AX-GS-CD-T81G

Room Carbon dioxide Transmitter, Analogue output, Optional RH&T

Product overview

The AX-GS-CD-T81G Carbon Dioxide Transmitter uses Non-Dispersive Infrared (NDIR) technology to measure CO2 levels and provides an analogue output (voltage or current) corresponding to the measured value. The maximum level can be set to 2000 ppm or 5000 ppm using the on-board dipswitches. The optional multicolour LCD version can display CO2 levels in ppm and change backlight colour based on the measured CO2 value. It also has a version with additional Relative Humidity and Temperature outputs.

Applications: Indoor air quality monitoring and demand controlled ventilation systems where there is no full-time occupation.

Products Features

- Solid state sensing element
- No calibration required
- Voltage or current output
- 24V AC/DC supply voltage
- Digital display of CO2 levels in ppm (-MCD versions)
- Visual alarm indication with backlight colour switch (-MCD)

Product Specifications

Power supply:	24Vac/dc ±15%
Power consumption:	0.75W Typical. 1.5W Maximum
Carbon Dioxide Sensor	
Output range:	0-2000ppm/5000ppm selectable
Sensing method:	Non Dispersive Infrared
Sampling type:	Diffusion
Typical coverage area:	15m radius or 700sq.m
Accuracy:	±30ppm ±3% of reading
Stability:	<2% of FS over life of sensor
Temperature dependence:	5ppm per °C or 0.5%of reading per °C whichever is greater
Sensor life expectancy:	15 years typical
Calibration interval:	Calibration not required. See ABC Logic
Signal update interval:	Every 5 seconds
Response time (t_{90}):	< 3minutes
Warm up time:	10 minutes
Passive Temperature Output (optional)	
Sensor type:	See order codes for available passive sensor types
Accuracy	±0.5°C typical
RH&T Analog Outputs (optional)	
Sensor Type:	Capacitive
Output range:	RH : 0to100%RH, Temperature: -10°C to 40°C
Accuracy	RH: ±2.5% typical (20 to 80% RH at 25°C) Temperature: ±0.3°C Typical
Response time	15 seconds @25°C, but dependent on airflow
LCD Display (optional):	4 digits 9mm high
	Backlight color : Red(>1500ppm)Orange(1000 to 1500ppm)/Green (<1000ppm)
Analogue Outputs:	0-10Vdc / 4-20mA selectable using dipswitch
Maximum load:	600 Ohms max for 4-20mA output. 5mA for Voltage output.
Enclosure:	ABS UL94-5VA compliant . Cool white colour.
Dimensions, weight and ingress:	87 x 82 x 27mm, 75g, IP30
Operating conditions:	-10°C to 50°C, 0 to 95%RH non-condensing
Storage conditions:	-20°C to 70°C
Compliance:	CE, RoHS
Country of origin:	United Kingdom

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AX-GS-CD-T81G

Room Carbon dioxide Transmitter, Analogue output, Optional RH&T

Order Codes	
Part Number	**Description**
AX-GS-CD-T81G-V	Room CO2 transmitter, 0-2000/5000ppm, 0-10V output
AX-GS-CD-T81G-VI	Room CO2 transmitter, 0-2000/5000ppm, 0-10V/4-20mA output
AX-GS-CD-T81G-VI-MCD	Room CO2 transmitter, 0-2000/5000ppm, 0-10V/4-20mA output with Multicolour LCD Display
AX-GS-CD-T81G-VI-H	Room CO2, RH &T transmitter, 0-2000/5000ppm, 0-10V/4-20mA output
AX-GS-CD-T81G-VI-H-MCD	Room CO2, RH &T transmitter, 0-2000/5000ppm, 0-10V/4-20mA output with Multicolour LCD

Add 'x' to the part numbers for additional passive temperature sensor output. Choose 'x' from the following table	**T**	10K3A1 NTC	**SAT**	SAT1 NTC	**1K**	PT1000a Platinum
	3K	3K3A1 NTC	**ST1**	ST1 PTC	**N1K**	Ni1000a Nickel(TCR)
	A	10K4A1 NTC	**50K**	50K6A1 NTC	**TAC**	1K87A1 NTC
	H	20K6A1 NTC	**J**	2.2K NTC		
	D	30K6A1 NTC	**100**	PT100a Platinum		

Installation

The transmitter should be installed by suitably qualified technician in conjunction with any guidelines for the equipment it is to be connected to and any local regulations. Field wiring should be installed to satisfy the requirements set out by the manufacturer of the equipment that the sensor is being connected to. Anti -static precautions must be observed when handling these transmitters. The PCB contains circuitry that can be damaged by static discharge.

