SAMON
safe monitoring

Gas Detection Equipment

Issue **15**

Valid from 2015-05-01

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Monitoring units

MPU – Multi point unit with 2, 4 or 6 channels

General
The MPU2C, MPU4C and MPU6C are central units with two, four or six channels (detectors).
They offer an ideal solution for multi-point surveillance of small/medium-sized rooms where various toxic, hazardous and explosive gases may be present.
The microprocessor-controlled unit displays operating status and alarm information independently for each channel via (LEDs). They are suitable for monitoring HCFC and HFC refrigerants, carbon dioxide (CO2), ammonia, organic compounds (hydrocarbons) as gasoline (hexane), ethanol, hydrogen, natural gas (methane), propane (LPG) and butane etc.

Function (per channel)
The connected detector continuously measures the gas concentration and provides an analogue signal to the central unit.
Alarms are indicated in three levels by a yellow and two red LEDs that indicate low (Alarm C), medium (Alarm B) and high (Alarm A) gas concentration, the respective LED lights up and the corresponding relay switches.
If the alarm delay selected flashes each LED in the selected delay time, then the LED turns to steady and the relay contact switches.

Features
- Microprocessor controlled unit for two, four and six detectors
- LED operation indicator per individual channel
- Three adjustable alarm thresholds for each individual channel
- Alarm delay, selectable in four steps
- Relay outputs for A, B, C and fault alarm, 230V / 5A
- Manual or automatic alarm reset
- Test terminal for service tools
- Service mode for temporary blocking of alarm
- Built-in self-test feature
- Built-in buzzer
- Fail-safe function with built-in monitoring and power failure alarm
- 24V DC / 150mA output for siren or flashing light

Connectable Detectors
Detectors are available for different gases and different ranges.
- MP-Series is specifically designed for MPU
- ATEX detectors for explosive environment
- Transmitters with 0..10V or 4..20mA output

⚠ It's only allowed to connect detectors with a total power consumption of 10W at the MPU. Overload can damage the unit.

Options
- Input for external battery back-up (UPS)
- Can be ordered with custom preset alarm levels for the specific gas type

Order code	Model	Details	PG	EURO
	**MPU**	Ambient temperature: 0°C..+50°C Humidity: 10..95% Rh (non condensing) IP66		
20-310	MPU2C	2 channels, 230V AC / 24V DC, max 10 W	A	836
20-300	MPU4C	4 channels, 230V AC / 24V DC, max 10 W	A	1143
20-305	MPU6C	6 channels, 230V AC / 24V DC, max 10 W	A	1436
60-300		Custom preset alarm levels. Price per channel/detector	Net	28

Factory-set alarm levels (by experience appropriate alarm levels and ranges):

Detector type	Range	Alarm levels
NH3 -1000	0 – 1000 ppm	150 / 300 / 500 ppm
NH3 - 4000	0 – 4000 ppm	150 / 500 / 3000 ppm
NH3 – 10000 *) Option	0 – 10000 ppm	500 / 3000 / 8000 ppm
HFC [2)]	0 – 4000 ppm	100 / 1000 / 2000 ppm
CO2 [1)]	0 – 10000 ppm	2000 / 5000 / 8000 ppm
Flammable / explosive gas	0 – 40% LEL	5 / 10 / 20% LEL

[1)] New standard settings starting from May 2013. **Note! The MPU6C is limited to use with max four (4) MPS-CO2**
[2)] Normal factory setting is for R134a, but the detectors also indicate for HCFC and CFC with slightly different alarm levels.

Monitoring units

SPU / SPLS– Single point unit with one channel

NEW!

General
SPU/SPLS is a monitoring unit for single channel detection of toxic, hazardous or explosive gases.
The microprocessor-controlled unit LED's displays operating status and alarm information for the connected detector.
The SPU/SPLS is suitable for monitoring of HCFC and HFC refrigerants, carbon dioxide (CO_2), ammonia, hydrocarbons like gasoline (hexane), ethanol, hydrogen, methane, propane (LPG) and butane etc.

Connectable detectors
Detectors are available for different gases and different ranges.
- MP-Series
- ATEX detectors for explosive environment
- Transmitter with 0-10V or 4..20mA output signal

Features
- The unit is microprocessor controlled and displays the current operating status via LED's
- High intense LED alarm flash, (B-alarm)
- Built in alarm buzzer, (A-alarm)
- Mute function with timer (60min)
- Three adjustable alarm levels with relay output (230V/5A)
- Alarm delay, selectable in four steps
- Manual or automatic reset on alarm
- Fail-safe function with built-in monitoring and power failure alarm
- Built-in self-test and service function
- Test terminal for service tools
- Robust non corrosive PC enclosure for installation also in aggressive environments

Special features for the SPLS:
- High intensive LED alarm indication (B-alarm)
- Built-in buzzer for alarm indication (A-alarm)
- Mute function with time limit (60min)
- The unit has a screw terminal connection for a remote manual activation of full alarm. (A-alarm)

Options:
- Input for external battery back-up (UPS)
- Can be ordered with custom preset alarm levels for specific gas type.

Order code	Model	Details	PG	EURO
	**SPU**	Ambient temperature: 0°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
20-350	SPU24	24V AC/DC, max 3 W	A	301
20-355	SPU230	85-230V AC, max 3 W	A	325
	**SPLS**	Sound and light signal for alarm indication (A & B alarm) Ambient temperature: 0°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
20-360	SPLS24	24V AC/DC, max 3 W	A	398
20-365	SPLS230	85-230V AC, max 3 W	A	422
60-300		Custom preset alarm levels. Price per channel/detector	Net	28

Monitoring units

LAN63/ 64/ 65 – Alarm panels

General
LAN panels offer an ideal solution for multi-point monitoring of leakage of such refrigerants in refrigeration systems but also for detecting other toxic and explosive gases.
The system consists of LAN63 (master) and LAN64 (slave) which can be expanded to a maximum of 108 inputs (DI).
LAN63-PKT and LAN63/64-PKT is the complete package with power supply and enclosure designed for wall mounting.

Current mode and alarm status is shown by LEDs on the front. If necessary, the relay box LAN65 can be connected to provide one potential-free relay contact per input.

The panel is suitable for monitoring of HCFC and HFC refrigerants, carbon dioxide (CO2), ammonia, organic compounds (hydrocarbons) as gasoline (hexane), ethanol, hydrogen, natural gas (methane), propane (LPG) and butane etc.

