

# B series

## Product brief

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### Key applications

- Applications in commercial buildings
- Object metering

### Meter performance

- Single phase and three phase
- Direct connected up to 65 A
- Active or active and reactive energy
- Import or import and export of energy
- Accuracy class B (Cl. 1) or C (Cl. 0,5 S)
- Low power consumption
- Transformer connected 1, 2 or 5 A
- Up to 4 tariffs
- Alarm function

### Communication

- Pulse output
- IR port for serial communication adapter
- Built-in M-Bus
- Built-in RS-485 for Modbus RTU or EQ bus

### Installation

- Wide temperature range
- Easy configuration

### Approvals

- MID type approval "annex B"
- MID initial verification "annex D"
- IEC type approval

# B series

## Description

The B series EQ meters are meters for single phase and three phase metering. The B series meters are mounted on a DIN rail and are suitable for installation in distribution boards and small enclosures such as consumer units. The B series are suitable in applications where there is a need for reliable energy measurements and where space is limited.

### General features

The B series meters are high runner meters for many applications and installations. Navigating the meter is easily done via the push-buttons below the display. To configure the meter settings, the set button must be accessed and this button is protected against unauthorized use when the “glass lid” on the front of the meter is closed and sealed. The power consumption of the meter is very low, less than 0.8 VA.

### Communication

Data from the B series meters can be collected via pulse output or serial communication. The pulse output is a solid state relay that generates pulses proportionally to the measured energy. The meters can also be equipped with built-in serial communication interfaces for M-Bus or Modbus RTU (RS-485). Meters with RS-485 interface can also be set to communicate over the new EQ bus with the new gateway G13. All meters in the B series come with an infrared port for communication with an external Serial Communication Adapter (SCA) such as the KNX adapter.

### Instrumentation

The B series meters support reading of instrument values. A large number of electrical properties can be read. Depending on version of the meter the following data is available:

- Active power
- Apparent power
- Reactive power
- Current
- Voltage
- Frequency
- Power factor



### Inputs and outputs

The B series support two inputs and two outputs in a fixed configuration. Inputs can be used for counting pulses from e.g. a water meter, or reading status from external devices. Outputs can be used as pulse outputs or controlling external apparatus like a contactor or an alarm (connected via an external relay).

### Approvals

The B series meters are type approved according to IEC and they are both type approved and verified according to MID. MID is the Measuring Instruments Directive 2004/22/EC from the European Commission. MID type approval and verification is mandatory for meters in billing applications within EU and EEA. 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.

### Tariffs

The tariffs are controlled via inputs or communication.

# B21

## Single phase meter

### 65A, 2 DIN with IR port

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B21

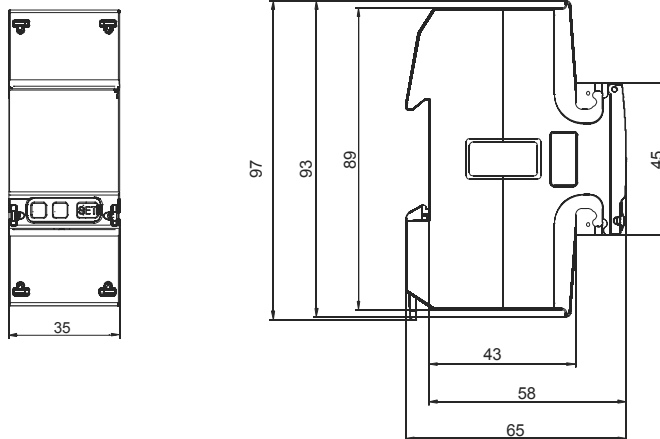
#### Description

Direct connected electricity meter. Verified and approved according to MID. IEC approval. Instrument values. Alarm function. - Communication - Infrared (M-Bus).  
Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

