COHERENT Coherent LaserSystems GmbH & Co. KG Hans-Böckler-Strasse 12 D - 37079 Göttingen, Germany	**Service Information Report** **Number: 0446** **Confidential**	**Rev. Date:** 23.02.2015 **Rev. Index:** AA **Rev. Author:** R. Fiedler M. Dielenschneider **Rev. Editor:** I. Moore

Subject: **LCB02 Software and Parameter Settings Download**

Product: **BraggStar M, COMPex*Pro*®, LPX*pro*®, LPF*pro*®, LEAP ™, IndyStar (LCB)**

Customer: **All**

Software Version: **LCS V3.08 and Higher**

Module: **Laser Control Board LCB02, LCS and FPGA (PLD) Software**

Revision Status

Index	Changes	Rev. Date	Rev. Author	Rev. Editor
AA	First version	23.02.2015	R. Fiedler	I. Moore

Purpose

This document describes the procedure to download new software versions and / or parameter settings onto a BraggStar M, COMPex*Pro*, LPX*pro*, LPF*pro*, LEAP or IndyStar laser device fitted with the laser control board LCB02.

Tools and Materials

- RS 232, 9 pin D-sub null-modem cable
- External computer (PC, laptop or notebook) with the following software:
  - HyperTerminal
    If your external computer uses the operating system Windows Vista, Windows 7/8 HyperTerminal is to be installed as it is not included in the software package.
  - LCS Monitor software (CMPX_Mon.exe, V3.0 and higher)
- Latest control software and parameter settings files on internal drive or data medium:
  - compex.RTB
  - appropriate menu parameter file "*.nvs" (depends on model and gas supply mode)
- FPGA (PLD) software and configuration files on internal drive or data medium:
  - FPGAV*xxx*.RBF (with *xxx* as software version, V4.14 and higher)
  - FPGA programming software FLASH.BAT and FLASHPRG.EXE (Files already exist on SD-Card.)

The software files should be obtained in advance from your local service support center. The part numbers are contained in the software configuration list for the corresponding laser device.

Procedure / Corrective Action

Follow this procedure completely to download a new software version and menu parameters and to configure the FPGA. If only the menu parameters are to be changed, start the procedure at step 14.

Preparation

1. Connect the null-modem cable between the COM1 on the laser device and the serial port on the external computer (e.g. COM1).

Start and Set-Up the HyperTerminal

2. Start the external computer and select “HyperTerminal” as shown in Figure 1 or alternatively start the “hypertrm.exe”

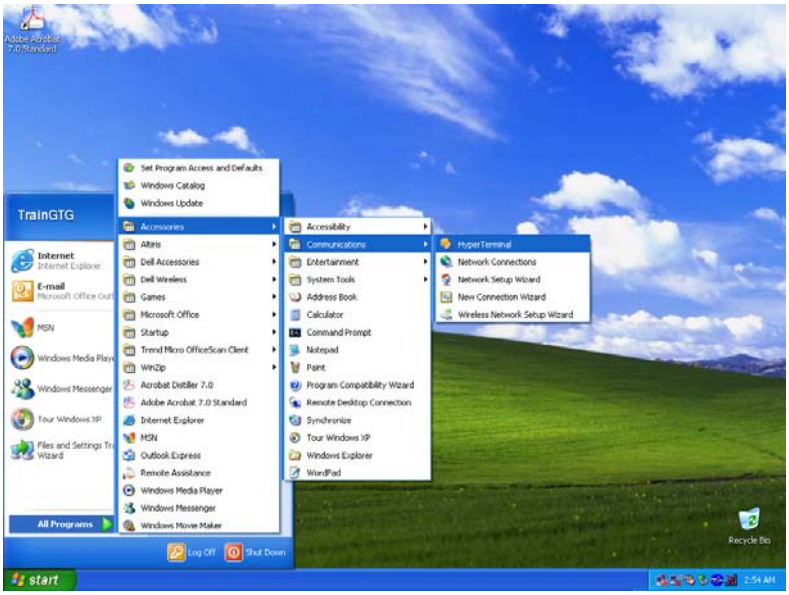

Figure 1 Selecting the HyperTerminal function

If the HyperTerminal has not yet been set up, the system requests information about your location, area code (e.g. “United States” and “535”) and connection type (“phone” has to be selected). After specifying the connection, the screen shown in Figure 2 appears.

