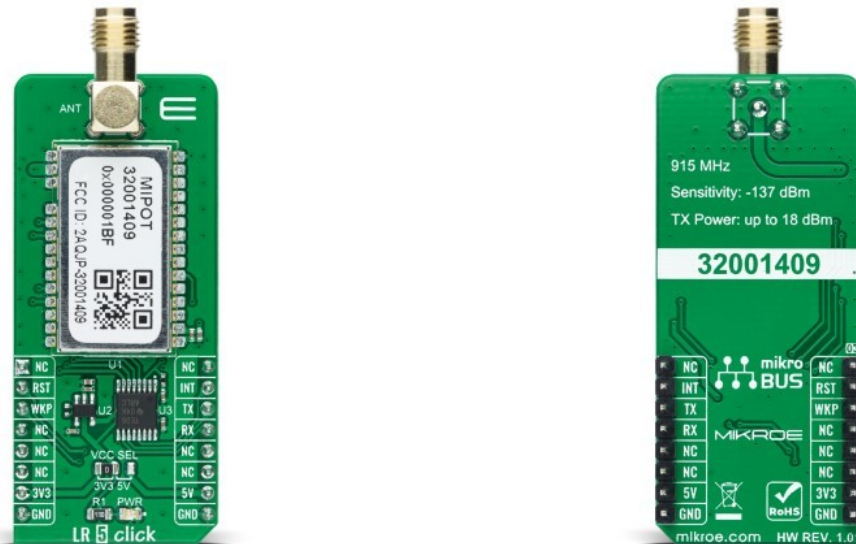


LR 5 Click



PID: MIKROE-4618

LR 5 Click is a compact add-on board that contains a long-range transceiver. This board features the 32001409, RF technology-based SRD transceiver, which operates at a frequency of 915MHz from Mipot. Thanks to the spread spectrum modulation feature, as well as the low power consumption, it is capable of achieving long-range communication, immune to interferences. It features a complete long-range stack onboard; it implements physical, network, and MAC layers, allowing for easy operation via the UART interface. This Click board™ offers an easy and reliable solution for developing highly integrated long-range IoT networks, security systems, alarm networks, and similar applications that require simple and reliable networking solutions.

LR 5 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.

NOTE: The 32001409 module is certified for American region.

How does it work?

LR 5 Click as its foundation uses the 32001409, a low-power long-range RF technology-based transceiver module from Mipot. It offers a long-range spread spectrum communication with high interference immunity. The network is implemented as a star topology, where endpoints work in duty cycle mode, significantly reducing the overall power consumption. This Click board™ features an embedded LoRaWAN Class A and Class C compliant stack offering an easy and reliable solution for developing low-power, highly integrated IoT networks, security systems, alarm networks, and similar applications that require simple and reliable networking

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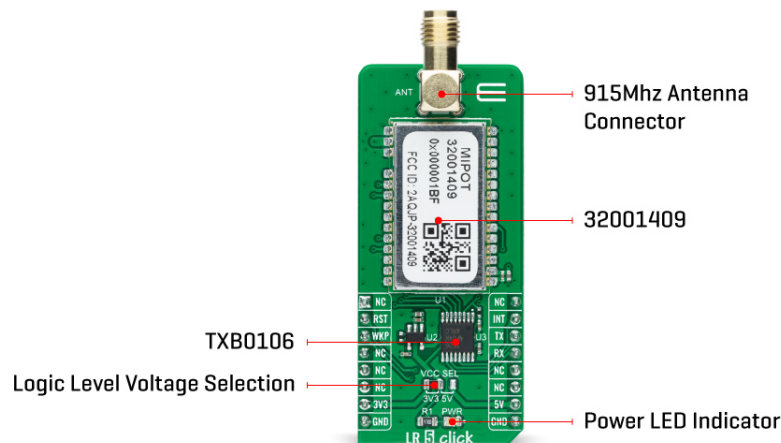


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solutions.



This Click board™ can be configured to work as either END or MASTER NODE, by using simple [AT commands](#). While working as the MASTER NODE, the Click board™ can use a set of master-specific commands, such as the pairing command. This command will add the end node which requested pairing, to the master network table. While working as the END NODE, LR 5 Click can issue slave specific commands/requests, such as the pairing request command, which will allow that end node to be paired with the master.

LR 5 Click communicates with MCU using the UART interface with commonly used UART RX and TX pins at data rates up to 115200bps for the data transfer. In addition to these features, the 32001409 also uses several GPIO pins connected to the mikroBUS™ socket. The WK pin routed on the CS pin of the mikroBUS™ represents the Wake-up function used for waking up the device, while the RST pin on the mikroBUS™ socket can perform Hardware Reset function by putting this pin in a logic low state. This Click board™ also has an indicator routed on the INT pin of the mikroBUS™ socket, which will provide the user with feedback after a successfully received package and verified checksum.

LR 5 Click features the SMA antenna connector with an impedance of 50Ω, so it can be equipped with the appropriate antenna that [Mikroe](#) has in its [offer](#).

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. A proper logic voltage level conversion is performed by the TXB0106 voltage level shifter, while the LDO ensures that recommended values power the module. This allows for both 3.3V and 5V capable MCUs to use the UART communication lines properly. However, the Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used, as a reference, for further development.

Specifications

Type	LoRa,Sub-1 GHz Transceivers
Applications	Can be used for developing highly integrated long-range IoT networks, security systems, alarm networks, and similar applications that require simple and reliable networking solutions.

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On-board modules	32001409 - low-power long-range RF technology-based transceiver module from Mipot
Radio Region	America
Key Features	Low power consumption, RF technology based wireless networking, full network stack, easy to use UART interface, and more.
Interface	UART
ClickID	No
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on LR 5 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
Reset	RST	2	RST	INT	15	INT	Data TX Indication
Wake-Up	WKP	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	5V	Power Supply
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

LR 5 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating Frequency Range	902	915	928	MHz
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the LR 5 Click as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika [development boards](#).

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Package can be downloaded/installed directly from compilers IDE(recommended way), or downloaded from our [LibStock](#), or found on [mikroE github account](#).

Library Description

This library contains API for LR 5 Click driver.

Key functions:

- void lr5_cfg_setup (lr5_cfg_t *cfg); - Config Object Initialization function.
- LR5_RETVAL lr5_init (lr5_t *ctx, lr5_cfg_t *cfg); - Initialization function.

Examples description

This example reads and processes data from LR 5 clicks.

The application is composed of three sections :

The full application code, and ready to use projects can be installed directly from compilers IDE(recommended) or found on [LibStock](#) page or [mikroE GitHub account](#).

Other mikroE Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.LR5

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. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

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.

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

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

Downloads

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[LR 5 click 2D and 3D files](#)

[32001409 datasheet](#)

[LR 5 click schematic](#)

[LR 5 click example on Libstock](#)

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