

Pressure / Temperature / Humidity / Air Velocity / Airflow / Sound level

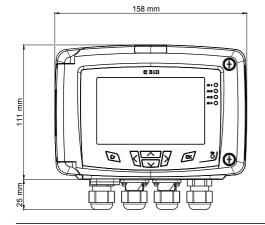
Multifunction transmitter

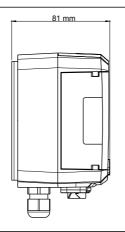
C 310

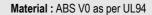
KEY POINTS

- 2 inputs for interchangeable probes
- 1 location for interchangeable SPI-2 board
- Simultaneous display of 1 to 4 parameters
- Trend indicator
- 4 visual (dual-color LEDs) and audible alarms
- 2 analogue outputs (4 wires) 0/5-10 V or 0/4-20 mA, 2 additional outputs (optional)
- 4-relay board (optional)
- 24 Vdc/Vac or 115/230 Vac power supply
- Outputs diagnostic
- Ethernet communication (optional)
- MODBUS network RS485 system (optional)
- ABS housing with stainless steel front, IP65, with or without backlit graphic display
- "1/4 turn" system mounting with wall-mount plate









Protection: IP65

Display: Graphic from 1 to 4 lines, 240 x 128 px;

Size: 86 x 51 mm,

Backlit

Height of digits: Values: 10 mm; Units: 5 mm

Cable gland: in polyamide for cables Ø 9 mm maximum

Weight: 700 g

PART NUMBERS

- C310-BO: multifunction transmitter, 24 Vac/Vdc power supply, with display
- C310-BN: multifunction transmitter, 24 Vac/Vdc power supply, without display
- C310-HO: multifunction transmitter, 115-230 Vac power supply, with display
- C310-HN: multifunction transmitter, 115-230 Vac power supply, without display

TECHNICAL SPECIFICATIONS

Power supply	24 Vac / Vdc ±10 % 115 Vac to 230 Vac ±10 %, 50-60 Hz
Outputs	2 x 0/4-20 mA or 2 x 0-5/10 V (4 wires) or 4 x 0/4-20 mA or 4 x 0-5/10 V (optional) Maximum load : 500 Ohms (0/4-20 mA) / Minimum load : 1 K Ohms (0-5/10 V)
Galvanic isolation	Inputs (power supply) and outputs (on 115 Vac/230 Vac models) Outputs (on 24 Vac/Vdc models)
Consumption	10 W
Relays	4 RCR relays 5 A / 230 V (optional)
Conformity	CEM 2004/108/CE and NF EN 61010-1 directives
Electrical connections	Screw terminal block for cables from 0.05 to 2.5 mm ² or from 30 to 14 AWG
RS485 communication	Digital : Modbus RTU protocol, configurable communication speed from 2400 to 115200 Bauds (optional)
Ethernet communication	Ethernet communication module allowing transmission, monitoring and maintenance of transmitters via an Ethernet network in 10 BASE-T and 100 BASE-TX LAN/WAN supporting TCP/IP protocol (optional)



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TECHNICAL SPECIFICATIONS

Environment and type of fluid	Air and neutral gases
Liviloilileit and type of hald	All and neutral gast

