# Monitoring Relays 1-Phase AC/DC Over Current Types DIA01, PIA01







- AC/DC over current monitoring relay
- Current measured through internal shunt
- Measuring range 0.5 to 5 A AC/DC
- Adjustable current limit on relative scale
- Adjustable hysteresis
- Programmable latching at set level
- Output: 8 A SPDT relay normally de-energized
- For mounting on DIN-rail in accordance with DIN/EN 50 022 (DIA01) or plug-in module (PIA01)
- 22.5 mm Euronorm housing (DIA01) or 36 mm plug-in module (PIA01)
- LED indication for relay and power supply ON
- Galvanically separated power supply

## **Product Description**

DIA01 and PIA01 are precise AC/DC over current monitoring relays. Direct measuring or through current transformer. Owing to the built-in latch function, the ON-position of the relay output can be

maintained.

The red LED indicates the relay status. Through the built-in shunt it is possible to monitor loads up to 5 A AC/DC.

# Ordering Key Housing Function Type Item number Output Power supply Range

#### **Type Selection**

Mounting	Output	Supply: 24 VDC	Supply: 24/48 VAC	Supply: 115/230 VAC
DIN-rail	SPDT	DIA 01 C 724 5A	DIA 01 C B48 5A	DIA 01 C B23 5A
Plug-in	SPDT	PIA 01 C 724 5A	PIA 01 C B48 5A	PIA 01 C B23 5A

#### **Input Specifications**

Input (current level)	DIA01: Terminals Y1, Y2 PIA01: Terminals 5, 7	
Measuring ranges Direct  Standard CT (examples) TADK2 50 A/5 A TAD2 150 A/5 A TAD6 400 A/5 A TAD12 1000 A/5 A TAD12 1000 A/5 A TACO200 6000 A/5 A	Internal resistance: 0.05 Ω Max. current: 6 A Max. current for 1 s: 25 A AAC <sub>rms</sub> Max. curr. 5 to 50 A 60 A 15 to 150 A 180 A 40 to 400 A 480 A 100 to 1000 A 1200 A 600 to 6000 A 7200 A	
Contact input DIA01 PIA01 Disabled Enabled Latch disable	Terminals Z1, Y1 Terminals 8, 9 $> 10 \text{ k}\Omega$ $< 500 \Omega$ $> 500 \text{ ms}$	
Note: The input voltage cannot raise over 300 VAC/DC with respect to ground (PIA only)		

## **Output Specifications**

Output	SPDT relay
Rated insulation voltage	250 VAC
Contact ratings (AgSnO <sub>2</sub> ) 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	≥ 30 x 10 <sup>6</sup> operations
Electrical life	$\geq 10^5$ operations (at 8 A, 250 V, cos $\phi = 1$ )
Operating frequency	≤ 7200 operations/h
Dielectric strength Dielectric voltage Rated impulse withstand volt.	≥ 2 kVAC (rms) 4 kV (1.2/50 μs)



#### **Supply Specifications**

Power supply Rated operational voltage through terminals:	Overvoltage cat. III (IEC 60664, IEC 60038)
A1, A2 or A3, A2 (DIA01) 2, 10 or 11, 10 (PIA01) 724: B48:	24 VDC ± 20%, insulated 24/48 VAC ± 15%
B23:	45 to 65 Hz, insulated 115/230 VAC ± 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 2 W

#### **General Specifications**

Reaction time Alarm ON delay  Alarm OFF delay	< 100 ms (current rising from -20% to +20% set value) < 300 ms (current decreasing from +20% to -20% set value)
Accuracy Temperature drift Repeatability	(15 min warm-up time) ± 1000 ppm/°C ± 0.5% on full-scale
Indication for Power supply ON Output relay ON	LED, green LED, red
Environment Degree of protection Pollution degree Operating temperature Storage temperature	(EN 60529) IP 20 3 (DIA01), 2 (PIA01) -20 to 60°C, R.H. < 95% -30 to 80°C, R.H. < 95%
Housing dimensions DIN-rail version Plug-in version	22.5 x 80 x 99.5 mm 36 x 80 x 87 mm
Weight	Approx. 150 g
Screw terminals Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Approval	UL
CE-Marking	Yes

#### **Mode of Operation**

DIA01 and PIA01 monitor both AC and DC over current through an internal shunt. They can monitor AC currents up to 6000 A when connected to a suitable current transformer.

#### Example 1

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

The relay operates and latches in operating position when the measured value exceeds the set level. Provided that the current has dropped min. 4% below the set point (see hysteresis) the relay releases when the inter-

connection between terminals Z1, Y1 or 8, 9 is interrupted or the power supply is interrupted as well.

Example 2 (Stardard CT) (no connection between terminals Z1, Y1 or 8, 9 - latch

function disabled)

The relay operates when the current flowing through the transformer exceeds the set level. It releases when the current drops min. 4% below the set level (see hysteresis) or when the power supply is interrupted.

#### **Range Setting**

#### Centre knob:

Setting of current on relative scale: from 10 to 110% of the full-scale value.

#### **Hysteresis:**

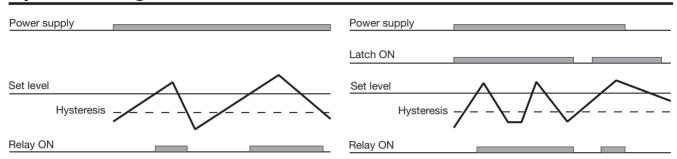
Approx. 4% of set value, it can be extended by inserting a resistor between terminals Z1, Y1 or 8, 9.

#### Approx. resistor values:

 $\begin{array}{lll} 10\%: & 180 \text{ k}\Omega \\ 25\%: & 47 \text{ k}\Omega \\ 50\%: & 22 \text{ k}\Omega \\ 75\%: & 15 \text{ k}\Omega \\ \text{Latch:} & <500 \Omega \end{array}$ 



# **Operation Diagrams**



# **Wiring Diagrams**

