VAISALA

User's Guide

GMW20 Series

CO_2 Transmitters for Demand Controlled Ventilation

- **Excellent long term stability**
- **Five year recommended calibration interval**
- **Relay and temperature outputs as optional features**
- **Digital display as an option**
- **Practical small-sized unit**

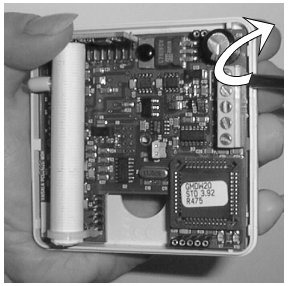
BASICS ABOUT THE GMW20 SERIES

Vaisala's GMW20 series transmitters use silicon based CARBOCAP® sensor with excellent stability and reliability properties. The series consist of the following transmitter types:

- GMW21 and display version GMW21D (80x108.5x35)mm
- GMW22 and display version GMW22D (80x80x35)mm

MOUNTING

1. The GMW20 is shipped ready for installation onto a standard wallbox or onto a surface mounting.
2. Drill a hole in the surface where the transmitter will be mounted , then pull the wiring through the drilled hole.
3. Open the transmitter cover by pushing forward and turning a screwdriver head in the slot located at the bottom between the cover and the back plate.
4. Remove the printed circuit board (PCB) (see Figure 1).



Remove the PCB by pressing upwards with a screwdriver

Figure 1.

5. Thread the power wires and output signal wire through the center hole of the back plate. In case of surface wiring, make (e.g.with a pliers) cut-out by removing the attenuated part at lower edge of the back plate.
6. Center the hole in the base over the drilled holes and fasten the base to the surface by using the screws.
7. Install the PCB into the base by aligning it over the latch pins and press down the upper right corner until it snaps into place. When using GMW21D or GMW22D, mount the display module on top of the PCB.
8. Proceed to the *Electrical connections* section.

ELECTRICAL CONNECTIONS (Figure 2)

See the requirements for the power supply in the reverse side of this page.

1. Connect the nominal 24 V supply on the PCB between the terminals + and -. The analog outputs are available for the remaining terminals.
2. Connect the common wire to terminal 0 and the other wire either to terminal V (voltage output) or to the terminal mA (current output).
3. Choose the current output with the jumper 0/4 mA

- 4...20mA: jumper shorts the pins (default)
- 0...20 mA: disconnect (do not discard) the jumper.

4. If the unit has an optional accessory (relay, display and relay, LonWorks interface, or temperature module), follow the procedure described in the applicable manuals before repositioning the cover.
5. Reposition the cover.

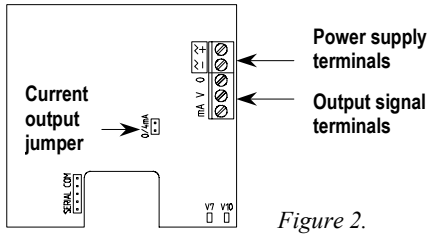


Figure 2.

CAUTION Connecting power wires to the output terminal can seriously damage the product.

CALIBRATION AND SERVICE

The GMW20 series transmitter is calibrated as shipped from the factory. In benign environments the recommended calibration interval is five years. In case the adjustment is needed, contact Vaisala SSD Service or local Vaisala representative.

The reading of the GMW20 can be checked and adjusted with Vaisala's 19222GM calibration software. The checking in the field can also be done with calibration gas and a multimeter.

Internet: http://www.vaisala.com
Technical support: helpdesk@vaisala.com
Vaisala Oyj, Phone (int.): (+358 9) 89491
P.O.Box 26, FIN-00421 Helsinki, Finland