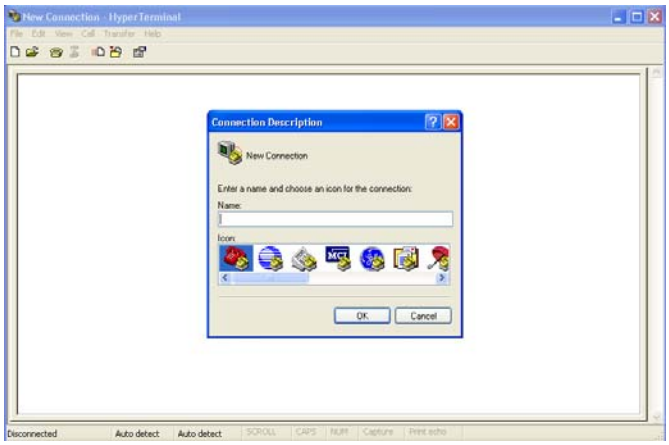

Figure 2 HyperTerminal setup screen

- Specify the desired name for the HyperTerminal, choose a symbol and click OK.
- Indicate the null-modem cable connection port on the external computer (usually COM1) as indicated in Figure 3.

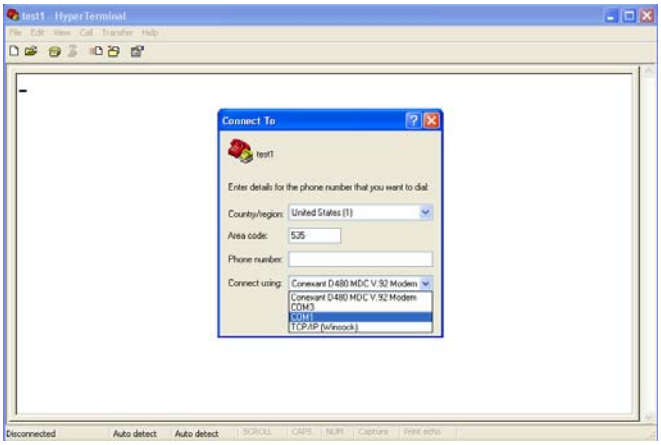

Figure 3 Specifying the null-modem connection port

This setting can be saved on the desktop for further use.

3. Set /check the null-modem port properties as indicated in Figure 4:
   - Baud rate: 115200 bps
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None

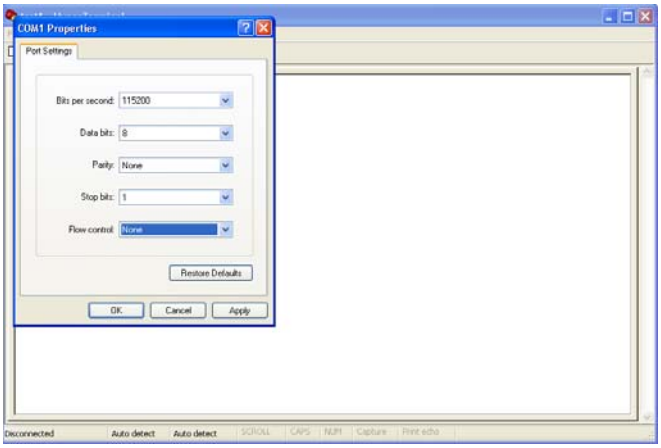

Figure 4 Specifying the null-modem port properties

Access the Laser Device Controller's Internal Drive

4. Switch the laser device ON with the key switch to boot the laser control software.
5. When "**Skip?[N, Y]?**" appears, immediately press <**Y**> to skip the booting of the laser control software. The external computer now has access to the laser device controller's internal drive. If <Y> is pressed too late or pressed <N>, the laser control software will start. In this case, repeat from step 4.

   If the command was successful, the screen shown in Figure 5 appears.

