

# SMART S-SS

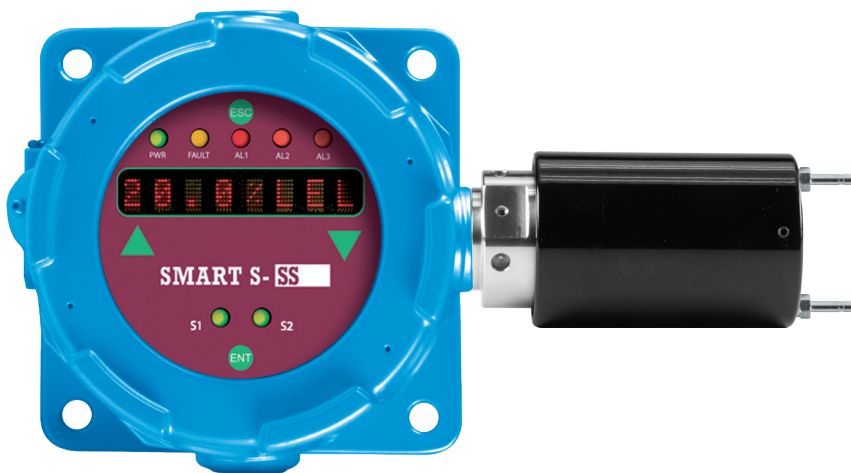
## PREMIUM LINE GAS DETECTORS



### Performance, Safety and Compliance

Una linea di rilevatori di gas veramente unica  
che abbina tecnologie avanzate  
a prestazioni eccezionali  
e ridefinisce i requisiti globali di sicurezza

*A truly unique gas detector range  
that combines advanced technology  
with exceptional service and  
sets the standard for global safety solutions*



## DESCRIZIONE

Progettati per soddisfare i requisiti industriali più esigenti, i rivelatori serie **SMART S-SS** vengono impiegati per rivelare la presenza di sostanze infiammabili o tossiche in aree pericolose.

Dotati di display a 8 digit, con scelta tra display LED e LCD, e 5 LED di stato, permettono una taratura in campo non intrusiva tramite magneti a effetto Hall che consentono di operare sullo strumento senza declassificare l'area.

I rivelatori **SMART S-SS** sono certificati SIL2 Hardware e SIL3 Software e consentono di monitorare gas infiammabili (%LIE), gas tossici e refrigeranti in ppm, oppure ossigeno, sia per carenza che per eccesso. Questa linea di prodotti offre una scelta di sensori idonea a tutte le applicazioni: le teste SMART S sono infatti state progettate per offrire un'ampia gamma di alternative per offrire all'utilizzatore la soluzione più idonea alle specifiche richieste.

Il sensore **Pellistor**, utilizzato nelle versioni per miscele esplosive, compresi idrocarburi, ammoniaca, idrogeno e vapori di benzina, conferisce una linearità eccellente fino al 100% LIE.

Nei luoghi in cui la funzionalità dei Pellistori possa essere compromessa dalla presenza di sostanze avvelenanti, Sensitron propone una serie di sensori **infrarossi**: 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.

I rivelatori sono disponibili con custodia in lega di alluminio o in acciaio inox.

## PRESTAZIONI PRINCIPALI

- Uscita 4-20 mA su 3 fili e Modbus RS485
- Ampia gamma di sensori e di gas rilevabili
- Modem Hart con scheda 3 relè (opzionale)
- Uscita 3 relè (opzionale)
- Certificati IECEx, ATEX II2G & SIL 2(3)

## DESCRIPTION

Designed to meet with the toughest industrial requirements, **SMART S-SS** line allows monitoring toxic and flammable contents in harsh environments. They offer 5 status LEDs and an 8 digits back-lit display for the gas concentration reading to be chosen between LCD or LED display. They feature non-intrusive calibration for an accurate and easy adjustment via Hall-effect switches, which allow to access the detector without opening the instrument and declassifying the area.

**SMART S-SS** offer SIL2 Hardware, SIL3 software approved capability and can detect flammable compounds (%LEL), toxic and refrigerant gases in ppm and Oxygen contents for both its depletion and enrichment.

They offer a complete range of sensor heads for all applications: the SMART S-HEAD line has been designed to offer a wide range of alternatives that grant customers the best solution to their requirements.

**Pellistor** sensors employed for all flammable gas detection, included hydrocarbons, ammonia, hydrogen, fuel and petrol vapours, show an excellent output linearity up to 100% LEL.

