



## EQM - multifunctional 4-quadrant electricity meter, (MID\* certificate)



- Measurement of instantaneous values: P, Q, S, I, U, f, tgφ, THD\*\* for measuring currents and voltages
- Signaling and registration of voltage failures
- Signaling and registration of incorrect phase
- Presentation of measuring data in OBIS standard according to EN 62056-61
- Identification of tariff programmed into the meter
- Possibility of defining tariff which is activated according to programmed date.
- Registration of data for the last 12 billing periods

EQM gives possibility of manual or automatic reset of billing period.

EQM meter may be supplied with the measuring voltages or with external auxiliary voltage. EQM meter is equipped with battery supply system that enables the possibility of reading out billing values from LCD display in case of voltage failure.

The meter may be optionally equipped with sensor of opening of terminal box cover and relay output for controlling of external devices. Relay functions are configured due to customer requirement e.g. signaling of power overconsumption referring to contractual power value.

The meter is equipped with automatic change-over between winter and daylight time.

Meter construction is supplied with galvanic separation between measuring and communication circuitry.

### Application

EQM is four quadrant electricity meter designed for direct and transformer measurements in 3 and 4 wire power network. Because of EQM's complex extended functionality and high accuracy, the meter is intended to be used in high voltage measuring systems of power plants, utilities and industry measuring systems.

### Measuring functions

- Measurement and registration of active and reactive energy in four tariffs and both directions
- Measurement and registration of total: active, reactive and apparent energy in both directions: P+, P-, Q+, Q-, S+, S-
- Measurement and registration of reactive energy in four quadrants: Q1, Q2, Q3, Q4
- Measurement and registration of total reactive energy: Q1, Q2, Q3, Q4
- Measurement and registration of  $U^2t$  and  $I^2t$  in both directions
- Measurement and registration of exceeded reactive energy for the first quadrant
- Registration of load profile, using 1, 15, 30 or 60 minutes integration periods for both directions
- Measurement and registration of the 10 highest values of maximum demand in both directions
- Measurement and registration of active power overconsumption due to contractual power value
- Measurement and registration of exceeded active power values, evaluated on the base of the 10 maximum demands due to contractual power value
- Registration of load profiles: P+, P-, Q1, Q2, Q3, Q4; profiles of energy registers: EP+, EP-, EQ1, EQ2, EQ3, EQ4, ES+, ES-; profile of:  $U^2t+$ ,  $U^2t-$ ,  $I^2t+$ ,  $I^2t-$  at 1, 15, 30 or 60 minute cycles. The meter registers 20150 measuring cycles (capacity of memory for 15 minutes of integration period – 209 days).
- Profile of mean values of: U1, U2, U3, I1, I2, I3, THD\*\* for currents and measuring voltages at 1, 5, 10 or 15 minute cycles. The meter registers 20150 measuring cycles (capacity of memory for 10-minutes integration period – 139 days).

### Communication interfaces

EQM meter is equipped with interfaces: optical (which may be blocked with a switch located under the terminal box cover), CLO or RS485.

The meter may be additionally equipped with communication module: GTqm (for GSM transmission), RS485, CLO, RS232. Access to the communication module is protected by sealed terminal box cover.

EQM meter gives possibility of data reading with auto – detection of protocols: DLMS, EN 62056-21 and EN 62056-61.

### Metering data

All the data registered by the meter is customer friendly presented on the LCD applying OBIS standard.

All data screens may be viewed manually using joystick that is available on the front panel of the meter. Specially designed, graphical LCD of the meter allows presentation of many data on the same screen. There are four fundamental LCD menus:

- Current data – access to current measuring data,
- Historical data – access to historical measuring data related to billing periods,
- Momentary values – access to momentary current measurements,
- Preset – meters configuration and presets.

LCD screen is equipped with external magnetic field indicator.

### Parametrization and configuration

All operations in connection with downloading of tariffs parameters, tariff structure and the way the billing period is to be reset, as well as display operating modes are to be performed using specially designed software tool SOLEN.

\* MID - Measuring Instruments Directive

\*\* THD - Total Harmonic Distortion.

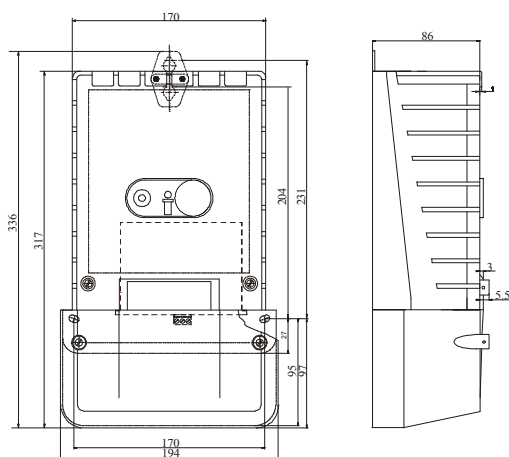
The meter has an EC - Type Examination Certificate number **TCM 221/14 - 5241** and is the subject to conformity assessment according to EU MID Directive and can be submitted to secondary legalization.

