

# NORA-B10 series

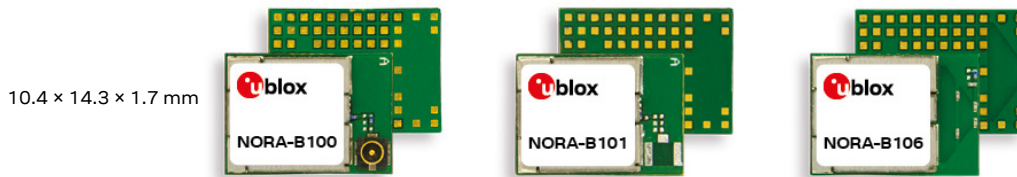


## Stand-alone Bluetooth 5.2 Low Energy modules



### Dual-core Arm® Cortex® M33 with Bluetooth 5.2 for performance oriented applications

- Arm® TrustZone® and CryptoCell® 312 for enhanced security
- Multi-protocol support for Bluetooth 5.2, Bluetooth mesh, Thread, Zigbee, and NFC
- Direction finding support for indoor location
- Support for Bluetooth Low Energy audio
- Extended temperature range up to 105 °C
- Global certification



### Product description

The NORA-B10 series are small, stand-alone Bluetooth Low Energy, wireless microcontroller unit (MCU) modules that comply with the Bluetooth 5.2 specification. The modules are built on the Nordic nRF5340 chip as an open CPU solution where customer applications run on two Arm® Cortex®-M33 processor cores with integrated flash and RAM memory.

The first core is for high-performance applications clocked at either 128 or 64 Mhz. The second core, clocked at 64 Mhz and optimized for low power and efficiency, is mainly dedicated to the wireless protocol stack and less demanding applications. Applications on the first core can run without being interrupted by network activity on the second, which is advantageous for time critical applications where a quick response is needed. In addition the modules support trusted execution with Arm TrustZone and root-of-trust with Arm CryptoCell-312.

NORA-B10 supports the Bluetooth 5.2 specification including features such as Angle-of-Arrival and Angle-of-Departure, Bluetooth long range and low energy audio. The modules support Bluetooth Low Energy services such as serial port communication, GATT, beacons and mesh. Additionally, they support NFC and IEEE 802.15.4 with Thread and Zigbee. A range of wired interfaces (UART, QSPI, SPI, I2C, I2S, USB, QDEC, PDM, PWM, and ADC) are available. NORA-B106 comes with an internal PCB antenna that provides a robust low profile solution with high performance and an extensive range. NORA-B100 comes with a U.FL connector and NORA-B101 comes with an antenna pin, both providing the option to use an external antenna of choice.

Key market segments are industrial automation, medical and healthcare, telematics, smart cities and buildings. Specific applications include connected tools, advanced and medical wearables, smart lighting, asset tracking, indoor location, low power sensors, as well as wireless-connected and configurable equipment. The NORA-B10 series is globally certified for use with the internal antenna or a range of external antennas. This greatly reduces time, cost and effort for customers integrating Bluetooth Low Energy in their designs.

	NORA-B100	NORA-B101	NORA-B106
<b>Grade</b>			
Automotive			
Professional	•	•	•
Standard			
<b>Radio</b>			
Chip inside	nRF5340		
Bluetooth qualification	v5.2	v5.2	v5.2
Bluetooth Low Energy	•	•	•
Thread / Zigbee	•	•	•
Bluetooth output power EIRP [dBm]	8	8	5
Max range, estimated [meters]	700	700	700
NFC	•	•	•
Antenna type (see footnotes)	U.FL	pin	pcb
<b>Application software</b>			
Open CPU for embedded applications	•	•	•
<b>Interfaces</b>			
UART	◆	◆	◆
QSPI and SPI	◆	◆	◆
I2C	◆	◆	◆
I2S and PDM	◆	◆	◆
USB	◆	◆	◆
PWM	◆	◆	◆
AD converters [channels/number of bits]	8/12	8/12	8/12
GPIO pins	48	48	48
<b>Features</b>			
MCU	Dual-core Arm® Cortex®-M33		
RAM [kB] *	512 / 64		
Flash [kB] *	1024 / 256		
Application core frequency [MHz]	128 or 64		
Arm TrustZone®	◆	◆	◆
Arm CryptoCell-312 and KMU	◆	◆	◆
Direction finding (AoA/AoD)	◆	◆	◆
Bluetooth mesh	◆	◆	◆
Secure boot	◆	◆	◆
FOTA	◆	◆	◆

pcb = Internal PCB antenna  
 pin = Antenna pin  
 U.FL = U.FL connector(s) for external antenna

