EU-type examination certificate

Number **T10709** revision 3
Project number 2446178

Issued by

NMi Certin B.V.,
designated and notified by the Netherlands to perform tasks with respect to conformity modules 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

Itron
Ganz Meter Company Ltd.
Tancsics Mihaly u. 11
H-2100 Gödöllö
Hungary

Measuring instrument

A static **Active Electrical Energy Meter**

Type	:	ACE661B / ACE661D and ACE662B / ACE662D
Manufacturer's mark or name	:	Itron
Reference voltage	:	3x57,7/100 V …. 3x240/415 V
Reference current	:	ACE66.B: 1; 1,5; 2,5 or 5 A ACE66.D: 5; 10; 15 or 20 A
Destined for the measurement of	:	electrical energy, in a - three-phase four-wire network - three-phase three-wire network
Accuracy class	:	ACE66.B: B or C ACE66.D: A or B
Environment classes	:	M2 / E2
Temperature range	:	-40 °C / +70 °C

Further properties are described in the annexes:
– Description T10709 revision 3;
– Documentation folder T10709-3.

Valid until

3 July 2025

Remark

This revision replaces the earlier version, except for its documentation folder.

Issuing Authority

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Certification Board

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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	10709/0-06	
CPU printed circuit board	Assembly: 10709/0-08, 10709/0-09, 10709/0-10, 10709/0-11, 10709/0-12, 10709/0-13, 10709/0-14 or 10709/0-15; Parts list: 10709/0-16, 10709/0-17, 10709/0-18, 10709/0-19, 10709/0-20, 10709/0-21 or 10709/0-22.	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.
Power supply printed circuit board	Auto-ranging board: - 10709/0-23, 10709/0-24. 230 V-board - 10709/0-25 or 10709/0-26, 10709/0-29; - 10709/0-27, 10709/0-30; - 10709/0-28, 10709/0-31. Auto-ranging board: - 10709/0-32 or 10709/0-33, 10709/0-34. Auto-ranging board: - 10709/0-35, 10709/0-37 or 10709/0-38; - 10709/0-36, 10709/0-39.	

1.2 Essential characteristics

1.2.1 See EU-type examination certificate T10709 revision 3 and the characteristics mentioned below.

1.2.2 Approved meter types : ACE661B, ACE661D, ACE662B and ACE662D

1.2.3 Frequency : 50 Hz or 60 Hz

1.2.4 Meter constant : 1.000 imp./kWh (ACE661.D)
10.000 imp./kWh (ACE661.B)

1.2.5 Number of registers : Max. 8

1.2.6 Error messages : Errors are indicated by a cursor on the far right on the display accompanied with an error code.

1.2.7 Phase sequence : The meter is not sensitive to the direction of the applied phase sequence.

1.2.8 Export energy : The meter is capable of measuring energy in 2 directions.

1.2.9 Software specification (refer to WELMEC guide 7.2):

- Software type P;
- Risk Class C;
- Extensions L, D and T are not applicable;
- Extension S is only applicable for ACE662x.

ACE661x

Software version	Identification number (checksum)	Remarks
internal:		
1.30F or	0x2537BA0D	
2.10B or	0x2937E756	
2.20A or	0x29371D9B	
3.01A or	0x3116B9C5	
4.00A	0x312627EF	
external:		
1.52A or	0xFD30C5C3	
1.57B or	0xEABAED2A	
2.13A or	0xCE9B2CE5	
2.21B or	0xD5E8EF23	
02.65A.12 or	0xE89F1D07	
02.21D.06 or	0xD6042ABC	
02.65B.12 or	0xE8C5D91C	
02.65C.12 or	0xE8CF3999	
02.67A.14 or	0xE921460E	
03.10C.00 or	0x1048FAA7	
03.20A.00 or	0x122d8995	
04.00B.00 or	0x28B86EA0	
04.02C.00 or	0x2AA1FB82	
04.03A.00 or	0x2E045DA9	
04.03B.00 or	0x2E1B641F	
04.04A.00 or	0x2D311846	
04.10D.01 or	0x344D6521	
04.12C.00 or	0x35D9822B	
04.12E.00	0x35CC0986	

ACE662x

Software version	Identification number (checksum)	Remarks
internal:		No software separation applied.
4.1	0x1E71DD5B	
external:		
4.92 or	0x79D1144	
5.13	0xF87E1938	

Software version	Identification number (checksum)	Remarks
internal: 2.24A or 2.25A	 0x566E6ABA 0x566CEFF7	Software separation applied. The external firmware is non-legally relevant.

