1. EU-TYPE EXAMINATION CERTIFICATE

2. **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

3. **EU-Type Examination Certificate No:** **FM21ATEX0070X**

4. **Equipment or protective system: (Type Reference and Name)** **S5000 Gas Monitor Gas Detection System**

5. **Name of Applicant:** **General Monitors Inc**

6. **Address of Applicant** **an MSA Company, 16782 Von Karman Ave., Unit 14, Irvine, California 92606, United States of America**

7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8. FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

   The examination and test results are recorded in confidential report number:

   PR460784 dated 22nd July 2022

9. Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

   EN 50104:2019, EN 50271:2018, EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-29-1:2016+A1:2022+A11:2022, EN 60079-31:2014, EN 60529:1991+A1:2000+A2:2013

10. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11. This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

Certificate issued by:

FM Approvals Richard Zammitt Dublin, Ireland 2024.3.0

Certification Manager, FM Approvals Europe Ltd. Date 26 November 2024

FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmapprovals.com www.fmapprovals.com

12. The marking of the equipment or protective system shall include:

See Annex

13. **Description of Equipment or Protective System:**

See Annex

14. **Specific Conditions of Use:**

See Annex

15. **Essential Health and Safety Requirements:**

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16. **Test and Assessment Procedure and Conditions:**

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

17. **Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
24 July 2022	Original Issue.
18 August 2022	Supplement 1: Report Reference: PR462892 dated 17th August 2022. Description of the Change: Replaced microprocessor, as well as minor hardware changes and a firmware update. Updated specific conditions of use. Minor corrections to certificate format.
26 November 2024	Supplement 2: Report Reference: PR467006 dated 19 November 2024. Description of the Change(s): The equipment received hardware and firmware

Date	Description
	updates resulting in additional performance and explosive atmosphere testing verification. The list of standards is updated to the latest edition as permitted in the Official Journal. The structure of the certificate is updated to list details in a table format. The leading paragraphs remain to detail information not in the specifications table. The equipment listings are moved into separate sections for the transmitter, the junction boxes, and the approved sensors. The listing for the transmitter shows a newly created table of Approved Sensors, detailing all FM Approved transmitter and sensor combinations. This includes FM Approved sensors maintained under separate approvals. This table indicates if performance testing has been performed. In cases where performance testing has not been performed, the transmitter/sensor combination still maintains the explosive atmosphere rating. The IR700 sensors and IR sensors with model codes R13 and R14 have been removed. The model code option for Aluminum housing for the transmitter has been removed. The humidity range for the Combustible Digital Sensors is increased to 95%RH, non-condensing. The term "FRIT" is replaced with "sintered flame arrestor". The certificate is updated to correct the flameproof rating of the S5000 Gas Monitor and S5000 Junction Box with cemented window for Group IIC when connected with passive sensors. The previous versions restricted the rating to group IIB + H2, which only applies to the flanged, non-cemented version.

ANNEX

S5000 Gas Monitor (With Cemented Window Joint)

Markings:

II 2GD
Ex db IIC T5 Gb
Ex tb IIIC T85°C Db
-55°C ≤ Ta ≤ +75°C
EN 60079-29-1
EN 50104
IP66

WHEN USING PASSIVE SINTERED SENSORS
Ex db IIC T4 Gb
-40°C ≤ Ta ≤ +70°C
EN 60079-29-1

Description of Equipment:

The S5000 Gas Monitor fixed gas detection system consists of an S5000 Transmitter and an optional S5000 Junction Box or ULTIMA JB5000 Junction Box (see certificate FM21ATEX0071X for details), fitted with up to two factory-configured combustible, toxic or oxygen gas sensors. The S5000 Gas Monitor supports two Digital Sensors, one ULTIMA XIR Plus sensor and one Digital Sensor simultaneously, or one IR400 point IR detector and one Digital Sensor simultaneously. The device only supports one passive sintered sensor, either a combustible catalytic bead sensor for combustible gases or a metal oxide semiconductor (MOS) sensor for H2S. The sensors may be connected integral to the transmitter or remote via the S5000 or ULTIMA JB5000 Junction Box. Refer to the Sensor Table below for the list of permitted sensors. Further details of the sensors can be found in the associated certificate (if applicable), under the specified product listing.

