

iButton™ Click



PID: MIKROE-3045

iButton click - is an iButton™ probe Click board™. The iButton is a Analog Devices technology based on Analog's 1-Wire® communication protocol, and a chip usually packed in a robust stainless steel casing. The button-shaped iButton device has two contacts - the lid and the base. These contacts carry the necessary connections down to a sensitive silicone chip, embedded inside the metal button. When the iButton touches the reader probe on the Click board™, it establishes the communication with the host MCU, via the 1-Wire® interface. The communication is almost instant, so it is enough to press the iButton lightly to the probe contacts.

Note: The Click board™ comes with Analog's [DS1990A](#), a serial number iButton™ device with a unique 64-bit serial number. For more information on the serial number iButton™ device, please visit the official [product page](#).

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Due to its robustness, the iButton can withstand much more stress than similar devices used to carry an information: tags, cards, and other such devices are prone to damage, while a chip packed inside a thick stainless steel can be highly resilient. This Click board™ carries an

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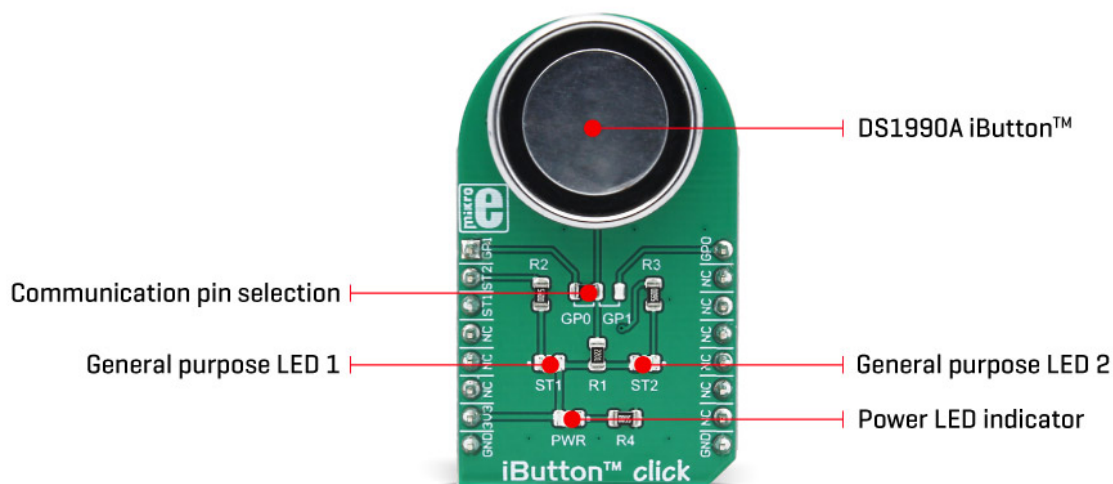


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iButton probe, along with two LEDs. It can be used to interface any iButton with the host MCU, displaying the resulting status information on any of the two independently programmed LEDs. This Click board™ is very useful for building a wide range of applications that can utilize a wide number of different iButton devices.

How does it work?

iButton click carries the [CZ-0-PIN](#), a high-quality iButton probe from Demiurge company. The metal probe ensures resistance to dirt, dust, moisture, shock and other environmental hazards while ensuring good alignment with the iButton device, at the same time. The manufacturer guarantees compatibility with Analog iButton devices, but any other device compatible with the maxim iButton can be read by the probe.



The iButton device is capable of powering itself up through the data line by employing the so-called parasite power supply. This Click board™ is equipped with the pull-up resistor to the 3.3V mikroBUS™ rail, providing power for the iButton that way. So-called parasite PSU of the iButton contains an internal capacitor, which provides enough current for the proper operation, once it has been charged by the data line. To allow proper functioning of the parasitic PSU, the idle state of the data line is HIGH, while the data line of the iButton device is in an open-drain configuration, pulling the data line to a LOW logic level when asserted.

The 1-Wire communication line is routed to the SMD jumper, which allows routing of the 1-Wire communication either to the PWM pin or to the AN pin of the mikroBUS™. These pins are labeled GP0 and GP1 respectively, the same as the SMD jumper positions, making the selection of the desired pin simple and straightforward.

The green LED labeled as ST1 is routed to the RST pin of the mikroBUS™, while the red LED is labeled as ST2 and it is routed to the CS pin of the mikroBUS™. These two pins allow visual feedback from the software, for example, if the serial number of the docked iButton matches the authorization criteria, the green LED can be used to signal it. These LEDs are can be used for any type of signalization, and are not directly connected with the iButton device itself.

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Specifications

Type	1-Wire
Applications	An ideal solution for building a wide range of applications that can utilize a wide number of different iButton devices
On-board modules	CZ-0-PIN, a high quality iButton probe from Demiurg company
Key Features	The metal probe ensures good alignment of the iButton device, two programmable LEDs that can be used for the status report, simple software development with the included library functions
Interface	1-Wire
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 **iButton click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
1-Wire Data IN/OUT	GP0	1	AN	PWM	16	GP1	1-Wire Data IN/OUT
Red LED Cathode	ST2	2	RST	INT	15	NC	
Green LED Cathode	ST1	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	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
PWR	PWR	-	Power LED indicator
ST1	ST1	-	User programmable GREEN LED
ST2	ST2	-	User programmable RED LED
JP1	GP0, GP1	Left	1-Wire data comm. pin selection: left position GP0, right position GP1

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Software Support

We provide a library for the iButton 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 iButton Click driver.

Key functions

- `ibutton_add_key` This function reads the ROM address from a DS1990A Serial Number iButton and stores it in the `ctx->key_rom` buffer.
- `ibutton_remove_keys` This function removes all stored keys by clearing the `ctx->key_rom` buffer.
- `ibutton_check_key` This function reads the ROM address from a DS1990A Serial Number iButton and checks if it is already stored in the `ctx->key_rom` buffer.

Example Description

This example demonstrates the use of the iButton Click by registering a DS1990A Serial Number iButton key and then waiting until a key is detected on the reader and identifying if the key matches one of those stored in RAM.

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.iButton

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.

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

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click Boards™](#)

Downloads

[iButton click example on Libstock](#)

[iButton click schematic](#)

[DS1990A datasheet](#)

[iButton click 2D and 3D files](#)

[CN-02 datasheet](#)

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