# Honeywell

OneWireless

# XYR 6000 HLAI Transmitter

## R120 User's Manual

# Notices and Trademarks

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**Revision 9 July 2011**

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# About This Document

This document describes preparation, operation and maintenance of the XYR 6000 Wireless HLAI Transmitters. Mounting, installation and wiring are covered in other documents.

Honeywell does not recommend using devices for critical control where there is a single point of failure or where single points of failure result in unsafe conditions. OneWireless is targeted at open loop control, supervisory control, and controls that do not have environmental or safety consequences. As with any process control solution, the end-user must weigh the risks and benefits to determine if the products used are the right match for the application based on security, safety, and performance. Additionally, it is up to the end-user to ensure that the control strategy sheds to a safe operating condition if any crucial segment of the control solution fails.

## Revision Information

| Document Name | Document ID | Revision Number | Publication Date |
|---|---|---|---|
| XYR 6000 HLAI Transmitter R120 User's Manual | 34-XY-25-17 | | |
| | | 8 | November 2010 |
| Transmitter Input channels changed from 3 to 1 | | 9 | July 2011 |

## References

The following list identifies all documents that may be sources of reference for material discussed in this publication.

| Document Title |
|---|
| XYR 6000 Transmitters Quick Start Guide |
| Getting Started with Honeywell OneWireless Solutions |
| OneWireless Wireless Builder User's Guide |
| OneWireless Builder Parameter Reference |

# Support and contact info

## United States and Canada

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**World Wide Web**

Honeywell Solution Support Online:

http://www.honeywell.com/ps/hfs

**Elsewhere**

Call your nearest Honeywell office.

**Training Classes**

Honeywell Automation College:

http://www.automationcollege.com

# Symbol Definitions

The following table lists those symbols used in this document to denote certain conditions.

| Symbol | Definition |
|---|---|
| | **ATTENTION:** Identifies information that requires special consideration. |
| | **TIP:** Identifies advice or hints for the user, often in terms of performing a task. |
| **CAUTION** | Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process. |
| | **CAUTION**: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. <br><br> **CAUTION** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual. |
| | **WARNING**: Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death. <br><br> **WARNING** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual. |
| | **WARNING, Risk of electrical shock**: Potential shock hazard where HAZARDOUS LIVE voltages greater than 30 Vrms, 42.4 Vpeak, or 60 VDC may be accessible. |
| | **ESD HAZARD:** Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices. |
| | **Protective Earth (PE) terminal**: Provided for connection of the protective earth (green or green/yellow) supply system conductor. |
| | **Functional earth terminal**: Used for non-safety purposes such as noise immunity improvement. NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national local electrical code requirements. |
| | **Earth Ground**: **Functional earth connection.** NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements. |
| | **Chassis Ground**: Identifies a connection to the chassis or frame of the equipment shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements. |

continued

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| Symbol | Description |
|---|---|
| FM APPROVED | The Factory Mutual® Approval mark means the equipment has been rigorously tested and certified to be reliable. |
| CSA® | The Canadian Standards mark means the equipment has been tested and meets applicable standards for safety and/or performance. |
| Ex | The Ex mark means the equipment complies with the requirements of the European standards that are harmonised with the 94/9/EC Directive (ATEX Directive, named after the French "ATmosphere EXplosible"). |
| CE 0981 | For radio equipment used in the European Union in accordance with the R&TTE Directive the CE Mark and the notified body (NB) identification number is used when the NB is involved in the conformity assessment procedure. The alert sign must be used when a restriction on use (output power limit by a country at certain frequencies) applies to the equipment and must follow the CE marking. |
| N314 | The C-Tick mark is a certification trade mark registered to ACMA (Australian Communications and Media Authority) in Australia under the Trade Marks Act 1995 and to RSM in New Zealand under section 47 of the NZ Trade Marks Act. The mark is only to be used in accordance with conditions laid down by ACMA and RSM. This mark is equal to the CE Mark used in the European Union.\n\nN314 directly under the logo is Honeywell's unique supplier identification number. |

# Contents

# Tables

# Figures

# 1. Introduction

## 1.1 Purpose

This manual describes the Honeywell OneWireless XYR 6000 HLAI Transmitter function, operation and maintenance.

## 1.2 Scope

The manual includes:

- Details of topics that relate uniquely to the Honeywell XYR 6000 HLAI Transmitter,

- This manual does not cover installation, mounting, or wiring. See XYR 6000 Transmitter Quick Start Guide (document 34-XY-25-21).

## 1.3 OneWireless network overview

OneWireless is an all digital, serial, two-way communication mesh network that interconnects industrial field sensors to a central system.

OneWireless has defined standards to which field devices and operator stations communicate with one another.  The communications protocol is built as an "open system" to allow all field devices and equipment that are built to OneWireless standard to be integrated into a system, regardless of the device manufacturer.  This interoperability of devices using OneWireless technology is to become an industry standard for automation systems.

## 1.4 About the transmitter

The XYR 6000 HLAI Transmitter is furnished with OneWireless interface to operate in a compatible distributed OneWireless system.  The transmitter will interoperate with any OneWireless-registered device.

The transmitter includes OneWireless electronics for operating in a 2.4GHz network.  It features function block architecture.

**Input**

The transmitter supports one input channel. The channel is configurable as follows.

- Current (0-20mA) &  (4-20mA)

The tranamitter measures analog signal and transmits a digital output signal proportional to the measured value. Figure 1 shows the functional diagram.
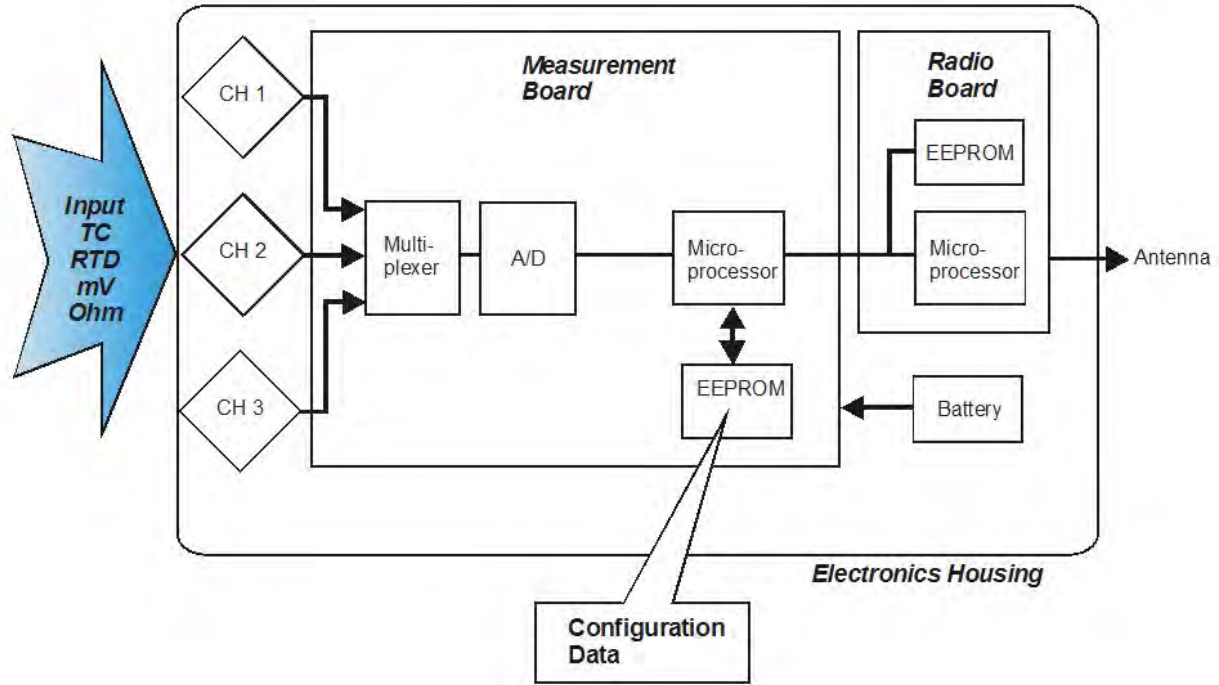
**Figure 1  XYR 6000 Functional Diagram**

# 2. Specifications

## 2.1 European Union Usage

This product may be used in any of the following European Union nations.

| Country | ISO 3166 2 letter code | Country | ISO 3166 2 letter code |
|---|---|---|---|
| Austria | AT | Latvia | LV |
| Belgium | BE | Liechtenstein | LI |
| Bulgaria | BG | Lithuania | LT |
| Cyprus | CY | Malta | MT |
| Czech Republic | CZ | Netherlands | NL |
| Denmark | DK | Norway | NO |
| Estonia | EE | Poland | PL |
| Finland | FI | Portugal | PT |
| France | FR | Romania | RO |
| Germany | DE | Slovakia | SK |
| Greece | GR | Slovenia | SI |
| Hungary | HU | Spain | ES |
| Iceland | IS | Sweden | SE |
| Ireland | IE | Switzerland | CH |
| Italy | IT | United Kingdom | BG |

## 2.2    Certifications and approvals

**Transmitter**

See the product label for applicable approvals and ratings.

