



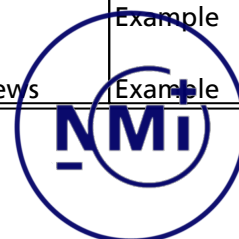
# Documentation folder

Number **T10362-22**

Project number 2327085

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| 10362/0-02  | 36    | Description of the meter, including drawings of the markings, sensor, printed circuit board  | General and G4 & G6 meter |
| 10362/6-01  | 25    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G4 & G6 meter             |
| 10362/10-01 | 16    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G4 & G6 meter             |
| 10362/13-01 | 22    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G4 & G6 meter             |
| 10362/16-01 | 30    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board, DC motor, casing and partlist | G4 & G6 meter             |
| 10362/16-02 | 10    | Excerpt documentation of the meter, including mechanical, Mbus, partlist and alarms  | G4 & G6 meter             |
| 10362/18-01 | 18    | Excerpt documentation of the meter   | G4 & G6 meter             |
| 10362/28-01 | 26    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G1.6/G2.5/G4/G6           |
| 10362/2-01  | 12    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G16 and G25 meter         |
| 10362/3-01  | 14    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G16 and G25 meter         |
| 10362/6-02  | 18    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G16 and G25 meter         |
| 10362/25-01 | 27    | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G10, G16 and G25 meter    |
| 10362/19-01 | 2     | Excerpt documentation of the meter, including drawings of the markings, sensor, printed circuit board                                | G16 and G25 meter         |
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| 10362/28-03 | 3     | Deflector with rubber  | U25/U40                   |
| 10362/20-01 | 4     | Markings   | Example                   |
| 10362/2-02  | 1     | Sealing of G16 and G25 meter with screws   | Example                   |





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| 10362/18-02 | 1     | Main PCB assembly                                | -       |
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| 10362/22-02 | 1     |  | -       |
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## GASTRONIC G4/G6 METERS

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## GASTRONIC G4/G6 METERS

**Product description:**

**Gas Meter**

**Manufacturer:**

**MeterSit S.r.l.  
Viale Tunisia, 50  
20124 Milano – Italy**

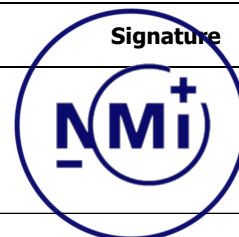
**Type/model number:**

**GASTRONIC G4/G6**

**Brand:**



|              |                 |                     |             |                  |
|--------------|-----------------|---------------------|-------------|------------------|
| Issued by:   | RD              | Giovanni D'Alberton | 30/06/2011  |                  |
| Verified by: | R&D             | Sergio Rogai        | 30/06/2011  |                  |
| Approved by: | DG              | Diego Gajani        | 30/06/2011  |                  |
|              | <b>Function</b> | <b>Name</b>         | <b>Date</b> | <b>Signature</b> |



|        |                   |
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### Document revisions

| Description of change  | Version | Issue Date<br>(dd/mm/yyyy) |
|--|---------|----------------------------|
| First version extracted from TCF10-001 with some additional paragraphs on Alarms and on the Display. | 1.0     | 29/06/2011                 |
| Revised version with paragraph 13 added, on Product Designation                                      | 1.1     | 30/06/2011                 |

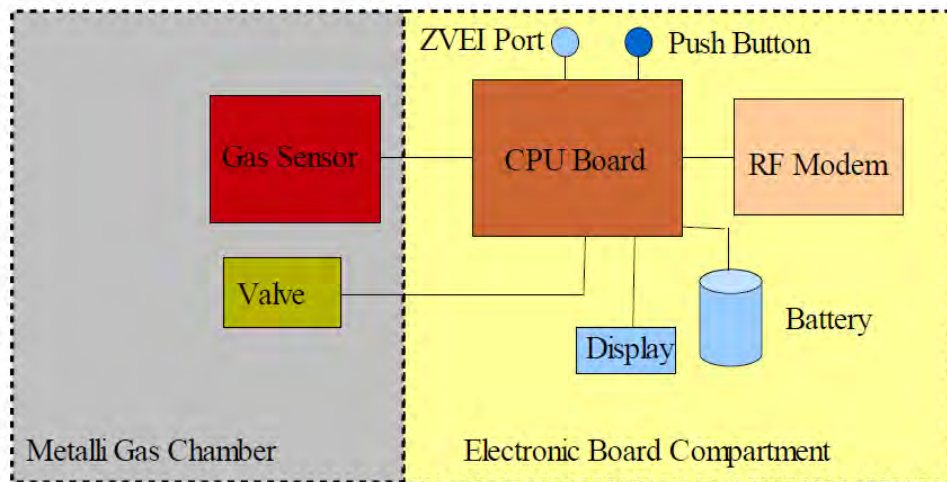


## 1. GENERAL DESCRIPTION OF THE INSTRUMENT AND BLOCK DIAGRAM

The Gas Meter is a solid state metrological instrument based on a Micro Electro Mechanical Sensor (MEMS) that computes gas flow.

The meter can be divided in two parts:

- a metallic gas chamber that includes the flow sensor and the gas valve;
- a plastic enclosure that contains the electronic boards and the display.



**Figure 1**

The main components of the meter are:

**Table 1 – Main components**

| Component                      | Functionality  |
|--------------------------------|--|
| <b>Gas sensor</b>              | It measures the gas flow. A more detailed description is given at paragraph 2.1  |
| <b>Gas valve</b>               | It performs the functions requested from the gas/energy authority therefore is not metrologically relevant   |
| <b>CPU Board</b>               | It implements the metrologically relevant and not metrologically relevant functions described in next paragraphs and in the technical files for the software |
| <b>RF Modem</b>                | It is used for remote interactions, may be equipped with GPRS/GSM or the MBUS ISM 868Mhz technology as alternative   |
| <b>Display and push button</b> | They provide the necessary UI for local user interaction with the meter  |

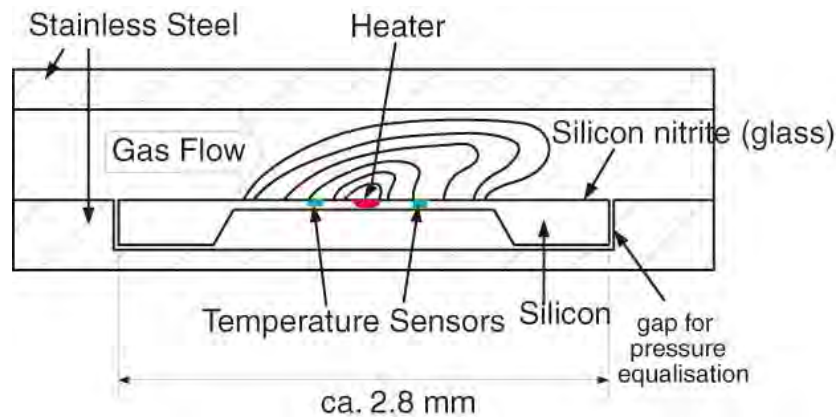


| Component      | Functionality   |
|----------------|---|
| <b>Battery</b> | The system is powered by a size D primary battery based on Lithium Thionyl Chloride chemistry |

### 1.1. Gas sensor principle

The gas sensor measures the mass gas flow using the calorimetric principle of measuring heat transfer. A small portion of the gas stream is diverted into a bypass channel where a CMOSens chip is embedded in a thermally insulated membrane. The chip contains a heater and two temperature sensors arranged symmetrically upstream and downstream of the heater.

The differential voltage of the sensors is a measure of the mass flow rate of the gas passing through the meter independent of the ambient temperature and any gas pressure changes (see Figure 2).



**Figure 2**

The CMOSens chip communicates directly with an external EEPROM. In combination with the embedded intelligence on the chip, the output signal is linearized, temperature compensated and calibrated using the calibration data stored in the EEPROM.

The generated I2C output signal is then directly used from the STM8 microprocessor, present on the electronic board.

See Annex 1 from Sensirion for the detailed explanation about:

- Measuring principle of thermal mass flow
- Principle of Gas Recognition.



## 2. METER SPECIFICATIONS

Metersit declares, under its responsibility, the following specifications:

**Table 2 – Rated operating conditions**

| Class     | Flow rate | $Q_{start}$         | $Q_{min}$           | $Q_t$               | $Q_{max}$           | $Q_r$               |
|-----------|-----------|---------------------|---------------------|---------------------|---------------------|---------------------|
|           |           | [m <sup>3</sup> /h] | [m <sup>3</sup> /h] | [m <sup>3</sup> /h] | [m <sup>3</sup> /h] | [m <sup>3</sup> /h] |
| <b>G4</b> |           | 0.01                | 0.04                | 0.6                 | 6.0                 | 7.2                 |
| <b>G6</b> |           | 0.015               | 0.06                | 1.0                 | 10                  | 12                  |

**Table 3 – Climatic environment**

| Class     | Operating Temperature | Storage Temperature |
|-----------|-----------------------|---------------------|
|           | [°C]                  | [°C]                |
| <b>G4</b> | -10 ÷ +55             | -20 ÷ +60           |
| <b>G6</b> | -10 ÷ +55             | -20 ÷ +60           |

The instrument is designed for non-condensing humidity  
Intended location: open and closed

**Table 4 – Gas related conditions**

| Description            | Value                 | Note |
|------------------------|-----------------------|------|
| Gas groups             | Second family group H |      |
| Temperature range      | (-10 ÷ +55) °C        |      |
| Max operating pressure | 150 mbar              |      |

**Table 5 – Other characteristics**

| Characteristic              | Value   | Note   |
|-----------------------------|---|--|
| DC Voltage supply           | (3.1 ÷ 3.6) V   | By Lithium Thyonil Chloride battery                      |
| Max DC rated current        | 6 mA<br>10 mA<br>250 mA                                   | Sensor ON<br>With M-BUS module ON<br>With GPRS module ON |
| DC source lifetime          | > 9 years with M-BUS module<br>> 5 years with GPRS module | See paragraph  |
| Mechanical environment      | M2  |  |
| Electromagnetic environment | E1  |  |





### 3. MECHANICAL SPECIFICATIONS

| Characteristic                | u.m. | Class G4           | Class G6                         | Note  |
|-------------------------------|------|--------------------|----------------------------------|---|
| Connection centrelines        | [mm] | 110                | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different |
| Max dimensions<br>(H x L x s) | [mm] | 220 x 190 x<br>160 | 220 x 190 x 160<br>(plus flange) |   |
| Connection diameter           | "    | G 1" 1/4           | G 1" 1/4<br>(1" 1/2 with flange) |   |
| Resistance to torque          | [Nm] | 110                | 140                              |   |
| Resistance to bending         | [Nm] | 40                 | 40<br>(60 with flange)           |   |
| Weight                        | [Kg] | 1.7                |                                  |   |

Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY

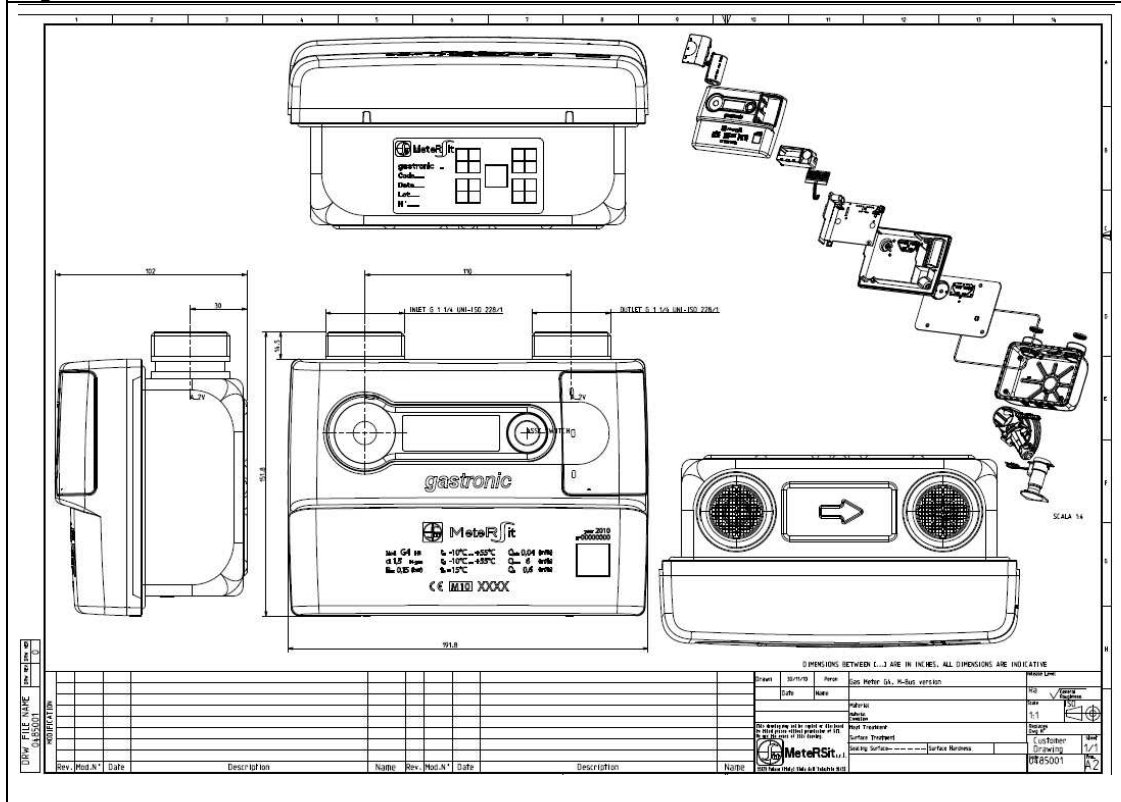


Figure 3.2 – VIEW OF FLOW SENSOR

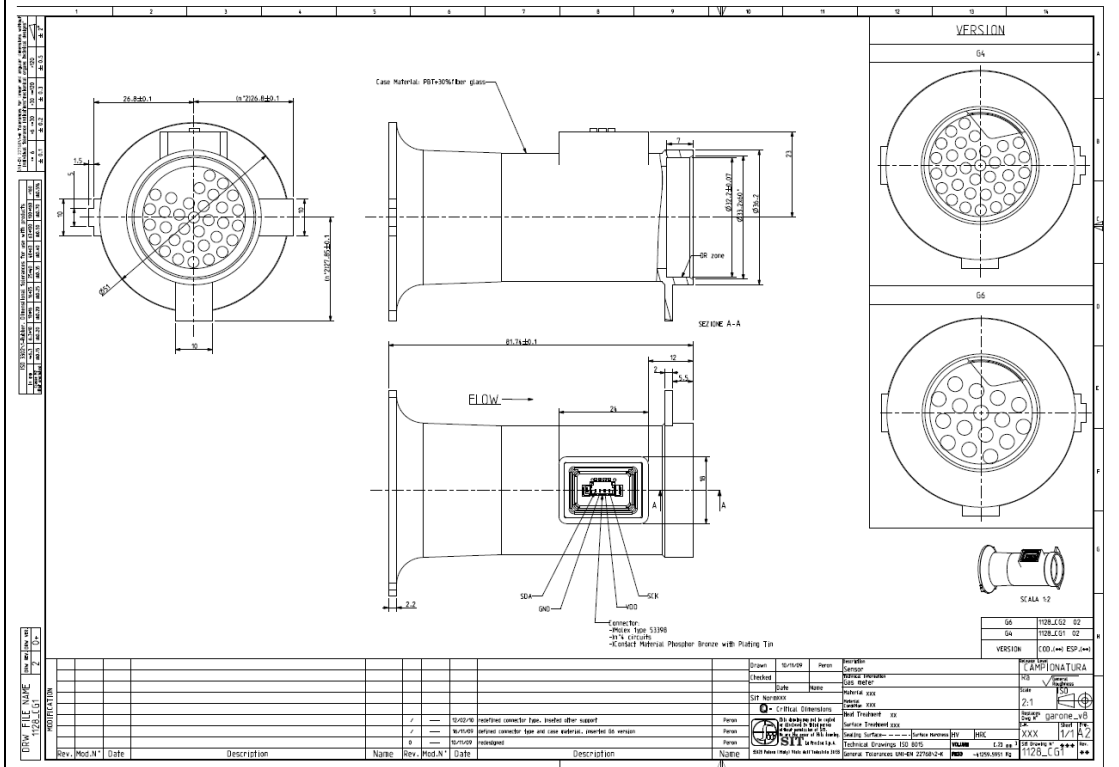
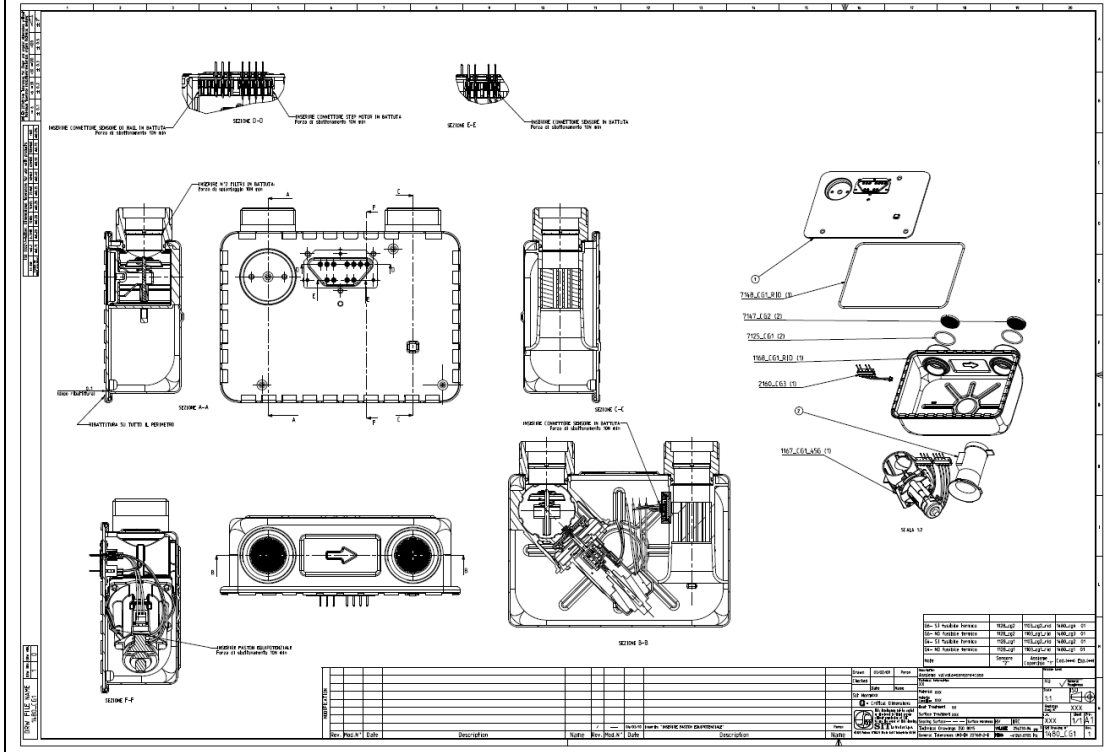


FIGURE 3.3 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE



## 4. CIRCUIT DIAGRAM

The electronic of the meter consists of four boards:

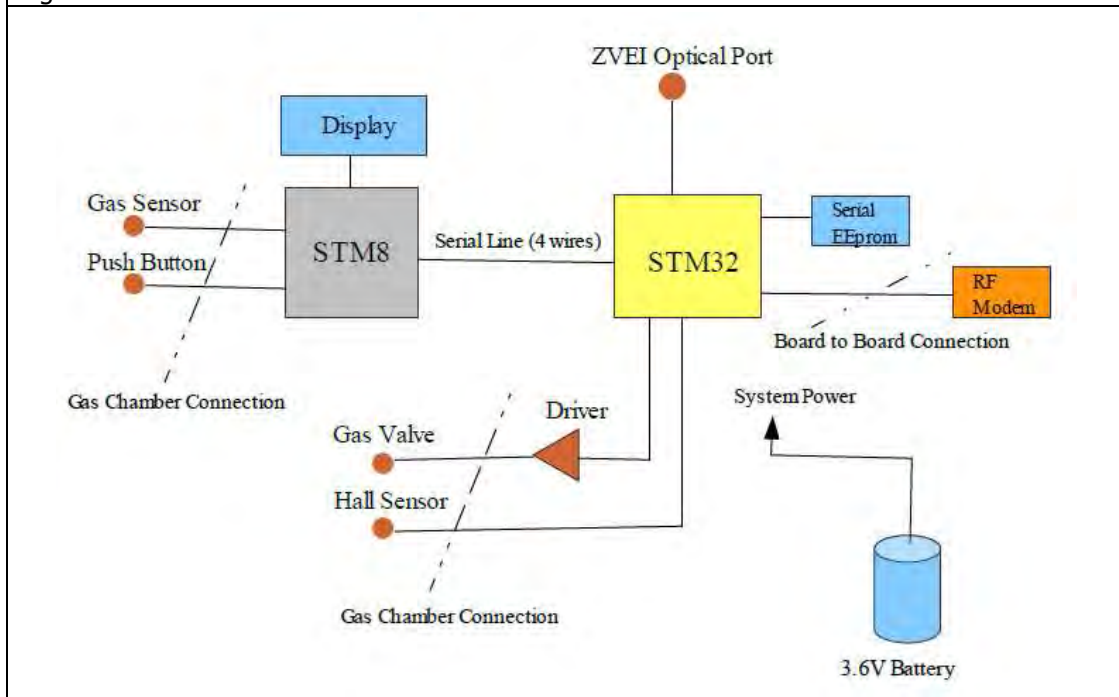
- CPU Board;
- M-BUS board;
- GPRS board;
- Hall Sensor Driver.

### 4.1. CPU Board

The CPU Board is designed around two microprocessors:

- STM8: an 8 bit CPU dedicated to gas sensor management, measurement integration algorithm, RTC clock
- STM32: a 32 bit CPU dedicated to billing time bands management, communications and application software
- As represented in the below block diagram, the two microprocessors communicate via a dedicated serial line with the addition of a fourth wire acting as an interrupt line.

Figure 4 – schematic view of CPU board



### 4.2. RF Modem board

The RF Modem board provides communication capability to the system and can be provided in two different versions: MBUS or GPRS/GSM.

Each board has the same form factor and pinout and can be connected to the CPU board with a connector-less board to board soldering solution.

The RF Modem pinout is provided in the table below:

| Pin Number | Name         | Function                                     |
|------------|--------------|--|
| 1          | GND          | Ground                                       |
| 2          | GND          | Ground                                       |
| 3          | V_CAP        | Supercapacitor Connection (to CPU board)     |
| 4          | V_CAP        | Supercapacitor Connection (to CPU board)     |
| 5          | DGND         | Digital Ground                               |
| 6          | DGND         | Digital Ground                               |
| 7          | 3.6V_VIN     | Power Input                                  |
| 8          | 3.6V_VIN     | Power Input                                  |
| 9          | USART_TX     | Serial Line TX                               |
| 10         | SPARE_PIN    | Not Used                                     |
| 11         | USART_RX     | Serial Line RX                               |
| 12         | ID_BOARD     | Used to identify RF Modem board type         |
| 13         | USART_CTS    | Serial Line CTS                              |
| 14         | USART_RTS    | Serial Line RTS                              |
| 15         | POWER_ON     | Power Switch Command (used in GPRS and MBUS) |
| 16         | NRST RESET   | Reset  |
| 17         | ON_OFF       | Power ON sequence start (used for GPRS)      |
| 18         | WISMO_READY  | GPRS ready (boot completed)                  |
| 19         | WISMO_TX     | Active when GPRS is transmitting             |
| 20         | CONFIG_M_BUS | Configuration Line (used in MBUS RF Modem)   |



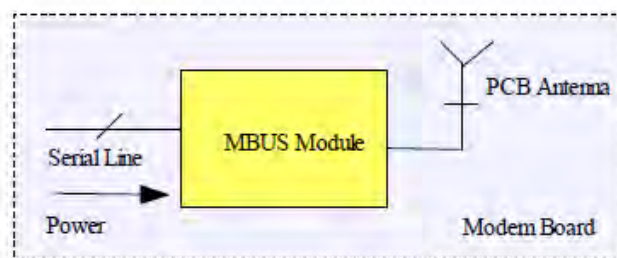
**4.2.1. M-BUS Modem schematic**

The MBUS RF modem is designed around an integrated module manufactured by Radiocraft, the module itself includes most of the radio HW as well as a CPU running the MBUS SW stack.

The RF Modem board is controlled and powered by the CPU board using the standard pinout board to board connector described above.

The MBUS radio module is completely controlled by AT commands using the standard serial line provided on the board to board interface connector.

Figure 6 – M-BUS module schematics



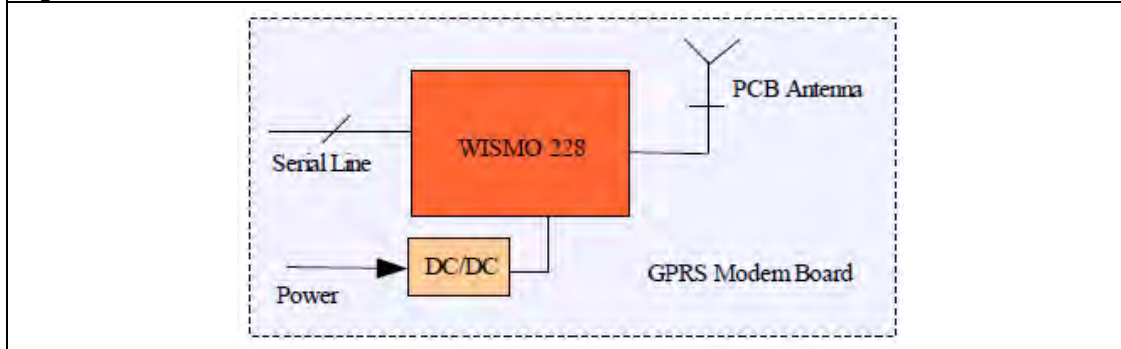
#### 4.2.2. GPRS Modem schematic

The GPRS modem is designed around a WISMO228 integrated module manufactured by Sierra Wireless, the module itself includes a complete GSM/GPRS IP Modem with its own internal GSM and TCP/IP stack.

The Modem board is controlled and powered by the CPU board using the standard pinout board to board connector described above. An on board DC/DC converter guarantees the needed voltage level to the GSM radio module.

The WISMO radio module is completely controlled by AT commands using the standard serial line provided on the board to board interface connector.

Figure 9 – GPRS module schematics



## 5. PCB LAYOUT

### 5.1. CPU Board layout

Figure 11 – CPU board layout

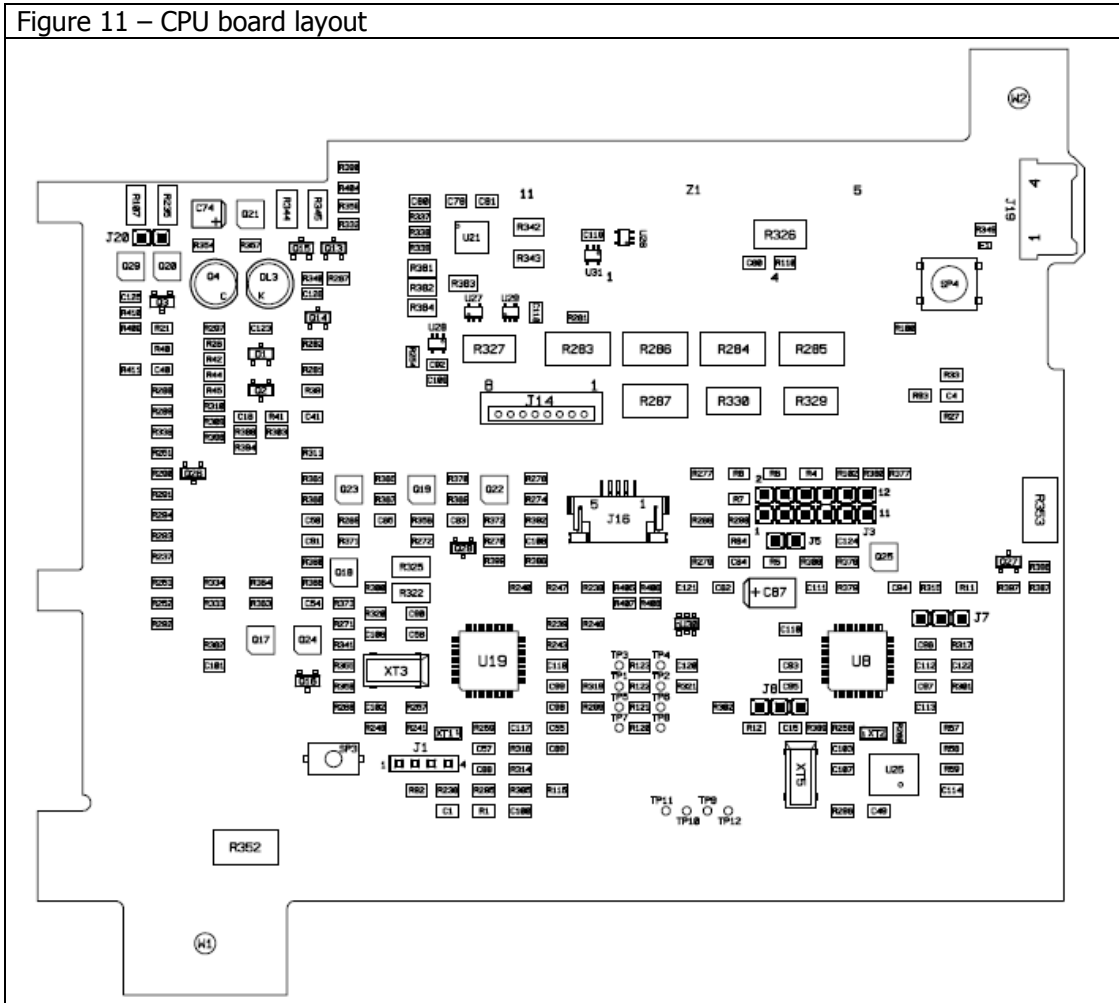




Figure 12 – M-BUS board layout: bottom view

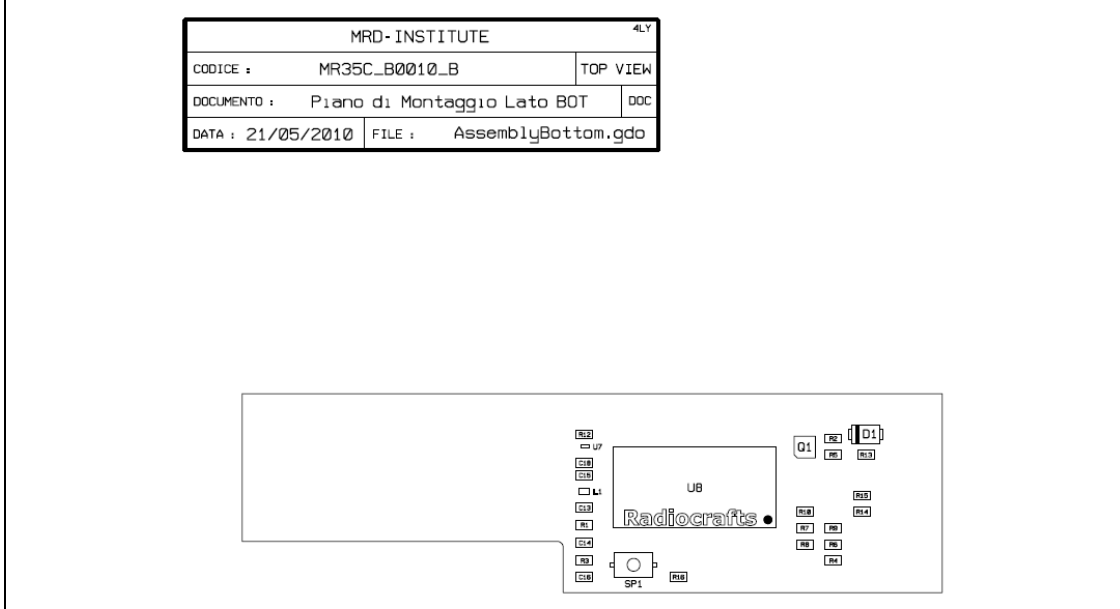


Figure 13 – M-BUS board layout: top view

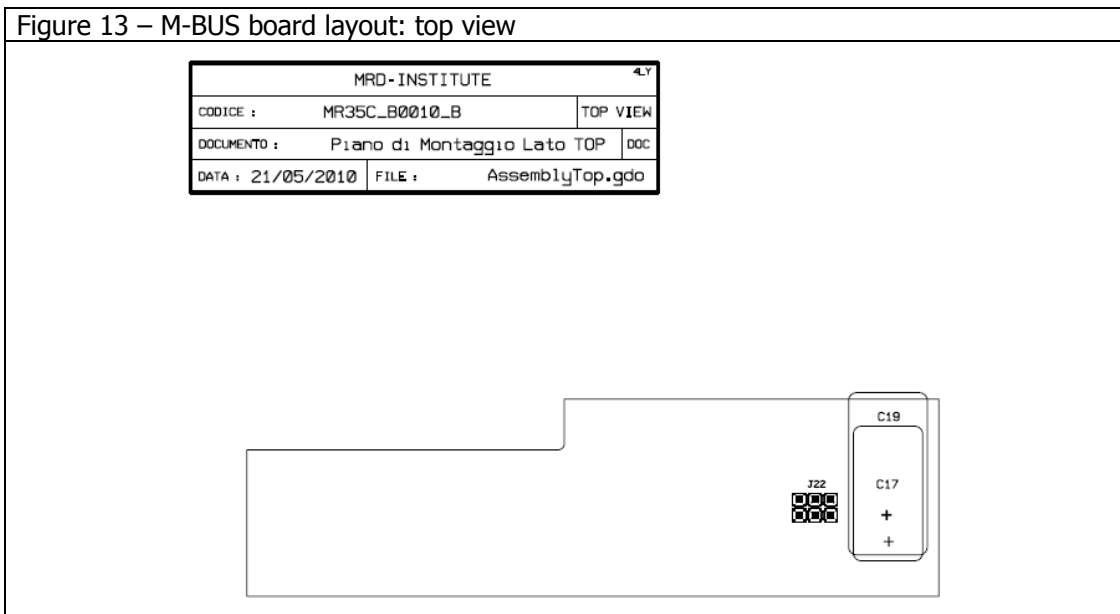


Figure 14 – GPRS board layout: bottom view

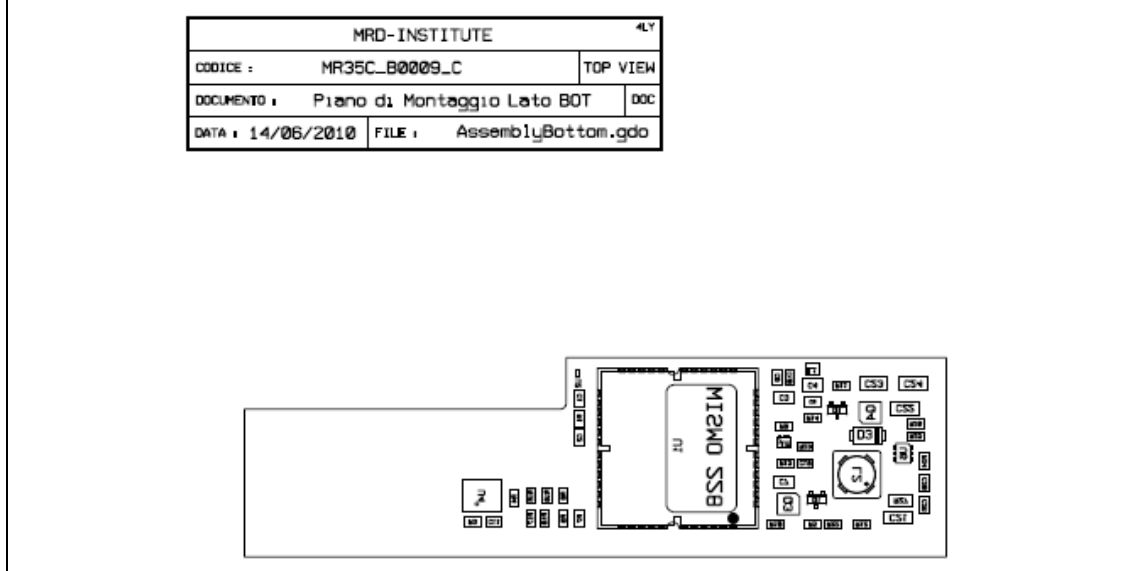
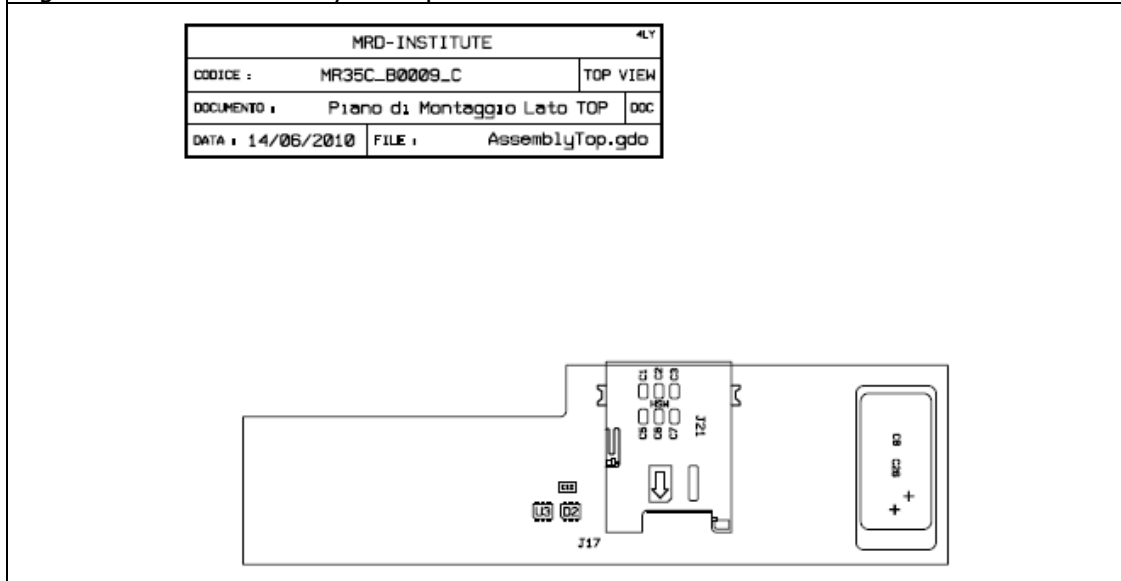


Figure 15 – GPRS board layout: top view





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### 6. PART LIST

The gas meter includes the following main components:

| Component                   | Manufacturer       | Reference                                   |
|-----------------------------|--------------------|---|
| <b>Battery</b>              | Tadiran            | <b>SL-2880</b>                              |
| <b>Electronic CPU Board</b> | MR&D Institute Spa | See paragraph 7.1                           |
| <b>MBus RF Modem</b>        | MR&D Institute Spa | See paragraph 7.2                           |
| <b>GPRS RF Modem</b>        | MR&D Institute Spa | See paragraph 7.3                           |
| <b>Display</b>              | Varitronics        | <b>COG-VLIT1519-01</b><br>See paragraph 7.3 |
| <b>Gas Sensor</b>           | Sensirion          | SGM8010<br>See Figure 3.2                   |
| <b>Gas Valve</b>            | SIT La Precisa Spa | See Figure 3.1 and 3.3                      |
| <b>Metallic Gas Chamber</b> | SIT La Precisa Spa | See Figure 3                                |
| <b>Plastic Case</b>         | MR&D Institute Spa | See Figure 3 and 17                         |

In the following paragraphs the part lists relative to the electronic boards are described in detail.



|        |                   |
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### 7. CPU board part list

Here below the CPU Board part list follows:

#### CPU board part list: 1 of 3

| Reference   | Quantity | Part Number_MRD   | Description   | Value | Not Mounted | Manufacturer     | Manufacturer PN         |
|---|----------|-------------------|---|-------|-------------|------------------|-------------------------|
| CS  |          | 1MR35CS0001E_1025 | CS Scheda Contatore Gas   |       |             |                  |                         |
| C1,C4,C15,C16,C<br>49,C54,C55,C56,<br>C57,C58,C62,C63<br>C64,C65,C78,C8<br>0,C81,C92,C93,C<br>94,C95,C96,C97,<br>C98,C99,C100,C1<br>01,C122,C123,C1<br>24 | 30       | C0500259100       | CAP SMD 0603 X7R 100NF 16V  | 100N  |             | KEMET            | C0603C104K5RAC7013      |
| C40,C41   | 2        | C080001C220       | CAP SMD 0603 COG 220PF 50V  | 220PF |             | MURATA           | GRM1885C1H221FA01D      |
| C60   | 1        | C0500259100       | CAP SMD 0603 X7R 100NF 16V  | 100N  | NM          | KEMET            | C0603C104K5RAC7013      |
| C74   | 1        | C0100026010       | TAJ TAN. CAP SMD SIZE B 10UF 6,3V   | 10U   |             | VISHAY / SPRAGUE | 293D106X96R3B8T         |
| C87   | 1        | C0100136010       | TAJ TAN. CAP SMD SIZE C 10UF 16V VISHAY COD 293D106X00                      | 10U   |             | VISHAY / SPRAGUE | 293D106X00              |
| C88,C89,C90,C91<br>C109,C110,C111<br>C112,C113,C114<br>C116,C117,C118<br>C119   | 14       | C0500016001       | CAP SMD 0603 X5R 1UF 25V  | 1U    |             | KEMET            | C0603C105K3PACTU        |
| C102,C103,C106,<br>C107   | 4        | C050011D068       | CAP SMD 0603 COG 6.8PF 25V  | 6,8P  |             | AVX              | 06033A690KAT2A          |
| C108  | 1        | C0500019010       | CAP SMD 0603 X7R 10NF 50V   | 10N   |             | MURATA           | GRM188R71H103KA01J      |
| C120  | 1        | C0600057022       | CAP SMD 0805 X5R 2.2UF 6,3V   | 2,2U  |             | MURATA           | GRM188R61A225ME34D      |
| C121  | 1        | C0500219220       | CAP SMD 0603 X7R 220NF 25V  | 220N  |             | KEMET            | C0603C224K3RACTU        |
| C125,C126   | 2        | C0500219001       | CAP SMD 0603 X7R 1NF 50V  | 1N    |             | MURATA           | GCM188R71H102KA37D      |
| D1  | 1        | D0300014001       | DUAL SWITCHING DIODE 0,15 A / 60 V , CASE SOT23 BAV99                       |       |             | PHILIPS          | BAV99                   |
| D1ST1,D1ST2   | 2        | ACC00209001       | RICHCO LEDS1-8-26 DISTANZIALI LED   |       |             | RICHCO           | LEDS1-8-26              |
| D13   | 1        | D0700050001       | INFRARED EMITTING DIODE, 5MM, L=880NM                                       |       |             | KINGBRIGHT       | L-7113SF4BT             |
| F1  | 1        | D1100020001       | FILM FUSE SMD - LITTELFUSE 0438 .250WR (0603)                               | A     |             | LITTELFUSE       | 0438 .250WR             |
| J1  | 1        | Z0300045004       | 4 PINS STRIP VERTICAL PITCH 2MM   |       |             | SAMTEC           | TMM-104-01-T-S          |
| J3  | 1        | Z0300008012       | DOUBLE ROW STRAIGHT PITCH 2 X 2,54 MM SAMTEC                                |       |             | SAMTEC           | TSW-106-06-T-D          |
| J5  | 1        | Z0300026002       | SINGLE ROW STRAIGHT PITCH X 2 2,54 MM SAMTEC                                |       | NM          | SAMTEC           | TSW-102-06-T-S          |
| J7,J8   | 2        | Z0300034003       | SINGLE ROW STRAIGHT PITCH X 3 2,54 MM SAMTEC                                |       |             | SAMTEC           | TSW-103-06-T-S          |
| J14   | 1        | Z0300017008       | 8 PINS P=1,5 MM - TOP ENTRY WIRE TO BOARD INSULATION DISPLACEMENT CONNECTOR |       |             | JST              | B88-ZR-SM4-TF (LF) (SN) |
| J16   | 1        | Z0300015005       | RIGHT ANGLE ZIF SMD CONNECTOR , 5 PINS , P 1 MM - MOLEX , 52207 SERIES      |       |             | MOLEX            | 52207-0551              |
| J19   | 1        | Z0300050004       | 2MM WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW,RIGHT ANGLE, 4 CIRCUIT         |       |             | MOLEX            | 502494-0470             |
| J20   | 1        | Z0300026002       | SINGLE ROW STRAIGHT PITCH X 2 2,54 MM SAMTEC                                |       |             | SAMTEC           | TSW-102-06-T-S          |
| Q2  | 1        | D0100006001       | NPN TRANSISTOR BIPOLAR SMD CASE SOT23                                       |       |             | PHILIPS          | BC847                   |
| Q3  | 1        | D0200003001       | PNP TRANSISTOR BIPOLAR SMD CASE SOT23                                       |       |             | PHILIPS          | BC857                   |
| Q4  | 1        | D1900003001       | NPN SILICON PHOTOTRANSISTOR LED LAMP, 5MM, L=940NM                          |       |             | KINGBRIGHT       | L-7113P3C               |
| Q13,Q14,Q15,Q1<br>6,Q26,Q27,Q28<br>Q17,Q18,Q19,Q2<br>0,Q21,Q22,Q23,<br>Q24,Q25,Q29  | 7        | D0600016001       | N-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, 20V, 1,05A, SOT23                |       |             | PHILIPS          | B5H105                  |
| R1,R4,R5,R6,R7,<br>R8,R11,R12,R57,<br>R58,R59,R93,R10<br>2,R237,R239,R24<br>0,R241,R243,R24<br>6,R247,R248,R25<br>1,R252,R253,R38<br>5                    | 10       | D0500017001       | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V, -1,52A, SOT457             |       |             | PHILIPS          | B5H207                  |
| R21   | 25       | R010002K010       | RESISTOR SMD 0603 - 0,06W 5% 10K  | 10K   |             | VISHAY           | CRCW060310K0J           |
| R26,R27,R409,R4<br>10   | 1        | R010001H047       | RESISTOR SMD 0603 - 0,06W 1% 4,7K   | 4,7K  |             | VISHAY           | CRCW06034K70F           |
| R33,R110,R115,R<br>254,R257,R258,R<br>259,R260,R261   | 4        | R0100020100       | RESISTOR SMD 0603 - 0,06W 5% 100  | 100   |             | VISHAY           | CRCW0603100RJ           |
| R39   | 1        | R010001K001       | RESISTOR SMD 0603 - 0,06W 5% 1K   | 1K    |             | VISHAY           | CRCW06031K00J           |
| R40   | 1        | R010001H012       | RESISTOR SMD 0603 - 0,06W 5% 1,2K   | 1,2K  |             | VISHAY           | CRCW06031K20J           |
| R41   | 1        | R0100010560       | RESISTOR SMD 0603 - 0,06W 1% 560  | 560   |             | VISHAY           | CRCW0603560RF           |
| R42   | 1        | R010001H039       | RESISTOR SMD 0603 - 0,06W 1% 3,9K   | 3,9K  |             | VISHAY           | CRCW06033K90F           |
| R44   | 1        | R010002K022       | RESISTOR SMD 0603 - 0,06W 1% 22K  | 22K   |             | VISHAY           | CRCW06032K20F           |
| R45   | 1        | R010001K470       | RESISTOR SMD 0603 - 0,06W 5% 470K   | 470K  |             | VISHAY           | CRCW0603470KJ           |
| R45   | 1        | R010001K470       | RESISTOR SMD 0603 - 0,06W 5% 470K   | 470K  | NM          | VISHAY           | CRCW0603470KJ           |



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| Reference  | Quantity | Part Number_MRD  | Description   | Value      | Not Mounted | Manufacturer      | Manufacturer P/N      |
|--|----------|------------------|---|------------|-------------|-------------------|-----------------------|
| R84,R92,R100,R236  | 4        | R010002K010      | RESISTOR SMD 0603 - 0,06W 5% 10K  | 10K        | NM          | VISHAY            | CRCW060310K0J         |
| R107,R235,R344,R345  | 4        | R0300010018      | RESISTOR SMD 1206 - 0,25W 1% 18   | 18         |             | VISHAY            | CRCW120618R0FKEA      |
| R120,R121,R122,R123,R266,R267,R268,R269,R270,R271,R272,R274,R277,R279,R281,R282,R377,R386,R387,R388,R405,R406                | 22       | R0100010047      | RESISTOR SMD 0603 - 0,06W 1% 47   | 47         |             | VISHAY            | CRCW060347R0F         |
| R238,R298,R303,R310,R389   | 5        | R0100010010      | RESISTOR SMD 0603 - 0,06W 1% 10   | 10         | NM          | VISHAY            | CRCW060310R0F         |
| R276   | 1        | R0100010047      | RESISTOR SMD 0603 - 0,06W 1% 47   | 47         | NM          | VISHAY            | CRCW060347R0F         |
| R283,R284,R285,R286  | 4        | R090001K001      | RESISTOR SMD 2512 - 1W 5% 1K  | 1K         |             | VISHAY            | CRCW25121K00J         |
| R287   | 1        | R090001K100      | RESISTOR SMD 2512 - 1W 5% 100K  | 100K       |             | VISHAY            | CRCW2512100KJ         |
| R288,R289,R290,R291,R292,R293,R294,R295,R296,R297,R299,R301,R309,R311,R300,R302,R308,R314,R315,R316,R317,R319,R320,R321,R349 | 14       | R0100010010      | RESISTOR SMD 0603 - 0,06W 1% 10   | 10         |             | VISHAY            | CRCW060310R0F         |
| R322,R325  | 2        | R030001K047      | RESISTOR SMD 1206 - 0,25W 1% 47K  | 47K        |             | VISHAY            | CRCW120647K0F         |
| R326,R329,R330   | 3        | R0600010047      | RESISTOR SMD 2010 1/2W 5% 47  | 47         |             | VISHAY            | CRCW201047R0JNEF      |
| R327   | 1        | R0600010047      | RESISTOR SMD 2010 1/2W 5% 47  | 47         | NM          | VISHAY            | CRCW201047R0JNEF      |
| R332,R333,R334,R336,R390   | 5        | R010001K100      | RESISTOR SMD 0603 - 0,06W 1% 100K   | 100K       |             | VISHAY            | CRCW0603100KF         |
| R337,R338,R339,R340,R341,R397,R398,R399,R407,R408  | 10       | R010001K010      | RESISTOR SMD 0603 - 0,06W 1% 10K  | 10K        |             | VISHAY            | CRCW060310K0F         |
| R342,R343  | 2        | R0200011056      | RESISTOR SMD 0805 - 0,1W 1% 5,6   | 5,6        |             | KOA               | RK73H2ATTDSR60F       |
| R352   | 1        | R0900010330      | RESISTOR SMD 2512 - 1W 5% 330   | 330        | NM          | VISHAY            | RCA 2512 330 J TC RT8 |
| R353   | 1        | R0900010330      | RESISTOR SMD 2512 - 1W 5% 330   | 330        |             | VISHAY            | RCA 2512 330 J TC RT8 |
| R354,R355,R356,R357,R358,R392,R394,R396,R411   | 9        | R010001M010      | RESISTOR SMD 0603 - 0,06W 1% 10M  | 10M        |             | VISHAY            | CRCW060310M0FKEA      |
| R359,R404  | 2        | R010001K220      | RESISTOR SMD 0603 - 0,06W 5% 220K   | 220K       |             | VISHAY            | CRCW0603220KJ         |
| R360,R361,R362,R363,R364,R365,R370   | 7        | R0100020000      | RESISTOR SMD 0603 - 0,06W 1% 0  | 0          | NM          | VISHAY            | CRCW06030000Z         |
| R366,R367,R368,R369,R378,R379  | 6        | R0100020000      | RESISTOR SMD 0603 - 0,06W 1% 0  | 0          |             | VISHAY            | CRCW06030000Z         |
| R371,R372,R373,R380  | 4        | R010001M001      | RESISTOR SMD 0603 - 0,06W 1% 1M   | 1M         |             | VISHAY            | CRCW06031M00F         |
| R381,R382,R383,R384  | 4        | R020002K001      | RESISTOR SMD 0805 - 0,125W 5% 1K  | 1K         |             | VISHAY            | CRCW08051K00J         |
| SP3  | 1        | Y0800007001      | BUTTON MINIATURE; SMD; ITT-CANNON COD. KSR231GLFS                           |            |             | ITT CANNON        | KSR231GLFS            |
| SP4  | 1        | Y0800046001      | BUTTON MINIATURE; SMD;6X6 ITT-CANNON COD. KSC351J                           |            |             | ITT CANNON        | KSC351J               |
| U8   | 1        | U0100074001      | MICROCONTROLLER STM32 ARM 32BIT CORTEX-M3 128KBFASH 20KBSRAM LQFP48         |            |             | ST                | STM32F103CB           |
| U19  | 1        | U0100058001      | STM8L151C6T3 MICROCONTROLLER STM8 8 BIT MCU 32KBFASH 2KBRAM 1KEEPROM LQFP48 |            |             | ST                | STM8L151C6T3          |
| U21  | 1        | U1600011001      | LOW VOLTAGE STEPPER AND SINGLE/DUAL DC MOTOR DRIVER                         |            |             | ALLEGRO           | A3906SESTR-T          |
| U25  | 1        | M0500005001      | 8 MBIT, LOW VOLTAGE, PAGE-ERASABLE SERIAL FLASH MEMORY                      |            |             | NUMONYX           | M45PE80-VMP6G         |
| U26,U27,U28,U29  | 5        | Y1800018001      | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF               |            |             | TEXAS INSTRUMENTS | TPS22943DCKR          |
| U30  | 1        | L0100121033      | TEXAS_BACK_BOOST_CHARGE_PUMP_THIN_SOT-23-6_60MA_3.3_5V                      |            |             | TEXAS INSTRUMENTS | REG710NA-3.3          |
| XT1,XT2  | 2        | Y1200002001      | CERAMIC RESONATOR MURATA CSTCE8M00G55A-R0 8MHZ                              | 8MHZ       |             | MURATA            | CSTCE8M00G55A-R0      |
| XT3,XT5  | 2        | Q0300019001      | CRYSTAL SMD 32.768KHZ +10PPM CITIZEN CM200C-032K768000ZRF1                  | 32.768 KHZ |             | CITIZEN           | CM200C-032K768000ZRF1 |
| CS   | 1        | MR35CS0001E_1025 | CS Scheda Contatore Gas   |            |             |                   |                       |
| C1,C4,C15,C16,C19,C54,C55,C56,C57,C58,C62,C63,C64,C65,C78,C80,C81,C92,C93,C94,C95,C96,C97,C98,C99,C100,C101,C122,C123,C124   | 30       | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100N       |             | KEMET             | C0603C104K5RAC7013    |





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| Reference   | Quantity | Part Number MRD | Description  | Value | Not Mounted | Manufacturer     | Manufacturer PIN        |
|---|----------|-----------------|--|-------|-------------|------------------|-------------------------|
| C40,C41   | 2        | C080001C220     | CAP SMD 0603 COG 220PF 50V   | 220PF |             | MURATA           | GRM1885C1H221FA01D      |
| C60   | 1        | C0500259100     | CAP SMD 0603 X7R 100NF 16V   | 100N  | NM          | KEMET            | C0603C104K5RAC7013      |
| C74   | 1        | C0100026010     | TAJ TAN. CAP SMD SIZE B 10UF 6,3V  | 10U   |             | VISHAY / SPRAGUE | 293D106X96R3B8T         |
| C87   | 1        | C0100136010     | TAJ TAN. CAP SMD SIZE C 10UF 16V VISHAY COD 293D106X00                         | 10U   |             | VISHAY / SPRAGUE | 293D106X00              |
| C88,C89,C90,C91<br>C109,C110,C111<br>C112,C113,C114<br>C116,C117,C118<br>C119   | 14       | C0500016001     | CAP SMD 0603 X5R 1UF 25V   | 1U    |             | KEMET            | C0603C105K3PACTU        |
| C102,C103,C106,<br>C107   | 4        | C050011D068     | CAP SMD 0603 COG 6,8PF 25V   | 6,8P  |             | AVX              | 06033A680KAT2A          |
| C108  | 1        | C0500019010     | CAP SMD 0603 X7R 10NF 50V  | 10N   |             | MURATA           | GRM188R71H103KA01J      |
| C120  | 1        | C0600057022     | CAP SMD 0805 X5R 2,2UF 6,3V  | 2,2U  |             | MURATA           | GRM188R61A225ME34D      |
| C121  | 1        | C0500219220     | CAP SMD 0603 X7R 220NF 25V   | 220N  |             | KEMET            | C0603C224K3RACTU        |
| C125,C126   | 2        | C0500219001     | CAP SMD 0603 X7R 1NF 50V   | 1N    |             | MURATA           | GCM188R71H102KA37D      |
| D1  | 1        | D0300014001     | DUAL SWITCHING DIODE 0,15 A / 60 V , CASE SOT23 BAV99                          |       |             | PHILIPS          | BAV99                   |
| D1S11,D1S12   | 2        | ACC00209001     | RICHCO LEDS1-8-26 DISTANZIALI LED  |       |             | RICHCO           | LEDS1-8-26              |
| DL3   | 1        | D0700050001     | INFRARED EMITTING DIODE, 5MM, L=880NM  |       |             | KINGBRIGHT       | L-7113SF4BT             |
| F1  | 1        | D1100020001     | FILM FUSE SMD - LITTELFUSE 0438 .250WVR (0603)                                 | A     |             | LITTELFUSE       | 0438 .250WR             |
| J1  | 1        | Z0300045004     | 4 PINS STRIP VERTICAL PITCH 2MM  |       |             | SAMTEC           | TMM-104-01-T-S          |
| J3  | 1        | Z0300008012     | DOUBLE ROW STRAIGHT PITCH X 2 X 6 2,54 MM SAMTEC                               |       |             | SAMTEC           | TSW-106-06-T-D          |
| J5  | 1        | Z0300026002     | SINGLE ROW STRAIGHT PITCH X 2 2,54 MM SAMTEC                                   |       | NM          | SAMTEC           | TSW-102-06-T-S          |
| J7,<br>J8   | 2        | Z0300034003     | SINGLE ROW STRAIGHT PITCH X 3 2,54 MM SAMTEC                                   |       |             | SAMTEC           | TSW-103-06-T-S          |
| J14   | 1        | Z0300017008     | 8 PINS P=1,5 MM - TOP ENTRY WIRE TO BOARD INSULATION<br>DISPLACEMENT CONNECTOR |       |             | JST              | B8B-2R-SM4-TF (LF) (SN) |
| J16   | 1        | Z0300015005     | RIGHT ANGLE ZIF SMD CONNECTOR , 5 PINS , P 1 MM - MOLEX ,<br>52207 SERIES      |       |             | MOLEX            | 52207-0551              |
| J19   | 1        | Z0300050004     | 2MM WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW,RIGHT<br>ANGLE, 4 CIRCUIT         |       |             | MOLEX            | 502494-0470             |
| J20   | 1        | Z0300026002     | SINGLE ROW STRAIGHT PITCH X 2 2,54 MM SAMTEC                                   |       |             | SAMTEC           | TSW-102-06-T-S          |
| Q2  | 1        | D0100006001     | NPN TRANSISTOR BIPOLAR SMD CASE SOT23  |       |             | PHILIPS          | BC847                   |
| Q3  | 1        | D0200003001     | PNP TRANSISTOR BIPOLAR SMD CASE SOT23  |       |             | PHILIPS          | BC857                   |
| Q4  | 1        | D19000003001    | NPN SILICON PHOTOTRANSISTOR LED LAMP, 5MM, L=940NM                             |       |             | KINGBRIGHT       | L-7113P3C               |
| Q13,Q14,Q15,Q1<br>6,Q26,Q27,Q28   | 7        | D0600016001     | N-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, 20V, 1,05A,<br>SOT23                |       |             | PHILIPS          | BSH105                  |
| Q17,Q18,Q19,Q2<br>0,Q21,Q22,Q23,<br>Q24,Q25,Q29   | 10       | D0500017001     | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V, -1,52A,<br>SOT457             |       |             | PHILIPS          | BSH207                  |
| R1,R4,R5,R6,R7,<br>R8,R11,R12,R57,<br>R58,R59,R93,R10<br>2,R237,R239,R24<br>0,R241,R243,R24<br>6,R247,R248,R25<br>1,R252,R253,R38<br>5    | 25       | R010002K010     | RESISTOR SMD 0603 - 0,06W 5% 10K   | 10K   |             | VISHAY           | CRCW060310K0J           |
| R21   | 1        | R010001H047     | RESISTOR SMD 0603 - 0,06W 1% 4,7K  | 4,7K  |             | VISHAY           | CRCW06034K70F           |
| R26,R27,R409,R4<br>10   | 4        | R0100020100     | RESISTOR SMD 0603 - 0,06W 5% 100   | 100   |             | VISHAY           | CRCW0603100RJ           |
| R33,R110,R115,R<br>254,R257,R258,R<br>259,R260,R261   | 9        | R010001K001     | RESISTOR SMD 0603 - 0,06W 5% 1K  | 1K    |             | VISHAY           | CRCW06031K00J           |
| R39   | 1        | R010001H012     | RESISTOR SMD 0603 - 0,06W 5% 1,2K  | 1,2K  |             | VISHAY           | CRCW06031K20J           |
| R40   | 1        | R0100010560     | RESISTOR SMD 0603 - 0,06W 1% 560   | 560   |             | VISHAY           | CRCW0603560RF           |
| R41   | 1        | R010001H039     | RESISTOR SMD 0603 - 0,06W 1% 3,9K  | 3,9K  |             | VISHAY           | CRCW06033K90F           |
| R42   | 1        | R010002K022     | RESISTOR SMD 0603 - 0,06W 1% 22K   | 22K   |             | VISHAY           | CRCW060322K0F           |
| R44   | 1        | R010001K470     | RESISTOR SMD 0603 - 0,06W 5% 470K  | 470K  |             | VISHAY           | CRCW0603470KJ           |
| R45   | 1        | R010001K470     | RESISTOR SMD 0603 - 0,06W 5% 470K  | 470K  | NM          | VISHAY           | CRCW0603470KJ           |
| R84,R92,R100,R2<br>36   | 4        | R010002K010     | RESISTOR SMD 0603 - 0,06W 5% 10K   | 10K   | NM          | VISHAY           | CRCW060310K0J           |
| R107,R235,R344,<br>R345   | 4        | R0300010018     | RESISTOR SMD 1206 - 0,25W 1% 18  | 18    |             | VISHAY           | CRCW120618R0FKEA        |
| R120,R121,R122,<br>R123,R266,R267,<br>R268,R269,R270,<br>R271,R272,R274,<br>R277,R279,R281,<br>R282,R377,R386,<br>R387,R388,R405,<br>R406 | 22       | R0100010047     | RESISTOR SMD 0603 - 0,06W 1% 47  | 47    |             | VISHAY           | CRCW060347R0F           |
| R238,R298,R303,<br>R310,R389  | 5        | R0100010010     | RESISTOR SMD 0603 - 0,06W 1% 10  | 10    |             | VISHAY           | CRCW060310R0F           |
| R276  | 1        | R0100010047     | RESISTOR SMD 0603 - 0,06W 1% 47  | 47    | NM          | VISHAY           | CRCW060347R0F           |
| R283,R284,R285,<br>R286   | 4        | R090001K001     | RESISTOR SMD 2512 - 1W 5% 1K   | 1K    |             | VISHAY           | CRCW25121K00J           |
| R287  | 1        | R090001K100     | RESISTOR SMD 2512 - 1W 5% 100K   | 100K  |             | VISHAY           | CRCW2512100KJ           |
| R288,R289,R290,<br>R291,R292,R293,<br>R294,R295,R296,<br>R297,R299,R301,<br>R309,R311   | 14       | R0100010010     | RESISTOR SMD 0603 - 0,06W 1% 10  | 10    |             | VISHAY           | CRCW060310R0F           |





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### 7.1. M-BUS board part list

Here below the M-Bus board part list follows:

#### M-Bus board part list: 1 of 1

| Reference                      | Quantity | Part_Number_MRD  | Description  | Value | Not Mounted | Manufacturer     | Manufacturer P/N   |
|--------------------------------|----------|------------------|--|-------|-------------|------------------|--------------------|
| CS                             | 1        | MR3SCS0010B_1021 | CS Scheda RADIO GASMETER M-BUS   |       |             |                  |                    |
| C13,C14                        | 2        | C080001C022      | CAP SMD 0603 NPO 22PF 50V  | 22P   | NM          | KEMET            | C0603C220J5GACTU   |
| C15                            | 1        | C0500259100      | CAP SMD 0603 X7R 100NF 16V   | 100N  |             | KEMET            | C0603C104K5RAC7013 |
| C16                            | 1        | C0500219001      | CAP SMD 0603 X7R 1NF 50V   | 1N    |             | MURATA           | GCM188R71H102KA37D |
| C17                            | 1        | C0900003047      | SUPERCAPACITOR DIA 21 , HIGH 23 , P 5.3 (MM) ULTRA LOW ESR 0.47F         | 0,47  | NM          | COOPER BUSSMANN  | PA-5R0V474         |
| C18                            | 1        | C050001C100      | CAP SMD 0603 X7R 100PF 50V   | 100P  |             | AVX              | 06035C101KAT2A     |
| C19                            | 1        | C0900021075      | SUPERCAPACITOR, LOW ESR 7.5F 5V STARCAP SCDRL5R0755                      | 7,5   |             | STARCAP          | SCDRML5R0755       |
| D1                             | 1        | D0400031001      | SCHOTTKY BARRIER RECT. GENERALSEMICONDUCTOR 1A, 30V                      |       |             | ON SEMICONDUCTOR | MBRA130LT3G        |
| J22                            | 1        | Z0300022006      | DOUBLE ROW STRAIGHT PITCH 2 X 3 2.54 MM SAMTEC                           |       |             | SAMTEC           | TSW-103-06-T-D     |
| L1                             | 1        | I0400010001      | SMD CHIP FERRITE BEADS MURATA BLM18H SERIES - CASE 0603                  |       | UH          | MURATA           | BLM18HE102SN1      |
| Q1                             | 1        | D0500017001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V, -1.52A, SOT457          |       |             | PHILIPS          | BSH207             |
| R1,R13                         | 2        | R0100010000      | RESISTOR SMD 0603 - 0.06W 5%   | 0     | 0           | VISHAY           | CRCW06030000Z      |
| R2                             | 1        | R010002K100      | RESISTOR SMD 0603 - 0.06W 5%   | 100K  |             | VISHAY           | CRCW0603100KJ      |
| R3                             | 1        | R010001H056      | RESISTOR SMD 0603 - 0.06W 1%   | 5,6K  | NM          | VISHAY           | CRCW06035K60F      |
| R4                             | 1        | R010001H082      | RESISTOR SMD 0603 - 0.06W 5%   | 8,2K  |             | VISHAY           | CRCW06038K20J      |
| R5,R6,R7,R8,R9,<br>R10,R14,R15 | 8        | R0100020100      | RESISTOR SMD 0603 - 0.06W 5%   | 100   | 100         | VISHAY           | CRCW0603100RJ      |
| R12                            | 1        | R010002K010      | RESISTOR SMD 0603 - 0.06W 5%   | 10K   | 10K         | VISHAY           | CRCW060310K0J      |
| R16                            | 1        | R010002H027      | RESISTOR SMD 0603 - 0.06W 5%   | 2,7K  | 2,7K        | VISHAY           | CRCW06032K70J      |
| SP1                            | 1        | Y0800007001      | BUTTON MINIATURE; SMD; ITT-CANNON COD. KSR231GLFS                        |       |             | ITT CANNON       | KSR231 GLFS        |
| U7                             | 1        | D1500007001      | ESD SUPPRESSOR, HIGH SPEED 50FF, TRIGGER 300V, CLAMPING 35V CASE MLP0402 |       | NM          | COOPER BUSSMANN  | 0402ESDA-MLP8      |
| U8                             | 1        | U1200021001      | WIRELESS M-BUS MULTI-MODE RF TRANSCEIVER MODULE                          |       |             | RADIOCRAFTS      | RC1180-MBUS        |



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### 7.2. GPRS board part list

Here below the GPRS board part list follows:

#### GPRS board part list: 1 of 1

| Reference              | Quantity | Part_Number_MRD  | Description   | Value | Not Mounted | Manufacturer      | Manufacturer P/N   |
|------------------------|----------|------------------|---|-------|-------------|-------------------|--------------------|
| CS                     | 1        | MR35CS0009C_1021 | CS Scheda RADIO GASMETER GPRS   |       |             |                   |                    |
| C1,C2                  | 2        | C080001C022      | CAP SMD 0603 NPO 22PF 50V   | 22PF  | NM          | KEMET             | C0603C220J5GACTU   |
| C3,C4                  | 2        | C0500036010      | CAP SMD 0805 XSR 100F 10V   | 100F  |             | MURATA            | GRM21BR61A106KE19L |
| C6,C10                 | 2        | C050011C033      | CAP SMD 0603 COG 33PF 50V   | 33PF  |             | VISHAY / VITRAMON | VJ0603A330JACV1B8C |
| C7                     | 1        | C0700037047      | CAP SMD 0805 Y5V 4,7UF 10V  | 4,7U  |             | KEMET             | C0805C4752BVACTU   |
| C8                     | 1        | C0900020005      | SUPERCAPACITOR, LOW ESR 5F 5V STARCAP   | 5     | NM          | STARCAP           | SCDRML5R0505       |
| C9                     | 1        | C050011C010      | CAP SMD 0603 X7R 10PF 50V   | 10PF  |             | AVX               | 06035C100KAT2A     |
| C11                    | 1        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 0,1UF | NM          | KEMET             | C0603C104K5RAC7013 |
| C12                    | 1        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 0,1UF |             | KEMET             | C0603C104K5RAC7013 |
| C19                    | 1        | C0500016001      | CAP SMD 0603 X5R 1UF 25V  | 1UF   |             | KEMET             | C0603C105K3PACTU   |
| C20                    | 1        | C080001C022      | CAP SMD 0603 NPO 22PF 50V   | 22PF  |             | KEMET             | C0603C220J5GACTU   |
| C21,C22,C24            | 3        | C0500016100      | CAP SMD 1206 X7R 100UF 6,3V   | 100U  |             | MURATA            | GRM31CR60J107ME39L |
| C23                    | 1        | C0500016100      | CAP SMD 1206 X7R 100UF 6,3V   | 100U  | NM          | MURATA            | GRM31CR60J107ME39L |
| C25                    | 1        | C0500016001      | CAP SMD 0603 X5R 1UF 25V  | 1U    |             | KEMET             | C0603C105K3PACTU   |
| C26                    | 1        | C0900021075      | SUPERCAPACITOR, LOW ESR 7,5F 5V STARCAP   | 7,5F  |             | STARCAP           | SCDRML5R0755       |
| D1                     | 1        | D0400008001      | SCHOTTKY DIODE COMM.KAT. 250MA, CASE SOT23 40V VRE BAT64-05   |       |             | INFINEON          | BAT64-05           |
| D2                     | 1        | D1300007001      | LOW CAPACITANCE DIODE ARRAY - CASE SOT23-6L (SC74)  |       |             | MICROELECTRONICS  | DALC208SC6         |
| D3                     | 1        | D0400030001      | SCHOTTKY BARRIER RECT. GENERALSEMICONDUCTOR 2A - 10V  |       |             | ON SEMICONDUCTOR  | MBR4210LT3         |
| J21                    | 1        | Z0300018008      | SIM PCB CONNECTOR 6 PINS - MOLEX SD-47553-001   |       |             | MOLEX             | SD-47553-001       |
| L1                     | 1        | I0100019220      | SMD INDUCTOR 0805 - COILCRAFT 0805CS-221XJLC  | 220NH |             | COILCRAFT         | 0805CS-221XJLC     |
| L2                     | 1        | I0100067047      | 4.7UH SMD SHIELDED POWER INDUCTOR WE-PD   | 4,7U  |             | WURTH ELECTRONICS | 7447789004         |
| Q1                     | 1        | D0100006001      | NPN TRANSISTOR BIPOLAR SMD CASE SOT23   |       |             | PHILIPS           | BC847              |
| Q3                     | 1        | D0500017001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V, -1.52A, SOT457   |       |             | PHILIPS           | B5H207             |
| Q4                     | 1        | D0600018001      | 20V SOT23-6 N-CHANNEL MOSFET WITH LOW GATE DRIVE CAPABILITY   |       |             | ZETEX             | ZXMN2803E6A        |
| R1,R3                  | 2        | R0100010000      | RESISTOR SMD 0603 - 0,06W 5%  | 0     |             | VISHAY            | CRCW06030000Z      |
| R4,R5,R6,R7,R8,R10,R11 | 7        | R0100020100      | RESISTOR SMD 0603 - 0,06W 5%  | 100   |             | VISHAY            | CRCW0603100RJ      |
| R9                     | 1        | R0100020100      | RESISTOR SMD 0603 - 0,06W 5%  | 100   | NM          | VISHAY            | CRCW0603100RJ      |
| R12,R13                | 2        | R010002K010      | RESISTOR SMD 0603 - 0,06W 5%  | 10K   |             | VISHAY            | CRCW060310K0J      |
| R14                    | 1        | R010002K330      | RESISTOR SMD 0603 - 0,06W 1%  | 330K  |             | VISHAY            | CRCW060330KFKEA    |
| R15,R16                | 2        | R010002H013      | RESISTOR SMD 0603 - 0,06W 1%  | 1,3K  |             | VISHAY            | CRCW06031K30FKEA   |
| R17,R18                | 2        | R010001K010      | RESISTOR SMD 0603 - 0,06W 1%  | 10K   |             | VISHAY            | CRCW060310K0F      |
| R22                    | 1        | R010002K100      | RESISTOR SMD 0603 - 0,06W 5%  | 100K  |             | VISHAY            | CRCW0603100KJ      |
| R23                    | 1        | R010002K820      | RESISTOR SMD 0603 - 0,06W 1%  | 820K  |             | VISHAY            | CRCW0603820KFKEB   |
| R24                    | 1        | R010001K100      | RESISTOR SMD 0603 - 0,06W 1%  | 100K  |             | VISHAY            | CRCW0603100KF      |
| R25                    | 1        | R010002K082      | RESISTOR SMD 0603 - 0,06W 1%  | 82K   |             | VISHAY            | CRCW060382K0F      |
| R26                    | 1        | R010001K348      | RESISTOR SMD 0603 - 0,06W 1%  | 348K  |             | VISHAY            | CRCW0603348KF      |
| R27                    | 1        | R0200001003      | RESISTOR SMD 0805 - 0,125W 5%   | 0,03  |             | VISHAY            | W5L0805R0300JEA    |
| U1                     | 1        | U0100073001      | WIRELESS STANDARD MODEM WAVECOM WISMO228  |       |             | WAVECOM           | WISMO228_0CG16R04F |
| U2                     | 1        | D1500007001      | ESD SUPPRESSOR, HIGH SPEED 50FF, TRIGGER 300V, CLAMPING 35V CASE MLP0402  |       | NM          | COOPER BUSSMANN   | 0402ESDA-MLP8      |
| U3                     | 1        | D1500005001      | QUAD TRANSIL ARRAY FOR ESD PROTECTION CASE SOT23-6L   |       |             | MICROELECTRONICS  | ESDA6V1SC6         |
| U4                     | 1        | U0100070001      | 16 BIT SECURITY CONTROLLER OPTIMIZED FOR M2M APPLICATIONS MD DUAL INVERTING SCHMITT TRIGG. 5V TOLLERANT INPUT-CASE SOT363 |       | NM          | INFINEON          | SLM76CF5120P       |
| U5                     | 1        | H1200007001      |   |       |             | NXP SEMICONDUCTOR | 74HC2G14           |
| U6                     | 1        | U1400006001      | DC-DC CONTROLLER STEP-UP 550KH FIXED FREQUENCY  |       |             | LINEAR TECHNOLOGY | LTC1872ES6         |



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### 8. MARKINGS

The figure 16 shows the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 4 different versions of the meters

Figure 16 – Labelling of G4 GPRS meter

**MeterSit**

**Mod G4 GPRS**

$c_{1,5}$  H<sub>3</sub> H-gas  $P_{max}$  0,15 (bar)  
 $t_a$  -10°C ... +55°C  $Q_{min}$  0,04 (m<sup>3</sup>/h)  
 $t_b$  -10°C ... +55°C  $Q_{max}$  6 (m<sup>3</sup>/h)  
 $t_b$  = 15°C  $Q_n$  0,6 (m<sup>3</sup>/h)

CE M11 0122 T10362  
 - YEAR OF CONSTRUCTION  
 - SERIAL NUMBER (progressive)

n° 00000000  
 year 2011  
 Made In Italy

DATA MATRIX CODE AREA  
 - YEAR OF CONSTRUCTION (2011 ...)  
 - SERIAL NUMBER (8 digit progressive)  
 - METER MODEL (G4)  
 - TYPE OF TRANSMISSION (GPRS)

NOTE:  
- ALL THE CHARACTERS OF THE WRITINGS HAVE TO BE FULL

| TOLLERANZE UNI-ISO 2768 |    | CLASSE in K                                 |    |
|-------------------------|----|---|----|
|                         |    | PER DIMENSIONI LINEARI (DUELE SINGOLICORRE) |    |
| CLASSE                  | SA | SA  | SA |
|                         | SA | SA  | SA |
| T                       | SA | SA  | SA |
| M                       | SA | SA  | SA |
| C                       | SA | SA  | SA |
| V                       | SA | SA  | SA |

**MeterSit**  
 $c_{1,5}$  H<sub>3</sub> H-gas  $P_{max}$  0,15 (bar)  
 $t_a$  -10°C ... +55°C  $Q_{min}$  0,04 (m<sup>3</sup>/h)  
 $t_b$  -10°C ... +55°C  $Q_{max}$  6 (m<sup>3</sup>/h)  
 $t_b$  = 15°C  $Q_n$  0,6 (m<sup>3</sup>/h)

CE M11 0122 T10362  
 SCALA 1:1

**Mod G4 GPRS**  
 n° 00000000  
 year 2011  
 Made In Italy

mm  
 PROIEZIONE  
 EUROPEA

**MeterSit**

P. COLOMBO  
 C. COMERIO  
 M. MONTI

NAME PLATE  
 GAS METER G4 GPRS

MR356\_P000\_L\_C  
 7252743  
 A3





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Figure 17 – Labelling of G6 GPRS meter

**MeterR Sit**

cl. 1,5 H3 H-gas  $P_{max}$  0,15 (bar)  
 $t_m$  -10°C ... +55°C  $Q_{min}$  0,08 (m³/h)  
 $t_b$  -10°C ... +55°C  $Q_{max}$  10 (m³/h)  
 $t_b$  =15°C  $Q_t$  1 (m³/h)  
 CE (M1) 0122 T10362

**Mod.G6 GPRS**

DATA MATRIX CODE AREA

00000000  
 year 2011  
 Made in Italy

NOTE:  
 - YEAR OF CONSTRUCTION  
 - SERIAL NUMBER (progressive)

NOTE:  
 - ALL THE CHARACTERS OF THE WRITINGS HAVE TO BE FULL

**TOLLERANZE UNI-ISO 2768  
 CLASSE m K**

| CLASSE | PER DIMENSIONI DI LINEE E CONDIZIONI STANDARDIZZATE |       |       | PER DIMENSIONI ASSOCIATE |       |       |
|--------|---|-------|-------|--------------------------|-------|-------|
|        | SA  | SA/2  | SA/4  | SA/2                     | SA/4  | SA/8  |
| F      | +0,08   | +0,08 | +0,08 | +0,08                    | +0,08 | +0,08 |
| M      | +0,15   | +0,15 | +0,15 | +0,15                    | +0,15 | +0,15 |
| C      | +0,25   | +0,25 | +0,25 | +0,25                    | +0,25 | +0,25 |
| V      | -   | +0,25 | +0,25 | +0,25                    | +0,25 | +0,25 |

**METERR SIT**

cl. 1,5 H3 H-gas  $P_{max}$  0,15 (bar)  
 $t_m$  -10°C ... +55°C  $Q_{min}$  0,08 (m³/h)  
 $t_b$  -10°C ... +55°C  $Q_{max}$  10 (m³/h)  
 $t_b$  =15°C  $Q_t$  1 (m³/h)  
 CE (M1) 0122 T10362

**G6 GPRS**

00000000  
 year 2011  
 Made in Italy

SCALA 1:1

**NAME PLATE**  
 GAS METER G6 GPRS

|      |      |             |      |      |
|------|------|-------------|------|------|
| IND. | REF. | DESCRIZIONE | DATA | NOME |
|      |      |             |      |      |

**METERR SIT**

MODELLO: M10362-C  
 DATA: 2-1  
 MODELLO: M10362-C

**METERR SIT**

MODELLO: M10362-C  
 DATA: 7252744  
 MODELLO: M10362-C

**METERR SIT**

MODELLO: M10362-C  
 DATA: 2-1  
 MODELLO: M10362-C





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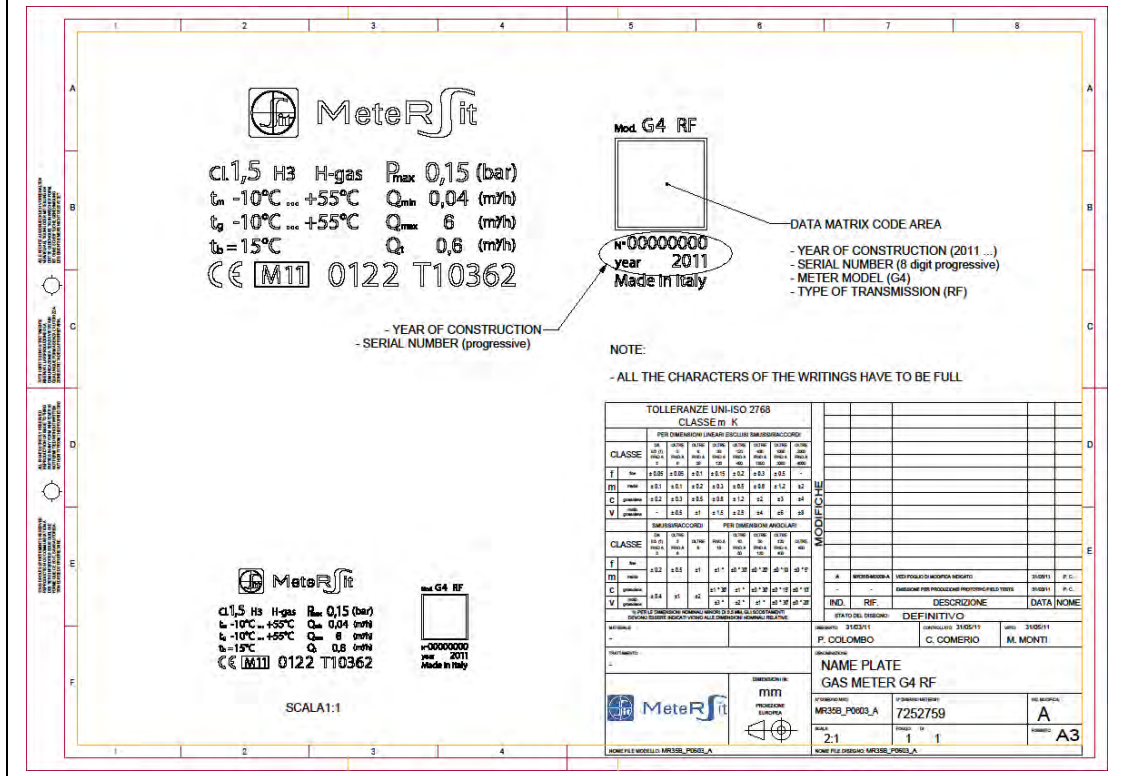
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Figure 18 – Labelling of G4 RF/MBus meter





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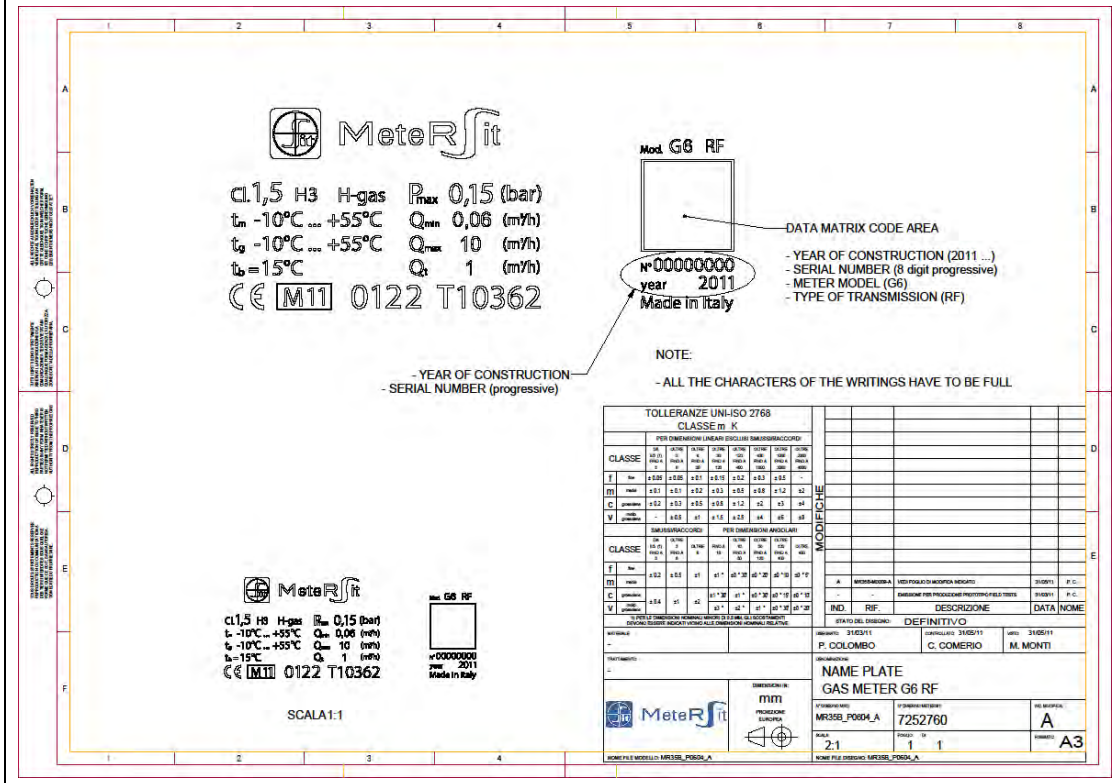
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Figure 19 – Labelling of G6 RF/MBus meter



## 9. ALARMS AND FAILURE VISUALIZATION

The system status of the meter is "summarized" in a "Status word" where each bit has the following meaning:

| Status Word Bit | Information      | DISPLAY VISUALIZATION |
|-----------------|------------------|-----------------------|
| 0               | NO BATTERY       | DG b<br>01            |
| 1               | BATTERY VERY LOW | DG F<br>02            |



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| Status Word Bit | Information                          | DISPLAY VISUALIZATION |
|-----------------|--------------------------------------|-----------------------|
| 2               | <b>BUFFER ALMOST FULL</b>            | DG C<br>03            |
| 3               | <b>GENERIC ALARM</b>                 | DG C<br>04            |
| 4               | <b>BUFFER FULL</b>                   | DG C<br>05            |
| 5               | <b>INVALID CLOCK</b>                 | DG A<br>06            |
| 6               | <b>VOLUME REGISTER INCONSISTENCY</b> | DG b<br>07            |
| 7               | <b>INVALID DATABASE</b>              | DG B<br>08            |
| 8               | <b>VALVE CLOSING INTERCEPTION</b>    | DG C<br>09            |
| 9               | <b>VALVE OPENING INTERCEPTION</b>    | DG A<br>10            |
| 10              | <b>DATABASE CREATION</b>             | DG                    |
| 11              | <b>NVM_FAILURE</b>                   | DG A<br>12            |
| 12              | <b>PROFILE ACTIVATED</b>             | DG                    |
| 13              | <b>WRITE FAILURE</b>                 | DG C<br>14            |
| 14              | <b>READ FAILURE</b>                  | DG C<br>15            |
| 15              | <b>TOO DIFF TIME SYNC</b>            | DG B<br>16            |
| 16              | <b>SENSOR FAILURE</b>                | DG A<br>17            |



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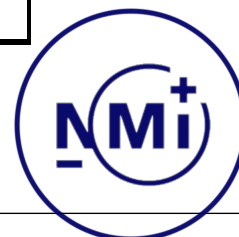
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| Status Word Bit | Information          | DISPLAY VISUALIZATION |
|-----------------|----------------------|-----------------------|
| 17              | REVERSE FLOW         | DG b<br>18            |
| 18              | OVERFLOW             | DG C<br>19            |
| 19              | METER CHECKSUM ERROR | DG A<br>20            |
| 20              | METER RTC ERROR      | DG A<br>21            |
| 21              | VALVE SHORT MOVE     | DG C<br>22            |
| 22              | LOW BATTERY          | DG C<br>23            |
| 23              | CONFIGURATION LOST   | DG B<br>34            |
| 24              | METER RESTARTED      | DG A<br>25            |
| 25              | VALVE ERROR          | DG A<br>26            |
| 26              | OPEN VALVE           | DG                    |
| 27              | CLOSE VALVE          | DG                    |
| 28              | TIME SYNCHRONIZED    | DG<br>29              |
| 29              | IMAGE DOWNLOADED     | DG                    |
| 30              | IMAGE ACTIVATED      | DG                    |
| 31              | MBUS CONFIG FAILURE  | DG<br>32              |
| 32              | IR DECRYPT FAILURE   | DG<br>33              |



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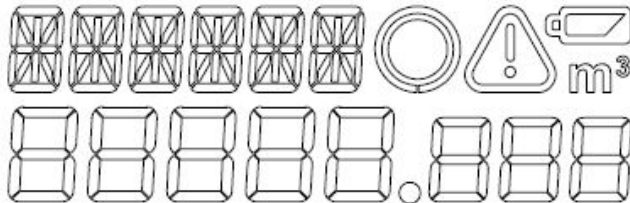
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If one of these faults occurs an alarm is shown on display of the meter, an event is recorded in Event-Log and the related bit in status world is modified.

## 10. DISPLAY

The meter is equipped with a display, where the following segments can be turned on, depending on the different screen and on the information to be displayed.



### Up row segments explanation (from left to right)

First 6 british flag segments are used to display letter information, such as the title of each different screen. The following circle indicates the status of the valve, which can be either open (empty circle) or closed (circle full). The alarm triangle is used to emphasize the presence of a relevant alarm which needs intervention. The battery sign is turned on when the battery level is measured below a programmable threshold (currently 90% of lifetime). The "m<sup>3</sup>" symbol is used in the screens which display the measured volumes (screen #6, #8, #10, #12 as detailed below).

### Bottom row explanation

The available digits are used for any numerical or time indication, such as date, time, value of measured volumes and so on. The point is used to separated integer values from decimal ones, when it is needed for an unambiguous visualization.

### Available screens:

The available screens are shown sequentially at each key-press (short key-press). Pushing repeatedly the button are shown the following information:

1. D: Date
2. H: Time
3. F1/F2/F3: Actual tariff
4. ID: Meter identification





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5. DG: Diagnostics
6. T: Total volume at standard condition
7. PT: Actual tariff plan identification
8. T1, T2, T3: Total volume per tariff band of actual tariff period
9. DF: End date of previous tariff period
10. PRE T: Total volume at standard condition at end date of previous tariff period
11. PRE PT: Tariff plan identification of previous tariff period
12. PRE T1, PRE T2, PRE T3: Total volume per tariff band at end date of previous tariff period.
13. SD: Meter state (1 = unconfigured, 0 = normal, 2 = maintenance)
14. SW1: "Meter Processing Unit" HW/SW version: first letter to represent HW blade type (currently *E* for G4 Meter, *A* for G6 meter + three numbers to represent the software release + four hex digits to represent checksum  
e.g. *E1030AC1*, means G4 meter in Rel. 1.0.3, with checksum 0AC1
15. SW2: "Communication & House Keeping Processing Unit" SW version: first letter to represent the type of product (currently *U* for MBus meter, *P* for GPRS meter) + three numbers to represent the software release + four hex digits to represent checksum  
e.g. *P1033076*, means GPRS meter in Rel. 1.0.3, with checksum 3076
16. SV: Valve state: letter and code as per **Errore. L'origine riferimento non è stata trovata.**  
e.g. *A* and *00* = Open, *C* and *20* = Closed, *R* and *40* = Enabled
17. All segments displayed
18. No segment displayed

The display is turned-off after 25 seconds without action, but for screen #17 which is turned-off after 5s.

Display has 5 digits + 3 digits after the decimal point. It can show until 99999.999 m3...



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### 11. SEALING

No traditional seal is implemented on the gas meter. The sealing is obtained by welding the plastic base and cover by a technique called "hot plate welding" (see Figure 17).

It is necessary to break up the cover in order to access the internal components.

The battery is integral with the gas meter but in a compartment, separated from all the internal mechanisms of the gas meter.

Therefore, it is possible to change the battery without disturbing the metrological seal.

The operator shall break down the battery cover, by a special tool, in three fixation points and replace it with a new one.



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Figure 20 – Metrological sealing and battery compartment



## 12. BATTERY LIFETIME

The purpose of the paragraph is to describe the energy budget allocation for each meter subsystem and to give an overview of the typical current consumption for each significant functional state.

In the figure 4 are shown the most relevant parts to be considered in power consumption calculations:

- Gas Sensor
- Processor STM8
- Processor STM32
- Gas Valve
- RF Modem (could be configured as GPRS or MBS)
- ZVEI Optical Port
- Display

### 12.1. Gas Meter Functional States

The meter has different power requirements depending on the peripherals powered and which activities are performed.

The most significant states to be considered are:

| Functionality  | Description of operations   |
|--|---|
| Gas flow measurement   | Sensor is read by STM8 and data are stored locally on STM8 internal memory, other resources are powered off   |
| User interaction (menu navigation using push button and display) | in this mode are powered on STM8 and display while STM32 is powered on only if other data different from main register are requested (i.e. hourly consumptions) |
| Service mode communication via ZVEI IR port and display          | both STM8 and STM32 are in use as well as ZVEI port and display   |
| Valve opening or closing   | STM32, valve motor, Hall sensor are powered on  |
| RF communication   | STM32 processes meter data and manages RF modem communication   |
| Housekeeping activities  | STM8 and STM32 are both on to process and store data on local EEPROM  |



### 12.2. Battery Capacity and Available Energy

The system is powered by a size D Lithium Thionyl Chlorite primary battery with a nominal capacity of 19 Ah.

The battery chemical imposes some limitations on maximum continuous discharge current (must be limited to avoid cell damage) and makes the battery unsuitable to withstand current pulses because of intrinsic high resistance.

The meter is thus equipped with a proper super-capacitor to provide the current needed during energy intensive activities: valve motor in use or RF communication.

Given the above consideration, the effective energy to be considered available for energy budget calculations has to be reduced to take in account: battery ageing, temperature profile, super-capacitor leakage and battery passivation.

The total energy to be considered available then becomes: 14Ah considering the following temperature profile:

| Temperature profile |           |
|---------------------|-----------|
| °C                  | % of time |
| -25                 | 2         |
| -10                 | 10        |
| 5                   | 15        |
| 20                  | 50        |
| 35                  | 15        |
| 50                  | 5         |
| 70                  | 3         |

The extreme temperatures considered are worse than those declared for the meter (-10 °C ÷ 55 °C) in order to be conservative.

### 12.3. Functional States Power Consumption

The typical power requirements, depending on each operating mode of the meter, is summarized in the table below.

This estimation has an accuracy viable for an average life prediction but shall not be considered guaranteed for any single device.

All the values are referred to the typical ambient temperature of 25 °C.





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## GASTRONIC G4/G6 METERS

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| Meter Functional State     | Sensor (uA) | STM8 (uA) | STM32 (uA) | ZVEI (uA) | Display (uA) | Modem GPRS (uA) | Modem MBUS (uA) | Valve (uA) | Average rated current (mA) |
|----------------------------|-------------|-----------|------------|-----------|--------------|-----------------|-----------------|------------|----------------------------|
| Gas Flow Reading           | 60          | 54        | 40         | -         | -            | -               | -               | -          | 0,154                      |
| User Interaction           | -           | 80        | 40         | -         | 60           | -               | -               | -          | 0,18                       |
| ZVEI Service Communication | -           | 105       | 30000      | 3000      | 60           | -               | -               | -          | 34                         |
| Gas Valve Operation        | -           | 54        | 30000      | -         | 60           | -               | -               | 50000      | 81                         |
| RF Modem (GPRS)            | -           | 105       | 30000      | -         | -            | 350000          | -               | -          | 380                        |
| RF Modem (MBUS)            | -           | 54        | 30000      | -         | -            | -               | 30000           | -          | 61                         |
| Housekeeping               | -           | 105       | 30000      | -         | -            | -               | -               | -          | 31                         |

### 12.4. Usage Profile and Battery Life Estimation

Considering the above power consumption data is then possible to perform a life prediction for Gas Meter considering an average usage profile.

A reasonable and conservative usage profile to be considered is the following.

| Operation Mode             | Average current (mA) | Duration (sec) | Repeats over 1 year (-) | Consumption (mAh) | Note                      |
|----------------------------|----------------------|----------------|-------------------------|-------------------|---------------------------|
| Gas Flow Reading           | 0,154                | -              | n.a.                    | 1315              | Measurement always active |
| User Interaction           | 0,18                 | 120            | 60                      | 0,36              |                           |
| ZVEI Service Communication | 34                   | 60             | 0,6                     | 0,34              |                           |
| Gas Valve Operation        | 81                   | 90             | 0,6                     | 1.215             |                           |
| RF Modem (GPRS)            | 380                  | 60             | 180                     | 1140              | Only for GPRS meter       |



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| Operation Mode  | Average current (mA) | Duration (sec) | Repeats over 1 year (-) | Consumption (mAh) | Note                |
|-----------------|----------------------|----------------|-------------------------|-------------------|---------------------|
| RF Modem (MBUS) | 61                   | 60             | 360                     | 92                | Only for MBUS meter |
| Housekeeping    | 31                   | 1              | 360                     | 3,1               |                     |

Considering the above usage profile and computing the related current consumptions we have the following life prediction

| Gas Meter Type | Overall Average Current | Estimated Battery Capacity | Nominal Battery Capacity | Life estimation |
|----------------|-------------------------|----------------------------|--------------------------|-----------------|
| MBUS           | 1.446 Ah                | 14 Ah                      | 19 Ah                    | 9,7 years       |
| GPRS           | 2.494 Ah                | 14 Ah                      | 19 Ah                    | 5,6 years       |

The estimated battery capacity, here considered, takes in account the EDLC super-capacitor leakage loss, passivation losses as well as self discharge effects.

### 13. PRODUCT DESIGNATION

MeterSit current product designation is "x485xxx", whose details are as follows:

- first number = "piece level", e.g. 0 = full assembled and sellable sample 1 = subsystem, etc
- from second number to fourth: "Family" i.e. gas meter products
- fifth number: "G" value; 0 = G4, 1 = G6
- from sixth to seventh: progressive number (00-99) identifying all the possible combination, such as communication features, high temperature resistances, etc



### 3. MECHANICAL SPECIFICATIONS

| Characteristic                | u.m. | Class G4        | Class G6                         | Note  |
|-------------------------------|------|-----------------|----------------------------------|---|
| Connection centrelines        | [mm] | 110             | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different |
| Max dimensions<br>(H x L x s) | [mm] | 152 x 192 x 104 | 152 x 192 x 104<br>(plus flange) |   |
| Connection diameter           | "    | G 1" 1/4        | G 1" 1/4<br>(1" 1/2 with flange) |   |
| Resistance to torque          | [Nm] | 110             | 140                              |   |
| Resistance to bending         | [Nm] | 40              | 40<br>(60 with flange)           |   |
| Weight                        | [Kg] | 1.7             |                                  |   |

Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY - GPRS

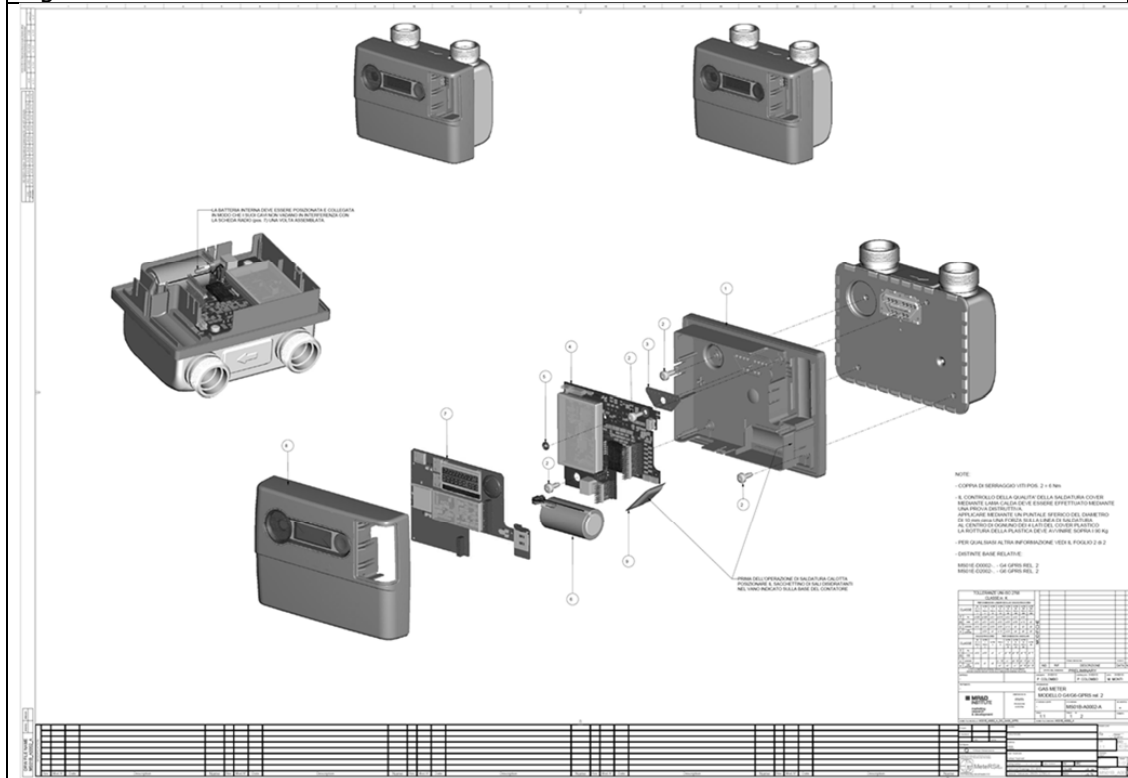


Figure 3.2 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY - RF WMBUS

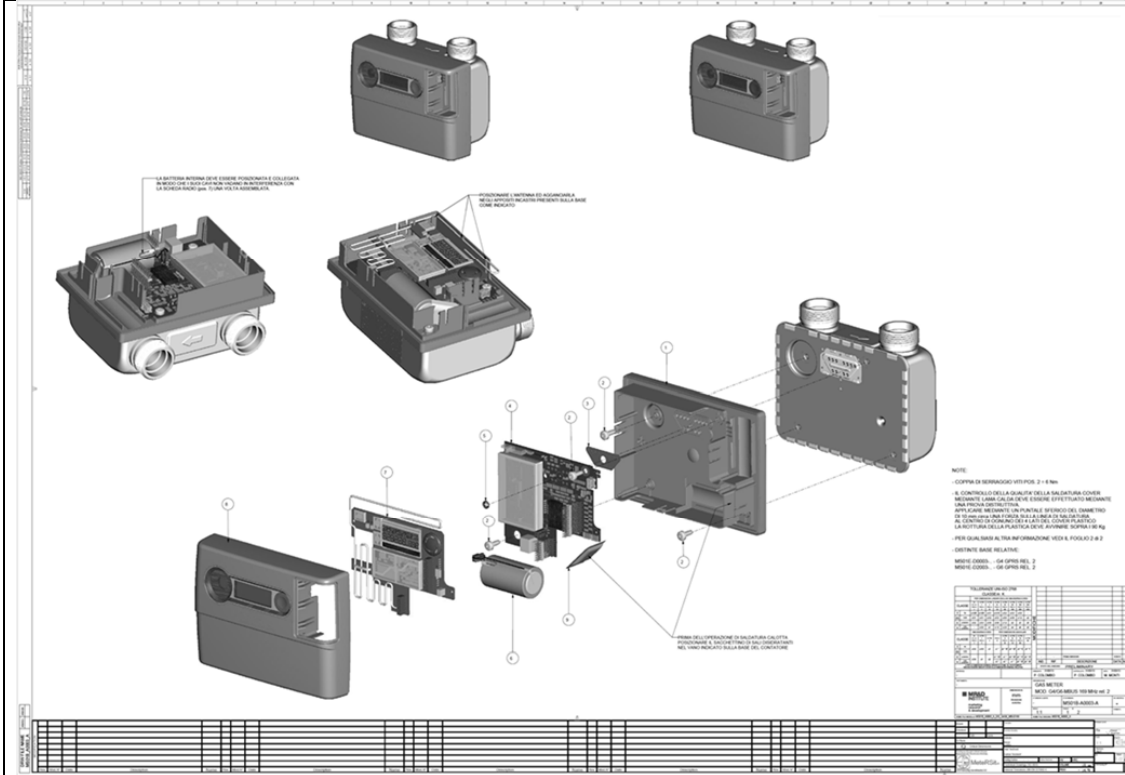




FIGURE 3.7 – WMBUS -INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS AND ANTENNA

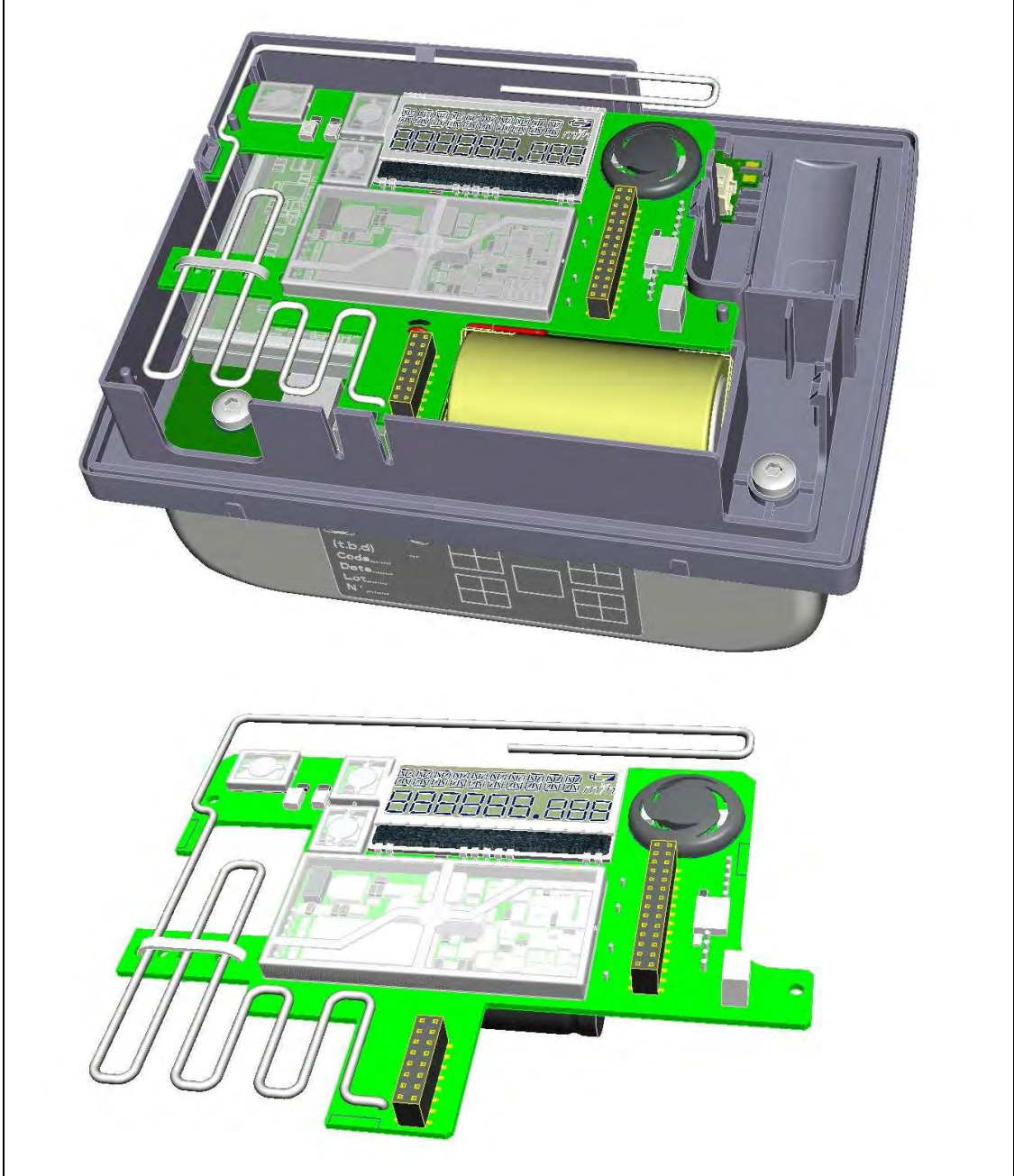


FIGURE 3.8 – WMBUS 169MHZ ANTENNA

| REV | DATE | BY | CHK | DESCRIPTION |
|-----|------|----|-----|-------------|
| 1   |      |    |     |             |

| Classe | Altezza | Spessore | Spessore | Raggio | Spessore | Spessore | Raggio |
|--------|---------|----------|----------|--------|----------|----------|--------|
| A      | 8,5     | 1,2      | 1,2      | 8,5    | 1,2      | 1,2      | 8,5    |

| Classe | Altezza | Spessore | Spessore | Raggio | Spessore | Spessore | Raggio |
|--------|---------|----------|----------|--------|----------|----------|--------|
| A      | 8,5     | 1,2      | 1,2      | 8,5    | 1,2      | 1,2      | 8,5    |

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| Classe | mm    | mm    | mm    | mm    | mm    | mm    |
|--------|-------|-------|-------|-------|-------|-------|
| f      | +0,10 | +0,08 | +0,11 | +0,12 | +0,13 | +0,14 |

**MODIFICHE**

| IND. | RIEF.         | DESCRIZIONE                                     | DATA INOME |
|------|---------------|---|------------|
| 1    | MSO1B_P0612_A | LOOP ANTENNA GAS METER G4/G6 MBUS 169 MHZ REL.2 |            |

**NOTE:**  
- MATERIALE:  
FILO Ø 2 in.  
BRONZO FOSFORATO ARGENTATO  
RAME CRUDO ARGENTATO. (alternativa)  
- RAGGI INTERNI DI PIEGATURA DOVE NON  
DIVERSAMENTE SPECIFICATO = MIN.  
- SVILUPPO TOTALE FILO = 565 mm circa



## 4. CIRCUIT DIAGRAM

The electronic of the meter consists of three boards:

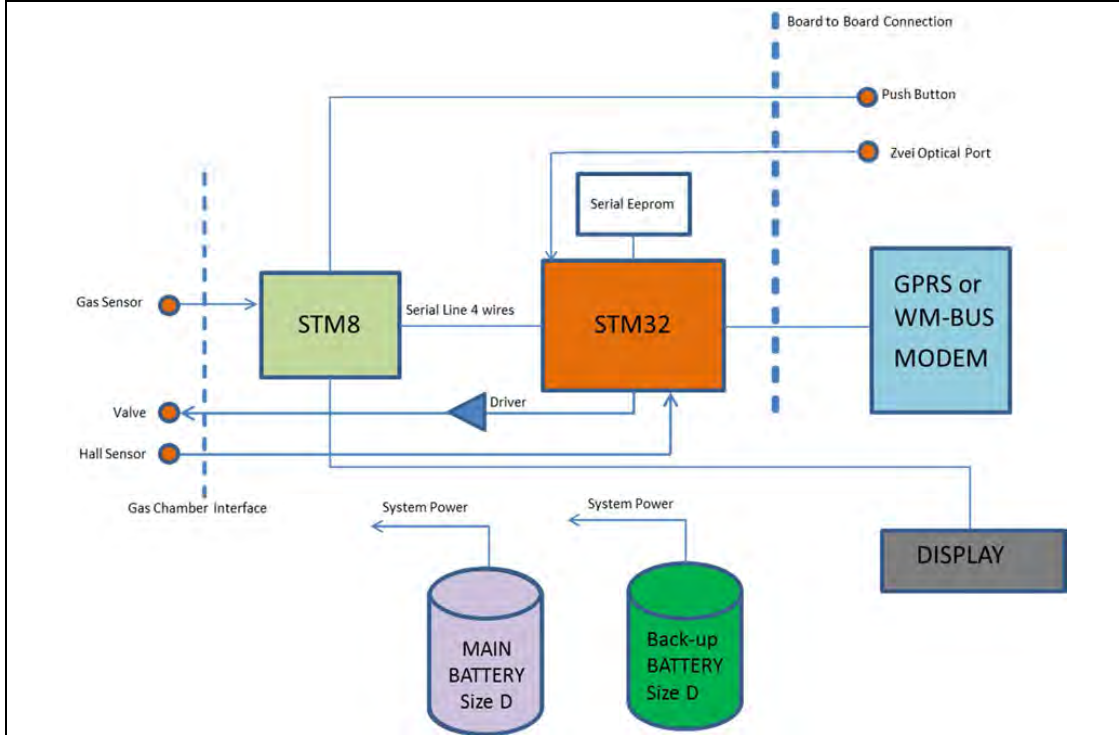
- CPU Board;
- M-BUS board or GPRS board;
- Hall Sensor Driver.

### 4.1. CPU Board

The CPU Board is designed around two microprocessors:

- STM8: an 8 bit CPU dedicated to gas sensor management, measurement integration algorithm, RTC clock
- STM32: a 32 bit CPU dedicated to billing time bands management, communications and application software
- As represented in the below block diagram, the two microprocessors communicate via a dedicated serial line with the addition of a fourth wire acting as an interrupt line.

Figure 4.1 – schematic view of CPU board



#### 4.2. RF Modem board

The RF Modem board provides communication capability to the system and can be provided in two different versions: M-BUS or GPRS/GSM.

Each board has the same form factor and pinout and can be connected to the CPU board with a connector-less board to board soldering solution.

The RF Modem pinout is provided in the table below:

| Pin Number | Name            | Function                                       |
|------------|-----------------|--|
| 1          | PWR_ZVEI        | ZVEI Port Power Supply                         |
| 2          | VCC_DISPLAY     | Display Power Supply                           |
| 3          | I2C_SCL_STM8_IO | Display I2C Clock                              |
| 4          | PUSH_LCD        | Push button                                    |
| 5          | SOI_TX          | ZVEI Port TX Data                              |
| 6          | I2C_SDA_STM8_IO | Display I2C Data                               |
| 7          | EN_STEP_DOWN    | Communication module power supply enable       |
| 8          | SOI_RX          | ZVEI Port RX Data                              |
| 9          | EN_STEP_UP      | Super capacitors charge enable                 |
| 10         | ID_BOARD_COM    | ID Board                                       |
| 11         | GND             | Ground   |
| 12         | EN_BALANCE      | Super Capacitors overcharge protections Enable |
| 13         | VCC_SAFE        | Power Input                                    |
| 14         | WISMO_READY     | GPRS ready (boot completed)                    |
| 15         | GND             | Ground   |
| 16         | USART3_RX       | Communication Serial Line RX                   |
| 17         | USART3_TX       | Communication Serial Line TX                   |
| 18         | USART3_RTS      | Communication Serial Line RTS                  |
| 19         | USART3_CTS      | Communication Serial Line CTS                  |
| 20         | WISMO_DATA_MODE | Communication Serial Line DCD (only for GPRS)  |
| 21         | VCAP_2_EX       | Super Capacitor 2 Voltage                      |
| 22         | RST_COM         | Reset  |
| 23         | MBUS_CONFIG     | MBUS Configuration enable                      |
| 24         | RES_5           | Reserved for future MBUS communication         |
| 25         | ON_OFF          | Power ON sequence start (used for GPRS)        |
| 26         | RES_6           | Reserved for future MBUS communication         |
| 27         | S_CAP_POS_SAFE  | Super Capacitor Connection (to CPU board)      |
| 28         | S_CAP_POS_SAFE  | Super Capacitor Connection (to CPU board)      |



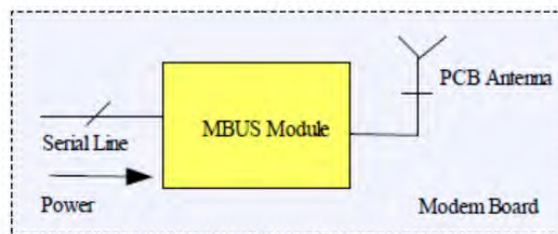
#### 4.2.1. M-BUS Modem schematic

The MBUS RF modem is designed around an integrated module manufactured by Radiocraft, the module itself includes most of the radio HW as well as a CPU running the MBUS SW stack.

The RF Modem board is controlled and powered by the CPU board using the standard pinout board to board connector described above.

The MBUS radio module is completely controlled by AT commands using the standard serial line provided on the board to board interface connector.

Figure 4.2 – M-BUS module schematics



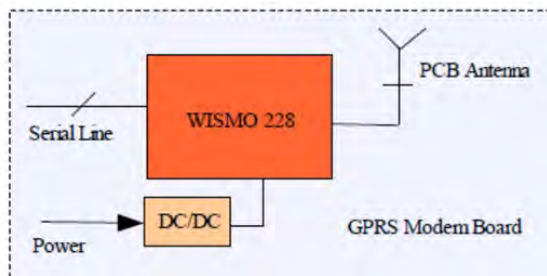
#### 4.2.2. GPRS Modem schematic

The GPRS modem is designed around a WISMO228 integrated module manufactured by Sierra Wireless, the module itself includes a complete GSM/GPRS IP Modem with its own internal GSM and TCP/IP stack.

The Modem board is controlled and powered by the CPU board using the standard pinout board to board connector described above. An on board DC/DC converter guarantees the needed voltage level to the GSM radio module.

The WISMO radio module is completely controlled by AT commands using the standard serial line provided on the board to board interface connector.

Figure 4.3 – GPRS module schematics



## 5. ELECTRICAL SCHEMATICS

### 5.1. CPU Board electrical schematics

Figure 5.1 – CPU board electrical schematics 1 of 4

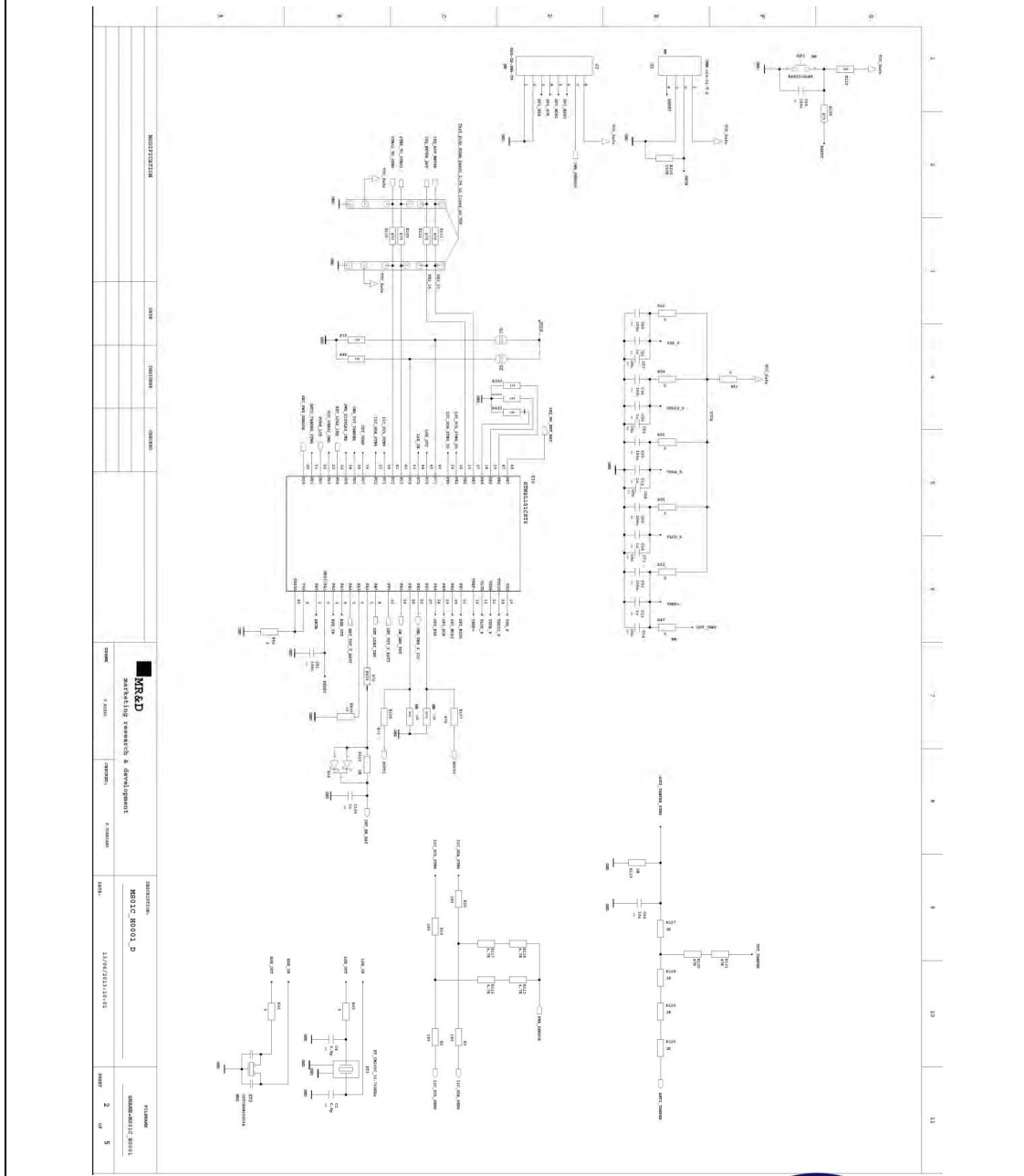


Figure 5.2 – CPU board electrical schematics 2 of 4

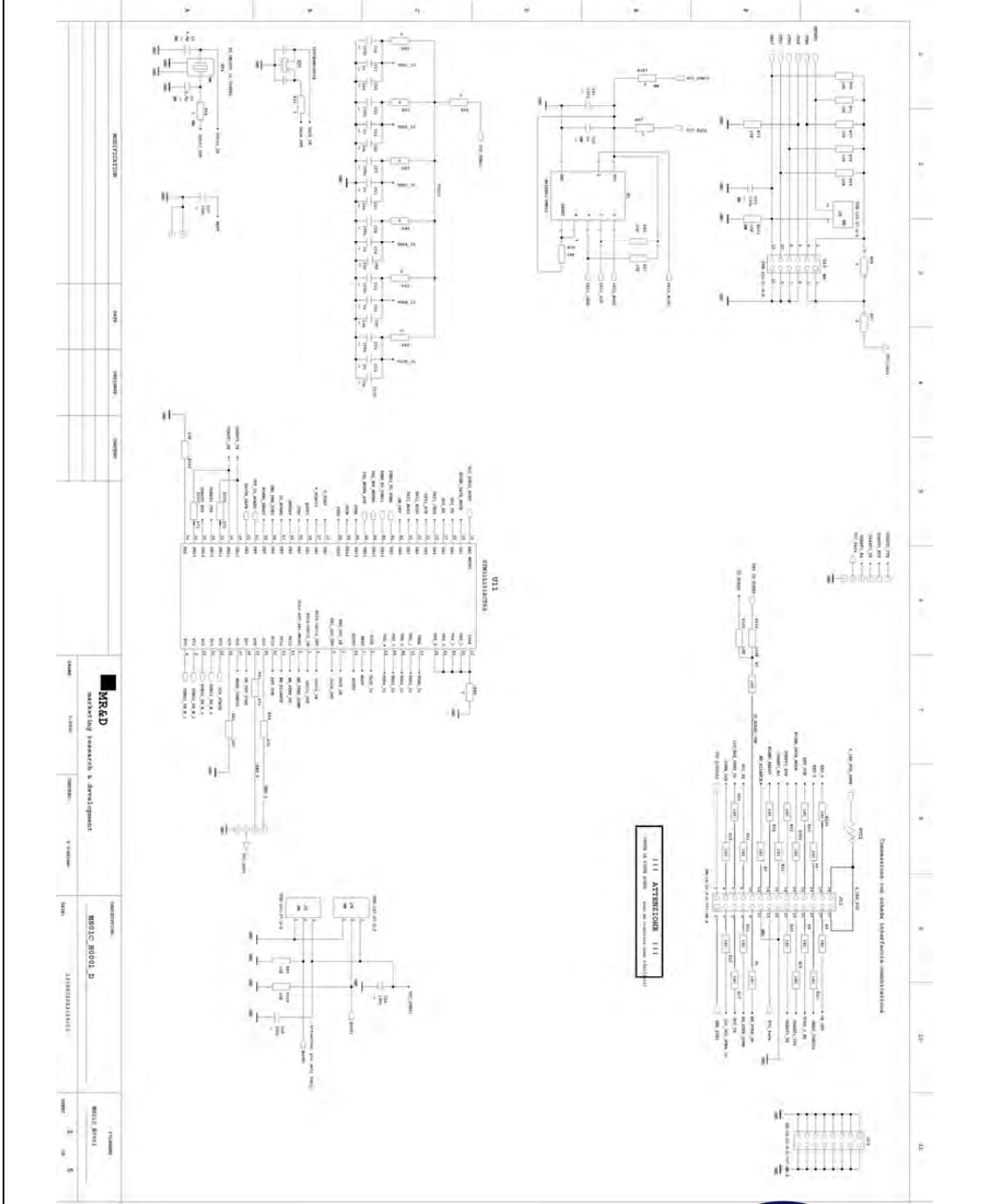


Figure 5.3 – CPU board electrical schematics 3 of 4

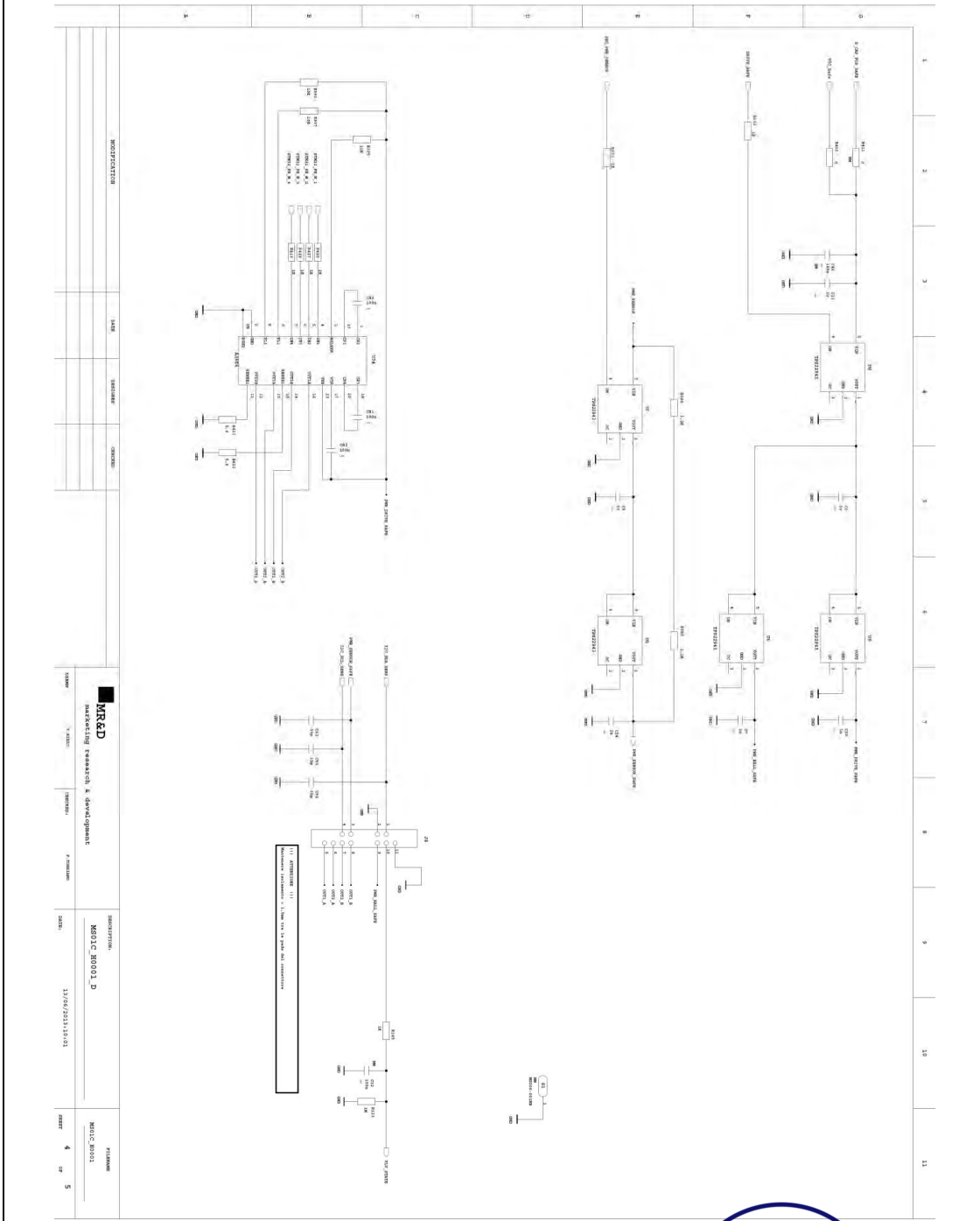
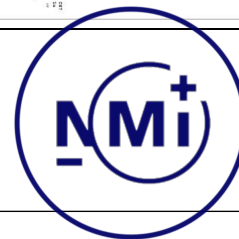
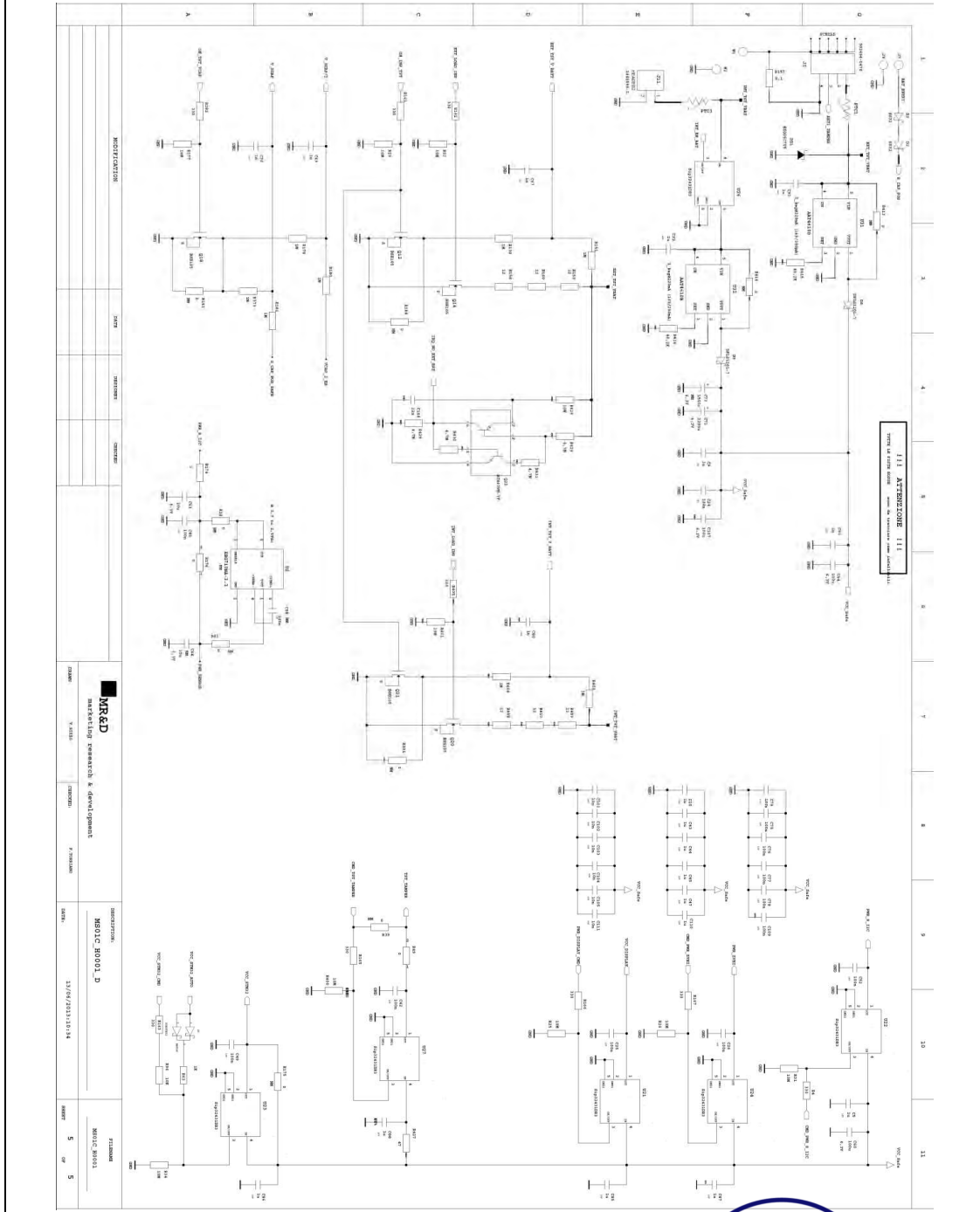




Figure 5.4 – CPU board electrical schematics 4 of 4



## 5.2. GPRS Board electrical schematics

Figure 5.5 – GPRS board electrical schematics 1 of 2

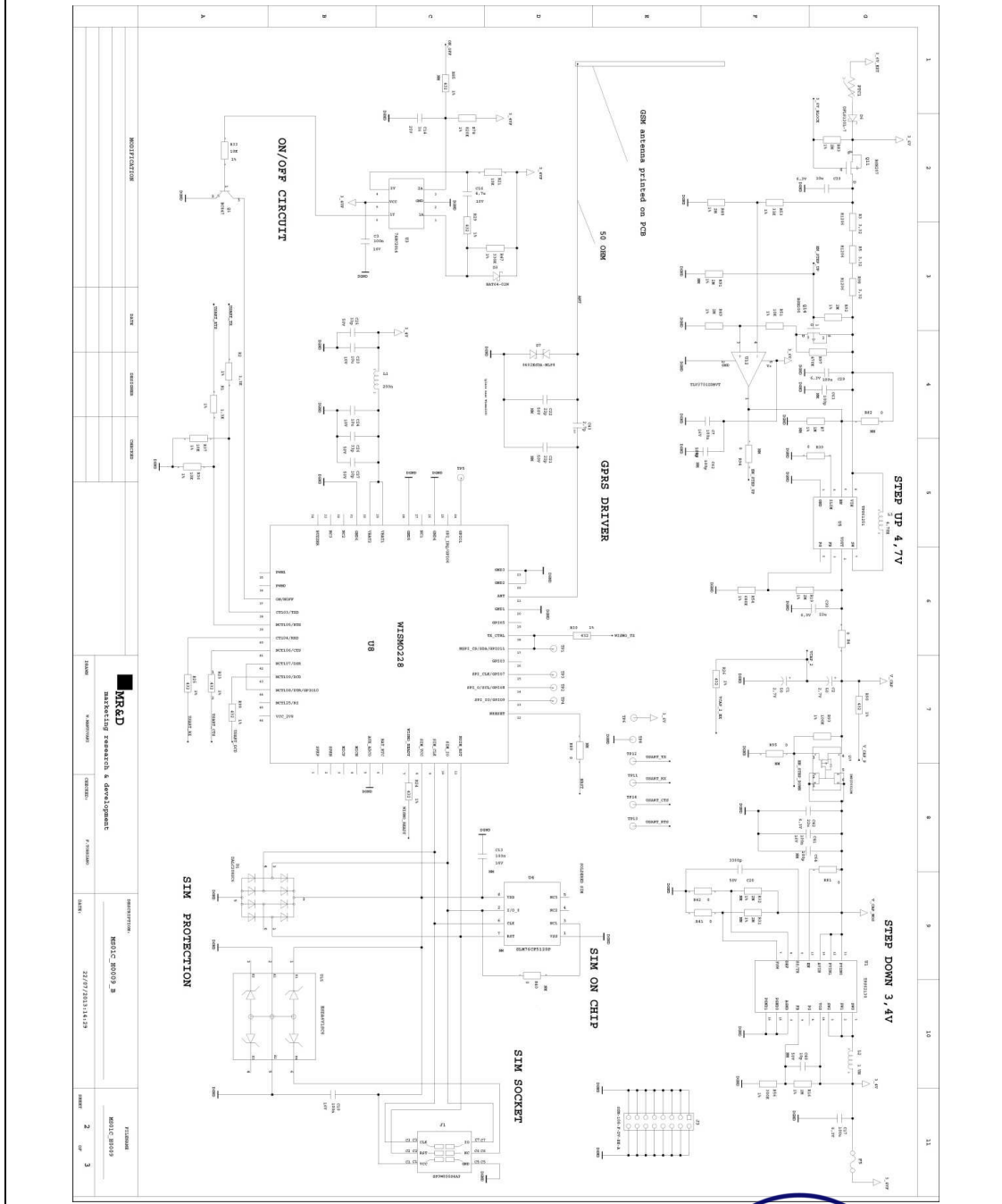
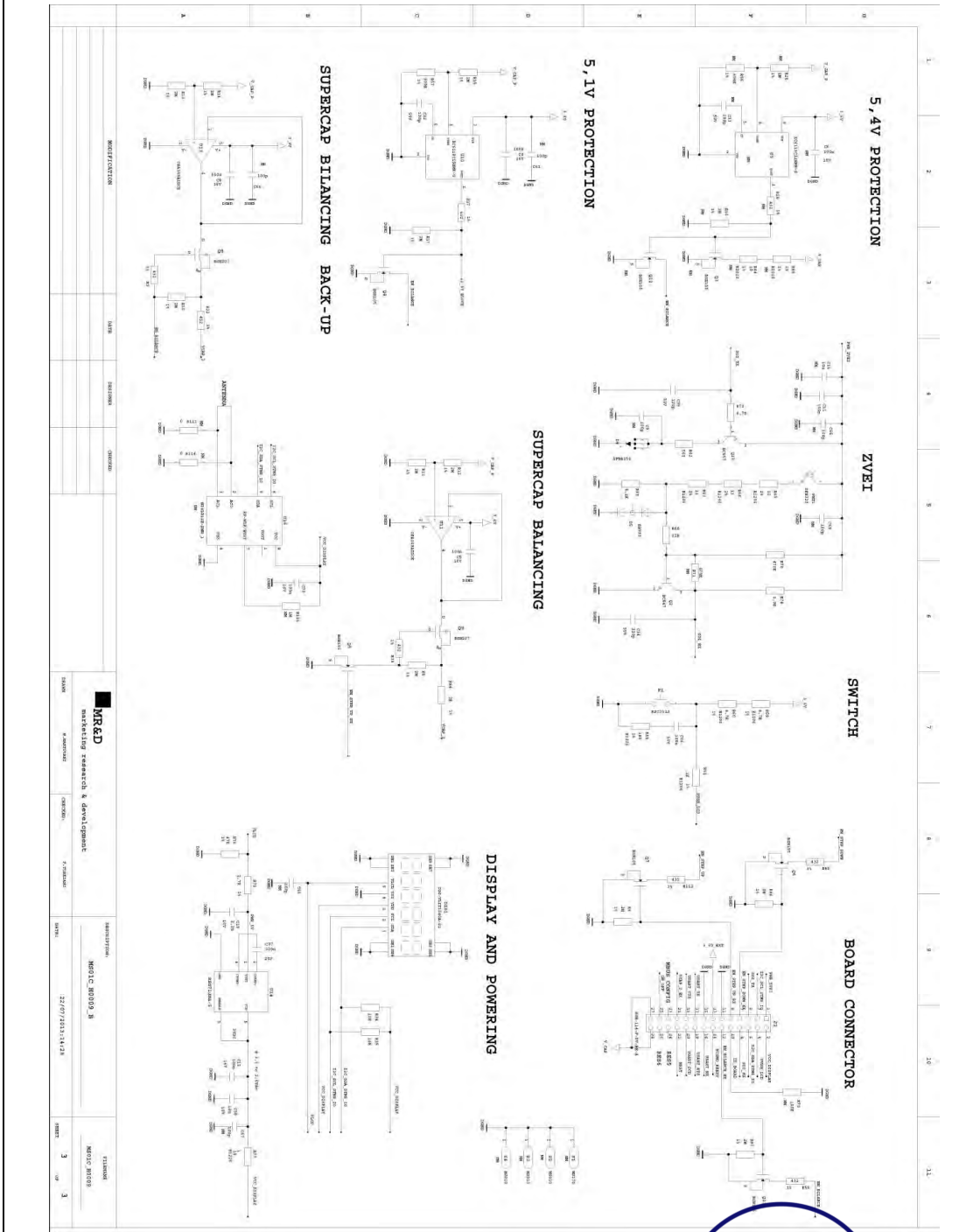


Figure 5.6 – GPRS board electrical schematics 2 of 2



5.3. WMBUS Board electrical schematics

Figure 5.7 – WMBUS board electrical schematics 1 of 2

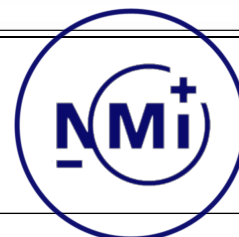
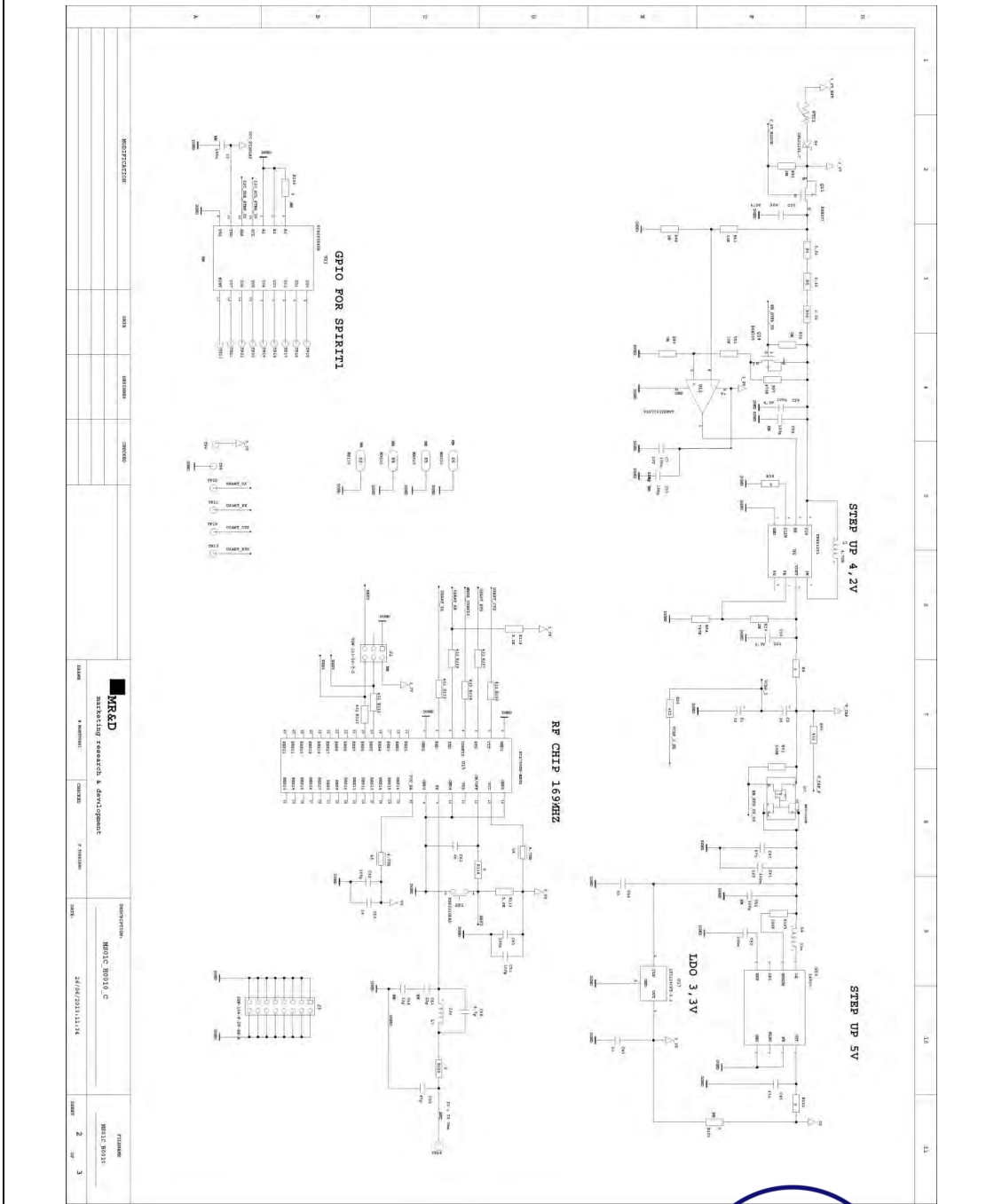
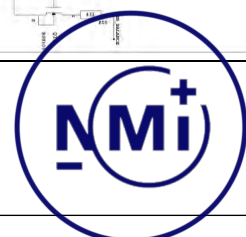
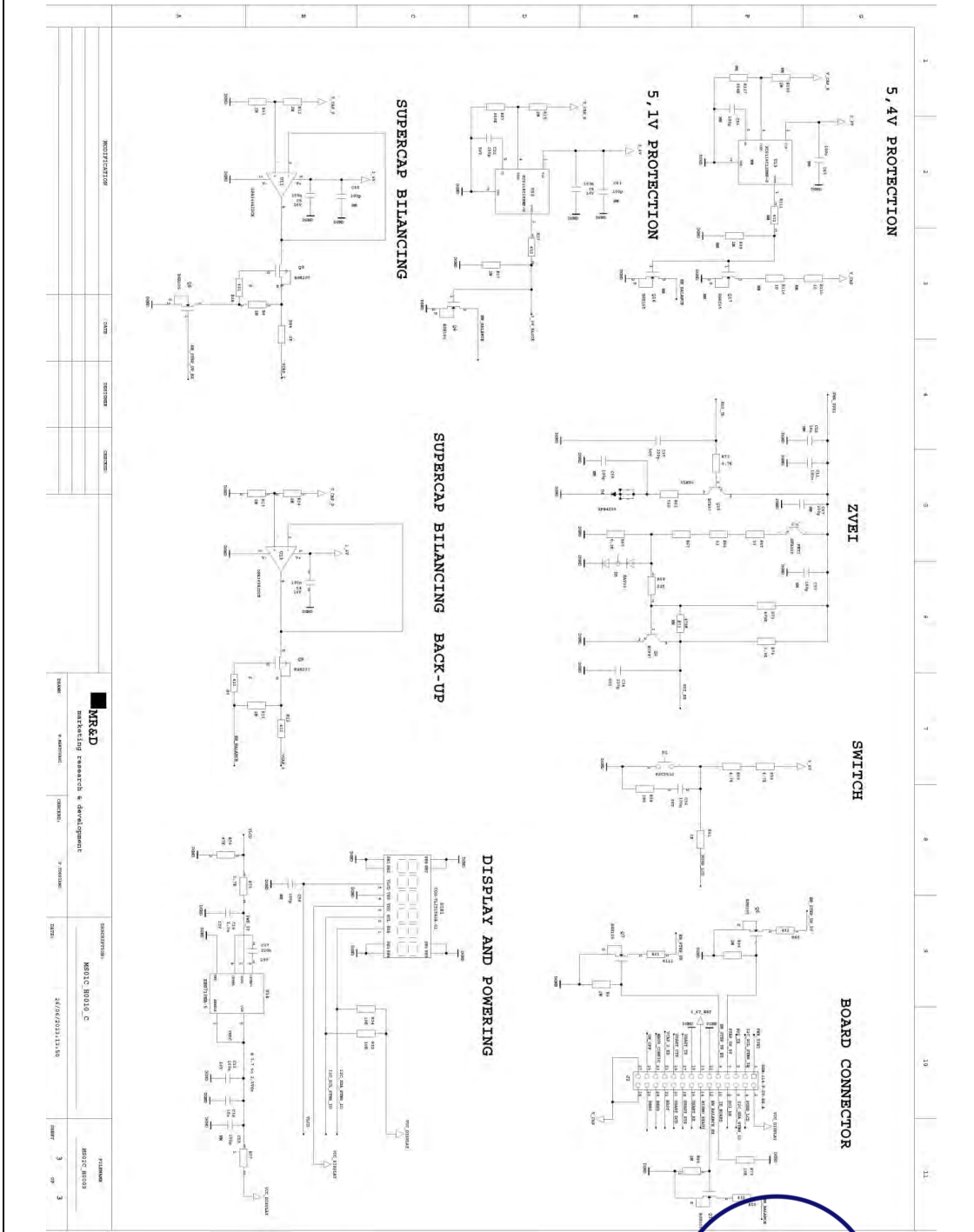


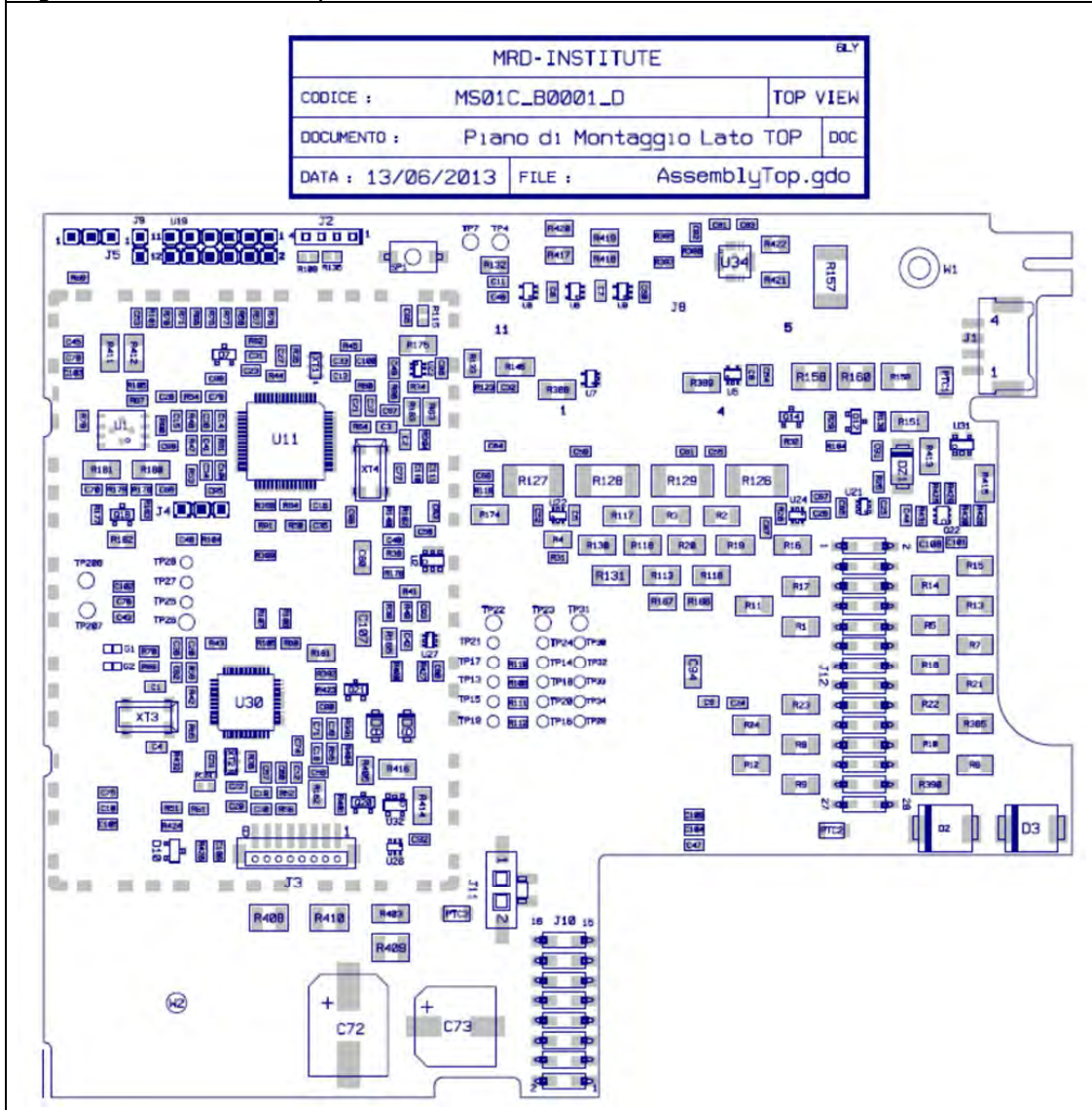
Figure 5.8 – WMBUS board electrical schematics 2 of 2



## 6. PCB LAYOUT

### 6.1. CPU Board TOP layout

Figure 6.1 – CPU board layout TOP view



## 6.2. GPRS Board layout

Figure 6.2 – GPRS board layout TOP view

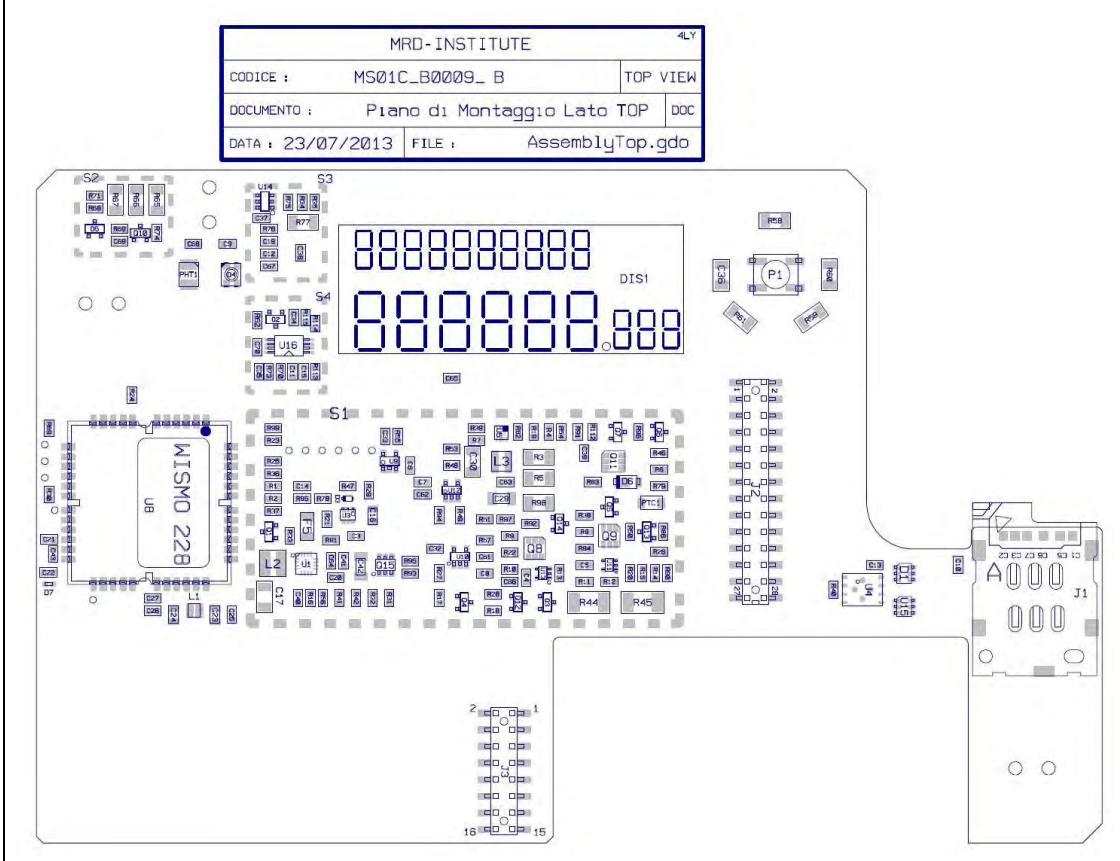
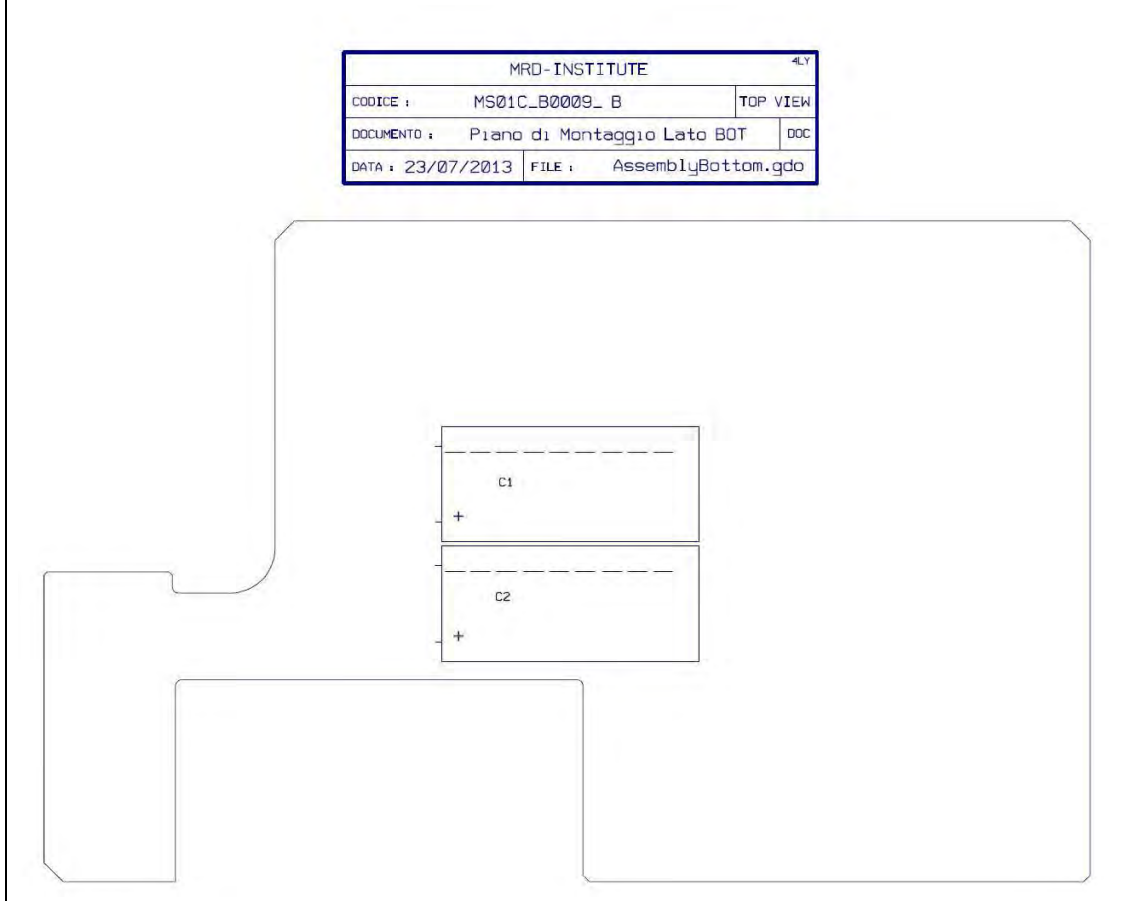


Figure 6.3 – GPRS board layout: BOTTOM view





### 6.3. WMBUS 169MHz Board layout

Figure 6.4 – WMBUS 169MHz board layout: TOP view

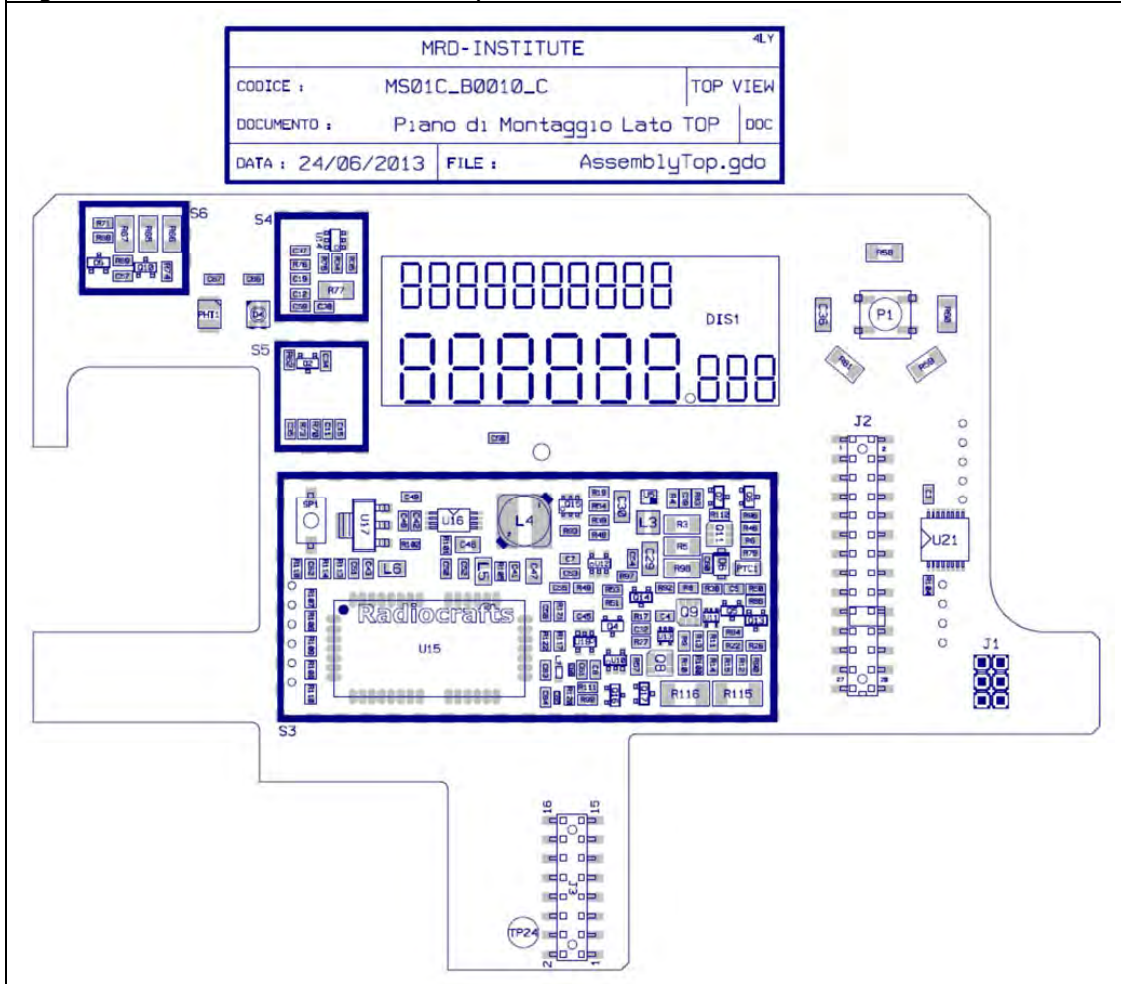
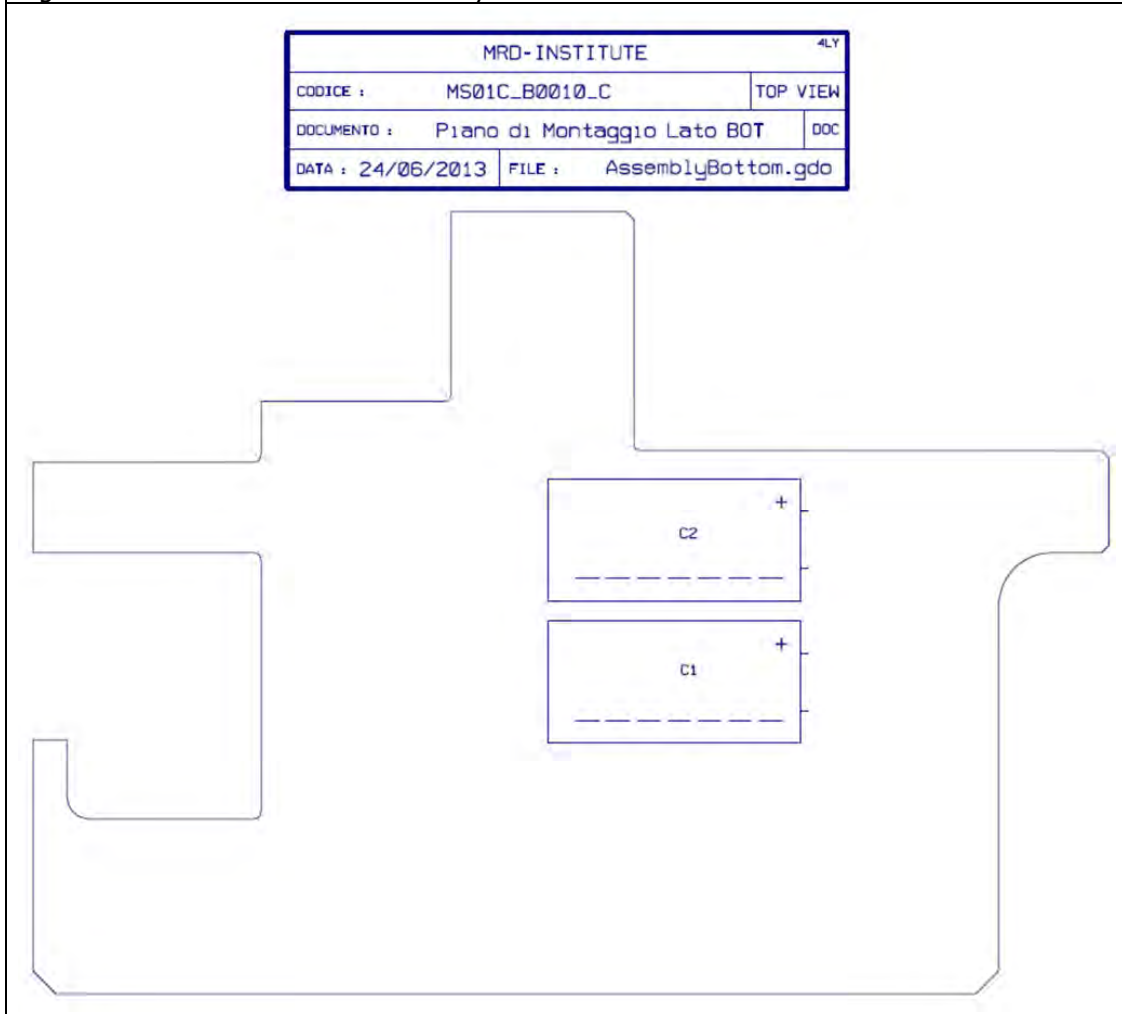


Figure 6.5 – WMBUS 169MHz board layout: BOTTOM view



## 7. PART LIST

The gas meter includes the following main components:

| Component                    | Manufacturer       | Reference                             |
|------------------------------|--------------------|---------------------------------------|
| <b>Removable Battery</b>     | ---                | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Back-up Battery</b>       |                    | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Electronic CPU Board</b>  | MR&D Institute Spa | See paragraph 5.1                     |
| <b>GPRS RF Modem</b>         | MR&D Institute Spa | See paragraph 5.2                     |
| <b>WMBUS 169MHz RF Modem</b> | MR&D Institute Spa | See paragraph 5.3                     |
| <b>WMBUS 169MHz Antenna</b>  | MR&D Institute Spa | See Figures 3.7 and 3.8               |
| <b>Display</b>               | Varitronix         | See Figure 10                         |
| <b>Gas Sensor</b>            | Sensirion          | See Figure 3.3                        |
| <b>Metallic Gas Chamber</b>  | SIT La Precisa Spa | See paragraph 3                       |
| <b>Plastic Case</b>          | MR&D Institute Spa | See Figure 3.5                        |

In the following paragraphs the part lists relative to the electronic boards are described in detail.





