Data sheet

Current monitoring relays CM-SRS.1 for single-phase AC/DC currents

For the monitoring of currents in single-phase AC/DC systems, ABB's CM range comprises a wide selection of powerful and compact devices, all featuring only 22.5 mm (0.89 in) width.

This range includes current monitoring relays for over- and undercurrent protection from 3 mA to 15 A.

Incorporating ABB's long-term experience, the CM range provides your electric installation with the highest safety and reliability.

2CDC 251 244 F0005

Characteristics

- Monitoring of DC and AC currents from 3 mA to 15 A
- TRMS measuring principle
- One device includes 3 measuring ranges
- Over- or undercurrent monitoring configurable
- Hysteresis adjustable from 3-30 %
- 3 supply voltage versions
- 1 c/o contact
- 22.5 mm (0.89 in) width
- 3 LEDs for indication of operational states

Approvals

	UL 508, CAN/CSA C22.2 No.14	
	GL	(pending)
	GOST	
	CB Scheme	
	CCC	
	RMRS	

Marks

CE

C-Tick

Order data

Current monitoring relays

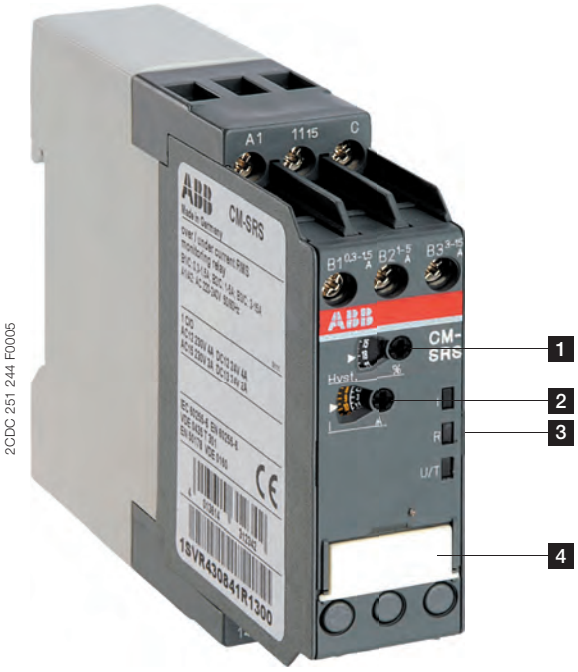
Type	Rated control supply voltage	Measuring ranges	Order code
CM-SRS.11	24-240 V AC/DC	3-30 mA, 10-100 mA, 0.1-1 A	1SVR 430 840 R0200
	110-130 V AC		1SVR 430 841 R0200
	220-240 V AC		1SVR 430 841 R1200
CM-SRS.12	24-240 V AC/DC	0.3-1.5 A, 1-5 A, 3-15 A	1SVR 430 840 R0300
	110-130 V AC		1SVR 430 841 R0300
	220-240 V AC		1SVR 430 841 R1300

Accessories

Type	Description	Order code
ADP.01	Adapter for screw mounting	1SVR 430 029 R0100
MAR.02	Marker label for devices with DIP switches	1SVR 430 043 R0000
COV.01	Sealable transparent cover	1SVR 430 005 R0100

Functions

Operating controls



1 **Adjustment of the hysteresis (MIN = Default)**

2 **Adjustment of the threshold value (MIN = Default)**

3 **Indication of operational states**

U/T: green LED – control supply voltage

R: yellow LED – relay status

U: red LED – over- / undercurrent

4 **DIP switches (see DIP switch functions)**

Application

Depending on the configuration, the current monitoring relays CM-SRS.1 can be used for over- ⊣/ or undercurrent monitoring ⊣\ in single-phase AC and/or DC systems. The devices work according to the open-circuit principle.

Operating mode

The CM-SRS.1 has 1 c/o contact. There are 2 versions available, CM-SRS.11 with 3 measuring ranges: 3-30 mA, 10-100 mA, 0,1-1 A and CM-SRS.12 with ranges: 0.3-1.5 A, 1-5 A, 3-15 A. The measuring range is selected by connecting the monitored wire to the corresponding terminal B1/B2/B3-C.

