



CU750 PRODUCT MANUAL

OEM Laser Diode Driver Control Unit

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User Manual

CU750 Laser Diode Driver Control Unit

Before working with the laser diode driver control unit, read this manual thoroughly. If you have questions or comments, please contact us immediately.

Introduction

The CU750 laser diode driver control unit is designed for use in industrial or laboratory environments. The control unit is designed to operate a single laser diode driver, or multiple different laser diode drivers as part of a larger system. The control unit is used to adjust the settings of pump current pulses, synchronization pulses, provides control of the temperature control channels, and other devices included in the laser setup.

The device is powered from a 24 VDC signal built into the laser power supply, and is connected to the laser diode driver via RS-485 communication interface.

Safety Requirements

1. Before operating this laser diode driver, personnel should familiarize themselves with the safe operating principles of the laser diode driver and high power solid state lasers.
2. The laser diode driver is to be dismantled and repaired by the manufacturer only.
3. If any abnormal noises arise during supply operation, such as a crackling noise, buzz, squealing, or other unusual sounds, the laser diode driver is to be immediately disconnected from the mains power. Contact us for assistance rectifying the problem.

Specifications

Parameter	Min.	Typ.	Max.	Unit
Power Input Voltage	9	24	36	V
Communication interface with the laser diode driver	–	RS485	–	–
Weight	–	2	–	kg
Dimensions	–	245 x 57 x 185	–	mm

Delivery Set

- Control Unit 1 pcs.
- Main Power Supply Connection Cable 1 pcs.
- Manual 1 pcs.

Operating Conditions

- Ambient Temperature: +5°C up to +40°C
- Humidity: Not more than 80% (at +25°C)
- Atmospheric Pressure: 84 kPa to 106 kPa
- Air free from corrosive vapors

Design Overview

The control unit is a single housing with a touchscreen display. The appearance of the device is shown in Figure 1.

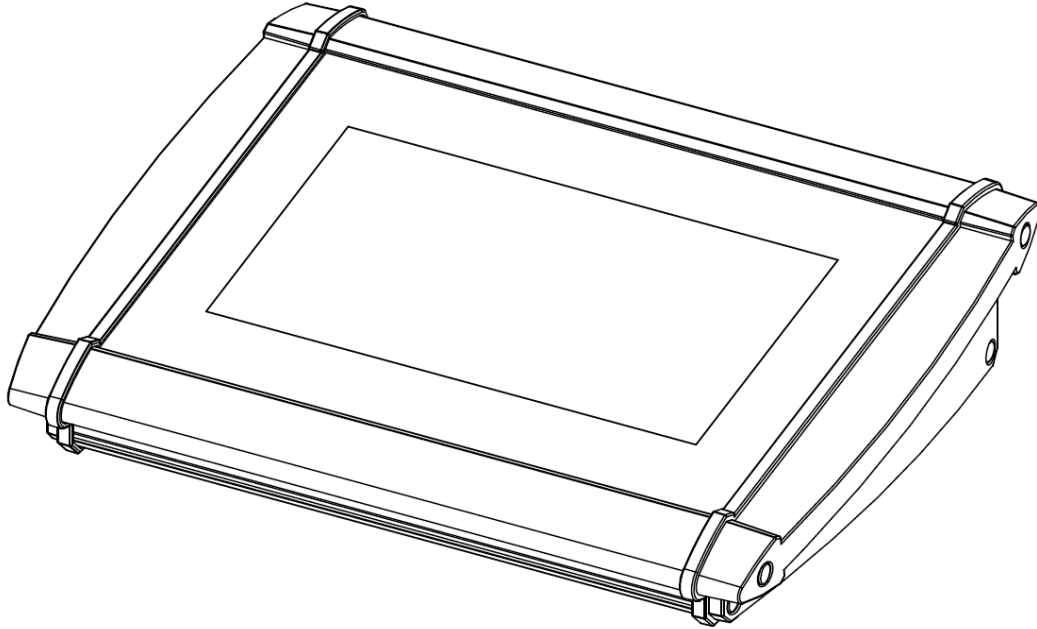


Figure 1 - External view of the control unit

The power and communication connector is located on the back panel of the device, shown in Figure 2. The connector pinout is provided on Page 13.

