

Monitoring Relays 1-Phase True RMS AC/DC Over or Under Current Types DIB02, PIB02



DIB02



PIB02

- TRMS AC/DC over or under current monitoring relays
- Current measuring through external shunt or CT
- Selection of measuring range by DIP-switches
- Measuring ranges from 6 to 150 mV AC/DC and 0.4 to 4 V_p AC (MI or MP range)
- Adjustable current on relative scale
- Adjustable hysteresis on relative scale
- Adjustable delay function (0.1 to 30 s)
- Programmable latching or inhibit at set level
- Output: 8 A SPDT relay N.D. or N.E. selectable
- For mounting on DIN-rail in accordance with DIN/EN 50 022 (DIB02) or plug-in module (PIB02)
- 22.5 mm Euronorm housing (DIB02) or 36 mm plug-in module (PIB02)
- LED indication for relay, alarm and power supply ON
- Galvanically separated power supply

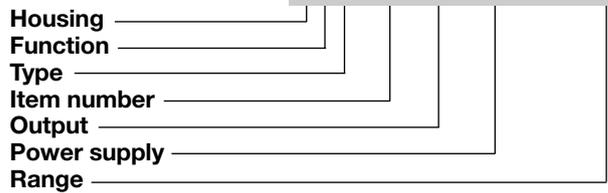
Product Description

DIB02 and PIB02 are precise TRMS AC/DC over or under current (selectable by DIP-switch) monitoring relays. The current is measured through an external shunt. 1-phase and 3-phase current up to 500 AAC can be monitored connecting MI or MP current transformers.

Owing to the built-in latch function, the ON-position of the relay output can be maintained. Inhibit function can be used to avoid relay operation when not desired (maintenance, transitions). The LED's indicate the state of the alarm and the output relay.

Ordering Key

DIB 02 C B23 150mV



Type Selection

| Mounting | Output | Supply: 24 VDC | Supply: 48 VDC | Supply: 24/48 VAC | Supply: 115/230 VAC |
|----------|--------|---------------------------|---------------------------|---------------------------|---------------------------|
| DIN-rail | SPDT | DIB 02 C 724 150MV | DIB 02 C 748 150MV | DIB 02 C B48 150MV | DIB 02 C B23 150MV |
| Plug-in | SPDT | PIB 02 C 724 150MV | PIB 02 C 748 150MV | PIB 02 C B48 150MV | PIB 02 C B23 150MV |

Input Specifications

| | | | | | |
|--|------------------------------------|-------------------|--|--|--|
| Input (voltage level) DIB02 PIB02 | Terminals Y1, Y2 Terminals 5, 7 | | | Note: MP3... current transformers not suitable for under current measurement due to the output signal of the device (see data sheet) | |
| Measuring ranges Direct Selectable by DIP-switch | Internal resis. | Max. volt. | | | |
| 6 to 60 mV AC/DC | 1 kΩ | 2 V | | | |
| 15 to 150 mV AC/DC | 1 kΩ | 2 V | | | |
| Max. voltage for 1 s | | 15 V | | | |
| 0.4 to 4 V _p AC | 50 kΩ | 50 V | | | |
| Max. voltage for 1 s | | 100 V | | | |
| MI and MP CT ranges | AAC rms | Max. curr. | | | |
| 1-ph.: 3-ph.: | | | | | |
| MI 5 MP 3005 | 0.5 to 5 A | 20 AAC | | | |
| MI 20 MP 3020 | 2 to 20 A | 50 AAC | | | |
| MI 100 MP 3100 | 10 to 100 A | 250 AAC | | | |
| MI 500 MP 3500 | 50 to 500 A | 750 AAC | | | |
| Note: The input voltage cannot raise over 300 VAC/DC with respect to ground (PIB02 only) | | | Contact input DIB02 PIB02 Disabled Enabled Latch disable | Terminals Z1, Y1 Terminals 8, 9 > 10 kΩ < 500 Ω > 500 ms | |

Output Specifications

| | |
|--|--|
| Output | SPDT relay |
| Rated insulation voltage | 250 VAC |
| Contact ratings (AgSnO ₂) | μ |
| Resistive loads | AC 1 8 A @ 250 VAC |
| | DC 12 5 A @ 24 VDC |
| Small inductive loads | AC 15 2.5 A @ 250 VAC |
| | DC 13 2.5 A @ 24 VDC |
| Mechanical life | ≥ 30 x 10 ⁶ operations |
| Electrical life | ≥ 10 ⁵ operations (at 8 A, 250 V, cos φ = 1) |
| Operating frequency | ≤ 7200 operations/h |
| Dielectric strength | |
| Dielectric voltage | ≥ 2 kVAC (rms) |
| Rated impulse withstand volt. | 4 kV (1.2/50 μs) |

