

Using BL654 DVK with Nordic nRFToolbox

Development Kit: Part # 455-00001 and 455-00002

Application Note

v1.1

OVERVIEW

This application note is intended to guide you through the initial setup of the BL654 development kit (part # 455-00001 and 455-00002), download a *smartBASIC* application onto the module, and create BLE data.

REQUIREMENTS

- Laird DVK-BL654, Part # 455-00001 or 455-00002
- Optionally, if not pre-installed, install the FTDI USB-to-Serial drivers for DVK-BL654 (found at <http://www.ftdichip.com/FTDrivers.htm>)
- USB-A to USB-Micro cable
- UwTerminalX, provided by Laird at <https://github.com/LairdCP/UwTerminalX>
- BLE-capable smartphone
- nRF Toolbox, which can be downloaded from Appstore or Android market by searching for *nRF Toolbox*
- *smartBASIC* application **htss.health.thermometer.sensor.custom.sb** found in <https://github.com/LairdCP/BL654-Applications/tree/master/Applications>
- A Windows/Linux PC or Mac

INITIAL SETUP USING BL654 DEVELOPMENT KIT

Complete the following steps on the BL654 development kit:

1. Configure the BL654 development kit with the following settings:
 - Power source switch (SW4) to USB_5V
 - Switches SW6 and SW5 to 3V3
 - Set SW7 in the middle position and SW11 to the right, as shown in [Figure 1](#)
2. Connect USB1 on the development kit to any spare USB port on your PC via the included USB-A to USB Micro cable.

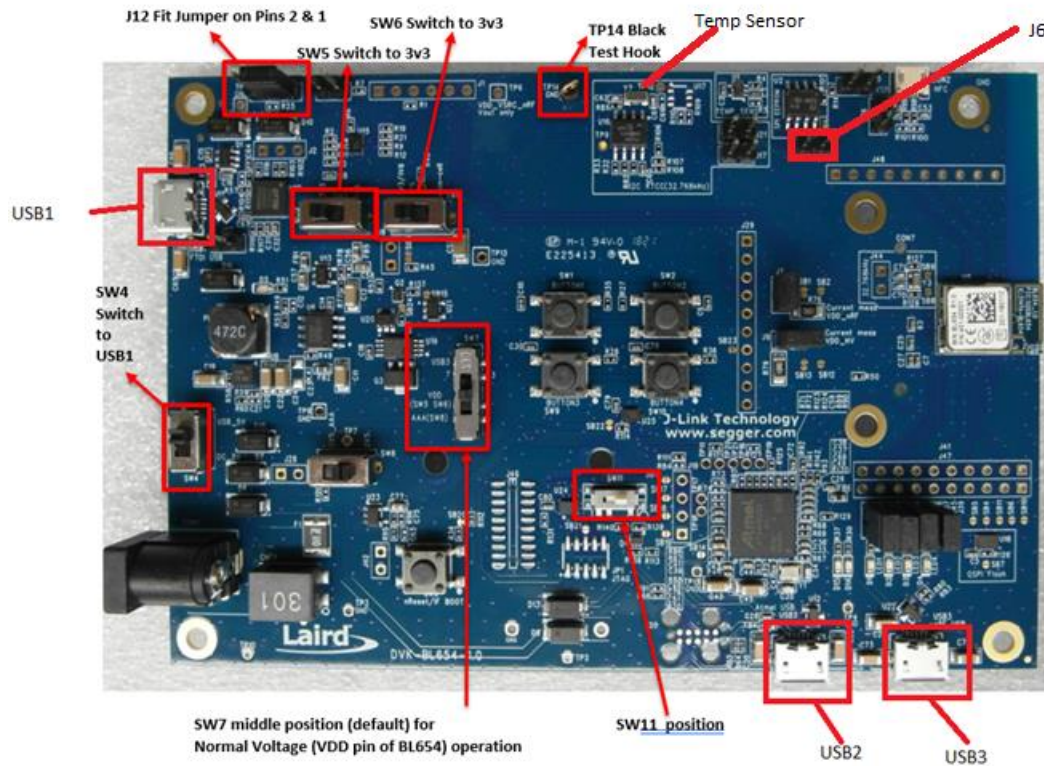


Figure 1: BL654 development board

3. In most cases, this should be a plug-and-play operation, but if asked, 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.