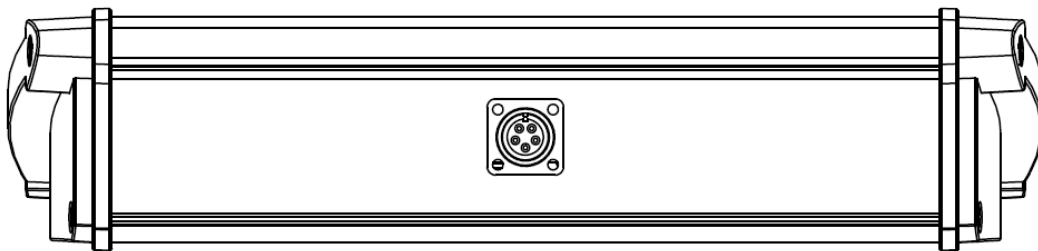


Figure 2 - Back panel view

The control unit turns on when power is applied from the laser diode driver via the interconnect cable. When communication with the laser power supply is established, the set operating parameters are displayed. If communication with the laser power supply is lost, the values of the displayed parameters show zero value.

User Interface Description

There are four tabs at the top of the screen, as shown in Figure 3. The four tabs are LASER, CHARGE, SUPPLY, TEC. The operating parameters of the laser devices are grouped inside each tab. Next, each of the tabs will be described in detail.

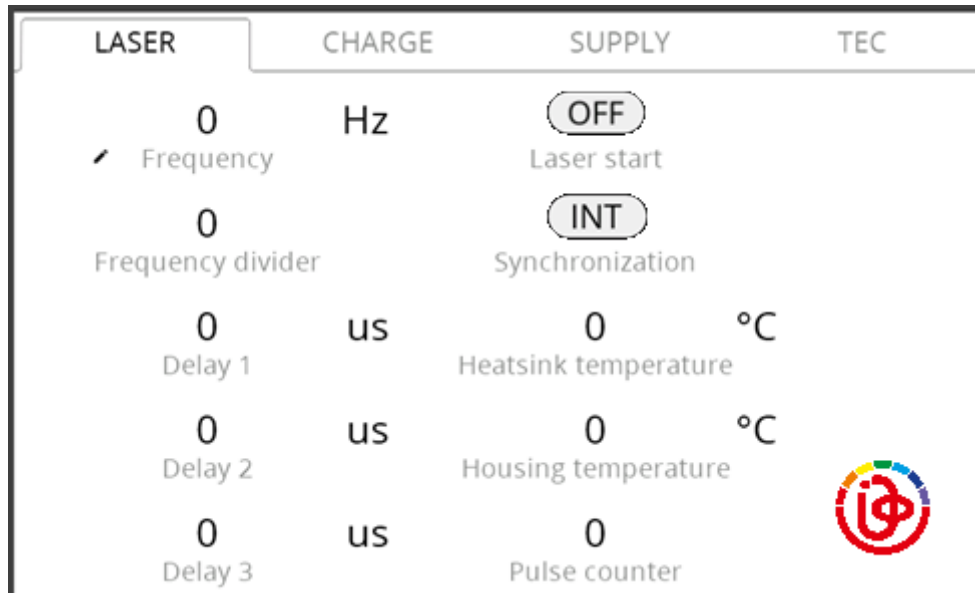



Figure 3 - Screen of the control panel

Entering and Editing Parameters

Control parameters that can be edited are marked with «  ». Control parameters are edited by clicking on the numerical value of the parameter. Parameters that do not have this icon next to them are display parameters only.

Clicking on a control parameter opens the editing window, shown in Figure 4. In this window, enter the required value by clicking on the corresponding numbers, then press «SET» to confirm the input. To erase the current value, press «DEL». Decimal values are entered using the dot sign. To return to the main tab without changing the value, press the «BACK» button.

The ability to edit control parameters can be restricted. The system administrator can program the control unit via computer, and the programming restrictions are stored in the laser power supply unit.

