



Cold Junction Compensation
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Topics



Basics of Cold Junctions



Thermocouple Adapters



Other Methods for Cold Junction Compensation



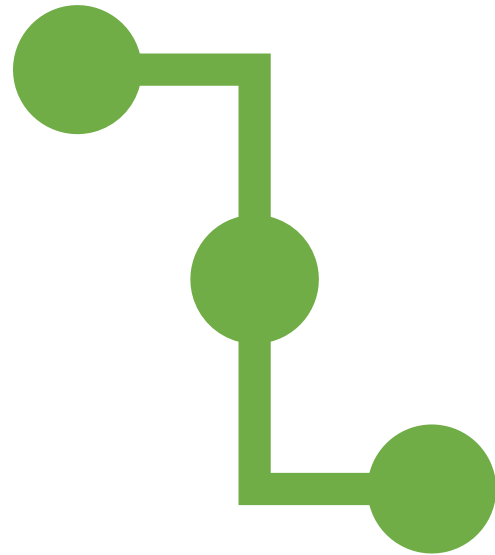
Additional Resources



Basics of Cold Junctions

Basics

- › Thermocouples allow us to measure temperature via the “Seebeck Effect” where voltage is generated across the junction of two dissimilar metal conductors (i.e. “thermocouple wire”). This voltage can be calibrated and recorded by a voltmeter or Data Acquisition System (DAS).
- › The point where thermocouple wire connects to the electronic measurement device or DAS is called the “Cold Junction”
- › Because there may be a variety of dissimilar metals at the Cold Junction, parasitic voltages can be generated, thus causing an offset in temperature readings that can result in a reduction in overall accuracy.
- › It is possible to compensate for cold junction effects using appropriate sensor setting or by using specialized thermocouple adapters.
- › When using thermocouples it is important to recognize the potential inaccuracies induced at the cold junction and perhaps incorporate some method of “cold junction compensation”.



Thermocouple Adapters

Typical Compensation – Adapters

- › A Thermocouple Adaptor can provide Cold Junction Compensation, giving greater accuracy in temperature measurements.
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- › **DTS Sells a Texense adaptor that supports Type K Thermocouples**

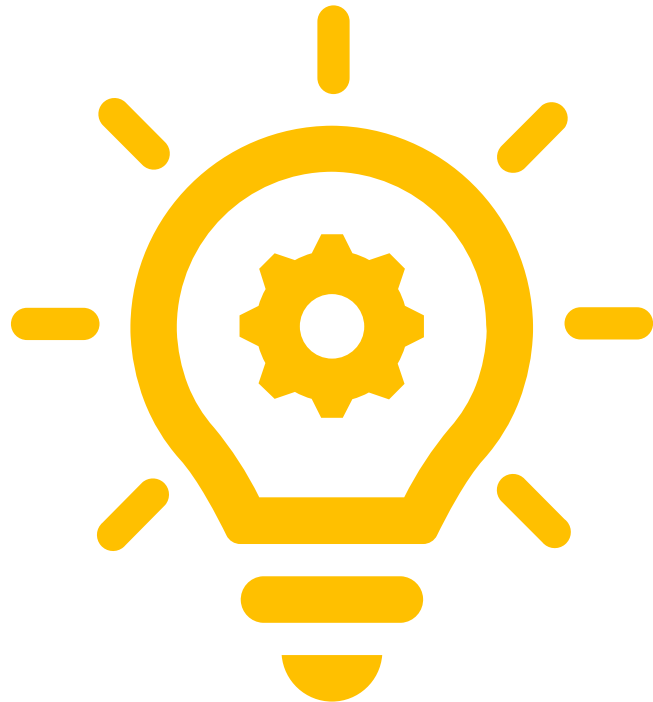


[Click Here for Product Page](#)



- › Other adaptors as well as thermocouples are offered by various measurement suppliers. One example is here:

- › [Omega Online Store](#)



