Toxic Transmitter Sensor

Safe Area Use

Description

The GMI Transmitter sensors use proven electrochemical sensor principles to detect and monitor for a selection of toxic gases in the Parts Per Million (ppm) range. They are designed for use in non- Hazardous applications e.g. Car park monitoring systems.

They operate on a 3 / 4 wire connection and provide a linear, calibrated 4~20 mA output to allow connections to our range of fixed control panels, or alternatively direct to existing PLC, DCS or external control systems as required.

The sensor and the amplifier electronics are housed in a sturdy mild steel enclosure which has built in external mounting lugs (as shown in Fig.1) to allow ease of fitting.

The amplifier PCB has built in Zero and Span potentiometers to allow a simple and reliable calibration procedure.

Ingress Protection	**IP65 (Transmitter Electronics)**
Material	**Mild Steel 0.8mm thick with Polyurethane seal.**
Lid fastening	**Four M4 screws**
Finish	**Polyester based coating (powder coating)**
Colour	**Grey RAL 7032**
Cable Entry	**20mm – top entry as standard**
Weight	**0.5Kg**
Dims	**140mm x 140mm x60mm**
Mounting	**2 off External lugs —6 mm holes diagonal fixing centres—175mm**

Sensor Location

General guidance on positioning sensors is currently available in BS EN 50073 and HSE Guidance Note *Control of safety risks at gas turbines used for power generation.*

The path of the gas or its dispersion characteristics will depend on the density of the gas and the ventilation patterns. The density can be used to determine at what height sensors should be positioned relative to the potential source. Refer to table opposite for gas density information and typical sensor location.

Sensors should be positioned to detect any gas accumulation before it creates a serious hazard. Factors to consider are:

- **the process plant and equipment;**
- **the type of sensor ;**
- **the properties and dispersion characteristics of the gas;**
- **the ventilation patterns;**
- **other safety issues, e.g. location of personnel or equipment protection.**

Maintenance, Servicing and Calibration

- **Gas detection sensors should be regularly serviced and calibrated by fully trained personnel**
- **Only Gas Measurement Instruments (GMI) replacement parts should be used**
- **All instruments and associated equipment should be regularly serviced and calibrated**
- **Only certified traceable gases should be used in the maintenance \ calibration of GMI products**
- **Only calibrate the instrument in the gases it will be used for to make sure of compliance with specification.**

Installation

- **Once Location of sensor has been determined, fix to suitable wall via the two external lugs using appropriate fixings.**
- **Locate Transmitter sensor unit away from sources of heat and with room for adequate air circulation. In addition, locate within easy reach for operating and maintenance personnel (where possible).**
- **Ensure that connecting wiring is electrically shielded, e.g SWA, Screened cable, Conduit or M.I.C.C**
- **Connect wiring to your control panel. Refer to connection options shown. For GMI control panels use option 1 of 4 (Shown opposite).**
- **Use appropriate cable gland for the application. 20 mm entry.**
- **Terminate to control panel**

Warning: Gas detection sensors and control panels must be disconnected before commencing installation tests. Do not apply any abnormal currents or voltages to the detection heads or sensor modules as this will invalidate any guarantee.

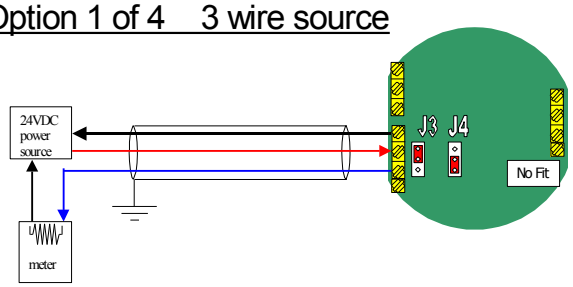
To ensure the installation provides reliable system operation and is compliant with EMC requirements, please connect the sensor enclosure to a clean earth back at the control panel via the cable armour or screen.

Multiple earthing must be avoided as induced signal interference may be encountered.

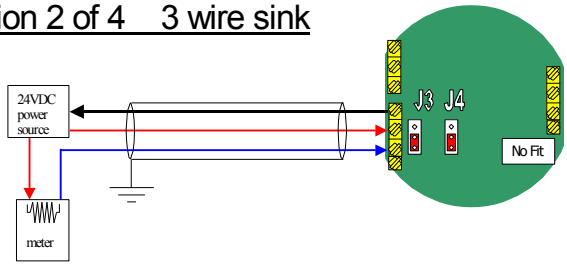
Connection Options

The transmitter sensor range can be connected to GMI control panels, PLC controllers, building management systems or any other control panel which can accommodate a 4-20mA input signal. There are four output configurations which may be selected to allow all possible connections as shown below. Please note positions of jumper links.

