Standard | Professional | Automotive

SHORT RANGE

NINA-B30 series

Stand-alone Bluetooth 5 low energy modules

Full Bluetooth® 5 with powerful MCU

- Full Bluetooth 5, Bluetooth mesh, and 802.15.4 Thread
- Open CPU architecture with powerful MCU for customer applications
- Pin compatible with other NINA modules
- Superior security functionality
- Global certification
- Multiple antenna options

NINA-B301
10.0 x 11.6 x 1.9 mm

NINA-B302
10.0 x 15.0 x 3.5 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™ and 802.15.4 with Thread. The modules have a range of wired interfaces, including UART, SPI, I²C, I²S, USB, QDEC, PDM, PWM, and ADC.

Intended applications include industrial automation, smart buildings and cities, low power sensors, wireless-connected and configurable equipment, point-of-sales, and health devices.

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		
	Software application	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	TBD	P	2	3	2	1	1	1	1	12	38	8	•	•		■	
NINA-B302	Open CPU*	v5.0	G	•	8	TBD	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

Features

Bluetooth	v5.0 (Bluetooth low energy)
NFC	NFC-A tag support
Range	TBD
Max. conducted output power	8 dBm
Conducted sensitivity	-95 dBm (1 Mbps modulation) -103 dBm (125 kbps modulation)

Package

Dimensions	NINA-B301: 10.0 x 11.6 x 1.9 mm NINA-B302: 10.0 x 15.0 x 3.5 mm
Weight	< 1.0 g
Mounting	Machine mountable Solder pins

Open CPU for customer application

Customers can develop and embed their own application on top of the Bluetooth stack in the NINA-B30x modules (open CPU concept). This section describes 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^2C 1 x I^2S 1 x PDM 1 x QDEC
Security	Secure boot Secure Simple Pairing 128-bit AES encryption BLE secure connections

* Not all simultaneously

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[1]

Type approvals	Europe (RED); US (FCC/CFR 47 part 15 unlicensed modular transmitter approval); Australia (ACMA); New Zealand; Brazil (Anatel); Canada (IC RSS); Japan (MIC); South Africa (ICASA); South Korea (KCC); Taiwan (NCC)
Health and safety	EN 62479, EN 60950-1, IEC 60950-1
Medical Electrical Equipment	IEC 60601-1-2
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

Electrical data

Power supply	1.7 to 3.6 VDC
Power consumption in Bluetooth LE mode	Active TX @ 0 dBm: 6.6 mA Standby: 0.8 µA Sleep: 400 nA (with wake-up on external event)

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.