Features
- 12 DI per module.
- Two relay outputs for A & B alarm, max 24V / 1A.
- Individual alarm indication with LEDs.
- Programmable alarm delay per alarm input.
- Alarm inputs for NO / NC contact.
- Fail-safe function with built-in monitoring and power failure alarm
- Manual reset of alarms
- Delivered as alarm panels for installation in control cabinets or as a complete package (PKT) for wall mounting

Connectable Detectors
All types of detectors and equipment with potential free relay output can be connected.

Note!
Starting April 2013 the -PKT unit has a 24VDC output for power supply of external detectors.
Max. external load 9 W

Order code	Model	Description	PG	EURO
	**LAN63-PKT**	Ambient temperature: 0°C..+50°C Humidity: 10-95% Rh (non condensing) IP32 24VDC power supply output for external detectors. Max 9W		
81-100	LAN63-PKT	12 DI, 230V AC, IP32, max 10 W	A	536
	**LAN63/64-PKT**	Ambient temperature: 0°C..+50°C Humidity: 10-95% Rh (non condensing) IP32 24VDC power supply output for external detectors. Max 9W		
81-200	LAN63/64-PKT	24 DI, 230V AC, IP32, max 10 W	A	834
81-110	LAN63	Only alarm panel, 12 DI, 24V AC, Master, max 2 W	A	413
81-120	LAN64	Only alarm panel, 12 DI, 24V AC, Slave, max 2 W	A	405
	**LAN65**	For mounting on DIN rail LAN 65 provides a potential-free NO contact for each LAN63 (LAN64) input.		
81-130	LAN65	Relay box, 12 DI, 24V AC, max 5 W	A	783

Gas analyser, Sampling system for NH_3, CO_2 and HFC

IR-em2 – Sampling system using Infra Red absorption (NDIR)

General
IR-em2 offers intelligent, reliable and accurate gas detection for a wide range of HCFC and HFC refrigerants or carbon dioxide and ammonia. Since 1997, leading companies has installed IR-based systems for detection of refrigerant leaks. High performance, reliability and quality from the previous system are the basis for the new IR-em2 which also offers a range of additional features.

Zone-based monitoring
IR-em2 is a system capable of monitoring up to 16 zones independently. The system uses a vacuum pump with high capacity to sequentially take air samples from cooling up to 200 meters away. Air sample is drawn through 6mm diameter colour coded pipes back to IR-em2 where it passes through the reversing valve and water trap before the sample reaches the measuring chamber where the analysis is done. The results of the analysis are clearly displayed on the LCD screen along with the associated zone name. Historical data from previous measurements are stored in the system so that technicians can more easily identify the leak and fix any problems.

High accuracy
The high sensitivity and selectivity is achieved by using a unique "infrared signature" to identify the refrigerant and eliminate annoying alarm from any impurities. As a result, the IR-em2 precisely detect the level of concentration in parts per million of the refrigerant. In order to maintain this high accuracy system also compensates for changes in ambient pressure. It can then determine and alert if blockages occur during operation, which may prevent the detection of refrigerant leaks.

Alarms
Each zone can be assigned up to three alarm levels; leakage zone and spills. Leak and zone alarm can be selected with the delay that requires a number of consecutive measurements over the alarm level before the alarm, while the overflow alarm is instantaneous. In the event of leakage, spill or fault, the corresponding LED and relay indicate status. The 16 zones have its own relay that indicates the alarm in each zone. All relays are potential free and can be configured as a "fail-safe", either as N / O or N / C.

Features
- Detects HCFC's, HFC's, Carbon dioxide (CO_2) or Ammonia (NH_3)
- Monitors up to 16 zones
- Simple 6 key user interface with password Protection
- Individual zone naming and alarm thresholds
- Historic data and alarm logs
- Optional fail-safe alarm operation
- Self diagnostics detect system faults
- Highly selective to minimise nuisance alarms
- Historic data and alarm logs

Interface
Remote monitoring can be connected via RS485 or Ethernet. RS485 supports Modbus RTU protocol and Woodley, while the Ethernet connection supports SNMP, XML and HTML protocols. Thus it can be a PC with standard web browser to read or inquire IR-em2 either locally or via LAN or WAN.
It also offers a range of additional equipment that is connected to the IR-em2 to remotely obtain indications of refrigerant leakage and / or failure of the system.

Self Diagnostics
The system's air flow is continuously monitored and if it drops below a certain level, which may affect the operation of the system, it is indicated as an error. Additionally performed daily self-test to verify the internal pneumatics of IR-em2, and if any problems identified indicated that false alarms. All errors are logged in order to solve problems as quickly and easily as possible.

- Complies with the F-gas regulative 842/2006 and EN378:2008

- Maintenance: at least once a year at normal operation

Gas analyser, Sampling system for NH_3, CO_2 and HFC

Order code	Model	Description	PG	EURO
	**IR-em2**	Ambient temperature: 0°C..+50°C Humidity: 0..95% Rh (non condensing)		
82-111	IR-em2 (8ch) CO2	Aspirated 8 Channel CO_2 unit	E	*)
82-121	IR-em2 (16ch) CO2	Aspirated 16 Channel CO_2 unit	E	*)
82-112	IR-em2 (8ch) HFC	Aspirated 8 Channel HCFC/HFC unit	E	*)
82-122	IR-em2 (16ch) HFC	Aspirated 16 Channel HCFC/HFC unit	E	*)
82-115	IR-em2 (8ch) NH3	Aspirated 8 Channel Ammonia unit	E	*)
82-125	IR-em2 (16ch) NH3	Aspirated 16 Channel Ammonia unit	E	*)
	Accessories			
DEL557	Sample tube	Supplied in 100m drums in 16 colours	E	*)
DEL556	End of line filter		E	*)
DEL555	Inline Filter		E	*)
DEL664	2 Way Manifold		E	*)
DEL665	4 Way Manifold		E	*)
DEL623	Sample tube filter	Internal air filter	E	*)
DEL558	Side panel filter	Dust filter for cabinet	E	*)
DEL620	Air pump, replacement		E	*)

*) Price on request

(NH_3) – Detectors for Ammonia

G-series – Detectors with relay output, semi conductive sensor (SC)

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored.
The detectors can be used independently, connected to a monitoring unit or to any other monitoring system that accepts potential-free contact.

