# CEM-C31-T1-MID

CEM-C31-T1-MID, Indirect three-phase energy meter with MID certificate

Code: Q23512.

> Módules: 4
> Tariff: 1
> Certification: MID
> Transistor output: 1
> System: Three-phase
> Measure: Indirect
> Measurement Range (V): 3 x 57/100...3 x 230/400
> Measurement Range (A): .../ 5 (10) A
> Max. Current (A): 10

## Description

Three-phase electrical energy meter with indirect measurement, 5(10)A (, CEM-C31), direct measurement 65 A (CEM-C21) or single-phase energy meter (CEM-C10).
Built-in LCD display (7 digits) with rotating screen system. It can have integrated RS-485 communications, depending on the model.. Also features
2 buttons (1 sealable button) for viewing all the measured information.
Other features include:

- MID certification, module B+D (depending on the type)
- Class 1 active energy (Class B, in accordance with MID), Class 2 reactive energy
- Complies with the EN 50470 (MID European standards) or IEC 62052-11 standards (international standards), depending on the type.
- Compact size (CEM-C10: 2 modules, 36 mm, CEM-C21 y CEM-C31: 4 modules, 72 mm)
- Resettable partial meter
- 1 programmable impulse output, in accordance with DIN 43864 (CEM-C10, CEM-C31-T1, CEM-C21-T1 models)
- 1 Digital input for Tariff selection and impulse count (CEM-C31-D, CEM-C21-DS)
- Indicates bad connections on the screen
- Energy storage, even in the case of bad connections

## Application

- Redundant meter for verifying the energy allocated by the energy provider.
- Energy consumption report sent to a remote system (PLC/BMS).
- Cost control for achieving a high consumption/unit ratio in industrial processes.
- Display of electrical parameters (V, A, kW, kW·h, PF, etc.), per phase and three-phase.

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Energy meter for DIN rail mounting

Code: Q23512.

## Specifications

### AC power supply

| | |
|---|---|
| Installation category | CAT III 300 V |
| Consumption | < 2 W, 10 VA |
| Frequency | 50 ... 60 Hz |
| Nominal voltage | 230 V / 400 V ~ (± 20 %) |

### Mechanical characteristics

| | |
|---|---|
| Size (mm) width x height x depth | 70 x 90 x 64 (mm) |
| Weight (kg) | 0,25 |

### Environmental characteristics

| | |
|---|---|
| Relative humidity (without condensation) | 5 ... 95 % |

### Current measurement circuit

| | |
|---|---|
| Consumption | 0.3 VA ... 10 A |
| Reference current (Iref) | 5 A |
| Maximum current | 10 A |
| Minimum current measurement | 0.050 A |
| Transition current | 0.25 A |

### Voltage measurement circuit

| | |
|---|---|
| Consumption | < 2W , < 10VA (In, Vref) |
| Nominal frequency | 50 / 60 Hz |
| Nominal voltage | 3 x 127/220 ... 3 x 230/400 V ~ |

### Electrical characteristics

| | |
|---|---|
| Insulation voltage, circuit | 4 kV RMS 50 Hz durante 1 min |

### Standards

| | |
|---|---|
| Electrical safety, Maximum height (m) | 2000 |
| Standards | EN 50470-1, EN 50470-3, IEC 62053-21, IEC 62053-23, EN 62056-21 |

### User interface

| | |
|---|---|
| LED | 2 LED: kWh, 20000 imp/kW, kvarh, 20000 imp/kvarh |
| Keyboard | 2 Keys |
| Display type | LCD |
| Maximum value | 999999.9 kWh |

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**Digital transistor outputs**

| | |
|---|---|
| Quantity | 1 |

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| | |
|---|---|
| Pulse output, time period (Ton / Toff) | Ton: 40 ms |
| Maximum current | 50 mA |
| Maximum voltage | 24 Vcc |

### Measurement accuracy

| | |
|---|---|
| Reactive energy measurement (kvarh) | Class 2.0 (IEC 62053-23) |
| Active energy measurement (kWh) | Class B (EN 50470) |

### Serial communication

| | |
|---|---|
| Protocol | Modbus RTU |

### Wireless communication

| | |
|---|---|
| Technology / Type | Optical IR port (additional external receiver required) |

**CEM-C**
Energy meter

| CODE | TYPE | Measurement Range (V) | Measurement Range (A) | Communications | Protocol | Transistor output | Digital inputs | Tariff | Certification |
|---|---|---|---|---|---|---|---|---|---|
| **Direct three-phase** | | | | | | | | | |
| Q22411. | CEM-C21-T1 | 3 x 127/220...3 x 230/400 | 5 (65) A | - | - | 1 | - | 1 | IEC |
| Q22421. | CEM-C21-485-T1 | 3 x 127/220...3 x 230/400 | 5 (65) A | RS-485 | Modbus/RTU | 1 | - | 1 | IEC |
| Q22431. | CEM-C21-485-DS | 3 x 127/220...3 x 230/400 | 5 (65) A | RS-485 | Modbus/RTU | 0 | 1 | 2 | IEC |
| Q22412. | CEM-C21-T1-MID | 3 x 127/220...3 x 230/400 | 5 (65) A | - | - | 1 | - | 1 | MID |
| Q22422. | CEM-C21-485-T1-MID | 3 x 127/220...3 x 230/400 | 5 (65) A | RS-485 | Modbus/RTU | 1 | - | 1 | MID |
| Q22432. | CEM-C21-485-DS-MID | 3 x 127/220...3 x 230/400 | 5 (65) A | RS-485 | Modbus/RTU | 0 | 1 | 2 | MID |
| **Indirect three-phase** | | | | | | | | | |
| Q23511. | CEM-C31-T1 | 3 x 57/100...3 x 230/400 | .../ 5 (10) A | - | - | 1 | - | 1 | IEC |
| Q23521. | CEM-C31-485-T1 | 3 x 57/100...3 x 230/400 | .../ 5 (10) A | RS-485 | Modbus/RTU | 1 | - | 1 | IEC |
| Q23531. | CEM-C31-485-DS | 3 x 57/100...3 x 230/400 | .../ 5 (10) A | RS-485 | Modbus/RTU | 0 | 1 | 2 | IEC |
| Q23512. | CEM-C31-T1-MID | 3 x 57/100...3 x 230/400 | .../ 5 (10) A | - | - | 1 | - | 1 | MID |
| Q23522. | CEM-C31-485-T1-MID | 3 x 57/100...3 x 230/400 | .../ 5 (10) A | RS-485 | Modbus/RTU | 1 | - | 1 | MID |
| Q23532. | CEM-C31-485-DS-MID | 3 x 57/100...3 x 230/400 | .../ 5 (10) A | RS-485 | Modbus/RTU | 0 | 1 | 2 | MID |

CEM-C10 and CEM-C21/C31 without built-in RS-485 communications can optionally communicate with CEM-M-ETH and CEM-M-RS485 modules.
Devices with absolute measurements (Abs). For 2 or 4 quadrants, see the Aditional table
Frecuency: 50/60 Hz. Parameters: V, A, kW, kVA, kWh, cos phi

CEM-XXX-TI encoding table - Devices with pulse output (transistor)
CEM-XXX-DS-Devices with digital input for tariff change and impulse meter

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## Dimensions

## Connections