

Smart Gas Detector

GT-2511-FLP



AMBETRONICS®

ISO 9001:2015
Quality



ISO 14001:2015
Environment



ISO 45001:2018
Health & Safety



Hot Swappable
SenSmart Sensor Module
(SSM)

Magnetic Wand for
Parameter Setting

Splash Guard



FIELD COMM GROUP™
Connecting the World of
Process Automation

Features

- Fast and reliable detection of smallest gas leaks.
- Smart pluggable and hot-swappable sensor module support.
- Sensor stores calibration and alarm data for servicing.
- Detects gases in PPM, %V/V, %LEL units.
- High-contrast OLED / Graphic LCD display (GLCD) shows gas concentration digitally.
- Displays specific error codes for sensor and system issues.
- Sink/Source/ Isolated 4-20mA output with configurable signal range.
- Non-intrusive programming for flameproof models via magnet.
- Password-protected settings with changeable password option.
- Test mode simulates gas values for electronic checks.
- Hardware test mode works with or without sensor.
- Two configurable alarm relays and one fault relay.
- Alarm acknowledgment from front, rear terminal, or via MODBUS.
- STEL and TWA thresholds configurable for toxic gases.
- Optional Isolated RS-485 with MODBUS RTU for communication.
- Optional HART protocol for advanced integration.

Applications

- Bullets Yards/ storage yards
- Chemical Processing Plant
- Acid Alkalizes & Dyes Mfg. Plants
- Coal Mine and Confined Area
- Chemical & Petrochemical Plants
- Automotive Industries / Paint Shops
- Power & Industrial Plants
- Heat Treatment Plants
- Chemical Storage Area
- Gas Pipeline Project
- Oil & Gas Industries
- Burner / Furnace Areas
- Control Atmosphere
- Ambient Monitoring
- Gas Metering skid
- Gas Metering Station
- Pulp & Paper Plants
- Cold Storage
- Sewage Plants
- Fertilizers Plants
- Stack Monitoring
- Chlorination Plant
- Gas Cylinder Bank
- Refineries

MUST FOR HUMAN & INDUSTRIAL SAFETY

Certifications

CIMFR & PESO Certification

- PESO: Certified to Ex d
Ex db IIC T6 Gb (-25°C ≤ Ta ≤ +60°C)
Ex tb IIIC T85°C Db (-25°C ≤ Ta ≤ +60°C)
- Standards: IS/IEC 60079-0, IS/IEC 60079-1, IS/IEC 60079-31.
- CIMFR tested : IIA, IIB & IIC
IIIA, IIIB & IIIC
- Ingress Protection IP66 & IP68 as per Standard : IS/IEC 60529 : 2011

ATEX Certification

- II 2GD
- Ex db IIC T4 Gb
- Ex tb IIIC T135°C Db
- Tamb= -40°C ≤ Ta ≤ +80°C • Standards : EN IEC 60079-0, EN 60079-1, EN 60079-31.

IECEx Certification

- Ex db IIC T4 Gb
- Ex tb IIIC T135°C Db
- Tamb= -40°C ≤ Ta ≤ +80°C • Standards: IEC 60079-0, IEC 60079-1, IEC 60079-31.

Functional Safety Certification

SIL certified compliance as per requirement of EN IEC 61508: 2010, Part1 to Part7 & meets requirements providing a level of integrity to SIL2 capable, Type B element, SIL2@ HFT=0, Route1_u (Models SFF ≥ 90%).

EMC Directive 2014/30/EU Compliance

EMC/EMI compatibility as per standard EN IEC 61000-6-2, BS EN 50270: 2015

Emission compatibility as per standard EN IEC 61000-6-4

Low Voltage Directive (LVD) 2014/35/EU Compliance

Compliance to meet the requirements of standard EN 61010-1

RoHS Directive 2015/863/EU

Compliance to meet the requirements of EN IEC 63000

Technical Specifications

General :

Sensor Technology	: Electrochemical/Catalytic/NDIR/PID
Detection Method	: Diffusion
Gas Detected	: Select gas as specified in the table
Range & Resolution	: Select Range & Resolution as Specified in the table
Display	: OLED Display/Graphic LCD Display (GLCD) 8 LEDs to indicate status of instrument
Control Action	: i) Two independent Alarm set points with Latch & Non-latch facility. ii) User selectable Hysteresis and Logic option. iii) Configurable STEL and TWA set points for Toxic Gases (optional)
Setting	: By using Magnetic Wand

Accuracy :

