Data sheet

Three-phase monitoring relay
CM-PFE

The CM-PFE is a three-phase monitoring relay that monitors the phase parameter phase sequence and phase failure in three-phase mains.



Characteristics

- Monitoring of three-phase mains for phase sequence and phase failure
- Powered by the measuring circuit
- 1 c/o (SPDT) contact
- 22.5 mm (0.89 in) width
- 1 LED for the indication of operational states

Approvals

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

Marks

- CE
- C-Tick

Order data

Three-phase monitoring relay

Type	Rated control supply voltage = measuring voltage	Order code
CM-PFE	3 x 208-440 V AC	1SVR550824R9100

Functions

Operating controls



2CDC 251 005 S0012

1 Indication of operational states

R: yellow LED – Relay status

Application / Operating mode

The CM-PFE is designed for use in three-phase mains for monitoring the phase parameters phase sequence and phase failure.

The CM-PFE works according to the closed-circuit principle.

Indication of operational states

LEDs, status information and fault messages

Operational state	R: LED yellow
Output relay energized	⎍

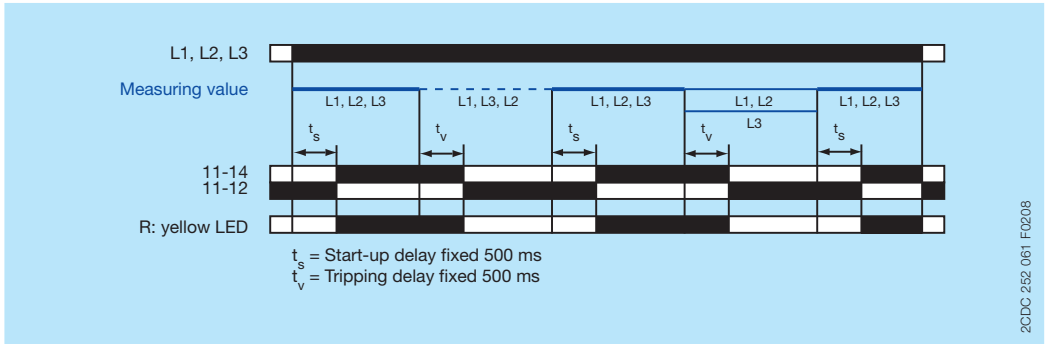
Function descriptions / diagrams

Phase sequence and phase failure monitoring

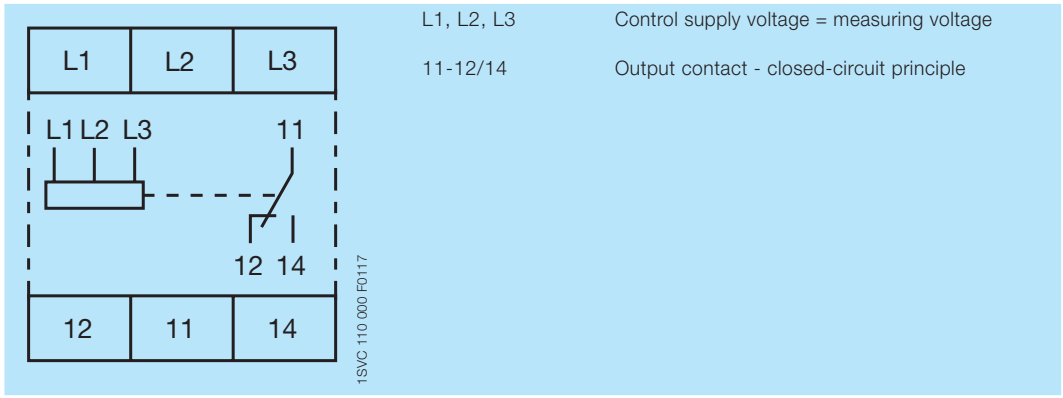
If all phases are present with the correct phase sequence, the output relay energizes after the fixed start-up delay t_s is complete.

If a phase failure or a phase sequence error occurs, the fixed tripping delay t_v starts. When timing is complete, the output relay de-energizes. The LED R glows when the output relay is energized.

