



**NIEUWKOOP**

METEN.NL

# LEAFLET



## **RV1100 – HD2301**

RH/°C-METER

IP67



TO MEASURE  TO KNOW



The **HD2301.0** is a portable instrument with a large LCD display. It measures relative humidity and temperature using a Pt100 sensor or thermocouple humidity/temperature combined probe. Temperature only is measured by immersion, penetration or contact probes. The sensor can be a Pt100, Pt1000 or Ni1000. When the humidity/temperature combined probe is connected, the instrument calculates and displays the absolute humidity, the dew point, the partial vapour pressure.

The probes are fitted with an automatic detection module, with the factory calibration settings already being memorized inside.

The *Max*, *Min* and *Avg* function calculate the maximum, minimum or average values.

Other functions include: the relative measurement REL, the HOLD function, and the automatic turning off that can also be disabled.

**The instruments have IP67 protection degree.**

### INSTRUMENT TECHNICAL CHARACTERISTICS

#### Instrument

|                           |   |
|---------------------------|---|
| Sampling time             | direct, better than 0,8 sec                       |
| (Length x Width x Height) | 140x88x38mm                                       |
| Weight                    | 160g (complete with batteries)                    |
| Materials                 | ABS   |
| Display                   | 2x4½ digits plus symbols<br>Visible area: 52x42mm |

#### Operating conditions

|                           |                                |
|---------------------------|--------------------------------|
| Operating temperature     | -5...50°C                      |
| Storing temperature       | -25...65°C                     |
| Working relative humidity | 0...90%RH without condensation |
| <b>Protection degree</b>  | <b>IP67</b>                    |

#### Power

|                                    |   |
|------------------------------------|---|
| Batteries                          | 3 1.5V type AA batteries                  |
| Autonomy                           | 200 hours with 1800mAh alkaline batteries |
| Power absorbed with instrument off | 20µA                                      |

Measuring unit                    °C - °F - %RH - g/m³ - Td - hPa

#### Connections

Input module for the probes    8-pole male DIN45326 connector

#### Measurement of relative humidity by Instrument

|                    |             |
|--------------------|-------------|
| Measurement range  | 0...100%RH  |
| Resolution         | 0.1%RH      |
| Accuracy           | ±0.1%RH     |
| Drift after 1 year | 0.1%RH/year |

#### Measurement of temperature by Instrument

|                          |               |
|--------------------------|---------------|
| Pt100 measurement range  | -200...+650°C |
| Pt1000 measurement range | -200...+650°C |
| Resolution               | 0.1°C         |
| Accuracy                 | ±0.1°C        |
| Drift after 1 year       | 0.1°C/year    |



### PROBES AND MODULES TECHNICAL DATA EQUIPPED WITH THE INSTRUMENT

#### Temperature probes Pt100 sensor using SICRAM module

| Model     | Type        | Working range   | Accuracy  |
|-----------|-------------|-----------------|---|
| TP472I    | Immersion   | -196°C...+500°C | ±0.25°C (-196°C...+350°C)<br>±0.4°C (+350°C...+500°C) |
| TP472I.0  | Immersion   | -50°C...+400°C  | ±0.25°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)  |
| TP473P.0  | Penetration | -50°C...+400°C  | ±0.25°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)  |
| TP474C.0  | Contact     | -50°C...+400°C  | ±0.3°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)   |
| TP475A.0  | Air         | -50°C...+250°C  | ±0.3°C (-50°C...+250°C)                               |
| TP472I.5  | Immersion   | -50°C...+400°C  | ±0.3°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)   |
| TP472I.10 | Immersion   | -50°C...+400°C  | ±0.3°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)   |

#### Common characteristics

|                          |           |
|--------------------------|-----------|
| Resolution               | 0.1°C     |
| Temperature drift @ 20°C | 0.003%/°C |

#### Relative humidity and temperature probes using SICRAM module

| Model   | Temperature sensor | Working range |                | Accuracy                                |        |
|---------|--------------------|---------------|----------------|---|--------|
|         |                    | %RH           | Temperature    | %RH                                     | Temp.  |
| HP472AC | Pt100              | 5...98%RH     | -20°C...+80°C  |   | ±0.3°C |
| HP572AC | Thermocouple K     | 5...98%RH     | -20°C...+80°C  | ±2% (5...95%RH)<br>±3% (95...99%RH)     | ±0.5°C |
| HP473AC | Pt100              | 5...98%RH     | -20°C...+80°C  |   | ±0.3°C |
| HP474AC | Pt100              | 5...98%RH     | -40°C...+150°C |   | ±0.3°C |
| HP475AC | Pt100              | 5...98%RH     | -40°C...+150°C | ±2.5% (5...95%RH)<br>±3.5% (95...99%RH) | ±0.3°C |
| HP477DC | Pt100              | 5...98%RH     | -40°C...+150°C |   | ±0.3°C |