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# DOMUSNEXT G4/G6 GAS METERS

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## 7.1. CPU board part list

Here below the CPU Board part list follows:

### CPU board part list: 1 of 2

| Reference | Quantity | Part_Number_MRD  | Description   | Value     | Not Mounted | Manufacturer          | Manufacturer P/N       |
|-----------|----------|------------------|---|-----------|-------------|-----------------------|------------------------|
| CS        | 1        | MS01C50001D_1324 | CS Scheda Base Contatore Gas G4/G6  |           |             | MFD                   | MS01C50001D            |
| C15       | 1        | C050019001       | CAP SMD 0603 X5R 1UF 25V  |           | NM          | Kemet                 | C0603C105K3PACTU       |
| C58       | 1        | C0500219220      | CAP SMD 0603 X7R 220NF 25V  |           | NM          | Kemet                 | C0603C224K3RACTU       |
| C61       | 1        | C060001C039      | CAP SMD 0603 COG 39PF 50V   |           |             | Kemet                 | C0603C390F5GACTU       |
| C63       | 1        | C0600016010      | CAP SMD 0603 X5R 10UF 6,3V  |           |             | Kemet                 | C0603C106M9PACTU       |
| C64       | 1        | C0600016010      | CAP SMD 0603 X5R 10UF 6,3V  |           | NM          | Kemet                 | C0603C106M9PACTU       |
| C72       | 1        | C0200045022      | SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                                |           |             | NIC COMP              | NATT22M6.3V12.5X14KL   |
| C73       | 1        | C0200015150      | ALUM RAD. ELE. SMT PANASONIC SERIES FK 1500UF 6,3V 20% 10X10.2              |           | NM          | Panasonic             | EEEFKJ152P             |
| C108      | 1        | C050036022       | CAP SMD 0805 X5R 22UF 6.3V MURATA Code GRM21BR6J226ME39L                    |           |             | Murata                | GRM21BR6J226ME39L      |
| D21       | 1        | D0800080001      | SMD zener diode Case DO-214 1.25W Vishay 7,5V BZG05C8V2                     |           |             | Vishay                | BZG05C7V5              |
| J1        | 1        | Z0300050004      | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW,RIGHT ANGLE, 4 CIRCUIT         |           |             | MOLEX                 | 502494-0470            |
| J2        | 1        | Z0300045004      | 4 pins Strip vertical pitch 2mm   |           | NM          | SAMTEC                | TMM-104-011-T-S        |
| J8        | 1        | Z0300017008      | 8 Pins J=1.5 mm - Top Entry Wire to Board Insulation Displacement Connector |           |             | JST                   | B08-2R-SM-TF (LF) (SN) |
| J9        | 1        | Z0300038002      | SINGLE ROW STRAIGHT PITCH X 2 2.54 mm SAMTEC TSW-102-07-G-S                 |           | NM          | SAMTEC                | TSW-102-07-G-S         |
| J10       | 1        | Z0300010016      | 16 Pin male SMT DIL 2.54mm Board Stackers 19.5 Stacker Height               |           |             | SAMTEC                | HW-08-20-F-D-767-SM-A  |
| J11       | 1        | Z0300058002      | VERTICAL SURFACE MOUNT HEADER 2 POS PASSO 3 mm                              |           |             | TYCO                  | 1445096-2              |
| J12       | 1        | Z0300007028      | 28 Pin male SMT DIL 2.54mm Board Stackers 19.5 Stacker Height               |           |             | SAMTEC                | HW-14-20-F-D-767-SM-A  |
| Q22       | 1        | D0100045001      | COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                    |           |             | Diodes                | BC847PN-7F             |
| R145      | 1        | R030001K001      | RESISTOR SMD 1206 - 0.25W 1% 1K   |           |             | Vishay                | CRCW12061K00FKEA       |
| R157      | 1        | R0900011051      | RESISTOR SMD 2512 - 1W 5% 5,1   |           |             | Vishay                | CRCW25125R10J          |
| R174      | 1        | R0300010001      | RESISTOR SMD 1206 - 0.25W 1% 1  |           |             | KOA                   | RK73H2BTDT1R00F        |
| R412      | 1        | R0300001000      | RESISTOR SMD 1206 - 0.25W - 5% 0  |           |             | Vishay                | CRCW120600R0J          |
| R427      | 1        | R0100010047      | RESISTOR SMD 0603 - 0.06W 1% 47   |           |             | Vishay                | CRCW060347R0F          |
| S1        | 1        | ACC000354001     | RF FRAME + COVER 75,8 X 51,5  |           | NM          | MASACH TECH           | MS006-001NB            |
| SP1       | 1        | Y0800007001      | Button miniature, SMD, ITT-Cannon cod. KSR231GLFS                           |           | NM          | ITT Cannon            | KSR231GLFS             |
| U1        | 1        | M0500005001      | 8 Mbit, low voltage, Page-Erasable Serial Flash memory                      |           |             | Nunonyx               | M45PE80-VMP6G          |
| U2        | 1        | L0100121033      | Texas_Back_Boost_Charge_Pump_Thin_SOT-23-6_60mA_3.3_5V                      |           | NM          | Texas instruments     | REG710NA-3             |
| U11       | 1        | U0100125001      | ARM_32Bit_Low_Power_64pin_256kFlash_32Kram_LQFP                             |           |             | STMicroelectronics    | STM32L151RC6TA         |
| U19       | 1        | Z0300013012      | DOUBLE ROW STRAIGHT PITCH 2 X 6 2.54 mm SAMTEC                              |           | NM          | SAMTEC                | TSW-106-07-G-D         |
| U30       | 1        | U0100116001      | MICROCONTROLLER STM8 8 BIT MCU 64KFLASH 2KBRAM 1KEEPROM LQFP48              |           |             | ST Microelectronics   | STM8L151C8T6           |
| U34       | 1        | U11600011001     | Low Voltage Stepper and Single/Dual DC Motor Driver                         |           |             | ALLEGRO               | A3906SESTR-T           |
| XT3       | 1        | C0300019001      | Crystal SMD 32.768kHz +-10ppm CITIZEN CM200C-032K768000ZRF1                 | 32.768kHz |             | CITIZEN               | CM200C-032K768000ZRF1  |
| XT4       | 1        | C0300019001      | Crystal SMD 32.768kHz +-10ppm CITIZEN CM200C-032K768000ZRF1                 | 32.768kHz |             | CITIZEN               | CM200C-032K768000ZRF1  |
| C2-C3     | 2        | C050011D068      | CAP SMD 0603 COG 6,8PF 25V  |           | NM          | AVX                   | 06033A680KAT2A         |
| C1,C4     | 2        | C050011D068      | CAP SMD 0603 COG 6,8PF 25V  |           |             | AVX                   | 06033A680KAT2A         |
| C5,C59    | 2        | C080021C010      | CAP SMD 0603 COG 10PF 25V 5%  |           |             | Kemet                 | C0603C100K3GACTU       |
| D2-D3     | 2        | D0400028001      | Schottky SMD Case DO-214AB 20V 3A   |           |             | General Semiconductor | SS32                   |
| D7,D10    | 2        | D0400019001      | Dual Schottky Diode, Common Kathode 250mA , SOT23 BAT54C                    |           |             | Philips               | BAT54C                 |

### CPU board part list: 2 of 2

| Reference             | Quantity | Part_Number_MRD | Description   | Value | Not Mounted | Manufacturer       | Manufacturer P/N    |
|-----------------------|----------|-----------------|---|-------|-------------|--------------------|---------------------|
| D8-D9                 | 2        | D0400042001     | SMD_Schottky_Diode_1A_20V   |       |             | Diode Incorporated | DFLS120L-7          |
| J4-J5                 | 2        | Z0300041003     | SINGLE ROW STRAIGHT PITCH X 3 2,54 mm SAMTEC  |       | NM          | SAMTEC             | TSW-103-07-G-S      |
| R130-R131             | 2        | R030001K047     | RESISTOR SMD 1206 - 0.25W 1% 47K  |       |             | Vishay             | CRCW120647K0F       |
| R135,R140             | 2        | R010001K100     | RESISTOR SMD 0603 - 0.06W 1% 100K   |       |             | Vishay             | CRCW0603100KF       |
| R388-R389             | 2        | R030001H012     | RESISTOR SMD 1206 - 0.25W 1% 1,2K CRCW12061R2KFN  |       |             | Vishay             | CRCW12061R2KFN      |
| J8,W1                 | 2        | ON_BOARD        | HOLE 8,8mm GAS  |       |             |                    |                     |
| R415-R416             | 2        | R030001H402     | RESISTOR SMD 1206 - 0.25W 1% 40,2K  |       |             | Vishay             | CRCW120640K2FKEA    |
| R421-R422             | 2        | R0200011056     | RESISTOR SMD 0805 - 0,1W 1% 5,6   |       |             | KOA                | RK73H2ATD75R60F     |
| U31-U32               | 2        | Y1120002001     | Protect High-Side Load Switch, 1A Max, 2,4 to 5.5 Supply Voltage Range, Low quiescent current |       |             | ANALOGIC TECH      | AAT4610BGV-1        |
| XT1-XT2               | 2        | Y120002001      | Ceramic Resonator Murata CSTCE8M00G55A-R0 8MHz  | 8MHz  |             | Murata             | CSTCE8M00G55A-R0    |
| C32,C46,C53           | 3        | C0500259100     | CAP SMD 0603 X7R 100NF 16V  |       | NM          | Kemet              | C0603C104K5RAC7013  |
| C60,C94,C107          | 3        | C0500016100     | CAP SMD 1206 X5R 100UF 6,3V   |       |             | MURATA             | GRM31CR6J107ME39L   |
| PTC1-PTC3             | 3        | D0120031001     | Polyswitch Resettable Device SMD 1206 - 0,8W - 0,2 / 0,8ohm IH=0,5A IT=1,10A                  |       |             | Tyco Electronics   | NanoSMD C050F       |
| R68,R101,R105         | 3        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K  |       | NM          | Vishay             | CRCW060310K0F       |
| R63,R132-R133         | 3        | R030001K001     | RESISTOR SMD 0805 - 0,125W 1% 1K  |       |             | Vishay             | CRCW08051K00F       |
| R113,R116-R118        | 4        | R030002H047     | RESISTOR SMD 1206 - 0,25W 1% 4,7K   |       |             | Vishay             | CRCW120647K0F       |
| R126-R129             | 4        | R090001K001     | RESISTOR SMD 2512 - 1W 5% 1K  |       |             | Vishay             | CRCW25121K00J       |
| R151,R180-R181,R403   | 4        | R030001M001     | RESISTOR SMD 1206 - 0,25W 1% 1M CRCW12061MFN  |       |             | Vishay             | CRCW12061MFN        |
| R175,R411,R413-R414   | 4        | R0300001000     | RESISTOR SMD 1206 - 0,25W - 5% 0  |       | NM          | Vishay             | CRCW120600R0J       |
| R417-R420             | 4        | R010002K001     | RESISTOR SMD 0805 - 0,125W 5% 1K  |       |             | Vishay             | CRCW08051K00J       |
| R426-R431             | 4        | R010002L047     | RESISTOR SMD 0603 - 0,06W 1% 4,7M   |       |             | Vishay             | CRCW06034M70F       |
| Q12,Q14,Q18,Q20-Q21   | 5        | U0600016001     | N-channel enhancement mode MOS transistor, 20V, 1,05A, SOT23                                  |       |             | Philips            | BSH105              |
| U5-U9                 | 5        | Y1800018001     | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF 40mA                            |       |             | Texas Instruments  | TPS22943DCKR        |
| R158-R160,R408-R410   | 6        | R0400010012     | RESISTOR SMD 1210 - 0,5W 1% 12 CRCW1210012RFN   |       |             | Vishay             | CRCW1210012RFN      |
| U21-U24,U26-U27       | 6        | A0500021001     | Load Switch with reverse blocking 1A SC70-6   |       |             | Vishay             | Sip32431DR3 - T1GE3 |
| C7,C50,C54,C67,C69-C  | 7        | C0500219001     | CAP SMD 0603 X7R 1NF 50V  |       |             | Murata             | GCM188R7H102KA37D   |
| R119,R123,R138,R178-F | 7        | R010001M001     | RESISTOR SMD 0603 - 0,06W 1% 1M   |       |             | Vishay             | CRCW06031M00F       |
| R4,R161-R163,R165-R1  | 9        | R0200010330     | RESISTOR SMD 0805 - 0,125W 1% 330   |       |             | Vishay             | CRCW0805330RF       |
| R36-R39,R41,R43,R64,F | 9        | R0100020000     | RESISTOR SMD 0603 - 0,06W 1% 0  |       | NM          | Vishay             | CRCW06030000Z       |
| R26-R28,R29,R31-R32,F | 10       | R010001M010     | RESISTOR SMD 0603 - 0,06W 1% 10M  |       |             | Vishay             | CRCW060310M0FKEA    |
| R91,R94,R106-R112,R3  | 12       | R0100010470     | RESISTOR SMD 0603 - 0,06W 5% 470  |       |             | Vishay             | CRCW0603470RJ       |
| C57,C62,C66,C68,C71,C | 18       | C0500019010     | CAP SMD 0603 X7R 10NF 50V   |       |             | Murata             | GRM188R7H103KA01J   |
| R35-R36,R42,R44-R47,F | 23       | R0100020000     | RESISTOR SMD 0603 - 0,06W 1% 0  |       |             | Vishay             | CRCW06030000Z       |
| R1-R3,R5-R24,R385,R3  | 25       | R0300020180     | RESISTOR SMD 1206 - 0,25W - 1% 180 CRCW1206180RFN   |       |             | Vishay             | CRCW1206180RFN      |
| R66-R67,R69-R71,R75-F | 25       | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K  |       |             | Vishay             | CRCW060310K0F       |
| C5-C6,C8-C14,C16-C23  | 30       | C0500016001     | CAP SMD 0603 X5R 1UF 25V  |       |             | Kemet              | C0603C105K3PACTU    |
| C24-C31,C33-C42,C48-C | 33       | C0500259100     | CAP SMD 0603 X7R 100NF 16V  |       |             | Kemet              | C0603C104K5RAC7013  |



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## DOMUSNEXT G4/G6 GAS METERS

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### 7.2. GPRS board part list

Here below the GPRS Board part list follows:

#### GPRS board part list: 1 of 3

| Reference | Quantity | Part Number_MRD  | Description   | Value | Not Mounted | Manufacturer        | Manufacturer P/N   |
|-----------|----------|------------------|---|-------|-------------|---------------------|--------------------|
| CS        | 1        | MS01CS0009B_1330 | CS Scheda RADIO GASMETER GPRS G4/G6   |       |             | MRD                 | MS01CS0009B_1330   |
| C14       | 1        | C0500016001      | CAP SMD 0603 X5R 1UF 25V  |       | NM          | Kemet               | C0603C105K3PACTU   |
| C15       | 1        | C0600046010      | CAP SMD 0603 X5R 10UF 10V   |       |             | TDK                 | C1608X5R1A106K     |
| C38       | 1        | C0600046010      | CAP SMD 0603 X5R 10UF 10V   |       |             | TDK                 | C1608X5R1A106K     |
| C16       | 1        | C07000037047     | CAP SMD 0805 15V 4.7UF 10V  |       |             | Kemet               | C0805C475Z8VACTU   |
| C19       | 1        | C0600067022      | CAP SMD 0805 X5R 2.2UF 10V  |       |             | Murata              | GRM188R61A225ME34D |
| C20       | 1        | C080001A033      | CAP SMD 0603 COG 3300pF 50V 5%  |       |             | TDK                 | C1608COG1H332J     |
| C27       | 1        | C080001C010      | CAP SMD 0603 COG 10PF 50V ±5%   |       |             | Murata              | GCM1885C1H100JA16D |
| C32       | 1        | C050001C100      | CAP SMD 0603 X7R 100PF 50V  |       |             | AVX                 | 06035C101KAT2A     |
| C36       | 1        | C0500095100      | CAP SMD 1206 X7R 100NF 50V  |       |             | Kemet               | C1206C104K5RAC7025 |
| C37       | 1        | C0500219220      | CAP SMD 0603 X7R 220NF 25V  |       |             | Kemet               | C0603C224K3RACTU   |
| C39       | 1        | C0600016010      | CAP SMD 0603 X5R 10UF 6.3V  |       |             | Kemet               | C0603C106M5PACTU   |
| C40       | 1        | C080001C010      | CAP SMD 0603 COG 10PF 50V ±5%   |       | NM          | Murata              | GCM1885C1H100JA16D |
| C43       | 1        | C080001D027      | CAP SMD 0603 COG 2.7PF 50V  |       |             | Murata              | GRM1885C1H2R7CZ01D |
| D1        | 1        | D1300007001      | Low Capacitance Diode Array - case SOT23-6L (SC74)                            |       |             | ST Microelectronics | DALC208SC6         |
| D3        | 1        | D0400034001      | Silicon Schottky Diode 100mA, Case SCD80 40V                                  |       |             | Infineon            | BATF4-02W          |
| D4        | 1        | D0700087001      | HIGH POWER INFRARED EMITTER DIODE   |       |             | OSRAM               | SFH4250            |
| D5        | 1        | D0300014001      | Dual Switching diode 0,15 A / 50 V , Case SOT23 BAV99                         |       |             | Philips             | BAV99              |
| D6        | 1        | D0400042001      | SMD_Schottky_Diode_1A_20V   |       |             | Diode Incorporated  | DFLS120L-7         |
| D7        | 1        | D1500007001      | ESD suppressor, high speed 50pF, trigger 300V, clamping 35V Case MLP0402      |       |             | Cooper Bussmann     | 0402ESDA-MLP8      |
| D51       | 1        | Y1500024001      | I2C DISPLAY   |       |             | VARITRONIX LIMITED  | COG-VLIT1540A-01   |
| F5        | 1        | D1100025001      | Film Fuse SMD - LITTELFUSE 0466.200 (1206)                                    |       |             | Littelfuse          | 0466.200NR         |
| J1        | 1        | Z0300029006      | PLUG IN SIM CARD CONNECTOR  |       |             | JAE                 | SF9W06S4A9         |
| J2        | 1        | Z0300006028      | 28_Pin_Female_SMT_DIL_2,5mm_pass_Through                                      |       |             | SAMTEC              | SSM-114-F-DV-BE-A  |
| J3        | 1        | Z0300009016      | 16_Pin_Female_SMT_DIL_2,5mm_pass_Through                                      |       |             | SAMTEC              | SSM-108-F-DV-BE-A  |
| L1        | 1        | 10100029220      | SMD INDUCTOR - COILCRAFT 200nH DCR=24mA IRMS=2.2A                             | 200n  |             | Coilcraft           | XP12010-201ML      |
| L2        | 1        | 10100046001      | POWER INDUCTOR 1UH 20% 5,1A   |       |             | COILCRAFT           | XL4020-102ME       |
| L3        | 1        | 10100047047      | POWER INDUCTOR 4.7UH 20% 1.2A   |       |             | COILCRAFT           | XFL3012-472ME      |
| P1        | 1        | Y0800046001      | BUTTON MINIATURE SMD 6X5 ITT-CANNON COD. KSC351J                              |       |             | ITT CANNON          | KSC351J            |
| PHT1      | 1        | D1900005001      | NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA                           |       |             | OSRAM               | SFH320FA           |
| PTC1      | 1        | D1200040001      | PolySwitch Resettable Device SMD 1206 - 0.8W - 0.12 / 0.65hm IH=0.2A IT=0.42A |       |             | Tyco Electronics    | NanoSMDCO202F      |
| Q10       | 1        | D0200003001      | PNP TRANSISTOR BIPOLAR SMD CASE SOT23   |       |             | PHILIPS             | BC857              |
| Q14       | 1        | D0500016001      | P-channel enhancement mode MOS transistor, -12V, -0.75A, SOT23                |       |             | Philips             | BSH205             |
| Q15       | 1        | D0500022001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V -4.6A 70MOHM SOT26            |       |             | DIODES INCORPORATED | DMP2068LDM         |

#### GPRS board part list: 2 of 3

| Reference | Quantity | Part Number_MRD | Description   | Value | Not Mounted | Manufacturer        | Manufacturer P/N   |
|-----------|----------|-----------------|---|-------|-------------|---------------------|--------------------|
| R16       | 1        | R010001M001     | RESISTOR SMD 0603 - 0.06W 1%  | 1M    |             | Vishay              | CRCW06031M00F      |
| R21       | 1        | R010002K010     | RESISTOR SMD 0603 - 0.06W 5%  | 10K   |             | VISHAY              | CRCW060310K0F      |
| R47       | 1        | R010002K330     | RESISTOR SMD 0603 - 0.06W 1%  | 330K  |             | Vishay              | CRCW0603330KFKEA   |
| R53       | 1        | R010001K033     | RESISTOR SMD 0603 - 0.06W 1%  | 33K   |             | KOA                 | RK73H1JTTD3302F    |
| R54       | 1        | R010002K680     | RESISTOR SMD 0603 - 0.06W 1%  | 680K  |             | Vishay              | CRCW0603680KF      |
| R55       | 1        | R010001K604     | RESISTOR SMD 0603 - 0.06W 1%  | 604K  | NM          | Vishay              | CRCW0603604KF      |
| R56       | 1        | R010001K300     | RESISTOR SMD 0603 - 0.06W 1%  | 300K  |             | Vishay              | CRCW0603300KF      |
| R57       | 1        | R010001K909     | RESISTOR SMD 0603 - 0.06W 1%  | 909K  |             | Vishay              | CRCW0603909KF      |
| R58       | 1        | R03000020180    | RESISTOR SMD 1206 - 0.25W - 1 %                                       | 180   |             | CRCW1206180RFFN     | Vishay             |
| R61       | 1        | R030001K001     | RESISTOR SMD 1206 - 0.25W 1%  | 1K    |             | Vishay              | CRCW12061K00FKEA   |
| R62       | 1        | R0100010560     | RESISTOR SMD 0603 - 0.06W 1%  | 560   |             | Vishay              | CRCW0603560RF      |
| R68       | 1        | R010002K022     | RESISTOR SMD 0603 - 0.06W 1%  | 22K   |             | VISHAY              | CRCW060322K0F      |
| R69       | 1        | R010001H082     | RESISTOR SMD 0603 - 0.06W 5%  | 8.2K  |             | Vishay              | CRCW060382K0F      |
| R71       | 1        | R010002K470     | RESISTOR SMD 0603 - 0.06W 1%  | 470K  | NM          | Vishay              | CRCW0603470KF      |
| R73       | 1        | R010001H047     | RESISTOR SMD 0603 - 0.06W 1%  | 4.7K  |             | VISHAY              | CRCW060347K0F      |
| R74       | 1        | R010001H039     | RESISTOR SMD 0603 - 0.06W 1%  | 3.9K  |             | Vishay              | CRCW060339K0F      |
| R75       | 1        | R010001H027     | RESISTOR SMD 0603 - 0.06W 1%  | 2.7K  |             | Vishay              | CRCW060327K0F      |
| R76       | 1        | R010002K047     | RESISTOR SMD 0603 - 0.06W 1%  | 47K   |             | Vishay              | CRCW060347K0F      |
| R77       | 1        | R0300010001     | RESISTOR SMD 1206 - 0.25W 1%  | 1     |             | KOA                 | RK73H2BTTD1R00F    |
| R78       | 1        | R010002K820     | RESISTOR SMD 0603 - 0.06W 1%  | 820K  |             | Vishay              | CRCW0603820KFKEB   |
| R79       | 1        | R010001K100     | RESISTOR SMD 0603 - 0.06W 1%  | 100K  | NM          | Vishay              | CRCW0603100KF      |
| R84       | 1        | R010001K002     | RESISTOR SMD 0603 - 0.06W 1%  | 2K    |             | Vishay              | CRCW06032K00F      |
| R93       | 1        | R010001K100     | RESISTOR SMD 0603 - 0.06W 1%  | 100K  |             | Vishay              | CRCW0603100KF      |
| S1        | 1        | ACC00351001     | RF FRAME + COVER 65.6 X 32.1  |       | NM          | MASACH TECH         | MS170              |
| U1        | 1        | U0500014001     | 3-17V 3A STEP-DOWN CONVERTER  |       |             | TEXAS INSTRUMENTS   | TPS52130           |
| U3        | 1        | H1200007001     | MD DUAL INVERTING SCHMITT TRIGG. 5V TOLLERANT INPUT-CASE SOT363       |       |             | NXP SEMICONDUCTOR   | 74HC2G14           |
| U4        | 1        | U0100079001     | 16 BIT SECURITY CONTROLLER OPTIMIZED FOR M2M APPLICATIONS             |       | NM          | INFINEON            | SLM79CF5120P       |
| U5        | 1        | U0900015001     | STEP-UP WITH ADJUSTABLE COSTANTE CURRENT                              |       |             | TEXAS INSTRUMENTS   | TPS51251           |
| U8        | 1        | U0100073001     | WIRELESS STANDARD MODEM WAVECOM WISM0228                              |       |             | WAVECOM             | WISM0228_OCG16R04F |
| U9        | 1        | U0100021012     | 1.2V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR |       | NM          | TOREX               | XC6118C12BMR-G     |
| U10       | 1        | U0100012015     | 1.5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR |       |             | TOREX               | XC6118C15BMR-G     |
| U12       | 1        | U1000013001     | Nanopower Push-Pull output comparators. SOT23-5                       |       |             | TEXAS INSTRUMENTS   | TLV3701DBVT        |
| U14       | 1        | U0100200005     | Texas_Back_Boost_Charge_Pump_Thin_SOT-23-6_60mA_5V                    |       |             | Texas Instruments   | REG710NA-5         |
| U15       | 1        | D1500005001     | QUAD TRANSIL ARRAY FOR ESD PROTECTION Case SOT23-6L                   |       |             | ST Microelectronics | ESD6V15SC6         |
| U16       | 1        | M0400010016     | ST Microelectr. M24LR16E-R EEPROM 16bit case TSSOP8                   |       | NM          | ST Microelectronics | M24LR16E-RW6T      |





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| Reference                                     | Quantity | Part Number_MRD | Description   | Value | Not Mounted | Manufacturer      | Manufacturer PIN   |
|---|----------|-----------------|---|-------|-------------|-------------------|--------------------|
| C6,C13  | 2        | C0500259100     | CAP SMD 0603 X7R 100NF 16V                                      |       | NM          | Kemet             | C0603C104K5RAC7013 |
| C17,C29                                       | 2        | C0500016100     | CAP SMD 1206 X5R 100UF 6,3V                                     |       |             | MURATA            | GRM31CR60J107ME39L |
| C21-C22                                       | 2        | C080001C022     | CAP SMD 0603 NPO 22PF 50V                                       |       | NM          | Kemet             | C0603C220J5GACTU   |
| C23-C24                                       | 2        | C0500036010     | CAP SMD 0603 X5R 10UF 10V                                       |       |             | Murata            | GRM21BR71A106KE51  |
| C25-C26                                       | 2        | C050011C033     | CAP SMD 0603 COG 33PF 50V                                       |       |             | Vishay / Vitramon | VJ0603A330JXACW1BC |
| C30,C42                                       | 2        | C0600046022     | CAP SMD 1206 X5R 22UF 6,3V                                      |       |             | AVX               | 1206D222KAT2A      |
| C34-C35                                       | 2        | C080001C220     | CAP SMD 0603 COG 220PF 50V                                      |       |             | Murata            | GRM1885C1H221FA01D |
| Q1-Q2   | 2        | D0100006001     | NPN Transistor Bipolar SMD case SOT23                           |       |             | Philips           | BC847              |
| Q3,Q12  | 2        | D0600016001     | N-channel enhancement mode MOS transistor, 20V, 1,05A, SOT23    |       | NM          | Philips           | B5H105             |
| R1-R2   | 2        | R010002H013     | RESISTOR SMD 0603 - 0,06W 1% 1,3K                               |       |             | VISHAY            | CRCW06031K30FKEA   |
| R44-R45                                       | 2        | R0600020010     | RESISTOR SMD 2010 1W 1% 10                                      |       | NM          | Vishay            | CRCW201010R0FNEAHP |
| R28,R85                                       | 2        | R0100020432     | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA                |       | NM          | Vishay            | CRCW0603432RFKEA   |
| R59-R60                                       | 2        | R030002H047     | RESISTOR SMD 1206 - 0,25W 1% 4,7K                               |       |             | Vishay            | CRCW12064K70F      |
| R70,R97                                       | 2        | R010002K470     | RESISTOR SMD 0603 - 0,06W 1% 470K                               |       |             | Vishay            | CRCW0603470KF      |
| R7,R115                                       | 2        | R010001M001     | RESISTOR SMD 0603 - 0,06W 1% 1M                                 |       | NM          | Vishay            | CRCW06031M00F      |
| U11,U13                                       | 2        | A0300027001     | 1,8V 700NA RAIL TO RAIL I/O OPERATIONAL AMPLIFIER               |       |             | TEXAS INSTRUMENTS | OPA369AIDCKR       |
| Q8-Q9,Q11                                     | 3        | D0500017001     | P-channel enhancement mode MOS transistor, -12V, -1,52A, SOT457 |       |             | Philips           | B5H207             |
| R3,R5,R98                                     | 3        | R0300012332     | RESISTOR SMD 1206 - 0,5W 1% 3,32                                |       |             | Vishay            | CRCW12063R32FNEAHP |
| R65-R67                                       | 3        | R0300010033     | RESISTOR SMD 1206 - 0,25W - 2% 33                               |       |             | Vishay            | CRCW120622R0F      |
| S2-S4   | 3        | ACC00356001     | RF FRAME + COVER15,3 X 12                                       |       | NM          | MASACH TECH       | MS010              |
| Q4-Q7,Q13                                     | 5        | D0600016001     | N-channel enhancement mode MOS transistor, 20V, 1,05A, SOT23    |       |             | Philips           | B5H105             |
| R18,R20,R31-R32,R91                           | 5        | R010001M002     | RESISTOR SMD 0603 - 0,06W 1% 2M                                 |       | NM          | Vishay            | CRCW06032M00F      |
| R4,R39,R41-R42,R81                            | 5        | R0100010000     | RESISTOR SMD 0603 - 0,06W 5% 0                                  |       |             | VISHAY            | CRCW06030000Z      |
| R33-R37,R51                                   | 6        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K                                |       |             | VISHAY            | CRCW060310K0F      |
| R40,R82,R89,R94-R95,R113-R114                 | 7        | R0100010000     | RESISTOR SMD 0603 - 0,06W 5% 0                                  |       | NM          | VISHAY            | CRCW06030000Z      |
| C3-C5,C7-C8,C10-C12,C41,C70                   | 10       | C0500259100     | CAP SMD 0603 X7R 100NF 16V                                      |       |             | Kemet             | C0603C104K5RAC7013 |
| C9,C33,C61-C69                                | 11       | C050001C100     | CAP SMD 0603 X7R 100PF 50V                                      |       | NM          | AVX               | 06035C101KAT2A     |
| R9,R22-R27,R29-R30,R38,R46,R50,R90,R99,R112   | 15       | R0100020432     | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA                |       |             | Vishay            | CRCW0603432RFKEA   |
| R6,R8,R10-R19,R17,R19,R48-R49,R63,R66,R92,R96 | 16       | R010001M002     | RESISTOR SMD 0603 - 0,06W 1% 2M                                 |       |             | Vishay            | CRCW06032M00F      |
| C1-C2   | 2        | C0900010050     | Supercapacitor, LOW ESR 50F 2,7V TECATE TPL-50/18X40F           |       |             | TECATE            | TPL-50/18X40F      |



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### 3. MECHANICAL SPECIFICATIONS

| Characteristic             | u.m. | Class G4        | Class G6                         | Note   |
|----------------------------|------|-----------------|----------------------------------|--|
| Connection centrelines     | [mm] | 110             | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different      |
| Max dimensions (H x L x s) | [mm] | 156 x 192 x 104 | 156 x 192 x 104<br>(plus flange) | Difference from V2.1: Bosses length has been increased of 4 mm |
| Connection diameter        | "    | G 1" 1/4        | G 1" 1/4<br>(1" 1/2 with flange) |  |
| Resistance to torque       | [Nm] | 110             | 140                              |  |
| Resistance to bending      | [Nm] | 40              | 40<br>(60 with flange)           |  |
| Weight                     | [Kg] | 1.7             | 1.7                              |  |

Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY - GPRS

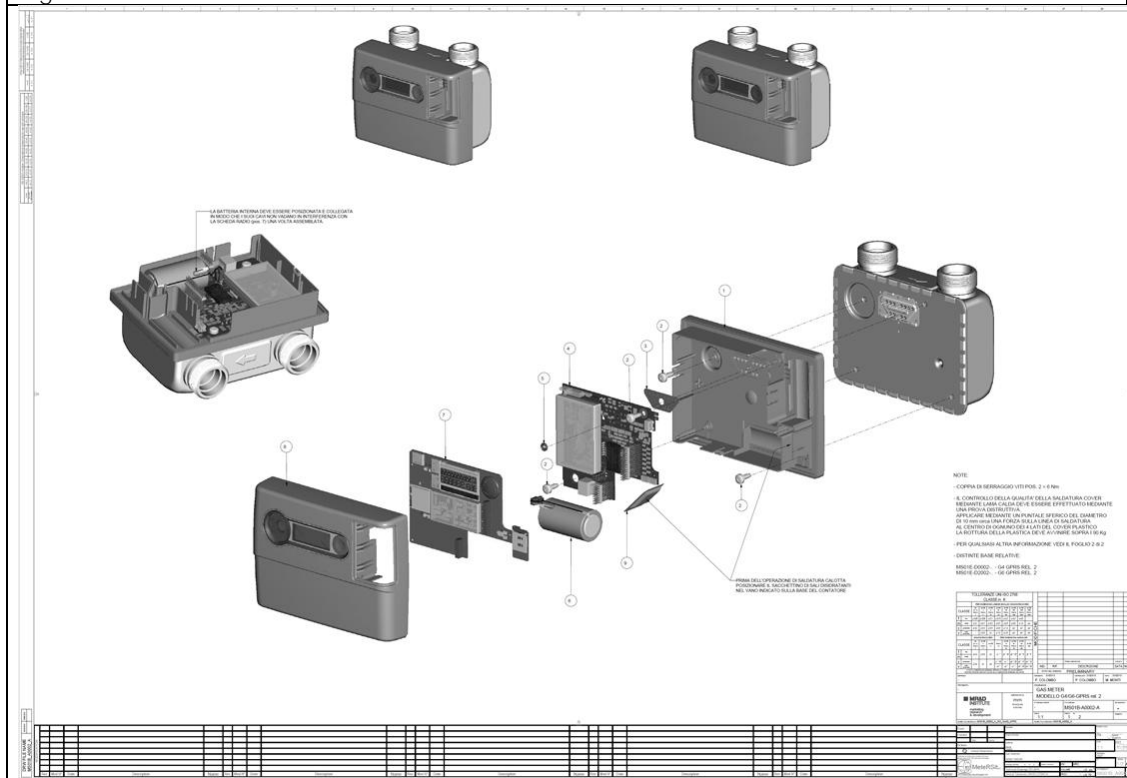




Figure 3.2 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY - RF WMBUS

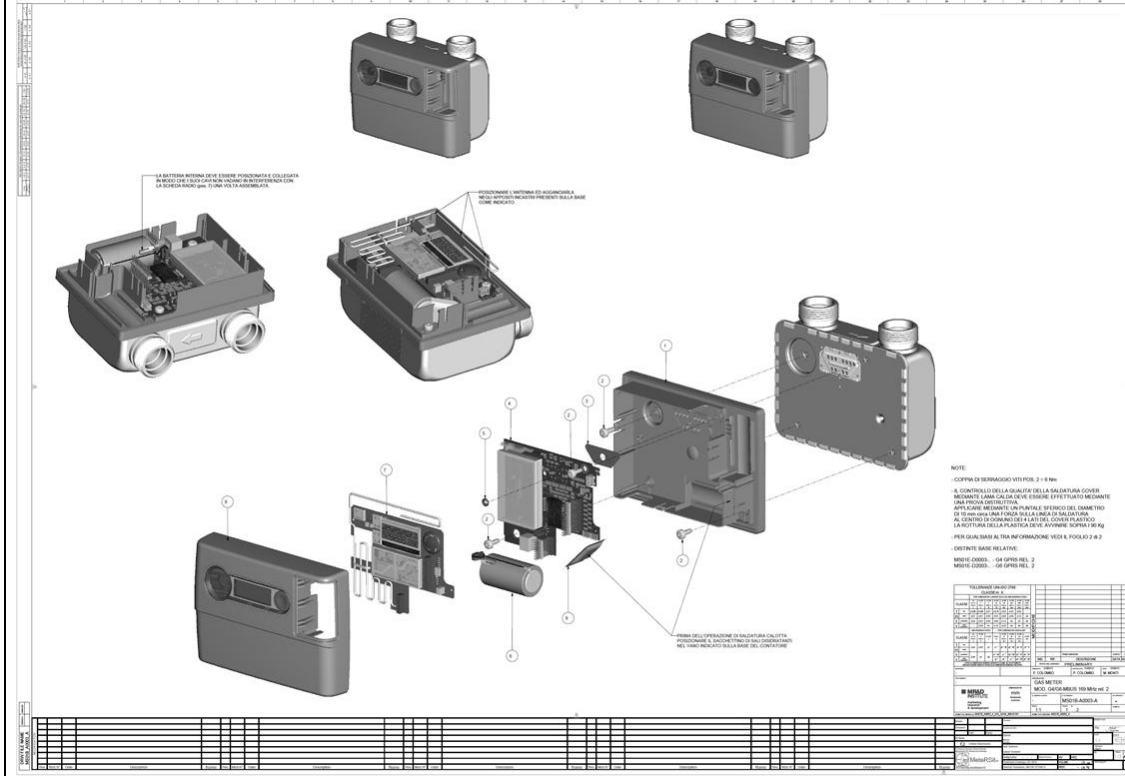


Figure 3.3 – VIEW OF FLOW SENSOR V1

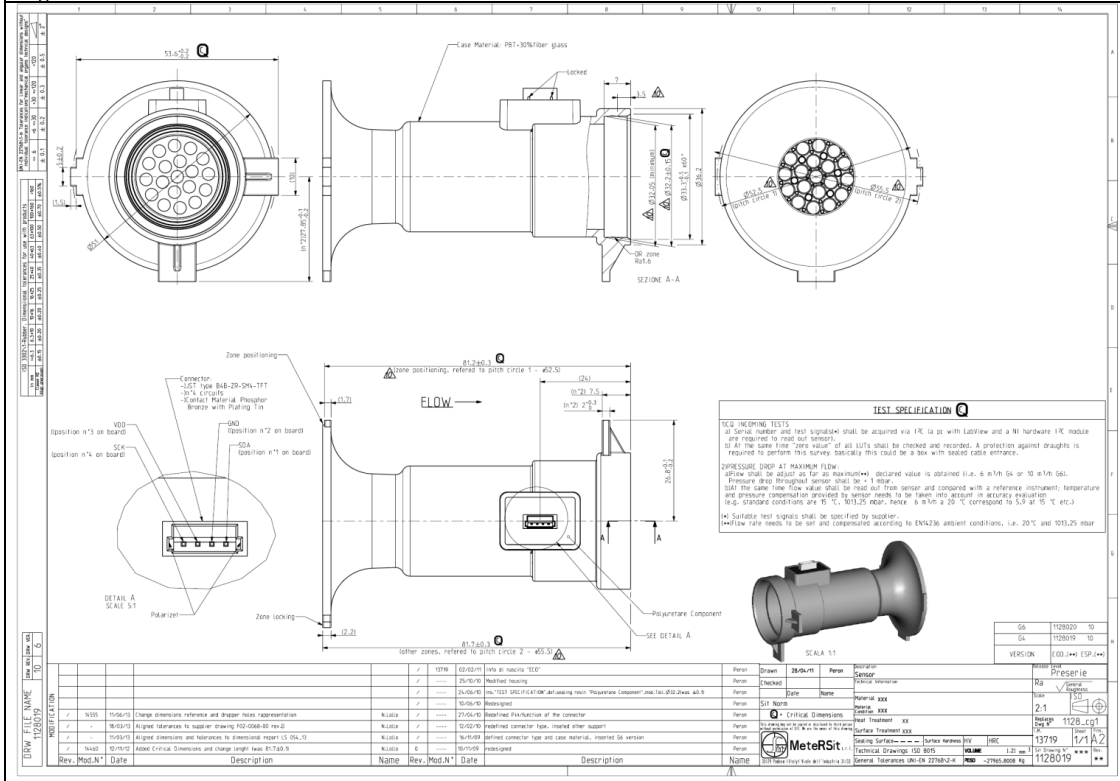


Figure 3.4 – VIEW OF FLOW SENSOR V2.0

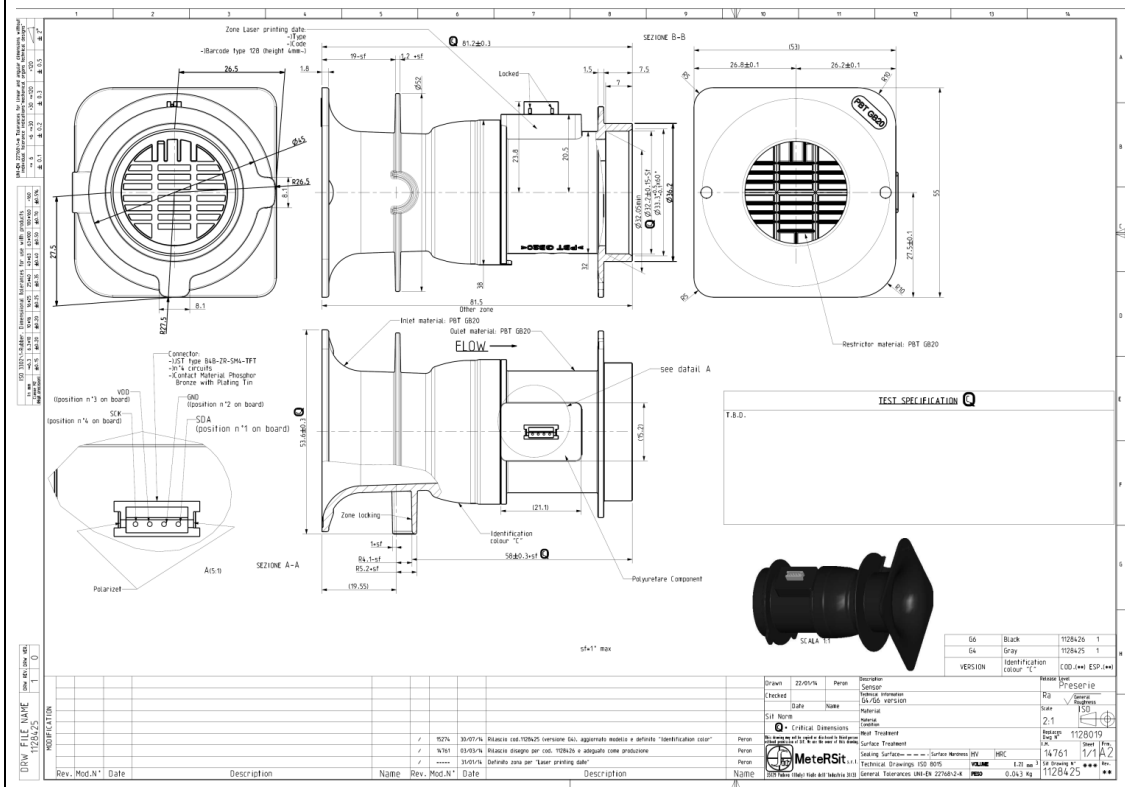
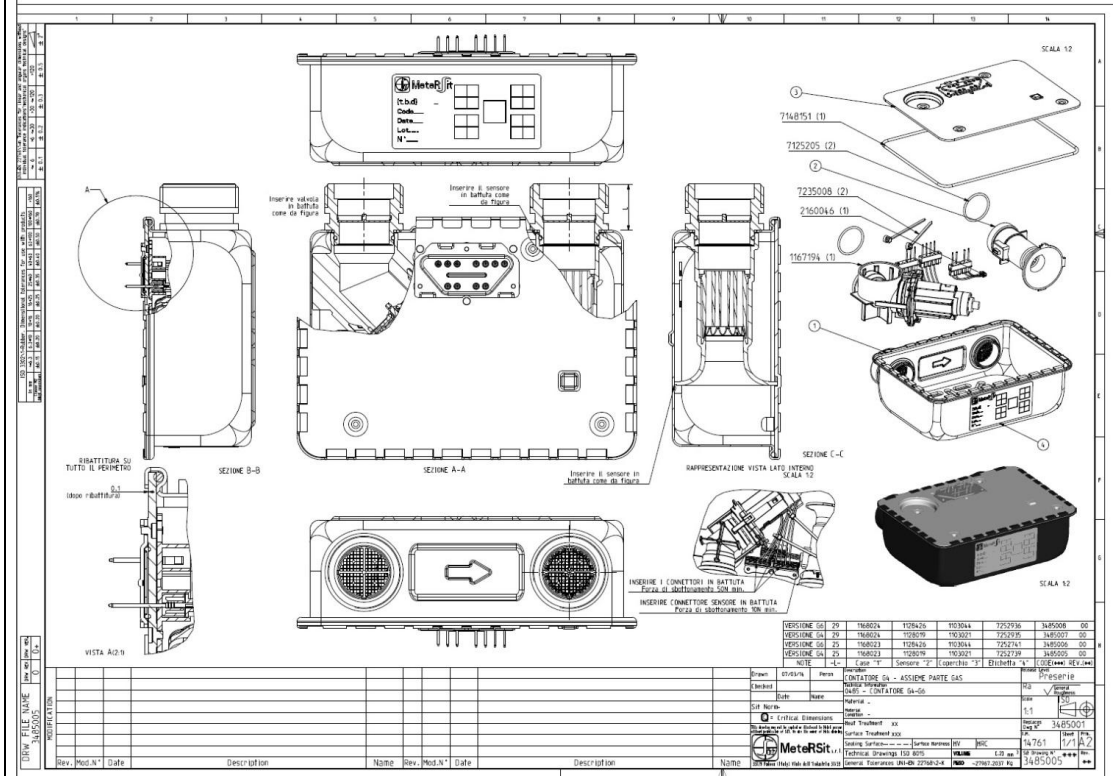


FIGURE 3.4 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE





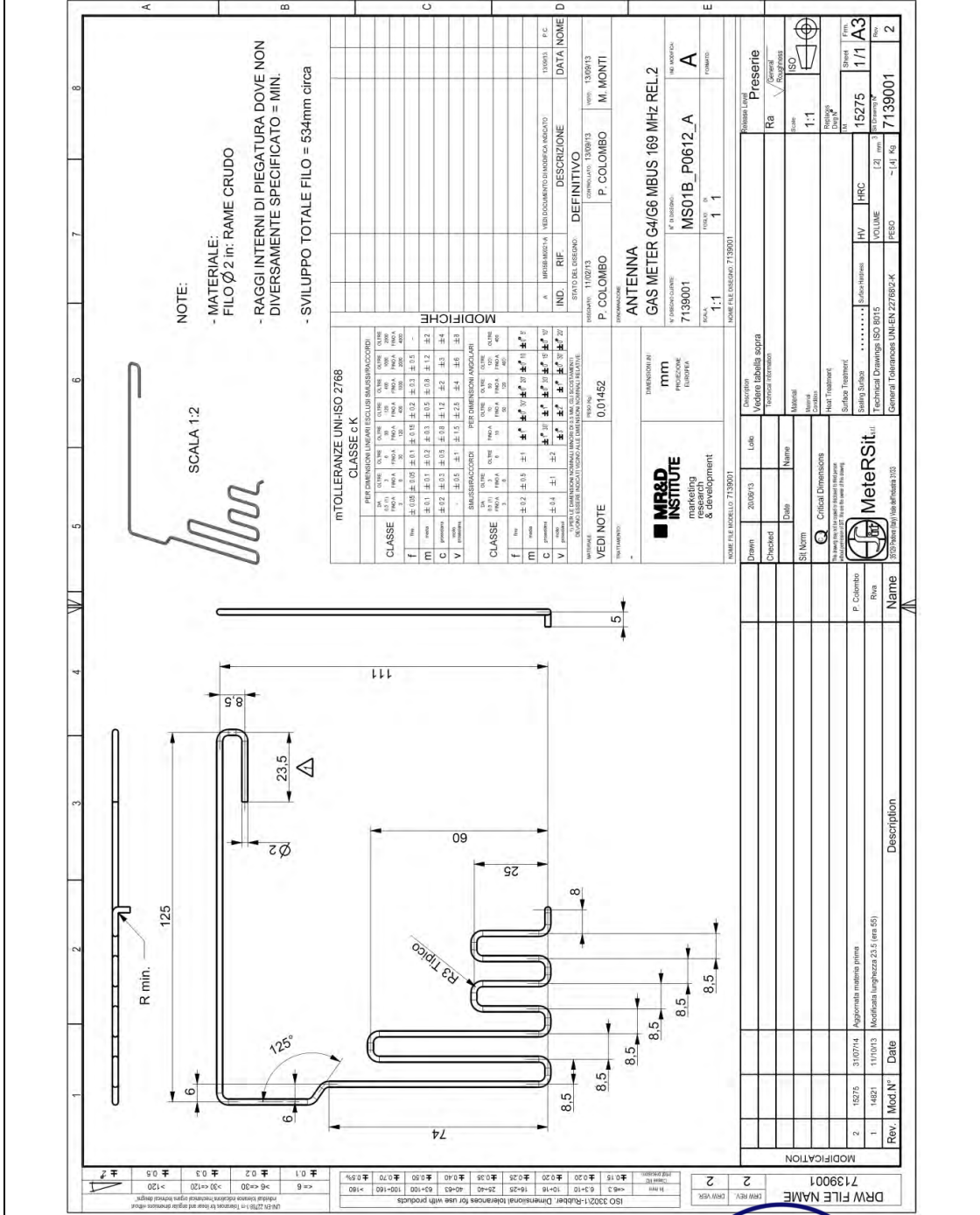
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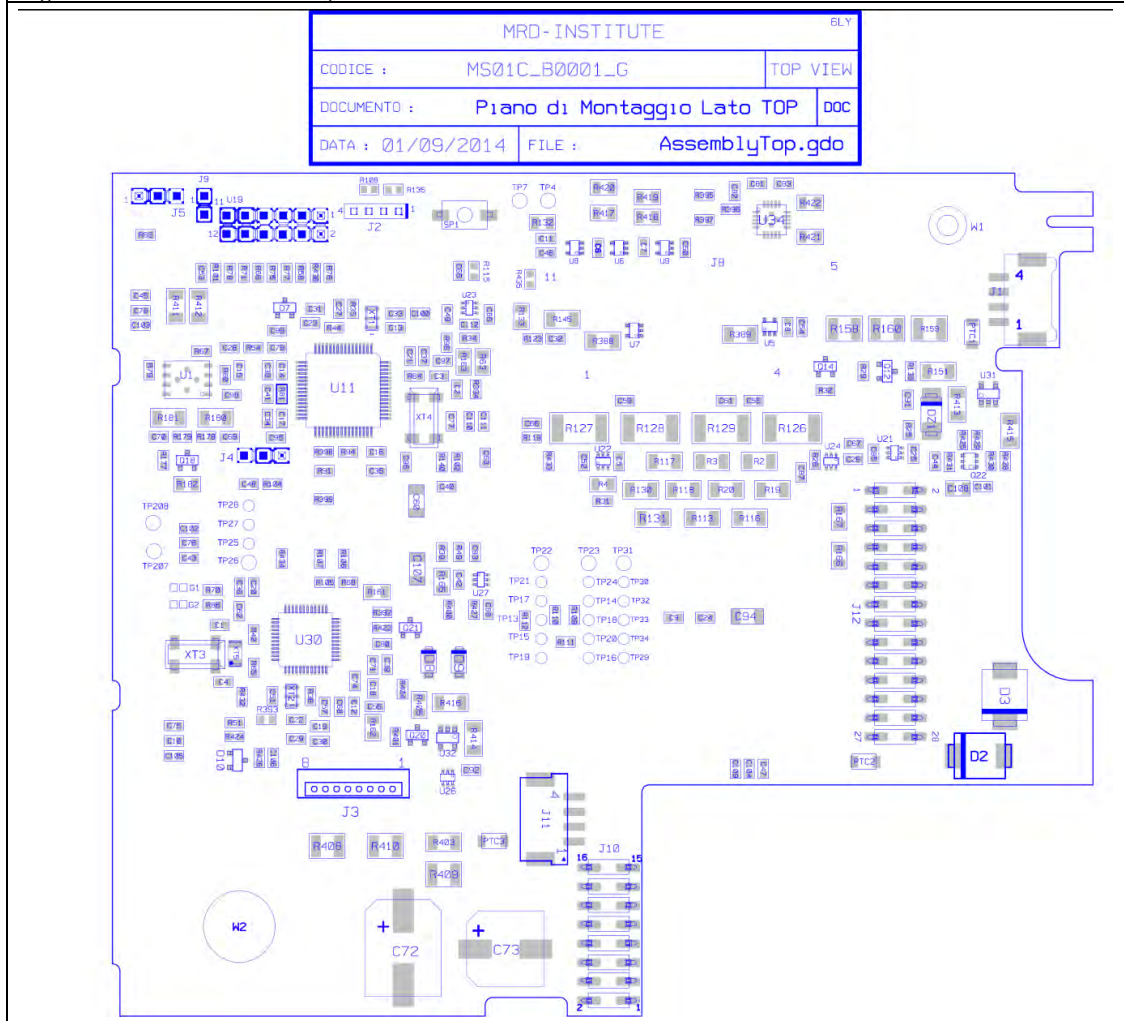
FIGURE 3.8 – WMBUS 169MHZ ANTENNA



## 6. PCB LAYOUT

### 6.1. CPU Board TOP layout

Figure 6.1 – CPU board layout TOP view



### 6.3. WMBUS 169MHz Board layout

Figure 6.4 – WMBUS 169MHz board layout: TOP view

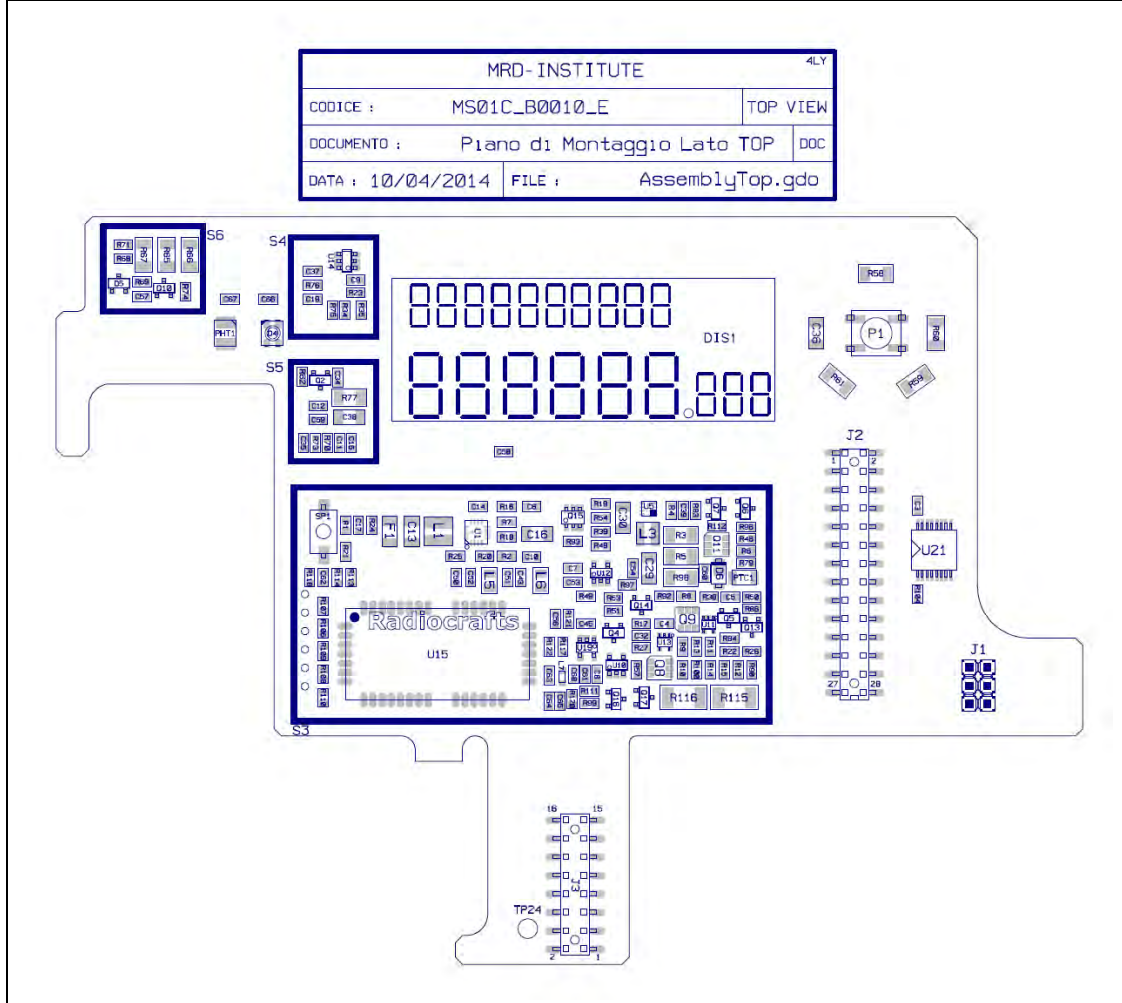
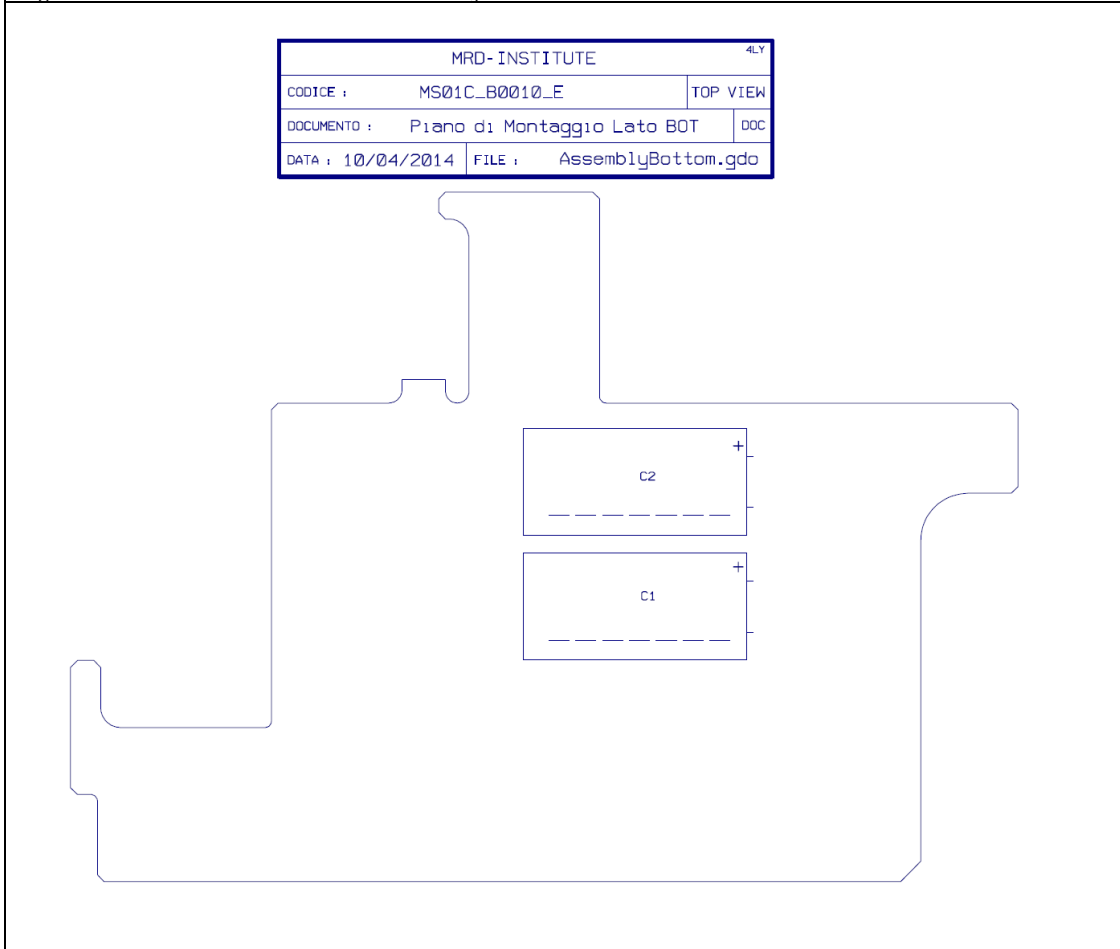


Figure 6.5 – WMBUS 169MHz board layout: BOTTOM view







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### 7. PART LIST

The gas meter includes the following main components:

| Component                    | Manufacturer       | Reference                             |
|------------------------------|--------------------|---------------------------------------|
| <b>Removable Battery</b>     | ---                | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Back-up Battery</b>       |                    | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Electronic CPU Board</b>  | MR&D Institute Spa | See paragraph 5.1                     |
| <b>GPRS RF Modem</b>         | MR&D Institute Spa | See paragraph 5.2                     |
| <b>WMBUS 169MHz RF Modem</b> | MR&D Institute Spa | See paragraph 5.3                     |
| <b>WMBUS 169MHz Antenna</b>  | MR&D Institute Spa | See Figures 3.7 and 3.8               |
| <b>Display</b>               | Varitronix         | See Figure 10                         |
| <b>Gas Sensor</b>            | Sensirion          | See Figure 3.3                        |
| <b>Metallic Gas Chamber</b>  | SIT La Precisa Spa | See paragraph 3                       |
| <b>Plastic Case</b>          | MR&D Institute Spa | See Figure 3.5                        |

In the following paragraphs the part lists relative to the electronic boards are described in detail.



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### 7.1. CPU board part list

Here below the CPU Board part list follows:

#### CPU board part list:

| Titolo / Title  |              | 2238025.1  |   | MeterSIt                |                       |                          |
|---|--------------|--|---|-------------------------|-----------------------|--------------------------|
| Cliente / Customer  |              | MeterSIt   |   | Codice / Code 2238025.1 |                       |                          |
| Descrizione progetto  |              | Main Board G4/G6   |   | Progetto                |                       |                          |
| Project description   |              |  |   | Project                 |                       |                          |
| Stato / State   |              |  |   | Data / Date 15/08/14    |                       |                          |
|   |              | Protezione / Protection  |   | RISERVATO               |                       |                          |
|   |              |  |   |                         |                       |                          |
| Reference   | Quantity     | Description  | Value   | Not Mounted             | Manufacturer          | Manufacturer PIN         |
| U21-U24,U26-U27   | 6 ICs        | Load Switch with reverse blocking 1A SC70-6                    |   |                         | Vishay                | Sip2431DR3 - T1GE3       |
| S1  | 1 Mechanic   | RF FRAME + COVER 75,8 X 51,5                                   |   | NM                      | MASACH TECH           | MS006-001NB              |
| C73   | 1 Capacitors | ALUM RAD. ELE. SMT PANASONIC SERIES FK 1500UF 6,3V 20% 10X10,2 |   | NM                      | Panasonic             | EEEFK0J152P              |
| C72   | 1 Capacitors | SMD Chip Alum. Elect. Capacitor Dia 12,5 mm                    |   |                         | NIC COMP              | NAT1222M6.3V12.5X14KLBFB |
| C15   | 1 Capacitors | CAP SMD 0603 X5R 1UF 25V                                       |   | NM                      | Kemet                 | C0603C105K3PACTU         |
| C5-C6,C8-C14,<br>C16-C23,C43-C45,C47,C85-C88,C91-<br>C93,C105,C110              | 30           | Capacitors   |   |                         |                       |                          |
| C60,C94,C107  | 3            | CAP SMD 0603 X5R 100UF 6,3V                                    |   |                         | Kemet                 | C0603C105K3PACTU         |
| C57,C62,C66,C68,<br>C71,C74,C95-C105,C111                                       | 18           | Capacitors   |   |                         | Murata                | GRM188R71H103KA01J       |
| C108  | 1            | CAP SMD 0603 X5R 22UF 6,3V                                     |   |                         | Murata                | GRM188R71H103KA01J       |
| C1,C4   | 2            | Capacitors   |   |                         | AVX                   | 06033A6RCA72A            |
| C2-C3   | 2            | Capacitors   |   | NM                      | AVX                   | 06033A6RCA72A            |
| C7,C50,C54,C67,C69-C70,<br>C80  | 7            | Capacitors   |   |                         | Murata                | GCM188R71H102KA37D       |
| C24-C31,C33-C42,<br>C48-C49,C51-C52,C56,C65,C75-C79,C81-<br>C83,C109            | 33           | Capacitors   |   |                         | Kemet                 | C0603C104K5RAC7013       |
| C32,C46,C53,C112  | 4            | Capacitors   |   | NM                      | Kemet                 | C0603C104K5RAC7013       |
| C63   | 1            | Capacitors   |   | NM                      | Kemet                 | C0603C106M9PACTU         |
| C61   | 1            | Capacitors   |   |                         | Kemet                 | C0603C390F5GACTU         |
| C55,C59   | 2            | Capacitors   |   |                         | Kemet                 | C0603C100K3GACTU         |
| Q22   | 1            | Transistors  | COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                                      |                         | Diodes                | BC847PN-7F               |
| D7,D10  | 2            | Diodes   | Dual Schottky Diode, Common Kathode 250mA, SOT23  |                         | Philips               | BAT54C                   |
| D2-D3   | 2            | Diodes   | Schottky SMD Case DO-214AB 20V 3A   |                         | General Semiconductor | SS32                     |
| D8-D9   | 2            | Diodes   | SMD_Schottky_Diode_1A_20V   |                         | Diode Incorporated    | DFLS120L-7               |
| Q12,Q14,Q18,Q20-Q21   | 5            | Transistors  | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                                  |                         | Philips               | BSZ005V5                 |
| D21   | 1            | Diodes   | SMD zener diode Case DO-214 1,25W 7,5V  |                         | Vishay                | BZ50C75                  |
| PTC1-PTC3   | 3            | PTC  | Polyswitch Resettable Device SMD 1206 - 0.8W - 0.2 / 0.80hm IH=0.5A IT=1,10A                  |                         | Tyco Electronics      | NANOSMD C050F113 2-2     |
| U1  | 1            | ICs  | 8 Mbit, low voltage, Page-Erasable Serial Flash memory  |                         | Numonyx               | M45PE80-VMP6G            |
| CS  | 1            | PCB  | CS main board G4/G6   |                         | Murata                | MS16C5001C               |
| XT3   | 1            | Frequency  | Crystal SMD 32.768kHz +10ppm  | 32.768khz               | CITIZEN               | CM200C-032K768000ZRF1    |
| XT4   | 1            | Frequency  | Crystal SMD 32.768kHz +10ppm  | 32.768khz               | CITIZEN               | CM200C-032K768000ZRF1    |
| R427  | 1            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 47   |                         | Vishay                | CRCW060347R0F            |
| R91,R94,R106-R112,<br>R399-R399,R424  | 12           | Resistors  | RESISTOR SMD 0603 - 0.06W 5% 470  |                         | Vishay                | CRCW0603470RJ            |
| R56-R67,R69-R71,R75-R81,R86,R96,<br>R102,R104,R115,R392-<br>R397,R423,R432,R434 | 26           | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 10K  |                         | Vishay                | CRCW060310K0F            |
| R68,R101,R105   | 3            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 10K  | NM                      | Vishay                | CRCW060310K0F            |
| R135,R140   | 2            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 100K   |                         | Vishay                | CRCW0603100K0F           |
| R435  | 1            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 100K   | NM                      | Vishay                | CRCW0603100K0F           |
| R119,R123,R138,R178-R179,<br>R404,R426  | 7            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 1M   |                         | Vishay                | CRCW06031M00F            |
| R25-R26,R29,R31-R32,R34,R177,<br>R400-R401,R425                                 | 10           | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 10M  |                         | Vishay                | CRCW060310M0FKEA         |
| R35-R36,R42,R44,R49,<br>R51,R54,R65,R433,R436                                   | 10           | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 0  |                         | Vishay                | CRCW06030000Z            |
| R39,R58,R64   | 3            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 0  | NM                      | Vishay                | CRCW06030000Z            |
| R428-R431   | 4            | Resistors  | RESISTOR SMD 0603 - 0.06W 1% 4.7M   |                         | Vishay                | CRCW06034M70F            |
| R4,R161,R163,R165-R167,R182,R405  | 9            | Resistors  | RESISTOR SMD 0805 - 0.125W 1% 330   |                         | Vishay                | CRCW0805330RF            |
| R421-R422   | 2            | Resistors  | RESISTOR SMD 0805 - 0.1W 1% 5.6   |                         | KOA                   | RK32H2ATT05R65GF         |
| R63,R132-R133   | 3            | Resistors  | RESISTOR SMD 0805 - 0.125W 5% 1K  |                         | Vishay                | CRCW08051K00J            |
| R417-R420   | 4            | Resistors  | RESISTOR SMD 0805 - 0.125W 5% 1K  |                         | Vishay                | CRCW08051K00J            |
| R411,R413-R414  | 3            | Resistors  | RESISTOR SMD 1206 - 0.25W - 5% 0  | NM                      | Vishay                | CRCW120600R0J            |
| R412  | 1            | Resistors  | RESISTOR SMD 1206 - 0.25W - 5% 0  |                         | Vishay                | CRCW120600R0J            |
| R388-R389   | 2            | Resistors  | RESISTOR SMD 1206 - 0.25W 1% 1.2K   |                         | Vishay                | CRCW12061R2KFN           |
| R415-R416   | 2            | Resistors  | RESISTOR SMD 1206 - 0.25W 1% 40.2K  |                         | Vishay                | CRCW120640K2FKEA         |
| R145  | 1            | Resistors  | RESISTOR SMD 1206 - 0.25W 1% 1K   |                         | Vishay                | CRCW12061K00FKEA         |
| R130-R131   | 2            | Resistors  | RESISTOR SMD 1206 - 0.25W 1% 47K  |                         | Vishay                | CRCW120647K0F            |
| R151,R160-R161,R403   | 4            | Resistors  | RESISTOR SMD 1206 - 0.25W 1% 1M   |                         | Vishay                | CRCW12061M0FN            |
| R2,R3,R19,R20   | 4            | Resistors  | RESISTOR SMD 1206 - 0.25W - 1% 180  |                         | Vishay                | CRCW1206180RFN           |
| R113,R116-R118  | 4            | Resistors  | RESISTOR SMD 1206 - 0.25W 1% 4.7K   |                         | Vishay                | CRCW12064K70F            |
| R158-R160,R408-R410   | 6            | Resistors  | RESISTOR SMD 1210 - 0.5W 1% 1K  |                         | Vishay                | CRCW1210012RFN           |
| R126-R129   | 4            | Resistors  | RESISTOR SMD 2512 - 1W 5% 12  |                         | Vishay                | CRCW25121K00J            |
| U30   | 1            | ICs  | MICROCONTROLLER STM8 8 BIT MCU 54KFLASH 2KB RAM 1KEEPROM LQFP48                               |                         | ST Microelectronics   | STM8L151C8T6             |
| U11   | 1            | ICs  | ARM_32Bit_Low_Power_54pin_256KFlash_32KBram_LQFP  |                         | ST Microelectronics   | STM32L151RC7EA           |
| U34   | 1            | ICs  | Low Voltage Stepper and Single/Dual DC Motor Driver   |                         | ALLEGRO               | A3906ESTR-T              |
| SP1   | 1            | Switch   | Button miniature, SMD,  |                         | ITT Canon             | KSR231GLFS               |
| XT1-XT2   | 2            | Frequency  | Ceramic Resonator Murata 8MHz   | 8MHz                    | Murata                | CSTCE8M0UG55A-R0         |
| XT5   | 1            | Frequency  | QUARTZ SMD 32.768MHz +10ppm NDK   |                         | NDK                   | NK3215SA-32.768MHz       |
| US-U9   | 5            | ICs  | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF 40mA                            |                         | Texas Instruments     | TPS22943DBCR             |
| U31-U32   | 2            | ICs  | Protect High-Side Load Switch, 1A Max, 2.4 to 5.5 Supply Voltage Range, Low quiescent current |                         | ANALOGIC TECH         | AAT4610BGV-1             |
| J12   | 1            | Connectors   | 28 Pin male SMT DIL 2.54mm Board Stackers 19.5 Stacker Height                                 |                         | ADAM TECH             | DPH-2-28-SG-33S/SMT-767P |
| J10   | 1            | Connectors   | 16 Pin male SMT DIL 2.54mm Board Stackers 19.5 Stacker Height                                 |                         | SAMTEC                | HW-14-20-F-D-767-SM-A    |
| U19   | 1            | Connectors   | DOUBLE ROW STRAIGHT PITCH 2 X 6 2.54 mm   | NM                      | SAMTEC                | TSW-106-07-G-D           |
| J3  | 1            | Connectors   | 8 Pins p=1.5 mm - Top Entry Wire to Board Insulation Displacement Connector                   | NM                      | JST                   | BBB-ZR-SM4-TF (LF) (SN)  |
| J9  | 1            | Connectors   | SINGLE ROW STRAIGHT PITCH X 2 2.54 mm   | NM                      | SAMTEC                | TSW-102-07-G-S           |
| J4-J5   | 2            | Connectors   | SINGLE ROW STRAIGHT PITCH X 3 2.54 mm   | NM                      | SAMTEC                | TSW-103-07-G-S           |
| J1  | 1            | Connectors   | 4 pins Strip vertical pitch 2mm   | NM                      | SAMTEC                | TMM-104-01-T-S           |
| J2  | 1            | Connectors   | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW, RIGHT ANGLE, 4 CIRCUIT                          |                         | MOLEX                 | 502494-0470              |
| J11   | 1            | Connectors   | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW, VERT, 4 CIRCUIT                                 |                         | MOLEX                 | 502443-0470              |





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### 7.3. WMBUS 169MHz board part list

Here below the WMBUS 169MHz Board part list follows:

#### WMBUS 169MHz board part list:

| Reference   | Quantity | Description   | Value | Not Mounted | Manufacturer       | Manufacturer P/N     |
|---|----------|---|-------|-------------|--------------------|----------------------|
| C8  | 1        | PCB Scheda smd MBUS G4/G6   |       |             | MRO                | MS01C50010_1414      |
| C3 C45  | 2        | Capacitors CAP SMD 6603 X7R 100NF 16V   | 100n  | NM          | Kemet              | C0603C104KSRAC7013   |
| C4 C5 C7 C8 C10 C12 C43   | 8        | Capacitors CAP SMD 6603 X7R 100NF 16V   | 100n  |             | Kemet              | C0603C104KSRAC7013   |
| C14   | 1        | Capacitors CAP SMD 6603 COG 3300PF 50V 5%   | 3300p |             | TEK                | C1608COG1H3E2        |
| C15   | 1        | Capacitors CAP SMD 6603 X5R 10UF 16V  | 10u   | NM          | TDK                | C1808X5R1A100K       |
| C17   | 1        | Capacitors CAP SMD 6603 COG 100PF 50V 5%  | 10p   | NM          | Murata             | GCM1885C1H100JA16D   |
| C19   | 1        | Capacitors CAP SMD 6603 X5R 2.2UF 10V   | 2.2u  |             | Murata             | GRM188R61A22ME34D    |
| C13 C29 C38   | 3        | Capacitors CAP SMD 1206 X5R 100UF 6.3V  | 100u  |             | MURATA             | GRM31CR60JA107ME39L  |
| C16 C35   | 2        | Capacitors CAP SMD 1206 X5R 22UF 6.3V   | 22u   |             | AVX                | 1206S022R63A7A       |
| C32 C51 C52   | 3        | Capacitors CAP SMD 6603 X7R 100PF 50V   | 100p  |             | AVX                | 06035C101KA12A       |
| C68   | 1        | Capacitors CAP SMD 6603 COG 82PF 50V  | 82p   |             | Murata             | GRM1885C1H82PF A01J  |
| C34 C35   | 2        | Capacitors CAP SMD 6603 COG 220PF 50V   | 220p  |             | Murata             | GRM1885C1H22PF A01D  |
| C36   | 1        | Capacitors CAP SMD 1206 X7R 100NF 50V   | 100n  |             | Kemet              | C1206C104KSRAC7025   |
| C9 C37  | 2        | Capacitors CAP SMD 6603 X7R 220NF 25V   | 220n  |             | Kemet              | C0603C224K3RACTU     |
| C39   | 1        | Capacitors CAP SMD 6603 X5R 10UF 6.3V   | 10u   |             | Kemet              | C0603C100M3FACTU     |
| C59   | 1        | Capacitors CAP SMD 6603 X5R 1UF 10V   | 1u    |             | Murata             | GRM188601A100KA01J   |
| C6 C8 C3 C4 C56 C61 C66 C67   | 11       | Capacitors CAP SMD 6603 X7R 100PF 50V   | 100p  | NM          | AVX                | 06035C101KA12A       |
| C82   | 1        | Capacitors CAP SMD 6603 X7R 10UF 50V  | 1u    |             | Murata             | GCM188R71H102KA37D   |
| C93 C64   | 2        | Capacitors CAP SMD 6603 NPO 220PF 50V   | 22p   |             | Kemet              | C0603C220N3FACTU     |
| C68   | 1        | Capacitors CAP SMD 6603 Cer 4.7pF ±1pF 50V COG  | 4.7p  | NM          | AVX                | 060354R7BETTR        |
| D4  | 1        | Diodes HIGH POWER INFRARED EMITTER DIODE  |       |             | OSRAM              | SF14250              |
| D5  | 1        | Diodes Dual Switching diode 0.15 A / 60 V, Case SOT23 BAV99                               |       |             | Philips            | BAV99                |
| D6  | 1        | Diodes SMD Schottky Diode 1A 20V  |       |             | Diode Incorporated | DFL5120L-7           |
| F1  | 1        | Fuses Film Fuse SMD - LITELFUSE (1206)  |       |             | LetelFuse          | 0465 500R1           |
| J2  | 1        | Connectors 28_Pin_Female_SMT_DIL_2.5mm_pass_Through                                       |       |             | SAITEC             | SSM114-F-DV-BE-A     |
| J3  | 1        | Connectors 16_Pin_Female_SMT_DIL_2.5mm_pass_Through                                       |       |             | ADAM TECH          | RS2-28-SC-SMT-P      |
| L1  | 1        | Inductors POWER INDUCTOR 1UH 20% 5.1A   | 1UH   |             | ADAM TECH          | SSM108-F-DV-BE-A     |
| L3  | 1        | Inductors POWER INDUCTOR 4.7UH 20% 1.2A   | 4.7UH |             | COLCRAFT           | XFL4200-102ME        |
| L5 L16  | 2        | SMD Chip Ferrite Beads - MURATA GJM32 Series - Case 0805                                  | 56UH  |             | COLCRAFT           | XFL3012-472ME        |
| L7  | 1        | Inductors High Freq. Ind. 6603 20mH ±1% 660MHz Murata LQP18M122NG02                       | 1uH   |             | Murata             | BLM18P22312M1        |
| P1  | 1        | Switch BUTTON MOUNTING SMD 6X6 ITC CANNON COD KSC351J                                     |       |             | ITT CANNON         | KSC351J              |
| PT01  | 1        | Transistor NPN Silicon Phototransistor Led Lamp OSRAM SFH020FA                            |       |             | OSRAM              | SFH020FA             |
| Q2  | 1        | Transistor Polytechn Transistable Device SMD 1206 - 0.8V - 0.12 / 0.68mm H=0.2A (H=0.42A) |       |             | Type Electronics   | NanoMOS1200F         |
| Q4-Q7 Q13   | 5        | Transistor NPN Transistor Bipolar SMD case SOT23  |       |             | Philips            | BC847                |
| C8 C9 C11   | 3        | Transistor N-channel enhancement mode MOS transistor 20V 1.05A SOT23                      |       |             | Philips            | BSH105               |
| Q10   | 1        | Transistor P-channel enhancement mode MOS transistor 12V 1.53A SOT457                     |       |             | Philips            | BSH07                |
| Q14   | 1        | Transistor PNP TRANSISTOR BIPOLAR SMD CASE SOT23  |       |             | PHILIPS            | BC857                |
| Q15   | 1        | Transistor P-channel enhancement mode MOS transistor -12V -0.75A SOT23                    |       |             | Philips            | BSH205               |
| Q15 Q17   | 2        | Transistor P-channel enhancement mode MOS transistor 20V 1.05A SOT23                      |       |             | DIODES INC.        | DMP2066LDM           |
| R3 R5 R58   | 3        | Resistors RESISTOR SMD 1206 0.5W 1% 3.3k  | 3.3k  | NM          | Philips            | BSH105               |
| R24   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 1M   | 1M    |             | Vishay             | CRCW06031M00F        |
| R25   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 300K   | 300K  |             | Vishay             | CRCW0603300K0F       |
| R4 R39 R114 R100 R16 R18 R20 R6 R8 R10  | 7        | Resistors RESISTOR SMD 6603 - 0.06W 1% 0  | 0     |             | Vishay             | CRCW06030000F        |
| R15 R17 R19 R48 R49 R83 R86 R92 R95 R9 R22 R26 R27 R38 R46 R50 R50 R106 R110 R112 R121 R132 | 16       | Resistors RESISTOR SMD 6603 - 0.1W 1% 432 CRCW0603432RFEA                                 | 432   | 432         | Vishay             | CRCW0603432RFEA      |
| R21 R23 R34 R35 R51 R79   | 6        | Resistors RESISTOR SMD 6603 - 0.06W 1% 10K  | 10K   |             | Vishay             | CRCW060310K0F        |
| R30   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 33K  | 33K   |             | KOA                | RC73H1JTD3302P       |
| R34   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 680K   | 680K  |             | Vishay             | CRCW0603680K0F       |
| R57   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 509K   | 509K  |             | Vishay             | CRCW0603509K0F       |
| R58   | 1        | Resistors RESISTOR SMD 1206 0.25W - 1% 180 CRCW1206180RPN                                 | 180   | 180         | Vishay             | CRCW1206180RPN       |
| R59 R60   | 2        | Resistors RESISTOR SMD 1206 0.25W 1% 4.7K   | 4.7K  |             | Vishay             | CRCW1206470F         |
| R61   | 1        | Resistors RESISTOR SMD 1206 0.25W 1% 1K   | 1K    |             | Vishay             | CRCW12061K00FKEA     |
| R62   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 560  | 560   |             | Vishay             | CRCW0603560R0F       |
| R68-R67   | 3        | Resistors RESISTOR SMD 1206 0.25W 2% 33   | 33    |             | Vishay             | CRCW12063300F        |
| R68   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 22K  | 22K   |             | VISHAY             | CRCW060322K0F        |
| R69   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 5% 8.2K   | 8.2K  |             | Vishay             | CRCW060382K0J        |
| R70 R97   | 2        | Resistors RESISTOR SMD 6603 - 0.06W 1% 470K   | 470K  |             | Vishay             | CRCW0603470K0F       |
| R71   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 470K   | 470K  | NM          | Vishay             | CRCW0603470K0F       |
| R73   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 4.7K   | 4.7K  |             | VISHAY             | CRCW0603470F         |
| R74   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 3.9K   | 3.9K  |             | Vishay             | CRCW0603390K0F       |
| R75   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 2.7K   | 2.7K  |             | Vishay             | CRCW0603270F         |
| R76   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 47K  | 47K   |             | Vishay             | CRCW060347K0F        |
| R77   | 1        | Resistors RESISTOR SMD 1206 0.25W 1% 10   | 10    |             | Vishay             | CRCW120610K0FKEAHP   |
| R83   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 100K   | 100K  |             | Vishay             | CRCW0603100K0F       |
| R84   | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 2K   | 2K    |             | Vishay             | CRCW06032K00F        |
| R2 R7 R99 R100  | 4        | Resistors RESISTOR SMD 6603 - 0.06W 1% 2M   | 2M    | NM          | Vishay             | CRCW06032M00F        |
| R1 R104   | 2        | Resistors RESISTOR SMD 6603 - 0.06W 1% 0  | 0     | 0 NM        | Vishay             | CRCW06030000F        |
| R111  | 1        | Resistors RESISTOR SMD 6603 - 0.1W 1% 432 CRCW0603432RFEA                                 | 432   | 432 NM      | Vishay             | CRCW0603432RFEA      |
| R113  | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 5.6K   | 5.6K  |             | Vishay             | CRCW060356K0F        |
| R115 R116   | 2        | Resistors RESISTOR SMD 2010 1W 1% 10  | 10    | 10 NM       | Vishay             | CRCW2010100R0FKEAHP  |
| R117  | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 604K   | 604K  | NM          | Vishay             | CRCW0603604K0F       |
| R118  | 1        | Resistors RESISTOR SMD 6603 - 0.06W 1% 8.2K   | 8.2K  |             | Vishay             | CRCW060382K0F        |
| SP1   | 1        | Switch Button measure SMD ITC Cannon cod KSR221GLFS                                       |       |             | ITT Cannon         | KSR221GLFS           |
| U5  | 1        | ICs STEP-UP WITH ADJUSTABLE CONSTANT CURRENT  |       |             | TEXAS INSTRUMENTS  | TP961251             |
| U10   | 1        | ICs PIN AND DELAY PIN CAPACITOR   |       |             | TORREX             | XG819C128MR-G        |
| U11 U13   | 2        | ICs 1.5V 700mA RAIL TO RAIL I/O OPERATIONAL AMPLIFIER                                     |       |             | TEXAS INSTRUMENTS  | OPA360AIDKVR         |
| U12   | 1        | ICs Nanopower Push-Pull output comparators SOT23-5  |       |             | TEXAS INSTRUMENTS  | TLV3701DBVT          |
| U14   | 1        | ICs Texas Back Boost Charge Pump Thin SOT-23-5 60mA 5V                                    |       |             | Texas Instruments  | REG1100A-5           |
| U15   | 1        | ICs DC/DC STEP DOWN CONVERTER MODULE AT 169MHz  |       |             | Radicals           | DC/DC-STEP-AMBUS4    |
| U1  | 1        | ICs 3.17V 3A STEP-DOWN CONVERTER  |       |             | TEXAS INSTRUMENTS  | TPS82130             |
| U19   | 1        | ICs 1.2V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR                 |       |             | TORREX             | XG819C128MR-G        |
| U21   | 1        | ICs 8-bit I2C bus   |       |             | KUP                | CM056540B            |
| C1 C2   | 2        | Capacitors Supercapacitor LOW ESR 30F 2.7V  | 30    |             | TECATE             | TP1_30/1631F         |
|   | 2        | Capacitors Supercapacitor LOW ESR 30F 2.7V  | 35    |             | Cosper Busmann     | HV1635-2R7356-R      |
|   | 2        | Capacitors Supercapacitor LOW ESR 20F 2.7V  | 25    |             | Vitrozecel         | V05CS 002R7 20F      |
| DIS1  | 1        | LCD I2C DISPLAY   |       |             | VARITRONIX LIMITED | COG-VLT1540A-01      |
| J1  | 1        | Connectors DOUBLE ROW STRAIGHT PITCH 2 X 3 2.54 mm SAITEC                                 |       | NM          | SAITEC             | TSW_103-06-T-D       |
| ATT1  | 1        | Switch ATTENUATOR SWITCH  |       |             | TST                | 711001               |
| ANT1  | 1        | LOOP ANTENNA 169MHz   |       |             |                    | 7139001              |
| FSC1  | 1        | Accessories FASCOTTA PLASTICA n=99 H=2.5 Sp=1 in NYLON                                    |       |             | RICHCO             | RG-203               |
| S3  | 1        | Accessories RF FRAME + COVER 6.5 x 3.2  |       | NM          | MASACH TECH        | MS10                 |
| S4-S6   | 3        | Accessories RF FRAME + COVER15.3 x 12   |       | NM          | MASACH TECH        | MS10                 |
| BD51  | 1        | Accessories PELLICOLA BI-ADESIVA PER SUPERCAP cod 4919                                    |       |             | 3M                 | See MeterSIT drawing |



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## DOMUSNEXT G4/G6 GAS METERS

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### 8. MARKINGS

The figures 8.x show the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 4 different versions of the meters

Figure 8.1 – Labelling of G4 GPRS meter

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSit
- K= year of construction - A for 2014 - B for 2015 ...
- 03= fixed digits mean Gas Meter
- YY= meter version, indicating the last two digits of the MeterSit product code
- Z= meter model, indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSA03010000001

PRODUCTION LOT from 0000001 to 9999999

**Technical Specifications:**  
Cl. 1.5 H3 H-gas  
t<sub>a</sub> -25°C... +55°C  
t<sub>g</sub> -25°C... +55°C  
p<sub>max</sub> 0,5 (bar)  
t<sub>b</sub> = 15°C  
p<sub>s</sub> = 1,01325 (bar)  
Q<sub>min</sub> 0,04 (m³/h)  
Q<sub>max</sub> 6 (m³/h)  
Q<sub>i</sub> 0,6 (m³/h)

**CE Marking:** 0122 T10362 Mtr. MTSK03YYZXXXXXX

**Labels:** Made in Italy, G4 GPRS, MeterSit, Viale dell'Industria 31, 35129 Padova

| Rev. | Mod. N° | Date     | Description  | Name       |
|------|---------|----------|--|------------|
| 3    |         | 10/09/14 | Aumentata la pressione massima di esercizio da 0.5 a 0.5 bar | P. Colombo |
| 2    | 1508    | 09/05/14 | Rivisto globalmente (aj-ou)                                  |            |
| 1    | 14751   | 09/09/13 | Modificato numero progressivo otto da 4 a 3 cifre            |            |

**Technical Specifications Table:**

|                       |                              |  |                    |                                |
|-----------------------|------------------------------|--|--------------------|--------------------------------|
| Designation           | NAME PLATE GAS METER G4 GPRS |  | Revision           | Preserie                       |
| Technical Information |                              |  | Scale              | 2:1                            |
| Date                  |                              |  | Surface Treatment  |                                |
| SI Norm               | Critical Dimensions          |  | Surface Treatment  |                                |
| Person                | P. Colombo                   |  | Sealing Surface    | ..... Surface treatment HV HRC |
| Material              | Alu                          |  | Technical Drawings | ISO 8015                       |
| Material              | Alu                          |  | General Tolerances | UNI-EN 227682-K                |
| Material              | Alu                          |  | Volume             | 1/1                            |
| Material              | Alu                          |  | Weight             | 7252965                        |
| Material              | Alu                          |  | Sheet              | 3                              |






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Figure 8.2 – Labelling of G6 GPRS meter



**Cl. 1,5 H3 H-gas**  
**t<sub>n</sub> -25°C... +55°C**  
**t<sub>s</sub> -25°C... +55°C**  
**p<sub>max</sub> 0,5 (bar)**

**t<sub>b</sub> = 15°C**  
**p<sub>b</sub> = 1,01325 (bar)**  
**Q<sub>min</sub> 0,06 (m³/h)**  
**Q<sub>max</sub> 10 (m³/h)**  
**Q<sub>1</sub> 1 (m³/h)**

**CE IM** 0122 T10362 **Metr. MTSK03YYZXXXXXX**

YEAR OF CONSTRUCTION  
 METER VERSION  
 METER MODEL  
 PROGRESSIVE NUMBER

SPACE FOR LAST TWO DIGITS  
YEAR OF CONSTRUCTION

CHARACTER FILLED

**G6 GPRS**  
**Made in Italy**

Lot 0000000

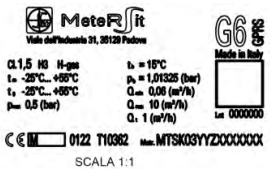
PRODUCTION LOT from 0000001 to 9999999

DATA MATRIX CODE AREA

- MTS= fixed digits mean MeterSit
- K= year of construction - A for 2014 - B for 2015 ...
- 03= fixed digits mean Gas Meter
- YY= meter version, indicating the last two digits of the MeterSit product code
- Z= meter model, indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSA030110000001



SCALA 1:1

| Rev | Mod N° | Date     | Description   | Name       |
|-----|--------|----------|---|------------|
| 3   |        | 10/09/14 | Aumentata la pressione massima di esercizio da 0,15 a 0,5 bar | P. Colombo |
| 2   | 15069  | 06/05/14 | Rivisto giornalmente  | Pironi     |
| 1   | 14791  | 09/08/13 | Modificato numero progressivo nido da 4 a 2 cifre             | Riva       |

|                 |            |                                       |                          |
|-----------------|------------|---------------------------------------|--------------------------|
| Drawn: 04/07/13 | P. Colombo | Version: NAME PLATE GAS METER G6 GPRS | Revised Level: Preserie  |
| Checked:        |            | Technical Information:                | Ra                       |
| Date:           | Name:      | Material:                             | 2.1                      |
| SE Norm:        |            | General Conditions:                   | 2.1                      |
|                 |            | Critical Dimensions:                  |                          |
|                 |            | Heat Treatment:                       |                          |
|                 |            | Surface Treatment:                    |                          |
|                 |            | Sealing Surface: .....                | Surface Hardness: HV HRC |
|                 |            | Technical Drawings ISO 8015:          | VOLUME [2] mm 3          |
|                 |            | General Tolerances UNI-EN 227892-K:   | PERCO - (4) kg           |





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Figure 8.3 – Labelling of G4 RF WMBUS meter

**MeterSIt**  
Viale dell'Industria 31, 35129 Padova

**G4 WMBUS**  
Made in Italy

**CE** M 0122 T10362 Metr. MTSK03YYZXXXXXX

Q<sub>n</sub> 1,5 H3 H-gas  
t<sub>a</sub> -25°C...+55°C  
t<sub>s</sub> -25°C...+55°C  
p<sub>max</sub> 0,5 (bar)

t<sub>b</sub> = 15°C  
p<sub>b</sub> = 1,01325 (bar)  
Q<sub>min</sub> 0,04 (m³/h)  
Q<sub>max</sub> 6 (m³/h)  
Q<sub>i</sub> 0,6 (m³/h)

Lot 0000000

DATA MATRIX CODE AREA

- MTS= fixed digits mean MeterSIt
- K= year of construction - A for 2014 - B for 2015 ...
- 03= fixed digits mean Gas Meter
- YY= meter version, indicating the last two digits of the MeterSIt product code
- Z= meter model, indicating the third last digit of the MeterSIt product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSA03010000001

PRODUCTION LOT from 0000001 to 9999999

YEAR OF CONSTRUCTION  
METER VERSION  
METER MODEL  
PROGRESSIVE NUMBER

SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION  
CHARACTER FILLED

**MeterSIt**  
Viale dell'Industria 31, 35129 Padova

**G4 WMBUS**  
Made in Italy

Q<sub>n</sub> 1,5 H3 H-gas  
t<sub>a</sub> -25°C...+55°C  
t<sub>s</sub> -25°C...+55°C  
p<sub>max</sub> 0,5 (bar)

t<sub>b</sub> = 15°C  
p<sub>b</sub> = 1,01325 (bar)  
Q<sub>min</sub> 0,04 (m³/h)  
Q<sub>max</sub> 6 (m³/h)  
Q<sub>i</sub> 0,6 (m³/h)

**CE** M 0122 T10362 Metr. MTSK03YYZ000000

SCALA 1:1

| Rev. | Mod.N° | Date     | Description   |
|------|--------|----------|---|
| 1    | 150914 | 15/09/14 | Aumentata la pressione massima di esercizio da 0,15 a 0,5 bar |
| 2    | 15089  | 09/05/14 | Rivisto globalmente   |
| 1    | 14791  | 09/09/13 | Modificato numero progressivo lotto da 4 a 3 cifre            |

|            |          |            |                                    |                               |            |                      |
|------------|----------|------------|------------------------------------|-------------------------------|------------|----------------------|
| Disegnato  | 04/07/13 | P. Colombo | Descrizione                        | NAME PLATE GAS METER G4 WMBUS | Revisioni  | Preserie             |
| Verificato |          |            | Materiali                          |                               | Ra         | General Requirements |
| Disegnato  |          |            | Scale                              | 2:1                           | ISO        |                      |
| Disegnato  |          |            | Surface Treatment                  |                               | Percentage |                      |
| Disegnato  |          |            | Surface Treatment                  |                               | Sheet      | Firm                 |
| Disegnato  |          |            | Technical Drawings ISO 8015        | VOLUME                        | 1/3        | 1/1 A3               |
| Disegnato  |          |            | General Tolerances UNI-EN 227682-K | PE80                          | -14        | KG                   |
| Disegnato  |          |            |                                    |                               | 7252964    | 3                    |





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Figure 8.4 – Labelling of G6 RF WMBUS meter

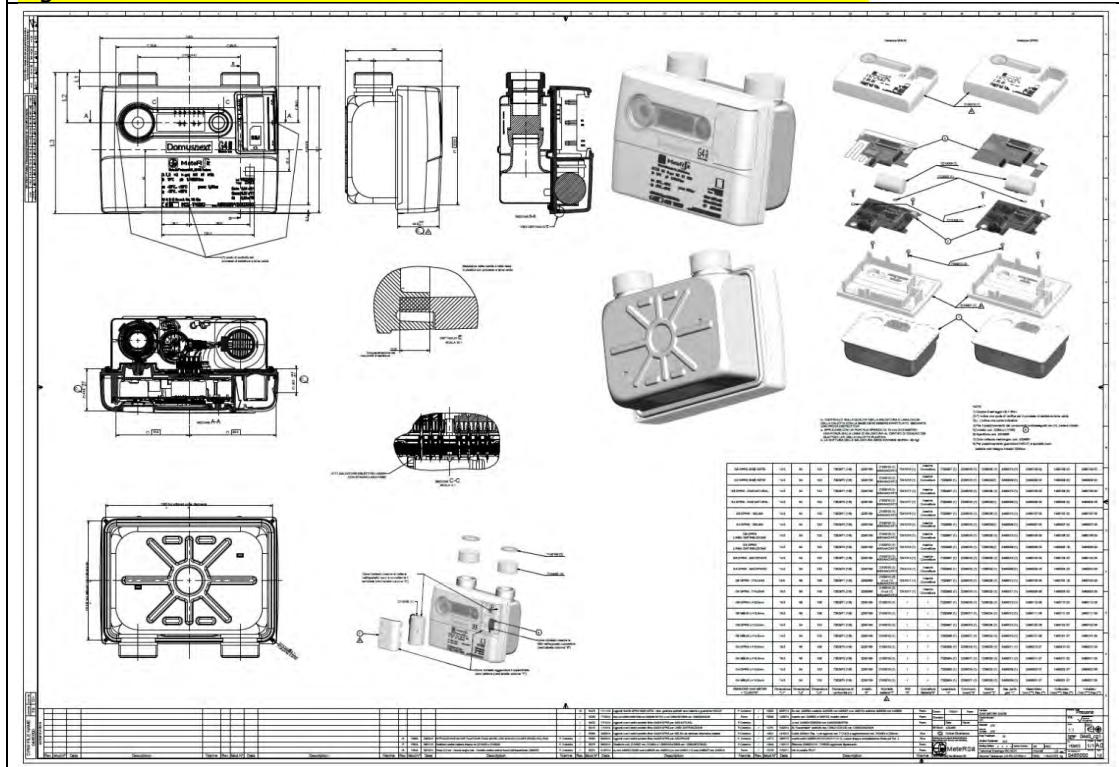
| <p>Viale dell'Industria 31, 35129 Padova</p>  |        | <p><b>G6 MBUS</b><br/>Made in Italy</p>   |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
|---|--------|---|---|--------------------------------|--------------|----------|--|----------|---|---|-------|----------|-------------------------|---|-------|----------|--|--|--|---------|--------|------------|-------------|--------------------------------|--------------|----------|---------|--|--|-----------------------|--|----|--|------|--|--|--|--|--|--|---------|--|--|--|--|--|--|---------------------|--|--|----------|-------|-----|--|----------------|--|--|-------------------|--------|--|--|-----------------|--|--|----------------|--------|---------|--|------------------------------------|--|--|------|--------|--------|--|
| <p><b>Cl. 1,5 H3 H-gas</b><br/><b>t<sub>n</sub> -25°C...+55°C</b><br/><b>t<sub>g</sub> -25°C...+55°C</b><br/><b>p<sub>max</sub> 0,5 (bar)</b></p>   |        | <p><b>t<sub>0</sub> = 15°C</b><br/><b>p<sub>0</sub> = 1,01325 (bar)</b><br/><b>Q<sub>min</sub> 0,06 (m³/h)</b><br/><b>Q<sub>max</sub> 10 (m³/h)</b><br/><b>Q<sub>i</sub> 1 (m³/h)</b></p>   |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <p>CE M 0122 T10362</p>   |        | <p>Metr. MTSK03YYZXXXXXX</p>  |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <p>YEAR OF CONSTRUCTION</p>   |        | <p>METER VERSION</p>  |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <p>METER MODEL</p>  |        | <p>PROGRESSIVE NUMBER</p>   |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <p>SPACE FOR LAST TWO DIGITS<br/>YEAR OF CONSTRUCTION</p>   |        | <p>Lot 0000000</p>  |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <p>CHARACTER FILLED</p>   |        | <p>DATA MATRIX CODE AREA</p> <ul style="list-style-type: none"> <li>- MTS= fixed digits mean MeterSit</li> <li>- K= year of construction - A for 2014 - B for 2015 ...</li> <li>- 03= fixed digits mean Gas Meter</li> <li>- YY= meter version; indicating the last two digits of the MeterSit product code</li> <li>- Z= meter model; indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25</li> <li>- XXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZXXXXXX</li> </ul> <p>ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW.</p> <p>MTSA030110000001</p> <p>PRODUCTION LOT from 0000001 to 9999999</p> |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <p>DRW FILE NAME: 7252966</p>   |        | <p>0122 T10362 Metr. MTSK03YYZXXXXXX</p> <p>SCALA 1:1</p>   |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| <table border="1"> <thead> <tr> <th>Rev.</th> <th>Mod.N°</th> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>3</td> <td></td> <td>13/05/14</td> <td>Aumentata la pressione massima di esercizio da 0,15 a 0,5 bar</td> </tr> <tr> <td>2</td> <td>15089</td> <td>09/05/14</td> <td>Rivisto: Obiettivamente</td> </tr> <tr> <td>1</td> <td>14791</td> <td>09/05/13</td> <td>Modificato numero progressivo lotto da 4 a 3 cifre</td> </tr> </tbody> </table> |        | Rev.  | Mod.N°  | Date                           | Description  | 3        |  | 13/05/14 | Aumentata la pressione massima di esercizio da 0,15 a 0,5 bar | 2 | 15089 | 09/05/14 | Rivisto: Obiettivamente | 1 | 14791 | 09/05/13 | Modificato numero progressivo lotto da 4 a 3 cifre | <table border="1"> <tr> <td>Disegn.</td> <td>03E713</td> <td>P. Colombo</td> <td>Description</td> <td>NAME PLATE (GAS METER) G6 MBUS</td> <td>Revised/Last</td> <td>Preserie</td> </tr> <tr> <td>Checked</td> <td></td> <td></td> <td>Tecnica e Informatica</td> <td></td> <td>Ra</td> <td></td> </tr> <tr> <td>Date</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SI Norm</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3">Critical Dimensions</td> <td>Material</td> <td>Scale</td> <td>2:1</td> <td></td> </tr> <tr> <td colspan="3">Hole Treatment</td> <td>Surface Treatment</td> <td>Shrink</td> <td></td> <td></td> </tr> <tr> <td colspan="3">Drawing Surface</td> <td>Surface Finish</td> <td>Volume</td> <td>[4] cm³</td> <td></td> </tr> <tr> <td colspan="3">General Tolerances UNI-EN 227682-K</td> <td>RESC</td> <td>Weight</td> <td>1,4 Kg</td> <td></td> </tr> </table> |  | Disegn. | 03E713 | P. Colombo | Description | NAME PLATE (GAS METER) G6 MBUS | Revised/Last | Preserie | Checked |  |  | Tecnica e Informatica |  | Ra |  | Date |  |  |  |  |  |  | SI Norm |  |  |  |  |  |  | Critical Dimensions |  |  | Material | Scale | 2:1 |  | Hole Treatment |  |  | Surface Treatment | Shrink |  |  | Drawing Surface |  |  | Surface Finish | Volume | [4] cm³ |  | General Tolerances UNI-EN 227682-K |  |  | RESC | Weight | 1,4 Kg |  |
| Rev.  | Mod.N° | Date  | Description   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| 3   |        | 13/05/14  | Aumentata la pressione massima di esercizio da 0,15 a 0,5 bar |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| 2   | 15089  | 09/05/14  | Rivisto: Obiettivamente                                       |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| 1   | 14791  | 09/05/13  | Modificato numero progressivo lotto da 4 a 3 cifre            |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| Disegn.   | 03E713 | P. Colombo  | Description   | NAME PLATE (GAS METER) G6 MBUS | Revised/Last | Preserie |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| Checked   |        |   | Tecnica e Informatica   |                                | Ra           |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| Date  |        |   |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| SI Norm   |        |   |   |                                |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| Critical Dimensions   |        |   | Material  | Scale                          | 2:1          |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| Hole Treatment  |        |   | Surface Treatment   | Shrink                         |              |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| Drawing Surface   |        |   | Surface Finish  | Volume                         | [4] cm³      |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |
| General Tolerances UNI-EN 227682-K  |        |   | RESC  | Weight                         | 1,4 Kg       |          |  |          |   |   |       |          |                         |   |       |          |  |  |  |         |        |            |             |                                |              |          |         |  |  |                       |  |    |  |      |  |  |  |  |  |  |         |  |  |  |  |  |  |                     |  |  |          |       |     |  |                |  |  |                   |        |  |  |                 |  |  |                |        |         |  |                                    |  |  |      |        |        |  |



### 3. MECHANICAL SPECIFICATIONS

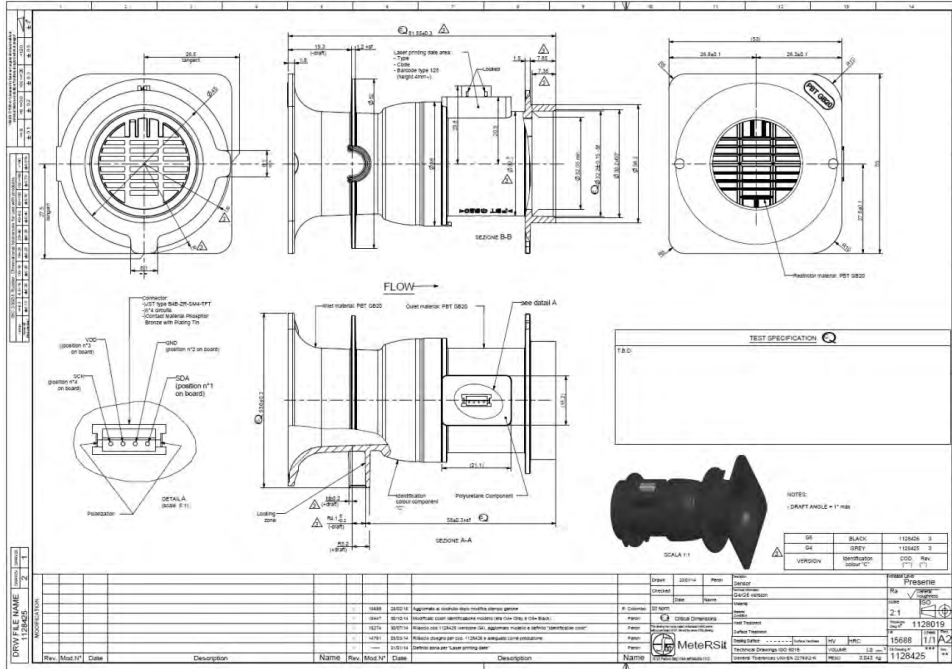
| Characteristic             | u.m. | Class G4        | Class G6                         | Note   |
|----------------------------|------|-----------------|----------------------------------|--|
| Connection centrelines     | [mm] | 110             | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different      |
| Max dimensions (H x L x s) | [mm] | 156 x 192 x 104 | 156 x 192 x 104<br>(plus flange) | Difference from V2.1: Bosses length has been increased of 4 mm |
| Connection diameter        | "    | G 1" 1/4        | G 1" 1/4<br>(1" 1/2 with flange) |  |
| Resistance to torque       | [Nm] | 110             | 140                              |  |
| Resistance to bending      | [Nm] | 40              | 40<br>(60 with flange)           |  |
| Weight                     | [Kg] | 1.7             | 1.7                              |  |

Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY – GPRS & MBUS

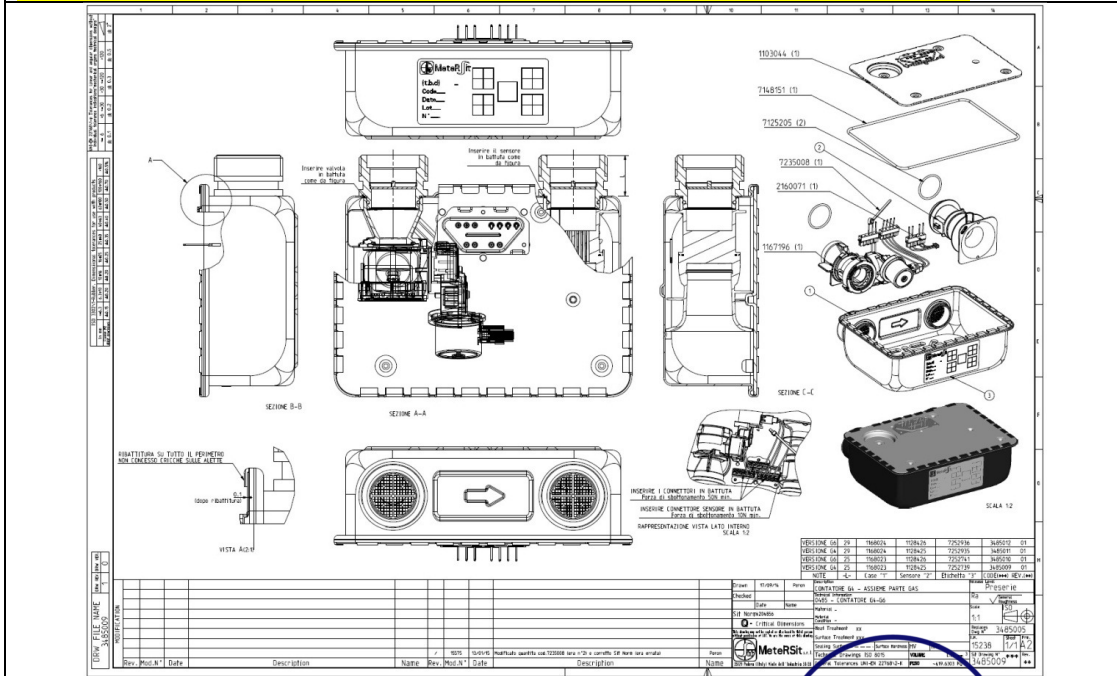




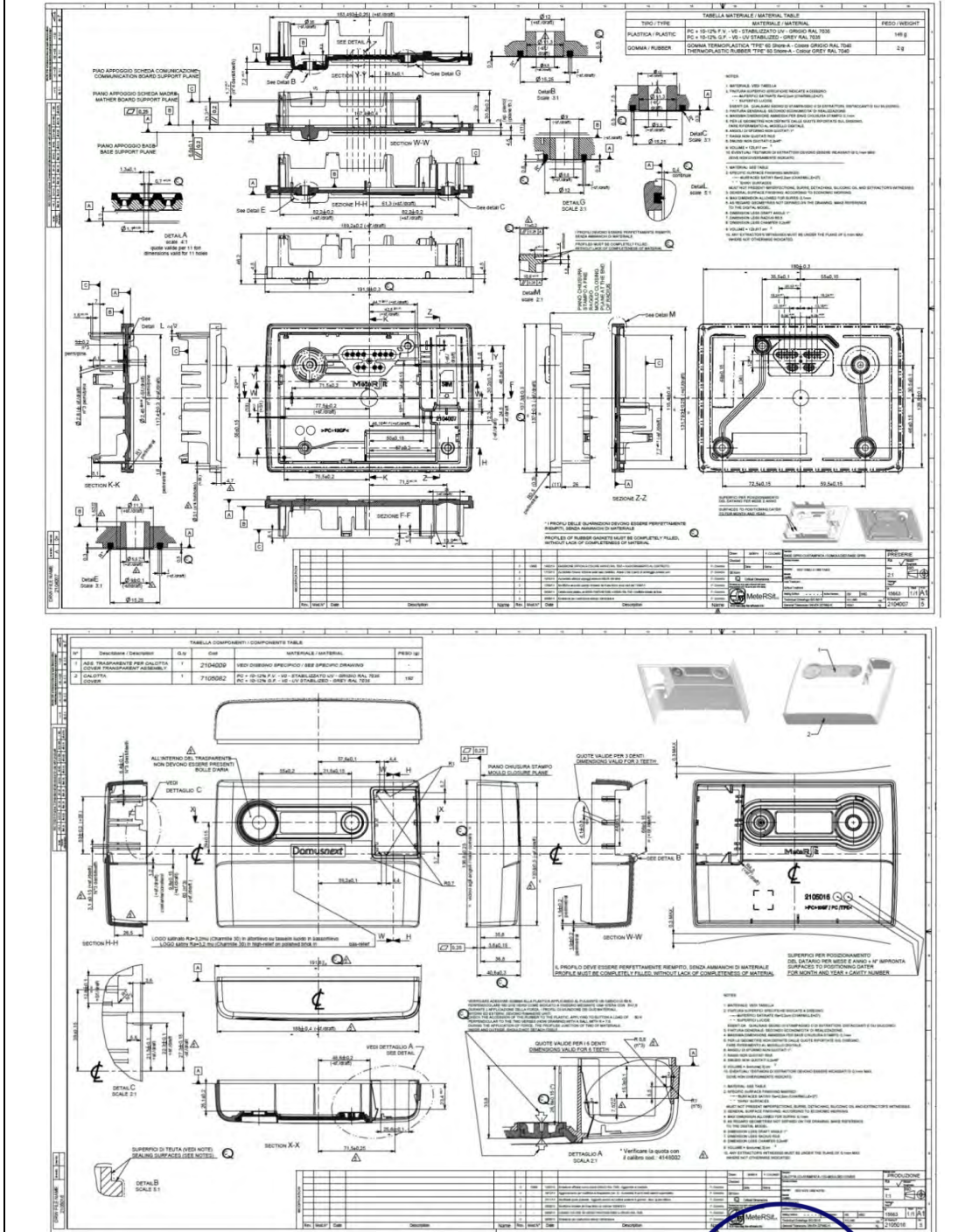
**Figure 3.2 – VIEW OF FLOW SENSOR V2.0**



**FIGURE 3.3 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE NEW VALVE**



**FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE (new colour)**



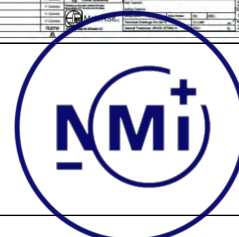
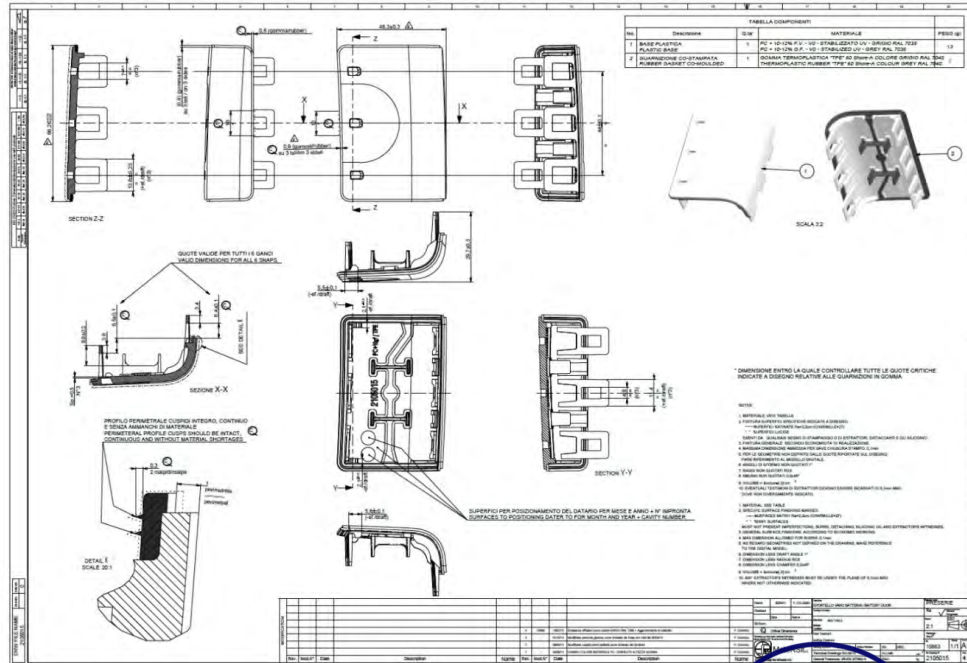
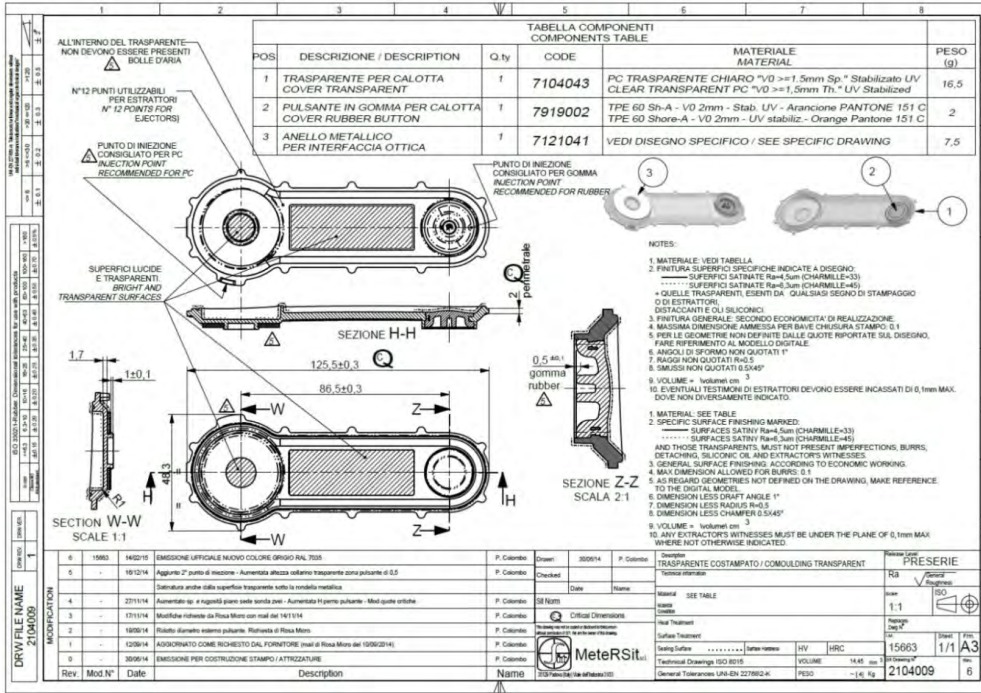


FIGURE 3.5 – GPRS -INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS

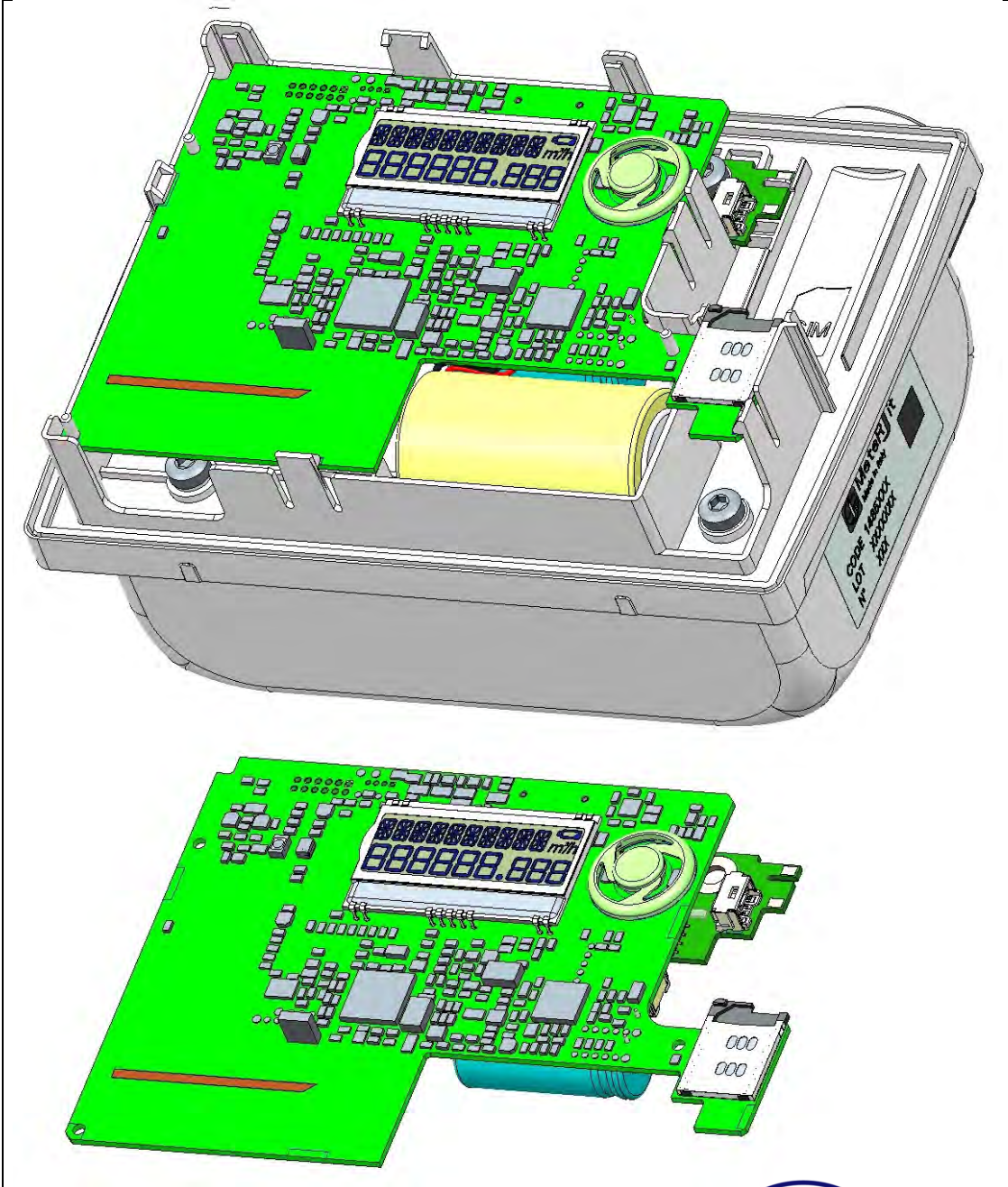


FIGURE 3.6 – WMBUS -INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS AND ANTENNA

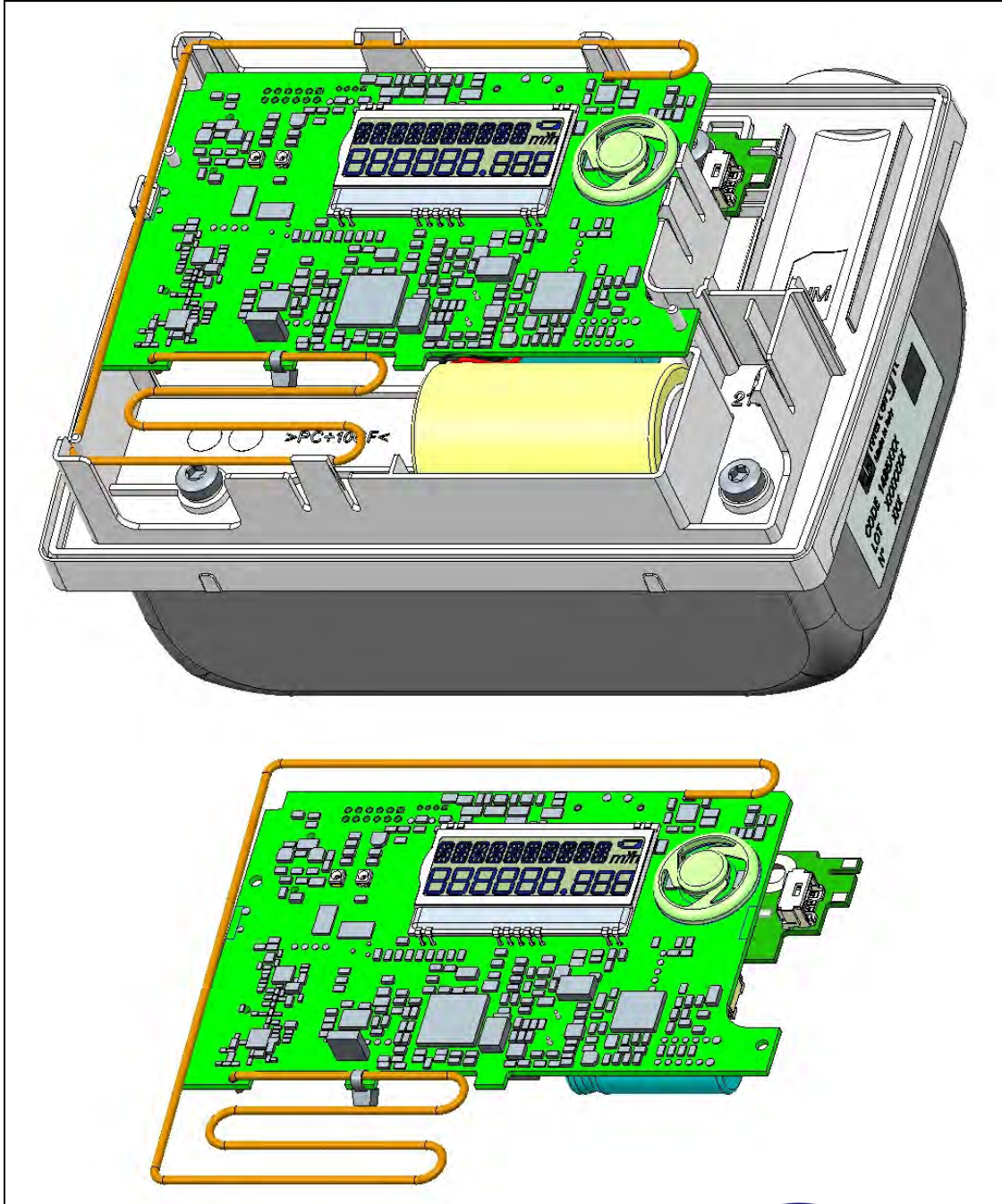
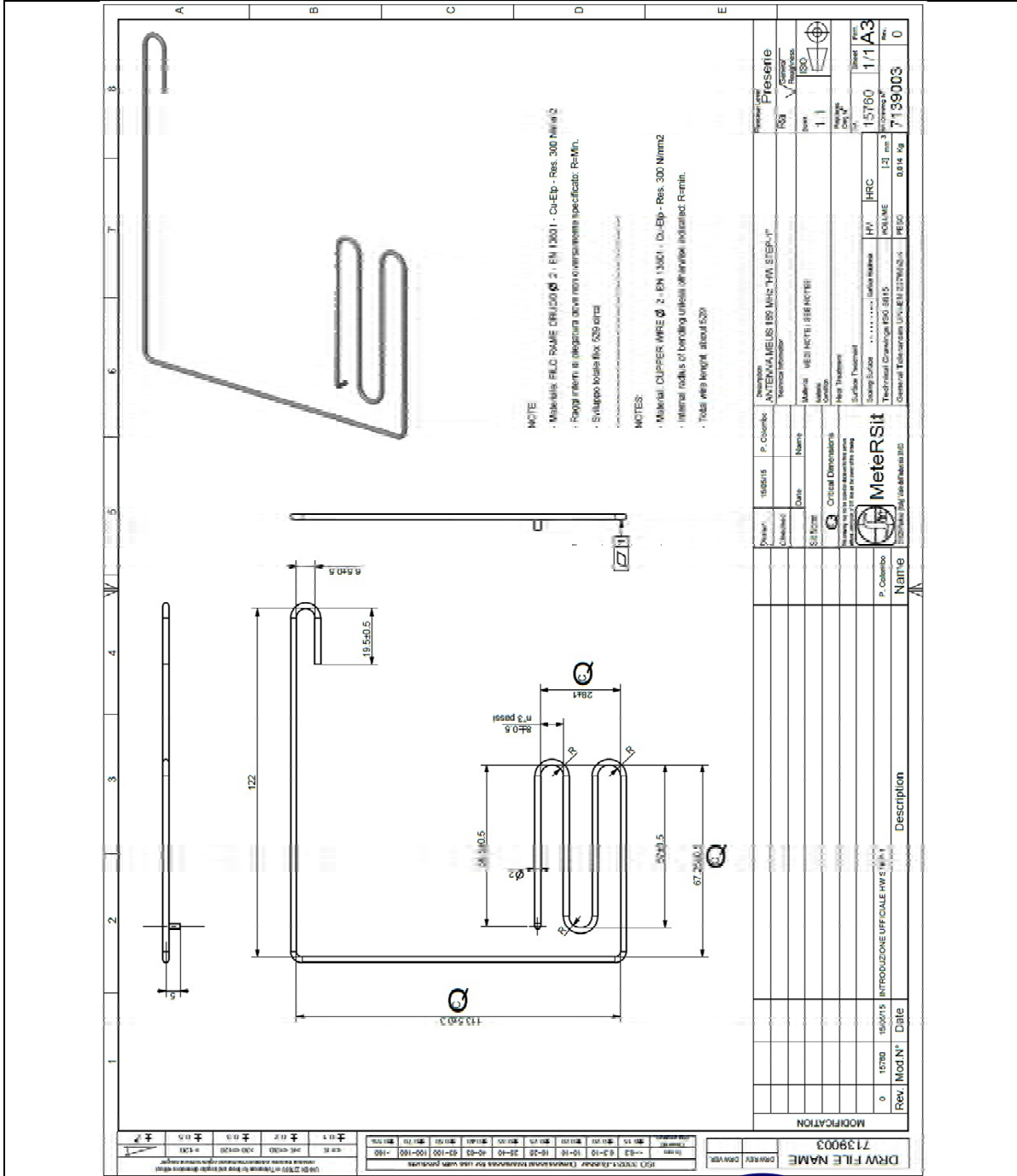


FIGURE 3.6 – WMBUS 169MHZ ANTENNA



## 6. PCB LAYOUT

### 6.1. GPRS Board layout

Figure 6.1 – GPRS board layout TOP view

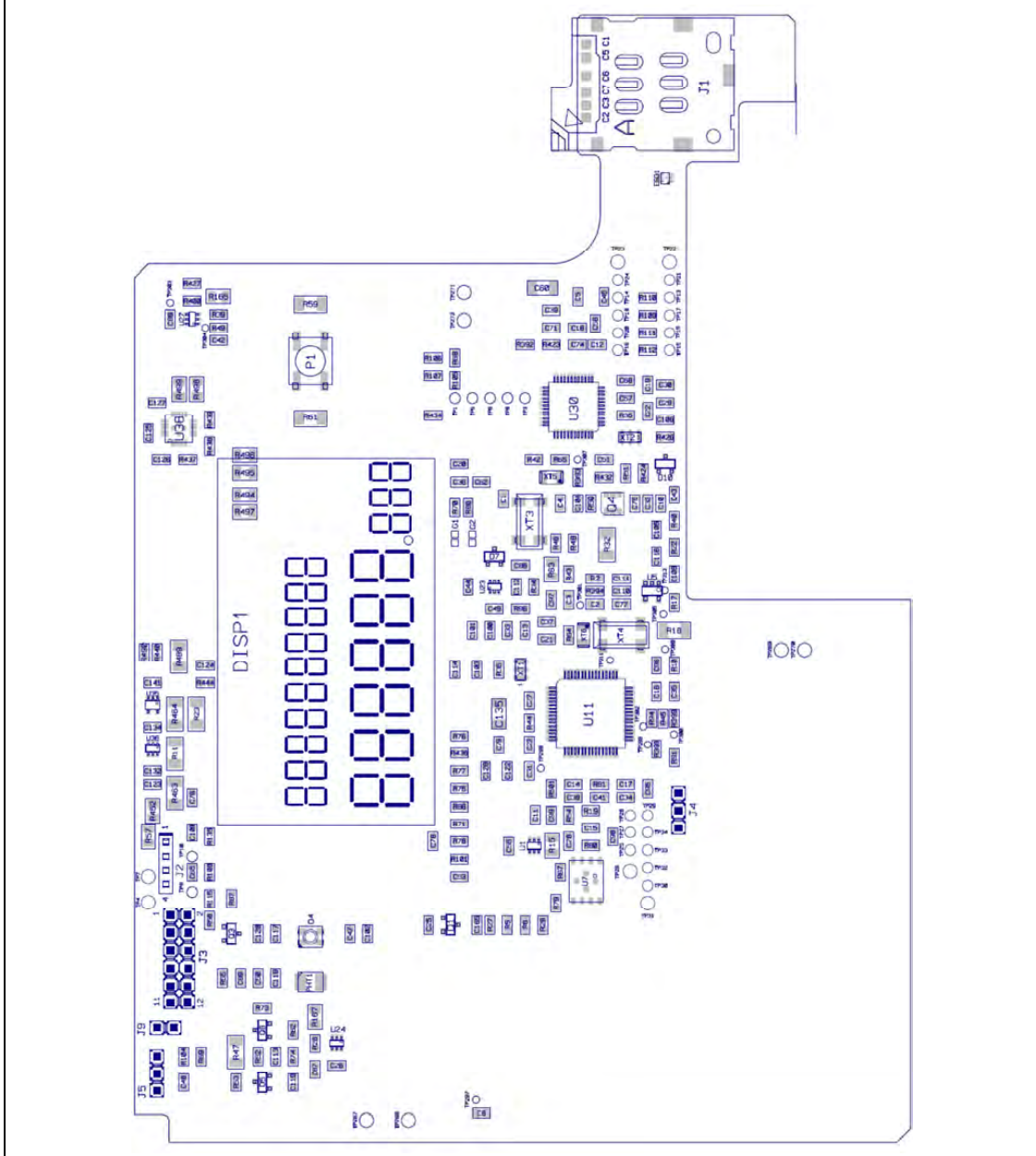
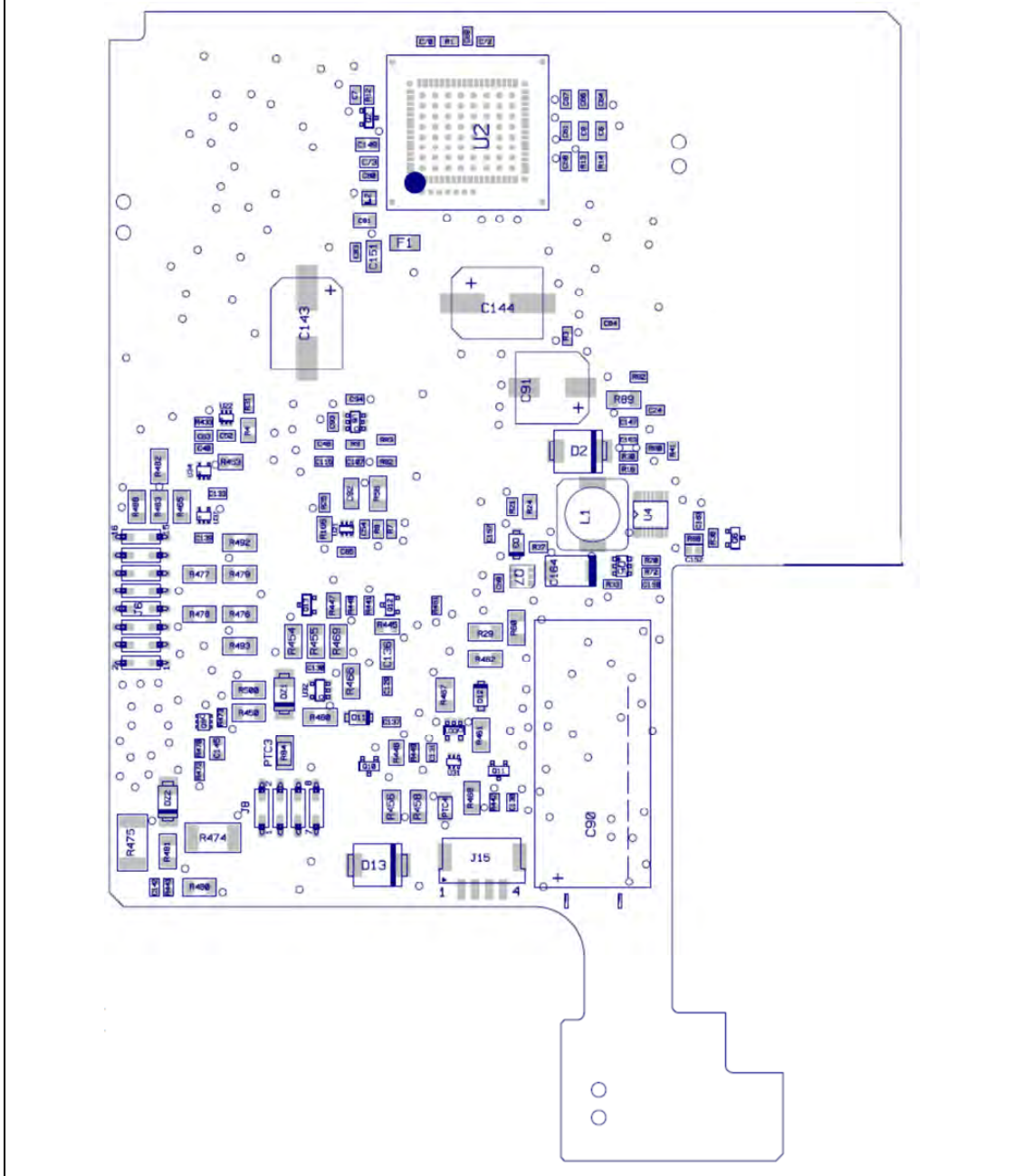


Figure 6.2 – GPRS board layout BOTTOM view





## 6.2. MBUS Board layout

Figure 6.3 – MBUS board layout TOP view

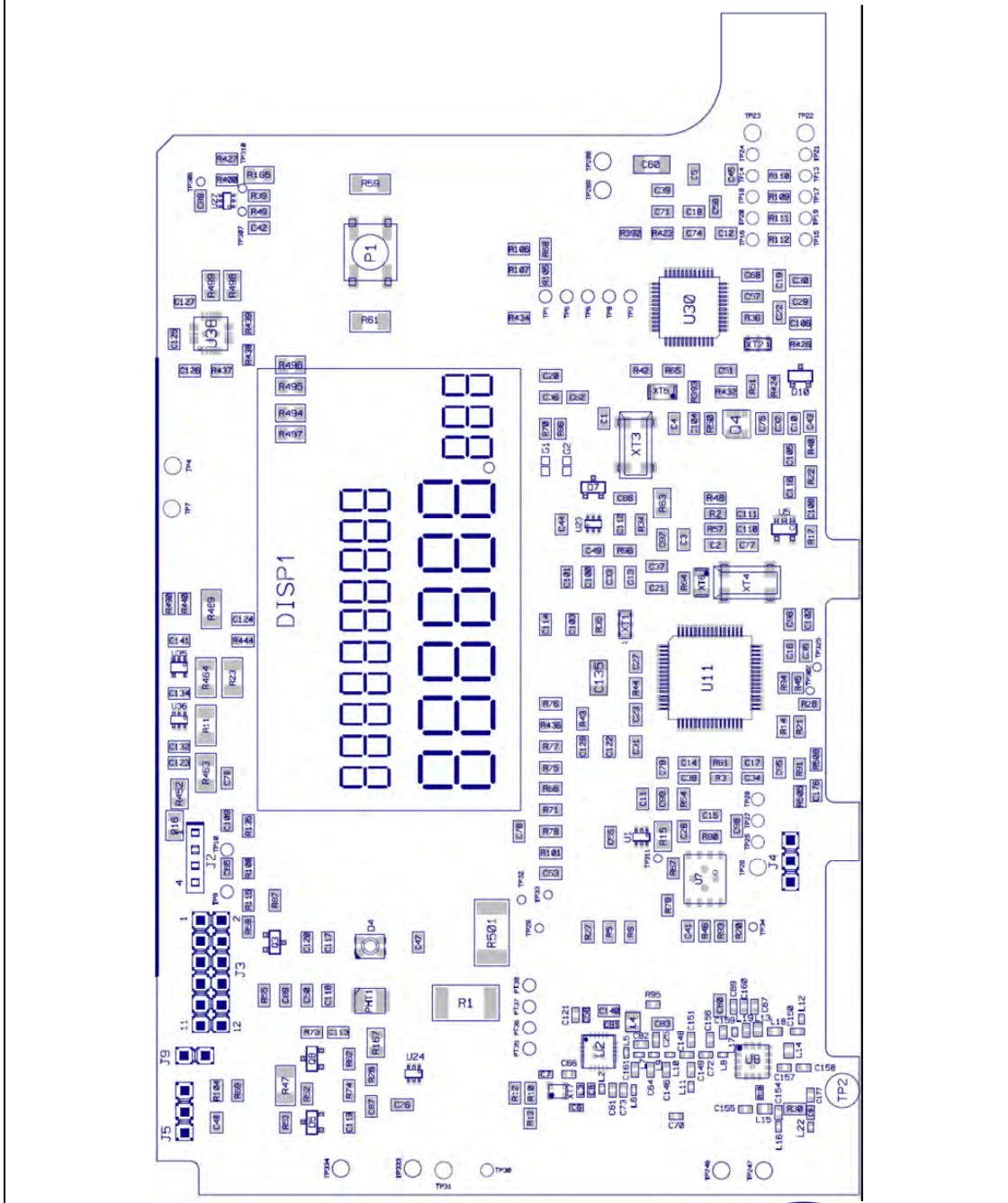
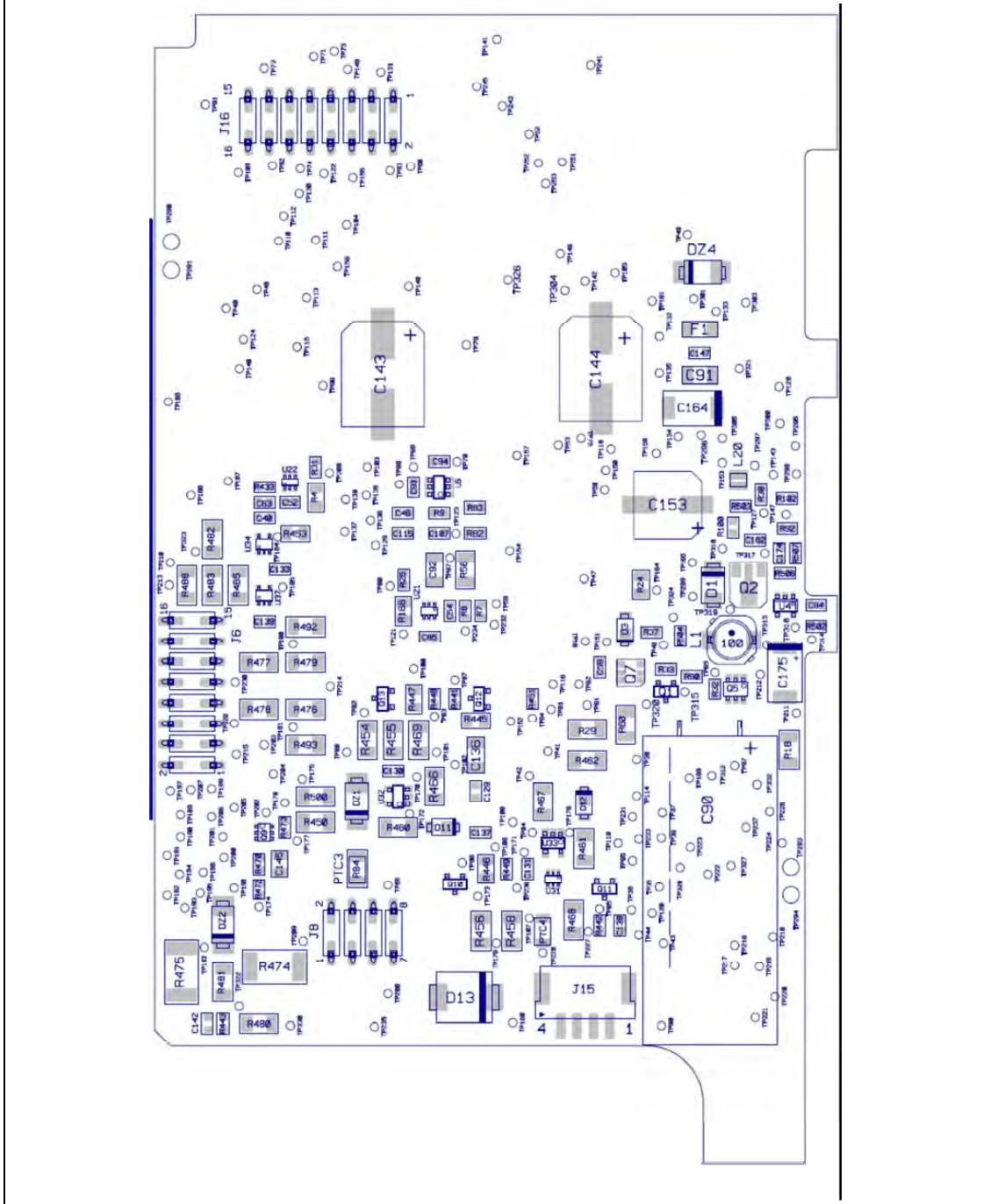
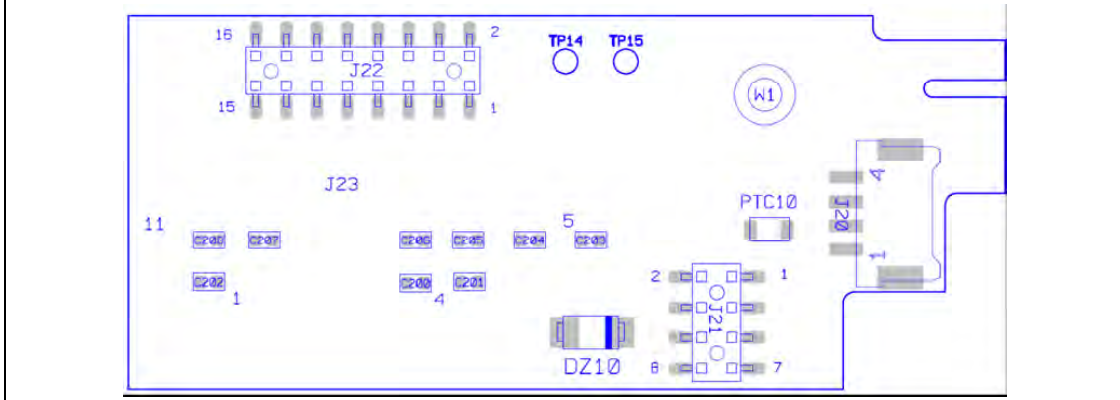


Figure 6.4 – MBUS board layout: BOTTOM view



### 6.3. Connection Board layout

Figure 6.5 – Connection board layout: TOP view



## 7. PART LIST

The gas meter includes the following main components:

| Component                    | Manufacturer       | Reference                             |
|------------------------------|--------------------|---------------------------------------|
| <b>Removable Battery</b>     | ---                | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Back-up Battery</b>       | ---                | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Electronic GPRS Board</b> | MR&D Institute Spa | See paragraph 5.1                     |
| <b>Electronic MBUS Board</b> | MR&D Institute Spa | See paragraph 5.2                     |
| <b>Connection Board</b>      | MR&D Institute Spa | See paragraph 5.3                     |
| <b>Display</b>               | Varitronix         | See Figure 10                         |
| <b>Gas Sensor</b>            | Sensirion          | See Figures 3.2 and 3.2.1             |
| <b>Metallic Gas Chamber</b>  | SIT S.p.A.         | See paragraph 3                       |
| <b>Plastic Case</b>          | MeterSit S.r.l.    | See Figure 3.5                        |

In the following paragraphs the part lists relative to the electronic boards are described in detail.





