

# 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. Ex d versions can also be configured through operation of magnetic switches using the magnetic wand (supplied) without needing to open the OELD unit. This feature is not available on Ex e-certified versions. The OELD unit is ATEX and IECEx approved for use in either Zone 1 (gas) or Zone 21 (dust) hazardous areas. Flame-proof 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

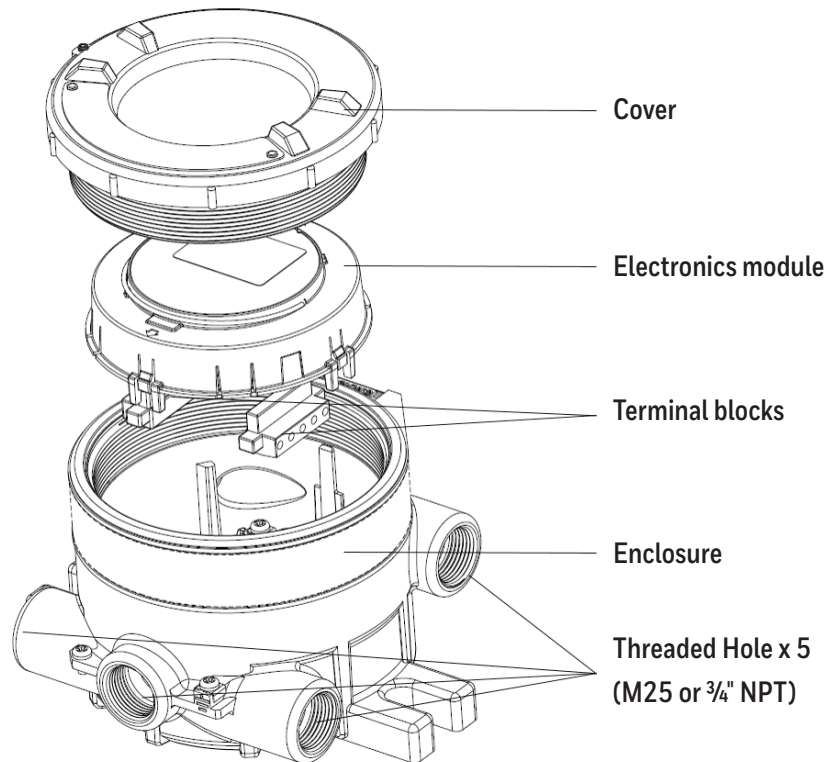
Do not rely on the OELD LCD backlight status indication for safety-related purposes.

The OELD is configured using a mobile device (such as smart phone or tablet) over Bluetooth® Low Energy. It is also possible to configure Ex d versions of the OELD through the operation of magnetic switches using the magnetic wand (supplied). 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.



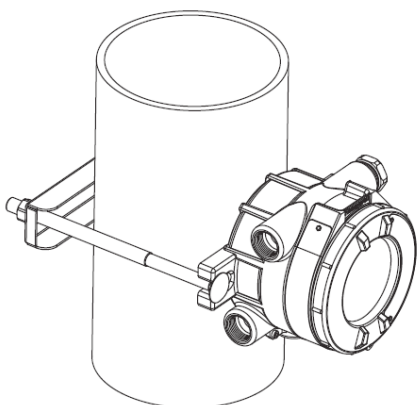
<Figure 1. OELD Exploded View>

## 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.

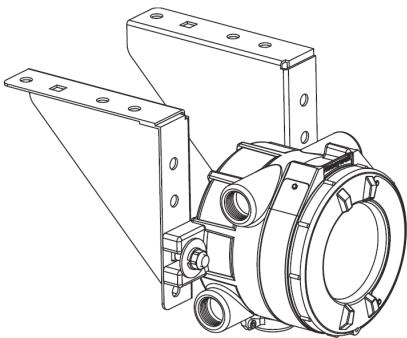
### 2.2.1 Pipe Mount Kit (1226A0358)



<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)



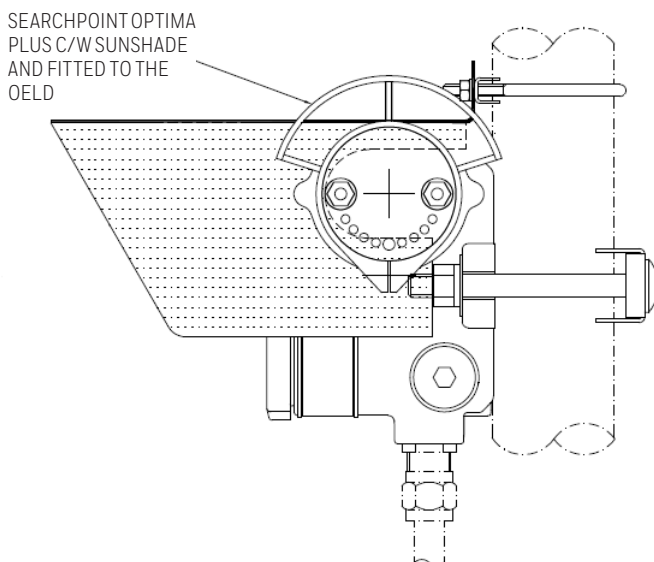
The Ceiling Mount Bracket Kit (1226A0355) allows the OELD to be mounted to the ceiling. The kit includes two stainless steel ceiling mount brackets, bolts, and nuts.

#### 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.



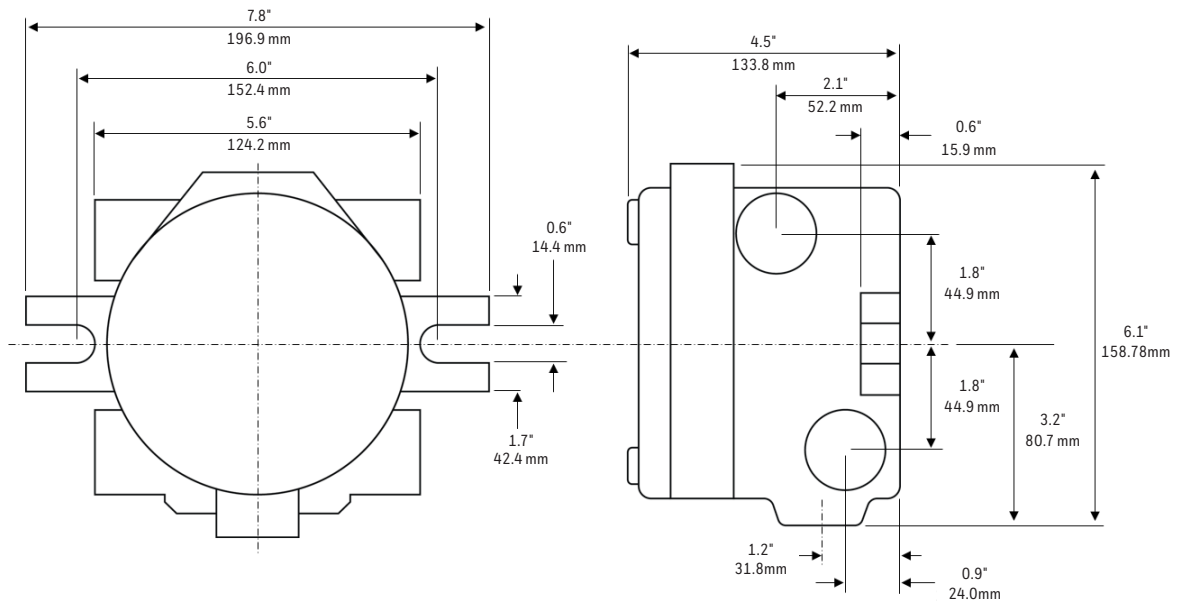
### 3.2.1 Installation to a Flat Surface

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.

