



BL620-US

USB BLE Dongle – Single Mode Central Mode BLE Module Featuring *smartBASIC*



USB BLE Dongle - Single Mode



The BL620-US single mode USB BLE dongle is derived from BL600 /BL620 and has the ability to add BLE Central Mode capabilities to any operating system supporting a USB interface and virtual COM

port. The dongle provides the ability to load *smartBASIC* applications over the air (OTA) to a BL600 peripheral mode module.

The BL600 Series modules from Laird have been enhanced with the addition of the BL620 part numbers. The BL620 uses the same module hardware as the BL600 but has a new firmware load supporting Central mode connectivity. The BL620 makes it easy to add single-mode Bluetooth Low Energy (BLE), or Bluetooth Smart™, to small, portable, power-conscious devices, including those powered by AAA or coin cell batteries. The fully approved, programmable modules feature Laird's innovative, event-driven *smart BASIC* programming language, which significantly simplifies BLE integration.

Based on the award winning Nordic Semiconductor nRF51822 chipset, BL620 modules provide exceptionally low power consumption with outstanding wireless range, all within a compact footprint of 19 mm x 12.5 mm. The modules incorporate all the hardware and firmware required to support development of BLE Central mode applications, including:

- Radio hardware
- UART, SPI, I2C, ADC, and GPIO interfaces for connecting peripherals and sensors
- A complete BLE software stack
- Central role functionality with GATT Client
- Custom Services to suit any application's needs
- Packaged USB Dongle incorporating BL620

What makes the modules unique is *smartBASIC*, an event-driven programming language that enables standalone operation of the module whereby sensors can be attached via any of the interfaces without the need for an external processor. Ultimately *smartBASIC* accelerates initial development, creation of prototypes, and mass production by providing you with your own BLE expert within the module.

The BL620-US USB Dongle is packed with BL620 to take advantage of the BL620 module, providing the ability to add BLE Central Mode capabilities to any operating system supporting a USB interface and virtual COM port. The control and configuration is via a standard virtual COM port and *smartBASIC*. The dongle provides the ability to load *smartBASIC* applications over the air (OTA) to a BL600 peripheral mode module.

In addition to carrying FCC modular, IC and CE approvals, BL620 –US USB dongle is fully qualified as a Bluetooth End Products, enabling designers to develop with the BL620 central mode firmware.

The details documents are subject to change. Download the product specification from www.lairdtech.com/bluetooth.

global solutions: local support.

Support Portal:

<http://ews-support.lairdtech.com>

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CATEGORIES	FEATURE	IMPLEMENTATION
Wireless Specification	Bluetooth®	V4.0 – Single-Mode – Central mode
	Frequency	2.402 - 2.480 GHz
	Max Transmit Power	4dBm
	Receive Sensitivity	-91dBm (typical)
	Whisper Mode	Down to -55dBm (Transmit)
	Link Budget	95 dB (@ 1 Mbps)
	Raw Data Rates	1 Mbps (over the air)
Host Interfaces	Total	28 lines – multi function
	UART	TX, RX, CTS, RTS DTR, DSR, DCD, RI can be implemented in <i>smartBASIC</i> Default 9600, N, ,8, 1 From 1,200 to 115,200bps
	GPIO	Up to 28 lines
	SPI	3 lines
	I2C	2 lines
	ADC	6 lines (plus ADC reference)
	Services	Client and Server Capability
Control Protocols	Any that can be implemented using <i>smartBASIC</i>	
Encryption	AES	128 bit using CCM encryption
Supply Voltage	Supply	5V
Power Consumption	Current	'System Idle' – 3.5uA 'Transmit' – 10.5mA @ 0dBm
Physical	Dimensions	19mm x 12.5mm x 3mm
Environmental	Operating Temperature	-40° to +40° C (contact Laird for any query)
	Storage Temperature	-40°C to +85°C
Miscellaneous	Lead Free	Lead-free and RoHS compliant
	Warranty	1 Year
Development Tools	Development Kit	Development board and free Software Tools **
Approvals	Bluetooth®	End Product Listing (EPL)
	FCC / IC / CE	All BL620 Series

Ordering Information

BL620-SA-0x	Single Mode BLE Module featuring <i>smartBASIC</i> (internal antenna)
BL620-SC-0x	Single Mode BLE Module featuring <i>smartBASIC</i> (IPEX MHF4 antenna connector)
BL620-ST-0x	Single Mode BLE Module featuring <i>smartBASIC</i> (trace pin)
BL620-US-0x	Packaged BL620 USB Dongle
DVK-BL600-SA / ST / SC-0x	Development Kit for each BL600 series module above *** Use standard DVK-BL600 and upgrade the firmware



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GETTING STARTED

Quick Start Guide

v1.0

INTRODUCTION

The goal of this document is to explain how to install the BL620-US dongle for use on your PC/Mac.

