



10350 STATE HWY 30 College Station, TX 77845

(979) 776-7200

## RL-101 Installation and Operation Manual Rev. 8



### IMPORTANT SAFETY WARNING

Failure to follow all safety and operational instructions may result in instrument damage, serious injury or death. **WARNING:** DO NOT OPEN OR EXPOSE TO SOLVENTS WHEN EXPLOSIVE ATMOSPHERE IS PRESENT.

**ATTENTION:** NE OUVREZ PAS OU EXPOSER À SOLVANTS POUR LE PRESENCE D'ATMOSPHERE EXPLOSIVE.

### INSTRUMENT HOUSING

This product is housed in a Limatherm Instrument Housing Type XD-Iwin

CL. I. GR. A,B,C,D; CL.II. GR. E,F,G CL.III; TYPE 4X

CL. ZONE 1 Ambient TEMP -30C to 85C

### Power Consumption and Voltage rating

RL101 instrument is powered by 4 AA batteries (6VDC) internally.

312uA continuous consumption when the device is operational.



Conforms to UL STDS 1203 & 61010-1

Certified to CSA STD C22.2 Nos. 30 & 61010-1

CI, D1 BCD C1, Zn 1, IIB+H2, IIB, IIA

### SAFETY MESSAGE

It is important to follow all instructions in this manual. This device is to be installed by a trained professional who is familiar with Redline Safety products.



(See manual for safety messages)

- Read and understand all instructions before installation or use of this equipment.
- Keep cover tight when circuits are alive.
- Test Instrument regularly to ensure it is operating properly.
- After installation provide a copy of manual to authorized personnel
- **Warning:** Do not expose to keytone solvents or vapors.  
**Attention:** ne pas exposer à keytone solvants ou de vapeurs.

# **OPERATIONS OVERVIEW**

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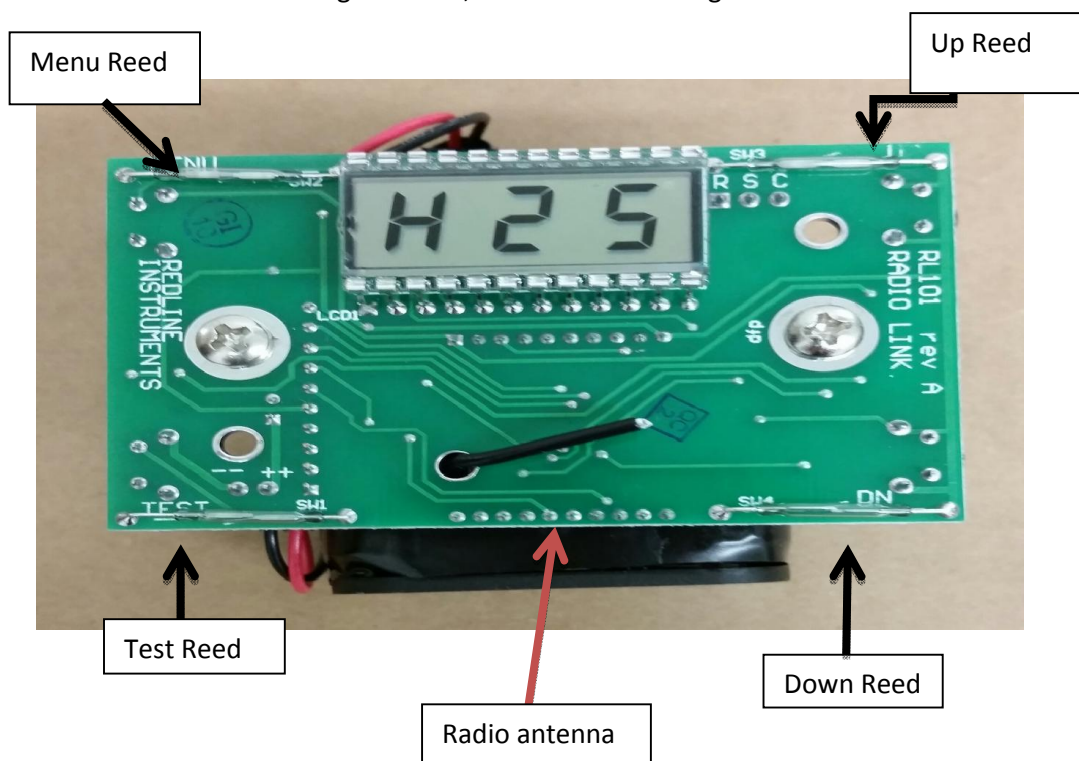
## 1.Basic Operation

