EU-type examination certificate

Number **T11952** revision 1
Project number 3669586

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	Bemko Sp. z o. o. ul. Bocznicowa 13 05-850 Jawczyce Poland
Measuring instrument	A static **Active Electrical Energy Meter**

Type	:	SL030-M-MID (A), SL03B-MID-M (A) SL03A-MID (D), SL03B-MID…. (D, D-CT, MODBUS, MBUS) SL03A-MBUS-MID (C-CT)
Manufacturer's mark or name	:	Bemko Sp. z o. o.
Reference voltage	:	3x230/400 V
Reference current	:	5 or 10 A (SL030-M-MID (A), SL03B-MID-M (A), SL03A-MID (D), SL03B-MID…. (D-CT) 10 A (SL03A-MBUS-MID(C)) 1,5 A (SL03A-MBUS-MID (C-CT), SL03B-MID…. (D-CT)
Destined for the measurement of	:	electrical energy, in a - three-phase four-wire network
Accuracy class	:	A or B
Environment classes	:	M1 / E2
Temperature range	:	-25 °C / +55 °C

Further properties are described in the annexes:
– Description T11952 revision 1;
– Documentation folder T11952-2.

Valid until	17 September 2030
Initially issued	17 September 2020
Remarks	This revision replaces the earlier version(s), including its documentation folder.
Issuing Authority	**NMi Certin B.V., Notified Body number 0122** 17 May 2023 Certification Board

NMi Certin B.V.
Thijsseweg 11
2629 JA Delft
The Netherlands
T +31 88 636 2332
certin@nmi.nl
www.nmi.nl

PRODUCTS
RvA C 681

Description

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	11952/0-06 (80 A) 11952/0-07 (100A) 11952/0-08 (6A & 100A)	
printed circuit board SL030-M-MID (A) SL03B-MID-M (A)	11952/0-11, 11952/0-12, 11952/0-13, 11952/0-14	
printed circuit board SL03A-MID (D) SL03B-MID…. (D, D-CT, MODBUS, MBUS)	11952/0-14, 11952/0-15, 11952/0-16 11952/1-08, 11952/1-09, 11952/1-10, 11952/1-11, 11952/1-12, 11952/1-13, 11952/1-14	
power board SL03A-MID (D) SL03B-MID…. (D-CT)	11952/1-19, 11952/1-21, 11952/1-22 11952/1-20, 11952/1-23, 11952/1-24	
voltage and current sampling board SL03A-MID (D) SL03B-MID…. (D-CT)	11952/1-20 11952/1-25	
printed circuit board SL03A-MBUS-MID (C-CT)	11952/0-17, 11952/0-18 and 11952/0-19	

1.2 Essential characteristics

1.2.1 See EU-type examination certificate T11952 revision 1 and the characteristics mentioned below.

1.2.2 Approved meter types : SL030-M-MID (A), SL03B-MID-M (A) (mechanical register) SL03A-MID (D), SL03A-MID (D), SL03B-MID…. (D), SL03A-MBUS-MID (C-CT) (digital register). An explanation of all type designations is presented in document no. 11952/0-05 and 11952/1-03.

1.2.3 Frequency : 50 Hz or 60 Hz (60 Hz SL03A-MBUS-MID (C) only)

1.2.4 Meter constant : 400 or 1.000 imp./kWh (SL030-M-MID (A), SL03B-MID-M (A), SL03B-MID…. (D))
400 imp./kWh (SL03A-MBUS-MID (C))
2.000 imp./kWh (SL03B-MID…. (D-CT))
3.200 imp./kWh (SL03A-MBUS-MID (C-CT))

1.2.5 Number of registers : 1 (SL030-M-MID (A), SL03B-MID-M (A), SL03A-MID (D), SL03B-MID…. (D)) or 2 (SL03A-MBUS-MID(C))

1.2.6 Export energy : the SL030-M-MID (A), SL03B-MID-M (A),SL03A-MID,SL03B-MID…. (D) meters are not capable of measuring energy in 2 directions.
The SL03A-MBUS-MID (C-CT) and SL03B-MID…. (D-CT) meter is capable of measuring energy in 2 directions.

1.2.7 Software specification (refer to WELMEC 7.2):

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

Meter type	FW version / checksum	Remarks
SL030-M-MID (A)-400 or 1000*	0ded dd54	SL030-M-MID (A), SL03BMID-M (A) and SL03A-MID (D), SL03B-MID…. (D): the software version is printed on the name plate SL03A-MID (D), SL03B-MID…. (D) and SL03A-MBUS-MID (C-CT): The software version and checksum are displayed at start-up.
SL03A-MID (D)-400 or 1000	9bf7 296f 8F81	
SL03B-MID…. (D-CT)	9FC1	
SL03A-MBUS-MID (C)	7Fd6	
SL03A-MBUS-MID (C-CT)	1F7b	
SL03B-MID-M (A) – 400 or 1000	21F6 21F5	
SL03B-MID…. (D) -400 or 1000	21F2 21F1	
SL03B-MID…. (D-MODBUS)- 400 or 1000	21F4 21F3	
SL03B-MID…. (D-MBUS) -400 or 1000	21F8 21F7	

* the 400 or 1000 refers to the meter constant of the meter

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. 11952/0-02, 11952/0-03 and 11952/0-04, 11952/1-02.

