

WiFi ESP Click



PID: MIKROE-2542

WiFi ESP Click is a compact add-on board that provides wireless connectivity to your application. This board features the [ESP-WROOM-02](#), a fully integrated WiFi module from [Espressif](#). It provides wireless communication over the printed antenna and 2.4GHz frequency range (802.11b/g/n) and can be used in softAP (access point) WiFi mode, in WiFi station mode, and a combination of both. In addition, this module is packed with IPv4, TCP, UDP, HTTP, and FTP network protocols. This Click board™ makes the perfect solution for the development of industrial wireless control, smart home applications, various IoT devices, connected lighting, security systems, node applications, wireless data loggers, and more.

WiFi ESP 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?

WiFi ESP Click is based on the ESP-WROOM-02, a fully integrated WiFi module from Espressif. It carries the well-known work-horse ESP8266EX, a highly integrated SoC solution that meets continuous demands for efficient power usage, compact design, and reliable performance in the industry. Besides the WiFi functionalities, ESP8266EX integrates an enhanced version of Tensilica's L106 Diamond series 32-bit processor and on-chip SRAM, as well as antenna switches, RF balun, power amplifier, low noise receiver amplifier, filters, and power management modules. The module also includes 2MB of SPI flash to store a user program.

With the complete and self-contained WiFi networking capabilities, it can perform as either a standalone application (WROOM module itself) or the slave to an MCU host, which is the

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primary intention of the click board as a whole. So, this click board is applied to any microcontroller design as a WiFi adaptor through the UART interface (RX, TX lines on mikroBUS pin socket). The WiFi ESP Click comes with exposed 5 GPIOs of the module, which are part of the HSPI/GPIO interface of the module. The GPIO0 is used to enter the ESP8266EX's UART download mode by shortening it with the GND just next to it. This way, you can upgrade the module's firmware or upload a custom one.

WiFi ESP Click communicates with the host MCU using the UART interface as its default communication protocol at the 115200 baud rate. Besides standard UART RX and TX lines, the host MCU is also connected to the WiFi ESP Click with EN and RST lines. The first one turns off the module with a LOW logic state, while the latter is used to reset the ESP8266EX. You can also use the UART interface to communicate with the ESP-WROOM-02 module by the AT commands set.

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

Specifications

Type	WiFi
Applications	Create smart appliances, home automation systems, wireless data loggers, etc
On-board modules	ESP-WROOM-02 carries ESP8266EX highly integrated Wi-Fi SoC
Key Features	Protocols: IPv4, TCP/UDP/HTTP/FTP, 802.11 b/g/n standard, UART interface, 3.3V power supply
Interface	UART
Feature	No ClickID
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 **WiFi ESP click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
Reset	RST	2	RST	INT	15	NC	
Chip Enable	EN	3	CS	TX	14	TX	UART TX
SPI Clock	SCK	4	SCK	RX	13	RX	UART RX
SPI Data OUT	SDO	5	MISO	SCL	12	NC	

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SPI Data IN	SDI	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

WiFi ESP Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Frequency Range	2400	-	2483.5	MHz
Data Rate	-	-	72.2	Mbps
Output Power	-	20	-	dBm

Software Support

We provide a library for the Wifi ESP 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 way), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Library Description

This library contains API for Wifi ESP Click driver.

Key functions

- Sends AT command to the module.
- Generic write function.
- Generic read function.

Example Description

This example connects to the desired WiFi network and then creates web server on the IP address assigned to the click board. The user can connect to the server via web browser.

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

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.WifiEsp

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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](#).

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Resources

[mikroBUS™](#)

[Click board™ Catalog](#)

[Click Boards™](#)

Downloads

[ESP-WROOM-02 datasheet](#)

[WiFi ESP click schematic](#)

[WiFi ESP click example on Libstock](#)

[WiFi Click boards™ guide](#)

[WiFi ESP click 2D and 3D files](#)

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