

## HMW90 Series Humidity and Temperature Transmitters for High Performance HVAC Applications



*The HMW90 Series Humidity and Temperature Transmitters are designed for demanding HVAC applications.*

Wall-mounted Vaisala HMW90 Series HUMICAP® Humidity and Temperature Transmitters measure relative humidity and temperature in indoor HVAC applications, where high accuracy, stability, and reliable operation are required.

The flexible HMW90 series offers a variety of options and features. Transmitters include a display and a sliding cover with either an opening for the display or a solid front. Both analog and digital output options, including special scalings and calculated parameters, are available.

### Quick and Easy to Install

HMW90 series transmitters are quick and easy to install. The wiring is connected through the back plate and the electronics with the sensors can be snapped on easily after the wiring is complete. The transmitter is configured using dip switches, which are accessible when the enclosure is open.

### Digital Communication Brings Benefits

The introduction of digital (BACnet/Modbus) communication to field level devices brings many advantages. For example, all sensors can be centrally accessed and their performance can be easily monitored. Wiring is simple when multiple sensors are installed on the same bus. Sensors can be set up using standardized tools, and the system can be enlarged with additional sensors quickly and conveniently. In addition, parameters influencing measurements, such as pressure or site elevation, can be centrally set and updated.

### Choose from a Wide Variety of Calibration Options

On-site calibration and adjustment is exceptionally easy. The sliding cover exposes offset trimmers for one-point calibration without disturbing measurement. The display instantly indicates the effects of changes,

### Features/Benefits

- Both analog and digital output
- Easy installation, configuration, and field adjustment
- Humidity parameter options: relative humidity, dew point, mixing ratio, enthalpy, wet bulb temperature, dew point depression, and absolute humidity
- Full 0 ... 100%RH measurement range
- Up to  $\pm 1.7\%$  RH accuracy
- User exchangeable humidity and temperature module
- NIST traceable calibration (certificate included)
- Available in four colors

### BACnet in Brief

- A data communication protocol for Building Automation and Control networks
- Used in management, automation and field level communication
- ANSI/ISO/ASHRAE standard controlled by a standardization body
- Adds flexibility by allowing the integration of products and systems from different manufacturers

making it clear and convenient to make adjustments. A service port enables two-point calibration, using either a PC or the Vaisala HUMICAP® Hand-Held Humidity and Temperature Meter HM70. HMW90 series transmitters include a user-exchangeable measurement module, which can be ordered as a spare part. Calibration services are available through all Vaisala Service Centers.

# Technical Data

## Models

|        |        |                                             |
|--------|--------|---------------------------------------------|
| TMW92  | T-only | 2-wire, current output                      |
| TMW93  | T-only | 3-wire, voltage output                      |
| TMW90  | T-only | configurable analog output model            |
| HMW92  | RH+T   | 2-wire, current output                      |
| HMW92D | RH+T   | 2-wire, current output with display         |
| HMW93  | RH+T   | 3-wire, voltage output                      |
| HMW93D | RH+T   | 3-wire, voltage output with display         |
| HMW90  | RH+T   | Configurable analog/digital model           |
| HMW95  | RH+T   | Digital (BACnet, Modbus) model              |
| HMW95D | RH+T   | Digital (BACnet, Modbus) model with display |

## Performance

### RELATIVE HUMIDITY

Measurement range 0 ... 100 %RH, non-condensing

### Accuracy

|                   |                                  |
|-------------------|----------------------------------|
| Temperature range | +10 ... +40 °C (+50 ... +104 °F) |
| 0 ... 90 %RH      | ±1.7 %RH                         |
| 90 ... 100 %RH    | ±2.5 %RH                         |

|                   |                                                                     |
|-------------------|---------------------------------------------------------------------|
| Temperature range | -5 ... +10 °C, +40 ... +55 °C<br>(+23 ... +50 °F, +104 ... +131 °F) |
|-------------------|---------------------------------------------------------------------|

|                |        |
|----------------|--------|
| 0 ... 90 %RH   | ±3 %RH |
| 90 ... 100 %RH | ±4 %RH |

Stability in typical HVAC applications ±0.5 %RH/year

Humidity sensor Vaisala HUMICAP® 180R

### TEMPERATURE

Measurement range -5 ... +55 °C (+23 ... +131 °F)

