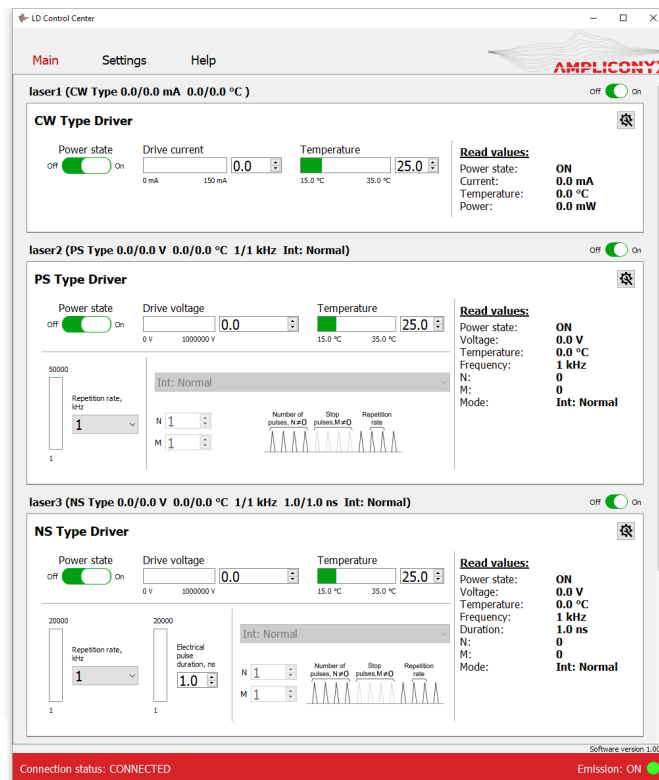


Control Center Driver Software

User Manual



AMPLICONVX
AMPLICONVX

NEW FRONTIER IN ULTRAFAST LASER PERFORMANCE.

Connecting the Drivers

Quick start (mini USB mode, only one driver)

1. Power the driver board according to its datasheet.
2. Connect the mini USB cable.
3. Run `Id_control_center_vXXX.exe`.
4. Click "Settings" to enter the program configuration menu.
5. Press the icon to refresh the list of COM ports and select the COM port the driver is connected to from the drop down menu.
6. Tick the "mini USB mode" box.
7. Tick the "Auto connection" box to select the "Auto connection" mode; otherwise click "Connect".
8. Click "Apply system configuration" to apply the settings.
9. Click "Main" menu panel. The control panel corresponding to the type of USB connected.
10. The driver should appear in the first channel. Click the "Main" menu panel. The shown control panel matches the connected driver type.
11. Click the icon located in the control panel's upper right corner to enter the driver setting mode. The driver setting mode allows entering laser diode parameters and the permitted range of laser operating conditions.
12. Enter each parameter into the setting window and click "SET" to apply the value. CAN ID for the driver could also be set here for operation as part of the CAN network. The new CAN ID value will be applied only after resetting the driver power supply. See more about the CAN network in the next section.
13. The driver is now configured and ready for operation.

Advanced mode (operating in CAN network)

1. Before connecting several drivers into a CAN network, the user needs to set a CAN ID for each driver by connecting the driver through the mini USB port and following the procedure described in the Quick Start section. The set CAN ID for each driver should be recorded.

2. Connect up to 10 drivers into the CAN network by using the Ampliconyx CAN hub.
3. Click "Settings" to enter the program configuration menu.
4. Press icon to refresh the list of the COM ports and select from the drop down menu the COM port the driver board is connected to.
5. Untick the "mini USB mode" box.
6. Tick "Auto Connection" box to select the "Auto Connection" mode. Otherwise, click "Connect".
7. The software has ten channels for connecting and controlling devices. Enter the CAN ID of the driver you want to control in Channel X. You can rename the drivers to better keep track of them. Tick "Enabled" box to activate the selected channel.
8. Click "Apply system configuration" to apply the settings.

