

Thermo-anemo-manometer  
**MP 210**



KEY POINTS

- Measurement of pressure, air velocity and airflow
- Interchangeable modules
- 2 inputs for Pt100 temperature
- Up to 6 measurements simultaneously
- Large graphic display

CONNECTIONS

**Interchangeable measurement modules**



1 device = several possible ranges and parameters

**Wireless connection**



Device/probe wireless connection

**SMART-2014 system**



Wireless and wired probes automatically recognized



REFERENCES

MP 210 : Only portable instrument



**MP 210 P** : MP 210 + MPR 500 pressure module ( $\pm 500$  Pa pressure module)

**MP 210 M** : MP 210 + MPR 2500 pressure module ( $\pm 2500$  Pa pressure module)

**MP 210 G** : MP 210 + MPR 10 000 pressure module ( $\pm 10000$  Pa pressure module)

Modules with 2 pressure connectors  $\varnothing 6.2$  mm made of nickelled brass and 1 thermocouple input.



**MP 210 H** : MP 210 + MPR 500 M pressure module ( $\pm 500$  mbar pressure module)

**MP 210 HP** : MP 210 + MPR 2000 M pressure module ( $\pm 2000$  mbar pressure module)

Modules with 2 pressure threaded connectors  $\varnothing 4.6$  mm made of nickelled brass and 1 thermocouple input.

The new probes use a mini-DIN cable unique and pluggable that fits on every probes. This cable is supplied with each instrument. The instruments are supplied in a transport case with a calibration certificate, a charger and a USB cable.



# SPECIFICATIONS OF PRESSURE MODULES AND PROBES

## PRESSURE

| Pressure module   | Units  | Measuring ranges     | Accuracies*  | Resolutions                                    | Overpressure allowed |
|-------------------|--|----------------------|--|--|----------------------|
| <b>MPR 500</b>    | Pa, mmH <sub>2</sub> O, In WG, mbar, hPa, mmHg, daPa, kPa  | From 0 to ±500 Pa    | From -100 to +100 Pa : ±0.2% of reading ±0.8 Pa<br>Beyond : ±0.2% of reading ±1.5 Pa | From -100 to +100 Pa : 0.1 Pa<br>Beyond : 1 Pa | 250 mbar             |
| <b>MPR 2500</b>   |  | From 0 to ±2500 Pa   | ±0.2% of reading ±2 Pa   | 1 Pa   | 500 mbar             |
| <b>MPR 10000</b>  |  | From 0 to ±10000 Pa  | ±0.2% of reading ±10 Pa  | 1 Pa   | 1200 mbar            |
| <b>MPR 500 M</b>  | mmH <sub>2</sub> O, In WG, mbar, hPa, mmHg, daPa, kPa, PSI | From 0 to ±500 mbar  | ±0.2% of reading ±0.5 mbar   | 0.1 mbar                                       | 2 bar                |
| <b>MPR 2000 M</b> | bar, In WG, mbar, hPa, mmHg, kPa, PSI                      | From 0 to ±2000 mbar | ±0.2% of reading ±2 mbar   | 1 mbar   | 6 bar                |

Pressure modules also have a thermocouple connection allowing to connect a K, J, T or S thermocouple probe.

| Thermocouple | °C, °F | K : From -200 to +1300°C<br>J : From -100 to +750°C<br>T : From -200 to +400°C<br>S : From 0 to 1760°C | K, J, T : From -200 to 0 °C : ±0.4°C ±0.3 % of reading<br>From 0 to 1300 °C : ±0.4°C<br>S : ±0.6 °C | 0.1 °C<br>0.1 °C<br>0.1 °C<br>0.1 °C |
|--------------|--------|--|---|--------------------------------------|
|              |        |  |   |                                      |

## AIR VELOCITY AND AIRFLOW

Features in air velocity and airflow depend on the type of probe connected on the instrument.

