

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.

1074-19

Revision 17



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: January 7, 2035.

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, January 7, 2025



REVISION OVERVIEW

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

| Rev. No. | Date of issue | Reason |
|----------|------------------|--------------------------------|
| 0 (V1) | 5 March 2019 | First issue |
| 1 (V2) | 2 May 2019 | Corrections to the testreport |
| 2 (V3) | 10 May 2019 | Typo corrected |
| 3 (V4) | 13 May 2019 | Typo corrected |
| 4 (V5) | 10 December 2019 | Corrections to the testreport |
| 5 (V6) | - | Wrong issue |
| 6 (V7) | - | Wrong issue |
| 7 (V8) | - | Wrong issue |
| 8 (V9) | 25 February 2021 | Typo corrected |
| 9 (V10) | 17 June 2021 | Product update |
| 10 (V11) | 26 November 2021 | Product update |
| 10 | - | Wrong issue |
| 11 | 24 January 2022 | Typo corrected |
| 12 | - | Wrong issue |
| 13 | 14 March 2022 | Typo corrected |
| 14 | 15 December 2022 | Product update |
| 15 | 12 October 2023 | Product update |
| 16 | 31 October 2023 | Typo corrected |
| 17 | 7 January 2025 | Report 103662102-25 was added. |

REPORT LIST

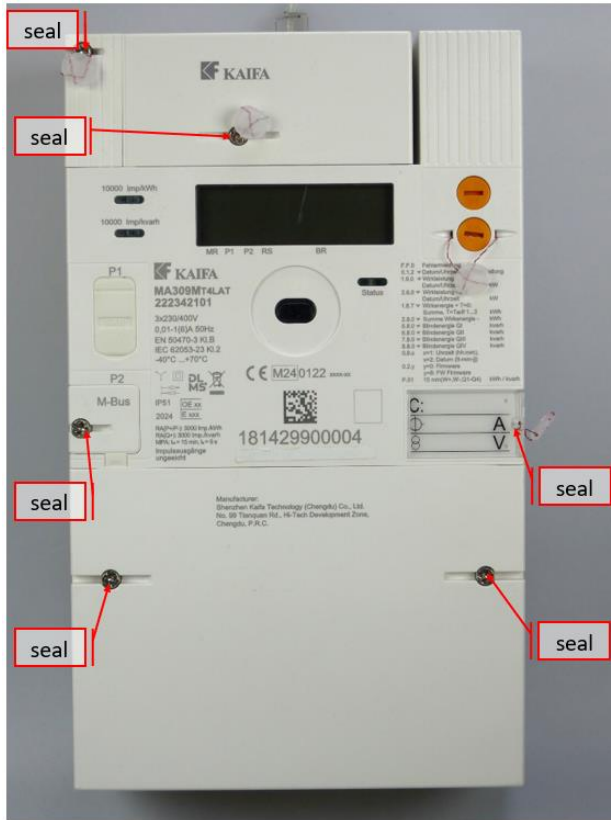
This Certificate is issued based on the following reports.

| Report number | Revision |
|---------------|----------|
| 1631-23 | R1 |
| 103662102-25 | R0 |

