

Adjustable Phase-Failure / Phase Sequence Monitor



Description

The SF1 Monitors negative phase sequence (NPS) voltage to detect phase failure, phase reversal and phase imbalance. The NPS voltage of the unit can be adjusted from 7-15%. When any of these faults occur the unit will de-energize. The relay will only re-energize if the supply voltage corrects itself. The unit will not react to a balanced voltage variation

FEATURES

- Monitoring relay for 3 - phase voltage control
- Measures if all 3 phases present and in sequence
- Detection of phase asymmetry
- Insusceptible to balanced supply voltage variation
- Insensitive to regenerated EMF
- Fast response to reverse phase sequence
- Relay ON LED
- Output 10A SPDT

Level Sensing Input Specifications

<u>Input</u>	
<u>Pin 5</u>	Phase L1
<u>Pin 6</u>	Phase L2
<u>Pin 7</u>	Phase L3
<u>Voltage Interruption</u>	< 40ms
<u>Dielectric Voltage</u>	None (supply / electronics)
<u>Rated Impulse withstand</u>	4kV (1.2/50ms line/line)

Output Specifications

<u>Output Specifications</u>	SPDT
<u>Rated Isolation</u>	6000 VAC
<u>Voltage</u>	(contact / electric) 1000 VAC (contact / contact)
<u>Nominal Rate in AC1</u>	1500 VA (Ag-Ni)
<u>Rated Current</u>	10A
<u>Rated Voltage</u>	250V
<u>Mechanical Life</u>	10x10 ⁶ cycles
<u>Electrical Life</u>	110x10 ³ cycles (at max load)
<u>Operation Frequency</u>	≤ 1800 cycles/h

Supply Specifications

<u>Power Supply AC Type</u>	110, 230, 400V
<u>(Galvanic)</u>	525V ± 10%
	50 Hz ± 5Hz
<u>Isolation</u>	4kV
<u>Consumption</u>	± 3VA
	± 6VA 525 V

General Specifications

<u>Power ON Delay</u>	≤ 300 ms
<u>Power OFF Delay</u>	≤ 200 ms
<u>Indication for</u>	Output ON LED green
<u>Environment</u>	
<u>Degree Of Protection</u>	IP 20
<u>Operating Temperature</u>	-10 to + 50°C
<u>Storage Temperature</u>	-50 to + 85°C
<u>Weight</u>	200g

Phase-Failure / Phase Sequence Monitor

Mode of Operations

Phase Failure

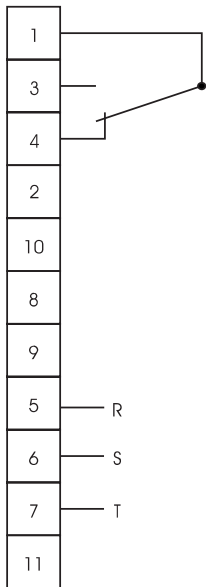
The relay will only operate while all three phases are present, in sequence and balanced. The unit provides effective protection of phase failure / phase reversal / excessive phase imbalance and phase angle error. The units detect all the above faults by measuring the NPS voltage of the supply. The NPS voltage is fixed at 7% and can be calculated by the following formula:

$$\text{NPS voltage} = 71 / \text{V average (V high - V middle - V low)}$$

Example

- Protects motors from single phasing and subsequently burning out.
- Detects phase failure and reversal on voltage transformers.
- Protects forward and reverse operating machines.

Wiring Diagram



Operations Diagram

