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SAMON
safe monitoring

PRODUCT GUIDE

2025

SIMPLY RELIABLE

Gas Detection

SAMON
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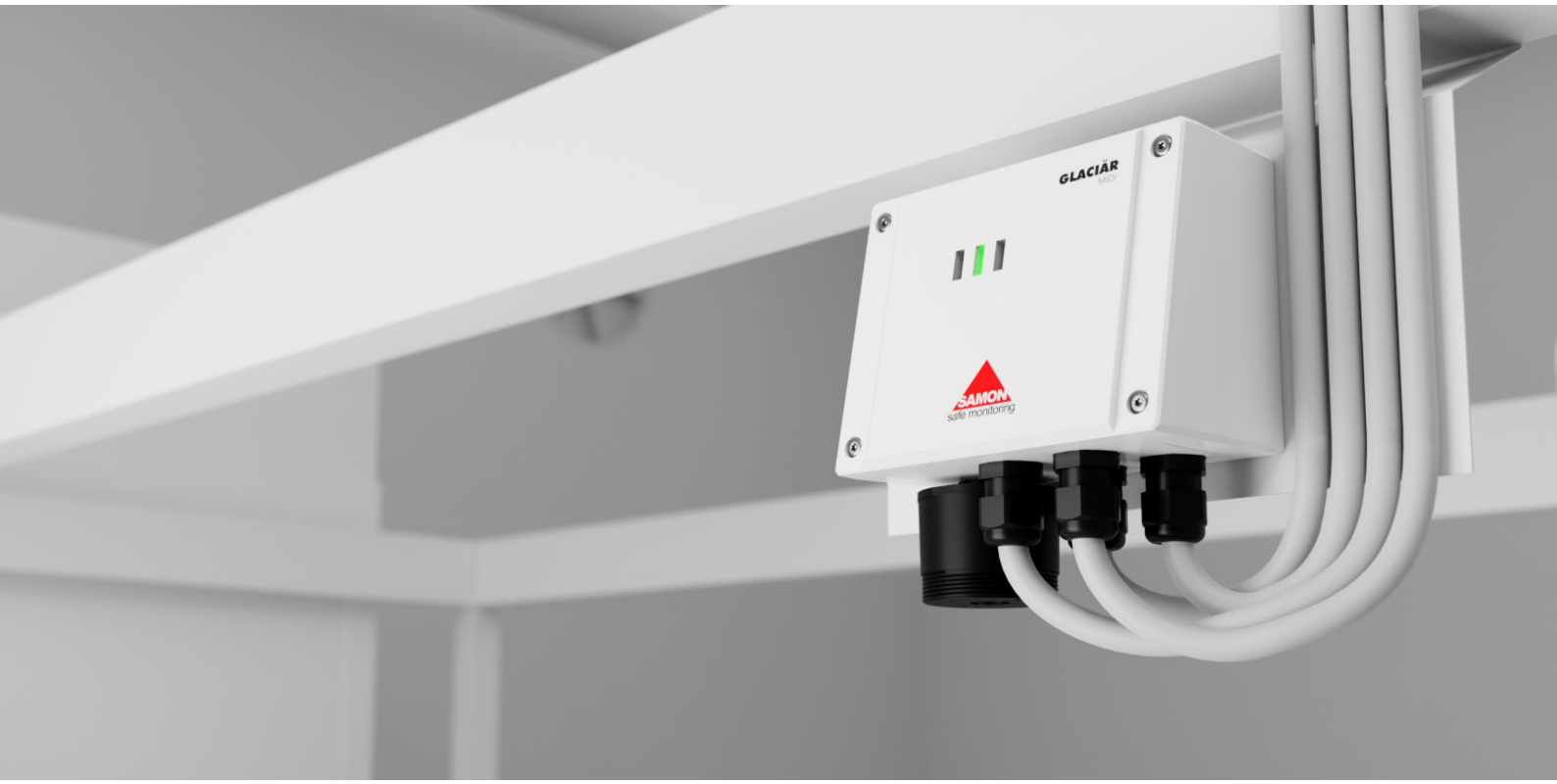
GLACIÄR MIDI

SIMPLY RELIABLE REFRIGERANT GAS DETECTORS



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Refrigerant Gas Detection

Commercial & Industrial

APPLICATION NOTES

Due to their environmental impact and increasing levels of regulation and restriction to phase them down, the use of some types of refrigerants has decreased in recent years. The use of CO_2 has increased due to it being a natural refrigerant with lower environmental impact.

Applications include:

- **Supermarkets & food retail**
- **Cold rooms**
- **Walk-in Freezers**
- **Cold Storage**
- **Food processing**

Why are CO_2 detectors needed?

In high concentrations, CO_2 can be dangerous to humans because it is an asphyxiant gas. Refrigeration systems using CO_2 also operate at high pressures, sometimes as high as 2,000psig, which means that if a leak occurs the gas can escape at a high rate, quickly creating a dangerous atmosphere.

CO_2 concentration in air (ppm)	Effect
370	Atmospheric level
5,000	Long term exposure limit - 8 hours TWA
15,000	Short-term exposure limit – 15 minutes, some physical discomfort
30,000	Respiration difficulties, headache, dizziness, nausea
40,000	IDLH limit (Immediate Danger to Life & Health)
100,000	Loss of consciousness, death
300,000	Quick death

NOTE

There is no general rule or standard for establishing the appropriate number of sensors and their location for each application.

Therefore, the guidance given is intended as support for installers, and not as rules in their own right. All local, state, and national regulations should be adhered to.

For an example in a refrigeration system using CO_2 as a refrigerant, in a typical walk-in cold room with a volume of 25m3 and a rate of one air exchange per hour we can calculate that **a leak rate of 500g/hr will create an atmosphere containing 40,793ppm of CO_2 in just 250 seconds.**

That surpasses the level of 40,000ppm at which CO_2 presents an immediate danger to life and health according to OSHA guidelines.

In refrigeration, it must also be noted that if the refrigerant has leaked, the refrigeration system will be less efficient and eventually will fail. This can have a high economic impact through loss of refrigerated or frozen produce.

How to apply CO2 detection?

CO_2 is slightly heavier than air, meaning it will eventually sink closer towards the ground. With that in mind, it can be advisable to install gas detectors at low level, circa 20cm above the ground. There can be occasions where a higher positioning is applicable, for example in cold rooms positioning the gas detector on a side-wall in the return air flow to the evaporator is best practice.

How to apply CO2 detection? (continued)

Common practice is to install gas detectors near to the likely source of a leak, for example valves, flanges, joints, and pressure reducers. Detectors can also be installed near to areas with a high concentration of refrigerant, such as compressors, storage tanks/cylinders, pipes, and conduits.

Consideration should be given to air flow and ventilation, both natural and mechanical. It typically takes a long time for leaked gas to evenly disperse into the environment, so clouds of leaked gas can be moved by ventilation. Placing gas detectors in this air flow is good practice for effective detection.

CO_2 is typically detected using infrared sensors.

Consideration should be given to then implementation of the infrared sensor and its suitability for refrigerant leak detection, which has very different needs to indoor air quality (IAQ) applications, where CO_2 sensors are also widely used.

A suitable CO_2 refrigerant leak detector should have the following characteristics:

- Fast response time
- Appropriate temperature range (e.g. -40°C - +50°C)
- Suitable IP rating for the installation environment (e.g. IP67)
- Outputs for system integration, control & safety alerts

BENEFITS

This technology has a number of benefits.

- **Long lifetime (~7-10 years)**
- **Minimal cross-interference**
- **High stability**
- **High accuracy**
- **Cannot be poisoned**

CO_2 Gas Detector Product Selector

	Relays	Modbus	Analogue Output	Mobile App	Service Wheel	Remote Sensor	Low Power (e.g. 24V)	Mains Power (e.g. 110V, 230V)	Page #
GLACIÄR MIDI	2	✓	✓	✓	✓	Option	✓	—	21
GLACIÄR X5	3	—	✓	—	—	Option	✓	—	24
G-Series	3	Option	—	—	—	—	✓	✓	30
MP-Series	3 via MPU/SPU	—	✓	—	—	—	Via MPU/SPU		37
TR-IR	—	—	✓	—	—	—	✓	—	34

APPLICATION NOTES

There is widespread use in refrigeration of a wide variety of gases and gas blends consisting of HFC and HFO refrigerants. Efforts to reduce the impact on climate change of refrigerant leaks has seen the introduction of an increasing number of gases with the goal of reducing the global warming potential (GWP) of refrigerant gases.

Applications include:

- **Supermarkets & food retail**
- **Cold rooms**
- **Walk-in Freezers**
- **Cold Storage**
- **Food processing**

Why are HFC & HFO detectors needed?

Most of the HFC and HFO refrigerants in use today are low in acute toxicity. There has, however, been an increase in the number of refrigerants classified as A2L, commonly referred to as "mildly flammable" and therefore of a higher risk.

Leaking HFC and HFO gases can also have the effect of displacing oxygen, leading to discomfort, danger, and the risk of death.

Below are examples of what happens in a non-ventilated room of approximately 50 m3 with leakage of R134a.

R134a leakage (kg)	R134a concentration (ppm)	Oxygen level (%)	Effect on humans
0	0	~21	Normal, fresh air
21	100,645	~19	Reduced oxygen delivery to cells, adverse effect on ability to function
63	301,395	~15	Increased pulse rate, rapid breathing, impaired co-ordination, compromised thought processes
84	402,581	~13	Nausea, vomiting, risk of permanent heart damage
115.5	553,547	~10	Convulsions, inability to move, loss of consciousness, loss of life

The above figures are based on even dispersion throughout the room. This is unlikely, as refrigerant gases have a much higher molecular weight than air and will sink to the lowest part of the room. It is therefore possible that 0.5m above the ground, a 21kg leak could actually have the same oxygen displacement effect as 84kg dispersed evenly in the room.

In many regions, regulations and standards demand the need to monitor for leakage of HFC and HFO gases. These include EN378 in Europe and ASHRAE 15 in the US.

In refrigeration it must also be noted that if the refrigerant has leaked, the refrigeration system will be less efficient and eventually will fail. This can have a high economic impact through loss of refrigerated or frozen produce.

How to apply HFC & HFO gas detection?

HFCs and HFOs are generally much heavier than air, meaning they will quickly sink closer towards the ground or to any lower points in a room, such as stairwells or sumps. Gas detectors should be installed at low level, circa 20cm above the ground, in order to be most effective at detecting the leak.

Common practice is to install gas detectors near to the likely source of a leak, for example valves, flanges, joints, and pressure reducers. Detectors can also be installed near to areas with a high concentration of refrigerant, such as compressors, storage tanks/cylinders, pipes, and conduits.

Consideration should be given to air flow and ventilation, both natural and mechanical. It typically takes a long time for leaked gas to evenly disperse into the environment, so clouds of leaked gas can be moved by ventilation. Placing gas detectors in this air flow is good practice for effective detection.

NOTE

There is no general rule or standard for establishing the appropriate number of sensors and their location for each
application. Therefore, the guidance given is intended as support for installers, and not as rules in their own right.

All local, state, and national regulations should be adhered to.

HFC & HFO Gas Detector Selection

HFC and HFO gases are most typically detected using semiconductor sensors, although infrared and other technologies are becoming available for refrigerant detection, albeit at a higher price. Semiconductor, metal oxide sensors are a long-proven method for detection of HFC and HFO refrigerants and blends, and have a number of benefits.

Semiconductor sensors can be cross-sensitive to other reducing gases and consideration should be given to this when selecting an installation location.