| Approval / Item | Ratings / Description |
|---|---|
| CSAcus Intrinsically Safe | CL I, Div 1, Groups A, B, C, & D; CL II, Div 1, Groups E, F & G; CL III, T4<br>CL I, Zone 0: Ex ia IIC, T4; CL I, Zone 0: AEx ia IIC, T4 |
| CSAcus Explosionproof | CL I, Div 1, Groups A, B, C, & D; CL II, Div 1, Groups E, F & G; CL III, T4<br>CL I, Zone 1: Ex d IIC, T4; CL I, Zone 1: AEx d IIC, T4 |
| CSAcus Nonincendive | CL I, Div 2, Groups A, B, C & D; CL II, Div 2, Groups F & G; CL III, Div 2, T4<br>CL I, Zone 2: Ex nA IIC, T4; CL I, Zone 2: AEx nA IIC, T4 |
| FM Approvals Intrinsically Safe | CL I, Div 1, Groups A, B, C, & D; CL II, Div 1, Groups E, F & G; CL III, T4<br>CL I, Zone 0: AEx ia IIC, T4 |
| FM Approvals Explosionproof | CL I, Div 1, Groups A, B, C, & D; CL II, Div 1, Groups E, F & G; CL III, T4<br>CL I, Zone 1: AEx d IIC, T4 |
| FM Approvals Nonincendive | CL I, Div 2, Groups A, B, C & D; CL II, Div 2, Groups F & G; CL III, Div 2, T4<br>CL I, Zone 2: AEx nA IIC, T4 |
| HON – ATEX Non-Sparking | (Ex) II 3 GD, Ex nA IIC, T4; Ta = 85°C, Zone 2 |
| KEMA 08 ATEX0062X Intrinsically Safe Flameproof Non-Sparking | (Ex) II 1 GD  Ex ia IIB; T4 Ta = 70ºC; Ex tD A20 IP66 T90ºC<br>(Ex) II 2 GD  Ex d [ia] IIB; T4 Ta = 70ºC; Ex tD A21 IP66 T90ºC<br>(Ex) II 3 GD  Ex nA [nL] IIC; T4 Ta = 84ºC; Ex tD A22 IP66 T90ºC |
| IECEx CSA 09.0001X Intrinsically Safe Flameproof Non-Sparking | Ex ia IIB; T4 Ta = 70ºC; DIP A20 IP66 T90ºC<br>Ex d [ia] IIB; T4 Ta = 70ºC; DIP A21 IP66 T90ºC<br>Ex nA [nL] IIC; T4 Ta = 84ºC; DIP A22 IP66 T90ºC |
| Process Connections in Division 2 / Zone 2 | ⚠️<br>Division 2 / Zone 2 apparatus may only be connected to processes classified as non-hazardous or Division 2 / Zone 2. Connection to hazardous (flammable or ignition capable) Division 1 / Zone 0, or 1 process is not permitted. |
| Enclosure Type | Type 4X, IP 66 |
| CRN | Canadian Registration Number |
| Class II and III installations and Type 4X/IP66 applications require that all cable and unused entries be sealed with a NRTL (National Recognized Testing Laboratory) listed cable gland or conduit plug.  Cable glands and conduit plugs are not supplied with the product. | |

For detailed transmitter specifications see the following Specification and Model Selection Guide.

- XYR 6000 Wireless Transmitter HLAI (document 34-XY-03-30)

**Authentication Device**

Install the Authentication Device application on any PDA having

- Windows Mobile version 4.2+

- Infrared port.

## 2.3    Agency compliance information

This section contains the Federal Communications Commission (FCC), Industry Canada (IC) and Radio Frequency compliance statements for the OneWireless XYR 6000 Wireless Transmitter device.

> **ATTENTION**
>
> XYR 6000 units must be professionally installed in accordance with the requirements specified in the *OneWireless XYR 6000 Agency Compliance Professional Installation Guide.*

**FCC compliance statements**

- This device complies with Part 15 of FCC Rules and Regulations. 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 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 in a residential installation. This equipment generates, uses, and can radiate radiofrequency energy and, if not installed and used in accordance with these instructions, 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.

- Intentional or unintentional changes or modifications must not be made to the XYR 6000 Wireless Transmitter unless under the express consent of the party responsible for compliance. Any such modifications could void the user's authority to operate the equipment and will void the manufacturer's warranty.

**IC compliance statements**

- To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropic radiated power (EIRP) is not more than that permitted for successful communication.

- 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.

- This Class A digital apparatus complies with Canadian ICES-003.

- French: Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

### Radio Frequency (RF) statement

To comply with FCC's and Industry Canada's RF exposure requirements, the following antenna installation and device operating configurations must be satisfied.

- Remote Point-to-Multi-Point antenna(s) for this unit must be fixed and mounted on outdoor permanent structures with a separation distance between the antenna(s) of greater than 20cm and a separation distance of at least 20cm from all persons.

- Remote Fixed Point–to-Point antenna(s) for this unit must be fixed and mounted on outdoor permanent structures with a separation distance between the antenna(s) of greater than 20cm and a separation distance of at least 100cm from all persons.

- Furthermore, when using integral antenna(s) the XYR 6000 Wireless Transmitter unit must not be co-located with any other antenna or transmitter device and have a separation distance of at least 20cm from all persons.

### European Union restriction

France restricts outdoor use to 10mW (10dBm) EIRP in the frequency range of 2,454-2,483.5 MHz. Installations in France must limit EIRP to 10dBm, for operating modes utilizing frequencies in the range of 2,454 – 2,483.5MHz.

### Japanese Restrictions

For locations in Japan the transmitter power is restricted to 12.14dBm/Mhz {(32mW (15.4 dBm)] maximum EIRP including the antenna.

## 2.4    Honeywell European (CE) Declaration of Conformity (DoC)

This section contains the European Declaration of Conformity (DoC) statement, for the OneWireless product line.

| R&TTE Directive | 1999/5/EC | LVD Directive | 73/23/EEC | EMC Directive | 2004/108/EC | ATEX Directive | 94/9/EC |
|---|---|---|---|---|---|---|---|
| **Harmonized Standards** | | | | | | | |
| **EN 300 328 V1.7.1** | Emissions Specification and Method: | | | | | | |
| **EN 301 893 V1.4.1** | Emissions Spec and Method | | | | | | |
| **EN 301 489-17 V1.2.1** | Immunity Specification: | | | | | | |
| **EN 301 489-1 V1.6.1** | Immunity Method: | | | | | | |
| **IEC61326-1 : 2006** | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements | | | | | | |
| **EN 60079-0 : 2006** | Electrical apparatus for explosive gas atmospheres - Part 0: General requirements | | | | | | |
| **EN 60079-1 : 2004** | Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd' | | | | | | |
| **EN 60079-11 : 2007** | Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i' | | | | | | |
| **EC 60079-15 : 2005** | Electrical apparatus for explosive gas atmospheres - Part 15: Type of protection 'n' | | | | | | |
| **EN 61241-0 : 2007** | Electrical apparatus for use in the presence of combustible dust - Part 0: General Requirements | | | | | | |
| **EN 61241-1 : 2004** | Electrical apparatus for use in the presence of combustible dust - Part 1-1: Electrical apparatus for use in the presence of combustible dust – Part 1: Protection by enclosures "tD" | | | | | | |
| Manufacturer's Name and Address | Honeywell Process Solutions 525 East Market Street, York, PA 17403 USA | | | | | | |
| Compliance Statement | The product herewith complies with the harmonized standards listed above. Typical product line systems and configurations have been tested, for compliance. | | | | | | |

### European Declaration of Conformity statements

| Language | Statement |
| --- | --- |
| Česky (Czech): | *Honeywell* tímto prohlašuje, že tento *XYR 6000 Wireless Transmitters* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES. |
| Dansk (Danish): | Undertegnede *Honeywell* erklærer herved, at følgende udstyr *XYR 6000 Wireless Transmitters* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF. |
| Deutsch (German): | Hiermit erklärt *Honeywell*, dass sich das Gerät *XYR 6000 Wireless Transmitters* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet. |
| Eesti (Estonian): | Käesolevaga kinnitab *Honeywell* seadme *XYR 6000 Wireless Transmitters* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele. |
| English | Hereby, *Honeywell*, declares that this *XYR 6000 Wireless Transmitters* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. |
| Español (Spanish): | Por medio de la presente *Honeywell* declara que el *XYR 6000 Wireless Transmitters* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE. |
| Ελληνική (Greek): | ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *Honeywell* ΔΗΛΩΝΕΙ ΟΤΙ *XYR 6000e* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ. |
| Français (French): | Par la présente *Honeywell* déclare que l'appareil *XYR 6000e* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE. |
| Italiano (Italian): | Con la presente *Honeywell* dichiara che questo *XYR 6000 Wireless Transmitters* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE. |
| Latviski (Latvian): | Ar šo *Honeywell* deklarē, ka *XYR 6000 Wireless Transmitters* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem. |
| Lietuvių (Lithuanian): | Šiuo *Honeywell* deklaruoja, kad šis *XYR 6000 Wireless Transmitters* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas. |
| Nederlands (Dutch): | Hierbij verklaart *Honeywell* dat het toestel *XYR 6000 Wireless Transmitters* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG. |
| Malti (Maltese): | Hawnhekk, *Honeywell*, jiddikjara li dan *XYR 6000 Wireless Transmitters* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC. |
| Magyar (Hungarian): | Alulírott, *Honeywell* nyilatkozom, hogy a *XYR 6000 Wireless Transmitters* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak. |
| Polski (Polish): | Niniejszym *Honeywell* oświadcza, że *XYR 6000 Wireless Transmitters* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC. |

| Language | Statement |
|---|---|
| Português (Portuguese): | *Honeywell* declara que este *XYR 6000 Wireless Transmitters* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE. |
| Slovensko (Slovenian): | *Honeywell* izjavlja, da je ta *XYR 6000 Wireless Transmitters* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES. |
| Slovensky (Slovak): | *Honeywell* týmto vyhlasuje, že *XYR 6000 Wireless Transmitters* spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES. |
| Suomi (Finnish): | *Honeywell* vakuuttaa täten että *XYR 6000 Wireless Transmitters* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen. |
| Svenska (Swedish): | Härmed intygar *Honeywell* att denna *XYR 6000 Wireless Transmitters* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG. |
| Íslenska (Icelandic): | Hér með lýsir *Honeywell* yfir því að *XYR 6000 Wireless Transmitters* er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC. |
| Norsk (Norwegian): | *Honeywell* erklærer herved at utstyret *XYR 6000 Wireless Transmitters* er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF. |

### For more information about the R&TTE Directive

The following website contains additional information about the Radio and Telecommunications Terminal Equipment (R&TTE) directive:

http://ec.europa.eu/enterprise/rtte/faq.htm

## 2.5    IECEx Conditions of Certification

Parts of the antenna are non-conducting and the area of the non-conducting part exceeds the maximum permissible areas for Category ll 1 G (Zone 0) according to IEC 60079-0. Therefore when the antenna is used within a potentially explosive atmosphere, appropriate measures must be taken to prevent electrostatic discharge.

Impact and friction hazards need to be considered according to IEC 600079-0 when the transmitter that is exposed to the exterior atmosphere is made of light metal alloys, and used in Category ll 1 G (Zone).

### ATEX Conditions for Safe Use

Because the enclosure of the enclosure of the XYR 6000 Wireless Transmitter is made from aluminum, if it mounted in an area where the use of category 1G apparatus is required, it must be installed such that even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

Special precautions shall be taken to prevent the surface of the antenna of the XYR 6000 Wireless Transmitter from being electrostatically charged

# 3.    Preparation

## 3.1    Installation

Refer to the XYR 6000 Transmitter Quick Start Guide (document 34-XY-25-21) for installation, mounting and wiring of your XYR 6000 transmitter.

