LEG Industrie-Elektronik **GmbH**
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Wire Breakage Detector / Short-Circuit- Line Monitoring DW1

Characteristics:

- **For load currents 5mA – 3A**
- **Monitoring also in idle state**
- **Short-circuit proof, 30s**
- **Status display in the front panel**
- **Malfunction message output plus switching**
- **Supply 24VDC**
- **Mountable on 35mm cap rail TS35**
- **Clear terminal labeling**
- **Narrow design**
- **Shape 17,5mm, super low**
- **PB - Power-Bus compatible**
- **.High reliability, 5 years warranty**

Description:

The devices of the wire breakage detector series DW1 have been developed for monitoring of both driven as well as non-driven consumer wires. A small measuring current flows in idle condition through the consumer. In case of this should not be possible, due to the connected load, a resistor must be placed parallel to the consumer. To minimize the thereby caused, additional load and the power loss in driven condition, are separated measuring circuits for the driven and non-driven condition at disposal. The jumper JP1, depending on the chosen parallel resistance, can be plugged on position 4, 5 or 6.

Example:
Load range 80...400mA. Chosen parallel resistance 4,7kΩ (according to technical data).
It results in: JP1 – 3 for the load current circuit and JP1 – 4 for the closed current circuit.

The proper condition of the wire is signaled through a plus switching malfunction message output, which in case of failure or loss of voltage switches off (closed current circuit).The intact measuring circuit is signaled by a LED in the front panel. If a short-circuit occurs, the module will switch its output off and will check cyclically every 10s whether there is still a short-circuit condition.

The devices of series DW1-1 are taking the load current directly from the driven output. Whereas the modules DW 1-2/-3 have an additional power amplifier, its current is taken from the unit supply. The driving of the DW1-2 /-3 therefore is nearly without need of power. Therefore the units are also usable as power amplifier for PLC-output channels.

Application:

Monitoring of 24VDC PLC- / SPS outputs, safety technology
Monitoring of alarm devices / extinguishing systems

Order-No.:	Output:
DW1-1	5…400mA
DW1-2	0, 32…3A
DW1-3	75…600mA

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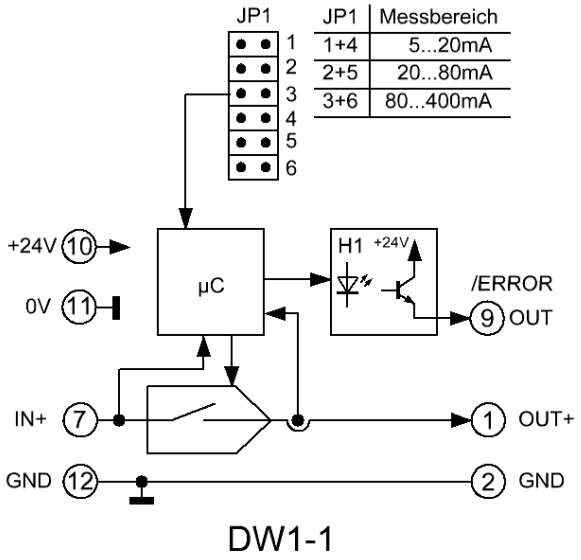
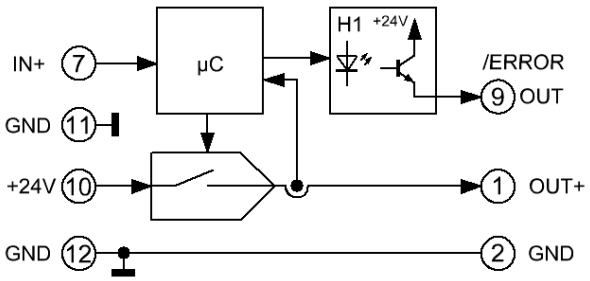


DW1-1

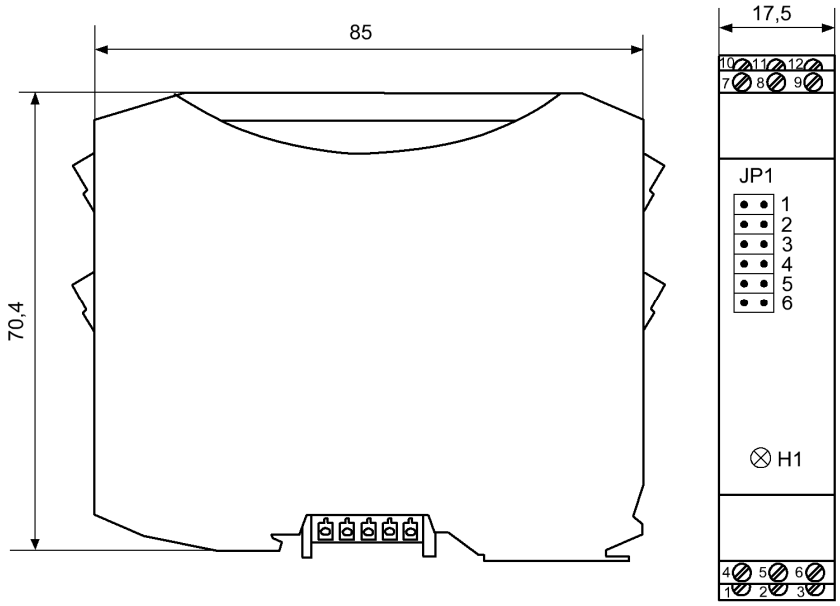


DW1-2

DW1-3

Notice:

For the type DW1-1 the adjustment for the load range by means of jumper JP1 -1, -2, -3 and for the closed current circuit by means of JP1 -4, -5, -6. They have to be plugged accordingly to the above table. Only if it is necessary to have a resistance parallel to the load (to let the measurement current flow), it is allowed to plug the jumper JP1 for the closed current circuit (-4, -5, -6), corresponding to the chosen resistance, deviating from the table. (cf. technical data).



