

Monitoring Relays

1-Phase True RMS AC/DC Over or Under Current

Types DIB02, PIB02



DIB02



PIB02

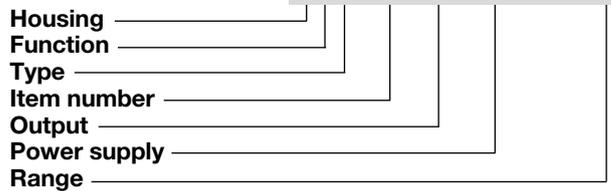
- TRMS AC/DC over or under current monitoring relays
- Current measuring through external shunt or CT
- Selection of measuring range by DIP-switches
- Measuring ranges from 6 to 150 mV AC/DC and 0.4 to 4 V_p AC (MI or MP range)
- Adjustable current on relative scale
- Adjustable hysteresis on relative 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/EC 60715 (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 to 48 VAC/DC	Supply: 115/230 VAC
DIN-rail	SPDT	DIB 02 C D48 150MV	DIB 02 C B23 150MV
Plug-in	SPDT	PIB 02 C D48 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 6 to 60 mV AC/DC 15 to 150 mV AC/DC Max. voltage for 1 s 0.4 to 4 V _p AC Max. voltage for 1 s	Internal resis. Max. volt. 1 kΩ 2 V 1 kΩ 2 V 15 V 50 kΩ 50 V 100 V	
MI and MP CT ranges 1-ph.: 3-ph.: MI 5 MP 3005 MI 20 MP 3020 MI 100 MP 3100 MI 500 MP 3500	AAC rms Max. curr. 0.5 to 5 A 20 AAC 2 to 20 A 50 AAC 10 to 100 A 250 AAC 50 to 500 A 750 AAC	Contact input DIB02 PIB02 Disabled Enabled Latch disable
Note: The input voltage cannot raise over 300 VAC/DC with respect to ground		Terminals Z1, Y1 Terminals 8, 9 > 10 kΩ < 500 Ω > 500 ms

Output Specifications

Output Rated insulation voltage	SPDT relay 250 VAC
Contact ratings Resistive loads AC 1 DC 12 Small inductive loads AC 15 DC 13	μ 8 A @ 250 VAC 5 A @ 24 VDC 2.5 A @ 250 VAC 2.5 A @ 24 VDC
Mechanical life	$\geq 30 \times 10^6$ operations
Electrical life	$\geq 50 \times 10^3$ operations (at 8 A, 250 V, $\cos \varphi = 1$)
Dielectric strength Dielectric voltage Rated impulse withstand volt.	≥ 2 kVAC (rms) 4 kV (1.2/50 μ s)

Supply Specifications

Power supply Rated operational voltage through terminals: A1, A2 or A3, A2 (DIB02) 2, 10 or 11, 10 (PIB02)	Overvoltage cat. III (IEC 60664, IEC 60038)
D48:	24 to 48 VAC/DC $\pm 15\%$ 45 to 65 Hz, insulated
B23:	115/230 VAC $\pm 15\%$ 45 to 65 Hz, insulated
Dielectric voltage Supply to input Supply to output Input to output	DC supply AC supply 2 kV 4 kV 4 kV 4 kV 4 kV 4 kV
Rated operational power AC DC	4 VA 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 inter-connection 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 \pm 0.5 s or 6 s \pm 0.5 s
Reaction time Alarm ON delay Alarm OFF delay	(input signal variation from -20% to +20% or from +20% to -20% of set value) < 100 ms < 100 ms
Accuracy Temperature drift Delay ON alarm Repeatability	(15 min warm-up time) ± 1000 ppm/ $^{\circ}$ C $\pm 10\%$ on set value ± 50 ms $\pm 0.5\%$ on full-scale
Indication for Power supply ON Alarm ON Output relay ON	LED, green LED, red (flashing 2 Hz during delay time) LED, yellow
Environment Degree of protection Pollution degree Operating temperature Storage temperature	(EN 60529) IP 20 2 -20 to 60 $^{\circ}$ C, R.H. < 95% -30 to 80 $^{\circ}$ C, R.H. < 95%
Housing Dimensions Material	DIB02 22.5 x 80 x 99.5 mm PIB02 36 x 80 x 94 mm PA66 or Noryl
Weight	Approx. 150 g
Screw terminals Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Product standard	EN 60255-6
Approvals	UL, CSA
CE Marking EMC Immunity Emissions	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC According to EN 60255-26 According to EN 61000-6-2 According to EN 60255-26 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 cur-

rent 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.

