

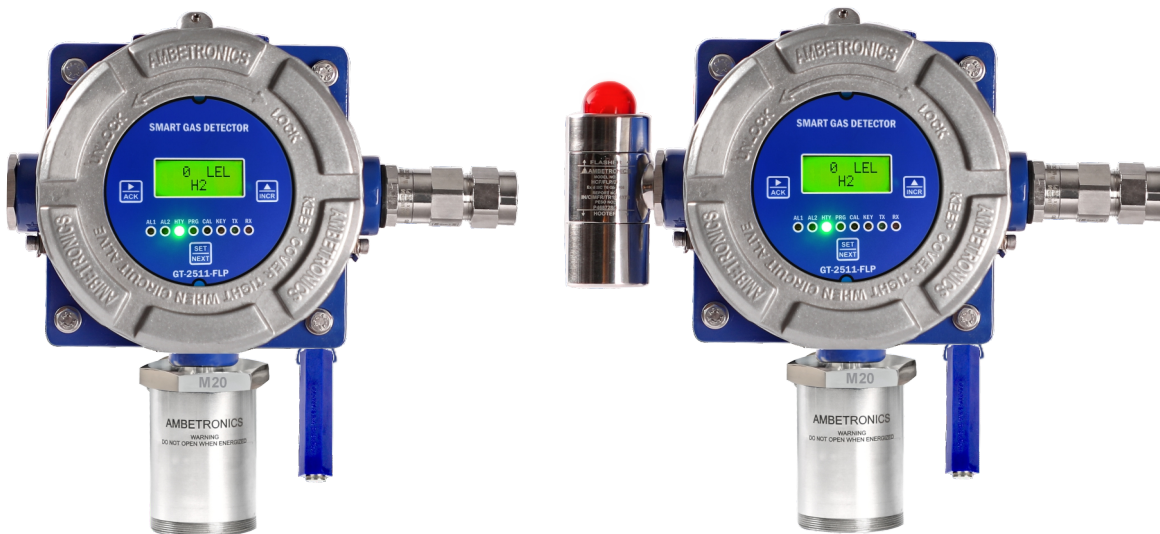
SMART GAS DETECTOR FOR TOXIC, COMBUSTIBLE, OXYGEN & VOC GASES

PESO Approved Enclosure

EN-50270
EN 61000-6-4
Compliance



MAKE IN INDIA



Features

- Provides a fast reliable output for detection a smallest leak of Oxygen, Toxic, Combustible Gases and Volatile Organic Compounds (VOC).
- Provision for smart - Pluggable gas sensor module for Oxygen, Toxic, Combustible, PID & NDIR sensors.
- Calibration data, Alarm data, Offset data, Output current data is saved in the particular sensor module, for easy maintenance & servicing.
- Highly resistant to poisoning and etching.
- Capable of detecting down to PPM, %V/V, %LEL, PPB, mg/m³, ug/m³.
- Digital display of Gas Concentration on LCD Display
- Indication for 'Sensor Open', 'Over Range', 'Sensor Replace', 'Cal Due', 'Cal Fail', mA Loop Open.
- Standard 4-20mA signal output with configurable range.
- Standard 0-10V/0-5V/ 0-1V signal output with configurable range.
- Optional STEL and TWA set points can be configured for Toxic & VOC Gases.
- Optional RS-485 Communication Port with MODBUS RTU PROTOCOL.
- Non - Intrusive programming for Flameproof Model using Magnetic Wand.
- Password protected programming with Password Changing Facility.
- Alarm Acknowledgement Facility from front as well as rare terminal.
- 'Test Mode' provided to check the electronics as Alarm LEDs, Relays, Output current/voltage with or without sensor module.
- Optional Alarm Relay contacts on board with two configurable Alarm Levels & One Fail Safe Relay.

Approval & Compliance

- Approval & Compliance for Flameproof Certified to Ex d IIC T6 Gb, IP66
- CIMFR CERTIFICATE NO. : IN/CIMFR/TR19/4071 Dt. : 13/12/2019
- PESO CERTIFICATE NO. : P468728/2 Dt. : 21/02/2020
- Standard Compliance :
 - IS / IEC 60079-1 : 2014 Ex d IIC T6 Gb (Flameproof Protection)
 - IS / IEC 60079-31 : 2013 Ex ta IIIC T 85°C Da (Dust Ignition Protection)
 - IS / IEC 60079 -11 : 2011 Ex ia IIC T6 Ga (Intrinsically Safe)
 - IS / IEC 60529 : 2001 IP66 AND IP68 (Ingress Protection)
- Approval & Compliance for Intrinsically Safe Certified to Ex ia IIC T6 Ga Ex ta IIIC T 85°C Da
- CIMFR CERTIFICATE NO. : IN/CIMFR/TR22/P/3297 Dt. : 04/02/2022
- EMI & EMC Compliance : EN-50270 EN 61000-6-4

