

# RESISTIVE AMPLIFIER RELAY FOR LEVEL CONTROL ES 2001



- For all electrical conductive liquids
- Dimensions: 22.5 mm width, rail DIN mounting
- Adjustable sensitivity and timer
- Selection of action mode
- Functions: On /Off level controller between 2 rods  
Level regulation between 3 rods

## PRINCIPLE

The resistive amplifier relay for level control ES 2001 works with the electrical conductivity property of the liquid, detecting the opening or closing circuit between two electrodes. A complete range of probes and rods are specially designed to answer to all type of applications.

The sensibility is adjusted in relation to the liquid conductivity from 1 to 150 kOhm. The hysteresis between on/off relay switching is about 10% of sensibility; This is to avoid false alarms originated by smog, foam or condensation of vapours. With both timers, it is easy to adjust the level detection or level regulation even if the fluid surface is moving (small wave effect).

## APPLICATIONS

- Reed contact, models included in BRK60, BW60, CNL, MNR6, MNR7 etc.
- Flow switch, such as ZE951 (IDP – PDP), CDP etc.

Also on level control for electrically conductive liquid media:

Minimal or maximal levels – Dosing, flow detection and alarm, pump control, solenoid valve control, fluid detection in a pipe. With appropriate electrodes for use as limit transducer in: Water, wastewater – Acids, lye – Brines, etc.

It is necessary to have one relay ES2001 for each detection level.

## TECHNICAL FEATURES

- Power supply: 230 V AC,  $\pm 10\%$ , 50-60 Hz  
Optional: 24, 48, 115 V AC or 12, 24 V DC  $\pm 10\%$
- Consumption: 2 VA
- Working temperature: Maximal, +45°C
- Housing: IP40 – cabinet, tropicalized version, on request
- Mounting: Rail DIN 46277
- Galvanic insulation: Between main line and electrodes circuit
- Sensitivity: 2 adjustable ranges, 1...70 kOhm and 5...150 kOhm
- Outputs: 2 ea. floating changeover contacts  
AC: max. 250 V, 5 A, 500 VA  
DC: max. 125 V, 1 A, 40 W  
Screw connectors for reverse contact
- Timers, adjustable:  $t = 0.5$  to 5 s for increasing level,  $0.5 t$  for decreasing level
- Hysteresis: approx. 10% of adjusted sensitivity
- Electrodes circuit: 6 V AC, < 1.5 mA
- Indicators: 1 operating LED, 1 switching status LED

## CODE NUMBERS AND REFERENCES

Code	Reference	Designation
530 200	ES 2001 /230	Main supply 230 V AC - 50/60 Hz
530 210	ES 2001 /115	Main supply 115 V AC - 50/60 Hz
530 220	ES 2001 /48	Main supply 48 V AC - 50/60 Hz
530 230	ES 2001 /24	Main supply 24 V AC - 50/60 Hz
530 252	ES 2001 /12 V DC	Main supply 12 V DC
530 254	ES 2001 /24 V DC	Main supply 24 V DC

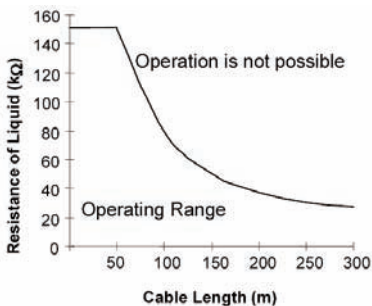
## Operating range

. The capacitive resistance of long cables reduces the sensitivity of the electrode controls.

. A typical, shielded, 3 conductor PVC cable has a capacitance of approx. 100 pF per metre.

. This results in an operating range which is dependent upon cable length and the resistance of the liquid in accordance with the following diagram:

[only for V AC supply]



# BAMO MESURES

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FOR LEVEL CONTROL  
**ES 2001**

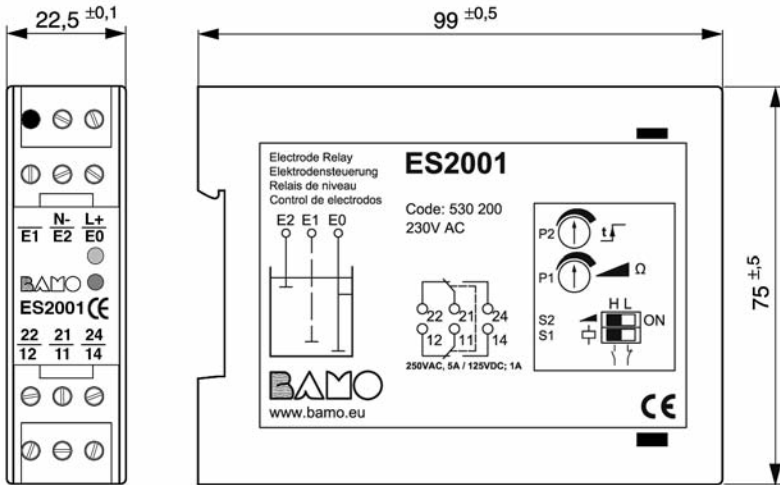
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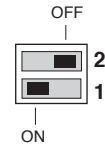
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## DIMENSIONS