The S5000 Gas Monitor enclosure consists of a single 316 stainless steel compartment enclosure and is provided with ¾" NPT threaded entries and a certified adapter is supplied for M25 entries which can be fitted with the sensors described below or suitably certified cable entry devices or blanking plugs.

Model Code Options:

S5000-a-b-c-d-e-fff-ggg-h, S5000 Gas Monitor (With Cemented Window Joint)
a is for Enclosure Material:
3 = Stainless Steel – IIC (with cemented window joint)
b is for Outputs:
0 = Bluetooth/ Modbus/ HART 1.25 mA
1 = Bluetooth/ Modbus/ HART 3.5 mA
2 = Bluetooth/ Modbus/ HART 1.25 mA/ RELAYS
3 = Bluetooth/ Modbus/ HART 3.5 mA/ RELAYS
4 = No Bluetooth/ Modbus/ HART 1.25 mA
5 = No Bluetooth/ Modbus/ HART 3.5 mA
6 = No Bluetooth/ Modbus/ HART 1.25 mA/ RELAYS

7 = No Bluetooth/ Modbus/ HART 3.5 mA/ RELAYS

c is for Relay State:

0 = No Relays
1 = Latch Alarm / Non-Latch Warn De-Energized
2 = Latch Alarm / Non-Latch Warn Energized
3 = Latch Alarm / Latch Warn De-Energized
4 = Latch Alarm / Latch Warn Energized
5 = Non-Latch Alarm / Non-Latch Warn De-Energized
6 = Non-Latch Alarm / Non-Latch Warn Energized
7 = Non-Latch Alarm / Latch Warn De-Energized
8 = Non-Latch Alarm / Latch Warn Energized

d is for Agency Approval:

1 = ATEX/IECEx/UKEX

e is for Custom Features:

00 = None (standard)
01 = Stainless Steel Tag
02 = HART Off (Factory Setting, customer can enable later)
03 = Stainless Steel Tag / Hart Off (Factory Setting, customer can enable later)
04 = UI Assy –1 with Bluetooth Disabled
05 = Stainless Steel Tag / UI Assy –1 with Bluetooth Disabled
06 = BCM Modbus (Isolated)
07 = SS Tag/BCM Modbus (Isolated)

fff is for Sensor 1 selection: See Approved Sensors table below

Cxx = Passive Sintered Sensor (Combustible)
Dxx = Digital Sensor
Mxx = Passive Sintered Sensor (Toxic)
Rxx = IR Series Combustible Sensor
xx = Ultima XIR Plus Sensor

ggg is for Sensor 2 selection: See Approved Sensors table below

000 = No Sensor or Sensor Body
Dxx = Digital Sensor

h is for Paint Options:

0 = no paint
1 = Gray
2 = Blue
3 = Yellow
4 = White

Specifications:

Sensor Type:	See Sensor Table for sensor type
Gases:	See Sensor Table for approved gases
Range:	See Sensor Table for ranges
Installation:	Fixed
Sampling Type:	See Sensor Table for sampling type
Accuracy:	See Sensor Table for sensor accuracy

Response Time:	See Sensor Table for response time
Supply Parameters:	12-30 Vdc, 13.7W maximum
Operating Temperature:	-55°C to +75°C -40°C to +70°C (when installed with passive sintered sensors as identified in the Sensor Table)
Storage Temperature:	-50°C to +85°C
Relative Humidity:	5 to 95% RH non-condensing
Measurement Signal:	Two 4-20mA, LED Display
Alarms:	LED Display, Relay (5A 30Vdc / 250Vac)
Ingress Protection:	IP66
Firmware:	NXP Microprocessor: 2.00.0065 ST Microprocessor: 4.01.0011

Sensor Table - Sensors permitted for use with the S5000 Gas Monitor:

Product / Listing Title	Model Code	Gas / Description	Range	Certificate Number
Ultima XIR Plus Combustible Gas Sensors	See Sensor Table in the associated product listing of the referenced certificate			FM21ATEX0071X
Digital Sensors	See Sensor Table in the associated product listing of the referenced certificate			FM21ATEX0070X
IR400	R00	No Sensor	N/A	N/A
IR400-1065	R43	Methane - CH_4	0-100% LFL	N/A
IR400-1067	R44	Propane - C_3H_8	0-100% LFL	N/A
IR400-2593	R45*	Hexane - C_6H_{14}	0-100% LFL	N/A
IR400-2611	R46*	Pentane - C_5H_{12}	0-100% LFL	N/A
IR400-1069	R47*	Butane - C_4H_{10}	0-100% LFL	N/A
IR400-1108	R48*	Ethane - C_2H_6	0-100% LFL	N/A
IR400-1533	R50*	Ethylene - C_2H_4	0-100% LFL	N/A
Passive Sintered Sensors				
Universal Gas HC Sensor (Combustible)	C00	No Sensor	N/A	N/A
11159-1L	C07	General Purpose	0-100% LFL	N/A

SCHEDULE

EU-Type Examination Certificate No. FM21ATEX0070X

Product / Listing Title	Model Code	Gas / Description	Range	Certificate Number
11159-2L	C08	General Purpose, High Temperature	0-100% LFL	N/A
11159-8L	C09	General Purpose	0-20% LFL	N/A
11159-8	C10	General Purpose	0-20% LFL	N/A
11159-1	C11	General Purpose	0-100% LFL	N/A
11159-2	C12	General Purpose, High Temperature	0-100% LFL	N/A
Universal Gas H_2S Sensor (Toxic)	M00*	No Sensor	N/A	N/A
51457-1L	M11*	Hydrogen Sulfide - H_2S	0-100 ppm	N/A
51457-5L	M12*	Hydrogen Sulfide - H_2S	0-50 ppm	N/A
51457-9L	M13*	Hydrogen Sulfide - H_2S	0-20 ppm	N/A
51457-1	M14*	Hydrogen Sulfide - H_2S	0-100 ppm	N/A
51457-5	M15*	Hydrogen Sulfide - H_2S	0-50 ppm	N/A
51457-9	M16*	Hydrogen Sulfide - H_2S	0-20 ppm	N/A

*Denotes sensors that do not have performance certification to EN 60079-29-1 or EN 50104. See Specific Condition of Use number 1 for additional information.

Accessories - The following accessories are included in the Approval:

CALKIT1	Calibration Kit for Digital Gas Sensors & ULTIMA XIR Plus Sensors
1400270	Calibration Kit for IR400 Point IR Detector

Specific Conditions of Use:

1. For any sensors not specifically identified as having performance testing, the sensors shall require additional evaluation if used within a safety related system.
2. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall only be cleaned with a damp cloth.
3. This fixed equipment apparatus is exclusively designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of all sensors. The equipment is subject to the installation and orientation requirements defined in the product manual.
4. The flameproof joints shall not be repaired.

5. It is recommended to end users to seek guidance provided in EN 60079-29-2 for installation, use and maintenance of gas detectors for flammable gases and other applicable gases.
6. Guidance for functional safety of fixed gas detection systems are set out in EN 60079-29-3 which has not been covered in the scope of this assessment.

Conditions relating to EN 50271

1. The user shall comply with the requirements given in the manufacturer's user documentation in regards to all relevant functional safety aspects such as application of use, installation out of hazardous areas, operation, maintenance, proof tests, maximum ratings, environmental conditions, and repair.
2. Selection of this equipment for use in safety functions, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
3. The safety related device must be functioning and powered independently of any control devices required for operation.
4. The proof test interval for the S5000 safety function is 3 months.
5. Further assessment shall be required when the safety device is combined with specific Equipment under Control and before the safety device is used to control risks of explosion.

