

# Monitoring Relays

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

### Types DUB03, PUB03

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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

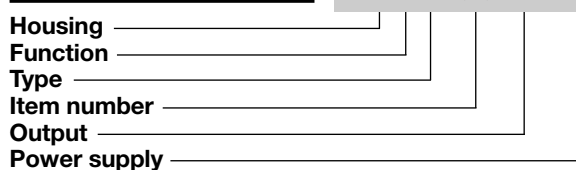
### Product Description

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) DUB03 PUB03	Terminals A1, A2 Terminals 2, 10 Measures on own power supply
<b>Measuring ranges</b> Direct Selectable by DIP-switch 24 VAC/DC 48 VAC/DC 115 VAC/DC 240 VAC/DC	<b>Level</b> 10 to 26 V    50 to 110% 10 to 53 V    20 to 110% 12 to 127 V    10 to 110% 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> Rated insulation voltage	SPDT relay 250 VAC
<b>Contact ratings</b> (AgSnO <sub>2</sub> ) Resistive loads    AC 1 DC 12 Small inductive loads AC 15 DC 13	μ 8 A @ 250 VAC 5 A @ 24 VDC 2.5 A @ 250 VAC 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 (at 8 A, 250 V, cos φ = 1)
<b>Operating frequency</b>	≤ 7200 operations/h
<b>Dielectric strength</b> Dielectric voltage Rated impulse withstand volt.	≥ 2 kVAC (rms) 4 kV (1.2/50 μs)

### Supply Specifications

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



## General Specifications

<b>Power ON delay</b>	1 s ± 0.5 s or 6 s ± 0.5 s	<b>Housing</b>	Dimensions	DUB03	22.5 x 80 x 99.5 mm
<b>Reaction time</b>	(input signal variation from -20% to +20% or from +20% to -20% of set value)			PUB03	36 x 80 x 94 mm
Alarm ON delay	< 100 ms	<b>Weight</b>			Approx. 150 g
Alarm OFF delay	< 100 ms	<b>Screw terminals</b>			
<b>Accuracy</b>	(15 min warm-up time)	Tightening torque			Max. 0.5 Nm acc. to IEC 60947
Temperature drift	± 1000 ppm/°C	<b>Approvals</b>			UL, CSA
Delay ON alarm	± 10% on set value ± 50 ms	<b>CE Marking</b>			Yes
Repeatability	± 0.5% on full-scale	<b>EMC</b>			
<b>Indication for</b>		Immunity			Electromagnetic Compatibility According to EN 61000-6-2
Power supply ON	LED, green	Emission			According to EN 61000-6-3
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%				

## 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.

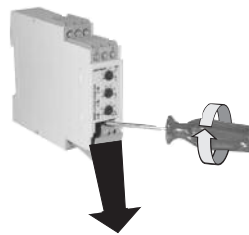
To access the DIP switches open the grey plastic cover as shown below.

**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

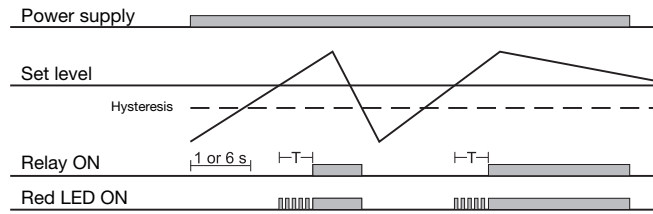
Power ON delay	
ON:	6 s ± 0.5 s
OFF:	1 s ± 0.5 s

Contact input	
ON:	Latching
OFF:	Not latching

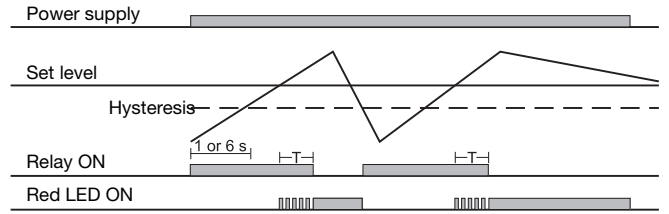
Monitoring function	
ON:	Over voltage
OFF:	Under voltage

## Operation Diagrams

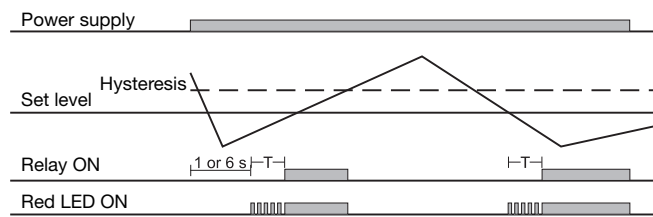
### Over voltage - N.D. relay



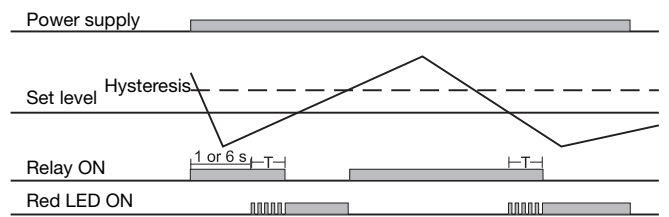
### Over voltage - N.E. relay



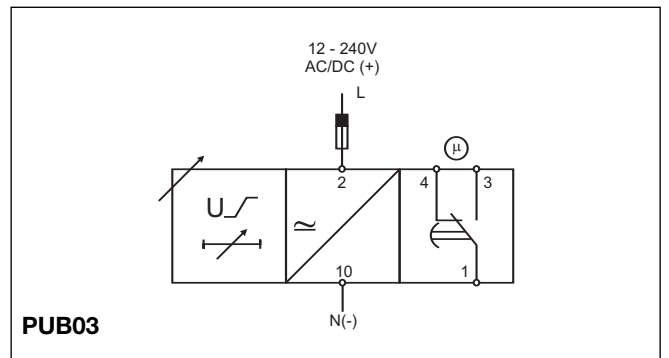
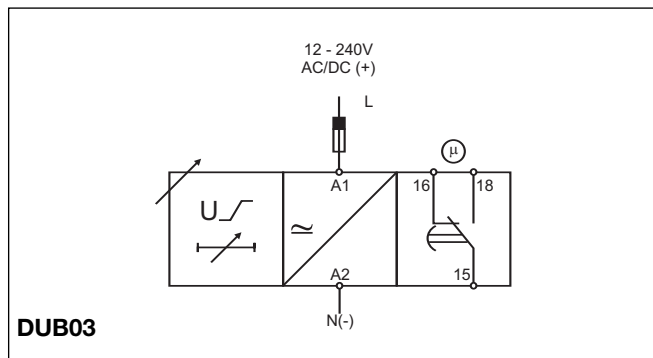
### Under voltage - N.D. relay



### Under voltage - N.E. relay



## Wiring Diagrams



## Dimensions

