

# Monitoring Relays

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

### Types DUB03, PUB03



DUB03



PUB03

- TRMS AC/DC over or under voltage monitoring relays
- Selection of measuring range by DIP-switches
- 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 (DUB03) or plug-in module (PUB03)
- 22.5 mm Euronorm housing (DUB03) or 36 mm plug-in module (PUB03)
- LED indication for relay, alarm and power supply ON

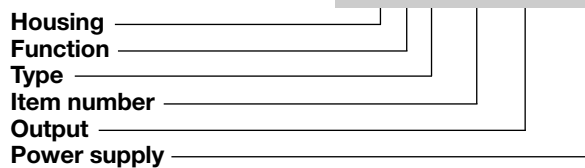
### Product Description

DUB03 and PUB03 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 03 C W24**



### Type Selection

| Mounting | Output | Frequency   |
|----------|--------|-------------|
| DIN-rail | SPDT   | 50 - 400 Hz |
| Plug-in  | SPDT   | 50 - 400 Hz |

| Supply: 12 to 240V AC/DC |
|--------------------------|
| DUB 03 C W24             |
| PUB 03 C W24             |

### Input Specifications

|   |  |
|---|--|
| <b>Input</b> (voltage level)<br>DUB03<br>PUB03  | Terminals A1, A2<br>Terminals 2, 10<br>Measure their own power supply  |
| <b>Measuring ranges</b><br>Direct<br>Selectable by DIP-switch<br>24 VAC/DC<br>48 VAC/DC<br>115 VAC/DC<br>240 VAC/DC | <b>Level</b><br>10 to 26 V    50 to 110%<br>10 to 53 V    20 to 110%<br>12 to 127 V    10 to 110%<br>24 to 264 V    10 to 110% |
| The input voltage cannot raise over 300 VAC/DC with respect to ground (PUB03 only)                                  |  |

### Output Specifications

|  |   |
|--|---|
| <b>Output</b><br>Rated insulation voltage  | SPDT relay<br>250 VAC   |
| <b>Contact ratings</b> (AgSnO <sub>2</sub> )<br>Resistive loads    AC 1<br>DC 12<br>Small inductive loads AC 15<br>DC 13 | μ<br>8 A @ 250 VAC<br>5 A @ 24 VDC<br>2.5 A @ 250 VAC<br>2.5 A @ 24 VDC |
| <b>Mechanical life</b>   | ≥ 30 x 10 <sup>6</sup> operations                                       |
| <b>Electrical life</b>   | ≥ 10 <sup>5</sup> operations<br>(at 8 A, 250 V, cos φ = 1)              |
| <b>Operating frequency</b>   | ≤ 7200 operations/h   |
| <b>Dielectric strength</b><br>Dielectric voltage<br>Rated impulse withstand volt.  | ≥ 2 kVAC (rms)<br>4 kV (1.2/50 μs)                                      |

### Supply Specifications

|   |  |
|---|--|
| <b>Power supply</b><br>Rated operational voltage through terminals:<br>A1 and A2 (DUB03) or<br>2 and 10 (PUB03)<br>Dielectric voltage | Overvoltage cat. III<br>(IEC 60664, IEC 60038)<br><br>12 to 240 V AC/DC<br>+10% -15%; 45 to 440 Hz<br>None |
| <b>Rated operational power</b>  | 4 VA (AC)<br>1.5W (DC)   |



## General Specifications

|                       |  |
|-----------------------|--|
| <b>Power ON delay</b> | 1 s ± 0.5 s or 6 s ± 0.5 s   |
| <b>Reaction time</b>  | (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   |
| <b>Accuracy</b>       | (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   |
| <b>Indication for</b> |  |
| Power supply ON       | LED, green   |
| Alarm ON              | LED, red (flashing 2 Hz during delay time)                                   |
| Output relay ON       | LED, yellow  |
| <b>Environment</b>    |  |
| Degree of protection  | IP 20  |
| Pollution degree      | 3 (DUB03), 2 (PUB03)   |
| Operating temperature | -20 to 60°C, R.H. < 95%  |
| Storage temperature   | -30 to 80°C, R.H. < 95%  |

|                         |                |  |
|-------------------------|----------------|--|
| <b>Housing</b>          |                |  |
| Dimensions              | DUB03<br>PUB03 | 22.5 x 80 x 99.5 mm<br>36 x 80 x 94 mm                 |
| Material                |                | PA66 or Noryl  |
| <b>Weight</b>           |                | Approx. 150 g  |
| <b>Screw terminals</b>  |                |  |
| Tightening torque       |                | Max. 0.5 Nm<br>acc. to IEC 60947                       |
| <b>Product standard</b> |                | EN 60255-6   |
| <b>Approvals</b>        |                | UL, CSA  |
| <b>CE Marking</b>       |                | L.V. Directive 2006/95/EC<br>EMC Directive 2004/108/EC |
| EMC Immunity            |                | According to EN 60255-26<br>According to EN 61000-6-2  |
| Emissions               |                | According to EN 60255-26<br>According to EN 61000-6-3  |

## Mode of Operation

DUB03 and PUB03 monitor both AC and DC over or under voltage.