A suitable HFC and HFO refrigerant leak detector should have the following characteristics:

- Fast response time
- appropriate temperature range (e.g. -40°C - +50°C)
- suitable IP rating for the installation environment (e.g. IP67)
- outputs for system integration, control & safety alerts

For any areas zoned as being potentially explosive, a detector with the appropriate ATEX approval for that zone should be selected.

BENEFITS

This technology has a number of benefits.

- **Cost effective**
- **Long lifetime (~5 years)**
- **Low maintenance costs**

HFC & HFO Gas Detector Product Selector

	Relays	Modbus	Analogue Output	Mobile App	Service Wheel	Remote Sensor	Low Power (e.g. 24V)	Mains Power (e.g. 110V, 230V)	ATEX	Page #
GLACIÄR MIDI	2	✓	✓	✓	✓	Option	✓	—	—	21
GLACIÄR X5	3	—	✓	—	—	Option	✓	—	✓	24
G-Series	3	Option	—	—	—	—	✓	✓	—	30
MP-Series	3 via MPU/SPU	—	✓	—	—	—	Via MPU/SPU		—	37
TR-SC	—	—	✓	—	—	—	✓	—	—	34
GEX-HFC	3 via MPU/SPU	—	—	—	—	—	Via MPU/SPU		Zone 1	37

APPLICATION NOTES

Ammonia (NH_3) is used in larger, industrial refrigeration applications, and often when very low temperatures need to be achieved.

Typical applications include:

- **Cold storage**
- **Frozen food processing**
- **Ice factories**
- **Ice rinks & stadiums**

Why are NH_3 detectors needed?

NH_3 is both lethally toxic and explosive. It is corrosive to the skin, eyes, and lungs. At high levels, NH_3 is explosive. Standards and regulations vary by country, but typical levels are as below.

NH_3 concentration in air	Effect on humans
25ppm	Long term exposure limit - 8 hours TWA
35-50ppm	Short-term exposure limit – 15 minutes, some physical discomfort
70-300ppm	Severe irritation of nose, throat, and airways, risk of fluid accumulation in the lungs
300ppm	IDLH limit (Immediate Danger to Life & Health)
5,000ppm	Rapid respiratory arrest
15-18%	Flammable, explosive

Any leakage of ammonia is generally used to trigger an emergency alarm due to its acute toxicity. Although humans can detect ammonia by smell, typically in ranges from 5ppm – 50ppm, this is not a reliable method because repeated exposure can reduce sensitivity. The use of electronic gas detectors is therefore both recommended and mandated in most applications.

How to apply NH_3 detection?

NH_3 is lighter than air, meaning it will rise to the highest point in the room in which it leaks. Gas detectors should be installed at a high level, circa 20cm below the ceiling. Consideration should be given to the accessibility of the installation for service and maintenance.

Common practice is to install gas detectors above the likely source of a leak, for example valves, flanges, joints, and pressure reducers. Detectors can also be installed above areas with a high concentration of refrigerant, such as compressors, storage tanks/cylinders, pipes, and conduits.

Consideration should be given to air flow and ventilation, both natural and mechanical. It typically takes a long time for leaked gas to evenly disperse into the environment, so clouds of leaked gas can be moved by ventilation. Placing gas detectors in this air flow is good practice for effective detection.

NOTE

There is no general rule or standard for establishing the appropriate number of sensors and their location for each application.

Therefore, the guidance given is intended as support for installers, and not as rules in their own right.

All local, state, and national regulations should be adhered to.

NH_3 Gas Detector Selection

NH_3 is typically detected using electrochemical sensors. This technology has a number of benefits in refrigeration applications.

Electrochemical sensors have a limited life span, typically requiring replacement every 2-3 years. Selecting a gas detector with simple maintenance procedures is therefore particularly important.

Applications for NH_3 detection often require detection in high-pressure vent lines from pressure relief valves. Special mounting accessories should be used in this case, in order to ensure effective measurement and to protect the gas detector from damage by over-pressurisation.

A suitable NH_3 refrigerant leak detector should have the following characteristics:

- Fast response time
- Appropriate temperature range (e.g. -40°C - +50°C)
- Suitable IP rating for the installation environment (e.g. IP67)
- Outputs for system integration, control & safety alerts
- For any areas zoned as being potentially explosive, a detector with the appropriate ATEX certification for that zone should be selected.
- Appropriate detection range for the required alarm levels

BENEFITS

This technology has a number of benefits.

- **High selectivity**
- **Minimal cross-interference**
- **High stability**
- **High accuracy**

NH_3 Gas Detector Product Selector

	Relays	Modbus	Analogue Output	Mobile App	Service Wheel	Remote Sensor	Low Power (e.g. 24V)	Mains Power (e.g. 110V, 230V)	ATEX	Page #
GLACIÄR MIDI	2	✓	✓	✓	✓	Option	✓	—	—	21
GLACIÄR X5	3	—	✓	—	—	Option	✓	—	✓	24
G-Series	3	Option	—	—	—	Option	✓	✓	Option	30
MP-Series	3 via MPU/SPU	—	—	—	—	—	Via MPU/SPU		—	37
TR-EC/SC	—	—	✓	—	—	—	✓	—	—	34
GEX-NH3	3 via MPU/SPU	—	—	—	—	—	Via MPU/SPU		Zone 1	37

APPLICATION NOTES

R290 (propane) is increasingly used in refrigeration applications. It is a natural refrigerant (as opposed to synthetic) and has a negligible global warming potential (GWP). Typically, it is used in self-contained refrigeration systems:

Typical applications include:

- **Display cases**
- **Heat pumps**
- **Vending machines**
- **Ice machines**

The leakage of other flammable gases, for example methane or hexane, is possible in a wide range of industrial and petrochemical applications, or anywhere where natural gas is used for fuel.

Examples include:

- **Petrol filling stations**
- **Biogas plants**
- **Tank farms**

Why are flammable gas detectors needed?

Flammable gases have a lower flammability limit (LFL) and an upper flammability limit (UFL), which are the percentage volumes in air between which the gas can burn if exposed to an ignition source. This presents a significant safety risk if there is a leak.

The LFL varies per gas, but generally detection is designed to trigger an alert at a much lower level. 10% of LFL and 25% of LFL are typical warning and alarm levels.

How to apply R290 / flammable gas detection?

The molecular weight of flammable gases varies. This is very important to consider when determining where to locate a gas detector.

For example, R290 (propane) is heavier than air and will quickly sink closer towards the ground or to any lower points in a room, such as stairwells or sumps. Gas detectors should be installed at low level, circa 20cm above the ground, in order to be most effective at detecting the leak.

Conversely, methane is lighter than air, meaning it will rise to the highest point in the room in which it leaks. Gas detectors should be installed at a high level, circa 20cm below the ceiling. Consideration should be given to the accessibility of the installation for service and maintenance.

Common practice is to install gas detectors near to the likely source of a leak, for example valves, flanges, joints, and pressure reducers. Detectors can also be installed near to areas with a high concentration of gas, such as compressors, storage tanks/cylinders, pipes, and conduits.

Consideration should be given to air flow and ventilation, both natural and mechanical. It typically takes a long time for leaked gas to evenly disperse into the environment, so clouds of leaked gas can be moved by ventilation. Placing gas detectors in this air flow is good practice for effective detection.

NOTE

There is no general rule or standard for establishing the appropriate number of sensors and their location for each application. Therefore, the guidance given is intended as support for installers, and not as rules in their own right. All local, state, and national regulations should be adhered to.

Flammable Gas Detector Selection

There are many sensor technologies which can be used to detect flammable gases, including R290. In refrigeration applications, one of the most commonly deployed is the semiconductor sensor.

Semiconductor, metal oxide sensors are a long-proven method for detection of R290, and have a number of benefits.

Semiconductor sensors can be cross-sensitive to other reducing gases and consideration should be given to this when selecting an installation location.

A suitable flammable gas leak detector should have the following characteristics:

- Fast response time
- Appropriate temperature range (e.g. -40°C - +50°C)
- Suitable IP rating for the installation environment (e.g. IP67)
- Outputs for system integration, control & safety alerts

For any areas zoned as being potentially explosive, a detector with the appropriate ATEX certification for that zone should be selected

BENEFITS

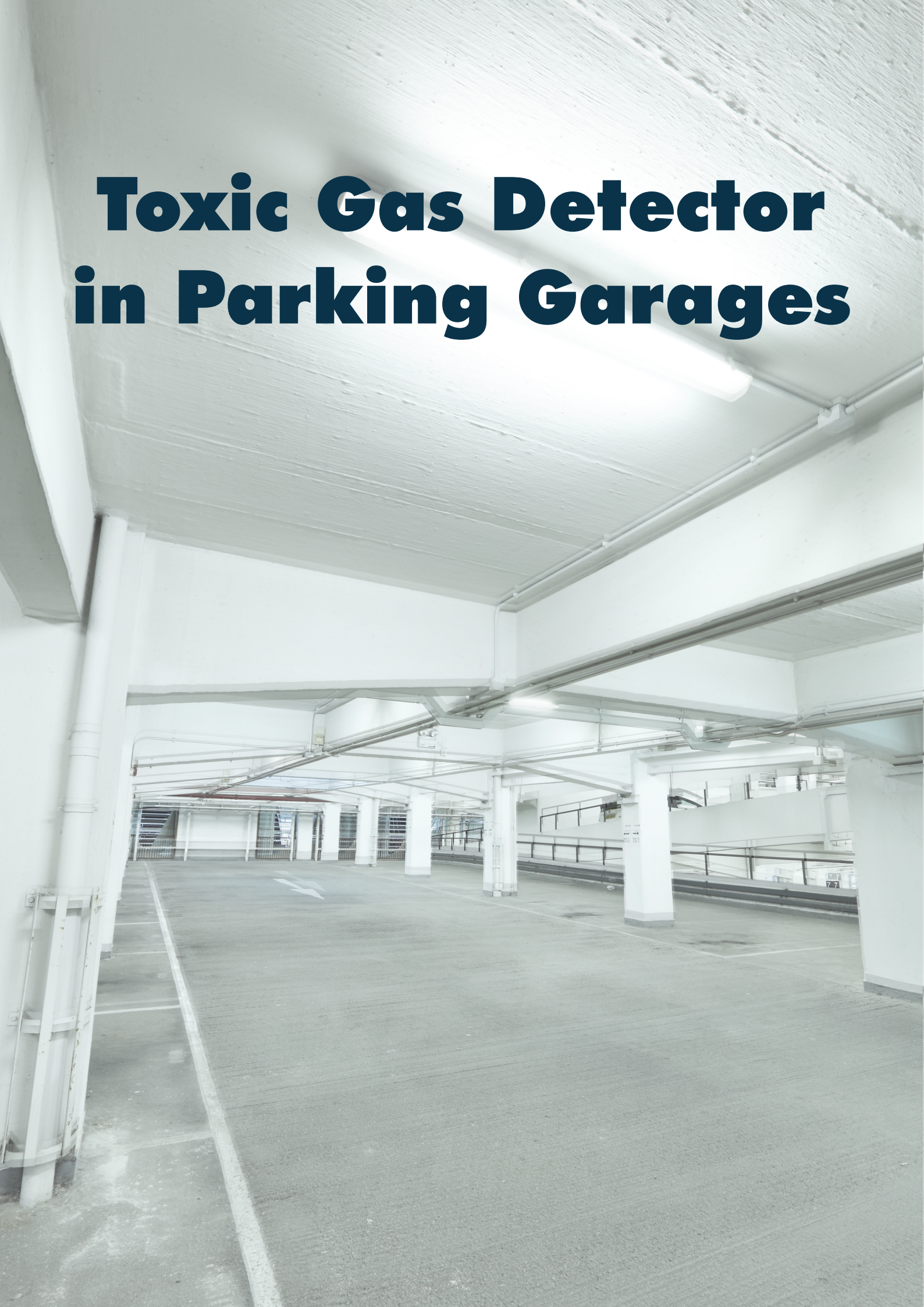
This technology has a number of benefits.