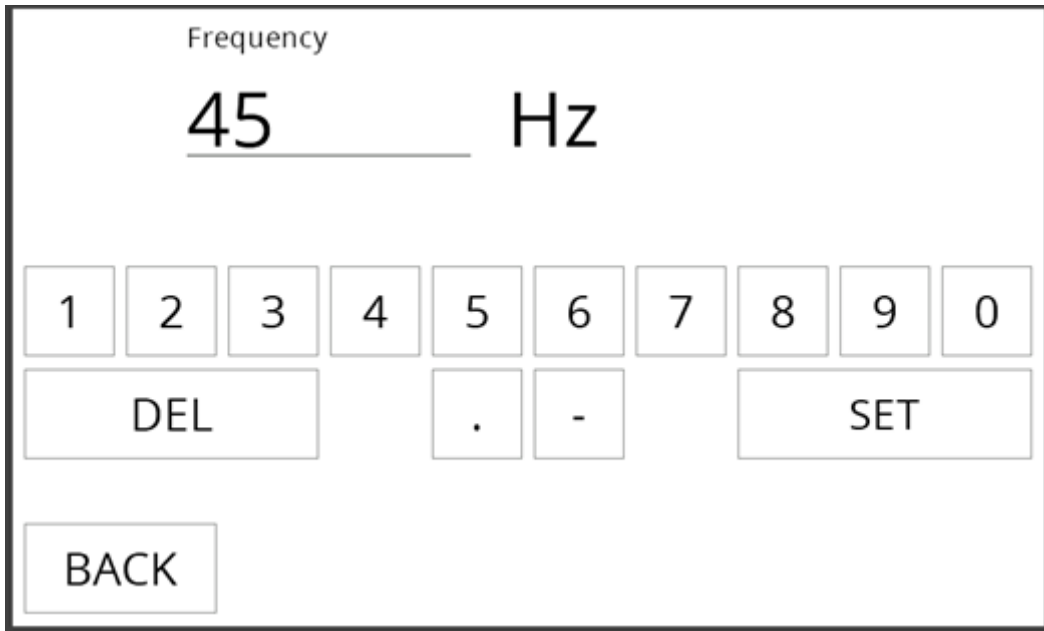


Figure 4 - Value editing window

The appearance of the Laser control tab is shown in Figure 5.

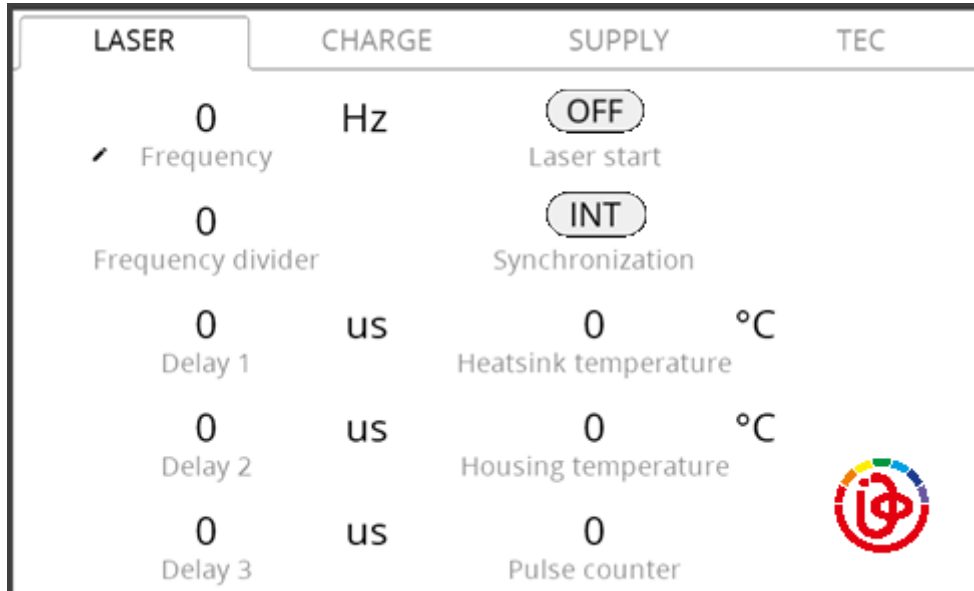


Figure 5 - Screen of the Laser control panel

Description of LASER interface elements is given in the table 1.

Table 1.

UI element image	Name	Description
<p>0 Hz</p> <p>Frequency</p>	Frequency	Operating frequency of laser driver
<p>0</p> <p>Frequency divider</p>	Frequency divider	Pulse frequency divider on the shutter
<p>0</p> <p>Delay 1</p>	Delay 1	Output sync delay, output 1
<p>0</p> <p>Delay 2</p>	Delay 2	Output sync delay, output 2
<p>0</p> <p>Delay 3</p>	Delay3	Output sync delay, output 3
<p>OFF</p> <p>Laser start</p>	Laser start	Delivery of pumping pulses, the button is inactive if one of the locks is triggered
<p>INT</p> <p>Synchronization</p>	Synchronization	Selection of the synchronization mode - internal ("INT"), external at input 1, external at input 2
<p>0 °C</p> <p>Heatsink temperature</p>	Heatsink temperature	Heatsink temperature display
<p>0 °C</p> <p>Housing temperature</p>	Housing temperature	Housing temperature display
<p>0</p> <p>Pulse counter</p>	Pulse counter	Pulse counter

CHARGE Tab

This window contains a control panel and a display of the main operating characteristics, states and controls of the shutter control unit. The appearance of the CHARGE tab is shown in Figure 6.

