



DATA SHEET

# CPE 310-S / CPE 311-S

## Flush-mount multifunction pressure transmitter

Supplied with  
ADJUSTMENT  
certificate



**Input for interchangeable probe (Class 310)**

**3 analogue outputs 0-5/10 V or 0/4-20 mA**

**3 audible and visual alarms**

**RS485 Modbus RTU (optional)**

### Features

- Measuring ranges:  
CPE 310-S: from -100 to +100 Pa  
CPE 311-S: from -1000 to +1000 Pa
- Front face differential pressure calibration
- Alternating display of 1 to 3 parameters
- Configurable measuring ranges
- Front face keypad allowing to configure the transmitter and acknowledge the alarm
- 3 analogue outputs 0-5/10V or 0/4-20 mA
- High resolution in pressure on model -100/+100 Pa (ex: 0.1 Pa) (optional)
- Outputs diagnostic
- Front face made of brushed stainless steel with electroluminescent display

### Technical features in pressure

Measuring range	CPE 310- S: from -100 to +100 Pa / CPE 311-S: from -1000 to +1000 Pa
Measurement units	Pa, mmH <sub>2</sub> O, mbar, inWG, mmHG, daPa, hPa
Accuracy*	CPE 310-S: ±0.2% of reading ±0.8 Pa / CPE 311-S: ±0.2% of reading ±2 Pa
Zero drift	None (see "Self-calibration" on page 2)
Resolution	1 Pa, 0.1 mmH <sub>2</sub> O, 0.01 mbar, 0.01 inWG, 0.01 mmHG, 0.1 daPa, 0.01 hPa
Auto-calibration	Manual or automatic (configurable)
Allowed overpressure	25 000 Pa
Response time	1/e (63 %) 0.3 s
Type of fluid	Air and neutral gases

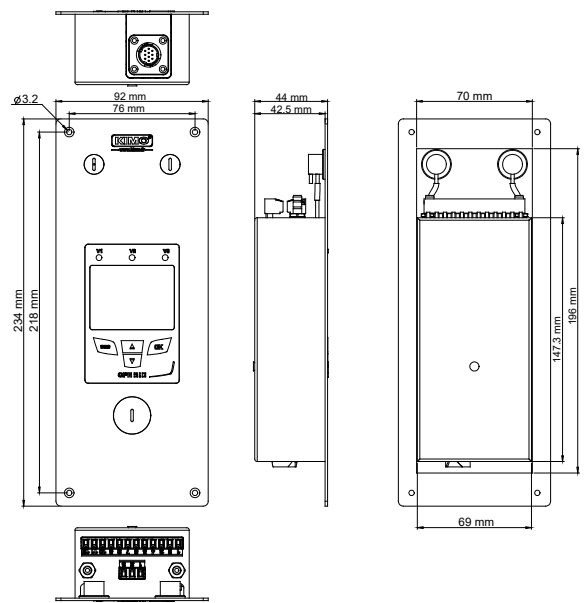
\*All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

## General features

Power supply	24 Vac / Vdc ±10%
Output	3 x 0/4-20 mA or 3 x 0-5/10 V (4 wires) Common mode voltage Maximum load: 500 Ohms (0/4-20 mA) Minimum load: 1 K Ohms (0-5/10 V)
Galvanic isolation	On the output
Consumption	5 VA
Conformity	2014/30/EU EMC; 2014/35/EU Low Voltage; RoHS 2011/65/EU (EU)2015/863; 2012/19/EU WEEE
Electrical connection	Screw terminal block for cables from 0.05 to 1.5 mm <sup>2</sup> or from 30 to 16 AWG Carried out according to the code of good practice
RS485 communication (option)	Digital: ModBus RTU protocol, configurable communication speed from 2400 to 115200 Bauds
Visual alarm	Blinking of the value
Audible alarm	Buzzer (70 dB at 10 cm)
Environment and type of fluid	Air and neutral gases
Conditions of use (°C/%RH/m)	From -10 to +50 °C. In non-condensing condition. From 0 to 2000 m
Storage temperature	From -10 to +70 °C

## Features of housing

Front face	Brushed stainless steel 316 L
Back housing	Flush-mount in stainless steel 304 L
Protection	IP65 in front face
Display	Electroluminescent alphanumeric (38 x 48 mm) Protection screen made of inactinic red PMMA
Height of the digits	14 mm
Back fittings	Barbed fitting Ø5.2 mm
Weight	640 g



All dimensions are in mm.

