IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx SIR 17.0017X**

Page 1 of 4

Certificate history:

Status: **Current**

Issue No: 5

Issue 4 (2019-08-19)
Issue 3 (2019-03-12)
Issue 2 (2018-11-06)
Issue 1 (2018-03-20)
Issue 0 (2017-10-02)

Date of Issue: 2020-09-18

Applicant: **MSA - The Safety Company**
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
United States of America

Equipment: **ULTIMA® X5000 Gas Monitor fixed gas detection system (ULTIMA® X5000 transmitter & ULTIMA® X5000 or JB5000 Junction Box) and ULTIMA® XIR Plus sensor**

Optional accessory:

Type of Protection: **Flameproof db, Type nA and Dust Protection by Enclosure tb**

Marking: Refer to certificate annex for full marking.

Approved for issue on behalf of the IECEx Certification Body: **N Jones**

Position: **Certification Manager**

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

IECEx Certificate of Conformity

Certificate No.: **IECEx SIR 17.0017X**

Date of issue: 2020-09-18

Issue No: 5

Manufacturer: **MSA - The Safety Company**
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
United States of America

Additional manufacturing locations: **General Monitors (Ireland) Limited**
Ballybrit Business Park
Galway
Ireland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

IEC 60079-29-1:2007 Explosive Atmospheres - Part 29-1: Gas Detectors - Performance requirements of detectors for flammable gases
Edition:1

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

GB/SIR/ExTR17.0192/00
GB/SIR/ExTR18.0040/00
GB/SIR/ExTR18.0207/00
GB/SIR/ExTR19.0066/00
GB/SIR/ExTR19.0203/00
GB/SIR/ExTR20.0150/00

Quality Assessment Reports:

FR/INE/QAR08.0011/10
GB/SIR/QAR07.0014/08

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The ULTIMA® X5000 Gas Monitor fixed gas detection system is designed to measure specified percentage volumes of combustible gases or a variety of toxic gases or oxygen. The system comprises an ULTIMA® X5000 transmitter base unit and an optional ULTIMA® X5000 **or JB5000** Junction Box fitted with an arrangement of up to a pair of two factory-configured combustible, toxic or oxygen gas sensors. The transmitter enclosure is fitted with associated circuitry, connection facilities and an Organic LED (OLED) display visible through the viewing window of the enclosure.

Refer to the Annexe for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:
Refer to the Annexe.

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
This issue, Issue 5, recognises the following changes; refer to the certificate annex to view a comprehensive history:

1. Addition of the new JB5000 Junction Box product models;
2. Update to the latest edition of IEC 60079-0 standard: Edition 7 of 2017;
3. Removal of "*Ex db nA IIC T5 Gc" classification from X5000 certification at the customer's request.
4. Revisions to X5000 Transmitter temperature codes.
5. Specific Condition of Use added to the XIR Plus Sensor per exemptions within the IEC 60079-28 Scope.
6. Revision of several drawings and addition of two JB5000 drawings.

Annex:

IECEx SIR 17.0017X issue 5 Annex.pdf

Annexe to:	**IEC Ex SIR 17.0017X Issue 5**
Applicant:	**MSA – The Safety Company**
Apparatus:	**ULTIMA® X5000 Gas Monitor fixed gas detection system (ULTIMA® X5000 transmitter & ULTIMA® X5000 or JB5000 Junction Box) and ULTIMA® XIR Plus sensor**

Marking:

ULTIMA® X5000Transmitters:
*Ex db IIC T6 Gb
*Ex tb IIIC T85°C Db
Ex nA IIC T4 Gc
-40°C ≤ Ta ≤ +60°C
IEC 60079-29-1

IP66

ULTIMA® X5000Junction Boxes:
Ex db IIC T6 Gb
Ex tb IIIC T85°C Db
Ex nA IIC T6 Gc
-40°C ≤ Ta ≤ +60°C

IP66

ULTIMA® XIR Plus sensor:
Ex db IIC T6 Gb
Ex nA IIC T5 Gc
-40°C ≤ Ta ≤ +60°C

IP66

ULTIMA® JB5000 Junction Boxes
Ex db IIC T6 Gb
Ex tb IIIC T85°C Db
Ex nA IIC T6 Gc
-55°C ≤ Ta ≤ +75°C
IP66

*Output Communication Option 1 (Analog/HART/Relays) only suitable for Ex db and Ex tb.

Notes to Standard IEC 60079-29-1:

1. Applies only to the ULTIMA ®X5000 Gas Monitor fixed Combustible Gas Detection System.
2. IEC 60079-31 compliance does not imply that the equipment will detect gas during and after exposure to dust and fibers in suspension in air conditions.

