B series
Product brief

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**

**Description**
Direct connected electricity meter. Verified and approved according to MID. IEC approval. Instrument values. Alarm function. - Communication - Infrared (M-Bus).

**Ordering details**

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 230 V AC</td>
<td>Class B (Cl. 1)</td>
<td>Pulse output</td>
<td>-</td>
<td>B21 111 - 100</td>
<td>2CMA100149R10000</td>
<td>1</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RS-485</td>
<td>B21 112 - 100</td>
<td>2CMA100150R10000</td>
<td>1</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-Bus</td>
<td>B21 113 - 100</td>
<td>2CMA100151R10000</td>
<td>1</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**Steel**
Active energy

**Bronze**
Active and reactive energy, import/export.

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 230 V AC</td>
<td>Class B (Cl. 1)</td>
<td>Pulse output</td>
<td>RS-485</td>
<td>B21 212 - 100</td>
<td>2CMA100152R10000</td>
<td>1</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**Silver**
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 230 V AC</td>
<td>Class B (Cl. 1)</td>
<td>2 output, 2 input</td>
<td>-</td>
<td>B21 311 - 100</td>
<td>2CMA100154R10000</td>
<td>1</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>Reactive Cl. 2</td>
<td></td>
<td>RS-485</td>
<td>B21 312 - 100</td>
<td>2CMA100155R10000</td>
<td>1</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-Bus</td>
<td>B21 313 - 100</td>
<td>2CMA100156R10000</td>
<td>1</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**Dimensions**
B23
Three phase meter
65A, 4 DIN with IR port

Description

Ordering details

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight 1 pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 230/400 V AC</td>
<td>Class B (Cl. 1)</td>
<td>Pulse output</td>
<td>-</td>
<td>B23 111 - 100</td>
<td>2CMA100163R1000</td>
<td>1</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RS-485</td>
<td>B23 112 - 100</td>
<td>2CMA100164R1000</td>
<td>1</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-Bus</td>
<td>B23 113 - 100</td>
<td>2CMA100165R1000</td>
<td>1</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Bronze
Active and reactive energy, import/export.

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight 1 pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 230/400 V AC</td>
<td>Class B (Cl. 1)</td>
<td>Pulse output</td>
<td>RS-485</td>
<td>B23 212 - 100</td>
<td>2CMA100166R1000</td>
<td>1</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Silver
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight 1 pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 230/400 V AC</td>
<td>Class B (Cl. 1)</td>
<td>2 output, 2 input</td>
<td>-</td>
<td>B23 311 - 100</td>
<td>2CMA100168R1000</td>
<td>1</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RS-485</td>
<td>B23 312 - 100</td>
<td>2CMA100169R1000</td>
<td>1</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-Bus</td>
<td>B23 313 - 100</td>
<td>2CMA100170R1000</td>
<td>1</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Dimensions
B24
Three phase meter
6A, 4 DIN with IR port

Description

Ordering details

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight 1 pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 230/400 V AC</td>
<td>Class B (Cl. 1)</td>
<td>Pulse output</td>
<td></td>
<td>B24 111 - 100</td>
<td>2CMA100177R1000</td>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RS-485</td>
<td>B24 112 - 100</td>
<td>2CMA100178R1000</td>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-Bus</td>
<td>B24 113 - 100</td>
<td>2CMA100179R1000</td>
<td>1</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Bronze
Active and reactive energy, import/export.

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight 1 pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 230/400 V AC</td>
<td>Class B (Cl. 1)</td>
<td>Pulse output</td>
<td>RS-485</td>
<td>B24 212 - 100</td>
<td>2CMA100180R1000</td>
<td>1</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Silver
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.

<table>
<thead>
<tr>
<th>Voltage V</th>
<th>Accuracy Class</th>
<th>I/O</th>
<th>Communication</th>
<th>Type</th>
<th>Order Code</th>
<th>Pkg qty</th>
<th>Weight 1 pc</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 230/400 V AC</td>
<td>Class C (0.5 S)</td>
<td>2 output, 2 input</td>
<td>RS-485</td>
<td>B24 351 - 100</td>
<td>2CMA100182R1000</td>
<td>1</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-Bus</td>
<td>B24 353 - 100</td>
<td>2CMA100184R1000</td>
<td>1</td>
<td>0.29</td>
</tr>
</tbody>
</table>
## B series