ATEX & IECEx

UL 22ATEX 2610X Rev. 0

IECEx UL 22.0049X

Ex II2G Ex db IIC T6 Gb (-20°C ≤ Ta ≤ +60°C)

Applications

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

MUST FOR HUMAN AND INDUSTRIAL SAFETY

TECHNICAL SPECIFICATIONS

General :

Sensor Technology : Electrochemical/ Catalytic/ Pellistor/ NDIR / PID
 Detection Method : Diffusion
 Gas Detected : (Please select gas as specified in the table)
 Range & Resolution : (Please select Range & Resolution as Specified in the table)
 Display : 8 x 2 Alphanumeric LCD with configurable backlit.
 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 : Magnetic Wand without opening enclosure cover

Accuracy :

SR. NO.	SENSOR TECHNOLOGY	CALIBRATION ACCURACY	
1	Electrochemical	±2 % F.S	
2	Catalytic/ Pellistor	±2 % F.S	
3	NDIR-CH4/ CO2/ C3H8	± 10 % of Applied Gas	
4	PID	0 to 5000 PPM	± 10 % of Applied Gas
		0 to 1000 PPM	± 5 % of Applied Gas
		0 to 50 PPM	± 3 % of Applied Gas
5	Semiconductor	± 10% of applied gas whichever is max	

Performance :

Response time : Less than 15 seconds

Electrical :

Supply Voltage : 18 to 36 VDC, Typically 24VDC
 Power Consumption : Less than 3.6 Watts
 Connector :
 Cross-section : 2.5mm² for Flexible or Armoured Shielded Cable.

Output Signal :

Standard Current/
 Voltage : 4-20mA/ 0-10V/0-5V/0-1V Output with configurable range selection.
 Current Output Capacity : ±0.125% Full Scale
 Load Driving Capacity : 1) 560 ohm at 18VDC to 36VDC
 2) 820 ohm load driving capacity at 22VDC to 36VDC.
 Optional Relay : Three SPDT Relay (one for FailSafe and Two for Alarm indication) of rating NO:10a 250VAC/ 5A 30VDC & NC: 3A 125VAC/ 3A 30VDC.
 Optional communication : isolated RS-485 Communication port with MODBUS RTU protocol.

Environmental :

Operating Temperature : -20 to +65°C
 Storage : -40 to 85°C
 Humidity : Less than 95% Non-Condensing.

Accessories (Optional) :

- 1) CE Certified 24VDC Power supply.
- 2) Canopy & Mounting stand.
- 3) Gas Calibration Kit (0.5, 1,3,10) Liter.
- 4) Hooter Cum Flasher : P468728/3 Dt. : 21/02/2020
- 5) Gas sampling & Conditioning System
- 6) RS-485 to USB or RS-232 converter
- 7) Ethernet converter
- 8) PC Based SCADA software, Modem

Error Monitoring :

- 1) During Sensor Break / Open, the Display shows 'SENSOR OPEN' & Output Current/voltage will be as per Upscale/ Downscale
- 2) During Over range, the Display shows 'OVER RANGE' & Output Current will be as per Upscale/ Downscale
- 3) During output current open condition the display indicates "mA LOOP OPEN" & the message disappears after Acknowledgment
- 4) Upscale current: 21mA/ 22mA Selectable
- 6) Downscale current 1mA / 3.7mA Selectable
- 7) Upscale voltage for 0-10V: 10V
- 8) Upscale voltage for 0-5V: 5V
- 9) Upscale voltage for 0-1V: 1V
- 10) Downscale voltage for 0-10V/0-5V/0-1V: 0V
- 11) Inhibit mode current is adjustable & user selective
 Oxygen for 25% V/V range : 3.8mA / 17.4mA
 Oxygen for 100% V/V range : 3.8mA / 7.34mA
 Nitrogen for 100% V/V range : 3.8mA/ 16.656mA
 Toxic / combustible / PID / NDIR : 2mA / 3.8mA / 4mA
- 12) Inhibit mode for 0-10V voltage output is adjustable & user selective
 Oxygen for 5% V/V range : 0V / 8.36V
 Oxygen/N2 for 100% V/V range : 0V/ 2.09V
 Nitrogen for 100% V/V range : 0V/7.91V
 Toxic / combustible / PID / NDIR : 0V
- 13) Inhibit mode for 0-5V voltage output is adjustable & user selective
 Oxygen for 25% V/V range : 0V / 4.18V
 Oxygen/N2 for 100% V/V range : 0V/ 1.045V
 Nitrogen for 100% V/V range : 0V/3.955V
 Toxic / combustible / PID / NDIR : 0V
- 14) Inhibit mode for 0-1V voltage output is adjustable & user selective
 Oxygen for 25% V/V range : 0V / 836mV
 Oxygen/N2 for 100% V/V range : 0V/ 209mV
 Nitrogen for 100% V/V range : 0V/79

