# METERING


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## OUTSTANDING PRODUCTS

| | CIRWATT B100 | CIRWATT B | CIRWATT P | COMPACT DC | CEM-10 | CEM-20 / CEM-30 |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| | Single-phase energy meter | Three-phase energy meters | Single/Three phase prepayment energy meters | PLC PRIME Concentrator | Single-phase energy meter | Three-phase energy meter |
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# Multifunction electronic energy meters

## Table: multi-function electrical energy meters Selection

| | | B502 | B505 | B410T | B410D | B410D RCP | B200 RCP | B100 | B101 | B102 | P200RC | P410RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | |  |  |  |  |  |  |  |  |  |  |  |
| **Connection** | 2 wires | – | – | – | – | – | • | • | • | • | • | – |
| | 4 wires Direct mesure | – | – | – | • | • | – | – | – | – | – | • |
| | 4 wires Indirect mesure | • | • | • | – | – | – | – | – | – | – | – |
| **Measure** | Quadrants | 4 | 4 | 4 | 4 | 4 | 4 | ABS | ABS | ABS | ABS | ABS |
| **Accuracy class** | 1x127 $V_{ac}$ | – | – | – | – | – | • | • | • | • | • | – |
| | 1x230 $V_{ac}$ | – | – | – | – | – | • | • | • | • | • | – |
| | 3x57/100 V | • | • | • | – | – | – | – | – | – | – | – |
| | 3x63.5/110 $V_{ac}$ | • | • | • | – | – | – | – | – | – | – | – |
| | 3x127/220 $V_{ac}$ | • | • | • | • | • | – | – | – | – | – | – |
| | 3x230/400 $V_{ac}$ | • | • | • | • | • | – | – | – | – | – | • |
| | 3x127/220 Vac...3x230/400 Vac | – | – | – | • | – | – | – | – | – | – | – |
| | 3x57/100 $V_{ac}$ ...3x230/400 $V_{ac}$ | • | • | • | – | – | – | – | – | – | – | – |
| **Frequency** | 50 Hz | • | • | • | • | • | • | • | • | • | – | – |
| | 60 Hz | • | • | • | • | • | • | • | • | • | – | – |
| | 50/60 Hz | – | • | • | • | – | – | – | – | – | • | • |
| **Communications** | RS-485 | – | – | – | – | – | – | – | – | • | – | – |
| | PRIME | – | – | – | – | • | • | – | – | – | – | – |
| | RS-232/232 | • | • | • | • | – | – | – | – | – | – | – |
| | RS-232/485 | • | • | • | • | – | – | – | – | – | – | – |
| | RS-232/Ethernet | • | • | • | • | – | – | – | – | – | – | – |
| | RS-485/Ethernet | • | • | • | • | – | – | – | – | – | – | – |
| | RFID | – | – | – | – | – | – | – | – | – | • | • |
| **Input / Output Modules** | Impulse output | – | – | – | – | – | – | – | T | T | – | – |
| | Relay outputs | – | – | – | – | T | T | – | – | T | – | – |
| | Tariff modification input | – | – | – | – | – | – | – | T | T | – | – |
| | Auxiliary power supply | OP | OP | OP | OP | – | – | – | - | - | – | – |
| | 4 relay outputs | OP | OP | OP | OP | – | – | – | – | – | – | – |
| | 4 relay I. / 2 relay O. | OP | OP | OP | OP | – | – | – | – | – | – | – |
| | 2 relay I. / 2 relay O. / 20 | OP | OP | OP | OP | – | – | – | – | – | – | – |
| **Circuit breaker** | | – | – | – | – | • | • | – | – | – | • | • |
| | **Page** | 87 | 87 | 88 | 88 | 89 | 89 | 87 | 87 | 87 | 90 | 90 |

T - depending on the type
OP - Optional

Delivery time: [*] immediate
[x] working weeks
[c] consult

## CIRWATT B, Single-phase energy meters



| TYPE | Code | Class (Active / Reactive) | Measurement Range V | Measurement Range A | Frequency (Hz) | Tariff | Certificate | Quadrants | Impulse outputs | Relay output | Change tariff input | Communications |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CIRWATT B 100** | | | | | | | | | | | | |
| **210-ES7A-00B20(*1)** | **[1] QBM00M20** | B (1) | 230V | 5(65) A | 50 | 1 | MID | Abs. | - | - | - | - |
| **210-ES7A-00B20(*1)** | **[1] QBM00M21** | 1 | 230V | 5(65) A | 50 | 1 | IEC | Abs. | - | - | - | - |
| **210-ES7A-00B20(*2)** | **[1] QBM00M23** | 1 | 230V | 5(65) A | 50 | 1 | IEC | Abs. | - | - | - | - |
| **210-ES7B-00B20(*1)** | **[1] QBM20M20** | B (1) | 230V | 5(65) A | 60 | 1 | MID | Abs. | - | - | - | - |
| **210-ES7B-00B20(*1)** | **[1] QBM20M21** | 1 | 230V | 5(65) A | 60 | 1 | IEC | Abs. | - | - | - | - |
| **210-ES7B-00B20(*2)** | **[1] QBM20M23** | 1 | 230V | 5(65) A | 60 | 1 | IEC | Abs. | - | - | - | - |
| **CIRWATT B 101** | | | | | | | | | | | | |
| **210-ES7A-01B20** | **[1] QBM03** | B (1) | 230V | 5(65)A | 50 | 3 | IEC | Abs. | 1 | - | - | - |
| **210-ES7A-0EB20** | **[1] QBM07** | B (1) | 230V | 5(65) A | 50 | 2 | IEC | Abs. | - | - | 1 | - |
| **CIRWATT B 102** | | | | | | | | | | | | |
| **212-ES7A-21B20** | **[1] QBM83** | B (1) / 2 | 230V | 5(65) A | 50 | 3 | IEC | Abs. | 1 | - | - | RS-485 |
| **212-ES7A-23B20** | **[1] QBM85** | B (1) / 2 | 230V | 5(65) A | 50 | 3 | IEC | Abs. | - | 1 | - | RS-485 |
| **212-ES7A-2EB20** | **[1] QBM87** | B (1) / 2 | 230V | 5(65)A | 50 | 2 | IEC | Abs. | - | - | 1 | RS-485 |