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Technical data:

Auxiliary power:

Supply voltage	:	19, 2…30VDC
Current consumption	:	< 0,5VA + malfunction message max. 50mA + load current

Measurement current output circuit:

DW1-1	:	0, 5…0,8mA	range 5...20mA	4,7kΩ / 0,5W, JP1 = 4
		1, 9...3mA	range 20...80mA	1,2kΩ / 2 W, JP1 = 5
		7, 2...12,6mA	range 80...400mA	1,2kΩ / 2 W, JP1 = 5 or
				optional 4,7kΩ / 0,5W, JP1 = 4
DW1-2	:	20…25mA		75kΩ / 10 W, JP1 = 6
		1, 5…2,5mA		1,2kΩ / 2 W, JP1 = 5
DW1-3	:	4...6mA		280Ω / 5 W, JP1 = 6
		1, 5…2,5mA		1,2kΩ / 2 W, JP1 = 5

Outputs load circuits:

Voltage output	:	24VDC		
Current output	:	DW1-1	5…400mA,	short-circuit proof for max. 30s
		DW1-2	0, 32…3A,	short-circuit proof
		DW1-3	75...600mA,	short-circuit proof
Switch delay	:	Type: 50ms / max. 70ms		
Switch frequency max.	:	R-load 15Hz, L-load 1Hz		

Output resistance :		in closed circuit	in load circuit	measurement range
	DW1-1	4,7kΩ	47Ω	5...20mA
		1,2kΩ	10Ω	20...80mA
		270Ω	2,7Ω	80...400mA
	DW1-2	150Ω	0,022Ω	0, 32...3A
	DW1-3	680Ω	0,1Ω	75...600mA

Operating range: **Safe error detecting**

		Load range:	**Wire breakage:**	**Short-circuit:**
DW1-1				
Load range JP1 -1	:	5...20mA	< 1mA	> 40mA
Load range JP1 -2	:	20...80mA	< 10mA	> 160mA
Load range JP1 -3	:	80...400mA	< 40mA	> 800mA
JP1 -4,-5,-6	:	Cf. table, or optional (cf. measurement current circuit)		
DW1-2 JP1 -6	:	0, 32...3A	< 160mA	> 6A
DW1-3 JP1 -6	:	75...600mA	< 15mA	> 1A
Optional JP1 -5	:	Optional (see measurement current circuit)		
				Calibrated version on request!!!

Outputs:

Malfunction message		
Contact	:	Plus switching + 24V/50mA
Switch delay	:	Type: 100ms / max. 300ms

General data:

Operating temperature	:	0...50°C
Storage temperature	:	-25...+85°C, condensation before putting into operation is not allowed
MTBF	:	71 years Mean Time Between Failures – according to EN 61709 (SN29500). Requirements: Stationary operation in clean rooms, average ambient temperature40 ° C, permanent operation without forced ventilation, continuous operation

Data-sheet DW1 revision: 02 - 2015

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CE conformity	:	EN 61326-1, EN 61000-4-2/3*/4/5/6*, EN 61000-6-4 * during measurements small deviations are possible

Body:

Dimension	:	See drawing, 17,5mm adjoin body, 17,5x70,4x90,5mm (with terminals)
Material	:	PA / V0
Protection category	:	IP20
Connection	:	M3-srew-type terminal 0, 14 - 2,5mm², flexible or inflexible
Fixing	:	Snap-on mounting for norm rail TS35
Weight	:	66g
Mounting position	:	As you like

Note on safety:

Disconnect the power supply before attempting to open the unit.

During the operation of this module it is possible that parts of the module, even there is extra-low voltage, (for example shunt measurement) are under dangerous voltage! Therefore a non-observance of this caution may cause damage of property or physical injury.
Only trained qualified personnel should install or operate the unit. Before installation the qualified personnel should read the documentation and should familiarize himself with the unit.
If there is visible damage to the body of the unit it should be immediately replaced and not put into operation.

Please ensure that there is a sufficient prevention against electrostatic discharge during installation of the unit.

Installation Information:

Pay attention and make sure the unit is far away from mounted sources that may disturb the device such as magnetic coils, transformers, frequency converters etc.

Wiring advice:

Use only shielded cables. The shield is to be connected extensively to ground. Do not mix power- and signal-wires/cables in the same cable tray.

Limited warranty:

The LEG Industrie-Elektronik GmbH warranted that the product does not have any material or processing defects in a period of 5 years after date of delivery.
It is up to the choice of LEG to repair or to exchange an inoperative unit.
Subsequent damages or any claim for indemnification above the functionality of the unit are excluded.
This limited warranty is only valid if …

1. the product was installed and put into operation according to the LEG operation documentation;
2. the technical configuration of the power supply was abided;
3. the product was not used for unintended purposes;
4. there were no unauthorized modifications or manipulations, misuse or repairs without previous agreement from LEG .

Our Terms of Trade are based on the “General Conditions for the supply of products and services of the Electrical and Electronics Industry” including the “Complementary Clause: Extended Reservation of Property” of the ZVEI e.V. (German Association of Electrical Manufacturers).

Miscellaneous:

We expressly reserve the right, without previous notice, to correct errors contained in any data of this information brochure, and to make alterations to the program and technical modifications.