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.
1563-18
Revision 20

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: March 14, 2034.

This Certificate comprises 9 pages in total.

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

Alessandro Bertani
Director,
Services & Smart Technologies

Arnhem, March 14, 2024

REVISION OVERVIEW

The highest revision always replaces the earlier issued versions.

Rev. No.	Date of issue	Reason
0 (V1)	8 November 2018	First issue
1 (V2)	8 November 2018	Report revised
2 (V3)	24 April 2020	Report revised
3 (V4)	4 September 2020	Report revised
4 (V5)	10 September 2020	Report revised
5 (V6)	24 September 2020	Report revised
6 (V7)	13 October 2020	Report revised
7 (V8)	13 October 2020	Report revised
8 (V9)	26 February 2021	Report revised
9 (V10)	23 May 2022	Report revised
10 (V11)	-	Skipped due changing from Version to Revision
11	23 May 2022	Report revised
12	23 May 2022	Report revised
13	23 May 2022	Report revised
14	23 May 2022	Report revised
15	20 May 2022	Report revised (date of issue earlier than R11 – R14 due to archiving issues)
16	31 May 2022	Report revised
17	15 June 2022	Report revised
18	6 April 2023	Report revised
19	9 August 2023	Report revised
20	March 14, 2024	Report 1551-24 added

REPORT LIST

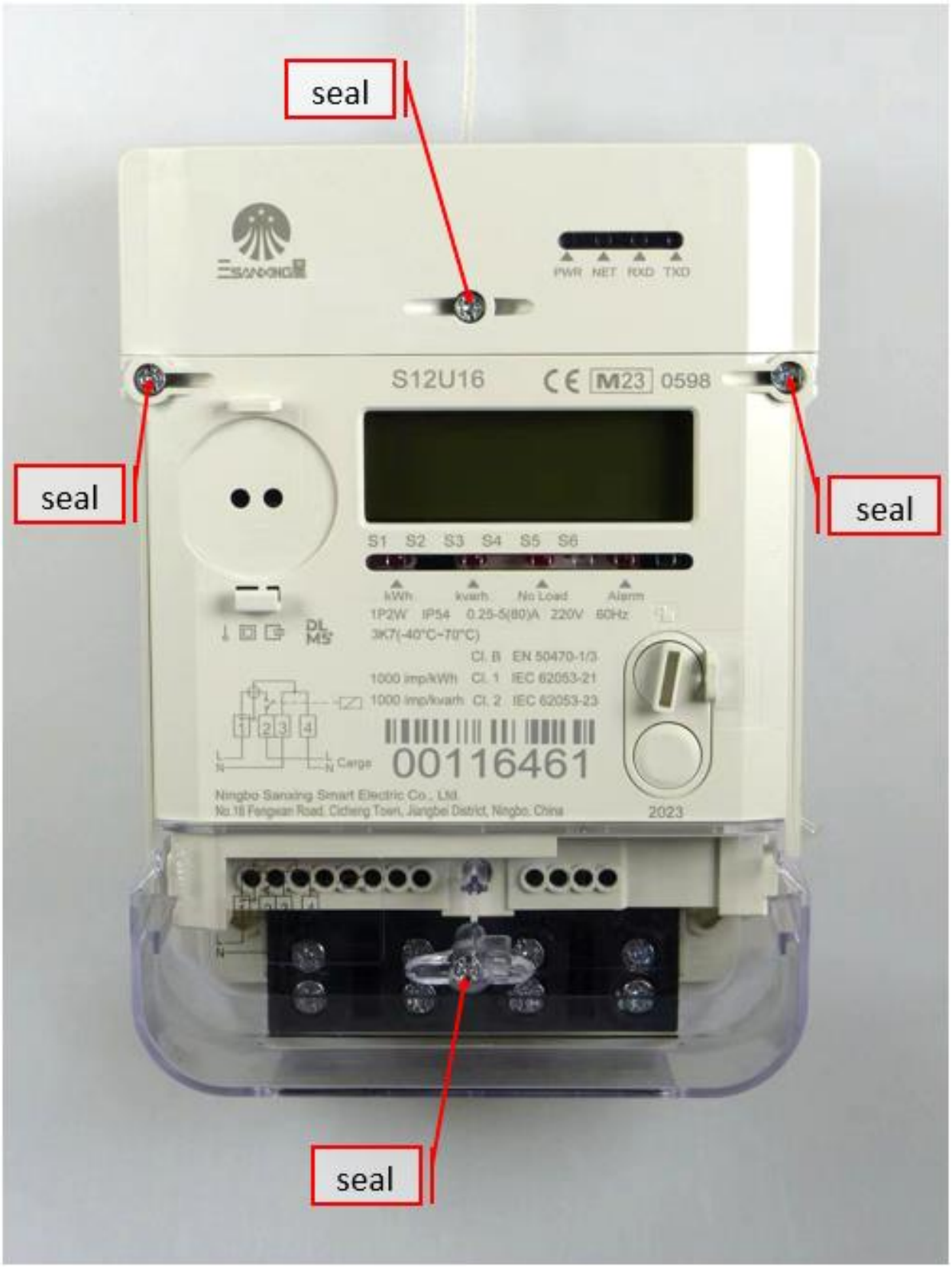
This Certificate is issued based on the following reports.