S5000 Gas Monitor (With Non-Cemented, Flanged Window Joint)

Markings:

II 2GD
Ex db IIB+H2 T5 Gb
Ex tb IIIC T85°C Db
-55°C ≤ Ta ≤ +75°C
EN 60079-29-1
EN 50104
IP66

WHEN USING PASSIVE SINTERED SENSORS
Ex db IIB+H2 T4 Gb
-40°C ≤ Ta ≤ +70°C
EN 60079-29-1

Description of Equipment:

The S5000 Gas Monitor fixed gas detection system consists of an S5000 Transmitter and an optional S5000 Junction Box or ULTIMA JB5000 Junction Box (see certificate FM21ATEX0071X for details), fitted with up to two factory-configured combustible, toxic or oxygen gas sensors. The S5000 Gas Monitor supports two Digital Sensors, one ULTIMA XIR Plus sensor and one Digital Sensor simultaneously, or one IR400 point IR detector and one Digital Sensor simultaneously. The device only supports one passive sintered sensor, either a combustible catalytic bead sensor for combustible gases or a metal oxide semiconductor (MOS) sensor for H2S. The sensors may be connected integral to the transmitter or remote via the S5000 or ULTIMA JB5000 Junction Box. Refer to the Sensor Table below for the list of permitted sensors. Further details of the sensors can be found in the associated certificate (if applicable), under the specified product listing.

The S5000 Gas Monitor enclosure consists of a single 316 stainless steel compartment enclosure and is provided with ¾" NPT threaded entries and a certified adapter is supplied for M25 entries which can be fitted with the sensors described below or suitably certified cable entry devices or blanking plugs.

Model Code Options:

S5000-a-b-c-d-e-fff-ggg-h, Gas Monitor Model S5000 (With Non-Cemented, Flanged Window Joint)

a is for Enclosure Material:
- 2 = Stainless Steel – IIB+H2 (with non-cemented, flanged window joint)

b is for Outputs:
- 0 = Bluetooth/ Modbus/ HART 1.25 mA
- 1 = Bluetooth/ Modbus/ HART 3.5 mA
- 2 = Bluetooth/ Modbus/ HART 1.25 mA/ RELAYS
- 3 = Bluetooth/ Modbus/ HART 3.5 mA/ RELAYS
- 4 = No Bluetooth/ Modbus/ HART 1.25 mA
- 5 = No Bluetooth/ Modbus/ HART 3.5 mA
- 6 = No Bluetooth/ Modbus/ HART 1.25 mA/ RELAYS
- 7 = No Bluetooth/ Modbus/ HART 3.5 mA/ RELAYS

c is for Relay State:
- 0 = No Relays
- 1 = Latch Alarm / Non-Latch Warn De-Energized
- 2 = Latch Alarm / Non-Latch Warn Energized
- 3 = Latch Alarm / Latch Warn De-Energized
- 4 = Latch Alarm / Latch Warn Energized
- 5 = Non-Latch Alarm / Non-Latch Warn De-Energized
- 6 = Non-Latch Alarm / Non-Latch Warn Energized
- 7 = Non-Latch Alarm / Latch Warn De-Energized
- 8 = Non-Latch Alarm / Latch Warn Energized

d is for Agency Approval:
- 1 = ATEX/IECEx/UKEX

e is for Custom Features:
- 00 = None (standard)
- 01 = Stainless Steel Tag
- 02 = HART Off (Factory Setting, customer can enable later)
- 03 = Stainless Steel Tag / Hart Off (Factory Setting, customer can enable later)
- 04 = UI Assy –1 with Bluetooth Disabled
- 05 = Stainless Steel Tag / UI Assy –1 with Bluetooth Disabled
- 06 = BCM Modbus (Isolated)
- 07 = SS Tag/BCM Modbus (Isolated)

fff is for Sensor 1 selection: See Approved Sensors table below
- Cxx = Passive Sintered Sensor (Combustible)
- Dxx = Digital Sensor
- Mxx = Passive Sintered Sensor (Toxic)
- Rxx = IR Series Combustible Sensor
- xx = Ultima XIR Plus Sensor

ggg is for Sensor 2 selection: See Approved Sensors table below
- 000 = No Sensor or Sensor Body
- Dxx = Digital Sensor

h is for Paint Options:

0 = no paint
1 = Gray
2 = Blue
3 = Yellow
4 = White

Specifications:

Sensor Type:	See Sensor Table for sensor type
Gases:	See Sensor Table for approved gases
Range:	See Sensor Table for ranges
Installation:	Fixed
Sampling Type:	See Sensor Table for sampling type
Accuracy:	See Sensor Table for sensor accuracy
Response Time:	See Sensor Table for response time
Supply Parameters:	12-30 Vdc, 13.7W maximum
Operating Temperature:	-55°C to +75°C -40°C to +70°C (when installed with passive sintered sensors as identified in the Sensor Table)
Storage Temperature:	-50°C to +85°C
Relative Humidity:	5 to 95% RH non-condensing
Measurement Signal:	Two 4-20mA, LED Display
Alarms:	LED Display, Relay (5A 30Vdc / 250Vac)
Ingress Protection:	IP66
Firmware:	NXP Microprocessor: 2.00.0065 ST Microprocessor: 4.01.0011

Sensor Table - Sensors permitted for use with the S5000 Gas Monitor:

Product / Listing Title	**Model Code**	**Gas / Description**	**Range**	**Certificate Number**
Ultima XIR Plus Combustible Gas Sensors	See Sensor Table in the associated product listing of the referenced certificate			FM21ATEX0071X
Digital Sensors	See Sensor Table in the associated product listing of the referenced certificate			FM21ATEX0070X
IR400	R00	No Sensor	N/A	N/A
IR400-1065	R43	Methane - CH_4	0-100%	

Product / Listing Title	Model Code	Gas / Description	Range	Certificate Number
			LFL	N/A
IR400-1067	R44	Propane - C_3H_8	0-100% LFL	N/A
IR400-2593	R45*	Hexane - C_6H_{14}	0-100% LFL	N/A
IR400-2611	R46*	Pentane - C_5H_{12}	0-100% LFL	N/A
IR400-1069	R47*	Butane - C_4H_{10}	0-100% LFL	N/A
IR400-1108	R48*	Ethane - C_2H_6	0-100% LFL	N/A
IR400-1533	R50*	Ethylene - C_2H_4	0-100% LFL	N/A
Passive Sintered Sensors				
Universal Gas HC Sensor (Combustible)	C00	No Sensor	N/A	N/A
11159-1L	C07	General Purpose	0-100% LFL	N/A
11159-2L	C08	General Purpose, High Temperature	0-100% LFL	N/A
11159-8L	C09	General Purpose	0-20% LFL	N/A
11159-8	C10	General Purpose	0-20% LFL	N/A
11159-1	C11	General Purpose	0-100% LFL	N/A
11159-2	C12	General Purpose, High Temperature	0-100% LFL	N/A
Universal Gas H_2S Sensor (Toxic)	M00*	No Sensor	N/A	N/A
51457-1L	M11*	Hydrogen Sulfide - H_2S	0-100 ppm	N/A
51457-5L	M12*	Hydrogen Sulfide - H_2S	0-50 ppm	N/A
51457-9L	M13*	Hydrogen Sulfide - H_2S	0-20 ppm	N/A
51457-1	M14*	Hydrogen Sulfide - H_2S	0-100 ppm	N/A
51457-5	M15*	Hydrogen Sulfide - H_2S	0-50 ppm	N/A

Product / Listing Title	Model Code	Gas / Description	Range	Certificate Number
51457-9	M16*	Hydrogen Sulfide - H_2S	0-20 ppm	N/A

*Denotes sensors that do not have performance certification to EN 60079-29-1 or EN 50104. See Specific Condition of Use number 1 for additional information.

Accessories - The following accessories are included in the Approval:

CALKIT1	Calibration Kit for Digital Gas Sensors & ULTIMA XIR Plus Sensors
1400270	Calibration Kit for IR400 Point IR Detector

Specific Conditions of Use:

1. For any sensors not specifically identified as having performance testing, the sensors shall require additional evaluation if used within a safety related system.
2. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall only be cleaned with a damp cloth.
3. This fixed equipment apparatus is exclusively designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of all sensors. The equipment is subject to the installation and orientation requirements defined in the product manual.
4. The flameproof joints shall not be repaired.
5. It is recommended to end users to seek guidance provided in EN 60079-29-2 for installation, use and maintenance of gas detectors for flammable gases and other applicable gases.
6. Guidance for functional safety of fixed gas detection systems are set out in EN 60079-29-3 which has not been covered in the scope of this assessment.