**(*1) English laser labeling / (*2) Spanish laser labeling**
**FOR OTHERS CONFIGURATIONS (inputs, outputs and other communications), CONSULT**

## CIRWATT B, THREE-PHASE ENERGY METERS

(Measuring, load profiling, multi configurable billling calendar) AMR Meters



| TYPE | Code | Class (Active/Reactive) | Quadrants | Frecuency (Hz) | Measuring range (V) | Measuring range (A) | Communication COM1 | Communication COM2 |
|---|---|---|---|---|---|---|---|---|
| **CIRWATT B502** | | | | | | | | |
| **402-VT5A-90B10** | **[1] QBL10** | 0.2S/0.5 | 4 | 50 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | RS-485 |
| **402-VT5A-A0B10** | **[1] QBL20** | 0.2S/0.5 | 4 | 50 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | Ethernet |
| **402-VT5B-90B10** | **[1] QBL50** | 0.2S/0.5 | 4 | 60 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | RS-485 |
| **402-VT5B-A0B10** | **[1] QBL60** | 0.2S/0.5 | 4 | 60 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | Ethernet |
| **CIRWATT B505** | | | | | | | | |
| **405-VT5A-90B10** | **[1] QBK10** | C (0,5S) / 1 | 4 | 50 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | RS-485 |
| **405-VT5A-A0B10** | **[1] QBK20** | C (0,5S) / 1 | 4 | 50 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | Ethernet |
| **405-VT5B-90B10** | **[1] QBK50** | C (0,5S) / 1 | 4 | 60 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | RS-485 |
| **405-VT5B-A0B10** | **[1] QBK60** | C (0,5S) / 1 | 4 | 60 | 3X57/100 V up to 3x230/400 V | .../5 A | RS-232 | Ethernet |
| **405-VT7A-90B10** | **[1] QBN00** | C (0,5S) / 1 | 4 | 50 | 3X57/100 V up to 3x230/400 V | .../1 A | RS-232 | RS-485 |
| **405-VT7A-A0B10** | **[1] QBN10** | C (0,5S) / 1 | 4 | 50 | 3X57/100 V up to 3x230/400 V | .../1 A | RS-232 | Ethernet |
| **405-VT7B-90B10** | **[1] QBN30** | C (0,5S) / 1 | 4 | 60 | 3X57/100 V up to 3x230/400 V | .../1 A | RS-232 | RS-485 |
| **405-VT7B-A0B10** | **[1] QBN40** | C (0,5S) / 1 | 4 | 60 | 3X57/100 V up to 3x230/400 V | .../1 A | RS-232 | Ethernet |

Delivery time: [*] immediate
[x] working weeks
[c] consult

## CIRWATT B, THREE-PHASE ENERGY METERS

(Measuring, load profiling, multi configurable billling calendar) AMR Meters



| TYPE | Code | Class (Active/Reactive) | Quadrants | Frecuency (Hz) | Measuring range V | Measuring range A | Communication COM1 | Communication COM2 |
|---|---|---|---|---|---|---|---|---|
| **CIRWATT B410T, indirect connection, energy generation** | | | | | | | | |
| **410-QT5A-90B10** | **[1] QB870** | B (1) / 2 | 4 | 50 | 3x230/400 V | .../5A | RS-232 | RS-485 |
| **410-QT5A-A0B10** | **[1] QB880** | B (1) / 2 | 4 | 50 | 3x230/400 V | .../5A | RS-232 | Ethernet |
| **410-VT5A-90B10** | **[1] QBJ10** | B (1) / 2 | 4 | 50 | 3x57/100 V ... 3x230/400 V | .../5A | RS-232 | RS-485 |
| **410-VT5A-A0B10** | **[1] QBJ20** | B (1) / 2 | 4 | 50 | 3x57/100 V ... 3x230/400 V | .../5A | RS-232 | Ethernet |
| **410-QT5B-90B10** | **[1] QB8D0** | B (1) / 2 | 4 | 60 | 3x230/400 V | .../5A | RS-232 | RS-485 |
| **410-QT5B-A0B10** | **[1] QB8E0** | B (1) / 2 | 4 | 60 | 3x230/400 V | .../5A | RS-232 | Ethernet |
| **410-VT5B-90B10** | **[1] QBJ60** | B (1) / 2 | 4 | 60 | 3x57/100 V ... 3x230/400 V | .../5A | RS-232 | RS-485 |
| **410-VT5B-A0B10** | **[1] QBJ70** | B (1) / 2 | 4 | 60 | 3x57/100 V ... 3x230/400 V | .../5A | RS-232 | Ethernet |
| **410-QT7A-90B10** | **[1] QBN0B** | B (1) / 2 | 4 | 50 | 3x230/400 V | .../1A | RS-232 | RS-485 |
| **410-QT7A-A0B10** | **[1] QBN1B** | B (1) / 2 | 4 | 50 | 3x230/400 V | .../1A | RS-232 | Ethernet |
| **410-VT7A-90B10** | **[1] QBN0J** | B (1) / 2 | 4 | 50 | 3x57/100 V ... 3x230/400 V | .../1A | RS-232 | RS-485 |
| **410-VT7A-A0B10** | **[1] QBN1J** | B (1) / 2 | 4 | 50 | 3x57/100 V ... 3x230/400 V | .../1A | RS-232 | Ethernet |
| **410-QT7B-90B10** | **[1] QBN2B** | B (1) / 2 | 4 | 60 | 3x230/400 V | .../1A | RS-232 | RS-485 |
| **410-QT7B-A0B10** | **[1] QBN3B** | B (1) / 2 | 4 | 60 | 3x230/400 V | .../1A | RS-232 | Ethernet |
| **410-VT7B-90B10** | **[1] QBN2J** | B (1) / 2 | 4 | 60 | 3x57/100 V ... 3x230/400 V | .../1A | RS-232 | RS-485 |
| **410-VT7B-A0B10** | **[1] QBN3J** | B (1) / 2 | 4 | 60 | 3x57/100 V ... 3x230/400 V | .../1A | RS-232 | Ethernet |
| **CIRWATT B410D, direct connection, energy generation** | | | | | | | | |
| **410-QD1A-90B10** | **[1] QB4B0** | B (1) / 2 | 4 | 50 | 3x230/400 V | 10 (100)A | RS-232 | RS-485 |
| **410-QD1A-A0B10** | **[1] QB4C0** | B (1) / 2 | 4 | 50 | 3x230/400 V | 10 (100)A | RS-232 | Ethernet |
| **410-QD1B-90B10** | **[1] QB4H0** | B (1) / 2 | 4 | 60 | 3x230/400 V | 10 (100)A | RS-232 | RS-485 |
| **410-QD1B-A0B10** | **[1] QB4I0** | B (1) / 2 | 4 | 60 | 3x230/400 V | 10 (100)A | RS-232 | Ethernet |

