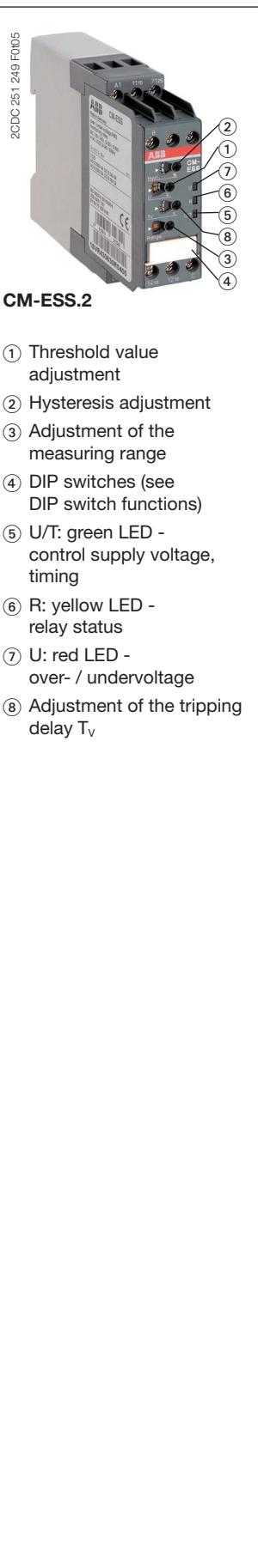


Measuring and monitoring relays CM-ESS.2

Voltage monitoring relays, single-phase AC/DC

Data sheet



Characteristics

- Monitoring of DC and AC voltages from 3-600 V
- RMS measuring principle
- One device includes 4 measuring ranges: 3-30 V, 6-60 V, 30-300 V, 60-600 V
- Over- or undervoltage monitoring configurable
- Hysteresis adjustable from 3-30 %
- Tripping delay T_v adjustable 0; 0.1-30 s
- 3 supply voltage versions
- 2 c/o contacts
- 22.5 mm width
- 3 LEDs for status indication

Approvals

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

Marks

- | | |
|--|--------|
| | CE |
| | C-Tick |

Order data

Type	Control supply voltage	Order code
------	------------------------	------------

Messbereiche: 3-30 V; 6-60 V; 30-300 V; 60-600 V

CM-ESS.2	24-240 V AC/DC 110-130 V AC 220-240 V AC	1SVR 430 830 R0400 1SVR 430 831 R0400 1SVR 430 831 R1400
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Order data (Accessories)

Type	Description	Order code
ADP.01	Adapter for screw mounting	1SVR 430 029 R0100
MAR.01	Marker label	1SVR 366 017 R0100
COV.01	Sealable transparent cover	1SVR 430 005 R0100

Application

Depending on the configuration, the voltage monitoring relays **CM-ESS.2** can be used for over- or undervoltage monitoring in single-phase AC and/or DC systems. The devices work according the open-circuit principle.

Operating mode

The voltage monitoring relay **CM-ESS.2** has 2 c/o contacts. One device includes 4 measuring ranges: 3-30 V, 6-60 V, 30-300 V, and 60-600 V.

The unit is adjusted with potentiometers and switches on the top of the unit. The selection of over- or undervoltage monitoring is made with a DIP switch. A potentiometer, with direct reading scale, allows the adjustment of the threshold value U. There are also adjustments for the hysteresis % and the tripping delay T_v. The hysteresis % is adjustable within a range of 3 to 30 % of the threshold value, and the tripping delay T_v over a range of instantaneous to a 30 s delay.

