

# 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.: 13MID001**  
**Sprememba / Modification: M06**

## 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 elektronski večfunkcijski števec električne energije /  
Three-phase multifunction electricity meter**

Tip / Type: **MT880**

Varianta števca / Meter variant: **MT880-D2, MT880-T1**

Referenčne napetosti / Reference voltages: **3x57.7/100 V ... 3x290/500 V, 3x100 V ... 3x290 V,  
2x110/190 V ... 2x240/415 V, 110 V ... 240 V**

Referenčni tokovi / Reference currents: **5 A, 10 A**

Nazivni tokovi / Rated currents: **1A, 2.5 A, 5 A**

Referenčna frekvenca / Reference frequency: **50 Hz, 60 Hz**

Razred točnosti / Accuracy class: **A, B, C**

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 proizvajalca 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 priglasenem 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. 13MID001M05. /  
This EU Design Examination Certificate modifies Certificate No. 13MID001M05.

Certifikat ima prilogo, ki vsebuje 10 strani. / Certificate has an Annex, which includes 10 pages.

Ta EU certifikat o pregledu zasnove velja do 2033-05-08. /  
This EU Design Examination Certificate valid till 2033-05-08.

Ljubljana, 2023-05-08

Podpis pooblaščenice osebe / Authorised signature

Bojan Pečavar

**Priloga k certifikatu št. / Annex to the Certificate No.: 13MID001**  
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**1. Places of manufacture**

- ISKRAEMECO, merjenje in upravljanje energije, d.d.  
Savska Loka 4, 4000 Kranj, Slovenija

