INSTALLATION MANUAL FOR ULTRASONIC LEVEL SWITCHES ULS/ULC SERIES

1. DESCRIPTION OF THE INSTRUMENT

The ultrasonic level switch of ULS/ULC series is designed to be mounted on tanks or on pipes, for checking the level of liquid (alarms for full or empty level).
Insensible to pressure, temperature , density, viscosity and foam of liquid. Without moving or vibrating parts, sensor completely statical.
Suitable for industrial, marine and food applications.
No regulation during installation, it beginns working immediately.

2. IDENTIFICATION OF THE MODEL

MODEL	
ULS	basic housing type
ULC	small housing type

LENGHT OF PROBE	
0112	STD 112mm
xxxx	value (mm)

PROCESS CONNECTION	
G	3/4" GAS M
N	3/4" NPT M
F	FLANGED

PROBE MATERIAL	
J	316

TYPE OF CIRCUIT	
AC	Output relay sealed 8A 250Vac DPDT Power supply 24Vdc/ac
AE	Output relay sealed 8A 250Vac DPDT Back-of-board circuit on guide DIN Power supply 24Vdc/ac
BC	Output relay sealed 8A 250Vac DPDT Power supply 220-110Vac
BE	Output relay sealed 8A 250Vac DPDT Back-of-board circuit on guide DIN Power supply 220-110Vac
EA	Output two wires 5/16mA EExia IIC T6 Power supply 10-30Vdc

HOUSING	
WATER-PROOF	EEx-d
WP	EP

NOT STD. VERSION
X.X.

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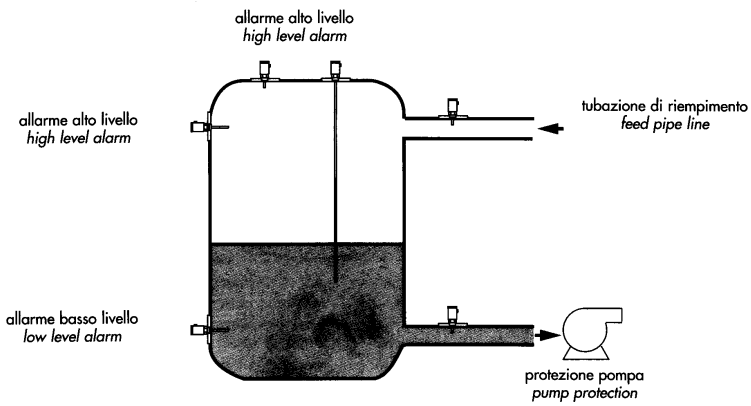
3. OPERATING PRINCIPLE

The level switch works on the principle of distributed acoustic waves in a metal rod (probe). If the rod is not covered by the liquid the sound waves are dispersed freely without any interference. When the liquid covers the rod the emission of the wave is muffled and this interference is picked up by the piezoelectric sensor and transmitted by a signal to the current loop. The sensor converts this interference into an electrical signal ON/OFF.

4. INSTALLATION

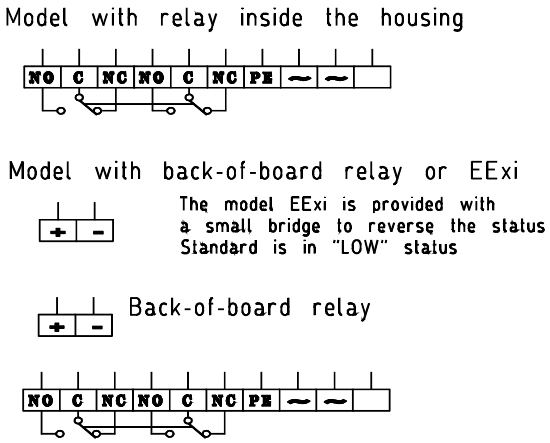
4.1 INSTALLATION ON THE PLANT

Before mounting the instrument, check the compatibility between the connections of the tank/pipe and this of the instrument. Check that the lenght of the probe is suitable for the type of requested control (fit lenght).



