**COUNTIS E3x**

Active energy meters

three-phase - direct 100 A

Function

The COUNTIS E3x is a modular active electrical energy meter displaying the energy and power consumed (kWh and kW) directly on its backlit LCD display. It is designed for three-phase load metering and is used for direct connections of up to 100 A. COUNTIS E32, E34 and E36 are MID certified.

Common characteristics

- Measurement accuracy: 1%
- Backlit LCD display.
- Detects connection errors.

Advantages

RS485 communication (MODBUS or M-BUS) or pulse output

To enable the remote reporting of energy consumption, COUNTIS E3x are provided with either a pulse output or an RS485 communication output, with MODBUS or M-BUS protocol.

In addition to their reporting functions, COUNTIS E3x with RS485 can be configured remotely and enable access to multi-measurement values.

Detection of connection errors

The product is protected against phase/neutral inversion and detects wiring errors. This simplifies the installation and commissioning, thereby reducing associated costs, and ensures that the device operates correctly.

**Principle diagram**

COUNTIS E3x

COUNTIS E3x

COUNTIS E3x

MID certified B+D module

COUNTIS E products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. “Module B+D” certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

Bi-directional metering

(available only on the E33 and E35)

This function is for metering energy production or energy consumption.

Multi-measurement and load curve

Display of electrical values (I, U, V, P, Q, S, PF) and load curve over a 7 day period via communication.

**Conformity to standards**

- IEC 62053-21 class 1
- IEC 62053-31
- IEC 62053-11
- EN 50470-1
- EN 50470-3

<table>
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<th>Models</th>
<th>Key characteristics</th>
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<tr>
<td>E30</td>
<td>Pulse output</td>
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<tr>
<td>E31</td>
<td>Dual tariff (2 partial counters) + Pulse output</td>
</tr>
<tr>
<td>E32</td>
<td>Dual tariff + MID (Reset impossible) + Pulse output</td>
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<tr>
<td>E33</td>
<td>Dual tariff + RS485 MODBUS communication</td>
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<tr>
<td>E34</td>
<td>Dual tariff + RS485 MODBUS communication + MID (Reset impossible)</td>
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<tr>
<td>E35</td>
<td>Dual tariff + M-BUS communication</td>
</tr>
<tr>
<td>E36</td>
<td>Dual tariff + M-BUS communication + MID (Reset impossible)</td>
</tr>
</tbody>
</table>
Single-circuit metering, measurement & analysis ensures that the device operates correctly, thereby reducing associated costs, and simplifies the installation and commissioning, neutral inversion and detects wiring errors. This product is protected against phase/measure values.

In addition to their reporting functions, the COUNTIS E3x meters offer remote access to multi-phase data. They are equipped with either a pulse output or an RS485 communication (MODBUS or M-BUS).

Advantages
- Detects connection errors.
- Bi-directional metering.
- Three-phase load metering.
- Direct connections of up to 100 A.
- Counting and measuring energy production directly.
- Measurement and load curve over a period.
- Multi-measurement and load curve for applications in which sub-billing of the electrical energy consumed is necessary.
- Provides the guaranteed accuracy required, guaranteeing MID directive.
- Detects connection errors.
- Prevents fraud.
- Tamper-proof components to prevent tampering.
- Functions for energy billing and power consumption (kWh and kW).
- Is used for applications in which sub-billing of the electrical energy consumed is necessary.
- For laboratories.
- Counting active energy meters on the basis of ISO 50470-3 and IEC 62053-31.
- Counting active energy meters on the basis of ISO 50470-1 and IEC 62053-21.

Common characteristics
- MID certified B+D module (COUNTIS E3x).
- MID feature (COUNTIS E3x).
- Conformity to standards: IEC 62053-31, IEC 62053-21, EN 50470-1, EN 50470-3, CEMEP.

Models
- E36 Dual tariff + M-BUS communication + MID (Reset impossible)
- E34 Dual tariff + RS485 MODBUS communication + MID (Reset impossible)
- E32 Single tariff + RS485 MODBUS communication + MID (Reset impossible)
- E33 Dual tariff + RS485 MODBUS communication + MID (Reset impossible)
- E31 Single tariff + RS485 MODBUS communication + MID (Reset impossible)
- E30 Single tariff + RS485 MODBUS communication + MID (Reset impossible)

Electrical characteristics

Current measurement
- Type: three-phase - direct 100 A
- Input consumption: 0.5 VA max. per phase
- Startup current (\(I_{\text{t}}\)): 80 mA
- Minimum current (\(I_{\text{op}}\)): 0.5 A\(^2\)
- Transition current (\(I_{\text{tr}}\)): 2 A\(^2\)
- Reference current (\(I_{\text{ref}}\)): 20 A\(^2\)
- Permanent overload (\(I_{\text{max}}\)): 100 A
- intermittent overload: 3000 A max. for 10 ms

Voltage measurement
- Range of measurement: 230 ... 400 V +/- 20 %
- Consumption (VA): 2
- Permanent overload: 280 V phase-neutral / 480 V phase-phase

Energy accuracy
- Active (according to IEC 62053-21): Class 1
- Active (according to EN 50470): Class B

Power supply
- Self-supplied: yes
- Frequency: 50 / 60 Hz

Output (pulsed) (E30/E31/E32)
- Number: 1
- Type of optocoupler: IEC 62053-31 class A (20 ... 30 VDC)
- Fixed pulse weight: 100 Wh
- Pulse duration: 100 ms

Operating conditions
- Operating temperature: -10 to 55 °C
- Storage temperature: -20 to 70 °C
- Relative humidity: 85 %

Communication
- Type: E32/34: RS485, E35/E36: M-BUS
- Connection: 2 half duplex wires
- Protocol: MODBUS RTU
- Speed: 4800 ... 9600 bauds

Fixed pulse weight (Ref.)
- 100 Wh

Type of optocoupler
Type 1: IEC 62053-31 class A (20 ... 30 VDC)
Type 2: half duplex wires
Type 3: 2 half duplex wires

Table 1: Technical characteristics

<table>
<thead>
<tr>
<th>Type</th>
<th>COUNTIS E30 Reference</th>
<th>COUNTIS E31 Reference</th>
<th>COUNTIS E32 Reference</th>
<th>COUNTIS E33 Reference</th>
<th>COUNTIS E34 Reference</th>
<th>COUNTIS E35 Reference</th>
<th>COUNTIS E36 Reference</th>
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</thead>
<tbody>
<tr>
<td>100 A direct</td>
<td>4850 3005</td>
<td>4850 3006</td>
<td>4850 3007</td>
<td>4850 3012</td>
<td>4850 3013</td>
<td>4850 3025</td>
<td>4850 3026</td>
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<tr>
<td>100 A direct - Dual tariff</td>
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<td>100 A direct - Dual tariff - MID</td>
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<td>100 A direct - Dual tariff with RS485 MODBUS communication</td>
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<td>100 A direct - Dual tariff with M-BUS communication</td>
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Management software for COUNTIS
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References

1. 100 A gCe / Am fuses max.
2. The accuracy class is guaranteed between \(I_{\text{t}}\) and \(I_{\text{op}}\).
3. \(I_{\text{tr}} = I_{\text{tr}}(b) = 10 \times I_{\text{tr}}(r)\) for direct connection COUNTIS.

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