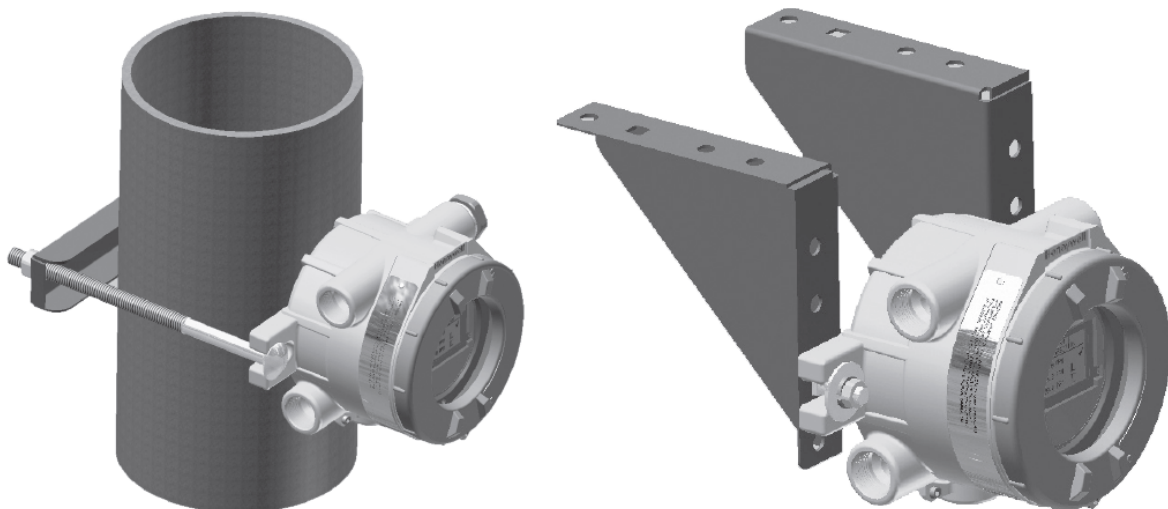


<Figure 5. OELD Dimensions>

### 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.

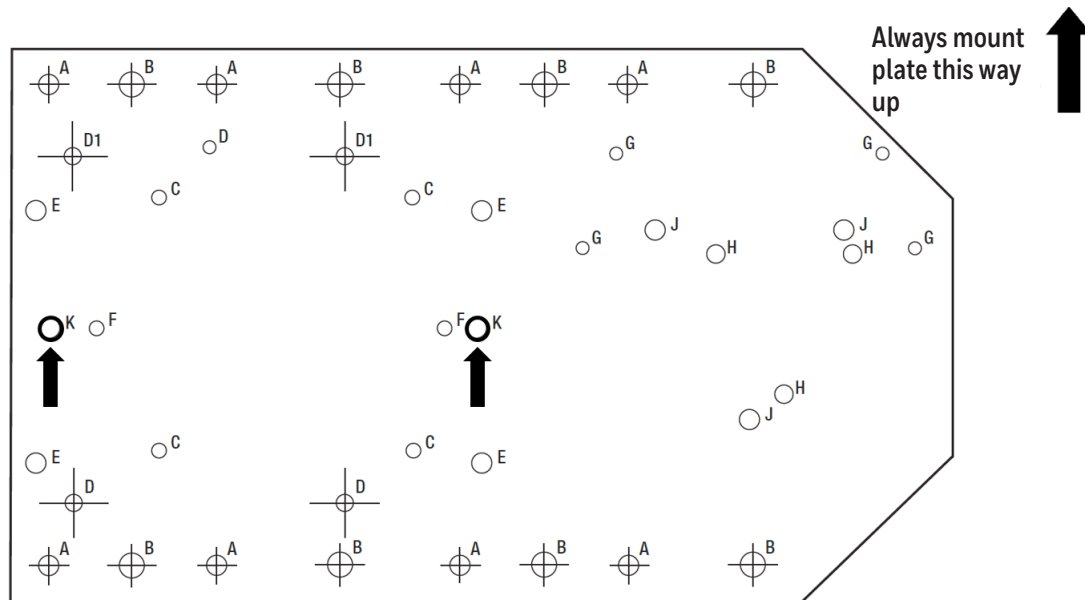
The Ceiling Mount Bracket Kit (1226A0355) allows the OELD to be mounted to the ceiling. This kit includes two stainless steel ceiling mount brackets, bolts and nuts.



<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.



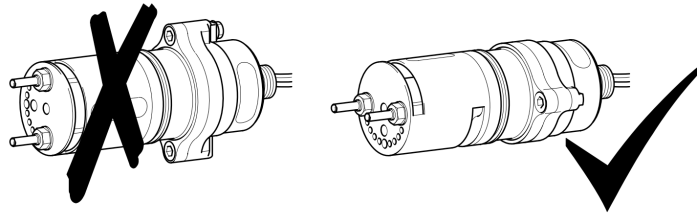
<Figure 7. Searchline Excel Mounting Plate>

## 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**

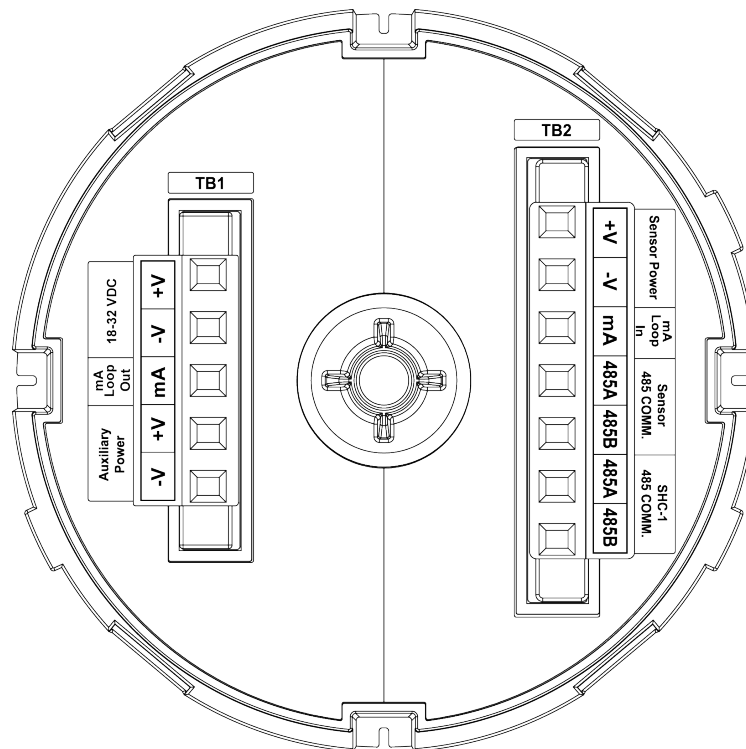
The plastic transport caps supplied must be replaced with suitably certified closers (such as glands or stopping plugs) prior to commissioning the OELD. Failure to do so presents a potential source of ignition.

