

GT-2511-FLP

Smart Gas Detector for Toxic, Combustible, Oxygen & VOC Gases



AMBETRONICS
AN ISO 9001:2015 CERTIFIED COMPANY

Intrinsically Safe

PESO Approved Enclosure

EN-50270
EN 61000-6-4
Compliance

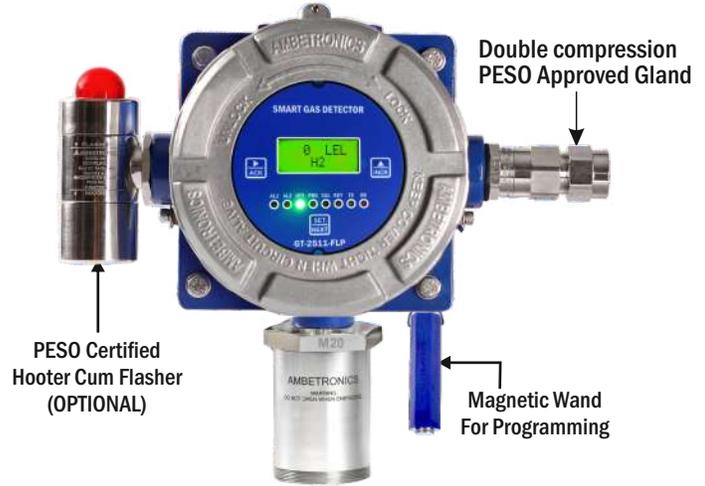


MAKE IN INDIA

GT-2511-FLP Without Hooter Cum Flasher



GT-2511-FLP With Hooter Cum Flasher



Hot Swappable Smart Sensor

Features

- Provides a fast reliable output for detection a smallest leak of Oxygen, Toxic, Combustible 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, mg/m3.
- 2-Line, 4-Digit 8 mm (H) Seven Segment LED Display & 8 LEDs to indicate status of instrument
- Indication for 'Sensor Open', 'Over Range', 'Sensor Replace', 'Cal Due', 'Cal Fail', mA Loop Open.
- Standard 4-20mA 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.

Approvals & Compliance

Approval & Compliance for Flameproof Enclosure :

Ex db IIC T6 Gb IP 66

- CIMFR CERTIFICATE NO. : IN/CIMFR/TR19/4071 Dt. : 13/12/2019
- PESO CERTIFICATE NO. : P538850/6 Dt. : 16/06/2022

Ex db IIC T6 Gb IP 68

- CIMFR CERTIFICATE NO. : IN/CIMFR/TR21/S/977 Dt. : 06/07/2021
- PESO CERTIFICATE NO. : P538850/6 Dt. : 16/06/2022

Approval & Compliance for Smart Gas Detector / Transmitter :

Ex db IIC T6 Gb Ex tb/tc IIIC T85°C Db/Dc IP68

- CIMFR CERTIFICATE NO. : IN/CIMFR/TR22/P/1316 Dt. : 28/07/2022
- PESO CERTIFICATE NO. : P5445300/2 Dt. : 23/08/2022

Standard Compliance :

- IS/IEC 60079-1 : 2014 Ex d IIC T6 Gb (Flameproof Protection)
- IS/IEC 60079-31 : 2013 Ex ta IIIC T85°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 d [ia] IIC T6 Ga Ex tb IIIC T85°C Db IP68

- CIMFR CERTIFICATE NO. : IN/CIMFR/TR22/P/3297 Dt. : 04/02/2022
- PESO CERTIFICATE NO. : P544946/1 Dt. : 26/08/2022
- EMI & EMC Compliance : EN-50270 EN 61000-6-4

Approval & Compliance for Sensor Holder SenSmart

Model No. SM-FLP-IIC Safe Certified to

Ex db IIC T6 Gb Ex tb IIIC T85°C Db IP-66

- CIMFR CERTIFICATE NO. : IN/CIMFR/TR21/P/2085 Dt. : 06/10/2021
- PESO CERTIFICATE NO. : P538850/5 Dt. : 16/06/2022

• UL22 ATEX 2610X Rev.0 ATEX

Ex II 2G Ex db IIC T6 Gb
(-20°C ≤ Ta ≤ +60°C)

MUST FOR HUMAN & INDUSTRIAL SAFETY

TECHNICAL SPECIFICATIONS

Applications

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

General

- Sensor Technology** : Electrochemical/Catalytic / Pellistor / NDIR / PID / Solid State
- 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 L.C.D. 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

Performance

- Response time** : Less than 15 seconds (Depending on type of gas)

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.

