

Time-saving embedded tools

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia VAT: SR105917343 Registration No. 20490918 Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com www.mikroe.com







PID: MIKROE-4107

The **CAN FD 4 Click** is a Click board[™] that features the <u>NCV7344D10R2G</u>, a Controller Area Network (CAN) transceiver, from <u>onsemi</u>. This Click board[™] provides differential transmit capability to the bus and differential receive capability to the CAN controller. The CAN FD 4 click can be used for various applications such as automotive and industrial networks.

The CAN FD 4 click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board^m comes as a fully tested product, ready to be used on a system equipped with the mikroBUS^m socket.

How does it work?

The CAN FD 4 click is based on the NCV7344D10R2G, is a complete CAN protocol controller and the physical bus, from onsemi. The Click board[™] guarantees additional timing parameters to ensure robust communication at data rates beyond 1 Mbps to cope with CAN flexible data rate requirements (CAN FD). These features make the CAN FD 4 click an good choice for all types of high speed - controller area network (HS–CAN) networks.

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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).



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The CAN FD 4 click provides two operation modes, these modes are selectable pin CS.

First option is normal mode (when CS pin is LOW), where the transceiver is able to communicate via the bus line. The signals are transmitted and received to the CAN controller via the pins TxD and RxD. The slopes on the bus lines outputs are optimized to give low EME. Second option is when CS pin is HIGH, and the CAN FD 4 click is in Standby mode. In standby mode both the transmitter and receiver are disabled and a very low–power differential receiver monitors the bus lines for CAN bus activity. When a wake–up request is detected by the low–power differential receiver, the signal is first filtered and then verified as a valid wake signal after a time period of twake_filt, the RxD pin is driven low by the transceiver (following the bus) to inform the controller of the wake–up request.

High speed CAN (HS CAN) is a serial bus system that connects microcontrollers, sensors and actuators for realtime control applications. Compatible with ISO 11898-2 (2016) describes the use of the Controller Area Network (CAN) within road vehicles. According to the 7-layer OSI reference model the physical layer of a HS CAN bus system specifies the data transmission from one CAN node to all other available CAN nodes within the network. The CAN transceiver is part of the physical layer.

This Click Board^m is designed to be operated only with 5V logic level. A proper logic voltage level conversion should be performed before the Click board^m is used with MCUs with logic levels of 3.3V.

Specifications

Туре	CAN,CAN FD
Applications	HS CAN networks in automotive applications and HS CAN networks in industrial applications
On-board modules	NCV7344D10R2G, Controller Area Network (CAN) transceiver from onsemi
Key Features	Automotive and Industrial Networks
Interface	UART
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)

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Input Voltage

5V

Pinout diagram

This table shows how the pinout on CAN FD 4 click corresponds to the pinout on the mikroBUS^m socket (the latter shown in the two middle columns).

Notes	Pin	● ● mikro™ ● ● ● BUS			TM-	Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
Chip Select	CS	3	CS	RX	14	ТХ	UART Transmit
	NC	4	SCK	TX	13	RX	UART Receive
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
	NC	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

Software Support

We provide a library for the CAN FD 4 Click on our <u>LibStock</u> page, as well as a demo application (example), developed using MikroElektronika <u>compilers</u>. The demo can run on all the main MikroElektronika <u>development boards</u>.

Library Description

Library provides functions for communication via UART module, and a function for controlling cs pin, which sets device mode.

Key functions:

- void canfd4_write_byte (uint8_t input) Writes single byte of data
- uint8_t canfd4_read_byte() Reads single byte of data
- uint8_t canfd4_byte_ready () Checks if new data ic received

Examples description

The application is composed of three sections :

- System Initialization Intializes UART module
- Application Initialization Driver intialization
- Application Task Choose one mode (read or write) of task. If you reading it checks if data is ready to be read and then reads one byte and if you are wiriting send data via UART.

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The full application code, and ready to use projects can be found on our <u>LibStock</u> page.

Other mikroE Libraries used in the example:

• UART

Additional notes and informations

Depending on the development board you are using, you may need <u>USB UART click</u>, <u>USB UART</u> <u>2 click</u> or <u>RS232 click</u> to connect to your PC, for development systems with no UART to USB interface available on the board. The terminal available in all MikroElektronika <u>compilers</u>, or any other terminal application of your choice, can be used to read the message.

mikroSDK

This Click board^m is supported with <u>mikroSDK</u> - MikroElektronika Software Development Kit. To ensure proper operation of mikroSDK compliant Click board^m demo applications, mikroSDK should be downloaded from the <u>LibStock</u> and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

<u>mikroBUS™</u>

<u>mikroSDK</u>

Click board[™] Catalog

Click Boards™

Downloads

CAN FD 4 click 2D and 3D files

NCV7344 datasheet

CAN FD 4 click example on Libstock

CAN FD 4 click schematic

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