◆ = Feature enabled by HW. The actual support depends on the open CPU application SW.  
 \* = Application / Network core  
 KMU = Key management unit

## Features

Bluetooth	v5.2 (Bluetooth Low Energy)
NFC	NFC-A tag support
Estimated range	700 m
Max. conducted output power	3 dBm
Conducted sensitivity	-98 dBm (1 Mbit/s Bluetooth LE) -95 dBm (2 Mbit/s Bluetooth LE) -104 dBm (125 kbit/s Bluetooth LE)

## Open CPU for customer application

Customers develop and embed their own application on top of the Bluetooth stack in the NORA-B10x modules (open CPU concept). This section describes the possible features enabled by the NORA-B10 hardware. The Nordic Semiconductor's SDK environment for the nRF5340 chip (available for free) is required to develop the connectivity and application software.

Development environment	nRF Connect SDK (based on Zephyr RTOS)
HW interfaces *	<p>Application core:</p> <ul style="list-style-type: none"> <li>1 x QSPI</li> <li>5 x SPI (1 high speed)</li> <li>4 x I2C (1 high speed)</li> <li>4 x UART</li> <li>1 x I2S</li> <li>1 x USB</li> <li>1 x PDM</li> <li>4 x PWM (4 channels each)</li> <li>8 x ADC (12-bit)</li> <li>3 x Timer/Counter (32-bit)</li> <li>2 x RTC (24-bit)</li> </ul> <p>Network core:</p> <ul style="list-style-type: none"> <li>1 x QDEC</li> <li>1 x SPI</li> <li>1 x I2C</li> <li>1 x UART</li> <li>3 x Timer/Counter (32-bit)</li> <li>2 x RTC (24-bit)</li> </ul> <p>Common:</p> <ul style="list-style-type: none"> <li>48 x GPIO</li> </ul>
Security	Secure boot ready Secure Simple Pairing 128-bit AES encryption Bluetooth Low Energy secure connections

\* Not all simultaneously

## Electrical data

Power supply	1.7 to 5.5 V
Power consumption (@3V DCDC)	Active TX @ 0 dBm: 3.4 mA RX only: 2.7 mA (1 Mbit/s) Standby: 1.3 µA Sleep: 1.0 µA

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

For more product details and ordering information, see the [product data sheet](#).

## Package

Dimensions	10.4 x 14.3 x 1.7 mm
Weight	< 0.55 g
Mounting	Machine mountable Solder pins

## Environmental data, quality & reliability

Operating temperature	-40 °C to +105 °C
Storage temperature	-40 °C to +105 °C
Humidity	RH 5 – 90% non-condensing

## Certifications and approvals

Type approvals	Europe (ETSI RED), Canada (ISED RSS), US (FCC/CFR 47 part 15 unlicensed modular transmitter approval), Japan (MIC) <sup>1</sup> , South Korea (KCC) <sup>1</sup> , Taiwan (NCC) <sup>1</sup> , Australia (ACMA) <sup>1</sup> , New Zealand <sup>1</sup> , Brazil (Anatel) <sup>1</sup> , South Africa (ICASA) <sup>1</sup>
Health and safety	EN 62479, EN 62368-1, IEC 62368-1
Bluetooth qualification	v5.2 (Bluetooth Low Energy)

1 = Pending approvals

## Support products

EVK-NORA-B100	Evaluation kit for NORA-B100/B101 with open CPU and U.FL connector for an external antenna, Arduino UNO form factor, includes SEGGER J-LINK-OB debug interface
EVK-NORA-B106	Evaluation kit for NORA-B106 with open CPU and internal PCB antenna, Arduino UNO form factor, includes SEGGER J-LINK-OB debug interface
MINI-NORA-B100	Evaluation kit for NORA-B100/B101 with open CPU and U.FL connector for an external antenna, includes two mikroBUS compatible sockets
MINI-NORA-B106	Evaluation kit for NORA-B106 with open CPU and internal PCB antenna, includes two mikroBUS compatible sockets

## Product variants

NORA-B100	Bluetooth Low Energy module with open CPU and U.FL connector for external antenna
NORA-B101	Bluetooth Low Energy module with open CPU and antenna pin
NORA-B106	Bluetooth Low Energy module with open CPU and internal PCB antenna

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