Environmental :

- Operating Temperature** : -15 to +55°C
- Storage** : -10 to 60°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) mA Loop Open setting can be Enabled or disabled
- 5) Upscale current: 21mA/ 22mA Selectable
- 6) Downscale current 1mA / 3.7mA Selectable
- 7) 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

Output Signal

- Standard Current / Voltage** : 4-20mA 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 Fail Safe and Two for Alarm indication) of rating No: 10a 250VAC / 5A 30VDC & NC: 3A 125VAC / 3A 30VDC
- Display** : 8 x 2 Alphanumeric L.C.D. with configurable backlit 8 LEDs to indicate status of instrument.
- Optional communication** : Isolated RS-485 Communication port with MODBUS RTU protocol

Common Deliverable

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

Flameproof Housing

- Protection Class** : IP66 / IP68
- Cabinet Material** : Cast Aluminium alloy, LM-6 or SS-316 (optional)
- Approval** : CIMFR approved for IIA, IIB group, IIC
- | Certificate Agency | Certificate No. | Certificate Dt. |
|--------------------|---------------------|-----------------|
| CIMFR | IN/CIMFR/TR21/S/977 | 06/07/2021 |
| PESO | P538850/6 | 16/06/2022 |
- Cable Entry** : Double Compression Cable Gland - Model No. : CG/FLP/2C M20 x 1.5(P) & 25 x 1.5P
- | Certificate Agency | Certificate No. | Certificate Dt. |
|--------------------|----------------------|-----------------|
| CIMFR | IN/CIMFR/TR21/R/2147 | 12/10/2021 |
| PESO | P538850/7 | 16/06/2022 |
- Stopping Plug** : Model No.: SP/FLP/2C
- | Certificate Agency | Certificate No. | Certificate Dt. |
|--------------------|----------------------|-----------------|
| CIMFR | IN CIMFR/TR21/R/1143 | 23/07/2021 |
| PESO | P538850/3 | 16/06/2022 |
- 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 125 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	00.1
NT1	Nitrogen (N ₂)	0 TO 100	%V/V	00.1
TOXIC GASES				
T1	Ammonia (NH ₃)	100	PPM	1
T2	Ammonia (NH ₃)	1000	PPM	1
T3	Bromine (Br ₂)	20	PPM	00.1
T4	Carbon Monoxide (CO)	1000	PPM	1
T5	Carbon Monoxide (CO)	2000	PPM	1
T6	Chlorine (Cl ₂)	10	PPM	0.1
T7	Ethylene Oxide (ETO)	100	PPM	1
T8	Hydrogen (H ₂)	2000	PPM	1
T9	Hydrogen Bromide (HBr)	20	PPM	1
T10	Hydrogen Chloride (HCL)	20	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)	5	PPM	0.01
T16	Phosphine (PH ₃)	10	PPM	0.1
T17	Nitrogen Dioxide (NO ₂)	20	PPM	0.1
T18	Nitric Oxide (NO)	250	PPM	1
T19	Sulfur Dioxide (SO ₂)	50	PPM	0.1
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	0.01
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

