

EC Declaration of Conformity



The undersigned of
Honeywell Analytics Ltd
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For and on behalf of the importer
Life Safety Distribution AG
 Wittrasse II
 CH-8610
 Uster
 Switzerland

Declares that the products listed below

APEX Sensor

The APEX sensor is part of the APEX fixed gas detector which is used to monitor areas where flammable gases, oxygen deficiency or toxic gases may pose a hazard to the working environment.

Are in conformity with the provisions of the following European Directive(s), when installed, operated, serviced and maintained in accordance with the installation/operating instructions contained in the product documentation:

2004/108/EC	EMC Directive
94/9/EC	ATEX Directive – Equipment for use in Potentially Explosive Atmospheres

And that the standards and/or technical specifications referenced below have been applied or considered:

Harmonised Standard	Description
EN 50270:2006	Electromagnetic Compatibility – Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen
EN 60079-0:2006	Electrical apparatus for explosive gas atmospheres: General requirements
EN 60079-1:2007	Electrical apparatus for explosive gas atmospheres: Flameproof enclosures “d”
EN 60079-11:2007	Electrical apparatus for explosive gas atmospheres: Intrinsic safety “i”
EN 61241-1:2004	Electrical apparatus for use in the presence of combustible dust: Protection by enclosures “D”

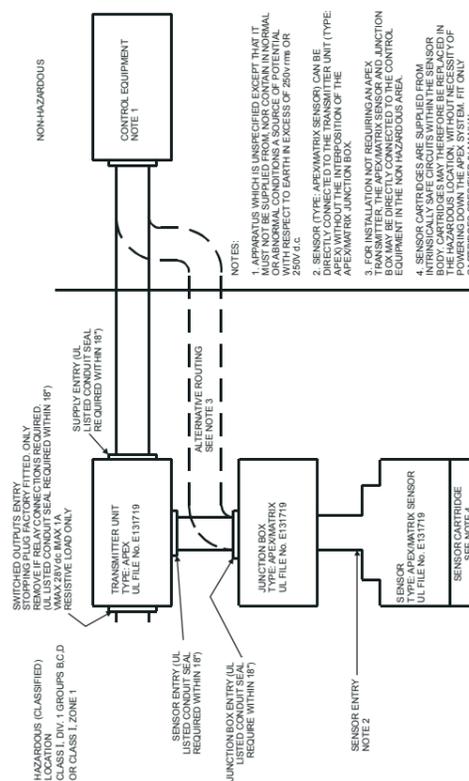
Notified Body for ATEX: Baseefa Ltd Rockhead Business Park Staden Lane Buxton Derbyshire SK17 9RZ	Certificate Number Baseefa08ATEX0254X Type Approval II 2 G D Ex d I B IIC Ex ID A21 IP67 T100°C (Tamb -40°C to +55°C) or T135°C (Tamb -40°C to +80°C)	Quality Assurance Notification Number Baseefa ATEX 5192
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Notified Body Number: 1180
 Year of CE marking: 2001