Operating/Storage temperature From -10 to +50 °C / From -10 to +70 °C

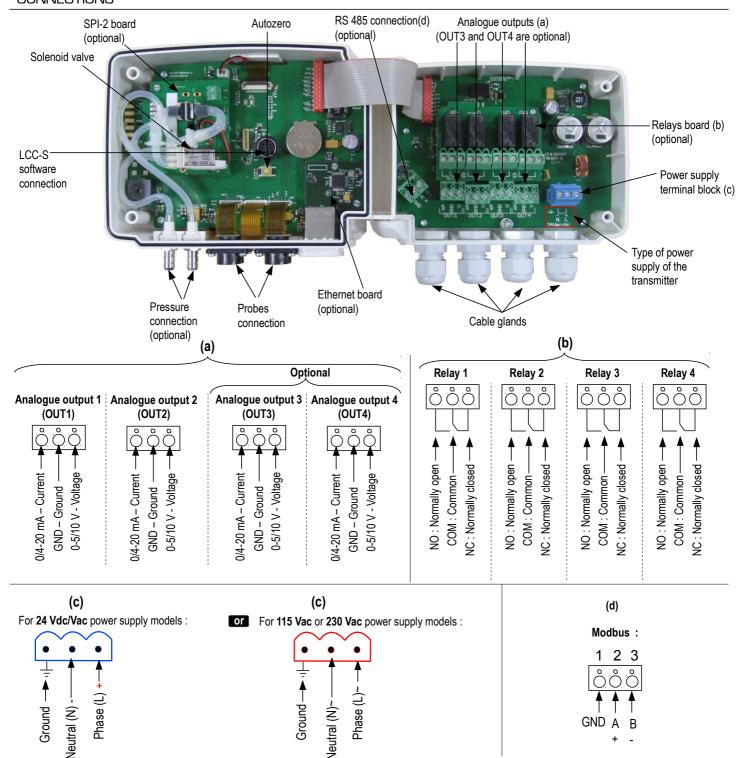
RELAYS AND ALARMS

The **C 310** transmitter has 4 independent and configurable alarms: these are visual and audible alarms and it is possible to couple them with 4 relays (optional).

Available settings:

- Selection of the parameter (pressure, air velocity, temperature,...)
- Time-delays duration from 0 to 600 s
- · Alarm action: rising edge, falling edge, monitoring or state of the transmitter
- Operating mode of the relays : negative or positive safety (optional)
- Activation of the audible alarm (buzzer) that can be acknowledged by the front keypad (optional)



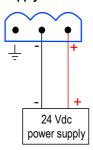


ELECTRICAL CONNECTIONS - as per NFC15-100 Norm

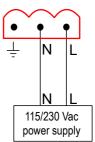


This connection must be made by a qualified technician. Whilst making the connection, the transmitter must not be energized.

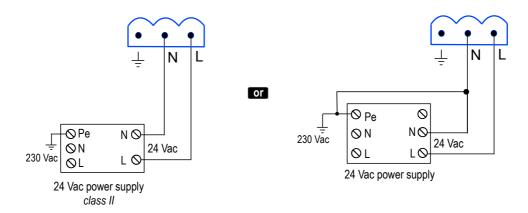
For 24 Vdc power supply models:



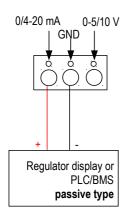
For 115 Vac or 230 Vac power supply models:



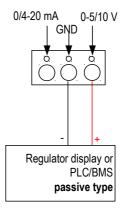
For 24 Vac power supply models :



> 0/4-20 mA current output connection :



> 0-5/10 V voltage output connection :



RS 485 MODBUS PROTOCOL (optional)

Class 310 transmitters can be linked in one network operating on a RS485 home bus.

The RS 485 digital communication is a 2-wire network, on which the transmitters are connected in parallel. They are connected to a PLC/BMS via the RTU Modbus communication system. Since the C310 can be configured with the keypad, the MODBUS enables remote configuration, to measure 1 or 2 parameters or to see the status of the alarms...

ETHERNET BOARD (optional)

An Ethernet board can put put on a C310 transmitter allowing for each transmitter to have a specific configurable IP address. So the user can remotely interrogate the transmitter, retrieve data, modify the configuration,...

It is also possible to integrate C310 transmitters into a computer network via the RJ45 connection located at the bottom of the transmitter.



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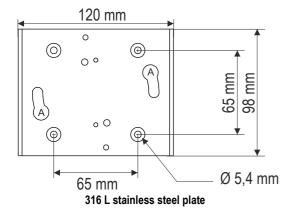
CONFIGURATION

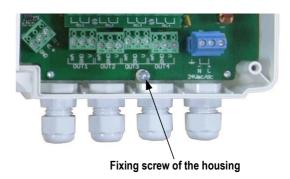
Class 310 transmitters allows you to set all the parameters managed by the transmitter: units, measuring ranges, alarms, outputs, channels... via the different methods shown below:

- > Via keypad, only on models with display. A code-locking system for keypad guarantees the security of the installation. See configuration manual.
- > Via software (optional): simple and user-friendly. See LCC-S user manual.
- > Via Modbus (optional): configuration of all parameters from your PC, via the supervision or data acquisition software.
- > Via Ethernet (optional): configuration of all parameters from your PC, via the supervision or data acquisition software.