The unit should not be mounted where temperatures will exceed the ambient temperature range specified.

Allow 2 minutes after applying power before checking functionality, and allow a further 10 minutes before carrying out pre-commissioning checks.

The sensor is designed for benign environments. The performance and reliability may be compromised in environments that contain corrosive or caustic gases including but not limited to Ammonia, Chlorine, NOx and Ozone. Care must taken to ensure that the sensor is not exposed to these compounds under any operating condition.

Location

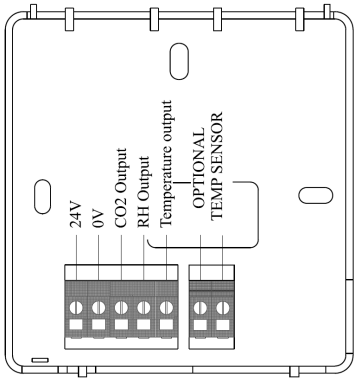
Choose a location where the air is a representative sample of the area to be monitored or controlled. Install the sensor at a height of 1.5 to 2 meters, which is the breathing zone where most human respiration occurs. Place the sensor away from windows, doors, vents, and other sources of airflow that could skew readings. Ensure the sensor is in an open space for accurate measurements. Keep the sensor out of direct sunlight, as it can affect sensor readings. Exposure to direct sunlight can cause temperature fluctuations and impact performance.

Wiring

The transmitter should be connected to the controller using 0.5 to 1.5mm² cables. The use of a shielded cable is recommended for optimal noise immunity.

Power Supply: The transmitter can operate with both AC and DC power supplies. If a DC power supply is used, ensure it is galvanically isolated from the mains power. It can also be powered by a step-down transformer if mains voltage is available. (Annicom recommends the use of a 5VA transformer.) Ensure that the device's maximum ratings are not exceeded. Excess voltage will result in permanent damage.

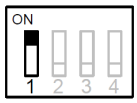
Outputs: Do NOT apply any external voltage to these terminals. The output configuration should be compatible with the device/ controller to which the unit is connected.



Output Configuration

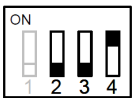
Configure the CO2 sensing range and analogue outputs with the on board dipswitches. Possible configurations are shown below. Any other combination could cause device malfunctioning.

DSW1 - Configure CO2 output



ON - 5000ppm
OFF- 2000ppm

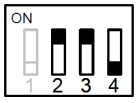
4-20mA Out



0-10V Out

DSW2 (optional)- Configure RH output

ON - Display on LCD



4-20mA Out

0-10V Out

DSW3 (optional) - Configure temperature output

ON - Display on LCD

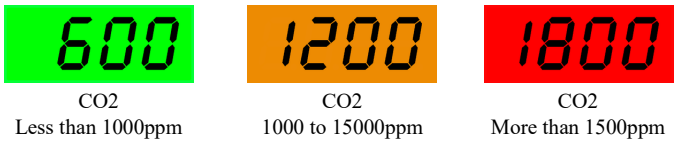
4-20mA Out

0-10V Out

Enabling a combination of CO2,RH &T parameters result in toggling the values periodically.

Display (optional)

The -MCD versions come with a 4-digit, 9mm-high LCD display with a backlight that changes colours based on the detected CO2 level. By default, it displays the CO2 concentration in ppm.



CO2
Less than 1000ppm

CO2
1000 to 15000ppm

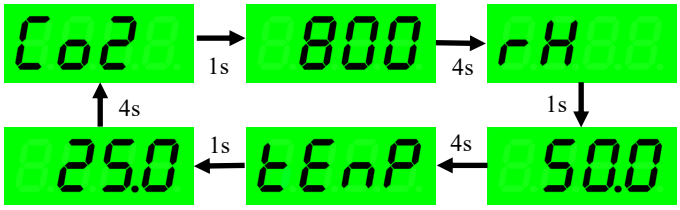
CO2
More than 1500ppm

In units with the optional RH and T sensor, the display will toggle between CO2, RH, and Temperature readings if the RH and T display is enabled with the corresponding dipswitches.