**FOR OTHERS CONFIGURATIONS (inputs, outputs and other communications), CONSULT**

### OPTIONAL ACCESORIES (additional price)

| Code | Model | Description |
|---|---|---|
| Consult | 3 | 4 output relays 3 A, 250 Vac |
| Consult | 5 | 4 impulse inputs<br>2 output relays 3 A, 250 Vac |
| Consult | D | 2 output relays 3 A 250 Vac<br>2 impulse inputs<br>2 impulse outputs |
| Consult | 6 | Auxiliary Power Supply 24-48Vdc |
| Consult | B | Earth leakage detection |

Delivery time: [*] immediate
[x] working weeks
[c] consult

## Compact DC , PLC PRIME Concentrator



NEW

| Type | Code | LV Supervision system | 3G Modem | Digital inputs (*) | Second transformer connections | Dimensions (WidthXHeightXLength) |
|---|---|---|---|---|---|---|
| Concentrador PLC | | | | | | |
| Compact DC 3G | [*] Q46010 | • | • | – | – | 203x120x130 |
| Compact DC 4I | [*] Q46020 | • | – | 4 | – | 203x120x130 |
| Compact DC SBT | [*] Q46030 | • | – | – | – | 165x120x130 |
| Compact DC BASIC | [*] Q46040 | – | • | – | – | 165x120x130 |
| Compact DC 2 | [*] Q46050 | • | – | 4 | • | 279x120x130 |

**(*)** 4 isolated digital inputs 10 kV / 1 min"

## CIRWATT B PRIME, Three-phase energy meters with PLC system (measuring, load profiling, multi configurable billing calendar)



| Type | Code | Class (active / reactive) | Quadrants | Measuring range V | Measuring range A | Frecuency (Hz) | Internal disconnection relay | Relay output | Communication COM1 | Communication COM2 |
|---|---|---|---|---|---|---|---|---|---|---|
| CIRWATT B410TP, indirect connection | | | | | | | | | | |
| 410-QT5A-B0B10 | [1] QB8I0 | B(1)/ 2 | 4 | 3x230/400 | .../5A | 50 | - | - | RS-232 | PRIME |
| CIRWATT B410DP, direct connection | | | | | | | | | | |
| 410-QD1A-B0B10 | [1] QB4N0 | B(1)/ 2 | 4 | 3x230/400 | 10 (100) | 50 | - | - | RS-232 | PRIME |
| CIRWATT B410RCP, direct connection with internal disconnection relay | | | | | | | | | | |
| 410-QD1A-B0B16 | [c] QB4P0 | B(1)/ 2 | 4 | 3x230/400 | 10 (100) | 50 | • | - | - | PRIME |
| 410-QD1A-B3B16 | [c] QB4P1 | B(1)/ 2 | 4 | 3x230/400 | 10 (100) | 50 | • | 1 | - | PRIME |

## CIRWATT B PRIME, Single-phase energy meters with PLC system (measuring, load profiling, multi configurable billing calendar)



| Type | Code | Class (active/reactive) | Quadrants | Measuring range V | Measuring range A | Frecuency (Hz) | Relay output | Internal disconnection relay | Communications |
|---|---|---|---|---|---|---|---|---|---|
| CIRWATT B200RCP | | | | | | | | | |
| 212-ES4A-B0B-17 | [1] QB3C0 | B / 2 | 4 | 230 | 10 (60) | 50 | - | • | PRIME |
| 212-ES4A-BFB-17 | [1] QB3C3 | B / 2 | 4 | 230 | 10 (60) | 50 | 1 | • | PRIME |

FOR OTHERS CONFIGURATIONS (inputs, outputs and other communications), CONSULT

## Accesories for PLC concentrator



| Type | Code | Power Supply ($V_{ac}$) | PLC | Serie | Ethernet port |
|---|---|---|---|---|---|
| Modem SGE-3G/GPRS | [c] Q30230 | 127...230 | GPRS/3G | RS-232/485 | • |
| LM6I2O-PRIME | [c] Q30219 | 230 | PRIME | RS-232 | - |

Delivery time: [*] immediate
[x] working weeks
[c] consult

## CIRWATT P, Prepayment energy meters



| Type | Code | Class (active/reactive) | Unidirectional | Frequency (Hz) | Measurement range V | Measurement range A | prepaid system | Internal disconnection relay |
|---|---|---|---|---|---|---|---|---|
| **SIngle-phase energy meter, CIRWATT P200RC** | | | | | | | | |
| **212-WS4C-23P23** | **[c] QP102** | 1 / 2 | • | 50/60 | 110 ... 260 | 10 (60) | RFID card | Yes |
| **Three-phase energy meter, CIRWATT P410RC** | | | | | | | | |
| **410-QD1A-20P22** | **[c] QP302** | 1 / 2 | • | 50/60 | 230 / 400 | 10 (100) | RFID card | Yes |
| **Accessories** | | | | | | | | |
| **PEM-SOFT-PLUS** | **[c] Q30501** | Management software + PEM-TERM | | | | | | |
| **PEM-TERM** | **[c] Q31100** | PEM-CARD writer / reader | | | | | | |
| **PEM-CARD** | **[c] E20001** | RFID card | | | | | | |
| **PEM-CASH** | **[c] Q31110** | External cabinet to vend and recharge RFID cards with cash payment | | | | | | |
| **PEM-CREDIT** | **[c] Q31111** | External cabinet to vend and recharge RFID cards with cash or credit payment | | | | | | |

