

EU-TYPE EXAMINATION CERTIFICATE

Ningbo Sanxing Smart Electric Co., Ltd.
No.16 Fengwan Road, Cicheng Town, Jiangbei District,
Ningbo City, Zhejiang Province, 315034
China

EU-Type Examination

Certificate No.

1500-24

Revision 0



Type M12U02
Object Electronic single-phase two-wire energy meter.
Direct connected

The object has been assessed and meets the requirements of

EU Directive 2014/32/EU
Module B

The energy meter(s) meet(s) the essential requirements of Annex V of EU Directive 2014/32/EU, on the harmonization of the laws of Member States relating to the making available on the market of measuring instruments (recast).

This Certification is based on the report(s) listed in the report list in this Certificate.

This Certificate is valid until: April 17, 2034.

This Certificate comprises 8 pages in total.

Issued by KEMA B.V.
Klingelbeekseweg 195,
Arnhem, The Netherlands
Notified Body 2290

Alessandro Bertani
Director,
Services & Smart Technologies

Arnhem, April 17, 2024



REVISION OVERVIEW

The edition with the highest revision number always replaces the earlier issued editions.

Rev. No.	Date of issue	Page no. and changes
0	April 17, 2024	First issue

REPORT LIST

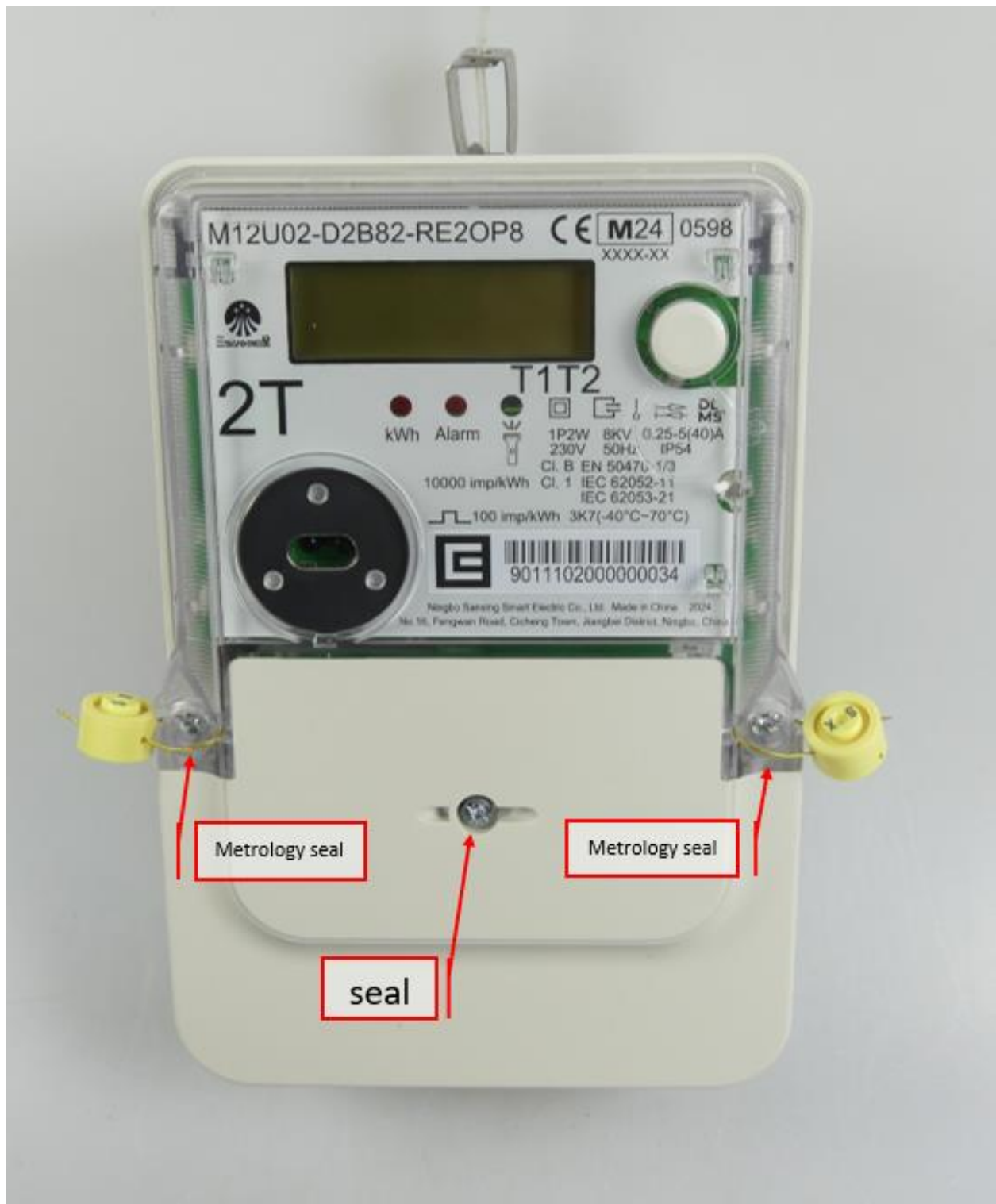
This Certificate is issued based on the following reports.