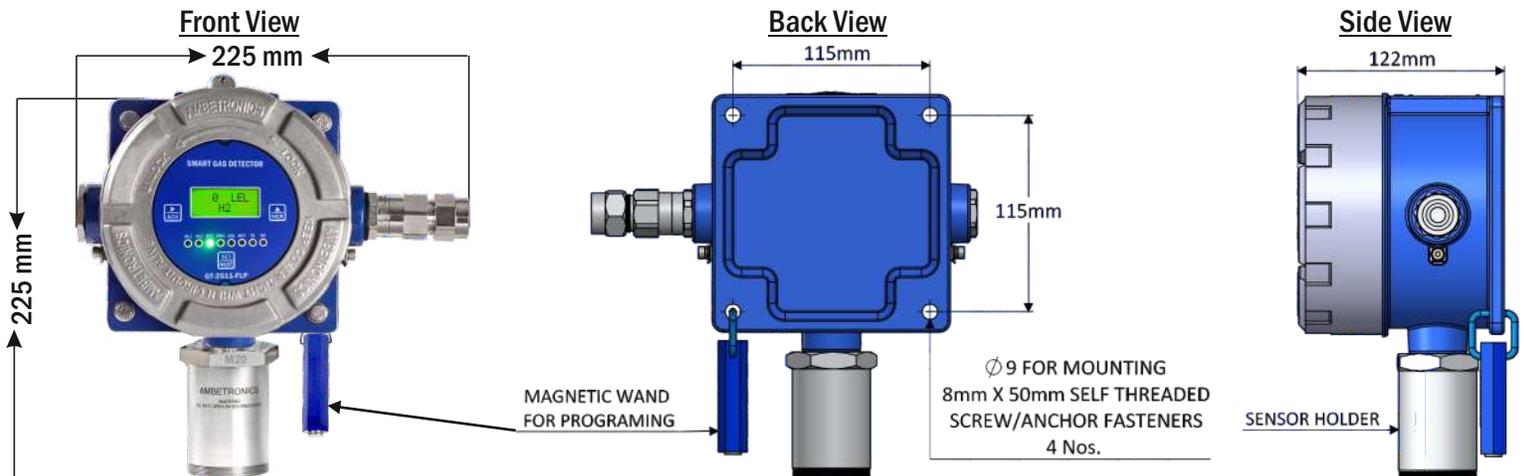
COMBUSTIBLE GASES				
SR.NO	GASES	RANGE	UNIT	RES
C1	Acetone (CH ₃) ₂ CO	100	%LEL	1
C2	Acetylene (C ₂ H ₂)	100	%LEL	1
C3	Ammonia (NH ₃)	100	%LEL	1
C4	Butane/ n-Butane (C ₄ H ₁₀)	100	%LEL	1
C5	Carbon Monoxide (CO)	100	%LEL	1
C6	Ethanol (C ₂ H ₅ OH)	100	%LEL	1
C7	Ethyl Acetate (C ₄ H ₈ O ₂)	100	%LEL	1
C8	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 ₁₂)	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

