

# SMART3G Gas Detectors

Ex II 2G – II 2GD



- Taratura non intrusiva (versioni Display)
- Facile sostituzione dei sensori
- Ampia gamma di sensori utilizzabili e di gas rilevabili
- Segnale standard 4-20 mA su 3 fili
- Ampia scelta di accessori per l'installazione e la manutenzione
- Inseguitore di zero per il mantenimento del parametro di zero da possibili derive
- Autodiagnosi continua del sistema
- Certificati ATEX per Gruppo I & II

## APPLICAZIONI

- Raffinerie
- Piattaforme di perforazione
- Stazioni di compressione
- Distributori di carburante
- Impianti chimici
- Turbine a gas
- Depositi di gas GPL e Metano
- Laboratori
- Miniere e gallerie



- Non-intrusive one man calibration (display version)
- Easy sensor replacement
- Wide range of sensors and detectable gases
- Standard 4-20 mA 3 wires output
- Wide range of accessories for installation and maintenance
- Zero tracking to maintain the detector zero point from possible drifts
- Ongoing system self diagnosis
- ATEX certified Group I & II

## APPLICATION

- Refineries
- Drilling Platforms
- Compressor stations
- Fuel loading stations
- Chemical Plants
- Gas turbines
- LNG/LPG storage facilities
- Laboratories
- Tunnels and mines

Ex II 3G – II 3GD



- Etalonnage local non intrusif (version display)
- Echange du capteur aisé
- Large gamme de capteurs disponibles et de gaz détectables.
- Signal sortie standard 4-20 mA 3 fils
- Large gamme d'accessoires pour l'installation et la maintenance.
- Zéro automatique pour le maintien du paramètre de zéro par possibles dérives
- Auto-diagnostic continu du système
- Certifications ATEX Group I & II

## APPLICATION

- Raffineries
- Plateformes de forage
- Stations de compression
- Stations de service
- Implantations Chimiques
- Turbines à gaz
- Stockage de GPL/GNL
- Laboratoires
- Tunnels et mines



## Description

**SMART3G series** gas detectors are employed to detect flammable compounds (%LEL), toxic compounds (ppm) and Oxygen contents for both its depletion and enrichment in classified areas.

The **Pellistor** sensors employed for the flammable Gas detection show an excellent output linearity up to 100% LEL.

For aggressive atmospheres, where the Pellistor sensors would be seriously damaged, Sensitron developed a version employing industrial grade Infrared sensors: IR sensors are poison free and this grants a higher accuracy and a longer lifetime to the cell.

For the toxic gas detection, Sensitron has operated a reliable selection among the most performing **electrochemical cells** to supply units representing the state of the art in toxic gas detection.

The **SMART3G** line has been designed to offer a wide range of alternatives that grant customers the best solution to their requirements.

**SMART3G-C** has been specifically designed to offer high performance products for light industrial applications.

**SMART3G-D** have been designed to meet with tougher industrial requirements and offer a 4 digits back-lit display and 5 mode status LEDs for the gas concentration reading. They feature **non intrusive magnetic calibration** for an accurate and easy calibration via Hall-effect switches, without opening the instrument and declassifying the area.

Specific gas detectors for tunnels and mines are available with certification for **Group I**.

**SMART3G** are ATEX certified for Group II 2G, 2GD, 3G & GD and for Group I M2.



## Descrizione

I rivelatori di gas serie **SMART3G** vengono impiegati per rivelare la presenza di sostanze infiammabili (%LIE), di gas tossici in ppm, oppure per la rivelazione di deficienza o eccesso di ossigeno in aree classificate.

Il sensore Pellistore, utilizzato nelle versioni per miscele esplosive, conferisce una linearità eccellente fino al 100% LIE.

Nei luoghi in cui i Pellistori non possono garantire una funzionalità ottimale, Sensitron ha sviluppato una serie di rivelatori con sensore infrarosso: i sensori IR permettono di aggiungere affidabilità e durata, evitando i problemi di avvelenamento a cui i Pellistori sono a volte soggetti.

Per la rivelazione dei gas tossici Sensitron ha operato una selezione tra le più affidabili **celle elettrochimiche** per realizzare strumenti che rappresentino lo stato dell'arte nella rivelazione dei gas tossici.

La serie **SMART3G** è stata concepita per offrire ai clienti un'ampia gamma di soluzioni, secondo le specifiche necessità dei clienti.

