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IoT ExpressLink Click





PID: MIKROE-5800

IoT ExpressLink Click is a compact add-on board that allows users to easily connected to IoT ExpressLink services and securely interact with cloud applications and other devices. This board features the ESP32-C3-MINI-1-N4-A, a small 2.4GHz WiFi (802.11 b/g/n) and Bluetooth® 5 module from Espressif Systems that use ESP32C3 series of SoC RISCV single-core microprocessor (ESP32-C3FN4) with 4MB flash in a single chip package. The module uses UART communication alongside several other features like the JTAG interface, module wake-up, various operational event detection, additional UART for debugging, and others. The rich set of ESP32C3's features makes this Click board™ ideal for smart homes, industrial automation, health care, consumer electronics, and many more.

IoT ExpressLink 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?

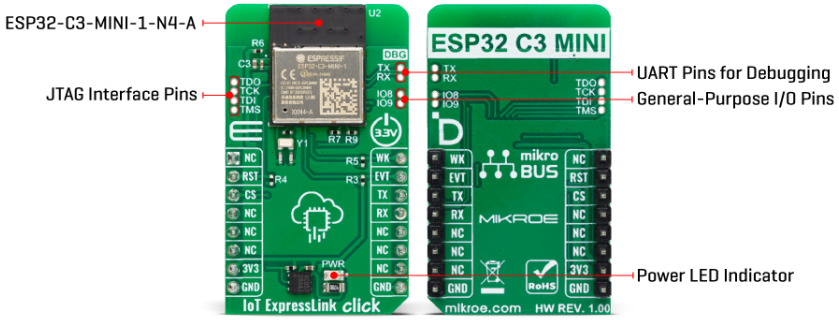
IoT ExpressLink Click is based on the ESP32-C3-MINI-1-N4-A, a general-purpose 2.4GHz WiFi (802.11 b/g/n) and Bluetooth® 5 LE combo module from Espressif Systems that comes with an onboard PCB antenna. This module's core is the ESP32C3 series of SoC RISCV single-core 32-bit microprocessor (ESP32-C3FN4), a chip with an embedded flash of 4MB and a clock speed of up to 160MHz. Since flash is packaged in the ESP32-C3FN4 chip rather than integrated into the module, the ESP32-C3-MINI-1-N4-A has a smaller package size. Thanks to its rich set of features necessary to implement IoT ExpressLink services, this Click board™ is ideal for smart homes, industrial automation, health care, consumer electronics, and generic IoT sensor hubs and data logger applications.

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The IoT ExpressLink Click interfaces with a host MCU through UART communication, which involves sending AT commands using RX and TX pins operating at a rate of 115200bps. Besides the UART pins, this Click board™ also employs other pins of the mikroBUS™ socket to enhance its functionality. For example, the WK pin is utilized as a module wake-up pin, the EVT pin detects significant events during operation, and the device enable pin RST offers a switch operation to turn ON/OFF the module.

On the left side of the board, it is possible to find an additional unpopulated header that offers full support for debugging and programming capabilities. With this header, the user can use a JTAG interface for programming and debugging, available through the JTAG interface pins (TDO, TCK, TDI, and TMS). On the right side of the board, there is also a set of unpopulated headers like extra UART pins for debugging and a header with user-configurable general-purpose I/O pins.

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.

Specifications

Type	WiFi,Cloud Routers
Applications	Can be used for smart homes, industrial automation, health care, consumer electronics, and generic IoT sensor hubs and data logger applications
On-board modules	ESP32-C3-MINI-1-N4-A - WiFi and Bluetooth® 5 LE combo module from Espressif Systems
Key Features	Easily connected to IoT ExpressLink services, 2.4GHz WiFi and Bluetooth® 5 combo, 4MB flash in a single chip package, UART-based control or via demo application, additional functionality like module wake-up, JTAG interface, UART pins for debugging, GPIOs, and more
Interface	UART

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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 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	**WK**	Module Wake-Up
Reset	**RST**	2	RST	INT	15	**EVT**	Event Detection
	NC	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
J1	-	Unpopulated	JTAG Interface for Debugging Header
J2	-	Unpopulated	UART Pins for Debugging Header
J3	-	Unpopulated	General-Purpose I/O Pins Header

IoT ExpressLink Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Frequency Range	-	2.4	-	GHz
Data Rate	-	-	150	Mbps

Software Support

We provide a library for the IoT ExpressLink 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 Click driver.

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Key functions

- iotexpresslink_reset_device This function resets device by toggling the RST pin state.
- iotexpresslink_send_cmd This function send command string by using UART serial interface.

Example Description

This example demonstrates the use of IoT ExpressLink 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.IoTExpressLink

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™

mikroSDK

Click board™ Catalog

Click Boards™

ClickID

Downloads

IoT ExpressLink click example on Libstock

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IoT ExpressLink click schematic

ESP32-C3-MINI-1-N4-A datasheet

IoT ExpressLink click 2D and 3D files

IoT ExpressLink Click manual

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