

Monitoring Relays

1-Phase AC/DC Over Voltage - AC Over Current

Types DUA01, PUA01

CARLO GAVAZZI



DUA01



PUA01

- AC/DC over voltage monitoring relay
- Selection of measuring range by DIP-switches
- Measuring ranges: 2 to 20 VAC/DC, 5 to 50 VAC/DC, 20 to 200 VAC/DC, 50 to 500 VAC/DC, 0.4 to 4 V_p AC
- Adjustable voltage 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 (DUA01) or plug-in module (PUA01)
- 22.5 mm Euronorm housing (DUA01) or 36 mm plug-in module (PUA01)
- LED indication for relay and power supply ON
- Galvanically separated power supply

Product Description

DUA01 and PUA01 are precise AC/DC over voltage monitoring relays. They can also be used as 1-phase or 3-phase over current monitoring relays when connected with MI or MP current

transformers. Owing to the built-in latch function, the ON-position of the relay output can be maintained. The red LED indicates the alarm status.

Ordering Key

DUA 01 C B23 500V

Housing	_____
Function	_____
Type	_____
Item number	_____
Output	_____
Power supply	_____
Range	_____

Type Selection

Mounting	Output	Supply: 24 to 48 VAC/DC	Supply: 115/230 VAC
DIN-rail	SPDT	DUA 01 C D48 500V	DUA 01 C B23 500V
Plug-in	SPDT	PUA 01 C D48 500V	PUA 01 C B23 500V

Input Specifications

Input (voltage level)	Terminals Y1, Y2	
DUA01	Terminals 5, 7	
PUA01	Terminals 5, 7	
Measuring ranges	Int. resist.	Max. volt.
Direct		
Selectable by DIP-switches		
2 to 20 VAC/DC	> 500 kΩ	600 V
5 to 50 VAC/DC	> 500 kΩ	600 V
20 to 200 VAC/DC	> 500 kΩ	600 V
50 to 500 VAC/DC	> 500 kΩ	600 V
0.4 to 4 V _p AC	> 500 kΩ	600 V
Max. voltage for 1 s		1000 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
Contact input	Terminals Z1, Y1	
DUA01	Terminals 8, 9	
PUA01	Terminals 8, 9	
Disabled	> 10 kΩ	
Enabled	< 500 Ω	
Latch disable	> 500 ms	

Note:

The input voltage cannot raise over 300 VAC/DC with respect to ground (PUA01 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	≥ 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 Rated operational voltage through terminals: A1, A2 or A3, A2 (DUA01) 2, 10 or 11, 10 (PUA01)	Overvoltage cat. III (IEC 60664, IEC 60038)	
D48:	24 to 48 VAC/DC ± 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	2 W	

General Specifications

Reaction time Alarm ON delay	< 100 ms (voltage rising from -20% to +20% set value)
Alarm OFF delay	< 300 ms (voltage decreasing from +20% to -20% set value)

Mode of Operation

DUA01 and PUA01 monitor both AC and DC over voltage. When connected with MI or MP current transformer (using the 0.4 - 4 V_p range) they can monitor 1-phase or 3-phase AC currents up to 500 A.

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 voltage has dropped min. 4% below the set point (see hysteresis), the relay releases when the interconnection between terminals Z1, Y1 or 8, 9 is interrupted or the power supply is interrupted as well.

Example 2 (MI CT)

(no connection between terminals Z1, Y1 or 8, 9)
The relay operates when the current flowing through the CT exceeds the set level. It releases when the current drops min. 4% below the set level (see hysteresis) or when power supply is interrupted.

Example 3 (MP CT)

(no connection between terminals Z1, Y1 or 8, 9 - latch function disabled)
The relay operates when the maximum current flowing through the CT exceeds the set level. It releases when the maximum current drops min. 4% below the set level (see hysteresis) or when power supply is interrupted.

General Specifications (cont.)

