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:** **FM21ATEX0083X**

4 **Equipment or protective system: (Type Reference and Name)**
PrimaX IR Gas Monitor
Combustible Gas Detector
PrimaX IR+
Gas Detector Controller

5 **Name of Applicant:**
MSA Innovation LLC
dba MSA - The Safety Company

6 **Address of Applicant:**
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
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:

PR461386 dated 28th February 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 IEC 60079-0:2018, EN 60079-1:2014, EN 60079-29-1:2016,
EN 60079-31:2014, EN 50271:2018 and 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.

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

Richard A Zammitt Ireland 12.1.0

Richard Zammitt
Certification Manager, FM Approvals Europe Ltd.

Issue date: 22nd May 2023

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SCHEDULE

to EU-Type Examination Certificate No. FM21ATEX0083X

PrimaX IR Gas Monitor:

II 2 G Ex db IIC T4 Gb Ta = -50°C to +80°C

II 2 D Ex tb IIIC T130°C Db Ta = -50°C to +80°C

EN 60079-29-1

PrimaX IR+ Gas Detector Controller:

II 2 G Ex db IIC T4 Gb Ta = -50°C to +80°C

II 2 D Ex tb IIIC T130°C Db Ta = -50°C to +80°C

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

PrimaX IR Gas Monitor:

General – The infrared gas monitor type PrimaX IR is a stationary gas detector for the measurement of hydrocarbon gases in ambient air under atmospheric conditions. The gas monitor contains an infrared sensor for gas measurement and electronic boards; it uses a cartridge type heater located near the window and mirror. The gas monitor is designed in type of protection flameproof enclosure "db" and equipment dust ignition protection by enclosure "tb". The connection of the gas monitor to other flameproof enclosures could be done via a M25 or a 3/4 NPT thread. The equipment has an ingress protection rating of IP67.

Specifications - The manufacturer's specifications are as follows:
Operating Temperature: -50°C to +80°C
Storage Temperature: -50°C to +80°C
Relative Humidity: 15 to 95% RH
Supply Parameters: 18-32 Vdc, 24 Vdc (Nominal), 6 watts maximum
Measurement Signal: 4-20mA
Calibration: Calibration Cap or HART
Firmware Version: 3.6

Use of the following outputs for Safety Relevant Purposes:
4-20 mA output for measured values

Use of the following accessories:
Calibration Cap, part number 1011874 (LCIE 10 ATEX 3090 X)
HART Calibration cover part number 10122228
Flow cap part number 10113100
Environmental Guard part number 10113663
Insect screen part number 10116419
Aluminum junction box kit part number 10117607 (NPT) and 10117606 (M25) (BVS 10 ATEX E 157 X)
316 Stainless steel junction box kit part number 10117608 (NPT) and 10117609 (M25) (FM06ATEX0029U)
PrimaX IR link version 1.06

Measurement of the following gases –
Methane, Propane, Ethylene, Propylene oxide, Acetone, Cyclopentane,Ethyl acetate 0-100% LEL
i-butane 0-70% LEL
propylene, Ethane, 0-50% LEL
n-butane, n-pentane, toluene 0-30% LEL
n-Hexane 0-10% LEL

A-PRIMAXIR-a-b-c. Gas Monitor.
a = Target Gas: 11, 12, 14, 15, 17, 19, 20, 27, 30, 31, 32, 33, 34, 37, 39, 41, 42, 43, 62 or 63.

b = Approval Agency: A.
c = Thread Type: M or N.

PrimaX IR+ Gas Detector Controller:
General – The gas detector controller type PrimaX IR+ Gas Detector Controller is a stationary gas detector controller for the measurement of hydrocarbon gases in ambient air under atmospheric conditions. The gas detector controller contains electronic boards used to display gas concentrations from a 4-20mA gas detector. The gas detector controller is designed in type of protection flameproof enclosure "db" and equipment dust ignition protection by enclosure "tb". The connection of the gas detector controller to other flameproof enclosures or detectors could be done via a M25 or a 3/4 NPT thread. The equipment has an ingress protection rating of IP67.

Specifications - The manufacturer's specifications are as follows:
Operating Temperature: -50°C to +80°C
Storage Temperature: -50°C to +80°C
Relative Humidity: 15 to 95% RH
Supply Parameters: 18-32 Vdc, 24 Vdc (Nominal), 6 watts maximum
Optional Relay Contacts: 30VDC 2 AMPS MAX
Measurement Signal: 4-20mA

14 **Specific Conditions of Use:**

PrimaX IR Gas Monitor:

1. The gas monitor PrimaX IR is equipped with a tapered NPT thread or a metric thread for mounting to a connection enclosure of protection type increased safety "e" or protection type flameproof enclosure "d".
2. When mounting the gas monitor to an enclosure of protection type flameproof enclosure "d", the reference pressure of the separate enclosure for the connection must not exceed 10.5 bar. The test of the mechanical strength of the separate enclosure for the connection and the test of the connecting thread with respect to explosion hazards must be ensured within the framework of the type test of the electrical apparatus, which is attached to the gas monitor PrimaX IR. The threaded hole to which the gas monitor is attached must meet the requirements of section 5.3 (Table 4/5) of IEC 60079-1.
3. Due to the limitations on the potting used for the wire bushing on the PrimaX IR, the service temperature within the separate enclosure (the enclosure the PrimaX IR is mounted to) must not exceed 120°C.
4. When mounting the gas monitor to enclosures in type of protection increased safety "e", the mechanical resistance and the IP protection (IP6X) of the mounted enclosure has to be ensured by the type test of the electrical apparatus being mounted to the gas monitor. After mounting of the gas monitor onto an enclosure in type of protection increased safety "e", the clearances and creepage distances must meet the requirements of Table 2 of IEC 60079-7. The non-shielded cables of the gas monitor must be routed and connected so as to be mechanically protected and corresponding to the temperature resistance of the cables as per 4.6.2, 4.8.2 and 4.9 of IEC 60079-7.
5. For dust applications, any intensive electrostatic charging processes to the instrument label has to be prevented.
6. The ¾" NPT fixture has to be sealed with 2 layer PTFE sealing tape or according to the instructions of the manufacturer of the enclosure with NPT thread; when removed, new PTFE sealing has to be used after reinstalling.
7. The gas monitor PrimaX IR must be screwed into the housing wall such that it is secured against self-loosening. The specified minimum thread depth of the add-on housing has to be observed.
8. The gas monitor PrimaX IR must be included into the earthing and equipotential bonding of the complete system, including the enclosure it is connected to.
9. The screw heads are filled with potting to prevent self-loosening and unauthorized entry. The user may not open the enclosure. Opening of the device will invalidate the type approval.

SCHEDULE

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PrimaX IR+ Gas Detector Controller:

1. The PrimaX IR+ has not been evaluated to the performance requirements of EN 60079-29-1 or EN 50271 and shall not be used to execute safety critical functions.
2. The flameproof joints of the equipment are not intended to be repaired. For maintenance or repair, contact the manufacturer.
3. The ¾" NPT fixture has to be sealed with 2 layer PTFE sealing tape or according to the instructions of the manufacturer of the enclosure with NPT thread; when removed, new PTFE sealing has to be used after reinstalling.

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
07th March 2022	Original Issue.
22nd May 2023	Supplement 1: Report Reference: PR459559 dated 17th May 2023. Description of the Changes: 1. Addition of PrimaX IR+ Gas Detector Controller and identification that evaluated in accordance with EN IEC 60079-0, EN 60079-1 and EN 60079-31 only. 2. Addition of firmware version in description of, and addition of EN 50271 as a relevant standard for, the PrimaX IR Gas Monitor Combustible Gas Detector. 3. Documentation updates not affecting the equipment safety.

Blueprint Report

MSA Innovation LLC dBA MSA - The Safety Company (1000001671)

Class No 6320

Original Project I.D. 3036837

Certificate I.D. FM21ATEX0083X

Drawing No.	Revision Level	Drawing Title	Last Report
10000028136	10-2-2009	Elan-tron PU 4110 / PH 4900	PR459559
10104919	2	Commercial Specification	PR461386
10107013	02	Lid Exd, M110x2, alu Casting part	PR459559
10108269	01	Fenster PrimaX 90 x 12 Window Primax 90 x 12	PR459559
10110846	03	MC-W-EN-005-08	PR459559
10111116	02	Clamping bracket M5	PR459559
10113581	06	Operating Manual PrimaX IR - Infrared Gas Monitor	PR459559
10145430	02	Casting Part, Clamping Ring for Glass, ADC12	PR459559
10147611	02	Retaining Clip for Lid, DF-8500	PR459559
10153742	02	Clamping ring for glass, SS 316 Casting part 316	PR459559
10153743	03	Lid, Exd, M110 2, SS 316, Casting part M110 2, 316	PR459559
10153744	02	Retaining bracket, SS 316	PR459559
10155258	01	LID ASSY, PrimaX IR SS, PrimaX IR SS	PR459559
10172095	01	Mounting Bracket, PrimaX IR-D /PrimaX IR-D	PR459559
10217780	11-26-20	Label, PrimaX IR	PR459559
10217781	00	Operating Manual	PR459559
APC0731504001	7-3-17	Final assembly, PrimaX IR Pro (Aluminum)	PR459559
APC0731504002	7-24-17	Final assembly, PrimaX IR Pro (Stainless Steel)	PR459559
SK3098-1147	00	Prima XIR, North American	PR461386
SK3098-1148	07	Primax IR, ATEX/IEC	PR461386
SK3098-1227	05	MSA PrimaX IR Infrared Gas Detector	PR461386
SK3098-1228	07	ATEX Performance, Primax IR	PR461386
SK3098-1229	04	ATEX Performance, Primax IR Main Board	PR461386
SK3098-1230	01	ATEX Performance, Primax IR Feedthru Board	PR461386
SK3098-1236	03	MSA PrimaX IR ATEX/IECEx	PR461386
SK3098-1247	04	North American Approval Label, Primax IR	PR459559