

## HMDW80 Series Humidity and Temperature Transmitters for Building Automation Applications



*HMDW80 Series Humidity and Temperature Transmitters for multiple applications within building automation.*

Vaisala INTERCAP® Humidity and Temperature Transmitter Series HMDW80 measure relative humidity and temperature in various building automation applications. Transmitters combine easy installation and reliable operation with a low requirement for maintenance.

The versatile HMDW80 series includes transmitters for wall and duct mounting, IP65-classified transmitters for humid areas, and transmitters with a radiation shield for outdoor use. It also includes temperature-only transmitters and transmitters with an optional display.

Calculated humidity parameters – dew point temperature, wet bulb temperature, and enthalpy – are also available.

### Easy Installation

HMDW80 series transmitters are optimized for easy installation. There are no loose parts, screws are retained in the enclosure, all connectors are clearly labeled, and the connectors are within easy reach. The duct mount transmitters are well suited to a variety of duct sizes, the outdoor transmitters can be mounted directly onto a wall or pole without any extra accessories, and the wall

### Features/Benefits

- Reliable transmitters for basic HVAC humidity measurements
- $\pm 3.0$  %RH accuracy
- Full 0 ... 100 %RH measurement range
- Optimized for easy installation and low maintenance
- User exchangeable INTERCAP® sensor for easy field replacement
- Output parameters: relative humidity and temperature with optional dew point temperature, wet bulb temperature and enthalpy parameters
- UL- VO flammability rating

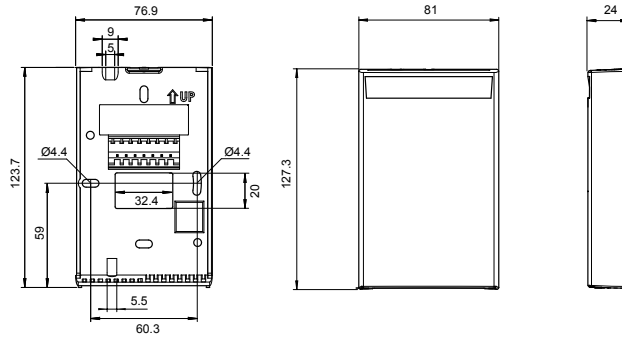
### Typical Installation Locations

- Ventilation ducts
- Walls
- Wash-down areas
- Outdoor locations

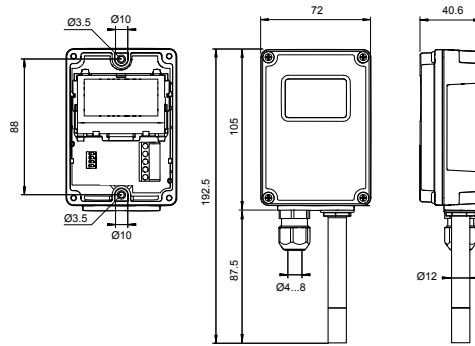
mount transmitters can be installed without the need to make holes in the transmitter enclosure.

### Reliable Operation

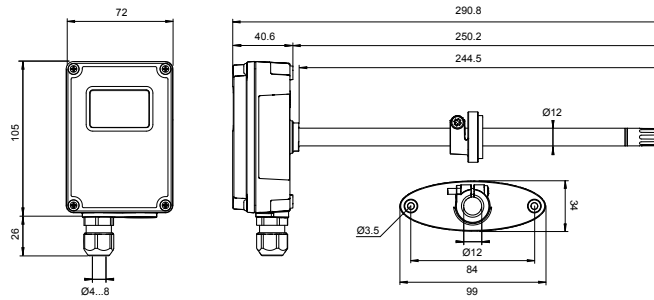
HMDW80 series transmitters require minimal maintenance thanks to their excellent sensor stability and high-quality materials. If necessary, the INTERCAP® sensor can be easily exchanged in the field with minimum downtime.



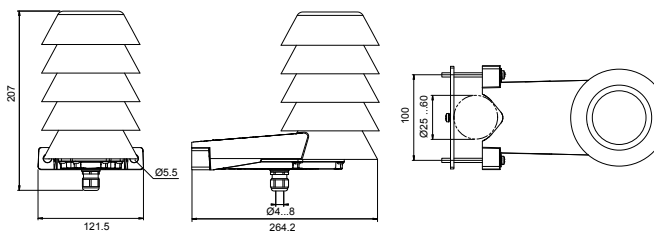
*HMW82/83 RH+T  
and TMW82/83  
T-only  
transmitters  
for wall-mounting*



