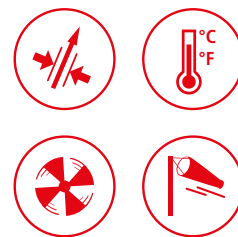


DATA SHEET



MP 210

Thermo-anemo-manometer



**Interchangeable measurement modules**

1 device = several possible ranges and parameters



**SMART-2014 system**

Wireless and wired probes automatically recognized



**Wireless connection**

Device/probe wireless connection



**Supplied with**

calibration certificate

Features

- Pressure, air velocity and air flow measurements
- Up to 6 measurements simultaneously
- 2 inputs for Pt100 temperature (from -200 to +600°C)
- Large graphic display

References

| Reference                                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  MP 210                  | Portable instrument only                                                                                                                                                                                                                                                                                                                                                                                                 | <p>The probes use a mini-DIN cable unique and pluggable that fits on every probes. This cable is supplied with each instrument.</p> <p>The instruments are supplied in a transport case with a calibration certificate, a charger and a USB cable.</p>  |
|  MP 210 + pressure module | <p>MP 210 P: MP 210 + MPR 500 pressure module (<math>\pm 500</math> Pa pressure module)</p> <p>MP 210 M: MP 210 + MPR 2500 pressure module (<math>\pm 2500</math> Pa pressure module)</p> <p>MP 210 G: MP 210 + MPR 10 000 pressure module (<math>\pm 10\,000</math> Pa pressure module)</p> <p>Modules with 2 pressure connectors <math>\varnothing 6.2</math> mm made of nickelled brass and 1 thermocouple input.</p> |                                                                                                                                                                                                                                                                                                                                              |
|  MP 210 + pressure module | <p>MP 210 H: MP 210 + MPR 500 M pressure module (<math>\pm 500</math> mbar pressure module)</p> <p>MP 210 HP: MP 210 + MPR 2000 M pressure module (<math>\pm 2000</math> mbar pressure module)</p> <p>Modules with 2 pressure threaded connectors <math>\varnothing 4.6</math> mm made of nickelled brass and 1 thermocouple input.</p>                                                                                  |                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                              |

## MP 210 General features

|                              |                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------|
| Connections                  | 2 mini-DIN connections SMART-2014 probes and 1 micro-USB port for charging and PC connection                |
| Power supply                 | Lithium-Ion battery                                                                                         |
| Battery life                 | 59 hours with pressure module                                                                               |
| Storage                      | Up to 1000 dataset of 20 000 points                                                                         |
| Conditions of use (°C/%RH/m) | From 0 to +50°C. In non-condensing condition.<br>From 0 to 2000 m.                                          |
| Storage temperature          | From -20 to +80°C                                                                                           |
| Auto shut-off                | Adjustable from 15 to 120 minutes or Off                                                                    |
| Weight                       | 485 g                                                                                                       |
| Operating environment        | Neutral gas                                                                                                 |
| European directives          | 2014/30/EU EMC; 2014/35/EU Low Voltage;<br>2011/65/EU RoHS II; 2012/19/EU WEEE                              |
| Languages                    | French, English, Dutch, German, Italian, Portuguese,<br>Swedish, Norwegian, Finn, Danish, Chinese, Japanese |

## Operating principle

### Piezoresistive 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:

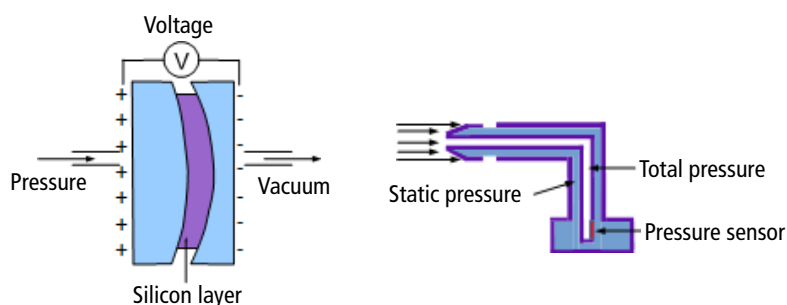
$P_d = \text{Total pressure (P}_t\text{)} - \text{static pressure (P}_s\text{)}$

Velocity is calculated according to Bernoulli simplified formula.

Formula with temperature correction:

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

$P_o$  = Barometric pressure in Pa  
 $\theta$  = temperature in °C  
 $K$  = Pitot tube coefficient



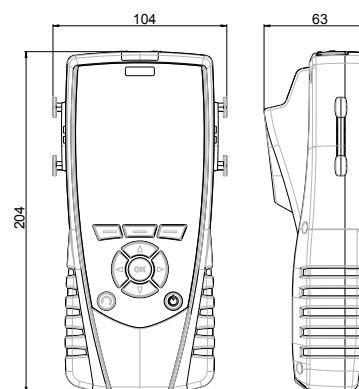
## Maintenance

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.

