

MULTI-CORE & MULTI-PROTOCOL – THE CAPABILITIES ARE ENDLESS



Laird Connectivity's newest edition to their Nordic Semiconductor based Bluetooth LE portfolio, is the most advanced, most secure and highest performing dual core MCU architecture wireless solution available. The BL5340 series of robust, tiny modules feature the **Nordic nRF5340 SoC**. It directly targets the highest performance with the lowest power budget, with variants featuring integrated Nordic **nRF21540 PA/LNA** for higher TX Power applications. Featuring Bluetooth 5.2 including Isochronous Channels and LE Audio, the BL5340 supports next generation Bluetooth audio for stereo streaming and broadcast audio.

The dual core **Arm® Cortex M33** microcontrollers enable you to run a low power core focused purely on wireless connectivity, with a second higher performance core targeted for the end application itself. This further extends the multi-protocol capabilities of the product: **Bluetooth LE, 802.15.4 (Thread / Zigbee) and NFC**. It's further enhanced with an ARM CryptoCell-312 including trusted execution, root-of-trust and secure key storage security features.

The BL5340 series brings out all nRF5340 hardware features and capabilities including **USB access**, up to **+10dBm** certified for PA version (+3 dBm from SoC) transmit power, from **1.7V to 5.5V** supply considerations, and a **true industrial operating range of -40 to 105°C**. Complete regulatory certifications enable faster time to market and reduced development risk completes Laird Connectivity's simplification of your next multi-protocol wireless design!

- **Nordic nRF5340** – 7x7 QFN with 48 GPIOs available.
- **Multi-protocol support:** Bluetooth 5.2 LE, 802.15.4 (Thread/Zigbee), NFC
- **Dual Cortex M33** microcontroller cores
  - Application processor - 128/64 MHz M33 – 1MB Flash/512KB RAM (Including DSP Instructions)
  - Network processor - 64 MHz M33 – 256KB Flash/64KB RAM
- **Most configurable interfaces:** - USB, UART, QSPI, SPI, I<sup>2</sup>S, I<sup>2</sup>C, PDM, PWM, ADC, GPIO, QDEC, Comparator, Low Power Comparator
- **Additional SoC Hardware Features** like RNG, WDT, temperature sensor, floating point unit, inter-processor communication, debug trace
- **Extended Industrial Temperature Rating** (-40° to +105 °C)
- **Module Choice:** Main module (BL5340 with nRF5340) or **Power Amplified** variant (BL5340 PA with nRF5340 + nRF21540)
- **Antenna choice** – integrated pre-certified **PCB or Trace pad** options
- **Small form factor:** as small as 15 x 10 x 2.2 mm (BL5340)
- **Development choice:** Zephyr RTOS or utilize Nordic nRF Connect SDK
- **Bluetooth LE:** Peripheral/Central, 2 Mbps (high throughput), LE Coded (long range), AoA / AoD, LE Audio / Isochronous Channels, Mesh
- **Advanced Security:** ARM TrustZone®, Root of Trust, ARM CryptoCell-312 & KMU, Access Control Lists, System Protection Unit, Encrypted QSPI
- **Firmware Over the Air (FOTA)** via MCUboot and Zephyr
- **Hostless operation** – Dual Core MCU reduces BOM
- Built on **decades of Nordic experience:** BL600/651/652/653/653μ/654
- **Fully featured development kits** to jump start Bluetooth LE development

FEATURES AT A GLANCE



**SECURE, FLEXIBLE DUAL CORE M33 ARCHITECTURE**

Dual cores supporting dedicated application and network processing all with secure trusted execution with Arm TrustZone and CryptoCell-312.



**SOFTWARE FLEXIBILITY AND SPEED TO MARKET**

Develop your with either Zephyr RTOS or the Nordic's nRF Connect SDK. Utilize our extensive sample apps and out of box demo to speed development



**TRUE INDUSTRIAL OPERATING RANGE**

Designed and certified to the highest industrial temperature range of -40 °C to +105 °C for every component utilised.



**GLOBAL APPROVALS – MAKE YOURSELF AT HOME**

Carries FCC, IC, CE, RCM, MIC for Bluetooth & 802.15.4 and Bluetooth SIG approvals.



**PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE**

Our industry-renowned support is passionate about helping you speed your design to market.