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# DOMUSNEXT® G4/G6 GAS METERS

TF10-005  
Version 2.5\_en

Page: 36 of 58  
Date: 29/05/2015

## 7.1. CPU board part list

| Titolo / Title  |          | BOM 2238029.3 (per item 1238038 e 1238040)                                   |           | METERSIT      |                       |                         |
|---|----------|--|-----------|---------------|-----------------------|-------------------------|
| Cliente / Customer  |          | MeterSit   |           | Codice / Code |                       |                         |
| Descrizione progetto  |          | Scheda GASMETER G4/G6 GPRS   |           | Progetto      |                       |                         |
| Stato / State   |          | RISERVATO  |           | Data / Date   |                       |                         |
| Project description   |          |  |           | Meter STEP1   |                       |                         |
|   |          |  |           | 16/04/15      |                       |                         |
| Reference   | Quantity | Description  | Value     | Not Mounted   | Manufacturer          | Manufacturer P/N        |
| U1,U21,U24,U27,U31,U36  |          | 8 Load Switch with reverse blocking 1A SC70-6                                |           |               | Vishay                | Sip3243DR3 - T1GE3      |
| C91   | 1        | ALUM.RAD. ELE. SMT PANASONIC SERIES FK 1500UF 6.3V 20% 10X10.2               | 1500u     |               | Panasonic             | EEEFKJ152P              |
| C164  | 1        | 1 SMD Alum. Elec. CAP 1500UF 6.3V EEPX0J151R PANASONIC                       | 150u      |               | Panasonic             | EEEFX0J151R             |
| C143  | 1        | 1 SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                               | 2200u     |               | NIC COMP              | NATT22M3.3V12.5X14KLBFB |
| C144  | 1        | 1 SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                               | 2200u     | NM            | NIC COMP              | NATT22M3.3V12.5X14KLBFB |
| C5,C10,C12,C14,C16-C23,C43-C45,C47,C55,C59,C85-C88,C106,C110,C128,C129,C132-C134,C153 | 31       | CAP SMD 0603 X5R 1UF 25V   | 1u        |               | Kemet                 | C0603C105K3PACTU        |
| C15,C130,C131   | 3        | CAP SMD 0603 X5R 1UF 25V   | 1u        | NM            | Kemet                 | C0603C105K3PACTU        |
| C90,C92,C135,C136,C151  | 5        | CAP SMD 1206 X5R 100UF 6,3V  | 100u      |               | MURATA                | GRM031CR60J107ME39L     |
| C57,C62,C68,C71,C74,C95-C105,C111,C142,C157   | 19       | CAP SMD 0603 X7R 10NF 50V  | 10n       |               | Murata                | GRM188R71H103KA01J      |
| C61,C64,C66,C67   | 4        | CAP SMD 0603 X7R 22PF 50V  | 22p       |               | AVX                   | 0603SA220KAT2A          |
| C108  | 1        | CAP SMD 0603 X7R 100PF 50V   | 100p      |               | AVX                   | 0603SC101KAT2A          |
| C113-C118   | 6        | CAP SMD 0603 X7R 100PF 50V   | 100p      | NM            | AVX                   | 0603SC101KAT2A          |
| C81,C149  | 2        | CAP SMD 0805 X7R 10UF 10V  | 10u       |               | Murata                | GRM21BR71A106KE51       |
| C145  | 1        | CAP SMD 0805 X5R 22UF 6,3V   | 22u       |               | Murata                | GRM21BR60J226ME39L      |
| C7,C25,C72,C73,C83,C165   | 6        | CAP SMD 0603 COG 33PF 50V  | 33p       |               | Murata                | VJ0603A330JACV1EBC      |
| C1,C4   | 2        | CAP SMD 0603 COG 6,8PF 25V   | 6.8p      |               | AVX                   | 0603A6R8CAT2A           |
| C2,C3   | 2        | CAP SMD 0603 COG 6,8PF 25V   | 6.8p      | NM            | AVX                   | 0603A6R8CAT2A           |
| C137-C139   | 3        | CAP SMD 0603 X7R 1NF 50V   | 1n        |               | Murata                | GCN188R71H102KA37D      |
| C93,C94,C124,C163   | 4        | CAP SMD 0603 X7R 220NF 25V   | 220n      |               | Kemet                 | C0603C224K3PACTU        |
| C6,C8,C9,C11,C24,C26-C42,C46,C48-C52,C54,C56,C65,C75                                  | 43       | CAP SMD 0603 X7R 100NF 16V   | 100n      |               | Kemet                 | C0603C104K5RAC7013      |
| C79,C109,C122,C125-C127,C147,C152   | 4        | CAP SMD 0603 X7R 100NF 16V   | 100n      | NM            | Kemet                 | C0603C104K5RAC7013      |
| C53,C112,C123,C158  | 2        | CAP SMD 0603 X5R 10UF 6,3V   | 10u       |               | Kemet                 | C0603C106M9PACTU        |
| C58,C141  | 1        | CAP SMD 0603 X5R 10UF 6,3V   | 10u       | NM            | Kemet                 | C0603C106M9PACTU        |
| C63   | 1        | CAP SMD 0603 X5R 10UF 6,3V   | 10u       | NM            | Kemet                 | C0603C106M9PACTU        |
| C84   | 1        | CAP SMD 0603 X5R 10UF 10V  | 10u       |               | TDK                   | C1608K5R1A106K          |
| C89   | 1        | CAP SMD 0603 X5R 10UF 10V  | 10u       | NM            | TDK                   | C1608K5R1A106K          |
| C107  | 1        | CAP SMD 0805 X5R 2,2UF 10V   | 2.2u      |               | Murata                | GRM188R61A225ME34D      |
| C69,C70   | 2        | CAP SMD 0603 NPO 22PF 50V  | 22p       | NM            | Kemet                 | C0603C220J5GACTU        |
| C115,C120   | 2        | CAP SMD 0603 COG 220PF 50V   | 220p      |               | Murata                | GRM188SC1H221FA01D      |
| C80   | 1        | CAP SMD 0603 COG 10PF 50V ±5%  | 10p       |               | Murata                | GCN188SC1H100JA16D      |
| C90   | 1        | Supercapacitor, LOW ESR 35F 2.7V   | 35        |               | Cooper Bussmann       | HV1635-2R7356-R         |
| Q2,Q3   | 2        | NPN Transistor Bipolar SMD case SOT23  |           |               | Philips               | BC847,BC847C            |
| Q1  | 1        | NPN Digital Resistor Transistor case SOT23                                   |           |               | Rohm                  | DT0144EKA               |
| Q9  | 1        | COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                     |           |               | Diodes                | BC847PN-7F              |
| Q8  | 1        | PNP TRANSISTOR BIPOLAR SMD CASE SOT23  |           |               | PHILIPS               | BC857                   |
| D5  | 1        | Dual Switching diode 0,15 A / 60 V , Case SOT23 BAV99                        |           |               | Philips               | BAV99                   |
| D7,D10  | 2        | Dual Schottky Diode, Common Cathode 250mA , SOT23 BAT54C                     |           |               | Philips               | BAT54C                  |
| D13   | 1        | Schottky SMD Case DQ-214AB 20V 3A  |           |               | General Semiconductor | SS32                    |
| D3,D11,D12  | 3        | SMD_Schottky_Diode_1A_20V  |           |               | Diode Incorporated    | DFLS120L-7              |
| D2  | 1        | 5.0 Amp surface mount silicon Schottky SMC                                   |           |               | CENTRAL SEMICONDUCT   | CMSH5-20                |
| Q4,Q7   | 2        | P-channel enhancement mode MOS transistor, -12V, -1.5A, SOT457               |           |               | Philips               | SSH207                  |
| Q6,Q10-Q13  | 1        | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -20V -6A 70MOHM SOT26             |           |               | DIODES INCORPORATED   | DMP2035UVT-7            |
| Q5  | 5        | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                 |           |               | Philips               | BSH105                  |
| D4  | 1        | HIGH POWER INFRARED EMITTER DIODE  |           |               | OSRAM                 | SFH4250                 |
| D21,D22   | 2        | SMD zener diode Case DO-214 1.25W Vishay 7.5V BZG05C6V2                      |           |               | Vishay                | BZ305C7V5               |
| F1  | 1        | Film Fuse SMD - LITTELFUSE 0466.002 (1206)                                   |           |               | Littelfuse            | 0466.002NR              |
| PTC3,PTC4   | 2        | Polyswitch Resettable Device SMD 1206 - 0.8W - 0.2 / 0.8Ohm IH=0.5A IT=1.10A |           |               | Tyco Electronics      | NanoSMDC050F            |
| ESD1  | 1        | ESD protection for high speed interface                                      |           |               | ST Microelectronics   | ESDALCV1-SP6            |
| PHT1  | 1        | NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA                          |           |               | OSRAM                 | SFH320FA                |
| L2  | 1        | SMD INDUCTOR - COILCAFT 200nH DCR=24MA IRMS=2.2A                             | 200n      |               | Coilcraft             | XPL2010-201MLB          |
| L1  | 1        | Ferrite drum core construction 10X10 2.5uH                                   | 2.5u      |               | SUMIDA                | CDRH104R-2R5            |
| U5  | 1        | 1.5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR        |           |               | TOREX                 | XC6118C158MR-G          |
| U6  | 1        | Texas_Buck_Boost_Charge_Pump_Tmn_SOT123-6_50mA_3V                            |           |               | Texas Instruments     | REG110A-5               |
| U7  | 1        | 8 Mbit, low voltage, Page-Erasable Serial Flash memory                       |           |               | Numonyx               | M45PE80-VMP6G           |
| CS  | 1        | CS Scheda GPRS Contatore Gas G4/G6   |           |               | MRD                   | MS09CS0009_1513         |
| ATT1  | 1        | PLASTIC SWITCH   |           |               | MesaRat               | 7117002                 |
| XT3   | 1        | Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-032K768000ZRF1                   | MHZ       |               | CITIZEN               | CM200C-032K768000ZRF1   |
| XT4   | 1        | Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-032K768000ZRF1                   | 32.768kHz | NM            | CITIZEN               | CM200C-032K768000ZRF1   |
| XT5,XT6   | 2        | QUARTZ SMD 32.768MHz +-10ppm NDK   |           | NM            | NDK                   | NX3215SA_32.768MHz      |
| R427  | 1        | RESISTOR SMD 0603 - 0.6W 1% 47   | 47        |               | Vishay                | CRW060347R0F            |
| R41   | 1        | RESISTOR SMD 0603 - 0.6W 1% 100  | 100       |               | Vishay                | CRW0603100R             |
| R91,R94,R106-R112,R424  | 10       | RESISTOR SMD 0603 - 0.6W 5% 470  | 470       |               | Vishay                | CRW0603470R             |
| R62   | 1        | RESISTOR SMD 0603 - 0.6W 1% 560  | 560       |               | Vishay                | CRW0603560R             |
| R92,R444  | 2        | RESISTOR SMD 0603 - 0.6W 1% 2.7K   | 2.7K      |               | Vishay                | CRW06032K70F            |
| R73   | 1        | RESISTOR SMD 0603 - 0.6W 1% 3.9K   | 3.9K      |               | Vishay                | CRW06033K90F            |
| R74   | 1        | RESISTOR SMD 0603 - 0.6W 1% 4.7K   | 4.7K      |               | VISHAY                | CRW06034K70F            |
| R52   | 1        | RESISTOR SMD 0603 - 0.6W 5% 8.2K   | 8.2K      |               | Vishay                | CRW06038K20J            |
| R21   | 1        | RESISTOR SMD 0603 - 0.6W 1% 2K   | 2K        |               | Vishay                | CRW06032K00F            |





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## DOMUSNEXT® G4/G6 GAS METERS

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| Titolo / Title  |          | BOM 2238029.3 (per item 1238038 e 1238040)   |          | METERSIT           |                              |                             |
|---|----------|--|----------|--------------------|------------------------------|-----------------------------|
| Cliente / Customer  |          | MeterSit   |          | Code / Code        | 2238029.3                    |                             |
| Descrizione progetto / Project description  |          | Scheda GASMETER G4/G6 GPRS   |          | Progetto / Project | Meter STEP1                  |                             |
| Stato / State   |          | RISERVATO  |          | Data / Date        | 16/04/15                     |                             |
| Reference   | Quantity | Description  | Value    | Not Mounted        | Manufacturer                 | Manufacturer P/N            |
| R2,R3,R5-R10,R43,R45,R46,R66,R67,R69-R71,R75-R81,R86,R96,R104,R115,R392-R394,R398,R399,R423,R432,R434,R437-R439 | 38       | RESISTOR SMD 0603 - 0.06W 1% 10K   | 10K      |                    | Vishay                       | CRCW060310K0F               |
| R68,R101,R105,R501  | 4        | RESISTOR SMD 0603 - 0.06W 1% 10K   | 10K      | NM                 | Vishay                       | CRCW060310K0F               |
| R90   | 1        | RESISTOR SMD 0603 - 0.06W 1% 18K   | 18K      |                    | Vishay                       | CRCW060318K0F               |
| R92   | 1        | RESISTOR SMD 0603 - 0.06W 1% 39K   | 39K      |                    | Vishay                       | CRCW060339K0F               |
| R13,R14,R16,R19,R30,R72,R135  | 7        | RESISTOR SMD 0603 - 0.06W 1% 100K  | 100K     |                    | Vishay                       | CRCW0603100K0F              |
| R20,R88,R440  | 3        | RESISTOR SMD 0603 - 0.06W 1% 100K  | 100K     | NM                 | Vishay                       | CRCW0603100K0F              |
| R17   | 1        | RESISTOR SMD 0603 - 0.06W 1% 1.2M  | 1.2M     |                    | Vishay                       | CRCW06031M20PFKEA           |
| R426,R441-R443  | 4        | RESISTOR SMD 0603 - 0.06W 1% 1M  | 1M       |                    | Vishay                       | CRCW06031M00F               |
| R37,R38,R40,R48   | 4        | RESISTOR SMD 0603 - 0.06W 1% 2M  | 2M       |                    | Vishay                       | CRCW06032M00F               |
| R25,R26,R31,R34,R400,R448,R449,R451   | 8        | RESISTOR SMD 0603 - 0.06W 1% 10M   | 10M      |                    | Vishay                       | CRCW060310M0PFKEA           |
| R1,R35,R36,R49,R65,R433,R436,R490   | 8        | RESISTOR SMD 0603 - 0.06W 1% 0   | 0        |                    | Vishay                       | CRCW06030000Z               |
| R39,R42,R44,R51,R54,R58,R64   | 7        | RESISTOR SMD 0603 - 0.06W 1% 0   | 0        | NM                 | Vishay                       | CRCW06030000Z               |
| R22,R33   | 2        | RESISTOR SMD 0603 - 0.1W 1% 432 CRCW0603432RFKEA   | 432      |                    | Vishay                       | CRCW0603432RFKEA            |
| R27,R28   | 2        | RESISTOR SMD 0603 - 0.06W 1% 1.3K  | 1.3K     |                    | Vishay                       | CRCW06031K30PFKEA           |
| R12   | 1        | RESISTOR SMD 0603 - 0.06W 5% 10K   | 10K      |                    | Vishay                       | CRCW060310K0J               |
| R53   | 1        | RESISTOR SMD 0603 - 0.06W 1% 22K   | 22K      |                    | Vishay                       | CRCW060322K0F               |
| R83   | 1        | RESISTOR SMD 0603 - 0.06W 1% 47K   | 47K      |                    | Vishay                       | CRCW060347K0F               |
| R55   | 1        | RESISTOR SMD 0603 - 0.06W 1% 470K  | 470K     |                    | Vishay                       | CRCW0603470K0F              |
| R67   | 1        | RESISTOR SMD 0603 - 0.06W 1% 470K  | 470K     | NM                 | Vishay                       | CRCW0603470K0F              |
| R50   | 1        | RESISTOR SMD 0603 - 0.06W 1% 680K  | 680K     |                    | Vishay                       | CRCW0603680K0F              |
| R470,R472,R473  | 3        | RESISTOR SMD 0603 - 0.06W 1% 4.7M  | 4.7M     |                    | Vishay                       | CRCW06034M70F               |
| R4,R165-R167,R445-R447  | 7        | RESISTOR SMD 0805 - 0.125W 1% 330  | 330      |                    | Vishay                       | CRCW0805330RF               |
| R15,R62,R452,R453   | 2        | RESISTOR SMD 0805 - 0.125W 1% 1K   | 1K       |                    | Vishay                       | CRCW08051K00F               |
| R24,R57   | 2        | RESISTOR SMD 0805 - 0.125W 1% 1K   | 1K       | NM                 | Vishay                       | CRCW08051K00F               |
| R494-R497   | 4        | RESISTOR SMD 0805 - 0.125W 5% 1K   | 1K       |                    | Vishay                       | CRCW08051K00J               |
| R498,R499   | 2        | RESISTOR SMD 0805 - 0.125W 1% 3.3  | 3.3      |                    | Vishay                       | CRCW08053R30F               |
| R23,R94,R462,R465   | 4        | RESISTOR SMD 1206 - 0.25W - 5% 0   | 0        | NM                 | Vishay                       | CRCW12060R0J                |
| R460,R461,R463,R464   | 4        | RESISTOR SMD 1206 - 0.25W - 5% 0   | 0        |                    | Vishay                       | CRCW12060R0J                |
| R89   | 1        | RESISTOR SMD 1206 - 0.25W 1% 2   | 2        |                    | KOA                          | FK73H2BT TD2R00F            |
| R454-R456,R458  | 4        | RESISTOR SMD 1206 - 0.25W 1% 18  | 18       |                    | Vishay                       | CRCW120618R0PFKEA           |
| R47,R469  | 2        | RESISTOR SMD 1206 - 0.25W - 1% 100   | 100      |                    | Vishay                       | CRCW1206100RF               |
| R29   | 1        | RESISTOR SMD 1206 - 0.25W - 2% 330   | 330      |                    | Vishay                       | CRCW1206330RF               |
| R11   | 1        | RESISTOR SMD 1206 - 0.25W 1% 2.2   | 2.2      | NM                 | Vishay                       | CRCW12062R20FNEB            |
| R482,R483   | 2        | RESISTOR SMD 1206 - 0.25W 1% 2.2   | 2.2      |                    | Vishay                       | CRCW12062R20FNEB            |
| R488  | 1        | RESISTOR SMD 1206 - 0.25W - 1% 2.2K  | 2.2K     | NM                 | Vishay                       | CRCW12062K20F               |
| R466,R467   | 2        | RESISTOR SMD 1206 - 0.25W 1% 40.2K   | 40.2K    | NM                 | Vishay                       | CRCW120640K2FKEA            |
| R60,R61   | 2        | RESISTOR SMD 1206 - 0.25W 1% 1K  | 1K       |                    | Vishay                       | CRCW12061K00FKEA            |
| R59,R492,R493   | 3        | RESISTOR SMD 1206 - 0.25W - 2% 10K   | 10K      |                    | Vishay                       | RCW120610K0GTT              |
| R32,R460,R461   | 3        | RESISTOR SMD 1206 - 0.25W 1% 47K   | 47K      |                    | Vishay                       | CRCW120647K0F               |
| R18   | 1        | RESISTOR SMD 1206 - 0.25W 1% 910K  | 910K     |                    | Vishay                       | CRCW1206910KFKTA            |
| R468,R469   | 2        | RESISTOR SMD 1206 - 0.25W 1% 1M CRCW12061MFN   | 1M       |                    | Vishay                       | CRCW12061MFN                |
| R450  | 1        | RESISTOR SMD 1206 - 0.25W 1% 10M   | 10M      |                    | Vishay                       | CRCW120610M0PFHEAP          |
| R56   | 1        | RESISTOR SMD 1206 - 0.5W - 5% 10 CRCW120610R0LINEAHP   | 10       |                    | Vishay                       | CRCW120610R0LINEAHP         |
| R476-R479   | 4        | RESISTOR SMD 1206 - 0.25W - 1% 180 CRCW1206180RFN  | 180      |                    | Vishay                       | CRCW1206180RFN              |
| R500  | 1        | RESISTOR SMD 1206 - 0.25W 1% 4.7M  | 4.7M     |                    | Vishay                       | CRCW12064M70FKEA            |
| R474,R475   | 2        | RESISTOR SMD 2512 - 1W 5% 1K   | 1K       |                    | Vishay                       | CRCW25121K00J               |
| U30   | 1        | MICROCONTROLLER STM8S8 BIT MCU 64KBFLASH 2KBRAM 1KEEPROM LQFP48                              |          |                    | ST Microelectronics          | STM8L151QRT6                |
| U11   | 1        | ARM_32bit Low_Power_6pin_256kFlash_32kRam_LQFP   |          |                    | ST Microelectronics          | STM32L151RCT6A              |
| U2  | 1        | GSM/GPRS & M2M MODULE  |          |                    | SIERRA Wireless              | HL628-2.8V                  |
| U4  | 1        | HIGH FREQUENCY, HIGH POWER, LOW NOISE DC-DC CONVERTER  |          |                    | MAXIM - Dallas Semiconductor | MAX1708EE                   |
| U38   | 1        | Low Voltage Stepper and Single-Dual DC Motor Driver  |          |                    | ALLEGRO                      | A3969SESTR-T                |
| P1  | 1        | BUTTON MINIATURE; SMD;6X6 ITT-CANNON COD. KSC351J  |          |                    | ITT CANNON                   | KSC351J                     |
| XT1_XT2   | 2        | Ceramic Resonator Murata CSTCE8M00G55A-R0 8MHz   | 8MHz,MHZ |                    | Murata                       | CSTCE8M00G55A-R0            |
| DISP1   | 1        | 12C_DISPLAY  |          |                    | VARIATIONX LIMITED           | CDS-VLIT1540A-01            |
| U34,U35,U37   | 3        | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF 40mA                           |          | NM                 | Texas Instruments            | TFS229492CKR                |
| U32,U33   | 2        | Protect High-Side Load Switch, 1AMax, 2.4 to 5.5 Supply Voltage Range, Low quiescent current |          | NM                 | ANALOGIC TECH                | AAT4610BGV-1                |
| J3  | 1        | DOUBLE ROW STRAIGHT PITCH 2 X 6 2.54 mm SAMTEC   |          | NM                 | SAMTEC                       | TSW-106-07-G-D              |
| J6  | 1        | 16_Pin_male_SMT_DIL_2.54mm   |          |                    | ADAM TECH                    | DPH-2-16-U-1A13534-1-PP-T/R |
| J1  | 1        | PLUG IN SIM CARD CONNECTOR   |          |                    | JAE                          | SF9W08S4A9                  |
| J9  | 1        | SINGLE ROW STRAIGHT PITCH X 2 2.54 mm SAMTEC TSW-102-07-G-S                                  |          | NM                 | SAMTEC                       | TSW-102-07-G-S              |
| J4,J5   | 2        | SINGLE ROW STRAIGHT PITCH X 3 2.54 mm SAMTEC   |          | NM                 | SAMTEC                       | TSW-103-07-G-S              |
| J2  | 1        | 4 pins Strip vertical pitch 2mm  |          | NM                 | SAMTEC                       | TMM-104-01-T-S              |
| J8  | 1        | 8_Pin_male_SMT_DIL_2.54mm  |          |                    | ADAM TECH                    | DPH-2-08-U-1A13534-1-PP-T/R |
| J15   | 2        | mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW,VERT, 4 CIRCUIT                                  |          |                    | MOLEX                        | 50243-0470                  |
| J1_SL   | 1        | CONN SIM CARD PUSH-PULL SNAP-IN  |          |                    | JAE                          | SF9-ST51-A                  |





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### 7.2. MBUS board part list

| Titolo / Title  |          | BOM 2238028.5 (per ITEM 1238037 e 1238039)                       |       | METERSIT         |                       |                            |
|---|----------|--|-------|------------------|-----------------------|----------------------------|
| Cliente / Customer  |          | MeterSIT   |       | Codice / Code    |                       |                            |
| Descrizione progetto  |          | Scheda GASMETER G4/G6 MBUS                                       |       | Progetto Project |                       |                            |
| Stato / State   |          | RISERVATO  |       | Data / Date      |                       |                            |
| Reference   | Quantity | Description  | Value | Not Mounted      | Manufacturer          | Manufacturer P/N           |
| ATT1  |          | 1 PLASTIC SWITCH   |       |                  | MeterSIT              | 7117002                    |
| ANT1  |          | 1 LOOP ANTENNA 169MHZ  |       |                  | MeterSIT              | 7139003                    |
| CS  |          | 1 CS Scheda MBUS Contatore Gas G4/G6                             |       |                  | MRD                   | MS09CS0110_1505            |
| C1,C4   |          | 2 CAP SMD 0603 COG 6.8PF 25V                                     | 6,8p  | NM               | AVX                   | 06033A6R8CA72A             |
| C2,C3   |          | 2 CAP SMD 0603 COG 6.8PF 25V                                     | 6,8p  |                  | AVX                   | 06033A6R8CA72A             |
| C5,C10,C12-C14,C16-C23,C43-C45,C47,C56,C59,C85-C88,C106,C110,C128,C129,C132-C134,C174 |          | 31 CAP SMD 0603 X5R 1UF 25V                                      | 1u    |                  | Kemet                 | C0603C105K3PACTU           |
| C6,C7   |          | 2 CAP 0402 X7R 10nF 16V 10% MURATA GRM155R71C103KA01             | 10n   |                  | Murata                | GRM155R71C103KA01          |
| C8  |          | 1 CAP 0402 COG 10pF 50V 5% MURATA GRM1555C1H100JA01              | 10p   |                  | Murata                | GRM1555C1H100JA01          |
| C9  |          | 1 CAP SMD 0402 Cer:10pF±5% 50V COG GRM 15 5 5C 1H 180 J A01      | 18p   | NM               | Murata                | GRM1555C1H180JA01          |
| C11,C26-C42,C46,C48-C52,C54,C56,C65,C75-C79,C84,C109,C122,C125-C127                   |          | 38 CAP SMD 0603 X7R 100NF 16V                                    | 100n  |                  | Kemet                 | C0603C104K5RAC7013         |
| C15,C130,C131   |          | 3 CAP SMD 0603 X5R 1UF 25V                                       | 1u    | NM               | Kemet                 | C0603C105K3PACTU           |
| C25,C38   |          | 2 CAP 0402 X7R 100nF 16V 10% MURATA GRM155R71C104KA88            | 100n  |                  | Murata                | GRM155R71C104KA88          |
| C53,C112,C123   |          | 3 CAP SMD 0603 X7R 100NF 16V                                     | 100n  | NM               | Kemet                 | C0603C104K5RAC7013         |
| C57,C62,C68,C71,C74,C95-C105,C111,C142,C176   |          | 19 CAP SMD 0603 X7R 10NF 50V                                     | 10n   |                  | Murata                | GRM188R71H103KA01J         |
| C80,C91,C92,C135,C136   |          | 5 CAP SMD 1206 X5R 100UF 6.3V                                    | 100u  |                  | MURATA                | GRM31CR60J107ME39L         |
| C63   |          | 1 CAP SMD 0603 X5R 10UF 6.3V                                     | 10u   | NM               | Murata                | GRM1555C1H120GA01          |
| C64   |          | 1 CAP 0402 COG 27pF 50V 5% MURATA GRM1555C1H270JA01              | 27p   |                  | Kemet                 | C0603C106MPACTU            |
| C66,C67,C69   |          | 3 CAP 0402 X7R 1nF 50V 10% MURATA GRM155R71H102KA01              | 1n    |                  | Murata                | GRM1555C1H270JA01          |
| C70,C72,C73   |          | 3 CAP 0402 COG 220pF 50V 5% MURATA GRM1555C1H221JA01             | 220p  |                  | Murata                | GRM155R71H102KA01          |
| C81   |          | 1 CAP 0603 X5R 4.7UF 6.3V 10% MURATA GRM188R60J475KE19           | 4,7u  |                  | Murata                | GRM188R60J475KE19          |
| C82   |          | 1 CAP SMD 0402 Cer:100pF±5% 50V COG GRM 15 5 5C 1H 101 J Z01     | 100p  |                  | Murata                | GRM1555C1H101JZ01D         |
| C83   |          | 1 CAP 0402 COG 560pF 50V 5% MURATA GRM1555C1H561JA01             | 560p  |                  | Murata                | GRM1555C1H561JA01          |
| C89   |          | 1 CAP 0603 X7R 470nF 10V 10% MURATA GRM188R71A474KA61            | 470n  |                  | Murata                | GRM188R71A474KA61          |
| C93,C94,C124  |          | 3 CAP SMD 0603 X5R 10UF 10V                                      | 10u   | NM               | TDK                   | C1603051A109K              |
| C107  |          | 1 CAP SMD 0805 X5R 2.2UF 10V                                     | 2,2u  |                  | Kemet                 | C0603C224K3RACTU           |
| C108  |          | 1 CAP SMD 0603 X7R 100PF 50V                                     | 100p  |                  | Murata                | GRM188R61A225ME34D         |
| C113-C118   |          | 6 CAP SMD 0603 X7R 100PF 50V                                     | 100p  | NM               | AVX                   | 0603C0101KAT2A             |
| C119,C120   |          | 2 CAP SMD 0603 COG 220PF 50V                                     | 220p  |                  | AVX                   | 0603C0101KAT2A             |
| C121  |          | 1 CAP 0402 COG 330pF 50V 5% MURATA GRM1555C1H331JA01             | 330p  |                  | Murata                | GRM1555C1H331JA01          |
| C137-C139   |          | 3 CAP SMD 0603 X7R 1NF 50V                                       | 1n    |                  | Murata                | GCM188R71H102KA37D         |
| C140  |          | 1 CAP 0603 X5R 1uF 6.3V 10% MURATA GRM188R60J105KA01             | 1u    |                  | Murata                | GRM188R60J105KA01          |
| C141  |          | 1 CAP SMD 0603 X5R 10UF 6.3V                                     | 10u   |                  | Kemet                 | C0603C108MPACTU            |
| C143  |          | 1 SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                   | 2200u | NM               | NIC COMP              | NATT222M6.3V12.5X14KLB     |
| C144  |          | 1 SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                   | 2200u | NM               | NIC COMP              | NATT222M6.3V12.5X14KLB     |
| C145  |          | 1 CAP SMD 0805 X5R 22UF 6.3V MURATA Code GRM21BR60J226ME39L      | 22u   |                  | Murata                | GRM21BR60J226ME39L         |
| C146  |          | 1 CAP SMD 0402 Cer:47pF±5% 50V COG GRM1555C1H470JZ01             | 47p   |                  | Murata                | GRM1555C1H470JZ01D         |
| C147  |          | 1 CAP SMD 0603 X5R 10UF 10V                                      | 10u   |                  | TDK                   | C1603051A109K              |
| C149  |          | 1 CAP SMD 0402 COG 8.2pF 50V +/-0.25pF                           | 8,2p  |                  | Murata                | GRM1555C1H82CA01D          |
| C150  |          | 1 CAP 0402 COG 56pF 50V 5% MURATA GRM1555C1H560JA01              | 56p   |                  | Murata                | GRM1555C1H560JA01          |
| C151  |          | 1 CAP 0402 COG 4.3pF 50V 0.25% MURATA GRM1555C1H4R3CA01          | 4,3p  |                  | Murata                | GRM1555C1H4R3CA01          |
| C153  |          | 1 SMD Alum. Ele.CAP Dia 8 220UF 35V Panasonic Case F EEEFK1V221P | 220u  |                  | Panasonic             | EEEFK1V221P                |
| C154  |          | 1 CAP SMD 0402 Cer:18pF±5% 50V COG GRM 15 5 5C 1H 180 J A01      | 18p   |                  | Murata                | GRM1555C1H180JA01D         |
| C155,C156   |          | 2 CAP SMD 0402 Cer:22pF±5% 50V COG GRM 15 5 5C 1H 220 J Z01      | 22p   |                  | Murata                | GRM1555C1H220JZ01D         |
| C157  |          | 1 CAP SMD 0402 Cer: 2.2nF±10%50VX7R                              | 2,2n  |                  | Murata                | GRM155R71H222KA01D         |
| C158  |          | 1 CAP 0402 COG 33pF 50V 5% MURATA GRM1555C1H330JZ01D             | 33p   |                  | MURATA                | GRM1555C1H330JZ01D         |
| C159,C160   |          | 2 CAP 0402 X5R 1uF 10V 10% MURATA GRM155R61A105KE15              | 1u    |                  | Murata                | GRM155R61A105KE15          |
| C161  |          | 1 CAP SMD 0402 Cer:1.5nF±10% 10V X7R                             | 1,5n  | NM               | Kemet                 | C0402C152K9RACTU           |
| C162  |          | 1 CAP SMD 0603 COG 22PF 50V                                      | 22p   |                  | Kemet                 | C0603C220K5GACTU           |
| C164,C175   |          | 2 SMD Alum. Ele.CAP 150UF 6.3V EEFCK0J151R PANASONIC             | 150u  |                  | Panasonic             | EEFCK0J151R                |
| C177  |          | 1 CAP 0402 COG 68pF 50V 5% MURATA GRM1555C1H680JA01D             | 68p   |                  | MURATA                | GRM1555C1H680JA01D         |
| D1  |          | 1 SCHOTTKY BARRIER RECTIFIER TOREX 9A - 40 V - CASE SMA-PG       |       |                  | TOREX                 | XBS304F1H-G                |
| D3,D11,D12  |          | 3 SMD_Schottky_Diode_1A_20V                                      |       |                  | Diode Incorporated    | DFLS120L-7                 |
| D4  |          | 1 HIGH POWER INFRARED EMITTER DIODE                              |       |                  | OSRAM                 | SFH4250                    |
| D5  |          | 1 Dual Switching diode 0.15 A / 60 V , Case SOT23 BAV99          |       |                  | Philips               | BAV99                      |
| D7,D10  |          | 2 Dual Schottky Diode , Common Cathode 250mA , SOT23 BAT54C      |       |                  | Philips               | BAT54C                     |
| D13   |          | 1 Schottky SMD Case DO-214AB 20V 3A                              |       |                  | General Semiconductor | SS32                       |
| D21,D22   |          | 2 SMD zener diode Case DO-214 1.25W Vishay 7.5V BZG05C8V2        |       |                  | Vishay                | BZG05C7V5                  |
| D24   |          | 1 SMD Zener diode 3.3V BZG05C3V3Case DO-214                      |       | NM               | Vishay                | BZG05C3V3                  |
| F1  |          | 1 Film Fuse SMD - LITTELFUSE 0466.002 (1206)                     |       |                  | Littelfuse            | 0466.002NR                 |
| J6  |          | 1 16_Pin_male_SMT_DIL_2.5mm                                      |       |                  | ADAM TECH             | DPH-2-16-U-A13534-1-PP-T/R |
| J8  |          | 1 8_Pin_male_SMT_DIL_2.5mm                                       |       |                  | ADAM TECH             | DPH-2-08-U-A13534-1-PP-T/R |
| J15   |          | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW,VERT, 4 CIRCUIT     |       |                  | MOLEX                 | 502443-0479                |
| J16   |          | 1 16_Pin_male_SMT_DIL_2.5mm                                      |       | NM               | ADAM TECH             | DPH-2-16-U-A13534-1        |
| L1  |          | 1 INDUCTOR 10µH ±20% 1.7A  | 10u   |                  | TDK                   | CLF6045T-100M              |
| L2  |          | 1 MURATA LOG15HN82NJO2 IND 82nH 0402 5%                          | 82n   |                  | Murata                | LOG15HN82NJO2              |
| L3  |          | 1 IND 10nH 100MHz 300mA 5% 0402                                  | 10n   |                  | MURATA                | LOG15HN10NJO2              |
| L4  |          | 1 MURATA LOG15HN100M70L IND 10uH 0805 20%                        | 10u   |                  | Murata                | LOG15HN100M70L             |
| L5  |          | 1 MURATA LOW15CNR20J00 IND 200nH 0402 5%                         | 200n  |                  | Murata                | LOW15CNR20J00              |
| L6  |          | 1 MURATA LOG15HN68NJO2 IND 68nH 0402 5%                          | 68n   |                  | Murata                | LOG15HN68NJO2              |
| L7,L8,L9  |          | 3 MURATA LOG15HN27NJO2 IND 27nH 0402 5%                          | 27n   |                  | Murata                | LOG15HN27NJO2              |
| L11   |          | 1 MURATA LOG15HS12NJO2 IND 12nH 0402 5%                          | 12n   |                  | Murata                | LOG15HS12NJO2              |
| L12   |          | 1 MURATA LOG15HN25S02 IND 3.3nH 0402 +/-0.3nH                    | 3,3n  |                  | Murata                | LOG15HN25S02               |
| L13   |          | 1 COILCRAFT 0603CS-10NXJL IND 10nH 0603 5%                       | 10n   |                  | COILCRAFT             | 0603CS-10NXJL              |
| L14   |          | 1 COILCRAFT 0603CS-27NXJL IND 27nH 0603 5%                       | 27n   |                  | COILCRAFT             | 0603CS-27NXJL              |
| L15   |          | 1 COILCRAFT 0603CS-47NXJL IND 47nH 0603 5%                       | 47n   |                  | COILCRAFT             | 0603CS-47NXJL              |
| L16   |          | 1 MURATA LOG15HS12NJO2 IND 5.6nH 0402 +/-0.3nH                   | 5,6n  |                  | Murata                | LOG15HS12NJO2              |
| L17   |          | 1 MURATA LOG15HN15NJO2 IND 15nH 0402 5%                          | 15n   |                  | Murata                | LOG15HN15NJO2              |
| L18   |          | 1 COILCRAFT 0603CS-68NXJL IND 6.8nH 0603 5%                      | 6,8n  |                  | COILCRAFT             | 0603CS-68NXJL              |
| L19   |          | 1 SMD Chip Ferrite Beads - MURATA BLM15 series - Case 0402       |       |                  | MURATA                | BLM15B601N1                |
| L20   |          | 1 SMD INDUCTOR - COILCRAFT 200nH DCR=24mA IRMS=2.2A              | 200n  | NM               | Coilcraft             | xPL2010-20mL8              |
| L22   |          | 1 MURATA LOG15HN4N2S02 IND 4.7nH 0402 +/-0.3nH                   | 4,7n  | NM               | Murata                | LOG15HN4N2S02              |
| P1  |          | 1 BUTTON MINIATURE; SMD;6X6 ITT-CANNON COD. KSC351J              |       |                  | ITT CANNON            | KSC351J                    |





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DOMUSNEXT® G4/G6  
GAS METERS

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Version 2.5\_en

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| Titolo / Title   |          | BOM 2238028.5 (per ITEM 1238037 e 1238039)  |           | METERSIT           |                     |                       |
|--|----------|---|-----------|--------------------|---------------------|-----------------------|
| Cliente / Customer   |          | MeterRSit   |           | Codice / Code      | 2238028.5           |                       |
| Descrizione progetto / Project description   |          | Scheda GASMETER G4/G6 MBUS  |           | Progetto / Project | Meter STEP1         |                       |
| Stato / State  |          | RESERVATO   |           | Data / Date        | 19/05/15            |                       |
| Reference  | Quantity | Description   | Value     | Not Mounted        | Manufacturer        | Manufacturer P/N      |
| PHT1   |          | 1 NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA   |           |                    | OSRAM               | SFH320FA              |
| PTC3,PTC4  |          | 2 Polyswitch Resettable Device SMD 1206 - 0.8W - 0.2 / 0.8Ohm IH=0.5A IT=1,10A                |           |                    | Tyco Electronics    | NanoSMD050F           |
| Q1,Q10-Q13   |          | 5 N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                                |           |                    | Philips             | BSH105                |
| Q2   |          | 1 N-channel Power MOSFET 4A   |           |                    | TOREX               | XP151A1355PR-G        |
| Q3   |          | 1 NPN Transistor Bipolar SMD case SOT23   |           |                    | Philips             | BC847                 |
| Q4,Q7  |          | 2 P-channel enhancement mode MOS transistor, -12V, -1.52A, SOT457                             |           |                    | Philips             | BSH207                |
| Q5   |          | 1 P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V -4.6A 70MOHM SOT26                          |           |                    | DIODES              | DMP2066LDM-7          |
| Q8   |          | 1 PNP TRANSISTOR BIPOLAR SMD CASE SOT23   |           |                    | INCORPORATED        | BC857                 |
| Q9   |          | 1 COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                                    |           |                    | PHILIPS             | BC847PN-7F            |
| R1,R501  |          | 2 RESISTOR SMD 2512 - 2W 1% 0.05  | 0,05 NM   |                    | Diodes              | LR2512-R05FW          |
| R2,R3,R5-R10,R45,R66,R67,R69-R71,R75-R80,R86,R86,R104,R115,R392,R393,R423,R432,R434,R437,R439,R504 |          | 33 RESISTOR SMD 0603 - 0.06W 1% 10K   | 10K       |                    | Vishay              | CRCW060310K0F         |
| R4,R165-R167,R445-R447   |          | 7 RESISTOR SMD 0805 - 0.125W 1% 330   | 330       |                    | Vishay              | CRCW08053300F         |
| R11  |          | 1 RESISTOR SMD 1206 - 0.25W 1% 2.2  | 2,2 NM    |                    | Vishay              | CRCW12062R20FNEB      |
| R12,R13,R68,R81,R101,R105  |          | 6 RESISTOR SMD 0603 - 0.06W 1% 10K  | 10K       |                    | Vishay              | CRCW060310K0F         |
| R14,R20,R21,R27,R28,R43,R46,R57,R91,R33,R9   |          | 19 RESISTOR SMD 0603 - 0.06W 5% 470   | 470       |                    | Vishay              | CRCW0603470RJ         |
| 4,R106-R112,R424   |          | 4 RESISTOR SMD 0805 - 0.125W 1% 1K  | 1K        |                    | Vishay              | CRCW08051K00F         |
| R15,R63,R452,R453  |          | 2 RESISTOR SMD 0805 - 0.125W 1% 1K  | 1K        | NM                 | Vishay              | CRCW08051K00F         |
| R16,R24  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 1.2M   | 1,2M      |                    | Vishay              | CRCW06031M20FKEA      |
| R17  |          | 1 RESISTOR SMD 1206 - 0.25W 1% 910K   | 910K      |                    | Vishay              | CRCW1206910KFCTA      |
| R18  |          | 4 RESISTOR SMD 0402 - 0.06W 5% 0  | 0         |                    | Vishay              | CRCW0402000Z          |
| R19,R95,L10,C148   |          | 2 RESISTOR SMD 0603 - 0.1W 1% 432 CRCW0603432RFKEA  | 432       |                    | Vishay              | CRCW0603432RFKEA      |
| R22,R90  |          | 4 RESISTOR SMD 1206 - 0.25W - 5 % 0   | 0 NM      |                    | Vishay              | CRCW1206000Z          |
| R23,R84,R462,R465  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 10M  | 10M       |                    | Vishay              | CRCW060310M0F         |
| R25,R26,R31,R34,R400,R448,R449,R451  |          | 1 RESISTOR SMD 1206 - 0.25W - 2% 330  | 330       |                    | Vishay              | CRCW1206330RF         |
| R29  |          | 9 RESISTOR SMD 0603 - 0.06W 1% 0  | 0         |                    | Vishay              | CRCW0603000Z          |
| R30,R35,R36,R49,R65,R433,R436,R490,R503  |          | 5 RESISTOR SMD 0603 - 0.06W 1% 100K   | 100K      |                    | Vishay              | CRCW0603100KF         |
| R32,R102,R135,R505,R506  |          | 5 RESISTOR SMD 0603 - 0.06W 1% 2M   | 2M        |                    | Vishay              | CRCW06032M00F         |
| R33,R37,R40,R48,R507   |          | 1 RESISTOR SMD 0603 - 0.06W 1% 270K   | 270K      |                    | Vishay              | CRCW0603270KF         |
| R38  |          | 8 RESISTOR SMD 0603 - 0.06W 1% 0  | 0 NM      |                    | Vishay              | CRCW0603000Z          |
| R39,R42,R44,R51,R54,R58,R64,R502   |          | 2 RESISTOR SMD 1206 - 0.25W - 1% 100  | 100       |                    | Vishay              | CRCW1206100RF         |
| R47,R489   |          | 1 RESISTOR SMD 0603 - 0.06W 1% 680K   | 680K      |                    | Vishay              | CRCW0603680KF         |
| R50  |          | 2 RESISTOR SMD 0603 - 0.06W 1% 8.2K   | 8,2K      |                    | Vishay              | CRCW0603820J          |
| R52  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 22K  | 22K       |                    | VISHAY              | CRCW060322K0F         |
| R53  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 470K   | 470K      |                    | Vishay              | CRCW0603470KF         |
| R55  |          | 1 RESISTOR SMD 1206 - 0.5W - 5 % 10 CRCW120610R0JNEAHP  | 10        |                    | Vishay              | CRCW120610R0JNEAHP    |
| R56  |          | 3 RESISTOR SMD 1206 - 0.25W - 2 % 10K   | 10K       |                    | Vishay              | RCW120610K0F          |
| R59,R492,R493  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 1M   | 1M        |                    | Vishay              | CRCW06031M00F         |
| R60,R61  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 560  | 560       |                    | Vishay              | CRCW0603560RF         |
| R62  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 3.9K   | 3,9K      |                    | Vishay              | CRCW0603390F          |
| R73  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 4.7K   | 4,7K      |                    | VISHAY              | CRCW0603470F          |
| R74  |          | 2 RESISTOR SMD 0603 - 0.06W 1% 2.7K   | 2,7K      |                    | Vishay              | CRCW0603270F          |
| R82,R444   |          | 1 RESISTOR SMD 0603 - 0.06W 1% 47K  | 47K       |                    | Vishay              | CRCW0603470KF         |
| R83  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 470K   | 470K      |                    | Vishay              | CRCW0603470KF         |
| R87  |          | 1 RESISTOR SMD 0603 - 0.1W 1% 432 CRCW0603432RFKEA  | 432 NM    |                    | Vishay              | CRCW0603432RFKEA      |
| R92  |          | 1 RESISTOR SMD 0603 - 0.06W 1% 0.1  | 0,1       |                    | Vishay              | WSL0603R1000FEA       |
| R100   |          | 4 RESISTOR SMD 0603 - 0.06W 1% 1M   | 1M        |                    | Vishay              | CRCW06031M00F         |
| R423,R441-R443   |          | 1 RESISTOR SMD 0603 - 0.06W 1% 47   | 47        |                    | Vishay              | CRCW0603470F          |
| R440   |          | 1 RESISTOR SMD 0603 - 0.06W 1% 100K   | 100K      | NM                 | Vishay              | CRCW0603100KF         |
| R450   |          | 1 RESISTOR SMD 1206 - 0.25W 1% 10M  | 10M       |                    | Vishay              | CRCW120610M0FHEAP     |
| R454-R456,R458   |          | 4 RESISTOR SMD 1206 - 0.25W 1% 18   | 18        |                    | Vishay              | CRCW1206180RFKEA      |
| R460,R461,R463,R464  |          | 1 RESISTOR SMD 1206 - 0.25W - 5 % 0   | 0         |                    | Vishay              | CRCW1206000Z          |
| R466,R467  |          | 2 RESISTOR SMD 1206 - 0.25W 1% 40.2K  | 40,2K     | NM                 | Vishay              | CRCW1206402RFKEA      |
| R468,R469  |          | 2 RESISTOR SMD 1206 - 0.25W 1% 1M CRCW12061MFN  | 1M        |                    | Vishay              | CRCW12061MFN          |
| R470,R472,R473   |          | 3 RESISTOR SMD 0603 - 0.06W 1% 4.7M   | 4,7M      |                    | Vishay              | CRCW06034M70F         |
| R474,R475  |          | 2 RESISTOR SMD 2512 - 1W 5% 1K  | 1K        |                    | Vishay              | CRCW25121K00J         |
| R476,R479  |          | 4 RESISTOR SMD 1206 - 0.25W - 1 % 180 CRCW1206180RFN  | 180       |                    | Vishay              | CRCW1206180RFN        |
| R480,R481  |          | 2 RESISTOR SMD 1206 - 0.25W 1% 47K  | 47K       |                    | Vishay              | CRCW120647K0F         |
| R482,R483  |          | 2 RESISTOR SMD 1206 - 0.25W 1% 2.2  | 2,2       |                    | Vishay              | CRCW12062R20FNEB      |
| R486   |          | 1 RESISTOR SMD 1206 - 0.25W - 1 % 2.2K  | 2,2K      |                    | Vishay              | CRCW12062R20F         |
| R494-R497  |          | 4 RESISTOR SMD 0805 - 0.125W 5% 1K  | 1K        | NM                 | Vishay              | CRCW08051K00J         |
| R498,R499  |          | 2 RESISTOR SMD 0805 - 0.125W 1% 3.3   | 3,3       |                    | Vishay              | CRCW08053R30F         |
| R500   |          | 1 RESISTOR SMD 1206 - 0.25W 1% 4.7M   | 4,7M      |                    | Vishay              | CRCW12064M70FKEA      |
| R508   |          | 1 RESISTOR SMD 0603 - 0.06W 1% 2K   | 2K        |                    | Vishay              | CRCW06032K00F         |
| U1,U21-U24,U27,U31,U36   |          | 8 Load Switch with reverse blocking 1A SC70-6   |           |                    | Vishay              | Sip32431DR3 - T1GE3   |
| U2   |          | 1 Low data rate, low power sub-1GHz transceiver   |           |                    | ST Microelectronics | SPIRIT1QTR            |
| U4   |          | 1 STEP-UP DC/DC CONTROLLER  |           |                    | TOREX               | XC9104B093MR-G        |
| U5   |          | 1.5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN                                   |           |                    |                     |                       |
| U6   |          | 1 CAPACITOR   |           |                    | TOREX               | X06118C15BMR-G        |
| U7   |          | 1 Texas_Buck_Boost_Charge_Pump_Thin_SOT-23-6_60mA_5V  |           |                    | Texas Instruments   | REG710A-5             |
| U8   |          | 1 8 Mbit, low voltage, Page-Erasable Serial Flash memory                                      |           |                    | Nonyx               | M46PE80-VMP6G         |
| U11  |          | 1 169 to 170 MHz Transmitter/Receive Front-End Module   |           |                    | SKYWORKS            | SKY66100-11           |
| U11  |          | 1 ARM_32Bit_Low_Power_64pin_256kFlash_32kRam_LOFP   |           |                    | ST Microelectronics | STM32L151RCT6A        |
| U30  |          | 1 MICROCONTROLLER STM8 8 BIT MCU 64KBFLASH 2KBRAM 1KEEPROM LOFP48                             |           |                    | ST Microelectronics | STM8L151CT6           |
| U32,U33  |          | Protect High-Side Load Switch, 1A Max, 2.4 to 5.5 Supply Voltage Range, Low quiescent current |           | NM                 | ANALOGIC TECH       | AAT4810BIV-1          |
| U34,U35,U37  |          | 3 LOW INPUT-VOLTAGE CURRENT-LIMITED MOTOR SWITCHES WITH SHUT OFF 40mA                         |           | NM                 | Texas Instruments   | TPS22843DCKR          |
| U38  |          | 1 Low Voltage Stepper and Single/Dual DC Motor Driver   |           |                    | ALLEGRO             | A3966SESTR-T          |
| XT1,XT2  |          | 2 Ceramic Resonator Murata CSTCE8M00G55A-R0 8MHz  | 8MHz,MHZ  |                    | Murata              | CSTCE8M00G55A-R0      |
| XT3  |          | 1 Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-032K768000ZRF1                                  | MHZ       |                    | CITIZEN             | CM200C-032K768000ZRF1 |
| XT4  |          | 1 Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-032K768000ZRF1                                  | 32.768kHz | NM                 | CITIZEN             | CM200C-032K768000ZRF1 |
| XT5,XT6  |          | 2 QUARZ SMD 32.768MHz +-10ppm NDK   |           | NM                 | NDK                 | NKX3155A_32.768MHZ    |
| X7   |          | 1 CRYSTAL 50MHz 10pF  |           | NM                 | NDK                 | NT2016SB-50M-NSA3560D |
| C90  |          | 1 Supercapacitor, LOW ESR 35F 2.7V  | 35        |                    | Cooper Bussmann     | HV1635-2R735E-R       |
| DISP1  |          | 1 I2C DISPLAY   |           |                    | VARITRONIX LIMITED  | CQG-VLIT1540A-01      |
| J2   |          | 1 4 pins Strip vertical pitch 2mm   |           | NM                 | SAMTEC              | TSM-104-07-G-S        |
| J3   |          | 1 DOUBLE ROW STRAIGHT PITCH 2 X 6 2.54 mm SAMTEC  |           | NM                 | SAMTEC              | TSW-106-07-G-D        |
| J4,J5  |          | 2 SINGLE ROW STRAIGHT PITCH X 3 2.54 mm SAMTEC  |           | NM                 | SAMTEC              | TSW-103-07-G-S        |
| J9   |          | 1 SINGLE ROW STRAIGHT PITCH X 2 2.54 mm SAMTEC TSW-102-07-G-S                                 |           | NM                 | SAMTEC              | TSW-102-07-G-S        |
| FSC1   |          | 1 FASCETTA PLASTICA L=98 H=2.5 Sp=1 in NYLON  |           |                    | RICHCO              | RG-203                |







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### 7.3. Connection board part list

| Titolo / Title                             |          | BOM 2238027.3  |       |             |                    |                  | METERSIT    |  |
|--|----------|--|-------|-------------|--------------------|------------------|-------------|--|
| Cliente / Customer                         |          | MeterSIT   |       |             | Codice / Code      |                  | 2238027.3   |  |
| Descrizione progetto / Project description |          | Scheda GASMETER G4/G6 CONNECTION for GPRS                                    |       |             | Progetto / Project |                  | Meter STEP1 |  |
| Stato / State                              |          | RISERVATO  |       |             | Data / Date        |                  | 16/04/15    |  |
| Reference                                  | Quantity | Description  | Value | Not Mounted | Manufacturer       | Manufacturer P/N |             |  |
| C200                                       | 1        | CAP SMD 0603 COG 39PF 50V  | 39p   | NM          | Kemet              | C0603C390F5GACTU |             |  |
| C201-C208                                  | 8        | CAP SMD 0603 COG 10PF 25V 5%   | 10p   | NM          | Kemet              | C0603C100K3GACTU |             |  |
| CS   | 1        | CS Scheda BASE GPRS/MBUS G4/G6   |       |             | MRD                | MS09CS0001_1514  |             |  |
| DZ10                                       | 1        | SMD zener diode Case DO-214 1,25W Vishay 7,5V BZG05C8V2                      |       | NM          | Vishay             | BZG05C7V5        |             |  |
| J20  | 1        | CIRCUIT  |       |             | MOLEX              | 502494-0470      |             |  |
| J21  | 1        | 8_Pin_Female_SMT_DIL_2,5mm   |       |             | ADAM TECH          | RS2-08-G-SMT-P   |             |  |
| J22  | 1        | 16_Pin_Female_SMT_DIL_2,5mm  |       |             | ADAM TECH          | RS2-16-G-SMT-P   |             |  |
| J23,W1                                     | 2        | CONNECTOR ON PCB GAS METER,HOLE 8,8mm GAS                                    |       | NM          |                    |                  |             |  |
| PTC10                                      | 1        | Polyswitch Resettable Device SMD 1206 - 0,8W - 0,2 / 0,8Ohm IH=0,5A IT=1,10A |       | NM          | Tyco Electronics   | NanoSMDC050F     |             |  |



Doc no

**10362/13-01**

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## DOMUSNEXT® G4/G6 GAS METERS

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### 8. MARKINGS

The figures 8.x show the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 4 different versions of the meters

Figure 8.1 – Labelling of G4 GPRS meter

**CHARACTERS FILLED** → **G4 GPRS**  
Made in Italy

**MeterSit**  
Viale dell'Industria 31, 35129 Padova  
CI.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C  
Qmin 0,04 m³/h  
Qmax 6,00 m³/h  
Qt 0,60 m³/h  
II 3 G Ex nA IIA T6 Gc  
CEIM 0122 T10362  
Matr. MTSK03YYZXXXXXXXXX

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSit
- K= year of construction - A for 2014 - B for 2015
- 03= fixed digits mean Gas Meter
- YY= meter version, indicating the last two digits of the MeterSit product code
- Z= meter model, indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSA03010000001  
PRODUCTION LOT from 000001 to 9999999  
Lot 0000000  
Year XXXX  
YEAR OF MANUFACTURE

**MeterSit**  
Viale dell'Industria 31, 35129 Padova  
CI.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C  
Qmin 0,04 m³/h  
Qmax 6,00 m³/h  
Qt 0,60 m³/h  
II 3 G Ex nA IIA T6 Gc  
CEIM 0122 T10362  
Matr. MTSK03YYZXXXXXXXXX  
SCALA 1:1

| Rev | Mod. N° | Date     | Description  | Name       |
|-----|---------|----------|--|------------|
| 5   | 10584   | 10/02/15 | ASSIUNTO ANNO DI FABBRICAZIONE E IP65  | P. Colombo |
| 4   | 10545   | 20/12/14 | Prima versione + Cl. ambientale meccanica M2 + Cl. compatibilità elettromagn. E2 - IP65 - ATEX | P. Colombo |
| 2   | 10580   | 09/05/14 | Rivisto globalmente  | Paron      |
| 1   | 14751   | 06/05/13 | Modificato numero progressivo lotto da 4 a 3 cifre   | Riva       |

|                             |          |            |                                    |                               |               |          |
|-----------------------------|----------|------------|------------------------------------|-------------------------------|---------------|----------|
| Drawn                       | 04/07/13 | P. Colombo | Description                        | TARISA GATI GAS METER G4 GPRS | Release Level | Preserie |
| Checked                     |          |            | Technical drawings                 |                               | NA            | Approved |
| Date                        |          |            | Name                               |                               | Scale         | 2:1      |
| SI Norm                     |          |            | Material                           |                               | Material      | ISO      |
| Critical Dimensions         |          |            | Heat Treatment                     |                               | Material      | 2:1      |
| Surface Treatment           |          |            | Surface Treatment                  |                               | Material      | 15684    |
| Technical Drawings ISO 8015 |          |            | General Tolerances UNI-EN 227982-K |                               | Material      | 1/1 A3   |
|                             |          |            |                                    |                               | Material      | 7252965  |
|                             |          |            |                                    |                               | Material      | 5        |





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Figure 8.2 – Labelling of G6 GPRS meter

**CHARACTERS FILLED** → **G6 GPRS**  
**Made in Italy**

**MeterSIT**  
Viale dell'Industria 31, 35129 Padova

**Cl.1,5 H3 H-gas M2 E2 IP65**  
**tb 15°C pb 1,01325 bar**

**tm -25°C...+55°C pmax 0,5 bar**  
**tg -25°C...+55°C**

**Qmin 0,06 m³/h**  
**Qmax 10,00 m³/h**  
**Qt 1,00 m³/h**

**Matr. MTSK03YYZXXXXXX**

**Lot 0000000** → PRODUCTION LOT from 0000001 to 9999999  
**Year XXXX** → YEAR OF MANUFACTURE

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSIT
- K= year of construction - A for 2014 - B for 2015 ...
- 03= fixed digits mean Gas Meter
- YY= meter version, indicating the last two digits of the MeterSIT product code
- Z= meter model, indicating the third last digit of the MeterSIT product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

**ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:**

MTSA030110000001

**YEAR OF CONSTRUCTION** → 0122  
**METER VERSION** → T10362  
**METER MODEL** → G6

**SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION** → 0122  
**CHARACTER FILLED** → T10362  
**PROGRESSIVE NUMBER** → XXXXXXXX

**SCALA 1:1**

| Rev | Mod N° | Date     | Description  | Name       |
|-----|--------|----------|--|------------|
| 5   | 15684  | 18/02/15 | AGGIUNTO ANNO DI FABBRICAZIONE E IP65  | P. Colombo |
| 4   | 15545  | 20/12/14 | Prima=0,5bar + Cl. ambientale meccanica M2 + Cl. compatibilità elettromagn. E2 - IP55 - ATEX | P. Colombo |
| 2   | 15099  | 08/05/14 | Rivisto globalmente  | Peron      |
| 1   | 14791  | 08/06/13 | Modificato numero progressivo lotto da 4 a 3 cifre   | Riva       |

|                     |          |            |                    |                              |           |          |
|---------------------|----------|------------|--------------------|------------------------------|-----------|----------|
| Drawn               | 04/07/13 | P. Colombo | Descrizione        | TARGA DATI GAS METER G6-GPRS | Revisione | Preserie |
| Checked             |          |            | Tecnica            | Informazione                 | Ra        | 1/1      |
| Date                |          |            | Material           | ISO                          | 2:1       |          |
| SE Norm             |          |            | Surface Treatment  |                              | 15684     |          |
| Critical Dimensions |          |            | Sealing Surface    |                              | VOLUME    | [2] mm³  |
| Technical Drawings  |          |            | General Tolerances |                              | ISO 8015  | [4] kg   |
|                     |          |            |                    |                              | 7252967   | 5        |





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Figure 8.3 – Labelling of G4 RF WMBUS meter

**CHARACTERS FILLED** → **G4<sup>MBUS</sup>**  
Made in Italy

**MeterSIt**  
Viale dell'Industria 31, 35129 Padova  
Cl.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C  
II 3 G Ex nA IIA T6 Gc  
CE 0122 T10362

**DATA MATRIX CODE AREA**  
- MTS= fixed digits mean MeterSIt  
- K= year of construction - A for 2014 - B for 2015 ...  
- 03= fixed digits mean Gas Meter  
- YY= meter version, indicating the last two digits of the MeterSIt product code  
- Z= meter model, indicating the third last digit of the MeterSIt product code: 0= G4 1= G6 2= G10 3= G16 4= G25  
- XXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW.

MTSAD3010000001  
Lot 0000000  
Year XXXX  
Qmin 0,04 m³/h  
Qmax 6,00 m³/h  
Qt 0,60 m³/h  
Metr. MTSK03YYZXXXXXX  
YEAR OF CONSTRUCTION  
METER VERSION  
PROGRESSIVE NUMBER

**G4<sup>MBUS</sup>**  
Made in Italy  
MeterSIt  
Viale dell'Industria 31, 35129 Padova  
Cl.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C  
II 3 G Ex nA IIA T6 Gc  
CE 0122 T10362  
Lot 0000000  
Year XXXX  
Qmin 0,04 m³/h  
Qmax 6,00 m³/h  
Qt 0,60 m³/h  
Metr. MTSK03YYZXXXXXX

SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION  
CHARACTERS FILLED

SCALA 1:1

|                     |                 |            |                       |                              |                 |                      |
|---------------------|-----------------|------------|-----------------------|------------------------------|-----------------|----------------------|
| Drawn               | 04/07/15        | P. Colombo | Descrizione           | TARGA DATI GAS METER G4 MBUS | Processo target | Preserie             |
| Checked             |                 |            | Technical information |                              | Ra              | General Requirements |
| Date                |                 | Name       | Material              |                              | Scale           | ISO                  |
| St Num              |                 |            | Surface Treatment     |                              | 2:1             |                      |
| Critical Dimensions |                 |            | Sealing Surface       | .....                        | 15684           | 1/1 A3               |
| Technical Drawings  | ISO 8015        | VOLUME     | (2) ass               | 7252964                      |                 |                      |
| General Tolerances  | UNI EN 227882-4 | PESO       | - [4] Kg              |                              |                 |                      |





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Figure 8.4 – Labelling of G6 RF WMBUS meter

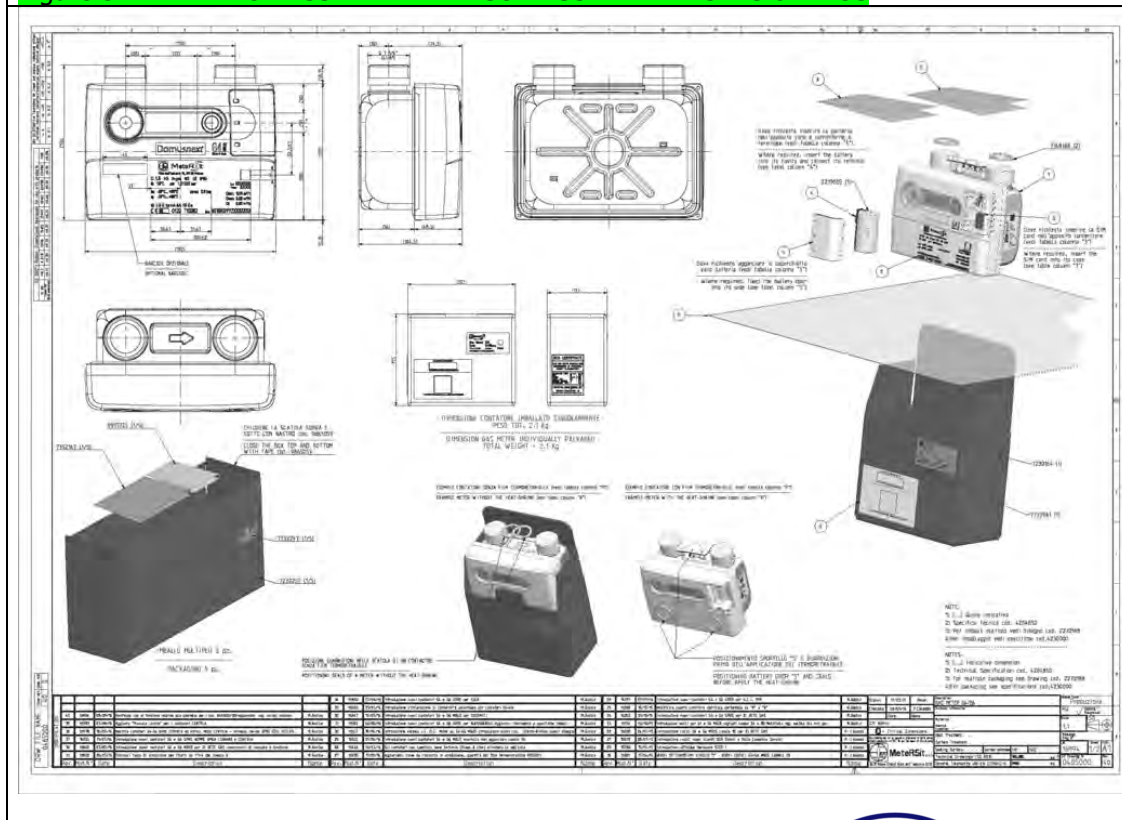
| <p>Viale dell'Industria 31, 35129 Padova<br/>Cl.1,5 H3 H-gas M2 E2 IP65<br/>tb 15°C pb 1,01325 bar<br/>tm -25°C... +55°C pmax 0,5 bar<br/>tg -25°C... +55°C<br/>II 3 G Ex nA IIA T6 Gc<br/>CEM 0122 T10362</p>  |          | <p><b>G6 MBUS</b><br/>Made in Italy</p>                                  |   | <p><b>DATA MATRIX CODE AREA</b></p> <ul style="list-style-type: none"> <li>- MTS= fixed digits mean MeterSIT</li> <li>- K= year of construction - A for 2014 - B for 2015 ...</li> <li>- 03= fixed digits mean Gas Meter</li> <li>- YY= meter version, indicating the last two digits of the MeterSIT product code</li> <li>- Z= meter model, indicating the third last digit of the MeterSIT product code: 0= G4 1= G6 2= G10 3= G16 4= G25</li> <li>- XXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZX000000</li> </ul> <p>ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:</p> <p>MTSA030110000001</p> |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
|---|----------|--|---|---|--------------|----------|-------|----------|---------------------------------------|---|-------|----------|---|---|-------|----------|---------------------|---|-------|----------|--|---|--|-------|----------|------------|-------------|------------------------------|--------------|----------|---------|--|--|-----------------------|--|----|---|------|--|------|--|--|-------|-----|---------|--|--|----------|--|-----|-----|--|--|--|-------------------|--|--|--|--|--|--|-------------------|--|--|--|--|--|--|-----------------|----------------------|----|-----|--|--|--|-----------------------------|--------|-----|-----|--|--|--|------------------------------------|------|----|----|--|--|---------|-------|-------|-----|------|----|----------|--|--------|--|----------|--|----------|--|----------|--|------------|---------|-----|--|-------|--|-------|---|
| <p>Lot 0000000<br/>Year XXXX</p>  |          | <p>PRODUCTION LOT from 0000001 to 9999999</p> <p>YEAR OF MANUFACTURE</p> |   | <p><b>G6 MBUS</b><br/>Made in Italy</p> <p>Viale dell'Industria 31, 35129 Padova<br/>Cl.1,5 H3 H-gas M2 E2 IP65<br/>tb 15°C pb 1,01325 bar<br/>tm -25°C... +55°C pmax 0,5 bar<br/>tg -25°C... +55°C<br/>II 3 G Ex nA IIA T6 Gc<br/>CEM 0122 T10362</p>  |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| <p>YEAR OF CONSTRUCTION</p> <p>SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION</p> <p>CHARACTERS FILLED</p>  |          | <p>METER VERSION</p> <p>METER MODEL</p> <p>PROGRESSIVE NUMBER</p>        |   | <p>SCALA 1:1</p>  |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| <table border="1"> <thead> <tr> <th>Rev</th> <th>Mod N°</th> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>15884</td> <td>19/02/15</td> <td>AGGIUNTO ANNO DI FABBRICAZIONE E IP65</td> </tr> <tr> <td>4</td> <td>15445</td> <td>20/12/14</td> <td>Prima 0,5 bar + Cl. ambientale meccanica M2 + Cl. compatibilità elettromagn. E2 - IP55 - ATEX</td> </tr> <tr> <td>2</td> <td>15389</td> <td>08/05/14</td> <td>Rivisto Globalmente</td> </tr> <tr> <td>1</td> <td>14791</td> <td>03/06/13</td> <td>Modificato numero progressivo lotto da 4 a 3 cifre</td> </tr> </tbody> </table> |          | Rev  | Mod N°  | Date  | Description  | 5        | 15884 | 19/02/15 | AGGIUNTO ANNO DI FABBRICAZIONE E IP65 | 4 | 15445 | 20/12/14 | Prima 0,5 bar + Cl. ambientale meccanica M2 + Cl. compatibilità elettromagn. E2 - IP55 - ATEX | 2 | 15389 | 08/05/14 | Rivisto Globalmente | 1 | 14791 | 03/06/13 | Modificato numero progressivo lotto da 4 a 3 cifre | <table border="1"> <tr> <td>Drawn</td> <td>34/07/13</td> <td>P. Colombo</td> <td>Description</td> <td>TARGA DATI GAS METER G6-MBUS</td> <td>Release date</td> <td>Preserie</td> </tr> <tr> <td>Checked</td> <td></td> <td></td> <td>Technical information</td> <td></td> <td>Ra</td> <td>✓</td> </tr> <tr> <td>Date</td> <td></td> <td>Name</td> <td></td> <td></td> <td>Scale</td> <td>ISO</td> </tr> <tr> <td>SE Norm</td> <td></td> <td></td> <td>Material</td> <td></td> <td>2:1</td> <td>ISO</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Surface Treatment</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Surface Treatment</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Sealing Surface</td> <td>..... Surface finish</td> <td>HV</td> <td>HRC</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Technical Drawings ISO 8015</td> <td>VOLUME</td> <td>1/3</td> <td>1/1</td> </tr> <tr> <td></td> <td></td> <td></td> <td>General Tolerances UNI-EN 227682-6</td> <td>PECO</td> <td>14</td> <td>kg</td> </tr> </table> |  | Drawn | 34/07/13 | P. Colombo | Description | TARGA DATI GAS METER G6-MBUS | Release date | Preserie | Checked |  |  | Technical information |  | Ra | ✓ | Date |  | Name |  |  | Scale | ISO | SE Norm |  |  | Material |  | 2:1 | ISO |  |  |  | Surface Treatment |  |  |  |  |  |  | Surface Treatment |  |  |  |  |  |  | Sealing Surface | ..... Surface finish | HV | HRC |  |  |  | Technical Drawings ISO 8015 | VOLUME | 1/3 | 1/1 |  |  |  | General Tolerances UNI-EN 227682-6 | PECO | 14 | kg | <table border="1"> <tr> <td>Part No</td> <td>15684</td> <td>Sheet</td> <td>1/1</td> <td>Form</td> <td>A3</td> </tr> <tr> <td>Quantity</td> <td></td> <td>Weight</td> <td></td> <td>Material</td> <td></td> </tr> <tr> <td>Order No</td> <td></td> <td>Customer</td> <td></td> <td>Drawing No</td> <td>7252966</td> </tr> <tr> <td>Rev</td> <td></td> <td>Scale</td> <td></td> <td>Sheet</td> <td>5</td> </tr> </table> |  | Part No | 15684 | Sheet | 1/1 | Form | A3 | Quantity |  | Weight |  | Material |  | Order No |  | Customer |  | Drawing No | 7252966 | Rev |  | Scale |  | Sheet | 5 |
| Rev   | Mod N°   | Date   | Description   |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| 5   | 15884    | 19/02/15   | AGGIUNTO ANNO DI FABBRICAZIONE E IP65   |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| 4   | 15445    | 20/12/14   | Prima 0,5 bar + Cl. ambientale meccanica M2 + Cl. compatibilità elettromagn. E2 - IP55 - ATEX |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| 2   | 15389    | 08/05/14   | Rivisto Globalmente   |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| 1   | 14791    | 03/06/13   | Modificato numero progressivo lotto da 4 a 3 cifre  |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Drawn   | 34/07/13 | P. Colombo   | Description   | TARGA DATI GAS METER G6-MBUS  | Release date | Preserie |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Checked   |          |  | Technical information   |   | Ra           | ✓        |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Date  |          | Name   |   |   | Scale        | ISO      |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| SE Norm   |          |  | Material  |   | 2:1          | ISO      |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
|   |          |  | Surface Treatment   |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
|   |          |  | Surface Treatment   |   |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
|   |          |  | Sealing Surface   | ..... Surface finish  | HV           | HRC      |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
|   |          |  | Technical Drawings ISO 8015   | VOLUME  | 1/3          | 1/1      |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
|   |          |  | General Tolerances UNI-EN 227682-6  | PECO  | 14           | kg       |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Part No   | 15684    | Sheet  | 1/1   | Form  | A3           |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Quantity  |          | Weight   |   | Material  |              |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Order No  |          | Customer   |   | Drawing No  | 7252966      |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |
| Rev   |          | Scale  |   | Sheet   | 5            |          |       |          |                                       |   |       |          |   |   |       |          |                     |   |       |          |  |   |  |       |          |            |             |                              |              |          |         |  |  |                       |  |    |   |      |  |      |  |  |       |     |         |  |  |          |  |     |     |  |  |  |                   |  |  |  |  |  |  |                   |  |  |  |  |  |  |                 |                      |    |     |  |  |  |                             |        |     |     |  |  |  |                                    |      |    |    |  |  |         |       |       |     |      |    |          |  |        |  |          |  |          |  |          |  |            |         |     |  |       |  |       |   |



### 3. MECHANICAL SPECIFICATIONS

| Characteristic             | u.m. | Class G4        | Class G6                         | Note   |
|----------------------------|------|-----------------|----------------------------------|--|
| Connection centrelines     | [mm] | 110             | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different      |
| Max dimensions (H x L x s) | [mm] | 156 x 192 x 104 | 156 x 192 x 104<br>(plus flange) | Difference from V2.1: Bosses length has been increased of 4 mm |
| Connection diameter        | "    | G 1" 1/4        | G 1" 1/4<br>(1" 1/2 with flange) |  |
| Resistance to torque       | [Nm] | 110             | 140                              |  |
| Resistance to bending      | [Nm] | 40              | 40<br>(60 with flange)           |  |
| Weight                     | [Kg] | 1.7             | 1.7                              |  |

**Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY – GPRS & MBUS**



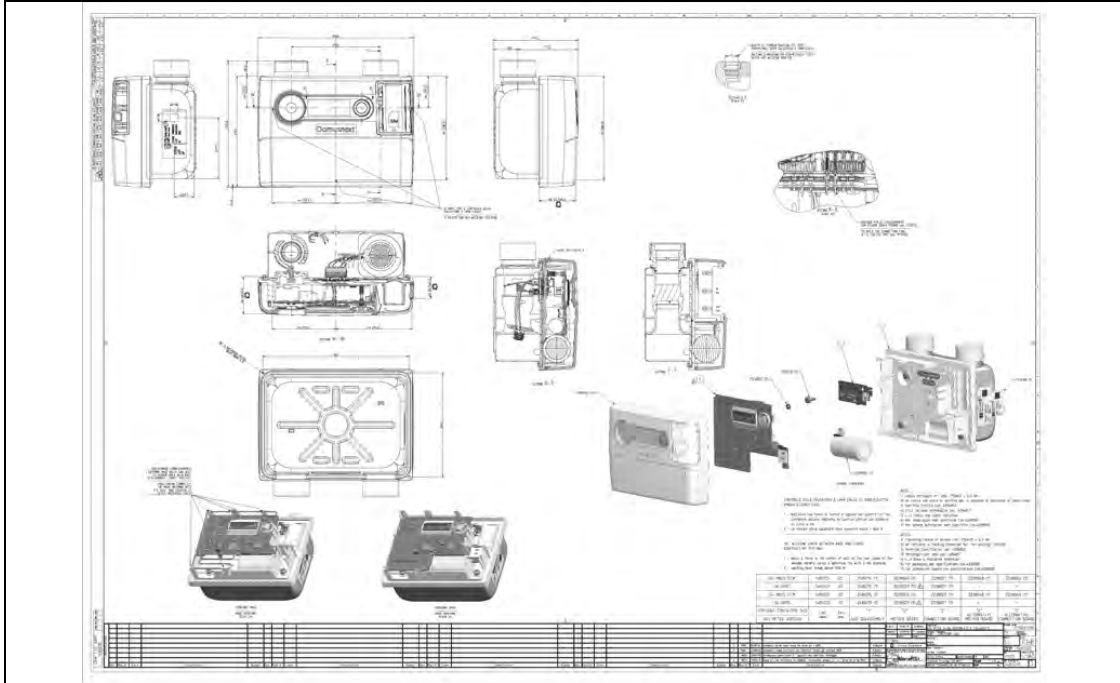
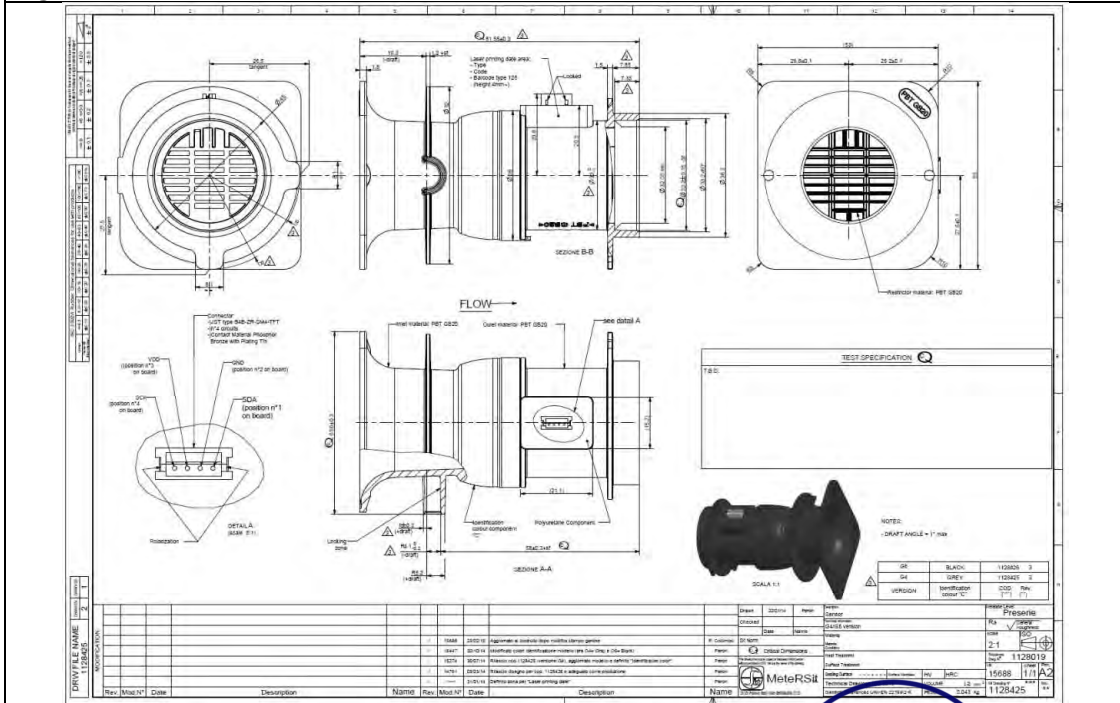
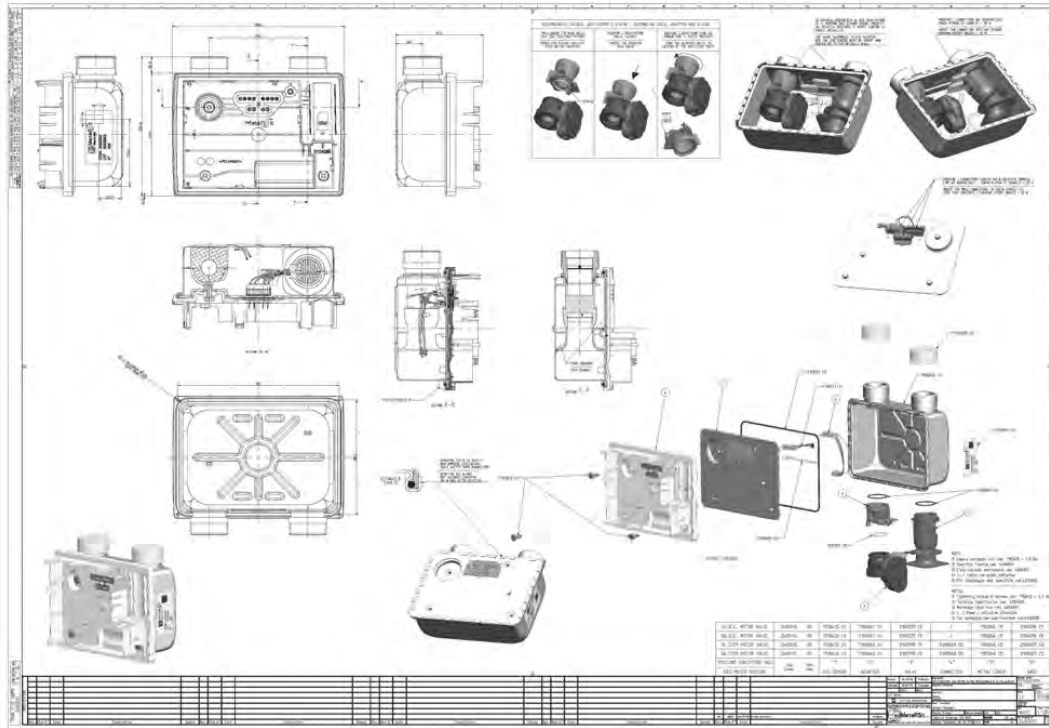


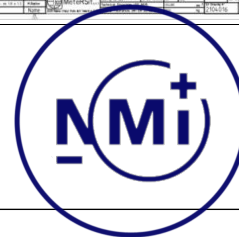
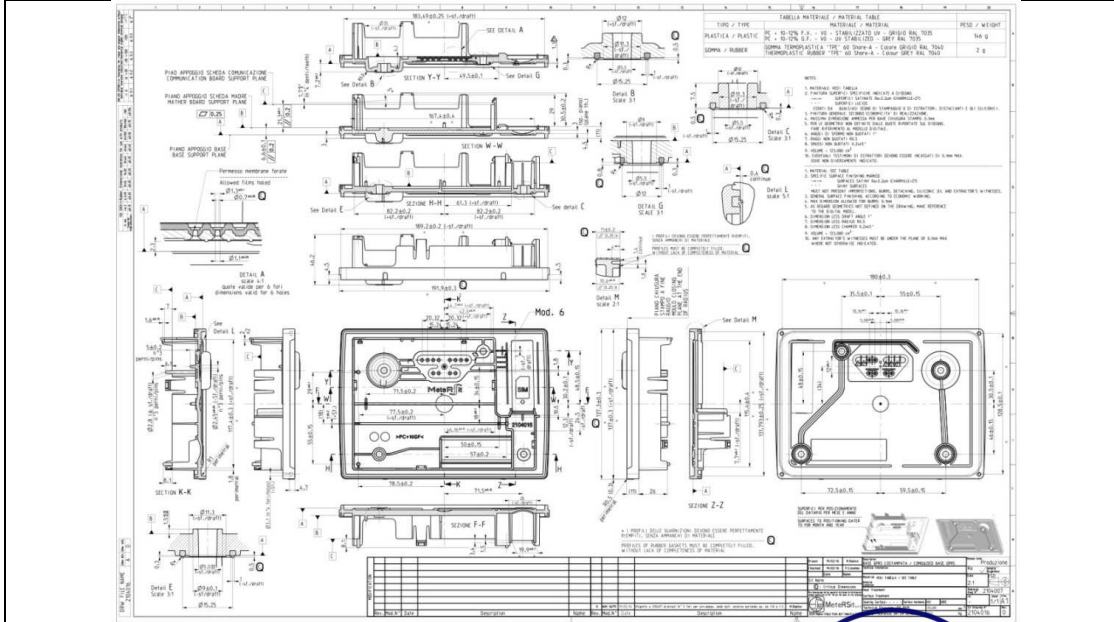
Figure 3.2 – VIEW OF FLOW SENSOR V2.0



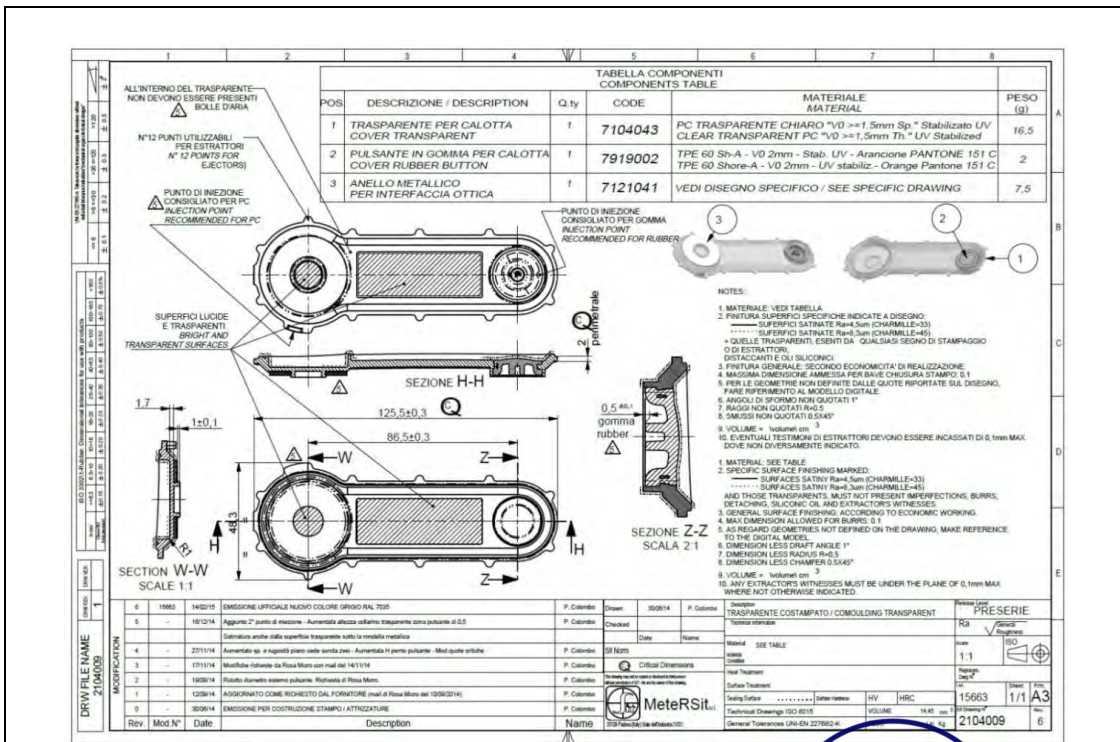
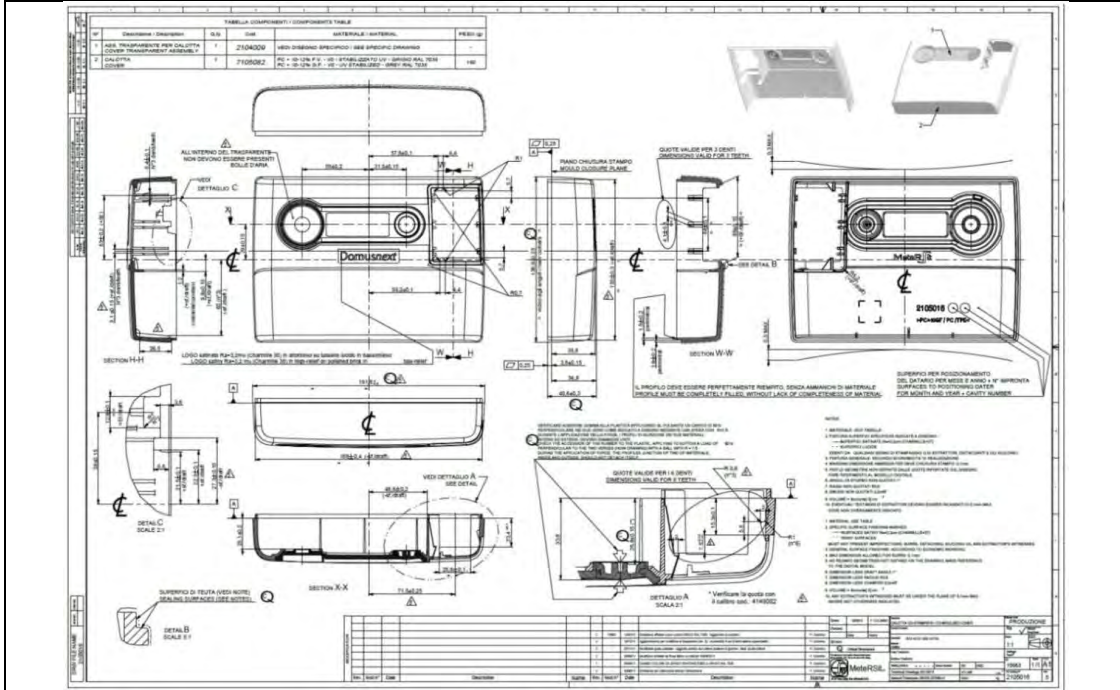
**FIGURE 3.3 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE (NEW DC MOTOR)**



**FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE**





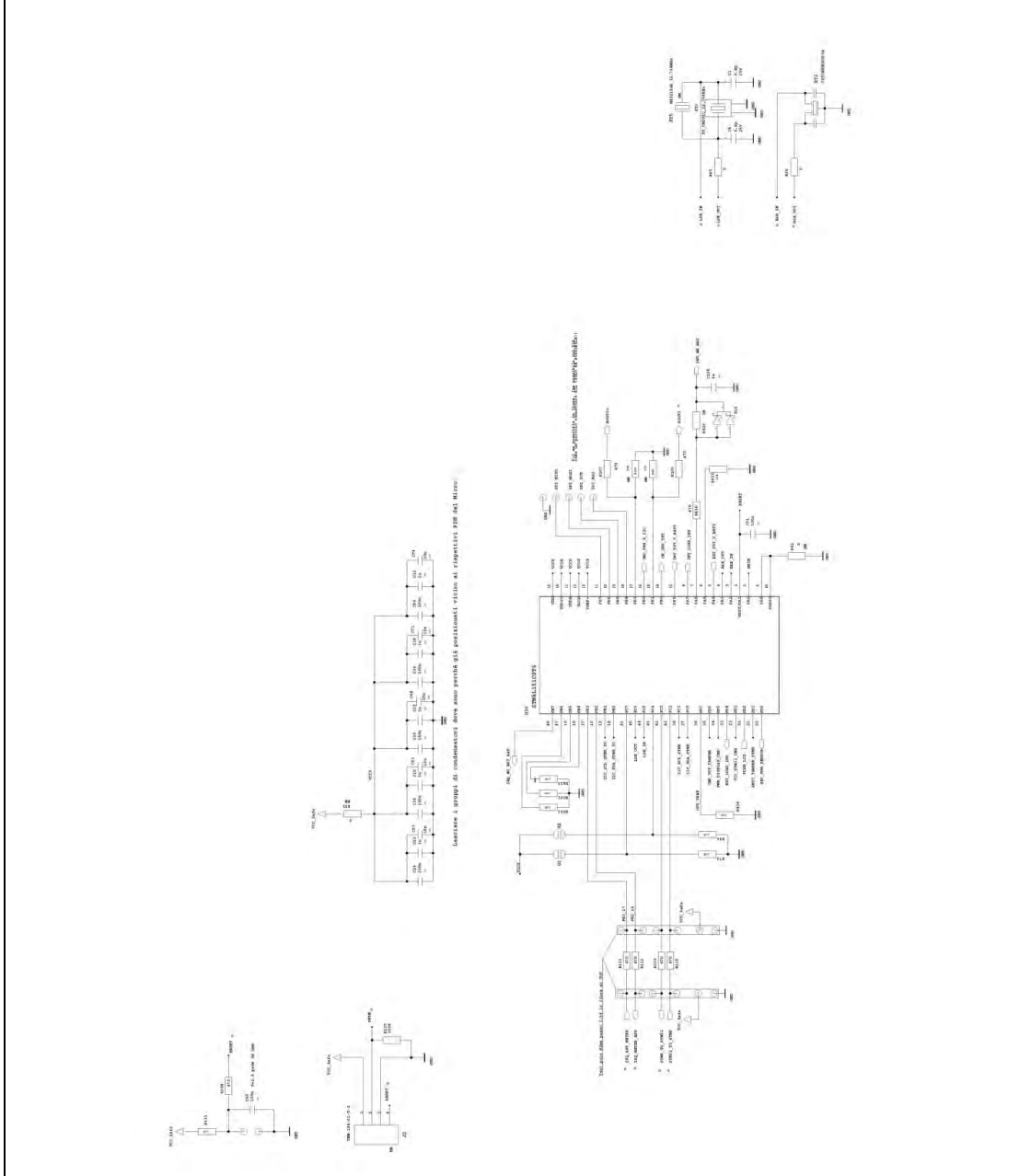




## 5. ELECTRICAL SCHEMATICS

### 5.1. GPRS Board electrical schematics

Figure 5.1 – GPRS board electrical schematics 1 of 6



**Figure 5.2 – GPRS board electrical schematics 2 of 6**

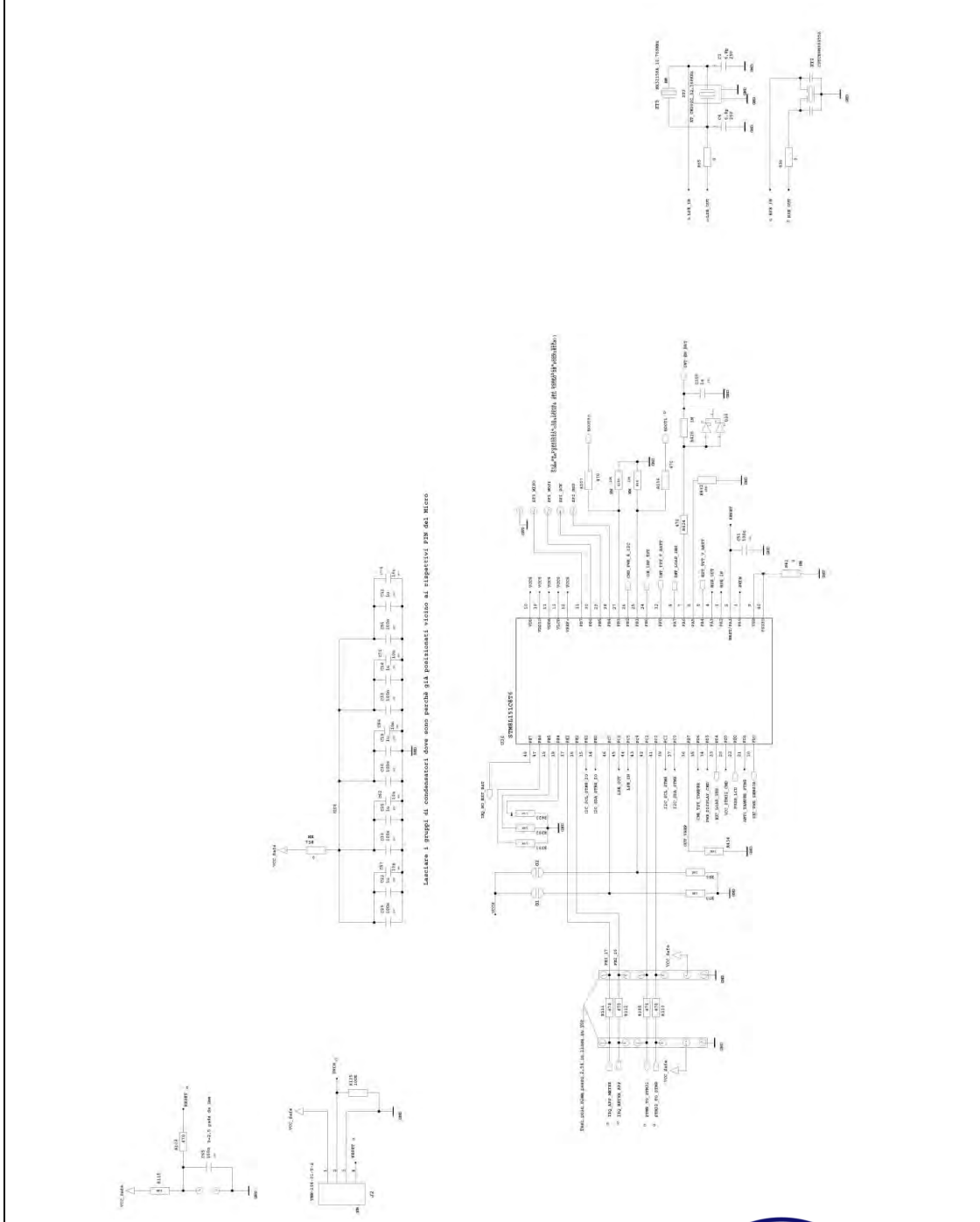


Figure 5.3 – GPRS board electrical schematics 3 of 6

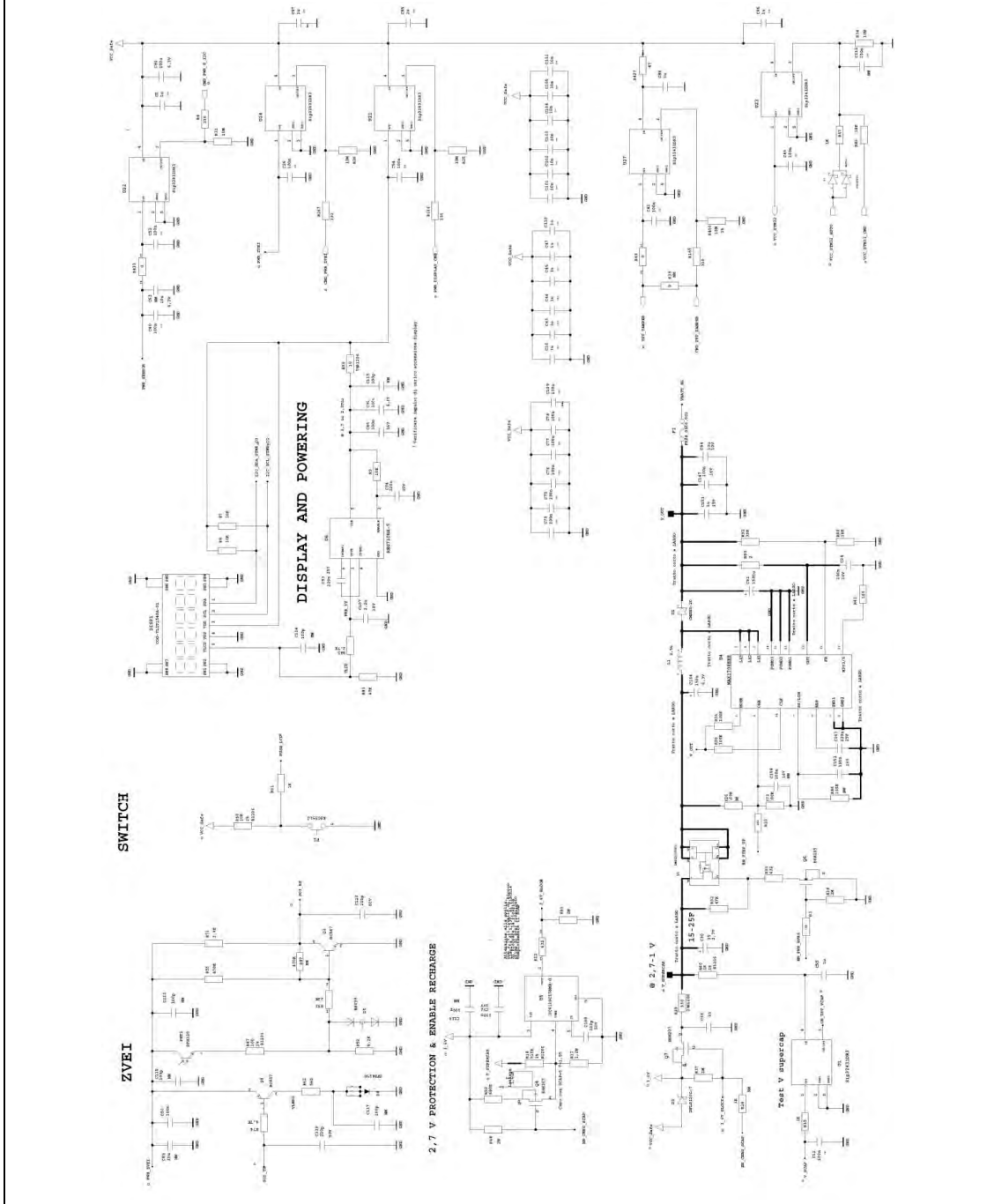


Figure 5.4 – GPRS board electrical schematics 4 of 6

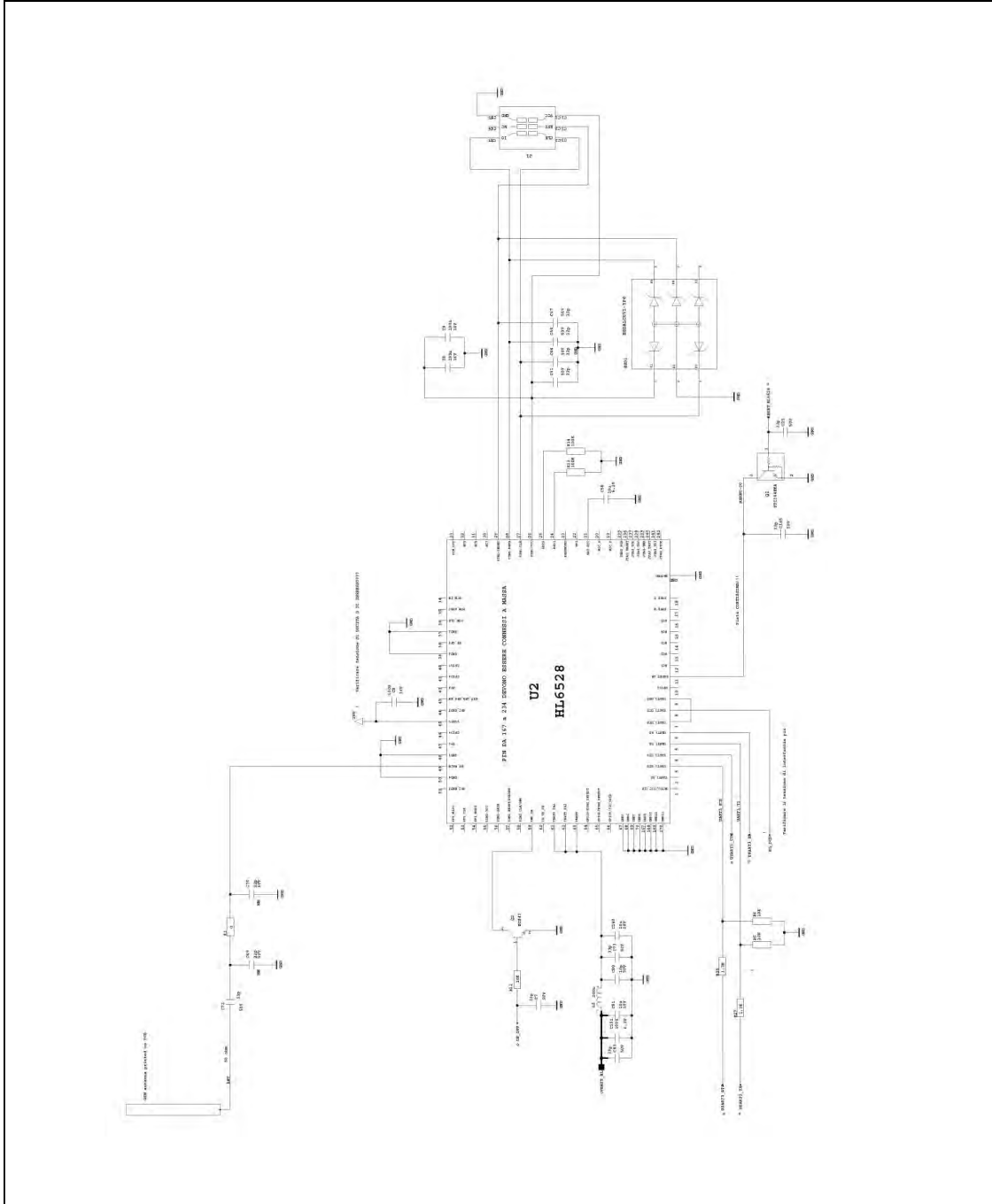
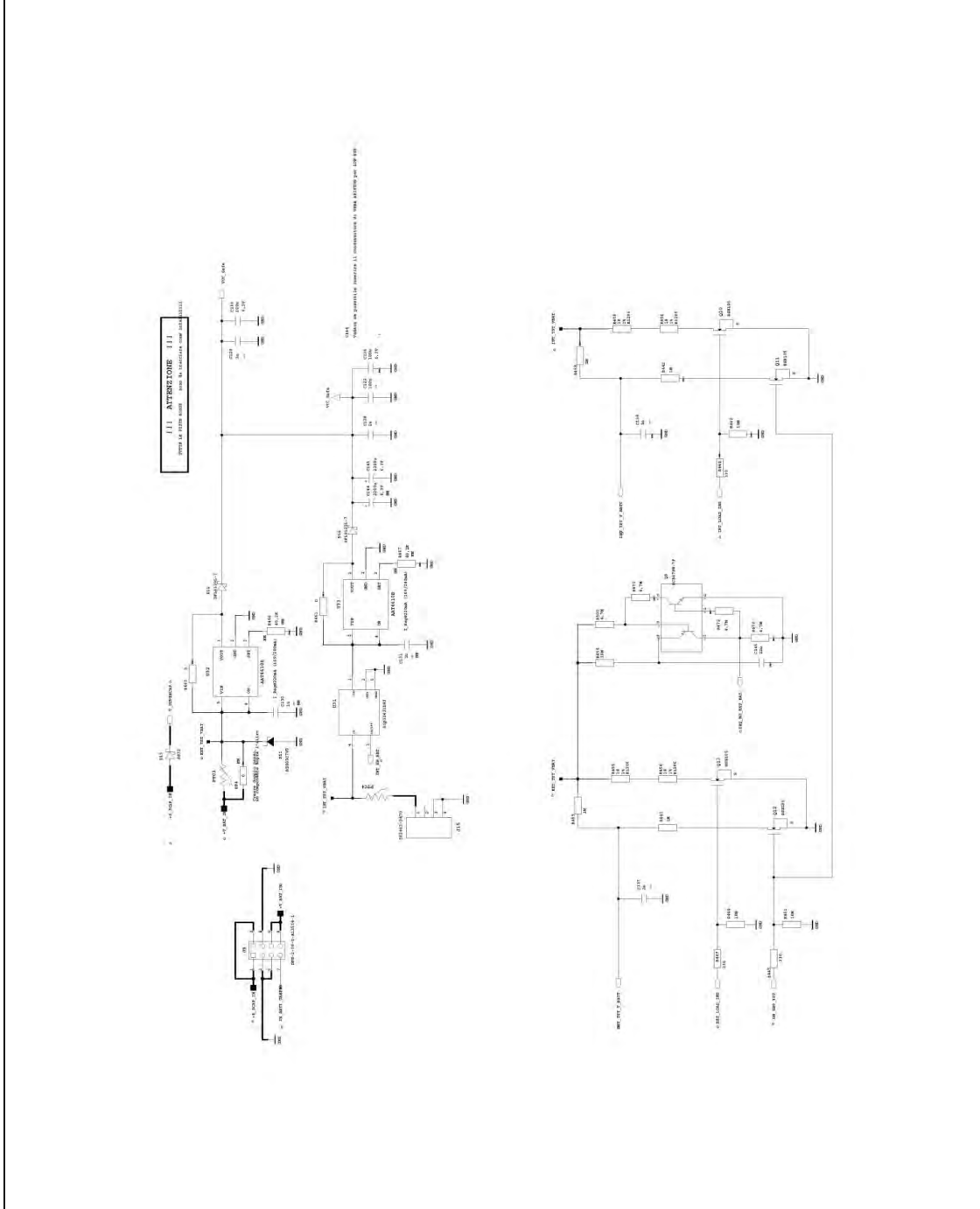
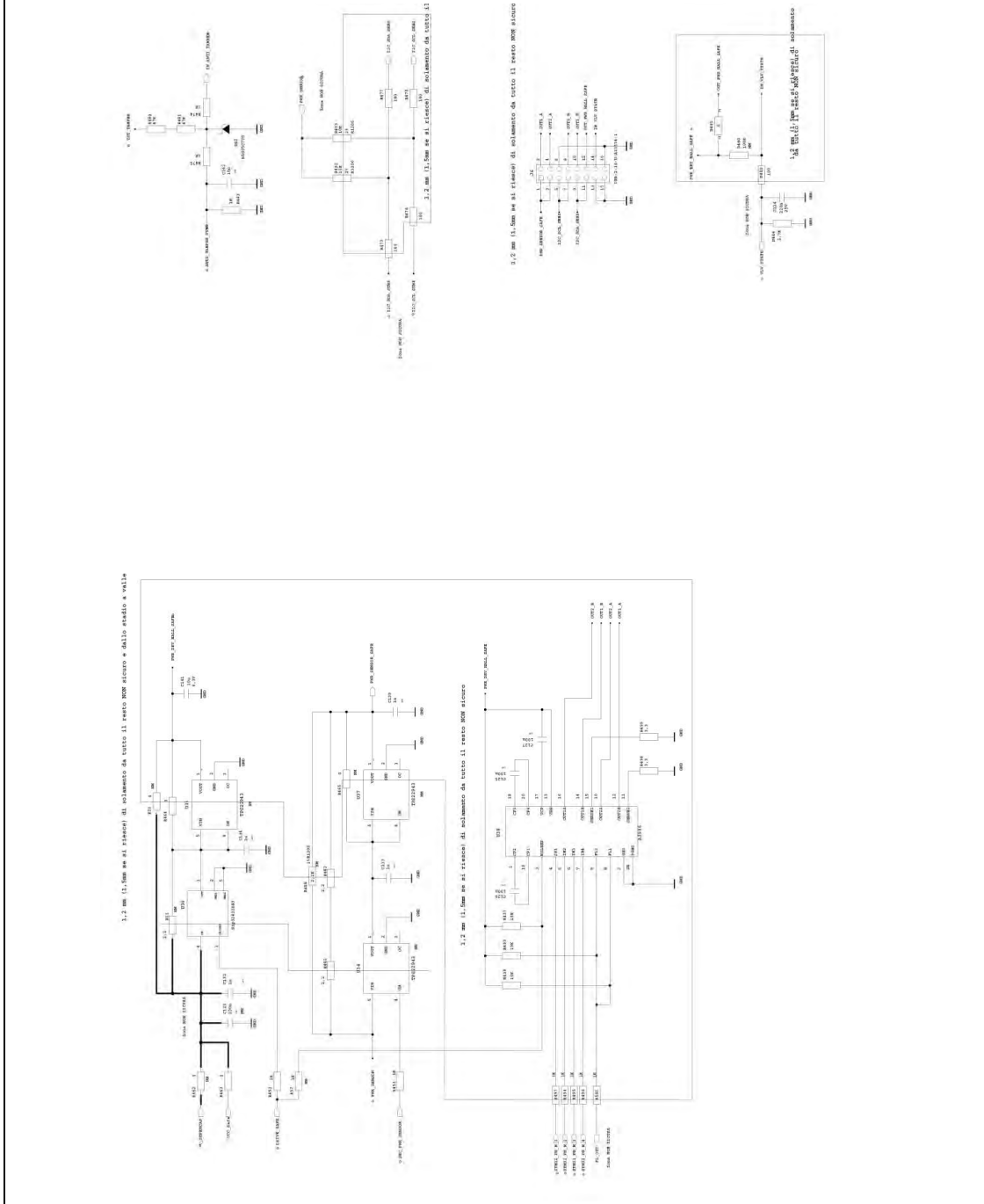


Figure 5.5 – GPRS board electrical schematics 5 of 6



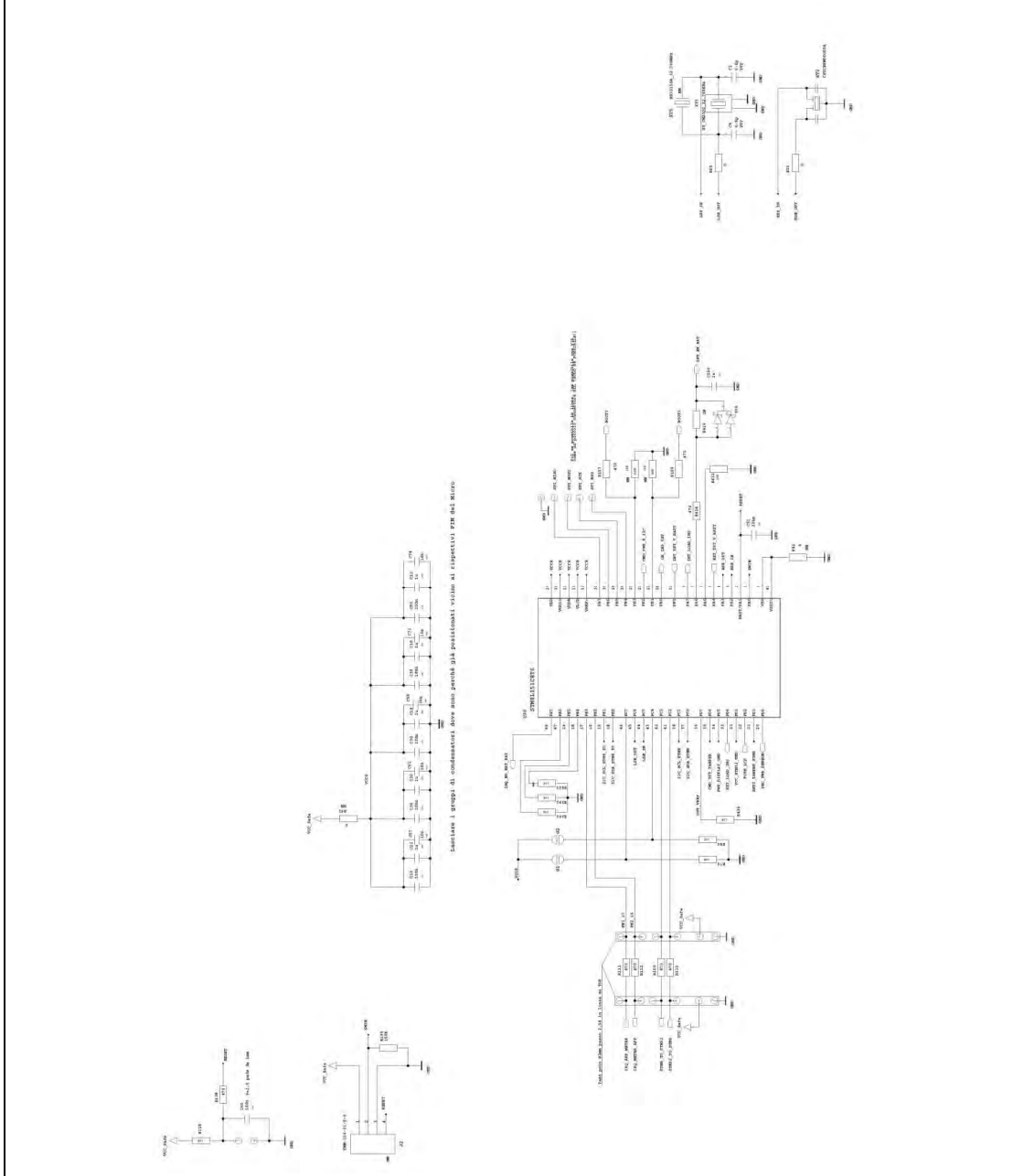
**Figure 5.6 – GPRS board electrical schematics 6 of 6**





**5.2. MBUS Board electrical schematics**

Figure 5.7 – MBUS board electrical schematics 1 of 6



**Figure 5.8 – MBUS board electrical schematics 2 of 6**

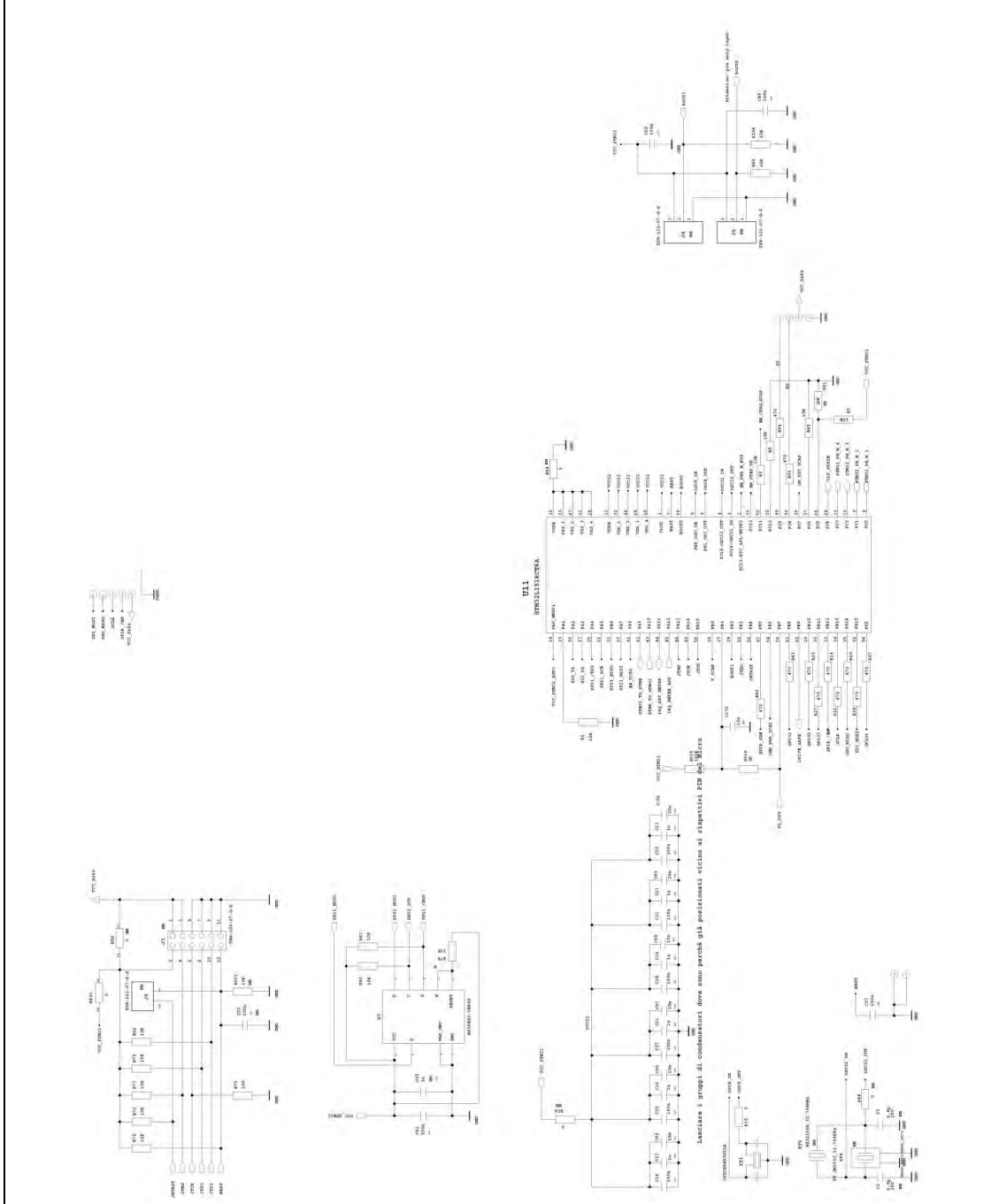


Figure 5.9 – MBUS board electrical schematics 3 of 6

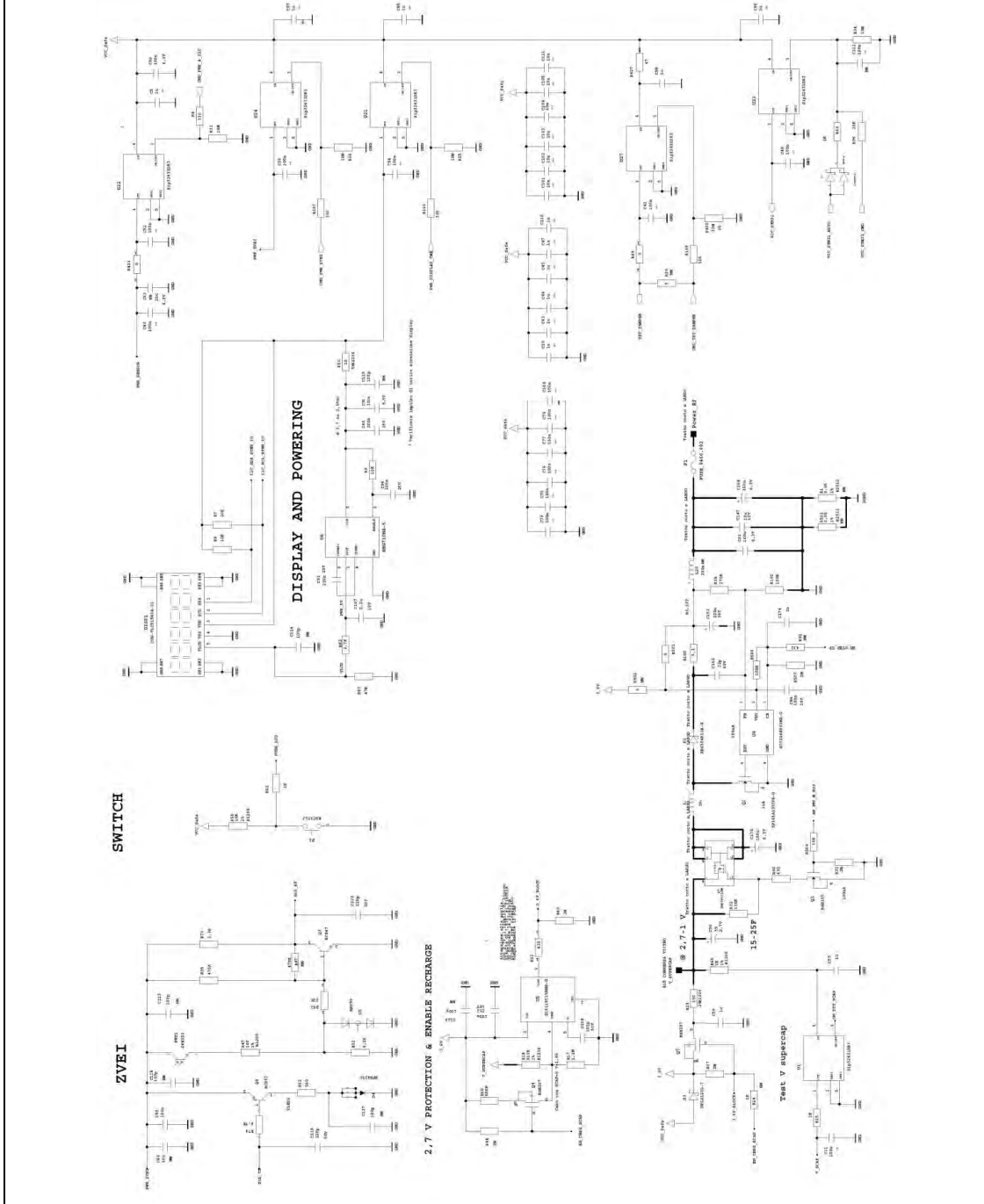


Figure 5.10 – MBUS board electrical schematics 4 of 6

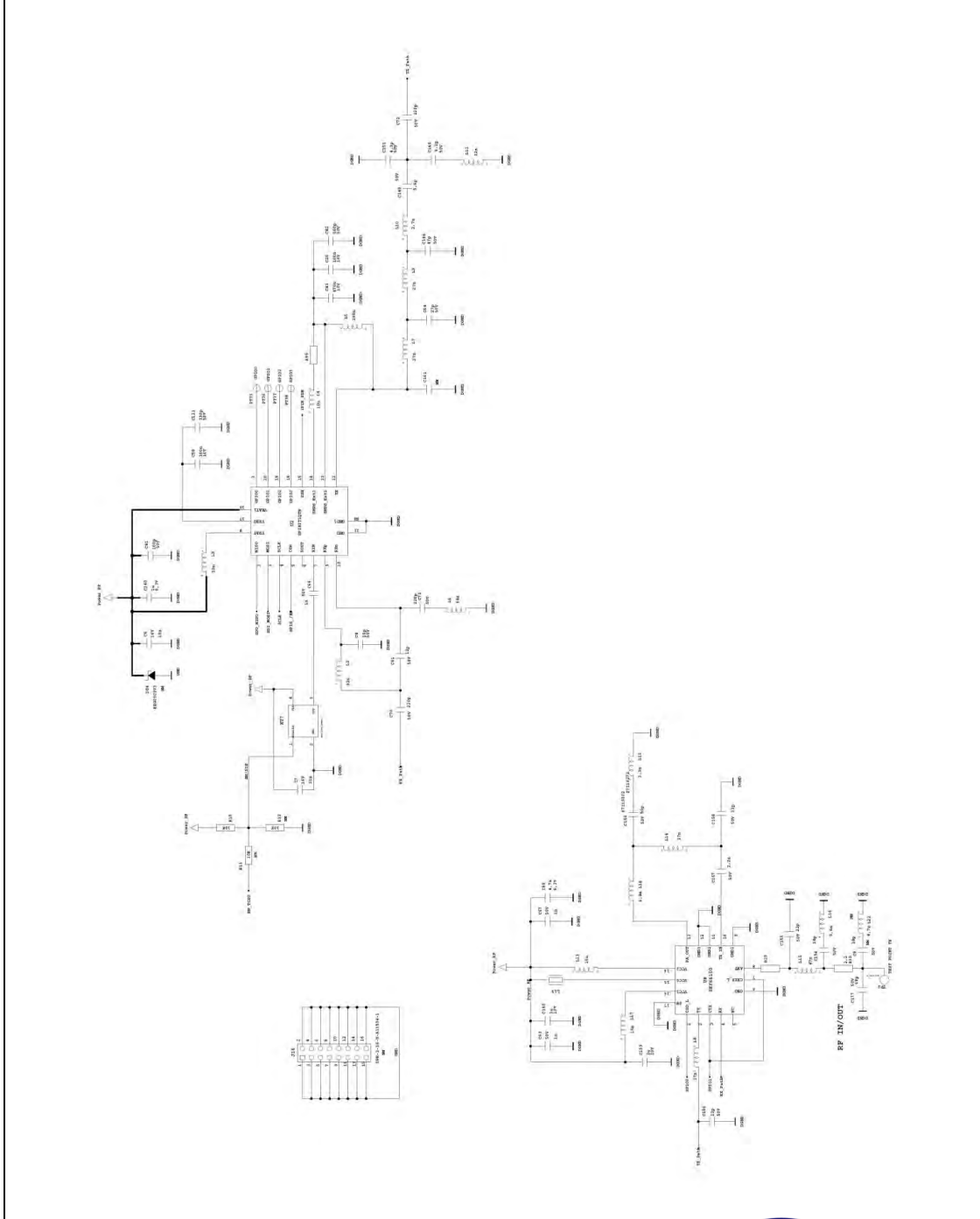
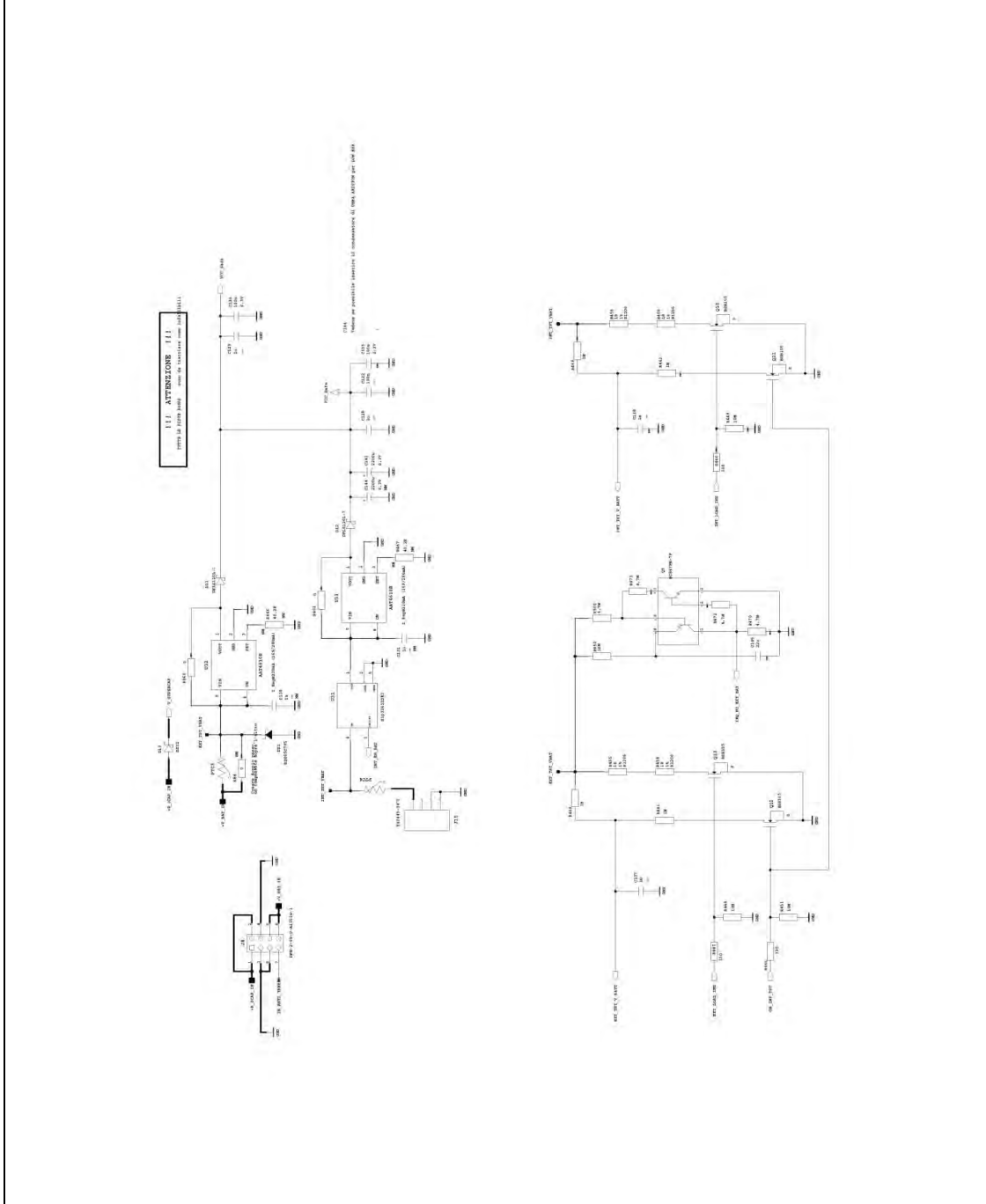
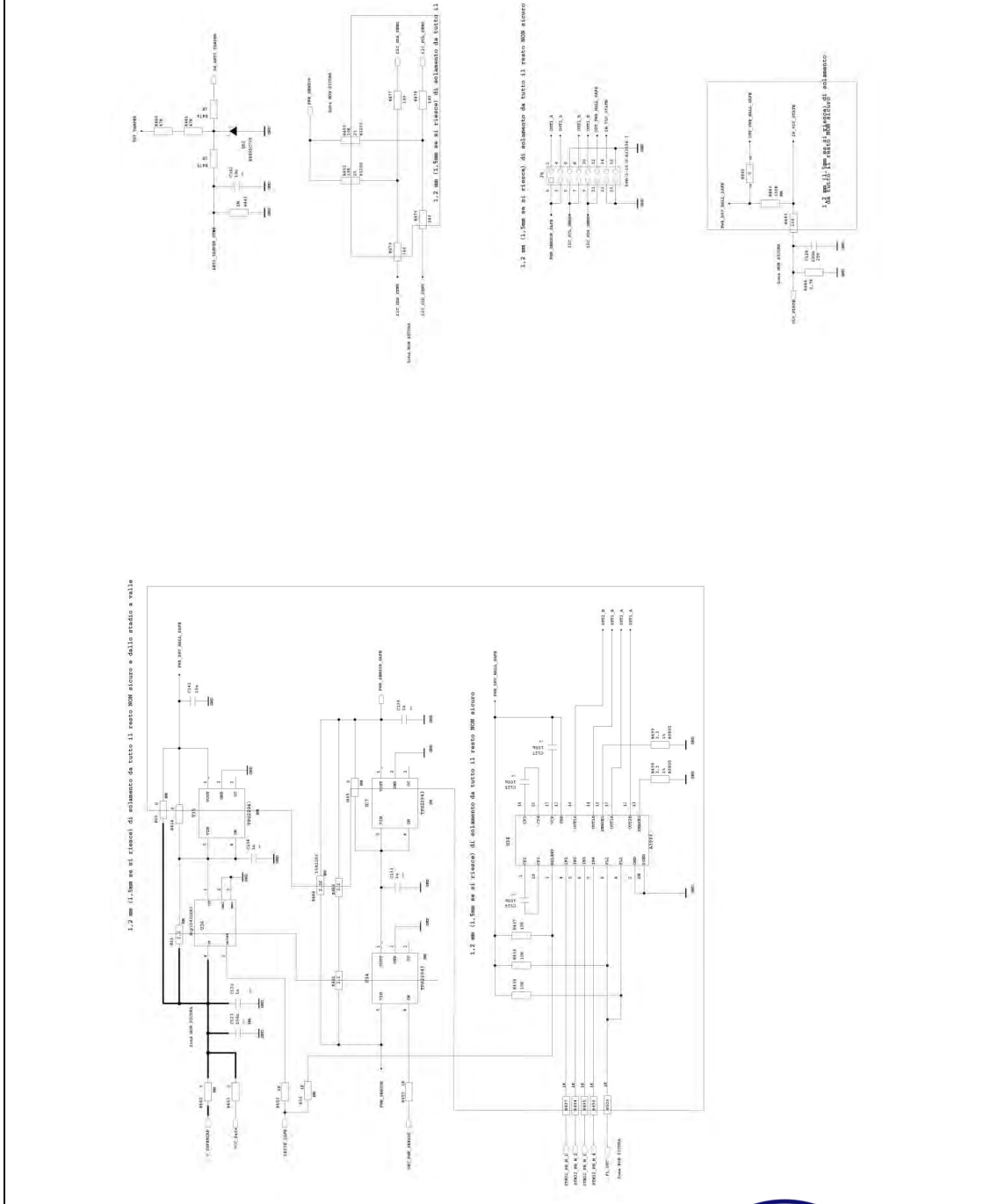


Figure 5.11 – MBUS board electrical schematics 5 of 6



**Figure 5.12 – MBUS board electrical schematics 6 of 6**



## 6. PCB LAYOUT

### 6.1. GPRS Board layout

Figure 6.1 – GPRS board layout TOP view

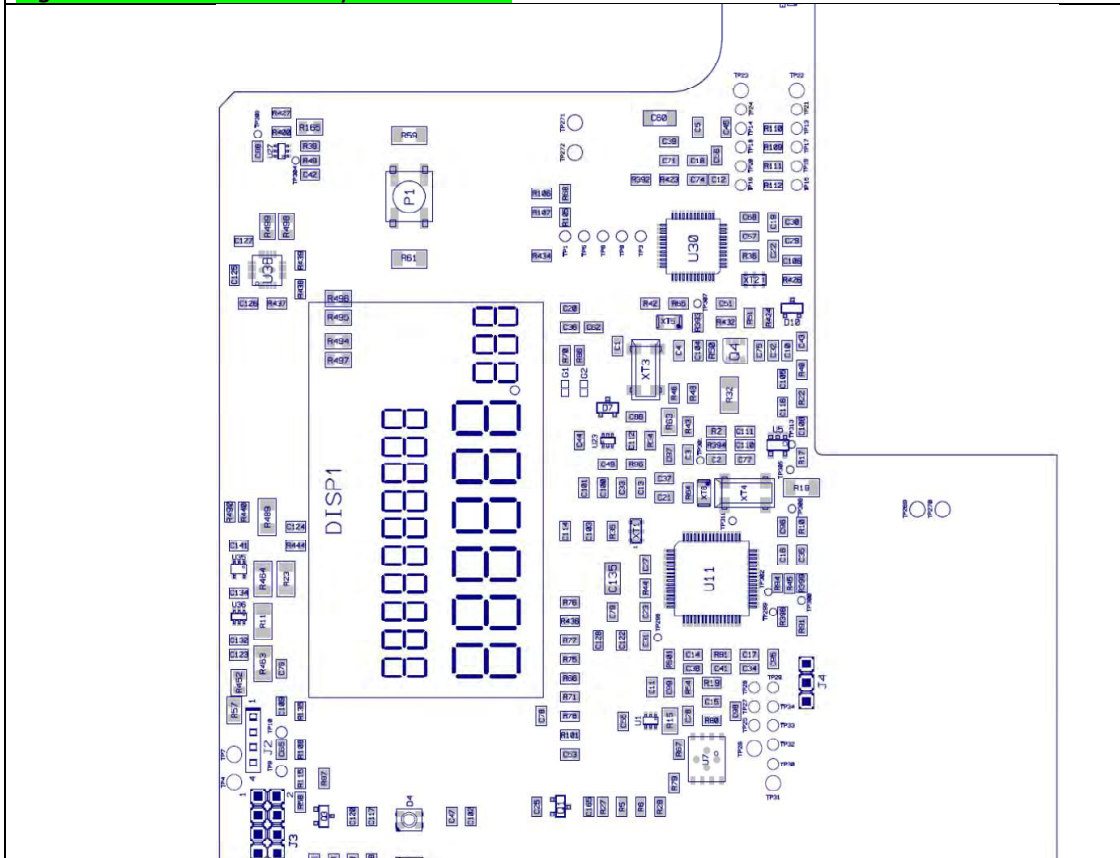
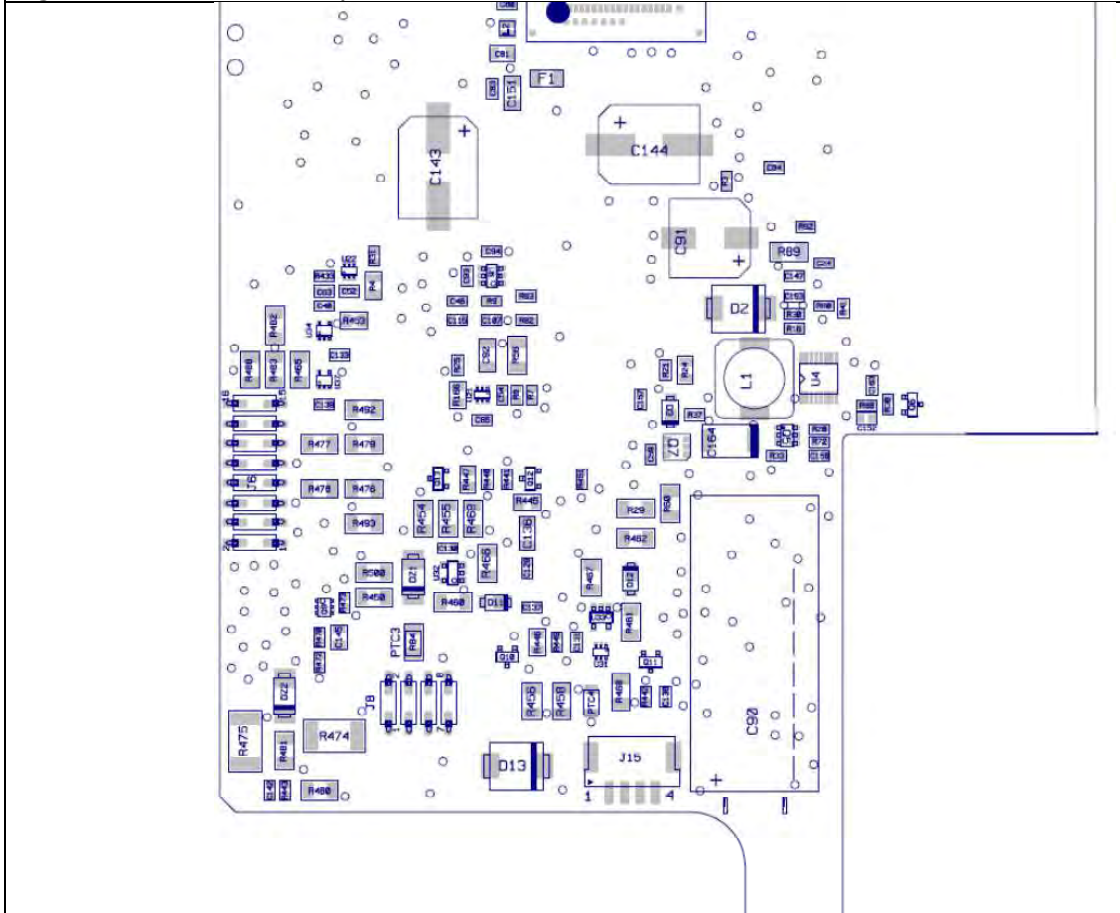


Figure 6.2 – GPRS board layout BOTTOM view





## 6.2. MBUS Board layout

Figure 6.3 – MBUS board layout TOP view

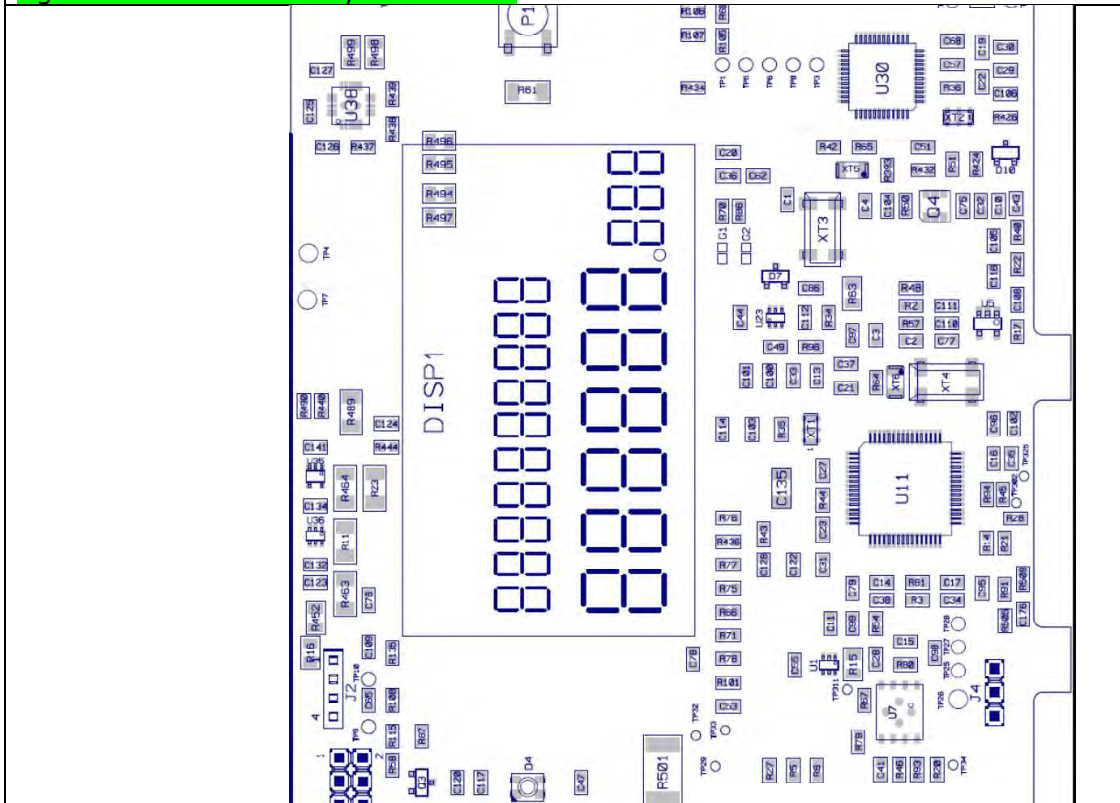
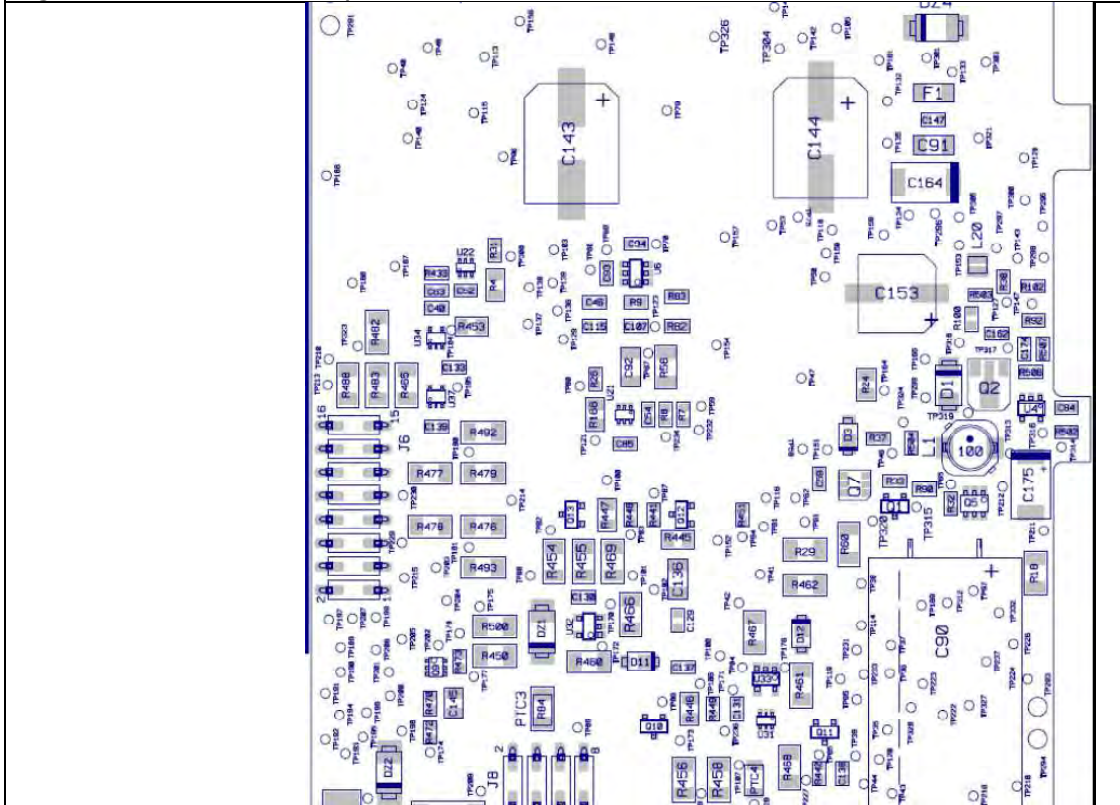


Figure 6.4 – MBUS board layout: BOTTOM view



## 7. PART LIST

The gas meter includes the following main components:

| Component                    | Manufacturer    | Reference                             |
|------------------------------|-----------------|---------------------------------------|
| <b>Removable Battery</b>     | ---             | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Back-up Battery</b>       | ---             | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Electronic GPRS Board</b> | MeterSIt S.r.l. | See paragraph 5.1                     |
| <b>Electronic MBUS Board</b> | MeterSIt S.r.l. | See paragraph 5.2                     |
| <b>Connection Board</b>      | MeterSIt S.r.l. | See paragraph 5.3                     |
| <b>Display</b>               | Varitronix      | See Figure 10                         |
| <b>Gas Sensor</b>            | Sensirion       | See Figures 3.2 and 3.2.1             |
| <b>Metallic Gas Chamber</b>  | SIT S.p.A.      | See paragraph 3                       |
| <b>Plastic Case</b>          | MeterSIt S.r.l. | See Figure 3.5                        |

In the following paragraphs the part lists relative to the electronic boards are described in detail.



