Loading a *smart*BASIC Heart Rate Service Application
BL600

Quick Start Guide *v1.2*

INTRODUCTION

This guide demonstrates how to load a *smart*BASIC Heart Rate Service application (hrs.heart.rate.SB) onto the BL600 development board and view the data on a BT4.0 iPad/iPhone. For this example, the heart rate data originates from a fictional sensor attached to the UART in the format "hr 60".

REQUIREMENTS

- PC running Windows XP or later
- UWTerminalX, found at https://github.com/LairdCP/UwTerminalX/releases
- BL600-Applications-master file found at https://github.com/LairdCP/BL600-Applications
- USB A to mini B cable
- iPad 3/ iPhone 4S or newer with BT4.0 support
- Internet connection on iOS device (to download the BL600 app)
- DVK_BL600 User Manual
- FTDI Drivers http://www.ftdichip.com/Drivers/VCP.htm (for some versions of Windows)

DEVELOPMENT KIT SETUP

To setup the BL600 development kit (DVK), follow these steps:

1. Configure the BL600 development kit to the following settings:
    - DC/USB power source switch (SW4) set to USB
    - VCC_1V8/VCC_3V3 switch (SW5) set to VCC_3V3
    - CR2033/VCC_3V3/1V8 switch (SW6) set to VCC_3V3/1V8
2. Connect one end of the mini USB cable to CON4 on the DVK board and the other end to your PC.
3. Follow the on screen prompts. Windows may prompt you to install FTDI drivers.
   When complete, the DVK board appears in the Windows device manager as a *USB Serial Port*.
4. Note the port number shown in device manager.
5. Extract UWTerminalX and run the program.
6. In the Config tab Select BL600/BL620 which should populate the following settings (Figure 1):
    - Baudrate – 9600
    - Stop Bits – 1
    - Data Bits – 8
    - Handshaking – None

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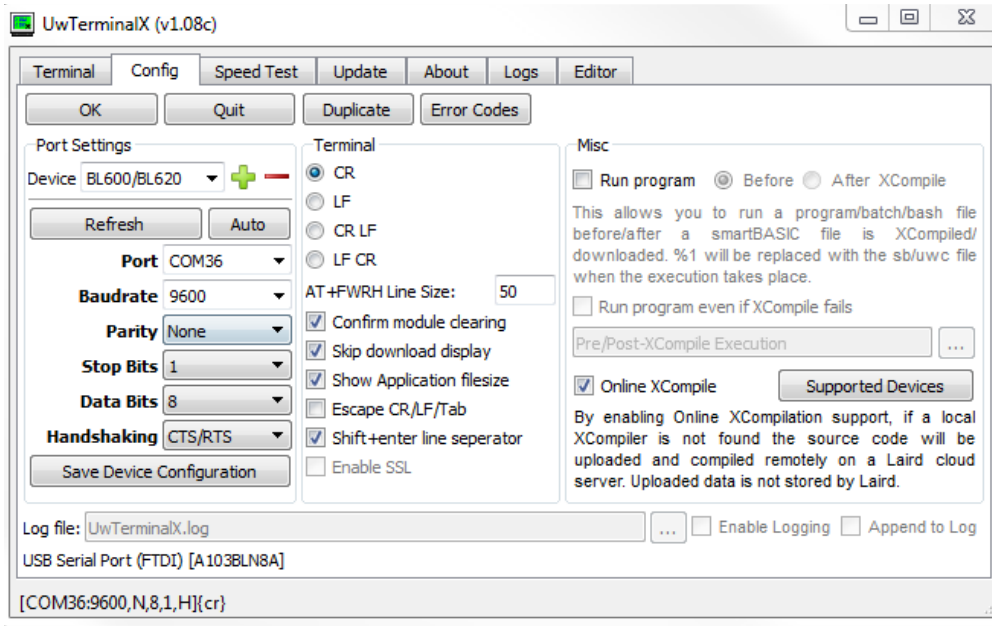Hong Kong: +852 2923 0610

