



### Product overview

The AX-GS-CM-M range of Carbon monoxide transmitters use electrochemical sensor to monitor CO concentration in the levels of 0-300 ppm and transmit over the RS-485 network configured for Modbus RTU protocol. The sensor module uses a plug-in connector making in-the-field replacement easy.

### Products Features

- Monitors CO levels over a range of 0 to 300ppm
- Electrochemical sensing element
- Isolated RS-485 Output
- Rising Clamp Terminals
- Easy maintenance and 3 year exchange sensor option
- Sensor is UL recognised component UL2034, UL2075, E240671
- 3 Year Warranty

### Product Specifications

Sensor Type:	CO : Electrochemical 3-electrode Temperature (option) : 10K3A1 NTC Thermistor
Power Supply:	24Vac $\pm$ 10%, 100mA maximum or 24Vdc $\pm$ 10%, 60mA maximum
Output:	RS-485 Modbus RTU *see ' <i>NETWORK COMMUNICATION DETAILS</i> ' for more information
Output Accuracy:	CO : $\pm$ 5ppm or $\pm$ 5% of reading (whichever is greater) between 0-50°C Temperature (option) : $\pm$ 0.3 °C Typical
Output Stability:	<5% signal drift per year
Display (option)	4 digit 9mm high character backlit LCD of reading in ppm
Typical Coverage Area:	700m <sup>2</sup> or 15m radius
Settling Time:	3 minutes after power up
Response Time(t <sub>90</sub> ):	<45 Seconds
Life Expectancy:	>3 years dependant on environment
Ambient Range:	0-50°C, 15-90% RH non-condensing
Housing:	Flame retardant ABS, IP65, White (optional Black - see order codes)
Dimensions & Weight:	92mm diameter x 52mm, TBC
Terminals:	Rising clamp for 0.5-1.5mm <sup>2</sup>
Country of origin	UK

### Product Order codes

Order Code	Description
AX-GS-CM-M	0-300 ppm
AX-GS-CM-ML	0-300 ppm with Display
AX-GS-CM-M-T	0-300 ppm CO, 0-50DegC Outside temperature
AX-GS-CM-ML-T	0-300 ppm CO, 0-50DegC Outside temperature , LCD Display (CO reading in ppm)
* Add -B to all part numbers for optional black enclosure.	

### Installation

The AX-GS-CM-M should be installed by a suitably qualified technician in accordance with any guidelines for the device and the equipment which is to be connected to. Field wiring should be installed to satisfy the requirements set out by the manufacturer of the equipment that the unit is being connected to using screened cable where necessary.

### Location

The enclosure should be mounted at a height of 1 to 1.5 metres from the floor of the area to be monitored in an area of good airflow. For best operation do not mount the sensor near doors, opening windows, supply air diffusers or other known air disturbances. Avoid areas where the transmitter would be exposed to vibrations or rapid temperature changes.

### Termination Impedance

If the slave device is at the end of the network, enable 120Ohms termination resistor by placing TERM in ENABLE Position. This ensures the proper termination of signals travelling in both directions on the bus. Do NOT use more than two termination impedances in a network.

### Status LED

This flashes 6 times every 8 seconds. A brighter flash in the sequence indicates a fault, ordered as:

- 1 - Program memory
- 2 - Internal
- 3 - Calibration
- 4 - CO sensor selection
- 5 - Temperature sensor
- 6 - CO sensor

### Communication status LED

The LED flashes once per second to show that the communication is active. If the unit does not receive any request for more than a minute the LED will flash rapidly indicating NO COMMUNICATION.

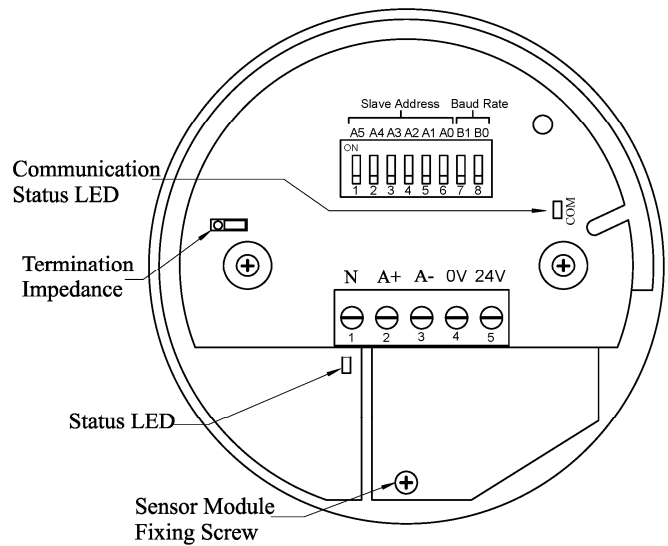
### Sensor module replacement

To replace the sensor module remove the fixing screw and slide module to the right. After replacing the module, check the status LED indications give 6 equal flashes (no bright flash).

