

Stand-alone Bluetooth modules

S

	Bluetooth modules															
	ALMA-B101	ALMA-B106	NORA-B201	NORA-B206	NORA-B211	NORA-B216	NORA-B221	NORA-B226	NORA-B261	NORA-B266	NORA-B100	NORA-B101	NORA-B106	NORA-B120	NORA-B121	NORA-B126
Grade																
Automotive																
Professional	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Standard																
Physical																
Image																
Size [mm]	10.4 × 11.2 × 1.9 / 10.4 × 14.3 × 1.9		10.4 × 11.2 × 1.9 / 10.4 × 14.3 × 1.9								10.4 × 14.3 × 1.7					
Operating temperature [°C]	-40 to +105		-40 to +85								-40 to +105					
Radio																
Chip inside	nRF54H20		nRF54L15		nRF54L10		nRF54L05		nRF54L10		nRF5340					
Bluetooth Core qualified	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.2	5.2	5.2	5.2	5.2	5.2
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Thread / Zigbee	•/-	•/-	•	•	•	•	•	•	•	•	•	•	•	•	•	•
NFC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Max range [meters]	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	700	700	400	1700	1700	1500
Bluetooth output power [dBm]	13	13	10	10	10	10	10	10	10	10	8	8	5	18	18	15
Antenna type (see footnotes)	pin	pcb	pin	pcb	pin	pcb	pin	pcb	pin	pcb	U.FL	pin	pcb	U.FL	pin	pcb
Application software																
u-connectXpress										•	•					
Open CPU for embedded SW	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Interfaces																
CAN FD	♦	♦														
UART	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
SPI	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
I2C	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
I2S	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
USB	♦	♦									♦	♦	♦	♦	♦	♦
PDM and/or PWM	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
GPIO pins	64	64	31	31	31	31	31	31			48	48	48	46	46	46
AD converters [number of bits]	14	14	14	14	14	14	14	14			12	12	12	12	12	12
Features																
MCU (see footnotes)	2 x M33/RISC-V*		Arm® Cortex-M33 + RISC-V								Dual-core Arm® Cortex-M33					
RAM [kB] (including all cores)	1 MB		256	256	192	192	96	96			512 + 64					
NVM [kB] (including all cores)	2 MB		1500	1500	1000	1000	500	500			1024 + 256					
Matter	♦	♦	♦	♦	♦	♦	♦	♦			♦	♦	♦	♦	♦	♦
Bluetooth mesh	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Direction finding (AoA/AoD)											♦	♦	♦	♦	♦	♦
Bluetooth long range	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Bluetooth Channel Sounding	♦	♦	♦	♦	♦	♦	♦	♦								
Bluetooth LE audio	♦	♦									♦	♦	♦	♦	♦	♦
Low Energy Serial Port Service										♦						
Arm TrustZone®	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Security Root of Trust	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Secure boot	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Secure storage	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Throughput [Mbit/s]	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	0.8	0.8	1.4	1.4	1.4	1.4	1.4	1.4
FOTA	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Simultaneous GATT server / client	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦						

pin = Antenna pin
pcb = Internal PCB antenna
U.FL = U.FL antenna connector

*2 x M33/RISC-V = Dual Arm® Cortex®-M33,
Dual RISC-V

♦ = Feature enabled by hardware. The actual support
depends on the open CPU application software.