Report number	Revision	Firmware version
1564-24	0	V1.05.04

1 TECHNICAL DATA

Manufacturer	Ningbo Sanxing Smart Electric Co., Ltd., No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo City, Zhejiang Province, 315034, China		
Production location	Ningbo Sanxing Smart Electric Co., Ltd., No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo City, Zhejiang Province, 315034, China		
Type	M12U02		
Model	D2B82-RE2OP1	D2B82-RE2OP8	
Connection	Direct		
Type of circuit	1P2W		
Accuracy class Wh	1/B and 2/A		
Standard	IEC 62053-21 EN 50470-3		
Meter constant	10000 imp/kWh		
V range	230 V		
I range I_{min} - I_n (I_{max})	0,25-5(40) A		
Frequency	50 Hz		
Temperature range	-40 .. 70 °C		
Use	Indoor		
IP rating	IP54		
Protection Class	II		
Environmental class	M1, M2, E1 and E2, CISPR32 class B		
LR Firmware ID	V1.05.04		
LR Firmware CRC	6F2CF631		
Register	LCD		
Registry method(s):	bi-directional method with separate registers: received- and delivered energy is added in separate registers.		

2 PHOTOGRAPHS AND SEALING



3 EXAMPLES OF NAME PLATES



4 CALCULATION OF THE COMPOSITE ERROR / MPE

During the type approval test the intrinsic errors for temperature, voltage and frequency variation are determined per load point. The composite error is determined with the following formula:

$$\varepsilon_m = \sqrt{\varepsilon^2(I, \cos\varphi) + \delta^2(T, I, \cos\varphi) + \delta^2(U, I, \cos\varphi) + \delta^2(f, I, \cos\varphi)}$$

Where

$\varepsilon^2(I, \cos\varphi)$ = Intrinsic error of the meter at a certain load

$\delta^2(T, I, \cos\varphi)$ = Additional error due to the variation of the temperature at the same load

$\delta^2(U, I, \cos\varphi)$ = Additional error due to the variation of the voltage at the same load

$\delta^2(f, I, \cos\varphi)$ = Additional error due to the variation of the frequency at the same load

Results are in the table below:

		Composite error							
Current	cosφ	-40 °C	-25 °C	-10 °C	5 °C	30 °C	40 °C	55 °C	70 °C
I _{min}	1	0,36%	0,21%	0,11%	0,09%	0,09%	0,12%	0,25%	0,48%
I _{tr}	1	0,40%	0,23%	0,12%	0,09%	0,09%	0,11%	0,26%	0,49%
I _{tr}	0,5i	0,37%	0,18%	0,11%	0,09%	0,09%	0,13%	0,28%	0,50%
I _{tr}	0,8c	0,44%	0,25%	0,14%	0,10%	0,10%	0,13%	0,27%	0,50%
I _n	1	0,42%	0,25%	0,13%	0,10%	0,10%	0,12%	0,26%	0,49%
I _n	0,5i	0,37%	0,20%	0,10%	0,07%	0,07%	0,10%	0,25%	0,49%
I _n	0,8c	0,43%	0,25%	0,13%	0,10%	0,09%	0,11%	0,25%	0,48%
I _{max}	1	0,36%	0,20%	0,09%	0,05%	0,06%	0,10%	0,26%	0,49%
I _{max}	0,5i	0,31%	0,16%	0,07%	0,03%	0,04%	0,11%	0,28%	0,53%
I _{max}	0,8c	0,34%	0,18%	0,08%	0,03%	0,04%	0,09%	0,26%	0,50%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
M12U02	<ul style="list-style-type: none">• Communication options: optical port• Pulse output (100 imp/kWh)

END OF DOCUMENT

The laboratories of KEMA Labs are:

- CESI S.p.A., Milan, Italy, accredited by ACCREDIA in accordance with ISO/IEC 17025:2017 under no. 0030L.
- FGH Engineering & Test GmbH, Mannheim, Germany, accredited by DAkkS in accordance with DIN EN ISO/IEC 17025:2018 under no. D-PL-12110-01-00.
- IPH Institut "Prüffeld für elektrische Hochleistungstechnik" GmbH, Berlin, Germany accredited by DAkkS in accordance with DIN EN ISO/IEC 17025:2018 under nos. D-PL-12107-01-00 and D-K-12107-01-00.
- KEMA B.V., Arnhem, The Netherlands, accredited by RvA in accordance with EN ISO/IEC 17025:2017 under nos. L020, L218 and K006 and with EN ISO/IEC 17065:2012 under no. C685.
- KEMA Labs, Zkušebnictví, a.s., Prague, the Czech Republic, testing laboratory no. 1035 accredited by CAI in accordance with ČSN EN ISO/IEC 17025:2018.
- KEMA-Powertest, LLC, Chalfont, United States, accredited by A2LA in accordance with ISO/IEC 17025:2017 under no. 0553.01.

Tests are carried out under the scope of accreditation, unless otherwise indicated in the chapter 'Tests carried out'.