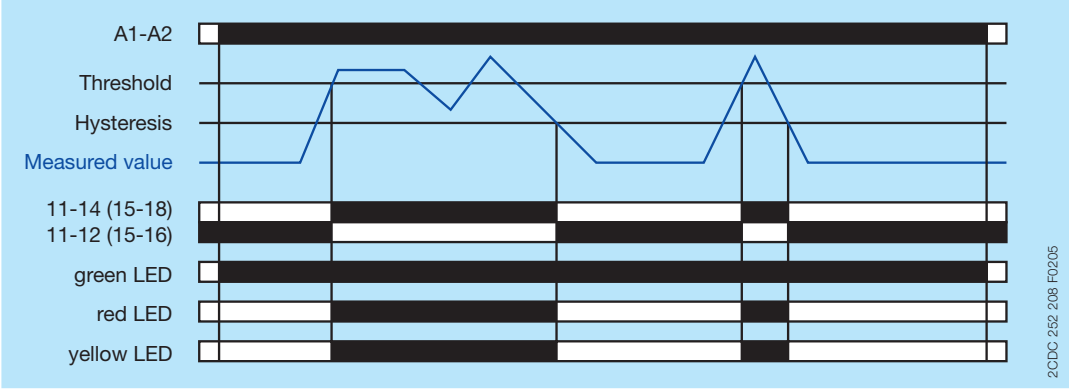
The unit is adjusted with potentiometers and switches on the top of the unit. The selection of over- ⊣/ or undercurrent monitoring ⊣\ is made with a DIP switch . Potentiometers, with direct reading scale, allow the adjustment of the threshold value I and of the hysteresis %. The hysteresis % is adjustable within a range of 3 to 30 % of the threshold value.

Function diagram: overcurrent monitoring

The current to be monitored (measured value) is applied to terminals B1/B2/B3-C. The supply voltage applied to terminals A1-A2 is displayed by the glowing green LED.

If the measured value exceeds the adjusted threshold value, the output relay energizes and the red LED (overcurrent) and the yellow LED (relay energized) glow.

If the measured value drops below the threshold value minus the adjusted hysteresis, the output relay de-energizes and the red and yellow LEDs turn off.

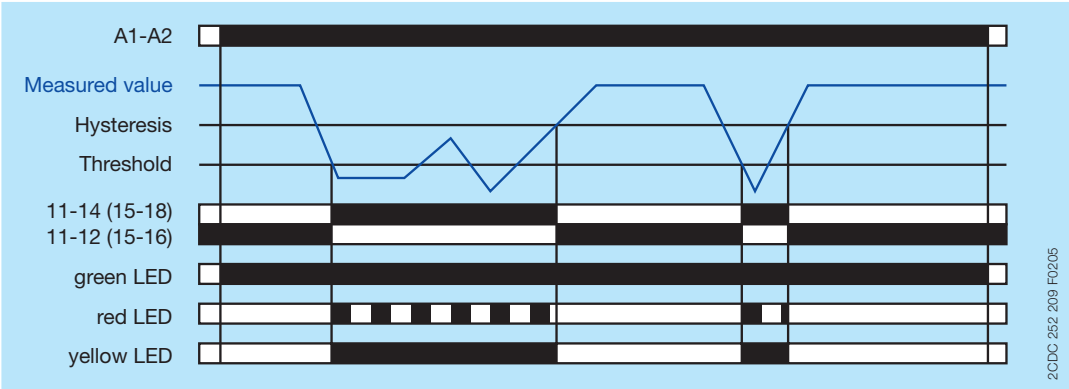


Function diagram: undercurrent monitoring

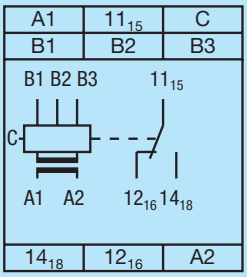
The current to be monitored (measured value) is applied to terminals B1/B2/B3-C. The supply voltage applied to terminals A1-A2 is displayed by the glowing green LED.

If the measured value drops below the adjusted threshold value, the output relay energizes, the red LED flashes (undercurrent) and the yellow LED (relay energized) glows.

