

# Laser Diode Driver Software

## 1 Current Release Notes, Version 1.90

24 Dezember 2013

LDD Service Software Version 1.90; LDD STM32 Version 1.90, LDD FPGA Version 1.40

### Supported Devices

- LDD-1121 / LDD-1125 (Hardware Versions 0.80 – 1.10)
- LDD-1124 / LDD-1127 (Hardware Versions 1.10)

### New and Improved Features

*The current release features the following enhancements. Refer to the user manual for further information:*

- The Service Software can now handle comma or point separated decimals, depending on the regional computer settings.
- The Integrated Signal Generator now supports Trigger Input. The Generator will be reseted on a plusive signal edge.

### Resolved Issues

- Pulse Generator was not synchronized with the Enable.  
→ Fixed
- On reset request the power stage shutdown was not correctly timed. Causing reset problems on LDD paralleling configurations.  
→ Fixed
- Interrupt load was too high in case of LDD-Paralleling in an LTR-1200 Rack Enclosure with Analog modulated Current  
→ Fixed
- Monitor Light Value was available on all device.  
→ Now devices with no LPC showing NA in the Monitor Tab.

### Known Issues

- In LDD parallel connection it is recommended to set a minimum current > 0.1A.

## 2 Old Release Notes, Version 1.80

25 September 2013

LDD Service Software Version 1.80; LDD STM32 Version 1.80, LDD FPGA Version 1.30

### Supported Devices

- LDD-1121 / LDD-1125 (Hardware Versions 0.80 – 1.10)
- LDD-1124 / LDD-1127 (Hardware Versions 1.10)

### New and Improved Features

*The current release features the following enhancements. Refer to the user manual for further information:*

- Added Support for Paralleling multiple LDD to achieve higher Output Current

### Resolved Issues

- In some conditions (specially when Enabled while LDD is running) the Startup of the integrated Signal Generator may be wrong  
→ Fixed
- Current Limitation in Analog Mode has no effect  
→ Fixed
- Pulse settings in Service Software was not shown in full precision.  
→ Fixed

### Known Issues

- None

## 3 Old Release Notes, Version 1.70

9 September 2013

LDD Service Software Version 1.70; LDD STM32 Version 1.70, LDD FPGA Version 1.20

### Supported Devices

- LDD-1121 / LDD-1125 (Hardware Versions 0.80 – 1.10)
- LDD-1124 / LDD-1127 (Hardware Versions 1.10)

### New and Improved Features

*The current release features the following enhancements. Refer to the user manual for further information:*

- Added Support for High Voltage LDD Version

### Resolved Issues

- None

### Known Issues

- None

## 4 Old Release Notes, Version 1.60

16 August 2013

LDD Service Software Version 1.60; LDD STM32 Version 1.60, LDD FPGA Version 1.20

### Supported Devices

- LDD-1121 / LDD-1125 (Hardware Versions 0.80 – 1.10)
- LDD-1124 / LDD-1127 (Hardware Versions 1.10)

### New and Improved Features

*The current release features the following enhancements. Refer to the user manual for further information:*

- The Connected Devices address is now shown in the Software title
- The Parameter System Save to Flash function can be disabled now. This is useful when the Device is being controlled over a Data Interface and some values are periodically changed. Prevents early Flash failure.

### Resolved Issues

- In some cases the Ethernet Connection from a Windows 7 or 8 host fail  
→ Fixed
- The Software crashed in some cases when changing the IP Address while the software is already connected with the LTR-1200  
→ Fixed
- Info Message has not enough space in the Connection Bar.  
→ Fixed
- If a Parameter is being changed while the Device is Boot loading, the reset after boot loading is not being executed and the new Parameter will not be saved. → The Parameter is now being saved after boot loading and after this the reset is executed.
- Chart scaling was wrong on odd sampling times.  
→ Fixed

### Known Issues

- None

## 5 Old Release Notes, Version 1.50

18 June 2013

LDD Service Software Version 1.50; LDD STM32 Version 1.50, LDD FPGA Version 1.20

### Supported Devices

- LDD-1121 / LDD-1125 (Hardware Versions 0.80 – 1.10)
- LDD-1124 / LDD-1127 (Hardware Versions 1.10)

### New and Improved Features

*The current release features the following enhancements. Refer to the user manual for further information:*

- It is now Possible to use the HW Pin6 as Pulse Output Trigger. If the internal Pulse Generator is used or an external Signal is fed to the Pulse Input Pin, this Output is high, when the Output is enabled.
- The internal Signal Generator is now synchronized with the Enable Signal. The internal Generator starts always with the “Rise Time” Parameter.
- An additional universal Current Parameter (Laser Diode Current) has been added. This current represents always the most useful Current.
- The 4 most useful actual Parameters (Diode Current, Diode Voltage, Diode Temperature and Diode Light output Power) have been added to the Info Bar of the Service Software. These 4 Parameters are now always visible.
- If the TEC is used in a LTR-1200, the Device Address is an important setting to be able to communicate with the TEC. If the user imports a Config File, the Service Software asks the user now before the Address is being changed.

