

NORA-B2 series (Open CPU)



Stand-alone Bluetooth® Low Energy modules



Standard



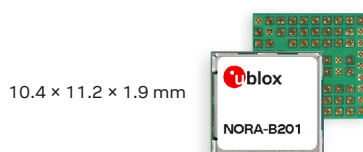
Professional



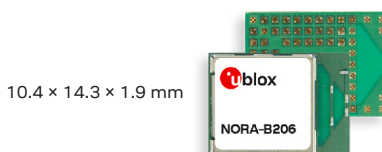
Automotive

Bluetooth LE module for ultra-low power IoT applications

- Professional grade modules supporting Thread, Zigbee, and Matter
- High performance ARM Cortex-M33 for demanding applications
- Designed for PSA Certified Level 3 security with tamper detection
- Qualified against Bluetooth® Core 6.0 including Channel Sounding for accurate ranging
- Variants with antenna pin and embedded antenna
- Global certification



10.4 × 11.2 × 1.9 mm



10.4 × 14.3 × 1.9 mm

Product description

NORA-B2 series are small, stand-alone Bluetooth Low Energy, wireless MCU modules that are qualified against Bluetooth Core 6.0. The modules are built on the latest generation of Nordic Semiconductor's nRF54L Series chips as an open CPU solution where customer applications run on Arm® Cortex®-M33 processor with integrated non-volatile memory and RAM memory. The modules also include NFC™, IEEE 802.15.4 radio, and are capable of supporting Thread, Zigbee and Matter protocols.

NORA-B2's powerful MCU can be used for high-performance applications while being clocked up to 128 MHz. NORA-B20 scores an impressive 505 on EEMBC CoreMark tests making it twice as powerful as the previous generation of Bluetooth LE modules, while it consumes up to 50% less current when compared to the previous generations.

All NORA-B2 variants support Bluetooth Channel Sounding and other Bluetooth Core 5.0 features such as Bluetooth long range communication (CODED PHY), Bluetooth high data-rate (2M PHY), and Bluetooth mesh. NORA-B206, NORA-B216 and NORA-B226 come with an internal PCB antenna that provides a robust low-profile solution with high performance and an extensive range. NORA-B201, NORA-B211 and NORA-B221 come with an antenna pin and provide 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 medical wearables, smart lighting, asset tracking, indoor location, low power sensors, as well as wireless-connected and configurable equipment. All variants come designed for PSA Certified Level 3 IoT security making the modules ideal for security sensitive applications like point-of-sales terminals and medical devices. All NORA-B2 modules are globally certified for use with the internal antenna or a range of external antennas. This greatly reduces time, cost, and effort for integrating Bluetooth Low Energy in designs.

	NORA-B201 NORA-B206	NORA-B211 NORA-B216	NORA-B221 NORA-B226
Grade			
Automotive			
Professional	•	•	•
Standard			
Radio			
Chip inside	nRF54L15	nRF54L10	nRF54L05
Qualified against Bluetooth Core	6.0	6.0	6.0
Bluetooth low energy	•	•	•
802.15.4 / Thread / Zigbee / Matter	•	•	•
Bluetooth output power EIRP [dBm]	10	10	10
Max range [meters]	1400	1400	1400
Antenna type (see footnotes)	pin/pcb	pin/pcb	pin/pcb
Application software			
Open CPU for embedded applications	•	•	•
Interfaces			
NFC	♦	♦	♦
SPI	♦	♦	♦
UART	♦	♦	♦
QDEC	♦	♦	♦
I2C	♦	♦	♦
Timer / PWM	♦	♦	♦
GPIO pins	31	31	31
AD converters [number of bits]	14	14	14
SWD	♦	♦	♦
RTC	♦	♦	♦
Features			
MCU	Arm Cortex-M33		
RAM [kB]	256	192	96
NVM [MB]	1.5	1.0	0.5
Matter	♦	♦	
Maximum Bluetooth connections	TBD	TBD	TBD
Bluetooth Channel Sounding	♦	♦	♦
Bluetooth LE long range (coded PHY)	♦	♦	♦
Bluetooth LE 2 Mbit/s	♦	♦	♦
Arm TrustZone®	♦	♦	♦
Secure boot	♦	♦	♦
Secure FOTA	♦	♦	♦
Simultaneous GATT server and client	♦	♦	♦

pin = Antenna pin
pcb = Internal PCB antenna

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

NORA-B2 series (open CPU)