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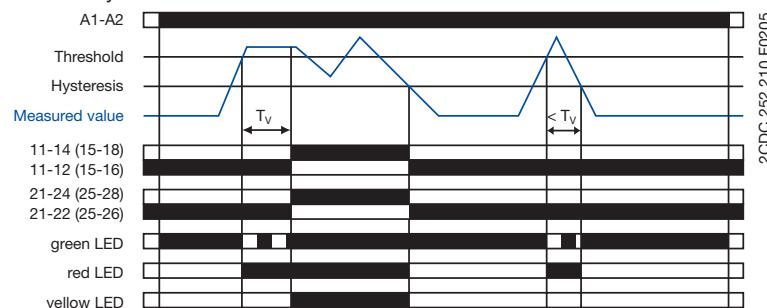
Function diagrams

Overvoltage monitoring

The voltage to be monitored (measured value) is applied to terminals **B-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 tripping delay T_V starts and the red LED (overvoltage) glows. Timing of T_V is displayed by the flashing  green LED. When T_V is complete and the measured value still exceeds the threshold value minus the adjusted hysteresis, the output relays energize and the yellow LED (relay energized) glows.

If the measured value decreases below the threshold value minus the adjusted hysteresis, the output relays de-energize and the red and yellow LEDs turn off.

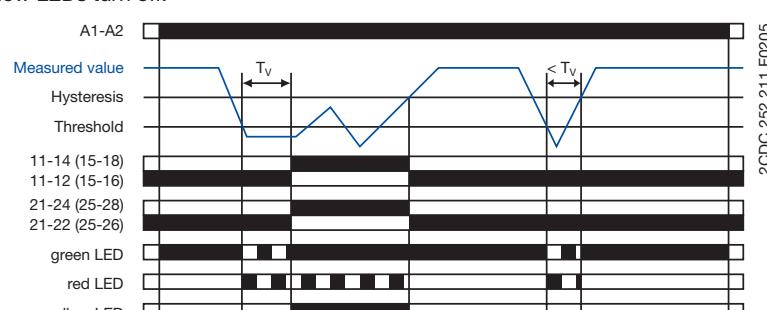


Undervoltage monitoring

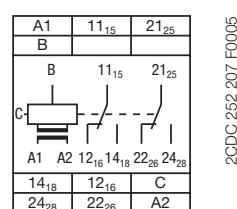
The voltage to be monitored (measured value) is applied to terminals **B-C**. The supply voltage applied to terminals A1-A2 is displayed by the glowing green LED.

If the measured value decreases below the adjusted threshold value, the tripping delay T_V starts and the red LED (undervoltage) flashes . Timing of T_V is displayed by the flashing  green LED. When T_V is complete and the measured value is still below the threshold value plus the adjusted hysteresis, the output relays energize and the yellow LED (relay energized) glows.