Function/Range/Level and Time Delay Setting

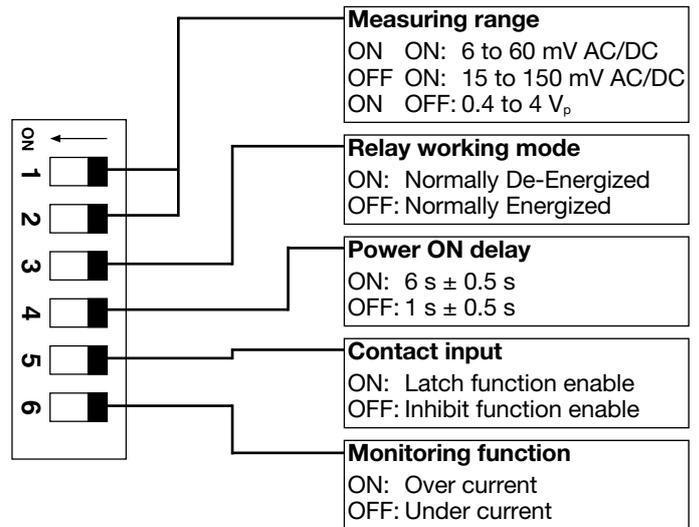
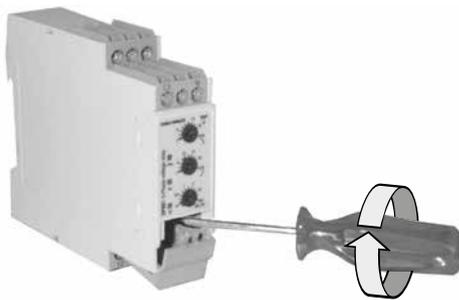
Adjust the measuring range setting the DIP switches 1 and 2 and select the desired function setting the DIP switches 3 to 6 as shown below.
To access the DIP switches open the grey plastic cover as shown below.

Selection of level and time delay:

Upper knob: Setting of hysteresis on relative scale: 0 to 30% on set value.

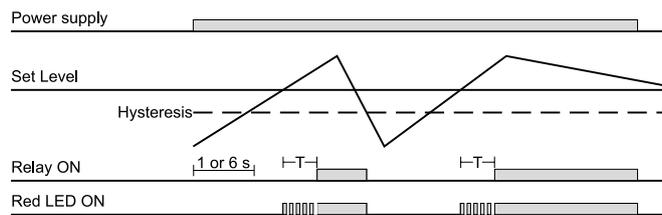
Centre knob: Current level setting on relative scale: 10 to 110% on full scale.

Lower knob: Setting of delay on alarm time on absolute scale (0.1 to 30 s).

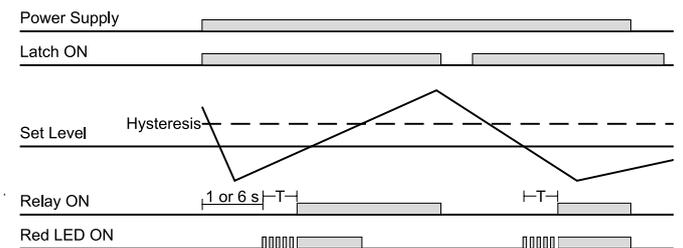


Operation Diagrams

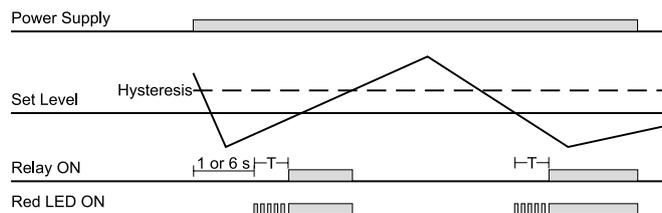
Over current - N.D. relay



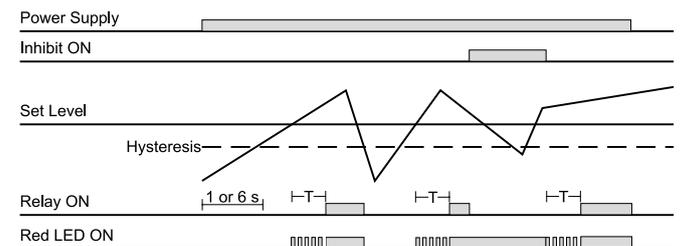
Under current - Latch function - N.D. relay