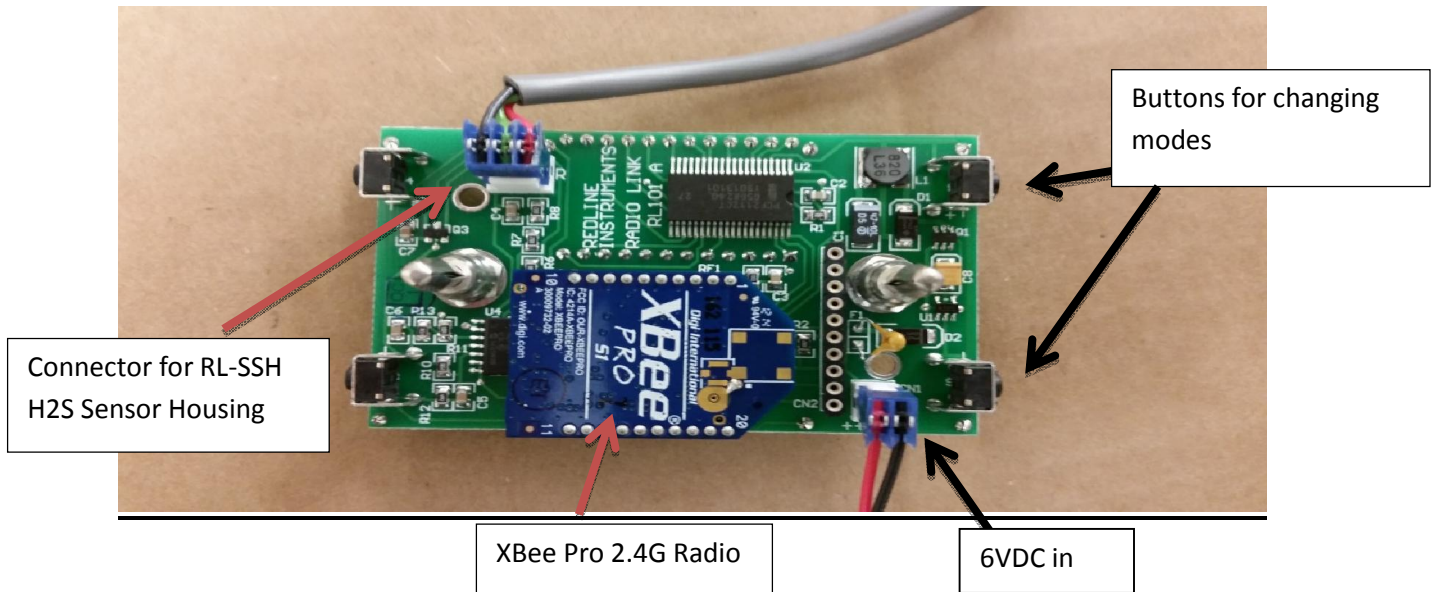
There are three main modes for the RL-101 Head Unit. In addition, there is an **OFF** mode and a **Start up** process. When the unit is powered, there is a 30 second (Startup) countdown during which some system values are displayed before going into the Normal Operating mode. The RL-101CB offers reed switches which allow nonintrusive calibration. The reed switch acts as a button with the Redline magnet. When the magnet is placed close to the reed it engages the reed switch like a button. When the magnet is taken away it disengages. Move the magnet toward the reed and away from the reed repeatedly to change digits.

**Addressing** is the second mode; to enter this mode press test once. Press TEST again to get to the third Mode, the display should read "r 2.1". Pressing TEST again while in the 3rd Mode, will get back to the **Addressing** mode. Pressing MENU multiple times while in the third mode will scroll you thru the different settings options offered by the RL-101.