Conditions relating to EN 50271

1. The user shall comply with the requirements given in the manufacturer's user documentation in regards to all relevant functional safety aspects such as application of use, installation out of hazardous areas, operation, maintenance, proof tests, maximum ratings, environmental conditions, and repair.
2. Selection of this equipment for use in safety functions, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
3. The safety related device must be functioning and powered independently of any control devices required for operation.
4. The proof test interval for the S5000 safety function is 3 months.
5. Further assessment shall be required when the safety device is combined with specific Equipment under Control and before the safety device is used to control risks of explosion.

S5000 Junction Boxes (With Cemented Window Joint)

Markings:

II 2GD
Ex db IIC T6 Gb
Ex tb IIIC T85°C Db
-55°C ≤ Ta ≤ +75°C
EN 60079-29-1
EN 50104
IP66

WHEN USING PASSIVE SINTERED SENSORS
Ex db IIC T4 Gb
-40°C ≤ Ta ≤ +70°C
EN 60079-29-1

Description of Equipment:

The S5000 Junction Boxes are the remote mounting units of the S5000 Gas Monitor fixed gas detection system. The S5000 enclosures are provided with either ¾" NPT or M25 threaded entries, and a certified adapter can be supplied for M25 entries which can be fitted with sensors approved for use with the S5000 Gas Monitor fixed gas detection system, suitably certified cable entry devices, or blanking plugs. The equipment enclosure has been separately tested against the requirements of EN 60529 and meets IP66.

Model Code Options:

S5000 Junction Boxes

Model Reference	Description
324240-3, 324240-7, 324240-11, 324240-15, 324240-19	S5000 Junction Box; Stainless Steel, (with cemented window joint)
324240-4, 324240-8, 324240-12, 324240-16, 324240-20	S5000 Junction Box; Aluminum, (with cemented window joint)

For the ULTIMA JB5000 Junction Box marking and listing, refer to MSA certificate FM21ATEX0071X.

Specific Conditions of Use:

1. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall only be cleaned with a damp cloth.
2. The flameproof joints shall not be repaired.

S5000 Junction Boxes (With Non-Cemented, Flanged Window Joint)

Markings:

II 2GD
Ex db IIB+H2 T6 Gb
Ex tb IIIC T85°C Db
-55°C ≤ Ta ≤ +75°C
EN 60079-29-1
EN 50104
IP66

WHEN USING PASSIVE SINTERED SENSOR
Ex db IIB+H2 T4 Gb
-40°C ≤ Ta ≤ +70°C
EN 60079-29-1

Description of Equipment:

The S5000 Junction Boxes are the remote mounting units of the S5000 Gas Monitor fixed gas detection system. The S5000 enclosures are provided with either ¾" NPT or M25 threaded entries, and a certified adapter can be supplied for M25 entries which can be fitted with sensors approved for use with the S5000 Gas Monitor fixed gas detection system, suitably certified cable entry devices, or blanking plugs. The equipment enclosure has been separately tested against the requirements of EN 60529 and meets IP66.

Model Code Options:

S5000 Junction Boxes

Model Reference	Description
324240-1, 324240-5, 324240-9, 324240-13, 324240-17	S5000 Junction Box; Stainless Steel, (with non-cemented, flanged window joint)
324240-2, 324240-6, 324240-10, 324240-14, 324240-18	S5000 Junction Box; Aluminum, (with non-cemented, flanged window joint)

For the ULTIMA JB5000 Junction Box marking and listing, refer to MSA certificate FM21ATEX0071X.

Specific Conditions of Use:

1. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall only be cleaned with a damp cloth.
2. The flameproof joints shall not be repaired.

Digital Sensors (With Sintered Flame Arrestor)

Markings:

II 2GD
Ex db IIC T5 Gb
Ex tb IIIC T85°C Db
-55°C ≤ Ta ≤ +60°C
EN 60079-29-1
EN 50104
IP65

Description of Equipment:

The S5000 Digital Sensor (with sintered flame arrestor) consists of a sensor body and a combustible gas, toxic gas, or oxygen sensing element. The sintered flame arrestor is located in the lower sensor element housing assembly, which has a fine thread pattern machined in to mate to the thread pattern of the upper sensor body assembly. The Digital Sensors are constructed of stainless steel and include a ¾" NPT thread for connection to the S5000 Transmitter. Remote connection requires the S5000 Junction Box or ULTIMA JB5000 Junction Box.

