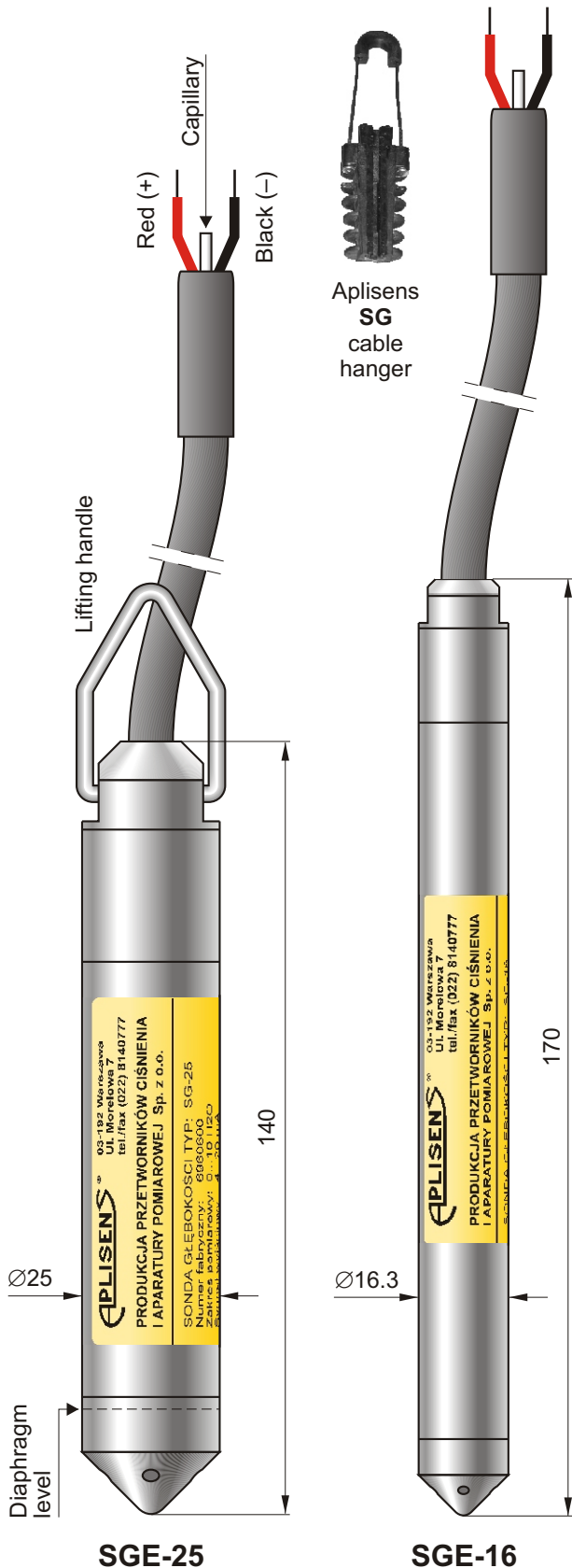


Hydrostatic level probes SGE-25 and SGE-16



- ✓ Any measurement range from 1 up to 500 m H₂O
- ✓ Integrated internal overvoltage protection circuit
- ✓ ATEX Intrinsic safety Ex II 1G EEx ia IIC T4/T5/T6 I M1 EEx ia I

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 H₂O (the standard ranges: 4, 10, 20, 50, 100 m H₂O are recommended)

| | Measuring Range | | |
|---|--|----------------------|--|
| | 1 m H ₂ O | 4 m H ₂ O | 0...10 m H ₂ O ÷ 500 m H ₂ O |
| Overpressure Limit (repeatable – without hysteresis) | 40 × range | 25 × range | 10× range (max. 700 m H ₂ O) |
| Accuracy | 0.6% | 0.3% | 0.2% |
| Thermal error | Typical 0.3% / 10°C max 0.4% / 10°C | | Typical 0.2% / 10°C max 0.3% / 10°C |

Special version with increased accuracy: SGE-25 level probe, measurement range 0...10 m H₂O
Accuracy 0.1%; Total error at 0...25°C 0.3%

Long term stability 0.1% or 1 cm H₂O for 1 year

Hysteresis, repeatability 0.05%

Thermal compensation range 0 ÷ 25°C – standard,
-10 ÷ 70°C – special version

Medium temperature range -25 ÷ 50°C – for range > 20 m H₂O,
-25 ÷ 75°C – for range ≤ 20 m H₂O,
-25 ÷ 50°C – for EEx 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, 20, 50, 100 m H₂O

Overpressure limit 10 × range
(repeatable – without hysteresis)

Accuracy 0.5%

Hysteresis, repeatability 0.05%

Thermal compensation range 0 ÷ 25°C

Process temperature limit 0 ÷ 50°C

Electrical parameters (applicable to both probes)

Output signal 4 ÷ 20 mA, two-wire transmission
Special version 0 ÷ 10 V three-wire transmission (SGE-25 only;
not applicable to EEx version)

Load resistance $R[\Omega] \leq \frac{U_{sup}[V] - 10.5V}{0.02A}$
(for current output)

Power supply 10.5 ÷ 36 V DC (EEx: max 28 V)
15 ÷ 30 V DC (for 0 ÷ 10 V output signal)

Load resistance $R \geq 5k\Omega$
(for voltage output)

Error due to supply voltage changes 0.005% / V

Degree of protection IP-68

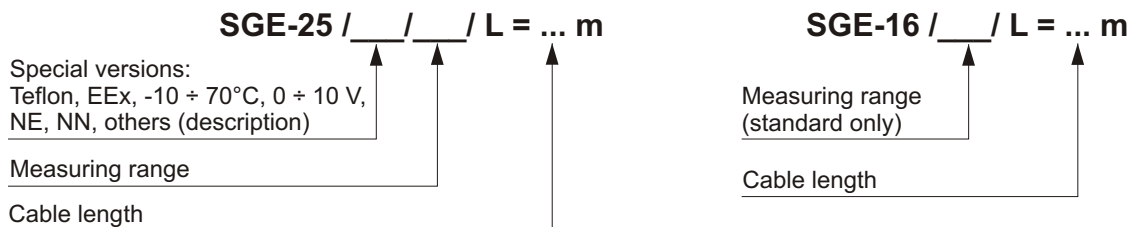
Material of casing and diaphragm (applicable to both probes) 00H17N14M2 (316Lss)

Cable shield (applicable to both probes) POLYURETHANE

Special versions, certificates (not applicable to SGE-16)

- ◇ Teflon – Teflon cable shielding
- ◇ EEx – Atex Intrinsic safety
- ◇ -10 ÷ 70°C – extended thermal compensation range
- ◇ 0 ÷ 10 V – output voltage (not applicable to EEx; without overvoltage protection circuit)
- ◇ NE – low power demand version (power consumption < 1.3mA, output signal 0...10V)
- ◇ NN – low – voltage version (power supply 3V, output signal 0...2.5V)
- ◇ Others

Ordering procedure



Fitting accessories if required: **SG** cable hanger, **PP** junction box

Example 1: SGE-25 level probe / EEx version, extended temperature compensation range / measuring range 0 ÷ 2.5 m of fuel oil with density $\rho = 0.83 \text{ g/cm}^3$ / cable length 6 m

SGE-25 / EEx, -10 ÷ 70°C / 0 ÷ 2.5 m ($\rho = 0,83$) / L = 6 m

Example 2: SGE-16 level probe / measuring range 0 ÷ 20 m of water / cable length 50 m

SGE-16 / 0 ÷ 20 m H₂O / L = 50 m