

RTD Wiring Considerations

Since the operating principle of the RTD module is based on the measurement of resistance, take special care when selecting your input cable. For 2-wire or 3-wire configurations, select a cable that has a consistent impedance throughout its entire length.

Configuration	Recommended Cable
2-wire	Belden™ 9501 or equivalent
3-wire — less than 30.48 m (100ft.)	Belden™ 9533 or equivalent
3-wire — greater than 30.48 m (100 ft.) or high humidity conditions	Belden™ 83503 or equivalent

IMPORTANT

The RTD module requires three wires to compensate for lead resistance error. We recommend that you do not use 2-wire RTDs if long cable runs are required, as it reduces the accuracy of the system. However, if a two-wire configuration is required, reduce the effect of the lead wire resistance by using a lower gauge wire for the cable (for example, use AWG #16 instead of AWG #24). The module's terminal block accepts two AWG #14 gauge wires.

When using a 3-wire configuration, the module compensates for resistance error due to lead wire length. For example, in a 3-wire configuration, the module reads the resistance due to the length of one of the wires and assumes that the resistance of the other wire is equal. If the resistances of the individual lead wires are much different, an error may exist. The closer the resistance values are to each other, the greater the amount of error is eliminated.

IMPORTANT

To ensure temperature or resistance value accuracy, the resistance difference of the cable lead wires must be equal to or less than 0.01Ω .

To insure that the lead values match as closely as possible:

- Keep lead resistance as small as possible and less than 25Ω .
- Use quality cable that has a small tolerance impedance rating.
- Use a heavy-gauge lead wire which has less resistance per foot.