Product summary

NORA-W2 series

S

AWS IoT ExpressLink stand-alone multiradio modules

Standard

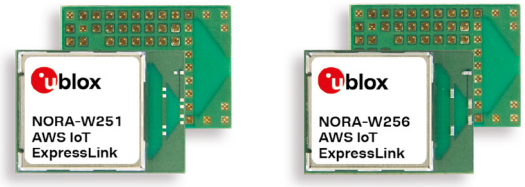
Professional

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



Product description

The NORA-W2 series comprises stand-alone multiradio modules that integrate 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. This allows the module to provide "out of the box" connectivity with Amazon Web Services (AWS) with no effort from the customer. It also supports secure over-the-air (OTA) updates of both the module firmware and the host application. Control and data communication is done via the module with stateless AT-commands over a serial interface.

The NORA-W2 AWS IoT ExpressLink grants OEM ownership of the end-product when activated in the field via the AWS Multi Account Registration (MAR) process. Fleet management, monitoring, and security auditing are supported by AWS IoT Device Management and AWS IoT Device Defender.

NORA-W2 includes a wireless MCU, flash memory, crystal, and 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. To ensure operation in harsh industrial environments, the modules are professional grade and qualified according to ISO 16750, supporting an extended temperature range of –40 °C to +85 °C.

	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]	8	8
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 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

* = Estimate

NORA-W2 series

S

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	15 dBm *
Conducted sensitivity	–96 dBm (1 Mbit/s Wi-Fi 802.11b) –98 dBm (1 Mbit/s Bluetooth Low Energy)

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.

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)	NORA-W251AWS: TBD NORA-W256AWS: TBD

* = Estimated values; still to be verified

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 [1]

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

1 = Pending approvals

Support products

EVK-NORA-W251	Evaluation kit for NORA-W251AWS with AWS IoT ExpressLink and antenna pin
EVK-NORA-W256	Evaluation kit for NORA-W256AWS with AWS IoT ExpressLink and internal PCB antenna
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-us.

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