ALL FEATURES ARE SUBJECT TO CHANGE WITHOUT NOTICE ACCORDING TO PRODUCTS IMPROVEMENTS.

### Basic technical data

Type		EQM		
Measuring system		Direct	Transformer	Transformer
Accuracy	active energy (P)	1 - EN 62053-21 B - EN 50470-3	1 or 0,5 S - EN 62053-21/22 B or C - EN 50470-3	0,5 S or 0,2 S - EN 62053-22 B or C - EN 50470-3
	reactive energy (Q)	2 - EN 62053-23 1 - ZN/LB/T/08/11	2 - EN 62053-23 0,5 - ZN/LB/T/08/11	2 - EN 62053-23 0,5 - ZN/LB/T/08/11
Nominal voltage $U_n$		3 x 230/400 V AC	Range from 3 x 57,7/100 V to 3 x 230/400 V AC	3 x 57,7/100 V AC
Reference current $I_{ref}$		5 A	5 A	1 A
Maximum current $I_{max}$		100 A	10 A	1,2 A
Starting current $I_{st}$ / Minimum current $I_{min}$		20 mA / 150 mA	5 mA / 50 mA	1 mA / 10 mA
Transitional current $I_{tr}$		500 mA	250 mA	50 mA
Power consumption in voltage circuits		< 2,3 VA per phase	Standard version 2,4 ... 2,8 VA per phase Optional version < 2,2 VA per phase	Standard version 1,3 ... 2,1 VA per phase Optional version < 2,2 VA per phase
Power consumption in voltage circuits, when meter supplied from auxiliary power supply		Standard version 1,6 ... 2 VA per phase Optional version < 0,3 VA per phase	Standard version 1,6 ... 2 VA per phase Optional version < 0,3 VA per phase	Standard version 0,8 ... 1,3 VA per phase Optional version < 0,05 VA per phase
Power consumption in current circuits		< 0,05 VA per phase		
Frequency		50 Hz		
Operational frequency range		49 – 51 Hz		
Tariffication		4		
RTC (real time clock) battery supply		Lithium battery – 10 years of life time		
Display		LCD display, 33x65 mm		
Counter capacity		999999,99	99999,999	9999,9999
Auxiliary power supply (optional)		80 – 230 V AC, 120 – 320 V DC Power consumption of auxiliary power supply < 9 VA		
Communication interfaces		OPTICAL and CLO or RS485 Optional communication modules available: GTqm, RS232, RS485, CLO		
Pulse output		Transoptor, open collector type, negative or positive pulse with duration time 50 ms $U_{nom}=24$ V DC ( $U_{max}=38$ V DC), $I_{nom}=10$ mA ( $I_{max}=20$ mA), Pulse constant – according to operation manual		
Synchronization input or output (optional)		Transoptor, negative or positive pulse with duration time 50 ms $U_{nom}=24$ V DC ( $U_{max}=38$ V DC), $I_{nom}=10$ mA ( $I_{max}=20$ mA)		
Remote time synchronization code		Active or inactive		
Relay output (optional)		Maximum load of relay contacts 30 VA, $U_{max}=280$ V AC or 24 V DC		
Electromagnetic compatibility (acc. EN 61000-4 and EN 50470-1)		Repetitive electrical fast transients – 4 kV; Surges caused by overvoltages – 6 kV Static electricity discharges – 8 kV; Voltage failures and interruptions		
Housing		Polycarbonate PC, Protection Class: II, IP 51		
Specified operating range (EN 60721-3-3 Table 1)		- 40 °C ... + 70 °C (class 3K7) – LCD display - 35 °C ... + 70 °C		
Limit range of operation (EN 60721-3-3 Table 1)		- 40 °C ... + 70 °C (class 3K7) – LCD display - 35 °C ... + 70 °C		
Limit range for storage (EN 60721-3-1 Table 1)		- 40 °C ... + 70 °C (class 1K5)		
Limit range for transportation (EN 60721-3-2 Table 1)		- 40 °C ... + 70 °C (class 2K4)		
Weight		~2,4 kg	~1,9 kg	

Construction of the meter assures resistance against influence of external magnetic fields caused by magnets with inductance up to 150 mT, when measure is carry out at 30 mm distance from its surface.



Dimensions



Meter's view with communication module