CTC AppNotes
A series of technical documents written by members of the CTC community

Connector Maintenance - Cables and Connectors

Executive Summary

This edition of CTC's *APPnotes* will discuss care and maintenance of permanently installed and portable sensor cabling and connections.

Portable Cables

By nature, cables are usually the weakest part of a measurement system, whether it be a permanent or portable application.

Coiled cables comprise a large volume of the portable collection applications. However, they are prone to excess wear which can cause deterioration of the internal conductors and connections, which may lead to erroneous readings.

Pictured below are two coiled assemblies, 10' in length, which have each been in service for approximately five years. The cable on the left is still functioning properly with no signal distortion, while the cable assembly on the right was found to be influencing the signal with random noise and a pronounced ski slope affect.

Care should be taken to maintain the integrity of the cable as it was designed. Once the cable has been distorted as in the right hand photo, it becomes unusable.

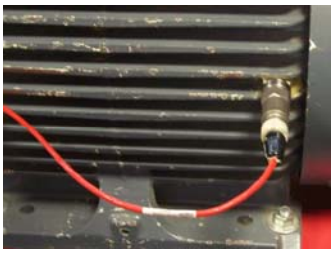
Another concern with portable cables is the amount of strain placed upon the cable at the connector end when taking a measurement. Pictured below is a cable assembly on the left with an allowable amount of strain and on the right an assembly with severe strain.

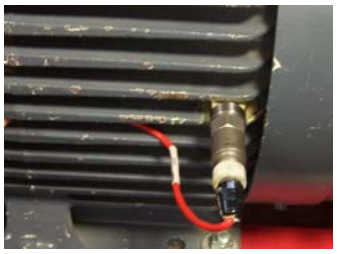
Permanent Cables

The initial installation of any permanently mounted cable assembly is the most critical, since typically it will not be moved once installed. Any strain or pressure introduced during the installation will begin to degrade the assembly immediately upon being placed in service.

Allowing a suitable amount of slack or loop in the cable insures that no undue strain is placed on the cable jacket and wires.

In the following photos, the cable assembly on the left is typical of a proper installation, and the photo on the right shows one in which too much strain is exerted on the cable and connector.





Remember - Cable and connector reliability goes hand in hand with maintenance and proper care.

Care and Maintenance

- Portable cables should be inspected on a regular basis for damaged jacketing or worn connector components, When wires display abrasive cuts or fraying they should be replaced immediately.
- When cleaning cabling and connectors, Isopropyl Alcohol is recommended. Other solvents can produce permanent physical damage.
- To determine efficiency, longevity, and durability of a cable, a consumer must be familiar with certain cable specifics. There are factors that must be considered when purchasing a cable. By specifying the correct cable for the conditions consumers can avoid repetitive and unnecessary cable replacements.
- Match your cable construction to the conditions it will be required to perform in, i.e. temperature, chemical and physical demand etc.

DON'T -

- Pull the sensor from the test point using the cabling. Pull from the sensor body not the cable.
- Let the weight of the sensor hang from the cable.
- Stretch the cable beyond it's rated length.
- Wad the cables up in a ball when finished.

DO -

- Coil your cables up neatly when finished, being careful not to kink or knot the cables.
- Avoid temperature exposure of the cables to levels higher than the assembly is rated for.
- Keep cables and connectors clean and free of dirt and grease.
- Avoid cable/connector exposure to chemicals, lubricants and coolants not rated as compatible to the cable assembly.

If you have any questions or for further information please contact CTC directly via Email at dgripe@ctconline.com or jsmith@ctconline.com or feel free to call 1-800-999-5290 in the US and Canada or +1-585-924-5900 internationally.