

# NINA-B1 series

Standard Professional Automotive

SHORT RANGE

## Stand-alone Bluetooth low energy modules

### Highlights

- Bluetooth Smart (Bluetooth low energy v4.2)
- Powerful MCU for customer applications
- State of the art power consumption
- GPIO / SPI / I<sup>2</sup>C / UART / ADC interfaces
- Over-the-air firmware upgrade
- Concurrent peripheral and central role
- Serial port application for serial data



NINA-B111:  
10.0 x 10.6 x 2.1 mm



NINA-B112:  
10.0 x 14.0 x 3.7 mm

### Product description

The NINA-B1 series modules are small stand-alone Bluetooth low energy (Bluetooth Smart) modules featuring Bluetooth v4.2 and the latest state-of-the-art power performance. The Bluetooth low energy profiles and services are embedded in the module. This module is offered in professional grade for applications such as health care, asset tracking, connected cities, home automation, smart energy, manufacturing and telematics.

The NINA-B1 is tailored for OEMs who wish to embed their own application on top of the available Bluetooth low energy stack and/or to embed Bluetooth services/attributes on top of the integrated software stack and tools using ARM mbed IDE. The NINA-B1 is a stand-alone product with no additional hardware

required. Additional sensors, including temperature sensor, accelerometers, LEDs, can be connected directly to the module via GPIO, ADC, I<sup>2</sup>C, SPI and UART.

The NINA-B1 embeds firmware with the u-blox Low Energy Serial Port Service for replacing serial cables or accessing UART devices using Bluetooth low energy technology.

The modules are fully Bluetooth qualified and provide global modular approval. They are also compliant with Safety and Medical standards. The operating temperature range is -40 °C to +85 °C.

### Product selector

Model	Radio	Interfaces	Power	Connectors	Features	Grade
	Bluetooth qualification Bluetooth profiles NFC for "Touch to Pair" Maximum output power Maximum range Antenna type	UART SPI and I <sup>2</sup> C GPIO pins AD converters (ADC)	Power supply: 1.70 - 3.60 V Current consumption (idle) Current consumption (TX) Ultra low power	Solder pins	u-blox Low Energy Serial Port Service GATT server GATT client Throughput AT command support Max number of connections Customer application platform	Standard Professional Automotive
<b>NINA-B111</b>	v4.2 G * 7 dBm 200 m P	• • 19 7	• 2 µA < 8 mA •	•	• • • TBD • 3 •	Professional
<b>NINA-B112</b>	v4.2 G * 6 dBm 150 m I	• • 19 7	• 2 µA < 8 mA •	•	• • • TBD • 3 •	Professional

\* = For customer applications

G = GATT

P = Antenna pin

I = Internal antenna

## Features

Bluetooth	v4.2 (Bluetooth low energy)
Range	NINA-B111: 200 m, antenna pin reference design with 1/2 wave antenna NINA-B112: 150 m, internal antenna
Output power	6 dBm, internal antenna 7 dBm with approved external antennas
Receiver sensitivity	-96 dBm
Throughput	TBD

## Electrical data

Power supply	1.70 to 3.60 VDC
Power consumption	1.70 to 3.60 VDC 8 mA @ 3.0 VDC (average Tx) 400 nA, wake-up on external event

## Software features

Embedded software	Bluetooth stack Serial port application Customer implemented Bluetooth low energy profiles / services / attributes
GATT based service	u-blox Low Energy Serial Port Service
Max. number of connections	3
Configuration tools	AT commands s-center (Windows-based software)
Security	Secure Simple Pairing 128-bit AES encryption BLE Secure Connection

## Interfaces

SPI	3*
I <sup>2</sup> C	2*
UART	1
I <sup>2</sup> S	1
GPIO pins	19
ADC channels	7
Quadrature decoder (QDEQ)	
Pulse density modulation interface (PDM)	
Pulse-width modulation (PWM) channels	12

\* Not all simultaneously

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## Package

Dimensions	NINA-B111: 10.0 x 10.6 x 2.1 mm NINA-B112: 10.0 x 14.0 x 3.7 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 R&TTE); US (FCC/CFR 47 part 15 unlicensed modular transmitter approval); Canada (IC RSS); Japan (MIC - formerly TELEC); Taiwan (NCC); Australia (ACMA); South Korea (KCC); China (SRRC)
Health and safety	EN 62479, EN 60950-1, IEC 60950-1
Medical Electrical Equipment	IEC 60601-1-2
Bluetooth Qualification	v4.2



## Support products

The evaluation kits include a NINA-B1 module on an evaluation board with built-in debugging capabilities. To be used with ARM mbed as a development kit or with s-center to evaluate the serial port application.

EVK-NINA-B111	Evaluation kit for NINA-B111 module with antenna pin
EVK-NINA-B112	Evaluation kit for NINA-B112 module with internal antenna

## Product variants

NINA-B111	With antenna pin
NINA-B112	With internal antenna

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

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