

# E-RTDT-1562

## High-Accuracy Platinum RTD Transmitter -328°F to 1562°F (-200°C to 850°C)

### Features

- Factory calibrated for 100Ω platinum
- 2, 3 or 4-wire RTD connection with lead resistance compensation
- Highly accurate and repeatable
- User selectable input span from entire thermocouple range down to 15.0°
- Upscale or downscale open sensor indication
- 4-20 mA, 0-20 mA, RS485 or 0-10V transmitter output, jumper selectable, isolated
- Output resolution: 0.0015% of span (16 bits), accuracy: ±0.02% of span
- Output update rate to 60/sec
- DIN rail mount housing only 22.5 mm wide
- Detachable screw-clamp connectors
- Dual solid state relays for alarm or control, isolated
- RS232 or RS485 serial communications, isolated
- Universal AC power, 85-264 Vac
- Temperature range: -328 to 1562°F (-200 to 850°C)
- When used with the E-2D/5D/16D, the supported range is -89 to 738°F (-67 to 392°C). Call an NTI product consultant to have the range expanded on the ENVIROMUX system.



### Description

The E-RTDT-1562 temperature transmitter provides a linearized, highly accurate, stable and repeatable transmitter output for 100 ohm platinum RTDs.

Pt 100 platinum RTDs can have a DIN alpha of 0.00385 or ANSI alpha of 0.00392. The RTD type and temperature range, specified in °C or °F, are user-selectable. The temperature range can be as wide as the entire span of the RTD type or as narrow as 150 counts (such as 15.0°), limited only by considerations of electrical noise and digital filtering time constants.

**Digital calibration of all RTD ranges** is performed the factory, with calibration data stored in EEPROM on the signal conditioner board. This allows signal conditioner boards and ranges to be changed in the field with no need for recalibration.

**RTD connections can be via 2, 3 or 4wires.** With 3- and 4-wire connections, the transmitter automatically compensates for lead resistance of the sensor.

**Fast read rate at up to 50 or 60 conversions per second** while integrating the signal over a full power line cycle is provided by Concurrent Slope (Pat 5,262,780) analog-to-digital conversion. High read rate is ideal for peak or valley capture and for real-time computer interface and control.

**Open sensor indication** is standard and may be set up to indicate either upscale or downscale. RTD excitation is provided by the transmitter.

