sauermann®

DATA SHEET

Probes and interchangeable boards

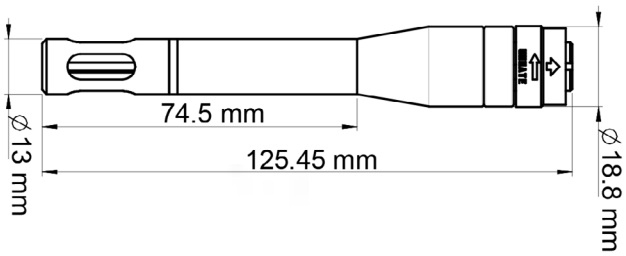
for class 310 sensors

Ambient hygrometry/temperature probes

Stainless steel hygrometry/temperature probes

Interchangeable hygrometry and ambient temperature probe in stainless steel with stainless steel filter. Standard mounting probe 125 mm length with a watertight 1/4 turn connector. Optional: protective tips, filters. Supplied with adjustment certificate.

Ref.: SHSI



Parameter	Measuring range	Accuracy*	Resolution
Temperature Pt100 (°C, °F)	From -20 to 80°C	±0.3% of reading ±0.25°C	0.1°C
Wet temperature** ($°C_{tw}$, $°F_{tw}$)	From -50 to 100$°C_{tw}$	-	0.1$°C_{tw}$
Dewpoint** ($°C_{td}$, $°F_{td}$)	From -50 to 100$°C_{td}$	-	0.1$°C_{td}$
Relative humidity (%HR)	From 0 to 100%RH	Accuracy (Repeatability, linearity, hysteresis): ±1.5%RH (from 15°C to 25°C and from 5 to 95%RH) Temperature dependence: ±0.04 x (T-20)%RH (if T<15°C or T>25°C)	0.1%RH
Absolute humidity[1] (g/m3)	From 0 to 600 g/m^3	-	0.1 g/m^3
Enthalpy** (kJ/kg)	C310/CA310: from 0 to 15 000 kJ/kg CPE310: from 0 to 9999 kJ/kg	-	C310/CA310: from 0 to 9999.9: 0.1 kJ/kg from 10 000 to 15 000: 1 kJ/kg CPE310: from 0 to 999.9: 0.1 kJ/kg from 1000 to 9999: 1 kJ/kg
Combination ratio** (g/kg)	C310: from 0 to 10 000 g/kg CA310: from 0 to 9999.9 g/kg CPE310: from 0 to 9999 g/kg	-	C310/CA310: 0.1 g/kg CPE310: from 0 to 999.9 g/kg: 0.1 g/kg from 1000 to 9999 g/kg: 1 g/kg

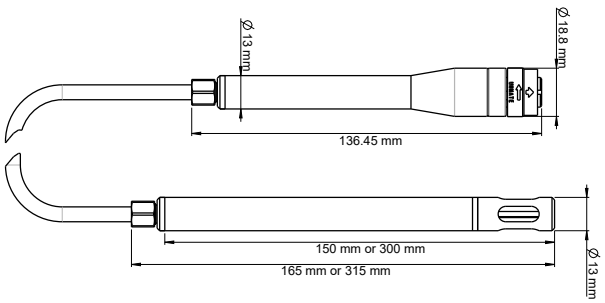
*All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.
**Calculated value

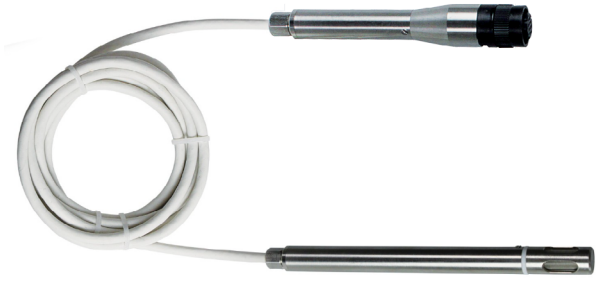
Remote hygrometry/temperature probes

Stainless steel hygrometry/temperature probes

Interchangeable hygrometry and temperature probe in stainless steel with stainless steel filter. Remote probe 150 mm length or 300 mm, 13 mm diameter. White silicone cable 2 m length with watertight 1/4 turn connector. Optional: protective tips, filters. Supplied with adjustment certificate.