#### Ordering details

Voltage V	Accuracy Class	I/O	Communication	Type	Order Code	Pkg qty	Weight 1 pc
<b>Steel</b>							
Active energy							
1 x 230 V AC	Class B (Cl. 1)	Pulse output	-	B21 111 - 100	2CMA100149R1000	1	0,14
			RS-485	B21 112 - 100	2CMA100150R1000	1	0,15
			M-Bus	B21 113 - 100	2CMA100151R1000	1	0,15
<b>Bronze</b>							
Active and reactive energy, import/export.							
1 x 230 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	RS-485	B21 212 - 100	2CMA100152R1000	1	0,15
<b>Silver</b>							
Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.							
1 x 230 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	-	B21 311 - 100	2CMA100154R1000	1	0,14
			RS-485	B21 312 - 100	2CMA100155R1000	1	0,15
			M-Bus	B21 313 - 100	2CMA100156R1000	1	0,15

#### Dimensions



# B23

## Three phase meter

### 65A, 4 DIN with IR port



B23

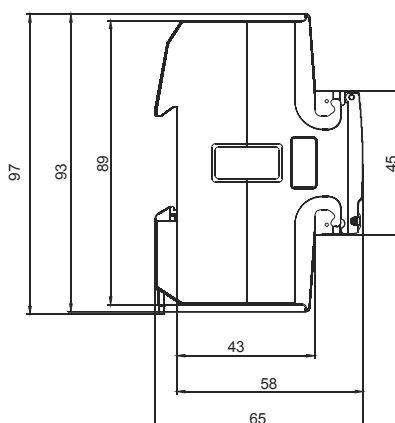
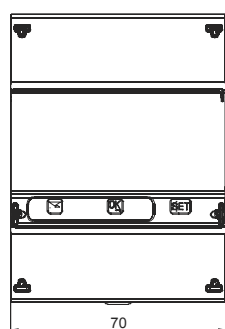
#### Description

Direct connected electricity meter. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

#### Ordering details

Voltage V	Accuracy Class	I/O	Communication	Type	Order Code	Pkg qty	Weight 1 pc
<b>Steel</b>							
Active energy							
3 x 230/400 V AC	Class B (Cl. 1)	Pulse output	-	B23 111 - 100	2CMA100163R1000	1	0.31
			RS-485	B23 112 - 100	2CMA100164R1000	1	0.32
			M-Bus	B23 113 - 100	2CMA100165R1000	1	0.33
<b>Bronze</b>							
Active and reactive energy, import/export.							
3 x 230/400 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	RS-485	B23 212 - 100	2CMA100166R1000	1	0.32
<b>Silver</b>							
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.							
3 x 230/400 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	-	B23 311 - 100	2CMA100168R1000	1	0.33
			RS-485	B23 312 - 100	2CMA100169R1000	1	0.34
			M-Bus	B23 313 - 100	2CMA100170R1000	1	0.35

#### Dimensions



# B24

## Three phase meter

### 6A, 4 DIN with IR port

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B24

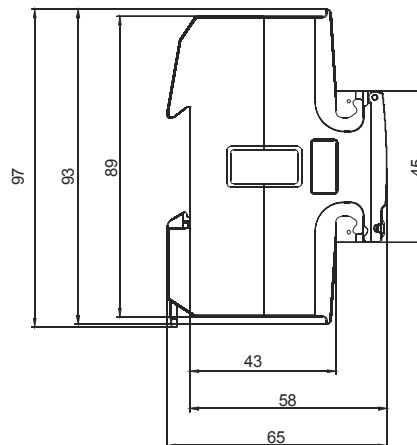
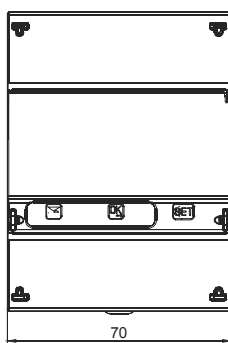
#### Description

Transformer CT connected electricity meter. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