For aggressive atmospheres, where the Pellistor functionality might be seriously compromised by the presence of inhibitors or poisons, Sensitron proposes a range of industrial grade **Infrared** sensors: IR sensors are immune from poisoning and this guarantees a higher accuracy and a longer lifetime.

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 detectors can be housed in alloy or stainless steel enclosures.

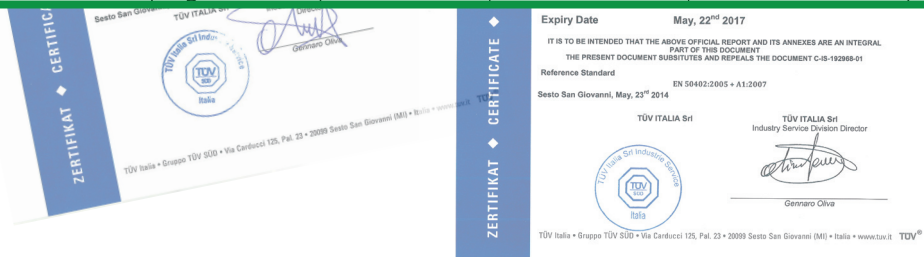
## MAIN FEATURES

- Output 4-20 mA 3 wires & RS485 Modbus
- Wide range of sensors and detectable gases
- Hart modem with 3-relay card (optional)
- 3-relay output (optional)
- Certifications: IECEx, ATEX II2G & SIL 2(3)

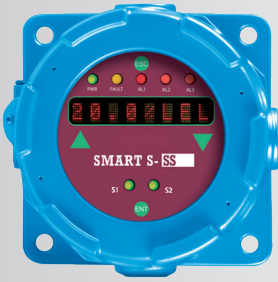


**SMARTS-S range are SIL2 Hardware, SIL3 Software certified by TÜV Süd, according to EN 50402 & IEC 61508 part 1-7.**

Sensing element	SIL Capability	Output	$\lambda_{DU}$	PFD <sub>avg</sub>		Test Period
				Single detector	Redundant detectors	
Catalytic	SIL 2 (3)	4-20 mA Digital RS485	1.17 x 10 <sup>-7</sup> h 1.11 x 10 <sup>-7</sup> h	5.28 x 10 <sup>-4</sup>	5.31 x 10 <sup>-5</sup>	12 months
				4.95 x 10 <sup>-4</sup>	4.97 x 10 <sup>-5</sup>	
Electrochemical	SIL 2 (3)	4-20 mA Digital RS485	1.34 x 10 <sup>-7</sup> h 1.27 x 10 <sup>-7</sup> h	6.05 x 10 <sup>-4</sup>	6.09 x 10 <sup>-5</sup>	12 months
				5.71 x 10 <sup>-4</sup>	5.75 x 10 <sup>-5</sup>	
Infrared	SIL 2 (3)	4-20 mA Digital RS485	4.65 x 10 <sup>-8</sup> h 3.92 x 10 <sup>-8</sup> h	2.23 x 10 <sup>-4</sup>	1.12 x 10 <sup>-5</sup>	12 months
				1.89 x 10 <sup>-4</sup>	9.50 x 10 <sup>-6</sup>	



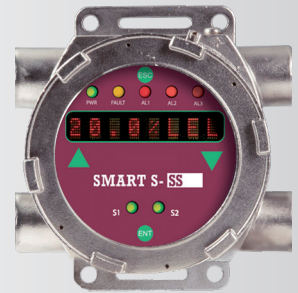
# ENCLOSURES & TRANSMITTERS



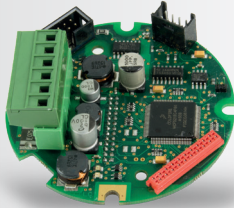
S-SS 4A enclosure for S6 HEADS



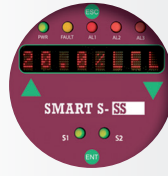
S-SS 3A enclosure for S4 HEADS



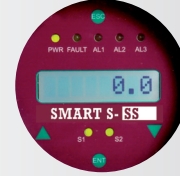
S-SS 2S enclosure for S4 & S6 HEADS



Transmitter SMART S 4-20 mA RS 485



LED display

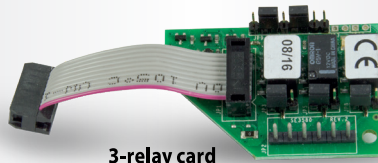


LCD display

## OPTIONALS

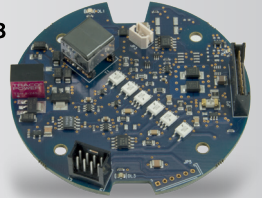


Hart modem with 3-relay card



3-relay card

Intrinsically safe PCB & galvanic isolation



## HEADS

S4[XXXGAS]



