

# GT-5022-FLP

## Smart Gas Detector - Dual Channel



**AMBETRONICS**  
AN ISO 9001:2015 CERTIFIED COMPANY



**ORDER CODE : GT-5022-FLP-0-0**

### 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
- Control Atmosphere
- Automotive Industries / Paint Shops

### Features

- Dual Gas concentration indication at time
- Two no Gas sensor module connection
- 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.
- 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 front keys.
- Password protected programming with Password Changing Facility.
- Alarm Acknowledgement Facility from front as well as rear 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 by PESO :

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

T5 (-20° ≤ Ta ≤ +70°C)

Ex tb IIIC T85°C (-20° C ≤ Ta ≤ +60°C) Db

IP66/ IP68 (1.25 meter, 2 hours)

• Standard compliance :

1) IS/IEC 60079-0: 2017 2) IS/IEC 60079-1: 2014

3) IS/IEC 60079-31: 2013 4) IS/IEC 60529: 2001

Approval & Compliance for Flameproof Enclosure :

Ex db IIC T6 Gb IP 66

• CIMFR CERTIFICATE NO. : IN/CIMFR/TR23/P/136 Dt. : 19/04/2023

• PESO CERTIFICATE NO. : P566724/1 Dt. : 13/07/2023

**MUST FOR HUMAN & 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	: Graphic LCD with settable 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	: By Using Magnetic Wand.

## 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/ F.S	
4	PID	0 to 4000 PPM	± 10 % of Applied Gas/ F.S
		0 to 1000 PPM	± 5 % of Applied Gas/ F.S
		0 to 40 PPM	± 3 % of Applied Gas/ F.S

## Performance :

Response time : Less than 15 seconds

## Electrical :

Supply Voltage	: 18 to 36 VDC, Typically 24VDC
Power Consumption	: Less than 3.6 Watts
Cable	: 1) 3 Core, 1mm <sup>2</sup> , Shielded Armoured Cable for 24 VDC Input & 4-20mA Output 2) 2 Core, 1mm <sup>2</sup> , Shielded Armoured Cable for RS-485 Output 3) 4 Core, 1mm <sup>2</sup> , Shielded Armoured Cable for Relay Output

## Output Signal :

Standard Current/	: 4-20mA/ 0-10V/0-5V/0-1V Output with configurable range Voltage 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

## Error Monitoring :

- During Sensor Break / Open, the Display shows 'SENSOR OPEN' & Output Current/voltage will be as per Upscale/ Downscale
- During Over range, the Display shows 'OVER RANGE' & Output Current will be as per Upscale/ Downscale
- During output current open condition the display indicates "mA LOOP OPEN" & the message disappears after Acknowledgment
- mA Loop Open setting can be Enabled or disabled
- Upscale current: 21mA/ 22mA Selectable
- Downscale current 1mA / 3.7mA Selectable
- Upscale voltage for 0-10V: 10V

- Upscale voltage for 0-5V: 5V
- Upscale voltage for 0-1V: 1V
- Downscale voltage for 0-10V/0-5V/0-1V: 0V
- 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
- Inhibit mode for 0-10V voltage output is adjustable & user selective  
Oxygen for 25% 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
- 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
- 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/791mV  
Toxic / combustible / PID / NDIR : 0mV

## Environmental :

Operating Temperature	: -15 to +50°C
Storage	: -10 to 60°C
Humidity	: Less than 95% Non-Condensing.

## Accessories (Optional) :

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

## Common Deliverable

- Test Calibration Certificate
- Reference Calibration Gas Certificate
- 'Operational / Instrument' User Manual
- Standard Mounting Hardware

## Flameproof Housing

Protection Class	: IP-68
Cabinet Material	: Cast Aluminium alloy, LM-6
Approval	: CIMFR approved for IIA, IIB group, IIC

Certificate Agency	Certificate No.	Certificate Dt.
CIMFR	IN/CIMFR/TR23/P/136	19/04/2023
PESO	P566724/1	13/07/2023

Cable Entry : Double Compression Cable Gland EX-proof M20 X 1.5mm (P)

Certificate Agency	Certificate No.	Certificate Dt.
CIMFR	IN/CIMFR/TR21/R/2147	12/10/2021
PESO	P538850/7	16/06/2022

Stopping Plug : (M20 x 1.5P & M25 x 1.5P)

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

### With Hooter Cum Flasher

Dimension	: 300 mm (H) with sensor holder x 270 mm (W) x 121 mm (D)
Weight	: Approx. 1.6 kg

