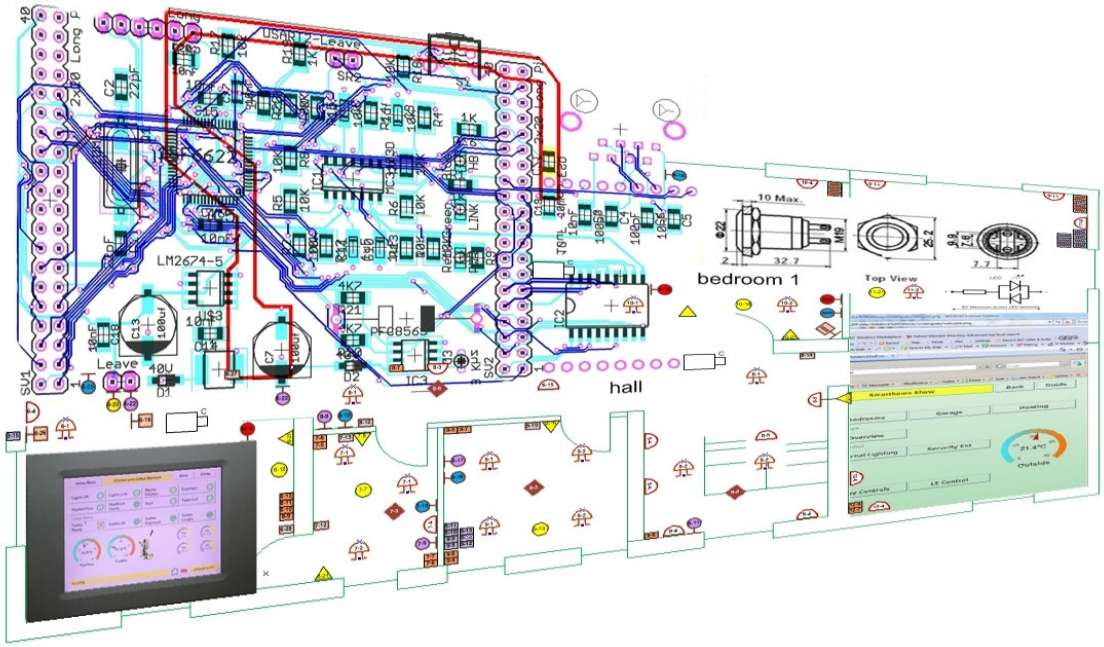
WebBrick RTI™ – Manual

Resistive Thermometer Interface

September 2008



Features

- ✓ Allows A WebBrick Controller to connect to a resistive thermometer
- ✓ Reads platinum resistance devices between -50° to 200℃
- ✓ Linearizes and offsets the zero to give 0 to 5V signal
- ✓ Pulsed sensor excitation to keep sensor self-heating to a minimum
- ✓ Low quiescent current <8mA at 12V
- ✓ 75mm wide DIN rail housing with rising clamp connectors

Fig1. Resistive Thermometer Interface including Remote Unit

Background

Utilities like solar heating and heat recovery systems may be supplied with sensors built into them, usually a platinum resistance device of either 100 ohms or 1000 ohms characteristic resistance.
The RTI is specially designed to bridge the gap between commercially supplied equipment and the WebBrick automation system. Anywhere where a temperature beyond the normal range for the WebBrick Temperature sensor needs to be sensed, a Pt1000 sensor can be used in combination with the WebBrick RTI.

General Description

The WebBrick RTI has two parts, the amplifier and the remote unit. The amplifier is usually situated near to the WebBrick it is signalling to and the remote unit is situated as close to the sensor as possible. The amplifier's range is offset to read temperatures below zero and to linearize the readings from the sensor. The reason for the remote unit is to keep the error due to resistance in long cable runs to a minimum this is particularly important with 100 Ohm sensors. The amplifier unit is usually placed close to the WebBrick that it is signalling to the connections are shown in Fig 2.

