

Tailored to Task, Tailored to Gas

Why a Fixed Refrigerant Leak Detection System?

- ✓ Save money – In refrigeration and heating installations, efficiency in the operation of the system depends on its gas charge, a leaking system will incur additional running costs. Undercharged systems need to work harder to produce the same cooling effect which substantially increases power consumption resulting in an increase in your energy bill.
- ✓ Leak Detection systems identify problems early and allow systems to be repaired at a lower cost in leaked refrigerant and with less system down time and costly stock losses.
- ✓ In addition, systems with Fixed Gas Detection systems require fewer inspections under F-Gas (842/2006) regulations.
- ✓ Avoid Prosecution – Many refrigerants are toxic or flammable and a duty of care exists on system operators to protect both staff and members of the public from the effects of refrigerant leaks.
- ✓ F-Gas legislation requires gas detection for systems for refrigerant plant with a charge in excess of 300kg

Why Install a Murco Refrigerant Detection System?....

- An out-of-the box solution which is quick and easy to install
- A range of products to detect every refrigerant gas for any application
- Continuous monitoring – sensors are located in the monitored area and connected to a central controller or BMS to provide a continuous signal
- Qualifies for Enhanced Capital Allowance from the Carbon Trust (UK Only)
- Industry Experts in refrigeration working closely with global manufacturers
- Constantly improving and developing our innovative product solutions

A Suitably designed Murco leak detection system can ensure compliance:

- ✓ Legislation – F Gas Regulation, EH40
- ✓ Standards – EN378, LLYODS approval (MGD only)
- ✓ Regulatory Approvals – UL, CE
- ✓ Greener Building Programmes – BREEAM, LEED, Energy Technology List



• Comply with legislation • Protect personnel • Protect the environment • Save on operating costs •

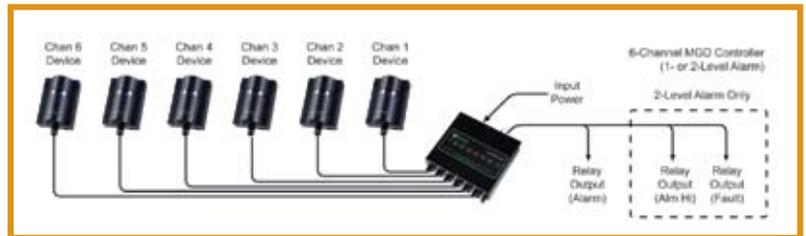
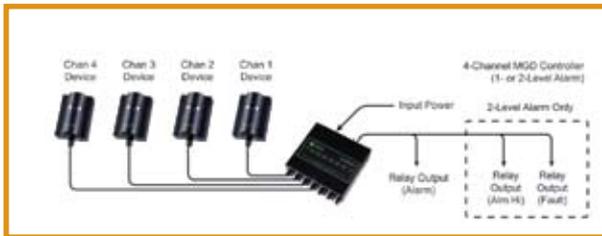
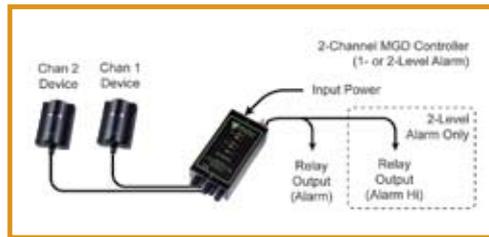
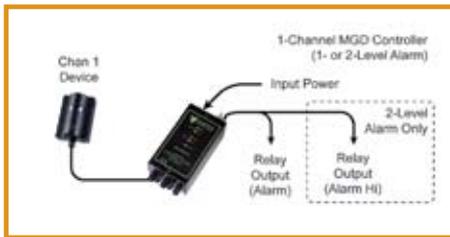
“ If your business success depends on refrigeration, depend on Murco the refrigeration experts ”

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Applications and Features

The most cost effective systems available; a robust and scalable gas detection system, for reliable real-time monitoring that alarms when pre-set thresholds are exceeded. The MGD alarms are monitored by a central controller, which can alert personnel of potentially hazardous conditions via an onboard buzzer and LED alarm indicators. The system can range from a single sensor, one-alarm level system to larger scale systems consisting of 6 sensors with 2 alarm levels.

