

Under / over voltage Relay

Type VHXm



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- ✓ Unparalleled domain competence
- ✓ Global experience
- ✓ Complete solution capabilities
- ✓ Large installed base
- ✓ Environment-friendly technologies



Under / over voltage relay type VHXm

Features

- Static design
- Variable voltage setting
- Variable time delay setting
- Draw-out type design
- Hand reset flag

Application

The relay type VHXm is a static under/over voltage relay used for detection of under voltage (or loss of voltage) or over voltage in the AC system.

Relay is used for over voltage protection and supervision in distribution systems. Relay is also used for overvoltage / undervoltage protection of Generators, Motors and Transformers.

Design and principle

The VHXm is a AC voltage measuring relay. Different versions are available for a) Fixed voltage

setting with instantaneous operation b) Variable voltage setting with or without variable time delayed operation.

The AC voltage to be measured is applied at terminal 3 and 4. The input voltage is isolated, scaled and suitably conditioned for measurement.

Operating voltage level and time delay can be set with the potentiometer on the front-panel of the relay. The product of the potentiometer setting and multiplier (marked) is the set operate time for relay.

The VHXm is powered by a DC auxiliary supply. The relay has a built-in electro-mechanical output relay providing medium duty contacts. The output relay also has one red hand reset flag.

The relay is available in draw-out type flush mounting model.

Technical data

Energizing quantities, values and limits

| | |
|---|---|
| Rated auxiliary voltage (U _{aux}) | 24, 30, 48, 110, 220 V DC |
| Operative range in % of rated voltage | 80-110 |
| Rated AC voltage (U _N) | 63.5, 110, 240 V AC |
| Burden on PT | 0.5 VA |
| Voltage setting ranges | |
| - Over voltage | 80-140% of U _N |
| - Under voltage | 40-80% of U _N |
| - Operation accuracy | +/- 5% |
| Reset ratio | |
| - Over voltage | >90% of U _N |
| - Under voltage | <110% of U _N |
| Operating time | |
| - Instantaneous | <60 m sec. |
| - Time delayed operation setting range | 0.1-1.0 sec, 0.5-5.0 sec, 1.0-10.0 sec. |
| - Accuracy of operating time | +/- 10 msec or +/- 5% of the setting, whichever is greater at rated supply voltage at 25°C. |
| Frequency | 47.5 Hz to 52.5 Hz. |
| Power consumption under quiescent/operation condition | ~8 w / 11 w |
| Operation temperature range | -5°C to +55°C |
| Mechanical durability | 10,000 switching operations & 200 Draw-out/Plug-in operations |
| Weight | 4 Kg |

Contact data

| | |
|--|--------------|
| Contact configuration | 3NO+3NC, 6NO |
| Maximum voltage within contacts system | 250V DC/AC |
| Rated current | 5 A |
| Max. making current | 25 A |

Technical data

| Max. breaking capacities | | | | | | | | | |
|--------------------------|-----|---------------|-----|---------------|------|---------------|------|---------------|-------------|
| Voltage | 24V | | 48V | | 110V | | 250V | | |
| Contacts | 1 | 2 in parallel | 1 | 2 in parallel | 1 | 2 in parallel | 1 | 2 in parallel | 2 in series |
| DC resistive load | 5A | 10A | 5A | 10A | 5A | 7A | 1A | - | 5A |
| DC inductive. L/R =15ms | 5A | 10A | 5A | 8A | 4A | - | 1A | - | 4A |
| DC inductive, L/R =40ms | 4A | 8A | 4A | 8A | 3A | - | 0.5A | - | 2A |
| AC resistive & inductive | 10A | - | 10A | - | 10A | - | 10A | - | - |

| | |
|-----------|-------------------------------|
| Terminals | Suitable for M5 ring type lug |
|-----------|-------------------------------|

Electrical tests

| | |
|--|--------------------------|
| Measurement of resistance; tested acc. to IEC 255 | +/- 10% of specified |
| Insulation resistance; tested acc. to IEC 255-5 | >100 M Ohm at 500 V DC |
| Dielectric; tested acc. to IEC 255-5 | 2.0 kV 50 Hz, 1 min |
| Impulse; tested acc. to IEC 255-5 | 5 kV, 1.2/50µs, 0.5J |
| 1 MHz burst disturbance; tested acc. to IEC 255-22-1 | Class III |
| - common mode | 2,5 kV, 1 MHz, 400 pls/s |
| - differential mode | 1 kV, 1 MHz, 400 pls/s |

