

## Operating instruction for class 4 LDCU laser system

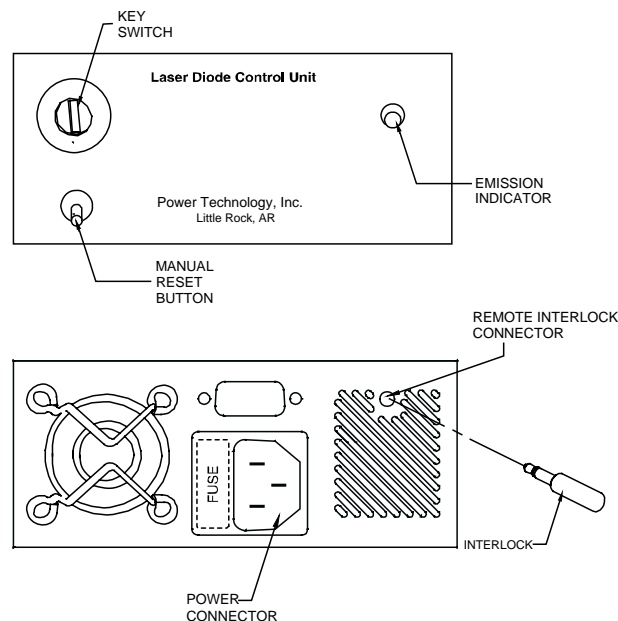
### Introduction

The Laser Diode Control Unit (LDCU) is a turnkey power supply for lasers. The LDCU incorporates all safety features required by U.S. federal regulations. End users—those not directly integrating a laser into another product—must purchase an LDCU to meet U.S. government requirements for laser systems. Original equipment manufacturers are not required to purchase an LDCU and are, therefore, responsible for integrating their own safety features to meet government standards.

### Safety features

The LDCU incorporates the following safety features to comply with government regulations.

1. **Power on/off key switch**—Located on the front panel of the LDCU, this switch enables users to power the unit on with the turn of a key. The LDCU is inoperable when key is removed.
2. **Emission indicator**—This red LED, located to the upper right on the LDCU front panel, lights up when the unit is on to warn of eminent laser emission.
3. **5-second activation delay**—The LDCU does not power on until five seconds after a user has turned the key switch to the “on” position.
4. **Remote interlock & connector**—This feature is located on the rear panel of the LDCU. The unit will not operate without the interlock intact.
5. **Manual reset button**—Located on the front panel, this button requires that the user push it to begin lasing any time a remote interlock is used or there has been an interruption in power exceeding five seconds.
6. **Beam blocker**—Located on the laser module, this cap prevents unwanted radiation emissions.



### Equipment ratings

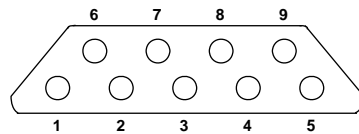
The LDCU requires a 120VAC (or optional 220VAC) input voltage. The output voltage of the LDCU varies according to the laser module ordered. A label on the bottom of the unit states the output voltage (3.3, 5, or 12VDC), as well as the input voltage (100-240V), current (1.4A), frequency (47-63Hz), fuse value (250VAC 1.6A 3AG), and model number. The unit is designed for indoor use only for altitudes up to 2000m. The LDCU operates optimally between temperatures of 5°C and 40°C with a maximum relative humidity of 80% for temperatures up to 31°C.



## Installation

Plug the LDCU into a grounded outlet. Ensure that the interlock on the back panel is intact and installed. The unit will not operate without the interlock installed.

Before users can operate the unit, they must connect the laser module to the LDCU power supply. Any extension to the laser module cable must be less than two meters in overall length to maintain CDRH/IEC laser certification. Users should position the equipment so that it is not difficult to disconnect the interlock. A DB-9 (9-pin) connector is located on the rear panel of the LDCU. Connections are as follows.



|       |         |
|-------|---------|
| Pin 1 | ground  |
| Pin 2 | + 8VDC  |
| Pin 3 | +12VDC  |
| Pin 4 | +5VDC   |
| Pin 5 | +3.3VDC |
| Pin 6 | ground  |
| Pin 7 | +12VDC  |
| Pin 8 | +5VDC   |
| Pin 9 | +3.3VDC |

Do not mount the laser module in a thermal insulating material, such as foam plastic. For best heat dissipation, use a metal mounting fixture. The use of a heat sink is recommended. A heat sink is always recommended for operating temperatures above 25°C.

Users should leave a minimum of three inches of space to the rear of the LDCU to promote adequate ventilation.

## Operation

The LDCU is equipped with a key switch located on the front panel. Customers use the key to activate and deactivate the laser. A 5-second delay will begin after the key switch is turned to the "on" position. The emissions indicator on the front panel will then light up to warn of eminent laser emission. The laser system will be "off" when the key is in the vertical position.

**Caution:** The LDCU is a certified laser system only when used with an appropriate laser module that has the appropriate labels. Do not operate laser without the LDCU. Use of controls or adjustment or performance of procedures other than those specified herein may impair the protection provided by the equipment and result in hazardous radiation exposure.

Refer to the enclosed laser module operating instructions for specifics on how to operate the module.

## Laser Safety

Class 3b and 4 lasers are not intended for use in surveying, leveling, alignment, or medical applications.

**Caution:** Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**Caution:** The use of optical instruments with this product will increase eye hazard.

Modifications that affect any aspect of the product's performance or intended functions will require re-certification and re-identification of the product in accordance with the provisions of 21 CFR 1010.2 and 1010.3.

## Maintenance & Service

This laser module and LDCU power supply contain no user serviceable parts. Depending on environmental conditions, the optics may require occasional cleaning. Clean, compressed air is recommended to blow the optics clean. If compressed air fails, clean lens carefully with alcohol and a lint free rag or cotton swab.

## Warranty

This system features a 1 year warranty.



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