



# Documentation folder

Number **T12077-1**  
Project number 2450887  
Page 1 of 1

Number	Pages	Description	Remark
12077/0-01	1	Assembly	
12077/0-02	1	- Index upper assembly	-
12077/0-03	1	- Index lower assembly	-
12077/0-04	1	- Can assembly	-
12077/0-04	2	- Gas meter assembly	-
		Main PCB	
12077/0-05	1	- PCB assembly	11195004-RevB
12077/0-06	2	- PCB parts list	-
		Sensor	
12077/0-07	1	- Flow tube	-
12077/0-08	2	- Sensor UMU 3	GB-F9CM64A
12077/0-09	2	Potential error message	-
12077/0-10	1	Markings	Example
12077/0-11	1	Valve	-
12077/0-12	1	Seal	Example



1	2	3	4	5	6	7	8
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ITEM No.	PART No.	PART NAME	QTY.
1	33700014	BATTERY COVER SEAL	1
2	11193011	UPPER MOULDING	1
3	31500002	KEYPAD BUTTON	1
4	33200002	KEYPAD BRACKET	1
5	2195822-1	MICROSTRIP ANTENNA	1
6	36500018	3MMx6MM SCREW	2
7	35500002	FLAG WASHER	1

SCALE 0.500

SCALE 1.250

ENSURE MAGNET IS SITTING FLAT AGAINST INSIDE FACE

SECTION X-X  
SCALE 2.000  
HEAT-STAKE DETAIL  
2 PLACES

TIGHTEN TORQUE 0.4Nm

ANTENNA WIRE ROUTING. WIRE SHOULD BE FLUSH TO THE SURFACE, NO FLOATING ALLOWED

MAGNET POLARITY MARK (VISIBLE)

ANTENNA WIRE Cu FOIL

SCALE 0.500

ASSEMBLY INSTRUCTIONS

SEE DETAIL A

PLACE ANTENNA FLANG ON TOP OF KEYPAD BRACKET AND SCREW DOWN

MAKE SURE THE ANTENNA FLANGE IS FIRMLY PRESSED AGAINST THE BRACKET

SCREW TIGHTEN TORQUE 0.4 Nm

DETAIL A  
SCALE 1.500

ALIGN ANTENNA SLOT WITH THE KNOB ON UPPER MOULDING AND FIX

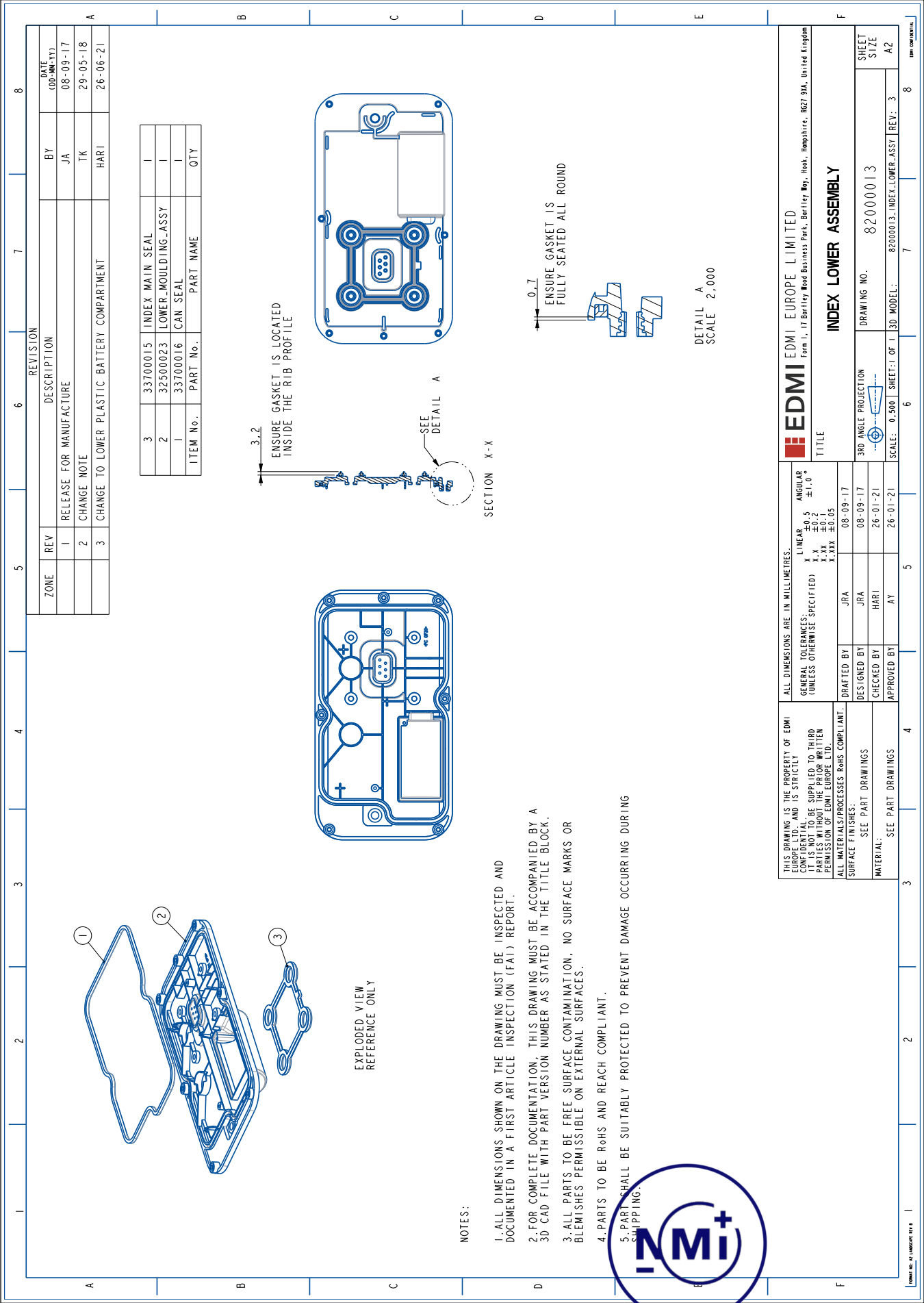
SCALE 0.750

PASTE THE ANTENNA WIRE Cu FOIL AT THE EDGE

NOTES:

- ALL DIMENSIONS SHOWN ON THE DRAWING MUST BE INSPECTED AND DOCUMENTED IN A FIRST ARTICLE INSPECTION (FAI) REPORT.
- TEST SEAL AROUND LENS AND KEYMAT - CONDUCT INTERNAL HERMETIC TEST AND APPLY PRESSURE OF 0.5 BAR, ENSURE RATE OF CHANGE DOES NOT EXCEED 10 mBar/min.
- FOR COMPLETE DOCUMENTATION, THIS DRAWING MUST BE ACCOMPANIED BY A 3D CAD FILE WITH PART VERSION NUMBER AS NOTED IN THE TITLE BLOCK.
- ALL PARTS TO BE FREE SURFACE CONTAMINATION, NO SURFACE MARKS OR BLEMISHES PERMISSIBLE ON EXTERNAL SURFACES.
- BOXED DIMENSIONS ARE CRITICAL DIMENSIONS CRITICAL DIMENSIONS CPK>1.67 UNLESS OTHERWISE STATED.
- PARTS TO BE RoHS AND REACH COMPLIANT.
- PART SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OCCURRING DURING SHIPPING

<p>EDMI EDMI LIMITED 47 YISHUN INDUSTRIAL PARK A, SINGAPORE 768724</p> <p>TITLE INDEX UPPER ASSEMBLY</p>									
<p>ALL DIMENSIONS ARE IN MILLIMETRES</p> <p>GENERAL TOLERANCES: (UNLESS OTHERWISE SPECIFIED)</p> <table style="width:100%;"> <tr> <td>X.LINER ±0.5</td> <td>ANGULAR ±1.0°</td> </tr> <tr> <td>X.X ±0.2</td> <td></td> </tr> <tr> <td>X.XX ±0.1</td> <td></td> </tr> <tr> <td>X.XXX ±0.05</td> <td></td> </tr> </table>	X.LINER ±0.5	ANGULAR ±1.0°	X.X ±0.2		X.XX ±0.1		X.XXX ±0.05		<p>DRAFTED BY: HARI 01-07-20</p> <p>DESIGNED BY: HARI 01-07-20</p> <p>CHECKED BY: AY 26-01-21</p> <p>APPROVED BY: AY 26-01-21</p>
X.LINER ±0.5	ANGULAR ±1.0°								
X.X ±0.2									
X.XX ±0.1									
X.XXX ±0.05									
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<p>3RD ANGLE PROJECTION</p> <p>DRAWING NO.: 11191010</p> <p>SCALE: 0.500 SHEET: 1 OF 1 3D MODEL: 11191010-INDEX_UPPER-ASSEMBLY REV: 3</p>									
<p>INDEX UPPER ASSEMBLY</p>									
<p>SHEET SIZE A2</p>									

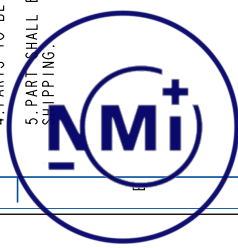


ZONE	REV	DESCRIPTION	BY	DATE (DD-MM-YY)
	1	RELEASE FOR MANUFACTURE	JA	08-09-17
	2	CHANGE NOTE	TK	29-05-18
	3	CHANGE TO LOWER PLASTIC BATTERY COMPARTMENT	HARI	26-06-21