- Complies with EN378:2008 regulations

Features
- The detector is microprocessor controlled and displays the current operating status via LED's
- Three adjustable alarm levels with relay output (230V/5A)
- Alarm delay, selectable in four steps
- Manual or automatic reset on alarm
- Fail-safe function with built-in monitoring and power failure alarm
- Built-in self-test and service function
- Test terminal for service tools
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**GD**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP21		
37-252	GD24-NH3-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	554
37-253	GD24-NH3-10000	0-10000 ppm, 12..24V AC/DC, max 2 W	A	554
37-257	GD230-NH3-4000	0-4000 ppm, 230V AC, max 2 W	A	581
37-258	GD230-NH3-10000	0-10000 ppm, 230V AC/DC, max 2 W	A	581
	**GS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-452	GS24-NH3-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	671
37-453	GS24-NH3-10000	0-10000 ppm, 12..24V AC/DC, max 2 W	A	671
37-457	GS230-NH3-4000	0-4000 ppm, 230V AC, max 2 W	A	698
37-458	GS230-NH3-10000	0-10000 ppm, 230V AC/DC, max 2 W	A	698
	**GSR**	Splash proof, room mounting with remote sensor, 5m cable The sensor can hang freely, while the detector is wall mounted Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-952	GSR24-NH3-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	711
37-953	GSR24-NH3-10000	0-10000 ppm, 12..24V AC/DC, max 2 W	A	711
37-957	GSR230-NH3-4000	0-4000 ppm, 230V AC, max 2 W	A	740
37-958	GSR230-NH3-10000	0-10000 ppm, 230V AC/DC, max 2 W	A	740

(NH_3) – Detectors for Ammonia

Order code	Model	Details	PG	EURO
	**GK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-852	GK24-NH3-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	711
37-857	GK230-NH3-4000	0-4000 ppm, 230V AC, max 2 W	A	740
	**GR**	Detector specially designed for vent lines from pressure relief valves in refrigeration plants. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-652	GR24-NH3-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	698
37-657	GR230-NH3-4000	0-4000 ppm, 230V AC, max 2 W	A	725

Factory-set alarm levels (by experience appropriate alarm levels and ranges):

Detector type	**Range (ppm)**	**Alarm levels (ppm)**
Model - 4000	0 - 4000	150 / 500 / 3000
Model - 10000	0 - 10000 ppm	500 / 3000 / 8000 ppm

(NH_3) – Detectors for Ammonia

MP-series – Detectors for connection to MPU, semi conductive sensor (SC)

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored. The 'MP-Series' is specifically designed for MPU and SPU/SPLS monitoring units

Measuring ranges and alarm levels
⚠ Alarm levels are always set on the monitoring unit!
⚠ Appropriate ranges and alarm levels depends on the environment in which the detectors is installed and the type of gas to be detected.

- Complies with EN378:2008 regulations

Features
- Requires connection to a monitoring unit e.g.MPU2C, MPU4C, MPU6C, SPU/SPLS
- Power supply from monitoring unit
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**MP-D**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP21		
38-252	MP-D-(NH3)-4000	0-4000 ppm	A	352
38-253	MP-D-(NH3)-10000	0-10000 ppm	A	352
	**MP-DS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-452	MP-DS-(NH3)-4000	0-4000 ppm	A	439
38-453	MP-DS-(NH3)-10000	0-10000 ppm	A	439
	**MP-DK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-852	MP-DK-(NH3)-4000	0-4000 ppm	A	439
	**MP-DR**	Detector specially designed for vent lines from pressure relief valves in refrigeration plants. Fitting in yellow chromated steel ½ "R. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-652	MP-DR-NH3-4000	0-4000 ppm	A	364

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labeled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

(NH_3) – Detectors for Ammonia

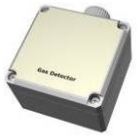
TR-EC – Transmitters (4..20mA), electro chemical sensor (EC)

General
TR-EC is a transmitter with electrochemical sensor for ammonia, which can be connected to MPU or SPU/SPLS monitoring units or PLC/DUC with 4..20mA input.
The detector is specifically designed for harsh conditions in industrial and marine applications with huge fluctuations in temperature and humidity.
TR-EC has a replaceable electrochemical sensor with high accuracy. Electrochemical sensors are characterized by high selectivity, even at low concentrations.

- Complies with EN378:2008 regulations

Features
- 4 different ranges
- High selectivity
- Insensitive to hydrogen
- Factory calibrated
- Output 4..20mA
- Power supply 12..30V DC
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 2 year
Easy replaceable sensor module, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**TR-EC**	Ambient temperature -30°C..+50°C Humidity: 0-95% Rh (non condensing) IP67		
39-4250	TR-EC-NH3-100	0 - 100 ppm	A	967
39-4251	TR-EC-NH3-1000	0 - 1000 ppm	A	967
39-4252	TR-EC-NH3-5000	0 - 5000 ppm	A	967
39-4253	TR-EC-NH3-10000	0 - 10000 ppm	A	967

(NH_3) – Detectors for Ammonia

TR-SC – Transmitters (4..20mA / 0..10V DC), semi conductive sensor (SC)

General
TR-SC is a transmitter with a semi conductive sensor, which can be connected to MPU or SPU/SPLS monitoring units or PLC/DUC with 4..20mA or 0..10V DC input.
The output signal can be selected either 4..20mA or 0..10V DC (non-linear) depending on configuration.
Using the current signal decreases sensitivity to distortion even when installed over long distances.
TR-SC has replaceable semiconductor sensors. Semi conductive sensors are not gas specific but have a long life (up to 5 years) and also low maintenance costs

- Complies with EN378:2008 regulations

Features
- Different ranges
- Limited selectivity
- Selectable output 4..20mA / 0..10V DC
- Factory calibrated
- Power supply 12..30V DC
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**TR-SC**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-4152	TR-SC-NH3-4000	0..4000ppm Ammonia, max 2 W	A	588
39-4153	TR-SC-NH3-10000	0..10000ppm Ammonia, max 2 W	A	588
	**TR-SCK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-8152	TR-SCK-NH3-4000	0..4000ppm Ammonia, max 2 W	A	588
	**TR-SCR**	Detector specially designed for vent lines from pressure relief valves in refrigeration plants. Fitting in yellow chromated steel ½ "R. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-6152	TR-SCR-NH3-4000	0..4000ppm Ammonia, max 2 W	A	588

(NH_3) – Detectors for Ammonia

EC28 – Transmitters, electro chemical sensor (EC), ATEX

Order code	Model	Details	PG	EURO
	**EC28**	Output 4..20mA Supply 15..30V DC Expected sensor lifetime ≈ 2 year Sensors are a consumable part. Ambient temperature: -30°C..+50°C Humidity: 0..95% Rh (non condensing) ***Option, LCD display***		
35-1401	EC28-NH3-100	0-100 ppm	C	1613
35-1402	EC28-NH3-100-D	0-100 ppm, With display	C	1991
35-1403	EC28-NH3-1000	0-1000 ppm	C	1613
35-1404	EC28-NH3-1000-D	0-1000 ppm, With display	C	1991