Ref.: SHDI-150 (probe length: 150 mm)
SHDI-300 (proble length: 300 mm)

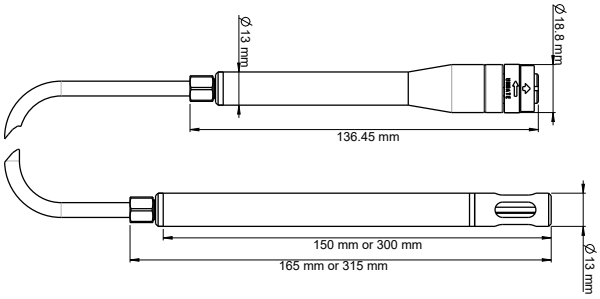


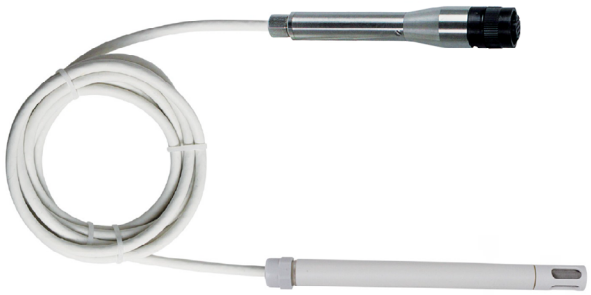


Polycarbonate hygrometry / temperature probe

Interchangeable hygrometry and temperature probe in polycarbonate with stainless steel filter. Remote probe 150 mm length or 300 mm, 13 mm diameter. White silicone cable 2 m length with watertight 1/4 turn connector. Optional: protective tips, filters. Supplied with adjustment certificate.

Ref.: SHDP-150 (probe length: 150 mm)
SDHP-300 (probe length: 300 mm)



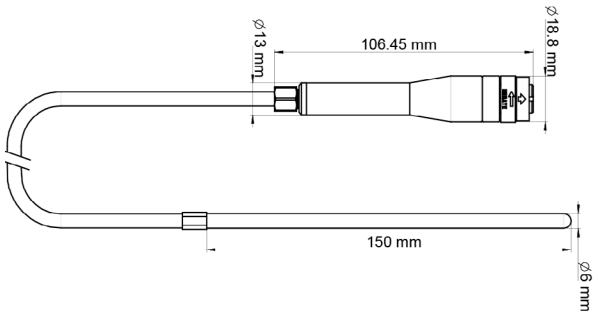


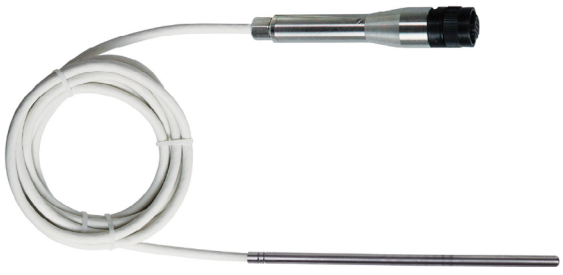
Parameter	Measuring range	Accuracy*	Resolution
Temperature Pt100 (°C, °F)	SHDI: from -40 to 180°C SHDP: from -20 to 80°C	±0.3% of reading ±0.25°C	0.1°C
Wet temperature** ($°C_{tw}$, $°F_{tw}$)	From -50 to 100$°C_{tw}$	-	0.1$°C_{tw}$
Dewpoint** ($°C_{td}$, $°F_{td}$)	From -50 to 100$°C_{td}$	±0.6% of reading ±0.5$°C_{td}$	0.1$°C_{td}$
Relative humidity (%RH)	From 0 to 100%RH	Accuracy (Repeatability, linearity, hysteresis): ±1.5%RH (from 15°C to 25°C and from 5 to 95%RH) Temperature dependence: ±0.04 x (T-20)%RH (if T<15°C or T>25°C)	0.1%RH
Absolute humidity[1] (g/m3)	From 0 to 600 g/m^3	-	0.1 g/m^3
Enthalpy** (kJ/kg)	C310/CA310: from 0 to 15 000 kJ/kg CPE310: from 0 to 9999 kJ/kg	-	C310/CA310: from 0 to 9999.9: 0.1 kJ/kg from 10 000 to 15 000: 1 kJ/kg CPE310: from 0 to 999.9: 0.1 kJ/kg from 1000 to 9999: 1 kJ/kg
Combination ratio** (g/kg)	C310: from 0 to 10 000 g/kg CA310: from 0 to 9999.9 g/kg CPE310: from 0 to 9999 g/kg	-	C310/CA310: 0.1 g/kg CPE310: from 0 to 999.9 g/kg: 0.1 g/kg from 1000 to 9999 g/kg: 1 g/kg

Temperature probes

Interchangeable temperature probe Pt100 1/3 DIN for general use, contact tip 6 mm diameter, 150 mm length, IP65. Grey silicone cable 2 m length with watertight 1/4 turn connector. Supplied with adjustment certificate.