Figure 1: Comms Settings

7. In the COM port dropdown, select the COM port created in Windows Device Manager.
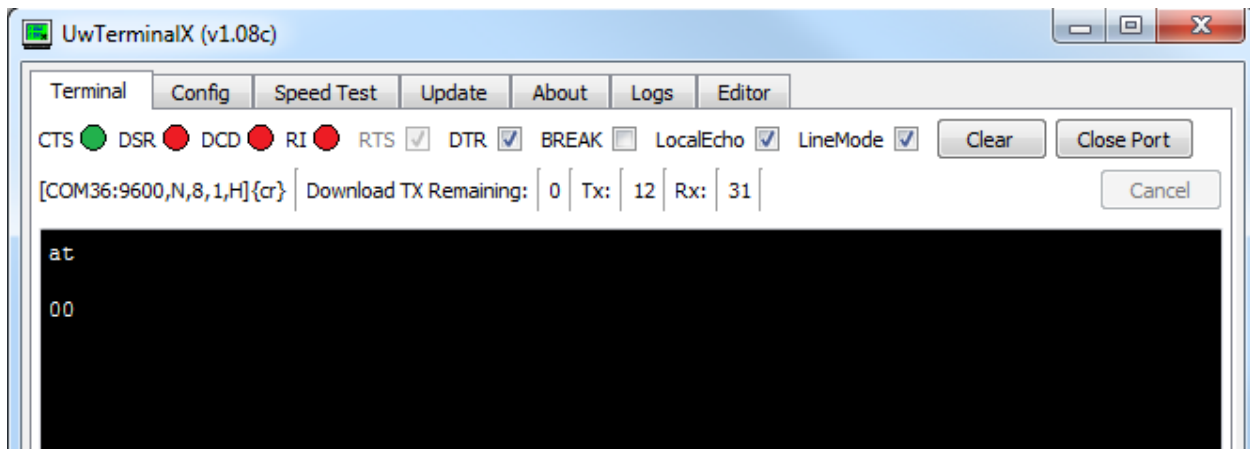8. Verify that you can communicate with the board by typing *at* followed by a return. The module responds with *00*.

Figure 2: Comms OK

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.
The BL600 app also allows you to manage devices through its connection manager available via the gears icon, swipe left any existing devices to delete them.

To complete these steps, your computer must be connected to the internet. The UwTerminalX online XCompiler requires access to the internet to compile a *smart*BASIC application.

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

1. To compile and load a *smart* BASIC application, right-click in the UWterminalX main window and select **XCompile + Load**.
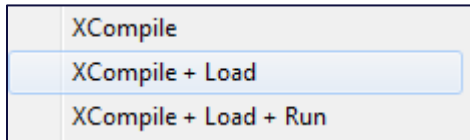

