

Operating Manual WD100V

Stand: 2015-06-24 Fu

Watchdog Time-Relay WD100V

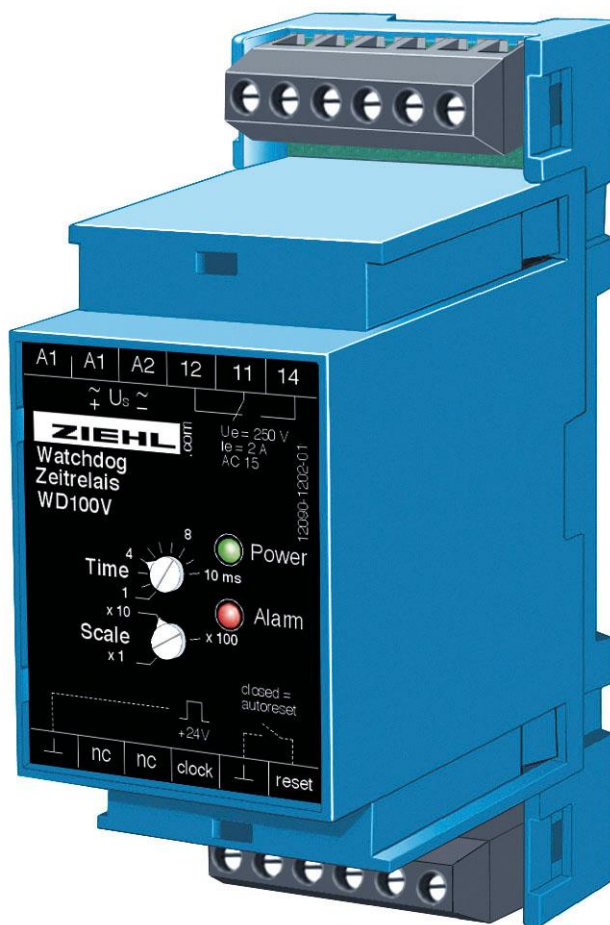


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1 Application and short description

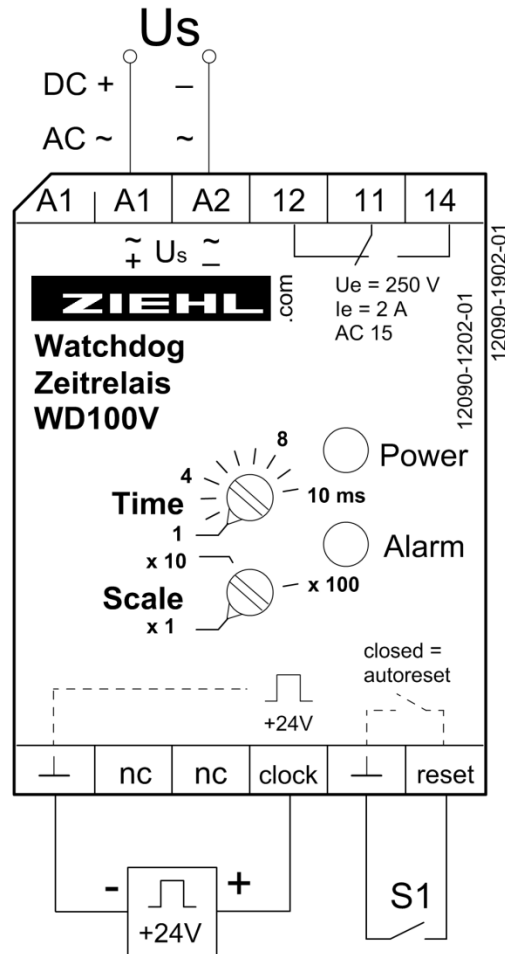
In the control technology of today, the number of industrial PCs (IPC) partly with decentralized intelligence constantly increases.

Individual processes are controlled independent of each other. In case of failure or malfunction of one component, it can therefore be necessary to switch off the hardware of a complete machine or plant. Time-Relay WD100V is used to make sure that because of malfunctions in the program flow, caused by short-term voltage interruptions for instance, no undefined status are created.

