Upgrading BL600 Firmware via UART

BL600 Series

Application Note   *v1.7*

IMPORTANT!   You can upgrade the module firmware over UART only if the BLE stack version will not be different. If your new firmware version contains a different stack version, you will need to upgrade firmware over the JTAG interface, which is covered in the Application Note "Upgrading BL600 Firmware via JTAG."

To check if the BLE stack is changed in your new firmware version, look at the second digit of the firmware number. If the second digit has increased, the stack version has changed. As an example, if your current firmware version is 1.2.54.0 and you want to upgrade to 1.5.70.0, the "5" in the new firmware version indicated the BLE stack is newer and you will need to upgrade via JTAG.

INTRODUCTION

The goals of this document include the following:

- To explain the method of upgrading the bootloader and firmware for the BL600 module.

Note: This method applies to firmware versions of 1.1.50.0 or later. Laird recommends that you upgrade BL600 development modules to version 1.5.70.0 or later.

OVERVIEW

Note: You can upgrade the firmware of the BL600 module over its serial port if the BLE stack has not changed.

To upgrade the module, you must use Laird's development board or your own equivalent implementation to provide an RS-232 connection to the module's serial port.

Firmware versions 1.1.53.15 and later include a new bootloader that gives increased functionality and improves the firmware upgrade process. If your module's firmware is older than this, you must upgrade the bootloader through the JLINK interface before you can upload new firmware over the UART. Please refer to BL600_FW_UPGRADE_APPNOTE.

Embedded Wireless Solutions Support Center:
http://ews-support.lairdtech.com
www.lairdtech.com/wireless

1

© Copyright 2015 Laird. All Rights Reserved

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

INITIAL SETUP USING BL600 DEV KIT DVK-BL600-Sx-05

Figure 1: BL600 development board

BL600 Development Board Setup

To set up, complete the following steps.

1. Configure the BL600 development kit to the following settings:
    - DC/USB power source switch (SW4) – USB
    - VCC_1V8/VCC_3V3 switch (SW5) – VCC_3V3
    - CR2033/VCC_3V3/1V8 switch (SW6) – VCC_3V3
2. Connect the DVK-BL600 to your PC via the included USB-A to USB Micro cable.
3. Install the FTDI USB to Serial driver (found at http://www.ftdichip.com/FTDrivers.htm**).**
4. Ensure that the Windows Device Manager displays a new virtual COM port for the USB to Serial adapter.
5. Launch UwTerminalX (available at https://github.com/LairdCP/UwTerminalX/releases)
6. From the Update tab in UwTerminalX, click Check for Updates to ensure you're using the latest version of UwTerminalX with support for the BL600.
7. From the Config tab in Device drop-down menu, select BL600 to populate the baud, parity, stop bits, data bits, and handshaking settings. If "BL600" is not a selectable device, set the following:
    - Baudrate: 9600
    - Parity: None
    - Stop Bits: 1
    - Data Bits: 8
    - Handshaking: CTS/RTS
8. In the Port dropdown, select the COM port associated with your DVK-BL600.
9. At the top of the screen, click **OK.**

Checking Firmware Version

To check the firmware version, attach the module to a serial port on your PC and run UWTerminalX. Once the module is running, type **AT I 3** to display the firmware version (Figure 2).
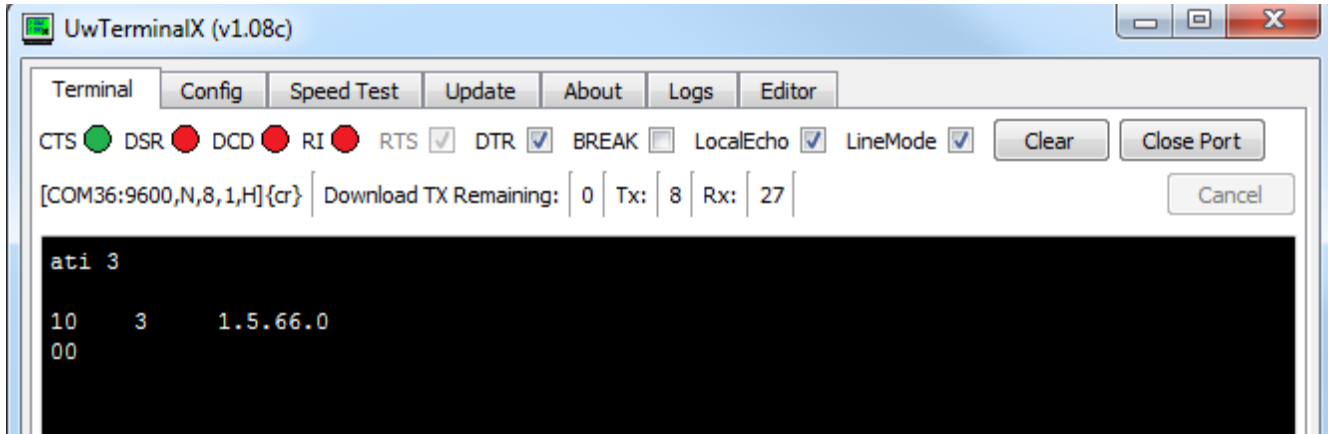
Figure 2: AT I 3 command returning the firmware version number

