

PTS TYPE

Voltage Relay

High-performance under-voltage relay that activates output when all 3-phase voltages fall below a reference voltage by monitoring voltage on each phase of 4 wires



FEATURES

Monitoring voltages of 3-phase 4 wires with a single unit

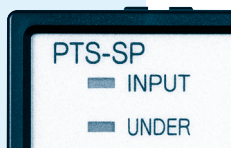
The PTS type for monitoring 3-phase 4 wires is newly available in addition to the conventional FVS type that monitors only one phase. The PTS type under-voltage relay monitors all 3-phase voltages to verify that voltages on all phases are lower than a reference voltage. The PTS type incorporates 1a1b output contacts.

Operation status LED

With the operation monitor LED, you can easily check control power ON/OFF status and monitor voltage. (POWER, UV)

Digital switch

The digital switch simplifies the reference voltage setting procedure.



VOLTAGE RELAY

Voltage indication label (standard accessory)

Labels that indicate reference voltage settings are included in the product. If you attach a label after setting a voltage, you can easily confirm the reference voltage.



Control voltage is input from monitor power supply. No additional control power supply is required.

Since control voltage is input from the monitor power supply, the relay unit does not need an additional control power supply.

* The internal relay turns OFF when input voltage falls below 38V regardless of the reference voltage setting.

High-performance engineering plastic is used for the storing case.

To enhance flame-retardance, high-performance engineering plastic is used for the storing case. (UL94, V-1)

SPECIFICATIONS (RATINGS, PERFORMANCE)

| Item | Specifications | |
|-----------------------------------|---|---|
| Rated insulation voltage | 250V AC / DC | |
| Monitor/control input voltage | Each phase: 40-110V AC | |
| Max. input value | 130 V (continuous), 250 V (instantaneous) | |
| Input impedance | 4 kΩ or more (when output relay is excited) | |
| Reference voltage | 40, 50, 60, 70, 80V AC (5 settings) | |
| Insulation resistance | L-A | 10 MΩ or more (500 V DC Megger tester) *1 |
| | L-L | 10 MΩ or more (500 V DC Megger tester) *2 |
| Power-frequency withstand voltage | L-A | 2,000 V AC for 1 minute *1 |
| | L-L | 2,000 V AC for 1 minute *2 |
| Lightning impulse | L-A | ±7,000 V, 3 times for each pole *1 |
| | L-L① | ±4,500 V, 3 times for each pole *2 |
| | L-L② | ±3,000 V, 3 times for each pole (between monitor/control input terminals) |
| Noise immunity | Radio interference noise | 150 MHz band (5 W), 400 MHz band (5 W) 900 MHz band (cellular phone) |
| | Electrostatic noise | Contact discharge: 8kV Air discharge: 15kV |
| Vibration resistance | Frequency: 16.7Hz Double amplitude: 0.4mm Direction: Forward/backward, right/left, up/down Vibration time: 10min | |
| Shock resistance | Shock value: 294m/s ² | Number of shocks: 3 times each (forward, backward, right, left, up, down) |
| Ambient temperature | Performance warranty | 0 to +40°C |
| | Operation warranty | -10 to +55°C (Allowable for several hours per day) |
| | Recovery warranty | -20 to +60°C |
| Relative humidity | 30 to 90% (daily average) | |
| Altitude | 2,000 m max. | |
| Power consumption | Approx. 3.5 W (Control power supply: Maximum rating, When output relay is excited) | |
| Weight | Approx. 220 g | |

*1 Between monitor/control input and output contact terminals and mounting rail

*2 Between monitor/control input terminals and output contact terminals, and between individual output contact terminals

● TYPE CODING

PTS - SP - AC40 / 120

① ② ③ ④

| No. | Item | Indication | Description | Remarks |
|-----|----------------------|-------------|---|---|
| ① | Basic type | PTS | - | - |
| ② | Shape code | S | 8-pin socket type | Applicable to the socket, 8PFA1 (OMRON) |
| ③ | Circuit code | P | 3-phase 4-wire AC under-voltage monitoring | |
| ④ | Power supply voltage | AC 40 / 120 | 40 to 120V AC | Since control voltage is input from monitor power supply, no additional control power supply is required. |

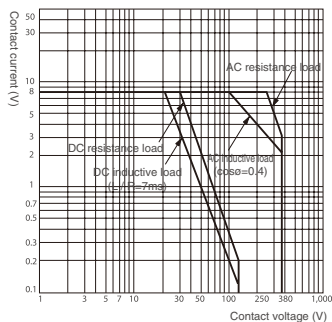
● CONFORMABLE STANDARDS

| Standard | Name | Year |
|----------|---|---------|
| JEC-174D | Auxiliary relay for power supply | 1987 |
| JEC-2500 | Protection relay for power supply | 1979 |
| B-402 | Digital protection relay and protection relay equipment | 1997.10 |