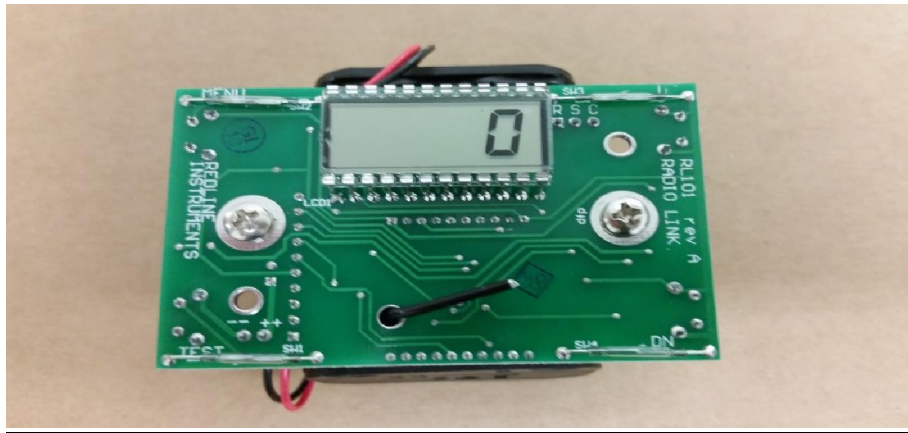
If left in any mode (except OFF), the unit will return to Normal Mode after three minutes.

When the Head unit changes modes, it will send a message to the Monitor.



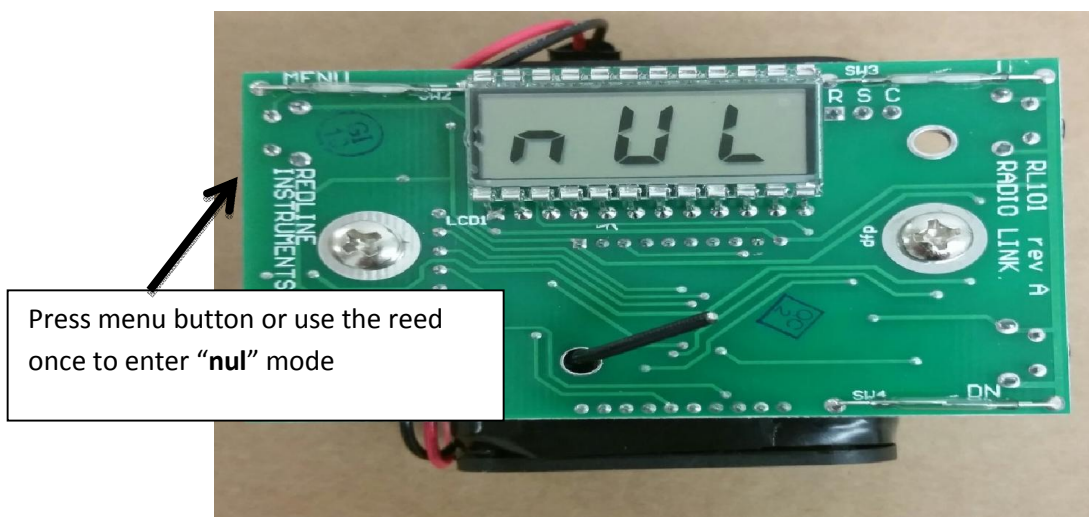


## 2. Normal Operation



The RL101 Head unit monitors the gas level. If the gas level is greater than or equal to the background setting, the unit will send a message every 5 seconds; if less than the background setting, the unit will send a message every 5 minutes. When the RL101CB is in normal mode it will display a zero.

