

OELD Smart Junction Box



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1 Safety

1.1 Safety Warnings and Information

WARNING

1. Installation must be in accordance with the recognized standards of the appropriate authority in the country concerned. For Europe see EN 60079-14 and EN 60079-29-2.
2. Do not open the enclosure when energized or when an explosive atmosphere may be present.
3. Operators should be fully aware of the action to be taken if the gas concentration exceeds the alarm level.
4. Do not modify or alter the construction of the product as essential safety and certification requirements may be invalidated.
5. Access to the interior of the product, when carrying out any work, must be conducted only by trained personnel.
6. Measuring function not approved under ATEX. Do not rely on the OELD display backlight status indication for safety-related purposes.
7. In order to maintain electrical safety, the unit must not be operated in atmospheres of more than 21% oxygen.

Special Conditions for Safe Use - Increased Safety (Ex e) Versions

In order to comply with the ATEX certification, the following special conditions of us must be adhered to:

1. Not more than one single or multiple strand lead shall be connected into either side of any terminal, unless multiple conductors have been joined in a suitable manner, e.g. two conductors into a single insulated crimped boot lace ferrule.
2. Leads connected to the terminals shall be insulated for the appropriate voltage and this insulation shall extend to within 1 mm of the terminal throat.
3. All terminal screws, used and unused, shall be tightened down to between 0.5 Nm to 0.6 Nm
4. The terminals shall only be installed and wired with cable as recommended in IECEx KEM 10.0093U

1.2 Disposal

Dispose of the product in accordance with local regulations. The materials used are: -

Enclosure	Aluminum alloy or SS316
Lid	Aluminum alloy or SS316, Glass

1.3 EU Directive 2012/19/EU: Waste Electrical and Electronic Equipment (WEEE)



This symbol indicates that the product must not be disposed of as general industrial or domestic waste. This product should be disposed of through suitable WEEE disposal facilities. For more information about disposal of this product, contact your local authority, distributor or the manufacturer.

1.4 Important Information

This manual is for use with the OELD smart junction box only.

Honeywell Analytics can take no responsibility for installation and/or use of its equipment if not done so in accordance with the appropriate issue and/or amendment of the Operating Instructions.

The reader of these Operating Instructions should ensure that it is appropriate in all details for the exact equipment to be installed and/or operated. If in doubt, contact Honeywell Analytics for advice.

The following types of notices are used throughout these Operating Instructions:

WARNING

Identifies a hazardous or unsafe practice which could result in severe injury or death to personnel.

Caution

Identifies a hazardous or unsafe practice which could result in minor injury to personnel, or product or property damage.

Note

Identifies useful/additional information.

Every effort has been made to ensure the accuracy of this document, however, Honeywell Analytics can assume no responsibility for any errors or omissions in this document or their consequences.

Honeywell Analytics would greatly appreciate being informed of any errors or omissions that may be found in the content of this document.

For information not covered in this document, or if there is a requirement to send comments/corrections about this document, please contact Honeywell Analytics using the contact details given on the back page.

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 organization of such revision or change. If information is required that does not appear in this document, contact the local distributor/agent or Honeywell Analytics.

2 Overview

2.1 Introduction

OELD is hazardous location certified junction box for use with detectors that feature a 4-20 mA output. The OELD unit has been designed to operate with the Searchpoint Optima Plus or Searchline Excel range of gas detectors. It provides a local visual status indication, and a Bluetooth® low energy interface for configuration and maintenance using a Bluetooth®-enabled mobile device. The OELD unit is ATEX and IECEx approved for use in either Zone 1 (gas) or Zone 21 (dust) hazardous areas. Flameproof versions are also cULus approved for use in Class I Division 1 or Class II Division 1.

The OELD unit has five entries – either M25 or 3/4" NPT (dependent on the version) and is supplied with three certified blanking plugs. Increased safety (Ex e)-approved versions of OELD has five entries for M25x1.5 only.

Note

Searchpoint Optima and Searchline Excel are IP66/67 approved in accordance with IEC/EN 60079-0 and IEC/EN 60529.

WARNING

The plastic transport caps supplied must be replaced with a detector or suitably certified closers (such as glands or stopping plugs) prior to commissioning the OELD. Failure to do so presents a potential source of ignition.

Internally, the enclosure features two earth connection points, and an electronics module with two pluggable terminal blocks for connection of field and detector wiring. The OELD features a four-color backlight (green, yellow, red and blue), and a custom 7-segment liquid crystal display (LCD). In operation, the LCD backlight provides a status indication as follows:

- Green – Normal operation or Warning
- Yellow – Fault or Inhibit
- Red – Alarm (level is configurable)
- Blue – Bluetooth® pairing / connection

Refer to section 6.1.2 Normal Operation for full details on this feature.

WARNING

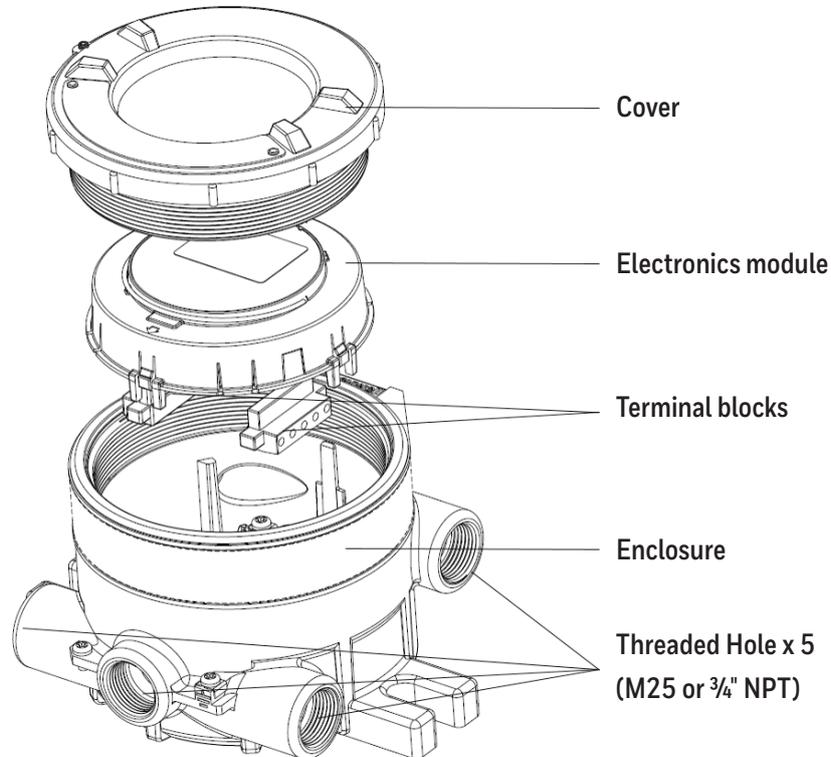
Do not rely on the OELD LCD backlight status indication for safety-related purposes.

The OELD is configured using a mobile device (such as smart phone or tablet) over Bluetooth® Low Energy. The following parameters can be configured:

- Threshold for local alarm notification (red indication)
- 4-20 mA operational levels for the local display
- Gas name, measurement units and range for local display
- Additionally when using the OELD in conjunction with a Searchpoint Optima Plus or Searchline Excel, the user will be able to gain full access to all configuration and maintenance parameters of the gas detector.

WARNING

When operating in the hazardous location, ensure that the mobile device being used is suitably certified for that area.



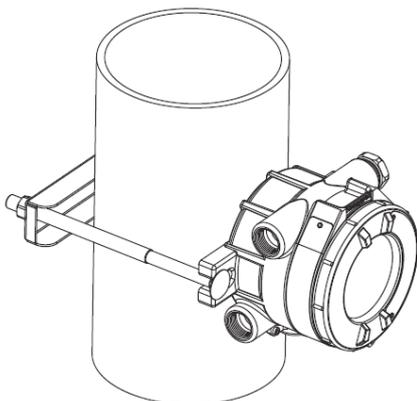
<Figure 1. OELD Exploded View>

2.2 Optional Accessories

Note

The optional pipe mount, ceiling bracket and sunshade accessories are not included as part of the assessment to EN60079-29-1.

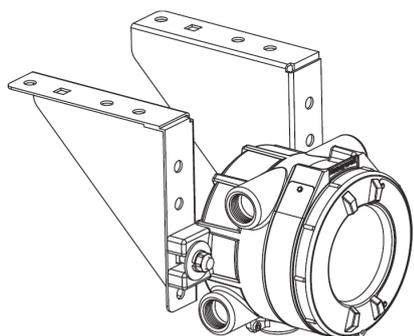
2.2.1 Pipe Mount Kit (1226A0358)



<Figure 2. Pipe-Mounted OELD>

The Pipe Mount kit (1226A0358) allows the OELD to be mounted to pipe from 2" to 6" (50 to 150 mm) in diameter. The kit includes the pipe mount bracket, two carriage bolts, nuts, and lock washers.