- **Cost effective**
- **Fairly long lifetime** (~5 years)
- **Low maintenance costs**
- **High accuracy**

Flammable Gas Detector Product Selector

	Relays	Modbus	Analogue Output	Mobile App	Service Wheel	Remote Sensor	Low Power (e.g. 24V)	Mains Power (e.g. 110V, 230V)	ATEX	Page #
GLACIÄR MIDI	2	✓	✓	✓	✓	Option	✓	—	—	21
GLACIÄR X5	3	—	✓	—	—	Option	✓	—	✓	24
G-Series	3	Option	—	—	—	Option	✓	✓	Option	30
MP-Series	3 via MPU/SPU	—	—	—	—	—	Via MPU/SPU		—	37
TR-SC	—	—	✓	—	—	—	✓	—	—	34
GEX-SC	3 via MPU/SPU	—	—	—	—	—	Via MPU/SPU		Zone 1	37

Toxic Gas Detector in Parking Garages



Gas detectors are available to activate demand-controlled ventilation in parking garages, tunnels, or other occupied spaces. Typical requirements are to measure the concentration of carbon monoxide (CO) produced by gasoline powered vehicles or nitrogen dioxide (NO_2) produced by diesel- and gas-powered vehicles.

CO and NO_2 are usually measured using electrochemical sensors. This technology has a number of benefits in parking garage applications.

Electrochemical sensors have a limited life span, typically requiring replacement every 2-3 years.

VOC (volatile organic compounds) detectors are air quality sensors for garage environments, which detects emissions and other pollutants that can be formed in a garage. For example, carbon monoxide (CO) and unburned hydrocarbons (HC).

VOCs can be detected using semiconductor sensors. Semiconductor, metal oxide sensors have a number of benefits.

Semiconductor sensors can be cross-sensitive to other reducing gases and pollutants, so consideration should be given to this when selecting an installation location.

BENEFITS

Electrochemical sensors

- **High selectivity**
- **Minimal cross-interference**
- **High stability**
- **High accuracy**

Semiconductor sensors

- **Cost effective**
- **Fairly long lifetime** (~5 years)
- **Low maintenance costs**

Parking Garage Gas Detector Product Selector

	Relays	Analogue Output	Low Power (e.g. 24V)	Mains Power (e.g. 110V, 230V)	Gas	Page #
GLACIÄR X5	3	☑	☑	⊟	CO, NO_2	24

Refrigerant Gas Detection

VRF Systems & Occupied Spaces

APPLICATION NOTES

Variable Refrigerant Volume (VRV) and Variable Refrigerant Flow (VRF) types of HVAC system have become increasingly prevalent in their use in the hotel sector, amongst others. They present advantages including per-room control of temperature, cost effective and efficient installation, and both cooling and heating capability. The design of these systems is such that in the event of a leak, the refrigerant charge that could leak into an occupied space is higher than in older types of HVAC system.

Typical applications include:

- **Hotel rooms**
- **Offices**
- **Care homes**
- **Prisons**

Why are refrigerant gas detectors needed?

A larger refrigerant leak has a number of undesirable consequences for hotel owners and occupants, including:

- A danger to the safety of occupants
- Inefficient HVAC system energy use & associated cost increases
- Ineffective HVAC system operation & associated repair costs
- Failed HVAC system operation & lost revenue resulting from unsaleable rooms
- Emissions of environmentally harmful refrigerant gas to the atmosphere

A refrigerant leak is unlikely to have even dispersion throughout the room. Refrigerant gases have a much higher molecular weight than air and will sink to the lowest part of the room. It is therefore possible that 0.5m above the ground, around the height of a bed or a plug socket, a dangerously high concentration of refrigerant could be present.

In many regions regulations and standards demand the need to monitor for leakage of refrigerant gases in occupied spaces. These include EN378 in Europe and ASHRAE 15 in the US.

How to apply refrigerant gas detection in occupied spaces?

Because refrigerant gases used in VRF/VRV systems are much heavier than air, a leak will sink to the lower points in a room. Gas detectors should be installed at low level, circa 20cm above the ground, in order to be most effective at detecting the leak.

Common practice is to install gas detectors near to the likely source of a leak, underneath the evaporator mounted for the HVAC system.

Consideration should be given to air flow and ventilation, both natural and mechanical. It typically takes a long time for leaked gas to evenly disperse into the environment, so clouds of leaked gas can be moved by ventilation. Placing gas detectors in this air flow is good practice for effective detection.

NOTE

There is no general rule or standard for establishing the appropriate number of sensors and their location for each application. Therefore, the guidance given is intended as support for installers, and not as rules in their own right.

All local, state, and national regulations should be adhered to.

Refrigerant detection in occupied spaces is most typically deployed using semiconductor sensors. Semiconductor, metal oxide sensors are a long-proven method for detection of HFC and HFO refrigerants and blends. They have a number of benefits.

Semiconductor sensors can be cross-sensitive to other reducing gases and consideration should be given to this when selecting an installation location. For example, the location should be away from vanity units, mirrors, and bathrooms where aerosol products and high levels of steam may be present.

Due to the aesthetic nature of a domestically occupied space, the presence of a typical gas detector is often unacceptable. This can be overcome by using a detector that is recessed into the wall, with an unobtrusive faceplate being the only visible part.

See RM & RM-V (page 20) for details on suitable gas detectors for this application.

BENEFITS

This technology has a number of benefits.

- **Cost effective**
- **Fairly long lifetime** (~5 years)
- **Low maintenance costs**

NOTE

There is no general rule or standard for establishing the appropriate number of sensors and their location for each application. Therefore, the guidance given is intended as support for installers, and not as rules in their own right.

All local, state, and national regulations should be adhered to.

Products

Gas Detectors

RM & RM-V Gas Detectors for Occupied Spaces

RM

RM-V

The RM and RM-V detect leaks of refrigerant gas in occupied spaces, typically from HVAC systems including VRF/VRV air conditioning systems. Applications include hotel rooms, offices, care homes, prisons, and other occupied facilities.

- Standalone operation or connection to monitoring system
- Flush-mounted installation using RM-V with KAP045 back box
- Built-in audio-visual alarms
- Visual status indication by tri-colour LED
- 85db buzzer
- Alarm relay
- Failsafe operation
- 2 x factory-set alarm levels (1000ppm/4000ppm)
- Automatic alarm reset once under the alarm threshold
- Alarm delay to reduce false alarms from transient interfering gases
- IP21 housing
- Power supply 12-24V AC/DC
- Annual maintenance using DT300 service tool
- Standard calibration for R410A (responds to other HFC gases, alternate calibration possible on request)

Order Code	Model	Details	PG
32-220	RM-HFC	0–5000 ppm, 12-24V AC/DC, max 2 W	A
32-320	RMV-HFC	0-5000 ppm, 12..24V AC/DC, max 2 W NOTE Requires KAP045 or KAP046 back box	A
KAP045	RMV backbox, flush mount	Square shaped back-box for flush mounting, Included as standard	
KAP046	RMV backbox, surface mount	Square shaped back-box for surface mounting, height 30mm - No-cost option.	

GLACIÄR MIDI

GLACIÄR MIDI detects leaks of refrigerant gases in commercial and industrial environments, including:

Supermarkets & food retail
Cold rooms
Walk-in Freezers
Cold Storage
Food processing

Providing interfaces for set-up, configuration, and maintenance via both a digital app connection and via an analogue service-wheel, **GLACIÄR MIDI** can be used in all refrigeration environments without the need for any special tools.

GLACIÄR MIDI is available in version with a built-in sensor, or with a remote sensor.

GLACIÄR MIDI can be configured for detection of synthetic refrigerants (HFC & HFO blends) and natural refrigerants (CO_2, NH_3, R290/propane).

We have used our extensive gas detection expertise to make it possible to detect all commonly used refrigerants with only 5 different sensor types, making it simple and easy to select the right detector for your application.

SIMPLE SELECTION

HFC/HFO blends detected via just two bro-ad-band semiconduct sensor variants

CO_2 detection via infra-red sensor

NH_3 detection via electrochemical sensors

R290 (propane) detection via semiconductor sensor

Comes ready to install with standard configuration

Multiple cable glands located for easy access to power connections & output terminals

Pluggable screw terminals for simple installation on site

IP67-rated enclosure

-40°C - + 50°C operating range suitable for all refrigeration environments

Power supply 15 to 24 VDC; 24 V AC/DC

Bluetooth® connectivity to app for configuration & calibration (Android™ & iOS)

2 x alarm relay outputs for high- and low-alarm levels, 1A at 24VAC/VDC

Configurable alarm behaviour, auto-reset or latching

Failsafe operation

Modbus RTU over RS485, galvanically isolated
Selectable analogue output range, 0-5V; 1-5V; 0-10V; 2-10V; 4-20mA

Visual health-check via high-intensity status LEDs
Service counter tells you when service is needed

Analogue configuration via service-wheel & magnetic switch

Pre-calibrated sensor module replacements
Sensor lifetime counter

Read more about GLACIÄR MIDI

Order Code	Model	Details	PG
CO_2			
31-210-32	GLACIAR MIDI IR CO_2 10000ppm	0-10000 ppm, 15.. 24VDC; 24VAC/DC, máx. 4 W , 170mA @24VDC	G
31-510-32	GLACIAR MIDI Remote IR CO2 10000ppm	0-10000 ppm, 15.. 24VDC; 24VAC/DC, máx. 4 W , 170mA @24VDC	G
HFO/HFC	**Group 1**	R32 / R407A / R407C / R407F / R410A / R448A / R449A / R452A / R452B / R454A / R454B / R454C / R455A / R464A / R465A / R466A / R468A / R507A	
31-220-12	GLACIAR MIDI SC HFC/ HFO Group 1 1000ppm	0-1000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-520-12	GLACIAR MIDI Remote SC HFC/HFO Group 1 1000ppm	0-1000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
HFO/HFC	**Group 2**	R134a / R404A / R450A / R513A / R1234yf / R1234ze / R1233zde	
31-220-17	GLACIAR MIDI SC HFC/ HFO Group 2 1000ppm	0-1000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-520-17	GLACIAR MIDI Remote SC HFC/HFO Group 2 1000ppm	0-1000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
NH_3			
31-250-22	GLACIAR MIDI EC NH_3 100ppm	0-100 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-250-23	GLACIAR MIDI EC NH_3 1000ppm	0-1000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-250-24	GLACIAR MIDI EC NH_3 5000ppm	0-5000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-550-22	GLACIAR MIDI Remote EC NH_3 100ppm	0-100 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-550-23	GLACIAR MIDI Remote EC NH_3 1000ppm	0-1000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-550-24	GLACIAR MIDI Remote EC NH_3 5000ppm	0-5000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
R290	**Group 3**	R290 / R50 / R600a / R1150 / R1270	
31-290-13	GLACIAR MIDI SC R290 / Group 3 4000ppm	0-4000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G
31-590-13	GLACIAR MIDI Remote SC R290 HC 4000ppm	0-4000 ppm, 15.. 24VDC; 24VAC/DC, max. 4 W , 170mA @24VDC	G

GLACIÄR X5

GLACIÄR X5, featuring a **revolutionary long-life NH_3 sensor**, is engineered to perform in the most demanding industrial refrigeration environments, including:

Machinery Rooms
Cold Storage
Food Processing

GLACIÄR X5 is available in versions with a built-in single or dual sensor, or up to two remote sensors (see configuration sheet on page 26).