If the measured value exceeds the threshold value plus the adjusted hysteresis, the output relay de-energizes and the red and yellow LEDs turn off.



Connection diagram



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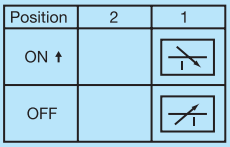
A1-A2	Control supply voltage	
B1-C	Measuring range 1:	CM-SRS.11: 3-30 mA CM-SRS.12: 0.3-1.5 A
B2-C	Measuring range 2:	CM-SRS.11: 10-100 mA CM-SRS.12: 1-5 A
B3-C	Measuring range 3:	CM-SRS.11: 0.1-1 A CM-SRS.12: 3-15 A
11_{15}-12_{16}/14_{18}	Output contact - open-circuit principle	

DIP switch functions



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1	ON	Unterstromüberwachung
	OFF	Überstromüberwachung

OFF = Default

Technical data

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

Input circuit

Supply circuit		**A1-A2**		
Rated control supply voltage U_S		110-130 V AC	220-240 V AC	24-240 V AC/DC
Rated control supply voltage tolerance		-15...+10 %		
Rated frequency		50/60 Hz		50/60 Hz or DC
Current / power consumption	24 V DC	-	-	30 mA / 0.75 W
	115 V AC	24 mA / 2.6 VA	-	17 mA / 1.9 VA
	230 V AC	-	12 mA / 2.6 VA	11 mA / 2.6 VA
On-period		100 %		
Power failure buffering time		20 ms		
Transient overvoltage protection		varistors		

Measuring circuit		**B1/B2/B3-C**					
Monitoring function		over- or Unterstromüberwachung configurable					
Measuring method		TRMS measuring principle					
Measuring inputs		CM-SRS.11			CM-SRS.12		
	terminal connection	B1-C	B2-C	B3-C	B1-C	B2-C	B3-C
	measuring range	3-30 mA	10-100 mA	0.1-1 A	0.3-1.5 A	1-5 A	3-15 A
	input resistance	3.3 Ω	1 Ω	0.1 Ω	0.05 Ω	0.01 Ω	0.0025 Ω
	pulse overload capacity t < 1 s	500 mA	1 A	10 A	1 A	50 A	100 A
	continuous capacity	50 mA	150 mA	1.5 A	2 A	7 A	17 A
Threshold value		adjustable within the indicated measuring range					
Tolerance of the adjusted threshold value		10 % of the range end value					
Hysteresis related to the threshold value		3-30 % adjustable					
Measuring signal frequency range		DC / 15 Hz - 2 kHz					
Rated measuring signal frequency range		DC / 50-60 Hz					
Maximum response time	AC	80 ms					
	DC	120 ms					
Accuracy within the control supply voltage tolerance		ΔU ≤ 0.5 %					
Accuracy within the temperature range		ΔU ≤ 0.06 % / °C					

Timing circuit	
Delay time T_V	none
Repeat accuracy (constant parameters)	±0.07 % of full scale
Tolerance of the adjusted delay time	-
Accuracy within control supply voltage tolerance	-
Accuracy within temperature range	-

Indication of operational states

Control supply voltage	U/T: green LED	⎍: control supply voltage applied
Measured value	U: red LED	⎍: overcurrent ⎍⎍: undercurrent
Relay status	R: yellow LED	⎍: relay energized

