EU-type examination certificate

Number **T11028** revision 6
Project number 2279639

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	MetCom Solutions GmbH Marie-Curie-Strasse 19 D-68219 Mannheim Germany
Measuring instrument	A static **Active Electrical Energy Meter**

Type	:	MCS301
Manufacturer's mark or name	:	MetCom
Reference voltage	:	3x58/100 V, 3x230/400 V or 3x58/100 V …. 3x240/415 V or 3x58/100 V …. 3x277/480V
Reference current	:	1 A or 5 A (CT version) 5 A or 10 A (DC version)
Destined for the measurement of	:	electrical energy, in a - three-phase four-wire network
Accuracy class	:	A or B (DC version) B or C (CT version)
Environment classes	:	M1 / E2
Temperature range	:	-40 °C / +70 °C

Further properties are described in the annexes:
– Description T11028 revision 6;
– Documentation folder T11028-7.

Valid until	16 October 2027
Remark	This revision replaces the earlier versions, including its documentation folder.
Issuing Authority	**NMi Certin B.V., Notified Body number 0122** 28 December 2018

C. Oosterman
Head Certification Board

NMi Certin B.V.
Hugo de Grootplein 1
3314 EG Dordrecht
The Netherlands
T +31 78 6332332
certin@nmi.nl
www.nmi.nl

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	T11028/0-03 T11028/1-01	CT version DC version
Main board CT version V1.1 V1.2 V1.3	T11028/0-09, T11028/0-10 or T11028/0-11 or T11028/0-12 T11028/3-01 or T11028/3-02 T11028/6-01 or T11028/6-02	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.
Main board DC version V2.0	T11028/1-03, T11028/1-04	
Power supply board 230 V 58 V Wide range power supply board V1.1 or V1.2 58-240 V (aux voltage) 58-240 V (no aux voltage)	T11028/0-13, T11028/0-14 or T11028/0-15 T11028/2-01 or T11028/5-01 T11028/2-02 or T11028/2-03	

1.2 Essential characteristics

1.2.1 See EU-type examination certificate T11028 revision 6 and the characteristics mentioned below.

1.2.2 Approved meter types : MCS301
An explanation of all type designations is presented in document no. T11028/0-02.

1.2.3 Frequency : 50 Hz or 60 Hz

1.2.4 Meter constant : 5.000 … 40.000 imp./kWh (CT version)
500 … 2.000 imp./kWh (DC version)

1.2.5 Number of registers : Up to 8 Time-Of-Use (TOU) tariff registers

1.2.6 Error messages : An overview of all error codes is given in document no. T11028/0-06.

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;
- Extension S, while extensions L, D and T are not applicable.

Software version MCOR (OBIS 1-0:0.2.0)	Identification number (checksum) (OBIS 1-0:0.2.8)	Remarks
01.01.23 01.01.24	E79AF67A C820532A	CT(VT) version
03.01.23 03.01.24	BDBE62F8 4413E7C1	DC version

The software version and checksum are listed in the Std_data list of the display.

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. T11028/0-01.

1.3.2 Sealing: see chapter 2.

1.3.3 The registration observation is executed by means of an 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 5 mm (CT version) or 7 mm (DC version). The cables are connected with the terminal block via 1 screw. See documents no. T11028/0-07 and T11028/1-02.

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 documents no. T11028/0-01 and T11028/0-04.

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. T11028/0-05.
For test purposes an indication with a least significant element of at least 0,01 kWh, can be arranged via the user interface.

1.4.5 Tariff control
When the meter is provided with more than one register, a tariff control is available by means of built-in Time-Of-Use (TOU) calendar and communication.

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 Communication (optionally)
Optionally the meter can be provided with Mbus and RS485 communication modules, whereby the EMC-requirements are fulfilled as described in directive 2014/32/EU Annex V.

1.5 Conditional characteristics

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

Terminal block:

Maximum current	Document no.	Remarks
10 A	T11028/0-07	CT version
100 A	T11028/1-02	DC version

1.5.2 Minimum current:
CT version: 0,01 A (I_{ref} = 1 A) or 0,05 A (I_{ref} = 5 A)
DC version: 0,25 A (I_{ref} = 5 A) or 0,5 A (I_{ref} = 10 A)

1.6 Non-essential parts

1.6.1 Pulse output

2 Seals

Both screws of the meter cover are sealed.
An example of the sealing is presented in document no. 11028/0-08.

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

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.

CT version:

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

Annex 1

DC version:

Current	Power factor	-40°C [%]	-25°C [%]	-10°C [%]	+5°C [%]	+23°C [%]	+40°C [%]	+55°C [%]	+70°C [%]
Imin	1	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.1
Itr	1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1
	0,5 ind.	0.4	0.4	0.3	0.3	0.2	0.3	0.4	0.4
	0,8 cap.	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.3
Itr phase R	1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2
	0,5 ind.	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Itr phase S	1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	0,5 ind.	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4
Itr phase T	1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1
	0,5 ind.	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4
10 Itr	1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2
	0,5 ind.	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3
	0,8 cap.	0.3	0.3	0.2	0.1	0.1	0.2	0.3	0.3
10 Itr phase R	1	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.2
	0,5 ind.	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10 Itr phase S	1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2
	0,5 ind.	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3
10 Itr phase T	1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1
	0,5 ind.	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3
Imax	1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1
	0,5 ind.	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4
	0,8 cap.	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3
Imax phase R	1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	0,5 ind.	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Imax phase S	1	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.2
	0,5 ind.	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Imax phase T	1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2
	0,5 ind.	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4