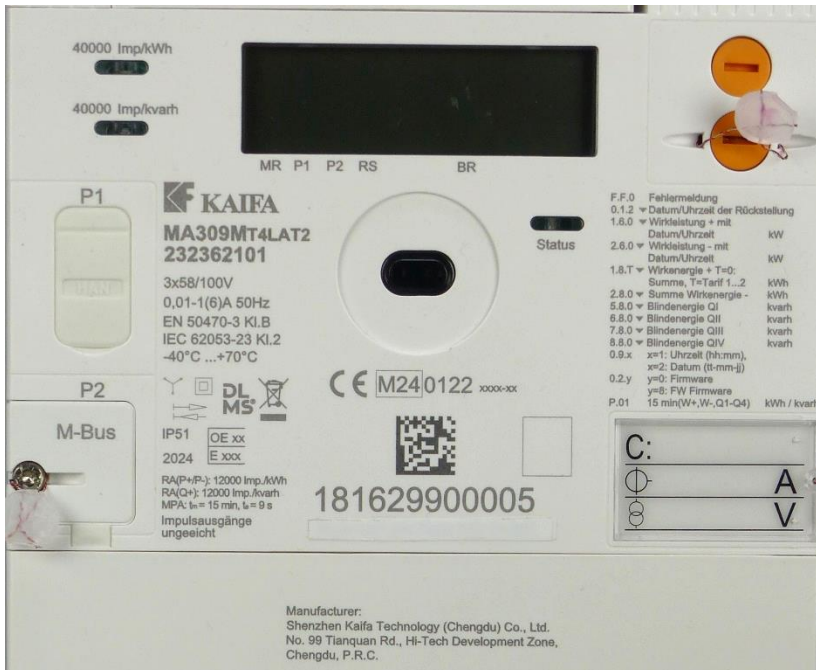
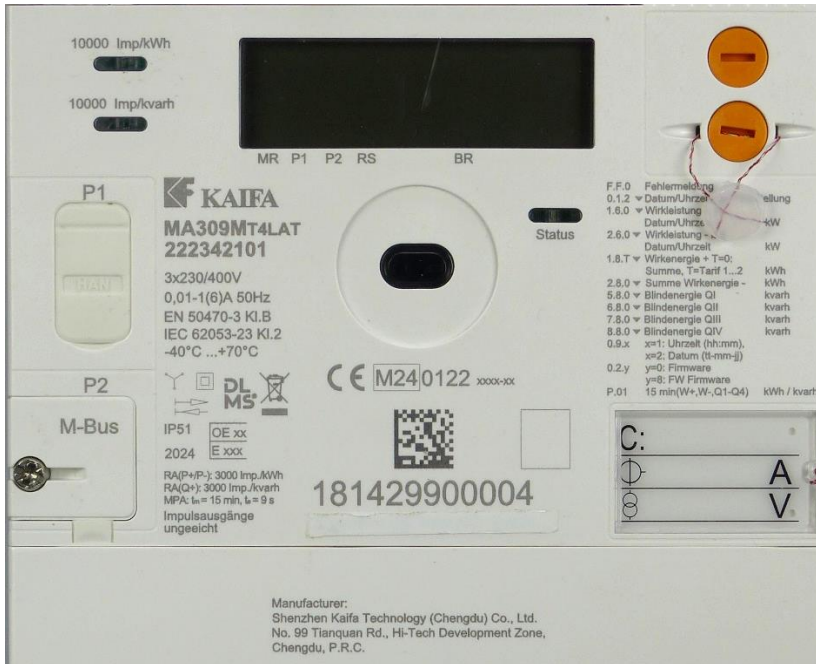
1 TECHNICAL DATA