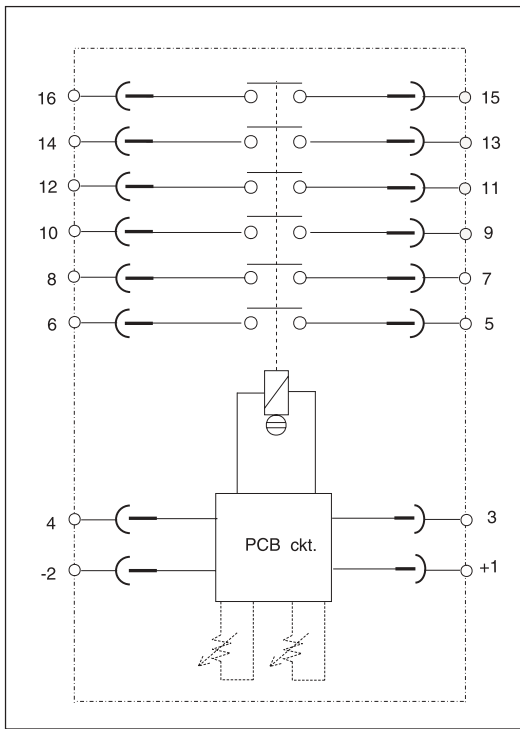
Thermal tests

| | |
|---|---|
| Maximum allowable temperature; tested acc. to IEC 255-6 | Coil (class B), Contact, heat dissipating component |
| Limiting continuous and temporary thermal withstand values of input energizing quantities; tested acc. to IEC 255-6 | 2 x U _N |
| Limiting short time thermal withstand value of input energizing quantity tested acc. to IEC 255-6 | 3 x U _N for 10 sec. |

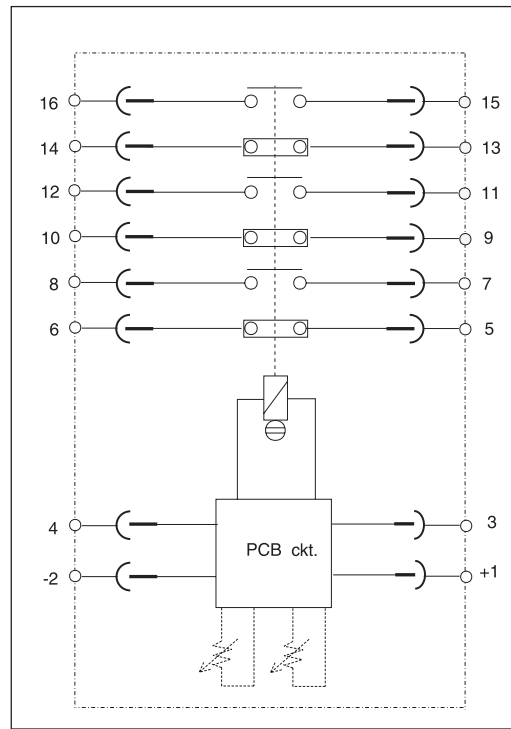
Environmental tests

| | |
|--|--------------------------------------|
| Dry heat; tested acc. to IEC 68-2-2 | at +55°C in energized condition |
| Damp heat (cyclic - 2days); tested acc. to IEC 68-2-30 | 12 Hr/55°C + 12 Hr/25°C x 2 @ 95% RH |