2.2.2 Ceiling Mount Bracket Kit (1226A0355)



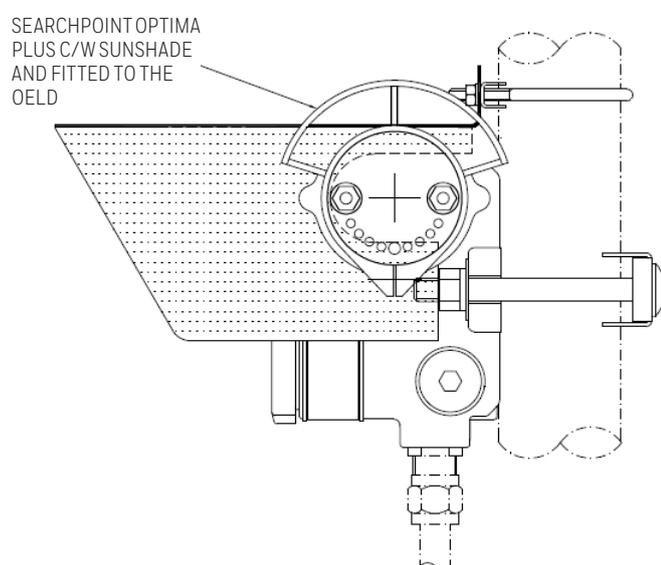
The Ceiling Mount Bracket Kit (1226A0355) allows the OELD to be mounted to the ceiling. The kit includes two stainless steel ceiling mount brackets, bolts, and nuts.

Note

When considering the final mounting position using the Ceiling Mount Bracket Kit, consider the ability to see the OELD display when installed.

<Figure 3. Ceiling-Mounted OELD>

2.2.3 Sunshade (94000-A-1006)



A sunshade manufactured from 316 stainless steel, is available which covers the OELD and can extend over either side to also provide protection to a Searchpoint Optima or Searchline Excel

The sunshade slots over the OELD mounting bolts so no additional fixings are required and is stainless steel 316.

Use the sunshade to reduce the effects of direct solar heating.

<Figure 4. OELD with Sunshade>

3 Installation

3.1 Siting and Positioning

The placement of gas detectors should be determined following the advice of:

- experts having specialist knowledge of gas dispersion
- experts having knowledge of the process plant system and equipment involved
- safety personnel
- engineering personnel

The agreement reached on the location of detectors should be recorded.

Guidance on the positioning of gas detectors to provide the best detection coverage is contained in IEC/EN 60079-29-2 and other national Codes of Practice. It is recommended that the installation designer consults these Codes of Practice when determining where detectors are to be located.

Additionally refer to the technical manual of the gas detector for siting recommendations specific for that device.

3.2 Mechanical Installation

The OELD can be mounted in a number of ways using the integral mounting tabs. The OELD can be attached to flat wall surfaces or to Unistrut®. With the optional Pipe Mount kit, the unit can be mounted to pipe or pole. A ceiling mount bracket kit (1226A0358) is also available. If required, conduit (either flexible or rigid) can be run to the OELD.

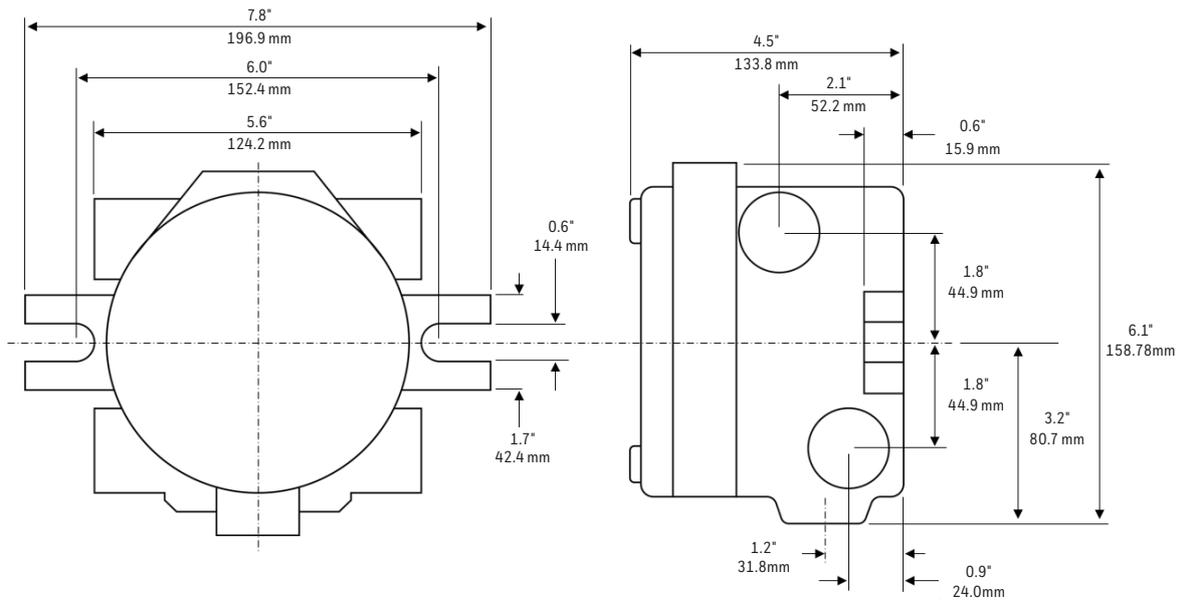
3.2.1 Installation to a Flat Surface

The OELD may be fixed directly to a suitable flat surface, using the integral mounting points (dimensions shown below).

Note

When installing OELD ensure that the correct detector orientation is considered. Refer to the detector manufacturer's instructions.

Ensure that mounting bolts are fully tightened and suitable locking washers are used.

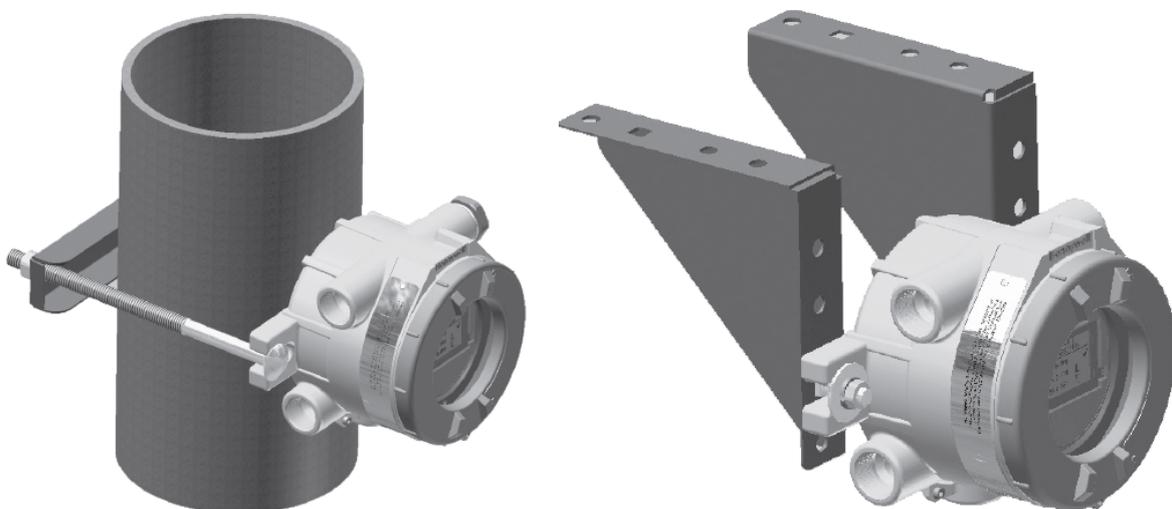


<Figure 5. OELD Dimensions>

3.2.2 Optional Pipe and Ceiling Mount Installation

The OELD may be fixed to a vertical pipe of 2" to 6" (50 to 150 mm) in diameter using the Pipe Mounting kit. This kit (1226A0358) consists of one bracket, two sets of carriage bolts, nuts and lock washers.

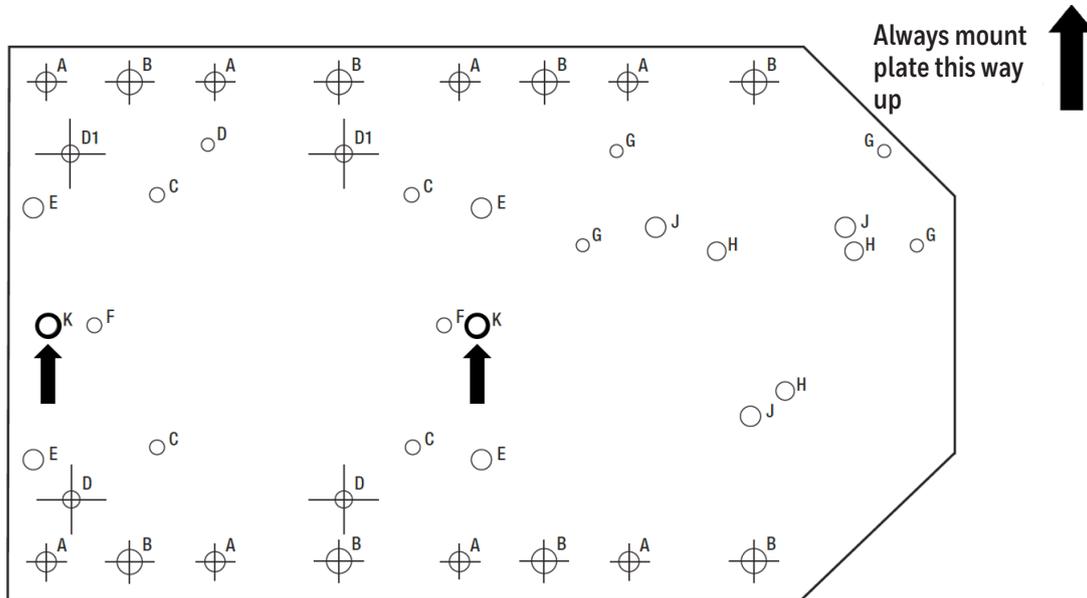
The Ceiling Mount Bracket Kit (1226A0355) allows the OELD to be mounted to the ceiling. This kit includes two stainless steel ceiling mount brackets, bolts and nuts.



