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 20.0022X**

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Status: **Current**

Issue No: 8

Date of Issue: 2025-02-21

Applicant: **Blackline Safety**
Suite 100, 803 24th Ave SE
Calgary, Alberta T2G 1P5
Canada
Canada

Equipment: **G7 EXO Model Numbers G7EXO-AZ2, G7EXO-EU2, G7EXO-NA2 and EXab-cc-dde**

Optional accessory:

Type of Protection: **Intrinsically Safe ia**

Marking: Ex ia IIC T3 Ga
Ta = -20°C to +50°C

Certificate history:

Issue 7 (2024-10-23)
Issue 6 (2024-02-01)
Issue 5 (2023-06-08)
Issue 4 (2022-08-24)
Issue 3 (2022-03-07)
Issue 2 (2021-03-23)
Issue 1 (2021-01-20)
Issue 0 (2020-09-17)

Approved for issue on behalf of the IECEx Certification Body: **Michelle Halliwell**

Position: **Senior Director of Operations**

Signature:
(for printed version)

Date:
(for printed version)

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:

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside CH5 3US
United Kingdom

IECEx Certificate of Conformity

Certificate No.: **IECEx SIR 20.0022X**

Date of issue: 2025-02-21 Issue No: 8

Manufacturer: **Blackline Safety**
Suite 100, 803 24th Ave SE
Calgary, Alberta T2G 1P5
Canada
Canada

Manufacturing locations: **Blackline Safety**
Suite 100, 803 24th Ave SE
Calgary, Alberta T2G 1P5
Canada
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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 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-26:2014 Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
Edition:3.0

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/CSAE/ExTR22.0050/00
GB/SIR/ExTR20.0172/00
GB/SIR/ExTR21.0005/00
GB/SIR/ExTR21.0047/00
GB/SIR/ExTR22.0115/00
GB/SIR/ExTR23.0102/00
GB/SIR/ExTR24.0018/00
GB/SIR/ExTR24.0018/01
GB/SIR/ExTR25.0012/00

Quality Assessment Report:

CA/CSA/QAR16.0006/06

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

Transportable long-term area gas monitor instrument EXO Models G7EXO-XX# and EXab-cc-dde are models of multi-gas monitors which continuously monitor toxic and combustible gas concentrations using a variety of sensor types using various measuring principles. All combustible sensor types compatible with the EXO include IR, electrochemical, MPSTM, and catalytic bead pellistor LEL sensors. The EXO Models are equipped with integrated cellular modules supporting several forms of connectivity. The EXO Models are intended for automated long-term area gas monitoring.

The housing is constructed of Aluminum (ANSI 380.0-F). The front of the monitor has an LCD Display, with buttons to change menu items. There is also an Alarm Reset switch. All models are powered by a rechargeable Lithium polymer battery. The Lithium polymer battery must be replaced and charged outside the hazardous area.

Refer to the Annexe for additional information including safety parameters

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The enclosure is manufactured from Aluminium, magnesium, titanium or zirconium which may be used at the accessible surface of the equipment. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered when the EXO is being installed in Zone 0 locations for group II level of protection Ga.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Issue 8 - This issue introduced the following change

1. Addition of EXOGAM (Gamma Module).
2. Modification of EXO Main Board.

Annex:

IECEx SIR 20.0022X Issue 8 Annexe.pdf

The housing is constructed of Aluminum (ANSI 380.0-F). The front of the monitor has an LCD Display, with buttons to change menu items. There is also an Alarm Reset switch. All models are powered by a rechargeable Lithium polymer battery. The Lithium polymer battery must be replaced and charged outside the hazardous area.

G7 EXO Area Monitor Model Series Model code G7EXO-XX#	G7EXO-	XX	#	aaaaa	xxxxx
Model Family					
XX = World Region designation: = Two alpha character string forming an abbreviation for the target region/ country for the instrument, not relevant to the certified Equipment construction					
# = Radio Technology populated: 1 = 3G 2 = LTE					
aaaaa = Serial Number Prefix (Output Range, entity parameters): 35880 = High Output Range for North America-LTE 35882 = High Output Range for Europe-LTE 35884 = High Output Range for Australia/New Zealand-LTE ##### = any other five alphanumeric characters forming the prefix of the serial number are Low Output (excludes 35880, 35882, 35884)					
xxxxx = Serial Number Suffix - alphanumeric character string forming the suffix of the serial number, not relevant to the certified Equipment construction					

Detail	Additional Device Naming
Model number:	EXab-cc-dde Where: a = Series 8 - 8th 9..F Future major releases b = Type N - Non-Gamma G - Gamma ... - Future types cc = SIM Card 01..99 SIM Card Carrier dd = Region NA - North America EU - Europe/UK AZ - Australia/New Zealand UA - UAE

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Detail	Additional Device Naming
	... - Other e = Cellular Technology 2 - 4G/LTE 3 - 5G

Product overview:

Detail	
Entity Parameters:	PER CONTROL DRAWING: IECEx Zone 0 Instructions MAN_103482 Input Entity Parameters, Group IIC (Zone 0):

Parameters	EXO – Input Power Port for Solar Panel Input / Trickle Charger
	gas application
Terminals	External Side Connector Pin 1 – Input Power Pin 2 – GND Pin 3 – Debug Port Pin 4 – Debug Port
Voltage Ui	16Vdc
Current Ii	687mA
Power Pi	5.3W
Effective internal capacitance Ci	0nF
Effective internal inductance Li	12.48uH