Ref.: STD-13



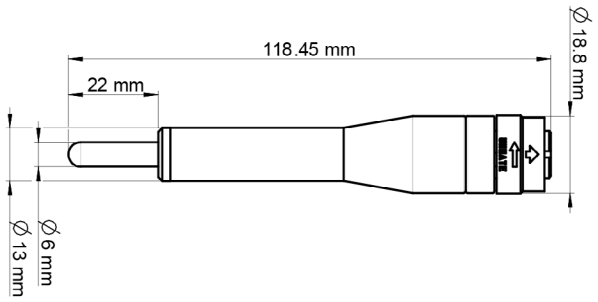


Measuring range	From -50 to 180°C
Accuracy*	±0.3% of reading ±0.25°C
Resolution	0.1°C

*All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.
**Calculated value

Interchangeable temperature probe for general use Pt100, 1/3 DIN type STS-13, contact tip 6 mm diameter, 22 mm length. Range from -20 to 80 °C. Direct output on connector for C310 sensors, CPE310 (with adapter) and large display CA310. Supplied with adjustment certificate.

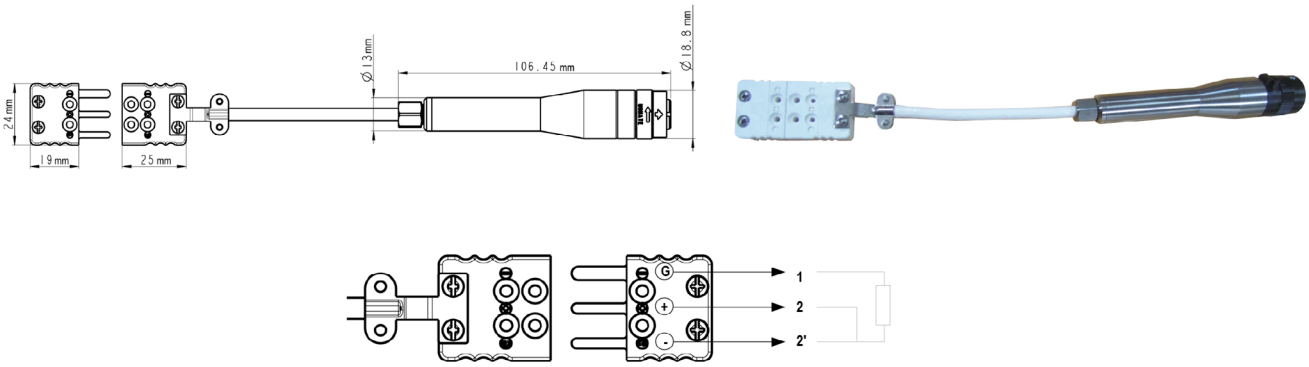
Ref.: STS-13



Measuring range	From -20 to 80°C
Accuracy*	±0.3% of reading ±0.25°C
Resolution	0.1°C

Interchangeable adapter for 3-wire Pt100 temperature probe. Allows to connect a 3-wire Pt100 probe to a class 310 sensor. PVC cable, 10 cm length with 1/4 turn connector and 3-point terminal to screw for 3-wire Pt100 probe.

Ref.: STA-13



Measuring range	According to the probe (maximum measuring range in temperature: from -100 to 400°C)
Accuracy*	According to the probe
Resolution	0.1°C

