

## Laser Diode Cables

Two styles of cable are available to connect the LDC500 series controller to a laser diode—a flying-lead cable and a double terminated cable. Both styles have a 9-pin male D-sub connector to mate with the controller. All SRS laser diode cables are specially constructed for high flexibility and high bandwidth, and optimized for use with the LDC500 series controllers.

The terminated version (see Figure 1) is available in two lengths (6 ft and 12 ft).

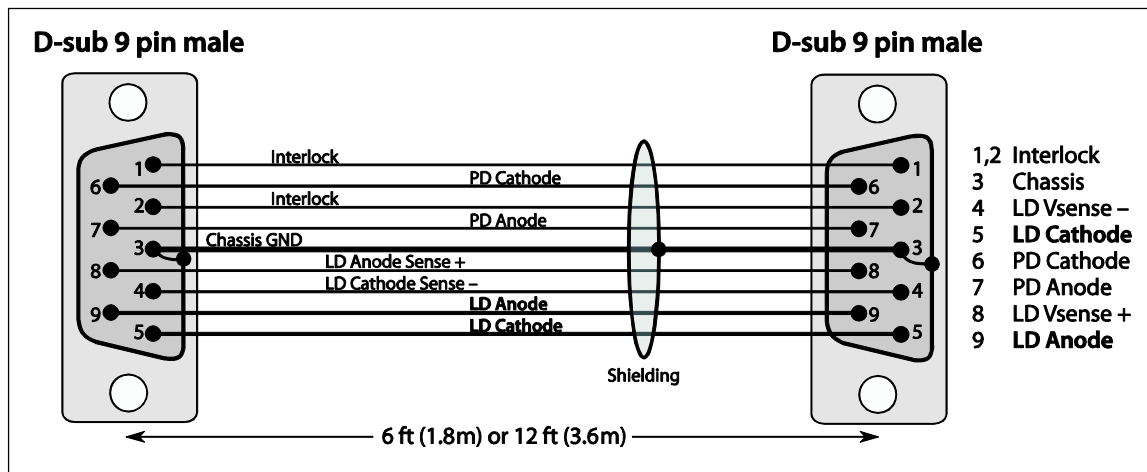


Figure 1 – Laser diode cable with mating connector. SRS part number O500C3 (6 ft) or O500C5 (12 ft).

This cable can be used with customer-built laser mounts with a 9-pin D-sub female connector. Alternatively, these can be used with some commercially-available mounts:

- ILX: Most ILX laser mounts can be directly used, mating the SRS cable to the 9-pin female socket on the mount. Be certain the “Interlock” function is satisfied by connecting pins 1 & 2 internally in the laser diode mount.
- Newport: Mounts from Newport follow a compatible pin assignment, but have the reverse gender—the mount has a 9-pin male connector. A gender-changer (with two female 9-pin connectors, wired “pin-to-pin”) can be used, but be careful to *not* use an RS-232 “null modem” part (which does not keep “pin-to-pin” connections). The interlock will require connecting pins 1 & 2 internally in the mount.
- Thorlabs: Not compatible. Because of the grounding scheme used in Thor mounts, the cable must be customized for each laser configuration. See the discussion for the flying-lead cable.

The flying-lead version (see Figure 2) is available in one length (6 ft), and provides users with the greatest flexibility for interfacing to a range of laser mounts.

