



Sb0BxA1x0Axx

Immersion probe for pH measurements with antimony electrodes, c/w low electrolyte level alarm

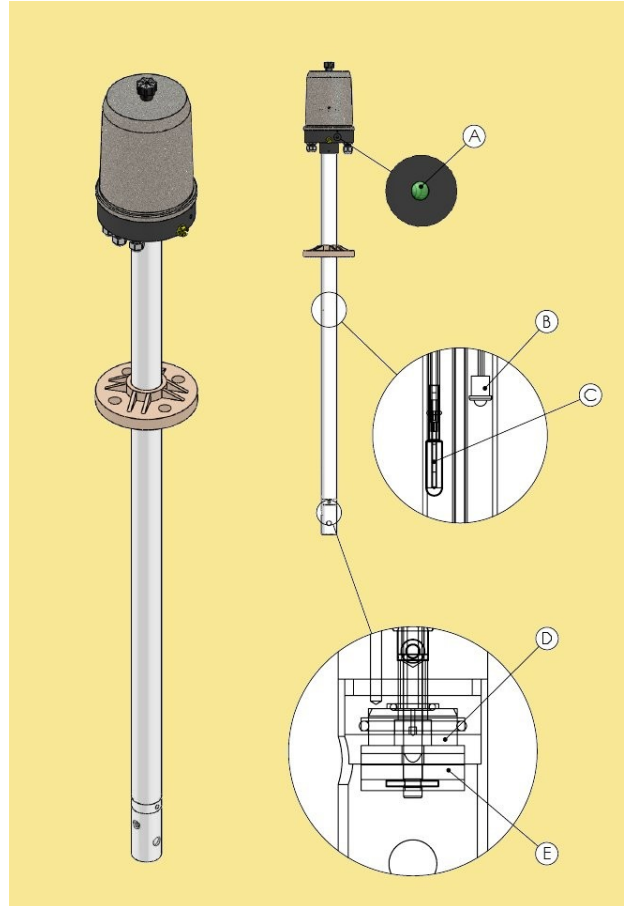
Immersion probes designed for the measure of pH in very difficult applications. The measuring electrode, that is kept clean and active by a brush, and the reference electrode, c/w electrolyte reservoir, assure long operating periods without maintenance requirements.

Sb0B immersion probe can be installed into basins, tanks and open channels, and they are designed for wall mounting by means of a flange sliding on all the probe body, DN32.

Mod.Sb0BxAxx0A4 probes include pneumatic brush actuator and are suitable for hazardous areas applications.

Mod.Sb0BxA1x0A1B includes an alarm for low electrolyte level inside the probe body.

Mod.Sb0B probes are designed for industrial "heavy/duty" applications, in dirty and fouling processes, in water with abrasive suspended solids, as where calcium hydroxide is dosed, or in solutions containing hydrofluoric acid or phosphoric acid where glass pH electrode would not be suitable.



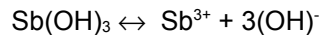
Advantages

- **Sturdy and compact execution**
- **Suitable for measurements in the range 1 to 13 pH**
- **24,110 or 220 VAC power supply or**
- **Pneumatic actuator (for Ex zone installation)**
- **Water tight cable glands**
- **Electrodes self cleaning**
- **The probe body acts as the electrolyte reservoir**
- **Alarm for low electrolyte level in the probe body available as an option**
- **Local indication and remote retransmission of low electrolyte level alarm**
- **Extremely low maintenance requirements**

Sb0BxA1x0Axx

Operating principle and realization

The Antimony electrode measure is based on an oxidation-reduction phenomenon. On the surface of this electrode the metallic Sb naturally forms an $\text{Sb}(\text{OH})_3$ oxide layer, so that an electrochemical equilibrium is produced as per the equation:



A too thick oxide layer on the electrode surface would compromise the functioning, so the measuring surface of the antimony electrode is continuously gritted by a brush that keeps the oxide layer to a constant thickness value; the brush also avoids any fouling of the electrode surface.

