

NINA-B30 series



Stand-alone Bluetooth 5 low energy modules



Full Bluetooth® 5 with powerful MCU and worldwide certifications

- Full Bluetooth 5, Bluetooth mesh, 802.15.4 Thread, and Zigbee
- Powerful open CPU for advanced customer applications
- Hardware optimized for performance and low power consumption
- Pin compatible with other NINA modules
- Superior security functionality
- Multiple antenna options



10.0 × 11.6 × 2.2 mm



10.0 × 15.0 × 3.8 mm

Product description

The NINA-B30 series are small, stand-alone Bluetooth low energy microcontroller unit (MCU) modules. NINA-B30 features full Bluetooth 5, a powerful Arm® Cortex®-M4 with FPU, and state-of-the-art power performance. The embedded low power crystal in NINA-B30 improves the power consumption by enabling optimal power save modes.

Both variants are open CPU modules that enable customer applications to run on the built-in Arm Cortex-M4 with FPU. With 1 MB flash and 256 kB RAM, they offer the best-in-class capacity for customer applications on top of the Bluetooth low energy stack. Applications can include Bluetooth low energy services such as GATT, beacons, and mesh. Additionally, the modules support NFC™, 802.15.4 with Thread and ZigBee. The modules have a range of wired interfaces, including UART, SPI, I²C, I²S, USB, QDEC, PDM, PWM, and ADC.

NINA-B30 caters to applications in smart buildings, smart cities, and the Industry 4.0, including smart lighting systems, industrial sensor networks, asset tracking solutions, and building automation systems.

NINA-B302 comes with an internal antenna while, NINA-B301 has a pin for use with an external antenna. The internal PIFA antenna is specifically designed for the small NINA form factor and provides an extensive range, independent of ground plane and component placement.

The NINA-B30 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 NINA-B30 in their designs.

Product selector

Model	Radio	Interfaces	Features	Grade
	Bluetooth® qualification Bluetooth profiles NFC for "Touch to Pair" Maximum conducted output power [dBm] Maximum range [m] Antenna type	UART SPI I²C I²S USB QDEC PDM PWM GPIO pins AD converters (ADC)	Secure boot Over-the-air firmware update	Standard Professional Automotive
NINA-B301	Open CPU* v5.0 G ● 8 1400 P	2 3 2 1 1 1 1 12 38 8	● ●	●
NINA-B302	Open CPU* v5.0 G ● 8 1400 I	2 3 2 1 1 1 1 12 38 8	● ●	●

* = Features enabled by hardware. The actual support depends on the open CPU application software / P = antenna pin / I = internal antenna / G = GATT



NINA-B30 series



Features

Bluetooth	v5.0 (Bluetooth low energy)
NFC	NFC-A tag support
Range	1400 m
Max. conducted output power	8 dBm
Conducted sensitivity	-94 dBm (1 Mbit/s) -100 dBm (125 Kbit/s)

Open CPU for customer application

Customers develop and embed their own application on top of the Bluetooth stack in the NINA-B30x modules (open CPU concept). This section describes the possible features enabled by the NINA-B30 hardware. Use Nordic Semiconductor's SDK environment to develop the connectivity and application software.

Development environment	Nordic SDK (including Bluetooth Mesh, HomeKit, AirFuel, IoT)
HW interfaces *	2 x UART 3 x SPI 38 x GPIO pins 8 x ADC channels 12 x PWM 1 x USB 2 x I ² C 1 x I ² S 1 x PDM 1 x QDEC
Security	Secure boot Secure Simple Pairing 128-bit AES encryption BLE secure connections

* Not all simultaneously

Electrical data

Power supply	1.7 VDC to 3.6 VDC
Power consumption in Bluetooth LE mode	Active TX @ 0 dBm: 4.9 mA Standby: 1.3 µA Sleep: 400 nA (with wake-up on external event)

Package

Dimensions	NINA-B301: 10.0 x 11.6 x 2.2 mm NINA-B302: 10.0 x 15.0 x 3.8 mm
Weight	< 1.0 g
Mounting	Machine mountable Solder pins

Environmental data, quality & reliability

Operating temperature	-40 °C to +85 °C
Storage temperature	-40 °C to +85 °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); Australia (ACMA) ¹ ; New Zealand ¹ ; Brazil (Anatel) ¹ ; Canada (IC RSS) ¹ ; Japan (MIC) ¹ ; South Africa (ICASA) ¹ ; South Korea (KCC) ¹ ; Taiwan (NCC) ¹
Health and safety	EN 62479, EN 60950-1, IEC 60950-1
Bluetooth qualification	v5.0 (Bluetooth Low Energy)

1 = Pending approvals

Support products

EVK-NINA-B301	Evaluation kit for NINA-B301 module with open CPU and antenna pin
EVK-NINA-B302	Evaluation kit for NINA-B302 module with open CPU and internal antenna

Product variants

NINA-B301	With open CPU and antenna pin
NINA-B302	With open CPU and internal 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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