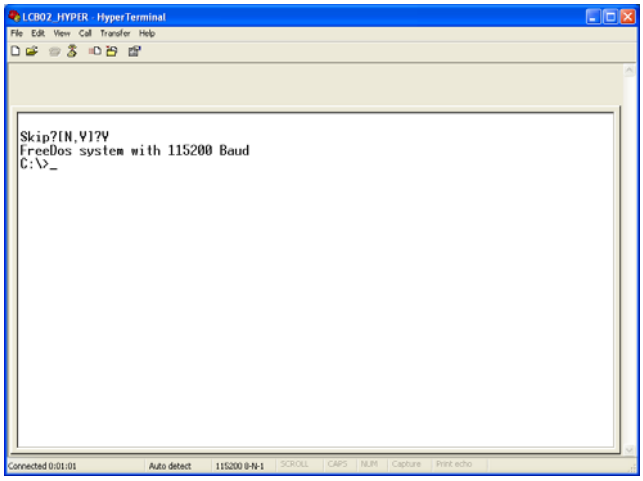

Figure 5 Preparing connection with the laser device controller's internal drive

Download the Software Files

6. Type "**`download`**" and press <**ENTER**>.
7. Select "Transfer" → "Send File…" (see Figure 6).

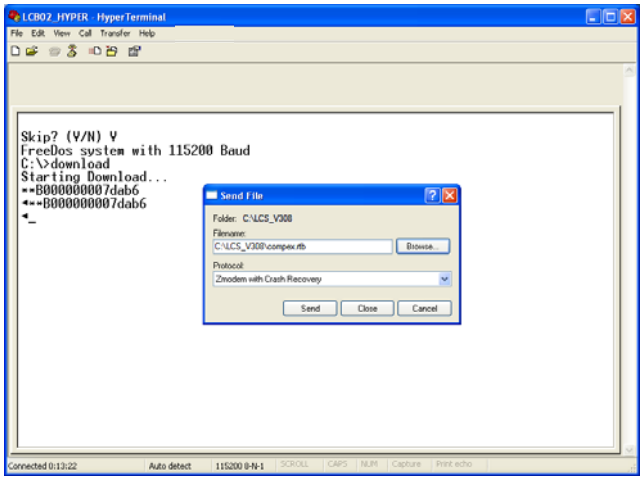

Figure 6 Downloading the laser control software

8. Select “Z modem” or “Z modem with crash recovery” in the “Protocol” line (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).
9. Click the “Browse...” button and search for compex.RTB on the appropriate drive of the external computer or disk.
10. Click “Open”.
    The external computer path appears in the input line.
11. Click “Send”.

    The download is completed when “Download finished” appears (see Figure 7).

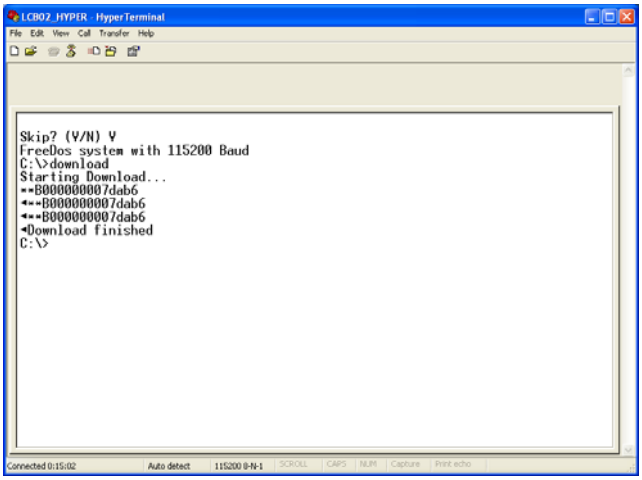

Figure 7 Transmission end screen

12. Repeat steps 7 to 11 to download the file FPGAV*xxx*.RBF (with *xxx* as the FPGA software version).

Program the PLD

13. When the download is finished, type "**`flash fpgavxxx.rbf`**" (with *xxx* as the FPGA software version) and press <**ENTER**>.
    The PLD program module of the LCB board is configured. The messages shown in Figure 8 appear. The programming is finished when "C:\>" appears at the HyperTerminal (see Figure 8).