## Self-calibration

Class 310 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

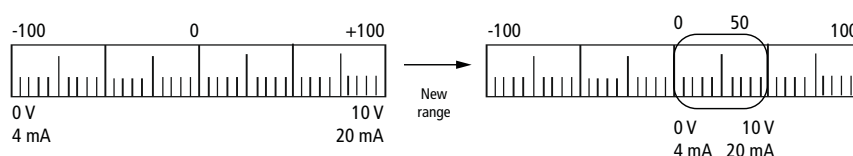
**Advantage:** no zero drift

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

## Configurable analogue outputs

Range with centre zero (-50/0/+50 Pa), with offset zero (-30/0/+70 Pa) or standard range (0/+100 Pa), it is possible to configure your own intermediate ranges. The minimum configurable range is 10% of the full scale.

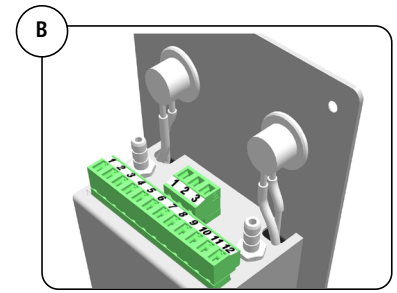
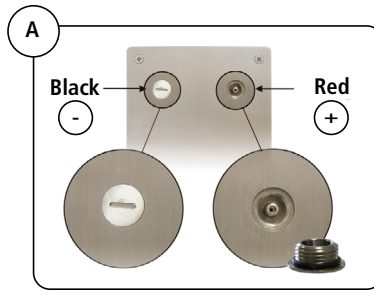
**Configurable ranges according to your needs: outputs are automatically adjusted to the new measuring ranges**



## Innovations

### Adjustable pressure connections

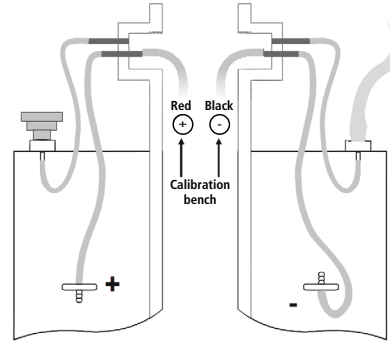
The CPE310-S and CPE 311-S transmitter have a two adjustable pressure connections system in front face (A) coupled with two pressure connections at the back (B). When installing the transmitter, this system allows to configure the differential pressure connections with a set of plugs (supplied with the transmitter).



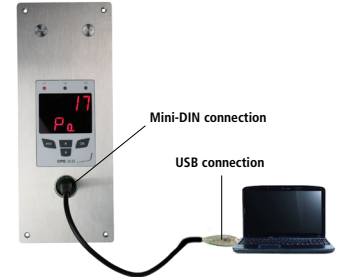
### Front face calibration

This system allows to isolate the back pressure connections and then to access the sensitive element (on the front face) of the pressure transmitter.

Without dismantle the transmitter, this system allows to calibrate by connecting the transmitter to a pressure generator and a calibration bench. The calibration is easier and faster.



