

DATA SHEET



CP 210-R

Temperature and differential pressure transmitter



Range from ± 100 to $\pm 10\,000$ Pa
(according to model, see "Part number")



Two 4-wire analogue output
0-5/10 V or 0/4-20 mA



2 relay outputs



ABS V0 housing, IP65,
with or without display

Features

- Input Pt100 on terminal block for temperature measurement, range from -100 to +400°C (probes as option)
- Configurable intermediate ranges
- Power supply 24 Vdc/Vac or 100-240 Vac
- Trend indicator
- "1/4 turn" system mounting with wall-mount plate
- Solenoid valve for auto-calibration (only on CP211 and CP212 models)

Part number

CP 21	-		-		-		-	R
Measuring range		Power Supply / Output		Display		Relay outputs		
1: -100/+100 Pa		B: 24 Vac/Vdc		O: with display				
2: -1000/+1000 Pa		H: 100-240 Vac		N: without display				
3: -10 000/+10 000 Pa								

Example: CP 211 – H0 – R

Pressure transmitter -100/+100 Pa measuring range, with 100-240 Vac power supply, with display and relay outputs.

Technical specifications

Parameters	Accuracies*	Response time	Resolution	Tolerated overpressure
Pressure	CP211/212: $\pm 0.5\%$ of reading ± 2 Pa CP213: $\pm 0.5\%$ of reading ± 10 Pa	1/e (63%) 0.3 s	CP211/212: 1 Pa; 0.1 mmH ₂ O; 0.01 mbar; 0.01 inWG; 0.01 mmHG; 0.1 daPa; 0.001 kPa; 0.01 hPa CP213: 1 Pa; 0.1 mmH ₂ O; 0.01 mbar; 0.01 inWG; 0.01 mmHG; 0.1 daPa; 0.01 kPa; 0.01 hPa	CP211/212: 21 000 Pa CP213: 69 000 Pa
Pt100 temperature	CP211/212/213 (Pt100 temperature): $\pm 0.5\%$ of reading $\pm 0.5^\circ\text{C}$	1/e (63%) 0.3 s	0.1 °C ; 0.1 °F	-

*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.

General features

Power supply	24 Vac / Vdc ±10% 100-240 Vac, 50-60 Hz Warning: risk of electric shock 
Output	2 x 4-20 mA or 2 x 0-20 mA or 2 x 0-5 V or 2 x 0-10 V (4 wires) Common mode voltage <30 VAC Maximum load: 500 Ohms (0/4-20 mA) Minimum load: 1 K Ohms (0-5/10 V)
Relay outputs	2 changeover relays NO: 5A / NC: 3A / 240 Vac
Galvanic isolation	Inputs and outputs (100-240 Vac models) Device fully protected by DOUBLE ISOLATION or REINFORCED ISOLATION Outputs (24 Vac/Vdc models) 
Consumption	CP210-B: 6 VA / CP210-H: 8 VA
Electrical connection	Screw terminal block for cables 2.5 mm². Carried out according to the code of good practice
PC communication	USB-Mini Din cable
Environment	Air and neutral gases
Autozero	Manual by push-button; Automatic by solenoid valve (only CP211/CP212)
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
Security	Protection class II; Pollution degree 2; Overvoltage category 2 (OVCI)
European directives	2014/30/EU EMC; 2014/35/EU Low Voltage; 2011/65/EU RoHS II; 2012/19/EU WEEE

Airflow and Air Velocity functions

Class 210 transmitters have 2 analogue outputs that correspond to both displayed parameters. It is possible to activate one or two outputs and select for each output between pressure, air velocity and air flow (functions as option).

Linked to a differential pressure device (Debimo blade, Pitot tube, orifice plate, ...), they can be equipped as option with the SQR 3 function (square root function) allowing to calculate the air velocity and/or air flow in a duct from a differential pressure.

