

SMARTCOST

Compact ultrasonic level transmitter with two thresholds for pump or alarm controls

Technical Data

Enclosure material:	PP
Mechanical installation:	2" BSP
	on request with PP DN50 flange screwed
	on request with PP DN80 flange screwed
Mechanical protection:	IP65 or IP68
Electrical connection:	internal plug-in connectors (IP65) output cables (IP68)
Working temperature:	-30 a +70°C (80°C for short time)
Pressure:	from 0,5 to 1,5bar (absolute)
Power supply depend to the model:	24Vdc ,24,48,115,230Vac
Power consumption:	2,0W
Analog output:	4-20mA max load 600 ohm
Relays output:	2 x n.o. 2A, 230Vac
Serial port:	RS485
Max measure range:	5m (option 7m extended range)
[The above distance must be intended from perfect reflecting surfaces]	
Blocking distance:	0,25m
Automatic frequency tuning:	built in
Temperature compensation:	PT100 from -30 to +80°C
Accuracy:	+/- 0.5% not better than +/-1mm
Resolution:	0.3mm
Calibration:	two push-buttons, for self-acquisition
Warm-up:	20 minutes normally
LEDs display:	green LED flashing for echo receiving yellow LEDs for rel1 and rel2 actions

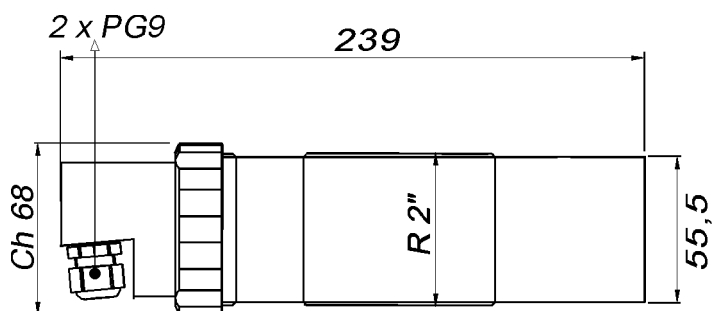
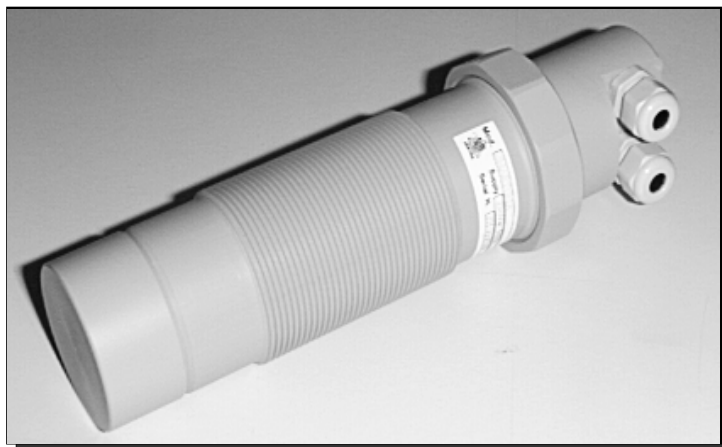


