

# CERTIFICATE OF CONFORMITY

**FM** Approvals

## 1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. Certificate No:

FM20US0039X

3. Equipment:  
(Type Reference and Name)

S5000 Gas Monitor Gas Detection System

4. Name of Listing Company:

General Monitors Inc

5. Address of Listing Company:

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

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

PR449900 dated 1<sup>st</sup> June 2020

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3600:2022, FM 3611:2021, FM 3615:2022, FM 3616:2022, FM 3810:2021, FM 6310, 6320:2024,  
FM 6340:2022, ANSI/UL 60079-29-1:2019, ANSI/UL 50E:2015, NEMA 250:2014,  
ANSI/UL 60079-0:2020, ANSI/UL 60079-1:2015, ANSI/UL 60079-15:2017, ANSI/UL 60079-31:2015,  
ANSI/IEC 60529:2004, ANSI/UL 61010-1:2023, ANSI/UL 121201:2021, ANSI/UL 920001:2010,  
ANSI/UL 920401:2007

8. 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.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

See Annex

11. The marking of the equipment shall include:

See Annex

12. Description of Equipment:

Certificate issued by:



J.E. Marquedant  
VP, Manager - Electrical Systems

19 November 2024

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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FM Approvals LLC. One Technology Way, Norwood, MA 02062 USA

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See Annex

### **13. Specific Conditions of Use:**

See Annex

### **14. Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

### **15. Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

### **16. Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
1 June 2020	Original Issue.
4 January 2021	<u>Supplement 1:</u> Report Reference: PR457663 dated 4 <sup>th</sup> January 2021. Description of the Change: Documentation, hardware and software updates and an additional junction box option.
10th March 2021	<u>Supplement 2:</u> Report Reference: PR457663 Reissue 2 dated 10th March 2021. Description of the Change(s): Corrected model code listing and typos.
12 January 2022	<u>Supplement 3:</u> Report Reference: – RR229755 dated 12 <sup>th</sup> January 2022 . Description of the Change: Update to address on certificate.
22 July 2022	<u>Supplement 4:</u> Report Reference: PR460784 dated 22 <sup>nd</sup> July 2022. Description of the Change: Documentation, hardware and software updates and an additional junction box option.
17th August 2022	<u>Supplement 5:</u> Report Reference: PR462892 dated 17th August 2022. Description of the Change(s): Replaced microprocessor, as well as minor hardware changes and a firmware update. Updated format of certificate to add an annex.
19 November 2024	<u>Supplement 6:</u> Report Reference: PR467006 dated 19 November 2024. Description of the Change(s): Hardware and firmware updates. Additional performance and Nonincendive testing verification. Complete restructuring of

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## SCHEDULE

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Date	Description
	certificate format, including removal of incorrectly listed variable options, reduction of paragraphs in favor of table formats, and separating Digital Sensors to be listed in Combustible, Toxic, and Oxygen sub-sections. Humidity range for Combustible Digital Sensors increased to 95%RH.



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## **ANNEX**

### **S5000 Series Combustible, Toxic, & Oxygen Gas Monitor**

#### **Equipment Ratings:**

The S5000 Transmitter is Explosionproof for use in Class I, Division 1, Groups A, B, C, D, T5; Class II, Division 1, 2 Groups E, F, G, Class III, T5; Nonincendive for Class I, Division 2, Groups A, B, C, D, T4; Flameproof for use Class I, Zone 1, AEx db IIC T5 Gb (with cemented window joint) or Class I, Zone 1, AEx db IIB+H2 T5 Gb (with non-cemented, flanged window joint); Protection by Enclosure as Zone 21 AEx tb IIIC T85°C Db; Non-Sparking and Sealed Device as Class I, Zone 2, AEx nA nC IIC T4 Gc; Ta = -40°C to +75°C (with relays) or Ta = -50°C to +75°C (without relays), Hazardous (Classified) Locations, indoor and outdoor (Type 4X/IP66).

