



EN Voltage Monitoring
120 AC, 240 AC

1563;1564;1565-02-001 Rev.:0

- 3-state indication - LEDs indicating normal state and 2 faulty states
- Voltage U_{min} adjusted as % of U_{max}
- Adjustable delay 0 - 10 sec
- Adjustment of voltage levels and delay via potentiometers

240 AC

- U_{max} AC 48 - 276 V
- U_{min} 30-99 % of U_{max} .
- U_{max} and U_{min} can be monitored independently

120 AC

- U_{max} AC 25 - 150 V
- U_{min} 30-99 % of U_{max} .
- U_{max} and U_{min} can be monitored independently



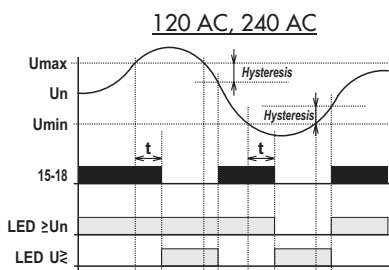
This device is designed for connection of 1-phase main 120 or 240 VAC and must be installed according to norms valid in existing state. Connections to this device must be made according to the details in this instruction sheet. Installation, connection, setting and servicing should be installed by qualified electrician staff only, who understands this instruction sheet and functions of respective device.

Before starting installation ensure that the main switch is in "SWITCH OFF" position and there should be no power going to the device. Qualified installer must also ensure the device is being installed into a temperature controlled environment which will guarantee not to exceed the specified maximal operating temperature. For installation and setting use a screw-driver with 2 mm tip.

Function

Legend:

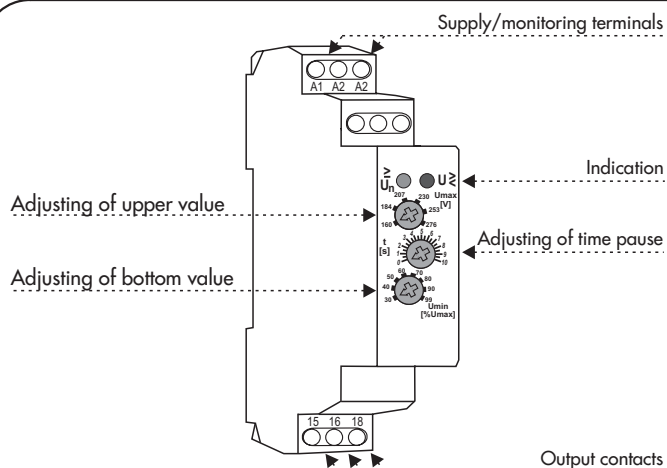
- U_{max} - upper adjustable level of voltage
- U_n - measured voltage
- U_{min} - bottom adjustable level of voltage
- 15-18 - switching contact of output relay No.1
- 25-28 - switching contact of output relay No. 2
- $LED \geq U_n$ - indication green
- $LED U \geq$ - indication red



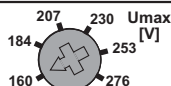
Voltage monitoring relays serve to monitor level of voltage in in single-phase circuits. Monitored voltage is also a supply voltage for the device. It is possible to set two individual levels of voltage, when a level is exceeded, the output is activated. A normal state - the output relay is permanently energized and when there is a deviation above or under the adjusted level, the relay de-energizes. This combination of connection is advantageous in installations where supply(monitored) voltage failure is a faulty state in the same way as if it is outside the adjusted figures. In both case the relay is de-energized.

To eliminate short pulses in the main, there is a time delay which can be set from 0-10 sec. It is applied when changing from normal to faulty state and prevents the relay from useless changes caused by them. When changing from faulty to normal state, the time delay doesn't apply. hysteresis applies (1-6% - depends on the adjusted voltage). Thanks to changeover output contacts it is possible to reach other configurations and functions according to demands of the current application.

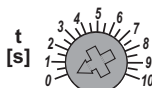
Description



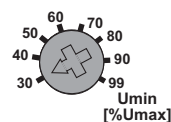
Description of control components



Adjusting of upper level of voltage.
Over passing is indicated by switching off relay and by red and green LED shining.



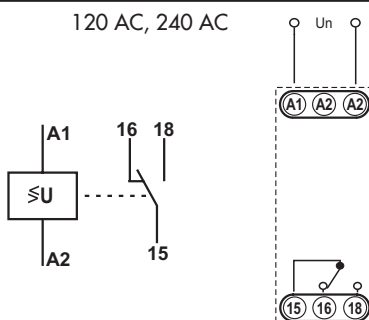
Delay adjustable - delay of output reaction to exceeding adjustable levels.


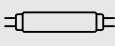
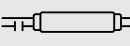
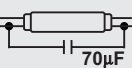



Adjusting of bottom level of voltage.
Over passing is indicated by switching off relay and red LED shines.