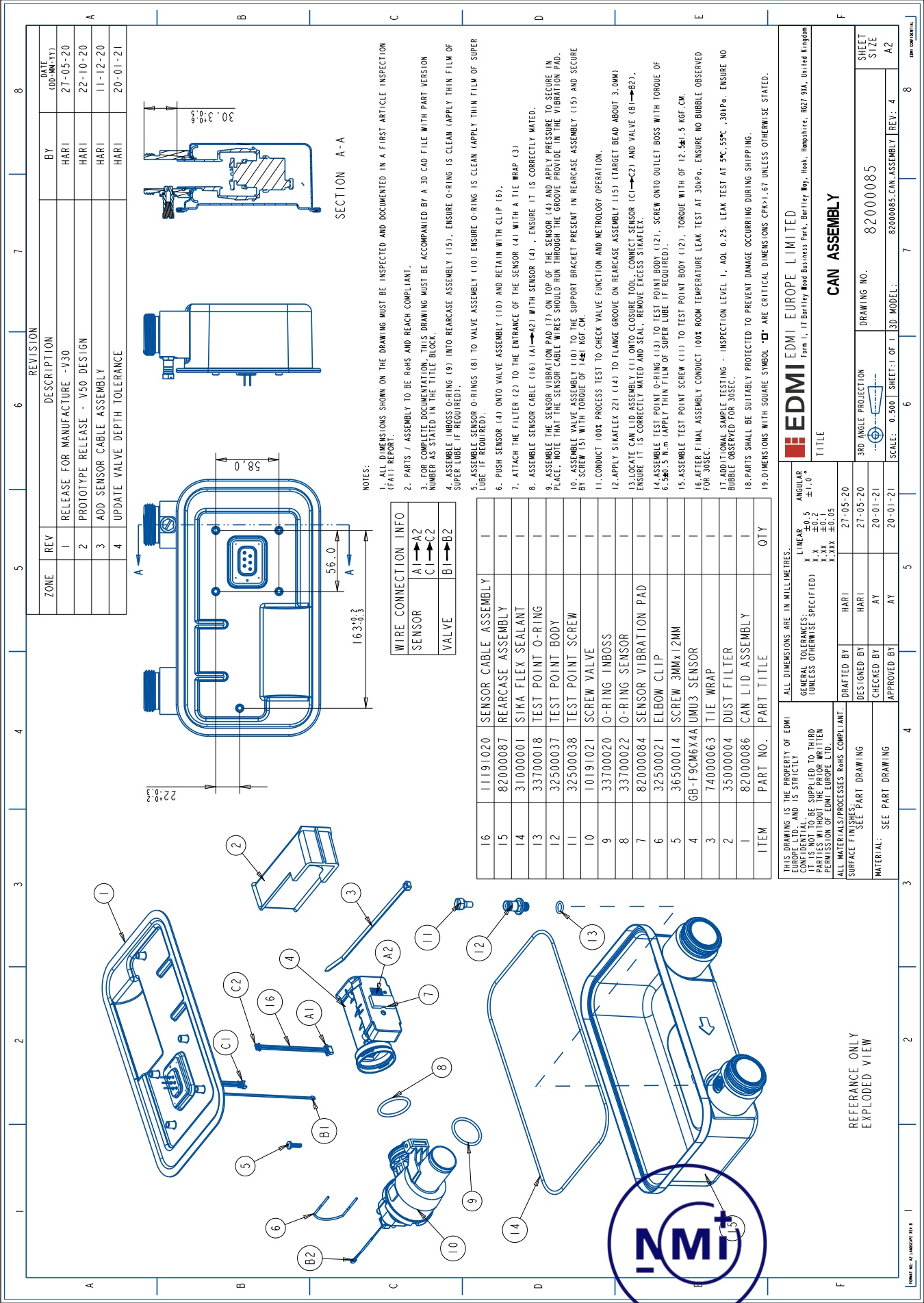
ITEM No.	PART No.	PART NAME	QTY
3	33700015	INDEX MAIN SEAL	1
2	32500023	LOWER_MOULDING_ASSY	1
1	33700016	CAN SEAL	1

NOTES:

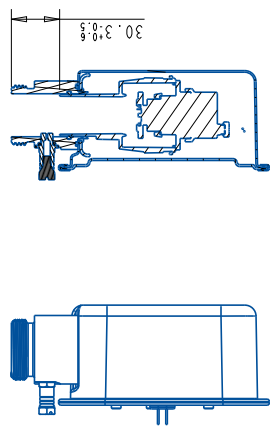
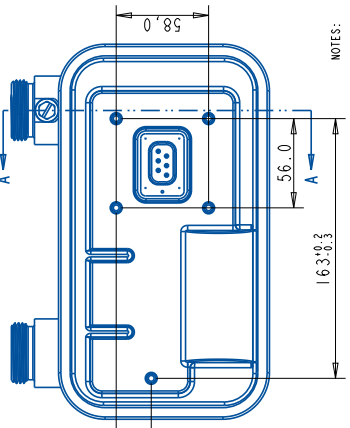
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2. FOR COMPLETE DOCUMENTATION, THIS DRAWING MUST BE ACCOMPANIED BY A 3D CAD FILE WITH PART VERSION NUMBER AS STATED IN THE TITLE BLOCK.
3. ALL PARTS TO BE FREE SURFACE CONTAMINATION, NO SURFACE MARKS OR BLEMISHES PERMISSIBLE ON EXTERNAL SURFACES.
4. PARTS TO BE RoHS AND REACH COMPLIANT.
5. PARTS SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OCCURRING DURING SHIPPING.



<b>EDMI</b> EDMI EUROPE LIMITED Form 1, 17 Berilly Road Business Park, Berilly Way, Hook, Hampshire, RG27 9XA, United Kingdom		<b>INDEX LOWER ASSEMBLY</b>	
ALL DIMENSIONS ARE IN MILLIMETRES GENERAL TOLERANCES: (UNLESS OTHERWISE SPECIFIED) X: LINEAR ±0.5 X.X: ANGULAR ±1.0 X.XX: ±0.2 X.XXX: ±0.1 X.XXX: ±0.05		TITLE 3RD ANGLE PROJECTION	
THIS DRAWING IS THE PROPERTY OF EDMI EUROPE LTD., AND IS STRICTLY CONFIDENTIAL. IT IS NOT TO BE REPRODUCED OR COPIED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF EDMI EUROPE LTD. ALL MATERIALS/PROCESSES RoHS COMPLIANT.		DRAWING NO. 8200013 SHEET SIZE A2	
SURFACE FINISHES: SEE PART DRAWINGS		SCALE: 0.500 SHEET: 1 OF 1 3D MODEL: 8200013_INDEX_LOWER_ASSY	
MATERIAL: SEE PART DRAWINGS		REV: 3	
DRAFTED BY: JRA DESIGNED BY: JRA CHECKED BY: HARI APPROVED BY: AY		DATE: 08-09-17 DATE: 08-09-17 DATE: 26-01-21 DATE: 26-01-21	



ZONE	REV	DESCRIPTION	BY	DATE (DD-MM-YY)
	1	RELEASE FOR MANUFACTURE - V30	HARI	27-05-20
	2	PROTOTYPE RELEASE - V50 DESIGN	HARI	22-10-20
	3	ADD SENSOR CABLE ASSEMBLY	HARI	11-12-20
	4	UPDATE VALVE DEPTH TOLERANCE	HARI	20-01-21



WIRE CONNECTION INFO	
SENSOR	A1 → A2 C1 → C2
VALVE	B1 → B2

- NOTES:
- ALL DIMENSIONS SHOWN ON THE DRAWING MUST BE INSPECTED AND DOCUMENTED IN A FIRST ARTICLE INSPECTION (FAI) REPORT.
  - PARTS / ASSEMBLY TO BE ROHS AND REACH COMPLIANT.
  - FOR COMPLETE DOCUMENTATION, THIS DRAWING MUST BE ACCOMPANIED BY A 3D CAD FILE WITH PART VERSION NUMBER AS STATED IN THE TITLE BLOCK.
  - ASSEMBLE INBOSS O-RING (9) INTO REARCASE ASSEMBLY (15). ENSURE O-RING IS CLEAN (APPLY THIN FILM OF SUPER LUBE IF REQUIRED).
  - ASSEMBLE SENSOR O-RINGS (8) TO VALVE ASSEMBLY (10). ENSURE O-RING IS CLEAN (APPLY THIN FILM OF SUPER LUBE IF REQUIRED).
  - PUSH SENSOR (4) ONTO VALVE ASSEMBLY (10) AND RETAIN WITH CLIP (16).
  - ATTACH THE FILTER (2) TO THE ENTRANCE OF THE SENSOR (4) WITH A TIE WRAP (3)
  - ASSEMBLE SENSOR CABLE (16) (A1 → A2) WITH SENSOR (4). ENSURE IT IS CORRECTLY MATED.
  - ASSEMBLE THE SENSOR VIBRATION PAD (7) ON TOP OF THE SENSOR (4) AND APPLY PRESSURE TO SECURE IN PLACE. NOTE THAT THE SENSOR CABLE WIRES SHOULD RUN THROUGH THE GROOVE PROVIDED IN THE VIBRATION PAD.
  - ASSEMBLE VALVE ASSEMBLY (10) TO THE SUPPORT BRACKET PRESENT IN REARCASE ASSEMBLY (15) AND SECURE BY SCREW (5) WITH TORQUE OF 1481 NCM.
  - CONDUCT 100% PROCESS TEST TO CHECK VALVE FUNCTION AND METROLOGY OPERATION.
  - APPLY SIMPLEX 221 (14) TO FLANGE GROOVE ON REARCASE ASSEMBLY (15) (TARGET BEAD ABOUT 3.0MM). ENSURE IT IS CORRECTLY MATED AND SEAL. REMOVE EXCESS SIMPLEX.
  - LOCATE CAN LID ASSEMBLY (11) ONTO CLOSURE TOOL. CONNECT SENSOR (C1 → C2) AND VALVE (B1 → B2). ENSURE IT IS CORRECTLY MATED AND SEAL.
  - ASSEMBLE TEST POINT O-RING (13) TO TEST POINT BODY (12). SCREW ONTO OUTLET BOSS WITH TORQUE OF 6.540.5 Nm (APPLY THIN FILM OF SUPER LUBE IF REQUIRED).
  - ASSEMBLE TEST POINT SCREW (11) TO TEST POINT BODY (12). TORQUE WITH OF 12.541.5 NCM.
  - AFTER FINAL ASSEMBLY CONDUCT 100% ROOM TEMPERATURE LEAK TEST AT 30kPa. ENSURE NO BUBBLE OBSERVED FOR 30SEC.
  - ADDITIONAL SAMPLE TESTING - INSPECTION LEVEL 1. AQL 0.25. LEAK TEST AT 5% 55°C .30kPa. ENSURE NO BUBBLE OBSERVED FOR 30SEC.
  - PARTS SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OCCURRING DURING SHIPPING.
  - DIMENSIONS WITH SQUARE SYMBOL "□" ARE CRITICAL DIMENSIONS CPK>1.67 UNLESS OTHERWISE STATED.

