Product leaflet

Three phase electricity meters B23/B24
EQ meters in Silver version from ABB

The compact and versatile EQ meters B23 and B24 in Silver versions are three phase meters with full four quadrants measuring meaning both active/reactive energy measurements, import/export of energy and tariff handling. They have outstanding performance and can be used in applications for reliable and trustworthy metering.

EQ meters B23/B24 in Silver version can be used in stand-alone applications or metering network installations with the option of inbuilt M-Bus or Modbus.

General features

B23 is a three phase direct connected meter up to 65 A and B24 is a three phase transformer connected for 5 A. The B23 and B24 are measuring active energy with accuracy class B (Cl. 1) or class C (Cl. 0.5 S) and reactive energy with accuracy class 2. The low rated or base currents of these products ensures high dynamic performance with superior accuracy even at low currents. Navigation of the meters is easily done via the push-buttons below the display. The exceptional low power consumption of the meters, less than 1.6 VA, makes them economical in the long run-an important feature specially for large meter populations.

Communication

Data from B23 and B24 can be collected via pulse output or serial communication. The meters are equipped with solid state outputs for 5-240 V AC/DC external supply. They can be used for pulses proportionally to the measured energy or various alarms. The meters are also available with built-in serial communication interfaces for Modbus RTU (RS-485) or M-Bus as option.

Tariff handling

The B23 and B24 have up to 4 tariffs that could be controlled either by the 2 inputs or through serial communication.

Approvals

The B23 and B24 meters are type approved according to IEC as well as type approved and verified according to MID. MID is the Measure Instruments Directive 2004/22/EC from European Commission. The type approval is according to standards that covers all relevant technical aspects of the meter. These include climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

Instrumentation

The B23 and B24 meters support reading of instrument values. A large number of electrical properties can be read.

- Active power - Total and per phase
- Reactive power - Total and per phase
- Apparent power - Total and per phase
- Current - Total and per phase
- Voltage - Total and per phase
- Power factor
- Frequency

Ordering details

65 A direct connected, 4 DIN

Voltage V	Communication	Type	Order code	Weight 1 pc
Silver Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication, 2 outputs, 2 inputs, class B (Cl. 1), reactive Cl. 2				
3 x 230/400 V AC	-	B23 311 - 100	2CMA100168R1000	0.33
	RS-485	B23 312 - 100	2CMA100169R1000	0.34
	M-Bus	B23 313 - 100	2CMA100170R1000	0.35

6 A transformer connected, 4 DIN

Voltage V	Communication	Type	Order code	Weight 1 pc
Silver Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication, 2 outputs, 2 inputs, class C (Cl. 0.5 S), reactive Cl. 2				
3 x 230/400 V AC	-	B24 351 - 100	2CMA100182R1000	0.27
	RS-485	B24 352 - 100	2CMA100183R1000	0.27
	M-Bus	B24 353 - 100	2CMA100184R1000	0.29

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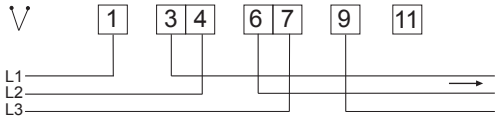
B series
Technical data

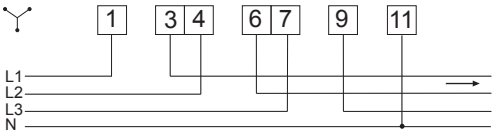
	B23	B24
Voltage/current inputs		
Nominal voltage	3x230/400 V AC	
Voltage range	3x220-240 VAC (-20% - +15%)	
Power dissipation voltage circuits	1.6 VA (0,7 W) total	
Power dissipation current circuits	0.007 VA (0.007 W) per phase at 230 V AC and I_b or I_n	
Base current I_b	5 A	-
Rated current I_n	-	1 A
Reference current I_{ref}	5 A	-
Transitional current I_tr	0.5 A	0.05 A
Maximum current I_{max}	65 A	6 A
Minimum current I_{min}	0.25 A	0.02 A
Starting current I_{st}	< 20 mA	< 1 mA
Terminal wire area	1 - 25 mm^2	0.5 - 10 mm^2
Recommended tightening torque	3 Nm	1.5 Nm
Communication		
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
Transformer ratios		
Configurable current ratio (CT)	-	1/9 - 9999/1
Pulse indicator (LED)		
Pulse frequency	1000 imp/kWh	5000 imp/kWh
Pulse length	40 ms	40 ms
General data		
Frequency	50 or 60 Hz ± 5%	
Accuracy Class	B (Cl. 1) and Reactive Cl. 2	C (Cl. 0,5 S) and Reactive Cl. 2
Active energy	1%	0.5%, 1%
Display of energy	7 digit LCD	
Environmental		
Operating temperature	-40°C - +70°C	
Storage temperature	-40°C - +85°C	
Humidity	75% yearly average, 95% on 30 days/year	
Resistance to fire and heat	Terminal 960 °C, cover 650°C (IEC 60695-2-1)	
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.	
Mechanical environment	Class M1 in accordance with the Measuring Instrument Directive (MID). (2004/22/EC).	
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2004/22/EC).	
Outputs		
Current	2 - 100 mA	
Voltage	5 - 240 V AC/DC	
Pulse output frequency	Programmable: 1 - 999999 imp/kWh	
Pulse length	Programmable: 10 - 990 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
Inputs		
Voltage	0 - 240 V AC/DC	
OFF	0 - 12 V AC/DC	
ON	57 - 240 V AC/24 - 240 V DC	
Min. pulse length	30 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
EMC compatibility		
Impulse voltage test	6 kV 1.2/50µs (IEC 60060-1)	
Surge voltage test	4 kV 1.2/50µs (IEC 61000-4-5)	
Fast transient burst test	4kV (IEC 61000-4-4)	
Immunity to electromagnetic HF-fields	80 MHz - 2 GHz (IEC 61000-4-6)	
Immunity to conducted disturbance	150kHz - 80MHz (IEC 61000-4-6)	
Immunity to disturbance with harmonics	2kHz - 150kHz	
Radio frequency emission	EN 55022, class B (CISPR22)	
Electrostatic discharge	15 kV (IEC 61000-4-2)	
Standards	IEC 62052-11, IEC 62053-21 class 1, IEC 62053-22 class 0,5 S, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GB/T 17215.312-2008 class 1 & 2, GB/T 17215.322-2008 class 0,5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category B & C	
Mechanical		
Material	Polycarbonate in transparent front glass. Glass reinforced polycarbonate in bottom case and upper case. Polycarbonate in terminal cover.	
Dimensions		
Width	70 mm	
Height	97 mm	
Depth	65 mm	
DIN modules	4	

Wiring diagram B23

3 wire connection, 2 elements

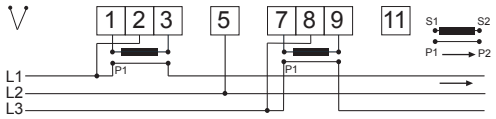


4 wire connection, 3 elements

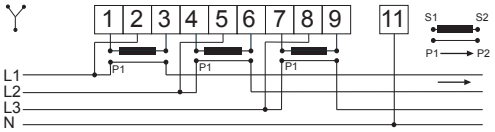


Wiring diagram B24

3 wire connection, 2 elements



4 wire connection, 3 elements



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