### Without Hooter Cum Flasher

Dimension	: 300 mm (H) with sensor holder x 229 mm (W) x 121 mm (D)
Weight	: Approx. 1.6 kg

# GAS WITH RANGE & RESOLUTION

ELECTROCHEMICAL SENSOR TECHNOLOGY					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Oxygen (O <sub>2</sub> )	25	%V/V	0.01	SSM-FLP-02-EC-08-03
2	Oxygen (O <sub>2</sub> )	100	%V/V	0.01	SSM-FLP-02-EC-14-03
3	Nitrogen (N <sub>2</sub> )	100	%V/V	0.01	SSM-FLP-N2-EC-14-03
TOXIC GASES					
1	Ammonia (NH <sub>3</sub> )	100	PPM	1	SSM-FLP-NH3-EC-14-01
2	Ammonia (NH <sub>3</sub> )	1000	PPM	1	SSM-FLP-NH3-EC-24-01
3	Bromine (Br <sub>2</sub> )	10	PPM	0.1	SSM-FLP-BR2-EC-05-01
4	Carbon Monoxide (CO)	1000	PPM	1	SSM-FLP-CO-EC-24-01
5	Carbon Monoxide (CO)	2000	PPM	1	SSM-FLP-CO-EC-28-01
6	Chlorine (CL <sub>2</sub> )	10	PPM	0.1	SSM-FLP-CL2-EC-05-01
7	Ethylene Oxide (ETO)	100	PPM	1	SSM-FLP-ETO-EC-14-01
8	Hydrogen (H <sub>2</sub> )	2000	PPM	1	SSM-FLP-H2-EC-26-01
9	Hydrogen Bromide (HBr)	100	PPM	1	SSM-FLP-HBR-EC-14-01
10	Hydrogen Chloride (HCL)	100	PPM	1	SSM-FLP-HCL-EC-14-01
11	Hydrogen Cyanide (HCN)	100	PPM	1	SSM-FLP-HCN-EC-14-01

TOXIC GASES					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
12	Hydrogen Fluoride (HF)	10	PPM	0.1	SSM-FLP-HF-EC-05-01
13	Hydrogen Fluoride (HF)	100	PPM	1	SSM-FLP-HF-EC-14-01
14	Hydrogen Sulfide (H <sub>2</sub> S)	100	PPM	1	SSM-FLP-H2S-EC-14-01
15	Ozone (O <sub>3</sub> )	20	PPM	0.1	SSM-FLP-03-EC-06-01
16	Phosphine (PH <sub>3</sub> )	10	PPM	0.1	SSM-FLP-PH3-EC-05-01
17	Nitrogen Dioxide (NO <sub>2</sub> )	20	PPM	0.1	SSM-FLP-NO2-EC-06-01
18	Nitric Oxide (NO <sub>2</sub> )	250	PPM	1	SSM-FLP-NO-EC-17-01
19	Sulfur Dioxide (SO <sub>2</sub> )	50	PPM	0.1	SSM-FLP-SO2-EC-11-01
20	Sulfur Dioxide (SO <sub>2</sub> )	2000	PPM	1	SSM-FLP-SO2-EC-26-01
CATALYTIC/ PELLISTOR SENSOR TECHNOLOGY					
COMBUSTIBLE GASES					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
1	Acetone (CH <sub>3</sub> ) <sub>2</sub> CO	100	%LEL	1	SSM-FLP-ACETONE-CT-14-02
2	Acetylene (C <sub>2</sub> H <sub>2</sub> )	100	%LEL	1	SSM-FLP-ACETYLENE-CT-14-02
3	Ammonia (NH <sub>3</sub> )	100	%LEL	1	SSM-FLP-NH3-CT-14-02

