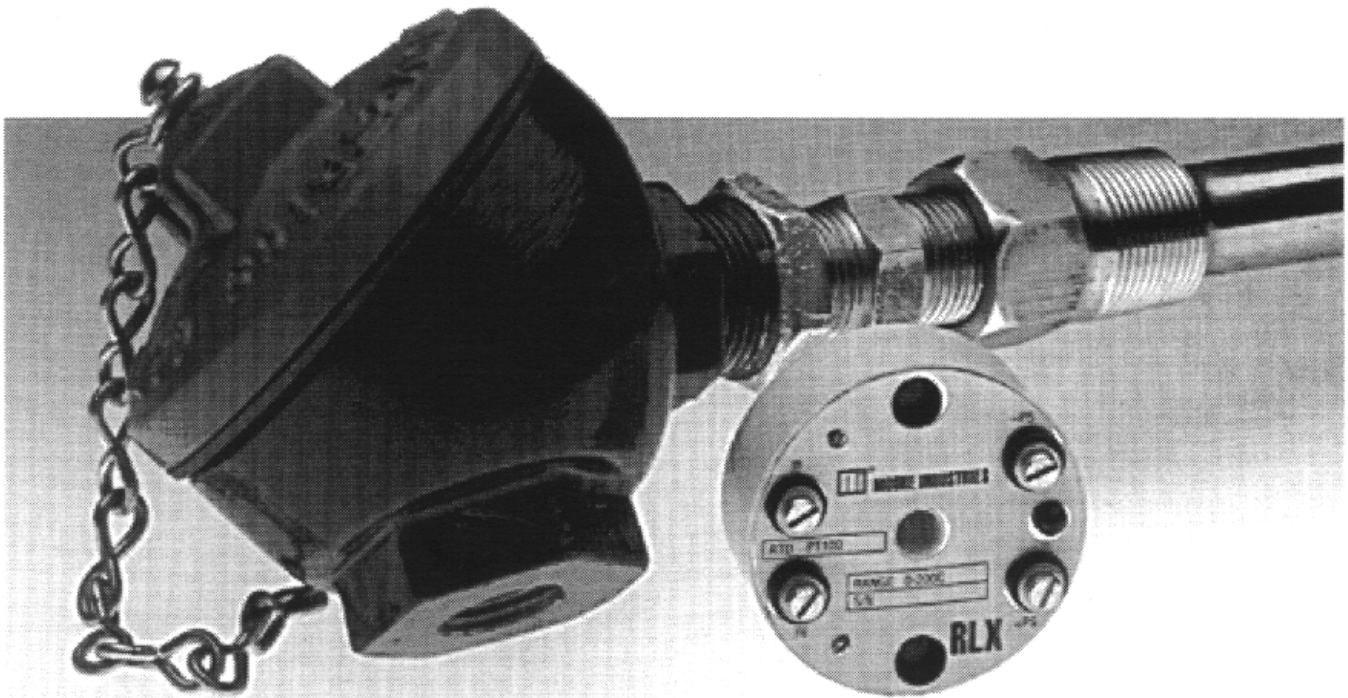


# USERS' MANUAL EPRX/RLX

Low-Cost, Linearizing RTD Transmitters

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## Description

Moore Industries' line of economical, linearizing RTD transmitters, the RLX and EPRX accept input from both 2- and 3-wire platinum RTD's, and provide highly accurate, 4-20mA output linear with respect to temperature.

## Ordering

To order, use the bold face data from the Ordering Specifications section of the table below. For assistance, a model number example appears at the bottom of the table.

## Specifications

|  |  |  |   |
|--|--|--|---|
| <b>Performance Accuracy:</b> ±0.1% of span (includes the combined effects of linearity, hysteresis and repeatability)<br><b>Power Supply Effect:</b> Negligible within specified limits<br><b>Burnout Protection:</b> Upscale to 28mA, standard (see -DD option for downscale drive)<br><b>Output Current Limiting:</b> 150% of span typical | <b>Performance (continued)</b><br><br><b>Ambient Temperature</b> | <b>Load Capability:</b> (Vs -8.5V)/0.2A = ohms (see -LV option for EPRX)<br><br><b>Operation:</b> -40°C to +82°C (-40°F to +180°F)<br><b>Effect on Amplifier:</b> EPRX: ±0.01% of span/°C maximum for spans greater than 15°C; ±0.005% of span/°C typ. RLX: ±0.01% of span/°C typical; ±0.02% of span/°C maximum | <b>Adjustments Type:</b> External multiturn potentiometers<br><b>Zero and Span:</b> EPRX: ±10%; RLX: ±5%<br><br><b>Indicator</b> LED indicates adequate power supplied for operation<br><br><b>Weight</b> EPRX: 74 grams (2.6 ounces)<br>RLX: 62 grams (2.2 ounces) |
|--|--|--|---|

