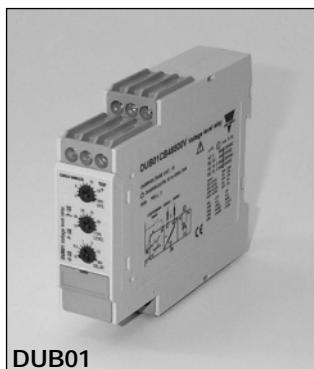


# Monitoring Relays

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

### Types DUB01, PUB01



DUB01



PUB01

- 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: 8 A SPDT relay N.D. or N.E. selectable
- For mounting on DIN-rail in accordance with DIN/EN 50 022 (DUB01) or plug-in module (PUB01)
- 22.5 mm Euronorm housing (DUB01) or 36 mm plug-in module (PUB01)
- LED indication for relay, alarm and power supply ON

### Product Description

DUB01 and PUB01 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 01 C B23 10V



### Type Selection

Mounting	Output	Measuring range	Supply: 24 VDC	Supply: 48 VDC	Supply: 24/48 VAC	Supply: 115/230 VAC
DIN-rail	SPDT	0.1 to 10 V AC/DC	DUB 01 C 724 10V	DUB 01 C 748 10V	DUB 01 C B48 10V	DUB 01 C B23 10V
		2 to 500 V AC/DC	DUB 01 C 724 500V	DUB 01 C 748 500V	DUB 01 C B48 500V	DUB 01 C B23 500V
Plug-in	SPDT	0.1 to 10 V AC/DC	PUB 01 C 724 10V	PUB 01 C 748 10V	PUB 01 C B48 10V	PUB 01 C B23 10V
		2 to 500 V AC/DC	PUB 01 C 724 500V	PUB 01 C 748 500V	PUB 01 C B48 500V	PUB 01 C B23 500V

### Input Specifications

<b>Input</b>			
Voltage level	DUB01: Terminals Y1, Y2 PUB01: Terminals 5, 7		
<b>Measuring ranges</b>	<b>Internal resist.</b>	<b>Max. volt.</b>	
..10V:	0.1 to 1 V AC/DC	>200 kΩ	100 V
	0.2 to 2 V AC/DC	>200 kΩ	100 V
	0.5 to 5 V AC/DC	>200 kΩ	100 V
	1 to 10 V AC/DC	>200 kΩ	100 V
	Max. voltage for 1 s		200 V
..500V:	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>Note:</b>	The input voltage cannot raise over 300 VAC/DC with respect to ground (PUB01 only)		
<b>Contact input</b>			
DUB01	Terminals Z1, Y1		
PUB01	Terminals 8, 9		
Disabled	> 10 kΩ		
Enabled	< 500 Ω		
Latch disable	> 500 ms		

### Output Specifications

<b>Output</b>	SPDT relay
Rated insulation voltage	250 VAC
<b>Contact ratings (AgSnO<sub>2</sub>)</b>	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
<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	≥ 2 kVAC (rms)
Rated impulse withstand volt.	4 kV (1.2/50 μs)



## Supply Specifications

<b>Power supply</b> Rated operational voltage through terminals: A1, A2 or A3, A2 (DUB01) 2, 10 or 11, 10 (PUB01) 724: 748: B48: B23:	Overvoltage cat. III (IEC 60664, IEC 60038)	
	24 VDC $\pm$ 20%, insulated	
	48 VDC $\pm$ 20%, insulated	
	24/48 VAC $\pm$ 15%	
	45 to 65 Hz, insulated	
	115/230 VAC $\pm$ 15%	
	45 to 65 Hz, insulated	
<b>Dielectric voltage</b> Supply to input Supply to output Input to output	<b>DC supply</b> 2 kV 4 kV 4 kV	<b>AC supply</b> 4 kV 4 kV 4 kV
<b>Rated operational power</b> AC DC	4 VA 3 W	

## General Specifications

<b>Power ON delay</b>	1 s $\pm$ 0.5 s or 6 s $\pm$ 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 Alarm OFF delay
	< 100 ms < 100 ms
<b>Accuracy</b> 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
<b>Indication for</b> Power supply ON Alarm ON  Output relay ON	LED, green LED, red (flashing 2 Hz during delay time) LED, yellow
<b>Environment</b> Degree of protection Pollution degree Operating temperature Storage temperature	IP 20 3 (DUB01), 2 (PUB01) -20 to 60 $^{\circ}$ C, R.H. < 95% -30 to 80 $^{\circ}$ C, R.H. < 95%
<b>Housing dimensions</b> DIN-rail version Plug-in version	22.5 x 80 x 99.5 mm 36 x 80 x 87 mm
<b>Weight</b>	Approx. 150 g
<b>Screw terminals</b> Tightening torque	Max. 0.5 Nm acc. to IEC 60947
<b>Approvals</b>	UL, CSA (except 748)
<b>CE Marking</b>	Yes
<b>EMC</b> Immunity Emission	Electromagnetic Compatibility According to EN 61000-6-2 According to EN 50081-1

## Mode of Operation

DUB01 and PUB01 monitor both AC and DC over or under voltage.

### Example 1

(no connection between terminals Z1, Y1 or 8, 9 - 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 or 8, 9 - 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 or 8, 9 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.