fig.1

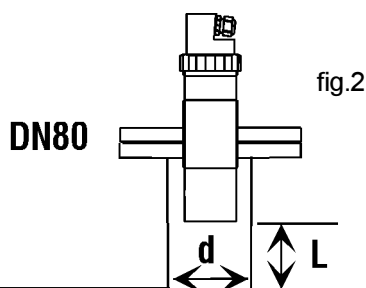


fig.2

d	L max
80mm	150mm

L (m)	r (m)
0,5	0,1
1	0,13
1,5	0,15
2	0,25
2,5	0,29
3	0,3
5	0,35

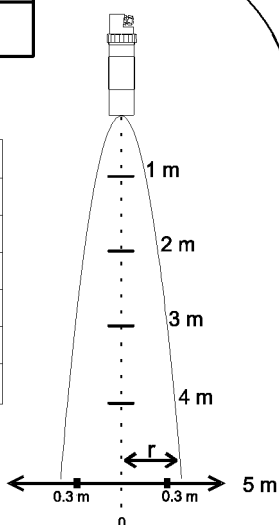
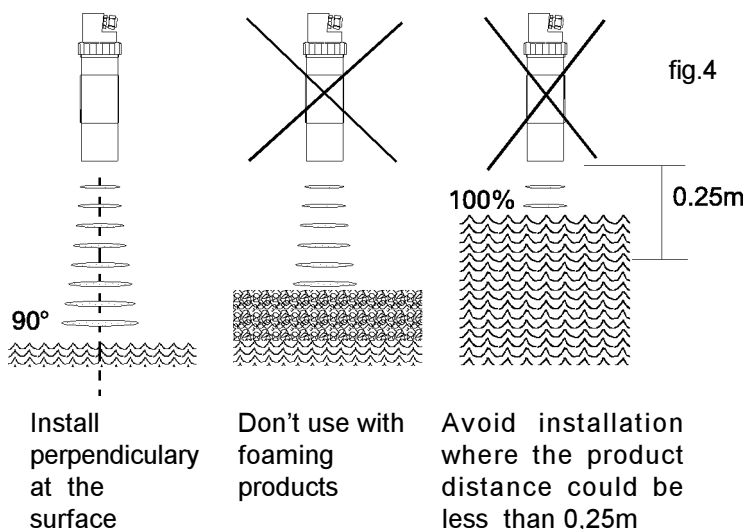


fig.3

SMARTCOST Mechanical installation

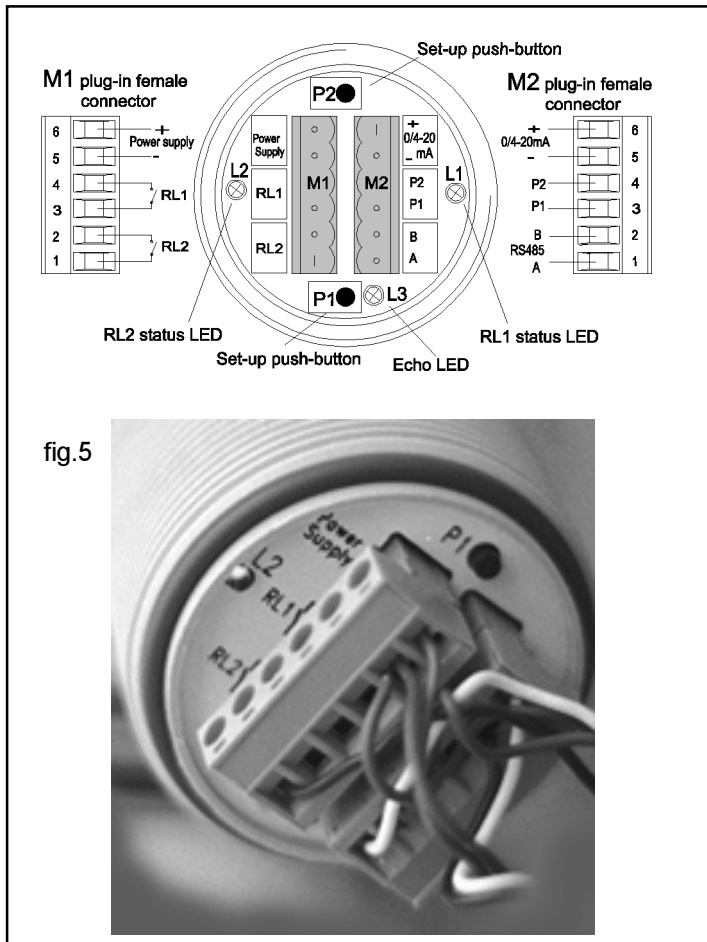
Important close to the sensor there is a "blind zone" of 0,25m where the equipment can't measure.

To reach a good and safe measurement, avoiding spurious echo (not reflected from the surface to measure) need to take care about the sensor sensibility volume in the sound path, no obstacles or objects must be present into the sensibility volume (lobe), see fig.3. On fig.4 some suggestions.