**7.1. GPRS board part list**

| Tablo / Title  | BOM 2238039.0 (per item 1238041 e 1238043)        |  |                    |             | METER51               |                       |
|--|---|--|--------------------|-------------|-----------------------|-----------------------|
| Cliente / Customer   | MeterSit  |  | Codice / Code      |             | 2238039.0             |                       |
| Descrizione progetto / Project description   | Schema GASMETER G4G6 GPRS Versione per volvole DC |  | Progetto / Project |             | Meter STEP1           |                       |
| Stato / State  | PRELIMINARE                                       | RESERVATO  | Data / Date        |             | 15/01/16              |                       |
| Reference  | Quantity  | Description  | Value              | Not Mounted | Manufacturer          | Manufacturer PN       |
| U1 U21 U24 U27 U31 U36   |   | 8 Load Switch with reverse blocking 1A SC70-6                                  |                    |             | Vishay                | Sip32431DR3 - 11GE3   |
| C31  |   | 1 ALUMI RAD. ELE. SMT PANASONIC SERIES FK 1500UF 6.3V 20% 10X10.2              | 1500u              |             | Panasonic             | EEFCKU152P            |
| C164   |   | 1 SMD Alum. Ele. CAP 1500UF 6.3V EEFCKU151R PANASONIC                          | 150u               |             | Panasonic             | EEFCKU151R            |
| C143   |   | 1 SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                                 | 2200u              |             | NIC COMP              | NAT222M6.3V12.5X14KLB |
| C144   |   | 1 SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                                 | 2200u              | NM          | NIC COMP              | NAT222M6.3V12.5X14KLB |
| C5 C10 C12 C14 C16 C23 C43 C45 C47 C55 C59 C85 C88 C106 C110 C128 C129 C132 C134 C153  |   | 31 CAP SMD 0603 X5R 1UF 25V  | 1u                 |             | Kemet                 | C0803C105K3PACTU      |
| C15 C130 C131  |   | 3 CAP SMD 0603 X5R 1UF 25V   | 1u                 |             | Kemet                 | C0803C105K3PACTU      |
| C60 C92 C135 C136 C151   |   | 5 CAP SMD 1206 X5R 100UF 6.3V  | 100u               | NM          | MURATA                | GRM31CR60J107ME35L    |
| C57 C62 C68 C71 C74 C95 C105 C111 C142   |   | 18 CAP SMD 0603 X7R 100PF 50V  | 10n                |             | Murata                | GRM18BR71H103KA01J    |
| C61 C84 C66 C67  |   | 4 CAP SMD 0603 X7R 22PF 50V  | 22p                |             | AVX                   | 060324208KAT2A        |
| C108   |   | 1 CAP SMD 0603 X7R 100PF 50V   | 100p               |             | AVX                   | 06035C101KAT2A        |
| C113 C118  |   | 6 CAP SMD 0603 X7R 100PF 50V   | 100p               | NM          | AVX                   | 06035C101KAT2A        |
| C81 C149   |   | 2 CAP SMD 0805 X7R 100P 10V  | 10u                |             | Murata                | GRM21BR11A100LE51     |
| C145   |   | 1 CAP SMD 0805 X2R 22UF 6.3V MURATA Code GRM21BR60J226ME35L                    | 22u                |             | Murata                | GRM21BR60J226ME35L    |
| C7 C25 C72 C73 C83 C165  |   | 6 CAP SMD 0603 COG 33PF 50V  | 33p                |             | Vishay / Vitamon      | VJ0603A330JACW1BC     |
| C1 C4  |   | 1 CAP SMD 0603 COG 6.8PF 25V   | 6.8p               |             | AVX                   | 060334RR68AT2A        |
| C2 C3  |   | 2 CAP SMD 0603 COG 6.8PF 25V   | 6.8p               | NM          | AVX                   | 060334RR68AT2A        |
| C137 C139  |   | 3 CAP SMD 0603 X7R 10PF 50V  | 1n                 |             | Murata                | GRM18BR71H102KA37D    |
| C59 C84 C124 C163  |   | 4 CAP SMD 0603 X7R 220PF 25V   | 220n               |             | Kemet                 | C0803C220K3RACTU      |
| C6 C8 C9 C11 C24 C26 C42 C46 C48 C52 C54 C56 C65 C75 C79 C109 C122 C125 C127 C147 C152 |   | 43 CAP SMD 0603 X7R 100NF 16V  | 100n               |             | Kemet                 | C0803C104K5RACT013    |
| C53 C112 C123 C158   |   | 4 CAP SMD 0603 X7R 100NF 16V   | 100n               | NM          | Kemet                 | C0803C104K5RACT013    |
| C58 C141   |   | 2 CAP SMD 0603 X5R 10UF 6.3V   | 10u                |             | Kemet                 | C0803C105M3PACTU      |
| C63  |   | 1 CAP SMD 0603 X5R 10UF 6.3V   | 10u                | NM          | Kemet                 | C0803C105M3PACTU      |
| C84  |   | 1 CAP SMD 0603 X5R 10UF 10V  | 10u                |             | TDK                   | C1608SR1A106K         |
| C89  |   | 1 CAP SMD 0603 X5R 10UF 10V  | 10u                | NM          | TDK                   | C1608SR1A106K         |
| C107   |   | 1 CAP SMD 0805 X5R 2 2UF 10V   | 2.2u               |             | Murata                | GRM18BR61A225ME34D    |
| C89 C170   |   | 2 CAP SMD 0603 LPO 22PF 50V  | 22p                |             | Kemet                 | C0803C220J5ACTU       |
| C119 C120  |   | 2 CAP SMD 0603 COG 220PF 50V   | 220p               |             | Murata                | GRM1885C1H221FA01D    |
| C80  |   | 1 CAP SMD 0603 COG 10PF 50V ±5%  | 10p                |             | Murata                | GRM1885C1H100JA16D    |
| C90  |   | 1 Supercapactor LOW ESR 33F 2.7V   | 33                 |             | Cospec Bussmann       | HY1635-2R255-R        |
| Q2 Q3  |   | 2 NPN Transistor Bipolar SMD case SOT23  |                    |             | Philips               | BC847 BC847C          |
| Q1   |   | 1 NPN DigitalResistor Transistor case SOT23                                    |                    |             | Rohm                  | DTC144EA              |
| Q8   |   | 1 COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                     |                    |             | Diodes                | BC241PN-1F            |
| Q5   |   | 1 PNP TRANSISTOR BIPOLAR SMD CASE SOT23  |                    |             | PHILIPS               | BC187                 |
| D5   |   | 1 Dual Switching diode 0.15 A / 60 V, Case SOT23 BAV99                         |                    |             | Philips               | BAV99                 |
| D17 D18  |   | 2 Dual Schottky Diode Common Cathode 250mA, SOT23 BAT54C                       |                    |             | Philips               | BAT54C                |
| D13  |   | 1 Schottky SMD Case DO-214AB 20V 3A  |                    |             | General Semiconductor | SS32                  |
| D3 D11 D12   |   | 3 SMD_Schottky_Diode_1A_20V  |                    |             | Diode Incorporated    | DFL5120L-7            |
| D2   |   | 1 5.0 Amp surface mount silicon Schottky SMC                                   |                    |             | CENTRAL SEMICONDUCTOR | CSMSH5-20             |
| Q4 Q7  |   | 2 P-channel enhancement mode MOS transistor, 12V, -1.5A, SOT457                |                    |             | Philips               | BSH207                |
| Q6   |   | 1 P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, 20V -6A 70MMHxL SOT26             |                    |             | PHILIPS               | PHMPT9341VT-7         |
| Q5 Q10 Q13   |   | 5 N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                 |                    |             | Philips               | BSH105                |
| D4   |   | 1 HIGH POWER INFRARED EMITTER DIODE  |                    |             | OSRAM                 | SFH4250               |
| D21 D22  |   | 2 SMD zener diode Case DO-214 1.25W Vishay 7.5V BZG95CBV2                      |                    |             | Vishay                | BZG95C7V5             |
| F1   |   | 1 Film Fuse SMD - LITTLEFUSE 0465 002 (1206)                                   |                    |             | Littlefuse            | 0465 002R             |
| PTC3 PTC4  |   | 2 Polyswitch Resettable Device SMD 1206 - 0.8V - 0.2 / 0.8Ohm IH=0.5A IT=1.10A |                    |             | Tyco Electronics      | NanoSMD050F           |
| ESD1   |   | 1 ESD protection for high speed interface                                      |                    |             | ST Microelectronics   | ESDADL05V1-5P6        |
| PH11   |   | 1 NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA                          |                    |             | OSRAM                 | SFH320FA              |
| L2   |   | 1 SMD INDUCTOR - COILCAFT 200H DCR=24MA IRMS=2.2A                              | 200H               |             | Coilcraft             | XPPL2010-201MLB       |
| L1   |   | 1 Ferrite drum core construction 10X10 2.5uH                                   | 2.5u               |             | SUMIDA                | CDRH104R-2R5          |
| U5   |   | 1 1.5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR        |                    |             | TORREX                | YG5119C155MR-G        |
| U6   |   | 1 Texas_Instrumts_Page_Erasable_Serial_Flash_Memory                            |                    |             | Texas Instruments     | REG710A-5             |
| U7   |   | 1 8 Mbit, low voltage, Page-Erasable Serial Flash memory                       |                    |             | Namonyx               | MA3PE8B-VMP6G         |
| CS   |   | 1 CS Schema GPRS Constante Cas G4/G6 per Volvole DDM                           |                    |             | MeterSit              | 2238039.0             |
| ATT1   |   | 1 PLASTIC SWITCH   |                    |             | MeterSit              | 7117002               |
| XT3  |   | 1 Crystal SMD 32.768kHz ±10ppm CITIZEN CM200C-032K768000ZRF1                   | MHz                |             | CITIZEN               | CM200C-032K768000ZRF1 |
| XT4  |   | 1 Crystal SMD 32.768kHz ±10ppm CITIZEN CM200C-032K768000ZRF1                   | 32.768kHz          | NM          | CITIZEN               | CM200C-032K768000ZRF1 |
| XT5 XT6  |   | 2 QUARTZ SMD 32.768MHz ±10ppm NDK  |                    | NM          | NDK                   | NQ3215SA_32.768MHz    |
| R427   |   | 1 RESISTOR SMD 0603 - 0.60W 1% 47  | 47                 |             | Vishay                | CRCW060347R0F         |
| R41  |   | 1 RESISTOR SMD 0603 - 0.60W 1% 100   | 100                |             | Vishay                | CRCW0603100R0F        |
| R31 R34 R106 R112 R424   |   | 10 RESISTOR SMD 0603 - 0.60W 5% 470  | 470                |             | Vishay                | CRCW0603470RJ         |
| R62  |   | 1 RESISTOR SMD 0603 - 0.60W 1% 560   | 560                |             | Vishay                | CRCW0603560R0F        |
| R62 R444   |   | 2 RESISTOR SMD 0603 - 0.60W 1% 2.7K  | 2.7K               |             | Vishay                | CRCW06032K70F         |
| R73  |   | 1 RESISTOR SMD 0603 - 0.60W 1% 3.9K  | 3.9K               |             | Vishay                | CRCW06033K90F         |
| R74  |   | 1 RESISTOR SMD 0603 - 0.60W 1% 4.7K  | 4.7K               |             | VISHAY                | CRCW06034K70F         |
| R62  |   | 1 RESISTOR SMD 0603 - 0.60W 5% 8.2K  | 8.2K               |             | Vishay                | CRCW06038K20J         |
| R21  |   | 1 RESISTOR SMD 0603 - 0.60W 1% 2K  | 2K                 | NM          | Vishay                | CRCW06032K00F         |



| Tablo / Title   |    | BOM 2238038.0 (per item 1238041 e 1238043)  |                      | METER5IT           |             |                              |                            |
|---|----|---|----------------------|--------------------|-------------|------------------------------|----------------------------|
| Cliente / Customer  |    | Meter5it  |                      | Codice / Code      |             |                              |                            |
| Descriptione progetto / Project description   |    | Schema GASMETER G4G6 OPRES Versione per valvole DC  |                      | Progetto / Project |             |                              |                            |
| Stato / State   |    | PRELIMINARE / RISERVATO   |                      | Data / Date        |             |                              |                            |
| Reference   |    | Quantity  | Description          | Value              | Not Mounted | Manufacturer                 | Manufacturer P/N           |
| R2 R3 R5-R10 R43 R45 R46 R66 R67 R69-R71 R75-R81 R86 R96 R104 R115 R332-R394 R398 R399 R423 R432 R434 R437 C157 | 38 | RESISTOR SMD 0603 - 0.05W 1%  | 10K                  | 10K                |             | Vishay                       | CRCW060310K0F              |
| R58 R101 R105 R501 R439   | 5  | RESISTOR SMD 0603 - 0.05W 1%  | 10K                  | 10K                | NM          | Vishay                       | CRCW060310K0F              |
| R90   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 15K                  | 15K                |             | Vishay                       | CRCW060315K0F              |
| R92   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 39K                  | 39K                |             | Vishay                       | CRCW060339K0F              |
| R13 R14 R16 R30 R72 R135  | 6  | RESISTOR SMD 0603 - 0.05W 1%  | 100K                 | 100K               |             | Vishay                       | CRCW0603100K0F             |
| R19 R20 R88 R445  | 4  | RESISTOR SMD 0603 - 0.05W 1%  | 100K                 | 100K               | NM          | Vishay                       | CRCW0603100K0F             |
| R17   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 1.2M                 | 1.2M               |             | Vishay                       | CRCW06031M20PFKEA          |
| R426 R441-R443  | 4  | RESISTOR SMD 0603 - 0.05W 1%  | 1M                   | 1M                 |             | Vishay                       | CRCW06031M00F              |
| R27 R39 R40 R48   | 4  | RESISTOR SMD 0603 - 0.05W 1%  | 2M                   | 2M                 |             | Vishay                       | CRCW06032M00F              |
| R25 R26 R31 R34 R400 R448 R449 R451   | 8  | RESISTOR SMD 0603 - 0.05W 1%  | 10M                  | 10M                |             | Vishay                       | CRCW060310M0PFKEA          |
| R1 R35 R36 R49 R65 R433 R436 R490   | 8  | RESISTOR SMD 0603 - 0.05W 1%  | 0                    | 0                  |             | Vishay                       | CRCW060300002              |
| R39 R42 R44 R51 R54 R58 R64   | 7  | RESISTOR SMD 0603 - 0.05W 1%  | 0                    | 0                  | NM          | Vishay                       | CRCW060300002              |
| R22 R33   | 2  | RESISTOR SMD 0603 - 0.1W 1%   | 432 CRCW0603432RFKEA | 432                |             | Vishay                       | CRCW0603432RFKEA           |
| R27 R28   | 2  | RESISTOR SMD 0603 - 0.05W 1%  | 1.3K                 | 1.3K               |             | Vishay                       | CRCW0603470K0F             |
| R12   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 10K                  | 10K                |             | Vishay                       | CRCW060310K0F              |
| R53   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 22K                  | 22K                |             | VISHAY                       | CRCW060322K0F              |
| R63   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 47K                  | 47K                |             | Vishay                       | CRCW0603470K0F             |
| R65   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 470K                 | 470K               |             | Vishay                       | CRCW0603470K0F             |
| R87   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 470K                 | 470K               | NM          | Vishay                       | CRCW0603470K0F             |
| R50   | 1  | RESISTOR SMD 0603 - 0.05W 1%  | 680K                 | 680K               |             | Vishay                       | CRCW0603680K0F             |
| R470 R472 R473  | 3  | RESISTOR SMD 0603 - 0.05W 1%  | 4.7M                 | 4.7M               |             | Vishay                       | CRCW0603470M0F             |
| R4 R165-R167 R445-R447  | 7  | RESISTOR SMD 0805 - 0.125W 1%   | 330                  | 330                |             | Vishay                       | CRCW0805330F               |
| R15 R63 R452 R453   | 4  | RESISTOR SMD 0805 - 0.125W 1%   | 1K                   | 1K                 |             | Vishay                       | CRCW08051K00F              |
| R24 R27   | 2  | RESISTOR SMD 0805 - 0.125W 1%   | 1K                   | 1K                 | NM          | Vishay                       | CRCW08051K00F              |
| R494 R497 R502  | 5  | RESISTOR SMD 0805 - 0.125W 5%   | 1K                   | 1K                 |             | Vishay                       | CRCW08051K00J              |
| R498 R499   | 2  | RESISTOR SMD 0805 - 0.125W 1%   | 7.5                  | 7.5                |             | Vishay                       | CRCW08057R50F              |
| R23 R38 R462 R465   | 4  | RESISTOR SMD 1206 - 0.25W - 5%  | 0                    | 0                  | NM          | Vishay                       | CRCW12060R0J               |
| R460 R461 R463 R464   | 4  | RESISTOR SMD 1206 - 0.25W - 5%  | 0                    | 0                  |             | Vishay                       | CRCW12060R0J               |
| R89   | 1  | RESISTOR SMD 1206 - 0.25W 1%  | 2                    | 2                  |             | KOA                          | RK73B2TD2R00F              |
| R454 R465 R468  | 4  | RESISTOR SMD 1206 - 0.25W 1%  | 18                   | 18                 |             | Vishay                       | CRCW1206180PFKEA           |
| R47 R489  | 2  | RESISTOR SMD 1206 - 0.25W - 1%  | 100                  | 100                |             | Vishay                       | CRCW1206100F               |
| R29   | 1  | RESISTOR SMD 1206 - 0.25W - 2%  | 330                  | 330                |             | Vishay                       | CRCW1206330F               |
| R11   | 1  | RESISTOR SMD 1206 - 0.25W 1%  | 2.2                  | 2.2                | NM          | Vishay                       | CRCW12062R20FNEB           |
| R482 R483   | 2  | RESISTOR SMD 1206 - 0.25W 1%  | 2.2                  | 2.2                |             | Vishay                       | CRCW12062R20FNEB           |
| R488  | 1  | RESISTOR SMD 1206 - 0.25W - 1%  | 2.2K                 | 2.2K               | NM          | Vishay                       | CRCW12062K20F              |
| R466 R467   | 2  | RESISTOR SMD 1206 - 0.25W 1%  | 40.2K                | 40.2K              |             | Vishay                       | CRCW120640K2PFKEA          |
| R60 R61   | 2  | RESISTOR SMD 1206 - 0.25W 1%  | 1K                   | 1K                 |             | Vishay                       | CRCW12061K0PFKEA           |
| R59 R492 R493   | 3  | RESISTOR SMD 1206 - 0.25W - 2%  | 10K                  | 10K                |             | Vishay                       | RCWP1206103GT              |
| R32 R480 R481   | 3  | RESISTOR SMD 1206 - 0.25W 1%  | 47K                  | 47K                |             | Vishay                       | CRCW120647K0F              |
| R18   | 1  | RESISTOR SMD 1206 - 0.25W 1%  | 910K                 | 910K               |             | Vishay                       | CRCW1206910KPFKA           |
| R466 R469   | 2  | RESISTOR SMD 1206 - 0.25W 1%  | 1M CRCW12061M0F      | 1M                 |             | Vishay                       | CRCW12061M0F               |
| R450  | 1  | RESISTOR SMD 1206 - 0.25W 1%  | 10M                  | 10M                |             | Vishay                       | CRCW120610M0FHEAP          |
| R56   | 1  | RESISTOR SMD 1206 - 0.3W - 5%   | 10 CRCW120610R0JHEAP | 10                 |             | Vishay                       | CRCW120610R0JHEAP          |
| R476 R479   | 4  | RESISTOR SMD 1206 - 0.25W - 1%  | 180 CRCW1206180R0F   | 180                |             | Vishay                       | CRCW1206180R0F             |
| R500  | 1  | RESISTOR SMD 1206 - 0.25W 1%  | 4.7M                 | 4.7M               |             | Vishay                       | CRCW120647M0PFKEA          |
| R474 R475   | 2  | RESISTOR SMD 2512 - 1W 5%   | 1K                   | 1K                 |             | Vishay                       | CRCW25121K0R0J             |
| U30   | 1  | MICROCONTROLLER STM8 8 BIT MCU 64KFLASH 2KB RAM 1KEEPROM LQFP48                               |                      |                    |             | ST Microelectronics          | STM8L151C8E                |
| U11   | 1  | ARM_32Bit_Low_Power_64pin_256KFlash_32KRam_LQFP   |                      |                    |             | ST Microelectronics          | STM32L151RCT6A             |
| U2  | 1  | GSMA/GPRS & GSM MODULE - FM Rel HL91M_003_00_200F - SKUM 1102466                              |                      |                    |             | SIERRA Wireless              | HL528-2 8V SKUM 1102466    |
| U4  | 1  | HIGH FREQUENCY, HIGH POWER, LOW NOISE DC-DC CONVERTER   |                      |                    |             | MAXIM - Dallas Semiconductor | MAX1700EE                  |
| U38   | 1  | Low Voltage Stepper and SingleDual DC Motor Driver  |                      |                    |             | ALLEGRO                      | A3969SESTR-T               |
| P1  | 1  | BUTTON MINATURE, SMD,6x6 - IIT-CANNON COD. KSC351J  |                      |                    |             | IIT CANNON                   | KSC351J                    |
| Y11 Y12   | 2  | Ceramic Resonator Murata - CSTCEM0055A-R0 8MHz  |                      | 8MHz, MHz          |             | Murata                       | CSTCEM0055A-R0             |
| DISP1   | 1  | DC DISPLAY  |                      |                    |             | VARITRONIX LIMITED           | COG-VLT1540A-01            |
| U34 U35 U37   | 3  | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF 40mA                            |                      |                    | NM          | Texas Instruments            | TPS22943DCKR               |
| U32 U33   | 2  | Protect High-Side Load Switch, 1A Max, 2.4 to 5.5 Supply Voltage Range, Low quiescent current |                      |                    | NM          | ANALOGIC TECH                | AT4146IBDQV1               |
| J3  | 1  | DOUBLE ROW STRAIGHT PITCH 2 X 2.54 mm SAMTEC  |                      |                    | NM          | SAMTEC                       | TSW-106-07-G-D             |
| J6  | 1  | 16_Pin_male_SMT_DIL_2.5mm   |                      |                    |             | ADAM TECH                    | DPH-2-16-U-A13534-1-PP-T/R |
| J1  | 1  | PLUG IN SMT CARD CONNECTOR  |                      |                    |             | JAE                          | SFWM09SA9                  |
| J9  | 1  | SINGLE ROW STRAIGHT PITCH X 2.254 mm SAMTEC TSW-102-07-G-S                                    |                      |                    | NM          | SAMTEC                       | TSW-102-07-G-S             |
| J4 J5   | 2  | SINGLE ROW STRAIGHT PITCH X 3 2.54 mm SAMTEC  |                      |                    | NM          | SAMTEC                       | TSW-103-07-G-S             |
| J8  | 1  | 1.4 pins Strip vertical pitch 2mm   |                      |                    | NM          | SAMTEC                       | TMB-104-01-T-S             |
| J8  | 1  | 1.8_Pin_male_SMT_DIL_2.5mm  |                      |                    |             | ADAM TECH                    | DPH-2-18-U-A13534-1-PP-T/R |
| J16   | 1  | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW VERT, 4 CIRCUIT                                  |                      |                    |             | MOLEX                        | 502443-0470                |
| J1 S/L  | 1  | COMB SMT CARD PUSH-PULL SNAP-IN   |                      |                    |             | JAE                          | SFS-ST51A                  |
| BDS1  | 1  | FELICOLA BI-ADESIVA PER SUPERCAP cod. 4919  |                      |                    |             | 3M                           | 7237002                    |



7.2. MBUS board part list

| Reference   | Quantity | Description   | Value | Not Mounted | Manufacturer          | Manufacturer P/N          |
|---|----------|---|-------|-------------|-----------------------|---------------------------|
| ATT1  | 1        | PLASTIC SWITCH  |       |             | MeteRat               | 7117002                   |
| AI15  | 1        | LOOP ANTENNA 16MHZ  |       |             | Colsoni Modificio     | 7139003                   |
| CS  | 1        | CS Scheda MBUS Contatore Gas G4/G6 per valvola DCM            |       |             | MeteRat               | 2238040_0                 |
| C1,C4   | 2        | CAP SMD 0603 COG 6.8PF 25V                                    | 6.8p  |             | AVX                   | 06033A68RCAT2A            |
| C2,C3   | 2        | CAP SMD 0603 COG 8.8PF 25V                                    | 8.8p  |             | AVX                   | 06033A88RCAT2A            |
| CS,C10,C12,C14,C16,C23,C43,C45,C47,C55,C59,C85,C88,C106,C110,C128,C129,C132,C134,C174 | 31       | CAP SMD 0603 X5R 1UF 25V                                      | 1u    |             | Kemet                 | C0603C105K3PACTU          |
| CS,C7   | 2        | CAP 0402 X7R 100nF 16V 10% MURATA GRM1555R7C103KAD1           | 10n   |             | Murata                | GRM1555R7C103KAD1         |
| C9  | 1        | CAP 0402 COG 100pF 50V 5% MURATA GRM1555C1H100JA01            | 10p   |             | Murata                | GRM1555C1H100JA01         |
| C9  | 1        | CAP SMD 0402 Cer 180p±5% 50V COG GRM 15 5 C 1H 180 J A01      | 18p   | NM          | Murata                | GRM1555C1H180JA01D        |
| C11,C26,C42,C46,C48,C52,C54,C56,C65,C75-C79,C84,C109,C122,C125-C127                   | 38       | CAP SMD 0603 X7R 100NF 16V                                    | 100n  |             | Kemet                 | C0603C104KSRAC7013        |
| C15,C130,C131   | 3        | CAP SMD 0603 X5R 1UF 25V                                      | 1u    | NM          | Kemet                 | C0603C105K3PACTU1         |
| C25,C58   | 2        | CAP 0402 X7R 100nF 16V 10% MURATA GRM1555R7C104KAB8           | 100n  |             | Murata                | GRM1555R7C104KAB8         |
| CS3,C112,C123   | 3        | CAP SMD 0603 X7R 100NF 16V                                    | 100n  | NM          | Kemet                 | C0603C104KSRAC7013        |
| CS7,CS2,C58,C71,C74,C35-C105,C111,C142  | 19       | CAP SMD 0603 X7R 100NF 50V                                    | 10n   |             | Murata                | GRM1555R7C103KAD1J        |
| C60,C91,C92,C135,C136   | 5        | CAP SMD 1206 X5R 100UF 6.3V                                   | 100u  |             | MURATA                | GRM31CR60J107ME39L        |
| O61   | 1        | CAP 0402 COG 12pF 50V 2% MURATA GRM1555C1H20GA01              | 12p   |             | Murata                | GRM1555C1H20GA01          |
| CS3   | 1        | CAP SMD 0603 X5R 10UF 6.3V                                    | 10u   | NM          | Kemet                 | C0603C106M9PACTU          |
| O64   | 1        | CAP 0402 COG 27pF 50V 5% MURATA GRM1555C1H27JA01              | 27p   |             | Murata                | GRM1555C1H27JA01          |
| O66,C67,C69   | 3        | CAP 0402 X7R 100NF 50V 5% MURATA GRM1555R7C102KA01            | 1n    |             | Murata                | GRM1555R7C102KA01         |
| C70,C72,C73   | 3        | CAP 0402 COG 220pF 50V 5% MURATA GRM1555C1H22JA01             | 220p  |             | Murata                | GRM1555C1H22JA01          |
| C80   | 1        | CAP 0603 X5R 4.7UF 6.3V 10% MURATA GRM188R6U475KE19           | 4.7u  |             | Murata                | GRM188R6U475KE19          |
| C81   | 1        | CAP SMD 0402 Cer 100p±5% 50V COG GRM 15 5 C 5C 1H 101 J Z01   | 100p  |             | Murata                | GRM1555C1H101JZ01D        |
| C82   | 1        | CAP 0402 COG 56pF 50V 5% MURATA GRM1555C1H56JA01              | 56p   |             | Murata                | GRM1555C1H56JA01          |
| C83   | 1        | CAP 0603 X7R 470nF 10V 10% MURATA GRM188R71A47KA61            | 470n  |             | Murata                | GRM188R71A47KA61          |
| C89   | 1        | CAP SMD 0603 X5R 10UF 10V                                     | 10u   | NM          | TDK                   | C1608X5R1A106K            |
| CS3,CS4,C124  | 3        | CAP SMD 0603 X7R 220NF 50V                                    | 220n  |             | Kemet                 | C0603C104KSRAC7013        |
| C107  | 1        | CAP SMD 0603 X5R 2.2UF 10V                                    | 2.2u  |             | Murata                | GRM188R14220ME34D         |
| C108  | 1        | CAP SMD 0603 X7R 100PF 50V                                    | 100p  |             | AVX                   | 06033C101KAT2A            |
| C113-C118   | 6        | CAP SMD 0603 X7R 100PF 50V                                    | 100p  | NM          | AVX                   | 06033C101KAT2A            |
| C119,C120   | 2        | CAP SMD 0603 COG 220PF 50V                                    | 220p  |             | Murata                | GRM1555C1H22JA01D         |
| C121  | 1        | CAP 0402 COG 33pF 50V 5% MURATA GRM1555C1H33JA01              | 33p   |             | Murata                | GRM1555C1H33JA01          |
| C137-C139   | 3        | CAP SMD 0603 X7R 1NF 50V                                      | 1n    |             | Murata                | GRM1555R7C102KA01D        |
| C140  | 1        | CAP 0603 X5R 1uF 6.3V 10% MURATA GRM188R6U105KA01             | 1u    |             | Murata                | GRM188R6U105KA01          |
| C141  | 1        | CAP SMD 0603 X5R 10UF 6.3V                                    | 10u   |             | Kemet                 | C0603C106M9PACTU          |
| C143  | 1        | SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                  | 2200u |             | NIC COMP              | NAT222M6 3V12 5X14KLBF    |
| C144  | 1        | SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                  | 2200u | NM          | NIC COMP              | NAT222M6 3V12 5X14KLBF    |
| C145  | 1        | CAP SMD 0805 X5R 22UF 6.3V MURATA Code GRM21HR6GJ226ME39L     | 22u   |             | Murata                | GRM21HR6GJ226ME39L        |
| C146  | 1        | CAP SMD 0402 Cer 47p±5% 50V COG GRM1555C1H47JZ01              | 47p   |             | Murata                | GRM1555C1H47JZ01D         |
| C147  | 1        | CAP SMD 0603 X5R 10UF 10V                                     | 10u   |             | TDK                   | C1608X5R1A106K            |
| C149  | 1        | CAP SMD 0402 COG 8.3PF 50V ±0.25pF                            | 8.3p  |             | Murata                | GRM1555C1H83CA01D         |
| C150  | 1        | CAP 0402 COG 56pF 50V 5% MURATA GRM1555C1H56JA01              | 56p   |             | Murata                | GRM1555C1H56JA01          |
| C151  | 1        | CAP 0402 COG 4.3pF 50V 0.25% MURATA GRM1555C1H43CA01          | 4.3p  |             | Murata                | GRM1555C1H43CA01          |
| C153  | 1        | SMD Alum. Ele CAP Dia 9 220uF 35V Panas. Case F EEEFKV221P    | 220u  |             | Panasonic             | EEEFK1V221P               |
| C154  | 1        | CAP SMD 0402 Cer 180p±5% 50V COG GRM 15 5 C 1H 180 J A01      | 18p   |             | Murata                | GRM1555C1H180JA01D        |
| C155,C156   | 2        | CAP SMD 0402 Cer 22p±5% 50V COG GRM 15 5 C 1H 220 J Z01       | 22p   |             | Murata                | GRM1555C1H220Z01D         |
| C157  | 1        | CAP SMD 0402 Cer 2.2nF ±10%±50VX7R                            | 2.2n  |             | Murata                | GRM1555R7C220KA01D        |
| C158  | 1        | CAP 0402 COG 33pF 50V 5% MURATA GRM1555C1H33JZ01D             | 33p   |             | MURATA                | GRM1555C1H33JZ01D         |
| C159,C160   | 2        | CAP 0402 X5R 1uF 10V 10% MURATA GRM1555R81A105KE15            | 1u    |             | Murata                | GRM1555R81A105KE15        |
| C161  | 1        | CAP SMD 0402 Cer 1.5nF ±10% 10V X7R                           | 1.5n  | NM          | Kemet                 | C0402C152KRAC7013         |
| C162  | 1        | CAP SMD 0603 COG 22PF 50V                                     | 22p   |             | Kemet                 | C0603C220KSRAC7013        |
| C164,C175   | 2        | SMD Alum. Ele CAP 150UF 6.3V EEEFCXJ151R PANASONIC            | 150u  |             | Panasonic             | EEEFCXJ151R               |
| C177  | 1        | CAP 0402 COG 80pF 50V 5% MURATA GRM1555C1H80JA01D             | 80p   |             | MURATA                | GRM1555C1H80JA01D         |
| D1  | 1        | SCHOTTKY BARRIER RECTIFIER TOREX 3A - 40 V - CASE SIMA-PG     |       |             | TOREX                 | XBS30AF1R0G               |
| D3,D11,D12  | 3        | SMD Schottky Diode 1A 20V                                     |       |             | Diode Incorporated    | DFLS120L-7                |
| D4  | 1        | HIGH POWER INFRARED EMITTER DIODE                             |       |             | OSRAM                 | SFH4200                   |
| D5  | 1        | Dual Switching diode 0.15 A / 60 V - Case SOT23 BAV99         |       |             | Philips               | BAV99                     |
| D7,D10  | 2        | Dual Schottky Diode, Common Cathode 250mA, SOT23 BAT54C       |       |             | Philips               | BAT54C                    |
| D13   | 1        | Schottky SMD Case DO-214AB 20V 3A                             |       |             | General Semiconductor | SS32                      |
| D21,D22   | 2        | SMD zener diode Case DO-214 1.25W Vishay 7.5V BZG05C8V2       |       |             | Vishay                | BZG05C7V5                 |
| D24   | 1        | SMD Zener diode 3.3V BZG05C3V3                                |       | NM          | Vishay                | BZG05C3V3                 |
| F1  | 1        | Film Fuse SMD - LITTELFUSE 0466.002 (1206)                    |       |             | Littelfuse            | 0466 002NR                |
| J6  | 1        | 16_Pin_male_SMT_DIL_2.5mm                                     |       |             | ADAM TECH             | DPH-2-16-U-A13534-1-PP-TR |
| J6  | 1        | 18_Pin_male_SMT_DIL_2.5mm                                     |       |             | ADAM TECH             | DPH-2-18-U-A13534-1-PP-TR |
| J15   | 1        | 2mm WIRE TO BOARD POS RECEPTACLE, SINGLE ROW, VERT, 4 CIRCUIT |       |             | MOLEX                 | 5024430470                |
| L1  | 1        | 16_Pin_male_SMT_DIL_2.5mm                                     |       | NM          | ADAM TECH             | DPH-2-16-U-A13534-1       |
| L2  | 1        | INDUCTOR 10uH ±20% 17A  | 10u   |             | TDK                   | CLF6645T-100M             |
| L3  | 1        | MURATA LQG15H1H68N02 IND 820H 0402 5%                         | 82n   |             | Murata                | LQG15H1H68N02             |
| L4  | 1        | MURATA LQM21FH100M70L IND 10uH 0805 20%                       | 10u   |             | Murata                | LQM21FH100M70L            |
| L5  | 1        | MURATA LQM155CHR2030L IND 200nH 0402 5%                       | 200n  |             | Murata                | LQM155CHR2030L            |
| L6  | 1        | MURATA LQG15H1H68N02 IND 68nH 0402 5%                         | 68n   |             | Murata                | LQG15H1H68N02             |
| LT,L8,L9  | 3        | MURATA LQG15H1H27N02 IND 27nH 0402 5%                         | 27n   |             | Murata                | LQG15H1H27N02             |
| L11   | 1        | MURATA LQG15SH12N02 IND 12nH 0402 5%                          | 12n   |             | Murata                | LQG15SH12N02              |
| L12   | 1        | MURATA LQG15SH18NS02 IND 3.3nH 0402 ±0.3nH                    | 3.3n  |             | Murata                | LQG15SH18NS02             |
| L13   | 1        | COLCRAFT 0603CS-10NXL IND 10uH 0603 5%                        | 10u   |             | COLCRAFT              | 0603CS-10NXL              |
| L14   | 1        | COLCRAFT 0603CS-27NXL IND 27nH 0603 5%                        | 27n   |             | COLCRAFT              | 0603CS-27NXL              |
| L15   | 1        | COLCRAFT 0603CS-47NXL IND 47nH 0603 5%                        | 47n   |             | COLCRAFT              | 0603CS-47NXL              |
| L16   | 1        | MURATA LQG15SHS16S02 IND 5.6nH 0402 ±0.3nH                    | 5.6n  |             | Murata                | LQG15SHS16S02             |
| L17   | 1        | MURATA LQG15SH15N02 IND 15nH 0402 5%                          | 15n   |             | Murata                | LQG15SH15N02              |
| L18   | 1        | COLCRAFT 0603CS-6NXL IND 6.8nH 0603 5%                        | 6.8n  |             | COLCRAFT              | 0603CS-6NXL               |
| L19   | 1        | SMD Chip Ferrite Beads - MURATA BLM1S series - Case 0402      |       |             | Murata                | BLM15B0601S1N1            |
| L20   | 1        | SMD INDUCTOR - COLCRAFT 200nH DCR=24mA IRMS=2.2A              | 200n  | NM          | Colcraft              | NPL2010-201MLB            |
| L22   | 1        | MURATA LQG15SH18NS02 IND 4.7nH 0402 ±0.3nH                    | 4.7n  | NM          | Murata                | LQG15SH18NS02             |
| P1  | 1        | BUTTON MINIATURE, SMD 6X6 TIT-CANNON COD KSC351J              |       |             | ITT CANNON            | KSC351J                   |



| Tabella / Title  | BOM 2238040.0 (per ITEM 1238042 e 1238044)    |  |           |             | METERSIT                       |                       |
|--|---|--|-----------|-------------|--------------------------------|-----------------------|
| Cliente / Customer   | MeteR Sit                                     |  |           |             | Code / Code 2238040.0          |                       |
| Descrizione progetto / Project description                         | Schema GASMETER G4/G6 Versione per valvola DC |  |           |             | Progetto / Project Meter STEP1 |                       |
| Stato / Date   | RISERVATO                                     |  |           |             | Data / Date 18/01/16           |                       |
| Reference  | Quantity                                      | Description  | Value     | Not Mounted | Manufacturer                   | Manufacturer PIN      |
| P1H1   | 1   | NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA  |           |             | OSRAM                          | SFH320FA              |
| PTC3 PTC4  | 2   | Polyswitch Resettable Device SMD 1206 - 0.8W - 0.2 / 0.80mm IH=0.5A IT=1.10A                 |           |             | Tyco Electronics               | NanoSMD050F           |
| Q1 Q10-Q13   | 5   | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                                 |           |             | Philips                        | BSH105                |
| Q2   | 1   | N-channel Power MOSFET 4A  |           |             | TORREX                         | BC147                 |
| Q3   | 1   | NPN Transistor Bipolar SMD case SOT23  |           |             | Philips                        | BC847                 |
| Q4 Q7  | 2   | P-channel enhancement mode MOS transistor, -12V, -1.52A, SOT457                              |           |             | Philips                        | BSH207                |
| Q5   | 1   | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V -4.6A 70MOHM SOT26                           |           |             | DIODES                         | INCORPORATED          |
| Q8   | 1   | PNP TRANSISTOR BIPOLAR SMD CASE SOT23  |           |             | PHILIPS                        | DMP2066LDM-7          |
| Q9   | 1   | COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                                     |           |             | PHILIPS                        | BC147AF               |
| R1 R501  | 2   | RESISTOR SMD 2512 - 2W 1% 0.05   | 0.05      | NM          | WELWYN                         | LR2512-R05FW          |
| R2 R3 R5-R10 R45 R66 R67 R69-R71 R75-                              | 33  | RESISTOR SMD 0603 - 0.60W 1% 10K   | 10K       |             | Vishay                         | CRCW060310K0F         |
| R80 R86 R86 R104 R115 R392 R393 R423 R432 R434 R437 R438 R504 C176 | 7   | RESISTOR SMD 0805 - 0.125W 1% 330  | 330       |             | Vishay                         | CRCW0805330F          |
| R4 R165-R167 R445-R447   | 1   | RESISTOR SMD 1206 - 0.25W 1% 2.2   | 2.2       | NM          | Vishay                         | CRCW12062R20FNEB      |
| R11  | 7   | RESISTOR SMD 0603 - 0.60W 1% 10K   | 10K       |             | Vishay                         | CRCW060310K0F         |
| R12-R13 R69 R81 R101 R105 R439                                     | 4   | RESISTOR SMD 0805 - 0.60W 1% 470   | 470       |             | Vishay                         | CRCW0805470J          |
| R14 R20 R21 R27 R28 R43 R46 R57 R91 R93 R94 R106-R112 R424         | 4   | RESISTOR SMD 0805 - 0.125W 1% 1K   | 1K        |             | Vishay                         | CRCW08051K00F         |
| R15 R63 R452 R453  | 2   | RESISTOR SMD 0805 - 0.125W 1% 1K   | 1K        |             | Vishay                         | CRCW08051K00F         |
| R16 R24  | 1   | RESISTOR SMD 0603 - 0.60W 1% 10K   | 10K       | NM          | Vishay                         | CRCW060310K0F         |
| R17  | 1   | RESISTOR SMD 0603 - 0.60W 1% 1.2M  | 1.2M      |             | Vishay                         | CRCW06031M20FKEA      |
| R18  | 1   | RESISTOR SMD 1206 - 0.25W 1% 910K  | 910K      |             | Vishay                         | CRCW1206910KFKTA      |
| R19 R35 L10 C148   | 4   | RESISTOR SMD 0402 - 0.60W 1% 0   | 0         |             | Vishay                         | CRCW04020000          |
| R22 R30  | 2   | RESISTOR SMD 0603 - 0.1W 1% 432 CRCW0603432RFKEA   | 432       |             | Vishay                         | CRCW0603432RFKEA      |
| R23 R84 R462 R465  | 4   | RESISTOR SMD 1206 - 0.25W 5% 0   | 0         | NM          | Vishay                         | CRCW12060R0J          |
| R25 R26 R31 R34 R400 R448 R449 R451                                | 8   | RESISTOR SMD 0603 - 0.60W 1% 10M   | 10M       |             | Vishay                         | CRCW060310M0FKEA      |
| R29  | 1   | RESISTOR SMD 1206 - 0.25W - 2% 330   | 330       |             | Vishay                         | CRCW1206330F          |
| R30 R35 R36 R49 R65 R66 R433 R436 R490 R503                        | 9   | RESISTOR SMD 0603 - 0.60W 1% 0   | 0         |             | Vishay                         | CRCW0603000Z          |
| R32 R102 R135 R506   | 4   | RESISTOR SMD 0603 - 0.60W 1% 100K  | 100K      |             | Vishay                         | CRCW0603100KF         |
| R35  | 1   | RESISTOR SMD 0603 - 0.60W 1% 100K  | 100K      | NM          | Vishay                         | CRCW0603100KF         |
| R33 R37 R40 R48 R507   | 5   | RESISTOR SMD 0603 - 0.60W 1% 2M  | 2M        |             | Vishay                         | CRCW06032M00F         |
| R38  | 1   | RESISTOR SMD 0603 - 0.60W 1% 270K  | 270K      |             | Vishay                         | CRCW0603270KF         |
| R39 R42 R44 R51 R54 R58 R64 R502                                   | 8   | RESISTOR SMD 0603 - 0.60W 1% 0   | 0         | NM          | Vishay                         | CRCW060300Z           |
| R47 R489   | 2   | RESISTOR SMD 1206 - 0.25W 1% 100   | 100       |             | Vishay                         | CRCW1206100F          |
| R50  | 1   | RESISTOR SMD 0603 - 0.60W 1% 680K  | 680K      |             | Vishay                         | CRCW0603680KF         |
| R52  | 1   | RESISTOR SMD 0603 - 0.60W 1% 3.2K  | 3.2K      |             | Vishay                         | CRCW060332KJ          |
| R53  | 1   | RESISTOR SMD 0603 - 0.60W 1% 22K   | 22K       |             | VISHAY                         | CRCW060322KF          |
| R55  | 1   | RESISTOR SMD 0603 - 0.60W 1% 470K  | 470K      |             | Vishay                         | CRCW0603470KF         |
| R56  | 1   | RESISTOR SMD 1206 - 0.25W 5% 10 CRCW120610R0JUEAHP   | 10        |             | Vishay                         | CRCW120610R0JUEAHP    |
| R59 R492 R493  | 3   | RESISTOR SMD 1206 - 0.25W - 2% 10K   | 10K       |             | Vishay                         | RCVIP1206103GT        |
| R60 R61  | 2   | RESISTOR SMD 1206 - 0.25W 1% 1K  | 1K        |             | Vishay                         | CRCW12061K00FKEA      |
| R62  | 1   | RESISTOR SMD 0603 - 0.60W 1% 560   | 560       |             | Vishay                         | CRCW0603560KF         |
| R73  | 1   | RESISTOR SMD 0603 - 0.60W 1% 3.9K  | 3.9K      |             | Vishay                         | CRCW060339KF          |
| R74  | 1   | RESISTOR SMD 0603 - 0.60W 1% 4.7K  | 4.7K      |             | VISHAY                         | CRCW0603470F          |
| R82 R444   | 2   | RESISTOR SMD 0603 - 0.60W 1% 2.7K  | 2.7K      |             | Vishay                         | CRCW0603270F          |
| R83  | 1   | RESISTOR SMD 0603 - 0.60W 1% 47K   | 47K       |             | Vishay                         | CRCW0603470F          |
| R87  | 1   | RESISTOR SMD 0603 - 0.60W 1% 470K  | 470K      | NM          | Vishay                         | CRCW0603470KF         |
| R92  | 1   | RESISTOR SMD 0603 - 0.1W 1% 432 CRCW0603432RFKEA   | 432       | NM          | Vishay                         | CRCW0603432RFKEA      |
| R100   | 1   | RESISTOR SMD 0603 - 0.60W 1% 0.1   | 0.1       |             | Vishay                         | WSL0603R100FKEA       |
| R426 R441-R443   | 4   | RESISTOR SMD 0603 - 0.60W 1% 1M  | 1M        |             | Vishay                         | CRCW06031M00F         |
| R427   | 1   | RESISTOR SMD 0603 - 0.60W 1% 47  | 47        |             | Vishay                         | CRCW0603470F          |
| R440   | 1   | RESISTOR SMD 0603 - 0.60W 1% 100K  | 100K      | NM          | Vishay                         | CRCW0603100KF         |
| R450   | 1   | RESISTOR SMD 1206 - 0.25W 1% 10M   | 10M       |             | Vishay                         | CRCW120610M0FHEAP     |
| R454 R456 R458   | 4   | RESISTOR SMD 1206 - 0.25W 1% 18  | 18        |             | Vishay                         | CRCW120618R0FKEA      |
| R460 R461 R463 R464  | 4   | RESISTOR SMD 1206 - 0.25W 5% 0   | 0         |             | Vishay                         | CRCW12060R0J          |
| R466 R467  | 2   | RESISTOR SMD 1206 - 0.25W 1% 40.2K   | 40.2K     | NM          | Vishay                         | CRCW1206402KFKEA      |
| R488 R489  | 2   | RESISTOR SMD 1206 - 0.25W 1% 1M CRCW12061M0FN  | 1M        |             | Vishay                         | CRCW12061M0FN         |
| R470 R472 R473   | 3   | RESISTOR SMD 0603 - 0.60W 1% 4.7M  | 4.7M      |             | Vishay                         | CRCW060347M0F         |
| R474 R475  | 2   | RESISTOR SMD 2512 - 1W 5% 1K   | 1K        |             | Vishay                         | CRCW25121K00J         |
| R476 R479  | 4   | RESISTOR SMD 1206 - 0.25W - 1% 180 CRCW1206180R0FN   | 180       |             | Vishay                         | CRCW1206180R0FN       |
| R480 R481  | 2   | RESISTOR SMD 1206 - 0.25W 1% 47K   | 47K       |             | Vishay                         | CRCW120647KF          |
| R482 R483  | 2   | RESISTOR SMD 1206 - 0.25W 1% 2.2   | 2.2       |             | Vishay                         | CRCW12062R20FNEB      |
| R489   | 1   | RESISTOR SMD 1206 - 0.25W - 1% 2.2K  | 2.2K      | NM          | Vishay                         | CRCW12062K20F         |
| R484 R487 R509   | 5   | RESISTOR SMD 0805 - 0.125W 5% 1K   | 1K        |             | Vishay                         | CRCW08051K00J         |
| R490 R495  | 2   | RESISTOR SMD 0805 - 0.125W 1% 7.5  | 7.5       |             | Vishay                         | CRCW0805750F          |
| R500   | 1   | RESISTOR SMD 1206 - 0.25W 1% 4.7M  | 4.7M      |             | Vishay                         | CRCW120647M0FKEA      |
| R508   | 1   | RESISTOR SMD 0603 - 0.60W 1% 2K  | 2K        | NM          | Vishay                         | CRCW06032K00F         |
| U1 U21-U24 U27 U31 U36   | 8   | Load Switch with reverse blocking 1A SC70-6  |           |             | Vishay                         | Sig3431DR1-1T1GE3     |
| U2   | 1   | Low data rate, low power sub-1GHz transceiver  |           |             | ST Microelectronics            | SPRIT1QTR             |
| U4   | 1   | STEP-UP DC/DC CONTROLLER   |           |             | TOREX                          | XC9104B039MR-G        |
| U5   | 1   | 1.5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR                        |           |             | TOREX                          | XC91180180MR-G        |
| U6   | 1   | Texas_Back_Boost_Charge_Pump_Thin_SOT-23-6_60mA_5V   |           |             | Texas Instruments              | REG710NA-5            |
| U7   | 1   | 8 Mbit, low voltage, Page-Erasable Serial Flash memory                                       |           |             | Numonyx                        | M45P66-VMP6G          |
| U8   | 1   | 159 to 170 MHz Transmitter/Receiver Front-End Module   |           |             | SKYWORKS                       | SKV6100-11            |
| U10  | 1   | ARM_32Bit_Low_Power_64pin_256KFlash_32KBram_LQFP   |           |             | ST Microelectronics            | STM32L151RCT6A        |
| U31  | 1   | 1MROMCONTROLLER STM8 8 BIT MCU 64KFLASH 2KBKRAM 1KEEPROM LQFP48                              |           |             | ST Microelectronics            | STM8L151C8T6          |
| U32 U33  | 2   | Protect High-Side Load Switch, 1Amax, 2.4 to 5.5 Supply Voltage Range, Low quiescent current |           | NM          | ANALOGIC TECH                  | AAT4410BGV-1          |
| U34 U35 U37  | 3   | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF 40mA                           |           | NM          | Texas Instruments              | TPS22932DCR           |
| U39  | 1   | Low Voltage Stepper and Single-Dual DC Motor Driver  |           |             | ALLEGRO                        | A3969S3TR-T           |
| XT1 XT2  | 2   | Ceramic Resonator Murata CSTCEM00555A-R0 8MHz  | 8MHz      | MHZ         | Murata                         | CSTCEM00555A-R0       |
| XT3  | 1   | Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-032K7680002RF1                                   | 32.768kHz | MHZ         | CITIZEN                        | CM200C-032K7680002RF1 |
| XT4  | 1   | Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-032K7680002RF1                                   | 32.768kHz | MHZ         | CITIZEN                        | CM200C-032K7680002RF1 |
| XT5 XT6  | 2   | QUARTZ SMD 32.768kHz +10ppm NDK  |           | NM          | NDK                            | NV32165A_32.768MHz    |
| XT7  | 1   | CRYSTAL 50MHz 10pf   |           | NM          | NDK                            | NT2165B-50MHSA3350D   |
| C90  | 1   | Supercapacitor, LOW ESR 35F 2.7V   | 35        |             | Cooper Bussmann                | HV1635-2R7356R        |
| DSP1   | 1   | DC DISPLAY   |           |             | VIASTRON LIMITED               | COO-VL11540A-01       |
| J2   | 1   | 14 pins Strip vertical pitch 2mm   |           |             | SAMTEC                         | TMM-104-01-T-S        |
| J3   | 1   | DOUBLE ROW STRAIGHT PITCH 2 X 6 2.54 mm SAMTEC   |           |             | SAMTEC                         | TSW-106-07-G-D        |
| J4 J5  | 2   | SINGLE ROW STRAIGHT PITCH X 3 2.54 mm SAMTEC   |           |             | SAMTEC                         | TSW-103-07-G-S        |
| J9   | 1   | SINGLE ROW STRAIGHT PITCH X 2 2.54 mm SAMTEC TSW-102-07-G-S                                  |           |             | SAMTEC                         | TSW-102-07-G-S        |
| FSC1   | 1   | FASCETTA PLASTICA L=98 H=2.5 Sp=1 in NYLON   |           |             | RHCO                           | RG-203                |
| BDS1   | 1   | PELLICOLA BI-ADESIONE PER SUPERCAP cod. 4919   |           |             | 3M                             | 7237022               |



**8. MARKINGS**

The figures 8.x show the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 4 different versions of the meters

**Figure 8.1 – Labelling of G4 GPRS meter**

**CHARACTERS FILLED** → **G4 GPRS**  
Made in Italy

**MeterSit**  
Viale dell'Industria 31, 35129 Padova  
Cl.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C

**CE** **II 3 G Ex nA IIA T6 Gc**  
**0122 T10362**

**Metr. MTSB03YYZXXXXXX**

**Lot 000000**  
**Year XXXX**

**Qmin 0,04 m³/h**  
**Qmax 6,00 m³/h**  
**Qt 0,60 m³/h**

**DATA MATRIX CODE AREA**  
- MTS= fixed digits mean MeterSit  
- B= fixed digit  
- 03= fixed digits mean Gas Meter  
- YY= meter version; indicating the last two digits of the MeterSit product code  
- Z= meter model; indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25  
- XXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSB030100000001  
PRODUCTION LOT from 0000001 to 9999999  
YEAR OF MANUFACTURE

**G4 GPRS**  
Made in Italy

**MeterSit**  
Viale dell'Industria 31, 35129 Padova  
Cl.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C  
II 3 G Ex nA IIA T6 Gc  
**0122 T10362**  
Metr. MTSB03YYZXXXXXX

SCALE 1:1

| Rev. | Mod.N° | Date     | Description   | Name       |
|------|--------|----------|---|------------|
| 6    | 16260  | 09/12/15 | Modificato quarto carattere matricola, prima indicava l'anno ora è un carattere fisso       | M.Radice   |
| 5    | 15684  | 19/02/15 | AGGIUNTO ANNO DI FABBRICAZIONE E IP65   | P. Colombo |
| 4    | 15545  | 20/12/14 | Pmax=0,5bar - Cl. ambientale meccanica M2 - Cl. compatibilità elettromagn. E2 - IP55 - ATEX | P. Colombo |
| 2    | 15089  | 09/05/14 | Rivisto globalmente   | Pieron     |
| 1    | 14791  | 09/09/13 | Modificato numero progressivo fatto da 4 a 3 cifre  | Riva       |





**Figure 8.2 – Labelling of G6 GPRS meter**

**CHARACTERS FILLED** → **G6 GPRS**  
 Made in Italy

**MeterSit**  
 Viale dell'Industria 31, 35129 Padova

**CI.1,5 H3 H-gas M2 E2 IP65**  
**tb 15°C pb 1,01325 bar**

**tm -25°C...+55°C pmax 0,5 bar**  
**tg -25°C...+55°C**

**II 3 G Ex nA IIA T6 Gc**  
**CE M 0122 T10362**

**Lot 0000000**  
**Year XXXX**

**Qmin 0,06 m³/h**  
**Qmax 10,00 m³/h**  
**Qt 1,00 m³/h**

**Matr. MTSB03YYZXXXXXXXX**

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSit
- B= fixed digit
- O3= fixed digits mean Gas Meter
- YY= meter version; indicating the last two digits of the MeterSit product code
- Z= meter model; indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSB030110000001

PRODUCTION LOT from 0000001 to 9999999

YEAR OF MANUFACTURE

SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION

CHARACTER FILLED

METER VERSION

METER MODEL

PROGRESSIVE NUMBER

SCALA 1:1

| Rev. | Mod.N° | Date     | Description   | Name       |
|------|--------|----------|---|------------|
| 1    | 14791  | 09/09/13 | Modificato numero progressivo lotto da 4 a 3 cifre  | Riva       |
| 2    | 15089  | 09/05/14 | Rivisto globalmente   | Peron      |
| 4    | 15545  | 20/12/14 | Pmax=0,5bar - Cl. ambientale meccanica M2 - Cl. compatibilità elettromagn. E2 - IP55 - ATEX | P. Colombo |
| 5    | 15684  | 19/02/15 | AGGIUNTO ANNO DI FABBRICAZIONE E IP65   | P. Colombo |
| 6    | 16260  | 09/12/15 | Modificato quarto carattere matricola, prima indica l'anno ora è un carattere fisso         | M. Radice  |

| Drawn  | 04/07/13  | P. Colombo  | Description                                | Release Level |
|--|---|---|--|---------------|
| Checked <td>11/12/15 <td>P. Colombo <td>TECNICA DATI GAS METER G6-GPRS <td>Ra</td> </td></td></td> | 11/12/15 <td>P. Colombo <td>TECNICA DATI GAS METER G6-GPRS <td>Ra</td> </td></td> | P. Colombo <td>TECNICA DATI GAS METER G6-GPRS <td>Ra</td> </td> | TECNICA DATI GAS METER G6-GPRS <td>Ra</td> | Ra            |
| Date <td></td> <td></td> <td>Material <td>Scale</td> </td>   |   |   | Material <td>Scale</td>                    | Scale         |
|  |   |   | Surface Treatment <td>2:1</td>             | 2:1           |
|  |   |   | Sealing Surface                            | 16260         |
|  |   |   | Technical Drawings ISO 8015                | 1/1 A3        |
|  |   |   | General Tolerances UNI-EN 22768-2-K        | 7252967       |



**Figure 8.3 – Labelling of G4 RF WMBUS meter**

**CHARACTERS FILLED** → **G4 MBUS**  
Made in Italy

**MeterSit**  
Viale dell'Industria 31, 35129 Padova  
Cl.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar

tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C

II 3 G Ex nA IIA T6 Gc  
CEM 0122 T10362

SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION

METER VERSION → **YY**  
METER MODEL → **MTSB03YYZXXXXXX**

PRODUCTION LOT from 0000001 to 9999999  
Lot **000000**  
Year **XXXX** → YEAR OF MANUFACTURE

Qmin 0,04 m³/h  
Qmax 6,00 m³/h  
Qt 0,60 m³/h

**G4 MBUS**  
Made in Italy

**MeterSit**  
Viale dell'Industria 31, 35129 Padova  
Cl.1,5 H3 H-gas M2 E2 IP65  
tb 15°C pb 1,01325 bar  
tm -25°C...+55°C pmax 0,5 bar  
tg -25°C...+55°C  
II 3 G Ex nA IIA T6 Gc  
CEM 0122 T10362 Matr. MTSB03YYZXXXXXX

SCALA 1:1

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSit
- B= fixed digit
- 03= fixed digits mean Gas Meter
- YY= meter version; indicating the last two digits of the MeterSit product code
- Z= meter model; indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSB030100000001

| Rev. | Mod.N° | Date     | Description  | Name       |
|------|--------|----------|--|------------|
| 6    | 16260  | 09/12/15 | Modificato quarto carattere matricella, prima indicava l'anno, ora è un carattere fisso      | M. Radice  |
| 5    | 15684  | 19/02/15 | AGGIUNTO ANNO DI FABBRICAZIONE E IP65  | P. Colombo |
| 4    | 15545  | 20/12/14 | Praxi-0.5bar - EL, ambientale meccanica M2 - EL, compatibilità elettromagn. E2 - IP55 - ATEX | P. Colombo |
| 2    | 15089  | 09/05/14 | Rivisto globalmente  | Paron      |
| 1    | 14791  | 09/09/13 | Modificato numero progressivo (otto da 4 a 3 cifre)  | Rizza      |

|         |          |            |                       |                              |                   |            |
|---------|----------|------------|-----------------------|------------------------------|-------------------|------------|
| Drawn   | 04/07/13 | P. Colombo | Description           | TARGA DATI GAS METER G4-MBUS | Release Level     | Produzione |
| Checked | 11/12/15 | P. Colombo | Technical Information |                              | Scale             | 2:1        |
| Date    |          |            | Material              |                              | General Roughness | ISO        |
|         |          |            | Legend                |                              |                   |            |
|         |          |            | Heat Treatment        |                              |                   |            |
|         |          |            | Surface Treatment     |                              |                   |            |
|         |          |            | Coating Surface       |                              |                   |            |
|         |          |            | Surface Hardness      | HV                           | HRC               | 16260      |
|         |          |            | Technical Drawings    | ISO 8075                     | VOLUME            | 1/1 A3     |
|         |          |            | General Tolerances    | UNI-EN 22768-2-K             | RESO              | ~ 1,41 Kg  |
|         |          |            |                       |                              |                   | 7252964    |
|         |          |            |                       |                              |                   | 6          |



**Figure 8.4 – Labelling of G6 RF WMBUS meter**

**CHARACTERS FILLED** (pointing to G6 MBUS logo)

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterS<sub>it</sub>
- B= fixed digit
- 03= fixed digits mean Gas Meter
- YY= meter version; indicating the last two digits of the MeterS<sub>it</sub> product code
- Z= meter model; indicating the third last digit of the MeterS<sub>it</sub> product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZX000000

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:

MTSB030110000001

Lot 0000000  
 Year XXXX

PRODUCTION LOT from 0000001 to 9999999  
 YEAR OF MANUFACTURE

**MeterS<sub>it</sub>**  
 Viale dell'Industria 31, 35129 Padova  
 Cl.1,5 H3 H-gas M2 E2 IP65  
 tb 15°C pb 1,01325 bar  
 tm -25°C...+55°C pmax 0,5 bar  
 tg -25°C...+55°C  
 Qmin 0,06 m³/h  
 Qmax 10,00 m³/h  
 Qt 1,00 m³/h

II 3 G Ex nA IIA T6 Gc  
 CE M 0122 T10362

Metr. MTSB03YYZX000000

SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION

CHARACTERS FILLED (pointing to CE M 0122 T10362)

METER VERSION (pointing to YY)

METER MODEL (pointing to Z)

PROGRESSIVE NUMBER (pointing to XXXXX)

**MeterS<sub>it</sub>**  
 Viale dell'Industria 31, 35129 Padova  
 Cl.1,5 H3 H-gas M2 E2 IP65  
 tb 15°C pb 1,01325 bar  
 tm -25°C...+55°C pmax 0,5 bar  
 tg -25°C...+55°C  
 Qmin 0,06 m³/h  
 Qmax 10,00 m³/h  
 Qt 1,00 m³/h

CE M 0122 T10362 Metr. MTSB03YYZX000000

SCALA 1:1

| Rev. | Mod.N° | Date     | Description   | Name       |
|------|--------|----------|---|------------|
| 6    | 16260  | 09/12/15 | Modificato quarto carattere matricola, prima indicava l'anno ora è un carattere fisso       | M.Radice   |
| 5    | 15684  | 19/02/15 | AGGIUNTO ANNO DI FABBRICAZIONE E IP65   | P. Colombo |
| 4    | 15545  | 20/12/14 | Pmax=0,5bar - Cl. ambientale meccanica M2 - Cl. compatibilità elettromagn. E2 - IP55 - ATEX | P. Colombo |
| 2    | 15089  | 09/05/14 | Rivisto Globalmente   | Pieron     |
| 1    | 14791  | 09/09/13 | Modificato numero progressivo lotto da 4 a 3 cifre  | Riva       |

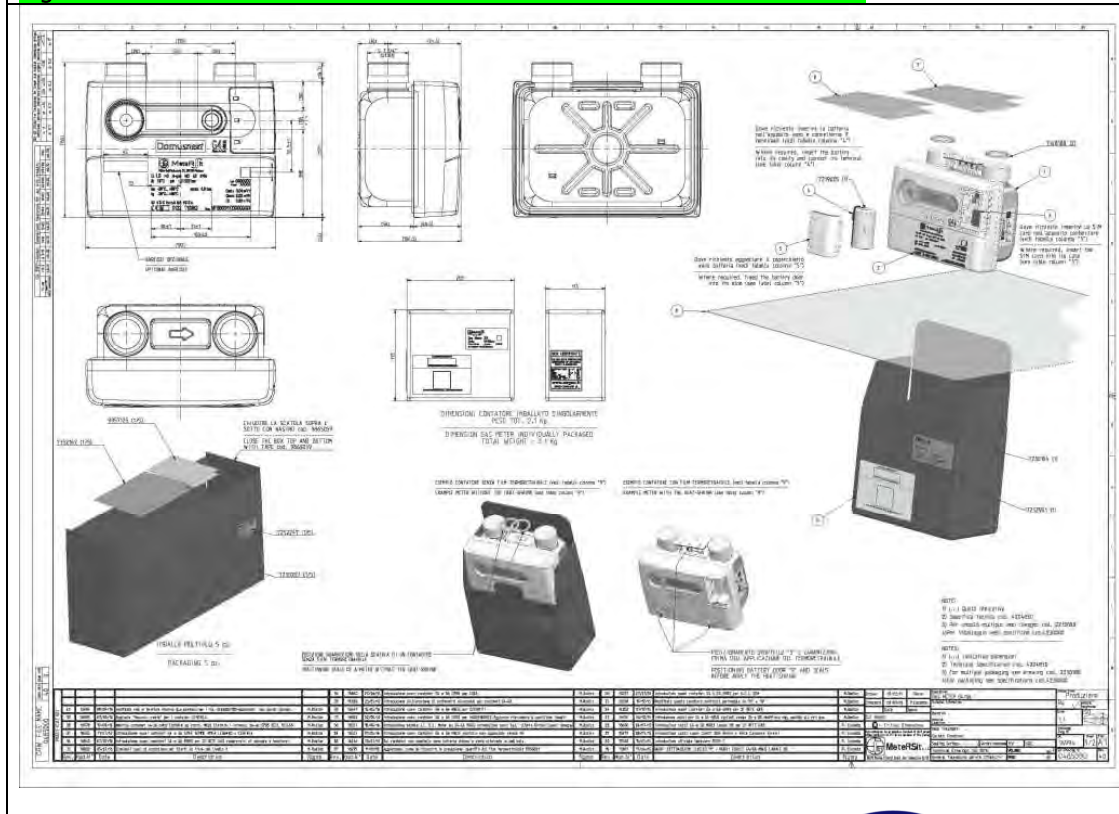
| Drawn   | 04/07/13 | P. Colombo | Description                         | 16260 DATI GAS METER G6-MBUS | Release List         |
|---------|----------|------------|-------------------------------------|------------------------------|----------------------|
| Checked | 11/12/15 | P. Colombo | Technical Information               | PRODUZIONE                   | General Requirements |
| Date    | Name     | Material   | Scale                               | 2:1                          | ISO                  |
|         |          |            | Material                            |                              |                      |
|         |          |            | Classification                      |                              |                      |
|         |          |            | Heat Treatment                      |                              |                      |
|         |          |            | Surface Treatment                   |                              |                      |
|         |          |            | Sealing Surface                     | Surface hardness HV HRC      | Designs              |
|         |          |            | Technical Drawings ISO 8015         | VOLUME I.21 mm 3             | 16260                |
|         |          |            | General Tolerances UNI-EN 22768-2-K | FEED                         | 1/1 A3               |
|         |          |            |                                     |                              | Sheet                |
|         |          |            |                                     |                              | 1/1 A3               |
|         |          |            |                                     |                              | Rev.                 |
|         |          |            |                                     |                              | 6                    |



### 3. MECHANICAL SPECIFICATIONS

| Characteristic             | u.m. | Class G4        | Class G6                         | Note   |
|----------------------------|------|-----------------|----------------------------------|--|
| Connection centrelines     | [mm] | 110             | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different      |
| Max dimensions (H x L x s) | [mm] | 156 x 192 x 104 | 156 x 192 x 104<br>(plus flange) | Difference from V2.1: Bosses length has been increased of 4 mm |
| Connection diameter        | "    | G 1" 1/4        | G 1" 1/4<br>(1" 1/2 with flange) |  |
| Resistance to torque       | [Nm] | 110             | 140                              |  |
| Resistance to bending      | [Nm] | 40              | 40<br>(60 with flange)           |  |
| Weight                     | [Kg] | 1.7             | 1.7                              |  |

**Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY – GPRS & MBUS**



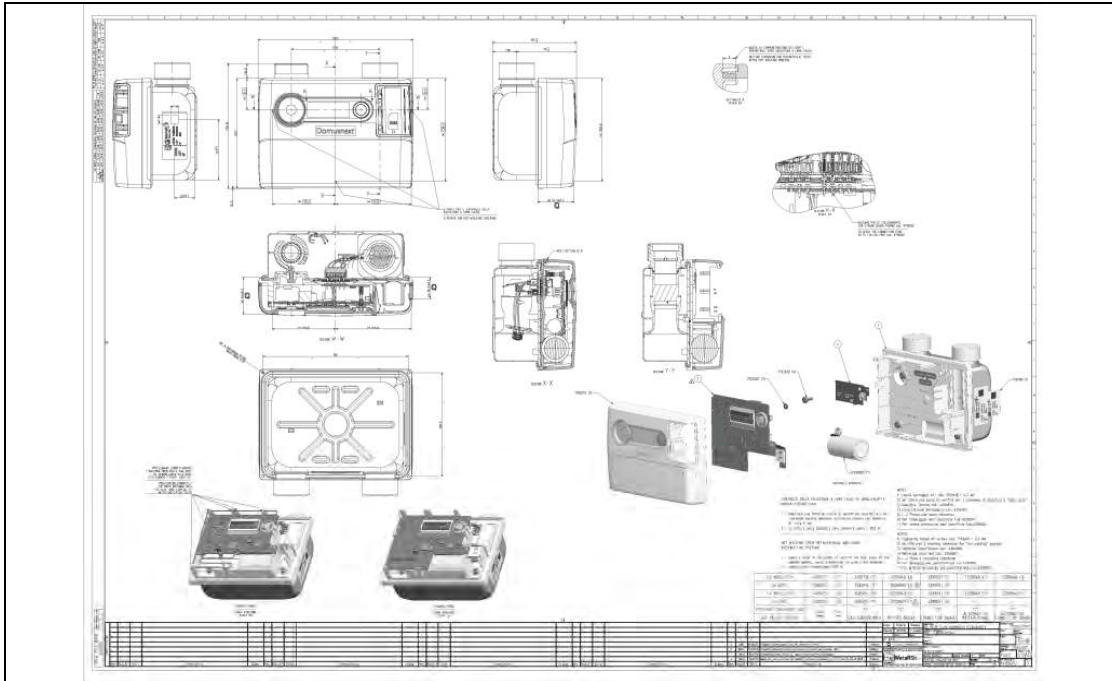
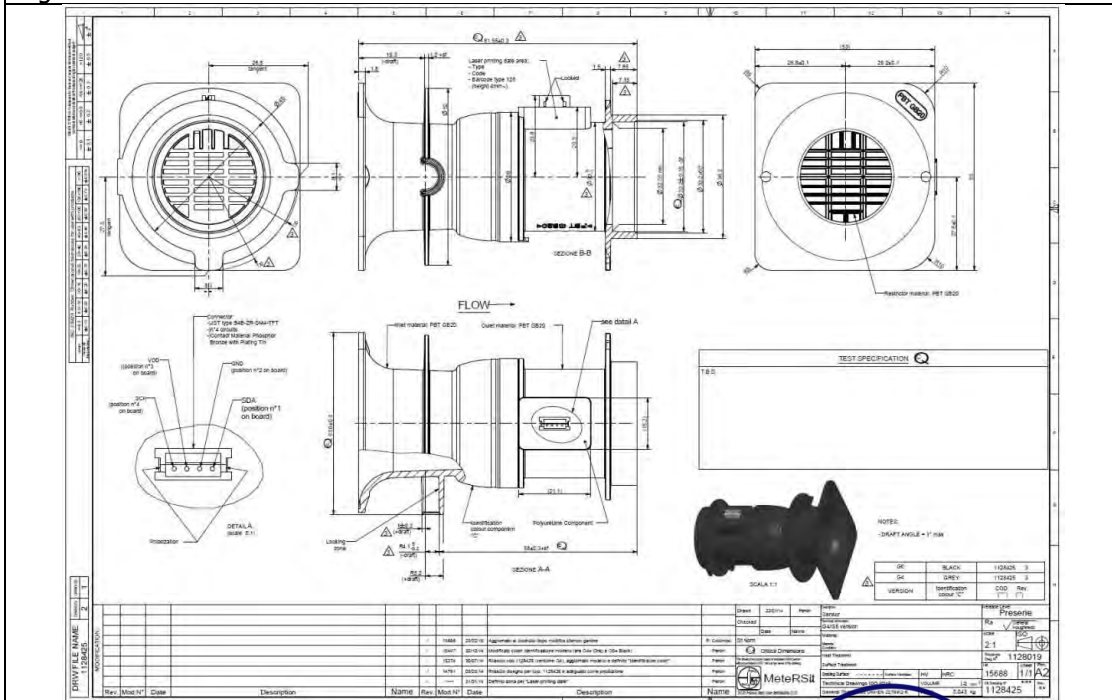
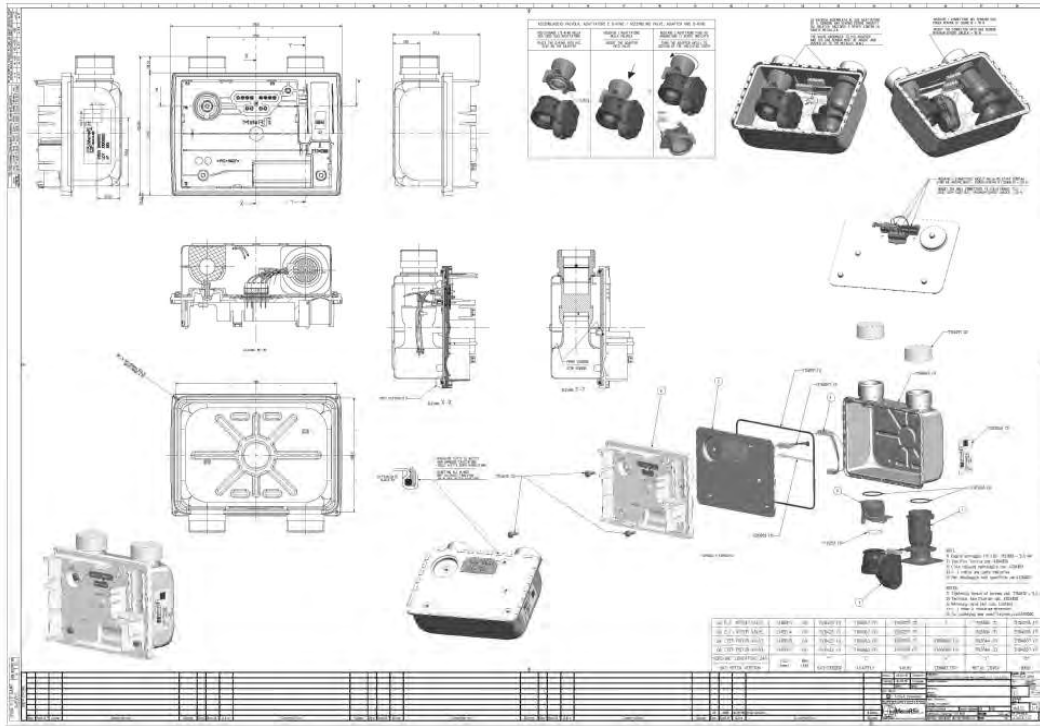


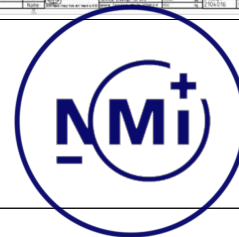
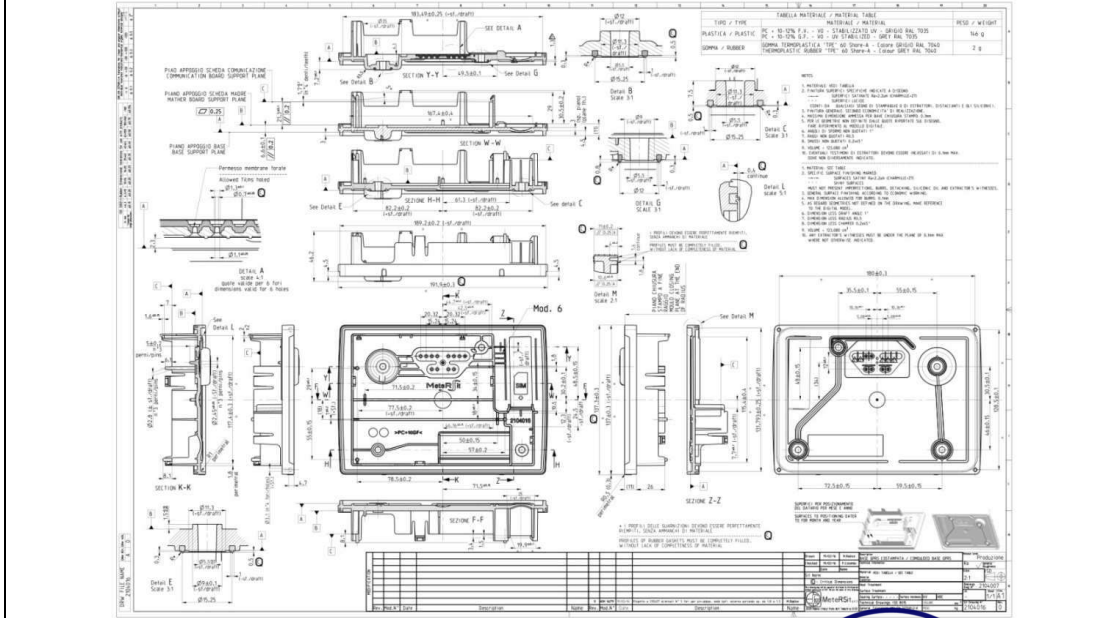
Figure 3.2 – VIEW OF FLOW SENSOR V2.0

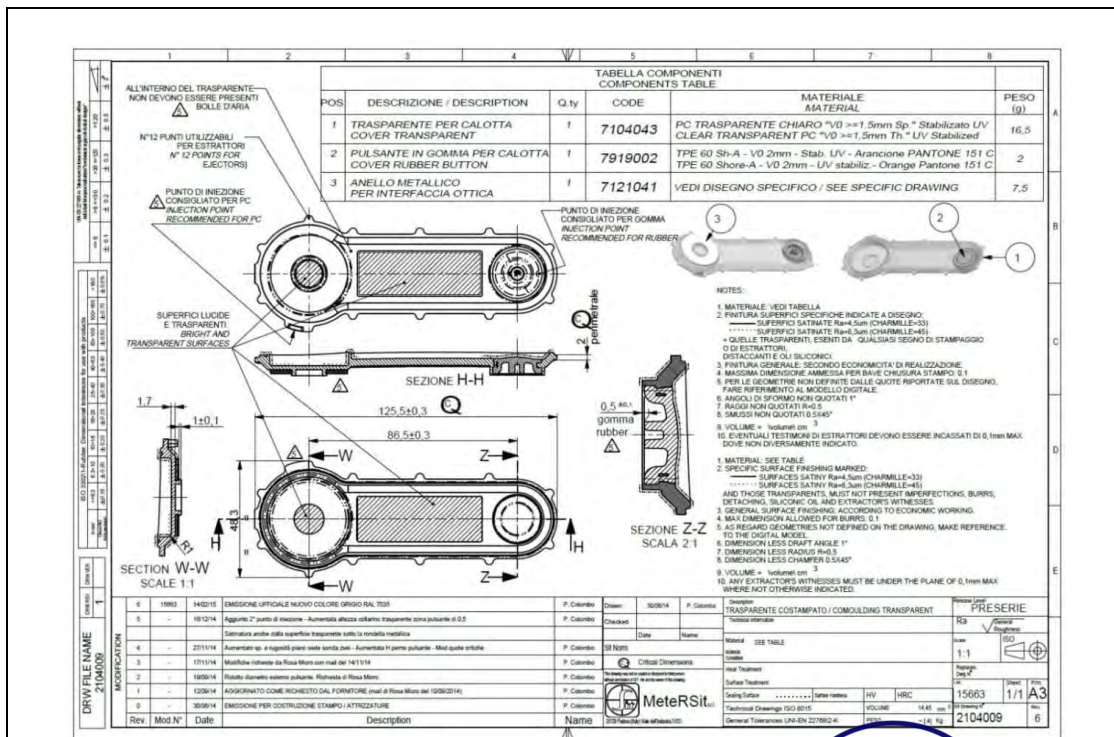
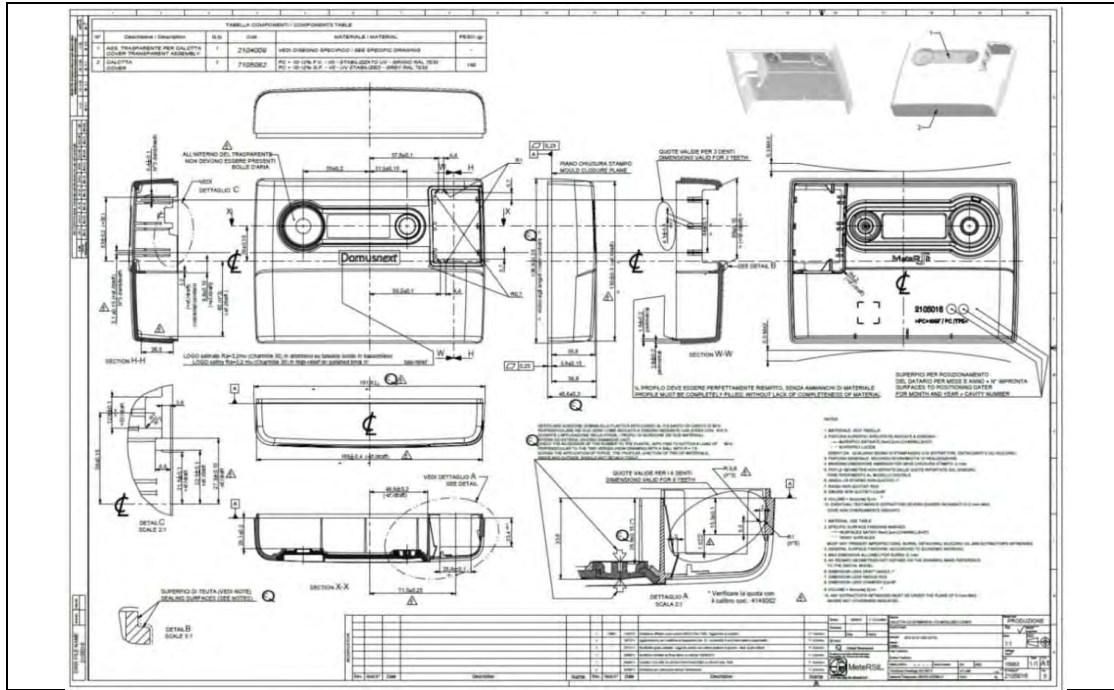


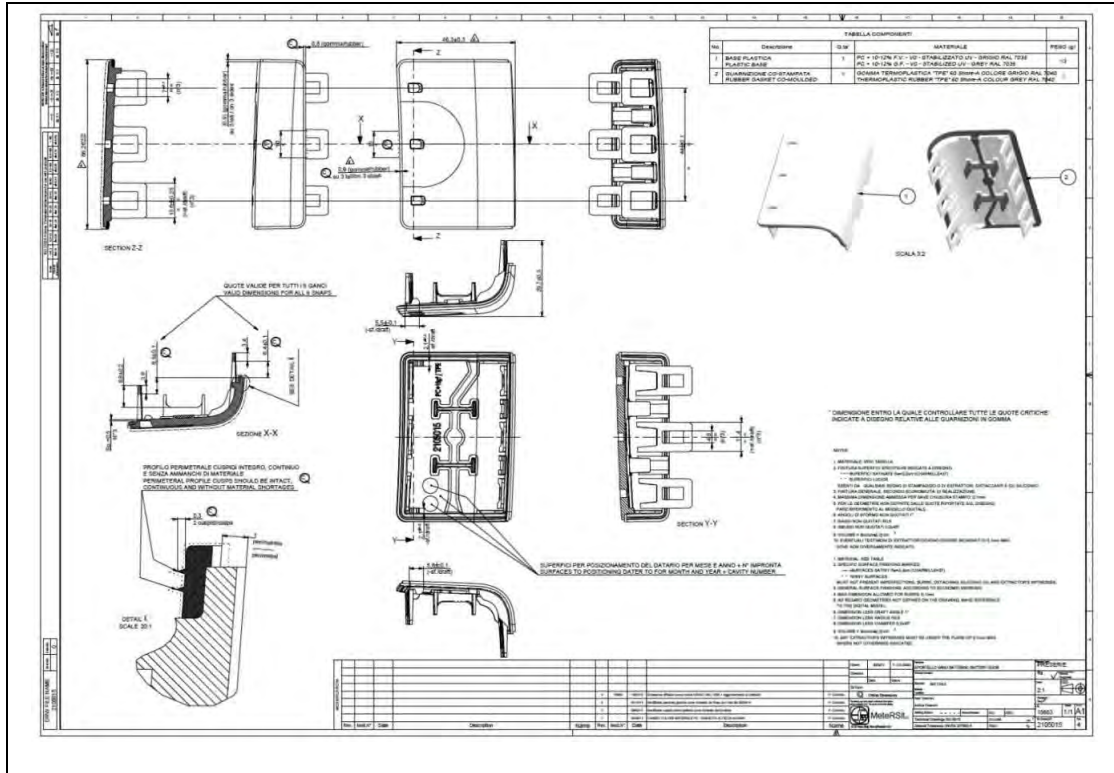
**FIGURE 3.3 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE (NEW DC MOTOR)**



**FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE**









**7.2. MBUS board part list**

| Titolo / Title  | BOM 2238040.0 (per ITEM 1238042 e 1238044)          |  |                    | METERSIT    |                       |                           |
|---|---|--|--------------------|-------------|-----------------------|---------------------------|
| Cliente / Customer  | MetersIt  |  | Codice / Code      | 2238040.0   |                       |                           |
| Descrizione progetto / Project description  | Schoda GASMETER, G4/G6 MBUS Versione per valvola DC |  | Progetto / Project | Meter STEP1 |                       |                           |
| Stato / State   | RISERVATO   |  | Data / Date        | 16/01/16    |                       |                           |
| Reference   | Quantity  | Description  | Value              | Not Mounted | Manufacturer          | Manufacturer PIN          |
| ANT1  | 1   | PLASTIC SWITCH   |                    |             | MetersIt              |                           |
| C1  | 1   | LOOP ANTENNA 169MHZ  |                    |             | Colombi Modificio     | 7139003                   |
| CS  | 1   | CS Schoda MBUS Contatore Gas G4/G6 per valvola DCM           |                    |             | MetersIt              | 2238040.0                 |
| C14   | 2   | CAP SMD 0603 COG 6.8PF 50V                                   | 6.8p               |             | AVX                   | 06033A6BR02CAT2A          |
| C2, C3  | 2   | CAP SMD 0603 COG 6.8PF 25V                                   | 6.8p               | NM          | AVX                   | 06033A6BR02CAT2A          |
| C5, C10, C12, C14, C16, C23, C43, C45, C47, C55, C59, C88, C106, C110, C128, C129, C132, C134, C174 | 31  | CAP SMD 0603 X5R 1U6 25V                                     | 1u                 |             | Kemet                 | C0603C105K3PACTU          |
| C6, C7  | 2   | CAP 0402 X7R 100nF 10V 10% MURATA GRM155R7C103KA01           | 10n                |             | Murata                | GRM155R7C103KA01          |
| C8  | 1   | CAP 0402 COG 100pF 50V 5% MURATA GRM1555C1H100JA01           | 10p                |             | Murata                | GRM1555C1H100JA01         |
| C9  | 1   | CAP SMD 0402 Cer 180pF±5% 50V COG GRM 15 5 5C 1H 180 J A01   | 18p                | NM          | Murata                | GRM1555C1H100JA01D        |
| C11, C26, C42, C46, C48, C52, C54, C56, C65, C75, C79, C84, C109, C122, C125, C127                  | 38  | CAP SMD 0603 X7R 100nF 10V                                   | 100n               |             | Kemet                 | C0603C104K3RACT103        |
| C15, C130, C131   | 3   | CAP SMD 0603 X5R 1U6 25V                                     | 1u                 | NM          | Kemet                 | C0603C105K3PACTU          |
| C25, C28  | 2   | CAP 0402 X7R 100nF 10V 10% MURATA GRM155R7C104KA88           | 100n               |             | Murata                | GRM155R7C104KA88          |
| C53, C115, C123   | 3   | CAP SMD 0603 X7R 100nF 10V                                   | 100n               | NM          | Kemet                 | C0603C104K3RACT103        |
| C57, C82, C88, C71, C74, C95, C105, C111, C142  | 18  | CAP SMD 0603 X7R 100nF 10V                                   | 10n                |             | Murata                | GRM188R7H103KA01J         |
| C60, C91, C92, C135, C136   | 5   | CAP SMD 1206 X5R 100UF 6.3V                                  | 100u               |             | MURATA                | GRM31CR60107ME39L         |
| C61   | 1   | CAP 0402 COG 120pF 50V 2% MURATA GRM1555C1H20GA01            | 12p                |             | Murata                | GRM1555C1H20GA01          |
| C63   | 1   | CAP SMD 0603 X5R 10UF 6.3V                                   | 10u                | NM          | Kemet                 | C0603C106M9PACTU          |
| C64   | 1   | CAP 0402 COG 27pF 50V 5% MURATA GRM1555C1H27JA01             | 27p                |             | Murata                | GRM1555C1H27JA01          |
| C66, C67, C69   | 3   | CAP 0402 X7R 100nF 50V 10% MURATA GRM155R7H102KA01           | 1n                 |             | Murata                | GRM155R7H102KA01          |
| C70, C72, C73   | 3   | CAP 0402 COG 220pF 50V 5% MURATA GRM1555C1H22JA01            | 220p               |             | Murata                | GRM1555C1H22JA01          |
| C80   | 1   | CAP 0603 X5R 4.7uF 6.3V 10% MURATA GRM188R6U475KE19          | 4.7u               |             | Murata                | GRM188R6U475KE19          |
| C81   | 1   | CAP SMD 0402 Cer 180pF±5% 50V COG GRM 15 5 5C 1H 181 J 701   | 18p                |             | Murata                | GRM1555C1H100JA01D        |
| C82   | 1   | CAP 0402 COG 560pF 50V 5% MURATA GRM1555C1H56JA01            | 560p               |             | Murata                | GRM1555C1H56JA01          |
| C83   | 1   | CAP 0603 X7R 470nF 10V 10% MURATA GRM188R71A474KA61          | 470n               |             | Murata                | GRM188R71A474KA61         |
| C89   | 1   | CAP SMD 0603 X5R 10UF 10V                                    | 10u                | NM          | TKK                   | C1003R4A100K              |
| C93, C94, C124  | 3   | CAP SMD 0603 X7R 220nF 25V                                   | 220n               |             | Kemet                 | C0603C224K3RACTU          |
| C107  | 1   | CAP SMD 0805 X5R 2.2UF 50V                                   | 2.2u               |             | Murata                | GRM1885R1A225ME34D        |
| C109  | 1   | CAP SMD 0603 X7R 100PF 50V                                   | 100p               |             | AVX                   | 0603C101KAT2A             |
| C113, C118  | 6   | CAP SMD 0603 X7R 100PF 50V                                   | 100p               | NM          | AVX                   | 0603C101KAT2A             |
| C119, C120  | 2   | CAP SMD 0603 COG 220PF 50V                                   | 220p               |             | Murata                | GRM1555C1H22JA01D         |
| C121  | 1   | CAP 0402 COG 330pF 50V 5% MURATA GRM1555C1H33JA01            | 330p               |             | Murata                | 0603C101KAT2A             |
| C137, C139  | 3   | CAP SMD 0603 X7R 10NF 50V                                    | 1n                 |             | Murata                | GCM188R7H102KA37D         |
| C140  | 1   | CAP 0603 X5R 1uF 6.3V 10% MURATA GRM188R6U105KA01            | 1u                 |             | Murata                | GRM188R6U105KA01          |
| C141  | 1   | CAP SMD 0603 X5R 10UF 6.3V                                   | 10u                |             | Kemet                 | C0603C106M9PACTU          |
| C143  | 1   | SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                 | 2200u              |             | NIC COMP              | NATT22M6.3V12.5X14KLFB    |
| C144  | 1   | SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                 | 2200u              | NM          | NIC COMP              | NATT22M6.3V12.5X14KLFB    |
| C145  | 1   | CAP SMD 0805 X5R 22UF 6.3V MURATA Code GRM21BR60J22ME39L     | 22u                |             | Murata                | GRM21BR60J22ME39L         |
| C146  | 1   | CAP SMD 0402 Cer 47pF±5% 50V COG GRM1555C1H470Z01            | 47p                |             | Murata                | GRM1555C1H470Z01D         |
| C147  | 1   | CAP SMD 0603 X5R 10UF 10V                                    | 10u                |             | TKK                   | C1003R4A100K              |
| C149  | 1   | CAP SMD 0402 COG 8.2PF 50V ±0.25pF                           | 8.2p               |             | Murata                | GRM1555C1H82CA01D         |
| C150  | 1   | CAP 0402 COG 560pF 50V 5% MURATA GRM1555C1H560JA01           | 56p                |             | Murata                | GRM1555C1H560JA01         |
| C151  | 1   | CAP 0402 COG 4.3PF 50V 0.25% MURATA GRM1555C1H43CA01         | 4.3p               |             | Murata                | GRM1555C1H43CA01D         |
| C153  | 1   | SMD Alum. Ele CAP Dia 8 220uF 35V Panas. Case F EEEFK1V221P  | 220u               |             | Panasonic             | EEEFK1V221P               |
| C154  | 1   | CAP SMD 0402 Cer 180pF±5% 50V COG GRM 15 5 5C 1H 180 J A01   | 18p                |             | Murata                | GRM1555C1H180JA01D        |
| C155, C156  | 2   | CAP SMD 0402 Cer 220pF±5% 50V COG GRM 15 5 5C 1H 220 J 201   | 22p                |             | Murata                | GRM1555C1H220JA01D        |
| C157  | 1   | CAP SMD 0402 Cer. 2.2uF±10%±50VTR                            | 2.2u               |             | Murata                | GRM155R7H22KA01D          |
| C158  | 1   | CAP 0402 COG 330pF 50V 5% MURATA GRM1555C1H330Z01D           | 33p                |             | MURATA                | GRM1555C1H330Z01D         |
| C159, C160  | 2   | CAP 0402 X5R 1uF 10V 10% MURATA GRM155R6T1A105KE15           | 1u                 |             | Murata                | GRM155R6T1A105KE15        |
| C161  | 1   | CAP SMD 0402 Cer. 1.5uF±10% 10V X7R                          | 1.5n               | NM          | Kemet                 | C0402C152KRACTU           |
| C162  | 1   | CAP SMD 0603 COG 22PF 50V                                    | 22p                |             | Kemet                 | C0603C220K5GACTU          |
| C164, C175  | 2   | SMD Alum. Ele CAP 150uF 6.3V EEEFCW0151R PANASONIC           | 150u               |             | Panasonic             | EEFCW0151R                |
| C177  | 1   | CAP 0402 COG 82PF 50V 5% MURATA GRM1555C1H820JA01D           | 82p                |             | Murata                | GRM1555C1H820JA01D        |
| D1  | 1   | SCHOTTKY BARRIER RECTIFIER TOREX 3A - 40 V - CASE SMA-PG     | 68p                |             | TOREX                 | MS304F 1TR-G              |
| D3(D11, D12)  | 3   | SMD Schottky Diode 1A 20V                                    |                    |             | Diode Incorporated    | DFL5120L-T                |
| D4  | 1   | HIGH POWER INFRARED EMITTER DIODE                            |                    |             | OSRAM                 | SFH4250                   |
| D5  | 1   | Dual Switching diode 0.15 A / 60 V - Case SOT23 BAV99        |                    |             | Philips               | BAV99                     |
| D7(D10)   | 2   | Dual Schottky Diode, Common Cathode 250mA - SOT23 BAT54C     |                    |             | Philips               | BAT54C                    |
| D13   | 1   | Schottky SMD Case DO-214 1.25W 20V 3A                        |                    |             | General Semiconductor | SS32                      |
| D21, D22  | 2   | SMD zener diode Case DO-214 1.25W Vishay 7.5V BZG95C8V2      |                    |             | Vishay                | BZG95C8V2                 |
| D24   | 1   | SMD Zener diode 3.3V BZG95C3V3Case DO-214                    |                    | NM          | Vishay                | BZG95C3V3                 |
| F1  | 1   | Film Fuse SMD - LITTELFUSE 0465.002 (1008)                   |                    |             | Littelfuse            | 0465.002R                 |
| J6  | 1   | 16_Pin_male_SMT_DIL_2.5mm                                    |                    |             | ADAM TECH             | DPH-2-16-0A-13534-1-PP-TR |
| J8  | 1   | 8_Pin_male_SMT_DIL_2.5mm                                     |                    |             | ADAM TECH             | DPH-2-08-0A-13534-1-PP-TR |
| J15   | 1   | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW VERT. 4 CIRCUIT |                    |             | MOLEX                 | 502443-0470               |
| J16   | 1   | 16_Pin_male_SMT_DIL_2.5mm                                    |                    | NM          | ADAM TECH             | DPH-2-16-0A-13534-1       |
| L1  | 1   | INDUCTOR 10uH ±20% 17A                                       | 10u                |             | TDK                   | CLF5045T-100M             |
| L2  | 1   | MURATA LQG15NH82NJ02 IND 820H 0402 5%                        | 82n                |             | Murata                | LQG15NH82NJ02             |
| L3  | 1   | IND 10uH 100mΩ 300mA 5% 0402                                 | 10u                |             | MURATA                | LQG15NH100NJ02            |
| L4  | 1   | MURATA LQM21FN100M70L IND 10uH 0805 20%                      | 10u                |             | MURATA                | LQM21FN100M70L            |
| L5  | 1   | MURATA LQM15CR20300 IND 200H 0402 5%                         | 200n               |             | Murata                | LQM15CR20300              |
| L6  | 1   | MURATA LQG15NH82NJ02 IND 820H 0402 5%                        | 82n                |             | Murata                | LQG15NH82NJ02             |
| L7, L8, L9  | 3   | MURATA LQG15NH27NJ02 IND 270H 0402 5%                        | 27n                |             | Murata                | LQG15NH27NJ02             |
| L11   | 1   | MURATA LQG15SH12NJ02 IND 120H 0402 5%                        | 12n                |             | Murata                | LQG15SH12NJ02             |
| L12   | 1   | MURATA LQG15HN350J02 IND 3.5nH 0402 ±0.3nH                   | 3.5n               |             | Murata                | LQG15HN350J02             |
| L13   | 1   | COILCRAFT 0603CS-10NUL IND 10nH 0603 5%                      | 10n                |             | COILCRAFT             | 0603CS-10NUL              |
| L14   | 1   | COILCRAFT 0603CS-27NUL IND 27nH 0603 5%                      | 27n                |             | COILCRAFT             | 0603CS-27NUL              |
| L15   | 1   | COILCRAFT 0603CS-47NUL IND 47nH 0603 5%                      | 47n                |             | COILCRAFT             | 0603CS-47NUL              |
| L16   | 1   | MURATA LQG15SH82NS02 IND 8.2nH 0402 ±0.3nH                   | 8.2n               |             | Murata                | LQG15SH82NS02             |
| L17   | 1   | MURATA LQG15SH15NJ02 IND 15nH 0402 5%                        | 15n                |             | Murata                | LQG15SH15NJ02             |
| L18   | 1   | COILCRAFT 0603CS-68NUL IND 6.8nH 0603 5%                     | 6.8n               |             | COILCRAFT             | 0603CS-68NUL              |
| L19   | 1   | SMD Chip Ferrite Beads - MURATA BL15 series - Case 0402      |                    |             | Murata                | BL15S0601S1H              |
| L20   | 1   | SMD INDUCTOR - COILCAFT 200uH DCR=24mA RMS=2.2A              | 200n               | NM          | Coilcraft             | XL12010-20MLB             |
| L22   | 1   | MURATA LQG15SH44T502 IND 4.7nH 0402 ±0.3nH                   | 4.7n               | NM          | Murata                | LQG15SH44T502             |
| P1  | 1   | BUTTON MINIATURE, SMD 6x6 ITC-CANNOV COD. KSC35J1            |                    |             | ITC CANNOV            | KSC35J1                   |

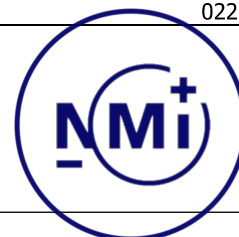




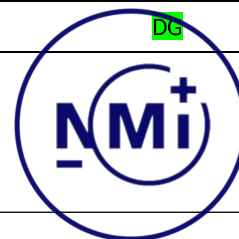
## 9. ALARMS AND FAILURE VISUALIZATION

The system status of the meter is "summarized" in a "Status word" where each bit has a one to one relationship with the Internal Code used to identify the relative event. The relationship is Status word bit = Internal Code -1, i.e Status word bit 0 corresponds to Internal Code 1 and so on. The possible events are listed below:

| Internal Code for Event | Information                               | Display Visualization     |
|-------------------------|---|---------------------------|
| 1                       | NO BATTERY                                | DG b<br>001               |
| 2                       | <b>BATTERY CRITICAL</b>                   | <b>DG</b>                 |
| 3                       | BUFFER ALMOST FULL                        | DG C<br>003               |
| 4                       | GENERIC ALARM                             | DG C<br>004               |
| 5                       | BUFFER FULL                               | DG C<br>005               |
| 6                       | INVALID CLOCK                             | <b>DG</b>                 |
| 7                       | VOLUME INCONSISTENCY                      | <b>DG</b>                 |
| 8                       | INVALID DATABASE                          | DG b<br>008               |
| 9                       | LEAKAGE WITH CLOSED VALVE                 | DG <b>A</b><br>009        |
| 10                      | VALVE CLOSED AFTER OPENING<br>TEST FAILED | DG A<br>010               |
| 11                      | DATABASE CREATION                         | DG                        |
| 12                      | NVM_ERROR                                 | DG A<br>012               |
| 13                      | PROFILE ACTIVATED                         | DG                        |
| 14                      | WRITE FAILURE                             | DG C<br>014               |
| 15                      | READ FAILURE                              | DG C<br>015               |
| 16                      | TOO DIFF TIME SYNC                        | DG <b>b</b><br><b>006</b> |
| 17                      | SENSOR FAILURE                            | DG A<br>018               |
| 18                      | REVERSE FLOW                              | DG b<br>019               |
| 19                      | OVERFLOW                                  | DG C<br>020               |
| 20                      | METER CHECKSUM ERROR                      | DG A<br>017               |
| 21                      | METER RTC ERROR                           | DG A<br>021               |
| 22                      | VALVE SHORT MOVE                          | DG C<br>022               |



| Internal Code for Event | Information                             | Display Visualization |
|-------------------------|---|-----------------------|
| 23                      | LOW BATTERY (10%)                       | DG F<br>002           |
| 24                      | UNI TS STATUS MODIFIED                  | DG                    |
| 25                      | METER RESTARTED                         | DG                    |
| 26                      | VALVE ERROR                             | DG A<br>026           |
| 27                      | OPEN VALVE                              | DG                    |
| 28                      | CLOSE VALVE                             | DG                    |
| 29                      | TIME SYNCHRONIZED                       | DG                    |
| 30                      | IMAGE DOWNLOADED                        | DG                    |
| 31                      | IMAGE ACTIVATED                         | DG                    |
| 32                      | NETWORK FAILURE                         | DG C<br>032           |
| 33                      | IR DECRYPT or AUTH. FAILURE             | DG C<br>033           |
| 34                      | METER UNAVAILABLE                       | DG                    |
| 35                      | DLS BEGIN                               | DG                    |
| 36                      | VALVE ENABLED FOR OPENING               | DG                    |
| 37                      | TEMPERATURE ERROR                       | DG C<br>037           |
| 38                      | GAS DETECTION ERROR                     | DG C<br>038           |
| 39                      | BATTERY VERY LOW                        | DG F<br>039           |
| 40                      | INTERNAL BATTERY EXHAUSTED              | DG                    |
| 41                      | EXTERNAL BATTERY EXHAUSTED              | DG                    |
| 42                      | BILLING PERIOD CLOSED                   | DG                    |
| 43                      | NEW TARIFF PLAN PROGRAMMED              | DG                    |
| 44                      | EXTERNAL BATTERY REPLACEMENT AUTHORIZED | DG                    |
| 45                      | SECURITY KEY MODIFIED                   | DG                    |
| 46                      | INTERNAL UNITS LIB                      | DG                    |
| 47                      | INTERNAL UNITS LIB FAIL                 | DG                    |
| 48                      | RESET CIG LOGBOOK                       | DG                    |
| 49                      | RESET EVENT LOGBOOK                     | DG                    |



| Internal Code for Event | Information                            | Display Visualization |
|-------------------------|--|-----------------------|
| 50                      | NEW TARIFF PLAN ACTIVATED              | DG                    |
| 51                      | OPTICAL COMMUNICATION<br>SESSION START | DG                    |
| 52                      | OPTICAL COMMUNICATION<br>SESSION STOP  | DG                    |
| 53                      | FIRMWARE IMAGE DOWNLOAD                | DG                    |
| 54                      | WRONG PIN FOR VALVE                    | DG                    |
| 55                      | VALVE CLOSE NO COM                     | DG                    |
| 56                      | DLS IS ACTIVE                          | DG                    |

If one of these faults occurs an alarm code is often shown on the display of the meter (see for more details the above table, column Display Visualization), an event is recorded in Event-Log and the related bit in the Status word is modified.



## 2. METER SPECIFICATIONS

Metersit declares, under its responsibility, the following specifications:

**Table 2 – Rated operating conditions**

| Flow rate<br>Class | Q <sub>start</sub><br>[m <sup>3</sup> /h] | Q <sub>min</sub><br>[m <sup>3</sup> /h] | Q <sub>t</sub><br>[m <sup>3</sup> /h] | Q <sub>max</sub><br>[m <sup>3</sup> /h] | Q <sub>r</sub><br>[m <sup>3</sup> /h] |
|--------------------|---|---|---------------------------------------|---|---------------------------------------|
| <b>G4</b>          | 0.01                                      | 0.04                                    | 0.6                                   | 6.0                                     | 7.2                                   |
| <b>G6</b>          | 0.015                                     | 0.06                                    | 1.0                                   | 10                                      | 12                                    |

**Table 3 – Climatic environment**

| Class     | Operating Temperature | Storage Temperature |
|-----------|-----------------------|---------------------|
|           | [°C]                  | [°C]                |
| <b>G4</b> | -25 ÷ +55             | -30 ÷ +60           |
| <b>G6</b> | -25 ÷ +55             | -30 ÷ +60           |

The instrument is designed for non-condensing humidity  
Intended location: open and closed

**Table 4 – Gas related conditions**

| Description            | Value                       | Note  |
|------------------------|-----------------------------|---|
| Gas groups             | Second family group, H or L | Either L or H, depending on legally relevant firmware |
| Temperature range      | (-25 ÷ +55) °C              |   |
| Max operating pressure | 500 mbar                    |   |

**Table 5 – Other characteristics**

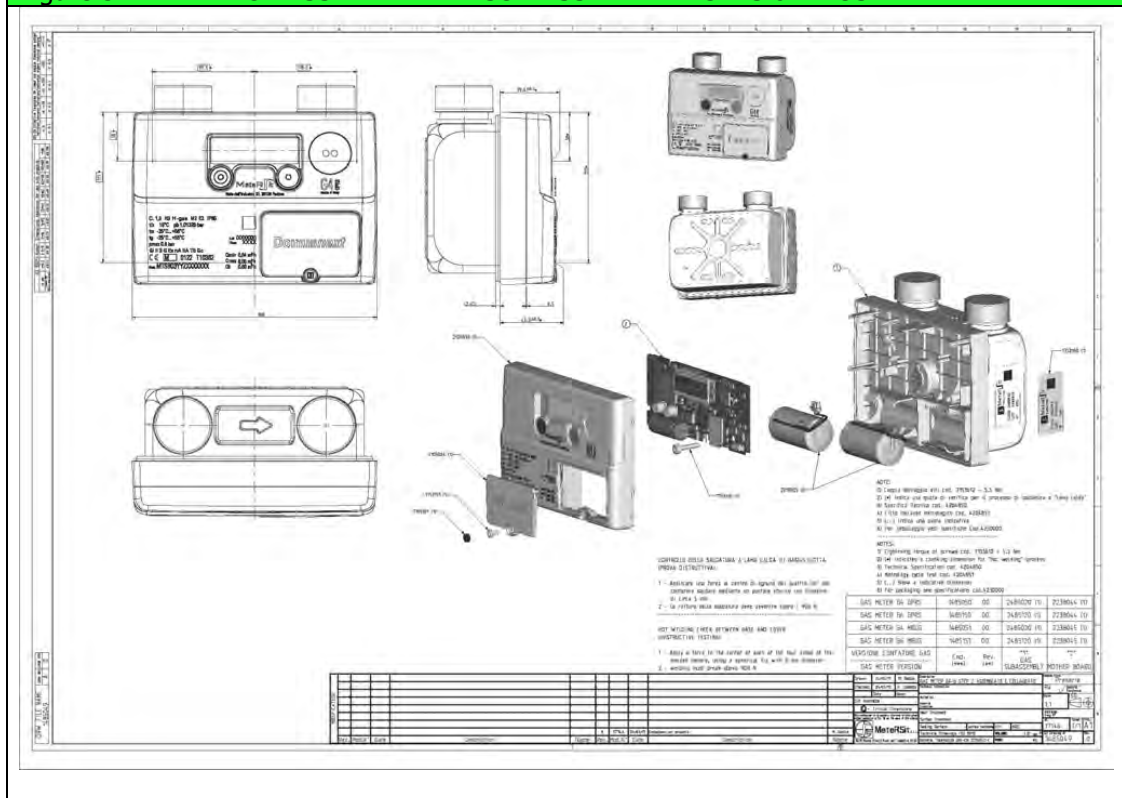
| Characteristic              | Value   | Note   |
|-----------------------------|---|--|
| DC Voltage supply           | (3.1 ÷ 3.6) V   | By Lithium Thyonil Chloride battery  |
| Max DC rated current        | 10 mA<br>10 mA<br>10 mA<br>10 mA                            | Sensor ON<br>With M-BUS module ON<br>With GPRS module ON<br>Gas valve movement |
| DC source lifetime          | > 15 years with M-BUS module<br>> 10 years with GPRS module | See chapter 12   |
| Mechanical environment      | M2  |  |
| Electromagnetic environment | E2  |  |



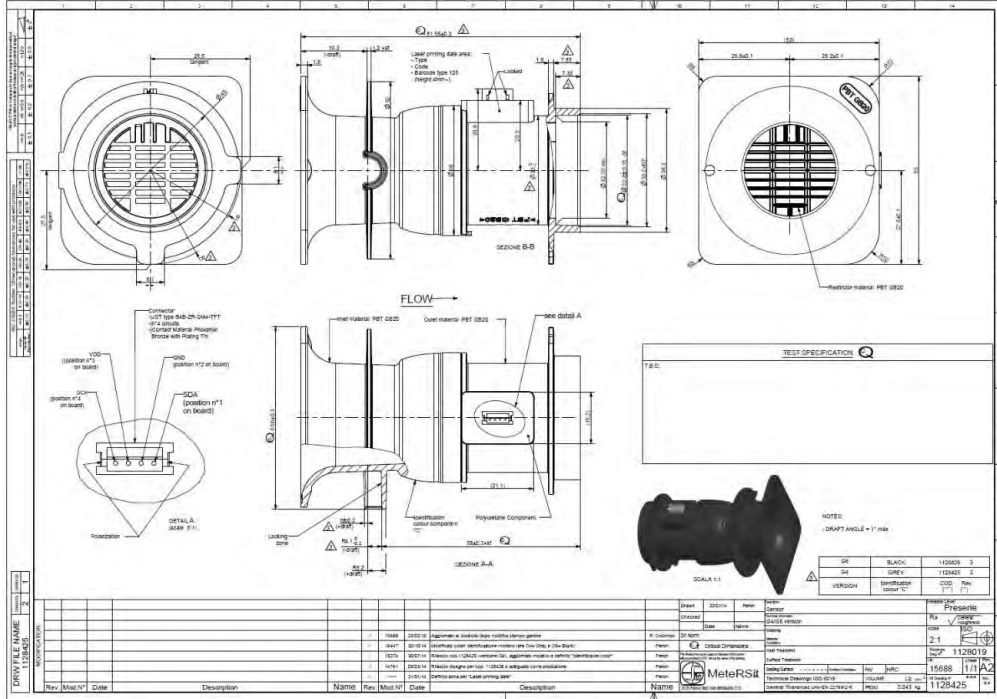
### 3. MECHANICAL SPECIFICATIONS

| Characteristic             | u.m. | Class G4        | Class G6                         | Note  |
|----------------------------|------|-----------------|----------------------------------|---|
| Connection centrelines     | [mm] | 110             | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different |
| Max dimensions (H x L x s) | [mm] | 154 x 188 x 101 | 154 x 188 x 101<br>(plus flange) | Dimensions valid for product platform 2                   |
| Connection diameter        | "    | G 1" 1/4        | G 1" 1/4<br>(1" 1/2 with flange) |   |
| Resistance to torque       | [Nm] | 110             | 140                              |   |
| Resistance to bending      | [Nm] | 40              | 40<br>(60 with flange)           |   |
| Weight                     | [Kg] | 2.0             | 2.0                              |   |

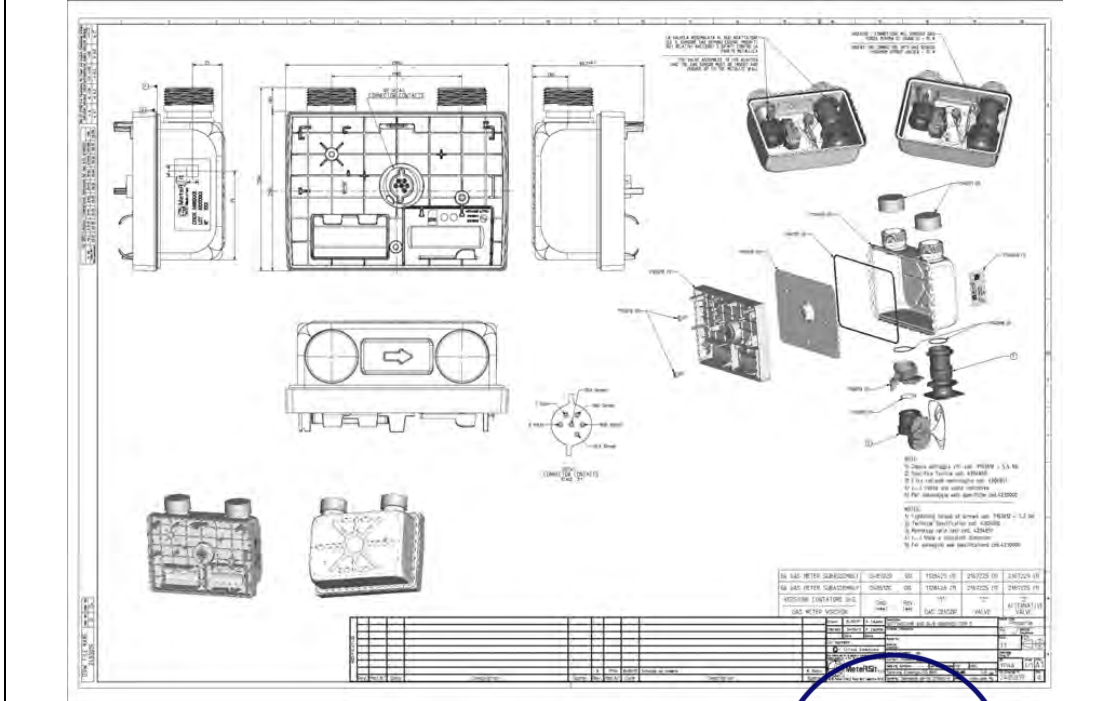
Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY – GPRS & MBUS



**Figure 3.2 – VIEW OF FLOW SENSOR V2.0**

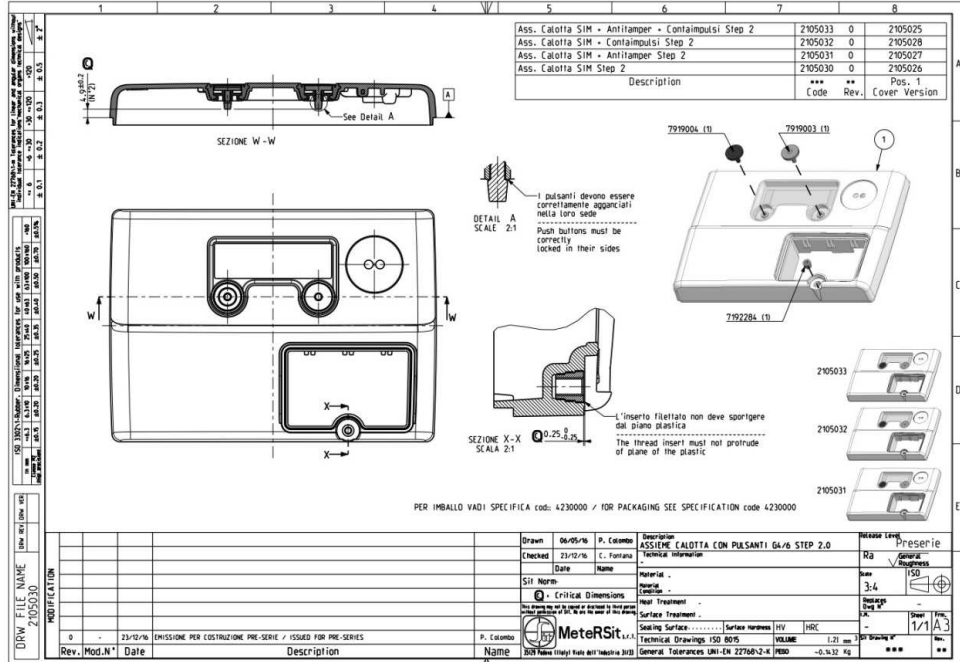
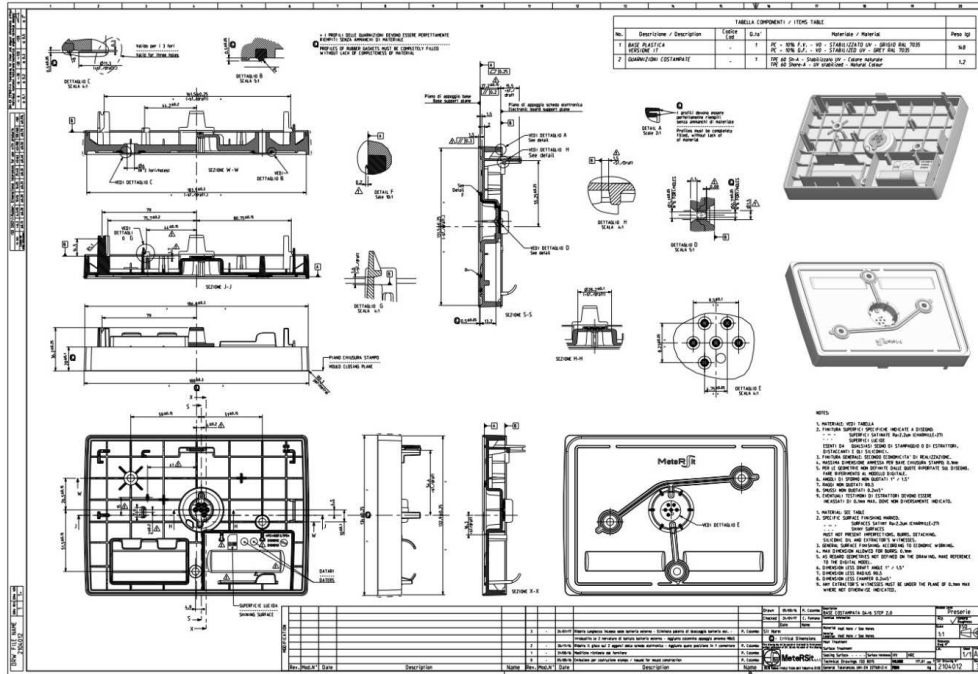


**FIGURE 3.3 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE**





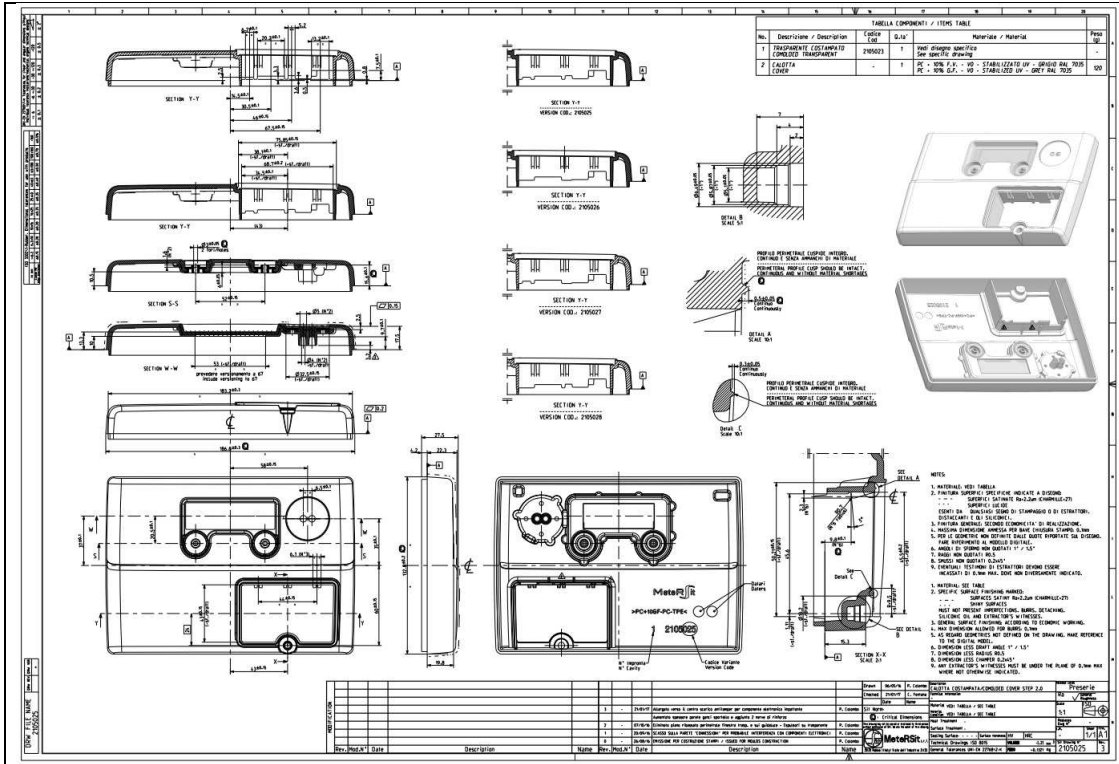
**FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE**



**DOMUSNEXT® G4/G6**  
**GAS METERS**

**TF10-005**  
**Version 3.0\_en**

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**Date: 29/03/2017**



| POS. | DESCRIZIONE / DESCRIPTION                 | Qty | CODE    | MATERIALE / MATERIAL   | PESO (g) |
|------|---|-----|---------|--|----------|
| 1    | TRASPARENTE PER CALOTTA COVER TRANSPARENT | 1   | 7105098 | PC TRASPARENTE CHIARO - VO=1,5mm Sp. - Stabilizzato UV<br>CLEAR TRANSPARENT PC "VO=1,5mm Th. - UV Stabilized | 12       |
| 2    | PULSANTE IN GOMMA COVER RUBBER BUTTON     | 1   | 7919005 | TPE 60 Sh-A - Stabilizzato UV - Colore naturale<br>TPE 60 Shore-A - UV stabilized - Natural Colour           | 1,6      |
| 3    | ANELLO METALLICO PER INTERFACCIA OTTICA   | 1   | 7121160 | VEDI DISEGNO SPECIFICO / SEE SPECIFIC DRAWING  | 5        |

**NOTE:**

- MATERIALE: VEDI TABELLA
- FINITURA SUPERFICI SPECIFICHE INDICATE A DISEGNO:  
 --- SURFICI SATINATE Ra2,2um (CHARMILLE-Z7)  
 ..... SUPERFICI LUCIDE TRASPARENTI  
 ESENTI DA QUALSIASI SEGNO DI STAMPAGGIO O DI ESTRATTORI, DISTACCANTI E OLI SILICONICI.
- FINITURA GENERALE: SECONDO ECONOMICITA' DI REALIZZAZIONE.
- MASSIMA DIMENSIONE AMMESSA PER BARE CHIUSURA STAMPO: 0,1mm
- PER LE GEOMETRIE NON DEFINITE DALLE QUOTE RIPORTATE SUL DISEGNO, FARE RIFERIMENTO AL MODELLO DIGITALE.
- ANGOLI DI SFORNO NON QUOTATI 1° / 1,5°
- RAGGI NON QUOTATI R0,5
- SMUSSI NON QUOTATI 0,2x45°
- EVENTUALI TESTIMONI DI ESTRATTORI DEVONO ESSERE INCASSATI DI 0,1mm MAX. DOVE NON DIVERSAMENTE INDICATO.

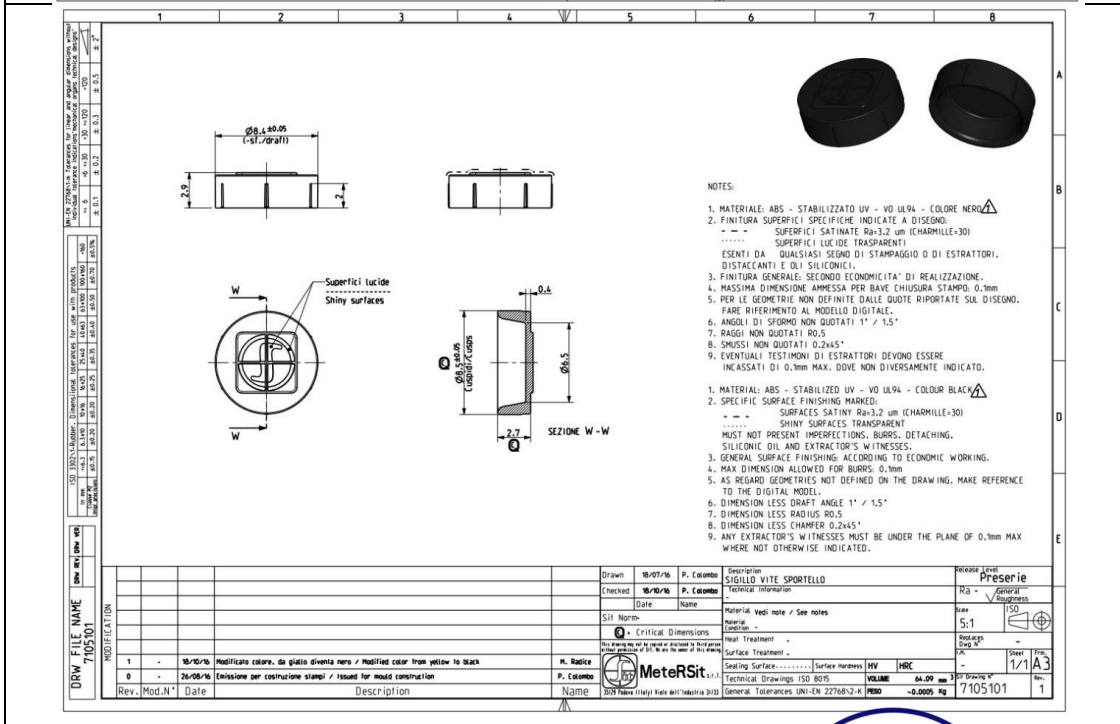
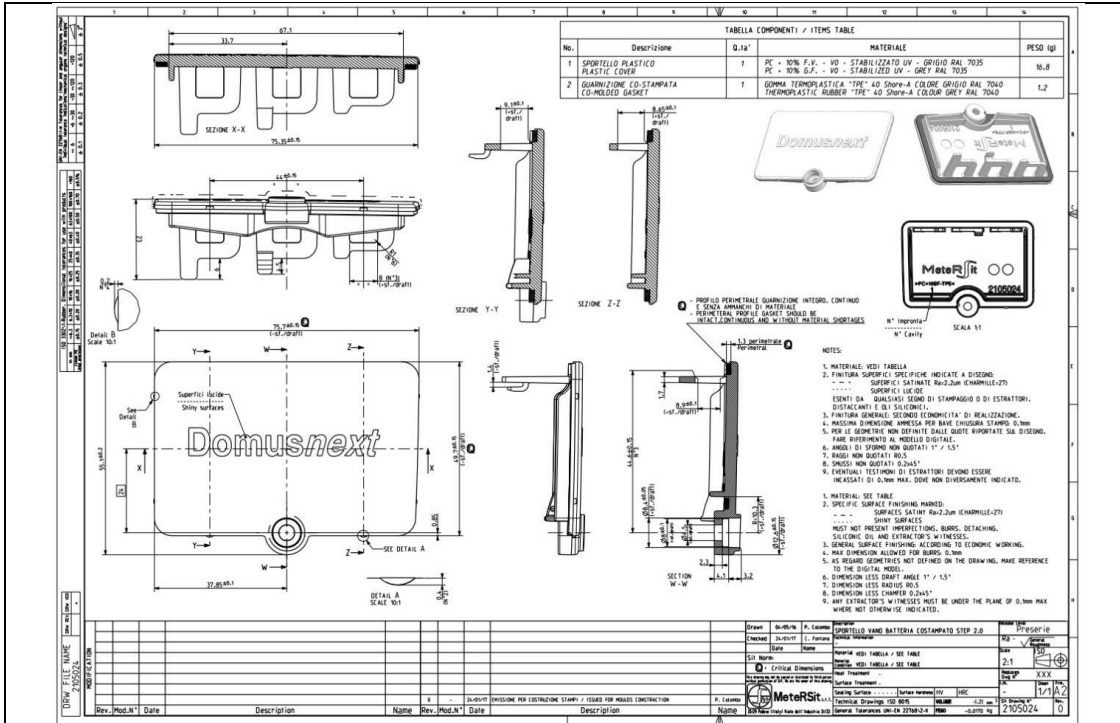
  

**Area per n° impronta / Surface for cavity number**

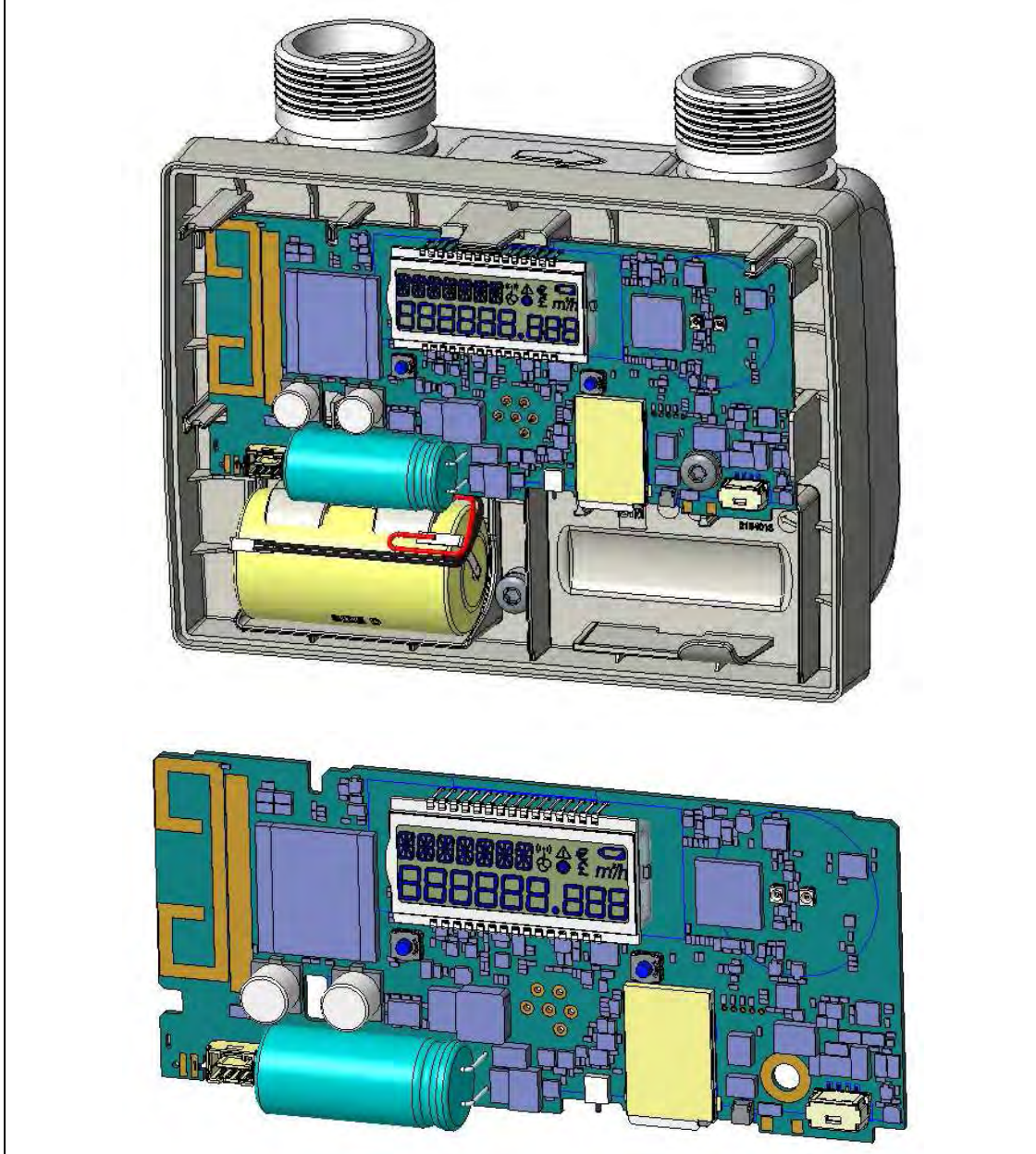
| Rev. | Mod.N° | Date     | Description  | Drawn      | Checked | Date | Name | Description | Technical Information | Material | Surface Treatment | Heat Treatment | Surface Treatment | Scale | Sheet | Total |
|------|--------|----------|--|------------|---------|------|------|-------------|-----------------------|----------|-------------------|----------------|-------------------|-------|-------|-------|
| 1    |        | 21/05/17 | AGGIUNTO PIANETTI AI LATI DELLA SEDE PULSANTE (REQUISTA STAMPABILITÀ)                    | P. Colombo |         |      |      |             |                       |          |                   |                |                   | 1:1   | 1/1   | 1     |
| 0    |        | 26/08/16 | AUMENTATA ALTEZZA ESTERNA GUIDALUCE DNEI - AGGIUNTO ESPANSORI PERIMETRALI E PUNTO INIEZ. | P. Colombo |         |      |      |             |                       |          |                   |                |                   |       |       |       |
|      |        |          | EMMISSIONE PER COSTRUZIONE STAMPO / ISSUED FOR MOLD CONSTRUCTION                         | P. Colombo |         |      |      |             |                       |          |                   |                |                   |       |       |       |

| Rev. | Mod.N° | Date     | Description  | Drawn      | Checked | Date | Name | Description | Technical Information | Material | Surface Treatment | Heat Treatment | Surface Treatment | Scale | Sheet | Total |
|------|--------|----------|--|------------|---------|------|------|-------------|-----------------------|----------|-------------------|----------------|-------------------|-------|-------|-------|
| 1    |        | 21/05/17 | AGGIUNTO PIANETTI AI LATI DELLA SEDE PULSANTE (REQUISTA STAMPABILITÀ)                    | P. Colombo |         |      |      |             |                       |          |                   |                |                   | 1:1   | 1/1   | 1     |
| 0    |        | 26/08/16 | AUMENTATA ALTEZZA ESTERNA GUIDALUCE DNEI - AGGIUNTO ESPANSORI PERIMETRALI E PUNTO INIEZ. | P. Colombo |         |      |      |             |                       |          |                   |                |                   |       |       |       |
|      |        |          | EMMISSIONE PER COSTRUZIONE STAMPO / ISSUED FOR MOLD CONSTRUCTION                         | P. Colombo |         |      |      |             |                       |          |                   |                |                   |       |       |       |

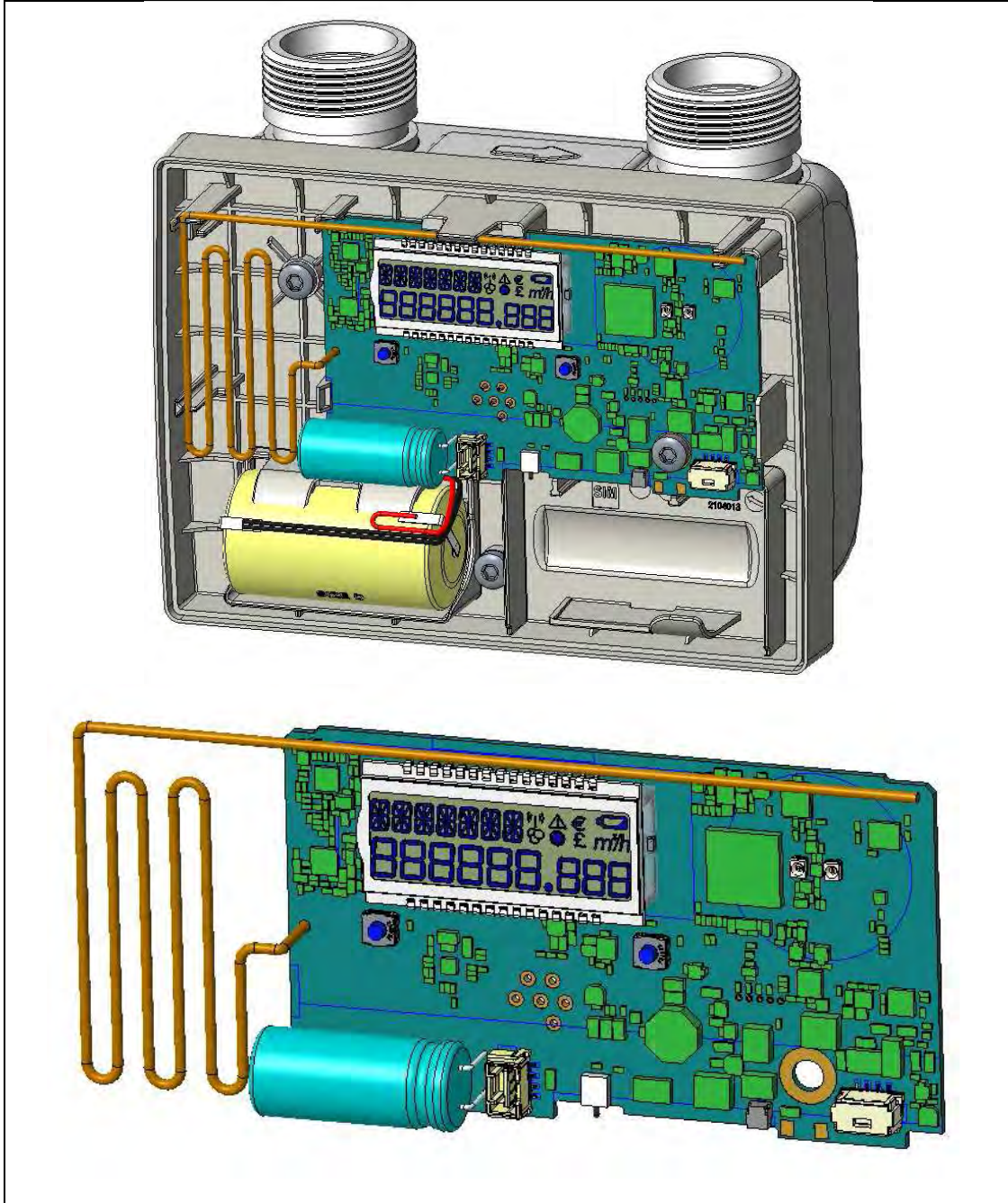




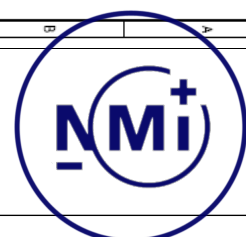
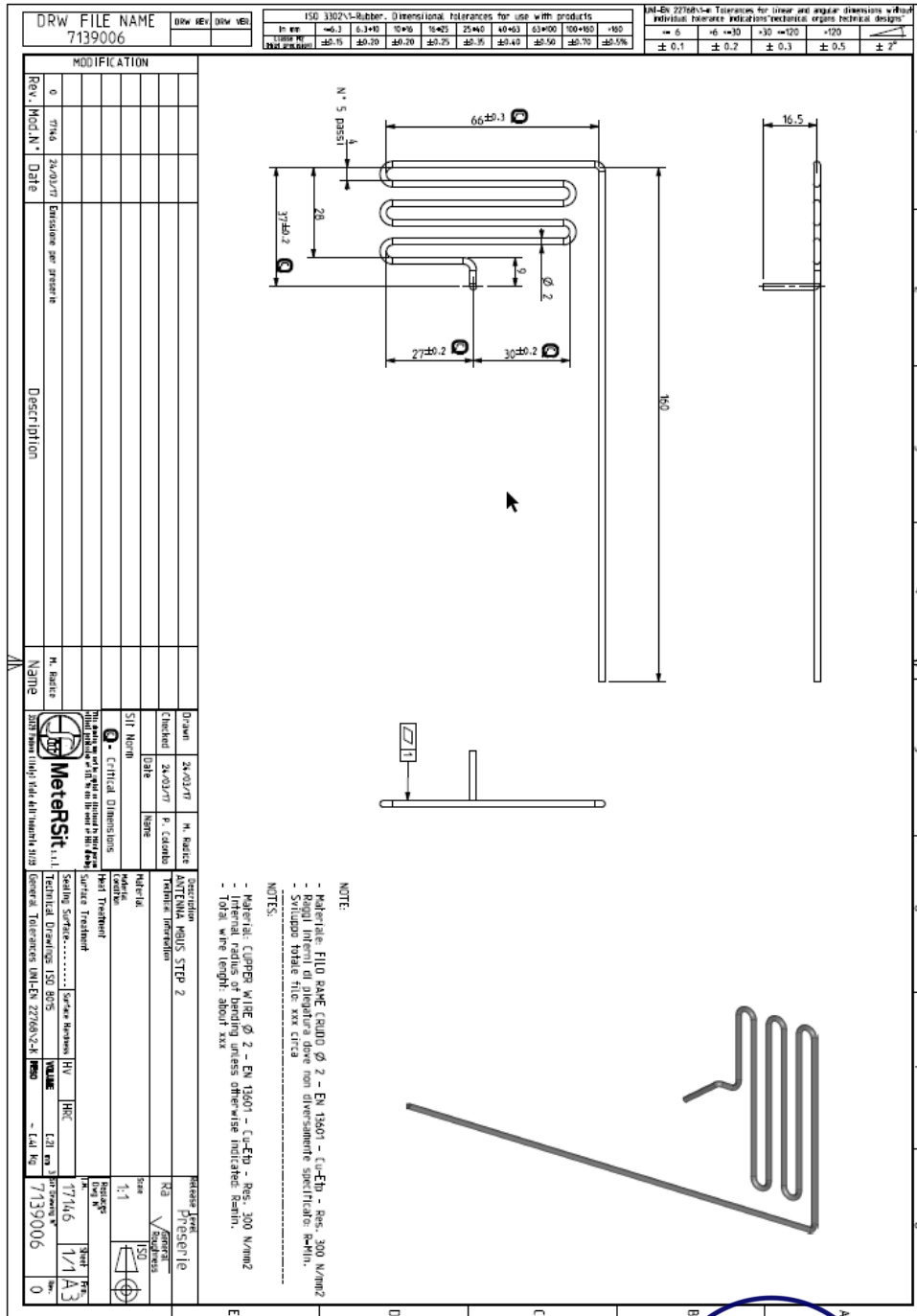
**FIGURE 3.5 – GPRS -INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS**



**FIGURE 3.6 – WMBUS - INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS AND ANTENNA**



**FIGURE 3.6 – WMBUS 169MHz ANTENNA**



## 4. CIRCUIT DIAGRAM

The electronic of the meter consists of two boards:

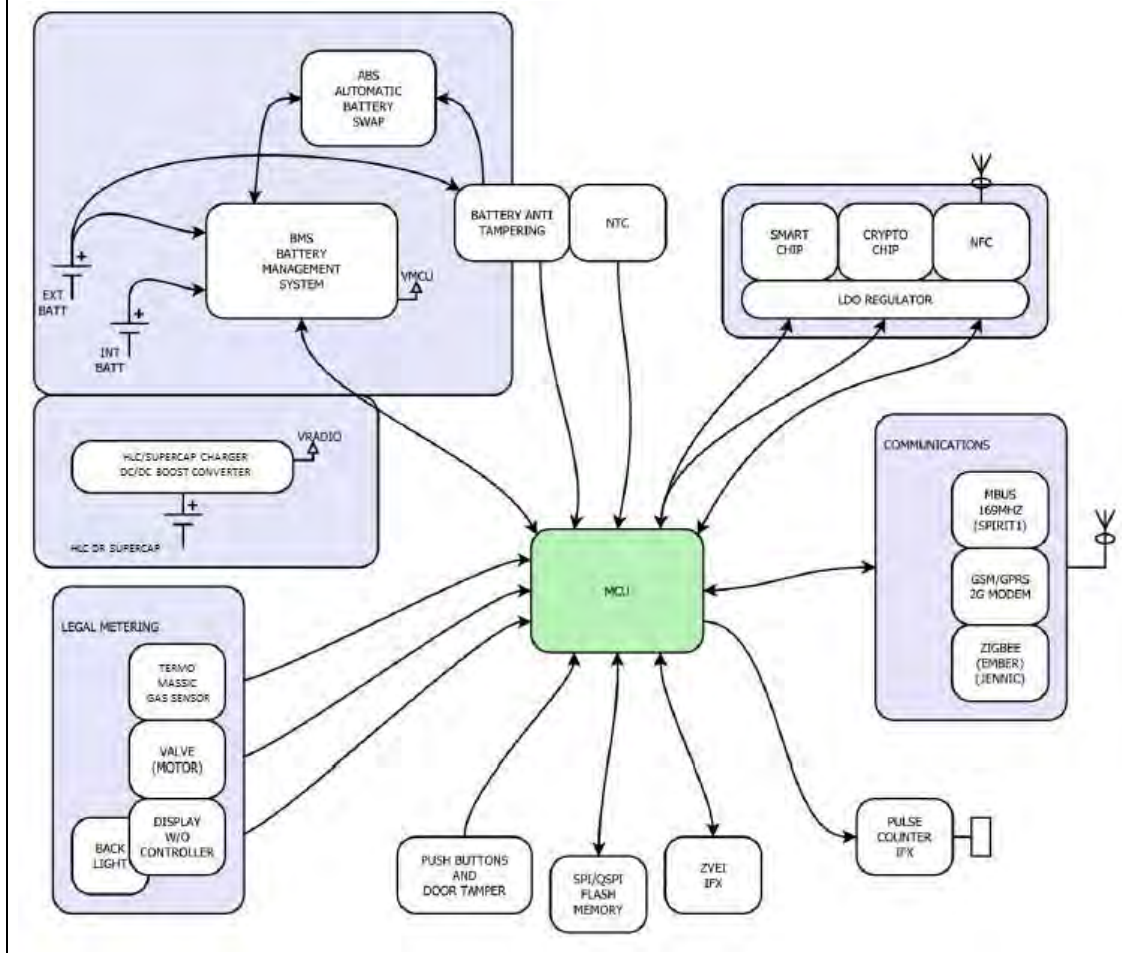
- GPRS Main Board;
- W-Mbus Main board

### 4.1. CPU Board

The CPU Board is designed around a single microprocessor:

- STM32: a 32 bit CPU dedicated to gas sensor management, measurement integration algorithm, RTC clock, billing time bands management, communications and application software

Figure 4.1 – schematic view of Main board

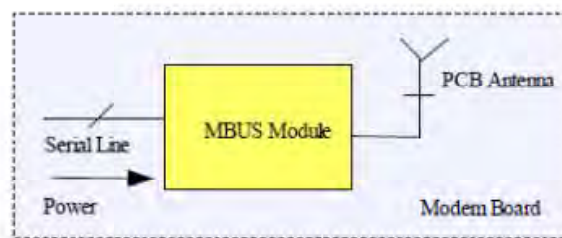




#### 4.1.1. M-Bus Modem schematic

The MBUS RF modem is designed around a ST Microelectronics Transceiver and a Skyworks power amplifier. The transceiver module is controlled directly by the CPU where are implemented most of the radio HW functionality as well as the MBUS SW stack. The RF Modem is supplied by the super-capacitor on board by means of a DC/DC converter to guarantee the needed voltage level.

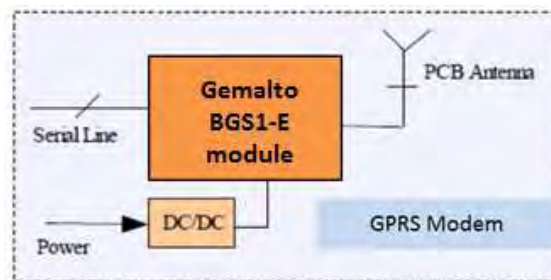
Figure 4.2 – M-BUS module schematics



#### 4.1.2. GPRS Modem schematic

The GPRS modem is designed around the BGS1-E integrated module manufactured by Gemalto, the module itself includes a complete GSM/GPRS IP Modem with its own internal GSM and TCP/IP stack. The Modem is controlled directly by the CPU. The GPRS module is supplied by the super-capacitor on board by means of a DC/DC converter to guarantee the needed voltage level. The AirPrime radio module is completely controlled by AT commands using the standard serial line.

Figure 4.3 – GPRS module schematics



## 5. ELECTRICAL SCHEMATICS

### 5.1. GPRS Board electrical schematics

In Annex 1 is available the integral GPRS board electrical schematics (version with supercapacitor).

In Annex 2 is available the integral GPRS board electrical schematics (version with HLC).

### 5.2. MBUS Board electrical schematics

In Annex 3 is available the integral MBUS board electrical schematics.

## 6. PCB LAYOUT

### 6.1. GPRS Board file gerber

In Annex 4 is available the integral GPRS board file gerber (version with supercapacitor).

In Annex 5 is available the integral GPRS board file gerber (version with HLC).

### 6.2. MBUS Board file gerber

In Annex 6 is available the integral MBUS board file gerber.



## 7. PART LIST

The gas meter includes the following main components:

| Component                    | Manufacturer    | Reference   |
|------------------------------|-----------------|---|
| <b>Removable Battery</b>     | ---             | Lithium Thyonil Chloride Size D 19 Ah                                 |
| <b>Back-up Battery</b>       | ---             | Lithium Thyonil Chloride Size D 19 Ah                                 |
| <b>Electronic GPRS Board</b> | MeterSit S.r.l. | See section 5.1   |
| <b>Electronic MBUS Board</b> | MeterSit S.r.l. | See section 5.2   |
| <b>Display</b>               | Varitronix      | See Figure 10   |
| <b>Gas Sensor</b>            | Sensirion       | See Figures 3.2 and 3.2.1   |
| <b>Metallic Gas Chamber</b>  | SIT S.p.A.      | See section <b>Errore. L'origine riferimento non è stata trovata.</b> |
| <b>Plastic Case</b>          | MeterSit S.r.l. | See section 3.5   |

In the following sections the part lists relative to the electronic boards are described in detail.

### 7.1. GPRS Board part list

In Annex 7 is available the integral GPRS board part list (version with supercapacitor).  
In Annex 8 is available the integral GPRS board part list (version with HLC).