## 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.

## Dimensions (in mm)



## Housing features

|            |                                                                                                                      |
|------------|----------------------------------------------------------------------------------------------------------------------|
| Material   | ABS/PC and elastomer                                                                                                 |
| Protection | IP54                                                                                                                 |
| Display    | LCD 120 x 160 px;<br>Dimensions: 58 x 76 mm,<br>Backlight<br>Display of 6 measurements<br>including 3 simultaneously |
| Kaypad     | Elastomer<br>4 navigation keys<br>3 function keys                                                                    |

## Accessories

| Name                                                                | Reference  |
|---------------------------------------------------------------------|------------|
| PC software for data recording and processing                       | Datalogger |
| Mini-DIN / mini-DIN cable for probe                                 | CSM        |
| Backpack                                                            | SAD        |
| Infrared printer                                                    | KIMP23     |
| Telescopic extension<br>1 m lenght, bent at 90° for measuring probe | RTE        |

**i** Only the accessories supplied with the device must be used.

Specifications of pressure modules and probes

• Pressure and temperature

| Pressure module | Units                                                      | Measuring range      | Accuracy*                                                                          | Resolution                                   | Tolerated overpressure |
|-----------------|------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------|----------------------------------------------|------------------------|
| MPR 500         | 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               |
| MPR 2500        | Pa, mmH <sub>2</sub> O, In WG, mbar, hPa, mmHg, daPa, kPa  | From 0 to ±2500 Pa   | ±0.2% of reading ±2 Pa                                                             | From -100 to +100 Pa: 0.1 Pa<br>Beyond: 1 Pa | 500 mbar               |
| MPR 10000       | Pa, mmH <sub>2</sub> O, In WG, mbar, hPa, mmHg, daPa, kPa  | From 0 to ±10000 Pa  | ±0.2% of reading ±10 Pa                                                            | 1 Pa                                         | 1200 mbar              |
| MPR 500 M       | 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                  |
| MPR 2000 M      | 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 | Units  | Measuring range                                                                                                               | Accuracy*                                                                                           | Resolution                                |
|--------------|--------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------|
| Thermocouple | °C, °F | K: From -200 to +1300°C<br>J: From -100 to +750°C<br>N: From -200 to +1300°C<br>T: From -200 to +400°C<br>S: From 0 to 1760°C | K, J, T:<br>From -200 to 0°C: ±0.4°C ±0.3 % of reading<br>From 0 to 1300°C: ±0.4°C<br><br>S: ±0.6°C | 0.1°C<br>0.1°C<br>0.1°C<br>0.1°C<br>0.1°C |

• Air velocity and air flow

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

| Probe              | Units                             | Measuring range                          | Accuracy*                                                                                | Resolution           |
|--------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------------------------------|----------------------|
| Pitot tube         | Air velocity: m/s, fpm, km/h, mph | From 3 to 5 m/s<br>From 5.1 to 85 m/s    | ±0.3 m/s<br>±0.5% of reading ±0.2 m/s                                                    | 0.1 m/s              |
|                    | Air flow: m³/h, cfm, l/s, m³/s    | From 0 to 99 999 m³/h                    | ±0.2% of reading ±1% FS                                                                  | 1 m³/h               |
| Debimo blade       | Air velocity: m/s, fpm, km/h, mph | From 3 to 20 m/s<br>From 21 to 40 m/s    | ±0.3 m/s<br>±1% of reading ±0.1 m/s                                                      | 0.1 m/s              |
|                    | Air flow: m³/h, cfm, l/s, m³/s    | From 0 to 99 999 m³/h                    | ±0.2% of reading ±1% FS                                                                  | 1 m³/h               |
| Ø14 mm vane probe  | 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              |
|                    | Air flow: m³/h, cfm, l/s, m³/s    | From 0 to 99 999 m³/h                    | ±3% of reading or ±0.03*sheath surface (cm²)                                             | 1 m³/h               |
|                    | Temperature: °C, °F               | From -20 to +80°C                        | ±0.4% of reading ±0.3°C                                                                  | 0.1°C                |
| Ø70 mm vane probe  | Air velocity: m/s, fpm, km/h, mph | 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              |
|                    | Air flow: m³/h, cfm, l/s, m³/s    | From 0 to 99999 m³/h                     | ±3% of reading or ±0.03*sheath surface (cm²)                                             | 1 m³/h               |
|                    | Temperature: °C, °F               | From -20 to +80°C                        | ±0.4% of reading ±0.3°C                                                                  | 0.1°C                |
| Ø100 mm vane probe | Air velocity: m/s, fpm, km/h, mph | 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>0.01 m/s |
|                    | Air flow: m³/h, cfm, l/s, m³/s    | From 0 to 99 999 m³/h                    | ±3% of reading or ±0.03*sheath surface (cm²)                                             | 1 m³/h               |
|                    | Temperature: °C, °F               | From -20 to +80°C                        | ±0.4% of reading ±0.3°C                                                                  | 0.1°C                |
| Hot wire probe     | Air velocity: m/s, fpm, km/h      | From 0.15 to 1 m/s                       | ±2% of reading ±0.03 m/s<br>(Specific adjustment and calibration in option)              | 0.01 m/s             |
|                    |                                   | From 0.15 to 3 m/s<br>From 3.1 to 30 m/s | ±3% of reading ±0.03 m/s<br>±3% of reading ±0.1 m/s                                      | 0.01 m/s<br>0.1 m/s  |
|                    | Air flow: m³/h, cfm, l/s, m³/s    | From 0 to 99 999 m³/h                    | ±3% of reading or ±0.03*sheath surface (cm²)                                             | 1 m³/h               |
|                    | Temperature: °C, °F               | From -20 to +80°C                        | ±0.3% of reading ±0.25°C                                                                 | 0.1°C                |