GLACIÄR X5 features analogue output and relays, a visual health check via a digital display, and pre-calibrated smart sensor modules compatible with a wide range of gases (NH_3, CO_2, HFC, HFO, A2L, R290, etc.).

Equipped with a 5-year long-life ionic NH_3 sensor and non-depleting ionic technology, **GLACIÄR X5** operates reliably in constant NH_3 environments, reducing maintenance costs and enhancing reliability.

SIMPLE SELECTION

Single & dual sensor option

Long-life ionic electrochemical sensor for NH_3 detection

CO_2 detection via infra-red sensor

Infrared or catalytic sensor for R290

Semiconductor and/or infrared sensor for HFC, HFO, & A2L refrigerants

Combine locally mounted sensors and remote sensors

Non-intrusive calibration via magnetic wand

Visual health-check via digital display

Easy plug-replaceable sensor replacement

Digital display showing concentration, alarms and fault status

2 x independent 4-20mA outputs

2 x alarm relays

Dedicated fault relay

Multiple cable glands located for easy access to power connections & output terminals

IP66 heavy duty enclosure

-20°C - +55°C operating range suitable for refrigeration environments

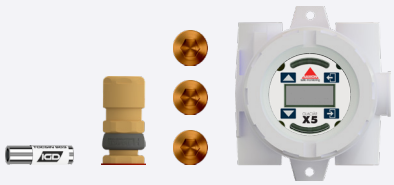
Simple mounting

Read more about GLACIÄR X5

Sensor Configuration Sheet

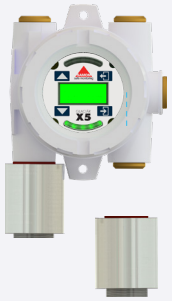
GLACIÄR X5 transmitter is provided with

1x ATEX Transmitter
1x Magnetic Wand
1x ATEX Cable Gland
3x Stopping Plugs



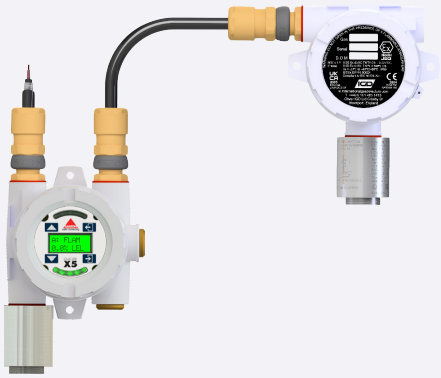
A 1 or 2 Directly-Connected Sensors

1x ATEX Transmitter
1x or 2x Sensor Head(s)



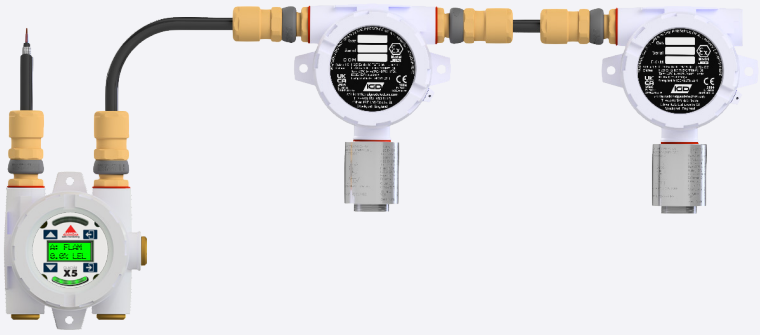
B 1 Directly-Connected & 1 Remote Sensor

1x ATEX transmitter
1x Sensor Head
1x Remote Sensor Head
1x Power Filter
2x Cable Glands

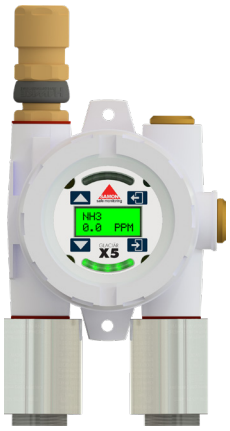


C 2 Remote Sensors

1x ATEX transmitter
2x Remote Sensor Heads
1x Power Filter
4x Cable Glands*
1x Stopping Plug



*Cable glands don't come with the ATEX transmitter, example shown is for 2 detectors



PLEASE FOLLOW THE ORDERING INSTRUCTIONS AS PER CONFIGURATION SHEET.

For further assistance, please contact sales support.

THE ORDERING PARTY MUST BE FAMILIAR WITH AN ATEX ENVIRONMENT INSTALLATION.

Order Code	Model	Details	PG
3500-0001	GLACIÄR X5 ATEX Transmitter with display	ATEX, analogue incl 1Wand, 1 Gland, 3 Plugs	G
GLACIÄR X5 sensor modules			
3500-0002	GLACIÄR X5 NH3 0-100 ppm sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0003	GLACIÄR X5 NH3 0-500 ppm sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0095	GLACIÄR X5 NH3 0-1000 ppm sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0004	GLACIÄR X5 NH3 0-5000 ppm sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0005	GLACIÄR X5 CO2 0-5000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0006	GLACIÄR X5 CO2 0-5 % vol sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0096	GLACIÄR X5 CO 0-100ppm sensor module	ATEX, EC, Sensor & spare sensor	G
3500-0097	GLACIÄR X5 O2 0-25 % vol sensor module	ATEX, EC, Sensor & spare sensor	G
3500-0098	GLACIÄR X5 NO2 0-5ppm sensor module	ATEX, EC, Sensor & spare sensor	G
GLACIÄR X5 sensor modules, group IRR			
3500-0065	GLACIÄR X5 R22 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0066	GLACIÄR X5 R32 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0067	GLACIÄR X5 R123 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0068	GLACIÄR X5 R125 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0069	GLACIÄR X5 R134A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0070	GLACIÄR X5 R227 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0071	GLACIÄR X5 R404A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0072	GLACIÄR X5 R407A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0073	GLACIÄR X5 R407F 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0074	GLACIÄR X5 R410A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0075	GLACIÄR X5 R417A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0076	GLACIÄR X5 R442D 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0077	GLACIÄR X5 R448A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0078	GLACIÄR X5 R449A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0079	GLACIÄR X5 R452B 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G

Order Code	Model	Details	PG
3500-0080	GLACIÄR X5 R507 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0081	GLACIÄR X5 R513A 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0082	GLACIÄR X5 R1233zd 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0083	GLACIÄR X5 R1234yf 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0084	GLACIÄR X5 R1234ze 0-2000 ppm sensor module	ATEX, IR, Sensor & spare sensor	G
GLACIÄR X5 sensor modules, group R1			
3500-0007	GLACIÄR X5 R407C 0-1000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0008	GLACIÄR X5 R22 0-1000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0009	GLACIÄR X5 R134A 0-1000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0010	GLACIÄR X5 R404A 0-1000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0011	GLACIÄR X5 R410 0-1000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
GLACIÄR X5 sensor modules, group R2			
3500-0012	GLACIÄR X5 R32 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0013	GLACIÄR X5 R22 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0014	GLACIÄR X5 R1234yf 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0015	GLACIÄR X5 R410A 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0016	GLACIÄR X5 R1234ze 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0017	GLACIÄR X5 R290 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0018	GLACIÄR X5 R454B 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0019	GLACIÄR X5 R404A 1000-10 000 ppm sensor module	ATEX, SC, Sensor & spare sensor	G
GLACIÄR X5 sensor modules, IRF			
3500-0020	GLACIÄR X5 Flammable gas 0-100%LEL sensor module	ATEX, IR, Sensor & spare sensor	G
GLACIÄR X5 sensor modules, MK8			
3500-0021	GLACIÄR X5 Flammable gas 0-100%LEL sensor module	ATEX, Pellister, Sensor & spare sensor	G
GLACIÄR X5 remote sensor modules			
3500-0022	GLACIÄR X5 NH3 0-1000 ppm Remote sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0023	GLACIÄR X5 NH3 0-100 ppm Remote sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0024	GLACIÄR X5 NH3 0-500 ppm Remote sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0025	GLACIÄR X5 NH3 0-5000 ppm Remote sensor module	ATEX, IONIC EC, Sensor & spare sensor	G
3500-0026	GLACIÄR X5 CO2 0-5 % vol Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0099	GLACIÄR X5 CO 0-100ppm Remote sensor module	ATEX, EC, Sensor & spare sensor	G
3500-0100	GLACIÄR X5 O2 0-25 % vol Remote sensor module	ATEX, EC, Sensor & spare sensor	G
3500-0101	GLACIÄR X5 NO2 0-5ppm Remote sensor module	ATEX, EC, Sensor & spare sensor	G
GLACIÄR X5 remote sensor module, group IRR			
3500-0032	GLACIÄR X5 R22 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0033	GLACIÄR X5 R32 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0034	GLACIÄR X5 R123 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G

Order Code	Model	Details	PG
3500-0035	GLACIÄR X5 R125 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0036	GLACIÄR X5 R134A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0037	GLACIÄR X5 R227 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0038	GLACIÄR X5 R404A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0039	GLACIÄR X5 R407A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0040	GLACIÄR X5 R407F 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0041	GLACIÄR X5 R410A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0042	GLACIÄR X5 R417A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0043	GLACIÄR X5 R422D 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0044	GLACIÄR X5 R448A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0045	GLACIÄR X5 R449A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0046	GLACIÄR X5 R452B 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0047	GLACIÄR X5 R507 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0048	GLACIÄR X5 R513A 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0049	GLACIÄR X5 R1233zd 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0050	GLACIÄR X5 R1234yf 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
3500-0051	GLACIÄR X5 R1234ze 0-2000 ppm Remote sensor module	ATEX, IR, Sensor & spare sensor	G
GLACIÄR X5 remote sensor module, group R1			
3500-0052	GLACIÄR X5 R407C 0-1000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0053	GLACIÄR X5 R22 0-1000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0054	GLACIÄR X5 R134A 0-1000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0055	GLACIÄR X5 R404A 0-1000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0056	GLACIÄR X5 R410A 0-1000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
GLACIÄR X5 remote sensor modules, group R2			
3500-0057	GLACIÄR X5 R32 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0058	GLACIÄR X5 R22 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0059	GLACIÄR X5 R1234yf 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0060	GLACIÄR X5 R410A 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0061	GLACIÄR X5 R1234ze 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0062	GLACIÄR X5 R290 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0063	GLACIÄR X5 R454B 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
3500-0064	GLACIÄR X5 R404A 1000-10000 ppm Remote sensor module	ATEX, SC, Sensor & spare sensor	G
GLACIÄR X5 remote sensor modules, IRF			
3500-0028	GLACIÄR X5 Flammable gas 0-100%LEL Remote sensor module	ATEX, IR, Sensor & spare sensor	G
GLACIÄR X5 components			
3500-0029	GLACIÄR X5 D44Power Filter	use with remote sensor solution	G

G-Series gas detectors are field-proven over many years, offering simply reliable gas detection for commercial and industrial refrigerant applications.

There are a number of variants in the G-Series platform to meet application-specific needs, all sharing a common set of features.

