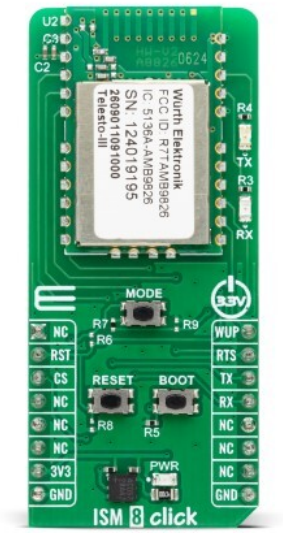
MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

# ISM 8 Click





PID: MIKROE-6628

**ISM 8 Click** is a compact add-on board designed to enable reliable short-range wireless communication in embedded systems. It is based on the Telesto-III (2609011091000) radio module from Würth Elektronik. Operating in the 902.5 to 927.5MHz ISM band (centered at 915MHz), the module supports a data rate of up to 400kbit/s, with a typical receiver sensitivity of -74dBm and transmission output power of -8dBm. It communicates with the host MCU via UART and features integrated support for flow control, reset, boot, and mode selection. With a line-of-sight range of approximately 40 meters and built-in antenna, it ensures dependable RF connectivity without complex setup. ISM 8 Click is ideal for industrial automation, smart sensor networks, and remote monitoring applications that require low-power, point-to-point or multi-node wireless communication.

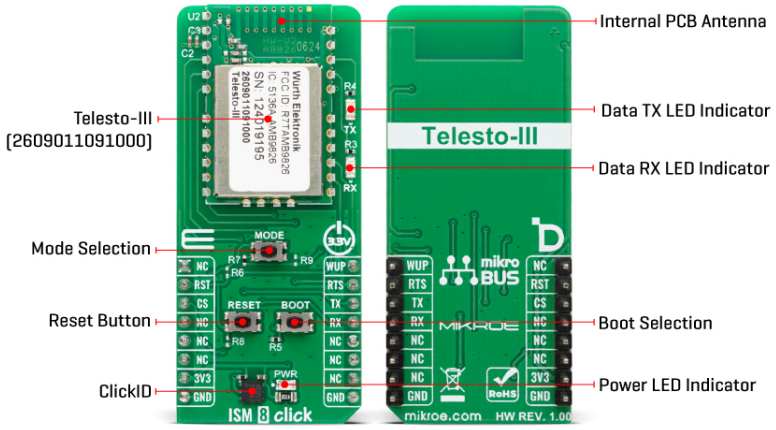
For more information about **ISM 8 Click** visit the official product page.

## How does it work?

ISM 8 Click is based on the Telesto-III (2609011091000) radio module from Würth Elektronik. This module features an integrated PCB antenna and operates within the 902.5 to 927.5MHz frequency range, with a nominal center frequency of 915MHz. It is designed for reliable short-range communication between various electronic devices such as sensors, control systems, and remote controls. The module supports a maximum radio data rate of 400kbit/s, offering a typical receiver sensitivity of -74dBm and a transmission output power of -8dBm. In optimal conditions, it achieves a line-of-sight communication range of approximately 40 meters. Thanks to its reliable wireless data packet exchange capabilities and ease of configuration, ISM 8 Click is an ideal solution for industrial automation systems, smart sensor networks, remote monitoring setups, and any other embedded application that requires simple, low-power, short-

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

range RF communication between multiple devices.




The Telesto-III module provides several configurable radio settings and address modes, enabling flexible network design. Its internal processing capabilities offload complex radio-specific tasks from the host MCU. This includes checksum calculations, address resolution, and optional repetition of unacknowledged telegrams to ensure robust data transmission. This Click board™ communicates with the host MCU through a UART interface using the standard UART RX and TX pins, and hardware flow control pin (RTS - Ready to Send) for data transfer. The default communication speed is set at 115200bps.