ITEM	PART NO.	PART TITLE	QTY
16	11191020	SENSOR CABLE ASSEMBLY	1
15	82000087	REARCASE ASSEMBLY	1
14	31000001	SIMPLEX FLEX SEALANT	1
13	33700018	TEST POINT O-RING	1
12	32500037	TEST POINT BODY	1
11	32500038	TEST POINT SCREW	1
10	10191021	SCREW VALVE	1
9	33700020	O-RING INBOSS	1
8	33700022	O-RING SENSOR	1
7	82000084	SENSOR VIBRATION PAD	1
6	32500021	ELBOW CLIP	1
5	36500014	SCREW 3MMx12MM	1
4	GB-F9CM6X44	UMI03 SENSOR	1
3	74000063	TIE WRAP	1
2	35000004	DUST FILTER	1
1	82000086	CAN LID ASSEMBLY	1

EDMI EDMI EUROPE LIMITED  
 Form 1, 17 Beritley Road Business Park, Beritley Way, Hook, Hampshire, RG27 9XA, United Kingdom

TITLE: CAN ASSEMBLY

3RD ANGLE PROJECTION

DRAWING NO.: 82000085

SHEET SIZE: A2

SCALE: 0.500

SHEET: 1 OF 1

3D MODEL: 82000085.CAN-ASSEMBLY

REV: 4

DATE: 20-01-21

DRAFTED BY: HARI

DESIGNED BY: HARI

CHECKED BY: AY

APPROVED BY: AY

ALL DIMENSIONS ARE IN MILLIMETRES.

GENERAL TOLERANCES: LINEAR ±0.5, ANGULAR ±1.0, UNLESS OTHERWISE SPECIFIED. X.X ±0.2, X.XX ±0.2, X.XXX ±0.05

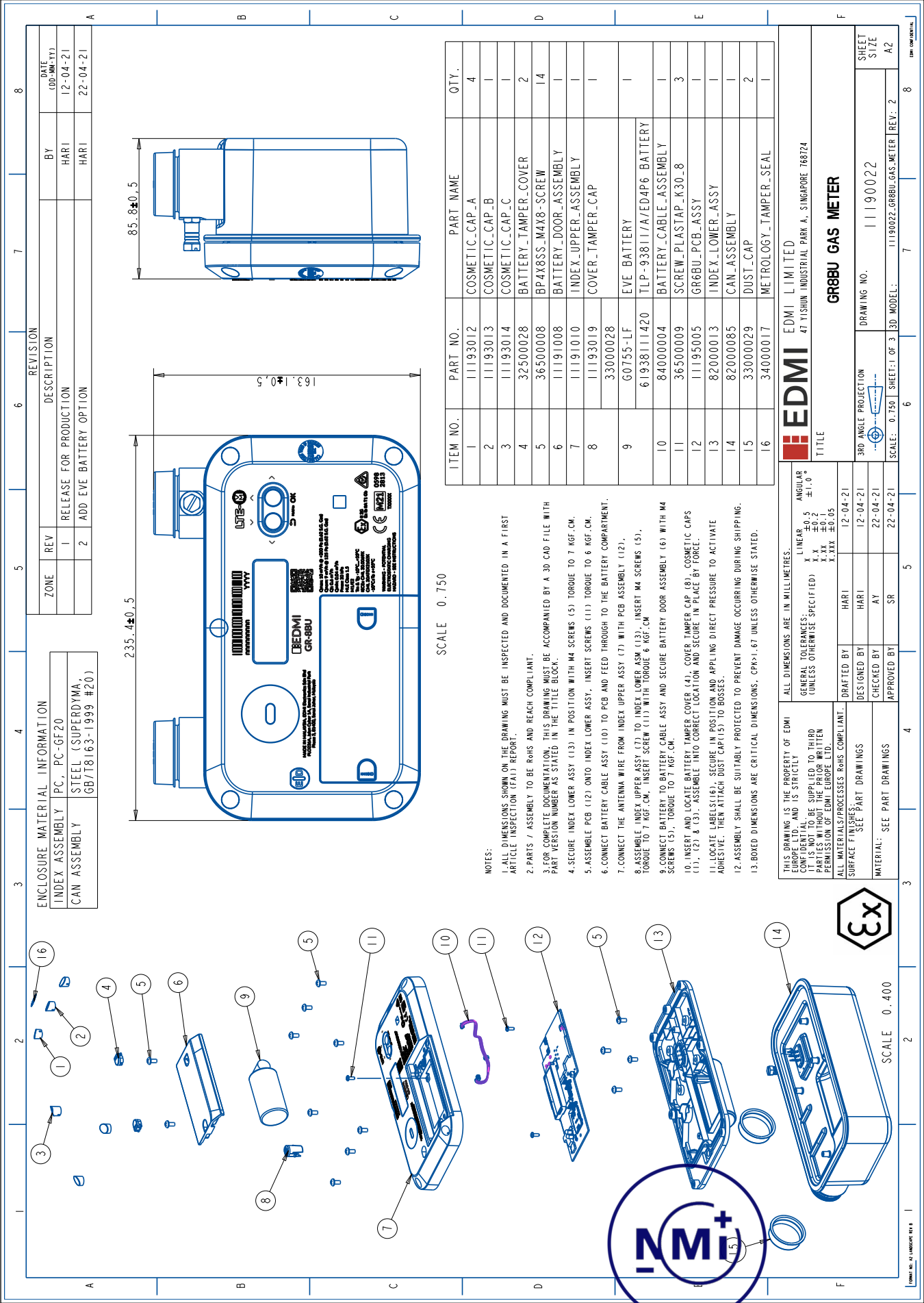
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ALL MATERIALS/PROCESSES ROHS COMPLIANT.

SURFACE FINISHES: SEE PART DRAWING

MATERIAL: SEE PART DRAWING

REFERENCE ONLY EXPLODED VIEW



ENCLOSURE MATERIAL INFORMATION

INDEX ASSEMBLY	PC, PC-GF20
CAN ASSEMBLY	STEEL (SUPERDYMA, GB/78163-1999 #20)

REVISION

ZONE	REV	DESCRIPTION	DATE (DD-MM-YY)	BY
	1	RELEASE FOR PRODUCTION	12-04-21	HARI
	2	ADD EVE BATTERY OPTION	22-04-21	HARI

SCALE 0.750

- NOTES:
- ALL DIMENSIONS SHOWN ON THE DRAWING MUST BE INSPECTED AND DOCUMENTED IN A FIRST ARTICLE INSPECTION (FAI) REPORT.
  - PARTS / ASSEMBLY TO BE RoHS AND REACH COMPLIANT.
  - FOR COMPLETE DOCUMENTATION, THIS DRAWING MUST BE ACCOMPANIED BY A 3D CAD FILE WITH PART VERSION NUMBER AS STATED IN THE TITLE BLOCK.
  - SECURE INDEX LOWER ASSY (13) IN POSITION WITH M4 SCREWS (5) TORQUE TO 7 KGF.CM.
  - ASSEMBLE PCB (12) ONTO INDEX LOWER ASSY, INSERT SCREWS (11) TORQUE TO 6 KGF.CM.
  - CONNECT BATTERY CABLE ASSY (10) TO PCB AND FEED THROUGH TO THE BATTERY COMPARTMENT.
  - CONNECT THE ANTENNA WIRE FROM INDEX UPPER ASSY (7) WITH PCB ASSEMBLY (12).
  - ASSEMBLE INDEX UPPER ASSY (7) TO INDEX LOWER ASSY (13), INSERT M4 SCREWS (5), TORQUE TO 7 KGF.CM, INSERT SCREW (11) WITH TORQUE 6 KGF.CM.
  - CONNECT BATTERY TO BATTERY CABLE ASSY AND SECURE BATTERY DOOR ASSEMBLY (6) WITH M4 SCREWS (5), TORQUE TO 7 KGF.CM.
  - INSERT AND LOCATE BATTERY TAMPER COVER (4), COVER TAMPER CAP (8), COSMETIC CAPS (11), (12) & (13), ASSEMBLE INTO CORRECT LOCATION AND SECURE IN PLACE BY FORCE.
  - LOCATE LABELS (16), SECURE IN POSITION AND APPLYING DIRECT PRESSURE TO ACTIVATE ADHESIVE, THEN ATTACH DUST CAP (15) TO BOSSES.
  - ASSEMBLY SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OCCURRING DURING SHIPPING.
  - BOXED DIMENSIONS ARE CRITICAL DIMENSIONS, CPK>1.67 UNLESS OTHERWISE STATED.