**2. Appearance of the electricity meter and approved meter types**

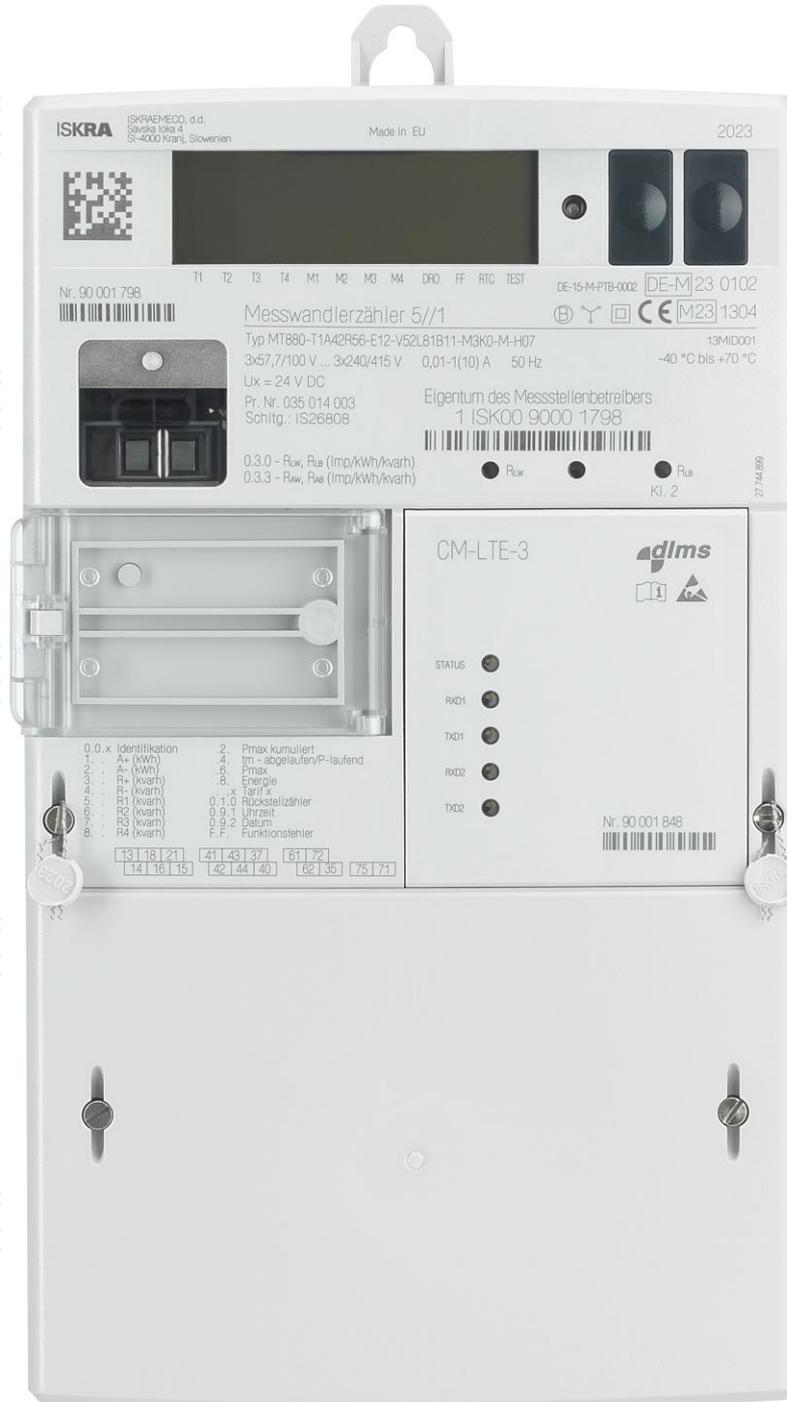


Figure 1: View of MT880-T1 Three-phase multifunction electricity meter



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- Type designations: **MT880-D2, MT880-T1**
- Meter variants and versions:

<b>Meter variant:</b>	<b>Version:</b>
MT880-D2	H00, H01
MT880-T1	H00, H01, H02, H04, H05, H06, H07, H08, H09

**3. Metrological characteristics of the measuring instrument**

- Reference voltages: **3x57.7/100 V ... 3x240/415 V**  
**3x100 V ... 3x240 V**  
**3x57.7/100 V ... 3x290/500 V**  
**3x100 V ... 3x290 V**  
**3x110/190 V ... 3x240/415 V**  
**3x110 V ... 3x240 V**  
**2x110/190 V ... 2x240/415 V**  
**110 V ... 240 V**
- Reference currents: **5 A, 10 A**
- Rated currents: **1 A, 2.5 A, 5 A**
- Maximum currents:  **$\geq 1,2 I_n$  to 10 A**  
 **$\geq 1,2 I_n$  to 20 A**  
 **$\geq 50 I_{tr}$  to 120 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: **500 impulses/kWh to 40.000 impulses/kWh**
- Main board versions: **027.631.325.001**  
**027.640.231.000**  
**027.640.326.000**  
**027.640.380.000**
- Main technical documents: **MT880 User Manual, EAK 020.615.636**

**4. Software identification**

- Software Versions: **V1.004**  
**V1.005**  
**V1.006**  
**V1.007**  
**V1.008**

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Core ID (1-0:0.2.0):	CHKSUM number:
V1.004	A6 56 90 88 3E D8 B2 B1 D8 C3 E1 07 0E 2E B0 17
V1.005	D8 24 2D 56 59 2F F6 5F DD EF 28 D8 49 59 19 D6
V1.006	5B 1A 77 8C BC 61 41 A9 D7 A3 B5 E3 82 58 6F EC
V1.007	D5 2A 69 56 0F D7 DF 8F A7 96 EA CB A3 34 C4 62
V1.008	82 20 F2 47 35 4C C7 5D A2 B6 44 FD 88 B0 45 81

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:**

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

Transformer operated polyphase meter with balanced loads: : **Uref = 3×240/415 V; f = 50 Hz; I<sub>max</sub> = 10 A**