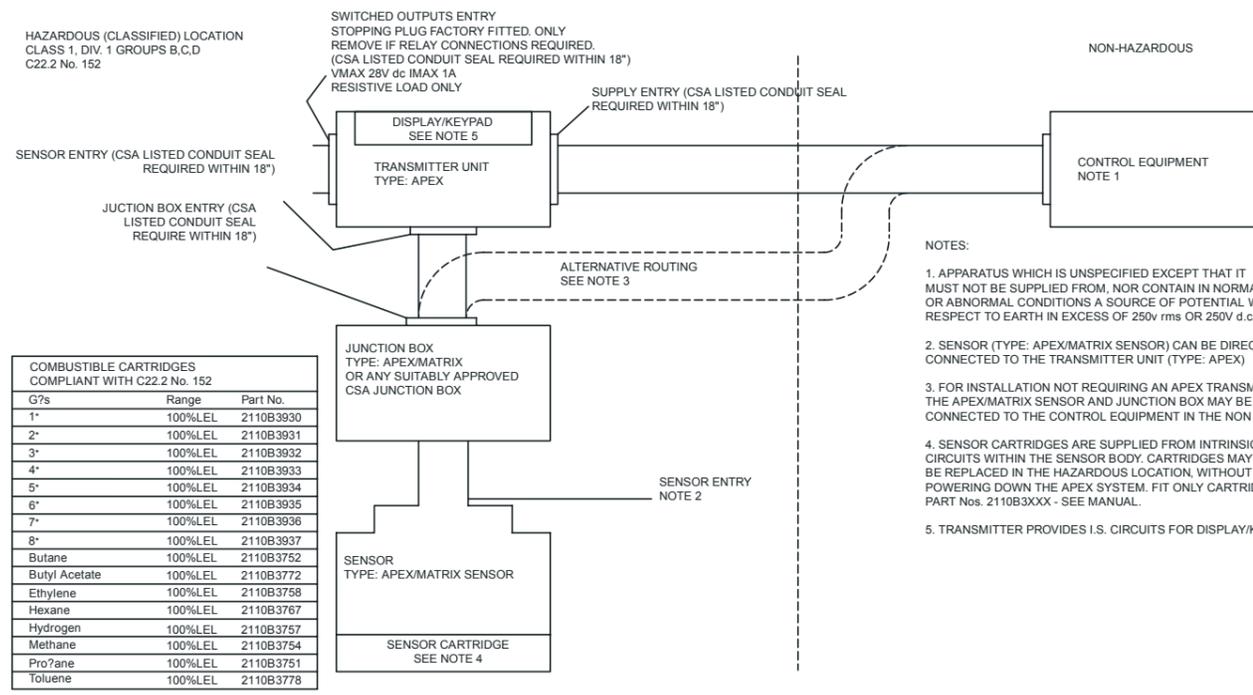
Signature:
 Name: Steve Hamilton
 Position: Senior Regulatory Compliance Engineer
 Date: 7 September 2010
 Declaration Number: 2004Y0021_01A03227
 Declaration of Conformity in accordance with EN ISO/IEC 17050-1:2004



UL Control Drawing



CSA Control Drawing



G?s	Range	Part No.
1*	100%LEL	2110B3930
2*	100%LEL	2110B3931
3*	100%LEL	2110B3932
4*	100%LEL	2110B3933
5*	100%LEL	2110B3934
6*	100%LEL	2110B3935
7*	100%LEL	2110B3936
8*	100%LEL	2110B3937
Butane	100%LEL	2110B3752
Butyl Acetate	100%LEL	2110B3772
Ethylene	100%LEL	2110B3758
Hexane	100%LEL	2110B3767
Hydrogen	100%LEL	2110B3757
Methane	100%LEL	2110B3754
Pro?ane	100%LEL	2110B3751
Toluene	100%LEL	2110B3778

1. INTRODUCTION

This guide provides the basic information necessary to mechanically install a Certified Sensor and make electrical connections.

The Certified Sensor is designed for use in hazardous areas and can be fitted directly to an Apex Transmitter Unit, or to a Certified Junction Box.

The sensor features a cartridge, housed in the sensor body, that determines which gas is being sensed. The monitored gas concentrations are displayed on the Transmitter Unit's LCD screen.

The Certified Sensor includes transducer drive and conditioning electronics in an Ex d enclosure with an IS interface to the cartridge.

The sensors are available in M20 ATEX and 3/4 NPT (UL and CSA) thread versions and are protected against water and dust ingress to IP67 except for the gas sensing entry.

Associated Documentation

Apex Technical Handbook, MAN0604	Part No. 2110M8030
Certified Junction Box Quick Start Guide, MAN0607	Part No. 2110M8007
Accessories Quick Start Guide, MAN0608	Part No. 2110M8008
Cartridge Quick Start Guide, MAN0620	Part No. 2110M8015

Refer to the relevant control system manual for connection information. If information outside the scope of these instructions is required please contact Honeywell Analytics.

