## DATA SHEET <br> Thermo-hygrometer-air quality <br> 


co


Features

- Hygrometry, temperature, $\mathrm{CO}_{2} \& \mathrm{CO}$ gases and air velocity measurement (depending on models)
- Up to 6 measurements simultaneously
- 2 inputs fot Pt100 temperature (from -200 to $+600^{\circ} \mathrm{C}$ )
- Large graphic display


## References

Heference

The probes use a mini-DIN cable unique and pluggable that fits on every probes. Each device is supplied with 2 cables of this type.

The instruments are supplied in a transport case with a calibration certificate, a charger and a USB cable.


HQ 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 |
| Autonomy | 57 h with hygrometry probe |
| Memory capacity | Up to 1000 dataset of 20000 points |
| Conditions of use ( ${ }^{\circ} \mathrm{C} / \% \mathrm{RH} / \mathrm{m}$ ) | From 0 to $+50^{\circ} \mathrm{C}$. In non-condensing condition. From 0 to 2000 m . |
| Storage temperature | From -20 to $+80^{\circ} \mathrm{C}$ |
| 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; 2011/65/EU RoHS II; 2012/19/EU WEEE |
| Languages | nch, English, Dutch, German, Italian, Portuguese, Swedish, Norwegian, Finn, Danish, Chinese, Japanese |

## Operating principle

## Non dispersive infrared absorbance

A gas absorbs light at a specific wavelenght, some of the intensity emitted by the infrared source absorbed by the gas sample. The amount of light read by the IR sensor is inversely proportional to $\mathrm{CO}_{2}$ concentration.


## Electrochemical sensor

Electrochemical cell consists of a container, 2 electrodes, connection wires and an electrolyte. Carbon monoxide is oxidised at one electrode to $\mathrm{CO}_{2}$ whilst oxygen is consumed at the other electrode. The current produced is proportional to CO concentration


## Dimensions (in mm)



## Housing features

\(\left.\begin{array}{l|c}\hline Material \& ABS/PC and elastomer <br>
\hline Protection \& IP54 <br>
\hline Lisplay 120 \times 160 \mathrm{px} <br>
Dimensions: 58 \times 76 \mathrm{~mm} <br>

Backlight\end{array}\right]\)| Display of 6 measurements |
| :--- |
| including 3 simultaneously |

## Accessories

| Name | Reference |
| :--- | :---: |
| PC software for data recording and <br> processing | Datalogger |
| Mini-DIN / mini-DIN cable for probe | CSM |
| Backpack | SAD |
| Infrared printer | KIMP23 |
| Telescopic extension of 1 m lenght bent <br> at 90 |  |
| Wher measuring probe | RTE |
| radiofrequency probes, 1.20 to 3.50 m |  |
| length, ajustable at $90^{\circ}$ |  |

Only the accessories supplied with the device must be used.