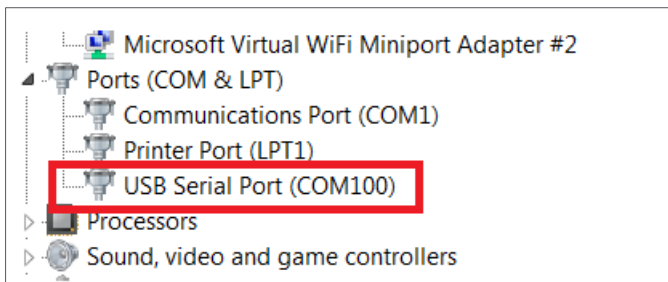


Figure 2: Device manager

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 BL654.
7. From the Config tab in the Device drop-down menu, select **BL65x** to populate the baud, parity, stop bits, data bits, and handshaking settings. If **BL65x** is not a selectable device, set the following:
 - Baudrate: 115200
 - Parity: None
 - Stop Bits: 1
 - Data Bits: 8
 - Handshaking: CTS/RTS
8. In the Port dropdown, select the COM port associated with your development kit.
9. At the top of the screen, click **OK**.

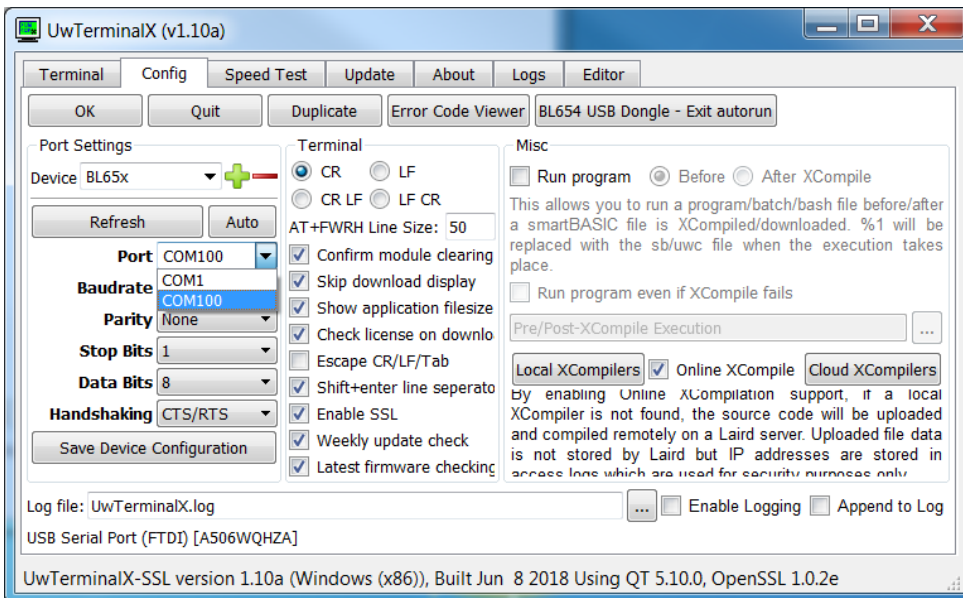


Figure 3: UwTerminalX configuration window

10. To test that UwTerminalX is configured correctly and communicating with the module, click **Enter**. You should get **00** (**Error! Reference source not found.**).

