

## IECEX/ATEX Guidelines for GEN II Ex Equipment (OI-6000, OI-6900, OI-5900)

### Engineering

## 1.0 Introduction

This document is a “Quick Installation Guide” that may be used to maintain the Ex integrity of the Ex Equipment. Detailed System calibration, fault finding, PWA (Printed Circuit Board) replacement, Battery Replacement and Sensor replacement can be found in the detailed instruction supplied with the equipment.

## 2.0 Description

Toxic Gas detection Models OI-5900, OI-6000, and OI-6900 units are comprised of two explosion proof enclosures, a main enclosure (OI-4000) and a sensor enclosure (OI-2000) that threads into the OI-4000 enclosure through one of three ¾” – 14 NPT entries.

Models OI-5900, and OI-6000 are DC powered (12V to 35V) via an external power source.

Model OI-6900 is battery powered via dual integral non-rechargeable 3.6V Lithium D-Cell.

All models can be provided with an optional (920MHz or 2.4GHz) radio PWB and antenna coupler.

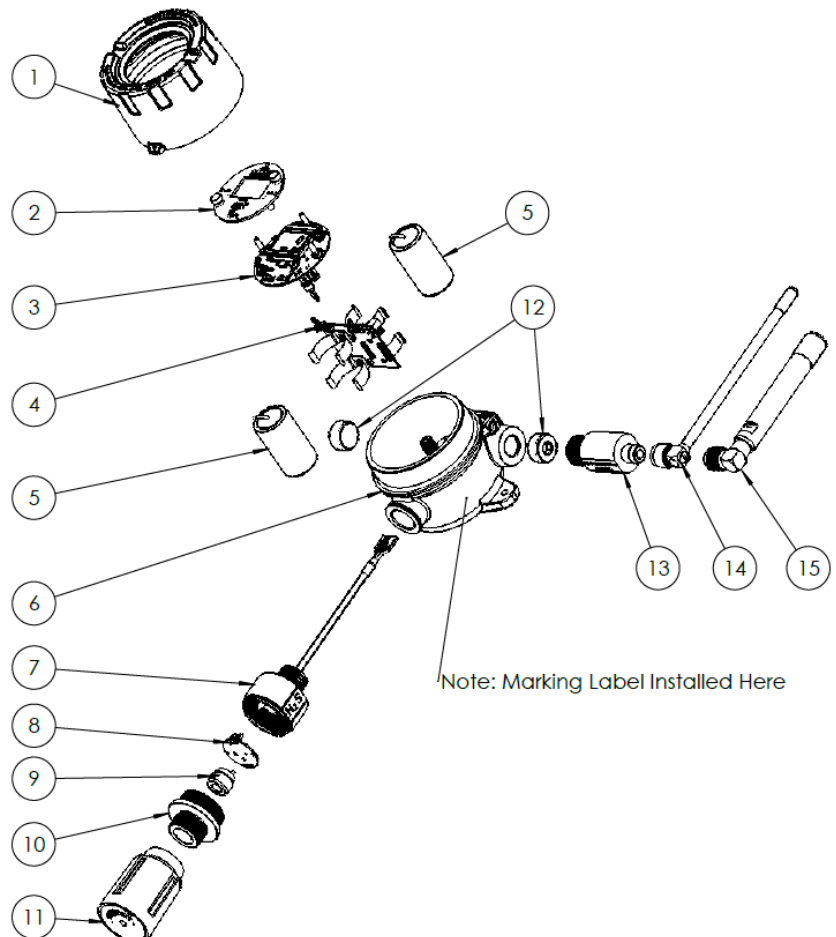
1. Enclosure Lid
2. Faceplate Assembly
3. Control Board Assembly
4. Battery/Radio Board or Radio/Relay Board Assembly
5. Batteries - OI-6900 Only
6. Main Enclosure
7. Sensor Housing Assembly
8. Sensor Board
9. Sensor Element
10. Sensor Housing Cap Assembly with Flame Arrestor
11. Rain Guard
12. Ex Stopping Plug
  1. With antenna fitting: installed in left port
  2. Without antenna fitting: installed in right port
13. Antenna Fitting
14. 900 MHz Antenna
15. 2.4 GHz Antenna

