KEMA Labs

EU-TYPE EXAMINATION CERTIFICATE

Kaifa Technology Netherlands B.V.
Nieuwezijds Voorburgwal 104, 1012SG Amsterdam
The Netherlands

EU-Type Examination
Certificate No.
1624-23
Revision 0

Type MA110M

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: October 11, 2033.

This Certificate comprises 8 pages in total.

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

Alessandro Bertani
Director,
Services & Smart Technologies

Arnhem, October 11, 2023

REVISION OVERVIEW

The highest revision always replaces the earlier issued versions.

Rev. No.	Date of issue	Reason
0	October 11, 2023	First issue

REPORT LIST

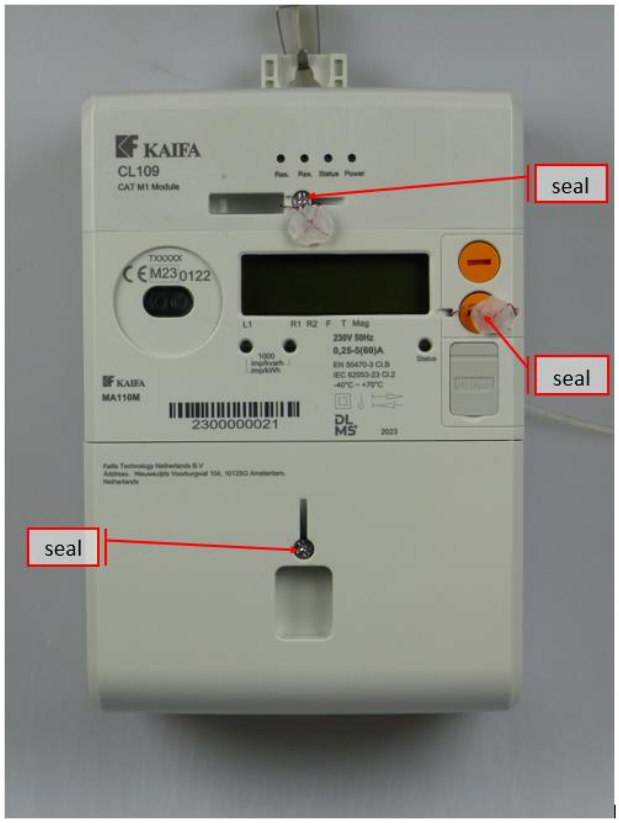
This Certificate is issued based on the following reports.

Report number	revision
1623-23	Rev. No 0

1 TECHNICAL DATA

Manufacturer	Kaifa Technology Netherlands B.V.,
Mark - Type	MA110M
Accuracy Class	Active: B
Voltage range	230 V
Current range (Imin-Iref(Imax))	0,25-5(60) A
Frequency	50 Hz
Meter constant (LED)	Optical Pulse output active: 500 - 10000 imp./kWh
Type of circuit	1P2W
Temperature range	-40 °C… 70°C
Use	Indoor
IP Rating	IP54
Protection Class	II
Impulse voltage	6 kV
Environmental class	M1, M2, E1 and E2
Register	LCD
Software/Firmware version	010001
CRC Checksum	5E192274
Location of Manufacturer address	Terminal cover

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:

I in % of I_{ref}	cos φ	Composite error %							
		-40 ºC	-25 ºC	-10 ºC	5 ºC	30 ºC	40 ºC	55 ºC	70 ºC
5	1	1,01%	0,78%	0,57%	0,32%	0,23%	0,33%	0,47%	0,61%
10	1	1,01%	0,79%	0,56%	0,30%	0,17%	0,28%	0,43%	0,58%
10	0,5 ind.	1,03%	0,79%	0,57%	0,28%	0,18%	0,30%	0,47%	0,64%
10	0,8 cap.	1,00%	0,77%	0,57%	0,32%	0,23%	0,31%	0,45%	0,59%
I_{max}	1	1,00%	0,77%	0,53%	0,27%	0,15%	0,28%	0,42%	0,57%
I_{max}	0,5 ind.	1,04%	0,80%	0,56%	0,29%	0,16%	0,29%	0,45%	0,61%
I_{max}	0,8 cap.	0,99%	0,76%	0,52%	0,26%	0,16%	0,29%	0,43%	0,56%

5 OPTIONS AND VARIANTS

Overview of variants with details

Type designation	Details of the meter
MA110M	- Communication options: 4G+2G CAT M1+NB CAT M1 RS485 P1 port Wired M-Bus Optical output - Pulse output (limited meter constant) - Auxiliary relay terminal - HAN port

END OF DOCUMENT

The laboratories of KEMA Labs are:

- CESI S.p.A., Milan, Italy.
- FGH Engineering & Test GmbH, Mannheim, Germany.
- IPH Institut “Prüffeld für elektrische Hochleistungstechnik” GmbH, Berlin, Germany.
- KEMA B.V., Arnhem, The Netherlands.
- KEMA Labs, Zkušebnictví, a.s., Prague, the Czech Republic.
- KEMA-Powertest, LLC, Chalfont, United States.