Laird™ CONNECTIVITY

BL5340PA Series
Multi-Core/Protocol – Bluetooth® + 802.15.4 + NFC Modules & Nordic FEM

MULTI-CORE, MULTI-PROTOCOL AND LONG RANGE

Laird Connectivity's latest edition to their Nordic Semiconductor based Bluetooth LE portfolio, is the most advanced, secure, and highest performing dual core MCU architecture wireless solution available. Based on the **Nordic nRF5340 system-on-chip (SoC)** and **nRF21540 Front End Module (FEM)**, the BL5340PA series directly targets OEM customers requiring the longest range and highest MCU performance for their products' wireless connectivity needs. Adding the nRF21540 RF FEM improves the link budget and connection robustness and significantly increases wireless range versus only using the nRF5340 SoC. The partnering of the nRF5340 and nRF21540 together into a certified module enables a wide range of use cases including industrial predictive maintenance and long range LE Audio capabilities.

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 BL5340PA series brings out the nRF5340 & nRF21540 hardware features and capabilities including **USB access,** up to **+18.5 dBm transmit power** and **a true industrial operating range of -40 to 105°C.** Multiple regulatory certifications for both Bluetooth and 802.15.4 enables 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 40 GPIOs available.
- **Nordic nRF21540** – 4 x 4mm QFN16
- **Multi-protocol support:** Bluetooth 5.2 LE, 802.15.4 (Thread/Zigbee), NFC
- **Dual Cortex M33** microcontroller cores
  - Application processor - 128/64 MHZ M33 – 1 MB Flash/512 KB RAM (Including DSP Instructions)
  - Network processor - 64 MHz M33 – 256 KB Flash/64KB RAM
- **Configurable interfaces**: - USB, UART, QSPI, SPI, I²S, I²C, 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:** This **Power Amplified** variant or smaller, non-amplified BL5340 series
- **Antenna choice** – integrated pre-certified **PCB or MHF4 connector** options with **antenna selection** feature for MHF4 variant
- **SMT Form factor:** 21 x 10 x 2.5 mm
- **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 CryproCell-312.

SOFTWARE FLEXIBILITY AND SPEED TO MARKET
Develop with either Zephyr RTOS or the Nordic's nRF Connect SDK. Use our extensive sample apps and out of box demo to speed your development

TRUE INDUSTRIAL OPERATING RANGE
Designed and certified to the highest industrial temperature range of -40°C to +105°C for every component utilized.

EXTENDED RANGE
Upto 18.5dBm TX output power to ensure the maximum wireless range for your product

PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE
Our industry-renowned support is passionate about helping you speed your design to market.

NORDIC SEMICONDUCTOR

Zephyr™ Project

APPLICATION AREAS

Smart Building – Lighting and Building Automation

Auracast™ - LE Audio for Public Broadcasts

Secure Medical Peripherals

Industrial Automation

Contact Sales -   Americas: +1-800-492-2320   Hong Kong: +852 2762 4823
Europe: +44-1628-858-940

For documentation, software, sample apps and more visit:
http://www.lairdconnect.com/BL5340PA-Series

KEY SPECIFICATIONS

CATEGORY	FEATURE	SPECIFICATION	
Wireless Specification	Bluetooth®	v5.2	
	802.15.4	Thread and Zigbee	
	NFC	Type 2/4 Tags	
	TX Power (conducted)	BL5340PA	Up to + 18.5 dBm BLE. Configurable down to –20dBm Up to + 21.0 dBm IEEE 802.15.4. Configurable down to -20dBm
	Receive Sensitivity (conducted)	BL5340PA	-103.0dBm at BLE 1Mbps -108.5dBm at BLE 125kbps coded PHY -107.0dBm at IEEE 802.15.4-2006 250kbps
	Link Budget (conducted)	BL5340PA	121.5dB at BLE 1Mbps 127.0dB at BLE 125kbps coded PHY
	Antenna Options Antenna Selection	Integrated PCB trace antenna or MHF4 connector for external antennas Only available on part # 453-00076	
	Raw Data Rates (Air)	1 Mbps, 2 Mbps, 500 kbps, 250kpbs, 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 40 multifunction GPIO's that can provide: ▪ Up to 4 UART (4 GPIO pins each) ▪ 8 ADC channels (1 pin each) ▪ Up to 4 I2C (2 GPIO pins each) ▪ Up to 5 SPI Master (4 GPIO pins including CS each) ▪ 1 PDM (2 GPIO pins)	▪ 1 I2S (5 GPIO pins) ▪ 2 GPIO pins for 32.768 kHz crystal ▪ 2 GPIO pins for NFC ▪ PWM output on 16 pins ▪ QSPI
Key Bluetooth LE Features	Bluetooth Low Energy	▪ GATT client/server – Any adopted/custom services ▪ Central/Peripheral roles ▪ Bluetooth mesh ▪ 2M PHY ▪ LE Coded PHY ▪ LE Audio w/ Isochronous streams (BT v5.2)	▪ AoA / AoD ▪ LE Advertising Extensions ▪ LE secure connections ▪ Data packet length extensions ▪ LE privacy v1.2 ▪ DTM Firmware (Test Modes)
Programming Options	Nordic nRF Connect SDK	Software/Support available from Nordic directly https://devzone.nordicsemi.com/	
	Zephyr RTOS	Software/Support available from https://www.zephyrproject.org/	
FW upgrade		Via UART, SWD, or Bluetooth LE – nRF Connect SDK Via UART, SWD, or Bluetooth LE – Zephyr	
Supply Voltage		3.0V – 3.6V	
Power Consumption	Current	Max Peak Radio Current (@ +18.5dBm TX) – 99.7mA (DCDC at 3.3V) Max Peak Radio Current (@ x 21.0dBm TX) – 133.1 mA (DCDC at 3.3V) System ON Idle – 3.1 µA (wake on any event, full 512kB RAM retention) System OFF – 0.9 µA (wake on reset)	
Physical	Dimensions	21 mm x 10 mm x 2.5 mm	
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 nRFConnect SDK/Zephyr RTOS. nRFConnect for Android, iOS and Desktop	
Qualifications	Bluetooth®	Complete Declaration ID	
Regulatory	Approvals	FCC/ISED/ RCM - Bluetooth & 802.15.4 certified	

For full specifications on BL5340PA modules, please see the appropriate datasheet.

ORDERING INFORMATION

PART #	DESCRIPTION
453-00068R	BL5340PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC (Nordic nRF5340+nRF21540) – Integrated antenna (Tape/Reel)
453-00076R	BL5340PA Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC (Nordic nRF5340+nRF21540) – MHF4 connector (Tape/Reel)
453-00068C	BL5340PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC (Nordic nRF5340+nRF21540) – Integrated antenna (Cut Tape)
453-00076C	BL5340PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC (Nordic nRF5340+nRF21540) – MHF4 connector (Cut Tape)
453-00068-K1	DVK for BL5340PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC (Nordic nRF5340+nRF21540) – Integrated antenna
453-00076-K1	DVK for BL5340PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC (Nordic nRF5340+nRF21540) – MHF4 connector

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Alcom
electronics

Singel 3 | B-2550 Kontich | Belgium | Tel. +32 (0)3 458 30 33 | info@alcom.be | www.alcom.be
Rivium 1e straat 52 | 2909 LE Capelle aan den Ijssel | The Netherlands | Tel. +31 (0)10 288 25 00 | info@alcom.nl | www.alcom.nl