Output circuits

Kind of output	11_{15}-12_{16}/14_{18}	relay, 1 c/o contact
Operating principle		open-circuit principle (output relay energizes if the measured value exceeds ⊣/ / falls below ⊣\ the adjusted threshold value)
Contact material		AgNi
Rated operational voltage U_e (VDE 0110, IEC/EN 60947-1)		250 V
Minimum switching voltage / minimum switching current		24 V / 10 mA
Maximum switching voltage / maximum switching current		250 V AC / 4 A AC
Rated operational current I_e (IEC/EN 60947-5-1)	AC12 (resistive) at 230 V	4 A
	AC15 (inductive) at 230 V	3 A
	DC12 (resistive) at 24 V	4 A
	DC13 (inductive) at 24 V	2 A
AC rating (UL 508)	utilization category (Control Circuit Rating Code)	B 300
	max. rated operational voltage	300 V AC
	max. continuous thermal current at B 300	5 A
	max. making/breaking apparent power (Make/Break) at B 300	3600/360 VA
Mechanical lifetime		30 x 10^6 switching cycles
Electrical lifetime (AC12, 230 V, 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		available on request
Dimensions (W x H x D)	product dimensions	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 in)
	packaging dimensions	81 x 106 x 26 mm (3.19 x 4.17 x 1.02 in)
Weight	net weight	CM-SRS.11 version 24-240 V AC/DC: 0.123 kg (0.271 lb) version 110-130 V AC: 0.149 kg (0.328 lb) version 220-240 V AC: 0.152 kg (0.335 lb) CM-SRS.12 version 24-240 V AC/DC: 0.127 kg (0.230 lb) version 110-130 V AC: 0.155 kg (0.342 lb) version 220-240 V AC: 0.155 kg (0.342 lb)
	gross weight	CM-SRS.11 version 24-240 V AC/DC: 0.146 kg (0.322 lb) version 110-130 V AC: 0.172 kg (0.379 lb) version 220-240 V AC: 0.175 kg (0.386 lb) CM-SRS.12 version 24-240 V AC/DC: 0.150 kg (0.331 lb) version 110-130 V AC: 0.178 kg (0.392 lb) version 220-240 V AC: 0.178 kg (0.392 lb)
Material of enclosure		PA 6
Mounting		DIN rail (IEC/EN 60715)
Mounting position		any
Degree of protection	enclosure	IP50
	terminals	IP20

Electrical connection

Wire size	fine-strand with(out) wire end ferrule	2 x 0.75-2.5 mm² (2 x 18-14 AWG)
	rigid	2 x 0.5-4 mm² (2 x 20-12 AWG)
Stripping length		7 mm (0.28 in)
Tightening torque		0.6-0.8 Nm (5.31-7.08 lb.in)

Environmental data

Ambient temperature	operation	-20...+60 °C
	storage	-40...+85 °C
Damp heat (IEC 60068-2-30)		55 °C, 6 cycle
Vibration (sinusoidal) (IEC/EN 60255-21-1)		class 2
Shock (IEC/EN 60255-21-2)		class 2

Isolation data

Rated insulation voltage (VDE 0110, IEC/EN 60947-1, IEC/EN 60255-5)	supply / measuring circuit / output	600 V
	supply / output 1 / output 2	250 V
Rated impulse withstand voltage U_{imp} (IEC/EN 60947-1, IEC/EN 60255-5)	supply / measuring circuit / output	6 kV 1.2/50 µs
	supply / output 1 / output 2	4 kV 1.2/50 µs
Test voltage between all isolated circuits (routine test)	rated insulation voltage 250 V	2.0 kV, 50 Hz
	rated insulation voltage 600 V	2.5 kV, 50 Hz
Pollution degree (VDE 0110, IEC 664, IEC/EN 60255-5)		3
Overvoltage category (VDE 0110, IEC 664, IEC/EN 60255-5)		III

Standards

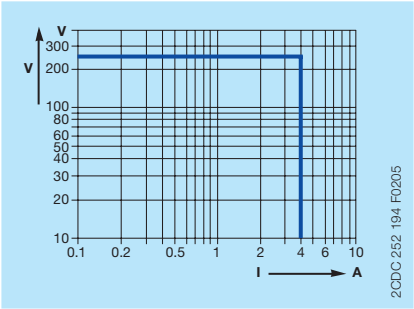
Product standard	IEC/EN 60255-6
Low Voltage Directive	2006/95/EC
EMC Directive	2004/108/EC
RoHS Directive	2002/95/EC

Electromagnetic compatibility

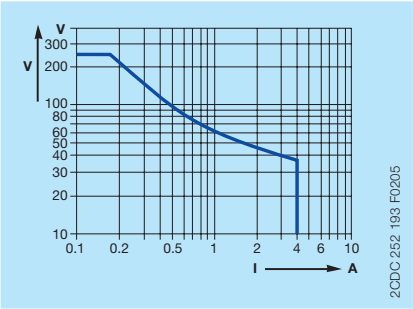
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	Level 3
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3
surge	IEC/EN 61000-4-5	Level 3
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3
Interference emission		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