Lo **SMART3G-C** è stato disegnato per offrire elevate prestazioni per applicazioni civili e industriali.

Lo **SMART3G-D**, progettato per l'impiego in ambienti industriali, è fornito di un display luminoso a 4 cifre che visualizza in tempo reale la concentrazione di gas misurata. Inoltre, lo **SMART3G-D** consente una taratura in campo non intrusiva tramite magneti a effetto Hall che permettono di operare sullo strumento senza doverlo aprire o declassificare l'area.

Per sottosuolo e miniere, è disponibile una versione certificata **Gruppo I**.

I rivelatori serie **SMART3G** sono certificati ATEX per Gruppo II 2G, 2GD, 3G & 3 GD e per Gruppo I M2.



## Description

Les détecteurs de gaz de la série **SMART3G** sont utilisés pour détecter la présence de substances combustibles, dans des concentrations exprimables % LIE, et de substances toxiques en ppm (parties par million) ou bien pour la détection de déficience ou d'excès d'oxygène dans les endroits classifiés.

Le capteur catalytique industriel (Pellistor), utilisé dans les versions pour les mélanges explosifs, confère une linéarité jusqu'à 100% LIE et une précision optimale avec n'importe quel type de gaz inflammable. Dans les lieux où les Pellistori ne peuvent pas garantir une fonctionnalité optimale, Sensitron a développé une gamme de détecteurs avec cellule Infrarouge qui permet d'ajouter fiabilité et durée, en évitant les problèmes d'empoisonnement auxquels sont parfois sujets les Pellistori.

Pour la détection des gaz toxiques, Sensitron a effectué une sélection parmi les **cellules électrochimiques** fournissant les meilleures prestations afin de réaliser des appareils qui représentent la pointe de la technique dans la détection des gaz toxiques.

La série SMART 3 a été élaborée afin d'offrir une large gamme de solutions qui satisfassent toutes les nécessités de la clientèle.

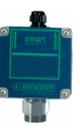
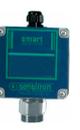
Les **SMART 3 GC** sont des détecteurs à hautes performances conçus pour le secteur tertiaire et l'industrie légère.

Les **SMART3G-D** offrent la lecture immédiate de la concentration relevée sur l'écran LCD à 4 chiffres. L'étalonnage local non intrusif à l'aide des aimants à effet Hall, permet d'intervenir sur les appareils, sans les ouvrir, ni mettre la zone hors service.

Pour les mines et les tunnels, une version certifiée pour Groupe I M2, est également disponible.

Les détecteurs **SMART 3G** sont certifiés ATEX pour Groupe II 2G, 2GD, 3G & 3 GD et le Groupe I M2.