These include:

- Operating status displayed via LEDs
- 3 x adjustable alarm levels
- 3 x alarm relay outputs
- Adjustable alarm delay
- Configurable alarm behaviour, auto-reset or latching
- Failsafe operation
- -40°C - + 50°C operating range suitable for all refrigeration environments
- Test terminal for service tools
- Annual maintenance using DT300 service tool
- Power supply options inc. 12-24V AC/DC & 230V AC

G-SERIES PRODUCTS

CO_2 detector using
infrared sensor
IP67 enclosure

GSH

CO_2 detector using
infrared sensor
Modbus RTU digital
communications
IP67 enclosure

GSMB

CO_2 detector using
infrared sensor
High-intensity LED & built-in
buzzer (with mute function)
for alarm indication
Terminal for connection of
a manual remote alarm
activation
IP67 enclosure

GSLS

HFC / HFO detector using
semiconductor sensor
IP54 enclosure
Remote sensor, 1.5m cable
Vent lines from pressure relief
valve installation
Pipe fitting in brass ½ " Flare.

GR

HFC / HFO
/ VOC detection using
semiconductor sensor
IP54 enclosure
Remote sensor, 1.5m cable
Ventilation ducts installation

(plastic tube with the sensor mounted with
a rubber sleeve directly in the channel)

GK

HFC / HFO / R290
/ flammable gas detection
using semiconductor sensor
IP56 enclosure
ATEX approved remote sensor,
5m cable
Flameproof sensor
enclosure (EX d), can be
installed in ATEX Zone1
Controller must be installed outside
the ATEX area.

GXR

HFC / HFO / R290
/ flammable gas / VOC
detection using
semiconductor sensor
IP54 enclosure

GS

HFC / HFO / R290
/ flammable gas detection
using semiconductor sensor
IP54 enclosure
Remote sensor, 5m cable

GSR

Order Code	Model	Details	PG
GSH detectors	**CO_2**		
37-4120	GSH24-CO2-10000	0-10000 ppm, 12..24V AC/DC, max 3 W	A
37-4124	GSH24-CO2-30000	0-30000 ppm, 12..24V AC/DC, max 3W	A
37-4170	GSH230-CO2-10000	0-10000 ppm, 85...230V AC, max 3 W	A
37-4174	GSH230-CO2-30000	0-30000 ppm, 85..230V AC, max 3W	A
GSMB detectors	**CO_2**		
37-4120-MB	GSMB24-CO2-10000	0-10000 ppm, 12..24V AC/DC, max 3 W	A
37-4124-MB	GSMB24-CO2-30000	0-30000 ppm, 12..24V AC/DC, max 3W	A
37-4170-MB	GSMB230-CO2-10000	0-10000 ppm, 85..230V, Max 3W	A
37-4174-MB	GSMB230-CO2-30000	0-30000 ppm, 85..230V AC, max 3W	A
GSLS detectors	**CO_2**		
37-4120-LS	GSLS24-CO2-10000	0-10000ppm, 12...24V AC/DC, max 3W	A
37-4124-LS	GSLS24-CO2-30000	0-30000 ppm, 24 V, max 3 W	A
37-4170-LS	GSLS230-CO2-10000	0-10000ppm, 85...230V AC, max 3W	A
37-4174-LS	GSLS230-CO2-30000	0-30000 ppm, 230 V, max 3 W	A
GS detectors	**HFC / HFO / NH_3 / R290 / flammable gas**	**Splash Proof**	
37-420	GS24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A
37-425	GS230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A
37-430	GS24-HC	0-50% LEL, 12..24V AC/DC, Hydrocarbons	A
37-435	GS230-HC	0-50% LEL, 230V AC, Hydrocarbons	A
37-470	GS24-H2	0-50% LEL, 12..24V AC/DC, (Hydrogen)	A
37-475	GS230-H2	0-50% LEL, 230V AC, (Hydrogen)	A
37-480	GS24- Methane	0-50% LEL, 12..24V AC/DC	A
37-485	GS230- Methane	0-50% LEL, 230V AC	A
37-490	GS24- Propane	0-50% LEL, 12..24V AC/DC	A
37-495	GS230- Propane	0-50% LEL, 230V AC	A
GSR detectors with remote sensor	**HFC / HFO / NH_3 / R290 / flammable gas**		
37-920	GSR24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A
37-925	GSR230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A

Order Code	Model	Details	PG
GSR detectors with remote sensor	**HFC / HFO / NH_3 / R290 / flammable gas**	Continued...	
37-930	GSR24-HC	0-50% LEL, 12..24V AC/DC, Hydrocarbons	A
37-935	GSR230-HC	0-50% LEL, 230V AC, Hydrocarbons	A
37-980	GSR24-Methane	0-50% LEL, 12..24V AC/DC	A
37-985	GSR230-Methane	0-50% LEL, 230V AC	A
37-990	GSR24-Propane	0-50% LEL, 12..24V AC/DC	A
37-995	GSR230-Propane	0-50% LEL, 230V AC	A
GK detectors	**HFC / HFO / NH_3**	**For ventilation ducts**	
37-820	GK24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A
37-825	GK230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A
GR detectors	**HFC / HFO / NH_3 /**	**For vent lines from pressure relief valves**	
37-620	GR24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A
37-625	GR230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A
GXR detectors	**HFC / HFO / NH_3 /**	**With ATEX approved remote sensor**	
37-720	GXR24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A
37-725	GXR230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A
37-730	GXR24-Propane	0-50% LEL, 12..24V AC/DC, max 2 W	A
37-735	GXR230-Propane	0-50% LEL, 230V AC, max 2 W	A

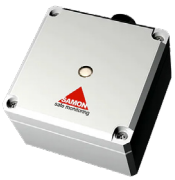
TR-Series gas detector transmitters are robustly designed for use in harsh environments, offering simply reliable gas detection for industrial refrigerant applications.

There are a number of variants in the TR-xx platform to meet application-specific needs, all sharing a common set of features.

These include:

- Selectable analogue output (4-20mA, 0-10V)
- Connectivity to MPU or SPU monitoring unit
- Integrate with any PLC or gas detection controller accepting analogue signals
- -40°C - + 50°C operating range (exc. TR-EC)
- Maintenance calibration gas & TR calibration kit
- Power supply 12-30V DC

TR-SERIES PRODUCTS



CO2 detection using
infrared sensor
IP67 enclosure

TR-IR

HFC / HFO / R290 /
flammable gas / VOC dete-
ction using
semiconductor sensor
IP54 enclosure

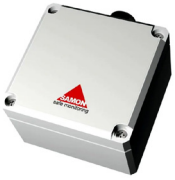
TR-SC

HFC / HFO / R290 / flam-
mable gas detection using
semiconductor sensor
IP54 enclosure
Remote sensor, 1.5m cable
Ventilation ducts installation
(plastic tube with the sensor
mounted with a rubber sleeve
directly in the channel)

TR-SCK

HFC / HFO
detector using
semiconductor sensor
IP54 enclosure
Remote sensor, 1.5m cable
Vent lines from pressure
relief valve installation
Pipe fitting in brass ½ " Flare

TR-SCR



NH3 / CO / NO2 detector
using electrochemical sensor
IP67 enclosure
NH3: -30°C - + 50°C
operating range
CO / NO2: -10°C - +
40°C operating range

TR-EC

Order Code	Model	Details	PG
TR-IR detectors	**CO_2**		
39-4312	TR-IR-CO2-10000	0-10000 ppm, max 2,5 W	A
39-4314	TR-IR-CO2-30000	0-30000 ppm, max 2,5 W	A
TR-SC detectors	**HFC / HFO / NH_3 / R290 / flammable gas**		
39-4120-A	TR-SC-HFC(A)-4000	0..4000 ppm HFC (standard R404a / R507)	A
39-4120-B	TR-SC-HFC(B)-4000	0..4000 ppm HFC (standard R134a)	A
39-4130	TR-SC-HC	0-50% LEL, General for Hydrocarbons (HC)	A
39-4170	TR-SC-H2	0-50% LEL, Hydrogen (H2)	A
TR-SCK detectors	**HFC / HFO / NH_3/ R290 / flammable gas**	**For ventilation ducts**	
39-8120-A	TR-SCK-HFC(A)-4000	0..4000 ppm HFC (standard R404a / R507)	A
39-8120-B	TR-SCK-HFC(B)-4000	0..4000 ppm HFC (standard R134a)	A
39-8130	TR-SCK-HC	0-50% LEL, General for Hydrocarbons (HC)	A
39-8170	TR-SCK-H2	0-50% LEL, Hydrogen (H2)	A
TR-SCR detectors	**HFC / HFO / NH_3 /**	**For vent lines from pressure relief valves**	
39-6120-B	TR-SCR-HFC(B)-4000	0..4000 ppm HFC (standard R134a)	A
TR-EC detectors	**NH3 / CO_2 / NO_2**		
39-4250	TR-EC-NH3-100	0 - 100 ppm	A
39-4251	TR-EC-NH3-1000	0 - 1000 ppm	A
39-4252	TR-EC-NH3-5000	0 - 5000 ppm	A
39-4253	TR-EC-NH3-10000	0 - 10000 ppm	A
39-4260	TR-EC-CO	0-300 ppm	A
39-4240	TR-EC-NO2	0-20 ppm	A

MP-Series gas detectors offer simply reliable gas detection for commercial and industrial refrigerant applications. These detectors are designed for use with a monitoring unit, and the use of one of the following is required in combination with the MP-Series detectors:

MPU2C / MPU4C / MPU6C (see page 36)
SPU / SPLS (see page 37)

There are a number of variants in the MP-Series platform to meet application-specific needs, all sharing a common set of features. These include:

- Power supply from monitoring unit
- -40°C - + 50°C operating range suitable for all refrigeration environments
- Alarm levels set via monitoring unit
- Annual maintenance using DT300 service tool
- Pre-set alarm levels
- Custom alarm levels available on request

MP-SERIES PRODUCTS

CO2 detector using
infrared sensor
IP67 enclosure

MPS

HFC / HFO / R290
/ flammable gas detection
using semiconductor sensor
IP54 enclosure

MP-DS

HFC / HFO
detection using
semiconductor sensor
IP54 enclosure
Remote sensor, 1.5m cable
Ventilation ducts installation
(plastic tube with the sensor
mounted with a rubbe
sleeve directly in the channel)