### 7.2. MBUS Board part list

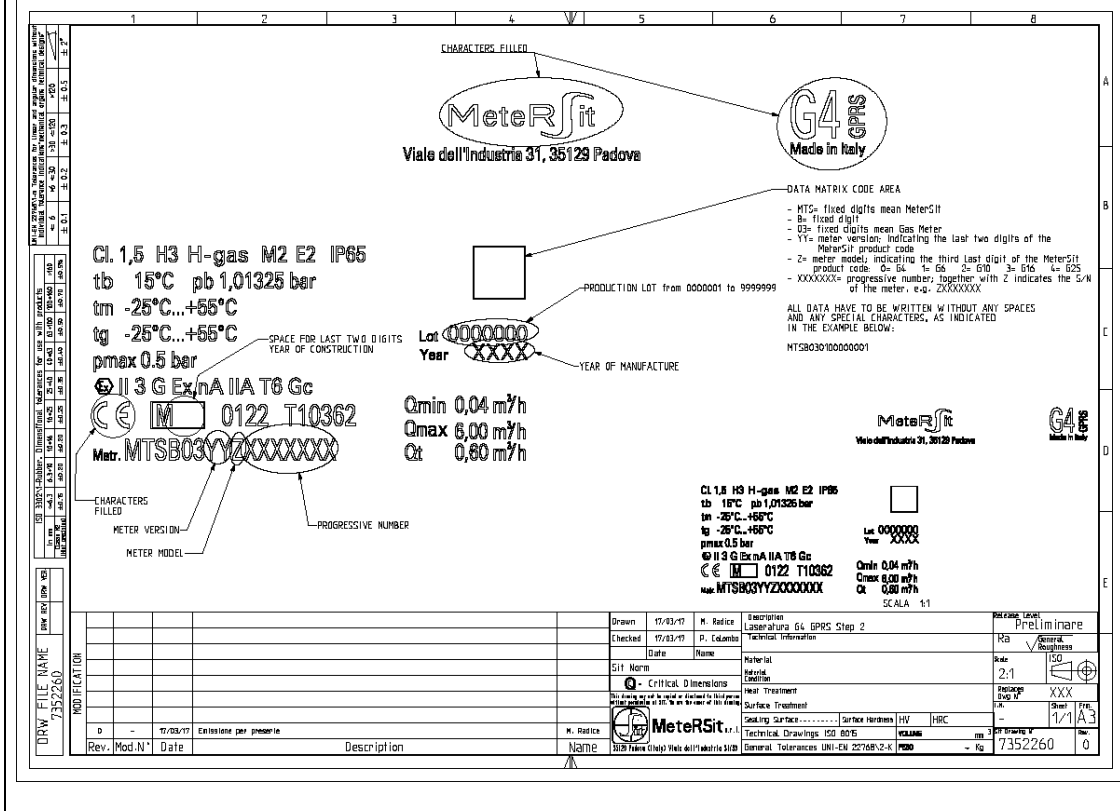
In Annex 9 is available the integral MBUS board part list.



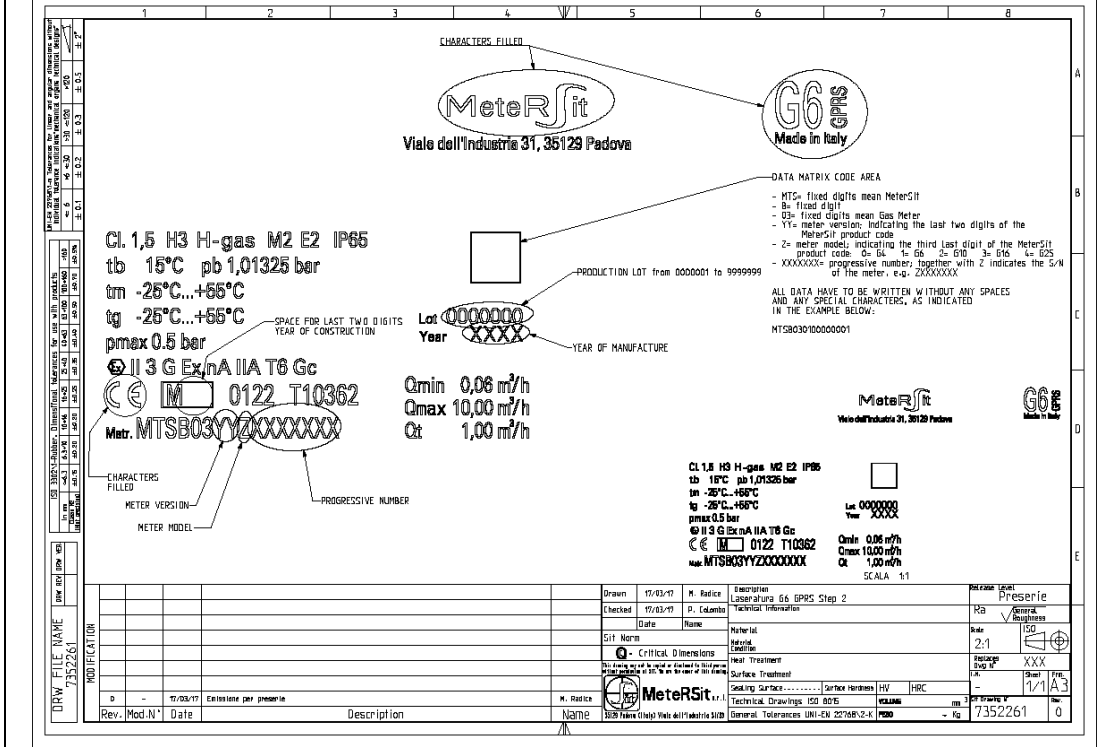
**8. MARKINGS**

The figures 8.x show the labeling and markings as printed on the plastic code cover of gas meter by a laser engraver, for the 4 different versions of the meters:

**Figure 8.1 – Labelling of G4 GPRS meter**



**Figure 8.2 – Labelling of G6 GPRS meter**



**Figure 8.3 – Labelling of G4 RF WMBUS meter**

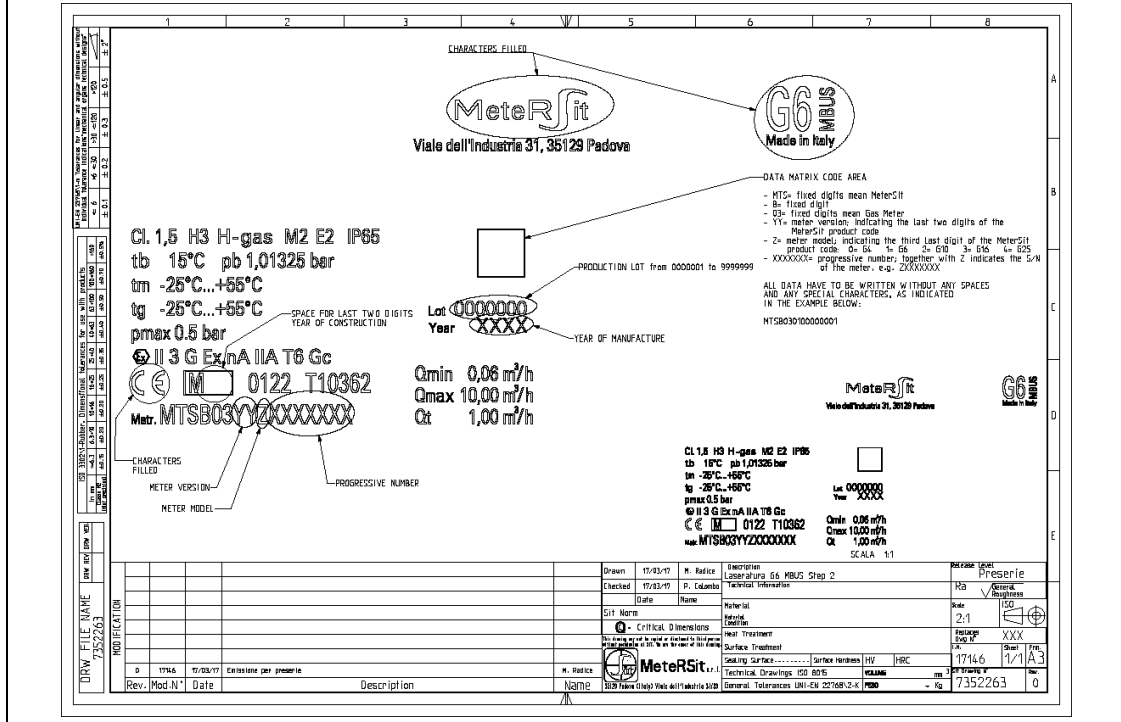
The drawing shows a gas meter label with various technical specifications and a data table. Annotations include:

- CHARACTERS FILLED:** Points to the MeterSit logo and the G4 WMBUS Made in Italy logo.
- DATA MATRIX CODE AREA:** Explains the format: MTS- fixed digits mean MeterSit; G- fixed digit; 03- fixed digits mean Gas Meter; Y1- meter version; Z- meter model; XXXXXXX- progressive number.
- PRODUCTION LOT:** 0000000
- YEAR OF MANUFACTURE:** XXXX
- CHARACTERS FILLED:** Points to the meter version (0122) and progressive number (T10362).
- Technical Specifications:**
  - Cl. 1,5 H3 H-gas M2 E2 IP65
  - tb 15°C pb 1,01325 bar
  - tm -25°C...+55°C
  - tg -25°C...+55°C
  - pmax 0,5 bar
  - II 3 G Ex nA IIA T6 Gc
  - 0122 T10362
  - Matr. MTSB03YYZXXXXXX
  - Qmin 0,04 m³/h
  - Qmax 6,00 m³/h
  - Qt 0,80 m³/h
- Table:**

|           |          |            |                       |                            |        |     |
|-----------|----------|------------|-----------------------|----------------------------|--------|-----|
| Drawn     | 11/03/17 | M. Radice  | Dimensioni            | Lineatura G4 WMBUS Strip 2 | Scale  | 1:1 |
| Checked   | 11/03/17 | P. Colombo | Technical Information |                            | ISO    |     |
| Date      |          |            | Material              |                            | 2:1    |     |
| Site Norm |          |            | Surface Treatment     |                            | XXX    |     |
|           |          |            | Sealing Surface       | Surface Norms              | HW     | HRC |
|           |          |            | Technical Drawings    | ISO 6015                   | VOLUME | mm  |
|           |          |            | General Tolerances    | UNI-EN 22768-2-K           | PRO    | kg  |



**Figure 8.4 – Labelling of G6 RF WMBUS meter**



## 2. METER SPECIFICATIONS

Metersit declares, under its responsibility, the following specifications:

**Table 2 – Rated operating conditions**

| Flow rate<br>Class | Q <sub>start</sub><br>[m <sup>3</sup> /h] | Q <sub>min</sub><br>[m <sup>3</sup> /h] | Q <sub>t</sub><br>[m <sup>3</sup> /h] | Q <sub>max</sub><br>[m <sup>3</sup> /h] | Q <sub>r</sub><br>[m <sup>3</sup> /h] |
|--------------------|---|---|---------------------------------------|---|---------------------------------------|
| <b>G1,6</b>        | <b>0.004</b>                              | <b>0.016</b>                            | <b>0.25</b>                           | <b>2.5</b>                              | <b>3.0</b>                            |
| <b>G2,5</b>        | <b>0.00625</b>                            | <b>0.025</b>                            | <b>0.4</b>                            | <b>4.0</b>                              | <b>4.8</b>                            |
| <b>G4</b>          | 0.01                                      | 0.04                                    | 0.6                                   | 6.0                                     | 7.2                                   |
| <b>G4 EXTENDED</b> | <b>0.004</b>                              | <b>0.016</b>                            | <b>0.25</b>                           | <b>6.0</b>                              | <b>7.2</b>                            |
| <b>G6</b>          | 0.015                                     | 0.06                                    | 1.0                                   | 10                                      | 12                                    |


**Table 3 – Climatic environment**

| Class              | Operating Temperature | Storage Temperature |
|--------------------|-----------------------|---------------------|
|                    | [°C]                  | [°C]                |
| <b>G1,6</b>        | <b>-25 ÷ +55</b>      | <b>-30 ÷ +60</b>    |
| <b>G2,5</b>        | <b>-25 ÷ +55</b>      | <b>-30 ÷ +60</b>    |
| <b>G4</b>          | -25 ÷ +55             | -30 ÷ +60           |
| <b>G4 EXTENDED</b> | <b>-25 ÷ +55</b>      | <b>-30 ÷ +60</b>    |
| <b>G6</b>          | -25 ÷ +55             | -30 ÷ +60           |

The instrument is designed for non-condensing humidity  
Intended location: open and closed





|   |   |  |
|---|---|--|
| <br>Viale dell'Industria 31-33<br>35129 Padova | <b>DOMUSNEXT® G1,6/G2,5/G4/G6<br/> GAS METERS</b> | Class: Restricted<br>TF10-005<br>Version 3.3_en<br>Page: 8 of 46<br>Date: 11/03/2019 |
|---|---|--|

**Table 4 – Gas related conditions**

| Description            | Value                       | Note  |
|------------------------|-----------------------------|---|
| Gas groups             | Second family group, H or L | Either L or H, depending on legally relevant firmware |
| Temperature range      | (-25 ÷ +55) °C              |   |
| Max operating pressure | 500 mbar                    |   |

**Table 5 – Other characteristics**

| Characteristic              | Value   | Note                                |
|-----------------------------|---|-------------------------------------|
| DC Voltage supply           | (3.1 ÷ 3.6) V   | By Lithium Thyonil Chloride battery |
| Max DC rated current        | 10 mA   | Sensor ON                           |
|                             | 10 mA   | With M-BUS module ON                |
|                             | 10 mA   | With GPRS module ON                 |
|                             | 10 mA   | Gas valve movement                  |
| DC source lifetime          | > 15 years with M-BUS module<br>> 10 years with GPRS module | See chapter 12                      |
| Mechanical environment      | M2  |                                     |
| Electromagnetic environment | E2  |                                     |



**3. MECHANICAL SPECIFICATIONS**

| Characteristic             | u.m. | G1,6 – G2,5 –<br>G4 – G4 EXTENDED | G6                               | Note  |
|----------------------------|------|-----------------------------------|----------------------------------|---|
| Connection centrelines     | [mm] | 110                               | 110<br>(250 with flange)         | For G6 same case plus flange if centrelines are different |
| Max dimensions (H x L x s) | [mm] | 154 x 188 x 101                   | 154 x 188 x 101<br>(plus flange) | Dimensions valid for product platform 2                   |
| Connection diameter        | "    | G 1" 1/4                          | G 1" 1/4<br>(1" 1/2 with flange) |   |
| Resistance to torque       | [Nm] | 110                               | 140                              |   |
| Resistance to bending      | [Nm] | 40                                | 40<br>(60 with flange)           |   |
| Weight                     | [Kg] | 2.0                               | 2.0                              |   |

**Figure 3.1 – VIEW OF ASSEMBLY AND SUB-ASSEMBLY – GPRS & MBUS**

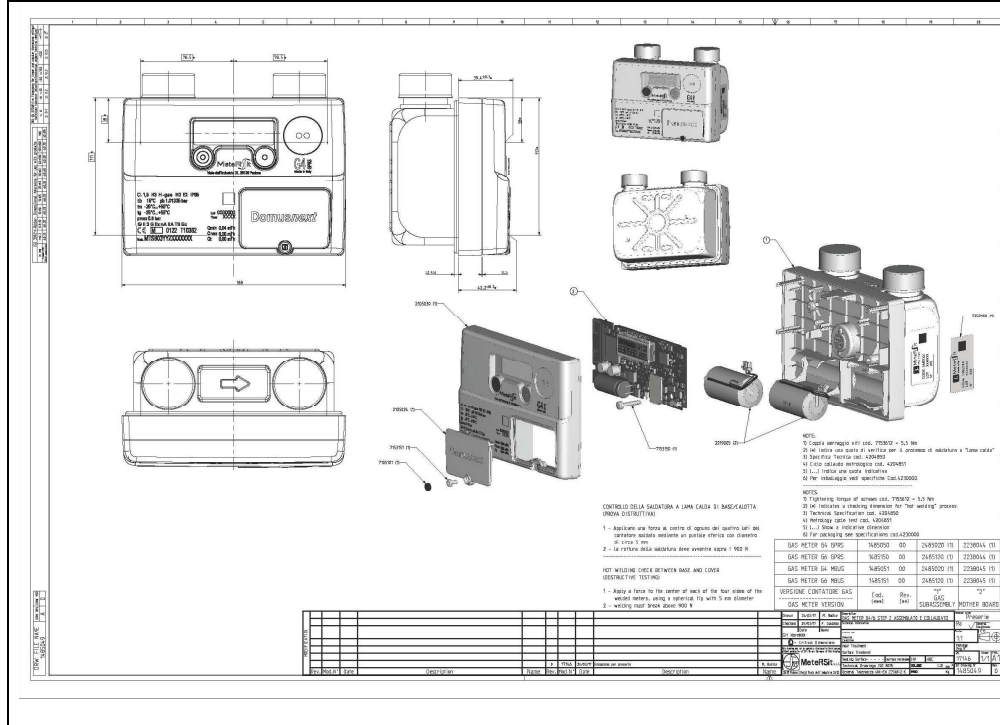


Figure 3.2 – VIEW OF FLOW SENSOR V2.0

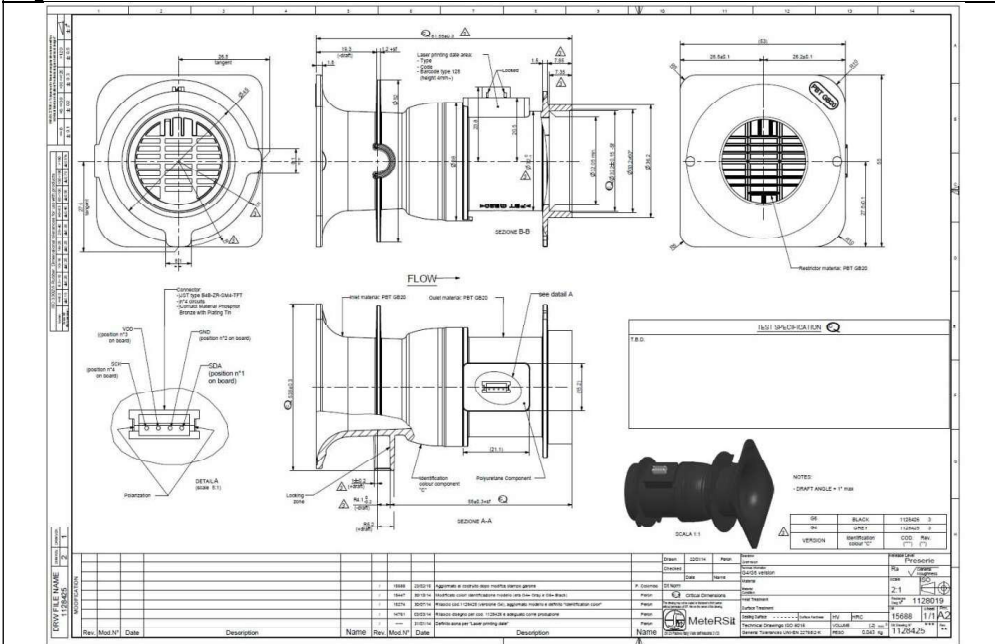
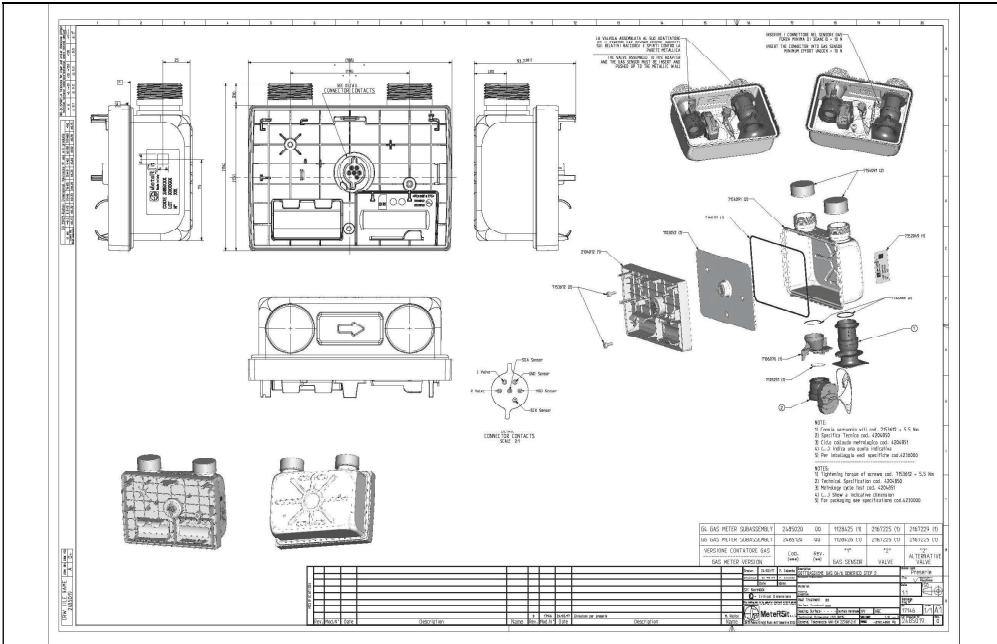
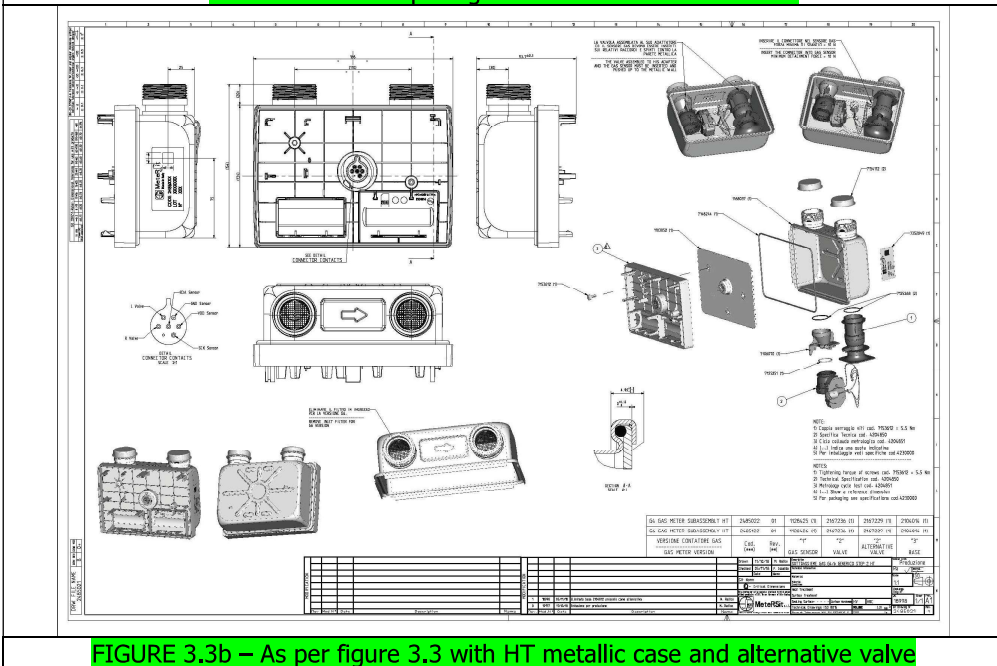


FIGURE 3.3 – EXTERIOR AND INTERIOR VIEW OF METALLIC CASE



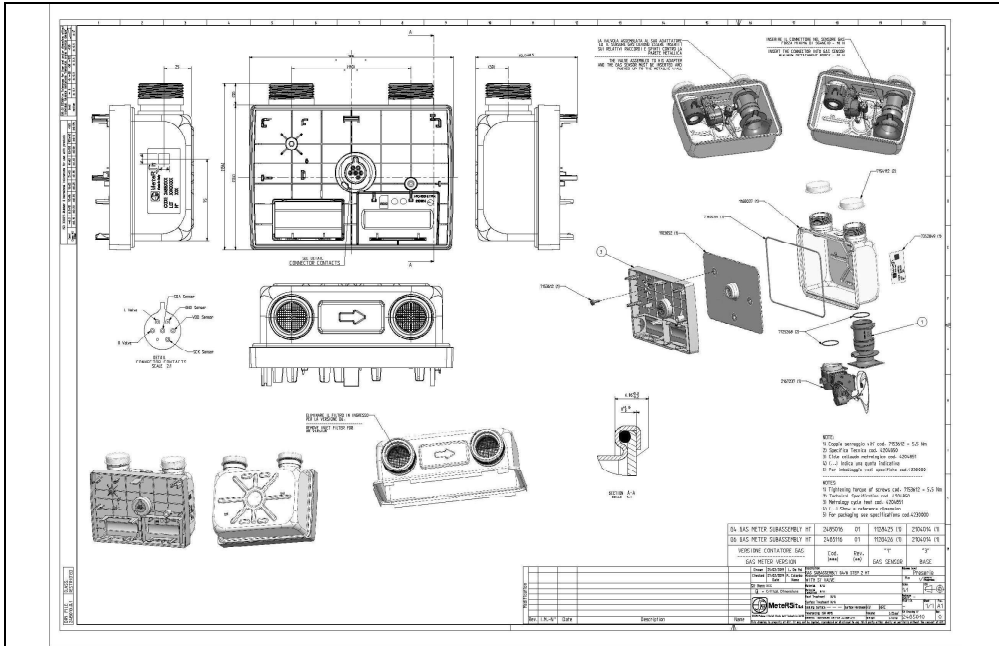


**FIGURE 3.3a – As per figure 3.3 with HT metallic case**

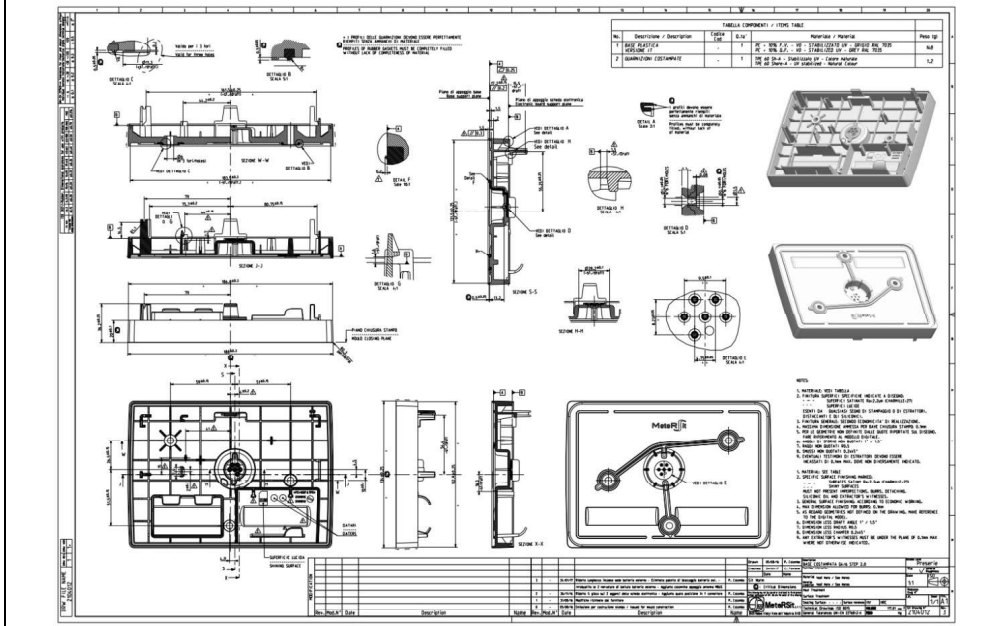


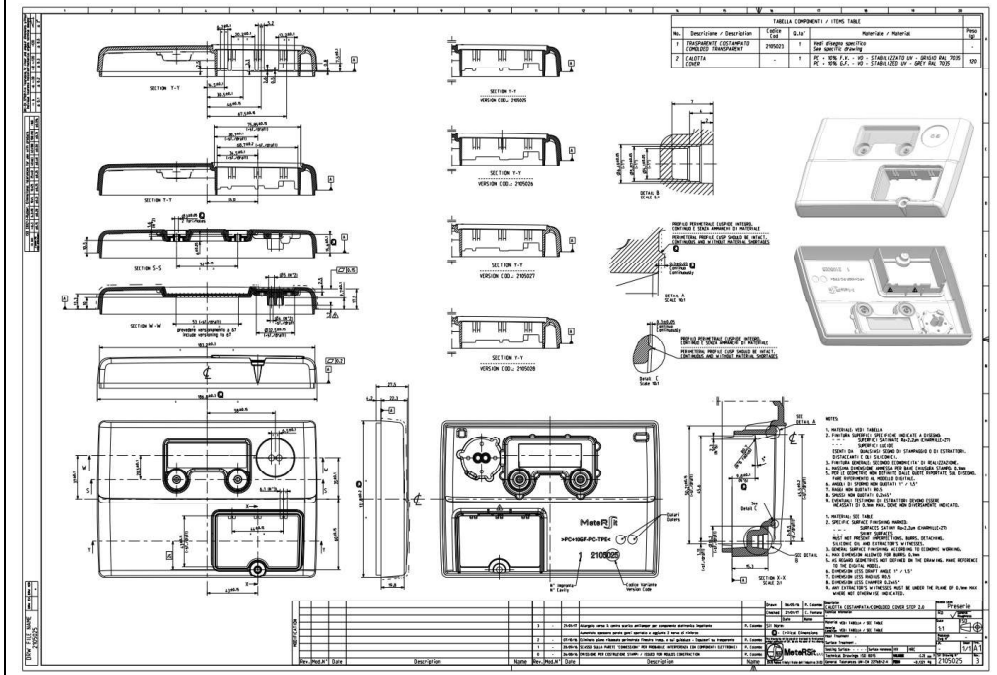
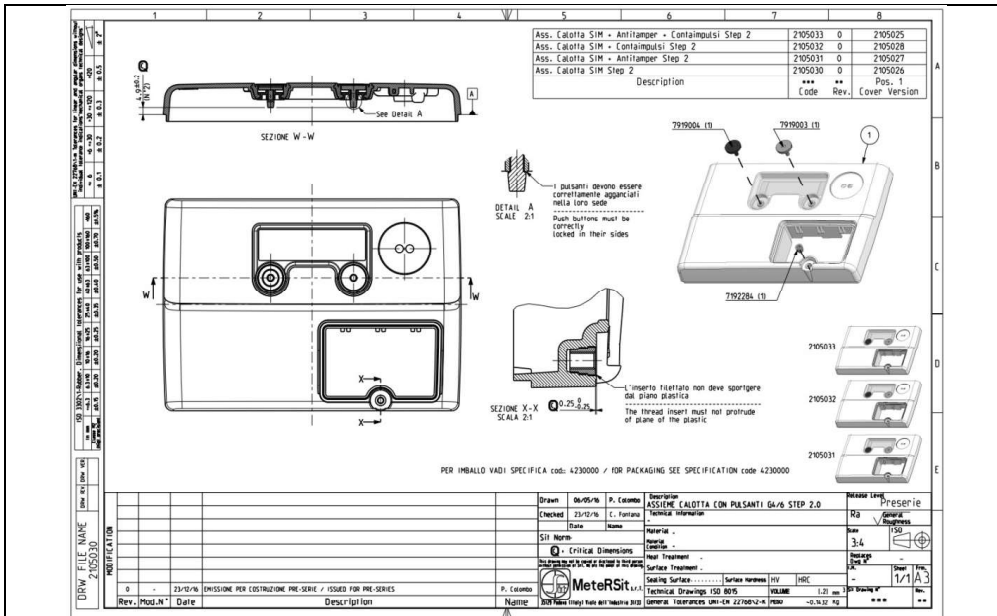
**FIGURE 3.3b – As per figure 3.3 with HT metallic case and alternative valve**





**FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE**





**DOMUSNEXT® G1,6/G2,5/G4/G6  
GAS METERS**

| POS. | DESCRIZIONE / DESCRIPTION                  | Q.ty | CODE    | MATERIALE / MATERIAL   | PESO / PWT |
|------|--|------|---------|--|------------|
| 1    | TRASPARENTE PER CALOTTA COVER, TRANSPARENT | 1    | 7105098 | PE TRASPARENTE CHIARO *VD=1.5mm Sp. - Stabilizzato UV / CLEAR TRANSPARENT PE *VD=1.5mm Th. - UV Stabilized | 12         |
| 2    | PULSANTE IN GOMMA COVER RUBBER BUTTON      | 1    | 7919005 | TPE 60 Sh-A - Stabilizzato UV - Colore naturale / TPE 60 Shore-A - UV stabilized - Natural Colour          | 1,6        |
| 3    | ANELLO METALLICO PER INTERFACCIA OTTICA    | 1    | 7121160 | VEDI DISEGNO SPECIFICO / SEE SPECIFIC DRAWING  | 5          |

**NOTES:**

- MATERIALE: VEDI TABELLA
- FINITURA SUPERFICIALE SPECIFICHE INDICATE A DISEGNO:  
 - - - - - SUPERFICIE SATINATE Ra2,0um (ECHARVILLE-Z7)  
 ..... SUPERFICIE LUCIDE (TRASPARENTI)  
 ESENTI DA QUALSIASI SEGNO DI STAMPAGGIO O DI ESTRATTORI, DISTACCANTI E OLI SILICONICI.
- FINITURA GENERALE: SECONDO ECONOMICITA' DI REALIZZAZIONE.
- MASSIMA DIMENSIONE AMMESSA PER BAVE CHIUSURA STAMPO 0,1mm
- PER LE GEOMETRIE NON DEFINITE DALLE QUOTE RIPORTATE SUI DISEGNI, FARE RIFERIMENTO AL MODELLO DIGITALE.
- ANGOLI DI SFORNO NON QUOTATI 1° / 1,5°
- RAGGI NON QUOTATI R0,5
- SMUSI NON QUOTATI 0,2x45°
- EVENTUALI TESTIMONI DI ESTRATTORI DEVONO ESSERE INCISATI DI 0,1mm MAX, DOVE NON DIVERSAMENTE INDICATO.

**1. MATERIAL: SEE TABLE**

**2. SPECIFIC SURFACE FINISHING MARKED:**  
 - - - - - SURFACES SATINY Ra2,0um (ECHARVILLE-Z7)  
 ..... SHINY SURFACES TRANSPARENT  
 MUST NOT PRESENT IMPERFECTIONS, BURRS, DETACHING, SILICONIC OIL AND EXTRACTOR'S WITNESSES.

**3. GENERAL SURFACE FINISHING: ACCORDING TO ECONOMIC WORKING.**

**4. MAX DIMENSION ALLOWED FOR BURRS: 0,1mm**

**5. AS REGARD GEOMETRIES NOT DEFINED ON THE DRAWING, MAKE REFERENCE TO THE DIGITAL MODEL.**

**6. DIMENSION LESS DRAFT ANGLE 1° / 1,5°**

**7. DIMENSION LESS RADIUS R0,5**

**8. DIMENSION LESS CHAMFER 0,2x45°**

**9. ANY EXTRACTOR'S WITNESSES MUST BE UNDER THE PLANE OF 0,1mm MAX WHERE NOT OTHERWISE INDICATED.**

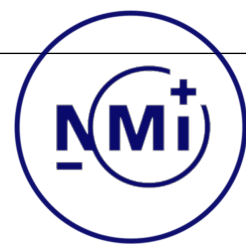
Area per n° impronta  
Surface for cavity number

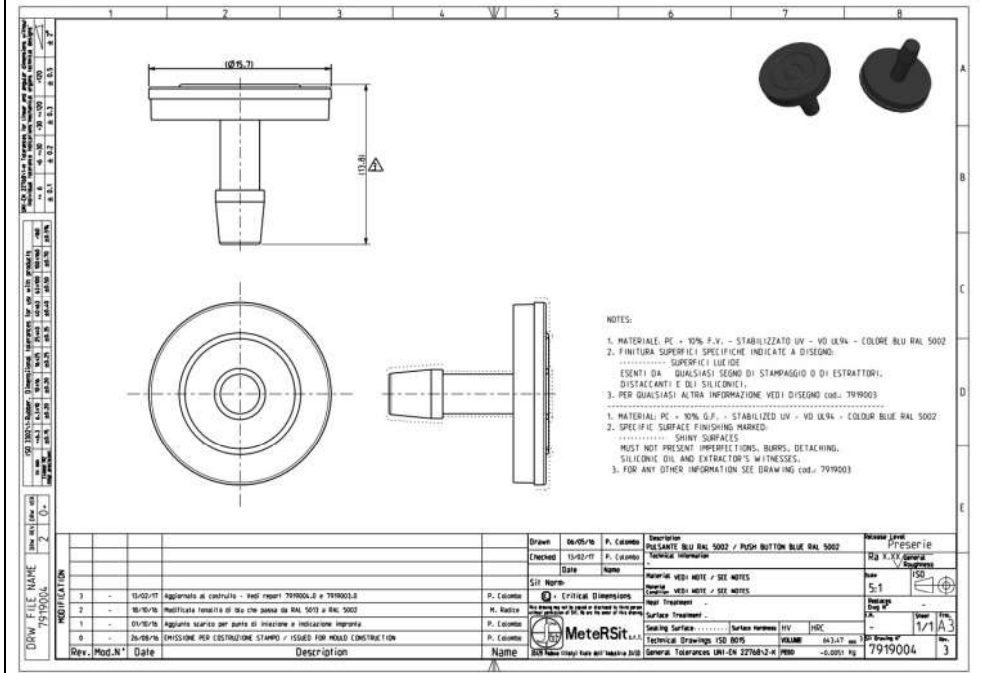
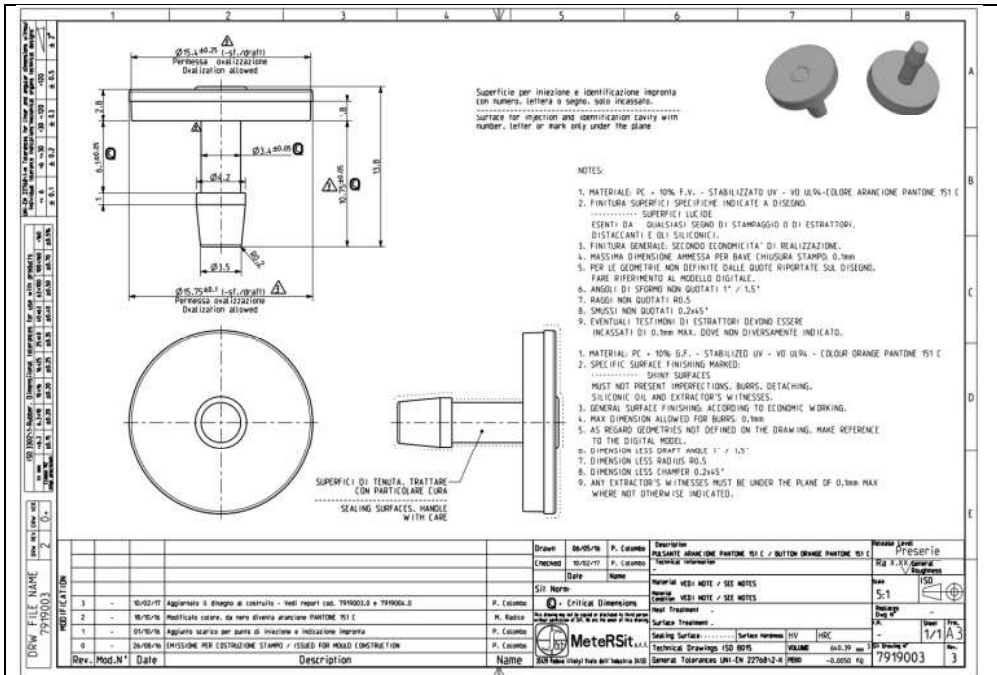
|         |          |            |                       |   |                    |           |
|---------|----------|------------|-----------------------|---|--------------------|-----------|
| Drawn   | 06/05/18 | P. Colombo | Description           | TRASPARENTE CO-STAMPATO / TRANSPARENT CO-MOLDED | Revision           | Preserie  |
| Checked | 23/01/17 | L. Fontana | Technical Information |   | RA                 | general   |
| Date    |          |            | Name                  |   | ISO                | geometric |
| Scale   |          |            | Material              | VEDI TABELLA / SEE TABLE                        | Scale              | 1:1       |
| Scale   |          |            | Finish                | VEDI TABELLA / SEE TABLE                        | Drawings           | 1:1       |
| Scale   |          |            | Heat Treatment        |   | Sheet              | 1/1       |
| Scale   |          |            | Surface Treatment     |   | Form               | A3        |
| Scale   |          |            | Sealing Surface       | ..... Surface normen HV HRC                     | Technical Drawings | ISO 8019  |
| Scale   |          |            | Sealing Surface       | ..... Surface normen HV HRC                     | Technical Drawings | ISO 8019  |
| Scale   |          |            | General Tolerances    | UNI-EN 22768-2-6                                | Sheet              | 2105023   |
| Scale   |          |            | General Tolerances    | UNI-EN 22768-2-6                                | Form               | 1         |

| Rev. | Mod.N° | Date     | Description  |
|------|--------|----------|--|
| 1    |        | 21/01/17 | AGGIUNTO PIANETTI AI LATI DELLA SEDE PULSANTE RICHIESTA STAMPITAL.                       |
| 0    |        | 26/08/16 | INVENTATA ALTEZZA ESTERNA GUIDANZE ZVI1 - AGGIUNTO ESPANSORI PERIFERICALI E PUNTO INNEZ. |
| 0    |        | 26/08/16 | IMPRESSIONE PER COSTRUZIONE STAMPO / ISSUES FOR MOLD CONSTRUCTION                        |



**DOMUSNEXT® G1,6/G2,5/G4/G6  
 GAS METERS**





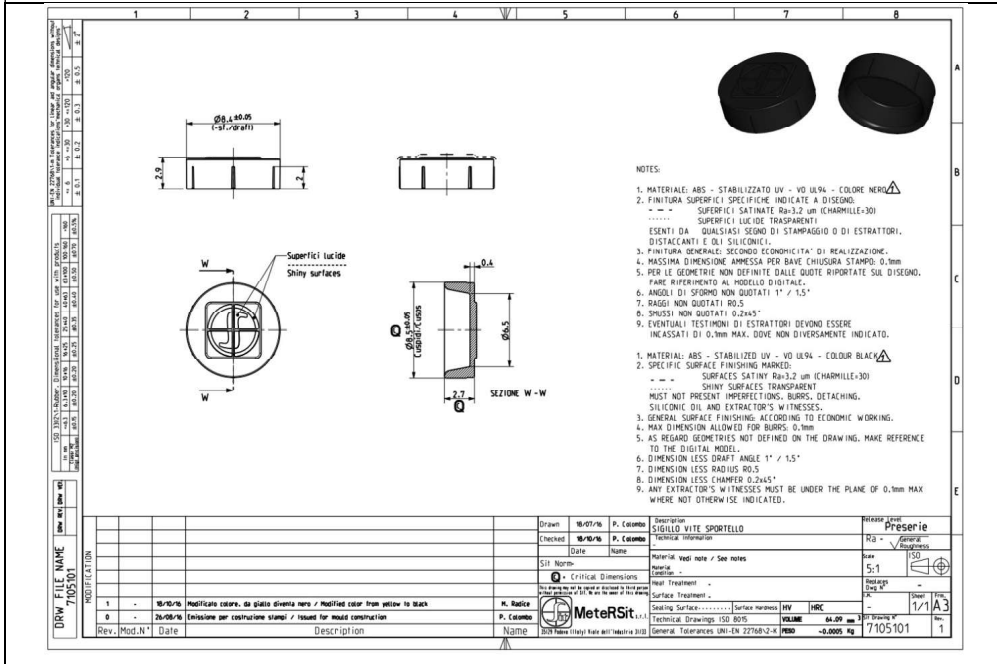
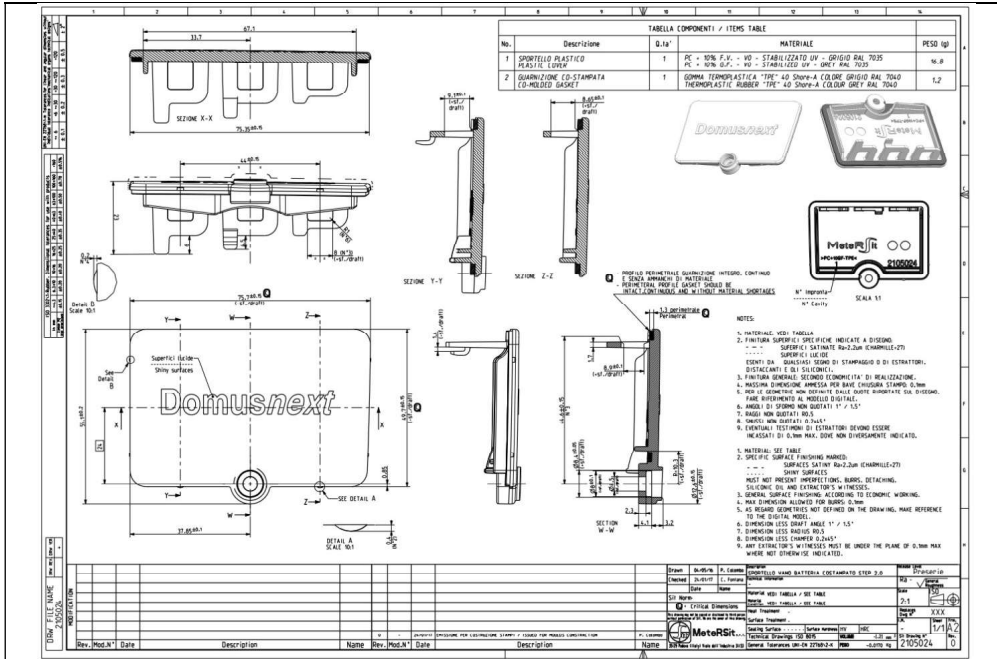


FIGURE 3.5 – GPRS -INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS

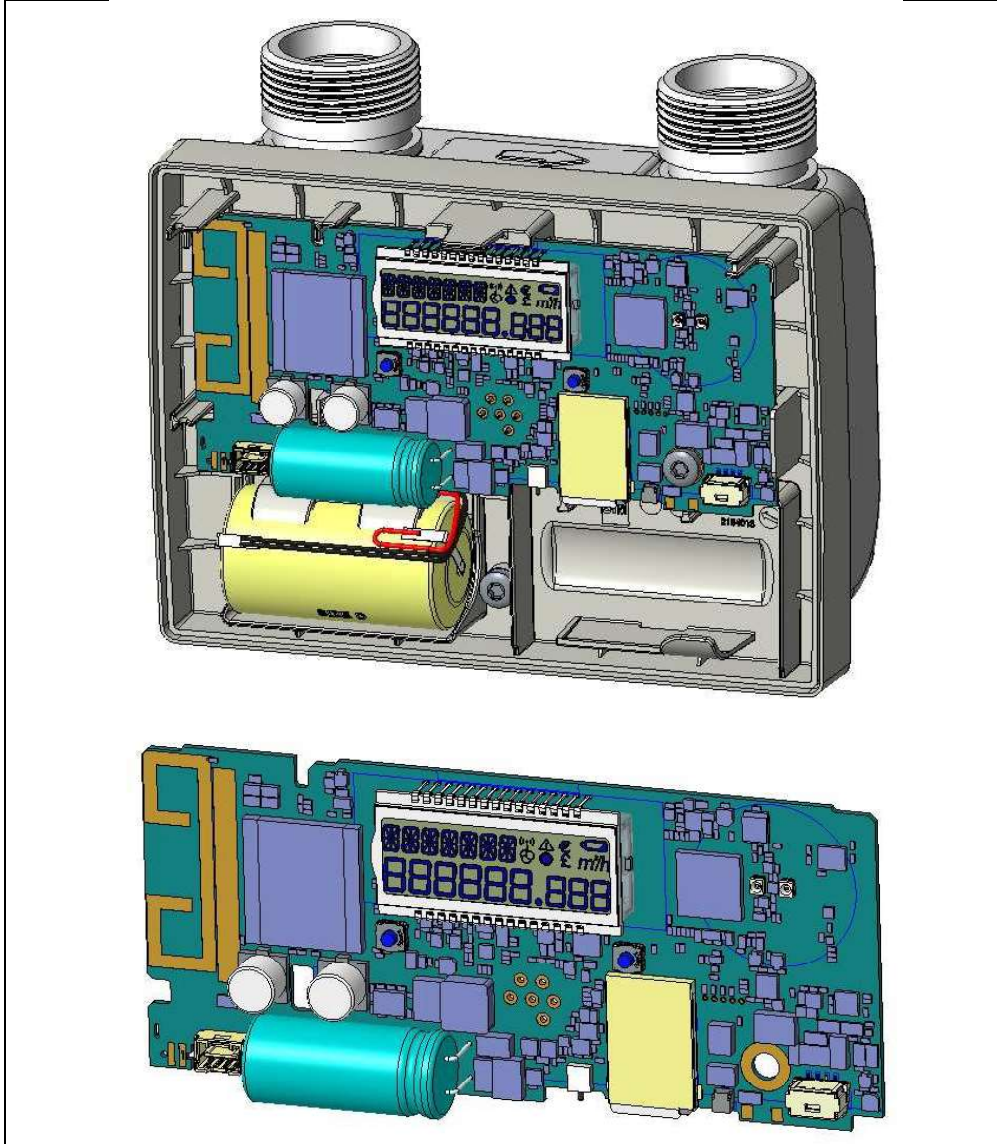
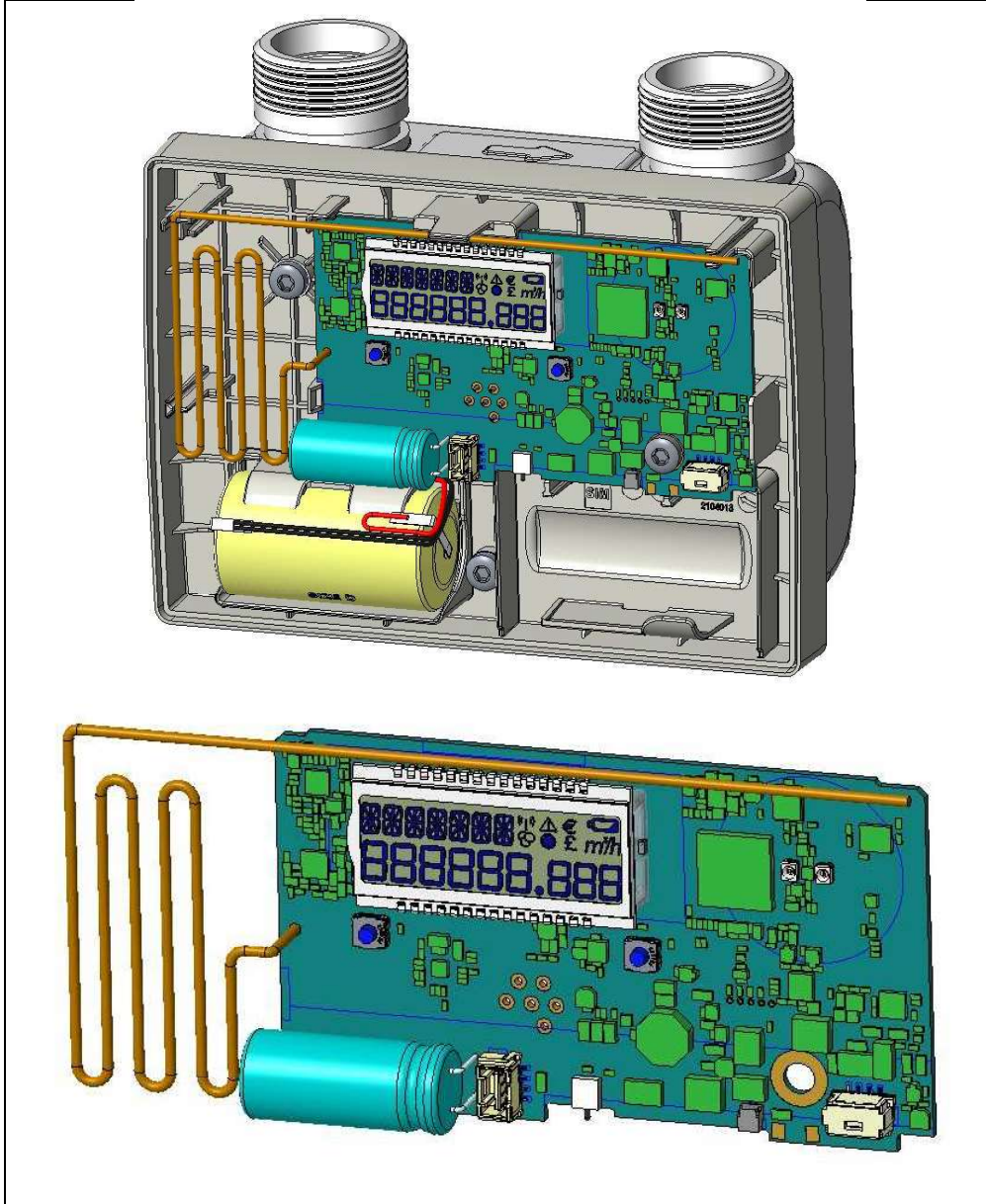


FIGURE 3.6 – WMBUS -INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS AND ANTENNA





## 4. CIRCUIT DIAGRAM

The electronic of the meter consists of two boards:

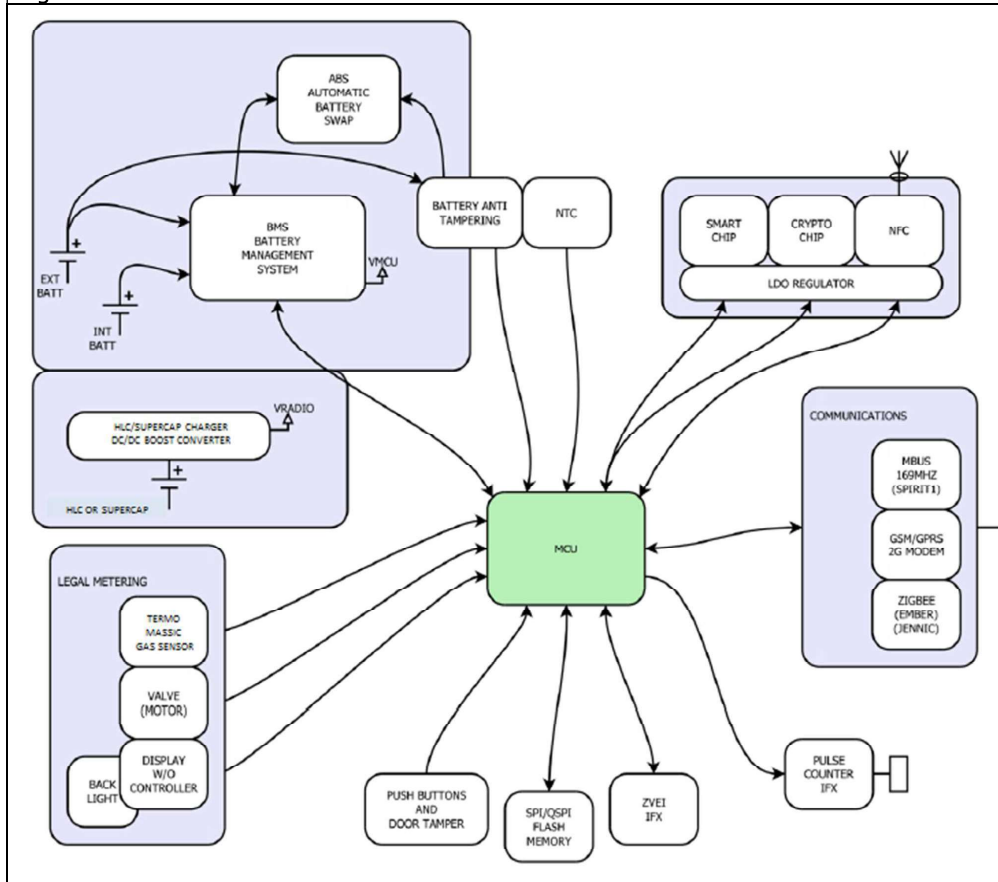
- GPRS Main Board;
- W-Mbus Main board

### 4.1. CPU Board

The CPU Board is designed around a single microprocessor:

- STM32: a 32 bit CPU dedicated to gas sensor management, measurement integration algorithm, RTC clock, billing time bands management, communications and application software

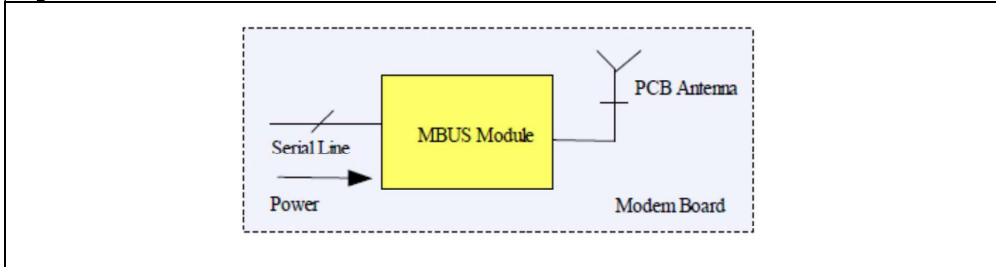
Figure 4.1 – schematic view of Main board



#### 4.1.1. M-Bus Modem schematic

The MBUS RF modem is designed around a ST Microelectronics Transceiver and a Skyworks power amplifier. The transceiver module is controlled directly by the CPU where are implemented most of the radio HW functionality as well as the MBUS SW stack. The RF Modem is supplied by the super-capacitor on board by means of a DC/DC converter to guarantee the needed voltage level.

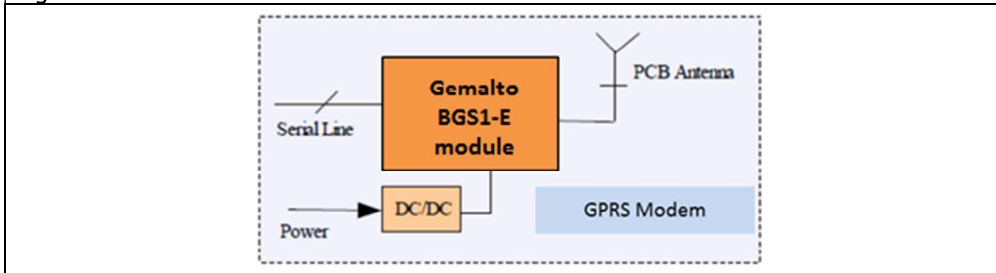
Figure 4.2 – M-BUS module schematics



#### 4.1.2. GPRS Modem schematic

The GPRS modem is designed around the BGS1-E integrated module manufactured by Gemalto, the module itself includes a complete GSM/GPRS IP Modem with its own internal GSM and TCP/IP stack. The Modem is controlled directly by the CPU. The GPRS module is supplied by the super-capacitor on board by means of a DC/DC converter to guarantee the needed voltage level. The AirPrime radio module is completely controlled by AT commands using the standard serial line.

Figure 4.3 – GPRS module schematics



## 5. ELECTRICAL SCHEMATICS

### 5.1. GPRS Board electrical schematics

In Annexes 1 and 2 are available the integral GPRS board electrical schematics (versions with supercapacitor – P/N 2238044, 2238060 and 2238064).

In Annex 3 is available the integral GPRS board electrical schematics (version with HLC – P/N 2238057).

### 5.2. MBUS Board electrical schematics

In Annex 4 is available the integral MBUS board electrical schematics (P/N 2238045 and 2238065).

## 6. PCB LAYOUT

### 6.1. GPRS Board file gerber

In Annexes 5 and 6 are available the integral GPRS board file gerber (versions with supercapacitor – P/N 2238044, 2238060 and 2238064).

In Annex 7 is available the integral GPRS board file gerber (version with HLC – P/N 2238057).

### 6.2. MBUS Board file gerber

In Annex 8 is available the integral MBUS board file gerber (P/N 2238045 and 2238065).



## 7. PART LIST

The gas meter includes the following main components:

| Component                    | Manufacturer    | Reference                             |
|------------------------------|-----------------|---------------------------------------|
| <b>Removable Battery</b>     | ---             | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Back-up Battery</b>       | ---             | Lithium Thyonil Chloride Size D 19 Ah |
| <b>Electronic GPRS Board</b> | MeterSit S.r.l. | See section 5.1                       |
| <b>Electronic MBUS Board</b> | MeterSit S.r.l. | See section 5.2                       |
| <b>Display</b>               | Varitronix      | See Figure 10                         |
| <b>Gas Sensor</b>            | Sensirion       | See Figures 3.2 and 3.2.1             |
| <b>Metallic Gas Chamber</b>  | SIT S.p.A.      | See section 3.3                       |
| <b>Plastic Case</b>          | MeterSit S.r.l. | See section 3.5                       |

In the following sections the part lists relative to the electronic boards are described in detail.

### 7.1. GPRS Board part list

In Annexes 9, 10, and 13 are available the integral GPRS board part list (versions with supercapacitor – P/N 2238044, 2238060 and 2238064).

In Annex 11 is available the integral GPRS board part list (version with HLC – P/N 2238057).

### 7.2. MBUS Board part list

In Annexes 12 and 14 are available the integral MBUS board part list (P/N 2238045 and 2238065).

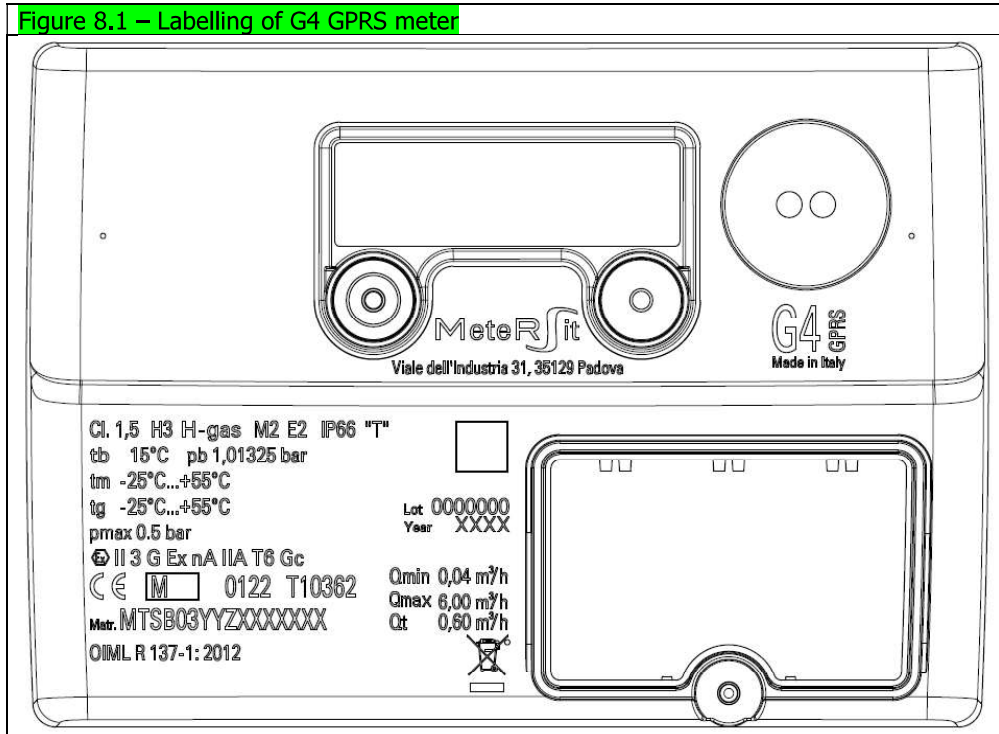




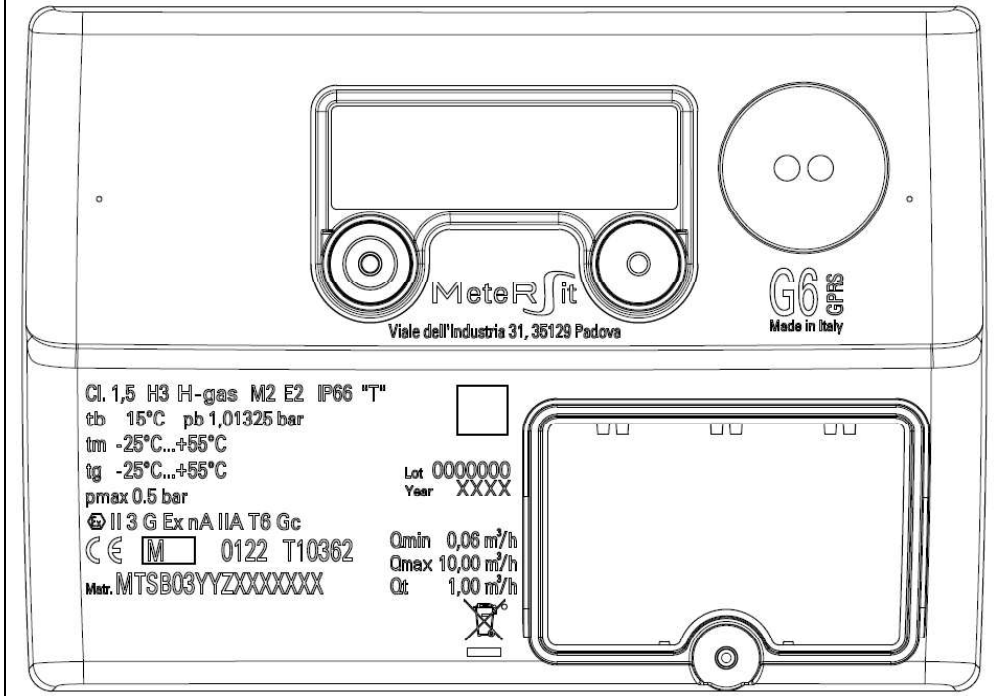
## 8. MARKINGS

The figures 8.x show the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 4 different versions of the meters:

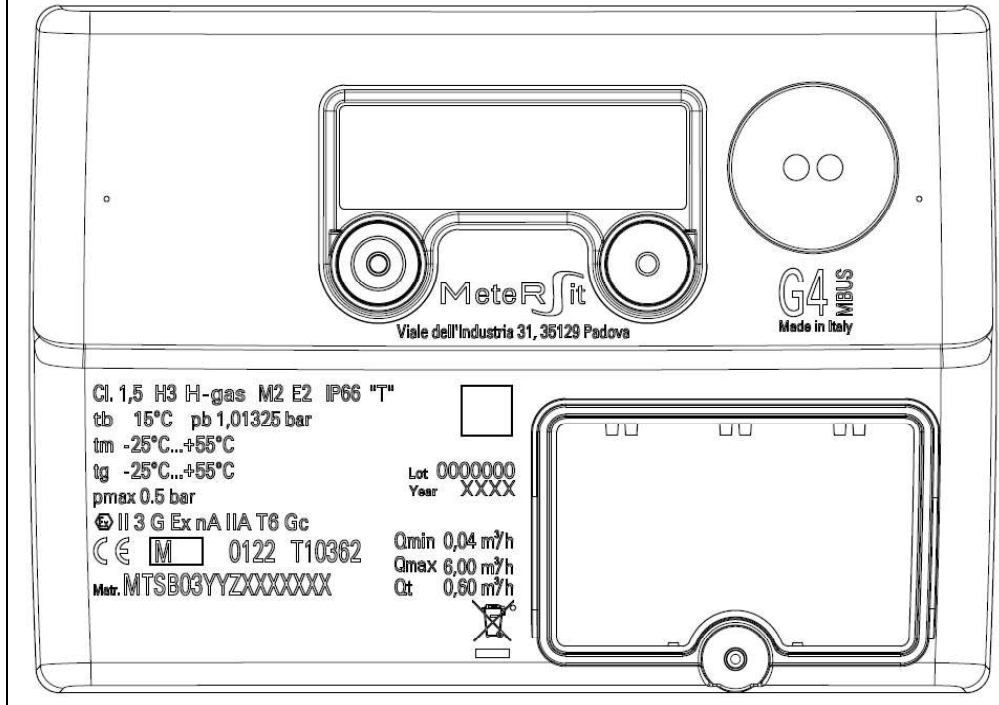
**Figure 8.1 – Labelling of G4 GPRS meter**



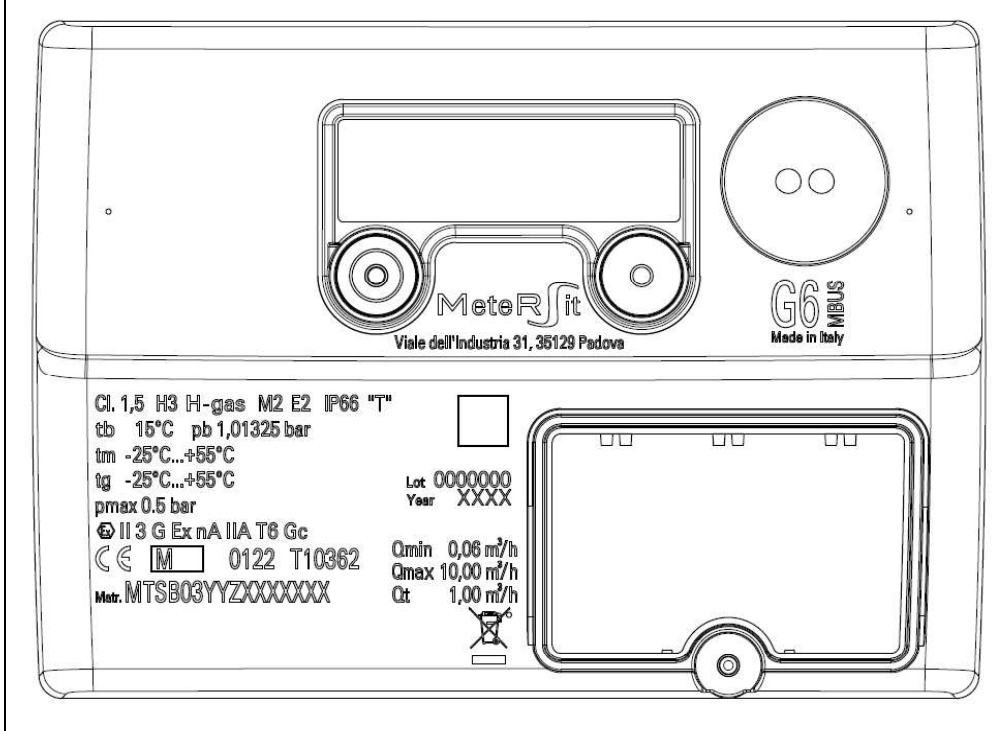
**Figure 8.2 – Labelling of G6 GPRS meter**



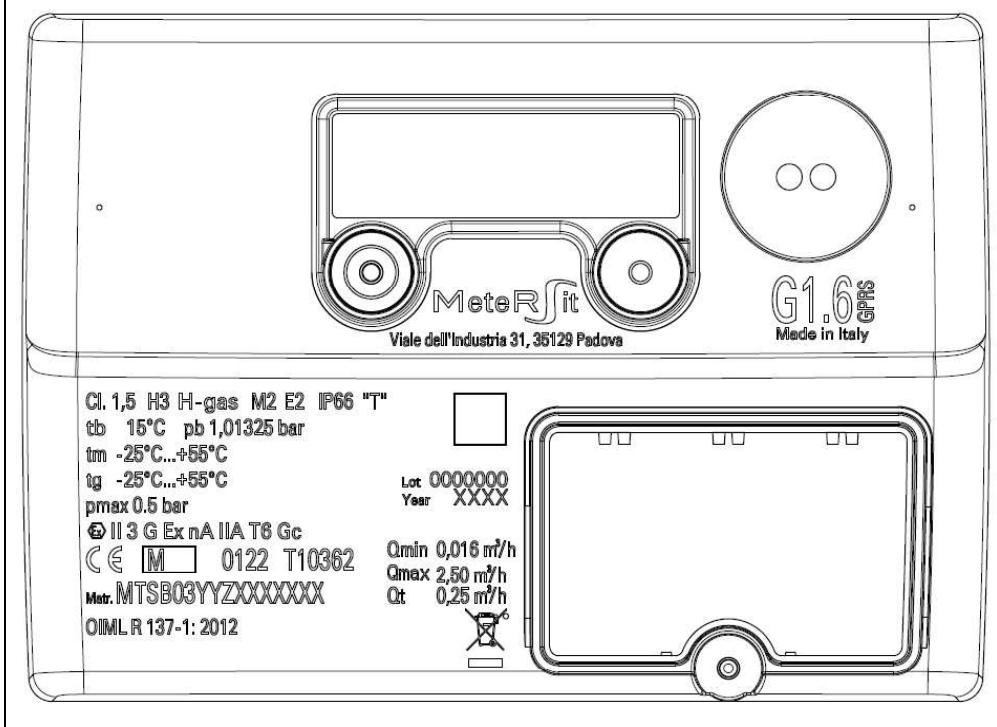
**Figure 8.3 – Labelling of G4 RF WMBUS meter**



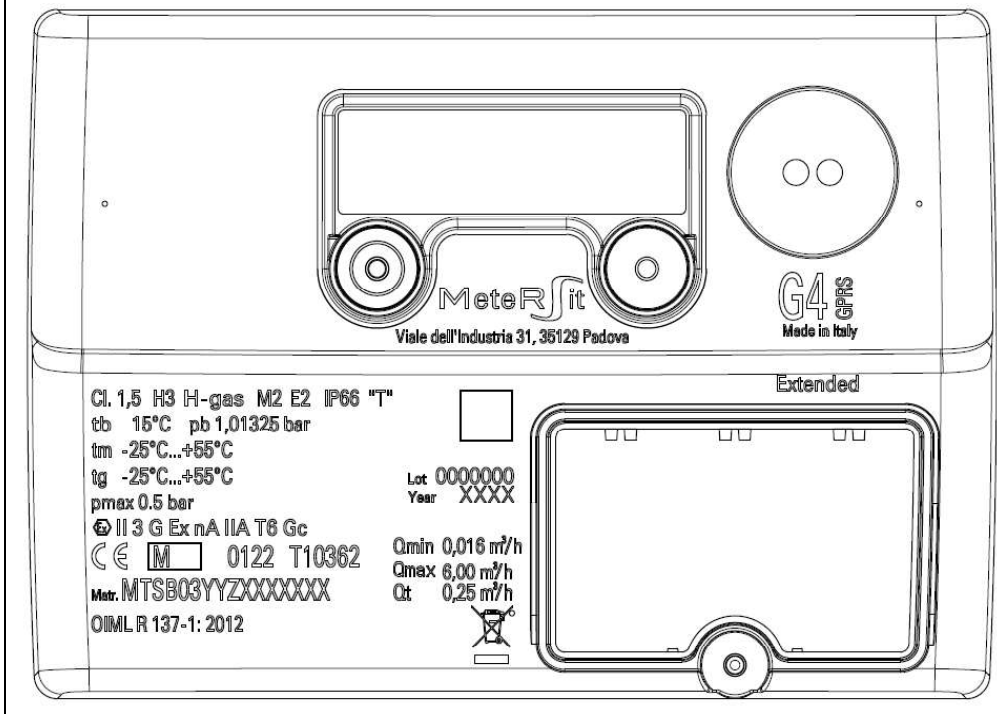
**Figure 8.4 – Labelling of G6 RF WMBUS meter**



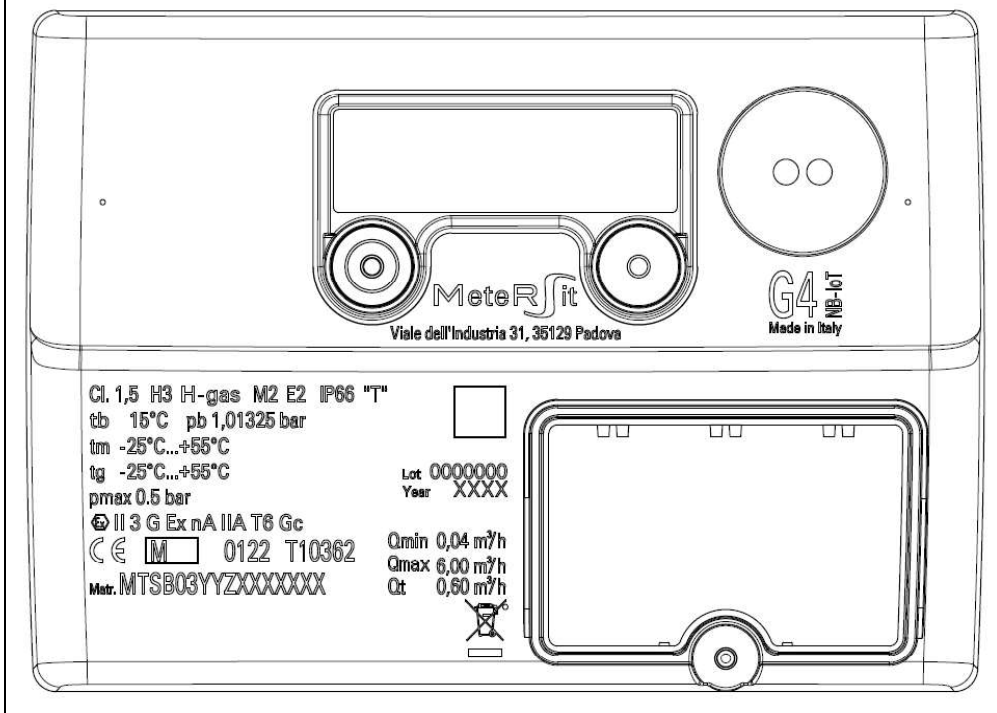
**Figure 8.5 – Labelling of G1,6 GPRS meter**



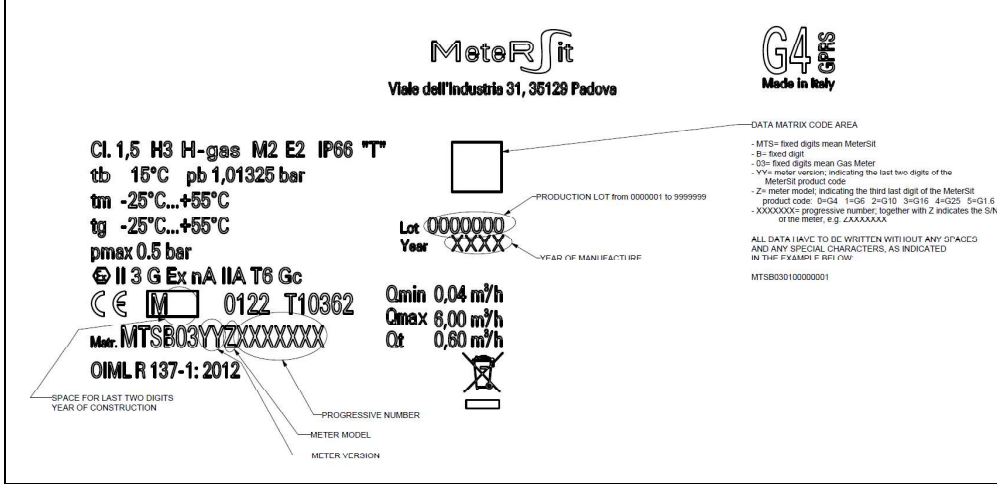
**Figure 8.6 – Labelling of G4 EXTENDED GPRS meter**



**Figure 8.7 – Labelling of G4 NB-IoT meter**



**Figure 8.8 – Gas Meter Labelling Description**





### 13. PRODUCT DESIGNATION

MeterSIt current product designation is "x485xxx", whose details are as follows:

- first number = "piece level"
  - 0 = fully assembled and sellable sample
  - 1 = subsystem, etc.
- from second number to fourth: "Family" i.e. gas meter products
- fifth number: "G" value
  - 0 = G4
  - 1 = G6
  - 5 = G1,6
  - TBD = G2,5 (To be defined)
- from sixth to seventh: progressive number (00-99) identifying all the possible combination, such as communication features, high temperature resistances, etc.



### 3. MECHANICAL SPECIFICATIONS

| Characteristic                             | u.m. | Class G16         | Class G25         |
|--|------|-------------------|-------------------|
| Connection centrelines                     | [mm] | 280               | 335               |
| Max dimensions<br>(Width x Height x Depth) | [mm] | 436 x 189 x 187,4 | 436 x 189 x 187,4 |
| Connection diameter                        | "    | G 2 ISO 228/1     | G 2 ISO 228/1     |
| Resistance to torque                       | [Nm] | 170               | 170               |
| Resistance to bending                      | [Nm] | 60                | 60                |
| Weight                                     | [Kg] | 5.7               | 5.7               |

Figure 3.1a – VIEW OF G16 STRUCTURE

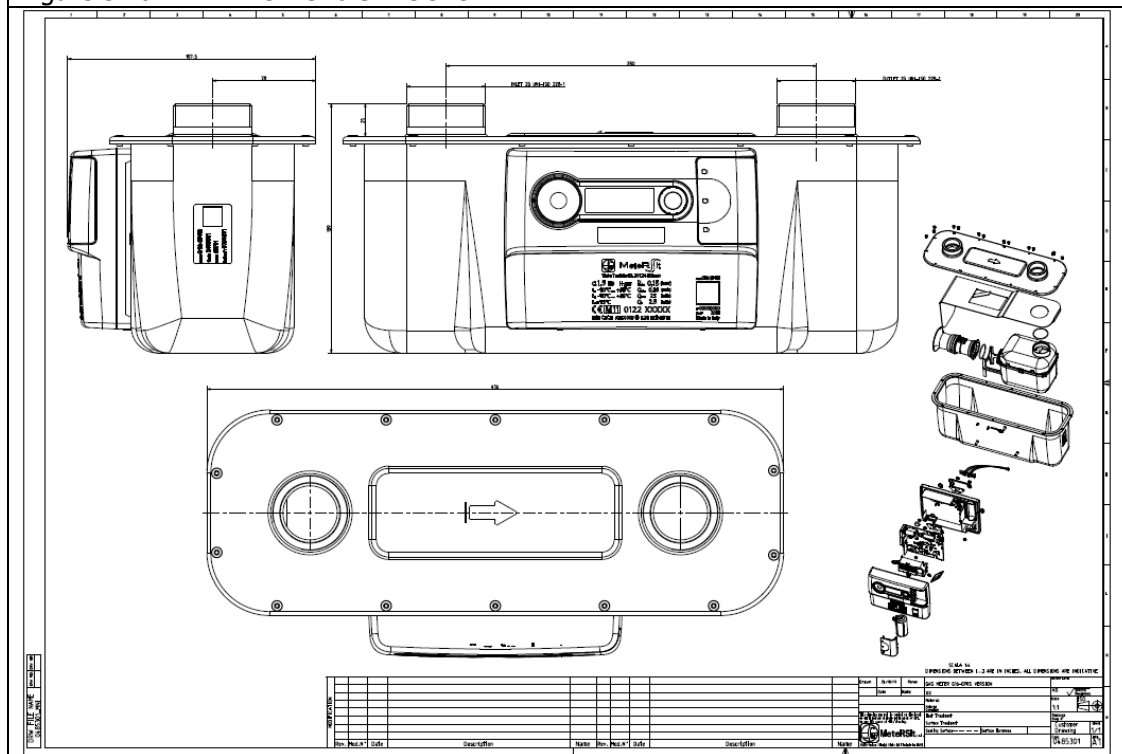


Figure 3.1b – VIEW OF G25 STRUCTURE

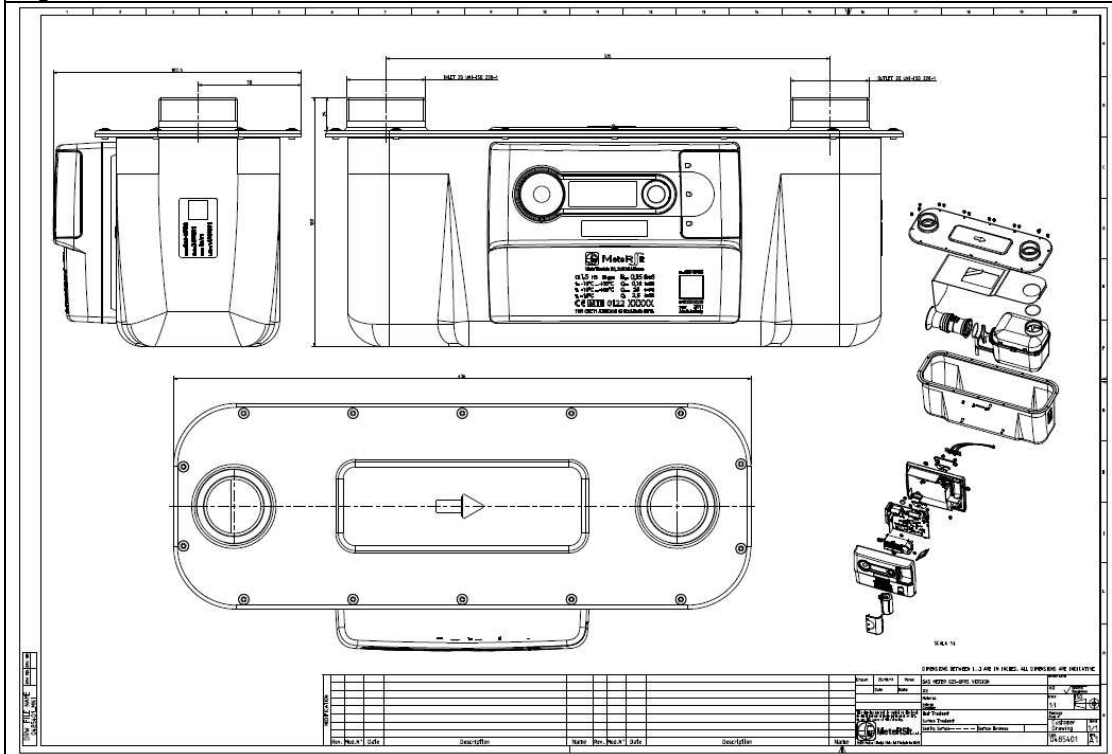
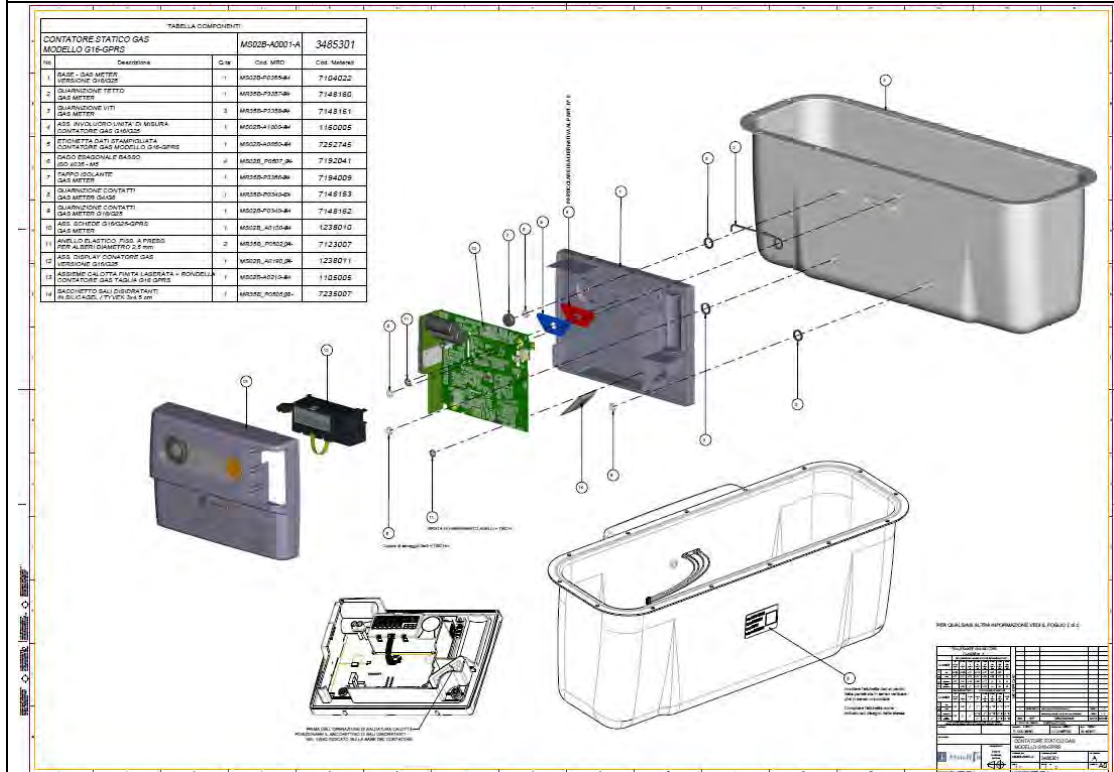




FIGURE 3.3 – EXPLODED DRAWING OF PLASTICS AND ELECTRONICS







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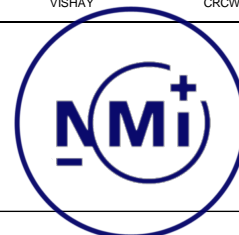
Date: 16/12/2011

### 7.1. CPU board part list

Here below the CPU Board part list follows:

#### CPU board part list: 1 of 3

| Reference  | Quantity | Part_Number_MRD  | Description   | Value     | Not Mounted | Manufacturer          | Manufacturer PN       |
|--|----------|------------------|---|-----------|-------------|-----------------------|-----------------------|
| CS   | 1        | MS02CS0001A_1111 | CS Scheda Contatore Gas G16/G25 (ATEX)  |           |             |                       |                       |
| DIST1,DIST2  | 2        | ACC00035001      | Dist. h:15,9mm x led d 5mm  |           |             | RICHCO                | LEDS1E-10-19          |
| C74  | 1        | C0100026010      | TAJ TAN. CAP SMD SIZE B 10UF 6,3V   | 10U       |             | VISHAY / SPRAGUE      | 293D106X96R3B8T       |
| C87,C140,C141,C142,C147  | 5        | C0100136010      | TAJ TAN. CAP SMD SIZE C 10UF 16V VISHAY COD 293D106X00                          | 10U       |             | VISHAY / SPRAGUE      | 293D106X00            |
| C143   | 1        | C0100136010      | TAJ TAN. CAP SMD SIZE C 10UF 16V VISHAY COD 293D106X00                          | 10U       | NM          | VISHAY / SPRAGUE      | 293D106X00            |
| C88,C89,C90,C91,C110,C111,C112,C113,C116,C117,C118,C119,C127,C128,C129   | 15       | C0500016001      | CAP SMD 0603 X5R 1UF 25V  | 1U        |             | KEMET                 | C0603C105K3PACTU      |
| C109,C114,C123,C130  | 4        | C0500016001      | CAP SMD 0603 X7R 10NF 50V   | 1U        | NM          | KEMET                 | C0603C105K3PACTU      |
| C108   | 1        | C0500019010      | CAP SMD 1206 X7R 100NF 50V  | 10N       |             | MURATA                | GRM188R71H103KA01J    |
| C1,C4  | 2        | C0500059100      | CAP SMD 1206 X7R 100NF 50V  | 100n      |             | Kemet                 | C1206C104K5RAC7025    |
| C102,C103,C106,C107  | 4        | C050011D068      | CAP SMD 0603 COG 6,8PF 25V  | 6,8P      |             | AVX                   | 06033A680KAT2A        |
| C125,C126,C145   | 3        | C0500219001      | CAP SMD 0603 X7R 1NF 50V  | 1N        |             | MURATA                | GCM188R71H102KA37D    |
| C121,C144  | 2        | C0500219220      | CAP SMD 0603 X7R 220NF 25V  | 220N      |             | KEMET                 | C0603C224K3RAC7U      |
| C15,C49,C55,C56,C57,C62,C64,C78,C80,C81,C92,C93,C94,C95,C96,C97,C98,C99,C100,C122,C124,C131,C132,C133,C134,C135,C136,C137,C138,C139,C146 | 31       | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100N      |             | KEMET                 | C0603C104K5RAC7013    |
| C60  | 1        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100N      | NM          | KEMET                 | C0603C104K5RAC7013    |
| C120   | 1        | C0600057022      | CAP SMD 0805 X5R 2,2UF 6,3V   | 2,2U      |             | MURATA                | GRM188R61A225ME34D    |
| C40,C41  | 2        | C080001C220      | CAP SMD 0603 COG 220PF 50V  | 220PF     |             | MURATA                | GRM1885C1H221FA01D    |
| Q2   | 1        | D0100006001      | NPN TRANSISTOR BIPOLAR SMD CASE SOT23   |           |             | PHILIPS               | BC847                 |
| Q3   | 1        | D0200003001      | PNP TRANSISTOR BIPOLAR SMD CASE SOT23   |           |             | PHILIPS               | BC857                 |
| D8   | 1        | D0300010001      | Dual switching diode 200mA 70V200mW ONSemi BAW56WT1G SC-70                      |           |             | ON Semiconductor      | BAW56WT1G             |
| D1   | 1        | D0300014001      | DUAL SWITCHING DIODE 0,15 A / 60 V , CASE SOT23 BAV99                           |           |             | PHILIPS               | BAV99                 |
| D2   | 1        | D0300014001      | Dual Switching diode 0,15 A / 60 V , Case SOT23 BAV99                           |           |             | Philips               | BAV99                 |
| D6   | 1        | D0300030001      | Small sig. doublediode common cathode 100mA 70V BAV70W SOT323                   |           |             | Philips               | BAV70W                |
| D7   | 1        | D0400024001      | SMD Diode Schottky 0.2A - 40V/SOT23   |           |             | Vishay                | BAT54                 |
| D3,D4  | 2        | D0400028001      | Schottky SMD Case DO-214AB 20V 3A   |           |             | General Semiconductor | SS32                  |
| D5   | 1        | D0400037001      | Diode Schottky Single 1A - 15V - S15U   |           |             | Microsemi             | UPS115U               |
| Q21,Q24,Q29  | 3        | D0500017001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V, -1.52A, SOT457                 |           |             | PHILIPS               | BSH207                |
| Q30,Q31,Q32,Q33,Q34,Q35,Q36  | 7        | D0500019001      | P-channel enhancement mode MOS transistor, -60V, -3A, SOT457                    |           |             | Zetex                 | ZMP6A17E6TA           |
| Q13,Q14,Q15,Q16,Q26,Q27,Q37,Q38,Q39,Q40  | 10       | D0600016001      | N-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, 20V, 1,05A, SOT23                    |           |             | PHILIPS               | BSH105                |
| DL3  | 1        | D0700083001      | Gallium Aluminum Arsenide Infrare Emission diode WATER CLEAR LENS 5mm, L=940nm  |           |             | Kingbright            | L-7113SF4C            |
| PTC1,PTC2  | 2        | D1200031001      | Polyswitch Resettable Device SMD 1206 - 0,8W - 0,2 / 0,8Ohm IH=0,5A IT=1,10A    |           |             | Tyco Electronics      | NanoSMD050F           |
| Q4   | 1        | D1900003001      | NPN SILICON PHOTOTRANSISTOR LED LAMP, 5MM, L=940NM                              |           |             | KINGBRIGHT            | L-7113P3C             |
| U39  | 1        | I0100136010      | SMD Power Inductor, 10uH, Isat = 0.8A   | UH        |             | Coilcraft             | DO3314-103MLC         |
| U36  | 1        | L0100043033      | Ultra low drop voltage Ultra Low Quiescent Current, 500nA, 3,3Vdc, 3%, SOT23-5L |           |             | Texas Instruments     | TPS7823DDCR           |
| U37  | 1        | L0100121033      | TEXAS_BACK_BOOST_CHARGE_PUMP_THIN_SOT-23-6_60MA_3.3_5V                          |           |             | TEXAS INSTRUMENTS     | REG710NA-3.3          |
| U30  | 1        | L0100200005      | Texas_Back_Boost_Charge_Pump_Thin_SOT-23-6_60mA_5V                              |           |             | Texas Instruments     | REG710NA-5            |
| U25  | 1        | M0500005001      | 8 Mbit, low voltage, Page-Erasable Serial Flash memory                          |           |             | Numonyx               | M45PE80-VMP6G         |
| Z1   | 1        | ON_BOARD         | HOLE 8,8mm GAS  |           |             |                       |                       |
| W1,W2  | 2        | ON_BOARD         | CRYSTAL SMD 32.768KHZ +10PPM CITIZEN CM200C-032K768000ZRF1                      | 32.768KHZ |             | CITIZEN               | CM200C-032K768000ZRF1 |
| XT3,XT5  | 2        | Q0300019001      | CRYSTAL SMD 32.768KHZ +10PPM CITIZEN CM200C-032K768000ZRF1                      | 32.768KHZ |             | CITIZEN               | CM200C-032K768000ZRF1 |
| R295,R441,R442,R443,R444,R445,R446   | 7        | R0100010470      | RESISTOR SMD 0603 - 0,06W 5%  | 470       |             | Vishay                | CRCW0603470RJ         |
| R39  | 1        | R010001H012      | RESISTOR SMD 0603 - 0,06W 5%  | 1,2K      |             | VISHAY                | CRCW06031K20J         |
| R277   | 1        | R010001H027      | RESISTOR SMD 0603 - 0,06W 1%  | 2,7K      |             | Vishay                | CRCW06032K70F         |
| R21  | 1        | R010001H047      | RESISTOR SMD 0603 - 0,06W 1%  | 4,7K      |             | VISHAY                | CRCW06034K70F         |
| R115,R254,R261   | 3        | R010001K001      | RESISTOR SMD 0603 - 0,06W 5%  | 1K        |             | VISHAY                | CRCW06031K00J         |



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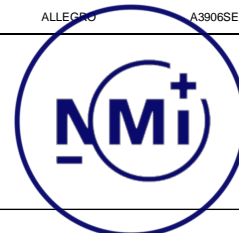
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### CPU board part list: 2 of 3

| Reference  | Quantity | Part Number_MRD | Description  | Value | Not Mounted | Manufacturer        | Manufacturer PIN      |
|--|----------|-----------------|--|-------|-------------|---------------------|-----------------------|
| R337, R338, R339, R340, R341, R397, R398, R407, R408, R434, R435, R438, R439, R440, R4, R5, R6, R7, R8, R11, R12, R57, R58, R59, R102, R237, R239, R241, R243, R248, R251, R253, R84, R240, R247, R252 | 14       | R010001K010     | RESISTOR SMD 0603 - 0.06W 1%   | 10K   |             | VISHAY              | CRCW060310K0F         |
| R332, R333, R334, R336, R390, R491, R492   | 4        | R010001K010     | RESISTOR SMD 0603 - 0.06W 1%   | 10K   | NM          | Vishay              | CRCW060310K0F         |
| R92, R465  | 2        | R010001K100     | RESISTOR SMD 0603 - 0.06W 1%   | 100K  |             | VISHAY              | CRCW0603100KF         |
| R45  | 1        | R010001K470     | RESISTOR SMD 0603 - 0.06W 5%   | 470K  | NM          | VISHAY              | CRCW0603470KJ         |
| R363, R380, R385, R451, R452, R453, R454, R455   | 8        | R010001M001     | RESISTOR SMD 0603 - 0.06W 1%   | 1M    |             | VISHAY              | CRCW06031M00F         |
| R274, R354, R355, R357, R358, R394, R396, R411, R429, R430, R431, R432, R433   | 13       | R010001M010     | RESISTOR SMD 0603 - 0.06W 1%   | 10M   |             | VISHAY              | CRCW060310M0FKEA      |
| R480   | 1        | R010001P681     | RESISTOR SMD 0603 - 0.06W 1%   | 6.81M |             | Vishay              | CRCW06036M81FKEA      |
| R257, R258, R259, R260, R299, R314, R316, R319, R320   | 9        | R0100020000     | RESISTOR SMD 0603 - 0.06W 1%   | 0     |             | VISHAY              | CRCW06030000Z         |
| R456   | 1        | R0100020000     | RESISTOR SMD 0603 - 0.06W 1%   | 0     | NM          | VISHAY              | CRCW06030000Z         |
| R298, R300, R301, R302, R308, R315, R317, R321, R425, R427, R488   | 11       | R0100020000     | RESISTOR SMD 0603 - 0.06W 1%   | 0     |             | Vishay              | CRCW06030000Z         |
| R422, R423, R424, R426, R428, R489   | 6        | R0100020000     | RESISTOR SMD 0603 - 0.06W 1%   | 0     | NM          | Vishay              | CRCW06030000Z         |
| R42  | 1        | R010002K022     | RESISTOR SMD 0603 - 0.06W 1%   | 22K   |             | VISHAY              | CRCW060322K0F         |
| R266   | 1        | R010002K047     | RESISTOR SMD 0603 - 0.06W 1%   | 47K   |             | Vishay              | CRCW060347K0F         |
| R482   | 1        | R010002K470     | RESISTOR SMD 0603 - 0.06W 1%   | 470K  |             | Vishay              | CRCW0603470KF         |
| R483   | 1        | R010002L047     | RESISTOR SMD 0603 - 0.06W 1%   | 4.7M  |             | Vishay              | CRCW06034M70F         |
| R409   | 1        | R0100040470     | CRCW0603470RFEA  | 470   | NM          | Vishay              | CRCW0603470RFEA       |
| R490   | 1        | R0200010000     | RESISTOR SMD 0805 - 0.125 W 1%   | 0     |             | Vishay              | CRCW08051000Z         |
| R267, R281, R282, R387, R388, R475, R476, R477, R478, R479   | 10       | R0200010330     | RESISTOR SMD 0805 - 0.125W 1%  | 330   |             | Vishay              | CRCW0805330RF         |
| R342, R343   | 2        | R0200011056     | RESISTOR SMD 0805 - 0.1W 1%  | 5.6   |             | KOA                 | RK73H2ATTD5R60F       |
| R381, R382, R383, R384   | 4        | R020002K001     | RESISTOR SMD 0805 - 0.125W 5%  | 1K    |             | VISHAY              | CRCW08051K00J         |
| R279, R481   | 2        | R0300010001     | RESISTOR SMD 1206 - 0.25W 1%   | 1     |             | KOA                 | RK73H2BTTD1R00F       |
| R468, R469, R470   | 3        | R0300010033     | RESISTOR SMD 1206 - 0.25W - 2 %  | 33    |             | Vishay              | CRCW120622R0F         |
| R40, R467  | 2        | R0300010270     | RESISTOR SMD 1206 - 0.25W - 5 %  | 270   |             | Vishay              | CRCW1206270RJ         |
| R487   | 1        | R030001H012     | RESISTOR SMD 1206 - 0.25W 1%   | 1.2K  |             | Vishay              | CRCW12061R2KFN        |
| R484, R485, R486   | 3        | R030001H402     | RESISTOR SMD 1206 - 0.25W 1%   | 40.2K |             | Vishay              | CRCW120640K2FKEA      |
| R33, R110, R458, R459, R460, R461, R462, R463, R464  | 9        | R030001K001     | RESISTOR SMD 1206 - 0.25W 1%   | 1K    |             | Vishay              | CRCW12061K00FKEA      |
| R436, R437   | 2        | R030001K010     | RESISTOR SMD 1206 - 0.25W - 2 %  | 10K   |             | Vishay              | RCW1206103GT          |
| R287, R457   | 2        | R030001K047     | RESISTOR SMD 1206 - 0.25W 1%   | 47K   |             | Vishay              | CRCW120647K0F         |
| R44  | 1        | R030001K120     | RESISTOR SMD 1206 - 0.25W - 2 %  | 120K  |             | Vishay              | CRCW1206120KF         |
| R359, R404   | 2        | R030001K200     | RESISTOR SMD 1206 - 0.25W 1%   | 200K  |             | Vishay              | CRCW120620K0FKEA      |
| R466   | 1        | R030001K330     | RESISTOR SMD 1206 - 0.25W - 2 %  | 330K  |             | Vishay              | CRCW1206330KF         |
| R27, R268, R288, R289, R290, R291, R292, R293, R294, R410, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421  | 20       | R0300020180     | RESISTOR SMD 1206 - 0.25W - 1 %  | 180   |             | Vishay              | CRCW1206180RFN        |
| R41  | 1        | R030002H027     | RESISTOR SMD 1206 - 0.25W 1%   | 2.7K  |             | Vishay              | CRCW120627K0F         |
| R1, R93, R322, R325, R447, R448, R449, R450  | 8        | R030002H047     | RESISTOR SMD 1206 - 0.25W 1%   | 4.7K  |             | Vishay              | CRCW12064K70F         |
| R107, R235, R471, R472, R473, R474   | 6        | R0400010012     | RESISTOR SMD 1210 - 0.5W 1%  | 12    |             | Vishay              | CRCW1210012RFN        |
| R352   | 1        | R0900010330     | RESISTOR SMD 2512 - 1W 5%  | 330   |             | VISHAY              | RCA 2512 330 J TC RT6 |
| R283, R284, R285, R286   | 4        | R090001K001     | RESISTOR SMD 2512 - 1W 5%  | 1K    |             | VISHAY              | CRCW25121K00J         |
| U19  | 1        | U0100088001     | STM8L151C8T3 MICROCONTROLLER STM8 8 BIT MCU 64KBFLASH 2KBRAM 1KEEPROM LQFP48 |       |             | ST MICROELECTRONICS | STM8L151C8T3          |
| U8   | 1        | U0100074001     | MICROCONTROLLER STM32 ARM 32BIT CORTEX-M3 128KBFLASH 20KBSRAM LQFP48         |       |             | ST MICROELECTRONICS | STM32F103CB           |
| U35  | 1        | U0900010001     | Low input voltage Boost converter with low quiescent current, SOT23-5        |       |             | TEXAS INSTRUMENTS   | TPS61097-33DBV        |
| U38  | 1        | U1000013001     | Nanopower Push-Pull output comparators, SOT23-5                              |       |             | TEXAS INSTRUMENTS   | TLV3701IDBVT          |
| U21  | 1        | U1600011001     | LOW VOLTAGE STEPPER AND SINGLE/DUAL DC MOTOR DRIVER                          |       |             | ALLEGRO             | A3906SESTR-T          |



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### CPU board part list: 3 of 3

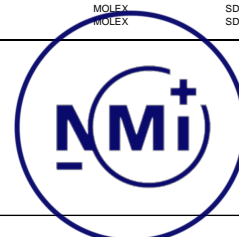
| Reference           | Quantity | Part_Number_MRD | Description   | Value | Not Mounted | Manufacturer      | Manufacturer PIN        |
|---------------------|----------|-----------------|---|-------|-------------|-------------------|-------------------------|
| U40                 | 1        | U2100001001     | 20V,540mA Dual N-Channel Small Signal MOSFET SOT563   |       |             | ON Semiconductor  | NTZD3154N               |
| U41                 | 1        | U2100003001     | -20V Dual P-Channel Small Signal MOSFET with ESD prot. SOT563   |       |             | ON Semiconductor  | NTZD3152P               |
| SP3                 | 1        | Y0800007001     | BUTTON MINIATURE; SMD; ITT-CANNON COD. KSR231GLFS   |       | NM          | ITT CANNON        | KSR231GLFS              |
| SP4                 | 1        | Y0800046001     | BUTTON MINIATURE; SMD;6X6 ITT-CANNON COD. KSC351J   |       |             | ITT CANNON        | KSC351J                 |
| XT1,XT2             | 2        | Y1200002001     | CERAMIC RESONATOR MURATA CSTCE8M00G55A-R0   | 8MHZ  |             | MURATA            | CSTCE8M00G55A-R0        |
| K1                  | 1        | Y1400037001     | SMT 8PIN; DPDT; 1 COIL LATCHING; 3V/2A  |       |             | FUJITSU           | FTR-B3-SB-003-ZB10      |
| U26,U27,U28,U29,U31 | 5        | Y1800018001     | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF   |       |             | TEXAS INSTRUMENTS | TPS22943DCKR            |
| U32,U33,U34         | 3        | Y1800023001     | Protect High-Side Load Switch, 1AMax, 2, 4 to 5,5 Supply Voltage Range, Low quiescent current                         |       |             | ANALOGIC TECH     | AAT4610BIV-1            |
| J3                  | 1        | Z0300013012     | DOUBLE ROW STRAIGHT PITCH 2 X 6 2,54 mm SAMTEC RIGHT ANGLE ZIF SMD CONNECTOR , 5 PINS , P 1 MM - MOLEX , 52207 SERIES |       |             | SAMTEC            | TSW-106-07-G-D          |
| J16                 | 1        | Z0300015005     | 8 PINS P=1,5 MM - TOP ENTRY WIRE TO BOARD   |       |             | MOLEX             | 52207-0551              |
| J14                 | 1        | Z0300017008     | INSULATION DISPLACEMENT CONNECTOR   |       |             | JST               | B8B-ZR-SM4-TF (LF) (SN) |
| J5                  | 1        | Z0300038002     | SINGLE ROW STRAIGHT PITCH X 2 2,54 mm SAMTEC TSW-102-07-G-S   |       | NM          | SAMTEC            | TSW-102-07-G-S          |
| J7_J8               | 2        | Z0300041003     | SINGLE ROW STRAIGHT PITCH X 3 2,54 mm SAMTEC  |       |             | SAMTEC            | TSW-103-07-G-S          |
| J1                  | 1        | Z0300045004     | 4 PINS STRIP VERTICAL PITCH 2MM   |       |             | SAMTEC            | TMM-104-01-T-S          |
| J19                 | 1        | Z0300050004     | 2MM WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW,RIGHT ANGLE, 4 CIRCUIT   |       |             | MOLEX             | 502494-0470             |

## 7.2. GPRS board part list

Here below the GPRS board part list follows:

### GPRS board part list: 1 of 1

| Reference           | Quantity | Part_Number_MRD  | Description   | Value | Not Mounted | Manufacturer        | Manufacturer PIN   |
|---------------------|----------|------------------|---|-------|-------------|---------------------|--------------------|
| CS                  | 1        | MS02CS0009B_1125 | CS Scheda RADIO GASMETER GPRS ATEX                                      |       |             |                     |                    |
| C25,C19             | 1        | C0500016001      | CAP SMD 0603 XSR 1UF 25V  | 1UF   |             | KEMET               | C0603C105K3PACTU   |
| C21,C22,C24         | 3        | C0500016100      | CAP SMD 1206 XFR 100UF 6,3V   | 100UJ |             | MURATA              | GRM31CR6J107ME33L  |
| C3,C4               | 2        | C0500036010      | CAP SMD 0805 XSR 10UF 10V   | 10UF  |             | MURATA              | GRM21BR61A106KE19L |
| C9                  | 1        | C050011C010      | CAP SMD 0603 XFR 10PF 50V   | 10PF  |             | AVX                 | 06035C100KAT2A     |
| C6,C10              | 2        | C050011C033      | CAP SMD 0603 COG 33PF 50V   | 33PF  |             | VISHAY / VITRAMON   | VJ0603A330JACW1BC  |
| C11                 | 1        | C0500259100      | CAP SMD 0603 XFR 100NF 16V  | 0,1UF | NM          | KEMET               | C0603C104K5RAC7013 |
| C7                  | 1        | C0700037047      | CAP SMD 0805 Y5V 4,7UF 10V  | 4,7UJ |             | KEMET               | C0805CA7528VACTU   |
| C20                 | 1        | C080001C022      | CAP SMD 0603 NPO 22PF 50V   | 22PF  |             | KEMET               | C0603C220JGACTU    |
| C1,C2               | 2        | C080001C022      | CAP SMD 0603 NPO 22PF 50V   | 22PF  | NM          | KEMET               | C0603C220JGACTU    |
| C28,C29             | 2        | C0900010035      | Supercapacitor, LOW ESR 35F 2,7V STARCAP DR2R7356                       | 35    | NM          | STARCAP             | DR2R7356           |
| C26,C27             | 2        | C0900020030      | Supercapacitor, LOW ESR 30F 2,7V TECATE TPL-30/16X31F                   | 30    |             | TECATE              | TPL-30/16X31F      |
| D1                  | 1        | D010006001       | NPN TRANSISTOR BIPOLAR SMD CASE SOT23                                   |       |             | PHILIPS             | B3C847             |
| D3                  | 1        | D0400030001      | SCHOTTKY BARRIER RECT. GENERALSEMICONDUCTOR 2A - 10V                    |       |             | ON SEMICONDUCTOR    | MBR4210LT3         |
| D1                  | 1        | D0400034001      | Silicon Schottky Diode 100mA, Case SCD80 40V                            |       |             | Infinion            | BAT64-02W          |
| D3                  | 1        | D0500022001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V -4,6A 70MOHM SOT26      |       |             | DIODES INCORPORATED | DMP2068DM          |
| Q4                  | 1        | D0600018001      | 20V SOT23-6 N-CHANNEL MOSFET WITH LOW GATE DRIVE CAPABILITY             |       |             | ZETEX               | Z2MM2B03E6A        |
| F1,F2,F3,F4         | 4        | D1100025001      | Film Fuse SMD - LITELFUSE 0466 200 (1206)                               |       | A           | Littelfuse          | 0466-200NR         |
| U2                  | 1        | D1500007001      | ESD SUPPRESSOR, HIGH SPEED SOFT, TRIGGER 300V, CLAMPING 35V CASE MLP402 |       | NM          | COOPER BUSSMANN     | 0402ESDA-MLP402    |
| U5                  | 1        | H1200007001      | MD DUAL INVERTING SCHMITT TRIGG. 5V TOLLERANT INPUT-CASE SOT363         |       |             | NXP SEMICONDUCTOR   | 74HC2G14           |
| L1                  | 1        | I0100029220      | SMD INDUCTOR - COLCRAFT 200nH DCR=24MA IRMS=2,2A                        |       | UH          | Colcraft            | XPL2010-201ML      |
| L2                  | 1        | I0100067047      | 4,7UH SMD SHIELDED POWER INDUCTOR WE-PD                                 | 4,7UJ |             | WURTH ELECTRONICS   | 7447789004         |
| R3                  | 1        | R0100010000      | RESISTOR SMD 0603 - 0,06W 5% 0  | 0     | NM          | VISHAY              | CRCW06030000Z      |
| R1                  | 1        | R0100010000      | RESISTOR SMD 0603 - 0,06W 5% 0  | 0     |             | VISHAY              | CRCW06030000Z      |
| R17,R18             | 2        | R010001K010      | RESISTOR SMD 0603 - 0,06W 1% 10K  | 10K   |             | VISHAY              | CRCW060310K0F      |
| R24                 | 1        | R010001K100      | RESISTOR SMD 0603 - 0,06W 1% 100K                                       | 100K  |             | VISHAY              | CRCW0603100K0F     |
| R26                 | 1        | R010001K348      | RESISTOR SMD 0603 - 0,06W 1% 348K                                       | 348K  |             | VISHAY              | CRCW0603348K0F     |
| R2,R19              | 2        | R010001M001      | RESISTOR SMD 0603 - 0,06W 1% 1M   | 1M    |             | Vishay              | CRCW06031M00F      |
| R6                  | 1        | R0100020100      | RESISTOR SMD 0603 - 0,06W 5% 100  | 100   |             | VISHAY              | CRCW0603100R0J     |
| R4,R5,R7,R8,R10,R11 | 6        | R0100020432      | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA                        | 432   |             | Vishay              | CRCW0603432RFKEA   |
| R9                  | 1        | R0100020432      | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA                        | 432   | NM          | Vishay              | CRCW0603432RFKEA   |
| R15,R16             | 2        | R010002H013      | RESISTOR SMD 0603 - 0,06W 1% 1,3K                                       | 1,3K  |             | VISHAY              | CRCW06031K30FKEA   |
| R12,R13             | 2        | R010002K010      | RESISTOR SMD 0603 - 0,06W 5% 10K  | 10K   |             | VISHAY              | CRCW060310K0J      |
| R25                 | 1        | R010002K082      | RESISTOR SMD 0603 - 0,06W 1% 82K  | 82K   |             | VISHAY              | CRCW060382K0F      |
| R22                 | 1        | R010002K100      | RESISTOR SMD 0603 - 0,06W 5% 100K                                       | 100K  |             | VISHAY              | CRCW0603100KJ      |
| R14                 | 1        | R010002K330      | RESISTOR SMD 0603 - 0,06W 1% 330K                                       | 330K  |             | VISHAY              | CRCW060330K0FKEA   |
| R23                 | 1        | R010002K820      | RESISTOR SMD 0603 - 0,06W 1% 820K                                       | 820K  |             | VISHAY              | CRCW0603820K0FKEB  |
| R27                 | 1        | R0200001003      | RESISTOR SMD 0605 - 0,125W 5% 0,03                                      | 0,03  |             | VISHAY              | WSL0805R0300JEA    |
| U4                  | 1        | U0100070001      | 16 BIT SECURITY CONTROLLER OPTIMIZED FOR M2M APPLICATIONS               |       | NM          | INFINEON            | SLM760F5120P       |
| U1                  | 1        | U0100073001      | WIRELESS STANDARD MODEM WAVECOM WISM0228                                |       |             | WAVECOM             | WISM0228_OC618R04F |
| U6                  | 1        | U1400006001      | DC-DC CONTROLLER STEP-UP 550KH FXED FREQUENCY                           |       |             | LINEAR TECHNOLOGY   | LTC1872E56         |
| J21                 | 1        | Z0300018008      | SIM PCB CONNECTOR 6 PINS - MOLEX SD-47553-001                           |       |             | MOLEX               | SD-47553-001       |
| J21                 | 1        | Z0300018008      | SIM PCB CONNECTOR 6 PINS - MOLEX SD-47553-001                           |       |             | MOLEX               | SD-47553-001       |



## 8. PCB LAYOUT

### 8.1. CPU Board layout

Figure 5.1 – CPU board layout

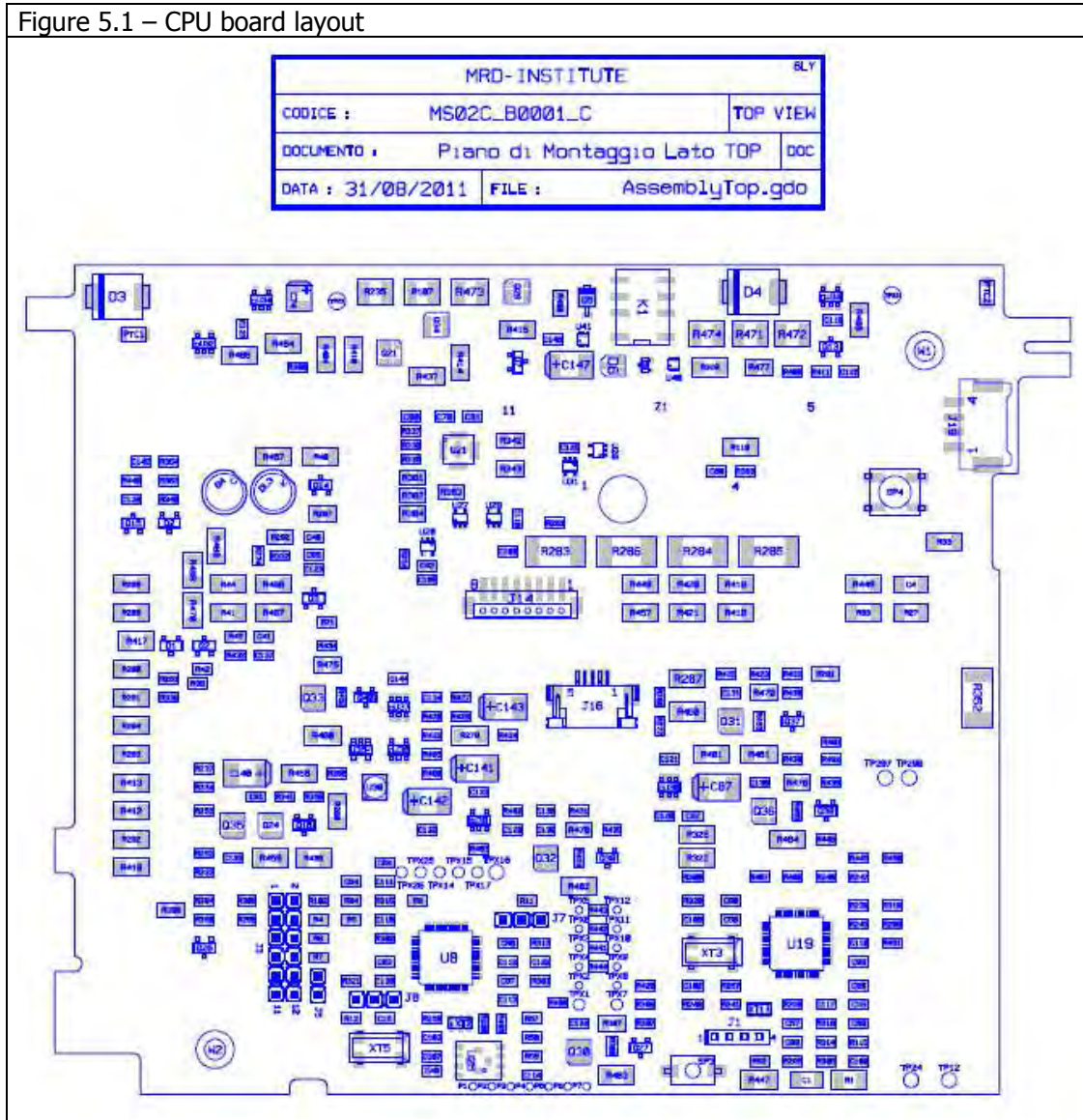


Figure 5.2 – GPRS board layout: bottom view

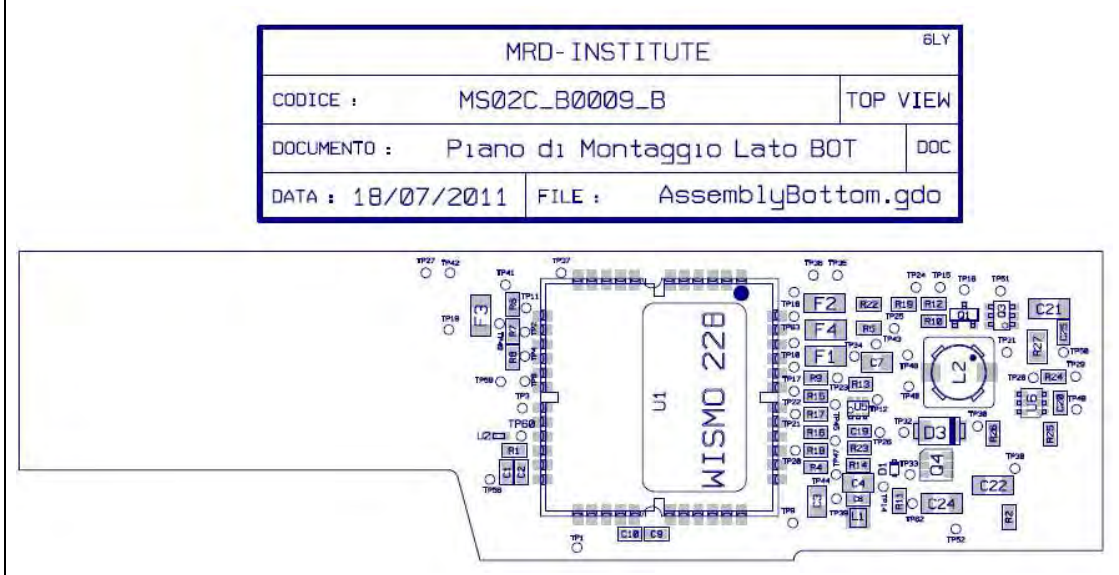
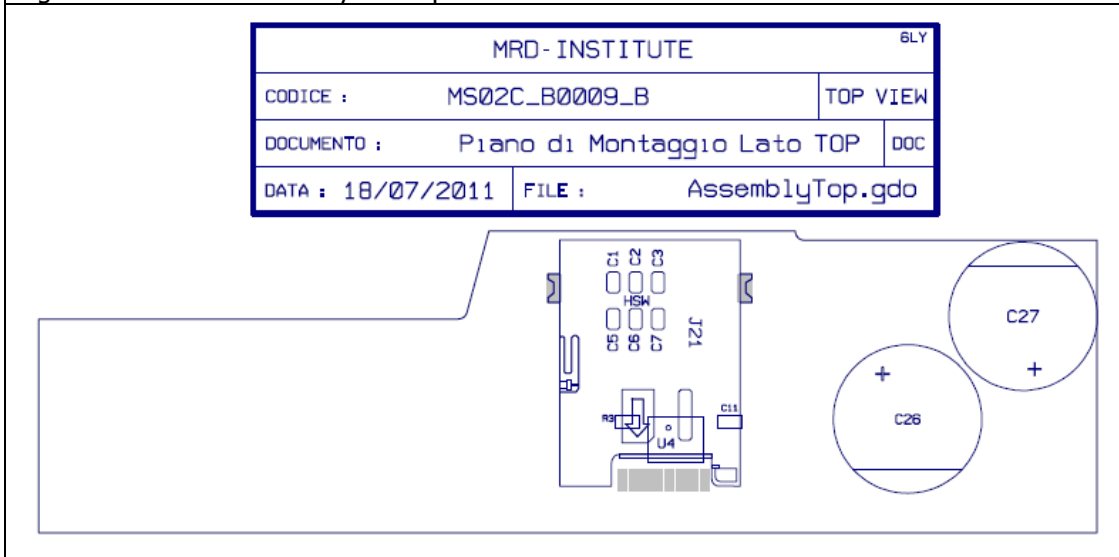


Figure 5.3 – GPRS board layout: top view



## 11. SEALING

No traditional seal is implemented on the gas meter. The sealing is obtained by welding the plastic base and cover by a technique called "hot plate welding" (see Figure 10.1).

It is necessary to break up the cover in order to access the internal components.

The battery is integral with the gas meter but in a compartment, separated from all the internal mechanisms of the gas meter.

Therefore, it is possible to change the battery without disturbing the metrological seal.

The operator shall break down the battery cover, by a special tool, in three fixation points and replace it with a new one.

Figure 10.1 – View of Sealing



### 13. PRODUCT DESIGNATION

MeterSit current product designation is "x485xxx", whose details are as follows:

- first number = "piece level"
  - 0 = full assembled and sellable sample
  - 1 = subsystem, etc
- from second number to fourth: "Family" i.e. gas meter products
- fifth number: "G" value:
  - 3 = G16
  - 4 = G25
- from sixth to seventh: progressive number (00-99) identifying all the possible combination, such as communication features, high temperature resistances, etc



### 3. MECHANICAL SPECIFICATIONS

| Characteristic                             | u.m. | Class G16         | Class G25                    |
|--|------|-------------------|------------------------------|
| Connection centrelines                     | [mm] | 280               | 335                          |
| Max dimensions<br>(Width x Height x Depth) | [mm] | 436 x 189 x 187,4 | 436 x 189 x 187,4            |
| Connection diameter                        | "    | G 2 ISO 228/1     | G 2 <sup>1/2</sup> ISO 228/1 |
| Resistance to torque                       | [Nm] | 170               | 170                          |
| Resistance to bending                      | [Nm] | 60                | 60                           |
| Weight                                     | [Kg] | 5.7               | 5.7                          |

Figure 3.1a – VIEW OF G16 STRUCTURE

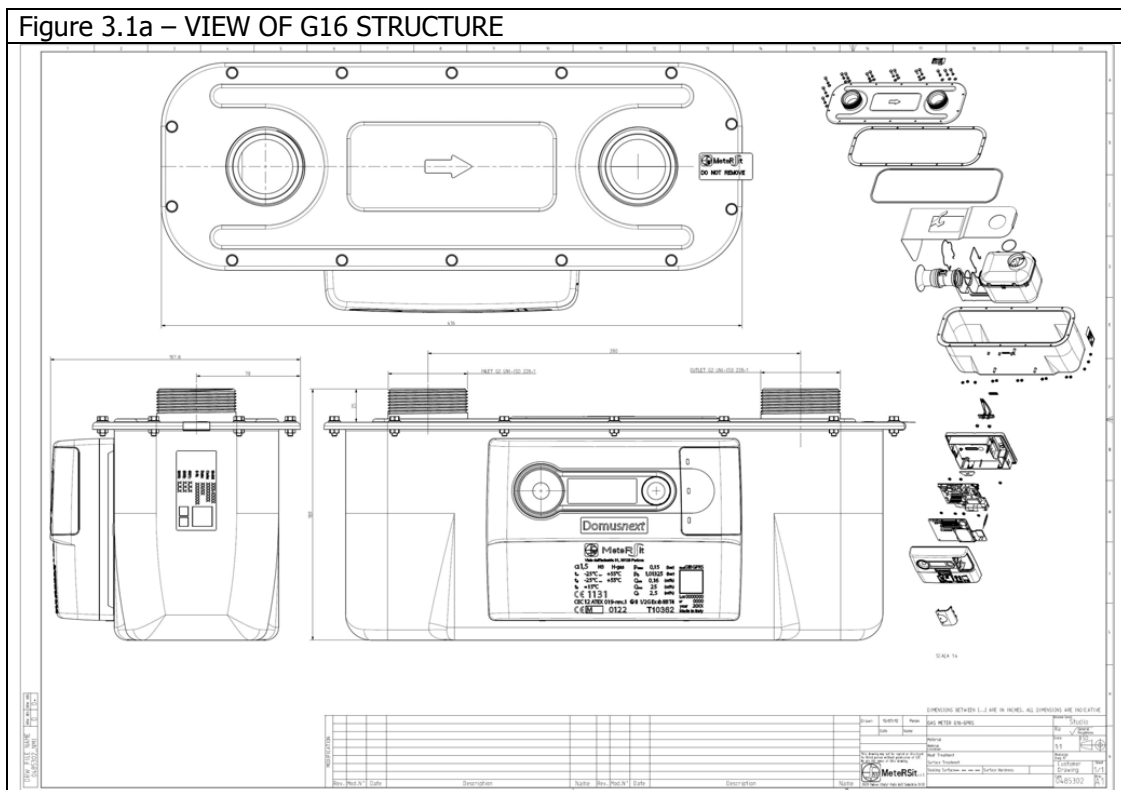


Figure 3.1b – VIEW OF G25 STRUCTURE

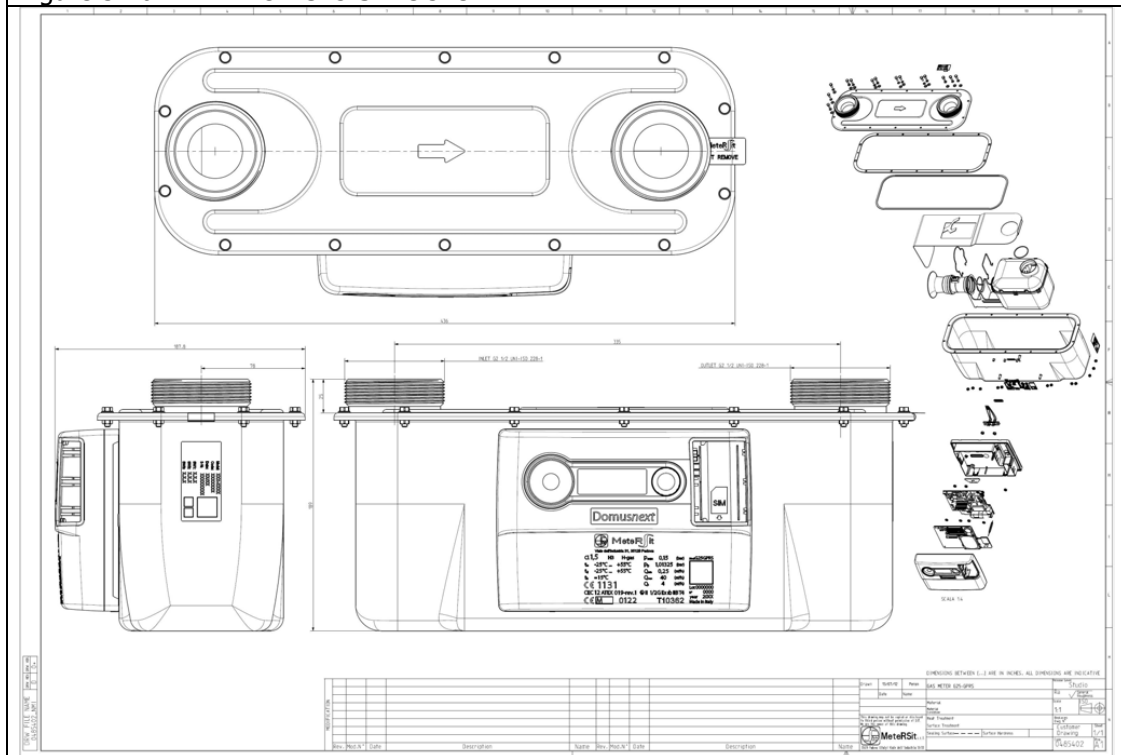


Figure 3.2 – VIEW AND MAIN DIMENSIONS OF FLOW SENSOR

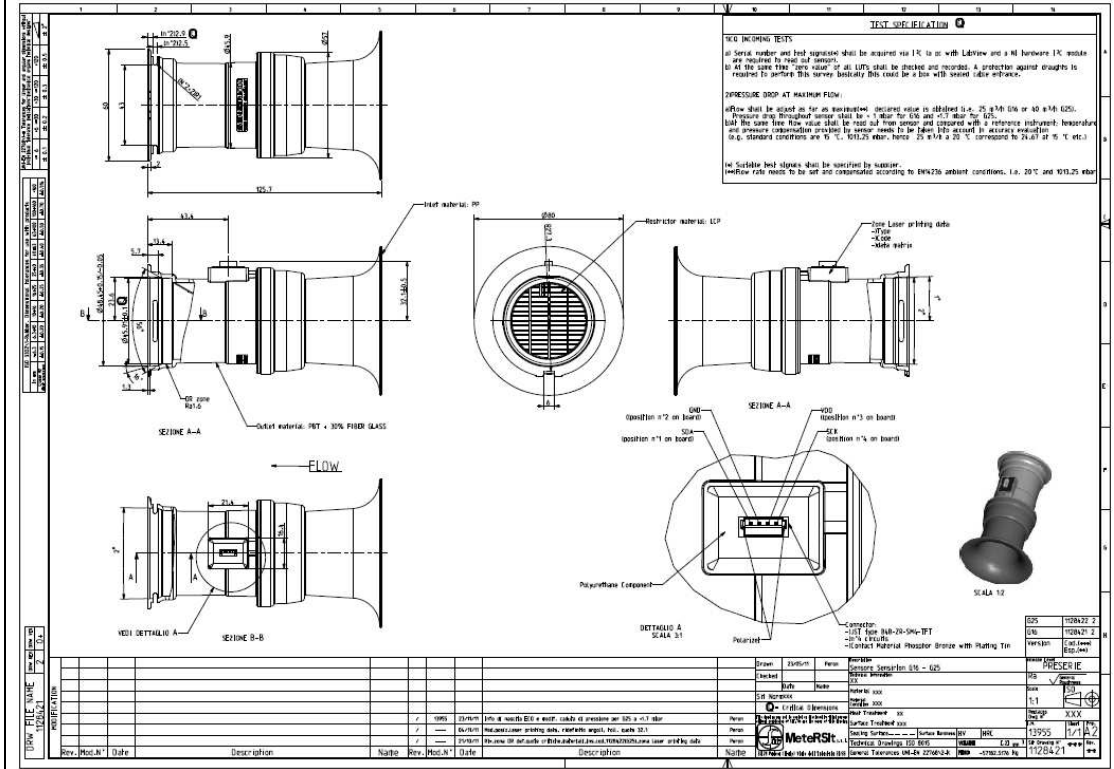
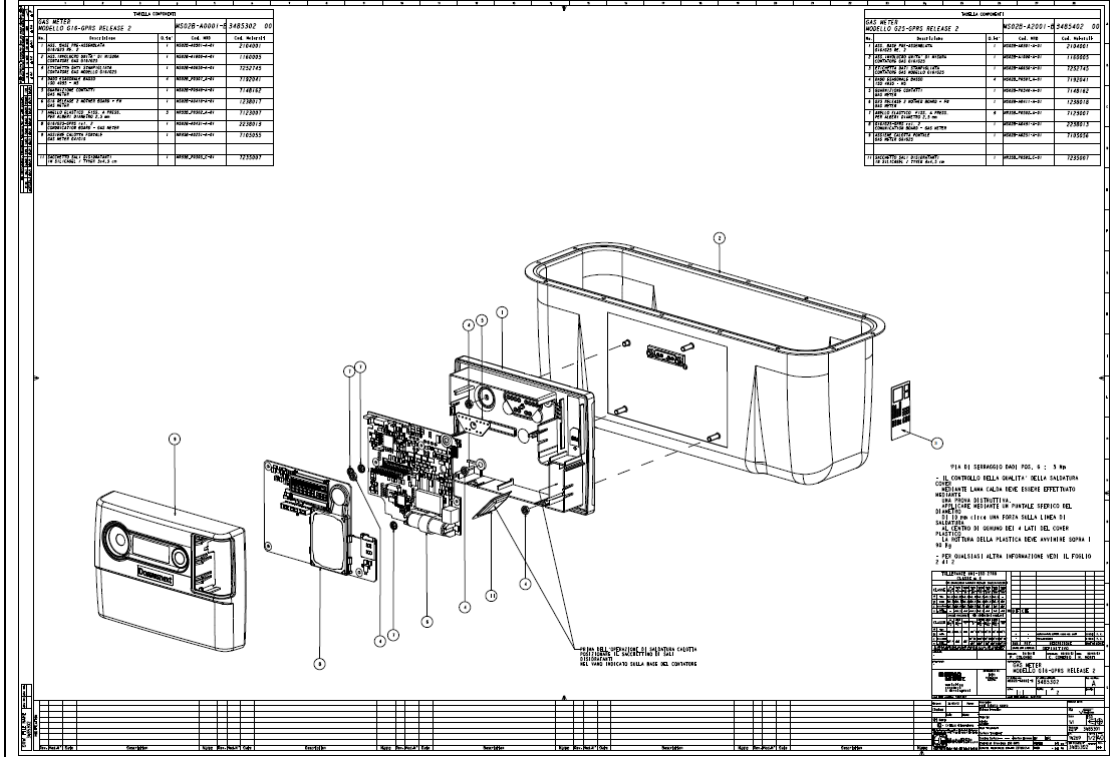


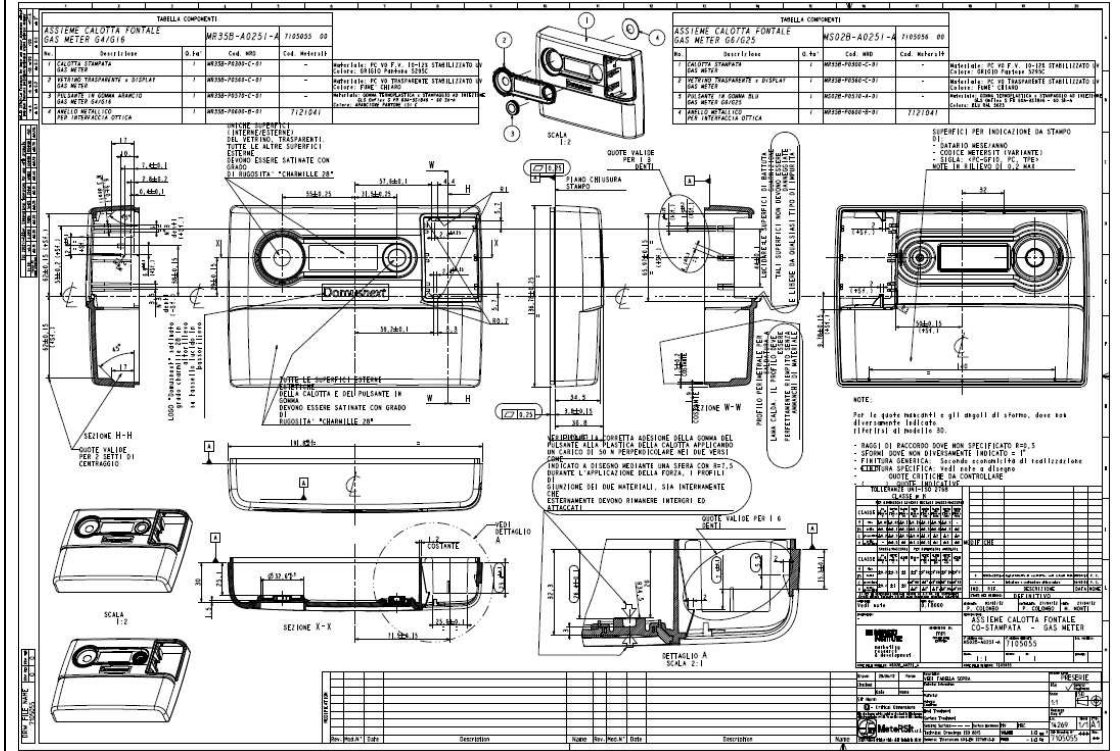


FIGURE 3.3 – EXPLODED DRAWING OF PLASTICS AND ELECTRONICS



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### FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE





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### 7.1. CPU board part list

Here below the CPU Board part list follows:

#### CPU board part list: 1 of 2

| Reference   | Quantity | Part_Number_MRD  | Description   | Value | Not Mounted | Manufacturer          | Manufacturer P/N        |
|---|----------|------------------|---|-------|-------------|-----------------------|-------------------------|
| C5  | 1        | MS02CS0001F 1210 | CS Scheda Contatore Gas G16/G25 (ATEX)  |       |             |                       |                         |
| B11   | 1        | ACC00343001      | Batt Holder 68x15mm h:15mm SMD  |       |             | KEYSTONE ELECT.       | 1024                    |
| C57   | 1        | C0100026010      | TAJ TAN. CAP SMD Size B 10uF 6.3V   | 10u   |             | Vishay / Sprague      | 293D106X96R38BT         |
| C60   | 1        | C0100036100      | TAJ TAN. CAP SMD Size C 100uF 10V TPSC107K010R0075                            | 100u  |             | AVX                   | TPSC107K010R0075        |
| C63   | 1        | C0100136010      | TAJ TAN. CAP SMD Size C 10uF 16V Vishay cod 293D106X00                        | 10u   |             | Vishay / Sprague      | 293D106X00              |
| C64   | 1        | C0100136010      | TAJ TAN. CAP SMD Size C 10uF 16V Vishay cod 293D106X00                        | 10u   | NM          | Vishay / Sprague      | 293D106X00              |
| C73   | 1        | C0200015150      | ALUM.RAD. ELE. SMT PANASONIC SERIES FK 1500UF 6.3V 20% 10X10.2                | 1500u | NM          | Panasonic             | EEEFK0J152P             |
| C72   | 1        | C0200045022      | SMD Chip Alum. Electr. Capacitor Dia 12.5 mm                                  | 2200u |             | NIC COMP              | NATT22M6.3V12.5X14K14BF |
| C5, C6, C8, C12, C13, C14, C16, C17, C18, C19, C20, C21, C22, C23   | 14       | C0500016001      | CAP SMD 0603 XSR 1UF 25V  | 1u    |             | Kemet                 | C0603C105K3PACTU        |
| C10, C11, C15   | 3        | C0500016001      | CAP SMD 0603 XSR 1UF 25V  | 1u    | NM          | Kemet                 | C0603C105K3PACTU        |
| C66, C74  | 2        | C0500019010      | CAP SMD 0603 X7R 10NF 50V   | 10n   |             | Murata                | GRM188R71H103KA01J      |
| C65   | 1        | C0500059100      | CAP SMD 1206 X7R 100NF 50V  | 100n  |             | Kemet                 | C1206C104K5RAC7025      |
| C1, C4  | 2        | C0500110068      | CAP SMD 0603 COG 6.8PF 25V  | 6.8p  |             | AVX                   | 06033A680KAT2A          |
| C2, C3  | 2        | C0500110068      | CAP SMD 0603 COG 6.8PF 25V  | 6.8p  | NM          | AVX                   | 06033A680KAT2A          |
| C7, C50, C54, C67, C69, C70   | 6        | C0500219001      | CAP SMD 0603 X7R 1NF 50V  | 1n    |             | Murata                | SCM188R71H102KA37D      |
| C58   | 1        | C0500219220      | CAP SMD 0603 X7R 220NF 25V  | 220n  |             | Kemet                 | C0603C224K3RACU         |
| C24, C25, C26, C27, C28, C29, C30, C31, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C46, C47, C48, C49, C51, C52, C56, C71, C75, C76, C77, C78, C79 | 31       | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100n  |             | Kemet                 | C0603C104K5RAC7013      |
| C32, C53, C68   | 3        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100n  | NM          | Kemet                 | C0603C104K5RAC7013      |
| C9  | 1        | C0500336001      | CAP SMD 0805 X7R 1UF 50V  | 1u    |             | Kemet                 | C0805C105K4RAC7800      |
| C44   | 1        | C0500419010      | CAP SMD 0603 X7R 10NF 25V   | 10n   |             | Kemet                 | C0603C103J3RACU         |
| C43   | 1        | C0600057022      | CAP SMD 0805 XSR 2,2UF 10V  | 2.2u  |             | Murata                | GRM188R61A225ME34D      |
| C45   | 1        | C0600066010      | CAP SMD 0603 XSR 10UF 25V   | 10u   |             | MURATA                | GRM188R61E106VA73L      |
| C61   | 1        | C080001C039      | CAP SMD 0603 COG 39PF 50V   | 39p   |             | Kemet                 | C0603C390F5GACTU        |
| C55, C59  | 2        | C080021C010      | CAP SMD 0603 COG 10PF 25V 5%  | 10p   |             | Kemet                 | C0603C100K3GACTU        |
| D1  | 1        | D0400019001      | Dual Schottky Diode, Common Cathode 250mA, SOT23 BAT54C                       |       | NM          | Philips               | BAT54C                  |
| D7  | 1        | D0400019001      | Dual Schottky Diode, Common Cathode 250mA, SOT23 BAT54C                       |       |             | Philips               | BAT54C                  |
| D2, D3  | 2        | D0400028001      | Schottky SMD Case DO-214AB 20V 3A   |       |             | General Semiconductor | S532                    |
| D4, D5, D6, U3, U27   | 5        | D0400042001      | SMD_Schottky_Diode_1A_20V   |       |             | Diode Incorporated    | DFLS120L-7              |
| Q17   | 1        | D0500017001      | P-channel enhancement mode MOS transistor, -12V, -1.52A, SOT457               |       |             | Philips               | BSH107                  |
| Q1, Q2, Q3, Q4, Q5, Q6, Q19   | 7        | D0500019001      | P-channel enhancement mode MOS transistor, -60V, -3A, SOT457                  |       |             | Zetex                 | ZXMPP6A17E6TA           |
| Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q18  | 9        | D0600016001      | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                  |       |             | Philips               | BSH105                  |
| D21, D22  | 2        | D0800080001      | SMD zener diode Case DO-214 1.25W Vishay 7.5V BZG05C8V2                       |       |             | Vishay                | BZG05C7V5               |
| PTC1, PTC2, PTC3  | 3        | D1200031001      | Polyswitch Resettable Device SMD 1206 - 0.8W - 0.2 / 0.80hm IH=0.5A IT=1, 10A |       |             | Tyco Electronics      | NanoSMDMDC050F          |
| U2  | 1        | U0100121033      | Texas, Back, Boost, Charge, Pump, Thin, SOT-23-6, 60mA, 3.3, 5V               |       |             | Texas Instruments     | REG710NA-3.3            |
| U1  | 1        | M0500005001      | 8Mbit, low voltage, Page-Erasable Serial Flash memory                         |       |             | Numonyx               | M45PE80-VMP6G           |
| J8  | 1        | DN_BOARD         | DN_BOARD  |       |             |                       |                         |
| W1  | 1        | DN_BOARD         | DN_BOARD  |       |             |                       |                         |
| Q7  | 1        | C0300019001      | Crystal SMD 32.768KHz +10ppm CITIZEN CM200C-032K768000ZRF1                    | NMHz  |             | CITIZEN               | CM200C-032K768000ZRF1   |
| Q8  | 1        | C0300019001      | Crystal SMD 32.768KHz +10ppm CITIZEN CM200C-032K768000ZRF1                    | NMHz  | NM          | CITIZEN               | CM200C-032K768000ZRF1   |
| R106  | 1        | R0100010470      | RESISTOR SMD 0603 - 0.06W 5% 470  | 470   |             | Vishay                | CRCW0603470RJ           |
| R91, R94, R107, R108, R109, R110, R111, R112  | 8        | R0100010470      | RESISTOR SMD 0603 - 0.06W 5% 470  | 470   |             | Vishay                | CRCW0603470RJ           |
| R132, R133, R134  | 3        | R010001K001      | RESISTOR SMD 0603 - 0.06W 5% 1K   | 1K    |             | Vishay                | CRCW06031K001           |
| R40, R66, R67, R69, R70, R71, R75, R76, R77, R78, R79, R80, R81, R83, R85, R86, R87, R88, R89, R93, R96, R97, R98, R99, R100, R102, R103, R104            | 27       | R010001K010      | RESISTOR SMD 0603 - 0.06W 1% 10K  | 10K   |             | Vishay                | CRCW060310K0F           |
| R68, R95, R101, R105  | 4        | R010001K010      | RESISTOR SMD 0603 - 0.06W 1% 10K  | 10K   | NM          | Vishay                | CRCW060310K0F           |



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### CPU board part list: 2 of 2

| Reference  | Quantity | Part_Number_MRD | Description  | Value | Not Mounted | Manufacturer        | Manufacturer P/N        |
|--|----------|-----------------|--|-------|-------------|---------------------|-------------------------|
| R135,R139,R140   | 3        | R010001K100     | RESISTOR SMD 0603 - 0.06W 1% 100K  | 100K  |             | Vishay              | CRCW0603100KF           |
| R136   | 1        | R010001M001     | RESISTOR SMD 0603 - 0.06W 1% 1M  | 1M    | NM          | Vishay              | CRCW06031M00F           |
| R119,R120,R121,R122,R123,R124,R125,R138,R178,<br>R179  | 10       | R010001M001     | RESISTOR SMD 0603 - 0.06W 1% 1M  | 1M    |             | Vishay              | CRCW06031M00F           |
| R25,R26,R27,R28,R29,R30,R31,R32,R33,R34,R177   | 11       | R010001M010     | RESISTOR SMD 0603 - 0.06W 1% 10M   | 10M   |             | Vishay              | CRCW060310M0FKEA        |
| R35,R36,R42,R44,R45,R46,R47,R49,R50,R51,R52,R5<br>3,R54,R55,R56,R57,R58,R59,R60,R61,R62,R65,R176,<br>R48 | 24       | R0100020000     | RESISTOR SMD 0603 - 0.06W 1% 0   | 0     |             | Vishay              | CRCW06030000Z           |
| R37,R38,R39,R41,R43,R64,R183,R184,R185   | 9        | R0100020000     | RESISTOR SMD 0603 - 0.06W 1% 0   | 0     | NM          | Vishay              | CRCW06030000Z           |
| R182   | 1        | R0200010330     | RESISTOR SMD 0805 - 0.125W 1% 330  | 330   |             | Vishay              | CRCW0805330RF           |
| R161,R162,R163,R164,R165,R166,R167   | 7        | R0200010330     | RESISTOR SMD 0805 - 0.125W 1% 330  | 330   |             | Vishay              | CRCW0805330RF           |
| R342,R343  | 2        | R0200011056     | RESISTOR SMD 0805 - 0.1W 1% 5,6  | 5,6   |             | KOA                 | RK73H2ATTDS60F          |
| R175   | 1        | R0300001000     | RESISTOR SMD 1206 - 0.25W 1% 5   | 5     | NM          | Vishay              | CRCW120600R0J           |
| R174   | 1        | R0300010001     | RESISTOR SMD 1206 - 0.25W 1% 1   | 1     |             | KOA                 | RK73H28T1D1R00F         |
| R388,R389  | 2        | R030001H012     | RESISTOR SMD 1206 - 0.25W 1% 1,2K CRCW12061R2KFN   | 1,2K  |             | Vishay              | CRCW12061R2KFN          |
| R171,R172  | 2        | R030001H402     | RESISTOR SMD 1206 - 0.25W 1% 40,2K   | 40,2K |             | Vishay              | CRCW120640K2FKEA        |
| R63,R141,R142,R143,R144,R145,R146,R147,R148,R<br>381,R382,R383,R384                                      | 13       | R030001K001     | RESISTOR SMD 1206 - 0.25W 1% 1K  | 1K    |             | Vishay              | CRCW12061K00FKEA        |
| R173   | 1        | R030001K010     | RESISTOR SMD 1206 - 0.25W 1% 10K   | 10K   |             | Vishay              | RCWP1206103GT           |
| R130,R131  | 2        | R030001K047     | RESISTOR SMD 1206 - 0.25W 1% 47K   | 47K   |             | Vishay              | CRCW120647KF            |
| R386   | 1        | R030001K100     | RESISTOR SMD 1206 - 0.25W 1% 100K CRCW1206100KFN   | 100K  |             | Vishay              | CRCW1206100KFN          |
| R90  | 1        | R030001L015     | RESISTOR SMD 1206 - 0.25W 1% 1,5M  | 1,5M  |             | Vishay              | CRCW12061M50FKEA        |
| R152   | 1        | R030001M001     | RESISTOR SMD 1206 - 0.25W 1% 1M CRCW12061M0FN  | 1M    | NM          | Vishay              | CRCW12061M0FN           |
| R151,R180,R181,R387  | 4        | R030001M001     | RESISTOR SMD 1206 - 0.25W 1% 1M CRCW12061M0FN  | 1M    |             | Vishay              | CRCW12061M0FN           |
| R1,R2,R3,R4,R5,R6,R7,R8,R9,R10,R11,R12,R13,R14,<br>R15,R16,R17,R18,R19,R20,R21,R22,R23,R24,R385          | 25       | R0300020180     | RESISTOR SMD 1206 - 0.25W 1% 180 CRCW1206180RFN  | 180   |             | Vishay              | CRCW1206180RFN          |
| R113,R114,R115,R116,R117,R118  | 6        | R030002H047     | RESISTOR SMD 1206 - 0.25W 1% 4,7K  | 4,7K  |             | Vishay              | CRCW120647KF            |
| R391   | 1        | R030002L027     | RESISTOR SMD 1206 - 0.25W 1% 2,7M  | 2,7M  |             | KOA                 | RK73H28T1D2J5J          |
| R392,R393,R394   | 3        | R030003L047     | RESISTOR SMD 1206 - 0.25W 1% 4,7M  | 4,7M  |             | Vishay              | CRCW12064M70FKEA        |
| R158,R159,R160   | 3        | R0400010012     | RESISTOR SMD 1210 - 0.5W 1% 12 CRCW1210012RFN  | 12    |             | Vishay              | CRCW1210012RFN          |
| R157   | 1        | R0900011051     | RESISTOR SMD 2512 - 1W 5% 5,1  | 5,1   |             | Vishay              | CRCW25125R10J           |
| R126,R127,R128,R129  | 4        | R090001K001     | RESISTOR SMD 2512 - 1W 5% 1K   | 1K    |             | Vishay              | CRCW25121K00J           |
| U15  | 1        | U0100088001     | MICROCONTROLLER STM8 8 BIT MCU 64KBFLASH 2KBRAM 1KEEPROM LQFP48                              |       |             | ST Microelectronics | STM8L51C8T3             |
| U11  | 1        | U0100095001     | ARM 32Bit Low-Power 64pin, 128KFlash, 16KRam LQFP  |       |             | STMicroelectronics  | STM32L151R8T6           |
| U24  | 1        | U1000013001     | Nanopower Push-Pull output comparators, SOT23-5  |       |             | TEXAS INSTRUMENTS   | TLV3701DBVT             |
| U10  | 1        | U1600021001     | DRV8833 DUAL H-BRIDGE MOTOR DRIVER 16PIN CASE QFN  |       |             | Texas Instruments   | DRV8833                 |
| SP1  | 1        | Y080007001      | Button miniature; SMD; ITT-Cannon cod. KSR231GLFS  |       | NM          | ITT Cannon          | KSR231GLFS              |
| XT1,XT2  | 2        | Y1200002001     | Ceramic Resonator Murata CSTCE8M00G55A-R0 8MHz   |       | MHZ         | Murata              | CSTCE8M00G55A-R0        |
| U5,U6,U7,U8,U9   | 5        | Y1800018001     | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD SWITCHES WITH SHUT OFF 40mA                           |       |             | Texas Instruments   | TPS22943DCKR            |
| U12,U13  | 2        | Y1800023001     | Protect High-Side Load Switch, 1Amax, 2.4 to 5,5 Supply Voltage Range, Low quiescent current |       |             | ANALOGIC TECH       | AAT4610B0V-1            |
| U20  | 1        | Z0300095028     | 28 Pin male SMT DIL 2.54mm Board Stacker 19.5 Stacker Height                                 |       |             | SAMTEC              | HW-14-30-P-0767-SM-LC   |
| U19  | 1        | Z0300013012     | DOUBLE ROW STRAIGHT PITCH 2 X 6 2.54 mm SAMTEC   |       | NM          | SAMTEC              | TSW-106-07-G-0          |
| J3   | 1        | Z0300017008     | 8 Pins p=1.5 mm - Top Entry Wire to Board Insulation Displacement Connector                  |       | NM          | IST                 | B88-2R-SMA-TF (LF) (SN) |
| J9   | 1        | Z0300038002     | SINGLE ROW STRAIGHT PITCH X 2 2.54 mm SAMTEC TSW-102-07-G-5                                  |       | NM          | SAMTEC              | TSW-102-07-G-5          |
| J4,J5  | 2        | Z0300041003     | SINGLE ROW STRAIGHT PITCH X 3 2.54 mm SAMTEC   |       | NM          | SAMTEC              | TSW-103-07-G-5          |
| J2   | 1        | Z0300045004     | 4 pins Strip vertical pitch 2mm  |       | NM          | SAMTEC              | TMM-104-01-T-5          |
| J1   | 1        | Z0300050004     | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW, RIGHT ANGLE, 4 CIRCUIT                         |       |             | MOLEX               | 502494-0470             |



