

EU-TYPE EXAMINATION CERTIFICATE

Shenzhen Kaifa Technology (Chengdu) Co., Ltd.
No. 99 Tianquan Rd., Hi-Tech Development Zone,
611730, Chengdu,
China

EU-Type Examination

Certificate No.

1543-24

Revision 2



Type MA309M
Object Electronic Three-phase four-wire energy meter.
Transformer 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: November 8, 2034.

This Certificate comprises 14 pages in total.

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

Alessandro Bertani
Director,
Services & Smart Technologies

Arnhem, November 8, 2024



REVISION OVERVIEW

The highest revision always replaces the earlier issued versions.

Rev. No.	Date of issue	Reason
0	February 29, 2024	First issue
1	March 21, 2024	<ul style="list-style-type: none">• Class B added• Report 1562-24 added
2	November 8, 2024	<ul style="list-style-type: none">• Table chapter 1 corrected• Report 1679-24 and 1680-24 added

REPORT LIST

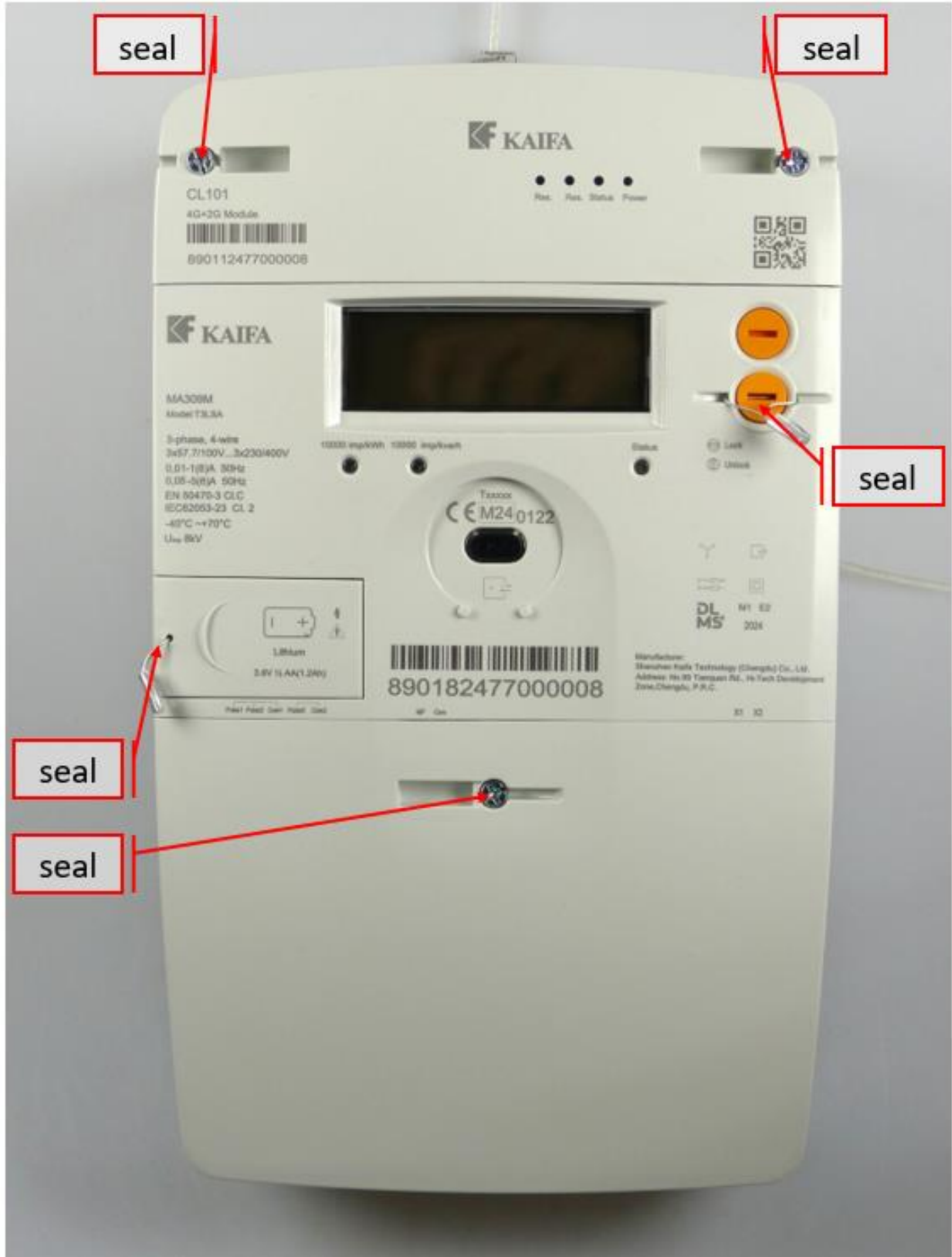
This Certificate is issued based on the following reports.