UBX-14003456 - R33 - August, 2025

Stand-alone Bluetooth modules



Grade

Automotive
Professional
Standard

Physical

Image



	NINA-B501	NINA-B506	NINA-B400	NINA-B401	NINA-B406	NINA-B410	NINA-B411	NINA-B416	NINA-B301	NINA-B306
Size [mm]	10.0 x 11.6 x 2.4 / 10.0 x 15.0 x 2.4		10.0 x 15.0 x 2.2 / 10.0 x 11.6 x 2.2						10.0 x 11.6 x 2.2 / 10.0 x 15.0 x 2.2	
Operating temperature [°C]	-40 to +85		-40 to +105						-40 to +85	
Radio	MCX W71		nRF52833						nRF52840	
Chip inside	MCX W71		nRF52833						nRF52840	
Bluetooth qualification version	5.3	5.3	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.0
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•
Thread / Zigbee	•	•	•	•	•				•	•
NFC			•	•	•	•	•	•	•	•
Max range [meters]	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
Bluetooth output power [dBm]	13	13	11	11	11	11	11	11	10	10
Antenna type (see footnotes)	pin	pcb	U.FL	pin	pcb	U.FL	pin	pcb	pin	pcb
Application software										
u-connectXpress						•	•	•		
Open CPU for embedded SW	•	•	•	•	•				•	•
Interfaces										
FlexCAN / CAN FD	♦	♦								
UART	♦	♦	♦	♦	♦	2	2	2	♦	♦
SPI	♦	♦	♦	♦	♦				♦	♦
I2C	♦	♦	♦	♦	♦				♦	♦
I2S	♦	♦	♦	♦	♦				♦	♦
USB			♦	♦	♦				♦	♦
PDM and PWM	♦	♦	♦	♦	♦				♦	♦
GPIO pins	29	29	40	40	40	26	26	26	38	38
AD converters [number of bits]	16	16	12	12	12				12	12
Features										
AT command interface						•	•	•		
Direction finding (AoA/AoD)			♦	♦	♦					
MCU (see footnotes)	Arm® Cortex-M33, -M3 and -M0+		M4F	M4F	M4F				M4F	M4F
RAM [kB]	128 + 88		128	128	128				256	256
NVM [kB]	1024 + 256		512	512	512				1024	1024
Matter	♦	♦							♦	♦
Max Bluetooth connections	24	24	20	20	20	8	8	8	20	20
Bluetooth long range	♦	♦	♦	♦	♦	•	•	•	♦	♦
Bluetooth mesh			♦	♦	♦				♦	♦
Low Energy Serial Port Service						•	•	•		
Channel Sounding										
Arm TrustZone®	♦	♦								
Security Root of Trust	♦	♦								
On-the-fly flash encryption	♦	♦								
Throughput [Mbit/s]	1.4	1.4	1.4	1.4	1.4	0.8	0.8	0.8	1.4	1.4
Secure boot	♦	♦	♦	♦	♦	•	•	•	♦	♦
FOTA	♦	♦	♦	♦	♦				♦	♦
Dual-PAN HW support	♦	♦								

pin = Antenna pin
pcb = Internal PCB antenna
U.FL = U.FL antenna connector

M33 = 260 MHz Arm® Cortex-M33
M4F = 64 MHz Arm® Cortex-M4 with FPU

♦ = Feature enabled by hardware. The actual support depends on the open CPU application software.

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Grade

Automotive
Professional
Standard

Physical

Image



Size [mm]	10 x 10.6 x 2.2 / 10 x 14.0 x 3.8						6.5 x 6.5 x 1.2									
Operating temperature [°C]	-40 to +85						-40 to +85				-40 to +105		-40 to +85			
Radio																
Chip inside	ESP32		nRF52832				nRF54L15				nRF52833		nRF52832			
Bluetooth qualification version	4.2	4.2	5.0	5.0			6.0	6.0	6.0	6.0	5.1	5.1	5.0			
Bluetooth Low Energy	•	•	•	•			•	•	•	•	•	•	•			
Bluetooth BR/EDR	•	•														
Thread / Zigbee							•	•					•			
NFC							•	•	•	•	•	•	•			
Max range [meters]	200	200	350	350			TBD	TBD	TBD	TBD	800 / 1400*		160 / 190*			
Bluetooth output power [dBm]	8	8	7	6			8	8	8	8	9 / 13*		5 / 8*			
Antenna type (see footnotes)	pin	metal	pin	metal			pin	chip	pin	chip	chip or pin		chip or pin			
Application software																
u-connectXpress	•	•		•		•	•				•	•		•		
Open CPU for embedded SW			•		•		•	•					•	•		
Interfaces																
UART	1	1	◆	1	◆	1	◆	◆	•	•	◆	2	◆	1		
SPI	1	1	◆		◆		◆	◆					◆	◆		
I2C			◆		◆		◆	◆					◆	◆		
I2S			◆		◆		◆	◆					◆	◆		
USB											◆					
PDM and PWM			◆		◆		◆	◆					◆	◆		
GPIO pins	16	16	19	7	19	7	32	32					33	19	25	11
AD converters [number of bits]			12		12		14	14					12		12	
Features																
AT command interface	•	•		•		•	•				•		•			
Direction finding (AoA/AoD)											◆					
MCU (see footnotes)			M4F	M4F			Arm® Cortex-M33 + RISC-V				M4F	M4F				
RAM [kB]			64	64			256	256					128	64		
NVM [kB]	•	•	512	•	512	•	1500	1500					512	•	512	•
Matter							◆	◆								
Max Bluetooth connections	8	8	20	7	20	7					20	7	20	7		
Bluetooth long range							◆	◆	•	•						
Bluetooth Channel Sounding							◆	◆	•	•						
Bluetooth mesh			◆		◆		◆	◆	•	•	◆			◆		
Low Energy Serial Port Service	•	•		•		•	•				•		•			
Throughput [Mbit/s]	1.0	1.0	1.4	0.8	1.4	0.8	1.4	1.4	0.8	0.8	1.4	0.8	1.4	0.8		
Secure boot	•	•					◆	◆	•	•	◆	•				

chip = Internal chip antenna
pin = Antenna pin
pcb = Internal PCB antenna
metal = Internal metal PIFA antenna

M4F = 64 MHz Arm® Cortex-M4 with FPU
* = Different values for use with internal or external antenna

◆ = Feature enabled by hardware. The actual support depends on the open CPU application software.

