Monitoring Relays
1-Phase True RMS AC/DC Over or Under Voltage
Type DUB71

- **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.

Ordering Key

DUB 71 C B23 10V

- **Housing**
- **Function**
- **Type**
- **Item number**
- **Output**
- **Power supply**
- **Range**

Type Selection

Mounting	Output	Measuring range	Supply: 24/48 VAC	Supply: 115/230 VAC
DIN-rail	SPDT	0.1 to 10 V AC/DC	**DUB 71 C B48 10V**	**DUB 71 C B23 10V**
DIN-rail	SPDT	2 to 500 V AC/DC	**DUB 71 C B48 500V**	**DUB 71 C B23 500V**

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		Terminals Z1, Y1	
Disabled		> 10 kΩ	
Enabled		< 500 Ω	
Latch disable		> 500 ms	

Output Specifications

Output		SPDT relay
Rated insulation voltage		250 VAC
Contact ratings ($AgSnO_2$)		μ
Resistive loads	AC 1	5 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 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
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
Operating temperature	-20 to 60°C, R.H. < 95%
Storage temperature	-30 to 80°C, R.H. < 95%

Housing	
Dimensions	35.5 x 81 x 67.2 mm
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

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.

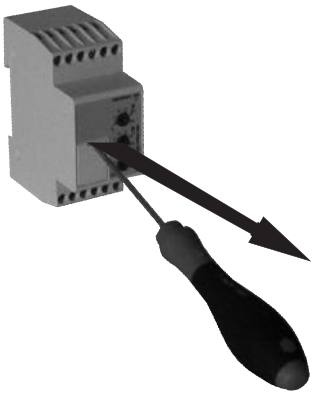
To access the DIP switches open the grey plastic cover as shown below.

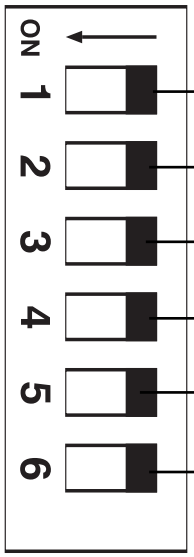
Selection of level and time delay:

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

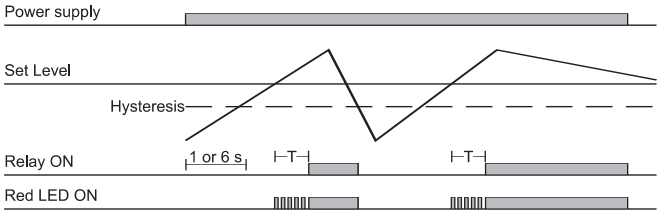
Power ON delay
ON: 6 s ± 0.5 s
OFF: 1 s ± 0.5 s

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

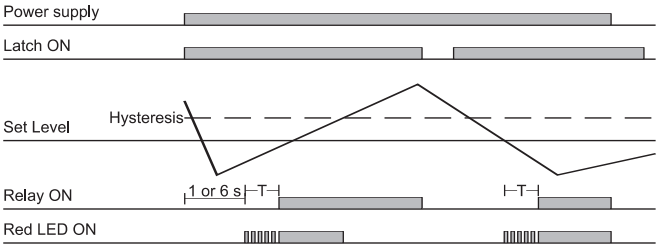
Monitoring function
ON: Over voltage
OFF: Under voltage

Operation Diagrams

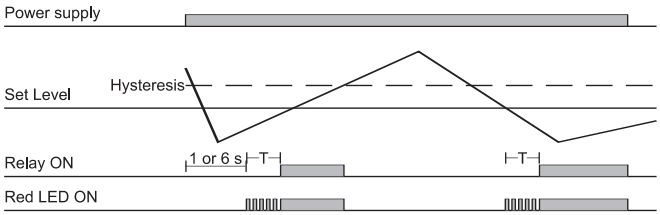
Over voltage - N.D. relay



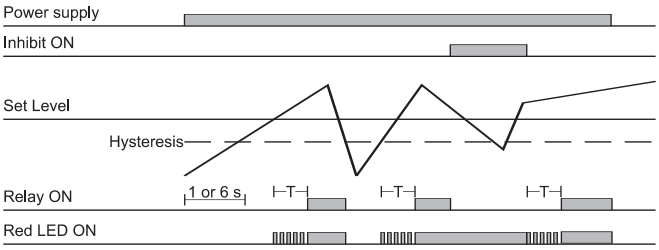
Under voltage - Latch function - N.D. relay



Under voltage - N.D. relay

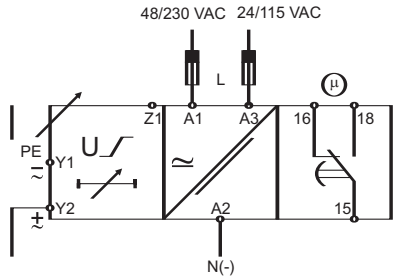


Over voltage - Inhibit function - N.D. relay

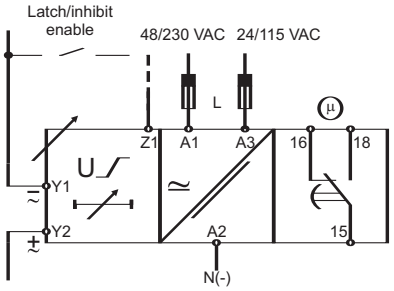


Wiring Diagrams

Example 1



Example 2



Dimensions