Equipment:

The ULTIMA® X5000 Transmitter is the control unit of the ULTIMA® X5000 Gas Monitor fixed gas detection system. The enclosure of the transmitter is designed for Flameproof (Ex db) and Dust protection by enclosure (Ex tb). The ULTIMA® X5000 Transmitter is designed for Non-Sparking (Ex nA) protection, which excludes Output Alarm Relays and the relay board; the relay board selected by Output Communication Option 1 (Analog/HART/Relays) is only suitable for Ex db and Ex tb. The enclosure is provided with either ¾" NPT or M25 threaded entries and a certified adapter can be supplied for M25 entries which can be fitted with the sensors described below or suitably certified cable entry devices or blanking plugs. The equipment enclosure has been separately tested against the requirements of IEC 60529 and meets IP66.

The ULTIMA® X5000 and JB5000 Junction Boxes are the remote mounting units of ULTIMA® X5000 Gas Monitor fixed gas detection system. The Junction Box enclosures are designed for Flameproof (Ex db) and Dust protection by enclosure (Ex tb). The Junction Box enclosure is designed with Non-Sparking (Ex nA) protection. The X5000 and the JB5000 enclosures are provided with ¾" NPT or M25 threaded entries, and a certified adapter can be supplied for M25 entries which can be fitted with the sensors described below or suitably certified cable entry devices or blanking plugs. The equipment enclosure has been separately tested against the requirements of IEC 60529 and meets IP66.

The ULTIMA® XIR Plus Sensor assembly is the infra-red sensor unit of the ULTIMA® X5000 Gas Monitor fixed combustible and toxic gas detection configurations. The ULTIMA® XIR Plus Sensor is designed for Flameproof (Ex db) and Non-Sparking (Ex nA) protection. The equipment enclosure has been separately tested against the requirements of IEC 60529 and meets IP66.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

The ULTIMA® X5000 system makes use of two sensor types including a Digital Sensor for combustible, toxic or oxygen gas detection and an IR (infrared) sensor for combustible or toxic gas detection, all mounted via conduit entries. The permitted sensor configurations follow:

- Two-Digital Sensors (combustible, toxic or oxygen) installed either integral to the ULTIMA® X5000 transmitter or one integral and one remote via the ULTIMA® X5000 or JB5000 Junction Box or two remote via two separate ULTIMA® X5000 or JB5000 Junction Boxes.
- One ULTIMA® XIR Plus Sensor (combustible or toxic) and one Digital Sensor (combustible, toxic or oxygen) installed either integral to the ULTIMA® X5000 transmitter, one integral and one remote or remotely via an ULTIMA® X5000 or JB5000 Junction Box or two remote via two separate ULTIMA® X5000 or JB5000 Junction Boxes.
- Two-ULTIMA® XIR Plus Sensors (combustible or toxic) installed either integral to the ULTIMA® X5000 transmitter or one integral and one remote via the ULTIMA® X5000 or JB5000 Junction Box or two remote via two separate ULTIMA® X5000 or JB5000 Junction Boxes.

The product model code options of the ULTIMA® X5000 gas detection systems (Combustible, toxic or oxygen) featuring the ULTIMA® X5000 transmitter, ULTIMA® X5000 Junction Boxes, JB5000 Junction Boxes, ULTIMA® X5000 XIR Plus Sensor and the Digital Sensors are shown in the Model Code Options section below. The applicable configuration limitations resulting from the hazardous area classifications can be derived in the model codes. The equipment enclosures have been separately tested against the requirements of IEC 60529 for Ingress Protection levels.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Model Code Options:

ULTIMA® X5000 Gas Monitor fixed gas detection system:
ULTIMA® X5000 Transmitter:
Model coding appearing on the transmitter enclosure are shown below:

ULTIMA® X5000 transmitter (equipment)		
Model reference	Description	Coding/System Limitations
A-X5000- ***abcdeffggh***	Transmitter control unit of the Fixed Gas Detection System for use in explosive gas atmospheres; where up to two sensors may be connected, either coupled to the transmitter enclosure or one coupled to the transmitter and the other coupled to the Junction Box enclosure – only one senor per Junction Box permitted; two Digital Sensors or/ one ULTIMA® XIR Plus sensor and one Digital Sensor or/ two ULTIMA® XIR Plus sensors are permitted for installation (the main transmitter enclosure and the Junction Box enclosure) ***a*** is for Enclosure Material: 0 = Stainless Steel – ¾" NPT 1 = Aluminum – ¾" NPT 2 = Stainless Steel – M25 ***b*** is A = IECEx (ATEX) ***c*** is for Bluetooth: 0 = Yes 1 = No ***d*** is for Output Communication: 0 = Analog/HART 1 = Analog/HART/Relays (Ex db, Ex tb only) ***e*** is 0 = Default place holder, not relevant to certification ***ff*** is for Sensor 1 selection: ***gg*** is for Sensor 2 selection: **Sensors:** for Sensor Selection ***ff*** or ***gg***: (Independently certified Ex Equipment Sensors or Ex Component Sensors forming the Combustible Gas Detection System, per 60079-29-1, are denoted by [^])	*transmitter only, without sensors, without Relay board* Ex db IIC T6 Gb Ex tb IIIC T85°C Db Ex nA IIC T4 Gc Tamb: -40°C ≤ Ta ≤ +60°C *with Relay board** Ex db IIC T6 Gb Ex tb IIIC T85°C Db Tamb: -40°C ≤ Ta ≤ +60°C *Zone 1 Combustible Gas Detection Systems: main transmitter + one or two Combustible Digital Sensors (With FRIT) units (one sensor maybe connected to one Junction Box)* Ex db IIC T5 Gb Ex tb IIIC T85°C Db Tamb: -40°C < Ta < +60°C *Zone 1 Combustible Gas Detection System: main transmitter + one or two Combustible ULTIMA® XIR Plus sensors (one sensor maybe connected to one Junction Box)*

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® X5000 transmitter (equipment)		
Model reference	Description	Coding/System Limitations
A-X5000- ***abcdeffggh***	-ULTIMA® XIR Plus sensor selections include 00 = No Sensor AA = IR Combustible 0 – 100% LEL – 5% Methane [^] AB = IR Combustible 0 – 100% LEL – 2.1 % Propane [^] AC = IR Combustible 0-100% LEL – 4.4 % Methane [^] AD = IR Combustible 0-100% LEL – 1.7% Propane [^] AK = IR Combustible 0 – 100% LEL – 2.5% Acetone [^] AS = IR Combustible 0 – 100% LEL – 1.2% Benzene [^] BY = IR Combustible 0 – 100% LEL – 3.3% Ethanol [^] CD = IR Combustible 0 – 100% LEL – 2.7% Ethylene [^] CF = IR Combustible 0 – 100% LEL – 3% Ethylene Oxide [^] CJ = IR Combustible 0 – 100% LEL – 1.1% Hexane [^] CP = IR Combustible 0 – 100% LEL – 2% Isopropanol [^] DJ = IR Combustible 0 – 100% LEL – 1.7% Methyl Methacrylate [^] FJ = IR Combustible 0 - 100% LEL – 3.1% Ethanol [^] FL = IR Combustible 0 - 100% LEL – 2.3% Ethylene [^] FM = IR Combustible 0 - 100% LEL – 2.6% Ethylene Oxide [^] FP = IR Combustible 0 - 100% LEL – 1% Hexane [^] xx = Any two digit letter representing Gas Type ULTIMA® XIR Plus infrared Combustible sensor, not verified by CSA/SIRA for the specific flammable gas for performance, excludes sensor codes AA	Ex db IIC T6 Gb Tamb: -40°C < Ta < +60°C *Zone 1 Combustible Gas Detection Systems: main transmitter + one Combustible ULTIMA® XIR Plus + one Combustible Digital Sensor (With FRIT) (one sensor maybe connected to one Junction Box)* Ex db IIC T6 Gb (Enclosure w/XIR Plus) Ex db IIC T5 Gb (Enclosure w/ Digital Sensor) Tamb: -40°C ≤ Ta ≤ +60°C
	AB, AC, AD, AK, AS, BY, CD, CF, CJ, CP, DJ, FJ, FL, FM, FP. The sensor shall not be marked with "IEC 60079-29-1". xx = Any two-digit letter representing Toxic Type ULTIMA® XIR Plus infrared Toxic sensor	*Zone 2 Toxic Systems: main transmitter + one Digital Sensor (With FRIT) model + any other listed sensor (one sensor maybe connected to one Junction Box)*
	-Digital Sensor selections include, 00 = No Sensor and no Digital Sensor Body (transmitter only) 01 = No Sensor, Digital Sensor Body (With FRIT) w/blank element 02 = No Sensor, Digital Sensor Body (No FRIT) w/blank element 60 = Combustible, 0-100% LEL – 5% Methane [^] 61 = Combustible, 0-100% LEL – 2.1%Propane [^] 62 = Combustible, 0-100% LEL – 1.05% Heptane [^] 63 = Combustible, 0-100% LEL – 0.8% Nonane [^] 64 = Combustible, 0-100% LEL – 4.0% Hydrogen [^] 65 = Combustible, 0-100% LEL – 4.4 % Methane [^] 66 = Combustible, 0-100% LEL – 1.7% Propane [^] 67 = Combustible, 0-100% LEL – 0.85% Heptane [^] 68 = Combustible, 0-100% LEL – 0.7% Nonane [^]	*without Relay board* Ex nA IIC T4 Gc Tamb: -40°C ≤ Ta ≤ +60°C