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**

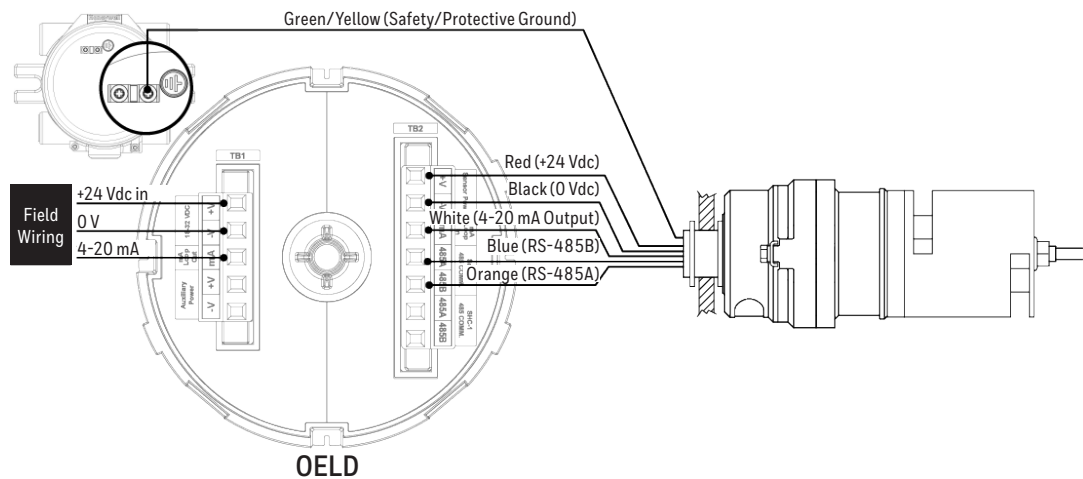
The OELD is protected against accidental reverse polarity connection of power

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**

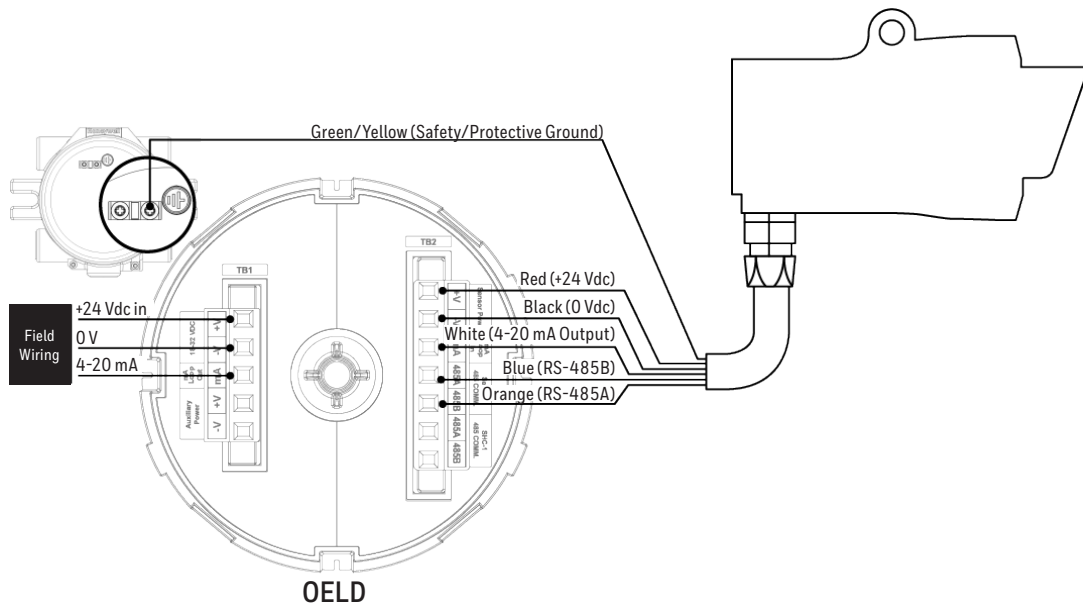
The maximum permissible mA loop voltage is 32 VDC and the maximum current is 22 mA.

**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.

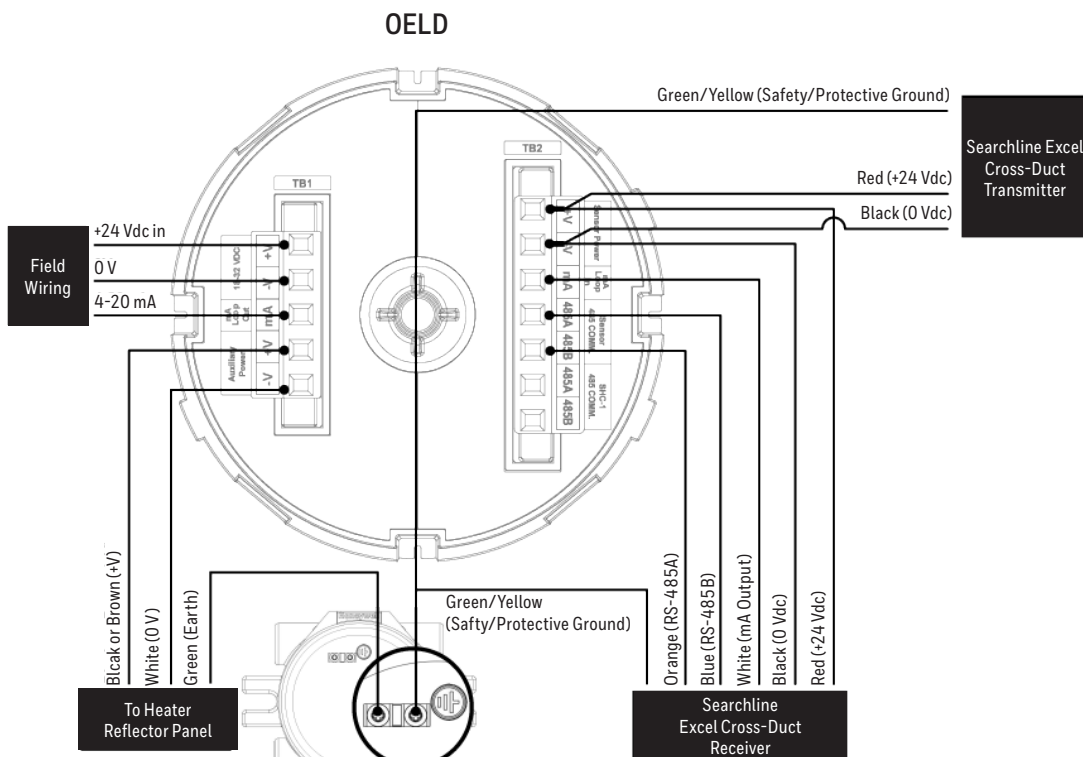
### Connecting the OELD to Searchline Excel



<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.

