

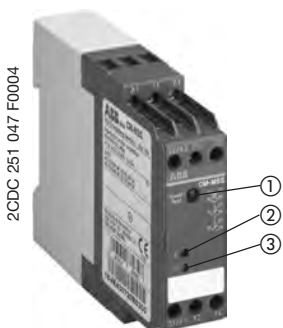
Measuring and monitoring relays CM-MSS (4), CM-MSS (5)

Thermistor motor protection relay

Data sheet



CM-MSS (4)



CM-MSS (5)

- ① Reset / test button
② F: red LED - fault
③ U: green LED - supply voltage

Features

- One sensor circuit with short-circuit monitoring
- Continuous voltage range: 24-240 V AC/DC
- Selectable non-volatile storage in case of fault
- Reset / test button
- Remot reset
- Automatic reset configurable
- Output contacts:
 - CM-MSS (4): 1 n/o, 1 n/c
 - CM-MSS (5): 2 c/o
- 2 LEDs for status indication

Approvals

CM-MSS (4): , , II 2 G, PTB 02 ATEX 3080 ,

CM-MSS (5): , - und II 2 G, PTB 02 ATEX 3080 pending

Marks



Ordering data

Type	Supply voltage	Output contacts	Order code
CM-MSS (4)	24-240 V AC/DC	1 n/o, 1 n/c	1SVR 430 720 R0400
CM-MSS (5)	24-240 V AC/DC	2 c/o	1SVR 430 720 R0300

Application

The devices CM-MSS (4) and (5) are used to monitor the overload of motors by the wiring temperature. The motors have to be fitted with PTC sensors.

Operating mode

If the motor heats-up excessively (sensor resistance > 3,6 kΩ) the output relays de-energize and the red LED displays the overtemperature. Wire breakage or a short circuit within the sensor circuit (sensor resistance < 20 Ω) will also cause a disconnection of the output relays and the red LED flashes.

A fault reset is only possible after the cooling down of the motor (sensor resistance < 1600 Ω) or after the wire breakage or the short circuit within the sensor circuit has been removed (sensor resistance > 40 Ω). The reset can be made by operating the front-face reset / test button.

By terminal assignment remote reset (= non-volatile fault storage) or auto reset can be configured. Details see examples of application on page 3.