Supply Specifications

| | | |
|--|--|------------------|
| Power supply | Overvoltage cat. III (IEC 60664, IEC 60038) | |
| Rated operational voltage through terminals: | | |
| A1, A2 or A3, A2 (DIB02) | | |
| 2, 10 or 11, 10 (PIB02) | | |
| 724: | 24 VDC ± 20%, insulated | |
| 748: | 48 VDC ± 20%, insulated | |
| B48: | 24/48 VAC ± 15% | |
| | 45 to 65 Hz, insulated | |
| B23: | 115/230 VAC ± 15% | |
| | 45 to 65 Hz, insulated | |
| Dielectric voltage | DC supply | AC supply |
| Supply to input | 2 kV | 4 kV |
| Supply to output | 4 kV | 4 kV |
| Input to output | 4 kV | 4 kV |
| Rated operational power | | |
| AC | 4 VA | |
| DC | 3 W | |

Mode of Operation

DIB02 and PIB02 monitor both AC and DC over or under current through an external shunt.

When connected with MI or MP current transformer (using the 0.4 to 4 V_p range) they can monitor 1-phase or 3-phase AC current up to 500 A.

Example 1

(connection between terminals Z1, Y1 or 8, 9 - latching function enabled)

The relay operates and latches in operating position when the measured value

exceeds (or drops below) the set level for more than the set delay time.

Provided that the current has dropped below (or has exceeded) the set point (see hysteresis setting), the relay releases when the interconnection between terminals Z1, Y1 or 8, 9 is interrupted or the power supply is interrupted as well.

The red LED flashes until the delay time has expired or the measured value comes back to a non-alarm value (see hysteresis setting).

General Specifications

| | | |
|------------------------|--|---------------------|
| Power ON delay | 1 s ± 0.5 s or 6 s ± 0.5 s | |
| Reaction time | (input signal variation from -20% to +20% or from +20% to -20% of set value) | |
| Alarm ON delay | < 100 ms | |
| Alarm OFF delay | < 100 ms | |
| Accuracy | (15 min warm-up time) | |
| Temperature drift | ± 1000 ppm/°C | |
| Delay ON alarm | ± 10% on set value ± 50 ms | |
| Repeatability | ± 0.5% on full-scale | |
| Indication for | | |
| Power supply ON | LED, green | |
| Alarm ON | LED, red (flashing 2 Hz during delay time) | |
| Output relay ON | LED, yellow | |
| Environment | (EN 60529) | |
| Degree of protection | IP 20 | |
| Pollution degree | 3 (DIB02), 2 (PIB02) | |
| Operating temperature | -20 to 60°C, R.H. < 95% | |
| Storage temperature | -30 to 80°C, R.H. < 95% | |
| Housing | | |
| Dimensions | DIB02 | 22.5 x 80 x 99.5 mm |
| | PIB02 | 36 x 80 x 94 mm |
| Weight | Approx. 150 g | |
| Screw terminals | | |
| Tightening torque | Max. 0.5 Nm acc. to IEC 60947 | |
| Approvals | UL, CSA (except 748) | |
| CE Marking | Yes | |
| EMC | | |
| Immunity | Electromagnetic Compatibility | |
| Emission | According to EN 61000-6-2 According to EN 61000-6-3 | |

Example 2 (MI CT)

(no connection between terminals Z1, Y1 or 8, 9 - latch function disabled)

The relay operates when the current flowing in the CT exceeds (or drops below) the set level for more than the set delay time.

It releases when the current drops below (or exceeds) the set level (see hysteresis setting) or when power supply is interrupted.