## ACCESSORIES for energy meters



| Type | Code | Description |
|---|---|---|
| Modems | | |
| **CM-GSM/GPRS** | **[*] Q30250** | GSM RS-232/485 Modem (includes antenna) |
| **Modem SGE-3G/GPRS** | **[*] Q30230** | GPRS-3G Modem with Ethernet communications |
| **ANTENNA 9 db** | **[1] Q4994E** | Antenna 9 db (for GSM modem) |



| | | |
|---|---|---|
| **Converters** | | |
| **RS2RS** | **[*] M62141** | RS-232/485 Intelligent converter and amplifier (RTS control) for PC |
| **USB-RS485 conv.** | **[*] M54040** | USB to RS-485 Converter |
| **USB-RS232 conv.** | **[*] M54050** | USB to RS-232 Converter |
| **TCP1RS+** | **[*] M62121** | RS-485 / Ethernet modbus/TCP Converter |
| **CMBUS-8** | **[*] M540A0** | M-Bus to Modbus Converter, up to 8 Mbus slaves |
| **CMBUS-24** | **[*] M540B0** | M-Bus to Modbus Converter, up to 24 Mbus slaves |
| **Software** | | |
| **PowerWatt-LT SQL** | **[*] Q30423** | Energy metering management information software |
| **Others** | | |
| **LOC-RS** | **[*] Q30301** | CIRWATT optical reader |
| **LOC-USB** | **[*] Q30302** | CIRWATT optical reader with USB port |



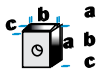
### ReadWatt, impulse collection with communication

| | | |
|---|---|---|
| **ReadWatt** | **[*] M62311** | Impulse collector with RS232/RS485 Modbus communications. Built in transistor output. PowerStudio supported |
| **PS- 100-240Vcc** | **[*] M62331** | ReadWatt power supply |

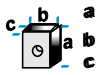
Delivery time: [*] immediate
[x] working weeks
[c] consult

## Current Transformers encapsulated in resin

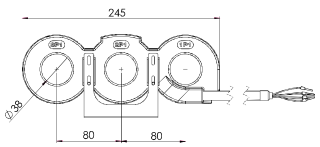
### kit3-TRMC 210, Sets of 3 current transformers for energy meters

| | 3 X  | | | | | |
|---|---|---|---|---|---|---|
| Type | kit 3-TRMC 210 | | | | | |
| | Primary winding | | | | | |
| Flat strip | Flat strip dimensions ( Wound primary) | | | | | |
|  | 145<br>111<br>48 | | | | | |
| A | Class 0,5S<br>V·A | Code | Class 0,5<br>V·A | Code | Class 0,5S<br>V·A | Code |
| 100/5 | 10 | [3] Q309010100000 | 15 | [3] Q309610100000 | 2,5 | [3] Q309810100000 |
| 150/5 | 10 | [3] Q309020100000 | 15 | [3] Q309620100000 | 2,5 | [3] Q309820100000 |
| 200/5 | 10 | [3] Q309030100000 | 15 | [3] Q309630100000 | 2,5 | [3] Q309830100000 |
| 300/5 | 10 | [3] Q309040100000 | 15 | [3] Q309640100000 | 2,5 | [3] Q309840100000 |
| 400/5 | 10 | [3] Q309050100000 | 15 | [3] Q309650100000 | 2,5 | [3] Q309850100000 |
| 500/5 | 10 | [3] Q309060100000 | 15 | [3] Q309660100000 | 2,5 | [3] Q309860100000 |
| 600/5 | 10 | [3] Q309070100000 | 15 | [3] Q309670100000 | 2,5 | [3] Q309870100000 |

### kit3-TRMC 400, Sets of 3 current transformers for energy meters

| | 3 X  | | | | | |
|---|---|---|---|---|---|---|
| Type | kit 3-TRMC 400 | | | | | |
| Ø | 100 x 20 | | | | | |
| Flat strip | Bus bar | | | | | |
|  | 160<br>99<br>68 | | | | | |
| A | Class 0,5S<br>V·A | Code | Class 0,5<br>V·A | Code | Class 0,5<br>V·A | Code |
| 750/5 | 10 | [3] Q309110100000 | 15 | [3] Q309710100000 | 2,5 | [3] Q309A10100000 |
| 1 000/5 | 10 | [3] Q309120100000 | 15 | [3] Q309720100000 | 2,5 | [3] Q309A20100000 |
| 1 500/5 | 10 | [3] Q309130100000 | 15 | [3] Q309730100000 | 2,5 | [3] Q309A30100000 |
| 2 000/5 | 10 | [3] Q309140100000 | 15 | [3] Q309740100000 | 2,5 | [3] Q309A40100000 |
| 3 000/5 | | | | | 2,5 | [3] Q309A60100000 |

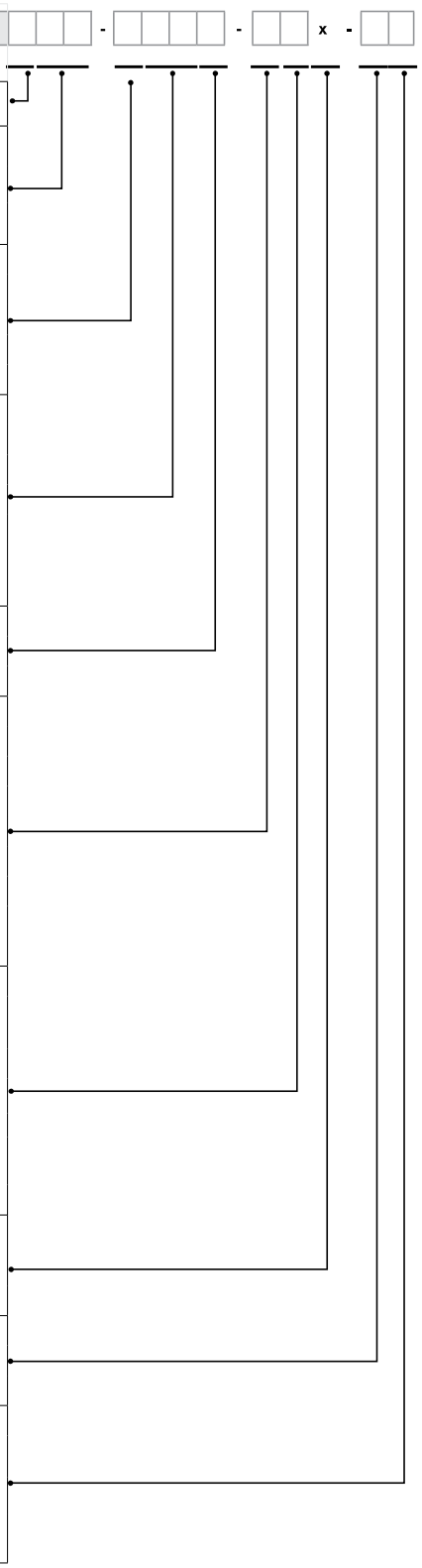
### TRMCx3, Three-phase current transformers for energy meters

