



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx UL 15.0037X

Issue No: 6

Certificate history:

Issue No. 6 (2018-02-27)

Issue No. 5 (2017-05-24)

Issue No. 4 (2017-01-29)

Issue No. 3 (2016-08-30)

Issue No. 2 (2016-06-24)

Issue No. 1 (2015-11-18)

Issue No. 0 (2015-07-22)

Status: **Current**

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Date of Issue: **2018-02-27**

Applicant: **Detector Electronics Corporation**
6901 West 110th Street
Minneapolis, MN 55438
United States of America

Equipment: **FlexSight™ LS2000 Line-of-Sight Infrared Gas Detector***

Optional accessory:

Type of Protection: **Flameproof "db" and Increased safety "eb"**

Marking:

Ex db eb IIC T4 IEC 60079-29-4 IP66/67

Ex db IIC T4 IEC 60079-29-4 IP66/67

-50°C to +75°C (for Ex db eb version)

-55°C to +75°C (for Ex db version)

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

Katy A. Holdredge

Position:

Senior Staff Engineer

*Signature:
(for printed version)*

Date:

2018-02-27

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 the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

UL LLC
333 Pfingsten Road
Northbrook IL 60062-2096
United States of America





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Manufacturer: **Detector Electronics Corporation**
6901 West 110th Street
Minneapolis, MN 55438
United States of America

Additional Manufacturing location(s):
Detector Electronics Corporation (System Center)
10901 Louisiana Ave. South
Minneapolis, MN 55438
United States of America

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 electrical apparatus 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 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-29-4 : 2009 Edition:1.0	Explosive atmospheres - Part 29-4: Gas detectors - Performance requirements of open path detectors for flammable gases
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical 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 Report:

[US/UL/ExTR15.0043/06](#)

Quality Assessment Report:

[DK/ULD/QAR06.0002/07](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Models LS2000 and HC800 are line of sight infrared gas detection systems that provide continuous monitoring of combustible hydrocarbon gas concentrations in the range of 0 to 5 LFL-meters, over a distance of 5 to 120 meters. Standard system outputs include an electrically isolated/non-isolated 4-20 mA DC current output with the ability to go below 4 mA to indicate fault conditions, and also HART and RS-485 MODBUS communication. Alarm and fault relays are available. LON Output option for EQP is for LS2000 only.

Please see Annex for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- The Line of Sight Infrared Gas Detector LS2000 and HC800 Receiver and Transmitter shall be installed in places where there is a low risk of mechanical damage.
- The field wiring terminal connections are certified for a single wire in size from 0.2mm² to 2.5mm² (or two conductors with the same cross section 0.2 to 0.75mm²). The screws must be tightened down with a torque of 0.4 Nm to 0.5 Nm.
- The metal housing of the Model LS2000 and HC800 must be electrically connected to earth ground.
- Flammable joints are not user serviceable; contact Det-Tronics Service.
- Potential Electrostatic Charging Hazard on the brow. Use caution when servicing in an explosive environment.
- Special Fasteners are used on the Transmitter Electronics Module, M8 bolts per ISO 965 with M6 head. Stainless Steel bolts with a yield strength of 483 N/mm² (70,000 psi).
- Only suitable certified Ex db or Ex eb (as applicable) cable entries, adapters and blanking elements are to be used with a minimum IP66/67 rating.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1: Updated to the latest edition of IEC 60079-1 (ed. 7) and included the Butane and Propane Receiver or Kit option per updated drawing.

Issue 2: Adding model HC800 Line-of-Sight Infrared Gas Detector.

Issue 3: Updated certificate to the latest edition of IEC 60079-7, added LON board configuration for LS2000 model only, and added (alternate) relays for "db" only model.

Issue 4: Update firmware part number revision on the Receiver unit of the LON version of model LS2000.

Issue 5: Drawing revisions for firmware changes.

Issue 6: Firmware update only – no other mechanical, electrical, or physical changes. Drawing update to reflect new firmware versions.

Annex:

[Annex to IECEx UL 15.0037X Issue 6.pdf](#)



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TYPE DESIGNATION

The systems consist of two stainless steel modules – a transmitter and a receiver, along with mounting and alignment bracket. The receiver provides the measurement signal outputs and is furnished with on board “status indication” LEDs and in internal magnetic calibration switch. The transmitter houses a flash lamp and “status indication” LEDs. Both modules are powered from an external 24 VDC supply and are equipped with microprocessor controlled heated optics to increase resistance to moisture and ice.

Models LS2000 and HC800, Line of Sight Infrared Gas Detectors are infrared hydrocarbon gas detectors which provides continuous monitoring of combustible gas concentrations in the range of 0 to 5 LFL-meters, certified for Methane, Butane and Propane. The IP66/IP67 rated enclosure is constructed of stainless steel and utilizes electro-optical components.

The detectors provide an isolated 4-20 mA signal output supporting HART communication protocol and an RS-485 output supporting MODBUS protocol. In addition, optional relay contact alarm outputs can be installed in the terminal compartment in type of explosion protection flameproof enclosure “db”.

