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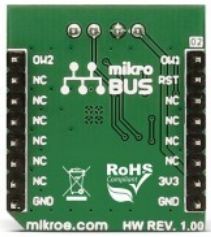
1-Wire I2C Click



PID: MIKROE-2750

1-Wire I2C Click is a compact add-on board that provides an I2C interface communication over the 1-Wire interface. This board features the DS28E17, a 1-Wire-to-I2C master bridge from Analog Devices. It interfaces directly to I2C slaves in standard or fast modes of up to 400kHz. The data is transferred serially over the 1-Wire protocol, which requires only a single data lead and a ground return. This Click board™ makes the perfect solution for the development of applications for accessory identification and control, I2C sensors, display controllers, ADCs/DACs devices, and generally to extend the length of I2C lines by converting I2C to 1-Wire, and more.

1-Wire I2C 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?

1-Wire I2C Click is based on the DS28E17, a 1-Wire-to-I2C master bridge from Analog Devices. The bridge supports 15Kbps and 77Kbps 1-Wire protocol with packetized I2C data payloads. The factory-programmed unique 64-bit 1-Wire ROM ID provides an unalterable serial number to the end equipment, thus allowing multiple DS8E17 devices to coexist with other devices in a 1-Wire network and be accessed individually without affecting other devices. The 1-Wire I2C Click allows communication with complex I2C devices, such as displays, ADCs, DACs, sensors, and more. The bridge provides 1-Wire communication with only one I2C device.

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1-Wire I2C Click uses the 1-Wire interface as a bridge to the standard 2-Wire I2C interface to communicate with the host MCU. You can choose a One-Wire input pin over the OW SEL jumper, where the OW1 is routed to an analog pin of the mikroBUS™ socket and is set by default. You can also reset the bridge over the RST pin. The I2C device can be connected over a 4-pin screw terminal.

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, this 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	1-Wire
Applications	Can be used for the development of applications for accessory identification and control, I2C sensors, display controllers, ADCs/DACs devices, and generally to extend the length of I2C lines by converting I2C to 1-Wire, and more
On-board modules	DS28E17 - 1-Wire-to-I2C master bridge from Analog Devices
Key Features	Converts 1-Wire communication protocol to I2C master IO, flexible 1-Wire slave and I2C master operational modes, I2C clock stretching automatically supported, low power consumption, unique 64-bit ROM ID, and more
Interface	1-Wire,GPIO
Feature	No ClickID
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 1-Wire I2C click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS™				Pin	Notes
1-Wire 1st pin	**OW1**	1	AN	PWM	16	**OW2**	1-Wire 2nd pin
Reset pin	**RST**	2	RST	INT	15	NC	
	NC	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	

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Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
-	PWR	-	Power LED Indicator
-	OW SEL	Left	1-Wire pin Selection OW1/OW2: Left position OW1, Right position OW2

1-Wire I2C click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
I2C Bus Operating Frequency	-	-	400	kHz
1-Wire Data Rate	-	-	77	Kbps

Software Support

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

Key functions

- c1wirei2c_reset_device This function resets the device by toggling the RST pin state.
- c1wirei2c_write_data This function addresses and writes 1-255 bytes to an I2C slave without completing the transaction with a stop.
- c1wirei2c_read_data_stop This function is used to address and read 1-255 bytes from an I2C slave in one transaction.

Example Description

This example demonstrates the use of 1-Wire I2C click board by reading the temperature measurement from connected Thermo 4 click board.

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:

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- MikroSDK.Board
- MikroSDK.Log
- Click.1WireI2C

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™

Click board™ Catalog

Click Boards™

Downloads

1-Wire I2C click schematic v100

1-Wire I2C click example on Libstock

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

DS28E17 datasheet