- cold stores • supermarkets • fishing vessels • ice-making plants • food distribution centres •
- fruit ripening stores • meat and food processing plants • chiller machinery rooms •
- air cooled chillers •



Detector Location

Keep in mind that sensors monitor a point as opposed to an area. If the gas leak does not reach the sensor then no alarm will be raised. Therefore, it is extremely important to carefully select the sensor location.

Regarding the number of gas sensors, there is no legal guideline on sensor coverage. The British Standard that preceded EN378 specified 36m² per sensor in a machinery room. This can be increased to 50 m² if there is a discernible airflow.

When selecting the number of sensors for your installation, remember not to try and economise by using the minimum possible. A few extra could make ALL the difference if a gas leak occurs.

Machinery Rooms – Refrigeration:

Plant Room installations can be monitored using standard Murco Sensors. You can monitor at a particular point of concern like a compressor or you can place your sensors around the room. With heavier than air gas, the sensor should be mounted low. If mechanical ventilation is fitted, sensors should be downwind of the equipment to be monitored. A sensor may be fitted on the wall below the fan or an airflow sensor may be fitted at the fan face, also we suggest that you monitor the pressure relief valve outlet.

Cross Sensitivity

In all cases the sensor supplied is designed for maximum sensitivity to a particular gas. However, in certain circumstances false alarms may be caused by the occasional presence of sufficiently high concentrations of other gaseous impurities. If this happens installers should check that sensors of a suitable cross sensitivity can be supplied.

Refrigeration Spaces – Coldrooms, Freezers

Sensors should be located in the return airflow to the evaporators on the rear wall, slightly below the drain pan level, not directly in front of an evaporator. In large rooms with multiple evaporators, sensors should be mounted on the central line between 2 adjacent evaporators, as turbulence will result in airflows mixing.

Chillers

Recommended locations for sensor mounting in a rough order of importance, please bear in mind that it is very difficult to monitor in free air.

- ✓ Install a standard sensor in enclosed machinery sections, where the compressors are located, or behind protective baffles such as acoustic panels.
- ✓ Fit IP66 detectors below any open compressors, in particular near the shaft seals. If necessary use an IP66 sensor with a remote head for areas that are difficult to access.
- ✓ As most modern condensers use a single u-tube construction and floating coil, they are unlikely to leak in the condenser block. However the refrigerant headers may be monitored, again using an IP66 sensor located beneath the brazed section.
- ✓ Any pressure relief valve should be monitored, as they are particularly prone to seeping gas. A PRV sensor head is available.
- ✓ Any valve stations such as solenoid or drier points can also be monitored using an IP66 sensor located underneath the valve station.
- ✓ Lastly consider an airflow sensor, especially where slow speed fans or variable speed drives are used, as they are likely to draw any leaked refrigerant through the sensor.

Technical Specification

Power Supply	220VAC (optional 110VAC, 12VDC)
Pre-set Alarm Levels (eg. 100/1000 ppm)	1 or 2
Visual + Audible Alarm	Yes
Relay Outputs	1 or 2
Multi Sensor Control Panels	Yes
Standard Alarm Levels	Low 100 ppm. High 1000 ppm.



MGD Enclosure - Standard

IP rating:	IP41
Temperature rating:	-20C to +50C
Application:	Plant rooms, general indoor applications.



IP66 Enclosure

IP rating:	IP66
Temperature rating:	-40C to +50C
Application:	A very robust enclosure for high levels of dust, moisture or where condensation is present. Low temperature cold stores, freezers, outdoor chillers, marine applications, high humidity produce rooms.



IP66 Enclosure With Exd Rated Remote Sensor Head

IP rating:	IP66
Temperature rating:	-40C to +50C
	Certified to ATEX Exd 11C T5, Zone 1, Zone 2
Application:	To monitor hazardous areas where ATEX rating is required – such as some Ammonia plant rooms, some plant rooms with flammable gases. A more cost effective sensor to the full Exd model. The enclosure is placed outside the ATEX area with the remote sensor fitted inside the area.



IP66 Enclosure With Remote Head Sensor

IP rating:	IP66
Temperature rating:	-40C to +50C
Application:	As IP66 above, but for remote areas that are difficult to access, out of eye-line, or compressor enclosures. M42 thread fitting on remote head.



IP66 Enclosure For Pressure Relief Valve (PRV) Sensor

IP rating:	IP66 enclosure, IP40 Sensor element
Temperature rating:	-40C to +50C
Application:	To monitor blow off or weeping from pressure relief valves. Normally teed off Vent Pipes line to exterior.