I	I [A]	PF	I <sub>mp.</sub>	IF [%]
Active energy – reception				
I <sub>min</sub>	0.01	1	3	0,11
I <sub>tr</sub>	0.05	1	6	0,07
I <sub>tr</sub>	0.05	0.5L	3	0,15
I <sub>tr</sub>	0.05	0.8C	5	0,05
I <sub>ref</sub>	1	1	35	0,06
I <sub>ref</sub>	1	0.5L	20	0,11
I <sub>ref</sub>	1	0.8C	25	0,04
I <sub>max</sub>	10	1	300	0,06
I <sub>max</sub>	10	0.5L	200	0,09
I <sub>max</sub>	10	0.8C	250	0,04
Active energy – generation				
I <sub>min</sub>	0.01	1	3	0,07
I <sub>tr</sub>	0.05	1	6	0,05
I <sub>tr</sub>	0.05	0.5L	3	0,13
I <sub>tr</sub>	0.05	0.8C	5	0,04
I <sub>ref</sub>	1	1	35	0,06
I <sub>ref</sub>	1	0.5L	20	0,11
I <sub>ref</sub>	1	0.8C	25	0,05
I <sub>max</sub>	10	1	300	0,06
I <sub>max</sub>	10	0.5L	200	0,10
I <sub>max</sub>	10	0.8C	250	0,04

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Direct connected polyphase meter with balanced loads : **Uref = 3×240/415 V; f = 50 Hz; I<sub>max</sub> = 120 A**

I	I [A]	PF	Imp.	IF [%]
Active energy – reception				
I <sub>min</sub>	0.15	1	3	0,11
I <sub>min</sub>	0.30	1	6	0,07
I <sub>tr</sub>	0.5	1	6	0,05
I <sub>tr</sub>	0.5	0.5L	3	0,19
I <sub>tr</sub>	0.5	0.8C	4	0,12
I <sub>tr</sub>	1	1	6	0,05
I <sub>tr</sub>	1	0.5L	3	0,11
I <sub>tr</sub>	1	0.8C	4	0,05
I <sub>ref</sub>	5	1	10	0,03
I <sub>ref</sub>	5	0.5L	5	0,06
I <sub>ref</sub>	5	0.8C	6	0,04
I <sub>ref</sub>	10	1	10	0,03
I <sub>ref</sub>	10	0.5L	5	0,05
I <sub>ref</sub>	10	0.8C	8	0,05
I <sub>max</sub>	60	1	60	0,04
I <sub>max</sub>	60	0.5L	30	0,05
I <sub>max</sub>	60	0.8C	48	0,03
I <sub>max</sub>	80	1	80	0,04
I <sub>max</sub>	80	0.5L	40	0,06
I <sub>max</sub>	80	0.8C	60	0,04
I <sub>max</sub>	100	1	100	0,04
I <sub>max</sub>	100	0.5L	50	0,18
I <sub>max</sub>	100	0.8C	80	0,04
I <sub>max</sub>	120	1	120	0,07
I <sub>max</sub>	120	0.5L	60	0,11
I <sub>max</sub>	120	0.8C	90	0,09

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I	I [A]	PF	Imp.	IF [%]
Active energy – generation				
I <sub>min</sub>	0.15	1	3	0,10
I <sub>min</sub>	0.30	1	6	0,06
I <sub>tr</sub>	0.5	1	6	0,07
I <sub>tr</sub>	0.5	0.5L	3	0,09
I <sub>tr</sub>	0.5	0.8C	4	0,07
I <sub>tr</sub>	1	1	6	0,05
I <sub>tr</sub>	1	0.5L	3	0,09
I <sub>tr</sub>	1	0.8C	4	0,05
I <sub>ref</sub>	5	1	10	0,04
I <sub>ref</sub>	5	0.5L	5	0,06
I <sub>ref</sub>	5	0.8C	6	0,05
I <sub>ref</sub>	10	1	10	0,02
I <sub>ref</sub>	10	0.5L	5	0,51
I <sub>ref</sub>	10	0.8C	8	0,04
I <sub>max</sub>	60	1	60	0,04
I <sub>max</sub>	60	0.5L	30	0,07
I <sub>max</sub>	60	0.8C	48	0,04
I <sub>max</sub>	80	1	80	0,04
I <sub>max</sub>	80	0.5L	40	0,11
I <sub>max</sub>	80	0.8C	60	0,07
I <sub>max</sub>	100	1	100	0,04
I <sub>max</sub>	100	0.5L	50	0,19
I <sub>max</sub>	100	0.8C	80	0,04
I <sub>max</sub>	120	1	120	0,06
I <sub>max</sub>	120	0.5L	60	0,13
I <sub>max</sub>	120	0.8C	90	0,06