TECHNICAL DATA

Property	Description / value
Measuring ranges	0...2000 ppm CO_2 0...5000 ppm CO_2 0...10 000 ppm CO_2 0...20 000 ppm CO_2
Accuracy at 25°C against certified factory references (includes repeatability and calibration uncertainty)	<±[30 ppm CO_2+ 2% of reading]
Non-linearity	<±1.0 % FS
Temperature dependence of output (typically)	0.15 % FS / °C (reference 25ºC)
Long-term stability	<5.0 % FS / 5 years
Recommended calibration interval	5 years
Response time (0...63%)	1 minute
Operating conditions	
Operating temperature range	-5…+45°C
Humidity range	0...85 % RH , non-condensing
General	
Output signal for CO_2	Selectable 0...20 mA or 4...20 mA and 0...10 V
Resolution of analog outputs	0.5 % FS
Optional outputs	relay output
	LonWorks® interfaces
Recommended external load:	
current output voltage output	max. 500 Ω min. 1kΩ
Power supply	nominal 24 VAC/VDC (18...30 VDC)
Power consumption	<2.5 W
Warm-up time	<15 min
Housing material	ABS plastic
Weight	GMW21(D):100g(130g) GMW22(D):90g(120g)
Storage temperature	-20...+70 ºC

CE

POWER SUPPLY REQUIREMENTS

The GMW20 uses a nominal 24 VAC/VDC power supply maintaining a voltages of 18...30 VDC or 20...26 VAC for all load conditions and all mains voltages. Although the power input includes a halfwave rectifier, it is recommended to use a DC supply to avoid current peaks (Current consumption: peak 170 mA, average 85 mA).

Connections to a 24 VAC power supply

When more than one transmitter is connected to one 24 VAC transformer, a common loop is formed and the risk of a short-circuit increases. To avoid this, separate floating supply for each transmitter is recommended (see Figure 3).

In case where several transmitters have to share one transformer, the phase (~) must always be connected to 24V connector in each transmitter to maintain the "polarity" and to avoid short-circuit via shared common line at the controller as shown in Figure 4.

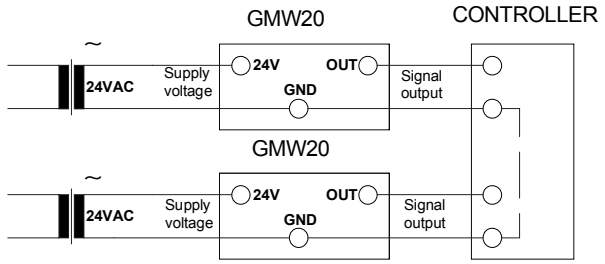


Figure 3. Connection of separate AC supplies (recommended).

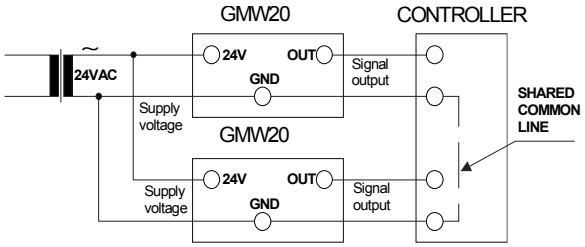
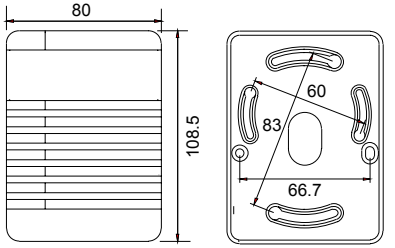
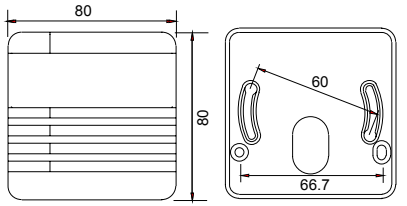


Figure 4. Connection of one AC supply to several transmitters

DIMENSIONS (IN MM)



GMW21



GMW22

RELAYS AND OTHER ACCESSORIES

Transmitters can be ordered with or without relays. The default relay trigger point has been set to 1000 ppm. This can be changed with the optional software kit 19222GM.

Order code	Description
GMI21	Display and relay output option
GMR20	Relay output option
GML20	LonWorks interface option
GML20T	LonWorks interface option:CO_2 and temperature (GMW21 only)
GMA20T	Analog temperature option (GMW21 only)
GM35001	Calibration pipe
19222GM	Calibration software kit (incl. disk and serial COM adapter)

GUARANTEE

Vaisala issues a guarantee for the material and workman-ship of this product under normal operating conditions for one (1) year from the date of delivery. Exceptional operating conditions, damage due to careless handling and misapplication will void the guarantee.