



Condensate water detectors

with electrode and relay



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Condensate water detectors

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General information

Condensate water detectors consist of a KWS .-Z10 conductive electrode and a Leckstar 101 or Leckstar 101/S conductive electrode relay. They can be used for the detection of condensate water, e. g. in a collection tray under an air conditioning unit.

The conductive electrodes are printed circuit boards, which can be disposed or glued at a straight even surface.

Each printed circuit board is fitted with two separate comb-shaped electrodes as sensitive elements : 1 control electrode and 1 ground electrode. As soon as a conductive liquid creates a conductive path between the control electrode and the ground electrode, an electrical contact is made and an alarm signal given.

Each KWS .-Z10 conductive electrode is to be connected to 1 Leckstar 101 or Leckstar 101/S conductive electrode relay.

Due to the comb-shaped structure of the conductors of each printed circuit board the KWS .-Z10 electrodes have a high sensitivity for the detection of electrically low conductive liquids (e.g. condensate water). For a better surface protection, the conductors of each printed circuit board are gilded.

The KWS .-Z10 electrodes are fitted with a 3 m long cable.

To avoid that the functional efficiency of the electrode could strongly be reduced or complete invalidated, it is absolutely necessary, that the sensitive surface of the printed circuit board is kept free of grease and that it does not come into contact with chemical agents.

The KWS .-Z10 electrodes have to be installed where condensation water is most probably expected to occur.

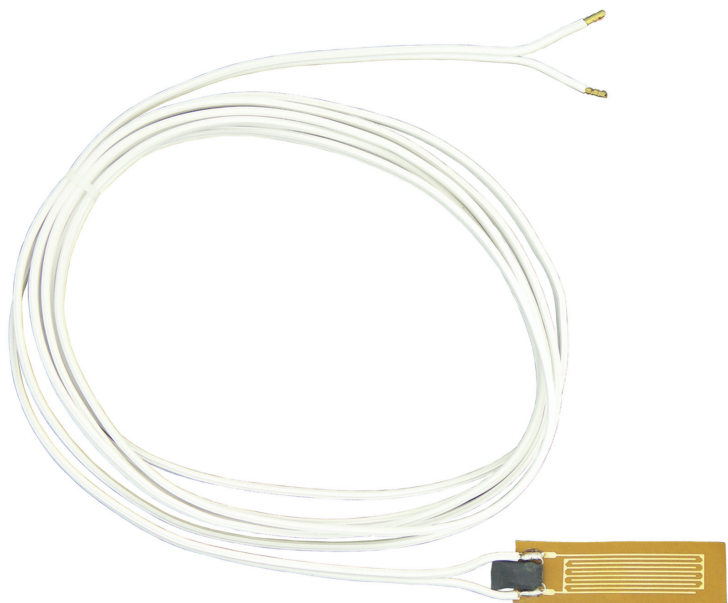


KWS .-Z10 conductive electrodes

Technical data	KWS 0 -Z10	KWS 1 -Z10	KWS 2 -Z10	KWS 3 -Z10	KWS 3/S -Z10	KWS 4 -Z10
Design	1 control electrode and 1 ground electrode					
Sensitive elements	2 comb-shaped conductors made of gilded copper					
Printed circuit board	adhesive film 65 mm x 20 mm	50 mm x 15 mm	86 mm x 56 mm	500 mm x 30 mm	120 mm x 30 mm	220 mm x 100 mm
Electrical connection	non adhesive rigid sensor white PVC cable, length: 3 m, on request: • longer • halogen-free					
Temperature range	– 20°C to + 60°C					
Cable break monitoring	with integrated Z10 cable break monitoring unit					
Max. length of connecting cable	1,000 m between KWS .-Z10 and electrode relay					



