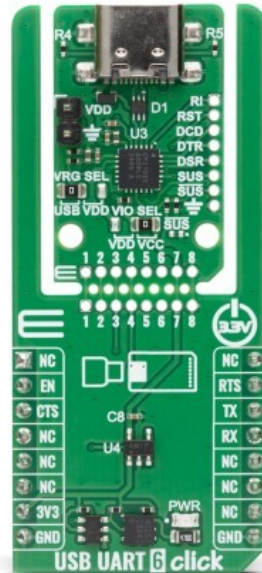


## USB UART 6 Click



PID: MIKROE-6725

**USB UART 6 Click** is a compact add-on board designed to provide a conversion of USB signals to UART serial communication, enabling integration of USB connectivity into embedded applications. It is based on the [CP2102C](#), a USB-to-UART bridge from [Silicon Labs](#), which combines a USB 2.0 full-speed function controller, USB transceiver, oscillator, and Universal Asynchronous Receiver/Transmitter in a single package. This Click board™ features hardware flow control, a yellow SUS LED for suspend mode indication, a Snap section with accessible pins for additional signals such as reset, USB suspend, and modem control lines, as well as VIO SEL and VRG SEL jumpers for selecting the logic voltage source and internal regulator configuration. This board is an excellent solution for upgrading RS-232 designs to USB and for applications such as POS terminals, USB dongles, gaming controllers, medical equipment, and data loggers.

For more information about **USB UART 6 Click** visit the official [product page](#).

### How does it work?

USB UART 6 Click is based on the CP2102C, a USB-to-UART bridge from Silicon Labs and provides a simple way to convert USB signals to UART serial communication. By integrating a USB 2.0 full-speed function controller, USB transceiver, oscillator, and a Universal Asynchronous Receiver/Transmitter in a single package, the CP2102C eliminates firmware complexity and the need for external components, allowing engineers to add USB functionality to their applications with minimal development time. These features make USB UART 6 Click an ideal choice for upgrading RS-232 designs to USB and for use in a wide range of applications such as POS terminals, USB dongles, gaming controllers, medical equipment, and data loggers

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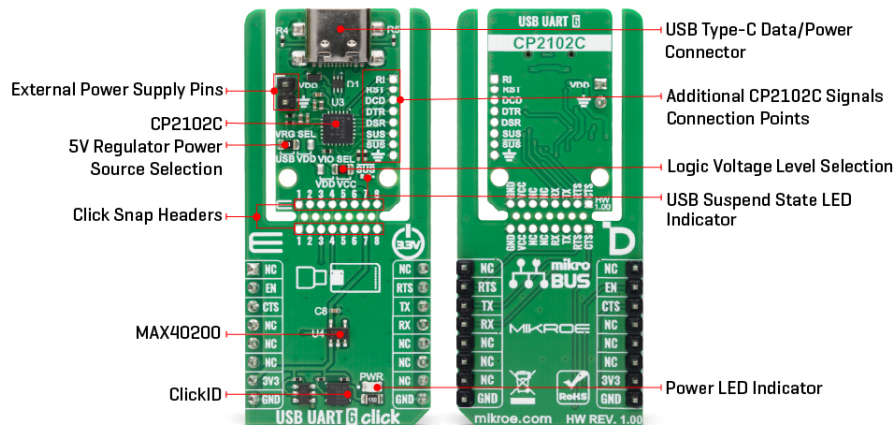


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where high-speed USB-to-UART communication is essential.



Its integrated USB transceiver requires no external resistors and includes 512-byte transmit and receive buffers, while the internal 48MHz oscillator removes the need for an external crystal. The device supports USB 2.0 full-speed operation at 12Mbps, and standard CDC drivers are supported, eliminating the requirement for custom drivers and simplifying integration across multiple operating systems.

This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor/IC/module area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the CP2102C can operate autonomously by accessing its signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

This Click board™ establishes communication between the CP2102C module and the host MCU through a UART interface, using standard UART RX and TX pins and hardware flow control via CTS and RTS pins. The default communication speed is set at 115200bps, ensuring efficient data exchange. The board also has SUS yellow LED indicator that indicates when the CP2102C enters Suspend mode - when suspend signaling is detected on the bus. On entering Suspend mode, the CP2102C asserts the USB Suspend and Resume signals, for power management of both the CP2102C as well as external circuitry. Suspend signals are also asserted after a CP2102C reset until device configuration during USB Enumeration is complete.

