# COUNTIS M4x

## Active energy meters for OEM

three-phase - up to 10000 A via CT


COUNTIS M44

## Function

The **COUNTIS M4x** meters are modular energy meters designed for three-phases metering with connection via CT and are suitable for applications up to 10000 A for machine manufacturers (Bulk packaging). They can directly display both active (kWh) and reactive energy (kvarh) on a backlit LCD screen.

With multifunction monitoring and compact size in 4 modules width, they support RS485 MODBUS RTU or MBUS communication and are suited for both commercial or industrial power distribution systems.

COUNTIS M44 and M46 have MID certification.

## Advantages

**Communication**

- RS485 communication (MODBUS RTU) or MBUS communication.
- Energy values can be remotely transmitted via the communication output (computer, BMS, etc.) to a system for billing analysis, energy savings or energy cost management.
- 2 available pulse outputs : one with configurable pulse weight and duration, the second with fixed 3200 Wh/imp.

**Multi-parameters measurement and load acquisition**

Remote collection of multiple electrical parameters through communication: I, U, V, P, Q, S, PF, THD, demand, energies.

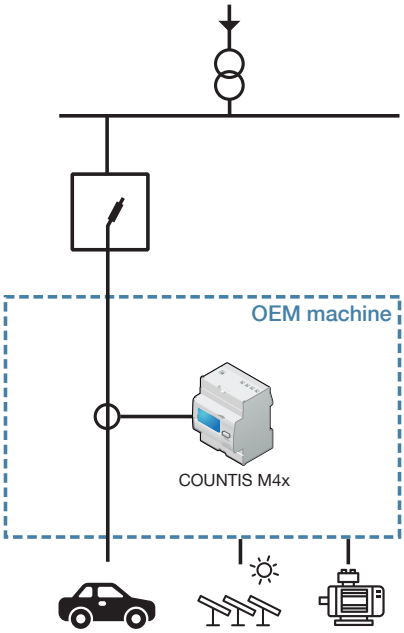
**Compact**

4 modules width only.

**MID Module B+D certified**

COUNTIS M units comply with the MID directive to guarantee accuracy and reliability when metering, compulsory for energy billing applications. “Module B+D” certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

## Functional diagram




**Extended temperature range**

Operating temperature from -40°C up to +70°C without degrading any functions of the meter.

**Bulk packaging**

The packaging and accessories of these meters are optimised for high quantities requirements :

- Unboxing and integration are quicker
- Packaged with large quantities to simplify ordering and shipping process.

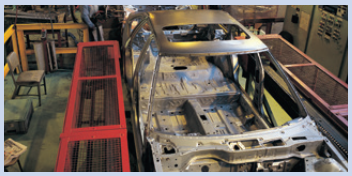
## General Characteristics

- Compact design.
- Measurement accuracy: 0.5%.
- Backlit LCD display.
- Demand monitoring.
- Total harmonic distorsion.

| Model | Key functions |
|---|---|
| M44 | 2 pulses output + RS485 MODBUS communication + MID |
| M46 | 2 pulses output + M-Bus communication + MID |

### The solution for

- EV chargers
- Inverters
- OEM machines



### Strong points

- Bulk packaging
- Communication and pulse outputs
- Multi-parameters measurement and load acquisition
- Compact
- MID Module B+D certified
- Extended temperature range

### MID certification

- COUNTIS M units comply with the MID directive to guarantee accuracy and reliability when metering, compulsory for energy billing applications.
- COUNTIS M MID feature tamper-proof components to prevent fraud.

### Conformity to standards

- IEC 62053-22
- IEC 62053-23
- EN50470-1
- EN50470-3

### Associated with current transformers

*See “Current transformers”.*



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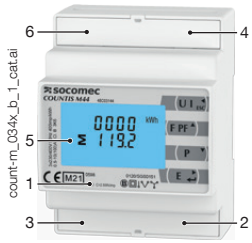
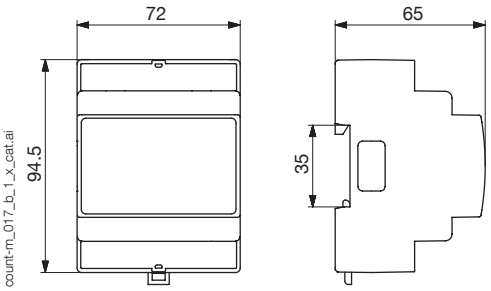
## Front panel