2 Overview of functions

- Input-signal 24 VDC square wave
- Minimum pulse length 500 µs
- Maximum pulse length 1 s
- Monitoring of positive and negative slopes
- Watchdog-time = Time x Scale (1 ms-1 s)
- Display of state of function with LED (Alarm)
- Reset with external contact or switch
- Universal power-supply AC/DC 24-240 V
- Relay-output (1 change-over contact)

3 Connection plan

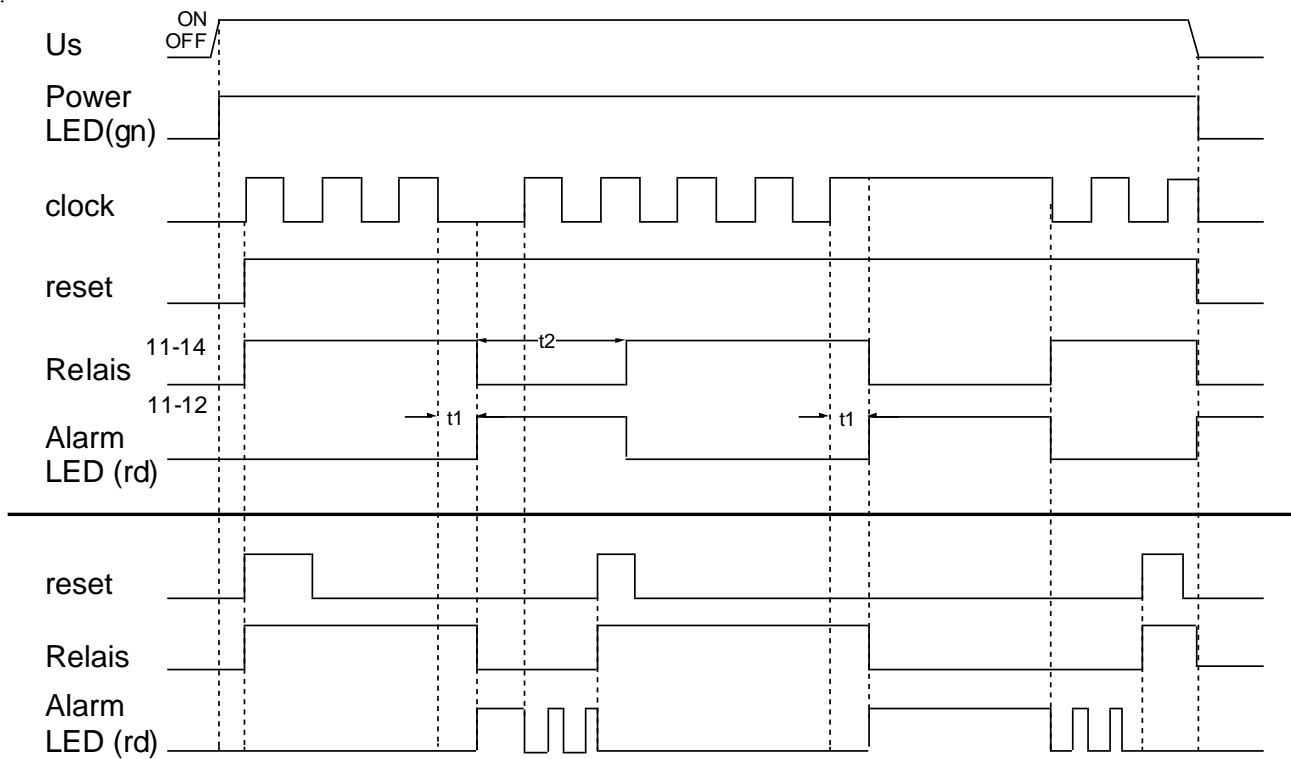


4 Detailed Description

The software of the IPC creates a square wave signal (DC 24 V) with a pulse-time of 500 µs to 1000 ms. The output relay (1 potential free change-over contact) of the watchdog time-relay WD100V is picked up when the supply voltage and the square wave voltage are fed. The relay releases the preset time (Time x Scale) after the last recognized slope when the next slope is missing. Positive slopes as well as negative slopes are monitored. When the square signals recovers and the reset-input is closed or supply-voltage is switched on, the relay picks up again (not earlier than 500 ms after switching off).