CC28 – Transmitters, catalytic sensor (CC), ATEX

	**CC28**	Output 4..20mA Supply 15..30V DC Expected sensor lifetime ≈ 5 year Sensors are a consumable part. Ambient temperature: -30°C..+50°C Humidity: 0..95% Rh (non condensing)		
35-150	CC28-NH3	0-4%	C	974

GEX-NH3 - semi conductive sensor (SC), ATEX

Order code	Model	Details	PG	EURO
	**GEX**	Must be connected to a monitoring unit MPU2/4/6 or SPU/SPLS Power supply from monitoring unit. Normally delivered with a calibrated monitoring unit. Expected sensor lifetime ≈ 5 year Sensors are a consumable part. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP65		
35-304	GEX-SC-NH3-4000	0-4000 ppm	A	1079
35-303	GEX-SC-NH3-10000	0-10000 ppm	A	1079

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labelled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

(NH_3) – Detectors for Ammonia

Aquis500 – For detection in water and brine

General
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 (NH3) in water. In an aqueous solution, ammonia is in a pH-dependent equilibrium with the ammonium ion (NH4+ ions). Since the NH4+ ions are converted to ammonia when adding lye, the sensor can detect ammonia. (the NH4+ 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 EN378:2008 regulations
- Expected sensor lifetime ≈ 2 year
- Sensors are a consumable part.
- Maintenance: every 6 month at normal operation

⚠ When ordering, brine type must be specified!

Order code	Model	Details	PG	EURO
	**Aquis**	Temperature range media (in circuit): depending on sensor type IP67		
35-210	Aquis 500	Monitoring unit, wall mount	Net	909
35-220	NH3 sensor, standard	Media temp (0..+50°C).	Net	589
35-221	NH3 sensor, low temp	Media temp (-8..+30°C).	Net	589
35-229	Coax cable set	1x5mm 75Ω, 5,0m	Net	62
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	691
35-231	Aquis bottle kit	Mounting kit with hose and bottle for liquid sample.	Net	17

(HFC) – Detectors for synthetic refrigerants

G-series – Detectors with relay output, semi conductive sensor (SC)

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored.
The detectors can be used independently, connected to a monitoring unit or to any other monitoring system that accepts potential-free contact.

- Complies with the F-gas regulative 517/2014 and EN378:2008

Features
- The detector is microprocessor controlled and displays the current operating status via LED's
- Three adjustable alarm levels with relay output (230V/5A)
- Alarm delay, selectable in four steps
- Manual or automatic reset on alarm
- Fail-safe function with built-in monitoring and power failure alarm
- Built-in self-test and service function
- Test terminal for service tools
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**GD**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP21		
37-220	GD24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	433
37-225	GD230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A	462
	**GS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-420	GS24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	565
37-425	GS230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A	593
	**GSR**	Splash proof, room mounting with remote sensor, 5m cable The sensor can hang freely, while the detector is wall mounted Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-920	GSR24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	638
37-925	GSR230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A	667
	**GK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-820	GK24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	565
37-825	GK230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A	593

(HFC) – Detectors for synthetic refrigerants

Order code	Model	Details	PG	EURO
	**GR**	Detector specially designed for vent lines from pressure relief valves in refrigeration plants. 1.5 m cable between the sensor and the detector. Pipe fitting in brass ½ " Flare. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-620	GR24-HFC-4000	0-4000 ppm, 12..24V AC/DC, max 2 W	A	565
37-625	GR230-HFC-4000	0-4000 ppm, 230V AC, max 2 W	A	593

Factory-set alarm levels (by experience appropriate alarm levels and ranges):

Detector type	**Range (ppm)**	**Alarm levels (ppm)**
HFC	0 - 4000	100 / 1000 / 2000

⚠ The HFC detector alarm levels are set for (R134). But they also indicate for HCFC and CFC although at slightly different levels. Detectors can be adjusted for other gases and customized alarm levels. Please contact us for information.

(HFC) – Detectors for synthetic refrigerants

MP-series – Detectors for connection to MPU, semi conductive sensor (SC)

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored. The 'MP-Series' is specifically designed for MPU and SPU/SPLS monitoring units.

Measuring ranges and alarm levels
⚠ Alarm levels are always set on the monitoring unit!
⚠ Appropriate ranges and alarm levels depends on the environment in which the detectors is installed and the type of gas to be detected.

- Complies with the F-gas regulative 517/2014 and EN378:2008

Features
- Requires connection to a monitoring unit e.g.MPU2C, MPU4C, MPU6C, SPU/SPLS
- Power supply from monitoring unit
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**MP-D**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP21		
38-220	MP-D-HFC-4000	0-4000 ppm	A	324
	**MP-DS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-420	MP-DS-HFC-4000	0-4000 ppm	A	392
	**MP-DK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-820	MP-DK-HFC-4000	0-4000 ppm	A	392
	**MP-DR**	Detector specially designed for vent lines from pressure relief valves in refrigeration plants. Fitting in brass ½ "Flare. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-620	MP-DR-HFC-4000	0-4000 ppm	A	331

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labeled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

(HFC) – Detectors for synthetic refrigerants

TR-SC – Transmitters (4..20mA / 0..10V DC) , semi conductive sensor (SC)

General
TR-SC is a transmitter with a semi conuctive sensor, which can be connected to MPU, SPU/SPLS monitoring units or PLC/DUC with 4..20mA or 0..10V DC input.
The output signal can be selected either 4..20mA or 0..10V DC (non-linear) depending on configuration.
Using the current signal decreases sensitivity to distortion even when installed over long distances.
TR-SC have replaceable semiconductor sensors. Semi conductive sensors are not gas specific but have a long life (up to 5 years) and also low maintenance costs.

- Complies with the F-gas regulative 517/2014 and EN378:2008

Features
- 3 different ranges
- Limited selectivity
- Selectable output 4..20mA / 0..10V DC
- Factory calibrated
- Power supply 12..30V DC , max 2 W
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Modell	Details	PG	EURO
	**TR-SC**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-4120	TR-SC-HCFC-4000	0..4000ppm HCFC (standard R22)	A	497
39-4120-A	TR-SC-HFC(A)-4000	0..4000ppm HFC (standard R404a / R507)	A	497
39-4120-B	TR-SC-HFC(B)-4000	0..4000ppm HFC (standard R134a)	A	497
	**TR-SCK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-8120	TR-SCK-HCFC-4000	0..4000ppm HCFC (standard R22)	A	497
39-8120-A	TR-SCK-HFC(A)-4000	0..4000ppm HFC (standard R404a / R507)	A	497
39-8120-B	TR-SCK-HFC(B)-4000	0..4000ppm HFC (standard R134a)	A	497
	**TR-SCR**	Detector specially designed for vent lines from pressure relief valves in refrigeration plants. Fitting in brass ½ " Flare. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-6120-B	TR-SCR-HFC(B)-4000	0..4000ppm HFC (standard R134a)	A	497

⚠ The detector for R404A type (A) are also suitable for R407C and R410A.