**Example 1**  
(latch function disabled, ND relay)

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.

**Note**  
If the voltage drops below the minimum power supply voltage and the relay is set for undervoltage the output contact isn't necessarily ON.

**Example 2**  
(latch function enabled, NE relay)

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.

The relay releases when power supply is interrupted.

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

## 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.

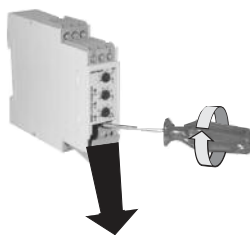
To access the DIP switches open the grey plastic cover as shown below.

**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 |     |       |  |
|-----------------|-----|-------|--|
| ON              | OFF | 24 V  |  |
| OFF             | OFF | 48 V  |  |
| ON              | ON  | 115 V |  |
| OFF             | ON  | 240 V |  |

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

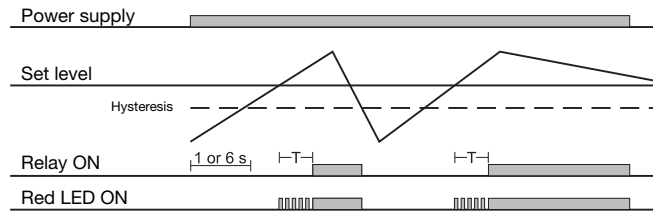
| Power ON delay |             |
|----------------|-------------|
| ON:            | 6 s ± 0.5 s |
| OFF:           | 1 s ± 0.5 s |

| Contact input |              |
|---------------|--------------|
| ON:           | Latching     |
| OFF:          | Not latching |

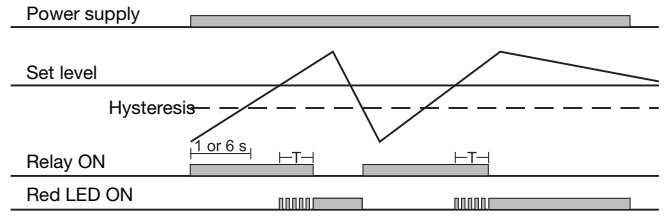
| Monitoring function |               |
|---------------------|---------------|
| ON:                 | Over voltage  |
| OFF:                | Under voltage |

## Operation Diagrams

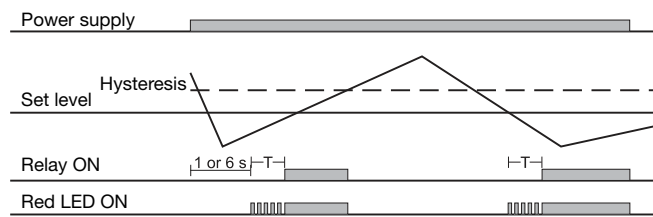
### Over voltage - N.D. relay



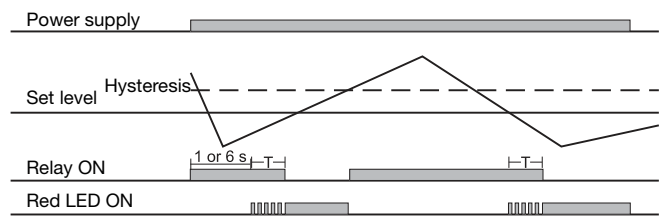
### Over voltage - N.E. relay



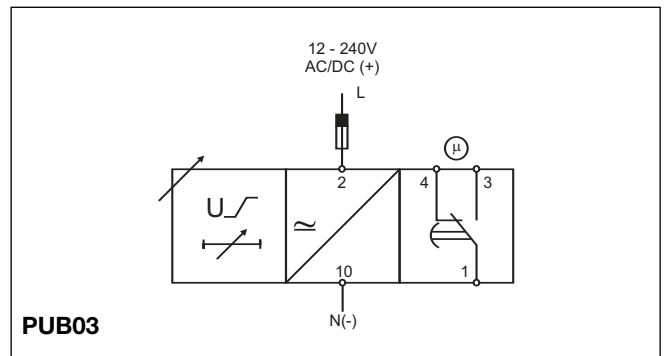
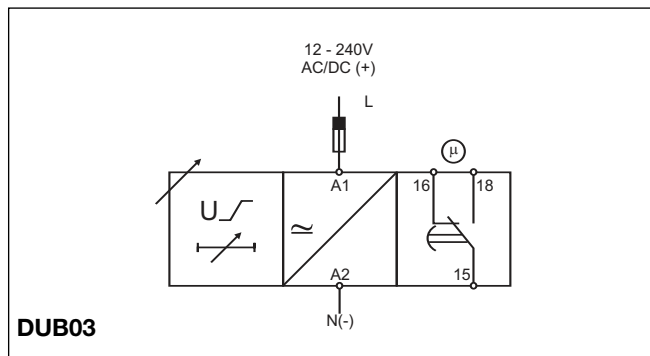
### Under voltage - N.D. relay



### Under voltage - N.E. relay



## Wiring Diagrams



## Dimensions