MOUNTING

To install the transmitter on a wall, fix the stainless steel plate to the wall (drilling: Ø8 mm, screws and wall-plugs supplied). Insert the transmitter on the plate (see A on the drawing below) by aligning it at 30°. Rotate the housing in clockwise direction until you heard a "click" which confirms that the transmitter is correctly installed. Open the housing, lock the clamping system of the housing on the plate with the screw (see photo below). To remove the transmitter from the fixing plate, do not forget to remove this screw.





CALIBRATION

Adjusting and calibration on site: the professional configuration interface, with a dynamic pressure calibration bench, allows you to adjust and calibrate your transmitters directly on site or in laboratories.

Outputs diagnostics: with this function, you can check with a multimeter (or on a regulator/display, or on a PLC/BMS) if the transmitter outputs work properly. The transmitter generates a voltage of 0 V, 5 V and 10 V or a current of 0 mA, 4 mA, 12 mA and 20 mA

Certificate: transmitters are supplied with an individual adjusting certificate and can be supplied with a calibration certificate as an option.

MAINTENANCE

Avoid aggressive solvents. When cleaning rooms or ducts with products containing formol, protect the the transmitter.

OPTIONS

- LCC-S: configuration software with USB cable.
- SQR/3 function: (square root extraction) function for the calculation of air velocity and airflow.
- RS5: RS 485 Protocol Modbus digital output
- O2S: 2 additional analogue output
- C4R: 4 relays board
- **CETHE**: Ethernet network board
- HRP: high resolution (example in pressure: 0.1 Pa) with SPI2-100 board
- Calibration certificate



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Temperature, hygrometry, CO and CO₂ probes for class 310 transmitters



STAINLESS STEEL HYGROMETRY/TEMPERATURE PROBE

Stainless steel interchangeable hygrometry and ambient temperature probe with stainless steel filter. Standard mounting probe 120 mm length with hermetic connector 1/4 de tour. Optional : protection tips, filters.

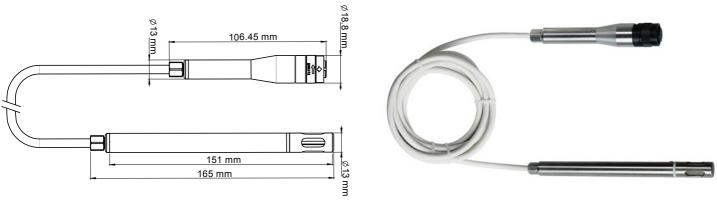
Ref: SHSI



Measuring ranges	From 5 to 95%RH and from -20 to 80 °C
Accuracy*	Hygrometry: - Accuracy** (Repeatability, linearity, hysteresis): $\pm 1.5\%$ RH (from 15°C to 25°C) - Factory calibration uncertainty: $\pm 0.88\%$ RH - Temperature dependence: $\pm 0.04 \times (T-20)\%$ RH (if T<15°C or T>25°C) Pt100 temperature: $\pm 0.3\%$ of reading ± 0.25 °C
Resolution	0.1 %RH / 0.1 °C

Stainless steel interchangeable hygrometry and ambient temperature probe with stainless steel filter. Remote probe 150 mm length, 13 mm diameter. White silicone cable 2 m length with hermetic connector. Optional: protection tips, filters.