6 Enclosure Information:

Limatherm XD-Iwin

Certificate Numbers:

FTZU 03 ATEX 0207U  
IECEX FTZU 12.0017U  
CSA 1717515  
FM18US0036U



### Transmitter Enclosure

The OI-4000 main Ex d enclosure houses two PWB's a Control PWB (circular PWB) with an LCD display and either a relay, relay/radio, or radio board (rectangular PWB) or battery/radio board depending on configuration. The rectangular board mounts perpendicular to the control PWB and secured using L brackets. The PWB assembly is secured in the enclosure using two banana plugs/posts screwed in the Base Plate. If the radio option is used antenna coupler (RXN3S0208RXN or RXN3S0208RXO 900MHz to 2.4GHz) Screws into one of the three 3/4" – 14 NPT entries.

### Sensor Enclosure

The OI-2000 Ex d sensor enclosure houses a sensor PWB and is electrically connected to the OI-4000 by means of a cable, models OI-6900 and OI-6000 only. The OI-5900 uses insulated, stranded wire to electrically connect to the output of any 4-20 mA sensor. The sensor detects the gas presence by a variety of means:

**Electrochemical** – Electrochemical reaction which produces a current proportional to the gas concentration catalytic bead that burns a little of the gas and produces a proportional electrical change in the sensor.

**Infrared** – Uses light spectrum analysis to determine the target gas concentration.

**Solid State** – Gas permeates the solid state material and changes the electrical characteristics of the material.

**Photo Ionization Detector** – Uses photo ionization to detect volatile organic compounds and produces a proportional electrical change in the sensor.






**Catalytic Bead** – Uses catalytic combustion to detect combustible gas and produces a resistance change proportional to the concentration of gas present.

## 3.0 Certifications

Equipment covered by this guide is ATEX and IECEx approved for Category 2 (Zone 1) and Category 3 (Zone 2) use only.

Ex mb and ia protection methods refer only to the antenna coupler (RXN3S0208RXN or RXN3S0208RXO 900MHz to 2.4GHz).

North American approvals are available but not addressed in this guide.

 301 S. Texas Ave Bryan, Texas, USA Serial # : QCXXXX Year : 2023 Model # : OI-5900, OI-6000 12-35 VDC Max. / 1 A Max. Model # : OI-6900 - Battery: 3.6V
<b>Antenna Fitting</b> OI-5900-X-X-O OI-6900-X-X-O-X OI-6000-X-X-9-X-O OI-6000-X-X-2-X-O Ex db mb ia [ia Ga] IIB T6 Gb  2460  II 2 (1) G
<b>No Antenna Fitting</b> OI-6000-X-X-X-X-O Ex db mb IIB T6 Gb  2460  II 2 G
-40°C ≤ Ta ≤ +54°C ATEX QPS 23ATEX5008X IECEx QPS 19.0025X  READ MANUAL BEFORE USING  WARNING – DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT

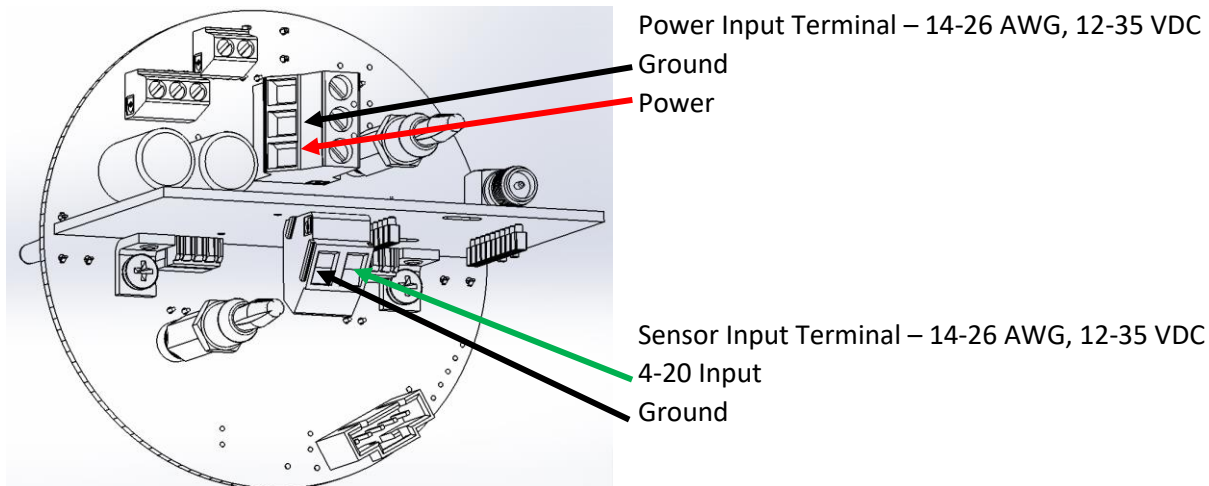
## 4.0 Installation and Instructions for Safe Use

Equipment shall be installed in compliance with local or national codes; where these are not available or are not mandated the installation shall comply with the current edition of EN or IEC 60079-14. Only suitably qualified staff shall install, operate and maintain this equipment. For threaded entries use only already certified connection facilities suitable for the application and rated for a minimum of 60 °C. Unused opening shall be closed using certified stopping plugs suitable for the application and rated for a minimum of 60 °C. The transmitter cover shall be fully tight as shall the cover retaining screw.

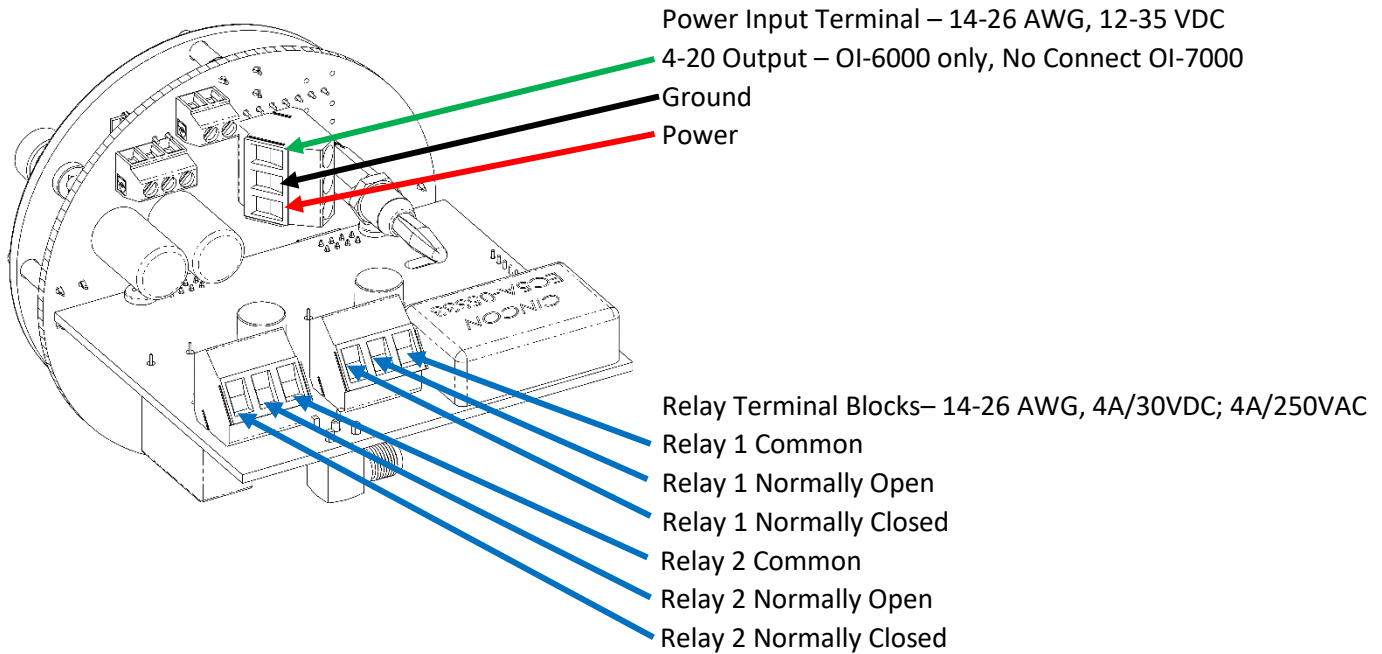
### Specific Conditions of Use for Ex Equipment

