

FEATURE / BENEFIT	MGS-410	MGS-450	MGS-460	Comments
Semiconductor sensors for refrigerants	Y	Y	Y	Maintain industry required range of refrigerants detected; Keep up with market shifts & new refrigerants influenced by F-Gas
Infrared sensor for CO2	Y	Y	Y	
Electrochemical sensor for NH3, O2	Y	Y	Y	
Low temperature performance <0°C	Y	Y	Y	Suitable for use in <0°C is essential; MSR uses heater element on sensor - the sensor element is only specified from +5°C - +50°C
Appropriate response times	Y	Y	Y	MSR T90 ~2.21 minutes; MGS-400 Series under test, expect >30s. EN 14624 & EN 378 specify <30s for 1.6 x alarm threshold
Temperature compensation	Y	Y	Y	Mitigate false alarms as a result of temperature change (E.g. defrost cycles can typically cause a false alarm); Minimise costs of unnecessary call-out of maintenance contractors; Mitigate need for adjustment during commissioning
Tri-colour LED status indicator	Y	Y	Y	Immediate visual indication of instrument status; Indicate a problem at point of detection, as well as at control system - required for compliance with EN 378
Display screen & keypad on instrument	N	N	N	
Audible alarm on instrument	Y	Y	Y	Immediate audio indication of instrument status; Indicate a problem at point of detection, as well as at control system (enhance ease of compliance with ASHRAE 15 / EN 378)

High alarm & low alarm levels	Y	Y	Y	Initiate different actions at each alarm level, e.g. low alarm = check for leaks; high alarm = system shut-down; ease compliance with some local regulations, e.g. Holland standards for CO2 systems
Modbus via RS-485	Y	Y	Y	communications wiring for easy installation; Extract all instrument information; Integrate with Bacharach MGS-408 Controller
UPS	N	N	N	
Hazardous area certification (Exd)	N	N	N	
Pre-calibrated sensor exchange	Y	Y	Y	Sensor mounted on small PCB which holds all sensor calibration data;Plugs into main instrument PCB; Plug-and-play sensor exchange in the field; Use of pre-calibrated sensor for maintenance means no need for calibration gas and manual calibration of instrument; Takes less than two minutes to perform maintenance & calibration; No specialist tools required
Semi-automated calibration	Y	Y	Y	MGS-400 Series automated procedure once begun with app; MSR process unclear - sensor is potted and does not appear to allow field adjustment. Potentially via PC
Fault diagnostics & identification	Y	Y	Y	MGS-400 provides in-field fault diagnostics via app and Modbus - allows for better field support, fewer returns
"Service due" indicator	Y	Y	Y	Tells customer when instrument should be serviced and maintained; Assists compliance with EN 378 and F-Gas; Enables proactive service and maintenance programme; Helps ensure continued correct function of instrument

"Time since calibration" counter	Y	Y	Y	Identifies if and when service and maintenance has been performed, or when it is next due (assists planning)
Sensor exposure counter	Y	Y	Y	Measure sensor's exposure to gas in total for its lifetime; Proactively identify if a sensor needs to be replaced; Helps identify sensor damage due to over-exposure
Analogue output	N	Y	Y	Directly interface with analogue control devices
Relays	N	3	3	Directly initiate action in alarm state, e.g. turn on ventilation; Directly interface with analogue devices, e.g. external audio-visual alarm beacon
Customise remote sensor cable length	n/a	n/a	Y	Optimise installation per project
Bluetooth User Interface	Y	Y	Y	Intuitive configuration and operation of MGS-400 Series gas detectors; multi-language; minimises required training; reduces time on site to install, configure, maintain or use instruments
Adjust alarm set points	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to configure instrument per site / application; minimal training required
Configure alarm delay	Via Bluetooth	Via Bluetooth	Via Bluetooth	Helps minimise false alarms from transient cross-interfering gases; Simple intuitive operation to configure instrument per site / application; minimal training required
Configure alarms latching / non-latching	Via Bluetooth	Via Bluetooth	Via Bluetooth	Require manual acknowledgement that there was an alarm, if necessary; Simple intuitive operation to configure instrument per site / application; minimal training required
Buzzer enable / disable	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to configure instrument per site / application; minimal training required
Clear alarms	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to configure instrument per site / application; minimal training required

Set Modbus address	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to configure instrument per site / application; minimal training required
Initiate calibration	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to maintain instrument on site; minimal training required
Initiate bump test	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to maintain instrument on site; minimal training required
Adjust analogue output settings	n/a	Via Bluetooth	Via Bluetooth	Simple intuitive operation to configure instrument per site / application; minimal training required
Generate automatic field calibration certificates	Via Bluetooth	Via Bluetooth	Via Bluetooth	Create field service audit trail
View full current instrument status & configuration	Via Bluetooth	Via Bluetooth	Via Bluetooth	Simple intuitive operation to view all instrument data and settings on site; minimal training required
View current gas level	Via Bluetooth	Via Bluetooth	Via Bluetooth	Easily see current gas level, whether in alarm state or not
View fault diagnostic information	Via Bluetooth	Via Bluetooth	Via Bluetooth	Enhance field service capability