APPLICATION AREAS



Smart Building



Asset Tracking



Secure Medical Peripherals



Industrial Automation

## KEY SPECIFICATIONS

CATEGORY	FEATURE	SPECIFICATION	
Wireless Specification	Bluetooth®	v5.2	
	802.15.4	Thread and Zigbee	
	NFC	Type 2 / 4 Tags	
	TX Power (radiated – inc. 2dBi antenna gain)	BL5340	Up to + 5 dBm. Configurable down to -38 dBm
		BL5340 PA	Up to + 10 dBm. Configurable down to -41 dBm
	Receive Sensitivity	BL5340	-98.0 dBm (typical @ BLE 1 Mbps), -104 dBm (typical @ BLE 125 kbps)
		BL5340 PA	TBD
	Link Budget	BL5340	101.0 dB (@ BLE 1 Mbps), 107 dB (@ BLE 125 kbps)
BL5340 PA		TBD	
Antenna Options	Integrated PCB trace antenna or RF trace pin for external antennas		
Raw Data Rates (Air)	1 Mbps, 2 Mbps, 500kbps, 125 kbps		
Host Interface and Peripherals	UART Interface	TX, RX, CTS, RTS, DTR, DSR, DCD, RI (GPIO). Default: 115200, N, 8, 1. Configurable from 1200 bps to 1 Mbps	
	USB Interface	2 pins – USB 2.0 slave, up to 12Mbps	
	Other	Up to 48 multifunction GPIO's that can provide: <ul style="list-style-type: none"> <li>▪ Up to 4 UART (4 GPIO pins each)</li> <li>▪ 8 ADC channels (1 pin each)</li> <li>▪ Up to 4 I2C (2 GPIO pins each)</li> <li>▪ Up to 5 SPI Master (4 GPIO pins including CS each)</li> <li>▪ 1 PDM (2 GPIO pins)</li> </ul>	
	Key BLE Features	Bluetooth Low Energy <ul style="list-style-type: none"> <li>▪ GATT client/server – Any adopted/custom services</li> <li>▪ Central/Peripheral roles</li> <li>▪ Bluetooth mesh</li> <li>▪ 2M PHY</li> <li>▪ LE Coded PHY</li> <li>▪ LE Audio w/ Isochronous streams (BT v5.2)</li> </ul>	
Programming Options	Nordic nRF Connect SDK	Software/Support available from Nordic directly <a href="https://devzone.nordicsemi.com/">https://devzone.nordicsemi.com/</a>	
	Zephyr RTOS	Software/Support available from <a href="https://www.zephyrproject.org/">https://www.zephyrproject.org/</a>	
FW upgrade	Via UART, SWD or BLE – nRF Connect SDK Via UART, SWD or BLE – Zephyr		
Supply Voltage	1.7V – 5.5V – BL5340 variants		
	3.0V – 3.6V – BL5340 PA variants		
Power Consumption	Current - BL5340 only	Max Peak Radio Current (@ +3 dBm TX) – 5.3 mA (DCDC at 3V)	
		Max Peak Radio Current (@ 0 dBm TX) – 4.1 mA (DCDC at 3V)	
		System ON – 1.3 µA (wake on any event)	
		System OFF – 0.9 µA (wake on reset)	
Physical	Dimensions	15 mm x 10 mm x 2.2 mm - BL5340 variants	
		21 mm x 10 mm x 2.2 mm – BL5340 PA variants	
Environmental	Temp Range	-40°C to +105°C	
Miscellaneous	Lead Free	Lead-free and RoHS-compliant	
	Development Kit	Development board and free software tools	
Development Tools	Utilities	Nordic nRF Connect - Android and iOS applications	
Qualifications	Bluetooth®	Complete Declaration ID	
Regulatory	Approvals	FCC/IC/CE/MIC/RCM - All BL5340 Series. Bluetooth & 802.15.4 certified	

**For full specifications on BL5340 modules, please see the appropriate datasheet.**

## ORDERING INFORMATION

PART #	DESCRIPTION
453-00052R	BL5340 series - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Tape/Reel)
453-00053R	BL5340 series - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Tape/Reel)
453-00052C	BL5340 series - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Cut Tape)
453-00053C	BL5340 series - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Cut Tape)
453-00052-K1	Development kit for BL5340 Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna
453-00053-K1	Development kit for BL5340 Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) - Trace pin (Ext antenna)
453-00068R	BL5340 PA - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Tape/Reel)
453-00069R	BL5340 PA - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Tape/Reel)
453-00068C	BL5340 PA - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Cut Tape)
453-00069C	BL5340 PA - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Cut Tape)
453-00068-K1	DVK for BL5340 PA - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna
453-00069-K1	DVK for BL5340 PA - Multi-Core / Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (external antenna)