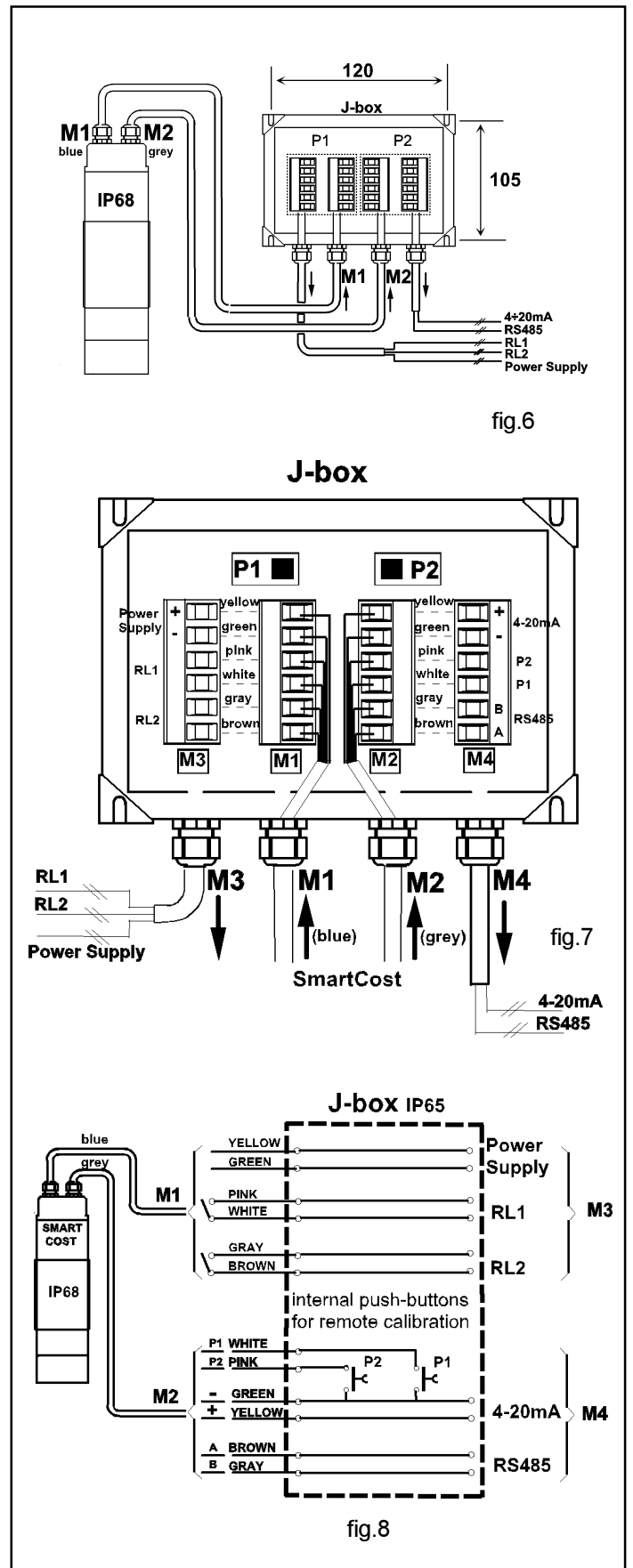


The SMARTCOST must be supplied with the voltage selected at the order. The current consumption is less than 2,0W that means for 24Vdc power supply less than 100mA. For IP65 version; remove the cover unscrewing and opening the upper part, gain the access to two 6-pole plug-in connectors. Electrical connection must be made with a multi-wires round cable of proper diameter, otherwise the seal of the cable gland may be impaired. No special cable or coax-cable are requests, and no practice distance limits. For the Vdc power supply take in consideration that the negative of the power supply is electrically connected to the negative output current. For the Vac power supply versions, from the power supply and the output current there is a galvanically separation. **IP68** version; the electrical connections are made by two multi-wires cables M1, M2 (grey and blue), consequently the connection will be made in a junction-box. A special J-box with P1 and P2 calibration push buttons built-in is available on request, (the standard connection cable is 3m length, max cable length 15m on request). The picture below shows the connectors and the push-buttons for the IP65 version calibration. Available a RS485 serial port to communicate to PC or PLC. On request the "LC" S/W communication for PC and the RS485/RS232 conversion module are available. "LC" allow a PC SMARTCOST configuration and calibration, see the relevant documentation.

IP65 version



IP68 version



The SMARTCOST calibration can be done in two different ways:

- a) By means the P1 and P2 push-buttons.
- b) With PC or PLC soft. communication with RS485 port.

a)
To calibrate by-means 2 push-buttons P1 and P2 (see figure), needs to put the "SMARTCOST" respectively at the distance refers to 0% and 100% level, in order to memorise the relevant distance electronically.

In the condition of normal working the SMARTCOST shows green L3 (echo led) flashing (when echo is received).

To calibrate 4mA needs to put the SMARTCOST at the distance at which you want 4mA output current. Wait till the L3 is flashing than: press simultaneously P1 and P2, release them and verify that L3 will stay fix lightened.

