

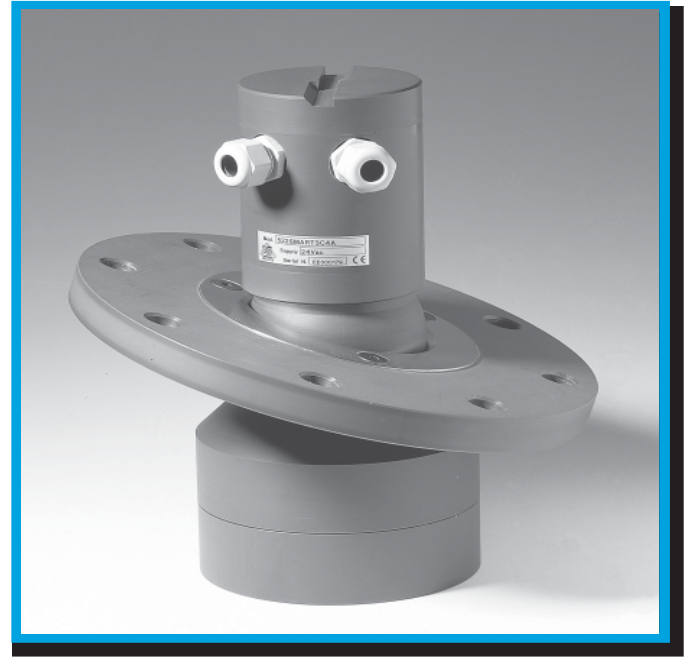
521Smart

compact ultrasonic level transmitter for liquids and granular solids

865B038A

521Smart

This single-chip operated transmitter has been designed for use in tanks and silos for measurements up to 10 m. It is characterized by easy calibration procedures. If the probe is being used just as a two-threshold transmitter (min and max), calibration is performed by simply pressing two switches. The complete configuration is also possible by connecting the transmitter to a PC through the RS485 port. The two transmitter relays may be setup as thresholds or as self-diagnostic alarms, should malfunctioning occur. The ultrasonic transducer and electronics are enclosed into a PP housing or PVC. **521Smart** is intended to operate at normal temperature and pressure. It is appropriate for applications involving aggressive chemical acids or liquids and it is especially recommended with granular solids.



- 4÷20 mA Level/Distance transmitter up to 10 m**
- 2 calibration keys + RS485**
- 2 built-in programmable relays (5A, 250Vac)**
- two different flanged mechanical connection**
- IP65**
- Power supply 24Vdc or 24,115,230 Vac**

Implementation

The **521Smart** incorporates a powerful single-chip allowing the completely digitized acquisition and processing of the acoustic signal immediately after the ultrasonic (physical) transducer, a significant feature which has been implemented using an extremely high-speed processor. The signal processing technique is therefore of the DSP type (digital signal processor) allowing to achieve special stability, disturbance immunity and accuracy which are unique, even within this class of products.

While normally operating, a built-in self-diagnostic control system monitors essential functions, detecting any echo absence (lost echo), reading instability or electronic fault occurrence. Such self-diagnostic monitoring allows to use one of the two relays available on the **521Smart** as a malfunctioning alarm. The reliability during operation is ensured by the manufacturing techniques and materials used, involving forced ageing cycles (i.e. temperature range) and by the use of silicon components of demonstrated quality and reliability.

Device versions

IP65 version: the calibration switches are housed into the connection head of the transmitter. The electric connection has no length limit and is obtained through electric wires connected to a watertight shunt box (IP65) also housing the calibration switches.

521Smart versions:

- ✓ **521Smart - 1** **no flanged version**
- ✓ **521Smart - 2** **DN 250 flanged**
- ✓ **521Smart - 3** **DN 250 moveable flanged**

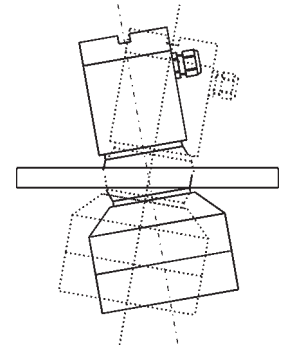
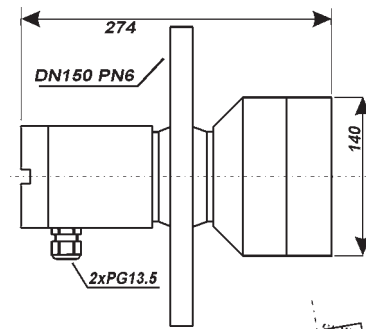


