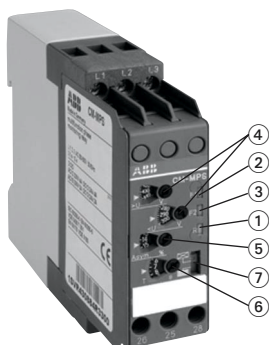


Measuring and monitoring relays CM-MPS

Multifunctional three-phase monitor

Data sheet

2CDC 251 005 F0003



CM-MPS

- ① R: green LED - supply voltage, relay
- ② F1: red LED - fault signal
- ③ F2: red LED - fault signal
 - overvoltage: F1
 - under voltage: F2
 - phase unbalance: F1 and F2 on
 - phase loss: F1 on, F2 flashes
 - phase sequence: F1 and F2 flash alternately
- ④ Threshold adjustment U_{min}/U_{max}
- ⑤ Threshold adjustment phase unbalance 2-15 %
- ⑥ Time adjustment 0.1-10 s
Phase sequence and phase loss are signalled without delay.
- ⑦ Slide switch for selecting the time function
 - ON-delay
 - OFF-delay

Features

- Three-phase monitoring of phase sequence, phase loss, over- and undervoltage and phase unbalance
- Adjustable over- and undervoltage threshold
- Adjustable asymmetrie threshold
- Adjustable ON- and OFF-delay time
- Available with or without neutral monitoring
- Dual-frequency measuring input 50/60 Hz
- Powered by the measuring circuit
- 2 c/o contacts
- 3 LEDs for status indication

Approvals

UL LISTED, GL and PC, CCC (pending)

Marks



Ordering data

Type	Supply voltage	Order code
Without neutral monitoring		
CM-MPS	160-300 V AC, 50/60 Hz	1SVR 430 884 R1300
CM-MPS	300-500 V AC, 50/60 Hz	1SVR 430 884 R3300
With neutral monitoring		
CM-MPS	90-170 V AC, 50/60 Hz	1SVR 430 885 R1300
CM-MPS	180-280 V AC, 50/60 Hz	1SVR 430 885 R3300

Ordering data - Accessories

Description	Order code
Sealable cover	1SVR 430 005 R0100
Adapter for screw mounting	1SVR 430 029 R0100
Marker	1SVR 366 017 R0100

Application

The CM-MPS is a three-phase monitor. It is able to monitor the phase parameters phase sequence, phase loss, over- and undervoltage and phase unbalance.

Operating mode

Over- and undervoltage monitoring

If all three phases are present with correct voltage, the output relay is energized.

If the voltage to be monitored exceeds or falls below the set threshold value, the output relays are de-energized undelayed or delayed (0.1-10 s), depending on the set time delay.

The fault type is indicated by LEDs.

The output relays re-energize automatically, instantaneously or with delay (0,1-10 s), depending on the set time delay, as soon as the voltage returns to the tolerance range, taking into account a fixed hysteresis of 5%.

Phase unbalance monitoring

If all three phases are present with correct voltage, the output relay is energized.

The output relays are de-energized undelayed or delayed (0.1-10 s), if the phase unbalance of the phases to be monitored exceeds the set unbalance threshold value. This enables a short-term suppression of fault signals.

The fault type is indicated by LEDs.

The output relays re-energize undelayed or delayed (0.1-10 s), as soon as the voltage returns to the tolerance range, taking into account a fixed hysteresis of 20%.

Phase sequence and phase loss


Phase sequence and phase loss are indicated and reset without time delay.

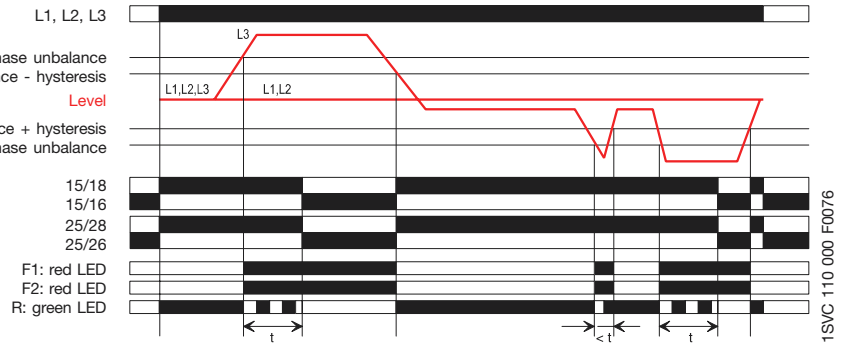
Measuring and monitoring relays CM-MPS


Multifunctional three-phase monitor

Data sheet

Function diagrams (continued)