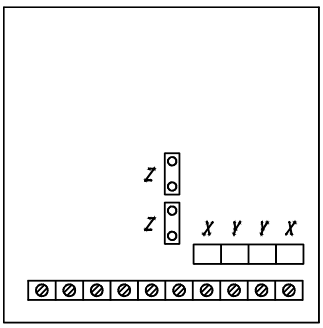
4.2 ELECTRICAL CABLE

The instrument is provided with a terminal board inside the housing, for connections see the scheme. The electrical connections must be executed by a technician (electrician). Do not feed the circuit before completing the connections and closing the cover of the housing.



4.3 POWER SUPPLY

The device (unless specifically requested otherwise) is factory-set to operate with a feeding voltage value of 220 Vac (BC coded value) and 24 Vdc/ac (AC coded value)
If you wish to change the feeding voltage from 220 Vac to 110 Vac, you need to change the position of the jumpers from YY to XX (see sketch).
In the 24 Vdc/ac version, the jumpers are not enabled. Before feeding the circuit, ensure that the feeding voltage matches the device settings.



5. START-UP

Make sure that the employment of the instrument isn't higher than the one allowed (higher pressure and temperature), the supply voltage and the load on relay (where foreseen) is in accordance with the data reported on the label.
Verify the functioning of the instrument, by changing more times the level of the liquid.

6. CALIBRATION

The instrument is calibrated by our workshop and doesn't need any regulation on site.

6.1 VERTICAL MOUNTING

The commutation occurs when the liquid wets the probe for at least 10mm, the switch differential is of about 5mm.

6.2 HORIZONTAL MOUNTING

The commutation occurs when the liquid wets the probe for at least 6mm, the switch differential is of about 3mm.

7. MAINTENANCE

A periodic maintenance is suggested (every 6 months abt.) which guarantees the efficiency of the instrument.