MP-DK

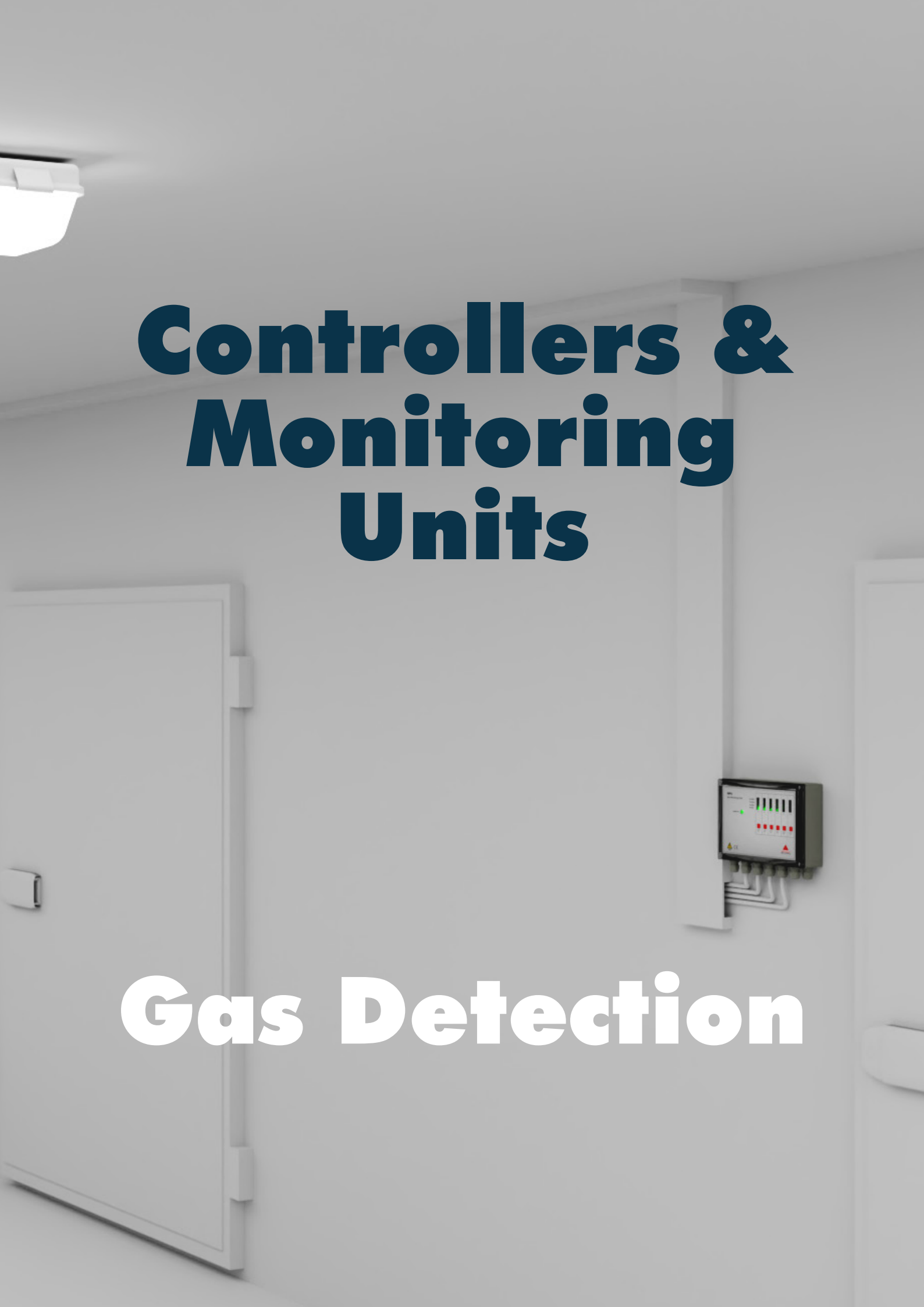
HFC / HFO
detector using
semiconductor sensor
IP54 enclosure
Remote sensor, 1.5m cable
Vent lines from pressure
relief valve installation
Pipe fitting in brass ½" Flare.

MP-DR2

HFC / HFO / R290 / flam-
mable gas detection using
semiconductor sensor
ATEX approved flameproof
sensor enclosure (EX d)
IP66 enclosure

GEX

Order Code	Model	Details	PG
MPS detectors	**CO_2**		
34-410	MPS-CO2-10000	0-10000 ppm, max 2,5 W	A
34-414	MPS-CO2-30000	0-30000 ppm, max 2,5 W	A
MP-DS detectors	**HFC / HFO / NH_3/ R290 / flammable gas**	**Splash Proof**	
38-420	MP-DS-HFC-4000	0-4000 ppm	A
38-430	MP-DS-HC	0-50% LEL	A
38-470	MP-DS-H2	0-50% LEL	A
38-480	MP-DS-Methane	0-50% LEL	A
38-490	MP-DS-Propane	0-50% LEL	A
MP-DK detectors	**HFC / HFO / NH_3**	**For ventilation ducts**	
38-820-V2	MP-DK2-HFC-4000	0-4000 ppm	A
MP-DR2 detectors	**HFC / HFO / NH_3**	**For vent lines from pressure relief valves**	
38-620-V2	MP-DR2-HFC-4000	0-4000 ppm	A
GEX detectors	**HFC / HFO / NH_3**	**With ATEX approved enclosure**	
35-301	GEX-SC-HFC-4000	0-4000 ppm	A
35-302	GEX-SC-Propane	Propane, Methane etc. 0-50% LEL.	A



Controllers & Monitoring Units

Gas Detection

MPU -Multi-Point Gas Detection Monitoring Unit

The **MPU** is a centralised monitoring unit for two, four, or six connected gas detectors. It offers an ideal solution for monitoring rooms where multiple gases need to be detected, or where multiple detection points are required for a single gas.

- MP-Series gas detectors specifically designed for use with MPU
- Connect GEX gas detectors for use in potentially explosive environments
- Integrate any gas detector with a 4-20mA or 0-10V output
- Operating & alarm status displayed independently for each channel
- Visual status indication via LEDs
- Audible alarm buzzer built-in
- 3 x alarm thresholds per channel
- 3 x alarm relay outputs, 230V, 5A
- Adjustable alarm delay
- Configurable alarm behaviour, auto-reset or latching
- 1 x fault relay output
- Failsafe operation
- -40°C - + 50°C operating range
- IP66 enclosure
- Service mode to block alarm outputs
- Test terminal for service tools
- 24V DC / 150mA output for siren or flashing light
- Input for optional external battery back-up (UPS)
- Can be ordered with custom pre-set alarm levels for the specific gas type
- Power supply 230V AC / 24V DC

Order Code	Model	Details	PG
20-310	MPU2C	2 channels, 230V AC / 24V DC, max 10 W	A
20-300	MPU4C	4 channels, 230V AC / 24V DC, max 10 W	A
20-305	MPU6C	6 channels, 230V AC / 24V DC, max 10 W	A
60-300		Custom pre-set alarm levels. Price per channel/detector	Net

Note: Maximum total power consumption of all connected gas detectors is 10W, e.g. MPU6C 230V is limited to use with max. 4 x MPS-CO2

SPU / SPLS - Single-Point Gas Detection Monitoring Unit

The **SPU** is a monitoring unit for a single gas detector.

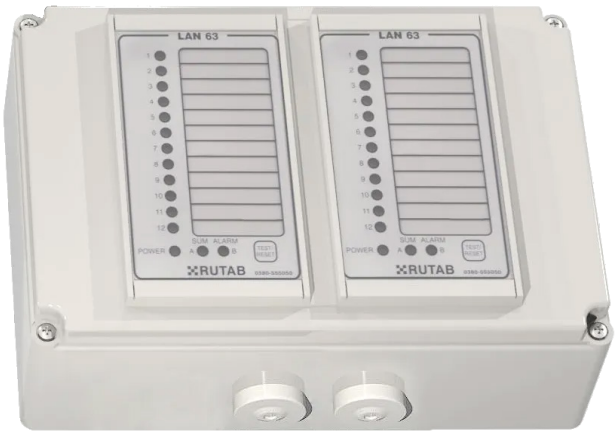
- MP-Series gas detectors specifically designed for use with SPU / SPLS
- Connect GEX gas detectors for use in potentially explosive environments
- Integrate any gas detector with a 4-20mA or 0-10V output
- Operating & alarm status displayed via LEDs
- 3 x alarm relay outputs, 230V, 5A
- Adjustable alarm delay
- Configurable alarm behaviour, auto-reset or latching
- Failsafe operation
- -40°C - + 50°C operating range
- IP67 enclosure
- Test terminal for service tools
- Input for optional external battery back-up (UPS)
- Can be ordered with custom pre-set alarm levels for the specific gas type
- Power supply options 24V AC/DC or 85-230V AC

Additional features for SPLS:

- High-intensity LED & built-in buzzer (with mute function) for alarm indication
- Terminal for connection of a manual remote alarm activation

Order Code	Model	Details	PG
20-350	SPU24	24V AC/DC, max 3 W	A
20-355	SPU230	85-230V AC, max 3 W	A
20-360	SPLS24	24V AC/DC, max 3 W	A
20-365	SPLS230	85-230V AC, max 3 W	A

LAN63/64/65 Gas Detection Alarm Panels



LAN gas detection alarm panels offer an ideal solution for multi-point monitoring of refrigerant leaks, toxic gases, and explosive gases.

The system consists of **LAN63** (master) and **LAN64** (slave) which can be expanded to a maximum of 108 inputs.

LAN63-PKT and LAN63/64-PKT is a complete package with power supply and enclosure designed for wall mounting. Current mode and alarm status is shown by LEDs on the front of the enclosure.

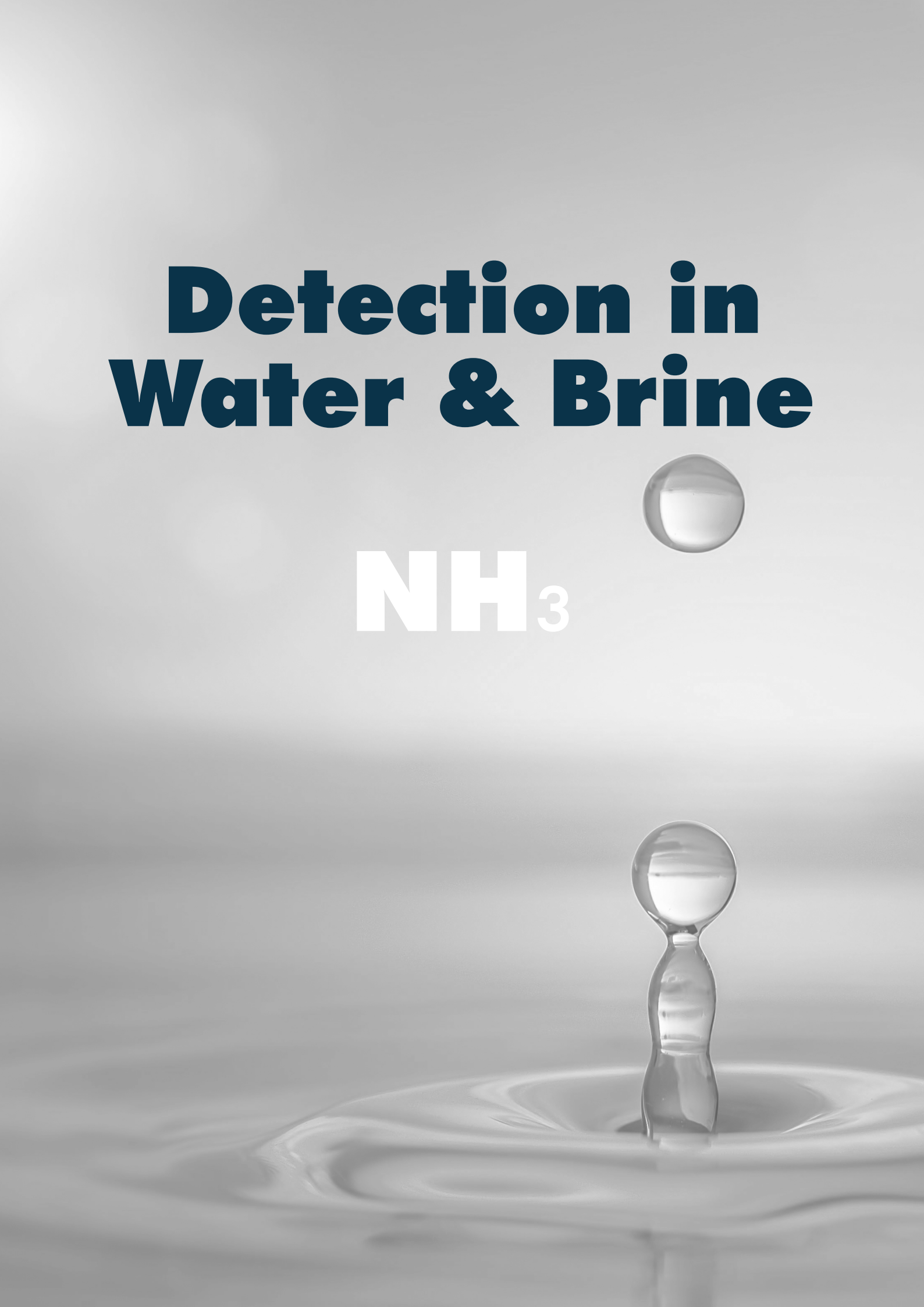
For mounting on a DIN rail, LAN 65 provides a potential-free NO contact for each LAN63 (LAN64) input.