ITEM NO.	PART NO.	PART NAME	QTY.
1	11193012	COSMETIC_CAP_A	4
2	11193013	COSMETIC_CAP_B	1
3	11193014	COSMETIC_CAP_C	1
4	32500028	BATTERY_TAMPER_COVER	2
5	36500008	BP4X8SS-M4X8-SCREW	14
6	11191008	BATTERY_DOOR_ASSEMBLY	1
7	11191010	INDEX_UPPER_ASSEMBLY	1
8	11193019	COVER_TAMPER_CAP	1
9	G0755-LF	EVE BATTERY	1
	61938111420	TLP-938111A/ED4P6 BATTERY	1
10	84000004	BATTERY_CABLE_ASSEMBLY	1
11	36500009	SCREW_PLASTAP_K30_8	3
12	11195005	GR6BU_PCB_ASSY	1
13	82000013	INDEX_LOWER_ASSY	1
14	82000085	CAN_ASSEMBLY	1
15	33000029	DUST_CAP	2
16	34000017	METROLOGY_TAMPER_SEAL	1

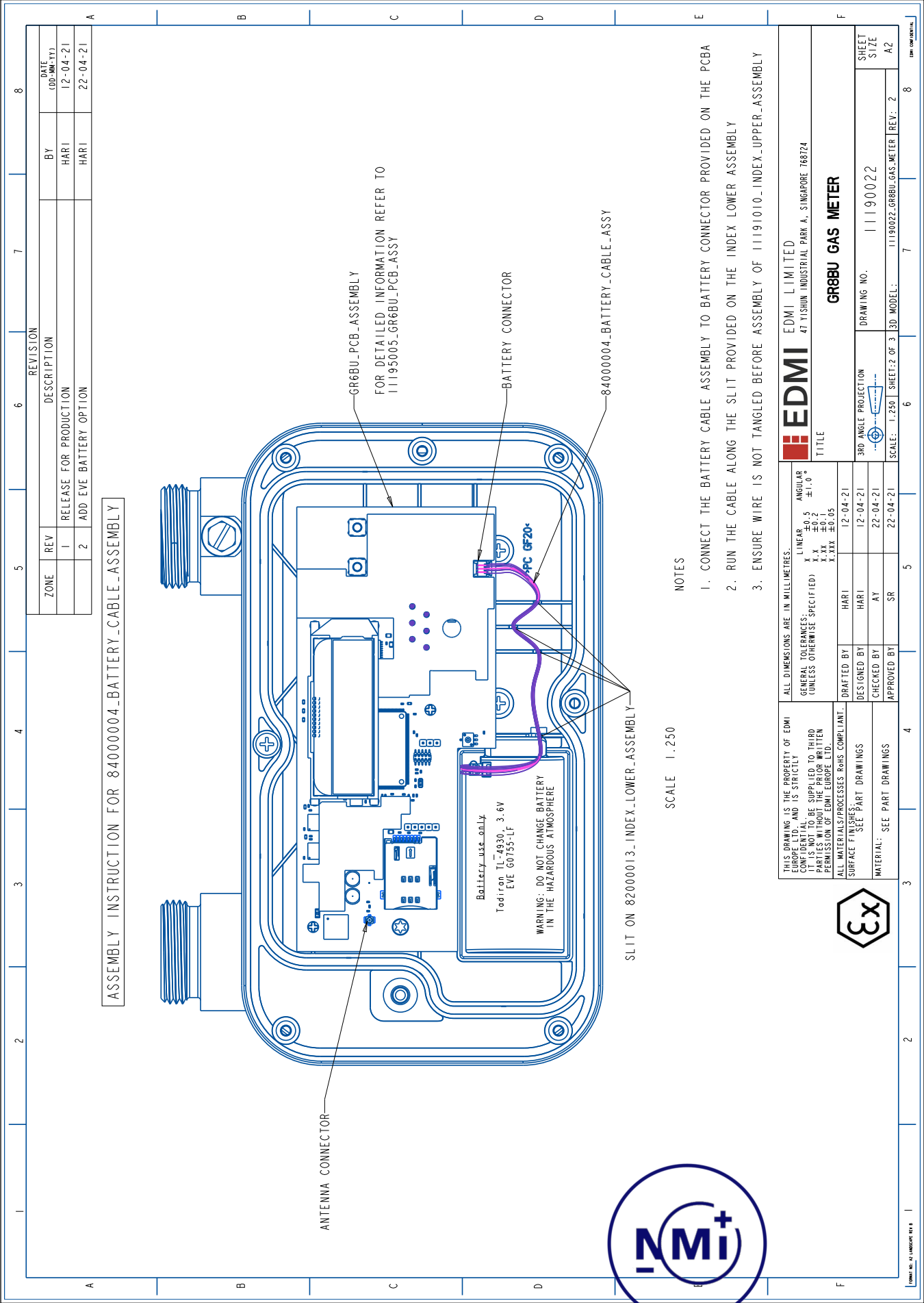
**EDMI** EDMI LIMITED  
47 YISHUN INDUSTRIAL PARK A, SINGAPORE 768724

TITLE  
**GR8BU GAS METER**

ALL DIMENSIONS ARE IN MILLIMETRES.  
GENERAL TOLERANCES:  
(UNLESS OTHERWISE SPECIFIED) X: ±0.5 ANGULAR ±1.0  
X.X: ±0.2  
X.XX: ±0.1  
X.XXX: ±0.05

DRAFTED BY: HARI 12-04-21  
DESIGNED BY: HARI 12-04-21  
CHECKED BY: AY 22-04-21  
APPROVED BY: SR 22-04-21

3RD ANGLE PROJECTION  
DRAWING NO. 11190022  
SHEET: 1 OF 3  
3D MODEL: 11190022-GR8BU-GAS-METER  
REV: 2  
SIZE: A2



ZONE	REV	DESCRIPTION	DATE (DD-MM-YY)
	1	RELEASE FOR PRODUCTION	12-04-21
	2	ADD EVE BATTERY OPTION	22-04-21

ASSEMBLY INSTRUCTION FOR 84000004\_BATTERY\_CABLE\_ASSEMBLY

NOTES  
SCALE 1:250

1. CONNECT THE BATTERY CABLE ASSEMBLY TO BATTERY CONNECTOR PROVIDED ON THE PCBA
2. RUN THE CABLE ALONG THE SLIT PROVIDED ON THE INDEX LOWER ASSEMBLY
3. ENSURE WIRE IS NOT TANGLED BEFORE ASSEMBLY OF 11191010\_INDEX\_UPPER\_ASSEMBLY

<b>EDMI</b> EDMI LIMITED 47 YISHUN INDUSTRIAL PARK A, SINGAPORE 768724	
TITLE	
GR8BU GAS METER	
DRAWING NO.	11190022
3RD ANGLE PROJECTION	
SCALE: 1:250	SHEET: 2 OF 3
SHEET: 2 OF 3	REV: 2
SIZE	A2

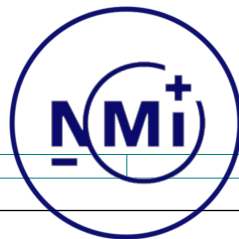
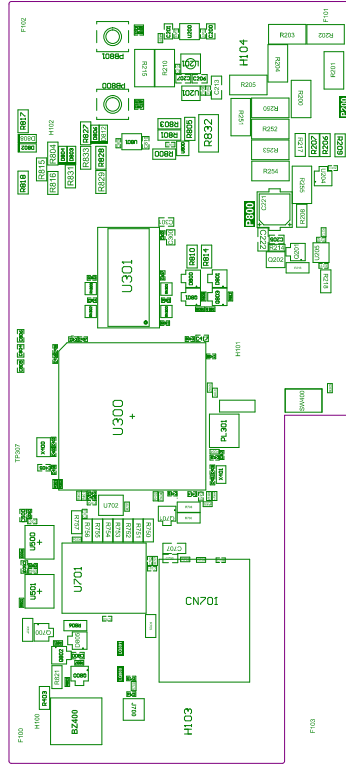
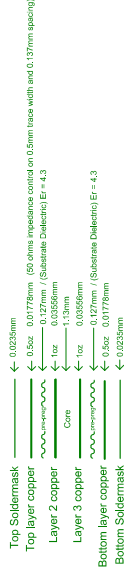
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GENERAL TOLERANCES: UNLESS OTHERWISE SPECIFIED)	X: LINEAR ±0.5 Y: ANGULAR ±1.0° Z: HOLE POSITION ±0.2 W: HOLE DIA ±0.05 V: HOLE DIA ±0.05
DRAFTED BY	HARI
DESIGNED BY	HARI
CHECKED BY	AY
APPROVED BY	SR
DATE	22-04-21



**P.C.B. SPECIFICATIONS**

- Standard: Fabricate and accept to meet the requirements of IPC-A-600 Class 2 latest revision.
- Material: Copper Clad Epoxy Glass FR-4 130 Tg.
- Finished thickness 1.6mm +/-10%
- Manufacturing Info: ROHS/Vendor logo's, date code and UL flammability shall be printed on top silkscreen layer.
- Silk screen overlay: Non-conductive Permanent White Ink.
- No silk screen legends on exposed pads. (Overlap into tented holes is allowed.)
- Warpage and twist: less than 0.75%
- BBT test: 100% Electrically tested for Open/Short.
- Apply marking on edge and inform the exact location when submit FA.
- Number of Layers : 4Layers
- Submit the Microsection & Layer stack details
- V-Routes (if applicable) will be with the following specifications : 30° 1/3 depth, Both sides.
- RoHS
- Soldermask : 2 x BLUE; All vias must be tented with Solder Resist
- Finish : OSP
- Submit the Certificate of Conformance Report of the following:
  - Microsection, Electric Test, Solderability Test, X-Ray Test, Inspection Report
  - CTI Index >= 175

**Layer Stackup Thickness Detail**



Doc no	12077/0-05
Page	1 of 1

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DO NOT SCALE

ISSUE	DATE	DRAWN BY:	APPROVED BY:	COMMENTS
B	09/04/2020	YO CHEN		FIRST RELEASE FOR B.
P6	25/02/2020	YO CHEN		FIRST RELEASE FOR P6.
P3	03/02/2020	YO CHEN		FIRST RELEASE FOR P3.
P2	14/02/2018	YO CHEN		FIRST RELEASE FOR P2.

