



for 3/N AC systems



Use to the intended purpose

SUD473 is a voltage relay which continuously monitors the voltage in four-wire systems (3/NAC). Devices are available for mains voltages of 400, 230 or 110 V. The respective rated mains voltage is indicated on the nameplate of the device.

Product description

The mains voltage is monitored by measuring the voltage of the three phase conductors against the neutral conductor. The respective function "over or undervoltage" can be selected by a change-over switch located at the front plate. Depending on the selected function, the relay recognizes and alarms when the voltage falls below or exceeds the pre-set response value in one, two or all three phase conductors.

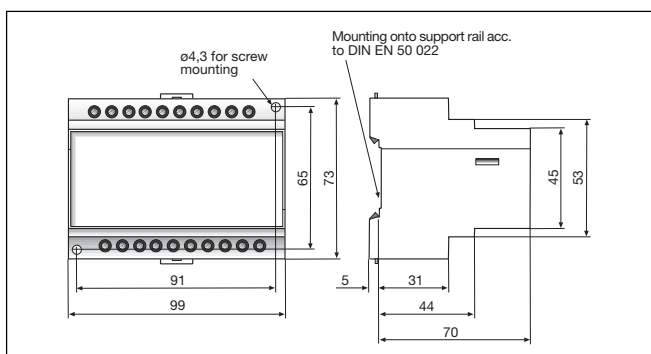
Due to the integrated energy store, the adjusted time delay remains active, even in case of a complete power failure.

Fields of application

The voltage relay SUD473 is used to monitor the mains voltage in industrial electrical systems, and special applications. These might be special monitoring functions within monitoring modules according to DIN VDE 0107 or monitoring and control of emergency lighting systems according to DIN VDE 0108. These applications require a high degree of safety which often can not be met with standard voltage relays.

- ⇒ electronic measuring relay
- ⇒ under or overvoltage, selectable by a switch located at the frontplate
- ⇒ no additional auxiliary voltage required
- ⇒ electromagnetic compatibility (EMC) tested
- ⇒ output relay with two change-over contacts
- ⇒ built-in Power On LED
- ⇒ built-in alarm LED
- ⇒ continuously adjustable alarm point
- ⇒ continuously adjustable response delay
- ⇒ built-in energy store (5 sec)
- ⇒ internal test button
- ⇒ transparent dust cover for ingress protection
- ⇒ casing suited for standard distribution panels

Dimension diagram



Technical data SUD473

Insulation coordination acc. to DIN VDE 0110, T1:

| | |
|---|----------|
| Rated insulation voltage | AC 400 V |
| Rated impulse withstand voltage/ contamination level | 4 kV/3 |
| Dielectric test acc. to IEC 255 | 2500 V |

Network being monitored

| | |
|---------------------------|----------------------|
| Rated mains voltage U_N | 3/N AC 400/230/110 V |
| Max. self consumption | ≈ 3 VA |

Response values

| | |
|----------------------------------|-------------------------------|
| Response value, adjustable | see ordering details |
| Influence of ambient temperature | $< 0.05\%/^{\circ}\text{C}$ |
| Switching hysteresis | approx. 2.5 ... 3.5% of U_N |
| Response delay, adjustable | 0.3 ... 5 sec. |
| Release delay | ≈ 0.5 sec. |
| Influence of ambient temperature | $< 0.2\%/^{\circ}\text{C}$ |

Contact circuit

| | |
|---|-------------------|
| Switching components | |
| Contact class acc. to DIN IEC 255 Teil 0-20 | IIB |
| Rated contact voltage | AC 250 V/DC 300 V |
| Admissible number of operations | 12000 cycles |
| Limited making capacity | UC 5 A |
| Limited breaking capacity | |
| at AC 230 V and $\cos \phi = 0.4$ | AC 2 A |
| at DC 220 V and $L/R = 0.04$ s | DC 0.2 A |
| Operating principle, overvoltage relay | N/O operation |
| Undervoltage relay | N/C operation |

Type tests

Test of the Electromagnetic Compatibility (EMC):

