

Monitoring Relays

1-Phase True RMS AC Over/Under Voltage

Types DUB02, PUB02

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DUB02



PUB02

- TRMS AC over/under voltage monitoring relays
- Measuring if power supply is within set limits
- Measure on own power supply
- Measuring ranges: 24, 115, 230 VAC
- Power ON delay 1 or 6 s selectable by DIP-switch
- Separately adjustable upper/lower level on relative scale
- Adjustable delay on alarm or on recovery (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 (DUB02) or plug-in module (PUB02)
- 22.5 mm Euronorm housing (DUB02) or 36 mm plug-in module (PUB02)
- LED indication for relay, alarm and power supply ON

Product Description

DUB02 and PUB02 are precise TRMS AC window voltage monitoring relays. The relays monitor their own power supply which is selectable by DIP-switch (24, 115 or 230 VAC). The advantage of using the latch function is that the relay can be kept energized

even after the end of the alarm condition. 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 02 C T23

Housing _____
 Function _____
 Type _____
 Item number _____
 Output _____
 Power supply _____

Type Selection

Mounting	Output	Supply: 24, 115, 230 VAC
DIN-rail	SPDT	DUB 02 C T23
Plug-in	SPDT	PUB 02 C T23

Input Specifications

Input		
Own power supply	DUB02: PUB02:	A1, A2 (24, 115, 230 VAC) 2, 10 (24, 115, 230 VAC)
Measuring ranges		
Selectable by DIP-switch		
24 VAC	Upper level	-5% to +20%
115 VAC	Lower level	-20% to +5%
230 VAC		22.8 to 28.8 V 19.2 to 25.2 V
		109 to 138 V 92 to 121 V
		218 to 275 V 184 to 242 V
Contact input		
DUB02		Terminals Z1, Z2
PUB02		Terminals 8, 9
Disabled		> 10 kΩ
Enabled		< 500 Ω
Pulse width		> 500 ms
Hysteresis		~ 2% of set value - fixed

Output Specifications

Output	SPDT relay
Rated insulation voltage	250 VAC
Contact ratings (AgSnO₂)	
Resistive loads	μ
AC 1	8 A @ 250 VAC
DC 12	5 A @ 24 VDC
Small inductive loads	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 Rated operational voltage through terminals: A1 and A2 (DUB02) or 2 and 10 (PUB02)	Overvoltage cat. III (IEC 60664, IEC 60038)
Dielectric voltage	24 VAC $\pm$ 20%, 115 VAC $\pm$ 20% or 230 VAC $\pm$ 20%
Dielectric voltage Supply to output	None
Rated operational power	4 kV
	4 VA

General Specifications

Power ON delay	1 s $\pm$ 0.5 s or 6 s $\pm$ 0.5 s
Reaction time Alarm ON delay Alarm OFF delay	(input signal variation from -20% to +20% or from +20% to -20% of set value) < 200 ms < 200 ms

General Specifications (cont.)

Accuracy Temperature drift Delay ON alarm Repeatability	(15 min warm-up time) $\pm$ 1000 ppm/ $^{\circ}$ C $\pm$ 10% on set value $\pm$ 50 ms $\pm$ 0.5% on full-scale
Indication for Power supply ON Alarm ON Output relay ON	LED, green LED, red (flashing 2 Hz during delay time) LED, yellow
Environment Degree of protection Pollution degree Operating temperature Storage temperature	IP 20 3 (DUB02), 2 (PUB02) -20 to 60 $^{\circ}$ C, R.H. < 95% -30 to 80 $^{\circ}$ C, R.H. < 95%
Housing dimensions DIN-rail version Plug-in version	22.5 x 80 x 99.5 mm 36 x 80 x 87 mm
Weight	Approx. 150 g
Screw terminals Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Approvals	UL, CSA
CE Marking	Yes
EMC Immunity Emission	Electromagnetic Compatibility According to EN 61000-6-2 According to EN 50081-1

Mode of Operation

DUB02 and PUB02 monitor the TRMS value of their own power supply.

Example 1

(no connection between terminals Z1, Z2 or 8, 9 - Delay ON alarm - N.E. relay)
The relay operates and the yellow LED is ON as long as the measured value is within the upper and lower limits.

The relay releases after the adjustable time delay when the measured voltage exceeds the upper set level or drops below the lower set level. The red LED flashes until the delay time has expired or the measured value falls off the limits.

Example 2

(connection between termi-

nals Z1, Z2 or 8, 9 - latching function enabled - delay on recovery - N.E. relay)
The relay operates and the yellow LED is ON as long as the measured value is within the upper and lower limits. The relay releases and latches in alarm position as soon as the measured voltage exceeds the upper set level or drops below the lower set level. Pro-

vided that the voltage has dropped below the upper set level (minus hysteresis) or exceeded the lower set level (plus hysteresis) for more than the set delay time, the relay operates when the interconnections between terminals Z1, Z2 or 8, 9 are interrupted. The red LED flashes until the delay time has expired or the measured value falls off the limits.

Function/Range/Level and Time Delay Setting

Adjust the input range setting the DIP switches 5 and 6 as shown on the right.

Select the desired function setting the DIP switches 1 to 4 as shown on the right.

