MOORE INDUSTRIES WORLDWIDE

# LRX

Low-Power
Temperature Transmitter

April 2011

## Description

The LRX Low-Power Temperature Transmitter is designed specifically for oil and gas well head and similar installations where line power is not available.

The LRX accepts a 3-wire 100 ohm platinum RTD, K-type thermocouple or direct millivolt input. It converts the input to a 1-5Vdc signal ready for direct interface with readout instruments, recorders, a DCS and other computer-based SCADA systems.

**Ideal for Solar or Battery Powered Systems**

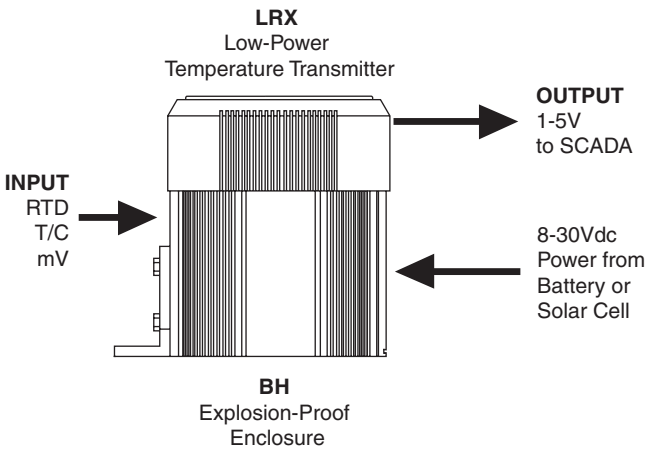
Featuring an exceptionally low power consumption of only 3mA, the LRX mounts in remote or infrequently accessed field locations where solar or battery powered systems are utilized. It will operate accurately in a wide range of fluctuating ambient temperature conditions.

**Complete Temperature Assemblies**

We offer a complete line of temperature assemblies for use with the LRX including field-mount enclosures, sensors, thermowells and fittings.

***The LRX low power requirements and rugged*** *field-mount enclosures make it ideal for installation in remote or hard-to-get-at locations.*

***Figure 1.*** *The LRX is ideal for remote locations where power is supplied by a battery or solar cell.*




## Features

- **Lower power consumption.** Able to be powered from a solar panel or batteries, the LRX's extremely low power requirements (3mA) make it perfect for use where power lines are too expensive or inconvenient to run.
- **Operates in hot and cold climates.** The LRX operates in ambient temperatures ranging from -45°C to +82°C (-50°F to +180°F) allowing installation in environments with fluctuating conditions without loss of accuracy.
- **Rugged field-mount enclosures.** For installation in harsh environments, the LRX can be ordered in a tough explosion-proof and economical NEMA 4X (IP66) enclosure.

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## Specifications

| | |
|---|---|
| **Performance** | **Accuracy:** ±0.15% of span (includes the combined effects of linearity, hysteresis and repeatability)<br>NOTE: RTDs are linear with temperature; T/Cs are linear with mV<br>**Ripple:** Less than 10mV peak-to-peak maximum<br>**Stability:** ±1°C for 6 months<br>**Current Consumption:** 2mA nominal<br>**Power Supply Effect:** ±0.005% of span/volt, maximum<br>**Output Protection:** Transient protection on output to 24V, reverse polarity on output |
| **Performance (Continued)** | **Output Limiting:** 130% of span, maximum; 125% of span, typical<br>**Load Impedance:** 100 kohms minimum<br>**Frequency Repsonse:** 5Hz (3dB point) |
| **Ambient Conditions** | **Operating Range:** -45°C to +82°C (-50°F to +180°F)<br>**Storage Range:** -45°C to +100°C (-50°F to +212°F)<br>**Relative Humidity:** 0-95%, non-condensing<br>**Ambient Temperature Effect:** ±0.02% of span/°C maximum |
| **Ambient Conditions (Continued)** | **RFI/EMI Immunity: (Standard Unit):** 10V/m@80-1000MHz, 1kHz AM, when tested according to IEC61326 with error of 0.5% of span or less<br>**RFI/EMI Immunity: (with -RF Option):** 20V/m@80-1000MHz, 1kHz AM, when tested according to IEC61326 with error of 0.5% of span or less |
| **Adjustments** | **Zero and Span:** Front panel potentiometers, ±5% of input span |
| **Weight** | HP: 148g (5.2 oz)<br>BH2NG: 1.4kg (3 lbs)<br>D2LC: 660g (1.45 lbs) |