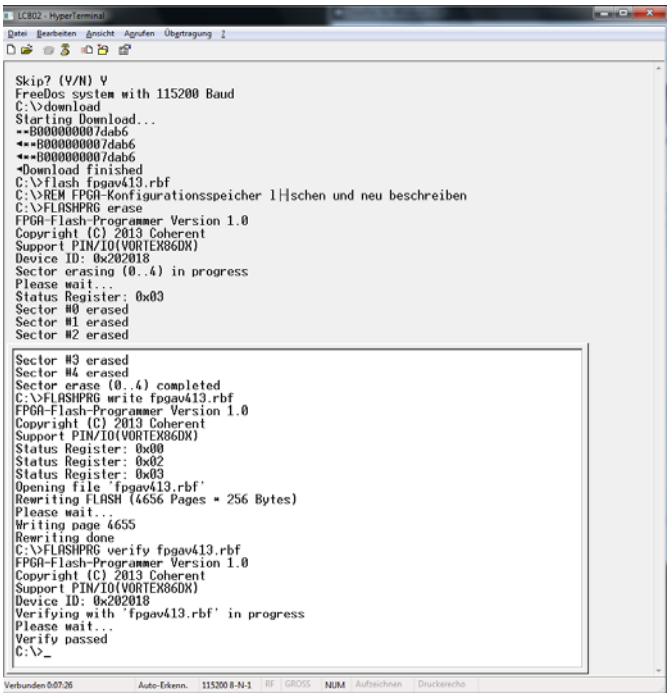

Figure 8 PLD programming

Load Parameter Settings

14. Click the appropriate button to terminate the HyperTerminal.
15. Switch the laser device OFF and then ON again at the key switch to reboot the laser control software.
16. Start the LCS Monitor (CMPX_Mon.exe) Version 3.0 and higher and select the "Parameter Settings" tab (see Figure 9).

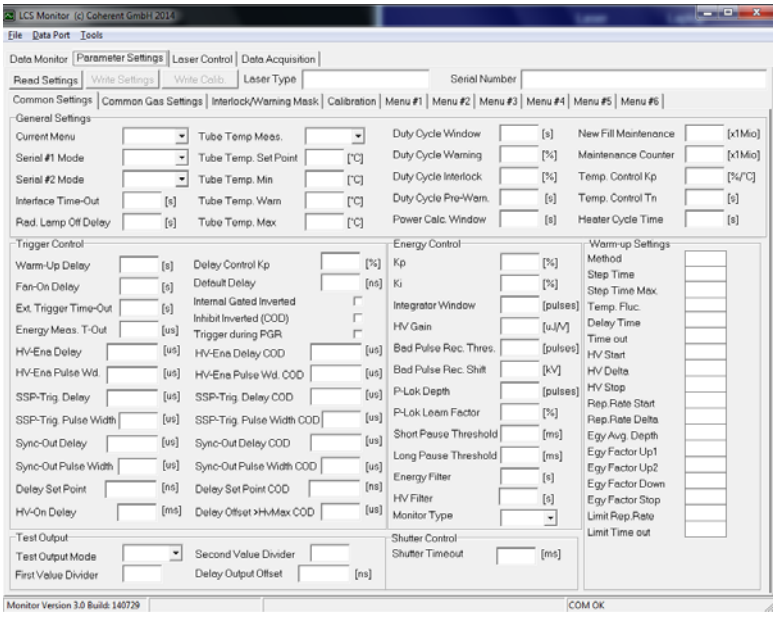

Figure 9 Parameter settings screen of LCS Monitor

17. Click the “Read Settings” button to display the currently active parameter settings (see Figure 10).

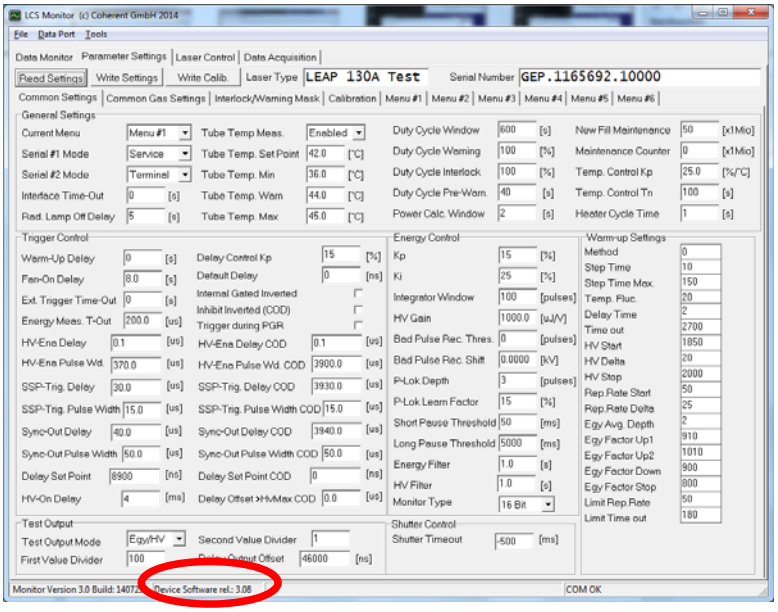

Figure 10 Parameter settings display

18. Make sure that the laser software version indicated in the bottom line of the screen is correct (see Figure 10).

NOTICE
Risk of data loss!
The laser-specific calibration data will be overwritten when the new parameter settings are loaded. Once the new parameter settings have been loaded, there is no possibility of automatically restoring the old settings.