Immunity against electromagnetic

Interferences acc. prEN 50082-2:

| | |
|----------------------------------|-------------------|
| ESD acc. to IEC 801-2/EN 60801-2 | severity degree 3 |
| EM field acc. to IEC 801-3 | severity degree 3 |
| Burst acc. to IEC 801-4 | severity degree 3 |
| Surge acc. to draft of IEC 801-5 | severity degree 3 |

Impulse voltage and electrical disturbance test acc. to IEC 255:

| | |
|---|-----------|
| Impulse voltage test acc. to IEC 255-5 | class III |
| Electrical disturbance test acc. to IEC 255-5 | class III |

Emissions acc. to EN 50081-2:

| | |
|------------------------------------|---------|
| Emissions acc. to EN 55011/CISPR11 | class A |
|------------------------------------|---------|

Mechanical tests:

| | |
|---------------------------------------|-----------------------------|
| Shock resistance acc. to IEC 68-2-27 | 15 g/11 ms |
| Bumping acc. to IEC 68-2-29 | 40 g/6 ms |
| Vibration strength acc. to IEC 68-2-6 | 10 ... 150 Hz/0.15 mm - 2 g |

Environmental conditions

| | |
|---------------------------------------|---|
| Ambient temperature, during operation | $-5^{\circ}\text{C} \dots +50^{\circ}\text{C}$ |
| Storage temperature range | $-25^{\circ}\text{C} \dots +60^{\circ}\text{C}$ |
| Climatic class acc. to IEC 721 | 3K5, except condensation and formation of ice |

General data

| | |
|-----------------------------------|---|
| Operation class | permanent operation |
| Mounting | as desired |
| Type of connection | terminals with self-lifting clamp-washers M 3.5 |
| Wire cross section | |
| single wire | 0.2 ... 4 mm ² |
| fine braid | 0.2 ... 2.5 mm ² (AWG 24 - 12) |
| Rapid mounting | |
| Protection class acc. to EN 60529 | |
| Internal components | IP 30 |
| Terminals/with terminal covers | IP 20 |
| Type of casing | |
| Flammability class | UL94V-0 |
| Weight approx. | 360 g |

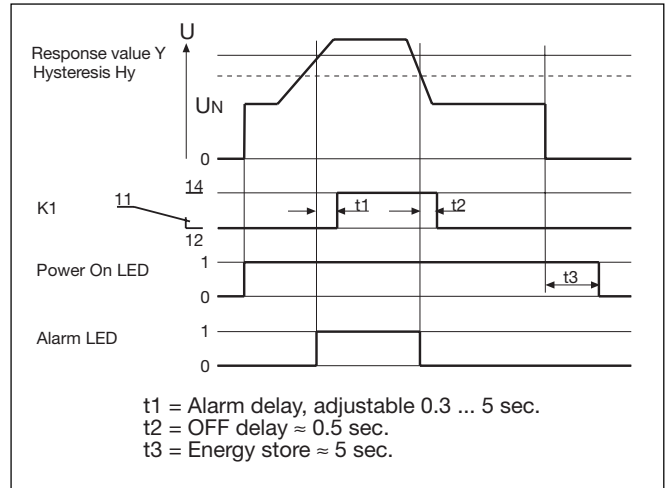
Function

Setting: $U > Y$ (overvoltage relay)

If one, two or all phase to neutral voltages exceed the pre-set response value, the red alarm LED signals "L1, L2, L3 \rightarrow N $>$ Y" and the output relay reacts after the set delay time has elapsed.

If the values fall below the pre-set response value including the adjusted hysteresis "Hy", the output relay drops out and the red alarm LED extinguishes.

By pushing the test button, the output relay reacts after the set delay time has elapsed and the red alarm LED illuminates.

