

Current and Voltage Controls

3-Phase Voltage Sequence Control

Type SM 170

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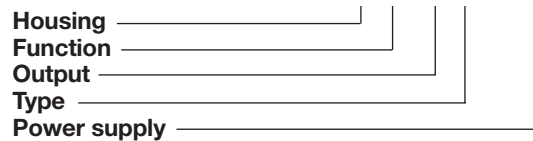


- 3-phase monitoring relay for phase sequence/phase loss
- Measures when all 3 phases are present and have the correct phase sequence
- Output: 10 A SPDT relay
- Plug-in type module
- S-housing
- LED-indication for power supply and output ON
- Power supply is the 3-phased measuring voltage

Product Description

3-phase plug-in monitoring and phase sequence/phase-loss relay. Frequently used to prevent a 3-phase motor from running on only 2 phases or to secure the right phase sequence when connecting a load to the mains.

Ordering Key **SM 170 400**



Type Selection

Plug	Output	Supply: 240 VAC	Supply: 380 VAC	Supply: 400 VAC	Supply: 415 VAC
Circular	SPDT	SM 170 240	SM 170 380	SM 170 400	SM 170 415

Input Specifications

Input	
Pin 5	Phase L1
Pin 6	Phase L2
Pin 7	Phase L3
Pin 11	Neutral (optional connection) measures on own supply

Output Specifications

Output	SPDT relay
Rated insulation voltage	250 VAC (rms) (cont./elect.)
Contact ratings (AgCdO)	μ (micro gap)
Resistive loads	AC 1 10 A/250 VAC (2500 VA)
	DC 1 1 A/250 VDC (250 W)

Supply Specifications

Power supply AC types	Overvoltage cat. III (IEC 60664) (IEC 60038)
Rated operational voltage Through pins 5, 6, 7 & 11	
240	3 x 240 VAC ± 15%, 45 to 65 Hz
380	3 x 380 VAC ± 15%, 45 to 65 Hz
400	3 x 400 VAC ± 15%, 45 to 65 Hz
415	3 x 415 VAC ± 15%, 45 to 65 Hz
Internal measuring circuit is connected to pins 5 & 7	
Voltage interruption	≤ 40 ms
Dielectric voltage	None (supply/elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μs) (line/neutral, line/line), direct connection to electronics

Mechanical life	≥ 30 x 10 ⁶ operations
Electrical life	AC 1 ≥ 2.5 x 10 ⁵ operations (at max. load)
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	≥ 2 kVAC (rms) (cont./elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μs) (cont./elect.) (IEC 60664)



General Specifications

Reaction time	$\tau = 0.5$ s, worst case reaction time may be up to $5 \times \tau$
Indication for	
Power supply ON	LED, green
Output ON	LED, red
Environment	(IEC 60947-1)
Degree of protection	IP 20 B (IEC 60529)
Pollution degree	(IEC 60664)
	1: SM 170 380/400/415
	2: SM 170 240
Operating temperature	-20° to +50°C (-4° to +122°F)
Storage temperature	-50° to +85°C (-58° to +185°F)
Weight	200 g
Approvals	UL, CSA, SEV (SEV only 3 x 220 VAC)

Mode of Operation

The relay measures on its own 3-phased power supply and operates when all phases are present and the phase sequence is correct.

phase does not exceed 70% of the nominal voltage. If it exceeds this value the connection cannot be recommended (see description ex. 3). The regenerated voltage will be a lower phase voltage combined with a phase angle failure.

Example 1

The relay is for monitoring that the power supply has a correct phase sequence and that all phase voltages are present. The relay is a 3-phase power supply monitoring relay.

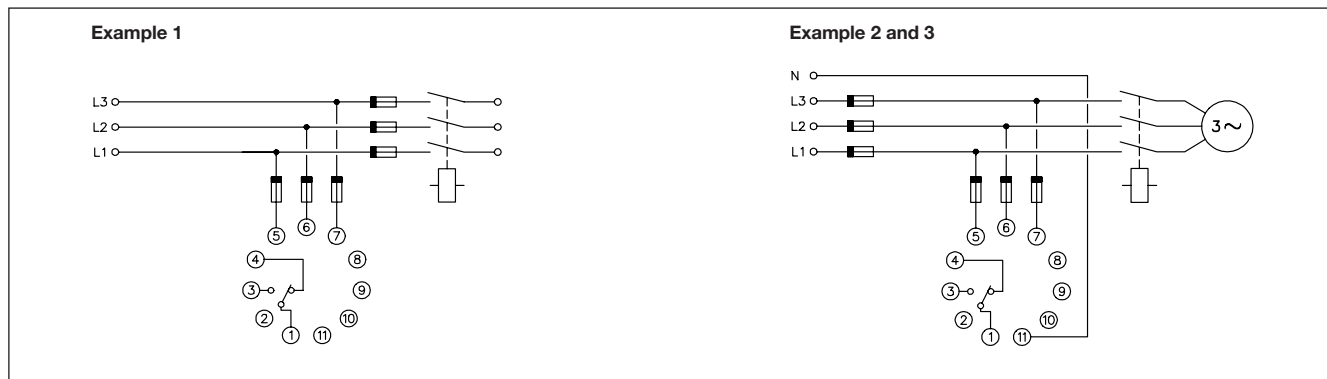
Example 3

If the value of the regenerated voltage is slightly higher than 70% of the nominal voltage, the relay releases when neutral is connected to pin 11 as sensitivity is improved.

Example 2

The relay releases in case of interruption of one of the phases, provided that the voltage regenerated by electric motors on the interrupted

Wiring Diagrams



Accessories

Sockets	S 411
Hold down spring	HF
Mounting rack	SM 13
Socket covers	BB 4
Front mounting bezel	FRS 2

For further information refer to "Accessories".

Operation Diagram