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### 7.2. GPRS board part list

Here below the GPRS board part list follows:

#### GPRS board part list: 1 of 2

| Reference                     | Quantity | Part_Number_MRD  | Description   | Value | Not Mounted | Manufacturer        | Manufacturer P/N   |
|-------------------------------|----------|------------------|---|-------|-------------|---------------------|--------------------|
| CS                            | 1        | MS02CS0009F_1215 | CS Scheda RADIO GASMETER GPRS ATEX  |       |             | MRD                 | MS02CS0009F_1215   |
| U11,U13                       | 2        | A0300027001      | 1.8V 700NA RAIL TO RAIL I/O OPERATIONAL AMPLIFIER                             |       |             | TEXAS INSTRUMENTS   | OPA369AIDCKR       |
| C38                           | 1        | C0100136010      | TAJ TAN. CAP SMD Size C, 10uF 16V Vishay cod 293D106X00                       | 10u   |             | Vishay / Sprague    | 293D106X00         |
| C14                           | 1        | C0500016001      | CAP SMD 0603 X5R 1UF 25V  | 1u    |             | Kemet               | C0603C105K3PACTU   |
| C17,C29                       | 2        | C0500016100      | CAP SMD 1206 X5R 100UF 6.3V   | 100u  |             | MURATA              | GRM31C6G0107ME39L  |
| C32,C33                       | 2        | C050001C100      | CAP SMD 0603 X7R 100PF 50V  | 100p  |             | AVX                 | 06035C101KAT2A     |
| C23,C24                       | 2        | C0500036010      | CAP SMD 0805 X5R 10UF 10V   | 10u   |             | Murata              | GRM21BR71A106KE51  |
| C15                           | 1        | C0500056010      | CAP SMD 1206 X7R 10UF 10V   | 10u   | NM          | Kemet               | C1206C104K5RAC7025 |
| C11,C36                       | 2        | C0500059100      | CAP SMD 1206 X7R 100NF 50V  | 100n  |             | Kemet               | C1206C104K5RAC7025 |
| C25,C26                       | 2        | C050011C033      | CAP SMD 0603 COG 33PF 50V   | 33p   |             | Vishay / Vitramon   | VJ0603A3301XACW1BC |
| C37                           | 1        | C0500219220      | CAP SMD 0603 X7R 220NF 25V  | 220n  |             | Kemet               | C0603C224K3RACTU   |
| C3,C4,C5,C6,C7,C8,C10,C12,C41 | 9        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100n  |             | Kemet               | C0603C104K5RAC7013 |
| C13                           | 1        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100n  | NM          | Kemet               | C0603C104K5RAC7013 |
| C39                           | 1        | C0600161010      | CAP SMD 0603 X5R 10UF 6.3V  | 10u   |             | Kemet               | C0603C106M9PACTU   |
| C30,C42                       | 2        | C0600046022      | CAP SMD 1206 X5R 22UF 6.3V  | 22u   |             | AVX                 | 12066D226KAT2A     |
| C19                           | 1        | C0600057022      | CAP SMD 0805 X5R 2.2UF 10V  | 2.2u  |             | Murata              | GRM188R61A225ME34D |
| C16                           | 1        | C0700037047      | CAP SMD 0805 Y5V 4.7UF 10V  | 4.7u  |             | Kemet               | C0805C475Z8VACTU   |
| C20                           | 1        | C080001A033      | CAP SMD 0603 COG 3300PF 50V 5%  | 3300p |             | TDK                 | C1608C0G1H33J2     |
| C21,C22                       | 2        | C080001C022      | CAP SMD 0603 NPO 22PF 50V   | 22p   | NM          | Kemet               | C0603C22015GACTU   |
| C34,C35                       | 2        | C080001C220      | CAP SMD 0603 COG 220PF 50V  | 220p  |             | Murata              | GRM1885C1H221FA01D |
| C27                           | 1        | C080011C010      | CAP SMD 0603 COG 10PF 50V ±5%   | 10p   |             | Murata              | GCM1885C1H1001A16D |
| C40                           | 1        | C080011C010      | CAP SMD 0603 COG 10PF 50V ±5%   | 10p   | NM          | Murata              | GCM1885C1H1001A16D |
| C1,C2                         | 2        | C0900010050      | Supercapacitor, LOW ESR 30F 2.7V, TECATE TPL-50/18X40F                        | 50    |             | TECATE              | TPL_50/18X40F      |
| Q11,Q2                        | 2        | D0100006001      | NPN Transistor Bipolar SMD case SOT23   |       |             | Philips             | BC847              |
| Q10                           | 1        | D0200003001      | PNP TRANSISTOR BIPOLAR SMD CASE SOT23   |       |             | PHILIPS             | BC857              |
| D5                            | 1        | D03000014001     | Dual Switching diode 0.15 A / 60 V, Case SOT23 BAV99                          |       |             | Philips             | BAV99              |
| D3                            | 1        | D0400034001      | Silicon Schottky Diode 100mA, Case SC88D 40V                                  |       |             | Infineon            | BAT64-02W          |
| D6                            | 1        | D0400042001      | SMD Schottky Diode 1A, 20V  |       |             | Diode Incorporated  | DFL5120L-7         |
| Q14                           | 1        | D05000016001     | P-channel enhancement mode MOS transistor, -12V, -0.75A, SOT23                |       |             | Philips             | B5H205             |
| Q8,Q9,Q11                     | 3        | D05000017001     | P-channel enhancement mode MOS transistor, -12V, -1.52A, SOT457               |       |             | Philips             | B5H207             |
| Q15                           | 1        | D0500022001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V -4.6A, 70MOHM SOT26           |       |             | DIODES INCORPORATED | DMP2066LDM         |
| Q3,Q4,Q6,Q7,Q12,Q13           | 6        | D0600016001      | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                  |       |             | Philips             | B5H105             |
| Q5                            | 1        | D0600016001      | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                  |       |             | Philips             | B5H105             |
| D4                            | 1        | D07000087001     | HIGH POWER INFRARED EMITTER DIODE   |       |             | OSRAM               | SFH4250            |
| F1,F2,F3,F4,F5                | 5        | D1100025001      | Film Fuse SMD - LITTELFUSE 0466.200 (1206)                                    |       |             | Littelfuse          | 0466.200MR         |
| PTC1                          | 1        | D1200040001      | Polyswitch Resettable Device SMD 1206 - 0.8W - 0.12 / 0.65hm IH=0.2A IT=0.42A |       |             | Tyco Electronics    | NanoSMDCO20F       |
| D1                            | 1        | D1300007001      | Low Capacitance Diode Array - case SOT23-6L (SC74)                            |       |             | ST Microelectronics | DALC2085C6         |
| U15                           | 1        | D1500005001      | QUAD TRANSIL ARRAY FOR ESD PROTECTION Case SOT23-6L                           |       |             | ST Microelectronics | ESDAGV15C6         |
| D7                            | 1        | D1500007001      | ESD suppressor, high speed 50F, trigger 300V, clamping 35V Case MLP0402       |       |             | Cooper Bussmann     | 0402ESDA-MLP8      |
| PHT1                          | 1        | D1900005001      | NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA                           |       |             | OSRAM               | SFH320FA           |
| U3                            | 1        | H1200007001      | MD DUAL INVERTING SCHMITT TRIGG. SV TOLLERANT INPUT-CASE SOT363               |       |             | NXP SEMICONDUCTOR   | 74HC2G14           |
| L1                            | 1        | I0100029220      | SMD INDUCTOR - COILCRAFT 200nH DCR=24MA IRMS=2,2A                             |       |             | Coilcraft           | XPL2010-201ML      |
| L2                            | 1        | I0100046001      | POWER INDUCTOR 1uH 20% 5.1A   | 1uH   |             | COILCRAFT           | XFL4020-102ME      |
| L3                            | 1        | I0100047047      | POWER INDUCTOR 4.7uH 20% 1.2A   | 4.7uH |             | COILCRAFT           | XFL3012-472ME      |
| L10                           | 1        | I0100012015      | 1.5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR         |       |             | TOREX               | XC6118C15BMR-G     |
| U9                            | 1        | I0100021012      | 1.2V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR         |       |             | TOREX               | XC6118C12BMR-G     |
| U14                           | 1        | I0100200005      | Texas Back Boost Charge Pump Thin SOT-23-6 60mA 5V                            |       |             | Texas Instruments   | REG710NA-5         |
| R39,R41,R42,R43,R81           | 5        | R0100010000      | RESISTOR SMD 0603 - 0.06W 5% 0  | 0     |             | VISHAY              | CRCW06030000Z      |
| R40,R82,R89,R94,R95           | 5        | R0100010000      | RESISTOR SMD 0603 - 0.06W 5% 0  | 0     | NM          | VISHAY              | CRCW06030000Z      |



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| Reference   | Quantity | Part_Number_MRD | Description   | Value | Not Mounted | Manufacturer       | Manufacturer P/N    |
|---|----------|-----------------|---|-------|-------------|--------------------|---------------------|
| R75   | 1        | R010001H027     | RESISTOR SMD 0603 - 0,06W 1% 2,7K                         | 2,7K  |             | Vishay             | CRCW06032K70F       |
| R73   | 1        | R010001H047     | RESISTOR SMD 0603 - 0,06W 1% 2,7K                         | 4,7K  |             | VISHAY             | CRCW06034K70F       |
| R69   | 1        | R010001H082     | RESISTOR SMD 0603 - 0,06W 5% 8,2K                         | 8,2K  |             | Vishay             | CRCW06038K20J       |
| R84   | 1        | R010001K002     | RESISTOR SMD 0603 - 0,06W 1% 2K                           | 2K    |             | Vishay             | CRCW06032K00F       |
| R33,R36,R37   | 3        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K                          | 10K   |             | VISHAY             | CRCW060310K0F       |
| R51   | 1        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K                          | 10K   |             | Vishay             | CRCW060310K0F       |
| R53   | 1        | R010001K033     | RESISTOR SMD 0603 - 0,06W 1% 33K                          | 33K   |             | KOA                | RK73HJTTD3302F      |
| R93   | 1        | R010001K100     | RESISTOR SMD 0603 - 0,06W 1% 100K                         | 100K  |             | Vishay             | CRCW0603100K0F      |
| R79   | 1        | R010001K100     | RESISTOR SMD 0603 - 0,06W 1% 100K                         | 100K  | NM          | Vishay             | CRCW0603100K0F      |
| R97   | 1        | R010002K470     | RESISTOR SMD 0603 - 0,06W 1% 470K                         | 470K  |             | Vishay             | CRCW0603470K0F      |
| R71   | 1        | R010002K470     | RESISTOR SMD 0603 - 0,06W 1% 470K                         | 470K  | NM          | Vishay             | CRCW0603470K0F      |
| R56   | 1        | R010001K300     | RESISTOR SMD 0603 - 0,06W 1% 300K                         | 300K  |             | Vishay             | CRCW0603300K0F      |
| R55   | 1        | R010001M604     | RESISTOR SMD 0603 - 0,06W 1% 604K                         | 604K  |             | Vishay             | CRCW0603604K0F      |
| R57   | 1        | R010001K909     | RESISTOR SMD 0603 - 0,06W 1% 909K                         | 909K  |             | Vishay             | CRCW0603909K0F      |
| R16   | 1        | R010001M001     | RESISTOR SMD 0603 - 0,06W 1% 1M                           | 1M    |             | Vishay             | CRCW06031M00F       |
| R7  | 1        | R010001M001     | RESISTOR SMD 0603 - 0,06W 1% 1M                           | 1M    | NM          | Vishay             | CRCW06031M00F       |
| R6,R8,R10,R11,R12,R13,R14,R15,R17,R18,<br>R19,R20,R48,R49,R83,R86,R92,R96 | 18       | R010001M002     | RESISTOR SMD 0603 - 0,06W 1% 2M                           | 2M    |             | Vishay             | CRCW06032M00F       |
| R31,R32,R91   | 3        | R010001M002     | RESISTOR SMD 0603 - 0,06W 1% 2M                           | 2M    | NM          | Vishay             | CRCW06032M00F       |
| R9,R22,R23,R24,R25,R26,R27,R28,R29,R3<br>0,R38,R46,R50,R90,R99            | 15       | R0100020432     | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA          | 432   |             | Vishay             | CRCW0603432RFKEA    |
| R85   | 1        | R0100020432     | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA          | 432   | NM          | Vishay             | CRCW0603432RFKEA    |
| R1,R2   | 2        | R010002H013     | RESISTOR SMD 0603 - 0,06W 1% 1,3K                         | 1,3K  |             | VISHAY             | CRCW06031K30FKEA    |
| R21   | 1        | R010002K010     | RESISTOR SMD 0603 - 0,06W 5% 10K                          | 10K   |             | VISHAY             | CRCW060310K0J       |
| R68   | 1        | R010002K022     | RESISTOR SMD 0603 - 0,06W 1% 22K                          | 22K   |             | VISHAY             | CRCW060322K0F       |
| R76   | 1        | R010002K047     | RESISTOR SMD 0603 - 0,06W 1% 47K                          | 47K   |             | Vishay             | CRCW060347K0F       |
| R47   | 1        | R010002K330     | RESISTOR SMD 0603 - 0,06W 1% 330K                         | 330K  |             | Vishay             | CRCW0603330K0FKEA   |
| R54   | 1        | R010002K680     | RESISTOR SMD 0603 - 0,06W 1% 680K                         | 680K  |             | Vishay             | CRCW0603680K0F      |
| R78   | 1        | R010002K820     | RESISTOR SMD 0603 - 0,06W 1% 820K                         | 820K  |             | Vishay             | CRCW0603820K0FKEB   |
| R4  | 1        | R0300001000     | RESISTOR SMD 1206 - 0,25W - 5 % 0                         | 0     |             | Vishay             | CRCW120600R0J       |
| R77   | 1        | R0300010001     | RESISTOR SMD 1206 - 0,25W 1% 1                            | 1     |             | KOA                | RK73H2BTTD1000F     |
| R65,R66,R67   | 3        | R0300010033     | RESISTOR SMD 1206 - 0,25W - 2 % 33                        | 33    |             | Vishay             | CRCW120622R0F       |
| R62,R63   | 2        | R0300010270     | RESISTOR SMD 1206 - 0,25W - 5 % 270                       | 270   |             | Vishay             | CRCW1206270R0J      |
| R3,R5,R98   | 3        | R0300012348     | RESISTOR SMD 1206 - 0,5W 1% 3,48                          | 3,48  |             | Vishay             | CRCW1206348R0FNEAHP |
| R64   | 1        | R030001H012     | RESISTOR SMD 1206 - 0,25W 1% 1,2K CRCW12061R2KFN          | 1,2K  |             | Vishay             | CRCW12061R2KFN      |
| R61   | 1        | R030001K001     | RESISTOR SMD 1206 - 0,25W 1% 1K                           | 1K    |             | Vishay             | CRCW12061K00FKEA    |
| R70   | 1        | R030001K120     | RESISTOR SMD 1206 - 0,25W - 2 % 120K                      | 120K  |             | Vishay             | CRCW1206120K0F      |
| R72   | 1        | R030001K300     | RESISTOR SMD 1206 - 0,25W - 1 % 300K                      | 300K  |             | Vishay             | CRCW1206330K0F      |
| R58   | 1        | R0300020180     | RESISTOR SMD 1206 - 0,25W - 1 % 180 CRCW1206180RFN        | 180   |             | Vishay             | CRCW1206180RFN      |
| R74   | 1        | R030002H027     | RESISTOR SMD 1206 - 0,25W 1% 2,7K                         | 2,7K  |             | Vishay             | CRCW12062K70F       |
| R59,R60   | 2        | R030002H047     | RESISTOR SMD 1206 - 0,25W 1% 4,7K                         | 4,7K  |             | Vishay             | CRCW12064K70F       |
| R34,R35   | 2        | R030002K010     | RESISTOR SMD 1206 - 0,33W - 1 % 10K                       | 10K   |             | KOA                | SG7352BTTD1002F     |
| R44,R45   | 2        | R0600020010     | RESISTOR SMD 2010 1W 1% 10                                | 10    |             | Vishay             | CRCW201010R0FNEAHP  |
| J4  | 1        | U0100070001     | 16 BIT SECURITY CONTROLLER OPTIMIZED FOR M2M APPLICATIONS |       | NM          | INFINEON           | SLM76CF5120P        |
| J8  | 1        | U0100073001     | WIRELESS STANDARD MODEM WAVECOM WISMO228                  |       |             | WAVECOM            | WISMO228_OCG16R04F  |
| J1  | 1        | U0900014001     | 3-17V 3A STEP-DOWN CONVERTER                              |       |             | TEXAS INSTRUMENTS  | TPS52130            |
| J5  | 1        | U0900015001     | STEP-UP WITH ADJUSTABLE CONSTANTE CURRENT                 |       |             | TEXAS INSTRUMENTS  | TPS51251            |
| J12   | 1        | U1000013001     | Nanopower Push-Pull output comparators, SOT23-5           |       |             | TEXAS INSTRUMENTS  | TLU37011DBVT        |
| P1  | 1        | Y0800046001     | BUTTON MINIATURE; SMD; 6X6 ITT-CANNON COD. KSC351J        |       |             | ITT CANNON         | KSC351J             |
| DIS1  | 1        | Y1500024001     | I2C DISPLAY   |       |             | VARITRONIX LIMITED | COG-VLT1540A-01     |
| J2  | 1        | Z0300006028     | 28 Pin Female SMT_DIL 2.5mm pass_Through                  |       |             | SAMTEC             | SSM-114-F-DV-BE-A   |
| P1  | 1        | Z0300029006     | PLUG IN SIM CARD CONNECTOR                                |       |             | JAE                | SF9W00654A9         |

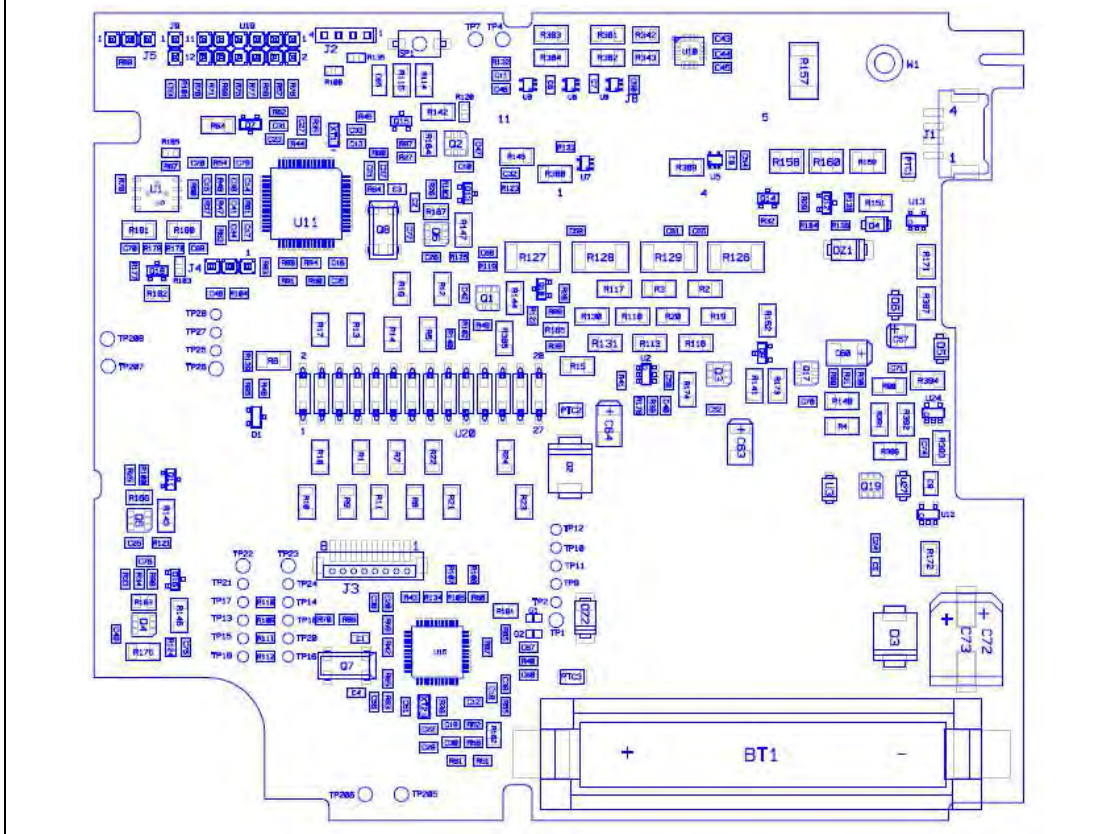
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## 8. PCB LAYOUT

### 8.1. CPU Board layout

Figure 5.1 – CPU board layout



## 8.2. GPRS Board layout

Figure 5.2 – GPRS board layout: bottom view

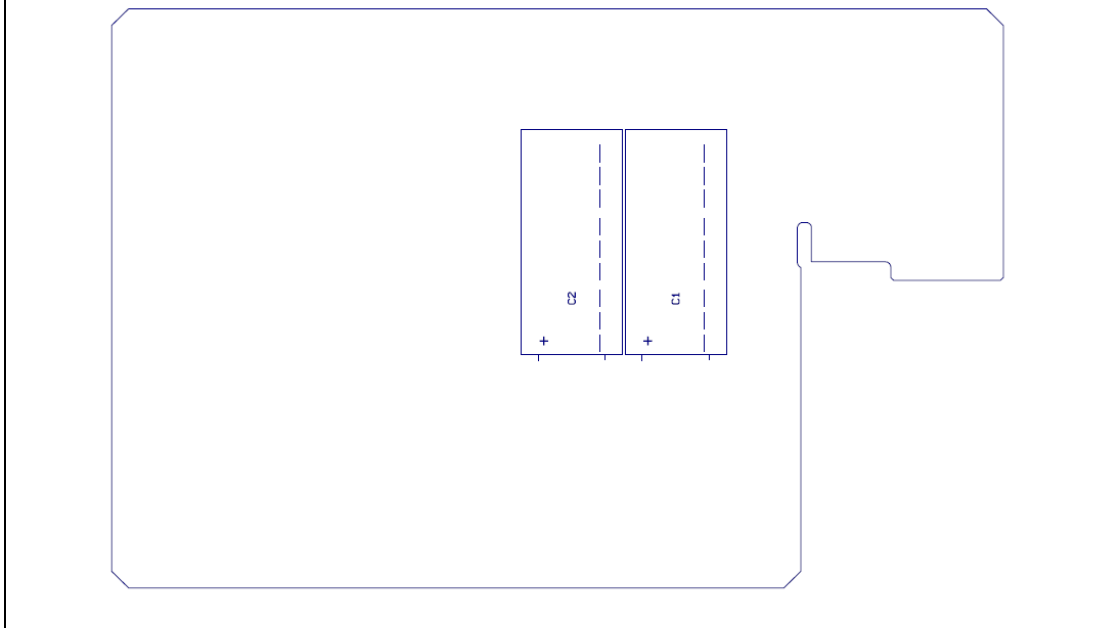
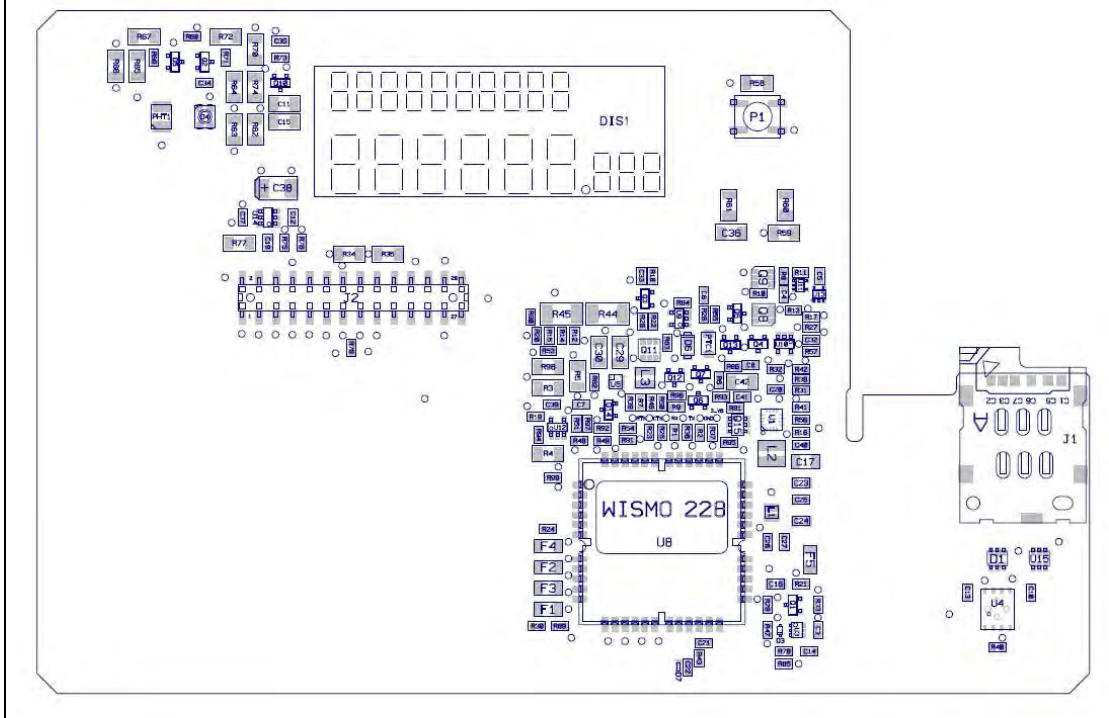




Figure 5.3 – GPRS board layout: top view





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### 9. MARKINGS

The figure 7.1 shows the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 2 different versions of the meters

Figure 7.1 – Labelling of G16 GPRS meter

**MeterSit**  
Viale dell'Industria 31, 35129 Padova

**Mod G16 GPRS**

**Lot 00000000**  
year 20XX  
Made in Italy

**CE 1131**  
CEC 12 ATEX 019-rev.1  
CE M 0122

**T10362**

**DATA MATRIX CODE AREA**

- YEAR OF CONSTRUCTION - 4 digits
- PRODUCTION LOT - 7 digits from 1 to 9999999
- PROGRESSIVE NUMBER - 4 digits from 1 to 9999
- METER MODEL - G16
- TYPE OF TRANSMISSION - GPRS

201200000010001616GPRS

**TOLLERANZE UNI-ISO 2768 CLASSE m K**

| PER DIMENSIONI LINEARI ESCLUSI SMICCI/RACCORDI | CLASSE | h6 | h7 | h8 | h9 | h10 | h11 | h12 | h13 | h14 | h15 | h16 | h17 | h18 | h19 | h20 |
|--|--------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ES   | F      | M  | C  | H  | K  | M   | N   | P   | R   | S   | T   | V   | X   | Y   | Z   |     |

**MODIFICHE**

| MODIF. C | DESCRIZIONE                                      | IND. RIF. | DEFINITIVO | DATA NOME |
|----------|--|-----------|------------|-----------|
| 0        | Modificato parametro ambiente da -10 a +10°C     |           |            |           |
| 1        | Modificato parametro ambiente da 0,10 a 0,15 bar |           |            |           |
| 2        | Modificato parametro ambiente da 0,15 a 0,20 bar |           |            |           |
| 3        | Modificato parametro ambiente da 0,20 a 0,25 bar |           |            |           |
| 4        | Modificato parametro ambiente da 0,25 a 0,30 bar |           |            |           |
| 5        | Modificato parametro ambiente da 0,30 a 0,35 bar |           |            |           |
| 6        | Modificato parametro ambiente da 0,35 a 0,40 bar |           |            |           |
| 7        | Modificato parametro ambiente da 0,40 a 0,45 bar |           |            |           |
| 8        | Modificato parametro ambiente da 0,45 a 0,50 bar |           |            |           |
| 9        | Modificato parametro ambiente da 0,50 a 0,55 bar |           |            |           |
| 10       | Modificato parametro ambiente da 0,55 a 0,60 bar |           |            |           |
| 11       | Modificato parametro ambiente da 0,60 a 0,65 bar |           |            |           |
| 12       | Modificato parametro ambiente da 0,65 a 0,70 bar |           |            |           |
| 13       | Modificato parametro ambiente da 0,70 a 0,75 bar |           |            |           |
| 14       | Modificato parametro ambiente da 0,75 a 0,80 bar |           |            |           |
| 15       | Modificato parametro ambiente da 0,80 a 0,85 bar |           |            |           |
| 16       | Modificato parametro ambiente da 0,85 a 0,90 bar |           |            |           |
| 17       | Modificato parametro ambiente da 0,90 a 0,95 bar |           |            |           |
| 18       | Modificato parametro ambiente da 0,95 a 1,00 bar |           |            |           |
| 19       | Modificato parametro ambiente da 1,00 a 1,05 bar |           |            |           |
| 20       | Modificato parametro ambiente da 1,05 a 1,10 bar |           |            |           |

**MRAD INSTITUTE**  
marking development

**NAME PLATE**  
GAS METER G16 GPRS REL. 2

7252891

**MODIFICATION**

| Rev. | Mod.N° | Date     | Description                     | Name |
|------|--------|----------|---------------------------------|------|
| 02   | 14587  | 15/02/13 | Modificato dati tecnici tabella |      |
| 01   | 14525  | 26/01/12 | Divise dati letteratura         |      |

SCALE 1:1





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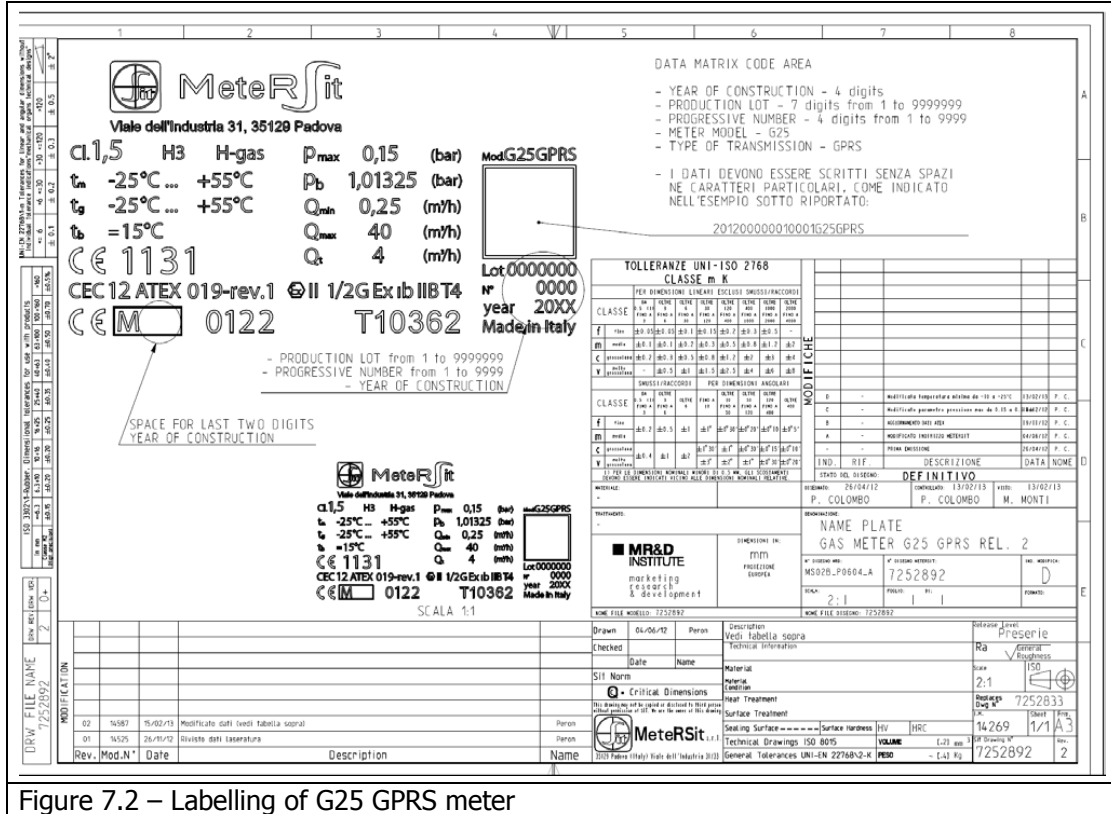


Figure 7.2 – Labelling of G25 GPRS meter

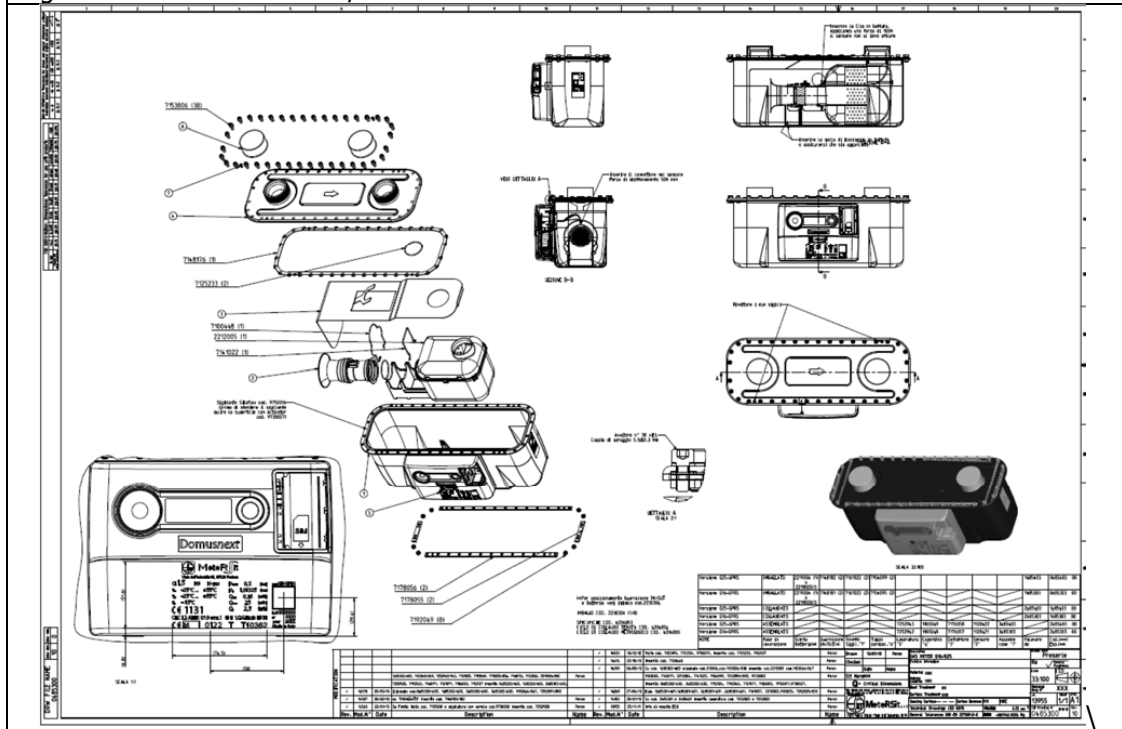


### 3. MECHANICAL SPECIFICATIONS

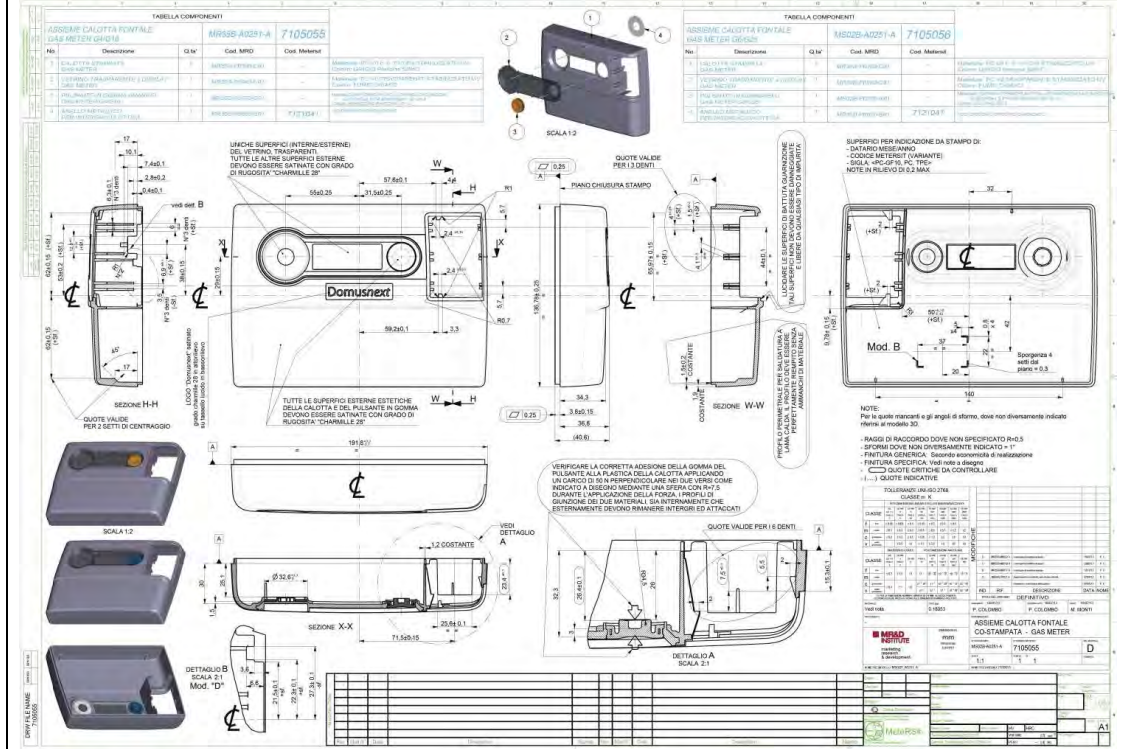
Table 6 – Mechanical Specifications

| Characteristic                             | u.m. | Class G10         | Class G16         | Class G25         |
|--|------|-------------------|-------------------|-------------------|
| Connection centrelines                     | [mm] | 280               | 280               | 335               |
| Max dimensions<br>(Width x Height x Depth) | [mm] | 436 x 189 x 187,4 | 436 x 189 x 187,4 | 436 x 189 x 187,4 |
| Connection diameter                        | "    | G 2 ISO 228/1     | G 2 ISO 228/1     | G 2 1/2 ISO 228/1 |
| Resistance to torque                       | [Nm] | 170               | 170               | 170               |
| Resistance to bending                      | [Nm] | 60                | 60                | 60                |
| Weight                                     | [Kg] | 5.7               | 5.7               | 5.7               |

Figure 3.1a – VIEW OF G10/G25 STRUCTURE



### FIGURE 3.4 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE







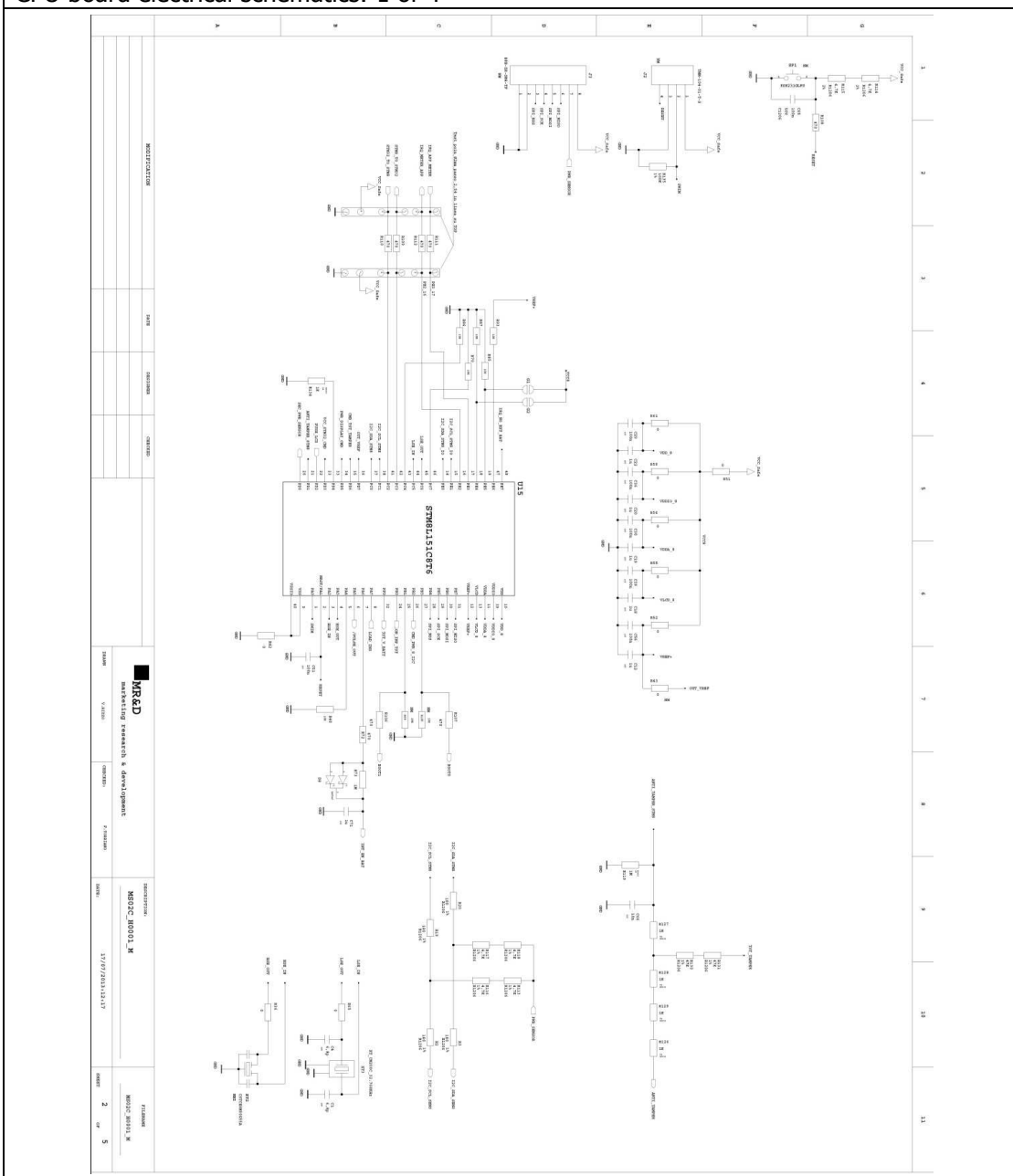
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## 6. ELECTRICAL SCHEMATICS 6.1. CPU Board Electrical Schematics

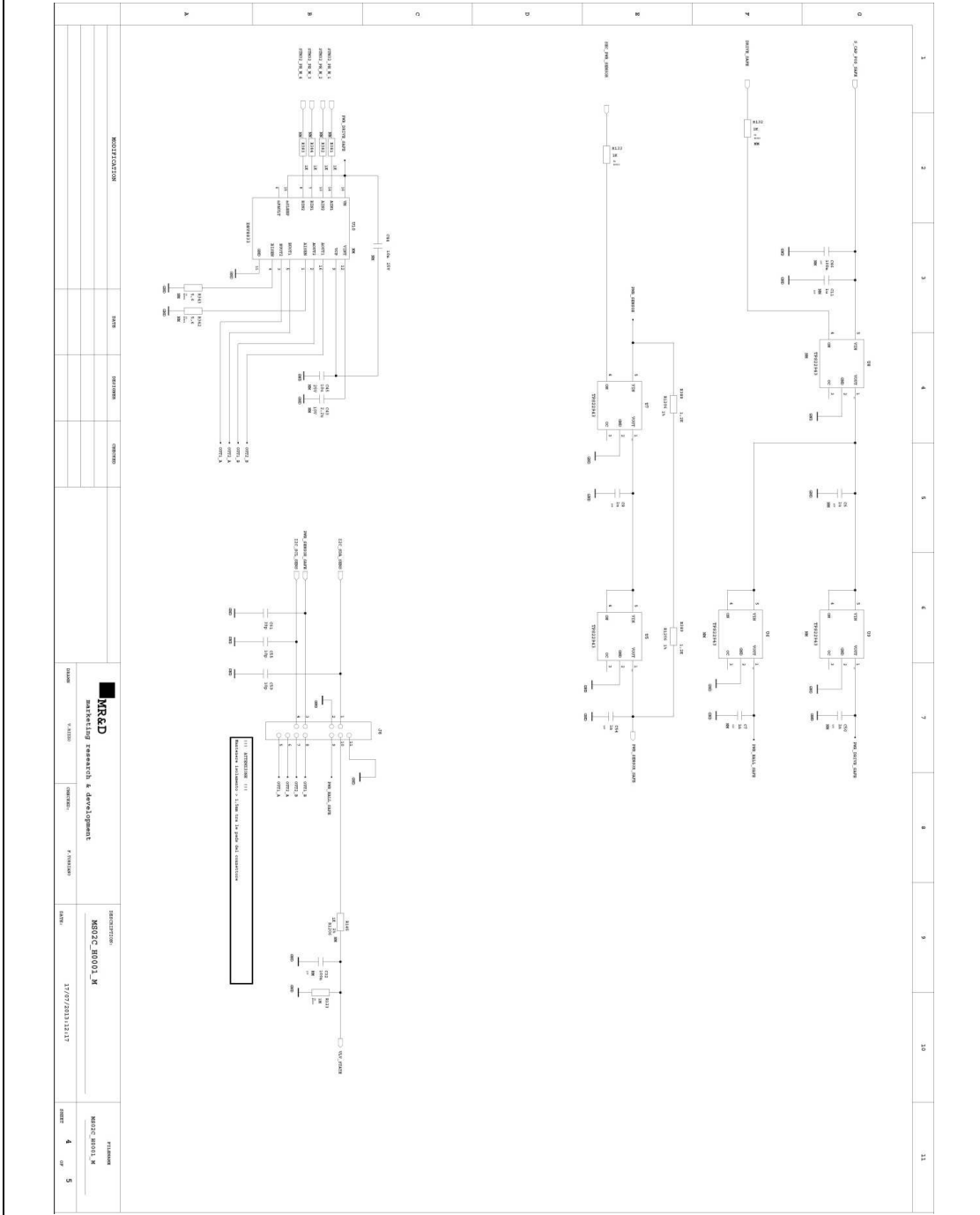
CPU board electrical schematics: 1 of 4







## CPU board electrical schematics: 3 of 4



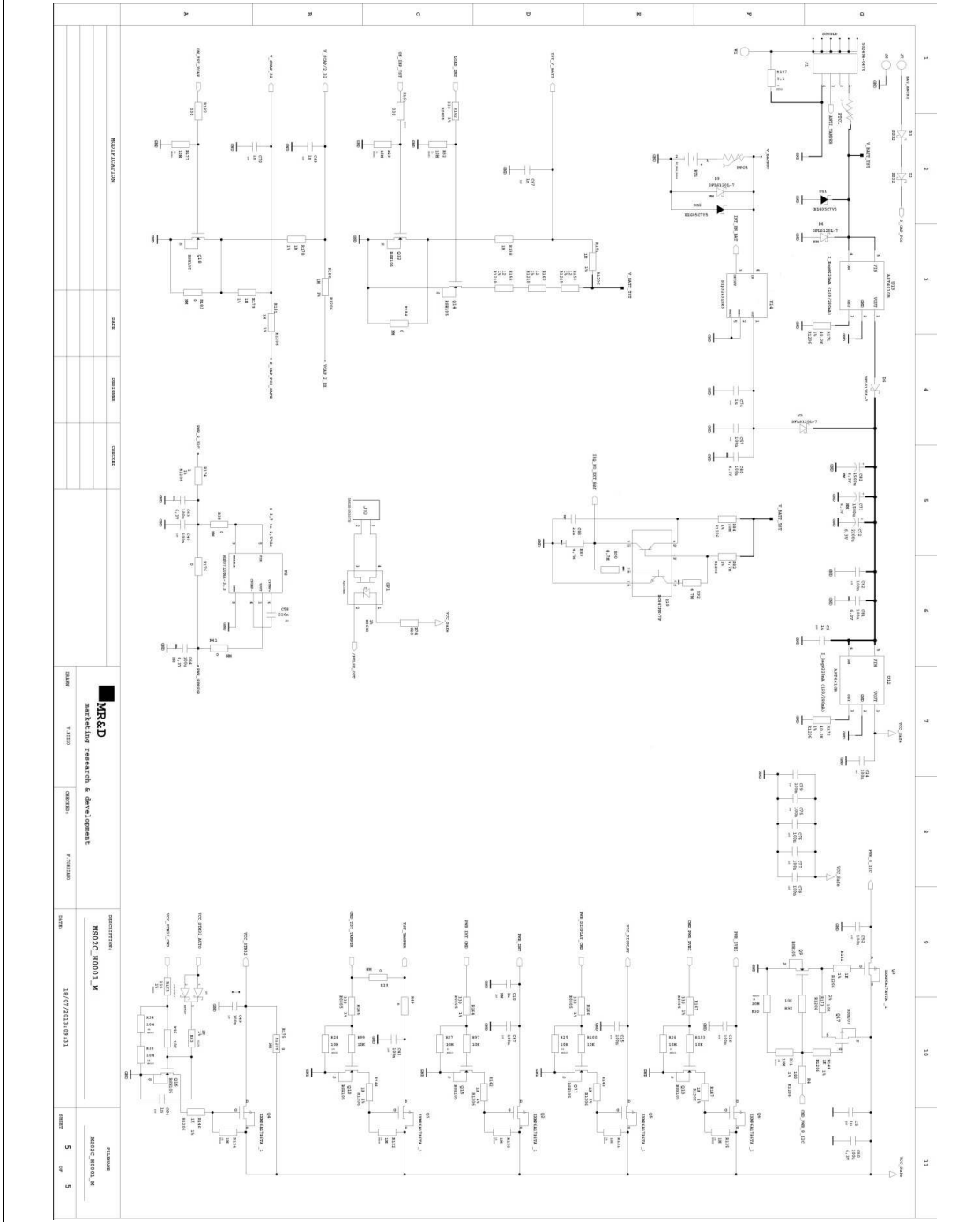


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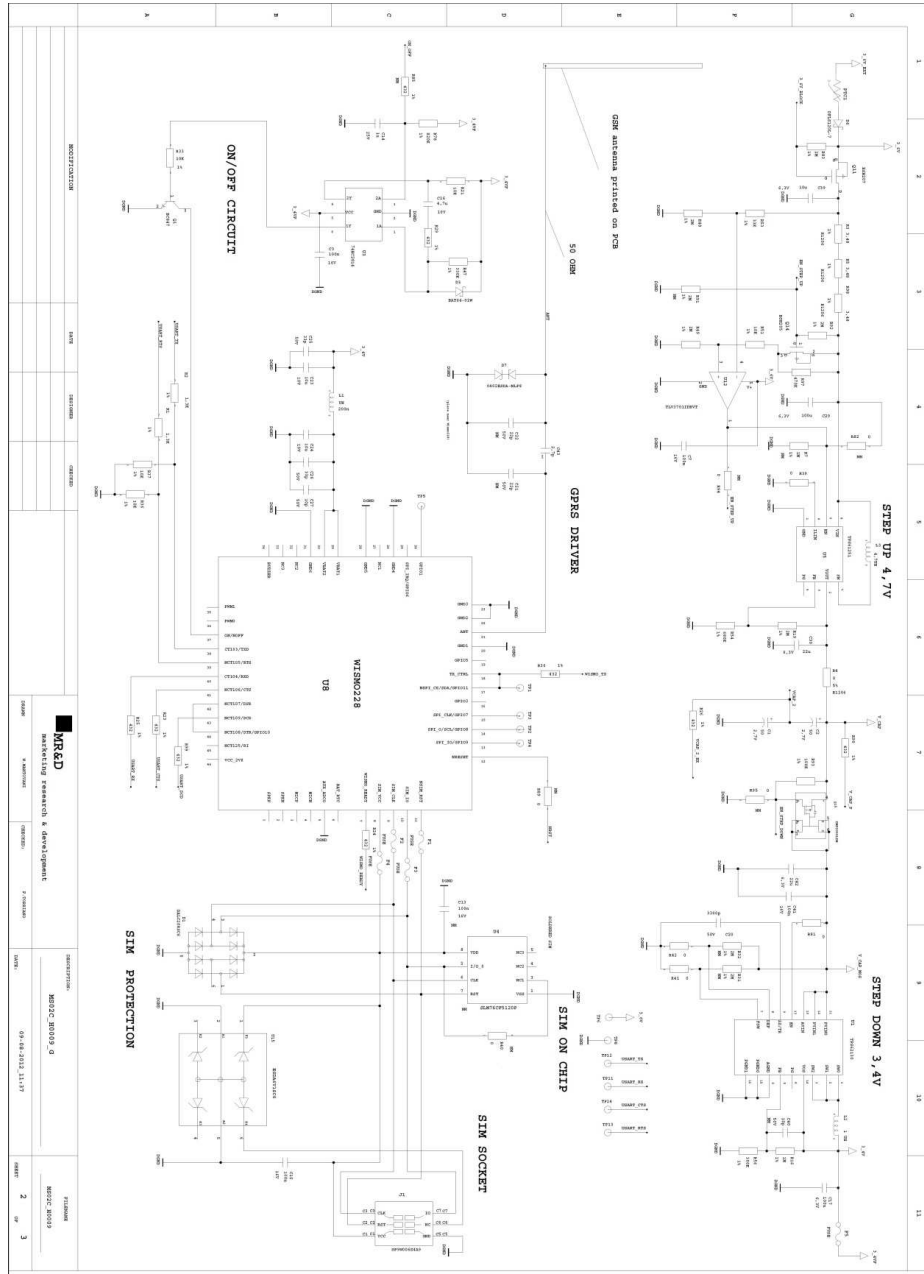
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## CPU board electrical schematics: 4 of 4

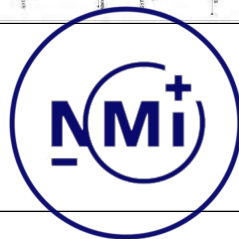
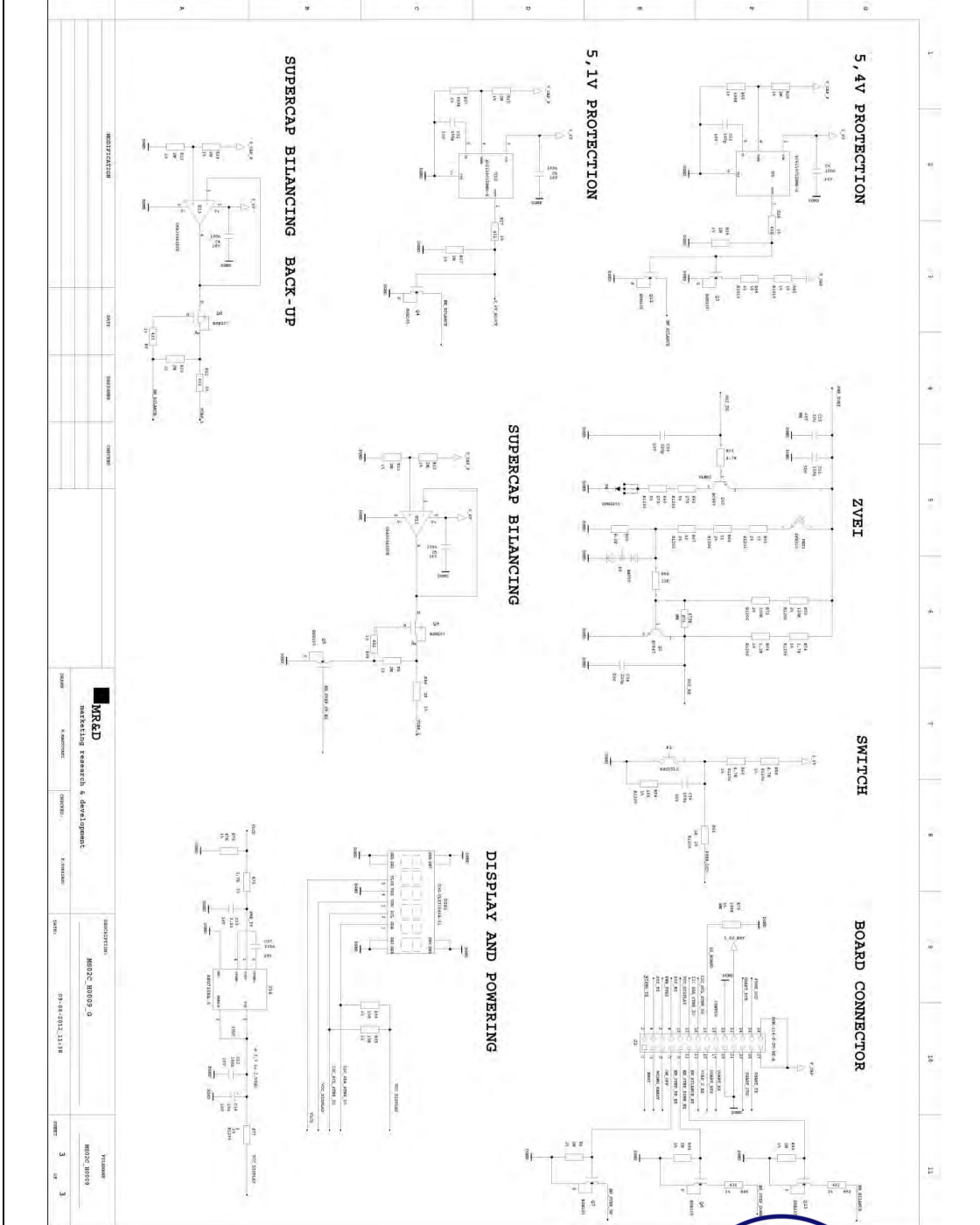


## 6.2. GPRS board electrical schematics

GPRS board electrical schematics: 1 of 2



## GPRS board electrical schematics: 2 of 2



## 7. PART LIST

The gas meter includes the following main components:

**Table 8 – Main components**

| Component                   | Manufacturer       | Reference                               |
|-----------------------------|--------------------|---|
| <b>Removable Battery</b>    | ---                | Lithium Thyonil Chloride Size D 19 Ah   |
| <b>Back-up Battery</b>      |                    | Lithium Thyonil Chloride Size AA 2,2 Ah |
| <b>Electronic CPU Board</b> | MR&D Institute Spa | See paragraph 6.1                       |
| <b>GPRS RF Modem</b>        | MR&D Institute Spa | See paragraph 6.2                       |
| <b>Display</b>              | Varitronix         | See Figure 9.1                          |
| <b>Gas Sensor</b>           | Sensirion          | See Figure 3.2                          |
| <b>Metallic Gas Chamber</b> | SIT La Precisa Spa | See paragraph 3.1                       |
| <b>Plastic Case</b>         | MR&D Institute Spa | See Figure 3.4                          |

In the following paragraphs the part lists relative to the electronic boards are described in detail.





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### 7.1. CPU board part list

Here below the CPU Board part list follows:

#### CPU board part list: 1 of 4

| Reference   | Quantity | Part_Number_MRD  | Description  | Value | Not Mounted | Manufacturer    | Manufacturer PIN       |
|---|----------|------------------|--|-------|-------------|-----------------|------------------------|
| CS  | 1        | MS02CS0001M_1329 | CS Scheda Contatore Gas G16/G25 (ATEX)                         |       |             | MRD             | MS02CS0001M_1329       |
| BT1   | 1        | ACC00343001      | Batt Holder 68x15mm h:15mm SMD                                 |       |             | KEYSTONE ELECT. | 1024                   |
| C1,C4   | 2        | C050011D068      | CAP SMD 0603 COG 6,8PF 25V                                     | 6,8p  |             | AVX             | 06033A680KAT2A         |
| C2,C3   | 2        | C050011D068      | CAP SMD 0603 COG 6,8PF 25V                                     | 6,8p  | NM          | AVX             | 06033A680KAT2A         |
| C5,C8,C12-C14,C16-C23,C71,C74                       | 15       | C0500016001      | CAP SMD 0603 X5R 1UF 25V                                       | 1u    |             | Kemet           | C0603C105K3PACTU       |
| C6,C10,C11,C15                                      | 4        | C0500016001      | CAP SMD 0603 X5R 1UF 25V                                       | 1u    | NM          | Kemet           | C0603C105K3PACTU       |
| C7,C50  | 2        | C0500219001      | CAP SMD 0603 X7R 1NF 50V                                       | 1n    | NM          | Murata          | GCM188R71H102KA37D     |
| C9  | 1        | C0500336001      | CAP SMD 0905 X7R 1UF 50V                                       | 1u    |             | Kemet           | C0805C105K4RAC7800     |
| C24-C31,C33-C42,C47-C49,C51,C52,C56,C57,C62,C75-C79 | 31       | C0500259100      | CAP SMD 0603 X7R 100NF 16V                                     | 100n  |             | Kemet           | C0603C104K5RAC7013     |
| C32,C46,C53   | 3        | C0500259100      | CAP SMD 0603 X7R 100NF 16V                                     | 100n  | NM          | Kemet           | C0603C104K5RAC7013     |
| C43   | 1        | C0600057022      | CAP SMD 0805 X5R 2,2UF 10V                                     | 2,2u  | NM          | Murata          | GRM188R61A225ME34D     |
| C44   | 1        | C0500419010      | CAP SMD 0603 X7R 10NF 25V                                      | 10n   | NM          | Kemet           | C0603C103J3RACTU       |
| C45   | 1        | C0600066010      | CAP SMD 0603 X5R 10UF 25V                                      | 10u   | NM          | MURATA          | GRM188R61E106MA73L     |
| C54,C67,C69,C70,C84                                 | 5        | C0500219001      | CAP SMD 0603 X7R 1NF 50V                                       | 1n    |             | Murata          | GCM188R71H102KA37D     |
| C55,C59   | 2        | C080021C010      | CAP SMD 0603 COG 10PF 25V 5%                                   | 10p   |             | Kemet           | C0603C100K3GACTU       |
| C58   | 1        | C0500219220      | CAP SMD 0603 X7R 220NF 25V                                     | 220n  |             | Kemet           | C0603C224K3RACTU       |
| C60,C63,C80,C81                                     | 4        | C0500016100      | CAP SMD 1206 X5R 100UF 6,3V                                    | 100u  |             | MURATA          | GRM31CR60J107ME39L     |
| C61   | 1        | C080001C039      | CAP SMD 0603 COG 39PF 50V                                      | 39p   |             | Kemet           | C0603C390F5GACTU       |
| C64   | 1        | C0500016100      | CAP SMD 1206 X5R 100UF 6,3V                                    | 100u  | NM          | MURATA          | GRM31CR60J107ME39L     |
| C65   | 1        | C0500059100      | CAP SMD 1206 X7R 100NF 50V                                     | 100n  |             | Kemet           | C1206C104K5RAC7025     |
| C66   | 1        | C0500019010      | CAP SMD 0603 X7R 10NF 50V                                      | 10n   |             | Murata          | GRM188R71H103KA01J     |
| C72   | 1        | C0200045022      | SMD Chip Alum. Electr. Capacitor Dia 12,5 mm                   | 2200u |             | NIC COMP        | NATT22M6.3V12.5X14 KLF |
| C73,C82   | 2        | C0200015150      | ALUM.RAD. ELE. SMT PANASONIC SERIES FK 1500UF 6,3V 20% 10X10.2 | 1500u | NM          | Panasonic       | EEEFK0J152P            |
| C83   | 1        | C0500036022      | CAP SMD 0805 X5R 22UF 6,3V MURATA Code GRM21BR60J226ME39L      | 22u   |             | Murata          | GRM21BR60J226ME39L     |

#### CPU board part list: 2 of 4

| Reference                                 | Quantity | Part_Number_MRD | Description  | Value | Not Mounted | Manufacturer          | Manufacturer PIN        |
|---|----------|-----------------|--|-------|-------------|-----------------------|-------------------------|
| D2,D3                                     | 2        | D0400028001     | Schottky SMD Case DO-214AB 20V 3A  |       |             | General Semiconductor | SS32                    |
| D4,D9                                     | 2        | D0400042001     | SMD_Schottky_Diode_1A_20V  |       | NM          | Diode Incorporated    | DFLS120L-7              |
| D5,D6                                     | 2        | D0400042001     | SMD_Schottky_Diode_1A_20V  |       |             | Diode Incorporated    | DFLS120L-7              |
| D7,D8                                     | 2        | D0400019001     | Dual Schottky Diode, Common Kathode 250mA, SOT23 BAT54C                                    |       |             | Philips               | BAT54C                  |
| D21,D22                                   | 2        | D08000080001    | SMD zener diode Case DO-214 1,25W Vishay 7,5V BZG05C8V2                                    |       |             | Vishay                | BZG05C8V5               |
| J1  | 1        | Z03000050004    | 2mm WIRE TO BOARD PCB RECEPTACLE, SINGLE ROW, RIGHT ANGLE, 4 CIRCUIT                       |       |             | MOLEX                 | 502494-0470             |
| J2  | 1        | Z03000045004    | 4 pins Strip vertical pitch 2mm  |       | NM          | SAMTEC                | TMM-104-01-T-S          |
| J3  | 1        | Z0300017008     | 8 Pins p=1,5 mm - Top Entry Wire to Board Insulation Displacement Connector                |       | NM          | JST                   | B8B-ZR-SM4-TF (LF) (SN) |
| J4,J5                                     | 2        | Z03000041003    | SINGLE ROW STRAIGHT PITCH X 3 2,54 mm SAMTEC   |       | NM          | SAMTEC                | TSW-103-07-G-S          |
| J9  | 1        | Z0300038002     | SINGLE ROW STRAIGHT PITCH X 2 2,54 mm SAMTEC   |       |             | SAMTEC                | TSW-102-07-G-S          |
| J10                                       | 1        | Z0300064002     | TSW-102-07-G-S   |       |             | JST                   | SM02B-SR5S-TB           |
| J11                                       | 1        | Z0300013012     | JST SR SMD Connector, passo 1mm 50V, 700mA. DOUBLE ROW STRAIGHT PITCH 2 X 6 2,54 mm SAMTEC |       | NM          | SAMTEC                | TSW-106-07-G-D          |
| J12                                       | 1        | Z0300005028     | 28 Pin male SMT DIL 2,54mm Board Stackers 19,5 Stackers Height                             |       |             | SAMTEC                | HW-14-20-F-D-767-SM-LC  |
| OP1                                       | 1        | U2200018001     | SMD PhotoMOS Re laywith reinforced insulation  |       |             | Panasonic             | AGY210EHA               |
| PTC1-PTC3                                 | 3        | D1200031001     | Polyswitch Resettable Device SMD 1206 - 0,8W - 0,2 / 0,8Ohm IH=0,5A IT=1,10A               |       |             | Tyco Electronics      | NanoSMDC050F            |
| Q1-Q6                                     | 6        | D0500019001     | P-channel enhancement mode MOS transistor, -60V, -3A, SOT457                               |       |             | Zetex                 | ZXMP6A17E6TA            |
| Q9-Q16,Q18                                | 9        | D0600016001     | N-channel enhancement mode MOS transistor, 20V, 1,05A, SOT23                               |       |             | Philips               | BSH105                  |
| Q17                                       | 1        | D0500017001     | P-channel enhancement mode MOS transistor, -12V, -1,52A, SOT457                            |       |             | Philips               | BSH207                  |
| Q19                                       | 1        | D0100045001     | COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR                                   |       |             | Diodes                | BC847PN-7F              |
| R1-R24,R385                               | 25       | R0300020180     | RESISTOR SMD 1206 - 0,25W - 1 %  | 180   |             | Vishay                | CRCW1206180RFN          |
| R25-R34,R177                              | 11       | R010001M010     | CRCW 1206180RFN  | 10M   | 10M         | Vishay                | CRCW060310M0FKEA        |
| R35,R36,R42,R44-R46,R49-R62,R65,R176,R185 | 23       | R0100020000     | RESISTOR SMD 0603 - 0,06W 1%   | 0     | 0           | Vishay                | CRCW06030000Z           |



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### CPU board part list: 3 of 4

| Reference  | Quantity | Part_Number_MRD | Description                     | Value | Not Mounted | Manufacturer | Manufacturer P/N  |
|--|----------|-----------------|---------------------------------|-------|-------------|--------------|-------------------|
| R37-<br>R39,R41,R43,R4<br>7,R64,R183,R184                                      | 9        | R0100020000     | RESISTOR SMD 0603 - 0,06W 1%    | 0     | 0 NM        | Vishay       | CRCW06030000Z     |
| R40,R66,R67,R6<br>9-R71,R75-<br>R81,R83,R85-<br>R88,R93,R96-<br>R100,R102-R104 | 27       | R010001K010     | RESISTOR SMD 0603 - 0,06W 1%    | 10K   | 10K         | Vishay       | CRCW060310K0F     |
| R63,R141-<br>R144,R146-R148  | 8        | R030001K001     | RESISTOR SMD 1206 - 0,25W 1%    | 1K    | 1K          | Vishay       | CRCW12061K00FKEA  |
| R68,R95,R101,R<br>105  | 4        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1%    | 10K   | 10K NM      | Vishay       | CRCW060310K0F     |
| R72,R91,R94,R1<br>06-R112  | 10       | R0100010470     | RESISTOR SMD 0603 - 0,06W 5%    | 470   | 470         | Vishay       | CRCW0603470RJ     |
| R73,R119-<br>R125,R138,R178,<br>R179   | 11       | R010001M001     | RESISTOR SMD 0603 - 0,06W 1%    | 1M    | 1M          | Vishay       | CRCW06031M00F     |
| R74  | 1        | R0100020820     | RESISTOR SMD 0603 - 0,06W 1%    | 820   | 820         | Yageo        | RC0603FR-07820RL  |
| R82  | 1        | R030003L047     | RESISTOR SMD 1206 - 0,25W 1%    | 4,7M  | 4,7M        | Vishay       | CRCW12064M70FKEA  |
| R84  | 1        | R030001M010     | RESISTOR SMD 1206 - 0,25W 1%    | 10M   | 10M         | Vishay       | CRCW120610M0FHEAP |
| R89,R90,R92  | 3        | R010002L047     | RESISTOR SMD 0603 - 0,06W 1%    | 4,7M  | 4,7M        | Vishay       | CRCW06034M70F     |
| R113-R118  | 6        | R030002H047     | RESISTOR SMD 1206 - 0,25W 1%    | 4,7K  | 4,7K        | Vishay       | CRCW12064K70F     |
| R126-R129  | 4        | R090001K001     | RESISTOR SMD 2512 - 1W 5%       | 1K    | 1K          | Vishay       | CRCW25121K00J     |
| R130,R131  | 2        | R030001K047     | RESISTOR SMD 1206 - 0,25W 1%    | 47K   | 47K         | Vishay       | CRCW120647K0F     |
| R132   | 1        | R010001K001     | RESISTOR SMD 0603 - 0,06W 5%    | 1K    | 1K NM       | Vishay       | CRCW06031K00J     |
| R133,R134  | 2        | R010001K001     | RESISTOR SMD 0603 - 0,06W 5%    | 1K    | 1K          | Vishay       | CRCW06031K00J     |
| R135,R139,R140   | 3        | R010001K100     | RESISTOR SMD 0603 - 0,06W 1%    | 100K  | 100K        | Vishay       | CRCW0603100KF     |
| R145,R381-R384   | 5        | R030001K001     | RESISTOR SMD 1206 - 0,25W 1%    | 1K    | 1K NM       | Vishay       | CRCW12061K00FKEA  |
| R151,R180,R181   | 3        | R030001M001     | RESISTOR SMD 1206 - 0,25W 1%    | 1M    | 1M          | Vishay       | CRCW12061MFN      |
| R157   | 1        | R0900011051     | RESISTOR SMD 2512 - 1W 5%       | 5,1   | 5,1         | Vishay       | CRCW25125R10J     |
| R158-R160  | 3        | R0400010012     | RESISTOR SMD 1210 - 0,5W 1%     | 12    | 12          | Vishay       | CRCW1210012RFN    |
| R161-R167,R182   | 8        | R0200010330     | RESISTOR SMD 0805 - 0,125W 1%   | 330   | 330         | Vishay       | CRCW0805330RF     |
| R171,R172  | 2        | R030001H402     | RESISTOR SMD 1206 - 0,25W 1%    | 40,2K | 40,2K       | Vishay       | CRCW120640K2FKEA  |
| R173   | 1        | R030001K010     | RESISTOR SMD 1206 - 0,25W - 2 % | 10K   | 10K         | Vishay       | RCWP1206103GT     |
| R174   | 1        | R0300010001     | RESISTOR SMD 1206 - 0,25W 1%    | 1     | 1           | KOA          | RK73H2BTD1R00F    |
| R175   | 1        | R0300001000     | RESISTOR SMD 1206 - 0,25W - 5 % | 0     | 0 NM        | Vishay       | CRCW120600R0J     |
| R342,R343  | 2        | R0200011056     | RESISTOR SMD 0805 - 0,1W 1%     | 5,6   | 5,6 NM      | KOA          | RK73H2ATTD5R60F   |

### CPU board part list: 4 of 4

| Reference | Quantity | Part_Number_MRD | Description  | Value         | Not Mounted | Manufacturer        | Manufacturer P/N          |
|-----------|----------|-----------------|--|---------------|-------------|---------------------|---------------------------|
| R388,R389 | 2        | R030001H012     | RESISTOR SMD 1206 - 0,25W 1%   | 1,2K          | 1,2K        | Vishay              | CRCW12061R2KFN            |
| SP1       | 1        | Y0800007001     | Button miniature; SMD; ITT-Cannon cod. KSR231GLFS  |               | NM          | ITT Cannon          | KSR231GLFS                |
| U1        | 1        | M0500005001     | 8 Mbit, low voltage, Page-Erasable Serial Flash memory   |               |             | Numonyx             | M45PE80-VMP6G             |
| U2        | 1        | L0100121033     | Texas_Back_Boost_Charge_Pump_Thin_SOT-23-<br>6_60mA_3_3_5V                                       |               |             | Texas Instruments   | REG710NA-3.3              |
| U5,U7     | 2        | Y1800018001     | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD<br>SWITCHES WITH SHUT OFF 40mA                            |               |             | Texas Instruments   | TPS22943DCKR              |
| U6,U8,U9  | 3        | Y1800018001     | LOW-INPUT-VOLTAGE CURRENT-LIMITED LOAD<br>SWITCHES WITH SHUT OFF 40mA                            |               | NM          | Texas Instruments   | TPS22943DCKR              |
| U10       | 1        | U1600021001     | DRV8833 DUAL H-BRIDGE MOTOR DRIVER 16PIN CASE<br>QFN   |               | NM          | Texas Instruments   | DRV8833                   |
| U11       | 1        | U0100125001     | ARM_32Bit_Low_Power_64pin_256kFlash_32kRam_LQFP  |               |             | ST Microelectronics | STM32L151RCT6A            |
| U12,U13   | 2        | Y1800023001     | Protect High-Side Load Switch, 1A Max, 2,4 to 5,5 Supply<br>Voltage Range, Low quiescent current |               |             | ANALOGIC TECH       | AAT4610BIGV-1             |
| U14       | 1        | A0500021001     | ANALOG SWITCH  |               |             | Vishay              | Sip32431DR3 - T1GE3       |
| U15       | 1        | U0100116001     | MICROCONTROLLER STM8 8 BIT MCU 64KBFLASH<br>2KBRAM 1KEEPROM LQFP48                               |               |             | ST Microelectronics | STM8L151C8T6              |
| XT1,XT2   | 2        | Y1200002001     | Ceramic Resonator Murata CSTCE8M00G55A-R0 8MHz   | 8MHz          |             | Murata              | CSTCE8M00G55A-R0          |
| XT3       | 1        | Q0300019001     | Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-<br>032K768000ZRF1                                   | 32.768<br>khz |             | CITIZEN             | CM200C-<br>032K768000ZRF1 |
| XT4       | 1        | Q0300019001     | Crystal SMD 32.768kHz +10ppm CITIZEN CM200C-<br>032K768000ZRF1                                   | 32.768<br>khz | NM          | CITIZEN             | CM200C-<br>032K768000ZRF1 |





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### 7.2. GPRS board part list

Here below the GPRS board part list follows:

#### GPRS board part list: 1 of 2

| Reference                     | Quantity | Part_Number_MRD  | Description   | Value | Not Mounted | Manufacturer        | Manufacturer P/N   |
|-------------------------------|----------|------------------|---|-------|-------------|---------------------|--------------------|
| C5                            | 1        | MS02CS0009F 1215 | CS Scheda RADIO GASMETER GPRS ATEX  |       |             | MRD                 | MS02CS0009F 1215   |
| U11,U13                       | 2        | A0300027001      | 1.8V 700NA RAIL TO RAIL/O PERATIONAL AMP/PIER                                 |       |             | TEXAS INSTRUMENTS   | OP439AIDCKR        |
| C38                           | 1        | C0100136010      | TAJ TAN. CAP SMD Size C 10uF 16V Vishay cod 293D106X00                        | 10u   |             | Vishay / Sprague    | 293D106X00         |
| C14                           | 1        | C0500016001      | CAP SMD 0603 X5R 1uF 25V  | 1u    |             | Kemet               | C0603C105K3PACTU   |
| C17,C29                       | 2        | C0500016100      | CAP SMD 1206 X5R 100UF 6.3V   | 100u  |             | MURATA              | GRM31CR60J107ME39L |
| C32,C33                       | 2        | C050001C100      | CAP SMD 0603 X7R 100PF 50V  | 100p  |             | AVX                 | 06035C101KAT2A     |
| C23,C24                       | 2        | C0500036010      | CAP SMD 0805 X5R 10UF 10V   | 10u   |             | Murata              | GRM21BR71A106KE51  |
| C15                           | 1        | C0500058010      | CAP SMD 1206 X7R 10UF 10V   | 10u   | NM          | Kemet               | C1206C105K3PACTU   |
| C11,C36                       | 2        | C0500059100      | CAP SMD 1206 X7R 100NF 50V  | 100n  |             | Kemet               | C1206C104K3RAC7025 |
| C25,C26                       | 2        | C050011C033      | CAP SMD 0603 COG 33PF 50V   | 33p   |             | Vishay / Vitramon   | VJ0603A33QNAQW18C  |
| C37                           | 1        | C0500219220      | CAP SMD 0603 X7R 220NF 25V  | 220n  |             | Kemet               | C0603C224K3RACTU   |
| C3,C4,C5,C6,C7,C8,C10,C12,C41 | 9        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100n  |             | Kemet               | C0603C104K3RAC7013 |
| C13                           | 1        | C0500259100      | CAP SMD 0603 X7R 100NF 16V  | 100n  | NM          | Kemet               | C0603C104K3RAC7013 |
| C39                           | 1        | C0600016010      | CAP SMD 0603 X5R 10UF 6.3V  | 10u   |             | Kemet               | C0603C106M9PACTU   |
| C30,C42                       | 2        | C0600046022      | CAP SMD 1206 X5R 22UF 6.3V  | 22u   |             | AVX                 | 120660226KAT2A     |
| C19                           | 1        | C0600057022      | CAP SMD 0805 X5R 2,2UF 10V  | 2.2u  |             | Murata              | GRM188R61A225ME34D |
| C16                           | 1        | C0700037047      | CAP SMD 0805 Y5V 4,7UF 10V  | 4.7u  |             | Kemet               | C0805C475Z8PACTU   |
| C20                           | 1        | C080001A033      | CAP SMD 0603 COG 3300PF 50V 5%  | 3300p |             | TDK                 | C1808CG1H332J      |
| C21,C22                       | 2        | C080001C022      | CAP SMD 0603 NPO 22PF 50V   | 22p   | NM          | Kemet               | C0603C220J56ACTU   |
| C34,C35                       | 2        | C080001C220      | CAP SMD 0603 COG 220PF 50V  | 220p  |             | Murata              | GRM1885C1H221FA01D |
| C27                           | 1        | C080011C010      | CAP SMD 0603 COG 10PF 50V ±5%   | 10p   |             | Murata              | GCM1885C1H100A16D  |
| C40                           | 1        | C080011C010      | CAP SMD 0603 COG 10PF 50V ±5%   | 10p   | NM          | Murata              | GCM1885C1H100A16D  |
| C1,C2                         | 2        | C0900010050      | Supercapacitor LOW ESR 30F 2.7V TECATE TPL-50/18X40F                          | 50    |             | TECATE              | TPL-50/18X40F      |
| Q1,Q2                         | 2        | D0100006001      | NPN Transistor Bipolar SMD case SOT23   |       |             | Philips             | BC847              |
| Q10                           | 1        | D0200003001      | PNP TRANSISTOR BIPOLAR SMD CASE SOT23   |       |             | PHILIPS             | BC857              |
| D5                            | 1        | D0300014001      | Dual Switching diode 0,15 A / 60 V - Case SOT23 BAV99                         |       |             | Philips             | BAV99              |
| D3                            | 1        | D0400034001      | Silicon Schottky Diode 100mA, Case SC80 40V                                   |       |             | Infineon            | BA164-02W          |
| D6                            | 1        | D0400042001      | SMD Schottky Diode 1A 20V   |       |             | Diode Incorporated  | DF1S120L-7         |
| Q14                           | 1        | D0500016001      | P-channel enhancement mode MOS transistor, -12V, -0.75A, SOT23                |       |             | Philips             | BSH205             |
| Q8,Q9,Q11                     | 3        | D0500017001      | P-channel enhancement mode MOS transistor, -12V, -1.52A, SOT457               |       |             | Philips             | BSH207             |
| Q15                           | 1        | D0500022001      | P-CHANNEL ENHANCEMENT MODE MOS TRANSISTOR, -12V -4.6A 70MOHM SOT26            |       |             | DIODES INCORPORATED | DMP2066LDM         |
| Q3,Q4,Q6,Q7,Q12,Q13           | 6        | D0600016001      | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                  |       |             | Philips             | BSH105             |
| Q5                            | 1        | D0600016001      | N-channel enhancement mode MOS transistor, 20V, 1.05A, SOT23                  |       |             | Philips             | BSH105             |
| D4                            | 1        | D0700087001      | HIGH POWER INFRARED EMITTER DIODE   |       |             | OSRAM               | SFH4250            |
| F1,F2,F3,F4,F5                | 5        | D1100025001      | Film Fuse SMD - LITTELFUSE 0466.200 (1206)                                    |       |             | Littelfuse          | 0466.200NR         |
| PTC1                          | 1        | D1200040001      | Polyswitch Resettable Device SMD 1206 - 0,8W - 0,12 / 0,65hm IH=0,2A IT=0,42A |       |             | Tyco Electronics    | NanoSMDC020F       |
| D1                            | 1        | D1300007001      | Low Capacitance Diode Array - case SOT23-6L (SC74)                            |       |             | ST Microelectronics | DALC2085C6         |
| U15                           | 1        | D1500009001      | QUAD TRANSIL ARRAY FOR ESD PROTECTION Case SOT23-6L                           |       |             | ST Microelectronics | ESDA6V15C6         |
| D7                            | 1        | D1500007001      | ESD suppressor, high speed 50F, trigger 300V, clamping 35V Case MLP0402       |       |             | Cooper Bussmann     | 0402ESDA-MLP8      |
| PHT1                          | 1        | D1900005001      | NPN Silicon Phototransistor Led Lamp OSRAM SFH320FA                           |       |             | OSRAM               | SFH320FA           |
| U3                            | 1        | H1200007001      | MD DUAL INVERTING SCHMITT TRIGG. 5V TOLLERANT INPUT-CASE SOT363               |       |             | NXP SEMICONDUCTOR   | 74HC2G14           |
| L1                            | 1        | I0100029220      | SMD INDUCTOR - COILCRAFT 200nh DCR=24MA IRMS=2,2A                             |       |             | Coilcraft           | XL2010-201ML       |
| L2                            | 1        | I0100046001      | POWER INDUCTOR 1uH 20% 5,1A   | 1 uH  |             | COILCRAFT           | XL14020-102ME      |
| L3                            | 1        | I0100047047      | POWER INDUCTOR 4,7uH 20% 1,2A   | 4,7UH |             | COILCRAFT           | XL13012-472ME      |
| U10                           | 1        | I0100012015      | 1,5V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR         |       |             | Torex               | XC6118C15BMR-G     |
| U9                            | 1        | I0100021012      | 1,2V VOLTAGE DETECTOR WITH SEPARATE SENSE PIN AND DELAY PIN CAPACITOR         |       |             | Torex               | XC6118C12BMR-G     |
| U14                           | 1        | I0100200005      | Texas Back Boost Charge Pump Thin SOT-23-6, 60mA 5V                           |       |             | Texas Instruments   | REG180NA-S         |
| R39,R41,R42,R43,R81           | 5        | R0100010000      | RESISTOR SMD 0603 - 0,06W 5% 0  | 0     |             | VISHAY              | CRW06030000Z       |
| R40,R82,R89,R94,R95           | 5        | R0100010000      | RESISTOR SMD 0603 - 0,06W 5% 0  | 0     | NM          | VISHAY              | CRW06030000Z       |



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| Reference   | Quantity | Part Number_MRD | Description   | Value | Not Mounted | Manufacturer       | Manufacturer P/N    |
|---|----------|-----------------|---|-------|-------------|--------------------|---------------------|
| R75   | 1        | R010001H027     | RESISTOR SMD 0603 - 0,06W 1% 2,7K                         | 2,7K  |             | Vishay             | CRCW06032K70F       |
| R73   | 1        | R010001H047     | RESISTOR SMD 0603 - 0,06W 1% 2,7K                         | 4,7K  |             | VISHAY             | CRCW06034K70F       |
| R69   | 1        | R010001H082     | RESISTOR SMD 0603 - 0,06W 5% 8,2K                         | 8,2K  |             | Vishay             | CRCW06038K20J       |
| R84   | 1        | R010001K002     | RESISTOR SMD 0603 - 0,06W 1% 2K                           | 2K    |             | Vishay             | CRCW06032K00F       |
| R33,R36,R37   | 3        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K                          | 10K   |             | VISHAY             | CRCW060310K0F       |
| R51   | 1        | R010001K010     | RESISTOR SMD 0603 - 0,06W 1% 10K                          | 10K   |             | Vishay             | CRCW060310K0F       |
| R53   | 1        | R010001K033     | RESISTOR SMD 0603 - 0,06W 1% 33K                          | 33K   |             | KOA                | RK73H11TTD3302F     |
| R93   | 1        | R010001K100     | RESISTOR SMD 0603 - 0,06W 1% 100K                         | 100K  |             | Vishay             | CRCW0603100K0F      |
| R79   | 1        | R010001K100     | RESISTOR SMD 0603 - 0,06W 1% 100K                         | 100K  | NM          | Vishay             | CRCW0603100K0F      |
| R97   | 1        | R010002K470     | RESISTOR SMD 0603 - 0,06W 1% 470K                         | 470K  |             | Vishay             | CRCW0603470K0F      |
| R71   | 1        | R010002K470     | RESISTOR SMD 0603 - 0,06W 1% 470K                         | 470K  | NM          | Vishay             | CRCW0603470K0F      |
| R56   | 1        | R010001K300     | RESISTOR SMD 0603 - 0,06W 1% 300K                         | 300K  |             | Vishay             | CRCW0603300K0F      |
| R55   | 1        | R010001K604     | RESISTOR SMD 0603 - 0,06W 1% 604K                         | 604K  |             | Vishay             | CRCW0603604K0F      |
| R57   | 1        | R010001K909     | RESISTOR SMD 0603 - 0,06W 1% 909K                         | 909K  |             | Vishay             | CRCW0603909K0F      |
| R16   | 1        | R010001M001     | RESISTOR SMD 0603 - 0,06W 1% 1M                           | 1M    |             | Vishay             | CRCW06031M00F       |
| R7  | 1        | R010001M001     | RESISTOR SMD 0603 - 0,06W 1% 1M                           | 1M    | NM          | Vishay             | CRCW06031M00F       |
| R6,R8,R10,R11,R12,R13,R14,R15,R17,R18,R19,R20,R48,R49,R83,R86,R92,R96 | 18       | R010001M002     | RESISTOR SMD 0603 - 0,06W 1% 2M                           | 2M    |             | Vishay             | CRCW06032M00F       |
| R31,R32,R91   | 3        | R010001M002     | RESISTOR SMD 0603 - 0,06W 1% 2M                           | 2M    | NM          | Vishay             | CRCW06032M00F       |
| R9,R22,R23,R24,R25,R26,R27,R28,R29,R30,R38,R46,R50,R90,R99            | 15       | R0100020432     | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA          | 432   |             | Vishay             | CRCW0603432RFKEA    |
| R85   | 1        | R0100020432     | RESISTOR SMD 0603 - 0,1W 1% 432 CRCW0603432RFKEA          | 432   | NM          | Vishay             | CRCW0603432RFKEA    |
| R1,R2   | 2        | R010002H013     | RESISTOR SMD 0603 - 0,06W 1% 1,3K                         | 1,3K  |             | VISHAY             | CRCW06031K30FKEA    |
| R21   | 1        | R010002K010     | RESISTOR SMD 0603 - 0,06W 5% 10K                          | 10K   |             | VISHAY             | CRCW060310K0J       |
| R68   | 1        | R010002K022     | RESISTOR SMD 0603 - 0,06W 1% 22K                          | 22K   |             | VISHAY             | CRCW060322K0F       |
| R76   | 1        | R010002K047     | RESISTOR SMD 0603 - 0,06W 1% 47K                          | 47K   |             | Vishay             | CRCW060347K0F       |
| R47   | 1        | R010002K330     | RESISTOR SMD 0603 - 0,06W 1% 330K                         | 330K  |             | Vishay             | CRCW060330K0FKEA    |
| R54   | 1        | R010002K680     | RESISTOR SMD 0603 - 0,06W 1% 680K                         | 680K  |             | Vishay             | CRCW0603680K0F      |
| R78   | 1        | R010002K820     | RESISTOR SMD 0603 - 0,06W 1% 820K                         | 820K  |             | Vishay             | CRCW0603820K0FKEB   |
| R4  | 1        | R0300001000     | RESISTOR SMD 1206 - 0,25W 5% 0                            | 0     |             | Vishay             | CRCW12060R0J        |
| R77   | 1        | R03000010001    | RESISTOR SMD 1206 - 0,25W 1% 1                            | 1     |             | KOA                | RK73H2HTD1R00F      |
| R65,R66,R67   | 3        | R0300010033     | RESISTOR SMD 1206 - 0,25W - 2% 33                         | 33    |             | Vishay             | CRCW120622R0F       |
| R62,R63   | 2        | R0300010270     | RESISTOR SMD 1206 - 0,25W - 5% 270                        | 270   |             | Vishay             | CRCW1206270R0J      |
| R3,R5,R98   | 3        | R0300012348     | RESISTOR SMD 1206 - 0,5W 1% 3,48                          | 3,48  |             | Vishay             | CRCW1206348R0FNEAHP |
| R54   | 1        | R030001H012     | RESISTOR SMD 1206 - 0,25W 1% 1,2K CRCW12061R2KFN          | 1,2K  |             | Vishay             | CRCW12061R2KFN      |
| R61   | 1        | R030001K001     | RESISTOR SMD 1206 - 0,25W 1% 1K                           | 1K    |             | Vishay             | CRCW12061K00FKEA    |
| R70   | 1        | R030001K120     | RESISTOR SMD 1206 - 0,25W - 2% 120K                       | 120K  |             | Vishay             | CRCW1206120KF       |
| R72   | 1        | R030001K330     | RESISTOR SMD 1206 - 0,25W - 2% 330K                       | 330K  |             | Vishay             | CRCW1206330KF       |
| R58   | 1        | R0300020180     | RESISTOR SMD 1206 - 0,25W - 1% 180 CRCW1206180RFN         | 180   |             | Vishay             | CRCW1206180RFN      |
| R74   | 1        | R030002H027     | RESISTOR SMD 1206 - 0,25W 1% 2,7K                         | 2,7K  |             | Vishay             | CRCW12062K70F       |
| R59,R60   | 2        | R030002H047     | RESISTOR SMD 1206 - 0,25W 1% 4,7K                         | 4,7K  |             | Vishay             | CRCW12064K70F       |
| R34,R35   | 2        | R030002K010     | RESISTOR SMD 1206 - 0,33W - 1% 10K                        | 10K   |             | KOA                | SG73S2BTTD1002F     |
| R44,R45   | 2        | R0600020010     | RESISTOR SMD 2010 1W 1% 10                                | 10    |             | Vishay             | CRCW201010R0FNEAHP  |
| U4  | 1        | U0100070001     | 16 BIT SECURITY CONTROLLER OPTIMIZED FOR M2M APPLICATIONS |       | NM          | INFINEON           | SU476CF5120P        |
| U8  | 1        | U0100070001     | WIRELESS STANDARD MODEM WAVECOM WISMO228                  |       |             | WAVECOM            | WISMO228_OCG16R04F  |
| U1  | 1        | U0900014001     | 3-17V 3A STEP-DOWN CONVERTER                              |       |             | TEXAS INSTRUMENTS  | TPS562130           |
| U5  | 1        | U0900015001     | STEP-UP WITH ADJUSTABLE COSTANTE CURRENT                  |       |             | TEXAS INSTRUMENTS  | TPS562151           |
| U12   | 1        | U1000013001     | Nanopower Push-Pull output comparators, SOT23-5           |       |             | TEXAS INSTRUMENTS  | TLV3701DBVT         |
| P1  | 1        | Y0800046001     | BUTTON MINIATURE, SMD,6X6 ITT-CANNON COD. K5C351J         |       |             | ITT CANNON         | K5C351J             |
| DI51  | 1        | Y1500024001     | 12C DISPLAY   |       |             | VARITRONIX LIMITED | COG-VLT11540A-01    |
| J2  | 1        | Z0300006028     | 28_Pin, Female_SMT_DIL_2,5mm_pass_Through                 |       |             | SAMTEC             | SSM-114-F-DV-BE.A   |
| J1  | 1        | Z03000029006    | PLUG IN SIM CARD CONNECTOR                                |       |             | JAE                | SF9W0065A49         |

GPRS board part list: 2 of 2



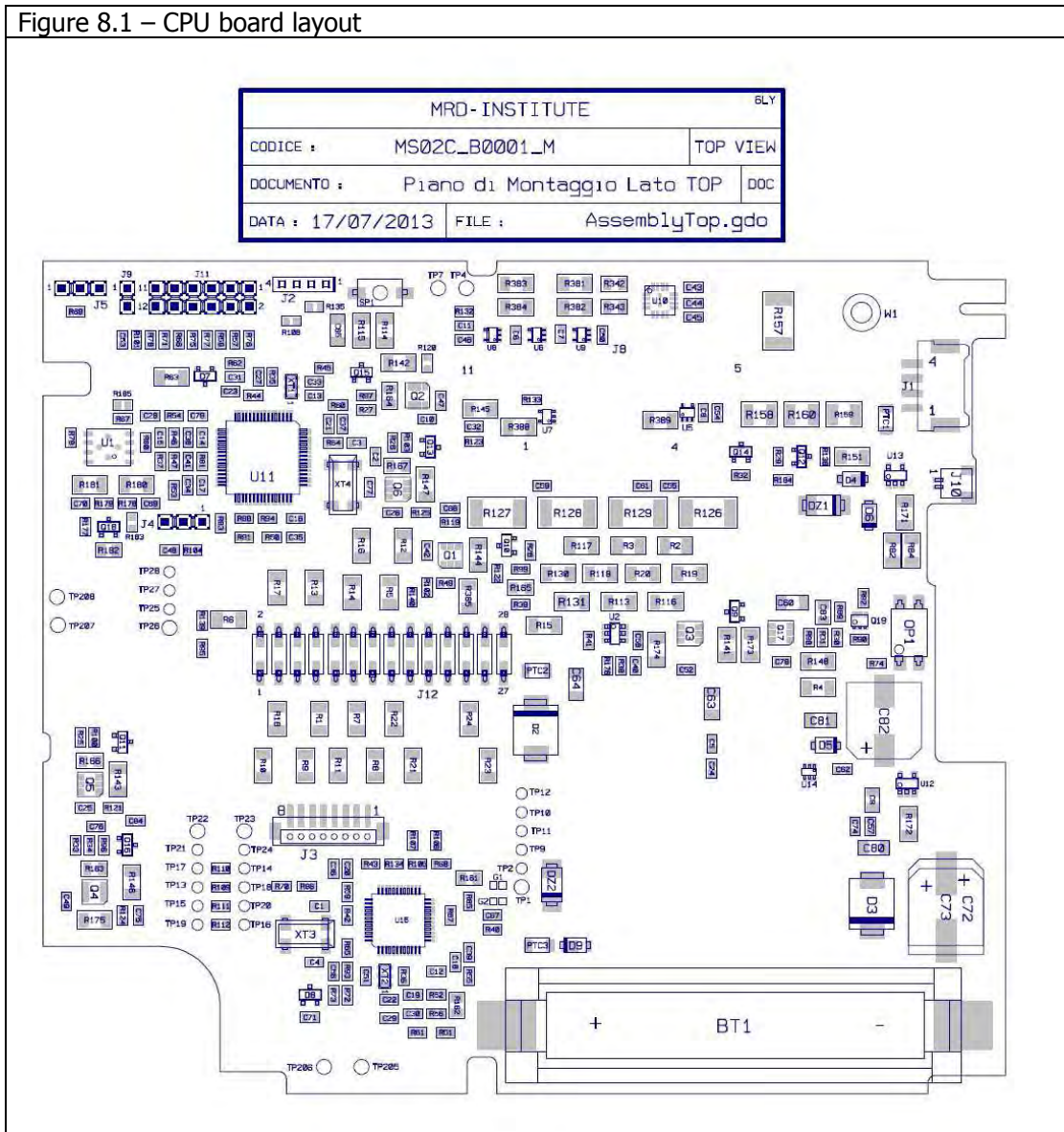
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## 8. PCB LAYOUT

### 8.1. CPU Board layout

Figure 8.1 – CPU board layout



## 8.2. GPRS Board layout

Figure 8.2 – GPRS board layout: bottom view

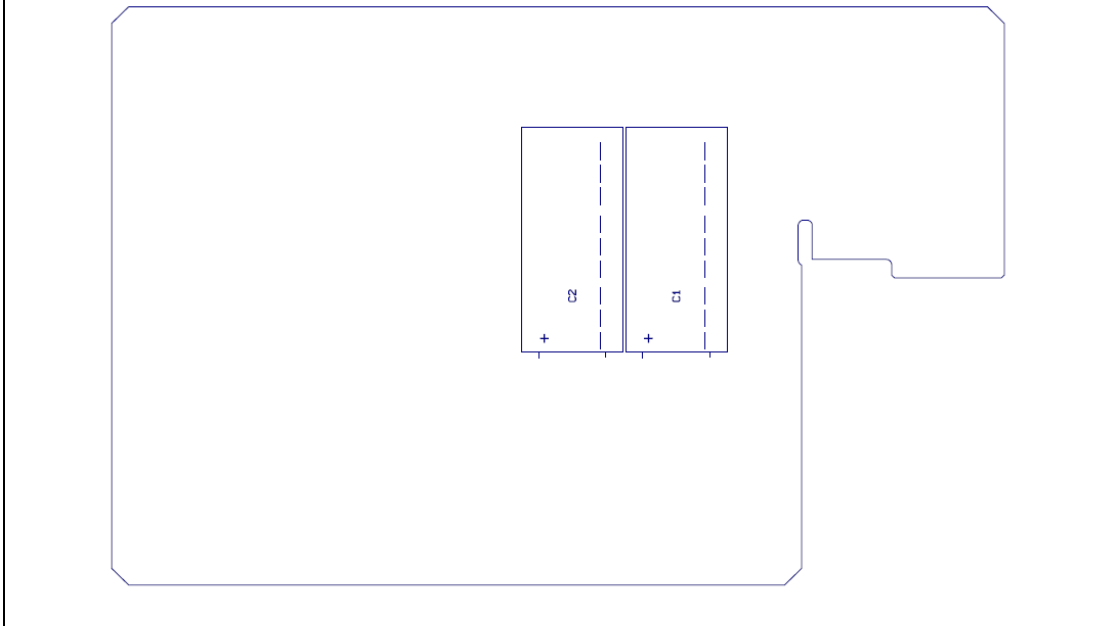
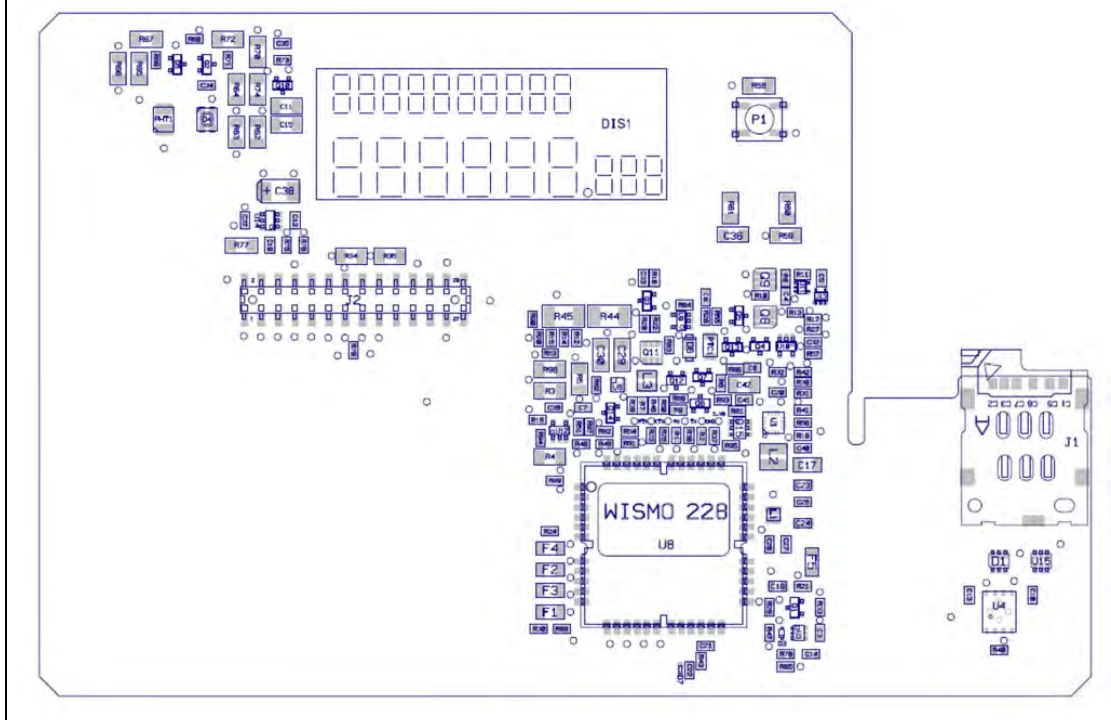


Figure 8.3 – GPRS board layout: top view



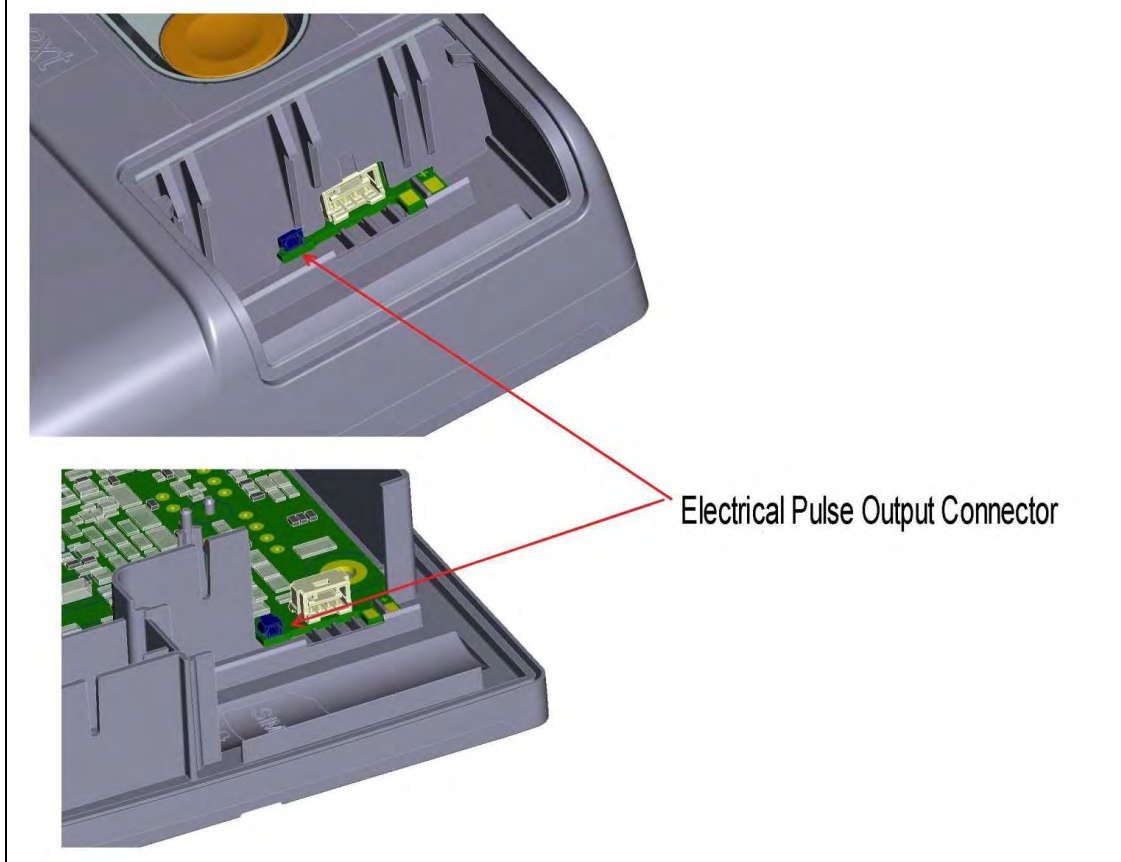
Display has 6 digits + 3 digits after the decimal point. It can show until 999999.999 m3...

## 12. ELECTRICAL PULSE OUTPUT

On the gas meter it's available an electric pulse output connector (optional for the customer), useful to drive an external data logger.

The meter will generate an impulse for each "V<sub>0</sub>" liter of measured gas (V<sub>0</sub> threshold is programmable: e.g. 1 pulse/m<sup>3</sup>); this signal is compliant to the UNI11291-5 Annex A requirements.

FIGURE 12.1 – INTERNAL PULSE EMITTER CONNECTOR

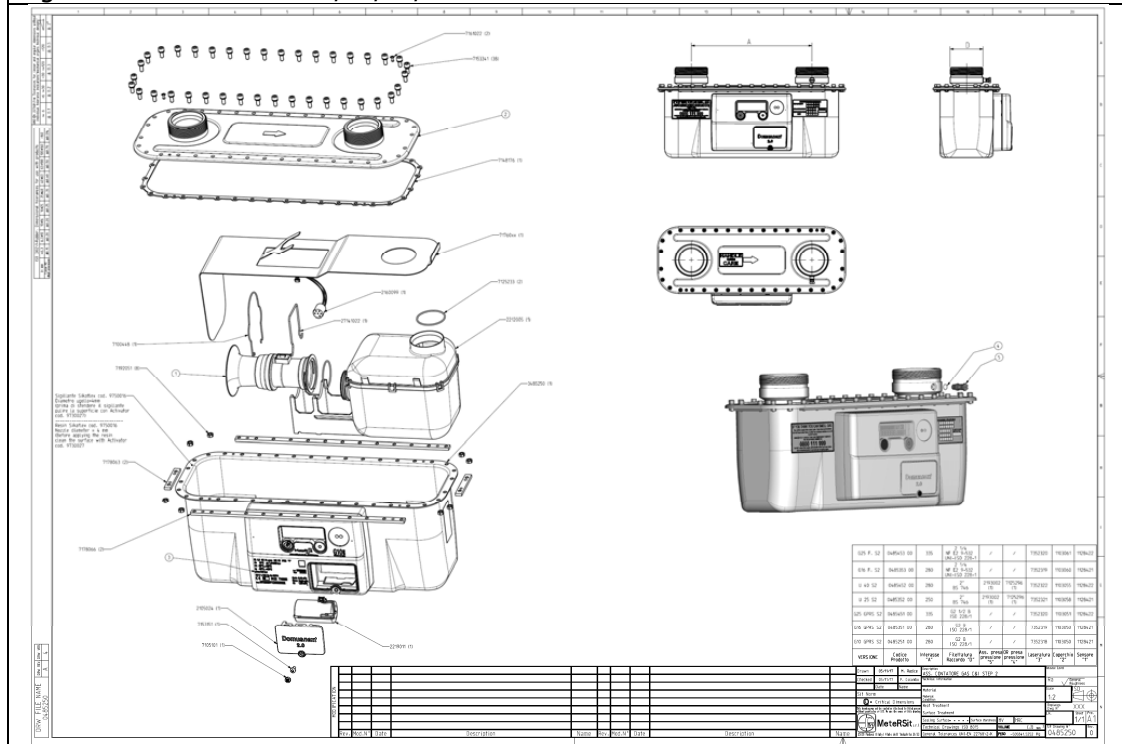


### 3. MECHANICAL SPECIFICATIONS

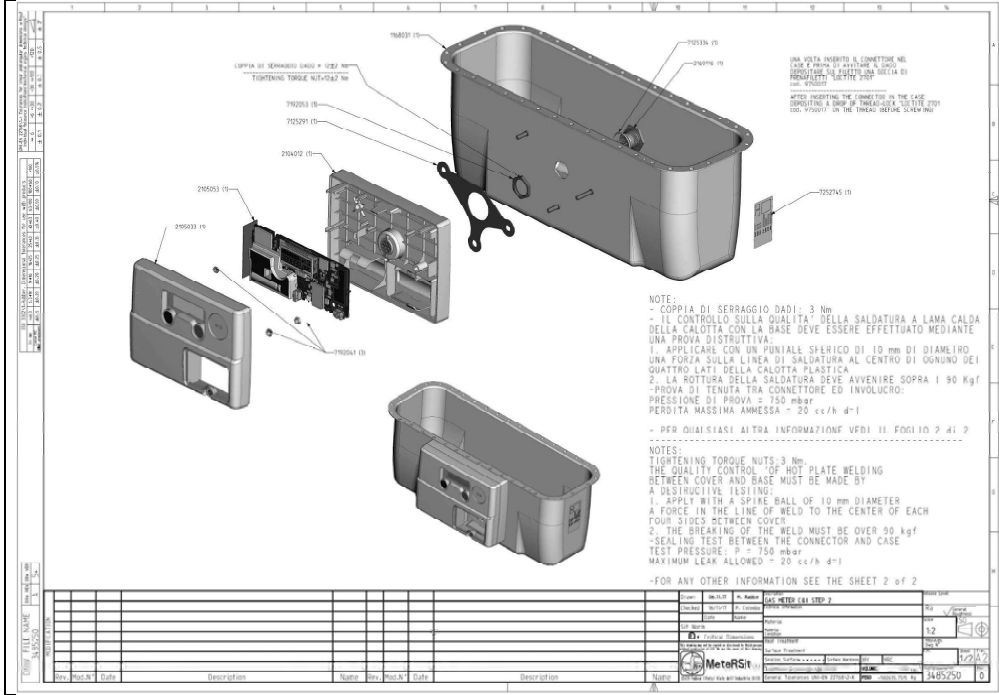
Table 6 – Mechanical Specifications

| Characteristic                          | u.m. | MMU16           | G10-16          | G25               | MMU25           | MMU40           |
|---|------|-----------------|-----------------|-------------------|-----------------|-----------------|
| Connection center distance              | [mm] | 152,4           | 280             | 335               | 250             | 280             |
| Max dimensions (Width x Height x Depth) | [mm] | 199 x 181 x 101 | 436 x 189 x 184 | 436 x 189 x 184   | 436 x 209 x 184 | 436 x 209 x 184 |
| Connection thread                       | "    | 1" 1/4 - BS 746 | G 2 ISO 228/1   | G 2 1/2 ISO 228/1 | 2" BS 746       | 2" BS 746       |
| Resistance to torque                    | [Nm] | 110             | 170             | 170               | 170             | 170             |
| Resistance to bending                   | [Nm] | 40              | 60              | 60                | 60              | 60              |
| Weight                                  | [Kg] | 2.2             | 5.7             | 5.7               | 6.4             | 6.4             |

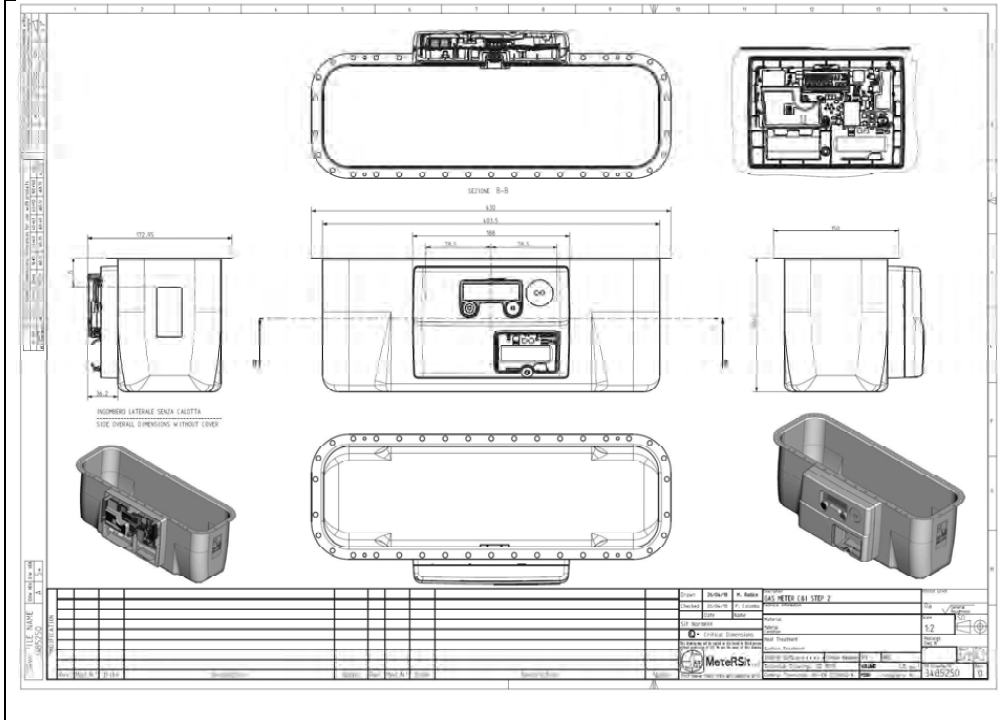
Figure 3.1 – VIEW OF G10/16/25/ STRUCTURE – G10-G16-G25-MMU25-MMU40



**FIGURE 3.3 – EXPLODED DRAWING OF PLASTICS AND ELECTRONICS – G10-G16-G25-MMU25-MMU40**



**FIGURE 3.4 – EXPLODED DRAWING OF PLASTICS AND ELECTRONICS – G10-G16-G25-MMU25-MMU40**





**FIGURE 3.8 – DRAWING AND CHARACTERISTICS OF PLASTIC CASE**

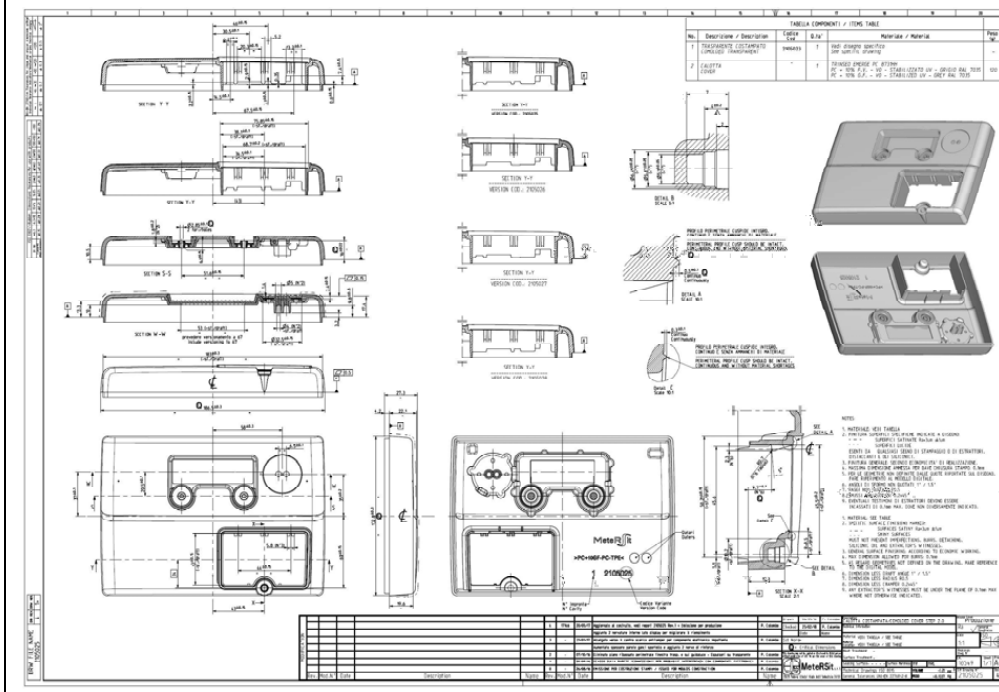


FIGURE 3.13-INTERIOR VIEW OF METALLIC CASE WITH ELECTRONIC BOARDS G10-G16-G25-MMU25-MMU40

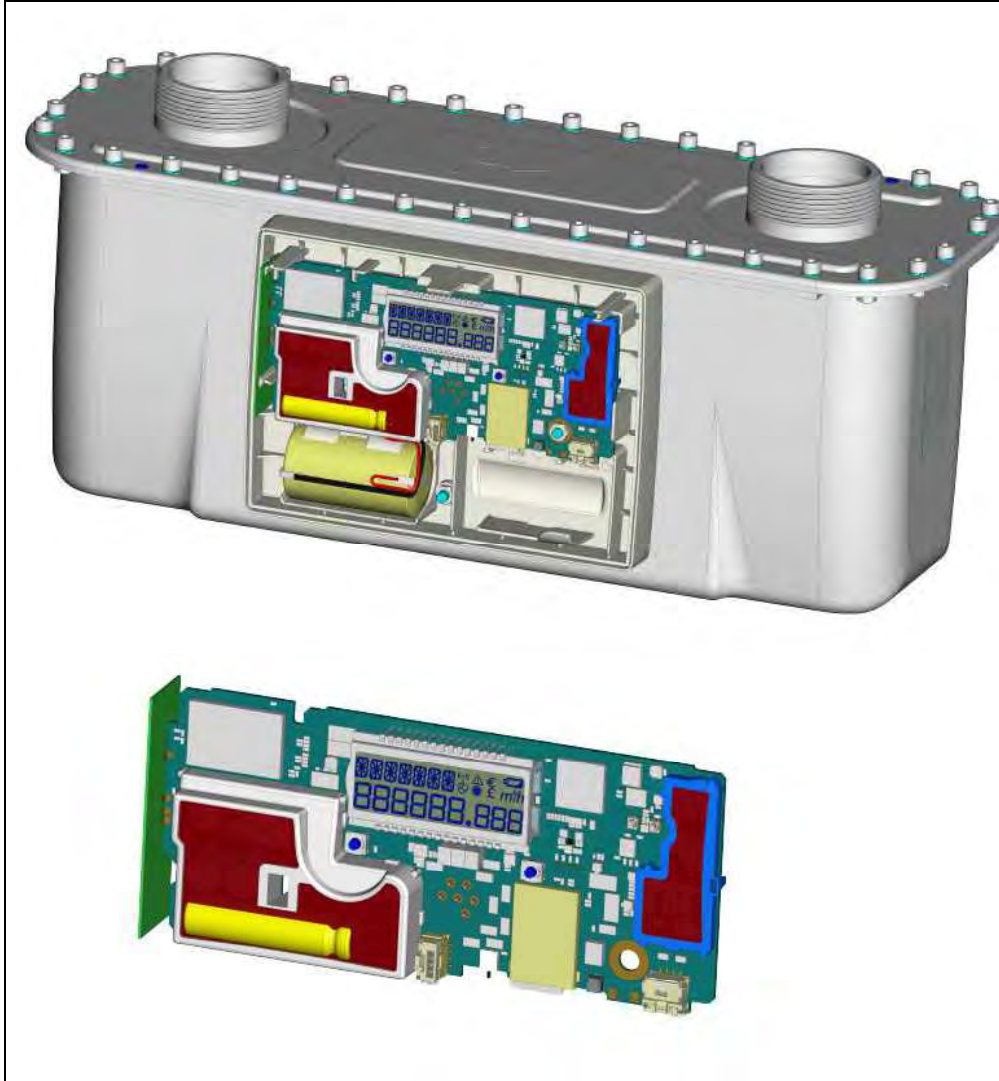
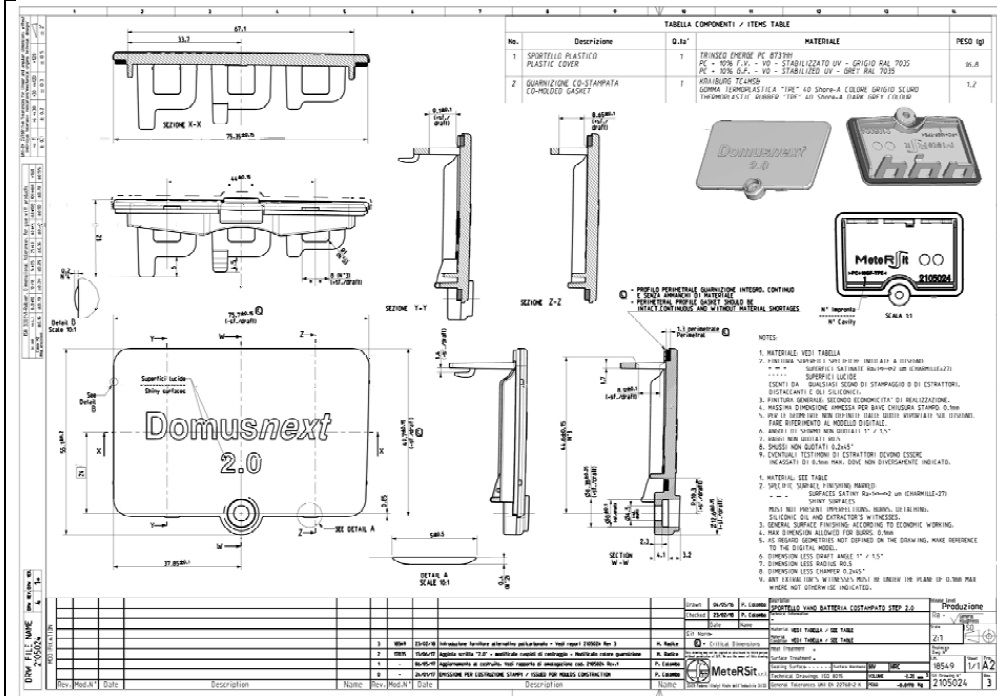
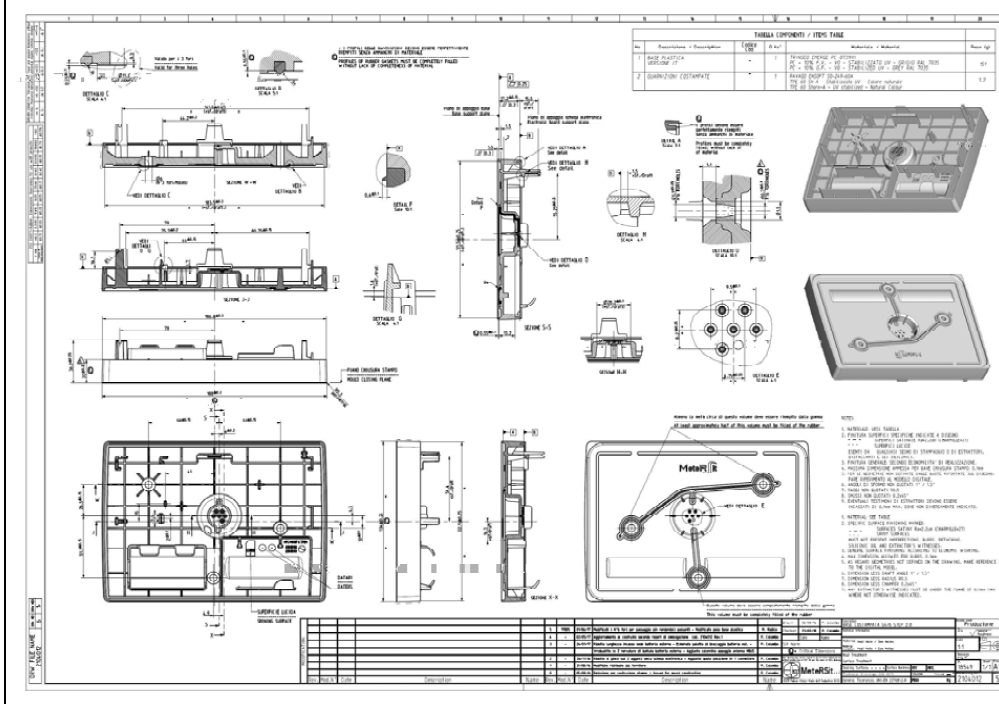


FIGURE 3.9 – DRAWING AND CHARACTERISTICS OF PLASTIC COVER



**FIGURE 3.10 – DRAWING AND CHARACTERISTICS OF PLASTIC BASE G10-G16-G25-MMU25-MMU40**



## 5. CIRCUIT DIAGRAM

The electronic of the meter consists of two boards:

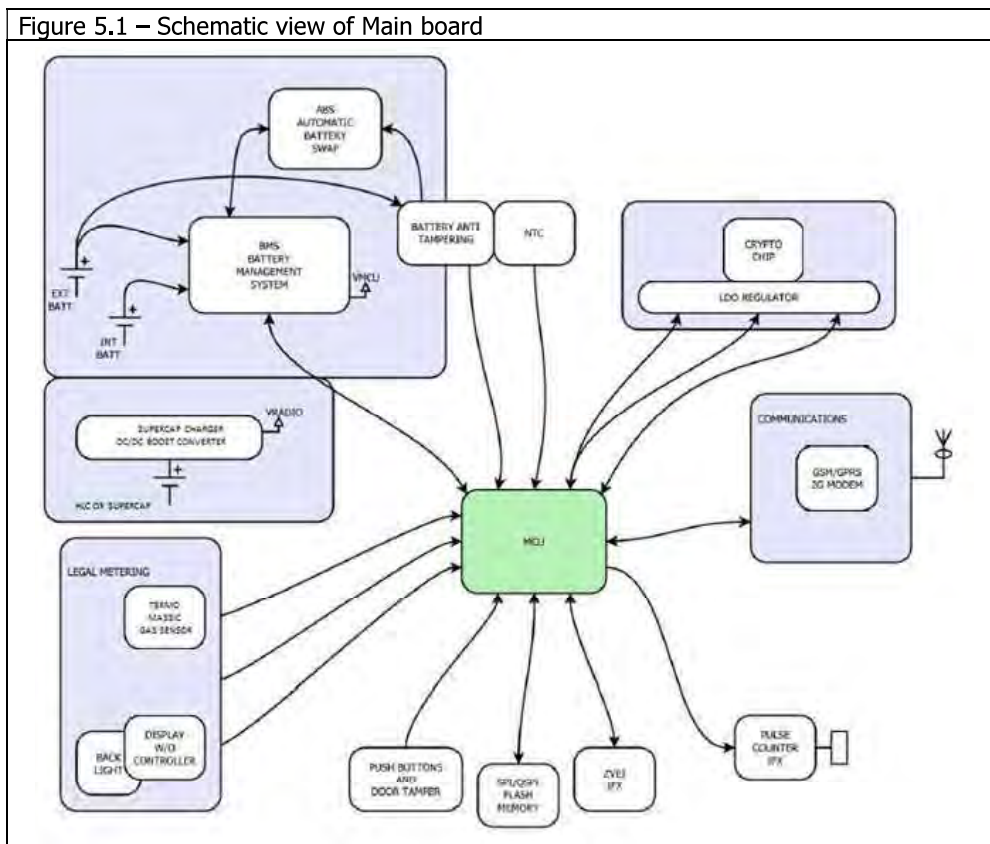
- Main board;
- Antenna board

### 5.1. Main Board

The CPU Board is designed around a single microprocessor:

- STM32: a 32 bit CPU dedicated to gas sensor management, measurement integration algorithm, RTC clock, billing time bands management, communications and application software

Figure 5.1 – Schematic view of Main board

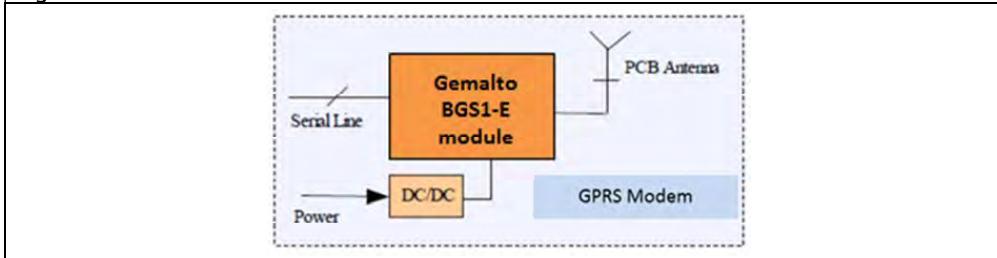


### 5.1.1. GPRS Modem

The GPRS modem is designed around the BGS1-E integrated module manufactured by Gemalto, the module itself includes a complete GSM/GPRS IP Modem with its own internal GSM and TCP/IP stack.

The Modem is controlled directly by the CPU. The GPRS module is powered by the super-capacitor on board by means of a DC/DC converter to guarantee the needed voltage level. The BGS1-E radio module is completely controlled by AT commands using the standard serial line.

Figure 5.2 – GPRS module schematics

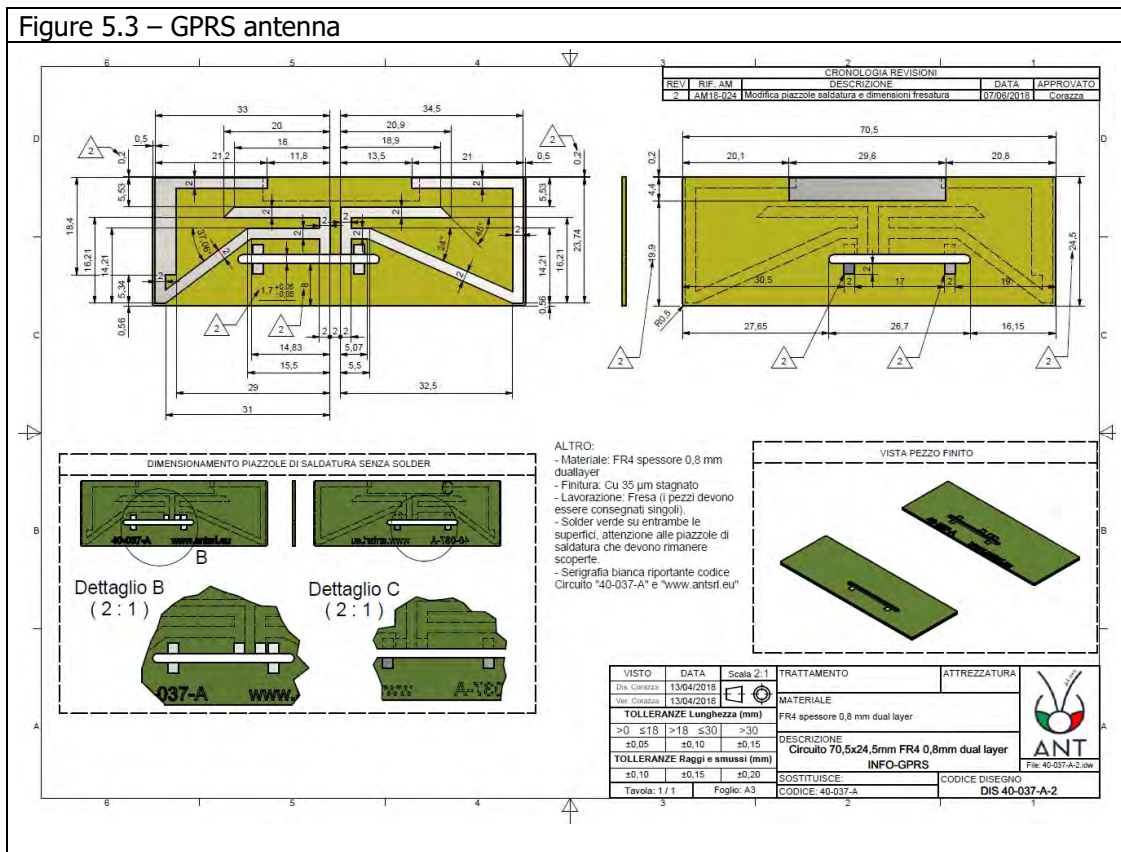


### 5.2. Antenna Board

Antenna board (p/n 2238061) is directly soldered on main board close to GPRS module (see figures 3.13 and 3.14)

In the following figure is shown antenna mechanical drawing:

Figure 5.3 – GPRS antenna



### 5.3. AtEx compliance and electronic board coating

To guarantee AtEx compliance according with the following gas meter marking (see also figures 9.x):

 **II 1/2(1) G Ex ia / ib mb [ia Ga] IIB T4 Ga/Gb**

The equipment complies with EPL **Gb** for the **Gas Meter** and EPL **Ga** for the **Gas Sensor**.

Separation between EPL **Ga** (Gas sensor) and EPL **Gb** (Gas meter) areas is obtained by means of a partition wall, made with a corrosion resistant metal, and a bushing for electrical connection.

Gas sensor and its connection to the Gas meter are not accessible and removable by the end user.

The electronic board shall be coated in all red zones highlighted in figures 3.13 and 3.14 with the following bi-component **Wevo** resin:

**WEVOPUR 403 FL/20** with **WEVONAT 300 RE**

In Annex 4 – “**TF18-023\_Gas Meter C&I 2.0 – Specifica Tecnica di Resinatura schede elettroniche\_v1.0**” is integrally described electronic board coating procedure and all related check.

## 6. ELECTRICAL SCHEMATICS

### 6.1. Main Board Electrical Schematics

In Annex 1 is available the integral Main board electrical schematics (P/N 2238053).

## 7. PCB LAYOUT

### 7.1. Main Board file gerber

In Annex 2 is available the integral Main board file gerber (P/N 2238053).





## 8. PART LIST

The gas meter includes the following main components:

**Table 8 – Main components**

| Component   | Manufacturer   | Reference   |
|---|--|---|
| <b>Removable Battery pack</b>                           | Vitzrocell pack p/n2219013<br>or<br>Tadiran pack 2219014 | Lithium Thyonil Chloride Size D 19 Ah<br>See Figure 3.15 e 3.16 |
| <b>Back-up Battery pack</b>                             | Vitzrocell pack p/n2219013<br>or<br>Tadiran pack 2219014 | Lithium Thyonil Chloride Size D 19 Ah<br>See Figure 3.15 e 3.16 |
| <b>Electronic Main Board</b>                            | MeterSit S.r.l.  | See section 5.1   |
| <b>Display</b>  | Varitronix   | See Figure 11   |
| <b>Gas Sensor</b>                                       | Sensirion  | See Figures 3.2 and 3.7   |
| <b>GPRS antenna</b>                                     | MeterSit S.r.l. p/n 2238060                              | See section 5.2   |
| <b>G10/G25<br/>MMU25/MMU40<br/>Metallic Gas Chamber</b> | SIT S.p.A.   | See section 3   |
| <b>MMU16<br/>Metallic Gas Chamber</b>                   | SIT S.p.A.   | See section 3   |
| <b>Plastic Case</b>                                     | MeterSit S.r.l.  | See section 3   |

In the following paragraphs the part lists relative to the electronic boards are described in detail.

### 8.1. Main Board part list

In Annex 3 is available the integral GPRS board part list (P/N 2238053).

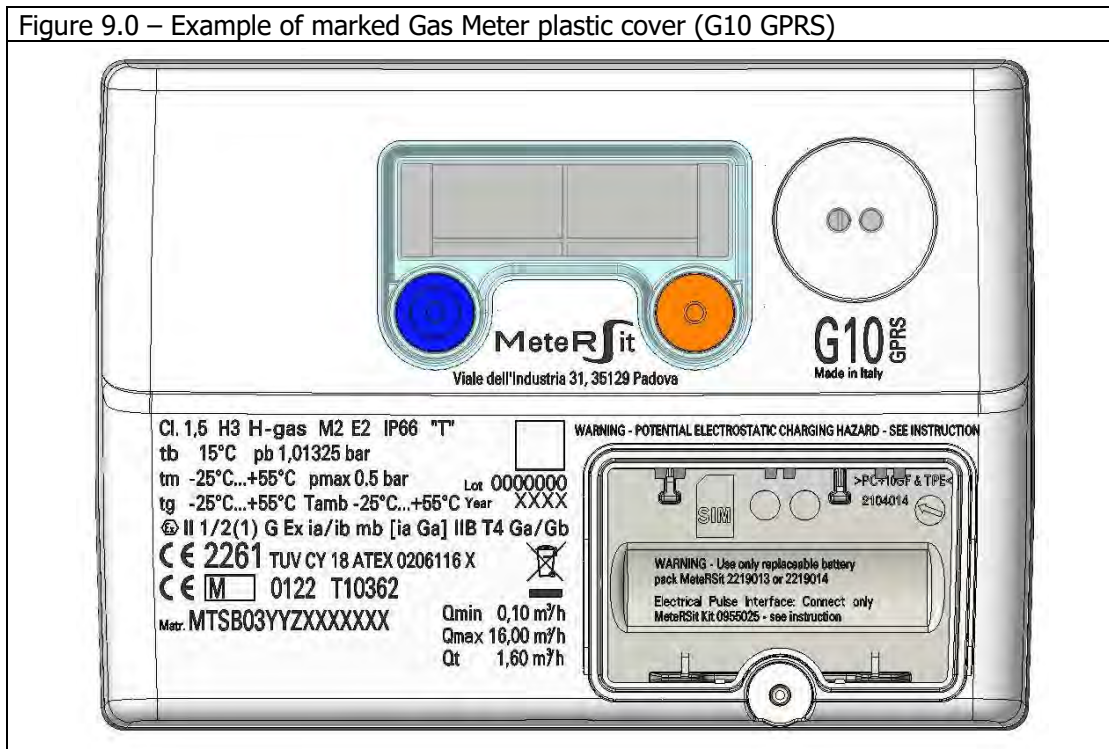


## 9. MARKINGS

The figures 9.x shows the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for each possible meter version (G10-G16-G26-MMU25-MMU40-MMU16).

The symbol T shows the High Temperature Meter compliance.

Figure 9.0 – Example of marked Gas Meter plastic cover (G10 GPRS)







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Figure 9.2 – Labeling of G16 GPRS meter

**CHARACTERS FILLED** (multiple locations)

**MeterSIt**  
Viale dell'Industria 31, 35129 Padova

**G16 GPRS**  
Made in Italy

**DATA MATRIX CODE AREA**

**CI, 1,5 H3 H-gas M2 E2 IP66 "T"**  
**tb 15°C pb 1,01325 bar**  
**tm -25°C...+55°C pmax 0.5 bar**  
**tg -25°C...+55°C Tamb -25°C...+55°C Year XXXX**  
**Ⓜ II 1/2(1) G Ex ia/ib mb [ia Ga] IIB T4 Ga/Gb**  
**CE 2261 TUV CY 18 ATEX 0206116 X**  
**CE M 0122 T10362**  
**Metr. MTSB03YYZXXXXXX**

**WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTION**

**Lot 0000000**  
**YEAR OF MANUFACTURE XXXX**

**WARNING - Use only replaceable battery pack MeterSIt 2219013 or 2219014**  
**Electrical Pulse Interface: Connect only MeterSIt Kit 0955025 - see instruction**

**Qmin 0,16 m³/h**  
**Qmax 25,00 m³/h**  
**Qt 2,50 m³/h**

**VEDI DETTAGLIO A**

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSIt
- B= fixed digit
- O= fixed digits mean Gas Meter
- Y= meter version, indicating the last two digits of the MeterSIt product code
- Z= meter model, indicating the third last digit of the MeterSIt product code: 2= G10 3= G16 4= G25
- XXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZXXXXXX

ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:  
MTSB03000000001

| Rev. | Mod.N° | Date     | Description                                   | Name      |
|------|--------|----------|---|-----------|
| 2    | 18990  | 26/09/18 | Modifiche generali - emissione per produzione | M. Radice |
| 1    | -      | 02/07/18 | Aggiornato grado di protezione da IP65 a IP66 | L. De Pol |
| 0    | -      | 15/05/18 | Prima emissione                               | M. Radice |

|          |          |             |                       |                            |                |                      |
|----------|----------|-------------|-----------------------|----------------------------|----------------|----------------------|
| Drawn    | 15/05/18 | M. Radice   | Description           | Lavoratura G16 GPRS Step 2 | Revision Level | Produzione           |
| Checked  | 26/09/18 | P. Calcinai | Technical Information |                            | Ra             | General Requirements |
| Date     |          | Name        | Material              |                            | Scale          | 2:1                  |
| Sit Norm |          |             | Material Condition    |                            | ISO            |                      |
|          |          |             | Heat Treatment        |                            | Bedding        | 1/1                  |
|          |          |             | Surface Treatment     |                            | Qty            | 18990                |
|          |          |             | Sealing Surface.....  | Surface Hardness           | HV             | HRC                  |
|          |          |             | Technical Drawings    | ISO 6075                   | VOLUME         | en                   |
|          |          |             | General Tolerances    | UNI-EN 22768-2-R           | PESO           | kg                   |
|          |          |             |                       |                            | DRWING N°      | 7352319              |
|          |          |             |                       |                            | SHEET          | 1/1                  |
|          |          |             |                       |                            | FORM           | A3                   |
|          |          |             |                       |                            | REV.           | 2                    |





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Figure 9.3 – Labeling of G25 GPRS meter

**MeterSit**  
Viale dell'Industria 31, 36129 Padova

**G25 GPRS**  
Made in Italy

**CI. 1,5 H3 H-gas M2 E2 IP66 "T"**  
**tb 15°C pb 1,01325 bar**  
**tm -25°C...+55°C pmax 0.5 bar**  
**tg -25°C...+55°C Tamb -25°C...+55°C Year**  
**II 1/2(1) G Ex ia/ib mb [ia Ga] IIB T4 Ga/Gb**  
**CE 2261 TUV CY 18 ATEX 0206116 X**  
**CE M 0122 T10362**  
**Mod. MTSB03YYZXXXXXX**

**Qmin 0,25 m³/h**  
**Qmax 40,00 m³/h**  
**Qt 4,00 m³/h**

**WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTION**

**WARNING - Use only replaceable battery pack MeterRisk 2219013 or 2219014**  
**Electrical Pulse Interface: Connect only MeterRisk Kx 0950025 - see instruction**

**Lot 0000000**  
**XXXXX**  
**YEAR OF MANUFACTURE**

**DATA MATRIX CODE AREA**  
 - MTS= fixed digits mean MeterSit  
 - G= fixed digit  
 - G2= fixed digits mean Gas Meter  
 - Y= meter version; indicating the last two digits of the MeterSit product code  
 - Z= meter model; indicating the third last digit of the MeterSit product code: 2= G20 3= G21 4= G22  
 - XXXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZXXXXXX

**MTSB03010000001**

| Rev. | Mod.N° | Date     | Description                                   | Name      |
|------|--------|----------|---|-----------|
| 2    | 18990  | 26/09/18 | Modifiche generali - emissione per produzione | M. Radice |
| 1    | -      | 02/07/18 | Aggiornato grado di protezione da IP65 a IP66 | L. De Pol |
| 0    | -      | 15/05/18 | Prima emissione                               | M. Radice |

|         |          |             |                       |                            |                |                      |
|---------|----------|-------------|-----------------------|----------------------------|----------------|----------------------|
| Drawn   | 15/05/18 | M. Radice   | Designation           | Laboratura G25 GPRS Step 2 | Revision Level | Produzione           |
| Checked | 26/09/18 | P. Calcinai | Technical Information |                            | Ra             | General Rigorousness |
| Date    |          |             | Material              |                            | Scale          | ISO                  |
|         |          |             | Surface Treatment     |                            | Scale          | 2:1                  |
|         |          |             | Surface Treatment     |                            | Particulate    | ISO                  |
|         |          |             | Coating Surface       | Surface Roughness          | Surface        | 18990                |
|         |          |             | Technical Drawings    | ISO 8075                   | VOLUME         | 1/1                  |
|         |          |             | General Tolerances    | UNI-EN 22769-2-R           | WEIGHT         | 18990                |
|         |          |             |                       |                            | FINISH         | A3                   |
|         |          |             |                       |                            | NO. OF SHEETS  | 2                    |
|         |          |             |                       |                            |                |                      |





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Figure 9.4 – Labeling of MMU25 GPRS meter

|   |          |            |   |                               |                  |                   |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
|---|----------|------------|---|-------------------------------|------------------|-------------------|---|-------|----------|-----------|-------------|-------------------------------|----------------|------------|---------|----------|------------|-----------------------|--|----|-------------------|------|--|------|----------|--|-------|-----|----------|--|--|-------------------|--|-------|-----|---|--|--|-----------------|-------|------------------|--------|---|--|--|--------------------|----------|--------|----|---|--|--|--------------------|------------------|------|----|------|--------|------|-------------|------|----------|-------|---|-------|----------|---|-----------|-------|-----|---|--|----------|---|------------|--|----|---|--|----------|-----------------|-----------|--|---|
| 1   | 2        | 3          | 4   | 5                             | 6                | 7                 | 8 |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| <p>CODE 128 SERIAL NUMBER<br/>EXAMPLE:<br/>M025M000018S6</p> <p>CHARACTERS FILLED</p> <p><b>MeterSIt</b><br/>Viale dell'Industria 31, 35129 Padova</p> <p>CHARACTERS FILLED</p> <p><b>MMU25 GPRS</b><br/>Made in Italy</p> <p>DATA MATRIX</p> <p><b>Cl. 1.5 H3 H-gas M2 E2 IP66 "T"</b><br/> <b>tb 15°C pb 1,01325 bar</b><br/> <b>tm -25°C...+55°C pmax 0.5 bar</b><br/> <b>tg -25°C...+55°C Tamb -25°C...+55°C Year XXXX</b><br/> <b>Lot 0000000</b><br/> <b>II 1/2(1) G Ex ia/ib mb [ia Ga] IIB T4 Ga/Gb</b><br/> <b>CE 2261 TUV CY 18 ATEX 0206116 X</b><br/> <b>CE M-0122 T10362</b><br/> <b>s/n: M025M000018S6</b></p> <p><b>WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTION</b></p> <p>PRODUCTION LOT from 0000001 to 9999999</p> <p>YEAR OF MANUFACTURE</p> <p><b>WARNING - Use only replaceable battery pack MeterSIt 2218013 or 2218014</b><br/> <b>Electrical Pulse Interface: Connect only MeterSIt Kit 0065025 - see instruction</b></p> <p>CHARACTERS FILLED</p> <p><b>Qmin 0,16 m³/h</b><br/> <b>Qmax 25,00 m³/h</b><br/> <b>Qt 2,50 m³/h</b></p> <p>VEDI DETTAGLIO A</p> <p>DATA MATRIX CODE AREA</p> <ul style="list-style-type: none"> <li>- MTS= fixed digits mean MeterSIt</li> <li>- B= fixed digit</li> <li>- Q3= fixed digits mean Gas Meter</li> <li>- YY= meter version, indicating the last two digits of the MeterSIt product code</li> <li>- Z= meter model, indicating the third last digit of the MeterSIt product code: Z= G10 3= G15 4= G25</li> <li>- XXXXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZX000000</li> </ul> <p>ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW.</p> <p>MTS030100000001</p> |          |            |   |                               |                  |                   |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| <table border="1"> <tr> <td>Drawn</td> <td>15/05/18</td> <td>M. Radice</td> <td>Description</td> <td>Laboratoria MMU25 GPRS Step 2</td> <td>Revision Level</td> <td>Produzione</td> </tr> <tr> <td>Checked</td> <td>31/08/18</td> <td>P. Calcinà</td> <td>Technical Information</td> <td></td> <td>Ra</td> <td>General Dimension</td> </tr> <tr> <td>Date</td> <td></td> <td>Name</td> <td>Material</td> <td></td> <td>Scale</td> <td>ISO</td> </tr> <tr> <td>SIT Norm</td> <td></td> <td></td> <td>Surface Treatment</td> <td></td> <td>Ratio</td> <td>2:1</td> </tr> <tr> <td colspan="3"> <p>Q Critical Dimensions</p> <p>Surface Treatment</p> </td> <td>Sealing Surface</td> <td>.....</td> <td>Surface Hardness</td> <td>HV HRC</td> </tr> <tr> <td colspan="3"> <p>M. Radice</p> <p>L. De Pitt</p> <p>M. Radice</p> </td> <td>Technical Drawings</td> <td>ISO 6015</td> <td>VOLUME</td> <td>mm</td> </tr> <tr> <td colspan="3"> <p>M. Radice</p> <p>3109 Padova (Italy) Viale dell'Industria 31/B</p> </td> <td>General Tolerances</td> <td>UNI-EN 22768/2-4</td> <td>PERO</td> <td>kg</td> </tr> <tr> <td>Rev.</td> <td>Mod.N°</td> <td>Date</td> <td>Description</td> <td>Name</td> <td>Quantity</td> <td>Sheet</td> </tr> <tr> <td>2</td> <td>18990</td> <td>26/09/18</td> <td>Modifiche generali - emissione per produzione</td> <td>M. Radice</td> <td>18990</td> <td>1/1</td> </tr> <tr> <td>1</td> <td></td> <td>02/07/18</td> <td>Aggiornato grado di protezione da IP65 a IP66</td> <td>L. De Pitt</td> <td></td> <td>A3</td> </tr> <tr> <td>0</td> <td></td> <td>15/05/18</td> <td>Prima emissione</td> <td>M. Radice</td> <td></td> <td>2</td> </tr> </table>   |          |            |   |                               |                  |                   |   | Drawn | 15/05/18 | M. Radice | Description | Laboratoria MMU25 GPRS Step 2 | Revision Level | Produzione | Checked | 31/08/18 | P. Calcinà | Technical Information |  | Ra | General Dimension | Date |  | Name | Material |  | Scale | ISO | SIT Norm |  |  | Surface Treatment |  | Ratio | 2:1 | <p>Q Critical Dimensions</p> <p>Surface Treatment</p> |  |  | Sealing Surface | ..... | Surface Hardness | HV HRC | <p>M. Radice</p> <p>L. De Pitt</p> <p>M. Radice</p> |  |  | Technical Drawings | ISO 6015 | VOLUME | mm | <p>M. Radice</p> <p>3109 Padova (Italy) Viale dell'Industria 31/B</p> |  |  | General Tolerances | UNI-EN 22768/2-4 | PERO | kg | Rev. | Mod.N° | Date | Description | Name | Quantity | Sheet | 2 | 18990 | 26/09/18 | Modifiche generali - emissione per produzione | M. Radice | 18990 | 1/1 | 1 |  | 02/07/18 | Aggiornato grado di protezione da IP65 a IP66 | L. De Pitt |  | A3 | 0 |  | 15/05/18 | Prima emissione | M. Radice |  | 2 |
| Drawn   | 15/05/18 | M. Radice  | Description                                   | Laboratoria MMU25 GPRS Step 2 | Revision Level   | Produzione        |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| Checked   | 31/08/18 | P. Calcinà | Technical Information                         |                               | Ra               | General Dimension |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| Date  |          | Name       | Material                                      |                               | Scale            | ISO               |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| SIT Norm  |          |            | Surface Treatment                             |                               | Ratio            | 2:1               |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| <p>Q Critical Dimensions</p> <p>Surface Treatment</p>   |          |            | Sealing Surface                               | .....                         | Surface Hardness | HV HRC            |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| <p>M. Radice</p> <p>L. De Pitt</p> <p>M. Radice</p>   |          |            | Technical Drawings                            | ISO 6015                      | VOLUME           | mm                |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| <p>M. Radice</p> <p>3109 Padova (Italy) Viale dell'Industria 31/B</p>   |          |            | General Tolerances                            | UNI-EN 22768/2-4              | PERO             | kg                |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| Rev.  | Mod.N°   | Date       | Description                                   | Name                          | Quantity         | Sheet             |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| 2   | 18990    | 26/09/18   | Modifiche generali - emissione per produzione | M. Radice                     | 18990            | 1/1               |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| 1   |          | 02/07/18   | Aggiornato grado di protezione da IP65 a IP66 | L. De Pitt                    |                  | A3                |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |
| 0   |          | 15/05/18   | Prima emissione                               | M. Radice                     |                  | 2                 |   |       |          |           |             |                               |                |            |         |          |            |                       |  |    |                   |      |  |      |          |  |       |     |          |  |  |                   |  |       |     |   |  |  |                 |       |                  |        |   |  |  |                    |          |        |    |   |  |  |                    |                  |      |    |      |        |      |             |      |          |       |   |       |          |   |           |       |     |   |  |          |   |            |  |    |   |  |          |                 |           |  |   |





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Figure 9.5 – Labeling of MMU40 GPRS meter

**CODE 128 SERIAL NUMBER**  
EXAMPLE: M040M000018S6

**CHARACTERS FILLED**

**MeterSIT**  
Viale dell'Industria 31, 35129 Padova

**MMU40 GPRS**  
Made in Italy

**DATA MATRIX**

**WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTION**

**CI.1.5 H3 H-gas M2 E2 IP66 'T'**  
**tb 15°C pb 1,01325 bar**  
**tm -25°C...+55°C pmax 0.5 bar**  
**tg -25°C...+55°C Tamb -25°C...+55°C Year XXXX**  
**Lot 0000000**  
**II 1/2(1) G Ex ia/ib mb [Ia Ga] IIB T4 Ga/Gb**  
**CE 2261 TUV CY 18 ATEX 0206116 X**  
**CE M 0122 T10362**  
**s/n: M040MXXXX18S6**

**PRODUCTION LOT**  
from 0000001 to 9999999

**YEAR OF MANUFACTURE**

**WARNING - Use only replaceable battery pack MeterSIT 2219013 or 2219014**

**Electrical Pulse Interface: Connect only MeterSIT Kit 0055025 - see instruction**

**VEDI DETTAGLIO A**

**DATA MATRIX CODE AREA**

- MTS= fixed digits mean MeterSIT
- 8= fixed digit
- 03= fixed digits mean Gas Meter
- Y1= meter version; indicating the last two digits of the MeterSIT product code
- Z= meter model; indicating the third last digit of the MeterSIT product code 2= G40 3= G16 4= G25
- XXXXXXX= progressive number; together with Z indicates the S/N of the meter, e.g. ZXXXXXXX

**ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:**  
MTS8030100000001

| Rev. | Mod.N° | Date     | Description                                   | Nome      |
|------|--------|----------|---|-----------|
| 2    | 18990  | 25/09/18 | Modifiche generali - emissione per produzione | M. Radice |
| 1    | -      | 02/07/18 | Aggiornato grado di protezione da IP65 a IP66 | L. De Pol |
| 0    | -      | 15/05/18 | Prima emissione                               | M. Radice |

|           |          |            |                                    |                              |          |         |            |
|-----------|----------|------------|------------------------------------|------------------------------|----------|---------|------------|
| Drawn     | 15/05/18 | M. Radice  | Description                        | Laseratura MMU40 GPRS Step 2 | Revision | Level   | Produzione |
| Checked   | 26/09/18 | P. Colombo | Tecnica                            | Information                  | RA       | General | ✓          |
| Date      |          | Name       | Material                           |                              | Scale    | ISO     |            |
| S.P. Norm |          |            | Surface Treatment                  |                              | 2:1      |         |            |
|           |          |            | Surface Treatment                  |                              |          |         |            |
|           |          |            | Sealing Surface.....               | Surface Hardness HV          | HRC      | 18990   | 1/1        |
|           |          |            | Technical Drawings ISO 8015        | VOLUME                       | en       | 7352322 | 2          |
|           |          |            | General Tolerances UNI-EN 227692-H | PESO                         |          |         |            |



## 10. ALARMS AND FAILURE VISUALIZATION

The system status of the meter is "summarized" in an event log where each bit has the following meaning:22-26-27-28

**Table 9 – Alarms**

| Internal Code for Event | Information          | Display Visualization |
|-------------------------|----------------------|-----------------------|
| 1                       | NO BATTERY           | DG b<br>001           |
| 2                       | BATTERY CRITICAL     | DG                    |
| 3                       | BUFFER ALMOST FULL   | DG C<br>003           |
| 4                       | GENERIC ALARM        | DG C<br>004           |
| 5                       | BUFFER FULL          | DG C<br>005           |
| 6                       | INVALID CLOCK        | DG                    |
| 7                       | VOLUME INCONSISTENCY | DG                    |
| 8                       | INVALID DATABASE     | DG b<br>008           |
| 9                       | RESERVED             | DG                    |
| 10                      | RESERVED             | DG                    |
| 11                      | DATABASE CREATION    | DG                    |
| 12                      | NVM_ERROR            | DG A<br>012           |
| 13                      | PROFILE ACTIVATED    | DG                    |
| 14                      | WRITE FAILURE        | DG C<br>014           |
| 15                      | READ FAILURE         | DG C<br>015           |
| 16                      | TOO DIFF TIME SYNC   | DG b<br>006           |
| 17                      | SENSOR FAILURE       | DG A<br>018           |
| 18                      | REVERSE FLOW         | DG b<br>019           |
| 19                      | OVERFLOW             | DG C<br>020           |
| 20                      | METER CHECKSUM ERROR | DG A<br>017           |
| 21                      | METER RTC ERROR      | DG A<br>021           |
| 22                      | RESERVED             | DG                    |
| 23                      | LOW BATTERY (10%)    | DG F<br>002           |





| Internal Code for Event | Information                                | Display Visualization |
|-------------------------|--|-----------------------|
| 24                      | UNI TS STATUS MODIFIED                     | DG                    |
| 25                      | METER RESTARTED                            | DG                    |
| 26                      | RESERVED                                   | DG                    |
| 27                      | RESERVED                                   | DG                    |
| 28                      | RESERVED                                   | DG                    |
| 29                      | TIME SYNCHRONIZED                          | DG                    |
| 30                      | IMAGE DOWNLOADED                           | DG                    |
| 31                      | IMAGE ACTIVATED                            | DG                    |
| 32                      | NETWORK FAILURE                            | DG C<br>032           |
| 33                      | IR DECRYPT or AUTH. FAILURE                | DG C<br>033           |
| 34                      | METER UNAVAILABLE                          | DG                    |
| 35                      | DLS BEGIN                                  | DG                    |
| 36                      | RESERVED                                   | DG                    |
| 37                      | TEMPERATURE ERROR                          | DG C<br>037           |
| 38                      | GAS DETECTION ERROR                        | DG C<br>038           |
| 39                      | BATTERY VERY LOW                           | DG F<br>039           |
| 40                      | INTERNAL BATTERY EXHAUSTED                 | DG                    |
| 41                      | EXTERNAL BATTERY EXHAUSTED                 | DG                    |
| 42                      | BILLING PERIOD CLOSED                      | DG                    |
| 43                      | NEW TARIFF PLAN PROGRAMMED                 | DG                    |
| 44                      | EXTERNAL BATTERY<br>REPLACEMENT AUTHORIZED | DG                    |
| 45                      | SECURITY KEY MODIFIED                      | DG                    |
| 46                      | INTERNAL UNITS LIB                         | DG                    |
| 47                      | INTERNAL UNITS LIB FAIL                    | DG                    |
| 48                      | RESET CIG LOGBOOK                          | DG                    |
| 49                      | RESET EVENT LOGBOOK                        | DG                    |



| Internal Code for Event | Information                            | Display Visualization |
|-------------------------|--|-----------------------|
| 50                      | NEW TARIFF PLAN ACTIVATED              | DG                    |
| 51                      | OPTICAL COMMUNICATION<br>SESSION START | DG                    |
| 52                      | OPTICAL COMMUNICATION<br>SESSION STOP  | DG                    |
| 53                      | FIRMWARE IMAGE DOWNLOAD                | DG                    |
| 54                      | RESERVED                               | DG                    |
| 55                      | RESERVED                               | DG                    |
| 56                      | DLS IS ACTIVE                          | DG                    |

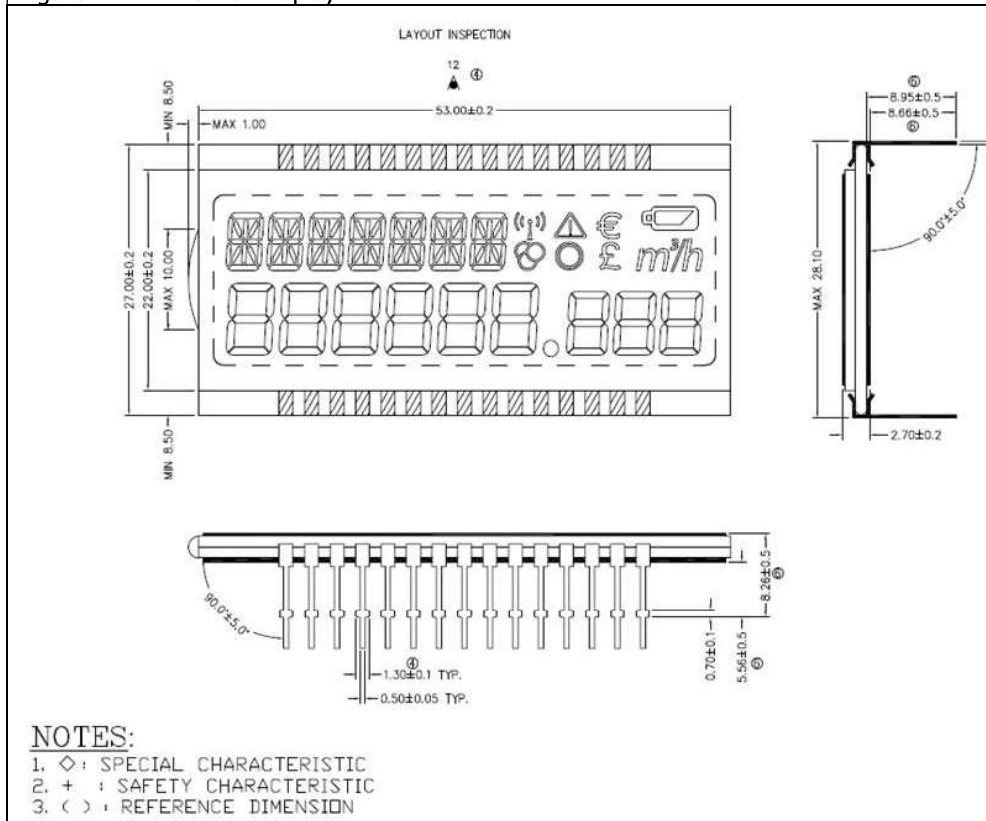
If one of these faults occurs an alarm code is often shown on the display of the meter (see for more details the above table, column Display Visualization), an event is recorded in Event-Log and the related bit in the Status word is modified.