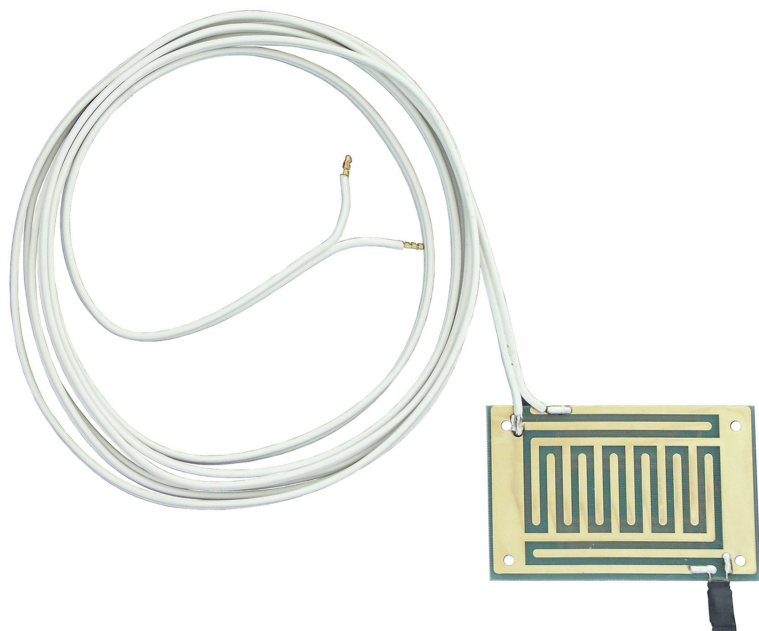
KWS 0-Z10, KWS 1-Z10 and KWS 2-Z10 conductive electrodes