The software versions and their appertaining checksums can be read via the display, in the specific MID menu by pressing the following key sequence:

- Press"D" button for more than two seconds;
- Scroll until "MID-DATA" is displayed (using the "D" button);
- Again press the "D" button for two seconds to enter the MID menu.

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. 10709/0-03 or 10709/1-01.

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 (direct connected version) or 5 mm (indirect connected version). The cables are connected with the terminal block via 2 screws.

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 shown in documents 10709/0-01 and 10709/0-02.

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, with an indication in kWh, for the direct connected version;
- at least 8 elements, with an indication in MWh, for the indirect connected version.
The way of presentation is described in document no. 10709/0-04.
For test purposes an indication with a least significant element of at least 0,01 kWh, can be arranged via serial communication.

1.4.5 Jumper
The labswitch (jumper P6) on the CPU printed circuit board has to be in the 'off position', in order to avoid that a hardware reset can be performed.

1.4.6 Tariff control
When the meter is provided with more than one register, a tariff control is available by means of tariff inputs, whereby the EMC-requirements are fulfilled as described in Annex V of Directive 2014/32/EU.

1.4.7 Optical communication
The meter is provided with optical communication. Via the communication no legally relevant data can be altered.

1.4.8 Serial communication
The meter is provided with RS232 / RS485 communication. Via serial communication no legal parameters can be changed.

1.4.9 Shield (optional)
A shield may be mounted around the current sensors, as indicated in documentation no. 10709/0-07.

1.5 Conditional characteristics

1.5.1 Maximum current:
ACE66.D: smaller than or equal to 100 A, and at least 5 times higher than the reference current.
ACE66.B: smaller than or equal to 10 A, and at least 1,2 times higher than the reference current.

1.5.2 Minimum current:
ACE66.D: smaller than or equal to 0,05 x I_{ref} (0,25 A, 0,5 A, 0,75 A or 1 A).
ACE66.B: smaller than or equal to 0,01 x I_{ref} (0,01 A, 0,015 A, 0,025 A, or 0,05 A).

1.6 Non-essential parts

1.6.1 Pulse output

2 Seals

One screw of the meter cover is always sealed. The other screw is either sealed as well, or an anti-tamper screw is mounted. This anti-tamper screw breaks during screwing, which prevents re-opening of the meter.

Furthermore the meter has several possibilities for sealing with a utility seal (terminal cover, window, IP-link and battery).
An example of the sealing is presented in document no. 10709/0-05.

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 Guide 11.1, section 2.5.6, the sum of the square values is presented.

Annex 1

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.

For the indirect connected version ACE66.B:

Current	Power factor	-40°C [%]	-25°C [%]	-10°C [%]	+5°C [%]	+23°C [%]	+40°C [%]	+55°C [%]	+70°C [%]
Imin	1	1,2	0,8	0,5	0,4	0,3	0,4	0,4	0,5
Itr	1	1,2	0,8	0,5	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,9	0,5	0,3	0,1	0,2	0,3	0,3
	0,8 cap.	1,2	0,8	0,5	0,3	0,2	0,2	0,3	0,3
Itr phase R	1	1,1	0,8	0,5	0,3	0,2	0,2	0,3	0,3
	0,5 ind.	1,1	0,8	0,5	0,3	0,2	0,2	0,3	0,3
Itr phase S	1	1,1	0,8	0,5	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,1	0,8	0,5	0,3	0,1	0,2	0,3	0,3
Itr phase T	1	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
10 Itr	1	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,9	0,6	0,3	0,2	0,2	0,3	0,3
	0,8 cap.	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
10 Itr phase R	1	1,1	0,8	0,5	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,8	0,5	0,3	0,1	0,2	0,3	0,3
10 Itr phase S	1	1,2	0,8	0,5	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,9	0,6	0,4	0,3	0,3	0,4	0,4
10 Itr phase T	1	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,3	0,9	0,6	0,3	0,1	0,2	0,3	0,3
Imax	1	1,2	0,9	0,6	0,3	0,2	0,2	0,3	0,3
	0,5 ind.	1,2	0,9	0,6	0,4	0,2	0,3	0,3	0,4
	0,8 cap.	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
Imax phase R	1	1,2	0,9	0,6	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,8	0,5	0,3	0,1	0,2	0,3	0,3
Imax phase S	1	1,2	0,8	0,5	0,3	0,1	0,2	0,3	0,3
	0,5 ind.	1,2	0,9	0,6	0,4	0,2	0,3	0,3	0,4
Imax phase T	1	1,3	0,9	0,6	0,3	0,2	0,2	0,3	0,3
	0,5 ind.	1,3	0,9	0,6	0,3	0,1	0,2	0,3	0,3