The types of information notices used throughout this document are as follows:



WARNINGS
 Indicates hazardous or unsafe practice which could result in severe injury or death to personnel.

Caution: Indicates hazardous or unsafe practice which could result in minor injury to personnel, or product or property damage.

Note Provides useful/helpful/additional information.

Special conditions for safe use - ATEX

The integral leads shall be protected from impact and suitably terminated. Equipotential bonding is to be provided by the mounting arrangement. The sensor is not to be used in atmospheres containing more than 21% oxygen.

Honeywell Analytics reserve the right to change or revise the information supplied in this document without notice and without obligation to notify any person or organisation of such revision or change.

2. SAFETY

WARNINGS

- This gas detection equipment is certified for and intended for use in potentially hazardous areas. Install and use the equipment in accordance with current local and national regulations.
- Refer to the control drawings included in this document when installing the certified components.
- Operators should be fully aware of the action to be taken if the gas concentration exceeds the alarm level.
- Do not modify or alter the construction of the unit as essential safety and certification requirements may be invalidated.
- The equipment is not suitable for use in oxygen enriched atmospheres (>21%V/V). Oxygen deficient atmospheres (<10% V/V) may suppress some sensor outputs.
- The equipment is intended for use at atmospheric pressure only and should not be used in pressures exceeding 1.1 bar.
- When installed to measure flammable gas it is essential that either the Transmitter unit or control network is configured to latch the overrange condition. If the Transmitter unit local relays are used this should be achieved by enabling the overrange latching function of the Transmitter unit. Depletion of oxygen as a consequence of displacement by flammable gas can result in the gas reading returning to zero.
- Change gas cartridges using the procedure described in the Cartridge Quick Start Guide. Failure to correctly follow the procedure could result in the wrong cartridge being installed, and possibly non-detection of events. Alternatively, extraneous alarms could be triggered by chemicals detected but not of concern at a particular location.
- Sensor cartridges may contain corrosive solutions. Dispose of in accordance with local and national regulations.
- During usage, as some gases may be hazardous, outlets from accessories, etc., e.g. Flow Housing, should exhaust to a safe area.

CAUTIONS

- Installation should consider not only optimum siting for gas detection related to potential leak points, gas characteristics and ventilation but also placement where the potential for mechanical damage is minimised or avoided.
- Calibration procedures should only be performed by qualified personnel.
- During installation maintenance only use the supplied parts. Replacement with alternatives will invalidate certification.
- Exposure to fluorinated hydro carbons or silicones will poison the sensor beads on catalytic sensor cartridges. If a sensor is known to have been poisoned then it must be re-calibrated. If not sure then flow gas over the sensor and if the reading is incorrect re-calibrate within the cartridge's tolerance value (see the Apex Technical Handbook).
- Only cartridges with the following part numbers can be fitted to the Certified Sensor: 2110B30x0, 31x0, 32x0, 33x0, 34x0 series and 2110B3700 - 2110B3999 range. Note: Sensor certified to CSA C22.2 No. 152 only when fitted with specific cartridges. See Certifications-CSA Control Drawing.
- Do not use the unit where the temperature is lower than -40°C (-40°F) or higher than +65°C (149°F).
- Exposures to gas above the recommended range may result in ambiguous readings and may require subsequent re-calibration of the sensor.
- Review cartridge data sheets for operating temperatures and humidities, which are determined on a cartridge by cartridge basis.
- Dispose of in accordance with local disposal regulations. Materials used: Main Body - Stainless Steel

Find out more
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Quick Start Guide



