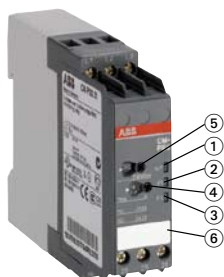


Three-phase monitoring relay

CM-PFS

Data sheet

2CDC 261 044 F0108



CM-PFS

- ① R: yellow LED - relay status
- ② Marker label

Features

- Monitoring of three-phase mains for phase sequence and failure
- Powered by the measuring circuit
- 2 c/o (SPDT) contacts
- 1 LED for status indication

Approvals

- UL 508, CAN/CSA C22.2 No.14
- GL
- GOST
- CB scheme
- CCC
- RMRS

Marks

- CE CE
- C-Tick C-Tick

Order data

Type	Rated control supply voltage = measuring voltage	Order code
CM-PFS	3x200-500 V AC	1SVR 430 824 R9300

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

The CM-PFS is used to monitor three-phase mains for incorrect phase sequence and phase failure.

Operating mode

Signalling is made by means of the front-face LED.

LED

Function	R: yellow LED
Output contact closed	

Three-phase monitoring relay

CM-PFS

Data sheet

Function descriptions/diagrams

Function diagram legend

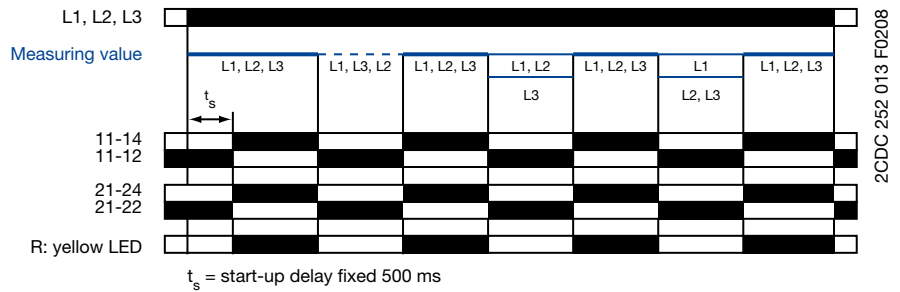
- Control supply voltage not applied / Output contact open / LED off
- Control supply voltage applied / Output contact closed / LED glowing

Phase sequence and phase failure monitoring

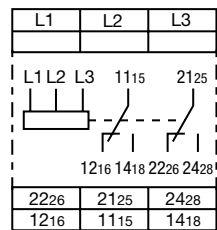
If all phases are present with the correct phase sequence, the output relays energize after the start-up delay t_s is complete.

If a phase failure or a phase sequence error occurs, the output relays de-energize instantaneously. The LED R glows when the output relays are energized.

In case of motors which continue running with only two phases, the CM-PFS detects phase failure if the reverse fed voltage is less than 60 % of the originally applied voltage.



Connection diagram



1SVC 110 000 F0118

- L1, L2, L3 Control supply voltage = measuring voltage
- 11₁₅-12₁₆/14₁₈ Output contacts -
- 21₂₅-22₂₆/24₂₈ closed-circuit principle

CM-PFS

Three-phase monitoring relay

CM-PFS

Data sheet

Type		CM-PFS
Supply circuit = measuring circuit		L1, L2, L3
Rated control supply voltage U_s = measuring voltage		3x200-500 V AC
Power consumption		approx. 15 VA
Rated control supply voltage U_s tolerance		-15...+10 %
Rated frequency		50/60 Hz
Duty time		100 %
Measuring circuit		L1, L2, L3
Monitoring functions		<ul style="list-style-type: none"> phase failure ■ phase sequence ■
Measuring ranges		3x200-500 V AC
Thresholds		U_{min} U_{max}
		0.6 x U_N
Hysteresis related to the threshold value		
Measuring voltage frequency		50/60 Hz
Response time		500 ms
Measuring error within rated control supply voltage tolerance		≤ 0.5 %
Measuring error within temperature range		≤ 0.06 % / °C
Timing circuit		
Start-up delay t_s		fixed 500 ms
Tripping t_r		-
Indication of operational states		
Relay status	R: yellow LED	┌───┐ Output relay energized
Output circuits		11(15)-12(16)/14(18), 21(25)-22(26)/24(28)
Kind of output		2 c/o (SPDT) contacts
Operating principle ¹⁾		closed-circuit principle
Contact material		AgNi
Rated voltage (VDE 0110, IEC 60947-1)		250 V
Minimum switching voltage / Minimum switching current		- / -
Maximum switching voltage		250 V AC, 250 V DC
Rated operational current		4 A
(IEC 60947-5-1)		AC12 (resistive) 230 V
		AC15 (inductive) 230 V
		DC12 (resistive) 24 V
		DC13 (inductive) 24 V
Mechanical lifetime		30 x 10 ⁶ switching cycles
Electrical lifetime (AC12, 230 V, 4 A)		0.1 x 10 ⁶ switching cycles
Short-circuit proof,		
max. fuse rating		n/c contact 4 A fast-acting
		n/o contact 6 A fast-acting
AC rating		Utilization category (Control Circuit Rating Code) B 300
(UL 508)		max. rated operational voltage 300 V AC
		max. continuous thermal current at B 300 5 A
		max. making/breaking apparent power at B 300 3600/360 VA
General data		
Dimensions (W x H x D)		22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inch)
Mounting		DIN rail (EN 50022)
Mounting position		any
Minimum distance to other units		horizontal / vertical ≥ 10 mm if the control supply voltage is higher than 415 V
Degree of protection		enclosure / terminals IP50 / IP20
Electrical connection		
Wire size		
fine-strand with wire end ferrule		2 x 0.75-2.5 mm ² (2 x 18-14 AWG)
fine-strand without wire end ferrule		2 x 0.75-2.5 mm ² (2 x 18-14 AWG)
rigid		2 x 0.5-4mm ² (2 x 20-12 AWG)
Stripping length		7 mm (0.28 inch)
Tightening torque		0.6-0.8 mm
Environmental data		
Ambient temperature range		operation / storage -20...+60 °C / -40...+85 °C
Environmental testing (IEC 68-2-30)		24 h cycle time, 55 °C, 93 % rel., 96 h
Operational reliability (IEC 68-2-6)		4 g
Mechanical resistance (IEC 68-2-6)		6 g