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® X5000 transmitter (equipment)		
Model reference	Description	Coding/System Limitations
A-X5000- ***abcdeffggh***	(With FRIT), not verified by CSA/SIRA for the specific flammable gas for performance, excludes sensor codes 60, 61, 62, 63, 64, 65, 66, 67, 68. The sensor shall not be marked with "IEC 60079-29-1". xx = Any two digit number representing Toxic Type Digital Sensor (With FRIT). xx = Any two digit number representing Toxic Type Digital Sensor (No FRIT). ***h*** is for Tag: 0 = None T# = (# = 1, 2, or 3) Stainless Steel affixed tags	*Zone 2 Toxic Systems: main transmitter + one Digital Sensor (No FRIT) model + any other listed sensor (one sensor maybe connected to one Junction Box)* *without Relay board* Ex nA IIC T4 Gc Tamb: -40°C ≤ Ta ≤ +60°C *Zone 2 Toxic Systems: main transmitter + one ULTIMA® XIR Plus sensors + any other listed sensor (one sensor maybe connected to one Junction Box)* *without Relay board* Ex nA IIC T4 Gb Tamb: -40°C ≤ Ta ≤ +60°C The coding of any attached sensor limits the coding of the transmitter/ system.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® X5000 Junction Boxes:
Model coding appearing on the Junction Box enclosure are shown below:

ULTIMA® X5000 Junction Boxes (equipment)		
Model reference	Description	Coding/System Limitations
10179509	ULTIMA® X5000 Junction Box; Stainless Steel, ¾" NPT	*Junction Box only, without a sensor* Ex db IIC T6 Gb Ex tb IIIC T85°C Db Ex nA IIC T6 Gc Tamb: -40°C ≤ Ta ≤ +60°C *Zone 1 configurations:* *With one Digital Sensor (With FRIT) model connected* Ex db IIC T5 Gb Ex tb IIIC T85°C Db Tamb: -40°C ≤ Ta ≤ +60°C *With one ULTIMA® XIR Plus connected* Ex db IIC T6 Gb Tamb: -40°C ≤ Ta ≤ +60°C *Zone 2 configurations:* *With one ULTIMA® XIR Plus model* Ex nA IIC T5 Gc Tamb: -40°C ≤ Ta ≤ +60°C *With one Digital Sensor (With FRIT "Ex db") model* Ex db nA IIC T5 Gc Tamb: -40°C ≤ Ta ≤ +60°C *With one Digital Sensor (No FRIT "Ex nA") model* Ex nA IIC T5 Gc Tamb: -40°C ≤ Ta ≤ +60°C
10179511	ULTIMA® X5000 Junction Box; Stainless Steel, M25	
10179513	ULTIMA® X5000 Junction Box; Aluminum, ¾" NPT	

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

JB5000 Junction Boxes:

Model coding appearing on the Junction Box enclosure are shown below:

JB5000 Junction Boxes (equipment)		
Model reference	Description	Coding/System Limitations
10213879	JB5000 Junction Box; Stainless Steel, ½" NPT	*Junction Box only, without a sensor* Ex db IIC T6 Gb Ex tb IIIC T85°C Db Ex nA IIC T6 Gc Tamb: -55°C ≤ Ta ≤ +75°C *Zone 1 configurations:* *With one Digital Sensor (With FRIT) model connected* Ex db IIC T5 Gb Ex tb IIIC T85°C Db Tamb: -55°C ≤ Ta ≤ +60°C *With one ULTIMA® XIR Plus connected* Ex db IIC T6 Gb Tamb: -40°C ≤ Ta ≤ +60°C *Zone 2 configurations:* *With one ULTIMA® XIR Plus model* Ex nA IIC T5 Gc Tamb: -40°C ≤ Ta ≤ +60°C *With one Digital Sensor (With FRIT) model* Ex db nA IIC T5 Gc Tamb: -55°C ≤ Ta ≤ +60°C *With one Digital Sensor (No FRIT) model* Ex nA IIC T5 Gc Tamb: -55°C ≤ Ta ≤ +60°C The coding of any attached sensor limits the coding of the junction box.
10213893	JB5000 Junction Box; Stainless Steel, M25	

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® XIR Plus sensor:

Model coding appearing on the ULTIMA® XIR Plus sensor enclosure are shown below:

ULTIMA® XIR Plus gas sensor (equipment)		
Model reference	Description	Coding
A-5K-SENS-***aa*-*b*-c-*d*-e**	ULTIMA® XIR Plus infrared Combustible sensor; Gas Type verified for Performance per "IEC 60079-29-1" where the following applies ***aa*** is for Gas Type (verified for Performance): AA = IR Combustible 0 – 100% LEL – 5% Methane AB = IR Combustible 0 – 100% LEL – 2.1 % Propane AC = IR combustible 0-100% LEL – 4.4% Methane AD = IR combustible 0-100% LEL – 1.7% Propane AK = IR Combustible 0 – 100% LEL – 2.5% Acetone AS = IR Combustible 0 – 100% LEL – 1.2% Benzene BY = IR Combustible 0 – 100% LEL – 3.3% Ethanol CD = IR Combustible 0 – 100% LEL – 2.7% Ethylene CF = IR Combustible 0 – 100% LEL – 3% Ethylene Oxide CJ = IR Combustible 0 – 100% LEL – 1.1% Hexane CP = IR Combustible 0 – 100% LEL – 2% Isopropanol DJ = IR Combustible 0 – 100% LEL – 1.7% Methyl Methacrylate FJ = IR Combustible 0 - 100% LEL – 3.1% Ethanol FL = IR Combustible 0 - 100% LEL – 2.3% Ethylene FM = IR Combustible 0 - 100% LEL – 2.6% Ethylene Oxide FP = IR Combustible 0 - 100% LEL – 1% Hexane ***b*** is 0 = Stainless Steel ***c*** is A = IEC Ex (ATEX) ***d*** is for Sensor Body: 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to certification ULTIMA® XIR Plus infrared Combustible sensor; Gas Type not verified for Performance per "IEC 60079-29-1" where the following applies ***aa*** is for Gas Type (not verified for Performance): xx = Any two digit letter representing Gas Type ULTIMA® XIR Plus infrared Combustible sensor, not verified by CSA/SIRA for the specific flammable gas for performance, excludes sensor codes AA, AB, AC, AD, AK, AS, BY, CD, CF, CJ, CP, DJ, FJ, FL, FM, FP. The sensor shall not be marked with "IEC 60079-29-1". ***b*** is 0 = Stainless Steel ***c*** is A = IEC Ex (ATEX) ***d*** is for Sensor Body: 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to certification	Ex db IIC T6 Gb Ex nA IIC T5 Gc Tamb: -40°C ≤ Ta ≤ +60°C

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® XIR Plus gas sensor (equipment)		
Model reference	Description	Coding
	ULTIMA® XIR Plus infrared Toxic sensor; where the following applies ***aa*** is for Toxic Type: xx = Any two digit letter representing Toxic Type ULTIMA® XIR Plus infrared Toxic sensor ***b*** is 0 = Stainless Steel ***c*** is A = IEC Ex (ATEX) ***d*** is for Sensor Body: 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to certification	

Digital Sensor:
Model coding appearing on the Digital Sensor are shown below:

Digital Sensor, gas sensor (equipment)		
Model reference	Description	Coding
A-5K-SENS-***aa***-***b***-c-***d***-**e**	Digital Sensor (With FRIT) model (combustible)) Gas Type verified for Performance per "IEC 60079-29-1"; where the following applies Note: Digital Sensors "With FRIT" utilize Fine Threads for Flamepaths appropriate for Ex db applications. ***aa*** is for Gas Type (verified for Performance): 01 = No Sensor Digital sensor body (With FRIT) w/blank element) 60 = Combustible, 0-100% LEL – 5% Methane 61 = Combustible, 0-100% LEL – 2.1% Propane 62 = Combustible, 0-100% LEL – 1.05% Heptane 63 = Combustible, 0-100% LEL – 0.8% Nonane 64 = Combustible, 0-100% LEL – 4.0% Hydrogen 65 = Combustible, 0-100% LEL – 4.4% Methane 66 = Combustible, 0-100% LEL – 1.7% Propane 67 = Combustible, 0-100% LEL – 0.85% Heptane 68 = Combustible, 0-100% LEL – 0.7% Nonane ***b*** is for Material type 0 = Stainless Steel 1 = Aluminum ***c*** is for the listed Approval: A = ATEX.IECEx ***d*** is for Sensor Body: 0 = No Sensor Body 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to certification Digital Sensor (With FRIT) model (combustible) Gas Type not verified for Performance per "IEC 60079-29-1"; where the following applies Note: Digital Sensors "With FRIT" utilize Fine Threads for Flamepaths appropriate for Ex db applications. ***aa*** is for Gas Type (not verified for Performance): 01 = No Sensor Digital sensor body (With FRIT) w/blank element)	Ex db IIC T5 Gb Ex tb IIIC T85°C Db Tamb: -55°C ≤ Ta ≤ +60°C

