

DESCRIPTION

Demonstration circuit DC388 utilizes the LTC1923 thermoelectric cooler (TEC) controller. It provides a complete temperature control solution for TEC based temperature control of fiber-optic lasers. Laser temperature may be controlled at temperatures above or below ambient with set point stability typically well within $.05^{\circ}\text{C}$ over widely varying ambient temperature. Temperature set point is established with a screwdriver driven potentiometer or a 14-bit on-board DAC. Considerably more detail relating to TEC temperature control issues is available in LTC Application Note AN-89, "A Thermoelectric Cooler Temperature Controller for Fiber Optic Lasers." This publication should be reviewed before demo board results are evaluated.

QUICK START GUIDE

The Demonstration Board is easy to use if the following procedure is followed:

1. Connect a turned-off power supply (2.7-6V) to the "VDD" and "GND" terminals.
2. Connect a thermistor to the "NTC+" and "NTC – " terminals. Although the thermistor is not a polarized device, one of its leads may be committed to the lasers case ground. If this is so, this lead should be connected to "NTC -." Shielded cable should be used for the thermistor leads, with the shield connected to ground.
3. Temperature set point is determined by the potentiometer or the on-board serial-addressed DAC. Set JPI jumper connections to the desired temperature set point source.
4. Connect the TEC leads from the laser to the boards "TEC+" and "TEC – " terminals. Observe polarity.
5. Turn on the power supply. The board will typically pull hundreds of milliamperes for several seconds. When the temperature set point is reached current will drop and settle to some sustaining value.
6. Performance optimization for any particular laser is achievable by following the procedures and guidelines given in LTC Application Note AN-89.