

Vaisala CARBOCAP® Carbon Dioxide Module GMM112 and Transmitter GMW115



- GMM112 compact diffusion aspirated CO₂ module for OEM applications
- GMW115 CO₂ transmitter for wall mounting
- Measurement range 0 ... 2000 ppm or 0 ... 5000 ppm CO₂
- Ideal for HVAC applications



ELECTRICAL CONNECTIONS

mA	Signal 4 ... 20 mA
V	Signal (+) 0 ... 10 V
0	Signal (-)
B	RS-485 Signal B
A	RS-485 Signal A
0	Power supply (-)
24V	Power supply (+) 24 VDC/VAC

See Figure 3 for wire terminals.

Powering

The products require a nominal 24 VDC/VAC power supply maintaining a voltage of 18 ... 30 VDC or 20 ... 26 VAC for all load conditions and all mains voltages. Although the power input includes a half-wave rectifier, it is recommended to use a DC supply to avoid current peaks.

Connections to 24 VAC Power Supply

Connecting more than one transmitter to a single 24VAC transformer forms a common loop and increases the risk of a short-circuit. Therefore, a separate floating supply for each transmitter is recommended (see Figure 1).

If several transmitters share a common transformer, the phase (~) must always be connected to the 24 V connector in each transmitter (see Figure 2).

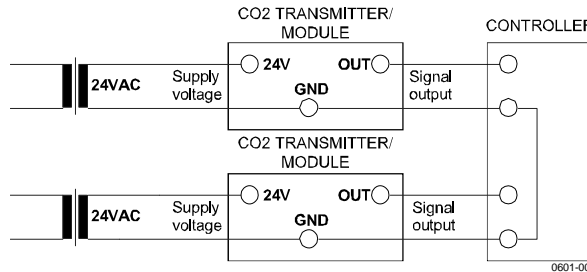
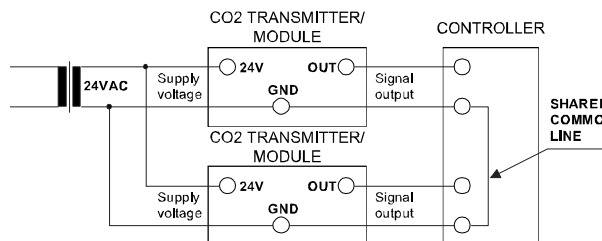


Figure 1 Connection of Separate AC Supplies (Recommended)



MOUNTING AND DIMENSIONS

Dimensions

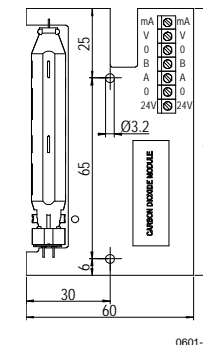


Figure 3 GMM112 Module Connections and Dimensions

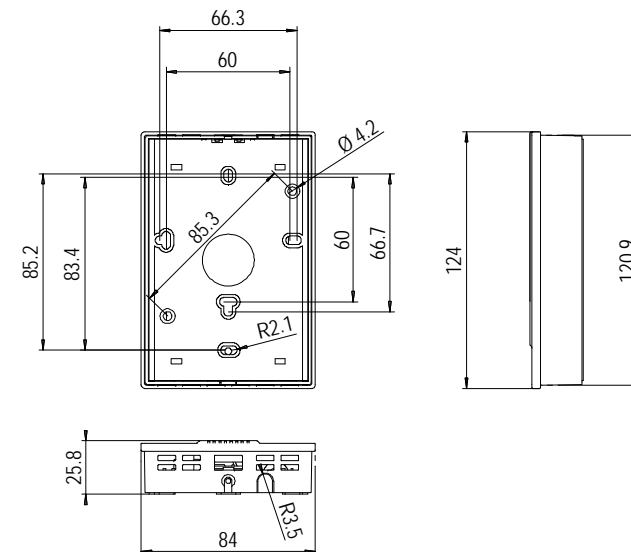


Figure 4 GMW115 Transmitter Dimensions

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Mounting the GMW115 Transmitter

Mount the back plate onto a wall using screws. Make sure the back plate is mounted in with the same orientation as in Figure 4.