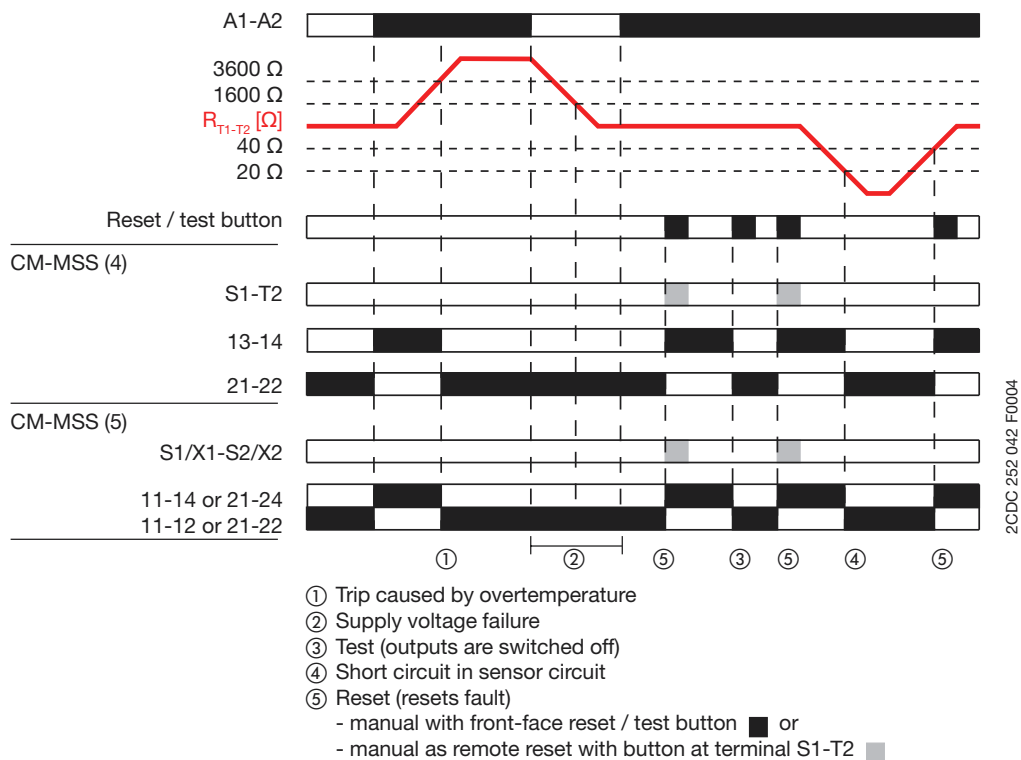
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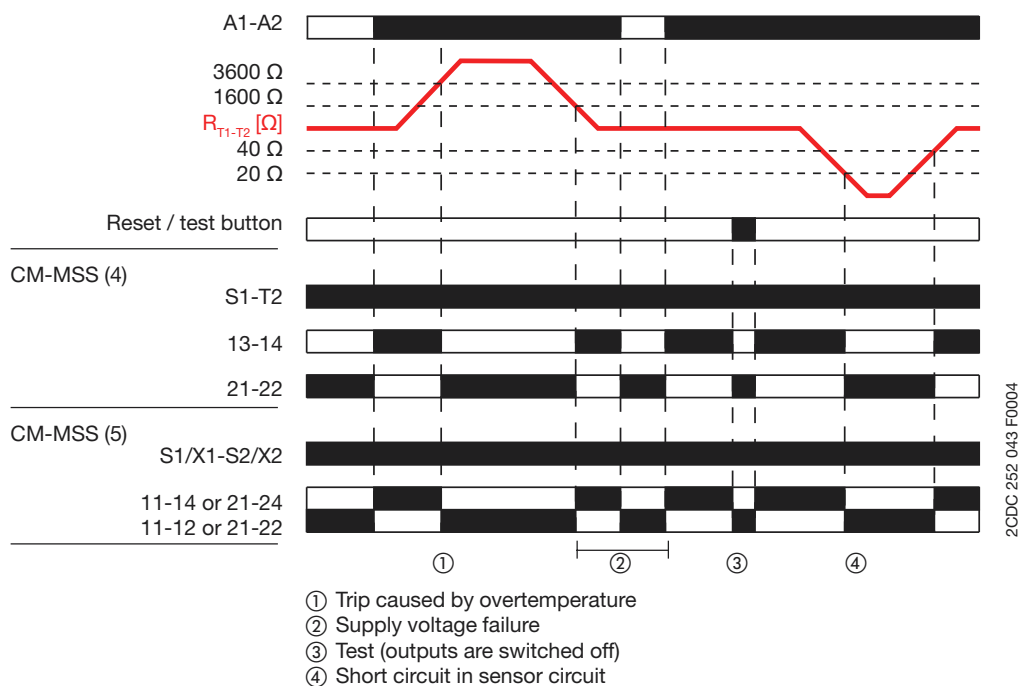
Data sheet

Function diagrams

Manual or remote reset (= non-volatile fault storage)



Auto reset (= no fault storage)

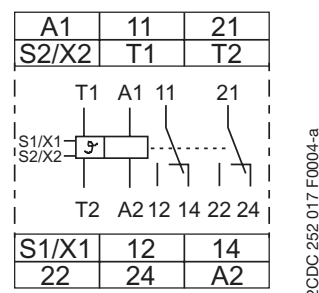
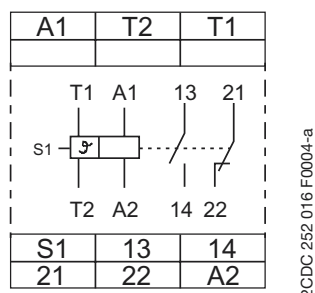