## 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.

## Specifications of probes

| Probe | Units | Measuring range | Accuracy* | Resolution |
| :---: | :---: | :---: | :---: | :---: |
| Hygrometry probes SHR 110 and SHR 300 | Relative humidity: \%RH | From 3 to 98\% RH | Accuracy (Repeatability, linearity, Hysteresis): <br> $\pm 1.5 \% \mathrm{RH}$ (from $15^{\circ} \mathrm{C}$ to $25^{\circ} \mathrm{C}$ ) <br> Factory calibration uncertainty: $\pm 0.88 \% \mathrm{RH}$ Temperature dependence: <br> $\pm 0.04 \times(\mathrm{T}-20) \% \mathrm{RH}\left(\right.$ if $\mathrm{T}<15^{\circ} \mathrm{C}$ or $\mathrm{T}>25^{\circ} \mathrm{C}$ ) | 0.1\% RH |
|  | Absolute humidity**: $\mathrm{g} / \mathrm{m}^{3}$ | From 0 to $600 \mathrm{~g} / \mathrm{m}^{3}$ | - | $0.1 \mathrm{~g} / \mathrm{m}^{3}$ |
|  | Dew-point**: ${ }^{\circ} \mathrm{C}_{\text {td }}{ }^{\circ} \mathrm{F}_{\text {td }}$ | From -50 to $+100^{\circ} \mathrm{C}_{\text {td }}$ | $\pm 0.6 \%$ of reading $\pm 0.5{ }^{\circ} \mathrm{C}_{\text {td }}$ | $0.1{ }^{\circ} \mathrm{C}_{\text {td }}$ |
|  | Wet temperature**: ${ }^{\circ} \mathrm{C}_{\text {tw }}{ }^{\circ} \mathrm{F}_{\mathrm{tw}}$ | From -50 to $+100^{\circ} \mathrm{C}_{\text {tw }}$ | $\pm 0.6 \%$ of reading $\pm 0.5{ }^{\circ} \mathrm{C}_{\text {td }}$ | $0.1{ }^{\circ} \mathrm{C}_{\text {tw }}$ |
|  | Enthalpy**: kj/kg | From 0 to $10000 \mathrm{kj} / \mathrm{kg}$ | - | $0.1 \mathrm{kj} / \mathrm{kg}$ |
|  | Temperature: ${ }^{\circ} \mathrm{C},{ }^{\circ} \mathrm{F}$ | From - 20 to $+80^{\circ} \mathrm{C}$ (SHR110) <br> From -40 to $+180^{\circ} \mathrm{C}$ (SHR 300) | $\pm 0.3 \%$ of reading $\pm 0.25{ }^{\circ} \mathrm{C}$ | $0.1{ }^{\circ} \mathrm{C}$ |
|  | Combination ratio**: g/kg | From 0 to $10000 \mathrm{~g} / \mathrm{kg}$ | - | $0.1 \mathrm{~g} / \mathrm{kg}$ |
| Omnidirectional probe of airstream SOM 900 | Air velocity: m/s, fpm, km/h | From 0.00 to $5.00 \mathrm{~m} / \mathrm{s}$ | $\pm 3 \%$ of reading $\pm 0.05 \mathrm{~m} / \mathrm{s}$ | $0.01 \mathrm{~m} / \mathrm{s}$ |
|  | Relative humidity: \%RH | From 5 to 95\% RH | Accuracy (Repeatability, linearity, Hysteresis): <br> $\pm 1.5 \% \mathrm{RH}$ (from $15^{\circ} \mathrm{C}$ to $25^{\circ} \mathrm{C}$ ) <br> Factory calibration uncertainty: $\pm 0.88 \%$ RH Temperature dependence: $\pm 0.04 \times(\mathrm{T}-20) \% \mathrm{RH}\left(\text { if } \mathrm{T}<15^{\circ} \mathrm{C} \text { or } \mathrm{T}>25^{\circ} \mathrm{C}\right)$ | 0.1\% RH |
|  | Temperature: ${ }^{\circ} \mathrm{C},{ }^{\circ} \mathrm{F}$ | From -20 to $+80^{\circ} \mathrm{C}$ | $\pm 0.3 \%$ of reading $\pm 0.25{ }^{\circ} \mathrm{C}$ | $0.1{ }^{\circ} \mathrm{C}$ |
| $\mathrm{CO}_{2}$ /hygrometry/ temperature probe SCOH 112 | Temperature: ${ }^{\circ} \mathrm{C}$, ${ }^{\circ} \mathrm{F}$ $\mathrm{CO}_{2}$ : ppm <br> Hygrometry: \%RH | From - 20 to $+80^{\circ} \mathrm{C}$ From 0 to 5000 ppm From 5 to $95 \%$ RH | $\pm 0.3 \%$ of reading $\pm 0.25^{\circ} \mathrm{C}$ $\pm 3 \%$ of reading $\pm 50 \mathrm{ppm}$ <br> Accuracy (Repeatability, linearity, Hysteresis): <br> $\pm 1.5 \% \mathrm{RH}$ (from $15^{\circ} \mathrm{C}$ to $25^{\circ} \mathrm{C}$ ) <br> Factory calibration uncertainty: $\pm 0.88 \%$ RH Temperature dependence: $\pm 0.04 \times(\mathrm{T}-20) \% \mathrm{RH}\left(\text { if } \mathrm{T}<15^{\circ} \mathrm{C} \text { or } \mathrm{T}>25^{\circ} \mathrm{C}\right)$ | $\begin{gathered} 0.1^{\circ} \mathrm{C} \\ 1 \mathrm{ppm} \\ 0.1 \% \mathrm{RH} \end{gathered}$ |

HQ 210 instruments can also calculate and display the WBGT index that corresponds to a index of composite temperature used to estimate the effect of temperature, humidity and solar radiation on humans.

