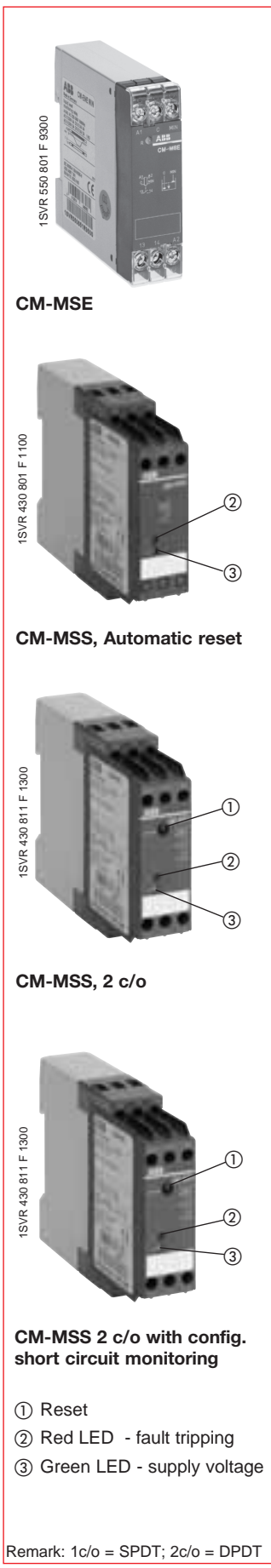


Thermistor motor protection relays CM-MSE, CM-MSS

Ordering details



CM-MSE

CM-MSS, Automatic reset

CM-MSS, 2 c/o

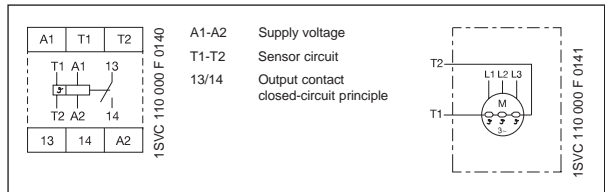
CM-MSS 2 c/o with config. short circuit monitoring

- ① Reset
- ② Red LED - fault tripping
- ③ Green LED - supply voltage

Remark: 1c/o = SPDT; 2c/o = DPDT

CM-MSE

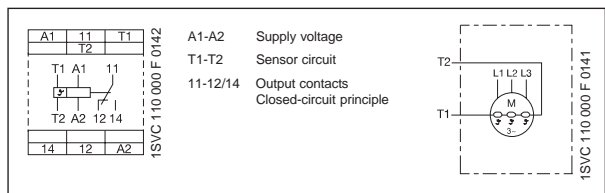
- Automatic reset
- Several sensors can be connected (max. 6 sensors in series)
- Control of bimetals
- 1n
- Excellent cost / performance ratio
- Approval ,



Type	Supply voltage	Order number	Pack. unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSE	24 VAC 110-130VAC 220-240VAC	1SVR 550 805 R 9300 1SVR 550 800 R 9300 1SVR 550 801 R 9300	1 1 1		0.110/0.242 0.110/0.242 0.110/0.242

CM-MSS, automatic reset

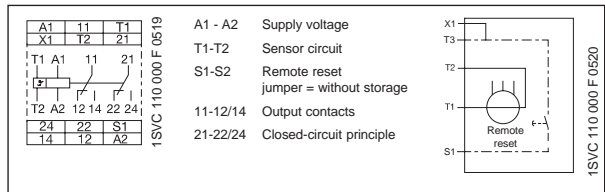
- Automatic reset
- Several sensors can be connected
- 1c/o, 2 LEDs
- Control of bimetals
- Approval ,



Type	Supply voltage	Order number	Pack. unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSS	24 VAC/DC 220-240VAC	1SVR 430 800 R 9100 1SVR 430 801 R 1100	1 1		0.150/0.33 0.150/0.33

