

EU-TYPE EXAMINATION CERTIFICATE



[1]

[2]

Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

[3]

EU-Type Examination Certificate Number: **DEMKO 01 ATEX 129485X Rev. 9**

[4]

Product: **PointWatch Eclipse® Hydrocarbon Infrared Gas Detector, Model PIRECL, HC200, HC300PL**

[5]

Manufacturer: **Detector Electronics Corporation**

[6]

Address: **6901 West 110th Street, Minneapolis, MN 55438 USA**

[7]

This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8]

UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential report no. **4787818433**

[9]

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 60079-0:2012+A11:2013
EN 60079-11:2012**

**EN 60079-1:2014
EN 60079-29-1:2007**

EN 60079-7:2015

[10]

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11]

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by the certificate.

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The marking of the equipment or protective system shall include the following:

II 2 G

**Ex db eb [ib] IIC T5...T4 EN60079-29-1 IP66/IP67 or
Ex db [ib] IIC T5...T4 EN60079-29-1 IP66/IP67**

or

II 2 G

**Ex db eb IIC T5...T4 EN60079-29-1 IP66/IP67 or
Ex db IIC T5...T4 EN60079-29-1 IP66/IP67**

For CO₂ version only:

II 2 G

**Ex db eb [ib] IIC T5...T4 IP66/IP67 or
Ex db [ib] IIC T5...T4 IP66/IP67**

or

II 2 G

**Ex db eb IIC T5...T4 IP66/IP67 or
Ex db IIC T5...T4 IP66/IP67**

Certification Manager

Jan-Erik Storgaard

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all equipment to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2001-05-15

Re-issued: 2017-06-22



Notified Body

UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
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Description of Product

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 utilises 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.

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 = ¾ NPT
B = M25
E = ½ 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

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 de
2 = Division*/Ex d

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.

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Performance testing

The measuring function of the Infrared Gas Detector model PIRECL for explosion protection, according to Annex II clause 1.5.5, 1.5.6 and 1.5.7 of the Directive 2014/34/EU is, for methane, propane, ethylene and butane covered in this EU-Type Examination Certificate in the following configurations:

1. PIRECL Infrared Gas Detector (LON Model) tested in combination with the EQP System Controller Model EQ3XXX
2. PIRECL Infrared Gas Detector tested in combination with the Model PIRTB, PointWatch Termination Box – non CO₂ version.
3. PIRECL Infrared Gas Detector tested as stand-alone gas detector.
4. PIRECL Infrared Gas Detector tested in combination with the Model UD20 Universal Display Unit – non CO₂ version.

Note:

The measuring function of the Infrared Gas Detector model PIRECL CO₂ version, for explosion protection, according to Annex II clause 1.5.5, 1.5.6 and 1.5.7 of the Directive 2014/34/EU is NOT covered in this EU-Type Examination Certificate.

Temperature range

The relation between ambient temperature and the assigned temperature class is as follows:

Ambient temperature range	Temperature class
-50 °C to +40 °C (for Ex db eb version)	T5
-55 °C to +40 °C (for Ex db version)	
-50 °C to +75 °C (for Ex db eb version)	T4
-55 °C to +75 °C (for Ex db version)	

Coding:

For the terminal compartment in type of explosion protection flameproof enclosure “d”:
Ex db IIC T5...T4 or Ex db [ib] IIC T5...T4 (With HART communication port)

For the terminal compartment in type of explosion protection increased safety “e”:

Ex db eb IIC T5...T4 or Ex db eb [ib] IIC T5...T4 (for model PIRECL only, with HART communication port)

Electrical data:

Supply specifications:

Rated voltage 18- 32 Vdc
 Rated power 10 W max.

Optional third party addressable module:

Rated voltage 30 Vdc
 Rated current 30 mA

Intrinsic safe output specifications:

Intrinsic safe terminals are accessible exterior on housing, separate from the terminal block compartment. The intrinsic safe output from the PIRECL Infrared Hydrocarbon Gas Detectors is only optimised for use with the ATEX certified handheld HART Communicators. These HART communicators are themselves not covered by this certificate.

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

U_o : 3.47 V
 I_o : 117 mA
 C_o : 1000 µF
 L_o : 2.3 mH
 U_m : 250 V

Routine tests:

Routine tests according to EN 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 “e” shall be tested with a dielectric strength test at 500 VAC or 700 VDC for 1 minute in accordance with EN60079-7 cl. 7.

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Descriptive Documents

The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.

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Specific conditions of 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.
- The Infrared Gas Detector model PIRECL has an ambient temperature rating for performance of -55°C to +75 °C (for Ex d version) and -50°C to +75°C (for e version) .
- 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 EN60742 or EN61588.
- 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 μ F 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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Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) are covered by the standards listed at item 9.

Additional information

The Infrared Gas Detector model PIRECL has in addition passed the tests for Ingress Protection to IP 66 and IP 67 in accordance with EN60529:1991+A1:2000+A2:2013.

The construction of the HC200 Infrared Hydrocarbon Gas Detector and the PIRECL Infrared Hydrocarbon Gas Detector are identical. The construction of the HC200 Infrared Hydrocarbon Gas Detector and the HC300PL are identical, but the HC300PL is equipped with the Power Loop board made by Autronica, replacing the 4-20 mA board.

The trademark **▲ DET-TRONICS** will be used as the company identifier on the marking label.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.