

Electronic measuring and monitoring relay CM-WDS

Cycle monitor with watchdog function

The CM-WDS is designed for the external monitoring of the correct function of programmable logic controllers (plc) and industrial pcs (ipc).



2SDC 251 002 F0004

Features

- Cycle monitor for monitoring the function of programmable logic controllers or industrial pcs
- 4 selectable cycle monitoring time ranges from 0.5 to 1000 ms
- 24 V DC supply
- 1 c/o contact
- 2 LEDs for status indication

Approvals

- UL 508, CAN/CSA C22.2 No.14
- RMRS

Marks

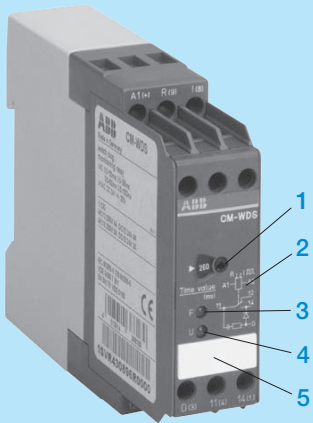
CE CE

Order data

Type	Rated control supply voltage	Order code
CM-WDS	24 V DC	1SVR 430 896 R0000

Functions

Operating controls



1 Setting the lower threshold value of cycle monitoring time

2 Wiring diagram

3 F: red LED - cycle error

4 U: green LED - control supply voltage

5 Marker label

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Application

The CM-WDS is designed for the external monitoring of the correct function of programmable logic controllers (plc) and industrial pcs (ipc). See "Example of application - Circuit diagram" on page 3.

Operating mode

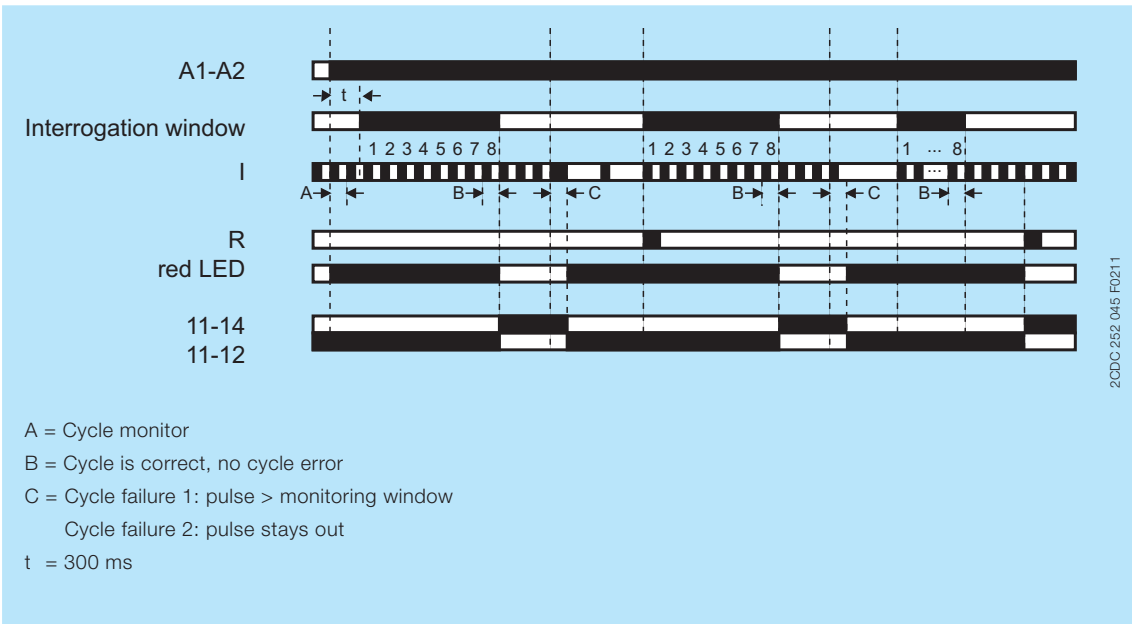
The cycle monitor CM-WDS (watchdog) observes if a regularly intermittent pulse is applied to its pulse input "I". It is, for example, possible to connect the output of a programmable logic controller (plc), which is set and reset regularly (e. g. once each cycle). The connected cycle pulse must be generated by suitable programming of the plc/ipc. Now, the CM-WDS monitors if the cycle time of the plc/ipc program is smaller than the cycle monitoring time setted by means of the front-face selector switch "time value (ms)".

