

IoT ExpressLink 3 Click



PID: MIKROE-5891

IoT ExpressLink 3 Click is a compact add-on board that allows users to connect easily to IoT ExpressLink services and securely interact with cloud applications and other devices. This board features the [NORA-W256WS](#), a standalone multi-radio module from [u-blox](#). The module supports Wi-Fi radio at 802.11b/g/n standard and 2.4GHz of ISM band. It also supports the Bluetooth Low Energy 5. The embedded AWS IoT ExpressLink-compliant software includes secured pre-flashed certificates in the module. This Click board™ makes the perfect solution for the development of smart homes, industrial automation, health care, consumer electronics, and many more.

IoT ExpressLink 3 Click is supported by a [mikroSDK](#) compliant library, which includes functions that simplify software development. This [Click board™](#) comes as a fully tested product, ready to be used on a system equipped with the [mikroBUS™](#) socket.

How does it work?

IoT ExpressLink 3 Click is based on the NORA-W256WS, a standalone multi-radio module from u-blox. Under the hood is the ESP32-S3, a radio for wireless communication, and a dual-core MCU from Espressif. This powerful 32-bit microcontroller has 512KB of RAM and 8192KB of flash memory. It features host software OTA, module firmware OTA, secure boot, end-to-end security (TLS), MQTT, stateless AT commands, WPA/WPA2/WPA3, and more. With pre-flashed AWS IoT ExpressLink software that offers out-of-the-box connectivity with Amazon Web Services (AWS), you can benefit from convenient cloud access to applications and all other services that AWS provides.

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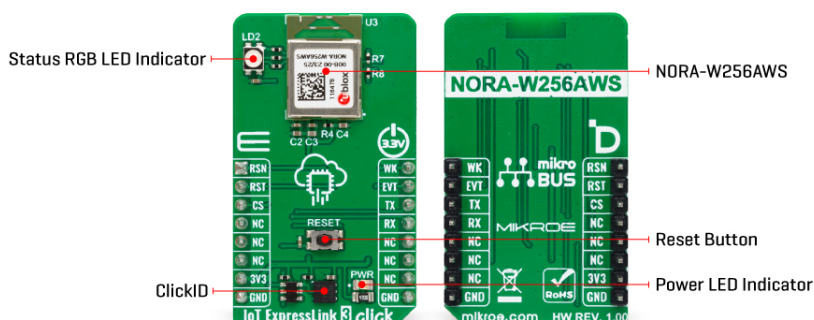
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The NORA-W256WS module comes with a printed antenna that serves both radios. You can only use one at a time. The module also features an RGB LED that visualizes the system statuses. IoT ExpressLink 3 Click uses a standard 2-Wire UART interface to communicate with the host MCU, with commonly used UART RX and TX pins over the 115200bps baud rate. The ExpressLink events can be monitored over the EVT pin. The module enters a standby state and stops the Wi-Fi until the wake WK pin is asserted. Toggling this pin when the module is in deep sleep mode allows the module to enter active wake mode. The module can be reset (rebooted) over the RST pin. You can also reset the module over the RESET button. In addition, you can reset the ExpressLink over the RSN pin.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. Also, it comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Aws iot expresslink

AWS IoT ExpressLink is a powerful solution for swiftly developing IoT devices that securely connect to the AWS Cloud. It leverages a series of hardware modules equipped with software that adheres to AWS's strict security requirements, making it faster and easier to connect devices to the Cloud securely and seamlessly interface with a vast array of over 200 AWS services. AWS IoT ExpressLink not only expedites cloud connectivity but also reduces development costs by delegating networking and cryptography tasks to the module, simplifying device connection, and monitoring device fleet health and security updates at scale.

Several modules can be found in the form of our compact [Click board™](#) line of products, simplifying your hardware development and reducing development time. For further explanation, you can discover more about the features offered by this solution at the official [AWS IoT ExpressLink page](#).

Specifications

Type	Cloud Routers,WiFi
Applications	Can be used for the development of smart homes, industrial automation, health care,

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	consumer electronics, and many more
On-board modules	NORA-W256WS - standalone multi-radio module from u-blox
Key Features	AWS IoT ExpressLink connectivity with pre-provisioned AWS connectivity, easy integration with high-level commands, WiFi 802.11b/g/n, Bluetooth Low Energy 5, enhanced security features, printed antenna, global certification, and more
Interface	UART
ClickID	Yes
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on IoT ExpressLink 3 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS™				Pin	Notes
Reset Nora Module	RSN	1	AN	PWM	16	WK	Module Wake Up
Device Enable / ID SEL	RST	2	RST	INT	15	EVT	Event Interrupt
Chip Select / ID COMM	CS	3	CS	RX	14	TX	UART TX
	NC	4	SCK	TX	13	RX	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	LD2	-	Status RGB LED Indicator
T1	RESET	-	Reset Button

IoT ExpressLink 3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Wi-Fi Operating Frequency	-	2.4	-	GHz
Bluetooth Operating Frequency	-	2.4	-	GHz
Wi-Fi Data Rate	-	-	54	Mbps
Bluetooth Data Rate	-	-	2	Mbps
Estimated Range	-	-	500	m

Software Support

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We provide a library for the IoT ExpressLink 3 Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development boards](#).

Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Library Description

This library contains API for IoT ExpressLink 3 Click driver.

Key functions

- `iotexpresslink3_reset_device` This function resets device by toggling the RST pin state.
- `iotexpresslink3_send_cmd` This function send command string by using UART serial interface.

Example Description

This example demonstrates the use of IoT ExpressLink 3 Click board™ by bridging the USB UART to mikroBUS UART which allows the click board to establish a connection with the IoT ExpressLink over the Quick Connect demo application without an AWS account.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.IoTExpressLink3

Additional notes and informations

Depending on the development board you are using, you may need [USB UART click](#), [USB UART 2 Click](#) or [RS232 Click](#) to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE [compilers](#).

mikroSDK

This Click board™ is supported with [mikroSDK](#) - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the [LibStock](#) and installed for the compiler you are using.

For more information about mikroSDK, visit the [official page](#).

Resources

[mikroBUS™](#)

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[mikroSDK](#)

[Click board™ Catalog](#)

[Click Boards™](#)

[ClickID](#)

Downloads

[IoT ExpressLink 3 click example on Libstock](#)

[IoT ExpressLink 3 click 2D and 3D files](#)

[NORA-W256AWS datasheet](#)

[IoT ExpressLink 3 Click schematic](#)

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