Technical diagrams

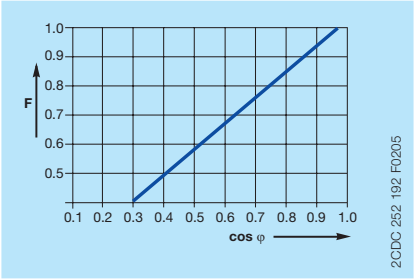
Load limit curves



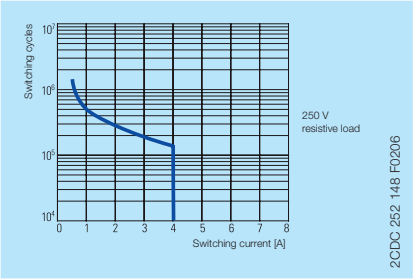
AC load (resistive)



DC load (resistive)



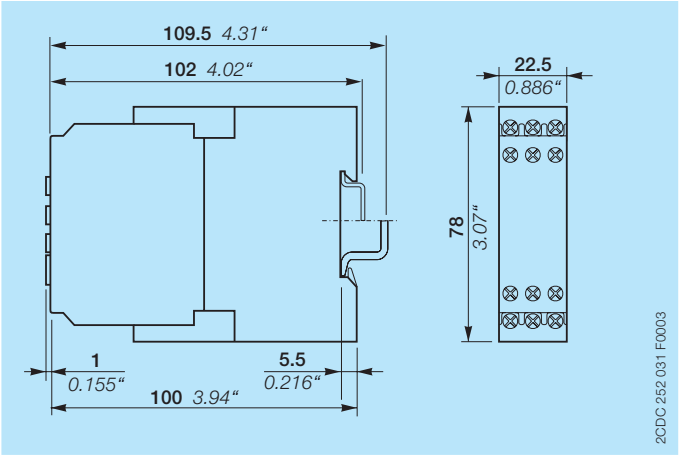
Derating factor F for inductive AC load



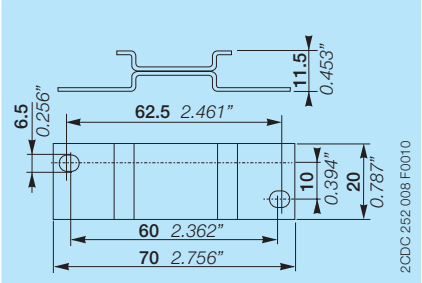
Contact lifetime

Dimensions

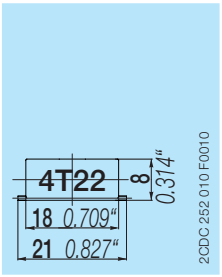
in **mm** and inches



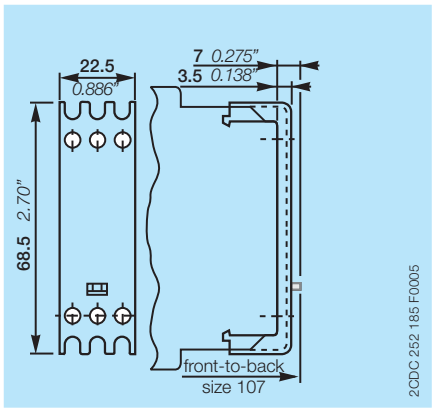
CM-SRS.1



ADP.01 - Adapter for screw mounting



MAR.02 - Marker label for devices with DIP switches



COV.01 - Sealable transparent cover

Further documentation

Document title	Document type	Document number
Electronic products and relays	Technical catalogue	2CDC 110 004 C020x
CM-SRS.1, CM-SRS.2	Instruction manual	1SVC 437 842 M1000

You can find the documentation on the internet at www.abb.com/lowvoltage -> Control Products -> Electronic Relays and Controls -> Single Phase Monitors.

CAD system files

You can find the CAD files for CAD systems at http://abb-control-products.partcommunity.com/PARTcommunity/Portal/abb-control-products -> Low Voltage Products & Systems -> Control Products -> Electronic Relays and Controls -> Single Phase Monitors -> CM-SRx - Single Phase Monitors.

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