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 7 mm. The cables are connected with the terminal block via one screw. See document no. 11952/0-09, 11952/1-04 and 11952/1-05.

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. 11952/0-01,11952/1-01 and 11952/1-06.

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. For test purposes an indication with a least significant element of at least 0,01 kWh, is available.

1.4.5 MBUS or MODBUS communication (optional for SL03A-MBUS-MID and SL03B-MID…. (MODBUS, MBUS))
The meter can be provided with MBUS or MODBUS communication whereby the EMC-requirements are fulfilled as described in Annex V of Directive 2014/32/EU.
Via the communication no legally relevant data can be altered.

Description	Document	Remarks
MBUS board	11952/0-18, 11952/0-19, 11952/1-15	
MODBUS board	11952/0-18, 11952/0-19, 11952/1-16, 11952/1-17 and 11952/1-18	

1.5 Conditional characteristics

1.5.1 Maximum current:

SL030-M-MID (A), SL03B-MID-M (A), SL03A-MBUS-MID (C), SL03A-MID (D), SL03B-MID…. (D) smaller than or equal to 100 A, and at least 5 times higher than the reference current.

SL03A-MBUS-MID (C-CT), SL03B-MID…. (D-CT)
smaller than or equal to 6 A, and at least 1,2 times higher than the reference current.

Terminal block:

Maximum current	Document no.	Remarks
100 A	11952/0-09	

Maximum current	Document no.	Remarks
6 A	11952/0-09	SL03A-MBUS-MID (CT), SL03B-MID…. (D-CT)

1.5.2 Minimum current: 0,25 A or 0,5 A (SL030-M-MID (A), SL03B-MID-M (A) / SL03A-MID (D), SL03B-MID…. (D))
0,5 A (SL03A-MBUS-MID(C))
0,015 A (SL03A-MBUS-MID C-CT, SL03B-MID…. (D-CT))

1.6 Non-essential parts

1.6.1 Pulse output

2 Seals

The meter is sealed with a wire seal.
An example of the sealing is presented in document no. 11952/0-10 and 11952/1-07.

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.

SL030-M-MID (A), SL03B-MID-M (A), SL03A-MID (D), SL03B-MID…. (D):

Current	Power factor	Error -25°C [%]	Error -10°C [%]	Error +5°C [%]	Error +23°C [%]	Error +40°C [%]	Error +55°C [%]
Imin	1	0.3	0.2	0.1	0.1	0.1	0.2
Itr	1	0.3	0.2	0.2	0.1	0.1	0.2
	0,5 ind.	0.3	0.2	0.2	0.1	0.2	0.3
	0,8 cap.	0.2	0.2	0.1	0.1	0.1	0.2
Itr phase R	1	0.2	0.1	0.1	0.1	0.1	0.2
	0,5 ind.	0.4	0.3	0.2	0.1	0.2	0.3
Itr phase S	1	0.2	0.2	0.1	0.1	0.1	0.2
	0,5 ind.	0.2	0.2	0.2	0.2	0.2	0.2
Itr phase T	1	0.4	0.3	0.2	0.1	0.1	0.3
	0,5 ind.	0.2	0.2	0.2	0.1	0.2	0.3
10 Itr	1	0.3	0.2	0.1	0.1	0.1	0.2
	0,5 ind.	0.3	0.2	0.2	0.1	0.1	0.3
	0,8 cap.	0.3	0.2	0.1	0.0	0.1	0.2
10 Itr phase R	1	0.2	0.2	0.2	0.2	0.2	0.2
	0,5 ind.	0.5	0.4	0.4	0.4	0.4	0.5
10 Itr phase S	1	0.2	0.2	0.1	0.1	0.1	0.2
	0,5 ind.	0.2	0.2	0.3	0.2	0.2	0.3
10 Itr phase T	1	0.4	0.3	0.2	0.1	0.2	0.3
	0,5 ind.	0.3	0.2	0.2	0.1	0.1	0.3
Imax	1	0.4	0.3	0.2	0.1	0.2	0.3
	0,5 ind.	0.4	0.3	0.2	0.1	0.2	0.3
	0,8 cap.	0.3	0.2	0.1	0.0	0.1	0.3
Imax phase R	1	0.4	0.3	0.2	0.1	0.2	0.4
	0,5 ind.	0.5	0.3	0.2	0.1	0.2	0.4
Imax phase S	1	0.1	0.1	0.1	0.1	0.1	0.1
	0,5 ind.	0.1	0.1	0.1	0.1	0.1	0.2
Imax phase T	1	0.4	0.3	0.2	0.1	0.2	0.3
	0,5 ind.	0.4	0.3	0.2	0.1	0.2	0.3

Annex 1

SL03A-MBUS-MID (C)