## SAFE DETECTION SET UP



**DIP switch S2: ON / OFF**  
Sensitivity

**DIP switch S1: ON / OFF**  
Work/<O-C. Current

## WIRING

Multiple wire cable of 0.5 mm<sup>2</sup> should be used. Care to separate this cable from power cables. Over 25 m long, it is necessary to use a shielded cable, with a maximum length of 300 m.

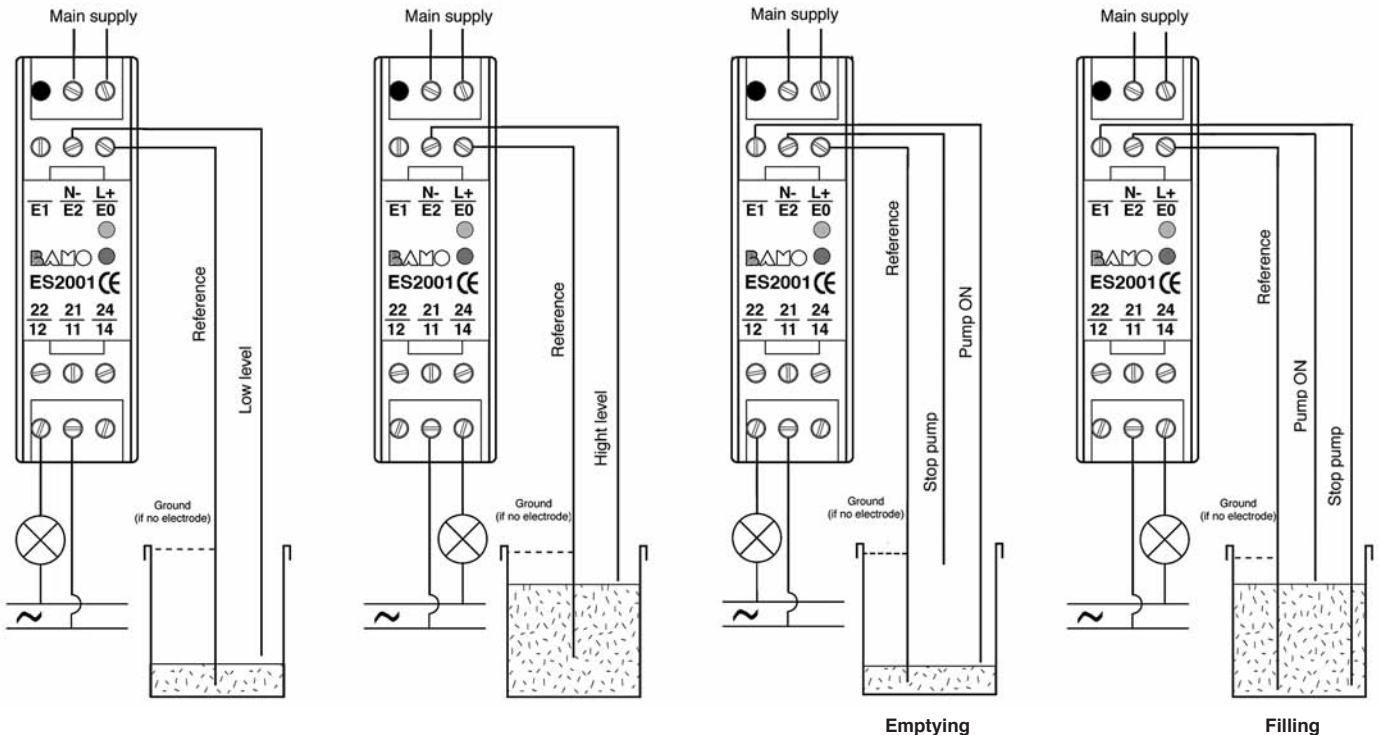
## FUNCTION

### 1. ON/OFF DETECTION: 2 rods

The relay actuates when the liquid allow the current to go through the loop.

### 2. ON/OFF REGULATION: 3 rods

The relay actuates and keeps its function until the liquid reach the upper level (filling) or the lower level (emptying). A LED indicates the relay status.



### Relay testing:

Disconnect all the rods (electrodes)

Alarm function Shunt E0 and E2: relay actuates

Regulation function Shunt E0, E2 and E1. Let free E2 and then E1

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