| |    | | | | | | |
|---|---|---|---|---|---|---|---|
| Ø | 38 mm | | | | | | |
| | | Indoor | | | Outdoor | | |
| A | Class 0,5S<br>V·A | Type | Code | cable (m) | Type | Code | cable (m) |
| 100/5 | 2,5 | TRMCx3 100/5 | [*] Q301T1 | 1,5 | TRMCx3 100/5-ext | [c] Q301T1010E000 | 7 |
| 200/5 | 2,5 | TRMCx3 200/5 | [*] Q301T2 | 1,5 | TRMCx3 200/5-ext | [c] Q301T2010E000 | 7 |
| 300/5 | 2,5 | TRMCx3 300/5 | [*] Q301T3 | 1,5 | TRMCx3 300/5-ext | [c] Q301T3010E000 | 7 |
| 400/5 | 2,5 | TRMCx3 400/5 | [*] Q301T4 | 1,5 | TRMCx3 400/5-ext | [c] Q301T4010E000 | 7 |

Delivery time: [*] immediate
[x] working weeks
[c] consult

## SELECTION TABLE - Three-phase Energy Meters

| Energy Meter Type | CIRWATT B410D | CIRWATT B502 / B505 /B410T / B410TP | CIRWATT B400RCP | CIRWATT B400RC | | CIRWATT |
|---|---|---|---|---|---|---|
| 4 wires | • | • | • | • | 4 | Connection |
| 0.2s Active class / 0.5 Reactive class | – | • | – | – | 02 | Accuracy |
| 0.5s Active (C) class / 1 Reactive class | – | • | – | – | 05 | |
| 1 Active (B) Class / 2.0 Reactive class | • | • | • | • | 10 | |
| 3 x 57 / 100 $V_{ca}$ | – | • | – | – | L | Measured voltage |
| 3 x 63,5 / 110 $V_{ca}$ | – | • | – | – | M | |
| 3 x 127 / 220 $V_{ca}$ | • | • | • | – | N | |
| 3 x 230 / 400 $V_{ca}$ | • | • | • | • | Q | |
| 3 x 57/100 V $_{ca}$ ...3x230 / 400 $V_{ca}$ | – | • | – | – | V | |
| 2,5 (10) A Transformer | – | • | – | – | T2 | Measured current |
| 5 (10) A Transformer | – | • | – | – | T5 | |
| 1 (6) A Transformer | – | • | – | – | T7 | |
| 1 (10) A Transformer | – | • | – | – | T8 | |
| Direct 10 (100) A | • | • | • | – | D1 | |
| Direct 15 (120) A | • | – | – | – | D5 | |
| Direct 5 (100) A | • | – | – | – | D6 | |
| 50 Hz | • | • | • | – | A | Frequency |
| 60 Hz | • | • | • | – | B | |
| 50 / 60 Hz automatic | • | • | – | • | C | |
| Without communications | • | • | – | | 0 | Communications |
| R1 / R2 | RS485 / PLC A | RS485 / PLC A | - | RS485 / RFID | 2 | |
| R1 / R2 | RS232 / PLC A | RS232 / PLC A | PLC A | – | 4 | |
| R1 / R2 | RS232 / PLC B | RS232 / PLC B | PLC B | – | 5 | |
| R1 / R2 | RS232 / RS232 | RS232 / RS232 | - | – | 7 | |
| R1 / R2 | RS232 / RS485 | RS232 / RS485 | - | – | 9 | |
| R1 / R2 | RS232 / Ether. | RS232 / Ether. | - | – | A | |
| R1 / R2 | RS232 / PRIME | RS232 / PRIME | PRIME | – | B | |
| R1 / R2 | RS485 / Ether. | RS485 / Ether. | - | – | C | |
| Without Inputs / Outputs | • | • | • | – | 0 | Expansion modules |
| Inputs / Outputs | 3A 250V relay free of voltage | 3A 250V relay free of voltage | 3A 250V relay free of voltage | – | 3 | |
| Inputs / Outputs | *1 | *1 | - | – | 5 | |
| Inputs / Outputs | Power supply | Power supply | - | – | 6 | |
| Inputs / Outputs | *2 | *2 | - | – | A | |
| Inputs / Outputs | Earth fault detection | Earth fault detection | - | – | B | |
| Inputs / Outputs | *3 | *3 | - | – | D | |
| industrial / Residential | • | • | • | – | B | Type |
| Pre-payment | – | – | – | • | p | |
| 2 Quadrants | • | • | • | – | 0 | Quadrants |
| 4 Quadrants | • | • | • | – | 1 | |
| Absolute register (Abs.) | • | • | – | • | 2 | |
| No extras | • | • | • | – | 0 | More features |
| With circuit breaker in-phase | – | – | • | – | 2 | |
| With omnipolar circuit breaker | – | – | • | • | 3 | |
| With circuit breaker in phase line and voltage fraud detection system | – | – | • | – | 6 | |




*1 - 2 relay outputs, 4 optocoupled inputs
*2 - 4 optocoupled inputs
*3 - 2 relay outputs, 2 impulse inputs, 2 optocoupled outputs

Delivery time: [*] immediate
[x] working weeks
[c] consult

## SELECTION TABLE - Single-phase Energy Meters

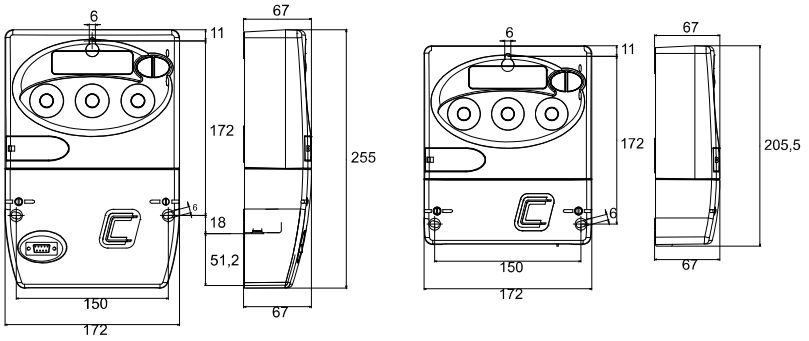
CIRWATT | | | | - | | | | | - | | | x - | | |