The S5000 Junction Box is Explosionproof for use in Class I, Division 1, Groups A, B, C, D, T6; Class II, Division 1, 2, Groups E, F, G, Class III, T6; Nonincendive for Class I, Division 2, Groups A, B, C, D, T6; Flameproof for use in Class I, Zone 1, AEx db IIC T6 Gb (with cemented window joint) or Class I, Zone 1, AEx db IIB+H2 T6 Gb (with non-cemented, flanged window joint); Protection by Enclosure as Zone 21 AEx tb IIIC T85°C Db; Non-Sparking as Class I, Zone 2, AEx nA IIC T6 Gc; Ta = -50°C to +75°C Hazardous (Classified) Locations, indoor and outdoor (Type 4X/IP66).

#### **Markings:**

##### S5000 Transmitter

CL I, Div 1 Group A, B, C, D; T5

CL I, Div 2 Group A, B, C, D; T4

CL II, Div 1, 2 Group E, F, G; CL III; T5

CL I, Zone 1, AEx db IIC T5 Gb (WITH CEMENTED WINDOW JOINT)

CL I, Zone 1, AEx db IIB+H2 T5 Gb (WITH NON-CEMENTED, FLANGED WINDOW JOINT)

CL I, Zone 2, AEx nA nC IIC T4 Gc

Zone 21, AEx tb IIIC T85°C Db

Ta = -40°C to +75°C (WITH RELAYS); Ta = -50°C to +75°C (WITHOUT RELAYS); Type 4X, IP66

FM 6340

ANSI/ISA 92.00.01

ANSI/ISA 92.04.01

60079-29-1

##### **WHEN USING PASSIVE COMBUSTIBLE SENSOR**

CL I, Div 1, Group B, C, D; T5

Ta = -40°C to +75°C

##### **WHEN USING PASSIVE MOS SENSOR**

CL I, Div 1, Group B, C, D; T5

Ta = -40°C to +60°C

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### S5000 Junction Box

CL I, Div 1 Group A, B, C, D; T6

CL I, Div 2 Group A, B, C, D; T6

CL II, Div 1, 2 Group E, F, G; CL III; T6

CL I, Zone 1, AEx db IIC T6 Gb (WITH CEMENTED WINDOW JOINT)

CL I, Zone 1, AEx db IIB+H2 T6 Gb (WITH NON-CEMENTED, FLANGED WINDOW JOINT)

CL I, Zone 2, AEx na IIC T6 Gc

Zone 21, AEx tb IIIC T85°C Db

Ta = -50°C to +75°C; Type 4X, IP66

FM 6340

ANSI/ISA 92.00.01

ANSI/ISA 92.04.01

60079-29-1

### WHEN USING PASSIVE COMBUSTIBLE SENSOR

CL I, Div 1, Group B, C, D; T5

Ta = -40°C to +75°C

### WHEN USING PASSIVE MOS SENSOR

CL I, Div 1, Group B, C, D; T5

Ta = -40°C to +60°C

### **Description of Equipment:**

The S5000 Gas Monitor consists of an S5000 Transmitter and an optional S5000 Junction Box or JB5000 Junction Box. 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 sensor, either a combustible catalytic bead sensor for combustible gases or a metal oxide semiconductor (MOS) sensor for H2S.

The S5000 Gas Monitor and S5000 Junction Box consist of a single 316 stainless steel compartment enclosure approximately 5 inches diameter by 4 inches high. The JB5000 Junction Box consists of a single 316 stainless steel compartment enclosure approximately 3.5 inches in diameter by 3 inches high. The enclosures are explosionproof/dust-ignitionproof and contain the field connections, power, display and control circuitry if used as the transmitter and as a means of connecting remote sensors. The transmitter and junction box enclosures provides (4) 3/4 inch NPT threaded conduit entries, which when unused will be fitted with certified blanking plugs and a 4-1/2-12UN threaded cover housing a 0.375 inch thick soda lime tempered glass window that is held in place by a retaining ring. The JB5000 junction box enclosure provides (3) 3/4 inch NPT or M25 threaded conduit entries, which when unused will be fitted with certified blanking plugs and a 3-1/4-12UN threaded cover. For the JB5000 Junction Box marking and listing, refer to MSA certificate FM20US0060X.

