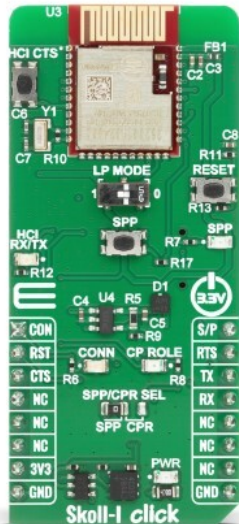


Skoll-I Click



PID: MIKROE-6830

Skoll-I Click is a compact add-on board designed for Bluetooth® and Bluetooth® Low Energy wireless communication between embedded systems. It is based on the Skoll-I ([2620011024000](https://www.wuerth-elektronik.com/en/2620011024000)) radio module from [Würth Elektronik](https://www.wuerth-elektronik.com/), built around the Infineon CYW20819 chipset and featuring an integrated PCB antenna. The module supports the full Bluetooth® 5 specification and operates across the 2402MHz to 2480MHz frequency range, providing a line-of-sight communication range of up to 350 meters with output power up to 2.4dBm and receiver sensitivity down to -91dBm. It supports Bluetooth® Classic and Bluetooth® LE operation with multiple device roles, advanced radio modes including BR, EDR, and LE 2Mbps, Serial Port Profile (SPP) communication, configurable control through UART and HCI interfaces, and over-the-air firmware update capability. This Click board™ is suitable for wireless connectivity applications in medical devices, industrial systems, IoT infrastructure, and smart sensor networks.

For more information about **Skoll-I Click** visit the official [product page](#).

How does it work?

Skoll-I Click is based on the Skoll-I (2620011024000), a Bluetooth® and Bluetooth® Low Energy communication radio module from Würth Elektronik that features an integrated PCB antenna and is built around the Infineon CYW20819 chipset. Designed to support the full Bluetooth® 5 specification, this module provides wireless connectivity between devices such as control systems, remote controls, sensors, and other smart embedded nodes. The Skoll-I module supports operation across the 2402MHz to 2480MHz frequency range and offers wireless performance with a line-of-sight communication range of up to 350 meters, delivering output power up to 2.4dBm and receiver sensitivity down to -91dBm. Thanks to the

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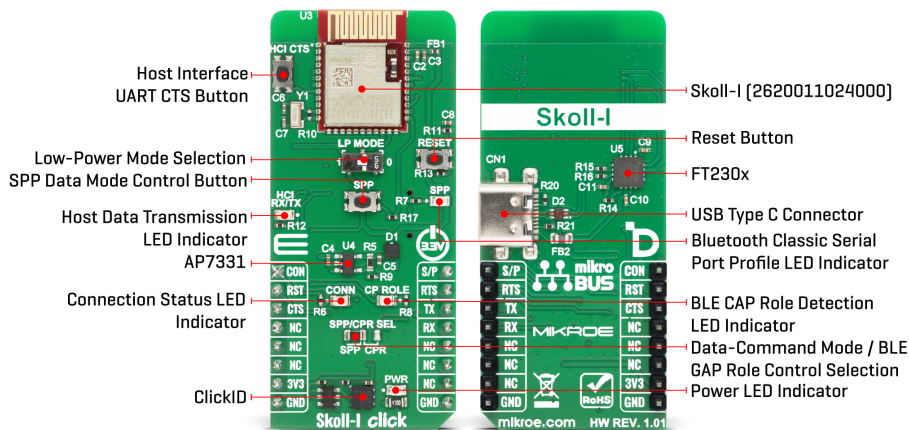


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capabilities of the CYW20819 chipset, the module can operate in multiple Bluetooth® roles, functioning as a host or peripheral device in Bluetooth® Classic communication as well as a central or peripheral device within Bluetooth® Low Energy networks. The Skoll-I Click is ideal for adding wireless connectivity to embedded systems in various sectors including medical devices, industrial equipment, and IoT infrastructure.



The Skoll-I module firmware implements the Bluetooth® Classic Serial Port Profile (SPP), a profile optimized for transparent exchange of generic data between wireless devices. Through this functionality, the module enables bidirectional data transmission between multiple Skoll-I modules as well as other Bluetooth® Classic devices that support the SPP v1.2 profile. Once the module is initialized and operating in SPP mode, it exposes a single virtual COM port that allows serial connectivity and communication, making integration simple for systems that rely on UART-based interfaces. Thanks to the Serial Port Profile, the module ensures compatibility with millions of Bluetooth® Classic devices already deployed in the field, enabling communication with existing hardware platforms without requiring complex protocol implementation.

Control of the SPP operating mode is managed through the SPP button, which allows the user to enter the SPP data mode by forcing the module into either transparent data mode or command mode depending on the application requirements. When the module enters the SPP data mode, the green SPP LED indicator provides a clear visual confirmation that the module is operating in transparent data communication mode. Configuration of the SPP functionality is determined through the SPP/CPR SEL jumper, which must be placed in the SPP position in order for the S/P pin on the mikroBUS™ socket to control the SPP mode operation.

Alternatively, when the jumper is positioned to the CPR setting, the same control mechanism determines whether the device operates as a Bluetooth® Low Energy central or peripheral device. The forced Bluetooth® LE Generic Access Profile role is indicated through the yellow CP ROLE LED indicator, providing a clear visual status of the selected Bluetooth® LE role. In addition, the board features a blue CONN LED indicator that signals when a Bluetooth® peer device has successfully established a connection with the module. The same connection status is also available in digital form through the CON pin on the mikroBUS™ socket, allowing the host MCU to monitor connection events.