## Order P/N and protections

Flammable gases (% LEL)	G-D3 	G-D2 	G-D3 IR 	G-D2 IR 	G-C3 	G-C2 	G-C3 IR 	G-C2 IR 	G-G1 
METHANE	S2156ME	S2157ME	S2601ME	S2602ME	S2096ME	S2097ME	S2653ME	S2654ME	S1255ME
LPG	S2156GP	S2157GP			S2096GP	S2097GP			
ACETIC ACID		S2157AA				S2097AA			
ACETONE		S2157AT				S2097AT			
ACETYLENE		S2179AC				S2151AC			
AMMONIA		S2157AM				S2155AM			
BENZENE		S2157BZ				S2155BZ			
BUTANE	S2156BU	S2157BU	S2601BU	S2602BU	S2096BU	S2097BU	S2653BU	S2654BU	
BUTYL ACETATE		S2157AB				S2097AB			
BUTYL ALCOHOL		S2157BT				S2097BT			
CYCLOPENTANE		S2157CP				S2097CP			
ETHANE		S2157EN				S2097EN			
ETHYL ACETATE		S2157AE				S2097AE			
ETHYL ALCOHOL		S2157ET				S2097ET			
ETHYLENE		S2157EL				S2097EL			
ETHYLENE OXYDE						S2155OE			
HEPTANE		S2157EP				S2097EP			
HEXANE		S2157ET				S2097ES			
HYDROGEN		S2157H2				S2097H2			
ISO BUTANE		S2157IB				S2097IB			
ISO BUTYL ALCOHOL		S2157IT				S2097IT			
ISO PENTANE		S2157IN				S2097IN			
ISO PROPYL ALCOHOL		S2157IP				S2097IP			
JET PROPELLER AVIO FUEL		S2108P8				S2154P8			
METHYL ALCOHOL		S2157MT				S2097MT			
METHYL ETHYL KETONE		S2157MK				S2097MK			
NONANE		S2157NN				S2097NN			
PENTANE		S2157PE				S2097PE			
PETROL VAPOURS	S2156VB	S2157VB			S2096VB	S2097VB			
PROPANE	S2156PR	S2157PR	S2601PR	S2602PR	S2096PR	S2097PR	S2653PR	S2654PR	
PROPYLENE		S2157PP				S2097PP			
PROPYL ALCOHOL		S2157PN				S2097PN			
STYRENE		S2157ST		S2602ST		S2155ST		S2654ST	
TRI METHYLBENZENE						S2097TM			
TOLUENE		S2157TO				S2097TO			
VINYL ACETATE						S2155AV			
XYLENE		S2157XI				S2097XI			
<i>Other gases on request</i>									
Toxic gases	GD3 	GD2 	GD3 IR 	GD2 IR 	GC3 	GC2 	GC3 IR 	GC2 IR 	GG1 
OXYGEN (O2) 25% Vol.	S2642O2	S2643O2			S2640O2	S2641O2			
CARBON MONOXIDE 500 ppm	S2162CO	S2163CO			S2130CO	S2131CO			S1493CO
AMMONIA (NH3) 0-200 ppm	S2164AM	S2165AM			S2132AM	S2133AM			
AMMONIA (NH3) 0-1000 ppm	S2166AM	S2167AM			S2134AM	S2135AM			
CARBON DIOXIDE 2% Vol			S2631CO2	S2634CO2			S2649CO2	S2651CO2	
CARBON DIOXIDE 5% Vol			S2632CO2	S2635CO2			S2650CO2	S2652CO2	
CHLORINE (CL2) 20 ppm	S2174CL	S2175CL			S2142CL	S2143CL			
ETHYLENE 200 ppm					S2130ET				
HYDROCHLORIC ACID 50 ppm		S2311HC				S2147HC			
HYDROGEN SULPHIDE 50 ppm	S2168HS	S2169HS			S2136HS	S2137HS			
NITRIC OXYDE 100 ppm	S2176NO	S2177NO			S2144NO	S2135NO			
NITROGEN DIOXIDE 20 ppm	S2172ND	S2173ND			S2140ND	S2141ND			
SULPHUR DIOXIDE 20 ppm	S2170SD	S2171SD			S2138SD	S2139SD			
<i>Other toxic gases on request</i>									
Accessories									
ST.GD/AD2 & ST.GD/AD3: Adapter to upgrade the ATEX protection from G to GD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STS/CSW: Calibration Software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STS/IDI: RS485 communication interface for SENTOX IDI and MULTISCAN++ panels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STS/CKD: Handheld calibration keypad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STS/OC: 2-Open Collector card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STS1REL: 1-Relay card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STS3REL: 3-Relay card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

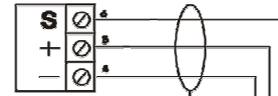
## Technical specifications

Sensing element	Pellistor sensors for flammable gas Electrochemical cells for toxic gas IR sensors for flammable and CO <sub>2</sub>
Measuring range	%LEL for flammable ppm for toxic % vol for O <sub>2</sub> and CO <sub>2</sub>
Power supply	12-24Vdc -20% +15%
Consumption at 12Vdc	90mA (medium); 130mA (max) Pellistor 50mA (medium); 70mA (max) electr. cell 90mA (medium); 130mA (max) IR
Visual indications	SMART3G-C: flickering LED SMART3G-D: 3 red LED's for Alarm yellow for Fault, green for PS
Display characteristics (SMART3G-D)	4 digits, 7.5 mm high, 7 segments
Proportional output	4-20 mA (200 Ω)
Serial Output (optional)	RS 485 and proprietary protocol for addressable gas control panel
Relay outputs, with mode status LEDs (optional)	3 relays with tension free changeover contact 24V-1A
Accuracy	from ±2% to ±5% FS (depending on sensor type)
Repeatability	from ±2% to ±5% FS (depending on sensor type)
Warm-up time	5 minutes
Stabilization time	< 2 minutes
Response time T90	From 15 to 30 secs (depending on sensor type)
Storage temperature	Recommended 0°C ÷ +20°C
Operating temperature	-40°C ÷ +60°C (+65°C or 75°C on request) for Pellistor and IR sensors -20°C ÷ +50°C for cells Always refer to the detector's label
Relative humidity	20-90% RH / 40°C
IP rating	IP 65 for II 2G(D); IP 55 for II3GD
Operative pressure	80-110 KPa
Max. air velocity	6 m/s
Weight	850÷1200 g Exn 950÷1700 g Exd
Dimension (approx)	Exd L.130 H.180 D.90 mm Exn L.106 H.180 D.65 mm
Orientation	Detector must be mounted sensor head downwards
Certificates	CESI 01 ATEX 053 (ESR II 2G/2GD) CESI 03 ATEX 339 (ESR II 3GD) CESI 04 ATEX 106 (ESR Group I) CESI 02 ATEX 084 (Performance)
EMC Reference Norms	EN 50270: 2011