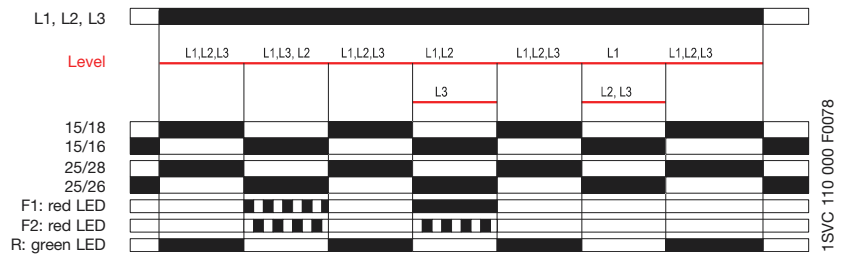
ON-delayed phase unbalance monitoring
(switch position )



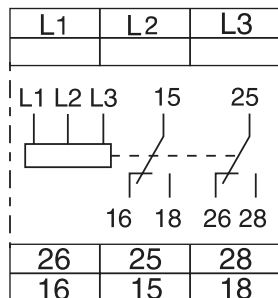
OFF-delayed phase unbalance monitoring
(switch position )



Phase sequence and phase loss, signalled without delay

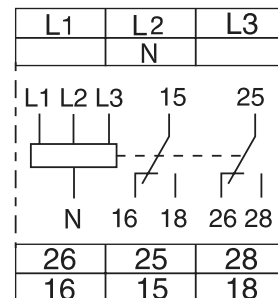


Position of connection terminals



L1, L2, L3 supply voltage = monitoring voltage
15-16/18 2 c/o - closed-circuit principle
25-26/28

Versions without neutral monitoring
(1SVR 430 884 R1300 and 1SVR 430 884 R3300)



L1, L2, L3, N supply voltage = monitoring voltage
15-16/18 2 c/o - closed-circuit principle
25-26/28

Versions with neutral monitoring
(1SVR 430 885 R1300 and 1SVR 430 885 R3300)

Measuring and monitoring relays CM-MPS

Multifunctional three-phase monitor

Data sheet

Technical data

Input circuit (= Monitoring circuit)		L1, L2, L3, (N)
Supply voltage - power consumption	L1, L2, L3	160-300 V AC - 20 VA
	L1, L2, L3	300-500 V AC - 20 VA
	L1, L2, L3, N	90-170 V AC - 20 VA
	L1, L2, L3, N	180-280 V AC - 20 VA
Supply voltage tolerance		-15 % ... +10 %
Supply voltage frequency		50/60 Hz
Supply voltage frequency tolerance		±10 %
Duty time		100 %
Monitoring circuit		L1, L2, L3, (N)
Monitoring functions		phase loss, phase sequence, over- and undervoltage, phase unbalance
Monitoring ranges min.-max.	overvoltage	220-300 V / 420-500 V
	undervoltage	160-220 V 300-380 V
	phase unbalance	2-15 %
Thresholds	over-/ undervoltage	adjustable
	phase unbalance	adjustable
Hysteresis related to the threshold value		fixed 5 %
Monitoring voltage frequency		50/60 Hz ±10 %
Max. monitoring time		50 ms
Measuring error within supply voltage tolerance		≤ 0.5 %
Measuring error within temperature range		≤ 0.06 % / °C
Timing circuit		
ON-delay time		200 ms
Delay time (ON and OFF delayed)		0.1-10 s adjustable
Timing error within supply voltage tolerance		≤ 0.5 %
Timing error within temperature range		≤ 0.06 % / °C
Indication of operational states		R: green LED, F1, F2: red LED
Supply voltage		R on
Output relay energized		R flashes during timing
Phase loss		F1 on, F2 flashes
Phase sequence		F1 and F2 flash alternately
Overvoltage		F1 on
Undervoltage		F2 on
Phase unbalance		F1 and F2 on
Output circuits		15-16/18, 25-26/28
Number of contacts		2 c/o (relays)
Operating principle (output relays de-energize in case of fault)		closed-circuit principle
Contact material		AgNi
Rated voltage	acc. to VDE 0110, IEC 60947-1	250 V
Min. switching voltage		24 V / 10 mA
Max. switching voltage		250 V AC, 250 V DC
Rated switching current acc. to IEC 60947-5-1	AC-12 (resistive) 230 V	4 A
	AC-15 (inductive) 230 V	3 A
	DC-12 (resistive) 24 V	4 A
	DC-13 (inductive) 24 V	2 A
Max. 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, max. fuse rating	n/c	10 A fast, operating class gL
	n/o	10 A fast, operating class gL
General data		
Width of enclosure		22.5 mm
Weight		140 kg (0.031 lb)
Wire size	stranded with wire end ferule	2 x 2.5 mm ² (2 x 14 AWG)
Mounting position		any