<Figure 6. Pipe and Ceiling Mount Installation Examples>

3.2.3 Using the Searchline Excel Mounting Plate

The OELD may be fixed to the Searchline Excel mounting plate (2104D0237), which is included in the Searchline Excel kits. Two M10 tapped holes, 'K', are provided for mounting the OELD. Refer to the Searchline Excel technical manual for other details. The mounting plate fixings are not supplied.



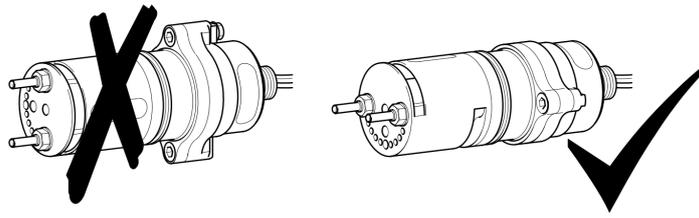
<Figure 7. Searchline Excel Mounting Plate>

3.3 Electrical Installation

The detector can be either fitted directly or remotely to the OELD. Junction boxes are available for the Searchpoint Optima Plus or Searchline Excel to facilitate remote mounting applications. Refer to the Searchpoint Optima Plus Operating Instructions or Searchline Excel Technical Handbook for details on remote installations or contact your Honeywell representative for more information.

1. Remove the lid.
2. Lift the handle and take out the electronics module.
3. Fit a suitably approved cable gland or conduit fitting to the required cable entry for the field cable.
4. For versions featuring M25 entries, a seal (part number 1226-0410) and lock nut (part number 1226-0409) are provided to allow the fitting of a Searchpoint Optima Plus.
 - Insert the seal into the desired entry.
 - Thread the lock nut to the bottom of the M25 thread of the Optima.
 - Screw the Optima into the OELD until the seal is compressed.
 - Unscrew the Optima until the semi-circular pattern on the front of the Optima weather protection is towards the bottom (see the diagram below).
 - Fully tighten the lock nut against the body of the OELD.

Versions featuring 3/4" NPT entries do not require the seal and lock nut.



For other detector types, fit to the desired entry referring to the detector manual for specific information relating to it.

Note

To prevent corrosion apply an anti-seize compound to the threads of the detector before assembling it into the OELD.

5. Fit stopping plugs (supplied) to all unused cable entries. Do not remove the sealing o-rings fitted to the stopping plugs to ensure that the ingress protection to IP66 is maintained.

WARNING

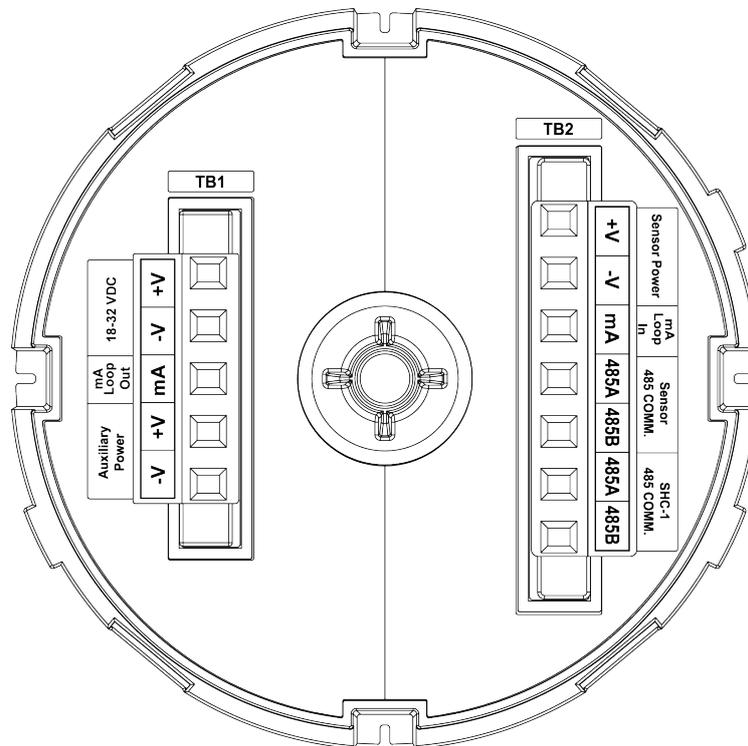
The plastic transport caps supplied must be replaced with suitably certified closers (such as glands or stopping plugs) prior to commissioning the OELD. Failure to do so presents a potential source of ignition.

6. Make the electrical connections (see Chapter 4).
7. Carefully replace the display module.
8. Replace and tighten the cover and tighten the locking screw.

Caution

Take care to avoid trapping cables when replacing the display module.

4 Electrical Connections



<Figure 8. OELD Electronics Module>

Terminal Block 1 (TB1)			
Number	Marking	Colour	Description
1	-V	Black	Auxiliary power e.g. Excel cross duct heater
2	+V	Red	Auxiliary power e.g. Excel cross duct heater
3	mA	White	mA Signal to Field Wiring
4	-V	Black	Input power 0V
5	+V	Red	Input power +ve
Terminal Block 2 (TB2)			
Number	Marking	Colour	Description
1	+V	Red	Detector power +ve
2	-V	Black	Detector power -ve
3	mA	White	mA Signal to gas detector (Optima, Excel, etc.)
4	485A	Blue	RS-485A to Optima or Excel
5	485B	Orange	RS-485B to Optima or Excel
6	485A	Blue	Reserved for SHC-1 connection
7	485B	Orange	Reserved for SHC-1 connection

Caution

Increased safety (Ex e) versions utilize a specific manufacturer and type of terminal block. Only use manufacturer-supplied terminal blocks correct to the type of the OELD and can be identified by their colour:

- Flameproof (Ex d) versions are black in colour
- Increased safety (Ex e) versions are green in colour.

Failure to do so will result in the product approval being nullified.

Caution

When using the SHC-1 it must always be connected to the OELD using the SHC Protection Device.

Note

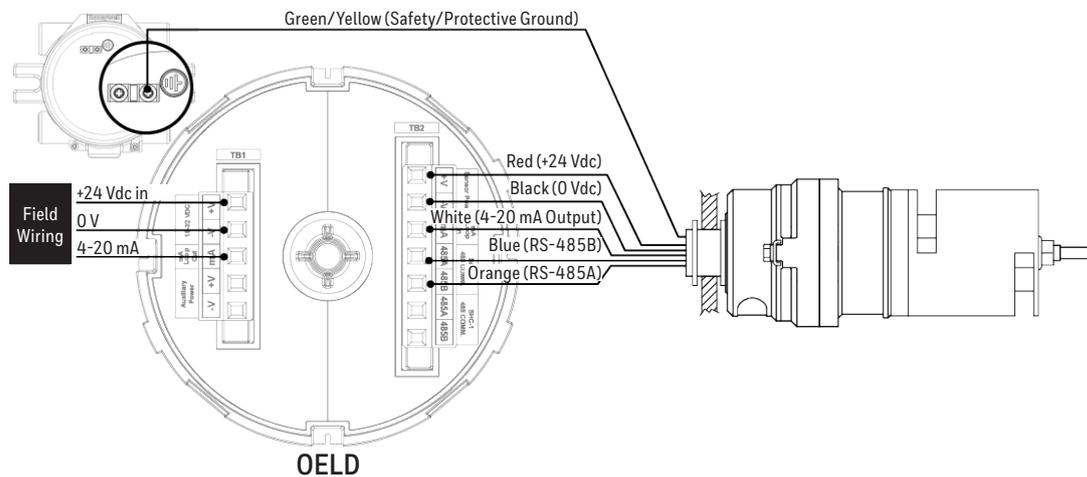
The OELD is protected against accidental reverse polarity connection of power

Spare conductors must be suitably terminated. Wiring must be in accordance with local, national and/or company regulations. Exposed, bare conductors must be avoided.

The following diagrams show the wiring of the OELD to Searchpoint Optima and Searchline Excel. For other detectors, refer to the manufacturer's wiring details.

Caution

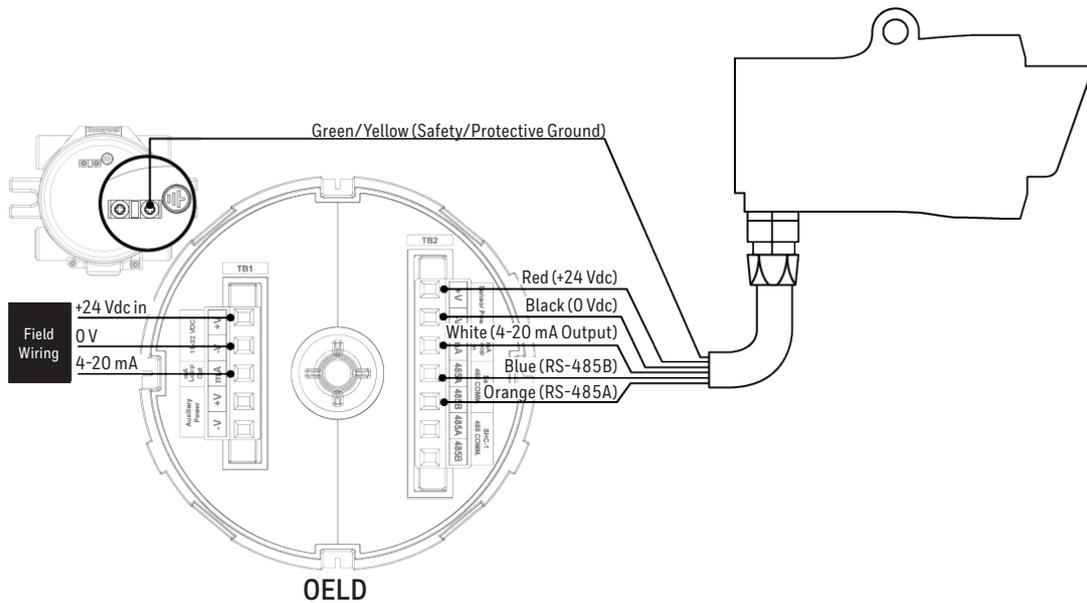
The maximum permissible mA loop voltage is 32 VDC and the maximum current is 22 mA.