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



Connection diagram



A1-A2 Control supply voltage

B-C Measuring range: 3-30 V; 6-60 V; 30-300 V; 60-600 V

11₁₅-12₁₆/14₁₈ Output contacts - open-circuit principle

21₂₅-22₂₆/24₂₈

DIP switch functions

Position	2	1
ON 		
OFF 		

2CDC 252 275 F0005

1 ON Undervoltage monitoring

OFF Overvoltage monitoring

OFF = Default

Measuring and monitoring relays CM-ESS.2

Voltage monitoring relays, single-phase AC/DC

Data sheet

Technical data

Type	CM-ESS.2				
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	AC versions	50/60 Hz			
	AC/DC versions	50/60 Hz or DC			
Current / power consumption	24 V DC	115 V AC	230 V AC		
	-	24 mA / 2.6 VA	-		
	-	-	12 mA / 2.6 VA		
	30 mA / 0.75 W	17 mA / 1.9 VA	11 mA / 2.6 VA		
On-period	100 %				
Power failure buffering	20 ms				
Transient overvoltage protection	Varistors				
Input circuit - Measuring circuit		B-C			
Monitoring function	over- or undervoltage monitoring configurable				
Measuring method	RMS measuring principle				
Measuring inputs	CM-ESS.2				
	B-C	B-C	B-C		
	3-30 V	6-60 V	30-300 V		
	600 kΩ	600 kΩ	600 kΩ		
	800 V	800 V	800 V		
	660 V	660 V	660 V		
	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			
	Maximum voltage within measuring circuit	factor 1.5 of full-scale			
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				
Measuring error within the control supply voltage tolerance	≤ 0.5 %				
Measuring error within the temperature range	≤ 0.06 % / °C				
Transient overvoltage protection	Varistors				
Timing circuit					
Delay time T_v	0 or 0.1-30 s adjustable				
Repeat accuracy (constant parameters)	±0.07 % of full scale				
Tolerance of the adjusted delay time					
Timing error within control supply voltage tolerance	≤ 0.5 %				
Timing error within temperature range	≤ 0.06 % / °C				
Indication of operational states					
Control supply voltage	U/T: green LED	□: control supply voltage applied □□: tripping delay T_v active			
Measured value	U: red LED	□: overvoltage □□: undervoltage			
Relay status	R: yellow LED	□: relay energized			
Output circuits					
Kind of output	relays, 2 c/o contacts				
Operating principle ¹⁾	open-circuit principle				
Contact material	AgNi				
Rated voltage (VDE 0110, IEC 947-1)	250 V				
Minimum switching voltage / minimum switching current	24 V / 10 mA				
Maximum switching voltage / maximum switching current	250 V AC / 4 A AC				

Measuring and monitoring relays CM-ESS.2

Voltage monitoring relays, single-phase AC/DC

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Type	CM-ESS.2	
Rated operational current (IEC 60947-5-1)	AC12 (resistive)	at 230 V
	AC15 (inductive)	at 230 V
	DC12 (resistive)	at 24 V
	DC13 (inductive)	at 24 V
Mechanical lifetime	30x10 ⁶ switching cycles	
Electrical lifetime (AC12, 230 V, 4 A)	0.1x10 ⁶ switching cycles	
Short-circuit capacity / maximum fuse rating	n/c contact	10 A fast-acting
	n/o contact	10 A fast-acting
General data		
MTBF		
Dimensions (W x H x D)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 in)	
Mounting	DIN rail (EN 50022)	
Mounting position	any	
Material of enclosure	PA 6	
Degree of protection	IP50 / IP20	
Electrical connection		
Wire size	fine-strand with wire end ferrule	2x0.75 mm ² / 2x2.5 mm ² (2x18 AWG / 2x14 AWG)
	fine-strand without wire end ferrule	2x0.75 mm ² / 2x2.5 mm ² (2x18 AWG / 2x14 AWG)
	rigid	2x0.5 mm ² / 2x4 mm ² (2x20 AWG / 2x12 AWG)
Stripping length	8 mm (0.31 in)	
Tightening torque	0.8 Nm	
Environmental data		
Ambient temperature range	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		
Insulation voltage (VDE 0110, IEC 947-1, IEC/EN 60255-5)	supply circuit / measuring circuit	600 V
	supply circuit / output circuit	250 V
	measuring circuit / output circuit	600 V
	output circuit 1 / output circuit 2	250 V
Pollution degree (VDE 0110, IEC 664, IEC/EN 60255-5)	2	
Overvoltage category (VDE 0110, IEC 664, IEC/EN 60255-5)	III	
Test voltage between all isolated circuits (type test)	Rated insulation voltage 250 V	2.0 kV, 50 Hz
	Rated insulation voltage 600 V	2.5 kV, 50 Hz
Standards		
Product standard	IEC 255-6, EN 60255-6	
Low Voltage Directive	2006/95/EC	
EMC Directive	2004/108/EC	
Electromagnetic compatibility		
Interference immunity	IEC/EN 61000-6-2	
	electrostatic discharge (ESD)	IEC/EN 61000-4-2- Level 3
	electromagnetic field	IEC/EN 61000-4-3- Level 3
	fast transients (Burst)	IEC/EN 61000-4-4- Level 3
	powerful impulses (Surge)	IEC/EN 61000-4-9- Level 3
Interference emission	HF line emission	IEC/EN 61000-4-6- Level 3
	IEC/EN 61000-6-3	
	electromagnetic field	IEC/CISPR 22; EN 55022 - Class B
		IEC/CISPR 22; EN 55022 - Class B

¹⁾ Open-circuit principle: output relay energizes if the measured value exceeds / falls below the adjusted threshold value.