Model Code Options:

A-5K-SENS-aa-b-c-d-e, Digital Sensor (With Sintered Flame Arrestor)

a is for Gas Type:
See Sensor Table below
b is for material type:
0 = Stainless Steel
1 = Aluminum
c is for listed Approval:
A = IECEx/ATEX/UKEX
d is for Sensor Body Thread Type:
0 = No Sensor Body
1 = ¾ NPT
2 = M25
e is for Advanced Option:
0 = none

Sensor Table:

Model Code	Approved Gas	Range
00	No Sensor or Sensor Body (transmitter only)	N/A
01	No Sensor (Sensor Body with blank element and sintered flame arrestor)	N/A
15	Oxygen - O_2	0-25% O_2

Model Code	Approved Gas	Range
60	Methane - CH_4	0-100% LFL – 5.0% vol
61	Propane - C_3H_8	0-100% LFL – 2.1% vol
62	Heptane - C_7H_{16}	0-100% LFL – 1.05% vol
63	Nonane - C_9H_{20}	0-100% LFL – 0.8% vol
64	Hydrogen - H_2	0-100% LFL – 4.0% vol
65	Methane - CH_4	0-100% LFL – 4.4% vol
66	Propane - C_3H_8	0-100% LFL – 1.7% vol
67	Heptane - C_7H_{16}	0-100% LFL – 0.85% vol
68	Nonane - C_9H_{20}	0-100% LFL – 0.7% vol
XX	Any two digit letter representing: - Combustible Type gas sensor with sintered flame arrestor, not verified by FM Approvals for the specific flammable gas for performance to EN 60079-29-1, or - Oxygen sensor with sintered flame arrestor, not verified by FM Approvals for performance to EN 50104, or - Toxic Type gas sensor with sintered flame arrestor.	N/A

Specifications:

Sensor Type:	Combustible Sensors: Catalytic Bead O_2 Sensor: Electrochemical
Sampling Type:	Diffusion
Accuracy:	Combustible Sensors: ±5% F.S. O_2 Sensor: ±0.5% O_2
Response Time:	Combustible Sensors: t(90) ≤ 60 s O_2 Sensor: 5 seconds
Operating Temperature:	Combustible Sensors: -50°C to +60°C O_2 Sensor: -40°C to +60°C
Storage Temperature:	-40°C to +60°C
Relative Humidity:	Combustible Sensors: 10 to 95% RH, non-condensing O_2 Sensor: 10 to 95% RH, non-condensing
Firmware:	1.0.1

Specific Conditions of Use:

1. For any sensors not specifically identified as having performance testing, the sensors shall require additional evaluation if used within a safety related system.
2. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall only be cleaned with a damp cloth.
3. The flameproof joints shall not be repaired.
4. If the sensor is uninstalled, the equipment instruction manual shall be referenced prior to reinstalling.
5. The Digital Sensor is provided with a ¾" NPT thread and shall only be connected to a suitably certified enclosure. The installation to the certified enclosure shall be with five fully engaged threads, tightened wrench-tight.
6. The Digital Sensor shall be connected directly to a suitably certified junction box or instrument for the hazardous area of installation and thereby provide Ex protection for the flying lead connections.
7. For combustible gas detection performance applications, the appropriate Digital Sensor model number shall only be used to construct the S5000 Gas Monitor fixed gas detection system; mounted onto either the S5000 transmitter, S5000 Junction Box enclosure, or JB5000 Junction Box enclosure and receive power and control from the transmitter.
8. The Ingress Protection rating is exclusively based upon the installation instruction for orientation specified in the operating manual.
9. The Digital Sensor shall only be installed for external connection to suitably certified equipment (transmitters) providing transient protection set at a maximum transient overvoltage of 119 V (140% of 85 Vpeak).
10. The Digital Sensor shall only be fitted to enclosures having a maximum reference pressure of 34.4 bars or lower. It is recommended to end users to seek guidance provided in EN 60079-29-2 for installation, use and maintenance of gas detectors for flammable gases and other applicable gases.
11. Guidance for functional safety of fixed gas detection systems are set out in EN 60079-29-3 which has not been covered in the scope of this assessment.