Connecting the OELD to Searchpoint Optima Plus

<Figure 9. Wiring Diagram for Searchpoint Optima Plus>

The earth bonding arrangement must ensure that the maximum peak voltage between the unit case earth and any field cable conductor is less than 350V. Voltages in excess of this can cause permanent damage to the units' internal RFI protection filters.

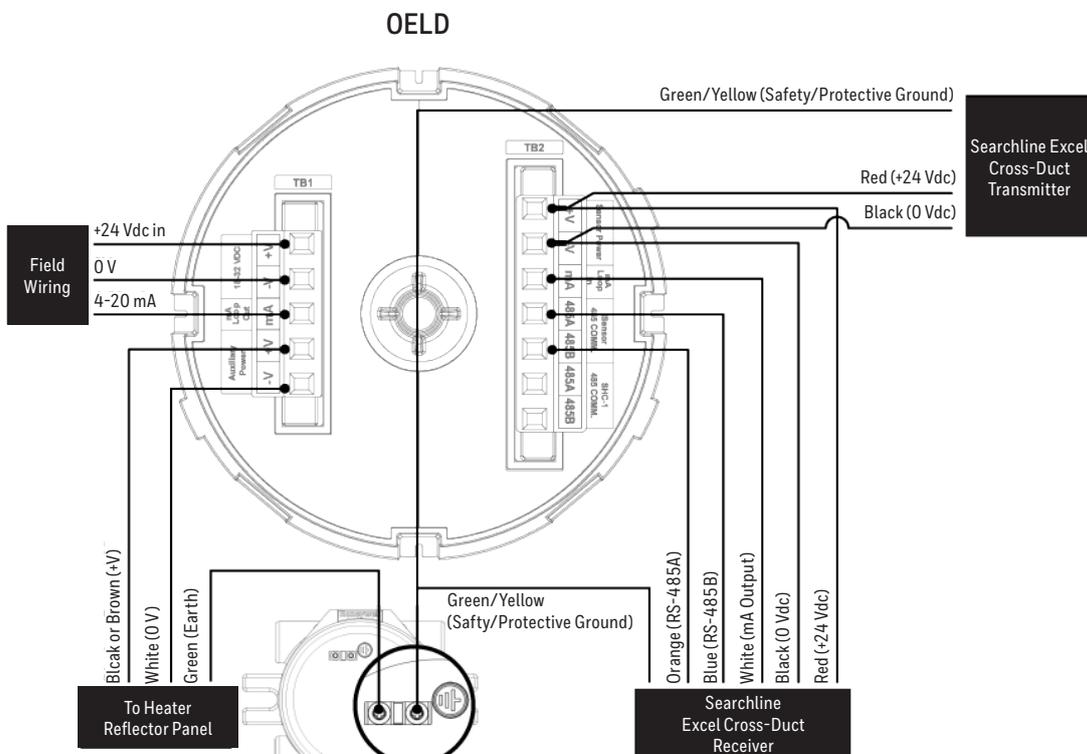
Connecting the OELD to Searchline Excel



<Figure 10. Wiring Diagram for Searchline Excel>

The earth bonding arrangement must ensure that the maximum peak voltage between the unit case earth and any field cable conductor is less than 350V. Voltages in excess of this can cause permanent damage to the units' internal RFI protection filters.

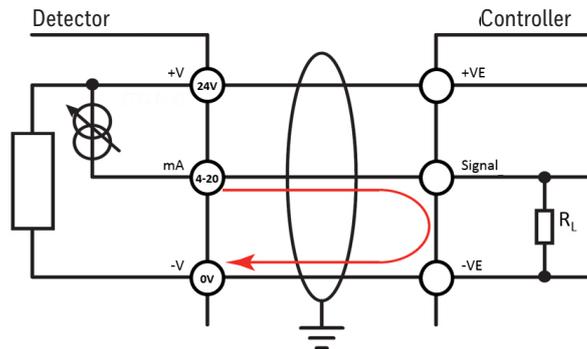
Connecting the OELD to Searchline Excel Cross-Duct (XD)



<Figure 11. Wiring Diagram for Searchline Excel Cross-Duct>

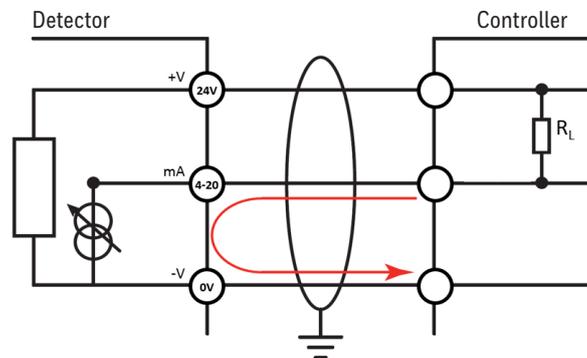
The earth bonding arrangement must ensure that the maximum peak voltage between the unit case earth and any field cable conductor is less than 350V. Voltages in excess of this can cause permanent damage to the units' internal RFI protection filters.

OELD Connection for Detectors Configured as Current Sink



<Figure 12. mA Input Sink Configuration>

OELD Connection for Detectors Configured as Current Source



<Figure 13. mA Input Source Configuration>

Caution

The maximum permissible mA loop voltage is 32 VDC and the maximum current is 22 mA.

4.1 Power Supply

The OELD requires a voltage supply of 18 - 32 Vdc (nominal 24 Vdc). Power consumption is 2 W maximum.

Refer to individual detector manuals for detector specific limits and power consumption.

Ensure that the minimum required supply voltage is present at the detector, taking into account the voltage drop due to cable resistance.

Note

Make allowance for the insertion loss resistance.

The maximum loop resistance in the field cable is calculated as follows:

$$R_{loop} = \frac{V_{controller} - V_{detector\ min}}{I_{detector}}$$

4.2 Cabling Recommendation

The cable used must be appropriate for the hazardous area classification and meet local, national and/or company regulations. The use of industrial grade, screened field cable is recommended.

An example would be 3-core copper cable with screen (minimum 90% coverage) and suitable mechanical protection (e.g. steel wire armor) to suit an M25 or 3/4" NPT gland entry or conduit.

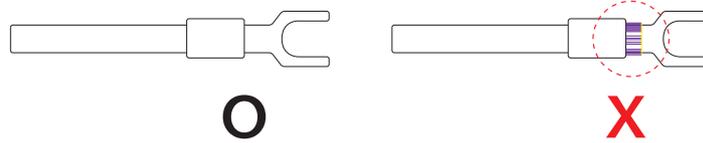
The allowable conductor size for the terminals is 0.2 – 2.5 mm² (24 - 12 AWG). The OELD terminals will accept only wire sizes (solid-core or stranded) in this range. The temperature rating of the conductors should be greater than 80°C. The terminals should be tightened to a torque of between 0.5 Nm to 0.6 Nm.

Ensure the cable gland is installed correctly and fully tightened. All unused cable/conduit entries must be sealed with stopping plugs (supplied). Increased safety (Ex e-certified) versions, wires should be stripped of their installation by 7 mm prior to inserting into the terminals.

4.3 Earth Regimes

Caution

Any earthing regime employed must avoid earth loops.



The following information is provided to assist with proper earthing of the OELD:

- The OELD has two internal earth points provided (see Electrical Connections). This is to facilitate connection of the detector to protective earth.
- Field cable screens should be connected to instrument earth at the control room. The other end of the field cable screen should be suitably terminated or isolated. It should not be connected to internal earth point.
- OELD features internal and external earth points with a clamp size of 8 mm x 8 mm. For the internal earth, use a wire size of 2.5 mm². For the external earth connection, use a wire size of 4 mm².
- Loosen the screw on the earth clamp sufficiently to enable the wire to be inserted. Form the end of the wire into a 'U' shape. Raise the clamp and place the wire between the clamp and ground base and place the wire end around the screw. If using a crimp connector for the earth connection, use a ring or fork-style crimp, manufactured from stainless steel to prevent corrosion. A suitable crimping tool must be used when making these terminations. Lower the clamp and tighten the screw to a torque of 10.4 lb-in (1.17 Nm).

5 Configuration

5.1 General

The OELD has several configurable parameters, which are set using a mobile device running the OELD App. Essentially, these are the threshold for local alarm indication, mA input level settings, behaviour of the green light and display settings such as full scale range, measurement unit and gas name.

5.1.1 Threshold for Local Alarm Indication

The gas reading at which the the OELD indicates an alarm (flashing red lights) can be set between 5 and 65 % FSD. The default setting is 20 % FSD.

Note

This setting is local to the OELD and applies only to the red lights in the OELD backlight. Changing the level will have no effect on alarm levels configured in the detector, or in the control system.

Note

Guidance for setting alarm levels appropriate for the application can be found in IEC/EN 60079-29-2 and/or other regional and local publications.