GMW115 Cover Opening/Closing

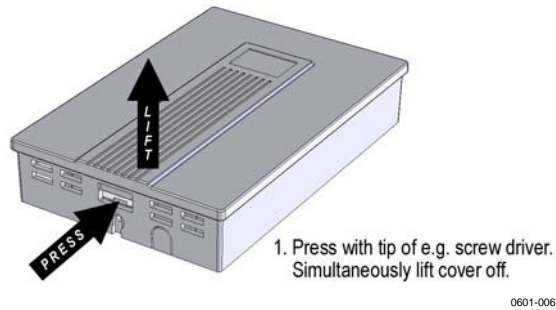


Figure 5 Opening the GMW115 Cover

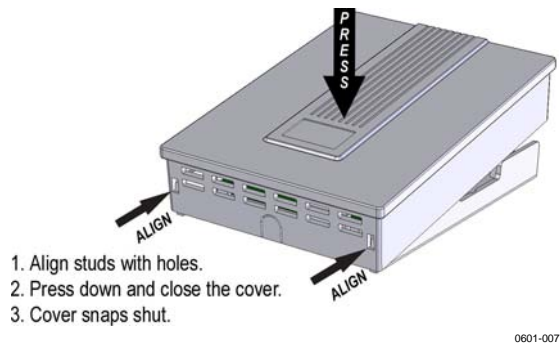


Figure 6 Closing the GMW115 Cover

SERIAL COMMUNICATION INTERFACES

The modules support RS232 or RS485 communication. RS232 is set as factory default. The RS485 interface is selected by serial command. The communication settings for both interfaces are: 9600, N, 8, 1.

RS485 Interface

The interface is non-isolated two-wire interface with no internal bus termination. If termination is needed, use RC termination (100 Ω resistor in series with 1 nF capacitor) at both ends of the bus. See serial commands list below to activate the RS485 interface.

RS232 Interface

Use the RS-232 interface for setting the operating parameters. The connection cable between PC and module (a serial COM adapter for maintenance purposes) is available from Vaisala (order code: 19040GM).

SERIAL COMMANDS

Serial commands are the same for RS232 and RS485 interface. <cr> stands for pressing ENTER.

Polling command for CO₂ measurement (ppm):

SEND <cr>

Setting the interval for the RUN (continuous output) mode:

INTV X Y<cr>
X = 0 (default) ... 255
Y = S/MIN/H

Starting the continuous mode printing:

R<cr>

Stopping the continuous mode printing:

S<cr>

Saving the parameters into the memory:

SAVE<cr>

Enabling/disabling the RS485 interface:

RS485 X<cr>
X = ON/OFF

Changing the operation mode:

SMODE X<cr>
X = STOP (default) / RUN / POLL

Giving the device address:

ADDR X<cr>
X = 0 (default) ... 99

Opening the polling line:

OPEN addr<cr>
addr = 0 (default) ... 99

Closing the polling line:

CLOSE<cr>

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TECHNICAL DATA

Property	Description / Value
Performance	
Measurement ranges	0 ... 2000 ppm CO ₂ 0 ... 5000 ppm CO ₂
Measurement accuracy (incl. repeatability, non-linearity and calibration uncertainty)	±(2 % of range + 2 % of reading)
Long-term stability	± 5 % of range / 5 years
Response time	1 min
Temperature dependence of reading	-0.35 % of reading / °C (typical)
Pressure dependence of reading	+ 0.15 % of reading / hPa (typical)
Warm-up time	1 min 10 min full specification
Product lifetime	> 10 years
Operating environment	
Operating temperature range	-5 ... +45°C
Operating humidity range	0 ... 85 %RH
Operating pressure range	700 hPa ... 1200 hPa
Inputs and outputs	
Operating voltage	24 V (±20 %) AC/DC
Power consumption	< 2 W
Connections	Screw terminals, wire size 0.5 ... 1.5 mm ²
Outputs analog serial	0 ... 10 V, 4 ... 20 mA RS-485, 2-wire, non-isolated
Recommended external load current output voltage output	< 500 Ω > 1 kΩ
Electromagnetic compatibility	EN61326-1: Generic Environment
Materials	
Weight	GMM112: 34 g GMW115: 105 g
Housing material	ABS plastic

GUARANTEE

Vaisala issues a guarantee for the material and workmanship of this product under normal operating conditions for two (2) years from the date of delivery. Exceptional operating conditions, damage due to careless handling and misapplication will void the guarantee.

