

EU-TYPE EXAMINATION CERTIFICATE

Ningbo Sanxing Smart Electric Co., Ltd.
No. 16 Fengwan Road, Cicheng Town
Jianbei District NINGBO
China

EU-Type Examination

Certificate No.

1659-24

Revision 3



Type S12U16
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: February 11, 2035.

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, February 11, 2025



REVISION OVERVIEW

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

Rev. No.	Date of issue	Reason
0	December 20, 2024	First issue
1	December 20, 2024	Added evaluation report 1735-24 and safety report 1736-24
2	February 7, 2025	Updated 1727-24, 1728-24, 1729-24, 1752-24 and updated picture
3	February 11, 2025	Updated 1735-24 and 1736-24

REPORT LIST

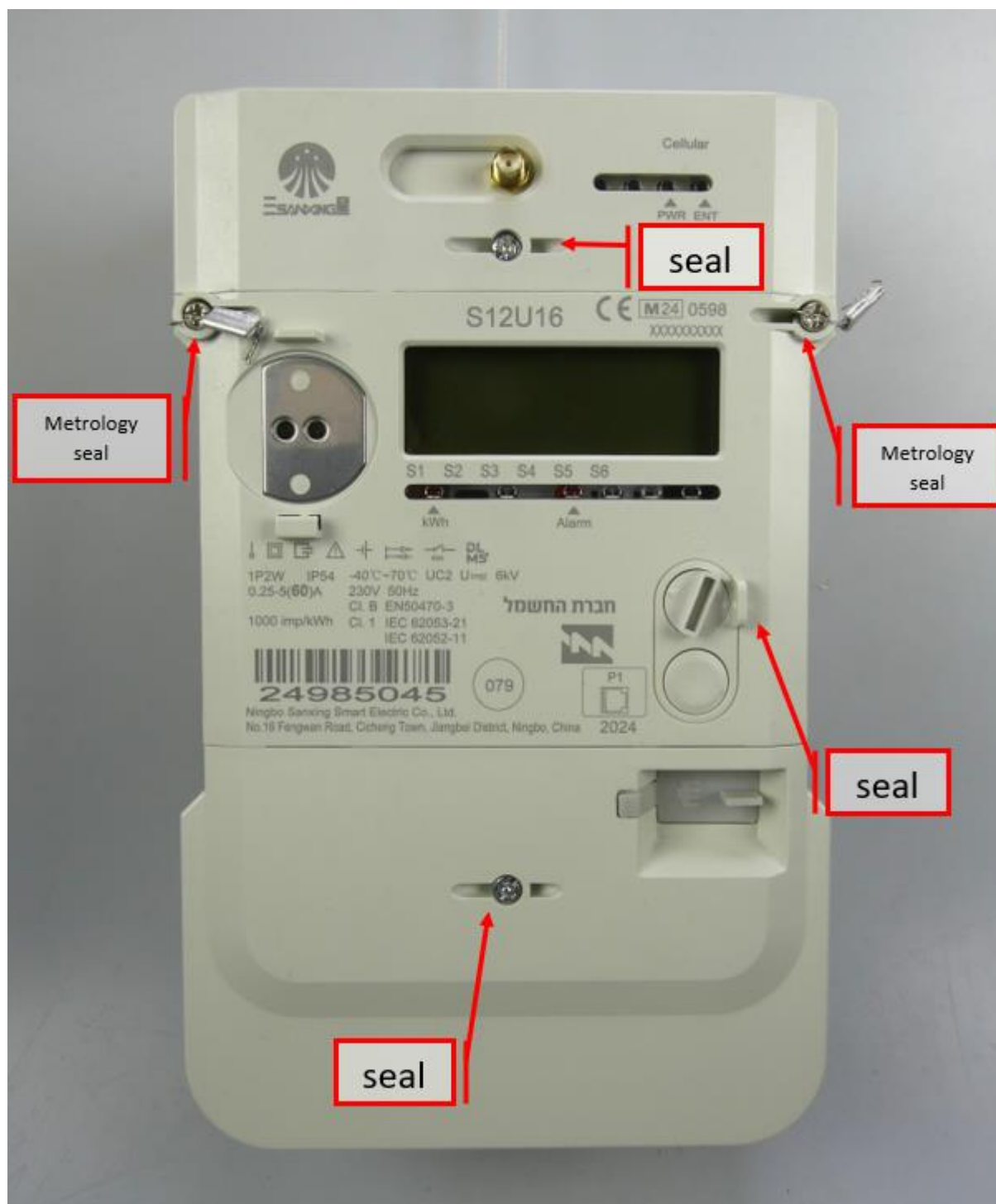
This Certificate is issued based on the following reports.