### Usage

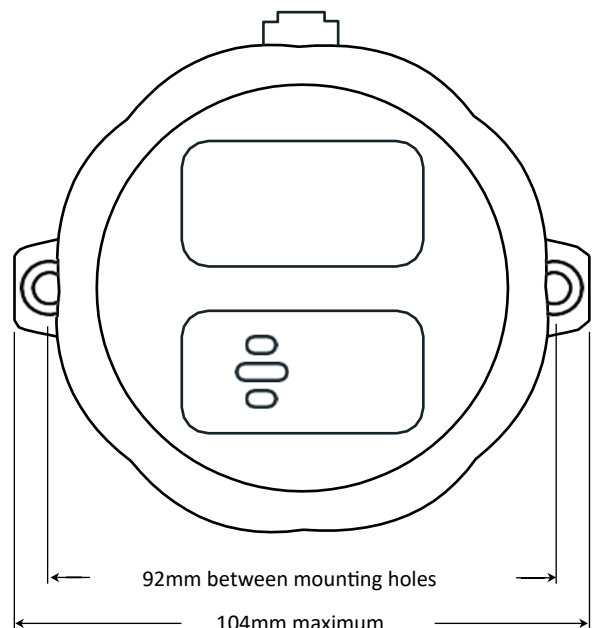
Suitable for monitoring and ventilation applications. Do NOT use in safety critical or hazardous applications.

### Connections



- 1. SHIELD
- 2. DATA+
- 3. DATA -
- 4. 0V
- 5. 24V AC/DC

### Fixing



### Network Communication Details

The communication parameters can be set using the Dipswitches or can be programmed over the network.

When dipswitches are used, the device address is set using switches A5 to A0 and the baud rate is selected by B1 and B0. The Parity will be None and the Number of Stop bits will be 1 in this mode. The new values will not be updated until either the unit is re-powered or a software reset executed.

When the dipswitches A5 to A0 are set to OFF, the communication parameters will be loaded from the configuration registers 40050 to 40053. When these registers are modified, the updated values will not be stored until a Non Volatile Memory Update command has been executed and will not be used until either a Force Reset command or a re-power of the unit.

### Modbus Register Details

### Dipswitch configuration

A5	A4	A3	A2	A1	A0	
OFF	OFF	OFF	OFF	OFF	OFF	Comms. set by registers 40050:53
						<b>Address</b>
OFF	OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	OFF	ON	OFF	2
↓	↓	↓	↓	↓	↓	↓
ON	ON	ON	ON	ON	ON	63

B1	B0	Baud Rate	Parity	No of Stop Bits
OFF	OFF	9600	None	One
OFF	ON	19200		
ON	OFF	38400		
ON	ON	57600		

Address	Supported function codes	Description	Data type	Data
Data registers				
30001	04(Read Input Registers)	CO Concentration in ppm	uint16	0-300
30002		Temperature in Deg C(-T Version Only)	uint16	0-500 (00.0 - 50.0)
30003		Fault	uint16	0: No Faults 1: CO Sensor Faulty 2: Temperature Sensor Faulty 3: Both Sensors are faulty
Configuration registers				
40050	03(Read Holding Registers) 06(Preset Single Register) 16(Preset Multiple Registers)	Modbus Address	uint16	1-247 (Default:1)
40051		Baud rate	uint16	0: 9600(Default) 1:19200 2:38400 3:57600
40052		Parity	uint16	0:None (Default) 1:Odd 2:Even
40053		No of Start/Stop bits	uint16	0:1 Stop bit (Default) 1:2 Stop bits
Control registers				
40100	06(Preset Single Register)	Force reset	uint16	0:Normal 1:Reset
40101		Non volatile memory update	uint16	0:Normal 1:Update
40102		Force factory defaults	uint16	0:Normal 1:force Defaults

### Datasheet Contents

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