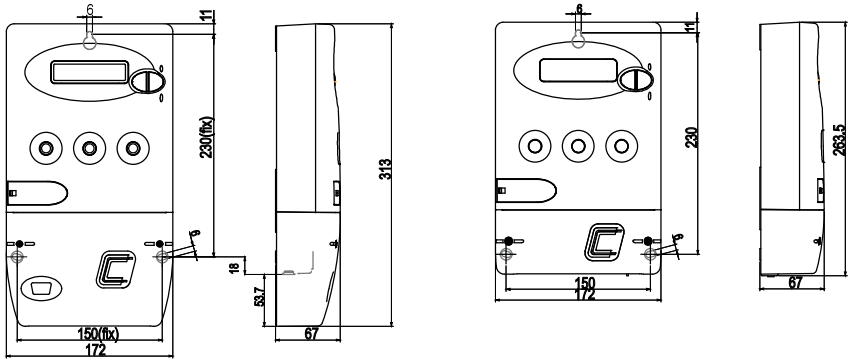
| METER TYPE | CIRWATT B101/102 | CIRWATT B200RC | CIRWATT B200RCP | | |
|---|---|---|---|---|---|
| 2 wires asymetric connection | • | • | • | 2 | |
| Active Class B (1) / Not Reactive measurement | • | • | – | 10 | Accuracy |
| Active class B (1)/ Reactive class 2.0 | • (102) | – | • | 12 | |
| 1x230 $V_{ac}$ | • | – | • | E | Voltage measure |
| 1x127 $V_{ac}$ | • | – | • | B | |
| 1x120 $V_{ac}$ | • | – | • | 1 | |
| 1X110 ..260 $V_{ac}$ | – | • | – | W | |
| Shunt 10 (60) A | – | • | • | S4 | Current measure |
| Shunt 5 (65) A | • | – | – | S7 | |
| 50 Hz | • | – | • | A | Frequency |
| 60 Hz | • | – | • | B | |
| 50 / 60 Hz | – | • | – | C | |
| Without Communications | • (101) | – | – | 0 | Communications |
| R1 | RS-485 (102) | RS-485 /RFID | - | 2 | |
| R1 | - | - | DCSK A | 4 | |
| R1 | - | - | DCSK B | 5 | |
| R1 | - | - | PRIME | B | |
| Without inputs/outputs | — | – | • | 0 | Expansion modules |
| Inputs / outputs | Input 100 V up to 240 V | — | — | E | |
| Inputs / outputs | Optomos output | — | — | 1 | |
| Inputs / outputs | 1 Output relay 3 A 250 V, free of voltage | 1 Output relay 3 A 250 V, neutral potential | — | 3 | |
| Inputs / outputs | – | — | 1 Output relay 3 A 250 V, free of voltage | F | |
| Residential model | • | — | • | B | Type |
| Pre-payment | — | • | — | P | |
| 2 Quadrants | • (OP) | — | — | 0 | Registration mode |
| 4 Quadrants | • | — | • | 1 | |
| Bidirectional, with fully positive logging (in any direction) | • (OP) | • | – | 2 | |
| No extras | • | – | – | 0 | More features |
| omnipolar Internal disconnection relay | – | • | • | 3 | |
| Neutral current measurement and magnetic detection | • (OP) | – | – | 5 | |
| With ph-n internal breaker and voltage fraud detection | – | – | • | 7 | |

