



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 CO₂ 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 (CO₂, 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 CO₂ 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 CO₂, 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

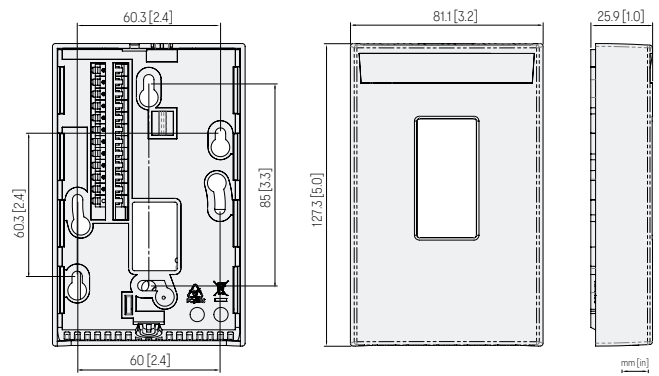
| | |
|-------------------------------|--|
| EU directives and regulations | EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) as amended by 2015/863 |
| Electrical safety | EN 61326-1, basic electromagnetic environment |
| EMC emissions | CISPR 32 / EN 55032, Class B |
| Compliance marks | CE,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