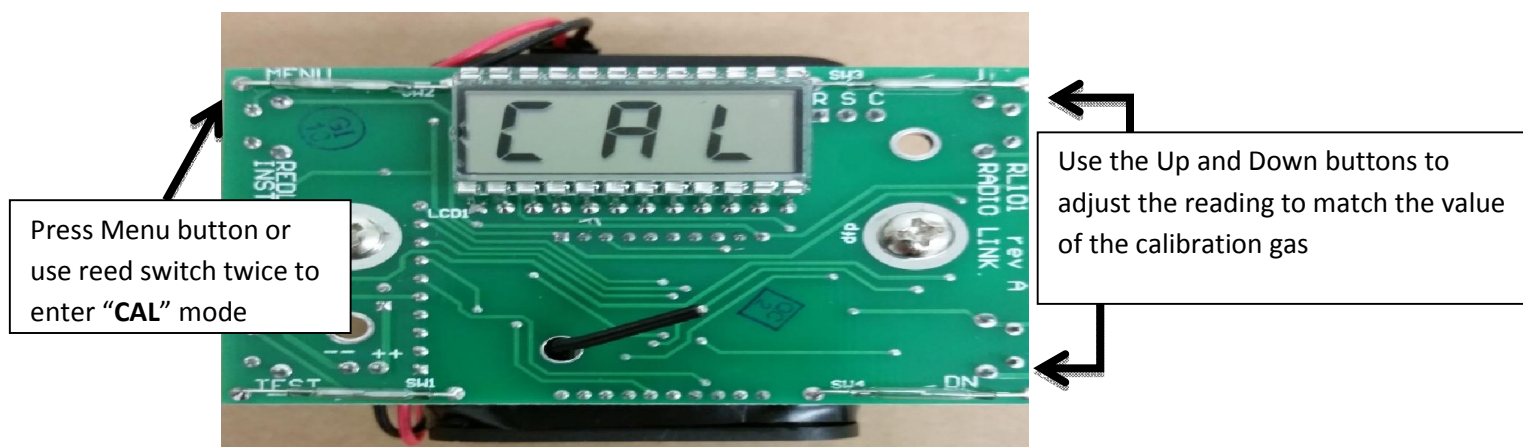
### 3. NULL



To place the RL101 into **NULL** Mode press MENU button or use the magnet with the reed switch once; "NUL" will flash on the display. The RL101 Head unit monitors the gas level but does not send messages when in **NULL** Mode. **NULL** Mode is used to remove any errors in the amplifiers that may cause a gas reading when there is no gas. Use the Up or Down buttons to adjust the readings to zero.



## 4. Calibration



To place the RL101 into **CAL** Mode press the MENU button twice "CAL" will flash on the display. The RL101 Head unit monitors the gas level but does not send messages to the monitor when in **CALIBRATION** mode. When calibration gas is applied, the unit will display the reading. Use the Up and Down buttons to adjust the reading to match the value of the calibration gas. Pressing MENU will place the unit in Normal Operation and will begin sending messages to the monitor.

## 5. Addressing (Head) to Channel



To access this feature, press TEST once. "Adr" will flash on the display when in that mode. Use the UP and Down buttons to adjust the Address of the Head unit. There must be a corresponding address set in the Monitor.

## **6. Set Background Gas Level**

To access this feature, press TEST once then MENU once. "**brd**" will flash on the display when in that mode. (Default setting is 7) Use the Up and Down buttons to adjust the **Background** level. When the gas level is equal to or greater than this number, the unit will transmit a message every 5 seconds; if less than this setting, the unit transmits every 5 minutes.

## **7. Check Battery Voltage**

This mode displays the condition of the batteries. To access this feature, press TEST once then MENU twice. "**bat**" will flash on the display when in this mode.

## **8. Select Redline message or 784 message**

(This mode is new to revisions 2.0 or greater). If the RL101 sensor head is in the wrong setting of 784, use the Up or Down buttons to change back to "**Red**".

**\*\* If the RL101 sensor head is in 784 it will not communicate to the Redline Monitor\*\***

## **9. Revision**

This mode shows the revision of the software that is being used in the RL101 Head unit. To access press TEST Twice.

## **10. Relay Test**

To place the RL101 sensor Head in relay test mode press the TEST button twice and the MENU button once ("**REL**" will show on the display). Use the Up and Down buttons to adjust the PPM value to send in a message to the Monitor. The Monitor treats this PPM value in the same way it would treat an actual gas reading. This will allow for the relays in the Monitor to be activated and shows that the Head unit is communicating with the Monitor.

## **11. Radio Signal Strength Input**

To get to this, mode press the TEST button twice and the MENU button twice "rln" will then flash on the display. This mode allows the Head unit and Monitor to exchange messages (this mode is disabled when in the 784 mode since the 784 does not resend any messages). When the Head unit sends a message, the Monitor knows that the Head unit is in this mode and resends the message. The Head unit stays awake in order to receive this resent message. The Head unit measures the strength of the signal and displays it (the maximum Value is 255); the units should work properly until the signal level drops to about 50.

**(Caution:** Given that the radio stays awake for this test, the battery is being discharged much faster in this mode, so try to spend as little time in this test as possible.)

