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

Pregled zasnove merilnega instrumenta v skladu z EU direktivo o merilnih instrumentih 2014/32/EU /
Design examination of Measuring Instrument according to EU Directive on Measuring Instruments 2014/32/EU

Št. / *No.*: 21MID007

Sprememba / *Modification:* M01; Popravek / *Revision*: R01

Ime in naslov naročnika / *Name and address of the applicant* :

Naročnik / *Applicant*: **ISKRAEMECO, merjenje in upravljanje energije, d.d.**
Naslov / *Address*: **Savska loka 4, 4000 Kranj, SLOVENIJA**

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

Proizvajalec / *Manufacturer* : **ISKRAEMECO, merjenje in upravljanje energije, d.d.**
Naslov / *Address* : **Savska loka 4, 4000 Kranj, SLOVENIJA**

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

Merilo / *Measuring instrument*: **Trifazni števec delovne električne energije / *Three phase electricity meter for active energy***
Tip / *Type*: **MT174**
Varianta števca / *Meter variant*: **MT174-T1**

Referenčne napetosti / *Reference voltages*: **3x230/400 V, 3x230 V, 1x230 V**
Referenčni tokovi / *Reference currents*: **1 A**
Nazivni tokovi / *Rated currents*: **1 A, 5 A**
Referenčna frekvenca / *Reference frequency*: **50 Hz, 60 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 EU 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.*

SIQ LJUBLJANA je priglašeni organ v skladu z EU direktivo o merilnih instrumentih 2014/32/EU s priglasitveno številko 1304. Certifikacijski organ ni akreditiran za namen priglasitve. / *SIQ LJUBLJANA is a notified body according to EU Directive on Measuring Instruments 2014/32/EU with notification number 1304. Certification body is not accredited for notification purposes.*

V skladu z zgoraj navedenim Pravilnikom o merilnih instrumentih mora naročnik obvestiti priglašeni organ o vsaki narejeni ali načrtovani spremembi ter reklamaciji s strani tretje osebe. / *In accordance with the above mentioned Directive the applicant has to inform the notified body of any already performed or planned modifications and reclamations from the third party.*

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 je sprememba certifikata št. 21MID007M01. /
This EU Design Examination Certificate modifies Certificate No. 21MID007M01.

Certifikat ima prilogo, ki vsebuje 5 strani. / *Certificate has an Annex, which includes 5 pages.*

Ta EU certifikat o pregledu zasnove velja do 2031-12-06 /
This EU Design Examination Certificate valid till 2031-12-06.

Ljubljana, 2023-05-09

Podpis pooblaščene osebe / *Authorised signature*

SIQ Ljubljana
Mašera-Spasićeva ulica 10
1000 Ljubljana
SI

Bojan Pečavar

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BOJAN PEČAVAR
Date: 2023-05-09
12:50+02:00

Priloga k certifikatu št. / *Annex to the Certificate No.:* 21MID007
Sprememba / *Modification*: M01; Popravek / *Revision*: R01

1. Places of manufacture

- ISKRAEMECO, merjenje in upravljanje energije, d.d.
  Savska Loka 4, 4000 Kranj, Slovenija
- ISKRAEMECO Egypt Energy Measurement and Management
  Plot No. 1 Pyramids Industrial West Park - 10th of Ramadan City, 44629, Egypt

2. Appearance of the electricity meter and approved meter types

Figure 1: View of an example of MT174 three phase electricity meter

- Type designations: **MT174-T1**

3. Metrological characteristics of the measuring instrument

- Reference voltages: **1x230 V**
  3x230 V
  3x230/400 V
- Reference currents: **1 A**
- Rated currents: **1 A**
  5 A
- Maximum currents: **6 A**
- Reference frequency: **50 Hz**
  60 Hz
- Climatic environments: **from -40 °C to +70 °C**
  non-condensing humidity
  closed location
- Mechanical environments: **M1**
- Electromagnetic environments: **E2**
- Meter constants: **10 000 impulses/kWh**
- Main board versions: **027.631.152.002**
- Main technical documents: **MT174 Technical description, EAD 020.615.250**

4. Software identification

- Software Versions: **V1.04**
  V1.06

Version (0.2.0):	**Check sum (C.1.6):**
V1.04	B204
V1.06	391B

The FW identification is displayed on the meter LCD. Detailed instructions are in the documents listed in paragraph 3.

5. Influence factors

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 polyphase meter with balanced loads: **Uref = 3x230/400 V, f = 50 Hz, Imax = 6 A, 3P4W**

I	I [A]	PF	Imp.	IF [%]
Active energy – reception				
Imin	0.01	1	2	0,10
Itr	0.05	1	3	0,06
Itr	0.05	0.5L	2	0,10
Itr	0.05	0.8C	3	0,08
Iref	1	1	10	0,12
Iref	1	0.5L	6	0,11
Iref	1	0.8C	8	0,07
Imax	6	1	100	0,08
Imax	6	0.5L	50	0,11
Imax	6	0.8C	80	0,06
Active energy – generation				
Imin	0.01	1	2	0,15
Itr	0.05	1	3	0,09
Itr	0.05	0.5L	2	0,13
Itr	0.05	0.8C	3	0,07
Iref	1	1	10	0,10
Iref	1	0.5L	6	0,12
Iref	1	0.8C	8	0,08
Imax	6	1	100	0,08
Imax	6	0.5L	50	0,08
Imax	6	0.8C	80	0,08