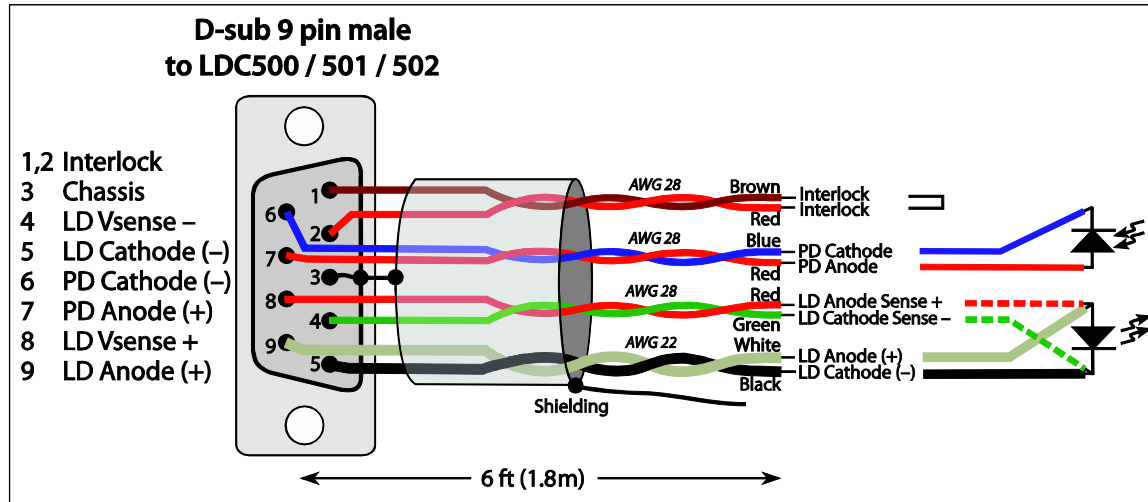


Figure 2—Laser diode cable with flying-leads. SRS part number O500C1.

### **Special note for interfacing to Thorlabs laser diode mounts**

Laser diode mounts from Thorlabs are switch-configured, based on the grounding of your specific laser diode and photodiode. These switches connect each terminal (anode or cathode) between either the corresponding pin of the mount connector, and the chassis ground of the mount. The laser diode circuit, and the photodiode circuit, are each completed through the “Laser Ground Pin” of the mount (typically pin 3).

For example, consider a laser diode with Grounded Anode, and photodiode Grounded Cathode. In this case, the black LD Cathode lead and the green LD Cathode Sense lead are both wired to the LD Cathode pin (typically pin 7 on Thorlabs mounts), and the white LD Anode lead and the red LD Anode Sense lead are both wired to the laser ground pin (typically pin 3). Similarly, the red PD Anode lead is wired to the photodiode Anode pin (typically pin 4), while the blue PD Cathode lead is wired to laser ground (again, pin 3).

When using these mounts, it is necessary to re-wire the flying-lead end of the cable each time the grounding configuration of the mount is changed.

## TEC Cables

Two styles of cable are also available to connect the LDC500 series controller to a thermoelectric cooler—a flying-lead cable and a double terminated cable. Both styles are built with the 15-pin male D-sub connector to mate with the TEC output of the controller. All SRS TEC cables are constructed for high flexibility and high current capacity, and optimized for use with the LDC500 series controllers.

The terminated version (see Figure 3) is available in two lengths (6 ft and 12 ft).

