EU-TYPE EXAMINATION CERTIFICATE

Shenzhen Kaifa Technology (Chengdu) Co., Ltd.
No. 99 Tianquan Rd., Hi-Tech Development Zone
611731, Chengdu
China

EU-Type Examination
Certificate No.
1641-24
Revision 2

Type MA304

Object Electronic three-phase four-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: April 3, 2035.

This Certificate comprises 8 pages in total.

Issued by KEMA B.V.

Marten Dekker
Operations Director Netherlands

Arnhem, April 3, 2025

REVISION OVERVIEW

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

Rev. No.	Date of issue	Reason
0	March 21, 2025	First issue
1	March 26, 2025	- Report 103254108-25 revised - Report 103254109-25 revised - Report 103254110-25 revised - Report list and Clause 1; firmware corrected - Clause 1; typo in type name corrected
2	April 3, 2025	- Report 103254108-25 revised - Report list and Clause 1; firmware corrected

REPORT LIST

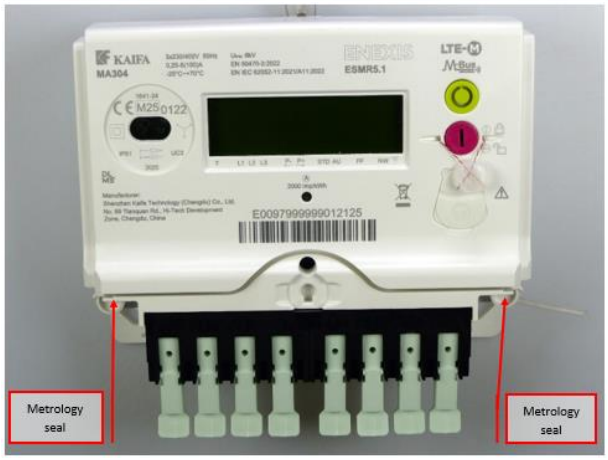
This Certificate is issued based on the following reports.

Report number	Revision	Firmware version
103254108-25	R2	10000019, 10000021 and 10000022
103254109-25	R1	
103254110-25	R1	

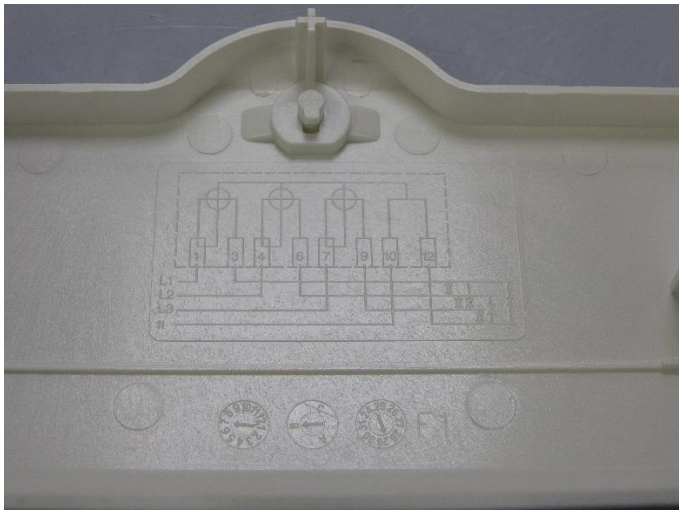
1 TECHNICAL DATA

Manufacturer	Shenzhen Kaifa Technology (Chengdu) Co., Ltd. No. 99 Tianquan Rd., Hi-Tech Development Zone 611731, Chengdu China	
Production location	Shenzhen Kaifa Technology (Chengdu) Co., Ltd. No. 99 Tianquan Rd., Hi-Tech Development Zone 611731, Chengdu China	
Type	MA304	
Connection	Direct	
Type of circuit	3P4W	
Accuracy class Wh	1/B/A	
Accuracy class varh	-	
Meter constant	2000 imp/kWh	
V range	3x230/400 V	
I range I_{min}-I_n(I_{max})	0,25-5(100)A	
Frequency	50 Hz	
Temperature range	-25°C .. 70 °C	
Use	Indoor	
IP rating	IP51	
Protection Class	II	
Impulse voltage	6 kV	
Internal clock	Crystal controlled	
Environmental class	M1, M2, E1 and E2, CISPR32 class B	
Utilisation category	UC3	
LR Firmware ID	1	10000019
	2	10000021
	3	10000022
LR Firmware CRC	1	976ECC9F1EA881C253E4D1FCDD81B992DF630702EF5CBC5B78CB21A08F3FAAF5864B22259CFF8F618645F6F4FDF4C3ED4113008E110CDC7E01554A313EC6A356
	2	6C071915465439B55D06DFF86D1105224339014DE812218BB28DA140D34CCE04304BEE3907C12C8AB21DC64582C561B7D1A89707E6E076A697BECD6D7431854B
	3	64DE2035166B0290DA2AFFCDE2EDBA9A9C1F5973C5FD291C3B5779CB15644DDE68B99FE5C8368F4C4D5964BC28521769127C681608AD3952D12BAE3398137F5B
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:

