

# 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

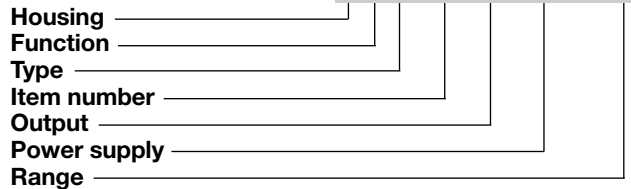
### Product Description

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**



### Type Selection

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

### Input Specifications

| Input (voltage level)    | Terminals Y1, Y2        |                   |
|--------------------------|-------------------------|-------------------|
| <b>Measuring ranges</b>  | <b>Internal resist.</b> | <b>Max. volt.</b> |
| Direct                   |                         |                   |
| Selectable by DIP-switch |                         |                   |
| <b>..10V:</b>            |                         |                   |
| 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             |
| <b>..500V:</b>           |                         |                   |
| 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            |
| <b>Contact input</b>     | Terminals Z1, Y1        |                   |
| Disabled                 | > 10 kΩ                 |                   |
| Enabled                  | < 500 Ω                 |                   |
| Latch disable            | > 500 ms                |                   |

### Output Specifications

| Output                                     | SPDT relay   |
|--|--|
| Rated insulation voltage                   | 250 VAC  |
| <b>Contact ratings (AgSnO<sub>2</sub>)</b> | μ  |
| Resistive loads                            | AC 1   |
|  | DC 12  |
| Small inductive loads                      | AC 15  |
|  | DC 13  |
| <b>Mechanical life</b>                     | ≥ 30 x 10 <sup>6</sup> operations                          |
| <b>Electrical life</b>                     | ≥ 10 <sup>5</sup> operations<br>(at 5 A, 250 V, cos φ = 1) |
| <b>Operating frequency</b>                 | ≤ 7200 operations/h  |
| <b>Dielectric strength</b>                 |  |
| Dielectric voltage                         | 2 kVAC (rms)   |
| Rated impulse withstand volt.              | 4 kV (1.2/50 μs)   |

## Supply Specifications

|   |  |   |   |
|---|--|---|---|
| <b>Power supply</b><br>Rated operational voltage through terminals:<br>A1, A2 or A3, A2 | B48: 24/48 VAC $\pm$ 15%<br>45 to 65 Hz, insulated   | <b>Dielectric voltage</b><br>Supply to input<br>Supply to output<br>Input to output | <b>AC supply</b><br>4 kV (1.2/50 $\mu$ s)<br>4 kV (1.2/50 $\mu$ s)<br>4 kV (1.2/50 $\mu$ s) |
|   | B23: 115/230 VAC $\pm$ 15%<br>45 to 65 Hz, insulated |   |   |

## General Specifications

|  |   |
|--|---|
| <b>Power ON delay</b><br>1 s $\pm$ 0.5 s or 6 s $\pm$ 0.5 s  | <b>Housing</b><br>Dimensions<br>Material<br><b>Weight</b><br>Approx. 150 g  |
| <b>Reaction time</b><br>(input signal variation from -20% to +20% or from +20% to -20% of set value)<br>Alarm ON delay < 100 ms<br>Alarm OFF delay < 100 ms                                  |   |
| <b>Accuracy</b><br>Temperature drift $\pm$ 1000 ppm/ $^{\circ}$ C<br>Delay ON alarm $\pm$ 10% on set value $\pm$ 50 ms<br>Repeatability $\pm$ 0.5% on full-scale                             | <b>Screw terminals</b><br>Tightening torque<br>Max. 0.5 Nm<br>acc. to IEC 60947   |
| <b>Indication for</b><br>Power supply ON<br>Alarm ON<br>Output relay ON  | <b>Product standard</b><br>EN 60255-6   |
| <b>Environment</b><br>Degree of protection IP 20<br>Pollution degree 3<br>Operating temperature -20 to 60 $^{\circ}$ C, R.H. < 95%<br>Storage temperature -30 to 80 $^{\circ}$ C, R.H. < 95% | <b>Approvals</b><br>UL, CSA   |
|  | <b>CE Marking</b><br>L.V. Directive 2006/95/EC<br>EMC Directive 2004/108/EC   |
|  | <b>EMC</b><br>Immunity<br>Emissions<br>According to EN 60255-26<br>According to EN 61000-6-2<br>According to EN 60255-26<br>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.