## Ordering Information

| Unit | Input | Output | Power | Options | Housing |
|---|---|---|---|---|---|
| **LRX** Low-Power RTD Transmitter | **PT1** 3-wire 100 ohm Platinum RTD<br>NOTE: Specify any range between 0-500°F (Example: PT1-0-500F)<br><br>**K** K-type thermocouple<br>NOTE: Specify any range between 0-2,500°F (Example: K-0-500F) | **1-5V** into 100 kohms or greater | **8-30DC** (3mA) | **-RF** RFI/EMI protection rates 20V/m@80-1000MHz, 1kHz AM, when tested according to IEC61326 with error of 0.5% of span or less | **BH2NS** Explosion-proof enclosure with two 1/2-inch NPT entry ports with solid cover<br>**BH3NS** Explosion-proof enclosure with three 1/2-inch NPT entry ports with solid cover<br>**D2LS** 2-Hub, low base, clear cover, NEMA 4X (IP66) enclosure<br>**HP** Hockey-puck housing and spring clips<br>**DN** Snap-in mounting for HP case on TS-32 DIN rail<br>**FL** Mounting flanges on HP suitable for relay track or screw mounting<br><br>**A** suffix with BH or SB indicates ANZEx/TestSafe (Ex d) Flame-Proof approvals; 2" pipe-mount kit is included (i.e., BH2MGA or SB2MGA)<br>**E** suffix with BH or SB indicates ATEX Flame-Proof enclosures; 2" pipe-mount kit is included (i.e., BH2MGE, SB2NGE)<br>**P** suffix indicates enclosure is equipped with 2" pipe-mount hardware kit (i.e., BH2NGP) |

**To order, specify:** Unit / Input / Output / Power / Options [Housing]
**Model Number Example:** LRX / PT1-0-500F / 1-5V / 8-30DC / [BH2NS]

**Certifications**

**LRX-HP**
**Factory Mutual Approvals**
**General/Ordinary and Hazardous "Classified" Locations**
**Non-Incendive:**
Class I, Division 2, Groups A, B, C, D
**Temperature Code**
T5@85°C and T6@70°C Maximum Operating Ambient

**CE Conformant:**
EMC Directive 2004/108/EC – EN 61326

**LRX in BH/SB2 Housing**
**Factory Mutual:**
**Explosion-Proof & Dust-Ignition Proof**
Class I, Division 1, Groups A*, B, C & D
Class II & III, Division 1, Groups E, F & G
Environmental Protection: Type 4X & IP66
T6@60°C Maximum Operating Ambient
*For Group A applications, seal all conduits within 18"

**ATEX Directive 94/9/EC:**
**Explosion/Flame-Proof**
II 2 G Ex d IIC T6 (Tamb 60°C)
II 2 D Ex tD A21 IP66 T85°C

**ANZEx (TestSafe):**
**Explosion/Flame-Proof**
Ex d IIC T6 (Tamb 60°C)


Specifications and information subject to change without notice.