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Position of connection terminals



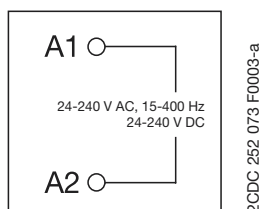
CM-MSS (4)

A1-A2 Supply voltage
T1-T2 Thermistor connection
S1-T2 Reset input
13-14 1 n/o, 1 n/c -
21-22 closed-circuit principle

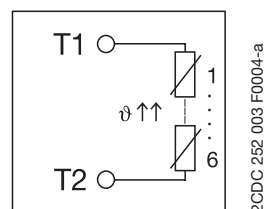
CM-MSS (5)

A1-A2 Supply voltage
T1-T2 Thermistor connection
S1/X1-S2/X2 Reset input
11-12/14 2 c/o -
21-22/24 closed-circuit principle

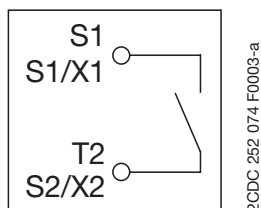
Example of application



Connection of the supply voltage



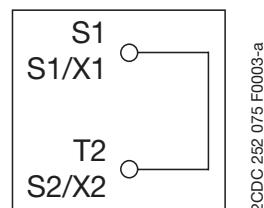
Sensor circuit, Thermistor connection



Remote reset

(= non-volatile fault storage)

CM-MSS (4): S1-T2
CM-MSS (5): S1/X1-S2/X2



Auto reset

(= no fault storage)

CM-MSS (4): S1-T2
CM-MSS (5): S1/X1-S2/X2

Measuring and monitoring relays CM-MSS (4), CM-MSS (5)

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Technical data

Input circuit		A1-A2
Supply voltage - power consumption	A1-A2	24-240 V AC/DC ca. 1.7 W or 3.5 VA
Supply voltage tolerance		-15 % ... +10 %
Supply voltage frequency		15-400 Hz
Duty time		100 %
Measuring/ Sensor circuit		T1-T2
Monitoring function		Temperature monitoring by means of PTC sensor
Number of sensor circuits		1
Short-circuit monitoring		yes
Non-volatile fault storage		yes
Reset / test function		yes
Temperature	switch-off resistance (Relay de-energizes)	3600 $\Omega \pm 5 \%$
	switch-on resistance (Relay energizes)	1600 $\Omega \pm 5 \%$
Short circuit	switch-off resistance (Relay de-energizes)	< 20 Ω
	switch-on resistance (Relay energizes)	> 40 Ω
Max. total resistance of sensors connected in series (cold states)		$\leq 1500 \Omega$
Max. sensor cable length	0,75 mm ²	2x100 m
for short-circuit detection	2,5 mm ²	2x400 m
Response time		< 100 ms
Control circuit - Reset function		S1-T2 or S1/X1-S2/X2
Remote reset		1 n/o
Max. no-load voltage		ca. 5.5 V
Max. cable length	unshielded	≤ 50 m
	shielded	100-200 m
Indication of operating states		
Supply voltage		U: green LED
Fault: Output relays de-energized		F: red LED
Output circuits		13-14, 21-22 or 11-12/14, 21-22/24
Number of contacts	CM-MSS (4)	Relay: 1 n/o, 1 n/c
	CM-MSS (5)	Relay: 2 c/o
Operating principle (output relays de-energize in case of fault)		closed-circuit principle
Contact material		AgNi
Rated voltage	acc. to VDE 0110, IEC 664-1, IEC 60947-1	250 V
Min. switching voltage		-
Max. switching voltage		250 V AC
Min. switching current		-
Rated switching current	AC-12 (resistive) 230 V	4 A
acc. to IEC 60947-5-1	AC-15 (inductive) 230 V	3 A
	DC-12 (resistive) 24 V	4 A
	DC-13 (inductive) 24 V	2 A
Maximum lifetime	mechanical	30 x 10 ⁶ switching cycles
	electrical (AC-12, 230 V, 4 A)	0.1 x 10 ⁶ switching cycles
Short-circuit proof,	n/c	2 A fast, operating class gL
max. fuse rating	n/o	10 A fast, operating class gL
General data		
Width of enclosure		22.5 mm
Weight		approx. 140 g (0.31 lb)
Wire size		2 x 2.5 mm ² (2 x 14 AWG) stranded with wire end ferrule
Mounting position		any
Degree of protection	housing / terminals	IP 50 / IP 20
Temperature range	operation	-20 °C ... +60 °C
	storage	-40 °C ... +85 °C
Mounting		DIN rail (EN 50022)