19. Select the “Calibration” tab and note the settings of “Serial Number”, “Tube Pressure Calibration”, “Energy Calibration” and “Delay Calibration” (see Figure 11).

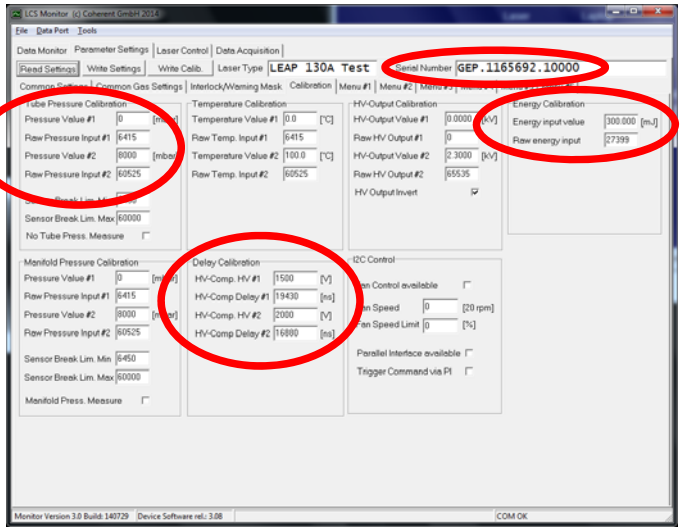

Figure 11 Noting calibration settings

20. Select “File” → “Load Settings” to load the new parameter settings.

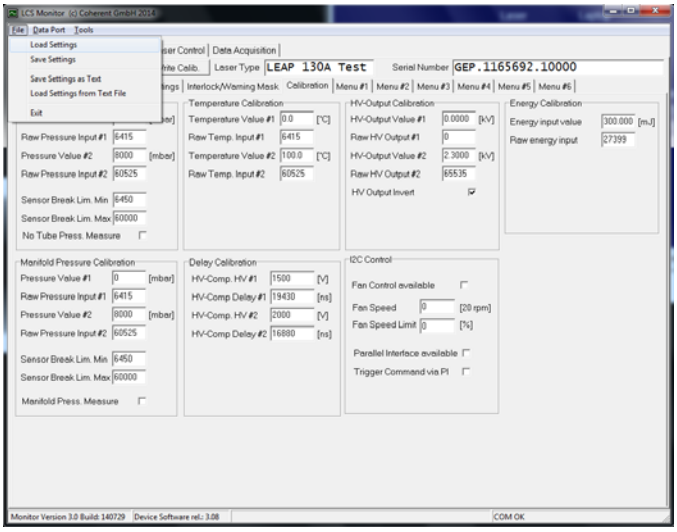

Figure 12 Loading new settings

21. Click the “Search” button and search for the menu parameter file (*.nvs) on the external computer disk that contains the parameter settings for the specific laser device version.

22. Click “Open”.
23. Select the “Calibrate” tab and change the settings of “Serial Number”, “Tube Pressure Calibration”, “Energy Calibration” and “Delay Calibration” to the values noted in step 19.

    If the tube pressure sensor has just been upgraded from 8 bar to 4 bar, the “Tube Pressure Calibration” settings are not to be changed.
24. Click “Write Settings” to send the parameter settings to the F-RAM on the laser controller.
25. Click “Write Calibration” to send the calibration settings to the F-RAM on the laser controller.
26. Click “Read Settings” to display the currently active parameter settings.
27. Check the parameter settings.

Load Parameter Settings (Alternative Procedure, Without Calibration Menu Changes)

The following steps describe an alternative procedure to load the parameter settings. This procedure shall be performed by skilled service personnel only and only if the software update does not affect the parameter settings in the Calibration Menu.

28. Perform steps 14 to 18 to load the current parameter settings from the F-RAM into the LCS Monitor software.
29. Note the “Serial Number” indicated in the parameter settings display (see Figure 10).
30. Perform steps 20 to 22 to load the new parameter settings from the external disk.
31. Change the setting of “Serial Number” to the value noted down in step 29.
32. Click “Write Settings” to send the parameter settings to the F-RAM on the laser controller. Do **not** click “Write Calibration”!
33. Click “Read Settings” to display the currently active parameter settings.
34. Check the parameter settings.