For vent lines / blow off pipe use TR-SCR type (B) for all CFC, HCFC and HFC's.

(HFC) – Detectors for synthetic refrigerants

GEX-HFC - semi conductive sensor (SC), ATEX

Order code	Model	Details	PG	EURO
	**GEX**	Must be connected to a monitoring unit MPU2/4/6, or SPU/SPLS Power supply from monitoring unit. Normally delivered with a calibrated monitoring unit. Expected sensor lifetime ≈ 5 year Sensors are a consumable part. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP65		
35-301	GEX-SC-HFC-4000	0-4000 ppm	A	1079

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labelled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

(HFC) – Detectors for synthetic refrigerants

RM-HFC – for room monitoring (hotels, offices etc)

General
RM-HFC is a microprocessor controlled gas detector that reacts to most types of HFCs and mixtures in air conditioners. It is specially developed for installation in offices, hotel rooms, in stores or in other confined spaces where people stay a long time and where the concentration of HFCs (HCFC) could reach critical thresholds.
Placement of the detector is important for its function and as HFC / HCFC is heavier than air the detector should be mounted 15-20cm above the floor.
The housing is specially designed and the off-white color makes it easy to fit into any public environment.

Function
Normal mode is indicated by LEDs - solid Green light.
Alarms are indicated by: LED - Flashing Red / Orange, Buzzer and Relay.
RM HFC is equipped with adaptive alarm delay to filter out short-term disruptions.
Automatic reset to normal operation after the alarm when the gas disappears.

- Complies with the F-gas regulative 517/2014 and EN378:2008

Features
- Room detector for HFC and HCFC gases
- Standalone use or connection to monitoring system
- Two factory-set alarm levels
- Alarm output with changeover contact relay (relay draw in normal operation)
- Adaptive alarm delay
- LED indication of operational status, performance, testing and alarm
- Built-in 85dB buzzer (can be disabled)
- Fail-safe operation
- Power supply: 12..24V AC/DC.

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**RM**	Ambient temperature: 0 °C..+50°C Humidity: 0-95% Rh (non condensing) IP21		
32-220	RM-HFC	0–5000 ppm (standard calibration for R410A) , max 2 W	A	279

Factory-set alarm levels (by experience appropriate alarm levels and ranges):

Detector type	**Range (ppm)**	**Alarm levels (ppm)**
HFC	0 - 5000	1000 / 4000

⚠ The HFC detector alarm levels are set for (R134). But they also indicate for HCFC and CFC although at slightly different levels. Detectors can be adjusted for other gases and customized alarm levels. Please contact us for information.

(CO_2) – Detectors for carbon dioxide

G-series – Detectors with relay output, IR-sensor (NDIR)

NEW!

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored.
The detectors can be used independently, connected to a monitoring unit or to any other monitoring system that accepts potential-free contact.

- Complies with EN378:2008 regulations

NEW FEATURE!
GSH-CO2 has extended temperature range starting from February 2015. The new unit replaces previous 'low temp' (LT) unit.

Special features for the GSLS:
- High intensive LED alarm indication (B-alarm)
- Built-in buzzer for alarm indication (A-alarm)
- Mute function with time limit (60min)
- The unit has a screw terminal connection for a remote manual activation of full alarm. (A-alarm)

Features
- The detector is microprocessor controlled and displays the current operating status via LED's
- Infrared absorption (NDIR) detection with high selectivity and long-term stability >10 years life time
- Three adjustable alarm levels with relay output (230V/5A)
- Alarm delay, selectable in four steps
- Manual or automatic reset on alarm
- Fail-safe function with built-in monitoring and power failure alarm
- Built-in self-test and service function
- Test terminal for service tools
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Expected sensor lifetime > 10 year
Automatic zero calibration
Easy replaceable sensor, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**GSH**	Splash proof, room mounting detector with built-in heater for installation in cold rooms. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP67		
37-4120	GSH24-CO2-10000	0-10000 ppm, 12..24V AC/DC, max 3 W	A	568
37-4170	GSH230-CO2-10000	0-10000 ppm, 85…230V AC, max 3 W	A	593
	**GSLS**	Splash proof, room mounting detector with built-in heater for installation in cold rooms. Sound and light signal for alarm indication (A & B alarm) Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP67		
37-4120-LS	GSLS24-CO2-10000	0-10000ppm, 12…24V AC/DC, max 3W	A	690
37-4170-LS	GSLS230-CO2-10000	0-10000ppm, 85…230V AC, max 3W	A	714

Factory-set alarm levels (by experience appropriate alarm levels and ranges)**:**

Detector type	**Range (ppm)**	**Alarm levels (ppm)**
Model -10000	0 – 10000	2000 / 5000 / 8000 [1)]

[1)] Changed factory standard settings for CO2 starting May 2013.

- *Option*

Order code	Model	Details	PG	EURO
	**MSVK**	Mounting kit for detection in ventilation ducts Connection tube: 2 x 20mm Ø		
60-800	-	Duct mounting kit		

Please contact us for information

(CO_2) – Detectors for carbon dioxide

MPS-series – Detectors for use with MPU & SPU/SPLS, IR-sensor (NDIR)

NEW!

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored. The 'MPS-Series' is specifically designed for MPU and SPU/SPLS monitoring units.

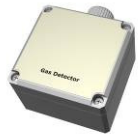
Measuring ranges and alarm levels
⚠ Alarm levels are always set on the monitoring unit!
⚠ Appropriate ranges and alarm levels depends on the environment in which the detectors is installed and the type of gas to be detected.

- Complies with EN378:2008 regulations

NEW FEATURE!
MPS-CO2 has extended temperature range starting from February 2015. The new unit replaces previous 'low temp' (LT) unit.

Features
- Requires connection to a monitoring unit e.g.MPU2C, MPU4C, MPU6C, SPU/SPLS
- Power supply from monitoring unit
- Infrared absorption (NDIR) detection with high selectivity and long-term stability >10 years life time
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Expected sensor lifetime > 10 year
Automatic zero calibration
Easy replaceable sensor, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**MPS**	Splash proof, room mounting detector with built-in heater for installation in cold rooms. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP67		
34-410	MPS-CO2-10000	0-10000 ppm, max 2,5 W	A	482

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labelled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

- *Option*

Order code	Model	Details	PG	EURO
	**MSVK**	Mounting kit for detection in ventilation ducts Connection tube: 2 x 20mm Ø		
60-800	-	Duct mounting kit		

Please contact us for information

(CO_2) – Detectors for carbon dioxide

TR-IR – Transmitters (4..20mA / 0..10V DC), IR-sensor (NDIR)

NEW!