REV	DATE	BY	DESCRIPTION
1	14/04/2020	YEE DENG CHEN	CHANGED BT:

Proj: TOP ASSEMBLY	VIEW FROM COMPONENT SIDE	A3
Title: GR8BU - PCB LAYOUT	Revision:	B
Drawing No: 11195005		
File Location: C:\Users\yeechen\Documents\EDMI\GR8BU\GR8BU.dwg	Plotted By: YEE DENG CHEN	11/05/2020 09:56:00
Date: 6/11/2019	14/4/2020	
EDMI LIMITED		
47 Yiahun Industrial Park A, Singapore 78924		
Tel: +65 6756 2808 <a href="https://www.edmi-meters.com">https://www.edmi-meters.com</a>		





Designator	Manufacturer_Part_Number1	Manufacturer1	Description
R707	RC1206IR-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R708	RC1206IR-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R801	RC1206R-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R803	RC1206IR-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R805	RC1206R-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R831	RC1206R-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R833	RC1206R-0710KL	Yageo	Res 10k 250mW 5% 1206 Thick Film
R800	RC1206IR-07220RL	Yageo	Res 220R 1/4W 5% 1206 Thick Film
R810	RC1206R-07220RL	Yageo	Res 220R 1/4W 5% 1206 Thick Film
R814	RC1206R-07220RL	Yageo	Res 220R 1/4W 5% 1206 Thick Film
C221	RZE-35V70TMFR80UR	Elna	Cap RAD 100uF 35V 20% EDLC
PB800	SKRAAKE010	Alps	Switch 6mm square Reflow Light Touch
PB801	SKRAAKE010	Alps	Switch 6mm square Reflow Light Touch
CN800	SMMIC162-EU-01-SYC-WX-F	Smartwih	SMMIC162-EU-01-SYC-WX-F
D803	TDZ3V6J	Nexperia	DIODE ZENER 500mW 3V6 SOD-323F
D804	TDZ3V6J	Nexperia	DIODE ZENER 500mW 3V6 SOD-323F
D806	TDZ3V6J	Nexperia	DIODE ZENER 500mW 3V6 SOD-323F
D812	TDZ3V6J	Nexperia	DIODE ZENER 500mW 3V6 SOD-323F
U204	TPS3839G25	Texas Instrument	Supply Voltage Monitor
U201	TPS62740DSSR	Texas Instrument	IC Reg Buck Adj 300mA 12WSON
U702	TXS0108ERGY	Texas Instrument	8-Wire Bi Directional Level Shifter
U500	W25064JV2PQ	Winbond	IC Flash 64M 3.0V 108Mhz Serial NOR WSON-8
U501	W25064JV2PQ	Winbond	IC Flash 64M 3.0V 108Mhz Serial NOR WSON-8
U301	W981666H-61	Winbond	IC SDRAM W981666H-61 (1M*16 LOW POWER) 50T5OP
R806	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R815	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R816	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R821	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R827	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R828	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R829	WF12P1000FTL	Walsin	Res 100R 0.5W 1% 1206
R832	WF25A15R0FTL	Walsin	Res 15R 3W 1% 2512
R212	WR04X000PTL	Walsin	Res 0R0 0402 Thick Film
R402	WR04X000PTL	Walsin	Res 0R0 0402 Thick Film
R404	WR04X000PTL	Walsin	Res 0R0 0402 Thick Film
R700	WR04X000PTL	Walsin	Res 0R0 0402 Thick Film
R702	WR04X1001FTL	Walsin	Res 1K 62.5mW 1% 0402 Thick Film
R305	WR04X1003FTL	Walsin	Res 100K 62.5mW 1% 0402 Thick Film
R307	WR04X1003FTL	Walsin	Res 100K 62.5mW 1% 0402 Thick Film
R500	WR04X1003FTL	Walsin	Res 100K 62.5mW 1% 0402 Thick Film
R501	WR04X1003FTL	Walsin	Res 100K 62.5mW 1% 0402 Thick Film
R602	WR04X7502FTL	Walsin	Res 75K 100mW 5% 0402
R609	WR06SW1005FTL	Walsin	Res 10M 0.1W ±1% 0603
R217	WR12X000 PTL	Walsin	Res 0R 250mW ±1% 1206 Thick Film
R217	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R218	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206

Designator	Manufacturer_Part_Number1	Manufacturer1	Description
R706	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R750	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R751	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R752	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R753	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R754	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R755	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R756	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R757	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R817	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R818	WR12X1001FTL	Walsin	Res 1K 0.25W 1% 1206
R208	WW12NR40ZF TL	Walsin	Res 0.02R 1% 1W 1206
R200	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R201	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R202	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R203	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R204	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R205	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R210	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R215	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R251	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R252	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R253	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R254	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
R255	WW251R200FZL	Walsin	Res 0.2R 1% 3W 2512
U200	XG6215B302MR-G	Torex	IC Linear Voltage Regulator 3V0 LDO
U801	XG6215B302MR-G	Torex	IC Linear Voltage Regulator 3V0 LDO

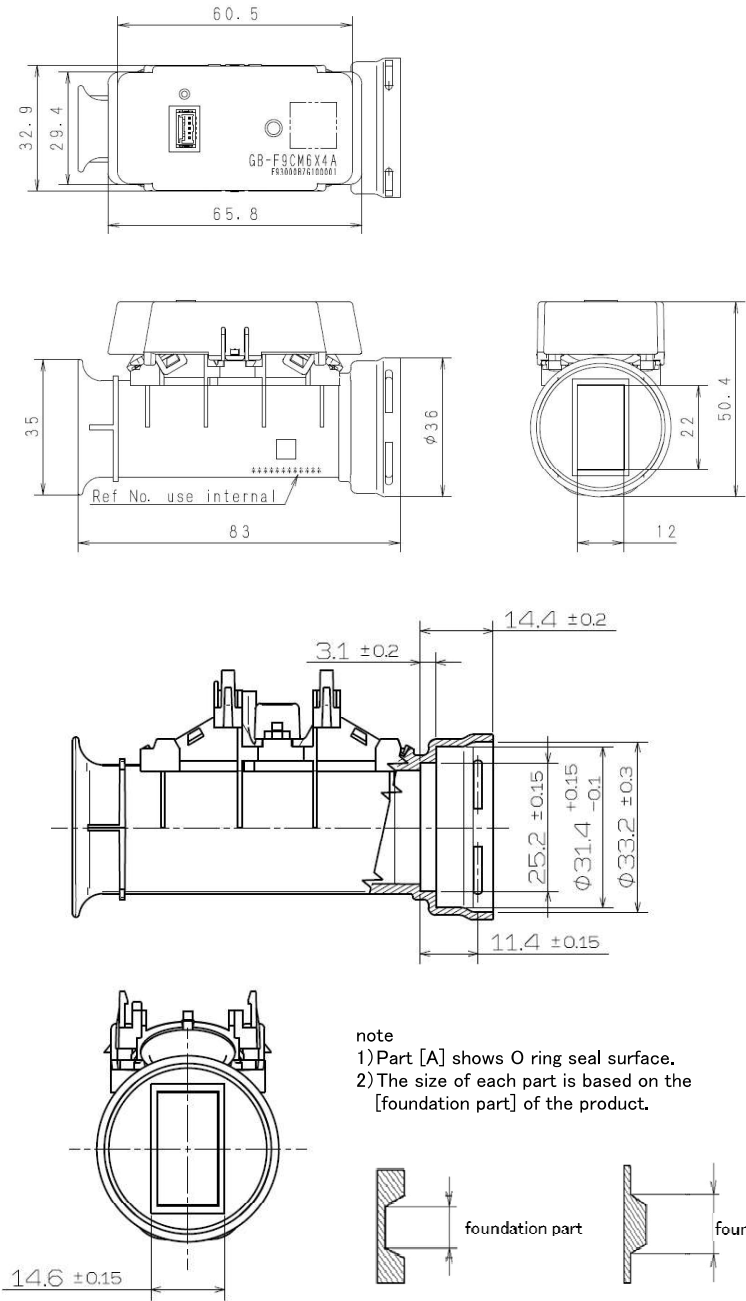


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 © EDMI Limited 2019  
 DO NOT SCALE  
 MODIFIED BY: [Blank]  
 APPROVED BY: [Blank]  
 DATE: [Blank]  
 ISSUE: [Blank]