Figure 3: Right-click menu

2. Locate and open the *hrs.heart.rate.custom.SB* application in the supplied *BL600-Applications-master* folder. When the application successfully compiles and loads, the console reads **--Finished Downloading File --** (Figure 4)**.**
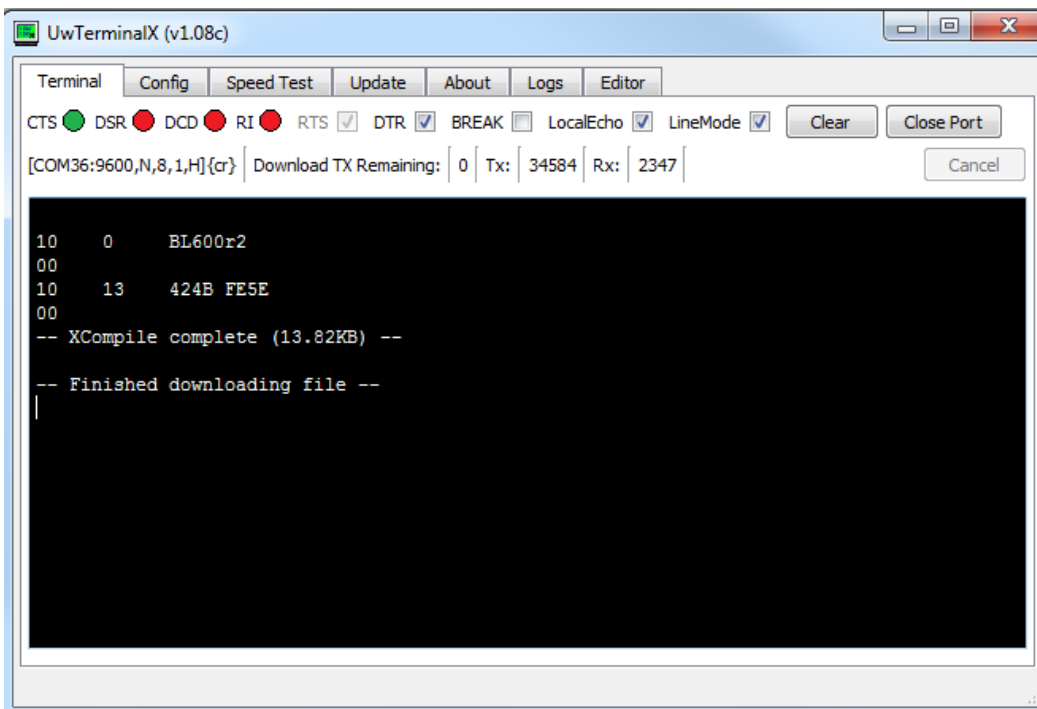

Figure 4: Compiled and Loaded

3. Confirm that the *hrs* application is loaded by using the command **at+dir**.

Note: The file extension is truncated from files copied onto the BL600 module. Therefore, when hrs.SB is copied to the device, its name becomes *hrs*.
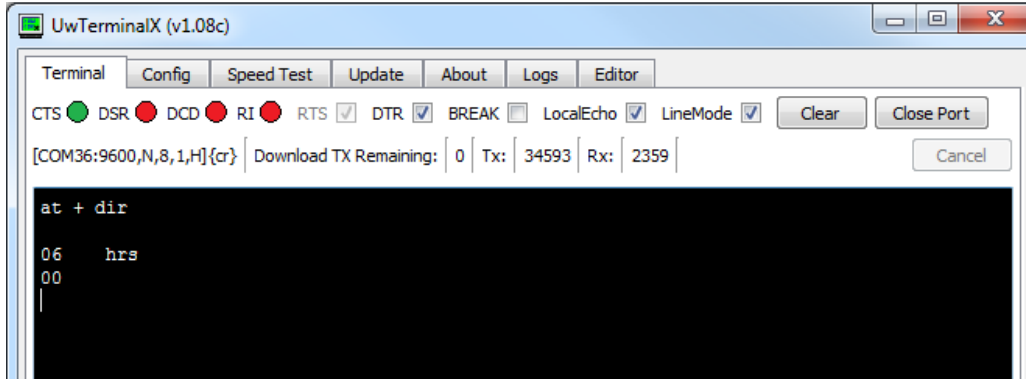
Figure 5: Directory showing "hrs" app loaded

iPad/iPhone Setup

For iPad/iPhone setup, follow these steps:

1. Install the Laird Toolkit app from the Apple App Store (https://itunes.apple.com/us/app/laird-toolkit/id978146538?mt=8). Ensure Bluetooth is enabled in the device settings. If using an iPad and after searching the Laird Toolkit app doesn't appear in the results, select **iPhone Only** from the dropdown menu.
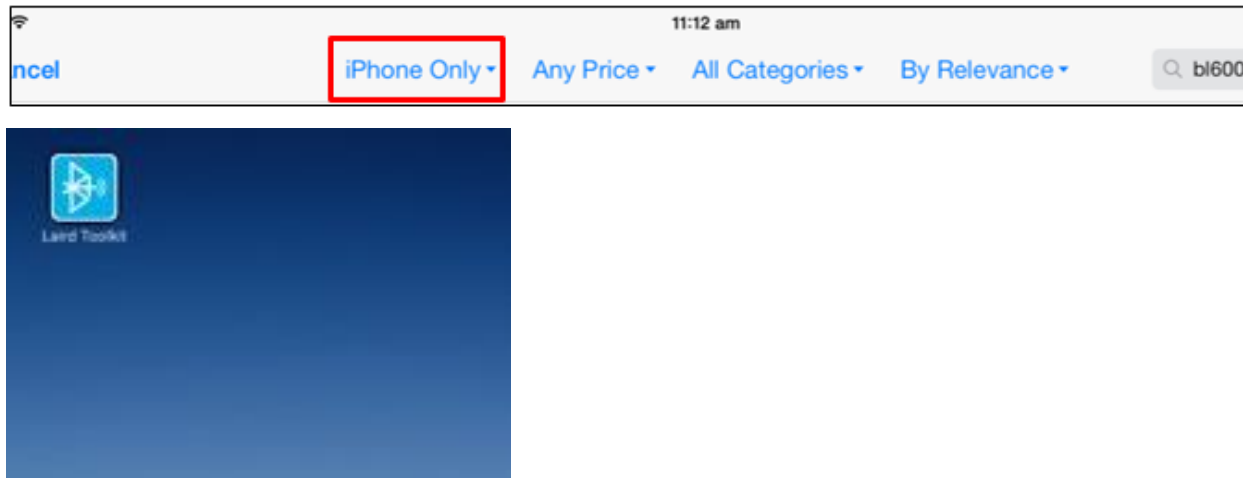

Figure 6: Laird Toolkit app installed

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2. Once installed, select the HRM option found in the Laird Toolkit application on your iOS device (Figure 7).
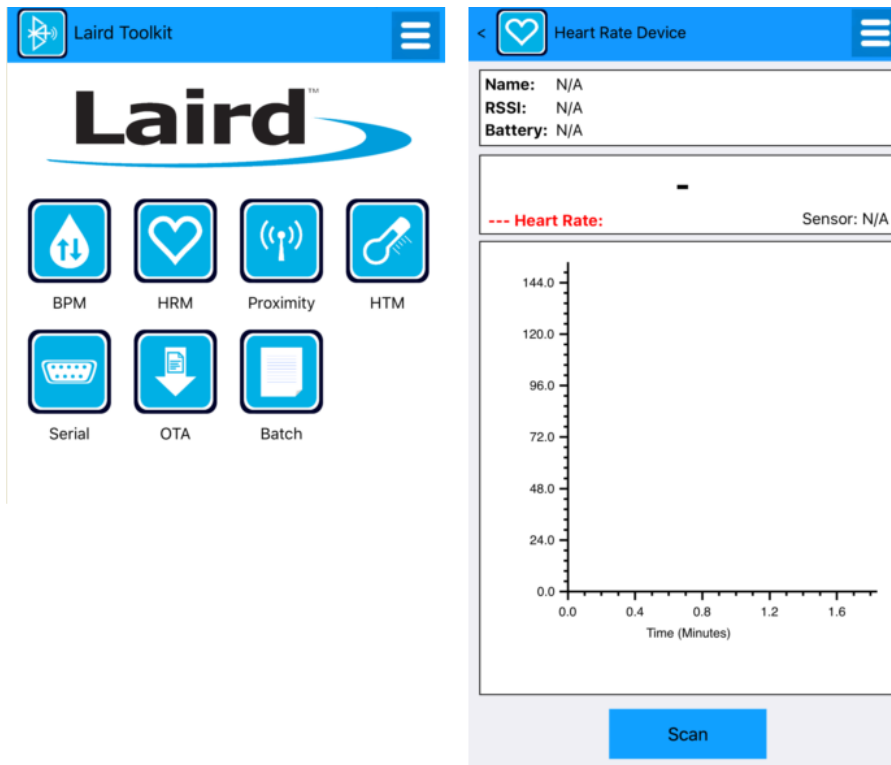
Figure 7: Laird Toolkit app – Home screen, HRM