### Accuracy

|                                                                     |                     |
|---------------------------------------------------------------------|---------------------|
| +20 ... +30 °C (+68 ... +86 °F)                                     | ±0.2 °C (± 0.36 °F) |
| +10 ... +20 °C, +30 ... +40 °C<br>(+50 ... +68 °F, +86 ... +104 °F) | ±0.3 °C (± 0.54 °F) |
| -5 ... +10 °C, +40 ... +55 °C<br>(+23 ... +50 °F, +104 ... +131 °F) | ±0.5 °C (± 0.90 °F) |

Temperature sensor Digital temperature sensor

## Operating Environment

Operating temperature range -5 ... +55 °C (+23 ... +131 °F)

Storage temperature range -30 ... +60 °C (-22 ... +140 °F)

Electromagnetic compliance EN61326-1, Industrial Environment

## Spare Parts and Accessories

|                                           |         |
|-------------------------------------------|---------|
| Humidity and Temperature Module           | HTM10SP |
| Temperature Module (for T-only models)    | TM10SP  |
| Decorative cover set (10 pcs.)            | 236285  |
| Connection cable for HM70 hand-held meter | 219980  |
| USB cable for PC connection               | 219690  |

## Mechanics

|                            |                                          |
|----------------------------|------------------------------------------|
| IP class                   | IP30                                     |
| Standard housing color     | White (RAL9003*)                         |
| Optional housing colors    | Black (RAL9005*)                         |
| (configurable models only) | Grey (RAL7035*)                          |
|                            | Light Ivory (RAL1015*)                   |
| Housing material           | ABS/PC, UL-V0 approved                   |
| Output connector           | Screw terminals                          |
|                            | max. wire size 2 mm <sup>2</sup> (AWG14) |
| Service port connector     | 4-pin M8                                 |
| Weight                     | 155 g                                    |

\*RAL code is only indicative with potential small variations in color shade

## Inputs and Outputs

### Current output models

|                                   |                               |
|-----------------------------------|-------------------------------|
| Outputs                           | 2 x 4 ... 20 mA, loop powered |
| Loop resistance                   | 0 ... 600 Ω                   |
| Supply voltage                    | 20 ... 28 VDC at 500 Ω load   |
|                                   | 10 ... 28 VDC at 0 Ω load     |
| Isolation between output channels | 500 VDC                       |

### Voltage output models

|                          |                                      |
|--------------------------|--------------------------------------|
| Outputs                  | 2 x 0...5 V or 2 x 0...10 V          |
| Load resistance          | 10 kΩ min.                           |
| Supply voltage           | 18 ... 35 VDC, 24 VAC ±20 % 50/60 Hz |
| Max. current consumption | 12 mA                                |
|                          | max. with relay 25 mA                |
| Relay                    | 1 pc (max. 50 VDC, 500 mA)           |

### Digital models

|                                |                                      |
|--------------------------------|--------------------------------------|
| Supply voltage                 | 18 ... 35 VDC, 24 VAC ± 20% 50/60 Hz |
| Max. current consumption       | 30 mA at 24 VDC                      |
| (with 120 Ω termination)       |                                      |
| Output type                    | RS-485 (galvanic isolation, 1.5 kV)  |
| RS-485 end of line termination | Enable with jumper, 120 Ω            |
| Supported protocols            | Selectable by DIP switch             |
| BACnet MS/TP                   |                                      |
| Operating mode                 | Selectable Master/Slave              |
| Address range, master mode     | 0 ... 127                            |
| Address range, slave mode      | 128...255                            |

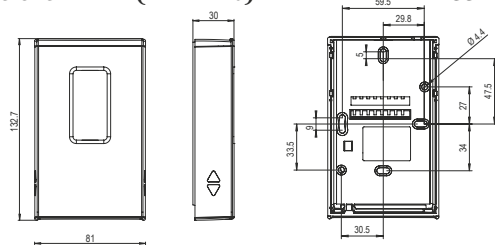
### Modbus RTU

Address range 0 ... 247

Service port RS-485 line for temporary service use

## Dimensions in mm (h x w x d)

133 x 81 x 30



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