KWS 0-Z10



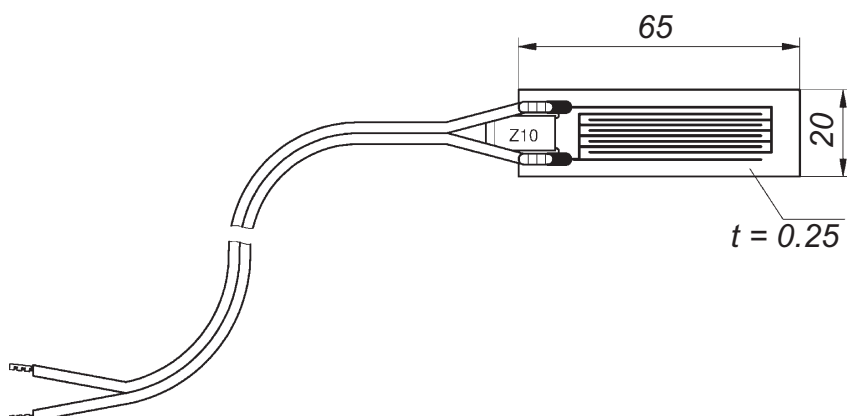
KWS 1-Z10



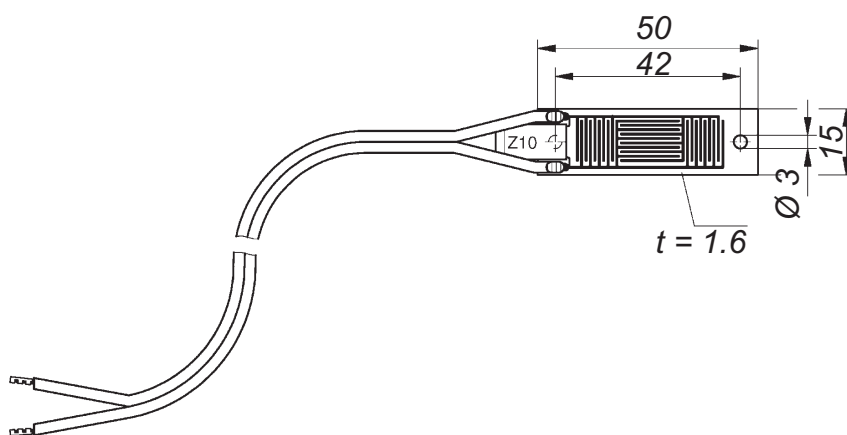
KWS 2-Z10



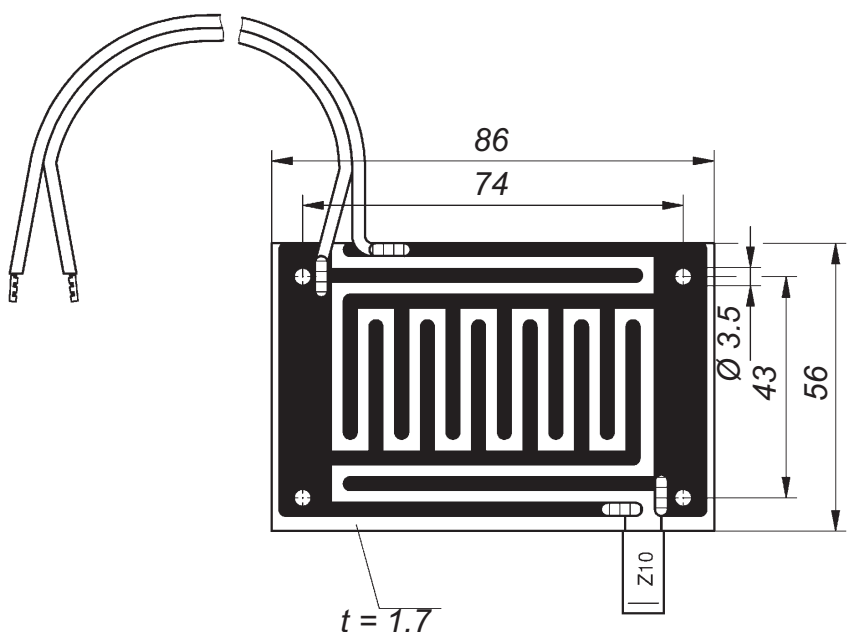
KWS 0-Z10, KWS 1-Z10 and KWS 2-Z10 conductive electrodes



