

NINA-W13 series



Stand-alone Wi-Fi modules

Secure industrial Wi-Fi modules

- Wi-Fi 802.11b/g/n
- u-connect software for accelerated time to market
- Built-in security with secure boot
- Small footprint and multiple antenna options
- Pin compatible with other NINA modules
- Global certification



Product description

The NINA-W13 series is a small stand-alone wireless MCU module that integrates a powerful microcontroller (MCU) and a radio for wireless communication. The NINA-W13 modules are pre-flashed with u-connectXpress software. This software is easy to use and reduces the time, risk and cost to add Wi-Fi connectivity to the end product. The host system can set up and control the module through the AT command interface.

The NINA-W13 modules provide top grade security, thanks to secure boot, which ensures the module boots up only with original u-blox software. In addition, they provide end-to-end security on the wireless link and enterprise security to provide a secure connection to the infrastructure. This makes NINA-W13 ideal for critical IoT applications where security is important. The u-connectXpress software for NINA-W13 enables communication with cloud services. The software features end-to-end security with TLS and built-in MQTT protocol for lightweight communication with cloud-based applications.

Intended applications include telematics, low power sensors, connected factories, connected buildings (appliances and surveillance), point-of-sales, and health devices.

Device design is simplified as developers can choose to either use an external antenna (NINA-W131) or take advantage of the internal PIFA antenna (NINA-W132). Additionally, the NINA-W13 modules are pin-compatible with other NINA modules, thus offering maximum flexibility for development of similar devices offering different radio technologies.

The NINA-W13 series is globally certified and this reduces time to market for the end product. To ensure operation in harsh professional environments, the modules are industrial grade and qualified according to ISO 16750, supporting an extended temperature range of -40 °C to +85 °C.

	NINA-W131	NINA-W132
Grade		
Automotive		
Professional	•	•
Standard		
Radio		
Chip inside	ESP32	
Antenna type (see footnotes)	pin	metal
Wi-Fi 2.4 / 5 [GHz]	2.4	2.4
Wi-Fi IEEE 802.11 standards	b/g/n	b/g/n
Wi-Fi output power EIRP [dBm]	18	18
Max Wi-Fi range [meters]	500	400
Application software		
u-connectXpress	•	•
Interfaces		
UART	1	1
RMII	1	1
GPIO pins	16	16
SPI	1	1
Features		
AT command interface	•	•
Point-to-Point Protocol	•	•
MCU (see footnotes)	LX6	LX6
RAM [kB]	520	520
Flash [kB]	2048	2048
Wi-Fi throughput [Mbit/s]	16	16
Micro Access Point [max stations]	10	10
Wi-Fi enterprise security	•	•
End-to-end security (TLS)	•	•
Secure boot	•	•
WPA/WPA2/WPA3	•	•

pin = Antenna pin
metal = Internal metal PIFA antenna

LX6 = 240 MHz dual-core Xtensa LX6

NINA-W13 series



Features

Wi-Fi standards	802.11b/g/n 802.11d/e/i/h/w
Wi-Fi channels	2.4 GHz channels 1-13
Wi-Fi maximum transfer rates	802.11b: 11 Mbit/s 802.11g: 54 Mbit/s 802.11n: 72 Mbit/s
Output power	Wi-Fi: 18 dBm EIRP
Sensitivity (conducted)	Wi-Fi: -96 dBm
Antenna	Internal PIFA antenna or antenna pin for connecting to the external antenna

u-connectXpress software

Wi-Fi features	Wi-Fi station Wi-Fi micro access point
Security features	WPA/WPA2/WPA3 Enterprise security (EAP-TLS, PEAP) Secure boot End-to-end security with TLS Protected Management Frames (PMF)
IoT features	TCP/UDP client/server TLS client HTTP/HTTPS client SNTP client MQTT-SN/MQTT client gateway DHCP client/server
IoT cloud support	Thingstream AWS IoT Core Microsoft Azure IoT Hub
Extended Data Mode™	For individually controlled multipoint data channels
Point-to-Point Protocol	For UART-based IP connectivity between the host and the module; enables individually controlled data channels and AT commands in parallel
Configuration over air	Wireless transmission of AT commands to control the module
Throughput (user data)	Wi-Fi: 16 Mbit/s
Support tools	s-center

Interfaces

NINA-W131 and NINA-W132	UART, GPIO, RMII, SPI
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Package

Dimensions	NINA-W131: 10.0 x 10.6 x 2.2 mm NINA-W132: 10.0 x 14.0 x 3.8 mm
Weight	< 1 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

Electrical data

Power supply	3.0 V to 3.6 V
Power consumption	Wi-Fi 15 dBm: 130 mA Standby mode: 30 mA Sleep mode: 1.5 mA Stop mode: 5 µA

Certifications and approvals

Type approvals	Europe (ETSI RED), Great Britain (UKCA), US (FCC/CFR 47 part 15 unlicensed modular transmitter approval), Canada (IC RSS), Japan (MIC), Taiwan (NCC), South Korea (KCC), Australia (ACMA), New Zealand, Brazil (Anatel), South Africa (ICASA)
Health and safety	EN 62479, EN 62368-1, EN 62311
Medical Electrical Equipment	EN 60601-1-2
Wi-Fi Alliance®	Wi-Fi CERTIFIED™ b, g, n
Cloud service programs	AWS IoT Core Qualified Azure Certified Device

Support products

EVK-NINA-W131	Evaluation kit for NINA-W131 module with antenna pin
EVK-NINA-W132	Evaluation kit for NINA-W132 module with internal PIFA antenna

Product variants

NINA-W131	Wi-Fi module with antenna pin
NINA-W132	Wi-Fi module with internal PIFA antenna

Further information

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

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

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