Functions / Features	Measuring ranges	Units and resolutions
Air velocity*	From 3 to 85 m/s (according to model)	0.1 m/s 0.1 fpm
Airflow*	From 0 to 99 999 dam³/h (according to air velocity and section)	1 m³/h – 0.1 m³/s – 1 dam³/h 0.1 l/s – 1 cfm

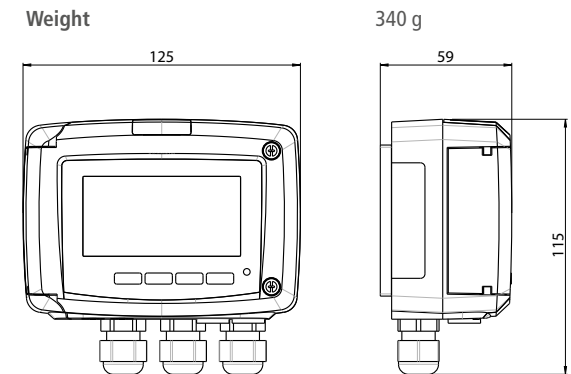
*Differential pressure device (Pitot tube, Debimo...) as option

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 and then helps avoid any excessive variations; it guarantees a stable measurement.

Housing features

Material	ABS V0 according to UL94
Protection	IP65
Display	75 x 40 mm, LCD 19 digits 2 lines Height of digits: Values: 10 mm; Units: 5 mm
Connection	Ribbed Ø6.2 mm (CP211/212/213)
Pass-through	For cables Ø6 mm maximum
Cable gland	For cables Ø8 mm maximum



All dimensions are in millimeters.

Configurable intermediate or center zero ranges

Transmitters	Pressure range	Air velocity range*
CP211	-100/+100 Pa	From 3 to 10 m/s
CP212	-1000/+1000 Pa	From 3 to 30 m/s
CP213	-10 000/+10 000 Pa	From 3 to 85 m/s

*These air velocity ranges are given for information, based on a L type Pitot tube and do not take into account temperature compensation.

• Air Velocity calculation :
$$V = C_M \sqrt{\frac{2 \Delta P}{\rho}}$$

$$\rho = \frac{P_o}{287.1 \times (\Theta + 273.15)}$$

- Air flow calculation: air flow (m³/h) = air velocity (m/s) x surface (m²) x 3600

Surface: setting of duct type (rectangular or circular) and duct size (mm or inch).

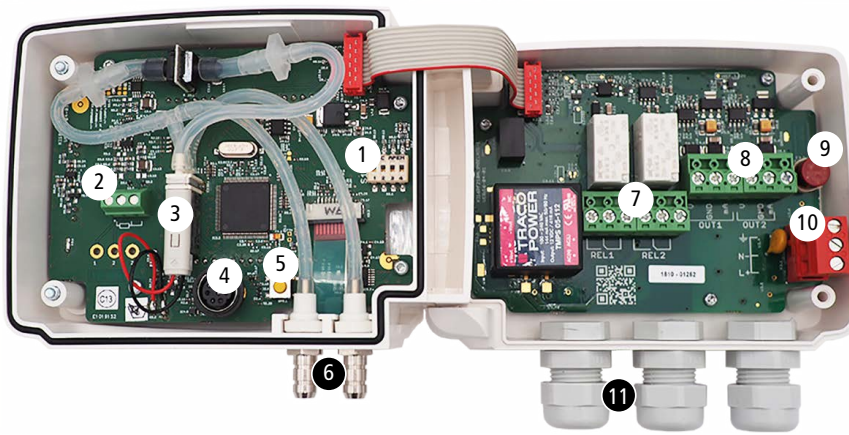
With:

- C_M : differential pressure device coefficient
 - Pitot tube type L: $C_M = 1.0015$
 - Pitot tube type S: $C_M = 0.84$
 - Debimo blade: $C_M = 0.8165$

Θ : given temperature (°C)

P_o : given atmospheric pressure (Pa)

