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CAN Isolator 2 Click

PID: MIKROE-4809

CAN Isolator 2 Click is a compact add-on board that provides isolated CAN communication. This board features the ISO1042, an isolated CAN transceiver from Texas Instruments. This galvanically-isolated CAN transceiver meets the ISO11898-2 specifications and offers a +/-70V DC bus fault protection, along with the +/-30V of common mode voltage range. The transceiver supports two CAN modes, with speeds of up to 1Mbps in Classic CAN and flexible data rate (FD) CAN, which allows much faster transfer of payload compared to the classic CAN with up to 5Mbps. This Click board™ makes the perfect solution for the development of solar inverters, AC and servo drives, industrial field networks, PLC and DCS communication modules, battery charging and management, and more.

CAN Isolator 2 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?

CAN Isolator 2 Click is based on the ISO1042, an isolated CAN transceiver from Texas Instruments. It has several features, such as undervoltage protection, driver Dominant Time Out (TXD DTO), HBM ESD tolerance on bus pins, and more. The transceiver has ideal passive high-impedance bus terminals when unpowered. If used in conjunction with the isolated power supplies, the CAN Isolator 2 Click can be the ideal choice for protection against high voltages and noise currents from the bus.

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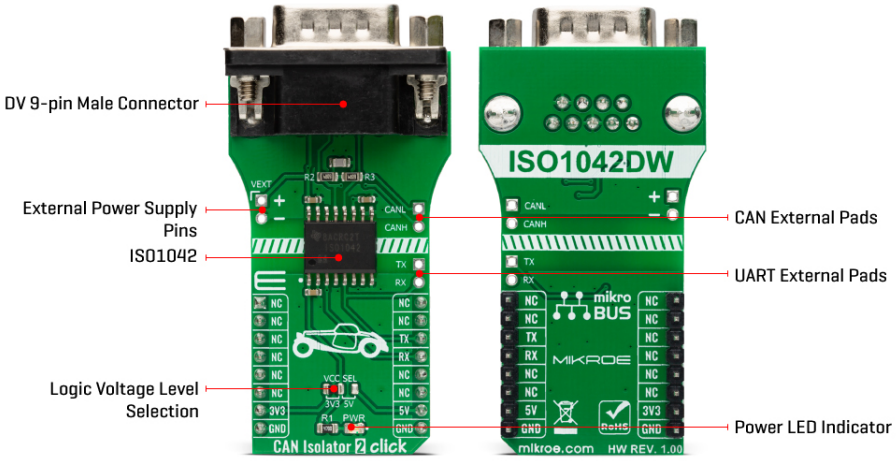

There are two states of operation on this Click board™: dominant and recessive. In a dominant state, the bus is driven differentially by a driver. In a recessive state, the host MCU of the CAN node uses the TXD pin to drive the bus and receives the data from the bus on the RXD pin. To connect ISO1042 on a CAN bus, this Click board™ features a standard DB 9-pin male connector. According to the ISO 11898-2 standard, a maximum bus length is 40m, and a maximum stub length is 0.3m, while with careful design, the cables could be longer. This transceiver has a high input impedance, thus allowing a large number of nodes on the CAN bus.

CAN Isolator 2 Click uses a standard UART interface to communicate with the host MCU, with commonly used UART RX and TX. In addition, there are few headers to interface lines directly with jumper wires. The left side of the CAN Isolator 2 Click has VEXT 2-pin header to connect the external power supply. Along with the VEXT, on the opposite side, there are CANH and CANL pins to interface the CAN bus in the same manner. Under the CAN header, there is also one TX and RX header which allows this Click board™ to be used independently of the host MCU.

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. However, the 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	CAN,Isolators
Applications	Can be used for the development of solar inverters, AC and servo drives, industrial field networks, PLC and DCS communication modules, battery charging and management, and more
On-board modules	ISO1042 - isolated CAN transceiver from Texas Instruments
Key Features	The fully isolated interface between the CAN protocol controller and the physical layer bus, capable of running at data rates of up to 5Mbps, robust electromagnetic compatibility,

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	ideal passive high impedance bus terminal when unpowered, long bus cable length, dominant and recessive states during operation, and more
Interface	UART
Feature	No 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 CAN Isolator 2 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	
	NC	2	RST	INT	15	NC	
	NC	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	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

CAN Isolator 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Data Rate	-	-	5	Mbps
Insulation Barrier	-	-	5000	V_{rms}
Maximum Bus Length	-	-	40	m

Software Support

We provide a library for the CAN Isolator 2 Click as well as a demo application (example), developed using MIKROE compilers. The demo can run on all the main MIKROE development boards.

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Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for CAN Isolator 2 Click driver.

Key functions

- canisolator2_generic_write CAN Isolator 2 data writing function.
- canisolator2_generic_read CAN Isolator 2 data reading function.
- canisolator2_send_data CAN Isolator 2 send data function.

Example Description

This example reads and processes data from CAN Isolator 2 clicks.

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.CanIsolator2

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™

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Downloads

CAN Isolator 2 click 2D and 3D files

ISO1042 datasheet

CAN Isolator 2 click schematic

CAN Isolator 2 click example on Libstock