

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

CARLO GAVAZZI



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

DIA 01 C B23 5A

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	Internal resistance: 0.05 Ω Max. current: 6 A Max. current for 1 s: 25 A	
Standard CT (examples)	AAC_{rms}	Max. curr.
TADK2 50 A/5 A	5 to 50 A	60 A
TAD2 150 A/5 A	15 to 150 A	180 A
TAD6 400 A/5 A	40 to 400 A	480 A
TAD12 1000 A/5 A	100 to 1000 A	1200 A
TACO200 6000 A/5 A	600 to 6000 A	7200 A

Contact input	
DIA01	Terminals Z1, Y1
PIA01	Terminals 8, 9
Disabled	> 10 k Ω
Enabled	< 500 Ω
Latch disable	> 500 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 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	$\geq 30 \times 10^6$ operations
Electrical life	$\geq 10^5$ operations (at 8 A, 250 V, $\cos \varphi = 1$)
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	≥ 2 kVAC (rms)
Rated impulse withstand volt.	4 kV (1.2/50 μ s)

Supply Specifications

Power supply Rated operational voltage through terminals: A1, A2 or A3, A2 (DIA01) 2, 10 or 11, 10 (PIA01) 724: B48: B23:	Overvoltage cat. III (IEC 60664, IEC 60038)	
	24 VDC $\pm$ 20%, insulated	
	24/48 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	
	2 W	

General Specifications

Reaction time Alarm ON delay	< 100 ms (current rising from -20% to +20% set value)
	Alarm OFF delay < 300 ms (current decreasing from +20% to -20% set value)
Accuracy Temperature drift Repeatability	(15 min warm-up time) $\pm$ 1000 ppm/°C $\pm$ 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
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 (Standard 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

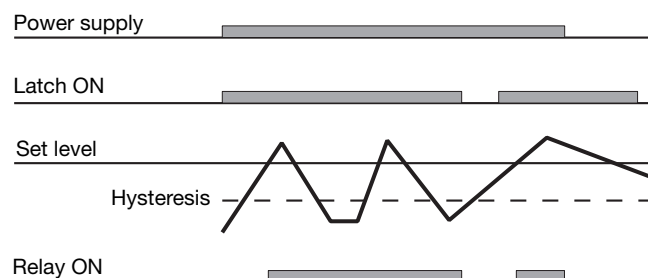
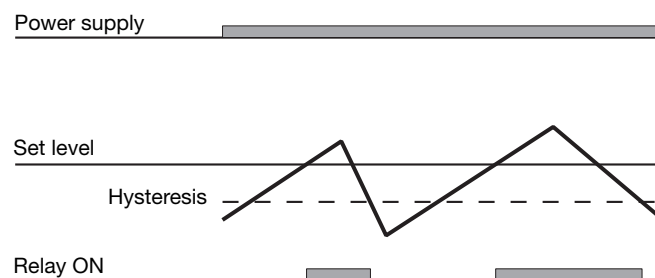
Centre knob:
Setting of current on relative scale: from 10 to 110% of the full-scale value.

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

Approx. resistor values:

10%: 180 k Ω
25%: 47 k Ω
50%: 22 k Ω
75%: 15 k Ω
Latch: < 500 Ω

Operation Diagrams



Wiring Diagrams