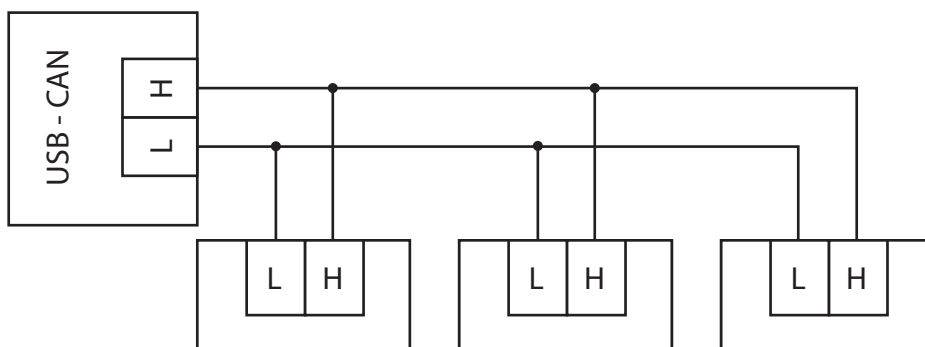


Figure 1: CAN interface connection scheme

Software

Basic controls and operation

The main multi-driver software window implements accordion controls. Each control panel can be collapsed. The software supports up to 10 devices connected to a PC through a USB/CAN adapter. Each laser diode's drive current, temperature, drive voltage, repetition rate, and pulse duration can be entered into parameter window or changed by up and down arrows. The user needs to confirm the value by pressing Enter for changes to take effect, except for pulse duration and repetition rate.

The changes in pulse duration and repetition rate values take immediate effect and do not need to be confirmed. **Note:** All settings are not available for all driver types. The software will show only the available controls based on the recognized driver type, as shown in Figure 2.

Green indicator bars shows the current set value relative to the minimum and maximum allowed values. The user can change the allowed range in the driver settings menu. The driver can be disconnected from the USB port during operation and the device will preserve the last known status. The driver stores the settings in the onboard memory, and after reconnection, the software reads driver settings and displays them in the control panel. When trying to close the software with at least one laser running, a dialog window opens prompting the user to select whether to switch off the laser or to keep it running.