Press two times P1, release it and wait until L3 is flashing again before move the sensor. The distance has been memorised and associated to 4mA output. **To calibrate 20mA** needs to put the SMARTCOST at the distance at which you want 20mA output. Wait till the L3 is flashing than: press simultaneously P1 and P2, release them and verify that L3 will be fix lightened. Press two times P2, release it and wait until L3 is flashing again before move the sensor. The distance has been memorised and associated to 20mA output.

The SMARTCOST relays configuration;
 RL1, min distance alarm (max level alarm)
 RL2, max distance alarm (min level alarm)

To calibrate the threshold of minimum distance (maximum level) needs to put the SMARTCOST at the distance at which you want minimum distance set-point, waiting till the L3 is flashing than: press simultaneously P1 and P2, release them and verify that L3 will stay fix on. Press P2 and release it, press P1 and release it. Wait until L3 is flashing again 10s before move the distance. The threshold of RL1 has been memorised.

To calibrate the set point (threshold) of max distance (minimum level) needs to put the SMARTCOST at the distance at which you want max distance set-point, waiting till the L3 is flashing than: press simultaneously P1 and P2, release them and verify that L3 will stay fix on. Press P1 and release it, press P2 and release it. Wait until L3 is flashing again for 10s before to move the distance. Threshold of RL2 has been memorised