KWS 0-Z10



KWS 1-Z10

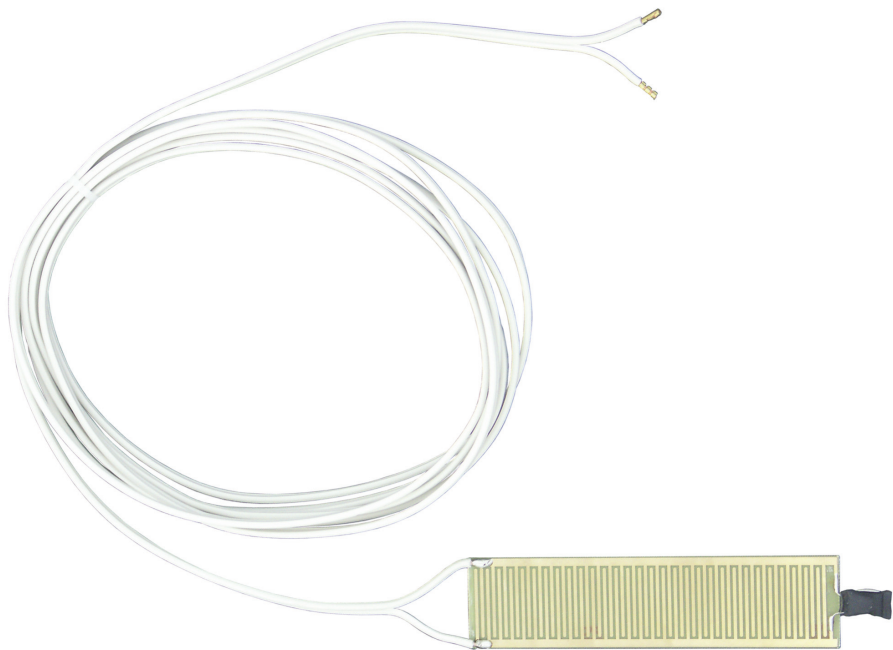


KWS 2-Z10

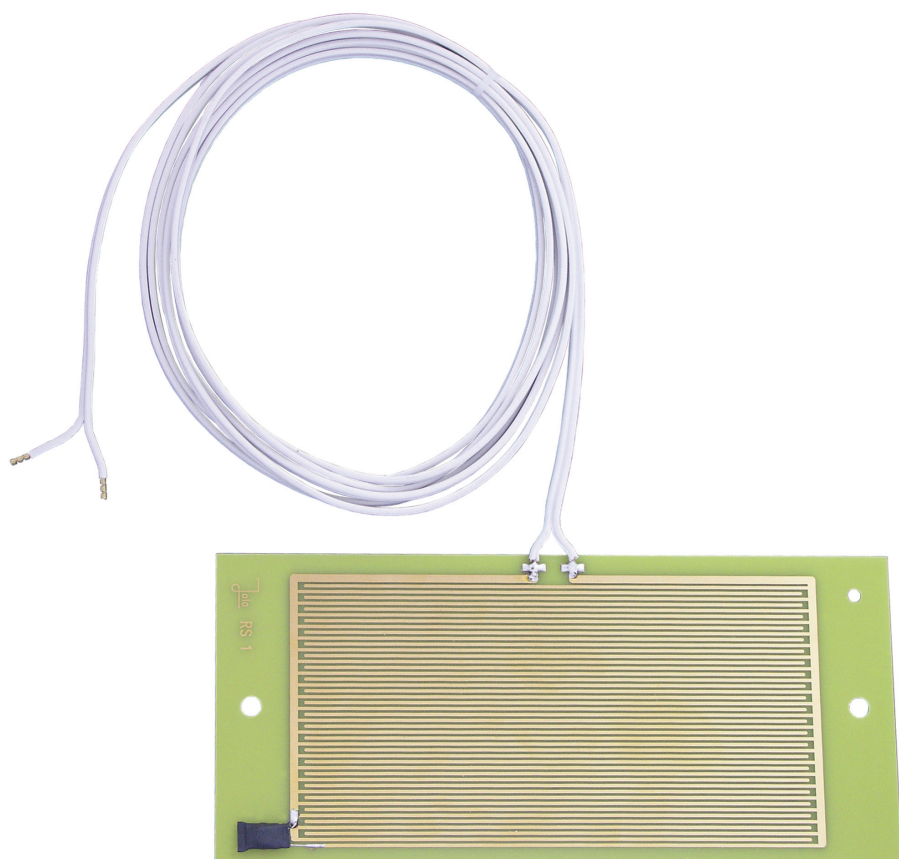
Dimensions in mm



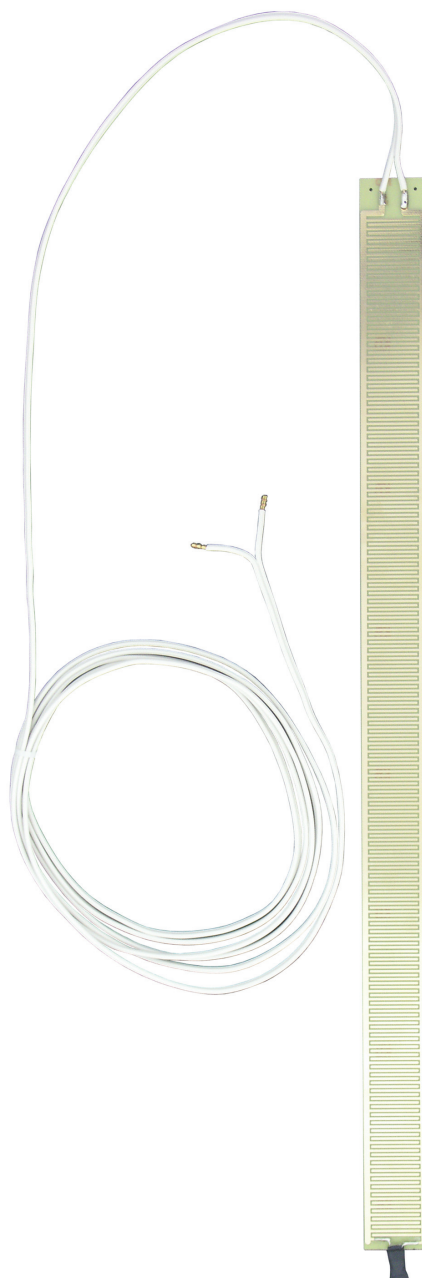
KWS 3-Z10, KWS 3-Z10/S and KWS 4-Z10 conductive electrodes



