VAISALA

XMW85 Carbon Dioxide, Humidity, and Temperature Transmitters

For monitoring indoor air quality economically

Features

- Reliable transmitters with Modbus® RTU support over RS-485
- User exchangeable INTERCAP® sensor for easy field replacement
- Field-replaceable GM10 CO_2 module for simple field service
- Excellent stability with the advanced proprietary CARBOCAP® technology
- Optimized for easy installation and low maintenance

Vaisala XMW85 is a configurable Modbus RTU transmitter designed for standard demand-controlled ventilation (DCV) and indoor air quality monitoring (IAQ). It is available in two models: 3-in-1 (CO_2, humidity, and temperature), and 2-in-1 (humidity and temperature) with an optional local display.

XMW85 is designed to meet the needs of modern building automation systems. It integrates seamlessly with ventilation control systems via Modbus RTU communication, which ensures easy installation and reliable communication.

By optimizing ventilation and maintaining ideal indoor air conditions, the XMW85 series transmitters enable smart ventilation strategies that improve energy efficiency, and maintain a healthy and comfortable indoor environment across different building spaces.

Digital communication brings benefits

The introduction of Modbus RTU communication to field-level devices brings many advantages. For example, all transmitters can be centrally accessed and their performance easily monitored. Wiring is simple when multiple devices are installed on the same bus. Transmitters can be set up using standardized tools, and the system can be expanded with additional devices quickly and conveniently.

Easy installation

The XMW85 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.

With modern buildings often having hundreds of sensors, installation time per unit can be a significant cost factor. Returning to the building site to check sensor operation adds further costs.

The XMW85 series transmitters include a number of subtle design features that have been introduced to make installation and commissioning quick and easy.

Reliable operation and low maintenance

The XMW85 series transmitters require minimal maintenance thanks to their excellent sensor stability and high-quality materials. If necessary, the INTERCAP sensor or the CARBOCAP sensor can be easily exchanged in the field with minimum downtime.

The unique, low-power CARBOCAP technology enables a longer lifetime and better stability than before. As the power consumption is low, the heat generated by the electronics does not distort the temperature inside the sensor.

The internal reference in the CO_2 sensor guarantees excellent stability and flawless operation even in constantly occupied buildings, without the need for frequent readjustments. The reliable operation and accurate measurement values of the XMW85 series transmitters contribute to the significant cost savings brought by demand-controlled ventilation.

Technical data

Measurement performance of RH & T models

Relative humidity	
Measurement range	0–100 %RH
Accuracy:	
in temperature range +10 … +30 °C (+50 … +86 °F)	±3 %RH (0–70 %RH) ±5 %RH (70–100 %RH)
in temperature range −5 … +10 °C, +30 … +55 °C (+23 … +50 °F, +86 … +131 °F)	±7 %RH (0–100 %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:	
at +10 … +30 °C (+50 … +86 °F)	±0.5 °C (±0.9 °F)
at −5 … +10 °C, +30 … +55 °C (+23 … +50 °F, +86 … +131 °F)	±1.0 °C (±1.8 °F)
Temperature sensor	Digital temperature sensor