Ref: SHDI-150



Measuring ranges	From 5 to 95%RH and from -40 to +180 °C
Accuracy*	Hygrometry : - Accuracy** (Repeatability, linearity, hysteresis) : $\pm 1.5\%$ RH (from 15°C to 25°C) - Factory calibration uncertainty : $\pm 0.88\%$ RH - Temperature dependence : $\pm 0.04 \times (T-20)\%$ RH (if T<15°C or T>25°C) Pt100 temperature : $\pm 0.3\%$ of reading ± 0.25 °C
Resolution	0.1 %RH / 0.1 °C

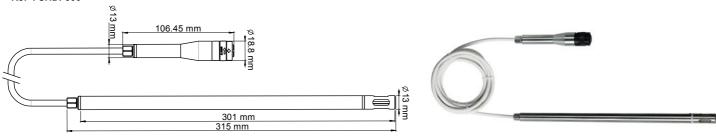
^{*}All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

As per NFX 15-113 and the Charter 2000/2001 HYGROMETERS, GAL (Guaranteed Accuracy Limit) which has been calculated with a coverage factor value of 2 is ±2.88%RH between 18 and 28°C on the measuring range from 5 to 95%RH. Sensor drift is less than 1%RH/year.



Tel. +41 (0)56 222 38 18 n Fax +41 (0)56 222 10 12 Stainless steel interchangeable hygrometry and ambient temperature probe with stainless steel filter. Remote probe 300 mm length, 13 mm diameter. White silicone cable 2 m length with hermetic connector. Optional: protection tips, filters.

Ref: SHDI-300



Measuring ranges From 5 to 95%RH and from -40 to +180 °C

Accuracy*

Hygrometry:

- Accuracy** (Repeatability, linearity, hysteresis): ±1.5%RH (from 15°C to 25°C)

- Factory calibration uncertainty: ±0.88 %RH

- Temperature dependence: ±0.04 x (T-20) %RH (if T<15°C or T>25°C)

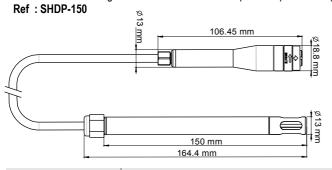
Pt100 temperature: ±0.3% of reading ±0.25°C

Resolution

0.1 %RH / 0.1 °C

POLYCARBONATE HYGROMETRY/TEMPERATURE PROBE

Polycarbonate interchangeable hygrometry and ambient temperature probe with stainless steel filter. Remote probe 150 mm length, 13 mm diameter. White silicone cable 2 m length with hermetic connector. Optional: protection tips, filters.





Measuring ranges From 5 to 95%RH and from -20 to +80 °C

Accuracy*

Hygrometry:

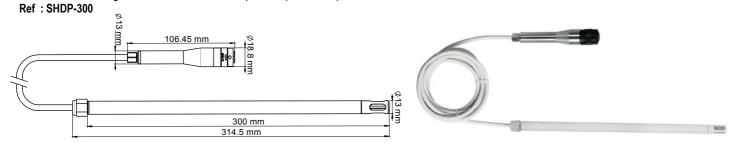
- Accuracy** (Repeatability, linearity, hysteresis) : $\pm 1.5\%$ RH (from 15°C to 25°C)
- Factory calibration uncertainty: ±0.88 %RH
- Temperature dependence: ±0.04 x (T-20) %RH (if T<15°C or T>25°C)

Pt100 temperature: ±0.3% of reading ±0.25°C

Resolution

0.1 %RH / 0.1 °C

Polycarbonate interchangeable hygrometry and ambient temperature probe with stainless steel filter. Remote probe 300 mm length, 13 mm diameter. White silicone cable 2 m length with hermetic connector. Optional: protection tips, filters.



Measuring ranges From 5 to 95%RH and from -20 to +80 °C

Accuracy*

Hygrometry:

- Accuracy** (Repeatability, linearity, hysteresis): ±1.5%RH (from 15°C to 25°C)
- Factory calibration uncertainty: ±0.88 %RH
- Temperature dependence: ±0.04 x (T-20) %RH (if T<15°C or T>25°C)

