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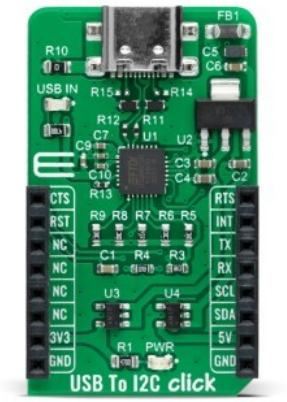
USB to I2C Click





PID: MIKROE-5312

USB to I2C Click is an adapter add-on board with a general-purpose USB master to I2C/UART serial interface. This board features the FT260 from FTDI, an interface device controller that provides a bridge between standard USB Human Interface Device (HID) class drivers and an I2C or UART slave devices. The FT260 is highly-integrated with a USB 2.0-compliant full-speed (12Mbps) transceiver, oscillator, LDO regulator, and on-chip eFUSE. It is supported by most operating systems where a custom driver is not required. With the possibility of use as a standalone device, this Click board™ provides an ideal, fast-to-implement bridge between USB and either UART or I2C peripherals.

USB to 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?

USB to I2C Click as its foundation uses the FT260Q, a USB device that supports I2C and UART communication through standard USB HID class interfaces from FTDI. It provides the bridge function between a standard USB HID class driver and an I2C or UART slave device. This highly integrated IC comes with a USB2.0 compliant full-speed transceiver, oscillator as the source of the operating clock, LDO regulator for the entire chip operating power source, eFUSE for basic customization, and automatic scanning mechanism of EEPROM for advanced customization. The USB HID class is natively supported by most operating systems with no requirements for custom drivers.

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ISO 27001: 2013 certification of informational security management system.
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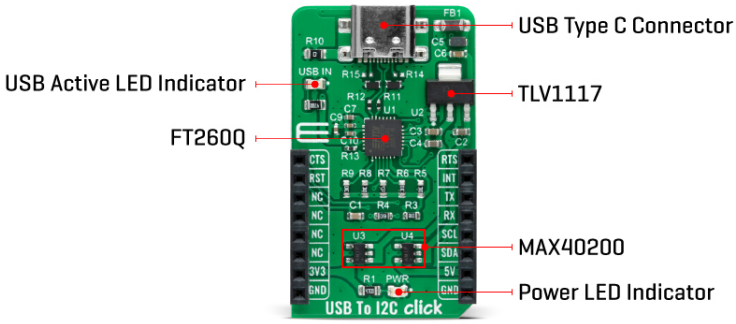

This Click board™ can communicate with MCU via UART or I2C interface. The FT260Q uses the UART interface with commonly used UART RX and TX pins and hardware flow control pins UART CTS and RTS (Clear to Send and Ready to Send) to transmit and exchange data with the host MCU or using the I2C interface, which can also act as a Master with a maximum I2C bus speed of up to 3.4Mbit/s. These two interfaces exist concurrently and can be selected independently according to the application.

In addition, the USB to I2C Click also has an active-low reset signal routed on the RST pin of the mikroBUS™ socket that activates a hardware reset of the chip and a possibility of a remote wake-up function. If the operating system supports remote wake-up and allows external hardware to wake it, the FT260Q can be resumed by the INT pin, defaulted as wake-up, triggering a resume signal on the USB bus to wake up the USB host. If this function is not used, this pin behaves like a standard interrupt pin.

USB to I2C Click can operate with both 3.3V and 5V logic voltage levels. Considering that the board can be powered via USB and used as a standalone device (USB active voltage level is visually indicated with a blue LED marked USB IN), using an additional LDO, the TLV1117, in this way, the existence of the voltage of both mikroBUS™ power lines is ensured. An LDO and both mikroBUS™ power rails also have protection in the form of MAX40200 diodes to prevent any unwanted back voltage.

The board must complete the proper logic voltage level conversion before use with MCUs with different logic levels. However, the Click board™ comes equipped with a library from FTDI containing functions and an example code that can be used, as a reference, for further development.

Specifications

Type	USB
Applications	Can be used as a bridge between USB and either UART or I2C peripherals
On-board modules	FT260 - USB device that supports I2C and UART communication through standard USB HID class interfaces from FTDI
Key Features	Full speed HID class USB device, USB2.0 compliant with entire USB protocol handled on

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	the chip, supported by most operation systems, custom driver is not required, I2C Master interface, standalone operation, and more
Interface	I2C,UART,USB
ClickID	No
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V,5V

Pinout diagram

This table shows how the pinout on USB to I2C Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
UART CTS	**CTS**	1	AN	PWM	16	**RTS**	UART RTS
Reset	**RST**	2	RST	INT	15	**INT**	Wake-up / Interrupt
	NC	3	CS	RX	14	**TX**	UART TX
	NC	4	SCK	TX	13	**RX**	UART RX
	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	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	USB IN	-	USB Active LED Indicator

USB to I2C Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Data Rate	-	-	12	Mbps
Operating Temperature Range	-40	+25	+85	°C

Software Support

MIKROE does not provide software support for this Click board™ in the form of libraries, functions, or example code at this moment. The software support is provided by the FTDI company. Please visit the official FTDI FT260Q webpage to get the support on this I2C master IC and how to control it from your PC.

Resources

mikroBUS™

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mikroSDK

Click board™ Catalog

Click boards™

Downloads

TLV1117 datasheet

MAX40200 datasheet

FT260 datasheet

USB to I2C click 2D and 3D files

USB to I2C click schematic

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