Delivery time: [*] immediate
[x] working weeks
[c] consult

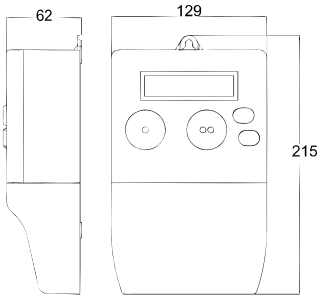
## Dimensions

### CIRWATT B III

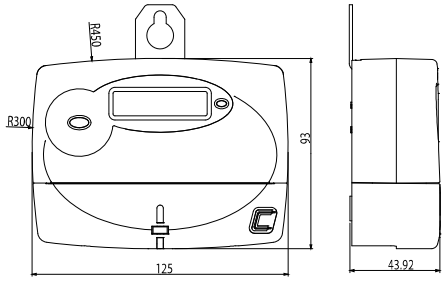


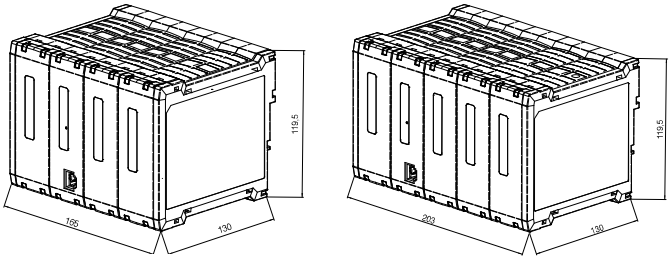

### CIRWATT B II



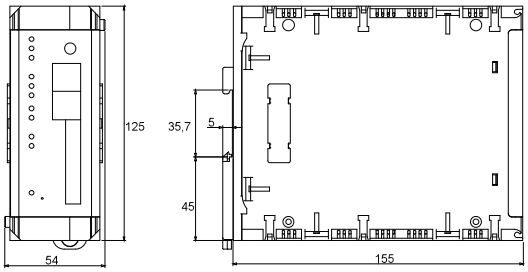

### CIRWATT B 100




### Compact DC + SBT




### SGE 3G/GPRS




Delivery time: [*] immediate
[x] working weeks
[c] consult

# Partial consumption energy meters

## Table: Selection of partial consumption electrical energy meters

| | | CEM-10 | EM-30 | MK DC | CEM-20 | CEM-30 | EDMK |
|---|---|---|---|---|---|---|---|
| | |  |  |  |  |  |  |
| **Mounting** | DIN rail (modules) | 2 | 2 | 2 | 4 | 4 | 3 |
| **DC measurement** | | – | – | • | – | – | – |
| **AC measurement** | Three-phase 3/4 wires | – | – | – | • | • | • |
| | Single-phase | • | • | • | – | – | – |
| | Quadrants | 2 / 4 / ABS | 2 | 2 | 2 / 4 / ABS | 2 / 4 / ABS | 4 |
| **Parameters** | Active energy (kWh) | • | • | • | • | • | • |
| | Reactive energy (kvarh) | • | – | – | • | • | • |
| | V, A, W | • | – | • | • | • | – |
| | Tariffs | 1 | – | 1 | 1 | 1 | 1 / 3 - DT |
| **Current Input** | Direct | 5 (65) A | 5 (30) A | 30 $A_{cc}$ - DT | 5 (65) A | – | – |
| | Indirect | – | – | DT | – | / 5 A | DT |
| | MC System | – | – | – | – | – | DT |
| **Communications** | RS-485 | OP | – | – | OP | OP | DT |
| **Optional** | MID certification | DT | – | – | DT | DT | DT |
| | Digital outputs | 1 | 1 | – | 1 | 1 | 1 / 2 - DT |
| | Auxiliary power supply | – | – | • | • | • | • |
| | **Page** | 96 | 97 | 97 | 96 | 96 | 96 |

DT - Depending on the type

Delivery time: [*] immediate
[x] working weeks
[c] consult

## AC measurement

### CEM, Single-phase and three-phase energy meters







| Type | Code | Measurement range (V) | Nominal current | Power Supply (V) | Certification | Measurement | Measure |
|---|---|---|---|---|---|---|---|
| **CEM-C10-212** | **[*] Q21112** | 1 x 230 | 5 (65) A | - | IEC | 1 phase | Direct |
| **CEM-C10-212 MID** | **[*] Q21114** | 1 x 230 | 5 (65) A | - | MID | 1 phase | Direct |
| **CEM-C20-312** | **[*] Q22312** | 3 x 127/220...3 x 230/400 | 5 (65) A | 230 | IEC | 3 phase | Direct |
| **CEM-C20-312 MID** | **[*] Q22314** | 3 x 127/220...3 x 230/400 | 5 (65) A | 230 | MID | 3 phase | Direct |
| **CEM-C30-312** | **[*] Q23422** | 3 x 57/100...3 x 230/400 | .../ 5 (6) A | 230 | IEC | 3 phase | Indirect |
| **CEM-C30-312 MID** | **[*] Q23424** | 3 x 57/100...3 x 230/400 | .../ 5 (6) A | 230 | MID | 3 phase | Indirect |
| **Comunication module** | | | | | | | |
| **CEM-M-RS-485** | **[*] Q23100** | Modbus | RS-485 | | | | |
| **CEM-M-ETH** | **[c] Q23400** | Modbus-RTU | Ethernet | | | | |

Units: V, A, kW, kWh, kvar, kvarh, PF - Frecuency:50 / 60 Hz

### EDMk, Three-phase energy meters DIN rail

**EDMk Series, Three-phase energy meters, external current transformer**



| Type | Code | Module | Outputs | Tariff | Communication | Units |
|---|---|---|---|---|---|---|
| **EDMk series - DIN Rail - 230 Vac supply - To other values see at the end of page** | | | | | | |
| **EDMk-ITF-RS485-C2** | **[*] M31751** | 3 | 2 | 1 | RS-485 | kW·h, kvarL·h, kvarC·h |
| **EDMk - MID** | | | | | | |
| **EDMk-ITF-RS485-C MID** | **[*] M317C4** | 3 | 1 | 1 | RS-485 | kW·h, kvarL·h, kvarC·h |
| EDMk-**MC, Efficient measuring Systems - Current transformers not included** | | | | | | |
| **EDMK-MC-ITF-RS485-C2** | **[*] M31781** | 3 | 2 | 1 | RS-485 | kW·h, kvarL·h, kvarC·h |

**EDMK-MC 1 MC3**



**EDMK-MC 3 MC1**



**MC1 / MC3 MC1 single-phase and MC3 three-phase Efficient Transformers, MC Series**

| Type | Code | I max. (A) | Ranges | Class 0,5 Power | Measurement | Inner diameter (mm) |
|---|---|---|---|---|---|---|
| **MC3-63** | **[*] M73121** | 63 | - | 0,1 VA | 3 phases | 7,1 |
| **MC3-125** | **[*] M73122** | 125 | - | 0,1 VA | 3 phases | 14,6 |
| **MC3-250** | **[*] M73123** | 250 | - | 0,1 VA | 3 phases | 26 |
| **MC1-35-50/100/150** | **[*] M73116** | 150 | 50/100/150 | 0,25 VA | 1 phase | 35 |
| **MC1-20-150/200/250** | **[*] M73113** | 250 | 150/200/250 | 0,25 VA | 1 phase | 20 |
| **MC1-30-250/400/500** | **[*] M73114** | 500 | 250/400/500 | 0,25 VA | 1 phase | 30 |
| **MC1-55-500/1000/1500** | **[*] M73115** | 1500 | 500/1000/1500 | 0,25 VA | 1 phase | 55 |
| **MC1-80-1000/1500/2000** | **[*] M73117** | 2000 | 1000/1500/2000 | | 1 phase | 80 |

**MC efficient transformers are only compatible with the EDMk-MC, CVM MINI-MC, CVM NET , CVM B, CVM C devices**

**SET FORMED BY:** **EDMK-MC Meter + 1 MC3 or 3 x MC1 Transformers**

CODIFICATION TABLE

**CEM**

| Q 2 X X X X 0 0 X X X X X | Code | | Internal code | | | | | Delivery time |
|---|---|---|---|---|---|---|---|---|
| Meas.V | CEM10 | Standard (1x230 V) | 0 | | | | | - |
| | | 1x127 V ca | 1 | | | | | 2 |
| Current Input | CEM 10 | Standard (5 (65) A) | | 0 | | | | - |
| | | 10 (60) A | | 1 | | | | 2 |
| | CEM 20 | Standard (5 (6) A) | | 0 | | | | - |
| | | 5 (10) A | | 1 | | | | 2 |
| Energy measure | | Standard (Active+reactive) | | | 0 | | | - |
| | | Active | | | 1 | | | 2 |
| Quadrants | | Standard (ABS) | | | | 0 | 0 | - |
| | | 2 | | | | 0 | 1 | 2 |
| | | 4 | | | | 0 | 2 | 2 |