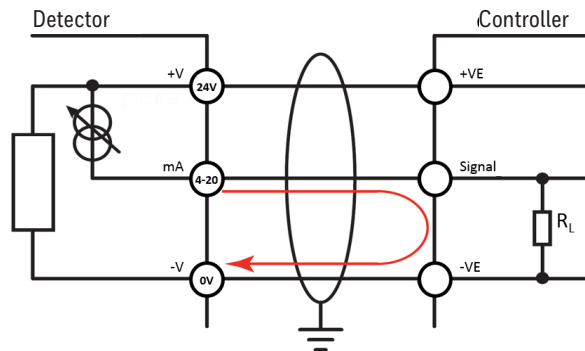
### Connecting the OELD to Searchline Excel Cross-Duct (XD)



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

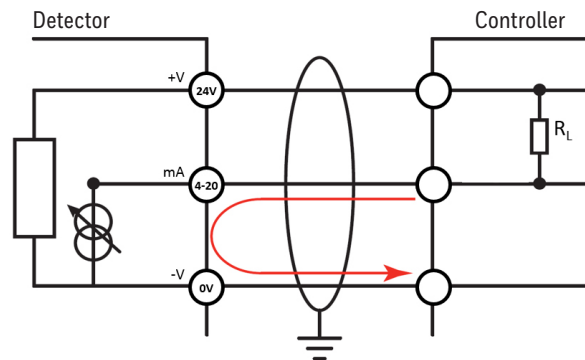
The earth bonding arrangement must ensure that the maximum peak voltage between the unit case earth and any field cable conductor is less than 350V. Voltages in excess of this can cause permanent damage to the units' internal RFI protection filters.

### OELD Connection for Detectors Configured as Current Source



<Figure 12. mA Input Source Configuration>

### OELD Connection for Detectors Configured as Current Sink



<Figure 13. mA Input Sink Configuration>

#### Caution

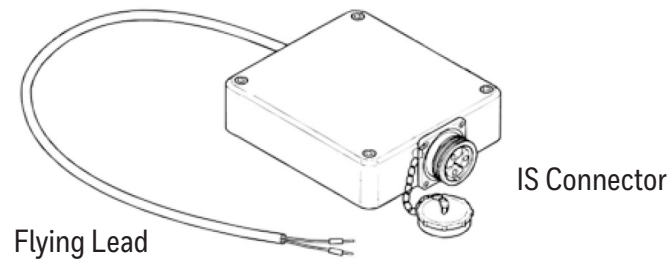
The maximum permissible mA loop voltage is 32 VDC and the maximum current is 22 mA.

## SHC-1 Connection

### WARNING

Do not attempt to connect SHC-1 Handheld interrogator directly to the OELD. Always use the SHC Protection Device.

Connect the SHC-1 Handheld Interrogator to the OELD using the SHC Protection Device.



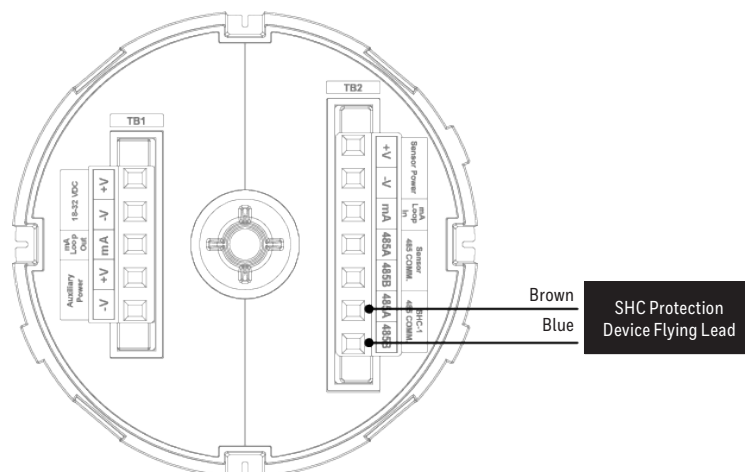
<Figure 14. SHC Protection Device>

### Note

A hot work permit may be required for this procedure.

Carry out the following procedure to connect using the protection device:

1. Isolate all power supplies.
2. Remove the OELD cover
3. Lift out the electronics module and locate the blue and orange terminals marked 'SHC-1 485 COMM'
4. Connect the flying leads of the SHC Protection Device to these terminals as shown:



<Figure 15. Connection for the SHC Protection Device>

5. Connect the SHC-1 hand-held interrogator to the IS connector on the end of the SHC Protection Device.
6. Re-apply power.



## 4.1 Power Supply

The OELD requires a voltage supply of 18 - 32 Vdc (nominal 24 Vdc), which is suitably approved for the region (for example, UL approved). 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 armour) to suit an M25 or 3/4" NPT gland entry or conduit.

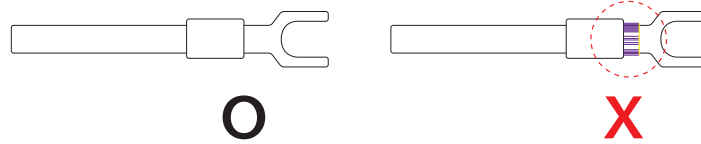
The allowable conductor size for the terminals is 0.2 – 2.5 mm<sup>2</sup> (24 - 12 AWG). The OELD terminals will accept only wire sizes (solid-core or stranded) in this range. The temperature rating of the conductors should be greater than 80°C. The terminals should be tightened to a torque of between 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 mm<sup>2</sup>. For the external earth connection, use a wire size of 4 mm<sup>2</sup>.
- 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).

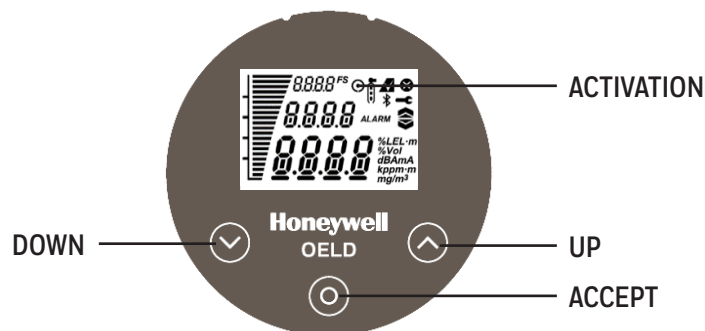
# 5 Configuration

## 5.1 General

The OELD has several configurable parameters, which are set using a mobile device running the OELD App. On Ex d versions of OELD, it is also possible to configure the majority of the settings through operation of magnetic switches using a magnetic wand (supplied). Essentially, these are the threshold for local alarm indication, mA input level settings, behavior of the green light and display settings such as full scale range, measurement unit and gas name.

If using the magnetic switches to configure the OELD, use the magnetic wand (supplied) to navigate the menu system. To do this, position the wand over one of the three controls on the window of the OELD. Activation of these controls is indicated by the ACTIVATION icon on the screen:

- Holding the magnetic wand briefly 1.5 second over a control
- ⊙ Holding the magnetic wand over a control for 2 seconds or more



<Figure 16. Layout of Magnetic Controls>

Refer to section 10 for full details on the OELD menu system.

### 5.1.1 Threshold for Local Alarm Indication

The gas reading at which 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. On Ex d versions, configuration is also possible through the use of a magnetic wand (supplied). Refer to section 5.1 for general operation instructions and section 10 for details on the menu system.