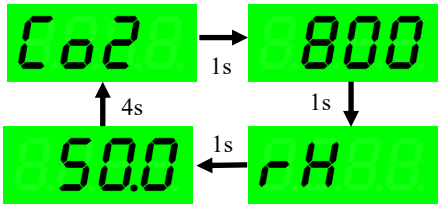
RH and Temperature disabled

(CO2 level in ppm)

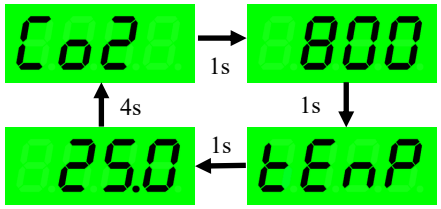
RH and Temperature enabled



Only RH enabled



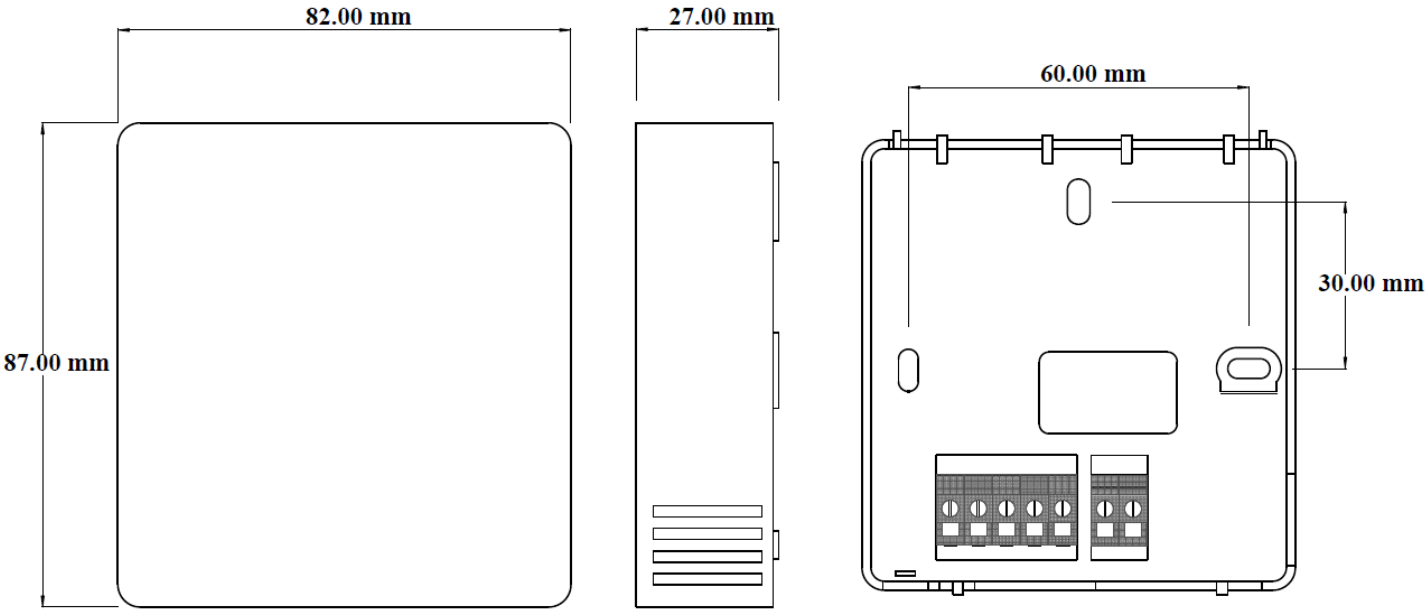
Only Temp enabled



ABC Logic

Automatic Background Calibration Logic (ABC Logic) is a self-calibration technique designed for applications where concentrations drop to outside ambient conditions (ppm) at least once for 15 minutes within a 7-day period. This typically occurs during unoccupied periods. Full accuracy is achieved using ABC Logic. The sensor typically reaches its operational accuracy after 25 hours of continuous operation under conditions where it was exposed to ambient air at 400 ppm CO2. The sensor will maintain its accuracy specifications, provided it is exposed to the reference value at least once every 7 days, and this reference value is the lowest concentration to which the sensor is exposed. ABC Logic requires continuous operation of the sensor for increments of at least 4 hours each.

Dimensions



Datasheet Contents

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