



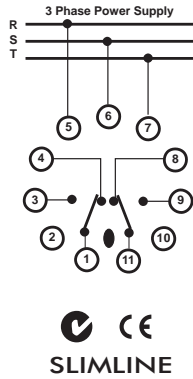
# 3 Phase Monitoring Relay - Phase Sequence, Failure, or Asymmetry Detection 1 C/O or 2 C/O

# SP 430 SP 431



### WIRING EXAMPLE

DPDT (2 C/O) version shown  
(requires optional S3-B base)



### Application Examples

- Detection of phase failure and phase reversal on voltage transformers of HT switchgear.
- Protection of 3 phase motors against single phasing.
- Overhead line supervision in rural areas.
- Protection against reverse phase sequence on forward and reverse operating machines.
- Protection against phase reversal on 3-phase compressor motors or on 3-phase fan motors.
- Detection of phase angle errors & unbalanced supply voltage
- Detection of loss of neutral (SP431 only).

### ORDERING CODE

TYPE	SUPPLY VOLTAGE	AC/DC	RELAY CONTACTS
SP430	415	AC	S

Note: SP431 acts as SP430 but also detects loss of Neutral

### Technical Specification

#### Power Supply:

Supply voltage (phase-to-phase):  
110, 220, 380, 400, 415, 525VAC ±20%

#### Response:

Time delay on trip: 1 second (approx.)  
Time delay on recovery: 1 second (approx.)

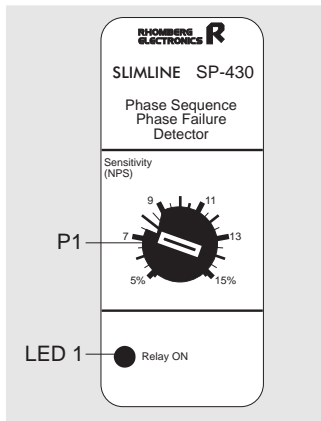
#### Voltage Sensing:

Repetitive accuracy: 1%  
Hysteresis : 2% fixed (relative to its supply voltage)

Relay output: 10 SPDT or 5A DPDT per contact

**Note:** Insensitive to regenerated EMF voltage.  
Insensitive to balanced supply voltage variations.  
High stability under harmonic distortion.

### Description of Controls



**P1:** The **Sensitivity** to 3-phase voltage imbalance is adjusted on P1. The scale is calibrated in percentage NPS voltage. For general applications, a setting of between 5% and 7% is recommended.

**LED 1:** The green LED marked “Relay ON” illuminates when the relay is energised, ie. the power supply is balanced and in the correct sequence.

**Fault Detection:** When power is applied, the relay energises after approximately one second, provided all three phases are balanced and in the correct sequence. The relay will de-energise when any one of the following faults occur:

- reversal of phase sequence.
- excessive imbalance between phases.
- excessive phase angle error.
- failure of one or more phases (“single phasing”)
- loss of neutral (SP431 only).

The relay will energise again when proper power supply conditions are established. Imbalance sensitivity, ie. percentage NPS voltage tolerance is adjustable between 5% and 15%.

**Note:** The unit will not react to a balanced under-voltage or over-voltage condition on all three phases. For over-/under- voltage protection refer to SP 231.

### Operational Diagrams