The output relay 11-12/14 of the CM-WDS energizes and the red LED is switched off, if there are minimum 8 successive regular pulses on input "I". When the pulse signal stays out or is not regular, the output relay de-energizes and the red LED is illuminated.

In case the monitoring time is too short or too long, this can be adjusted by a modified programming of the plc/ips or by modified setting of the monitoring time "time value (ms)".

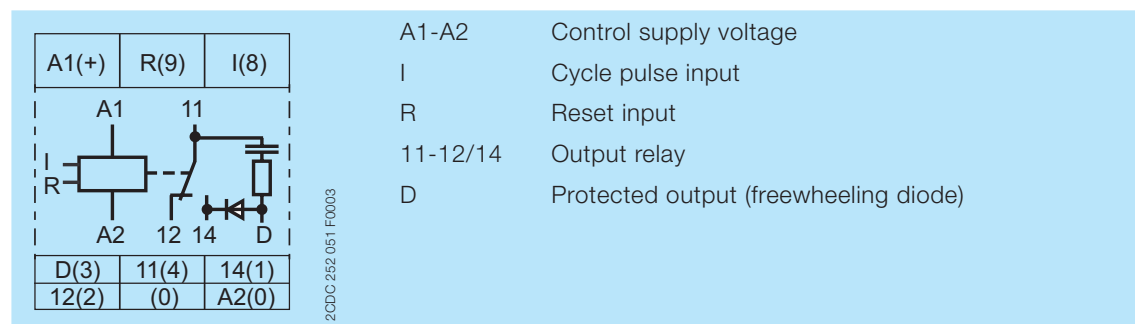
A malfunction recognized and stored with the CM-WDS can be reset with an H-impulse (0-1-transition) on the reset input "R(9)", so that the cycle monitoring is again released. The reset impulse can be generated by means of a reset button or by suitable programming of the controller (plc/ipc).