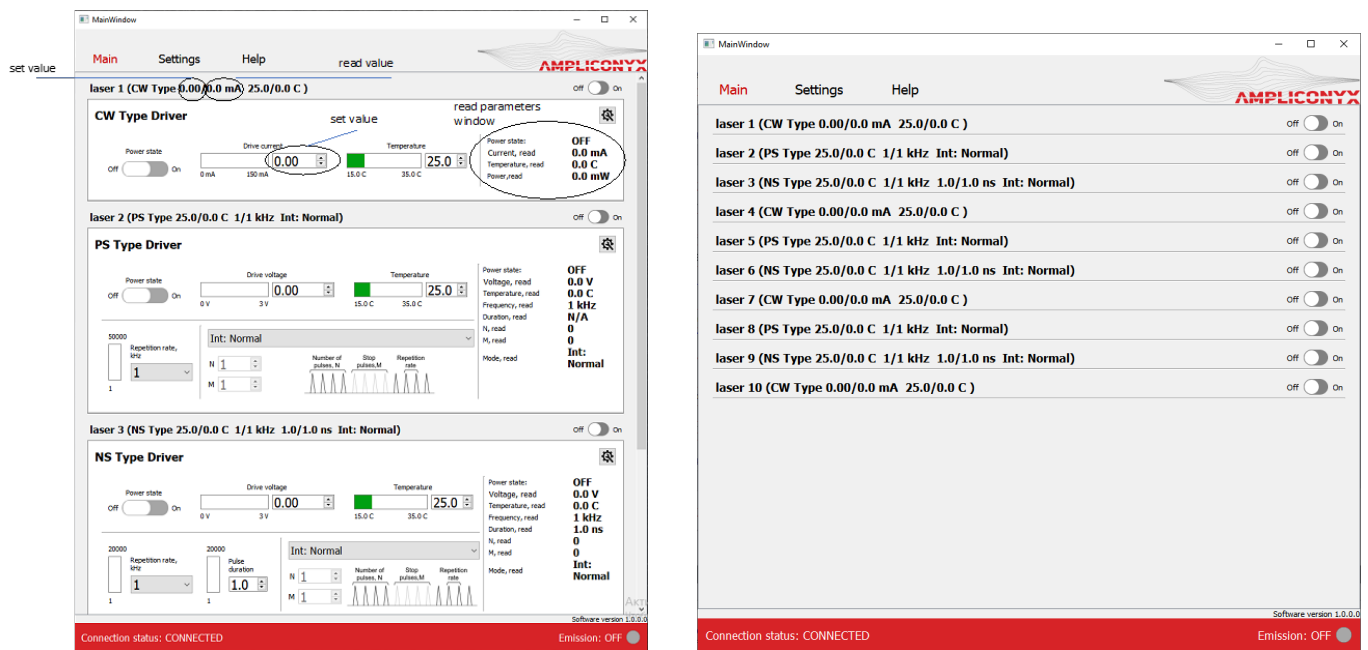


Figure 2: The expanded and the collapsed main control views. The collapsed view shows the main operating parameters of each connected driver, and the drivers can be switched on/off individually.

Operating modes for pulsed drivers

The user can choose various operating modes for the pulsed drivers:

- **Int: Normal** – the standard mode. The driver generates a pulse train with a constant repetition frequency set in the driver's control panel.
- **Int: Burst** – the internal burst mode. The driver generates bursts of pulses at a predefined frequency from the onboard pulse generator. The user can set the number of pulses in burst (N) and the number of pulses skipped between the bursts (M).

- **Ext: Normal** – the standard external mode. The driver starts to generate pulses at a preset frequency as a response to an external TTL trigger signal. The change of trigger signal level from LOW to HIGH starts pulse generation. Change of trigger signal from HIGH to LOW stops pulse generation.
- **Ext: Burst** – the same as Ext: Normal, but bursts of pulses are generated as a response to an external trigger signal.
- **Pulse on Demand** – external trigger signal (change of trigger signal level from LOW to HIGH) generates a single pulse.

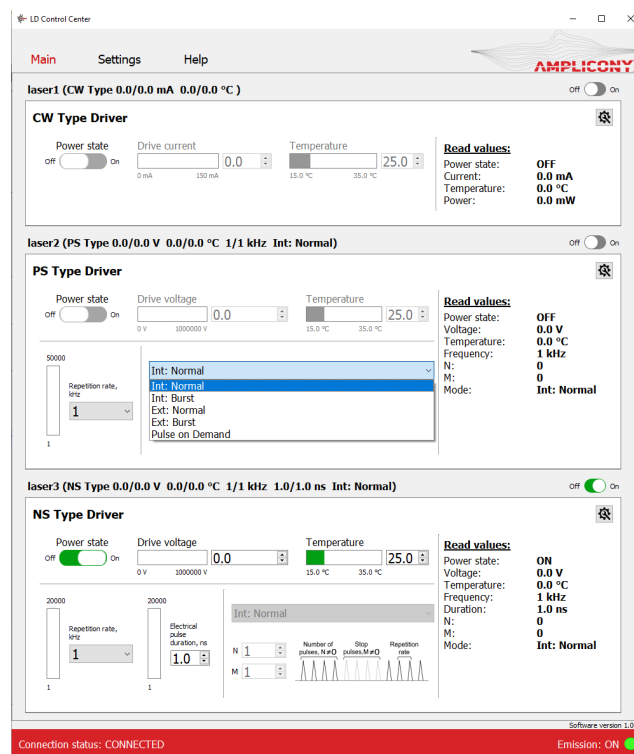


Figure 3: The operating mode selection for a pulsed driver.

Laser diode settings and system configuration

The user can access the laser diode settings menu by pressing the wrench icon in the expanded main control view. The wrench icon will open a new individual menu for each of the connected diodes, and the software applies the new settings only to that single diode. The user can set the allowed ranges for the voltage and temperature and apply some other diode specific settings such as thermistor resistance values. The available settings for CW and pulsed drivers are shown in Figure 4.

The system configuration window is accessed by pressing "Settings" in the navigation bar. In this window the user can set the number of channels, CAN network ID and the names for the connected drivers.