### **Model Code Options:**

#### **S5000-a-b-c-d-e-f-g-h, Gas Monitor**

a is for Enclosure Material:

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2 = Stainless Steel – IIB+H2 (with non-cemented, flanged window joint)

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:

2 = FM

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 Cat Bead Sensor (Combustible)

Dxx = Digital Sensor

Mxx = Passive MOS Sensor (Toxic)

Rxx = IR Series Combustible Sensor

Xx = 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

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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:	-50°C to +75°C (when installed without relays) -40°C to +75°C (when installed with relays) -40°C to +75°C (when installed with passive combustible sensors as identified in the Sensor Table) -40°C to +60°C (when installed with passive MOS sensor 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:	Type 4X, 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	See Sensor Table	See Sensor Table	FM20US0060X

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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Product / Listing Title	Model Code	Gas / Description	Range	Certificate Number
Digital Sensor (Combustible)	See Sensor Table	See Sensor Table	See Sensor Table	FM20US0039X
Digital Sensor (Toxic)	See Sensor Table	See Sensor Table	See Sensor Table	FM20US0039X
Digital Sensor (Oxygen)	See Sensor Table	See Sensor Table	See Sensor Table	FM20US0039X
IR400-1501	R31	Methane - CH <sub>4</sub>	0-100% LFL	FM17US0037
IR400-1516	R32	Propane - C <sub>3</sub> H <sub>8</sub>	0-100% LFL	FM17US0037
IR400-2554	R34	Hexane - C <sub>6</sub> H <sub>14</sub>	0-100% LFL	FM17US0037
IR400-1173	R35	Pentane - C <sub>5</sub> H <sub>12</sub>	0-100% LFL	FM17US0037
IR400-1528	R37	Butane - C <sub>4</sub> H <sub>10</sub>	0-100% LFL	FM17US0037
IR400-1523	R38	Ethane - C <sub>2</sub> H <sub>6</sub>	0-100% LFL	FM17US0037
<b>Passive Sensors</b>				
10058-1	C04	General Purpose	0-100% LFL	FM16US0378X
50448-1	M04	Hydrogen Sulfide - H <sub>2</sub> S	0-100 ppm	FM16US0378X
50448-5	M05	Hydrogen Sulfide - H <sub>2</sub> S	0-50 ppm	FM16US0378X
50448-9	M06	Hydrogen Sulfide - H <sub>2</sub> S	0-20 ppm	FM16US0378X

**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

**Junction Boxes Approved with the S5000:**

324240-5, 324240-9, 324240-13, 324240-17, 324240-21	S5000 Junction Box; Stainless Steel, (flanged/non-cemented)
324240-2, 324240-6, 324240-10, 324240-14, 324240-18	S5000 Junction Box; Aluminum, (flanged/non-cemented)

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324240-7, 324240-11, 324240-15, 324240-19, 324240-22	S5000 Junction Box; Stainless Steel, (cemented)
324240-4, 324240-8, 324240-12, 324240-16, 324240-20	S5000 Junction Box; Aluminum, (cemented)
10213892	JB5000 Junction Box; Stainless Steel, 3/4" NPT
10213896	JB5000 Junction Box; Stainless Steel, M25