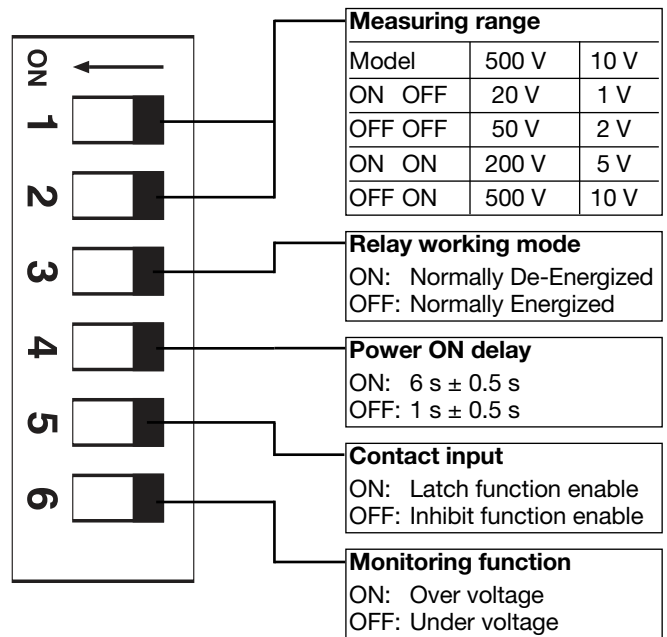
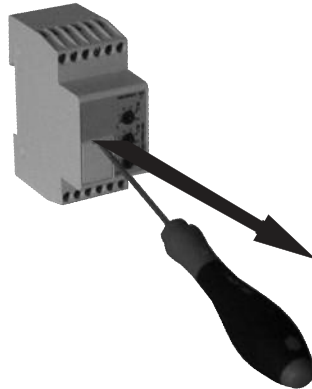
To access the DIP switches open the grey plastic cover as shown below.

### Selection of level and time delay:

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

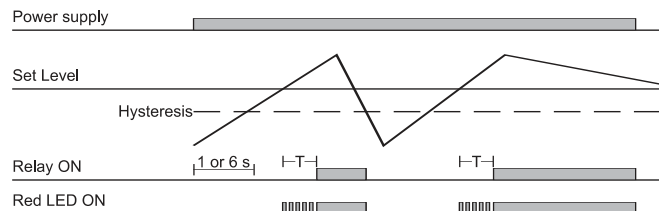
**Centre knob:**  
Voltage level setting on relative scale: 10 to 110% on full scale.

**Lower knob:**  
Setting of delay on alarm time on absolute scale (0.1 to 30 s).

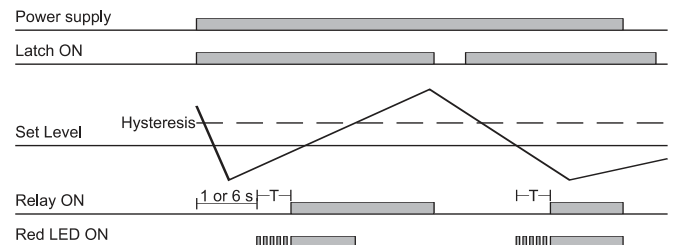


## Operation Diagrams

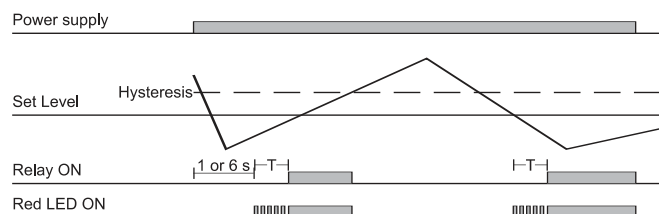
### Over voltage - N.D. relay



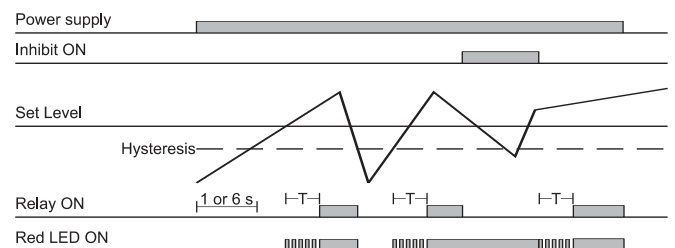
### Under voltage - Latch function - N.D. relay



### Under voltage - N.D. relay

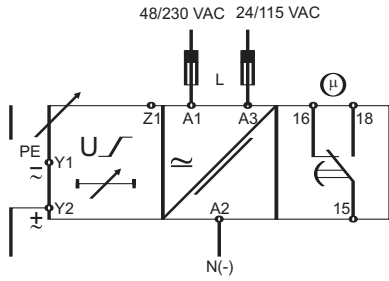


### Over voltage - Inhibit function - N.D. relay

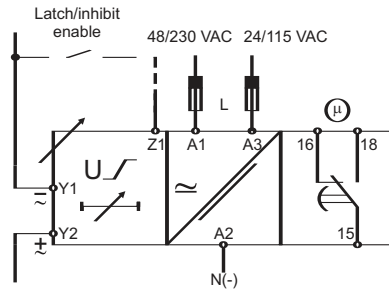


## Wiring Diagrams

Example 1



Example 2



## Dimensions

