

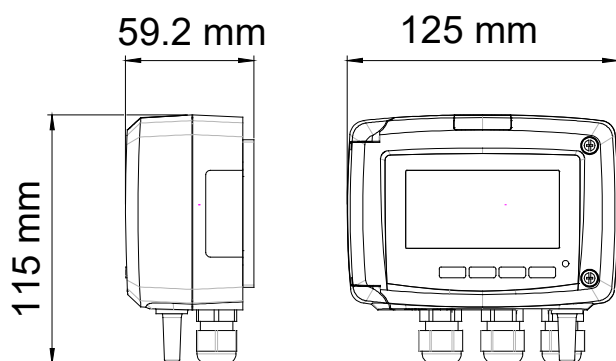
Air velocity and air flow transmitter CP 218 / CP 219

Features

- Designed to measure air velocity and air flow for HVAC application
- CP218 measuring range: 0~30 m/s, 0~1000 Pa, 0~99 999 m³/h
- CP219 measuring range: 0~100 m/s, 0~10 000 Pa, 0~99 999 m³/h
- Input Pt100 on terminal block for temperature measurement, range from -100 to +400 °C (probe as option)
- Configurable intermediate ranges
- Online auto-zero calibration (CP218) without disconnect tubes and power
- Analogue outputs: two channels (4-wires) of 0~5, 0~10 V, 0~20 mA, 4~20 mA (self-configurable)
- 2 relay outputs
- Power supply: 24 Vac/Vdc or 230 Vac (according to model number)
- Trend indicator
- ABS V0 housing, IP65, with or without display
- Supply with wall-mount plate, transmitter use "1/4 turn" system mounting



Dimensions



Features of housing

Material	ABS V0 as per UL94
Protection	IP65
Display	75 x 40 mm, LCD 20 digits 2 lines. Height of digits: Values: 10 mm; Units: 5 mm
Connection	Ribbed Ø 6.2 mm
Pass-through	For cables Ø 6 mm maximum
Cable gland	For cables Ø 8 mm maximum
Weight	320 g

Part number

CP 21	—	●	—	●	—	●
		Measuring range			Power supply/ Output	Probe type
		8: 0~30 m/s, 0~1000 Pa			B: 24 Vac/Vdc	O: with display
		9: 0~100 m/s, 0~10 000 Pa			H: 230 Vac	N: without display

Example: CP218 – B0

Air velocity and air flow transmitter, power supply 24 Vac/Vdc, with display, range 0~30m/s, 0~1000 Pa.

Technical specifications

Units of measurement	m/s, fpm, m³/h, m³/s, l/s, cfm, Pa, mmH₂O, mbar, inWG, mmHG, daPa, KPa, hPa, °C, °F
Accuracy	±2% of reading (air velocity > 3m/s, airflow) ±0.5% of reading (differential pressure) ±2 °C (temperature)
Response time	1/e (63%) 0.3 S
Resolution	0.1 m/s, 0.1 fpm, 1 m³/h, 0.1 m³/s, 0.1 l/s, 1 cfm, 1 Pa, 0.1 mmH₂O, 0.01 mbar, 0.01 inWG, 0.01 mmHG, 0.1 daPa, 0.001 KPa, 0.01 hPa, 0.1 °C, 0.1 °F
Tolerated overpressure	21000 Pa (CP218), 69000 Pa (CP219)

Air velocity and Air flow function

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.

Linked to differential pressure device (Debimo blade, L type or S type Pilot tube)

Transmitters calculate the air velocity and/ or air flow in a duct from a dynamic pressure.

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

$$\rho = \frac{P_0}{287.1 \times (\Theta + 273.15)}$$

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_0 : given atmospheric pressure (Pa)

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

General features

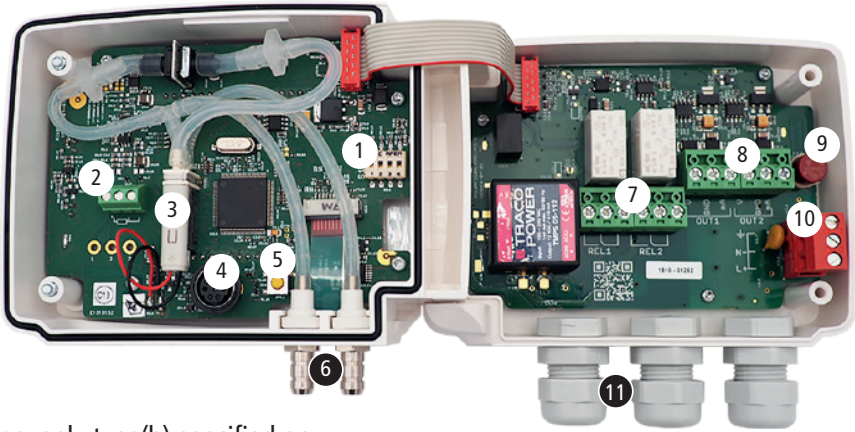
Power supply	24 Vac / Vdc ±10% 230 Vac ±10%, 50-60 Hz Warning: risk of electric shock 
Output	2 x 4~20 mA or 2 x 0~20 mA (4 wires) 2 x 0~5 V or 2 x 0~10 V (4 wires) Maximum load: 500 Ohms (0/4~20 mA) Minimum load: 1 K Ohms (0~5/10 V)
Consumption	6 VA (CP210-B) / 8 VA (CP210-H)
Relay outputs	2 changeover relays: 3A / 230 V
European directives	2014/30/EU EMC; 2014/35/EU Low Voltage; 2011/65/EU RoHS II; 2012/19/EU WEEE
Electrical connection	Screw terminal block for cable 2.5 mm², Carried out according to the code of good practice.
Environment	Air and neutral gases
Auto-zero calibration	CP218 - performed by integrated device, guarantees long-term accuracy and stability of measurement no drift at zero point (Pre-configured auto calibration every 10 minutes)
Manual calibration	Manual by push-button
Type of fluid	Air and neutral gases
Conditions of use (°C/ %RH/ m)	-10~+50°C, in non-condensing condition, 0~2000 m
Storage temperature	-10 ~ +70 °C