5.1.2 mA Input Level Settings

The detector generates a mA output in relation to the measured gas value. This mA output is monitored by the OELD and is used to provide an indication of the status of the detector which can include warning, fault and inhibit. The mA input to the OELD can be configured to match the mA output profile of the detector to control the OELD backlight function and show messages on the OELD display. The factory settings for Searchpoint Optima Plus and Searchline Excel are given in the table below.

Detector Status	mA Detection Settings	
	Searchpoint Optima Plus*	Searchline Excel
Fault	0-1 mA	0 mA
Inhibit	2 mA	2 mA
Warning	3 mA	N/A
Beam Block	N/A	2.5 mA
Low Signal	N/A	3 mA
Gas Reading	4-20 mA	4-20 mA
Over-Range	≥ 21 mA	≥ 21 mA

Note

*Searchpoint Optima Plus with HART® requires a minimum of 1 mA flowing in the current loop for HART® communications to be maintained. It is possible to set the mA level in the Searchpoint Optima Plus for fault to 1 mA, however this may affect the reliability of the HART® communications.

To ensure correct reporting of the gas detector status (fault, inhibit, warning and over-range), it is essential that the mA input ranges are chosen to match those of the connected gas detector. Allow for a separation of at least 0.1 mA between each of the ranges.

5.1.3 OELD General Display Settings

The user configurable settings of the OELD display are:

- full scale range
- units of measurement
- reading resolution
- gas name

These settings are used to convert the 4-20 mA output from the detector into a reading on the OELD display.

WARNING

Do not rely on the OELD LCD backlight status indication for safety-related purposes.

5.2 Configuration Process

Note

After configuration or making any changes to the OELD or gas detector settings, the configuration should be read back and verified to ensure that the intended changes have been made.

Configuration of the OELD is achieved through use of a mobile device running the OELD App. There is no local interface to configure the OELD.

The configuration process involves connecting to the OELD unit via the Bluetooth® (BLE) interface of a suitable smart phone or tablet. During the connection, the blue light of the OELD will indicate different states. Once the connection has been successfully established and if the detector status is normal, the OELD blue light will be lit solid blue to indicate this. Connect the mobile device to the OELD as follows:

1. Locate the icon for the OELD App on the mobile device and tap on it to start the app
2. Log into the OELD App by entering the registered User ID and Password
3. Search for nearby OELD units
4. Select the desired OELD from the displayed list
5. The backlight of the OELD will flash blue, confirming your selection from step 4
6. Once the user has confirmed the unit, the connection process will complete
7. The OELD App will display information from the OELD on the main status screen.

For more details on the connection procedure refer to section 6.2 Bluetooth® Communication.

Once the OELD is connected to the mobile device, the user can configure the OELD via the menu system of the app. For more details on the operation of the mobile application, refer to section 7 OELD Mobile App.

After all operations have been completed, simply terminate the connection from the main screen of the app so that other mobile devices can connect to it.

Caution

Only one Bluetooth® connection is allowed at any one time. Terminate the Bluetooth® connection when the configuration activity has been completed

6 Operation

6.1 Display

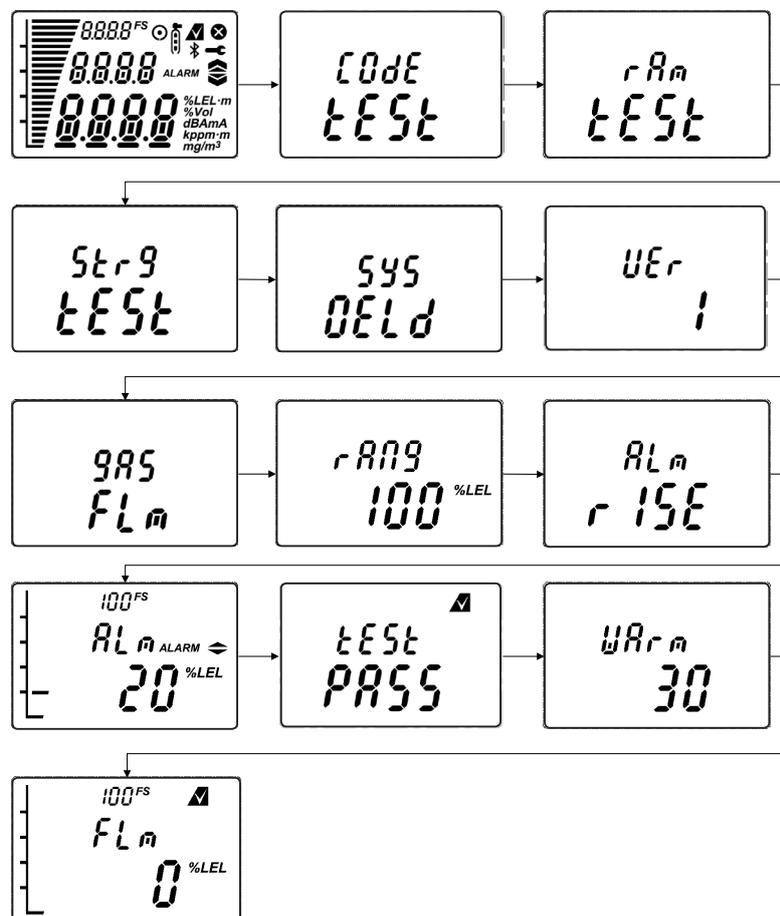
6.1.1 Start-up

The start-up and self-test sequence of the OELD takes approximately 60 seconds. During this time the user can check that each of the functions listed below are operating correctly as well as the OELD checking the correct operation of its critical circuits and processes. The OELD will perform a series of functional tests, including:

- Display test – each segment of the LCD will be sequentially activated
- Backlight test – each of the colours of the backlight will be activated several times
- Internal hardware and memory checks
- Display of software version
- Display of user-configured settings such as gas name, range and alarm set points

Once the LCD and backlight tests have completed, the green backlight indication will be illuminated for the remainder of the start-up sequence.

Once the OELD has completed this start-up sequence, it will enter its normal operating condition.



<Figure 16. Start-up Sequence>

Note

Upon completing the start-up sequence, the OELD may momentarily report the status of the detector as fault, inhibit or warning. This can be as a result of the detector connected taking more time to complete its initialization and it holding its output at a level of less than 4 mA. This is normal.

6.1.2 Normal Operation

During normal operation, the LCD backlight provides an indication of the detector status based on the detector 4-20 mA output as follows:

Default Detection Ranges	OELD Backlight			Typical Status
	Color	Flashing		
Less than 1.5 mA	Yellow	Yes		Fault
1.5 to less than 2.5 mA	Yellow	No		Inhibit
2.5 to less than 3.5 mA	G Y G	Alternating Yellow		Warning
3.5 mA to less than Alarm Threshold*	Green	No		Normal
Greater than or equal to Alarm Threshold*	Red	Yes		Hazardous Gas Concentration
3.5 mA to less than Alarm Threshold**	Blue	No		Normal, OELD connected to a mobile device

* Alarm threshold is configurable between 5 and 65 % FSD (4.8 mA to 14.4 mA)

Note

The detection ranges of the current loop are configurable by the user using the OELD app.

Note

The visual indicator of the OELD is derived from the 4-20 mA output of the detector and/or status of the OELD unit. Use a compatible mobile device and the OELD app to connect to the OELD using Bluetooth®. When used in conjunction with a Searchpoint Optima Plus or Searchline Excel, diagnostic and maintenance functions of the detector can be accessed also.

6.1.3 Display Screen

The OELD features a backlit liquid crystal display (LCD) with high-intensity multi-color LEDs to show normal, alarm, fault and communication status.

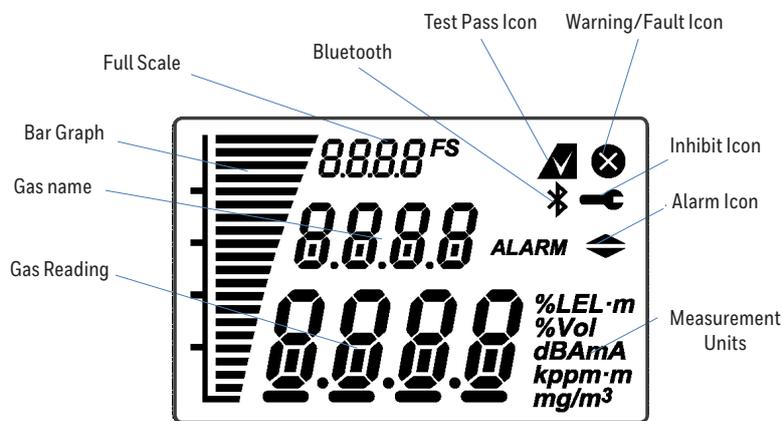
During normal operation the instrument LCD shows a steady GREEN backlight. In case of a gas alarm or fault the red or yellow backlight respectively will flash. The screen is visible through the window of the OELD top cover and the display shows the gas concentration information both graphically and numerically, as well as other information including full scale range, measurement units, alarm / fault status etc.

Note

At low temperatures, the OELD automatically lowers the refresh rate of the display to maintain optimal readability.

Note

At extreme low temperatures (typically less than -40°C), a reduction in screen clarity may be experienced. The display module will not be damaged by this condition and will recover once normal operating ambient temperature has returned.



<Figure 17. Display Screen>

6.2 Bluetooth® Communication

The OELD features a Bluetooth® Low Energy (BLE) interface that allows non-intrusive connection to the OELD using a mobile device running the OELD App. In addition the OELD bridges message transactions between the mobile device and the Searchpoint Optima Plus or the Searchline Excel by converting the BLE packet information into RS-485 messages and relaying them to the RS-485 interface, and vice versa. The OELD does not process, modify or regenerate any RS-485 messages between the mobile device and Searchpoint Optima Plus or Searchline Excel detectors.