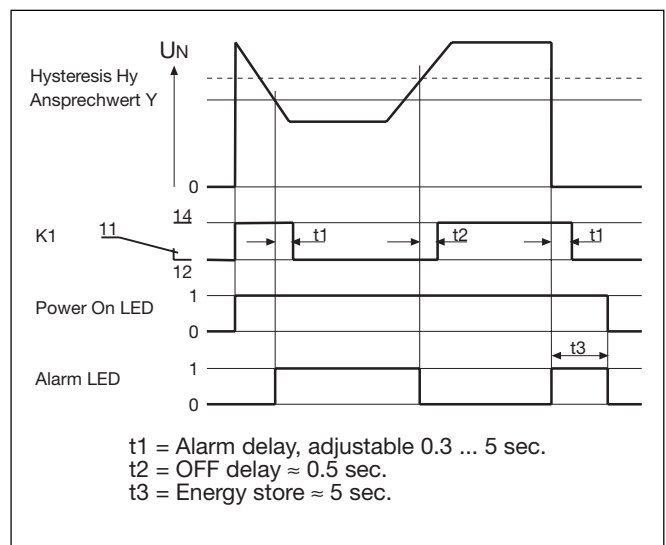


Setting: $U < Y$ (undervoltage relay)

If one, two or all phase to neutral voltages fall below the pre-set response value "Y", the red alarm LED signals "L1, L2, L3 \rightarrow N $<$ Y" and the output relay drops out after the set delay time has elapsed.

If the values exceed the pre-set response value including the adjusted hysteresis "Hy", the output relay is energized and the red alarm LED extinguishes.

By pushing the test button, the output relay drops out after the set delay time has elapsed and the red alarm LED illuminates.



Safety instructions



Please check for correct mains voltage !
For line protection, overcurrent protective devices have to be installed.



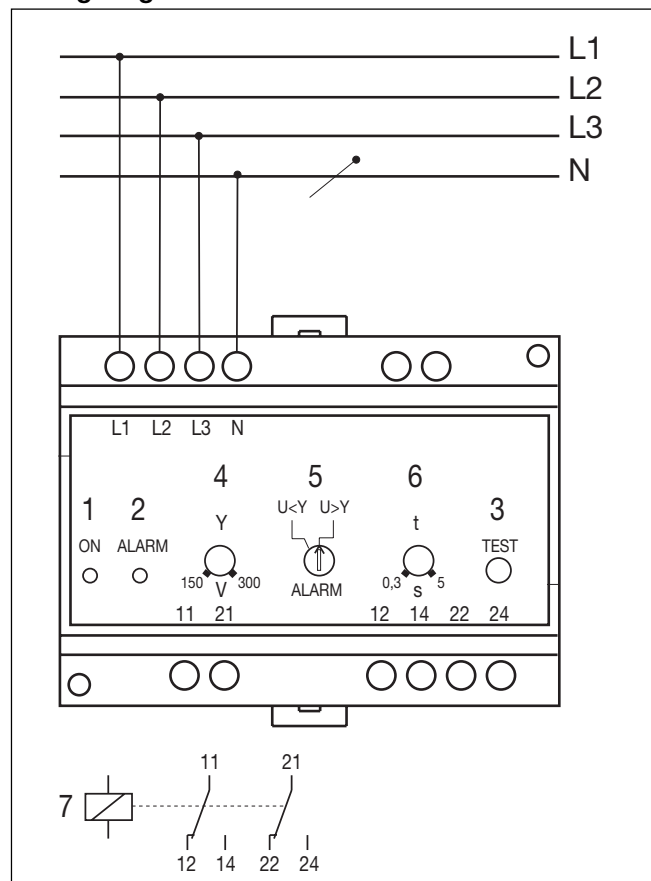
Electrical equipment shall only be installed by qualified personnel in consideration of the current safety regulations.

Additionally to this data sheet, you will find enclosed "Important safety instructions for Bender products".

Ordering details

| Type | Rated mains voltage | Response values | Art. No. |
|--------|--|--|-------------------------------|
| SUD473 | 3/N AC 110 V 3/N AC 230 V 3/N AC 400 V | 40 ... 80 V 80 ... 170 V 150 ... 300 V | 933 220 933 171 933 703 |

Wiring diagram



Legend to wiring diagram

- 1 Power On LED
- 2 Alarm LED
- 3 Test button
- 4 adjustable response value
- 5 Change-over switch to select under or overvoltage
- 6 adjustable alarm delay
- 7 Output relay with two change-over contacts

Right to modifications reserved