Common Deliverable

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

Flameproof Housing

Protection Class : IP-66
 Cabinet Material : Cast Aluminium alloy, LM-6
 Approval : CIMFR approved for IIA, IIB group, IIC
 CIMFR Certificate : Certificate No. : IN/CIMFR/TR19/4071 Dated : 13/12/2019
 PESO Certificate : Certificate No. : P468728/2 Dated : 21/02/2020
 Cable Entry : Double Compression Cable Gland EX-proof M20 X 1.5mm (P)
 CIMFR Certificate : Certificate No. : CIMFR/ TC/P/ 1313 Dated : 19/09/2018
 PESO Certificate : Certificate No. : P431645/2 Dated : 19/11/2019
 Stopping Plug : (M20 x 1.5P & M25 x 1.5P)
 CIMFR Certificate : Certificate No. : CIMFR/ TC/P/ 1314 Dated : 19/09/2018
 PESO Certificate : Certificate No. : P431645/3 Dated : 19/11/2019
 Mounting : Wall Mounting / Stand Mounting / Pipe Mounting

DIMENSION WITHOUT HOOTER CUM FLASHER

Dimension : 225 mm (H) with sensor holder x 225 mm (W) x 122 mm (D)
 Weight : Approx. 2.2 kg

DIMENSION WITH HOOTER CUM FLASHER

Dimension : 225 mm (H) with sensor holder x 266 mm (W) x 122 mm (D)
 Weight : Approx. 2.7 kg

LIST OF GASES WITH RANGE AND RESOLUTION AND ALARM SET POINT

ELECTROCHEMICAL SENSOR TECHNOLOGY

SR.NO	GASES	RANGE	UNIT	RES
O1	Oxygen (O ₂)	25	%V/V	0.01
O2	Oxygen (O ₂)	0 TO 100	%V/V	0.01
NT1	Nitrogen (N ₂)	0 TO 100	%V/V	0.01

TOXIC GASES

T1	Ammonia (NH ₃)	100	PPM	1
T2	Ammonia (NH ₃)	1000	PPM	1
T3	Bromine (Br ₂)	10	PPM	0.01
T4	Carbon Monoxide (CO)	1000	PPM	1
T5	Carbon Monoxide (CO)	2000	PPM	1
T6	Chlorine (CL ₂)	10	PPM	0.01
T7	Ethylene Oxide (ETO)	100	PPM	1
T8	Hydrogen (H ₂)	2000	PPM	1
T9	Hydrogen Bromide (HBr)	100	PPM	1
T10	Hydrogen Chloride (HCL)	100	PPM	1
T11	Hydrogen Cyanide (HCN)	100	PPM	1
T12	Hydrogen Fluoride (HF)	10	PPM	0.01
T13	Hydrogen Fluoride (HF)	100	PPM	1
T14	Hydrogen Sulfide (H ₂ S)	100	PPM	1
T15	Ozone (O ₃)	20	PPM	0.01
T16	Phosphine (PH ₃)	10	PPM	0.01
T17	Nitrogen Dioxide (NO ₂)	20	PPM	0.01
T18	Nitric Oxide (NO)	250	PPM	1
T19	Sulfur Dioxide (SO ₂)	50	PPM	0.01
T20	Sulfur Dioxide (SO ₂)	2000	PPM	1

NDIR SENSOR TECHNOLOGY

SR.NO	GASES	RANGE	UNIT	RES
N1	Carbon Dioxide(CO ₂)	5000	PPM	1
N2	Carbon Dioxide (CO ₂)	5	%V/V	0.01
N3	Carbon Dioxide (CO ₂)	100	%V/V	0.1
N4	Methane (CH ₄)	100	%V/V	0.1
N5	Methane (CH ₄)	100	%LEL	1
N6	Methane (CH ₄)	5	%V/V	0.1
N7	Propane/LPG (C ₃ H ₈)	100	%LEL	1
N8	Propane/LPG (C ₃ H ₈)	5	%V/V	0.1
N9	Propane/LPG (C ₃ H ₈)	100	%V/V	1