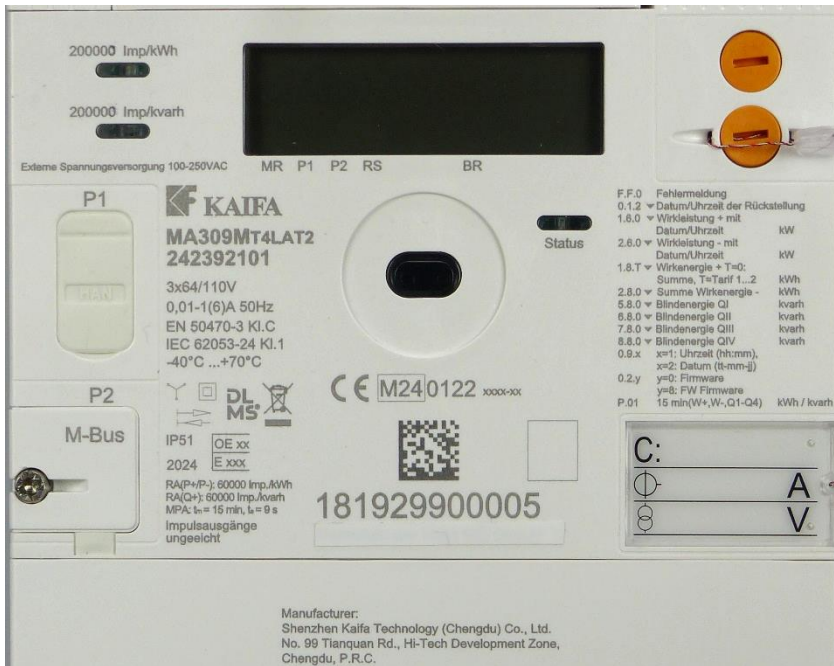
| | | |
|---|--|--|
| Manufacturer | Shenzhen Kaifa Technology (Chengdu) Co., Ltd., No. 99 Tianquan Rd., Hi-Tech Development Zone, 611730, Chengdu, China | |
| Production location | Shenzhen Kaifa Technology (Chengdu) Co., Ltd., No. 99 Tianquan Rd., Hi-Tech Development Zone, 611730, Chengdu, China | |
| Type | MA309M | |
| Model | T4LAT | T4LAT2 |
| Connection | Transformer (CT) | Transformer CTVT |
| Type of circuit | 3P4W | |
| Accuracy class Wh | 0,5S/C | 0,5S/C/B |
| Accuracy class varh | 2 | 1S/1/2 |
| Meter constant | Active: 10000, 20000, 40000, 80000, 100000, 160000, 200000 imp./kWh (configurable) Reactive: 10000, 20000, 40000, 80000, 100000, 160000, 200000 imp./kvarh (configurable) | |
| V range | 3x230/400 V | 3x58/100 V...3x240/415 V |
| I range I_{min} - I_n (I_{max}) | 0,01 – 1(6) A and 0,05 – 5(6) A | |
| Frequency | 50 Hz | |
| Temperature range | -40 .. 70 °C | |
| Use | Indoor | |
| IP rating | IP54 | |
| Protection Class | II | |
| Impulse voltage | 6 kV | |
| Internal clock | Crystal controlled | |
| Environmental class | M1, M2, E1 and E2, CISPR32 class B | |
| LR Firmware ID | 305102 | 3x58V: 605102 3x64V: 505102 3x230V: 305102 |
| LR Firmware CRC | B7952E6B5E0877C39D9C532769EDC F604E37951ABCD8C9C00358FE16AF B710A235A880ADCF48D42775F658E 7430FCF9D9400DD8EF9728FF6195B1 7E875F178E | 3x58V: 57E7A60D6AE9838F02C6570E4F2C89 E9222B1F2FE94FB3241239A26BE53D 0DBD62A8AE88B72FD5A4D709C06C D020F5DAB2AED1006BCD8075A6453 2B812912C9C 3x64V: 00494CAB843266C4BA9E34D2494FA 73519E5F1C3DA65C05A0BCD448653 E5690AAC48B2FDD6AC677FCEF796D 3DC102BAEB684551085DBA612D1A8 E89735892361 3x230V: B7952E6B5E0877C39D9C532769EDCF 604E37951ABCD8C9C00358FE16AF B710A235A880ADCF48D42775F658E 7430FCF9D9400DD8EF9728FF6195B1 7E875F178E |
| Register | LCD | |
| Registry method(s): | Vectorial 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:

$$\varepsilon_m = \sqrt{\varepsilon^2(I, \cos\varphi) + \delta^2(T, I, \cos\varphi) + \delta^2(U, I, \cos\varphi) + \delta^2(f, I, \cos\varphi)}$$

in which:

$\varepsilon^2(I, \cos\varphi)$ = 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 | Composite error | | | | | | | |
|---------|------|-------|-----------------|-------|-------|-------|-------|-------|-------|-------|
| | | | -40°C | -25°C | -10°C | 5°C | 30°C | 40°C | 55°C | 70°C |
| Imin | 1 | 3ph | 0,22% | 0,18% | 0,20% | 0,19% | 0,10% | 0,09% | 0,04% | 0,03% |
| Itr | 1 | 3ph | 0,13% | 0,12% | 0,08% | 0,06% | 0,03% | 0,04% | 0,06% | 0,08% |
| Itr | 1 | 1ph,1 | 0,10% | 0,10% | 0,08% | 0,05% | 0,04% | 0,03% | 0,03% | 0,05% |
| Itr | 1 | 1ph,2 | 0,17% | 0,14% | 0,09% | 0,05% | 0,05% | 0,08% | 0,14% | 0,25% |
| Itr | 1 | 1ph,3 | 0,12% | 0,10% | 0,07% | 0,06% | 0,04% | 0,05% | 0,07% | 0,07% |
| Itr | 0,5i | 3ph | 0,19% | 0,17% | 0,13% | 0,08% | 0,01% | 0,04% | 0,13% | 0,17% |
| Itr | 0,5i | 1ph,1 | 0,18% | 0,15% | 0,11% | 0,09% | 0,06% | 0,06% | 0,06% | 0,08% |
| Itr | 0,5i | 1ph,2 | 0,25% | 0,22% | 0,16% | 0,12% | 0,12% | 0,17% | 0,38% | 0,58% |
| Itr | 0,5i | 1ph,3 | 0,14% | 0,10% | 0,08% | 0,05% | 0,02% | 0,02% | 0,04% | 0,06% |
| Itr | 0,8c | 3ph | 0,11% | 0,09% | 0,06% | 0,04% | 0,03% | 0,05% | 0,05% | 0,05% |
| In | 1 | 3ph | 0,13% | 0,11% | 0,09% | 0,05% | 0,04% | 0,05% | 0,07% | 0,09% |
| In | 1 | 1ph,1 | 0,10% | 0,09% | 0,07% | 0,04% | 0,03% | 0,04% | 0,04% | 0,05% |
| In | 1 | 1ph,2 | 0,15% | 0,12% | 0,09% | 0,05% | 0,04% | 0,05% | 0,08% | 0,11% |
| In | 1 | 1ph,3 | 0,15% | 0,13% | 0,09% | 0,06% | 0,06% | 0,08% | 0,09% | 0,11% |
| In | 0,5i | 3ph | 0,17% | 0,15% | 0,12% | 0,09% | 0,06% | 0,09% | 0,12% | 0,15% |
| In | 0,5i | 1ph,1 | 0,14% | 0,13% | 0,11% | 0,09% | 0,07% | 0,08% | 0,09% | 0,11% |
| In | 0,5i | 1ph,2 | 0,18% | 0,15% | 0,12% | 0,07% | 0,06% | 0,09% | 0,15% | 0,20% |
| In | 0,5i | 1ph,3 | 0,21% | 0,18% | 0,15% | 0,12% | 0,10% | 0,11% | 0,14% | 0,17% |
| In | 0,8c | 3ph | 0,12% | 0,10% | 0,07% | 0,05% | 0,03% | 0,04% | 0,05% | 0,05% |
| Imax | 1 | 3ph | 0,14% | 0,12% | 0,09% | 0,06% | 0,05% | 0,06% | 0,08% | 0,09% |
| Imax | 1 | 1ph,1 | 0,10% | 0,09% | 0,07% | 0,05% | 0,04% | 0,05% | 0,05% | 0,06% |
| Imax | 1 | 1ph,2 | 0,15% | 0,13% | 0,09% | 0,06% | 0,05% | 0,06% | 0,09% | 0,11% |
| Imax | 1 | 1ph,3 | 0,17% | 0,14% | 0,11% | 0,09% | 0,08% | 0,09% | 0,10% | 0,12% |
| Imax | 0,5i | 3ph | 0,21% | 0,20% | 0,18% | 0,16% | 0,15% | 0,16% | 0,21% | 0,21% |
| Imax | 0,5i | 1ph,1 | 0,19% | 0,19% | 0,17% | 0,17% | 0,16% | 0,16% | 0,17% | 0,17% |
| Imax | 0,5i | 1ph,2 | 0,19% | 0,17% | 0,15% | 0,12% | 0,12% | 0,14% | 0,40% | 0,36% |
| Imax | 0,5i | 1ph,3 | 0,26% | 0,24% | 0,22% | 0,21% | 0,20% | 0,20% | 0,22% | 0,24% |
| Imax | 0,8c | 3ph | 0,12% | 0,10% | 0,07% | 0,04% | 0,02% | 0,03% | 0,02% | 0,04% |

5 OPTIONS AND VARIANTS

Overview of variants with details:

| Type designation | Details of the meter |
|------------------|---|
| MA309MT4LAT | <ul style="list-style-type: none"> • Communication options: optical port NB-IoT WiFi 4G (Lte) G3-PLC P1 port (HAN) P2 port (M-Bus) • Pulse output (3x) • Measurement period output. |
| MA309MT4LAT2 | <ul style="list-style-type: none"> • Communication options: optical port NB-IoT WiFi 4G (Lte) G3-PLC P1 port (HAN) P2 port (M-Bus) • Pulse output (3x) • Measurement period output • Auxiliary power supply |

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'.