

Thermo-anemo-manometer  
**MP 210**



KEY POINTS

- Mesure de la pression, de la vitesse et du débit
- 2 entrées pour température Pt100
- Modules interchangeable
- Jusqu'à 6 mesures en simultané
- Grand écran graphique

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 Beyond : ±0.2% of reading ±1.5 Pa	From -100 to +100 Pa : 0.1 Pa 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 J : From -100 to +750°C T : From -200 to +400°C  S : From 0 to 1760°C	K, J, T : From -200 to 0 °C : ±0.4°C ±0.3 % of reading From 0 to 1300 °C : ±0.4°C  S : ±0.6 °C	0.1 °C 0.1 °C 0.1 °C  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 From 5.1 to 100 m/s	±0.3 m/s ±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 From 21 to 100 m/s	±0.3 m/s ±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 Ø14 mm</b>	Air velocity : m/s, fpm, km/h	From 0 to 3 m/s From 3.1 to 25 m/s	From 0.8 to 3 m/s : ±3% of reading ±0.1m/s 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 Ø70 mm</b>	Air velocity : m/s, fpm, km/h	From -5 to 3 m/s From 3.1 to 35 m/s	From 0.4 to 3 m/s : ±3% of reading ±0.1m/s 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 Ø100 mm</b>	Air velocity : m/s, fpm, km/h	From -5 to 3 m/s From 3.1 to 35 m/s	From 0.3 to 3 m/s : ±3% of reading ±0.1m/s From 3.1 to 35 m/s : ±1% of reading ±0.3 m/s	0.01 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 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 From 0.15 to 3 m/s From 3.1 to 30 m/s	± 2%of reading ± 0.03 m/s** ± 3%of reading ± 0.03 m/s ± 3% of reading ± 0.1 m/s	0.01 m/s 0.01 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	±0.3% 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...**

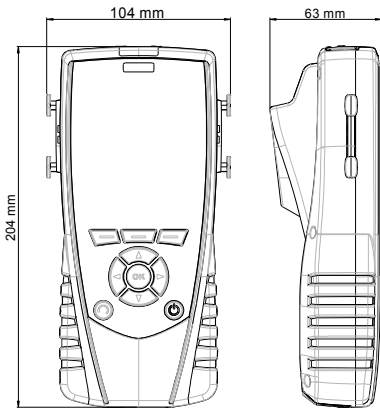
\*Also available in telescopic model / \*\*Also available in telescopic model and in wireless model

## 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.

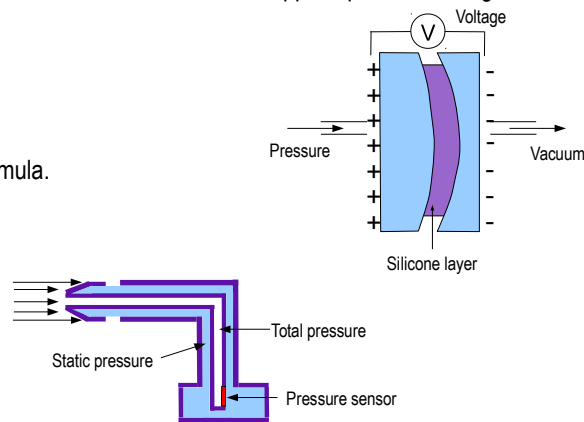
Formula with temperature correction :

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

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).



**MDUA - Mess- und Datentechnik für Umweltschutz und Arbeitssicherheit**

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