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**6. Additional information**

**6.1. Examples of front plates**

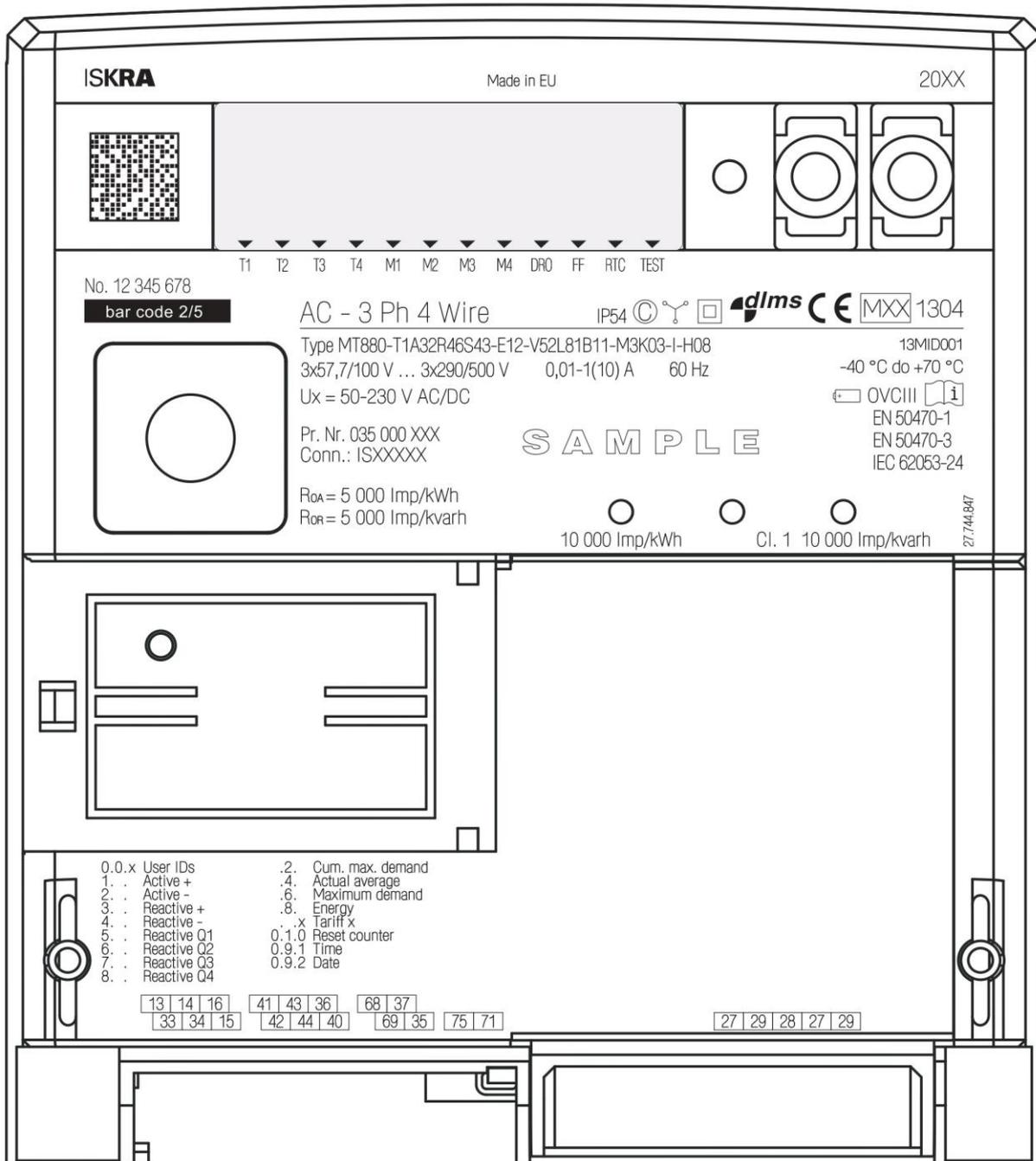


