

And Your Environment Safer

Gas Detectors and Controllers for Demanding Environments









Detector Oy is a company in Finland who has their own R&D department, manufactures and sells instruments with which you can detect and monitor combustible, toxic and suffocating gases and refrigerants for use in both safe areas and in potentially explosive ATEX atmospheres.

VTT Expert Services Ltd has assessed the company's quality system and found that it meets the requirements of SFS-EN ISO 9001.

Due to the experience of more than 35 years Detector's customer in different branches in the industry, laboratories, power plants, water treatment plants, ice skating halls, swimming baths and parking halls has got the confidence to use Detector's products and services over and over again.

Detector Oy has always invested in R&D. The years around the millennium were a turning point in the development. Detector started to manufacture digital measuring instruments.

A completely new approach to the gas detection was opened - the new technology brought many benefits to our customers (affordability), installation technicians (speed), and service technicians (ease).

With digital devices **Detector** manages to make the gas detection system decentralized making savings in cabling costs and installation time. With decentralized systems, the scalability is both easy and affordable.

The digital gas detection system can easily be combined to the factory's main control system when standard industrial communication buses are used.

VTT Technical Research Centre of Finland (VTT) has issued the ATEX (French, "Atmosphères *Explosibles*") certification for the detectors, which are designed by Detector Oy for potentially explosive areas.





Oy AGA Ab: Safe production of industrial gases

In Harjavalta there is two hydrogen plants and three air gas factories, where gas concentrations are monitored by technician Ilkka Malmi approximately thirty fixed installed detectors and several gas controllers.

- "Detector's fixed gas detectors are absolutely necessary for us and vital for safety," Malmi says.
- I have been very pleased with Detector's instruments, they have functioned all the time very well. Once a year, Detector Oy performs service on the gas detection systems. Between the services it is extremely rare that any action is needed",says Ilkka Malmi.

Woikoski Oy: Safe gas production

Detector Oy has calibrated all gas detectors used by the plant and thereto **developed special products for Woikoski**.

- We see Detector as an excellent partner.
 Detector is a growing company and they have the hightech expertise we need.
- In addition, Finnish Manufacturing is a very important value for us because we are the only Finnish gas producer and a 100% Finnish company, as well as Detector Oy. We have a very strong communication with them, says
 Eero Aspberg, Woikoski's Specialty Gas Product Manager.

NAFFCO FZCO: Cooperation with a company in the Fire Fighting industry in Dubai

Detector Oy is a partner to the international NAFFCO Group in United Arab Emirates, Dubai. NAFFCO operates in more than 100 countries and is responsible for the overall supply of fire and gas safety solutions e.g. for gas fields and oil refineries.

 The fact that a major global supplier chose us was a remarkable achievement. It shows strong confidence in our professionalism. The cooperation started immediately and NAFFCO exhibits Detector Oy's products every year at the international Intersec fairs. This has brought us a lot of contacts from other parts of the world, says CEO Pentti Maunu Detector.

Nor-Maali Oy: Controlling the solvent gases

Nor-Maali Oy, a manufacturer of specialty paints in Lahti, has equipped **all of the mill's production and storage facilities with Detector's fixed gas monitoring equipment**. In addition, portable detectors are also used.

- All areas except for office space are subject to gas monitoring, as hydrocarbons may leak from the solvents used in paints.
- Detecting possible leakage of flammable gases in says Production Manager Jyri Kangasmäki from Nor-Maali.

Stormossen Oy: Biogas from municipal waste

Detector gas monitoring equipment monitors potential methane leaks at Stormossen Oy waste dump. Indoor methane leakage always causes an explosion hazard.

The gas detectors are connected to the alarm system and the alarm limits are set so low that a damage still can be prevented before a hazard occurs. Hydrogen sulphide leakages are monitored by Detector portable detectors. Hydrogen sulphide can e.g. be generated in wells.

The detection system is annually served by Detector Oy to ensure a continuous error-free operation.

m/s Viking Grace: A pioneer in using LNG onboard a cruiser ferry

The world's first LNG-powered large passenger ship, m/s Viking Grace, has been ensured for gas safety since January 2013 with Detector equipment. The gas detectors meet the ATEX certification requirements for potentially explosive atmospheres.

 The use of LNG will increase, especially in the shipping. We will continue to be at the head of the development, says CEO Pentti Maunu from Detector Oy.