## 3.2    Configuration

The XYR 6000 Transmitter contains the electronics interface compatible for connecting to the OneWireless network.  An operator uses the Wireless Builder application to configure blocks, to change operating parameters, and to create linkages between blocks that make up the transmitter's configuration. These changes are written to the transmitter when it is authenticated by a security key.

## 3.3    Connecting to network

Use Authentication Device to connect your transmitter to the OneWireless network. See page 24.

## 3.4    Calibrating the transmitter

**Methods**

The following calibration methods are available through the transmitter menu.

- User Calibration - Calibrates the channel to the low and high range values for selected input type.

- Restore Calibration - constants for the channel 1 are restored to factory defaults.

- Clear Calibration - FACTORY or USER Calibration constants for the channel can be cleared.

**Wireless Builder**

Wireless Builder must be used to unlock and take the channel to be calibrated out of service. Calibration Point High (CAL_PT_HI), Calibration Point Low (CAL_PT_LO) & Cal Unit (CAL_UNIT) can be set from Wireless Builder.

PV value is scaled to Engineering Units. For example, for 1-5V input type if EU 0 = 0 and EU 100 = 100 then Input (1-5V) will be scaled to 0 to 100.

Calibration points CAL_LO and CAL_HI are considered in terms of engineering units. For example,

- If channel is to be calibrated for (1-3V) with above settings then set CAL_PT_LO to 0 and CAL_PT_HI to 50.

- If channel is to be calibrated for (1-4V) with above settings then set CAL_PT_LO to 0 and CAL_PT_HI to 75. Calibration unit has no significance.

**Table 1 User calibration**

| Step | Action |
|------|--------|
| 1 | In Wireless Builder, set transmitter's Write Lock to Unlocked. |
| 2 | In Wireless Builder, set the transmitter's channel to OOS (Out of Service). |
| 3 | Loosen the M3 locking set screw on the transmitter's battery end-cap (opposite end from display). Unscrew and remove the end cap. |
| 4 | See Figure 2 for terminal connections. If your process input is connected to the channel, disconnect it first, then connect a calibrator source to the channel's terminals. It is not necessary to disconnect any jumper wires on the terminals. |
| 5 | Select USER CAL by scrolling through menu. Follow displayed instructions.<br><br>• Using your calibration source, apply the low calibration value indicated on display.<br><br>• Press Enter to accept the value. Display will say BUSY, then CAL LO COMPLETE.<br><br>• Press Enter to continue.<br><br>• Apply the high calibration input value indicated on display.<br><br>• Press Enter to accept the value. Display will say BUSY, then SUCCESS.<br><br>• If calibration is unsuccessful at any of steps mentioned above an error message is displayed. See Table 2.<br><br>• Press Enter to return to PV display. |
| 6 | Exit the menu. |
| 7 | Reverse steps 3 and 4. |
| 8 | When ready, in Wireless Builder return the transmitter's channel to service and set Write Lock to Locked. |



**Figure 2 Calibration wiring: voltage (left), current (right)**

**Table 2 Calibration error messages**

| Message | Meaning |
|---------|---------|
| CALIBRATION_FAIL | 1. Calibration gain is greater than 5%. <br><br> 2. Calibration offset is greater than 5% of sensor span. |
| BAD_TRIM_POINT | CAL_POINT_HI  is greater than sensor high range value OR CAL_POINT_LO  is less than greater than sensor low range value. |
| BAD_USER_CALIBRATION | CAL_SOURCE is user and user calibration constants contain invalid values. |
| BAD_FACTORY_CALIBRATION | 1.  CAL_SOURCE is factory and factory calibration constants do not contain valid values. <br><br> 2. CAL_RESTORE command was issued but factory calibration constants do not contain valid values. |
| BAD_SENSOR | Check input connections. |
| BAD_UNITS | Units in CAL UNITS parameter are invalid or not supported by the sensor type. |
| INTERNAL_ERROR | An error occurred during calibration that prevents calibration from being completed successfully. |
| SUCCESS_WITH_EXCESS | The calibration succeeded but the calculated calibration values are greater that 5 percent beyond the normal calibration values. Typically this indicates that the applied calibration value was significantly different from the expected value or that the sensor is not within expected tolerances for the applied characterization. |

**Table 3 Restore calibration**

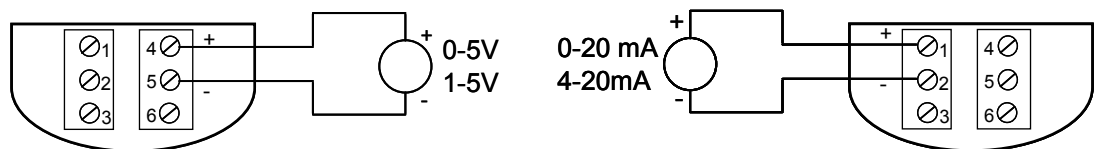| Step | Action |
|------|--------|
| 1 | In Wireless Builder, set transmitter's Write Lock to Unlocked. |
| 2 | In Wireless Builder, set the transmitter's channel to OOS (Out of Service). |
| 3 | Use Authentication Device's Device Local Configuration buttons to navigate to the transmitter's CAL menu. |
| | If the transmitter is locked a LOCKED message will be displayed. Go to step 1. |
| | If CAL menu is passcode protected, enter the passcode. |
| | If the channel is not out of service a WRONG MODE message will be displayed. Go to step 2. |
| 4 | • Select CAL RSTR by scrolling through menu. |
| | • Press Enter to continue. |
| | • Display will say BUSY, then SUCCESS. |
| | • If calibration is unsuccessful an error message is displayed. See Table 2. |
| | • Press Enter to return to PV display. |
| 5 | Exit the menu. |
| 6 | When ready, in Wireless Builder return the transmitter's channel to service and set Write Lock to Locked. |

**Table 4 Clear calibration**

| Step | Action |
|------|--------|
| 1 | In Wireless Builder, set transmitter's Write Lock to Unlocked. |
| 2 | In Wireless Builder, set the transmitter's channel to OOS (Out of Service). |
| 3 | Use Authentication Device's Device Local Configuration buttons to navigate to the transmitter's CAL menu. |
| | If the transmitter is locked a LOCKED message will be displayed. Go to step 1. |
| | If CAL menu is passcode protected, enter the passcode. |
| | If the channel is not out of service a WRONG MODE message will be displayed. Go to step 2. |
| 4 | • Select CAL CLR by scrolling through menu. |
| | • Press Enter to continue. |
| | • Display will say BUSY, then SUCCESS. |
| 5 | Exit the menu. |

# 4. Function blocks

## 4.1 Introduction

This section explains the construction and contents of the XYR 6000 HLAI Transmitter Function Blocks.

## 4.2 Block description

### Block types

Blocks are the key elements that make up the transmitter's configuration. The blocks contain data (block objects and parameters) which define the application, such as the inputs and outputs, signal processing and connections to other applications. The XYR 6000 Transmitter contains the following block types.

| Block Type | Function |
|---|---|
| Device | Contains parameters related to the overall field device rather than a specific input or output channel within it. A field device has exactly one device block. |
| AITB | Contains parameters related to a specific process input or output channel in a measurement or actuation device. An AITB defines a measurement sensor channel for an analog process variable represented by a floating-point value. There is one AITB per sensor. |
| Radio | Contains parameters related to radio communication between the transmitter and the multimode(s). |

### Block diagram

Figure 3 shows the blocks of the XYR 6000 Transmitter.
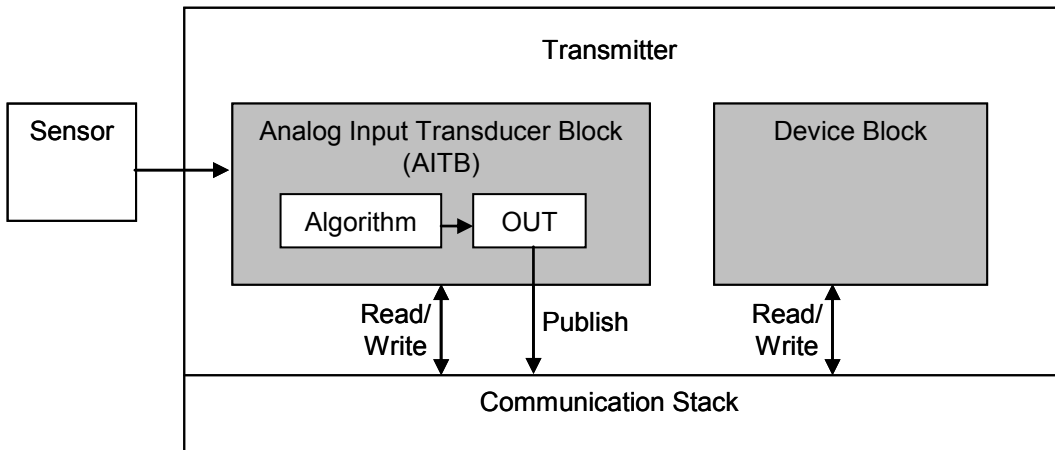


**Figure 3 Block Diagram**

Each of these blocks contains parameters that are standard OneWireless-transmitter defined parameters. The AITB and device blocks contain standard parameters common to all XYR 6000 transmitter models (that is, pressure, temperature, DI, corrosion,) as well as HLAI-specific parameters. The radio block contains parameters for communication with the wireless network.

## 4.3   Parameter details

The transmitter itself displays a few basic parameters, such as tag, serial number, device revision, build, device address and WFN ID by accessing the quick view mode using the Authentication Device navigation keys.

For more information on parameters, refer to the following documents.

- OneWireless Wireless Builder User's Guide

- OneWireless Parameter Reference

# 5.  Operation

## 5.1  Overview

**Display modes**

The transmitter has the following display modes.

- Test. Appears briefly after power-up to self-test the display.

- Connection status. Appears when transmitter is not fully connected to the OneWireless network. See section 5.2.

- PV display. Default mode of the transmitter displays the PV and any status messages. See section 5.3 on page 18.

- Quick view of transmitter identification parameters. Displays read-only parameters then returns to PV display. See section 5.4 on page 21.

- Menu. See section 5.5 on page 22.