## Electrical connections

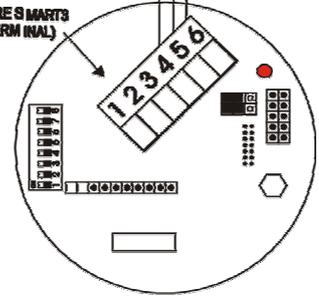
### COLLEGAMENTO USCITA 4-20 mA SMART3 A CENTRALE ANALOGICA (4-20 mA SMART3 CONNECTION TO ANALOG CONTROL UNIT)

MORSETTIERA CENTRALE 4-20 mA (4-20 mA CONTROL UNIT'S TERMINAL)



CAVO SCHERMATO 3 x 0,75 mm<sup>2</sup> (SHIELDED CABLE 3 x 0,75 mm<sup>2</sup>)

MORSETTIERA RIVELATORE SMART3 (SMART3 DETECTOR'S TERMINAL)



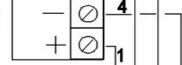
### COLLEGAMENTO USCITA RS485 SMART3 A CENTRALE 'ID1' (RS485 SMART3 CONNECTION TO AN ADDRESSABLE CONTROL PANEL)

MORSETTIERA CENTRALE 'ID1' ('ID1' (ADDRESSABLE) CONTROL UNIT'S TERMINAL)



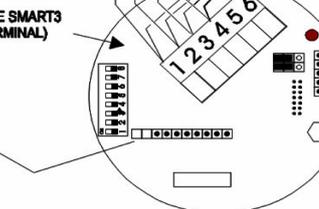
CAVO TWISTATO/SCHERMATO (TWISTED/SHIELDED CABLE)

MORSETTIERA ALIMENTATORE (POWER SUPPLY TERMINAL)



AL RIVELATORE SUCCESSIVO (TO THE NEXT DETECTOR)

MORSETTIERA RIVELATORE SMART3 (SMART3 DETECTOR'S TERMINAL)

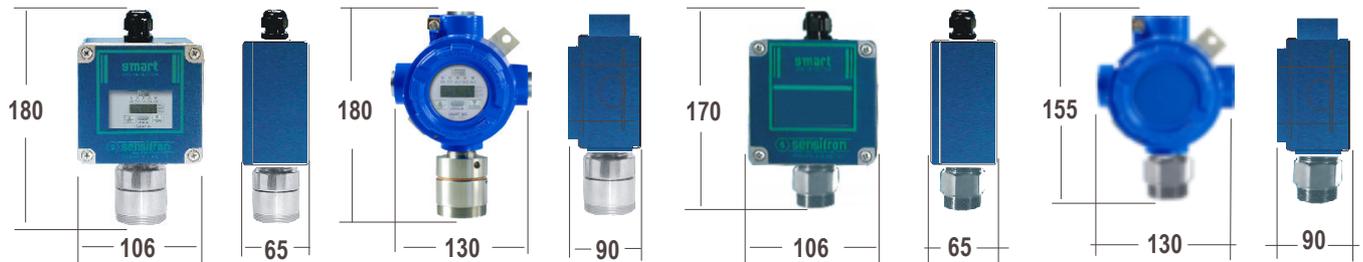


SCHEDA 'ID1' (OPZIONALE) ('ID1' BOARD, OPTIONAL)



## MECHANICAL DIMENSIONS

Measures in mm



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Due to Sensitron commitment to research, design and product improvement, specifications are subject to change without notice.