Figure 2: Front plate of MT880-T1 (integrated version)

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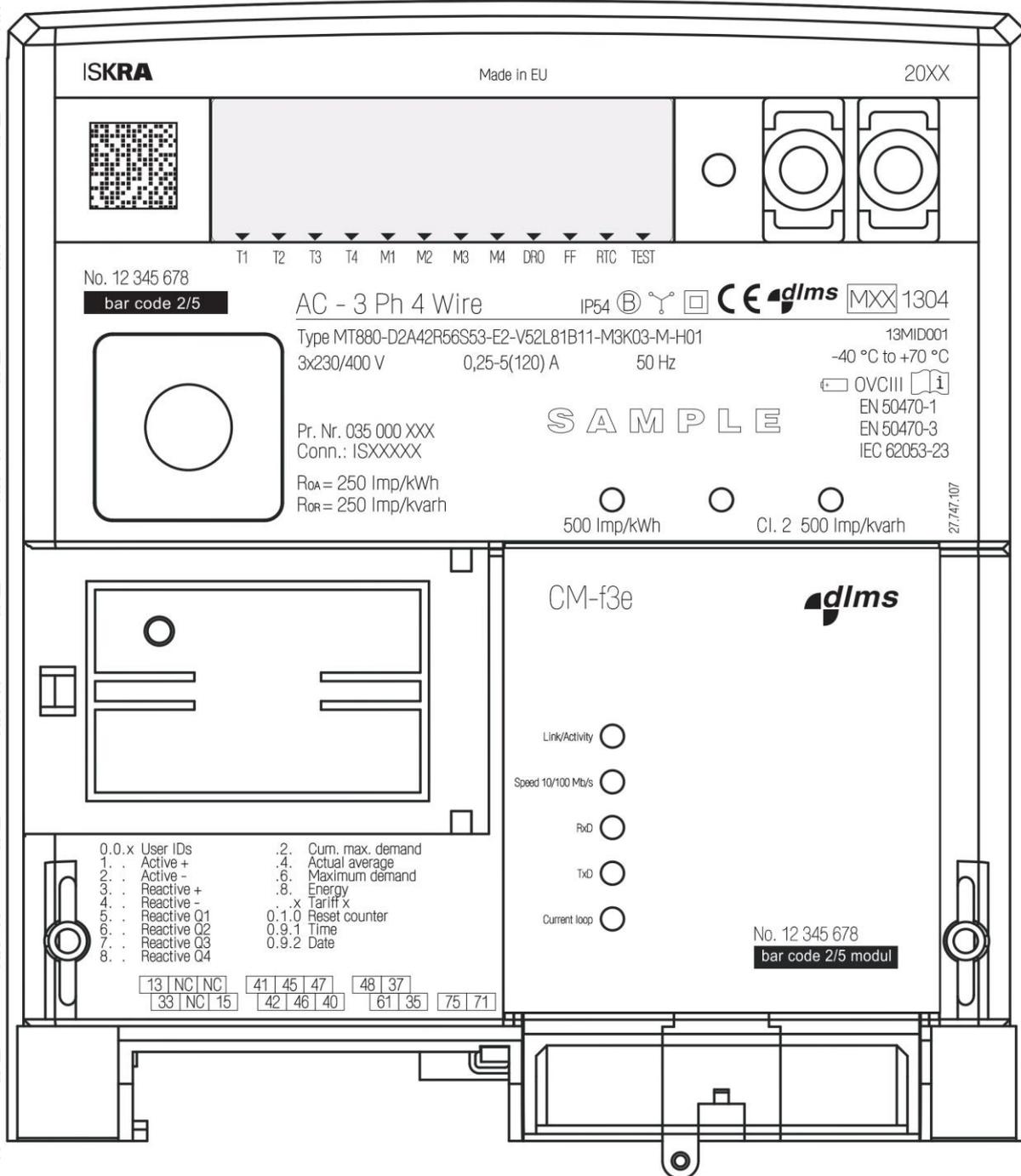


