

SMART3G Gas Detectors



- 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 e autodiagnosi continua del sistema
- Certificati ATEX e IECEx

APPLICAZIONI

- Raffinerie
- Stazioni di compressione
- Impianti farmaceutici
- Impianti chimici e petrolchimici
- Turbine a gas
- Depositi di gas GPL e Metano
- Laboratori

- 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 and system self diagnosis
- ATEX and IECEx certified

APPLICATION

- Refineries
- Compressor stations
- Pharmaceutical plants
- Petrochemical Plants
- Gas turbines
- LNG/LPG storage facilities
- Laboratories

- Etalonnage local non intrusif (version display)
- Echange du capteur aisé
- Large gamme de capteurs disponibles et de gaz détectables.
- Signal sortie 4-20 mA 3 fils
- Large gamme d'accessoires pour l'installation et la maintenance.
- Zéro automatique et auto-diagnostic continue du système
- Certifications ATEX et IECEx

APPLICATION

- Raffinerie
- Stations de compression
- Implantations Pharmaceutiques
- Implantations Pétrochimiques
- Turbines à gaz
- Stockage de GPL/GNL
- Laboratoires





Descrizione

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

Gli **SMART3G** hanno ottenuto le seguenti marcature ATEX:

II 2G Ex db IIC T5 Gb
(codice ATEX: ST/LD/E3, ST/L/E3, ST/LD/E3/C3, ST/L/E3/C3)

II 2G Ex db [ib] ib IIC T6 Gb
(codice ATEX: ST/*/EL1/SI)

II 3Gd EEx nA IIC T6 IP55 T85°C
(codice ATEX: 3G/3GD AT-EN R)

-IECEx cert. n.:
IECEx CES 17.0011X (per Ex db)
IECEx CES 17.0010X (per Ex db [ib] ib)



Description

SMART3G gas detectors are employed to detect flammable compounds (%LEL), toxic compounds (ppm), refrigerant gases 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 range of detectors 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 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.

SMART3G detectors have got the following ATEX marking:

II 2G Ex db IIC T5 Gb
(ATEX code: ST/LD/E3, ST/L/E3, ST/LD/E3/C3, ST/L/E3/C3)

II 2G Ex db [ib] ib IIC T6 Gb
(ATEX code: ST/*/EL1/SI)

II 3Gd EEx nA IIC T6 IP55 T85°C
(ATEX code: 3G/3GD AT-EN R)

-IECEx cert. No.:
IECEx CES 17.0011X (for Ex db)
IECEx CES 17.0010X (for Ex db [ib] ib)



Description

Les détecteurs de gaz de la série **SMART3G** sont utilisés dans les endroits classifiés pour détecter la présence de gaz combustibles (%LIE), de substances toxiques en ppm, de gaz réfrigérants ou bien pour la détection de déficience ou d'excès d'oxygène. Le capteur **Pellistor** utilisé dans les versions pour les mélanges explosifs, confère une linéarité jusqu'à 100% LIE. Dans les lieux où les Pellistor 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 Pellistor. 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 **SMART3G** a été élaborée afin d'offrir une large gamme de solutions qui satisfassent toutes les nécessités de la clientèle. Les **SMART3G-C** sont des détecteurs à hautes performances conçus pour le secteur tertiaire et l'industrie. 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.

Les détecteurs **SMART3G** ont obtenu les marques ATEX suivants:









II 2G Ex db IIC T5 Gb
(code ATEX: ST/LD/E3, ST/L/E3, ST/LD/E3/C3, ST/L/E3/C3)

II 2G Ex db [ib] ib IIC T6 Gb
(code ATEX: ST/*/EL1/SI)

II 3Gd EEx nA IIC T6 IP55 T85°C
(code ATEX: 3G/3GD AT-EN R)

-IECEx cert. n.:
IECEx CES 17.0011X (pour Ex db)
IECEx CES 17.0010X (pour Ex db [ib] ib)

Order P/N and protections.

