KEMA Labs

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.
1670-22
Revision 18

Type S12U26

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: September 27, 2034.

This Certificate comprises 11 pages in total.

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

Alessandro Bertani
Director,
Services & Smart Technologies

Arnhem, September 27, 2024

REVISION OVERVIEW

The highest revision always replaces the earlier issued versions.

Rev. No.	Date of issue	Reason
0	October 28, 2022	First issue
1	October 31, 2022	Typos corrected in supporting documentation
2	November 2, 2022	Typos corrected in supporting documentation
3	November 14, 2023	New variant of the meter added
4	November 14, 2023	New variant of the meter added
5	November 27, 2023	• Software version corrected (page 3) • Registration method description updated (page 3)
6	December 4, 2023	• Model name added (page 3) • Picture with model name added (page 5) • Revision of report 1665-23 and 1666-23 upgraded
7	December 22, 2023	Report 1697-23 and 1708-23 added
8	December 22, 2023	Report 1699-23 and 1705-23 added
9	February 16, 2024	• Report 1521-24 added • Impulse voltage level increased to 8 kV
10	March 27, 2024	• Typo in report list corrected
11	May 3, 2024	• Report 1598-24 added • Report 1599-24 added
12	June 3, 2024	• Revision of report 1598-24 upgraded • CRC on page 3 updated • Name plate picture added
13	June 21, 2024	• Report 1618-24 added • Report 1619-24 added
14	June 27, 2024	• Report 1620-24 added • Report 1621-24 added
15	July 10, 2024	• Revision of report 1621-24 upgraded
16	July 25, 2024	• Revision of report 1620-24 upgraded • Revision of report 1621-24 upgraded • Typo page 4 corrected
17	September 26, 2024	• Revision of report 1618-24 upgraded • Revision of report 1619-24 upgraded • Firmware version V0.02.12 added • CRC firmware version V0.02.11 corrected
18	September 27, 2024	• Typo chapter 1 corrected

REPORT LIST

This Certificate is issued based on the following reports.

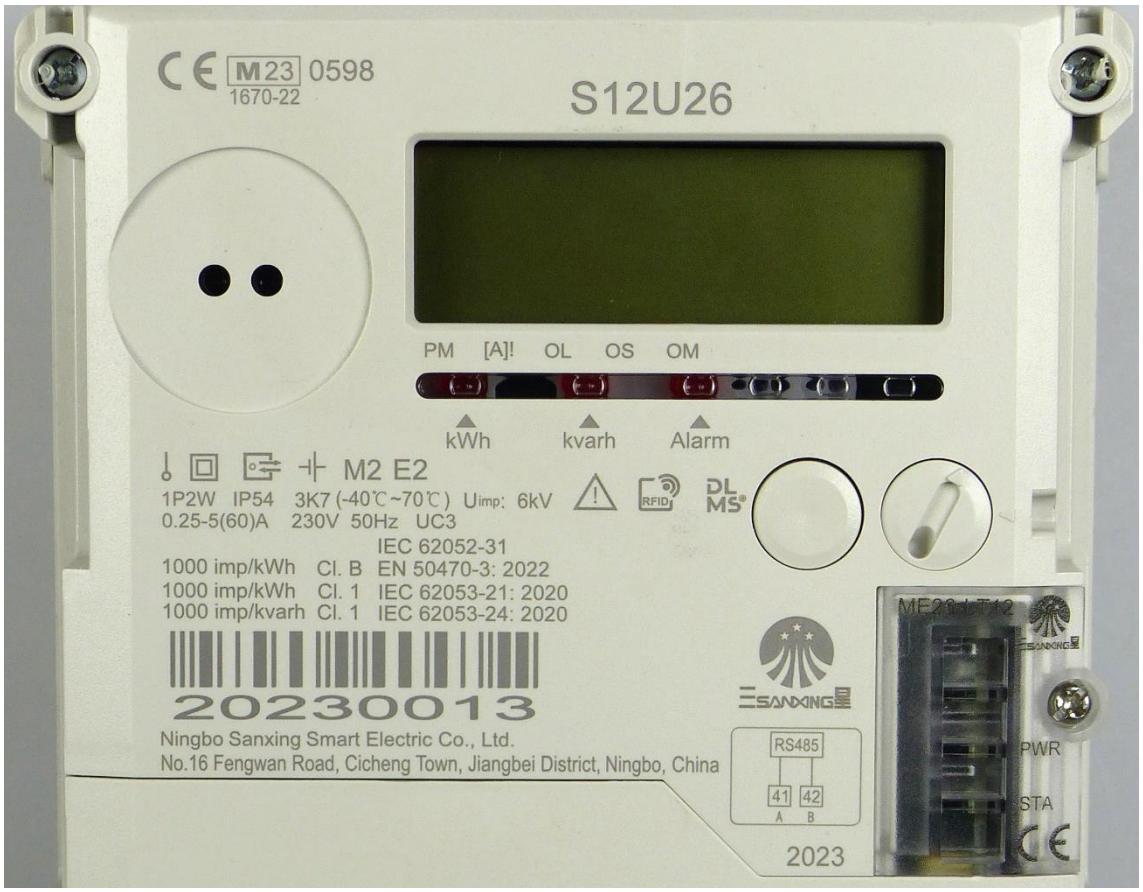
Report number	Revision	Firmware version
1690-22	2	V0.02.10
1691-22	1	
1657-23	0	
1665-23	2	
1666-23	1	
1697-23	0	V0.03.10
1708-23	0	
1699-23	1	V0.02.11
1705-23	0	
1521-24	0	
1598-24	1	V0.02.11
1599-24	0	
1618-24	1	
1619-24	1	
1620-24	1	
1621-24	2	V0.03.10
1685-24	0	V0.02.11
1686-24	0	V0.02.12