This: CRGBU-EE-BOM  
 Project Name: CR-GBU LITE CAT-FMI GAS METER  
 Drawing No.: 1119/003  
 Sheet 2 of 2  
 File Location: C:\Users\yvesing\ch\m\ba\proj\EE\SG\08\U-NB\DOT RevB\1118003-RevB\_EE\BOM\_2\_SchDoc  
 Date Originally Created: 27/06/2019  
 Date/Time Last Saved: 14/4/2020 9:42:04 AM  
 Originally Drawn by: YD Chai  
 Originally Checked by: [Blank]  
 Size: A3  
 Revision: B  
 47 Vishnu Industrial Park A, Singapore 768724  
 Tel: +65 6756 2838  
<https://www.edmi-meeters.com/>

10. Outline Drawing (Unit: mm) / 外形図 (単位:mm)

\*The common difference without directions is  $\pm 1.0$   
 \*指示なき公差は $\pm 1.0$



## BOM of Ultrasonic Measurement Unit (GB-F9CM64A) circuit

		rated voltage (V)	capacitance (F)	tolerance (%)	temperature characteristic (%)
C3	Capacitor	6.3	10 $\mu$	$\pm 10$	$\pm 15$
C4	Capacitor	25	0.01 $\mu$	$\pm 10$	$\pm 15$
C5	Capacitor	25	1000p	$\pm 10$	$\pm 15$
C6	Capacitor	10	0.1 $\mu$	$\pm 10$	$\pm 15$
C7	Capacitor	6.3	10 $\mu$	$\pm 10$	$\pm 15$
C8	Capacitor	10	0.1 $\mu$	$\pm 10$	$\pm 15$
C9	Capacitor	6.3	10 $\mu$	$\pm 10$	$\pm 15$
C12	Capacitor	6.3	4.7 $\mu$	$\pm 20$	$\pm 15$
C13	Capacitor	6.3	4.7 $\mu$	$\pm 20$	$\pm 15$
C14	Capacitor	10	0.1 $\mu$	$\pm 10$	$\pm 15$
C15	Capacitor	50	15p	$\pm 5$	0 $\pm$ 30ppm/ $^{\circ}$ C
C16	Capacitor	50	15p	$\pm 5$	0 $\pm$ 30ppm/ $^{\circ}$ C
C18	Capacitor	6.3	10 $\mu$	$\pm 10$	$\pm 15$
C19	Capacitor	6.3	2.2 $\mu$	$\pm 10$	$\pm 15$
C20	Capacitor	10	0.1 $\mu$	$\pm 10$	$\pm 15$
C22	Capacitor	10	0.1 $\mu$	$\pm 10$	$\pm 15$
C23	Capacitor	10	0.1 $\mu$	$\pm 10$	$\pm 15$
C25	Capacitor	6.3	10 $\mu$	$\pm 10$	$\pm 15$

		absolute maximum rating (V)	part number	Rth
Q3	Transistor	50	LTC014YEB	480 $^{\circ}$ C/W
IC1	Measurement IC	4.6	BU28132KV	83 $^{\circ}$ C/W
IC2	Microcomputer	6	ML611Q937	250 $^{\circ}$ C/W
IC5	EEPROM	6.5	BR24G08FVT-3	63 $^{\circ}$ C/W

		rated power (W)	resistance value ( $\Omega$ )	tolerance (%)
R1	Resistor	0.1	37.4k	$\pm 1$
R2	Resistor	0.063	1.0k	$\pm 5$
R3	Resistor	0.1	1.0k	$\pm 5$
R6	Resistor	0.1	1.0k	$\pm 5$
R7	Resistor	0.1	1.0k	$\pm 5$
R8	Resistor	0.063	33k	$\pm 5$
R9	Resistor	0.063	10k	$\pm 5$
R10	Resistor	0.063	10k	$\pm 5$
R11	Resistor	0.25	100	$\pm 5$
R12	Resistor	0.25	100	$\pm 5$
R13	Resistor	0.25	100	$\pm 5$
R14	Resistor	0.25	100	$\pm 5$
R16	Resistor	0.063	10k	$\pm 5$
R18	Resistor	0.063	0	+0.05 ( $\Omega$ )

		frequency (Hz)
X1	Crystal oscillator	32.768k
X2	Ceramic Resonator	4M

CN1	Connector
-----	-----------

		absolute maximum rating (V)
S1	Ultrasonic transducer	20
S2	Ultrasonic transducer	20

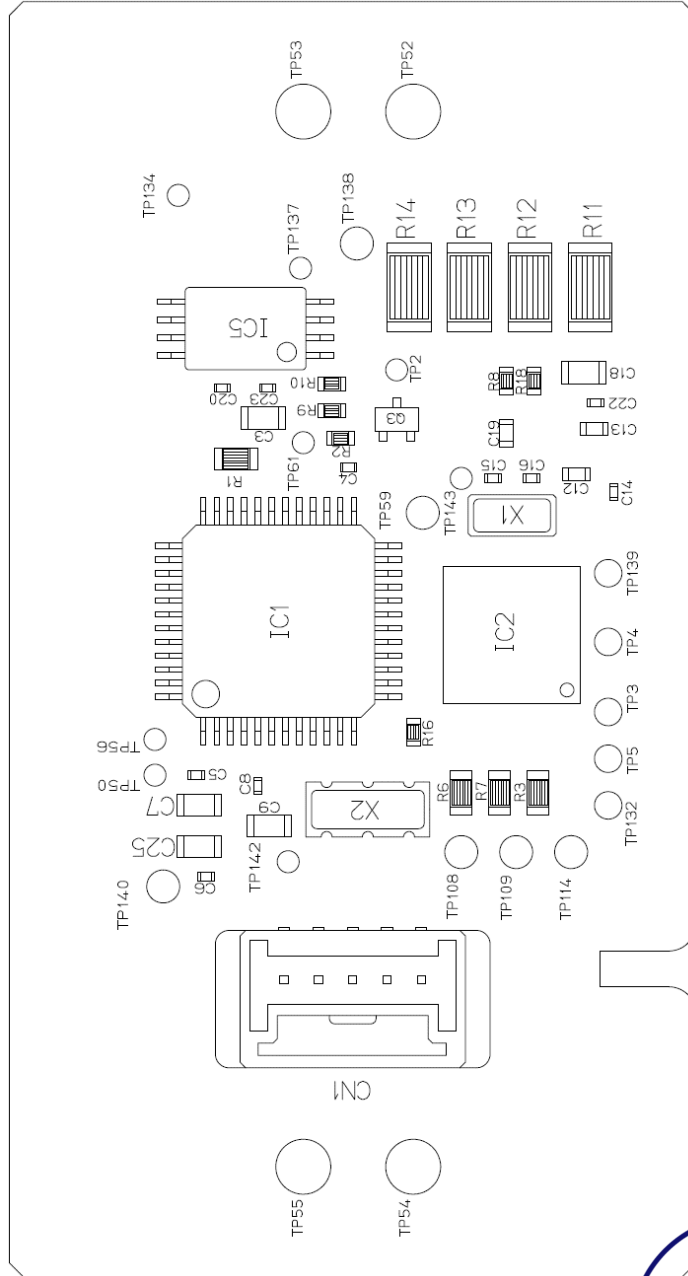
## Potting material

Coating part	
Chemical name	Polyurethane acrylate mixed solution
Volume resistivity	5.41 $\times 10^{13}$ $\Omega$ cm
Elastic modulus	4.50MPa
Elasticity	202%
Manufacturer	Sekisui Fuller Company, Ltd.

Outer circumference	
Chemical name	Polyurethane acrylate mixed solution
Volume resistivity	5.99 $\times 10^{13}$ $\Omega$ cm
Elastic modulus	6.13MPa
Elasticity	210%
Manufacturer	Sekisui Fuller Company, Ltd.

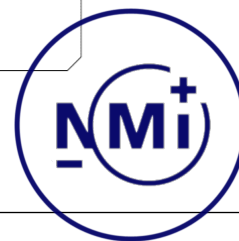


Mechanical assembly drawing of PCB



Document No.2020278

Confidential



### 18.2 Events

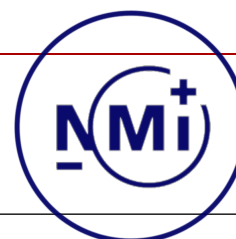
Events are recorded and stored on the meter for audit and maintenance purposes. Events may be retrieved from the meter during an active meter session and are sent as per the daily push at meter wakeup.