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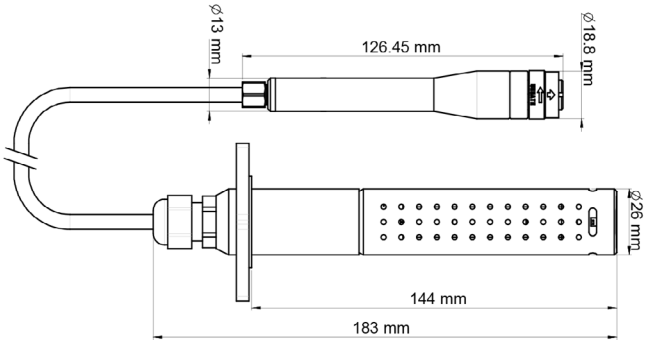
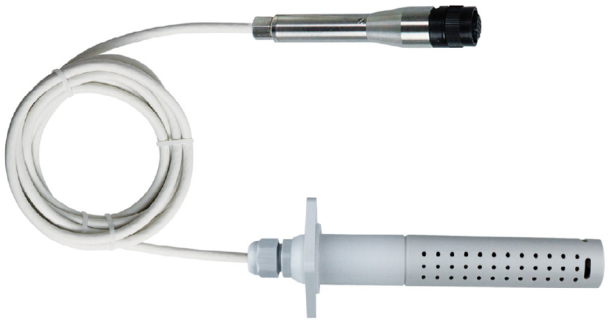
CO_2 / Temperature and CO / Temperature probes

Interchangeable CO_2 and temperature probe or CO and temperature in ABS V0. Remote probe 144 mm length, 26 mm diameter. White PVC cable 2 m length with watertight 1/4 turn connector. Supplied with mounting flange and adjustment certificate.
Ref.: SCO2 / SCCO

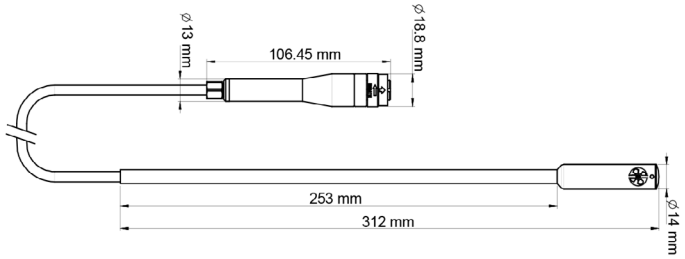




	CO_2 - temperature probe	CO - temperature probe
Measuring range	From 0 to 5000 ppm and from 0 to 50°C	From 0 to 500 ppm and from 0 to 50°C
Accuracy*	**CO_2**: from 0 to 5000 ppm: ±3 % of reading ±50 ppm **NTC temperature**: ±0.3 °C	**CO**: ±3 ppm or 3% of the measured value **NTC temperature**: ±0.3 °C
Resolution	0.1 ppm / 0.1°C	0.1 ppm / 0.1°C

Air velocity and temperature probes

Interchangeable air velocity and temperature remote with Ø14 mm vane, 300 mm length, white PVC cable 2 m length with watertight 1/4 turn connector.
Ref.: SVH-14 (Ø14 mm vane probe)

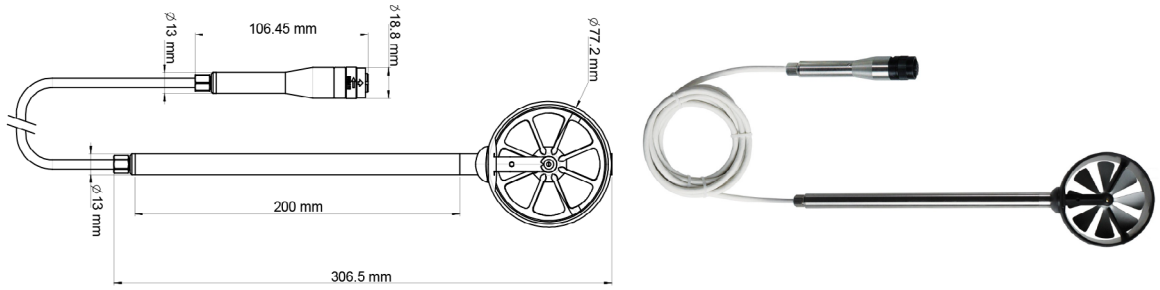


Measuring range	From 0 to 25 m/s / From -20 to 80 °C / From 0 to 99 999 m^3/h
Accuracy*	**Air velocity**: from 0.8 to 3 m/s: ±3% of reading ±0.1 m/s / from 3.1 to 25 m/s: ±1% of reading ±0.3 m/s **Pt100 temperature**: ±0.4% of reading ±0.3°C **Airflow**: ±3% of reading or ± 0.03 x sheath area (cm^2)
Resolution	0.1 m/s ; 0.1°C ; 0.1 m^3/h

*All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

Interchangeable air velocity and temperature remote probe with Ø 70 mm vane, 200 mm length, white PVC cable 2 m length with watertight 1/4 turn connector.

