



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 UL 16.0157X	Page 1 of 5	<u>Certificate history:</u>
Status:	Current	Issue No: 2	Issue 1 (2017-06-22) Issue 0 (2017-03-31)
Date of Issue:	2021-12-20		
Applicant:	Detector Electronics Corporation 6901 West 110th Street Minneapolis, MN 55438 United States of America		
Equipment:	PointWatch Eclipse® Hydrocarbon Infrared Gas Detector, Models PIRECL*****, HC200*****, HC300PL*****		
Optional accessory:			
Type of Protection:	Flameproof "db", Increased safety "eb", Intrinsic safety "ib"		
Marking:	Ex db eb [ib] IIC T5...T4 Gb IEC 60079-29-1, or Ex db [ib] IIC T5...T4 Gb IEC 60079-29-1, or Ex db eb IIC T5...T4 Gb IEC 60079-29-1, or Ex db IIC T5...T4 Gb IEC 60079-29-1 For CO ₂ version only : Ex db eb [ib] IIC T5...T4 Gb, or Ex db [ib] IIC T5...T4 Gb, or Ex db eb IIC T5...T4 Gb, or Ex db IIC T5...T4 Gb -50 °C to +40 °C (for Ex db eb version T5) -55°C to +40°C (for Ex db version T5)		
Approved for issue on behalf of the IECEx Certification Body:	Katy A. Holdredge		
Position:	Senior Staff Engineer		
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:

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





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-50 °C to +75 °C

(for Ex db eb version T4)

-55°C to +75°C

(for Ex db version T4)



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

Manufacturing
locations:

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 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

[IEC 60079-29-1:2016-07](#) Explosive atmospheres – Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases
Edition:2.0

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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:

[US/UL/ExTR16.0182/00](#)

[US/UL/ExTR16.0182/01](#)

[US/UL/ExTR16.0182/02](#)

Quality Assessment Report:

[US/UL/QAR20.0001/01](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The PointWatch Eclipse® Hydrocarbon Infrared Gas Detector model PIRECL is an infrared hydro-carbon gas detector which provides continuous monitoring of combustible gas concentrations in the range of 100 % LFL. The IP66/IP67 rated enclosure is constructed of stainless steel and utilizes sapphire optics.

The detector provides an isolated 4-20 mA signal output supporting HART communication protocol, an optional intrinsically safe port for hand-held HART communications, an optional LON communication protocol for use with the EQP System 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 "d".

The PIRECL can be used as a stand-alone gas detector, by which the alarm outputs can be used to generate alarm signals independently or with suitable certified gas detection equipment.

Please see Annex for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Special conditions for safe use (General):

- The Infrared Gas Detector model PIRECL 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 0.2 to 2.5 mm², (or two conductors with same cross section 0.2 to 0.75 mm²). The screws must be tightened down with a torque 0.4 to 0.5 Nm.
- The metal housing of the Infrared Hydrocarbon Gas Detectors must be electrically connected to earth ground.
- Alarm output latching requirement: High alarm outputs must be configured as latching, either as part of the alarm operation of the gas detector itself (in stand-alone applications), or as a function of the "high alarm" indication within the controller that is directly connected to the gas detector (for remote applications).
- Potential electrostatic charging hazard - use a wrist grounding strap or similar method at all times to control accidental ESD when disassembling, programming, or reassembling the PIRECL gas detector.
- Flameproof joints are not intended to be repaired – contact manufacturer for service or repair.
- Use M6 bolts per ISO 965 with M5 head with yield stress $\geq 65,000$ psi (448 N/mm²).

Special conditions for safe use for the [ib] HART communication port only:

- The PointWatch Eclipse® Hydrocarbon Infrared Gas Detectors model PIRECL shall be powered from a Safety Isolating Transformer according to IEC60742 or IEC61588.
- For installations in which both the Ci and Li of the intrinsically safe apparatus exceeds 1% of the Co and Lo parameters of the associated apparatus (excluding the cable), then 50% of Co and Lo parameters are applicable and shall not be exceeded. The reduced capacitance shall not be greater than 1 µF for Groups IIA and/or IIB, and 600 nF for Group IIC.
- The intrinsically safe output on the HART Communicator Port is internally connected to enclosure ground and will therefore not withstand a dielectric strength test.