**Authentication Device**

To navigate the transmitter displays and menus, hold the Authentication Device no more than 6" from the transmitter and aim the infrared beam at the transmitter display while tapping the Device Local Configuration buttons (Table 10). You can also use the PDA's buttons.

Authentication Device menus are described in section 5.6 starting on page 23.

## 5.2    Transmitter connection status

**Table 5 Transmitter connection status**

| Displayed status | Definition | What to do |
|---|---|---|
| NO KEY | Transmitter needs a key from the Authentication Device and is not transmitting. | Transmit a key to the transmitter. See page 24. |
| NOT CONN | Transmitter is in between discovery attempts. | If Transmitter does not make a connection within five minutes, do the following:<br><br>• Check that Key is correct for the network you are trying to join.<br><br>• Check that Multinode(s) in the local area are turned on and are already a secure part of the network.<br><br>• Check if KeyServer is active.<br><br>• Check the KeyServer Event Log to see if the Transmitter is actively trying to join. Errors in the Event Log show that the Transmitter is trying to join but that there are problems. Consult the OneWireless Wireless Builder documentation for troubleshooting errors. |
| DISCOVER | Transmitter has not made a connection to a Multinode and is in discovery (searching for a connection to a Multinode). Transmitter will automatically enter a power saving mode if it cannot make a connection and will retry later. | Wait for connection.  If Transmitter does not make a connection within five minutes, see NOT CONN in this table. |
| SECURING | Transmitter has connected with the network and is validating its key. | Wait for connection.  If Transmitter does not make a connection within five minutes, see NOT CONN in this table. |
| CONNECTD | For units with radio firmware build* 53 or higher:<br><br>Transmitter has validated the key and has made a secure connection with at least two Multinodes. Transmitter should appear in Wireless Builder as an uncommissioned device.<br><br>For units with radio firmware build* 52:<br><br>Transmitter has validated the key and has made a secure connection with at least one Multinode. Transmitter should appear in Wireless Builder as an uncommissioned device. | For units with radio firmware build* 53 or higher: No action required.<br><br>For units with radio firmware build* 52: Transmitter will periodically look for a second Multinode in order to form a redundant connection to the network. If connected with only one Multinode Wireless Builder will display a Secondary Multinode Address of 0. |
| NO REDUN | Appears only on units with radio firmware build* 53 or higher. No redundancy, that is, Transmitter has connected with only one Multinode. | No action required. The Transmitter will periodically look for a second Multinode in order to form a redundant connection to the network |
| *Use the PDA to determine your radio firmware build number (page 21). | | |

## 5.3 Transmitter PV display

In PV display, the following information is displayed in sequence.

| Item displayed | Example | Details |
|---|---|---|
| Channel number | 1 | Channel number. |
| PV value | 50.0 | Latest PV value. |
| PV engineering units | mV | See Table 6. |
| PV status | BAD | See Table 7. If PV status is not displayed then the PV value is good. |
| Device status | LOW BAT | See Table 8. If multiple device status messages are in effect, they are displayed one message per channel until all messages have been displayed. |
| | | If no device status is displayed then the device status is normal. |

### Table 6 PV engineering units

| Engineering units | Description |
|---|---|
| deg C | Degrees Celsius |
| deg F | Degrees Fahrenheit |
| deg | Degrees of revolution |
| L | Liters |
| Gal | US gallons |
| RPM | Revolutions Per Minute |
| Pa | Pascals |
| Psi | Pounds per square inch |
| Psia | Pounds per square inch absolute |
| Psig | Pounds per square inch gauge |
| inH20 | Inches of Water |
| inH2O (4 deg C) | Inches of Water at 4 deg C |
| mmHg | Millimeters of mercury |
| mmHg (0 deg C) | Millimeters of mercury at 0 deg C |
| mA | Milliamperes |
| V | Volts |
| % | Percent *(default units)* |

| Engineering units | Description |
|---|---|
| L/min | liters per minute |
| GPM | US gallons per minute |
| pH | pH |
| | no units |

**Table 7 PV status**

| PV status | Cause - Action |
|---|---|
| (blank) | • PV is normal – no action required |
| BAD | • Possible calibration error – Clear calibration |
| | • AITB can not execute due to internal firmware state – Attempt cold restart of device. |
| | • AITB can not execute due to hardware fault – Replace sensor board. See page 30. |
| | • Sensor failure – Check the following. |
| |     – connection between sensor board and terminal block |
| |     – field wiring terminations on the terminal block |
| |     – polarity of connections on the terminal block |
| |     – field sensor |
| UNC | • Warning: Input inaccurate due to uncertain input data integrity. |
| | • Warning: Input inaccurate due to input conversion limitations or resolution. |
| | • Warning: Input outside of characterized range. Value is estimated. |

**Table 8 Device status**

| Transmitter display | Wireless Builder display | Definition | What to do |
|---|---|---|---|
| OUT SVC | OOS | All channels are out of service. | Restore mode to Auto in Wireless Builder. |
| CAL ERR | Calibration Error | Calibration Data Invalid or could not be read. | Use Cal Clear, Restore, or User Calibrate. |
| LOW PWR | Low Power | External Power Critically Low | Check external 24V power supply |
| LOW BAT | Low Battery | Battery Voltage Critically Low | Replace batteries as soon as possible. See page 33. |

| Transmitter display | Wireless Builder display | Definition | What to do |
|---|---|---|---|
| NO RADIO | Radio Interprocessor Comm Error | Radio Board is not accessible. | Restart both the radio and sensor. If condition persists, replace sensor module. See page 30. |
| BAD RADIO SPI | Sensor Radio SPI Communication Failure | Radio detected loss of communication with sensor board over the inter-processor communication link. | Restart both the radio and sensor. If condition persists, replace sensor module. See page 30. |
| BAD RADIO EEPROM | EEPROM SPI Communication Failure | Radio EEPROM SPI Communication failure | The radio will not be able to perform firmware upgrades but will operate normally using installed code. Replace sensor module. See page 30. |
| RADIO WDT RESET | WDT Reset Occurred | Radio Watch Dog Timeout detected | Restart both the radio and sensor. If condition persists, replace sensor module. See page 30. |
| BAD RADIO | Radio Circuitry Failure | Radio circuitry has failed | The radio processor detected error on internal radio circuitry. Replace sensor module. See page 30. |
| The following status messages have multiple meanings. Refer to Wireless Builder Device Status for exact cause. | | | |
| E FAIL | A/D Failure | Diagnostics detected defect with Analog to Digital Converter. | Replace sensor module. See page 30. |
| E FAIL | Electronics Failure | Electronic Failure detected on Sensor Board. **Could be caused by one of the status items marked by \*.** | Restart both the radio and sensor. If condition persists, replace sensor module. See page 30. |
| E FAIL* | NVM Fault* | Startup diagnostics detected defect in Sensor Non-Volatile Memory | Replace sensor module. See page 30. |
| E FAIL* | Program Memory Fault* | Startup diagnostics detected defect in Sensor Read Only Memory | Replace sensor module. See page 30. |
| E FAIL* | RAM Fault* | Startup diagnostics detected defect in Processor Random Access Memory | Replace sensor module. See page 30. |
| INP FAIL | Input Failure | Input Error | Check input connection. Check input configuration. Restart the sensor. If condition persists, replace sensor module. See page 30. |

| Transmitter display | Wireless Builder display | Definition | What to do |
|---|---|---|---|
| INP FAIL | A/D Failure | Diagnostics detected defect with Analog to Digital Converter. | Replace sensor module. See page 30. |
| The following statuses are displayed only in Wireless Builder Device Status. | | | |
| blank* | Device/Firmware Mismatch* | Sensor Board Firmware Error. The software did not pass verification tests. | Replace sensor module. See page 30. |
| blank* | Heap Memory Not Available* | Heap Allocation Failure. Software detected heap shortage and some communication packets may have been dropped. | Clear by warm restart of device. If condition persists contact Honeywell service. |
| blank* | Watchdog Timer Error* | Sensor Watchdog Timeout. The processor was restarted due to unexpected operation. | Clear by warm restart of device. If condition persists contact Honeywell service. |

## 5.4    Transmitter quick view of parameters

If the Up or Down key is pressed using the Authentication Device while in PV display mode, the display will enter parameter quick view mode.  Successive presses of the Up key will increment to the next parameter in the following table, or exit to PV display mode if at the last parameter.  The Down key will decrement to the previous parameter or exit if at the first parameter.  The Enter key will exit to PV display mode at any time.

| Position | Parameter | Description |
|---|---|---|
| 1 | Vendor Name | HONEYWELL |
| 2 | HONEYWELL | XYR 6000 MULTI AI DI DO |
| 3 | Tag Name | HON_XYR6000_MAIDIDO_1234567890 |
| 4 | SDREV | Sensor device revision |
| 5 | SBLD | Sensor build number |
| 6 | Radio Type | DSSS |
| 7 | RBLD | Radio build number |
| 8 | WFN | Wireless field network identifier |
| 9 | NET | Network device address |
| 10 | MODE/CHANNEL | Frequency hopping mode & channel |

## 5.5    Transmitter menu

**Menu tree**

At the PV display, press Enter to access the menus. To interact with the menus use the Device Local Configuration onscreen buttons (page 26) or the buttons on your PDA.

**Table 9 Menu tree**

| Menu item | Description |
|---|---|
| CAL | Calibration menu. May be password-protected. See Table 10 on page 26 for password number entry. See page 10 for calibration details. |
| CAL RESTR | Constants for the channel 1 are restored to factory defaults. |
| USER CAL | Calibrates the channel to the low and high range values for selected input type. |
| CAL CLR | FACTORY or USER Calibration constants for the channel can be cleared. |
| RADIO | Radio menu |
| PRI RSSI | Primary receive signal strength. Read only. Signal strength 00 is too weak to connect to the network.<br><br>Displayed Value    Value dBm    Rx Margin dB<br>00    < -86    < 10<br>01    -86 to -81    10 to 15<br>02    -80 to -75    16 to 21<br>03    -74 to -69    22 to 27<br>04    -68 to -63    28 to 33<br>05    -62 to -57    34 to 39<br>06    -56 to -51    40 to 45<br>07    -50 to -45    46 to 51<br>08    -44 to -11    52 to 85<br>09    ≥ -10    Saturation |
| SEC RSSI | Secondary receive signal strength. Same as PRI RSSI. Read only. |
| WFN ID | Wireless Field Network ID. Read only. |
| DEV ADD | Device address. Read only. |
| TX POWER | Radio transmit power. Read only. |

## 5.6    Authentication device menus

**Overview**

Hold the Authentication Device no more than 6" (15 cm) from the transmitter and aim the infrared beam at the transmitter display while tapping on the screen command or button.