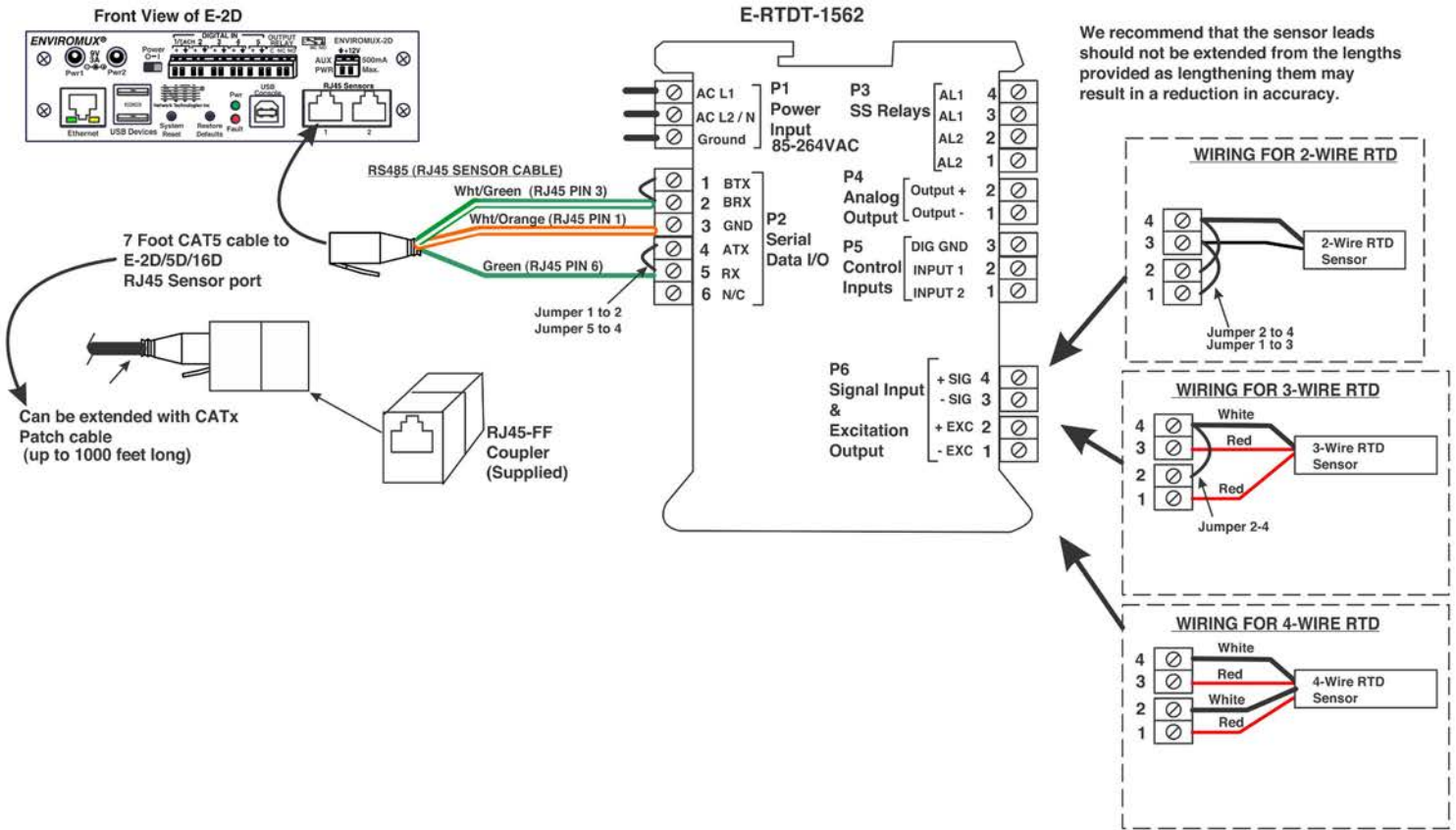
**Three analog output settings are jumper selectable:** 4-20 mA, 0-20 mA or 0-10V. All selections provide 16-bit (0.0015%) resolution of output span and 0.02% output accuracy. The output tracks the reading from -99,999 to +99,999 counts that would be transmitted digitally. For DC signals, this reading has a rated accuracy of ±0.01% of full scale input and can be scaled in software. Output isolation from signal and power grounds eliminates potential ground loop problems. The supply can drive 20 mA into a 500 ohm (or lower) load for 10V compliance, or 10V into a 5K ohm (or higher) load for 2 mA compliance.

**Standard features** of this transmitter include:

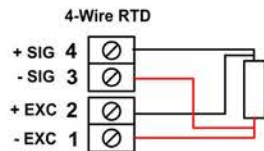
- Analog transmitter output, 16-bit, user scalable and isolated. User selectable 4-20 mA, 0-20 mA or 0-10V levels.
- Serial communications, isolated. User selectable RS232 or RS485, half or full duplex, Modbus ASCII protocol.
- Dual solid state relays for control or alarm, isolated. Rated 120 mA at 130 Vac or 170 Vdc.
- Transducer excitation output, isolated. User selectable 5V@100 mA, 10V@120 mA or 24V@50 mA.
- Universal AC power supply for 85-264 Vac.

# WIRING TO CONNECT E-RTDT-1562 TO E-2D/5D/16D

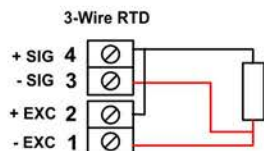
(Installation requires E-xD firmware version 2.23 or later)



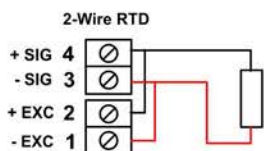
## RTD Hookup



**In 4-wire hookup**, different pairs of leads are used to apply the excitation current and sense the voltage drop across the RTD, so that the IR drop across the excitation leads is not a factor.