		G-D3 Ex II 3G	G-D2 Ex II 2G	G-D3 IR Ex II 3G	G-D2 IR Ex II 2G	G-C3 Ex II 3G	G-C2 Ex II 2G	G-C3 IR Ex II 3G	G-C2 IR Ex II 2G
									
Flammable gases (% LEL)	ATEX label IECEx label	AT-EN R --	ST/LD/E3	AT-EN R --	ST/LD/E3	AT-EN R --	ST/L/E3	AT-EN R --	ST/L/E3
METHANE		S2156ME	S2157ME	S2625ME	S2626ME	S2096ME	S2097ME	S2623ME	S2624ME
LPG		S2156GP	S2157GP			S2096GP	S2097GP		
ACETIC ACID			S2157AA				S2097AA		
ACETONE			S2157AT		S2602AT		S2097AT		S2654AT
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			S2602EN		S2097EN		S2654EN
ETHYL ACETATE		S2157AE			S2602AE		S2097AE		S2654AE
ETHYL ALCOHOL		S2157ET			S2602ET		S2097ET		S2654ET
ETHYLENE		S2157EL					S2097EL		
ETHYLENE OXYDE		S2157OE					S2155OE		
HEPTANE		S2157EP			S2602EP		S2097EP		S2654EP
HEXANE		S2157ET			S2602ES		S2097ES		S2654ES
HYDROGEN		S2157H2					S2097H2		
ISO BUTANE		S2157IB			S2602IB		S2097IB		S2654IB
ISO BUTYL ALCOHOL		S2157IT					S2097IT		
ISO PENTANE		S2157IN					S2097IN		
ISO PROPYL ALCOHOL		S2157IP			S2602IP		S2097IP		S2654IP
JET PROPELLER AVIO FUEL		S2108P8					S2154P8		
METHYL ALCOHOL		S2157MT					S2097MT		
METHYL ETHYL KETONE		S2157MK					S2097MK		
NONANE		S2157NN					S2097NN		
PENTANE		S2157PE			S2602PE		S2097PE		S2654PE
PETROL VAPOURS	S2156VB	S2157VB				S2096VB	S2097VB		
PROPANE	S2156PR	S2157PR	S2601PR	S2602PR	S2096PR	S2097PR	S2653PR	S2654PR	
PROPYLENE		S2157PP			S2602PP		S2097PP		S2654PP
PROPYL ALCOHOL		S2157PN					S2097PN		
STYRENE		S2157ST					S2155ST		
TRI METHYLBENZENE		S2157TM					S2097TM		
TOLUENE		S2157TO					S2097TO		
VINYL ACETATE		S2157AV					S2155AV		
XYLENE		S2157XI					S2097XI		
<i>Other gases on request</i>									
Toxic gases	ATEX label IECEx label	AT-EN R --	ST/LD/E3/C3	AT-EN R --	ST/LD/E3/C3	AT-EN R --	ST/L/E3/C3	AT-EN R --	ST/L/E3/C3
OXYGEN (O2) 25% Vol.		S2642O2	S2643O2			S2640O2	S2641O2		
CARBON MONOXIDE 500 ppm		S2162CO	S2163CO			S2130CO	S2131CO		
AMMONIA (NH3) 0-100 ppm		S3226AM	S3227AM			S3224AM	S3225AM		
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
CARBON DIOXIDE 30% Vol				S2447CO2	S2449CO2			S2443CO2	S2445CO2
CARBON DIOXIDE 5000 ppm				S2448CO2				S2444CO2	
HYDROGEN 2000 ppm	S3594H2	S3313H2				S3592H2	S3593H2		
HYDROGEN SULPHIDE 50 ppm	S2168HS	S2169HS				S2136HS	S2137HS		
NITRIC OXYDE 100 ppm	S2176NO	S2177NO				S2144NO	S2145NO		
R134A				S3597R134A	S3163R134A			S3595R134A	S3596R134A
SF6				S3600SF6	S3601SF6			S3598SF6	S3599SF6
<i>Other refrigerant gas on request</i> <i>SO2, NO2, Cl2 on request</i>									