Measuring and monitoring relays CM-MPS

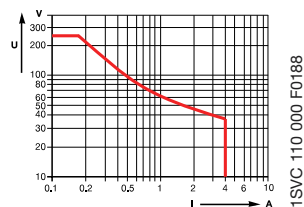
Multifunctional three-phase monitor

Data sheet

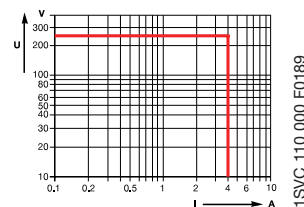
Technical data (continued)

General data (continued)		
Degree of protection	enclosure	IP 50
	terminals	IP 20
Temperature range	operation	-20 °C ... +60 °C
	storage	-40 °C ... +85 °C
Mounting	DIN rail (EN 50022)	
Standards		
Product standards	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
powerful impulses (Surge)	acc. to IEC 1000-4-5, EN 61000-4-5	2 kV symmetric
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	
Mechanical resistance	acc. to IEC 68-2-6	
Environmental tests	acc. to IEC 68-2-30	
24 h cycle, 55 °C, 93 % rel. 96 h		
Approvals / marks		
Approvals	cULus, GL and GOST CCC (pending)	
Marks	CE, C-Tick	
Isolation data		
Rated insulation voltage between in- and output acc. to VDE 0110, IEC 60947-1	600 V	
Impulse voltage resistance U_{imp}	measuring circuit	6 kV
	output circuits	4 kV
Test voltage between all isolated circuits	2,5 kV, 50 Hz, 1 min	
Pollution degree	acc. to VDE 0110, IEC 664, IEC 255-5	
Overvoltage category	acc. to VDE 0110, IEC 664, IEC 255-5	
III		

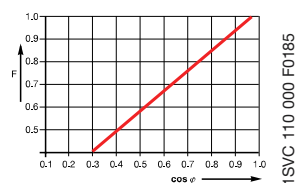
Load limit curves



AC load (resistive)



DC load (resistive)



Reduction factor F for inductive AC load



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

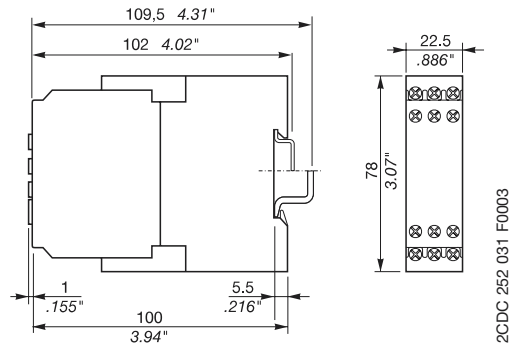
Measuring and monitoring relays CM-MPS

Multifunctional three-phase monitor

Data sheet

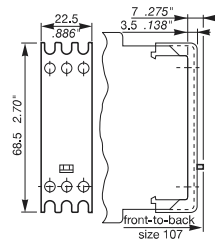
Dimensions

in mm

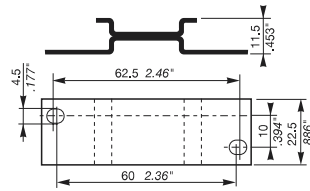


Dimensions accessories

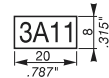
in mm



Sealable cover



Adapter for screw mounting



Marker



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