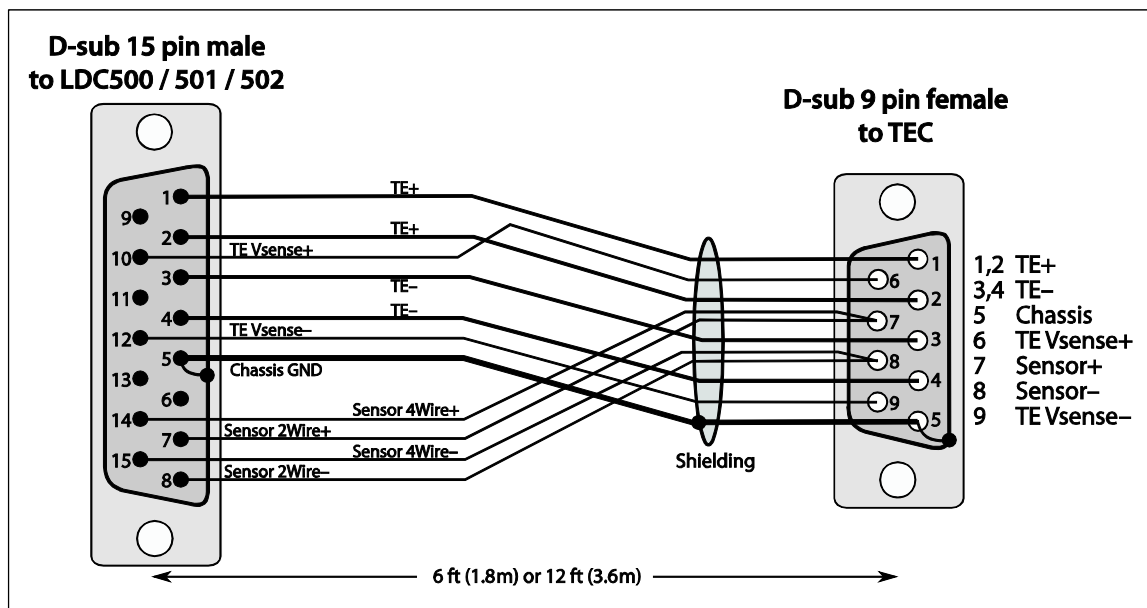


Figure 3 – TEC cable with mating connector. SRS part number O500C4 (6 ft) or O500C6 (12 ft).

This cable can be used with customer-built laser mounts with a 9-pin D-sub male connector. Alternatively, these can be used with some commercially-available mounts:

- ILX: Most ILX laser mounts can be directly used, mating the SRS cable to the 9-pin male plug on the mount. Note that voltage-sensing of the TE element is not implemented in ILX mounts, so the cable resistance contribution to  $V_{TEC}$  will appear when measured by the LDC50x.
- Newport: Mounts from Newport typically have a 15-pin male plug for the TEC. Users should consider the flying-lead cable.
- Thorlabs: Not compatible. Thorlabs mounts have a 9-pin male plug for their TEC, but the pin assignments are quite different. Users should again consider the flying-lead cable.

The flying-lead version of the cable (see Figure 4) is available in one length (6 ft)

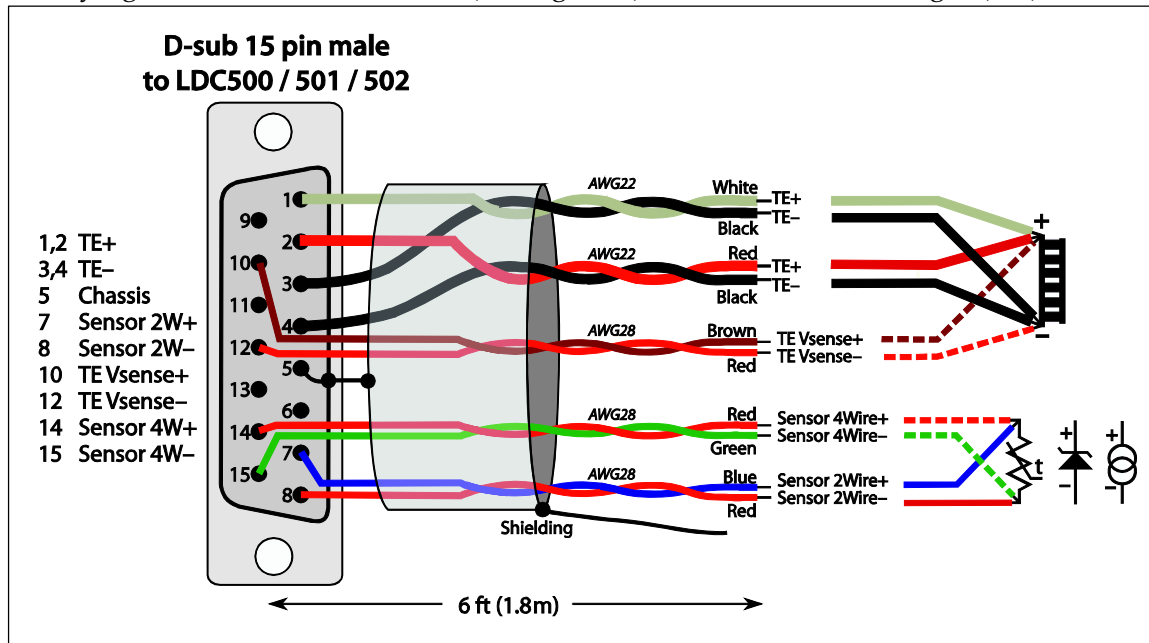


Figure 4—Laser diode cable with flying-leads. SRS part number O500C2.

When configuring a TEC system for use with the LDC50x series controllers, it is important that the temperature sensor be kept electrically isolated from all other nodes, including chassis ground. For best performance, the TEC (Peltier) element should also be isolated from chassis ground. See the LDC500 Series User’s Manual for further details.