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I2C 1-Wire 2 Click

PID: MIKROE-6058

I2C 1-Wire 2 Click is a compact add-on board bridging I2C master interfaces with 1-Wire slave devices, ideal for simplifying complex communication protocols. This board features the DS2485, an advanced 1-Wire master with memory from Analog Devices. It features adjustable internal timers for precise 1-Wire signal management, relieving the host processor of timing-sensitive operations, and supports standard and overdrive communication speeds. The board allows for flexible 1-Wire line pull-up configurations through internal or external resistors, enhancing its adaptability for various applications. It also includes a 0.75Kb EEPROM array for user-programmable memory, offering additional versatility. Primarily designed for industrial sensors and tools, single-use consumables, and printer cartridge identification, the I2C 1-Wire 2 Click simplifies device communications within various industrial applications.

I2C 1-Wire 2 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the mikroBUS™ standard. It comes with the mikroSDK open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this Click board™ apart is the groundbreaking ClickID feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

I2C 1-Wire 2 Click is based on the DS2485, an advanced 1-Wire master with memory from Analog Devices. The core function of the DS2485 involves facilitating the protocol transition between the I2C master interface and any connected 1-Wire slave devices. It is equipped with internal, adjustable timers that manage the 1-Wire signaling, thereby offloading the host processor of the duty to produce timing-sensitive 1-Wire signals. This feature allows for both regular and accelerated 1-Wire communication rates. An internal weak pull-up can pull the

Time-saving embedded tools

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1-Wire line up, an external resistor by populating R6 with a chosen resistance value, or combining internal and external pull-up methods for enhanced flexibility. This Click board™ is predominantly utilized in industrial sensor and tool applications, temporary consumables, and for identifying printer cartridges.
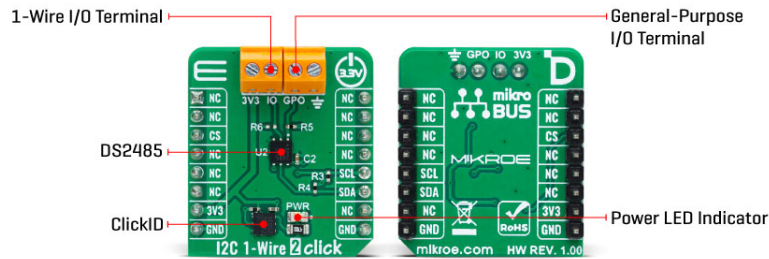
Upon receiving commands and data, the DS2485's input/output management unit takes over the execution of crucial 1-Wire operations such as the reset/presence-detection cycle, byte reading and writing, block reading and writing, single-bit read/write operations, executing triplets for ROM search activities, and handling complete command sequences for 1-Wire authenticators—all without the need for continuous host processor intervention.

Featuring a 0.75Kb EEPROM array, the DS2485 offers general-purpose, reprogrammable memory distributed across three 32-byte pages at even-numbered addresses, while odd-numbered pages are locked and inaccessible. Each of these even-numbered pages comes with optional security settings.

For communication with the host processor, the DS2485 uses an I2C interface, supporting both standard and fast modes, with communication speeds up to 1MHz. Additionally, the device's general-purpose I/O pin, available on the GPO terminal, can be managed independently via specific commands.

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. Also, it comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Specifications

Type	1-Wire
Applications	Ideal for industrial sensors and tools, single-use consumables, and printer cartridge identification
On-board modules	DS2485 - advanced 1-Wire master with memory from Analog Devices
Key Features	I2C to 1-Wire protocol conversion, supports both standard and overdrive 1-Wire

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	communication speeds, adjustable internal timers for signal management, flexible 1-Wire line pull-up options, 0.75Kb EEPROM with user-programmable memory, security features, independently operated GPIO, and more
Interface	1-Wire,I2C
ClickID	Yes
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on I2C 1-Wire 2 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	
	NC	2	RST	INT	15	NC	
ID COMM	**CS**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	6	MOSI	SDA	11	**SDA**	I2C Data
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

I2C 1-Wire 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V

Software Support

We provide a library for the I2C 1-Wire 2 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 I2C 1-Wire 2 Click driver.

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Key functions

- i2c1wire2_master_reset This function is used to reset device, and return all configuration registers to the default values.

- i2c1wire2_write_port_cfg This function is used to write a 1-Wire configuration register.

- i2c1wire2_search This function is used to perform 1-Wire Search algorithm and return one device ROMID.

Example Description

This example demonstrates the use of the I2C 1-Wire 2 Click board by searching if a device is connected and reading its ROMID.

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.I2C1Wire2

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.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

Downloads

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I2C 1-Wire 2 click example on Libstock

DS2485 datasheet

I2C 1-Wire 2 click 2D and 3D files v100

I2C 1-Wire 2 click schematic v100