RUNNING HRS.SB AND CONNECTING WITH THE IPHONE/IPAD

To run hrs and connect with the iPhone/iPad, follow these steps:

1. Return to UWterminalX and type **hrs** followed by a return to run the application. The module initialises and advertisements begin, and the log is printed to the console.
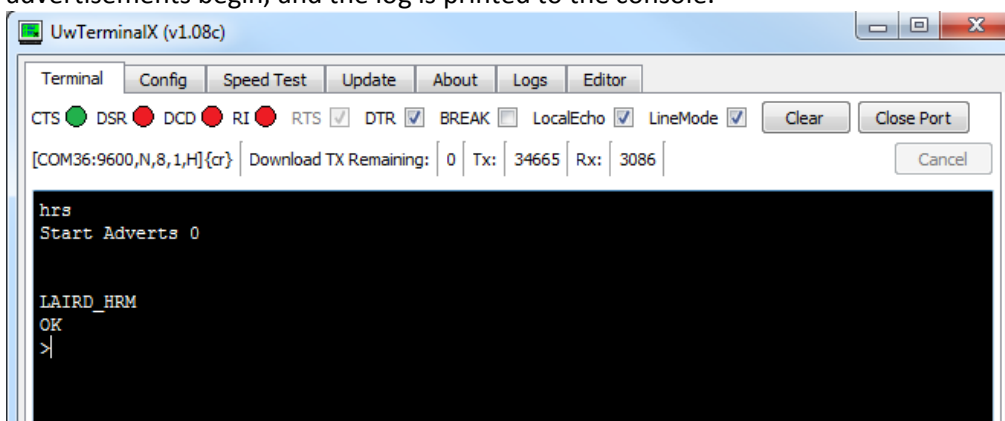
Figure 8: hrs running

2. Press **Scan** on the iPhone/iPad in the HRM window.
3. Select LAIRD_HRM to connect to the BL600.
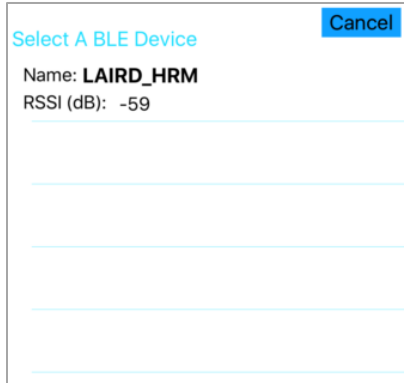
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Figure 9: BL600 Advert running HRM smartBASIC code

Note: If the module times out before you make a connection, press the reset button on the
development board, allow the module to reset and run the application again.

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4.   Send heart rate data to the iPad by issuing the following case-sensitive command in UwTerminalX:

```
hr 60<CR>
send<CR>
```