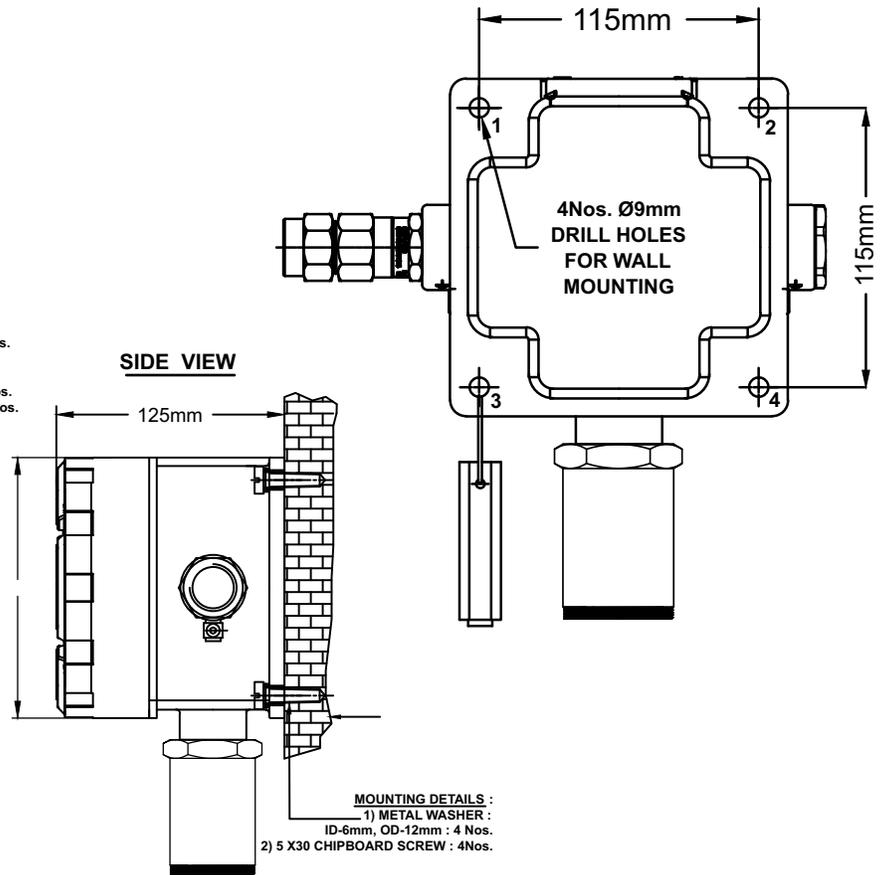
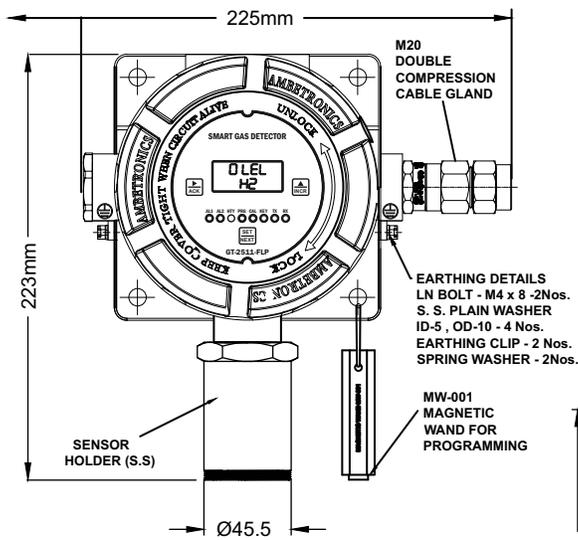
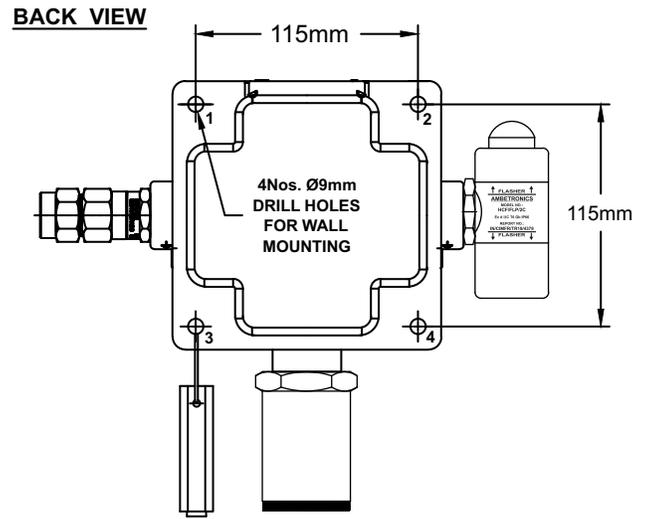
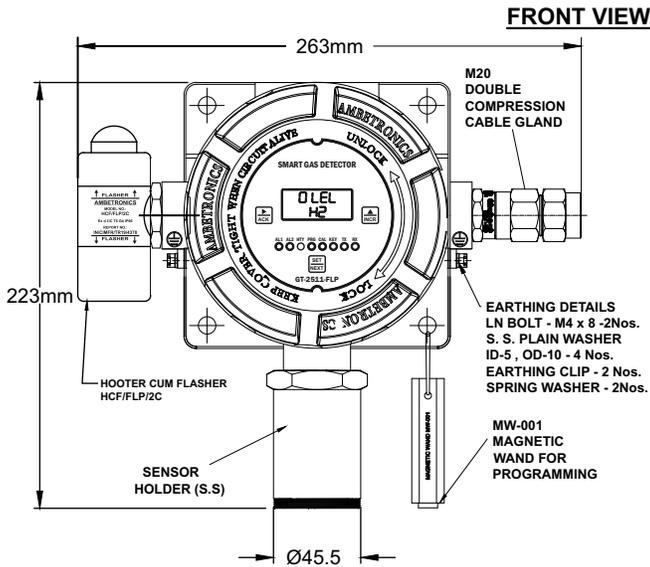
SEMICONDUCTOR SENSOR TECHNOLOGY			
GASES	RANGE	UNIT	RES.
R-22 / R-134	10 - 300	PPM	1
	5000 -10,000	PPM	1

- 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

FLAMEPROOF ENCLOSURE DIMENSION & MOUNTING DETAILS WITHOUT HOOTER CUM FLASHER



FLAMEPROOF ENCLOSURE DIMENSION & MOUNTING DETAILS WITH & WITHOUT HOOTER CUM FLASHER



ORDERING INFORMATION

GT	A	B	C	D	E	F	G	H							
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) Hooter cum Flasher	1) No 2) Yes	G) Communication Port	1) None 2) RS-485 serial port	H) Sensor Housing	1) Stainless Steel (SS316)

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

Manufactured by :



AMBETRONICS ENGINEERS PVT. LTD.
 17-B, 16, 14A, Tarun Industrial Estate, New Nagardas Road, Mogra Pada, Andheri (E.) Mumbai - 400 069, India.

+91-22-69623389 +91-93207 37646 sales8@ambetronics.com
 +91-22-61673021/22 +91-91674 18106 sales11@ambetronics.com



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