HMW90 Series Humidity and Temperature Transmitters

For high performance HVAC applications



Features

- Both analog and field bus communication (Modbus® RTU)
- 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 ±1.7 %RH accuracy
- User exchangeable humidity and temperature module
- Traceable calibration (certificate included)
- Available in two colors

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 field bus communication 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.

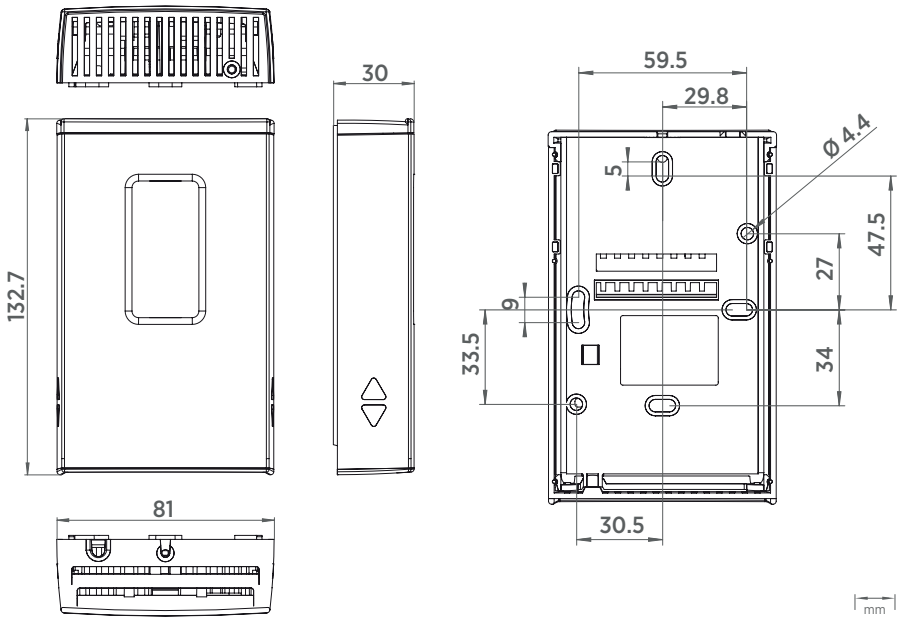
Digital communication brings benefits

The introduction of Modbus® RTU 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 expanded 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, making it clear and convenient to make adjustments. A service port enables two-point calibration, using either a PC or Vaisala HUMICAP® Handheld Humidity and Temperature Meter HM70. HMW90 series transmitters include a user-exchangeable measurement module, which can be ordered as a spare part.

HMW90 dimensions and models



Dimensions of HMW90 series transmitter cover (left) and mounting base (right)

Models

Model	Measurements	Output
TMW92	T-only	2-wire current output
TMW93	T-only	3-wire voltage output
TMW90	T-only	Analog output (configurable)
HMW92	RH+T	2-wire current output
HMW92D	RH+T	2-wire current output, model with display
HMW93	RH+T	3-wire voltage output
HMW93D	RH+T	3-wire voltage output, model with display
HMW90	RH+T	Analog/Modbus RTU output (configurable)
HMW95	RH+T	Modbus RTU output
HMW95D	RH+T	Modbus RTU output, model with display

Technical data

Measurement performance

Relative humidity	
Measurement range	0 ... 100 %RH, non-condensing
Accuracy at temperature range +10 ... +40 °C (+50 ... +104 °F):	
0 ... 90 %RH 90 ... 100 %RH	±1.7 %RH ±2.5 %RH
Accuracy at temperature range −5 ... +10 °C, +40 ... + 55 °C (+23 ... +50 °F, +104 ... +131 °F):	
0 ... 90 %RH 90 ... 100 %RH	±3 %RH ±4 %RH
Stability in typical HVAC applications	±0.5 %RH/year
Humidity sensor	HUMICAP® 180R
Temperature	
Measurement range	−5 ... +55 °C (+23 ... +131 °F)
Accuracy at +20 ... +30 °C (+68 ... +86 °F)	±0.2 °C (± 0.36 °F)
Accuracy at +10 ... +20 °C, +30 ... +40 °C (+50 ... +68 °F, +86 ... +104 °F)	±0.3 °C (± 0.54 °F)
Accuracy at −5 ... +10 °C, +40 ... +55 °C (+23 ... +50 °F, +104 ... +131 °F)	±0.5 °C (± 0.90 °F)
Temperature sensor	Digital temperature sensor

Inputs and outputs

Service port	RS-485 line for temporary service use
Current output models	
Outputs	2 × 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 × 0 ... 5 V or 2 × 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/50 VAC, 500 mA)
Field bus models	
Supply voltage	18 ... 35 VDC, 24 VAC ± 20 % 50/60 Hz
Max. current consumption (with 120 Ω termination)	30 mA at 24 VDC
Output type	RS-485 (galvanic isolation, 1.5 kV)
RS-485 end of line termination	Enable with jumper, 120 Ω
Supported protocol	Modbus RTU
Modbus RTU address range	1 ... 247

Operating environment

Operating temperature	−5 ... +55 °C (+23 ... +131 °F)
Storage temperature	−30 ... +60 °C (−22 ... +140 °F)
IP rating	IP30

Compliance

EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) amended by 2015/863
Electromagnetic compatibility (EMC)	EN 61326-1, industrial environment CISPR 32 / EN 55032, Class B
Compliance marks	CE, RCM

Mechanical specifications

Weight	155 g (5.5 oz)
Standard housing color	White (RAL9003 [1)])
Optional housing color (configurable models only)	Black (RAL9005 [1)])
Housing material	ABS/PC, UL-V0 approved
Output connector	Screw terminals Max. wire size 2 mm^2 (AWG14)
Service port connector	4-pin M8

1) RAL code is only indicative with potential small variations in color shade.

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 handheld meter	219980
USB cable for PC connection	219690

VAISALA

www.vaisala.com

Published by Vaisala | B211183EN-J © Vaisala 2023

fluidic

www.fluidic-ltd.co.uk

All rights reserved. Any logos and/or product names are trademarks of Vaisala or its individual partners. Any reproduction, transfer, distribution or storage of information contained in this document is strictly prohibited. All specifications — technical included — are subject to change without notice.