

# GMT220 CO<sub>2</sub> Transmitter Series for Industrial Applications



 **VAISALA**

# Reliable and Innovative Design

## HIGH-END MEASUREMENT TECHNOLOGY

The GMT220 series transmitters incorporate the new industrial CARBOCAP® sensor. The patented sensor has unique reference measurement capabilities. Its critical parts are made of silicon. This gives the sensor an outstanding stability over both time and temperature. For the user this means that the calibration interval can be extended compared to many other NDIR instruments on the market.

## FOR HARSH ENVIRONMENTS

The GMT220 series transmitters are designed to measure CO<sub>2</sub> in harsh and humid environments. The housing is dust and water proof to IP65/NEMA4. The materials have been chosen for good corrosion resistance.

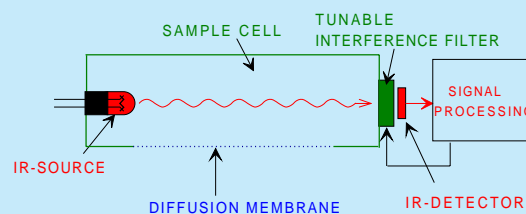
The transmitters are particularly well suited for industrial CO<sub>2</sub> applications, such as:

- horticulture and fruit storages
- safety alarming and leakage monitoring
- demand controlled ventilation in harsh environments



## The CARBOCAP® Operating Principle

The CARBOCAP® sensor is a Single-Beam Dual-Wavelength NDIR sensor. It features a tunable interference filter which enables reference measurements without the problems frequently encountered in other types of Dual-Wavelength sensors. The modulated infrared source emits light into the sample cell, where the gas absorbs photons of a certain wavelength. The filter is electrically tuned so that its pass band coincides with the absorption



wavelength of the gas. The detector measures the strength of the signal that gets through.

Then the pass band of the filter is shifted to a band with no interfering absorption lines. This constitutes the reference signal.

The ratio of the two signals indicates the degree of light absorption in the gas and so the gas concentration. Since the tunable interference filter is made by silicon micro-machining, all parts prone to mechanical wear have been eliminated.

## Easy to Use

CO<sub>2</sub>



### OPTIMAL MEASUREMENT RANGE FOR EACH APPLICATION

The user has a choice of measurement ranges up to 20 %CO<sub>2</sub>. The GMT220 series is comprised of two transmitters: the **GMT221** is designed for higher and the **GMT222** for lower CO<sub>2</sub> concentrations.

The transmitter can be connected to various measurement systems. In addition to standard analog, voltage and current outputs, there are also two configurable alarm relay outputs. Activated relays are indicated by LED lights on the cover. An optional LonWorks® digital interface is also available.

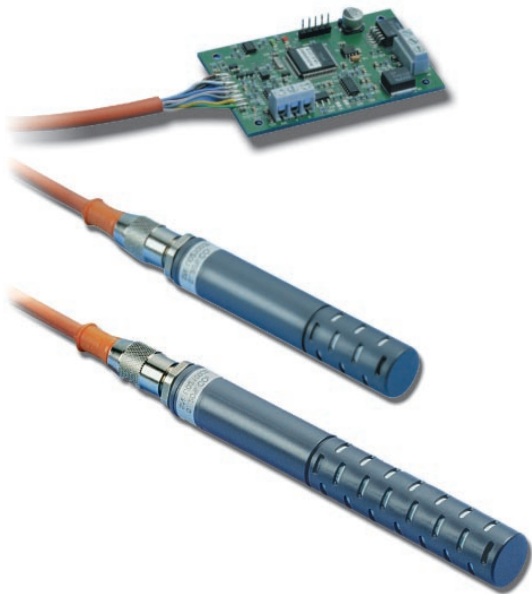
### SIMPLE INSTALLATION

A separate mounting plate makes the installation of the transmitter easy. After the mounting plate has been attached to the wall, the transmitter body is locked onto it. To simplify installation, the plastic plate protecting the electronics inside the housing includes instructions on how to make the electrical connections.

### EASY FIELD MAINTENANCE

Since the probes of the GMT220 series transmitters are truly interchangeable, they facilitate easy field maintenance. The probes can either be replaced by newly calibrated probes or separate ones that can be used as a reference for calibration checking. This minimizes downtime. The end-user can take care of the field maintenance without any additional equipment or heavy and expensive calibration gas bottles. Replaced probes can be sent to Vaisala for re-calibration.