Blueprint Report

General Monitors Inc (1000001865)

Class No **6340**

Original Project I.D. ***449900***

Certificate I.D. ***FM21ATEX0070X***

Drawing No.	Revision Level	Drawing Title	Last Report
10177819	1	Digital Sensor BOM	449900
10179953	0	Label	449900
10242470	1	S5000 Surface Mount Assembly, Dig & IR400/700	PR467006
10242471	1	S5000 Surface Mount Assembly, CB Sensor & AO1	PR467006
10242472	1	S5000 Surface Mount Assembly, MOS Sensor & AO1	PR467006
10242473	1	S5000 PCB Main Board, STM32U5	PR467006
10242474	1	S5000 PCB Assembly Main Board, Dig & IR400/700	PR467006
10242475	1	S5000 PCB Assembly Main Board, CB Sensor & AO1	PR467006
10242476	1	S5000 PCB Assembly Main Board, MOS Sensor & AO1	PR467006
324107-1	1	S5000 cover assembly BOM	449900
324114 BOM	5/7/19	S5000 Transmitter and Junction Box electronics assembly BOM	449900
324114	4	Assy, S5000, Board Stack	PR467006
324120	4	S5000 User Interface Board, Schematic	PR467006
324121	5	S5000 User Interface Board, Circuit Card Assembly	PR467006
324122	5	S5000 User Interface Board, BOM	PR467006
324125	2	S5000 User Interface Board, Circuit Card Detail	PR467006
324130	6	S5000 Control Board, Schematic	PR462892
324131-9	11	S5000 Control Board, BOM	PR462892
324131	6	S5000 Control Board, Circuit Card Assembly	PR462892
324133	6	S5000 Control Board, Circuit Card Detail	PR462892
324134	2	Artwork, Control Board	449900
324140	0	S5000 Relay Board, Schematic	449900
324141-1	1	S5000 Relay Board, BOM	449900
324141	0	S5000 Relay Board, Circuit Card Assembly	449900
324143	0	S5000 Relay Board, Circuit Card Detail	449900
324144	0	Artwork, Relay Board	449900
324150	5	Firmware, S5000, Control	PR462892
324200	1	S5000 Junction Box Board, Schematic	449900
324201-1	2	S5000 Junction Box Board, BOM	PR467006
324201	1	S5000 Junction Box Board, Circuit Card Assembly	449900
324230	3	Digital Sensor Life and Health Board, Schematic	PR462892
324231-1	3	Digital Sensor Life and Health Board, BOM	449900
324231	3	Digital Sensor Life and Health Board, Circuit Card Assembly	PR462892
324240-1	3	Junction Box Assembly BOM	PR462892
324240	2	Assy, S5000 Junction Box	PR467006
324249	1	Approval Drawing, S5000, Explosion-Proof	457663
486482	4	Cup, porous, 60 microns (sintered element)	449900
50360	H	Schematic Diagram, H2S Heater Control Board	449900
50448-1	K	Final Assy, H2S, Integral Temp Control, SST BOM	449900
50448	F	Final Assy, H2S, Integral Temp Control, SST	449900
7-7213-1	7	XCELL Sensor Assembly	PR467006
932-002	D	Conformal coating specification list	449900
945-071	0	Relay, 5V, 5A, Fujitsu FTR-F3CA005E	449900
MANS5000	9	General Monitors S5000 Operating Manual	PR467006
S5000	21	S5000 CODED CONFIG MATRIX	PR467006
SK3068-1126	2	Firmware, NGTP ASIC Sensor	449900
SK3068-1131	3	Firmware, NGTO, Lifehealth	PR467006
SK3068-1148	1	Firmware, NGTP Lifehealth with Diffusion Supervision	457663

SK3068-1209	1	S5000 Firmware, ST Microprocessor	PR467006
SK3073-1227	1	S5000 Wiring Schematics	PR467006
SK3098-1453	7/18/2019	5000 SERIES DIGITAL SENSOR, APPROVAL DRAWING, SUPPLEMENTA	457663
SK3098-1482	3	FM Markings Approval Drawing	PR460784