***Figure 2.*** *Dimensions for the LRX in the HP housing (version with FL mounting flanges shown)*

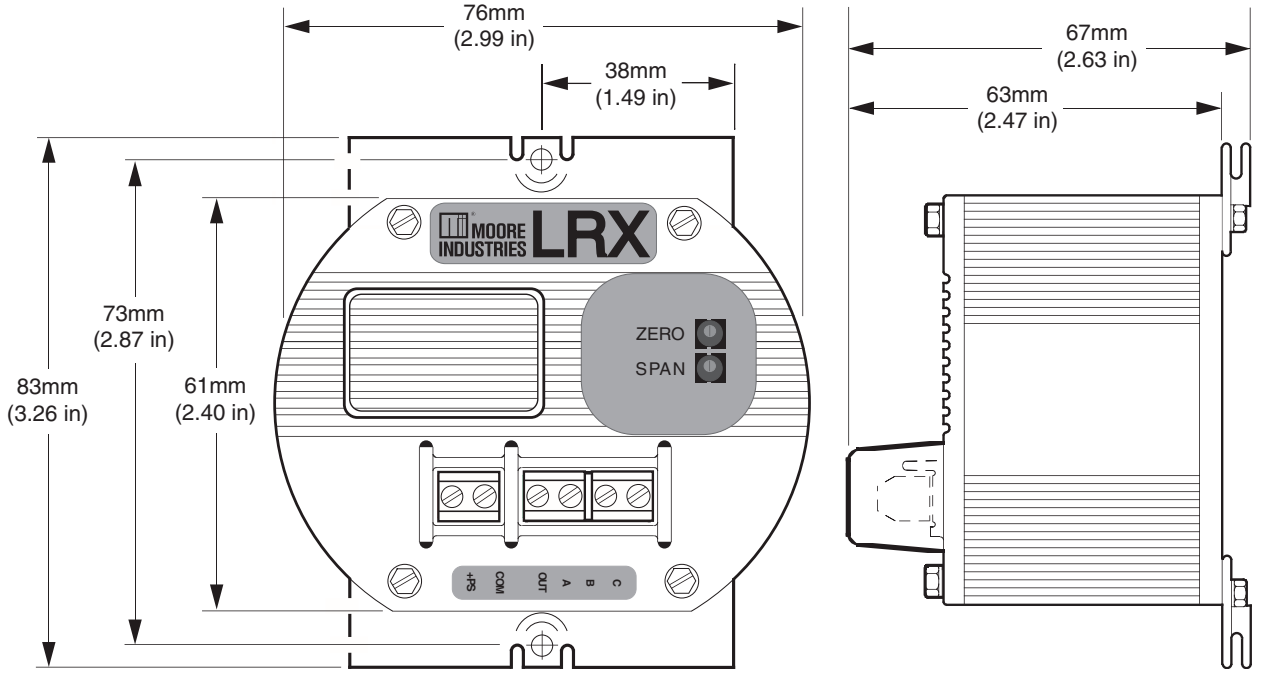



***Figure 3.*** *Dimensions for the LRX in the BH explosion-proof enclosure*

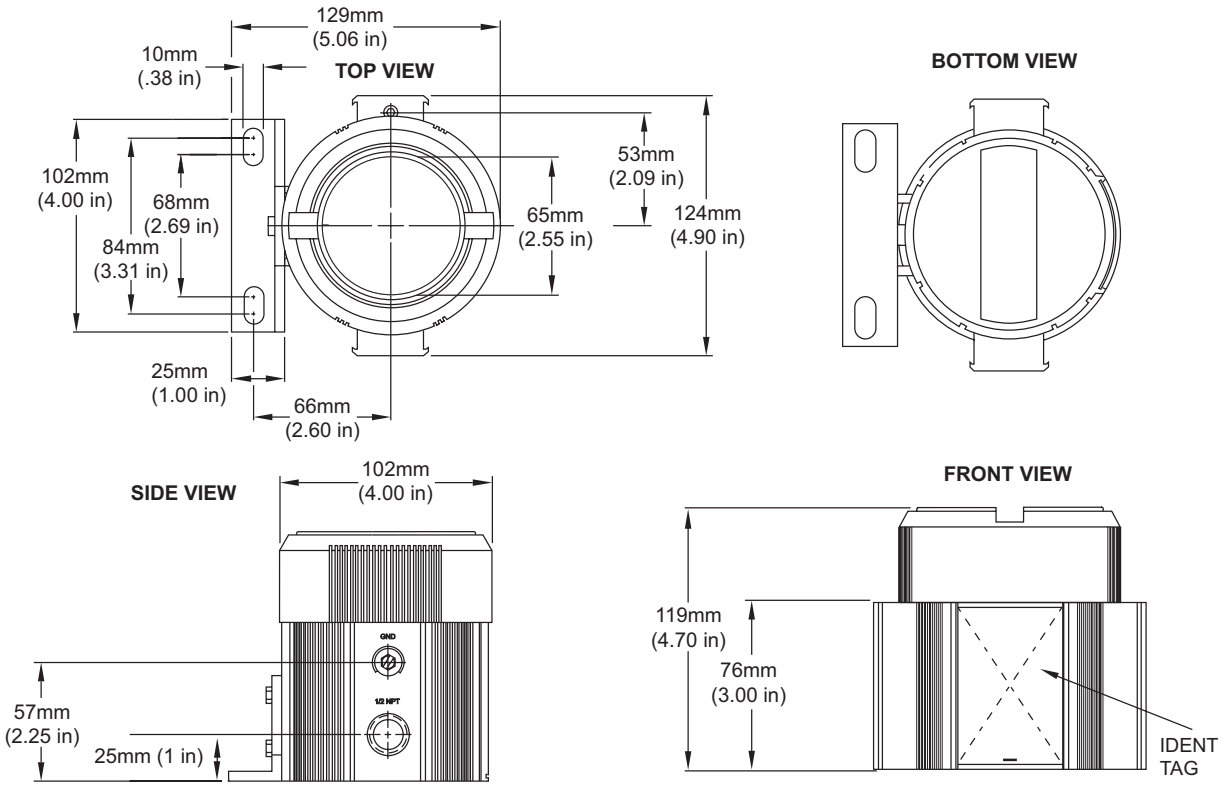


***Figure 4.*** *Dimensions for the LRX in the D-Box NEMA 4X (IP66) enclosure*

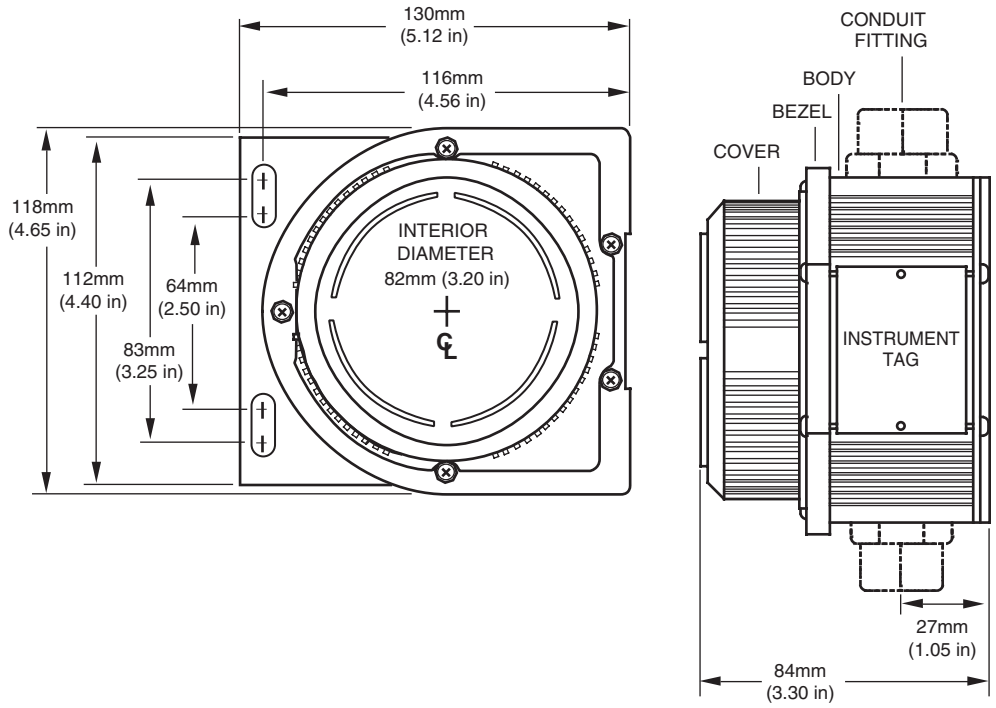
