

CERTIFICATE OF CONFORMITY



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

2. **Certificate No:** FM21US0008X
3. **Equipment:** Model ULTIMA OPIR-5 Open Path Gas Monitor
(Type Reference and Name) GAS DETECTOR (TOXIC) ULTIMA MOS-5

4. **Name of Listing Company:** Mine Safety Appliances

5. **Address of Listing Company:** 1000 Cranberry Woods Drive
Cranberry Township, PA 16066
United States

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

3042476 dated 22nd April 2011

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

FM Class 3600:2011, FM Class 3611:2004, FM Class 3615:2006, FM Class 3616:2011,
FM Class 3810:2005, FM Class 6325:2005, ANSI/FM 6325:2007, ANSI/FM 12.13.04:2007,
ANSI/NEMA 250:2003, ANSI/ISA 60529:2004

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:

Ultima – OPIR-5:

Explosionproof for Class I, Division 1, Groups B, C, and D, T4 Ta = -50°C to +65°C; Dust-ignitionproof for Class II/III, Division 1 applicable Groups E, F and G, T4 Ta = -50°C to 65°C; Nonincendive for installations in Class I/II/III, Division 2, applicable Groups B, C, D, E, F, G, T4 Ta = -50°C to 65°C; Hazardous Locations,

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

23 February 2021

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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SCHEDULE

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indoor/outdoor locations Type 4X and IP66/67.

Ultima MOS-5:

Explosionproof for installation in Class I, Division 1, Groups B, C and D; Class I, Zone 1, IIB + H2; T6 Ta = -40°C to +60°C Hazardous (Classified) Locations

11. The marking of the equipment shall include:

Ultima – OPIR-5:

Class I, Div. 1, 2 Groups B, C, D
Class II, Div. 1, 2 Groups E, F, G; Class III
T4 Ta = -50°C to +65°C; Type 4X, IP66/67

Ultima MOS-5:

Explosionproof for installation in Class I, Division 1, Groups B, C and D; Class I, Zone 1, IIB + H2; T6 Ta = -40°C to +60°C Hazardous (Classified) Locations

12. **Description of Equipment:**

The ULTIMA OPIR-5; part numbers, 329000-a, 329001-a is a fixed open path gas detector, comprising of a Source and Receiver module operating over a distance of 5-150 meters. The ULTIMA OPIR-5 is Explosionproof for Class I, Division 1, Groups B, C, and D, T4 Ta = -55°C to +65°C; Dust-ignitionproof for Class II/III, Division 1 applicable Groups E, F and G, T4 Ta = -55°C to 65°C; Nonincendive for installations in Class I/II/III, Division 2, applicable Groups B, C, D, E, F, G, T4 Ta = -55°C to 65°C; Hazardous Locations, indoor/outdoor locations Type 4X and IP66/67. The operating temperature range is -55°C to +65°C and the power consumption is: for the Source = 12W and for the Receiver = 10W. The enclosures are manufactured from 316L stainless steel. Field accessories comprise of Attenuation plate P/N 329113-1, Pan-Tilt Base assembly P/N 329071-1, Pan-Tilt Arm assembly P/N 329073-1, Long Range Alignment Kit P/N 329082 and gas filter kits P/N 329083 & 329084. Depending on the model selected, the system communications are Dual Modbus or Single Modbus with HART. Each variation comes complete with (2) 4-20mA outputs for detection of Propane with measurement ranges of 0-1 LEL•m and 0-2000ppm•m and Methane with measurement ranges of 0-5 LEL•m and 0-5000ppm•m, with minimum alarm set point of 10% FSD and repeatability of ±6% FSD. The apparatus complies with ANSI/ISA 12.13.04: 2007; Performance Requirements for Open Path Combustible Gas Detectors.

ULTIMA OPIR-5 Receiver:

329000-a

a: Output & Terminals -17 through -24

ULTIMA OPIR-5 Source:

329001-a

a: Terminals -3 or -4

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ULTIMA MOS-5; Stationary Single Channel 4-20mA Hydrogen Sulfide Gas Detector. Stand Alone Sensor/Transmitter. Intelligent Sensor Hydrogen Sulfide Gas Detector Model ULTIMA MOS-5 (see below for model codes)] is explosionproof for installation in Class I, Division 1, Groups B, C and D; Class I, Zone 1, IIB + H₂; T₆ Ta = -40°C to +60°C Hazardous (Classified) Locations. Model ULTIMA MOS-5 Sensor/Transmitter monitors 0-20 ppm, 0-50 ppm, or 0-100 ppm hydrogen sulfide gas-in-air. The instrument provides a three-digit measurement display with Warning, Alarm and Fault LED indicators, a 4-20mA measurement signal and optional 3 alarm SPTD relay contacts with dual MODBUS ports, as well as HART communication. The operating temperature range of the apparatus is -40°C to +60°C and operating voltage is 24 Vdc (nominal), 7W maximum power, the relay contact ratings are 8A, 250Vac or 30Vdc. Model ULTIMA MOS-5 transmitter assembly is suitable for outdoor (Type 4X) installation when the sensor is installed remotely from the transmitter with Universal Housing P/N 10252. In addition, the apparatus complies with ISA-92.0.01, Part I-1998 Performance Requirements for Toxic Gas-Detection Instruments: Hydrogen Sulfide. The following Sensor/Transmitter models are included in the Approval:

ULTIMA MOS-5. Intelligent Sensor Hydrogen Sulfide Gas Detector.
32426-a
a: -21 through -28 and -37 through -44

13. Specific Conditions of Use:

Ultima OPIR-5

1. For Source supply wires, use wires suitable for 32°C above surrounding ambient.
2. For Receiver supply wires, use wires suitable for 16°C above surrounding ambient.
3. At temperatures below -35°C propane cannot be detected due to the boiling point of propane being at -44°C.

ULTIMA MOS-5

1. The following auxiliary apparatus is Approved for use with ULTIMA MOS-5 Sensor/Transmitter: Portable Purge Calibrators P/N 1400250-X, Breaker Bottle-single P/N 5000, Individual or 12 Ampoule H₂S test gas P/N 5000-X, Duct Mounting Plate P/N 10041-1, Sensor Universal Housing P/N 10252 and H₂S Sensor: Part No. 50445-1 (0-100ppm, AL), 50445-5 (0-50ppm, AL), 50445-9 (0-20ppm, AL), 50448-1 (0-100ppm, SS), 50448-5 (0-50ppm, SS) or 50448-9 (0-20ppm, SS).
2. The ULTIMA MOS-5 Transmitter assembly is rated for outdoor (Type 4X) locations only. The sensor is required to be remotely located in an indoor location.

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.

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16. **Certificate History**

Details of the supplements to this certificate are described below:

| Date | Description |
|--------------------------------|--|
| 22 nd April 2011 | Original Issue. |
| 23 rd February 2021 | <u>Supplement 1:</u> Report Reference: – RR226370 dated 23 rd February 2021. Description of the Change: Documentation Update and correction of FM Class 3600 to 2011 edition that was examined under RR224491 and conversion to new format. |

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