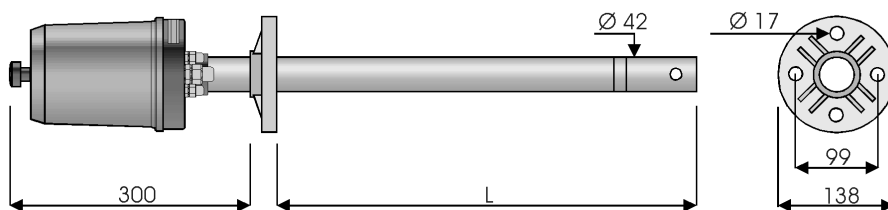
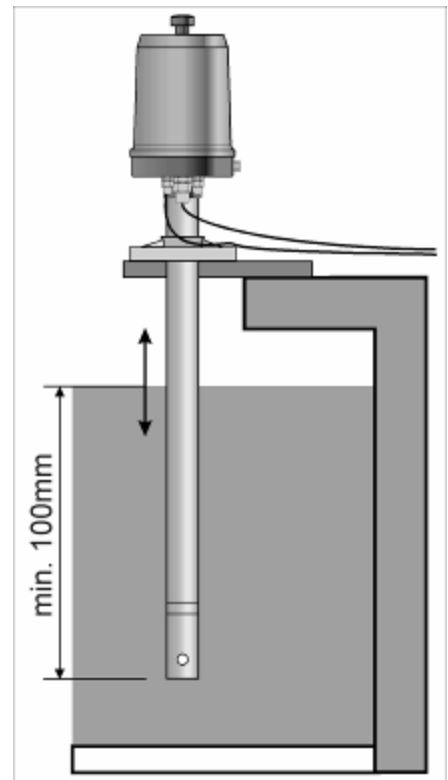
The potential generated by the Antimony electrode is 50 mV/pH with a response time of about 3 minutes respect to 57 mV/pH with 10 seconds of response time for the glass electrode. The zero point (0 mV) is at pH = 1 for antimony electrode, while it is at pH = 7 for the glass electrode. For this reason a pH meter that can introduce a zero correction of at least 400 mV must be used.

This probe includes separate electrodes: the antimony electrode is annular with flat surface and the reference is Ag/AgCl, with flat shaped diaphragm. A corundum (or other material on request) brush keeps constantly clean the electrodes surfaces.

The probe is composed of a PVDF body (\varnothing 42 mm, standard length 1000 mm) and a waterproof connection head, containing the brush actuator system, electrical or pneumatic, and the terminal board for electrical connections. The main body that acts as electrolyte reservoir and is totally filled with KCl, in which a small reference electrode (sealed, with semisolid electrolyte) is immersed. The lower part of the probe includes the ring shaped Antimony sensor, the brush and the synthetic diaphragm. The probe is fixed, on wall or to the basin wall, by means of a flange sliding on all the probe body, DN32.

Probes version Sb0BxA1x0A1B include a level sensor installed inside the probe body and the pertinent electronic unit installed in the probe head. The system generates a local indication (LED) and an alarm contact if the electrolyte level inside the probe falls under the set value. An alarm is also generated in case of system fault and in case of lack of power supply.

This system is only available for probes with 24 Vac power supply.



Sb0BxA1x0Axx

Technical Specifications

Body material:	PVDF
Measuring electrode:	Antimony
Reference electrode	Ag/AgCl-KCl semisolid, with salt bridge
Zero point:	0 mV at pH 0
Slope:	50 mV/pH @ 20°C
Measuring range:	1÷14 pH
Response:	20" to reach 80% of final value, appr. 3 minutes to reach 100%
Max distance from probe to instrument:	50 m
Operating temperature limits (probes w/o level sensor):	5÷110 °C
Operating temperature limits (probes c/w level sensor):	5÷80 °C
Storage temperature limits:	0÷60 °C
Power supply:	24 Vac, 110 Vac, 220 Vac
Max. consumption:	3 W
Cable outlet:	q.ty 1 PG13,5 (power supply cable) q.ty 3 PG 9 (electrodes wires)
Installation:	with fixing flange, DN32
Dimensions	∅ 42 mm, 1000 mm length, other lengths upon request
Weight:	appr. 3kg