Current	Power factor	Error -25°C [%]	Error -10°C [%]	Error +5°C [%]	Error +23°C [%]	Error +40°C [%]	Error +55°C [%]
Imin	1	1.7	1.3	0.8	0.1	0.4	1.0
Itr	1	1.7	1.2	0.8	0.1	0.5	1.0
	0,5 ind.	1.6	1.3	0.8	0.1	0.4	1.0
	0,8 cap.	1.7	1.2	0.7	0.1	0.5	1.1
Itr phase R	1	1.7	1.2	0.7	0.0	0.5	1.1
	0,5 ind.	1.6	1.1	0.7	0.1	0.5	1.1
Itr phase S	1	1.6	1.2	0.8	0.0	0.5	1.1
	0,5 ind.	1.5	1.2	0.8	0.1	0.5	1.1
Itr phase T	1	1.7	1.2	0.7	0.0	0.5	1.1
	0,5 ind.	1.5	1.2	0.7	0.0	0.5	1.1
10 Itr	1	1.6	1.1	0.7	0.0	0.6	1.1
	0,5 ind.	1.7	1.2	0.7	0.0	0.6	1.1
	0,8 cap.	1.6	1.1	0.6	0.0	0.6	1.2
10 Itr phase R	1	1.6	1.1	0.6	0.0	0.6	1.1
	0,5 ind.	1.7	1.1	0.6	0.0	0.6	1.2
10 Itr phase S	1	1.5	1.1	0.7	0.0	0.6	1.2
	0,5 ind.	1.6	1.2	0.7	0.0	0.6	1.2
10 Itr phase T	1	1.6	1.1	0.6	0.0	0.5	1.1
	0,5 ind.	1.7	1.2	0.7	0.0	0.5	1.1
Imax	1	1.6	1.1	0.6	0.0	0.6	1.1
	0,5 ind.	1.7	1.2	0.7	0.1	0.6	1.3
	0,8 cap.	1.5	1.1	0.6	0.0	0.5	1.1
Imax phase R	1	1.6	1.1	0.6	0.1	0.6	1.2
	0,5 ind.	1.7	1.2	0.7	0.1	0.7	1.3
Imax phase S	1	1.5	1.1	0.6	0.0	0.6	1.2
	0,5 ind.	1.6	1.2	0.7	0.2	0.8	1.5
Imax phase T	1	1.6	1.1	0.6	0.0	0.6	1.1
	0,5 ind.	1.7	1.2	0.7	0.0	0.6	1.2

SL03A-MBUS-MID (C-CT):

Current	Power factor	Error -25°C [%]	Error -10°C [%]	Error +5°C [%]	Error +23°C [%]	Error +40°C [%]	Error +55°C [%]
Imin	1	1.4	1.1	0.7	0.1	0.6	1.2
Itr	1	1.5	1.1	0.6	0.0	0.6	1.2
	0,5 ind.	1.3	1.0	0.6	0.1	0.7	1.3
	0,8 cap.	1.5	1.1	0.6	0.1	0.6	1.2
Itr phase R	1	1.4	1.0	0.6	0.1	0.6	1.2
	0,5 ind.	1.2	1.0	0.8	0.2	0.8	1.2
Itr phase S	1	1.6	1.3	0.7	0.2	0.7	1.3
	0,5 ind.	1.4	1.3	0.7	0.3	0.8	1.4
Itr phase T	1	1.4	1.0	0.7	0.1	0.7	1.3
	0,5 ind.	1.4	1.1	0.7	0.2	0.8	1.3
20 Itr	1	1.5	1.1	0.6	0.0	0.6	1.2
	0,5 ind.	1.4	1.1	0.6	0.0	0.6	1.3
	0,8 cap.	1.5	1.1	0.6	0.0	0.6	1.2
20 Itr phase R	1	1.4	1.0	0.6	0.0	0.6	1.2
	0,5 ind.	1.3	1.0	0.6	0.0	0.6	1.2
20 Itr phase S	1	1.6	1.2	0.7	0.0	0.7	1.3
	0,5 ind.	1.4	1.1	0.7	0.0	0.7	1.3
20 Itr phase T	1	1.5	1.1	0.6	0.0	0.6	1.2
	0,5 ind.	1.4	1.1	0.6	0.0	0.6	1.3
Imax	1	1.5	1.1	0.6	0.0	0.6	1.2
	0,5 ind.	1.5	1.1	0.6	0.0	0.7	1.3
	0,8 cap.	1.5	1.1	0.6	0.0	0.6	1.2
Imax phase R	1	1.4	1.0	0.6	0.0	0.6	1.2
	0,5 ind.	1.3	1.0	0.6	0.0	0.7	1.3
Imax phase S	1	1.6	1.2	0.7	0.0	0.7	1.3
	0,5 ind.	1.6	1.2	0.7	0.0	0.7	1.3
Imax phase T	1	1.5	1.1	0.6	0.0	0.6	1.3
	0,5 ind.	1.4	1.1	0.6	0.0	0.7	1.3

Annex 1

SL030-M-MID (A), SL03B-MID-M (A), SL03A-MID (D), SL03B-MID…. (D) (DC):

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