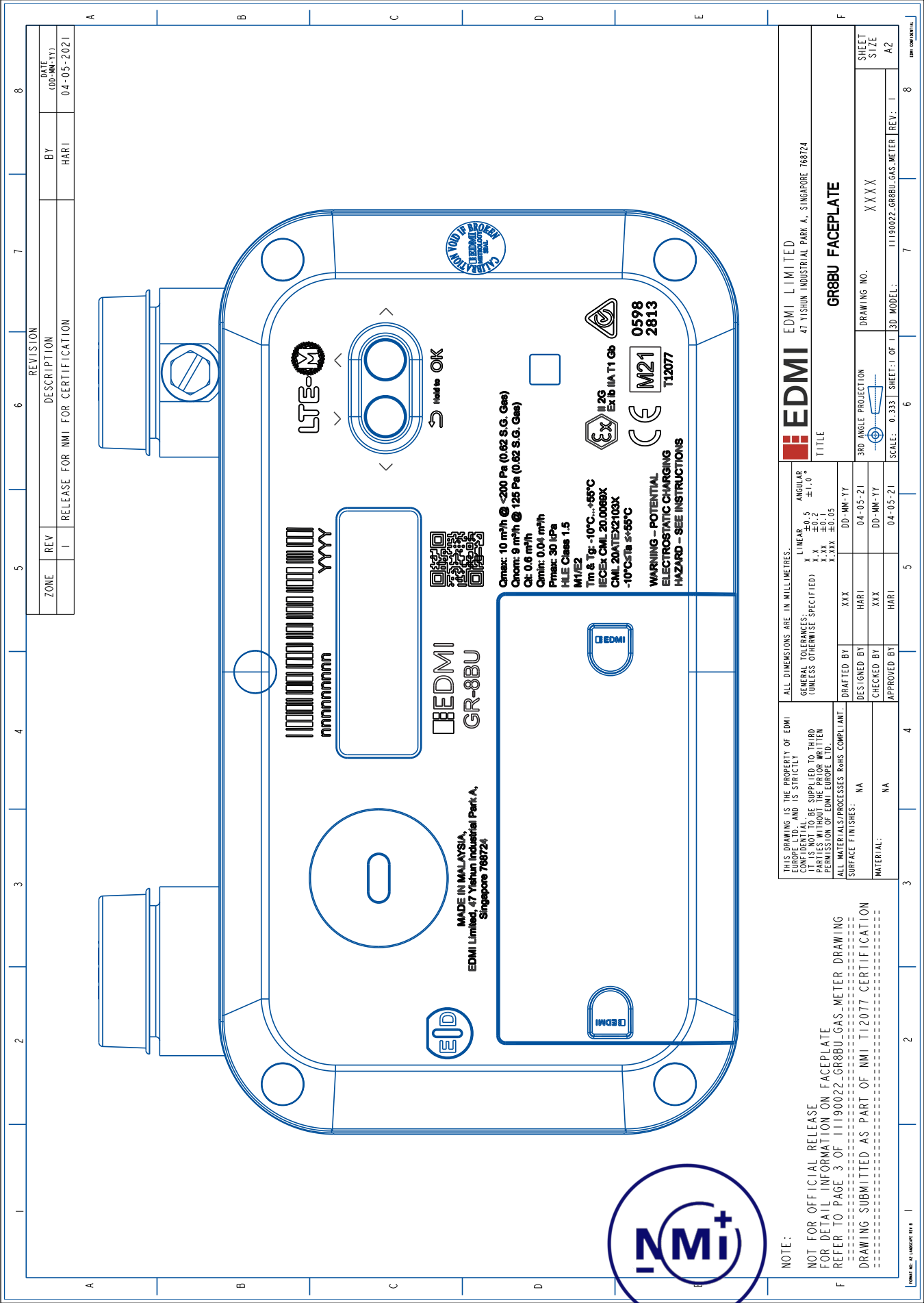
Code	Event	Severity	Area	Event Description
03050046	EVENT_MODULE_RESET_BY_METER	High	Module	Remote Comms module was reset by the meter
030700D6	EVENT_REVERSE_GAS_FLOW_DETECTED	High	Diagnostics	Detected Gas Flow in the reverse direction has exceeded 1 litre before 12 minutes timer expires. Stays active until event is cleared. No further event storing until current active event cleared. Timer gets reset once 1L threshold has been reached. This is latched once and pushed immediately to prevent multiple pushes, latch resets daily.
030700D7	EVENT_REVERSE_GAS_FLOW_CLEARED	High	Diagnostics	Reverse Gas Flow Event has ended. Paired with EVENT_REVERSE_GAS_FLOW_DETECTED. If any subsequent volume recorded is not triggering the threshold again, the event is considered ended.
030A00C3	EVENT_MAX_FLOW_EXCEEDED	High	Diagnostics	Gas Flow detected has exceeded Qmax multiplied by 1.6 for more than 1 minute. Any drop below threshold will reset counter.
030A00D8	EVENT_MAX_FLOW_EXCEEDED_STOPPED	High	Diagnostics	Indicates that high flow event has stopped once no further excessive flow has been measured for 10 uninterrupted minutes after dropping below threshold Paired with EVENT_MAX_FLOW_EXCEEDED
0301001B	EVENT_BATTERY_TAMPER_DETECTED	High	System Control	Unauthorised Battery door removal.
0301001C	EVENT_BATTERY_TAMPER_CLEARED	High	System Control	Unauthorised Battery door removal tamper has ended Paired with EVENT_BATTERY_TAMPER_DETECTED
0301000D	EVENT_SYSCTL_POWER_ON_RESET	High	System Control	Power on reset. Meter does a hard reboot Reset on FW upgrade or battery replacement Consumption is not measured during this restart. Restart takes approximately eight Seconds.
030300E7	EVENT_GAS_SENSOR_FAILURE	High	Measurement	The gas sensor packet is not being received
0301101B	EVENT_BATTERY_TAMPER_LATCHED	High	Diagnostics	Battery tamper detected (first time today)
030A10C3	EVENT_MAX_FLOW_EXCEEDED_LATCHED	High	Diagnostics	Max flow exceeded detected (first time today)
030710C4	EVENT_FLOW_VALVE_CLOSED_LATCHED	High	Diagnostics	Flow detected when valve closed (first time today)
030710D6	EVENT_REVERSE_FLOW_LATCHED	High	Diagnostics	Reverse flow detected (first time today)
020400B5	EVENT_BATTERY_LOW	Medium	Power Monitor	Battery capacity ≤10%.



020500C9	EVENT_BAD_PSM_TAU_TIMER	Medium	Module	Network hasn't provided suitable PSM timer which is less than factory configured T3412 TAU timer
020500DA	EVENT_BAD_PSM_ACTIVE_TIMER	Medium	Module	Network hasn't provided suitable PSM Active timer which is less than factory configured T3324 Active timer
020500CA	EVENT_PSM_WAKEUP_ERROR	Medium	Module	Meter has exited PSM dormant mode unexpectedly
02020031	EVENT_FIRMWARE_DOWNLOAD_BAD_IMAGE	Medium	Dataflash	A firmware image has been downloaded but its CRC (Cyclic Redundancy Check) check failed.
0202005E	EVENT_SHADOW_CONFIG_RESET	Medium	Dataflash	This is a meter configuration change
01050086	EVENT_NBIOT_NO_NETWORKS	Low	Module	The module failed to register with any network successfully
010500E3	EVENT_MODEM_FORCED_TTO_SHUTDOWN	Low	Module	The modem was forced to shut down because the meter was forced to sleep after being awake for 3 minutes. (System maximum ON time)
010500E4	EVENT_MODEM_POWERED_ON	Low	Module	The modem got powered on (from off).
010500E5	EVENT_MODEM_OFF_NETWORK_REG_TIMEOUT	Low	Module	The modem was turned off because of network registration timeout. (currently 4 mins)
010500E6	EVENT_MODEM_OFF_BAD_OR_NO_RESPONSE	Low	Module	The modem was turned off because it was replying error or it did not respond to AT commands
01020060	EVENT_SHADOW_CONFIG_APPLICATION_FAILURE	Low	Dataflash	An unsuccessful attempt to apply the shadow configuration has been made. The active configuration has not been updated.
01020030	EVENT_FIRMWARE_DOWNLOAD_SUCCESS	Low	Dataflash	A firmware image has been downloaded successfully
0102005F	EVENT_SHADOW_CONFIG_APPLIED	Low	Dataflash	The shadow configuration has been applied, updating the active configuration
01010037	EVENT_LARGE_RTC_ADJUSTMENT	Low	System Control	A large adjustment (>60s) has been made to the meter RTC time. This is not expected during normal operation. Maximum threshold for a time sync operation to occur is configured in the HES (default 585s)
01010011	EVENT_FW_ACTIVATED	Low	System Control	Firmware upgrade completed
00010036	EVENT_SMALL_RTC_ADJUSTMENT	Low	System Control	A small adjustment (≤60s) has been made to the meter RTC time. This is to be expected during normal operation. Minimum threshold to execute a time sync operation is configured in the HES (default 30s)
010200DC	EVENT_SURVEY_LOG_ERASED	Low	Dataflash	The load survey log has been erased
010200DD	EVENT_DAILY_CONSUMPTION_LOG_ERASED	Low	Dataflash	The daily consumption log has been erased
00050081	EVENT_NBIOT_NETWORK_START	Info	Module	The Network survey and selection has started
00050084	EVENT_NBIOT_NETWORK_SELECTED	Info	Module	A network has been selected to be used
01050087	EVENT_NBIOT_NETWORK_COMPLETED	Info	Module	The module registered with any network successfully
00050034	EVENT_MODULE_MNO_REGISTERED	Info	Module	The meter has registered with the selected network provider
00050085	EVENT_NBIOT_NO_GPRS	Info	Module	The module failed to register