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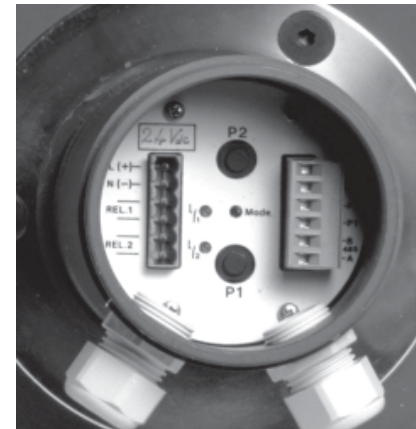
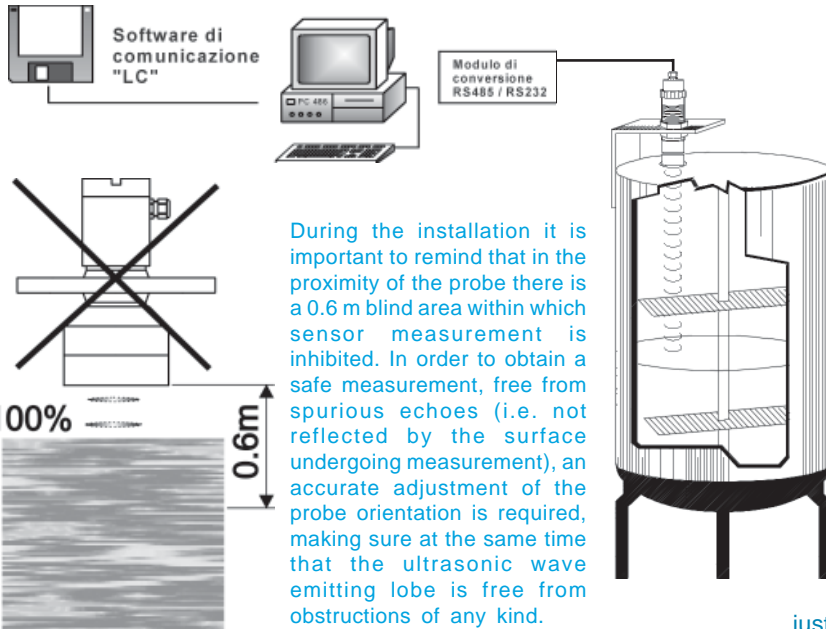
521Smart transmitter

TECHNICAL DATA

Housing:	PP or PVC
Mechanical installation:	version 2 1/2" connection flanged, fix DN250PN6 flanged DN250 PN6, moveable version
Protection class:	IP65
Electrical connection:	Internally extractable terminal boards (IP65)
Working temperature:	- 30 to + 60°C
Pressure:	0.7 to 1.3 bar (absolute)
Power supply:	24Vdc or 24, 48, 115, 230Vac
Power consumption:	6.0 W
Analogic output:	4÷20 mA; max load 750 ohm
Output relay:	n°2 relays; 5A 230 Vac (n.o.contacts)
Max meas. distance range:	10 m
Blocking distance:	0.6 m
Communication port :	RS485
Temperature compensation:	PT100; -30 to + 60°C
Accuracy:	± 1% (of the measured distance)
Resolution:	3 mm
Calibration:	two push buttons or by RS485 port
LED display:	green LED indicating echo reception yellow LEDs: REL1 and REL2 conditions



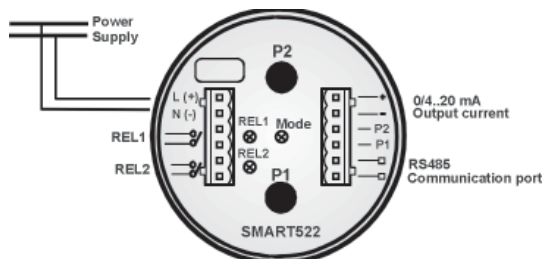
521Smart - 3
DN 250 moveable flanged



housing of the electronic

Calibration

Probe calibration is performed acting on the two P1 and P2 push buttons, placing the probe at the required distance, thus electronically memorizing the two differing physical situations. To set the 4mA signal, just place the probe at the distance to which the 4mA output is required to correspond; once achieved this press the two switches according to a pre-established sequence. Similarly, to set the 20 mA signal, just place the probe at the distance to which the 20mA output is required to correspond; once achieved press again the same two switches, paying attention to the different and pre-established sequence. Calibration of the 4-20 mA transmitter is thus achieved. The 2 relays may be set up as thresholds, applying once again the self-teaching method, i.e. presetting the level on the selected position which the trigger point is to be fixed and pressing the switches according to a pre-established sequence. Relay calibration and configuration for functions such as alarm, pump control and electronics diagnosis require using the RS485 communication port. To perform these operations through a PC the "LC" software is available.



Electrical characteristics

IP65 version: the lid may be unscrewed, giving access to two 6-contact extractable connectors. No special or coaxial cable is required and there is no distance limit. As power supply is Vac the current output is galvanically separated from power supply. Electrical connection is achieved through multithread wires.



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