CM-MSS, 2 c/o with reset button¹⁾

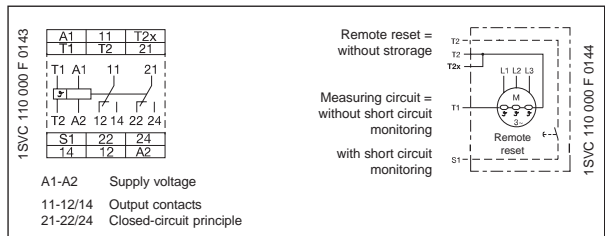
- Storage resettable
- Reset button
- Remote reset
- 2c/o, 2 LEDs
- Approvals , , ,



Type	Supply voltage	Order code	Pack. unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSS	24VAC/DC ¹⁾ 24VAC 110-130VAC 220-240VAC	1SVR 430 810 R 9300 1SVR 430 811 R 9300 1SVR 430 811 R 0300 1SVR 430 811 R 1300	1 1 1 1		0.150/0.33 0.150/0.33 0.150/0.33 0.150/0.33

CM-MSS 2 c/o with reset button and short circuit monitoring configurable

- Storage resettable
- Storage reset button
- Remote reset capability
- 2c/o, 2 LEDs
- Short circuit monitoring of the sensor cable
- Approvals , ,

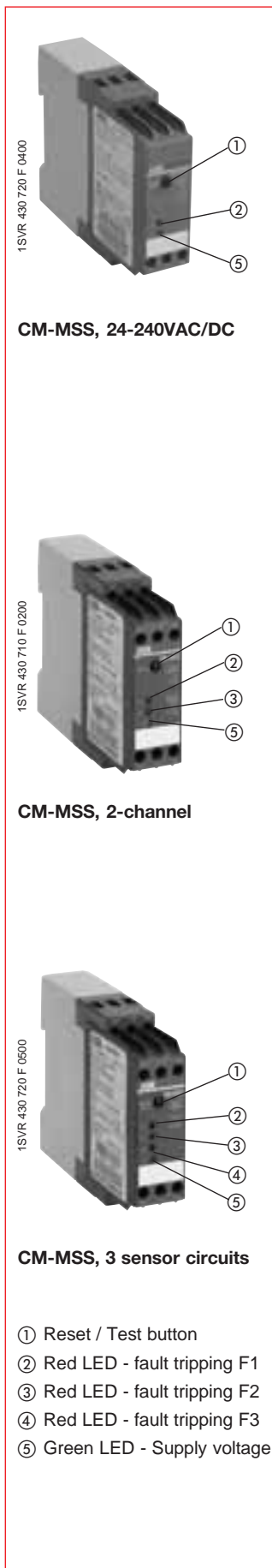


Type	Supply voltage	Order code	Pack.-unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSS	24 VAC/DC 110-130VAC 220-240VAC 380-415 VAC	1SVR 430 710 R 9300 1SVR 430 711 R 0300 1SVR 430 711 R 1300 1SVR 430 711 R 2300	1 1 1 1		0.150/0.33 0.150/0.33 0.150/0.33 0.150/0.33

• Technical data	69	• Dimensional drawings	95
• Accessories PTC resistor sensor	68	• Accessories	95

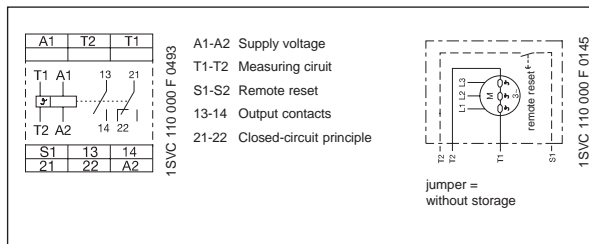
Thermistor motor protection relays CM-MSS 24-240VAC/DC, 2-channel, 3 sensor circuits

Ordering details



CM-MSS 24-240VAC/DC

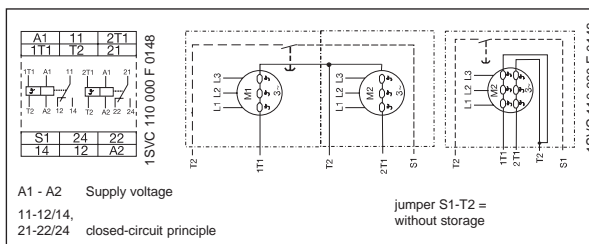
- Short circuit monitoring of the sensor circuit
- Continuous supply voltage range 24-240VAC/DC
- Configurable non-volatile storage in case of failure
- Storage resettable and test button
- Remote reset button
- Automatic reset configurable
- 2 output contacts 1n/c 1n/o, 2 LEDs