### **Specific Conditions of Use:**

#### S5000 Transmitter

1. The Model S5000 complies with FM 6320, ANSI/FM 60079-29-1, FM 6340, ANSI/ISA-92.00.01, and ANSI/ISA-92.04.01 when connected to a gas sensor that also has been evaluated to the appropriate standard listed on the certificate.
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. Certification does not cover HART, Wireless HART, MODBUS or Bluetooth communications used for toxic, oxygen or combustible gas performance. The HART, Wireless HART, MODBUS or Bluetooth communications may only be used for data collection or record keeping with regard to toxic, oxygen and combustible gas detection.
4. To minimize the risk of electrostatic charge, provisions shall be made for adequate grounding and equipment shall be installed in such a manner so that accidental discharge shall not occur.
5. The High Alarm relay can be programmed for a latching or non-latching operation with a deliberate manual action to reset. When the High Alarm relay is set to non-latching the output must be connected to an integrated or auxiliary system with the means of latching and resetting incorporated into these systems.
6. In order achieve the ingress ratings, the S5000 enclosure when used with the digital Sensor must be mounting in the orientation described in the instruction manual.
7. The S5000 Transmitter and Junction Box are rated for indoor/outdoor (IP66/Type 4X) locations only. The MOS sensor (p/n 50448-1, 5 or 9) and passive catalytic bead sensor (10058-1) are required to be remotely located in an indoor location in order to maintain the IP66/Type 4X rating of the Transmitter or Junction Box.
8. This fixed equipment is designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensor, ULTIMA XIR Plus Sensor, IR400 Sensor, and Passive Sensors. The equipment is subject to the installation and orientation requirements defined in the product manual.
9. The flameproof joints shall not be repaired.
10. When the manufacturer of the equipment has not identified the type of protection on the label, the user shall, on installation, mark the label adjacent to the type of protection used. Once the type of protection has been marked it shall not be changed.

#### Junction Box

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.

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with a damp cloth.

2. The flameproof joints shall not be repaired.

## **Digital Sensors (Combustible)**

### **Equipment Ratings:**

Explosionproof for use in Class I, Division 1, Groups A, B, C, D, T5; Class II, Division 1, 2 Groups E, F, G, Class III, T5; Nonincendive for Class I, Division 2, Groups A, B, C, D, T4; Flameproof for use in Class I, Zone 1, AEx db IIC T5 Gb; Protection by Enclosure as Zone 21 AEx tb IIIC T85°C Db; Flameproof and Non-Sparking as Class I, Zone 2, AEx db nA IIC T5 Gc; Ta = -50°C to +60°C Hazardous (Classified) Locations, indoor and outdoor (Type 3X/IP65).

### **Markings:**

CL I, Div 1 Group A, B, C, D; T5  
CL I, Div 2 Group A, B, C, D; T5  
CL II, Div 1, 2 Group E, F, G; CL III; T5  
CL I, Zone 1, AEx db IIC T5 Gb  
CL I, Zone 2, AEx db nA IIC T5 Gc  
Zone 21, AEx tb IIIC T85°C Db  
Ta = -50°C to +60°C; Type 3X, IP65  
60079-29-1

### **Description of Equipment:**

The Digital Sensors consist of a Digital Sensor body and a gas sensing element. The Digital Sensors are constructed of stainless steel and include a  $\frac{3}{4}$ " NPT thread for connection to the S5000 Gas Monitor. Remote connection requires the S5000 or JB5000 Junction Box.

### **Model Code Options:**

#### **A-5K-SENS-a-b-c-d-e Digital Sensor**

a is for Gas Type:

See Sensor Table below

b is for Material:

0 = Stainless Steel

c is for Listed Approval:

M = FM Approval

d is for Sensor Body Thread Type:

0 = No Sensor Body

1 =  $\frac{3}{4}$  NPT

2 = M25

e is for Advanced Option:

0 = none

### **Sensor Table:**

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Model Code	Approved Gas	Range
00	No Sensor or Sensor Body (transmitter only)	N/A
01	No Sensor (sensor body with Sintered Flame Arrestor w/ blank element)	N/A
60	Methane - CH <sub>4</sub>	0-100% LFL – 5.0% vol
61	Propane - C <sub>3</sub> H <sub>8</sub>	0-100% LFL – 2.1% vol
62	Heptane - C <sub>7</sub> H <sub>16</sub>	0-100% LFL – 1.05% vol
63	Nonane - C <sub>9</sub> H <sub>20</sub>	0-100% LFL – 0.8% vol
64	Hydrogen - H <sub>2</sub>	0-100% LFL – 4.0% vol
65	Methane - CH <sub>4</sub>	0-100% LFL – 4.4% vol
66	Propane - C <sub>3</sub> H <sub>8</sub>	0-100% LFL – 1.7% vol
67	Heptane - C <sub>7</sub> H <sub>16</sub>	0-100% LFL – 0.85% vol
68	Nonane - C <sub>9</sub> H <sub>20</sub>	0-100% LFL – 0.7% vol

### Specifications:

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

### Specific Conditions of Use:

1. To minimize the risk of electrostatic charge, provisions shall be made for adequate grounding and equipment shall be installed in such a manner so that accidental discharge shall not occur.

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2. This fixed equipment is designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensors.
3. The equipment is subject to the installation and orientation requirements defined in the product manual.

### **Digital Sensors (Toxic)**

#### **Equipment Ratings:**

Explosionproof for installation in Class I, Division 1, Groups A, B, C and D T5; Class II, Division 1, 2 Groups E, F, G; Class III, T5; Class I, Division 2, Groups A, B, C and D T5; Flameproof for use in Class I, Zone 1, AEx db IIC T5 Gb; Protection by Enclosure as Zone 21 AEx tb IIIC T85°C Db; Flameproof and Non-Sparking as Class I, Zone 2, AEx db nA IIC T5 Gc; Ta = -40°C to +60°C (for CO and H<sub>2</sub>S sensors) or Ta = -40°C to +50°C (for H<sub>2</sub>S 500 ppm sensor)  
Hazardous (Classified) Locations, indoor/outdoor (Type 3X, IP65)

#### **Markings:**

CL I, Div 1 Group A, B, C, D; T5

CL I, Div 2 Group A, B, C, D; T5

CL II, Div 1, 2 Group E, F, G; CL III; T5

CL I, Zone 1, AEx db IIC T5 Gb

CL I, Zone 2, AEx db nA IIC T5 Gc

Zone 21, AEx tb IIIC T85°C Db

Ta = -40°C to +60°C (CO & H<sub>2</sub>S sensors); Ta = -40°C to +50°C (H<sub>2</sub>S 500 ppm sensor); Type 3X, IP65

ANSI/ISA 92.00.01

#### **Description of Equipment:**

The S5000 Digital Sensor consists of a Digital Sensor body and a toxic gas sensing element. The Digital Sensors are constructed of stainless steel and include a 3/4" NPT thread for connection to the S5000 Gas Monitor. Remote connection requires the S5000 Junction Box or JB5000 Junction Box.

#### **Model Code Options:**

##### **A-5K-SENS-a-b-c-d-e Digital Sensor**

a is for Gas Type:

See Sensor Table below

b is for material type:

0 = Stainless Steel

c is for listed Approval:

M = FM

d is for Sensor Body Thread Type:

0 = No Sensor Body

1 = 3/4 NPT

2 = M25

e is for Advanced Option:

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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0 = none