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 (DUA01), 2 (PUA01) -20 to 60°C, R.H. < 95% -30 to 80°C, R.H. < 95%	
Housing Dimensions	DUA01 PUA01	22.5 x 80 x 99.5 mm 36 x 80 x 94 mm PA66 or Noryl
Material	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	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC	
EMC Immunity	According to EN 60255-26 According to EN 61000-6-2	
Emissions	According to EN 60255-26 According to EN 61000-6-3	

Range - Level Setting

Adjust the measuring range setting the DIP switches 1 to 4 as shown below.
To access the DIP switches open the grey plastic cover using a screwdriver as shown below.

Centre knob:

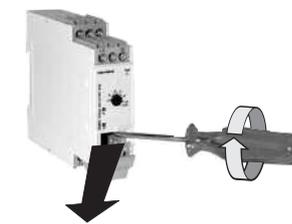
Setting of voltage on relative scale: from 10 to 110% of the full-scale value.

Hysteresis:

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

Approx. resistor values:

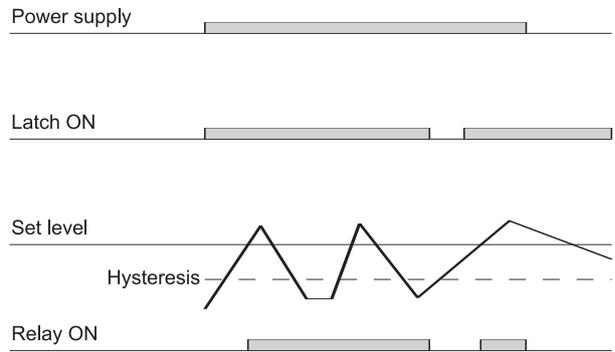
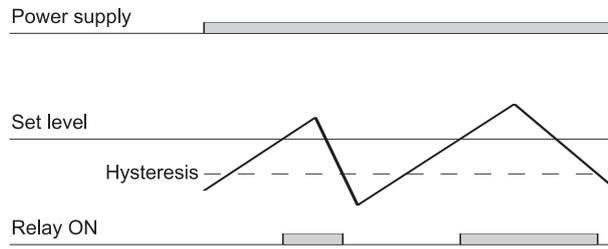
10%:	180 kΩ
25%:	47 kΩ
50%:	22 kΩ
75%:	15 kΩ
Latch:	< 500 Ω