**Main menu**

The main menu is shown below. Details start on the next page.



**Figure 4 Main menu**

### Security and Node Deployment

Use this to:

- receive new security keys,

- transmit security keys for connecting the transmitter (or other nodes) to the OneWireless network,

- clear all security keys from the PDA,

- clear the transmitter's key and reset its configuration to factory default (such as for decommissioning).
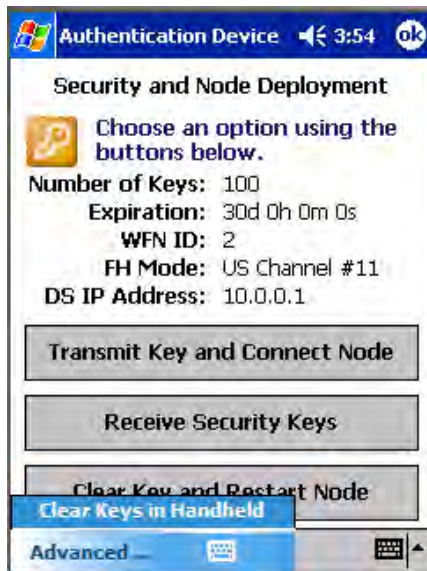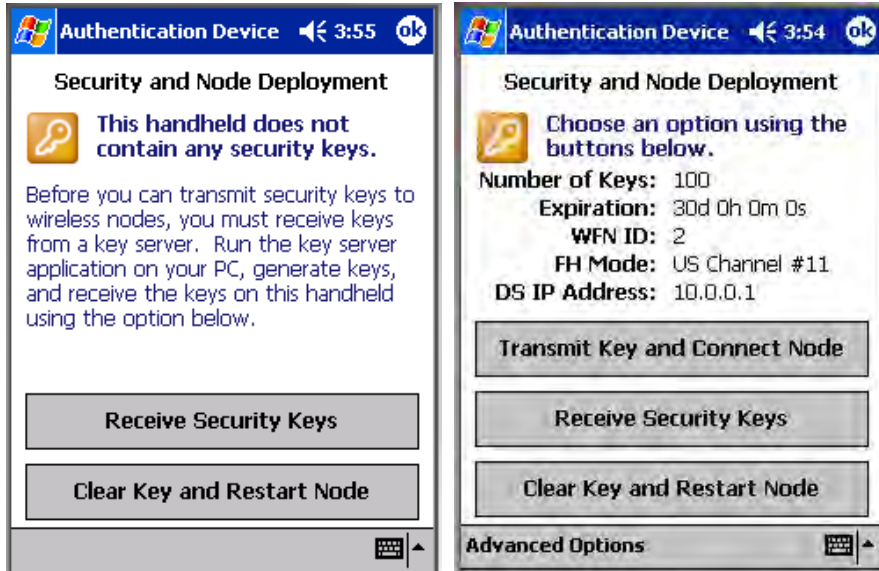


**Figure 5 Security and Device Deployment**

To connect your transmitter to the OneWireless network perform the following steps.

| Step | Action |
|------|--------|
| 1 | If the PDA contains no keys, obtain new security keys from the PC application Key Server Manager. |
| | To do this, select **Receive Security Keys**. Keys can be received either through Infrared (by aiming PDA at the infrared dongle) or through an ActiveSync/USB connection. See **Key Server Communication Method** under Advanced options on page 29 for details. |
| | **Important**: The Comm Method settings must match in the PC's Key Server Manager and in the Authentication Device (both must be set to Infrared or both to ActiveSync) in order for your PDA to receive security keys. See **Key Server Communication Method** under Advanced options on page page 29 for details. |
| 2 | When the Authentication Device has valid unexpired keys, aim it at the transmitter and transmit a key to the transmitter. The transmitter will validate the key and then use it to make a connection to the OneWireless Network. The Transmitter may continue to show the diagnostic message "NO KEY" for a brief time while it validates the key before showing the "DISCOVER" message. |
| | To verify your transmitter has been authenticated, see the Connection prompt on the Read Node Info screen (page 27). |

To decommission your transmitter from the OneWireless network, select **Clear Key and Restart Node**. This clears the transmitter's key, network and security configurations, and resets the transmitter to its factory default settings. perform the following steps.

Select **Clear Keys from Handheld** (under Advanced Options) when:

- The PDA has keys from one system, but you have moved your Authentication Device to another system, or

- you want to clear all keys so that you cannot deploy any more keys without going to the key server manager and getting more.

For more details on keys, refer to Getting Started with Honeywell OneWireless Solutions.

**Device Local Configuration**

Use Device Local Configuration buttons (Table 10) to navigate the transmitter menus (Table 9) and to make selections and changes. You can also use the PDA buttons.
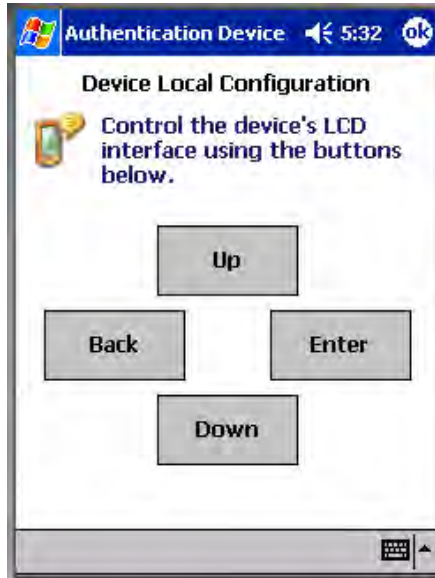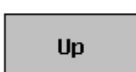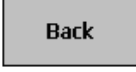


**Figure 6 Device Local Configuration screen**

**Table 10 Buttons for Device Local Configuration**

| Button | Function |
|---|---|
| Enter | • Enter the Menu Tree.<br>• Enter submenu of the menu that is appearing on the screen.<br>• Execute action.<br>• Submit the entered number while doing number entry.<br>• Read value of certain displayed parameters. |
| Up | • Go to the next menu in the same level.<br>• View quick view parameters in Normal Display Sequence (PV Display).<br>• During number entry, increment the digit or change +/- sign. |
| Down | • Go to the previous menu in the same level.<br>• View quick view parameters in Normal Display Sequence (PV Display).<br>• During number entry, decrement the digit or change +/- sign. |
| Back | • Go to the upper menu level.<br>• When changing a number value, move cursor to the left/more significant digit, then wrap around to the least significant digit. |

**Read Node Information**

Use this to read the transmitter's information shown in Figure 7. Similar to quick view parameters on the transmitter display. (See page 21.)
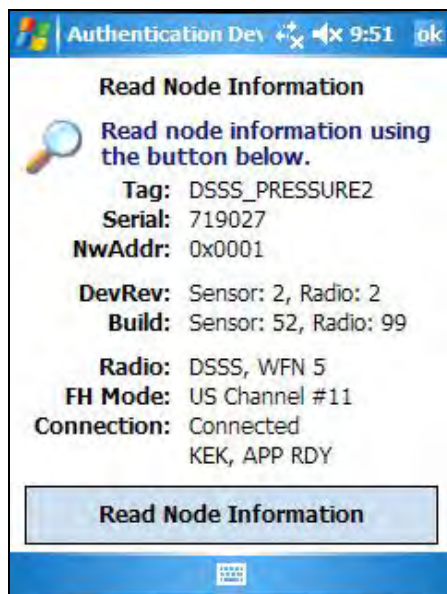


**Figure 7 Read Node Information**

| Item | Description |
|------|-------------|
| Tag | The name given to this transmitter |
| Serial | Transmitter serial number. This is the WBSN on the transmitter's nameplate. Do not confuse this with the other nameplate item marked "Serial." |
| NwAddr | Network Address of the device in hexadecimal. |
| DevRev | Device Revision. This parameter changes whenever objects and parameters are added, deleted, or their data type or range changes. It does not change if the application firmware changes without affecting the device description. Range: 0 to 65535. |
| Build | Sensor firmware and radio firmware build numbers. |
| Radio | Hardware radio type, FHSS or DSSS<br><br>WFN ID: Wireless Field Network ID. Range: 0 to 255. |

| Item | Description |
|------|-------------|
| FH Mode | Frequency group or frequency channel selection used by the wireless network of the device. The value must match the value set in the gateway and interface nodes to allow communication between the device and the wireless network.<br><br>Modes:<br>US Channel #1<br>US Channel #6<br>US Channel #11<br>US Guard Bands<br>EU Channel #1<br>EU Channel #7<br>EU Channel #13<br>EU Guard Bands<br>US/EU Spec Div A<br>US/EU Spec Div B<br>US/EU Channel #3<br>US/EU Channel #10<br>Complete Spectrum |
| Connection | The first line displays one of the following connection states.<br><br>No Security Key – No security key has been deployed to the device or multinode.  The user must give a security key to the device or multinode before it will join the wireless sensor network.<br><br>No Connection – A security key exists in the device or multinode, but no connection has been formed.  The device or multinode is waiting to form a connection and will automatically retry shortly.  Users may transmit a new security key in order to force the device or multinode to immediately retry to form a connection.<br><br>Discovering – The device is attempting to form a connection to the wireless sensor network.  The device is discovering multinodes and, if a multinode is found, will transition to the securing state.<br><br>Securing – The device is attempting to form a connection to the wireless sensor network.  The device has discovered one or two multinodes and is attempting to form a secure session.  If successful, the device will transition to the connected state.<br><br>Connected – A secure connection is formed with one or two multinodes.<br><br>The second line contains detailed state information useful for problem reporting. |

