

# Phase sequence relay PFN mecotron®



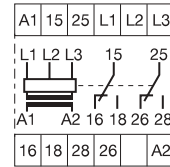
## Operation

The PFN monitors three-phase supply voltage for incorrect phase sequence, overvoltage, undervoltage and failure of one of the three phases. The output relay de-energizes and the LEDs indicate nature of the fault if one of the above faults occurs. The output relay remains energized with correct phase sequence (rotary field right handed polarized) and correct voltage. If the voltage exceeds 1.1 times the rated value or falls below 0.9 times the rated value, the output relay will de-energize. It will automatically energize again as soon as the voltage again attains the rated value, the set hysteresis of 5% thereby being effective.

A delay on operate or on release time can be set for the overvoltage and undervoltage monitoring functions. The delay time is adjusted with a potentiometer. Phase failure and incorrect phase sequence are indicated without delay.

With motors running on two phases the regenerated voltage may be so high that the output relay cannot de-energize if one of the phases fails. For such application, we recommend the use of phase unbalance relay ASN.

Approvals:



- Monitors three-phase supply voltage for incorrect phase sequence, overvoltage, undervoltage
- Monitoring range: 0.9 to 1.1 V<sub>N</sub>
- Fixed switching hysteresis of 5 %
- Selectable delay on operate or on release of 0.1 ... 10 s on overvoltage or undervoltage
- 2 SPDT contacts
- 5 LEDs to indicate all operational states
- 3 three-voltage monitoring versions: 220 V, 400 V, 500 V
- 3 supply voltage versions: 110...130 V, 220...240 V, 380...415 V

### Monitoring voltage (3-phase) Types for special measuring ranges and voltages on request

Supply voltage 50...60 Hz	P/N: 220 V/50 Hz	P/N: 380 V/50 Hz	P/N: 400 V/50 Hz	P/N: 400 V/60 Hz	P/N: 500 V/50 Hz
110...130 V AC	2 450 310 02	2 450 310 04	2 450 310 05		2 450 310 07
220...240 V AC	2 450 311 02	2 450 311 04	2 450 311 05		2 450 311 07
380...415 V AC	2 450 312 02	2 450 312 04	2 450 312 05	2 450 412 05	2 450 312 07

Accessories	P/N:
Sealable transparent cover	3 440 005 01
Adapter for screw mounting	3 430 029 01

## Technical data

### Input circuit

Supply voltage - power consumption	A1-A2	110...130 V AC	-	3 VA
	A1-A2	220...240 V AC	-	3 VA
	A1-A2	380...415 V AC	-	3 VA

Tolerance of supply voltage	-15 % ... +10 %
Supply voltage frequency	50...60 Hz

### Time circuit

Delay on operate time adjustable	message: overvoltage, low voltage	0.1...10 s
Delay on release time adjustable		0.1...10 s
Timing error within tolerance of supply voltage		≤ 0.5 %
Timing error within temperature range		≤ 0.06 % / °C

### Measuring circuit

	L1, L2, L3
Monitoring voltage V <sub>nom</sub> .	220 V AC 380 V AC 400 V AC 500 V AC
Frequency	50 Hz or 60 Hz
Response value at overvoltage/ undervoltage	0.9/1.1-V <sub>Nom</sub> (0.85/1.1 for 380 V/50 Hz version)
Reset value at overvoltage/ undervoltage	0.95/1.05-V <sub>Nom</sub> (0.9/1.05 for 380 V/50 Hz version)
Measuring cycle max.	80 ms
Hysteresis (fixed)	5 %
Temperature error	≤ 0.06 % / °C
Error within tolerance of supply voltage	≤ 0.5 %

### Display of operating status

Supply voltage	V LED, green
Output relay energized	R LED, yellow
Overvoltage	>V LED, red
Undervoltage	<V LED, red
Phase failure and phase sequence error	P LED, red

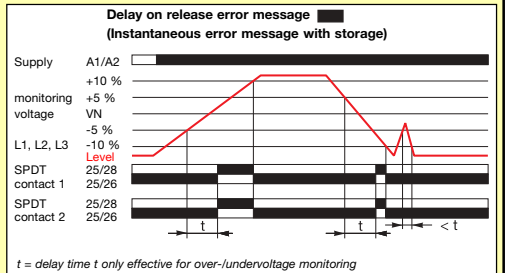
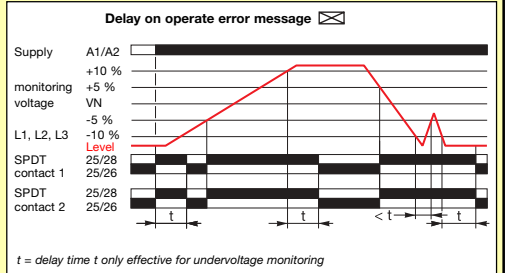
### Output circuit

	15-16/18, 25-26/28	Relay, 2 SPDT contacts, closed-circuit principle
Rated voltage	VDE 0110, IEC 947-1	400 V
Rated switching voltage max.		400 V AC
Rated switching current	AC 12 (resistive)	5 A (at 230 V)
Rated switching current	AC 15 (inductive)	3 A (at 230 V)
Rated switching current	DC 12 (resistive)	5 A (at 24 V)
Rated switching current	DC 13 (inductive)	2.5 A (at 24 V)
Maximum mechanical life		30 x 10 <sup>6</sup> operations
Maximum electrical life (acc. to AC 12 / 230 V / 5 A)		1 x 10 <sup>6</sup> operations
Short-circuit proof, max. fuse rating		5 A / fast, operating class gL

### General data

Rated impulse withstand voltage V <sub>imp</sub>	4 kV
Operating temperature	-25°C ... +65°C
Storage temperature	-40°C ... +85°C
Mounting position	any
Mounting to DIN rail (EN 50022)	Snap-on mounting/Screw mounting by adapter
Cable size stranded with wire end ferrule	2 x 14 AWG (2 x 2.5 mm <sup>2</sup> )
Weight	approx. 0.66 lb (300 g)

## 2 Functions



Note:  
Dimensions (W x H x D), 45 x 78 x 101 mm