### Technical data

<table>
<thead>
<tr>
<th>Voltage/current inputs</th>
<th>B21</th>
<th>B23</th>
<th>B24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>230 V AC</td>
<td>3x230/400 V AC</td>
<td></td>
</tr>
<tr>
<td>Voltage range</td>
<td>220-240 VAC (-20% - +15%)</td>
<td>3x220-240 VAC (-20% - +15%)</td>
<td></td>
</tr>
<tr>
<td>Power dissipation voltage circuits</td>
<td>0.8 VA (0.4 W) total</td>
<td>1.6 VA (0.7 W) total</td>
<td></td>
</tr>
<tr>
<td>Power dissipation current circuits</td>
<td>0.014 VA (0.007 W) at 230 V AC and I_p</td>
<td>0.007 VA (0.003 W) per phase at 230 V AC and I_p</td>
<td></td>
</tr>
<tr>
<td>Base current I_p</td>
<td>5 A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rated current I_R</td>
<td>-</td>
<td>1 A</td>
<td>-</td>
</tr>
<tr>
<td>Transient current</td>
<td>0.3 A</td>
<td>0.05 A</td>
<td>-</td>
</tr>
<tr>
<td>Maximum current I_m</td>
<td>65 A</td>
<td>6 A</td>
<td>-</td>
</tr>
<tr>
<td>Minimum current I_m</td>
<td>0.25 A</td>
<td>0.02 A</td>
<td>-</td>
</tr>
<tr>
<td>Starting current I_s</td>
<td>&lt; 20 mA</td>
<td>&lt; 1 mA</td>
<td>-</td>
</tr>
<tr>
<td>Terminal wire area</td>
<td>1 - 25 mm²</td>
<td>0.5 - 10 mm²</td>
<td>1.5 mm²</td>
</tr>
<tr>
<td>Recommended tightening torque</td>
<td>3 Nm</td>
<td>0.25 Nm</td>
<td>-</td>
</tr>
</tbody>
</table>

### Communication
- Terminal wire area: 0.5 - 1 mm²
- Recommended tightening torque: 0.25 Nm
- Configurable current ratio (CT): 1 : 19 - 9999 : 1

### Transformer ratios
- Pulse indicator (LED)
  - Pulse frequency: 1000 imp/kWh
  - Pulse length: 40 ms

### General data
- Frequency: 50 or 60 Hz ± 5%
- Accuracy Class: B (Cl. 1) and Reactive Cl. 2
- Active energy: 1%
- Display of energy: 6 digit LCD

### Environmental
- Operating temperature: -40°C - +70°C
- Storage temperature: -40°C - +85°C
- Humidity: 75% yearly average, 85% on 30 days/year
- Resistance to fire and heat: Terminal: 960°C, cover: 650°C (IEC 60695-2-1)
- Protection: IP51 in protective enclosure, according to IEC 60529.
- Mechanical environment: Class M1 in accordance with the Measuring Instrument Directive (MID).

### Outputs
- Current: 2 - 100 mA
- Voltage: 5 - 240 V AC/DC. For meters with only 1 output 5 - 40 VDC.
- Pulse output frequency: Programmable: 0.5 - 999999 imp/kWh
- Pulse length: Programmable: 10 - 990 ms
- Terminal wire area: 0.5 - 1 mm²
- Recommended tightening torque: 0.25 Nm

### Inputs
- Voltage: 0 - 240 V AC/DC
- OFF: 0 - 12 V AC/DC
- ON: 0 - 240 V AC/24 - 240 V DC
- Min. pulse length: 30 ms
- Terminal wire area: 0.5 - 1 mm²
- Recommended tightening torque: 0.25 Nm

### EMC compatibility
- Impulse voltage test: 6 kV 1.2/50µs (IEC 60065-1)
- Surge voltage test: 4 kV 1.2/50µs (IEC 61000-4-5)
- Fast transient burst test: 4 kV (IEC 61000-4-4)
- Immunity to electromagnetic HF-fields: 80 MHz - 2 GHz (IEC 61000-4-8)
- Immunity to conducted disturbance: 150 kVac - 150 kVac
- Radio frequency emission: EN 55022, class B [CSPM822]
- 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 17215.211-2008, GB/T 17215.322-2008 class 0.5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category A, B & C

### Mechanical
- Dimensions
  - Width: 35 mm
  - Height: 97 mm
  - Depth: 65 mm
  - DIN modules: 2

---

EQ meters | 2CMC481003C0201 | 3/27
B series
Wiring diagram

Terminal blocks

B21

3 wire connection, 2 elements

B23

4 wire connection, 3 elements

B24

3 wire connection, 2 elements

4 wire connection, 3 elements
B series
Inputs/outputs and communication

Inputs/Outputs ≈ Please see the pictures on page 28

2 outputs, 2 inputs

C Out1 Out2 Inp3 Inp4
13 15 16 17 18

1 output

C Out1 NC NC NC
13 15

Communication ≈ Please see the pictures on page 28

RS-485
A B C
37 36 35

M-Bus

37 36