Apex Sensor

3. INSTALLATION

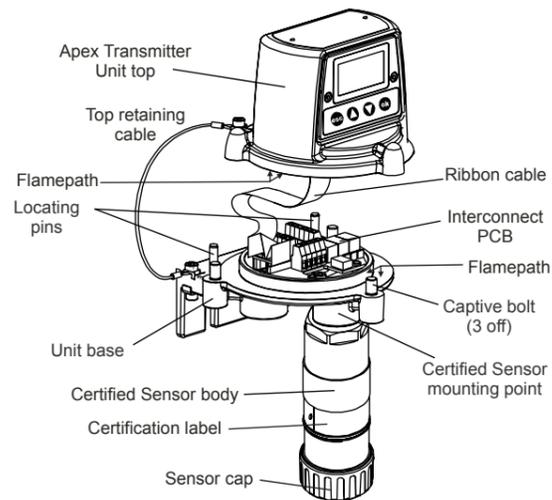
The Certified Sensor can be mounted in either an Apex Transmitter Unit or in a Certified Junction Box. The sensor should be mounted in the vertical orientation with the cartridge facing downwards. This procedure describes how to fit the Certified Sensor to an Apex Transmitter Unit. Remote sensor installation in a Certified Junction Box is similar-see the Certified Junction Box Quick Start Guide for details.

Caution: Ensure that the Apex Transmitter Unit flamepath is not damaged during this procedure. The flamepath is formed by the mating surfaces of the Apex Transmitter Unit top and base (see diagram).

1. Isolate all associated power supplies and ensure that they remain OFF during the installation procedure. Ensure a gas free atmosphere.

2. Detach the top of the Transmitter Unit.

Unscrew the three captive M8 bolts. The top is retained by a metal retaining cable attached to the base. Take care not to damage the ribbon cable between the top and the base.



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5. ACCESSORIES

The following accessories can be used with the Certified Sensor.

- **Flow Housing (Part No. 2110B2140).** Enables test, calibration or sample gas to flow over the sensor correctly.

- **Weather Protection (Part No. 2110B2150).** Protects the sensor from extreme weather conditions (torrential rain, storms, gales etc.) Also provides some protection from hose-down.

- **Collecting Cone (Part No. 2110B2151).** Increases the collection area for lighter than air gases.

- **Sunshade (Part No. 2110B2151).** Shades the sensor preventing overheating from direct, intense sunlight.

Note: Only use accessories from this range with the Certified Sensor.

For more information about the accessories, see the Accessories Quick Start Guide.

The Certified Sensor cap can house one of three types of filter. These prevent unwanted moisture, dirt and contaminants affecting the gas cartridge. Therefore, during operational service it is important that the sensor cap remains securely fitted.

The single filter is fitted to the Certified Sensor in place of the rubber seal inside the sensor cap or accessory.

The following three different types of filter are available:

- **Mesh filter - Part Number: 2110B2170** - for use in harsh environments. The filter prevents dirt from blocking the cartridge sinter.

- **Hydrophobic filter - Part Number: 2110B2171** - for use in environments where the cartridge front is likely to become wet. The hydrophobic material allows gas to pass through but not water.

- **Carbon filter - Part Number: 2110B2172** - For use in environments where significant volatile compounds are present. The filter prevents the cartridge from being critically affected.

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INSTALLATION

3. Fit the Certified Sensor to the Transmitter Unit

The sensor should be installed pointing downwards and in a location free from dust and direct heat sources.

Feed the sensor cable through the Certified Sensor mounting point at the front of the Transmitter Unit base. Screw the sensor firmly into the mounting point until it is fully home.

4. Refit the top to the base.

Cautions:

1. Ensure that there is no moisture inside the unit before fitting the top.

2. Use only the captive bolts supplied, replacement with alternative bolts will invalidate certification.

The top should be located using the locating pins on the Apex Transmitter Unit base and then lowered onto the base.

Ensure that the lid retaining cable and/or wiring is not trapped and the O-ring in the top is correctly located.

Check that there is no discernible gap between the top and the base. Tighten the captive M8 bolts to 5Nm (3.68 foot-pounds).