KWS 3-Z10/S



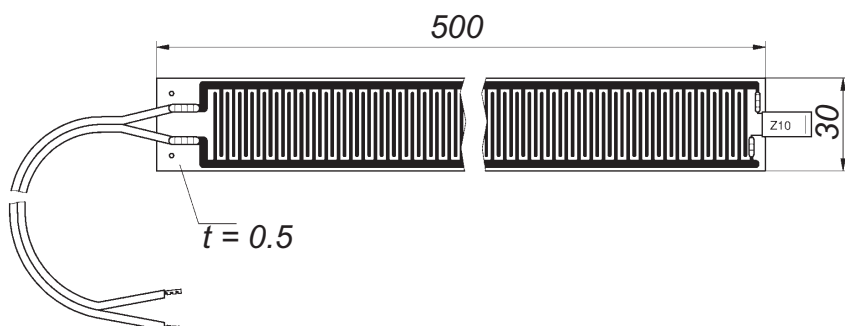
KWS 4-Z10



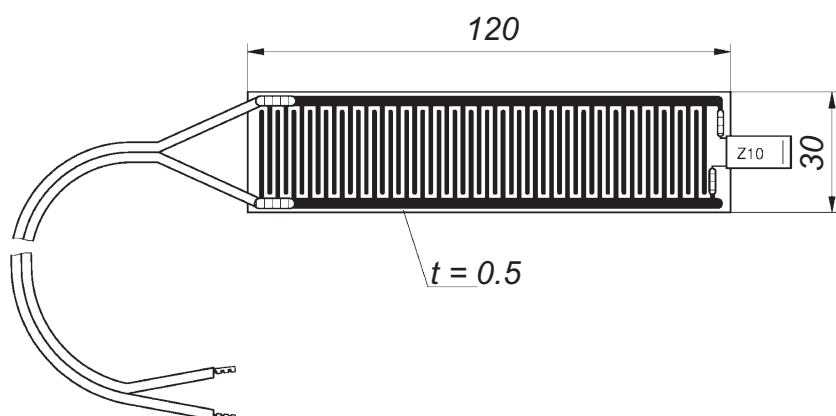
KWS 3-Z10



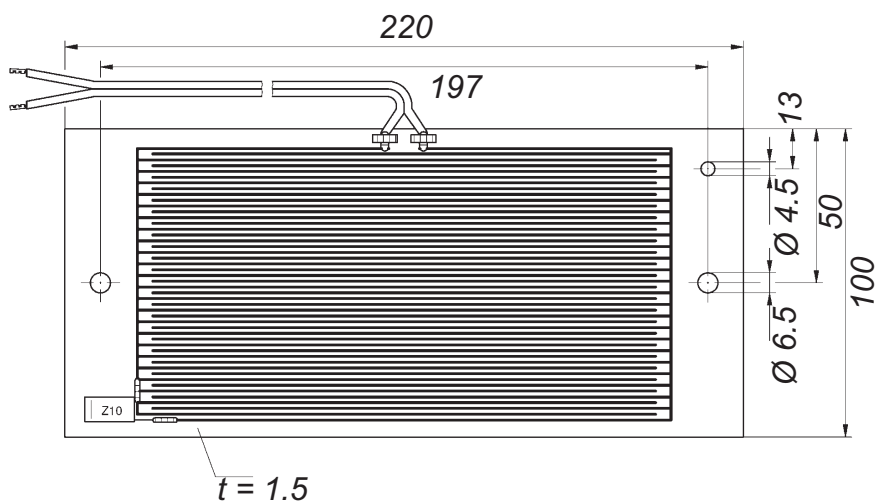
KWS 3-Z10, KWS 3-Z10/S and KWS 4-Z10 conductive electrodes



KWS 3-Z10



KWS 3-Z10/S



KWS 4-Z10

Dimensions in mm



Leckstar 101 conductive electrode relay

- with cable break monitoring feature and switchable self-hold
- for connection of 1 conductive electrode with Z10 cable break monitoring unit
- with 1 potential-free changeover contact at the output

Electrode relay for DIN rail mounting or fastening via 2 boreholes, with connection terminals on top and with 3 LEDs for signalling the operating statuses

The unit is designed for switch cabinet mounting or installation in a suitable protective housing and may therefore only be mounted / installed in these locations. It is suitable for use in clean environments only.

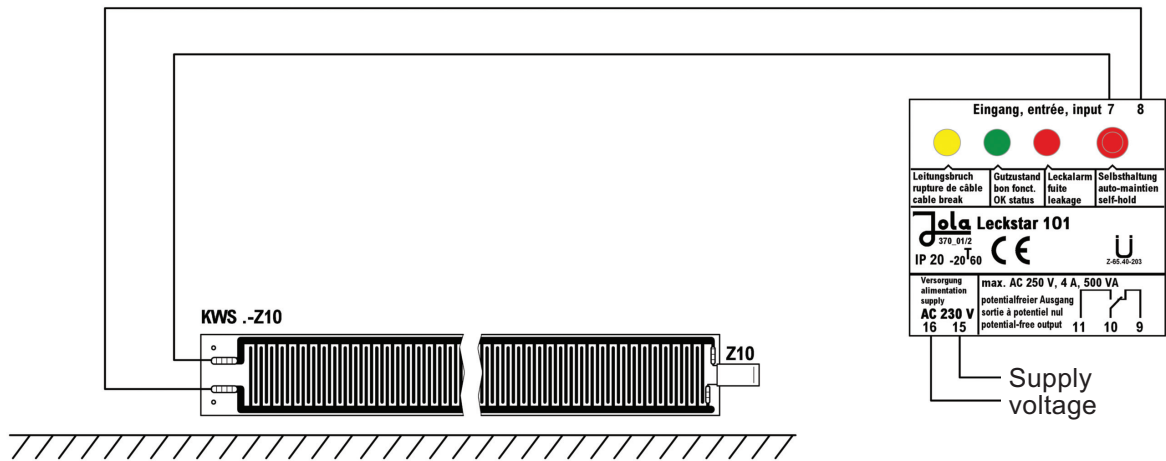
Self-hold:

- If the switch **for self-hold is switched on, an alarm is stored.** The relay continues to signal the alarm even if the cause of the alarm (e.g. the presence of condensate water or a cable break) is no longer present – in other words, if the electrode is dry again or if the line has contact. The alarm is acknowledged by switching off the switch for self-hold.
- If the switch **for self-hold is not switched on, the alarm is not maintained** when the cause of the alarm has been remedied but is terminated.



Technical data	Leckstar 101
Supply voltage (AC versions: terminals 15 and 16; DC versions: • terminal 15: – • terminal 16: +)	AC 230 V, on request: AC 240 V, AC 115 V, AC 24 V, DC 24 V, } only for connection to a safety low voltage DC 12 V } according to the safety regulations relating to the application or further supply voltages approx. 3 VA
Power consumption	
Electrode circuit (terminals 7 and 8)	2 terminals (under safety extra low voltage SELV) acting on 1 output relay with switchable self-hold 18 V _{eff} $\square$ 10 Hz (safety extra low voltage SELV) max. 0.5 mA _{eff}
No-load voltage	approx. 30 k Ω or approx. 33 μ S (electric conductance)
Short-circuit current	
Response sensitivity	
Power circuit (terminals 9, 10, 11)	1 single-pole potential-free changeover contact based on the quiescent current principle via 3 LEDs (see next page)
Switching status indication	max. AC 250 V
Switching voltage	max. AC 4 A
Switching current	max. 500 VA
Switching capacity	
Housing	insulating material, 75 x 55 x 110 mm (dimensions see next page)
Connection	terminals on top of housing
Protection class	IP20
Mounting	on 35 mm DIN rail or fastening via 2 boreholes
Mounting orientation	any
Temperature range	– 20°C to + 60°C
Max. length of connecting cable	1,000 m between electrode relay and Z10 cable break monitoring unit
EMC	• for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies • for interference immunity in accordance with the appliance-specific requirements for industrial companies

Connection diagram of Leckstar 101 electrode relay

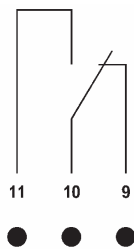


Position of contact when Leckstar 101 without voltage

Each KWS.-Z10 electrode is to be connected to a Leckstar 101 or Leckstar 101/S electrode relay.

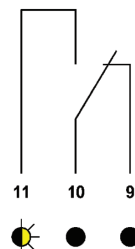
Position of output contact of the Leckstar 101 electrode relay

**Leckstar 101
without voltage**



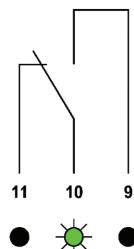
LEDs dark:
output relay
not energized

cable break



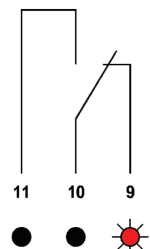
yellow LED flashes:
electrode cable break,
output relay
not energized

**Leckstar 101 under voltage
standby**



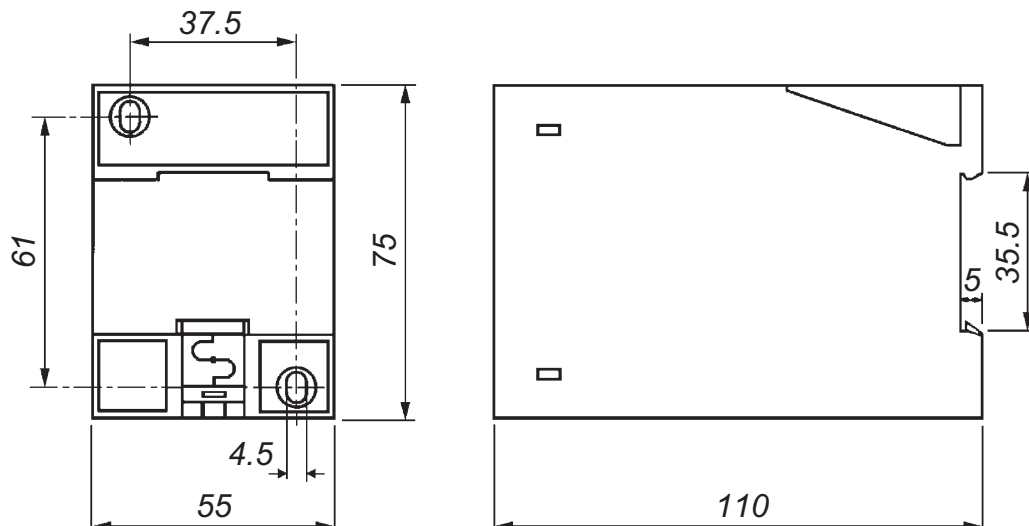
green LED lights:
electrode dry,
output relay
energized