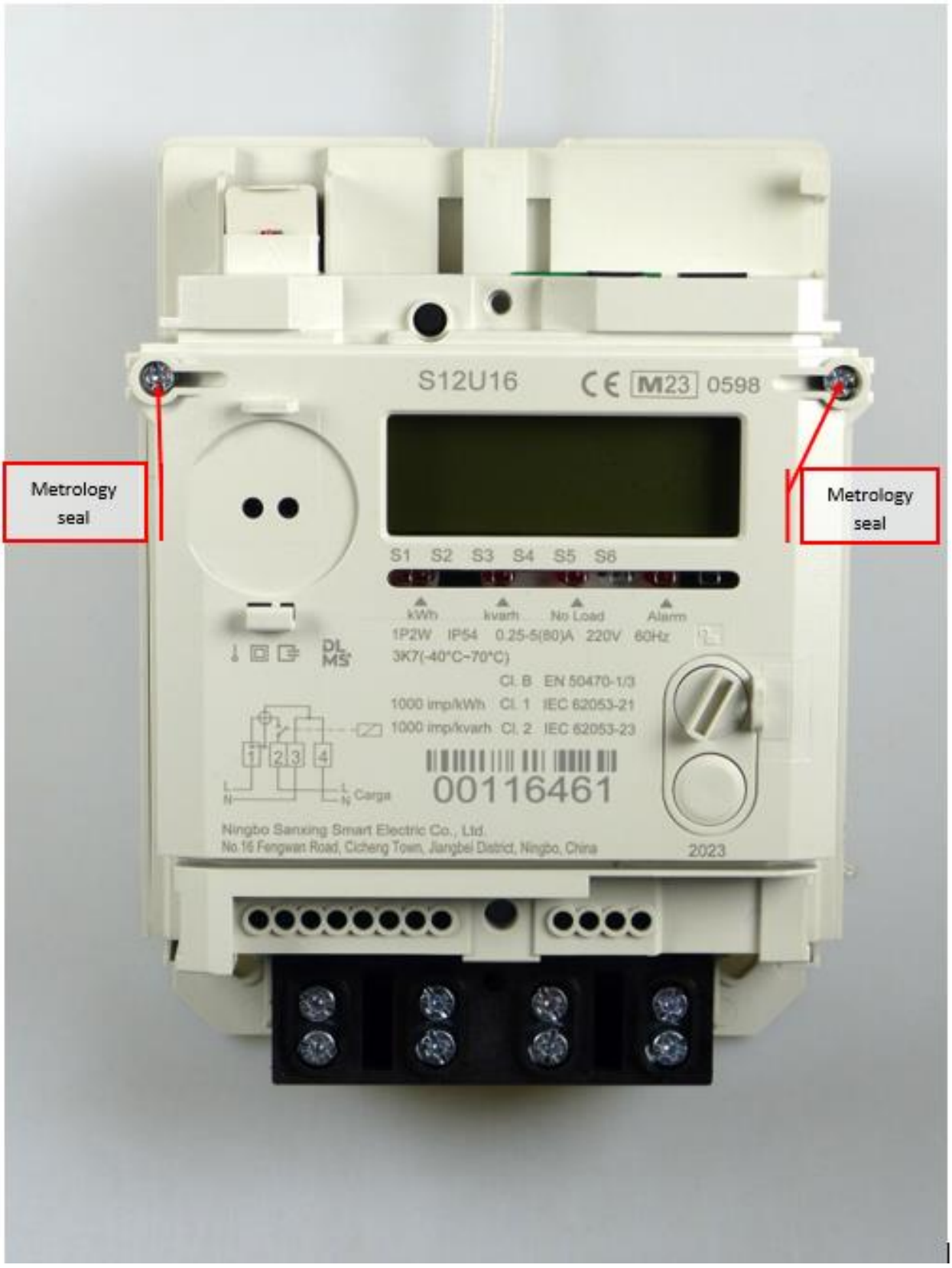
Report number	revision	Firmware version
1579-23	R0	V0.1
1551-24	R0	V1.00.01

