

INSTRUCTION MANUAL AMPLIFIER RELAY 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.



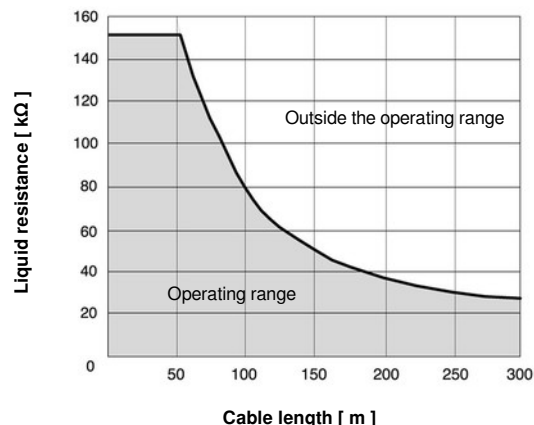
TECHNICAL DATA

| | |
|------------------------|---------------------------------------------------------------------------------------------------|
| 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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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.

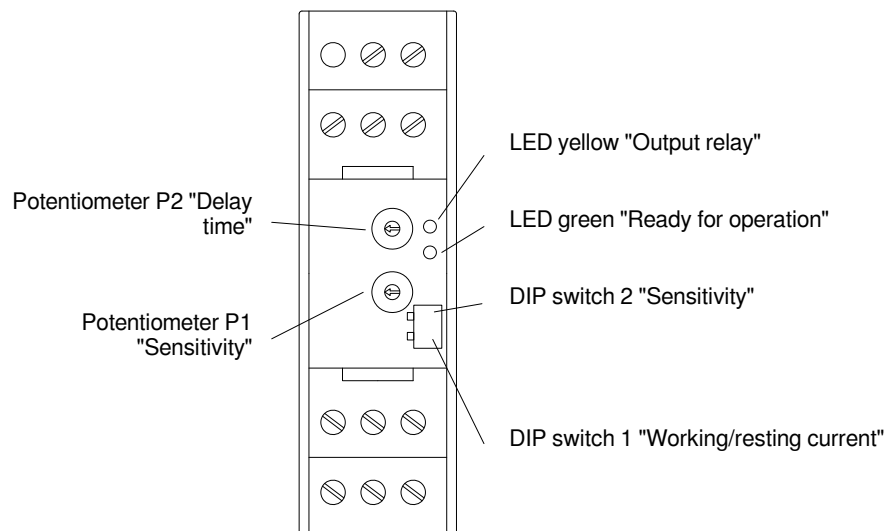
Note The poorer the liquid conductivity and greater the distance between electrodes, the higher the response sensitivity must be set.

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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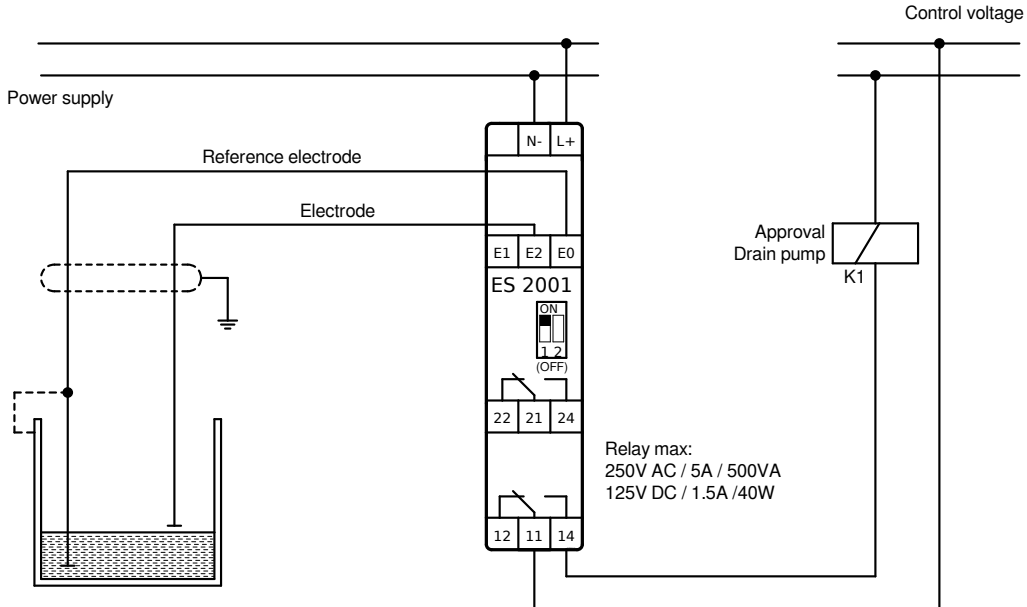
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ELECTRICAL CONNECTIONS

