CTC AppNotes

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

Integral Cable Sensors for Submersible Applications

Many industrial processes have a requirement for sensors to be submerged. Whenever sensors are submerged they must be properly designed to meet certain requirements depending on the environmental conditions where they will be immersed.

Figure 1. Integral polyurethane jacketed sensor showing the molded integral cable and polyurethane molded strain relief.

Sensor construction

All of CTC's sensors are hermetically sealed and 100% of our sensors are helium leak tested to ensure against microscopic leaks that can form in improperly welded seams. Integral cables are soldered and molded to the sensor bodies after the leak testing.

Water submersion

In most situations involving water submersion, in either freshwater or salt water, as long as no other potentially damaging chemicals are present, polyurethane integral jacketed cables are the proper choice. For integral polyurethane jacketed cables, the cables are soldered to the glass insulated sensing element contacts and have an additional reinforcing stainless steel piece over which the cable and sensor receive a molded polyurethane strain relief.

Submersion in oils or chemically active solutions

When sensors are submerged in oils or solutions that involve chemicals present in potentially damaging concentrations, integral Teflon jacketed cables are usually recommended. The integral Teflon jacketed sensors use the same basic sensor body design as the polyurethane jacketed versions with a hermetically sealed, helium leak tested body. The integral Teflon jacketed cables are highly resistant to damaging chemicals and can be submerged up to 200 feet or 60 meters, the same depth as CTC's sensor line with integral polyurethane jacketed sensors.

Fig. 2. Teflon jacketed integral cables are an excellent choice for submersion in many applications where chemicals are present.

Other submerged applications

In other situations where extra durability is required, armor jacketed Teflon cables are recommended. Manufactured with the same processes as the other integral cables above, the integral armored cables can be used in applications where there may be abrasive materials present, such as sand or gravel, or where there may be other material included in the water flow such as wastewater or industrial processing of other materials.

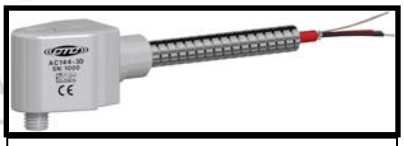

Fig. 3 . Integral armor jacketed cables are recommended for use where abrasives or other solids are present in the liquid where the sensor is submerged.

If you have any questions feel free to contact CTC directly. Call toll free 1-800-999-5290 in the US/Canada or +1-585-924-5900 internationally, or alternatively, email techsupport@ctconline.com.

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