## Ordering Specifications

| Unit                                    | Input   | Output  | Power   | Options  | Housing   |
|---|---|---|---|--|---|
| <b>EPRX</b><br>(2- or 3-wire RTD input) | (Specify RTD or potentiometer type and temperature range)<br><br>RTD Type:<br><b>PT1</b> 100 ohm platinum RTD<br><b>PT5</b> 500 ohm platinum RTD<br><b>PT10</b> 1000 ohm platinum RTD (alpha = .00385 ohms/ohm/°C)<br><br>Potentiometer Type (EPRX only):<br><b>POT2W</b> Current excited (rheostat). Full scale range may be between 10 ohms and 1 K ohms<br><b>POT3W</b> Voltage excited potentiometer input, any pot with 1K ohm and 50K ohm end resistance may be used. Specify range in percent of electrical rotation<br><br>Standard Temperature Input Ranges:<br><b>0-50C</b> 0 to +50°C<br><b>0-75C</b> 0 to +75°C<br><b>0-100C</b> 0 to +100°C<br><b>0-120C</b> 0 to +120°C<br><b>0-150C</b> 0 to +150°C<br><b>0-180C</b> 0 to 180°C<br><b>0-200C</b> 0 to +200°C<br><b>0-300C</b> 0 to +300°C<br><b>0-400C</b> 0 to +400°C<br><b>0-125F</b> 0 to 125°F<br><b>0-200F</b> 0 to 200°F<br><b>0-250F</b> 0 to 250°F<br><b>0-300F</b> 0 to 300°F<br><b>0-400F</b> 0 to 400°F<br><br>Custom Input Ranges: To order a °C or °F range (within the limits of the available RTD types), specify the range next to the RTD type in the model number. | <b>4-20MA</b><br>Characterized to compensate for RTD nonlinearities | EPRX:<br><b>8.5-42DC</b> (up to 55V without damage)<br><b>8.5-28DC</b> (required with -ISE option)<br><b>6.5-40DC</b> (-LV option required)<br><br>RLX:<br><b>12-42DC</b><br><b>12-28DC</b> (required with -ISE option) | <b>-ISE</b> BASEEFA approved intrinsically safe (8.5-28DC power required for EPRX; 12-28DC power required for RLX)<br><b>-DD</b> Downscale drive to 3.5mA<br><b>-DT</b> Differential temperature input (EPRX only with two 2-wire RTD's; no linearization with this option)<br><b>-LV</b> Low voltage (EPRX only; no LED)<br><b>-N</b> Type N approval for Zone II areas (RLX only; requires F2LS housing)<br><b>-RO</b> Reverse output (EPRX only; not available with -DT option or 3-wire potentiometer input) | <b>HPP</b> Hockey-puck housing<br><b>CCP</b> Clip for mounting in CH7 enclosure<br><b>CPP</b> Clip for mounting in 2HG and 2LS enclosures<br><b>2HG*</b> HPP in 2-hub, high glass window, explosion-proof enclosure<br><b>2LS*</b> HPP in 2-hub, solid cover, explosion-proof enclosure<br><b>CH4</b> HPP in cast iron connection head<br><b>CH5</b> Hockey-puck in cast aluminum connection head<br><b>CH6</b> Hockey-puck housing in plastic connection head<br><b>CH7</b> Hockey-puck housing in explosion-proof connection head<br><br>*When F prefix is added to the model number, unit is CENELEC approved (e.g., F2LS).<br>When P suffix is added to the model number, the unit comes equipped with a base plate and U-bolts for mounting on a 2-inch pipe (e.g., 2LSP). |

To order, specify: Unit/Input / Output / Power / Options / Housing

Model number example: EPRX / PT1-0-100°C / 4-20MA / 8.5-42DC / -DD [HPP]

# EPRX/RLX

## Calibration

EPRX and RLX zero and span are adjusted by connecting the unit to a calibrated decade resistance box, and trimming output by turning the front panel potentiometers (pots) while monitoring the voltage drop across a precision resistor.

