SLOVENSKA AKREDITACIJA
SIST EN ISO/IEC 17065
CP-001

EU certifikat o pregledu zasnove / *EU Design Examination Certificate*

Pregled zasnove merilnega instrumenta v skladu z Direktivo o merilnih instrumentih /
Design examination according to EU Directive on Measuring Instruments

Št. / *No.*: 20MID001

Ime in naslov proizvajalca / *Name and address of the manufacturer* :

Proizvajalec / *Manufacturer*: **MIKROELEKTRONIKA A.D.**
Naslov / *Address*: **Blagoja Parovića bb, 78000 Banja Luka, Bosna i Hercegovina**

Podatki o merilu / *Description of the measuring instrument* :

Merilo / *Measuring instrument*: **Monofazni elektronski števec električne energije / *Single-phase electronic electricity meter***

Tip / *Type*: **MEM6xx**

Varianta števca / *Meter variant*: **MEM6xx**

Referenčne napetosti / *Reference voltages*: **230 V**
Referenčni tokovi / *Reference currents*: **5 A**
Nazivni tokovi / *Rated currents*: /
Referenčna frekvenca / *Reference frequency*: **50 Hz**
Razred točnosti / *Accuracy class*: **A, B**

V skladu s Pravilnikom o merilnih instrumentih (UL RS št. 19/2016), priloga 5 (MI-003) – Števci delovne električne energije, priloga 2 modul H1, člen 4, je naročnik predložil vlogo, tehnično dokumentacijo in dokazila o ustreznosti zasnove v pregled zasnove merila za zgoraj navedeni proizvod, z namenom, da se preveri ali zasnova proizvoda ustreza zahtevam tega pravilnika. / *In accordance with the Directive on Measuring Instruments 2014/32/EU, Annex V (MI-003) – Active Electrical Energy Meters, Annex II Module H1, article 4, the applicant has submitted the application, technical documentation and the supporting evidence for the adequacy of the technical design for the above mentioned measuring instrument for the purpose of design examination. This is to certify, that the design of the measuring instrument meets the provisions laid down in the Directive.*

V skladu s Pravilnikom o merilnih instrumentih mora naročnik obvestiti priglašeni organ o vsaki narejeni ali načrtovani spremembi. / *In accordance with the above mentioned Directive the applicant has to inform the notified body of any already performed or planned modifications.*

Pregledana tehnična mapa se shrani pri priglašenem organu za dobo 10 let po izdelavi zadnjega primerka merila. Na željo naročnika se mapa predmeta po tem obdobju vrne naročniku ali uniči. / *The examined technical file will be stored by the notified body for 10 years after the last measuring instrument has been manufactured. On request of the applicant, it will then be returned or destroyed.*

Opomba / *Remark*:

Ta EU certifikat o pregledu zasnove velja do 2030-06-19. /
This EU Design Examination Certificate valid till 2030-06-19.

Certifikat ima prilogo, ki vsebuje 6 strani. / *The certificate has an Annex, which includes 6 pages.*

Ljubljana, 2020-06-19

Podpis pooblaščene osebe / *Authorised signature*

Igor Likar

Priloga k certifikatu št. / *Annex to the Certificate No.:* 20MID001

1. Metrological characteristics of the measuring instrument:

- Reference Voltage: **230 V**
- Reference Currents: **5 A**
- Rated Currents: */*
- Reference Frequency: **50 Hz**
- Climatic Environments: **from -25 °C to +55 °C (3K7)**
  non-condensing humidity
  closed location
- Mechanical Environments: **M1**
- Electromagnetic Environments: **E2**
- Software Version: **2.0.02. [403F5E00]**
- Accuracy Class: **A, B**

Percentage error due to variation of the voltage, frequency and temperature:

Influence Factor: $IF = \sqrt{\delta_T^2(T, I, \cos\varphi) + \delta_U^2(U, I, \cos\varphi) + \delta_f^2(f, I, \cos\varphi)}$

Direct connected single-phase meter at different load points:

Reference voltage: Uref = 230 V, f = 50 Hz, Imax = 100 A

I	I [A]	PF	IF [%]
Active energy – reception			
Imin	0.25	1	0,09
Itr	0.5	1	0,04
Itr	0.5	0.5L	0,06
Itr	0.5	0.8C	0,08
Iref	5	1	0,08
Iref	5	0.5L	0,09
Iref	5	0.8C	0,09
Imax	100	1	0,10
Imax	100	0.5L	0,21
Imax	100	0.8C	0,14
Active energy – generation			
Imin	0.25	1	0,20
Itr	0.5	1	0,21
Itr	0.5	0.5L	0,22
Itr	0.5	0.8C	0,27
Iref	5	1	0,24
Iref	5	0.5L	0,26
Iref	5	0.8C	0,25
Imax	100	1	0,26
Imax	100	0.5L	0,46
Imax	100	0.8C	0,27

1.1. Single-phase electronic electricity meter

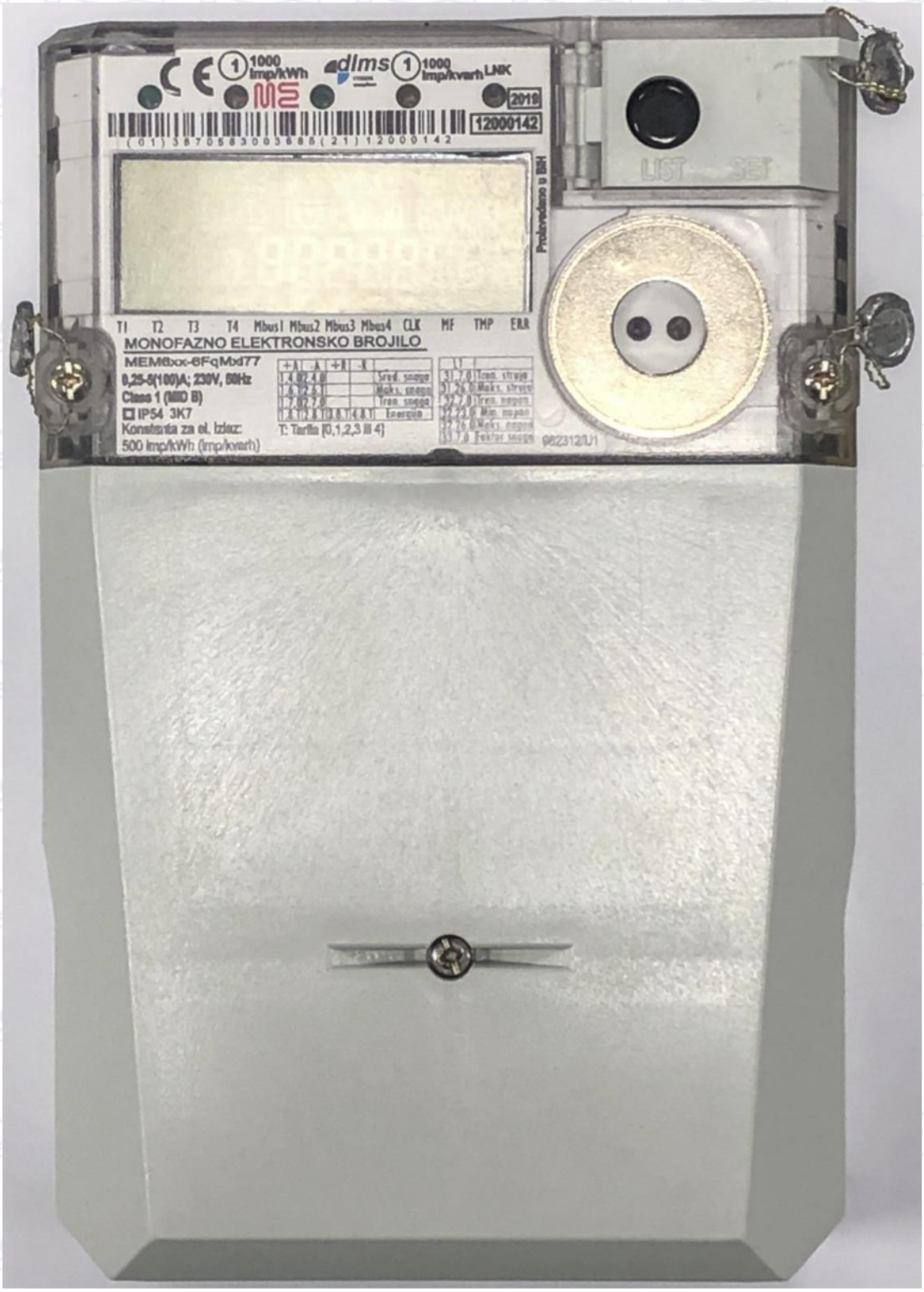

Figure 1: View of MEM6xx Single-phase electronic electricity meter

1.2. Front plate

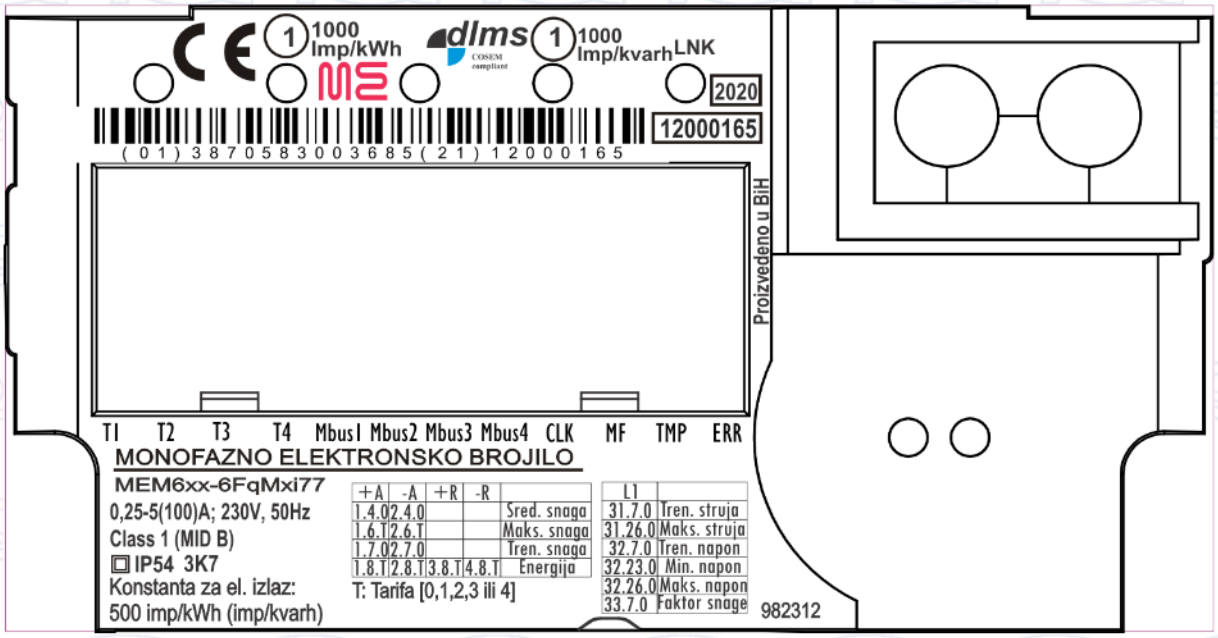

Figure 2: Front plate of MEM6xx electricity meter

1.3. Essential parts

1.3.1. Measurement system for electricity meter MEM6xx is described in the document 1551-237-MEM6xx Technical manual (Tehnički opis), 20.05.2020, Chapter 6.

1.3.2. Printed circuit boards for electricity meter MEM6xx are described in the following document:
- 1078-982328 (module MEM600-B10-V01 Rev. A).

1.3.3. The front plate bears the complete, well legible, legally required information as mentioned in the regulations on the energy meters. An example of the markings is shown in paragraph 1.2.

1.4. Essential characteristics

1.4.1. See paragraph 1 and the characteristics mentioned below.

1.4.2. Approved meter types: MEM6xx

A complete type designation for electricity meter see document 1551-237-MEM6xx Technical manual (Tehnički opis), 20.05.2020, Chapter 11.

1.4.3. Frequency: 50 Hz

1.4.4. Meter constant: 1.000 impulses/kWh (optical output)
500 impulses/kWh (electrical output)

1.4.5. Number of registers

List of registers for electricity meter is given in the document document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.1 and 7.

1.4.6. Error register

Detailed information for electricity meter is given in the document document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.10.

1.4.7. Active energy measurement

The meter is capable of measuring energy in two directions and has two types of measurements ('+A' with return stop, '-A' with return stop). Import and export energy are presented in separate registers.

Registers for active energy measurement at MEM6xx are listed in the document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.6.2.

