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

Housing
Function
Type
Item number
Output
Power supply

Type Selection

Mounting	Output	Frequency	Supply: 12 to 240V AC/DC
DIN-rail	SPDT	50 - 400 Hz	**DUB 03 C W24**
Plug-in	SPDT	50 - 400 Hz	**PUB 03 C W24**

Input Specifications

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

Output Specifications

Output		SPDT relay
Rated insulation voltage		250 VAC
Contact ratings ($AgSnO_2$)		µ
Resistive loads	AC 1	8 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 8 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 and A2 (DUB03) or 2 and 10 (PUB03)	12 to 240 V AC/DC +10% -15%; 45 to 440 Hz
Dielectric voltage	None
Rated operational power	4 VA (AC) 1.5W (DC)

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 (DUB03), 2 (PUB03)
Operating temperature		-20 to 60°C, R.H. < 95%
Storage temperature		-30 to 80°C, R.H. < 95%
Housing		
Dimensions	DUB03	22.5 x 80 x 99.5 mm
	PUB03	36 x 80 x 94 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

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.

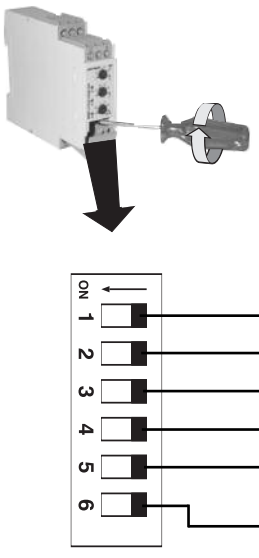
To access the DIP switches open the grey plastic cover as shown below.

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

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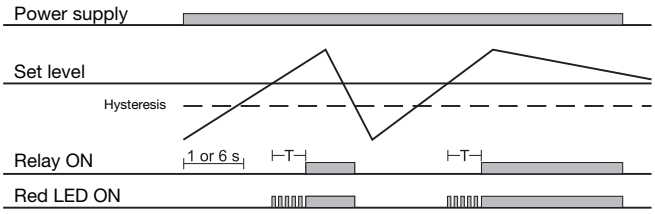
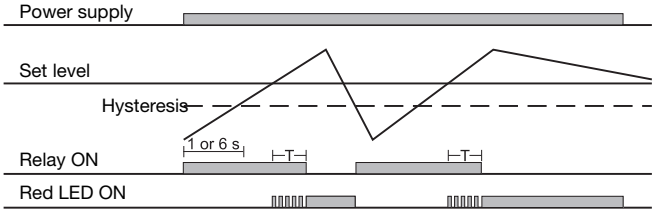
Operation Diagrams

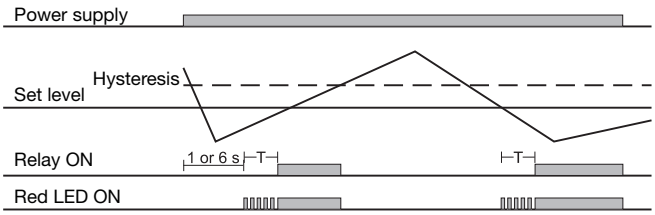
Over voltage - N.D. relay



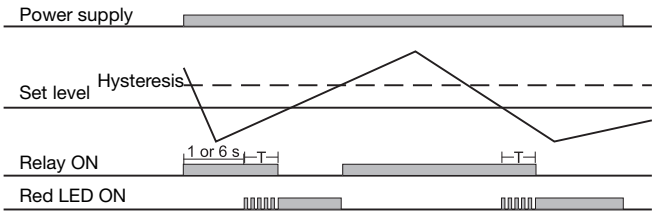
Over voltage - N.E. relay



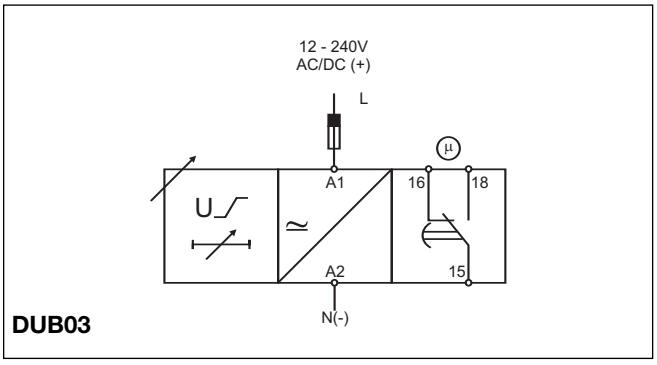
Under voltage - N.D. relay

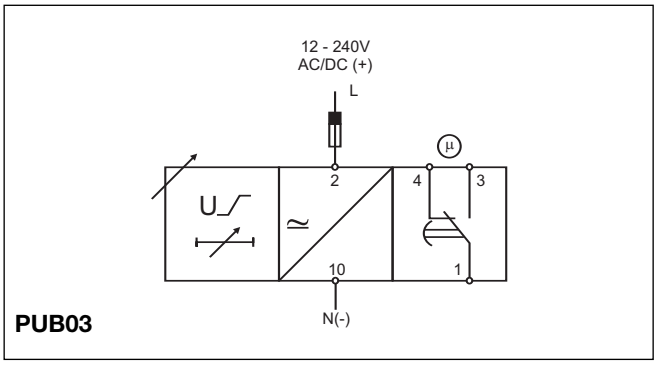


Under voltage - N.E. relay

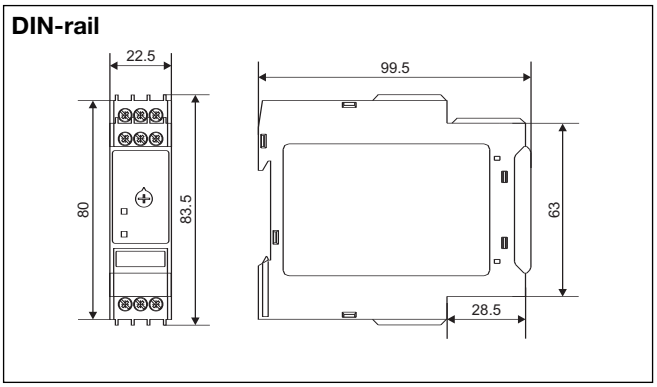


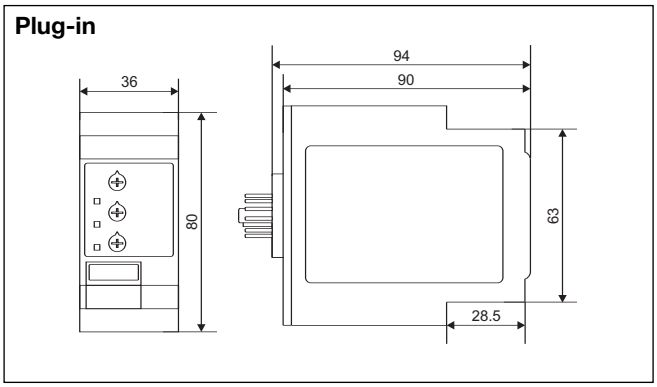
Wiring Diagrams





Dimensions





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