### Front face computer connection



## Alarms

The CPE310-S and CPE311-S pressure transmitter have 3 visual and audible alarms that are independent and configurable. Available settings are the followings:

- Time-delay duration: from 0 to 600 s
- Thresholds values
- Action of the alarm: rising edge, falling edge or monitoring
- Audible alarm activation (buzzer)

## Integration of pressure measurement

The pressure measurement element is very sensitive and reacts to pressure changes. When making measurements in unstable air movement conditions, the pressure measurement may fluctuate. The integration coefficient (from 0 to 9) makes an average of the measurements; this helps to avoid any excessive variations and guarantees a stable measurement.

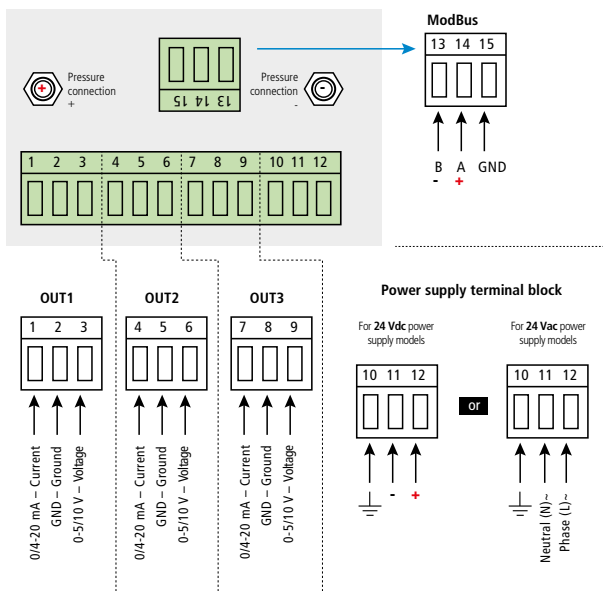
## Possible optional measurements

The following probes and boards are available as option for C310 transmitters. For further details please see the technical data sheet of probes for class 310 transmitters.

### Probes

Probes	Measuring ranges
Stainless steel or polycarbonate hygrometry / temperature probe	From 0 to 100% RH and from -40 to +180 °C (according to probe)
Air velocity vane probe: air velocity / temperature / airflow	From -5 to 35 m/s (according to probe) / From -20 to +80 °C / From 0 to 99 999 m³/h
Air velocity hotwire probe: air velocity / temperature / airflow	From 0 to 30 m/s / From -20 to +80 °C / from 0 to 99 999 m³/h
Omnidirectional probe: air velocity / temperature	From 0 to 5 m/s and from 0 to 50 °C
Pt100 1/3 DIN temperature probe	From -50 to +180 °C / From -20 to +80 °C
CO / temperature probe	From 0 to 500 ppm and from 0 to 50 °C
CO <sub>2</sub> / temperature probe	From 0 to 5000 ppm and from 0 to 50 °C

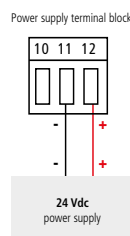
## Connections



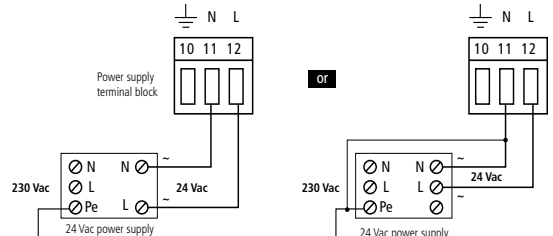
## Electrical connections as per NFC15-100 standard

**Warning:** This connection must be made by a qualified technician. To make the connection, the transmitter must not be energized.

