

Work sheet and operating instructions**baelz 1781, 1782****Resistive amplifier relay for level control****baelz 1781/5****Resistive level probes****baelz 1782**

- 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 baelz 1781/5 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

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.

TECHNICAL FEATURES

Main power supply : 230 V AC $\pm 10\%$ – 50/60 Hz (standard) – other on request

Consumption : 2 VA

Working temperaturat. : 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

Switching power : 500 VA / 250 V AC / 5 A – 1 A / 125 V DC / 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

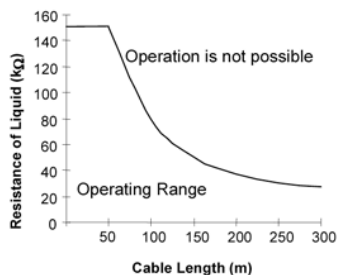
Indicators : 1 operating LED, 1 switching status LED

. 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.

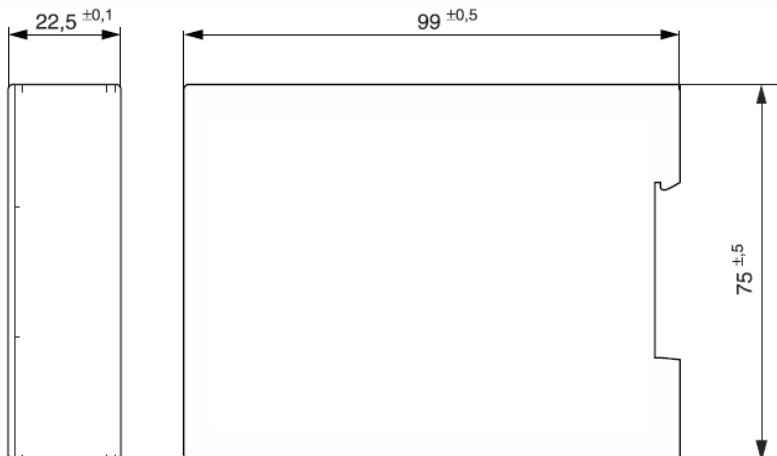
. This results in an operating range which is dependent upon cable length and the resistance of the liquid in accordance with the following diagram:

[only for V AC supply]



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DIMENSIONS

SAFE DETECTION SET UP

Switch 1: "ON"

The active relay actuation is maintained when the main supply is shut off, even if there is sufficient liquid (factory set up).


Switch 1: "OFF"

This set up lives the relay non-active when the main supply is shut off, even if there is or not liquid.

WIRING

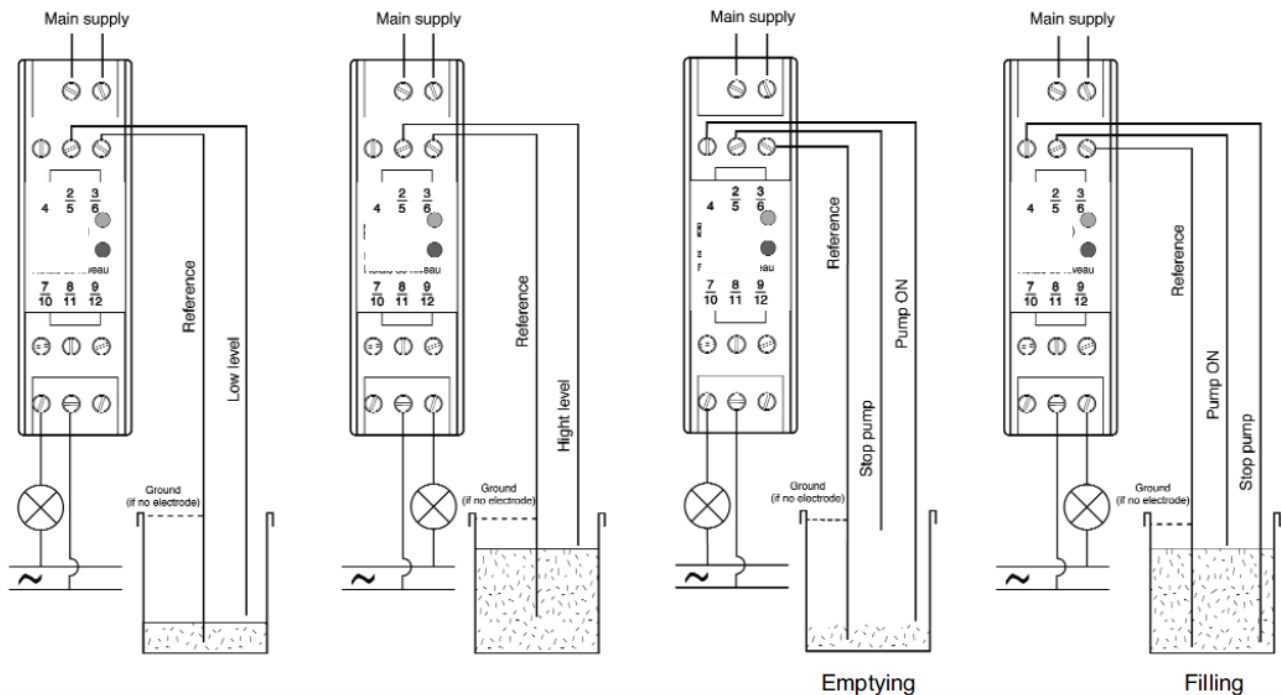
Multiple wire cable of 0.5 mm² should be used. Care to separate this cable from power cables. Over 25 m long, it is necessary to use a shielded cable, with a maximum length of 300 m.