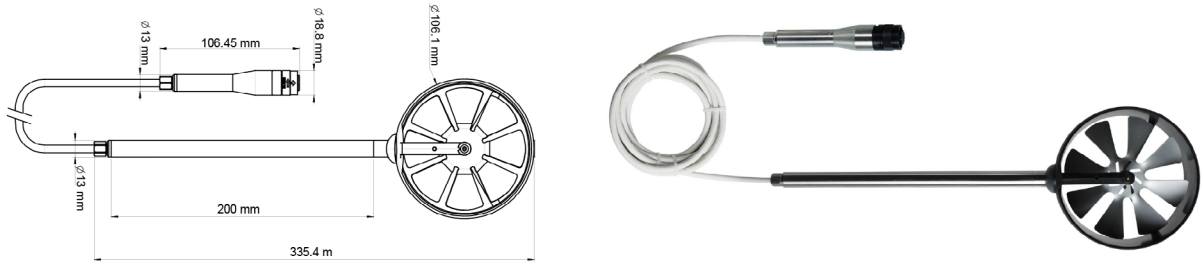
Ref.: SVH-70 (Ø70 mm vane probe)



Measuring range	From -5 to 35 m/s / From -20 to 80°C / From 0 to 99 999 m³/h
Accuracy*	**Air velocity**: from 0.4 to 3 m/s: ±3% of reading ±0.1 m/s / from 3.1 to 35 m/s: ±1% of reading ±0.3 m/s **Pt100 temperature**: ±0.4% of reading ±0.3°C **Airflow**: ±3% of reading or ±0.03 x sheath area (cm²)
Resolution	0.1 m/s / 0.1°C / 0.1 m³/h

Interchangeable air velocity and temperature remote probe with Ø 100 mm vane, 200 mm length, white PVC cable 2 m length with watertight 1/4 turn connector.

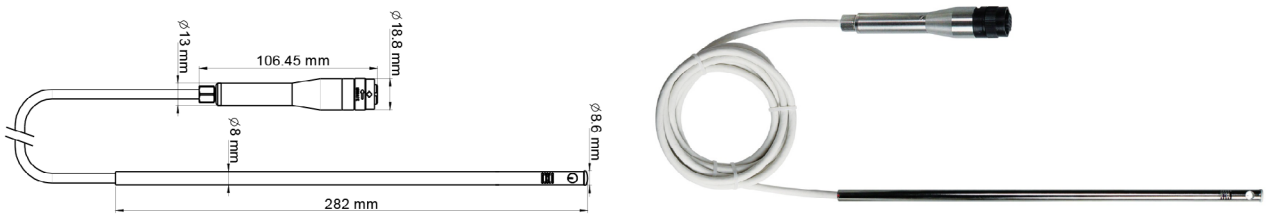
Ref.: SVH-100 (Ø100 mm vane probe)



Measuring range	From -5 to 35 m/s / From -20 to 80°C / From 0 to 99 999 m³/h
Accuracy*	**Air velocity**: from 0.3 to 3 m/s: ±3% of reading ±0.1 m/s / from 3.1 to 35 m/s: ±1% of reading ±0.3 m/s **Pt100 temperature**: ±0.4% of reading ±0.3°C **Airflow**: ±3% of reading or ±0.03 x sheath surface (cm²)
Resolution	From -5 to -3 m/s: 0.1 m/s; from -3 to 3 m/s: 0.01 m/s; from 3 to 35 m/s: 0.1 m/s / 0.1°C; 0.1 m³/h

Interchangeable air velocity and temperature remote hot-wire probe in stainless steel 280 mm length, 8 mm diameter, white PVC cable 2 m length with watertight 1/4 turn connector.

