



Exguard[™] Mobile Gas Detection



Features

The TN2000-5 is a further development of our *EXguard*™ System, which is designed for use on refineries and onshore plants. The TN2000-5 *EXguard*™ System is especially designed for use during hot work operation for onshore and offshore installations for detection, alarm and shutdown in case explosive gases are present.

The *EXguard*™ System consists of:

- TN2000-5, Main Control Unit (MCU).
- GD01 – GD05 Gas Detectors (GD).
- TN2000-5A, Power Control Unit (PCU). (Optional)
- The standard MGD is delivered with 5 pcs IR HC gas detectors on cable drums with 40m cable, and 4 power outlets (total max. 16A) fitted on the unit.
- As an option, a separate PCU with larger power outlets (63Amps, 380-690VAC) can be provided.
- Electrical & Pneumatic tools/welding equipment are connected directly to the MCU or PCU.
- If gas is detected, the system gives acoustic and visual local alarm, power outlets are switched off and gives alarm signal to the central control room (CCR) if present and connected.
- Frames, enclosures and cable drums are produced in acid resistant stainless steel.
- All cables are flame retardant and halogen free.
- The MCU and the PCU have a built-in earth fault relay.
- The MCU has built-in alarm output to CCR for gas alarm signal, low pressure signal, high temperature signal and emergency stop signal in accordance with NORSOK Z-015.
- The MCU and the PCU have integrated lifting lugs and can be delivered with certified lifting slings with lifting certificate (optional).
- Solenoids for pneumatic tools, and welding gas can optionally be installed on the MCU.
- More than one MCUs can be connected together to form a larger sensor-web, with more than 5 MCU's in parallel (so far up to 25 GDs have been connected).
- An UPS for power backup is optionally available for the MCU.
- ATEX approved (IECEX pending).

Applications

The *EXguard*™ System designed especially for use at offshore installations where explosive gases may occur, and it is used in connection with hot work in Zones 1 and 2. See product animation at <http://www.youtube.com/watch?v=NdhziJ00okg>.

Specifications

Main Control unit:

Material trolley and electrical enclosures	Acid Resistant Stainless Steel.
Power cable	35m H07RN-F, 3x2,5mm ²
PLC	OMRON.
Gas monitoring	0 - 100% LEL
Level shut down	10% LEL
Earth fault monitoring/shut off	30mA
Lifting lugs	Integrated.
Mobility	Wheeled, liftable.
Electrical data	220 - 240 VAC 50/60 Hz (others on request).
Power Outlet	4 x 16A Flange socket GHG5118 (other upon request)
Approvals	ATEX and IECEX
Standards	Norsok Z-015, rev. 4, September 2012
Operating temperature	-20°C to +40°C (Other temperature ranges on request).
Ex protection	⊕ II 2 G Ex dem IIC T4.
Protection category	IP66.
Dimension	W x H x D = 680 x 1275 x 625 mm.
Total weight	105 kg.



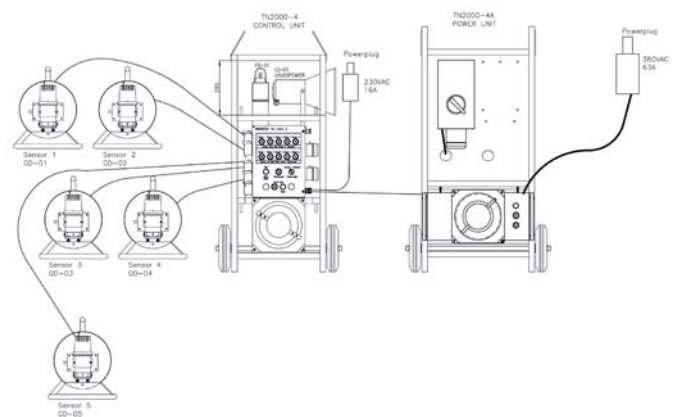


Gas Detectors:

Sensor type	Simtronics GD10P, other sensors upon request.
Material gas detectors and cable drums	Acid Resistant Stainless Steel.
Sensor cable	40m Radox Tenuis-TW/S EMC.
Connector	DXN1 / 24V
Electrical data	24VDC/3,5W. Current source 4-20 mA.
Approvals	ATEX and IECEx.
Operating temperature	-20°C to +45°C (Optional -40°C to +60°C).
Ex protection	⊕ II 2 G Ex de IIC T6.
Protection category	IP66/IP67.
Dimension	W x H x D = 104 x 106 x 246 mm.
Total weight	2,9 kg.