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

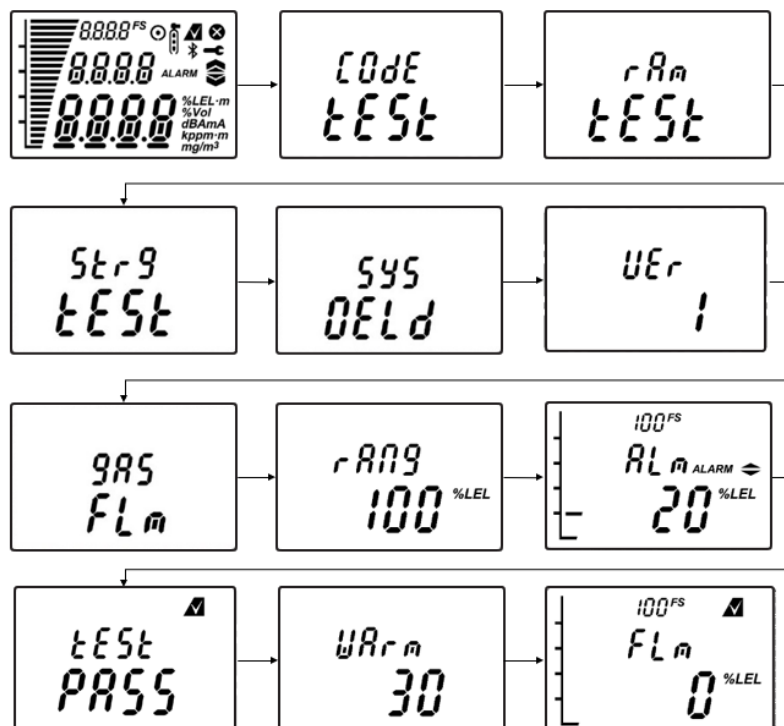
### 6.1.1 Start-up

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 17. 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 multicolour LEDs to show normal, alarm, fault and communication status.

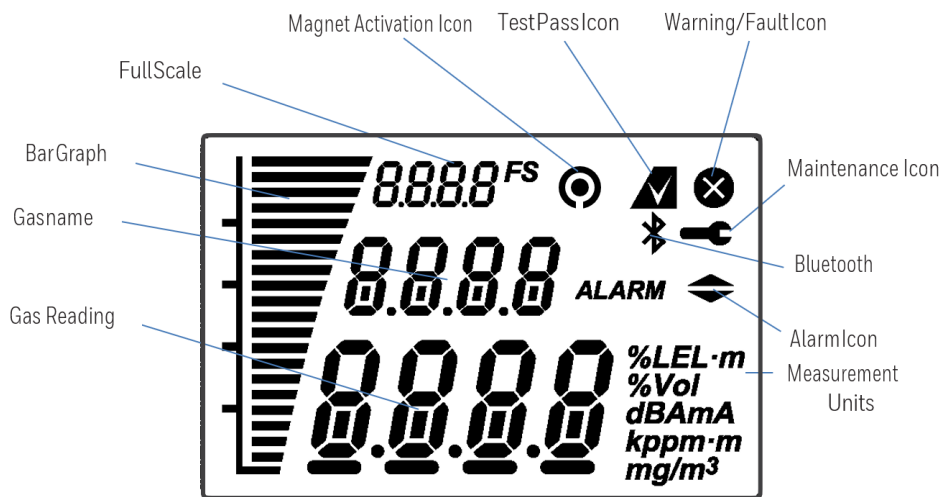
During normal operation the instrument LCD shows a steady GREEN backlight. In case of a gas alarm or fault the red or yellow backlight respectively will flash. The screen is visible through the window of the OELD top cover and the display shows the gas concentration information both graphically and numerically, 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  $-40^{\circ}\text{C}$ ), 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 18. 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 or the magnetic switch interface.

### 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

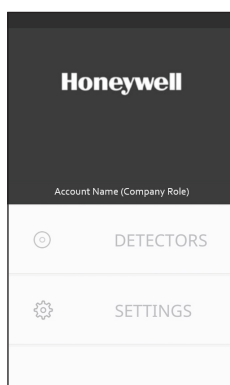
### Note

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.

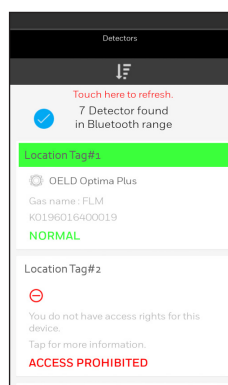
1. Find and tap the OELD App icon
2. Upon first start-up the app will prompt the user to read the End User License Agreement. Please take time to read this and accept to proceed.
3. The log-in screen will appear and ask the user to log in to the app
4. If you are already a registered user, enter your 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

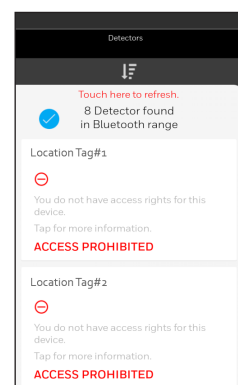
1. Standing in proximity to the OELD to which you want to connect, tap on the Detectors button on the main screen of the OELD App
2. A list of detectors to which you have access will be shown. Should you require access to a detector that is currently restricted, tap on the device and simply scan the 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.



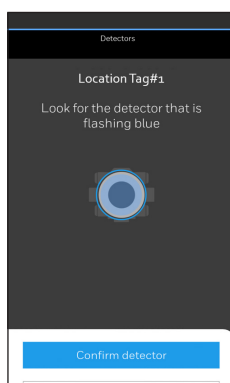
Main Screen



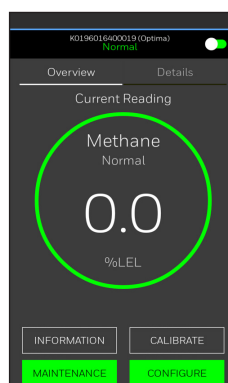
Detector List Example :  
Available Devices



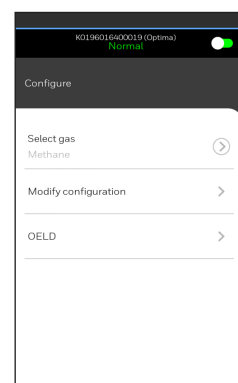
Detector List Example :  
Prohibited Devices



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	Dependent on the display resolution
Measurement units	%LEL	%Vol, mg/m <sup>3</sup> , g/m <sup>3</sup> , ppm, kppm, ppm·m, LEL·m, mA, A, dB, dBA
Inhibit Current	1.5 to 2.5 mA	0 to 3 mA* When set up using Magnet, the range is limited and needs to be explained.
Warning Current	2.5 to 3.5 mA	0 to 6 mA*
Beam block current*	2.25 to 2.75 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.

Beam block current is only available when the device type is configured to Searchline Excel.

When using magnetic switches, the range of setting is limited.

## 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	5%	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 signaling 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 Menu System

During normal operation, OELD will be displaying **Monitoring Mode**, which shows the gas concentration or mA reading as appropriate.

To perform set up and maintenance using the OELD, the user enters **Configuration Mode**, which gives full access to all of the configuration menus detailed in this chapter. If desired, **Configuration Mode** can be protected by a password to prevent unauthorized access.

A **Review Mode** is also available and can be used to display all key configuration parameters and other information such as software version.

Switching between the different modes is achieved through activation of the in-built magnetic switches using the magnetic wand (supplied).

## Note

The magnetic wand will operate the switches through the glass window in the front of the OELD. It is not necessary to open the OELD to operate the switches.