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Digital Sensor, gas sensor (equipment)		
Model reference	Description	Coding
	xx = Any two-digit number representing Gas Type Digital Sensor (With FRIT), not verified by CSA/SIRA for the specific flammable gas for performance, excludes sensor codes 60, 61, 62, 63, 64, 65, 66, 67, 68. The sensor shall not be marked with "IEC 60079-29-1". ***b*** is for Material type 0 = Stainless Steel 1 = Aluminum ***c*** is for the listed Approval: A = ATEX.IECEx ***d*** is for Sensor Body: 0 = No Sensor Body 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to certification	
	Digital Sensor (With FRIT) model (toxic); where the following applies Note: Digital Sensors "With FRIT" utilize Fine Threads for Flamepaths appropriate for Ex db applications. ***aa*** is for Toxic Type: 01 = No Sensor Digital sensor body (With FRIT) w/blank element) xx = Any two digit number representing Toxic Type Digital Sensor (With FRIT) ***b*** is for Material type: 0 = Stainless Steel 1 = Aluminum ***c*** is for the listed Approval: A = ATEX.IECEx ***d*** is for Sensor Body: 0 = No Sensor Body 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to	
	Digital Sensor (No-FRIT) model (toxic); where the following applies Note: Digital Sensors "Without FRIT" utilize Course Threads for Ex nA applications. ***aa*** is for Toxic Type: 02 = No Sensor Digital sensor body (No FRIT) w/blank element) xx = Any two digit number representing Toxic Type Digital Sensor (No FRIT) ***b*** is for Material type: 0 = Stainless Steel 1 = Aluminum ***c*** is for the listed Approval: A = ATEX.IECEx ***d*** is for Sensor Body: 0 = No Sensor Body 1 = ¾" NPT 2 = M25 ***e*** is 0 = Not relevant to certification	Ex nA IIC T5 Gc Tamb : -55°C < Ta < +60°C

Specific Conditions Of Use:

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® X5000 Transmitter: - Output Communication: with Option 1 (Analog/HART/Relays): with Relay board

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. This fixed equipment is exclusively designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensor and the ULTIMA® XIR Plus infrared (IR) sensor. The equipment is subject to the installation and orientation requirements defined in the product manual.
3. The flameproof joints shall not be repaired.
4. Guidance for Installation of fixed gas detection systems are set out in EN 60079-29-2 which has not been covered in the scope of this assessment.
5. Guidance for functional safety of fixed gas detection systems are set out in IEC 60079-29-3 which has not been covered in the scope of this assessment.
6. For the ULTIMA® X5000 transmitter the new software version 1.03.2996 and the checksum is 0xEC25 with hardware part number 10163333.

ULTIMA® X5000 Transmitter: Ex nA - Output Communication: with Option 0 (Analog/HART): without Relay board

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. This fixed equipment is exclusively designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensor and the ULTIMA® XIR Plus infrared (IR) sensor. The equipment is subject to the installation and orientation requirements defined in the product manual.
3. Guidance for Installation of fixed gas detection systems are set out in EN 60079-29-2 which has not been covered in the scope of this assessment.
4. Guidance for functional safety of fixed gas detection systems are set out in IEC 60079-29-3 which has not been covered in the scope of this assessment.
5. For the ULTIMA® X5000 transmitter the new software version 1.03.2996 and the checksum is 0xEC25 with hardware part number 10163333.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

ULTIMA® X5000 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.
2. This fixed equipment is exclusively designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensor and the ULTIMA® XIR Plus infrared (IR) sensor. The equipment is subject to the installation and orientation requirements defined in the product manual.
3. The flameproof joints shall not be repaired.

ULTIMA® XIR Plus sensor:

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.
3. The ULTIMA® XIR Plus infrared (IR) sensor is provided with a ¾“ NPT thread and shall only be connected to a suitably certified junction box or instrument for the hazardous area of installation and thereby provide Ex protection for the flying lead connections. The installation to the certified enclosure shall be with five fully engaged threads, tightened wrench-tight.
4. The ULTIMA® XIR Plus infrared (IR) sensor shall only be fitted to enclosures having a maximum reference pressure of 13.5 bars.
5. In combustible gas detection performance applications, the appropriate ULTIMA® XIR Plus model number shall only be used to construct the ULTIMA® X5000 Gas Monitor fixed gas detection system; mounted onto either the ULTIMA® X5000 transmitter or ULTIMA® X5000 Junction Box enclosures and receive power and control from the transmitter.
6. The ULTIMA® XIR Plus 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). The operating manual shall reinforce this installation requirement.
7. The Ingress Protection rating is exclusively based upon the installation instruction for orientation specified in the operating manual.
8. Guidance for Installation of fixed gas detection systems are set out in EN 60079-29-2 which has not been covered in the scope of this assessment.
9. Guidance for functional safety of fixed gas detection systems are set out in IEC 60079-29-3 which has not been covered in the scope of this assessment.
10. For the ULTIMA® XIR Plus sensor the new software version 3.0 and the checksum is 0xF33C with hardware part number 10172003.
11. The XIR Plus Sensor enclosure with Sensor Guard (opaque cover) or enclosure must fully contain the optical radiation and comply with a suitable type of protection as required by the involved EPL, complying with one of the following conditions:

    a) An enclosure for which protection regarding ingress of an explosive dust atmosphere is provided, such as dust protection "t" enclosures" (IEC 60079-31), or
    b) An enclosure that provides a minimum ingress protection of IP 6X and where no internal absorbers are to be expected and complying with “Tests of enclosures” in IEC 60079-0.

JB5000 Junction Box:

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

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. This fixed equipment is exclusively designed for field mounting in the vertical orientation with restrictions placed around the conduit entry locations permitted for connection of the Digital Sensor and the ULTIMA® XIR Plus infrared (IR) sensor. The equipment is subject to the installation and orientation requirements defined in the product manual.
3. The flameproof joints shall not be repaired.

Conditions Of Manufacture

ULTIMA® X5000 Transmitter: Ex nA - Output Communication: with Option 0 (Analog/HART): without Relay board

1. Dielectric Voltage Withstand Test (per IEC 60079-15, clause 23.2.1)
   At the end of manufacture, each ULTIMA® X5000 transmitter shall be subjected to an electric strength test using a test voltage of 500 Vac or 850 Vdc applied between the following test locations for a minimum of 60 seconds. Alternatively, a voltage of 600 Vac or 1020 Vdc may be applied for 0.1 second. There shall be no evidence of breakdown.
   a. Between the input terminals and the relay terminals.
   b. Between the metallic enclosure and the relay terminals.

ULTIMA® XIR Plus Sensor:

1. Dielectric Voltage Withstand Test (per IEC 60079-15, clause 23.2.1)
   At the end of manufacture, each ULTIMA® XIR Plus Sensor shall be subjected to an electric strength test using a test voltage of 500 Vac or 850 Vdc applied between the following test locations for a minimum of 60 seconds. Alternatively, a voltage of 600 Vac or 1020 Vdc may be applied for 0.1 second. There shall be no evidence of breakdown.
   a. a. Between P1, P2, P3 and P4 terminal pins and the metallic enclosure.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Full Certificate change history

Issue 1

1. Introduction of Certified Digital Sensor: Previously the Digital Sensor was evaluated as suitable to use with the ULTIMA® X5000 Gas Monitor fixed gas detection system requiring a special Digital Sensor nameplate referencing its suitability for use. The Digital Sensor Certification was confirmed and the requirement for the special Digital Sensor nameplate was removed.
2. Introduction of two remote sensor configurations: two Dual Sensors, two ULTIMA® XIR Plus sensors and One Dual Sensor/One ULTIMA® XIR Plus sensor. The Product Description and The ULTIMA® X5000 Transmitter model code table was amended to reference the two remote sensor configurations.
3. The Product Description and Model Code Tables were amended to correct typographical errors missed in the Prime report. Errors including, but not limited to: in Description section: Referencing Transmitter instead of Gas Detection System, calling out certified sensor along with cable entry devices & plugs, confirmation of gas types included in gas detection systems & Digital/XIR Plus Sensor and in Model Code Tables: Transmitter called out in title of each table, missing ambient temperature range and correction to Coding column title where appropriate.
4. Introduction of an additional note to Standard IEC 6079-29-1.
5. Transmitters, Junction Boxes and XIR Plus gas sensor Specific Condition of Use referencing “tightened to a minimum torque of 90 Nm (800 in-lbs)” was removed.
6. Transmitters and Junction Boxes Specific Condition of Use referencing “IEC 60664-1” was removed.
7. Transmitters, Junction Boxes and XIR Plus gas sensor Specific Condition of Use referencing “non-metallic parts” was revised.
8. Specific Condition of Use was introduced to the Junction Box referencing “field mounting in the vertical orientation” inadvertently omitted from the prime Certificates, same as the present Transmitters Specific Condition of Use.
9. Three Specific Conditions of Use were introduced to the XIR Plus gas sensor referencing: “sensor is provided with a ¾“ NPT thread”, “sensor shall only be fitted to enclosures having a maximum pressure” and “sensor shall be connected directly to a suitably certified junction box”; inadvertently omitted from the prime Certificates.
10. Introduction of a Condition of Manufacture referencing IEC 60079-0, clause 30, requiring the manufacture responsible to provide relevant information not presently included in the Instruction Manual.