## LIST OF GASES WITH RANGE AND RESOLUTION

CATALYTIC/ PELLISTOR SENSOR TECHNOLOGY					
COMBUSTIBLE GASES					
SR.NO	GASES	RANGE	UNIT	RES	ORDER CODE
4	Butane/n-Butane (C <sub>4</sub> H <sub>10</sub> )	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 <sub>2</sub> H <sub>5</sub> OH)	100	%LEL	1	SSM-FLP-ETHANOL-CT-14-02
7	Ethyl Acetate (C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> )	100	%LEL	1	SSM-FLP-ETHYL ACETATE-CT-14-02
8	Ethylene (C <sub>2</sub> H <sub>4</sub> )	100	%LEL	1	SSM-FLP-ETHYLENE-CT-14-02
9	Hexane/n-Hexane (C <sub>6</sub> H <sub>14</sub> )	100	%LEL	1	SSM-FLP-HEXANE-CT-14-02
10	Hydrogen (H <sub>2</sub> )	100	%LEL	1	SSM-FLP-H2-CT-14-02
11	Isopropanol (CH <sub>3</sub> COCH <sub>2</sub> OH)	100	%LEL	1	SSM-FLP-IPA-CT-14-02
12	Methane (CH <sub>4</sub> )/HC	100	%LEL	1	SSM-FLP-METHANE-CT-14-02
13	Methyl Ethyl Ketone (C <sub>4</sub> H <sub>8</sub> O)	100	%LEL	1	SSM-FLP-METHYL ETHYL KETONE-CT-14-02
14	Methanol (CH <sub>3</sub> OH)	100	%LEL	1	SSM-FLP-METHANOL-CT-14-02
15	N-Heptane (C <sub>7</sub> H <sub>16</sub> )	100	%LEL	1	SSM-FLP-N-HEPTANE-CT-14-02
16	N-Pentane (C <sub>5</sub> H <sub>12</sub> )	100	%LEL	1	SSM-FLP-N-PENTANE-CT-14-02
17	Pentane/n-Pentane (C <sub>5</sub> H <sub>12</sub> )	100	%LEL	1	SSM-FLP-PENTANE-CT-14-02
18	Propane/n-Propane / LPG (C <sub>3</sub> H <sub>8</sub> )	100	%LEL	1	SSM-FLP-PROPANE-CT-14-02
19	Toluene (C <sub>7</sub> H <sub>8</sub> )	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

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

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

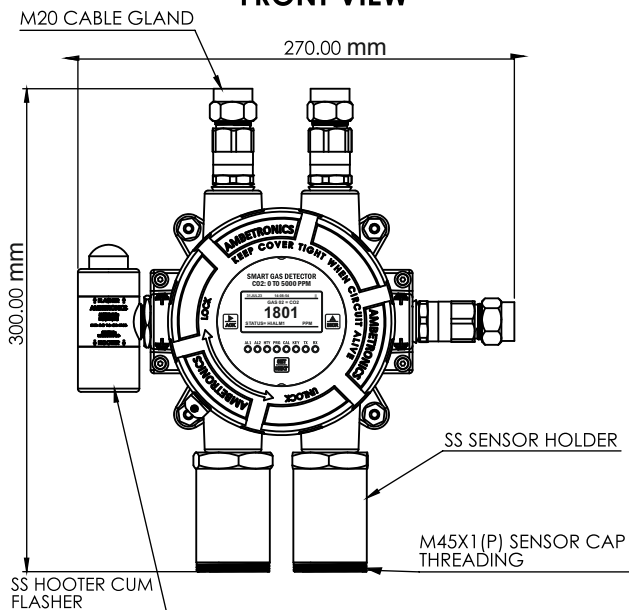
### NOTE:

- 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

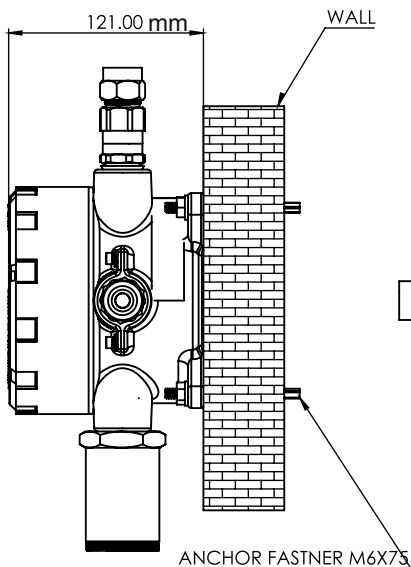
## DIMENSION & MOUNTING DETAILS

### With Hooter Cum Flasher

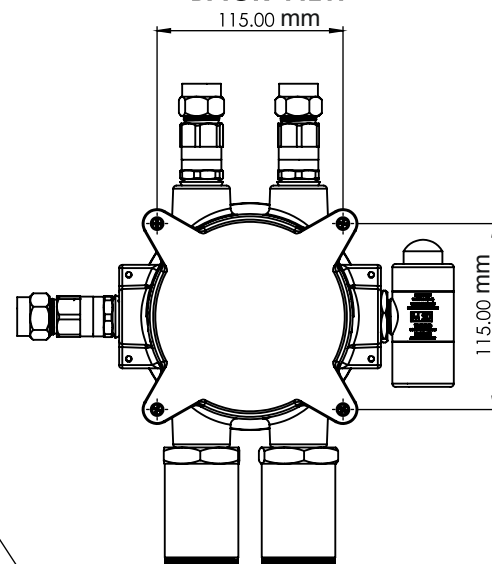
#### FRONT VIEW



#### RHS VIEW



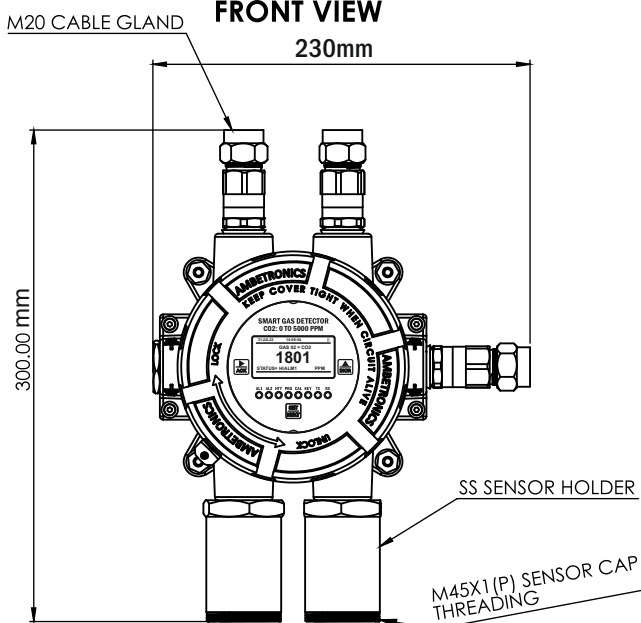
#### BACK VIEW



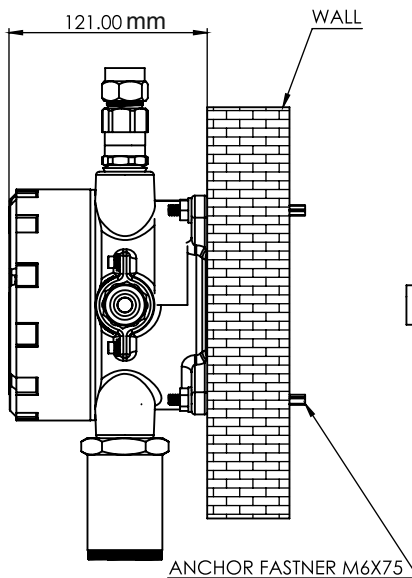
## DIMENSION & MOUNTING DETAILS

### Without Hooter Cum Flasher

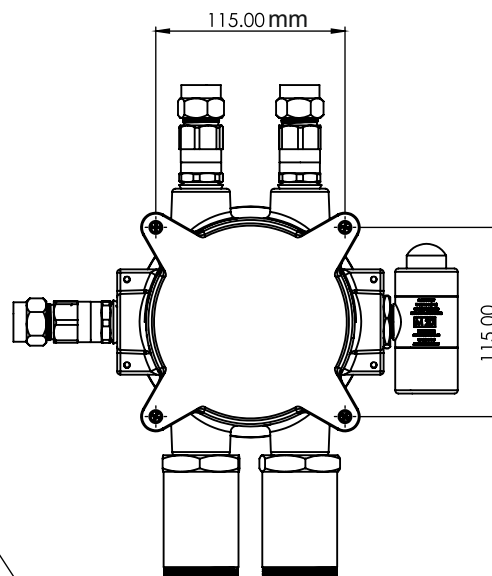
#### FRONT VIEW



#### RHS VIEW

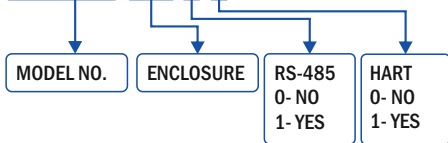


#### BACK VIEW

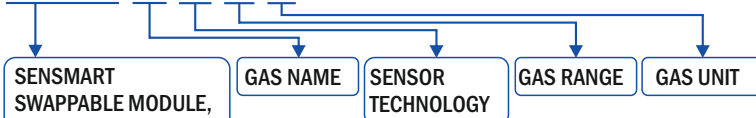


## ORDERING INFORMATION

### 1) GT-5022-FLP-0-0



### 2) SSM-FLP-02-EC-08-03



(E.g. Flameproof SenseSmart Swappable Module; Gas Name: OXYGEN (O2); Sensor operating Principle/ Technology: Electrochemical (EC) Gas Range & Unit: 25.00 %V/V)

\*Before placing order please refer the above ordering information or contact below address for assistance

Manufactured by :



**AMBETRONICS ENGINEERS PVT. LTD.**

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