Technical data

Data at T_a = 25 °C and rated values, unless otherwise indicated

Input circuit

Supply circuit		CM-MSS.12	CM-MSS.13
Rated control supply voltage U_s	A1-A2	24V AC/DC	220-240 V AC
	A2-A3	-	110-130 V AC
Rated control supply voltage U_s tolerance		-15...+10 %	
Rated frequency		50-60 Hz	
Typical current / power consumption	24 V AC/DC	33 mA / 0.55 VA	-
	110-130 V AC	-	24 mA / 3 VA
	220-240 V AC	-	10 mA / 2.2 VA
Electrical insulation between supply circuit and measuring circuit		no	yes
Power failure buffering time		20 ms	

Measuring circuit / Sensor circuit		T1-T2
Number of sensor circuits		1
Sensor type		PTC type A (DIN/EN 44081, DIN/EN 44082)
Max. total resistance of sensors connected in series, cold state		< 750 Ω
Overtemperature monitoring	switch-off resistance (relay de-energizes)	2.7 kΩ ± 5 %
	switch-on resistance (relay energizes)	1.2 kΩ ± 5 %
Maximum voltage in sensor circuit	1.33 kOhm	2.5 V
	4 kOhm	3.7 V
	∞ kOhm	5.5 V
Maximum current in sensor circuit		3.7 mA
Maximum sensor cable length		2 x 100 m at 0.75 mm², 2 x 400 m at 2.5 mm²
Accuracy within the rated control supply voltage tolerance		5 %
Accuracy within the temperature range		0.5 %/K
Repeat accuracy (constant parameters)		on request
Reaction time of the safety function		<100 ms
Hardware fault tolerance (HFT)		-

Control circuit		
Control function	auto reset	yes
Maximum no-load voltage		5.5 V
Max. current		1.2 mA
Maximum cable length		2 x 100 m at 0.75 mm², 2 x 400 m at 2.5 mm²

User interface

Indication of operational states		
Control supply voltage	U: green LED	⌐¯¯¯¯¬: control supply voltage applied
Fault message	F: red LED	⌐¯¯¯¯¬: overtemperature

Output circuit

Kind of output		11-12/14	relay, 1 c/o (SPDT) contact
Operating principle			closed-circuit principle
Contact material			AgNi alloy, Cd free
Rated operational voltage U_e)			250 V AC
Minimum switching voltage / Minimum switching current			24 V / 10 mA
Maximum switching voltage / Maximum switching current			See 'Load limit curves' on page 10
Rated operating current I_e		AC-12 (resistive) at 230 V	4 A
		AC-15 (inductive) at 230 V	3 A
		DC-12 (resistive) at 24 V	4 A
		DC-13 (inductive) at 24 V	2 A
AC Rating (UL 508)		utilization category (Control Circuit Rating Code)	B 300
		maximum rated operational voltage	300 V AC
		maximum continuous thermal current at B 300	5 A
		maximum making/breaking apparent power at B 300	3600/360 VA
		general purpose rating	250 V AC - 4 A
Mechanical lifetime			30 x 10^6 switching cycles
Electrical lifetime		at AC-12, 230 V AC, 4 A	0.1 x 10^6 switching cycles
Maximum fuse rating to achieve short-circuit protection		n/c contact	6 A fast-acting
		n/o contact	10 A fast-acting

General data

MTBF			on request	
Duty time			100 %	
Dimensions (W x H x D)		product dimensions	22.5 x 85.6 x 103.7 mm (0.89 x 3.37 x 4.08 in)	
		packaging dimensions	97 x 109 x 30 mm (3.82 x 4.29 x 1.18 in)	
Weight			**Screw connection technology**	**Easy Connect Technology (push-in)**
	net weight	CM-MSS.12	0.113 kg	0.105 kg
		CM-MSS.13	0.155 kg	0.147 kg
	gross weight	CM-MSS.12	0.136 kg	0.128 kg
		CM-MSS.13	0.179 kg	0.171 kg
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool	
Mounting position			any	
Minimum distance to other units			10 mm (0.39 in) if switching current > 2 A	
			10 mm (0.39 in) if switching current > 2 A	
Material of housing			UL 94 V-0	
Degree of protection		housing	IP50	
		terminals	IP20	

