

# DIA02Cxxx5A



## 1-phase true RMS AC/DC over current monitoring relay



### Benefits

- **Current measuring through internal shunt.** Through the built-in shunt it is possible to monitor loads up to 5 AAC/DC.
- **Adjustable current setpoint on relative scale.**
- **Selection of measuring range by DIP-switches.**
- **Latch function.** Owing to the built-in latch function, the ON-position of the relay output can be maintained.
- **Output and status LED indication.** For quick troubleshooting.
- **Very low minimum setpoint.** To sense the activity of small loads down to 20mA.

### Description

DIA02 is a precise TRMS AC/DC over current monitoring relay. It monitors the current of the load to detect if it is active or not. The wide range of input current values allow applications down to very small loads and DIA02 is less sensitive to inrush currents. Relay output grants isolation from measurement and power supply and great flexibility in the applications.

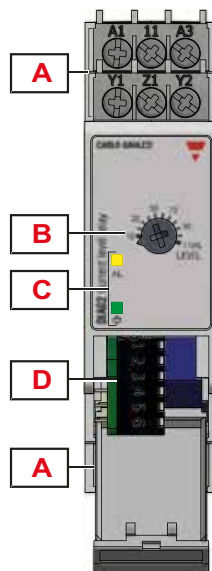
### Applications

DIA02 offers several building automation solutions like ON/OFF monitoring of water circulation pumps, extractor fans and light. It allows to provide prompt reaction in case of failure of the load.

### Main features

- Detection of AC/DC over current through an internal shunt.
- Front dial adjustable current level.
- Latch function.

## Structure

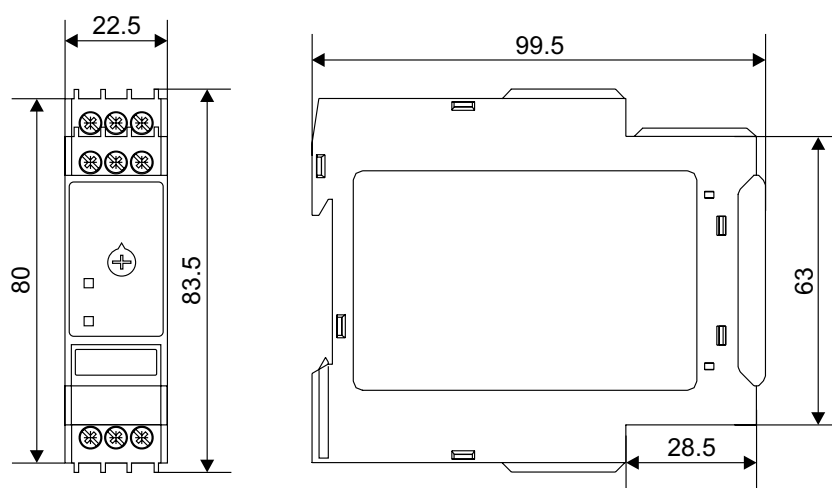


Element	Component	Function
A	Terminals block	Power supply: <b>B23</b> A1, A2, A3 <b>B48</b> A1, A2 Current input: Y1, Y2 Latch input: Y1, Z1 Relay output: 11, 12, 14
B	Current level dial	Setting of current level on a relative scale
C	Information LED	Yellow for relay output status and to signal alarm status Green for device ON
D	DIP-switches	Setting of input range

## Features

### General

<b>Material</b>	PA66 or Noryl
<b>Colour</b>	RAL7035 (light grey)
<b>Dimensions d x h x w</b>	99.5mm x 80mm x 22.5mm (3.92" x 3.15" x 0.886")
<b>Protection degree</b>	IP20
<b>Weight</b>	150 g (5.29oz)
<b>Terminals</b>	Cable size from 0.05mm <sup>2</sup> to 2.5mm <sup>2</sup> (AWG30 to AWG13), stranded or solid
<b>Tightening torque</b>	Max. 0.5Nm (4.425lb.in)
<b>Terminal type</b>	Double cage screw terminals






### Power supply

<b>Power supply</b>	Through terminals A1, A2 or A3, A2	
<b>Overvoltage category</b>	III (IEC 60664)	
<b>Voltage range</b>	B23	115/230 VAC ± 15%
	D48	24 to 48 VAC/DC ± 15%
<b>Frequency range</b>	45 to 65 Hz, insulated	
<b>Consumption</b>	2.5 VA	

### Environmental

<b>Operating temperature</b>	-20° C to 60° C (-4° F to 140° F)
<b>Storage temperature</b>	-30° C to 80° C (-22° F to 176° F)
<b>Relative humidity</b>	5-95% non condensing
<b>Pollution degree</b>	3
<b>Operating max altitude</b>	2000 m amsl (6560ft)
<b>Salinity</b>	No saline environment
<b>UV resistance</b>	No

## Compatibility and conformity

CE-marking	 According to EN 60947-5-1. Complies to European LV directive 2014/35/EU and EMC directive 2014/30/EU: Immunity according to EN61000-6-2; Emissions according to EN61000-6-3
Approvals	 LISTED
Standards	 EN 60255-6

## Inputs

Measured variable	Current level
Current measuring	Direct through internal shunt or through external current transformer (AC measurement)
Measuring ranges	20 to 200 mA AC/DC
	0.1 to 1 A AC/DC
	0.5 to 5 A AC/DC
Internal resistance	0.05 $\Omega$
Maximum current	6 A
Maximum current for 1 s	15 A
Contact input (terminals Z1, Y1)	Disabled: > 10 k $\Omega$ Enabled: < 500 $\Omega$ Latch disable: > 500 ms

