EU-type examination certificate

Number **T10677** revision 6
Project number 1900682

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	Inepro Metering BV Pondweg 7 2153 PK Nieuw Vennep The Netherlands
Measuring instrument	A static **Active Electrical Energy Meter**

Type	:	PRO380
Reference voltage	:	3x230/400 V
Reference current	:	5 A
Destined for the measurement of	:	electrical energy, in a - three-phase four-wire network - three-phase three-wire network - single-phase two-wire network
Accuracy class	:	B
Environment classes	:	M1 / E2
Temperature range	:	-40 °C / +70 °C

Further properties are described in the annexes:
– Description T10677 revision 6;
– Documentation folder T10677-4.

Valid until	9 December 2024
Remarks	This revision replaces the earlier versions, including its documentation folder.
Issuing Authority	**NMi Certin B.V., Notified Body number 0122** 4 August 2017

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INSPECTION
RvA I 122

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	10677/0-05	
printed circuit board	10677/0-10, 10677/0-11 or 10677/1-01, 10677/1-02 or 10677/6-03	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 T10677 revision 6 and the characteristics mentioned below.

1.2.2 Approved meter types : PRO380-S, PRO380-Mod and PRO380-Mb
An explanation of all type designations is presented in document no. 10677/0-02.

1.2.3 Frequency : 50 Hz

1.2.4 Meter constant : 10.000 imp./kWh

1.2.5 Number of registers : 4

1.2.6 Error messages : An overview of all error codes is presented in chapter 8.1 of the user manual (document no. 10677/0-03)

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. The meter can also be used with 2 phases loaded with import energy and 1 phase loaded with export energy.

1.2.9 Software specification (refer to WELMEC 7.2):

- Software type P;
- Risk Class C;
- Extensions L, D, S and T are not applicable.

Software version	Identification number (checksum)	Remarks
1.14 or 1.15 or 1.16 or 1.17 or 1.18 or 1.19 or 1.20 or 2.18 or 2.19	009C78FA 009D1585 009C8616 009F3097 009F7302 009D1081 or 009E8081 00970C09 0D010556 0D104797	

The checksum is displayed after pressing the left arrow button 4 times.

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. 10677/4-01.

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. The cables are connected with the terminal block via a screw. See documents no. 10677/0-07.
For 3-phase 3-wire connections, a bridge has to be made between pin 13 and 17, as indicated on the markings and in the user manual.

1.4.2 Housing
The meter has got a dustproof housing, which has sufficient tensile strength. The cover is made of synthetic material. Examples of the housing are presented in document no. 10677/0-01 and 10677/0-06 or 10677/6-02.

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 8 elements. The way of presentation is described in chapter 7 of the user manual (document no. 10677/0-03) or document no. 10677/6-01.

1.4.5 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.

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

1.4.7 M-Bus (optional)
The meter may be equipped with M-Bus communication. Via the communication no legally relevant data can be altered.

1.4.8 Modbus (optional)
The meter may be equipped with Modbus communication. Via the communication no legally relevant data can be altered.

1.4.9 Copper slice at the buttons (optional)
The meter may be equipped with copper slices at the buttons in order to promote the sensitivity. See document no. 10677/0-09.

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.

1.5.2 Minimum current: 0,25 A

1.6 Non-essential parts

1.6.1 Pulse output

2 Seals

The meter casing is sealed with a sealing sticker.
An example of the sealing is presented in document no. 10677/0-08.

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 2.5.6, the sum of the square values is presented.

Annex 1

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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.

Current	Power factor	-40 °C [%]	-25 °C [%]	-10 °C [%]	+5 °C [%]	+23 °C [%]	+40 °C [%]	+55 °C [%]	+70 °C [%]
I_{min}	1	0,9	0,7	0,5	0,3	0,2	0,3	0,6	0,9
I_{tr}	1	0,9	0,7	0,5	0,3	0,0	0,2	0,6	0,8
	0,5 ind.	0,9	0,7	0,5	0,3	0,1	0,3	0,6	0,9
	0,8 cap.	0,9	0,7	0,5	0,3	0,0	0,2	0,6	0,8
I_{tr} phase R	1	1,1	0,8	0,6	0,3	0,0	0,3	0,6	0,9
	0,5 ind.	1,1	0,8	0,6	0,3	0,1	0,3	0,6	0,9
I_{tr} phase S	1	0,8	0,7	0,5	0,3	0,0	0,2	0,5	0,8
	0,5 ind.	0,8	0,6	0,5	0,2	0,1	0,3	0,6	0,9
I_{tr} phase T	1	0,8	0,6	0,4	0,2	0,0	0,2	0,5	0,7
	0,5 ind.	0,8	0,6	0,4	0,2	0,0	0,2	0,5	0,7
10 I_{tr}	1	0,9	0,7	0,5	0,3	0,0	0,3	0,5	0,8
	0,5 ind.	1,0	0,7	0,5	0,3	0,0	0,3	0,5	0,8
	0,8 cap.	0,9	0,7	0,5	0,3	0,0	0,3	0,5	0,8
10 I_{tr} phase R	1	1,1	0,8	0,6	0,3	0,0	0,3	0,6	0,9
	0,5 ind.	1,1	0,8	0,6	0,3	0,0	0,3	0,6	0,9
10 I_{tr} phase S	1	0,8	0,7	0,5	0,3	0,0	0,3	0,6	0,8
	0,5 ind.	0,8	0,7	0,5	0,3	0,0	0,3	0,6	0,9
10 I_{tr} phase T	1	0,8	0,6	0,4	0,3	0,0	0,2	0,5	0,7
	0,5 ind.	0,8	0,6	0,4	0,2	0,0	0,3	0,5	0,8
I_{max}	1	0,9	0,7	0,5	0,4	0,2	0,4	0,6	0,8
	0,5 ind.	0,8	0,7	0,5	0,3	0,2	0,3	0,6	0,8
	0,8 cap.	0,8	0,6	0,5	0,3	0,1	0,3	0,5	0,8
I_{max} phase R	1	0,9	0,7	0,5	0,3	0,1	0,3	0,6	0,9
	0,5 ind.	0,9	0,7	0,5	0,3	0,1	0,3	0,6	0,9
I_{max} phase S	1	0,7	0,6	0,5	0,3	0,2	0,3	0,5	0,8
	0,5 ind.	0,7	0,6	0,5	0,3	0,1	0,3	0,6	0,8
I_{max} phase T	1	0,7	0,5	0,4	0,3	0,1	0,3	0,5	0,7
	0,5 ind.	0,7	0,6	0,4	0,3	0,1	0,3	0,5	0,7