**EDMk**

| M 3 X X X X 0 0 X 0 0 X X | Code | | Internal code | | | | | Delivery time |
|---|---|---|---|---|---|---|---|---|
| Power supply voltage | | Standard (230 $V_{ac}$) | 0 | | | | | - |
| | | 85...265 Vac<br>95...300 Vdc | C | | | | | 1 |
| Others | | Standard (without battery) | | | | 0 | 0 | - |
| | | With battery (it is used to read energy meters only in event of no mains supply) | | | | 3 | 0 | 1 |

Delivery time: [*] immediate
[x] working weeks
[c] consult



CIRCUTOR

## EM, Single-phase energy meters,direct connection

**EM series - DIN Rail - 230 Vph-N supply (of the measuring)**



| Type | Code | Nominal current | Modules | Display | Units | Communications |
|---|---|---|---|---|---|---|
| **EMS30-C** | **[*] M31611** | 5 (30) A | 1 | Mechanical | kW·h | --- |
| **EM30-C** | **[*] M30811** | 5 (30) A | 2 | Mechanical | kW·h | --- |

## DC measurement

## Mk-DC, Direct current energy meter

**MK-DC series - 2 DIN Rail modules - 230 V ac supply**



| Type | Code | Measuring A | Measuring Vdc | Display | Tariff | Units |
|---|---|---|---|---|---|---|
| **MK30-DC** | **[3] M30300** | 30 $A_{dc}$ | 0...800 | LED | 1 | V, A, kW, kW·h |
| **MK-SH DC** | **[*] M30400** | .../ 60 mV (*) | 0...800 | LED | 1 | V, A, kW, kW·h |
| **MK30-DC M125 Vc.c.** | **[3] M303000000D00** | 30 $A_{dc}$ | 0...125 | LED | 1 | V, A, kW, kW·h |
| **MK-SH DC M125 Vc.c.** | **[3] M304000000D00** | .../ 60 mV (*) | 0...125 | LED | 1 | V, A, kW, kW·h |

Ideal for photovoltaic applications. Voltage measurement 0...800 $V_{dc}$

**LM** Impulse centralisers, see section **Measurement/Control devices**

## Communication accessories



### RS2RS/ TCP1RS+/TCP2RS+, cable communication converters

| Type | Code | |
|---|---|---|
| **RS2RS** | **[*] M62141** | RS-232/485 Intelligent converter and amplifier (RTS control) for PC |
| **USB-RS485 conv.** | **[*] M54040** | USB to RS-485 Converter |
| **USB-RS232 conv.** | **[*] M54050** | USB to RS-232 Converter |
| **TCP1RS+** | **[*] M62121** | RS-485 / Ethernet modbus/TCP Converter |
| **TCP2RS+** | **[*] M54033** | RS-232/485 Converter / Ethernet Modbus/TCP. Built-in web server and web set-up |
| **CMBUS-8** | **[*] M540A0** | M-Bus to Modbus Converter, up to 8 Mbus slaves |
| **CMBUS-24** | **[*] M540B0** | M-Bus to Modbus Converter, up to 24 Mbus slaves |



### air, wireless converters and probes

| | | |
|---|---|---|
| **air GATEWAY** | **[c] M62001** | Router RS485 Modbus/RTU to Radio |
| **air BRIDGE** | **[c] M62002** | Radio Router to RS485 Modbus/RTU |
| **air REPEATER** | **[c] M62003** | Signal repeater |
| **air THL** | **[c] M62004** | Wireless temperature, relative humidity and brightness analyzer |
| **air HANDZER** | **[c] M62005** | Portable wireless signal coverage analyzer |



### Modems

| | | |
|---|---|---|
| **CM- GSM/GPRS** | **[*] Q30250** | RS-232/RS-485-GSM/GPRS Modem |
| **Modem router SGE-3G/GPRS** | **[*] Q30230** | GPRS-3G Modem router with Ethernet communications |



**Software**

| | | |
|---|---|---|
| **PowerStudio Scada** | **[*] M90231** | *Software* with HASP USB licencie |

See **Energy management software** section



**Others**

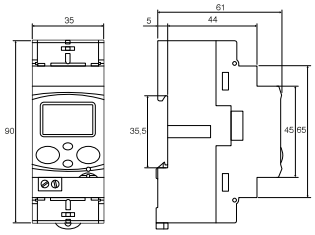
Current transformers (See **Measurement//Current transformers and shunts** section)

Shunts (See **Measurement//Current transformers and shunts** section)

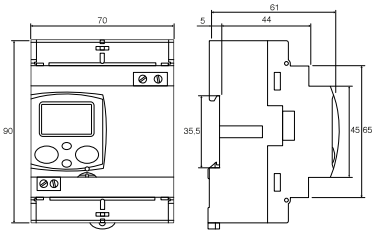
Delivery time: [*] immediate
[x] working weeks
[c] consult

## Dimensions

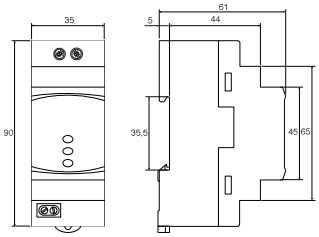
### CEM-10



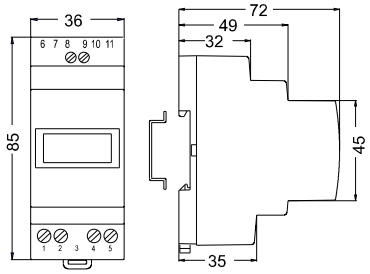

### CEM-20 / CEM-30



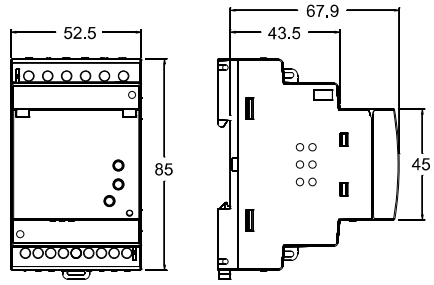

### CEM-M



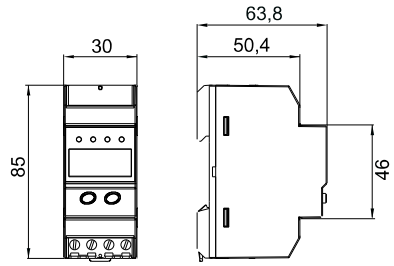

### EM30-C




### EDMk




### MK-30DC




Delivery time: [*] immediate
[x] working weeks
[c] consult