# Flexible



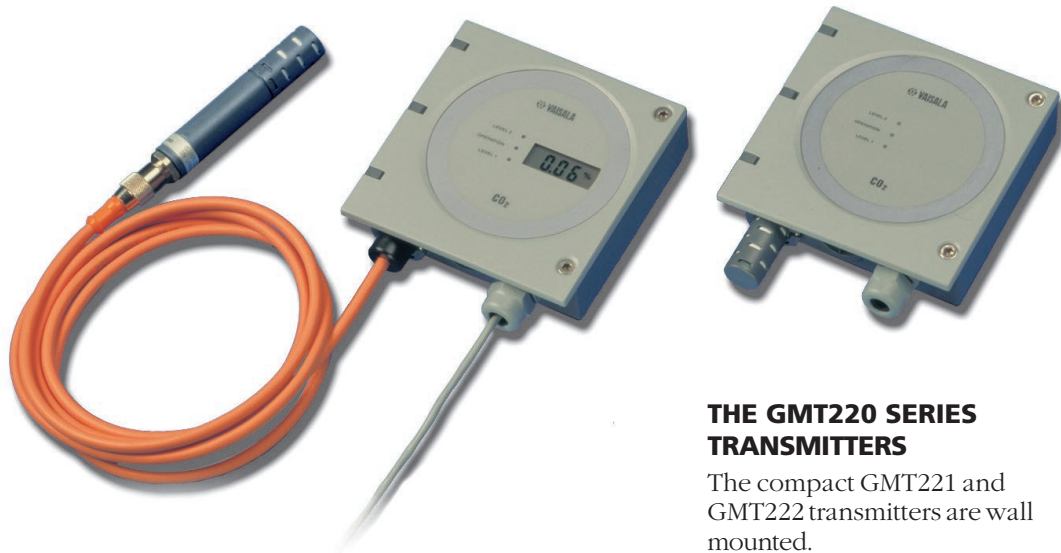
## THE GMM220 SERIES MODULES

The GMT221 and GMT222 transmitters are also available as corresponding modules, **GMM221** and **GMM222**.

The modules are particularly suitable for incubator, fermentor, or other OEM applications.

## INTERCHANGEABLE PROBES

Since the probes are truly interchangeable, they can be removed and re-attached or replaced at any time – without any need for calibration and adjustment. Furthermore, they can be attached directly to the transmitter body or used remotely with the help of a probe cable. This enables installation of the probe into hard-to-reach places.



## THE GMT220 SERIES TRANSMITTERS

The compact GMT221 and GMT222 transmitters are wall mounted.

## Options

### DIGITAL LCD DISPLAY

The LCD display shows four digits, the ppm or % (CO<sub>2</sub>) symbols, as well as diagnostics. The display is backlit and can therefore be seen even in dark locations.

### LONWORKS® MODULE

A LonWorks® module is available as a digital interface option.

### SPARE PROBES

The interchangeable probes **GMP221** and **GMP222** can be ordered separately.

### PROBE CABLE

The probe cable is two meters long. It facilitates remote installation of the probe. The

probe can be installed in an area where there is a danger of CO<sub>2</sub> leaks and the transmitter body mounted outside that area.

### PROBE ATTACHMENT GEAR

Remote installation of the probe e.g. in a duct, a chamber, or on a wall is possible with a mounting flange or two clips.

# Technical Specifications



LONMARK  
PARTNER

## GENERAL

Measurement ranges	
GMT221/GMM221 for high concentrations	0...2% CO <sub>2</sub> 0...3% CO <sub>2</sub> 0...5% CO <sub>2</sub> 0...10% CO <sub>2</sub> 0...20% CO <sub>2</sub>
GMT222/GMM222 for low concentrations	0...2000 ppm 0...3000 ppm 0...5000 ppm 0...7000 ppm 0...10 000 ppm
Accuracy at 25 °C against certified factory references	
GMT221/GMM221	<±[0.02% CO <sub>2</sub> + 2% of reading]
GMT222/GMM222	<±[20 ppm CO <sub>2</sub> + 2% of reading]
(incl. repeatability and calibration uncertainty)	
Nonlinearity	<±0.5 %FS
Temperature dependence of output (typical value)	0.1 %FS/°C
Pressure dependence (typ.)	0.15% of reading/hPa
Long-term stability	<±5 %FS/2 years
Response time (63%)	
GMT 221/GMM221	20 seconds
GMT 222/GMM222	30 seconds

## GMT221/222

Analog output signals	0...20 or 4...20 mA 0...10 V
Resolution of analog outputs	0.03 %FS
Recommended external load	
current output	max. 400 Ohm
voltage output	min. 1 kOhm
Two pre- or user-defineable relay outputs	
Relay contact ratings	max. 30 VAC/ 60 VDC, 0.5 A
Power supply	nominal 24 VAC/DC
Power consumption	<4 W
Warm-up time	<15 minutes
Operating temperature range	-20...+60 °C
Storage temperature range	-30...+70 °C
Operating humidity range	0...100 %RH non-condensing
Housing material	
transmitter body	ABS plastic
probe	PC plastic
Housing classification	IP65/NEMA4
Weight:	
GMT221	max. 280 g
GMT222	max. 300 g
Probe cable length	2 m (optional)