**condensate water
present**



red LED lights:
electrode wet,
output relay
not energized

Dimensions Leckstar 101 (in mm)





Leckstar 101/S

conductive electrode relay

- with cable break monitoring feature and switchable self-hold
- with separately routed cable break monitoring output
- for connection of 1 conductive electrode with Z10 cable break monitoring unit
- with 2 potential-free break (NC) contacts at the output

Electrode relay for DIN rail mounting or fastening via 2 boreholes, with connection terminals on top and with 3 LEDs for signalling the operating statuses

The unit is designed for switch cabinet mounting or installation in a suitable protective housing and may therefore only be mounted / installed in these locations. It is suitable for use in clean environments only.

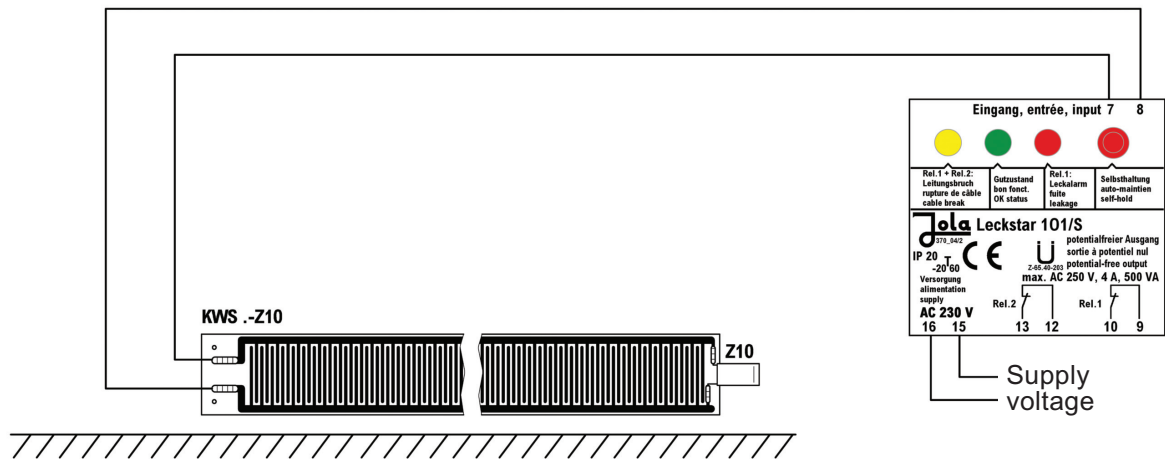
Self-hold:

- If the switch for self-hold is switched on, an alarm is stored. The relay continues to signal the alarm even if the cause of the alarm (e.g. the presence of condensate water or a cable break) is no longer present – in other words, if the electrode is dry again or if the line has contact. The alarm is acknowledged by switching off the switch for self-hold.
- If the switch for self-hold is not switched on, the alarm is not maintained when the cause of the alarm has been remedied but is terminated.