Due to the limited space on the board, specifically within the Snap area, and in order to provide complete functionality and full access to the CP2102C signals, certain pins from the IC have been routed to an unpopulated 1x8 header. This allows designers to tap into additional features such as the reset signal, the USB suspend (SUS) signals, as well as the RI, DCD, DTR, and DSR modem control signals (ring indicator, data carrier detect, data terminal ready, and data set ready), ensuring that all critical control and status lines remain available for advanced configurations, debugging, and custom application requirements. To manage the operation of the CP2102C IC, USB UART 6 Click integrates the MAX40200 from Analog Devices that enables or disables the sensor through the EN pin.

This Click board™ can operate only with a 3.3V logic voltage level. In addition, selecting the logic voltage source is also available via the VIO SEL jumper located in the Snap section. Using

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this jumper, the user can choose between the 3.3V mikroBUS power rail or an externally supplied voltage fed through the VDD header within the 3V to 3.6V range, ensuring flexibility with various system power configurations. The Snap section also features a VRG SEL jumper that allows selecting the power source for the IC's internal 5V voltage regulator.

When the internal regulator is used and the USB connection is active (self-powered mode), the VDD pin provides an output voltage of 3.3V, enabling access to the regulated supply for external use or monitoring. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

## Click Snap

**Click Snap** is an innovative feature of our standardized Click add-on boards, designed to bring greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the [official page](#) dedicated to this feature.

## Specifications

Type	USB
Applications	Ideal for upgrading RS-232 designs to USB and for applications such as POS terminals, USB dongles, gaming controllers, medical equipment, and data loggers
On-board modules	CP2102C - USB to UART bridge from Silicon Labs
Key Features	USB-to-UART bridge functionality, USB 2.0 full-speed controller, high data transfer rates, support for standard CDC drivers eliminating custom driver requirements, integrated 512-byte transmit and receive buffers, hardware flow control pins, yellow SUS LED indicating suspend mode, Click Snap format, and more
Interface	UART,USB
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

## Pinout diagram

This table shows how the pinout on USB UART 6 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin		Pin	Notes
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	NC	1	AN	PWM	16	NC	
Device Enable / ID SEL	<b>EN</b>	2	RST	INT	15	<b>RTS</b>	UART RTS
UART CTS / ID COMM	<b>CTS</b>	3	CS	RX	14	<b>TX</b>	UART TX
	NC	4	SCK	TX	13	<b>RX</b>	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	NC	
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground

## Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	SUS	-	USB Suspend State LED Indicator
JP1	VRG SEL	Left	5V Regulator Power Source Selection USB/VDD: Left position USB, Right position VDD
JP2	VIO SEL	Right	Logic Voltage Level Selection VDD/VCC: Left position VDD, Right position VCC

## USB UART 6 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
External Power Supply Voltage (VDD)	3	-	3.6	V
Data Rate	-	-	3	Mbps

## Software Support

[USB UART 6 Click](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

## Example Description

This example demonstrates the USB UART 6 Click board's ability to act as a USB-to-UART bridge. It enables bidirectional communication between a USB host and a UART device by forwarding received data between the USB and UART interfaces.

## Key Functions

- `usuart6_cfg_setup` This function initializes Click configuration structure to initial values.
- `usuart6_init` This function initializes all necessary pins and peripherals used for this Click board.
- `usuart6_generic_write` This function writes a desired number of data bytes by using UART serial interface.

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- `usbuart6_generic_read` This function reads a desired number of data bytes by using UART serial interface.
- `usbuart6_enable_device` This function enables the device by setting the EN pin to high logic state.

## Application Init

Initializes the logger and the Click board and enables the device.

## Application Task

Continuously reads the data from one UART interface and forwards it to the other, enabling seamless USB to UART data transfer and vice versa.

## Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

## Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

## Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

## Downloads

[USB UART 6 click example package](#)

[CP2102C datasheet](#)

[USB UART 6 click 2D and 3D files v100](#)

[USB UART 6 click schematic v100](#)

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