**Advanced Options**

Advanced options are non-typical configuration commands.
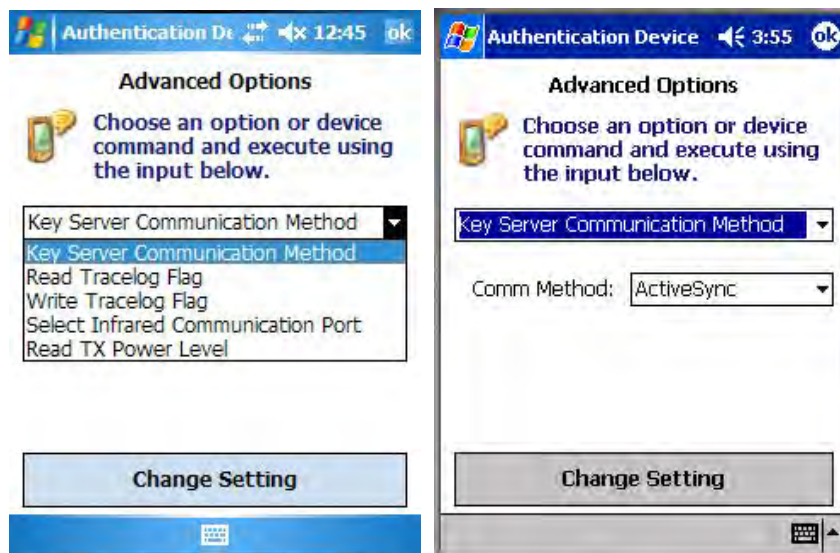


**Figure 8 Advanced Options**

**Table 11 Advanced Options**

| Item | Description |
|---|---|
| Key Server Communication Method | Determines how the PDA will receive security keys from the PC's Key Server Manager application. From the Comm Method menu select one of the following methods.<br><br>**ActiveSync** – Select this to receive keys over a USB connection, such as while the PDA battery is being charged in its base.<br><br>**Infrared** – Select this to receive keys over the infrared port.<br><br>**Important**: The Comm Method settings match in the PC's Key Server Manager and in the Authentication Device (both must be set to Infrared or both to ActiveSync) in order for your PDA to receive security keys. |
| Read Tracelog Flag | Not available for transmitters. Used with multinodes. Reads conditional tracelog flag value.  Tracelog flags are used to enable and disable logging functionality used for field support. |
| Write Tracelog Flag | Not available for transmitters. Used with multinodes. Writes conditional tracelog flag value.  Tracelog flags are used to enable and disable logging functionality used for field support . |
| Select Infrared Communication Port | Overrides the detected infrared communication port detected on your PDA.  If infrared communication is not functioning, you can override the detected settings using this option. |
| Read TX Power Level | Reads the transmission power level of the transmitter radio. |

# 6.  Maintenance/Repair

## 6.1  Parts

The following replacement parts may be ordered from Honeywell.

| Part number | Qty. | Description |
|---|---|---|
| 50015866-503 | 1 | ELECTRONICS MODULE ASSEMBLY aka SENSOR MODULE for HLAI |
| 50015866-507 | 1 | ELECTRONICS MODULE ASSEMBLY aka SENSOR MODULE for HLAI-Instrinsically Safe |
| 50015866-511 | 1 | ELECTRONICS MODULE ASSEMBLY aka SENSOR MODULE for HLAI-DSSS Intrinsically Safe |
| 50015843-501 | 1 | TERMINAL BOARD |
| 50015623-501 | 1 | CAP ASSEMBLY, BATTERY, ALUMINUM, DARK BEIGE |
| 50016190-501 | 1 | CAP ASSEMBLY, LCD, ALUMINUM, DARK BEIGE |
| 50026009-501 | 1 | CAP ASSEMBLY, BATTERY, STAINLESS STEEL |
| 50026127-501 | 1 | CAP ASSEMBLY, LCD, STAINLESS STEEL |
| 50016229-501 | 1 | ANTENNA ASSEMBLY, 2 dBi INTEGRAL RIGHT-ANGLE, ALUMINUM |
| 50016229-502 | 1 | ANTENNA ASSEMBLY, 2 dBi INTEGRAL RIGHT-ANGLE, STAINLESS STEEL |
| 50020767-501 | 1 | ANTENNA ASSEMBLY, 2 dBi INTEGRAL STRAIGHT, STAINLESS STEEL |
| 50020767-502 | 1 | ANTENNA ASSEMBLY, 2 dBi INTEGRAL STRAIGHT, ALUMINUM |
| 50031715-501 | 1 | ANTENNA ASSEMBLY, 4 dBi INTEGRAL RIGHT-ANGLE, ALUMINUM |
| 50031715-502 | 1 | ANTENNA ASSEMBLY, 4 dBi INTEGRAL RIGHT-ANGLE, STAINLESS STEEL |
| 50018414-001 | 1 | REMOTE OMNI-DIRECTIONAL ANTENNA, 8 dBi |
| 50018415-001 | 1 | REMOTE DIRECTIONAL ANTENNA, 14 dBi |
| 50016577-502 | 1 | ANTENNA ADAPTER ASSEMBLY, REMOTE, TYPE TNC, ALUMINUM |
| 50028364-501 | 1 | ANTENNA ADAPTER ASSEMBLY, REMOTE, TYPE N, ALUMINUM |
| 50028364-502 | 1 | ANTENNA ADAPTER ASSEMBLY, REMOTE, TYPE N, STAINLESS STEEL |
| 50018110-001 | 1 | COAX CABLE ASSY,   1.0M (  3.3 Ft) LONG, RP-TNC - N-MALE |
| 50018110-002 | 1 | COAX CABLE ASSY,   3.0M (10.0 Ft) LONG, RP-TNC - N-MALE |
| 50018110-003 | 1 | COAX CABLE ASSY, 10.0M (33.0 Ft) LONG, RP-TNC - N-MALE |
| 50018278-001 | 1 | COAX CABLE ASSY,   1.0M (  3.3 Ft) LONG, N-MALE - N-MALE |
| 50018278-002 | 1 | COAX CABLE ASSY,   3.0M (10.0 Ft) LONG, N-MALE - N-MALE |
| 50018278-003 | 1 | COAX CABLE ASSY, 10.0M (33.0 Ft) LONG, N-MALE - N-MALE |
| 50018279-090 | 1 | LIGHTNING SURGE ARRESTOR |
| 50047517-501 | 1 | BATTERY PACK HOUSING ASSEMBLY |
| 50031428-501 | 1 | 24V EXTERNAL POWER MODULE |
| 50026010-001 | 2 | 3.6V LITHIUM THIONYL CHLORIDE (Li-SOCl2) BATTERY |
| 50026010-002 | 4 | 3.6V LITHIUM THIONYL CHLORIDE (Li-SOCl2) BATTERY |
| 50026010-003 | 10 | 3.6V LITHIUM THIONYL CHLORIDE (Li-SOCl2) BATTERY |

## 6.2    Replacing sensor module

**Tools required**

- #1 Phillips Screwdriver or 1/8" Slotted Screwdriver

- Torque Screwdriver

- 1.5 mm hex key

**Procedure**

⚠️ **WARNING**

Risk of death or serious injury by explosion. Do not open transmitter
enclosure when an explosive gas atmosphere is present.

⚠️ **CAUTION**

Take precautions against electrostatic discharge to prevent damaging the
sensor module.

**Table 12 Sensor module replacement**

| Step | Action |
|------|--------|
| 1 | Honeywell recommends that the transmitter be removed from service and moved to a clean area before servicing. |
| 2 | Loosen the M3 locking set screw on the display end-cap. See item 1 in Figure 9. Unscrew and remove the end cap. |
| 3 | Loosen the two screws on the sensor module. See items 2 in Figure 9. |
| 4 | Disconnect each connector on the sensor module. See items 3 in Figure 9. |
| 5 | Install new sensor module. Be sure to orient sensor module in the proper viewing orientation before tightening two sensor compartment screws.<br><br>Reverse steps 1-4.<br><br>Torque screws to 0,4 – 0,6 N-M (3.5 – 5.3 Lb-in).<br><br>Honeywell recommends lubricating the end cap O-ring with a Silicone Grease such as Dow Corning #55 or equivalent before replacing the end cap.<br><br>Return transmitter to service. |
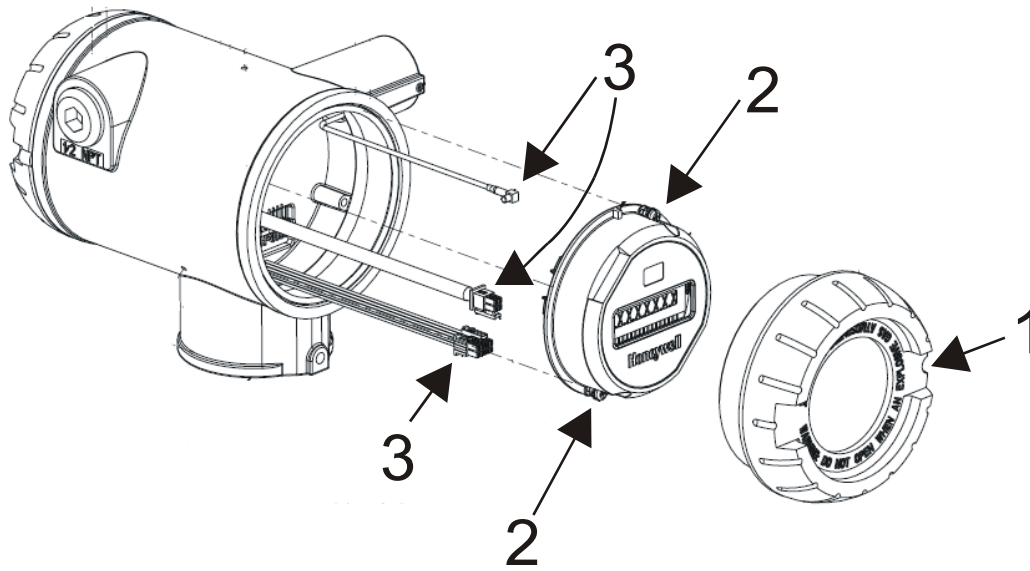
**Figure 9 Sensor module removal and replacement**

## 6.3   Replacing batteries

**When to replace**

When the transmitter displays a LO BAT message you have 2-4 weeks to replace both batteries before they expire. When batteries are removed or expired, all transmitter data is retained in the transmitter's non-volatile memory.

**Tools required**

- #1 Phillips Screwdriver or 1/8" Slotted Screwdriver

- Torque Screwdriver

- 1.5 mm hex key

**Procedure**

**ATTENTION**

Batteries must be replaced only by a trained service technician.

**WARNINGS**

- Risk of death or serious injury by explosion. Do not open transmitter enclosure when an explosive gas atmosphere is present.

- Batteries must not be changed in an explosive gas atmosphere.