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	Bluetooth modules									Antenna boards	
	BMD-360	BMD-380	BMD-340	BMD-341	BMD-345	BMD-350	BMD-301	BMD-300	BMD-330	ANT-B10	ANT-B11
Grade											
Automotive											
Professional											
Standard	•	•	•	•	•	•	•	•	•	•	•
Physical											
Image											
Size [mm]	9.8 x 14.0 x 1.9	7.5 x 9.5 x 1.5	10.2 x 15.0 x 1.9			6.4 x 8.6 x 1.5	9.8 x 14.0 x 1.9			126 x 126	29.5 x 93.5
Operating temperature [°C]	-40 to +85									-40 to +85	-40 to +85
Radio											
Chip inside	nRF52811	nRF52840				nRF52832			nRF52810	nRF52833	nRF52833
Bluetooth qualification version	5.1	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.1
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	•
Thread	•	•	•	•	•						
Zigbee		•	•	•	•						
NFC		•	•	•	•	•	•	•			
Max range [meters]	200	500	500	750	1700	190	400	200	200	70	70
Bluetooth output power [dBm]	3	7	7	11	18	5	9	3	3	N.A.	N.A.
Antenna type (see footnotes)	pcb	chip	pcb	U.FL	U.FL	chip	U.FL	pcb	pcb	8 patch elements	3 patch elements
Application software											
u-locateEmbed										•	•
Open CPU for embedded SW	•	•	•	•	•	•	•	•	•		
Interfaces											
UART	♦	♦	♦	♦	♦	♦	♦	♦	♦	1	1
SPI	♦	♦	♦	♦	♦	♦	♦	♦	♦	1	
I2C	♦	♦	♦	♦	♦	♦	♦	♦	♦		
I2S		♦	♦	♦	♦	♦	♦	♦			
USB		♦	♦	♦	♦					1	
PDM and PWM	♦	♦	♦	♦	♦	♦	♦	♦	♦		
GPIO pins	32	44	48	48	44	32	32	32	32	3	
AD converters [number of bits]	12	12	12	12	12	12	12	12	12		
Features											
AT command interface										•	•
Direction finding (AoA/AoD)	♦									•	•
MCU (see footnotes)	M4	M4F	M4F	M4F	M4F	M4F	M4F	M4F	M4		
RAM [kB]	24	256	256	256	256	64	64	64	24		
NVM [kB]	192	1024	1024	1024	1024	512	512	512	192		
Matter		♦	♦	♦	♦						
Max Bluetooth connections	4	20	20	20	20	20	20	20	4		
Bluetooth mesh		♦	♦	♦	♦	♦	♦	♦			
Bluetooth long range	♦	♦	♦	♦	♦						
Throughput [Mbit/s]	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4		
Secure boot		♦	♦	♦	♦					•	•
FOTA	♦	♦	♦	♦	♦	♦	♦	♦	♦		

chip = Internal chip antenna
pin = Antenna pin
pcb = Internal PCB antenna
U.FL = U.FL antenna connector

M4 = 64 MHz Arm® Cortex-M4
M4F = 64 MHz Arm® Cortex-M4 with FPU

♦ = Feature enabled by hardware. The actual support depends on the open CPU application software.

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Stand-alone short range radio modules

