

INSTRUCTION MANUAL ELEKTRODENSTEUERUNG ES2001

SAFETY INSTRUCTIONS

- Installation, commissioning and maintenance may only be performed by qualified personnel!
- Only connect the unit to the voltage specified in the technical data or on the type plate (observe polarity for DC)!
- The device must be disconnected from all sources of power during installation and maintenance work.
- The device may only be operated under the conditions specified in the operating instructions.



TECHNICAL DATA

Power supply	230, 115, 48, 24 V \pm 10% AC 50/60 Hz; 24, 12 V DC
Connected load	\leq 2 VA
Relay output	2 changeover contacts, potential-free AC: Max. 250 V, 5 A, 500 VA DC: Max. 125 V, 1 A, 40 W
Measuring circuit	Galvanically isolated, AC voltage $<$ 6 V / $<$ 2 mA
Measuring function	MIN-MAX control MIN control or MAX control
Hysteresis	About 20% of the set sensitivity value
Response sensitivity	2 adjustable ranges 1 to 70 k Ω & 5 to 150 k Ω
Working principle	Open / Closed current loop
Delay	ON/OFF delay adjustable: 0.5 to 3 s Adjustment through potentiometer
Ambient temperature	-15 ... +45 °C
Dimension	22.5 x 75 x 100 mm
Housing	IP40, mounting DIN rail 35x7.5 mm (EN 50 022); Option: IP55 wall-mount cabinet 88x150x130mm
Cable	min. Wire cross-section 0.5mm ² , shielded cable
Electrical connections	IP20, screw terminals, cable cross-section max 2.5 mm ²
Signalling	1x LED: "Operating" 1x LED: "Status of relay"

EC Conformity: The instrument meets the legal requirements of the current European Directives.

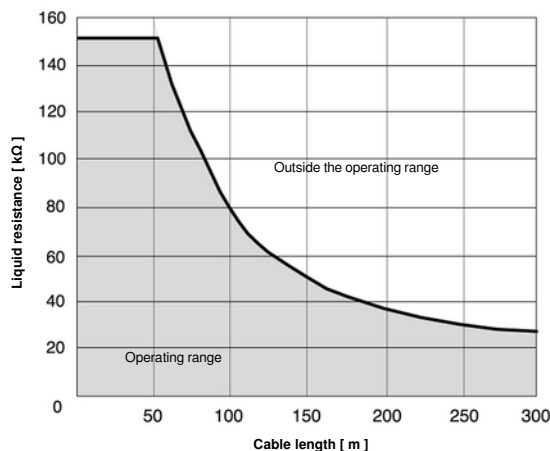
OPERATING RANGE

The capacitive resistance of long cables reduces the sensitivity of the detection.

A standard 3-wire PVC cable has a capacitance of 100 pF/m

The range therefore depends on the liquid resistance and on the cable length between the electrode and the relay ES2001.

This results in an operating range according to the diagram below:



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M-530.01-EN-AC

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RECOMMENDATIONS FOR THE CABLE

- Use a multi-core cable of 0.5 mm².
- This cable must be separated from other cables.
- Above 25 m length, it is necessary to use a shielded cable.

SETTINGS

The transparent front panel can be removed by levering it out, gently, with a screwdriver.

Sensitivity Potentiometer P1 and DIP S2
To adaptat the sensitivity to the liquid conductivity.

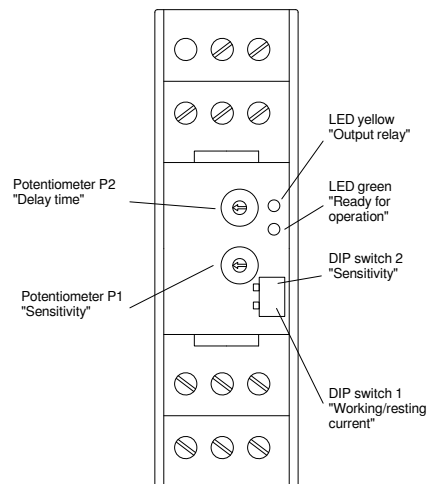
Note The poorer the liquid conductivity and greater the distance between electrodes, the higher the response sensitivity must be set.

Caution An excessive sensitivity leads to faulty triggering.

Open / Closed current loop DIP S1

Delay Potentiometer P2: To prevent multiple switching with waves on the liquid surface.