- If IS Battery Pack, Honeywell 50047517-001, has been installed in the Wireless Transmitter, the transmitter enclosure maybe opened when an explosive gas atmosphere is present. Otherwise, do not open transmitter enclosure when and explosive gas atmosphere is present.

  - When not in use the Battery Pack must be stored in a non Hazardous Area

- The batteries used in this device may present a risk of fire or chemical burn if mistreated. Do not recharge, disassemble, heat above 100°C (212°F), or incinerate.

- When installing batteries, do not snag the battery terminal on the clip or the battery may be damaged. Do not apply excessive force.

- Do not drop. Dropping the battery may cause damage. If a battery is dropped, do not install the dropped battery into the transmitter. Dispose of dropped battery promptly per local regulations or per the battery manufacturer's recommendations.

**SHOCK HAZARD**

Depending on your installation, transmitter input wiring sources may contain high voltage. Disconnect all power from transmitter input sources before accessing the batteries. Failure to do so could result in death or serious injury if the input terminals or wires are accidentally touched.

IS Battery Pack, 50047517-501

**Table 13: IS Battery Pack replacement procedure**

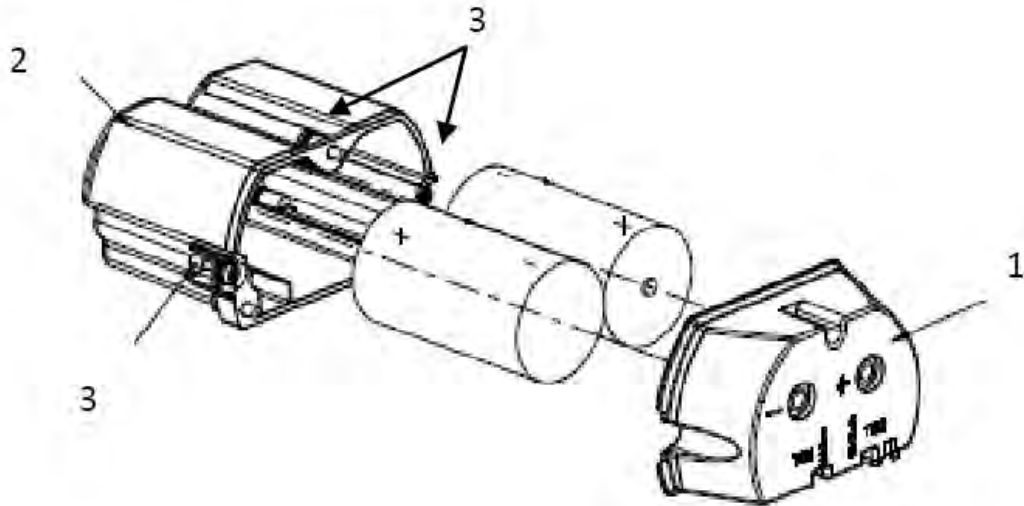| Step | Action |
|------|--------|
| 1 | **WARNING**<br>**DO NOT DISASSEMBLE OR ASSEMBLE WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT** |



**Figure 10: IS Battery Pack**

| | |
|------|--------|
| 2 | Loosen the M3 locking set screw on the battery end-cap (opposite end from display). See item 1 in Figure 1. Unscrew and remove the end cap. |
| 3 | Using thumb and forefinger, squeeze the battery connector at top and bottom to disengage the locking mechanism, then pull to disconnect.  See item 2 in Figure 1. |
| 4 | Loosen the two battery holder retaining screws (closest to the batteries). See item 3 in Figure 1. The screws are captive. |
| 5 | Pull the battery holder out of the transmitter. |
| 6 | Remove top of battery pack by using a #1 Philips or 1/8" slotted screwdriver for the screws identified as #3 in Figure 10. |
| 7 | Remove the old batteries and dispose of them promptly according to local regulations of the battery manufacturer's recommendations. |
| 8 | Install the batteries following the polarity as noted on the lid |
| 9 | Re-install top of the battery pack and tighten screws |
| 10 | Insert the Battery pack into the transmitter. Reattach the screws as indicated in Figure 10, item 3, to 0.4 to 0.6 N-M (3.5 – 5.3 Lb-in).<br>Reconnect the Battery Pack connector<br>Honeywell recommends lubricating the end cap with a silicone grease such as Dow Corning #55 or equivalent before replacing the end cap |
| 11 | Screw the cap back on and tighten the M3 locking screw |

## 6.4    Replacing 24V external power module

**When to replace**

When the transmitter displays LOW PWR and external power is present and sufficient.  When the external power is removed to allow replacement of the module, all transmitter data is retained in the transmitter's nonvolatile memory.

**Tools required**

- • #1 Phillips Screwdriver or 1/8" Slotted Screwdriver

- • Torque Screwdriver

- • 1.5 mm hex key

**Procedure**

**ATTENTION**

24V power module must be replaced only by a trained service technician.

**WARNINGS**

- Risk of death or serious injury by explosion. Do not open transmitter enclosure when an explosive gas atmosphere is present.

**SHOCK HAZARD**

- Depending on your installation, transmitter input wiring sources may contain high voltage. Disconnect all power from transmitter input sources before accessing the 24V power module. Failure to do so could result in death or serious injury if the input terminals or wires are accidentally touched.

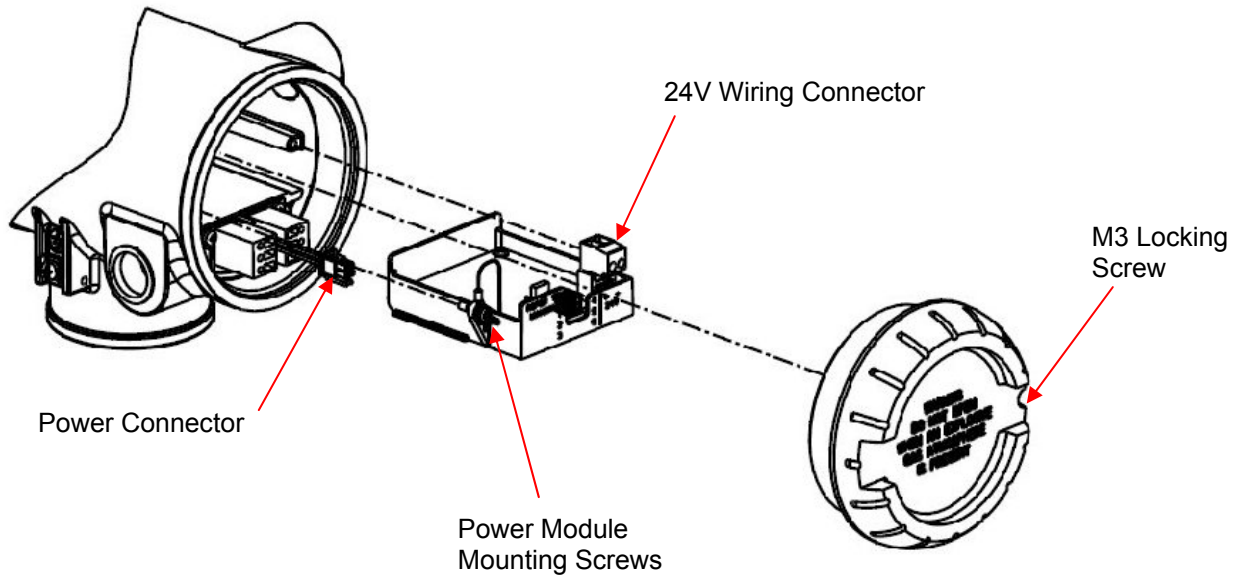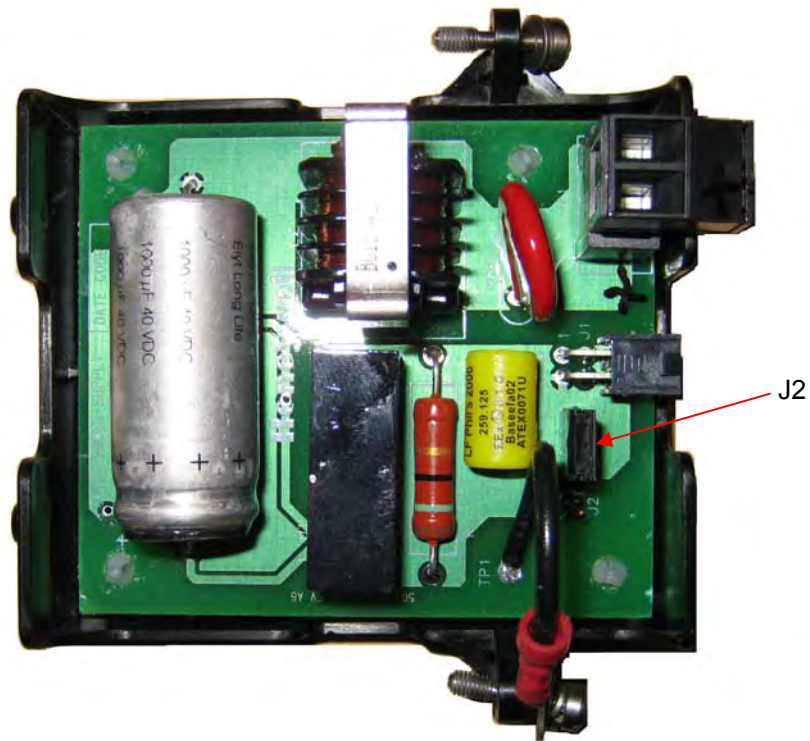**Figure 11  24V Power Supply Module Assembly**

24V Wiring Connector

M3 Locking
Screw

Power Connector

Power Module
Mounting Screws

**Table 14 24V External power module**



| Step | Action |
|------|--------|
| 1 | Loosen the M3 locking set screw on the end-cap (opposite end from display). See Figure 11. Unscrew and remove the end cap. |
| 2 | Using thumb and forefinger squeeze the power connector at top and bottom to disengage the locking mechanism then pull to disconnect.  See Figure 11 |
| 3 | Unplug the 24V wiring from the module |
| 4 | Loosen the two 24V power module retaining screws. The screws are captive. |
| 5 | Pull the 24V power module out of the transmitter. |
| 6 | The replacement 24V Power Modules are supplied with the "J2" Jumper in the NON-RTD position. For 24V Transmitters utilizing RTD sensors, move the "J2" jumper to the "RTD" position on the power module shown above. |
| 7 | Insert the replacement 24V power module into the transmitter. Reattach the screws and tighten to 0,4 – 0,6 N-M (3.5 – 5.3 Lb-in).

