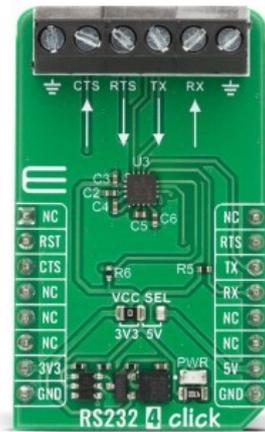


RS232 4 Click



PID: MIKROE-6767

RS232 4 Click is a compact add-on board that provides a reliable RS232 interface solution for asynchronous serial communication, ensuring data exchange between microcontrollers and external serial devices. It is based on the [TRSF3232E](#), a two-channel RS232 line driver and receiver from [Texas Instruments](#), which integrates two drivers, two receivers, and a dual charge-pump circuit to generate the necessary RS232 voltage levels from a single supply. It features $\pm 15\text{kV}$ ESD protection on all serial-port connection pins, supports data signaling rates up to 1Mbit/s, and maintains a controlled driver output slew rate of $14\text{V}/\mu\text{s}$ to $150\text{V}/\mu\text{s}$ for stable and distortion-free transmission. RS232 4 Click is ideally suited for industrial PCs, wired networking, enterprise and data center equipment, portable systems, and various handheld or battery-powered devices requiring secure and high-speed RS232 communication.

For more information about **RS232 4 Click** visit the official [product page](#).

How does it work?

RS232 4 Click is based on the TRSF3232E, a two-channel RS232 line driver and receiver from Texas Instruments, which integrates two line drivers, two line receivers, and a dual charge-pump circuit to generate the necessary RS232 voltage levels from a single supply. This Click board™ provides a reliable RS232 interface solution for asynchronous serial communication, designed to achieve robust data exchange between MCUs and external serial devices. With built-in $\pm 15\text{kV}$ ESD protection on all serial-port connection pins, including ground, the device ensures high immunity to electrostatic discharges, making it suitable for use in demanding industrial and portable applications.

Mikroe produces entire development toolchains for all major microcontroller architectures.

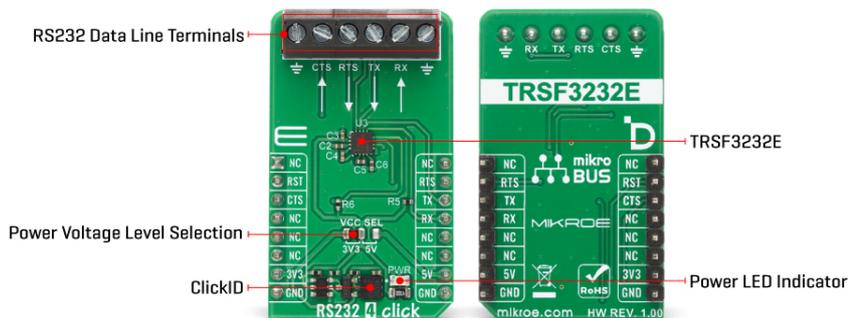
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ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).



This Click board™ establishes communication between the TRSF3232E 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 TRSF3232E supports data signaling rates up to 1Mbit/s while maintaining a controlled driver output slew rate between 14V/μs and 150V/μs, enabling fast and reliable communication without excessive signal distortion.

The RS232 4 Click offers integration into systems where legacy or long-distance serial communication is required. This makes it an ideal solution for a wide range of use cases, including industrial PCs, wired networking, enterprise and data center equipment, battery-powered systems, handheld devices, PDAs, notebooks, and palmtop computers, where stable, high-speed, and protected RS232 communication is essential.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	RS232
Applications	Ideal for industrial PCs, wired networking, enterprise and data center equipment, portable systems, and various handheld or battery-powered devices
On-board modules	TRSF3232E - two-channel RS232 1Mbit/s line driver and receiver from Texas Instruments
Key Features	Two-channel RS232 line driver and receiver, data rates up to 1Mbit/s, controlled driver output slew rate, built-in ±15kV ESD protection, UART interface, and more
Interface	UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)

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Input Voltage	3.3V or 5V
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Pinout diagram

This table shows how the pinout on RS232 4 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
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	5V	Power Supply
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

RS232 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Data Rate	-	-	1	Mbps
ESD Protection (HBM)	-	±15	-	kV

Software Support

[RS232 4 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 an RS232 4 Click board by showing the communication between the two Click board configured as a receiver and transmitter.

Key Functions

- `rs2324_cfg_setup` This function initializes Click configuration structure to initial values.
- `rs2324_init` This function initializes all necessary pins and peripherals used for this Click board.
- `rs2324_generic_write` This function writes a desired number of data bytes by using

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UART serial interface.

- rs2324_generic_read This function reads a desired number of data bytes by using UART serial interface.

Application Init

Initializes the driver and logger and displays the selected application mode.

Application Task

Depending on the selected mode, it reads all the received data or sends the desired message every 2 seconds.

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

[RS232 4 click example package](#)

[RS232 4 click 2D and 3D files v100](#)

[TRSF3232E datasheet](#)

[RS232 4 click schematic v100](#)

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