|                               | Units  | Measuring ranges   | Accuracies*  | Resolutions                     |
|-------------------------------|--|--|--|---------------------------------|
| <b>Pitot tube</b>             | Air velocity : m/s, fpm, km/h, mph                       | From 2 to 5 m/s<br>From 5.1 to 100 m/s                         | ±0.3 m/s<br>±0.5% of reading ±0.2 m/s  | 0.1 m/s                         |
|                               | Airflow : m <sup>3</sup> /h, cfm, l/s, m <sup>3</sup> /s | From 0 to 99999m <sup>3</sup> /h                               | ±0.2% of reading ±1% FS  | 1 m <sup>3</sup> /h             |
| <b>Debimo blades</b>          | Air velocity : m/s, fpm, km/h, mph                       | From 4 to 20 m/s<br>From 21 to 100 m/s                         | ±0.3 m/s<br>±1% of reading ±0.1 m/s  | 0.1 m/s                         |
|                               | Airflow : m <sup>3</sup> /h, cfm, l/s, m <sup>3</sup> /s | From 0 to 99999m <sup>3</sup> /h                               | ±0.2% of reading ±1% PE  | 1 m <sup>3</sup> /h             |
| <b>Vane probe<br/>Ø14 mm</b>  | Air velocity : m/s, fpm, km/h                            | From 0 to 3 m/s<br>From 3.1 to 25 m/s                          | From 0.8 to 3 m/s : ±3% of reading ±0.1m/s<br>From 3.1 to 25 m/s : ±1% of reading ±0.3 m/s | 0.1 m/s                         |
|                               | Airflow : m <sup>3</sup> /h, cfm, l/s, m <sup>3</sup> /s | From 0 to 99999 m <sup>3</sup> /h                              | ±3% of reading ou ±0.03*area surface (cm <sup>2</sup> )                                    | 1 m <sup>3</sup> /h             |
|                               | Temperature : °C, °F                                     | From -20 to +80°C  | ±0.4% of reading ±0.3°C  | 0.1 °C                          |
| <b>Vane probe<br/>Ø70 mm</b>  | Air velocity : m/s, fpm, km/h                            | From -5 to 3 m/s<br>From 3.1 to 35 m/s                         | From 0.4 to 3 m/s : ±3% of reading ±0.1m/s<br>From 3.1 to 35 m/s : ±1% of reading ±0.3 m/s | 0.1 m/s                         |
|                               | Airflow : m <sup>3</sup> /h, cfm, l/s, m <sup>3</sup> /s | From 0 to 99999 m <sup>3</sup> /h                              | ±3% of reading ou ±0.03*area surface (cm <sup>2</sup> )                                    | 1 m <sup>3</sup> /h             |
|                               | Temperature : °C, °F                                     | From -20 to +80°C  | ±0.4% of reading ±0.3°C  | 0.1 °C                          |
| <b>Vane probe<br/>Ø100 mm</b> | Air velocity : m/s, fpm, km/h                            | From -5 to 3 m/s<br>From 3.1 to 35 m/s                         | From 0.3 to 3 m/s : ±3% of reading ±0.1m/s<br>From 3.1 to 35 m/s : ±1% of reading ±0.3 m/s | 0.01 m/s<br>0.1 m/s             |
|                               | Airflow : m <sup>3</sup> /h, cfm, l/s, m <sup>3</sup> /s | From 0 to 99999 m <sup>3</sup> /h                              | ±3% of reading or ±0.03*area surface (cm <sup>2</sup> )                                    | 1 m <sup>3</sup> /h             |
|                               | Temperature : °C, °F                                     | From -20 to +80°C  | ±0.4% de la lecture ±0.3°C   | 0.1 °C                          |
| <b>Hotwire probe</b>          | Air velocity : m/s, fpm, km/h                            | From 0.15 to 1 m/s<br>From 0.15 to 3 m/s<br>From 3.1 to 30 m/s | ± 2%of reading ± 0.03 m/s**<br>± 3%of reading ± 0.03 m/s<br>± 3% of reading ± 0.1 m/s      | 0.01 m/s<br>0.01 m/s<br>0.1 m/s |
|                               | Airflow : m <sup>3</sup> /h, cfm, l/s, m <sup>3</sup> /s | From 0 to 99999 m <sup>3</sup> /h                              | ±3% of reading ou ±0.03*area surface (cm <sup>2</sup> )                                    | 1 m <sup>3</sup> /h             |
|                               | Temperature : °C, °F                                     | From -20 to +80°C  | ±0.3% of reading ±0.25°C   | 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.

\*\*Optional specific adjustment and calibration

**MPR 500, MPR 2500 and MPR 10000** pressure modules have 2 pressure connectors Ø 6.2 mm made of nickelled brass and 1 thermocouple input.

**MPR 500 M and MPR 2000 M** have 2 pressure threaded connectors Ø 4.6 mm made of nickelled brass and 1 thermocouple input.