Report number	Revision	Firmware version
1727-24	0	V2.00.01
1728-24	0	V2.00.01
1729-24	0	V2.00.01
1735-24	0	V2.00.01
1736-24	0	V2.00.01
1752-24	0	V2.00.01
1727-24	1	V2.00.01
1728-24	1	V2.00.01
1729-24	1	V2.00.01
1735-24	1	V2.00.01
1736-24	1	V2.00.01
1752-24	1	V2.00.01

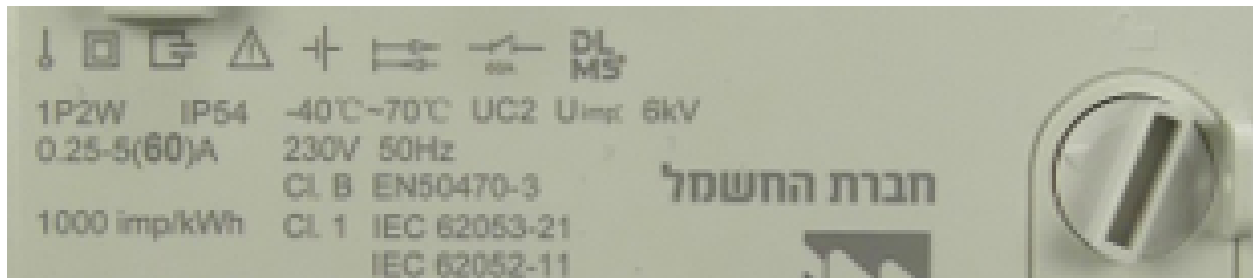
1 TECHNICAL DATA

Manufacturer	Ningbo Sanxing Smart Electric Co., Ltd. No. 16 Fengwan Road, Cicheng Town Jianbei District NINGBO China
Production location	Ningbo Sanxing Smart Electric Co., Ltd. No. 16 Fengwan Road, Cicheng Town Jianbei District NINGBO China
Type	S12U16
Model	-
Connection	Direct
Type of circuit	1P2W
Accuracy class Wh	1/B
Accuracy class varh	-
Standard	IEC 62052-11, IEC 62053-21, EN 50470-3
Meter constant	1000 imp/kWh
V range	230 V
I range $I_{min}-I_n(I_{max})$	0,25-5(60) A
Frequency	50 Hz
Temperature range	-40..70°C
Use	Outdoor
IP rating	IP54, category 2
Protection Class	II
Impulse voltage	6 kV
Internal clock	Crystal controlled
Environmental class	M1, M2, E1 and E2, CISPR32 class B
Utilisation category	UC2
LR Firmware ID	V2.00.01
LR Firmware CRC	7405080180F8F79803A60A040841C2248EB55558006A6949 4D4F5A4C63BE230421211F30C2248EB5197C4FE610538A2C
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	0,27%	0,25%	0,25%	0,25%	0,25%	0,25%	0,26%	0,29%
I _{tr}	1	0,19%	0,16%	0,16%	0,16%	0,16%	0,16%	0,18%	0,21%
I _{tr}	0,5i	0,12%	0,09%	0,08%	0,09%	0,08%	0,09%	0,11%	0,15%
I _{tr}	0,8c	0,27%	0,25%	0,25%	0,25%	0,25%	0,25%	0,26%	0,29%
I _n	1	0,11%	0,08%	0,08%	0,08%	0,08%	0,09%	0,11%	0,15%
I _n	0,5i	0,11%	0,07%	0,07%	0,07%	0,07%	0,08%	0,11%	0,17%
I _n	0,8c	0,18%	0,16%	0,16%	0,16%	0,16%	0,17%	0,18%	0,22%
I _{max}	1	0,04%	0,07%	0,07%	0,05%	0,04%	0,05%	0,11%	0,18%
I _{max}	0,5i	0,20%	0,20%	0,19%	0,18%	0,18%	0,19%	0,22%	0,29%
I _{max}	0,8c	0,12%	0,12%	0,10%	0,07%	0,05%	0,07%	0,13%	0,22%
Requirements									
Any	1	4,00%	3,50%	2,50%	2,00%	2,00%	2,50%	3,50%	4,00%
Any	0,5/0,8	4,00%	3,50%	2,50%	2,00%	2,00%	2,50%	3,50%	4,00%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
	• Communication options: optical port communication modules 3G/4G/RF P1 port • Version with SCS and version without SCS

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'.