1 TECHNICAL DATA

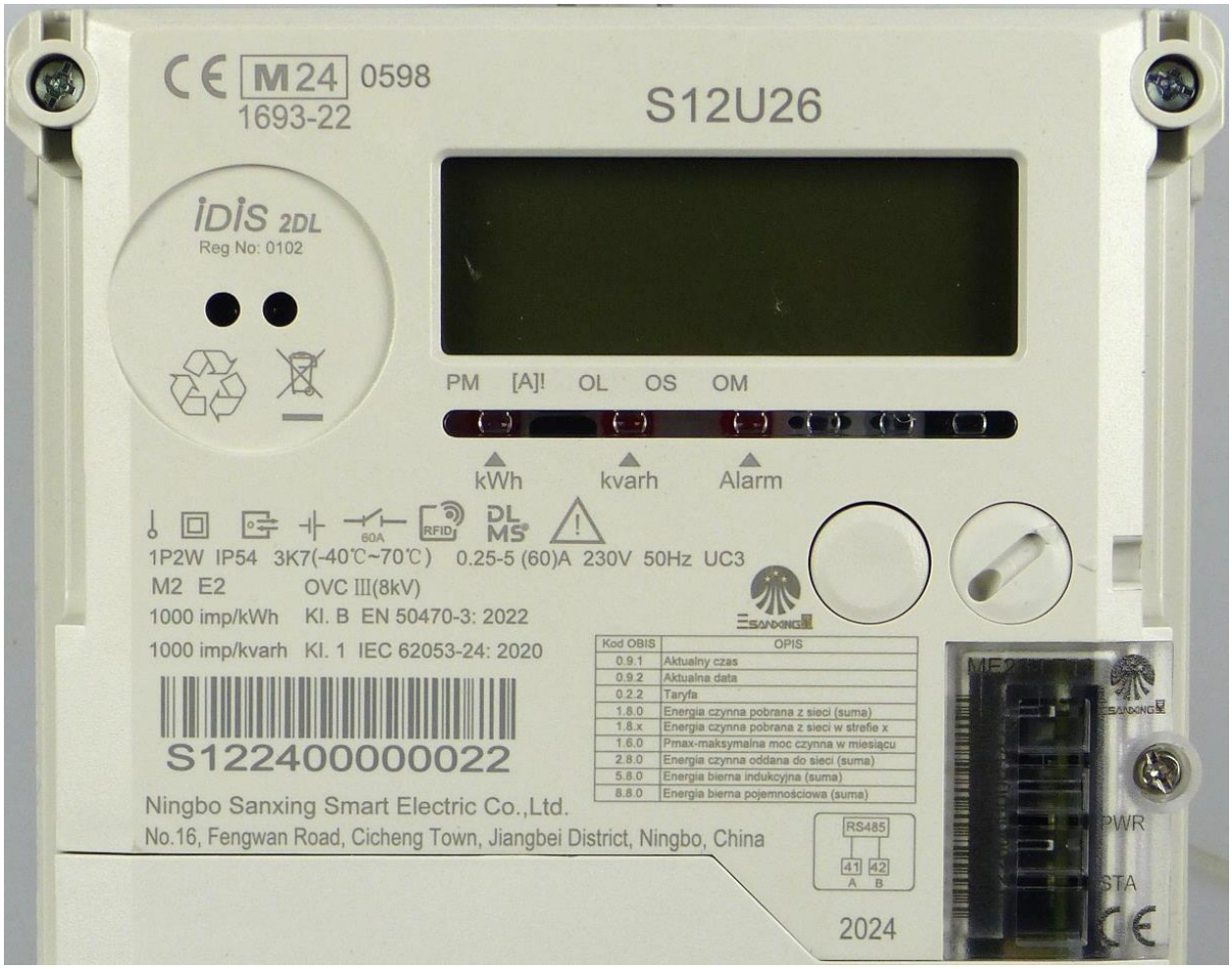
Manufacturer	Ningbo Sanxing Smart Electric Co., Ltd., No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo City, Zhejiang Province, 315034, China			
Production location	Ningbo Sanxing Smart Electric Co., Ltd., No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo City, Zhejiang Province, 315034, China			
Type	S12U26			
Model	SX601			
Connection	Direct			
Type of circuit	1P2W			
Accuracy class Wh	1/B			
Accuracy class varh	1 and 2			
Meter constant	1000 imp/kWh 1000 imp/kvarh			
V range	230 V			
I range I_{min}-I_n(I_{max})	0,25-5(40) A and 0,25-5(60) A and 0,25-5(80) A			
Frequency	50 Hz			
Temperature range	-40 ..70 °C			
Use	Indoor			
IP rating	IP54			
Protection Class	II			
Impulse voltage	8 kV			
Internal clock	Crystal controlled			
Environmental class	M1, M2, E1 and E2, CISPR32 class B			
Utilisation category	UC3			
LR Firmware ID	V0.03.10	V0.02.11	V0.02.12	V0.02.10
LR Firmware CRC	F289	C67F	78EF	E64F
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




kWh
kvarh
Alarm
Credit
Green: Enough
Red : Low
Flash : Warning
1P2W IP54 50Hz UC3 M2 E2 Uimp: 6kV
0. 25−5(60)A 230V 3K7(-40˚C~70˚C)
1000 imp/kWh Cl.B EN 50470-1/3
1000 imp/kWh Cl.1 IEC 62053-21
1000 imp/kvarh Cl.1 IEC 62053-24
RS485
41 42
A B
SANXING
2023
Ningbo Sanxing Smart Electric Co., Ltd.
No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo, China