## GMM221/222

Analog output signals	0...20 or 4...20 mA 0...1 V, 0...2 V, 0...2.5 V or 0...5 V
Resolution of analog outputs	0.03 %FS
Recommended external load	
current output	max. 200 Ohm
voltage output	min. 1 kOhm
Power supply	11...20 or 18...30VDC
Power consumption	<2.5 W
Warm-up time	<15 minutes
Operating temperature range	-20...+60 °C
Storage temperature range	-30...+70 °C
Operating humidity range	
probe	0...100 %RH non-condensing
mother board	0...85 %RH non-condensing
Probe housing material	PC plastic
Probe housing classification	IP65/NEMA4
Weight:	
GMP221 probe	max. 40 g
GMP222 probe	max. 60 g
Mother board (incl. 2 m cable)	max. 140 g

## ACCESSORIES

GMP221, GMP222	spare probe
(use the order form to define the measurement range etc.)	
25245GM	clips (2 pcs) for attaching the probe
GM45156	mounting flange for the probe
19040GM	serial COM adapter
GMT221/222 only:	
25665 GM	2.0 m probe cable
GML220	LonWorks® module

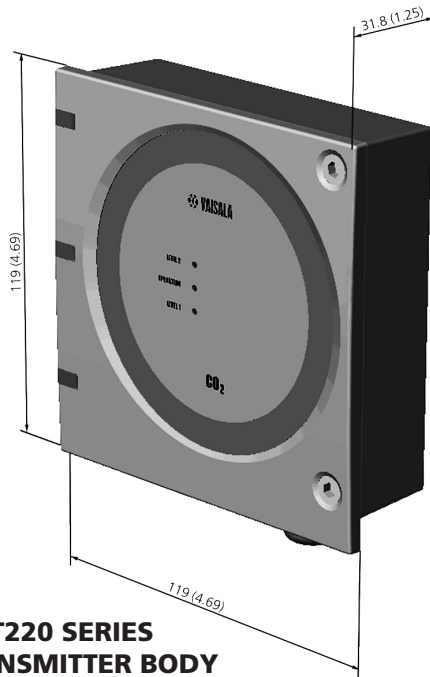
The GMT221/222 and GMM221/222 comply with the following EMC standards and have passed the following tests:

EN 50081-1	(EN 55022 class B = CISPR 22)
EN 50082-1	(IEC 1000-4-2, 8 kV air) (IEC 1000-4-3, 80 - 1000 MHz, 80% AM, 3 V/m) (IEC 1000-4-4, 500V) (IEC 1000-4-6, 0.15 - 80 MHz, 80% AM, 3 V/m)
	(IEC 1000-4-5, 500 V) [GMT221/222 only]

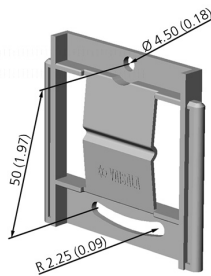
CARBOCAP® is a registered trademark of Vaisala Oyj. Specifications subject to change without prior notice.  
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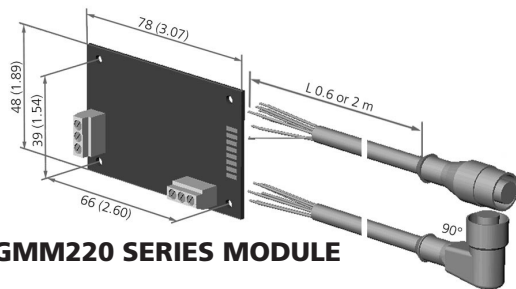
# Dimensions



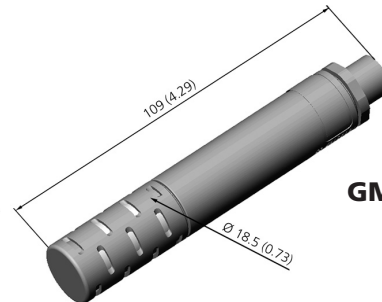
**GMT220 SERIES  
TRANSMITTER BODY**



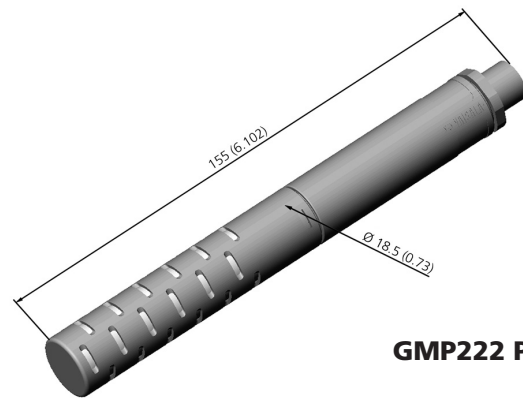
**MOUNTING PLATE**



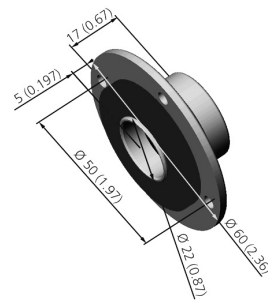
**GMM220 SERIES MODULE**



**GMP221 PROBE**



**GMP222 PROBE**



**MOUNTING FLANGE**

Dimensions in mm (inches)



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