## 11. DISPLAY

The meter is equipped with the display shown in figure 11.1, where the segments can be turned on, depending on the different screen and on the information to be displayed.


Figure 11.1 – View of Display







### Upper row segments explanation (from left to right)

- 7 British flag segments are used to display letter information, such as the title of each different screen (see section "Available screens").
- 8 icons (10 segments):



|  |  |  |
|--|--|--|
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|--|--|--|

- $m^3/h$  The  $m^3/h$  icon is composed by 2 segments:  $m^3$  and  $/h$
-  Antenna icon identifies a remote communication
-  Coins icon identify always all metrological information
-  Currency icons are used to identify credit for prepaid contracts
-  This icon identify an important Error

The battery sign is turned on when the battery level is measured below a programmable threshold (currently 90% of lifetime).

The “m<sup>3</sup>” symbol is used in the screens which display the measured volumes, while the “m<sup>3</sup>/h” symbol is used in the screens which display flow, e.g. Qv and Qb, see next page for further explanation.


#### Bottom row explanation

The available digits are used for any numerical or time indication, such as date, time, value of measured volumes and so on. The point is used to separated integer values from decimal ones, when it is needed for an unambiguous visualization.

Display bottom row has 6 digits + 3 digits after the decimal point. It can show until 999999.999 m<sup>3</sup>.

The display is turned-off after 30 seconds without action, but for screen “All segments displayed” which is turned-off after 5s.



|   |        |                    |
|---|--------|--------------------|
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**Available screens:**

The available screens are shown sequentially at each key-press (short key-press). Pushing repeatedly the button the following information is shown:

| Upper row                      | Meaning   | Unit visible      | Visible only under               |
|--------------------------------|---|-------------------|----------------------------------|
| V <sub>b</sub>                 | Total volume at standard condition  |                   |                                  |
| V <sub>b</sub> dm <sup>3</sup> | All   |                   | Verification mode                |
| Q <sub>b</sub>                 | All   | m <sup>3</sup> /h | Verification mode                |
| D                              | Date  |                   |                                  |
| H                              | Hour  |                   |                                  |
| ID                             | Point of delivery identification  |                   |                                  |
| TA                             | Total volume measured in alarm condition  |                   |                                  |
| SD                             | Meter state ('1' = unconfigured, '0' = normal, '2' = maintenance)   |                   |                                  |
| DG                             | Diagnostics   |                   |                                  |
| TEST                           | Test mode: in normal speed 'Speed -1' is shown in bottom row, in fast speed 'Speed -5'  |                   | Test mode, either Normal or Fast |
| Fx                             | Actual tariff, where 'x' can assume value '1' or '2' or '3'   |                   |                                  |
| PT                             | Actual tariff plan identification   |                   |                                  |
| T1                             | Total volume on tariff band 1 of actual tariff period   | m <sup>3</sup>    |                                  |
| T2                             | Total volume on tariff band 2 of actual tariff period   | m <sup>3</sup>    |                                  |
| T3                             | Total volume on tariff band 3 of actual tariff period   | m <sup>3</sup>    |                                  |
| Q <sub>v</sub>                 | Maximum conventional flow, as per UNI TS 11291-6  | m <sup>3</sup> /h |                                  |
| DF                             | End date of previous tariff period  |                   |                                  |
| HF                             | End hour of previous tariff period  |                   |                                  |
| PRE PT                         | Tariff plan identification of previous tariff period  |                   |                                  |
| PRE V <sub>b</sub>             | Total volume at standard condition at end date of previous tariff period  | m <sup>3</sup>    |                                  |
| PRE TA                         | Total volume measured in alarm condition at end date of previous tariff period  | m <sup>3</sup>    |                                  |
| PRE T1                         | Total volume on tariff band 1 at end date of previous tariff period   | m <sup>3</sup>    |                                  |
| PRE T2                         | Total volume on tariff band 2 at end date of previous tariff period   | m <sup>3</sup>    |                                  |
| PRE T3                         | Total volume on tariff band 3 at end date of previous tariff period   | m <sup>3</sup>    |                                  |
| PRE Q <sub>v</sub>             | Maximum conventional flow of previous tariff period   | m <sup>3</sup> /h |                                  |
| SW1                            | "Meter Processing Unit" HW/SW version: in bottom row first letter is used to represent HW blade type (currently B for G10 and MMU16 Meters, C for G16 and MMU25 meters and D for G25 and MMU40 meters + three numbers to represent the software release + four hex digits to represent checksum |                   |                                  |
| SW2                            | "Communication & House Keeping Processing Unit" SW version: in bottom row first letter is used to represent the type of product (A for GPRS meter) + three numbers to represent the software release + four hex digits to represent checksum  |                   |                                  |
| SW3                            | Bootloader SW version   |                   |                                  |
| All segments                   | For display segments verification purposes  |                   |                                  |
| No segments                    |   |                   |                                  |





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only for UK market gas meters (MMU16, MMU25, MMU40) the information sequence is modified as follows:

| Upper row                      | Meaning   | Unit visible      | Visible only under |
|--------------------------------|---|-------------------|--------------------|
| V <sub>b</sub>                 | Total volume at standard condition  |                   |                    |
| V <sub>b</sub> dm <sup>3</sup> | All   |                   | Verification mode  |
| Q <sub>b</sub>                 | All   | m <sup>3</sup> /h | Verification mode  |
| D                              | Date  |                   |                    |
| H                              | Hour  |                   |                    |
| MPRN                           | Metering Point Reference Number   |                   |                    |
| TA                             | Total volume measured in alarm condition  |                   |                    |
| CS                             | Commissioning status  |                   |                    |
| DG                             | Diagnostics   |                   |                    |
| SW1                            | "Meter Processing Unit" HW/SW version: in bottom row first letter is used to represent HW blade type (currently B for G10 and MMU16 Meters, C for G16 and MMU25 meters and D for G25 and MMU40 meters + three numbers to represent the software release + four hex digits to represent checksum |                   |                    |
| SW2                            | "Communication & House Keeping Processing Unit" SW version: in bottom row first letter is used to represent the type of product (A for GPRS meter) + three numbers to represent the software release + four hex digits to represent checksum  |                   |                    |
| SW3                            | Bootloader SW version   |                   |                    |

If the users presses and holds for 6 seconds the left button under 'DG' screen, the following screens are shown after 'DG' screen and before 'SW1' screen. Also this screens sequence scrolls by means of the right button:

| Upper row | Meaning  | Unit visible | Visible only under |
|-----------|--|--------------|--------------------|
| SN        | Serial Number used for communication (8digits) |              |                    |
| HE URL    | Head End system IP address (scrolling)         |              |                    |
| HE PORT   | Head End system Port configured                |              |                    |
| MNO ID    | MCC and MNC of Mobile Network operator         |              |                    |
| CELL ID   | Identifier of last cell used (decimal format)  |              |                    |
| LRSQ      | Last Received Signal Quality                   |              |                    |
| SIM       | SIM card ICCID number (scrolling)              |              |                    |
| DLCA      | Date of Last Communication Attempt             |              |                    |
| HLCA      | Hour of Last Communication Attempt             |              |                    |
| DLCS      | Date of Last Communication Success             |              |                    |
| HLCS      | Hour of Last Communication Success             |              |                    |
| DNCA      | Date of Next Communication Attempt             |              |                    |
| HNCA      | Hour of Next Communication Attempt             |              |                    |
| SCC       | Successful Communications Counter              |              |                    |
| FCC       | Failed Communications Counter                  |              |                    |



|        |                    |
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## 12. ELECTRICAL PULSE INTERFACE

On the gas meter it's available an electric pulse interface connector (optional for the customer), useful to drive an external data logger.

When enabled the meter will generate an impulse for each "V<sub>0</sub>" liter of measured gas (V<sub>0</sub> threshold is programmable: e.g. 1 pulse/m<sup>3</sup>); this signal is compliant to the UNI TS 11291-5 Annex A requirements.

During normal operation, when Electrical Pulse Interface is not used, this connector (ref. des. J9 on Annex1 - Electrical Schematics) is disabled and not externally accessible therefore not dangerous.

When required Electrical Pulse Interface connection only specialized operators can replace the original battery cover with a dedicated **Electrical Pulse Interface Kit** (MeterSit kit p/n **0955025**)

**Electrical Pulse Interface Kit** output cable will be connected with an external Data-logger set to guarantee a signal complaint with **UNI TS 11291-5 Annex A** requirements (see following table):

| Characteristic                                | Value                      |
|---|----------------------------|
| Pulse duration                                | ≥ 50msec                   |
| Max Frequency                                 | ≤ 10Hz                     |
| Applicable voltage                            | 5÷15 Volt                  |
| Max applicable Current                        | < 10mA                     |
| Equivalent ON Resistance (R <sub>ON</sub> )   | ≤ 2Vcc / 1mA = 2Kohm @ 1mA |
| Equivalent OFF Resistance (R <sub>OFF</sub> ) | ≥ 100Kohm @ 15Vcc          |

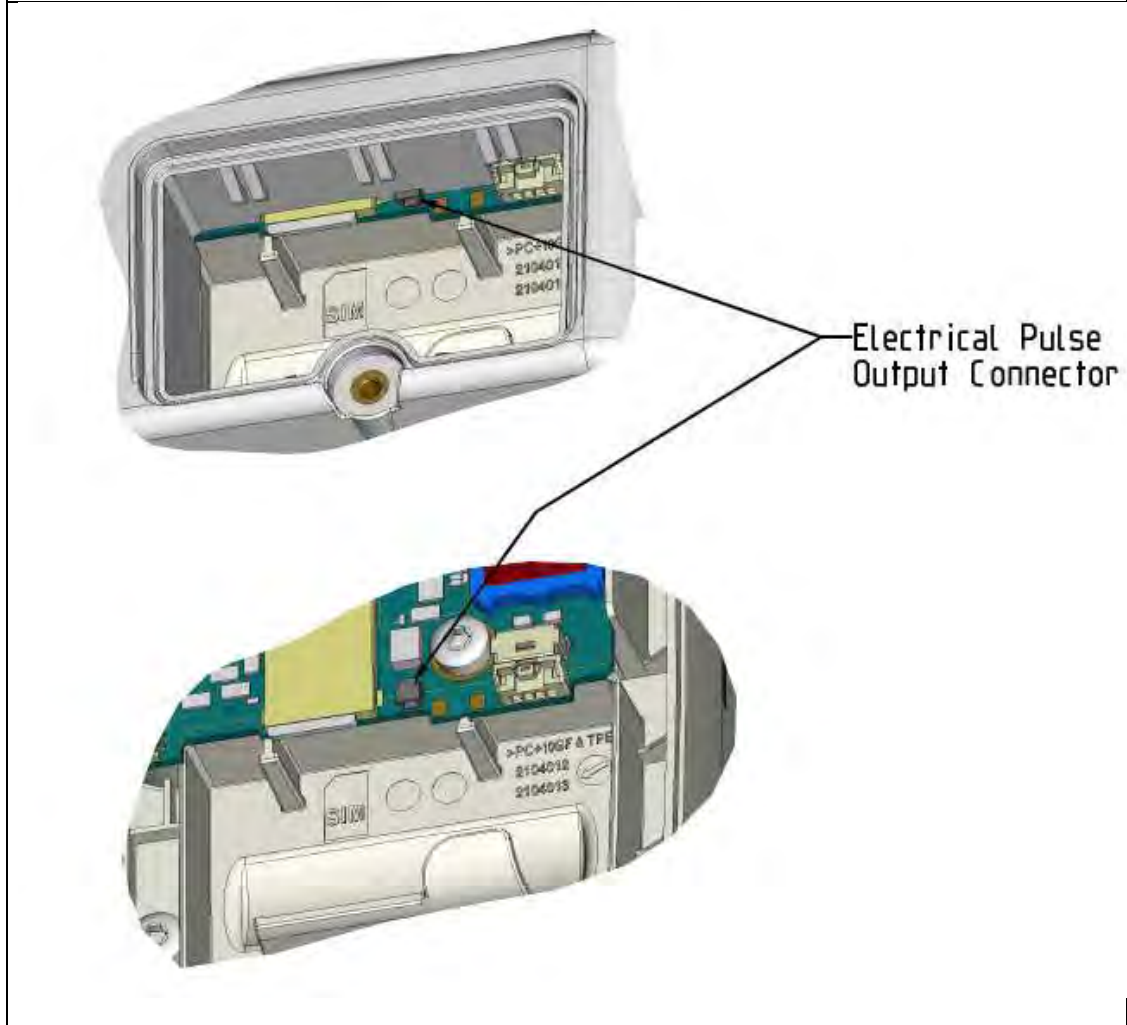
Between Gas meter (installed in AtEx Zone 1) and Data-logger (installed in Zone 2) is mandatory to insert a zener barrier to separate unsafe zone (Gas meter side - Zone 1) to safe zone (Data-logger side - Zone 2).

Figure 12.1 shown Electrical Pulse Interface Connector inside battery compartment

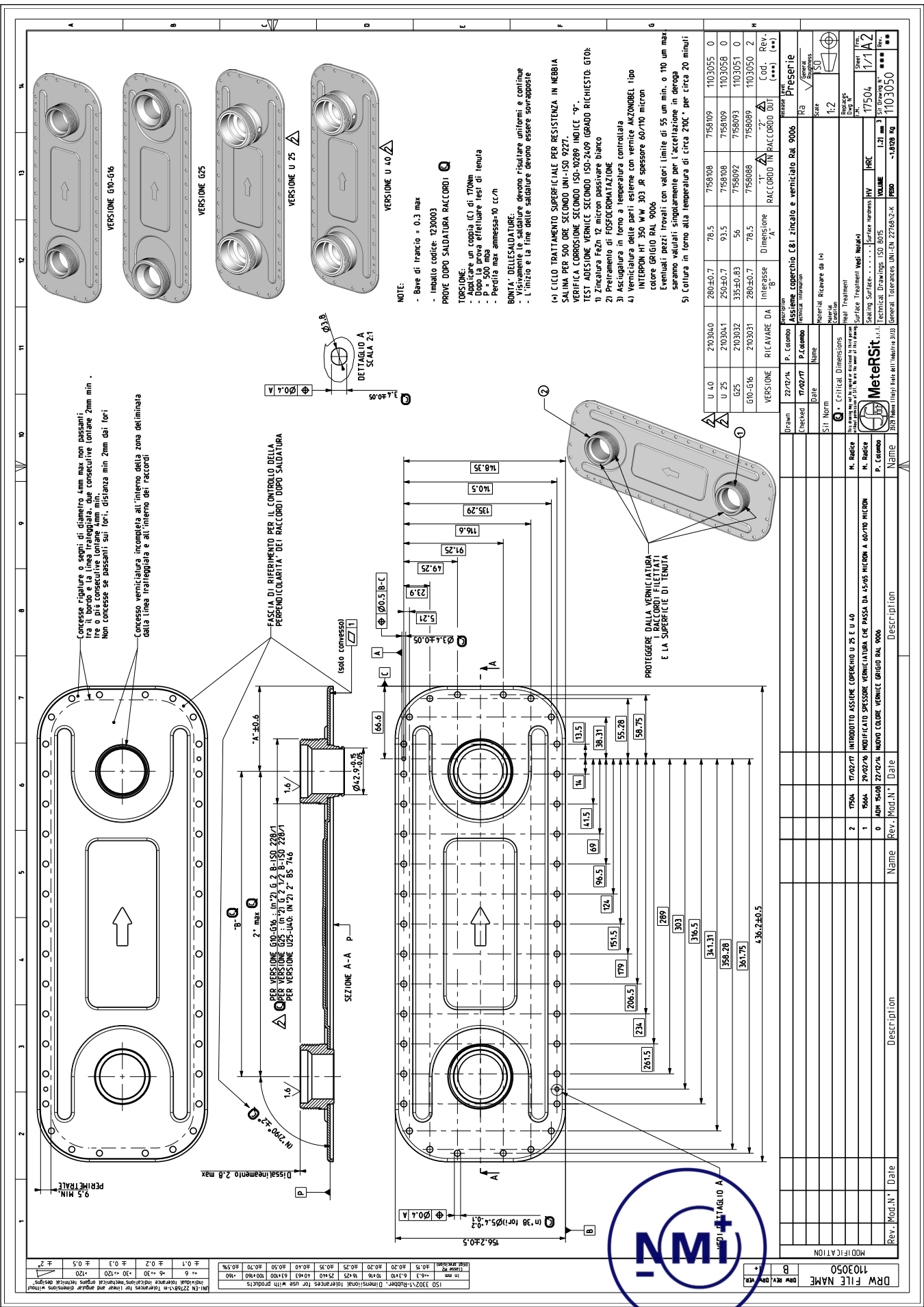
Only MeterSit kit p/n **0955025** can be connected with **Electrical Pulse Interface connector**, any other connection is not allowed and potentially danger for explosion.



**FIGURE 12.1 – INTERNAL PULSE EMITTER CONNECTOR**







Concesse rigature o segni di diametro 0mm max non passanti tra il bordo e la linea tratteggiata, due consecutive lontane 2mm min. Non concesse se passanti sui fori, distanza min 2mm dai fori.

Concesse verniciature, inverniciature all'interno della zona delimitata dalla linea tratteggiata e all'interno dei raccordi.

FASCIA DI RIFERIMENTO PER IL CONTROLLO DELLA PERPENDICOLARITA' DEI RACCORDI DOPO SALDATURA

PER VERSIONE G10-G16: IN 21, 16, 2, 8-ISO 228/1  
 PER VERSIONE G25: IN 21, 6, 2, 8-ISO 228/1  
 PER VERSIONE U25-U40: IN 21, 2, 8-ISO 228/1

SEZIONE A-A

PROTEGGERE DALLA VERNICIATURA I RACCORDI FILETTATI E LA SUPERFICIE DI TENUTA

DETTAGLIO A  
 SCALA 2:1

NOTE:

- Bave di trancio = 0,3 max
- Imbocco codice: 123003
- PROVE DOPO SALDATURA RACCORDI
- TORSIONE
- Addebiacare un copia (C) di 170mm
- Dopo la prova effettuare lesi di tenuta
- P = 500 mpa
- Perfora max. ammasso=10 cc/h

BONTA' DESSALDATURE:

- Visivamente le saldature devono risultare uniformi e continue
- L'inizio e la fine delle saldature devono essere sovrapposte

(\*) CICLO TRATTAMENTO SUPERFICIALE PER RESISTENZA IN NEBBIA SALINA PER 500 ORE SECONDO UNI-ISO 9227.  
 VERIFICA CORROSIONE SECONDO ISO-10289 INDICE '9'.  
 TEST ADESIONE VERNICE SECONDO ISO-2409 (GRADO RICHIESTO: G10):  
 1) Zincatura Fe/Zn 12 micron passivare bianco  
 2) Pretattamento di FOSFODOPAZIONE  
 3) Asciugatura in forno a temperatura controllata  
 4) Verniciatura delle parti esterne con vernice AKZONOBEL tipo INTERPON HT 350 W/W 303 IR spessore 60/110 micron colore GRIGIO RAL 9006

Eventuali prezzi trovati con valori limite di 55 un min. o 110 un max. saranno valutati singolarmente per l'accelerazione in deroga

5) Coltura in forno alla temperatura di circa 200C° per circa 20 minuti

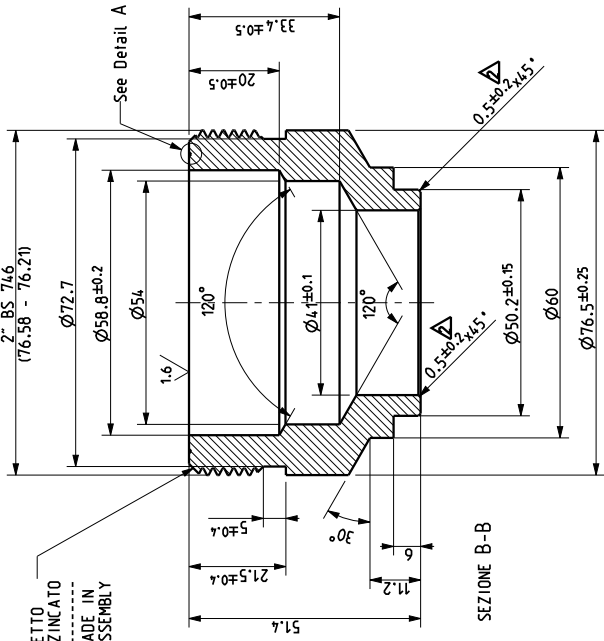
| U       | U 40    | U 25    | G25       | G10-G16   | VERSIONE | RICAVARE DA | Dimensione | Cod. Rev. |
|---------|---------|---------|-----------|-----------|----------|-------------|------------|-----------|
| 280±0,7 | 2103040 | 280±0,7 | 2103041   | 250±0,7   | 78.5     | 7158108     | 7158109    | 1103055_0 |
| 93.5    | 7158108 | 7158109 | 1103058_0 | 35±0,0,83 | 56       | 7158092     | 7158093    | 1103051_0 |
| 78.5    | 7158089 | 7158089 | 1103050_2 | 280±0,7   | 78.5     | 7158089     | 7158089    | 1103050_2 |

| Drawn    | Checked  | Drawn      | Checked    | Drawn      | Checked    | Drawn      | Checked    | Drawn      | Checked    |
|----------|----------|------------|------------|------------|------------|------------|------------|------------|------------|
| 22/02/14 | 17/02/17 | P. Colombo | P. Colombo | P. Colombo | P. Colombo | P. Colombo | P. Colombo | P. Colombo | P. Colombo |

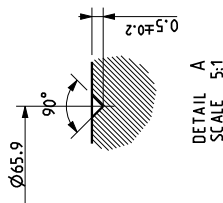
| Rev. | Mod.N° | Date     | Description   |
|------|--------|----------|---|
| 2    | 07504  | 17/02/17 | MODIFICATO ASSIEME COPRIBOIA U 25 E U 40                                |
| 1    | 05604  | 22/02/14 | MODIFICATO SPESORE VERNICIATURA CHE PASSA DA 55±5 MICRON A 60±10 MICRON |
| 0    | 0401   | 15/04    | MODIFICATO SPESORE VERNICIATURA CHE PASSA DA 55±5 MICRON A 60±10 MICRON |

| DRW FILE NAME | REV | DATE     |
|---------------|-----|----------|
| 103050        | B   | 17/02/17 |

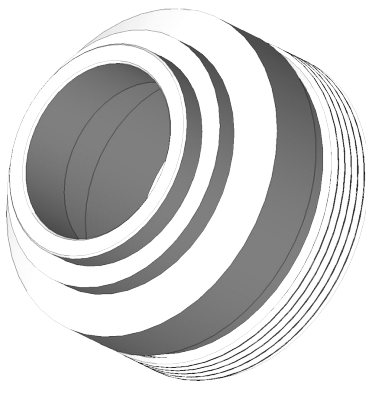
1 2 3 4 5 6 7 8



ESEGUIRE CONTROLLO FILETTO SU ASSIEME COPPERCHIO ZINCATO. CHECKING THREAD MUST BE MADE IN THE GALVANIZED COVER ASSEMBLY



DETAIL A SCALE 5:1



NOTE / NOTES:

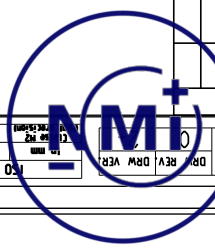
- LA FORNITURA DEVE INCLUDERE TUTTA LA DOCUMENTAZIONE "PPAP Liv. 3" PER L'OMOLOGAZIONE DEL PARTICOLARE.
- THE SUPPLY MUST INCLUDE ALL DOCUMENTATION "PPAP level 3" FOR THE APPROVAL OF THE PART.

UNI-EN 22768-1-n Tolerances for linear and angular dimensions without individual tolerance indications (mechanical design)

|       |       |       |       |     |
|-------|-------|-------|-------|-----|
| ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 2 |
| ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 2 |

ISO 3302-1-Rubber. Dimensional tolerances for use with products

|       |       |       |       |     |     |     |     |      |      |      |      |       |       |       |        |
|-------|-------|-------|-------|-----|-----|-----|-----|------|------|------|------|-------|-------|-------|--------|
| ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 1 | ± 2 | ± 3 | ± 5 | ± 10 | ± 20 | ± 30 | ± 50 | ± 100 | ± 200 | ± 500 | ± 1000 |
| ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 1 | ± 2 | ± 3 | ± 5 | ± 10 | ± 20 | ± 30 | ± 50 | ± 100 | ± 200 | ± 500 | ± 1000 |



|           |          |            |                            |                                  |                   |                          |
|-----------|----------|------------|----------------------------|----------------------------------|-------------------|--------------------------|
| Drawn     | 15/11/16 | P. Colombo | Description                | RACCORDO IN INGRESSO - 2" BS 716 | Release Level     | Preserie                 |
| Checked   | 07/06/17 | C. Fontana | Technical information      |                                  | Ra X.XX           | General Roughness        |
| Sit Norms |          |            | Material Acc. da fornitura | S235 JR H (H 3608) EN10210-2     | Scale             | 1:1                      |
|           |          |            | Condition                  | Treatato 400-h11                 | ISO               |                          |
|           |          |            | Heat Treatment             |                                  | Surface Roughness |                          |
|           |          |            | Sealing Surface            |                                  | Sheet             | 1/A3                     |
|           |          |            | Technical Drawings         | ISO 8075                         | VOLUME            | 90316.74 mm <sup>3</sup> |
|           |          |            | General Tolerances         | UNI-EN 22768-2-H                 | PESO              | -0.7090 Kg               |
|           |          |            |                            |                                  | 7158108           | 2                        |

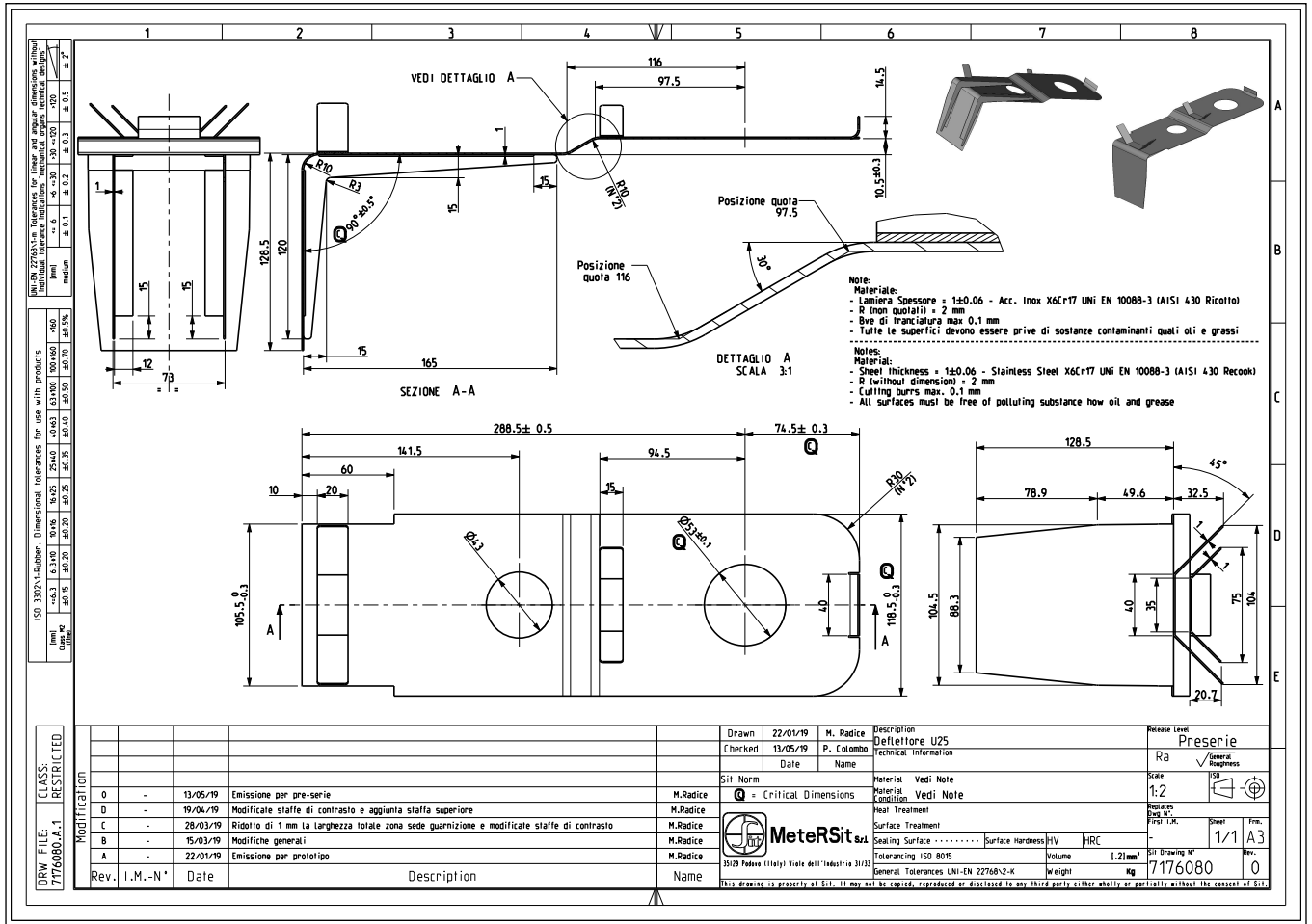
DRW FILE NAME 7158108

MODIFICATION

| Rev. | Mod.N° | Date     | Description   |
|------|--------|----------|---|
| 2    | -      | 07/06/17 | Modificata tolleranza ai 2 smussi' indicati                                   |
| 1    | -      | 06/05/17 | Aggiornato al costruito e aggiunte quote mancanti sul loro presa di pressione |
| 0    | -      | 17/02/17 | Prima emissione   |



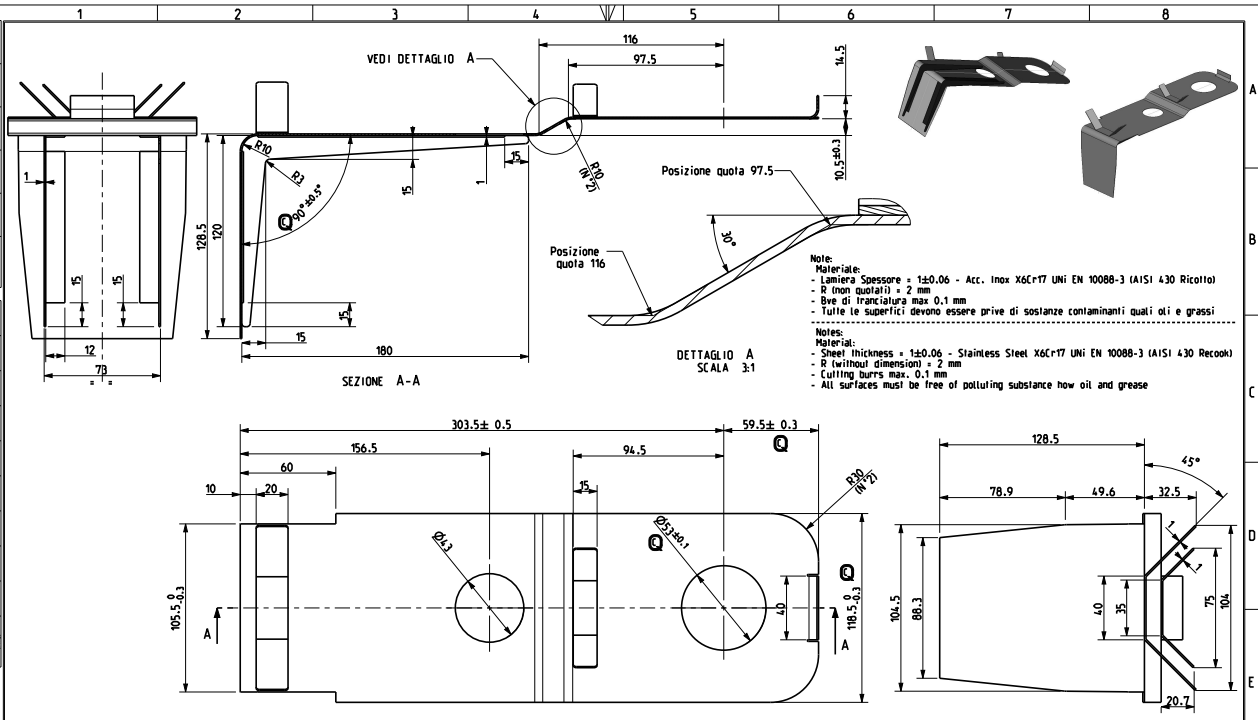




|             |       |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| ISO 2768-1m |       | ±0.1 | ±0.2 | ±0.3 | ±0.4 | ±0.5 | ±0.6 | ±0.7 | ±0.8 | ±1.0 | ±1.2 | ±1.5 | ±2.0 |
| mm          | Class | 0.05 | 0.07 | 0.10 | 0.15 | 0.20 | 0.30 | 0.40 | 0.50 | 0.70 | 1.00 | 1.50 | 2.00 |

|                   |       |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| ISO 3302-1-Rubber |       | ±0.1 | ±0.2 | ±0.3 | ±0.4 | ±0.5 | ±0.6 | ±0.7 | ±0.8 | ±1.0 | ±1.2 | ±1.5 | ±2.0 |
| mm                | Class | 0.05 | 0.07 | 0.10 | 0.15 | 0.20 | 0.30 | 0.40 | 0.50 | 0.70 | 1.00 | 1.50 | 2.00 |

|        |             |
|--------|-------------|
| CLASS: | RESTRICTED  |
| FILE:  | 7176081.A.4 |



| Rev. | I.M.-N' | Date     | Description  |
|------|---------|----------|--|
| 0    | -       | 13/05/19 | Emissione per pre-serie  |
| D    | -       | 19/04/19 | Modificare staffe di contrasto e aggiunta staffa superiore                                 |
| C    | -       | 28/03/19 | Ridotto di 1 mm la larghezza totale zona sede guarnizione e modificate staffe di contrasto |
| B    | -       | 15/03/19 | Modifiche generati   |
| A    | -       | 22/01/19 | Emissione per prototipo  |

|          |          |            |                                     |                     |               |                   |
|----------|----------|------------|-------------------------------------|---------------------|---------------|-------------------|
| Drawn    | 22/01/19 | M. Radice  | Description                         | Deflettore U40      | Release Level | Preserie          |
| Checked  | 13/05/19 | P. Colombo | Technical Information               |                     | Ra            | General Roughness |
| Date     |          | Name       |                                     |                     | Scale         | 1:2               |
| Sit Norm |          |            | Material                            | Vedi Note           | ISO           |                   |
|          |          |            | Material                            | Vedi Note           | Scale         | 1:2               |
|          |          |            | Heat Treatment                      |                     | ISO           |                   |
|          |          |            | Surface Treatment                   |                     | ISO           |                   |
|          |          |            | Sealing Surface                     | Surface Hardness HV | HRC           | 1/1 A3            |
|          |          |            | Tolerancing ISO 8015                | Volume              | 1.21mm³       | Rev.              |
|          |          |            | General Tolerances UNI-EN 22768-2-K | Weight              | kg            | 7176081           |
|          |          |            |                                     |                     |               | 0                 |





Rubber on deflector

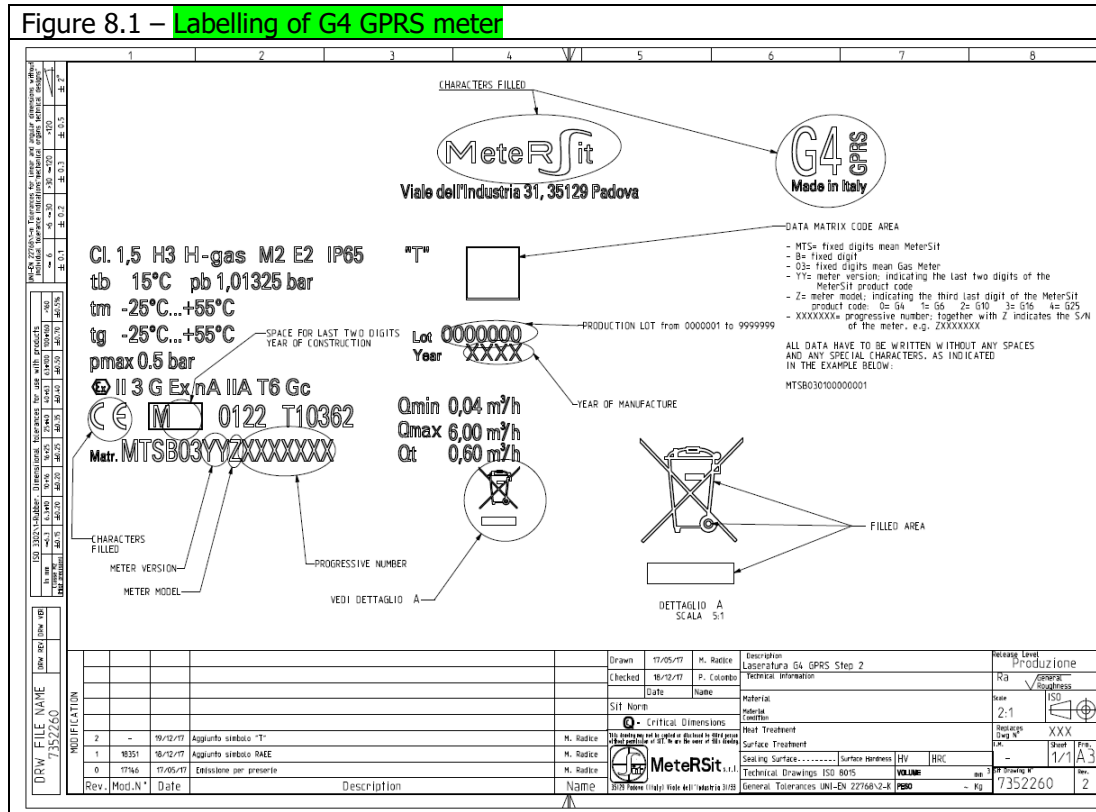


Rubber off deflector



### 8. MARKINGS

The figures 8.x show the labeling and markings as printed on the plastic cover of gas meter by a laser engraver, for the 4 different versions of the meters:



**Figure 8.2 – Labelling of G6 GPRS meter**

**CHARACTERS FILLED**

**MeterSit**  
 Viale dell'Industria 31, 35129 Padova

**G6 GPRS**  
 Made in Italy

**DATA MATRIX CODE AREA**

- MTS+ fixed digits mean MeterSit
- B= fixed digit
- 0s= fixed digits mean Gas Meter
- YTs meter version, indicating the last two digits of the MeterSit product code
- Z= meter model, indicating the third last digit of the MeterSit product code: 0= G4 1= G6 2= G10 3= G16 4= G25
- XXXXXXX= progressive number, together with Z indicates the S/N of the meter, e.g. ZX000000

**ALL DATA HAVE TO BE WRITTEN WITHOUT ANY SPACES AND ANY SPECIAL CHARACTERS, AS INDICATED IN THE EXAMPLE BELOW:**

MTSB03100000001

**CI. 1.5 H3 H-gas M2 E2 IP65 "T"**  
**tb 15°C pb 1,01325 bar**  
**tm -25°C...+55°C**  
**tg -25°C...+55°C**  
**pmax 0.5 bar**  
**Qn 3 G Ex,nA IIA T6 Gc**  
**Qmin 0,06 m³/h**  
**Qmax 10,00 m³/h**  
**Qt 1,00 m³/h**

**Lot 0000000**  
**Year XXXX**

**CHARACTERS FILLED**  
**METER VERSION**  
**METER MODEL**  
**PROGRESSIVE NUMBER**  
**SPACE FOR LAST TWO DIGITS YEAR OF CONSTRUCTION**

**VEDI DETTAGLIO A**  
**DETTAGLIO A**  
**SCALA 5:1**

**FILLED AREA**

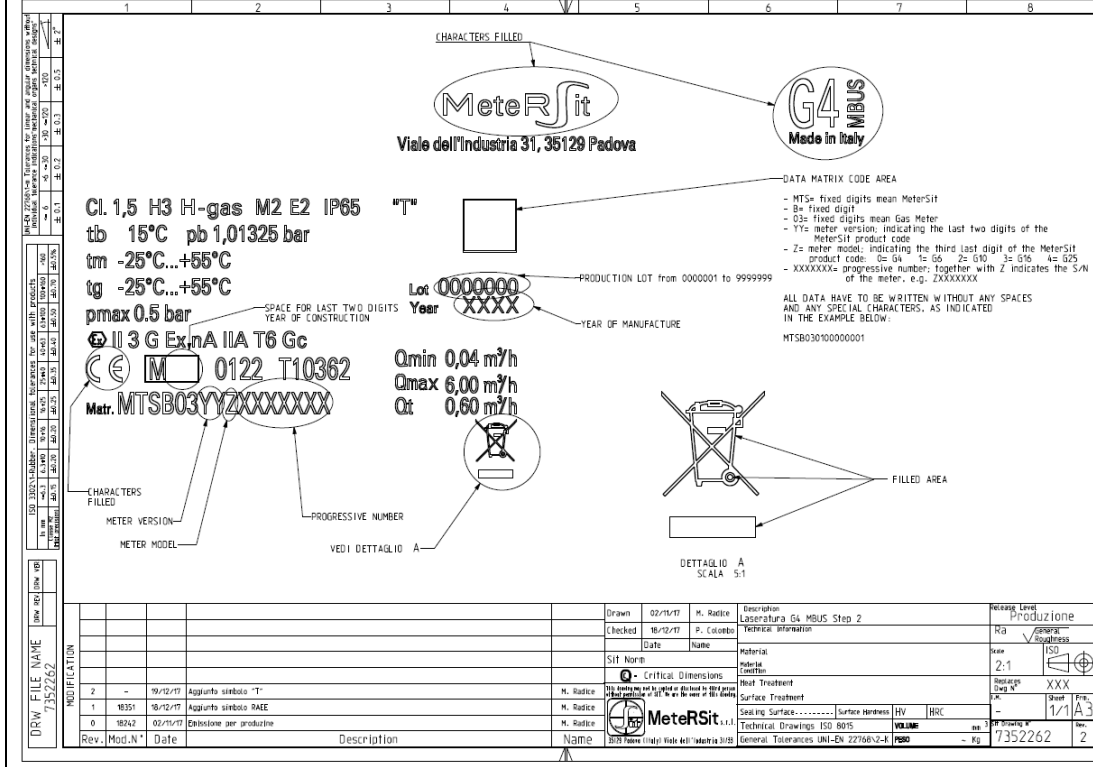
| Rev. | Mod.N° | Date     | Description            | Name      |
|------|--------|----------|------------------------|-----------|
| 2    |        | 16/12/17 | Aggiunta simbolo "T"   | M. Radice |
| 1    | 10351  | 16/12/17 | Aggiunta simbolo RAEE  | M. Radice |
| 0    | 17166  | 17/05/17 | Emissione per progetto | M. Radice |

|                                     |          |            |                       |                           |                   |            |
|-------------------------------------|----------|------------|-----------------------|---------------------------|-------------------|------------|
| Drawn                               | 17/05/17 | M. Radice  | Emisore               | Laboratura G6 GPRS Step 2 | Release           | Produzione |
| Checked                             | 16/12/17 | P. Colombo | Technical Information |                           | RA                | ✓          |
| Date                                |          | Name       | Material              |                           | Scale             | ISO        |
| SIT Norm                            |          |            | Condition             |                           | Scale             | 2:1        |
| Critical Dimensions                 |          |            | Heat Treatment        |                           | Surface Treatment |            |
| Sealing Surface:.....               |          |            | Surface Hardness      | HV                        | HRC               |            |
| Technical Drawings ISO 8015         |          |            | VOLUME                | an                        | Sheet             | 1/1        |
| General Tolerances UNI-EN 22768-2-4 |          |            | PSD                   | kg                        | 7352261           | 2          |

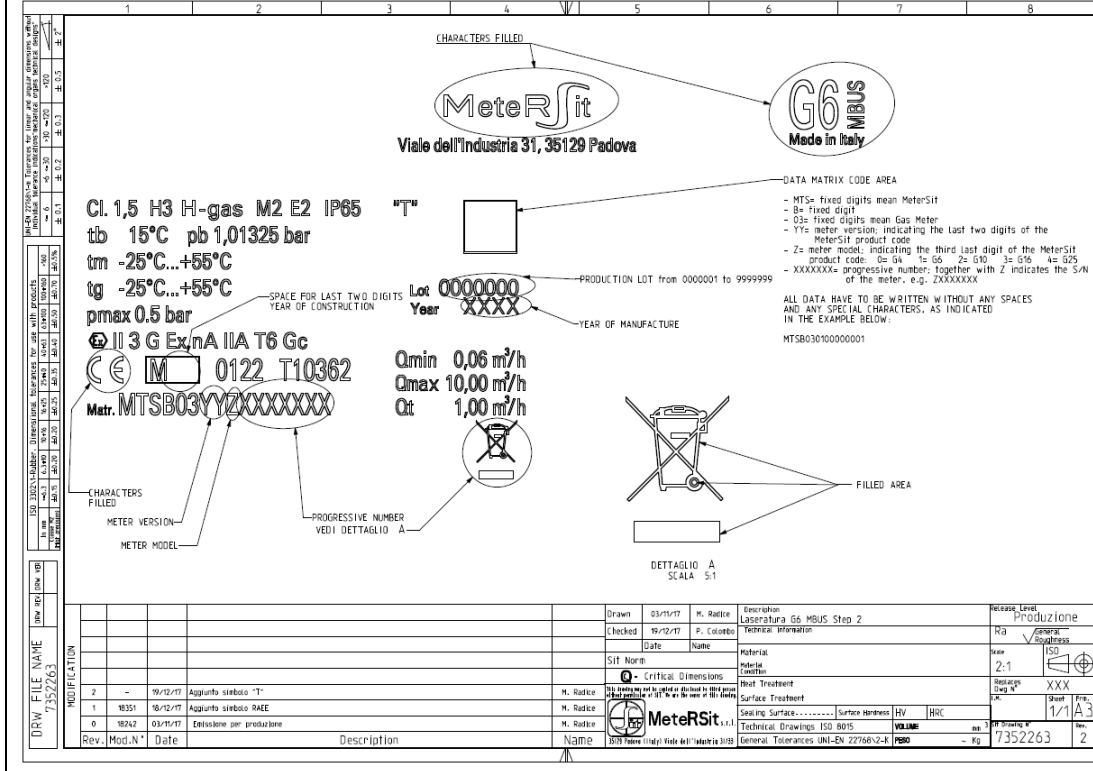




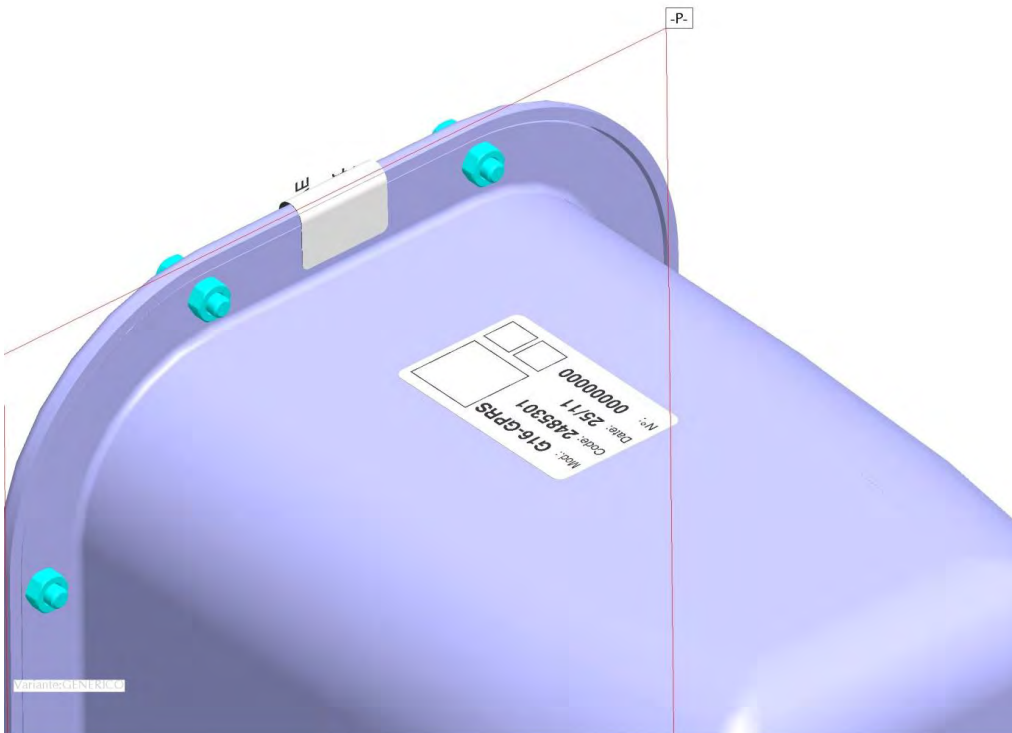
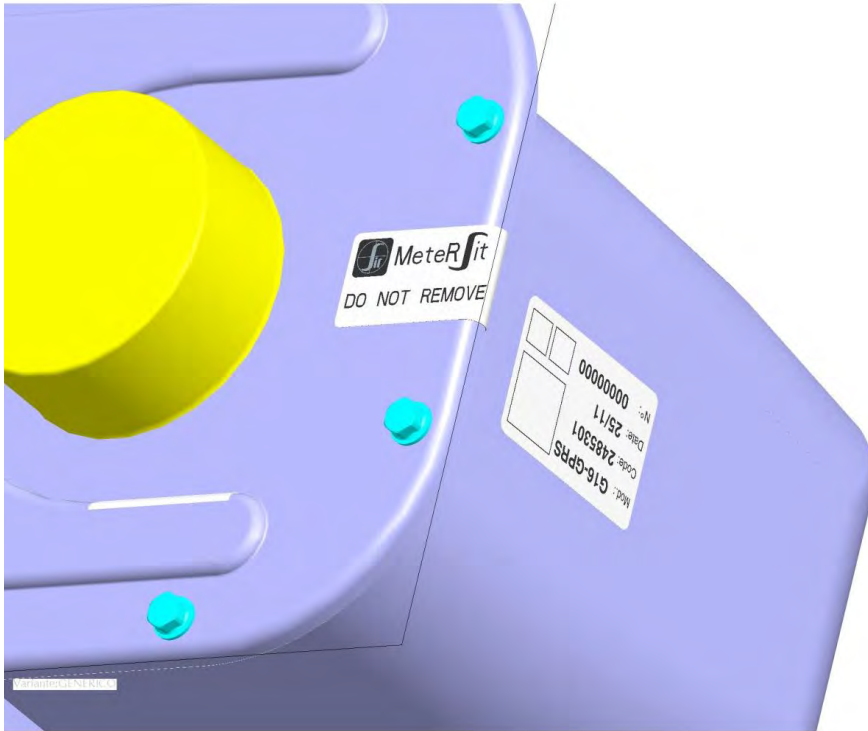
**Figure 8.3 – Labelling of G4 RF WMBUS meter**



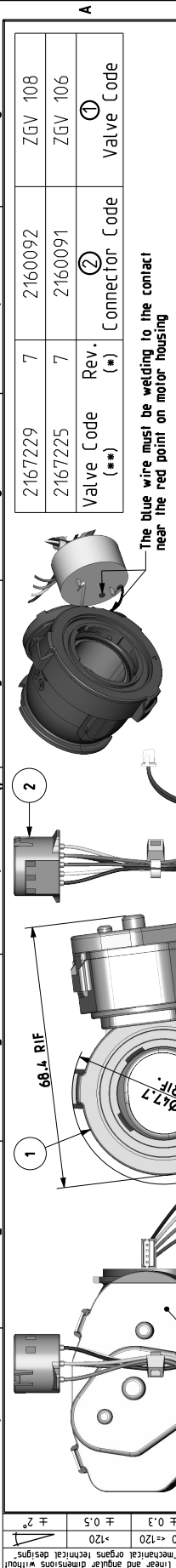
**Figure 8.4 – Labelling of G6 RF WMBUS meter**







1 2 3 4 5 6 7 8



**Surfaces for laser printing of:**

- CF symbol
- A/F, J.C. code
- J.C. Data
- Valve type "ZGV108" or "ZGV106"
- Data:
  - U<sub>i</sub> = 3.9 V
  - I<sub>i</sub> = 74 mA
  - P<sub>i</sub> = 0.29 W
- In clear text and Data Matrix  
DIN ISO/IEC 16022 ECC200 (4 dots):  
.JFYWWNNNNNN

where:  
YY = year of construction 2 digits  
MM = month of construction 2 digits  
NNNNNN = Serial number 7 digits

Areas where must be measured the dimensions 1.7 and 3.65

**TECHNICAL DATE BY JOHNSON**

|  |  |
|--|--|
| Johnson electric part number                       | ZGV 106 and ZGV 108  |
| Motor type   | PMDC-Motor   |
| Resistance (20 °C) $\Omega$                        | R20<br>71 $\Omega \pm 10\%$                                      |
| Resistance (-25 °C)                                | R-25<br>> 51 $\Omega$  |
| Operating voltage                                  | U<br>2.8...3.6 V DC  |
| Max. inductance (1000Hz, 1V)                       | Lmax<br>37.2 mH  |
| Storage temperature range                          | Amb<br>-25...+70 °C  |
| Operating temperature range                        | Amb<br>-25...+60 °C  |
| Thermal class (DIN EN 60085:2008-08)               | 105 (A)  |
| ATEX classification act. to DIN EN 60079-0:2014-06 | II 3G Ex ic IIA T3 X   |
| Electrical input values motor circuit (per coil)   | U <sub>i</sub> =3.9V I <sub>i</sub> =74mA P <sub>i</sub> =0.29 W |
| Type of protection (DIN EN 60079-11:2012-06)       | i (intrinsic safety)   |
| Max closing time (2.8V)                            | I<br>8 s (0-75 mbar 1-20 °C)                                     |
| Resistance to gas (DIN EN 437:2009-09)             | p<br>1*, 2* and 3* gas families                                  |
| Max pressure                                       | 500 mbar   |
| Max flow rate                                      | Q0<br>10 m <sup>3</sup> /h (AI air 1012.25 mbar)                 |
| Closed valve leakage (air, 500mbar, 20 °C)         | Q1<br><1 L/h   |
| Closed valve leakage (air, 75mbar, 20 °C)          | Q2<br><5 L/h   |

The valve must comply with the following requirements at all operating range (refer to EN16314:2013 for the test methods):

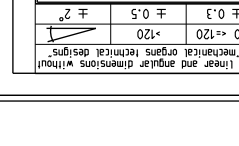
- Leakage (ref.par. 7.13.4.5.2):
  - maximum internal leakage at 20 mbar = 1 L/h
  - maximum internal leakage at 75 mbar = 1 L/h
  - maximum internal leakage at 150 mbar = 5 L/h
  - maximum internal leakage at 500 mbar = 5 L/h
- Endurance (ref.par. 7.13.4.8):
  - 1400 cycles at -25 °C
  - 1400 cycles at -60 °C
  - 13200 cycles at room temperature
- Resistance to contaminants in gas stream (ref.par. 7.13.4.9.2)  
The valve shall be tested assembled in a gas meter of 0465xxx family

**Notes:**

- Storage temperature range verify by MeterSIT = -40 °C - 70 °C - See specification code 4204856
- Max pressure operation verify by MeterSIT = 500 mbar - See specification code 4204856
- SIL 2 certification mandatory
- For parts validation see Technical Specification code S117-001
- For packaging see specification code 4230000

|          |          |            |                       |                         |               |                   |
|----------|----------|------------|-----------------------|-------------------------|---------------|-------------------|
| Drawn    | 20/09/16 | P. Colombo | Description           | DCM VALVE G6/6 STEP 2.0 | Release Level | Preserie          |
| Checked  | 24/05/17 | P. Colombo | Technical Information |                         | Ra            | General Roughness |
| Sit Norm |          |            | Material              |                         | Scale         | 1:1               |
|          |          |            | Material Condition    |                         | Roughness     | ISO               |
|          |          |            | Heat Treatment        |                         | Temp. N       |                   |
|          |          |            | Surface Treatment     |                         | Sheet         | 1/1               |
|          |          |            | Sealing Surface       |                         | Enc.          | A3                |
|          |          |            | Technical Drawings    | ISO 8015                | VOLUME        | 1.21 mm           |
|          |          |            | General Tolerances    | UNI-EN 22768-2-K        | PSO           | -2011.194         |
|          |          |            |                       |                         | kg            | 2167225           |

|      |        |      |             |
|------|--------|------|-------------|
| Rev. | Mod.N° | Date | Description |
| 7    |        |      |             |
| 6    |        |      |             |
| 5    |        |      |             |
| 4    |        |      |             |
| 3    |        |      |             |
| 2    |        |      |             |
| 1    |        |      |             |
| 0    |        |      |             |



**Surfaces for laser printing of:**

- CF symbol
- A/F, J.C. code
- J.C. Data
- Valve type "ZGV108" or "ZGV106"
- Data:
  - U<sub>i</sub> = 3.9 V
  - I<sub>i</sub> = 74 mA
  - P<sub>i</sub> = 0.29 W
- In clear text and Data Matrix  
DIN ISO/IEC 16022 ECC200 (4 dots):  
.JFYWWNNNNNN

where:  
YY = year of construction 2 digits  
MM = month of construction 2 digits  
NNNNNN = Serial number 7 digits

Areas where must be measured the dimensions 1.7 and 3.65

**TECHNICAL DATE BY JOHNSON**

|  |  |
|--|--|
| Johnson electric part number                       | ZGV 106 and ZGV 108  |
| Motor type   | PMDC-Motor   |
| Resistance (20 °C) $\Omega$                        | R20<br>71 $\Omega \pm 10\%$                                      |
| Resistance (-25 °C)                                | R-25<br>> 51 $\Omega$  |
| Operating voltage                                  | U<br>2.8...3.6 V DC  |
| Max. inductance (1000Hz, 1V)                       | Lmax<br>37.2 mH  |
| Storage temperature range                          | Amb<br>-25...+70 °C  |
| Operating temperature range                        | Amb<br>-25...+60 °C  |
| Thermal class (DIN EN 60085:2008-08)               | 105 (A)  |
| ATEX classification act. to DIN EN 60079-0:2014-06 | II 3G Ex ic IIA T3 X   |
| Electrical input values motor circuit (per coil)   | U <sub>i</sub> =3.9V I <sub>i</sub> =74mA P <sub>i</sub> =0.29 W |
| Type of protection (DIN EN 60079-11:2012-06)       | i (intrinsic safety)   |
| Max closing time (2.8V)                            | I<br>8 s (0-75 mbar 1-20 °C)                                     |
| Resistance to gas (DIN EN 437:2009-09)             | p<br>1*, 2* and 3* gas families                                  |
| Max pressure                                       | 500 mbar   |
| Max flow rate                                      | Q0<br>10 m <sup>3</sup> /h (AI air 1012.25 mbar)                 |
| Closed valve leakage (air, 500mbar, 20 °C)         | Q1<br><1 L/h   |
| Closed valve leakage (air, 75mbar, 20 °C)          | Q2<br><5 L/h   |

The valve must comply with the following requirements at all operating range (refer to EN16314:2013 for the test methods):

- Leakage (ref.par. 7.13.4.5.2):
  - maximum internal leakage at 20 mbar = 1 L/h
  - maximum internal leakage at 75 mbar = 1 L/h
  - maximum internal leakage at 150 mbar = 5 L/h
  - maximum internal leakage at 500 mbar = 5 L/h
- Endurance (ref.par. 7.13.4.8):
  - 1400 cycles at -25 °C
  - 1400 cycles at -60 °C
  - 13200 cycles at room temperature
- Resistance to contaminants in gas stream (ref.par. 7.13.4.9.2)  
The valve shall be tested assembled in a gas meter of 0465xxx family

**Notes:**

- Storage temperature range verify by MeterSIT = -40 °C - 70 °C - See specification code 4204856
- Max pressure operation verify by MeterSIT = 500 mbar - See specification code 4204856
- SIL 2 certification mandatory
- For parts validation see Technical Specification code S117-001
- For packaging see specification code 4230000

|          |          |            |                       |                         |               |                   |
|----------|----------|------------|-----------------------|-------------------------|---------------|-------------------|
| Drawn    | 20/09/16 | P. Colombo | Description           | DCM VALVE G6/6 STEP 2.0 | Release Level | Preserie          |
| Checked  | 24/05/17 | P. Colombo | Technical Information |                         | Ra            | General Roughness |
| Sit Norm |          |            | Material              |                         | Scale         | 1:1               |
|          |          |            | Material Condition    |                         | Roughness     | ISO               |
|          |          |            | Heat Treatment        |                         | Temp. N       |                   |
|          |          |            | Surface Treatment     |                         | Sheet         | 1/1               |
|          |          |            | Sealing Surface       |                         | Enc.          | A3                |
|          |          |            | Technical Drawings    | ISO 8015                | VOLUME        | 1.21 mm           |
|          |          |            | General Tolerances    | UNI-EN 22768-2-K        | PSO           | -2011.194         |
|          |          |            |                       |                         | kg            | 2167225           |

|      |        |      |             |
|------|--------|------|-------------|
| Rev. | Mod.N° | Date | Description |
| 7    |        |      |             |
| 6    |        |      |             |
| 5    |        |      |             |
| 4    |        |      |             |
| 3    |        |      |             |
| 2    |        |      |             |
| 1    |        |      |             |
| 0    |        |      |             |



**Surfaces for laser printing of:**

- CF symbol
- A/F, J.C. code
- J.C. Data
- Valve type "ZGV108" or "ZGV106"
- Data:
  - U<sub>i</sub> = 3.9 V
  - I<sub>i</sub> = 74 mA
  - P<sub>i</sub> = 0.29 W
- In clear text and Data Matrix  
DIN ISO/IEC 16022 ECC200 (4 dots):  
.JFYWWNNNNNN

where:  
YY = year of construction 2 digits  
MM = month of construction 2 digits  
NNNNNN = Serial number 7 digits

Areas where must be measured the dimensions 1.7 and 3.65

**TECHNICAL DATE BY JOHNSON**

|  |  |
|--|--|
| Johnson electric part number                       | ZGV 106 and ZGV 108  |
| Motor type   | PMDC-Motor   |
| Resistance (20 °C) $\Omega$                        | R20<br>71 $\Omega \pm 10\%$                                      |
| Resistance (-25 °C)                                | R-25<br>> 51 $\Omega$  |
| Operating voltage                                  | U<br>2.8...3.6 V DC  |
| Max. inductance (1000Hz, 1V)                       | Lmax<br>37.2 mH  |
| Storage temperature range                          | Amb<br>-25...+70 °C  |
| Operating temperature range                        | Amb<br>-25...+60 °C  |
| Thermal class (DIN EN 60085:2008-08)               | 105 (A)  |
| ATEX classification act. to DIN EN 60079-0:2014-06 | II 3G Ex ic IIA T3 X   |
| Electrical input values motor circuit (per coil)   | U <sub>i</sub> =3.9V I <sub>i</sub> =74mA P <sub>i</sub> =0.29 W |
| Type of protection (DIN EN 60079-11:2012-06)       | i (intrinsic safety)   |
| Max closing time (2.8V)                            | I<br>8 s (0-75 mbar 1-20 °C)                                     |
| Resistance to gas (DIN EN 437:2009-09)             | p<br>1*, 2* and 3* gas families                                  |
| Max pressure                                       | 500 mbar   |
| Max flow rate                                      | Q0<br>10 m <sup>3</sup> /h (AI air 1012.25 mbar)                 |
| Closed valve leakage (air, 500mbar, 20 °C)         | Q1<br><1 L/h   |
| Closed valve leakage (air, 75mbar, 20 °C)          | Q2<br><5 L/h   |

The valve must comply with the following requirements at all operating range (refer to EN16314:2013 for the test methods):

- Leakage (ref.par. 7.13.4.5.2):
  - maximum internal leakage at 20 mbar = 1 L/h
  - maximum internal leakage at 75 mbar = 1 L/h
  - maximum internal leakage at 150 mbar = 5 L/h
  - maximum internal leakage at 500 mbar = 5 L/h
- Endurance (ref.par. 7.13.4.8):
  - 1400 cycles at -25 °C
  - 1400 cycles at -60 °C
  - 13200 cycles at room temperature
- Resistance to contaminants in gas stream (ref.par. 7.13.4.9.2)  
The valve shall be tested assembled in a gas meter of 0465xxx family

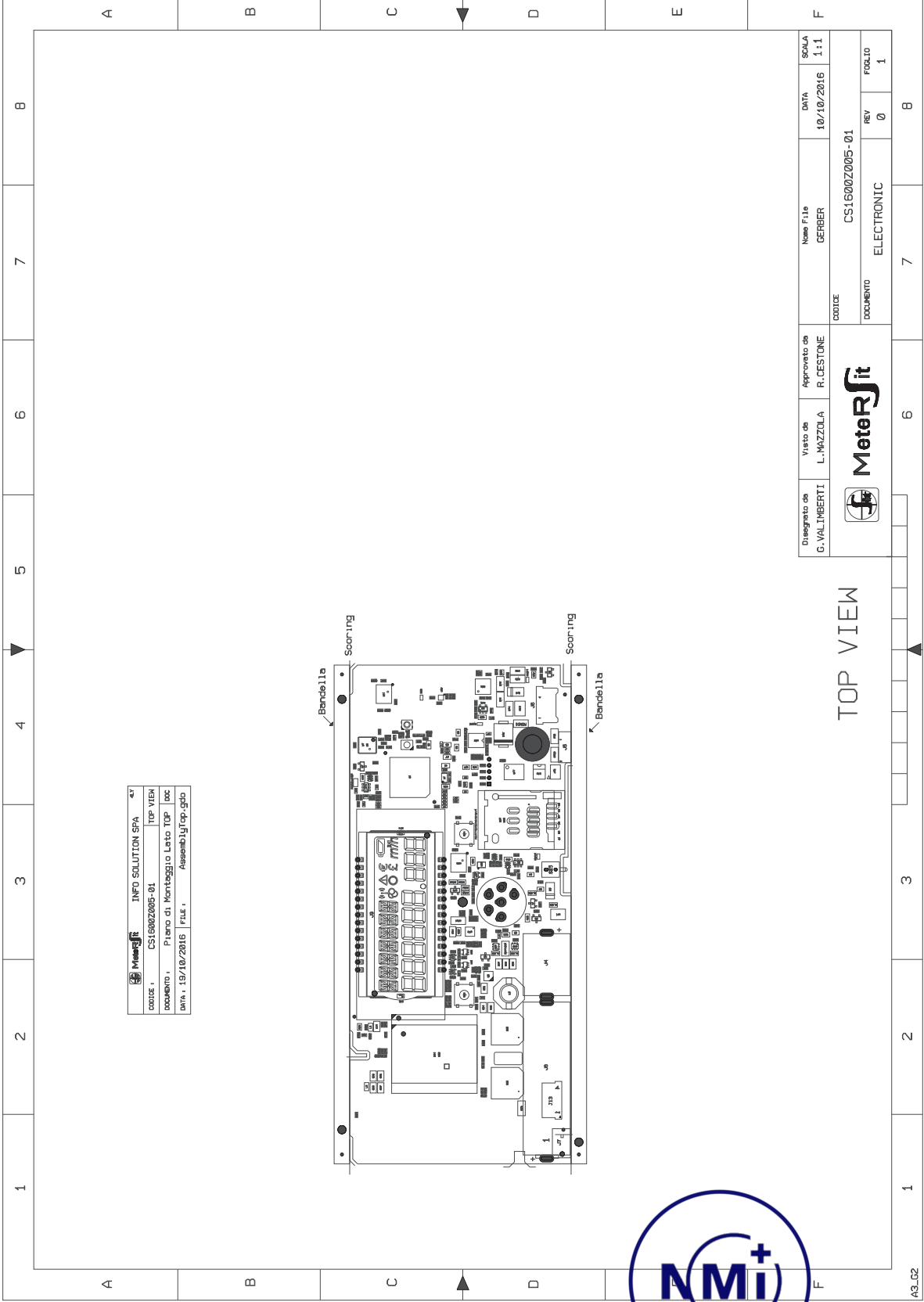
**Notes:**

- Storage temperature range verify by MeterSIT = -40 °C - 70 °C - See specification code 4204856
- Max pressure operation verify by MeterSIT = 500 mbar - See specification code 4204856
- SIL 2 certification mandatory
- For parts validation see Technical Specification code S117-001
- For packaging see specification code 4230000

|          |          |            |                       |                         |               |                   |
|----------|----------|------------|-----------------------|-------------------------|---------------|-------------------|
| Drawn    | 20/09/16 | P. Colombo | Description           | DCM VALVE G6/6 STEP 2.0 | Release Level | Preserie          |
| Checked  | 24/05/17 | P. Colombo | Technical Information |                         | Ra            | General Roughness |
| Sit Norm |          |            | Material              |                         | Scale         | 1:1               |
|          |          |            | Material Condition    |                         | Roughness     | ISO               |
|          |          |            | Heat Treatment        |                         | Temp. N       |                   |
|          |          |            | Surface Treatment     |                         | Sheet         | 1/1               |
|          |          |            | Sealing Surface       |                         | Enc.          | A3                |
|          |          |            | Technical Drawings    | ISO 8015                | VOLUME        | 1.21 mm           |
|          |          |            | General Tolerances    | UNI-EN 22768-2-K        | PSO           | -2011.194         |
|          |          |            |                       |                         | kg            | 2167225           |

|      |        |      |             |
|------|--------|------|-------------|
| Rev. | Mod.N° | Date | Description |
| 7    |        |      |             |
| 6    |        |      |             |
| 5    |        |      |             |
| 4    |        |      |             |
| 3    |        |      |             |
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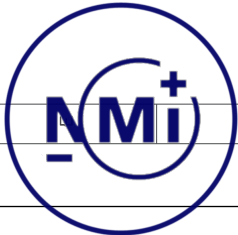


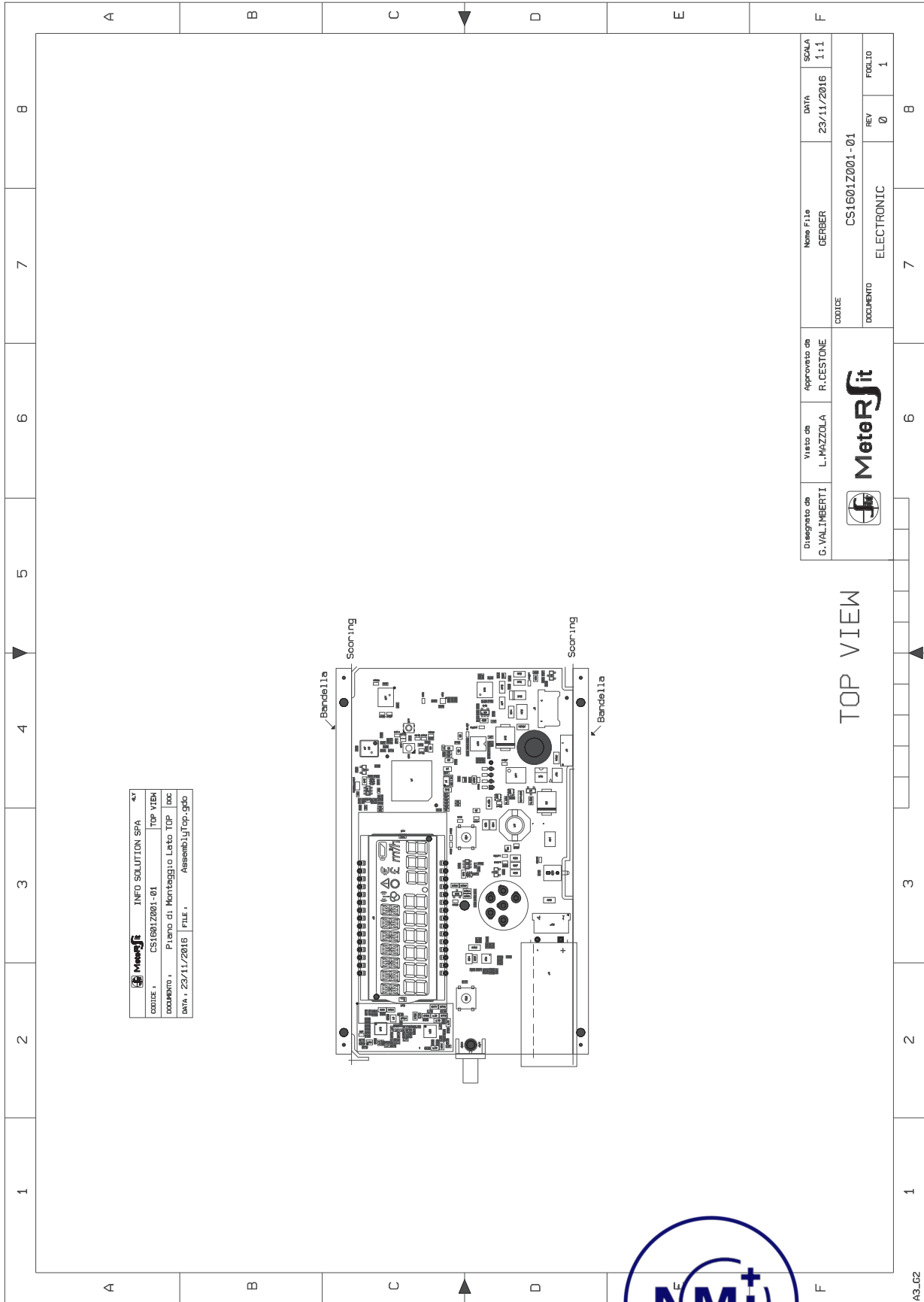


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| documento :                       | Piano di Montaggio Letto TOP |
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TOP VIEW

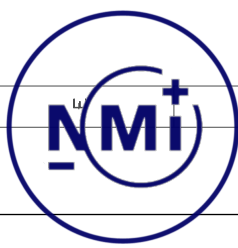




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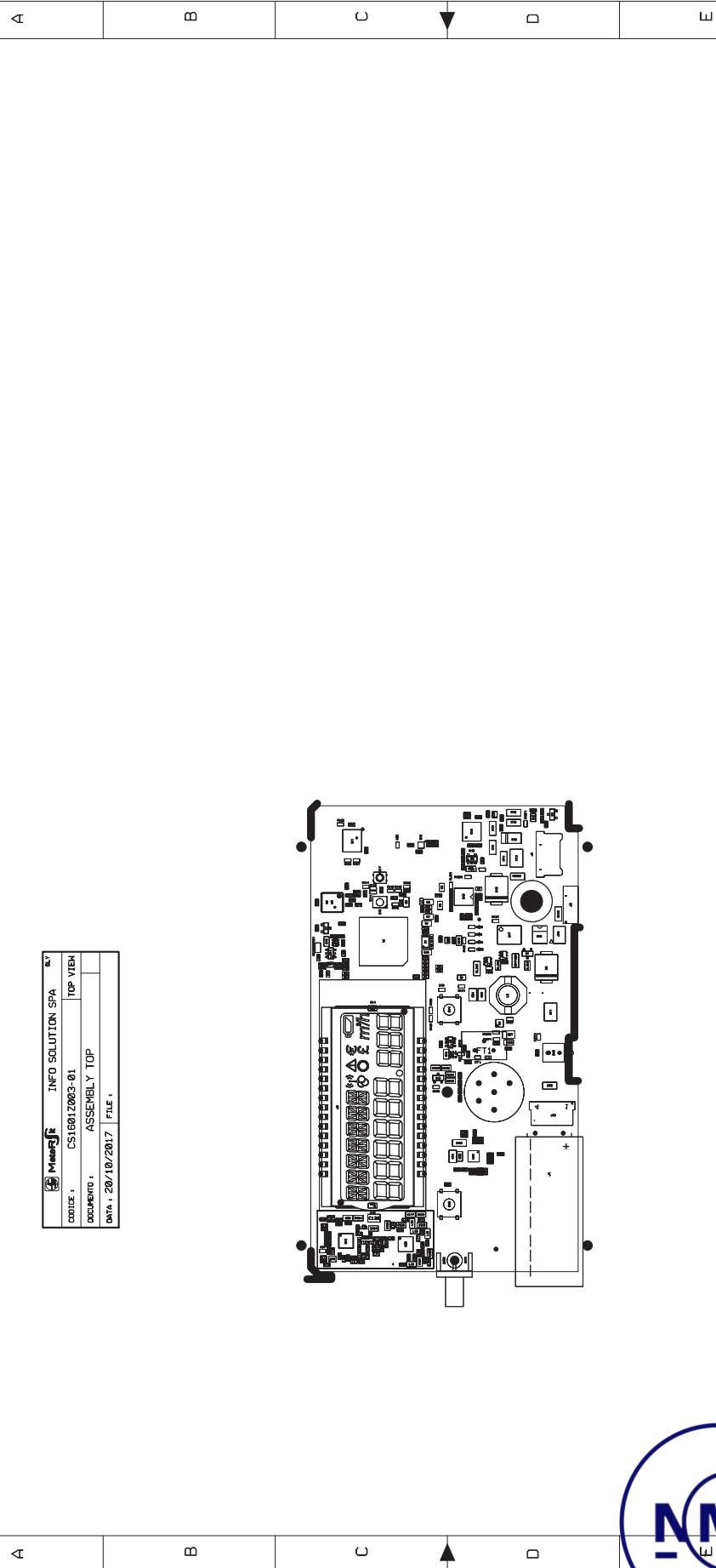
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|                              |                         |                            | DOCUMENTO<br>ELECTRONIC |                    |              |

TOP VIEW





1 2 3 4 5 6 7 8



|                   |               |
|-------------------|---------------|
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| CODICE :          | CS1601Z003-01 |
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| FILE :            |               |

TOP VIEW

|                               |                        |                            |                         |                    |              |
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| Disegnato da<br>G. VALIMBERTI | Visto da<br>L. MAZZOLA | Approvato da<br>R. CESTONE | Nome File<br>GERBER     | DATA<br>20/10/2017 | SCALA<br>1:1 |
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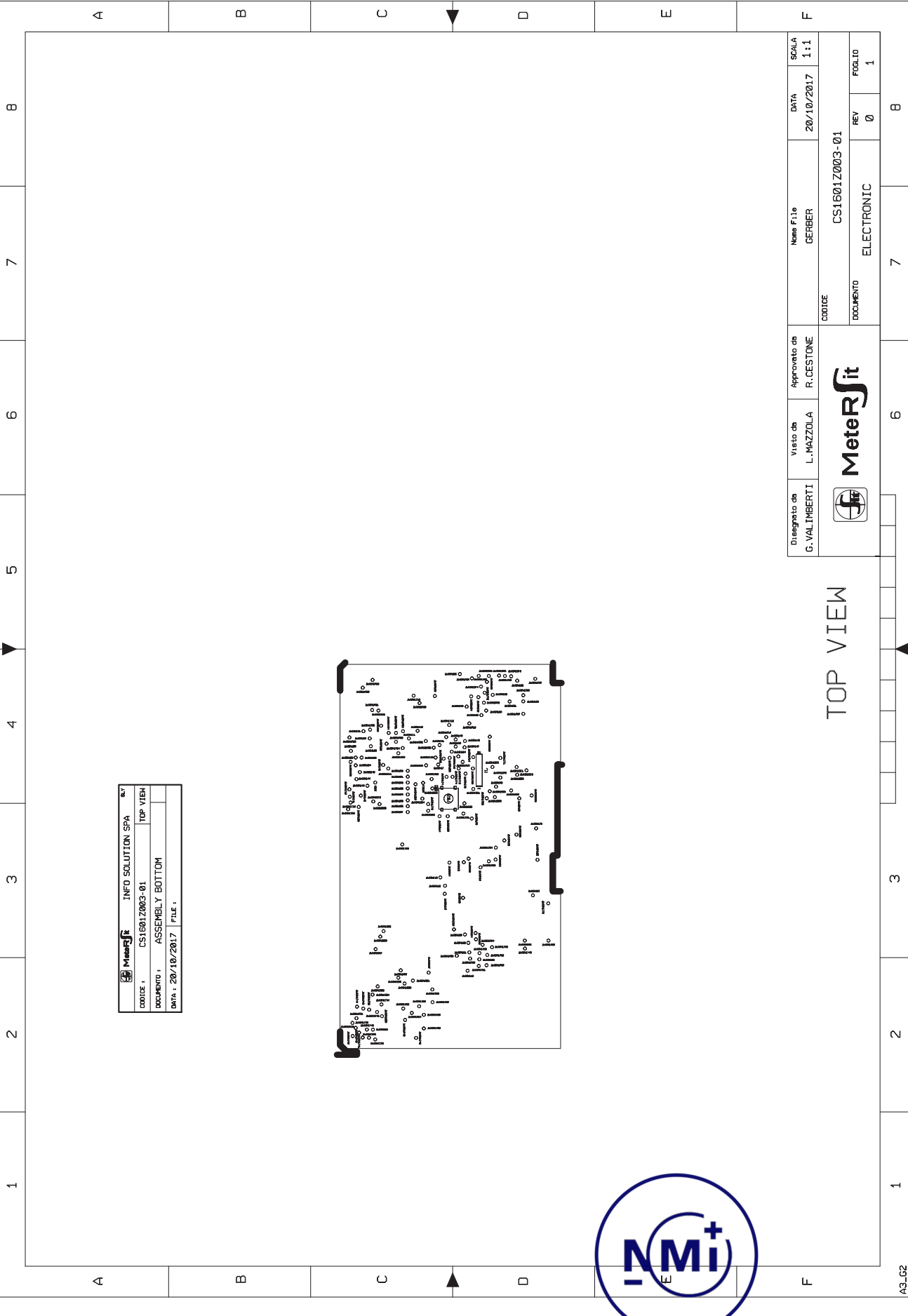


1 2 3 6 7 8

A3\_G2



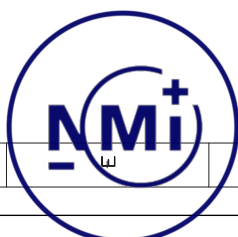
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| Page   | 1 of 2             |

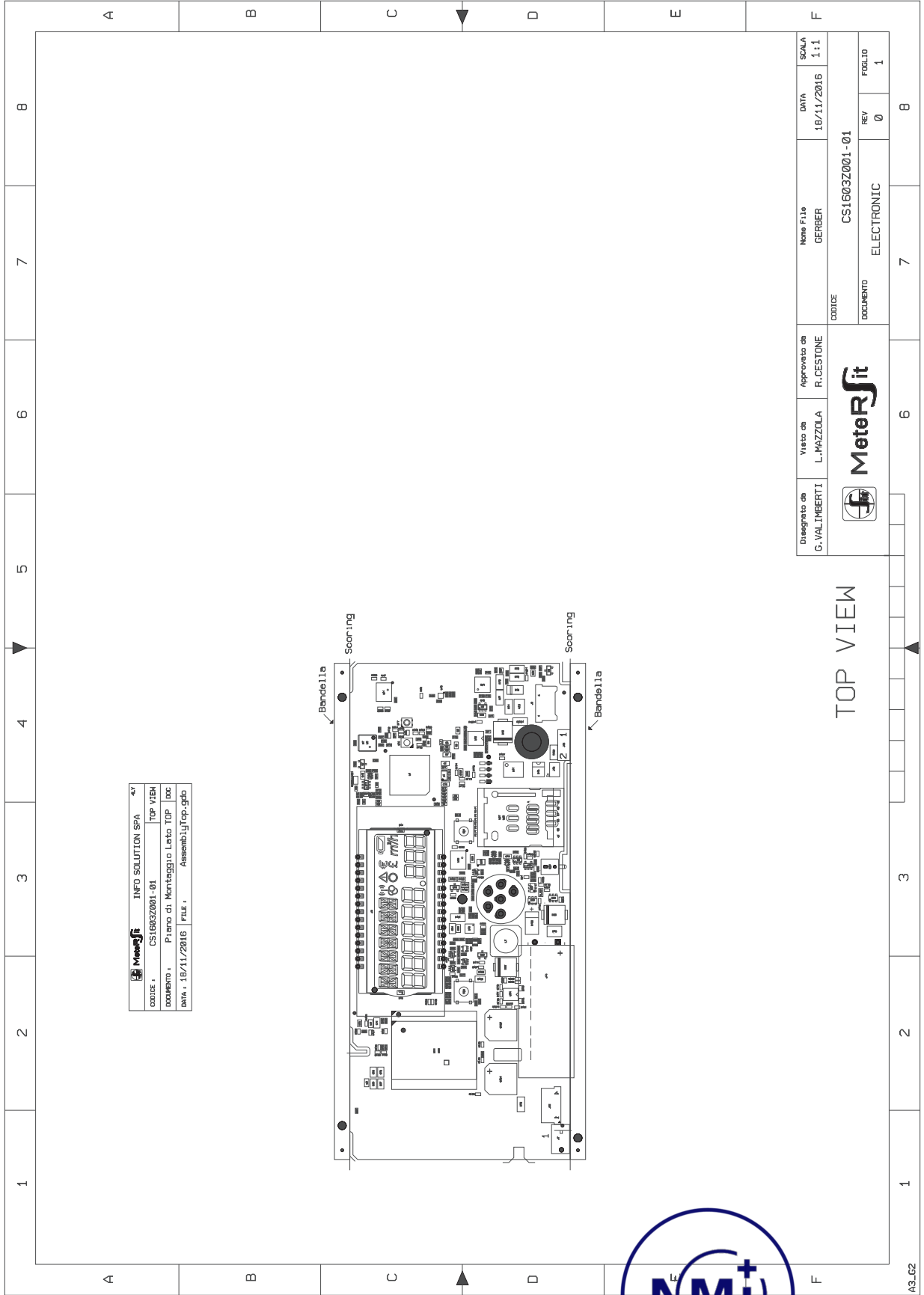


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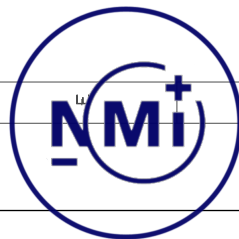





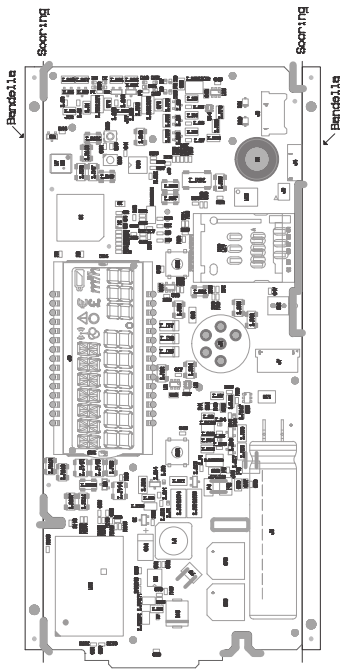
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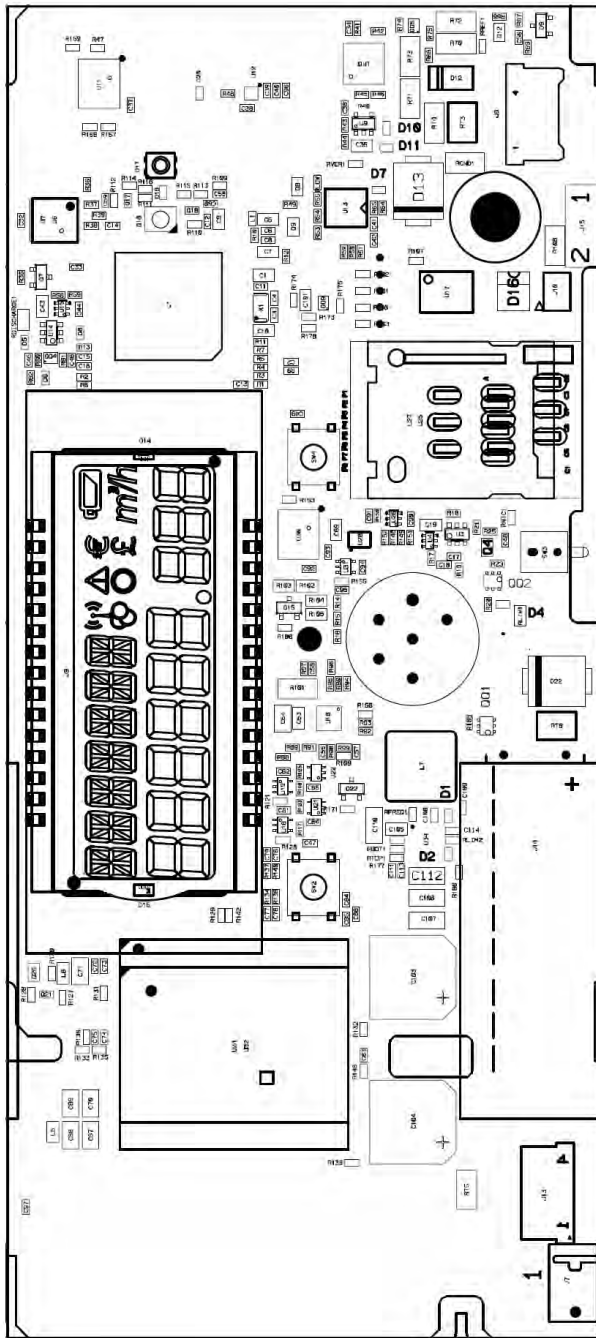
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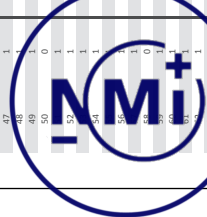
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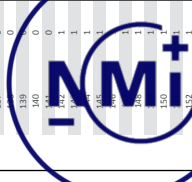


DOMUSNEXT® G4/G6  
GAS METERS  
ANNEX 8

| Pos | QTY | Reference | Value                   | Tolerance | Package                                  | P/N/P | Description   | Notes        | Supplier 1   | Supplier 1 Code     | Manufacturer 1 | Manufacturer 1 Code         | MODEL |
|-----|-----|-----------|-------------------------|-----------|--|-------|---|--------------|--------------|---------------------|----------------|-----------------------------|-------|
| 1   | 1   | C1        | 1U6930603               | +10%      | 1603                                     |       | CAP CER LUF 6.3V 276K 0603  | TOP LAYER    | FIRST EUROPE | FRNK32155A 32768KHZ | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 2   | 1   | C2        | 166F 0402               | +10%      | 0402                                     |       | CAP CER LUF 50V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 3   | 1   | C3        | 68F 0402                | +10%      | 0402                                     |       | CAP CER 6.8F 50V NP0 0402   | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 4   | 0   | C4        | 68F 0402                | +10%      | 0402                                     |       | CAP CER 6.8F 50V NP0 0402   | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 5   | 0   | J1        | BERUG                   | N/A       |  | DNP   | STRIP M4 POLI 2MM   | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 6   | 1   | R1        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 7   | 1   | R2        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 8   | 1   | R3        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 9   | 1   | R4        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 10  | 1   | R5        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 11  | 1   | R6        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 12  | 1   | R7        | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 13  | 0   | R8        | 100K 1% 0402 1/6W       | +1%       | 0402                                     | DNP   | R0402 1/6W 1% 100ppm /C-55°C-155°C  | BOTTOM LAYER |              |                     | YAGO           | YAGO                        | MCU   |
| 14  | 1   | R9        | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 15  | 1   | R10       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 16  | 1   | R11       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 17  | 1   | R12       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 18  | 1   | R13       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 19  | 0   | SW1       | RST-TACT                | N/A       | tbl                                      | DNP   | TACT SWITCH IP67  | BOTTOM LAYER |              |                     | C&K            | K5C74J LPS                  | MCU   |
| 20  | 1   | U1        | STM32L431VCT6           | N/A       | 100-LQP F (14x4)                         |       | K MCU 32BIT 256KB FLASH 100LQFP   | TOP LAYER    | FIRST EUROPE | FRNK32155A 32768KHZ | STM            | STM32L476VET6               | MCU   |
| 21  | 1   | X1        | 32768KHZ 6PF            | +10ppm    | 25MD LuxLE 0.28x0.28x0.059 (3.20x1.50mm) |       | 32768KHZ 6ppm Crystal 6PF 70.00MHz -40°C ~85°C Montaaggio superficie (SMD, SMT) 2.5MD | TOP LAYER    |              |                     | NDK            | NS32155A 32768KHZ 6PF 10ppm | MCU   |
| 22  | 1   | X2        | 32768KHZ 6PF            | +10ppm    | 25MD                                     |       | 32768KHZ 6ppm Crystal 6PF 70.00MHz -40°C ~85°C Montaaggio superficie (SMD, SMT) 2.5MD | TOP LAYER    |              |                     | NDK            | NS32155A 32768KHZ 6PF 10ppm | MCU   |
| 23  | 1   | X3        | 32768KHZ 6PF            | +10ppm    | 25MD                                     |       | 32768KHZ 6ppm Crystal 6PF 70.00MHz -40°C ~85°C Montaaggio superficie (SMD, SMT) 2.5MD | TOP LAYER    |              |                     | NDK            | NS32155A 32768KHZ 6PF 10ppm | MCU   |
| 24  | 1   | C6        | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 25  | 1   | C7        | 1u6930603               | +10%      | 0603                                     |       | CAP CER LUF 6.3V 276K 0603  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 26  | 1   | C8        | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 27  | 1   | C9        | 407 6V3 0603            | +10%      | 0603                                     |       | CAP CER 47UF 6.3V 6V 0603 55/48°C   | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 28  | 1   | C10       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 29  | 1   | C11       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 30  | 1   | C12       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 31  | 1   | C13       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 32  | 1   | C14       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 33  | 1   | C15       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 34  | 1   | L1        | 1K 100MHz 300mA 0.65ohm | +25%      | 0402                                     |       | SMD Ferrite 1Kohm at 100MHz 25% 0402  | TOP LAYER    |              |                     | MURATA         | BUM15AG1025N1D              | MCU   |
| 35  | 1   | R10       | 47K 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 36  | 1   | R11       | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 37  | 1   | R12       | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 38  | 1   | R13       | 080 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 39  | 1   | RGND1     | 080 1206 1/4W           | +1%       | 1206                                     |       | R1206 1/4W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 40  | 1   | C17       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 41  | 1   | C18       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 42  | 1   | C19       | 1u6930603               | +10%      | 0603                                     |       | CAP CER LUF 6.3V 276K 0603  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 43  | 1   | C20       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 44  | 1   | C21       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 45  | 1   | R14       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 46  | 1   | R15       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 47  | 1   | R16       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 48  | 1   | R17       | 48K 0402 1/6W           | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 49  | 1   | R18       | 100K 1% 0402 1/6W       | +1%       | 0402                                     |       | R0402 1/6W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |
| 50  | 0   | U3        | TPS22860                | N/A       | SOT-23-6                                 | DNP   | IC SWITCH SPDT SOT23-6  | TOP LAYER    |              |                     | TI             | TPS22860DRVR                | MCU   |
| 51  | 1   | U4        | SP32481                 | N/A       | 5079-6                                   |       | IC SWITCH HIGH SIDE SOT-6   | TOP LAYER    |              |                     | VISHAY         | SIF3248DR3-TJEG3            | MCU   |
| 52  | 1   | C20       | 1u6930603               | +10%      | 0603                                     |       | CAP CER LUF 6.3V 276K 0603  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 53  | 1   | C21       | 100n 0402               | +10%      | 0402                                     |       | CAP CER LUF 16V 27K 0402  | TOP LAYER    |              |                     | SAMSUNG        | CL05R106R0603NMC            | MCU   |
| 54  | 1   | D1        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 55  | 1   | D2        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 56  | 1   | D3        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 57  | 1   | D4        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 58  | 1   | D5        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 59  | 1   | D6        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 60  | 1   | D7        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 61  | 1   | D8        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 62  | 1   | D9        | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 63  | 1   | D10       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 64  | 1   | D11       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 65  | 1   | D12       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 66  | 1   | D13       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 67  | 1   | D14       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 68  | 1   | D15       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 69  | 1   | D16       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 70  | 1   | D17       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 71  | 1   | D18       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 72  | 1   | D19       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 73  | 1   | D20       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 74  | 1   | D21       | BAT5ACT                 | N/A       | CLUM                                     |       | IC DIODE ARRY SCHOTTKY 50V COMMON KATODE  | TOP LAYER    |              |                     | ONSEMI         | BAT54CTT1G                  | HIC   |
| 75  | 0   | RHY05S1   | 080 1206 1/4W           | +1%       | 1206                                     | DNP   | R1206 1/4W 1% 100ppm /C-55°C-155°C  | TOP LAYER    |              |                     | YAGO           | YAGO                        | MCU   |



| 76  | 1 | RLM1  | 100R 0603 1/16W    | ±1%  | 0603                                     | R 0603 1/10W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | HIC    |
|-----|---|-------|--------------------|------|--|---|-----------|-------------------|--------|
| 77  | 1 | RLM2  | 47R 0603 1/16W     | ±1%  | 0603                                     | R 0603 1/10W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | HIC    |
| 78  | 1 | RLM3  | 080 0603 1/16W     | ±1%  | 0603                                     | R 0603 1/10W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | HIC    |
| 79  | 1 | RLM4  | 200R 0603 1/16W    | ±1%  | 0603                                     | R 0603 1/10W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | HIC    |
| 80  | 1 | RT1   | TEC 1A             | N/A  | 1813                                     | POWERSWITCH 1A 1A RESET FUSE SMD3.2X2.5X0.8mm                                       | TOP LAYER | TE CONN / BAYCHAM | HIC    |
| 81  | 1 | RT2   | PTC 500mA          | N/A  | 1206                                     | POWERSWITCH 0.50A RESET FUSE SMD3.2X2.5X0.8mm                                       | TOP LAYER | TE CONN / BAYCHAM | HIC    |
| 82  | 1 | C22   | 1000UF 10V LOWESR  | ±20% | 10mm                                     | CAP ALUM 1000UF 20% 10V 500mV min 637mm x 120Hr - max 80mmØ - min 5000 ore at 105°C | TOP LAYER | PANASONIC         | BOOST  |
| 83  | 1 | C23   | 1000UF 10V LOWESR  | ±20% | 10mm                                     | CAP ALUM 1000UF 20% 10V 500mV min 637mm x 120Hr - max 80mmØ - min 5000 ore at 105°C | TOP LAYER | PANASONIC         | BOOST  |
| 84  | 0 | C24   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 85  | 0 | C25   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 86  | 0 | C26   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 87  | 1 | C27   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 88  | 0 | C28   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 89  | 0 | C29   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 90  | 0 | C30   | 22u 63G            | ±20% | 0805                                     | CAP CER 22UF 6.3V 50V X8R 0805-55/48°C  | TOP LAYER | SAMSUNG           | BOOST  |
| 91  | 1 | C31   | 10u 0402           | ±5%  | 0402                                     | CAP CER 10UF 50V X7R 0402   | TOP LAYER | SAMSUNG           | BOOST  |
| 92  | 1 | D4    | BATSACT            | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | ONSEMI            | BOOST  |
| 93  | 1 | L3    | 1uH 7A 4.0mRHM     | ±30% | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | ONSEMI            | BOOST  |
| 94  | 1 | U5    | RLM6401T           | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | ONSEMI            | BOOST  |
| 95  | 1 | U6    | RLM6401T           | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | ONSEMI            | BOOST  |
| 96  | 1 | R28   | 200R 0603 1/10W    | ±1%  | 0603                                     | R 0603 1/10W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 97  | 1 | R29   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 98  | 1 | R30   | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 99  | 1 | R31   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 100 | 1 | R32   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 101 | 0 | R33   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 102 | 0 | R34   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 103 | 1 | R07H1 | 100K 1% 0402 1/16W | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 104 | 1 | RTD1  | 200K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | BOOST  |
| 105 | 1 | C32   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | FLASH  |
| 106 | 1 | C33   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | FLASH  |
| 107 | 1 | C34   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | FLASH  |
| 108 | 1 | C35   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | FLASH  |
| 109 | 1 | R35   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 110 | 1 | R36   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 111 | 1 | R37   | 100K 1% 0402 1/16W | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 112 | 1 | R38   | 100K 1% 0402 1/16W | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 113 | 1 | R39   | 100K 1% 0402 1/16W | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 114 | 0 | U6    | N25322A            | N/A  | 8-50C (1020P ~ 5,30 mm di larghezza)     | CF FLASH MEM 32MB 3P CMOS 850C  | TOP LAYER | SPANSION          | FLASH  |
| 115 | 0 | U8    | M25P16             | N/A  | 8-50C (1020P ~ 5,30 mm di larghezza)     | CF FLASH MEM 16MB 3P CMOS 850C  | TOP LAYER | SPANSION          | FLASH  |
| 116 | 0 | U8    | S25F116E           | N/A  | 8-50C (1020P ~ 5,30 mm di larghezza)     | CF FLASH MEM 16MB 3P CMOS 850C  | TOP LAYER | SPANSION          | FLASH  |
| 117 | 0 | C34   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | FLASH  |
| 118 | 0 | C35   | 1u 6V 0603         | ±10% | 0603                                     | CAP CER 1UF 6.3V X7R 0603   | TOP LAYER | SAMSUNG           | FLASH  |
| 119 | 0 | C36   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | FLASH  |
| 120 | 0 | R37   | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 121 | 0 | R38   | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 122 | 0 | R41   | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 123 | 0 | R42   | 10K 0402 1/16W     | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 124 | 0 | R43   | 0R0 0402 1/16W     | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 125 | 0 | R44   | 0R0 0402 1/16W     | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 126 | 0 | R45   | 10K 0402 1/16W     | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | FLASH  |
| 127 | 0 | U9    | TERRES930          | N/A  | 507-523/27A                              | CRYPTO CHIP 9302CA/MNL  | TOP LAYER | TOSHIBA           | CRYPTO |
| 128 | 0 | U10   | A7002C             | N/A  | bd                                       | CRYPTO CHIP A7002CA/MNL   | TOP LAYER | NXP               | CRYPTO |
| 129 | 0 | C37   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 130 | 0 | R47   | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 131 | 0 | R48   | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 132 | 0 | R15B  | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 133 | 0 | R159  | 100K 0402 1/16W    | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 134 | 0 | U11   | SMARTCARD/SE       | N/A  | bd                                       | SMARTCARD/SECURE ELEMENT  | TOP LAYER | GEMALTO           | CRYPTO |
| 135 | 0 | C38   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 136 | 0 | C39   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 137 | 0 | C40   | 10 0402            | ±5%  | 0402                                     | CAP CER 10UF 50V X7R 0402   | TOP LAYER | SAMSUNG           | CRYPTO |
| 138 | 0 | C96   | 1p 0402            | ±5%  | 0402                                     | CAP CER 1PF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 139 | 0 | D20   | BATSACT            | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | ONSEMI            | CRYPTO |
| 140 | 0 | R48   | 100K 1% 0402 1/16W | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 141 | 0 | C41   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 142 | 1 | C42   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 143 | 1 | C8    | B3318W             | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | SAMSUNG           | CRYPTO |
| 144 | 1 | C9    | B3318W             | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | SAMSUNG           | CRYPTO |
| 145 | 1 | C11   | B3318W             | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | SAMSUNG           | CRYPTO |
| 146 | 1 | C11   | B3318W             | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | SAMSUNG           | CRYPTO |
| 147 | 1 | C11   | B3318W             | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | SAMSUNG           | CRYPTO |
| 148 | 1 | R49   | 100K 1% 0402 1/16W | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 149 | 1 | R50   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 150 | 1 | R51   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 151 | 1 | R52   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 152 | 1 | R53   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 153 | 1 | R54   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 154 | 1 | R55   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 155 | 1 | R56   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 156 | 1 | R57   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 157 | 1 | R58   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 158 | 1 | R59   | 1M 0402 1/16W      | ±1%  | 0402                                     | R 0402 1/16W 1% 100ppm /°C -55°C ~ 155°C  | TOP LAYER | YAGO              | CRYPTO |
| 159 | 1 | U13   | 74HCD651           | N/A  | 16-TSSOP (0.173" x 4,40 mm di larghezza) | 3.8 ANALOG MUX 2.0 to 6.0 SUPPLY  | TOP LAYER | YAGO              | CRYPTO |
| 160 | 1 | U13   | tu 6V 3003         | ±10% | 0603                                     | CAP CER 1UF 6.3V X7R 0603   | TOP LAYER | SAMSUNG           | CRYPTO |
| 161 | 1 | C45   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 162 | 1 | C45   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 163 | 1 | C46   | 100n 0402          | ±10% | 0402                                     | CAP CER 100NF 50V X7R 0402  | TOP LAYER | SAMSUNG           | CRYPTO |
| 164 | 1 | D5    | BATSACT            | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 30V 507-523   | TOP LAYER | ONSEMI            | CRYPTO |
| 165 | 1 | D6    | BATSACT            | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 30V 507-523   | TOP LAYER | ONSEMI            | CRYPTO |
| 166 | 1 | D8    | BATSACT            | N/A  | 507-523                                  | 2x DIODE ARRAY SCHOTTKY 50V COMMON KATODE   | TOP LAYER | ONSEMI            | CRYPTO |

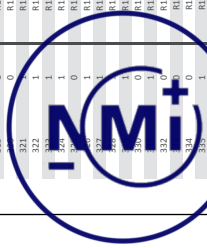


|     |      |                             |      |                |  |           |         |                 |          |
|-----|------|-----------------------------|------|----------------|--|-----------|---------|-----------------|----------|
| 167 | QD4  | DNA2000IV                   | N/A  | SOT-563        | MOSFET 2N-CH 20V 1.3A SOT563   | TOP LAYER | DIODES  | DMN2000V-7      | ABS BMS  |
| 168 | R58  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 169 | R59  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 170 | R60  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 171 | R61  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 172 | R62  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 173 | R63  | 220R 0603 1/10W             | +1%  | 0603           | R 0603 1/10W 1% 100ppm /°C -55°C -155°C  | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 174 | U4   | TPS23860                    | N/A  | SOT-23-6       | IC SWITCH HIGH-SIDE 32V 500mA  | TOP LAYER | TI      | TPS23860DRVR    | ABS BMS  |
| 175 | R64  | 100K 1% 0402 1/16W          | +1%  | SC70-6         | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   | CS16E8105T1G3   | ABS BMS  |
| 176 | R65  | 100K 1% 0402 1/16W          | +1%  | SC70-6         | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   | CS16E8105T1G3   | ABS BMS  |
| 177 | C48  | 100n 0402                   | +10% | 0402           | CAP CER 0.1UF 16V 27R 0402   | TOP LAYER | SAMSUNG | C050810405HNND  | ABS BMS  |
| 178 | C49  | 100n 0402                   | +10% | 0402           | CAP CER 0.1UF 16V 27R 0402   | TOP LAYER | SAMSUNG | C050810405HNND  | ABS BMS  |
| 179 | C50  | 10n 0402                    | +3%  | 0402           | CAP CER 1000PF 50V 5% NPO 0402   | TOP LAYER | KEMET   | CONO2L02P56ACTU | ABS BMS  |
| 180 | R66  | BAT54CT                     | N/A  | SC-75, SOT-143 | DIODE ARRAY SCHOTTKY 30V COMMON KATODE   | TOP LAYER | ONSEMI  | BAT54CT11G      | ABS BMS  |
| 181 | R67  | 3M 0402 1/8W                | +1%  | SMD            | 4 Position Power Connector (0.729" (18.0mm) Mountaggio a superficie ad angolo retto Sgno | TOP LAYER | MOLEX   | 50249-0470      | ABS BMS  |
| 182 | J6   | CONNETTORE BATTERIA 50"     | N/A  | SMD            | MOSFET N-CH 60V 280MA SOT-323  | TOP LAYER | NXP     | BSS138FW,115    | ABS BMS  |
| 183 | R68  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 184 | R69  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 185 | R70  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 186 | R71  | 1M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 187 | R72  | 3M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   | RO402R-073M.3L  | ABS BMS  |
| 188 | R73  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 189 | R74  | 3M 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 190 | R75  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 191 | R76  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 192 | R77  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 193 | R78  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 194 | R79  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 195 | R80  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 196 | R81  | 100K 0.25°C 1% 0402         | +1%  | 0402           | TERMOISTANTIC DIODI 04M 1% 0402  | TOP LAYER | MURATA  | NCJ15MT DAT03IC | ABS BMS  |
| 197 | D12  | CONNETTORE BATTERIA INTERNA | N/A  | N/A            | CONNETTORE BATTERIA INTERNA  | TOP LAYER | CRK     | IC57411 US      | ABS BMS  |
| 198 | D13  | CONNETTORE BATTERIA INTERNA | N/A  | N/A            | CONNETTORE BATTERIA INTERNA  | TOP LAYER | CRK     | IC57411 US      | ABS BMS  |
| 199 | D14  | CONNETTORE BATTERIA INTERNA | N/A  | N/A            | CONNETTORE BATTERIA INTERNA  | TOP LAYER | CRK     | IC57411 US      | ABS BMS  |
| 200 | D15  | CONNETTORE BATTERIA INTERNA | N/A  | N/A            | CONNETTORE BATTERIA INTERNA  | TOP LAYER | CRK     | IC57411 US      | ABS BMS  |
| 201 | D16  | CONNETTORE BATTERIA INTERNA | N/A  | N/A            | CONNETTORE BATTERIA INTERNA  | TOP LAYER | CRK     | IC57411 US      | ABS BMS  |
| 202 | D17  | CONNETTORE BATTERIA INTERNA | N/A  | N/A            | CONNETTORE BATTERIA INTERNA  | TOP LAYER | CRK     | IC57411 US      | ABS BMS  |
| 203 | R70  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   | DMQ20477        | ABS BMS  |
| 204 | R71  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 205 | R72  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 206 | R73  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 207 | R74  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 208 | R75  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 209 | R76  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 210 | R77  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 211 | R78  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 212 | R79  | 18R 1206 1/4W               | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | ABS BMS  |
| 213 | C54  | 22u 6V03                    | +20% | 0905           | CAP CER 22UF 6.3V X5R 0905-55/48°C   | TOP LAYER | SAMSUNG | MININDCLDF-2    | MOTOR-ST |
| 214 | C55  | 100n 0402                   | +10% | 0402           | CAP CER 0.1UF 16V 27R 0402   | TOP LAYER | YAGIO   | RF1324-000      | MOTOR-ST |
| 215 | C56  | 100n 0402                   | +10% | 0402           | CAP CER 0.1UF 16V 27R 0402   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 216 | R80  | 0R 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 217 | R81  | 0R 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 218 | R82  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 219 | R83  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 220 | R84  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 221 | R85  | 100K 1% 0402 1/8W           | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 222 | R86  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 223 | R87  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 224 | R88  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 225 | R89  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 226 | R90  | 1K 0402 1/8W                | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 227 | R91  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 228 | R92  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 229 | R93  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 230 | R94  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 231 | R95  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 232 | R96  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 233 | R97  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 234 | R98  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 235 | R99  | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 236 | R100 | 100K 1% 0402 1/16W          | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 237 | R101 | 806K 1206 1/4W              | +1%  | 1206           | R 1206 1/4W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 238 | R102 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 239 | R103 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 240 | R104 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 241 | R105 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 242 | R106 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 243 | R107 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 244 | R108 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 245 | R109 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 246 | R110 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 247 | R111 | 100R 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 248 | R112 | 4K7 0402 1/8W               | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 249 | R113 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 250 | R114 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 251 | R115 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 252 | R116 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 253 | R117 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 254 | R118 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 255 | R119 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 256 | R120 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |
| 257 | R121 | 470K 0402 1/8W              | +1%  | 0402           | R 0402 1/8W 1% 100ppm /°C -55°C -155°C   | TOP LAYER | YAGIO   |                 | MOTOR-ST |





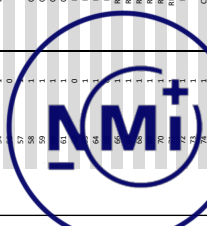
|     |      |                     |      |              |                                       |           |         |                   |                   |
|-----|------|---------------------|------|--------------|---------------------------------------|-----------|---------|-------------------|-------------------|
| 218 | R114 | 56R0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   | ZVI               |
| 259 | R115 | 22K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   | ZVI               |
| 260 | R116 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   | ZVI               |
| 261 | R117 | 70K0402.1/16W       | +1%  | DNP          | DNP                                   | TOP LAYER | YAGO    |                   | ZVI               |
| 262 | R118 | 40K0402.1/16W       | +10% | 0402         | CAP CER01LUF16V 27K 0402              | TOP LAYER | SAMSUNG | ESR18788A         | ESR18788A         |
| 263 | C61  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 264 | C62  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 265 | C63  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 266 | C64  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 267 | C65  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 268 | C66  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 269 | C67  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 270 | C68  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 271 | C69  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 272 | C70  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 273 | R120 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 274 | R121 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 275 | R122 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 276 | R123 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 277 | R124 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 278 | R125 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 279 | R126 | 1K0402.1/16W        | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 280 | U18  | 79KHC16T0           | N/A  | DNP          | K BUFF CMOS 1N/5VTR N1 SOT353         | TOP LAYER | ONSEMI  | M79VH1CLG150DFTTG | M79VH1CLG150DFTTG |
| 281 | U19  | 79KHC16T0           | N/A  | DNP          | K BUFF CMOS 1N/5VTR N1 SOT353         | TOP LAYER | ONSEMI  | M79VH1CLG150DFTTG | M79VH1CLG150DFTTG |
| 282 | U20  | 79KHC16T0           | N/A  | DNP          | K BUFF CMOS 1N/5VTR N1 SOT353         | TOP LAYER | ONSEMI  | M79VH1CLG150DFTTG | M79VH1CLG150DFTTG |
| 283 | U21  | 79KHC16T0           | N/A  | DNP          | K BUFF CMOS 1N/5VTR N1 SOT353         | TOP LAYER | ONSEMI  | M79VH1CLG150DFTTG | M79VH1CLG150DFTTG |
| 284 | U22  | 79KHC16T0           | N/A  | DNP          | K BUFF CMOS 1N/5VTR N1 SOT353         | TOP LAYER | ONSEMI  | M79VH1CLG150DFTTG | M79VH1CLG150DFTTG |
| 285 | U23  | 79KHC16T0           | N/A  | DNP          | K BUFF CMOS 1N/5VTR N1 SOT353         | TOP LAYER | ONSEMI  | M79VH1CLG150DFTTG | M79VH1CLG150DFTTG |
| 286 | C67  | 47k 0V3 X5R 0805    | +20% | 0805         | CAP CER17UF 6.3V X5R 0805 -55V/48°C   | TOP LAYER | YAGO    | COB05MKX5R8B476   | COB05MKX5R8B476   |
| 287 | C68  | 47k 0V3 X5R 0805    | +20% | 0805         | CAP CER17UF 6.3V X5R 0805 -55V/48°C   | TOP LAYER | YAGO    | COB05MKX5R8B476   | COB05MKX5R8B476   |
| 288 | C69  | 47k 0V3 X5R 0805    | +20% | 0805         | CAP CER17UF 6.3V X5R 0805 -55V/48°C   | TOP LAYER | YAGO    | COB05MKX5R8B476   | COB05MKX5R8B476   |
| 289 | C70  | 47k 0V3 X5R 0805    | +20% | 0805         | CAP CER17UF 6.3V X5R 0805 -55V/48°C   | TOP LAYER | YAGO    | COB05MKX5R8B476   | COB05MKX5R8B476   |
| 290 | C71  | 47k 0V3 X5R 0805    | +20% | 0805         | CAP CER17UF 6.3V X5R 0805 -55V/48°C   | TOP LAYER | YAGO    | COB05MKX5R8B476   | COB05MKX5R8B476   |
| 291 | C72  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 292 | C73  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 293 | C74  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 294 | C75  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 295 | C76  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 296 | C77  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 297 | C78  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 298 | C79  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 299 | C80  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 300 | C81  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 301 | C82  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 302 | C83  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 303 | C84  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 304 | C85  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 305 | C86  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 306 | C87  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 307 | C88  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 308 | C89  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 309 | U1   | PEBATENNA           | N/A  | DNP          | CAP CER22UF 50V COG NPO 0402          | TOP LAYER | YAGO    | CO402CNP030B2RZ   | CO402CNP030B2RZ   |
| 310 | U11  | UFL SMD             | N/A  | DNP          | CONV UMC AC/DC STR 50 OHM SMD         | TOP LAYER | HIROSE  | UFL-R-SMT1L0      | UFL-R-SMT1L0      |
| 311 | U12  | UFL SMD             | N/A  | DNP          | CONV UMC AC/DC STR 50 OHM SMD         | TOP LAYER | HIROSE  | UFL-R-SMT1L0      | UFL-R-SMT1L0      |
| 312 | U13  | 25K 2200m@100MHz    | +5%  | 0603         | PERITE BOARD 2200MHZ 0603 11N         | TOP LAYER | MURATA  | BU18552211NLD     | BU18552211NLD     |
| 313 | U14  | 25K 2200m@100MHz    | +5%  | 0603         | PERITE BOARD 2200MHZ 0603 11N         | TOP LAYER | MURATA  | BU18552211NLD     | BU18552211NLD     |
| 314 | U20  | BSS187W             | N/A  | DNP          | MOSETT N-CH 60V 280MA SOT-23          | TOP LAYER | ONSEMI  | BSS187W.115       | BSS187W.115       |
| 315 | Q21  | M48T806             | N/A  | 5C70-S01-333 | TRANS NPN 40V 0.2A SC7E-3             | TOP LAYER | ONSEMI  | M48T806TTLG       | M48T806TTLG       |
| 316 | R127 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 317 | R128 | 100K1%0402.1/16W    | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 318 | R129 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 319 | R130 | 10K0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 320 | R131 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 321 | R132 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 322 | R133 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 323 | R134 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 324 | R135 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 325 | R136 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 326 | R137 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 327 | R138 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 328 | R139 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 329 | R140 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 330 | R141 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 331 | R142 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 332 | R143 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 333 | R144 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 334 | R145 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 335 | R146 | 1K 0402.1/16W       | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 336 | R147 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 337 | U24  | MODEM GSM-GPRS BS22 | N/A  | T80          | DUAL QUAD BAND GSM/GPRS ENGINE        | TOP LAYER | GENALTO | BSS2-E            | BSS2-E            |
| 338 | C90  | 100n0402            | +10% | 0402         | DNP                                   | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 339 | C91  | 220n0402            | +10% | 0402         | CAP CER100PF 50V 5% NPO 0402          | TOP LAYER | KEMET   | C08B18A05FNND     | C08B18A05FNND     |
| 340 | C92  | 1n0402              | +10% | 0402         | CAP CER0.22UF 6.3V X5R 0402 -55V/48°C | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 341 | C93  | 220n0402            | +10% | 0402         | CAP CER100PF 50V 5% NPO 0402          | TOP LAYER | KEMET   | C08B18A05FNND     | C08B18A05FNND     |
| 342 | C94  | 1n0402              | +10% | 0402         | CAP CER0.22UF 6.3V X5R 0402 -55V/48°C | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 343 | C95  | 1n0402              | +10% | 0402         | CAP CER0.22UF 6.3V X5R 0402 -55V/48°C | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 344 | C96  | 1n0402              | +10% | 0402         | CAP CER0.22UF 6.3V X5R 0402 -55V/48°C | TOP LAYER | SAMSUNG | C08B18A05FNND     | C08B18A05FNND     |
| 345 | R148 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 346 | R149 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 347 | R150 | 4K7 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |
| 348 | R151 | 0R0 0402.1/16W      | +1%  | 0402         | R0402.1/16W.1X.100ppm/C. -55°C -155°C | TOP LAYER | YAGO    |                   |                   |



|     |   |      |                                |     |                            |   |           |           |      |
|-----|---|------|--------------------------------|-----|----------------------------|---|-----------|-----------|------|
| 349 | 1 | R152 | 080 0402 1/16W                 | +1% | 0402                       | R0402 1/16W 1% 100ppm /°C -55°C ~ 155°C | TOP LAYER | YAGEO     | GSM  |
| 350 | 0 | R153 | 487 0402 1/16W                 | +1% | 0402                       | R0402 1/16W 1% 100ppm /°C -55°C ~ 155°C | TOP LAYER | YAGEO     | GSM  |
| 351 | 0 | R155 | 3K 0402 1/16W                  | +1% | 0402                       | R0402 1/16W 1% 100ppm /°C -55°C ~ 155°C | TOP LAYER | YAGEO     | GSM  |
| 352 | 0 | U26  | SIM-HOLDER SW                  | N/A | DNP                        | DNP                                     | TOP LAYER | RISORHOPE | GSM  |
| 353 | 0 | U27  | 048R414                        | N/A | 6-TSSOP SC88               | 3MS BQ40LE50MMA/BW/SE706                | TOP LAYER | ONSEMI    | GSM  |
| 354 | 1 | U27  | SIM-HOLDER SPIN                | N/A | N/A                        | COMMON SIM/SAM CARD PUSH-PULL R/A       | TOP LAYER | JAE       | GSM  |
| 355 | 0 | U28  | FAZ2567                        | N/A | JE-1UQFN JE-1UMF (L,8x2.6) | K5 SWITCH-HBTD 16UMF                    | TOP LAYER | FAIRCHILD | GSM  |
| 356 | 1 | U29  | CASSETTINO SIMCARD             | N/A | N/A                        | COMMON SIM CARD PUSH-PULL SWAP-IN       | TOP LAYER | JAE       | GSM  |
| 357 | 0 | U30  | SIM-ON-CHIP                    | N/A | N/A                        | COMMON SIM CARD PUSH-PULL SWAP-IN       | TOP LAYER | GENMOTO   | GSM  |
| 358 | 0 | U31  | EL581                          | N/A | 5-TSSOP SC70LS SOT-23      | 800 OHM RES UV-STR N1.1 01E13           | TOP LAYER | ONSEMI    | GSM  |
| 359 | 0 | U32  | RES2 vs EL581 Adaptor          | N/A | CUSTOM                     | RES2 vs EL581 Adaptor - COMMON PADS     | TOP LAYER | ONSEMI    | GSM  |
| 360 | 0 | U32  | RES2 vs EL581 Adaptor          | N/A | CUSTOM                     | RES2 vs EL581 Adaptor - COMMON PADS     | TOP LAYER | ONSEMI    | GSM  |
| 361 | 0 | PCB1 | RES2 vs EL581 Adaptor          | N/A | CUSTOM                     | RES2 vs EL581 Adaptor - EL581 ONLY PADS | TOP LAYER | ONSEMI    | GSM  |
| 362 | 1 | PCB1 | PCL CS160020501 - LDR-L4Z      | N/A | N/A                        | PCL CS160020501 - LDR-L4Z Rev 1.01      | N/A       | tsd       | GSM  |
| 363 | 1 | PCB1 | PELLECOA P4P4S2V4 (Bottom 5mm) | N/A | N/A                        | PELLECOA P4P4S2V4 (Bottom 5mm)          | TOP LAYER | tsd       | PCB  |
|     |   |      |                                |     |                            |   |           | 3M        | 4959 |



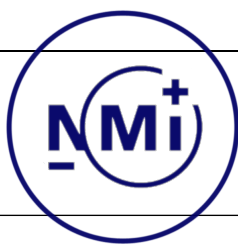
| POS | QTY | Reference | Value               | Tolerance | Package                                     | P/PP | Description   | Notes     | Supplier 1 Code       | Manufacturer 1 | Manufacturer 1 Code | Option |
|-----|-----|-----------|---------------------|-----------|---|------|---|-----------|-----------------------|----------------|---------------------|--------|
| 1   | 1   | C1        | 16.691.0003         | ±10%      | 0003  | DNP  | Cap CB 1.1UF 10V VDR 0402   | TOP LATER | FRN002156A.12.26.00R2 | SAMSUNG        | CL1810Q06BN1C       | MCU    |
| 2   | 1   | C2        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 0.1UF 10V VDR 0402   | TOP LATER |                       | SAMSUNG        | CL1810Q06BN1C       | MCU    |
| 3   | 1   | C3        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 0.1UF 10V VDR 0402   | TOP LATER |                       | SAMSUNG        | CL1810Q06BN1C       | MCU    |
| 4   | 1   | C4        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 0.1UF 10V VDR 0402   | TOP LATER |                       | SAMSUNG        | CL1810Q06BN1C       | MCU    |
| 5   | 0   | J1        | 06.810              | N/A       | 0001  | DNP  | STRIP AL FOLI 2MM   | TOP LATER |                       |                |                     |        |
| 6   | 1   | C5        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 0.1UF 10V VDR 0402   | TOP LATER |                       |                |                     |        |
| 7   | 1   | R1        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 8   | 1   | R2        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 9   | 1   | R3        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 10  | 1   | R4        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 11  | 1   | R5        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 12  | 1   | R6        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 13  | 1   | R7        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 14  | 1   | R8        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 15  | 1   | R100      | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 16  | 1   | R101      | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 17  | 1   | R102      | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 18  | 1   | R103      | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 19  | 1   | R104      | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 20  | 1   | U1        | 57M.124.13VCV.04V0E | N/A       | 101.0EP (14.14)                             | DNP  | IC MCU 2307 256/128 4T 1.0V 100DPP  | TOP LATER |                       |                |                     |        |
| 21  | 1   | X1        | 31.7086262 66F      | ±100%     | 25003 Lu (Lx 0.125x (0.059" (L30x 1.50) mm) | DNP  | 31.7086262 66F (60) 970m 47°C - 85°C. Montaggio superficiale (SMD). SMT 2.54D | TOP LATER |                       |                |                     |        |
| 22  | 1   | C6        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 23  | 1   | C7        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 24  | 1   | C8        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 25  | 1   | C9        | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 26  | 1   | C10       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 27  | 1   | C11       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 28  | 1   | C12       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 29  | 1   | C13       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 30  | 1   | C14       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 31  | 1   | C15       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 32  | 1   | C16       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 33  | 1   | C17       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 34  | 1   | C18       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 35  | 1   | R11       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 36  | 1   | R12       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 37  | 1   | R13       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 38  | 1   | R14       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 39  | 1   | R15       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 40  | 1   | C17       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 41  | 1   | C18       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 42  | 1   | C19       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 43  | 0   | J3        | 08S.CONN            | N/A       | CUSTOM                                      | DNP  | GAS METR HERMET NEW CONNECTOR (6 PINI) DI SALINITA(M)                         | TOP LATER |                       |                |                     |        |
| 44  | 1   | R16       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 45  | 1   | R17       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 46  | 1   | R18       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 47  | 1   | R19       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 48  | 1   | R20       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 49  | 1   | R21       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 50  | 1   | R22       | 08.0002.1J15W       | ±1%       | 0002  | DNP  | R 0002.1J15W R5.100mm F°C. 55°C - 155°C                                       | TOP LATER |                       |                |                     |        |
| 51  | 0   | U4        | 08.0002.1J15W       | ±1%       | 0002  | DNP  | IC SWITCH HIGH SW 50/5  | TOP LATER |                       |                |                     |        |
| 52  | 1   | C201      | 16.691.0003         | ±10%      | 0003  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 53  | 1   | C21       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 54  | 1   | C22       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 55  | 0   | J5        | 08S.CONN            | N/A       | N/A   | DNP  | GAS METR HERMET NEW CONNECTOR (6 PINI) DI SALINITA(M)                         | TOP LATER |                       |                |                     |        |
| 56  | 1   | C23       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 57  | 1   | C24       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 58  | 1   | C25       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 59  | 1   | C26       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 60  | 1   | C27       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 61  | 1   | C28       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 62  | 1   | C29       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 63  | 1   | C30       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 64  | 1   | C31       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 65  | 1   | C32       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 66  | 1   | C33       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 67  | 1   | C34       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 68  | 1   | C35       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 69  | 1   | C36       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 70  | 1   | C37       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 71  | 1   | C38       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 72  | 1   | C39       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 73  | 1   | C40       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 74  | 1   | C41       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 75  | 1   | C42       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 76  | 1   | C43       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 77  | 1   | C44       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 78  | 1   | C45       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 79  | 1   | C46       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 80  | 1   | C47       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 81  | 1   | C48       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 82  | 1   | C49       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 83  | 1   | C50       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 84  | 0   | C51       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 85  | 1   | C52       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |
| 86  | 1   | C53       | 1004.0002           | ±10%      | 0002  | DNP  | Cap CB 10UF 16V VDR 0402  | TOP LATER |                       |                |                     |        |







|     |      |   |                                 |      |        |   |              |           |                  |     |
|-----|------|---|---------------------------------|------|--------|---|--------------|-----------|------------------|-----|
| 290 | 081  | 1 | 100.0002                        | 45%  | 0002   | CAP CER TOP F5V CIG 5MM 0402  | TOP LAYER    | SAW SLIMS | CIG5001000000    | GSM |
| 291 | 084  | 1 | 100.0002                        | 45%  | 0002   | CAP CER TOP F5V CIG 5MM 0402  | TOP LAYER    | SAW SLIMS | CIG5001000000    | GSM |
| 292 | 085  | 1 | 100.0002                        | 45%  | 0002   | CAP CER TOP F5V CIG 5MM 0402  | TOP LAYER    | SAW SLIMS | CIG5001000000    | GSM |
| 293 | 087  | 0 | C4002                           | Bad  | 0002   | C4002   | TOP LAYER    | SAW SLIMS | CIG5001000000    | GSM |
| 294 | 088  | 0 | C4002                           | Bad  | 0002   | C4002   | BOTTOM LAYER | SAW SLIMS | CIG5001000000    | GSM |
| 296 | E1   | 0 | PAZ ANTENA                      | N/A  | N/A    | GSM/PCS/PCS ANTENA  | TOP LAYER    | PROSE     | UFR-SAT100       | GSM |
| 297 | J1   | 0 | UFR-SAT100                      | N/A  | DNP    | CONNA LMC IAC 5TH 50 OHM 3M D   | BOTTOM LAYER | PROSE     | UFR-SAT100       | GSM |
| 298 | L1   | 0 | UFR-SAT100                      | N/A  | DNP    | CONNA LMC IAC 5TH 50 OHM 3M D   | BOTTOM LAYER | PROSE     | UFR-SAT100       | GSM |
| 299 | L5   | 0 | 2,5A 220V 100W@100WHz           | N/A  | 0003   | FERRITE BEAD 210 OHM 0403 11M   | TOP LAYER    | PROSE     | UFR-SAT100       | GSM |
| 300 | L6   | 0 | 2,5A 220V 100W@100WHz           | N/A  | 0003   | FERRITE BEAD 210 OHM 0403 11M   | TOP LAYER    | PROSE     | UFR-SAT100       | GSM |
| 302 | Q21  | 1 | MARF51906                       | N/A  | 0002   | TRANS PWR 40V 02A575E3  | TOP LAYER    | NSA       | RE1-329M-115     | GSM |
| 303 | Q30  | 0 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 304 | Q31  | 0 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 305 | Q32  | 0 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 306 | F130 | 1 | 10K 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 307 | F131 | 1 | 10K 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 308 | F132 | 1 | 10K 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 309 | F133 | 1 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 310 | F134 | 1 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 311 | F135 | 1 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 312 | F136 | 1 | 080.0402                        | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 313 | F137 | 1 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 314 | F138 | 1 | 080.0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 315 | F139 | 1 | 1K 0402 J/16W                   | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 316 | F140 | 1 | 1K 0402 J/16W                   | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 317 | F141 | 1 | 1K 0402 J/16W                   | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 318 | F142 | 1 | 10K 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 319 | F143 | 0 | 1K 0402                         | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 320 | F144 | 0 | 1K 0402                         | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 321 | F145 | 0 | 1K 0402                         | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 322 | F146 | 0 | 1K 0402 J/16W                   | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 323 | F147 | 0 | 1K 0402 J/16W                   | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 324 | F148 | 0 | 1K 0402 J/16W                   | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 325 | G39  | 1 | 10 0V 10003                     | 110% | 0003   | DNP   | TOP LAYER    | GERMANTO  | RES2E            | GSM |
| 326 | G39  | 1 | 10 0V 10003                     | 110% | 0003   | DNP   | TOP LAYER    | GERMANTO  | RES2E            | GSM |
| 327 | G31  | 1 | 200V 0402                       | 110% | 0002   | CAP CER 0.22UF 6.3V 5% 10002 55V4857C                                 | TOP LAYER    | SAW SLIMS | C10A224023NND    | GSM |
| 328 | G32  | 1 | 10002                           | 45%  | 0002   | CAP CER 1000PF 50V 5% 10P10002  | TOP LAYER    | SAW SLIMS | C10A224023NND    | GSM |
| 329 | G33  | 1 | 10002                           | 45%  | 0002   | CAP CER 1000PF 50V 5% 10P10002  | TOP LAYER    | SAW SLIMS | C10A224023NND    | GSM |
| 330 | G34  | 0 | 1000.0402                       | 110% | 0002   | CAP CER 0.1UF 16V 5% 1000.0402  | TOP LAYER    | SAW SLIMS | C10B100403NND    | GSM |
| 331 | G35  | 1 | 1000.0402                       | 45%  | 0002   | CAP CER 1000PF 50V 5% 10P10002  | TOP LAYER    | SAW SLIMS | C10B100403NND    | GSM |
| 332 | F149 | 1 | 10K 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 333 | F150 | 1 | 10K 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 334 | F151 | 1 | 407 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 335 | F152 | 1 | 407 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 336 | F153 | 1 | 407 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 337 | F154 | 1 | 407 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 338 | F155 | 1 | 407 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 339 | F156 | 1 | 407 0402 J/16W                  | 11%  | 0002   | R 0402 J/16W R5 100000m F/C 55K - 155K                                | TOP LAYER    | VAGRO     | MM8130001110     | GSM |
| 340 | U26  | 0 | NIP4114                         | N/A  | 61320P | 5C-88   | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 341 | U27  | 0 | SM-HC0305-09N                   | n/a  | DNP    | CONN 5MM/5MM/20C/5C/06  | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 342 | U28  | 0 | SM-HC0305-09N                   | n/a  | DNP    | CONN 5MM/5MM/20C/5C/06  | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 343 | U29  | 0 | CASET 1200 3 WACARD             | N/A  | DNP    | CONN 1.5MM CARDED P-14H 3MM-N   | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 344 | U30  | 0 | 5M 080Chip                      | N/A  | DNP    | SMK08CHIP   | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 345 | U31  | 0 | BE1.5 507-253                   | N/A  | DNP    | CONN 1.5MM CARDED P-14H 3MM-N   | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 346 | U32  | 0 | BE2.5 11551 Adaptor             | N/A  | DNP    | BE2.5 to E1.551 Adaptor - COMMON PAIRS                                | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 347 | U33  | 0 | BE2.5 11551 Adaptor             | N/A  | DNP    | BE2.5 to E1.551 Adaptor - ELSDI OND PAIRS                             | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 348 | U34  | 0 | BE2.5 11551 Adaptor             | N/A  | DNP    | BE2.5 to E1.551 Adaptor - ELSDI OND PAIRS                             | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 349 | F157 | 0 | PCB_C15452302-01_LIGRE_45       | N/A  | DNP    | PCB_C15452302-01_LIGRE_45 Rev.1.04                                    | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |
| 350 | F158 | 1 | PELICOLA B-ARDESIVA (10mmx15mm) | N/A  | n/a    | PELICOLA B-ARDESIVA PER IEC con 4939 (10mmx15mm) - Marelli con 712305 | TOP LAYER    | PROSE     | FR 840216-AJ15-R | GSM |



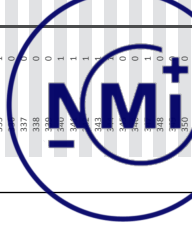
| POS | QTY | Reference | Value                       | Tolerance | Package                                      | P/N/P | Description                            | Notes     | Supplier 1  | Supplier 1 Code    | Manufacturer 1          | Manufacturer 1 Code        | Option     |
|-----|-----|-----------|-----------------------------|-----------|--|-------|--|-----------|-------------|--------------------|-------------------------|----------------------------|------------|
| 1   | 1   | C1        | 1x 6V3 0603                 | -10%      | 0603   |       | CAP CER LUF 6.3V X7R 0603              | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 2   | 1   | C2        | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 3   | 1   | C3        | 68PF-0402                   | -10%      | 0402   |       | CAP CER 68PF 50V X7R 0402              | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 4   | 1   | C4        | 10K-0402                    | -10%      | 0402   |       | CAP CER 10K 50V X7R 0402               | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 5   | 0   |           | THF PASCO DAMI              |           | DNP  |       |  | TOP LAYER |             |                    |                         |                            |            |
| 6   | 1   | R1        | 0402                        | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 7   | 1   | R2        | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 8   | 1   | R3        | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 9   | 1   | R4        | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 10  | 1   | R5        | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 11  | 1   | R6        | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 12  | 1   | R7        | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 13  | 0   |           | SHOCK PROTECT               |           | DNP  |       |  | TOP LAYER |             |                    |                         |                            |            |
| 14  | 1   | R8        | 100K 0402 1/16W             | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 15  | 1   | R9        | 100K 0402 1/16W             | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 16  | 1   | R10       | 100K 0402 1/16W             | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 17  | 0   |           | SHOCK PROTECT               |           | DNP  |       |  | TOP LAYER |             |                    |                         |                            |            |
| 18  | 1   | R11       | 100K 0402 1/16W             | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 19  | 0   |           | SHOCK PROTECT               |           | DNP  |       |  | TOP LAYER |             |                    |                         |                            |            |
| 20  | 1   | R12       | 100K 0402 1/16W             | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 21  | 1   | U1        | 327884Z-6P                  | -10ppm    | 25 MD LuA 1x1 0.126 x 0.059 (9.20 x 1.50 mm) |       | 327884Z-6P                             | TOP LAYER | FIRSTEUROPE | FRN92158A 32.7884Z | 5TM                     | 5TM2414313VCT6             | MCU        |
| 22  | 1   | X1        | 327884Z-6P                  | -10ppm    | 25 MD LuA 1x1 0.126 x 0.059 (9.20 x 1.50 mm) |       | 327884Z-6P                             | TOP LAYER | FIRSTEUROPE | FRN92158A 32.7884Z | NDK                     | NDK2158A 32.7884Z 6P 10ppm | MCU        |
| 23  | 1   | C5        | 1u6V3 0603                  | -10%      | 0603   |       | CAP CER LUF 6.3V X7R 0603              | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 24  | 1   | C6        | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 25  | 1   | C7        | 1u6V3 0603                  | -10%      | 0603   |       | CAP CER LUF 6.3V X7R 0603              | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 26  | 1   | C8        | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 27  | 1   | C9        | 47 6V3 0603                 | -10%      | 0603   |       | CAP CER 47 6.3V X7R 0603               | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 28  | 1   | C10       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 29  | 1   | C11       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 30  | 1   | C12       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 31  | 1   | C13       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 32  | 1   | C14       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 33  | 1   | C15       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 34  | 1   | C16       | 100n-0402                   | -10%      | 0402   |       | CAP CER 0.1UF 16V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | MCU        |
| 35  | 1   | L1        | 1K0 100MHz 300mA 0.65x0.4mm | -25%      | 0402   |       | SMD Ferrite Induct. at 100MHz 20% 0402 | TOP LAYER |             |                    | MURATA                  | BMT154G1025N1D             | MCU        |
| 36  | 1   | R10       | 47R 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 37  | 1   | R11       | 47R 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 38  | 1   | R12       | 47R 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 39  | 1   | R13       | 47R 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 40  | 1   | R14       | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 41  | 1   | R15       | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 42  | 1   | R16       | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 43  | 1   | R17       | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 44  | 1   | R18       | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 45  | 1   | R19       | 080 0402 1/16W              | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | MCU        |
| 46  | 0   |           | MRS_CONN                    |           | CUSTOM                                       |       |  | TOP LAYER |             |                    | N/A                     | N/A                        | GAS SENSOR |
| 47  | 1   | R20       | 200n-0402                   | -10%      | 0402   |       | CAP CER 200PF 50V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | GAS SENSOR |
| 48  | 1   | R21       | 200n-0402                   | -10%      | 0402   |       | CAP CER 200PF 50V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | GAS SENSOR |
| 49  | 1   | R22       | 200n-0402                   | -10%      | 0402   |       | CAP CER 200PF 50V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | GAS SENSOR |
| 50  | 1   | R23       | 200n-0402                   | -10%      | 0402   |       | CAP CER 200PF 50V X7R 0402             | TOP LAYER |             |                    | SAMSUNG                 | CL18L05K0BNNNC             | GAS SENSOR |
| 51  | 1   | R24       | 4842 0402 1/16W             | -1%       | 0402   |       | MOSETT-P-CH-12V-1.52A-ET20P            | TOP LAYER |             |                    | NXP                     | PNN80VP                    | SCAP       |
| 52  | 1   | R25       | 4842 0402 1/16W             | -1%       | 0402   |       | MOSETT-P-CH-12V-1.52A-ET20P            | TOP LAYER |             |                    | NXP                     | PNN80VP                    | SCAP       |
| 53  | 1   | R26       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 54  | 1   | R27       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 55  | 1   | R28       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 56  | 1   | R29       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 57  | 1   | R30       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 58  | 1   | R31       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 59  | 1   | R32       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 60  | 1   | R33       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 61  | 1   | R34       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 62  | 1   | R35       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 63  | 1   | R36       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 64  | 1   | R37       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 65  | 1   | R38       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 66  | 1   | R39       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 67  | 1   | R40       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 68  | 1   | R41       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 69  | 1   | R42       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 70  | 1   | R43       | 2M 0402 1/16W               | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 71  | 0   |           | CONN_B900                   |           | N/A  |       |  | TOP LAYER |             |                    | DIODES                  | 894031JF                   | SCAP       |
| 72  | 0   |           | CONN_B900                   |           | N/A  |       |  | TOP LAYER |             |                    | DIODES                  | 894031JF                   | SCAP       |
| 73  | 0   |           | CONN_B900                   |           | N/A  |       |  | TOP LAYER |             |                    | DIODES                  | 894031JF                   | SCAP       |
| 74  | 1   | Q28       | DMP2051V17                  | N/A       | T505-26 / 50723.6 THIN / T50723.6            |       | SMO BRIDGE RECTIFIER                   | TOP LAYER |             |                    | INTERNATIONAL RECTIFIER | RLM68401BRRE               | SCAP       |
| 75  | 1   | Q29       | DMP2051V17                  | N/A       | T505-26 / 50723.6 THIN / T50723.6            |       | SMO BRIDGE RECTIFIER                   | TOP LAYER |             |                    | INTERNATIONAL RECTIFIER | RLM68401BRRE               | SCAP       |
| 76  | 1   | R44       | DMN2000V7                   | -1%       | 507563                                       |       | MOSETT-2N-CH-20V-1.33A-S01963          | TOP LAYER |             |                    | DIODES                  | DMP2051V17                 | SCAP       |
| 77  | 1   | R45       | DMN2000V7                   | -1%       | 507563                                       |       | MOSETT-2N-CH-20V-1.33A-S01963          | TOP LAYER |             |                    | DIODES                  | DMP2051V17                 | SCAP       |
| 78  | 1   | R46       | 100K 1% 0402 1/16W          | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 79  | 1   | R47       | 100K 1% 0402 1/16W          | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 80  | 1   | R48       | 100K 1% 0402 1/16W          | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 81  | 1   | R49       | 100K 1% 0402 1/16W          | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 82  | 1   | R50       | 100K 1% 0402 1/16W          | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C -55°C -155°C | TOP LAYER |             |                    | YAGEO                   |                            | SCAP       |
| 83  | 1   | R51       | 100K 1% 0402 1/16W          | -1%       | 0402   |       | R 0402 1/16W 1% 100ppm/°C              |           |             |                    |                         |                            |            |