Output Entity Parameters, Group IIC (Zone 0):

Parameters	EXO – Relay Outputs 1 & 2
	gas application
Terminals	External Side Connector Pin 1 – Input for Low Side Switch Pin 2 – GND Pin 3 – Output(20V) Pin 4 – Output(5V)
Pin 1 Input Entity Parameters	
Voltage Ui	24VDC
Current Ii	3.33A
Power Pi	1.25W
Effective internal capacitance Ci	0µF
Effective internal inductance Li	0H
Pin 3 Entity Parameters – high output models (G7EXO-XX# serial#s 35880, 35882, #35884)	
Uo	20.76VDC
Io	268mA
Po	1.39W

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Detail		
	Co	0.194µF
	Ro	77.46Ω
	Lo	495µH
	Lo/Ro	6.39 µH/Ω
	Pin 3 Entity Parameters – low output models (G7EXO-XX# serial# aaaaa; excludes serial #s 35880, 35882, 35884)	
	Uo	20.76VDC
	Io	93mA
	Po	0.479W
	Co	0.194µF
	Ro	226Ω
	Lo	4.1mH
	Lo/Ro	18.2µH/Ω
	Pin 4 Entity Parameters – high output models (G7EXO-XX# serial#s 35880, 35882, 35884)	
	Uo	4.94VDC
	Io	0.108A
	Po	97mW
	Co	100µF
	Uo/Io	33.25Ω
	Lo	3.05mH
	Lo/Ro	91.7µH/Ω
	Pin 4 Entity Parameters – low output models (G7EXO-XX# serial# aaaaa; excludes serial #s 35880, 35882, 35884)	
	Uo	3.6VDC
	Io	1.21A
	Po	3.0W
	Co	1000µF
	Uo/Io	1.1Ω
	Lo	24.28µH
	Lo/Ro	21.9µH/Ω

Full Certificate Change History

Issue 1 – this Issue introduced the following Changes:

1. Addition of 3 components: Rmod1, Rmod2, Dmod1 impacting power control.
2. The product description was amended to correct typographical errors.

Issue 2 – this Issue introduced the following Changes:

1. The introduction of Satellite Module PCB, PUMP Module PCB, Addition of Single cell battery, Reduction of entity parameters for High Voltage Output, Review of conditions of manufacture and EXO G7 Hardware Implementation of approved modifications; per the content from CSA Letter of Attestation Project 80063121.
2. The introduction of City Tech 4P75C Pellistor Sensor for use with EXO G7; per the content from CSA Letter of Attestation Project 80067121.
3. The introduction of Custom Testing of Piezo with modified enclosure; per the content from CSA Custom Test Project 80061640, WO8582.

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4. The introduction of revised Enclosure drawings updates for Front Enclosure, Back Enclosure, Battery Back Enclosure and Battery Front Enclosure.
5. The introduction of High Output Models and Low Output Models; with revised and new Entity Parameters; the Equipment Description was amended to include the new Serial # description which has been appended to the Existing Models.

Issue 3 – this Issue introduced the following Changes:

1. Evaluation to include a new pump model.
2. Define maximum pump parameters.

Issue 4 – this Issue introduced the following Changes:

1. Update to G7EXO (Schematic, BOM, PCB)
   i. Incorporate alternates for current clamp (TIS Project: 80109743)
   ii. Cell Zone: R312, R313
   iii. GPS - DIG1 Zone: Q402, R415, C416, C417
   iv. DIG1 Zone: Change flash(U202,U204) to 104027 (IC FLASH 128MBIT SPI 8WPDFN) and 104052 (IC FLASH 1GBIT SPI 133MHZ 8WPDFN)
   Added R215,R212,C207,C208,C209,C210,Q200,Q203
   v. Minor Mechanical updates to enclosure
2. Update to EXOSAT(Schematic, BOM, PCB)
   i. Update EXOSAT (SCH, BOM, PCB)
   ii. Mechanical change to board outline
3. Addition of CSA Letter of Attestation
   i. Project 80070938(Alternate Potting Material)
   ii. Project 80097624(Alternate Potting Material)
   iii. Project 80125461(Alternate Potting Material)
4. Addition of IEC 60079-26:2014-10 Ed. 3.0
   i. Equipment with Equipment Protection Level (EPL) Ga

Issue 5 – this Issue introduced the following Changes:

1. The introduction of mono solar panel model JYG-5W-M as an approved accessory for use with G7EXO based on update to equipment input entity paraments.
2. Addition of drawing listing all approved potting materials for use with G7 EXO.
3. The recognition of new potting material.

Issue 6 – this Issue introduced the following Changes:

1. Update of model number/Unit ID nomenclature.
2. Collection of revised documents supporting the update of model number/Unit ID.

Issue 7 – this Issue introduced the following Changes:

1. Update to EXO Transportable Combustible or Toxic Gas Detector Models G7EXO-XXX for addition of four-gas sensor module, gamma sensor accessory
2. Mechanical drawing updates
3. Update the LCD display to two 3.4″ displays and further mechanical drawing updates.
4. Added addition Device Naming convention
5. Corrected year of revision of EN 60079-26:14 to EN 60076-26:15

Issue 8 – this Issue introduced the following Changes:

1. Addition of EXOGAM (Gamma Module).
2. Modification of EXO Main Board.

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