

Monitoring Relays

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

Type DUB71

CARLO GAVAZZI



- 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: 5 A SPDT relay N.D. or N.E. selectable
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 35.5 mm DIN-rail housing
- LED indication for relay, alarm and power supply ON

Product Description

DUB71 is a precise TRMS AC/DC over or under voltage (selectable by DIP-switch) monitoring relay. 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. 35.5 mm wide housing suitable both for back and front panel mounting.

Type Selection

Mounting	Output	Measuring range
DIN-rail	SPDT	0.1 to 10 V AC/DC
DIN-rail	SPDT	2 to 500 V AC/DC

Ordering Key

DUB 71 C B23 10V

Housing	
Function	
Type	
Item number	
Output	
Power supply	
Range	

Input Specifications

Input (voltage level)	Terminals Y1, Y2	
Measuring ranges		
Direct	Internal resist.	Max. volt.
Selectable by DIP-switch		
.10V: 0.1 to 1 V AC/DC	>120 kΩ	100 V
0.2 to 2 V AC/DC	>120 kΩ	100 V
0.5 to 5 V AC/DC	>120 kΩ	100 V
1 to 10 V AC/DC	>120 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
Contact input		
Disabled	Terminals Z1, Y1	
Enabled	> 10 kΩ	
Latch disable	< 500 Ω	
	> 500 ms	

Output Specifications

Output	SPDT relay 250 VAC
Contact ratings (AgSnO₂)	
Resistive loads	AC 1 DC 12
Small inductive loads	AC 15 DC 13
Mechanical life	≥ 30 x 10 ⁶ operations
Electrical life	≥ 10 ⁵ operations (at 5 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	
B48:	24/48 VAC ± 15% 45 to 65 Hz, insulated
B23:	115/230 VAC ± 15% 45 to 65 Hz, insulated

Dielectric voltage	AC supply
Supply to input	4 kV (1.2/50µs)
Supply to output	4 kV (1.2/50µs)
Input to output	4 kV (1.2/50µs)
Rated operational power	
AC	3 VA

General Specifications

Power ON delay	1 s ± 0.5 s or 6 s ± 0.5 s	Environment	
Reaction time	(input signal variation from -20% to +20% or from +20% to -20% of set value) < 100 ms < 100 ms	Degree of protection Pollution degree Operating temperature Storage temperature	IP 20 3 -20 to 60°C, R.H. < 95% -30 to 80°C, R.H. < 95%
Accuracy	(15 min warm-up time) ± 1000 ppm/°C ± 10% on set value ± 50 ms ± 0.5% on full-scale	Housing	Dimensions Material
Temperature drift Delay ON alarm Repeatability			35.5 x 81 x 67.2 mm PA 66
Indication for		Weight	Approx. 150 g
Power supply ON Alarm ON	LED, green LED, red (flashing 2 Hz during delay time) LED, yellow	Screw terminals	Max. 0.5 Nm acc. to IEC 60947
Output relay ON		Approvals	UL, CSA
		CE Marking	Yes
		EMC	Electromagnetic Compatibility Immunity Emission
			According to EN 61000-6-2 According to EN 61000-6-3

Mode of Operation

DUB71 monitor both AC and DC over or under voltage.

Example 1

(no connection between terminals Z1, Y1 - 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 - 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 is interrupted, or power supply is interrupted as well.

The yellow 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:

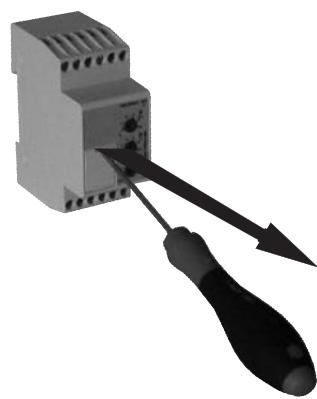
Setting of hysteresis on relative scale: 0 to 30% on set value.

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).



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	

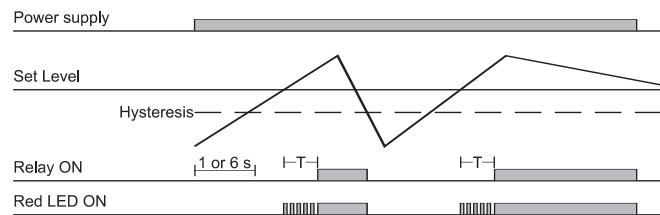
Power ON delay		
ON:	6 s ± 0.5 s	
OFF:	1 s ± 0.5 s	

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

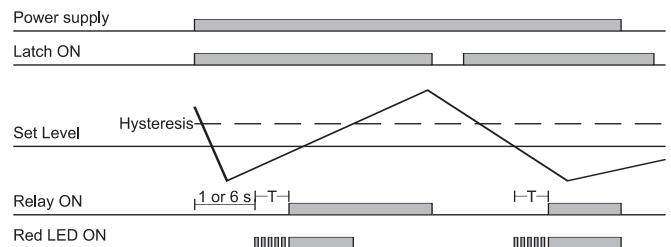
Monitoring function		
ON:	Over voltage	
OFF:	Under voltage	

Operation Diagrams

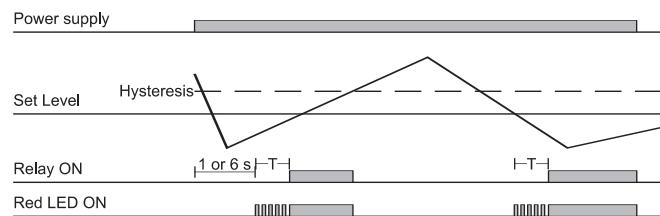
Over voltage - N.D. relay



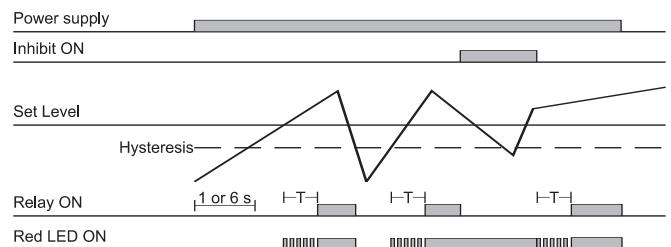
Under voltage - Latch function - N.D. relay



Under voltage - N.D. relay

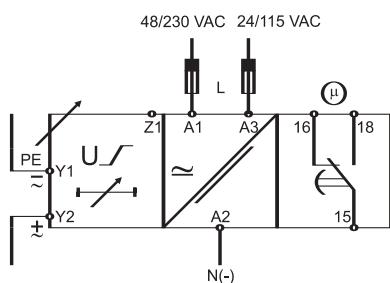


Over voltage - Inhibit function - N.D. relay

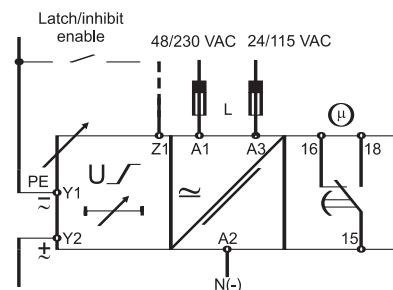


Wiring Diagrams

Example 1



Example 2



Dimensions