Issue 2

1. Introduction of applicable assessment, checklist and label drawing revisions to apply IEC 60079-15:2010 (Ed. 4) Zone 2 approval to the preexisting Zone 1 Ex db (and Ex tb) and Zone 1 ULTIMA® X5000 transmitter and ULTIMA® XIR Plus sensor.
2. The Marking, the Product Description and Model Code Tables were amended to include the Zone 2 approval of the preexisting Zone 1 ULTIMA® X5000 transmitter and Zone 1 ULTIMA® XIR Plus sensor.
3. Conditions of manufacture was amended to include the ULTIMA® X5000 transmitter and ULTIMA® XIR Plus sensor.
4. Inclusion of the IP rating for each equipment enclosure as part of both the marking.
5. Added alternate General Monitors (Ireland) Limited factory to the Manufacturer’s name and address section.
6. Introduction of Digital Sensor (with FRIT) and Digital Sensor (no FRIT) separately certified per IECEx SIR 17.0016X.

Issue 3

1. Introduction of the revised nameplate drawing number SK3098-1445.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

2. Introduction of the revised product instruction manual number 10177361.
3. Introduction of the revised addendum of the product instruction manual, document number 10182779.

Issue 4

1. The firmware of the ULTIMA® X5000 Transmitter was revised to 1.03.2996 and the firmware of the ULTIMA® XIR Plus Sensor was revised to 3.0.
2. Following appropriate assessment for the existing product, standard IEC 60079-29-1:2007 (Edition 1) was replaced by IEC 60079-29-1:2016 (Edition 2).
3. Introduction of additional other gases added to the combustible gas Digital Sensor (With FRIT). Gases: hydrogen, heptane and nonane. Range: 0-100% LFL.
4. Introduction of combustible gas Digital Sensor (With FRIT) not verified for Performance versions.
5. Introduction of additional other gases added to the ULTIMA® XIR Plus Sensor. Gases: hexane, acetone, methyl methacrylate, ethanol, ethylene, benzene, ethylene oxide, isopropanol. Range: 0-100% LFL.
6. Introduction of combustible gas ULTIMA® XIR Plus Sensor not verified for Performance versions.
7. ULTIMA® X5000 Gas Monitor fixed gas detection system Product Description was revised from specific gases “Methane and Propane” to generalized description “Combustible”.
8. ULTIMA® XIR Plus Sensor Product Description was revised to clarify suitable for both combustible and toxic applications.
9. Revision to Model Code Options with additional combustible gas performance codes for the Digital Sensor (With FRIT), new combustible gas Digital Sensor (With FRIT) not verified for Performance versions, clarification of combustible gas Digital Sensor (With FRIT) verified for Performance versions, the removal of specific gas Model Code Options for the toxic Digital Sensor, additional combustible gas performance codes for the ULTIMA® XIR Plus Sensor, new combustible gas ULTIMA® XIR Plus Sensor not verified for Performance versions, clarification of combustible gas ULTIMA® XIR Plus Sensor verified for Performance versions and the removal of specific gas Model Code Options for the toxic ULTIMA® XIR Plus Sensor.
10. Introduction of the revised product instruction manual.
11. Per the addition of IEC 60079-29-1:2016 (Edition 2) a Condition of Use was introduced to both the ULTIMA® X5000 Transmitter and ULTIMA® XIR Plus Sensor: Guidance for Installation of fixed gas detection systems are set out in EN 60079-29-2 which has not been covered in the scope of this assessment.
12. Per the addition of IEC 60079-29-1:2016 (Edition 2) a Condition of Use was introduced to both the ULTIMA® X5000 Transmitter and ULTIMA® XIR Plus Sensor: Guidance for functional safety of fixed gas detection systems are set out in IEC 60079-29-3 which has not been covered in the scope of this assessment.
13. Updating of the software of the ULTIMA® X5000 Transmitter version to (1.03.2996, checksum: 0xEC25); Condition of Use was introduced confirming Software and checksum versions.
14. Updating of the software of the ULTIMA® XIR Plus Sensor version to (3.0, checksum: 0xF33C); Condition of Use was introduced confirming Software and checksum versions.
15. Conditions of Use and Conditions of Manufacture descriptive titles for ULTIMA® X5000 Transmitter: Ex db nA and Ex nA were revised to further clarify which transmitter options include or not include the Relay Board.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Issue 5

1. Addition of the new JB5000 Junction Box product models;
2. Update to the latest edition of IEC 60079-0 standard: Edition 7 of 2017;
3. Removal of "*Ex db nA IIC T5 Gc" classification from X5000 certification at the customer's request.
4. Revisions to X5000 Transmitter temperature codes.
5. Specific Condition of Use added to the XIR Plus Sensor per exemptions within the IEC 60079-28 Scope.
6. Revision of several drawings and addition of two JB5000 drawings.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org