The Skoll-I radio module integrates the authentication and encryption mechanisms defined by the Bluetooth® specification. In addition to supporting the legacy Bluetooth® radio physical layers, including the Basic Rate (BR) mode used in Bluetooth® Classic and the LE 1Mbps mode

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used in Bluetooth® Low Energy communication, the Skoll-I module also provides advanced high-speed radio modes designed to improve overall data throughput. These include Enhanced Data Rate (EDR) modes operating at 2Mbps and 3Mbps for Bluetooth® Classic as well as the LE 2Mbps mode for Bluetooth® Low Energy communication, allowing faster data exchange between connected devices. Furthermore, the Skoll-I firmware supports over-the-air firmware update functionality, allowing system firmware to be upgraded remotely without requiring physical access to the device.

The Skoll-I module communicates with a host MCU through a UART interface that includes TX, RX, RTS, and CTS signals. In addition to the standard UART interface, the module also features a Host Controller Interface (HCI) UART connection that is primarily intended for certification and testing purposes. This interface can be accessed through a USB implemented with the [FT230x](#) device, enabling direct connection to a PC-based environment for development, debugging, or compliance testing scenarios. During HCI communication, a blue HCI RX/TX LED indicator provides a visual representation of data transmission activity on the interface. The board also includes an HCI CTS control button that can be pressed during the boot-up sequence to reset the HCI UART interface, ensuring proper initialization when performing certification procedures or interface troubleshooting.

A RST pin along with an onboard RESET button allows the user to perform a hardware reset of the module whenever necessary, while an LP MODE switch determines the sleep behavior of the radio module. When the switch is set to position 0, the module is allowed to enter a low-power sleep state whenever operational conditions permit, helping reduce overall power consumption. When the switch is set to position 1, the module is forced to remain in, or return to, an active operating state, preventing automatic entry into sleep mode and ensuring continuous availability of the wireless communication functionality.

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. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

Specifications

Type	BT/BLE
Applications	Ideal for wireless connectivity applications in medical devices, industrial systems, IoT infrastructure, and smart sensor networks
On-board modules	Skoll-I (2620011024000) - Bluetooth® and Bluetooth® LE radio module from Würth Elektronik
Key Features	Bluetooth® 5 wireless connectivity, module based on the Infineon CYW20819 chipset, integrated PCB antenna, support for Bluetooth® Classic and Bluetooth® Low Energy operation, configurable master/slave and central/peripheral device roles, Serial Port Profile (SPP) support for transparent bidirectional data communication, secure communication with authentication and encryption support, HCI UART interface for

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	certification and testing, and more
Interface	UART
Feature	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 Skoll-I Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Connection Status	CON	1	AN	PWM	16	S/P	SPP Mode / BLE GAP Control
Reset / ID SEL	RST	2	RST	INT	15	RTS	UART RTS
UART CTS / ID COMM	CTS	3	CS	RX	14	TX	UART TX
	NC	4	SCK	TX	13	RX	UART RX
	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
LD1	PWR	-	Power LED Indicator
LD2	SPP	-	Power LED Indicator
LD3	CONN	-	Power LED Indicator
LD4	CP ROLE	-	Power LED Indicator
LD5	HCI RX/TX	-	Power LED Indicator
SW1	LP MODE	Right	Low-Power Mode Selection 1/0: Left position 1, Right position 0
JP2	SPP/CPR SEL	Left	Data-Command Mode / BLE GAP Role Control Selection SPP/CPR: Left position SPP, Right position CPR
T1	RESET	-	Reset Button
T2	HCI CTS	-	Host Interface UART CTS Button
T3	SPP	-	SPP Data Mode Control Button

Skoll-I Click electrical specifications

Description	Min	Typ	Max	Unit
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Supply Voltage	-	3.3	-	V
Frequency Range	2402	-	2480	MHz
Line-of-Sight Range	-	-	350	m
Output Power	-	2.4	-	dBm
Receiver Sensitivity	-	-91	-	dBm
Bluetooth Classic Data Rate (EDR)	-	2/3	-	Mbps
Bluetooth LE Data Rate	-	2	-	Mbps

Software Support

[Skoll-I 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 use of Skoll-I Click board by processing data from a connected BLE device.

Key Functions

- `skolli_cfg_setup` This function initializes Click configuration structure to initial values.
- `skolli_init` This function initializes all necessary pins and peripherals used for this Click board.
- `skolli_cmd_action` This function sends a specified action command to the Click module.
- `skolli_cmd_set` This function sends a specified set command to the Click module.
- `skolli_read_packet` This function reads a response or event packet from the Click module and stores it in `ctx->evt_pkt` structure.

Application Init

Initializes the driver and logger.

Application Task

Application task is split in few stages:

- `SKOLLI_POWER_UP`:
Powers up the device and checks the communication.
- `SKOLLI_CONFIG_EXAMPLE`:
Restores factory settings and reads the BT address and name.
- `SKOLLI_EXAMPLE`:
Performs a BT terminal example by processing all data from a connected BLE device and sending back an adequate response messages.

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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

[Skoll-I click example package](#)

[Skoll-I click 2D and 3D files v101](#)

[Skoll-I click schematic v101](#)

[Skoll-I \(2620011024000\) datasheet](#)

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