Sr. No.	Working Principle		Accuracy	Repeatability	Zero Drift	Span Drift
1	Electrochemical		± 2 % F.S	± 2 % F.S	<1% FS/Month	<2% FS/Month
2	Catalytic		± 2 % F.S	± 2 % F.S	<2% FS/Month	<2% FS/Month
3	NDIR		± 5 % F.S	± 10 % F.S	<2% FS/Year	<5% FS/Year
4	PID	0 to 4000 PPM	± 5 % F.S	± 5 % F.S	<2% FS/Month	<5% FS/Year
		0 to 1000 PPM	± 5 % F.S	± 5 % F.S	<2% FS/Month	<5% FS/Year
		0 to 40 PPM	± 3 % F.S	± 3 % F.S	<2% FS/Month	<5% FS/Year

Performance :

Response time : Less than 15 seconds

Electrical :

Supply Voltage : 18 to 32 VDC, Typically 24VDC
Power Consumption : Less than 6 Watts
Connector Cross-section : 2.5mm² for Flexible or Armoured Shielded Cable.

4-20mA Output Levels

- 1) During a sensor break or open condition, the display shows 'ERROR 8', indicating 'SENSOR OPEN', and the output current will be 3.7 mA.
- 2) During a current output loop open condition, the display indicates 'ERROR 15'.
- 3) For warning errors 6, 10, 11, 24, and 25, the output current will be 3 mA.
- 4) During safety errors, the output current will be 0 mA or 3.7 mA.
- 5) Calibration mode, programming mode, and inhibit mode are user-configurable with output current selectable between 2 mA, 3.8 mA, 4 mA, and 17.4 mA.
- 6) For Over Range conditions, the output current will be 21 mA.

Output Signal :

- 3 wire 4-20mA (Sink or Source) or 4 Wire 4-20mA (Isolation)
- 4-20mA output in Source, Sink and Isolated mode.
- Load resistance : 250-600 Ω at 24VDC
- Optional Alarm Relay : Max Switching Voltage:- 5A, 30VDC
Two configurable alarm relays and one fault relay.
- Optional Communication : Isolated RS-485 Communication with MODBUS RTU and HART Communication.

Environmental :

Operating Temperature : -40°C to +80°C (-40°F to +176°F)
Storage : -40°C to +85°C (-40°F to +185°F)
Humidity : 5 to 95% Non Condensing.
Ingress Protection : IP66 as per EN 60529

Accessories (Optional) :

- | | |
|--|---------------------------------------|
| 1) CE Certified 24 VDC Power Supply. | 2) Gas sampling & Conditioning System |
| 3) Canopy & Mounting stand. | 4) RS-485 to USB or RS-232 convertor |
| 5) Gas Calibration Kit (0.5,1, 3,10)Liter. | 6) Hooter Cum Flasher |
| 8) Flash Gard | 7) PC Based SCADA software, Modem |

Common Deliverable

- | | |
|---|-------------------------------|
| 1) Test Calibration Certificate | 4) Standard Mounting Hardware |
| 2) 'Operational / Instrument' User Manual | 5) Safety Manual |
| 3) Reference Calibration Gas Certificate | |

Flameproof Housing

Protection Class : Ip66
Cabinet Material: • Pressure Diecast Aluminium alloy or
• Stainless steel (Non-magnetic) : SS316
Mounting : Wall Mounting / Stand Mounting / Pipe Mounting
Weight : Approx 2.5 kg

With M20 x 1.5mm(P)/ M25 x 1.5mm(P) Entry

Cable Entry : M20 x 1.5mm(P)/M25 x 1.5mm(P)
Stopping Plug : M20 x 1.5mm(P) / M25 x 1.5mm(P)
Dimension : 232 mm (H) x 225 mm (W) x 122 mm (D)

With 1/2" NPT OR 3/4" NPT Entry

Cable Entry : 1/2" NPT OR 3/4" NPT
Stopping Plug : 1/2" NPT OR 3/4" NPT
Dimension : 240 mm (H) x 240 mm (W) x 122 mm (D)

TABLE FOR LIST OF GASES WITH RANGE AND RESOLUTION

ELECTROCHEMICAL SENSOR TECHNOLOGY					
PLUGGABLE OXYGEN SENSOR MODULE					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Oxygen (O ₂)	25	%V/V	0.01	SSM-FLP-O2-EC-08-03