The BLE interface is accessed by a suitable mobile device that supports Bluetooth® Low Energy (BLE).

Refer to the OELD Mobile App User Manual for full information on the OELD Mobile App.

Note

- BLE (Bluetooth® Low Energy) differs from Bluetooth® Classic. Make sure the mobile device selected has an operating system that supports BLE.
- The Bluetooth® feature should be enabled on the mobile device to allow it to scan BLE devices nearby. Refer to the User Manual of the mobile device for details of how to use the Bluetooth® functions of the mobile device.
- The OELD supports BLE point-to-point mode of operation. If a connection is established between the OELD and a mobile device, it cannot be scanned or accessed by another mobile device.
- If there is no active BLE communication for 10 minutes, the OELD will terminate the BLE connection automatically.
- The communication range will vary depending on the field situation and installation location of the OELD. Optimal range will be achieved line-of-sight between the OELD and the mobile device.

6.3 Alternative Communications (SHC-1 Hand-Held Interrogator)

If the OELD is being used in conjunction with the Searchpoint Optima Plus or Searchline Excel the detector can be accessed using the Honeywell Analytics SHC-1 Handheld Interrogator and the SHC Protection Device. Use the dedicated terminals inside the OELD to do this. This is an intrusive connection and may require a hot work permit. Refer to the section entitled **SHC-1 Connection** in **Section 4 Wiring Details** for information on how to connect the SHC-1 and SHC protection device to the OELD.

Caution

The SHC-1 must not be directly connected to the terminals inside the OELD. Always use the SHC protection device (part no. 04230-A-1025)

WARNING

Do not use Bluetooth® communication feature when using the SHC-1 Hand-held Interrogator.

Note

The SHC-1 has not been evaluated for gas performance in accordance with ISA 60079-29-1(12.13.01).

Refer to the Searchpoint Optima Plus or Searchline Excel manual for details of how to use the SHC-1 Handheld Interrogator.

7 OELD Mobile App

7.1 Installing the OELD App

The OELD Mobile App running on the mobile device is used to configure the OELD and the Searchpoint Optima Plus or Searchline Excel that is connected to it. The OELD App runs under the Android Operating System (OS) version 4.3 (Jelly Bean) or higher that supports Bluetooth® Low Energy (BLE). The OELD App is available for download from the Google Play Store.

To install the app:

1. Start and sign in to the Google Play Store
2. Search for “Honeywell OELD App” and click on INSTALL
3. The Mobile App will be automatically downloaded and installed on the mobile device.

7.2 Running the OELD Mobile App

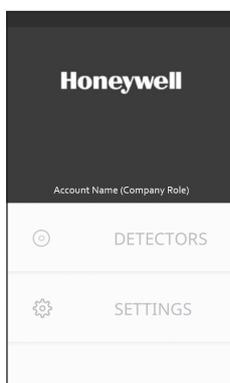
Note

To register a new user account you will need 1) a connection to the internet and 2) the QR code from at least one OELD device.

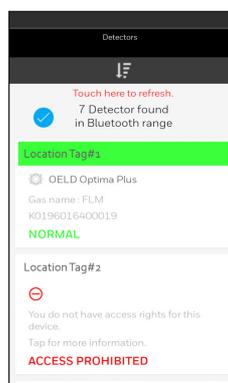
1. Find and tap the OELD App icon
2. Upon first start-up the app will prompt the user to read the End User License Agreement. Please take time to read this and accept to proceed.
3. The log-in screen will appear and ask the user to log in to the app
4. If you are already a registered user, enter your log-in details.
5. If you do not have a registered user account, please complete and submit the registration form in the app. Shortly afterwards you will receive a confirmation email. Click on the link in the email complete the email verification process.
6. Locate the Registration Sheet supplied with the OELD. This will have a QR code on it. Scan the QR code supplied to complete the registration process. Alternatively scan The QR code can also be found on the rear face of the electronics module.
7. Upon scanning the QR code, the security certificate will be downloaded from the Honeywell server.

7.3 Connecting to OELD Units

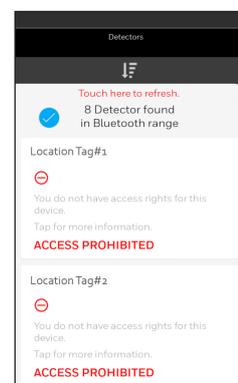
1. Standing in proximity to the OELD to which you want to connect, tap on the Detectors button on the main screen of the OELD App
2. A list of detectors to which you have access will be shown. Should you require access to a detector that is currently restricted, tap on the device and simply scan the QR code of that device. This can be found on both the Registration Sheet that was supplied with the detector and on a label attached to the side of the electronics module
3. Follow the on-screen prompts and click on Confirm Detector to complete the connection process
4. Once connected to the OELD, it is possible to configure it and the Searchpoint Optima or Searchline Excel gas detector that is connected to it.



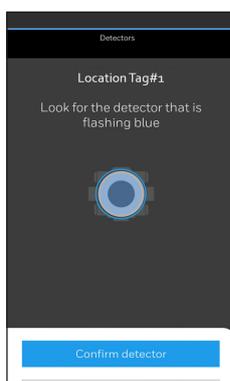
Main Screen



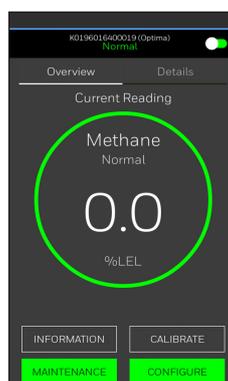
Detector List Example :
Available Devices



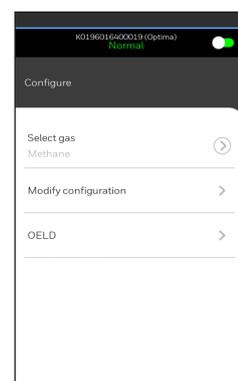
Detector List Example :
Prohibited Devices



Confirming Detector
flashing Blue



Device Main Screen



Configure Screen

Note

A user can connect to any OELD devices that have been registered to the user account.

For detailed configuration procedure using a mobile device and the OELD App, refer to OELD App User Manual or the on-line help of the OELD App.

7.4 Configure the OELD device

The OELD has several configurable parameters, which can be set using mobile device and OELD App. The configurable parameters are shown in the table below.

Configuration Parameters	Default Setting	Other Options
Device type	Searchpoint Optima Plus	Searchline Excel / Generic 4 to 20mA transmitter
Alarm Threshold*	20%	Any value between 5 and 65 % FSD
Gas name on display	'FLm'	4 of user-configurable alphanumeric characters
Display resolution	1	Decimal places (e.g. 0.1)
Full Scale Range for 20 mA	100	Dependant on the display resolution
Measurement units	%LEL	%Vol, mg/m ³ , g/m ³ , ppm, kppm, ppm·m, LEL·m, mA, A, dB, dBA
Inhibit Current	1.5 to 2.5 mA	0 to 3 mA
Warning Current	2.5 to 3.5 mA	0 to 6 mA
Beam block current*	2.3 to 2.7 mA	0 to 6 mA
Overrange Current	20.0 to 24.0 mA	20 to 24.0 mA
Normal (Green) LED control	On	Off

* Specific state for Searchline Excel gas detectors

Note

Alarm threshold and trigger relates to the local indication of the LED only. These settings do not affect the operation of the connected detector or any other systems connected to the OELD.

7.5 Optima Plus Configuration

The OELD Mobile App allows a user to configure a Searchpoint Optima Plus gas detector that is connected to the OELD unit. The configurable parameters are as shown in the table below.

Configuration Parameters	Min Value	Max Value	Step Size
Alarm Threshold	10%	65%	1%
Inhibit Current*	0mA	3mA	.05mA
Warning Current*	0mA	6mA	.05mA
Overrange Current	20mA	21.6mA	.05mA

*to ensure full compliance with the requirements of ATEX, refer to the Searchpoint Optima Plus manual for appropriate settings when using this gas detector.

Note

Make sure the RS-485 connections are made between the Searchpoint Optima Plus and the OELD.

7.6 Searchline Excel Configuration

For use with Searchline Excel gas detectors, the OELD will need to be configured at first use. Connect to the OELD as described in previous sections and when prompted, change the Device Type to Searchline Excel.

The OELD will then set the units of measurement, full-scale range, alarm set points and other parameters appropriate for Searchline Excel.

Refer to the Searchline Excel Technical Manual and align the Searchline Excel transmitter and receiver and then proceed to install the Searchline Excel as follows:

Note

the Searchline Excel will be held in a Fault condition until the Searchline Excel system has been successfully installed. This fault condition will be shown on the OELD as a flashing yellow back light indication accompanied by F-02. This is normal.

1. Connect the mobile device to the OELD referring to section 7.3 of this manual
2. Tap on CONFIGURE from the Home Screen and tap on Install
3. Enter the path length (the distance between the Searchline Excel transmitter and receiver, in meters)
4. Check that the receiver signal strength is OK and that "Signal OK" is displayed. If the signal strength is too low, re-check the alignment of the Searchline Excel. If the signal strength is too high, check the path length was entered correctly in the previous step
5. Tap on APPLY
6. After a short period of time the OELD App will perform a zero calibration on the system. Follow the on-screen instructions.
7. Upon completion of the calibration, the Searchline Excel will enter normal condition, indicated on the OELD App and display
8. Use the Searchline Excel functional test filters to check the response of the Searchline Excel. If required, use the inhibit function to suppress the mA output of the Searchline Excel.