- Compatible with all detectors with a volt-free relay output
- 12 inputs per module.
- 2 x relay outputs for A & B alarm, max 24V / 1A.
- Per-channel alarm indication with LEDs
- Programmable alarm delay per alarm input
- Alarm inputs for NO / NC contact.
- Failsafe function
- Manual alarm reset
- Delivered as alarm panels for installation in control cabinets or as a complete package (PKT) for wall mounting
- 0°C - + 50°C operating range
- IP32 enclosure (-PKT versions)
- 24VDC power supply output for external detectors, max. 9W (-PKT versions)

Order Code	Model	Details	PG
81-100	LAN63-PKT	12 DI, 230V AC, IP32, max 10 W	A
81-200	LAN63/64-PKT	24 DI, 230V AC, IP32, max 10 W	A
81-110	LAN63	Only alarm panel, 12 DI, 24V AC, Master, max 2 W	A
81-120	LAN64	Only alarm panel, 12 DI, 24V AC, Slave, max 2 W	A
81-130	LAN65	Relay box, 12 DI, 24V AC, max 5 W	A

Detection in Water & Brine

NH_3



AQUIS500

The Aquis system is developed for detection of ammonia leaks in refrigeration systems. The development of this robust and practical system is based on many years of experience can be used for water as well as brine.

The sensor can be used to measure ammonia (NH_3) in water. In an aqueous solution, ammonia is in a pH-dependent equilibrium with the ammonium ion (NH_4+ ions). Since the NH_4+ ions are converted to ammonia when adding lye, the sensor can detect ammonia. (the NH_4+ ions are not detected)

The ammonia sensor consists of a pH glass electrode and a reference electrode. Both electrodes are positioned in an electrolyte. The electrolyte is separated from the test medium with a hydrophobic, gas permeable membrane.

The local change in pH value is measured at the high resistance of the integrated pH electrode.

The monitoring unit provides a 4..20mA output, which can be connected to an external PLC.

Different sensor can be connected to the Aquis500 depending on the application and pressure in the system. The sensors can be quickly and easily installed.

Features

Designed for monitoring of ammonia in secondary cooling systems

Detection in Water, Brine mixtures, e.g. Ethylene, Tyfoxit, Hycool, etc

Selectable display of: numbers, graph or trends

Measuring low concentration (<0.2 ppm)

Measuring range: 0.01..9999 ppm

Output: 4..20mA, relay SPDT

Power supply: 230V AC

Pressure range: (0) 1 ... 6 bar

Easy installation and easy to use

User-friendly programming and access to plant documentation

Languages: English, French, German

Complies with EN 378 regulations

Expected sensor lifetime ≈ 2 year

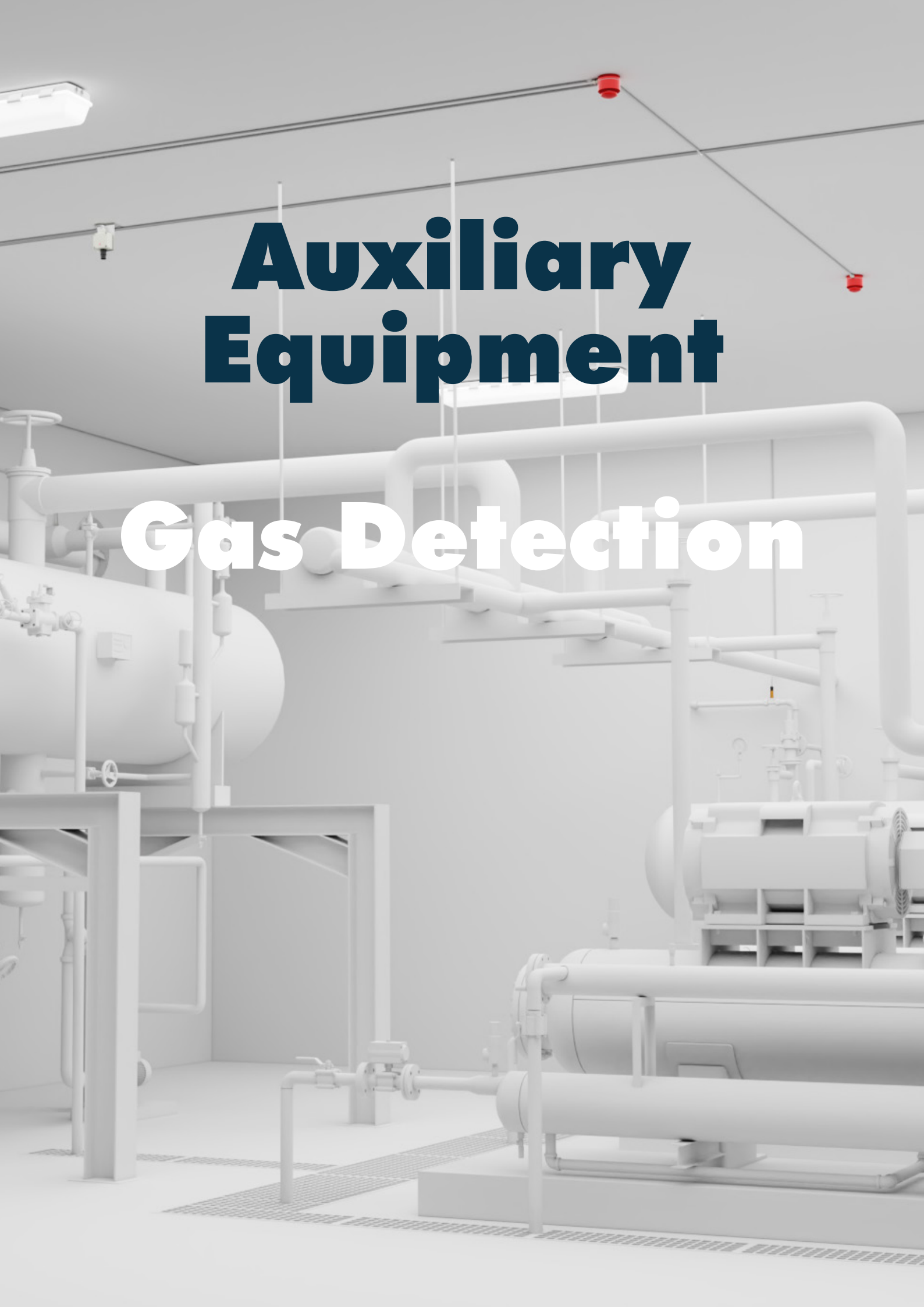
Sensors are a consumable part.

Maintenance: every 6 months at normal operation

NOTE

When ordering, brine type must be specified!

Order Code	Model	Details	PG
		Temperature range media (in circuit): depending on sensor type. IP67	
35-210	Aquis 500	Monitoring unit, wall mount	Net
35-220	NH3 sensor, standard	Media temp (0..+50°C).	Net
35-221	NH3 sensor, low temp	Media temp (-8..+30°C).	Net
35-229	Coax cable set	1x5mm 75Ω, 5,0m	Net
35-230	Pipe fitting for sensor	Retractable pipe fitting with built in pressure reducer, max 6 bar. Pipe/process connection (G 1¼") Built in shut of valve for sensor maintenance.	Net
35-231	Aquis bottle kit	Mounting kit with hose and bottle for liquid sample.	Net



Auxiliary Equipment

Gas Detection

Duct Mounting Kit

Order Code	Model	Details	PG
	**MSVK**	Mounting kit for detection in ventilation ducts Connection tube: 2 x 20mm Ø Compatible with: GSH, GSMB, GSLS, MPS, TR-IR, TR-EC	
60-800	-	Duct mounting kit	Net

Audio-Visual Alarms

Flashing Lights

Order Code	Model	Details	PG
	**BE**	For indoor or outdoor mounting IP54 with standard low socket Dimensions: 93x75mm Ambient temperature: -25oC..+70oC Option: High socket with side entry cable glands. (2 models) IP65 with high socket	
40-4021	BE-A-24VDC	Orange, 9..60V DC (88mA at 24V DC)	A
40-4022	BE-R-24VDC	Red, 9..60V DC (88mA at 24V DC)	A
40-4023	BE-BL-24VDC	Blue, 9..60V DC (88mA at 24V DC)	A
40-415	SOCK-H-R	High socket, red	A
40-420	SOCK-H-R-230	High socket for 230V AC, red	A

Combined flashing Light and Siren

Order Code	Model	Details	PG
	**FL**	Flashing light and siren can be activated separately. DIP-switches for selection of signal IP65 with standard high socket Dimensions ØxH: 93x120mm Ambient temperature: -10oC..+55oC Option: 230V AC socket	
40-440	FL-RL-R	Red, combined flashing light & siren, 18..28V DC (85mA at 24V DC)	A
40-441	FL-BL-V-SEP	Blue, combined flashing light & siren, 18..28V DC (85mA at 24V DC)	A
40-420	SOCK-H-R-230	Socket for 230V AC	A

Siren

Order Code	Model	Details	PG
	**1992-LP**	For indoor or outdoor mounting DIP-switches for selection of signal Built-in volume control IP54 with standard low socket Dimensions: 93x75mm Ambient temperature: -25oC..+80oC Option: High socket with side entry cable glands. (2 models) IP65 with high socket	
40-410	1992-R-LP	Red, 9..28V DC	A
40-415	SOCK-H-R	High socket, red	A
40-420	SOCK-H-R-230	High socket for 230V AC, red	A

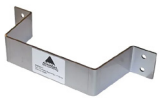
Battery back-up

Order Code	Model	Details	PG
	**UPS 5000**	Output: 6, 12 or 24V DC Maximal load: 4A Batteries: 12V / 7Ah (Battery to be ordered separately) Housing: Metal, IP21 Dimensions: 370x330 x95mm	
40-221	UPS5000		A
80-320 **)	Battery 12V/7Ah	weight 2,4 kg	C

Order Code	Model	Details	PG
	**UPS 1000**	Output: 27,3V DC Maximal load: 1A Batteries: 12V / 1,2 Ah (Battery to be ordered separately) Housing: Metal, IP30 Dimensions: 200x135x60	
4000-0003	UPS1000 battery back-up (Sweden only)	UPS1000 battery back-up with an easy installation, can be paralleled for higher output power or voltage drop compensation, making it ideal solution during the power loss. This power back-up requires two 12V 1,2Ah batteries (P/N 4000-0004)	D
4000-0001	UPS1000 battery back-up (w/o batteries)		D
4000-0004	UPS1000 battery		D

** Batteries can be handled as 'dangerous goods' by shipping companies, which can add very high extra cost for shipping. In those cases, we recommend batteries to be purchased locally.