If the firmware version is older than 1.1.53.15, you must upload a new bootloader before performing a firmware upgrade.

Note: Upgrading the bootloader or firmware clears any programs or data stored on the module.

Updating the Bootloader

If your firmware version is 1.1.53.15 or later, the module already has the correct bootloader installed. You may skip this step and go directly to Upgrading the Firmware.

If your firmware is 1.1.50.0, you must request the bootloader upgrade files from Laird. They are provided in a .zip file, along with a README file which explains the upgrade procedure.

Upgrading the Firmware

Note: Firmware upgrades for versions greater than 1.1.53.14 are made using the BL600UartFwUpgrade.exe utility.

To upgrade the firmware, follow these steps:

1. Extract the following files (located in the Firmware directory of the firmware upgrade .zip file) to a directory on your PC:
   - **BL600UartFwUpgrade.exe**   (The firmware upgrade utility)
   - **XXXX.uwf**   (The firmware image)
2. Run the firmware upgrade process from that directory.
3. Attach the module to your PC's serial port. If you are using Laird's development kit DVK-BL600-Sx-05, ensure that you are connecting to COM4 (see Figure 1).

Embedded Wireless Solutions Support Center:
http://ews-support.lairdtech.com
www.lairdtech.com/bluetooth

3

© Copyright 2015 Laird. All Rights Reserved

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0600

WARNING FOR FIRMWARE VERSION 1.2.54.0 OR NEWER:

> If you have enabled out-of-the-box Virtual Serial Port Service operation by pulling SIO7 to VCC and setting bit 8 of the config register 100 (using AT+SET 100="0xhhhh"), then you must do one of the following before starting the upgrade:
>
> - Ensure SIO7 is at 0v, OR
> - Submit the command AT+SET 100="0x0000" and ensure you get a successful 00 response
> - You may also submit the command AT&F* to put the module into factory default mode to ensure that the upgrade starts from a known state.