General:
TR-IR-CO2 is a transmitter designed to measure the concentration of carbon dioxide. The sensors are IR (infrared) type which gives long life and good selectivity. The detectors provide a 4..20mA or 0..10V output linearly proportional to the concentration of gas.
The output signal can be selected using jumper, to either 4..20mA or 0..10V DC.
Using the current signal decreases sensitivity to distortion even when installed over long distances.

- Complies with EN378:2008 regulations

NEW FEATURE!
TR-IR-CO2 has extended temperature range starting from February 2015. The new unit replaces previous 'low temp' (LT) unit.

Features
- Infrared absorption (NDIR) detection with high selectivity and long-term stability >10 years life time
- Linear output 4..20mA or 0..10V
- Power supply 12..30V DC
- Robust non corrosive PC enclosure for installation also in aggressive environments.

⚠ Expected sensor lifetime > 10 year
Automatic zero calibration
Easy replaceable sensor, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**TR-IR**	Splash proof, room mounting detector with built-in heater for installation in cold rooms. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP67		
39-4312	TR-IR-CO2-10000	0-10000 ppm , max 2,5 W	A	579

- ***Option***

Order code	Model	Details	PG	EURO
	**MSVK**	Mounting kit for gas detection in ventilation ducts. Connection tube: 2 x 20mm Ø		
60-800	-	Duct mounting kit		

Please contact us for information

(HC) – Detectors for hydro carbons (Flammable and explosive gas)

G-series – Detectors with relay output, semi conductive sensor (SC)

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored.
The detectors can be used independently, connected to a monitoring unit or to any other monitoring system that accepts potential-free contact.

- Complies with EN378:2008 regulations

- The general Hydrocarbon (HC) detector can be used for LPG (Propane), Butane, Biogas (Methane) etc.

Features
- The detector is microprocessor controlled and displays the current operating status via LED's
- Three adjustable alarm levels with relay output (230V/5A)
- Alarm delay, selectable in four steps
- Manual or automatic reset on alarm
- Fail-safe function with built-in monitoring and power failure alarm
- Built-in self-test and service function
- Test terminal for service tools
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**GD**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) Power consumption: max 2 W IP21		
37-230	GD24-HC	0-40% LEL, 12..24V AC/DC, Hydrocarbons	A	395
37-235	GD230-HC	0-40% LEL, 230V AC, Hydrocarbons	A	425
37-270	GD24-H2	0-40% LEL, 12..24V AC/DC, (Hydrogen)	A	498
37-275	GD230-H2	0-40% LEL, 230V AC, (Hydrogen)	A	528
37-280	GD24- Methane	0-40% LEL, 12..24V AC/DC	A	395
37-285	GD230- Methane	0-40% LEL, 230V AC	A	425
37-290	GD24- Propane	0-40% LEL, 12..24V AC/DC	A	395
37-295	GD230- Propane	0-40% LEL, 230V AC	A	425
	**GS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) Power consumption: max 2 W IP54		
37-430	GS24-HC	0-40% LEL, 12..24V AC/DC, Hydrocarbons	A	528
37-435	GS230-HC	0-40% LEL, 230V AC, Hydrocarbons	A	556
37-470	GS24-H2	0-40% LEL, 12..24V AC/DC, (Hydrogen)	A	630
37-475	GS230-H2	0-40% LEL, 230V AC, (Hydrogen)	A	659
37-480	GS24- Methane	0-40% LEL, 12..24V AC/DC	A	528
37-485	GS230- Methane	0-40% LEL, 230V AC	A	556
37-490	GS24- Propane	0-40% LEL, 12..24V AC/DC	A	528
37-495	GS230- Propane	0-40% LEL, 230V AC	A	556

(HC) – Detectors for hydro carbons (Flammable and explosive gas)

Order code	Model	Details	PG	EURO
	**GSR**	Splash proof, room mounting with remote sensor, 5m cable The sensor can hang freely, while the detector is wall mounted Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) Power consumption: max 2 W IP54		
37-930	GSR24-HC	0-40% LEL, 12..24V AC/DC, Hydrocarbons	A	638
37-935	GSR230-HC	0-40% LEL, 230V AC, Hydrocarbons	A	667
37-980	GSR24-Methane	0-40% LEL, 12..24V AC/DC	A	638
37-985	GSR230-Methane	0-40% LEL, 230V AC	A	667
37-990	GSR24-Propane	0-40% LEL, 12..24V AC/DC	A	638
37-995	GSR230-Propane	0-40% LEL, 230V AC	A	667

Factory-set alarm levels (by experience appropriate alarm levels and ranges):

Detector type	**Range**	**Alarm levels**
All models	0 – 40% LEL	5 / 10 / 20% LEL

(HC) – Detectors for hydro carbons (Flammable and explosive gas)

MP-series – Detectors for connection to MPU, semi conductive sensor (SC)

General
Detectors intended for installation in engine rooms, cold rooms or other spaces where gas is used, handled or stored. The 'MP-Series' is specifically designed for MPU and SPU/SPLS monitoring units.

Measuring ranges and alarm levels
⚠ Alarm levels are always set on the monitoring unit!
⚠ Appropriate ranges and alarm levels depends on the environment in which the detectors is installed and the type of gas to be detected.

- Complies with EN378:2008 regulations

- The general Hydrocarbon (HC) detector can be used for LPG (Propane), Butane, Biogas (Methane) etc.

Features
- Requires connection to a monitoring unit e.g.MPU2C, MPU4C, MPU6C, SPU/SPLS
- Power supply from monitoring unit
- Robust non corrosive PC enclosure for installation also in aggressive environments.

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**MP-D**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP21		
38-230	MP-D-HC	0-40% LEL	A	293
38-280	MP-D-Methane	0-40% LEL	A	293
38-290	MP-D-Propane	0-40% LEL	A	293
	**MP-DS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
38-430	MP-DS-HC	0-40% LEL	A	367
38-470	MP-DS-H2	0-40% LEL	A	421
38-480	MP-DS-Methane	0-40% LEL	A	367
38-490	MP-DS-Propane	0-40% LEL	A	367

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labelled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

(HC) – Detectors for hydro carbons (Flammable and explosive gas)

TR-SC – Transmitters (4..20mA / 0..10V DC), semi conductive sensor (SC)

General
TR-SC is a transmitter with a semi conductive sensor, which can be connected to MPU or SPU/SPLS monitoring units or PLC/DUC with 4..20mA or 0..10V DC input.
The output signal can be selected either 4..20mA or 0..10V DC (non-linear) depending on configuration.
Using the current signal decreases sensitivity to distortion even when installed over long distances.
TR-SC have replaceable semiconductor sensors. Semi conductive sensors are not gas specific but have a long life (up to 5 years) and also low maintenance costs.