Installation

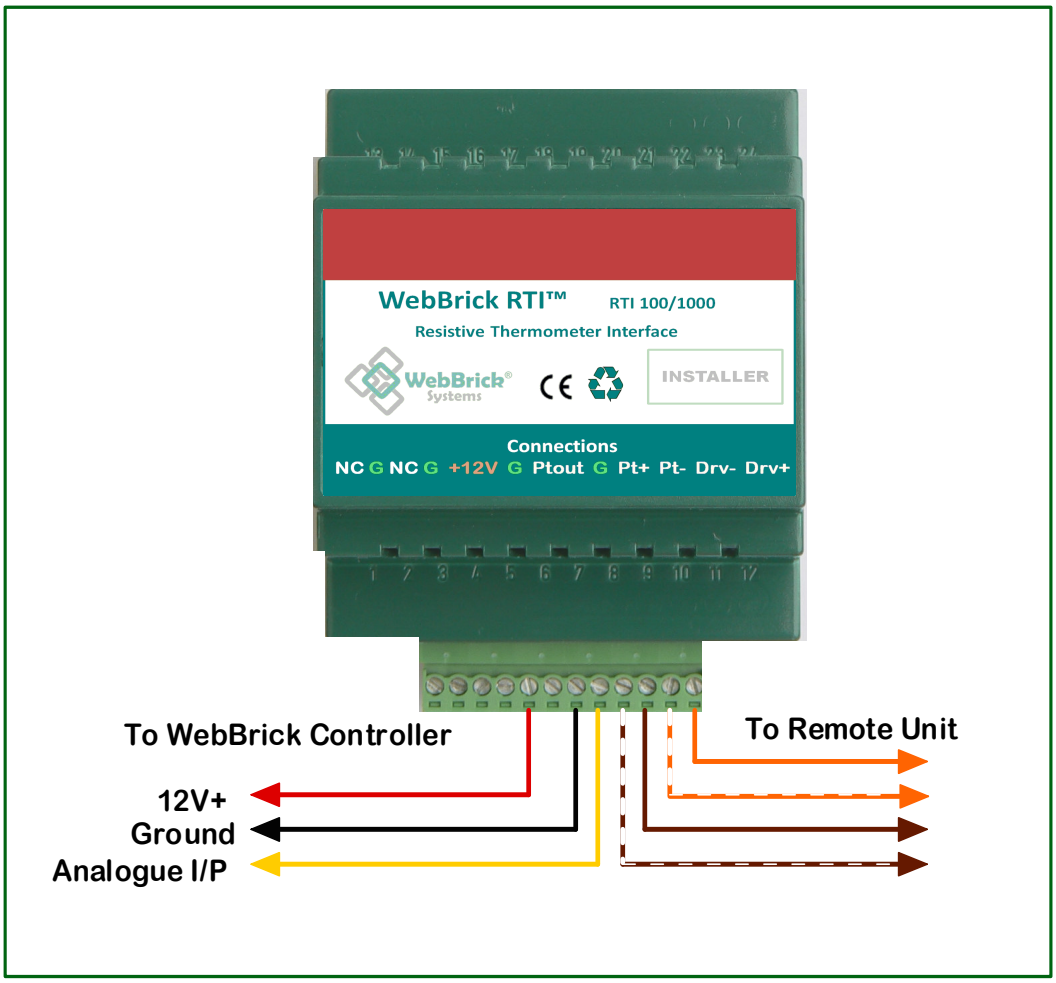


Fig 2. Resistive Thermometer Interface amplifier unit, connections

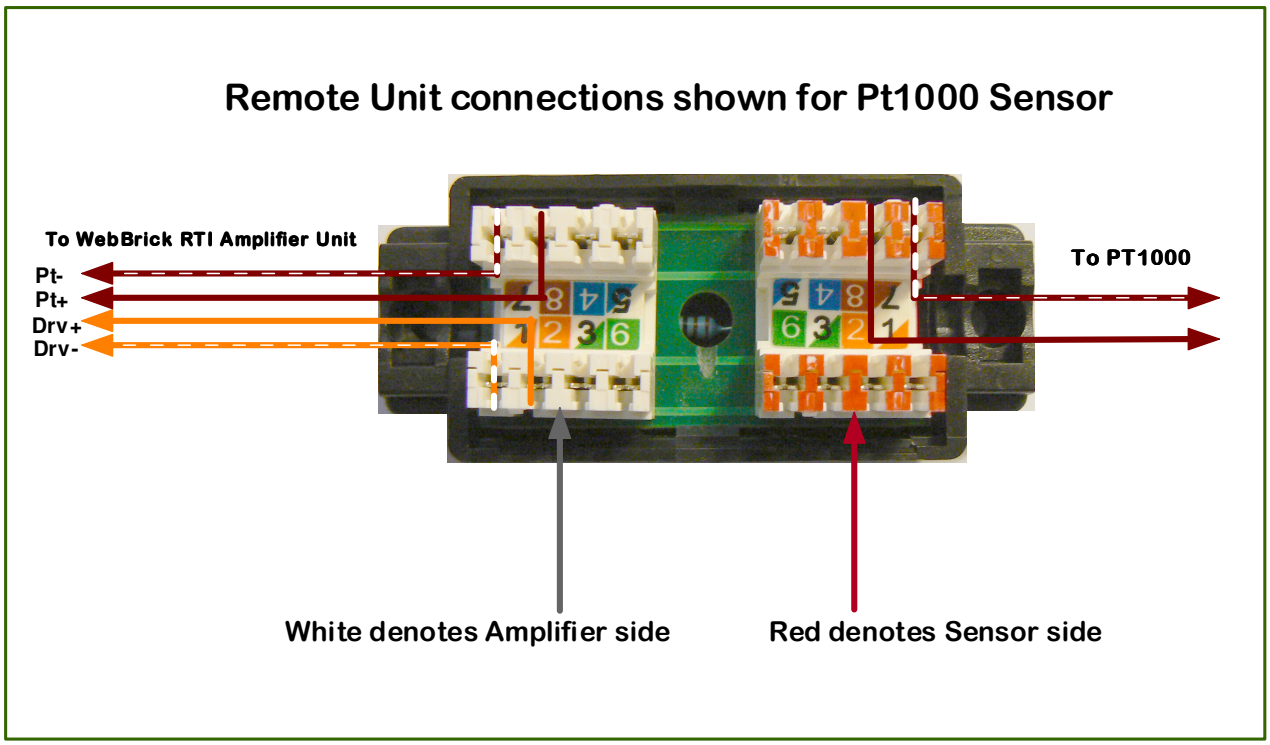


Fig 2. Remote Unit, (cover removed)

Fig 2. shows the connections at the remote unit for Pt1000, in the case of operation with Pt100 sensor, the green and green/white connections are used at the amplifier side of the remote unit, connections at the amplifier end are the same. It is important to connect the remote unit the correct way round because the internal circuit is not symmetrical, note red and white pinch-down blocks. The sensor can be connected to any pair of colour and striped punch-downs at the red end.
With the remote unit installed close to the sensor, the length of the cable to amplifier unit can be up to the maximum recommended 100m.

WebBrick RTI Technical Specification

Part Number RTI100/1000

External connections

- DC 12V
- 4 wire connection to remote sensor
- 0 to 5V output for compatibility with Analogue input for WebBrick Controller
- Ground (4 separate connections)

Operating parameters

- -50° to 200℃ measurement range
- 0 to 5 volt output equates to -50℃ to 200℃ or 0% to 100% analogue input reading.
- Max error +/- 8℃ across the range
- Pt100 or Pt1000 sensor
- 100m maximum cable length between amplifier unit and remote unit (Cat5e)
- 8mA maximum current draw at 12V
- 10 to 15V DC Supply
- 100m maximum cable length to remote unit