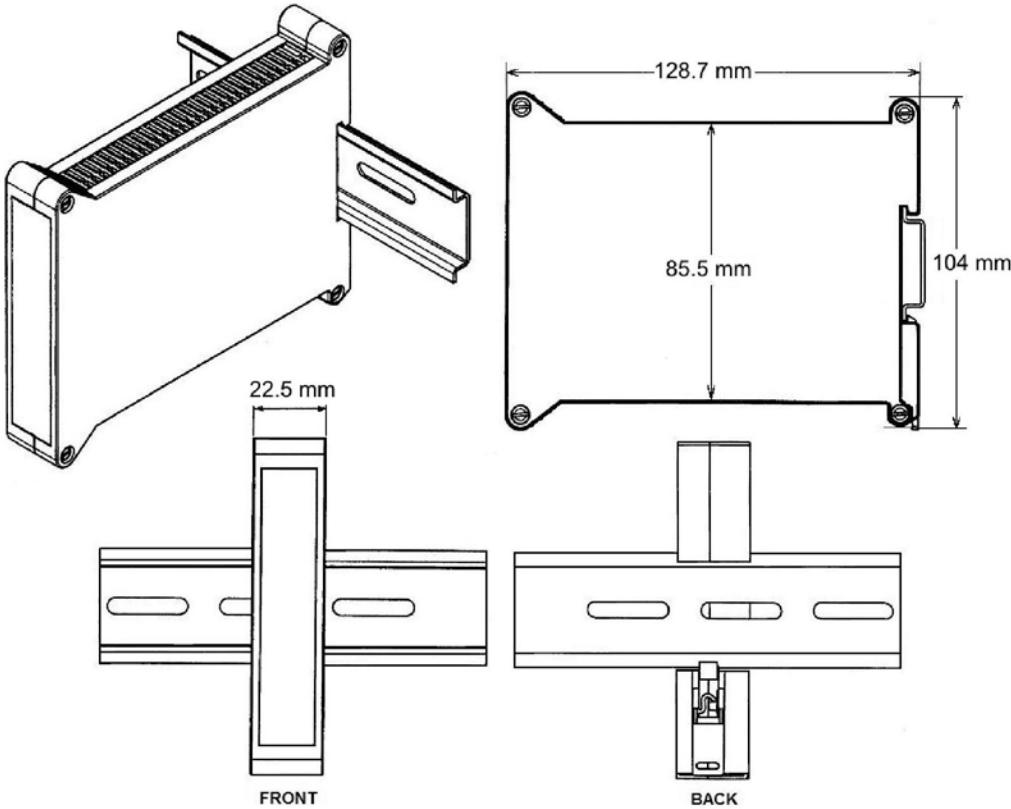


**In 3-wire hookup**, the transmitter senses the combined voltage drop across the RTD plus two excitation leads. It also senses the voltage drop across one excitation lead, and then subtracts twice this voltage from the combined total. This technique effectively subtracts all lead resistance and compensates for ambient temperature changes if the two excitation leads are identical.



**In 2-wire hookup**, the transmitter senses the combined voltage drop across the RTD and both lead wires. The voltage drop across the lead wires can be measured by shorting out the RTD during transmitter setup, and this voltage is then automatically subtracted from the combined total. However, changing resistance of the lead wires due to ambient temperature changes will not be compensated.

Mechanical



## ENVIROMUX WEB INTERFACE INSTALLATION

1. Connect the RTD Sensor to the Transmitter as per the wiring diagrams.
2. Supply power to the Transmitter.
3. Connect the RS485 communication cable to an available RJ45 Sensor port on the E-2D/5D/16D.
4. Make sure your firmware version in the ENVIROMUX is version 2.23 or later.
5. Access the ENVIROMUX web interface from your browser and go to the Sensors page (Main Menu "Monitoring" -> "Sensors")

**Sensors**


Internal Sensors					
No.	Description	Type	Value	Status	Action
<b>Sensors</b>					
Conn.	Description	Type	Value	Status	Action
1	<a href="#">Sensor #1.1</a>	Temperature Combo	23.6°C	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
1	<a href="#">Sensor #1.2</a>	Humidity Combo	34%	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
1	<a href="#">Dew Point Sensor #1</a>	Dew Point	7.0°C	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
2	<a href="#">E-RTDT-1562</a>	Temperature	40.2°C	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>


[Add New Sensor](#)  
[Add Tach Sensor on Digital input 1](#)

6. Select "Add New Sensor"

**Add New Sensor**

Add New Sensor

Sensor Type:    
Select the sensor type

RJ45 Connector:    
Choose which RJ45 jack the sensor will be connected to

- Water
- Water
- Smoke Detector
- Vibration
- Motion Detector
- Glass Break
- Door
- Keypad
- Panic Button
- Key Station
- Dry Contact
- RTD Sensor

7. From the drop-down list for Sensor Type select "RTD Sensor".
8. Select the connector from the RJ45 Connectors drop down that the Transmitter is connected to.
9. Click on "Add". This will add the sensor to the Sensors List.
10. From the sensors list, click on "Edit" to edit the sensor configuration. The configuration page will open and provide configuration options for your RTD sensor.

For a description of all of the available sensor configuration options, see your E-xD manual.