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

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

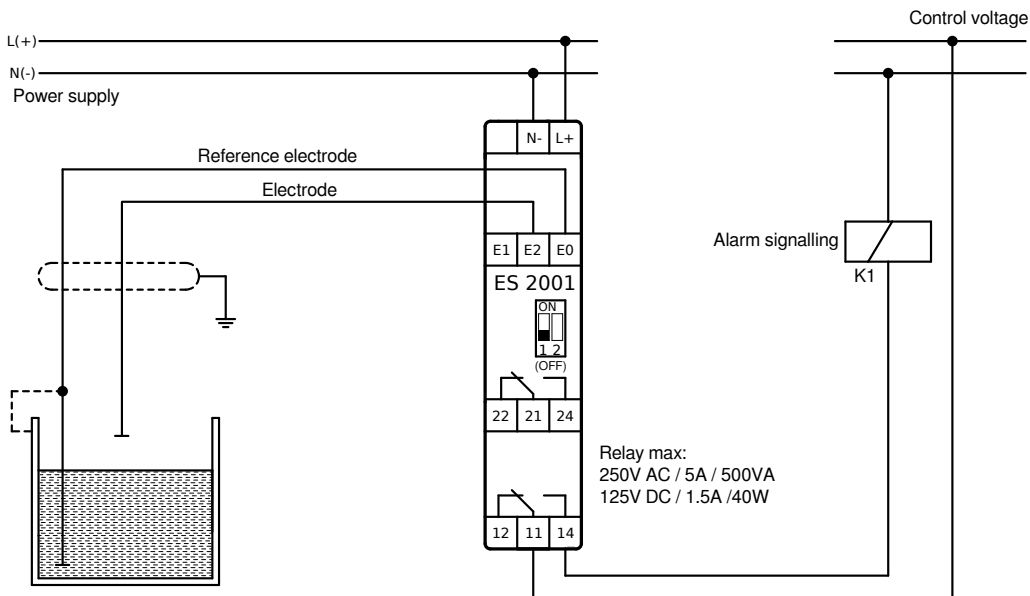
Dry run protection



Dry run protection:

Drain pump relay drops out when the electrode (E2) becomes free or in the event of a fault/power failure/cable break in the electrode control unit

Overflow alarm



Overflow alarm (0-signal):

The overflow alarm relay drops out when the electrode (E2) is immersed or in the event of a fault/power failure in the electrode control unit

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ELECTRICAL CONNECTIONS (continuation)

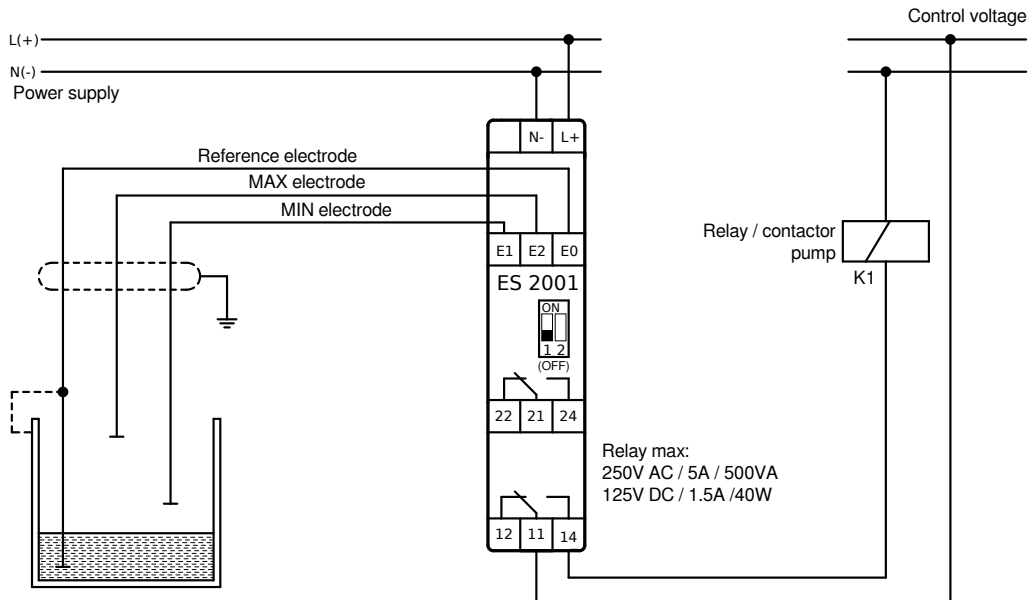
2. Automation of filling or draining (3 electrodes)

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

An LED shows the status of the relay.

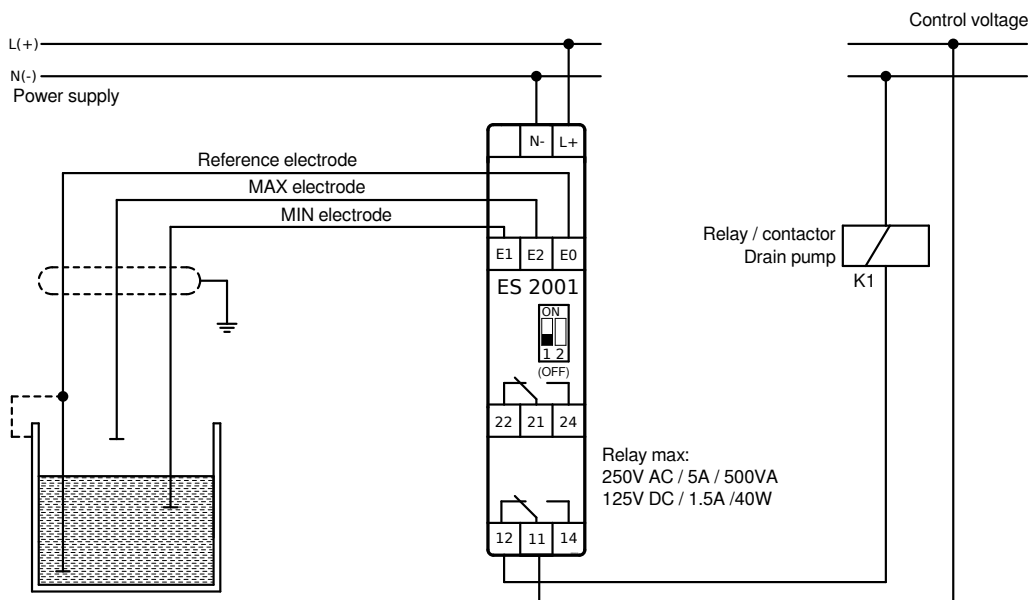
It lights up as soon as the relay is energised.

Filling the container



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

Draining the container



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

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