- Complies with EN378:2008 regulations

- The general Hydrocarbon (HC) detector can be used for LPG (Propane), Butane, Biogas (Methane) etc.

Note!
The TR-SC-HC transmitter is by default calibrated for Propane. Other calibrations are available on request.

Features
- Limited selectivity
- Selectable output 4..20mA / 0..10V DC
- Factory calibrated
- Power supply 12..30V DC , max 2 W
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**TR-SC**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-4130	TR-SC-HC	0-50% LEL, General for Hydrocarbons (HC)	A	461
39-4170	TR-SC-H2	0-50% LEL, Hydrogen (H_2)	A	515
	**TR-SCK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
39-8130	TR-SCK-HC	0-50% LEL, General for Hydrocarbons (HC)	A	461
39-8170	TR-SCK-H2	0-50% LEL, Hydrogen (H_2)	A	515

(HC) – Detectors for hydro carbons (Flammable and explosive gas)

GEX – semi conductive sensor (SC), ATEX

Order code	Model	Details	PG	EURO
	**GEX**	Must be connected to a monitoring unit MPU2/4/6 or SPU/SPLS Power supply from monitoring unit. Normally delivered with a calibrated monitoring unit. Expected sensor lifetime ≈ 5 year Sensors are a consumable part. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP65		
35-302	GEX-SC-HC	Propane, Methane etc. 0-40% LEL.	A	1079

⚠ Alarm levels are always set on the monitoring unit, which is normally done during commissioning of the system.

On special order, the monitoring unit can be preset with custom alarm levels. The monitoring unit and detectors are labelled correspondingly for easier installation. The detectors must therefore be connected to the specified input channel.

(CO, NO_2) – Detectors for exhaust gases (garage etc.)

TR-EC – Transmitters (4..20mA / 0..10V DC). Electro Chemical (EC) sensor

General
Detectors for demand-controlled ventilation in garages and tunnels etc.
TR-EC is a transmitter with an electrochemical sensor that can be connected to MPU or SPU/SPLS monitoring units or PLC/DUC with 4..20mA input.
Using the current signal decreases sensitivity to distortion even when installed over long distances.
TR-EC has a replaceable electrochemical sensor with high accuracy. Electrochemical sensors are characterized by high selectivity, even at low concentrations.

Features
- Measures the concentration of carbon monoxide (CO) produced by gasoline power vehicles or nitrogen dioxide (NO2) formed after diesel and gas powered vehicles.
- Electrochemical sensor for high accuracy and stable signal.
- High selectivity
- Factory calibrated
- Selectable and adjustable output 4..20mA / 0..10V DC
- Power supply 12..30V DC
- Robust non corrosive PC enclosure for installation also in aggressive environments.

⚠ Sensors are a consumable part.
Expected sensor lifetime: see each model
Easy replaceable sensor module, see spare parts
Method for test and calibration: calibration gas
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**TR-EC**	Carbon monoxide (CO) detector Expected sensor lifetime ≈ 6 year Sensors are a consumable part. Ambient temperature: -10°C..+40°C Humidity: 0..90% Rh (non condensing) IP56		
39-4260	TR-EC-CO	0-300 ppm (CO)	A	394
	**TR-EC**	Nitrogen dioxide (NO2) detector Expected sensor lifetime ≈ 2 year Sensors are a consumable part. Ambient temperature: -10°C..+40°C Humidity: 0..90% Rh (non condensing) IP56		
39-4240	TR-EC-NO2	0-20 ppm (NO_2)	A	601

- ***Option***

Order code	Model	Details	PG	EURO
	**MSVK**	Mounting kit for detection in ventilation ducts Connection tube: 2 x 20mm Ø		
60-800	-	Duct mounting kit		

Please contact us for information

(VOC) – Detectors for exhaust gases (garage etc.)

G-series – VOC detectors with relay output, semi conductive sensor (SC)

General
VOC detectors are air quality sensors for garage environments, which measure emissions and other pollutants that can be, formed in a garage, for example, carbon monoxide (CO) and unburned hydrocarbons (HC).
VOC = Volatile Organic Compounds
The detectors can be used independently, connected to a monitoring unit or to any other monitoring system that accepts potential free contact.

Egenskaper
- The detector is microprocessor controlled and displays the current operating status via LED's
- Three adjustable alarm levels with relay output (230V/5A)
- Alarm delay, selectable in four steps
- Manual or automatic reset on alarm
- Fail-safe function with built-in monitoring and power failure alarm
- Built-in self-test and service function
- Test terminal for service tools
- Robust non corrosive PC enclosure for installation also in aggressive environments

⚠ Sensors are a consumable part.
Expected sensor lifetime ≈ 5 year
Easy replaceable sensor, see spare parts
Method for test and calibration: DT300
Maintenance: at least once a year (at normal operation)

Order code	Model	Details	PG	EURO
	**GD**	Room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP21		
37-260	GD24-AQS	0-200 ppm, 12..24V AC/DC , max 2 W	A	498
37-265	GD230-AQS	0-200 ppm, 230V AC , max 2 W	A	528
	**GS**	Splash proof, room mounting Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-460	GS24-AQS	0-200 ppm, 12..24V AC/DC , max 2 W	A	630
37-465	GS230-AQS	0-200 ppm, 230V AC , max 2 W	A	659
	**GK**	Detector with external sensor for installation in ventilation ducts. A plastic tube with the sensor mounted with a rubber sleeve directly in the channel. 1.5 m cable between the sensor and the detector. Ambient temperature: -40°C..+50°C Humidity: 0..95% Rh (non condensing) IP54		
37-860	GK24-AQS	0-200 ppm, 12..24V AC/DC , max 2 W	A	630
37-865	GK230-AQS	0-200 ppm, 230V AC , max 2 W	A	659

Factory-set alarm levels (by experience appropriate alarm levels and ranges):

Detector type	**Range (ppm)**	**Alarm levels (ppm)**
All models	0 – 200	50 / 50 / 100 *)

⚠ The detectors are designed to control ventilation (fans) in the garage. The gas sensor in the detector has limited selectivity which means that it also measures other, in garages, occurring substances/pollutants such as gasoline vapor and other hydrocarbons.

*) The set alarm levels for the sum of CO+VOC emissions. The detector can therefore not be tested with carbon monoxide (CO) only.