## E-RTDT-1562 Configuration (Type: Temperature)

<b>[-] Sensor Settings</b>	
<b>Description</b>	<input type="text" value="E-RTDT-1562"/> <small>Descriptive name for the sensor</small>
<b>Units</b>	<input type="text" value="Deg. C"/> <small>▼</small> <small>Select the units for the sensor</small>
<b>Min. Level</b>	<input type="text" value="-67.0"/> <small>Min. supported value for the sensor</small>
<b>Max. Level</b>	<input type="text" value="392.0"/> <small>Max. supported value for the sensor</small>
<b>Min. Non-Critical Threshold</b>	<input type="text" value="-10.0"/> <small>Min. threshold below which indicates a non-critical alert condition</small>
<b>Max. Non-Critical Threshold</b>	<input type="text" value="90.0"/> <small>Max. threshold above which indicates a non-critical alert condition</small>
<b>Min. Critical Threshold</b>	<input type="text" value="-40.0"/> <small>Min. threshold below which indicates an alert condition</small>
<b>Max. Critical Threshold</b>	<input type="text" value="120.0"/> <small>Max. threshold above which indicates an alert condition</small>
<b>Refresh Rate</b>	<input type="text" value="10"/> <input type="text" value="Sec"/> <small>▼</small> <small>The refresh rate at which the sensor view is updated</small>
<b>[+] Group Settings</b>	
<b>[+] Schedule Settings</b>	
<b>[+] Non-Critical Alert Settings</b>	
<b>[+] Critical Alert Settings</b>	
<b>[+] Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

## Specifications

RTD Metal	Alpha	R at 0°C	R at top of range	Excitation Current	Range	Conformity Error
Platinum	0.003850 (DIN)	100Ω	390.48Ω at 850°C	196 μA	-200°C to +850°C -328°F to +1562°F	±0.03°C ±0.05°F
Platinum	0.003902 (ANSI)	100Ω	394.36Ω at 850°C	196 μA	-200°C to +850°C -328°F to +1168°F	±0.04°C ±0.07°F
<b>RTD Input</b>						
Calibration, Pt 100 DIN Calibration, Pt 100 ANSI Configuration Excitation Current Overall Accuracy Span Tempco Zero Tempco Lead Resistance Tempco  Overvoltage Protection Open Sensor Indication	IEC 751 (IPTS-68) NIST Monograph 126 2, 3 or 4-wire connection 196 μA for Pt100 and Ni120, 5 mA for Cu10 ±0.01 of full scale ±2 counts ±0.003% of reading/°C ±0.03 deg/deg 2-wire connection: 10 mdeg/Ω/deg up to 10Ω per conductor 3 & 4-wire connection: 10 μdeg/Ω/deg up to 100Ω per conductor 125 Vac 0 mA or > 20mA output, selectable					
<b>Analog Output</b>						
Output Levels Compliance, 4-20 mA Compliance, 0-10V Output Resolution Output Accuracy Output Isolation Step Response Time	4-20 mA and 0-10 Vdc (selectable) 10V ( 0-500Ω m load ) 2 mA ( 5 kΩ load ) 16 bits (65,536 steps) ±0.02% of output span 250V rms working, 2.3 kV rms per 1 minute test 50 ms					
<b>Dual Relay Output (standard)</b>						
Relay Type Load Rating	Two solid state relays, SPST, normally open, Form A 130 mA at 140 Vac or 180 Vdc					
<b>Serial Communications (optional)</b>						
Signal Types Data Rates Output Isolation Serial Protocols Modbus Modes Modbus Compliance Digital Addressing	RS232 or RS485 (half or full duplex) 300, 600, 1200, 2400, 4800, 9600, 19200 baud 250V rms working, 2.3 kV rms per 1 min test Modbus RTU, Modbus ASCII, Laurel ASCII RTU or ASCII Modbus over Serial Line Specification V1.0 (2002) 247 Modbus addresses. Up to 32 devices on an RS485 line w/o a repeater.					
<b>Power Input</b>						
Standard Power Power Frequency Power Isolation Power Consumption	85-264 Vac 47-63 Hz 250V rms working, 2.3 kV rms per 1 min test 2W typical, 3W with max excitation output					
<b>Mechanical</b>						
Dimensions Mounting Electrical Connections	129 x 104 x 22.5 mm case 35 mm rail per DIN EN 50022 Plug-in screw-clamp connectors					
<b>Environmental</b>						
Operating Temperature Storage Temperature Relative Humidity Cooling Required	0°C to 55°C -40°C to 85°C 95% at 40°C, non-condensing Mount transmitters with ventilation holes at top and bottom. Leave 6 mm (1/4") between transmitters, or force air with a fan.					