Measurement performance of CO_2, RH & T models

Carbon dioxide	
Measurement range	0–2000 ppm
Accuracy: [1]	
at +20 … +30 °C (+68 … +86 °F)	±(30 ppm +3 % of reading)
at +10 … +20 °C (+50 … +68 °F) and +30 … +40 °C (+86 … +104 °F)	±(35 ppm +3.7 % of reading)
at +0 … +10 °C (+32 … +50 °F) and +40 … +50 °C (+104 … +122 °F)	±(40 ppm +4.8 % of reading)
Stability in typical HVAC applications	±(15 ppm +2 % of reading) over 5 years
Warm-up time	1 min 10 min for full specification
Response time (63 %)	60 s
Carbon dioxide sensor	CARBOCAP® GM10
Relative humidity	
Measurement range	0–95 %RH
Accuracy:	
in temperature range +10 … +30 °C (+50 … +86 °F)	±3 %RH (0–70 %RH) ±5 %RH (70–100 %RH)
in temperature ranges 0 … +10 °C, +30 … +50 °C (+32 … +50 °F, +86 … +122 °F)	±7 %RH (0–100 %RH)
Stability in typical HVAC applications	±2 %RH over 2 years
Product lifetime	> 15 years
Humidity sensor	Vaisala INTERCAP®
Temperature	
Temperature sensor	Digital temperature sensor
Measurement range	0 … +50 °C (+32 … +122 °F)
Accuracy:	
at +10 … +30 °C (+50 °F … +86 °F)	±0.5 °C (±0.9 °F)
at −5 … +10 °C, +30 … +55 °C (+23 … +50 °F, +86 … +131 °F)	±1.0 °C (±1.8 °F)

1) *Accuracy applicable to 2000 ppm measurements at 1013 hPa pressure. Pressure or temperature dependencies not included in the values.*

Operating environment

Maximum wind/flow speed	30 m/s
Operating temperature	RH & T models: −5 … +55 °C (+23 … +131 °F) CO_2, RH & T models: 0 … +50 °C (+32 … +122 °F)
Operating humidity	0–100 %RH, non-condensing
Storage temperature	Without display: −40 … +70 °C (−40 … +158 °F) With display: −30 … +70 °C (−22 … +158 °F)
IP rating	IP30

Inputs and outputs

Supply voltage	18–35 V DC 24 V AC ±20 % 50/60 Hz
Digital output	Modbus RTU
Modbus RTU address range	1–247 (up to 255 possible, non-standard)
Bit rates	4800, 9600, 19200, 38400, 57600
Parity	None or Even
Stop bits	Supports automatically both 1 and 2 stop bits

Mechanical specifications

Housing material	ABS/PC UL-V0 approved
Housing color	White (RAL9003)
Max. wire size	1.5 mm^2 (16 AWG)
Weight:	
RH & T models	Without display: 104 g (3.67 oz) With display: 113 g (3.99 oz)
CO_2, RH & T models	Without display: 113 g (3.99 oz) With display: 122 g (4.30 oz)

Compliance

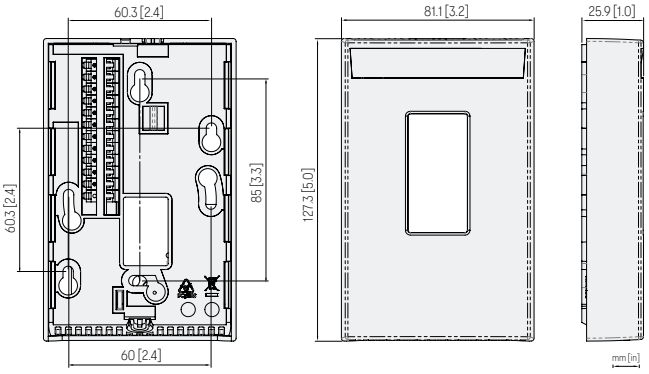
EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) as amended by 2015/863
Electrical safety	EN 61326-1, basic electromagnetic environment
EMC emissions	CISPR 32 / EN 55032, Class B
Compliance marks	CE, China RoHS, RCM

Spare parts and accessories

CO_2 module	GM10SP80
INTERCAP® humidity sensor	15778HM
10 pcs of INTERCAP sensors	INTERCAPSET-10PCS

Models

Model	Meas. parameters	Display	Item code	Units on display
XMW85HD	RH, T	Yes	XMW85HDV0	Metric
XMW85HE	RH, T	Yes	XMW85HEV0	Non-metric
XMW85H	RH, T	No	XMW85HNV0	-
XMW85GD	CO_2, RH, T	Yes	XMW85GDV0	Metric
XMW85GE	CO_2, RH, T	Yes	XMW85GEV0	Non-metric
XMW85G	CO_2, RH, T	No	XMW85GNV0	-



XMW85 dimensions

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