The Head unit transmits a message once per second and the Monitor responds immediately, so the test must be performed for at least one second. The Head unit can be moved away from obstructions, up or down, or pointed to get the best reading. When the MENU button is pressed to leave this mode, the last reading taken will be stored in memory; the stored reading will be included in the messages to the Monitor, so this reading can be examined at the Monitor. If no Monitor is in range, the readings will be very low or zero.

## **12. Off**

To put the Head unit in the **OFF** mode, press the TEST button for about 4 seconds. The display will show "**OFF**".

This mode disables all transmissions by the Head unit. The unit will transmit a message every 5 minutes with no gas present or every 5 seconds when the gas level is equal to or greater than the background setting. To reduce the battery discharge, the unit can be set in **OFF** mode, where it will never transmit. To wake the Head unit, press MENU, Up or TEST, and the unit will begin the start up sequence.

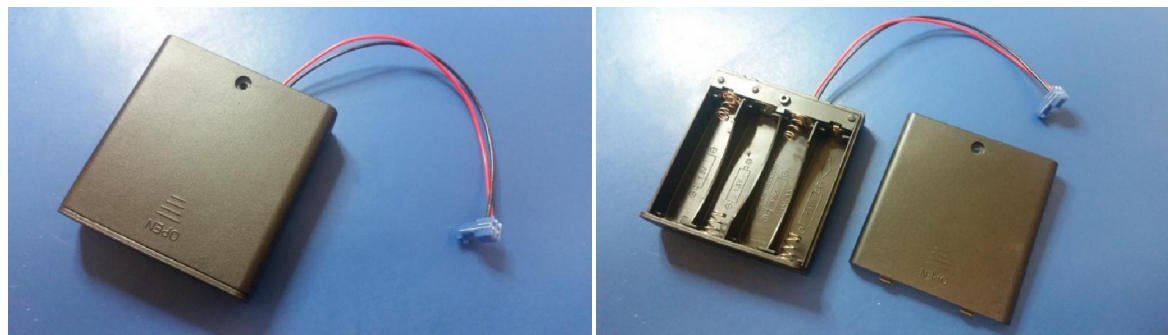
## **13. Startup**

When the RL101 is powered or awakened, it will display several values such as: gas type, **address** and **battery voltage**. The unit will then count up to 30 seconds and go into **normal operation**.



## **RL-BAT4 Battery Pack Replacement**

Redline uses a polarity protected battery case, that houses four alkaline 1.5vdc AA batteries. In certain areas it can be hazardous to replace batteries and changing the batteries requires special care in their installation.