Along with the communication and control pins, this Click board™ also includes a reset pin (RST) and a RESET button, enabling easy module resetting, WUP pin used to wake up the module from shutdown or standby mode, and a set of data LEDs, red TX and yellow RX, for successful data transmission and reception. The board also features two additional buttons - BOOT and MODE - that allow users to easily control the module’s startup behavior.

The BOOT button is used to select the desired boot mode: by default, the module starts with the pre-loaded application firmware, while by pressing the button it enables the UART bootloader mode, which is used for performing firmware updates. The MODE button determines the module’s operational mode during startup. By default setting, the module enters command mode, allowing the user to send AT-style commands for configuration and control. Alternatively, pressing the MODE button during boot places the module into transparent mode, in which all incoming UART data is transmitted directly over the air.

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. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

## Specifications

| Type | Sub-1 GHz Transceievers |
|---|---|
| Applications | Ideal for industrial automation, smart sensor networks, and remote monitoring applications that require low-power, point-to-point or multi-node wireless communication |
| | |

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

| | |
|---|---|
| On-board modules | Telesto-III (2609011091000) - radio module from Würth Elektronik |
| Key Features | Short-range wireless communication, integrated PCB antenna, 915MHz ISM band operation, line-of-sight range up to 40 meters, UART interface, hardware flow control support, internal handling of checksum and address resolution, automatic retransmission of unacknowledged packets (optional), configurable command and transparent modes, bootloader support for firmware updates, and more |
| Interface | UART |
| Feature | ClickID |
| Compatibility | mikroBUS™ |
| Click board size | L (57.15 x 25.4 mm) |
| Input Voltage | 3.3V |

## Pinout diagram

This table shows how the pinout on ISM 8 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 | **WUP** | Module Wake-Up |
| Reset | **RST** | 2 | RST | INT | 15 | **RTS** | UART RTS |
| 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 | RX | - | Data RX LED Indicator |
| LD3 | TX | - | Data TX LED Indicator |
| T1 | MODE | - | Mode Selection Button |
| T2 | BOOT | - | Boot Selection Button |
| T3 | RESET | - | Reset Button |

## ISM 8 Click electrical specifications

| Description | Min | Typ | Max | Unit |
|---|---|---|---|---|
| Supply Voltage | - | 3.3 | - | V |
| Operating Frequency | 902.5 | 915 | 927.5 | MHz |
| Data Rate | - | - | 400 | kbit/s |

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

| | | | | |
|---|---|---|---|---|
| RX Sensitivity | - | -74 | - | dBm |
| Output Power | - | -8 | - | dBm |
| Range (Line-of-Sight) | - | 40 | - | m |

## Software Support

ISM 8 Click demo application is developed using the NECTO Studio, ensuring compatibility with mikroSDK's open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a mikroBUS™ socket.

### Example Description

This example demonstrates the use of ISM 8 Click board by showing the communication between two Click boards.

Key Functions

- ism8_cfg_setup This function initializes Click configuration structure to initial values.
- ism8_init This function initializes all necessary pins and peripherals used for this Click board.
- ism8_send_cmd This function sends a desired command packet from the Click context object.
- ism8_read_event This function reads an event packet from the ring buffer and stores it in the Click context object.
- ism8_get_user_setting This function reads data from the desired user settings index and stores it in the Click context event packet object.

Application Init

Initializes the driver, resets the Click board, reads the device info, and sends a message to initiate the communication with other Click board.

Application Task

Reads and parses all the received event packets and displays them the USB UART. All incoming data messages received from the connected device will be echoed back.

### Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following this tutorial.
- UART Terminal - Monitor data via the UART Terminal using a USB to UART converter. For detailed instructions, check out this tutorial.

### Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the NECTO Studio. The application code can also be found on the MIKROE GitHub account.

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

## Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

## Downloads

ISM 8 click example package

ISM 8 click 2D and 3D files v100

ISM 8 click schematic v100

Telesto-III (2609011091000) datasheet