

RT7 Thermistor Protection Relays

When exact motor temperature sensing is critical



Investment Protection

Electric motors are significant investments, and losing them to overheating just is not an option. Sprecher + Schuh's RT7-E1 and RT7-E2 Thermistor Protection Relays are designed to keep that from happening. The RT7 is not a replacement for an overload relay. Instead, it is additional protection from damaging heat build-up in the motor.

If you have thermistors...

Installed in many of today's electric motors are thermistors, which sense heat levels produced in the stator windings. If thermal levels exceed safe standards, thermistors send that information to the relay, which trips and switches off the motor. The RT7-E1 and RT7-E2 display a red LED to indicate a fault.

The RT7-E1 and RT7-E2 also trip because of a short or open in the sensor measuring circuit. Each relay displays an open circuit alert with a 2 Hz red LED and a short circuit warning with a blinking red LED. The RT7-E2 stores a motor's switching status in memory during power failures – a critical safeguard.

Feature comparison

Model	RT7-E1	RT7-E2
Thermal overload protection	●	●
Short-circuit/open-circuit protection in the sensor measuring circuit	●	●
Power-on indication (green LED)	●	●
Trip indication (red LED)	●	●
Automatic reset	●	●
Manual reset & Test Button		●
Remote reset (external button)		●
Storage of switching status in memory		●



Compatibility and Convenience

These relays and their microprocessor technology provide very accurate and repeated protection. Neither requires adjustment, and their broad supply voltage rating (24...240V AC/DC) makes them ideal for a wide variety of applications. Up to six PTC thermistors can be connected in series.

Automatic Reset

The RT7-E1 and RT7-E2 automatically reset if the sensor measuring circuit's resistance drops below the reset value. To keep a motor from restarting after automatic reset, provide three-wire momentary control. The RT7-E2 also has a manual reset button, as well as a terminals for remote reset.

B

Motor Protection

RT7

Relay Configuration

	RT7-E1	RT7-E2	
	13/14 21/22	13/14	21/22
Normal			
Tripped			
Power off			

RT7 Pricing

RT7 Series	Price
RT7-E1	176
RT7-E2	247

Power/Trip Identification

Indication	LED	Resistance
Power On	Green	
Trip Overtemp	Red	3600 ohms
Trip Open Sensor Circuit	Red 2 Hz	>18000 ohms
Trip Shorted Sensor Circuit	Red Flashing	<20 ohms

Technical Information (Electrical)

Supply

Rated Supply Voltage (Us)	24...240V AC/DC
Operating Range	AC: 0.8...1.1 Us DC: 0.9...1.1 Us
Maximum Power Consumption	1.5 VA

Output Relay

Type of Contacts	Type E1: (2) Form A, one relay Type E2: (2) Form A, independent relays
Rated Thermal Current	5 A @ 250V AC 4 A @ 24V DC
Rated Insulation Voltage	250V AC
Rated Operating Voltage	250V AC
Utilization Category	AC15/DC13

Technical Information (Mechanical)

Environmental

Ambient Temperature	-40°C...+80°C; (storage) -25°C...+60°C; (operating)
Humidity	5...95% noncondensing
Maximum Altitude	2000 m
Pollution Environment	Pollution Degree 2
Degree of Protection	IP 20

PTC Sensor Circuit

Type of Control Unit	Mark A
PTC Sensor Characteristic	IEC 34-11-2
Max. Number of Sensors	6
Max. Cold Resistance of Sensor Chain	1500 ohm
Trip Resistance	3600 ohm (± 300 ohm):
Reset Resistance	1580 ohm (± 60 ohm):
Short Circuit Trip Resistance	<20 ohm (-5 ohm, +0 ohm):
Short Circuit Reset Resistance	24 ohm (-0 ohm, +6 ohm)
Open Circuit Trip Resistance	>18000 ohm:

Terminal Cross-Sections

Terminal Screwdriver Blade	M3
Conductor Size	0.5...2.5 mm ² 20...12 AWG

Measuring Line

Minimum Cross Section (mm ²)	0.5	0.75	1	1.5
Maximum Length (m)	200	300	400	600
	200...600m: twisted pair, shielded shield connection at T1			

Remote Reset

Maximum Line Length	200...600m: twisted pair, shielded shield connection at T1
---------------------	--

