

RT3 Thermistor Protection Relays

When exact temperature sensing is critical

Series RT3 Thermistor Protection Relays are used in applications where exact temperature monitoring is crucial. The RT3 takes into account extraneous influences such as increased ambient temperature, ventilation system breakdown and obstructed cooling.

In addition to overtemperature protection, the RT3 also trips because of a short or open in the sensor measuring circuit. The RT3-M and RT3-U models provide a critical safeguard by storing the switching status in memory during a power failure.

Straightforward design

The RT3 interface is clearly and logically designed. Tripping is distinctly indicated by a red LED. The RT3-M and RT3-U models have a manual reset button and terminals for remote reset. Model RT3-U also has a test button to check operating readiness and a green LED for power-on and power-loss indication.

For the very highest protection requirements, the RT3 can be used in combination with Sprecher + Schuh's CT Thermal Overload Relays, KTA Motor Circuit Controllers or the CET4 Electronic Motor Protector.

Theory of operation

Thermistors are installed in the thermally critical locations of the device to be protected. For motors this is the stator winding. The resistance of the thermistors has a positive temperature coefficient (PTC). The resistance of the PTC sensor increases immediately when the response temperature is exceeded.

Sensing this increase, the RT3 trips, switching off the protected device. It then indicates a fault by lighting the red LED.



Automatic reset standard

RT3 Relays feature an automatic reset once the resistance of the sensor measuring circuit falls below the reset value. To prevent undesirable starting of the motor, automatic reset should only be provided with three-wire/momentary control. The RT3-M and RT3-U models also have a manual reset button and terminals for remote reset.

Memory with loss of supply voltage

On the RT3-M and RT3-U, the switching status is stored in memory in the event of a power supply failure. After power is restored, the output relay and red LED trip indicator revert to the status existing before the failure. On the RT3-U, memory time is unlimited. Memory on the RT3-M is 3 hours at +25°C.

Temperature prewarning

If the manufacturer installs additional PTC sensors having a lower response temperature, a second RT3 can be used to provide a preliminary temperature warning. This permits early detection of an impending fault and can prevent an interruption to the operation.

Feature comparison

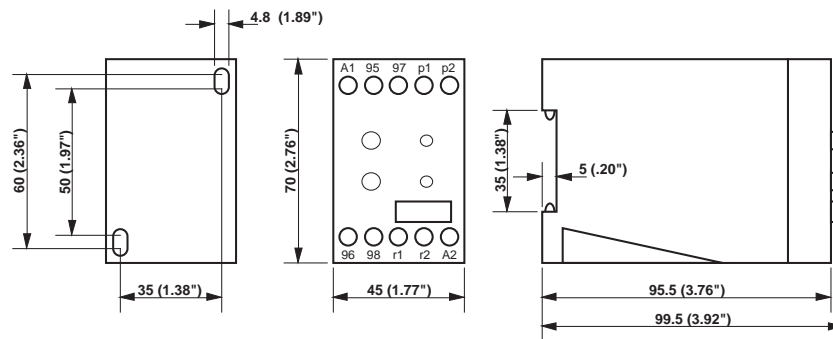
Model	RT3-A	RT3-M	RT3-U
Thermal overload protection	●	●	●
Short-circuit/open-circuit protection in the sensor measuring circuit	●	●	●
Trip indication (red LED)	●	●	●
Automatic reset	●	●	●
Manual reset		●	●
Remote reset (external button)		●	●
Storage of switching status in memory			
Three hours at +25°C		●	●
Unlimited			●
Test button			●
Power-on indication (green LED)			●

RT3 Pricing

RT3 Series	Price
RT3-A-★V50/60	251
RT3-M-★V50/60	330
RT3-U-★V50/60	508

Replace ★ in catalog number with supply voltage code:
 AC: 110, 220, 240, 380, 415 or 440
 DC: Change "★V50/60" to: "-24VDC" or "-48VDC"

Dimensions mm (inches)



Technical Information

Rated Voltage					
Maximum	[V]	440			
To UL & CSA	[V]	240			
Supply Voltage					
Alternating Current (AC) 50/60Hz - Normal	[V]	110, 220, 240, 380, 415 or 440			
Alternating Current (AC) 50/60Hz - Special	[V]	24 or 48			
Direct Current (DC)	[V]	24 or 48			
Permissible fluctuation					
AC		0.80 to 1.10 of rated supply voltage			
DC		0.90 to 1.20 of rated supply voltage			
Power Consumption					
		AC: 2.5VA (2.2 Watt) DC: 2.2 Watt			
Output Relay					
Contact arrangement		1 N.O. & 1 N.C. (electrically isolated)			
Continuous thermal current	[A]	4 Amps			
Rated operating current (AC)		24-110V/4A, 220-240V/3A, 380-415V/2A, 440V/1.5A			
Rated operating current (DC)		24V/0.6A, 48V/0.3A, 60V/0.25A, 110V/0.15A, 220-240V/0.05A			
Ambient Temperature					
Normal operation	[°C]	-25°C to +60°C			
For storage (dry)	[°C]	-40°C to +60°C			
Climatic Resistance					
	[°C]	40°C @ 92% relative humidity (56 days)			
Terminals					
	[AWG]	14-20			
Sensor Measuring Circuit					
Maximum cold resistance of PTC sensor chain	[Ω]	1500 Ω			
Maximum number of series connected PTC sensors		6			
Response level (-25°C to +60°C)	[Ω]	3300 Ω (±300 Ω)			
Reset level (-25°C to +60°C)	[Ω]	1800 Ω (±300 Ω)			
Response level with short circuit in sensor circuit (-25°C to +60°C)	[Ω]	≤15 Ω			
Measuring voltage		< 2.5 VDC			
Measuring Line					
Minimum cross-section (mm ²)	[mm ²]	0.5	0.75	1	1.5
Maximum length (m)	[m]	200	300	400	600
Reset					
RT3-A		Automatic			
RT3-M & RT3-U		Manual or automatic (for automatic reset connect r1-r2)			
Trip Memory					
RT3-M		3 hours @ 25°C; 1 hour @ 40°C; 15 min @ 60°C			
RT3-U		Unlimited (not temperature dependent)			
Remote Reset					
External contact		1 N.O. (volt free)			
Maximum line length		300m twisted; 1000m shielded			
Terminal Connections					
A1 (pos) -A2 (neg)		Power			
21(97)-22(98)		N.C. contact (with power off or trip)			
13(95)-14(96)		N.O. contact (with power off or trip)			
p1-p2		PTC temperature sensor			
r1-r2		Remote reset (RT3-M & RT3-U only)			