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

COMBUSTIBLE GASES

SR.NO	GASES	RANGE	UNIT	RES
C1	Acetone (CH ₃) ₂ CO	100	%LEL	1
C2	Acetylene (C ₂ H ₂)	100	%LEL	1
C3	Ammonia (NH ₃)	100	%LEL	1
C4	Butane/ n-Butane (C ₄ H ₁₀)	100	%LEL	1
C5	Carbon Monoxide (CO)	100	%LEL	1
C6	Ethanol (C ₂ H ₅ OH)	100	%LEL	1
C7	Ethyl Acetate (C ₄ H ₈ O ₂)	100	%LEL	1
C8	Ethylene (C ₂ H ₄)	100	%LEL	1
C9	Hexane/ n-Hexane (C ₆ H ₁₄)	100	%LEL	1
C10	Hydrogen (H ₂)	100	%LEL	1
C11	Isopropanol (CH ₃ -C ₂ H ₄ OH)	100	%LEL	1
C12	Methane (CH ₄)/ HC	100	%LEL	1
C13	Methyl Ethyl Ketone (CH ₃ -CO-C ₂ H ₅)	100	%LEL	1
C14	Methanol (CH ₃ OH)	100	%LEL	1
C15	N-Heptane (C ₇ H ₁₆)	100	%LEL	1
C16	N-Heptane (C ₇ H ₁₆)	100	%LEL	1
C17	Pentane / n-Pentane (C ₅ H ₁₂)	100	%LEL	1
C18	Propane / n-Propane (C ₃ H ₈)	100	%LEL	1
C19	Toluene (C ₆ H ₅ CH ₃)	100	%LEL	1
C20	Unleaded Petrol	100	%LEL	1
C21	CNG/ LNG/ LPG/ Natural Gas/ Flammable Gas	100	%LEL	1

