



S91

MOTOR MULTI-PROTECTION RELAY

Highlights

- **Front diagnostics via LED and display**
- **Simplified settings and adjustments via trimmer and front selector**
- **Current measurement up to 16 A directly or by Current Transformer**
- **Maximum rated voltage 660 Vac (F-F)**
- **Motor control input 195 ÷ 255 Vac**
- **SPDT Relay @ 250 Vac – 8 A**
- **Alarm, temperature, power factor, maximum current, minimum voltage or phase failure management**

S91 is a protection device for electric motors that allows the detection of wrong phase sequence or lack of a phase, of the excess current consumption, no-load operation with the power factor measurement. Equipped with rotary programming switches and a display of alarm signaling, the device is characterized by an input for PTC to protect the motor from overtemperature and enable input for starting the engine. S91 operates in 3 operation modes: single-phase or three-phase, maximum current range 5 or 16 A, operation with or without PTC. Main applications are protection of single-phase or three-phase pumps for possible rotor stop and for overtemperature as well as device failure detection of mechanical transmission (e.g. belts or chains) with protection against transmission system lockdown.



PTC Input

5 - 16 A

Max current range



Three-phase /
Single-phase
measurement



MOTOR MULTIPROTECTION RELAY

TECHNICAL DATA

GENERAL DATA

Power supply	195 ÷ 255 Vac (50-60Hz)
Power consumption	1,5 W (max)
Withstand voltage	2,5 kV
Pulse withstand voltage	4 kV
Rated insulation voltage	600 V (cat II); 300 V (cat III)
Protection degree	IP20
Operating temperature	-20 ÷ +65°C
Mounting	35mm DIN rail IEC EN60715
Weight	250 g
Dimension (wxhxd)	53,5 x 73 x 90 mm
Case	UL94 V0, color ral7035
Norms	EN61000-6-4, EN61000-6-2, EN61010-1

WARNINGS AND SETTINGS

LED status indicators	Relay status Device disabled; Inhibit time (slow rotation); Motor in rotation (fast rotation); PTC sensor line short-circuited; PTC sensor line interrupted; Phase failure or minimum voltage alarm; Phase sequence alarm; Maximum current alarm; Minimum P.F. alarm; Temperature alarm
Front panel display	
Front panel selector	Single-phase or three-phase measurement; maximum current range 5 or 16 A; operation with or without PTC
Front panel trimmer adjustment	Setting auto reset time, inhibition time, minimum power factor, trip time, max current
Motor activating/deactivating	Enabling input with inhibition time setting

CURRENT MEASUREMENT

Insertion type	Direct or by Current Transformer
Rated current	16 Aac
Current measurement limits	0,1 ÷ 16 Aac, accuracy < 5%
Input type	Shunt
Measurement type	TRMS
Continuous thermal limit	16 Aac
Pulse thermal limit	45 Aac per 1 s
Dynamic limit	200 Aac per 10 ms
Self-consumption	1,3 W
Phase failure intervention	< 200 ms

VOLTAGE MEASUREMENT

Rated voltage Ue	347 (L-N) / 600 (L-L) Vac Cat II; 277 (L-N) / 480 (L-L) Vac Cat III
Voltage measurement limits	60 ÷ 660 Vac, accuracy < 5%
Frequency limits	50 – 60 Hz ± 5%
Connection Modes	L1-L2-L3 o L-N
Power failure threshold	80 Vac (single phase and three-phase)
Phase difference max - min	>20% (three-phase only)

MOTOR CONTROL INPUT

Rated voltage	195 ÷ 255 Vac
Operating limits	0,85 ÷ 1,1 of rated voltage
Power consumption/dissipation	0,17 W
Minimum command duration	≥40 ms

RELAY OUTPUT

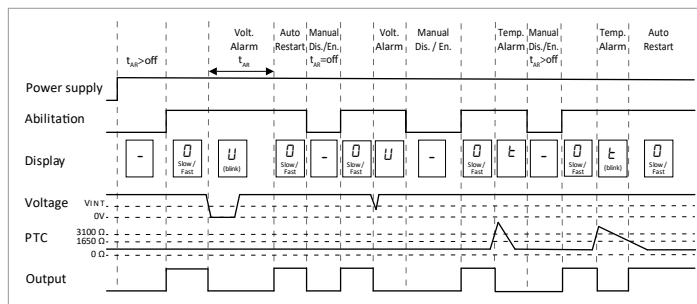
Type	SPDT
Working voltage	250 Vac
Working current	8 A

PTC MEASUREMENT

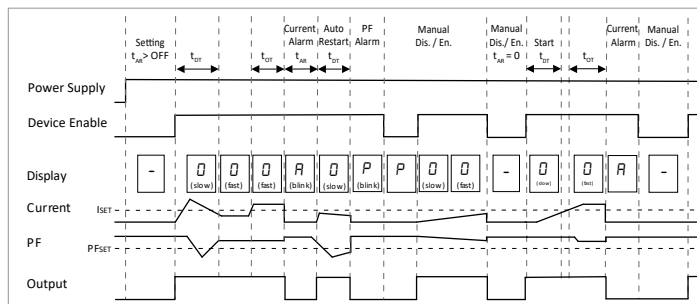
Input	Non insulated from power network, max cable length 30 m
Accuracy	1650 ÷ 3100 Ω; error < 5%
Short circuit detection	< 25Ω
Open circuit detection	> 14 kΩ

OPERATING DIAGRAM

VOLTAGE / PTC

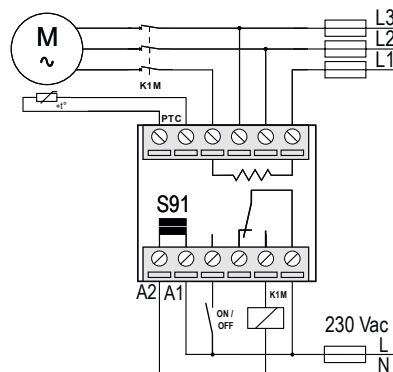


CURRENT / POWER FACTOR

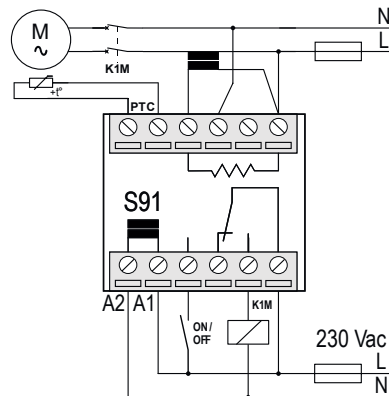


CONNECTION EXAMPLES

THREE-PHASE MOTOR WITH DIRECT CURRENT MEASUREMENT



SINGLE-PHASE MOTOR WITH CURRENT MEASUREMENT AND CURRENT TRANSFORMER



ORDER CODES

Code	Description
S91	Motor multi-protection relay