MPR 500, MPR 2500 and MPR 10000 pressure modules have 2 pressure connectors Ø6.2 mm made of nickelled brass and 1 thermocouple input.  
MPR 500 M and MPR 2000 M have 2 pressure threaded connectors Ø4.6 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 air flow:

- 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

\*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.

## Kits content and options

✓ supplied with

| 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)               | Option | ✓        | Option   | Option   | Option   | Option    |
| Pressure module from 0 to 0 to $\pm 2500$ Pa (MPR 2500)        | Option | Option   | ✓        | Option   | Option   | Option    |
| Pressure module from 0 to $\pm 10\,000$ Pa (MPR 1000)          | Option | Option   | Option   | ✓        | Option   | Option    |
| Pressure module from 0 to $\pm 500$ mbar (MPR 500 M)           | Option | Option   | Option   | Option   | ✓        | Option    |
| Pressure module from 0 to $\pm 2000$ mbar (MPR 2000 M)         | Option | Option   | Option   | Option   | Option   | ✓         |
| 4 thermocouple channels module (M4TC)                          | Option | Option   | Option   | Option   | Option   | Option    |
| Hot wire probe (SFC 300)                                       | Option | Option   | Option   | Option   | Option   | Option    |
| Telescopic hot wire probe (SFC 900)                            | Option | Option   | Option   | Option   | Option   | Option    |
| Air velocity measurement probe for laboratory hood (SFC 300 S) | Option | Option   | Option   | Option   | Option   | Option    |
| Vane probe 14 mm (SH 14)                                       | Option | Option   | Option   | Option   | Option   | Option    |
| Telescopic vane probe 14 mm (SHT 14)                           | Option | Option   | Option   | Option   | Option   | Option    |
| Vane probe 70 mm (SH 70)                                       | Option | Option   | Option   | Option   | Option   | Option    |
| Telescopic vane probe 70 mm (SHT 70)                           | Option | Option   | Option   | Option   | Option   | Option    |
| Wireless vane probe 70 mm (SHF 70)                             | Option | Option   | Option   | Option   | Option   | Option    |
| Vane probe 100 mm (SH 100)                                     | Option | Option   | Option   | Option   | Option   | Option    |
| Telescopic vane probe 100 mm (SHT 100)                         | Option | Option   | Option   | Option   | Option   | Option    |
| Wireless vane probe 100 mm (SHF 100)                           | Option | Option   | Option   | Option   | Option   | Option    |
| CO / temperature probe (SCO 110)                               | Option | Option   | Option   | Option   | Option   | Option    |
| Gas leak probe (SFG 300)                                       | Option | Option   | Option   | Option   | Option   | Option    |
| Tachometry probe (STA)                                         | Option | Option   | Option   | Option   | Option   | Option    |
| Thermocouple K, J, N, T and S probe                            | Option | Option   | Option   | Option   | Option   | Option    |
| Pt100 SMART-2014 probe                                         | Option | Option   | Option   | Option   | Option   | Option    |
| Wireless Pt100 probe                                           | Option | Option   | Option   | Option   | Option   | Option    |
| 2x1 m of silicone tube $\varnothing 4 \times 7$ mm             | Option | ✓        | ✓        | ✓        | Option   | Option    |
| 2x1 m of crystal tube $\varnothing 4 \times 6$ mm              | Option | Option   | Option   | Option   | ✓        | ✓         |
| Stainless steel tip $\varnothing 6 \times 100$ mm              | Option | ✓        | ✓        | ✓        | ✓        | ✓         |
| Calibration certificate                                        | Option | ✓        | ✓        | ✓        | ✓        | ✓         |
| Soft transport case (MTP-210)                                  | ✓      | ✓        | ✓        | ✓        | ✓        | ✓         |
| Additional battery                                             | Option | Option   | Option   | Option   | Option   | Option    |

## Optional probes and modules



L and S Pitot tubes

Measuring ranges from 3 to 85 m/s and from 0 to 99999 m<sup>3</sup>/h



Debimo blades

Measuring ranges from 3 to 40 m/s and from 0 to 99999 m<sup>3</sup>/h

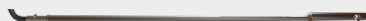


4 thermocouple channels module (M4TC)  
Measuring range from -200 to +1760°C  
(according to thermocouple type)



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 specific datasheet):

ambient / contact / penetration / immersion...

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

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