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XBee 2 Click





PID: MIKROE-5302

Xbee 2 Click is a compact add-on board providing wireless end-point connectivity to other devices. This board features the XB3-24Z8UM, a Digi XBee® 3 transceiver module offering a fully interoperable ecosystem covering all vertical markets from Digi International. Building on industry-leading technology, the pre-certified Digi XBee® 3 module delivers the flexibility to switch between multiple frequencies and wireless protocols as needed (Zigbee, 802.15.4, DigiMesh® and BLE). It can be easily configured and controlled from a simple, central platform and comes with built-in Digi TrustFence® security, identity, and data privacy features which use more than 175 controls to protect against new and evolving cyber threats. This Click board™ is suitable for broad smart-energy applications, wireless alarms and security, building automation, and others.

Xbee 2 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?

Xbee 2 Click is based on the XB3-24Z8UM, a Digi XBee® 3 Zigbee 3.0 transceiver module providing wireless end-point connectivity from Digi International. This module uses the IEEE 802.15.4 networking protocol for fast point-to-multipoint or peer-to-peer networking designed for high-throughput applications requiring low latency and predictable communication timing. Building on industry-leading technology, the pre-certified XB3-24Z8UM module delivers the flexibility to switch between multiple frequencies and wireless protocols as needed (Zigbee, 802.15.4, DigiMesh®, and BLE), offering a fully interoperable ecosystem covering all vertical markets.

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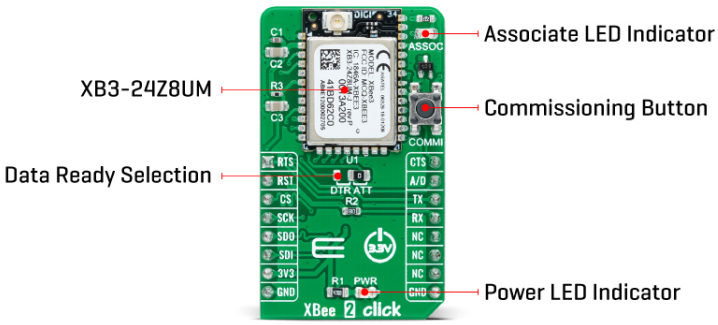

This Click board™ comes with a configurable host interface allowing communication with MCU using the chosen interface. The XB3-24Z8UM can communicate with MCU using the UART interface with commonly used UART RX, TX, and hardware flow control pins UART CTS and RTS (Clear to Send and Ready to Send), or using the SPI interface (XBee module will work as an SPI-slave only). In the case of the SPI interface, the users can use it to configure the module and write the library by themselves. The XB3-24Z8UM also has built-in Digi TrustFence® security, identity, and data privacy features, employing more over 175 controls to protect against new and evolving cyber threats.

The Xbee 2 Click is associated with many other features, such as the reset function and the possibility of visual and digital indicators. An active-low reset signal routed on the RST pin of the mikroBUS™ socket activates a hardware reset of the system, while a yellow LED indicator marked as ASSOC represents a visual indication of the module's connection to the network. If the LED is constantly on, it means that the module is not connected to the mobile network, while the case of standard flashing of the LED represents the normal operating mode.

The A/D pin routed on the INT pin of the mikroBUS™ socket represents a type of interrupt whose function can be selected by positioning an onboard SMD jumper to an appropriate position labeled as DTR or ATT. DTR position is a "Data terminal ready" function used to tell the XBee module that the host MCU is ready to communicate, while the ATT position (SPI Attention) represents an indicator for the SPI interface whenever the Xbee module has data for the host MCU. In addition, the board also has a commissioning pushbutton marked as COMMI which, combined with an ASSOC LED, provides various simple functions to aid in deploying devices in a network.

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	ZigBee
Applications	Can be used for broad smart-energy applications, wireless alarms and security, building automation, and others

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On-board modules	XB3-24Z8UM - Digi XBee® 3 Zigbee 3.0 radio module providing wireless end-point connectivity from Digi International
Key Features	Industry-leading technology, pre-certified, flexibility, multiple frequencies and wireless protocols, security features, high programmability, and more
Interface	SPI,UART
ClickID	No
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Supply Voltage	3.3V

Pinout diagram

This table shows how the pinout on XBee 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
UART RTS	**RTS**	1	AN	PWM	16	**CTS**	UART CTS
Reset	**RST**	2	RST	INT	15	**A/D**	Data Ready Indicator
SPI Chip Select	**CS**	3	CS	RX	14	**TX**	UART TX
SPI Clock	**SCK**	4	SCK	TX	13	**RX**	UART RX
SPI Data OUT	**SDO**	5	MISO	SCL	12	NC	
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
LD2	ASSOC	-	Associate LED Indicator
JP1	-	Right	Data Ready Selection DTR/ATT: Left position DTR, Right position ATT
T1	COMMI	-	Commissioning Button

XBee 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Frequency Range	-	2.4	-	GHz
Indoor/Urban Range	-	-	60	m
Outdoor/RF Line of Sight Range	-	-	1200	m
Data Rate	-	250	-	Kbps
Operating Temperature Range	-40	+25	+85	°C

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Software Support

We provide a library for the XBee 2 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika 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 XBee 2 Click driver.

Key functions

- xbee2_get_serial_number This function sends a get serial number command.
- xbee2_set_device_name This function sets the device name (node identifier).
- xbee2_set_destination_address This function sets the destination address high and low bytes.

Example Description

This example demonstrates the use of an XBee 2 Click board™ by showing the communication between the two click boards configured in transparent mode.

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.XBEE2

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 MikroElektronika compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika 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.

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For more information about mikroSDK, visit the official page.

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Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

Downloads

XBee 2 click example on Libstock

XB3-24Z8UM datasheet

XBee 2 click 2D and 3D files

XBee 2 click schematic

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