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	Multiradio (Wi-Fi and Bluetooth)											
	NORA-W401	NORA-W406	NORA-W301	NORA-W306	NORA-W361	NORA-W366	NORA-W251 AWS	NORA-W256 AWS	NORA-W101 -00B	NORA-W106 -00B	NORA-W106 -10B	
Grade												
Automotive	•	•	•	•	•	•	•	•	•	•	•	
Professional												
Standard												
Physical												
Image												
Size [mm]	10.4 × 14.3 × 1.9		10.4 × 14.3 × 1.9				10.4 × 14.3 × 1.9		10.4 × 14.3 × 1.9			
Operating temperature [°C]	-40 to +85											
Radio												
Chip inside	ESP32-C6		RTL8720DF				ESP32-S3		ESP32-S3			
Bluetooth qualification version	5.3		5.3		5.3		5.0		5.0			
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	•	
Thread	•	•										
Bluetooth output power [dBm]	10	10	6.5	8	6.5	8	8	8	10	10	10	
Wi-Fi band [GHz]	2.4		2.4 and 5		2.4 and 5		2.4	2.4	2.4	2.4	2.4	
Wi-Fi IEEE 802.11 standards	b/g/n/ax		a/b/g/n		a/b/g/n		b/g/n	b/g/n	b/g/n	b/g/n	b/g/n	
Wi-Fi output power [dBm]	20	20	20	20	20	20	20	20	20	20	20	
Max Wi-Fi range [meters]	500	500	500	500	500	500	500	500	500	500	500	
Antenna type (see footnotes)	pin	pcb	pin	pcb	pin	pcb	pin	pcb	pin	pcb	pcb	
Application software												
AWS IoT ExpressLink							•	•				
u-connectXpress					•	•						
Open CPU for embedded apps	•	•	•	•					•	•	•	
Interfaces												
UART	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	
USB	♦	♦	♦	♦					♦	♦	♦	
SDIO	♦	♦	♦	♦					♦	♦	♦	
SPI	♦	♦	♦	♦					♦	♦	♦	
I2C	♦	♦	♦	♦					♦	♦	♦	
I2S	♦	♦	♦	♦					♦	♦	♦	
RMII												
GPIO pins	22	22	21	21					38	38	33	
AD converters [number of bits]	12	12	12	12					12	12	12	
Features												
AT command interface					•	•	•	•				
MCU (see footnotes)	RISC-V, 160 MHz		M33 + M23	M33 + M23			LX7	LX7	LX7	LX7	LX7	
RAM [kB]	512	512	512	512			512	512	512	512	8192	
NVM [MB]	4/8	4/8	4	4			8	8	8	8	ext	
Matter	♦	♦	♦	♦					♦	♦	♦	
Bluetooth LE audio												
Max Bluetooth connections	TBD	TBD	3	3	3	3	1	1	7	7	7	
Micro Access Point [stations]	TBD	TBD	5	5	5	5			10	10	10	
Wi-Fi throughput [Mbit/s]	TBD	TBD	72	72	2.5	2.5	20	20	150	150	150	
Wi-Fi enterprise security	♦	♦	♦	♦	•	•			♦	♦	♦	
End-to-end security (TLS)	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	
Secure boot	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	
WPA3	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	

pin = Antenna pin
pcb = Internal PCB antenna
ext = External flash required

LX7 = 240 MHz dual-core Xtensa LX7
M33 = 260 MHz Arm® Cortex-M33
M23 = 20 MHz Arm® Cortex-M23

♦ = Feature enabled by hardware. The actual support depends on the open CPU application software.

UBX-14003456 - R33 - August, 2025

Stand-alone short range radio modules

S

Grade

Automotive
Professional
Standard

Physical

Image

Size [mm]

Operating temperature [°C]

Radio

Chip inside

Bluetooth qualification version

Bluetooth Low Energy

Thread

Bluetooth output power [dBm]

Wi-Fi band [GHz]

Wi-Fi IEEE 802.11 standards

Wi-Fi output power [dBm]

Max Wi-Fi range [meters]

Antenna type (see footnotes)

Application software

u-connectXpress

Open CPU for embedded apps

Interfaces

UART

USB

SDIO

SPI

I2C

I2S

RMII

GPIO pins

AD converters [number of bits]

Features

AT command interface

MCU (see footnotes)

RAM [kB]

NVM [MB]

Matter

Bluetooth LE audio

Point-to-Point Protocol

Low Energy Serial Port Service

Max Bluetooth connections

Micro Access Point [stations]

Wi-Fi throughput [Mbit/s]

Wi-Fi enterprise security

End-to-end security (TLS)

Secure boot and WPA3

Multiradio (Wi-Fi and Bluetooth)

Wi-Fi

IRIS-W101

IRIS-W106

NINA-W151

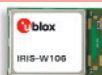
NINA-W152

NINA-W156

NINA-W106

NINA-W131

NINA-W132



14.6 × 16.8 × 2.1 / 14.6 × 20.9 × 2.1

10.0 × 10.6 × 2.2 / 10.0 × 14.0 × 3.8 / 10.0 × 14.0 × 2.2

-40 to +85

RW610 / RW612

ESP32

ESP32

ESP32

5.4

4.2

4.2

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2.4 and 5

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2.4

2.4

2.4

2.4

2.4

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b/g/n

b/g/n

b/g/n

b/g/n

b/g/n

b/g/n

20

20

18

18

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pin = Antenna pin
pcb = Internal PCB antenna
metal = internal metal PIFA antenna

LX6 = 240 MHz dual-core Xtensa LX6
M33 = 260 MHz Arm® Cortex-M33

◆ = Feature enabled by hardware. The actual support depends on the open CPU application software.

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