PLUGGABLE TOXIC (PV) SENSOR MODULE					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Chlorine (CL ₂)	20	PPM	0.1	SSM-FLP-CL2-EP-06-01
2	Nitrogen Dioxide (NO ₂)	20	PPM	0.1	SSM-FLP-NO2-EP-06-01
3	Hydrogen Fluoride (HF)	10	PPM	0.1	SSM-FLP-HF-EP-05-01
4	Hydrogen Fluoride (HF)	100	PPM	1	SSM-FLP-HF-EP-14-01
5	Bromine (Br ₂)	20	PPM	0.1	SSM-FLP-BR2-EP-06-01
6	Bromine (Br ₂)	40	PPM	0.1	SSM-FLP-BR2-EP-10-01

PLUGGABLE TOXIC (NV) SENSOR MODULE					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Ammonia (NH ₃)	100	PPM	1	SSM-FLP-NH3-EN-14-01
2	Ammonia (NH ₃)	1000	PPM	1	SSM-FLP-NH3-EN-24-01
3	Carbon Monoxide (CO)	1000	PPM	1	SSM-FLP-CO-EN-24-01
4	Carbon Monoxide (CO)	2000	PPM	1	SSM-FLP-CO-EN-26-01
5	Hydrogen (H ₂)	2000	PPM	1	SSM-FLP-H2-EN-26-01
6	Hydrogen Bromide (HBr)	100	PPM	1	SSM-FLP-HBR-EN-14-01
7	Hydrogen Chloride (HCL)	100	PPM	1	SSM-FLP-HCL-EN-14-01
8	Hydrogen Cyanide (HCN)	100	PPM	1	SSM-FLP-HCN-EN-14-01
9	Hydrogen Sulfide (H ₂ S)	100	PPM	1	SSM-FLP-H2S-EN-14-01
10	Ozone (O ₃)	20	PPM	0.1	SSM-FLP-O3-EN-06-01
11	Sulfur Dioxide (SO ₂)	50	PPM	0.1	SSM-FLP-SO2-EN-11-01
12	Sulfur Dioxide (SO ₂)	2000	PPM	1	SSM-FLP-SO2-EN-26-01
13	Phosphine (PH ₃)	10	PPM	0.1	SSM-FLP-PH3-EN-05-01
14	Ethylene Oxide (ETO)	100	PPM	1	SSM-FLP-ETO-EN-14-01
15	Nitric Oxide (NO)	250	PPM	1	SSM-FLP-NO-EN-17-01

IR/ NDIR SENSOR TECHNOLOGY					
PLUGGABLE COMBUSTIBLE IR/ NDIR SENSOR MODULE					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Carbon Dioxide(CO ₂)	5000	PPM	1	SSM-FLP-CO2-IR-28-01
2	Carbon Dioxide (CO ₂)	5	%V/V	0.1	SSM-FLP-CO2-IR-04-03
3	Carbon Dioxide (CO ₂)	100	%V/V	0.1	SSM-FLP-CO2-IR-14-03
4	Methane (CH ₄)	100	%V/V	0.1	SSM-FLP-METHANE -IR-14-03
5	Methane (CH ₄)	100	%LEL	1	SSM-FLP-METHANE -IR-14-02
6	Methane (CH ₄)	5	%V/V	0.1	SSM-FLP-METHANE-IR-04-03
7	Propane/ LPG(C ₃ H ₈)	100	%LEL	1	SSM-FLP-PROPANE-IR-14-02
8	Propane/LPG (C ₃ H ₈)	5	%V/V	0.1	SSM-FLP-PROPANE-IR-04-03
9	Propane/LPG (C ₃ H ₈)	100	%V/V	1	SSM-FLP-PROPANE-IR-14-03
10	Hydrocarbon (HC)	100	%LEL	1	SSM-FLP-HC-IR-14-02