### Sensor Table:

Model Code	Approved Gas / Description	Range
00	No Sensor or Sensor Body (transmitter only)	N/A
01	No Sensor (sensor body with Sintered Flame Arrestor w/ blank element)	N/A
02	No Sensor (sensor body without Sintered Flame Arrestor w/ blank element)	N/A
10	Carbon Monoxide - CO	0-100 ppm
11	Carbon Monoxide - CO	0-500 ppm
12	Carbon Monoxide - CO	0-1000 ppm
14	Carbon Monoxide - CO, Hydrogen Resistant	0-100 ppm
20	Hydrogen Sulfide - H <sub>2</sub> S	0-10 ppm
21	Hydrogen Sulfide - H <sub>2</sub> S	0-50 ppm
22	Hydrogen Sulfide - H <sub>2</sub> S	0-100 ppm
23	Hydrogen Sulfide - H <sub>2</sub> S	0-500 ppm
24	Hydrogen Sulfide - H <sub>2</sub> S, Span at 10 ppm	0-20 ppm
25	Hydrogen Sulfide - H <sub>2</sub> S, Span at 25 ppm	0-50 ppm
26	Hydrogen Sulfide - H <sub>2</sub> S, Span at 50 ppm	0-100 ppm
27	Hydrogen Sulfide - H <sub>2</sub> S, Diffusion Supervision	0-10 ppm
28	Hydrogen Sulfide - H <sub>2</sub> S, Diffusion Supervision	0-50 ppm
29	Hydrogen Sulfide - H <sub>2</sub> S, Diffusion Supervision	0-100 ppm
36	Carbon Monoxide - CO, Diffusion Supervision	0-100 ppm
37	Carbon Monoxide - CO, Diffusion Supervision	0-500 ppm
38	Carbon Monoxide - CO, Diffusion Supervision	0-1000 ppm
39	Carbon Monoxide - CO, Hydrogen Resistant, Diffusion Supervision	0-100 ppm
42	Hydrogen Sulfide - H <sub>2</sub> S, Span at 10 ppm, Diffusion Supervision	0-20 ppm

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Model Code	Approved Gas / Description	Range
43	Hydrogen Sulfide - H <sub>2</sub> S, Span at 25 ppm, Diffusion Supervision	0-50 ppm
44	Hydrogen Sulfide - H <sub>2</sub> S, Span at 50 ppm, Diffusion Supervision	0-100 ppm
77	Hydrogen Sulfide - H <sub>2</sub> S, Span at 10 ppm, Alcohol Tolerant	0-20 ppm
78	Hydrogen Sulfide - H <sub>2</sub> S, Span at 25 ppm, Alcohol Tolerant	0-50 ppm
79	Hydrogen Sulfide - H <sub>2</sub> S, Span at 50 ppm, Alcohol Tolerant	0-100 ppm
80	Hydrogen Sulfide - H <sub>2</sub> S, Span at 10 ppm, Alcohol Tolerant, Diffusion Supervision	0-20 ppm
81	Hydrogen Sulfide - H <sub>2</sub> S, Span at 25 ppm, Alcohol Tolerant, Diffusion Supervision	0-50 ppm
82	Hydrogen Sulfide - H <sub>2</sub> S, Span at 50 ppm, Alcohol Tolerant, Diffusion Supervision	0-100 ppm
83	Hydrogen Sulfide - H <sub>2</sub> S, Alcohol Tolerant	0-10 ppm
84	Hydrogen Sulfide - H <sub>2</sub> S, Alcohol Tolerant	0-50 ppm
85	Hydrogen Sulfide - H <sub>2</sub> S, Alcohol Tolerant	0-100 ppm
86	Hydrogen Sulfide - H <sub>2</sub> S, Alcohol Tolerant, Diffusion Supervision	0-10 ppm
87	Hydrogen Sulfide - H <sub>2</sub> S, Alcohol Tolerant, Diffusion Supervision	0-50 ppm
88	Hydrogen Sulfide - H <sub>2</sub> S, Alcohol Tolerant, Diffusion Supervision	0-100 ppm

**Specifications:**

Sensor Type:	Electrochemical
Sampling Type:	Diffusion
Accuracy:	H2S Sensors: $\pm 3$ ppm CO Sensors: $\pm 6$ ppm
Response Time:	t(90) $\leq$ 60 s
Operating Temperature:	Model Code 23, 500 ppm H <sub>2</sub> S Sensor: -40°C to +50°C All others: -40°C to +60°C