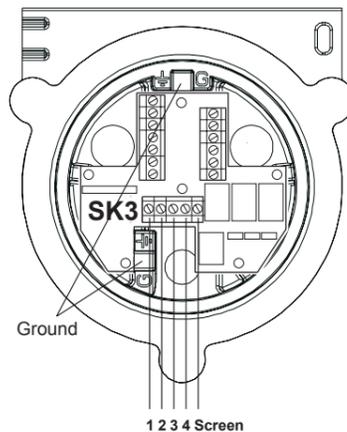
5. Connect the sensor wiring

See the diagram and wiring table

Terminal/Number	Function	Colour	Minimum length of cable from entry point
SK3 1	CAN_L	White	40mm
2	CAN_H	Green	40mm
3	+V	Red	40mm
4	0V	Black	40mm
5	Screen	-	40mm
	Earth	Green/Yellow	40mm

6. Fit a gas cartridge to the Certified Sensor

To install the gas cartridge refer to the Cartridge Quick Start Guide supplied



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6. FAULTS/WARNINGS

In order to assist with the identification of problems, the Transmitter Unit displays a number of Fault (F) and Warning (W) messages. The Fault/Warning messages related to the sensor are listed below together with possible causes and remedies.

Message	Cause/Remedy
F: Sensor Failed	A Certified Sensor fault has developed. Check the connections between transmitter and Certified Sensor. If fault remains replace the complete Certified Sensor assembly.
F: No Cartridge	The Certified Sensor reports there is no cartridge fitted. Check that the cartridge is fitted correctly. If no cartridge present, fit required cartridge.
F: Wrong Cartridge	The wrong type of cartridge has been fitted in the Certified Sensor. Replace the cartridge with correct type for the target gas.
F: Cartridge Failed	The cartridge has failed. Failed Replace the cartridge.
W: Temperature Error	The cartridge is being operated at temperatures outside its specified temperature range.
F: Temperature Error	Identify the cause of temperature problem. Fit suitable accessories or relocate the Certified Sensor as appropriate. If fault persists replace the Certified Sensor.
W: End of Cell Life	The cartridge is reaching, or has reached, the end of its useful service life.
F: End of Cell Life	Warning - Replace the cartridge within the next 3 months. Fault - replace the cartridge immediately.
W: Calibration Needed	The cartridge requires calibration.
F: Calibration Needed	Perform zero and span calibration procedures.
FATAL FAULT	A fatal error has occurred. Note the displayed fault code and conditions, and contact the manufacturer for advice.
NO SENSOR	The transmitter can not detect the presence of the sensor.
Sensor Comms Fail	Sensor incorrectly connected or faulty. Check connections between Certified Sensor and transmitter unit. If connections correct but message remains, replace Certified Sensor.

Sensor Procedures for calibration, component replacement, etc., are described in the Apex Technical Handbook.

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4. MAINTENANCE

The principal maintenance activities for Certified Sensors are replacement of the filter and replacement of the cartridge.

Once the sensor has been installed and the Transmitter Unit or controller that it is connected to has been commissioned, the sensor's operation is monitored and displayed by the Transmitter Unit or controller.

After successful installation, it should not be necessary to replace a Certified Sensor during service. However, if a sensor cartridge reaches the end of its service life, or fails, it can be replaced.

In order to ensure that safety and performance levels are maintained, planned maintenance is recommended. This maintenance should take account of operational conditions, cartridge type and relevant safety and performance requirements.

Recommended maintenance, which should only be performed by qualified service personnel, is detailed in the Apex Technical Handbook.

4.1. FILTER REPLACEMENT

The Certified Sensor filter is located in the sensor cap or accessory attached to the end of the sensor body. The following procedure allows the filter to be safely changed with the unit powered-up.

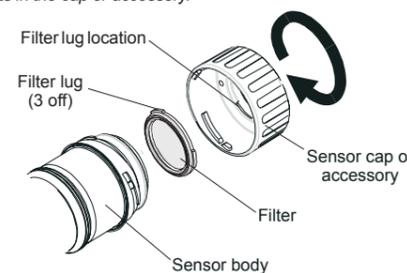
Note: Before starting the procedure check that the new filter is the correct type for the application. Three filter types are available: Mesh, Hydrophobic and Carbon.

1. Remove the Certified Sensor cap or accessory from the sensor body.

Rotate the cap or accessory in an anticlockwise direction by 1/4 turn to release the bayonet fitting and pull off.