MP 210 instruments have the following functions for the measurements of pressure, air velocity and airflow :

#### PRESSURE

- Automatic autozero with solenoid valve (depending on model)
- Manual autozero (depending on model)
- Pressure integration (0 to 9)
- Point/point average
- Automatic point/point average
- Automatic average

#### AIR VELOCITY AND AIRFLOW

- Large choice of Pitot tube or Debimo blades or factor for other sensing element
- Selection of section
- Selection of units
- Manual or automatic temperature balancing
- Manual atmospheric pressure balancing
- K factor, K2 factor

### TECHNICAL SPECIFICATIONS OF THE MP 210

|                              |  |
|------------------------------|--|
| <b>Connections</b>           | 2 mini-DIN connections SMART-2014 probes and 1 micro-USB port for charging and PC connection             |
| <b>Power supply</b>          | Lithium-Ion battery  |
| <b>Autonomy</b>              | 59 h with pressure module  |
| <b>Memory capacity</b>       | Up to 1000 dataset of 20 000 points  |
| <b>Operating temperature</b> | From 0 to +50 °C   |
| <b>Storage temperature</b>   | From -20 to +80 °C   |
| <b>Auto shut-off</b>         | Adjustable from 15 to 120 minutes or Off   |
| <b>Weight</b>                | 485 g  |
| <b>Operating environment</b> | Neutral gas  |
| <b>Conformity</b>            | EMC 2004/108/CE and EN 61010-1 directives  |
| <b>Languages</b>             | French, English, Dutch, German, Italian, Portuguese, Swedish, Norwegian, Finn, Danish, Chinese, Japanese |

### AVAILABLE PROBES AND MODULES (OPTIONAL)



#### L and S Pitot tubes

Measuring ranges from 2 to 100 m/s and from 0 to 99999 m<sup>3</sup>/h



#### Debimo blades

Measuring ranges from 4 to 100 m/s and from 0 to 99999 m<sup>3</sup>/h



#### 4 thermocouple channels module (M4TC)

Measuring range from -200 to +1760 °C (according to thermocouple type)



#### Hotwire probe\*

Measuring ranges from 0.15 to 30 m/s, from 0 to 99999 m<sup>3</sup>/h and from -20 to +80 °C



#### Vane probe Ø14 mm\*

Measuring ranges from 0 to 25 m/s, from 0 to 99999 m<sup>3</sup>/h and from -20 to +80 °C



#### Vane probe Ø70 mm\*\*

Measuring ranges from -5 to 35 m/s, from 0 to 99999 m<sup>3</sup>/h and from -20 to +80 °C



#### Ø100 mm\*\* vane probe

Measuring ranges from -5 to 35 m/s, from 0 to 99999 m<sup>3</sup>/h and from -20 to +80 °C



#### CO/temperature probe (SCO 110)

Measuring ranges from 0 to 500 ppm and from -20 to +80 °C



#### Gas leak probe (SFG 300)

Measuring range from 0 to 10 000 ppm



#### Optical tachometry probe (STA)

Measuring range from 0 to 60 000 tr/min



#### Contact tachometry probe (STA)

Measuring range from 0 to 20 000 tr/min



**Large choice of temperature probes (see related datasheet) : ambient / contact / penetration / immersion...**

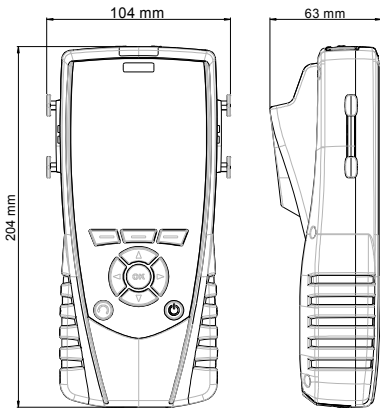
\*Also available in telescopic model / \*\*Also available in telescopic model and in wireless model

