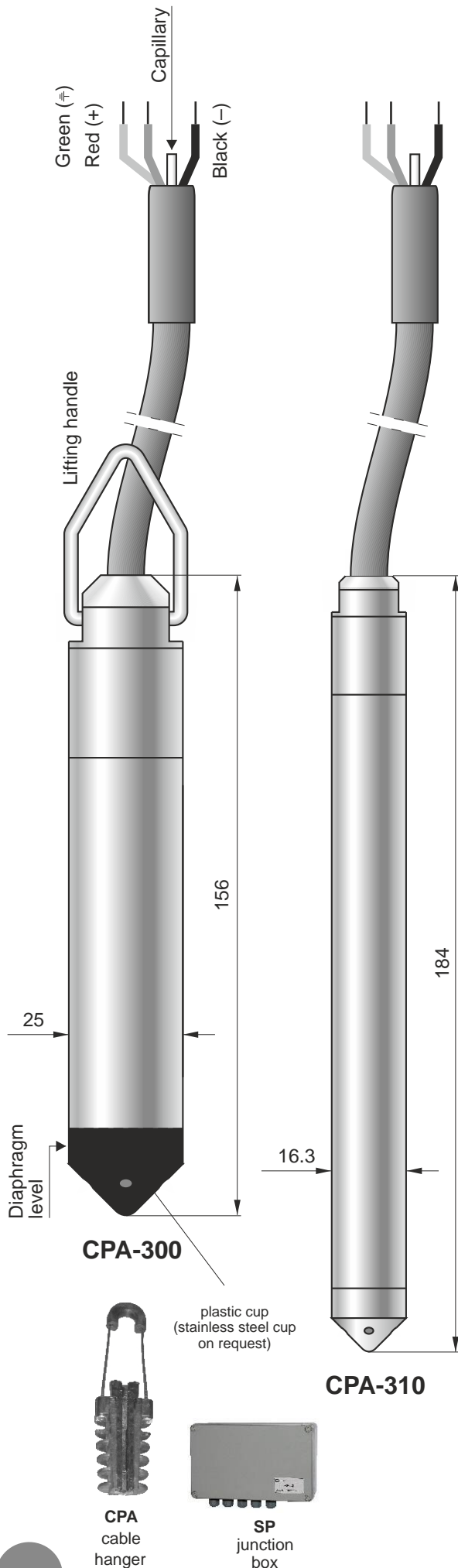


CPA-300 / CPA-310

- hydrostatic level probe for measurement of liquid levels
- any measurement range from 0..1 mH₂O up to 0..500 mH₂O
- integrated internal overvoltage protection circuit
- 4 - 20mA (2-wire) or 0 - 10V output (3-wire)
- IP 68 protection
- measurements under explosion hazard (ATEX Intrinsic safety)
- Marine certificate DNV



APPLICATION

The CPA-300 hydrostatic level probe is applicable to measure liquid levels in tanks, deep wells or piezometers.

The CPA-310 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 Simex CPA 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 Simex SP junction box is recommended. For systems with long signal transmission lines, it is recommended the using of an additional 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 100 m, the cable should be hanged at steel lifting rope. Cleaning the probe diaphragm by mechanical means is strictly prohibited.

TECHNICAL DATA : CPA-300
Measuring range
Any measuring range 1 ÷ 500 m H₂O

	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 x range	25 x range	10x range (max. 700 m H ₂ O)
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 ₂ O for 1 year
Hysteresis, repeatability	0,05%
Thermal compensation range	0 ÷ 40°C – standard -10 ÷ 70°C – special version
Medium temperature range	-30 ÷ 40°C – standard 0 ÷ 80°C – ETFE and PTFE version

CAUTION: The medium must not be allowed to freeze in the immediate vicinity of the probe

TECHNICAL DATA : CPA-310

Measurement ranges	10 ÷ 100 m H ₂ O
Overpressure limit (repeatable – without hysteresis)	10 x range
Accuracy	0,3%

Hysteresis, repeatability	0,05%
Thermal compensation range	0 ÷ 40°C
Process temperature limit (version with ETFE and PTFE cable)	-30 ÷ 40°C 0 ÷ 80°C

ELECTRICAL DATA

no	Signal type	Power supply	Available in models
1	4 ÷ 20mA	8...36 VDC	CPA-300
2	4 ÷ 20mA	9...28 VDC	CPA-300/Exia
3	0 ÷ 10V	13...30 VDC	CPA-300
4	0 ÷ 3,3V	5,5...16 VDC	CPA-300A, CPA-300A/Exia
5	0 ÷ 3,3V	4,1...5,6 VDC	CPA-300B, CPA-300B/Exia
6	0,5 ÷ 4,5 V	8...16 VDC	CPA-300A, CPA-300A/Exia
7	0,5 ÷ 4,5 V	5,0...5,6 VDC	CPA-300B, CPA-300B/Exia
8	4 ÷ 20mA	8...36 VDC	CPA-310
9	0 ÷ 3,3 V	3,6...4,5 VDC	CPA-310

Degree of protection IP68

Material of casing SS316L

Cable shield PU, ETFE, PTFE

Material of diaphragm

 CPA-300 Hastelloy C276 (optionally SS316L)
 CPA-310 SS316L

Load resistance
(for current output) $R[W] \leq \frac{U_{sup}[V] - 8V}{0,02A}$
Load resistance
(for supply output) $R \geq 20k\Omega$
Error due to supply voltage changes 0,005% / V

ORDERING

Model	Code	Description
CPA-300 (CPA-300A, CPA-300B) CPA-310		Level probe
Versions, certificates	/Exia *..... /MR *..... /-10÷70° *..... /Pt100..... /316L.....	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 Marine certification (DNV), only with ETFE cable Extended thermal compensation range Probe with Pt100 sensor (only with PU cable) 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..... /0...10V..... /0...3,3V..... /0,5...4,5V.....	4...20mA PS: CPA-300: 8...36VDC (Exia 9...28VDC, TR 10,5...36VDC) CPA-310: 10,5...36VDC 0...10V PS: CPA-300 : 13...30VDC 0...3,3V PS: CPA-300 A, CPA-300 A/Exia: 5,5...16VDC CPA-300 B, CPA-300B/Exia: 4,1...5,6VDC 0,5...4,5V PS: CPA-300 A, CPA-300 A/Exia: 8...16VDC CPA-300 B, CPA-300B/Exia: 5...5,6VDC
Type of cable	/PU..... /PU PZH..... /ETFE..... /ETFE-R..... /PU + PTFE..... /ETFE + PTFE...	Polyurethane cable (medium temp. up to 40°C) Polyurethane, halogen free cable with hygienic certification (medium temp. up to 40°C) ETFE cable (not suitable for mineral oil products, medium temp. up to 75°C) ETFE cable with Viton/silicon sealing (suitable for mineral oil products, medium temp. up to 40°C) Polyurethane cable with PTFE shielding (medium temp. up to 75°C) ETFE cable with PTFE shielding (medium temp. up to 75°C)
Cable length	/L=...m.....	Cable length (standard: 5m, 10m, 12m, 15m, 20m, 25m, other length on request)
Accessories	/SG /PP	Cable hanger Junction box