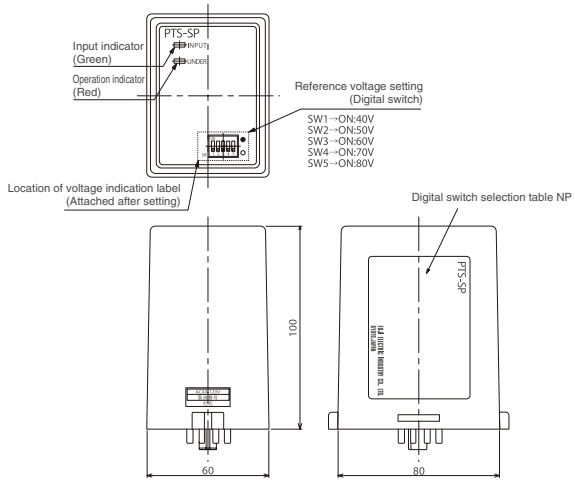
● OTHER SPECIFICATIONS

| Item | Description | |
|-----------------------------|---------------------------------------|---------------------------|
| Operating time / reset time | 0.5 sec max. | |
| Operation error | Within ± 2 V | |
| Reset dead zone | Within +4 V | |
| Temperature drift | Within ± 1 V / 10°C | |
| Output contact rating | Max. operating voltage | 380V AC max. 125V DC max. |
| | Rated operating current | 5A |
| Number of output contacts | UNDER | 1a1b |
| Operation indicator (LED) | Power supply indicator | Green (during operation) |
| | Output contact indicator | Red (during operation) |

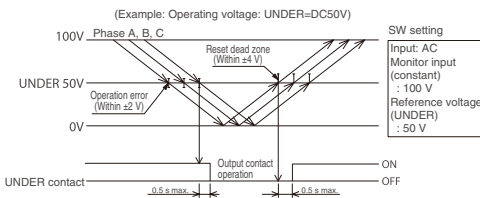
● MAXIMUM SWITCHING CAPACITY OF OUTPUT CONTACT



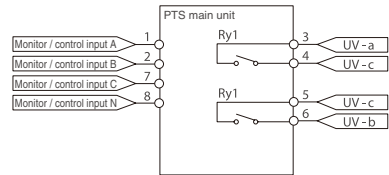
STANDARD PRODUCTS



Operation chart



Connection diagram



Operation

By monitoring input voltage on each phase of AC 3-phase 4 wires, the output contact is switched when all 3-phase voltages fall below a reference voltage. The internal relay has no voltage when input voltage is 38V or lower regardless of the reference voltage setting.

The above operation chart is based on "a-contact" output.

In constant monitoring mode, the internal relay is ON.

⇒ (Terminals 3 - 4: Open, Terminals 5 - 6: Closed)

When all 3-phase voltages fall below a reference voltage or when the monitor input is lost, the internal relay turns OFF.

⇒ (Terminals 3 - 4: Closed, Terminals 5 - 6: Open)

Indicators

| | Power supply indicator lamp (Green) □ INPUT | Operation indicator lamp (Red) □ UNDER | Internal relay | Terminals 3 - 4 | Terminals 5 - 6 |
|---|--|---|----------------|-----------------|-----------------|
| All 3-phase voltages are 38 V or lower | □ Unlit | □ Unlit | No voltage | ON | OFF |
| All 3-phase voltages are reference voltage or lower | ■ Lit | ■ Lit | No voltage | ON | OFF |
| At least one-phase voltage is higher than reference voltage | ■ Lit | □ Unlit | Excited | OFF | ON |

[TECHNICAL DATA]

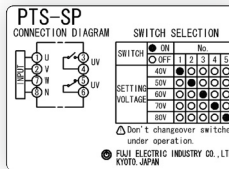
● REFERENCE VOLTAGE SETTING PROCEDURE

① Reference voltage (operating voltage) setting



By referring to the “Digital switch selection table” on the side of the relay unit, specify a reference voltage with the digital switch.

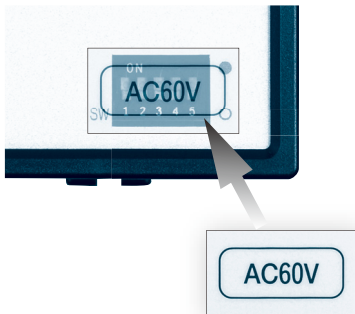
(Example: To set “70 V AC”, turn ON the No. 4 bit.)



Digital switch selection table

* Attached on side of the product body

② Attaching voltage indication label



To indicate the reference voltage specified in step ①, attach the voltage indication label (included in the product).

Be sure to attach this label so that the voltage is not accidentally changed after setting.

Before attaching the label, verify that the digital switch setting conforms to the selection table on the side of the product body.



Voltage indication label

* Standard accessory included in the product

③ Connecting the relay unit to a socket

Connect the relay unit to a specified applicable socket to apply a monitor voltage.

ACCESSORIES

■ Applicable socket [Order unit: 10]

- 8PFA1 [OMRON]



■ Voltage indication label (*Included as standard accessory) [Order unit: 10]

- PTS-SP-NP



■ Typical parts list

| No. | Part name | Material | Remarks |
|-----|-----------|--------------------|---------|
| 1 | Case | Modified PPE | UL94-V1 |
| 2 | Plug pin | Brass / Tin-plated | — |

■ Instructions for handling the product and other information

- This product is applicable to a 3-phase 4-wire voltage circuit and is not applicable to a 3-phase 3-wire voltage circuit. In applications to other circuits, this product enables monitoring of typical phase voltage of 3-phase 4-wire circuit, and monitoring of single-phase 2-wire voltage.
- For connection with a PT (transformer), check the capacity of the transformer (including other load).
- When setting a voltage, be sure to disconnect the relay unit from the socket, or do not apply a monitor voltage or power supply voltage to the relay unit (to prevent output error).
- After setting a voltage, be sure to attach the voltage indication label suitable for each state (to prevent erroneous operation and entry of a foreign substance).
- When you set a reference voltage with the digital switch, do not turn ON multiple bits simultaneously (to prevent output error).