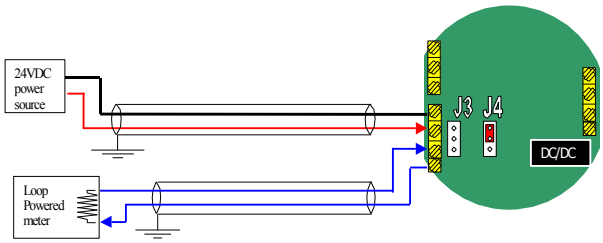
Option 1 of 4 3 wire source



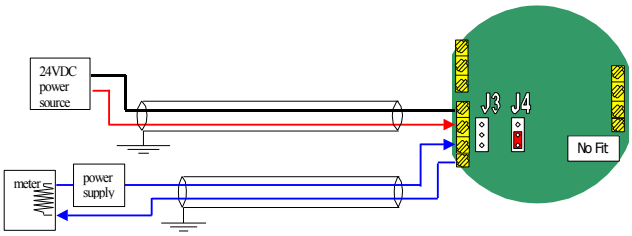
Option 2 of 4 3 wire sink



Option 3 of 4 4 wire active



Option 4 of 4 4 wire passive

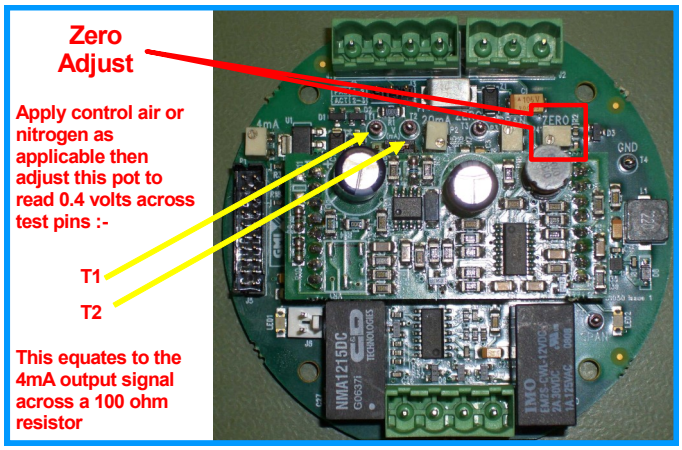


Gas Sensor Information

Transmitter Name	Transmitter Part No.	Gas Type	Operating Range	Relative Density Air = 1	Typical Sensor Location	Expected sensor life (In air at STP)	Replacement sensor part numbers
TS.01	51000	Carbon Dioxide	0 ~ 5 % Volume	1.53	Lowest point	>5 years (I.R. Cell)	51254
TS.02	51002	Carbon Dioxide	0 ~ 100 % Volume	1.53	Lowest point	>5 years (I.R. Cell)	51255
TS.03	51002	Carbon Monoxide	0 ~ 1000 ppm	0.976	Height = 1.5m	24	65127
TS.04	51003	VOC	50ppm Isobutylene	1.98	Lowest point	>24	66559
TS.05	51004	Sulphur Dioxide	0 ~ 30 ppm	2.263	Lowest point	24	65377
TS.06	51005	Chlorine	0 ~ 10 ppm	2.473	Lowest point	24	65371
TS.07	51006	Nitrogen Dioxide	0 ~ 20 ppm	2.62	Lowest point	24	65378
TS.08	51007	Ammonia	0 ~ 100 ppm	0.59	Highest Level	24	65388
TS.09	51008	Nitric Oxide	0 ~ 300 ppm	1.036	Height = 1.5m	24	65385
TS.10	51009	Freon	0 ~ 2000 ppm	>1	Lowest point	>24	51225
TS.11	51010	Hydrogen Sulphide	0 ~ 100 ppm	1.188	Lowest point	24	65128
TS.12	51011	Oxygen	0 ~ 25% Volume	1.105	Height = 1.5m	24	66066

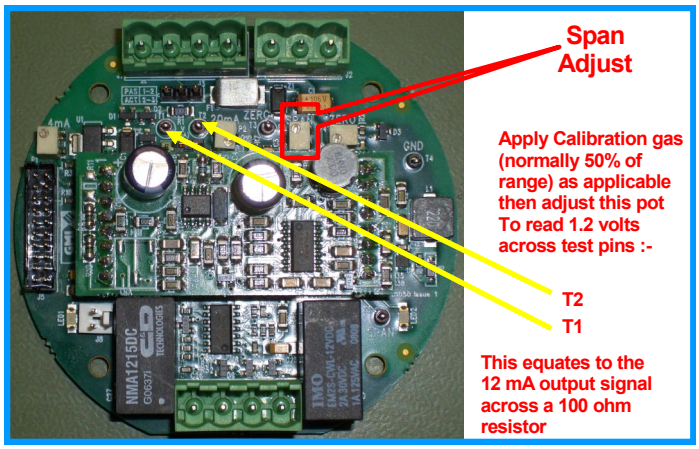
Calibration

There are four potentiometers on the GMI transmitter sensor PCB. To complete the Calibration of the transmitter sensor it should only be required to make adjustment on two of these. This requires the application of a zero gas and then a known value span gas. Follow the two steps shown below.



Step 1.....

Step 2.....



GMI Transmitter Sensor test Record

Gas Type	range	Serial No.	Calibration Gas Used	Set to mV	Tested by	Q.A.	Date

Other Information

STORAGE, HANDLING AND TRANSIT

GMI Safe Area Transmitter Sensors are designed to handle harsh environments and their electronics are protected to IP65. If not subject to misuse or malicious damage, the detection head will provide many years of reliable service. A GMI Safe Area Transmitter Sensor from the Toxic range contains an electrochemical sensor with a life of 24 months. Under conditions of prolonged storage the sensor should be removed. The sensor contains potentially corrosive liquid and care should be taken when handling or disposing of the sensor, particularly when a leak is suspected.

There are no special precautions to be taken when a Safe Area Transmitter Sensor is in transit.

DISPOSAL ADVICE

When no longer in use, dispose of Safe Area Transmitter Sensors carefully and with respect for the environment. GMI will dispose of the Safe Area Transmitter Sensors without charge if returned to the factory.

GMI

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