## 10.1 Abort Function

While in Review Mode or Configuration Mode, the user can escape to the previous screen using the Abort Function. To do this, present the magnetic wand to the **Accept** control for 2 seconds or more. Switching between the modes is shown in the following table:

From	To	Example
Review Mode	Monitoring Mode	Activate the Accept control for more than 2 seconds while in Review Mode
Configuration Mode	Monitoring Mode	Activate the Accept control for more than 2 seconds while navigating menus while in Configuration Mode
Configuration Mode Sub Menu	Configuration Mode main menu	Activate the Accept control for 2 seconds or more while in the sub menu

## 10.2 Configuration Mode

To enter Configuration Mode from Monitoring Mode, use the magnetic wand to activate the **Accept** control for 2 seconds or more.

If a password has been set, then use the magnetic wand to activate the **Up** to change the value of the selected digit. Use the **Down** control to move to the next digit. Once the password has been entered correctly, activate the **Accept** control to enter it.


With the first page of the menu displayed, the user can navigate to screens that allow various operations to be performed. These are detailed in the following tables.

## Note

While in Configuration Mode, the detector output will NOT be inhibited. This is due to the fact that the OELD simply passes through and monitors the mA loop current and does not modify it in any way.

Menu	Display	Description
Set Calibration	SEt CAL	Execute a zero or span on the connected Searchpoint Optima Plus or Searchline Excel After a zero, the user is presented with the option to proceed with a span calibration (Searchpoint Optima Plus only) or to return to the main menu. There is no facility to perform a span calibration on the Searchline Excel.
Reset Alarm & Fault	rSt ALrm	Use this menu to reset any alarms or faults that are latched on the OELD. If there is a fault or warning being signaled by the connected detector this will not be reset.
Set Device Type	SEt tYPE	The OELD supports three detector types: <ul style="list-style-type: none"> <li>• <b>OPt</b> (Searchpoint Optima Plus)</li> <li>• <b>ExEL</b> (Searchline Excel including cross-duct models)</li> <li>• <b>gEN</b> (generic type detector)</li> </ul> Ensure that the correct option is selected to match the type of gas detector connected to the OELD.
Set Gas Type	SEt GAS	Use this menu to select the target gas from the library that is programmed into the Searchpoint Optima Plus or Searchline Excel.
Set Time and Date (Searchline Excel only)	SEt tImE	Set the time and date of the real-time clock (RTC) in the Searchline Excel. Use the <b>Up</b> control to change the value of the currently selected digit and use the <b>Down</b> control to move to the next digit. Use the <b>Accept</b> control to store the time and date.
Install Detector (Searchline Excel only)	SEt Inst	Install the Searchline Excel detector which involves setting the type (short, medium or long range) and path length (in meters). When setting the path length, Use the <b>Up</b> and <b>Down</b> controls to modify the value. Once the path length has been entered, use the <b>Accept</b> control to store the entry.
Configure Searchline Excel (Searchline Excel only)	ExEL CONF	Set a range of configuration options in Searchline Excel including: <ul style="list-style-type: none"> <li>• Protocol address (select 0 to 255)</li> <li>• Time to block (select 5 to 600 seconds)</li> <li>• Time to fault (select 0 to 600 seconds)</li> <li>• Maximum response time (select 1 to 60 seconds)</li> <li>• Analogue output mode (select Alarm or Continuous)</li> <li>• Low signal level (select 0 to 90%)</li> <li>• Block fault (select On or Off)</li> </ul>
Set Current Levels (Searchpoint Optima and Generic device types)	SEt LVL	Set the current output levels and range of the Searchpoint Optima Plus. The OELD input levels and range are automatically updated to match. When the device type is set to Generic, the OELD settings are changed only. <ul style="list-style-type: none"> <li>• Inhibit Level (select 1 to 3 mA)</li> <li>• Warning Level (select 1.5 to 6 mA)</li> <li>• Overrange Level (select 20 to 21.6 mA*)</li> </ul> *24 mA when set to device type Generic

Menu	Display	Description
Set Current Levels (Searchline Excel)	SEt LVL	Set the current output levels and range of the Searchline Excel. The OELD input levels and range are automatically updated to match. <ul style="list-style-type: none"> <li>Inhibit Level (select 1 to 3 mA)</li> <li>Beam Block Level (select 1.5 to 3.5 mA)</li> <li>Low Signal Level (select 2 to 4 mA)</li> </ul>
Set Alarm Threshold	SEt ALrm	Sets the point at which the OELD will indicate an alarm through the backlight and screen icon. Select between 5 and 65% of the measurement range.
Set Resolution	SEt RES	Allows the resolution of the OELD display to be set.
Select Units	SEt Un It	OELD features a range of units of measurement that can be selected by the user. Choose between %LEL, mA, mg/m <sup>3</sup> , g/m <sup>3</sup> , %Vol, ppm, kppm, LEL*m, A, dB, dBA and ppm *m. Also set the range here (depending on the resolution setting, the full scale can be set between 10 to 9999, 1.0 to 99.99, 0.1 to 99.99 or 0.01 to 9.999) Use the <b>Up</b> and <b>Down</b> controls to change the selection and the <b>Accept</b> control to confirm.
Force Current	Forc Curr	The current loop of the Searchpoint Optima Plus and Searchline Excel can be controlled to the pre-determined level through the OELD. This can be particularly useful during commissioning or diagnostic routines. Use the <b>Up</b> and <b>Down</b> controls to change the desired mA level. The display will be blinking to indicate that the value is set but not affirmed. To affirm the value and set the current loop, activate the <b>Accept</b> control.
Set Location Tag	SEt Loc	An alphanumeric location tag of up to 25 characters can be set in the OELD for identification purposes. 4 characters of the Location Tag are displayed at a time. Use the <b>Up</b> control to change the value of the selected character and the <b>Down</b> control to move to the next character. Move to the next group of 4 characters units the <b>Accept</b> control.
Backlight Operation	norm LEd	The behavior of the backlight during normal operation can be switched on or off. Use the <b>Down</b> or <b>Up</b> control to toggle between the two options and use the <b>Accept</b> control to confirm the selection.
Set Purge Time (Searchpoint Optima Plus only)	SEt Purg	The purge time of the Searchpoint Optima Plus can be selected which allows the time to be adjusted that calibration gas is allowed to disperse. Use the <b>Down</b> or <b>Up</b> controls to change between 30, 40, 50, 60, 90, 120 or 180 seconds. Use the <b>Accept</b> control to confirm the selection.
Set Alarm Type (Generic device type only)	SEt tr 19	When the device type is set to Generic, it is possible to change the alarm type. Use the <b>Down</b> or <b>Up</b> control to change between Rising, Falling or None and use the <b>Accept</b> control to confirm the selection.

Menu	Display	Description
Set Password		<p>To set a password to restrict access to Configuration Mode, use the <b>Up</b> control to change the value of the selected digit and the <b>Down</b> control to move to the next digit. Once the password has been set, use the <b>Accept</b> control to enter the password.</p> <p>Set the password to four zeros, i.e. '0000' to disable the password. This is the default password.</p>


### 10.3 Configuration Mode Operation Tables

Use the tables below to help navigate the menus and make configuration change, the menus are shown in the left-hand column.

Use  $\Delta$  or  $\nabla$  to select the required menu and  $\circ$  to enter. Follow the information and instructions in the table from left to right from the required menu.

