



EQABP - electronic three phase electricity meter for active and reactive energy measurement (ver. OBIS, 3 interfaces), (MID* certificate)



Application

EQABP is a multi-tariff, four-quadrant electricity meter, designed for bidirectional direct and transformer measurements of electrical energy in 3 or 4-wire power network.

Measuring functions

- Measurement and registration of active and reactive energy in four tariffs for import and export directions
- Measurement and registration of total active, reactive and apparent energy for import and export directions: P+, P-, Q+, Q-, S+, S-
- Measurement and registration of total reactive energy in four measurement quadrants: Q1, Q2, Q3, Q4
- Measurement and registration of losses U^2t and I^2t
- Measurement and registration of reactive energy surplus for the first measuring quadrant
- Measurement of active power in both directions applying 1, 15, 30 or 60 minutes integration period
- Measurement and registration of 10 highest maximum demand values for import and export directions
- Measurement and registration of overconsumption of active power due to contractual power value
- Registration of number of exceedances with respect to predefined demand power value
- Registration of overconsumption of active power, evaluated on the base of the 10 maximum demands due to contractual power value
- Measurement and presentation of current active and reactive average power values with time indication of integration period for import and export direction
- Measurement of instantaneous values: P, Q, S, I, U, f, $\text{tg}\varphi$
- Registration of load profile (P+, P-, Q+, Q) and total energy registers values (EP+, EP-, EQ+, EQ-) applying 1, 15, 30 or 60 minutes integration period. 40500 mean values are registered in the meter's memory. When integration period is set to 15 minutes the load profile covers 421 days.
- Registration of mean values of U1, U2, U3, I1, I2, I3 applying 1, 5, 10 or 15 minutes integration period (so-called power quality profile). 44000 mean values are registered in the

meter's memory. When integration period is set to 10 minutes the power quality profile covers 305 days.

- Signalling and registration of measurement voltage failures
- Signalling of incorrect phase rotation
- Identification of billing tariff programmed into the meter
- The meters functionality allows to define a "passive tariff" that can be activated at the certain date, which is set by the utilities
- Metering data presentation in OBIS standard according to EN 62056-61
- Registration and storage of billing values for last 12 billing periods
- Registration and storage of events log

Additional functions

EQABP meter can be supplied either from measuring voltage or external auxiliary voltage. Measured and registered values are presented on LCD display. Overview of individual display screens can be done in automatic mode or using the sensor. In automatic mode, sequence and display time of particular screens can be configured by the user. Metering data from current billing period and previous as well can be overviewed. EQABP gives possibility of manual or automatic billing period reset. In manual mode, reset can be done by using torch pen or by optical interface using utility software (eg. SOLEN) installed on the portable computer. Communication between meter optical interface and computer is performed using optical head USB/OPTO or RS232/OPTO. In automatic mode, reset can be done up to five times within month on defined days. EQABP meter can be equipped with relay output, which can be used to control external devices. Relay function is configured due to customer requirement e.g. signaling of power overconsumption referring to contractual power value. The meter is equipped with automatic calendar function that enables automatic change over between winter and daylight time. The meter is equipped with galvanic separation between measuring, analog-digital and communication circuits.

Communication interfaces

In standard configuration EQABP is equipped with optical interface designed for programming and local metering data readout. Local metering data readout can be blocked with the switch that is available under the cover of terminal block. Depending on ordered meter configuration, meter EQABP can be equipped with two independent communication interfaces in following configuration RS485 + CLO (current loop) or 2 x RS485. Such a functionality of meter gives two independent ways of communication for readout metering data systems.