Power Control Unit:

Material trolley and electrical enclosures	Acid Resistant Stainless Steel.
Power cable	35m H07RN-F, 5x16mm ²
Earth fault monitoring/shut off	30mA
Lifting lugs	Integrated.
Mobility	Wheeled, liftable.
Electrical input	380 - 690 VAC (must be specified).
Power Outlet	1x63A Flange socket GHG (2x63A as an option)
Approvals	ATEX and IECEx
Operating temperature	-20°C to +40°C (Other temperature ranges on request).
Ex protection	⊕ II 2 G Ex dem IIB T5.
Protection category	IP66.
Dimension	W x H x D = 800 x 1290 x 600 mm.
Total weight	95 kg.



Example

The TN2000-5 EXguard™ System have since the late 80's helped operators and owners of oil and gas installations to perform safe and reliable 'Hot Work' operations in hazardous areas. The TN2000-5 constantly monitors the presence of flammable gas in the area where the 'Hot Work' is performed. It will shut down the electrical/pneumatic tools connected to the system, as well as give a local visual and audible alarm, upon detection of flammable gases.

The TN2000-5 (and earlier models) have with great success and safety been used in conjunction with 'HABITATs'. A 'HABITAT' is a "tent" that is installed locally over and around the work area, or the work piece. The 'HABITAT' is then pressurized by using instrument air or fans (electrical or pneumatic) to provide a safety barrier towards the surroundings, and prevent gas from entering when 'Hot Work' is ongoing. Upon detection of gas, either inside the 'HABITAT', outside, or in the air intake, the TN2000-5 will shut down the power outlets, give local alarm and external alarm to CCR, the area will still be safe.



Hazardous area information & terminology

ATEX Directive

The ATEX Directive, derived from the French “AT mosphères EXplosibles” and formally known as 94/9/EC, contains the ESR (Essential Safety Requirements) to which electrical equipment and protective systems used within potentially explosive atmospheres must conform.

The new ATEX Directive currently in place within the European Union was made mandatory on 1st July 2003. Primarily intended for manufacturers of hazardous area equipment for use in the presence of flammable gases, vapours, fumes or dusts, the new directive requires a quality management system to be implemented.

Procedures for the design, manufacture and verification of products are to be approved by a notified body (i.e. DNV, NEMKO, etc.) and all equipment conforming to the new directive will feature CE and Ex Marking.

Zone Classification with the presence of GAS	
Zone 1 (Category 2)	An area in which explosive gas is likely to be present during normal operation of the plant.
Zone 2 (Category 3)	An area in which explosive gas is not continuously present, but may exist for a short period of time.

Applicable EX protection

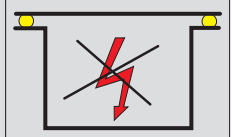
Ex d Protection

Parts, which can ignite a potentially explosive atmosphere, are surrounded by an enclosure, which are designed to withstand the pressure of an internal explosion and to prevent the propagation of the explosion to the atmosphere surrounding the enclosure.



Ex e Protection

for electrical components that do not spark under normal working conditions but where measures are applied to prevent high temperatures and the occurrence of arcs and sparks internally.



Ex m Protection

Parts that could ignite a potentially explosive atmosphere by means of heat or sparks are embedded in a sealing compound such that the potentially explosive atmosphere cannot be ignited. The compound is resistant to physical, electrical, thermal and chemical influences.