- When the equipment is supplied with a non-metallic aerial (antenna) connected to the antenna coupler, this aerial shall only be cleaned with a damp cloth.
- The equipment shall be installed in such a way that the OI-2000 sensor housing is pointing down towards the ground.
- For information on the dimensions of the flameproof joints, the manufacturer shall be contacted.

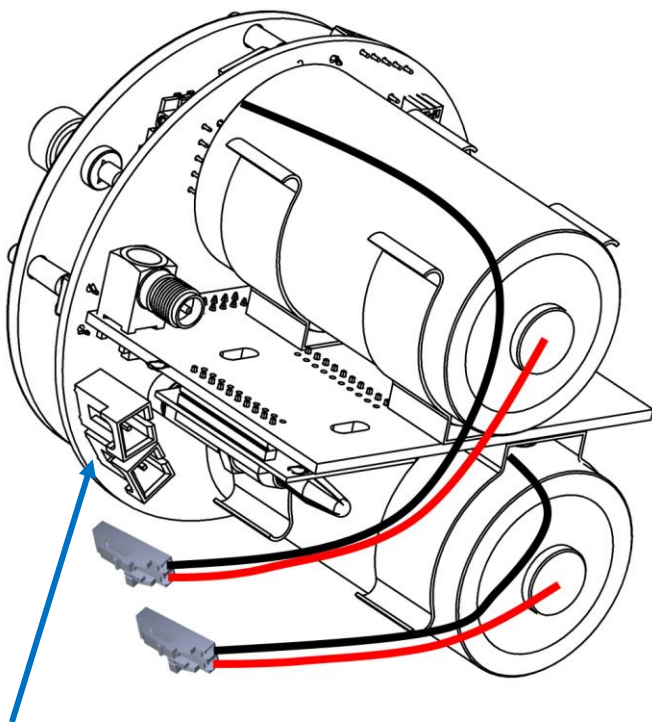
### OI-5900 – 4-20 Transmitter



### OI-6000 – Wire Powered Toxic Gas Detector



### OI-6900 – Battery Power Toxic Gas Detector



Battery Power Connectors – 3.6 VDC, only use Otis supplied batteries. Never mix old and new batteries. Always ensure batteries are replaced in pairs and that both batteries in the pair are from the same manufacturer.

## 5.0 Maintenance

If any of the flame paths in the enclosure become damaged the entire enclosure must be replaced, do NOT attempt any repairs on the flame paths.

De-energize the equipment before servicing or replacing the sensor elements.

**IMPORTANT NOTE:** Replacement batteries must be supplied by OTIS, do not attempt to replace batteries with other makes, models or types as this can be very dangerous and nullify the ATEX and IECEx approvals. Always ensure batteries are replaced in pairs and that both batteries in the pair are from the same manufacturer.

Before re-energizing the transmitter ensure the cover is correctly replaced and all the Ex entries are fully tightened.

Refer to the comprehensive instructions for further detailed maintenance information