2. Remove the existing filter.

The filter is held in place in the cap by its three lugs. Carefully prise the filter free from the lug location points in the cap or accessory.



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7. CERTIFICATION

The Certified Sensor is designed and approved for use in hazardous areas. There are six Certified Sensor types:

Sensor- ECC/Catalytic	*Alternatives
ATEX:	Part No: 2110B2000 Part No: 2110B2070
UL:	Part No: 2110B2003 Part No: 2110B2073
CSA:	Part No: 2110B2004 Part No: 2110B2074
Sensor- Thick Film	*Alternatives
ATEX:	Part No: 2110B2010 Part No: 2110B2080
UL:	Part No: 2110B2013 Part No: 2110B2083
CSA:	Part No: 2110B2014 Part No: 2110B2084

* Must be used with high sensitivity catalytic cartridges.

Caution: Only cartridges with the following part number can be fitted to the Certified Sensor:

2110B30x0, 31x0, 32x0, 33x0, 34x0 series
2110B3700-2110B3999 range

A certification label is located on the body of the Certified Sensor. The label contains all the relevant information regarding the product's identification and certification state.

UL:

Class I, Division 1, Groups B, C, D
Class I, Zone 1, AEx d [ia] IIC
OP. TEMP CODE: T4 (Tamb -40 to +80°C)
T5 (Tamb -40 to +55°C)

CSA:

Class I, Division 1, Groups B, C, D
OP. TEMP CODE: T4 (Tamb -40 to +75°C)
T5 (Tamb -40 to +55°C)

Note: Sensor certified to CSA C22.2 No. 152 only when fitted with specific cartridges. See Certifications -CSA Control Drawing.

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MAINTENANCE

3. Insert a new filter.

Ensure that the filter is correctly placed in the cap the correct way round with the three lugs closest to the front face of the cap or accessory and correctly engaged in the location points.

4. Refit the cap or accessory.

Reverse the removal procedure.

4.2. CARTRIDGE REPLACEMENT

To replace the sensor cartridge refer to the Cartridge Quick Start Guide supplied with the replacement cartridge.

Note: The Certified Sensor uses intrinsically safe circuits to drive the cartridges. Cartridges may therefore be exchanged without powering down even in the presence of an explosive gas atmosphere.

Cartridge Calibration

The plug in sensor cartridges are supplied pre-calibrated for a specific gas.

Caution: Only cartridges with the following part numbers can be fitted to the Certified Sensor.

2110B30x0, 31x0, 32x0, 33x0, 34x0 series
2110B3700 - 2110B3999 range

Note: Sensor certified to CSA C22.2 No. 152 only when fitted with specific cartridges. See Certifications - CSA Control Drawing.

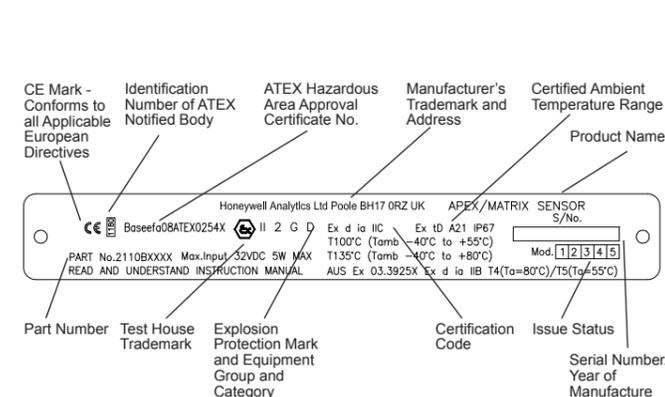
Re-calibration should only be performed by qualified service personnel using the accessories provided (see the Apex Technical Handbook). Test gas concentration should nominally be 50% of range, and applied for 5 minutes or until reading has stabilized.

Note: Sensors fitted with Oxygen cartridge should be calibrated with a gas concentration of 20.9%V/V (normal atmospheric).

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CERTIFICATION

ATEX Label



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