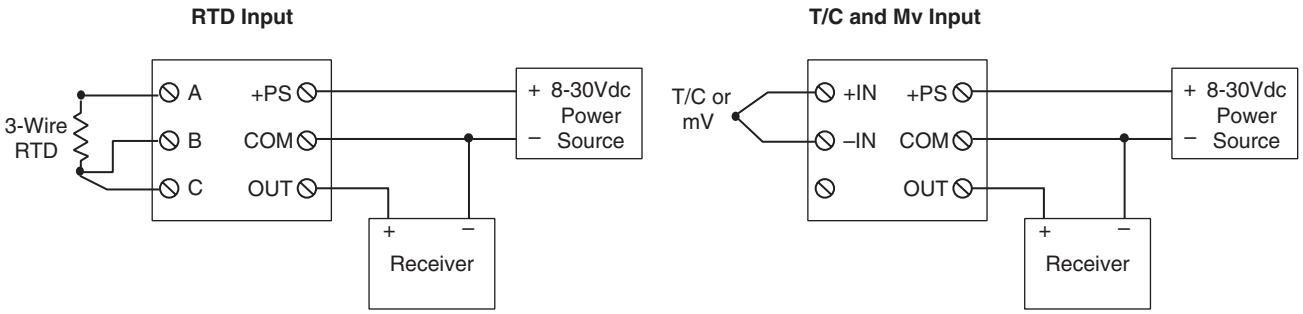



***Figure 5.*** *Typical LRX installation hook-up diagram*




**NOTES:**
1. If a 2-wire RTD is used, pins B and C of the LRX must be shorted together.
2. Terminal blocks can accommodate 14-22 AWG solid wiring.
3. Tighten terminals to four inch-pounds (maximum).