Cycle monitoring relay with watchdog function CM-WDS
Ordering details

CM-WDS

① Setting the lower threshold value of cycle monitoring time
② F: red LED - cycle error
③ U: green LED - control supply voltage
④ Wiring diagram
⑤ Marker label

- 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

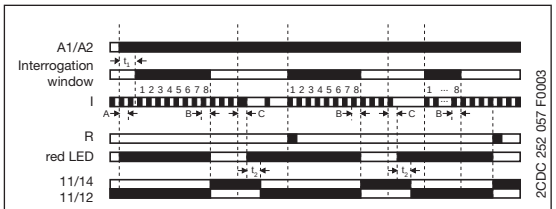
The cycle monitoring relay CM-WDS (watchdog) observes if a regularly intermittent pulse is applied to its pulse input “I“. It is, for example, possible to connect the output of a programmable logic controller (plc), which is set and reset regularly (e. g. once each cycle). The connected cycle pulse must 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)“.

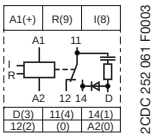
A fault recognized and stored with the CM-WDS can be reset by an H-impulse (0-1-transition) on the reset input “R(9)“, so that the cycle monitoring is again released. The reset impulse can be generated by means of a reset button or by suitable programming of the controller (plc/ipc).

Funktion diagram CM-WDS



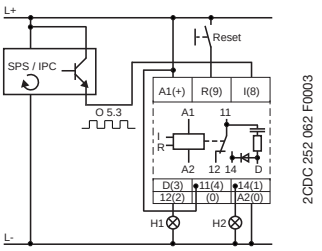
A = Cycle monitor
B = Cycle is correct, no cycle error
C = Cycle failure 1: pulse > monitoring window
Cycle failure 2: pulse stays out
t_1 = 300 ms
t_2 = 260 ms

Connection diagram CM-WDS



A1/A2	Rated control supply voltage
I	Cycle pulse input
R	Reset input
11-12/14	Output relay
D	Protected output (freewheeling diode)

Example of application - circuit diagram



Application

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

Type	Rated control supply voltage	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
CM-WDS	24 V DC	**1SVR 430 896 R0000**	1		0.15 / 0.33

• **Technical data**..... 2/99
• **Technical diagrams** ..... 2/102 • **Dimensional drawings** .....2/103 • **Accessories**..... 2/104

Cycle monitoring relay with watchdog function
CM-WDS
Technical data

Type		CM-WDS
Input circuit		**A1-A2**
Rated control supply voltage U_S - power consumption	A1-A2	24 V DC - approx. 1 W
Tolerance of the rated control supply voltage U_S		-30 % - +30 %
Duty time		100 %
Measuring circuit		**I**
Monitoring function		cycle monitoring
Measuring voltage		24 V DC
Current consumption at the measuring input		approx. 5 mA
Setting range of cycle monitoring time		selectable: 0.5-150 ms, 0.5-260 ms, 0.5-500 ms, 0.5-1000 ms
Response time		approx. 0.5-1000 ms
Accuracy within the supply voltage tolerance		$\Delta U \leq 0.5$ %
Accuracy within the temperature range		$\Delta U \leq 0.06$ % / °C
Timing circuit		
ON-delay		approx. 2.2-10 s
Tripping delay		approx. 260 ms
Indication of operational states		
Control supply voltage		U: green LED
Output relay de-energized / cycle error		F: red LED
Output circuit		**11-12/14**
Kind of output		1 c/o
Operating principle [1)]		Closed-circuit principle
Contact material		AgCdo
Rated operational voltage U_e	IEC/EN 60947-1	250 V
Minimum switching voltage / Minimum switching current		
Maximum switching voltage		250 V AC, 250 V DC
Rated operational current I_e (IEC/EN 60947-5-1)	AC12 (resistive) 230 V	4 A
	AC15 (inductive) 230 V	3 A
	DC12 (resistive) 24 V	4 A
	DC13 (inductive) 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		10 x 10^6 switching cycles
Electrical lifeteime (AC12, 230 V, 4 A)		0.1 x 10^6 switching cycles
Max. fuse rating to achieve short circuit protection	n/c / n/o contacts	10 A fast-acting / 10 A fast-acting
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 position		any
Degree of protection	enclosure / terminals	IP50 / IP20
Ambient temperature range	operation / storage	-20...+60 °C / -40...+85 °C
Mounting		DIN rail (IEC/EN 60715)
Electrical connection		
Wire size	fine-strand with wire end ferrule	2 x 2.5 mm^2 (2 x 14 AWG)
Standards		
Product standard		IEC 255-6, EN 60255-6
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC
Operational reliability (IEC 68-2-6)		4 g
Mechanical shock resistance (IEC 68-2-6)		6 g
Electromagnetic compatibility		
Interference immunity to		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		EN 61000-6-4

• **Approvals** 2/6

Cycle monitoring relay with watchdog function
CM-WDS
Technical data

Isolation data	
Rated insulation voltage between supply-, control- and output circuit (VDE 0110, IEC 60947-1)	250 V
Rated impulse withstand between all isolated circuits (VDE 0110, IEC 664)	4 kV / 1.2-50 µs
Test voltage between all isolated circuits	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
Environmental tests (IEC 68-2-30)	24 h cycle, 55 °C, 93 % rel. 96 h

[1] Closed-circuit principle: Output relay de-energizes if a cycle error occurs

• **Approvals** 2/6