1. Pulse LED (2.5 Wh/imp)
2. Optional auxiliary power supply
3. Voltage measurement
4. Current transformers
5. LCD display screen
6. Pulses output + M-bus or RS485

## Dimensions (mm)



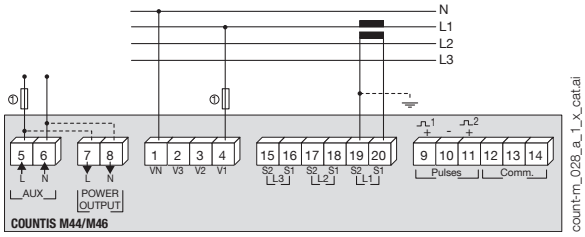

| | |
|---|---|
| Type | modular |
| Number of modules | 2 |
| Dimensions W x H x D | 72 x 94.5 x 65 mm |
| Case degree of protection | IP 20 |
| Front degree of protection | IP 51 |
| Display type | LCD |
| Rigid cable cross-section | 1.5 … 2.5 mm² |
| Flexible cable cross-section | 1.5 … 2.5 mm² |

## Electrical characteristics

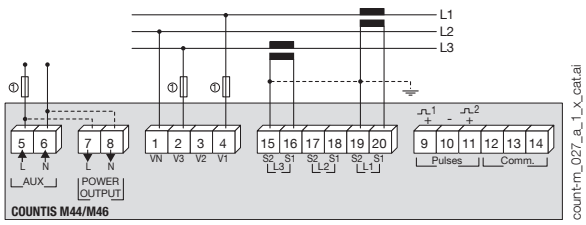
| | |
|---|---|
| **Current measurement** | |
| Type | three-phase on CT1 |
| Primary current | 1-10000 A |
| Secondary current | 1 A or 5 A |
| Input consumption | < 10 W |
| Overcurrent withstand | 30 $I_{max}$ for 0.5s |
| **Voltage measurement** | |
| Voltage AC ($U_n$) | 3x230 / 400 VAC |
| Voltage range | 80%~120% of $U_n$ |
| Frequency | 50 or 60 Hz ±2% |
| AC voltage withstand | 4 KV for 1 minute |
| Impulse voltage withstand | 6KV~1.2 µs waveform |
| **Auxiliary power supply** | |
| Voltage | 85-275 VAC 50/60 Hz ±10% 120-380 VDC ±20% |
| Power consumption | < 2 W / 10 VA |
| **Output (pulse)** | |
| Pulse output 1 | configurable : 0.001, 0.01, 0.1, 1, 10, 100 pulses per kWh/kvarh |
| Pulse output 2 | non-configurable : 3200 pulses per kWh |
| Type of optoisolated | 5-27 VDC - 27 mA DC max. |
| Pulse duration | 60 / 100 / 200 ms |
| **Accuracy** | |
| Voltage / Current / Frequency | 0.5% / 0.5% / 0.2% |
| Power factor / Active power / Reactive power / Apparent power | 1% |
| Active energy | Class 0.5s IEC 62053-22<br>Class C EN50470-1/3 (MID version only) |
| Reactive energy | Class 2 IEC 62053-23 |
| Total harmonic distortion | 1% up to 31st harmonic |
| Values refresh rate | 1s |
| **Operating conditions** | |
| Operating temperature | -40°C to +70°C |
| Storage temperature | -40°C to +70°C |
| Relative humidity | 0 to 95%, non-condensing |

## Terminals and connections

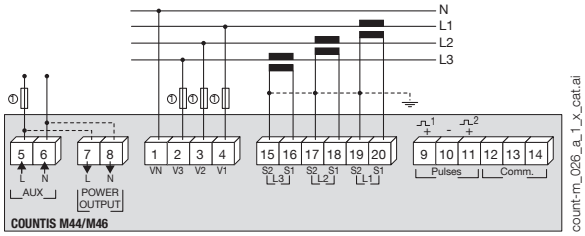
### Single phase 2 wires with 1 CT (1P+N)




### 3 phases 3 wires with 2 CT (3P)

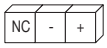



### 3 phases 4 wires with 3 CT (3P+N)

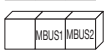



**N - L:** network input.
**N' - L':** network output.

**Comm.** terminals for RS485:




**Comm.** terminals for M-bus:




*(1) 1 A fast blow fuse.*

## References

| Type | COUNTIS M44 Reference | COUNTIS M46 Reference |
|---|---|---|
| Via CT - RS485 MODBUS Communication + MID | 48C0 **3144** | |
| Via CT - M-Bus Communication + MID | | 48C0 **3146** |