

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable to DIN 3440

Overview

The 3RS10/3RS11 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is sensed by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function).

The 3RS10 40, 3RS20 40, 3RS11 40 and 3RS21 40 relays comply with the requirements of DIN 3440 as temperature monitors; the 3RS10 42 and 3RS11 42 relays comply with the requirements of DIN 3440 as temperature limiters. The relays are also an excellent alternative to temperature controls in the low-end performance range (2 or 3-point closed-loop control).

Technical specifications

Type	3RS10 40/3RS10 42/3RS20 40			3RS11 40/3RS21 40	3RS11 42
General data					
Width	mm	45			
Operating range	V	0.85 ... 1.1 x U _s			
Rated power	W/VA	< 4/7			
Auxiliary circuits					
Contacts		1 CO + 1 CO + 1 NO			
Rated operational currents I _e					
• AC-15 at 230 V AC, 50 Hz	A	3			
• DC-13 at:					
- 24 V AC	A	1			
- 240 V AC	A	0.1			
DIAZED fuse	A	4			
gl/Gg operational class					
Electrical endurance	A	100000			
AC-15 at 3 A					
Mechanical endurance		30 x 10 ⁶			
Mechanical operating cycles					
Tripping units					
• Measuring accuracy at 20 °C ambient temperature (T20)		< ±2 K, ±1 digit	< ±5 K, ±1 digit	< ±7 K, ±1 digit	
• Reference point accuracy		--	< ±5 K		
• Deviations due to ambient temperature in % from measuring range	%	0.05 °C per K deviation from T20			
• Measuring cycle	ms	500			
• Hysteresis settings		1 ... 99 Kelvin, for both values			
- for temperature 1					
Adjustable delay time	s	0 ... 999			
Sensor circuits					
• Typical sensor circuits					
- PT100	mA	Typical 1	-	-	
- PT1000/KTY83/KTY84/NTC	mA	Typical 0.2	-	-	
• Open-circuit detection		Yes ¹⁾	Yes	Yes	
• Short-circuit detection		Yes	No	No	
• 3-wire conductor connection		Yes ²⁾	-	-	
Enclosures					
Environmental influences					
Permissible ambient temperature	°C	-25 ... +60			
Permissible storage temperature	°C	-40 ... +80			
Permissible mounting position		any			
Degree of protection acc. to EN 60529		Terminals: IP20; Cover: IP40			
Rated insulation voltage U _i (pollution degree 3)	V AC	300			
Conductor cross-section					
• Screw-type connection		M 3.5 (standard screwdriver, size 2 and Pozidriv 2)			
- Solid	mm ²	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)			
- Finely stranded, with end sleeve	mm ²	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)			
- AWG conductors, solid or stranded	AWG	2 x (20 ... 14)			
- Tightening torque	Nm	0.8 ... 1.2			
• Spring-loaded terminal					
- Solid	mm ²	2 x (0.25 ... 1.5)			
- Finely stranded, with end sleeve	mm ²	2 x (0.25 ... 1)			
- Finely stranded, without end sleeve	mm ²	2 x (0.25 ... 1.5)			
- AWG conductors, solid or stranded	AWG	2 x (24 ... 16)			
- Corresponding opening tool		8WA2 807 ³⁾			
Vibration resistance IEC 68-2-6	Hz/mm	5 ... 26/0.75			
Shock resistance IEC 68-2-27	g/ms	15/11			

1) Not for NTC B57227-K333-A1 (100 °C: 1.8 k; 25 °C: 32.762 k).

2) 2-wire connection of resistance sensors with wire jumper between T2 and T3.

3) See Catalog LV1, Accessories, 3RP15 Solid-State Timing Relays.