Ref.: SVS (hotwire probe)



Measuring range	From 0 to 30 m/s / From 0 to 50°C / From 0 to 99 999 m³/h
Accuracy*	**Air velocity**: from 0 to 3 m/s: ±3% of reading ±0.03 m/s / from 3.1 to 30 m/s: ±3 % of reading ±0.1 m/s **Pt100 temperature** : ±0.3% of reading ± 0.25°C **Airflow**: ±3% of reading or ±0.03 x sheath surface (cm²)
Resolution	From 0 to 3 m/s: 0.01 m/s; from 3 to 30 m/s: 0.1 m/s; 0.1°C; 0.1 m³/h

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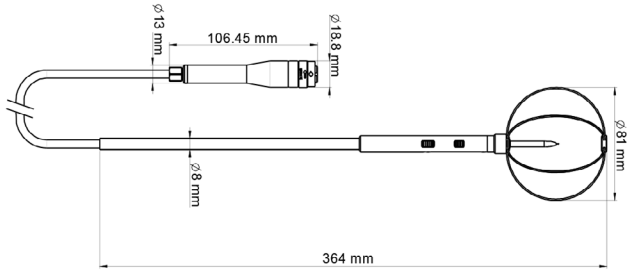
Interchangeable air velocity and temperature remote omnidirectional hot-wire probe in stainless steel 300 mm length, 8mm diameter, white PVC cable 2 m length with watertight 1/4 turn connector. Supplied with carrying case and tripod.
Ref.: SVO (omnidirectional probe)



Measuring range	From 0 to 5 m/s / from 0 to 50 °C
Accuracy*	**Air velocity**: ±3% of reading ±0.05 m/s **Pt100 1/3 DIN temperature**: ±0.3% of reading ±0.25°C
Resolution	0.1 m/s / 0.1°C

Interchangeable boards

Pressure board

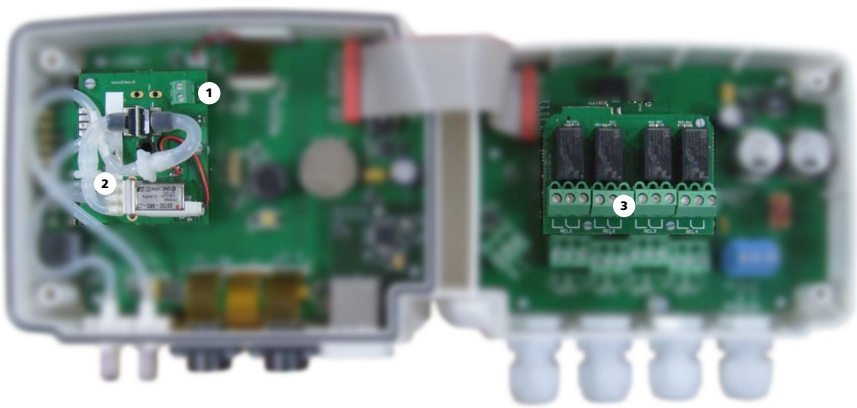
Interchangeable pressure board with solenoid valve and a terminal for K thermocouple probe for C 310 and CA 310 sensors. Supplied with pressure connectors and silicone tubes..
Ref. : SPI2-100 / SPI2-500 / SPI2-1000 / SPI2-10000

	Pressure	Temperature K thermocouple
Measuring range	**SPI2-100**: from -100 to 100 Pa **SPI2-500**: from -500 to 500 Pa **SPI2-1000**: from -1000 to 1000 Pa **SPI2-10000**: from -10000 to 10000 Pa	From -200 to 1300°C (according to the probe)
Accuracy*	**SPI2-100**: ±0.2% of reading ±0.8 Pa **SPI2-500**: ±0.2% of reading ±2 Pa **SPI2-1000**: ±0.2% of reading ±2 Pa **SPI2-10000**: ±0.2% of reading ±10 Pa	±1.1°C or ±0.4% of reading value**
Resolution	0.1 1 Pa / 0.1 mmH_2O / 0.01 mbar 0.01 inWG / 0.01 mmHg / 0.1 daPa / 0.001 kPa 0.01 hPa / 0.1 °C	0.1°C / 0.1°F

The SPI2 pressure boards for C 310 and CA 310 sensors have a temperature compensation of the gain from 0 to 50°C and an auto-calibration process which guarantee an excellent stability and a perfect reliability of the measurement as much in low as high range over time.
Auto-calibration principle: the microchip of the sensor manages a solenoid valve which compensates the drift of the sensitive element over time. The zero-point adjustment is ensured by this compensation. The differential pressure measurement is then independent from the environmental conditions of the sensor.

Solenoid valve lifetime: 100 million of cycles
Advantage: no zero-point drift
Periodicity of the auto-calibration: from 1 to 60 minutes, or deactivated.

1. Terminal block for K thermocouple probe
2. Example of SPI2 pressure board on C 310 transmitter
3. Relay board C4R on C 310 transmitter



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**The accuracy is expressed by a gap in °C, or by a percentage of the read value. Only the bigger value is held.