Connection

120 AC, 240 AC



RELAY CONTACT 16 A	LOAD								
						AC1	AC3	AC15	DC1 (24/110/220 V)
AgNi	1000 W					4000 VA	0.9 kW	750 VA	16 A/0.5 A/0.35 A

Technical parameters

	240 VAC	120 VAC
Supply and measuring		
Terminals:	A1 - A2	A1 - A2
Supply voltage:	in range of monitored voltage	in range of monitored voltage
Consumption:	AC max. 1.2 VA	DC max. 1.2 VA
Upper level (Umax):	AC 48 - 276 V	AC 25 - 150 V
Bottom level (Umin):	30 - 99 % Umax	30 - 99 % Umax
Time delay:	adjustable, 0 - 10 s	adjustable, 0 - 10 s
Accuracy		
Setting accuracy (mechanical):	5 %	5 %
Repeat accuracy:	<1 %	<1 %
Dependence on temperature:	< 0.1 % / °C	< 0.1 % / °C
Tolerance of limit values:	5 %	5 %
Hysteresis (from fault to normal):	2 - 6 % of adjusted value	2 - 6 % of adjusted value
Output		
Number of contacts:	1x changeover, AgNi	1x changeover, AgNi
Rated current:	16 A / AC1	16 A / AC1
Breaking capacity:	4000 VA / AC1, 384 W / DC	4000 VA / AC1, 384 W / DC
Inrush current:	30 A / < 3 s	30 A / < 3 s
Switching voltage:	250 V AC1 / 24 V DC	250 V AC1 / 24 V DC
Min. breaking capacity DC:	500 mW	500 mW
Output indication:	red / green LED	red / green LED
Mechanical life:	3x10 ⁷	3x10 ⁷
Electrical life (AC1):	0.7x10 ⁵	0.7x10 ⁵
Operating temperature:	-20 .. +55 °C	-20 .. +55 °C
Storage temperature:	-30 .. +70 °C	-30 .. +70 °C
Electrical strength:	4 kV (supply - output)	4 kV (supply - output)
Operating position:	any	any
Mounting:	DIN rail EN 60715	DIN rail EN 60715
Protection degree:	IP 40	IP 40
Overvoltage category:	III.	III.
Pollution degree:	2	2
Max. cable size:	2.5 mm ² / with cavern 1.5 mm ²	2.5 mm ² / with cavern 1.5 mm ²
Dimensions:	90 x 17.6 x 64 mm	90 x 17.6 x 64 mm
Weight:	60 g	60 g
Standards:	EN 60255-6, EN 61010-1	EN 60255-6, EN 61010-1

The device is constructed for 1-phase main and must be installed in accordance with regulations and standards applicable in the country of use. While installing the device follow the instructions in this manual and on the cover packaging of the device. Do not operate the device out of the specified range of technical parameters. Installation and launching can be done only by a person with an adequate electro-technical qualification who is accredited for this work and is informed about this manual and functions of this device. The person who executes the installation is responsible for correct and safe installation of this device. Keep in mind that it is a fully electronic device when mounting. Non problematic function of the device also depends on the previous way of transportation, storing and handling. If you find any sign of damage, deformation, malfunction or a missing part, do not install this device and claim it at its seller. After the expiry date of the product it is possible to demount, recycle, and store it at protected damping site.

1) Protection of the device

- the device contains protections against over-voltage peaks, and disturbing pulses in the main. To ensure correct function of these protective elements, suitable protections of higher degree (A,B,C) must be mounted into the installation, and screening of switched devices (contactors, motors, inductive loads etc.) must be applied.
- it is convenient to ensure protection of the device by adequate elements of over-current and over-voltage protection fuses, surge voltage protector

2) Operating conditions

- while installing this device it is necessary to consider temperature rate of ambient devices so the operation temperature stated in technical parameters is kept. It is necessary to ensure air circulation so the operation temperature is not exceeded in any case.
- to ensure the stated operating life and correct function of the device, it is not recommended to expose these to extreme influences that can negatively effect correct function of the device permanent exposure to temperatures (see technical parameters), aggressive evaporations, chemicals, high relative humidity above 95%, strong electromagnetic field of microwave radiation etc.
- it is necessary to avoid placing devices close to sources of electromagnetic disturbances to ensure their correct function
- all our products are in compliance with requirements of EMC (electromagnetic immunity and resistance) and in accordance with governmental regulation. However it is necessary to pay attention while connecting products to the circuit with appliances that create electromagnetic disturbances (conductors, motors), or power cables close to them. It is recommended to have the connection cables of a product (supply and operating inputs) as short as possible and have them led separately into power conductors. In case of connecting product into a circuit with conductors or motors, it is necessary to protect the product by adequate external protective elements RC elements, varistors or surge voltage protectors

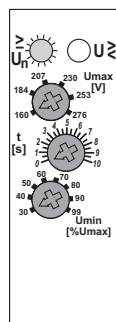
3) Handling the device and its use

- use a screwdriver with an approximate width 2mm for installation and setting
- do not use brute force to screw input terminals (maximally 0,5N/m), do not put exceeded pressure on to the holding parts of terminals so the inner construction of the device is not damaged.
- protect the device against falls and excessive vibrations
- do not overload relay output contacts, mainly while using loads of another category then AC-1
- if contacts of relay melted while switching big loads, it is necessary to use an inserted contactor or power relay rated for required load in the current installation.

Description of protective elements in devices

All timers and monitoring relays in our assortment are equipped by protective elements against possible over-voltage in the main. The nominal voltage of the applied varistors is 275V. During short-time over-voltage peaks, the varistor lowers its leakage resistance and accumulates the grown over-voltage peaks. In case this over-voltage has a character of short-time peak, varistor is able to react repeatedly this way and thus non-destructively protect a device against these negative influences. Other protective elements that are used in devices are transils a zener diodes, that eliminate over-voltage pulses, and are installed in supply and input circuits of the device (for example when switching inductive loads). In case of switching loads of inductive character it is recommended to separate supply of output elements (motors, contactors, etc.) from supply of monitoring and controlling inputs of the device.

Examples of usage

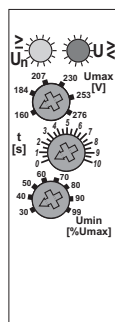


Normal state

$U_{min} < U_n < U_{max}$

Green LED = ON

Red LED = OFF



Upper level exceeded
(overvoltage)

$U_n > U_{max}$

Green LED = ON

Red LED = ON