Commonly ordered products for Refrigerant R404a

Description (1 alarm)	Part Number	Description (2 alarm)	Part Number
MGD 1 Sensor, 1 Alarm Level, 100ppm, 220V Std	M11 R404A 101	MGD 1 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V Std	M12 R404A 101
MGD 1 Sensor, 1 Alarm Level, 100ppm, 220V IP66	M11 R404A 102	MGD 1 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V IP66	M12 R404A 102
MGD 2 Sensor, 1 Alarm Level, 100ppm, 220V Std	M21 R404A 101	MGD 2 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V Std	M22 R404A 101
MGD 2 Sensor, 1 Alarm Level, 100ppm, 220V IP66	M21 R404A 102	MGD 2 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V IP66	M22 R404A 102
MGD 4 Sensor, 1 Alarm Level, 100ppm, 220V Std	M41 R404A 101	MGD 4 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V Std	M42 R404A 101
MGD 4 Sensor, 1 Alarm Level, 100ppm, 220V IP66	M41 R404A 102	MGD 4 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V IP66	M42 R404A 102
MGD 6 Sensor, 1 Alarm Level, 100ppm, 220V Std	M61 R404A 101	MGD 6 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V Std	M62 R404A 101
MGD 6 Sensor, 1 Alarm Level, 100ppm, 220V IP66	M61 R404A 102	MGD 6 Sensor, 2 Alarm Level, 100ppm, 1000ppm, 220V IP66	M62 R404A 102

To order a detector for R410A, R407C, R507, R22 and R134A, change the gas in the part number above

Commonly ordered products for NH3

Description (1 alarm)	Part Number	Description (2 alarm)	Part Number
MGD 1 Sensor, 1 Alarm Level, 500ppm, 220V Std	M11 NH3 101	MGD 1 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V Std	M12 NH3 101
MGD 1 Sensor, 1 Alarm Level, 500ppm, 220V IP66	M11 NH3 102	MGD 1 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V IP66	M12 NH3 102
MGD 2 Sensor, 1 Alarm Level, 500ppm, 220V Std	M21 NH3 101	MGD 1 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V Std	M12 NH3 111
MGD 2 Sensor, 1 Alarm Level, 500ppm, 220V IP66	M21 NH3 102	MGD 1 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V IP66	M12 NH3 112
MGD 4 Sensor, 1 Alarm Level, 500ppm, 220V Std	M41 NH3 101	MGD 2 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V Std	M22 NH3 101
MGD 4 Sensor, 1 Alarm Level, 500ppm, 220V IP66	M41 NH3 102	MGD 2 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V IP66	M22 NH3 102
MGD 6 Sensor, 1 Alarm Level, 500ppm, 220V Std	M61 NH3 101	MGD 2 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V Std	M22 NH3 111
MGD 6 Sensor, 1 Alarm Level, 500ppm, 220V IP66	M61 NH3 102	MGD 2 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V IP66	M22 NH3 112
		MGD 4 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V Std	M42 NH3 101
		MGD 4 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V IP66	M42 NH3 102
		MGD 4 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V Std	M42 NH3 111
		MGD 4 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V IP66	M42 NH3 112
		MGD 6 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V Std	M62 NH3 101
		MGD 6 Sensor, 2 Alarm Level, 500ppm 1000ppm, 220V IP66	M62 NH3 102
		MGD 6 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V Std	M62 NH3 111
		MGD 6 Sensor, 2 Alarm Level, 500ppm 10,000ppm, 220V IP66	M62 NH3 112

Commonly ordered products for CO2

Description (1 alarm)	Part Number	Description (2 alarm)	Part Number
MGD 1 Sensor, 1 Alarm Level, 5000ppm, 220V Std	M11 CO2 101	MGD 1 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V Std	M12 CO2 101
MGD 1 Sensor, 1 Alarm Level, 5000ppm, 220V IP66	M11 CO2 102	MGD 1 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V IP66	M12 CO2 102
MGD 2 Sensor, 1 Alarm Level, 5000ppm, 220V Std	M21 CO2 101	MGD 2 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V Std	M22 CO2 101
MGD 2 Sensor, 1 Alarm Level, 5000ppm, 220V IP66	M21 CO2 102	MGD 2 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V IP66	M22 CO2 102
MGD 4 Sensor, 1 Alarm Level, 5000ppm, 220V Std	M41 CO2 101	MGD 4 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V Std	M42 CO2 101
MGD 4 Sensor, 1 Alarm Level, 5000ppm, 220V IP66	M41 CO2 102	MGD 4 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V IP66	M42 CO2 102
MGD 6 Sensor, 1 Alarm Level, 5000ppm, 220V Std	M61 CO2 101	MGD 6 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V Std	M62 CO2 101
MGD 6 Sensor, 1 Alarm Level, 5000ppm, 220V IP66	M61 CO2 102	MGD 6 Sensor, 2 Alarm Level, 5000ppm 9000ppm, 220V IP66	M62 CO2 102