$\Delta\nabla$	$\circ$	$\Delta\nabla$	$\circ$	$\Delta\nabla$	$\circ$	$\Delta\nabla$	$\circ$	$\Delta\nabla$
SetCAL	✓	Current gas reading and gas bottle icon flashes. Apply zero gas. Select $\circ$ when the reading is stable. <b>Zero PASS</b> is displayed if OK. <b>Zero FAIL</b> if not.	✓	The screen shows <b>SPAN No</b> steadily. Select $\circ$ at this point to not perform a span and to return to the <b>Set CAL</b> menu. Otherwise use $\Delta\nabla$ controls to change the selection to <b>SPAN Yes</b> and select $\circ$ to proceed.	✓	Target gas concentration is displayed. Change to the desired value using the $\Delta\nabla$ controls. Select $\circ$ to start the span calibration.	✓	Span calibration result is displayed. <b>SPAN PASS</b> is shown if OK. <b>SPAN FAIL</b> is shown if not. Select $\circ$ to begin purge. The OELD will count down the purge time before returning to the <b>Set CAL</b> menu.
rStALrm	✓	The alarm reset screen shows <b>rSt yES</b> . Use the $\Delta\nabla$ controls to change to <b>rSt nO</b> if reset is not required.	✓	All alarms and faults are reset. The OELD returns to the <b>rStALrm</b> screen.				
SEt type	✓	The default product type is Searchpoint Optima Plus ( <b>Sys Opt</b> ). Use the $\Delta\nabla$ controls to change to Searchline Excel ( <b>Sys ExEL</b> ) or generic ( <b>Sys gEN</b> ).	✓	The selected device type is stored and the OELD returns to the <b>SEt type</b> screen.				
SEtgAS	✓	<b>gAS FLm</b> is displayed. Use the $\Delta\nabla$ controls to cycle through the flammable gases that are programmed into the memory of the detector.	✓	The chosen gas is selected and stored. The OELD then performs a 45 second countdown before returning to the <b>SEt gAS</b> screen.				
SEt timE (Searchline Excel only)	✓	The current year is shown. Use the $\Delta$ control to change the number. Use the $\nabla$ control to set and move to the next number.	✓	If the entered year is valid the screen will show the current month (01 to 12). Change in the same way as the time setting.	✓	The current time is displayed. The first two digits represent hour (00 to 24) and the second two the minute (00 to 59). Use the $\Delta$ control to change the number. Use the $\nabla$ control to set and move to the next number.	✓	Upon successful setting of the time and date, the OELD returns to the <b>SEt timE</b> screen.

△▽	○	△▽	○	△▽	○	△▽	○	△▽
SET InSt (Searchline Excel only)	✓	Select the system type from the <b>PAth</b> screen. Use the △▽ controls to choose from <b>Shrt</b> (short-range), <b>Long Med</b> (medium-range), <b>Long</b> (long-range) or <b>duct</b> (cross-duct).	✓	Enter the path length (in meters) Use the △ control to change the value of the selected digit. Use the ▽ control to set and move to the next number.	✓	The signal strength being received at the detector will be displayed as a percentage. This should be more than 70%. If not, check the alignment of the Searchline Excel.	✓	The installation is made and the settings stored. If the installation was successful, <b>Sig Ok</b> is displayed, otherwise <b>Sig FAIL</b> is shown. The OELD returns to the <b>SET InSt</b> screen.
ExEl Conf (Searchline Excel only)	✓	The <b>SET Addr</b> screen is shown. Use the △▽ controls to select the desired setting (Protocol Address, Time to Block, Time to Fault, Response Time, mA Mode or Low Level Threshold or Block Warning) to change.	✓	Use the △▽ controls select the desired value for the setting.	✓	The OELD returns to the previous screen. Repeat until the Searchline Excel settings have been set as required. Use the <b>Abort</b> function to exit from this menu level.		
SET Lvl	✓	Set the threshold levels to trigger the various states of the OELD. The <b>SET Inhb</b> screen is shown. Use the △▽ controls to select the desired current threshold to change.	✓	Use the △▽ controls select the desired value for the setting.	✓	The OELD returns to the previous screen. Repeat until the current levels have been set as required. Finally use the △▽ controls to select the <b>Lvl Quit</b> screen.	✓	The <b>SET Lvl</b> screen is displayed.
SET ALrm	✓	The current alarm level set in the OELD is shown. Use the △▽ controls to select the desired alarm threshold.	✓	The new alarm level threshold is set and the OELD returns to the <b>SET ALrm</b> screen.				

△▽	○	△▽	○	△▽	○	△▽	○	△▽
SEt rES	✓	The resolution that is currently set is shown. This is represented by position of the <b>1</b> numeral. <b>1</b> = whole integer, <b>0.1</b> = one place of decimal, <b>0.01</b> = two places of decimal, etc. Use the △▽ controls to change.	✓	The new resolution is set and the OELD returns to the <b>SEt rES</b> screen	○	△▽	○	△▽
SEt unit	✓	Use the △▽ controls to cycle through the available units of measurement.	✓	The new unit of measurement is stored and the OELD returns to the <b>SEt unit</b> screen.	○	△▽	○	△▽
Forc Curr	✓	The <b>Forc Curr</b> screen is shown with the  icon. Use the △▽ controls to change the force current to the desired value. <b>Note that for the chosen current to be asserted, the ○ control must be activated for at least 2 s.</b>	✓	The Searchpoint Optima Plus or Searchline Excel asserts the desired current on the current loop. When ready, use the △▽ controls to select the <b>AbtrtYES</b> screen to stop the current assertion.	○	△▽	○	△▽
SEt Loc	✓	The first four characters of the currently set location as shown. Use the △ control to change the current selected character and use the ▽ control to move the next character. Use the ○ control to move the next group.	✓	The next group of four digits are displayed. Modify them as required using the same method as before. Continue to select and modify the remaining characters.	○	△▽	○	△▽

The current loop returns to normal operation. The **Forc Curr** screen is displayed.

After the final group of four digits has been modified, the **SEt Loc** screen is shown.

△▽	○	△▽	○	△▽	○	△▽	○	△▽
nOrm LEd	✓	The behavior of the green backlight in a normal condition can be changed. Use the △▽ controls to toggle between <b>on</b> or <b>oFF</b> settings.	✓	The <b>nOrm LEd</b> screen is displayed.	○		○	△▽
SEt Purg (Searchpoint Optima Plus only)	✓	Use the △▽ controls to select the desired purge time allowed for gas to disperse following a span calibration. Choose from 30, 40, 50, 60, 90, 120 and 180 seconds.	✓	The desired purge time is stored and the OELD returns to the <b>SEt Purg</b> screen.				
SEt trig (Generic Device only)	✓	The behavior of the alarm threshold can be changed when the selected device is Generic. Use the △▽ controls to change between rising, falling or none.	✓	The desired alarm behavior is set and the OELD returns to the <b>SEt trig</b> screen.				
SEt PASS	✓	<b>PASS</b> is displayed and the currently selected digit highlighted. Use the △ control to change the current selected digit and use the ▽ control to move the next digit.	✓	The password is set and the OELD returns to the <b>SEt PASS</b> screen.				




## 10.4 Review Mode

The OELD will enter Review Mode when the Accept control is activated using the magnetic wand for 1 second or more. The following tables show the information that is displayed once Review Mode has been initiated. During this process, the OELD will also perform a self-test to check for the correct operation of internal functions.

Each screen will be displayed for around 2 seconds to allow the information to be read before proceeding to the next screen. At the end of the cycle, the OELD will automatically revert to Monitoring Mode.