Pt100 temperature: ±0.3% of reading ±0.25°C

Resolution

0.1 %RH / 0.1 °C

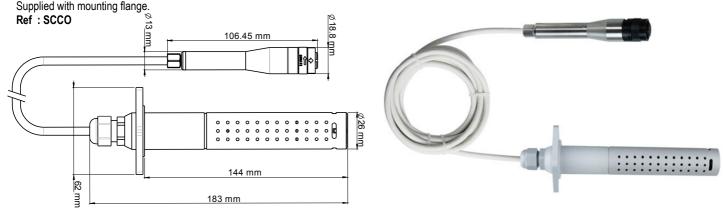
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As per NFX 15-113 and the Charter 2000/2001 HYGROMETERS, GAL (Guaranteed Accuracy Limit) which has been calculated with a coverage factor value of 2 is ±2.88%RH between 18 and 28°C on the measuring range from 5 to 95%RH. Sensor drift is less than 1%RH/year.



CO / TEMPERATURE PROBE

ABS V0 interchangeable CO and temperature probe. Remote probe 160 mm length, 26 mm diameter. White PVC cable 2 m length with hermetic connector.



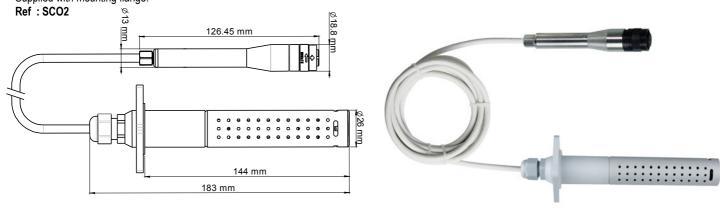
 Measuring ranges
 From 0 to 500 ppm and from 0 to 50 °C

 Accuracy*
 CO: ±3% ppm or 3% of measured value NTC temperature: ±0.3 °C

 Resolution
 0.1 ppm / 0.1 °C

CO₃ / TEMPERATURE PROBE

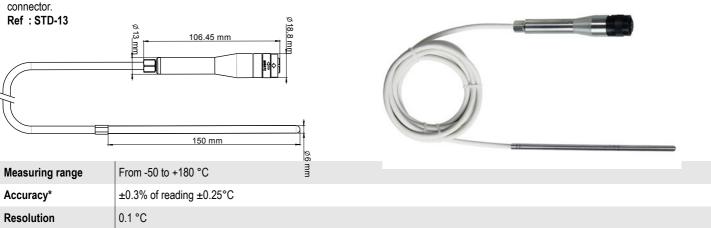
ABS V0 interchangeable CO₂ and temperature probe. Remote probe 160 mm length, 26 mm diameter. White PVC cable 2 m length with hermetic connector. Supplied with mounting flange.



Measuring ranges	From 0 to 5000 ppm and from 0 to 50 °C Other available range in CO ₂ : from 0 to 20 000 ppm
Accuracy*	CO ₂ : from 0 to 5000 ppm: ±3% of reading ±50ppm from 0 to 20 000 ppm: ±5% of reading ±100 ppm NTC temperature: ±0.3 °C
Resolution	0.1 ppm / 0.1 °C

TEMPERATURE

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



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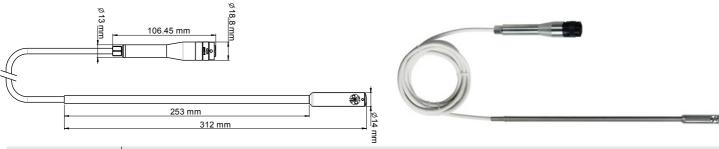
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Air velocity and temperature probes for class 310 transmitters

> SVH-14 : Ø14 mm vane

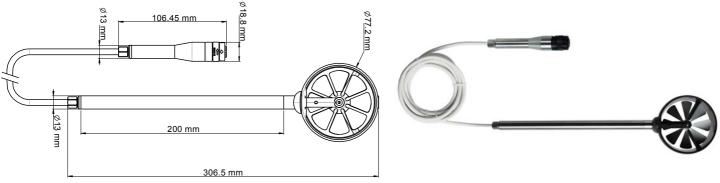
Interchangeable remote air velocity and temperature probe with Ø 14 mm vane, 300 mm length, white PVC cable 2 m length with hermetic connector.



