Instruction Manual

Voltage Monitoring Relay
120 VAC, 240 VAC, 24 VDC

Features

- LEDs indicating normal and fault conditions
- Adjustable time delay 0 - 10 sec.
- Adjustment of voltage levels and delay via potentiometers
- Voltage sensing capability for over and under voltage in ranges:

240 AC
AC 48 - 276 Vrms
120 AC
AC 25 - 150 Vrms
24 VDC
DC 6 - 30 V

This device is designed to be used in single phase applications. Connections to this device must be made according to the details in this instruction sheet. Installation, wiring, setting and servicing should be performed by qualified electrician staff who understand this instruction sheet and functions of the device.

Ensure that all power has been removed from the device prior to beginning the installation. Qualified installer must also ensure the device is being installed into a temperature controlled environment which will guarantee the specified operating temperature range. For installation and setting use a screw driver with 2 mm tip.

Principle of operation

Legend:

Umax - upper voltage threshold

Un - measured voltage

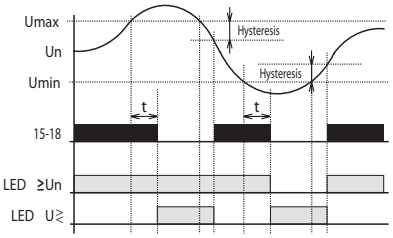
Umin - lower voltage threshold

15-18 - output contact state

LED ≥ Un - green LED state

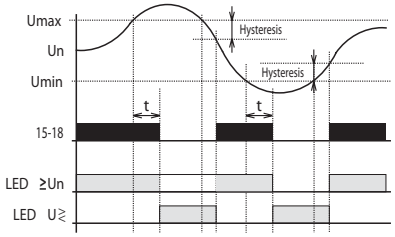
LED U ≷ - red LED state

120 AC, 240 AC



Voltage Umin as % of Umax (30-99% Umax)

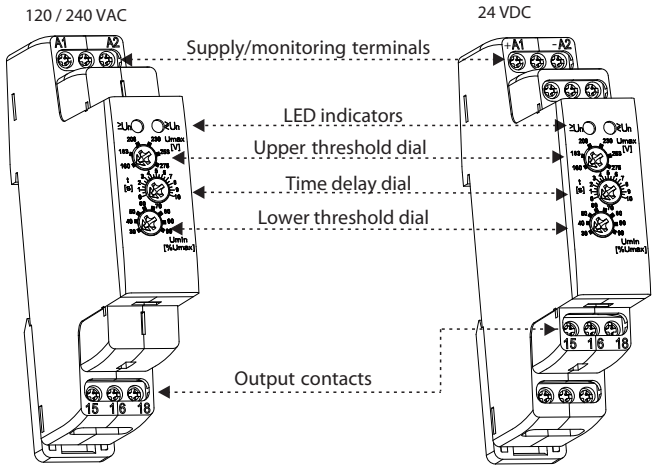
24 DC



Voltage Umin as % of Umax (30-99% Umax)

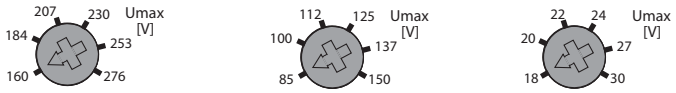
Voltage monitoring relays serve to monitor level of voltage in in single-phase circuits. Monitored voltage is also the supply voltage for the device.
In normal state the output relay is pernamently energized and when there is a deviation above or under the adjusted level, the relay de-energizes after preset time delay.
The time delay allows to eliminate false sensing of short over- and under-voltage spikes. The device also introduces the return to normal state hysteresis (up to 6% of adjustment voltage) to suppress erroneous sensing of short fluctuations around threshold voltages.

Product Layout

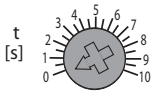


Description of control components

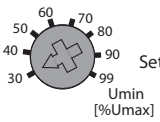
Setting of upper voltage threshold.



Once monitored voltage reaches the Umax, the time delay is initiated. After time delay is complete, the contacts 15-18 open and both green and red LED are ON.



Time delay before contacts transfer once fault condition is reached.

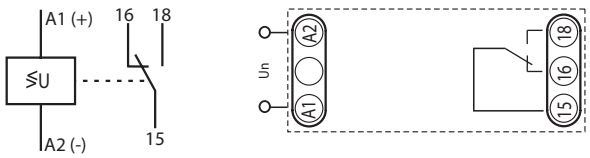


Setting up lower voltage threshold.