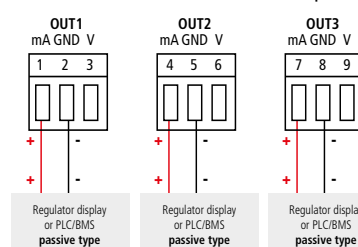
For 24 Vdc power supply models:



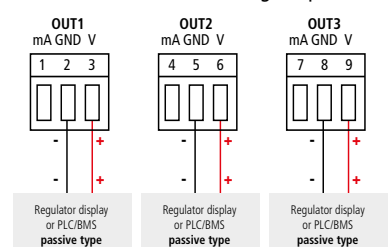
For 24 Vac power supply models:



Connection of the 0/4-20 mA current output:



Connection of the 0-5/10 V voltage output:



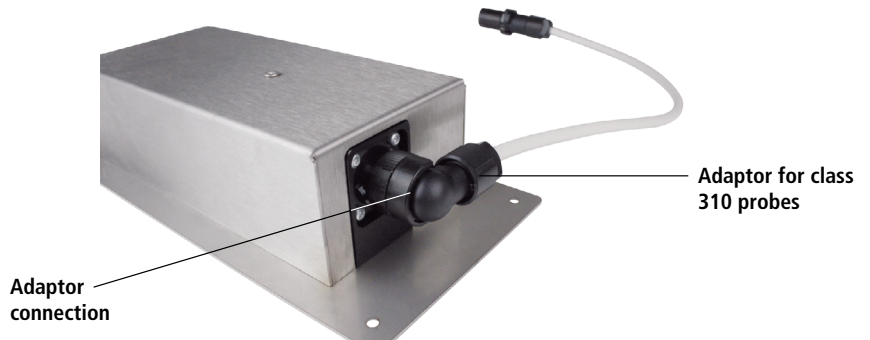
## RS 485 ModBus protocol

Class 310 transmitters can be linked in one network operating on a RS 485 bus. The RS 485 digital communication is a 2-wire network, on which the transmitters are connected in serial. They are connected to a PLC/BMS via the ModBus RTU communication system, allowing the acquisition of the measurements and the alarms by a regulation or monitoring system. The ModBus output allows to acquire the measurements or to see the status of the alarms, ...

## Input for class 310 interchangeable probes

The input for interchangeable probes allows to connect directly on CPE 310-S or CPE 311-S transmitter, via the adaptor cable, an interchangeable probe of the class 310 range (see technical datasheet of probes for class 310 transmitters).

**Advantage:** the CPE 310-S and CPE 311-S centralise, in addition of the pressure, temperature and humidity measurements of a SHDI150 probe for example.



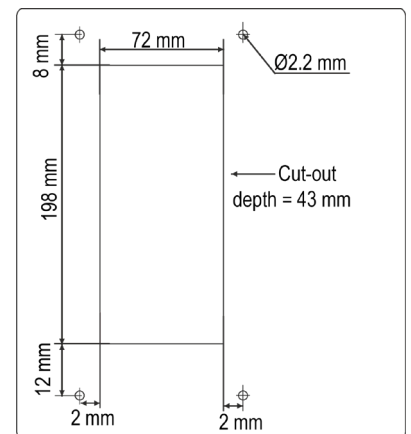
## Configuration

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 the configuration manual.
- **Via software (optional)**: simple and user-friendly. See LCC-S user manual.

## Mounting

To install a transmitter on a wall, make a cutting of 198 x 72 mm in the wall. Then drill 4 holes around the cutting as shown beside. Insert the transmitter into the wall and fix it with the 4 screws (supplied with the transmitter).



## Calibration

**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:** please avoid any aggressive solvents. Please protect the transmitter and its probes from any cleaning product containing formalin, that may be used for cleaning rooms or ducts.

**Precautions for use:** please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the device.

## Accessories

Description	Reference
Configuration software with USB cable	LCC-S (code 24106)
RS 485 Protocol Modbus digital output	RS5 (code 24437)
High resolution (example in pressure: 0.1 Pa) for CPE 310-S	HRP (code 24438)
Calibration certificate	Ask your sales representative
Sliding fittings	See the corresponding data sheet
Connection fitting	See the corresponding data sheet
Clear tube	See the corresponding data sheet
Pressure connections, trough-connections	See the corresponding data sheet

Only the accessories supplied with the device must be used.