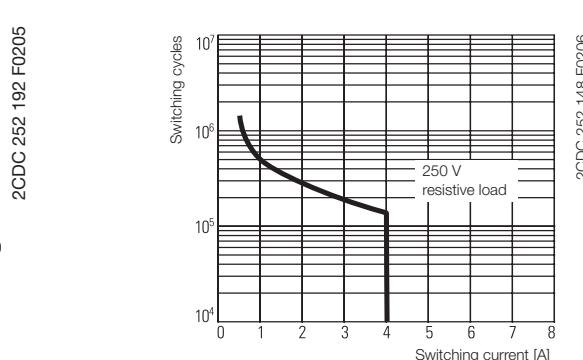
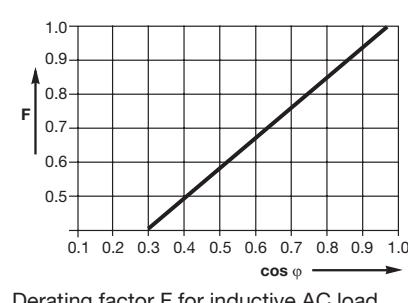
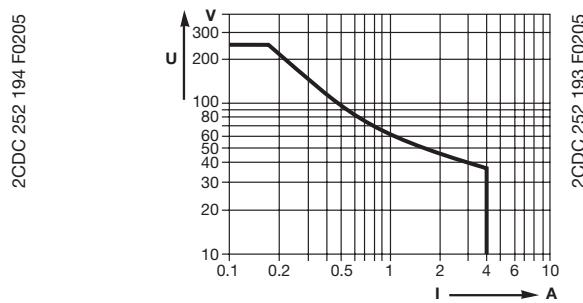
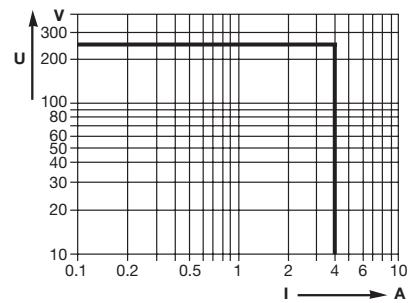
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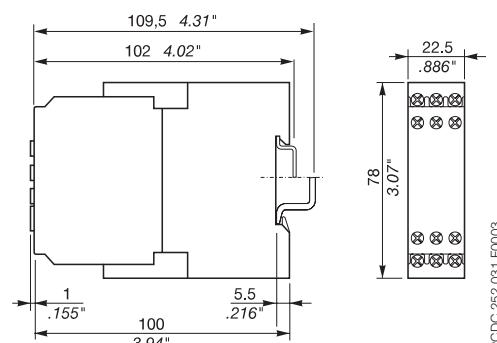
Technical diagrams

Load limit curves

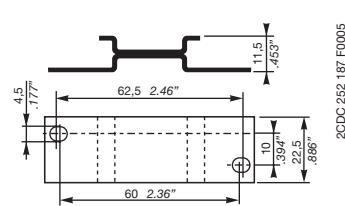


Dimensional drawing

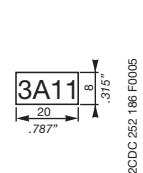
Dimensions in mm



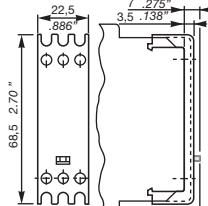
Dimensional drawings (Accessories)



ADP.01 - Adapter for screw mounting



MAR.01 - Marker label



COV.01 - Sealable transparent cover



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