

Monitoring Relays

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

Types DUB01, PUB01

CARLO GAVAZZI



DUB01



PUB01

- TRMS AC/DC over or under voltage monitoring relays
- Selection of measuring range by DIP-switches
- Measuring ranges from 0.1 to 500 V AC/DC
- Adjustable voltage 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 50 022 (DUB01) or plug-in module (PUB01)
- 22.5 mm Euronorm housing (DUB01) or 36 mm plug-in module (PUB01)
- LED indication for relay, alarm and power supply ON

Product Description

DUB01 and PUB01 are precise TRMS AC/DC over or under voltage (selectable by DIP-switch) monitoring relays. 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

DUB 01 C B23 10V

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

Type Selection

Mounting	Output	Measuring range	Supply: 24 to 48 VAC/DC	Supply: 115/230 VAC
DIN-rail	SPDT	0.1 to 10 V AC/DC 2 to 500 V AC/DC	DUB 01 C D48 10V DUB 01 C D48 500V	DUB 01 C B23 10V DUB 01 C B23 500V
Plug-in	SPDT	0.1 to 10 V AC/DC 2 to 500 V AC/DC	PUB 01 C D48 10V PUB 01 C D48 500V	PUB 01 C B23 10V PUB 01 C B23 500V

Input Specifications

Input (voltage level) DUB01 PUB01	Terminals Y1, Y2 Terminals 5, 7		Contact input DUB01 PUB01 Disabled Enabled Latch disable	Terminals Z1, Y1 Terminals 8, 9 > 10 kΩ < 500 Ω > 500 ms
Measuring ranges Direct Selectable by DIP-switches	Int. resist.	Max. volt.		
..10V: 0.1 to 1 V AC/DC	>200 kΩ	100 V		
0.2 to 2 V AC/DC	>200 kΩ	100 V		
0.5 to 5 V AC/DC	>200 kΩ	100 V		
1 to 10 V AC/DC	>200 kΩ	100 V		
Max. voltage for 1 s		200 V		
..500V: 2 to 20 V AC/DC	>500 kΩ	350 V		
5 to 50 V AC/DC	>500 kΩ	350 V		
20 to 200 V AC/DC	>500 kΩ	600 V		
50 to 500 V AC/DC	>500 kΩ	600 V		
Max. voltage for 1 s		1000 V		
Note: The input voltage cannot raise over 300 VAC/DC with respect to ground (PUB01 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	Overvoltage cat. III (IEC 60664, IEC 60038)	
Rated operational voltage through terminals:		
A1, A2 or A3, A2 (DUB01)		
2, 10 or 11, 10 (PUB01)		
D48:	24 to 48 VAC/DC ± 15%	
B23:	45 to 65 Hz, insulated	
	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	3 W	

General Specifications

Power ON delay	1 s ± 0.5 s or 6 s ± 0.5 s
Reaction time	(input signal variation from -20% to +20% or from +20% to -20% of set value)
Alarm ON delay	< 100 ms
Alarm OFF delay	< 100 ms
Accuracy	(15 min warm-up time)
Temperature drift	± 1000 ppm/°C
Delay ON alarm	± 10% on set value ± 50 ms
Repeatability	± 0.5% on full-scale
Indication for	
Power supply ON	LED, green
Alarm ON	LED, red (flashing 2 Hz during delay time)
Output relay ON	LED, yellow
Environment	
Degree of protection	IP 20
Pollution degree	3 (DUB01), 2 (PUB01)
Operating temperature	-20 to 60°C, R.H. < 95%
Storage temperature	-30 to 80°C, R.H. < 95%
Housing	
Dimensions	DUB01: 22.5 x 80 x 99.5 mm PUB01: 36 x 80 x 94 mm
Weight	Approx. 150 g
Screw terminals	
Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Approvals	UL, CSA
CE Marking	Yes
EMC	
Immunity	Electromagnetic Compatibility
Emission	According to EN 61000-6-2 According to EN 61000-6-3

Mode of Operation

DUB01 and PUB01 monitor both AC and DC over or under voltage.

Example 1

(no connection between terminals Z1, Y1 or 8, 9 - latch function disabled)

The relay operates when the measured value exceeds (or drops below) the set level for more than the set delay time. It releases when the voltage

drops below (or exceeds) the set level (see hysteresis setting), or when power supply is interrupted.

Example 2

(connection between terminals Z1, Y1 or 8, 9 - latch 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 voltage has dropped below (or has exceeded) the set point (see hysteresis setting) the relay releases when the interconnection between terminals Z1, Y1 or 8, 9 is interrupted, or power supply is interrupted as well.

The red LED flashes until the delay time has expired or the measured value has dropped below the set point (see hysteresis setting).