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 6 and 5: relay actuates

Regulation function Shunt 6, 5 and 4. Let free 5 and then 4



- For all conducting liquids.
- 1 up to 4 electrodes.
- Realization: Metal - PTFE.
- 200 bar maximum pressure.
- 220°C maximum temperature
- Connection process: threading Gas or NPT
- Connection housing: Cast aluminium

PRINCIPLE

Electrical resistance variation, caused by a fluid presence between two electrodes, is converted by level relay as ON/OFF signal.
(see level relay Redox or baelz 1781/5).

Electrodes length is calibrated according to controlled level value

APPLICATIONS

Level control or regulation, on open tanks or closed tanks..

Presence of fluid or no fluid localisation (leak detection, empty piping, empty pumps protection).

DESCRIPTION

Each probe has three parts:

- Cast aluminium head (IP 55 Protect) with connection housing and cable gland output (Ø 9).
 - S.St.316 L connection process with PTFE insulator.
 - 1 up to 4 electrode in S.St.316 L according to type and necessary length.
- Electrical connection by thimble.
Ground connection screw for any probes with IP55 connection housing.



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Number of electrode	1	2	3	4	1	1
Connection process	¾" Gas (½" op.)		1"		¾"	½"
Tightness	PTFE		PTFE		PTFE	PTFE
Min. length (mm)	54		-		47	38
Max. length (mm)	3 000		3 000		800	1000
Max temperature (°C)	220		80		220	100
Max. pressure at T° max	25		25		25	1
20° (bar) pressure	200		50		200	5
Head material	Cast aluminium		Cast aluminium		Sans	Sans
Stem material	S.St. 316 L		S.St. 316 L		S.St. 304	S.St. 304
Stem Ø (mm)	Ø 6		Ø 6		Ø 4	Ø 4
Connection material	S.St. 316 L		S.St. 316 L		S.St. 304	Steel zing

ASSEMBLY DESCRIPTION

1 electrode by level point + 1 reference electrode (if tank is not used as reference).

To mount the probes in vertical position, on the top tank.

If no possibility vertical mounting, to choice lateral position, with 45° angle in bottom tank direction.

(always think about conducting bridges to simulate fluid presence)

Check limits, temperature, pressure and chemical resistances of fluid in contact with material.

Be attentive with vapours, we recommend to coat connections after mounting or to use an holed cover for evacuation.

For no static fluid, the probes should be insulated with PVC - polyolefine - or PTFE sheath or by tranquillization tube (a spacers kit is available per option).

For clogging liquids or having a vapour phase, to remove or restrict the possibility of conducting bridge between two electrodes.

DIMENSIONS