Other Methods for Cold Junction Compensation

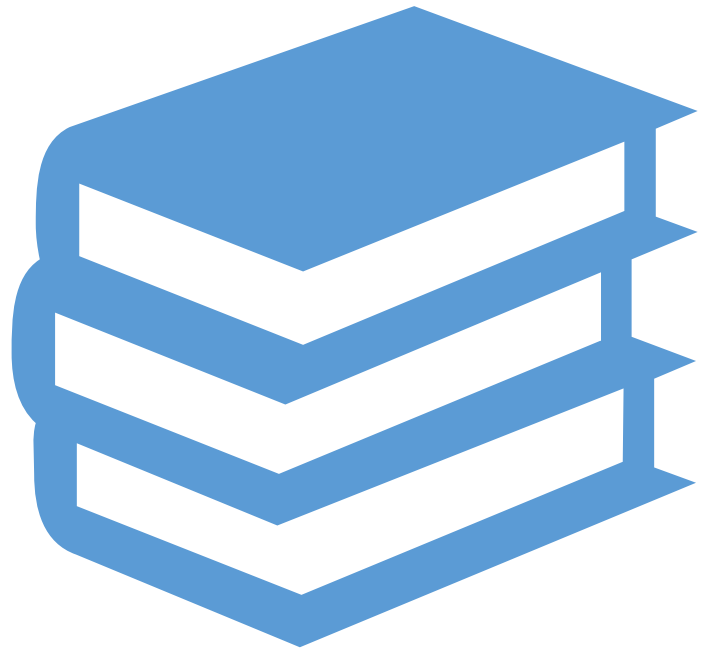
Other Methods

- › To estimate and account for the Cold Junction without an adapter, a simple test of multiple temperature points can give a basic picture of the effect.
- › For example, measuring the thermocouple at various temperatures while simultaneously running the Data Acquisition System (DAS) at various realistic operating temperatures, can reveal what kind of accuracy to expect.

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- › **DTS ran such a test with the SLICE6 AIR system, using a Thermocouple directly connected to that DAS. To see those results and potential compensation, refer to our Test Report.**
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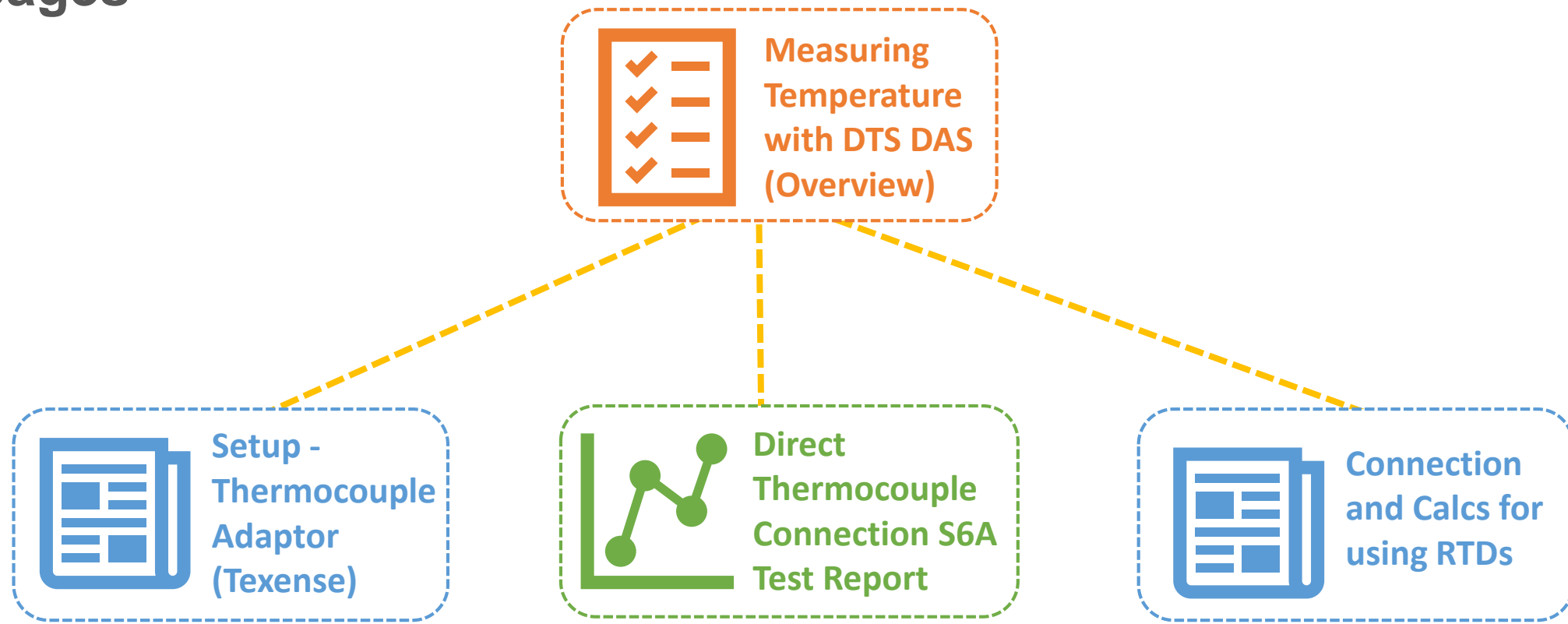
[Click Here for Our Test Report](#)



Additional Resources

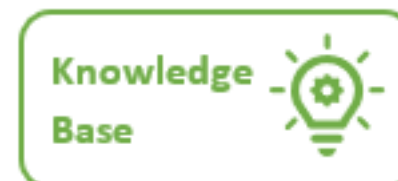
Additional Resources

- › For further reading on measuring temperature, please refer to our other articles, all of which are on our Help Center.
- › Clicking the buttons below will take you directly to the article pages



Need More Help?

- › We have support engineers in multiple time zones with various backgrounds who can assist. Registering creates a profile for your setup and keeps your records/requests organized going forward. You don't need to be registered to submit a Help Ticket, but it keeps all your info in one place.
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 3. Submit a Help Ticket. You can CC members of your organization, attach files, and add any helpful links.
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THANK YOU