## Outputs

Number of outputs	1
Type	SPDT electromechanical relay with change-over contacts
Logic	Output energized on alarm
Contact rating	<b>AC1:</b> 8 A @ 250 VAC <b>AC15:</b> 2.5 A @ 250 VAC <b>DC12:</b> 5 A @ 24 VDC <b>DC13:</b> 2.5 A @ 24 VDC
Electrical lifetime	$\geq 10 \times 10^6$ operations
Mechanical lifetime	$\geq 50 \times 10^3$ operations (at 8 A, 250 V, $\cos \phi = 1$ )
Assignment	Associated to overcurrent alarm

## Insulation

Terminals	Basic insulation
Power supply: A1, A2, A3 to input: Y1, Y2, Z1 Power supply: A1, A2, A3 to output: 11, 12, 14 Input: Y1, Y2, Z1 to output: 11, 12, 14	2.5kVrms, 4kV impulse 1.2/50 $\mu$ s (basic)

## Operating description

### • Device configuration

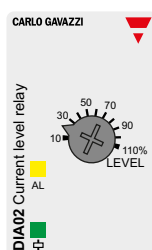
#### Connection between terminals Z1, Y1 - latching function enabled.

The relay operates and latches in operating position when the measured value exceeds the set level. Provided that the current has dropped below the set point (minus hysteresis), the relay releases when the interconnection between terminals Z1, Y1 is interrupted or the power supply is interrupted as well.

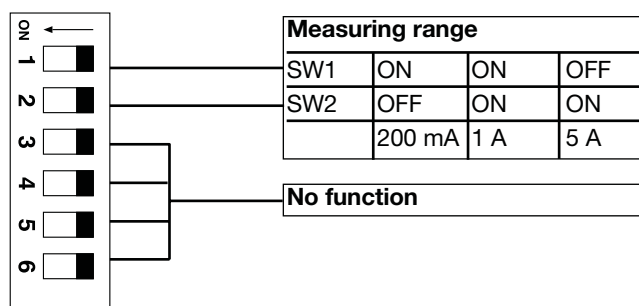
#### No connection between terminals Z1, Y1 - latch function disabled.

The relay operates when the measured value exceeds the set level. It releases when the current drops below the set level (minus hysteresis) or when power supply is interrupted.

Current level adjustment dial	
Typology	Linear selection from 10% to 110%
Resolution	10% setpoint increase per notch
Function	Relative current level setpoint



DIP-switches	
Typology	6 switches (switch numbers 3, 4, 5 and 6 are unused)
Function	Input range



### • Alarms

Over current causes immediate output relay energisation.

Current level alarm	
Input variables	20 mA to 5 A AC/DC
Reaction time	Input signal variation from -20% to +20% or from +20% to -20% of set value: Delay ON < 100 ms Delay OFF < 100 ms
Current level setting	From 10% to 110%
Power ON delay	1 s ± 0.5 s
Repeatability	0.5% reading
Hysteresis	~ 4% of set value, fixed
Accuracy (15 min. warm-up time)	Temperature drift: ± 1000 ppm/°C Repeatability: 0.5% on full-scale

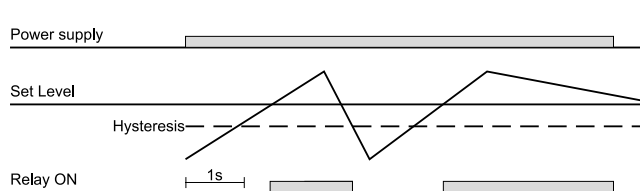


• **Visual information**

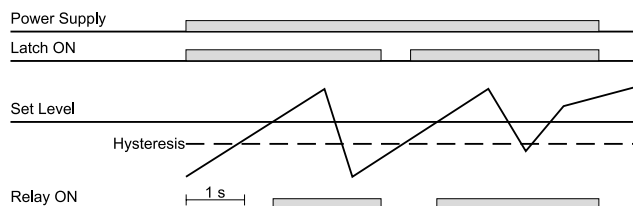
DIA02 feature 2 front LEDs which provide operation status information.

- Green LED is ON when the power supply is present.
- Yellow "AL" LED provides alarm status information: when a current alarm is triggered the LED turns ON.

**Operating diagram**

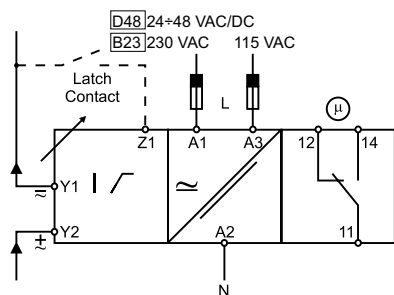


**Fig. 1 No-latch function**

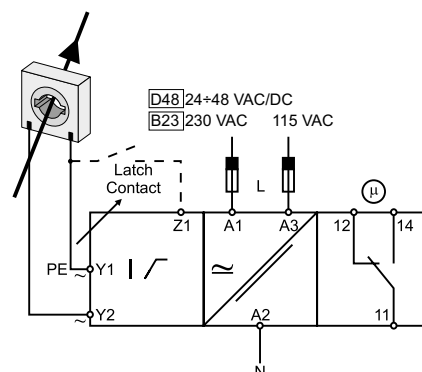


**Fig. 2 Latch function**

**Connection Diagrams**



**Fig. 3 Direct connection**



**Fig. 4 Connection by standard CT**

## References

Order code



DIA02C  5A

Complete the code entering the corresponding option instead of

Code	Option	Description
D	-	DIN rail housing
I	-	Current
A	-	Single function
02	-	Item number
C	-	SPDT relay output
<input type="checkbox"/>	B23	Power supply
	D48	
5A	-	Range

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