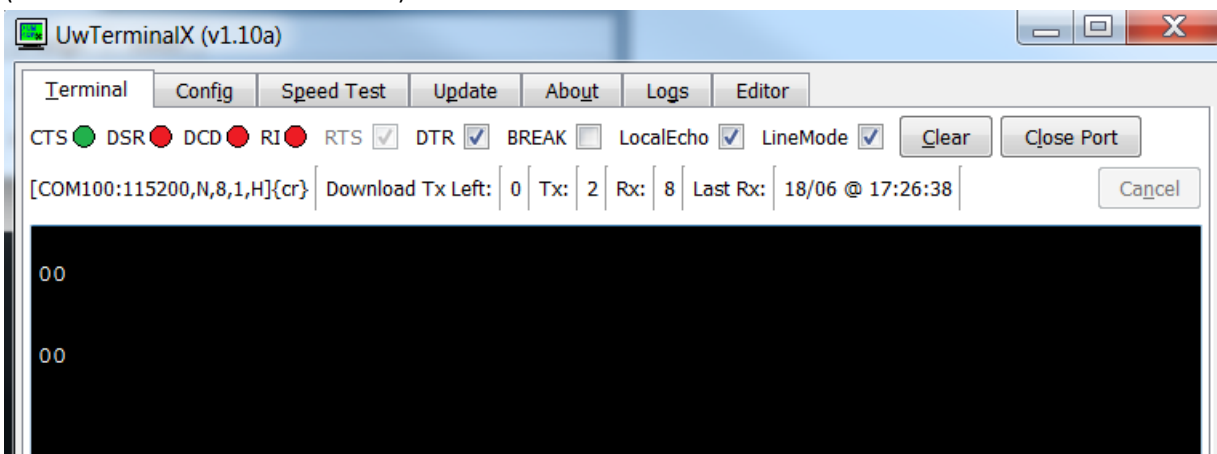


Figure 4: Module is communicating successfully

11. Download and save to your local drive the *smartBASIC* applications found in <https://github.com/LairdCP/BL654-Applications/>
12. Right-click in the UwTerminalX window and select **XCompile + Load** to load the **htss** *smartBASIC* application.
13. Navigate to the Applications folder and select the **htss.health.thermometer.sensor.custom.sb** file.
14. Wait for the application to compile and load; this should take few seconds. Verify the program is properly loaded by running the **at+dir** command in UwTerminalX.
15. Confirm that **htss** is displayed ([Figure 5](#)).

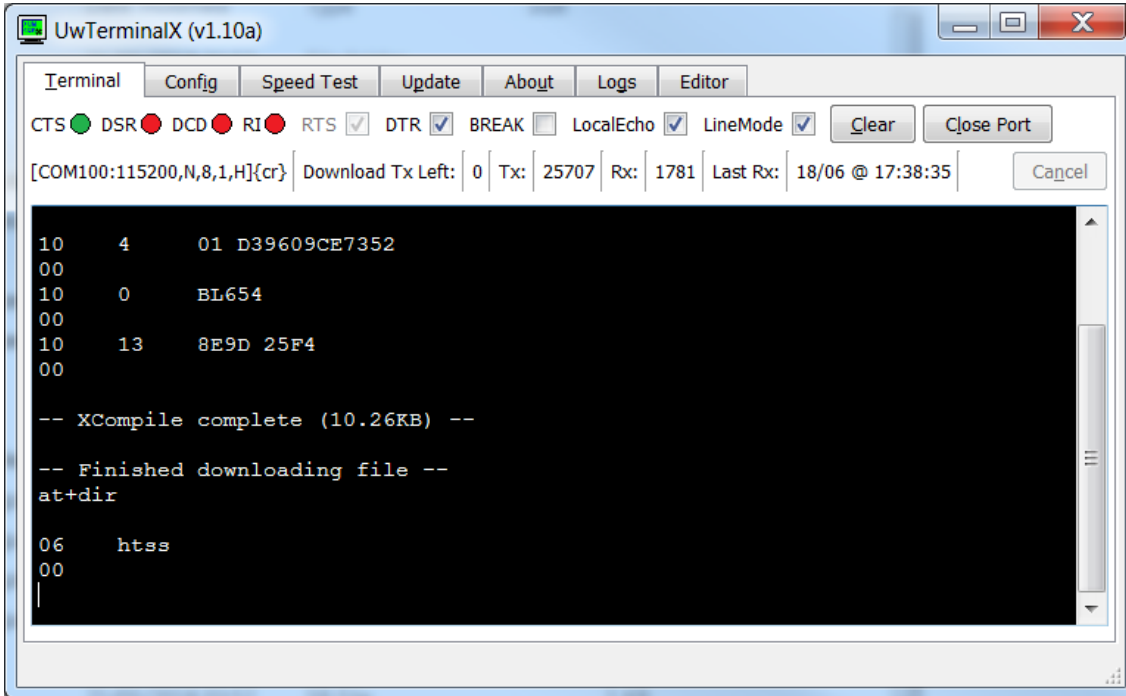


Figure 5: Successfully loaded program

16. Place a jumper on the 2-pin header J6 (see [Figure 1](#)) to connect the temperature sensor to the module.



Figure 6: nRF Toolbox

17. Search in the App store or Google Play Store for “nRF Toolbox” and install it.
18. In UwTerminalX, type **htss** and click on enter to run the application. The module will start advertising