Connection diagram and contact configuration

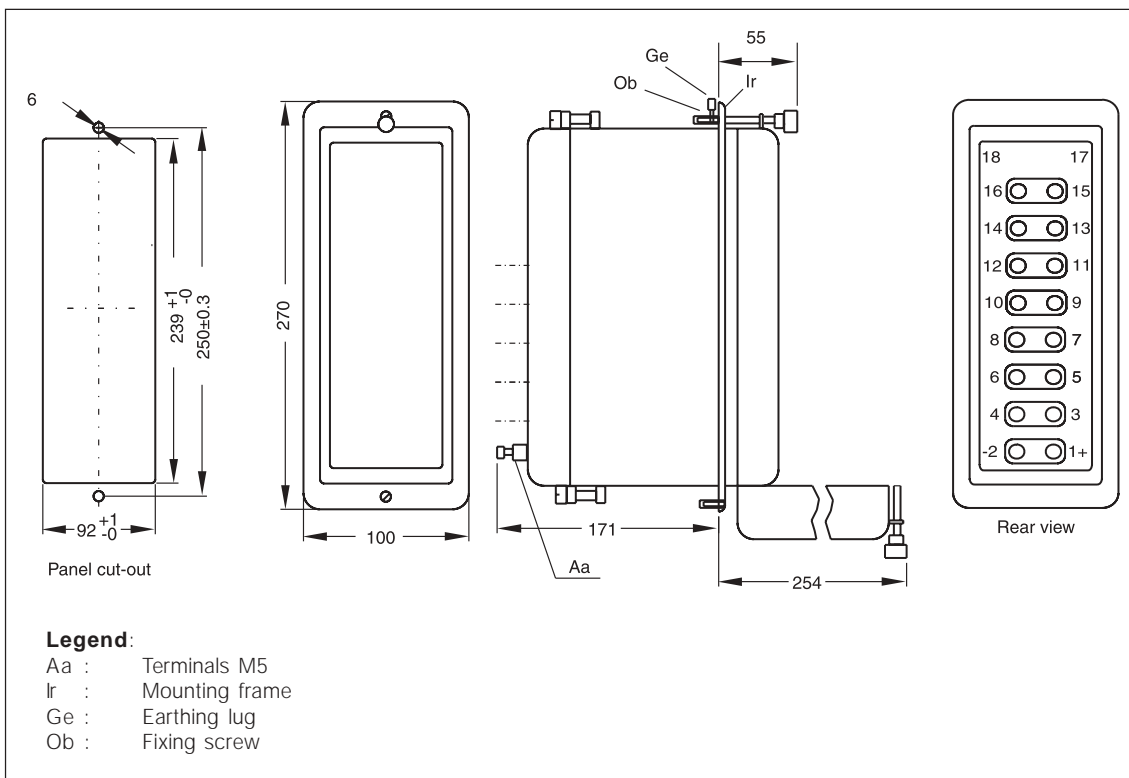


6NO



3NO + 3NC

Dimensions



Ordering details

Refer type designation for selection and tick mark appropriate boxes

| | | | | | |
|-------|---------|--|--------------------------|----------|--------------|
| Type: | VHXm21A | (Fixed 40% of Un Under voltage, W/O time delay) | <input type="checkbox"/> | Qty..... | Item no..... |
| | VHXm22A | (40-80% of Un Under voltage, W/O time delay) | <input type="checkbox"/> | Qty..... | Item no..... |
| | VHXm22B | (40-80% of Un Under voltage, with variable time delay) | <input type="checkbox"/> | Qty..... | Item no..... |
| | VHXm23A | (80-140% of Un Over voltage, W/O time delay) | <input type="checkbox"/> | Qty..... | Item no..... |
| | VHXm23B | (80-140% of Un Over voltage, with variable time delay) | <input type="checkbox"/> | Qty..... | Item no..... |

| | | | | | |
|-------------------|-----------|--------------------------|-----------------------|---------|--------------------------|
| Rated AC Voltage: | 63.5 V AC | <input type="checkbox"/> | Auxiliary DC Voltage: | 24 VDC | <input type="checkbox"/> |
| | 110 V AC | <input type="checkbox"/> | | 30 VDC | <input type="checkbox"/> |
| | 240 V AC | <input type="checkbox"/> | | 48 VDC | <input type="checkbox"/> |
| | | | | 110 VDC | <input type="checkbox"/> |
| | | | | 220 VDC | <input type="checkbox"/> |

| | | | | | |
|-----------|-------------|--------------------------|-------------------|---------------|--------------------------|
| Contacts: | 6N/O + 0N/C | <input type="checkbox"/> | Time delay range: | 0.1 - 1.0 Sec | <input type="checkbox"/> |
| | 3N/O + 3N/C | <input type="checkbox"/> | | 0.5 - 5.0 Sec | <input type="checkbox"/> |
| | | | | 1.0 - 1.0 Sec | <input type="checkbox"/> |



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