#### Ordering details

Voltage V	Accuracy Class	I/O	Communi- cation	Type	Order Code	Pkg qty	Weight 1 pc
<b>Steel</b>							
Active energy							
3 x 230/400 V AC	Class B (Cl. 1)	Pulse output	-	B24 111 - 100	2CMA100177R1000	1	0.25
			RS-485	B24 112 - 100	2CMA100178R1000	1	0.25
			M-Bus	B24 113 - 100	2CMA100179R1000	1	0.27
<b>Bronze</b>							
Active and reactive energy, import/export.							
3 x 230/400 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	RS-485	B24 212 - 100	2CMA100180R1000	1	0.25
<b>Silver</b>							
Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.							
3 x 230/400 V AC	Class C (Cl. 0,5 S) Reactive Cl. 2	2 output, 2 input	-	B24 351 - 100	2CMA100182R1000	1	0.27
			RS-485	B24 352 - 100	2CMA100183R1000	1	0.27
			M-Bus	B24 353 - 100	2CMA100184R1000	1	0.29

#### Dimensions



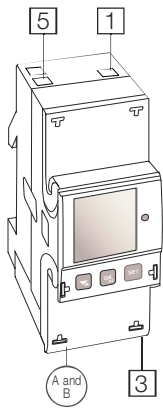
# B series

## Technical data

	B21	B23	B24
<b>Voltage/current inputs</b>			
Nominal voltage	230 V AC	3x230/400 V AC	
Voltage range	220-240 VAC (-20% - +15%)	3x220-240 VAC (-20% - +15%)	
Power dissipation voltage circuits	0.9 VA (0,4 W) total	1.6 VA (0,7 W) total	
Power dissipation current circuits	0.014 VA (0.014 W) at 230 V AC and $I_b$	0.007 VA (0.007 W) per phase at 230 V AC and $I_b$	
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 <sup>2</sup>		0.5 - 10 mm <sup>2</sup>
Recommended tightening torque	3 Nm		1.5 Nm
<b>Communication</b>			
Terminal wire area	0.5 - 1 mm <sup>2</sup>		
Recommended tightening torque	0.25 Nm		
<b>Transformer ratios</b>			
Configurable current ratio (CT)	-		1/9 - 9999/1
<b>Pulse indicator (LED)</b>			
Pulse frequency	1000 imp/kWh	1000 imp/kWh	5000 imp/kWh
Pulse length	40 ms	40 ms	40 ms
<b>General data</b>			
Frequency	50 or 60 Hz ± 5%		
Accuracy Class	B (Cl. 1) and Reactive Cl. 2	B (Cl. 1) and Reactive Cl. 2	B (Cl. 1) or C (Cl. 0,5 S) and Reactive Cl. 2
Active energy	1%	1%	0.5%, 1%
Display of energy	6 digit LCD	7 digit LCD	
<b>Environmental</b>			
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).		
<b>Outputs</b>			
Current	2 - 100 mA		
Voltage	5 - 240 V AC/DC. For meters with only 1 output 5 - 40 VDC.		
Pulse output frequency	Programmable: 1 - 999999 imp/kWh		
Pulse length	Programmable: 10 - 990 ms		
Terminal wire area	0.5 - 1 mm <sup>2</sup>		
Recommended tightening torque	0.25 Nm		
<b>Inputs</b>			
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 <sup>2</sup>		
Recommended tightening torque	0.25 Nm		
<b>EMC compatibility</b>			
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 burn 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 & 2, 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 A, B & C		
<b>Mechanical</b>			
Material	Polycarbonate in transparent front glass. Glass reinforced polycarbonate in bottom case and upper case. Polycarbonate in terminal cover.		
<b>Dimensions</b>			
Width	35 mm	70 mm	
Height	97 mm	97 mm	
Depth	65 mm	65 mm	
DIN modules	2	4	

# B series Wiring diagram

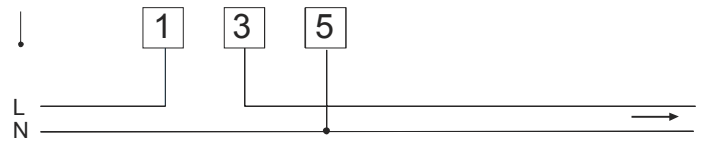
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- 1 Phase in
- 3 Phase out
- 5 Neutral

