RCMB132-01
AC/DC sensitive residual current monitoring module for measuring AC and DC currents up to ±100 mA
**Product description**

The AC/DC sensitive residual current monitoring module monitors electrically earthed power supplies up to 300 V and connected loads up to nominal currents of 32 A for leakage and fault currents.

The module is intended for installation in distribution equipment such as PDU's (Power Distribution Units), outlet boxes or multiple socket-outlets and is supplied with DC 2...24 V.

**Applications**

The RCMB132-01 is designed for installation in PDU's and outlet boxes. The module can communicate with a master via an RS-485 interface via Modbus RTU. It is possible to connect several devices in a daisy chain. For this purpose, the RCMB132-01 provides two identical connectors for RS-485 (incl. power supply).

**Functional description**

The RCMB132-01 is used to measure residual currents and output the values via an interface. The residual current monitoring module measures both AC and DC currents. The rms value is calculated from the DC component included in the residual current and the AC component below 2000 Hz. The RCMB132-01 continuously checks the connection of the internal measuring current transformer.

Via the RS-485 interface

- a signal proportional to the rms value is transmitted (measured value update every 180 ms)
- alarm messages are signalled
- response values are configured
- a functional test can be started

The existing switching outputs S1 and S2 switch to alarm state when the set response value is exceeded or a malfunction occurs.

*When S2 (rms) switches, S1 (DC) is also switched simultaneously.*

**Ordering details**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>Supply voltage $U_s$</th>
<th>Type</th>
<th>Art. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC/DC ±100 mA</td>
<td>12...24 V</td>
<td>RCMB132-01</td>
<td>B94042136</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mounting foot MCCT20</td>
<td>B91080111</td>
</tr>
</tbody>
</table>

**Dimension diagram**

Dimensions in mm

| Rail mounting | with mounting foot MCCT20 (accessories, see ordering data) |
Pin assignment

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1, Y1</td>
<td>Vcc</td>
<td>Supply voltage (DC 12…24 V)</td>
</tr>
<tr>
<td>X2, Y2</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>X3, Y3</td>
<td>B</td>
<td>RS-485-B</td>
</tr>
<tr>
<td>X4, Y4</td>
<td>A</td>
<td>RS-485-A</td>
</tr>
<tr>
<td>Z5</td>
<td>S1</td>
<td>Switching output 1 (DC)</td>
</tr>
<tr>
<td>Z6</td>
<td>S2</td>
<td>Switching output 2 (rms)</td>
</tr>
</tbody>
</table>

The two four-pole connections X and Y are designed as combinations of sockets and plugs, the two-pole connection Z as a push-in terminal.

* Terminating resistor 120 Ω must only be set on the last device in the RS-485 bus chain
** An external protective circuit is especially required for inductive loads.
Technical data

### Insulation coordination according to IEC 60664-1
- **Primary circuit**
  - monitored primary conductors
- **Secondary circuit**
  - Connections Vcc, GND, A, B, S1, S2
- All following specifications apply to the insulation between the primary and secondary circuit
- **Rated voltage**: 300 V
- **Overvoltage category**: III
- **Rated impulse voltage**: 4 kV
- **Operating altitude**: up to 3000 m AMSL
- **Rated insulation voltage**: 320 V
- **Pollution degree**: 2
- **Safe separation (reinforced insulation)**: between primary and secondary circuit
- **Voltage test acc. to IEC 61010-1**: AC 2.2 kV

### Voltage supply
- **Supply voltage** $U_S$: DC 12...24 V
- **Operating range of the supply voltage**: ±20 %
- **Ripple**: 100 mV
- **Power consumption**: < 0.75 W

### Measuring circuit
- **Internal diameter primary conductor opening**: 15 mm
- **Measured value evaluation**: DC, rms
- **Measuring range**: AC/DC ±300 mA
- **Characteristics according to IEC 60755**: AC/DC sensitive, type B
- **$I_{n1}$**
  - Response value: DC 3.5...100 mA (* 6 mA)
  - Response tolerance: 0.7...1.0 x $I_{n1}$
- **$I_{n2}$**
  - Response value: rms 3.5...100 mA (* 30 mA)
  - Response tolerance: DC...1 kHz 0.7...1.0 x $I_{n2}$
  - 1...2 kHz 1.0...2.0 x $I_{n2}$
- **Output range**: 0...100 mA (rms)
- **Resolution**: < 0.2 mA
- **Frequency range**: DC...2 kHz
- **Measuring time**: 180 ms

### Operating uncertainty
- **DC...500 Hz**: ±(5% + 0.5 mA)
- **501...1000 Hz**: ±(15% + 0.5 mA)
- **1...2 kHz**: ±(50% ± 0.5 mA)

### Time response
- **Response time $t_{sw}$ (relay switching time of 10 ms considered)**
  - for 1 x $I_{n1}$: ≤ 290 ms
  - for 2 x $I_{n1}$: ≤ 140 ms
  - for 5 x $I_{n1}$: ≤ 30 ms
- **Recovery time $t_{r}$**: ≤ 2 s

### Disturbances
- **Load current $I_L$**: 32 A

### Response value assignment
- **$I_{n1}$ (DC)**: S1
- **$I_{n2}$ (rms)**: S2

### Outputs
- **Interface**: RS-485
- **Protocol**: Modbus RTU
- **Switching outputs**: Open Collector, not short-circuit-proof
- **Switching capacity**: 40 V / 50 mA
- **Output voltage LOW level**: 0...0.6 V
- **Output voltage HIGH level**: 3.1...3.6 V
- **Hysteresis**: ≤ 30 %

### Environment/EMC
- **EMC**: DIN EN 62020:2003 (VDE 0663), where applicable
- **Ambient temperature (incl. primary conductors routed through module)**: -25...+70 °C

### Classification of climatic conditions acc. to IEC 60721
- **Stationary use** (IEC 60721-3-3): 3K5 (except condensation and formation of ice)
- **Transport** (IEC 60721-3-2): 2K11 (except condensation and formation of ice)
- **Long-term storage** (IEC 60721-3-1): 1K22 (except condensation and formation of ice)

### Classification of mechanical conditions acc. to IEC 60271
- **Stationary use** (IEC 60721-3-3): 3M4
- **Transport** (IEC 60721-3-2): 2M4
- **Long-term storage** (IEC 60721-3-1): 1M12

### Other
- **Operating mode**: continuous operation
- **Mounting**: any position
- **Protection class**: IP 30
- **Flammability rating**: UL94 V-0
- **Service life at 70 °C acc. to IEC 61709**: 20 years
- **Software**: D0604
- **Plug (included in scope of delivery)**: Phoenix Contact, PTSZ 0.5/4-P-2.5
- **Documentation number**: D00356
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  * = factory settings