



EU - type examination certificate

Number **T10515** revision 29
Project number 3708654
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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:

Applicant

ABB S.p.A.
Via Vittor Pisani 16
20124 Milano
Italy

Manufacturer

ABB S.p.A.
Viale dell'Industria 18
20009 Vittuone (MI)
Italy

Measuring
instrument

A static **Active Electrical Energy Meter**

Type : B21, B23 and B24

Reference voltage : B21 / B23: 220V ... 240V
B23 / B24: 3x220/380V...3x240/415V
or 3x380V...3x415V

Reference current : B21 / B23: 5A (direct connected meter)
B24: 1 A (indirect connected meter)

Destined for the measurement of : electrical energy, in a
- three-phase four-wire network (B23 / B24)
- two-phase three-wire network (B23 / B24)
- single-phase two-wire network (B21 / B23)

Accuracy class : B21 / B23: A or B
B24: B or C

Environment classes : M2 / E2
Temperature range : -40 °C / +70 °C

Further properties are described in the annexes:

- Description T10515 revision 29;
- Documentation folder T10515-17.

Valid until

11 July 2033

Initially issued

11 July 2013

Remark

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

Issuing Authority

NMi Certin B.V., Notified Body number 0122
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Certification Board

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EU-type examination certificate

Number **T12831** revision 1
Project number 3769733
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NMi Certin B.V.,
designated and notified by the Netherlands to perform tasks with respect
to conformity assessment 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

Zhejiang Eastron Electronic Co., Ltd.
No.52, Dongjin Road, Nanhu
Jiaxing, Zhejiang
China

Measuring instrument A static **Active Electrical Energy Meter**

Type : SDM72
Manufacturer's mark or name : Eastron
Reference voltage : 3x230/400 V; 230 V
Reference current : 10 A
Destined for the measurement of : electrical energy, in a
- three-phase four-wire network
- single-phase two-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 T12831 revision 1
- Documentation folder T12831-2

Valid until

2 December 2034

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2 December 2024

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This version replaces the earlier version including the documentation
folder.

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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	12831/0-02, 12831/0-03	ZR-FL-200B-009A / ZR-FL-200C-009B
printed circuit board	12831/0-12, 12831/0-13 12831/0-14, 12831/0-15 12831/0-16, 12831/0-17	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 T12831 revision 1 and the characteristics mentioned below.
- 1.2.2 Approved meter types : SDM72 (SDM72D-M, SDM72D-M-2T, SDM72D, SDM72DR, SDM72BI)
An explanation of all type designations is presented in document no. 12831/0-07.
- 1.2.3 Frequency : 50 Hz
- 1.2.4 Meter constant : 1000 imp./kWh
- 1.2.5 Number of registers : 2 registers
- 1.2.6 Error messages : 12831/0-18
- 1.2.7 Registration method : The following registration methods are allowed:
- 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.
- 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
1.04	7C58B369	SDM72D-M
1.04	A2FCE045	SDM72D-M-2T
1.04	3B79F82F	SDM72D
1.04	C7A62BBC	SDM72DR



Description

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Software version	Identification number (checksum)	Remarks
1.04	54E453DF	SDM72BI

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. 12831/0-04.
- 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. 12831/0-01, 12831/0-08, 12831/0-09 and 12831/0-10.
- 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. 12831/0-01 and 12831/0-05.
- 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. 12831/0-11.
For test purposes an indication with a least significant element of at least 0,01 kWh, can be arranged via RS485 Modbus.
- 1.4.5 RS485 Modbus communication
The meter is provided with RS485 Modbus 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	12831/0-01, 12831/0-08, 12831/0-09, 12831/0-10	

1.5.2 Minimum current: 0.5 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. 12831/0-06.

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.

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

Note: relevant values can be taken in case of single-phase two-wire applications.