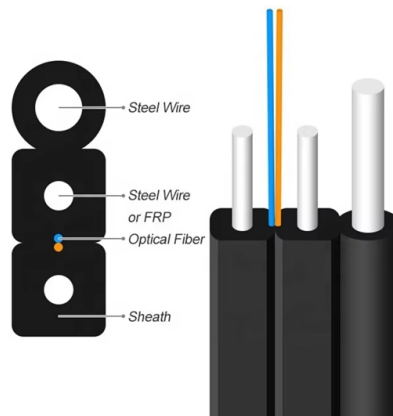


Temperature sensing cable terminal boxes can be connected in parallel



Overview

Series-parallel wiring Important: Use copper conductors only. Make all wiring connections in accordance with local, national, and regional Wiring examples.

Key Takeaways

Temperature sensing devices like RTDs generally should not be connected in parallel to multiple inputs, while thermocouples can be connected in parallel under specific conditions with proper precautions. RTDs (Resistance Temperature Detectors)

RTDs measure temperature by resistance, and connecting a single RTD element to multiple input modules in parallel is not recommended. When connected in parallel, each input draws current through the sensor, which can alter the measured voltage or resistance, leading to inaccurate temperature readings. Self-heating of the RTD due to multiple excitation currents can further distort measurements. To achieve multiple readings from a single RTD, consider:

- Dual-element RTDs: These have two sensing elements in the same thermowell, allowing independent connections to separate devices without interference.
 - Signal splitters or retransmitters: A temperature transmitter can provide two isolated outputs from a single RTD input, ensuring accurate readings and avoiding ground loop issues .
- Thermocouples

Thermocouples generate a small voltage proportional to temperature. Parallel connections are feasible if certain conditions are met:

- Measurement devices must have high input impedance to minimize loading effects.
 - The thermocouple signal should be buffered or conditioned to prevent degradation.
 - Proper shielding and grounding techniques must be used to reduce electrical noise.
 - Isolation amplifiers can be employed to prevent voltage drops and ground loops .
- Parallel thermocouple connections are commonly used when one sensor needs to serve multiple purposes, such as process control and data logging simultaneously. However, care must be taken to avoid signal interference and ensure all devices are compatible with the thermocouple type.

General Recommendations

- Always use sensors of the same type and value when wiring in series or parallel networks .
- Avoid directly connecting RTDs in parallel to multiple inputs; use dual-element sensors or signal splitters instead.
- For thermocouples, ensure signal conditioning, high input impedance, and proper grounding to maintain accuracy.
- Follow manufacturer guidelines and electrical ratings to prevent equipment damage. By following these practices, you can safely monitor temperature with multiple devices while maintaining measurement accuracy and system reliability.

Article Content

NTC Ring Temperature Sensor Cable Assemblies

Molex's Temperature Sensor Cable Assemblies are available in a variety of beta values, resistances, lengths and temperature

Contact Us

Continue your research online:

Website: <https://thegalleryselfcatering.co.za>

Technical inquiry: <https://thegalleryselfcatering.co.za/contact.html>

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

