

InPhenix Laser Diode Handling Manual

1 Purpose and Scope

- 1.1 This procedure provides instruction in the methods and tools needed to handle, install and use InPhenix SLD, SOA, FP Laser and DFB Laser devices.
- 1.2.1 Laser diodes are extremely sensitive to surges in current and voltage. The following precautions must be followed carefully to prevent permanent damage and loss of the device.
- 1.2.2 Failure to follow any of these instructions could result in damage to the device and void all warranties.

2 How Laser Diodes are Electronically Damaged

- 2.1 Laser diodes must not be installed in a circuit that has not been turned off. Using the diode to close the circuit may cause current overstress and permanent damage.
- 2.2 Connecting a charged capacitor to the power supply circuit could cause reverse current to damage the diode.
- 2.3 Laser diodes should not be installed on a common AC line with other equipment that is turned on and off. Sudden surges in voltage and current can fatally damage the diode.
- 2.4 Never use tools around laser diodes that can cause sudden power surges. Examples of these are ungrounded soldering irons and test probes.
- 2.5 Stringent Electrostatic Discharge (ESD) control is absolutely mandatory when working around laser diodes.

3 Methods to Prevent Damaging Laser Diodes

3.1 Precautions at the Worktable

- 3.1.1 Operators and their chairs must be properly grounded to the worktable.
- 3.1.2 The worktable, all tools and equipment, the operator, and the hardware that the diode is installed in must share a common ground.
- 3.1.3 The operator must wear an ESD smock or clothing that is electrically conductive. Use gloves and finger cots made of electrically conductive materials.
- 3.1.4 Diodes must be stored on conductive trays or on shelves that are grounded to the worktable.
- 3.1.5 Using a deionizer when handling laser diodes is recommended.
- 3.1.6 Maintain relative humidity to 50 +/-10% when working with laser diodes.
- 3.1.7 Do not pick up device by pulling the coupling fiber.
- 3.1.8 Do not bend the coupling fiber too hard.
- 3.1.9 Always clean the connector before using the device.

3.2 Precautions with Power Supplies and Equipment

- 3.2.1 Use a noise filter between the individual measuring devices and their power supplies.
- 3.2.2 Test equipment mounted on rubber pads or bumpers must be grounded.
- 3.2.3 The circuit containing the laser diode should have its own floating power supply.
- 3.2.4 The power supply connected to the laser diode should not generate ripples.
- 3.2.5 Relays connected to the power supply must not cause chattering.

3.3 Precautions during Installation, Test and Use

- 3.3.1 Do not switch the power on or off while the rated voltage is being applied. Make sure the voltage is set to the minimum before starting and adjust to the rated value after turning the power on. Always turn variable resistors down to the minimum setting before turning the power off. Never use variable resistors that do not change values smoothly (i.e. sticky) when adjusted.
- 3.3.2 If the circuit containing the laser device cannot be dedicated, do not turn the power on or off (to equipment or lights connected to the same line) during laser diode mounting and adjustment.
- 3.3.3 Do not use the device without using TEC. Always turn on the TEC when a operation current is applied to the device.
- 3.3.4 Use care when installing the device onto a heatsink. Stress introduced during mounting of device to heatsink by customer can cause TEC to malfunction and fiber to become displaced. The device must be carefully mounted evenly and screwed in evenly when mounting the device onto a heatsink. Excess stress can be introduced if solder paste is not applied evenly or if screws are not tightened carefully or screws are over tightened. This excess stress can result in TEC malfunctioning and/or fiber displacement