Report number	Revision
1642-23	1
1542-24	0
1562-24	0
1679-24	0
1680-24	0

1 TECHNICAL DATA

Manufacturer	Shenzhen Kaifa Technology (Chengdu) Co., Ltd., No. 99 Tianquan Rd., Hi-Tech Development Zone, 611730, Chengdu, China	
Production location	Shenzhen Kaifa Technology (Chengdu) Co., Ltd., No. 99 Tianquan Rd., Hi-Tech Development Zone, 611730, Chengdu, China	
Type	MA309M	
Model	T3LSA	
Connection	Transformer	
Type of circuit	3P4W	
Accuracy class Wh	0,2S/C	B
Meter constant	10000 imp/kWh 10000 imp/kvarh	
V range	3x57,7/100 V to 3x230/400 V	
I range I_{min} - I_n (I_{max})	0,01-1(6) and 0,05-5(6) 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	
LR Firmware ID	4903	
LR Firmware CRC	A29D2BB7	
Register	LCD	
Registry method(s):	Vectoral computation method	

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:

Current	cosφ	Phase	-40°C	-25°C	-10°C	5°C	30°C	40°C	55°C	70°C
I _{min}	1	3ph	0,10%	0,08%	0,07%	0,07%	0,08%	0,07%	0,07%	0,07%
I _{tr}	1	3ph	0,12%	0,12%	0,10%	0,10%	0,10%	0,10%	0,10%	0,11%
I _{tr}	1	1ph,1	0,07%	0,06%	0,05%	0,05%	0,06%	0,06%	0,06%	0,07%
I _{tr}	1	1ph,2	0,12%	0,11%	0,11%	0,11%	0,11%	0,11%	0,11%	0,11%
I _{tr}	1	1ph,3	0,10%	0,08%	0,02%	0,03%	0,02%	0,02%	0,05%	0,09%
I _{tr}	0,5i	3ph	0,08%	0,08%	0,07%	0,07%	0,07%	0,07%	0,08%	0,10%
I _{tr}	0,5i	1ph,1	0,21%	0,20%	0,20%	0,20%	0,20%	0,20%	0,21%	0,22%
I _{tr}	0,5i	1ph,2	0,19%	0,18%	0,19%	0,18%	0,18%	0,19%	0,19%	0,19%
I _{tr}	0,5i	1ph,3	0,26%	0,25%	0,25%	0,25%	0,25%	0,25%	0,25%	0,26%
I _{tr}	0,8c	3ph	0,10%	0,10%	0,08%	0,08%	0,08%	0,08%	0,08%	0,09%
I _n	1	3ph	0,06%	0,05%	0,02%	0,02%	0,01%	0,02%	0,03%	0,05%
I _n	1	1ph,1	0,05%	0,04%	0,01%	0,01%	0,01%	0,01%	0,03%	0,04%
I _n	1	1ph,2	0,05%	0,04%	0,01%	0,02%	0,01%	0,01%	0,02%	0,02%
I _n	1	1ph,3	0,11%	0,09%	0,03%	0,03%	0,02%	0,02%	0,04%	0,06%
I _n	0,5i	3ph	0,07%	0,05%	0,01%	0,01%	0,02%	0,02%	0,04%	0,07%
I _n	0,5i	1ph,1	0,06%	0,04%	0,01%	0,01%	0,01%	0,01%	0,03%	0,06%
I _n	0,5i	1ph,2	0,05%	0,04%	0,01%	0,01%	0,01%	0,01%	0,03%	0,04%
I _n	0,5i	1ph,3	0,12%	0,09%	0,03%	0,03%	0,01%	0,02%	0,04%	0,08%
I _n	0,8c	3ph	0,07%	0,05%	0,02%	0,02%	0,01%	0,02%	0,02%	0,04%
I _{max}	1	3ph	0,07%	0,06%	0,03%	0,03%	0,03%	0,04%	0,04%	0,06%
I _{max}	1	1ph,1	0,05%	0,04%	0,01%	0,02%	0,00%	0,01%	0,02%	0,04%
I _{max}	1	1ph,2	0,04%	0,03%	0,01%	0,01%	0,01%	0,02%	0,02%	0,03%
I _{max}	1	1ph,3	0,11%	0,08%	0,03%	0,03%	0,01%	0,02%	0,04%	0,06%
I _{max}	0,5i	3ph	0,09%	0,08%	0,06%	0,06%	0,06%	0,06%	0,07%	0,09%
I _{max}	0,5i	1ph,1	0,13%	0,12%	0,11%	0,11%	0,11%	0,11%	0,11%	0,12%
I _{max}	0,5i	1ph,2	0,05%	0,03%	0,01%	0,02%	0,02%	0,02%	0,03%	0,05%
I _{max}	0,5i	1ph,3	0,11%	0,08%	0,03%	0,03%	0,02%	0,03%	0,05%	0,08%
I _{max}	0,8c	3ph	0,06%	0,05%	0,02%	0,02%	0,02%	0,02%	0,04%	0,05%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
MA309MT3LSA	<ul style="list-style-type: none">• Communication options: optical port RS485 (2x) WiFi 4G• Pulse output (kWh+kvarh)• EOI output• Output I/O• External relay

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'.