Protective Equipment

Order Code	Model	Details	PG
	**Protection bracket**	Bracket in 3mm stainless steel to be mounted as protection for detectors etc. Width: 50mm	
40-901	Protection bracket Big	Inner dimension L x H: 174x92mm (fits e.g. the GD24/230 series)	A
40-902	Protection bracket Small	Inner dimension L x H: 94x92mm (fits e.g. the MP series)	A

Order Code	Model	Details	PG
	**Sensor Protection Cap**	Protection of sensor during construction time.	
DEL659	Sensor protection large	For GS/GSR/TR-SC/MP-DS	A
DEL660	Sensor protection small	For GR/TR-SCR/MP-DR	A

GLACIÄR MIDI

Order Code	Model	Details	
	Power Adapter	Power adapter, housed in an IP54 enclosure, delivers 200-230V power and a 24V output to the GLACIÄR MIDI, increasing its versatility for various applications. Equipped with input and output power cable management, it can power up to 5 GLACIÄR MIDI units simultaneously.	
4000-0002	Power Adapter	200-230V, 24V, IP54	G

Order Code	Model	Details	
	LED sign - Refrigerant Alarm	The "Refrigerant Alarm" LED sign serves as a clear indicator that the refrigerant alarm system is active in a designated area.	
6100-0002	LED sign -Refrigerant Alarm	Dimensions LxH: 300mm (325mm)x132mm, IP54, 230 AC or 24 DC	D

Order Code	Model	Details	
	Calibration Gas		
6120-XXXX	Calibration Gas	Contact sales for information on available calibration gas bottles and state *(Europe only)*.	D

Order Code	Model	Details	
	Pipe Adapter	The GLACIÄR MIDI Pipe Adapter is designed for high-pressure ammonia systems, ensuring a secure fit on the blow-off pipe or pressure relief valve pipe. This adapter effectively reduces the potential pressure exerted on gas sensors, providing crucial protection against damage and enhancing the longevity and reliability of your gas detection equipment.	
62-9031	Pipe Adapter	Pipe Adapter for GLACIÄR MIDI 1/2" R	G

Order Code	Model	Details	
	Calibration Adaptor (v 2.0)	The Calibration Kit, designed specifically for the GLACIÄR MIDI, allows you to periodically test and calibrate your gas detector alarms and cause & effect systems. This ensures accuracy and reliability for optimal safety.	
62-9011	Calibration Adapter v 2.0	Calibration adapter for GLACIÄR MIDI	D

Order Code	Model	Details	
	Duct Adapter	The GLACIÄR MIDI Duct Adapter is expertly engineered to enable precise monitoring of gas streams within ductwork and tank head spaces. Designed for seamless integration, this adapter ensures accurate and reliable gas detection, enhancing the safety and efficiency of your systems.	
62-9041	Duct Adapter	Duct Adapter for GLACIÄR MIDI	D

Order Code	Model	Details	
	Delivery Protection Cap	Protection Cap ensures safety from external elements, safeguarding the GLACIÄR MIDI sensor head until it is ready for use.	
62-9022	Delivery Protection Cap	Delivery Protection Cap for GLACIÄR MIDI	D

Order Code	Model	Details	
	Magnetic Wand (pack of 5)	Magnetic Wand streamlines the configuration process, ensuring quick and easy setup for GLACIÄR MIDI.	
62-9051	Magnetic Wand	Magnetic Wand for GLACIÄR MIDI, pack of 5 pcs	F

GLACIÄR X5

Order Code	Model	Details	
	**Stopping Plug**	ATEX certified M20 Stopping Plugs are used to blank off unused entries on GLACIÄR X5 in hazardous area, ensuring the integrity and Ex approval of the installation.	
3500-0031	Stopping Plug, M20	Spare Stopping Plug for GLACIÄR X5	G

Order Code	Model	Details	
	**Cable Gland**	ATEX cable glands for GLACIÄR X5 secure cables against pull, twist, and environmental damage, maintaining ingress protection and ATEX rating.	
3500-0030	Cable Gland EXd II C	Spare cable Gland for GLACIÄR X5, ATEX certified	G

Order Code	Model	Details	
	**Tool Kit (Magnetic Wand)**	The GLACIÄR X5 Magnetic Wand streamlines the configuration process, ensuring quick and easy setup for our equipment.	
3500-0087	Tool Kit (Magnetic Wand)	1 pc of spare Magnetic Wand for GLACIÄR X5	G

Order Code	Model	Details	
	**Gas Collector Cone**	The Gas Collector Cone, specially designed for the GLACIÄR X5, enhances the detection of lighter-than-air gases. This accessory is compatible exclusively with versions featuring a single sensor head.	
3500-0088	Gas Collector Cone	Gas Collector Cone for GLACIÄR X5. Note: Requires Splash Guard	G

Order Code	Model	Details	
	**ATEX Splash Guard**	The GLACIÄR X5 Splash Guard shields your detector from water splashes, ensuring consistent and reliable performance in wet environments.	
3500-0090	ATEX Splash Guard	Splash guard for GLACIÄR X5	G

GLACIÄR X5

Order Code	Model	Details	
	Sun Shade	The Sun Shade for GLACIÄR X5 serves dual purposes as a rain-guard and sun glare protector, ensuring protection from both weather elements for a comfortable experience.	
3500-0085	Sun Shade	Sun Shade/Rain-Guard for GLACIÄR X5	G

Order Code	Model	Details	
	Pole Clamp	The Pole Clamp provides an easy and versatile installation option for the GLACIÄR X5.	
3500-0086	Pole Clamp	Pole Clamp for GLACIÄR X5	G

Order Code	Model	Details	
	Protection Filter Disk	The Protection Filter Disk is essential when installing the splash guard for the GLACIÄR X5 sensor head, preventing costly system shutdowns caused by blockages. Specifically designed to purify various fluids, it is ideal for applications such as water irrigation.	
3500-0089	Protection Filter Disk	Protection Filter Disk for GLACIÄR X5. Note: Requires ATEX Splash Guard	G

Order Code	Model	Details	
	Spare Plug in PCB set	In the event of loss or damage, replacement plugs for the PCB are available for individual purchase.	
3500-0091	Spare Plug in PCB set	Spare plug in PCB set for GLACIÄR X5	G

Order Code	Model	Details	
	Replacement Base	In the event of damage to your GLACIÄR X5 base, the replacement bases are readily available for purchase to ensure your device continues to perform at its best.	
3500-0092	Replacement Base	Replacement Base for GLACIÄR X5	G

GLACIÄR X5

Order Code	Model	Details	
	Spare X5 ATEX Housing	Should your GLACIÄR X5 housing sustain damage, spare ATEX housings are available for purchase. This ensures you can maintain the safety and functionality of GLACIÄR X5.	
3500-0093	Spare X5 ATEX Housing	Spare ATEX Housing for GLACIÄR X5	G

Order Code	Model	Details	
	Calibration Kit	The Calibration Kit for GLACIÄR X5 includes all necessary tools for precise and easy calibration, ensuring your detector's optimal performance and accuracy.	
3500-0094	Calibration Kit	Calibration Kit for GLACIÄR X5	G

DT300
Diagnostic and calibration tool

DT300 is a unique instrument that is used for checking and calibration of detectors with semi conductive sensors.

A recurring concern when calibrating sensors is to know if the air is clean or contaminated. Traditionally, this has been accomplished by applying synthetic air or "zero gas" from a bottle. DT300 features a unique design with an integrated reference sensor that makes it possible to calibrate the relevant sensor without applying gas.

Function

The unit is equipped with a reference sensor (ordered separately) for the relevant gas.

The reference sensor is plugged into the unit and the LCD display indicates when the sensor is heated and ready to use.

The reference value for the gas appears in the LCD display.

The value is then used to calibrate offset-value on the relevant detector. Alphanumeric LCD display shows:

- The integrated reference sensors offset-value
- Offset-value on the tested detector
- System voltage (+5 V)
- C-, B-and A-alarm levels

SM300 sensor modules are a consumable part.

Easy replaceable sensor module, see spare parts

Method for test and calibration: NA

Maintenance: SM300-sensor module shall be replaced annually.

Features

For control and calibration of semiconductor detectors

For control and adjustment of alarm levels of monitoring units

Integrated reference sensor for measuring the temperature of gas or other contamination in the detector being tested

Exchangeable factory "plug-in" sensors are available for H2, HC, HFC / HFO, NH3 and VOCs

Allows calibration of the current sensor without introducing calibration gas

Power supply: 4 x AA alkaline (8h) or rechargeable
Ni-Mh (10h) batteries

LED indicator for battery level

Dimensions WxHxD: 100x165x44mm

Weight: 365g (including batteries)

Order Code	Model	Details	PG
	**DT300**	Ambient temperature: -25°C..+50°C	
60-130	DT300	Diagnostic tool, base unit *	A

Order Code	Model	Details	PG
	**SM300**	Pre calibrated sensor module for DT300	
60-131	SM300-VOC	Sensor for exhaust gas, air quality (VOC)	A
60-132	SM300-HC	Sensor for hydrocarbons (HC)	A
60-133	SM300-H2	Sensor for hydrogen (H2)	A
60-134	SM300-HFC	Sensor for refrigerant gases (HFC/CFC/HCFC/HFO)	A
60-136	SM300-NH3-4000	Sensor for ammonia (NH3) – 4000	A
60-137	SM300-NH3-10000	Sensor for ammonia (NH3) – 10000	A
60-150	SM300-self sense	Sensor for refrigerant gases (HFC/CFC/HCFC/HFO) with filter	A

Order Code	Model	Details	PG
	**SA200**	**Basic Service Tool** The tool is used with a voltmeter to check and adjust the settings of the alarm levels and sensor offset of gas detectors and control panels. • Basic service tool for control and adjustment of alarm levels for detectors • For control and adjustment of alarm levels of monitoring units **Features:** Service tool for detectors type GD/GS/GR/GK/GSR230, GD/GS/GR/GK/GSR24 and for detectors connected to monitoring units MPU2C/4C/6C and SPU/SPLS.	
60-120	SA200	for MPU, SPU/SPLS and G-series 230/24V models	Net

Order Code	Model	PG
Semiconductive sensors G / MP-DS / MP-DR2 / MP-DK2		
SEN002	HC sensor 0-50% LEL (SC)	D
SEN004	HFC sensor 0-4000ppm (SC)	D
SEN006	H2 sensor 0-50% LEL (SC)	D
SEN027	SELF SENSE filter sensor HFC, HFO, Propane	D
Sensor module for MP-D		
SEN204	HFC Sensor 0-4000ppm + RS02	D
Sensor module for Transmitter (TR-EC)		
SEN210	CO Sensor + RS05	D
SEN212	NO2 Sensor + RS05	D
CO_2 Sensor. Complete with heater and lid		
SEN113	CO2 IR-sensor 0-10000ppm, MPS/TR-IR	D
SEN1144	CO2 IR-sensor 0-10000ppm, GSH	D
SEN1114	CO2 IR-sensor 0-30000ppm, GSH	D
SEN115	CO2 IR-sensor 0-10000ppm, GSLS	D

Order Code	Model	PG
ATEX Sensor. 23cm cable. For GEX		
SEX019	HFC ATEX Sensor 0-4000ppm, 23cm cable	D
SEX019	HC ATEX Sensor 0-50%LEL, 23cm cable	D
ATEX Sensor. 5m cable. For GXR		
SEX018	HFC ATEX Sensor 0-4000ppm, 5m cable	D
SEX018	Propane ATEX Sensor 0-50%LEL, 5m cable	D
Sensor for AQUIS		
35-220	NH3 Sensor, Media temp (0..+50°C)	Net
35-221	NH3 sensor, Media temp (-8..+30°C)	Net

SAMON
safe monitoring

SIMPLY RELIABLE