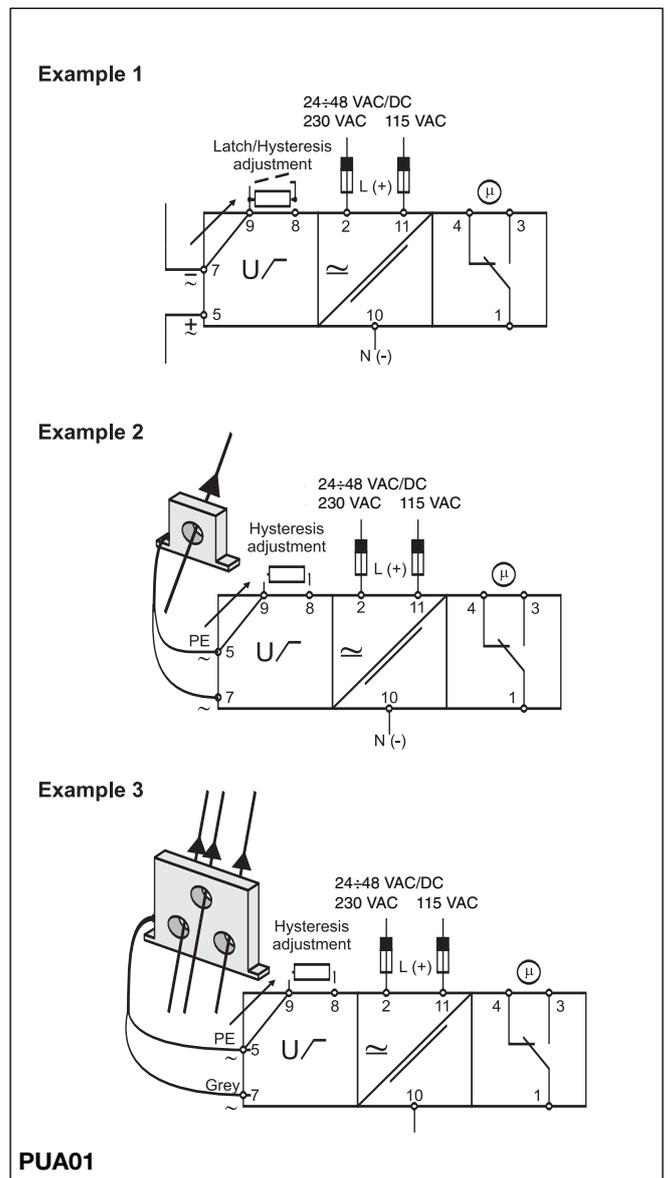
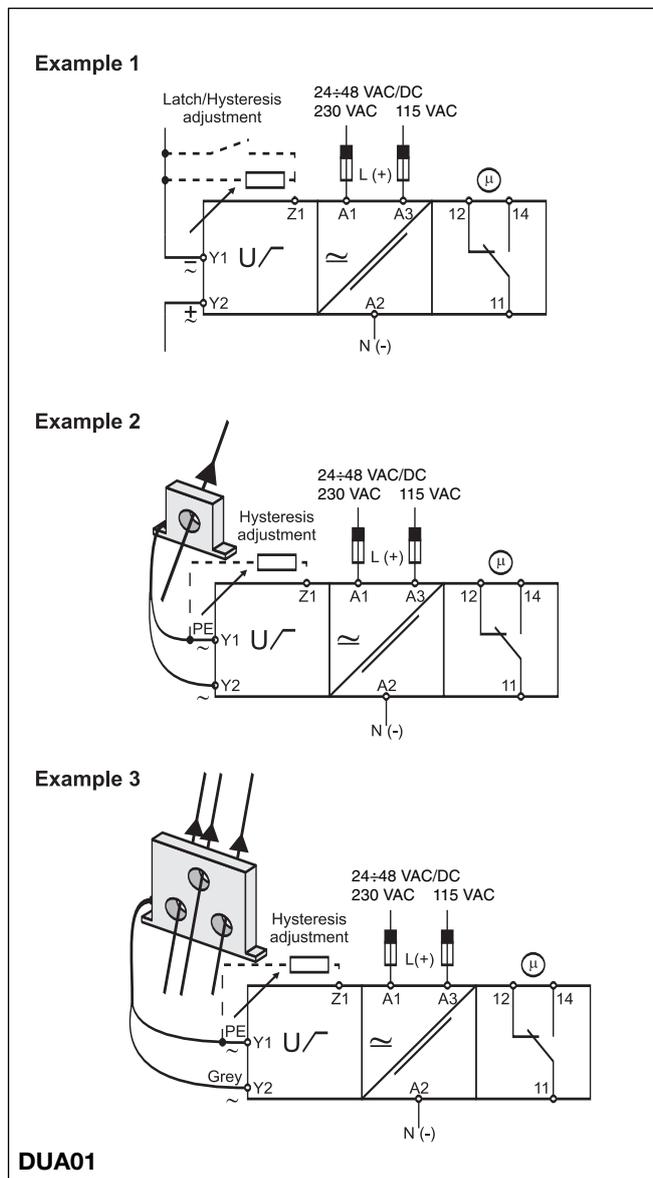
0Z	←								
1	□	□	□	□	□	□	□	□	□
2	□	□	□	□	□	□	□	□	□
3	□	□	□	□	□	□	□	□	□
4	□	□	□	□	□	□	□	□	□

Measuring range										
OFF	ON	OFF	0.4 to 4 V _p							
ON	OFF	2 to 20 VAC/DC								
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	5 to 50 VAC/DC
ON	OFF	ON	OFF	20 to 200 VAC/DC						
ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	50 to 500 VAC/DC

Operation Diagrams



Wiring Diagrams



Dimensions

