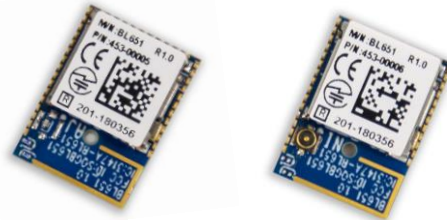


# BL651 Series

Bluetooth® 5 Low Energy Modules featuring  
Nordic nRF52810



## COST-EFFECTIVE BLUETOOTH 5 FOR SIMPLE BLE SOLUTIONS



Laird's BL651 Series contains the latest Nordic nRF52810 silicon with **Bluetooth 5 Low Energy** capabilities and groundbreaking ultra-low power performance. Building on Laird's multi generation module developments utilizing Nordic silicon (BL600, BL652, BL654) – now comes the latest series offering **cost effective** Bluetooth 5 enablement for simple BLE applications.

The BL651 series exposes all the capabilities of the Nordic nRF52810 silicon in a small, fully certified module with simple soldering castellation for easy prototyping and mass production manufacturing. Use the **Nordic SDK & SoftDevice** or **Zephyr RTOS** to deliver your BLE application. Let Laird's innovative BL651 series and decades of expertise in Bluetooth module design speed your product to market.

In addition, the BL651 series is 100% PCB footprint **drop in compatible** with the BL652 Series of modules, allowing flexibility to upscale your design if more flash / RAM or further feature sets are required, during the design process.

- **Bluetooth v5**
  - Higher Throughput 2MPHY
  - Advertising Extensions
- **ANT and Proprietary 2.4GHZ** radios options
- **Powerful** - 64MHz 32-bit Cortex M4 with 192kB Flash / 24kB RAM
- **Widest range of configurable interfaces:** UART, I2C, SPI, ADC, GPIO, PWM
- **Industrial Temp Rating** (-40° to +85° C)
- **Ultra-Small footprint** (14mm x 10mm x 2.1mm)
- **BLE Roles** – Peripheral (x2) and Broadcaster – concurrent (Nordic SDK).
- **Major security features:** LE Secure Connections, Link Layer Ping, Privacy v1.2
- **Built on years of experience with Nordic** (BL600, BL652 & BL654 Series to date)
- **Fully certified:** FCC, IC, CE, MIC & RCM

### Features at a Glance



#### SPEED TO MARKET

Easily write your hostless applications utilizing the Nordic SDK directly and all supporting Nordic utilities



#### EXTREMELY EFFICIENT POWER MANAGEMENT

Customize to balance throughput with power usage, enabled by ultra-low power sleep mode.



#### Global Approvals – Make Yourself at Home

Carries several modular FCC, IC, CE, MIC, RCM and Bluetooth SIG approvals.



#### Personal support from Design to Manufacture

Laird's industry-renowned support is passionate about helping you speed your design to market.

### Application areas



IoT Devices and Sensors



Beacons and Proximity Applications



Secure Medical Peripherals



Industrial Monitoring

## Shared Specifications

Category	Feature	Specification
<b>Wireless Specification</b>	Radios	Bluetooth 5 ANT and Proprietary 2.4 GHz
	Frequency	2.402 - 2.480 GHz
	Transmit Power	+ 4 dBm (maximum). Configurable down to -40 dBm
	Receive Sensitivity	-96 dBm (typical – 1Mbps mode) -93 dBm (typical – 2Mbps mode)
	Link Budget (1Mbps)	100 dB (conducted)
	Antenna Options	PCB Trace antenna or IPEX MHF4 Connector
	Raw Data Rates (Air)	1 Mbps / 2 Mbps
	<b>Host Interface and Peripherals</b>	32 Max. Lines
<b>Profiles</b>	Bluetooth Low Energy	Any available via Nordic SDK or Zephyr RTOS
<b>Roles</b>	Bluetooth Low Energy	2x peripheral and 1x broadcaster with Nordic SDK.
<b>Programmability</b>	Nordic SDK	Via JTAG Software / Support available from Nordic directly
	Nordic SoftDevice v S112	Any exposed within the related Nordic softdevice
	Zephyr	Via JTAG Software / Support available from Zephyr community
<b>Supply Voltage</b>		1.7V – 3.6V
<b>Power Consumption</b>	Current	Max Peak Radio Current (@ +4dBm TX) – 7.0mA (DCDC)
		Standby Doze – 1.5 uA
		Deep Sleep –0.3uA (external signal wake up)
<b>Physical</b>	Dimensions	14mm x 10mm x 2.1mm <b>NOTE:</b> Drop in PCB footprint compatible with BL652 series
<b>Environmental</b>	Temperature Range	-40°C to +85°C
<b>Miscellaneous</b>	Lead Free	Lead-free and RoHS compliant
	MSL Level	4
<b>Development Tools</b>	Utilities	All Nordic utilities
		Android and iOS applications (nRF Connect)
<b>Qualifications</b>	Bluetooth®	Complete Declaration ID
<b>Approvals</b>	FCC / IC / CE / MIC / RCM	All BL651 Series

For full specifications on BL651 Series modules, please see the appropriate **Hardware Integration Guide**.

## ORDERING INFORMATION

Part	Description
453-00005	Bluetooth v5.0 BLE Module with integrated antenna (Nordic nRF52810) - Tape / Reel
453-00006	Bluetooth v5.0 BLE Module with external antenna (Nordic nRF52810) - Tape / Reel
453-00005C	Bluetooth v5.0 BLE Module with integrated antenna (Nordic nRF52810) - Cut Tape
453-00006C	Bluetooth v5.0 BLE Module with external antenna (Nordic nRF52810) - Cut Tape