Measuring rangesFrom 0 to 25 m/s / from -20 to +80 °C / from 0 to 99999 m³/hAccuracy*Air velocity: from 0.8 to 3 m/s: $\pm 3\%$ of reading ± 0.1 m/s; from 3.1 to 25 m/s: $\pm 1\%$ of reading ± 0.3 m/sPt100 temperature: $\pm 0.4\%$ of reading ± 0.3 °C / Airflow: $\pm 3\%$ of reading or ± 0.03 * area (cm²)Resolution0.1 m/s / 0.1 °C / 0.1 m³/h

> SVH-70 : Ø70 mm vane

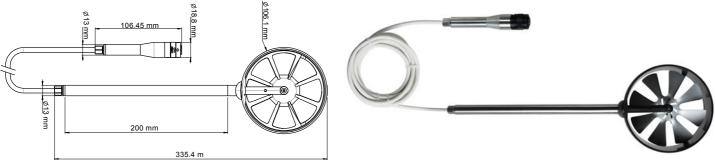
Interchangeable remote air velocity and temperature probe with Ø 70 mm vane, 300 mm length, white PVC cable 2 m length with hermetic connector.



Measuring ranges	From -5 to 35 m/s / from -20 to +80 °C / from 0 to 99999 m ³ /h
	Air velocity : from 0.4 to 3 m/s : $\pm 3\%$ of reading ± 0.1 m/s ; from 3.1 to 35 m/s : $\pm 1\%$ of reading ± 0.3 m/s Pt100 temperature : $\pm 0.4\%$ of reading ± 0.3 °C / Airflow : $\pm 3\%$ of reading or ± 0.03 *area (cm²)
Resolution	0.1 m/s / 0.1 °C / 0.1 m ³ /h

> SVH-100 : Ø100 mm vane

Interchangeable remote air velocity and temperature probe with Ø 100 mm vane, 300 mm length, white PVC cable 2 m length with hermetic connector.



Measuring ranges	From -5 to 35 m/s / from -20 to +80 °C / from 0 to 99999 m³/h
Accuracy*	Air velocity: from 0.3 to 3 m/s: $\pm 3\%$ of reading ± 0.1 m/s; from 3.1 to 35 m/s: $\pm 1\%$ of reading ± 0.3 m/s Pt100 temperature: $\pm 0.4\%$ of reading ± 0.3 °C / Airflow: $\pm 3\%$ of reading or ± 0.03 *area (cm²)
	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 $0.1 ^{\circ}$ C / 0.1 m ³ /h

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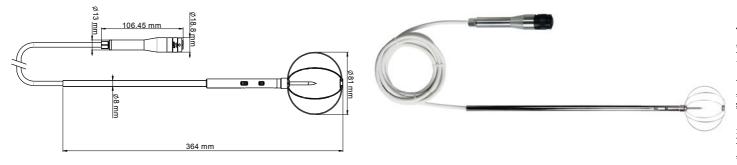
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Measuring ranges	From 0 to 30 m/s / from -20 to +80 °C / from 0 to 99999 m³/h
	Air velocity: from 0 to 3 m/s: $\pm 3\%$ of reading ± 0.03 m/s; from 3.1 to 30 m/s: $\pm 3\%$ of reading ± 0.1 m/s Pt100 temperature 1/3 DIN: $\pm 0.3\%$ of reading ± 0.25 °C / Airflow: $\pm 3\%$ of reading or ± 0.03 *area (cm²)
Resolution	0.1 m/s / 0.1 °C / 0.1 m³/h

SVO : Omnidirectional

Interchangeable stainless steel omnidirectional remote probe of air velocity and temperature 300 mm length, 8 mm diameter, white PVC cable 2 m length with hermetic connector. Supplied with transport case and tripod.



Measuring ranges	From 0 to 5 m/s / from 0 to +50 °C
Accuracy*	Air velocity: \pm 3% of reading \pm 0.05 m/s / Pt100 temperature 1/3 DIN: \pm 0.3% of reading \pm 0.25°C
Resolution	0.01 m/s / 0.1 °C

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Accessories and interchangeable boards for class 310 transmitters

SPI-2 PRESSURE BOARD

Interchangeable pressure board with solenoid valve and terminal block for K thermocouple probe for C310 and CA310 transmitters. Supplied with pressure connections and silicone tubes.

