

PPK-BL600 – Programming Jig for BL600 Modules

Quick Start Guide

INTRODUCTION

PPK-BL600 is a compact programing jig intended for downloading firmware and *smart* BASIC application on to a loose BL600 module. The programing jig provides JTAG and UART access to the module through two dedicated mini USB connectors.

REQUIREMENTS

- PC running Windows XP or later
- UWTerminal Version 6.50 or later available from the <u>BL600 page</u> of the Embedded Wireless Support site.
- PPK-BL600 Programing Jig **
- USB A to mini B cables (2 x cables included)
- BL600 User Manual available from the <u>BL600 page</u> of the Embedded Wireless Support site.
- FTDI Drivers <u>http://www.ftdichip.com/Drivers/VCP.htm</u> (for some versions of Windows)

** The latest BL600 firmware and upgrade documentation is available on the software downloads tab of the <u>BL600 product page</u>.

FIRMWARE DOWNLOAD

This section provides a step by step guide on how to download and upgrade firmware within Laird's loose BL600 BLE module using PPK-BL600 programing jig.

INITIAL SETUP

Before initiating a firmware upgrade, you must setup the Programing Jig by following the steps below:

1. Release the latch by pushing the white lever (1) down and lifting the handle (2). (Figure 1)



Figure 1: BL600 programing Jig

2. Place a BL600 module on the programmer (Figure 2).



Figure 2: BL600 module placement on the programming jig

3. Close the cover and gently press down the lever until the latch is in place (Figure 3).



Figure 3: BL600 latched in place on programming jig

4. Now connect the BLE Programing Jig (labelled as USB) to your PC and install the FTDI USB to Serial driver. The driver for the FTDI USB to Serial chipset on the Programing Jig can be found at http://www.ftdichip.com/FTDrivers.htm

PPK-BL600 – Programming Jig for BL600 Ouick Start Guide



Figure 4: Connecting programming jig to a PC USB port

To verify that your hardware and software are properly configured, ensure that the Windows Device Manager displays a virtual COM port and that the BL600 is able to send AT commands and receive responses. Use UW Terminal to check that the module is communicating. If you send an AT command at 9600,N,8,1 communications setting and it responds with "00", then it is working properly. See Figure 5 and Figure 6.

Terminal BASIC Config About		
Comport C Top Socket Line Terminator C CR C LF C CR LF C CR LF C LF C CR LF Data Bits 8 Handshaking CTS/F	Poll for port Poll	If you just want to enter the BASIC tab and you do not have a comport, please select Top Socket' client's of that treaming communications happen over a 1cp/y connection from within a smartBASIC application
✓ Trace/Log BASIC comms traffic Log Filename	70	Use AT+FWRH Command Max AT+FWRH Command Len Append

Figure 5: UW Terminal COM port settings



Figure 6: Communications OK, AT responds with 00

DOWNLOADING AND INSTALLING THE J-LINK DRIVER

This procedure has been successfully tested on Win XP SP3 and Win 7 SP1. If the J-Link driver is already installed on your PC, you may proceed to the Firmware Upgrade Procedure section.

To download and install the J-Link driver, follow these steps:

- 1. Download the Windows drivers for the J-Link at the following address: http://www.segger.com/jlink-software.html?step=1&file=JLink_476a
- 2. You may need to enter the J-Link serial number to download the driver package from the Segger website. You will find a 9-digit SEGGER serial number printed on the Jig. It should appear on the rear panel of the programming jig in the top-left corner. Run the executable to install the J-Link software; the serial port driver option is not required.



3. Connect the J-LINK cable to the programming jig (Figure 7).

Figure 7: J-LINK cable connecting to programming jig

4. Plug the J-Link into a USB port of your PC. Installation proceeds automatically. Wait for confirmation that the device is successfully installed.

FIRMWARE UPGRADE PROCEDURE

To complete the firmware upgrade procedure, follow these steps:

1. If the upgrade package is formatted as a zip file, then decompress into a new folder of your choice.

Note: Do not decompress into an existing folder, as there is potential for confusion with regards to firmware upgrade files. We recommend you decompress the zip file into a folder with the same name as the zip filename.

2. In the decompressed folder, launch _DownloadFirmware_vA_B_C_D.bat (either double-click it or launch it from a command prompt console window).

3. If the J-Link firmware is outdated, the following dialog box displays (Figure 8):

🗖 J-Lin	nk V 🛛 Firmware update 🛛 🚺	
?	A new firmware version is available for the connected emulator. Do you want to update to the latest firmware version ? NOTE: Updating to the latest firmware version is strongly recommended. New features / improvements may not be available without a firmware update	

Figure 8: J-Link Firmware update dialog

- 4. Click Yes to update the J-Link firmware. The BL600 firmware upgrade process resumes automatically and displays a command prompt box.
- 5. When the BL600 firmware download completes, the console window displays the following (Figure 9).