Detector Oy has supplied m/s Viking Grace with following gas monitoring systems:

- Hydrocarbon monitoring at the car decks
- Methane monitoring in the engine room
- 2 LNG / methane gas analysers for the engines
- Refrigerant monitoring
- Hydrogen sulphide monitoring in the wastewater treatment room
- Monitoring of oxygen deficiency



Gas detectors with a catalytic sensor element can detect and monitor combustible gases and organic solvent vapours

Characteristics for the catalytic detectors

- The detector gives a linear 4 20 mA signal output •
- The detector is calibrated to the measuring range for the target gas .
- The measuring range is 0 100% LEL
- Lifetime for the sensor element 4 5 years .



Types:

DGTkex

- DGTkex Gas Detector
 - the detector is designed to be installed in ATEX Zone 1, 21, 2 and 22 areas •
 - the ATEX markings are II 2 G Ex d IIC T6 (Gas) and II 2 D Ex tD A21 T85°C IP65 (Dust)
 - the detector is equipped with a clear LCD display •
 - the material of the enclosure is Aluminium, the diameter is Ø 110 mm and the height is 127 mm •
 - the ingress protection class is IP 66
 - the calibration is made non-intrusively with the IR Communicator

DGTk2 Gas Detector

- one type of the detector, DGTk2-ex, is designed to be installed in ATEX Zone 2 areas
- the ATEX marking for the DGTk2-ex is II 3G Ex d nA IIC T4 Gc X •
- the detector is equipped with a LED indication light
- the detector can be equipped with a relay output, buzzer and acknowledge button ('stand-alone' version) •
- the material is cast Aluminium ja dimensions are 89 mm x 89 mm x 69 mm
- the ingress protection class is IP 54 •
- the calibration is made non-intrusively with the IR Communicator •

Look for more detailed data in the technical brochure



Gas detectors with an infrared sensor element can detect and monitor carbon dioxide and combustible gases

Characteristics for the infrared detectors

- The detector gives a linear 4 20 mA signal output
- The detector is equipped with a sensor suitable for the target gas and it is calibrated to the measuring range
- The measuring range is 0 5% CO2 / 0 100% LEL
- The lifetime for the sensor is approx. 5 years





Types:

DGTiex



DGTi2, DGTi2r, DGTi2-ex, DGTi2r-ex

DGTiex Gas Detector

- the detector is designed to be installed in ATEX Zone 1 and 2 areas
- the ATEX marking is II 2 G Ex d IIC T5
- the detector is equipped with a clear LCD display
- the material of the enclosure is Aluminium, the diameter is Ø 110 mm and the height is 127 mm
- the ingress protection class is IP 66
- the calibration is made non-intrusively with the IR Communicator

DGTi2 Gas Detector

- one type of the detector, DGTi2-ex, is designed to be installed in ATEX Zone 2 areas
- the ATEX marking for the DGTi2-ex is II 3G Ex d nA IIC T4 Gc X
- the detector is equipped with a LED indication light
- the detector can be equipped with a relay output, buzzer and acknowledge button ('stand-alone' version)
- the material is cast Aluminium ja dimensions are 89 mm x 89 mm x 69 mm
- the ingress protection class is IP 54
- the calibration is made non-intrusively with the IR Communicator

Look for more detailed data in the technical brochure



Gas detectors with an electro-chemical sensor element can detect and monitor oxygen, toxic gases and hydrogen

Characteristics for the electro-chemical detectors

The detector gives a linear 4 – 20 mA signal output •



- The detector is equipped with a sensor suitable for the target gas and it is calibrated to the measuring range
- The measuring range is set according to the sensor type, e.g. for the Oxygen sensor 0 25% volume, for the Carbon Monoxide sensor 0 – 300 ppm ...
- The sensor lifetime is 6 24 months

			\rightarrow		
		Ammonia	Ethylene Oxide	Hydrogen Sulphide	Ozone
		Carbon Monoxide	Hydrogen	Nitrogen Oxide	Sulphur Dioxide
		Chlorine	Hydrogen Chloride	Nitrogen Dioxide	
		Chlorine Dioxide	Hydrogen Cyanide	Oxygen	
			SA		
	DCT	·		DCT	DOTAD AN DOTAD AN DOTAD

Types:

DGTeex



DGTeex Gas Detector

- the detector is designed to be installed in ATEX Zone 1, 21, 2 and 22 areas ٠
- the ATEX markings are II 2 G Ex d IIC T6 (Gas) and II 2 D Ex tD A21 T85°C IP65 (Dust) •
- the detector is equipped with a clear LCD display •
- the material of the enclosure is Aluminium, the diameter is Ø 110 mm and the height is 127 mm •
- the ingress protection class is IP 66
- the calibration is made non-intrusively with the IR Communicator ٠

DGTec2 Gas Detector

- one type of the detector, DGTec-ex, is designed to be installed, together with a galvanic isolator, in ATEX Zone 0, 1 and 2 areas, and another type, DGTec2-ex is designed for ATEX Zone 2 areas
- the ATEX markings are II 1 G Ex ia IIC T4 (DGTec-ex) and II 3G Ex d nA IIC T4 Gc X (DGTec2-ex) .
- the detector is equipped with a LED indication light
- the material is cast Aluminium ja dimensions are 89 mm x 89 mm x 69 mm •
- the ingress protection class is IP 54 •
- the calibration is made non-intrusively with the IR Communicator

Look for more detailed data in the technical brochure



Gas detectors with a semi-conductor sensor element can detect refrigerants leaks, combustible gases, toxic gases and organic solvent vapours

Characteristics for the semiconductor detectors

- The detector gives a linear 4 20 mA signal output
- The detector is equipped with a sensor suitable for the target gas and it is calibrated to the measuring range
- The measuring range is set according to the target gas
- The sensor lifetime is approx. 4 years





Types:

DGTt2, DGTt2r, DGTt2-ex, DGTt2r-ex

DGTt2 Gas Detector

- one type of the detector, DGTt2-ex, is designed to be installed in ATEX Zone 2 areas
- the ATEX marking for the DGTt2-ex is II 3G Ex d nA IIC T4 Gc X
- the detector is equipped with a LED indication light
- the detector can be equipped with a relay output, buzzer and acknowledge button ('stand alone' version)
- the material is cast Aluminium ja dimensions are 89 mm x 89 mm x 69 mm
- the ingress protection class is IP 54
- the calibration is made non-intrusively with the IR Communicator

Look for more detailed data in the technical brochure

Characteristics for the SCAN20 series controllers

The controller is designed for use in the demanding industry

To the series belong SCAN22, to which you can connect 1 - 2 detectors and SCAN24 for 1 - 4 detectors The controller receives 4 - 20 mA signals from the gas detectors and convert them into gas concentrations

- the controller has a bright and clear LCD display, in which you can see all the monitored channels
- three freely chosen alarm levels can be set
- there are seven relay outputs in the controller
- in the event of alarm, the buzzer in the controller will be activated and the LED indication lights express the seriousness of the alarm as well as desired relays will be activated
- wireless remote alarm by SMS message through outside GSM modem is available (option)
- two freely scalable 4-20mA standard current signal outputs are available (option)



SCAN24

Characteristics for the casing

- the material of the casing is ABS polymer
- the dimensions are 237 mm x 259 mm x 97 mm
- the ingress protection class is IP 66



Characteristics for the SCAN200E series controllers

- the controller is designed for use in the demanding industry
- casing options are SCAN200ED, SCAN200ER, SCAN200EA and possibility to mount into a 19" cabinet as well.
- the controller is designed for 1 64 detectors and 1 128 relays
- The system is modular; to the controller you can connect 1 8 sub-controllers, thus saving cabling work
- using a differential RS485 interface the maximum distance between the sub-controller and the main gas detection controller is 1 km
- The controller receives 4 20 mA signals from the gas detectors and convert them into gas concentrations
- the controller has a bright and clear LCD display, in which you can see 8 monitored input channels at a time
- the software in the controller is versatile: addressable alarms, three alarm levels per channel, bar, number or trend display, alarm event history
- in the event of alarm, the buzzer in the controller will be activated and the LED indication lights express the seriousness of the alarm as well as desired relays will be activated
- wireless remote alarm by SMS message through outside GSM modem is available (option)
- industrial field buses (Profibus, Modbus, Anybus...) are available (option)



SCAN200EA

Characteristics for the casings

SCAN200EA Controller

- the controller can facilitate all together 4 modules, in one module there is place for 8 input channels or 8 relays
- the casing material is powder painted steel
- the dimensions are 500 mm x 500 mm x 210 mm
- the ingress protection level is IP 54
- the controller will be customized (with modules, modem, field bus...)