6. Additional information

6.1. Examples of front plates

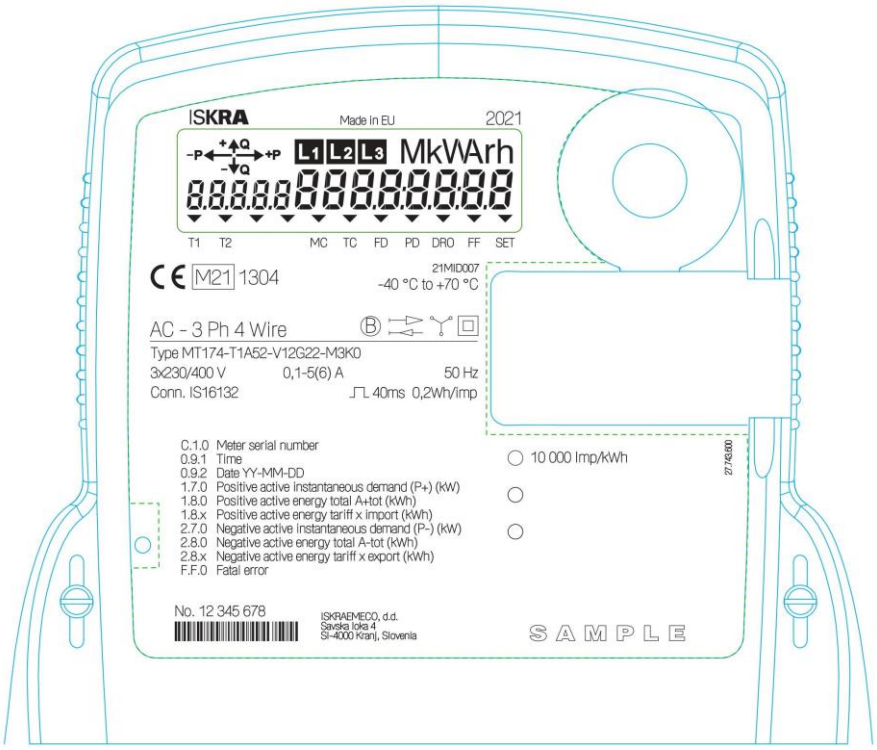

Figure 2: Example of front plate for MT174-T1 meter

6.2. Essential parts

6.2.1 Measurement systems for all electricity meters are described in the documents listed in paragraph 3.

6.2.2 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 on the front plates (example front plates of the meters) are shown in paragraph 6.1.

6.3. Essential characteristics

6.3.1 See paragraph 3 and the characteristics mentioned below.

6.3.2 Number of registers

Lists of registers for all electricity meters are given in the documents listed in paragraph 3.

6.3.3 Error register

Detailed information about error registers for all electricity meters are given in the documents listed in paragraph 3.

6.3.4 Active energy measurement

The meter is capable of measuring active energy in two directions (imported +A and exported -A).

Registers for active energy measurement for all electricity meters are described in the documents listed in paragraph 3.

6.4. Conditional parts

6.4.1 Terminals block

The current and voltage terminals are made of solid brass with a 5 mm bore diameter; the conductors are fixed in the terminals with two screws.

6.4.2 Housing

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

6.4.3 Terminals cover

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

6.4.4 Data display

The quantity of measured energy is presented by means of a seven segment LCD display with additional characters and symbols providing 8 characters. The lists of the displayed signals and alarms for all electricity meters are provided in the documents listed in paragraph 3.

6.4.5 Communication interface

The meter MT174 is equipped with an IR optical port for local readout and meter programming communication interface and RS485 interface. Detailed descriptions are provided in the documents listed in paragraph 3.

6.5. Non-essential parts

6.5.1 Inputs and outputs

On request inputs and outputs are built in the meter. Detailed descriptions are provided in the documents listed in paragraph 3.

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

- Sealing of all electricity meters is described in the documents listed in paragraph 3.
- The meter housing (meter cover) and terminals cover are sealed with two wire seals preventing access to the power meter and terminal block. The meter housing and power terminal cover cannot be opened without removing the seal.

- On request the MT174 meters are equipped with a terminal cover opening detector and a meter cover opening detector. The meter registers the number of openings and date/time of last opening in a special memory location.

  Terminal cover opening detector is described in the documents listed in paragraph 3.

- On request the MT174 meters are equipped with an external magnet field detector. In such a case there is a signal flag on the LCD which indicates that meter was exposed to an external magnetic field. At the same time such an event is registered in a log-book with a time stamp (date and time) of its occurrence.

  External magnet field detector is described in the documents listed in paragraph 3.

8. 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 documents listed in paragraph 3.

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

- Manufacturer provides software tools SEP2W MeterView and Symbiot which allow reading of all data and configuration of the registers of the meter. To use the SEP2W MeterView or Symbiot a personal computer and the interface are needed.

10. 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 and EN 50470-3) 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/TR50579 - 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.

Corrections stated in this certificate:

- In paragraph 3. description of HW identification displayed on the meter LCD has been deleted. Missing reference frequency 60 Hz at the front page of the certificate has been added.

The documentation is kept in the technical file No.:

21TF007

Ljubljana, 2023-05-09

Podpis pooblaščene osebe / *Authorised signature*

SIQ Ljubljana
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Bojan Pečavar

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