The output signal can be evaluated by a superordinate control or directly switched into the emergency- stop circuit of the machine.

4.1 Functional Diagram



t_1 = Time x Scale

t_2 = Relay switches off for 500ms

5 Important notes

To use the equipment flawless and safe, transport and store properly, install and start professionally and operate as directed.

Only let persons work with the equipment who are familiar with installation, start-up and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instruction manual, the information written on the equipment and the relevant security instructions for the setting up and the use of electrical units. The equipment is built according to EN 60947 and checked and leaves the plant according to security in perfect condition.

If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.

Instead of the industrial norms and regulations written in this instruction manual valid for Europe, you must observe out of their geographical scope the valid and relevant regulations of the corresponding country.



Attention!

Do not plug in device alive nor detach it from socket.

Before switching on make sure that the operational voltage U_s of the type-plate and the mains voltage are the same!

6 Assembly

The unit can be installed as follows:

- Installation in switchgear cabinet on 35 mm mounting rail according to EN 60715
- With screws M4 for installation on walls or panel. additional latch not included)
- Connection according to connection plan or type plate.

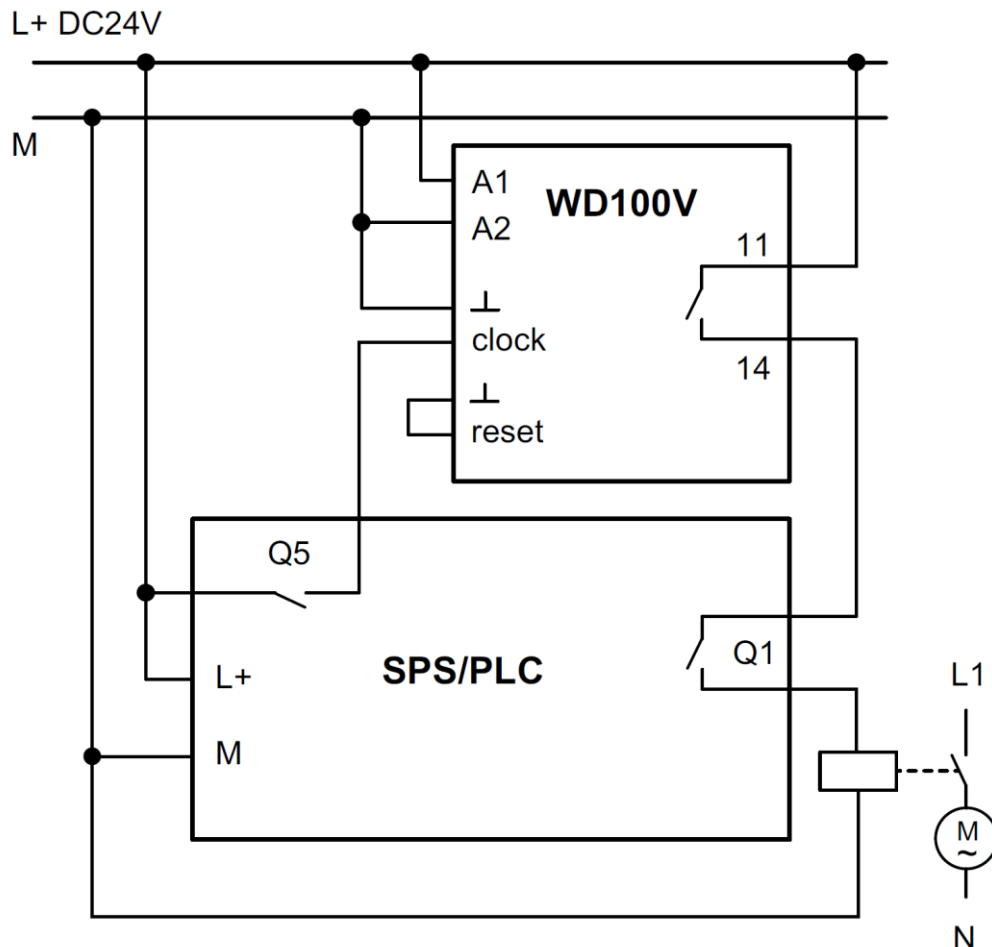
7 Installation

Apply supply-voltage and square wave-signal according to connection plan.

