

RS485 Isolator 4 Click



PID: MIKROE-6316

RS485 Isolator 4 Click is a compact add-on board designed for robust RS-485 and RS-422 half-duplex communication with galvanic isolation. This board features the ISO1450, a 5kVRMS isolated RS-485 transceiver from Texas Instruments. The ISO1450 supports data rates up to 50Mbps and features advanced protection against electrostatic discharge (ESD) and electrical fast transients (EFT), ensuring reliable long-distance communication in industrial environments. It operates over a wide supply voltage range (3V to 5.5V), offering failsafe protection against open, short, and idle bus states. RS485 Isolator 4 Click is ideal for grid infrastructure, motor drives, solar inverters, HVAC systems, and building automation applications.

How does it work?

RS485 Isolator 4 Click is based on the ISO1450, an isolated half-duplex RS-485 transceiver from Texas Instruments. This transceiver is designed to provide galvanic isolation for RS-485 and RS-422 communication, offering robust noise immunity essential for harsh industrial environments. The ISO1450's bus pins are engineered to withstand high levels of electrostatic discharge (ESD) and electrical fast transients (EFT), eliminating the need for additional external components to ensure system-level protection. This capability makes the Click board™ ideal for industrial and commercial communication needs such as grid infrastructure, solar inverters, motor drives, HVAC systems, and building automation.

Mikroe produces entire development toolchains for all major microcontroller architectures.

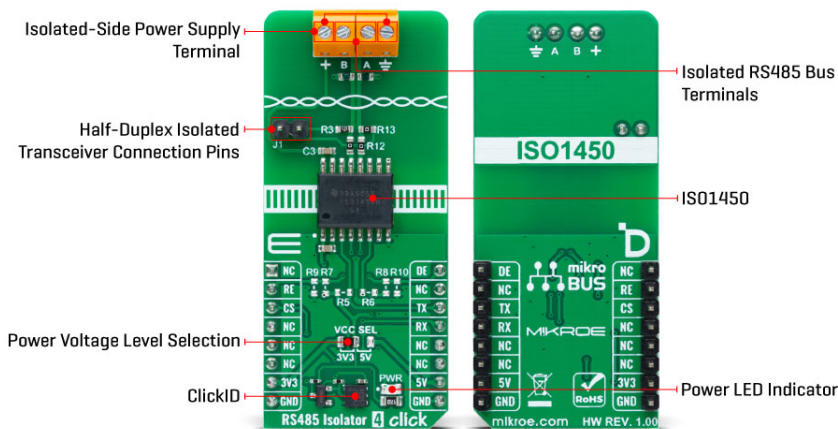
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



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).



With support for data rates up to 50Mbps, the ISO1450 enables long-distance communication while maintaining signal integrity. Its silicon-dioxide capacitive isolation barrier provides a reliable 5kVRMS isolation for 1 minute, as per UL 1577 standards, and a working voltage of 1500VPK. This isolation feature breaks ground loops between communicating nodes, allowing a wider common-mode voltage range. The ISO1450's isolated side can operate over a broad supply voltage range of 3V to 5.5V, removing the need for a regulated supply on this side.

The ISO1450 also includes advanced failsafe features to protect against invalid bus states, such as open bus conditions from broken cables, shorted bus conditions due to insulation breakdowns, and idle bus conditions where no driver is actively transmitting. This ensures reliable operation, even when communication lines encounter physical issues.

In addition to the standard UART interface TX and RX pins from the mikroBUS™ socket, RS485 Isolator 4 Click also features receiver and driver enable pins, routed to the RE and DE pins of the mikroBUS™. In this half-duplex implementation, the driver and receiver enable pins allow any connected node on the J1 header to be configured as either transmitting or receiving at any given moment. This flexibility reduces the need for additional cables since it allows dynamic switching between transmit and receive modes on the same communication line.

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	Isolators,RS485
Applications	Ideal for grid infrastructure, motor drives, solar inverters, HVAC systems, and building automation applications
On-board modules	ISO1450 - 5kVRMS isolated half-duplex RS-485 transceiver from Texas Instruments
Key Features	5kVRMS isolation for 1 minute as per UL 1577 standards, data rate up to 50Mbps, ESD and EFT protection, failsafe features, glitch-free power-up and power-down for hot plug in, and

Mikroe produces entire development toolchains for all major microcontroller architectures.

Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



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).

	more
Interface	UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V, External

Pinout diagram

This table shows how the pinout on RS485 Isolator 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	DE	Driver Enable
Receiver Enable	RE	2	RST	INT	15	NC	
ID COMM	CS	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

RS485 Isolator 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Isolated-Side Power Supply	3	-	5.5	V
Data Rate	-	-	5	Mbps
ESD Protection (HBM)	-	±30	-	kV

Software Support

We provide a library for the RS485 Isolator 4 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

Mikroe produces entire development toolchains for all major microcontroller architectures.

Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



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 library contains API for RS485 Isolator 4 Click driver.

Key functions

- `rs485isolator4_generic_write` This function writes a desired number of data bytes by using UART serial interface.
- `rs485isolator4_generic_read` This function reads a desired number of data bytes by using UART serial interface.
- `rs485isolator4_driver_enable` This function enables the driver input by setting the DE pin to high logic state.

Example Description

This example demonstrates the use of an RS485 Isolator 4 Click by showing the communication between the two click board configured as a receiver and transmitter.

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:

- MikroSDK.Board
- MikroSDK.Log
- Click.RS485Isolator4

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™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

Mikroe produces entire development toolchains for all major microcontroller architectures.

Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



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).

[ClickID](#)

Downloads

[RS485 Isolator 4 click example on Libstock](#)

[RS485 Isolator 4 click 2D and 3D files v100](#)

[ISO1450 datasheet](#)

[RS485 Isolator 4 click schematic v100](#)

Mikroe produces entire development toolchains for all major microcontroller architectures.

Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



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).