Electrical connection

		Screw connection technology	**Easy Connect Technology (push-in)**
Connecting capacity	fine-strand with(out) wire end ferrule	1 x 0.5-2.5 mm² (1 x 18-14 AWG) 2 x 0.5-1.5 mm² (2 x 18-16 AWG)	2 x 0.5-1.5 mm² (2 x 18-16 AWG)
	rigid	1 x 0.5-4 mm² (1 x 20-12 AWG) 2 x 0.5-2.5 mm² (2 x 20-14 AWG)	2 x 0.5-1.5 mm² (2 x 20-16 AWG)
Stripping length		8 mm (0.32 in)	
Tightening torque		0.6-0.8 Nm (7.08 lb.in)	-

Environmental data

Ambient temperature ranges	operation	-25...+60 °C (-13...+140 °F)
	storage	-40...+85 °C (-40...+185 °F)
Damp heat, cyclic (IEC/EN 60068-2-30)		6 x 24 h cycle, 55 °C, 95 % RH
Climatic class (IEC/EN 60721-3-3)		3K5 (no condensation, no ice formation)
Vibration, sinusoidal		5-13.2 Hz: ±1 mm; 13.2-100 Hz: 0.7 g
Shock		10 g / 11 ms

Isolation data

		CM-MSS.12	CM-MSS.13
Rated insulation voltage U_i	Supply circuit / Measuring circuit[1)]	n/a	300 V AC
	Supply circuit / Output circuits	300 V AC	
	Measuring circuit[1)] / Output circuits	300 V AC	
	Output circuit 1 / Output circuit 2	n/a	
Rated impulse withstand voltage U_{imp}	Supply circuit / Measuring circuit[1)]	n/a	4 kV
	Supply circuit / Output circuits	4 kV	
	Measuring circuit[1)] / Output circuits	4 kV	
	Output circuit 1 / Output circuit 2	n/a	
Basic insulation	Supply circuit / Measuring circuit[1)]	n/a	600 V AC
	Supply circuit / Output circuits	600 V AC	
	Measuring circuit[1)] / Output circuits	600 V AC	
	Output circuit 1 / Output circuit 2	n/a	
Protective separation (IEC/EN 61140, EN 50178)	Supply circuit / Measuring circuit[1)]	no	yes, up to 300 V
	Supply circuit / Output circuits	yes	
	Measuring circuit[1)] / Output circuits	yes	
	Output circuit 1 / Output circuit 2	n/a	
Pollution degree		3	
Overvoltage category		III	

[1)] Potential of measuring circuit = Potential of control circuit

Standards / Directives

Standards	IEC/EN 60947-5-1, IEC/EN 60947-8
Low Voltage Directive	2014/35/EU
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Electromagnetic compatibility

Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	Level 3, 6 kV contact discharge, 8 kV air discharge
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3, 10 V/m (1 GHz), 3 V/m (2 GHz), 1 V/m (2.7 GHz)
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3, 2 kV / 5 kHz
surge	IEC/EN 61000-4-5	Level 3, Installation class 3, supply circuit and measuring circuit 1 kV L-L, 2 kV L-N
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3, 0.15-80 MHz, 10 V, 80 % AM (1kHz)
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	Class 3
harmonics and interharmonics	IEC/EN 61000-4-13	Class 3
Additional interference immunity according to product standard EN 60255-1 (reference on EN 60255-26)		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	10 V/m (80 MHz - 3 GHz)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	10 V at stated frequencies
damped oscillatory waves	IEC/EN 61000-4-18	Signal lines, symmetric coupling: 1 kV peak voltage Power supply, asymmetric coupling: 2.5 kV peak voltage,
Interference emissions		IEC/EN 61000-6-3
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B
high-frequency radiated	Germanischer Lloyd	increased requirements in the emergency call frequency band