SCAN200ER Controller

- the controller can facilitate all together 6 modules, in one module there is place for 8 input channels or 8 relays
- the casing material is powder painted steel
- the ingress protection level is IP 55
- the controller will be customized (with modules, modem, field bus...)

Gas detection at a steel element producing plant

Main Controller	SCAN24		
outfit	GSM-modem, 3 numbers		
	alarm siren and alarm flash unit		

Detectors 3 pcs DGTk2 C3H8



Gas detection at a store for washing, cleaning and hygiene products



Gas detection at a research centre Laboratory in four floors

Main controller outfit	SCAN200EO /8/8 reserve power unit (UPS) 7 Ah alarm sirens and flashes in each room lap top with a gas detection software control of the main gas supply solenoi valve			
Sub-controller outfit	2 pcs SCAN200AK/16/16 reserve power units (UPS) 7 Ah alarm sirens and flashes in each room control of the gas supply solenoid valv			
Detectors	Gr floor:	1 pc ATEX DGTkex H2 1 pc ATEX DGTeex O2 2 pcs DGTec2 O2		
	1st floor:	12 pcs DGTk2 H2 4 pcs DGTec2 CO 1 pc DGTec2 H2S		
	2nd floor:	1 pc DGTec2 H2S 1 pc DGTi2 CO2		
	3rd floor:	1 pc DGTec2		



Stainless Steel Protection Housings

The double casing housing protects the detectors from splash water and dents. The protection housings are made from 1 mm thick stainless steel plate (AISI 316)



Protection housing for flameproof enclosure detectors Dimensions 325 mm x 225 mm x 175 mm, weight. 3,3 kg



Protection housing for wedge enclosure detectors Dimensions 225 mm x 142 mm x 135 mm, weight 1,4 kg

Stainless Steel Pipe Assembly Kit

Operating temperature -50°C - 100°C

The pipe assembly kit is made from 1,5 mm thick stainless steel plate (AISI 316)

The detectors DGTec2, DGTec-ex, DGTt2, DGTt2-ex, DGTi2, DGTi2-ex and

Test and Calibration Gas Adapters and Adapters for Analysers

DGTm3 can be assembled to a pipe by using the duct adapter The material is POM C ESD, length 132 mm, diameter 30 mm

The pipe assembly kit is used together with the protecting housing The kit fits for pipes with an outer diameter of 50 mm - 120 mm Dimensions 213 mm x 150 mm x 90 mm, weight 1,2 kg



Test gas adapter for DGTiex detectors



Splash guard for DGTkex, DGTk2 detectors

Fixed mounted test gas Adapter for DGTt2 detectors DGTec2/t2/i2 detectors



Analyser adapter for DGTiex detectors

Duct Adapter





Test gas adapter for DGTkex, DGTk2 detectors

Analyser adapter for DGTec2 detectors



Fixed mounted test gas adapter for DGTkex, DGTk2 detectors

Test and Calibration Gas for testing and calibrating fixed and portable detectors

Disposable, recyclable 5, 12, 20, 34, 58 tai 110 normal litre steel or aluminium cylinder

Valve, HPC regulator, fixed flow (0,5 l/min tai 1,0 l/min) and fixed pressure Valves for cylinders with non-reactive gases are made from nickel plated and brass, valves for cylinders with reactive gases are made from stainless steel Accessories: three cylinder carrying case, recycler tool

Certificate for the test gas available upon request.



Reserve Power (UPS) ensures the functionality of the gas detection system during power failure

19" rack-version Input Voltage: 230 VAC Nominal Output Voltage: 24 VDC Output Current: 10 A Battery Capacity: 14 Ah Installation: 19" 3U Dimensions: 482 mm x 133 mm x 180 mm

Stand-alone battery Input Voltage: 230 VAC Nominal Output Voltage: 24 VDC Output Current: 5 A (ADA4740) / 10A (ADA4980) Battery Capacity: 7 Ah Installation on the wall Dimensions: 188 mm x 317 mm x 110 mm

Sounder and Sounder / Strobe Combination

Voltage 50/60Hz: 240 VAC Current Consumption: 257 mA (tone 1) Sound Output: 110 dB (A) @ 1 m, 32 selectable tones Flash Energy: 2,5 or 5,0 Lens Colour: amber, red, green, opal, blue, clear Enclosure: ABS Ingress Protection Class: IP65 Dimensions: 169 mm x 134/191,5 mm x 128 mm Weight: 900 g