It is calculated from the following temperatures:

- $T_{w}=$ Wet-bulb temperature or natural wet temperature, measurement calculated from the relative humidity of a thermo-hygro probe;
- $T_{d}=$ Globe temperature, measured with a globe thermometer, or black globe thermometer, whose sensitive element is in black glass or black-smoke coated in order to run approximatively as a black body to measure the solar radiation. The measurement is performed with a temperature probe placed in a black ball;
- $T_{d}=$ Air temperature (measured by a thermometer whose bulb is protected from the solar radiation by a screen). The temperature measurement is realised with a thermo-hygro probe;

HQ 210 instruments have the following functions for the measurement of temperature, hygrometry and air quality:

- Air Quality probes ( CO / temperature, $\mathrm{CO}_{2}$ / temperature, $\mathrm{CO}_{2}$ / temperature / hygrometry):

Audible alarm (2 setpoints), Selection of units, Hold function, minimum and maximum values

- Thermocouple module:

Delta T, Alarm (lower and upper setpoints), Selection of units, Hold function, minimum and maximum values

[^0]
## Delivery kits and options

supplied with

| Description | HQ 210 | HQ 210 STD | HQ 210 HT | HQ 210 P | HQ 2100 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Telescopic omnidirectional probe (SOM 900) | Optional | Optional | Optional | Optional | $\checkmark$ |
| ABS hygrometry probe (SHR 110) | Optional | $\checkmark$ | Optional | Optional | Optional |
| Stainless steel hygrometry probe(SHR 300) | Optional | Optional | $\checkmark$ | Optional | Optional |
| CO / temperature probe (SCO 110) | Optional | Optional | Optional | Optional | Optional |
| $\mathrm{CO}_{2}$ / temperature probe (SCO 112) | Optional | Optional | Optional | Optional | Optional |
| $\mathrm{CO}_{2}$ / temperature / hygrometry probe ( SCOH 112 ) | Optional | Optional | Optional | $\checkmark$ | Optional |
| Light probe (SLU) | Optional | Optional | Optional | Optional | Optional |
| Pt100 SMART-2014 probe | Optional | Optional | Optional | Optional | Optional |
| Pt100 wireless probe | Optional | Optional | Optional | Optional | Optional |
| 4 thermocouple channels module (M4TC) | Optional | Optional | Optional | Optional | Optional |
| Climatic conditions module (MCC) | Optional | Optional | Optional | Optional | Optional |
| Wireless hygrometry probe in ABS (SHRF 110) | Optional | Optional | Optional | Optional | Optional |
| Wireless stainless steel hygrometry probe (SHRF 300) | Optional | Optional | Optional | Optional | Optional |
| K, J, N, T and S thermocouple probe | Optional | Optional | Optional | Optional | Optional |
| Calibration certificate | Optional | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Soft transport case (MTP-210) | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Additional battery | Optional | Optional | Optional | Optional | Optional |

## Available probes and modules (optional)



Light probe (SLU)
Measuring ranges from 0 to 150000 lux and from 0 to 13935 fc


4 thermocouple channels module (M4TC) Measuring range from -200 to $+1760^{\circ} \mathrm{C}$ (according to thermocouple type)


Climatic conditions module (MCC) Measuring ranges from 0 to $+50^{\circ} \mathrm{C}$, from 800 to 1100 hPa and from 5 to $95 \% \mathrm{RH}$

Wireless hygrometry probe (SHRF 110) Measuring ranges from 3 to $98 \%$ RH, from -50 to $+100^{\circ} \mathrm{C}_{\text {td }}$ and from -20 to $+80^{\circ} \mathrm{C}$

High temperature wireless hygrometry probe (SHRF 300)
Measuring ranges from 3 to $98 \%$ RH, from -50 to $+100^{\circ} \mathrm{Ctd}$ and from -40 to $+180^{\circ} \mathrm{C}$


Black ball (BN)


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


[^0]:    *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
    **Calculated parameters.