Commonly ordered products for flammable refrigerant R290

Description (1 alarm)	Part Number	Description (2 alarm)	Part Number
MGD 1 Sensor, 1 Alarm Level, 1000ppm, 220V Std	M11 R290 101	MGD 1 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Std	M12 R290 101
MGD 1 Sensor, 1 Alarm Level, 1000ppm, 220V Exd	M11 R290 105	MGD 1 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Exd	M12 R290 105
MGD 2 Sensor, 1 Alarm Level, 1000ppm, 220V Std	M21 R290 101	MGD 2 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Std	M22 R290 101
MGD 2 Sensor, 1 Alarm Level, 1000ppm, 220V Exd	M21 R290 105	MGD 2 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Exd	M22 R290 105
MGD 4 Sensor, 1 Alarm Level, 1000ppm, 220V Std	M41 R290 101	MGD 4 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Std	M42 R290 101
MGD 4 Sensor, 1 Alarm Level, 1000ppm, 220V Exd	M41 R290 105	MGD 4 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Exd	M42 R290 105
MGD 6 Sensor, 1 Alarm Level, 1000ppm, 220V Std	M61 R290 101	MGD 6 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Std	M62 R290 101
MGD 6 Sensor, 1 Alarm Level, 1000ppm, 220V Exd	M61 R290 105	MGD 6 Sensor, 2 Alarm Level, 1000ppm 2000ppm, 220V Exd	M62 R290 105

To order a detector for R600, change the gas in the part number above

Murco Detectors can detect almost any gas for every application. To order a detector for your choice of gas just change the gas in the part number

ORDERING INFORMATION:

Murco Part Numbers Explanatory Note: To order the correct product for your requirements, simply follow Murco's part number configuration below and email your order to; sales@murco.ie.

Here is a typical Murco Part Number for an MGD standard enclosure with 1 sensor, 1 level alarm for R507. **M11 R507 101** – Product + Sensor + Alarm + Gas + Enclosure

- M = the Product you require (in this case an MGD)
- 1 = the number of sensors you require - you can choose 1, 2, 4 or 6
- 1 = the number of alarms you require - you can choose 1 or 2
- R507 = the gas you need to detect which can be changed according to your requirements (CO2, NH3, R 134a, R404a, R407a, R410a, R507a, etc.)
- 101 = the type of enclosure you require - this is our standard version

Other optional enclosures

- 101 = the type of enclosure you require – this is our standard version
- 102 = IP66 enclosure – External Sensor Head – for High Humidity/condensing applications
- 103 = Splash Guard for IP66 – for heavy wash down areas
- 104 = IP66 enclosure – REMOTE External Sensor Head with 3m cable – for High Humidity/condensing applications
- 105 = Exd enclosure – Explosion Proof Housing
- 106 = Exd Remote Explosion Proof Sensor Head – IP66 enclosure with 5m of cable
- 107 = Pressure Relief Valve /Vent Pipe Monitoring IP66 enclosure – Gun Metal 1" Head with 3m cable
- 108 = Airflow/Duct Mount – IP66 enclosure

Other Fixed Gas Detectors available

IAM RANGE – Integrated Area Monitor

A stand-alone detector that combines sensor and monitor. Suits larger systems where hundreds of sensors may be required. 2 optional housings.



HGM RANGE – by Bacharach

Bacharach's Single and Multi Zone refrigerant monitors provide a unique combination of high sensitivity, large dynamic measurement ranges and speed of response.



MGS RANGE – Murco Gas Sensor

A state-of-the-art gas detector for areas that require continuous monitoring. Can be used on a stand-alone basis or integrated into Controls or Building Management Systems. 7 optional housings.