

## Thermo-hygrometer HD 110

### KEY POINTS

- Easy to use
- Adjustable backlight
- Hold-min-max functions
- Selection of units

### TECHNICAL FEATURES

|   |  |
|---|--|
| <b>Measuring element</b>                  | Digital sensor (CMOS)  |
| <b>Display</b>                            | 4 lines, LCD technology. Sizes 50 x 36 mm<br>2 lines of 5 digits with 7 segments (value)<br>2 lines of 5 digits with 16 segments (units) |
| <b>Cable</b>                              | Coiled, length 0.45 m, expanding to 2.4 m  |
| <b>Housing</b>                            | ABS, protection IP54   |
| <b>Keypad</b>                             | 5 keys   |
| <b>Conformity</b>                         | Directives CEM 2004/108/CE and NF EN 61010-1   |
| <b>Power supply</b>                       | 4 batteries AAA LR03 1.5 V   |
| <b>Battery life</b>                       | 150 hours  |
| <b>Ambiance</b>                           | Neutral gas  |
| <b>Operating temperature (instrument)</b> | From -10 to +50 °C   |
| <b>Operating temperature (probe)</b>      | From -20 to +70 °C   |
| <b>Storage temperature</b>                | From -20 to +80 °C   |
| <b>Auto shut-off</b>                      | Adjustable from 0 to 120 min   |
| <b>Weight</b>                             | 310 g  |

### SPECIFICATIONS

| Measuring units                     | Measuring range                  | Accuracy <sup>1</sup>   | Resolution           |
|-------------------------------------|----------------------------------|---|----------------------|
| <b>Relative humidity</b>            |                                  |   |                      |
| %HR                                 | From 5 to 95 %HR                 | Accuracy* (Repeatability, linearity, hysteresys) :<br>±1,8 %HR (from 15 °C to 25 °C)<br>Factory calibration uncertainty : ±0,88 %HR<br>Drift linked to the temperature : ±0,04 x (T-20)<br>%HR<br>(fi T < 15°C or T > 25°C) | 0,1 %HR              |
| <b>Dew point</b>                    |                                  |   |                      |
| °C <sub>td</sub> , °F <sub>td</sub> | From -40 to +70 °C <sub>td</sub> | ±0.8% of reading ±0.6°C <sub>td</sub>   | 0,1 °C <sub>td</sub> |
| <b>Ambient temperature</b>          |                                  |   |                      |
| °C, °F                              | From -20 to +70 °C               | ±0.4% of reading ±0.3°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 required compensation. As per NFX 15-113 and the Charter 2000/2001 HYGROMETERS, GAL (Guaranteed Accuracy Limit) which has been calculated with a coverage factor value of 2 is ±2.68%RH between 15 and 25°C on the measuring range from 5 to 95%RH. Sensor drift is less than 1%RH/year.

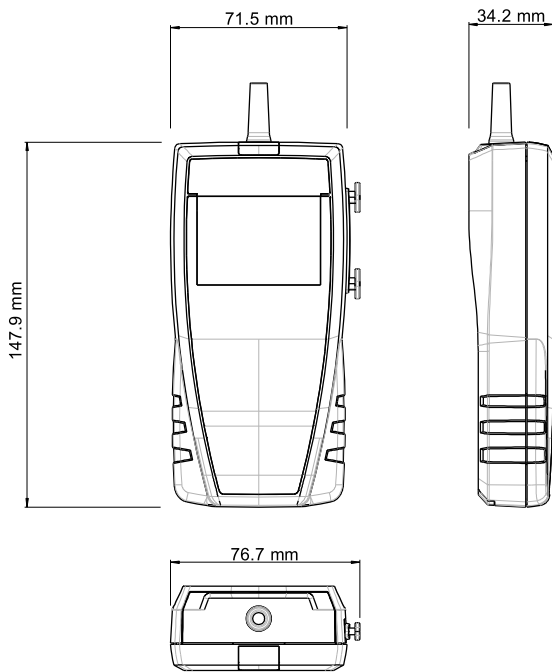
\*Except class 110 S



### FUNCTIONS

- Relative humidity, dew point and temperature measurements
- Selection of units (temperature and dew point)
- Hold Function
- Display of minimum and maximum values
- Adjustable and reseatable auto shut-off
- Backlight

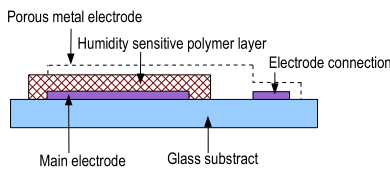
## DIMENSIONS



## OPERATING PRINCIPLES

### Measurement of capacitive hygrometry

On the capacitive probes, a sensitive polymer layer reacts with the humidity present between two metal layers which cover a glass substract. Water absorption is a function of relative humidity of the surrounding environment, and modifies the dielectric constant. The measured signal is directly proportional to the relative humidity and independent on the ambient pressure.



$$C(RH) = \frac{\xi_{RH} \times \xi_0 \times A}{d}$$

|            |  |    |                    |
|------------|--|----|--------------------|
| C          | Capacity of relative humidity sensor                 | A  | Electrodes area    |
| $\xi_{RH}$ | Relative dielectric permittivity, humidity dependent | d  | Electrodes spacing |
| $\xi_0$    | Void permittivity                                    | HR | Relative humidity  |

### Semiconductor temperature sensor

The direct tension of a silicon diode is dependent on the temperature, in accordance with the following equation :

$$V_{BE} = V_{G0}(1-T/T_0) + V_{BE0}(T/T_0) + (nKT/q)\ln(T_0/T) + (KT/q)\ln(IC/IC_0)$$

T = Temperature in Kelvin

$V_{G0}$  = Voltage of the band gap at the absolute zero

$V_{BE0}$  = Voltage of the band gap at  $T_0$  and  $IC_0$

K = Boltzmann constant

q = charge of an electron

n = Dependent constant of the instrument

## SUPPLIED WITH

- The instruments are supplied with :
- Hygrometry probe Ø 13 mm, lg. 110 mm
  - Calibration certificate\*
  - Transport case (ref : ST 110)



\*Except class 110 S

## ACCESSORIES

**CQ 15** : Magnetic protective housing



**RTE** : Telescopic extension  
Length 1m, with index at  $\pm 90^\circ$

**MT 51** : ABS transport case



## MAINTENANCE

We carry out calibration, adjustment and maintenance of your instruments to guarantee a constant level of quality of your measurements. As part of Quality Assurance Standards, we recommend you to carry out an annual verification.

## GUARANTEE

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

[www.kimo.fr](http://www.kimo.fr)



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