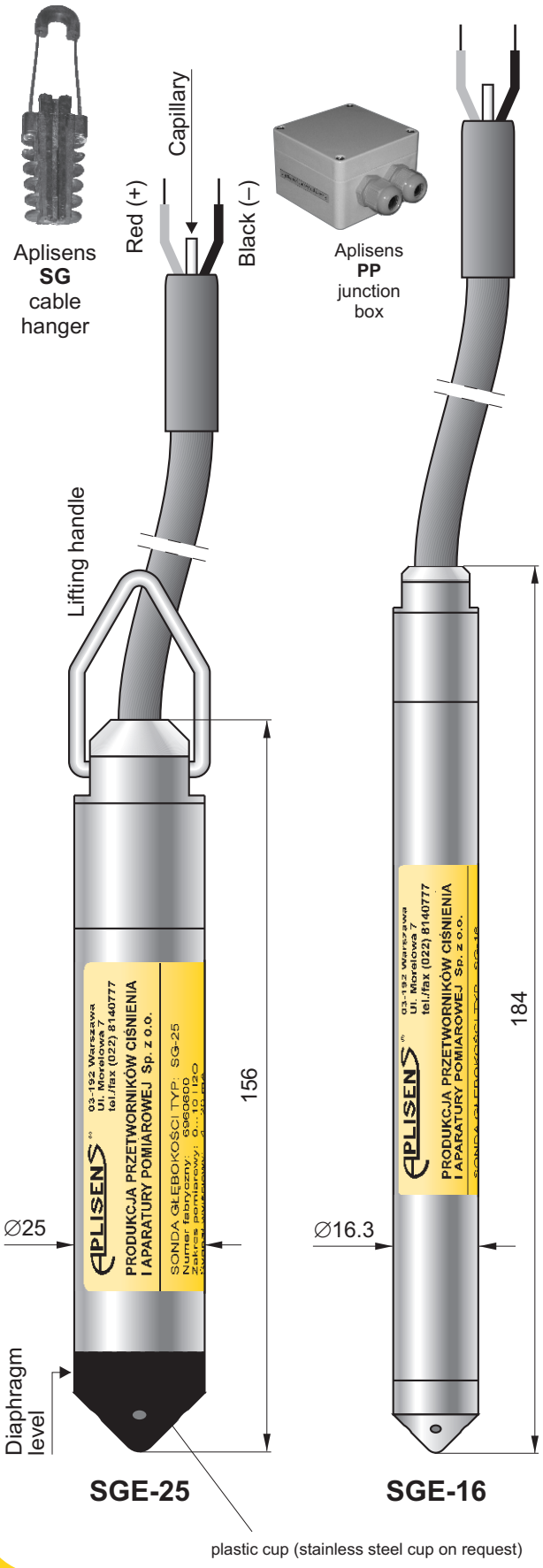
Hydrostatic level probes SGE-25 and SGE-16



- ✓ **Any measurement range from 1 up to 500 m H_2O**
- ✓ **Integrated internal overvoltage protection circuit**
- ✓ **Marine certificate DNV**
- ✓ **ATEX Intrinsic safety**

II 1G Ex ia IIC T4/T5/T6 Ga
II 1G Ex ia IIB T4/T5/T6 Ga (probes with PTFE cable)
I M1 Ex ia I Ma

Application

The SGE-25 hydrostatic level probe is applicable to measure liquid levels in tanks, deep wells or piezometers.

The SGE-16 probe is a specialized device designed to measure water levels in narrow diameter piezometers or wells.

Principles of operation, construction

The probe measures liquid levels, basing on a simple relationship between the height of the liquid column and the resulting hydrostatic pressure. The pressure measurement is carried out on the level of the separating diaphragm of the immersed probe and is related to atmospheric pressure through a capillary in the cable.

The active sensing element is a piezoresistant silicon sensor separated from the medium by an isolating diaphragm. The electronic amplifier, which works in combination with the sensor, and is meant to standardize the signal, is additionally equipped with an overvoltage protection circuit, which protects the probe from damage caused by induced interference from atmospheric discharges or from associated heavy current engineering appliances.

Installation, method of use

When lowered to the reference level, the probe may either hang freely on the cable or lie on the bottom of the tank. The cable with the capillary can be extended using a standard signal cable. For the cable connection a special Aplisens **SG** cable hanger is recommended. The cable connection should be situated in a non-hermetically sealed box (the internal pressure inside the box should be equal to the atmospheric pressure), preventing water or other contaminants from getting into the capillary. The Aplisens **PP** junction box is recommended For systems with long signal transmission lines, it is recommended the using of an additional Aplisens UZ-2 overvoltage protection circuit in the form of a wall-mounted box which allows the cables connection. When the probe cable is being wound up, the minimum winding diameter should be 30cm and the cable should be protected from mechanical damage.

If there is a possibility of turbulence in the tank (for example, because of the mixer operating mixers or a turbulent inflow), the probe should be installed inside a screening tube (e.g. made of PVC). If the probe is to be lowered deeper than 100m, the cable should be hanged at steel lifting rope. Cleaning the probe diaphragm by mechanical means is strictly prohibited.