*HMW88/89(D)  
RH+T transmitters  
for measurements  
in wet areas*



*HMD82/83(D)  
and TMD82/83  
RH+T and  
T-only  
transmitters  
for ducts*



*HMS82/83  
RH+T  
transmitters  
for outdoor  
measurements*

# Technical Data

## Models

| Model number | Type               | Output                 | Special Features                         | Ingress Protection |
|--------------|--------------------|------------------------|--|--------------------|
| TMW82        | Wall-mount, T-only | 2-wire, current output |  | IP30               |
| TMW83        | Wall-mount, T-only | 3-wire, voltage output |  | IP30               |
| HMW82        | Wall-mount, RH+T   | 2-wire, current output |  | IP30               |
| HMW83        | Wall-mount, RH+T   | 3-wire, voltage output |  | IP30               |
| HMW88        | Wall-mount, RH+T   | 2-wire, current output | Calculated parameters*                   | IP65               |
| HMW88D       | Wall-mount, RH+T   | 2-wire, current output | Display, calculated parameters*          | IP65               |
| HMW89        | Wall-mount, RH+T   | 3-wire, voltage output | Calculated parameters*                   | IP65               |
| HMW89D       | Wall-mount, RH+T   | 3-wire, voltage output | Display, calculated parameters*          | IP65               |
| TMD82        | Duct-mount, T-only | 2-wire, current output |  | IP65               |
| TMD83        | Duct-mount, T-only | 3-wire, voltage output |  | IP65               |
| HMD82        | Duct-mount, RH+T   | 2-wire, current output | Calculated parameters*                   | IP65               |
| HMD82D       | Duct-mount, RH+T   | 2-wire, current output | Display, calculated parameters*          | IP65               |
| HMD83        | Duct-mount, RH+T   | 3-wire, voltage output | Calculated parameters*                   | IP65               |
| HMD83D       | Duct-mount, RH+T   | 3-wire, voltage output | Display, calculated parameters*          | IP65               |
| HMS82        | Outdoor, RH+T      | 2-wire, current output | Radiation shield, calculated parameters* | IP65               |
| HMS83        | Outdoor, RH+T      | 3-wire, voltage output | Radiation shield, calculated parameters* | IP65               |

\*Output parameters for humidity: relative humidity, dew point temperature, wet bulb temperature, and enthalpy.

## Specifications for Models HMW82/83 and TMW82/83

### Performance

|  |  |
|--|--|
| Operating temperature range  | -5 ... +55 °C (+23 ... +131 °F)                                    |
| Operating humidity range   | 0 ... 100 %RH, non-condensing                                      |
| RELATIVE HUMIDITY  |  |
| Measurement range  | 0 ... 100 %RH  |
| Accuracy   |  |
| Temperature range  | +10 ... +30 °C (+50 ... +86 °F)                                    |
| 0 ... 70 %RH   | ±3 %RH   |
| 70 ... 100 %RH   | ±5 %RH   |
| Temperature range  | -5 ... +10 °C, +30 ... +55 °C<br>(+23 ... +50 °F, +86 ... +131 °F) |
| 0 ... 100 %RH  | ±7 %RH   |
| Stability in typical HVAC applications                             | ±2 %RH over 2 years  |
| Humidity sensor  | Vaisala INTERCAP®  |
| TEMPERATURE  |  |
| Measurement range  | -5 ... +55 °C (+23 ... +131 °F)                                    |
| Accuracy   |  |
| +10 ... +30 °C (+50 °F ... +86 °F)                                 | ±0.5 °C (±0.9 °F)  |
| -5 ... +10 °C, +30 ... +55 °C<br>(+23 ... +50 °F, +86 ... +131 °F) | ±1.0 °C (±1.8 °F)  |
| Temperature sensor   | Digital temperature sensor   |

## Specifications for Models HMD82/83, TMD82/83, HMW88/89, and HMS82/83

### Performance

|  |  |
|--|--|
| Operating temperature range  | -40 ... +60 °C (-40 ... +140 °F)                                   |
| Operating humidity range   | 0 ... 100 %RH  |
| RELATIVE HUMIDITY  |  |
| Measurement range  | 0 ... 100 %RH  |
| Accuracy   |  |
| Temperature range  | +10 ... +30 °C (+50 ... +86 °F)                                    |
| 0 ... 90 %RH   | ±3 %RH   |
| 90 ... 100 %RH   | ±5 %RH   |
| Temperature range  | -20 ... +10 °C, +30 ... +60 °C<br>(-4 ... +50 °F, +86 ... +140 °F) |
| 0 ... 90 %RH   | ±5 %RH   |
| 90 ... 100 %RH   | ±7 %RH   |
| Temperature range  | -40 ... -20 °C (-40 ... -4 °F)                                     |
| 0 ... 100%RH   | ±7 %RH   |
| Stability in typical HVAC applications                               | ±2 %RH over 2 years  |
| Humidity sensor  | Vaisala INTERCAP®  |
| TEMPERATURE  |  |
| Measurement range  | -40 ... +60 °C (-40 ... +140 °F)                                   |
| Accuracy   |  |
| At +20 °C (+68 °F)   | ±0.3 °C (±0.54 °F)   |
| Temperature dependence   | ±0.01 °C/ °C   |
| Temperature sensor   | Pt1000 RTD Class F0.1 IEC 60751                                    |
| CALCULATED PARAMETERS  |  |
| Measurement range for dew point temperature and wet bulb temperature | -40 ... +60 °C (-40 ... +140 °F)                                   |
| Measurement range for enthalpy                                       | -40 ... 460 kJ/kg (-10 ... +190 BTU/lb)                            |