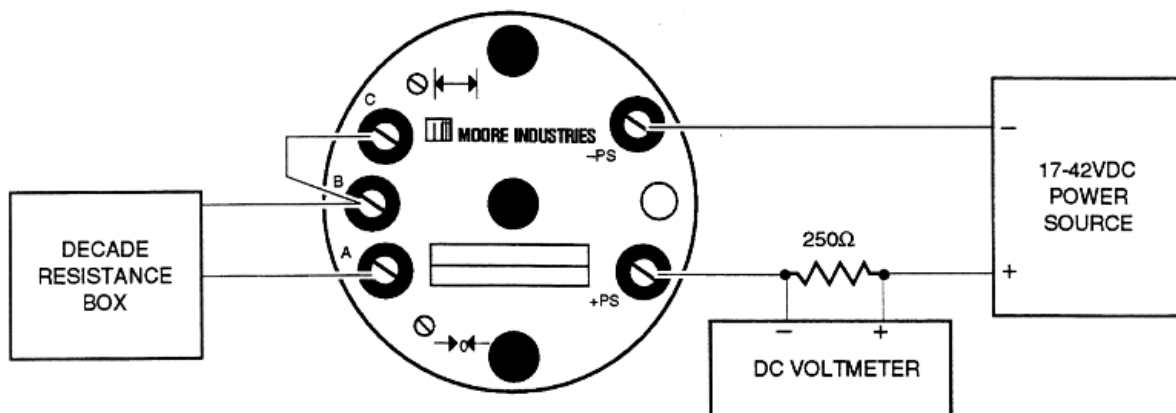
You will need:

- Temperature vs. Resistance tables for the type of RTD input to be used with the unit
- Decade resistance box accurate to 0.05% of unit (EPRX/RLX) span, minimum
- DC voltmeter accurate to 0.05% of unit span, minimum
- Precision resistor,  $250\Omega$ ,  $\pm 0.1\%$ , minimum
- 17-42Vdc power supply
- Blade-tip screwdriver

Figure 1 shows the calibration hookup.

1. With the unit connected as shown in the figure, apply the appropriate power, and allow 10 minutes for the setup to stabilize.
2. Using the ISA tables, calculate the resistance for the minimum and maximum temperature input that the unit is to encounter in its intended application.
3. Set the decade resistance box to the minimum resistance calculated in step 2.
4. Adjust the zero pot ( $\rightarrow \square \leftarrow$ ) until the unit output is 1V across the load resistor.
5. Set the decade resistance box to the maximum resistance calculated in step 2.
6. Adjust the span pot ( $\leftarrow \square \rightarrow$ ) until the unit output is 5V across the load resistor.
7. Repeat steps 3 through 6 until the unit being calibrated produces stable output at both zero and full scale input.

Figure 1. Calibration Hookup

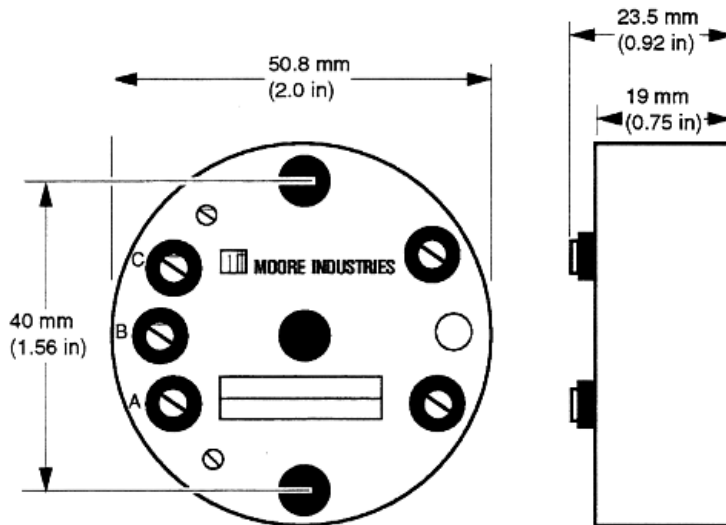


## Installation

Figure 2 shows the EPRX/RLX installation dimensions.

**Intrinsic Safety.** Installation of the EPRX/RLX in intrinsically safe applications requires special considerations. Contact the factory if your unit is to be used in such applications.