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Storage Temperature:	-40°C to +60°C
Relative Humidity:	5 to 95% RH, non-condensing
Firmware:	H <sub>2</sub> S and CO sensors ASIC: 1.1.2 H <sub>2</sub> S and CO sensors L&H, NXP Microprocessor: 1.3.0 H <sub>2</sub> S and CO sensors L&H, ST Microprocessor: 5.1.2 H <sub>2</sub> S and CO sensors L&H with DS: 4.0.9 Model Code 23, 500 ppm H <sub>2</sub> S sensor ASIC: 1.0.1

### **Specific Conditions of Use:**

1. To minimize the risk of electrostatic charge, provisions shall be made for adequate grounding and equipment shall be installed in such a manner so that accidental discharge shall not occur.
2. This fixed equipment is designed for field mounting with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensor. The equipment is subject to the installation and orientation requirements defined in the product manual.

## **Digital Sensor (Oxygen)**

### **Equipment Ratings:**

Explosionproof for installation in Class I, Division 1, Groups A, B, C and D T5; Class II, Division 1, 2 Groups E, F, G, Class III, T5; Class I, Division 2, Groups A, B, C and D T5; Flameproof for use in Class I, Zone 1, AEx db IIC T5 Gb; Protection by Enclosure as Zone 21 AEx tb IIIC T85°C Db; Flameproof and Non-Sparking as Class I, Zone 2, AEx db nA IIC T5 Gc; Ta = -40°C to +60°C, Hazardous (Classified) Locations, indoor/outdoor (Type 3X, IP65).

### **Markings:**

CL I, Div 1 Group A, B, C, D; T5  
CL I, Div 2 Group A, B, C, D; T5  
CL II, Div 1,2 Group E, F, G; CL III; T5  
CL I, Zone 1, AEx db IIC T5 Gb  
CL I, Zone 2, AEx db nA IIC T5 Gc  
Zone 21, AEx tb IIIC T85°C Db  
Ta = -40°C to +60°C; Type 3X, IP65  
FM 6340  
ANSI/ISA 92.04.01

### **Description of Equipment:**

The Digital Sensors consist of a Digital Sensor body and a gas sensing element. The Digital Sensors are constructed of stainless steel and include a 3/4" NPT thread for connection to the S5000 Gas Monitor. Remote connection

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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requires the S5000 Junction Box or JB5000 Junction Box.

### Model Code Options:

#### **A-5K-SENS-a-b-c-d-e Digital Sensor**

a is for Gas Type:

See Sensor Table below

b is for material type:

0 = Stainless Steel

1 = Aluminum

c is for listed Approval:

M = FM

d is for Sensor Body Thread Type:

0 = No Sensor Body

1 = 3/4 NPT

2 = M25

e is for Advanced Option:

0 = none

### Sensor Table:

Model Code	Gas / Description	Range	Accuracy
00	No Sensor or Sensor Body (transmitter only)	N/A	N/A
01	No Sensor (sensor body with Sintered Flame Arrestor w/ blank element)	N/A	N/A
15	Oxygen - O <sub>2</sub>	0-25% O <sub>2</sub>	±0.5% O <sub>2</sub>

### Specifications:

Sensor Type:	Electrochemical
Sampling Type:	Diffusion
Time of Response:	5 seconds
Operating Temperature:	-40°C to +60°C
Storage Temperature:	-40°C to +60°C
Relative Humidity:	10 to 95% RH, non-condensing
Firmware:	1.0.1