Composite error										
Current	**cosϕ**	**Phase**		**-25°C**	**-10°C**	**5°C**	**30°C**	**40°C**	**55°C**	**70°C**
Imin	**1**	**3ph**		0,33%	0,22%	0,11%	0,09%	0,12%	0,19%	0,24%
Itr	**1**	**3ph**		0,35%	0,22%	0,12%	0,03%	0,10%	0,17%	0,21%
Itr	**1**	**1ph,1**		0,34%	0,24%	0,13%	0,08%	0,12%	0,18%	0,21%
Itr	**1**	**1ph,2**		0,34%	0,22%	0,14%	0,09%	0,12%	0,22%	0,27%
Itr	**1**	**1ph,3**		0,33%	0,17%	0,11%	0,05%	0,06%	0,14%	0,17%
Itr	**0,5i**	**3ph**		0,30%	0,17%	0,09%	0,03%	0,07%	0,12%	0,17%
Itr	**0,5i**	**1ph,1**		0,33%	0,25%	0,16%	0,05%	0,09%	0,12%	0,16%
Itr	**0,5i**	**1ph,2**		0,28%	0,23%	0,18%	0,16%	0,18%	0,23%	0,27%
Itr	**0,5i**	**1ph,3**		0,33%	0,15%	0,10%	0,09%	0,11%	0,13%	0,16%
Itr	**0,8c**	**3ph**		0,38%	0,25%	0,14%	0,08%	0,12%	0,18%	0,23%
In	**1**	**3ph**		0,34%	0,22%	0,12%	0,03%	0,09%	0,16%	0,20%
In	**1**	**1ph,1**		0,37%	0,24%	0,15%	0,06%	0,12%	0,17%	0,20%
In	**1**	**1ph,2**		0,36%	0,23%	0,12%	0,04%	0,09%	0,18%	0,25%
In	**1**	**1ph,3**		0,29%	0,18%	0,11%	0,04%	0,07%	0,13%	0,16%
In	**0,5i**	**3ph**		0,30%	0,19%	0,12%	0,05%	0,07%	0,14%	0,17%
In	**0,5i**	**1ph,1**		0,34%	0,23%	0,14%	0,02%	0,07%	0,13%	0,15%
In	**0,5i**	**1ph,2**		0,31%	0,19%	0,12%	0,07%	0,10%	0,16%	0,23%
In	**0,5i**	**1ph,3**		0,25%	0,15%	0,09%	0,06%	0,08%	0,12%	0,14%
In	**0,8c**	**3ph**		0,36%	0,23%	0,12%	0,05%	0,10%	0,17%	0,22%
Imax	**1**	**3ph**		0,22%	0,16%	0,09%	0,05%	0,08%	0,12%	0,15%
Imax	**1**	**1ph,1**		0,25%	0,18%	0,13%	0,07%	0,09%	0,12%	0,12%
Imax	**1**	**1ph,2**		0,21%	0,13%	0,07%	0,04%	0,07%	0,12%	0,17%
Imax	**1**	**1ph,3**		0,16%	0,10%	0,07%	0,07%	0,08%	0,11%	0,12%
Imax	**0,5i**	**3ph**		0,18%	0,15%	0,14%	0,13%	0,14%	0,15%	0,16%
Imax	**0,5i**	**1ph,1**		0,26%	0,24%	0,23%	0,21%	0,21%	0,22%	0,22%
Imax	**0,5i**	**1ph,2**		0,14%	0,10%	0,08%	0,07%	0,07%	0,11%	0,14%
Imax	**0,5i**	**1ph,3**		0,14%	0,13%	0,12%	0,12%	0,12%	0,13%	0,14%
Imax	**0,8c**	**3ph**		0,21%	0,14%	0,09%	0,05%	0,08%	0,11%	0,12%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
MA304	• Communication options: optical port LTE-M Mbus (wireless) P1 port

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'.