

NINA-B31 series

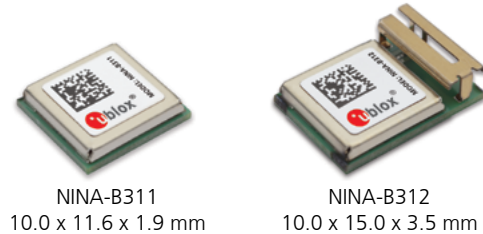
Standard Professional Automotive

SHORT RANGE

Stand-alone Bluetooth 5 low energy modules

Full Bluetooth® 5 made easy with the industry's leading connectivity software

- Full Bluetooth 5
- u-blox advanced connectivity software pre-flashed
- Pin compatible with other NINA modules
- Superior security functionality
- Global certification
- Multiple antenna options



Product description

The NINA-B31 series are small, stand-alone Bluetooth low energy wireless microcontroller unit (MCU) modules. NINA-B31 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-B31 improves the power consumption by enabling optimal power save modes. The NINA-B31 modules are delivered with u-blox connectivity software that provides support for u-blox Bluetooth low energy Serial Port Service, GATT client and server, beacons, NFC™, and simultaneous peripheral and central roles – all configurable from a host using AT commands.

The NINA-B31x modules provide top grade security, thanks to secure boot, which ensures the module only boots up with original u-blox software. Intended applications include industrial automation, smart buildings and cities, low power sensors, wireless-connected and configurable equipment, point-of-sales, and health devices.

NINA-B312 comes with an internal antenna while NINA-B311 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-B31 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-B31 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 +	GPIO pins	u-blox Low Energy Serial Port Service	Secure boot	AT command support	Standard	Professional	Automotive
NINA-B311	uCS	v5.0	G	•	8	TBD	P	1	3	28	•	•	•			
NINA-B312	uCS	v5.0	G	•	8	TBD	I	1	3	28	•	•	•			

uCS = u-blox connectivity software

G = GATT

P = antenna pin
I = internal antenna

+ = Planned features

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)

u-blox connectivity software*

This section describes the NINA-B31 features in the embedded u-blox connectivity software. All NINA-B31 modules are delivered with this software and configured using AT commands. More features will be available via software updates.

Software features	u-blox Low Energy Serial Port Service (SPS); GATT server and client via AT commands; Configuration over air; Extended Data Mode (EDM) protocol for simultaneous AT commands and data, and multiple simultaneous data streams; beacons; NFC tag for pairing and data; 2 Mbps modulation; 125 and 500 kbps modulation for long range functionality; Advertisement extensions
HW interfaces	UART, SPI, GPIO
Configuration	AT Commands
Support tools	s-center
Simultaneous connections	8
Security	Secure boot Secure Simple Pairing Bluetooth low energy Secure connections 128-bit AES encryption
Throughput over UART	700 kbps

* Planned features

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 μ A Sleep: 400 nA (with wake-up on external event)

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Package

Dimensions	NINA-B311: 10.0 x 11.6 x 1.9 mm NINA-B312: 10.0 x 15.0 x 3.5 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 approvals¹

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-B311	Evaluation kit for NINA-B311 module with u-blox connectivity software and antenna pin
EVK-NINA-B312	Evaluation kit for NINA-B312 module with u-blox connectivity software and internal antenna

Product variants

NINA-B311	With u-blox connectivity software and antenna pin
NINA-B312	With u-blox connectivity software 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.