Immersion probe Mod.Sb0BxAxx0A4 c/w pneumatic actuator:

Compressed air connection:	4 mm diameter quick connection fitting
	for Rilsan tubes
Pneumatic actuation:	filtered and non-lubricated air
Maximum operating pressure:	0,7 MPa (7 Bar)
Minimum operating pressure:	0.2 MPa (2 Bar)

Immersion probe Mod.Sb0BxAxx0A1B c/w alarm for low electrolyte level:

Attention: the low level alarm is only available for probes having 24 Vac power supply

Level sensor inside probe body:	optical type
Setting the alarm threshold:	it is defined by the position of the sensor inside the probe body and it can be set by the customer according to application needs
	the alarm must always be triggered when the electrolyte level is at least few cm over the level of the liquid in which the probe is immersed
Local indication:	green LED lit up: electrolyte level and sensor are OK
	red LED lit up: low electrolyte level or faulty level sensor
	LED OFF: lack of power supply
Contacts for alarm retransmission:	2, from relay RL1 and relay RL2
Relay characteristics:	max load voltage 350 V; continuous load current max. 120 mA; load current (peak) max. 350 mA
Relay operation features:	RL1 ON: electrolyte level OK; RL1 OFF= low electrolyte level or faulty level sensor
	RL 2 ON = electrolyte level OK; RL 2 OFF lack of power supply

Calibration & Maintenance

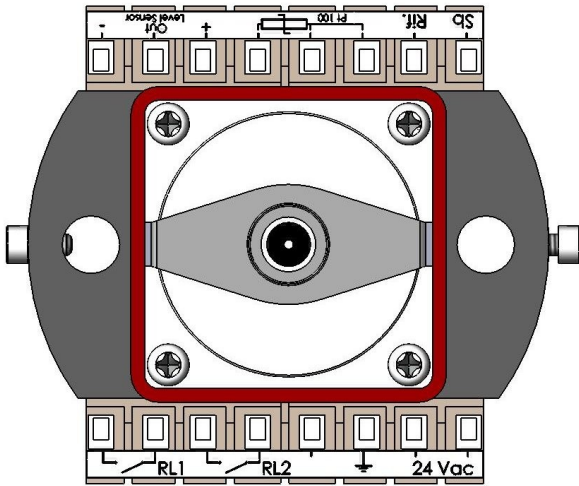
To perform a calibration, lift the probe out of the process, wash the probe end, fill a calibration vessel with proper dimensions (probe minimum immersion depth is 200 mm) with the desired calibration solution (e.g. pH 4 buffer solution). Wait stabilization time then calibrate the electronic unit according to the buffer solution value.

The zero point of these sensors is extremely stable and never needs to be recalibrated.

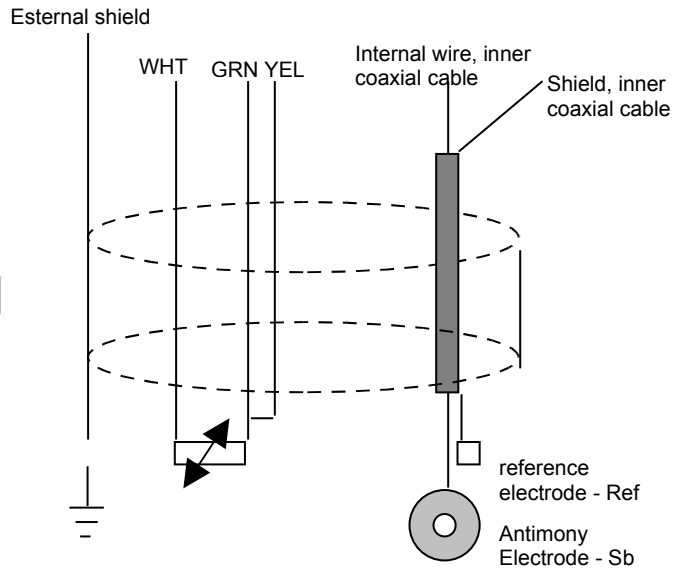
ATTENTION: the use of inorganic standard solution is recommended since the organic ones react with Antimony oxide causing voltage shift.