1 TECHNICAL DATA

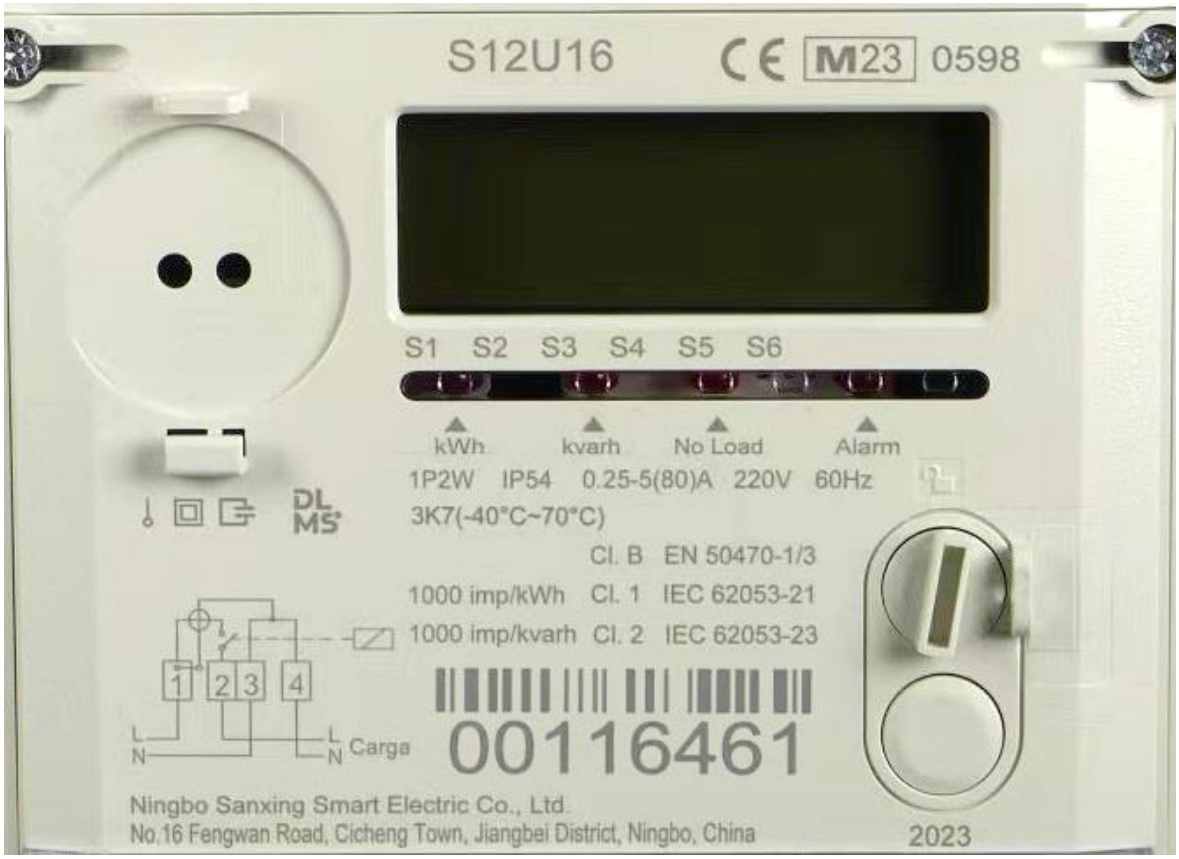
Manufacturer	Ningbo Sanxing Smart Electric Co., Ltd., No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo City, Zhejiang Province, 315034, China		
Production location	Ningbo Sanxing Smart Electric Co., Ltd., No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo City, Zhejiang Province, 315034, China		
Type	S12U16		
Model	P12S01, SX601 and SX1A1-SELS-05		
Connection	Direct		
Type of circuit	1P2W		
Accuracy class Wh	1		
Accuracy class varh	2		
Meter constant	1000 imp/kWh 1000 imp/kvarh		
V range	220, 230 and 240 V		
I range I_{min}-I_n(I_{max})	0,25-5(60), 0,25-5(80), 0,25-5(100), 0,5-10(60) and 0,5-10(100) A		
Frequency	50 and 60 Hz		
Temperature range	-40 .. 70 °C		
Use	Indoor		
IP rating	IP54		
Protection Class	II		
Impulse voltage	6 kV		
Environmental class	M1, M2, E1 and E2, CISPR32 class B		
LR Firmware ID	V1.00.01	V0.1	
LR Firmware CRC	0315	43A9	
Register	LCD		
Registry method(s):	bi-directional method with separate registers: received- and delivered energy is added in separate registers.		