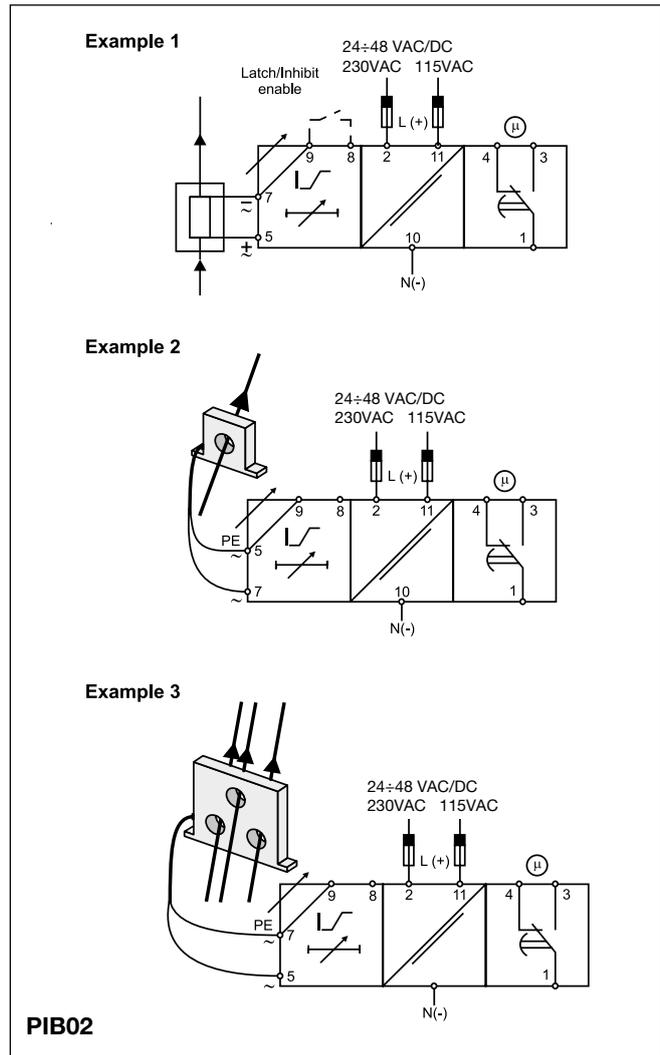
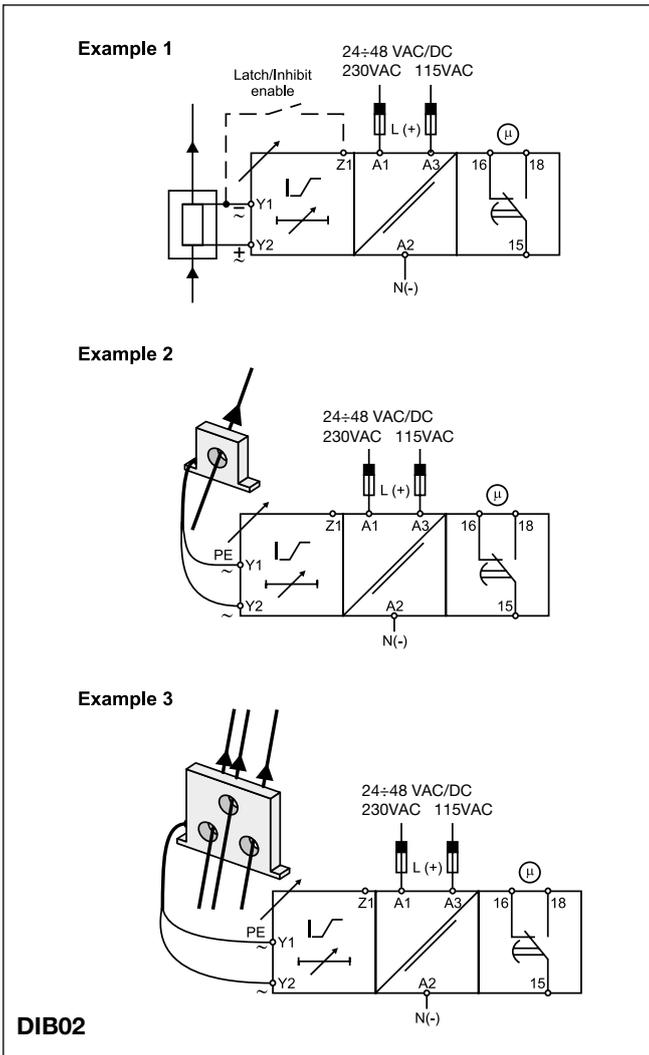
Under current - N.D. relay



Over current - Inhibit function - N.D. relay



Wiring Diagrams



Dimensions