Special conditions for safe use for the HC300PL only:

- The AutoPoint HC300PL is only to be used connected to the Autosafe system by the Power-Loop circuit.
- The Hart communicator tools are not to be used for changing the alarm set points of the HC300PL. The HC300PL alarm setpoints are only to be changed by using the alarm set points programming tools on the Autosafe controller unit.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Issue 1: Firmware update and addition of "Fast Response" CPU firmware/ No constructional changes affecting the applicable protection techniques. Drawing revisions to affect the above updates.

Issue 2: Evaluate alternate LON and 4-20 mA board components within the flameproof section, and perform an IEC 60079-0, IEC 60079-7 and IEC 60079-29-1 standard edition update.

Annex:

[Annex to IECEx UL 16.0157X Issue 2.pdf](#)



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TYPE DESIGNATION

Nomenclature for PIRECLabcdef, HC200abcdef or HC300PLabcdef, where:

Basic types: PIRECL = PointWatch Eclipse® Infrared Gas Detector
HC200 = AutoPoint Infrared Gas Detector
HC300PL = AutoPoint Infrared Gas Detector (Power Loop)

a – Thread type:

A = $\frac{3}{4}$ NPT
B = M25
E = $\frac{1}{2}$ NPT
F = M20

b – Output and measurements options:

1 = 4-20 mA with HART Protocol & RS 485: 0-100 % LFL Full Scale Range
2 = 4-20 mA with HART Protocol & RS 485: 0-100 % by volume Full Scale Range
3 = 4-20 mA with HART Protocol & RS 485: CO₂ detection only. Factory set to 0-2% Full Scale Range
4 = Eagle Quantum Premier (EQP): 0-100 % LFL Full Scale Range
5 = Eagle Quantum Premier (EQP): 0-100 % by volume Full Scale Range
6 = Eagle Quantum Premier (EQP): CO₂ detection only Full Scale Range undefined
7 = Power Loop
11 = 4-20 mA with HART Protocol & RS 485: 0-100 % LFL Full Scale Range, Fast Response
14 = Eagle Quantum Premier (EQP): 0-100 % LFL Full Scale Range, Fast Response

c – Optional outputs:

A = HART communication Port
B = HART communication Port and Relay Board (not compatible with EQP) Ex db only
C = Third party addressable module (Ex db only)
D = No optional outputs
E = Relay Board (not compatible with EQP) Ex db only

d – Weather protection:

1 = Weather Baffle with hydrophobic filter
2 = Weather Baffle without hydrophobic filter
3 = Weather Baffle with hydrophobic filter and 1/16" threaded calibration port
4 = Weather Baffle without hydrophobic filter and 1/16" threaded calibration port
5 = No weather protection installed



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e – Approvals:

A = FM*/CSA*
B = Brasil*
BT = Brasil*/SIL*
C = CSA*
E = ATEX/CE*/IECEx*
F = FM*
K = Kazakhstan
R = Russia*
S = SIL
T = SIL*/FM*/CSA*/ATEX/CE*/IECEx*
U = Ukraine*
W = FM*/CSA*/ATEX/CE*/IECEx*
Y = China*

f – Classification:

1 = Division*/Ex db eb
2 = Division*/Ex db

Notes:

1. The *-marked options are stated for information only and are not covered within this certification.
2. Refer to drawing No. 007231-001 for details.
3. Type 'Approval' can use one or more letters to designate the approval/certification on the product.

Furthermore, the models HC200 abcdef and HC300PL abcdef description correspond to the Autronica version of the PIRECL Infrared Hydrocarbon Gas Detector, as per note 12 on drawing No. 007263-002.

PARAMETERS RELATING TO THE SAFETY

18- 32 Vdc, 10 W max

The intrinsic safety parameters for the Hart output of the Infrared Hydrocarbon Gas Detector are:

Uo : 3.47 V
Io : 117 mA
Co : 1000 μ F
Lo : 2.3 mH
Um : 250 V



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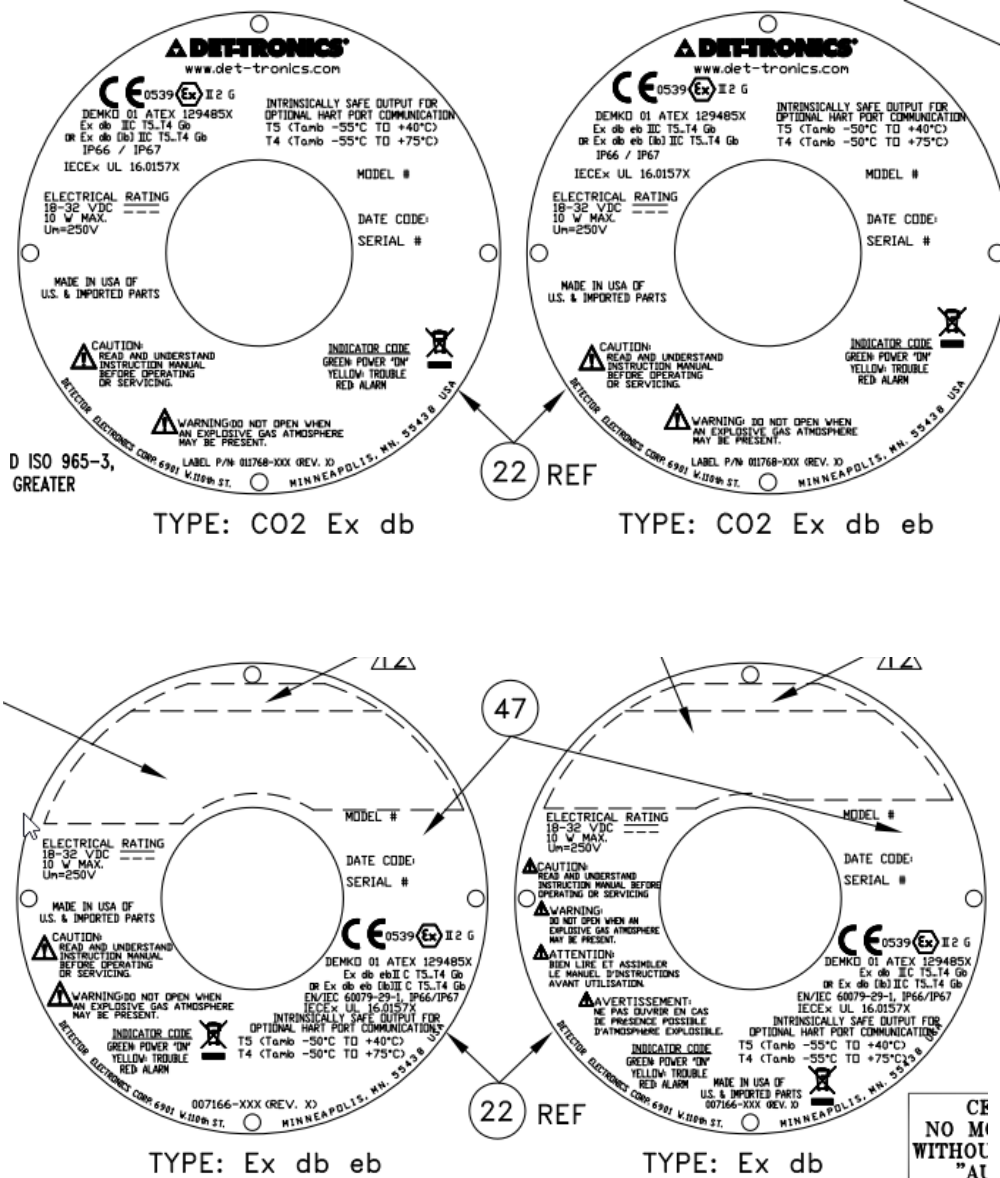
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MARKING

Marking has to be readable and indelible; it has to include the following indications:





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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 PIRECL assemblies with a terminal compartment constructed as increased safety "eb" shall be tested with a dielectric strength test at 500 VAC or 700 VDC for 1 minute in accordance with IEC 60079-7 cl. 7.

LIST OF CERTIFIED COMPONENTS

The following additional previous editions of Standards noted under the "Standards" section of this Certificate were applied to integral Components as itemized below. There are no significant safety related changes between these previous editions and the editions noted under the "Standards" section.

Product	Certificate Number	Standards
Phoenix Contact Front 2.5 Terminal Block	IECEx KEM 07.0023U	IEC 60079-0, Edition 7.0 IEC 60079-7, Edition 5.1