

M-SENSE III AND UG-M-SENSE III

CO₂ and CO sensors for monitoring and controlling ventilation in garages etc.



TECHNICAL DATA

Supply voltage	24 V AC/V DC $\pm 20\%$ 50/60Hz (half-wave rectifying input)
Current consumption	< 3 W average
Operating temperature ¹	0 to 50°C
CO₂ measurement	
Measurement principle	Infra-red (NDIR), Automatic baseline correction (ABC) ²
Accuracy ³	$\pm 1\%$ 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	± 10 ppm
Measurement range	0-100 ppm (standard)
Analogue outputs ⁴	
Protection	PTC fuse (automatic reset) on signal earth (ground) M, short-circuit proof
Measurements, wall mounting	150x110x46 mm
Measurements, duct mounting	287x150x110 mm
Linear outputs UTG.1 & UTG.2	0/2-10 V DC $R_{UTG} < 100$ Ohm $R_{load} > 5$ kOhm (0/1-5 V DC optional) 0/4-20 mA $R_{load} < 500$ Ohm
UTG.4	0-10 V DC $R_{UTG} < 100$ Ohm, $R_{load} > 5$ kOhm can be jumpered from open collector operation)
Relay (UTG.3)	ON/OFF outputs 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

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 CO₂ 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.

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, CO₂ 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
M-SENSE III	CO/CO ₂ sensor for wall installation
UG-M-SENSE III	CO/CO ₂ sensor for duct installation

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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. 0...100 ppm
4	OUT 2	Linear signal (+) 0-10 V/4-20 mA	CO ₂ -transm. 0...2000 ppm
5	M	Signal ground (-)	
6 7	OUT 3	ON/OFF relay (N.C.)	Gas alarm switch points CO = 35/30 ppm or CO ₂ = 1500/1400 ppm
8	OUT 4	Open collector (N.O.) or control signal (+) 0-10V	Fault alarm or gas alarm (UTG.3-relay open circuit)
Extra terminal:spring-loaded pin			
9 10	DI 1	Circuit breaker input with delay timer (N.O.)	Test function

* Can be configured with UIP4

WIRING DIAGRAM