Table 7: Events





ZONE	REV	DESCRIPTION	DATE (DD-MM-YY)
	I	RELEASE FOR NMI FOR CERTIFICATION	04-05-2021

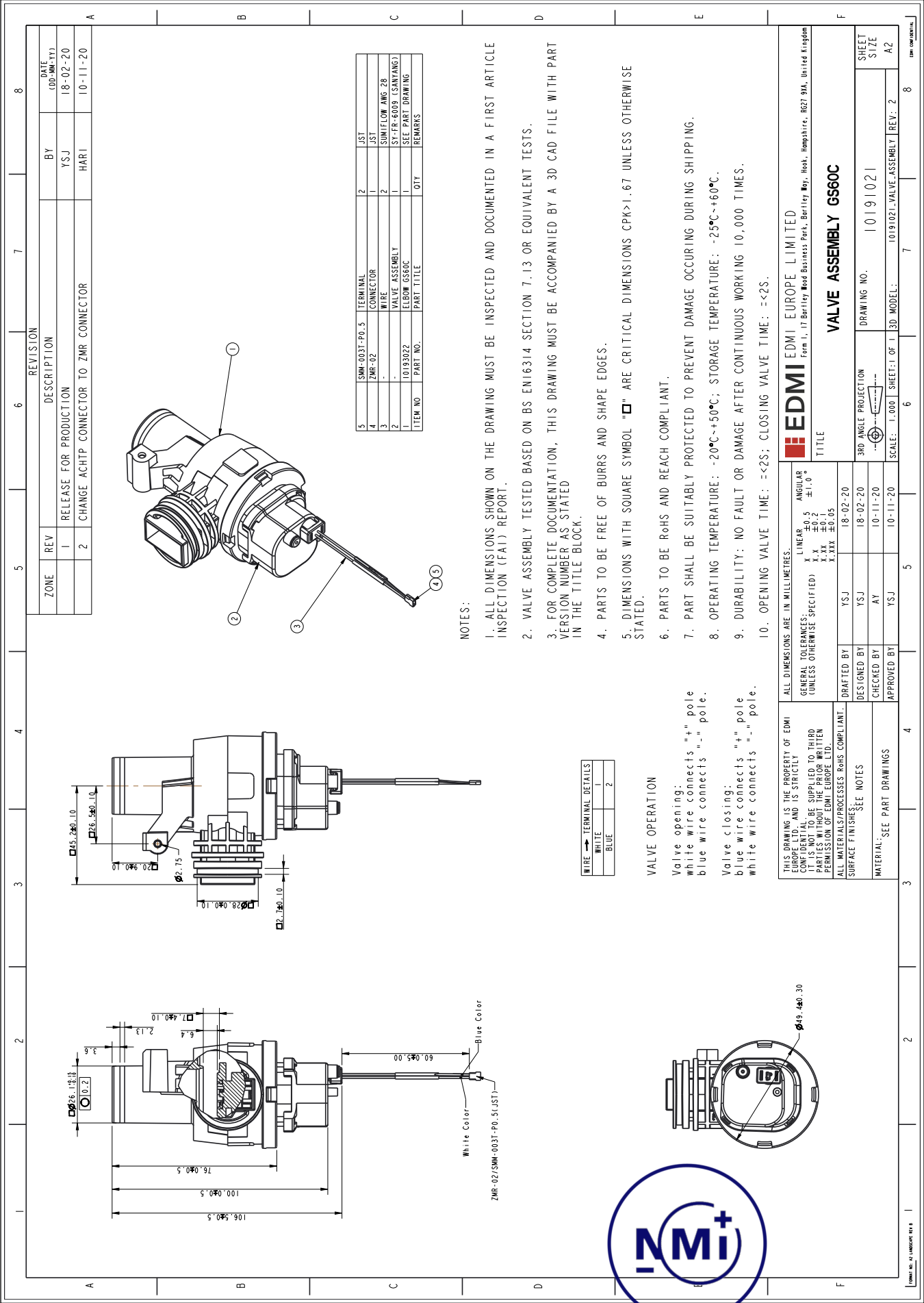
MADE IN MALAYSIA  
EDMI Limited, 47 Yishun Industrial Park A,  
Singapore 768724

Omax: 10 m³/h @ <math>200 \text{ Pa}</math> (0.62 S.G. Gas)  
 Qmax: 9 m³/h @ <math>125 \text{ Pa}</math> (0.62 S.G. Gas)  
 Qmin: 0.04 m³/h  
 Pmax: 30 kPa  
 HLE Class 1.5  
 M1/E2  
 Tm & Tg: <math>-10^{\circ}\text{C}</math> to <math>+55^{\circ}\text{C}</math>  
 IECEx: CML 20.0069X  
 CML 20ATEX2103X  
 <math>-10^{\circ}\text{C}</math> to <math>+55^{\circ}\text{C}</math>  
 WARNING - POTENTIAL  
 ELECTROSTATIC CHARGING  
 HAZARD - SEE INSTRUCTIONS

<b>EDMI</b> EDMI LIMITED 47 YISHUN INDUSTRIAL PARK A, SINGAPORE 768724		<b>GR8BU FACEPLATE</b>	
ALL DIMENSIONS ARE IN MILLIMETRES. GENERAL TOLERANCES: (UNLESS OTHERWISE SPECIFIED)		TITLE 3RD ANGLE PROJECTION	
X: LINEAR Y: ANGULAR Z: ±1.0%	X: X Y: Y Z: Z	DRAFTED BY DESIGNED BY CHECKED BY APPROVED BY	DD-MM-YY 04-05-21 04-05-21 04-05-21
THIS DRAWING IS THE PROPERTY OF EDMI EUROPE LTD., AND IS STRICTLY CONFIDENTIAL. IT IS TO BE SUPPLIED TO THIRD PARTIES WITHOUT THE PRIOR WRITTEN PERMISSION OF EDMI EUROPE LTD. ALL MATERIALS/PROCESSES MUST BE COMPLIANT. SURFACE FINISHES: NA MATERIAL: NA		SHEET: 1 OF 1 3D MODEL: I1190022-GR8BU-GAS-METER REV: I A2	



NOTE:  
NOT FOR OFFICIAL RELEASE  
FOR DETAIL INFORMATION ON FACEPLATE  
REFER TO PAGE 3 OF I1190022-GR8BU-GAS-METER DRAWING  
DRAWING SUBMITTED AS PART OF NMI T12077 CERTIFICATION



ZONE	REV	DESCRIPTION	BY	DATE
	1	RELEASE FOR PRODUCTION	YSJ	18-02-20
	2	CHANGE ACHTP CONNECTOR TO ZMR CONNECTOR	HARI	10-11-20

ITEM NO	PART NO.	PART TITLE	QTY	REMARKS
5	SMM-003T-PO.5	TERMINAL CONNECTOR	2	JST
4	ZMR-02	VALVE ASSEMBLY	1	JST
3	-	WIRE	2	SUMIFLOW AWG 28
2	-	VALVE ASSEMBLY	1	SY-FR-6009 (SANYANG)
1	10193022	ELBOW G560C	1	SEE PART DRAWING

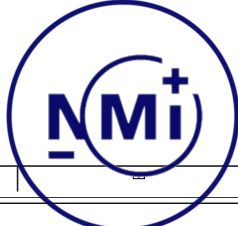
NOTES:

1. ALL DIMENSIONS SHOWN ON THE DRAWING MUST BE INSPECTED AND DOCUMENTED IN A FIRST ARTICLE INSPECTION (FAI) REPORT.
2. VALVE ASSEMBLY TESTED BASED ON BS EN16314 SECTION 7.13 OR EQUIVALENT TESTS.
3. FOR COMPLETE DOCUMENTATION, THIS DRAWING MUST BE ACCOMPANIED BY A 3D CAD FILE WITH PART VERSION NUMBER AS STATED IN THE TITLE BLOCK.
4. PARTS TO BE FREE OF BURRS AND SHAPE EDGES.
5. DIMENSIONS WITH SQUARE SYMBOL "□" ARE CRITICAL DIMENSIONS CPK>1.67 UNLESS OTHERWISE STATED.
6. PARTS TO BE RoHS AND REACH COMPLIANT.
7. PART SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OCCURRING DURING SHIPPING.
8. OPERATING TEMPERATURE: -20°C~+50°C; STORAGE TEMPERATURE: -25°C~+60°C.
9. DURABILITY: NO FAULT OR DAMAGE AFTER CONTINUOUS WORKING 10,000 TIMES.
10. OPENING VALVE TIME: =<2S; CLOSING VALVE TIME: =<2S.

VALVE OPERATION

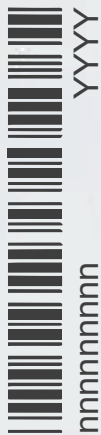
Valve opening:  
 white wire connects "+" pole  
 blue wire connects "-" pole.

Valve closing:  
 blue wire connects "+" pole  
 white wire connects "-" pole.



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<p>DRAFTED BY YSJ 18-02-20</p> <p>DESIGNED BY YSJ 18-02-20</p> <p>CHECKED BY AY 10-11-20</p> <p>APPROVED BY YSJ 10-11-20</p>		<p>EDMI EDM EUROPE LIMITED          Form 1, 17 Bertley Road Business Park, Bertley Way, Hook, Hampshire, RG27 9XA, United Kingdom</p> <p>TITLE  <b>VALVE ASSEMBLY G560C</b></p>	
<p>3RD ANGLE PROJECTION</p>		<p>DRAWING NO. 10191021</p> <p>SHEET SIZE A2</p>	
<p>SCALE: 1:000</p>		<p>SHEET: 1 OF 1</p> <p>3D MODEL: 10191021-VALVE-ASSEMBLY</p> <p>REV: 2</p>	





LTE-M



Hold to OK



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Singapore 768724

Qmax: 10 m³/h @ <200 Pa (0.62 S.G. Gas)  
Qnom: 9 m³/h @ 125 Pa (0.62 S.G. Gas)  
Qt: 0.6 m³/h  
Qmin: 0.04 m³/h  
Pmax: 30 kPa  
HLE Class 1.5  
M1/E2  
Tm & Tg: -10°C...+55°C  
IECEX CML 20.0069X  
CML 20ATEX2103X  
-10°C≤Ta ≤+55°C



WARNING - POTENTIAL  
ELECTROSTATIC CHARGING  
HAZARD - SEE INSTRUCTIONS



	Doc no	<b>12077/0-12</b>
	Page	1 of 1