### Resolved Issues

- The “Current Slope Limit” Module is being executed too slow. A Parameter Value of 0.002 [A/us] results in a “Current Slope Limit” of 0.001 [A/us].  
→ Time System fixed
- The “Current PID Values” are probably too slow by factor of 2  
→ Time System fixed
- Exopt Config: No file extension is being added if the Filename does contain some dots.  
→ Fixed
- Bootloader: If a wrong hex file is being downloaded by the user, the Service Software generates the correct error Message, but the Bootloader is hanging in a unknown state.  
→ The Bootloader state machine is now being set back to reset state if the user restarts the download process.
- Parameter Save System does not detect when new parameters not have been saved.  
→ The parameter sequence Number is now being checked after saving.
- The Service Software Graph shows some unreal Spikes if a negative trigger time offset is set. These Spikes do on not appear at the output.  
→ Trigger problem solved.
- The Limitation of the Parameter “Max Current Error” was set to 2A for LDD-1124, which is the maximum measurable current.  
→ The Limitation is now set to 1.85A

# Known Issues

- None

## 6 Old Release Notes, Version 1.40

10 April 2013

LDD Service Software Version 1.40; LDD STM32 Version 1.40, LDD FPGA Version 1.12

### Supported Devices

- LDD-1121 / LDD-1125 (Hardware Versions 0.80 – 1.10)
- LDD-1124 / LDD-1127 (Hardware Versions 1.10)

### New and Improved Features

*The current release features the following enhancements. Refer to the user manual for further information:*

- Interaction with LTR-1200 improved:
  - The Service Software is now able to connect over Ethernet to the LTR-1200
  - Communication watchdog between HMI and LDD added
  - Manufacture configurable Output Derating added. (Limits max output Power, ex. 2 LDD connected to one Power Supply)
- New Parameter ID added:
  - ID 106: Error Instance
  - ID 107: Error Parameter

### Resolved Issues

- SPI timing of the current sensor was not 100% compatible with the isolation IC. (So far there were no negative effects noticed)  
→ Current Sensor readout speed reduced to 500k Samples / Second to reach the defined timing requirements of the digital isolator IC.
- It was not secure to disable the LDD by Software Command when an external Enable Signal on the PBC Connector was present.  
→ Software Enable Signal with separate and conjunction added
- Data loss on RS485 Interface at very high data Rates  
→ Driver is now enabled 4us before the first byte is being sent.
- Firmware update reading the HEX file directly from CD was not possible  
→ Service Software is now able to handle read only files.

### Known Issues

- The “Current Slope Limit” Module is being executed too slow. A Parameter Value of 0.002 [A/us] results in a “Current Slope Limit” of 0.001 [A/us].
- The “Current PID Values” are probably too slow by factor of 2

## How to Update from Version 1.00 or above

Attention:

The device configuration will not be erased during the update process, it is although recommended to export the current LDD configuration as an ini File.

Update Instructions:

1. Connect the LDD controller to the LDD Service Software v1.30
2. Select tab 'Maintenance', press 'Load Hex File' and chose 'LDD STM32 v1.30.hex'
3. Press 'Update Device' and wait for the process to complete

Set the newly available parameters:

- <No new parameters available in Service Software>

## How to Update from Versions older than 1.00

Use the previous Release Notes Version 1.00

## 7 Previous Laser Diode Driver Software Releases

### Version 1.30

11 March 2013

LDD Service Software Version 1.30; LDD STM32 Version 1.30, LDD FPGA Version 1.11

*The current release features the following enhancements. Refer to the user manual for further information:*

- New parameter ID added: ID 105: 'Error Number'
- Command SA added: is used to set the device address based on the device type and serial number
- Command ?SD added: is used to download the mepar strings. These strings can be exported by the Service Software. This feature is used to easily change a configuration set by third-party software
- ini file import failure: if an ini file is imported in offline mode, all 'New' fields are filled up with 'Type Err'  
→ Type is now ignored in offline mode
- Delayed flash status → flash is now updated immediately
- Communication failure: The ?IF command has returned 24 chars instead of 20 chars  
→ Package size fixed to 20 chars (as it is defined in the communication protocol)

### Version 1.2x

22 January 2013

LDD Service Software Version 1.20; LDD STM32 Version 1.20, LDD FPGA Version 1.11

#### Software Changes

- Parameter loss because of an erroneous load process, due to a transmission errors  
→ Flash communication failure tolerance added
- Error message caused by an erroneous parameter load process was automatically cleared after the next device reset

### Version 1.1x

21 November 2012

LDD Service Software Version 1.10; LDD STM32 Version 1.10, LDD FPGA Version 1.11

#### Software Changes

- New device-specific parameters limitation system (support for new devices LDD-1125 and LDD-1124)
- New RS485 channel 2 connection to LDD Service Software (alternative to USB)
- New supported device: LDD-1127
- New Laser Power Control (LPC) including slope limit and startup ramp
- New graph for current and light waveforms
- New possibility to calibrate current and light measurement

## Version 1.0x

01 October 2012

LDD Service Software Version 1.00; LDD STM32 Version 1.00, LDD FPGA Version 1.00

### Software Changes

- New device-specific parameters limitation system (support for new devices LDD-1125 and LDD-1124)
- New RS485 channel 2 connection to LDD Service Software (alternative to USB)
- New comprehensive 'Error Status' description in 'Monitor' tab

## Version 0.7x

06 July 2012

LDD Service Software Version 0.70; LDD STM32 Version 0.70, LDD FPGA Version 0.70

### Software Changes

- Complete rework of LDD Service Software
- Complete rework of STM32 firmware
- Decreased PID regulation time from 2.24  $\mu\text{s}$  down to 1  $\mu\text{s}$  (*i.e.* rate 1 MHz)
- Added integrated current waveform generation
- Added integrated pulse generation
- Added flexible signal / data source configuration
- Added 'Expert' tab (hardware settings)
- Improved NTC temperature accuracy (Steinhart-Hart model)
- Changed Firmware Identification String (?IF Command) to "8063-LDD SW G01 "