Example 3 (MP CT)

(no connection between terminals Z1, Y1 or 8, 9 - latch

function disabled - over current measurement)

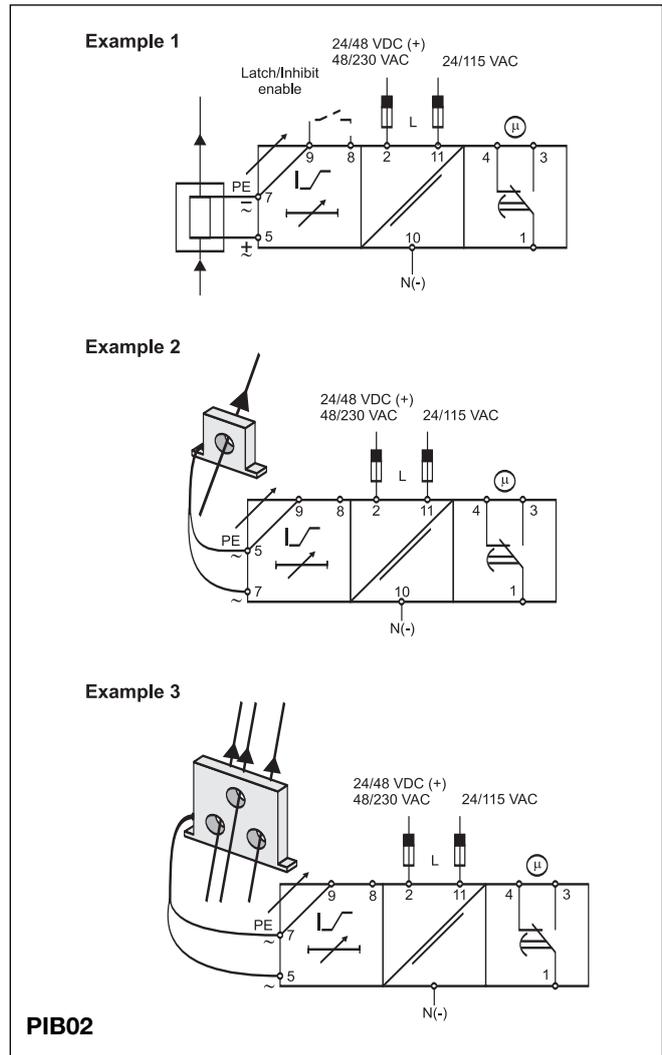
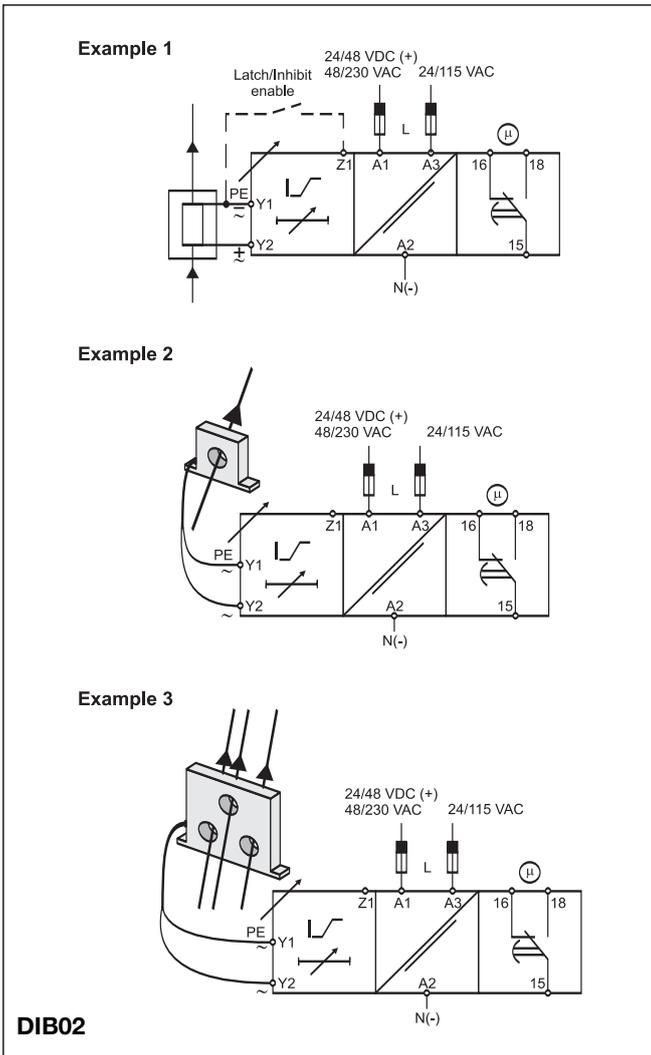
The relay operates when the maximum current flowing in the CT exceeds the set level for more than the set delay time.

It releases when the maximum current drops below the set level (see hysteresis setting) or when power supply is interrupted.

Note

When the inhibit contact is opened, if the input signal is already in alarm position, the delay time needs to elapse before relay activation.

Wiring Diagrams



Dimensions