Function diagrams

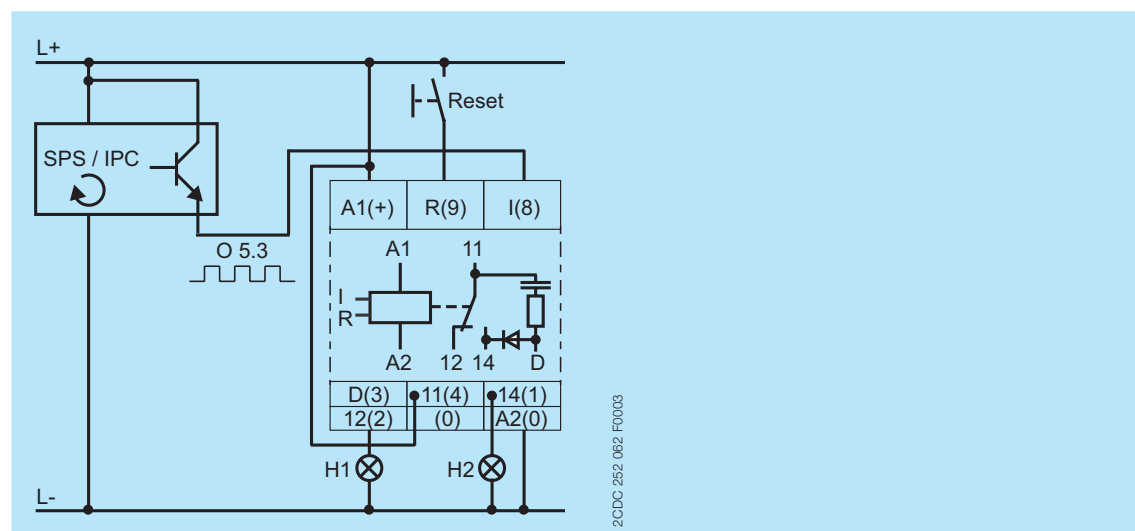


Connection and wiring

Position of connection terminals



Example of application - Circuit diagram



Technical data

Input circuit - Supply circuit		A1-A2
Rated control supply voltage U_S - power consumption	A1-A2	24 V DC - approx. 1 W
Rated control supply voltage tolerance		-30...+30 %
Duty time		100 %
Input circuit - Measuring circuit		I
Monitoring function		cycle monitoring
Input voltage		24 V DC
Input current		approx. 5 mA
Setting range of cycle monitoring time		0.5-150 ms
		0.5-260 ms
		0.5-500 ms
		0.5-1000 ms
Cycle duration of one pulse		approx. 0.5-1000 ms
Measuring cycle at switching ON		2.2-10 s
Accuracy within the rated control supply voltage tolerance		≤ 0.5 %
Accuracy within the temperature range		≤ 0.06 % / °C
Timing circuit		
ON-delay time		approx. 2.2-10 s

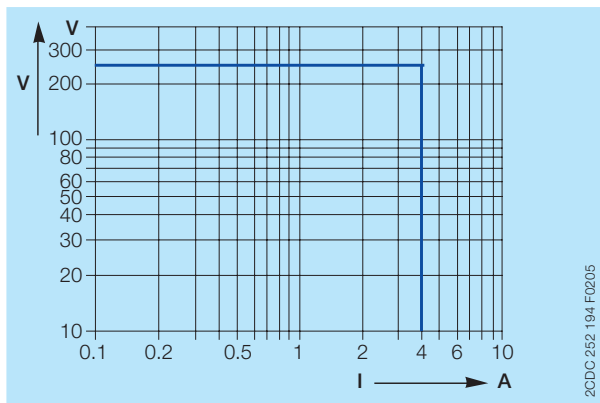
Indication of operating states		
Control supply voltage		U: green LED
Cycle error	output relay de-energized	F: red LED
Output circuits		
		11-12/14
Kind of output		Relay: 1 c/o contact
Operating principle	output relay de-energizes in case of cycle error	closed-circuit principle
Contact material		AgCdo
Rated voltage	VDE 0110, IEC 60947-1	250 V
Min. switching voltage / min. switching current		- / -
Max. switching voltage		250 V AC, 250 V DC
Rated operational current I _o (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
Mechanical lifetime		10 x 10 ⁶ switching cycles
Electrical lifetime	AC12, 230 V, 4 A	0.1 x 10 ⁶ switching cycles
Max. fuse rating to achieve short-circuit protection	n/c contact	10 A fast-acting class gL
	n/o contact	10 A fast-acting class gL
General data		
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 (IEC/EN 60715)
Mounting position		any
Degree of protection	enclosure / terminals	IP50 / IP20
Electrical connection		
Wire size	fine-strand with wire end ferrule	2 x 2.5 mm ² (2 x 14 AWG)
Environmental data		
Ambient temperature ranges	operation	-20...+60 °C
	storage	-40...+85 °C
Operational reliability	IEC/EN 60068-2-6	4 g
Mechanical shock resistance	IEC/EN 60068-2-6	6 g
Environmental tests	IEC/EN 60068-2-30	24 h cycle, 55 °C, 93 % rel., 96 h
Isolation data		
Rated insulation voltage between all isolated circuits (VDE 0110-1, IEC/EN 60947-1)		250 V
Rated impulse withstand voltage U _{imp} between all isolated circuits (VDE 0110-1, IEC 664)		4 kV / 1.2-50 µs
Test voltage between all isolated circuits, routine test (IEC/EN 60255-5, IEC/EN 61010-1)		2.5 kV, 50 Hz, 1 min
Pollution degree (VDE 0110, IEC 664, IEC 255-5)		3 / C
Overvoltage category (VDE 0110, IEC 664, IEC 255-5)		III
Standards / directives		
Product standard		IEC/EN 60255-6
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC

Electromagnetic compatibility

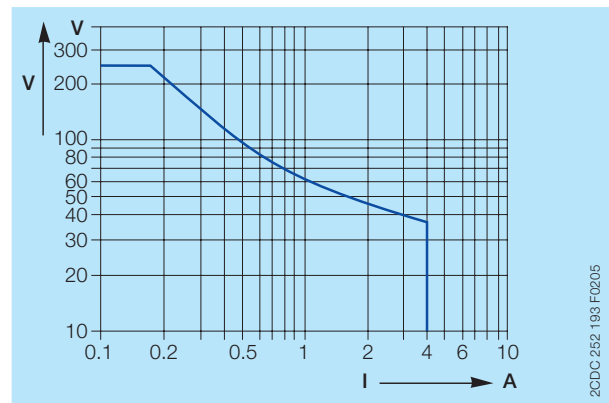
Interference immunity to	IEC/EN 61000-6-2	
electrostatic discharge	IEC/EN 61000-4-2	Level 3, 6 kV / 8 kV
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3, 10 V/m
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3, 2 kV / 5 kHz
surge	IEC/EN 61000-4-5	Level 3, 2 kV L-L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

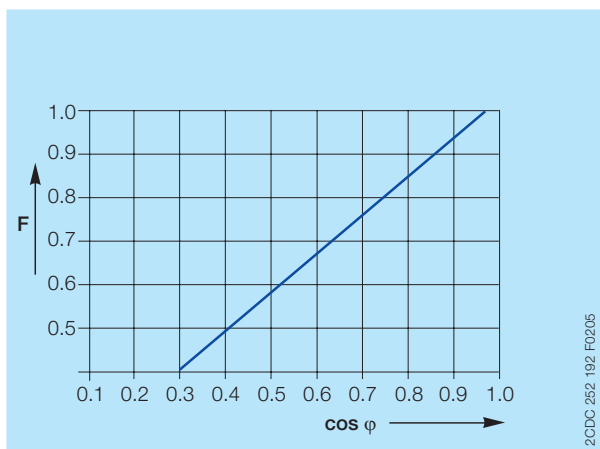
Load limit curves



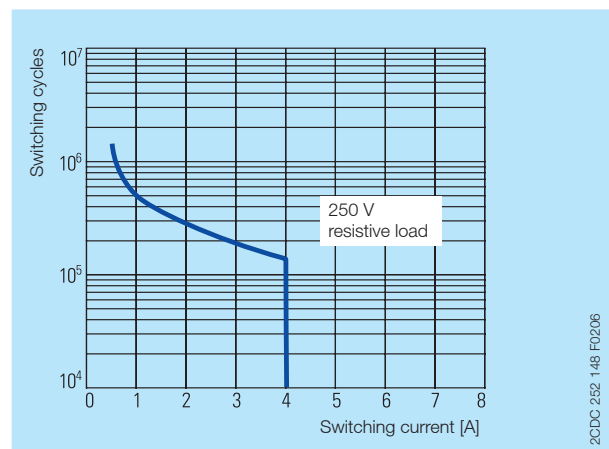
AC load (resistive)



DC load (resistive)



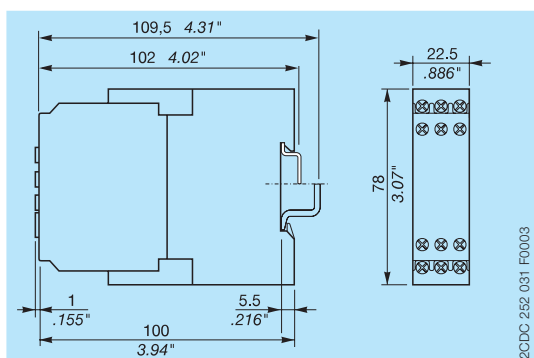
Reduction factor F for inductive AC load



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

Dimensions

in mm and inches



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
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