Alarm Equipment Aids



External Reset Unit With the unit a local sounder alarm can be acknowledged (silenced)



Trip Amplifier for Automation Signals When the gas detector works without controller the trip amplifier can control local alarm devices



Galvanic Isolator The DGTec-ex detector shall be used with the galvanic isolator



In brief, a gas detector tube is a glass tube filled with a chemical reagent granulate, which discolours when it comes in contact with the target gas. To get an accurate reading, each tube has been calibrated on fixed samples of the target gas drawn through the tube with a 100 ml manual pump, which allows a measuring scale to be printed on the tube. The further the discolouration of the reagent, the higher the gas concentration is.

This makes the gas detector tubes system a non-electric-powered way of gas detection.



Benefits by using the tubes for gas detection:

- As the tubes are a totally different measuring principle than (electrochemical) sensors, the cross sensitivities are also different. This means that this is the absolute perfect way to verify the concentration showed by your electronic detector. In this way, you can exclude most cross sensitivities to be sure of a non-hazardous working atmosphere. Especially in combination with a PID which is detecting almost all VOC gases, gas detector tubes can be used to specify the combined VOC gases the PID is detecting.
- 2. For 99% of the detector tubes, there is no Oxygen needed for doing a measurement. This allows people to measure into tanks, wells, manholes, etc. where less Oxygen is present. Here, you can think about measuring H2S, NH3, and CO2 for safety detection or process analysing.
- 3. Extreme low and high measuring ranges available, where sensors cannot reach due to over-range or insensitivity. H2S can be measured even up to 80% Vol. and CO2 up to 60% Vol.
- 4. Most tubes can be used in an environment with very high humidity and temperature without any problem.
- 5. Measuring with tubes is in most applications a lower cost measuring solution than the purchase of an electronic system.
- 6. No calibration needed.
- 7. Specialty detector tubes available for measuring extremely exotic gases, for instance the Chemical Warfare Agents like Sarin, Tabun, Mustard gas, Lewisite, Phosgene, Adamsite, Soman, VX, Arsine, and more.
- 8. With the right pump, gas detector tubes can be used in an ATEX environment. For instance, the KWIK-DRAW Gas Tester II can offer you this solution: http://www.kwikdraw.eu/Gas-Tester-II-H/gas-tester-ii-h





GX-2009 Multi Gas Detector: LEL, O2, H2S, CO



03 Series Single Gas Monitor 02, CO, H2S, LEL



GX-2012 Multi Gas Detector LEL, % vol CH4, O2, CO, H2S



Interchangeable Alkaline / NIMH removable battery compartment

Battery compartment thumbscrew

Eagle 2 Multi Gas Detector

Std Confined Space Gases: CH4, O2, CO, H2S Toxics: NH3, AsH3, Cl2, HCN, PH3, SO2 IR Sensors: CO2, CH4, HC PID Sensors: VOC TC Sensors: CH4, H2

Detector Oy at Your Service

Pre-maintenance Service

• Detector Oy services and calibrates the customers' gas detection systems on site in advance to secure an uninterrupted gas detection

Repair/Maintnance Service

 Detector Oy evaluates the need of and performs the service and calibration of the gas detection instruments which the customers send to the factory, services and calibrates the portable detectors and does service on the gas detection systems on site upon the customers' request.



Commissioning Service

• Once installed Detector Oy performs on request the commissioning and testing of the gas detection system

Technical Support

 Detector Oy gives technical advices and helps the customers in matters related to the gas detection systems



Training Service

- Detector Oy organizes training for the customer in installing, servicing and calibration of the gas detection system
- The customer and Detector Oy discuss the agenda of the training that it will fit the customer's need.
- After performed training the customer can receive a certificate which gives him the authorization to sell, install and service Detector Oy products, including ATEX products manufactured by Detector Oy.
- Within the validity time of the certificate (5 years) the customer can get access to an own "cloud" site at the internet where the training documents, reports and other relevant material is stored.







Company Name:	Detector Oy
Visiting Address: Post Office Code: Town: Country:	Telekatu 8 20360 Turku Finland
Telephone: Telefax:	+358 (0)207 756 480 +358 (0)207 756 498
e-mail:	detector@detector.fi
Web Site:	www.detector.fi