Nomenclature for type LS2000 and HC800 a b c d e f g h, where:

- a – Material: S = Stainless Steel
- b – Conduit Entry: N = 3/4-inch NPT, 4 Port Receiver, 2 Port Transmitter
M = Metric M25, 4 Port Receiver, 2 Port Transmitter
E = 1/2-inch NPT, 4 Port Receiver, 2 Port Transmitter
F = Metric M20, 4 Port Receiver, 2 Port Transmitter
- c – Output: 00 = None (Transmitter Only)
14 = Eagle Quantum Premier (EQP)
18 = 4-20mA, RS485, HART (Receiver or Kit)
25 = 4-20mA, RS485, HART w/Optional Relays (Receiver or Kit) – Ex d only
- d – Range: N = None (Transmitter Only)
S = Short Range, 5-60 Meters (Receiver or Kit)
L = Long Range, 30-120 Meters (Receiver or Kit)
- e – Factory Set Gas: N = None (Transmitter Only)
M = Methane (Receiver or Kit)
P = Propane (Receiver or Kit)
B = Butane (Receiver or Kit)
- f – Approvals: S = SIL*
A = FM/CSA*
E = ATEX/IECEX
B = INMETRO
- g – Classification: 1 = Division* and/or Ex db eb
2 = Division* and/or Ex db



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h – Configuration: S = Transmitter/Receiver/Mounting Hardware
T = Transmitter Only
R = Receiver Only
TM = Spare Transmitter Electronics Module
RM = Spare Receiver Electronics Module

Notes:

1. The *-marked options are stated for information only and are not covered within this certificate.
2. "Approval" can use one or more letters to designate the approvals of the product.
3. "Kit" is a complete system consisting of a Transmitter, Receiver, Aperture and Mounting Hardware.

PARAMETERS RELATING TO THE SAFETY

Rated detectable gas: Methane, Propane, and Butane

Measurement range: 0 to 5 LFL-meter

Operating distance (transmitter to receiver): 5 to 60 meters (short range version) and 30 to 120 meters (long range version)

Rated voltage: 18 to 30 Vdc, 24 Vdc nominal

Rated Power: Tx: 16 Watts Max; Rx: 10 Watts Max

Rated operating ambient temperature range: -55°C to +75°C

Classification of installation and use: Stationary

Firmware version: 011823-001 Rev. E (transmitter) 011822-001 Rev. F (receiver).



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MARKING

DET-TRONICS
DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA
www.det-tronics.com

TRANSMITTER

ELECTRICAL RATING
18-30 VDC
16.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

012633-003 (REV. D)

DET-TRONICS
DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA
www.det-tronics.com

TRANSMITTER

ELECTRICAL RATING
18-30 VDC
16.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

012633-004 (REV. D)

DET-TRONICS
DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA
www.det-tronics.com

RECEIVER

ELECTRICAL RATING
18-30 VDC
10.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

012633-016 (REV. B)

DET-TRONICS
DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA
www.det-tronics.com

RECEIVER

ELECTRICAL RATING
18-30 VDC
10.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

012633-017 (REV. B)

AutroPath
TRONDHEIM, NORWAY
www.autrotronic.com

TRANSMITTER

ELECTRICAL RATING
18-30 VDC
16.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

MADE BY: DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA

012633-016 (REV. B)

HC800 **012633-016 (REV. B)**
(SIL/ATEX/IEC APPROVAL)
Ex d

AutroPath
TRONDHEIM, NORWAY
www.autrotronic.com

TRANSMITTER

ELECTRICAL RATING
18-30 VDC
16.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

MADE BY: DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA

012633-017 (REV. B)

HC800 **012633-017 (REV. B)**
(SIL/ATEX/IEC APPROVAL)
Ex d e

AutroPath HC800 RECEIVER

ELECTRICAL RATING
18-30 VDC
10.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

MADE BY: DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA

012635-212 (REV. B)

HC800 **012635-212 (REV. B)**
(SIL / ATEX / IEC APPROVAL)
STANDARD, Ex d
W/ RELAY

RELEASED

AutroPath HC800 RECEIVER

ELECTRICAL RATING
18-30 VDC
10.0 WATTS MAX. (SEE MANUAL)

MODEL:
SERIAL NO:
DATE CODE:

MADE IN USA OF U.S. & IMPORTED PARTS

CE 0539 E N 2 G
DEMCO IS ATEX 1388X
Ex db ab IC 14 EN60079-29-4 IP66/67
IECEx UL 15.0037X
Ex db ab IC 14 EN60079-29-4 IP66/67
(Temp -50°C TO +75°C)

MADE BY: DETECTOR ELECTRONICS CORPORATION
6901 W. 110TH ST. MINNEAPOLIS, MN USA

012635-213 (REV. B)

HC800 **012635-213 (REV. B)**
(SIL / ATEX / IEC APPROVAL)
STANDARD, Ex d e
W/O RELAY

RELEASED



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ROUTINE EXAMINATIONS AND TESTS

Routine tests according to IEC 60079-1 cl. 16 are not required, as the enclosures have been successfully tested at four times the reference pressure.

All Line of Sight Infrared Gas Detector LS2000 and HC800 assemblies with a terminal compartment constructed as increased safety "eb" shall be tested with a dielectric strength test at a minimum of 500 VAC or 700 VDC for 1 minute or 600 VAC or 840 VDC for 100 ms in accordance with IEC 60079-7.