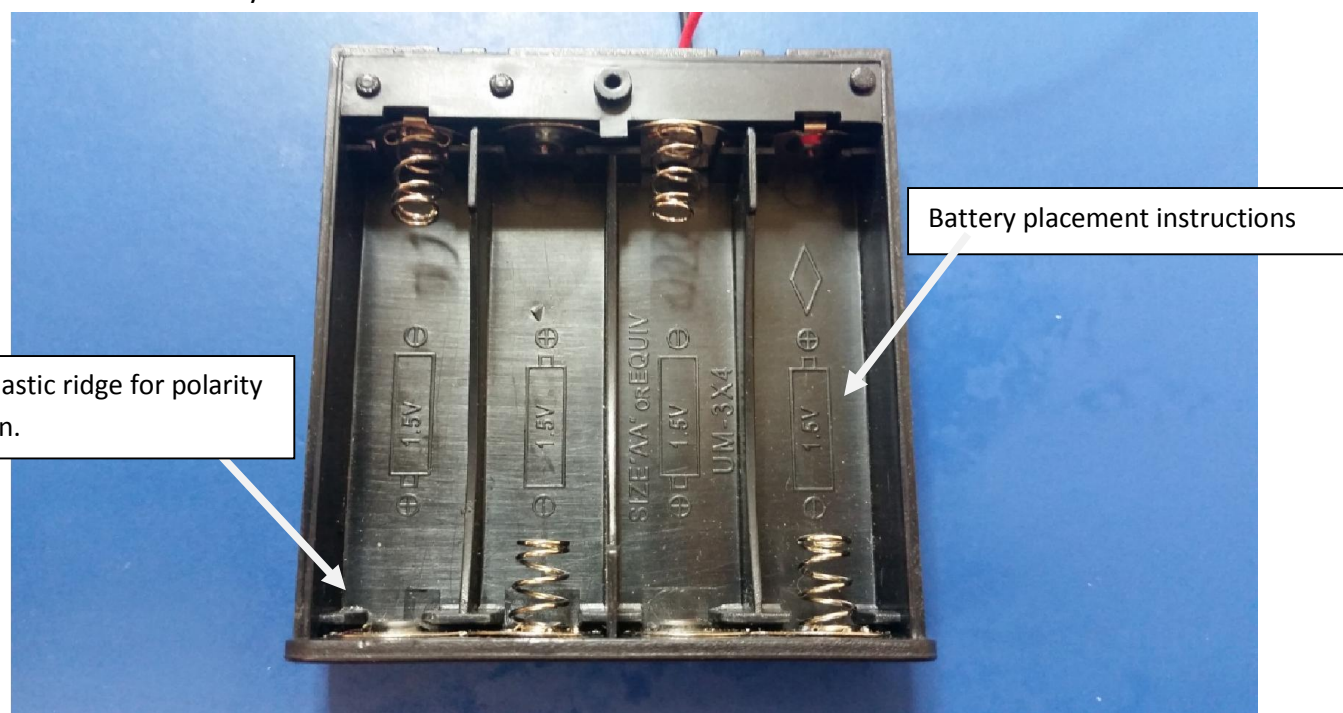
### **USAGE**

The following is the recommend use and installation of batteries into the Redline RI-101 H2S Sensor Head.

- Only use Redline approved alkaline AA batteries.
- Do not charge the non rechargeable AA alkaline batteries.
- Never use a swollen or leaky battery.
- Make sure battery snap is secure inside the correct terminals on the battery.
- Always replace batteries outside of any explosive or hazardous location.
- Do not use battery pack if there is any damage to case or to poles.
- Only use Redline approved battery pack.

### **RL-BAT4 BATTERY PACK INSTALLATION**

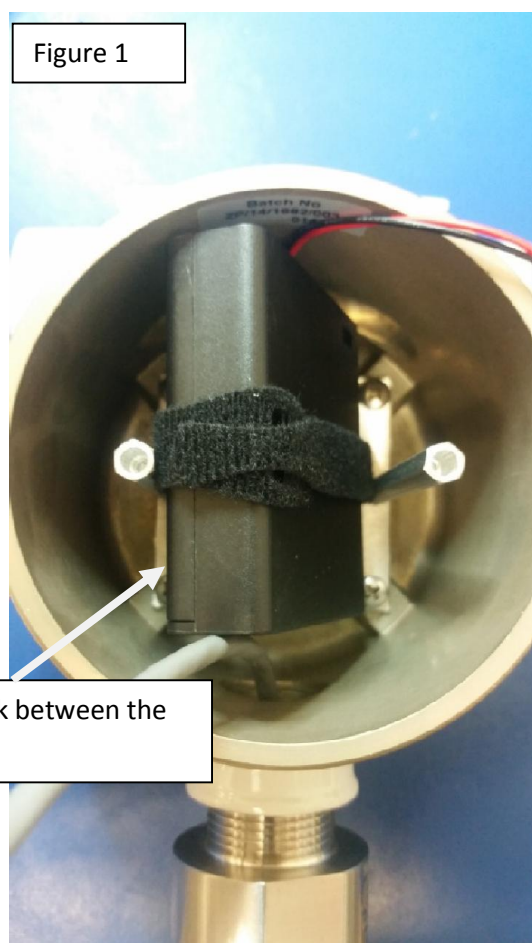
Redline uses a polarity protected battery case, that houses four alkaline 1.5vdc AA batteries. If batteries are placed up side down the case will not allow batteries to cause a short. Also, if batteries are placed upside down the RL101 will not power on. On the inside of the case there are instructions to show which way the batteries should be placed. Always make sure to read before battery installation.