If successful, the module responds *OK* > in UWTerminalX (Figure 10).
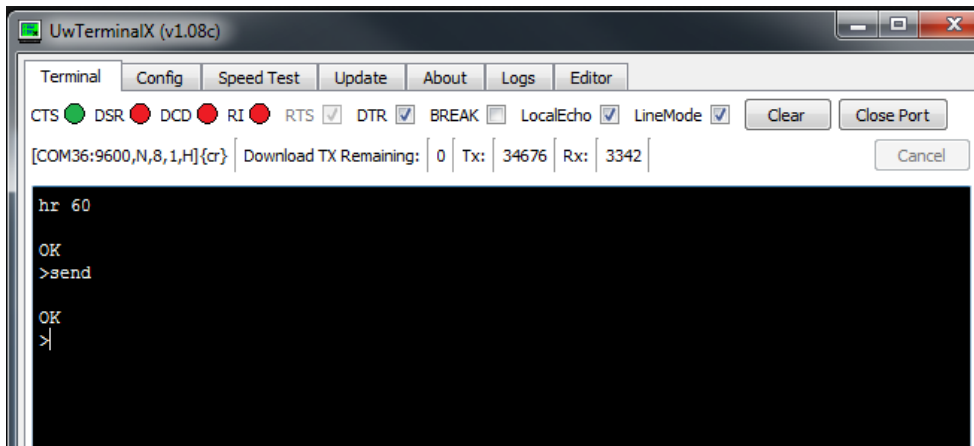

Figure 10: Heart rate data sent

The data now appears on the iPhone/iPad screen (Figure 11):

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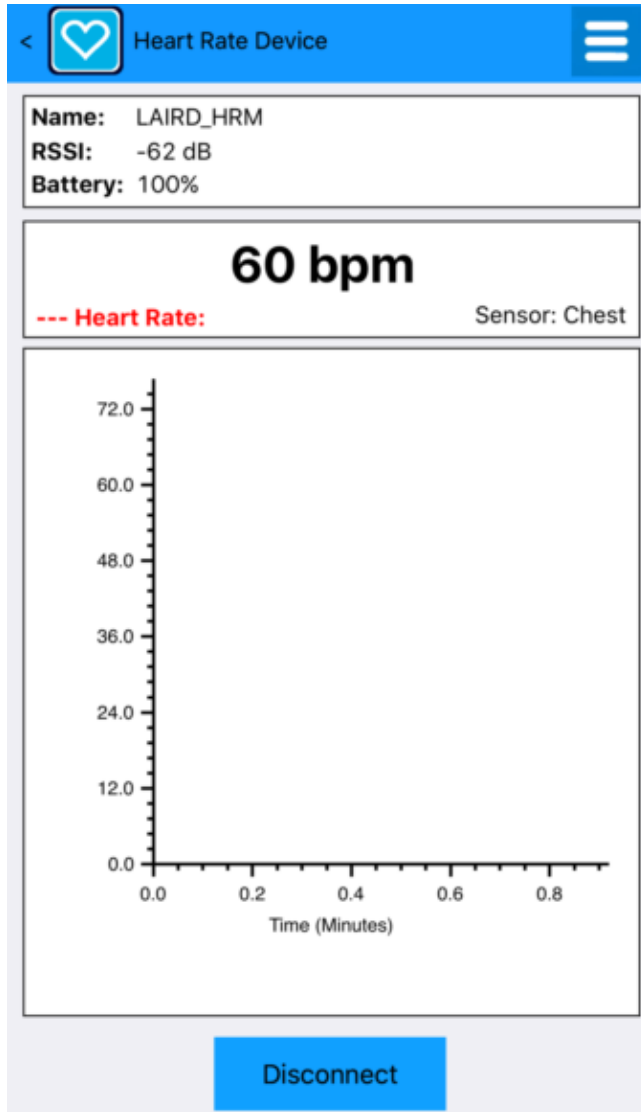Hong Kong: +852 2923 0600

Figure 11: Data received, provided by hrs.sb

To update the iPad with new heart rate values, send the command as in the following example:

```
hr 96<CR>
send<CR>
```

Pressing reset button on the DVK board while hrs.SB is running returns the module to interactive mode where you can reissue commands to the module.

REVISION HISTORY

Version	Date	Notes	Approver
1.0	22 Feb 2013	Initial Release	Jonathan Kaye
1.1	24 Feb 2015	Added Revision History and version number	Sue White
1.2	19 Dec 2016	Updated for Laird Toolkit and new template	Jonathan Kaye

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