Annex 1

For the direct connected version ACE66.D:

Current	Power factor	-40°C [%]	-25°C [%]	-10°C [%]	+5°C [%]	+23°C [%]	+40°C [%]	+55°C [%]	+70°C [%]
Imin	1	1,3	1,0	0,7	0,5	0,2	0,2	0,4	0,4
Itr	1	1,3	0,9	0,6	0,4	0,1	0,1	0,3	0,3
	0,5 ind.	1,3	0,9	0,7	0,4	0,1	0,1	0,3	0,3
	0,8 cap.	1,3	0,8	0,6	0,4	0,1	0,1	0,3	0,2
Itr phase R	1	1,3	0,9	0,7	0,4	0,1	0,1	0,3	0,2
	0,5 ind.	1,4	1,0	0,7	0,5	0,1	0,1	0,3	0,2
Itr phase S	1	1,2	0,8	0,6	0,4	0,1	0,1	0,3	0,3
	0,5 ind.	1,2	0,8	0,6	0,4	0,2	0,2	0,4	0,5
Itr phase T	1	1,3	0,9	0,7	0,4	0,0	0,1	0,2	0,2
	0,5 ind.	1,4	0,9	0,7	0,5	0,2	0,3	0,3	0,3
10 Itr	1	1,3	0,9	0,6	0,4	0,0	0,0	0,3	0,2
	0,5 ind.	1,3	0,9	0,7	0,4	0,0	0,0	0,3	0,2
	0,8 cap.	1,3	0,9	0,6	0,4	0,0	0,0	0,3	0,2
10 Itr phase R	1	1,3	0,9	0,7	0,4	0,0	0,0	0,3	0,2
	0,5 ind.	1,3	0,9	0,6	0,4	0,0	0,0	0,3	0,2
10 Itr phase S	1	1,3	0,9	0,6	0,4	0,0	0,0	0,2	0,2
	0,5 ind.	1,2	0,9	0,6	0,4	0,0	0,0	0,3	0,2
10 Itr phase T	1	1,3	0,9	0,6	0,4	0,0	0,0	0,3	0,2
	0,5 ind.	1,3	0,9	0,7	0,4	0,0	0,0	0,3	0,2
Imax	1	1,3	0,8	0,6	0,4	0,1	0,1	0,3	0,2
	0,5 ind.	1,3	0,8	0,7	0,4	0,1	0,1	0,3	0,3
	0,8 cap.	1,3	0,8	0,7	0,4	0,1	0,1	0,3	0,2
Imax phase R	1	1,3	0,9	0,7	0,4	0,1	0,1	0,3	0,3
	0,5 ind.	1,3	0,9	0,7	0,4	0,1	0,1	0,3	0,3
Imax phase S	1	1,2	0,8	0,6	0,4	0,0	0,0	0,2	0,2
	0,5 ind.	1,3	0,8	0,6	0,4	0,0	0,0	0,2	0,2
Imax phase T	1	1,3	0,9	0,7	0,4	0,1	0,1	0,3	0,3
	0,5 ind.	1,3	0,8	0,7	0,4	0,0	0,0	0,3	0,3