C:\Windows\system32\cmd.exe	
Programming, please wait it will take up to 20 seconds	^
. Acquiring info	
Programming stack (please wait)	
Programming application (please wait)	
Resetting module ####################################	
Press any key to continue	-

Figure 9: Firmware upgrade window

6. Press any key to proceed.

To check that the new version number matches the firmware upgrade package version, follow these steps:

- 1. Open UwTerminal (or any other terminal emulator).
- 2. Configure the COM port (the port number in device manager) with the following settings, as shown in Figure 10:

Baudrate – 9600 Stop Bits – 1 Data Bits – 8 Handshaking – None

PPK-BL600 – Programming Jig for BL600 Ouick Start Guide

UwTerminal v6.6	0	
Terminal BASIC C	Config About	
OK Cancel	Quit	
C Compot C Top Socket Line Terminator C CR C LF C CR LF C LF CR	COM B V Poll for port Baudrate 9600 V Parity None V Stop Bits 1 V Data Bits 8 V Handshaking CTS/RTS V	If you just want to enter the BASIC tab and you do not have a comport, please select 'Top Socket' and then untick 'Client's ot that streaming communications happen over a top/ip connection from within a smattBASIC application
Ira Log Filename	ce/Log BASIC comms traffic in Terminal Window	Vise AT+FWRH Command 70 Max AT+FWRH Command Len

Figure 10: COMMS settings

3. Confirm you can communicate with the development board by typing *at* followed by a return. The module responds with *OO* (Figure 11).

UwTerminal v6.60	
Terminal BASIC Config About	
CTS DSR DCD RIC RTS DTR BREAK	LocalEcho V LineMode V Clear ClosePort
Right-click for pop-up menu for more o	ptions.
Right-click for pop-up menu for more o	ptions.
at	
00	

Figure 11: COMMS OK

- 4. Select the COM port for the BL600 programing jig at 9600N81.
- 5. Send the string *AT/3* as shown in Figure 12:

WVTerminal v6.60	
Terminal BASIC Config About	
CTS DSR DCD RIC RTS DTR BREAK LocalEcho LineMode	ear ClosePort
at i 3	
10 3 1.2.54.0 00	

Figure 12: Issuing AT I 3 to check firmware version

Note: Please note there is at list one space between the 'i' and '3'.

6. Use the response string to confirm the version numbers match.

LOADING A *SMART*BASIC APPLICATION

Note: When swapping between profiles on the same device, it may be necessary to clear any existing pairings on the module and iOS device. On the module, this can be done with the command **at+btd***; and on the iOS device this can be done in Bluetooth settings.

PPK-BL600 – Programming Jig for BL600

Quick Start Guide

To load a *smart* BASIC application, follow these steps:

- 1. Ensure the cross compiler is located in the same folder as UWTerminal. Its name is similar to XComp_BL600r2_CA0D_1DA6, where *CA0D_1DA6* indicates a hash key. Each firmware version requires its corresponding cross compiler with a matching hash key.
- 2. To compile and load a *smart* BASIC application, right-click in the main UWTerminal window and select **XCompile + Load**.

XCompile
XCompile + Load
XCompile + Load + Run

Figure 13: Right-click menu

3. Locate and open your **.sb** application or one of the sample applications located in the supplied *smart* **BASIC _***sample_Apps* folder. When the application is successfully compiled and loaded, the console displays **+++ DONE +++.**

Terminal BASI	C Config About							
	DCD RIC RT	DTR BREA	K 🗖 LocalEd	:ho 🔽 LineMo	de 🔽 Clear	CloseP	ort	
AT+FWRH "C	1108060681B4E	010000040001	00FB30010	04E008060F	FFF52030	00010	0001"	^
AT+FWRH "C	0FB4003005258	24000110CF30	00009000F	A306700000	1E822000	00110	CF30"	
AT+FWRH "O	0009000FA306D	000001E82200	000110D23	0000001008	5204E1B0	110F8	20CC"	
AT+FWRH "1	.B8480FFFF4813	0000A11B0000	00000400F	BC01300484	14E444C4	55242	4C52"	
AT+FWRH "4	1445654494D4F	5554000110CD	20ED04D23	000000000B	D14F6340	61BC6	1B01"	
AT+FWRH "1	OCE211000FB00	10001B000A41	647665727	42073746F7	07065642	07669	6120"	
AT+FWRH "7	4696D656F7574	00CC21AE1BE5	210080C92	0BE0001100	110D2300	00001	0085"	
AT+FWRH "2	08D1B01108730	12008D1B0110	873100003	A190110873	00900161	B0110	3730"	
AT+FWRH "C	6004E1B0110D2	3000000100F6	34E71BE71	B0110C9201	E1301100)110D2;	3000"	
	00000F634031C							
	23000000000E8							
	00A0DCC21061C							
	.000FB00060008							
	1E5210080C920							
	110CF30060090			0D23000000	000E8220	080C9	206C"	
	C01108910F724	481C0110FD10	F510"					
AT+FCL								
+++ DONE +	·++							

Figure 14: Compiled and Loaded

If the correct version of cross compiler is not present, an error displays.

4. Locate the correct version and place it in the same folder as UWTerminal.



Figure 15: Cross Compiler Error

5. Confirm that the application (in our case upass.vsp.sb) is loaded using **at+dir**.

Note: The file extension is truncated from files copied onto the BL600 module. Therefore, when **upass.vsp.sb** is copied to the device, its name becomes **upass**.



Figure 16: Directory showing "upass" app loaded

FURTHER INFORMATION

Further information relating to firmware and the use of UWTerminal is available from the <u>BL600 page of</u> the Laird <u>Embedded Wireless Support site</u>. Information is also available from the <u>BL600 product page</u> of the Laird website.

REVISION HISTORY

Revision	Date	Description	Approved By
1.0	23 Sept. 2013	Initial Release	Jonathan Kaye
1.1	03 Apr 2013	Formatting edits; updated website links; updated footer	Sue White