M24 0598
1693-22
S12U26
iDIS 2DL
Reg No: 0102
PM [A]! OL OS OM
kWh
kvarh
Alarm
1P2W IP54 3K7(-40℃~70℃) 0.25-5 (60)A 230V 50Hz UC3
M2 E2 OVC III(8kV)
1000 imp/kWh Kl. B EN 50470-3: 2022
1000 imp/kvarh Kl. 1 IEC 62053-24: 2020
S12240000022
Kod OBIS
OPIS
0.9.1 Aktualny czas
0.9.2 Aktualna data
0.2.2 Taryfa
1.8.0 Energia czynna pobrana z sieci (suma)
1.8.x Energia czynna pobrana z sieci w strefie x
1.6.0 Pmax-maksymalna moc czynna w miesiącu
2.8.0 Energia czynna oddana do sieci (suma)
5.8.0 Energia bierna indukcyjna (suma)
8.8.0 Energia bierna pojemnościowa (suma)
Ningbo Sanxing Smart Electric Co.,Ltd.
No.16, Fengwan Road, Cicheng Town, Jiangbei District, Ningbo, China
RS485
41 42
A B
2024
PWR
STA


S12U26
CE M24 0598
XXXX/SGSXXXX
kWh
kvarh
Alarm
PLC
1P2W IP54 50Hz UC3 Uimp: 6kV
0.25-5(80)A 230V 3K7(-40°C~70°C)
1000 imp/kWh Cl. B EN 50470-1/3
1000 imp/kvarh Cl. 2 IEC 62053-23
DLMS
S1
RS485
31 32
41 42
A B
SANXING
Ningbo Sanxing Smart Electric Co., Ltd.
No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo, China
2024


1
2
3
4
L
N
L
N
LOAD

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:

		Additional % error due to temperature variation							
Current	**cosφ**	**-40°C**	**-25°C**	**-10°C**	**5°C**	**30°C**	**40°C**	**55°C**	**70°C**
Imin	**1**	- 0,74%	- 0,47%	- 0,22%	- 0,07%	0,05%	0,05%	- 0,08%	- 0,26%
Itr	**1**	- 0,75%	- 0,49%	- 0,25%	- 0,12%	0,01%	0,01%	- 0,09%	- 0,29%
Itr	**0,5i**	- 0,78%	- 0,50%	- 0,25%	- 0,09%	0,01%	- 0,01%	- 0,19%	- 0,39%
Itr	**0,8c**	- 0,77%	- 0,48%	- 0,27%	- 0,10%	0,00%	0,01%	- 0,09%	- 0,25%
In	**1**	- 0,73%	- 0,45%	- 0,23%	- 0,09%	0,01%	0,00%	- 0,10%	- 0,28%
In	**0,5i**	- 0,73%	- 0,45%	- 0,24%	- 0,10%	0,01%	- 0,03%	- 0,18%	- 0,40%
In	**0,8c**	- 0,73%	- 0,45%	- 0,23%	- 0,09%	0,00%	0,00%	- 0,08%	- 0,24%
Imax	**1**	- 0,58%	- 0,35%	- 0,17%	- 0,06%	- 0,01%	- 0,02%	- 0,14%	- 0,34%
Imax	**0,5i**	- 0,51%	- 0,31%	- 0,14%	- 0,06%	- 0,01%	- 0,07%	- 0,25%	- 0,49%
Imax	**0,8c**	- 0,48%	- 0,28%	- 0,12%	- 0,03%	0,00%	- 0,03%	- 0,14%	- 0,33%
Requirements									
Any	**1**	3,10%	2,40%	1,60%	0,90%	0,90%	1,60%	2,40%	3,10%
Any	**0,5/0,8**	4,40%	3,40%	2,30%	1,30%	1,30%	2,30%	3,40%	4,40%

5 OPTIONS AND VARIANTS

Overview of options and variants with details

Type designation	Details of the meter
S12U26	• Pre-payment version • Communication options: optical port RS485 PLC 4G module • Supply control switch

END OF DOCUMENT

The laboratories of KEMA Labs are:

- CESI S.p.A., Milan, Italy.
- FGH Engineering & Test GmbH, Mannheim, Germany.
- IPH Institut “Prüffeld für elektrische Hochleistungstechnik” GmbH, Berlin, Germany.
- KEMA B.V., Arnhem, The Netherlands.
- KEMA Labs, Zkušebnictví, a.s., Prague, the Czech Republic.
- KEMA-Powertest, LLC, Chalfont, United States.