Type	Supply voltage	Order code	Pack. unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSS 24-240VAC/DC	24-240VAC/DC	1SVR 430 720 R 0400	1		0.150/0.33

CM-MSS 2-channel, single evaluation

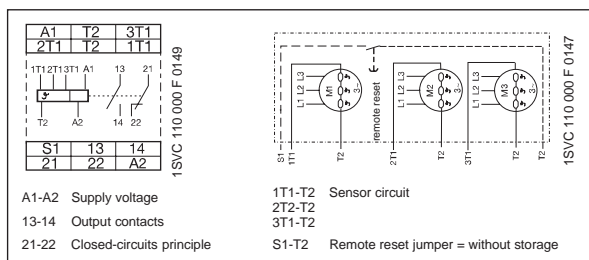
- Short circuit monitoring of the sensor circuit
- Continuous supply voltage range 24-240VAC/DC
- 2 separate sensor circuits to monitor two motors, or to monitor one motor with 2 sensor circuits (prewarning and final switch off)
- Storage resettable and test button
- Automatic reset configurable
- 2c/o, 3 LEDs



Type	Supply voltage	Order code	Pack. unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSS 2-channel	24-240VAC/DC	1SVR 430 710 R 0200	1		0.150/0.33

CM-MSS 3-sensor circuits, total evaluation

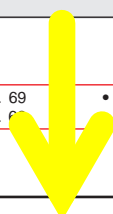
- Short circuit monitoring of the sensor circuit
- Continuous supply voltage range 24-240VAC/DC
- Configurable non-volatile storage
- Remote reset
- Automatic reset configurable
- Storage resettable and test button
- 2 output contacts 1n/c, 1n/o,
- 4 LEDs



Type	Supply voltage	Order code	Pack. unit piece	Price 1 piece	Weight 1 pc. kg/lb
CM-MSS 3 sensor circuits	24-240VAC/DC	1SVR 430 720 R 0500	1		0.150/0.33

Remark: 1c/o = SPDT; 2c/o = DPDT

• Technical data	69	• Dimensional drawing	95
• Accessories PTC resistor sensor		• Accessories	95