Accessories



STS/IDI
Interfaccia RS485
RS485 interface



STS3REL
Scheda 3 relé
3-relay card



STGD/AD2 & STGD/AD3
Accessorio per estendere il
modo di protezione da G a GD
Adapter to upgrade the
ATEX protection from G to
GD



STS/CKD
Tastiera di calibrazione
Handheld calibration
keypad



ZMCAP/123
Adattatore per rivelatori
gas
Calibration cap adapter

Technical specifications

Sensing element	Pellistor sensors for flammable gas Electrochemical cells for toxic gas IR sensors for HC, CO ₂ , SF ₆ , Refrigerant gases
Measuring range	%LEL for flammable gases ppm for toxic gases and refrigerants % vol for O ₂ and CO ₂
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 panels
Relay outputs, with mode status LEDs (optional)	3 relays with tension free changeover contact 24V-1A (non-latching type)
Accuracy	from ±2% to ±5% FS (depending on sensor type)
Repeatability	from ±2% to ±5% FS (depending on sensor type)
Warm-up time	2 minutes
Stabilization time	60 minutes (for test/calibration)
Response time T90	From 15 to 30 sec. for Pellistor and <60 sec. for other sensor type
Storage temperature	-25°C ÷ +60°C (or limits of the sensor)
Operating temperature	-20°C ÷ +60°C (-40°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 (5-95% RH non-condensing on request)
IP rating	IP65 for II 2G(D) (IP67 with: STGD/AD3 adapter and IP67 cable gland); IP55 for II3GD
Operative pressure	80-110 KPa
Max. air velocity	< 6 m/s
Weight	850÷1200 g Ex n 950÷1700 g Ex d
Dimension (approx)	Ex d L.130 H.180 D.90 mm (max) Ex n L.106 H.180 D.65 mm (max)
Orientation	Detector must be mounted sensor head downwards
Certificates	CESI 17 ATEX 003X (ESR II 2G/2GD) CESI 16 ATEX 046X (Intrinsic Safety) CESI 02 ATEX 084 (Performance) IECEX CES 17.0011X & 17.0010X
EMC Reference Standards	EN 50270, EN 61000-6-4

Electrical connections

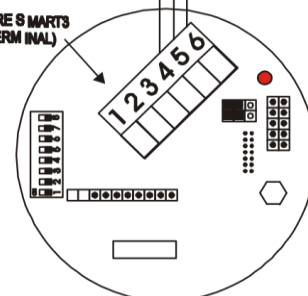
COLLEGAMENTO USCITA 4-20 mA SMART3 A CENTRALE ANALOGICA (4-20 mA SMART3 CONNECTION TO ANALOG CONTROL UNIT)

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



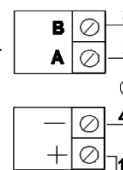
CAVO SCHEMATO 3 x 0,75 mm² (SHIELDED CABLE 3 x 0,75 mm²)

MORSETTIERA RIVELATORE SMART3 (SMART3 DETECTOR'S TERMINAL)



COLLEGAMENTO USCITA RS485 SMART3 A CENTRALE "ID" (RS485 SMART3 CONNECTION TO AN ADDRESSABLE CONTROL PANEL)

MORSETTIERA CENTRALE "ID" ("ID" (ADDRESSABLE) CONTROL UNIT'S TERMINAL)

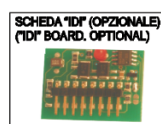


CAVO TWISTATO/SCHERMATO (TWISTED/SHIELDED CABLE)

MORSETTIERA ALIMENTATORE (POWER SUPPLY TERMINAL)

AL RIVELATORE SUCCESSIVO (TO THE NEXT DETECTOR)

MORSETTIERA RIVELATORE SMART3 (SMART3 DETECTOR'S TERMINAL)



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Per i propri prodotti, si riserva il diritto di modificare le
specificazioni nel momento e senza alcun preavviso.

For design and product improvement, specifications are