Technical data for the SGE-25 level probe

Measuring range
Any measuring range 1 ÷ 500 m H_2O (the standard ranges: 4, 10, 25, 60, 100 m H_2O are recommended)

	Measuring Range		
	1 m H_2O	**4 m H_2O**	**0...10 m H_2O ÷ 500 m H_2O**
Overpressure Limit (repeatable – without hysteresis)	40 × range	25 × range	10× range (max. 700 m H_2O)
Accuracy % FSO acc. to IEC 60770	0,6%	0,3%	0,2%
Accuracy % FSO acc. to BFSL	0,3%	0,15%	0,1%
Thermal error	Typical 0,3% / 10°C max 0,4% / 10°C		Typical 0,2% / 10°C max 0,3% / 10°C

Long term stability 0,1% or 1 cm H_2O for 1 year
Hysteresis, repeatability 0,05%
Thermal compensation range 0 ÷ 40°C – standard
-10 ÷ 70°C – special version
Medium temperature range -25 ÷ 40°C – standard
0 ÷ 75°C – ETFE and PTFE version
CAUTION: The medium must not be allowed to freeze in the immediate vicinity of the probe

Technical data for the SGE-16 level probe

Measurement ranges 10 ÷ 100 m H_2O
Overpressure limit 10 × range
(repeatable – without hysteresis)
Accuracy 0,3%
Hysteresis, repeatability 0,05%
Thermal compensation range 0 ÷ 40°C
Process temperature limit 0 ÷ 40°C
(version with ETFE and PTFE cable) 0 ÷ 75°C

Electrical parameters (applicable to both probes)

Output signal, power supply:

no	Signal type	Power supply	Available in models
1	4 ÷ 20mA	8…36 VDC 10,5…36 VDC (TR version)	SGE-25/…
2	4 ÷ 20mA	9…28 VDC 10,5…28 VDC (TR version)	SGE-25/Exia/…
3	0 ÷ 10V	13…30 VDC	SGE-25/….
4	0 ÷ 3,3V	4,1…14,1 VDC	SGE-25/….
5	0 ÷ 5V 0,5 ÷ 4,5 V	8…14,1 VDC	SGE-25/….
6	4 ÷ 20mA	8…36 VDC	SGE-16/….
7	0 ÷ 3,3 V	3,6…4,5 VDC	SGE-16/….

Load resistance (for current output) $R[\Omega] \leq \frac{U_{sup}[V] - 8V}{0{,}02A}$

Load resistance (for supply output) $R \geq 20k\Omega$

Error due to supply voltage changes 0,005% / V
Degree of protection IP68
Material of casing SS316L
Cable shield PU, ETFE, PTFE

Material of diaphragm
SGE-25 Hastelloy C276 (optionally SS316L)
SGE-16 SS316L

Ordering procedure

Model	Code	Description
SGE-25 SGE-16		Level probe
Versions, certificates * - applicable only for SGE-25	/Exia *……	II 1G Ex ia IIC T4/T5/T6 Ga II 1G Ex ia IIB T4/T5/T6 Ga (for probe with cable in PTFE shield) I M1 Ex ia I Ma
	/MR *……	Marine certification (DNV), only with PU PZH cable
	/-10÷70° *……	Extended thermal compensation range
	/Pt100……	Probe with Pt100 sensor (only with PU cable)
	/TR *……	Response time <30ms (only for 4...20mA output)
	/316L……	Membrane material: 316L
Measuring set range	/…÷… [required units]	Calibrated range in relation to 4mA and 20mA (or 0V and 10V) output
Output signal	/4…20mA……	4…20mA / power supply SGE-25: 8…36VDC (Exia 9…28VDC, TR 10,5…36VDC) SGE-16: 10,5…36VDC
	/0…10V……	/0…10V / power supply 13…30VDC
	/0…3,3V……	/0…3,3V / power supply SGE-25: 4,1…14,1VDC, SGE-16: 3,6…4,5VDC
	/0…5V……	/0…5V / power supply 18…14,1VDC
	/0,5…4,5V……	/0,5..4,5V / power supply 18…14,1VDC
Type of cable	/PU……	Polyurethane cable (medium temp. up to 40°C)
	/PU PZH……	Polyurethane, halogen free cable with hygienic certification (medium temp. up to 40°C)
	/ETFE……	ETFE cable (not suitable for mineral oil products, medium temp. up to 75°C)
	/ETFE-R……	ETFE cable with Viton/silicon sealing (suitable for mineral oil products, medium temp. up to 40°C)
	/PU + PTFE……	Polyurethane cable with PTFE shielding (medium temp. up to 75°C)
	/ETFE + PTFE…	ETFE cable with PTFE shielding (medium temp. up to 75°C)
Cable length	/L=…m……	Cable length;
Accessories	/SG	Cable hanger
	/PP	Junction box