#### Common characteristics

##### Relative humidity

|   |                                  |
|---|----------------------------------|
| Sensor                                    | Capacitive                       |
| Typical capacity @ 30%RH                  | 300pF±40pF                       |
| Resolution                                | 0.1%RH                           |
| Temperature drift @ 20°C                  | 0.02%RH/°C                       |
| Response time %RH at constant temperature | 10sec (10→80%RH; air speed=2m/s) |

##### Temperature with sensor Pt100

|                          |           |
|--------------------------|-----------|
| Resolution               | 0.1°C     |
| Temperature drift @ 20°C | 0.003%/°C |

##### Temperature with thermocouple K - HP572AC

|                          |          |
|--------------------------|----------|
| Resolution               | 0.1°C    |
| Temperature drift @ 20°C | 0.02%/°C |





### Probes Pt100 4 wires and Pt1000 2 wires

| Model     | Type          | Working range | Accuracy |
|-----------|---------------|---------------|----------|
| TP47.100  | 4 wire Pt100  | -50...+400°C  | Class A  |
| TP47.1000 | 2 wire Pt1000 | -50...+400°C  | Class A  |

#### Common characteristics

|                          |           |
|--------------------------|-----------|
| Resolution               | 0.1°C     |
| Temperature drift @ 20°C |           |
| Pt100                    | 0.003%/°C |
| Pt1000                   | 0.005%/°C |

#### ORDER CODES

**HD2301.0:** The kit is composed of the instrument HD2301.0, **combined probe HP472AC**, 3 1.5V alkaline batteries, operating manual, case.

#### Probes complete with SICRAM module

##### TEMPERATURE MEASUREMENT

- TP472I:** Immersion probe, sensor Pt100. Stem Ø 3mm, length 300mm. Cable length 2 metres.
- TP472I.0:** Immersion probe, sensor Pt100. Stem Ø 3mm, length 230mm. Cable length 2 metres.
- TP473P.0:** Penetration probe, sensor Pt100. Stem Ø 4mm, length 150mm. Cable length 2 metres.
- TP474C.0:** Contact probe, sensor Pt100. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 metres.
- TP475A.0:** Air probe, sensor Pt100. Stem Ø 4mm, length 230mm. Cable length 2 metres.
- TP472I.5:** Immersion probe, sensor Pt100. Stem Ø 6mm, length 500mm. Cable length 2 metres.
- TP472I.10:** Immersion probe, sensor Pt100. Stem Ø 6mm, length 1,000mm. Cable length 2 metres.

#### RELATIVE HUMIDITY AND TEMPERATURE PROBES

- HP472AC:** Combined probe %RH and temperature, dimensions Ø 26x170mm. Connection cable length 2 metres.
- HP572AC:** Combined probe %RH and temperature - **thermocouple K sensor**. Dimensions Ø 26x170mm. Connection cable length 2 metres.
- HP473AC:** Combined probe %RH and temperature. Handle dimensions Ø 26x130mm, probe Ø 14x110mm. Connection cable length 2 metres.
- HP474AC:** Combined probe %RH and temperature. Handle dimensions Ø 26x130mm, probe Ø 14x210mm. Connection cable length 2 metres.
- HP475AC:** Combined probe %RH and temperature. Connection cable length 2 metres. Handle Ø 26x110mm. Stainless steel stem Ø 12x560mm. Point Ø 13.5x75mm.
- HP477DC:** Combined sword probe %RH and temperature. Connection cable length 2 metres. Handle Ø 26x110mm. Probe's stem 18x4mm, length 520mm.

#### Temperature probes without SICRAM module

- TP47.100:** Immersion probe sensor Pt100 direct 4 wires. Probe's stem Ø 3mm, length 230mm. 4 wire connection cable with connector, length 2 metres.
- TP47.1000:** Immersion probe sensor Pt1000. Probe's stem Ø 3mm, length 230mm. Connection cable 2 wires with connector, length 2 metres.
- TP47:** Only connector for probe connection: direct 4 wire Pt100, 2 wire Pt1000.

#### Accessories

- HD11:** Saturated solution at 11.3%RH@20°C for calibration of relative humidity probes, fixing adapter M24x1.5
- HD33:** Saturated solution at 33.0%RH@20°C for calibration of relative humidity probes, fixing adapter M24x1.5
- HD75:** Saturated solution at 75.4%RH@20°C for calibration of relative humidity probes, fixing adapter M24x1.5

#### Protection for humidity probes HP472AC, HP572AC (M24x1,5)

- P1:** Stainless steel grid protection for probes Ø 26 mm.
- P2:** 20µ sintered polyethylene PE protection for probes Ø 26 mm.
- P3:** 20µ sintered bronze protection for probes Ø 26 mm.
- P4:** 20µ sintered PE complete cap for probes Ø 26 mm.

#### Protection for humidity probes HP473AC, HP474AC, HP475AC (M12x1)

- P5:** Stainless steel grid protection for probes Ø 14 mm.
- P6:** 20µm sintered complete protection made of stainless steel for probes Ø 14 mm.
- P7:** 10µm sintered complete protection made of PTFE for probes Ø 14 mm.



HD11

HD33

HD75





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