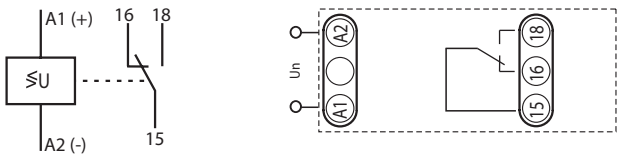
Once monitored voltage reaches the Umin, the time delay is initiated. After time delay is complete, the contacts 15-18 open and only red LED is ON.

Connection

120 AC, 240 AC



24 VDC

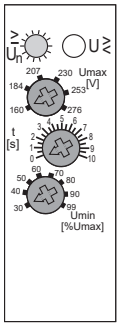


RELAY CONTACT 15 A	LOAD							
				70µF		AC1	AC3	AC15
AgNi	1000 W					4000 VA	0.9 kW	750 VA

Technical parameters

Supply and measuring	240 VAC	120 VAC	24 VDC
Terminals:	A1 - A2	A1 - A2	A1 - A2
Supply voltage:	in range of monitored voltage	in range of monitored voltage	in range of monitored voltage
Consumption:	AC max. 1.2 VA	AC max. 1.2 VA	DC max. 1.2 W
Upper threshold (Umax):	AC 160 - 276 V	AC 85 - 150 V	DC 18 - 30 V
Lower threshold (Umin):	30 - 99 % Umax	30 - 99 % Umax	30 - 99 % Umax
Time delay:	adjustable, 0 - 10 s	adjustable, 0 - 10 s	adjustable, 0 - 10 s
Accuracy			
Setting accuracy (mechanical):	5 %	5 %	5 %
Repeat accuracy:	<1 %	<1 %	<1 %
Temperature drift:	< 0.1 % / °C	< 0.1 % / °C	< 0.1 % / °C
Tolerance of limit values:	5 %	5 %	5 %
Hysteresis (from fault to normal):	2 - 6 % of adjusted value	2 - 6 % of adjusted value	2 - 6 % of adjusted value
Output			
Number of contacts:	1x SPDT, AgNi	1x SPDT, AgNi	1x SPDT, AgNi
Rated current:	15 A / AC1	15 A / AC1	15 A / AC1
Breaking capacity:	4000 VA / AC1	4000 VA / AC1	4000 VA / AC1
Inrush current:	30 A / < 3 s	30 A / < 3 s	30 A / < 3 s
Switching voltage:	250 V AC	250 V AC	250 V AC
Output indication:	red / green LED	red / green LED	red / green LED
Mechanical life (no load):	15,000,000 cycles	15,000,000 cycles	15,000,000 cycles
Electrical life (@ rated current):	30,000 cycles, AC-1	30,000 cycles, AC-1	30,000 cycles, AC-1
Operating temperature:	-20 .. +55 °C	-20 .. +55 °C	-20 .. +55 °C
Storage temperature:	-30 .. +70 °C	-30 .. +70 °C	-30 .. +70 °C
Electrical strength:	4 kV (supply - output)	4 kV (supply - output)	4 kV (supply - output)
Operating position:	any	any	any
Mounting:	DIN rail EN 60715	DIN rail EN 60715	DIN rail EN 60715
Protection degree:	IP 20	IP 20	IP 20
Overvoltage category:	III.	III.	III.
Pollution degree:	2	2	2
Terminal wire size (maximum):	14 AWG (2.5 mm^2)	14 AWG (2.5 mm^2)	14 AWG (2.5 mm^2)
Terminal torque (maximum):	7.1 lb-in (0.8 Nm)	7.1 lb-in (0.8 Nm)	7.1 lb-in (0.8 Nm)
Dimensions:	90 x 17.6 x 64 mm	90 x 17.6 x 64 mm	90 x 17.6 x 64 mm
Weight:	73 g	73 g	87 g
Standards:	UL E234203, EN 61010-1 EN 60255-26, EN 60255-27	UL E234203, EN 61010-1 EN 60255-26, EN 60255-27	UL E234203, EN 61010-1 EN 60255-26, EN 60255-27

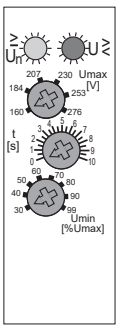
Examples of usage



Normal condition
(no fault)

Umin<Un<Umax

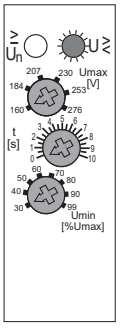
Green LED = ON
Red LED = OFF



Upper limit exceeded
(overvoltage)

Un>Umax

Green LED = ON
Red LED = ON



Lower limit exceeded
(undervoltage)

Un<Umin

Green LED = OFF
Red LED = ON