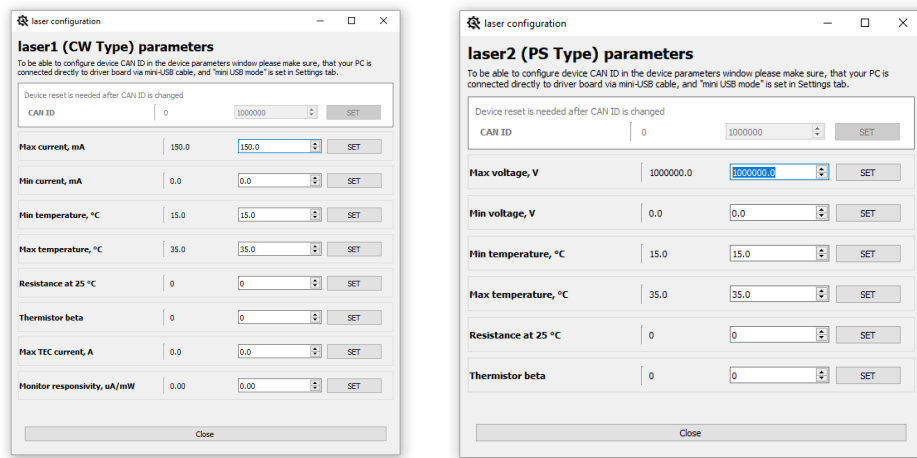


Figure 4: The laser diode settings menu.

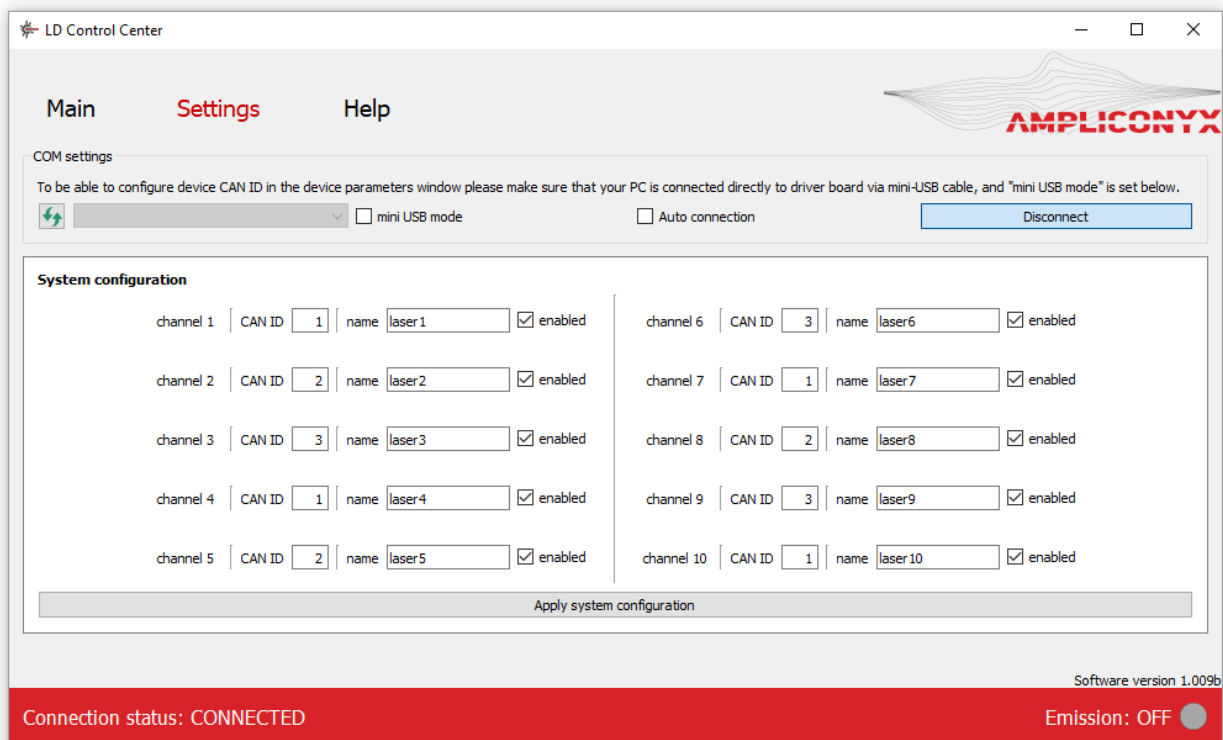


Figure 5: The system configuration menu.