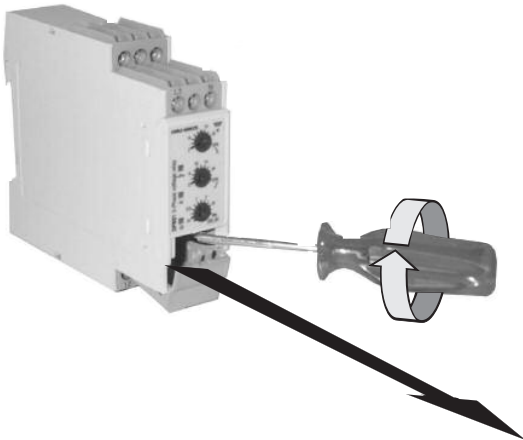
Note

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 input range setting the DIP switches 1 and 2 as shown below.
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: Voltage 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).

ON
1
2
3
4
5
6

Measuring range

Model	500 V	10 V
ON OFF	20 V	1 V
OFF OFF	50 V	2 V
ON ON	200 V	5 V
OFF ON	500 V	10 V

Relay working mode
ON: Normally De-Energized
OFF: Normally Energized

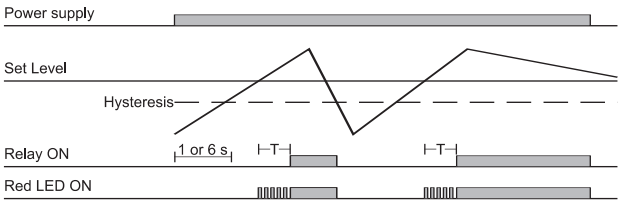
Power ON delay
ON: 6 s ± 0.5 s
OFF: 1 s ± 0.5 s

Contact input
ON: Latch function enable
OFF: Inhibit function enable

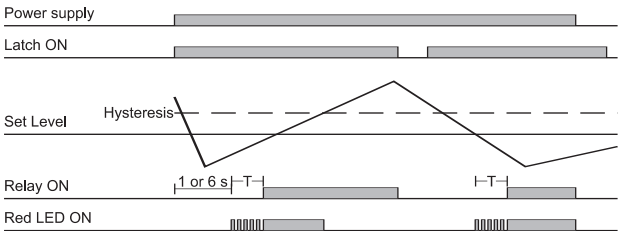
Monitoring function
ON: Over voltage
OFF: Under voltage

Operation Diagrams

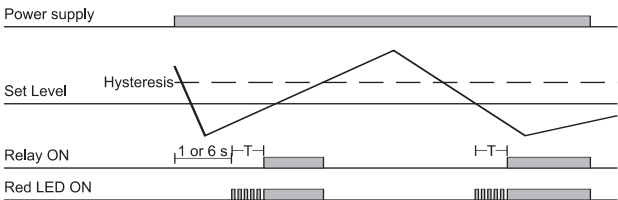
Over voltage - N.D. relay



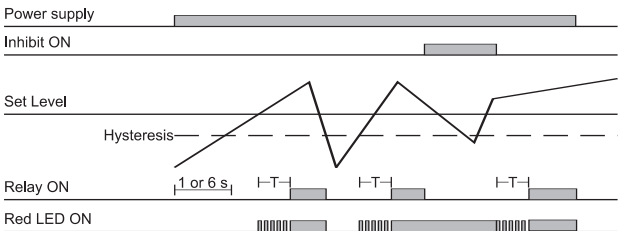
Under voltage - Latch function - N.D. relay



Under voltage - N.D. relay



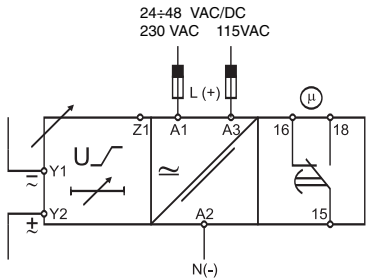
Over voltage - Inhibit function - N.D. relay



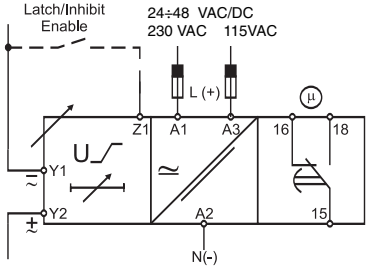


Wiring Diagrams

Example 1

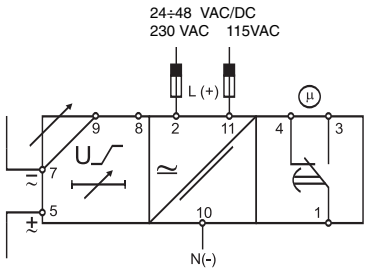


Example 2



DUB01

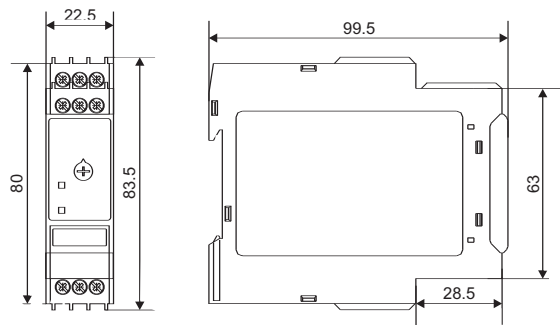
Example 2



PUB01

Dimensions

DIN-rail



Plug-in