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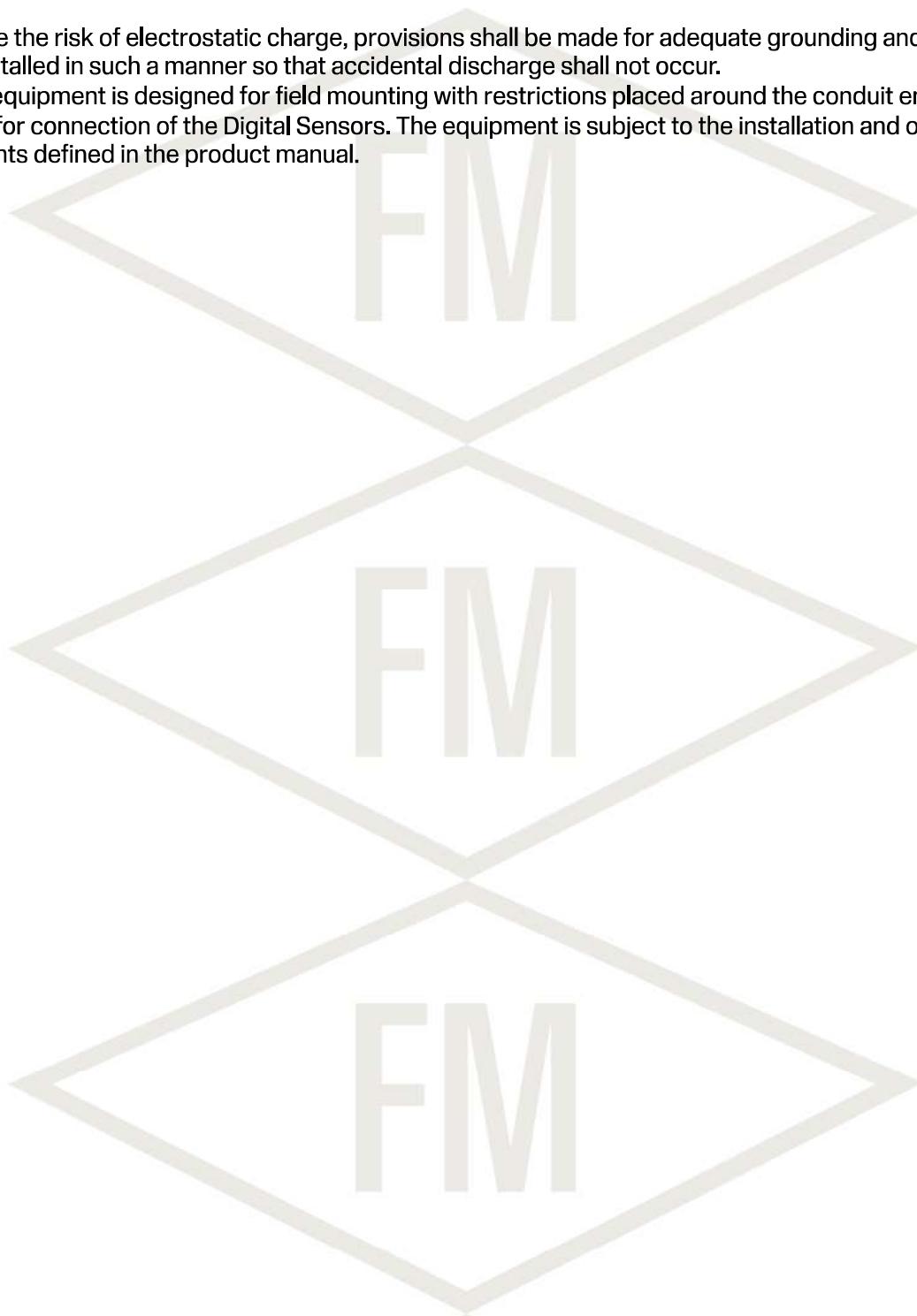
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### **Specific Conditions of Use:**

1. To minimize the risk of electrostatic charge, provisions shall be made for adequate grounding and equipment shall be installed in such a manner so that accidental discharge shall not occur.
2. This fixed equipment is designed for field mounting with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensors. The equipment is subject to the installation and orientation requirements defined in the product manual.



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