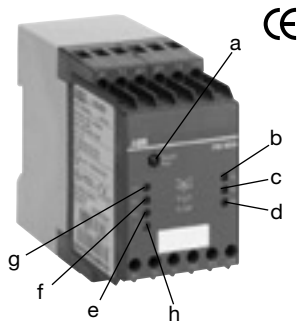
Thermistor Motor Protection Relays
CM-MSN 6 Sensing Circuits
Accumulative Evaluation

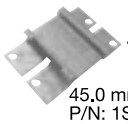


a Reset / Test button
b to g F1-F6: red LED - fault tripping F1 to F6
h U: green LED - supply voltage

- Short-circuit monitoring of the sensor circuit
- Wide voltage range: 24…240 V AC/DC
- Non-volatile memory selectable
- Remote reset
- Automatic reset selectable
- Memory reset and test button
- Output contacts: 1 n/c, 1 n/o
- 7 LEDs for status indication
- ATEX approved
  Ex II (2) G, PTB 02 ATEX

Approvals: c UL us LISTED

Accessories



Panel Mounting Adapter
45.0 mm
P/N: 1SVR 440 029 R 0100

Transparent Cover
45.0 mm
P/N:
1SVR 440 005 R 0100

Marker Insert
P/N:
1SVR 366 017 R 0100

Temperature Sensor

See accessory pages for specifications.

Operating principle and applications for thermistor motor protection relays

The CM range of thermistor motor protection relays are used to monitor motors equipped with PTC temperature sensors. The PTC temperature sensors are incorporated in the motor windings to measure the motor heating. This enables direct control and monitoring of the following operating conditions:

- heavy duty starting
- rapid cycling
- single-phase operation (phase loss)
- high ambient temperature
- insufficient cooling
- break operation
- unbalanced voltages

The relay is independent of the rated motor current, the insulation class and the method of starting. The PTC sensors are connected in series to the terminals 1T1 or 2T1 (Etc.) and T2. The number of possible PTC sensors per measuring circuit is limited by the sum of the individual PTC sensor resistances.

$RG = R1 + R2 + RN \leq 1.5\ k\Omega$.

Under normal operating conditions the resistance is below the trip point. If one of the PTC resistors heats up excessively, the output relay de-energizes.

If the autoreset function is selected, the output relay re-energizes automatically after the PTC cools.

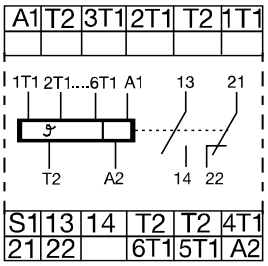
Includes manual reset (pushbutton on the front) or remote with a normally open dry contact.

Further applications:

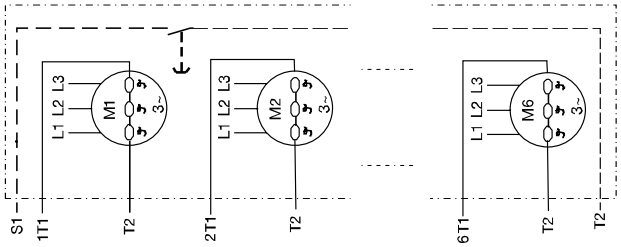
Temperature monitoring of equipment with PTC sensors integrated, such as

- machine rolling bearings
- hot-air ventilators
- oil
- air
- heating installations

6 Sensor Circuits, Accumulative Evaluation



A1-A2 Supply voltage
13-14 Output contacts -
21-22 Normally energized



1T1...6T1-T2 Sensor circuits
S1-T2 Remote reset, jumper = no memory

Ordering Table

Supply voltage	Part Number
24…240 V AC/DC	**1SVR 450 025 R 0100**

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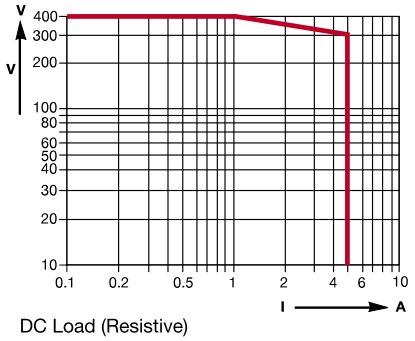
Technical Data