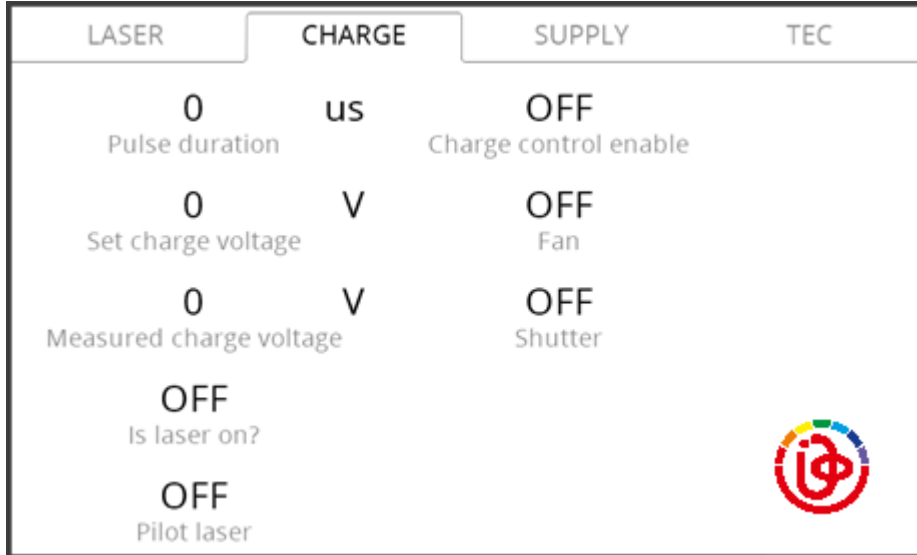


Figure 6 - Screen of the CHARGE tab

Description of CHARGE interface elements is given in the table 2.

Table 2.

UI element image	Name	Description
0 us Pulse duration	Pulse duration	The duration of the control pulse of the shutter control unit
0 V Set charge voltage	Set charge voltage	Set charge voltage of shutter control unit
0 V Measured charge voltage	Measured charge voltage	Measured charge voltage of shutter control unit
OFF Is laser on?	Is laser on?	Indication of the presence of laser radiation
OFF Pilot laser	Pilot laser	Pilot laser on / off
OFF Charge control enable	Charge control enable	Enabling / Disabling the Enable signal on the shutter control unit

Table 2. (con't)

OFF Fan	Fan	Fan on / off
OFF Shutter	Shutter	Shutter On / Off

SUPPLY Tab

This tab contains a control panel and displays the main operating characteristics, states and controls for the laser diode drivers. The appearance of the tab is shown in the figure 7.

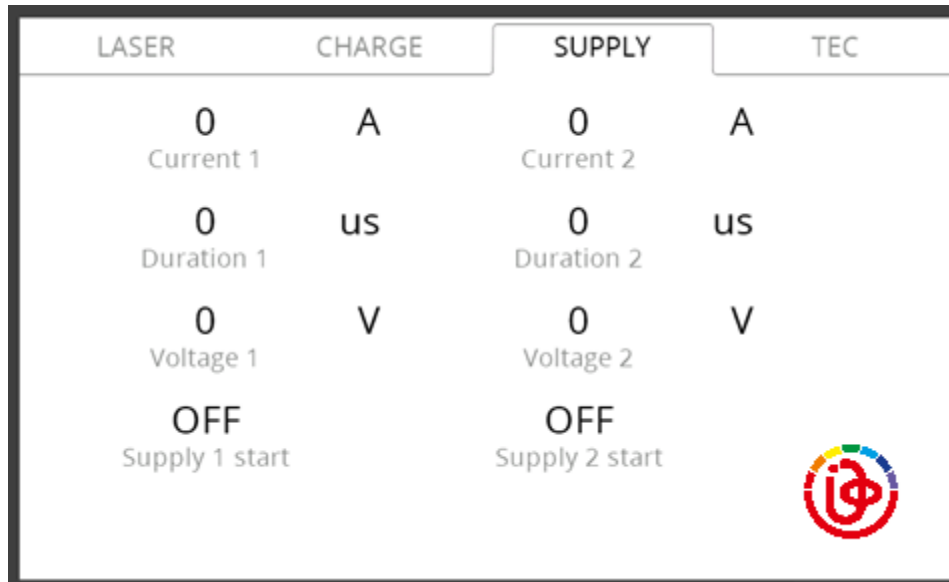


Figure 7 - SUPPLY Tab

A description of the SUPPLY interface elements is given in the table 3.

Table 3.

