EU-type examination certificate

Issued by	NMi Certin B.V., designated and notified by the Netherlands to perform tasks with respect to conformity asssessment procedures mentioned in article 17 of Directive 2014/32/EU, after having established that the measuring instrument meets the applicable requirements of Directive 2014/32/EU, to:
Manufacturer	Loxone Electronics GmbH Smart Home 1 4154 Kollerschlag Austria
Measuring instrument	A static **Active Electrical Energy Meter**

Type	:	Energy Meter 3-Phase Tree (100567)
Manufacturer's mark or name	:	Loxone
Reference voltage	:	3x230/400 V
Reference current	:	10 A
Destined for the measurement of	:	electrical energy, in a - single-phase three-wire network - three-phase three-wire network - three-phase four-wire network
Accuracy class	:	A or B
Environment classes	:	M1 / E2
Temperature range	:	-40 °C / +70 °C

Further properties are described in the annexes:
– Description T12774 revision 0;
– Documentation folder T12774-1.

Valid until	18 July 2034
Initially issued	18 July 2024

Issuing Authority	**NMi Certin B.V., Notified Body number 0122** 18 July 2024 Certification Board

PRODUCTS
RvA C 681

1 General information about the instrument

All properties of the static active electrical energy meter, whether mentioned or not, shall not be in conflict with the legislation.

1.1 Essential parts

Description	Document	Remarks
measuring sensor	12774/0-02	
printed circuit board DH-JS-220119 V1.0	12774/0-13, 12774/0-14	All parts of the printed circuit boards are essential, except the components which are related to parts as described in paragraph 1.4 or 1.6.

1.2 Essential characteristics

1.2.1 See EU-type examination certificate T12774 revision 0 and the characteristics mentioned below.

1.2.2 Approved meter types : Energy Meter 3-Phase Tree (100567)
An explanation of all type designations is presented in document no. 12774/0-07.

1.2.3 Frequency : 50 Hz

1.2.4 Meter constant : 400 imp./kWh

1.2.5 Number of registers : 2 registers

1.2.6 Error message : 12774/0-12

1.2.7 Registration method : The following registration methods are allowed:
measurement of energy as the sum of import and export
(absolute import energy + absolute export energy);

1.2.8 Phase sequence : The meter is not sensitive to the direction of the applied phase sequence.
A specific symbol is stated on the nameplate.

1.2.9 Export energy : The meter is capable of measuring energy in 2 directions.
The meter can also be used with 2 phases loaded with import energy and 1 phase loaded with export energy.

1.2.10 Software specification (refer to WELMEC 7.2):
- Software type P;
- Risk Class C;
- Extension L, T while extensions O, D and S are not applicable.

Software version	Identification number (checksum)	Remarks
20.01.01	0XA3168345	

The software version is displayed at start-up and in the display sequence.

Description

1.3 Essential shapes

1.3.1 The nameplate is bearing at least, good legible, the information as mentioned in the regulations on energy meters. An example of the markings is shown in document no. 12774/0-03.

1.3.2 Sealing: see chapter 2.

1.3.3 The registration observation is executed by means of a LED.

1.4 Conditional parts

1.4.1 Terminal block
The connections for the current cables on the terminal block have a diameter of at least 7 mm. The cables are connected with the terminal block via 1 screw. See documents no. 12774/0-01, 12774/0-08, 12774/0-09 and 12774/0-10.

1.4.2 Housing
The meter has got a dustproof housing, which has sufficient tensile strength. The cover is made of synthetic material. An example of the housing is presented in document no. 12774/0-01, 12774/0-04 and 12774/0-05.

1.4.3 Terminal cover
The terminal cover is made of synthetic material.

1.4.4 Register
The quantity of measured energy is presented by means of a display with at least 6 elements. The way of presentation is described in document no. 12774/0-11.
For test purposes an indication with a least significant element of at least 0,01 kWh, can be arranged via display or the CAN bus output.

1.4.5 CAN bus communication
The meter is provided with CAN bus communication. Via the communication no legally relevant data can be altered.

1.5 Conditional characteristics

1.5.1 Maximum current:
smaller than or equal to 100 A, and at least 5 times higher than the reference current.

Terminal block:

Maximum current	Document no.	Remarks
100 A	12774/0-01, 12774/0-08, 12774/0-09, 12774/0-10	

1.5.2 Minimum current: 0,5 A

2   Seals

The meter housing and cover are sealed.
An example of the sealing is presented in document no. 12774/0-06.

3   Conditions for conformity assessment according to module D or F

The influence factors for temperature, frequency and voltage, which are necessary to perform the conformity assessment according to module D or F, are presented in Annex 1, belonging to this EU-type examination certificate.
Based on the WELMEC 11.1, section 2.4.6, the sum of the square values is presented

Influence factors for temperature, frequency and voltage

During the type approval examination the influence factors for temperature, frequency and voltage are determined per load point. The values depicted in the table below present the root sum square values per load point, determined via the following formula:

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

with:
- $\delta e(T, I, \cos\varphi)$ = the additional percentage error due to the variation of the temperature at a certain load;
- $\delta e(U, I, \cos\varphi)$ = the additional percentage error due to the variation of the voltage at the same load;
- $\delta e(f, I, \cos\varphi)$ = the additional percentage error due to the variation of the frequency at the same load.

