# M-SENSE III AND UG-M-SENSE III

CO<sub>2</sub> and CO sensors for monitoring and controlling ventilation in garages etc.





**TECHNICAL DATA** Supply voltage

24 V AC/V DC ±20% 50/60Hz (half-wave rectifying input) < 3 W average

Current consumption Operating temperature 1 0 to 50°C CO<sub>2</sub> measurement Measurement principle

Infra-red (NDIR),

Accuracy 3

Automatic baseline correction (ABC)  $^{2}$ ±1% of measurement range, 5% of measured value

Measurement range

0-3 000 ppm (measurement ranges of up to 20 %vol. offered on request)

CO measurement

Gas sensitive thick film material (MMOS) with active carbon filter, internally compensated for temperature and humidity variations, Automatic baseline correction (ABC) 2

Accuracy 3 Measurement range Analogue outputs 4

0-100 ppm (standard)

± 10 ppm

Measurements.

Protection

PTC fuse (automatic reset) on signal earth (ground) M, short-circuit proof

wall mounting Measurements, duct mounting Linear outputs

UTG.4

150x110x46 mm

287x150x110 mm

**UTG.1 & UTG.2**  $0/2-10 \text{ V DC R}_{\text{UTG.}} < 100 \text{ Ohm}$  $R_{load} > 5 \text{ kOhm } (0/1-5 \text{ V DC optional})$ 

0/4-20 mA R<sub>load</sub> < 500 Ohm 0-10 V DC R<sub>UTG.</sub> < 100 Ohm, R<sub>load</sub> > 5 kOhm can be jumpered

from open collector operation)

ON/OFF outputs

Relay (UTG.3) Insulated N.C., 1 mA/5 V-1 A to

50 V AC/24 V DC.

Open collector UTG.4 In ON/OFF mode: max 0.5 A/

55 V DC (half wave rectification for AC), connected to earth

### **CHARACTERISTICS**

- Infra-red technology (NDIR) for carbon dioxide content
- Modern MMOS for carbon monoxide content
- Flexible control outputs for DUC or direct control of shutters and speed-regulated fans.
- Internal data logger for trend logging of the environment
- Contributes to reduced energy consumption for demand ventilation.
- Maintenance-free for over 5 years.

#### **FUNCTION**

M-SENSE III is a regulator with built-in gas sensor for carbon monoxide and carbon dioxide. Using these parameters, the programmable unit can regulate the air change rate etc. and generate alarms for personnel safety. The M-SENSE III also considers ambient temperature and relative humidity, for high CO measurement accuracy.

### **APPLICATION**

The M-SENSE III is intended for use in areas where combustion offers a potential danger from hazardous air, such as in vehicle garages, loading bays, tunnels and mines. It offers measurement of CO and CO2 which does not just guarantee general safety, it also saves energy if correct requirement control of ventilation is ensured.

It is general knowledge that all engines produce CO, especially during a cold start, and that we need protection from this poisonous gas. A warm, modern engine with catalytic exhaust purification generates more than 140 times more CO2 than CO, on average. In this situation, CO<sub>2</sub> is the potential danger, so both gases must be measured to guarantee personnel safety.

The M-SENSE III can be used for both local control/alarms and to form a component of a wider system.

### **INSTALLATION**

Please refer to the separate installation instruction.

# **MAINTENANCE**

Normally maintenance-free for 5 years.

## ORDERING EXAMPLE

Item Code Designation

CO/CO2 sensor for wall installation M-SENSE III UG-M-SENSE III CO/CO2 sensor for duct installation

Note 1: The gauge can operate at lower temperatures if a heater is installed.

Note 2: The ABC function is the key to maintenance free operation. It assumes an operation environment where there is at least some sporadic basic ventilation. The ABC function automatically compensates for any zero point drift of the CO sensor and CO<sub>2</sub> sensor.

Note 3: In normal indoor climate (at least 3 weeks after installation). NOTE! The CO measurement will give an incorrect reading if near to certain chemicals such as silicone, so some types of environment are not suitable

Note 4: The specifications apply when the outputs are connected to system ground G0 or a common signal ground, M.

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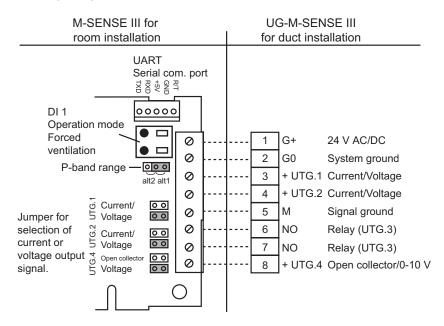


# **TERMINALS**

No.	Designation	Electric connection	Function*
1	G+	24 V AC/DC	
2	G0	System ground	
3	OUT 1	Linear signal (+) 0-10 V/4-20 mA	CO-transm. 0100 ppm
4	OUT 2	Linear signal (+) 0-10 V/4-20 mA	CO <sub>2</sub> -transm. 02000 ppm
5	M	Signal ground (-)	
67	OUT 3	ON/OFF relay (N.C.)	Gas alarm switch points CO = 35/30  ppm or $CO_2 = 1500/1400 \text{ ppm}$
8	OUT 4	Open collector (N.O.) or control signal (+) 0-10V	Fault alarm or gas alarm (UTG.3-relay open circuit)
Extra terr	minal:spring-loaded pin		
9 10	DI 1	Circuit breaker input with delay timer (N.O.)	Test function

<sup>\*</sup> Can be configured with UIP4

# **WIRING DIAGRAM**





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