Product summary

NINA-B30 series

S

Stand-alone Bluetooth 5 low energy modules

Standard

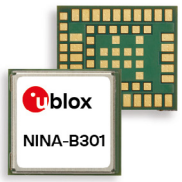
Professional

Automotive

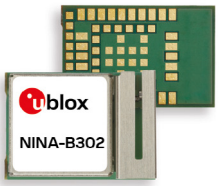
Full Bluetooth 5 with powerful MCU and worldwide certifications

- 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

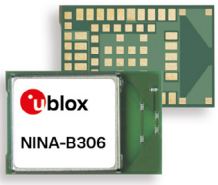
10.0 × 11.6 × 2.2 mm



10.0 × 15.0 × 3.8 mm



10.0 × 15.0 × 2.2 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 PIFA antenna, NINA-B306 comes with an internal PCB 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 internal PCB antenna provides a robust low profile solution with high performance.

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.

	NINA-B301	NINA-B302	NINA-B306
Grade			
Automotive			
Professional	•	•	•
Standard			
Radio			
Chip inside		nRF52840	
Bluetooth qualification	v5.0	v5.0	v5.0
Bluetooth low energy	•	•	•
Thread / Zigbee	•	•	•
Bluetooth output power EIRP [dBm]	10	10	10
Max range [meters]	1400	1400	1400
NFC	•	•	•
Antenna type (see footnotes)	pin	metal	pcb
Application software			
Open CPU for embedded customer applications	•	•	•
Interfaces			
UART	♦	♦	♦
SPI	♦	♦	♦
I2C	♦	♦	♦
I2S	♦	♦	♦
USB	♦	♦	♦
PDM and PWM	♦	♦	♦
GPIO pins	38	38	38
AD converters [number of bits]	12	12	12
Features			
MCU (see footnotes)	M4F	M4F	M4F
RAM [kB]	256	256	256
Flash [kB]	1024	1024	1024
Simultaneous GATT server and client	♦	♦	♦
Throughput [Mbit/s]	1.4	1.4	1.4
Maximum Bluetooth connections	20	20	20
Secure boot	♦	♦	♦
Bluetooth mesh	♦	♦	♦
FOTA	♦	♦	♦

pin = Antenna pin
metal = Internal metal PIFA antenna
pcb = Internal PCB antenna
M4F = 64 MHz Arm® Cortex-M4 with FPU

♦ = Feature enabled by hardware. Support depends on the open CPU application software.

NINA-B30 series

S

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 I2C 1 x I2S 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 NINA-B306: 10.0 x 15.0 x 2.2 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); Canada (IC RSS); Japan (MIC); Taiwan (NCC); Australia (ACMA); New Zealand; Brazil (Anatel); South Korea (KCC)
Health and safety	EN 62479, EN 60950-1, IEC 60950-1
Bluetooth qualification	v5.0 (Bluetooth Low Energy)

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 PIFA antenna
EVK-NINA-B306	Evaluation kit for NINA-B306 with open CPU and internal PCB antenna

Product variants

NINA-B301	With open CPU and antenna pin
NINA-B302	With open CPU and internal PIFA antenna
NINA-B306 [1]	With open CPU and internal PCB antenna

1 = Available with and without embedded low power 32 kHz crystal

Further information

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

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