Three-phase monitoring relay

CM-PFS

Data sheet

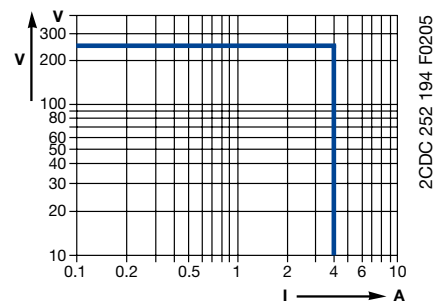
Type	CM-PFS
Isolation data	
Rated insulation volt. between supply, measuring and output circuits (VDE 0110, IEC 60947-1)	500 V
Rated impulse withstand voltage U_{imp} between all isolated circuits (VDE 0110, IEC 664)	4 kV / 1.2 - 50 μ s
Test voltage between all isolated circuits	2.5 kV, 50 Hz, 1 min.
Pollution category (VDE 0110, IEC 664, IEC 255-5)	3
Overvoltage category (VDE 0110, IEC 664, IEC 255-5)	III
Standards	
Product standard	IEC 255-6, EN 60255-6
Low Voltage Directive	2006/95/EC
EMC Directive	2004/108/EC
Electromagnetic compatibility	
Interference emission	EN 61000-6-2
electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3 - 6 kV/ 8 kV
electromagnetic field (HF radiation resistance) IEC/EN 61000-4-3	Level 3 - 10 V/m
fast transients (Burst) IEC/EN 61000-4-4	Level 3 - 2 kV / 5 kHz
powerful impulses (Surge) IEC 1000-4-5, EN 61000-4-5	Level 4 - 2 kV-L
HF line emission IEC 1000-4-6, EN 61000-4-6	Level 3 - 10 V
Interference emission	EN 61000-6-4

¹⁾ Closed-circuit principle: Output relay is de-energized if the measured value exceeds/drops below the adjusted threshold.

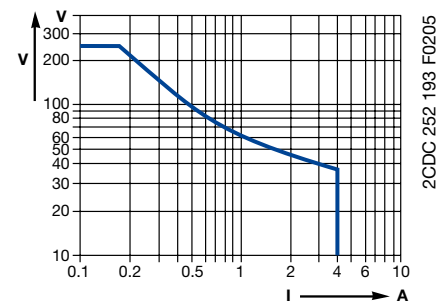
Technical diagrams

Load limit curves

AC load (resistive)

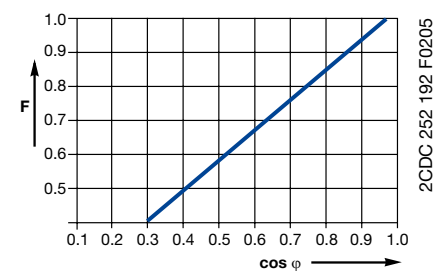


DC load (resistive)

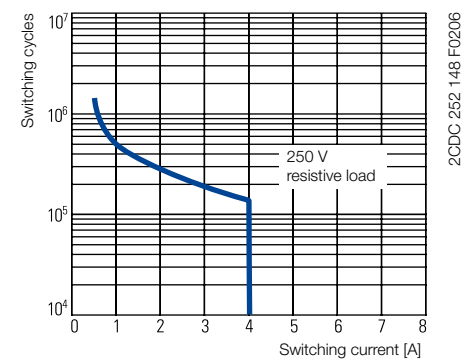


Derating factor F

at inductive AC load



Contact lifetime



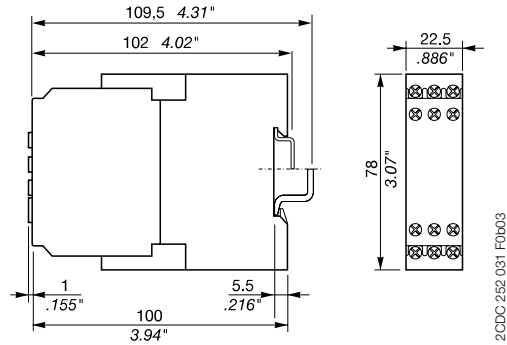
Three-phase monitoring relay

CM-PFS

Data sheet

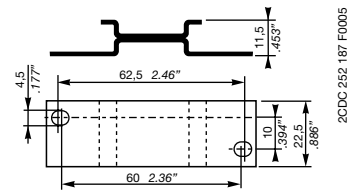
Dimensions

in mm

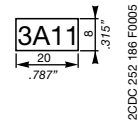


Dimensions - Accessories

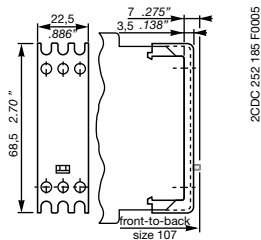
in mm



ADP.01 - Adapter for screw mounting



MAR.01 - Marker label



COV.01 - Sealable transparent cover

Further documentation

Document title	Document type	Document number
Electronic Products and Relays	Technical catalogue	2CDC 110 004 C020x
CM-PAS, CM-PFS, CM-PSS, CM-PVS	Instruction manual	1SVC 630 510 M0000

You can find the documentation online at www.abb.com/lowvoltage → Control Products → ...



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