Potentiometer	Anticlockwise	Right stop
P1 Sensitivity	Minimum	Maximum
P2 Delay	approx. 0.5 seconds	approx. 3 seconds
DIP switch	ON	OFF
1	Current in the loop	No current
2	High sensitivity 5 to 150 kΩ	Low sensitivity 1 to 70 kΩ



Signalling:

Green LED lights up Unit ready for operation
Yellow LED lights up Output relay status is changed

MAINTENANCE

When used as intended, the device is maintenance-free.

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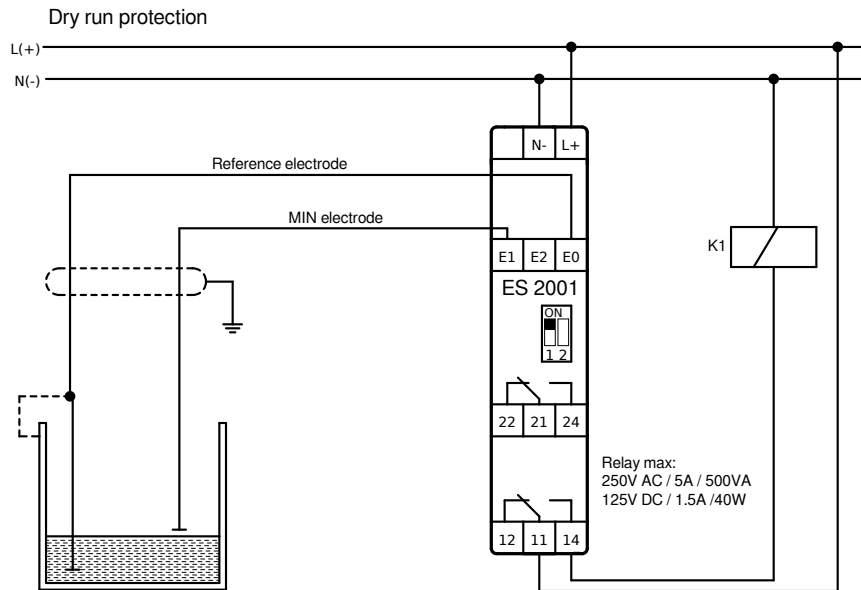
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ELECTRICAL CONNECTIONS

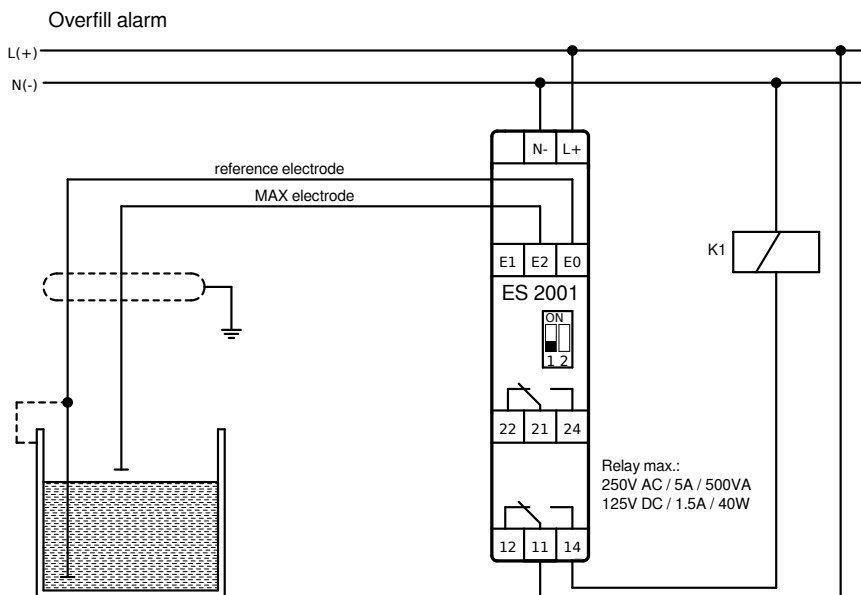
1. Dry run protection / overflow alarm (2 electrodes)

The relay is energised as soon as the liquid forms an electrical bridge between the level electrode and the reference electrode (or metal tank wall).