Features

Chip inside	nRF54L15, nRF54L10, nRF54L05
Bluetooth	Qualified against Bluetooth Core 6.0
Bluetooth PHY rate	125 kbit/s, 500 kbit/s, 1 Mbit/s, 2 Mbit/s
802.15.4	Thread Zigbee Matter Nordic Proprietary 2.4 GHz protocol
Max. conducted output power	+7 dBm
Output power, radiated (EIRP)	+10 dBm with internal antenna +10 dBm with external antenna
Receiver sensitivity, conducted	Bluetooth LE, 125 kbit/s: -102 dBm Bluetooth LE, 500 kbit/s: -97 dBm Bluetooth LE, 1 Mbit/s: -94 dBm Bluetooth LE, 2 Mbit/s: -91 dBm 802.15.4, 250 kbit/s: -100 dBm
Antenna	NORA-B2x1: Antenna pin for connecting to an external antenna NORA-B2x6: Internal PCB antenna
Range	1400 meters

Open CPU for customer application

Customers develop and embed their own apps on NORA-B2 modules using the Nordic Connect Software SDK (open CPU concept). This section describes the hardware features that NORA-B2 modules can enable.

MCU system	Arm® Cortex® -M33 application processor at 128 MHz NORA-B20: 1.5MB NVM and 256 KB RAM NORA-B21: 1.0MB NVM and 192 KB RAM NORA-B22: 0.5MB NVM and 96 KB RAM
Hardware interfaces ²	31 x GPIO 1 x Software defined peripheral (RISC-V) 2 x RTC, 1 x GRTC 1 x SWD 5 x serial interface (UART or I2C or SPI) 7 x Timers 1 x NFC 2 x QDEC
Security	Arm® TrustZone® technology Secure key management Immutable boot loader partitions Physical tamper detection Hardware crypto-accelerator Debug access port protection
Development environment	nRF Connect SDK

2 = Not all simultaneously

Package

Dimensions	NORA-B2x1: 10.4 x 11.2 x 1.9 mm NORA-B2x6: 10.4 x 14.3 x 1.9 mm
Weight	< 1.0 g
Mounting	Machine mountable; solder pins

Environmental data, quality and reliability

Operating temperature	-40 °C to +85 °C
Storage temperature	-40 °C to +85 °C
Humidity	RH 5 – 90% non-condensing
RoHS directive	RoHS 2 and RoHS 3

Electrical data

Power supply	1.71 to 3.60 V
Power consumption	Active TX @ 0dBm: 4.8 mA Standby: 0.8 uA Sleep: 600 nA

Certifications and approvals¹

Type approvals	Europe (RED), Great Britain (UKCA), US (FCC), Canada (ISED), Japan (MIC), South Korea (KCC), Taiwan (NCC), Australia (ACMA), New Zealand
Health and safety	EN 62479, EN 62368-1
Medical Electrical Equipment	IEC 60601-1-2
Bluetooth	Qualified against Bluetooth Core 6.0

1 = Certifications are pending

Support products

EVK-NORA-B201	Evaluation kit for professional grade NORA-B201 with open CPU and pin for external antenna
EVK-NORA-B206	Evaluation kit for professional grade NORA-B206 with open CPU and internal PCB antenna

Product variants

NORA-B201	Professional grade Bluetooth LE module with nRF54L15 (open CPU) and pin for external antenna
NORA-B206	Professional grade Bluetooth LE module with nRF54L15 (open CPU) and internal PCB antenna
NORA-B211	Professional grade Bluetooth LE module with nRF54L10 (open CPU) and pin for external antenna
NORA-B216	Professional grade Bluetooth LE module with nRF54L10 (open CPU) and internal PCB antenna
NORA-B221	Professional grade Bluetooth LE module with nRF54L05 (open CPU) and pin for external antenna

Further information

For contact information, see www.u-blox.com/contact-u-blox.

For more product details and ordering information, see the product data sheet.

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