7.7 Calibration

The OELD App allows a user to calibrate the Searchpoint Optima Plus or Searchline Excel. Note that this feature is not available for other gas detectors or detectors that may be used.

Caution

Searchpoint Optima Plus and Searchline Excel are factory calibrated and do not require routine calibration. In most cases, a re-zero will correct any inaccuracy in the gas reading. It is strongly recommended that a span calibration is not carried out.

After establishing a connection between the mobile device and the OELD, tap on the Calibrate button on the main screen of the OELD App.

1. Ensure that the gas detector is in fresh air and tap on the Zero button to start the zero calibration process.
2. The OELD App will automatically inhibit the gas detector and initiate the zero calibration.
3. After a successful zero calibration has been completed a span calibration may be performed. It is recommended at this point that you tap on Exit Without Span to exit and ignore steps 4 and 5. To perform a span calibration tap on the Span button and complete steps 4 and 5 below.
4. Apply calibration gas to the detector.
5. Follow the on-screen prompts and wait until span calibration is complete.

Refer to the Searchpoint Optima Plus or Searchline Excel Technical Handbook for full details on carrying out gas calibrations.

WARNING

- As some calibration gases may be hazardous, always ensure that outlets from gassing accessories exhaust safely.
- A cylinder of synthetic air (20.9 % vol. oxygen) should be used to perform the zero calibration if there is any doubt that the atmosphere in which the detector is exposed may contain any trace of detectable gas.

8 Maintenance

8.1 General

Periodically inspect the OELD and cabling for signs of physical damage. Clean the glass window with a damp cloth. Do not use solvents or abrasive cleaners.

The OELD has no user serviceable parts.

Honeywell Analytics recommend that the unit's configuration and operation are checked annually as a minimum.

The gas detectors connected to the OELD should be checked and if necessary zero and span calibrated as necessary by following the procedures detailed in their operating instructions.

8.2 Display Module Replacement

In the unlikely event of failure, the electronics module can be replaced.

WARNING

Obtain the correct replacement Display Module for that version. Failure to do so will result in the product approval being nullified.

Caution

In addition to the instruction below, always observe company and site procedures with respect to working on equipment in the hazardous area.

1. Remove the power from the OELD. Loosen the lock screw using the tool provided and carefully unscrew and remove the cover.
2. Lift the handle and take out the internal electronics module taking care not to place any undue strain on the connected cables.
3. Loosen the locking screws of the terminal blocks and unplug them from the underside of the module
4. It is recommended to record the serial number of the original electronics module and mark that serial number inside the enclosure. In addition, retain a record of the original serial number of the module in the maintenance record for that installation.
5. Remove the terminal blocks from the replacement electronics module and plug in the original terminal blocks and wiring. Secure using the locking screws. Should the OELD require rewiring, refer to Chapter 4 Electrical Connections.
6. Carefully replace the display module taking care not to place undue strain on the attached wiring.
7. Fully tighten the cover.

Caution

Take care to avoid trapping cables when replacing the display module.

Note

The replacement electronics module will have default settings for the threshold for local alarm indication and mA input level settings, RS-485 communication settings, visual indicator and detector settings. Use the OELD App to make changes that are necessary.

9 Faults and Warning

Display Message	Code	Description	Remedial Action
Over Rang	W-01	Overrange warning. The output from the connected detector is signalling a gas reading greater than the full-scale deflection.	Proceed with extreme caution as there may be a dangerous level of gas present. If the warning persists, check the detector by referring to the detector manual. Check the detector by referring to detector manual
bEAm Bloc	W-02*	Beam block signal detected	The connected Searchline Excel is indicating that there is an obstruction between the transmitter and receiver or that the signal is being excessively attenuated. Refer to the Searchline Excel manual
Warn	W-03	Warning level input from the detector	Refer to the detector manual for further information and possible causes.
Comm Err	F-01	Internal communication failure	Reset the OELD. If fault still appears, replace the display module
FLt	F-02	The connected detector is signaling a fault condition.	Refer to the detector manual for further information.
LooP High	F-03	Input current is too high	The output from the connected detector is exceeding the upper input range of the OELD. Check the detector by referring to detector manual
Volt Err	F-04	Supply voltage fault or internal power supply fault	Check the input voltage to the OELD. Reset the OELD. If fault still appears, replace the display module
RAM Err	F-05	RAM read/write fault	Reset the OELD. If fault still appears, replace the display module
Mem Err	F-06	An internal memory corruption has been detected	Reset the OELD. If fault still appears, replace the display module
Code Err	F-07	Code Memory corrupted	Reset the OELD. If fault still appears, replace the display module
Cert Err	F-08	Device certificate corrupted	Contact the manufacturer

Note

Warning for Beam Block (W-02) is only applicable when the connected detector type is Searchline Excel.

10 Specifications

OELD Specification	
Material	Marine-grade aluminum alloy or 316 stainless steel with 5-coat painted finish
Weight	Aluminum version 2.3 kg (5 lb), stainless steel version 5.0 kg (11 lb)
Dimensions	159 x 197 x 114 mm (6 1/4 x 7 3/4 x 4 1/2 inch)
Cable entries	5 x M25 (ATEX/IECEX versions) or 5 x 3/4" NPT (cULus versions). One reserved for detector connection. 3 stopping plugs certified and supplied for unused entries.
Termination	2 x pluggable rising-clamp type for connection to gas detector and field wiring. Accepts cable sizes of 0.5 to 2.5 mm ² , 12 to 28 AWG
Storage Temperature	-40 to +65 °C (-13 to 149 °F)
Operational temperature	-40 to +65 °C (-40 to 149 °F) -60 to +65 °C (-76 to 149 °F) (CU TR-Ex version only)
Humidity	0 to 99% RH (non-condensing)
Display Information	LCD module showing digital readout of detector output, bar chart representation, units of measurement, status icons for alarm, maintenance and active Bluetooth® connection. Display units, range and gas name, all configurable using the OELD App.
Visual indication	Green/amber/red/blue multi-colour backlight to display for indication of detector and OELD status. Green (normal) indication can be disabled via app.
Power supply	18 to 32 Vdc (24 Vdc nominal), <2 W
Interfaces	Bluetooth® (BLE) non-intrusive connection to suitable mobile device running the OELD App. Range up to 10 m (depends on mobile device and environmental conditions) Internal RS-485 connection to Searchpoint Optima Plus or Searchline Excel via SHC-1 through the protection device
Environmental Protection	IP66 / Type 4X (in accordance with NEMA 250)
Core Approvals	EN 50270:2015 (EMC) IEC/EN/UL/CSA 61010-1 (Electrical Safety)

OELD Specification	
Safety Approvals	ATEX cULus+ IECEX CCCF* Inmetro+ NEPSI+* ISA 60079-29-1 EN60079-29-1 approved accessory
Maritime Approvals*	Type approved to DNV, BV+, Lloyds+, ABS EN 60945 (EMC) IEC 60092-504
Other Approvals	Bluetooth® certified, RED, FCC+, country-specific wireless approvals
Bluetooth® communication security	Certificate-based mutual authentication. Encryption to AES128.

Note

+flameproof versions only

*Contact Honeywell Analytics for availability

Gas Performance: ISA 60079-29-1 approved for methane gas only

11 Ordering Information

Part Number	Description
OELDBXXXXADMAX	OELD Smart Junction Box, Display, Ex d, Aluminum, 5 x M25 Cable Entries, ATEX/IECEX
OELDBXXXXSDMAX	OELD Smart Junction Box, Display, Ex d, Painted 316SST, 5 x M25 Cable Entries, ATEX/IECEX
OELDBXXXXAEMAX	OELD Smart Junction Box, Display, Ex e, Aluminum, 5 x M25 Cable Entries, ATEX/IECEX
OELDBXXXXSEMAX	OELD Smart Junction Box, Display, Ex e, Painted 316SST, 5 x M25 Cable Entries, ATEX/IECEX
OELDBXXXXADNUX	OELD Smart Junction Box, Display, C1D1 Z1, Aluminum, 5 x 3/4" Cable Entries, cULus
OELDBXXXXSDNUX	OELD Smart Junction Box, Display, C1D1 Z1, Painted 316SST, 5 x 3/4" Cable Entries, cULus
OELDBXXXXADMXX	OELD Smart Junction Box, Display, Ex d, Aluminum, 5 x M25 Cable Entries, CU-TR Ex
OELDBXXXXSDMXX	OELD Smart Junction Box, Display, Ex d, Painted 316SST, 5 x M25 Cable Entries, CU-TR Ex
OELDVSK01	OELD General Service Kit
OELDVSK02	OELD Terminal Block Set for flameproof versions
OELDVSK03	OELD Terminal Block Set for increased safety versions
OELDVSK04	Stopping plug for M25 versions
OELDVSK05	Stopping plug for NPT versions
OELDVSK06	Electronics Module for flameproof versions
OELDVSK07	Electronics Module for increase safety (Ex e) versions
OELDVSK08	Electronics Module Locating Post
1226A0358	OELD Pole Mounting Kit
1226A0355	OELD Ceiling Mounting Kit
94000-A-1006	OELD Sunshade Kit

WARNING

Obtain the correct service kit appropriate for the version of the OELD. Failure to do so will result in the product approval being nullified.

12 Certification and Approvals

12.1 EU Declaration of Conformity

A full EC declaration of conformity is included with the product. This document lists the European Standards with which the OELD smart junction box complies.