3p/4w configuration:

Current	Power factor	-40°C [%]	-25°C [%]	-10°C [%]	+5°C [%]	+23°C [%]	+40°C [%]	+55°C [%]	+70° [%]
Imin	1	0,50	0,43	0,45	0,45	0,15	0,39	0,31	0,50
Itr	1	0,33	0,28	0,29	0,28	0,13	0,25	0,19	0,33
	0,5 ind.	0,48	0,42	0,43	0,43	0,20	0,38	0,31	0,48
	0,8 cap.	0,41	0,37	0,37	0,36	0,15	0,33	0,27	0,41
Itr phase R	1	0,37	0,41	0,46	0,50	0,41	0,58	0,55	0,37
	0,5 ind.	0,23	0,18	0,10	0,07	0,35	0,06	0,06	0,23
Itr phase S	1	0,48	0,41	0,33	0,27	0,16	0,14	0,02	0,48
	0,5 ind.	0,52	0,48	0,40	0,31	0,42	0,16	0,04	0,52
Itr phase T	1	0,16	0,08	0,09	0,10	0,07	0,06	0,07	0,16
	0,5 ind.	0,21	0,11	0,11	0,13	0,06	0,09	0,08	0,21
10 Itr	1	0,09	0,05	0,05	0,05	0,02	0,05	0,02	0,09
	0,5 ind.	0,08	0,05	0,05	0,05	0,08	0,05	0,02	0,08
	0,8 cap.	0,11	0,06	0,07	0,06	0,05	0,06	0,03	0,11
10 Itr phase R	1	0,13	0,11	0,05	0,01	0,03	0,10	0,10	0,13
	0,5 ind.	0,16	0,12	0,06	0,02	0,06	0,10	0,08	0,16
10 Itr phase S	1	0,31	0,22	0,16	0,10	0,10	0,01	0,12	0,31
	0,5 ind.	0,26	0,19	0,13	0,07	0,20	0,05	0,16	0,26
10 Itr phase T	1	0,11	0,04	0,05	0,06	0,06	0,04	0,05	0,11
	0,5 ind.	0,20	0,13	0,13	0,14	0,23	0,13	0,13	0,20
Imax	1	0,15	0,16	0,15	0,15	0,17	0,16	0,15	0,15
	0,5 ind.	0,10	0,11	0,08	0,07	0,12	0,07	0,08	0,10
	0,8 cap.	0,11	0,09	0,05	0,04	0,04	0,08	0,06	0,11
Imax phase R	1	0,44	0,32	0,20	0,09	0,12	0,10	0,12	0,44
	0,5 ind.	0,39	0,29	0,19	0,11	0,15	0,06	0,06	0,39
Imax phase S	1	0,15	0,14	0,14	0,14	0,13	0,13	0,15	0,15
	0,5 ind.	0,12	0,10	0,09	0,07	0,20	0,08	0,15	0,12
Imax phase T	1	0,18	0,19	0,18	0,17	0,18	0,19	0,19	0,18
	0,5 ind.	0,11	0,12	0,11	0,10	0,22	0,11	0,10	0,11

3p/3w configuration:

Current	Power factor	-40°C [%]	-25°C [%]	-10°C [%]	+5°C [%]	+23°C [%]	+40°C [%]	+55°C [%]	+70°C [%]
Imin	1	0,15	0,16	0,13	0,14	0,14	0,14	0,13	0,13
Itr	1	0,32	0,33	0,31	0,31	0,31	0,31	0,31	0,31
	0,5 ind.	0,05	0,04	0,03	0,04	0,05	0,05	0,04	0,08
	0,8 cap.	0,49	0,49	0,47	0,48	0,47	0,47	0,47	0,47
Itr phase R	1	0,22	0,19	0,11	0,08	0,04	0,04	0,04	0,04
	0,5 ind.	0,27	0,19	0,16	0,11	0,13	0,06	0,13	0,06
Itr phase T	1	0,06	0,02	0,02	0,03	0,03	0,03	0,18	0,07
	0,5 ind.	0,06	0,05	0,04	0,05	0,05	0,04	0,05	0,09
10 Itr	1	0,11	0,11	0,09	0,05	0,14	0,07	0,02	0,04
	0,5 ind.	0,09	0,04	0,04	0,03	0,05	0,04	0,07	0,06
	0,8 cap.	0,20	0,20	0,16	0,08	0,20	0,11	0,09	0,08
10 Itr phase R	1	0,22	0,18	0,11	0,07	0,02	0,04	0,05	0,03
	0,5 ind.	0,28	0,22	0,17	0,10	0,10	0,02	0,04	0,03
10 Itr phase T	1	0,06	0,04	0,04	0,04	0,10	0,08	0,04	0,09
	0,5 ind.	0,16	0,11	0,09	0,05	0,21	0,06	0,14	0,05
Imax	1	0,21	0,22	0,24	0,27	0,22	0,33	0,32	0,31
	0,5 ind.	0,11	0,11	0,11	0,10	0,31	0,11	0,12	0,10
	0,8 cap.	0,38	0,27	0,15	0,06	0,08	0,16	0,15	0,15
Imax phase R	1	0,56	0,40	0,23	0,10	0,26	0,16	0,17	0,19
	0,5 ind.	0,61	0,49	0,40	0,36	0,35	0,37	0,39	0,38
Imax phase T	1	0,22	0,21	0,19	0,18	0,18	0,20	0,18	0,18
	0,5 ind.	0,36	0,36	0,36	0,36	0,36	0,37	0,37	0,36