Adjust watchdog-time (Time x Scale) low to get an alarm. Increase watchdog-time until LED switches off or blinks.

It is recommended to choose setting for scale as low as possible.

8 Application example motor release



Q1 = relay output PLC
Q5 = clock from PLC

The software of the monitored control (PLC, IPC) makes a clock signal at the output Q5 (DC 24 V, transistor).

The relay of the WD100V picks up only when the input recognizes a clock signal. The time between two slopes has to be shorter than the time set at the WD100V (time x scale).

When the clock is missing completely or at a missing slope, the output relay of the WD100V opens contacts 11-14 and the motor is switched off respectively switching on is inhibited.

9 Error search

Power LED is off. Check supply-voltage.

Relay releases an alarm and switches back shortly after that.

- Watchdog-time to low. Increase watchdog-time (Time x Scale).

10 Technische Daten

Rated supply-voltage U_s :		DC/AC 24 – 240 V 0/50/60 Hz
Range		DC 20.4 - 297 V, AC 20 - 264 V
power consumption		< 2 W < 3 VA
Relay output		1 change-over contact (CO)
Switching voltage		Max. AC 250 V; DC 300 V
Minimum value of voltage / current		12 V 10 mA
Thermal current I_{th}		Max. 3 A
Switching capacity utilization category		AC-15 $I_e = 2$ A $U_e = 250$ V DC-13 $I_e = 2$ A $U_e = 24$ V
rated operating current		DC-13 $I_e = 0.8$ A $U_e = 60$ V
rated operational voltage		DC-13 $I_e = 0.4$ A $U_e = 120$ V DC-13 $I_e = 0.2$ A $U_e = 240$ V
Recommended fuse		Slow 3.15 A (gL) 2 x 10 ⁵ operations at AC 250 V / 3 A
Electrical contact life $\cos \varphi = 1$		5 x 10 ⁵ operations at AC 250 V / 2 A 1 x 10 ⁶ operations at AC 250 V / 0.8 A
Mechanical contact life		1 x 10 ⁷ operations
Inputs		
		DC 24 V square wave (range: low ≤ 4 V, high ≥ 12 V) Pulse-length min. 500 μ s
Clock-input		Relay picked up with voltage applied. Relay releases when no slope is detected Relay remains released min. 500 ms
Reset-input		Button for reset. Bridge = autoreset
Switching-time		Delay contact 10 ms
Tolerance		$\pm 10\%$ of preset value (0 ... 40 °C) $\pm 30\%$ of preset value (-32 ... +70 °C)
Time until ready		< 200 ms
Resistance of input		app. 20 k Ω
Testing conditions		EN 60947-1
Rated impulse voltage		4000 V
Overvoltage category		III
Pollution degree		2
Rated insulation voltage U_i		250 V
EMV - Emission		EN 61000-6-3; CISPR 11 Class B
EMV - Immunity		EN 60947-1
Vibration resistance EN 60068-2-6		2 ... 13.2 Hz ± 1 mm 13.2 ... 100 Hz 1 g 2...25 Hz ± 1.6 mm 25 ... 150 Hz 5 g
Environmental conditions		
Ambient temperature range		-32 °C ... +70 °C
Storage temperature range		-40 °C ... +70 °C
Altitude		Up to 2000 m
Climatic conditions		5-85% rel. humidity, no condensation
External wiring temperature range		-5 °C ... +70 °C

Housing	Design V2 switchgear mounting
Mounting height	55 mm
Width	2 TE
Dimensions (W x H x D)	35 x 90 x 58 mm
Line connection solid wire	1 x 0.34 – 4 mm ² / AWG 22 - 12
Stranded with insulated ferrules	1 x 0.1 -2.5 mm ² / AWG 27 - 14
Insulation Strip length	8 mm
Torque	0.5 Nm (3.6 lb.in)
Protection housing / terminals	IP 30 / IP 20
Attachment	35 mm standard rail according to EN 60 715 or screws M 4 (additional bar not included)
Weight	app. 100 g

Subject to technical modifications

11 Housing V2

Maße in mm