## DELIVERY KITS AND OPTIONS

| Description   | MP 210 | MP 210 P | MP 210 M | MP 210 G | MP 210 H | MP 210 HP |
|---|--------|----------|----------|----------|----------|-----------|
| Pressure module from 0 to $\pm 500$ Pa (MPR 500)        | ○      | √        | ○        | ○        | ○        | ○         |
| Pressure module from 0 to 0 to $\pm 2500$ Pa (MPR 2500) | ○      | ○        | √        | ○        | ○        | ○         |
| Pressure module from 0 to $\pm 10000$ Pa (MPR 1000)     | ○      | ○        | ○        | √        | ○        | ○         |
| Pressure module from 0 to $\pm 500$ mbar (MPR 500 M)    | ○      | ○        | ○        | ○        | √        | ○         |
| Pressure module from 0 to $\pm 2000$ mbar (MPR 2000 M)  | ○      | ○        | ○        | ○        | ○        | √         |
| 4 thermocouple channels module (M4TC)                   | ○      | ○        | ○        | ○        | ○        | ○         |
| Hot wire probe (SFC 300)                                | ○      | ○        | ○        | ○        | ○        | ○         |
| Telescopic hot wire probe (SFC 900)                     | ○      | ○        | ○        | ○        | ○        | ○         |
| Vane probe 14 mm (SH 14)                                | ○      | ○        | ○        | ○        | ○        | ○         |
| Telescopic vane probe 14 mm (SHT 14)                    | ○      | ○        | ○        | ○        | ○        | ○         |
| Vane probe 70 mm (SH 70)                                | ○      | ○        | ○        | ○        | ○        | ○         |
| Telescopic vane probe 70 mm (SHT 70)                    | ○      | ○        | ○        | ○        | ○        | ○         |
| Wireless vane probe 70 mm (SHF 70)                      | ○      | ○        | ○        | ○        | ○        | ○         |
| Vane probe 100 mm (SH 100)                              | ○      | ○        | ○        | ○        | ○        | ○         |
| Telescopic vane probe 100 mm (SHT 100)                  | ○      | ○        | ○        | ○        | ○        | ○         |
| Wireless vane probe 100 mm (SHF 100)                    | ○      | ○        | ○        | ○        | ○        | ○         |
| CO / temperature probe (SCO 110)                        | ○      | ○        | ○        | ○        | ○        | ○         |
| Gas leak probe (SFG 300)                                | ○      | ○        | ○        | ○        | ○        | ○         |
| Tachometry probe (STA)                                  | ○      | ○        | ○        | ○        | ○        | ○         |
| Thermocouple K, J, T and S probe                        | ○      | ○        | ○        | ○        | ○        | ○         |
| Pt100 SMART-2014 probe                                  | ○      | ○        | ○        | ○        | ○        | ○         |
| Wireless Pt100 probe                                    | ○      | ○        | ○        | ○        | ○        | ○         |
| 2x1 m of silicone tube $\varnothing$ 4x7 mm             | ○      | √        | √        | √        | ○        | ○         |
| 2x1 m of crystal tube $\varnothing$ 4x6 mm              | ○      | ○        | ○        | ○        | √        | √         |
| Stainless steel tip $\varnothing$ 6x100 mm              | ○      | √        | √        | √        | ○        | ○         |
| Calibration certificate                                 | ○      | √        | √        | √        | √        | √         |
| Transport case  | √      | √        | √        | √        | √        | √         |
| Additional battery                                      | ○      | ○        | ○        | ○        | ○        | ○         |

√ : supplied with      ○ : optional

## FEATURES OF THE HOUSING



**Material :** ABS/PC and elastomer

**Protection :** IP54

**Display :** LCD 120 x 160 px ;  
Dimensions : 58 x 76 mm,  
Backlight  
Display of 6 measurements including 3 simultaneously

**Key pad :** elastomer, 10 keys

## OPERATING PRINCIPLE

### Piezoresistif sensor

Piezoresistif sensor is a diaphragm formed on a silicone substrate, which bends with applied pressure and generates millivoltage or millicurrent proportional to the pressure applied.

### Pitot tube

Dynamic pressure is measured by Pitot tube :

**Pd** = Total pressure (**Pt**) – static pressure (**Ps**)

Velocity is calculated according to Bernoulli simplified formula.

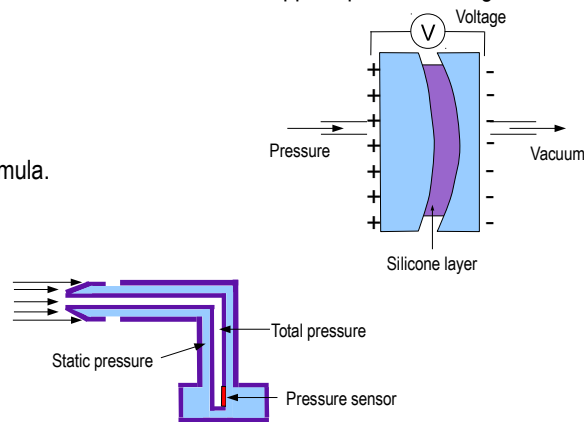
Formula with temperature correction :

$$V_{m/s} = K \times \sqrt{\frac{574,2 \theta + 156842,77}{P_0}} \times \sqrt{\Delta P_{en Pa}}$$

P<sub>0</sub> = Barometric pressure in Pa

θ = Temperature in °C

K = Pitot tube coefficient



## ACCESSORIES



**Datalogger** : PC software for data recording and processing.



**RTE** : Telescopic extension length 1m bent at 90° for measuring probe



**CSM** : Mini-DIN / mini-DIN cable for probe



**KIMP23** : Infrared printer



**SAD** : Backpack

## MAINTENANCE

We carry out calibration, adjustment and maintenance of your devices to guarantee a constant level of quality of your measurements. As part of Quality Assurance Standards, we recommend you to carry a yearly checking.

## WARRANTY PERIOD

Devices have 1-year guarantee for any manufacturing defect (return to our After-Sales Service required for appraisal).

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