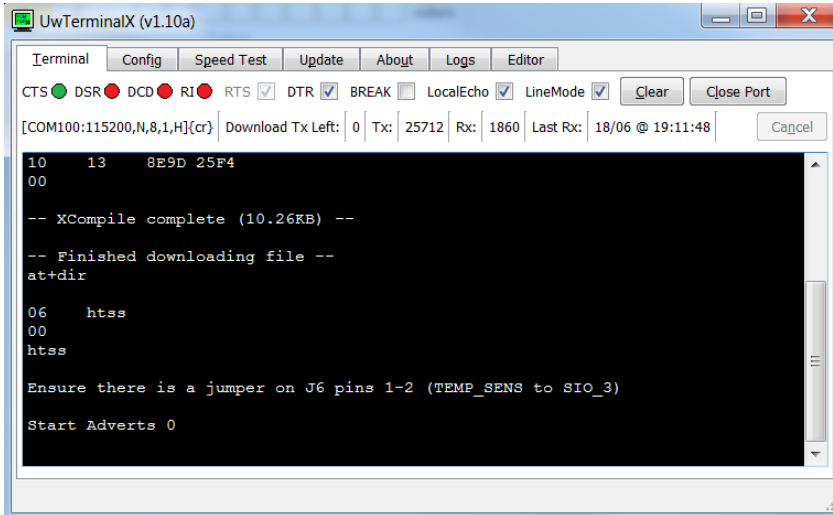


Figure 7: Running HTSS

19. Open the nRF Toolbox and run HTM.

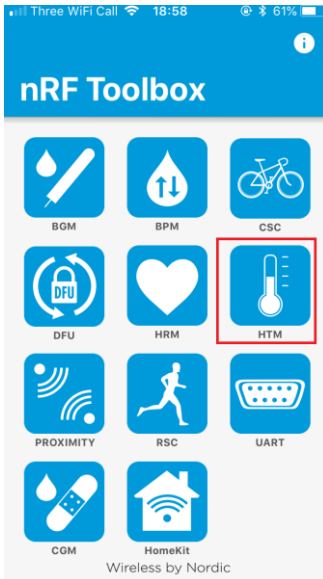


Figure 8: HTM app

20. Click **CONNECT** to start searching for the module.

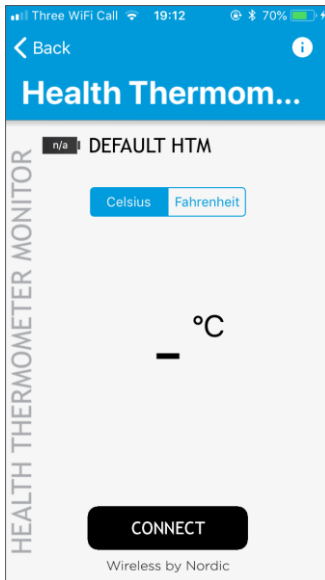


Figure 9: Connection screen

21. In the next screen, click to select the BL654 module (LAIRD_TS).

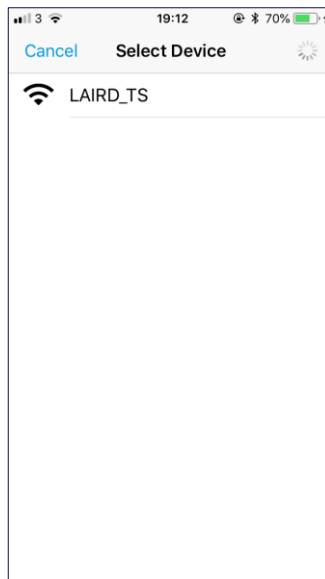


Figure 10: Search screen

You are now connected to the module. The application displays the received temperature data from the temperature sensor on the development board.



Figure 11: Live temperature data displayed by the app.

If you place your figure on the temperature sensor IC (see Figure 1), you should see the temperature reading on the app changing.

FURTHER INFORMATION

Further information relating to the BL654 USB dongle is available from the Laird BL654 product page:
<https://www.lairdtech.com/products/bl654-ble-thread-nfc-modules>

REVISION HISTORY

Version	Date	Notes	Contributor(s)	Approver
1.0	21 June 2018	Initial Release	Shewan Yitayew	Jonathan Kaye
1.1	05 July 2018	Renamed to <i>Using BL654 Development Kit with Nordic nRFToolbox</i>	Shewan Yitayew	Jonathan Kaye