UI element image	Name	Description
0 A Current 1	Current 1	Laser Driver 1 pump current adjustment
0 US Duration 1	Duration 1	Laser Driver 1 pulse duration Adjustments
0 V Voltage 1	Voltage 1	Laser Driver 1 operating voltage
OFF Supply 1 start	Supply 1 start	Laser Driver charging module status indicator 1. It turns on automatically 10 seconds after turning on the main power supply.
0 A Current 2	Current 2	Laser Driver 2 pump current adjustment
0 US Duration 2	Duration 2	Laser Driver 2 Pulse duration Adjustments
0 V Voltage 2	Voltage 2	Laser Driver 2 operating voltage
OFF Supply 2 start	Supply 2 start	Laser Driver charging module status indicator 2. It turns on automatically 10 seconds after turning on the main power supply.
0 A Current 1	Current 1	Laser Driver 1 pump current adjustment
0 US Duration 1	Duration 1	Laser Driver 1 Pulse duration Adjustments
0 V Voltage 1	Voltage 1	Laser Driver 1 operating voltage

TEC Tab

This tab contains a control panel and a display of the main operating characteristics, states and controls for the TEC control channel. The appearance of the tab is shown in figure 8.

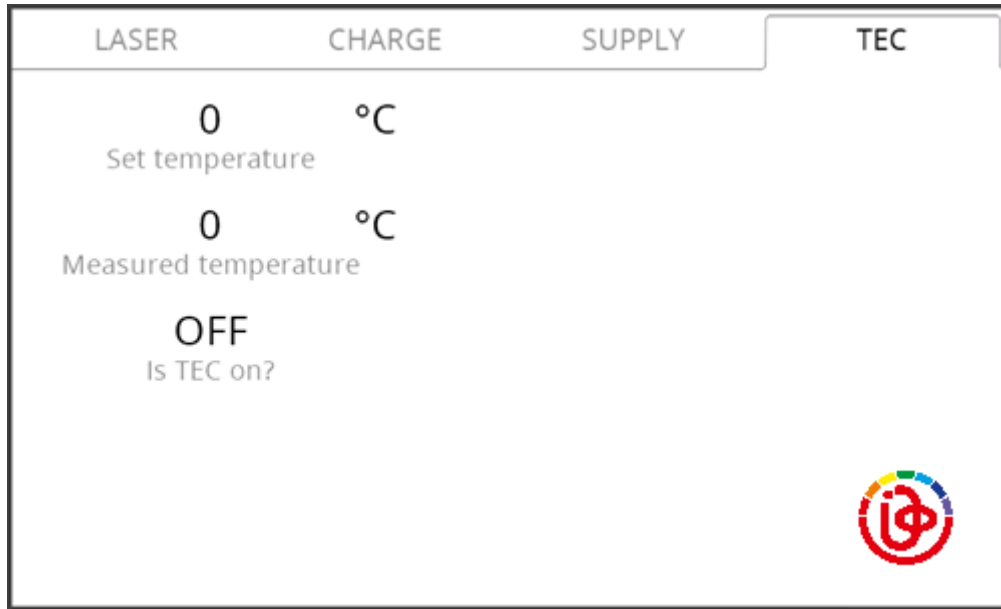


Figure 8 - TEC Tab

Description of TEC interface elements is given in the table 4.

Table 4.

UI element image	Name	Description
0 °C Set temperature	Set temperature	Set temperature at TEC
0 °C Measured temperature	Measured temperature	Measured temperature at TEC
OFF Is TEC on?	Is TEC on?	<p>TEC Status:</p> <ul style="list-style-type: none"> • White background = OFF (TEC stopped) • Green background = ON (TEC operating) • Red background = ERROR (TEC operation error, restart required)

Wiring Connector

Pinout for the power and communication connector:

Ncont.	Appointment
1	A (not inverting line)
2	B (inverting line)
3	Supply, general
4	Screen
5	Supply, +24V

Transportation and Storage

Transport the CU750 laser diode driver control unit in the manufacturer's original packaging only, and keep the unit upright. If the unit must be transported or shipped, it can be safely transported any distance in the original manufacturer's packaging. When transporting the unit, ensure the package is secured within the vehicle, and avoid unnecessary shock to the container.

Manufacturer Warranty

The manufacturer declares the compliance of the product with the declared technical characteristics, subject to operating modes and conditions, storage and transportation rules.

The warranty period is 12 months from date of shipment with warranty time between failure of 2000 hours.

Certificate of Acceptance

The CU-750 laser power supply control unit is approved for use.

Product: Laser power supply control unit	Model: CU-750
Serial number _____	Manufacture date _____
<p>Stamp / Sign _____</p>	

Manufacturer

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