Re-connect battery connector.

Honeywell recommends lubricating the end cap O-ring with a Silicone Grease such as Dow Corning #55 or equivalent before replacing the end cap. |
| 8 | Screw the end cap back on and tighten the M3 locking screw. |
| 9 | Dispose of the Power Module according to local regulations |

# 6.5    Replacing antenna

**Tools required**

- #1 Phillips Screwdriver or 1/8" Slotted Screwdriver

- Torque Screwdriver

- 1.5 mm hex key

**Procedure**

**ATTENTION**

You must replace your antenna with the same type, that is, elbow, straight, or remote. Changing to a different antenna type is not permitted by approval agencies.

**CAUTION**

Take precautions against electrostatic discharge to prevent damaging the sensor module.

**WARNING**

POTENTIAL ELECTROSTATIC CHARGING HAZARD

The integrally mounted antenna shroud is made of Teflon® and has a surface resistance greater than 1Gohm per square. When the XYR 6000 transmitter is installed in potentially hazardous locations care should be taken not to electrostatically charge the surface of the antenna shroud by rubbing the surface with a cloth, or cleaning the surface with a solvent. If electrostatically charged, discharge of the antenna shroud to a person or a tool could possibly ignite a surrounding hazardous atmosphere.

**Table 15 Antenna replacement procedure**

| Step | Action |
|------|--------|
| 1 | Honeywell recommends that the transmitter be removed from service and moved to a clean area before servicing. |
| 2 | Loosen the M3 locking set screw on the display end-cap. See item 1 in Figure 13. Unscrew and remove the front end cap. |
| 3 | Loosen the two screws on the sensor module. See items 2 in Figure 13. |
| 4 | Remove the sensor module from the transmitter body and disconnect the antenna connector from CN2 connector on the sensor module. See item 3 in Figure 13. |
| 5 | Loosen the locking set screw at the antenna base. Unscrew the antenna from the transmitter. Remove the antenna and its connector from the transmitter. See Figure 13. |
| 6 | Feed the new antenna's connector through the antenna hole to the front of the transmitter. Do not connect to sensor module yet. Screw new antenna into transmitter body until finger-tight, then back off 180 degrees to permit adjustment later. |
| 7 | Attach antenna connector to CN2 connector on sensor module. See item 3 in Figure 13. |
| 8 | Insert sensor module. Orient in the proper viewing orientation before tightening two sensor compartment screws. See items 2 in Figure 13. Torque screws to 0,4 – 0,6 N-M (3.5 – 5.3 Lb-in). |
| 9 | Replace the front end cap. Honeywell recommends lubricating the front end cap O-ring with a Silicone Grease such as Dow Corning #55 or equivalent before replacing the end cap. |
| 10 | Adjust antenna for best reception. Don't rotate antenna more than 180 degrees either direction or you could twist and break the antenna wiring inside. Tighten the antenna locking set screw. |

## 6.6   Replacing terminal board

**When to replace**

Various error messages can help you diagnose a faulty terminal board. These are described elsewhere in this manual.

**Tools required**

- #1 Phillips Screwdriver or 1/8" Slotted Screwdriver
- Torque Screwdriver
- 1.5 mm hex key

**Procedure**

> ⚠️ **WARNING**
>
> Risk of death or serious injury by explosion. Do not open transmitter enclosure when an explosive gas atmosphere is present.

**Table 16 Terminal board replacement procedure**

| Step | Action |
|------|--------|
| 1 | Honeywell recommends that the transmitter be removed from service and moved to a clean area before servicing. |

 **SHOCK HAZARD**

Depending on your installation, transmitter input wiring sources may contain high voltage. Disconnect all power from transmitter input sources before accessing the terminal board. Failure to do so could result in death or serious injury.

| Step | Action |
|------|--------|
| 2 | Loosen the M3 locking set screw on the battery end-cap (opposite end from display). See item 1 in Figure 12. Unscrew and remove the end cap. |
| 3 | Using thumb and forefinger, squeeze the battery connector at top and bottom to disengage the locking mechanism, then pull to disconnect.  See item 2 in Figure 12. |
| 4 | Loosen the two battery holder retaining screws (closest to the batteries). See item 3 in Figure 12.  The screws are captive. |
| 5 | Pull the battery holder out of the transmitter. |
| 6 | Disconnect field wiring from terminal board and label it to ease reconnection. |
| 7 | Remove and save the 3 screws that attach the terminal board to the housing. Take care because these screws are not captive. See item 4 in Figure 12. |
| 8 | Remove terminal board by disconnecting cable from back of the terminal board. Do not pull on the wires or you could damage them. Instead, depress the latch while pulling on the connector. |
| 9 | Attach connector to new terminal board. Observe correct polarity of the connector. Verify that the cable is latched to the terminal board. |
| 10 | Fasten terminal board with screws from step 7. |
| 11 | Re-connect field wiring. |
| 12 | Insert the battery holder into the transmitter. Reattach the screws and tighten to 0,4 – 0,6 N-M (3.5 – 5.3 Lb-in).<br><br>Re-connect battery connector.<br><br>Honeywell recommends lubricating the end cap O-ring with a Silicone Grease such as Dow Corning #55 or equivalent before replacing the end cap. |
| 13 | Screw the end cap back on and tighten the M3 locking screw. |
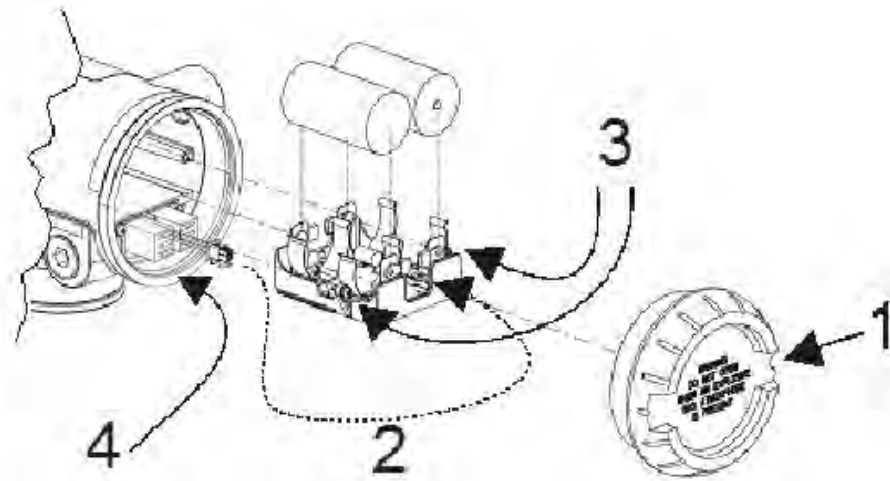
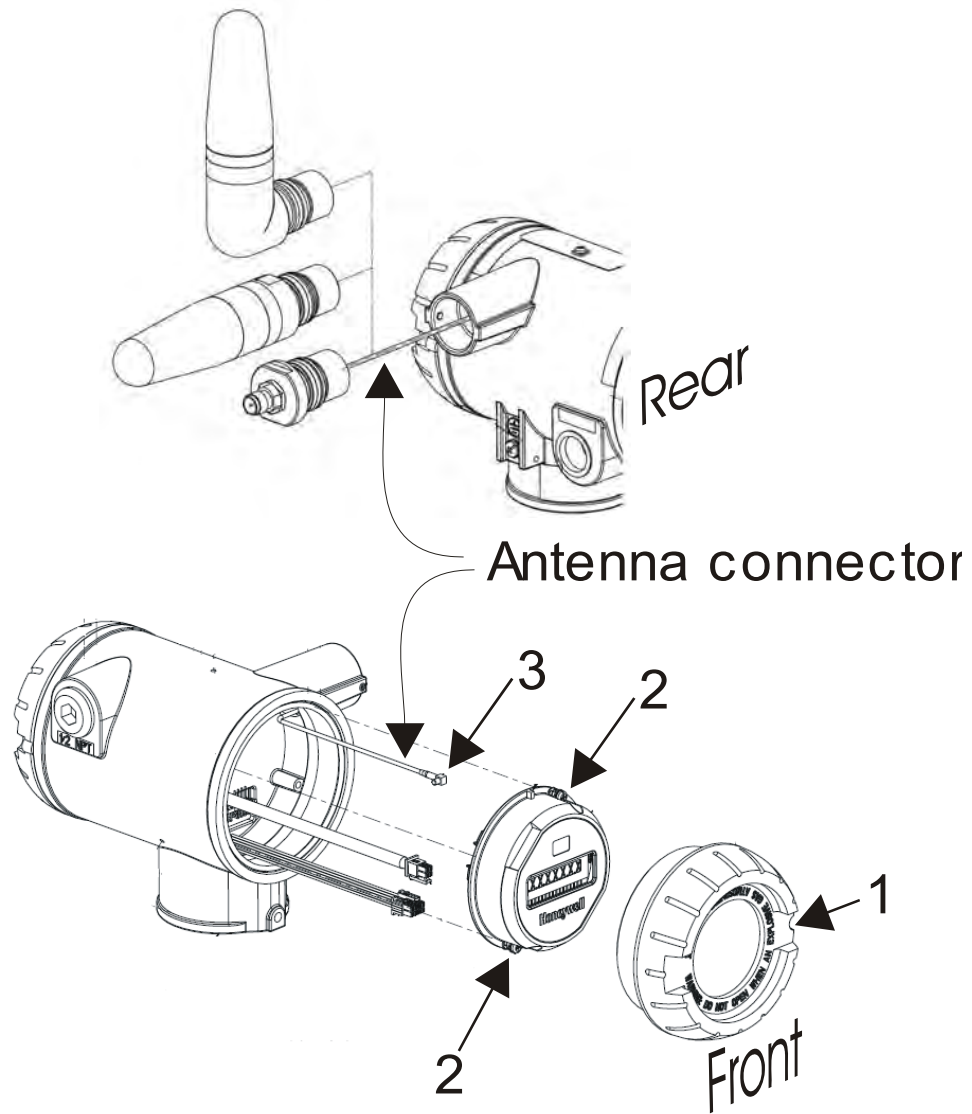**Figure 12 Terminal board replacement**

**Figure 13 Antenna replacement**

Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

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