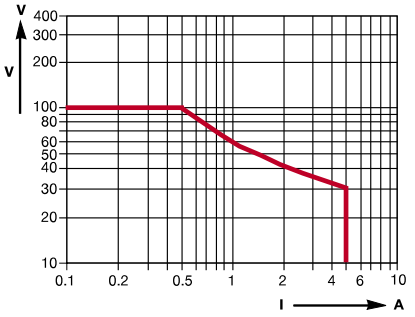
Input		
Supply voltage - power consumption	A1-A2	24...240 V AC/DC - ≅ 1.5 VA / W (24 V) ≅ 1.5 W (240 V DC) ≅ 3.3 VA (240 V AC/ 60 Hz)
Tolerance of supply voltage		-15 % ... +10 %
Frequency of AC supply		15...400 Hz
Measuring Circuit		
Measuring inputs	1T1... 6T1-T2	6 sensor circuits
Total resistance in cold state		≤ 1.5 kΩ per sensor circuit
Response value (relay de-energizes)		3.6 kΩ ± 5%
Reset value (relay energizes)		1.6 kΩ ± 5%
Voltage at T1-T2 , open circuit		≤ 6.5 V DC
Voltage at T1-T2 , at 4000 Ω		≤ 3.5 V DC
Max. Cable length, unshielded		≤ 100 m at 18 AWG (0.75 mm²); 400 m at 14 AWG (2.5 mm²)
Remote reset	S1-T2	n/o dry contact at 5.5…25 V
Reset cable length between S1 and T2		≤ 50 m, 100…200m if shielded
Display of Operating Status		
Supply voltage "U"		LED, green
Fault tripping sensor circuit 1...6 "F1"..."F6"		LED, red
Output	13-14 / 21-22	2 Relays, 1 n/o + 1 n/c
Rated voltage	VDE 0100, IEC947-1	250 V
Rated switching voltage max.		250 V AC
Rated switching current	AC 12 (resistive)	4 A (at 230 V)
	AC 15 (inductive)	3 A (at 230 V)
	DC 12 (resistive)	4 A (at 24 V)
	DC 13 (inductive)	2 A (at 24 V)
Maximum mechanical life		30 x 10^6 operations
Maximum electrical life (acc. to AC 12 / 230 V / 4 A)		1 x 10^5 operations
Short-circuit proof, max. fuse rating		10 A / fast acting
General Data		
Rated impulse withstand voltage Vimp		4 kV
Operating temperature		-25°C ... +65°C
Storage temperature		-40°C ... +85°C
Mounting to DIN rail (EN 50022)		Snap-on mounting/ Screw mounting with an adapter
Wire size stranded with wire end ferrule		2 x 14 AWG (2 x 2.5 mm²)
Weight		≅ 0.51 lb (230 g)

Load Limit Curves

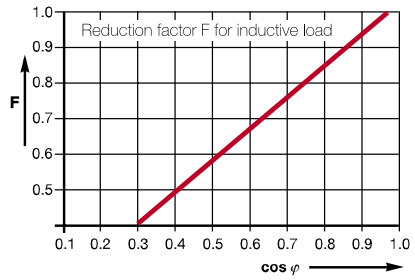
AC Load (Resistive)



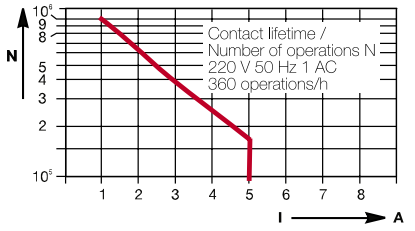
DC Load (Resistive)



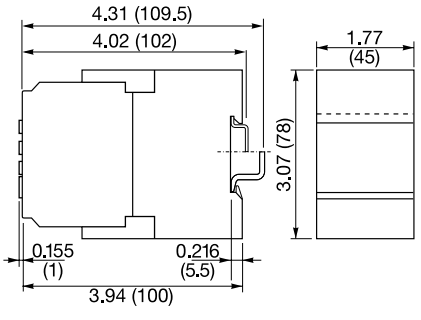
Reduction Factor for Inductive AC Load



Contact Lifetime



Mechanical View



Inches (Millimeters)

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