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



Electrical connection



Connection diagram CM-PFE

Technical data

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

Input circuits

Supply circuit = measuring circuit	**L1, L2, L3**
Rated control supply voltage U_s = measuring voltage	3 x 208-440 V AC
Rated control supply voltage U_s tolerance	-10...+10 %
Rated frequency	50/60 Hz (-10...+10 %)
Typical current / power consumption	approx. 15 VA

Measuring circuit		**L1, L2, L3**
Monitoring functions	Phase failure	■
	Phase sequence	■
Measuring ranges		3 x 208-440 V AC
Thresholds	U_{min}	0.6 x U_n
	U_{max}	
Rated frequency of the measuring signal		50/60 Hz
Response time		500 ms
Accuracy within the rated control supply voltage tolerance		$\Delta U \leq 0.5$ %
Accuracy within the temperature range		$\Delta U \leq 0.06$ % / °C

Timing circuit	
Start-up delay T_s	fixed 500 ms
Tripping delay T_v	fixed 500 ms

User interface

Indication of operational states		
Relay status	R	yellow LED

Details see table ‚LEDs, status information and fault messages‘ on page 2 and ‚Function descriptions / diagrams‘ on page 3.

Output circuits

Kind of output		1 c/o (SPDT) contact
Operating principle		closed-circuit principle [1]
Contact material		AgCdO
Rated operational voltage U_e (IEC/EN 60947-1)		250 V
Maximum switching voltage		250 V DC, 250 V 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 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	10 A fast-acting
	n/o contact	10 A fast-acting

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

General data

MTBF		on request
Duty time		100 %
Dimensions (W x H x D)	product dimensions	22.5 x 78 x 78.5 mm (0.89 x 3.07 x 3.09 in)
	packaging dimensions	24 x 83 x 25 mm (0.94 x 3.27 x 0.98 in)
Weight	net weight	0.068 kg (0.150 lb)
	gross weight	0.080 kg (0.176 lb)
Mounting		DIN rail (IEC/EN 60715)
Mounting position		any
Degree of protection	housing	IP50
	terminals	IP20

Electrical connection

Wire size	fine-strand with wire end ferrule	2 x 0.75-1.5 mm² (2 x 18-16 AWG)
	fine-strand without wire end ferrule	2 x 1-1.5 mm² (2 x 18-16 AWG)
	rigid	2 x 0.75-1.5 mm² (2 x 18-16 AWG)
Stripping length		10 mm (0.39 in)
Tightening torque		0.6 - 0.8 Nm (5.31 - 7.08 lb.in)

Environmental data

Ambient temperature ranges	operation	-20...+60 °C
	storage	-40...+85 °C
Damp heat, cyclic (IEC 60068-2-30)		24 h cycle time, 55 °C, 93 % rel., 96 h
Operational reliability (IEC 68-2-6)		6 g
Mechanical resistance (IEC 68-2-6)		10 g

Isolation data

Rated insulation voltage U_i (VDE 0110, IEC/EN 60947-1)	supply circuit / measuring circuit / output circuit	500 V
Rated impulse withstand voltage U_{imp} (VDE 0110, IEC/EN 60664)	all isolated circuits	4 kV, 1.2/50 µs
Test voltage between all isolated circuits (routine test)		2.5 kV, 50 Hz, 1 min.
Pollution degree (VDE 0110, IEC/EN 60664, IEC/EN 60255-5)		3
Overvoltage category (VDE 0110, IEC/EN 60664, IEC/EN 60255-5)		III

Standards

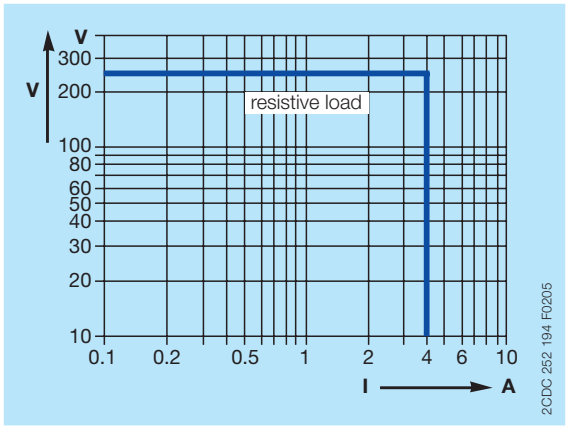
Product standard	IEC/EN 60255-6
Low Voltage Directive	2006/95/EC
EMC directive	2004/108/EC

