# Product summary

## 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.

### Grade
- Automotive
- Professional
- Standard

### Radio
- Chip inside: nRF5340
- Bluetooth qualification: v5.2
- Thread / Zigbee: •
- Bluetooth output power EIRP [dBm]: 3
- Max range, estimated [meters]: 700
- NFC: •
- Antenna type: (see footnotes) U.FL, pin, pcb

### Application software
- Open CPU for embedded applications: •

### Interfaces
- UART: •
- QSPI and SPI: •
- I2C: •
- I2S and PDM: •
- USB: •
- PWM: •
- AD converters [channels/number of bits]: 8/12
- GPIO pins: 48

### Features
- 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: •

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* = Feature enabled by HW. The actual support depends on the open CPU application SW.

** = Application / Network core

KMU = Key management unit

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

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UBX-20031981 - R01
NORA-B10 series

Features

Bluetooth        v5.2 (Bluetooth low energy)
NFC              NFC-A tag support
Estimated range  700 m
Max. conducted output power 3 dBm
Conducted sensitivity
-97.5 dBm (1 Mbit/s)
-94.3 dBm (2 Mbit/s)

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. Use Nordic Semiconductor’s SDK environment for the nRF5340 chip to develop the connectivity and application software.

Development environment
nRF Connect SDK (based on Zephyr RTOS)

HW interfaces *
- Application core: 1 x QSPI, 5 x SPI (1 high speed), 4 x I2C (1 high speed), 4 x UART, 1 x I2S, 1 x USB, 1 x PDM, 4 x PWM (4 channels each), 8 x ADC (12-bit), 3 x Timer/Counter (32-bit), 2 x RTC (24-bit)
- Network core: 1 x QDEC, 1 x SPI, 1 x I2C, 1 x UART, 3 x Timer/Counter (32-bit), 2 x RTC (24-bit)
- Common: 48 x GPIO

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 5.8 V
Power consumption (@3V DCDC)
- Active TX @ 0 dBm: 3.2 mA
- RX only: 2.6 mA (1 Mbit/s)
- Standby: 1.5 µA
- Sleep: 1.1 µA

Package

Dimensions       10.4 x 14.3 x 1.8 mm
Weight            < 1.0 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); US (FCC/CFR 47 part 15 unlicensed modular transmitter approval); Canada (IC RSS); Japan (MIC); Taiwan (NCC); Australia (ACMA); New Zealand; Brazil (Anatel); South Korea (KCC); South Africa (ICASA)
- Health and safety: EN 62479, EN 62368-1, IEC 62368-1
- Security: EN 62479, EN 62368-1, IEC 62368-1
- Bluetooth qualification: v5.2 (Bluetooth low energy)

Support products

- EVK-NORA-B100: Evaluation kit for NORA-B100 with open CPU and U.FL connector for the antenna on the module
- EVK-NORA-B101: Evaluation kit for NORA-B101 with open CPU, antenna pin, and U.FL connector on the EVK board
- EVK-NORA-B106: Evaluation kit for NORA-B106 with open CPU and internal PCB antenna

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

Further information

For contact information, see www.u-blox.com /contact-us.
For more product details and ordering information, see the product data sheet.

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