4. Start BL600UartFwUpgrade.exe to display the launch window (Figure 3).
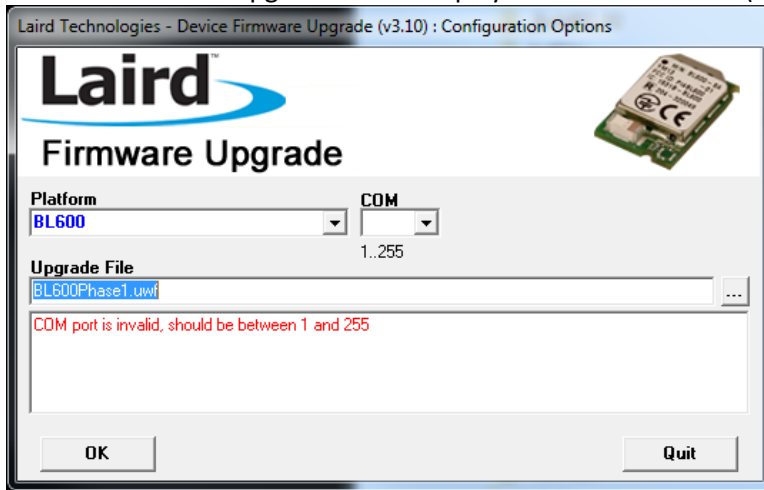

Figure 3: BL600UartFwUpgrade launch screen

5. Ensure that the selected platform is **BL600**.
6. If the **COM** field is empty, select the applicable COM port number from the drop-down menu.
7. If the Upgrade File field is empty, click the **…** button to select the applicable **xxx.uwf** file. The .uwf file may already have been detected if it is the only file in that folder. When the settings are correct, the large message field below Upgrade File disappears.
8. Click **OK**.
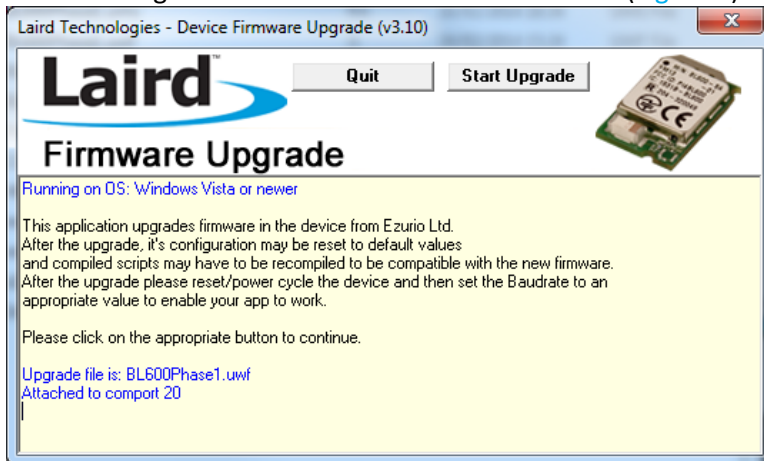   The following screen confirms the firmware version (Figure 4).

Figure 4: Screen confirming firmware version

Embedded Wireless Solutions Support Center:
http://ews-support.lairdtech.com
www.lairdtech.com/bluetooth

4

© Copyright 2015 Laird. All Rights Reserved

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0600

9. If the firmware version is correct, click **Start Upgrade**. The download process starts, with the screen showing the progress and describing the status (Figure 5).
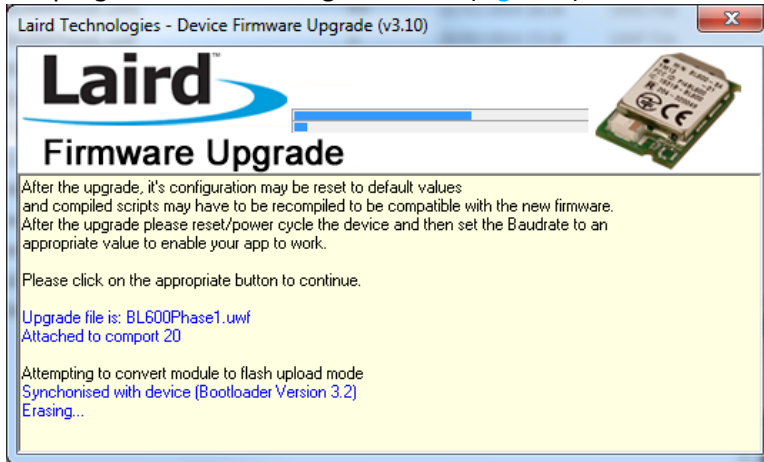

Figure 5: Firmware upgrade in progress

When the upgrade is complete, the screen indicates completion and requests that you power cycle the module (Figure 6).
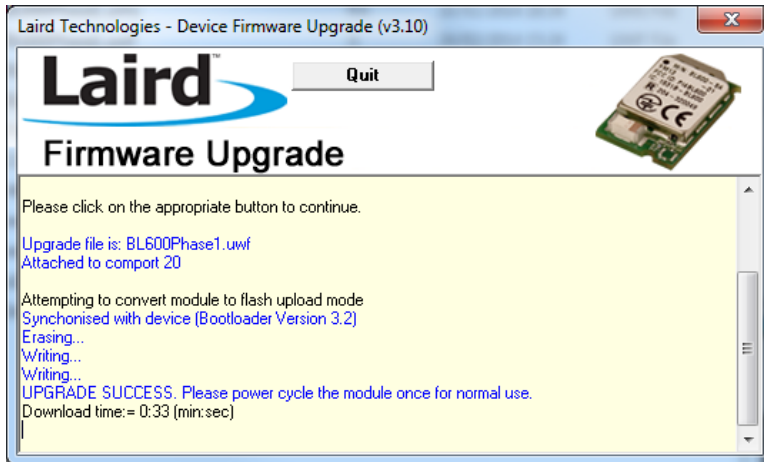