Figure 3: Front plate of MT880-D2 (modular version)

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**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 energy in 2 directions (one direction, bi-directional or absolute and net presented value).  
Registers for active energy measurement are given in the documents listed in paragraph 3.
- 6.3.5 Meter constant  
Meter constant is settable in the range of 500 impulses/kWh to 40.000 impulses/kWh, register 0.3.0.  
Maximal meter constant is limited with maximum reference voltage, maximum current and minimum LED impulse length

**6.4. Conditional parts**

- 6.4.1 Terminals block  
The connections for the current cables on the terminals block are made for conductors with maximum cross-section up to 16 mm<sup>2</sup> (terminal diameter 5 mm) for transformer operated electricity meters and up to 35 mm<sup>2</sup> (terminal diameter 9.5 mm) for direct connected electricity meters.
- 6.4.2 Housing  
The meter has a housing resistant to the penetration of dust, water IP54 and to the UV light. The housing is made of self-extinguishing isolative material.
- 6.4.3 Housing  
The meter has a separated terminals cover, made of self-extinguishing UV stabilized polycarbonate. It can be transparent or non-transparent.
- 6.4.4 Data display  
The quantity of measured energy is presented by means of a 198-segment liquid crystal display (LCD).  
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 MT880 is equipped with an IR optical port for local readout and meter programming, RS232 or RS485 communication interface and 2G (3G, Ethernet and MODBUS) modem or CS communication interface on communication module and RS485 interface (only at modular meter version).  
Detailed description of optical interfaces for all electricity meters are provided in the documents listed in paragraph 3.

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**6.5. Non-essential parts**

**6.5.1 Inputs and outputs**

Meter supports 5 high voltage configurable inputs, 8 voltage free (OptoMOS) configurable outputs and bistable 5 A relay or OptoMOS output.

Detailed descriptions are given 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 seal screws preventing access to the power meter and terminal block. The meter housing and terminal cover cannot be opened without removing the seal.
- The MT880 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. Meter detects meter and terminal cover opening also in no power state.  
Detailed descriptions are given in the documents listed in paragraph 3.
- The MT880 meters are equipped with an external magnet field detector. Events are recorded in the fraud detection and in the magnetic tamper log books. Meter detects strong magnetic field also in no power state.  
Detailed descriptions are given 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:**

- Manufacturer provides a software tool SEP2W MeterView which allows reading of all data and configuration of the registers of the meter. To use the SEP2W MeterView a personal computer and an optical probe supplied by manufacturer are needed.
- Manufacturer provides a software tool MeterRead and Metrologue for billing readout and programming of the meter. The tool is intended for readout on the field.

**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.



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**Modifications stated in this certificate:**

- This is renewal of the EU Design Examination Certificate 13MID001.

The documentation is kept in the technical file No.:

**13TF001**

Ljubljana, 2023-05-08

Podpis pooblaščenice osebe / *Authorised signature*

Bojan Pečavar

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