12.2 Hazardous Area Certification

Special conditions for safe use

To minimize the risk of electrostatic charge, provisions shall be made for an adequate grounding of the equipment, including accessories (e.g. sunshade). Equipment shall be installed in a manner so that accidental discharge shall not occur, including the following:

- Make sure that the housing and adjacent objects do not rub together
- Use only a damp cloth to clean the enclosure when needed,
- Ensure that the installation location does not increase the risk of electrostatic charge

Information relating to the certified terminal blocks as used in the increased safety (Ex e) **OELD**

The increased safety (Ex e) version of **OELD** uses Ex e-certified terminal blocks. Please find the below information and follow the schedule of limitations:

- Type name: GMSTB 2,5/ 5-STF-7,62 EX – 1795802, GMSTBV 2,5/ 5-GF-7,62 EX – 1796694, GMSTB 2,5/ 7-STF-7,62 EX – 1795828 and GMSTBV 2,5/ 7-GF-7,62 EX – 1796717
- Manufacturer: PHOENIX CONTACT GmbH & CO. KG
- IECEx / ATEX Certificate Number: IECEx KEM 10.0093U / KEMA 10ATEX0196U
- Protection type: Ex e IIC Gb (IEC/EN 60079-0 and IEC/EN 60079-7)

12.2.1 ATEX

Certificate number: DEMKO 16 ATEX 1693X (Ex d version)

⊕ II 2 GD

Ex db IIC T6

Ex tb IIIC T85°C

Tamb -40 to +65°C

IP 66

Vmax = 32 Vdc, Pmax = 2 W

Certificate number: DEKRA 17 ATEX 0006X (Ex e version)

⊕ II 2 GD

Ex eb mb [ia] IIC T5 Gb

Ex tb IIIC T100 °C

Tamb -40 to +65 °C

IP 66

Vmax = 32 Vdc, Pmax = 2 W

12.2.2 IECEX

Certificate number: UL 16.0066X (Ex d version)

Ex db IIC T6

Ex tb IIIC T85°C

Tamb -40 to +65°C

Certificate number: DEK 17.0011X (Ex e version)

Ex eb mb [ia] IIC T5 Gb

Ex tb IIIC T100 °C

Tamb -40 to +65 °C

12.2.3 cULus

Certificate Number: E484838

Class I, Division 1, Groups A, B, C and D

Class II, Division 1, Groups F and G

Class III, Division 1

Tamb -55 to +65 °C, Temp Code T6, IP66, Type 4X (in accordance with NEMA 250)

Class I, Zone 1, AEx d IIC T6

Class I, Zone 21, AEx tb IIIC T6

12.2.4 Inmetro

Certification Number: DNV 17.0010X

12.2.5 Hazloc Certificate Standards*

Flame-proof OELD

EN 60079-0

EN 60079-1

EN 60079-31

IEC 60079-0

IEC 60079-1

IEC 60079-31

UL 1203

CSA C22.2 No. 30-M1986

CSA C22.2 No. 25-1966

Ex e m i OELD

EN 60079-0

EN 60079-7

EN 60079-11

EN 60079-18

EN 60079-31

IEC 60079-0

IEC 60079-7

IEC 60079-11

IEC 60079-18

IEC 60079-31

12.3 Performance Approvals

12.3.1 ATEX

Assessed as an approved accessory for use with Searchpoint Optima Plus

Note

The optional pipe mount, ceiling bracket and sunshade accessories are not included as part of the assessment to EN60079-29-1.

12.3.2 cULus

ISA 60079-29-1

Certificate Number: E484838

WARNING

- Model OELD Smart Junction Box has been evaluated for gas performance testing in accordance with ISA 60079-29-1 (12.13.01) for Methane gas only.
- Model OELD Smart Junction Box has been evaluated for gas performance testing in accordance with ISA 60079-29-1 (12.13.01) for use as a stand-alone controller only.
- Model OELD Smart Junction Box has been evaluated for gas performance testing in accordance with ISA 60079-29-1 (12.13.01) for %LEL display options only. The mg/m³, g/m³, %Vol, ppm, mA, A, kppm, %LEL-m, LEL-m, dB, dBA, and ppm-m display options have not been evaluated, and shall not be used for ISA 60079-29-1 (12.13.01) installations.
- Do not use Bluetooth communication when using the SHC-1 Handheld Interrogator. The SHC-1 has not been evaluated for gas performance testing in accordance with ISA 60079-29-1 (12.13.01)

12.4 Wireless Approvals

Approved and registered for use in the following countries:

Algeria*, Australia, Bahrain, Brazil, Brunei, China, Egypt, India, Indonesia, Iraq*, Israel, Japan*, Kazakhstan*, Korea, Kuwait, Malaysia, Mexico, New Zealand, Oman, Pakistan*, Philippines*, Qatar, Russia*, Saudi Arabia, Singapore, South Africa*, Taiwan, Thailand, UAE, Uzbekistan*, Vietnam*

*check with Honeywell for availability

12.4.1 Bluetooth®

Certified and registered Bluetooth® SIG

ID: D031133

12.4.2 FCC

FCC ID: 2AISEOELD

[FCC Information]

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions.

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Note

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

12.4.3 IC

IC ID: 216130ELD

[IC Information]

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- 1) This device may not cause interference; and
- 2) This device must accept any interference, including interference that may cause undesired operation of the device

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage;
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WARNING

- OELD has been tested and meets applicable limits for radio frequency (RF) exposure. According to the RF Exposure report, minimum 20 cm separate distance is required.
- OELD a été testé et respecte les limites applicables à l'exposition aux radiofréquences (RF). Selon le rapport d'exposition RF, un minimum de 20 cm de distance séparée est nécessaire.

13 Warranty Summary

Honeywell Analytics warrants the OELD against defective parts and workmanship and will repair or (at its option) replace any instruments which are or may become defective under proper use within 24 months from date of shipment from Honeywell Analytics.

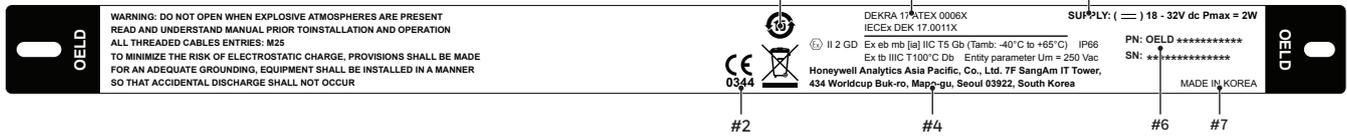
This warranty does not cover consumable items, normal wear and tear or damage caused by accident, abuse, improper installation, poisons, contaminants or abnormal operating conditions. Under no circumstances shall Honeywell Analytics liability exceed the original purchase price paid by the buyer for the product.

Any claim under the Honeywell Analytics Product Warranty must be made within the warranty period and as soon as reasonably possible after a defect is discovered. In the event of a warranty claim please contact your local Honeywell Analytics Service representative.

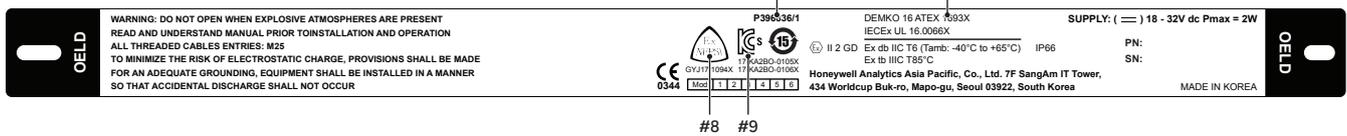
This is a summary, for full warranty terms please refer to the Honeywell Analytics “General Statement of Limited Product Warranty” available upon request.

14 Labels

OELD Ex e m i ATEX/IECEx Label



OELD Flame-proof ATEX/IECEx Label

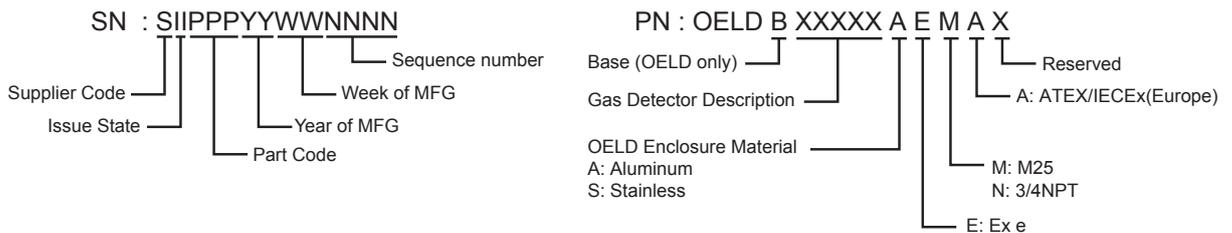


OELD Flame-proof cULus and Inmetro Label



Remark

- #1 Chinese EPUP marking
- #2 CE notified body identification: CE 0344 – ATEX QAN
- #3 OELD Ex e m i protection marking for IECEx and ATEX
- #4 Manufacturer information
- #5 OELD electrical rating
- #6 OELD serial number and part number



- #7 Country of origin
- #8 Chinese explosion-proof marking
- #9 Korean explosion-proof marking
- #10 Indian explosion-proof marking
- #11 OELD flame-proof marking for IECEx and ATEX
- #12 OELD flame-proof marking for Inmetro
- #13 OELD gas performance marking for ANSI/ISA 60079-29-1
- #14 OELD wireless marking for FCC and IC
- #15 OELD flame-proof cULus symbol
- #16 OELD flame-proof cULus marking

Find out more

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