PEL - Industrial grade Pellistor  
IRS - Infrared Technology  
ECS - Premium Electrochemical Cell

S6[XXXGAS]



IRM - Innovative fast t90, POP-IR single point open path with mesh & dust cover

## ACCESSORIES



CALIBRATION KEYPAD



CALIBRATION ADAPTER



RAIN SHIELD



GD - ADAPTER



WEATHER PROTECTION CONE



MESH & MEMBRANE DUST COVER

## Technical specifications

Sensing element	Pellistor for flammable gas, Premium line EC cells for toxic gas, IR source or Pyro elements for NDIR sensors for flammable, refrigerants and CO2
Measuring range	100% LEL for flammable, ppm for toxic, % Vol. for O2 and CO2
Power supply	12-24Vdc -20% +15%
Consumption at 24 Vdc	Pellistor: 100 mA (medium); 160 mA (max) E.C. 70 mA (medium); 130 mA (max) IR: 110 mA (medium); 160 mA (max)
Visual indications	6 LED indications: Power (green), Fault (green), Al.1, Al.2, Al.3 (red), D1 (yellow) (RS485 indication)
Display characteristics	LCD, Dot matrix 8 alphanumeric digits, 7,71 mm high, 4,2 mm large or LED display: Dot matrix 8 alphanumeric digits, 4,5 mm high, 2,5 mm width
Proportional analog output	1 x 4-20 mA (300 Ω max; 200 Ω typical)
Proportional Serial Output	1 x RS485 and proprietary protocol for addressable gas control panel
Relay outputs	Optional 3-relay board with tension free changeover contact 24V-1A (non latching relay)
Resolution	0,5% Full scale
Warm-up time	2 minutes
Stabilization time	60 minutes for calibration
Storage temperature	-25°C ÷ +60°C (or limits of the sensor)
Operating temperature	-40°C ÷ +60°C (+65°C or 75°C on request) typically -30°C ÷ +50°C for EC cells
Relative humidity	20-90 % Rh / 40° C (5-95% RH non condensing, on request)
IP rating	IP 65 (IP67 with: STGD/AD3 adapter and IP67 cable gland)
Enclosure material	Aluminum (Stainless Steel AISI316 on request)
Input cable	2 or 3 x 3/4" NPT (depending on enclosure type)
Operative pressure	80-110 KPa
Max. air velocity	6 m/s
Weight	1500 g (2500 g with stainless steel enclosure)
Dimension (approx)	L 140 x H 200 x D 125 mm (for 4A enclosure with S4 sensor head). For different combinations, please contact us.
Orientation	Detector shall be mounted sensor head downwards (horizontal for POP-IR)
ATEX certificates	CESI 17ATEX003X (ESR) CESI 02ATEX084 (EN 60079-29-1 performance)
EMC Reference Standards	EN 50270 EN 61000-6-4
Safety Integrity Level	SIL 2 (SIL 3 SW) C-IS-245120-01 by TÜV Sud

Detector performance, according to sensor head type (\*)

	CAT S4XXX series		IR S4XXX series		E-CELL S4XXX series		POP-IR (***) S6XXX series	
	CH4	Other flamm. gases	CH4	Other flamm. gases	CO	H2S	CH4	Other flamm. gases
<b>Accuracy</b>	±2% FS	±2,5%FS	±2% FS	±2% FS	±1% FS	±2% FS	±2% FS	±2% FS
<b>Repeatability</b>	±2% FS	±5% FS	±5% FS	±5% FS	±3% FS	±5% FS	±2% FS	±5% FS
<b>Response time (t90) (IEC 60079-29-1)</b>	< 9sec	< 30sec	< 25sec	< 60sec	< 60sec	< 60sec	< 9sec (**)	< 20sec (**)
<b>Sensor head material</b>	Stainless Steel AISI316L							

(\*) For H2S with MOS sensor and Laser COP-LS & POP-LS, sensor performance on request.

(\*\*) POP-IR sensor head without rain and dust protection

(\*\*\*) Standard for CH4 and Propane; other flammable gases on request



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