

Temperature Stabilized Sensors

Temperature Stabilized Amplifiers are recommended for measurement applications where long term stability is a requirement. Temperature sensitivity is a limiting characteristic of the photo detectors used in Philtec's sensors. To achieve the best accuracy and repeatability, the amplifier should be maintained at a constant temperature. Otherwise, the output voltage will drift proportionately with temperature, approximately 0.15%/°C.

A very successful development in our DMS packaging was the incorporation of a temperature stabilization function. **Our analog models can now also include this feature.**

When **Option A** is ordered for analog models,

- the sensor enclosure size will be the same size as our standard RC amplifier: approx. 2" x 3.25" x 5"
- A control is provided to adjust the set temperature of the amplifier.
- Two voltage outputs are provided giving:
 - a. the amplifier set temperature
 - b. the current active amplifier temperature



Once set, the amplifier can reach a stabilized temperature within 20 minutes. The amplifier temperature is maintained at the set temperature $\pm 0.1^\circ\text{C}$.

Example:

A DMS-RC100 sensor system was monitored for long term drift. The sensor tip was fixtured vertically with a small mirror target resting on the tip itself. Without controlling the amplifier temperature, the sensor output drifted up and down 0.5% in direct proportion to the ambient room temperature cycle of 3°C.

With temperature stabilization turned on, the drift was reduced one order of magnitude, to 0.05%.

Other measurements made, with the entire fiber-optic sensing system and target in an isothermal environment, show the drift of the electronics is less than 0.05% when temperature stabilization is used.