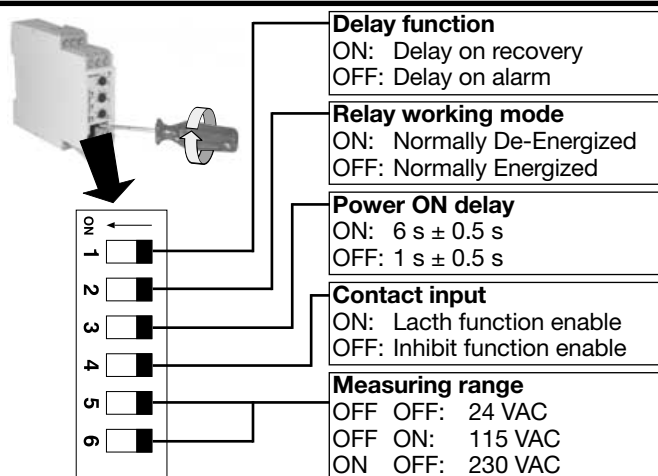
To access the DIP switches open the grey plastic cover as shown on the right.

Selection of level and time delay:

Upper knob:
Setting of upper level on relative scale: -5% to +20% of set power supply voltage.

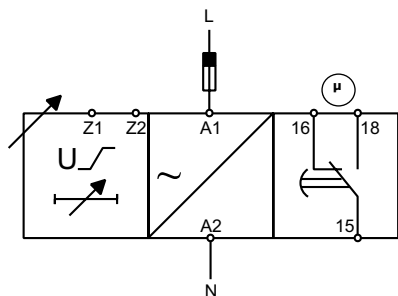
Centre knob:
Setting of lower level on relative scale: -20% to +5% of set power supply voltage.

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

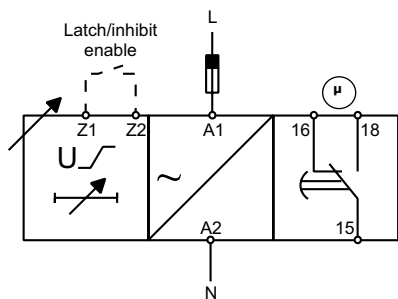


Wiring Diagrams

Example 1

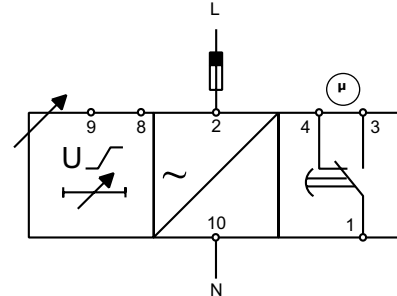


Example 2

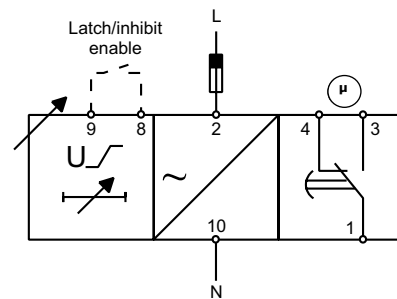


DUB02

Example 1



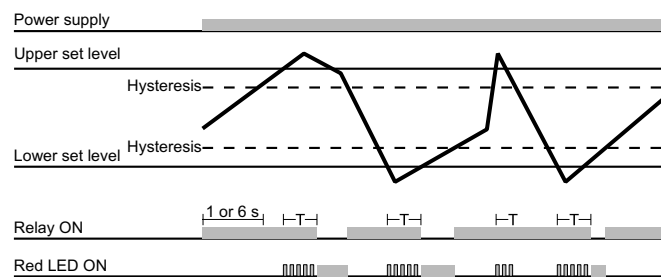
Example 2



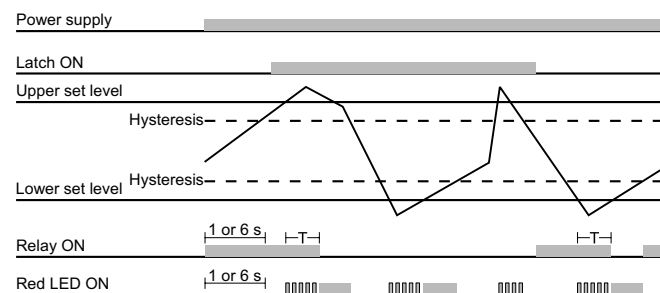
PUB02

Operation Diagrams

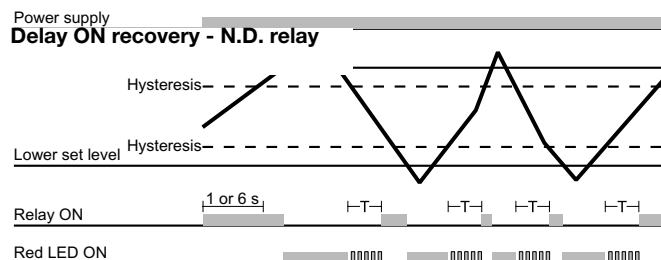
Delay ON alarm - N.E. relay



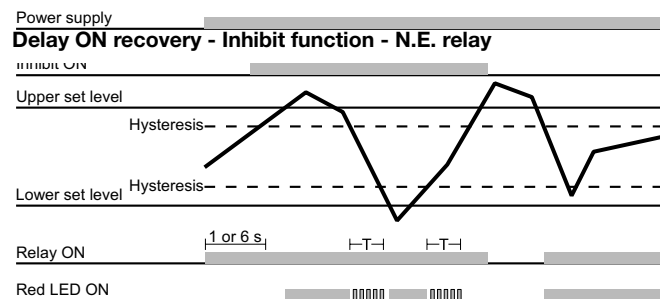
Delay ON alarm - Latch function - N.E. relay



Delay ON recovery



Delay ON recovery - Inhibit function





Dimensions