Pressure measurement stability coefficient configuration

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 coefficient (from 0 to 9) makes a filtering and average of the measurements and then helps avoid any excessive variations; It guarantees a stable measurement.

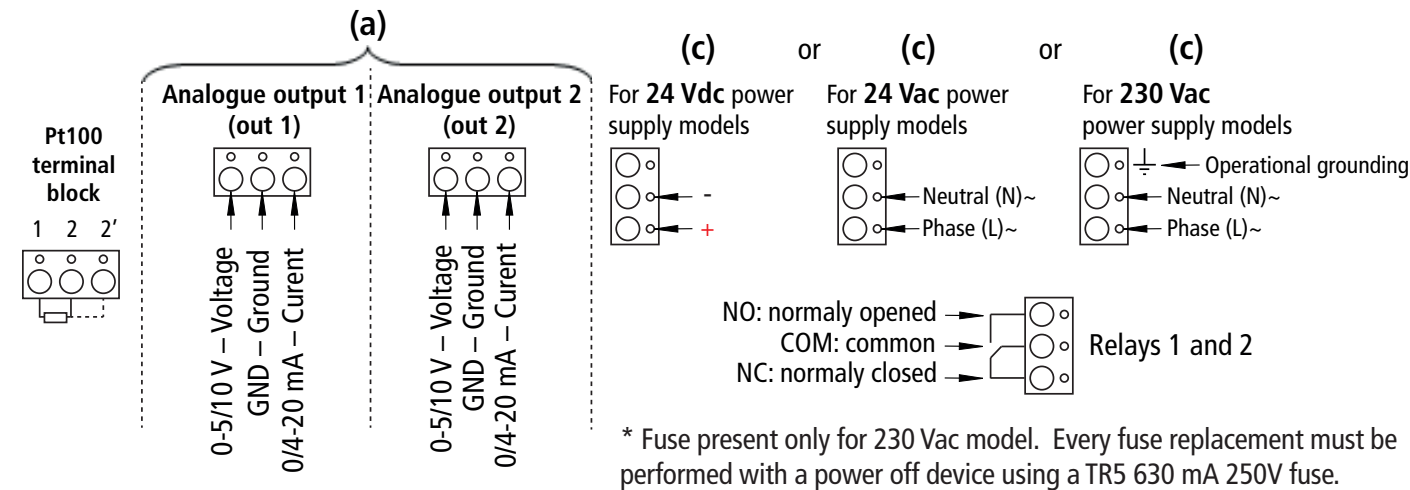
*All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

Connections



1. DIP switch (d)
2. Pt100 terminal block
3. Solenoid valve (only on CP218)
4. LCC-S software connection
5. Manual autozero button
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 transmitter

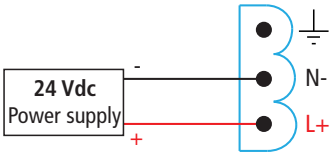


Electrical connections as per NFC15-100 standard

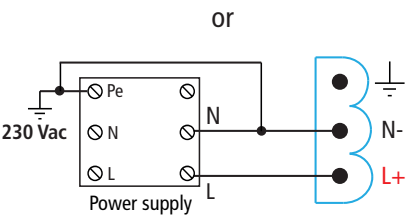
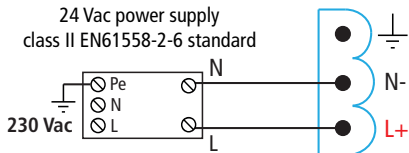


This connection must be made by a formed and qualified technician. To make the connection, the transmitter must not be energized. Before making the connection, you must first check the power supply indicated on the transmitter board (see (b) on "Connections" part). The presence of a switch and a circuit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

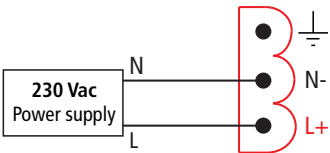
- For transmitters with 24 Vdc power supply:



- For transmitters with 24 Vac power supply:



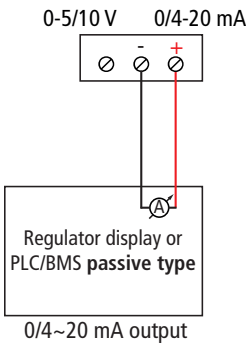
- For transmitters with 230 Vac power supply:



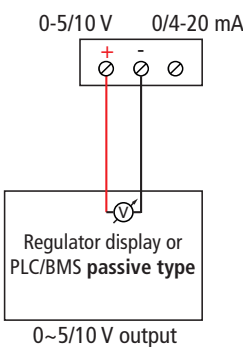
The selection of the output signal in voltage (0-10 V or 0-5 V) or in current (4-20 mA or 0-20 mA) is made via the DIP switch (d) of the electronic board of the transmitter: put the on-of switches as shown in the table below:

Configurations	4~20 mA	0~10 V	0~5 V	0~20 mA
Combinations	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

- Connection output in current:
0/4~20 mA:



- Connection output in voltage:
0~5/10 mA:



On 230 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.

Autozero

Auto-calibration

CP218 transmitters have a temperature compensation of the gain from 0 to 50°C and an auto-calibration process that guarantees over the time an excellent stability and a perfect reliability of the measurement on low and high ranges.

Auto-calibration principle: the microprocessor of the transmitter drives a solenoid valve that compensates the possible drifts on the sensitive element over the time. The compensation is performed by the permanent adjustment of the zero. So the measurement of the differential pressure is then independent from the environmental conditions of the transmitter.

It is not necessary to unplug the 2 pressure connection tubes.

When a auto zero has been performed, "On" green light turns on, and on transmitters equipped with a display, "auto-Z" is displayed.

Advantage: no drift

Frequency of auto-calibration: resetable or from 1 to 60 minutes

Manual-calibration

To perform a manual auto zero calibration, unplug the 2 pressure connections tubes and press the "Autozero" key.

On CP218 transmitters, it is not necessary to unplug the 2 pressure connection tubes.

When an auto zero has been performed, "On" green light turns on, and on transmitters equipped with a display, "auto-Z" is displayed.

Configuration of the transmitters

It is possible to configure all the parameters managed by the transmitter : units, measuring ranges, outputs, channels, calculation functions, etc, via different methods:

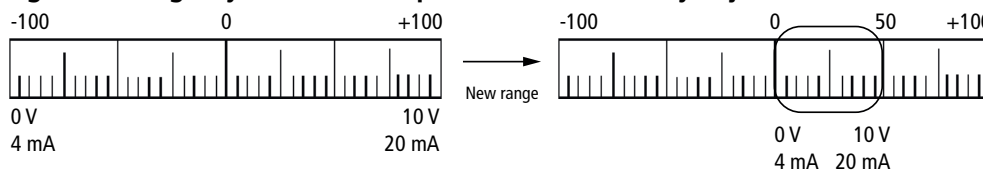
- **Keypad** for models with display : a code-locking system allows to secure the installation (See class 210 user manual).
- **Software** (optional) on all models. Simple user-friendly configuration. See LCC-SD user manual.

Configurable analogue output:

Range with central zero (-50/0/+50 Pa), with offset zero (-300/0/+70 Pa) or standard range (0/+100 Pa), it is possible to configure your own intermediate ranges.

Caution: the minimum difference between the high range and the low range is 20.

Configure the range according to your needs: outputs are automatically adjusted to the new measuring range



Mounting

To mount the transmitter, mount the ABS plate on the wall (drilling: Ø6 mm, screws and pins are supplied). Insert the transmitter on the fixing plate (see A on the drawing be-side). Rotate the housing in clockwise direction until you hear a "Click" which confirms that the transmitter is correctly installed.



Once the transmitter is installed and powered up, please make an autozero to guarantee the correct working of the transmitter in any position.

Maintenance

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

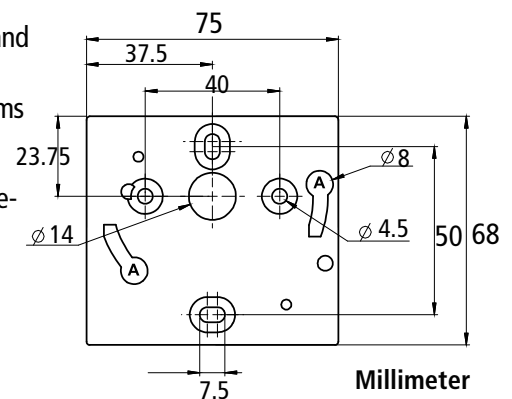
Calibration

Outputs diagnostic: With this function, you can check with a multimeter (or on a regulator / display, or 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 4 mA, 12 mA and 20 mA

Certificate: Class 210 transmitters are supplied with adjusting certificates. Calibration certificates are available as an option.

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.



Options and accessories

- **LCC-S:** configuration software with USB cable
- **Debimo blades**
- **L or S type Pitot tubes**
- **Connection tube**
- **Connection fittings**

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