CATALYTIC/ PELLISTOR SENSOR TECHNOLOGY					
PLUGGABLE COMBUSTIBLE / CATALYTIC/ PELLISTOR SENSOR MODULE					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Acetone (CH ₃) ₂ CO	100	%LEL	1	SSM-FLP-ACETONE-CT-14-02
2	Acetylene (C ₂ H ₂)	100	%LEL	1	SSM-FLP-ACETYLENE-CT-14-02
3	Ammonia (NH ₃)	100	%LEL	1	SSM-FLP-NH3-CT-14-02
4	Butane/n-Butane (C ₄ H ₁₀)	100	%LEL	1	SSM-FLP-BUTANE-CT-14-02
5	Carbon Monoxide (CO)	100	%LEL	1	SSM-FLP-CO-CT-14-02
6	Ethanol (C ₂ H ₅ OH)	100	%LEL	1	SSM-FLP-ETHANOL-CT-14-02
7	Ethyl Acetate (C ₄ H ₈ O ₂)	100	%LEL	1	SSM-FLP-ETHYL ACETATE-CT-14-02
8	Ethylene (C ₂ H ₄)	100	%LEL	1	SSM-FLP-ETHYLENE-CT-14-02
9	Hexane/n-Hexane (C ₆ H ₁₄)	100	%LEL	1	SSM-FLP-HEXANE-CT-14-02
10	Hydrogen (H ₂)	100	%LEL	1	SSM-FLP-H2-CT-14-02
11	Isopropanol (CH ₃ C ₂ H ₄ OH)	100	%LEL	1	SSM-FLP-IPA-CT-14-02
12	Methane (CH ₄)/HC	100	%LEL	1	SSM-FLP-METHANE-CT-14-02
13	Methyl Ethyl Ketone (C ₄ H ₈ O)	100	%LEL	1	SSM-FLP-METHYL ETHYL KETONE-CT-14-02
14	Methanol (CH ₃ OH)	100	%LEL	1	SSM-FLP-METHANOL-CT-14-02
15	N-Heptane (C ₇ H ₁₆)	100	%LEL	1	SSM-FLP-N-HEPTANE-CT-14-02
16	N-Pentane (C ₇ H ₁₂)	100	%LEL	1	SSM-FLP-N-PENTANE-CT-14-02
17	Pentane/n-Pentane (C ₅ H ₁₂)	100	%LEL	1	SSM-FLP-PENTANE-CT-14-02
18	Propane/n-Propane/LPG (C ₃ H ₈)	100	%LEL	1	SSM-FLP-PROPANE-CT-14-02
19	Toluene (C ₇ H ₈)	100	%LEL	1	SSM-FLP-TOLUENE-CT-14-02
20	Unleaded Petrol	100	%LEL	1	SSM-FLP-UNLEADED PETROL-CT-14-02
21	CNG/LNG/LPG/Natural Gas/ Flammable Gas	100	%LEL	1	SSM-FLP-CNG/LNG-CT-14-02
22	Hydrocarbon (HC)	100	%LEL	1	SSM-FLP-HC-CT-14-02

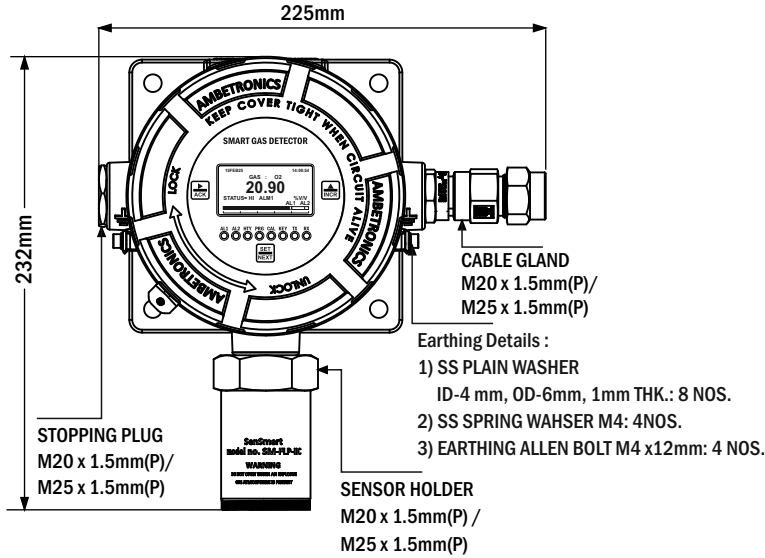
PID SENSOR TECHNOLOGY					
PLUGGABLE VOC SENSOR MODULE					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Isobutylene (C ₄ H ₈)/ other VOC	40	PPM	0.1	SSM-FLP-ISOBUTYLENE-PD-10-01
2	Isobutylene (C ₄ H ₈)/ other VOC	1000	PPM	1	SSM-FLP-ISOBUTYLENE-PD-24-01
3	Isobutylene (SPAN C ₄ H ₈)/ other VOC	4000	PPM	1	SSM-FLP-ISOBUTYLENE-PD-27-01

NOTE :