Relay board

3 A 4-relay board with 3-point terminal block for C310 transmitter.

Ref.: C4R

Atmospheric pressure board

Interchangeable atmospheric pressure board for C310 and CA310 sensors, range 800-1100 hPa. Supplied with pressure connectors and silicone tube.

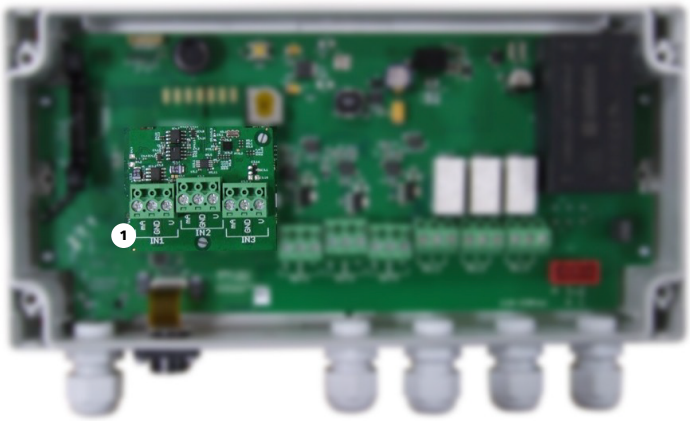
Ref.: SPI2-ATMO

Measuring range	From 800 to 1100 hPa
Accuracy*	±2 hPa
Resolution	0.1 mbar / 0.01 mmHg / 0.1 hPa

Current / Voltage boards

Interchangeable board, 3 current / voltage analogic input: 0-20 mA / 4-20 mA and 0-2,5 V / 0-5 V / 0-10 V, with terminals, CA310 transmitter.

Ref.: MVA



1. Example of MVA current / voltage board on CA 310 transmitter

Measuring range	0 – 20 mA / 4 – 20 mA / 0 – 2.5 V / 0 – 5 V / 0 – 10 V
Accuracy*	0 – 20 mA: ±0.01 mA / 4 – 20 mA: ±0.01 mA / 0 – 2.5 V: ±0.002 V / 0 – 5 V: ±0.005 V / 0 – 10 V: ±0.010 V

Extensions for probes

5 m extension for class 310 interchangeable probe.

Ref.: R310-5

10 m extension for class 310 interchangeable probe.

Ref.: R310-10

Adaptation cable, to connect an interchangeable probe to a CPE310. Length: 30 cm.

Ref.: CA-CPE

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Protection tips for Ø13 mm humidity probes

Tips protect against the following external aggressions:

- Water droplets: EPFT
- Shavings: EPI25 and EPFI
- Dust: EPFI
- Chemical products and grease: EPFT
- H_2O_2 (hydrogen peroxide): EPH2O2

Part numbers	 EPP2	 EPI25	 EPI100	 EPFI	 EPFT	 EPH202
Features	Cap: ABS[1] Filter: meshed, 316 L stainless steel 30 mm length	Cap: 316 L stainless steel[2] Filter: meshed, 316 L stainless steel 30 mm length	Cap: 316 L stainless steel[2] Filter: meshed, 316 L stainless steel 30 mm length	Cap: 316 L stainless steel[2] Filter: sintered, 316 L stainless steel 30 mm length	Cap: PTFE[3] Filter: sintered, PTFE 30 mm length	Cap: MnO_2[4] Filter: sintered, PTFE 33 mm length
Max. particle	25 µ	25 µ	100 µ	25 µ	10 µ	50 µ
Max. air velociy	25 m/s	25 m/s	20 m/s	25 m/s	25 m/s	25 m/s
Max. temperature	80°C	180°C	180°C	180°C	180°C	180°C
Relative humidity	95% RH	95% RH	100% RH	90% RH	90% RH	95% RH
APPLICATIONS						
HVAC air-conditioning system	✓	✓				
Cold storage room			✓		✓	
Industry	✓	✓	✓	✓	✓	
Pharma plants / Microe-lectronics	✓	✓	✓	✓	✓	✓
Dryer				✓	✓	
Curing				✓		
Swimming-pool					✓	

[1] ABS: white acrylonitrile butadiene styrene

[2] Stainless steel: 316 L

[3] PTFE: white Polytetrafluoroethylene

[4] MnO_2: manganese dioxide

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