Sb0BxA1x0Axx

Wiring, electric actuator



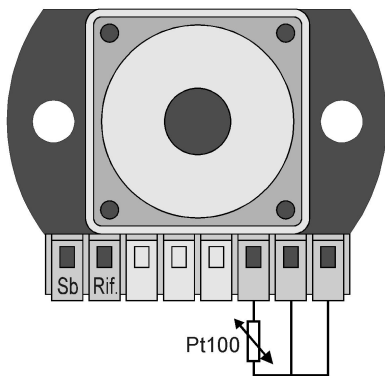
Cable instrument side



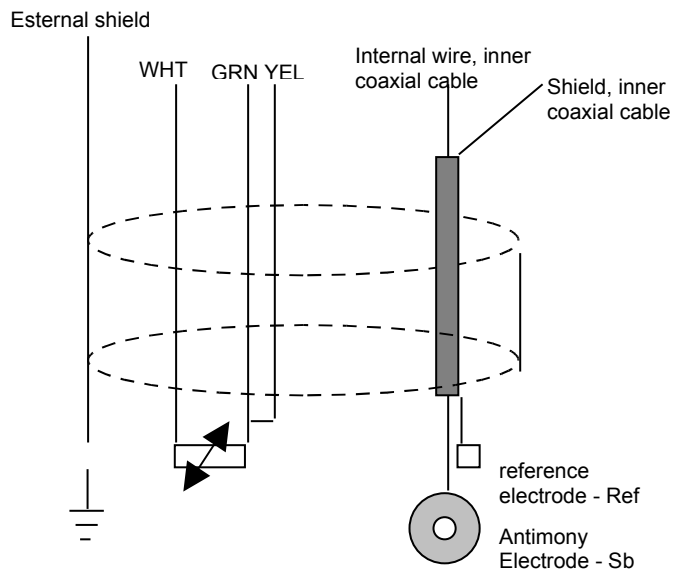
Wiring inside the probe

Terminal board inside the probe head

Wiring, probe with pneumatic actuator



Cable instrument side



Wiring inside the probe

Terminal board inside the probe head

Sb0BxA1x0Axx

Order code breakdown

	Sb0	x	x	x	x	x	x	x	x	x
pH probes with antimony electrodes	Sb0									
Type of probe Immersion probe Ø 42 (SI/42-Sb)		B								
Probe length 1000 mm (under the flange) 1500 mm (under the flange) Special execution			3 4 9							
Fixed code				A						
Construction material (body) PVDF Special execution					1 9					
Shaft and pin material Reserved Stainless steel Hastelloy C 276 (probes with max.length 1500 mm) Hastelloy C 276 (probes with length higher than 1500 mm) Special execution						A B C D Z				
Fixed code							0			
Fixed code								A		
Mechanical cleaning system actuator Reserved Electric, 24 Vac Electric, 110 Vac Electric, 220 Vac Pneumatic Special execution									0 1 2 3 4 9	
Alarm for low electrolyte level inside probe body Reserved Included (only for 24 Vac power supply) Not included										A B C

Accessories

Cable for the connection n to the electronic unit, 7 cores + inner coaxial cable, shielded, **Mod.CV/2SCH-7-x** where x = length in meters, to be specified at order

Optional Accessories

pH 7,00 buffer solution.....T/101-7x
 pH 4,00 buffer solution.....T/101-4x
 pH 9 buffer solution.....T/101-9x
 Refilling electrolyte, 3,3 M KCl solution.....E/123-1x

where x= A : 250 ml bottle; x = B : 500 ml bottle; x = C: 1000 ml bottle.

Sb0BxA1x0Axx

Mod.Sb0BxAxx0A4 with pneumatic actuator