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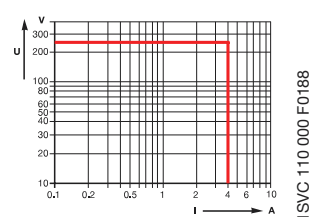
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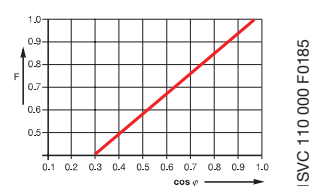
Technical data (continued)

Standards		
Product standard		IEC 255-6, EN 60255-6
Low Voltage Directive		73/23/EEC
EMC Directive		89/336/EEC
Electromagnetic compatibility		
Interference immunity	acc. to EN 61000-6-2	
electrostatic discharge (ESD)	acc. to IEC 61000-4-2, EN 61000-4-2	6 kV / 8 kV
electromagnetic field	acc. to IEC 61000-4-3, EN 61000-4-3	10 V/m
fast transients (Burst)	acc. to IEC 61000-4-4, EN 61000-4-4	2 kV / 5 kHz
powerfull impulses (Surge)	acc. to IEC 1000-4-5, EN 61000-4-5	1 kV or 2 kV
HF line emission	acc. to IEC 1000-4-6, EN 61000-4-6	10 V
Interference emission	acc. to EN 61000-6-4	
Operational reliability	acc. to IEC 68-2-6	4 g
Mechanical shock resistance	acc. to IEC 68-2-6	6 g
Environmental tests	acc. to IEC 68-2-30	24 h cycle, 55 °C, 93 % rel. 96 h
Approvals / Marks		
Approvals	CM-MSS (4) CM-MSS (5)	cULus, GL, ATEX, GOST GL, GOST - cULus and ATEX pending
Marks		CE, C-Tick
Isolation data		
Rated insulation voltage between supply-, control- and output circuit acc. to VDE 0110, IEC 60947-1		250 V
Rated impulse withstand voltage between all isolated circuits acc. to VDE 0110, IEC 664		4 kV / 1.2-50 µs
Test voltage between all isolated circuits		2.5 kV, 50 Hz, 1 min
Pollution degree	acc. to VDE 0110, IEC 664, IEC 255-5	III
Overvoltage category	acc. to VDE 0110, IEC 664, IEC 255-5	III

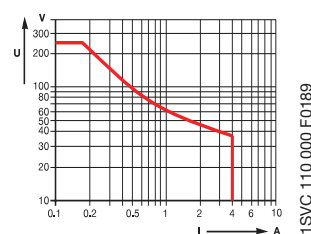
Load limit curves



AC load (resistive)



Reduction factor F for inductive AC load



DC load (resistive)



Contact life / number of operations
220 V 50 Hz 1 AC, 360 operations/h

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Dimensions

in mm

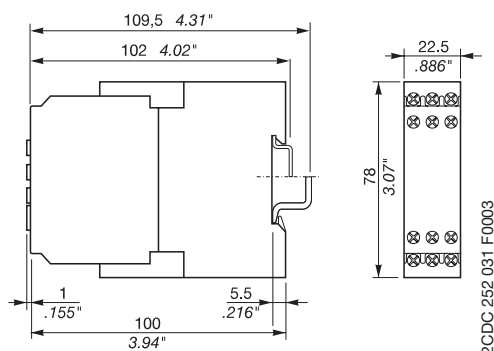


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