Electromagnetic compatibility

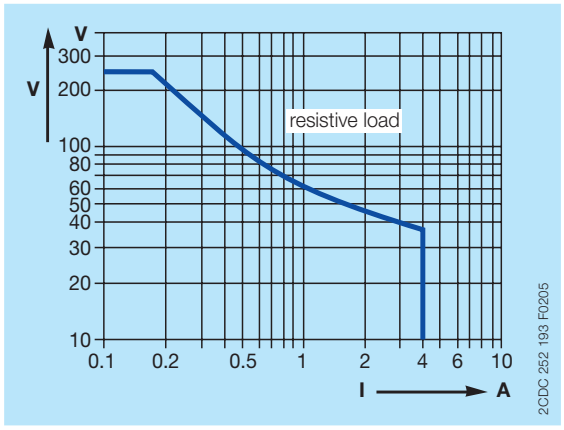
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	Level 3 (6 kV / 8 kV)
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3 (2 kV / 5 kHz)
surge	IEC/EN 61000-4-5	Level 4 (2 kV L-L)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)
Interference emission		IEC/EN 61000-6-4

Technical diagrams

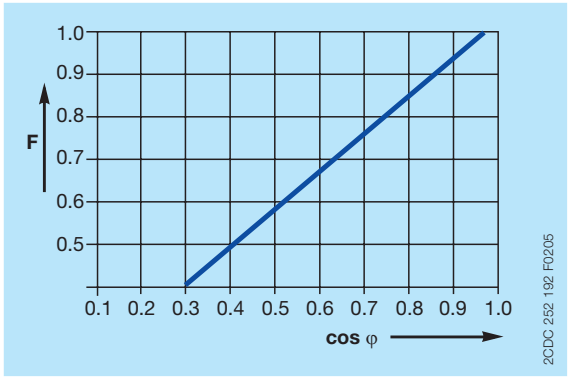
Load limit curves



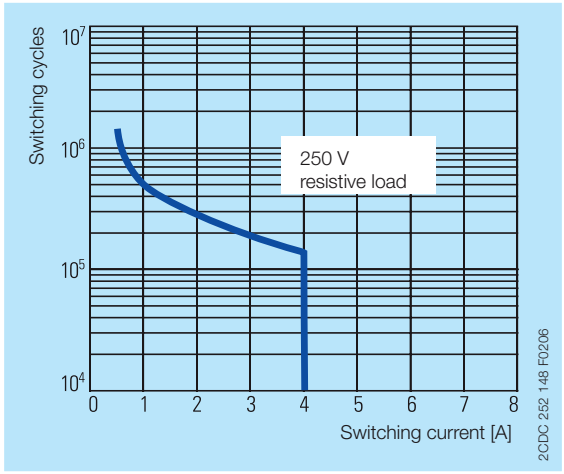
AC load (resistive)



DC load (resistive)



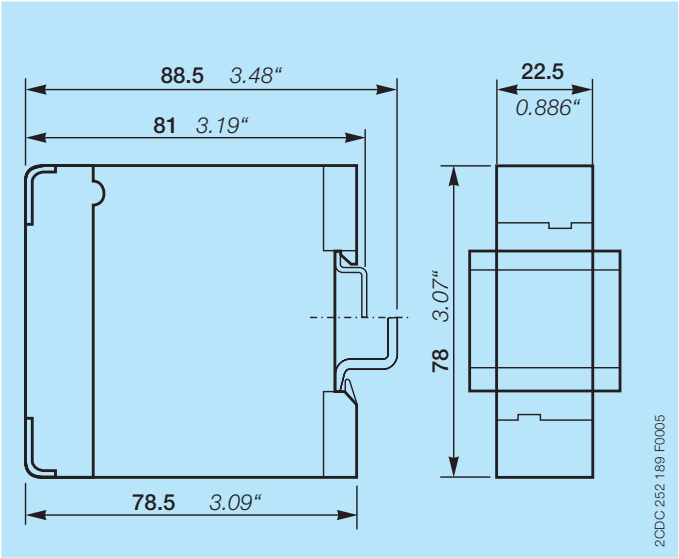
Derating factor F for inductive AC load



Contact lifetime

Dimensions

in **mm** and inches



Further documentation

Document title	Document type	Document number
Electronic products and relays	Technical catalogue	2CDC 110 004 C020x

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

Contact us

ABB STOTZ-KONTAKT GmbH
P. O. Box 10 16 80
69006 Heidelberg, Germany
Phone: +49 (0) 6221 7 01-0
Fax: +49 (0) 6221 7 01-13 25
E-mail: info.desto@de.abb.com

You can find the address of your
local sales organisation on the
ABB home page
http://www.abb.com/contacts
-> Low Voltage Products and Systems

Document number 2CDC 112 191 D0201 Rev B (08.2014)

Note:
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG.

Copyright© 2014 ABB
All rights reserved