Screen	Display	Description
Software Version	UEr 1	Displays the embedded software version of the OELD.
System Type	SYS OPT	Shows the Device Type that is currently set in the OELD (Searchpoint Optima Plus, Searchline Excel or Generic).
Gas Name	GRS FLm	Displays the gas type that is currently set in the OELD.
Measuring Range	rAn9 100 <sup>%LEL</sup>	Use this menu to select the target gas from the library that is programmed into the Searchpoint Optima Plus or Searchline Excel.
Alarm Level	100 <sup>%LEL</sup> RLm 20 <sup>%LEL</sup>	Displays the alarm threshold that is currently set in the OELD.
Location ID	Loc 0000	Shows the user-defined Location ID that is currently programmed into the OELD.
Input Supply Voltage	Power 226V	Displays the input supply voltage that is currently being measured by the OELD. Note that this may be different to actual input supply voltage due to measurement accuracy.
Temperature	tEmP 24C	Displays the ambient temperature that is being measured by the OELD. Note that this may be different to actual ambient temperature due to thermal characteristics and measurement accuracy.
Normal Backlight Operation	LEd On	Shows the backlight indication behavior that is currently set in the OELD.

Screen	Display	Description
Test Result		Gives the result of the internal self-test. In this example, the result is PASS.

# 11 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 ¼ x 7 ¾ x 4 ½ inch)
Cable entries	5 x M25 (ATEX/IECEX versions) or 5 x ¾" 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 <sup>2</sup> , 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. Integral magnetic switch, operated using the magnetic wand (supplied) – Ex d versions only.
Environmental Protection	IP66 / Type 4X (in accordance with NEMA 250)
Core Approvals	EN 50270:2015 (EMC) IEC/EN/UL/CSA 61010-1 (Electrical Safety)
Safety Approvals	ATEX cULus+ IECEX Inmetro+ NEPSI+ ISA 60079-29-1 EN60079-29-1 approved accessory Customs Union
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

**OELD Specification**

Bluetooth®  
communication security

Certificate-based mutual authentication. Encryption to AES128.

**Note**

+flameproof versions only

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

# 12 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
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.

# 13 Certification and Approvals

## 13.1 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.

## 13.2 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)

### 13.2.1 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

### 13.2.2 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

### 13.2.3 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

### 13.2.4 Inmetro

Certification Number: DNV 17.0010X

### 13.2.5 Maritime Approvals

ABS Certification Number: 18-BK1759680-PDA

Bureau Veritas Certificate Number: 52567/A0 BV

DNV.GL Certificate Number: TAA00001H9,

Location Classes: temperature (D), humidity (B), vibration (A/C) EMC (A), enclosure (C/IP66)

Lloyd's Register Certificate Number: 18/40008

### 13.2.6 Hazloc Certificate Standards\*

#### Flame-proof OELD

EN IEC 60079-0:2018

EN 60079-1:2014

EN 60079-31:2014

IEC 60079-0, 7th Ed

IEC 60079-1, 7th Ed

IEC 60079-31, 2nd Ed

UL 1203, 5th Ed

CSA C22.2 No. 30-M1986

CSA C22.2 No. 25-1966

#### Ex e m i OELD

EN 60079-0:2012+A11:2013

EN 60079-7:2015

EN 60079-11:2012

EN 60079-18:2015

EN 60079-31:2014

IEC 60079-0:2011

IEC 60079-7:2015

IEC 60079-11:2011

IEC 60079-18:2014

IEC 60079-31:2013

## 13.3 Performance Approvals

### 13.3.1 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.

### 13.3.2 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/m<sup>3</sup>, g/m<sup>3</sup>, %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)

## 13.4 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

### 13.4.1 Bluetooth®

Certified and registered Bluetooth® SIG

ID: D031133

### 13.4.2 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.

### 13.4.3 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.

# 14 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.

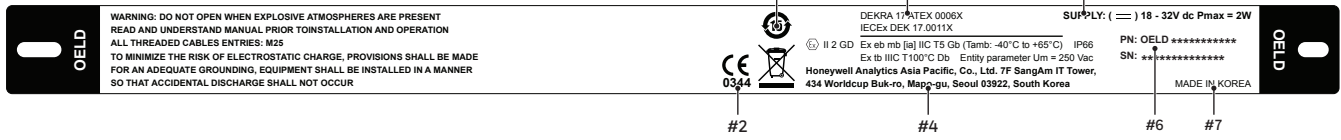
This warranty does not cover consumable items, normal wear and tear or damage caused by accident, abuse, improper installation, poisons, contaminants or abnormal operating conditions. Under no circumstances shall Honeywell Analytics liability exceed the original purchase price paid by the buyer for the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

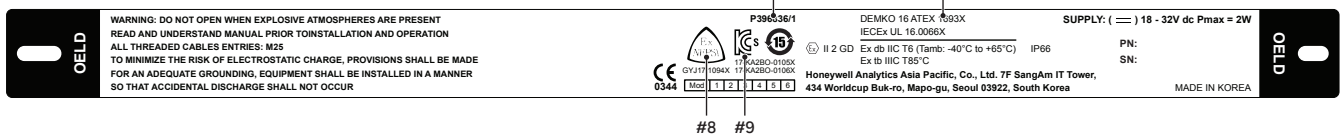
This is a summary, for full warranty terms please refer to the Honeywell Analytics "General Statement of Limited Product Warranty" available upon request.

# 15 Labels

## OELD Ex e m i ATEX/IECEx Label



## OELD Flame-proof ATEX/IECEx Label



## OELD Flame-proof cULus and Inmetro Label



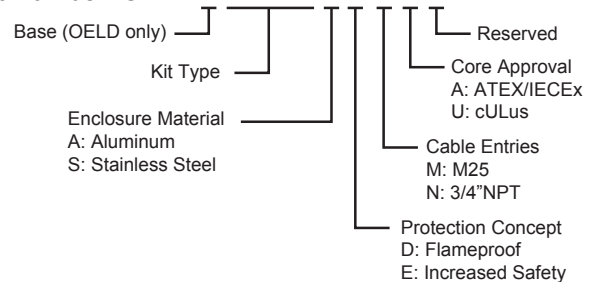
## Guide

- #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

Serial Number: SIIPPPYYWWNNNN



Part Number: OELD B XXXXX A E M A X



- #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**

[www.honeywellanalytics.com](http://www.honeywellanalytics.com)

**Contact Honeywell Analytics:****Americas**

Honeywell Analytics, Inc.  
405 Barclay Blvd.  
Lincolnshire, IL 60069  
USA  
Tel: +1 847 955 8200  
Toll free: +1 800 538 0363  
Fax: +1 847 955 8210  
[detectgas@Honeywell.com](mailto:detectgas@Honeywell.com)

**Europe, Middle East, Africa**

Life Safety Distribution GmbH  
Javastrasse 2  
8604 Hegnau  
Switzerland  
Tel: +41 (0)44 943 4300  
Fax: +41 (0)44 943 4398  
[gasdetection@honeywell.com](mailto:gasdetection@honeywell.com)

**Asia Pacific, India**

Honeywell Analytics Asia Pacific, Co., Ltd.  
7F SangAm IT Tower  
434 Worldcup Buk-ro, Mapo-gu  
Seoul 03922  
South Korea  
Tel: +82 (0)2 6909 0300  
Fax: +82 (0)2 2025 0388  
India Tel: +91 124 4752700  
China Tel: +86 10 5885 8788 3000  
[analytics.ap@honeywell.com](mailto:analytics.ap@honeywell.com)

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