Ref: SPI2-100 **SPI2-500** SPI2-1000 SPI2-10000

Pressure

Measuring ranges	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
Accuracy*	SPI2-100 : $\pm 0.2\%$ of reading ± 0.8 Pa SPI2-500 : $\pm 0.2\%$ of reading ± 2 Pa SPI2-1000 : $\pm 0.2\%$ of reading ± 2 Pa SPI2-10000 : $\pm 0.2\%$ of reading ± 10 Pa
Units and resolution	1 Pa / 0.1 mmH ₂ O / 0.01 mbar / 0.01 inWG / 0.01 mmHG / 0.1daPa / 0.001 kPa / 0.01 hPa

Thermocouple K temperature

Measuring range	From -200 to +1300 °C (according to probe)
Accuracy*	±1.1 °C ou ±0.4% of reading value ¹
Units and resolution	0.1 °C / 0.1 °F

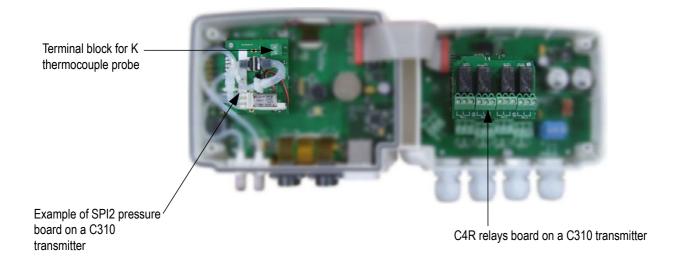
These SPI2 pressure boards for C310 and CA310 transmitters have a temperature compensation system from 0 to 50°C and a self-calibration system to guarantee an excellent long-term stability, along with a great measurement accuracy.

Self-calibration principle: the microprocessor of the transmitter drives a solenoid valve that compensates any long-term drifts of the sensitive element. The compensation is made by regular adjustment of the zero. The differential pressure measurement is then made regardless of the environmental conditions of the transmitter.

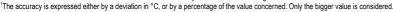
Solenoid valve lifetime: 100 million cycles

Advantage: no zero drift

Self-calibration frequency: can be disabled or set from 1 to 60 minutes



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Measuring range	From 800 to 1100 hPa
Accuracy*	±2 hPa
Units and resolution	0.1mbar / 0.1mmHG / 0.1hPa

RELAYS BOARD

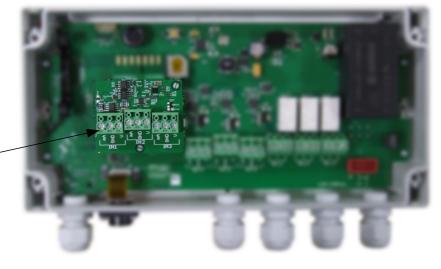
4 relays interchangeable board 3 A with 3 points terminal block for **C310 transmitters**.

Ref: C4R

CURRENT / VOLTAGE BOARD

Interchangeable board 3 current/voltage analogue inputs: 0-20 mA / 4-20 mA and 0-2.5 V / 0-5 V / 0-10 V, with terminal block, for CA310 transmitter.

Ref: MVA



Example of MVA current/voltage board on a CA310 transmitter

ACCESSORIES FOR PROBES

5 m extension for class 310 interchangeable probes

Ref: R310-5

10 m extension for class 310 interchangeable probes

Ref: R310-10

Adapter cable allowing to connect an interchangeable probe on a CPE310 transmitter.

Ref: CA-CPE

Ventilated system of protection for temperature and hygromety probes. 13 mm diameter. 24 Vcc power supply. Duct diameter: 125 mm, 250 mm length with protection cap. Supplied with 2 attaching collars.

Ref: PEM-V13

OTHER ACCESSORY

KSFO: Swivelling stainless steel fixing support for class 310 transmitters with fixing bracket. Adjustment with knurled screw.



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