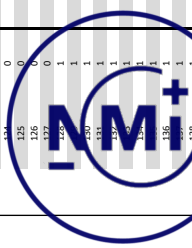


|     |      |              |                     |              |  |              |         |     |
|-----|------|--------------|---------------------|--------------|--|--------------|---------|-----|
| 271 | R123 | 1K 0402 J16W | 11%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 272 | R124 | 1K 0402 J16W | 11%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | BOTTOM LAYER | YAGO    | GSM |
| 273 | R125 | 1K 0402 J16W | 11%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 274 | R126 | 1K 0402 J16W | 11%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | BOTTOM LAYER | YAGO    | GSM |
| 275 | 0    | U18          | N/A                 | DNP          | K BUFF CMOS UN/STR N1 SOT133           | TOP LAYER    | ONEMI   | GSM |
| 276 | 0    | U19          | N/A                 | DNP          | K BUFF CMOS UN/STR N1 SOT133           | BOTTOM LAYER | ONEMI   | GSM |
| 277 | 0    | U20          | N/A                 | DNP          | K BUFF CMOS UN/STR N1 SOT133           | TOP LAYER    | ONEMI   | GSM |
| 278 | 0    | U21          | N/A                 | DNP          | K BUFF CMOS UN/STR N1 SOT133           | BOTTOM LAYER | ONEMI   | GSM |
| 279 | 0    | U22          | N/A                 | DNP          | K BUFF CMOS UN/STR N1 SOT133           | TOP LAYER    | ONEMI   | GSM |
| 280 | 0    | U23          | N/A                 | DNP          | K BUFF CMOS UN/STR N1 SOT133           | BOTTOM LAYER | ONEMI   | GSM |
| 281 | 0    | C67          | ±20%                | 0805         | CAP CER 47UF 6.3V X5R 0805-55J482C     | TOP LAYER    | YAGO    | GSM |
| 282 | 0    | C68          | ±20%                | 0805         | CAP CER 47UF 6.3V X5R 0805-55J482C     | TOP LAYER    | YAGO    | GSM |
| 283 | 0    | C69          | ±20%                | 0805         | CAP CER 47UF 6.3V X5R 0805-55J482C     | TOP LAYER    | YAGO    | GSM |
| 284 | 1    | C70          | ±20%                | 0805         | CAP CER 47UF 6.3V X5R 0805-55J482C     | TOP LAYER    | YAGO    | GSM |
| 285 | 1    | C71          | ±20%                | 0805         | CAP CER 47UF 6.3V X5R 0805-55J482C     | TOP LAYER    | YAGO    | GSM |
| 286 | 1    | C72          | ±10%                | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 287 | 1    | C73          | ±5%                 | 3910402      | CAP CER 39UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 288 | 1    | C74          | ±5%                 | 3910402      | CAP CER 39UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 289 | 0    | C75          | ±5%                 | 0402         | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 290 | 1    | C76          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 291 | 0    | C77          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 292 | 0    | C78          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 293 | 1    | C79          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 294 | 0    | C80          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | BOTTOM LAYER | YAGO    | GSM |
| 295 | 0    | C81          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | BOTTOM LAYER | YAGO    | GSM |
| 296 | 0    | C82          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | BOTTOM LAYER | YAGO    | GSM |
| 297 | 0    | C83          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | BOTTOM LAYER | YAGO    | GSM |
| 298 | 1    | C84          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 299 | 1    | C85          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 300 | 0    | C86          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 301 | 0    | C87          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 302 | 0    | C88          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 303 | 0    | C89          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 304 | 0    | C90          | ±5%                 | 100402       | CAP CER 10UF 50V COS NP0 0402          | TOP LAYER    | YAGO    | GSM |
| 305 | 0    | J11          | N/A                 | U1-R-SMT-1   | CONN UMC JACK ST.50 OHM SMD            | TOP LAYER    | HROSE   | GSM |
| 306 | 0    | J12          | N/A                 | U1-R-SMT-1   | CONN UMC JACK ST.50 OHM SMD            | BOTTOM LAYER | HROSE   | GSM |
| 307 | 0    | J13          | N/A                 | U1-R-SMT-1   | CONN UMC JACK ST.50 OHM SMD            | TOP LAYER    | HROSE   | GSM |
| 308 | 1    | L6           | ±2.5% 2200nH±100MHz | 0603         | FERRITE BEAD 220 OHM 0603 1N           | TOP LAYER    | YAGO    | GSM |
| 309 | 1    | Q20          | N/A                 | SC-70 SOT-23 | CAP CER 2.2UF 50V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 310 | 1    | Q21          | N/A                 | SC-70 SOT-23 | CAP CER 2.2UF 50V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 311 | 0    | R127         | ±1%                 | 0402         | TRANS NPN 40V 0.2A SC70-3              | TOP LAYER    | ONEMI   | GSM |
| 312 | 0    | R128         | ±1%                 | 0402         | TRANS NPN 40V 0.2A SC70-3              | TOP LAYER    | ONEMI   | GSM |
| 313 | 0    | R129         | ±1%                 | 0402         | TRANS NPN 40V 0.2A SC70-3              | TOP LAYER    | ONEMI   | GSM |
| 314 | 1    | R130         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 315 | 0    | R131         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 316 | 0    | R132         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 317 | 1    | R133         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 318 | 1    | R134         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 319 | 1    | R135         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 320 | 0    | R136         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 321 | 0    | R137         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 322 | 1    | R138         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 323 | 1    | R139         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 324 | 1    | R140         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 325 | 0    | R141         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 326 | 0    | R142         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 327 | 0    | R143         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 328 | 0    | R144         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 329 | 0    | R145         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 330 | 0    | R146         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 331 | 0    | R147         | ±1%                 | 0402         | R 0402 J16W 1K 100ppm / °C 50°C -155°C | TOP LAYER    | YAGO    | GSM |
| 332 | 1    | U24          | N/A                 | CUSTOM       | DUAL QUAD BAND GSM/GPRS ENGINE         | TOP LAYER    | GENALTO | GSM |
| 333 | 0    | C89          | ±10%                | 0805         | CAP CER 1UF 6.3V X7R 0805              | TOP LAYER    | YAGO    | GSM |
| 334 | 0    | C90          | ±10%                | 0805         | CAP CER 1UF 6.3V X7R 0805              | TOP LAYER    | YAGO    | GSM |
| 335 | 0    | C91          | ±10%                | 0805         | CAP CER 1UF 6.3V X7R 0805              | TOP LAYER    | YAGO    | GSM |
| 336 | 0    | C92          | ±15%                | 110402       | CAP CER 22UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 337 | 0    | C93          | ±10%                | 200402       | CAP CER 22UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 338 | 0    | C94          | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 339 | 0    | C95          | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 340 | 0    | C96          | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 341 | 0    | C97          | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 342 | 0    | C98          | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 343 | 0    | C99          | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 344 | 0    | C100         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 345 | 0    | C101         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 346 | 0    | C102         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 347 | 0    | C103         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 348 | 0    | C104         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 349 | 0    | C105         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 350 | 0    | C106         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 351 | 0    | C107         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 352 | 0    | C108         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 353 | 0    | C109         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 354 | 0    | C110         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 355 | 0    | C111         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 356 | 0    | C112         | ±10%                | 300402       | CAP CER 30UF 6.3V X5R 0402 55J482C     | TOP LAYER    | YAGO    | GSM |
| 357 | 1    | B051         | N/A                 | n/a          | PELICOLA B/A DESOVA (10mmx3mm)         | TOP LAYER    | BM      | PCB |



| POS | QTY | Reference | Value                   | Tolerance | Package            | P/N/P | Description   | Notes        | Supplier 1 | Supplier 1 Code       | Manufacturer 1 | Manufacturer 1 Code | Model      |
|-----|-----|-----------|-------------------------|-----------|--------------------|-------|---|--------------|------------|-----------------------|----------------|---------------------|------------|
| 1   | 1   | C1        | 1x 6V3 0603             | ±10%      | 0603               |       | CAP.CER.LUF. 6.3V X7R 0603                              | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 2   | 1   | C2        | 100n/0402               | ±10%      | 0402               |       | CAP.CER.01UF.16V X7R 0402                               | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 3   | 1   | C3        | 6.8p/0402               | ±0.25Pf   | 0402               |       | CAP.CER.6.8PF.50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 4   | 1   | C4        | 6.8p/0402               | ±0.25Pf   | 0402               |       | CAP.CER.6.8PF.50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 5   | 0   | C134      | 3B3002                  | N/A       |                    |       | STRIP 3P 1.2MM  | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 6   | 0   | C135      | 3B3002                  | N/A       |                    |       | STRIP 3P 1.2MM  | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 7   | 1   | R1        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 8   | 1   | R2        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 9   | 1   | R3        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 10  | 1   | R4        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 11  | 1   | R5        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 12  | 1   | R6        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 13  | 1   | R7        | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 14  | 0   | R8        | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | BOTTOM LAYER |            |                       | YAGEO          |                     | MCU        |
| 15  | 1   | R9        | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 16  | 1   | R160      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 17  | 1   | R161      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 18  | 1   | R162      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 19  | 1   | R163      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 20  | 1   | R164      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 21  | 0   | R165      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 22  | 0   | R166      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 23  | 0   | R167      | 100R 0402 1/6W          | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 24  | 1   | U1        | 57N13433C/2516          | N/A       |                    |       | TACT SWITCH IP67  | BOTTOM LAYER |            |                       | CSK            | K5C7411JFS          | MCU        |
| 25  | 1   | X1        | 32.768KHZ6P             | ±10ppm    |                    |       | 32.768KHZ6P   | TOP LAYER    |            |                       | ST             | SIEM32433CT6        | MCU        |
| 26  | 1   | C5        | 1u 6V3 0603             | ±10%      | 0603               |       | CAP.CER.LUF. 6.3V X7R 0603                              | TOP LAYER    |            | FIRMO32155A.32.768KHZ | SAMSUNG        | N632155A.32.768KHZ  | MCU        |
| 27  | 1   | C6        | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 28  | 1   | C7        | 1u 6V3 0603             | ±10%      | 0603               |       | CAP.CER.LUF. 1uV X7R 0603                               | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 29  | 1   | C8        | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 30  | 1   | C9        | 4k7 0V3 0603            | ±10%      | 0603               |       | CAP.CER.LUF. 4.7V X7R 0603                              | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 31  | 1   | C10       | 1u 6V3 0603             | ±10%      | 0603               |       | CAP.CER.LUF. 6.3V X7R 0603                              | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 32  | 1   | C11       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 33  | 1   | C12       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 34  | 1   | C13       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 35  | 1   | C14       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 36  | 1   | C15       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 37  | 1   | C16       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 38  | 1   | L1        | 1K@100MHz 300mA 0.65ohm | ±25%      | 0402               |       | SMD Ferrite 1Kohm at 100MHz 25% 0402                    | TOP LAYER    |            |                       | MURATA         | B1M15AG1025N1D      | MCU        |
| 39  | 1   | R10       | 47R 0402 1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 40  | 1   | R11       | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 41  | 1   | R12       | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 42  | 1   | R13       | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 43  | 1   | R14       | 0R0/0402/1/6W           | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | MCU        |
| 44  | 0   | U1        | STM32L433VC/26          | N/A       | 100-LQFP (1.4x4.1) |       | IC: MCU 32BIT 256/512KB FLASH 100LQFP                   | N/A          |            |                       | STM            | STM32L433VC6        | MCU        |
| 45  | 1   | C17       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 46  | 1   | C18       | 1n/0402                 | ±5%       | 0402               |       | CAP.CER.LUF. 1nV X7R 0402                               | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 47  | 1   | C19       | 100n/0402               | ±10%      | 0402               |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | MCU        |
| 48  | 0   | C20       | 330/0402                | ±10%      | 0402               |       | CAP.CER.330NF 50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 49  | 0   | C21       | 330/0402                | ±10%      | 0402               |       | CAP.CER.330NF 50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 50  | 0   | C22       | 330/0402                | ±10%      | 0402               |       | CAP.CER.330NF 50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 51  | 0   | C23       | 330/0402                | ±10%      | 0402               |       | CAP.CER.330NF 50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 52  | 0   | C24       | 330/0402                | ±10%      | 0402               |       | CAP.CER.330NF 50V NP0 0402                              | TOP LAYER    |            |                       | SAMSUNG        | C105CGRREB3NNDC     | MCU        |
| 53  | 1   | J3        | MRS_CONN                | N/A       | CUSTOM             |       | GAS METER METERSIT NEW CONNECTOR (E PLUMI DI SALDATURA) | TOP LAYER    |            |                       | N/A            | N/A                 | GAS SENSOR |
| 54  | 1   | R15       | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | GAS SENSOR |
| 55  | 1   | R16       | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | GAS SENSOR |
| 56  | 1   | R17       | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | GAS SENSOR |
| 57  | 1   | R18       | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | GAS SENSOR |
| 58  | 1   | R19       | 100K 1% 0402 1/6W       | ±1%       | 0402               |       | R 0402 1/6W 1% 100ppm /C -55°C - 155°C                  | TOP LAYER    |            |                       | YAGEO          |                     | GAS SENSOR |
| 59  | 1   | U3        | TPS22860                | N/A       | SOT23-6            |       | IC: SWITCH HIGH SIDE SOT23-6                            | TOP LAYER    |            |                       | TI             | TPS22860DRVR        | GAS SENSOR |
| 60  | 1   | U4        | 5P32413                 | N/A       | SC70-6             |       | IC: SWITCH HIGH SIDE SC70-6                             | TOP LAYER    |            |                       | VISHAY         | SIP32413DR3-1TIG3   | GAS SENSOR |
| 61  | 1   | U5        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 62  | 0   | B884C303  | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 63  | 1   | D2        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 64  | 1   | D1        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 65  | 1   | D2        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 66  | 1   | D3        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 67  | 1   | D4        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 68  | 1   | D5        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 69  | 1   | D6        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 70  | 1   | D7        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 71  | 1   | D8        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 72  | 1   | D9        | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 73  | 1   | D10       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 74  | 1   | D11       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 75  | 1   | D12       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 76  | 1   | D13       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 77  | 1   | D14       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 78  | 1   | D15       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 79  | 1   | D16       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 80  | 1   | D17       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 81  | 1   | D18       | B884C303                | ±10%      | 50733              |       | CAP.CER.LUF. 100NF (1.4x4.1)                            | TOP LAYER    |            |                       | SAMSUNG        | CL18B104K05S0NNDC   | GAS SENSOR |
| 82  | 1   | D19       | B884C303                | ±1        |                    |       |   |              |            |                       |                |                     |            |

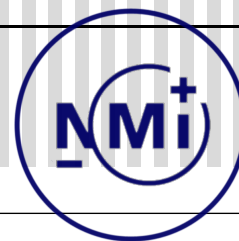
| 67  | 1 | R23  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP    |
|-----|---|------|--------------------|------|---|---|-----------|-------------------------|---------|
| 68  | 1 | R26  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP    |
| 69  | 1 | R27  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP    |
| 70  | 1 | R184 | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 71  | 1 | R185 | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 72  | 1 | R186 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 73  | 0 | R187 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 74  | 0 | R188 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 75  | 1 | R189 | 3.3K 0603 1/10W    | ±1%  | 0603  | R 1206 1/4W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 76  | 1 | R190 | 56K 1206 1/4W      | ±1%  | 1206  | R 1206 1/4W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | SCAP-QK |
| 77  | 1 | R191 | 33K 0603           | ±1%  | 0603  | PTC Resistor (see 6V 2.6A 1h Surface Mount 1812 (4832 Metric) Consume     | TOP LAYER | TE CONN / RAYCHEM       | SCAP    |
| 78  | 0 | C25  | 22u 6V3            | ±20% | 0805  | PTC Resistor (see 6V 2.6A 1h Surface Mount 1812 (4832 Metric) Consume     | TOP LAYER | TE CONN / RAYCHEM       | SCAP    |
| 79  | 0 | C26  | 22u 6V3            | ±20% | 0805  | PTC Resistor (see 6V 2.6A 1h Surface Mount 1812 (4832 Metric) Consume     | TOP LAYER | TE CONN / RAYCHEM       | SCAP    |
| 80  | 0 | C27  | 22u 6V3            | ±20% | 0805  | PTC Resistor (see 6V 2.6A 1h Surface Mount 1812 (4832 Metric) Consume     | TOP LAYER | TE CONN / RAYCHEM       | SCAP    |
| 81  | 1 | C28  | 1u 6V3 0603        | ±10% | 0603  | CAP CER 22UF 63V XSR 0805-55/485°C  | TOP LAYER | SAMSUNG                 | BOOST   |
| 82  | 1 | C29  | 100n 0402          | ±10% | 0402  | CAP CER 22UF 63V XSR 0805-55/485°C  | TOP LAYER | SAMSUNG                 | BOOST   |
| 83  | 1 | C30  | 100n 0402          | ±10% | 0402  | CAP CER 22UF 63V XSR 0805-55/485°C  | TOP LAYER | SAMSUNG                 | BOOST   |
| 84  | 1 | C31  | 100n 0402          | ±10% | 0402  | CAP CER 22UF 63V XSR 0805-55/485°C  | TOP LAYER | SAMSUNG                 | BOOST   |
| 85  | 0 | C32  | 100n 0402          | ±10% | 0402  | CAP CER 22UF 63V XSR 0805-55/485°C  | TOP LAYER | SAMSUNG                 | BOOST   |
| 86  | 1 | L3   | 1uH 7A 4.5mOhm     | ±30% | 10.00 4.1000 mm H=3.1 mm                    | FIXED IND 1uH 7A 4.5 mOhm SMD   | TOP LAYER | YAGEO                   | BOOST   |
| 87  | 1 | L4   | BLM18P5181         | N/A  | 0603  | FERRITE BEAD 180 OHM 0603 1LN   | TOP LAYER | YAGEO                   | BOOST   |
| 88  | 1 | R187 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | BOOST   |
| 89  | 1 | R188 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | BOOST   |
| 90  | 1 | R189 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | BOOST   |
| 91  | 1 | R190 | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | BOOST   |
| 92  | 1 | C32  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | YAGEO                   | BOOST   |
| 93  | 0 | C33  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | YAGEO                   | BOOST   |
| 94  | 1 | Q7   | IRLM1640 1T        | N/A  | 5.0723-3                                    | SMD IRML640 1TRPB - 12V Single-P-Channel HEXFET Power MOSFET in a Micro 3 | TOP LAYER | INTERNATIONAL RECTIFIER | FLASH   |
| 95  | 1 | R35  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 96  | 0 | R36  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 97  | 1 | R37  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 98  | 1 | R38  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 99  | 1 | R39  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 100 | 0 | U6   | N25Q032A           | N/A  | 8-50IC (0.209" x 5.30 mm dim (larghezza))   | IC FLASH MEM 32MB 512 5V CMOS BIOSIC                                      | TOP LAYER | MICRON                  | FLASH   |
| 101 | 0 | U7   | MSP5801VMPI66      | N/A  | 8-50IC (0.209" x 5.30 mm dim (larghezza))   | 8-Mbit, low voltage, Page-Eraserable Serial Flash memory                  | TOP LAYER | MICRON                  | FLASH   |
| 102 | 0 | C34  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | FLASH   |
| 103 | 0 | C35  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | FLASH   |
| 104 | 0 | C36  | 1u 6V3 0603        | ±10% | 0603  | CAP CER 1UF 6.3V X7R 0603   | TOP LAYER | SAMSUNG                 | FLASH   |
| 105 | 0 | C37  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | FLASH   |
| 106 | 0 | R40  | 0R0 0803 1/16W     | ±1%  | 0803  | R 0603 1/10W 1% 1000pm /C-55°C -155°C                                     | TOP LAYER | YAGEO                   | FLASH   |
| 107 | 0 | R41  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 108 | 0 | R42  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 109 | 0 | R43  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 110 | 0 | R44  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 111 | 0 | R45  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 112 | 0 | R46  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | FLASH   |
| 113 | 0 | U9   | TC9ZF30            | N/A  | SOT23-SC74A                                 | IC REG LDO 3.0V 2A SMD  | TOP LAYER | TOSHIBA                 | CRYPTO  |
| 114 | 0 | U10  | TC9ZF30            | N/A  | SOT23-SC74A                                 | IC REG LDO 3.0V 2A SMD  | TOP LAYER | TOSHIBA                 | CRYPTO  |
| 115 | 0 | C38  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 116 | 0 | R47  | 10K 0402 1/16W     | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 117 | 0 | R48  | 100R 0402 1/16W    | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 118 | 0 | R158 | 100R 0402 1/16W    | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 119 | 0 | R159 | 100R 0402 1/16W    | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 120 | 0 | R160 | 100R 0402 1/16W    | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 121 | 0 | C39  | 15p 0402           | ±5%  | 0402  | CAP CER 15PF 50V COG NPO 0402   | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 122 | 0 | C40  | 1p 0402            | ±5%  | 0402  | CAP CER 1PF 50V COG NPO 0402  | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 123 | 0 | C41  | BATSACT            | N/A  | SC75, SOT-416, SOT-523                      | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE                                 | TOP LAYER | ONSEMI                  | CRYPTO  |
| 124 | 0 | U11  | 100K 1% 0402 1/16W | ±1%  | 0402  | NIP MCFER 100K 1% 0402  | TOP LAYER | ONSEMI                  | CRYPTO  |
| 125 | 0 | U12  | 100K 1% 0402 1/16W | ±1%  | 0402  | NIP MCFER 100K 1% 0402  | TOP LAYER | ONSEMI                  | CRYPTO  |
| 126 | 0 | U13  | 100K 1% 0402 1/16W | ±1%  | 0402  | NIP MCFER 100K 1% 0402  | TOP LAYER | ONSEMI                  | CRYPTO  |
| 127 | 1 | C42  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 128 | 1 | Q8   | BSS138W            | N/A  | SC-70, SOT-323                              | MOSFET N-CH 60V 280MA SOT-323   | TOP LAYER | NXP                     | CRYPTO  |
| 129 | 1 | Q9   | BSS138W            | N/A  | SC-70, SOT-323                              | MOSFET N-CH 60V 280MA SOT-323   | TOP LAYER | NXP                     | CRYPTO  |
| 130 | 1 | R50  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 131 | 1 | R51  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 132 | 1 | R52  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 133 | 1 | R53  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 134 | 1 | R54  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 135 | 1 | R55  | 1M 1% 0402 1/16W   | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 136 | 1 | R56  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 137 | 1 | R57  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 138 | 1 | R58  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 139 | 1 | R59  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 140 | 1 | R60  | 100K 1% 0402 1/16W | ±1%  | 0402  | R 0402 1/6W 1% 1000pm /C-55°C -155°C                                      | TOP LAYER | YAGEO                   | CRYPTO  |
| 141 | 1 | U14  | 74HCT051           | N/A  | 16-TSSOP (0.173" x 4.40 mm dim (larghezza)) | 1.8 ANALOG MULT 2.0 TO 6.0 SUPPLY   | TOP LAYER | ONSEMI                  | CRYPTO  |
| 142 | 1 | C43  | 1u 6V3 0603        | ±10% | 0603  | CAP CER 1UF 6.3V X7R 0603   | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 143 | 1 | C44  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 144 | 1 | C45  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 145 | 1 | C46  | 100n 0402          | ±10% | 0402  | CAP CER 0.1UF 16V X7R 0402  | TOP LAYER | SAMSUNG                 | CRYPTO  |
| 146 | 1 | D5   | BATSACT            | N/A  | SC75, SOT-416, SOT-523                      | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE                                 | TOP LAYER | ONSEMI                  | CRYPTO  |
| 147 | 1 | D6   | BATSACT            | N/A  | SC75, SOT-416, SOT-523                      | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE                                 | TOP LAYER | ONSEMI                  | CRYPTO  |
| 148 | 1 | D8   | BATSACT            | N/A  | SC75, SOT-416, SOT-523                      | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE                                 | TOP LAYER | ONSEMI                  | CRYPTO  |



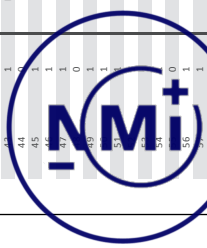




|     |   |      |                                  |        |              |   |           |       |             |
|-----|---|------|----------------------------------|--------|--------------|---|-----------|-------|-------------|
| 313 | 1 | L16  | 27n 0603                         | Ibid   | 0603         | 27nH Unshielded Multilayer Inductor 600mA 280Ohm Max 0603                 | TOP LAYER | MBLUS | 600GS-27NXL |
| 314 | 1 | L17  | 3.2n 0402                        | 40.3nH | 0402         | 3.2nH Unshielded Multilayer Inductor 300mA 150 mOhm Max 0402              | TOP LAYER | MBLUS | LOGSHANNS02 |
| 315 | 1 | L18  | 27n 0402                         | -5%    | 0402         | 27nH Unshielded Multilayer Inductor 300mA 670 mOhm Max 0402               | TOP LAYER | MBLUS | LOGSHANNS02 |
| 316 | 1 | L19  | 47n 0603                         | -5%    | 0603         | 47nH Unshielded Multilayer Inductor 600mA 280Ohm Max 0603                 | TOP LAYER | MBLUS | 060GS-47NXL |
| 317 | 1 | L20  | 5.6n 0402                        | -5%    | 0402         | 5.6nH Unshielded Multilayer Inductor 300mA 200 mOhm Max 0402              | TOP LAYER | MBLUS | LOGSHNS6S02 |
| 318 | 0 | R176 | 080 603 1/10W                    | -5%    | 0603         | RES 140 Ohm 1% 10W 0603 (20000000)  | TOP LAYER | MBLUS | LOGSHMANS02 |
| 319 | 0 | R177 | 080 603 1/10W                    | -5%    | 0603         | RES 140 Ohm 1% 10W 0603 (20000000)  | TOP LAYER | MBLUS | LOGSHMANS02 |
| 320 | 1 | R180 | 0R0 0402 1/10W                   | -5%    | 0402         | R 0402 1/10W 1% 1000pm / °C -55°C ~ 155°C                                 | TOP LAYER | MBLUS | YAGEO       |
| 321 | 1 | R181 | 0R0 0603 1/10W                   | -5%    | 0603         | R 0603 1/10W 1% 1000pm / °C -55°C ~ 155°C                                 | TOP LAYER | MBLUS | YAGEO       |
| 322 | 1 | R188 | 0R0 0603 1/10W                   | -5%    | 0603         | R 0603 1/10W 1% 1000pm / °C -55°C ~ 155°C                                 | TOP LAYER | MBLUS | YAGEO       |
| 323 | 0 | SHU1 | SHIELD 11                        | N/A    | Ibid         | Settematura-Alsison 0.5mm   | TOP LAYER | MBLUS | Ibid        |
| 324 | 1 | PG1  | 080 603 1/10W                    | -5%    | 16-MC01 (M4) | Settematura-Alsison 0.5mm   | TOP LAYER | MBLUS | SKY6810-11  |
| 325 | 1 | PG2  | PBL 65160 200G01-L               | N/A    | N/A          | PBL 65160 200G01-L IBERE-AN Rev.1.03                                      | TOP LAYER | MBLUS | SKY6810-11  |
| 326 | 1 | GD1  | CAVITTO GRAD MBLUS - 7139009     | N/A    | N/A          | CAVITTO GRAD MBLUS - 7139009 Rev. 8                                       | TOP LAYER | MBLUS | 7139009     |
| 327 | 1 | BD51 | PELLICOLA BI-ADESIVA (10mmx15mm) | N/A    | N/A          | PELLICOLA BI-ADESIVA PER ILC cod. 4919 (10mmx15mm) - MaterSI cod. 7237005 | TOP LAYER | MBLUS | 4919        |



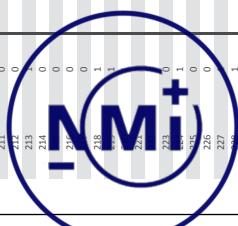
| Meterfit |     | BOM 2238045.3 |                          | TECHNICAL REFERENCES |                  | FIRST CHOICE (PREFERRED) |  | MODEL     |            |                 |                |                     |        |
|----------|-----|---------------|--------------------------|----------------------|------------------|--------------------------|--|-----------|------------|-----------------|----------------|---------------------|--------|
| POS      | QTY | Reference     | Value                    | Tolerance            | Package          | P/N/P                    | Description  | Notes     | Supplier 1 | Supplier 1 Code | Manufacturer 1 | Manufacturer 1 Code | Option |
| 1        | 1   | C1            | 1x093.0603               | +15%                 | 0603             |                          | GAS CER.0.LUF.16.VX.0603   | TOP LAYER | SAMSUNG    |                 | SAMSUNG        | CU08055QK0NNNC      | MCU    |
| 2        | 1   | C2            | 1x093.0602               | +10%                 | 0602             |                          | GAS CER.0.LUF.16.VX.0602   | TOP LAYER | SAMSUNG    |                 | SAMSUNG        | CU08055QK0NNNC      | MCU    |
| 3        | 1   | C3            | 6x01.0402                | +0.25Pp              | 0402             |                          | CAP CER.6.BPFS50.NPD.0402  | TOP LAYER | SAMSUNG    |                 | SAMSUNG        | CU08055QK0NNNC      | MCU    |
| 4        | 1   | C4            | 6x01.0402                | +0.25Pp              | 0402             |                          | CAP CER.6.BPFS50.NPD.0402  | TOP LAYER | SAMSUNG    |                 | SAMSUNG        | CU08055QK0NNNC      | MCU    |
| 5        | 0   | J1            | N/A                      |                      |                  | DNP                      | STRIP M4 1x01.2MM  | TOP LAYER |            |                 |                |                     |        |
| 6        | 1   | R1            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 7        | 1   | R2            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 8        | 1   | R3            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 9        | 1   | R4            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 10       | 1   | R5            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 11       | 1   | R6            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 12       | 1   | R7            | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 13       | 0   | R8            | 100K.0402                |                      | 0402             | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 14       | 1   | R9            | 100K.1%.0402.1/16W       | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 15       | 1   | R10           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 16       | 1   | R11           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 17       | 1   | R12           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 18       | 1   | R13           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 19       | 1   | R14           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 20       | 0   | R15           | 0x01.0402.1/16W          | +1%                  | 0402             | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 21       | 0   | R16           | RES.TACT                 |                      |                  | DNP                      | TACT SWITCH 1HS7   | TOP LAYER |            |                 |                |                     |        |
| 22       | 0   | U1            | STM32L433VC/AT70VE       | N/A                  | td               | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 23       | 1   | V1            | STM32L433VC/AT70VE       | N/A                  | 100-LQFP (14x14) | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 24       | 1   | V2            | STM32L433VC/AT70VE       | N/A                  | 100-LQFP (14x14) | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 25       | 1   | C5            | 3x01.0603                | +10%                 | 0603             |                          | CAP CER.3.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 26       | 1   | C6            | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 27       | 1   | C7            | 1u.0V3.0603              | +10%                 | 0603             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 28       | 1   | C8            | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 29       | 1   | C9            | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 30       | 1   | C10           | 1u.0V3.0603              | +10%                 | 0603             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 31       | 1   | C11           | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 32       | 1   | C12           | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 33       | 1   | C13           | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 34       | 1   | C14           | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 35       | 1   | C15           | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 36       | 1   | C16           | 100n.0402                | +10%                 | 0402             |                          | CAP CER.0.LUF.16.VX.0603   | TOP LAYER |            |                 |                |                     |        |
| 37       | 0   | H1            | HOLE                     |                      |                  | DNP                      | Board fitting Hole   | TOP LAYER |            |                 |                |                     |        |
| 38       | 1   | R17           | 1k@100M.1%.20ppm.0.65ohm | +25%                 | 0402             |                          | RES.PREC.1K.1%.20PPM.0.65OHM   | TOP LAYER |            |                 |                |                     |        |
| 39       | 1   | R18           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 40       | 1   | R19           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 41       | 1   | R20           | 100K.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 42       | 1   | R21           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 43       | 1   | R22           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 44       | 1   | R23           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 45       | 1   | R24           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 46       | 1   | R25           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 47       | 1   | R26           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 48       | 1   | R27           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 49       | 1   | R28           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 50       | 1   | R29           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 51       | 1   | R30           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 52       | 1   | R31           | 0x01.0402.1/16W          | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 53       | 0   | D1            | RES.400K                 |                      | 0402             | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 54       | 0   | D2            | RES.400K                 |                      | 0402             | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 55       | 0   | D3            | RES.400K                 |                      | 0402             | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 56       | 1   | U3            | TP522860BVR              | N/A                  | 50T23-6          | DNP                      | IC SWITCH SPDT SOT23-6   | TOP LAYER |            |                 |                |                     |        |
| 57       | 1   | U4            | SP.24.31                 | N/A                  | 50T23-6          | DNP                      | IC SWITCH HIGH SIDE 50T23-6  | TOP LAYER |            |                 |                |                     |        |
| 58       | 0   | C11           | 1u.0V3.0603              | +10%                 | 0603             | DNP                      | CAP CER.1UF.16VX.0603  | TOP LAYER |            |                 |                |                     |        |
| 59       | 0   | D1            | RES.400K                 |                      | 0402             | DNP                      | DIODE SCHOTTKY 40V 3A SMC (IRE = 100NA x40V)                           | TOP LAYER |            |                 |                |                     |        |
| 60       | 0   | J5            | CONN. EXT CHG SCAP       |                      |                  | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 61       | 0   | J6            | CONN. EXT CHG SCAP       |                      |                  | DNP                      |  | TOP LAYER |            |                 |                |                     |        |
| 62       | 1   | Q2            | IBL.M1640T1PFE           | N/A                  | 50T23-3          | DNP                      | SMO (IBL.M1640T1PFE - 12x Single P-Channel HEVSEET Power MOSFET in a M | TOP LAYER |            |                 |                |                     |        |
| 63       | 1   | Q01           | DMP2200D0W7              | N/A                  | 50T23-3          | DNP                      | MOSET 2P-CH-20V 0.5A SOT363  | TOP LAYER |            |                 |                |                     |        |
| 64       | 1   | Q02           | DMP2200D0W7              | N/A                  | 50T23-3          | DNP                      | MOSET 2P-CH-20V 0.5A SOT363  | TOP LAYER |            |                 |                |                     |        |
| 65       | 1   | Q03           | DMN2200D0W7              | N/A                  | 50T23-3          | DNP                      | MOSET 2P-CH-20V 1.33A SOT363   | TOP LAYER |            |                 |                |                     |        |
| 66       | 1   | Q04           | DMN2200D0W7              | N/A                  | 50T23-3          | DNP                      | MOSET 2P-CH-20V 1.33A SOT363   | TOP LAYER |            |                 |                |                     |        |
| 67       | 1   | R23           | 1M.1%.0402.1/16W         | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 68       | 1   | R24           | 1M.1%.0402.1/16W         | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |
| 69       | 1   | R25           | 1M.1%.0402.1/16W         | +1%                  | 0402             |                          | R.0402.1/16W.1%.100ppm/°C.55°C-155°C                                   | TOP LAYER |            |                 |                |                     |        |







|     |   |       |                               |      |                         |     |  |           |                   |                                 |          |
|-----|---|-------|-------------------------------|------|-------------------------|-----|--|-----------|-------------------|---------------------------------|----------|
| 154 | 0 | U14   | TPS22860                      | N/A  | SOT-23-6                | DNP | K SWITCH SPDT SOT23-6  | TOP LAYER | TI                | TPS22860BVR                     | ABS BMS  |
| 155 | 1 | U15   | SP2A31                        | N/A  | SC70-6                  | DNP | K SWITCH HIGH SIDE SC70-6  | TOP LAYER | VISHAY            | SP2A31                          | ABS BMS  |
| 156 | 1 | C47   | 100n 0402                     | +10% | 0402                    | DNP | CAP CER 0.1UF 16V X7R 0402   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | ABS BMS  |
| 157 | 1 | C48   | 100n 0402                     | +10% | 0402                    | DNP | CAP CER 0.1UF 16V X7R 0402   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | ABS BMS  |
| 158 | 1 | C49   | 100n 0402                     | +10% | 0402                    | DNP | CAP CER 0.1UF 16V X7R 0402   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | ABS BMS  |
| 159 | 1 | C50   | 100n 0402                     | +10% | 0402                    | DNP | CAP CER 0.1UF 16V X7R 0402   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | ABS BMS  |
| 160 | 1 | D9    | BATS5CT                       | N/A  | SC-75, SOT-143, SOT-523 | DNP | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE  | TOP LAYER | ONSEMI            | BATS5CTT1G                      | ABS BMS  |
| 161 | 1 | D9    | BZ68C6ZLT                     | +5%  | SOT23-3                 | DNP | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE  | TOP LAYER | ONSEMI            | BATS5CTT1G                      | ABS BMS  |
| 162 | 1 | J6    | CONNETTORE BATTERIA 90°       | N/A  | SMD                     | DNP | DIODE ZENER 6.3V 250MW SOT23-3   | TOP LAYER | ONSEMI            | BZ68C6ZLT1G                     | ABS BMS  |
| 163 | 1 | J6    | BSS138HW                      | N/A  | SC-70, SOT-323          | DNP | 4-Pin Silicon P-Channel MOSFET 0.079" (2.00 mm) Montaggio superficiale ad anello | TOP LAYER | MOLEX             | 501494-0470                     | ABS BMS  |
| 164 | 1 | R64   | 1M 1% 0402 1/16W              | +1%  | 0402                    | DNP | MOSFET N-CH 60V 280MA SOT-323  | TOP LAYER | NXP               | BS138PW115                      | ABS BMS  |
| 165 | 1 | R65   | 1M 1% 0402 1/16W              | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 166 | 0 | R66   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 167 | 1 | R67   | 3M 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 168 | 1 | R68   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 169 | 1 | R69   | 3M 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 170 | 1 | RNTC1 | 100K ±25°C 1/16W              | +1%  | 0402                    | DNP | TERMINATOR NTC LOOK OHM 1% 0402  | TOP LAYER | MURATA            | NCPL15W104F03RC                 | ABS BMS  |
| 171 | 1 | RREF1 | 100K 1% 0402 1/16W            | +1%  | 0402                    | DNP | TERMINATOR NTC LOOK OHM 1% 0402  | TOP LAYER | MURATA            | NCPL15W104F03RC                 | ABS BMS  |
| 172 | 1 | SW2   | TACT SW                       | N/A  | 0402                    | DNP | TACT SWITCH H67  | TOP LAYER | CBK               | KSC7411 US                      | ABS BMS  |
| 173 | 0 | SW3   | TAMPER                        | N/A  | 0402                    | DNP | TACT SWITCH H67  | TOP LAYER | CBK               | KSC7411 US                      | ABS BMS  |
| 174 | 0 | SW4   | TAMPER                        | N/A  | 0402                    | DNP | TACT SWITCH H67  | TOP LAYER | CBK               | KSC7411 US                      | ABS BMS  |
| 175 | 0 | D10   | BATS5CT                       | N/A  | SC-75, SOT-143, SOT-523 | DNP | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE  | TOP LAYER | ONSEMI            | BATS5CTT1G                      | ABS BMS  |
| 176 | 1 | D11   | BATS5CT                       | N/A  | SC-75, SOT-143, SOT-523 | DNP | 2x DIODE ARRAY SCHOTTKY 30V COMMON KATODE  | TOP LAYER | ONSEMI            | BATS5CTT1G                      | ABS BMS  |
| 177 | 1 | D12   | BZ68C6ZLT                     | +5%  | DO-214AC, SMA           | DNP | DIODE ZENER 7.5V 1.25W DO214AC   | TOP LAYER | ONSEMI            | BZ68C6ZLT1G                     | ABS BMS  |
| 178 | 0 | J13   | CONNETTORE BATTERIA VERTICALE | N/A  | SMD                     | DNP | DIODE SCHOTTKY 40V 3A SMC (IR = 100nA a 40V)                                     | TOP LAYER | MOLEX             | BZ68C6ZLT1G                     | ABS BMS  |
| 179 | 1 | J13   | B340Q                         | N/A  | SMD                     | DNP | DIODE SCHOTTKY 40V 3A SMC (IR = 100nA a 40V)                                     | TOP LAYER | MOLEX             | B340Q-13-F                      | ABS BMS  |
| 180 | 1 | Q05   | DMN2400UV                     | N/A  | SOT-563                 | DNP | DIODE ZENER 1.5V 1.25W DO214AC   | TOP LAYER | TE CONN / RAYCHEM | DMN2400UV-7                     | ABS BMS  |
| 181 | 1 | R70   | 1K 0402 1/16W                 | +1%  | SOT-563                 | DNP | MOSFET 2N-CH 20V 1.3A SOT-563  | TOP LAYER | TE CONN / RAYCHEM | DMN2400UV-7                     | ABS BMS  |
| 182 | 1 | R71   | 1K 0402 1/16W                 | +1%  | 1206                    | DNP | R 1206 1/4W 1% 100ppm/°C -55°C ~ 155°C   | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 183 | 1 | R72   | 18R 1206 1/4W                 | +1%  | 1206                    | DNP | R 1206 1/4W 1% 100ppm/°C -55°C ~ 155°C   | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 184 | 1 | R73   | 18R 1206 1/4W                 | +1%  | 1206                    | DNP | R 1206 1/4W 1% 100ppm/°C -55°C ~ 155°C   | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 185 | 1 | R74   | 18R 1206 1/4W                 | +1%  | 1206                    | DNP | R 1206 1/4W 1% 100ppm/°C -55°C ~ 155°C   | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 186 | 1 | R75   | 1M 1% 0402 1/16W              | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 187 | 0 | R76   | 1M 1% 0402 1/16W              | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ABS BMS  |
| 188 | 1 | R78   | PTC 500mA                     | N/A  | 1812                    | DNP | POLYSWITCH 1.5A RESET FUSE SMD 8V 1.5A 2A 0.210mOhm                              | TOP LAYER | TE CONN / RAYCHEM | MIMSMD10DF-2                    | ABS BMS  |
| 189 | 1 | R79   | PTC 500mA                     | N/A  | 1812                    | DNP | POLYSWITCH 1.5A RESET FUSE SMD 13.2V 500 1100mA 200.80mOhm                       | TOP LAYER | TE CONN / RAYCHEM | MIMSMD10DF-2                    | ABS BMS  |
| 190 | 1 | R80   | 1K 0402 1/16W                 | +1%  | 1812                    | DNP | POLYSWITCH 1.5A RESET FUSE SMD 13.2V 500 1100mA 200.80mOhm                       | TOP LAYER | TE CONN / RAYCHEM | MIMSMD10DF-2                    | ABS BMS  |
| 191 | 1 | C53   | 1u 6V3 0603                   | +10% | 0603                    | DNP | CAP CER 1UF 6V X7R 0603  | TOP LAYER | SAMSUNG           | CLJ1A226M030NDC                 | MOTOR-ST |
| 192 | 1 | C54   | 22u 6V3                       | +20% | 0603                    | DNP | CAP CER 22UF 6.3V X7R 0605-55/485°C  | TOP LAYER | SAMSUNG           | CLJ1A226M030NDC                 | MOTOR-ST |
| 193 | 1 | C55   | 100n 0402                     | +10% | 0402                    | DNP | CAP CER 0.1UF 16V X7R 0402   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | MOTOR-ST |
| 194 | 1 | C56   | 100n 0402                     | +10% | 0402                    | DNP | CAP CER 0.1UF 16V X7R 0402   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | MOTOR-ST |
| 195 | 0 | C57   | 22n 0402                      | +10% | 0402                    | DNP | CAP CER 22NF 63V X5R 0402-55/485°C   | TOP LAYER | SAMSUNG           | C105B10K05NND                   | MOTOR-ST |
| 196 | 0 | R88   | 080 0402                      | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 197 | 1 | R89   | 080 0402                      | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 198 | 1 | R90   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 199 | 1 | R91   | 369 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 200 | 0 | R92   | 10K 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 201 | 1 | R94   | 10K 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 202 | 1 | R95   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 203 | 1 | R96   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 204 | 1 | R97   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 205 | 1 | R98   | 1K 0402 1/16W                 | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 206 | 1 | R99   | 100K 1% 0402 1/16W            | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 207 | 1 | R100  | 100K 1% 0402 1/16W            | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 208 | 1 | R101  | 806K 1206 1/4W                | +1%  | 1206                    | DNP | R 1206 1/4W 1% 100ppm/°C -55°C ~ 155°C   | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 209 | 1 | R156  | 100R 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 210 | 1 | R157  | 100R 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 211 | 0 | R158  | 100R 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 212 | 0 | R159  | 100R 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 213 | 0 | R160  | 100R 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | MOTOR-ST |
| 214 | 0 | Q15   | IRLM1640IT                    | N/A  | CUSTOM                  | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 215 | 0 | R161  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 216 | 0 | R162  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 217 | 0 | R163  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 218 | 0 | R164  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 219 | 0 | R165  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 220 | 0 | R166  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 221 | 0 | R167  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 222 | 0 | R168  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 223 | 0 | R169  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 224 | 0 | R170  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 225 | 0 | R171  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 226 | 0 | R172  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 227 | 0 | R173  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 228 | 0 | R174  | WHITE LED 90°                 | N/A  | SMD                     | DNP | LED COOL WHITE 520x5x1000µm  | TOP LAYER | OSRAM             | 519N250...<br>LW Y85G-VAA-3K6-Z | MOTOR-ST |
| 229 | 1 | Q17   | MMBT306                       | N/A  | SMD 2-LE                | DNP | PHOTOTRANS NPN TO18 2-LE (IR FILTERED)   | TOP LAYER | JABIL             | M775T0008                       | OSRAM    |
| 230 | 0 | R107  | 820R 0402 1/16W               | +1%  | 0402                    | DNP | TRANS NPN 40V 0.2A SOT23-6   | TOP LAYER | ONSEMI            | MMBT306TT1G                     | ZVEI     |
| 231 | 0 | R108  | 2K2 1206 1/4W                 | +1%  | 1206                    | DNP | TRANS NPN 40V 0.2A SOT23-6   | TOP LAYER | ONSEMI            | MMBT306TT1G                     | ZVEI     |
| 232 | 1 | R109  | 4K2 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ZVEI     |
| 233 | 1 | R110  | 4K2 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ZVEI     |
| 234 | 1 | R111  | 100R 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ZVEI     |
| 235 | 1 | R112  | 4K7 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ZVEI     |
| 236 | 0 | R113  | 470K 0402 1/16W               | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ZVEI     |
| 237 | 1 | R114  | 1K8 0402 1/16W                | +1%  | 0402                    | DNP | R 0402 1/16W 1% 100ppm/°C -55°C ~ 155°C  | TOP LAYER | YAGEO             |                                 | ZVEI     |





**DOMUSNEX<sup>®</sup> C&I 2.0**  
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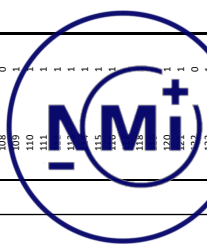
| MeterS <sup>it</sup> |     | BOM 2238053          |                      | Date       |         |       |  |                |                             |
|----------------------|-----|----------------------|----------------------|------------|---------|-------|--|----------------|-----------------------------|
| INDEX & QUANTITY     |     | TECHNICAL REFERENCES |                      | 22/11/2018 |         |       |  |                |                             |
| POS                  | QTY | Reference            | Value                | Tolerance  | Package | P/N/P | Description  | Manufacturer 1 | Manufacturer 1 Code         |
| 1                    | 1   | C1                   | 1U6V3 0603           | ±10%       | 0603    |       | CAP CER 1UF 6.3V X7R 0603  | SAMSUNG        | CL10B105K08NNHC             |
| 2                    | 1   | C2                   | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 3                    | 1   | C3                   | 68P 0402             | ±10%       | 0402    |       | CAP CER 68PF 50V NP0 0402  | SAMSUNG        | CL05B104K05NNND             |
| 4                    | 1   | C4                   | 680P 0402            | ±10%       | 0402    |       | CAP CER 680PF 50V NP0 0402   | SAMSUNG        | CL05B104K05NNND             |
| 5                    | 0   | J1                   | DEFUG                | N/A        |         |       | STRIP M 5 POLI 2MM   |                |                             |
| 6                    | 1   | R1                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 7                    | 1   | R2                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 8                    | 1   | R3                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 9                    | 1   | R4                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 10                   | 1   | R5                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 11                   | 1   | R6                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 12                   | 1   | R7                   | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 13                   | 1   | R8                   | 100R 0402 1/16W      | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 14                   | 1   | R9                   | 100R 0402 1/16W      | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 15                   | 1   | R10                  | 100R 0402 1/16W      | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 16                   | 1   | R11                  | 100R 0402 1/16W      | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 17                   | 1   | R12                  | 100R 0402 1/16W      | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 18                   | 0   | UL                   | STMS21433VC16        | N/A        |         |       | IC MCU 32BIT 256K 32KB FLASH 100LQFP   | ST             | STM21433VC16                |
| 19                   | 0   | UL                   | STMS21433VC16        | N/A        |         |       | IC MCU 32BIT 256K 32KB FLASH 100LQFP   | ST             | STM21433VC16                |
| 20                   | 1   | X1                   | 32 768R48            | ±10ppm     |         |       | 32 768R48 ±10ppm Ctsallip Bp 70.00hm -40°C - 85°C Montaggio superficiale (SMD, SMT) 2..SMD | NDK            | M83215A 32 768R48 64E 10ppm |
| 21                   | 1   | C5                   | 1u6V3 0603           | ±10%       | 0603    |       | CAP CER 1UF 6.3V X7R 0603  | SAMSUNG        | CL10B105K08NNHC             |
| 22                   | 1   | C6                   | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 23                   | 1   | C7                   | 4u76V3 0603          | ±10%       | 0603    |       | CAP CER 4.7UF 6.3V X7R 0603 -55/145°C  | SAMSUNG        | CL10A475K08NNHL             |
| 24                   | 1   | C8                   | 1u6V3 0603           | ±10%       | 0603    |       | CAP CER 1UF 6.3V X7R 0603  | SAMSUNG        | CL10B105K08NNHC             |
| 25                   | 1   | C9                   | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 26                   | 1   | C10                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 27                   | 1   | C11                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 28                   | 1   | C12                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 29                   | 1   | C13                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 30                   | 1   | C14                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 31                   | 1   | C15                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 32                   | 1   | C16                  | 100n 0402            | ±10%       | 0402    |       | CAP CER 0.1UF 16V X7R 0402   | SAMSUNG        | CL05B104K05NNND             |
| 33                   | 0   | HL                   | N/A                  | N/A        |         |       | Shielding hole   | N/A            |                             |
| 34                   | 0   | HL                   | N/A                  | N/A        |         |       | Shielding hole   | N/A            |                             |
| 35                   | 1   | R14                  | 1K08 0204MHz 0.65ohm | ±1%        | 0402    |       | SPACER 1K08MHz ±100mhz 15kV 0402   | MURATA         | BM15AG02032NLD              |
| 36                   | 1   | R15                  | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 37                   | 1   | R16                  | 080 0402 1/16W       | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 38                   | 1   | R17                  | 47R5 0402 1/16W      | ±1%        | 0402    |       | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C   | YAGEO          |                             |
| 39                   | 0   | UL                   | STMS21433VC16        | N/A        |         |       | IC MCU 32BIT 256K 32KB FLASH 100LQFP   | ST             | STM21433VC16                |
| 40                   | 0   | C79                  | 22uF 0805 MS         | ±10%       |         |       | IC MCU 32BIT 256K 32KB FLASH 100LQFP   | SAMSUNG        | CL2A220M000NHE              |
| 41                   | 0   | D2                   | RE055M2DA            | N/A        |         |       | DIODE SCHOTTKY 20V 500mA VF 200mV @ImA@25°C  | ROHM           | RE055M20A27R                |
| 42                   | 0   | D3                   | RE055M2DA            | N/A        |         |       | DIODE SCHOTTKY 20V 500mA VF 200mV @ImA@25°C  | ROHM           | RE055M20A27R                |
| 43                   | 1   | D4                   | RE055M2DA            | N/A        |         |       | DIODE SCHOTTKY 20V 500mA VF 200mV @ImA@25°C  | ROHM           | RE055M20A27R                |
| 44                   | 1   | F1                   | 75mA 2R0 0402        | N/A        | 0402    |       | DIODE SCHOTTKY 20V 500mA VF 200mV @ImA@25°C  | ROHM           | RE055M20A27R                |
| 45                   | 0   | L01                  | MMBT3906             | N/A        |         |       | FLUSE BOARD MOUNT 75MA32VDC 0402   | AVX            | MMBT3906FT1G                |
| 46                   | 0   | L02                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 47                   | 0   | L03                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 48                   | 0   | L04                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 49                   | 0   | L05                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 50                   | 0   | L06                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 51                   | 0   | L07                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 52                   | 0   | L08                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 53                   | 0   | L09                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 54                   | 0   | L10                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 55                   | 0   | L11                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 56                   | 0   | L12                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 57                   | 0   | L13                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 58                   | 0   | L14                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 59                   | 0   | L15                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 60                   | 0   | L16                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 61                   | 0   | L17                  | MMBT3906             | N/A        |         |       | TRANS PNP 40V 0.2A SC75-3  | ONSEMI         | MMBT3906FT1G                |
| 62                   | 1   | L18                  | 1K 1206 1/4W         | ±1%        | 1206    |       | RES 1206 1K 1% 200ppm /°C -55°C - 155°C  | YAGEO          | RY05C1206-1K                |
| 63                   | 1   | L19                  | 1K 1206 1/4W         | ±1%        | 1206    |       | RES 1206 1K 1% 200ppm /°C -55°C - 155°C  | YAGEO          | RY05C1206-1K                |
| 64                   | 1   | L20                  | 1K 1206 1/4W         | ±1%        | 1206    |       | RES 1206 1K 1% 200ppm /°C -55°C - 155°C  | YAGEO          | RY05C1206-1K                |
| 65                   | 1   | L21                  | 1K 1206 1/4W         | ±1%        | 1206    |       | RES 1206 1K 1% 200ppm /°C -55°C - 155°C  | YAGEO          | RY05C1206-1K                |
| 66                   | 1   | L22                  | 1K 1206 1/4W         | ±1%        | 1206    |       | RES 1206 1K 1% 200ppm /°C -55°C - 155°C  | YAGEO          | RY05C1206-1K                |
| 67                   | 1   | L23                  | 1K 1206 1/4W         | ±1%        | 1206    |       | RES 1206 1K 1% 200ppm /°C -55°C - 155°C  | YAGEO          | RY05C1206-1K                |



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|        |  |  |      |            |
|--------|--|--|------|------------|
| MeterS | BOM 2238053                                |  | Date | 22/11/2018 |
|        | <p align="center">TECHNICAL REFERENCES</p> |  |      |            |

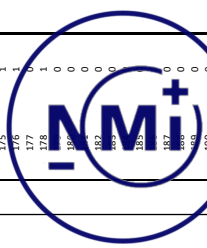
| POS | QTY | Reference | Value          | Tolerance | Package             | P/N/P | Description   | Manufacturer 1 | Manufacturer 1 Code |
|-----|-----|-----------|----------------|-----------|---------------------|-------|---|----------------|---------------------|
| 68  | 0   | J2        | MIS_CONN       | N/A       | CUSTOM              | DNP   | GAS METER TEST NEW CONNECTOR (P.PANTI DI SALDATURA) | N/A            | N/A                 |
| 69  | 1   | R19       | 100K 0402 1/6W | +1%       | 0402                | DNP   | R 0402 1/6W 1% 100ppm / °C -55°C - 155°C            | YAGEO          |                     |
| 70  | 1   | R20       | 100K 0402 1/6W | +1%       | 0402                | DNP   | R 0402 1/6W 1% 100ppm / °C -55°C - 155°C            | YAGEO          |                     |
| 71  | 1   | R21       | 200M 4002 1/6W | N/A       | 0402                | DNP   | FERRITE BEAD 400 OHM 0402 1M                        | MURATA         | BU1156G4715ND       |
| 72  | 1   | R22       | 200M 4002 1/6W | N/A       | 0402                | DNP   | FERRITE BEAD 400 OHM 0402 1M                        | MURATA         | BU1156G4715ND       |
| 73  | 1   | R27       | 10K 0402 1/6W  | +1%       | 0402                | DNP   | R 0402 1/6W 1% 100ppm / °C -55°C - 155°C            | YAGEO          |                     |
| 74  | 0   | U2        | TPS22860       | N/A       | SOT-23-6            | DNP   | IC SWITCH SPDT SOT23-6                              | TI             | TPS22860DRR         |
| 75  | 1   | U3        | 51P2431        | N/A       | SC70-6              | DNP   | CAP CER 100UF 10V X68 0805                          | VISHAY         | 51P2431DR3-T1GE3    |
| 76  | 0   | U8        | 10UF 0805 MS   | +10%      | 0805                | DNP   | DIODE SCHOTTKY 20V 500MA VF 200mV @Im@25°C          | SAMSUNG        | REB055M20ZTR        |
| 77  | 1   | D7        | RE055M20A      | N/A       | SC79 - S0D53 - EMD2 | DNP   | DIODE SCHOTTKY 20V 500MA VF 200mV @Im@25°C          | ROHM           | REB055M20ZTR        |
| 78  | 1   | D8        | RE055M20A      | N/A       | SC79 - S0D53 - EMD2 | DNP   | DIODE SCHOTTKY 20V 500MA VF 200mV @Im@25°C          | ROHM           | REB055M20ZTR        |
| 79  | 1   | D9        | RE055M20A      | N/A       | SC79 - S0D53 - EMD2 | DNP   | DIODE SCHOTTKY 20V 500MA VF 200mV @Im@25°C          | ROHM           | REB055M20ZTR        |
| 80  | 1   | D33       | PM8012ZP1000   | N/A       | PM8012ZP1000        | DNP   | DIODE SCHOTTKY 20V 500MA VF 200mV @Im@25°C          | ROHM           | PM8012ZP1000        |
| 81  | 1   | D32       | PM8012ZP1000   | N/A       | PM8012ZP1000        | DNP   | DIODE SCHOTTKY 20V 500MA VF 200mV @Im@25°C          | ROHM           | PM8012ZP1000        |
| 82  | 0   | F2        | 50mA 384 0402  | N/A       | 0402                | DNP   | FUSE BOARD MOUNT 50MA 32VDC 0402                    | AVX            | PO402G0050NTR       |
| 83  | 0   | L05       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 84  | 0   | L06       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 85  | 0   | L07       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 86  | 0   | L08       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 87  | 0   | L09       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 88  | 0   | L10       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 89  | 0   | L11       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 90  | 0   | L12       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 91  | 0   | L13       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 92  | 0   | L14       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 93  | 0   | L15       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 94  | 0   | L16       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 95  | 0   | L17       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 96  | 1   | L18       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 97  | 1   | L19       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 98  | 1   | L20       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 99  | 1   | L21       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 100 | 1   | L22       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 101 | 1   | L23       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 102 | 1   | L24       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 103 | 1   | L25       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 104 | 1   | L26       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 105 | 1   | L27       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 106 | 1   | L28       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 107 | 1   | L29       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 108 | 0   | L30       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 109 | 0   | L31       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 110 | 1   | L32       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 111 | 1   | L33       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 112 | 1   | L34       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 113 | 1   | L35       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 114 | 1   | L36       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 115 | 1   | L37       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 116 | 1   | L38       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 117 | 1   | L39       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 118 | 1   | L40       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 119 | 1   | L41       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 120 | 1   | L42       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 121 | 1   | L43       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 122 | 1   | L44       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 123 | 1   | L45       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 124 | 1   | L46       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 125 | 1   | L47       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 126 | 1   | L48       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 127 | 1   | L49       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 128 | 1   | L50       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 129 | 1   | L51       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 130 | 0   | L52       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 131 | 0   | L53       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 132 | 1   | L54       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 133 | 1   | L55       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |
| 134 | 1   | L56       | MMBT3906       | N/A       | SC75, SOT-416       | DNP   | TRANS PNP 40V 0.2A SC75-3                           | ONSEMI         | MMBT3906GTT1G       |



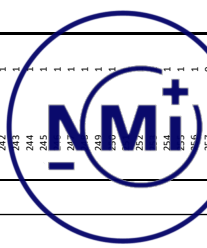
**DOMUSNEXT® C&I 2.0**  
**GAS METERS**

TF18-009\_G10-G25-U16-U40 Rev. 1.3 - ANNEX 3

| MeterS <sup>it</sup> |     | BOM 2238053 |                     | Date       |   |   |
|----------------------|-----|-------------|---------------------|------------|---|---|
|                      |     |             |                     | 22/11/2018 |   |   |
| TECHNICAL REFERENCES |     |             |                     |            |   |   |
| POS                  | QTY | Reference   | Value               | Tolerance  | Package                                 | P/N/P   |
| 135                  | 1   | C27         | 1U6V3 0603          | ±10%       | 0603                                    | CAP CER 1UF 6.3V X7R 0603   |
| 136                  | 1   | C28         | 22u 0603            | ±20%       | 0805                                    | CAP CER 22UF 6.3V XSR 0805-55/485°C   |
| 137                  | 1   | C29         | 100k 0402           | ±5%        | 0402                                    | CAP CER 0.1UF 16V X7R 0402  |
| 138                  | 1   | C30         | 100k 0402           | ±5%        | 0402                                    | CAP CER 0.1UF 16V X7R 0402  |
| 139                  | 1   | C31         | 100k 0402           | ±5%        | 0402                                    | CAP CER 0.1UF 16V X7R 0402  |
| 140                  | 1   | C32         | 220k 0402           | ±10%       | 0402                                    | CAP CER 0.22UF 6.3V XSR 0402-55/485°C   |
| 141                  | 1   | C33         | 100k 0402           | ±5%        | 0402                                    | CAP CER 0.1UF 16V X7R 0402  |
| 142                  | 1   | D15         | CM5H5-20            | N/A        | SMA                                     | Diode Schottky 200V 5A Surface Mount SMC  |
| 143                  | 1   | F3          | TCO 115°C           | N/A        | RADIAL / 1210                           | TERMAL CUTOFF 110±2   |
| 144                  | 1   | F7          | 75mA 2R0 0402       | N/A        | 0402                                    | FUSE BOARD MOUNT 75MA 32VDC 0402  |
| 145                  | 1   | L1R8        | 100K 0805 1/8W      | ±1%        | 0805                                    | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C   |
| 146                  | 1   | L1R9        | 100K 0805 1/8W      | ±1%        | 0805                                    | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C   |
| 147                  | 1   | L1R10       | 22K 0805 1/8W       | ±1%        | 0805                                    | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C   |
| 148                  | 1   | L2          | 2.5uH 6.1A 10.5mOhm | ±30%       | 10.20 x 10.00 mm                        | 2.5uH Shielded Inductor 6.1A 10.5 mOhm Max Nonstandard                              |
| 149                  | 1   | R42         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 150                  | 1   | R43         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 151                  | 1   | R44         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 152                  | 1   | R46         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 153                  | 1   | M1          | M180140C000016      | N/A        | 0805                                    | MEMORIE FLASH 16 Mbit (16 M x 8) SPI - quadruplo (IO 10MHz & SOI)                   |
| 154                  | 1   | H4          | 1500V 14C0000128    | N/A        | 1210                                    | RESISTORE PRECISION A 1500V 1% 1210 AEC-Q100 automotive                             |
| 155                  | 0   | L_D1        | BZT58B396T          | N/A        | SOD523                                  | DIODE ZENER 3.6V 350MW SOD523   |
| 156                  | 0   | L_D2        | BZT58B396T          | N/A        | SOD523                                  | DIODE ZENER 3.6V 350MW SOD523   |
| 157                  | 0   | L_Q11       | MMRF3906            | N/A        | SC75, 50T-416                           | TRANS PNP 40V 0.2A SC75-3   |
| 158                  | 0   | L_Q12       | MMRF3906            | N/A        | SC75, 50T-416                           | TRANS PNP 40V 0.2A SC75-3   |
| 159                  | 0   | L_Q13       | NYC0102B1TIG        | N/A        | 50723-3                                 | SCR 200V 250mA Sensitive Gate Surface Mount SOT-23 (TO-236)                         |
| 160                  | 0   | L_Q14       | NYC0102B1TIG        | N/A        | 50723-3                                 | SCR 200V 250mA Sensitive Gate Surface Mount SOT-23 (TO-236)                         |
| 161                  | 0   | L_Q15       | NYC0102B1TIG        | N/A        | 50723-3                                 | SCR 200V 250mA Sensitive Gate Surface Mount SOT-23 (TO-236)                         |
| 162                  | 0   | L_R10       | 1K01805 1/8W        | ±1%        | 0805                                    | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C   |
| 163                  | 0   | L_R11       | 100R 1206 1/4W      | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 164                  | 0   | L_R12       | 100R 1206 1/4W      | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 165                  | 1   | L_FRESHUNT3 | 0R43 2512 2W        | ±1%        | 2512                                    | R 2512 2W 1% 200ppm /°C -55°C - 155°C   |
| 166                  | 1   | L_FRESHUNT4 | 0R43 2512 2W        | ±1%        | 2512                                    | R 2512 2W 1% 200ppm /°C -55°C - 155°C   |
| 167                  | 1   | C34         | 100k 0402           | ±10%       | 0402                                    | CAP CER 0.1UF 16V X7R 0402  |
| 168                  | 1   | L_R13       | 1K 1206 1/4W        | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 169                  | 1   | L_R14       | 1K 1206 1/4W        | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 170                  | 1   | L_R21       | 1M 1206 1/4W        | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 171                  | 1   | Q2          | IRLM16401T          | N/A        | 50723-3                                 | SMD IRLM16401 TRRBF - 12V Single P-Channel HEXRET Power MOSFET in a Micro 3 package |
| 172                  | 1   | R44         | 1K0 0402 1/16W      | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 173                  | 0   | R48         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 174                  | 1   | R49         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 175                  | 1   | R50         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 176                  | 1   | R51         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 177                  | 1   | U7          | M55F26V032B4        | N/A        | 8-SOUC (0,209" x 5,30 mm) di (arghezza) | 8 Mbit, low voltage, Page-Enable Serial Flash memory                                |
| 178                  | 1   | U7          | M55F26V032B4        | N/A        | 8-SOUC (0,209" x 5,30 mm) di (arghezza) | 8 Mbit, low voltage, Page-Enable Serial Flash memory                                |
| 179                  | 0   | C39         | 10uF 0805           | ±10%       | 0805                                    | CAP CER 10UF 16V X65 0805   |
| 180                  | 0   | F5          | 75mA 2R0 0402       | N/A        | 0402                                    | FUSE BOARD MOUNT 75MA 32VDC 0402  |
| 181                  | 0   | L_D9        | BZT58B396T          | N/A        | SOD523                                  | DIODE ZENER 3.6V 350MW SOD523   |
| 182                  | 0   | L_Q4        | BZT58B396T          | N/A        | SOD523                                  | DIODE ZENER 3.6V 350MW SOD523   |
| 183                  | 0   | L_Q5        | BZT58B396T          | N/A        | SOD523                                  | DIODE ZENER 3.6V 350MW SOD523   |
| 184                  | 0   | L_Q16       | MMRF3906            | N/A        | SC75, 50T-416                           | TRANS PNP 40V 0.2A SC75-3   |
| 185                  | 0   | L_Q17       | MMRF3906            | N/A        | SC75, 50T-416                           | TRANS PNP 40V 0.2A SC75-3   |
| 186                  | 0   | L_Q18       | NYC0102B1TIG        | N/A        | 50723-3                                 | SCR 200V 250mA Sensitive Gate Surface Mount SOT-23 (TO-236)                         |
| 187                  | 0   | L_R13       | 1K01805 1/8W        | ±1%        | 0805                                    | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C   |
| 188                  | 0   | L_R14       | 100R 1206 1/4W      | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 189                  | 0   | L_R15       | 100R 1206 1/4W      | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 190                  | 0   | L_R16       | 100R 1206 1/4W      | ±1%        | 1206                                    | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C   |
| 191                  | 0   | L_FRESHUNT5 | 0R43 2512 2W        | ±1%        | 2512                                    | R 2512 2W 1% 200ppm /°C -55°C - 155°C   |
| 192                  | 0   | L_FRESHUNT6 | 0R43 2512 2W        | ±1%        | 2512                                    | R 2512 2W 1% 200ppm /°C -55°C - 155°C   |
| 193                  | 0   | C37         | 1uF 0402 0603       | ±10%       | 0603                                    | CAP CER 1UF 6.3V X7R 0603   |
| 194                  | 0   | C38         | 100k 0402           | ±10%       | 0402                                    | CAP CER 0.1UF 16V X7R 0402  |
| 195                  | 0   | R52         | 10K 0402 1/16W      | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 196                  | 0   | R53         | 10K 0402 1/16W      | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 197                  | 0   | R54         | 470K 0402           | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 198                  | 0   | R55         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 199                  | 0   | R56         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 200                  | 0   | R57         | 10K 0402 1/16W      | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |
| 201                  | 0   | R58         | 100K 0402 1/16W     | ±1%        | 0402                                    | R 0402 1/16W 1% 100ppm /°C -55°C - 155°C  |



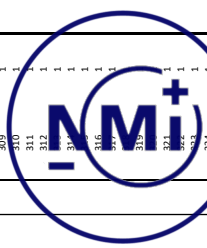
| MeterS <sub>it</sub> |     | BOM 2238053 |                 | Date<br>22/11/2018 |  |      |  |
|----------------------|-----|-------------|-----------------|--------------------|--|------|--|
| POS                  | QTY | Reference   | Value           | Tolerance          | Package                                  | P/NP | Description                              |
| 202                  | 0   | R59         | 1M 0402.1/16W   | +1%                | 0402                                     | DNP  | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 203                  | 0   | R60         | 1M 0402.1/16W   | +1%                | 0402                                     | DNP  | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 204                  | 0   | U0          | A702C           | N/A                |  | DNP  | CRYPTO CHIP A702C/OMNI                   |
| 205                  | 0   | U1          | 1K0805/18W      | +10%               | SOT-23-5A                                | DNP  | 1K0805/18W XTR 0402                      |
| 206                  | 0   | C40         | 100K 0402       | +10%               | 0402                                     | DNP  | CAP CER 0.1UF 16V XTR 0402               |
| 207                  | 1   | C41         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 208                  | 1   | L R19       | 1M 0805 1/8W    | +1%                | 0805                                     |      | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C  |
| 209                  | 1   | L R40       | 1M 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 210                  | 1   | L R41       | 1M 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 211                  | 1   | L R45       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 212                  | 1   | L R46       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 213                  | 1   | L R47       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 214                  | 1   | L R48       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 215                  | 1   | Q3          | 85S138W         | +1%                | SC-70, SOT-323                           |      | MOSFET N-CH 60V 280MA SOT-323            |
| 216                  | 1   | Q4          | 85S138W         | +1%                | SC-70, SOT-323                           |      | MOSFET N-CH 60V 280MA SOT-323            |
| 217                  | 1   | R64         | 100K 0402 1/16W | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 218                  | 1   | R65         | 1M 0402.1/16W   | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 219                  | 1   | R66         | 1M 0402.1/16W   | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 220                  | 1   | R67         | 1M 0402.1/16W   | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 221                  | 1   | R68         | 100K 0402 1/16W | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 222                  | 1   | R69         | 100K 0402 1/16W | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 223                  | 1   | U2          | 74HC051         | N/A                | 16-TSSOP (0.173" x 4.40 mm di larghezza) |      | 18 ANALOG MUX 2.2 to 6.0 SUPPLY          |
| 224                  | 1   | C42         | 1u6V3 0603      | +10%               | 0603                                     |      | CAP CER 1UF 16V XTR 0603                 |
| 225                  | 1   | C43         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 226                  | 1   | C44         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 227                  | 1   | C45         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 228                  | 1   | C46         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 229                  | 1   | D17         | BAT54CT         | N/A                | SC-75, SOT-416, SOT-523                  |      | DIODE ARRAY SCHOTTKY 30V COMMON KATODE   |
| 230                  | 1   | D18         | BAT54CT         | N/A                | SC-75, SOT-416, SOT-523                  |      | DIODE ARRAY SCHOTTKY 30V COMMON KATODE   |
| 231                  | 1   | L R69       | 1M 0805 1/8W    | +1%                | 0805                                     |      | R 0805 1/8W 1% 100ppm /°C -55°C - 155°C  |
| 232                  | 1   | L R70       | 1K 0805 1/8W    | +1%                | 0805                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 233                  | 1   | L R71       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 234                  | 1   | L R72       | 100K 1206 1/4W  | +1%                | 1206                                     |      | R 1206 1/4W 1% 200ppm /°C -55°C - 155°C  |
| 235                  | 1   | L R73       | 100K 1206 1/4W  | +1%                | 1206                                     |      | R 1206 1/4W 1% 200ppm /°C -55°C - 155°C  |
| 236                  | 1   | L R74       | 1M 0402.1/16W   | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 237                  | 1   | L R75       | 1M 0402.1/16W   | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 238                  | 1   | R73         | 100K 0402 1/16W | +1%                | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 239                  | 1   | R74         | 100K 1206 1/4W  | +1%                | 1206                                     |      | R 1206 1/4W 1% 100ppm /°C -55°C - 155°C  |
| 240                  | 0   | U13         | TPS22860        | N/A                | SOT-23-6                                 | DNP  | IC SWITCH HIGH SIDE SC70-6               |
| 241                  | 1   | U14         | 59P2431         | N/A                | SC70-6                                   |      | IC SWITCH HIGH SIDE SC70-6               |
| 242                  | 1   | C47         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 243                  | 1   | C48         | 100K 0402       | +10%               | 0402                                     |      | CAP CER 0.1UF 16V XTR 0402               |
| 244                  | 1   | D19         | BAT54CT         | +10%               | 0402                                     |      | DIODE ARRAY SCHOTTKY 30V COMMON KATODE   |
| 245                  | 1   | D20         | TVS5V0          | N/A                | SOD323                                   |      | TVS DIODE 5V0VM 500323                   |
| 246                  | 1   | D21         | TVS5V0          | N/A                | SOD323                                   |      | TVS DIODE 5V0VM 500323                   |
| 247                  | 1   | L R85       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 200ppm /°C -55°C - 155°C  |
| 248                  | 1   | L R86       | 1K 1206 1/4W    | +1%                | 1206                                     |      | R 1206 1/4W 1% 200ppm /°C -55°C - 155°C  |
| 249                  | 1   | L R87       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 250                  | 1   | L R88       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 251                  | 1   | L R89       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 252                  | 1   | L R90       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 253                  | 1   | L R91       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 254                  | 1   | L R92       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 255                  | 1   | L R93       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 256                  | 1   | L R94       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 257                  | 1   | L R95       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 258                  | 1   | L R96       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 259                  | 1   | L R97       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 260                  | 1   | L R98       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 261                  | 1   | L R99       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 262                  | 1   | L R00       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 263                  | 1   | L R01       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 264                  | 1   | L R02       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 265                  | 1   | L R03       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 266                  | 1   | L R04       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 267                  | 1   | L R05       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 268                  | 1   | L R06       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |
| 269                  | 1   | L R07       | 100K 0402       | +10%               | 0402                                     |      | R 0402.1/16W 1% 100ppm /°C -55°C - 155°C |



|                      |             |                    |
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| MeterS <sub>it</sub> | BOM 2238053 | Date<br>22/11/2018 |
|----------------------|-------------|--------------------|

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|-----------------------------|--|--|
| <u>TECHNICAL REFERENCES</u> |  |  |
|-----------------------------|--|--|

| POS | QTY | Reference | Value                     | Tolerance | Package  | P/N/P | Description   | Manufacturer 1          | Manufacturer 1 Code |
|-----|-----|-----------|---------------------------|-----------|----------|-------|---|-------------------------|---------------------|
| 269 | 1   | L_R93     | 1K 1206 1/4W              | ±1%       | SMD      |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  | 50244-3-0470        |
| 270 | 1   | L_17      | CONNETTORE BATTERIA VERT. | N/A       |          |       | 4 Posizioni Presa Connettore 0.09" (2.00mm) Montaggio superficiale ad inserzione verticale Stagno | MOLEX                   | BSS138PW.115        |
| 271 | 1   | G6        | BSS138W                   | N/A       | SMD 23LC |       | MOSETT N-CH 60V 280MA SOT-233   | NXP                     | BSS138PW.115        |
| 272 | 1   | D24       | LED COOL WHITE 8200K      | N/A       | SMD 233  |       | LED COOL WHITE 8200K 100mcd   | OSRAM                   | UW 985G-VAA-3K66-Z  |
| 273 | 0   | D25       | WHITE LED 90°             | N/A       | SMD      | DNP   |   | OSRAM                   | UW 985G-VAA-3K66-Z  |
| 274 | 0   | L_R42     | 18R2 1210 1/3W            | ±1%       | 1210     | DNP   | R 1210 1/3W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 275 | 0   | L_R43     | 18R2 1210 1/3W            | ±1%       | 1210     | DNP   | R 1210 1/3W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 276 | 0   | L_R44     | 18R2 1210 1/3W            | ±1%       | 1210     | DNP   | R 1210 1/3W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 277 | 0   | L_R45     | 18R2 1210 1/3W            | ±1%       | 1210     | DNP   | R 1210 1/3W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 278 | 1   | L_R50     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 279 | 1   | L_R20     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 280 | 1   | L_R21     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 281 | 0   | G8        | DISP.A. 1206 1/4W         | N/A       | CUL      |       |   | YAGLED                  |                     |
| 282 | 0   | R88       | 1M 0402 1/16W             | ±1%       | SOT23-3  | DNP   | SMD RL1M6401 TRRF - 12V Single P-Channel HEXFET Power MOSFET in a Micro 3 package                 | INTERNATIONAL RECTIFIER | IRLML6401TRF        |
| 283 | 0   | C78       | 10uF 0805 M5              | ±10%      | 0805     | DNP   | CAP CER 10UF 10V X6S 0805   | YAGLED                  |                     |
| 284 | 1   | D27       | RE05MSDA                  | N/A       | EMDZ     |       | DIODE SCHOTTKY 20V 500mA VF 200mV @Im@+25°C   | SAMSUNG                 | CL1X106FCLRNC       |
| 285 | 1   | D28       | RE05MSDA                  | N/A       | EMDZ     |       | DIODE SCHOTTKY 20V 500mA VF 200mV @Im@+25°C   | ROHM                    | RE05MSD20ZTR        |
| 286 | 1   | D29       | RE05MSDA                  | N/A       | EMDZ     |       | DIODE SCHOTTKY 20V 500mA VF 200mV @Im@+25°C   | ROHM                    | RE05MSD20ZTR        |
| 287 | 1   | D30       | RE05MSDA                  | N/A       | EMDZ     |       | DIODE SCHOTTKY 20V 500mA VF 200mV @Im@+25°C   | ROHM                    | RE05MSD20ZTR        |
| 288 | 1   | L_18      | 756A 380402               | N/A       | 0402     |       | FUSE BOARD MOUNT 756A 320V 0.402  | AVX                     | PO402G8020TR        |
| 289 | 1   | L_Q19     | MMBT3906                  | N/A       | EMDZ     | DNP   | TRANS PNP 40V 0.2A SC75-3   | ONSEMI                  | MMBT3906TTIG        |
| 290 | 1   | L_Q20     | MMBT3906                  | N/A       | EMDZ     | DNP   | TRANS PNP 40V 0.2A SC75-3   | ONSEMI                  | MMBT3906TTIG        |
| 291 | 1   | L_Q21     | NY10102RLTIG              | N/A       | SOT23-3  | DNP   | SCR 200V 250mA Sensitive Gate Surface Mount SOT-23-3 (TO-236)                                     | ONSEMI                  | NY10102RLTIG        |
| 292 | 1   | L_Q22     | NY10102RLTIG              | N/A       | SOT23-3  | DNP   | SCR 200V 250mA Sensitive Gate Surface Mount SOT-23-3 (TO-236)                                     | ONSEMI                  | NY10102RLTIG        |
| 293 | 1   | L_R20     | 220R 1206 1/4W            | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  | NY10102RLTIG        |
| 294 | 0   | L_R25     | 10K0805 1/8W              | ±1%       | 0805     | DNP   | R 0805 1/8W 1% 100ppm /°C -55°C -155°C  | YAGLED                  | NY10102RLTIG        |
| 295 | 0   | L_R26     | 10K0805 1/8W              | ±1%       | 0805     | DNP   | R 0805 1/8W 1% 100ppm /°C -55°C -155°C  | YAGLED                  | NY10102RLTIG        |
| 296 | 0   | L_R80     | 10K0805 1/8W              | ±1%       | 0805     | DNP   | R 0805 1/8W 1% 100ppm /°C -55°C -155°C  | YAGLED                  | NY10102RLTIG        |
| 297 | 0   | L_R91     | 10K0805 1/8W              | ±1%       | 0805     | DNP   | R 0805 1/8W 1% 100ppm /°C -55°C -155°C  | YAGLED                  | NY10102RLTIG        |
| 298 | 1   | L_SHUNT6  | 3R3 1210 1/2W             | ±1%       | 1210     |       | Resistor su chip A film spessa 1% 1/2 W 1210 AEC Q100 automotive                                  | PANASONIC               | RC1206FR0720RL      |
| 299 | 1   | C50       | 100n 0402                 | ±10%      | 0402     |       | CAP CER 100P 50V X7R 0402   | SAMSUNG                 | C0805040S3NNND      |
| 300 | 1   | C51       | 220n 0402                 | ±10%      | 0402     |       | CAP CER 220P 50V X7R 0402   | SAMSUNG                 | C0805040S3NNND      |
| 301 | 1   | C52       | 220n 0402                 | ±10%      | 0402     |       | CAP CER 220P 50V X7R 0402   | SAMSUNG                 | C0805040S3NNND      |
| 302 | 1   | L_R27     | 472R 1206 1/4W            | ±1%       | 1206     |       | R 1206 1/4W 1% 100mA 110mV/5% @ 100mA 30° 4 P/CC  | YAGLED                  | 3PH4239-PAV-Z       |
| 303 | 1   | L_R27     | 472R 1206 1/4W            | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 304 | 1   | L_R96     | 4K7 1206 1/4W             | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 305 | 1   | L_R97     | 100R 1206 1/4W            | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 306 | 1   | L_R101    | 1K8 1206 1/4W             | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 307 | 1   | L_R14     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 308 | 1   | L_R15     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 309 | 1   | L_R16     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 310 | 1   | L_R17     | 1K 1206 1/4W              | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 311 | 1   | L_R22     | 3K9 1206 1/4W             | ±1%       | 1206     |       | R 1206 1/4W 1% 100ppm /°C -55°C -155°C  | YAGLED                  |                     |
| 312 | 1   | J9        | MO85 2P                   | N/A       | N/A      |       | CONNETTORE LANCAAMPULSI   | ST                      | RC1206FR0720RL      |
| 313 | 1   | G9        | IRLML6401T                | N/A       | SOT23-3  |       | SMD RL1M6401 TRRF - 12V Single P-Channel HEXFET Power MOSFET in a Micro 3 package                 | INTERNATIONAL RECTIFIER | IRLML6401TRF        |
| 314 | 1   | Q10       | 5PH 320-FA                | N/A       | SMD 23LC |       | Phototransistor 598nm Top View 2-LCC (J-Lead)   | OSRAM                   | 5PH 320-FA3-Z       |
| 315 | 1   | Q11       | BSS138W                   | N/A       | SMD 23LC |       | MOSETT N-CH 60V 280MA SOT-233   | NXP                     | BSS138PW.115        |
| 316 | 1   | Q12       | MMBT3906                  | N/A       | EMDZ     |       | TRANS PNP 40V 0.2A SC75-3   | ONSEMI                  | MMBT3906TTIG        |
| 317 | 1   | Q13       | SC75 50T-416              | N/A       | EMDZ     |       | TRANS PNP 40V 0.2A SC75-3   | ONSEMI                  | MMBT3906TTIG        |
| 318 | 1   | R92       | 472R 0402 1/16W           | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 319 | 1   | R93       | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 320 | 1   | R105      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 321 | 1   | R106      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 322 | 1   | R107      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 323 | 1   | R108      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 324 | 1   | R109      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 325 | 1   | R110      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 326 | 1   | R111      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 327 | 1   | R112      | 10K0402 1/16W             | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |
| 328 | 0   | C53       | 47u 6V3 X5R 0805          | ±20%      | 0805     |       | CAP CER 47UF 6.3V X5R 0805-55/485°C   | YAGLED                  | C0805MKGR5R8476     |
| 329 | 1   | C54       | 47u 6V3 X5R 0805          | ±20%      | 0805     |       | CAP CER 47UF 6.3V X5R 0805-55/485°C   | YAGLED                  | C0805MKGR5R8476     |
| 330 | 1   | C55       | 47u 6V3 X5R 0805          | ±20%      | 0805     |       | CAP CER 47UF 6.3V X5R 0805-55/485°C   | YAGLED                  | C0805MKGR5R8476     |
| 331 | 1   | C56       | 47u 6V3 X5R 0805          | ±20%      | 0805     |       | CAP CER 47UF 6.3V X5R 0805-55/485°C   | YAGLED                  | C0805MKGR5R8476     |
| 332 | 1   | C57       | 47u 6V3 X5R 0805          | ±20%      | 0805     |       | CAP CER 47UF 6.3V X5R 0805-55/485°C   | YAGLED                  | C0805MKGR5R8476     |
| 333 | 1   | C58       | 47u 6V3 X5R 0805          | ±20%      | 0805     |       | CAP CER 47UF 6.3V X5R 0805-55/485°C   | YAGLED                  | C0805MKGR5R8476     |
| 334 | 1   | C59       | 33p 0402                  | ±10%      | 0402     |       | CAP CER 33PF 50V C0G NP0 0402   | SAMSUNG                 | C0805040G3NNND      |
| 335 | 1   | C60       | 0R0 0402 1/16W            | ±1%       | 0402     |       | R 0402 1/16W 1% 100ppm /°C -55°C -155°C   | YAGLED                  |                     |

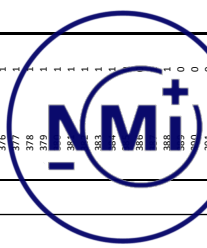




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| TECHNICAL REFERENCES |  |  |
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| POS | QTY | Reference | Value                       | Tolerance | Package                    | P/NP | Description                           | Manufacturer 1 | Manufacturer 1 Code |
|-----|-----|-----------|-----------------------------|-----------|----------------------------|------|---------------------------------------|----------------|---------------------|
| 336 | 0   | C61       | C 0402                      | td        | 0402                       | DNP  | C 0402                                |                |                     |
| 337 | 0   | C62       | td                          | td        | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 338 | 1   | C63       | 45%                         | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 339 | 1   | C64       | 45%                         | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 340 | 1   | C65       | 45%                         | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 341 | 1   | C66       | 45%                         | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 342 | 0   | C67       | 10P-0402                    | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 343 | 1   | C68       | 10P-0402                    | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 344 | 1   | C69       | 10P-0402                    | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 345 | 1   | C70       | 10P-0402                    | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V COG NPO 0402        | SAMBUNG        | C09SCLO0B5NND       |
| 346 | 1   | E1        | PCB ANTENNA                 | N/A       | N/A                        |      | GSN/GPS/PCB ANTENNA                   | MIEHRST        | C09SCLO0B5NND       |
| 347 | 1   | E2        | 1K 1% SMD                   | 45%       | N/A                        |      | 1K 1% SMD                             | MIEHRST        | 2238051             |
| 348 | 0   | L03       | U.F.L.R SMT-1               | N/A       |                            | DNP  | CONSUMIC JACK STR 5.0MM SMD           | HRDEE          | U.F.L.R SMT100      |
| 349 | 1   | L4        | 2,5A 220Ohm@100MHz          | N/A       | 0603                       | DNP  | FERRITE BEAD 220 OHM 0603 11N         | MURATA         | BLM18SG221TD0       |
| 350 | 1   | L4        | 2,5A 220Ohm@100MHz          | N/A       | 0603                       | DNP  | FERRITE BEAD 220 OHM 0603 11N         | MURATA         | BLM18SG221TD0       |
| 351 | 1   | Q14       | BS138W                      | N/A       |                            |      | MDSRET IN-CH 60V 280MA SOT-323        | NXP            | BS138PW.115         |
| 352 | 1   | Q15       | MMBT3906                    | N/A       |                            |      | TRANS PNP 40V 0.2A SC7-5              | ONSEMI         | MMBT3906GT1G        |
| 353 | 1   | R114      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 354 | 1   | R115      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 355 | 1   | R116      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 356 | 1   | R117      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 357 | 1   | R118      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 358 | 1   | R119      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 359 | 1   | R120      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 360 | 0   | R121      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 361 | 1   | R122      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 362 | 1   | R123      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 363 | 1   | R124      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 364 | 1   | R125      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 365 | 0   | R126      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 366 | 1   | R127      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 367 | 0   | R128      | 100K 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 368 | 1   | U16       | MODEM GSN-GPRS BG51         | N/A       | CUSTOM                     | DNP  | DUO/QUAD BAND GSN/GPRS ENGINE         | GENALTO        | BG51                |
| 369 | 1   | U17       | MODEM GSN-GPRS BG51         | N/A       | CUSTOM                     | DNP  | DUO/QUAD BAND GSN/GPRS ENGINE         | GENALTO        | BG51                |
| 370 | 1   | U18       | MODEM GSN-GPRS BG51         | N/A       | CUSTOM                     | DNP  | DUO/QUAD BAND GSN/GPRS ENGINE         | GENALTO        | BG51                |
| 371 | 1   | C73       | 10P-0402                    | 45%       | 0402                       | DNP  | CAP CER 10DFP 50V 5% NPO 0402         | SAMBUNG        | CL08B0606NTR        |
| 372 | 0   | C74       | 10P-0402                    | 45%       | 0402                       | DNP  | CAP CER 0.22UF 6.3V X5R 0402 55/485°C | SAMBUNG        | C09A224QC05NND      |
| 373 | 0   | C75       | 220n 0402                   | 45%       | 0402                       | DNP  | CAP CER 0.22UF 6.3V X5R 0402 55/485°C | SAMBUNG        | C09A224QC05NND      |
| 374 | 0   | C76       | 100n 0402                   | 45%       | 0402                       | DNP  | CAP CER 0.1UF 16V X7R 0402            | SAMBUNG        | C09B1040505NND      |
| 375 | 0   | C77       | 100n 0402                   | 45%       | 0402                       | DNP  | CAP CER 0.1UF 16V X7R 0402            | SAMBUNG        | C09B1040505NND      |
| 376 | 1   | C78       | 62nV 285/0402               | 45%       | 0402                       | DNP  | CAP CER 100DFP 50V 5% NPO 0402        | AVX            |                     |
| 377 | 1   | C79       | 62nV 285/0402               | 45%       | 0402                       | DNP  | CAP CER 100DFP 50V 5% NPO 0402        | AVX            |                     |
| 378 | 1   | L100      | 228 1206 1/4W               | 45%       | 1206                       | DNP  | R 1206 61AW 1% 100ppm /C-55°C-155°C   | YAGEO          |                     |
| 379 | 1   | L100      | 228 1206 1/4W               | 45%       | 1206                       | DNP  | R 1206 61AW 1% 100ppm /C-55°C-155°C   | YAGEO          |                     |
| 380 | 1   | L100      | 228 1206 1/4W               | 45%       | 1206                       | DNP  | R 1206 61AW 1% 100ppm /C-55°C-155°C   | YAGEO          |                     |
| 381 | 1   | R130      | 0R0 0402 1/16W              | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 382 | 1   | R131      | 0R0 0402 1/16W              | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 383 | 1   | R132      | 4K75 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 384 | 1   | R133      | 0R0 0402 1/16W              | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 385 | 1   | R134      | 0R0 0402 1/16W              | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 386 | 1   | R135      | 4K75 0402 1/16W             | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 387 | 1   | R136      | 1K 0402 1/16W               | 45%       | 0402                       | DNP  | R 0402 1/16W 1% 100ppm /C-55°C-155°C  | YAGEO          |                     |
| 388 | 1   | U17       | SIM-HOLDER-6PIN-SW          | N/A       | td                         | DNP  | SIM-HOLDER-6PIN-SW                    | FIRST EUROPE   | FR-30816-A-15-R     |
| 389 | 1   | U18       | NUP1414                     | N/A       |                            | DNP  | TVS DIODE 5.5VMM 10VC SC706           | ONSEMI         | NUP1414CMT1G        |
| 390 | 0   | U19       | SIM-HOLDER-6PIN             | N/A       |                            | DNP  | CONN SIM/SAM CARD PUSH-PULL R/A       | FAIRCHILD      | SF90065MART200      |
| 391 | 0   | U20       | ESX2525                     | N/A       | 16-UFQFN 16-UMDF (L 8x2.6) | DNP  | IC SWITCH FOOT 30UMDF                 | SPRAGUE        | FSX2525UMX          |
| 392 | 0   | U21       | SIM-HOLDER                  | N/A       |                            | DNP  | CONN SIM/SAM CARD PUSH-PULL R/A       | FAIRCHILD      | SF90065MART200      |
| 393 | 0   | U22       | SIM-HOLDER                  | N/A       |                            | DNP  | CONN SIM/SAM CARD PUSH-PULL R/A       | FAIRCHILD      | SF90065MART200      |
| 394 | 1   | U23       | 7MHLGT50                    | N/A       |                            | DNP  | SIM-HOLDER                            | GEALTO         | M7AHLGT50DFT1G      |
| 395 | 1   | PE11      | PEB_C5160A201-Q2 - IIGRE-AX | N/A       |                            | DNP  | PEB_C5160A201-Q2 - IIGRE-AX Rev.2.03  | td             | td                  |
| 396 | 1   | TL1       | PLASTIC FRAME 1             | N/A       |                            | DNP  | PLASTIC FRAME FOR COMPOUND            | MIEHRST        | 7105106             |
| 397 | 1   | TL2       | PLASTIC FRAME 2             | N/A       |                            | DNP  | PLASTIC FRAME FOR COMPOUND            | MIEHRST        | 7105107             |
| 398 | 1   | RSN1      | RESINA POLIURETANICA        | N/A       |                            | DNP  | RESINA RELEVOPUR-408 FL 720           | WEYON          | WEYONUR 403 FL 720  |
| 399 | 1   | RSN2      | RESINA POLIURETANICA        | N/A       |                            | DNP  | RESINA RELEVOPUR-408 FL 720           | WEYON          | WEYONUR 403 FL 720  |
| 400 | 1   | PEL1      | PELLUCIDA                   | 45%       | 0805                       | DNP  | INDURENTE WEGONAT 300RE               | YAGEO          | CC0805RNP08R300     |
| 401 | 1   | CR2       | 33P 0805                    | 45%       | 0805                       | DNP  | CAP CER 33P 50V COG NPO 0805          | YAGEO          | CC0805RNP08R300     |
| 402 | 1   | CR3       | 100P 0805                   | 45%       | 0805                       | DNP  | CAP CER 100DFP 50V COG NPO 0805       | YAGEO          | CC0805RNP08R102     |



|                             |                             |                    |              |           |   |
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| MeterSt                     | BOM 2238053                 | Date<br>22/11/2018 |              |           |   |
| <u>INDEX &amp; QUANTITY</u> | <u>TECHNICAL REFERENCES</u> |                    |              |           |   |
| POS                         | QTY                         | Reference          | Value        | Tolerance | Package                                 |
| 403                         | 1                           | CS4                | 1.000HE.0805 | +5%       | 0805                                    |
|                             |                             |                    |              |           | CAP CER 1000PF 50V COG NPO 0805         |
|                             |                             |                    |              |           | Manufacturer 1<br>YAGLEO                |
|                             |                             |                    |              |           | Manufacturer 1 Code<br>CC0805RNP0805N02 |

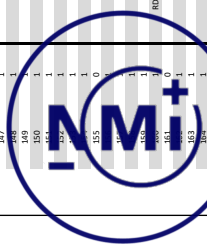


**Item#** **QTY** **Reference** **Value** **Tolerance** **Package** **P/W** **Description** **Notes** **Manufacturer 1 Code** **Option** **MODEL** **PCB Footprint** **RELEVÉ**

**INDEX QUANTITY** **BOM 228E03.0** **TECHNICAL REFERENCES**

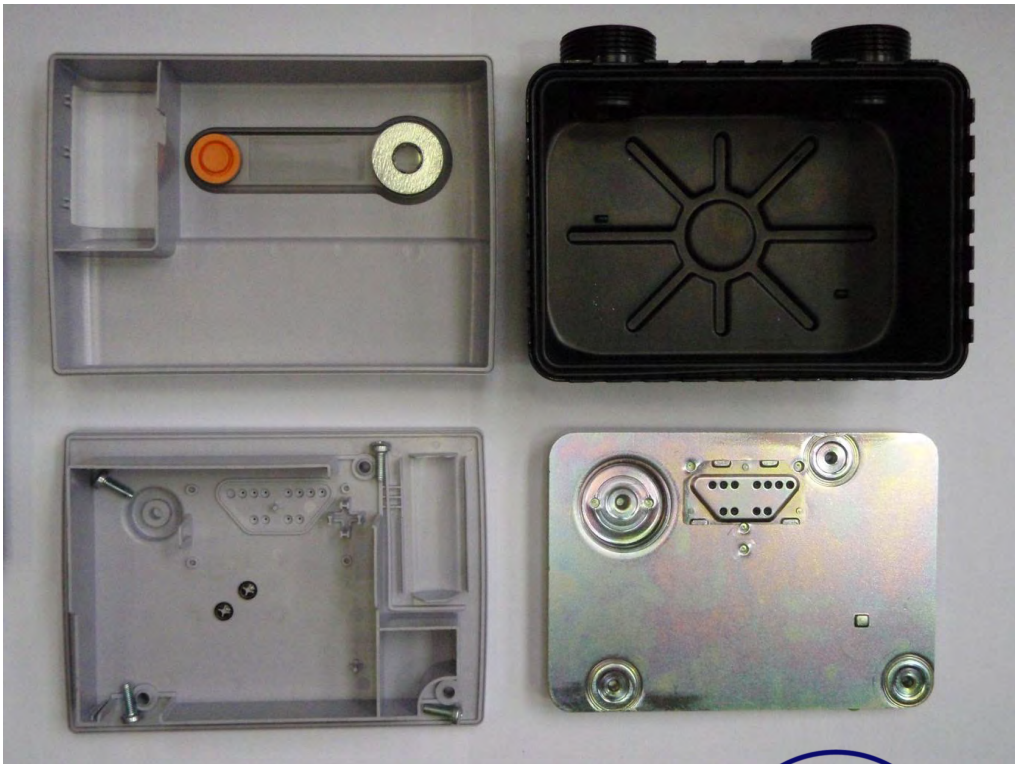
| Item# | QTY | Reference | Value                                | Tolerance | Package                 | P/W | Description  | Notes        | Manufacturer 1 Code     | Option           | MODEL | PCB Footprint    | RELEVÉ |
|-------|-----|-----------|--------------------------------------|-----------|-------------------------|-----|--|--------------|-------------------------|------------------|-------|------------------|--------|
| 1     | 1   | C1        | 1u 6V3 0603                          | +10%      | 0603                    |     | CAP CER 1UF 6V3VX7R 0603                                       | TOP LAYER    | SAMSUNG                 | CL181B3K9NNK     | MCU   | C0603            |        |
| 2     | 1   | C2        | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 3     | 1   | C3        | 6.81K 0402                           | -20%      | 0402                    |     | CAP CER 6.81K 50V NR0402                                       | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 4     | 1   | C4        | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 5     | 0   | J1        | THPASS02MM                           | DNP       |                         |     | STOP 04 020 2MM  | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | TW-MD03-1.5      |        |
| 6     | 1   | R1        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 7     | 1   | R2        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 8     | 1   | R3        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 9     | 1   | R4        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 10    | 1   | R5        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 11    | 1   | R6        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 12    | 1   | R7        | 0m 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 13    | 0   | R8        | 100K 0402                            | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | BOTTOM LAYER | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 14    | 1   | R9        | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 15    | 1   | R10       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 16    | 1   | R11       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 17    | 1   | R12       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 18    | 1   | R13       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 19    | 0   | SW1       | 100 100 100                          | DNP       |                         |     | FACTORY SWITCH #67   | BOTTOM LAYER | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 20    | 1   | X1        | 32.768KHZ 100 100 100                | DNP       |                         |     | 32.768KHZ 100pin Crystal 100 100 100                           | BOTTOM LAYER | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 21    | 1   | X1        | 32.768KHZ 100pin Crystal 100 100 100 | DNP       |                         |     | 32.768KHZ 100pin Crystal 100 100 100                           | BOTTOM LAYER | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 22    | 1   | C5        | 1u 6V3 0603                          | +10%      | 0603                    |     | CAP CER 1UF 6V3VX7R 0603                                       | TOP LAYER    | SAMSUNG                 | CL181B3K9NNK     | MCU   | C0603            |        |
| 23    | 1   | C6        | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 24    | 1   | C7        | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 25    | 1   | C8        | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 26    | 1   | C9        | 4.7K 03 0603                         | +10%      | 0603                    |     | CAP CER 4.7K 6.3VX7R 0603 3V 48°C                              | TOP LAYER    | SAMSUNG                 | CL10A47K03NNK    | MCU   | C0603            |        |
| 27    | 1   | C10       | 1u 6V3 0603                          | +10%      | 0603                    |     | CAP CER 1UF 6V3VX7R 0603                                       | TOP LAYER    | SAMSUNG                 | CL181B3K9NNK     | MCU   | C0603            |        |
| 28    | 1   | C11       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 29    | 1   | C12       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 30    | 1   | C13       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 31    | 1   | C14       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 32    | 1   | C15       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 33    | 1   | C16       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | C0402            |        |
| 34    | 1   | L1        | 140 100MH 300mA 0.55mm               | +25%      | 0402                    |     | SMD Ferrite Induct at 100MHz 25% 0402                          | TOP LAYER    | MURATA                  | BLM15AG102S1LD   | MCU   | L0402            |        |
| 35    | 1   | R10       | 47K 0402 1/16W                       | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 36    | 1   | R11       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 37    | 1   | R12       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 38    | 1   | R13       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 39    | 1   | RND1      | 0m 1206 1/4W                         | -1%       | 1206                    |     | R 1206 1/4W 1% 100ppm /C: 5°C -15°C                            | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R1206            |        |
| 40    | 1   | R14       | 100K 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | R1206            |        |
| 41    | 1   | C18       | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL08B4AC05NNK    | MCU   | R1206            |        |
| 42    | 1   | C19       | 1u 6V3 0603                          | +10%      | 0603                    |     | CAP CER 1UF 6V3VX7R 0603                                       | TOP LAYER    | SAMSUNG                 | CL181B3K9NNK     | MCU   | C0603            |        |
| 43    | 0   | J3        | MKS CONN                             | N/A       | CUSTOM                  |     | GAS METER METER NEW CONNECTION (PUNTI DI SALIDATURA)           | TOP LAYER    | N/A                     | N/A              | MCU   | CUSTOM           |        |
| 44    | 1   | R15       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 45    | 1   | R16       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 46    | 1   | R17       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 47    | 1   | R18       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 48    | 1   | R19       | 100K 0402 1/16W                      | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 49    | 0   | U3        | TP23280                              | DNP       |                         |     | IC SWITCH SPDT SOT23-6   | TOP LAYER    | TI                      | TP23280DWR       | MCU   | SOT23-6          |        |
| 50    | 0   | U4        | SP23431                              | DNP       |                         |     | IC SWITCH HIGH SIDE SC04                                       | TOP LAYER    | VISHAY                  | SP23431D103      | MCU   | SOT23-6          |        |
| 51    | 1   | U5        | TP23280                              | DNP       |                         |     | IC SWITCH SPDT SOT23-6   | TOP LAYER    | TI                      | TP23280DWR       | MCU   | SOT23-6          |        |
| 52    | 1   | U6        | TP23280                              | DNP       |                         |     | IC SWITCH SPDT SOT23-6   | TOP LAYER    | TI                      | TP23280DWR       | MCU   | SOT23-6          |        |
| 53    | 1   | D4        | BAT54CT                              | N/A       |                         |     | 2-DIODE ANHYS SCHOTTKY BIV CONNOMN K4020E                      | TOP LAYER    | ONSEM                   | BAT54CT10        | MCU   | BAT54CT10        |        |
| 54    | 1   | D22       | B340Q                                | N/A       | SMC                     |     | DIODE SCHOTTKY 40V JA SMC (R = 100mA 40V)                      | TOP LAYER    | ONSEM                   | B340Q-13F        | MCU   | B340Q-13F        |        |
| 55    | 0   | D15       | CONN. EXT CHG-SCAP                   | N/A       |                         |     | PAZOLE PER CONNETTONE PER ALIMENTAZIONE INTERNA                | TOP LAYER    | N/A                     | N/A              | MCU   | PAD CUSTOM       |        |
| 56    | 1   | Q22       | BLM18A011                            | N/A       | SC                      |     | INDUCTOR 180NH 100mA 0.55mm                                    | TOP LAYER    | N/A                     | N/A              | MCU   | BLM18A011        |        |
| 57    | 1   | Q21       | DMP2201DW-7                          | N/A       | 6-TSSOP, SC-88, SOT-363 |     | MOSFET 2P-CH 20V 0.8A SOT363                                   | TOP LAYER    | INTERNATIONAL RECTIFIER | DMP2201DW-7      | MCU   | DMP2201DW-7      |        |
| 58    | 1   | Q23       | DMP2201DW-7                          | N/A       | 6-TSSOP, SC-88, SOT-363 |     | MOSFET 2P-CH 20V 0.8A SOT363                                   | TOP LAYER    | INTERNATIONAL RECTIFIER | DMP2201DW-7      | MCU   | DMP2201DW-7      |        |
| 59    | 1   | Q24       | DMP2201DW-7                          | N/A       | 6-TSSOP, SC-88, SOT-363 |     | MOSFET 2P-CH 20V 0.8A SOT363                                   | TOP LAYER    | INTERNATIONAL RECTIFIER | DMP2201DW-7      | MCU   | DMP2201DW-7      |        |
| 60    | 1   | Q25       | DMP2201DW-7                          | N/A       | 6-TSSOP, SC-88, SOT-363 |     | MOSFET 2P-CH 20V 0.8A SOT363                                   | TOP LAYER    | INTERNATIONAL RECTIFIER | DMP2201DW-7      | MCU   | DMP2201DW-7      |        |
| 61    | 1   | Q26       | DMP2201DW-7                          | N/A       | 6-TSSOP, SC-88, SOT-363 |     | MOSFET 2P-CH 20V 0.8A SOT363                                   | TOP LAYER    | INTERNATIONAL RECTIFIER | DMP2201DW-7      | MCU   | DMP2201DW-7      |        |
| 62    | 1   | R20       | 0m 0402                              | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 63    | 1   | R21       | 3M3 0402 1/16W                       | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 64    | 1   | R22       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 65    | 1   | R23       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 66    | 1   | R24       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 67    | 1   | R25       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 68    | 1   | R26       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 69    | 1   | R27       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 70    | 1   | R28       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 71    | 1   | R29       | 1M 0402 1/16W                        | -1%       | 0402                    |     | R 0402 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0402            |        |
| 72    | 1   | RUM1      | 33R 0603 1/16W                       | -1%       | 0603                    |     | R 0603 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0603            |        |
| 73    | 1   | RUM2      | 33R 0603 1/16W                       | -1%       | 0603                    |     | R 0603 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0603            |        |
| 74    | 1   | RUM3      | 33R 0603 1/16W                       | -1%       | 0603                    |     | R 0603 1/16W 1% 100ppm /C: 3°C -15°C                           | TOP LAYER    | YAGEO                   | YAGEO            | MCU   | R0603            |        |
| 75    | 1   | C100F     | 1000UF 16V LOWESR                    | +20%      | 1000UF                  |     | 1000UF 16V LOWESR  | TOP LAYER    | TECONY/KM/CHEM          | MN1500C26F2      | MCU   | SCAP             |        |
| 76    | 1   | C105      | 1000UF 16V LOWESR                    | +20%      | 1000UF                  |     | 1000UF 16V LOWESR  | TOP LAYER    | TECONY/KM/CHEM          | MN1500C26F2      | MCU   | SCAP             |        |
| 77    | 1   | C106      | 470 20V 0603                         | +10%      | 0603                    |     | CAP ALUM 470UF 20V 10V SMD - max 80mOhm - min 1000 ore a 105°C | TOP LAYER    | TAIYO YUDEN             | EEF-FLA20P       | MCU   | EEF-FLA20P       |        |
| 78    | 1   | C107      | 220 10V 1206                         | +10%      | 1206                    |     | CAP CER 220UF 10V XFR 1206                                     | TOP LAYER    | MURATA                  | GRM188R12A25K100 | MCU   | GRM188R12A25K100 |        |
| 79    | 1   | C108      | 100n 0402                            | +10%      | 0402                    |     | CAP CER 0.1UF 16VX7R 0402                                      | TOP LAYER    | SAMSUNG                 | CL181B3K9NNK     | MCU   | C0402            |        |
| 80    | 1   | C109      | 100n 0                               |           |                         |     |  |              |                         |                  |       |                  |        |

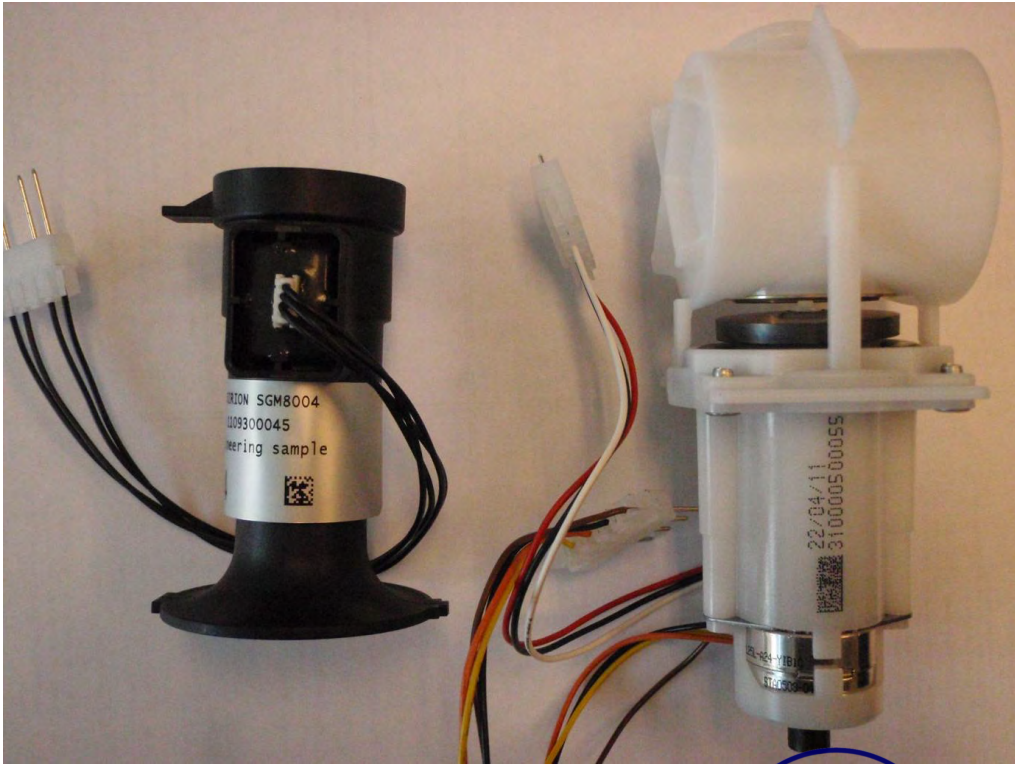
| Q4  | C133 | 470 0402              | DNP | 0402 | 0402 | TOP LAYER   | BOOST | Q402         |
|-----|------|-----------------------|-----|------|------|---|-------|--------------|
| 84  | C114 | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | BOOST | Q402         |
| 85  | D1   | BAT54CT               | N/A | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | BOOST | BAT54CTTIG   |
| 86  | U7   | SC78, 50T-416, SOT-23 | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | BOOST | BAT54CTTIG   |
| 87  | U7   | SC78, 50T-416, SOT-23 | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | BOOST | BAT54CTTIG   |
| 88  | U7   | SC78, 50T-416, SOT-23 | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | BOOST | BAT54CTTIG   |
| 89  | U7   | SC78, 50T-416, SOT-23 | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | BOOST | BAT54CTTIG   |
| 90  | U7   | SC78, 50T-416, SOT-23 | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | BOOST | BAT54CTTIG   |
| 91  | R178 | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | BOOST | R1402        |
| 92  | R179 | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | BOOST | R1402        |
| 93  | R180 | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | BOOST | R1402        |
| 94  | R181 | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | BOOST | R1402        |
| 95  | R182 | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | BOOST | R1402        |
| 96  | R183 | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | BOOST | R1402        |
| 97  | C32  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | BOOST | R1402        |
| 98  | C33  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | BOOST | R1402        |
| 99  | R35  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | R1402        |
| 100 | R36  | 100K 0402             | DNP | 0402 | 0402 | 100K 0402   | FLASH | R1402        |
| 101 | R37  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | R1402        |
| 102 | R38  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | R1402        |
| 103 | R39  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | R1402        |
| 104 | R40  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | R1402        |
| 105 | U6   | N23013A               | DNP | 0402 | 0402 | IC FLASH MEM 2Mbit SPI CMOS 801C                          | FLASH | SC0M-200     |
| 106 | U7   | MSPF8016MPRG          | DNP | 0402 | 0402 | 8 Mbit, low voltage, 1-Byte-Flashable Serial Flash memory | FLASH | MSPF8016MPRG |
| 107 | U7   | MSPF8016MPRG          | DNP | 0402 | 0402 | 8 Mbit, low voltage, 1-Byte-Flashable Serial Flash memory | FLASH | MSPF8016MPRG |
| 108 | C34  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 109 | C35  | 1u 0402 0603          | DNP | 0603 | 0603 | CAP CER 0.1UF 16V X7R 0603                                | FLASH | SC0M-200     |
| 110 | C36  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 111 | C37  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 112 | R41  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 113 | R42  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 114 | R43  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 115 | R44  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 116 | R45  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 117 | R46  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 118 | U9   | TC92EP                | DNP | 0402 | 0402 | IC REG100 3V/0.2A SW                                      | FLASH | SC0M-200     |
| 119 | U10  | TC92EP                | DNP | 0402 | 0402 | IC REG100 3V/0.2A SW                                      | FLASH | SC0M-200     |
| 120 | C37  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 121 | R47  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 122 | R48  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 123 | R49  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 124 | R50  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 125 | R51  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 126 | R52  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 127 | R53  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 128 | R54  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 129 | R55  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 130 | R56  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 131 | R57  | 10K 0402 1/16W        | DNP | 0402 | 0402 | 10K 0402 1/16W  | FLASH | SC0M-200     |
| 132 | U12  | NT9221                | DNP | 0402 | 0402 | IC REG100 3V/0.2A SW                                      | FLASH | SC0M-200     |
| 133 | C41  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 134 | C42  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 135 | C43  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 136 | U9   | 88S18W                | DNP | 0402 | 0402 | IC REG100 3V/0.2A SW                                      | FLASH | SC0M-200     |
| 137 | R49  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 138 | R50  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 139 | R51  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 140 | R52  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 141 | R53  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 142 | R54  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 143 | R55  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 144 | R56  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 145 | R57  | 100K 0402 1/16W       | DNP | 0402 | 0402 | 100K 0402 1/16W   | FLASH | SC0M-200     |
| 146 | U13  | 74VHC051              | DNP | 0402 | 0402 | IC SWITCH HIGH-SIDE SC04                                  | FLASH | SC0M-200     |
| 147 | U14  | TP3280                | DNP | 0402 | 0402 | IC SWITCH HIGH-SIDE SC04                                  | FLASH | SC0M-200     |
| 148 | U15  | SP2431                | DNP | 0402 | 0402 | IC SWITCH HIGH-SIDE SC04                                  | FLASH | SC0M-200     |
| 149 | U16  | TP3280                | DNP | 0402 | 0402 | IC SWITCH HIGH-SIDE SC04                                  | FLASH | SC0M-200     |
| 150 | C45  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 151 | C46  | 100K 0402             | DNP | 0402 | 0402 | CAP CER 0.1UF 16V X7R 0402                                | FLASH | SC0M-200     |
| 152 | D6   | BAT54CT               | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | FLASH | SC0M-200     |
| 153 | D8   | BAT54CT               | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | FLASH | SC0M-200     |
| 154 | Q24  | DMN2400U-7            | DNP | 0402 | 0402 | 2x DIODE ABRAX SCHOTTKY 30V COMMON KATODE                 | FLASH | SC0M-200     |
| 155 | R59  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 156 | R60  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 157 | R61  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 158 | R62  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 159 | R63  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 160 | R64  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 161 | R65  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 162 | R66  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 163 | R67  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 164 | R68  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 165 | R69  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 166 | R70  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 167 | R71  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 168 | R72  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 169 | R73  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 170 | R74  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 171 | R75  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 172 | R76  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 173 | R77  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 174 | R78  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |
| 175 | R79  | 1M 0402 1/16W         | DNP | 0402 | 0402 | 1M 0402 1/16W   | FLASH | SC0M-200     |



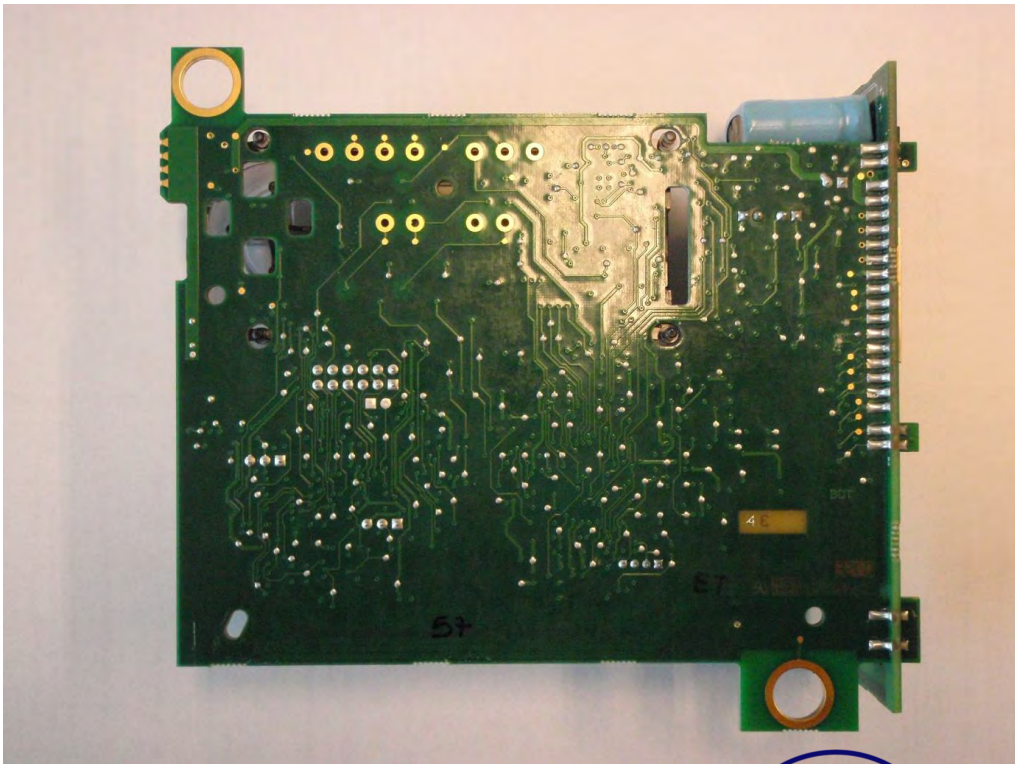
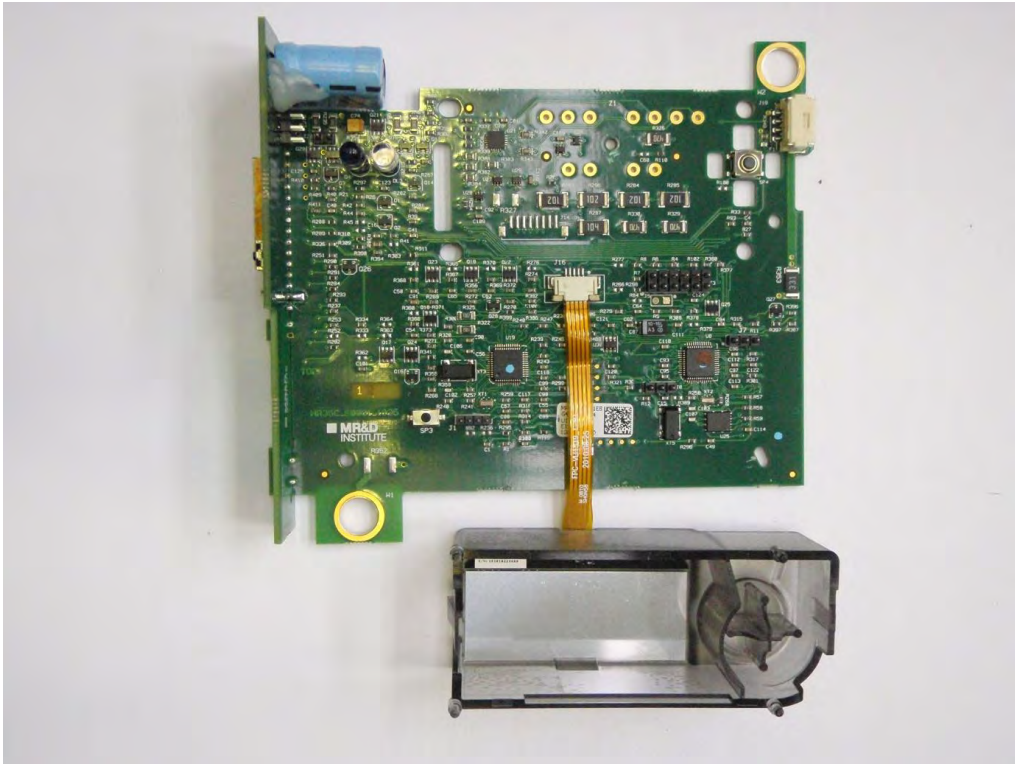
| 176 | 1 | R69   | 3M 04021J16W                           | +1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-150°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R402            |
|-----|---|-------|--|-------|---------|--|-----------|-------------------------|--|----------|-----------------|
| 177 | 1 | RNCE1 | DOX @ 2°C 1% 0402                      | -1%   | 0402    | THE RAYSTOR TIC DOX OHM 1% 0402  | TOP LAYER | MURATA                  |  | ABS BMS  | R402            |
| 178 | 1 | RNCE1 | DOX @ 2°C 1% 0402                      | -1%   | 0402    | THE RAYSTOR TIC DOX OHM 1% 0402  | TOP LAYER | YAGEO                   |  | ABS BMS  | R402            |
| 179 | 1 | SW6   | SWITCH ACTION SPST 100MA               | N/A   | DNP     | SWITCH ACTION SPST 100MA   | TOP LAYER | OSK                     |  | ABS BMS  | SK60R           |
| 180 | 1 | SW6   | TACT SW                                | N/A   | 104     | TACT SWITCH R67  | TOP LAYER | OSK                     |  | ABS BMS  | SK741           |
| 181 | 1 | SW4   | TACT SW                                | N/A   | 104     | TACT SWITCH R67  | TOP LAYER | OSK                     |  | ABS BMS  | BATSCT1TG       |
| 182 | 0 | D10   | 507-416-S07-523                        | N/A   | DNP     | 2-DOBE AIRMA S0707Y 3DV COMMON PAFODE  | TOP LAYER | ONDAI                   |  | ABS BMS  | BATSCT1TG       |
| 183 | 0 | D10   | 507-416-S07-523                        | N/A   | DNP     | 2-DOBE AIRMA S0707Y 3DV COMMON PAFODE  | TOP LAYER | ONDAI                   |  | ABS BMS  | BATSCT1TG       |
| 184 | 0 | D12   | 802146C-SMA                            | +1.5% | DNP     | DOBE ZEMER 3DV SMA02146C   | TOP LAYER | YOHAI                   |  | ABS BMS  | B0205CVALFEB    |
| 185 | 0 | D13   | B340Q                                  | N/A   | DNP     | DOBE SCHOTT 40V 3A SAC (Rt = 100nA @ 40V)                                    | TOP LAYER | DODIS                   |  | ABS BMS  | B340Q-13F       |
| 186 | 0 | C33   | CONNETTORE BATTERIA INTERNA            | N/A   | 77      | PAZOLELE PER CONNETTORE PER BATTERIA INTERNA                                 | TOP LAYER | LUMBERG                 |  | ABS BMS  | 3517-02-K0592   |
| 187 | 1 | R025  | CONNETTORE VERTICALE                   | N/A   | 025     | CONNETTORE VERTICALE   | TOP LAYER | DODIS                   |  | ABS BMS  | DMK2480V/7      |
| 188 | 1 | R025  | CONNETTORE VERTICALE                   | N/A   | 025     | CONNETTORE VERTICALE   | TOP LAYER | DODIS                   |  | ABS BMS  | DMK2480V/7      |
| 189 | 1 | R70   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 190 | 1 | R71   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 191 | 1 | R72   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 192 | 1 | R73   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 193 | 1 | R74   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 194 | 1 | R75   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 195 | 1 | R76   | 1R 1206 1AW                            | -1%   | 1206    | R 1206 1AW 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | ABS BMS  | R1206           |
| 196 | 1 | R14   | PTC 500MA                              | N/A   | 1206    | POLY SWITCH 0.50A RESET FUSE 500MA 13.2V 500V 100mA 200.800nOhm              | TOP LAYER | TECON / RANCHEM         |  | ABS BMS  | R1206           |
| 197 | 1 | R15   | PTC 500MA                              | N/A   | 1206    | POLY SWITCH 0.50A RESET FUSE 500MA 13.2V 500V 100mA 200.800nOhm              | TOP LAYER | TECON / RANCHEM         |  | ABS BMS  | R1206           |
| 198 | 1 | C33   | 1u 0V3 0603                            | +10%  | 0603    | CAP CER 1UF 0.3V X7R 0603  | TOP LAYER | SAMSUNG                 |  | MOTOR-ST | C0603           |
| 199 | 1 | C33   | 1u 0V3 0603                            | +10%  | 0603    | CAP CER 1UF 0.3V X7R 0603  | TOP LAYER | SAMSUNG                 |  | MOTOR-ST | C0603           |
| 200 | 1 | C35   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | MOTOR-ST | C0402           |
| 201 | 1 | C56   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | MOTOR-ST | C0402           |
| 202 | 1 | C57   | 22K 0402                               | +10%  | 0402    | CAP CER 22K 50V X7R 0402   | TOP LAYER | SAMSUNG                 |  | MOTOR-ST | C0402           |
| 203 | 1 | C58   | 22K 0402                               | +10%  | 0402    | CAP CER 22K 50V X7R 0402   | TOP LAYER | SAMSUNG                 |  | MOTOR-ST | C0402           |
| 204 | 1 | R89   | 080 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 205 | 1 | R90   | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 206 | 1 | R91   | 30K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 207 | 1 | R92   | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 208 | 0 | R93   | 100K0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 209 | 1 | R94   | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 210 | 1 | R95   | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 211 | 1 | R96   | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 212 | 1 | R97   | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 213 | 1 | R98   | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 214 | 1 | R99   | 50K0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 215 | 1 | R100  | 50K0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 216 | 1 | R101  | 50K0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R0402           |
| 217 | 1 | R156  | 100K 0402 1J16W                        | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | MOTOR-ST | R1206           |
| 218 | 1 | U16   | STEPN50                                | N/A   | 09N83   | DC MOTOR DRIVER  | TOP LAYER | OSAMA                   |  | MOTOR-ST | STEPN50         |
| 219 | 1 | U17   | WHITE LED 30°                          | N/A   | DNP     | LED COOL WHITE 830NM 100lm/W   | TOP LAYER | OSAMA                   |  | MOTOR-ST | U17             |
| 220 | 0 | D15   | WHITE LED 30°                          | N/A   | DNP     | LED COOL WHITE 830NM 100lm/W   | TOP LAYER | OSAMA                   |  | MOTOR-ST | U17             |
| 221 | 1 | F9    | POSITIVE YELLOW 5IN REFLECTIVE DISPLAY | N/A   | 50723-3 | POSITIVE YELLOW 5IN REFLECTIVE DISPLAY                                       | TOP LAYER | INTERNATIONAL RECTIFIER |  | LED      | 50723           |
| 222 | 0 | G15   | 50723-3                                | N/A   | DNP     | SMO 18ML640T8PBB-2V Single-Chemical HERMET Power MOSFET in a Micro 3 package | TOP LAYER | OSAMA                   |  | LED      | 50723           |
| 223 | 0 | G16   | 50723-3                                | N/A   | DNP     | SMO 18ML640T8PBB-2V Single-Chemical HERMET Power MOSFET in a Micro 3 package | TOP LAYER | OSAMA                   |  | LED      | 50723           |
| 224 | 0 | R108  | 1R 0603                                | -1%   | 0603    | R 0603 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | R0603           |
| 225 | 1 | R104  | 330K 0603 1J16W                        | -1%   | 0603    | R 0603 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | R0603           |
| 226 | 0 | R105  | 1R 0603                                | -1%   | 0603    | R 0603 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | R0603           |
| 227 | 0 | R106  | 1R 0603                                | -1%   | 0603    | R 0603 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | R0603           |
| 228 | 1 | C58   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | LED      | R0603           |
| 229 | 1 | C59   | 22K 0402                               | +10%  | 0402    | CAP CER 22K 50V X7R 0402   | TOP LAYER | SAMSUNG                 |  | LED      | R0603           |
| 230 | 1 | C60   | 22K 0402                               | +10%  | 0402    | CAP CER 22K 50V X7R 0402   | TOP LAYER | SAMSUNG                 |  | LED      | R0603           |
| 231 | 1 | C61   | 22K 0402                               | +10%  | 0402    | CAP CER 22K 50V X7R 0402   | TOP LAYER | SAMSUNG                 |  | LED      | R0603           |
| 232 | 1 | D17   | SH4588-AW-Z                            | N/A   | DNP     | Infrared (IR) Emitting 660nm 15V 100mA 110mm/W @ 1.00mA 30° 4-Pin            | TOP LAYER | OSAMA                   |  | LED      | SH4588-AW-Z     |
| 233 | 0 | D18   | BAT54ET                                | N/A   | DNP     | DIODE ARRAY SMD 50V X7R 30V 50723-3  | TOP LAYER | DODIS                   |  | LED      | BAT54ET         |
| 234 | 0 | J10   | M05 3P                                 | N/A   | DNP     | CONNETTORE LANGUARDIUS   | TOP LAYER | JST                     |  | LED      | M05 3P          |
| 235 | 1 | Q17   | M05 3P                                 | N/A   | DNP     | CONNETTORE LANGUARDIUS   | TOP LAYER | OSAMA                   |  | LED      | M05 3P          |
| 236 | 1 | Q18   | M05 3P                                 | N/A   | DNP     | CONNETTORE LANGUARDIUS   | TOP LAYER | OSAMA                   |  | LED      | M05 3P          |
| 237 | 1 | Q18   | M05 3P                                 | N/A   | DNP     | CONNETTORE LANGUARDIUS   | TOP LAYER | OSAMA                   |  | LED      | M05 3P          |
| 238 | 0 | R107  | 808 0602 1J16W                         | -1%   | 0602    | TRANS NPN 4V 0.2A 50V 148  | TOP LAYER | ONDAI                   |  | LED      | 808 0602 1J16W  |
| 239 | 0 | R108  | 808 0602 1J16W                         | -1%   | 0602    | TRANS NPN 4V 0.2A 50V 148  | TOP LAYER | ONDAI                   |  | LED      | 808 0602 1J16W  |
| 240 | 0 | R109  | 4643 0602 1J16W                        | -1%   | 0602    | TRANS PNP 4V 0.2A 50V 146  | TOP LAYER | ONDAI                   |  | LED      | 4643 0602 1J16W |
| 241 | 1 | R110  | 30K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 30K 0402 1J16W  |
| 242 | 1 | R111  | 30K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 30K 0402 1J16W  |
| 243 | 1 | R112  | 30K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 30K 0402 1J16W  |
| 244 | 1 | R113  | 470K 0402                              | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 470K 0402       |
| 245 | 1 | R114  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 246 | 1 | R115  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 247 | 1 | R116  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 248 | 1 | U17   | ADZ1208HA                              | N/A   | 104     | RELAY OPTO SPST 120MA 5VDC 300V  | TOP LAYER | OSAMA                   |  | LED      | ADZ1208HA       |
| 249 | 0 | C62   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | LED      | 100K 0402       |
| 250 | 0 | C63   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | LED      | 100K 0402       |
| 251 | 0 | C64   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | LED      | 100K 0402       |
| 252 | 0 | C65   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | LED      | 100K 0402       |
| 253 | 0 | C66   | 100K 0402                              | +10%  | 0402    | CAP CER 100K 50V X7R 0402  | TOP LAYER | SAMSUNG                 |  | LED      | 100K 0402       |
| 254 | 0 | Q19   | ES5138W                                | N/A   | DNP     | MOSFET N-CH 60V 200MA SOT-23   | TOP LAYER | OSAMA                   |  | LED      | ES5138W         |
| 255 | 1 | R117  | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 1K 0402 1J16W   |
| 256 | 1 | R118  | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 1K 0402 1J16W   |
| 257 | 1 | R119  | 1K 0402 1J16W                          | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 1K 0402 1J16W   |
| 258 | 0 | R120  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 259 | 0 | R121  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 260 | 0 | R122  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 261 | 0 | R123  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 262 | 0 | R124  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 263 | 0 | R125  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 264 | 0 | R126  | 10K 0402 1J16W                         | -1%   | 0402    | R 0402 1/16W 1% 100ppm /C -55°C-155°C  | TOP LAYER | YAGEO                   |  | LED      | 10K 0402 1J16W  |
| 265 | 1 | R127  | 10K 0402 1J16W                         | -1%   |         |  |           |                         |  |          |                 |

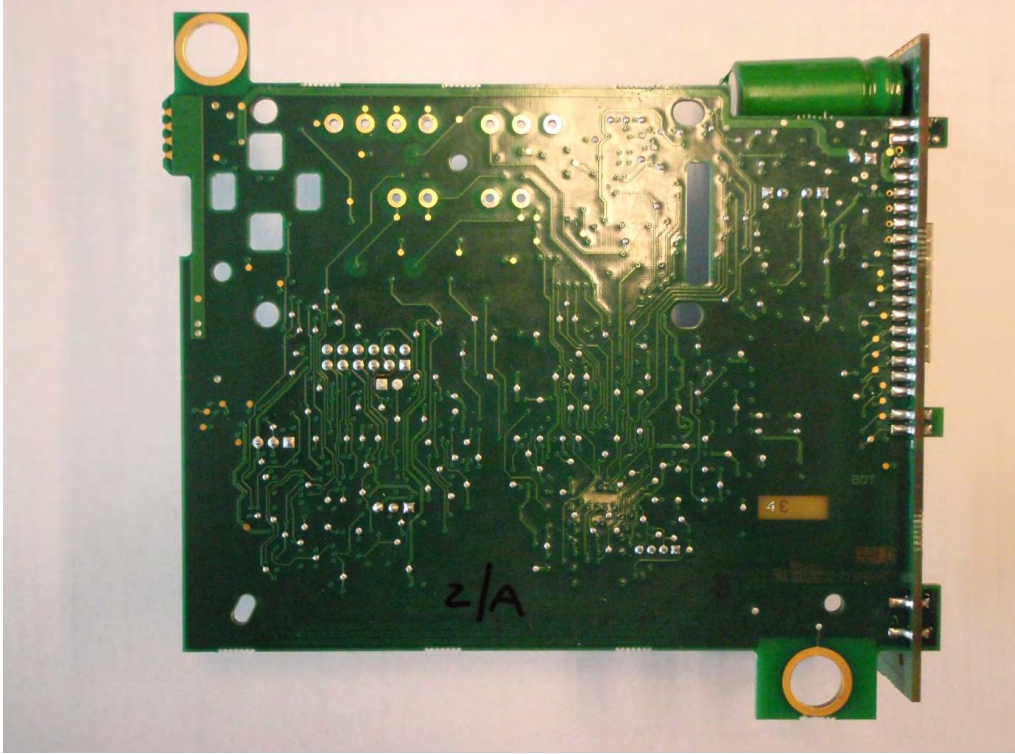
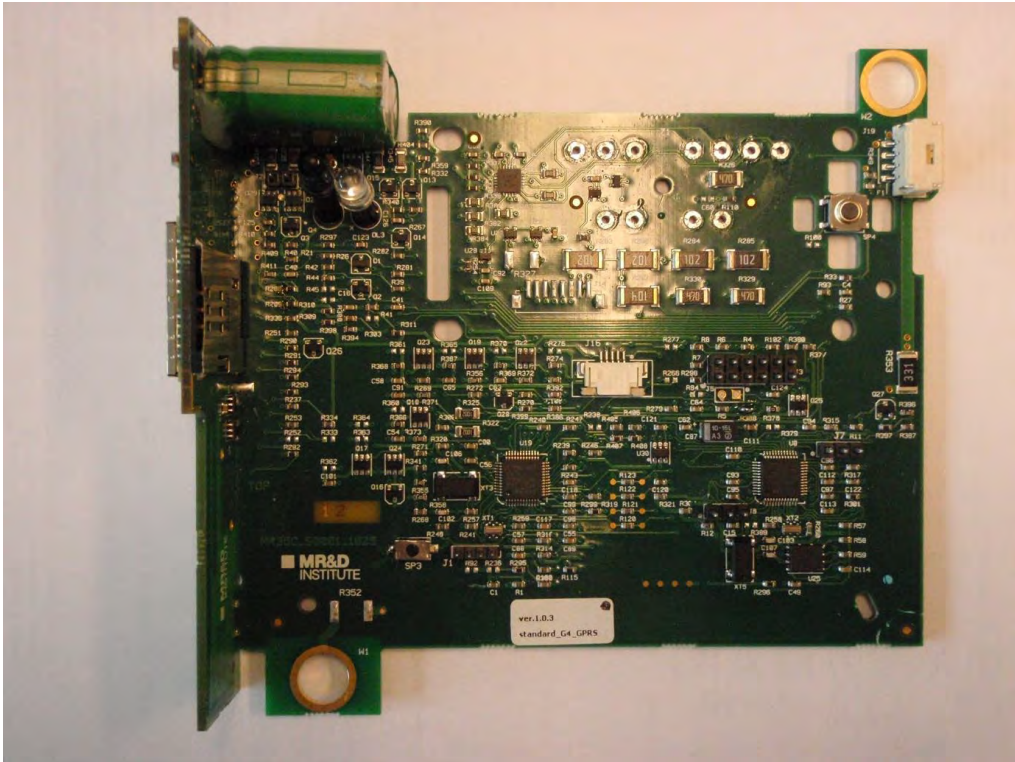
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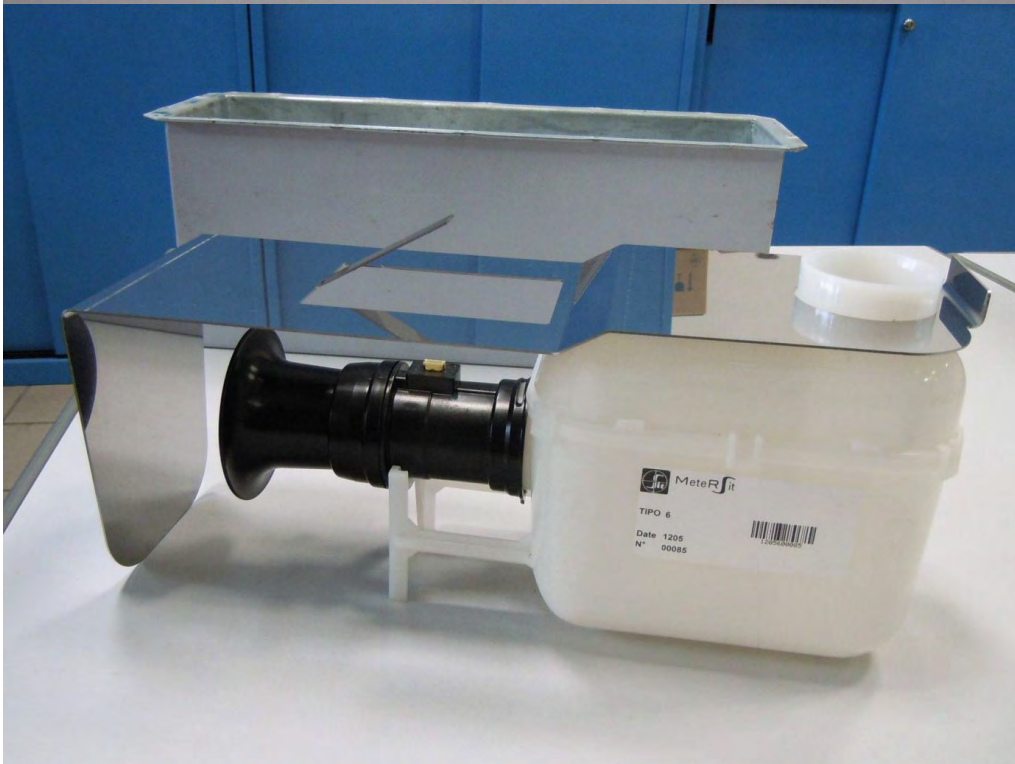
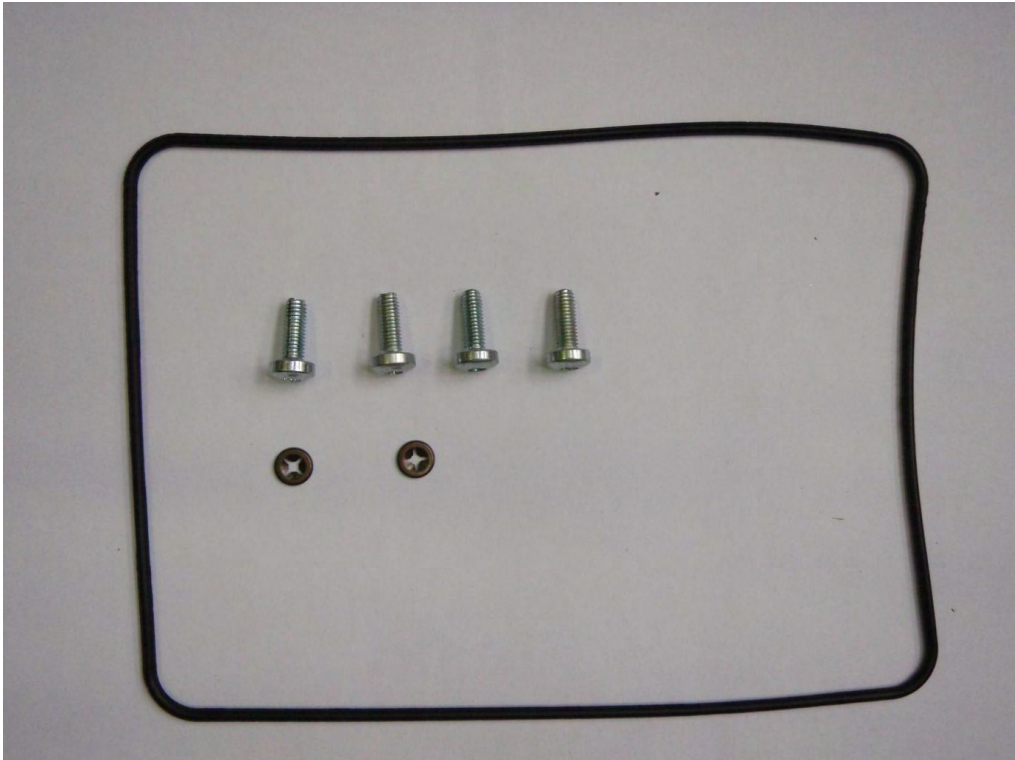






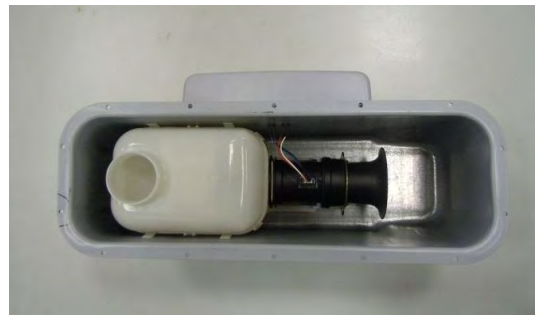
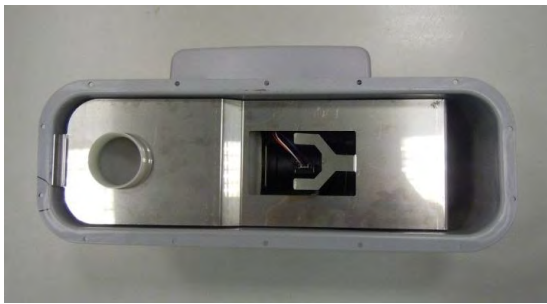


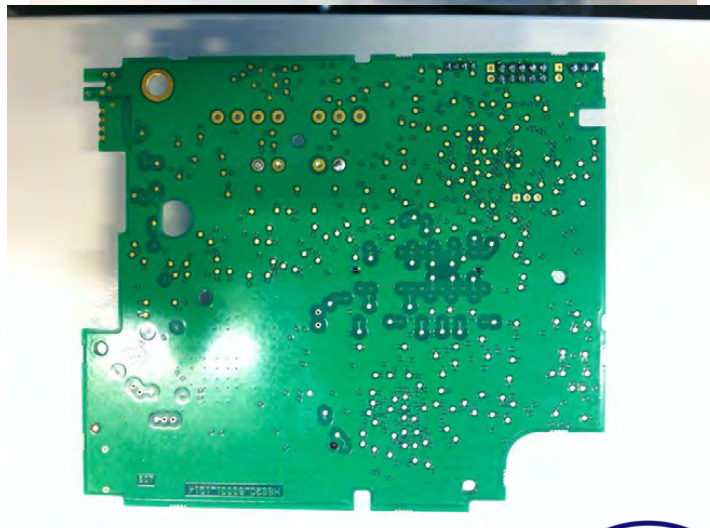
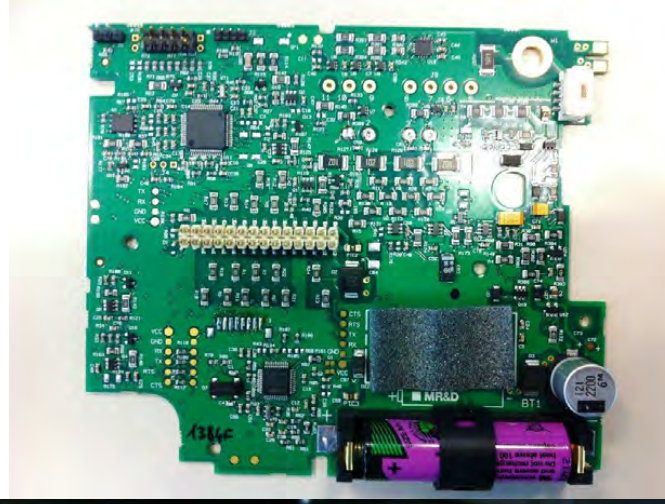
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|  | Doc no | <b>10362/1-01</b> |
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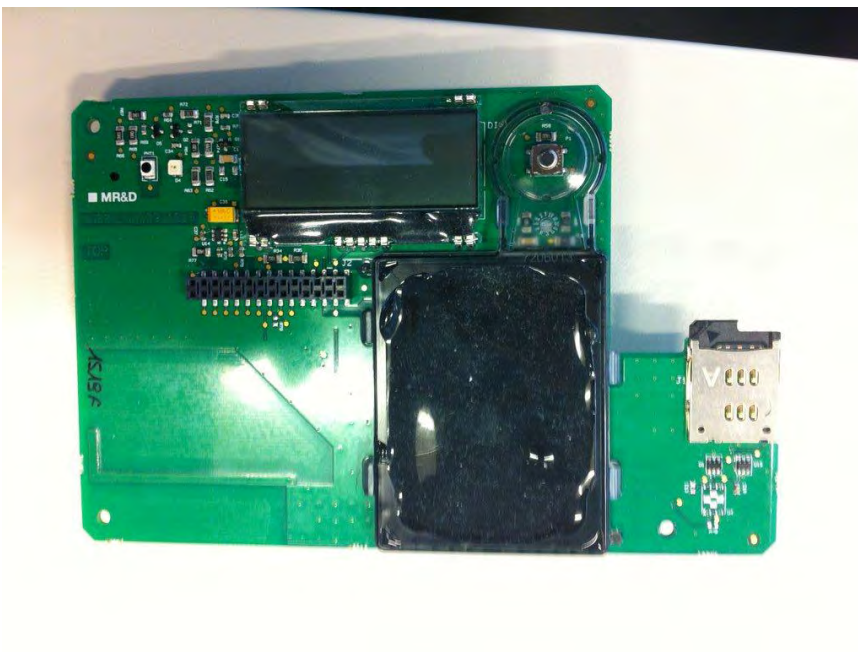
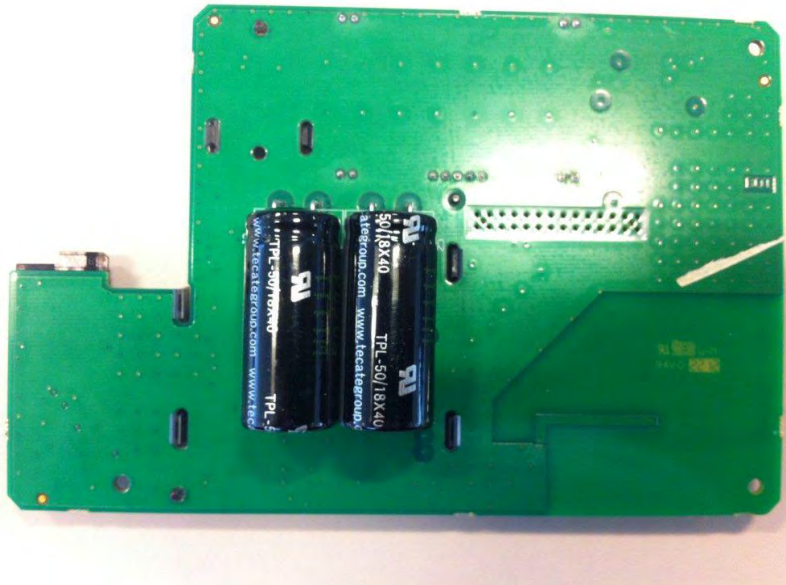








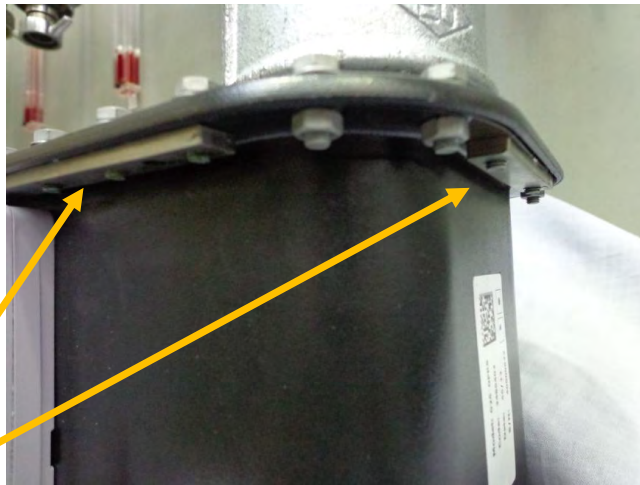








Example of a G16 / G25 enclosure using screws for closing the meter.

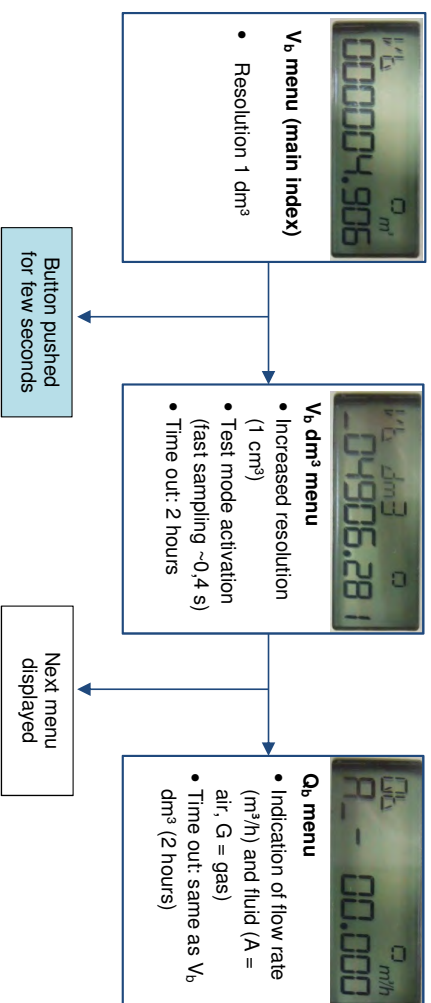


Optional strengthening bars that can be positioned on each side of the meter.

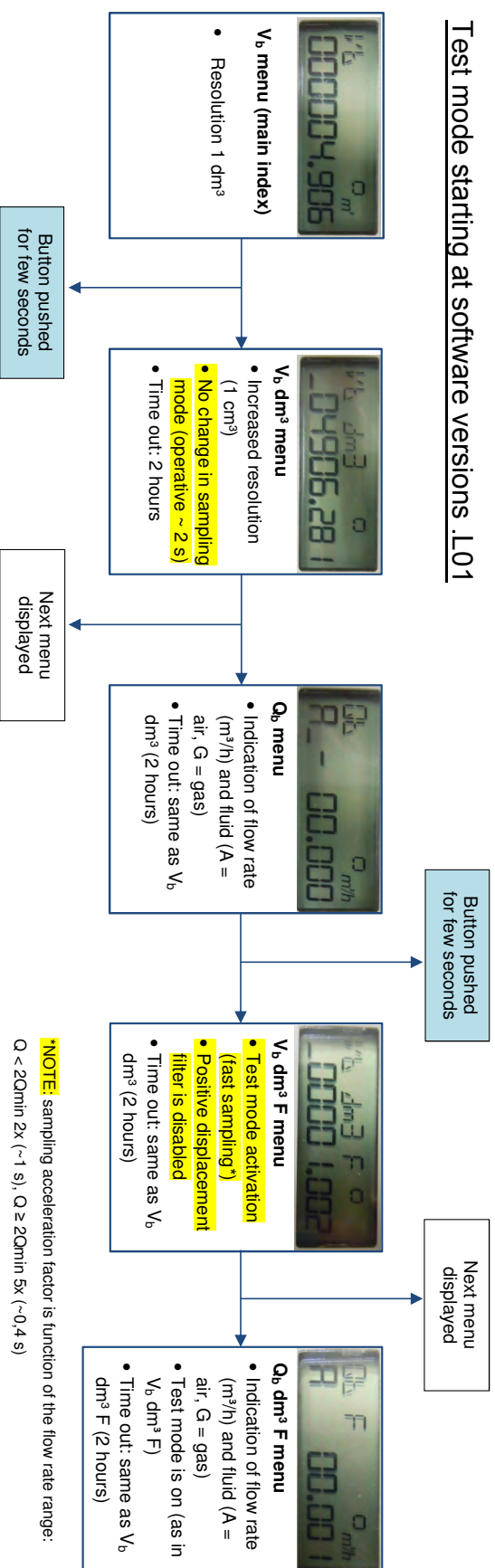




## Test mode:



## Test mode starting at software versions .L01



**NOTE:** sampling acceleration factor is function of the flow rate range:  
 $Q < 20\text{min } 2x$  (~1 s),  $Q \geq 20\text{min } 5x$  (~0,4 s)