Parametrization and configuration

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

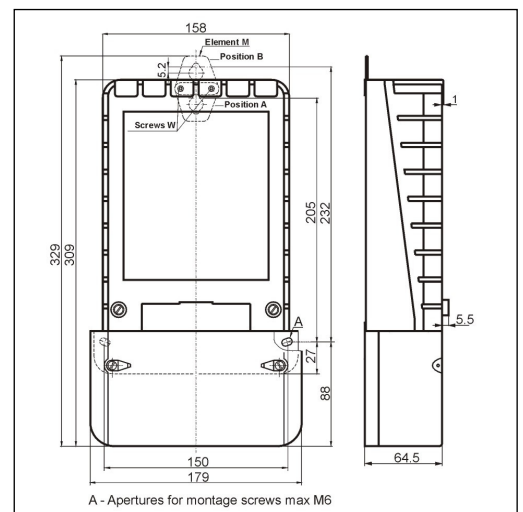
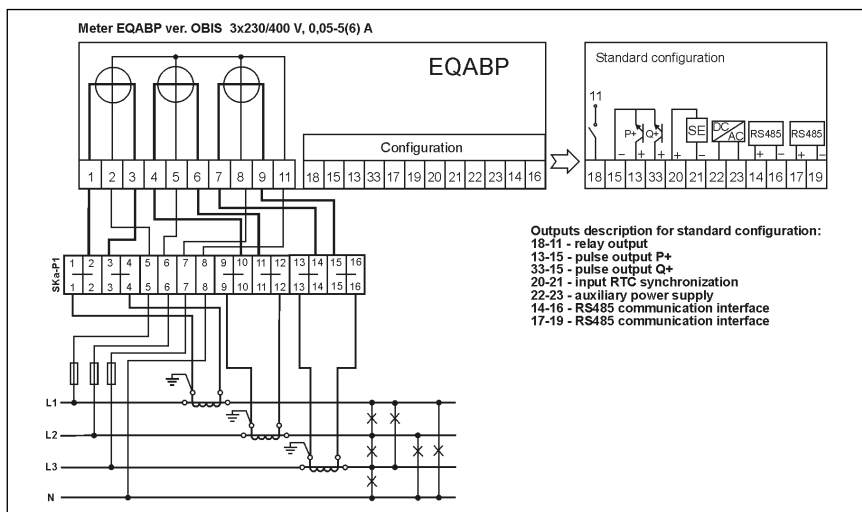
* **MID** - *Measuring Instruments Directive*

The meter has an EC - Type Examination Certificate number **TCM 221/14 - 5201** 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	EQABP					
Measuring system	Direct		Transformer	Transformer	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	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	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	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	3 x 100 V AC
Reference current I_{ref}	5 A	5 A	5 A	1 A	5 A	5 A
Maximum current I_{max}	100 A	6 A	10 A	1,2 A	6 A	10 A
Starting current I_{st} / Minimum current I_{min}	20 mA / 150 mA	5 mA / 50 mA	5 mA / 50 mA	1 mA / 10 mA	5 mA / 50 mA	5 mA / 50 mA
Transitional current I_{tr}	500 mA	250 mA	250 mA	50 mA	250 mA	250 mA
Frequency	50 Hz					
Operational frequency range	49 – 51 Hz					
Power consumption in voltage circuits	< 1,7 VA per phase		< 2 VA per phase			< 1,8 VA per phase
Power consumption in voltage circuits, when meter supplied from auxiliary power supply	< 0,7 VA per phase					
Power consumption in current circuits	< 0,03 VA per phase					
Tariffication	4					
RTC (real time clock) battery supply	Lithium battery: 10 years of life time					
Display	LCD display, 23x79 mm					
Counter capacity	99999,99	99999,999	9999,9999	9999,9999		
Auxiliary power supply	80 – 230 V AC, 120 – 320 V DC Power consumption of auxiliary power supply < 9 VA					
Communication interfaces	OPTICAL (acc. EN 62056-21) CLO and RS485 or 2 x RS485					
Pulse output	Transistor, 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 output constant – according to order					
Synchronization input or output	Transistor, 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	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 – 4 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 - 35 °C ... + 70 °C					
Limit range of operation (EN 60721-3-3 Table 1)	- 40 °C ... + 70 °C (class 3K7) – LCD - 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	~2,0 kg	~1,63 kg	~1,63 kg	~1,58 kg		~1,58 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.



Exemplary connection diagram

Dimensions

Note: Connection diagrams and available meter configurations are available on our web site <http://www.pozyton.com.pl> in section "Dla projektantów".

When ordering give us following information: meter accuracy class, voltage and current of measurement system, tariff, demand values and load profile integration periods, the way of billing period reset, optional equipment (e.g. CLO or RS485).