(O_2) – Detectors for oxygen

GMA36 Pro, electro chemical sensor (EC)

Order code	Model	Details	PG	EURO
	**GMA36 Pro**	Stand alone or connected to a monitoring unit. Display Outputs, three relays Electrochemical sensor Expected sensor lifetime ≈ 2 year Sensors are a consumable part. Measuring range 0-30% (O_2)		
35-190	GMA36-O2	0 - 30% (O2), supply 85..264V	C	1840

EC28 Transmitter, electro chemical sensor (EC) – ATEX

Order code	Model	Details	PG	EURO
	**EC28**	Stand alone or connected to a monitoring unit. Electrochemical sensor Expected sensor lifetime ≈ 2 year Sensors are a consumable part. Output 4..20mA Supply 15..30V DC *Option, LCD Display*		
35-1421	EC 28 EX-O2	0 - 25% (O2), ATEX	C	1377
35-1422	EC 28 EX-O2-D	0 - 25% (O2), ATEX, With display	C	1755

Portable detectors

Carbon dioxide (CO_2)

Order code	Model	Details	PG	EURO
	**aSENSE-alarm (CO_2)**	Non-Dispersive Infrared (NDIR) LED's and audible signal for alarm. Internal automatic self-diagnostic function and easy to calibrate. Charger and leather bag included		
50-001	aSENSE-alarm	0 - 3% CO2 (product obsolete)		

Ammonia, (O_2) and toxic gas

Order code	Model	Details	PG	EURO
	**MICRO IV**	Detector for toxic gases, including Ammonia, and oxygen. Electrochemical sensor Audible and visual alarm. Display ATEX classified. Pump as option		
50-120	MicroIV-NH3-200	0 - 200 ppm	C	804
50-1201	MicroIV-NH3-500	0 - 500 ppm	C	804
50-121	MicroIV- O2	0 - 25%	C	520

Order code	Model	Details	PG	EURO
	**Microtector II**	Detector for 1-6 different gases. Display. ATEX classified.		
50-130	G450	4 gases	C	*)
50-131	G460	6 gases	C	*)

*) Price on request

Auxiliary equipment

Flashing light

Order code	Model	Details	PG	EURO
	**BE**	For indoor or outdoor mounting IP54 with standard low socket Dimensions: 93x75mm Ambient temperature: -25°C..+70°C 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	73
40-4022	BE-R-24VDC	Red, 9..60V DC (88mA at 24V DC)	A	73
40-4023	BE-BL-24VDC	Blue, 9..60V DC (88mA at 24V DC)	A	73
40-415	SOCK-H-R	High socket, red.	A	12
40-420	SOCK-H-R-230	High socket for 230V AC, red.	A	56

Combined Flashing light and Siren

Order code	Model	Details	PG	EURO
	**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: -10°C..+55°C Option: 230V AC socket,		
40-440	FL-RL-R	Red, combined flashing light & siren, 18..28V DC (85mA at 24V DC)	A	171
40-420	SOCK-H-R-230	Socket for 230V AC	A	56

Siren

Order code	Model	Details	PG	EURO
	**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: -25°C..+80°C Option: High socket with side entry cable glands. (2 models) IP65 with high socket		
40-410	1992-R-LP	Red, 9..28V DC	A	67
40-415	SOCK-H-R	High socket, red.	A	12
40-420	SOCK-H-R-230	High socket for 230V AC, red.	A	56

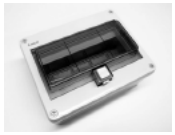
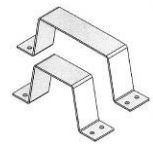
Auxiliary equipment

Battery back-up

Order code	Model	Details	PG	EURO
	**UPS**	Output: 12V DC Maximal load: 1,0A Battery: 12V / 2Ah (battery included) Housing: Plastic, IP67 Dimensions: 230x140x95mm		
40-210	UPS1500		A	548
	**UPS**	Output: 6, 12 or 24V DC Maximal load: 4A Batteries: 12V / 7Ah (Battery to be ordered separately) Housing: Metal, IP21 Dimensions: 370x315 x95mm		
40-220	UPS4000		A	565
80-320 **)	Battery 12V/7Ah	weight 2,4 kg	Net	38

⚠ **) 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.

Miscellaneous

Order code	Model	Details	PG	EURO
	**Enclosure**	Wall mounted enclosure with transparent lid Enclosure fits e.g. one G27C, one PSS 32/12 transformer and two optional relays. IP54 Dimensions WxHxD: 230x180x110mm		
40-600	N10-55L	Enclosure, IP54	A	55
	**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	30
40-902	Protection bracket Small	Inner dimension L x H: 94x92mm (fits e.g. the MP series)	A	30

Service tools

DT300 – Diagnostic tool

General
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 an LED 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

Features
- For control and calibration of semiconductor detectors
- For the 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 / CFC / HCFC / 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)

⚠ 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.

Order code	Model	Details	PG	EURO
	**DT**	Ambient temperature: -25°C..+50°C		
60-130	DT300	Diagnostic tool, base unit *)	A	436
60-131	SM300-VOC	Sensor for exhaust gas, air quality (VOC)	A	204
60-132	SM300-HC	Sensor for hydro carbons (HC)	A	204
60-133	SM300-H2	Sensor for hydrogen (H_2)	A	204
60-134	SM300-HFC	Sensor for refrigerant gases (HFC/CFC/HCFC/HFO)	A	204
60-135	SM300-NH3-1000	Sensor for ammonia (NH_3) - 1000	A	204
60-136	SM300-NH3-4000	Sensor for ammonia (NH_3) - 4000	A	204
60-137	SM300-NH3-10000	Sensor for ammonia (NH_3) - 10000	A	204

*) sensor module must be ordered separately (SM).

Service tools

SA – Basic service tool

General
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 tools for control, calibration and adjustment of alarm levels for detectors
- For control and adjustment of alarm levels of monitoring units

Features
- SA200:
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.

Order code	Model	Details	PG	EURO
	**SA**			
60-120	SA200	for MPU, SPU/SPLS and G-series 230/24V models	Net	87

Options, Service and Commissioning

Order code	Model	Details	PG	EURO
90-100		Service engineer, per hour	Net	*)
90-101		Design and consultancy, per hour	Net	*)
90-110		Travelling costs, *contact us for information*	Net	*)
Changing of standard pre-set alarm levels, (in combination with new orders)				
60-300		Custom preset alarm levels. Price per channel/detector	Net	28

*) Price on request

Terms and conditions of sale

- All prices in Euro, Ex-works, packing included
- Delivery terms, NL01, (Incoterms 2000)
- Proforma payment. Credit terms 30 days net by wire transfer.
- We reserve the right to change prices without notification.
- Technical specifications subject to alteration.

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