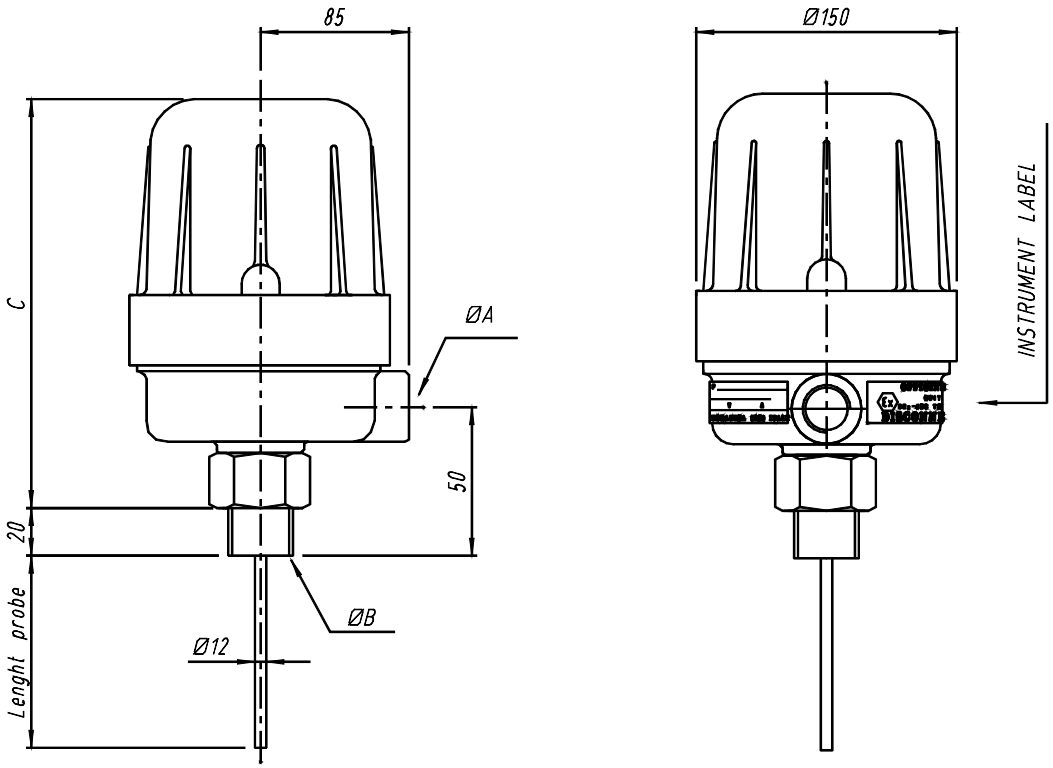
7.1 WARNING

-Never open the cover without switch off the voltage;
-Never leave the instrument without cover for a period higher than the inspection;
-Never employ the instrument at pressure and/or temperature higher than the data reported on the label;
-Never employ the instrument with rating higher than the data reported on the label.

7.2 INSPECTION

Change the level of the liquid and check that the instrument gives a correct signal of the alarm.

8. DIMENSIONAL DRAWINGS OF THE BODY



DIMENSIONS OF HOUSING "C"	
Model **ULC**	**165**
Model **ULS**	**230**

PROBE CONNECTION ØB
¾" GAS M code **"G"**
¾" NPT M code **"N"**
Flanged code **"F"**

ELECTRICAL CONNECTION ØA	
WP	**EP**
½" NPT	½" NPT
¾" NPT	¾" NPT
½" ISO 228/1 (GAS)	½" UNI 6152
¾" ISO 228/1 (GAS)	¾" UNI 6125
½" UNI 6125	

9. SPARE PARTS SUGGESTED

The instrument does not need spare parts.

10. LOCALISATION OF DAMAGES

Ultrasonic level switches of ULS/ULC series aren't normally subjected to damages. If the level switch doesn't give the signal, verify the supply to the circuit and the check described on the par. 7 MAINTENANCE.
If the problem persists, please contact our customer service.

11. DISPOSAL

Once ended their functioning cycle the instruments have to be scrapped, according to the rules in force.
During the disposal phase pay attention to the polymers, resins and rubbers employed during the manufacturing (PVC, PVDF, PP, PTFE, Neoprene, Viton, etc.).
Once cleaned the instruments from gaskets, particulars protective covers requested by the client and by every other plastic material, can be recycled.

12. WARRANTY

All level switches of ULS/ULC series are guaranteed against manufacturer defect for a period of 12 months from the date of shipment.
In the event of a malfunction, if the defective part is returned within the above-mentioned warranty period, OFFICINE OROBICHE undertakes to replace any damaged parts under warranty (excluding transport costs), provided that the defect is not the result of the improper use of the instrument.
OFFICINE OROBICHE may not be held liable for any improper use of its products where are used for ends other than those indicated in the specifications forming part of the order.
No claims for damages will be accepted in the case of improper use.
Damages and/or expenses, whether direct or indirect, arising from improper installation or use of the instrument shall not be attributable or debited to OFFICINE OROBICHE under any circumstance.
The instrument may be used for a maximum period of 10 years from the date of delivery.

After said period, the customer has two alternatives:
1) Replace the instrument with a new one.
2) Have the instrument overhauled by OFFICINE OROBICHE or an expert technician, who assumes full liability for the future use of the instrument.

HOW TO RETURN INSTRUMENTS

Any returned instruments must be accompanied by a sheet indicating:
1) The name of the customer
2) A description of the material
3) Details of the fault
4) Process data
5) Liquids with which the instrument has come into contact.

The returned instrument must be perfectly clean, free of dust and deposits; otherwise, OFFICINE OROBICHE may reserve the right to refuse to carry out the required maintenance and return the item "as found" to the customer.

FINAL NOTES

Every instrument is supplied fully assembled with all the accessories requested by the customer.
Only in exceptional cases will the various components be supplied separately.
We therefore recommend that the customer inspects the delivery on arrival and immediately notifies OFFICINE OROBICHE of any discrepancies.

N.B. IN CASES WHEN THE INSTRUMENTS ARE MEANT TO BE USED IN AREAS FEATURING POTENTIALLY EXPLOSIVE ATHMOSPHERES, THE USER SHALL COMPLY WITH THE **ADDITIONAL SAFETY INSTRUCTIONS** ATTACHED TO THE STANDARD ONES.