Thermistor motor protection relays CM range

Technical data and standards

	CM-MSE, CM-MSS , CM-MSN	
Input circuit		
Supply voltage - power consumption:		
24VAC	A1-A2	approx. 1.5VA
24VAC/DC	A1-A2	approx. 1.1VA/0.6W
110-130VAC	A1-A2	approx. 1.5VA
220-240VAC	A1-A2	approx. 1.5VA
380-440VAC	A1-A2	approx. 1.7VA
24-240VAC/DC	A1-A2	approx. 1.4-1.7W / approx. 3.5-5.7VA
Tolerance of supply voltage		-15%...+10%
Supply voltage frequency		AC: 50-60Hz AC/DC: 15-400Hz
Duty cycle		100%
Measuring circuit		
Monitoring function	T1-T2/T2x, 1Ta...1Tb-T2	
Number of sensor circuits	Temperature control with PTC sensors	
Short circuits detection	1, 2, 3 or 6, see ordering details	
Non volatile storage	see ordering details	
Test function	see ordering details	
Sensor circuit		
Temperature switch off resistance (relay de-energizes)	3.6kOhm +/-5%, CM-MSE: 2.7-3.7kOhm, (3050+/-550Ohm ³⁾)	
Temperature switch on resistance (relay energizes)	1.6kOhm +/-5%, CM-MSE: 1.7-2.3kOhm, (1900+/-400Ohm ³⁾)	
Short circuit switch off resistance (relay de-energizes)	<200Ohm	
Short circuit switch on resistance (relay energizes)	>400Ohm	
Max. total resistance in cold states	<=1.5kOhm	
Max. cable length for short circuit detection	2x100m at 0.75mm ² , 2x400m at 2.5mm ²	
Reaction time	<100ms	
Control circuit for storage and hysteresis function		
Remote reset S1-T2	n/c contact	
Max. no load voltage	approx. 25V, 5.5V (24-240VAC/DC versions)	
Max. cable length	<=50m, 100-200m shielded	
Display of operational status		
Supply voltage	U - Green LED	
Fault tripping	F - Red LED	
Output circuits		
Number of contacts	11-12/14, 21-22/24, 13-14, 21-22	
Opened circuits principle ¹⁾	1n/o, 1c/o, 2c/o, 1n/c + 1c/o	
Contact material	closed-circuit principle	
Rated voltage acc. to VDE0110, IEC664-1, IEC947-1	AgCdO	
Rated switching voltage max.	250 V	
Rated switching current AC12 (resistive) 230V	250V	
Rated switching current AC15 (inductive) 230V	4A	
Rated switching current DC12 (resistive) 24V	3A	
Rated switching current DC13 (inductive) 24V	4A	
Maximum mechanical life	2A (1.5A - n/c ²⁾)	
Maximum electrical life (acc. to AC12, 230V, 4A)	30 (10 ²⁾) x 10 ⁶	
Short circuit proof, max. fuse rating	0.1 x 10 ⁶	
	n/c	2A (4A ²⁾) fast, operation class gL
	n/o	10A (6A ²⁾) fast, operation class gL
General data		
Enclosure width	22.5mm / 45mm CM-MSN	
Wire size	2 x 2.5mm ² (2 x 14 AWG) stranded with wire end ferrule, CM-MSE: 2x1.5mm ² (2 x 16 AWG)	
Weight	approx 150g/0.33lb, CM-MSE: approx. 110g/0.24lb	
Mounting position	any	
Degree of protection: housing / terminals	IP50 / IP20	
Operating temperature	-20°C...+60°C, CM-MSN: -25°C...+65°C	
Storage temperature	-40°C...+80°C	
Mounting	DIN rail (EN50022)	
Standards / directives		
Product standard	IEC255-6, VDE0660 T302, T303, EN60947-5-1	
Electromagnetic compatibility	89/336 EWG, 91/263 EWG, 92/31 EWG, 93/68 EWG, 93/67 EWG	
ESD acc. to IEC61000-4-2, EN61000-4-2	Level 3 - 6 kV / 8 kV	
HF- radiation resistance acc. to IEC61000-4-3, EN61000-4-3	Level 3 - 10 V/m	
Burst acc.to IEC61000-4-4, EN61000-4-4	Level 3 - 2 kV / 5 kHz	
Surge acc. to IEC61000-4-5, EN61000-4-5	Level 3/4 - 1/2 kV	
HF line emission acc. to IEC61000-4-6, EN61000-4-6	Level 3 - 10 V	
Low voltage directive	93/68/EWG	
Operating safety	4G	
Resistance to vibration	10G, f = 55Hz, a = 0.95 mm, t = 2h per level	
Environmental tests acc. to IEC68-2-30 Db	24h Zyklus, 55°C, 93% rel., 96h	
Approvals		
cULus, part. GL, part. ATEX, GOST		
Isolation data		
Rated insulation between supply-, measuring- a. output circuit	250V	
Rated impulse withstand voltage between all isolated circuits	4kV / 1.2 - 50µs	
Test voltage between all isolated circuits	2.5kV, 50Hz, 1min.	
Pollution category	3	
Overvoltage category	3	

²⁾ 1SVR 430 710 R 0200 ³⁾ 1SVR 430 810 R 9300, 1SVR 430 800 R 9100
1SVR 430 8xx R xxxx

Remark: 1c/o = SPDT; 2c/o = DPDT



Thermistor motor protection relays

Benefits and advantages Selection table

Operating principle and examples of use of the thermistor motor protection relays

The Thermistor motor protection relays control motors fitted with PTC resistor sensors. The temperature sensors are incorporated in the starter windings and measure directly the motor heating. Direct control is guaranteed under the following operating conditions:

- heavy duty,
- high switching frequency,
- single-phasing,
- high ambient temperature
- insufficient cooling
- breaking a motor
- unbalance

Under normal operating conditions the resistance value is below the response value.

