Product summary
NORA-W2 series

AWS IoT ExpressLink stand-alone multiradio modules

S

Standard

Professional

Automotive

Secure AWS cloud connectivity for industrial and consumer applications

- AWS IoT ExpressLink with pre-provisioned AWS connectivity
- Easy integration with high-level commands
- Wi-Fi 802.11b/g/n and Bluetooth® Low Energy 5 *
- Enhanced security features
- Small footprint and multiple antenna options
- Global certification

10.4 × 14.3 × 1.8 mm

NORA-W251 AWS IoT ExpressLink

NORA-W256 AWS IoT ExpressLink
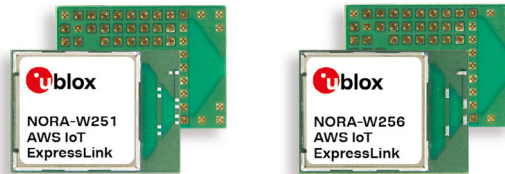
Product description

The NORA-W2 series are stand-alone multiradio modules integrating a powerful 32-bit, dual-core microcontroller unit (MCU) and a radio for wireless communication. The radio supports Wi-Fi 802.11b/g/n in the 2.4 GHz ISM band and Bluetooth Low Energy 5.

The embedded AWS IoT ExpressLink compliant software includes secured certificates that are pre-flashed in the modules. The module offers "out of the box" connectivity with Amazon Web Services (AWS), so that your customers can benefit from convenient cloud access to applications and all other services that AWS provides. NORA-W2 also supports secure over-the-air (OTA) updates of both the module firmware and the host application. Control and data communication with the module is performed with stateless AT commands over a serial interface.

NORA-W2 includes a wireless MCU, flash memory, and crystal. It also includes components for antenna matching, filtering, and decoupling – making it a very compact stand-alone multiradio module. The module is designed with secure boot, which ensures the module boots up only in the presence of authenticated software. The small size and the embedded security capabilities make NORA-W2 ideal for critical IoT applications where security is important. Intended applications include consumer products, telematics, low power sensors, connected factories, connected buildings (appliances and surveillance), point-of-sales, and health devices.

The NORA-W2 series is globally certified, which reduces time to market for the end product. The professional grade modules support an extended temperature range of –40 °C to +85 °C. They are qualified according to u-blox Qualification Policy, based on AEC-Q104.

* Supported by module, though not yet exposed to customer in AWS ExpressLink specification v1.1

	NORA-W251AWS	NORA-W256AWS
Grade		
Automotive		
Professional	•	•
Standard		
Radio		
Chip inside	ESP32-S3	
Bluetooth qualification version	5.0	5.0
Bluetooth Low Energy	•	•
Bluetooth output power EIRP [dBm]	10	10
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]	20	20
Max range, estimated [meters]	500	500
Antenna type (see footnotes)	pin	pcb
Application software		
AWS IoT ExpressLink	•	•
Interfaces		
UART	•	•
Features		
Stateless AT commands	•	•
MQTT support	•	•
MCU	LX7	LX7
RAM [kB]	512	512
Flash [kB]	8192	8192
End-to-end security (TLS)	•	•
Secure boot	•	•
WPA/WPA2/WPA3	•	•
Host software OTA	•	•
Module firmware OTA	•	•

pcb = Internal PCB antenna   pin = Antenna pin

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NORA-W2 series

Features

Wi-Fi	802.11 b/g/n 2.4 GHz
Bluetooth	Version 5.0 (Bluetooth Low Energy) Bluetooth is used for provisioning only. It is not available for customer applications.
Estimated range	500 m
Max. conducted output power	Wi-Fi: 20 dBm [1] Bluetooth LE: 10 dBm
Conducted sensitivity	–97 dBm (1 Mbit/s Wi-Fi 802.11b) –98 dBm (1 Mbit/s Bluetooth Low Energy)

1 = RF power including maximum antenna gain of 3 dBm

AWS IoT ExpressLink

Customers develop their applications on a separate host MCU, which communicates with the AWS IoT ExpressLink software via AT-commands over a serial interface.

Specification compliance	version 1.1 (This can be upgraded to later versions via FOTA)
HW interface	UART
Security	Multi-stage secure boot Anti-cloning Secure storage TLS 1.2 encryption Certificate-based authentication

Electrical data

Power supply	3.3 V
Power consumption (@3 V DCDC)	Deep sleep: 8 uA Wi-Fi connected to AP: 42 mA

Package

Dimensions	10.4 x 14.3 x 1.8 mm
Weight	< 1 g
Mounting	Machine mountable solder pins

Environmental data, quality & reliability

Operating temp.	–40 °C to +85 °C
Storage temp.	–40 °C to +85 °C
Humidity	RH 5 – 90% non-condensing

Certifications and approvals

Type approvals	Europe (ETSI RED), Great Britain (UKCA), US (FCC/CFR 47 part 15 unlicensed modular transmitter approval), Canada (ISED RSS)[2], Japan (MIC)[2], South Korea (KCC), Taiwan (NCC)[2], Australia (ACMA)[2], New Zealand[2], Brazil (Anatel)[2], South Africa (ICASA)[2]
Health and safety	EN 62479, EN 62368-1, IEC 62368-1

2 = Pending approvals

Support products

USB-NORA-W256	Evaluation kit for NORA-W256AWS with AWS IoT ExpressLink and internal PCB antenna; USB connector without shield

Product variants

NORA-W251AWS	Bluetooth Low Energy and Wi-Fi module with AWS IoT ExpressLink and antenna pin
NORA-W256AWS	Bluetooth Low Energy and Wi-Fi module with AWS IoT ExpressLink and internal PCB 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.