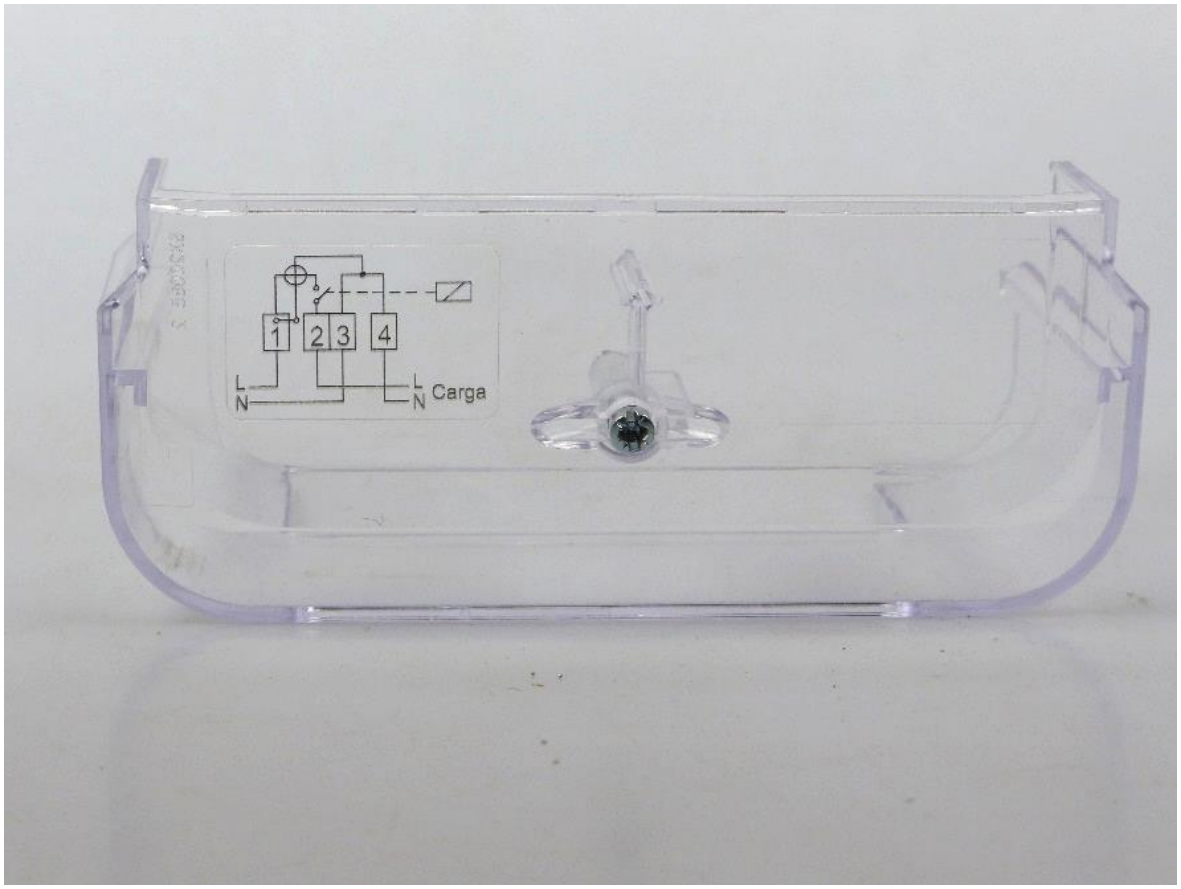
2 PHOTOGRAPHS AND SEALING




Metrology seal
Metrology seal
S12U16
M23 0598
S1 S2 S3 S4 S5 S6
kWh kvarh No Load Alarm
1P2W IP54 0.25-5(80)A 220V 60Hz
3K7(-40°C~70°C)
Cl. B EN 50470-1/3
1000 imp/kWh Cl. 1 IEC 62053-21
1000 imp/kvarh Cl. 2 IEC 62053-23
00116461
Ningbo Sanxing Smart Electric Co., Ltd.
No.16 Fengwan Road, Cicheng Town, Jiangbei District, Ningbo, China
2023

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:

I in % of I_{ref}	cos φ	Composite error %								
		ºC	-40	-25	-10	5	30	40	55	70
5	1		0,93%	0,64%	0,38%	0,20%	0,16%	0,19%	0,17%	0,16%
10	1		0,94%	0,64%	0,40%	0,23%	0,14%	0,16%	0,15%	0,16%
10	0,5 ind		0,96%	0,65%	0,38%	0,20%	0,13%	0,15%	0,13%	0,19%
10	0,8 cap		0,93%	0,64%	0,41%	0,22%	0,16%	0,17%	0,18%	0,16%
I_{max}	1		0,70%	0,45%	0,26%	0,11%	0,04%	0,04%	0,03%	0,13%
I_{max}	0,5 ind		0,66%	0,43%	0,25%	0,15%	0,11%	0,11%	0,16%	0,31%
I_{max}	0,8 cap		0,59%	0,38%	0,22%	0,09%	0,05%	0,06%	0,05%	0,14%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
P12S01, S12U16, SX601 or SX1A1-SELS-05	• Communication options: optical port RS485 NB-IoT WiFi 2G-4G Ethernet • Pulse output (active energy) • external relay • Mbus

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.
- 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'.