

## EU-TYPE EXAMINATION CERTIFICATE

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

EU-Type Examination  
Certificate No.  
**103810605-25**  
Revision 0



**Type** S12U16-01-Z10  
**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: May 27, 2035.

This Certificate comprises 8 pages in total.

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

  
Marten Dekker  
Operations Director Netherlands

Arnhem, May 27, 2025



## REVISION OVERVIEW

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

| Rev. No. | Date of issue | Reason      |
|----------|---------------|-------------|
| 0        | May 27, 2025  | First issue |

## REPORT LIST

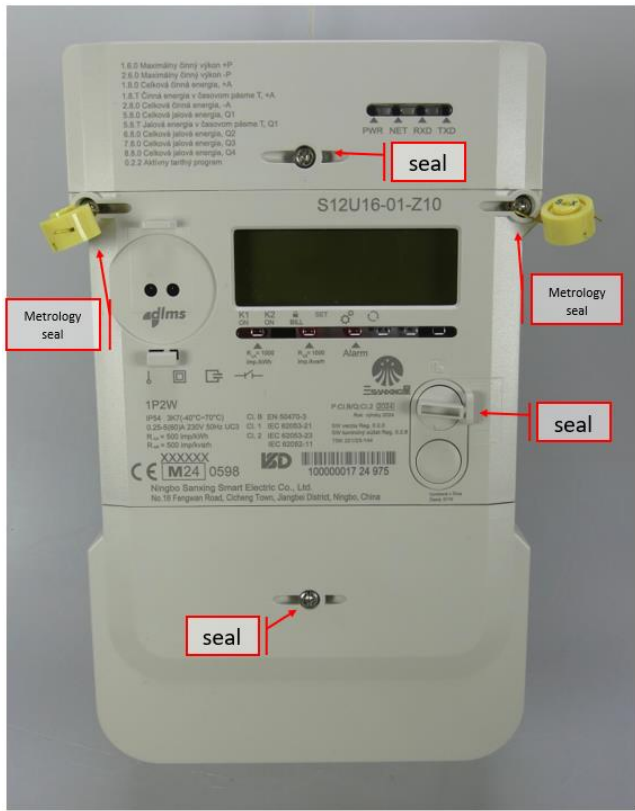
This Certificate is issued based on the following reports.

| Report number | Revision | Firmware version |
|---------------|----------|------------------|
| 103810601-25  | 0        | V1.26.00         |
| 103810602-25  | 0        | V1.26.00         |
| 103810603-25  | 0        | V1.26.00         |

## 1 TECHNICAL DATA

|                                |                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Manufacturer                   | Ningbo Sanxing Smart Electric Co., Ltd.<br>No.16 Fengwan Road, Cicheng Town, Jiangbei District<br>315034, Ningbo<br>China |
| Production location            | Ningbo Sanxing Smart Electric Co., Ltd.<br>No.16 Fengwan Road, Cicheng Town, Jiangbei District<br>315034, Ningbo<br>China |
| Type                           | S12U16                                                                                                                    |
| Model                          | 01-Z10                                                                                                                    |
| Connection                     | Direct                                                                                                                    |
| Type of circuit                | 1P2W                                                                                                                      |
| Accuracy class Wh              | 1/B                                                                                                                       |
| Accuracy class varh            | 2                                                                                                                         |
| Meter constant                 | 1000 imp/kWh<br>1000 imp/kvarh                                                                                            |
| 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                            | Indoor                                                                                                                    |
| IP rating                      | IP54                                                                                                                      |
| Protection Class               | II                                                                                                                        |
| Impulse voltage                | 6 kV                                                                                                                      |
| Utilisation category           | UC3                                                                                                                       |
| LR Firmware ID                 | V1.26.00                                                                                                                  |
| LR Firmware CRC                | 10D1778C                                                                                                                  |
| Register                       | LCD                                                                                                                       |
| Registry method(s):            | bi-directional method with separate registers: received- and delivered energy is added in separate registers.             |

**2      PHOTOGRAPHS AND SEALING**



S12U16-01-Z10

adlms

návod

1P2W

IP54 -3K7(-40°C~70°C)  
0.25-6(50A 230V 50Hz UC3  
 $R_{in} = 500 \text{ m}\Omega/\text{Wh}$   
 $R_{out} = 500 \text{ m}\Omega/\text{kvarh}$

CL.B EN 50470-3  
CL 1 IEC 62053-21  
CL 2 IEC 62053-21  
IEC 62052-11

P:CL.B/Q:CL.2 2024  
Rev. 01/04/2024  
SW verzia Rev. 0.2.5  
SW kontrolný súčet Reg. 0.2.5  
TSK 221023-144  
Uverejnené

XXXXXX  
CE M24 0598

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

100000001 24 834

23 24 25 26 41 42 27 28 29 31



#### 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:

|                  |         | Wh, 230 V, 0,25-5(60) A, 50 Hz |       |       |       |       |       |       |       |
|------------------|---------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|
|                  |         | Composite error                |       |       |       |       |       |       |       |
| Current          | cosφ    | -40°C                          | -25°C | -10°C | 5°C   | 30°C  | 40°C  | 55°C  | 70°C  |
| I <sub>min</sub> | 1       | 1,16%                          | 0,89% | 0,48% | 0,21% | 0,17% | 0,17% | 0,17% | 0,19% |
| I <sub>tr</sub>  | 1       | 0,65%                          | 0,48% | 0,22% | 0,09% | 0,07% | 0,07% | 0,09% | 0,15% |
| I <sub>tr</sub>  | 0,5i    | 1,10%                          | 0,88% | 0,48% | 0,23% | 0,20% | 0,20% | 0,19% | 0,20% |
| I <sub>tr</sub>  | 0,8c    | 0,78%                          | 0,58% | 0,28% | 0,11% | 0,09% | 0,09% | 0,11% | 0,15% |
| I <sub>n</sub>   | 1       | 0,24%                          | 0,11% | 0,02% | 0,00% | 0,01% | 0,04% | 0,11% | 0,20% |
| I <sub>n</sub>   | 0,5i    | 0,27%                          | 0,15% | 0,05% | 0,04% | 0,04% | 0,05% | 0,09% | 0,19% |
| I <sub>n</sub>   | 0,8c    | 0,24%                          | 0,11% | 0,03% | 0,02% | 0,02% | 0,05% | 0,11% | 0,20% |
| I <sub>max</sub> | 1       | 0,12%                          | 0,05% | 0,05% | 0,05% | 0,05% | 0,07% | 0,14% | 0,24% |
| I <sub>max</sub> | 0,5i    | 0,08%                          | 0,03% | 0,06% | 0,05% | 0,03% | 0,06% | 0,13% | 0,24% |
| I <sub>max</sub> | 0,8c    | 0,10%                          | 0,10% | 0,11% | 0,10% | 0,09% | 0,11% | 0,17% | 0,28% |
| 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                                                                                                                                                                                                          |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S12U16-01-Z10    | <ul style="list-style-type: none"><li>• Communication options:<br/>optical port<br/>RS485<br/>NB-IoT</li><li>• Pulse output</li><li>• Supply control switch</li><li>• Clock output</li><li>• Relay output K1 and K2</li></ul> |

## 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'.