Technical data	Leckstar 101/S
Supply voltage (AC versions: terminals 15 and 16; DC versions: • terminal 15: – • terminal 16: +)	AC 230 V, on request: AC 240 V, AC 115 V, AC 24 V, DC 24 V, } only for connection to a safety low voltage DC 12 V } according to the safety regulations relating to the application or further supply voltages approx. 3 VA
Power consumption	
Electrode circuit (terminals 7 and 8)	2 terminals (under safety extra low voltage SELV), acting on 2 output relays with switchable self-hold 18 V _{eff} $\square$ 10 Hz (safety extra low voltage SELV)
No-load voltage	max. 0.5 mA _{eff}
Short-circuit current	approx. 30 k Ω or approx. 33 μ S (electric conductance)
Response sensitivity	
1 st power circuit (terminals 9, 10)	1 single-pole potential-free break (NC) contact based on the quiescent current principle for signalling leakage or cable break
2 nd power circuit (terminals 12, 13)	1 single-pole potential-free break (NC) contact based on the quiescent current principle for additional signalling in the event of a cable break
Switching status indication	via 3 LEDs (see next page)
Switching voltage	max. AC 250 V
Switching current	max. AC 4 A
Switching capacity	max. 500 VA
Housing	insulating material, 75 x 55 x 110 mm (dimensions see next page)
Connection	terminals on top of housing
Protection class	IP20
Mounting	on 35 mm DIN rail or fastening via 2 boreholes
Mounting orientation	any
Temperature range	– 20°C to + 60°C
Further technical data	see Leckstar 101, page 37-2-7

Connection diagram of Leckstar 101/S electrode relay

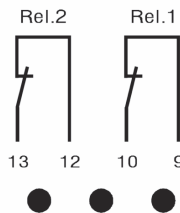


Position of contact when Leckstar 101/S without voltage

Each KWS .-Z10 electrode is to be connected to a Leckstar 101 or Leckstar 101/S electrode relay.

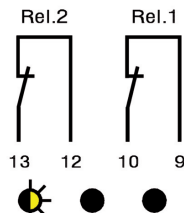
Position of output contact of the Leckstar 101/S electrode relay

**Leckstar 101/S
without voltage**



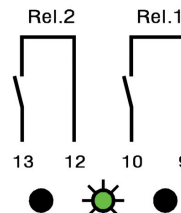
LEDs dark:
output relays
not energized,
output contacts
closed

**Leckstar 101/S under voltage
cable break**



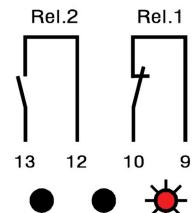
yellow LED flashes:
electrode cable break,
output relays
not energized,
output contacts
closed

**Leckstar 101/S under voltage
standby**



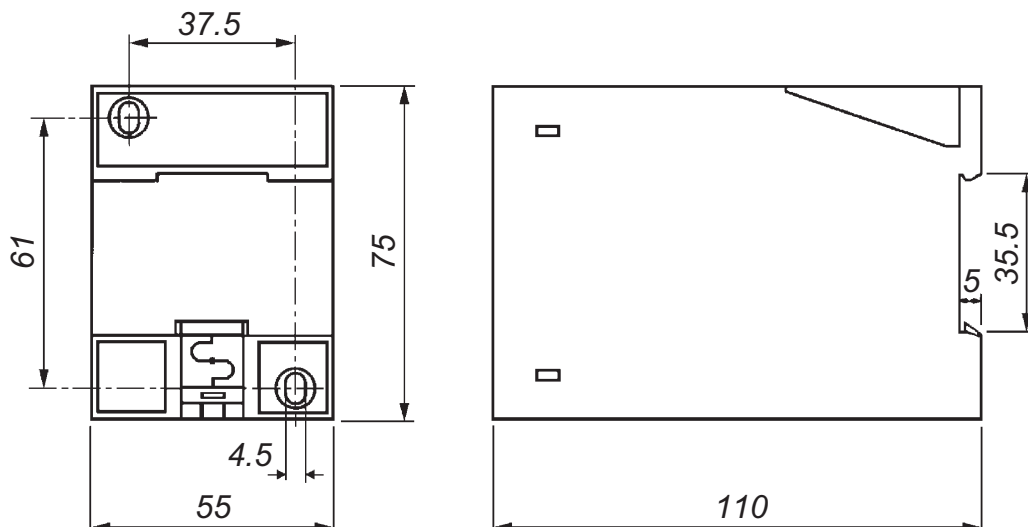
green LED lights:
electrode dry,
output relays
energized,
output contacts
open

**Leckstar 101/S under voltage
condensate water
present**



red LED lights:
electrode wet,
output relay 1
not energized,
output contact 1 closed,
output relay 2 energized,
output contact 2 open

Dimensions Leckstar 101/S



**Jola Spezialschalter GmbH & Co. KG
sells only business-to-business (B2B).**

**The units described in this documentation
may only be installed, connected,
started up, serviced and replaced
by suitably qualified personnel!**

**Subject to deviations from the diagrams
and technical data.**

**The details in this brochure are product
specification descriptions and
do not constitute assured properties
in the legal sense.**