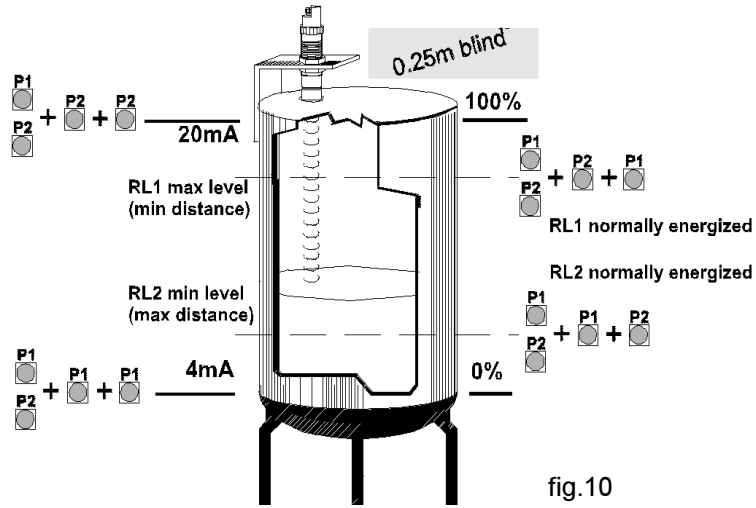


fig.10

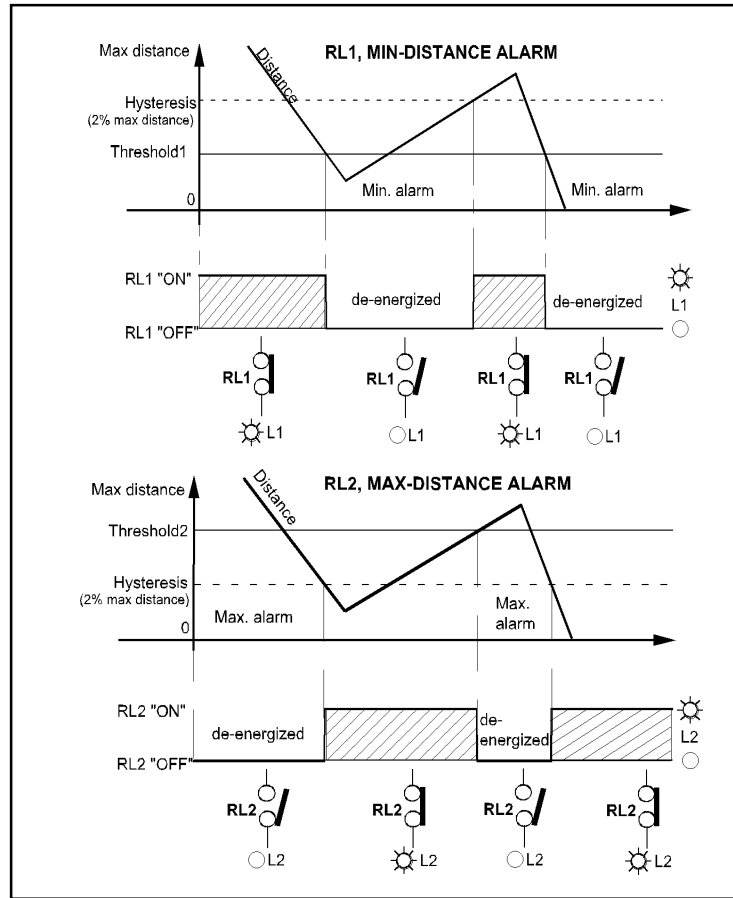


fig.11

- b) Refers to the "LC" S/W operating manual

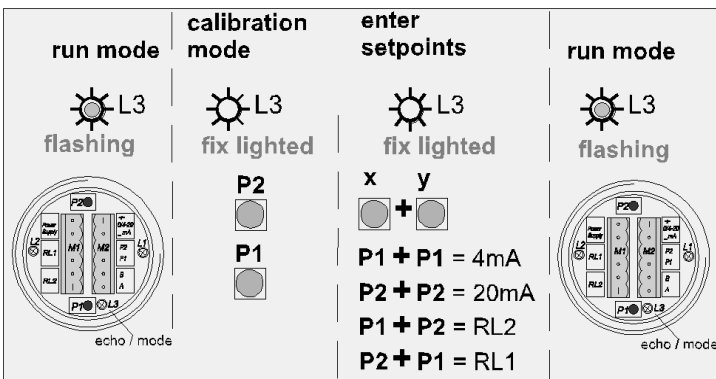


fig.9

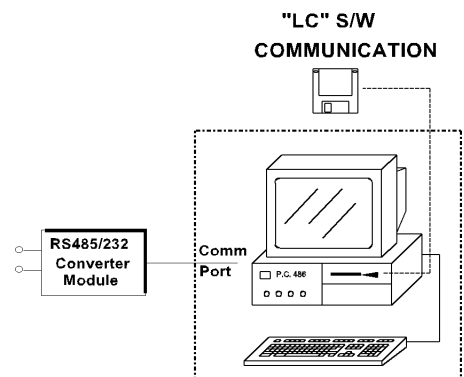
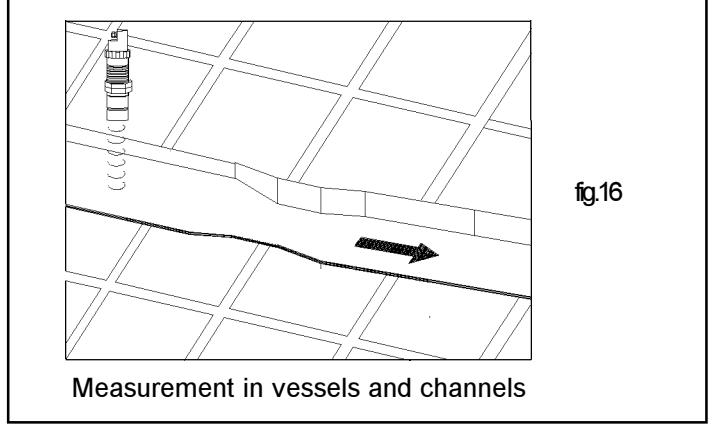
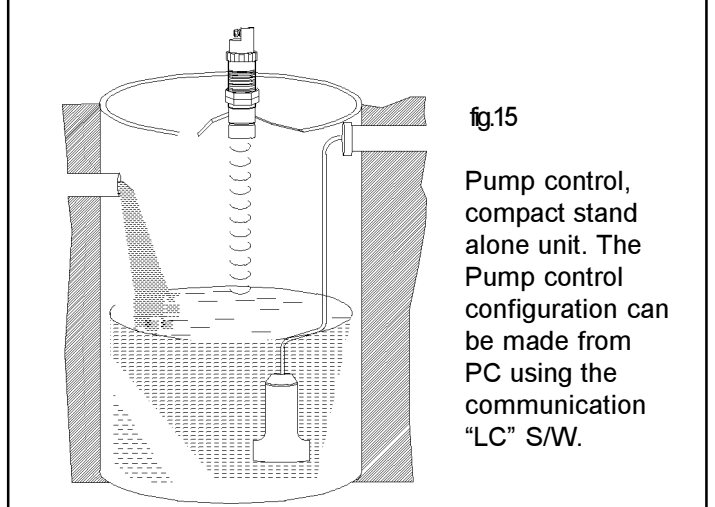
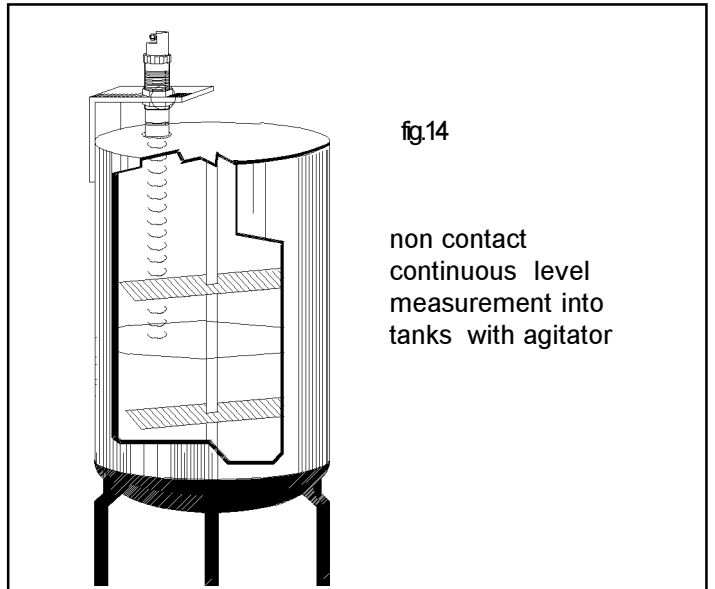
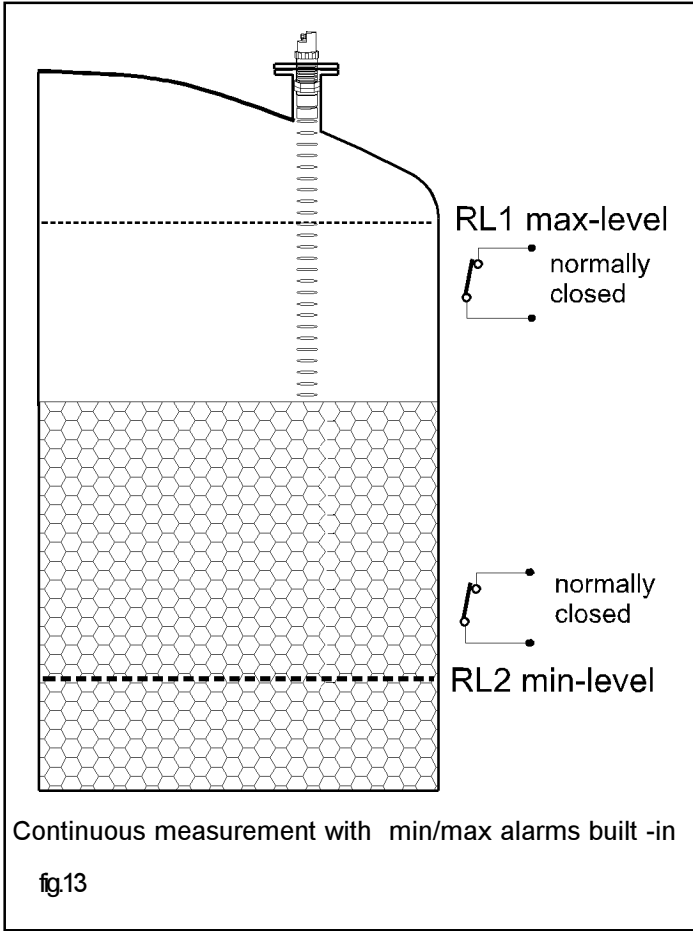


fig.12

SMARTCOST Application



SMARTCOST Warranty

The warranty expires when damages they have provoked from the use not quite or from not correct installations. The warranty is valid for a period of 12 months from the sell behind presentation of this manual. All the reparations in warranty will have realized in our workshop in Rodano (MI), the costs of dismounting and reinstalling of the device and the costs of the transport will be paid by the customer.

SMARTCOST Factory test certificate

In conformity to the company and ceck procedure I certify that the equipment:

SMARTCOST Serial n.
 is conform to the technical requirements on Technical Data and it is made in conformity to the SGM procedure
 Quality Control Manager

.....
 Production and ceck date

Customer calibration (on request):

4mA:
 20mA:



The SGM, reserves the right to make improvements in the product described in this manual at any time without notice