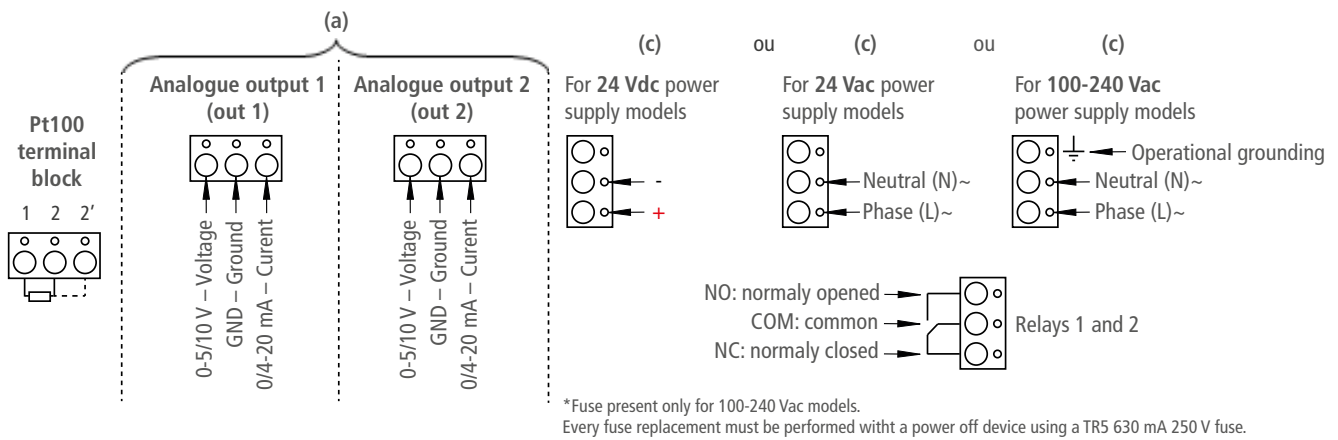
Connections



1. DIP switch (d)
2. Pt100 terminal block
3. Solenoid valve (only on CP211/212)
4. LCC-S software connection
5. Autozero
6. Pressure connections
7. Relays
8. Analogue outputs (a)
9. F3.20* fuse
10. Power supply terminal block (c)
11. Cable glands

Power supply type (b) specified on the label on the side of the transmitter

CP212-HXX-R	CP212-BXX-R
Power supply: 100-240 Vac 50-60 Hz 8 VA	Power supply: 24 Vac/Vdc $\pm 10\%$ 50-60 Hz 6 VA
Output: 0/4...20 mA / 0...5/10 V	Output: 0/4...20 mA / 0...5/10 V
100-240 Vac	24 Vac/Vdc

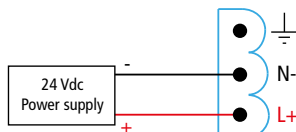


Electrical connections as per NFC15-100 standard

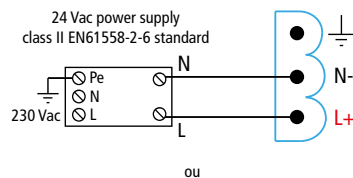


This connection must be made by a formed and qualified technician. To make the connection, the transmitter must not be energized. Before making the connection, you must first check the power supply indicated on the transmitter board (see (b) on "Connections" part). The presence of a switch and a circuit breaker upstream the device is compulsory

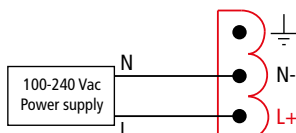
- For transmitters with 24 Vdc power supply:



- For transmitters with 24 Vac power supply:



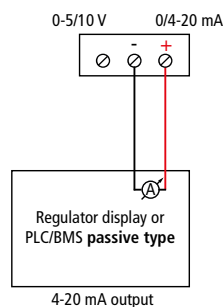
- For transmitters with 100-240 Vac power supply:



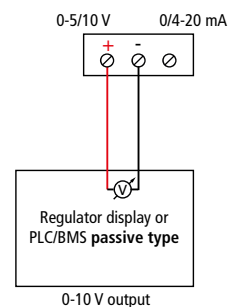
The selection of the output signal in voltage (0-10 V or 0-5 V) or in current (4-20 mA or 0-20 mA) is made via the DIP switch (d) of the electronic board of the transmitter: put the on-of switches as shown in the table below:

Configurations	4-20 mA	0-10 V	0-5 V	0-20 mA
Combinations				

- Connection of the output in current 4-20 mA:



- Connection of output in voltage 0-10 V:



On 100-240 Vac models, if a fuse protection is used for the power line, it is imperative to use delayed-action fuses in order to absorb the surge of current when first turned on the transmitter.