# Technical Data

## Specifications for Models HMD82/83D and HMW88/89D

### Performance

|  |  |
|--|--|
| Operating temperature range  | -5 ... +60 °C (+23 ... +140 °F)                                    |
| Operating humidity range   | 0...100 %RH, non-condensing  |
| RELATIVE HUMIDITY  |  |
| Measurement range  | 0 ... 100 %RH  |
| Accuracy   |  |
| Temperature range  | +10 ... +30 °C (+50 ... +86 °F)                                    |
| 0 ... 90 %RH   | ±3 %RH   |
| 90 ... 100 %RH   | ±5 %RH   |
| Temperature range  | -5 ... +10 °C, +30 ... +60 °C<br>(+23 ... +50 °F, +86 ... +140 °F) |
| 0 ... 90 %RH   | ±5 %RH   |
| 90 ... 100 %RH   | ±7 %RH   |
| Stability in typical HVAC applications                               | ±2 %RH over 2 years  |
| Humidity sensor  | Vaisala INTERCAP®  |
| TEMPERATURE  |  |
| Measurement range  | (Analog output scaling)<br>-40 ... +60 °C (-40 ... +140 °F)        |
| Operating temperature range of the display                           | +5 ... +60 °C (+23 ... +140 °F)                                    |
| Accuracy   |  |
| At +20 °C (+68 °F)   | ±0.3 °C (±0.54 °F)   |
| Temperature dependence   | ±0.01 °C/ °C   |
| Temperature sensor   | Pt1000 RTD Class F0.1 IEC 60751                                    |
| CALCULATED PARAMETERS  |  |
| Measurement range for dew point temperature and wet bulb temperature | -40 ... +60 °C (-40 ... +140 °F)                                   |
| Measurement range for enthalpy                                       | -40...460 kJ/kg<br>(-10...+190 BTU/lb)                             |

### Operating Environment (All Models)

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Operating Environment (All Models) | See model specifications          |
| Maximum wind/flow speed            | 30 m/s                            |
| Storage temperature                | -40 ... +60 °C (-40 ... +140 °F)  |
| Electromagnetic compliance         | EN61326-1, Industrial Environment |

### Mechanics

|  |                              |
|--|------------------------------|
| Max wire size                                | 1.5 mm <sup>2</sup> (AWG 16) |
| Standard housing color                       | White (RAL9003)              |
| Housing material                             |                              |
| HMW82/83, TMW82/83                           | ABS/PC (UL-V0 approved)      |
| HMW88/89(D), HMD82/83(D), TMD82/83, HMS82/83 | PC + 10%GF (UL-V0 approved)  |

### Inputs and Outputs

|                                |  |
|--------------------------------|--|
| Current output models (2-wire) |  |
| Outputs                        | 4 ... 20 mA, loop powered                              |
| Loop resistance                | 0 ... 600 Ω  |
| Supply voltage                 | 20 ... 28VDC at 600 Ω load<br>10 ... 28VDC at 0 Ω load |
| Voltage output models (3-wire) |  |
| Outputs                        | 0...10 V   |
| Load resistance                | 10 kΩ min  |
| Supply voltage                 | 18 ... 35 VDC<br>24 VAC ±20 % 50/60 Hz                 |

### Spare Parts and Accessories

|  |                   |
|--|-------------------|
| INTERCAP® sensor                                 | 15778HM           |
| 10 pcs of INTERCAP® sensors                      | INTERCAPSET-10PCS |
| Conduit fitting + O-ring (M16x1.5 / NPT1/2 Inch) | 210675SP          |
| Conduit fitting + O-ring (M16x1.5 / PG9, RE-MS)  | 210674SP          |
| Fastening set HMS80                              | 237805            |
| Porous PTFE Filter                               | DRW239993SP       |
| Membrane Filter                                  | ASM210856SP       |
| Terminal Block, Blue                             | 236620SP          |
| HMD80 display lid                                | ASM210793SP       |

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