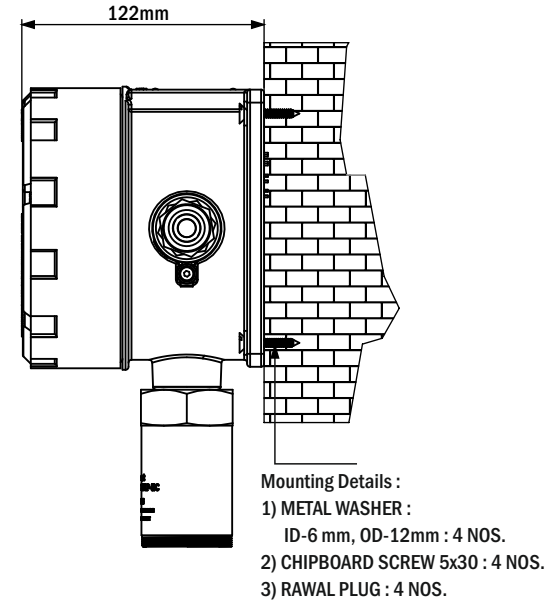
- In above Table, Range of gases start from zero.
- Gases which are not listed, are available on request & for other details contact factory.
- All VOCs are available in PID detection principle in PPM ranges.
- PID detector will be provided by calibration with Isobutylene gas.
- In PID detector, VOC other than Isobutylene is calibrated with Isobutylene gas by setting VOC correction factor, In Calibration Report, VOC factor with respect to Isobutylene gas will be mentioned.
- Detection value of VOC = Isobutylene gas concentration value x factor

With M20 x 1.5mm(P)/ M25 x 1.5mm(P) Entry

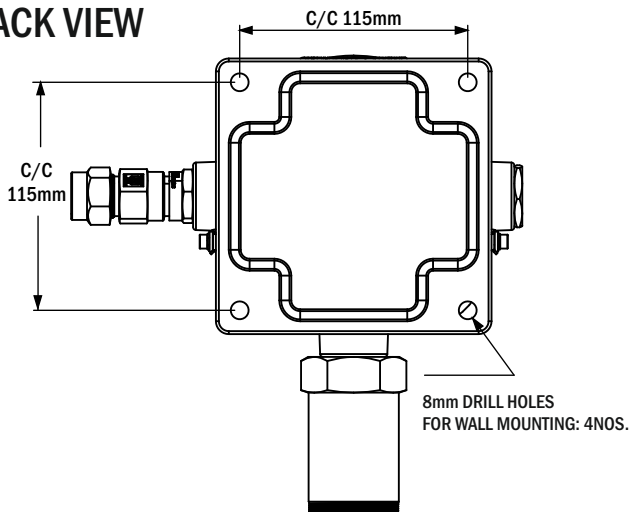
FRONT VIEW



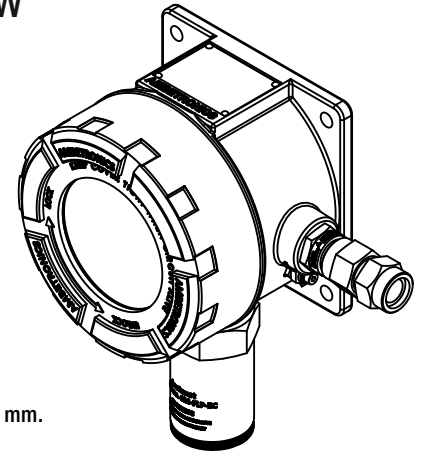
SIDE VIEW



BACK VIEW



ISOMETRIC VIEW



NOTE: 1) ALL DIMENSIONS ARE IN mm.
2) TOLERANCE ± 3 mm
3) SIZE: 232mm(H) X 225mm(W) X 122mm(D)

ORDERING INFORMATION

1) GT	-	2511	-	FLP	-	0	-	0
MODEL NO.		FLAMEPROOF ENCLOSURE		RS-485 COMMUNICATION 0- NO 1- YES		HART COMMUNICATION 0- NO 1- YES		

(E.g. For Order Code : GT-2511-FLP-1-1,
Selected Model : GT-2511-FLP-RS485-HART)

2) XXX	-	FLP	-	XX	-	XX	-	XX	-	XX
1) SSM: SENSMART PLUGGABLE SENSOR MODULE, FLAMEPROOF		GAS NAME		SENSOR TECHNOLOGY EN: ELECTROCHEMICAL NEGATIVE EP: ELECTROCHEMICAL POSITIVE EC: ELECTROCHEMICAL IR: INFRARED CT: CATALYTIC PD: PID		GAS RANGE		GAS UNIT		

(E.g For Order Code: SSM-FLP-03-EN-06-01,
Selected Model : Sensmart Pluggable Module-Flameproof-Ozone-
Electrochemical Negative-20-PPM)

NOTE: IR: INFRARED (NDIR, Dual Beam IR, Single Point IR etc.) Available either with HART or RS-485 Modbus RTU Communication

Manufactured by :



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