REQUIREMENTS

The following equipment and utilities are required:

- BL620-US Dongle
- Windows PC/Mac
- UwTerminal (Windows)

The BL620-US dongle has a Segger J-Link chip on board so when you connect the dongle to your computer it will search for the relevant driver which can be obtained from <http://www.segger.com/jlink-software.html>.

INSTALLATION (WINDOWS)

1. Connect the dongle to your PC
2. With the J-Link driver installed, wait until Windows finishes installing device driver software.
3. Check that the device is listed in the Device Manager. See [Figure 1](#).
4. Open UwTerminal and type “at” and return to check you can communicate with the dongle.

Note: When using the BL620-US dongle, in UwTerminal the CTS pin will always be deasserted

INSTALLATION (MAC)

1. Connect the dongle to your Mac
2. Open Terminal and type “ls /dev/cu.*” to get a list of the serial devices connected. Your dongle will be something similar to cu.usbmodem####.
3. Type “screen /dev/cu.usbmodem####” replacing “####” with what was returned by the previous command. You can now communicate with the dongle using AT commands. See [Figure 2](#).

Note: In the screen window, use ctrl + a to see a help screen with a list of available commands. Exit Screen by pressing ctrl + a, then ctrl + \



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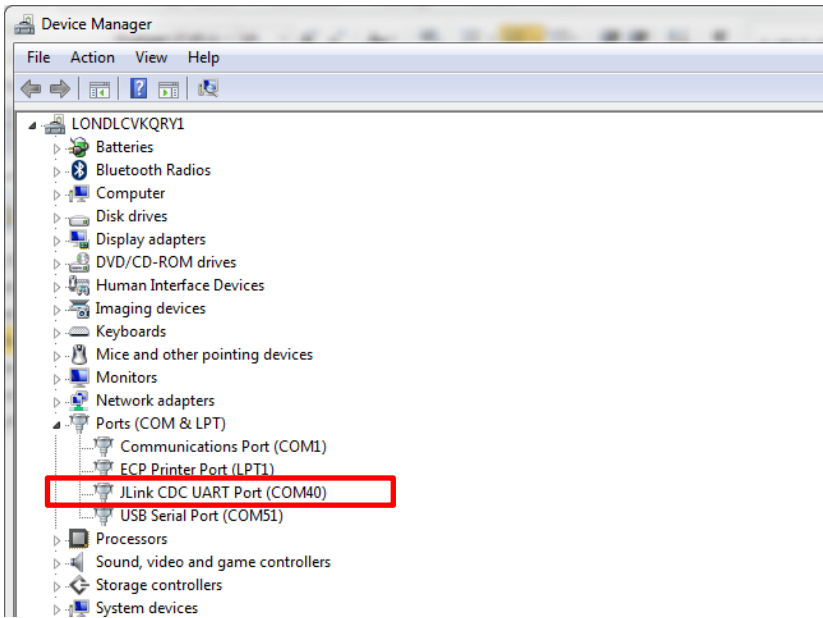


Figure 1: BL620-US as shown in Device Manager

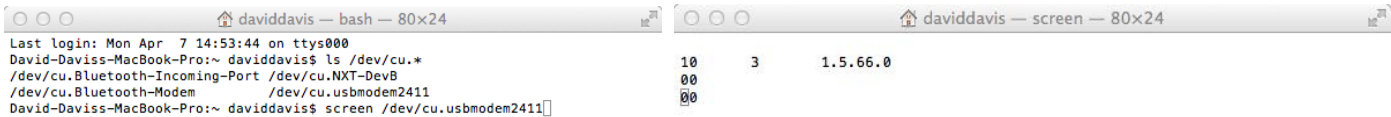


Figure 2: Using BL620-US in OS X

FURTHER INFORMATION

Further information relating to firmware and the use of UWTerminal is available from the Laird website at <http://www.lairdtech.com/Products/Embedded-Wireless-Solutions/Bluetooth-Radio-Modules/BL600-Series>



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FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

The product comply with the US portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



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INDUSTRY CANADA STATEMENT:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et*
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Radiation Exposure Statement:

The product comply with the Canada portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

Déclaration d'exposition aux radiations:

Le produit est conforme aux limites d'exposition pour les appareils portables RF pour les Etats-Unis et le Canada établies pour un environnement non contrôlé. Le produit est sûr pour un fonctionnement tel que décrit dans ce manuel. La réduction aux expositions RF peut être augmentée si l'appareil peut être conservé aussi loin que possible du corps de l'utilisateur ou que le dispositif est réglé sur la puissance de sortie la plus faible si une telle fonction est disponible.