Dry run protection:

Relay of the drain pump drops off when MIN electrode becomes free or in case of malfunction/power failure/cable breakage of the electrode control unit



Overflow alarm (0-signal):

Alarm signalling relay K1 drops off when MAX electrode immerses or in the case of malfunction/voltage failure of the electrode control system

Overflow alarm (1-signal):

Alarm signalling relay K1 activates when MAX electrode immerses or in case of malfunction/voltage failure of the electrode control

----> Connect relay K1 to terminal 12

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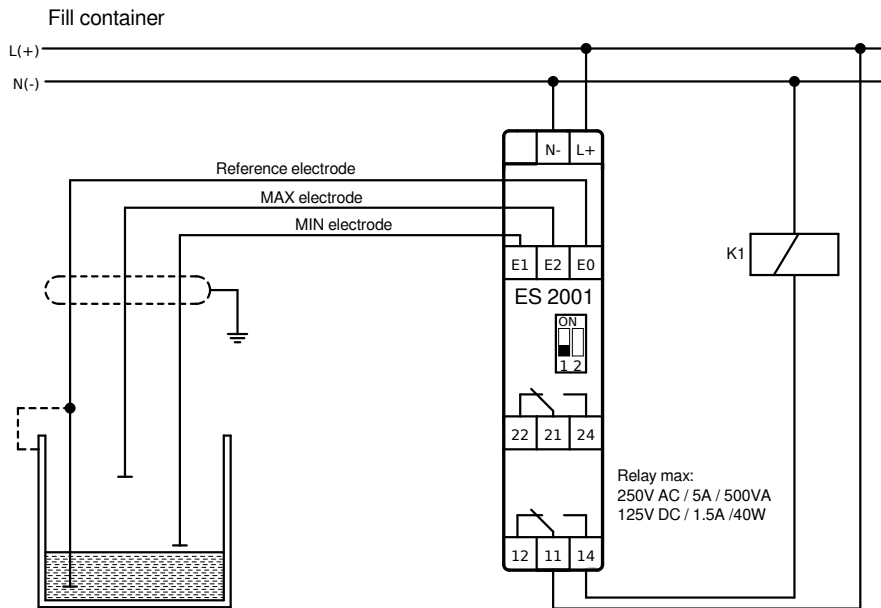
ELECTRICAL CONNECTIONS (continuation)

2. Automation of filling or draining (3 electrodes)

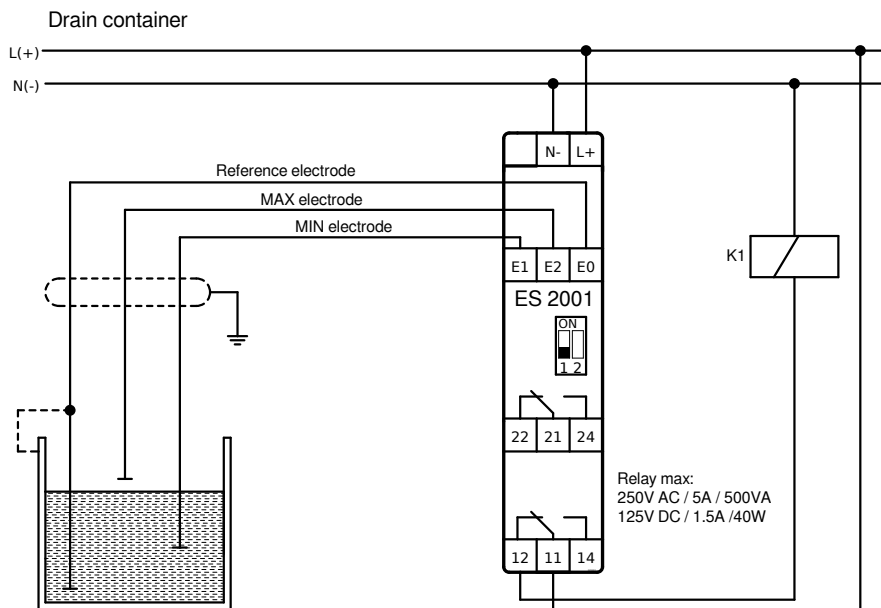
The self-holding function between two trigger points is carried out via the third electrode.

A diode on the front panel indicates the status of the relay.

It lights up as soon as the relay is energised.



Relay of the filling pump activates when MIN-electrode becomes free; ...drops off when MAX electrode is immersed



Relay of the drain pump activates when MAX electrode immerses; ...drops off when MIN electrode becomes free