Figure 2. Installation Dimensions

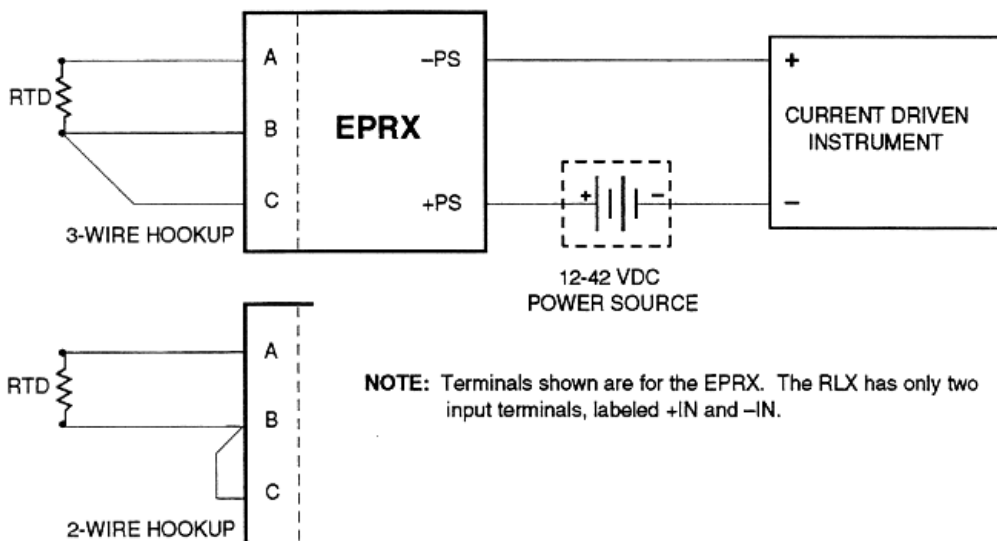


**NOTE:** Terminals shown are for the EPRX. The RLX has only two input terminals, labeled +IN and -IN.

Figure 3 shows the standard hookup for the EPRX and RLX.

**Complete Temperature Assemblies.** Moore Industries offers a complete line of temperature assemblies for use with the EPRX and RLX, including sensors, thermowells, and fittings. Accessories can be ordered separately, or as ready-to-install assemblies. For information, refer to the Temperature Systems data sheet, or contact your Moore Industries Sales Representative.

Figure 3. Installation Hookup



**NOTE:** Terminals shown are for the EPRX. The RLX has only two input terminals, labeled +IN and -IN.



# Declaration of Conformity

EMC Directive 89/336/EEC



**Manufacturer's Name:** Moore Industries-International, Inc.  
**Manufacturer's Address:** 16650 Schoenborn Street  
 North Hills, CA 91343-6196  
 USA

**Declares that the product(s):**

**Product Name:** EP-RBX

| MODEL | INPUT | OUTPUT | POWER | OPTIONS | HOUSING |
|-------|-------|--------|-------|---------|---------|
|-------|-------|--------|-------|---------|---------|

|                         |   |   |   |       |   |
|-------------------------|---|---|---|-------|---|
| Model Number(s): EP-RBX | * | * | * | * -CE | * |
|-------------------------|---|---|---|-------|---|

\*Indicates any input, output, power, option and housing as stated in the product data sheet.

**Conforms to the following EMC specifications:**

EN61326-1, 1998, Electromagnetic Compatibility requirements for electrical equipment for control use.

**Supplemental Information:**

None.

January 11, 2005

Date

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Quality Assurance Director

**Robert Stockham**

Moore Industries-International, Inc.

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## RETURN PROCEDURES

### To return equipment to Moore Industries for repair, follow these four steps:

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

#### Warranty Repair –

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

#### Non-Warranty Repair –

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
  - a) A note listing the symptoms that indicate the unit needs repair
  - b) Complete shipping information for return of the equipment after repair
  - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

#### WARRANTY DISCLAIMER

THE COMPANY MAKES NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY GOODS OR SERVICES SOLD BY THE COMPANY. THE COMPANY DISCLAIMS ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR TRADE USAGE, AND ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY ACKNOWLEDGES THAT THERE ARE NO WARRANTIES IMPLIED BY CUSTOM OR USAGE IN THE TRADE OF THE BUYER AND OF THE COMPANY, AND THAT ANY PRIOR DEALINGS OF THE BUYER WITH THE COMPANY DO NOT IMPLY THAT THE COMPANY WARRANTS THE GOODS OR SERVICES IN ANY WAY.

ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY AGREES WITH THE COMPANY THAT THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY WARRANTY CONCERNING THE GOODS OR SERVICES SHALL BE FOR THE COMPANY, AT ITS OPTION, TO REPAIR OR REPLACE THE GOODS OR SERVICES OR REFUND THE PURCHASE PRICE. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES EVEN IF THE COMPANY FAILS IN ANY ATTEMPT TO REMEDY DEFECTS IN THE GOODS OR SERVICES. BUT IN SUCH CASE THE BUYER SHALL BE ENTITLED TO NO MORE THAN A REFUND OF ALL MONIES PAID TO THE COMPANY BY THE BUYER FOR PURCHASE OF THE GOODS OR SERVICES.

ANY CAUSE OF ACTION FOR BREACH OF ANY WARRANTY BY THE COMPANY SHALL BE BARRED UNLESS THE COMPANY RECEIVES FROM THE BUYER A WRITTEN NOTICE OF THE ALLEGED DEFECT OR BREACH WITHIN TEN DAYS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH, AND NO ACTION FOR THE BREACH OF ANY WARRANTY SHALL BE COMMENCED BY THE BUYER ANY LATER THAN TWELVE MONTHS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH.

#### RETURN POLICY

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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