If only one of the PTC resistors heats up excessively, the output relay de-energizes.

After cooling down the output relay energizes automatically, if autoreset is configured.

Devices with hand (push button on front) or remote reset configuration must be controlled on the control input with the required signal.

Further application possibilities:

Temperature monitoring of equipment fitted with PTC resistor sensors, e.g.:

- Machine roller bearings
- Hot-air ventilators
- Oil
- Air
- Heating installations

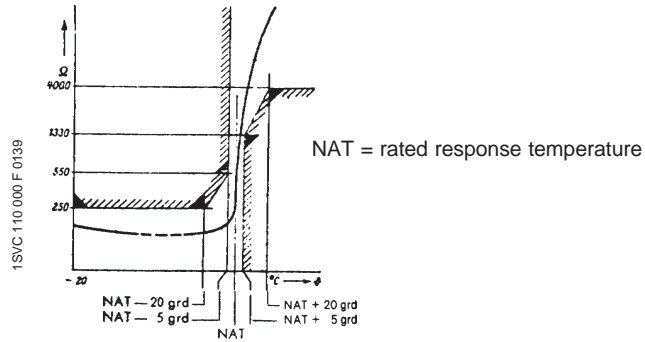
The relay is independent of the motor rated current and the method of starting.

The PTC resistor sensors are connected in series with the terminals Ta and Tb (resp. Ta and Tbx, without short circuit detection). The number of PTC resistor sensors is limited by the sum of the PTC sensor resistors of the individual resistors.

$$R_G = R_1 + R_2 + R_N \leq 1.5 \text{ k}\Omega$$

Resistance characteristic

of one temperature sensor to DIN 44 081.



Product overview: Thermistor motor protection

Type	CM-MSE	CM-MSS	CM-MSS	CM-MSS	CM-MSS	CM-MSS	CM-MSS	CM-MSS	
Function									
Measuring range									
Number of sensor circuits	1	1	1	1	1	2	3	6	
Wire break monitoring	•	•	•	•	•	•	•	•	
Short circuit detection	-	-	-	• ¹⁾	•	•	•	•	
Non-volatile fault storage	-	-	-	-	• ²⁾	• ²⁾	• ²⁾	• ²⁾	
Operation/ Reset									
Auto reset	•	•	•	•	• ²⁾	• ²⁾	• ²⁾	• ²⁾	
Manual reset	-	-	•	•	•	•	•	•	
Remote reset	-	-	•	•	•	•	•	•	
Test button	-	-	-	•	•	•	•	•	
Output contacts									
Principle of operation	closed-circuit principle								
Number / Type	1n/o	1c/o	2c/o	2c/o	1n/o + 1n/c	1c/o per sensor circuit	1n/o + 1n/c total evaluation	1 n/o + 1n/c total evaluation	
Width	22.5 mm							45 mm	
Supply voltages and Order code	24ACV 24VAC/DC 110-130VAC 220-240VAC 380-415VAC 24-240VAC/DC	1SVR 550 805 R 9300 1SVR 550 800 R 9300 1SVR 550 801 R 9300	1SVR 430 800 R 9100 1SVR 430 801 R 1100	1SVR 430 811 R 9300 1SVR 430 810 R 9300 1SVR 430 811 R 0300 1SVR 430 811 R 1300	1SVR 430 710 R 9300 1SVR 430 711 R 0300 1SVR 430 711 R 1300 1SVR 430 711 R 2300	1SVR 430 720 R 0400	1SVR 430 710 R 0200	1SVR 430 720 R 0500	1SVR 450 025 R 0100

1) Configurable via terminals

2) Auto reset configurable by a permanent link (jumper) by connection terminals S1-T2

Remark: 1c/o = SPDT; 2c/o = DPDT