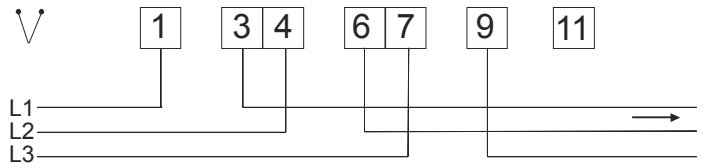
## Terminal blocks

### B21

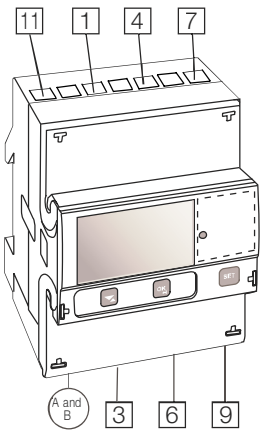
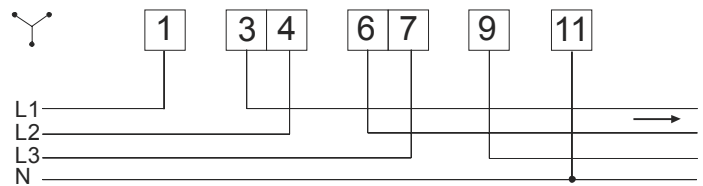


### B23

3 wire connection, 2 elements



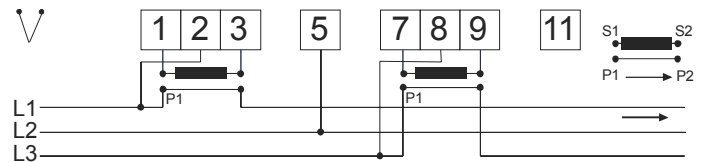
4 wire connection, 3 elements



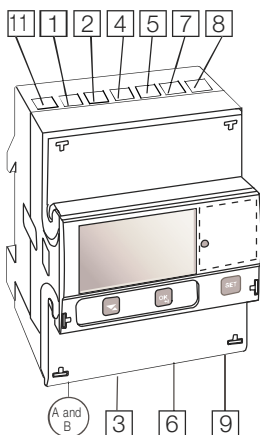
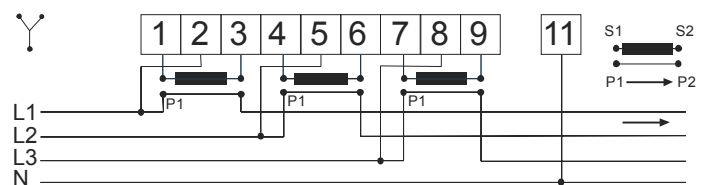
- 1 4 7 Phase in
- 3 6 9 Phase out
- 11 Neutral

### B24

3 wire connection, 2 elements



4 wire connection, 3 elements



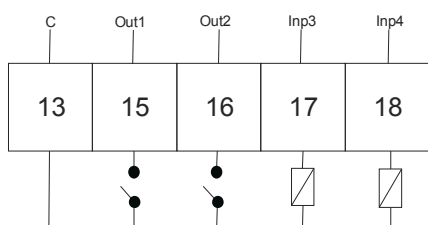
- 1 4 7 Current in
- 2 5 8 Voltage
- 3 6 9 Current out
- 11 Neutral

# B series

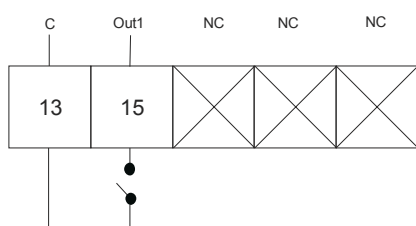
## Inputs/outputs and communication

### Inputs/Outputs (A) = Please see the pictures on page 28

#### 2 outputs, 2 inputs

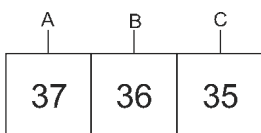


#### 1 output



### Communication (B) = Please see the pictures on page 28

#### RS-485



#### M-Bus