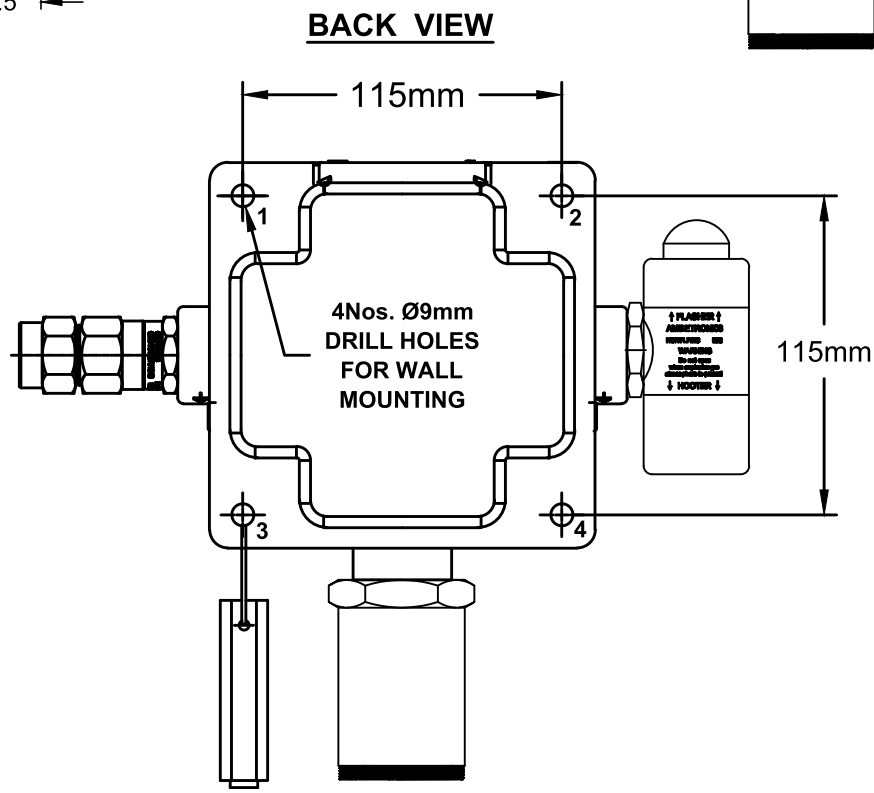
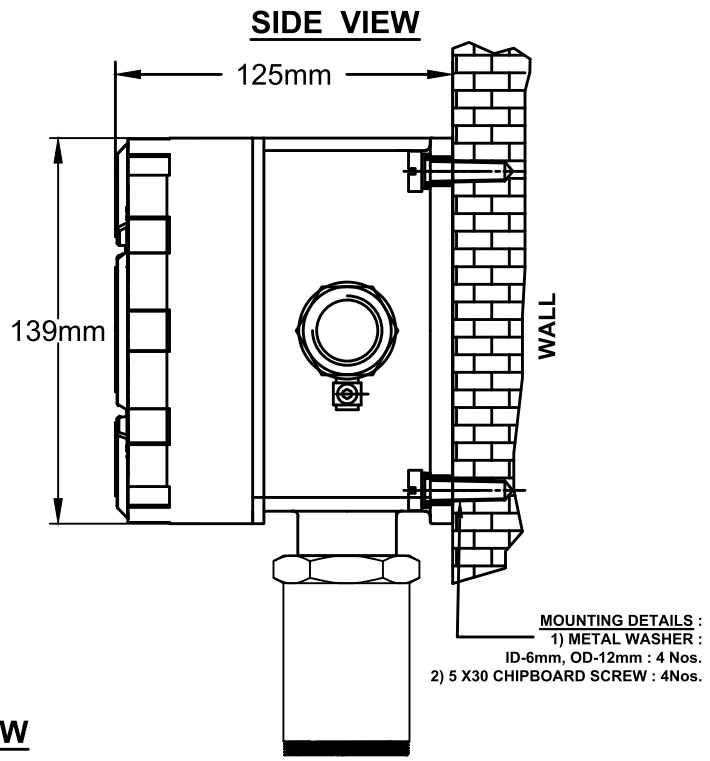
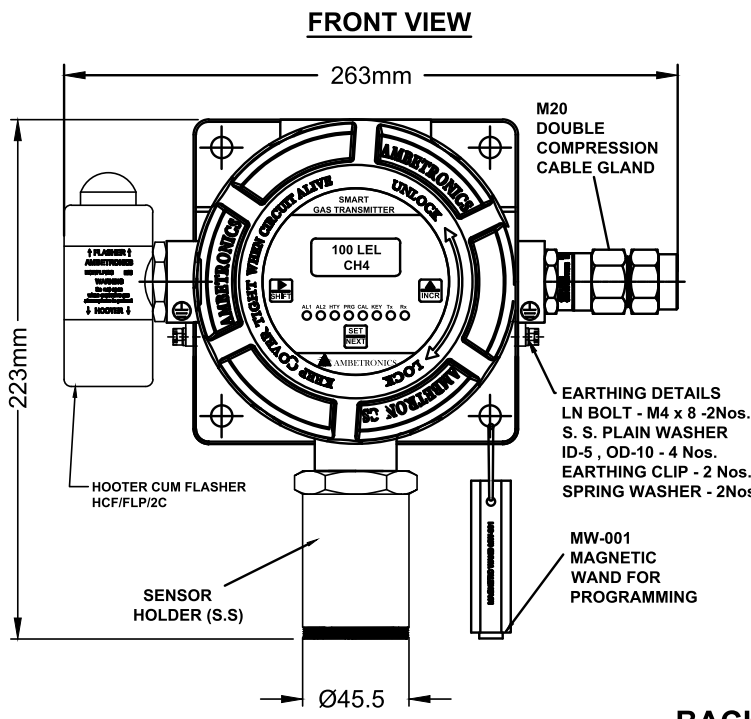
PID SENSOR TECHNOLOGY

Sr. No.	GASES	RANGE	UNIT	RES
P1	Isobutylene (C ₄ H ₈)/ other VOC	50	PPM	0.1
P2	Isobutylene (C ₄ H ₈)/ other VOC	1000	PPM	1
P3	Isobutylene (SPAN C ₄ H ₈)/ other VOC	5000	PPM	1

SEMICONDUCTOR SENSOR TECHNOLOGY

GASES	RANGE	UNIT	RES.
R-22 / R-134	10 - 300	PPM	1
	5000 -10,000	PPM	1

FLAMEPROOF ENCLOSURE DIMENSION & MOUNTING DETAILS



ORDERING INFORMATION

GT	A	B	C	D	E	F	G
	A) Model No. 1)2511-FLP	B) Enclosure 1) FLP (Flameproof)	C) Gas Please select the Serial No of the gas from the list given above.	D) Retransmission Output 1) None 2) 4 to 20mA	E) Relay Output 1) None 2) 3 Relays (AL1, AL2 Failsafe Relay)	F) Communication Port 1) None 2) RS-485 serial port	G) Sensor Housing 1) Stainless Steel (SS316)

* Before placing order please Refer the above ordering information or Contact below address for assistance.

Manufactured by :



AMBITRONICS ENGINEERS PVT. LTD.

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Specifications subject to change without any prior notice