### **RL-BAT4 BATTERY PACK INSTALLATION CONT'D**

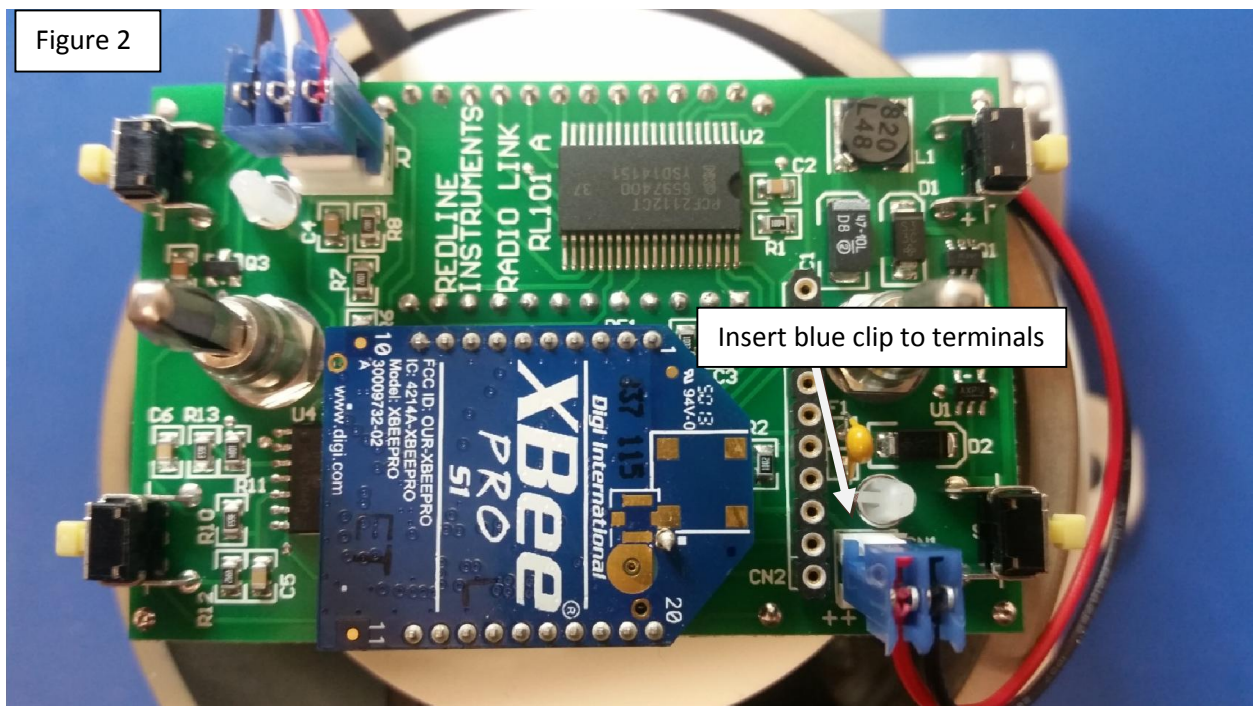
When installing the **RL-BAT4** battery pack, insert pack at an angle, and secure with Velcro.

Note figure 1.



## RL-BAT4 BATTERY PACK INSTALLATION CONT'D

Insert blue clip to terminals on the RL-101CB as so in figure 2.



## **INSTALLATION**

**Important-** before you install the RI101 H2S head make sure you have read the basic operations to ensure proper understanding of the product. Also check battery voltage to ensure RI101 will function properly.

When installing the RI101 H2S Head, make sure to calibrate the sensor head. Put the Head into “**cal**” mode. When calibration gas is applied, the unit will display the reading. Use the Up and Down buttons to adjust the reading to match the value of the calibration gas. (**# 3 in basic operations**)

The RI101 Head may be mounted 18 to 24 inches above the ground with the sensor housing pointed down towards the ground. For best signal strength position the glass window in line of sight of the Redline Monitor, also make sure there are no metal/nonmetal obstructions so signal will not be blocked.

## **Cleaning**

Clean the outside of the housing with isopropyl alcohol to remove contamination. Do not pressure wash.

## **MAINTENANCE**

Redline Instruments recommends you check battery voltage every 90 days and Calibration of the head every 30 days. Recommended battery replacement at 4.5VDC or lower, if battery is at 4.0VDC there will not be sufficient power to transmit a signal. **Caution:** Batteries should be replaced outside of the danger zone. If your instrument is in need of repair you may send your instrument to any of the redline location for repair. See website for location addresses. **For Troubleshooting assistance call the Redline office at (979)776-7200.**