Figure 6: Upgrade complete, requesting power cycle

10. Cycle power to the module.
11. Click **Quit**.

The module is upgraded and ready for operation. Confirm the upgrade by running UWTerminalX and checking the version using AT I 3 (Figure 7).
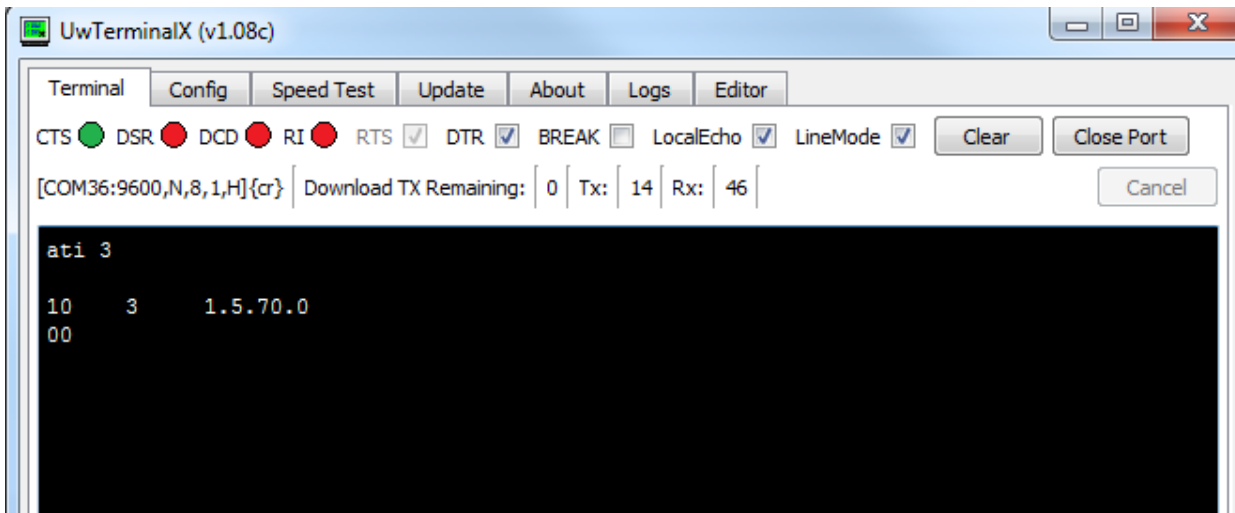
Embedded Wireless Solutions Support Center:
http://ews-support.lairdtech.com
www.lairdtech.com/bluetooth

5
© Copyright 2015 Laird. All Rights Reserved

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0600

Laird™

Figure 7: Confirming the new firmware with AT I 3 in UWTerminalX

FURTHER INFORMATION

Further information relating to firmware and the use of UWTerminal is available from the Laird Embedded Wireless Solutions Support Center: https://laird-ews-support.desk.com/?b_id=1945

… as well as the Laird website at:

http://www.lairdtech.com/products/bl600-series.

REVISION HISTORY

Version	Date	Notes	Approver
1.0	25 Jan 2013	Initial Release	Jonathan Kaye
1.1	21 Feb 2013	Minor revisions	Jonathan Kaye
1.2	13 Mar 2013	Minor revisions	Jonathan Kaye
1.3	25 June 2014	Minor revisions	Jonathan Kaye
1.4	08 Jan 2015	Updated links to new website	Jonathan Kaye
1.5	04 Mar 2015	Added revision history	Jonathan Kaye
1.6	05 May 2015	Clarified title and introduction warning.	Jonathan Kaye
1.7	19 Dec 2016	Updated for UwTerminalX and new template	Jonathan Kaye

Embedded Wireless Solutions Support Center:
http://ews-support.lairdtech.com
www.lairdtech.com/bluetooth
6
© Copyright 2015 Laird. All Rights Reserved
Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0600