1.4.8. Software specification (refer to WELMEC guide 7.2):

Identification number of the Core	**Remarks**
MEM6xx • Core ID: **2.0.02. [403F5E00]** CHKSUM number: **2F CC 9D 2C C8 27 CF 9E A5 D5 B5 AF 55 7E BF 7E 0B 76 A3 EB EB 45 57 17 E2 95 81 00 09 03 71 7B**	All changes to the software will lead to an increment of the version number. This is assured by the Quality Management System of the manufacturer. The software identification and signature shall be displayed on LCD. Detailed instructions for electricity meter are in the document document 1551-237-MEM6xx Technical manual (Tehnički opis), 20.05.2020, Chapter 4.5.2.6.

1.4.8.1. Software type: P

1.4.8.2. Software functions: Extensions L, S, T and I3

1.5. Conditional parts

1.5.1. Terminals block

The connections for the current cables on the terminals block allow a cable cross-section up to: 35 mm^2 (main terminals) and up to 1,5 mm^2 (auxiliary terminals). The cables are each fastened to the terminals with M6 screws.

1.5.2. Housing

The meter has a housing resistant to the penetration of dust and water (IP54) and is resistant to the UV light. The housing is made of self-extinguishing isolative material.

1.5.3. Terminals cover

The meter has a separated terminal's cover, made of self-extinguishing UV stabilized isolative material.

1.5.4. Data display

The meter has a separated terminals cover, made of self-extinguishing UV stabilized isolative material.

1.5.5. Data display

The quantity of measured energy is presented by means of a liquid crystal display (LCD). The list of the displayed signals and alarms for electricity meter is provided in the document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 4.5.

1.5.6. Communication interface

Meter supports the following communication interfaces: IC port, MBus, RS485, Ethernet, PLC, GSM and GPRS. Meter supports encrypting of data transmission between user and AMR center. For further information see document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 6.

1.6. Conditional characteristics

1.6.1. Maximum current: 100 A

1.7. Non-essential parts

1.7.1. Inputs and outputs

Meter supports two relay outputs. For further information see document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.6.2.

1.7.2. Bi-stable disconnector

Electricity meter has integrated bi-stable disconnector. For further information see document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.6.1.

2. Measures required for ensuring the integrity of the measuring instrument:

- Sealing is described in the document document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 3.1.
- The meter is sealed with two seals: first wire seal for upper cover of the housing (sealed by manufacturer) to prevent access to internal electronics of the electricity meter and second wire seal for lower cower of the housing (sealed by electrical distribution company) to prevent access to terminals of the electricity meter. The housing cannot be opened without visible mechanical deterioration.
- The electricity meter is equipped with a terminal cover opening detector and a meter cover opening detector. The meter registers if and when the terminal or meter covers were opened in a special memory location (see document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.4 and 5.9).
- The electricity meter is equipped with a detector of external magnetic field. Events are recorded in the special memory location (see document 1553A5-907622 Rev. A Instalation manual (Uputstvo za instaliranje), Maj 2020, Chapter 5.4 and 5.9).

3. Information on other elements necessary to identify the measuring instrument and to check its visual external conformity to the design:

- All information on other elements necessary to identify the measuring instrument and to check its visual external conformity to the design are presented in the document document 1551-237-MEM6xx Technical manual (Tehnički opis), 20.05.2020.

4. Information to verify the characteristics of manufactured measuring instruments (if necessary):

- Manufacturer provides a software tool "**µMETER**" which allows reading of all data and configuration of the registers of the meter. To use the "**µMETER**" a personal computer is needed.

5. Assessment of compliance with the essential requirements stated in Annex I and specific requirements stated in Annex V (MI-003) of the Directive on Measuring Instruments 2014/32/EU:

- The measuring instrument fulfills the above-mentioned requirements.
- The use of harmonized standards (EN 50470-1:2006 and EN 50470-3:2006) is appropriate and a presumption of conformity is established.
- Presumption of conformity that meter is compliant with the essential requirements is fulfilled also with conformity to the requirements with the European Technical Report CLC/TR 50579:2012 - Electricity metering equipment - Severity levels, immunity requirements and test methods for conducted disturbances in the frequency range 2 -150 kHz.
- The content of the technical file is in conformity with the above-mentioned requirements.

The documentation is kept in the technical file No.:

20TF001

Examined by

Mag. Matjaž Lindič