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

H-Bridge Driver 2 Click

PID: MIKROE-4931

H-Bridge Driver 2 Click is a compact add-on board that contains an H-bridge gate driver, also known as a full-bridge pre-driver. This board features the NCV7535, a monolithic H−bridge pre-driver for a DC motor with an enhanced feature set, useful in automotive systems from ON Semiconductor. The gate driver channels are independently controlled by a 24-bit SPI interface, allowing this Click board™ to be optionally configured in a single or dual H-bridge mode. It has a wide operating voltage range from 6V to 18V with built-in protection features against short-circuit, under/over voltage, overcurrent, and overtemperature conditions. This Click board™ is suitable to drive external MOSFETs, thus providing control of a DC-motor.

H-Bridge Driver 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.

NOTE: An additional MOSFET board and DC Motor do not come in the same package with this Click board™; you can find an H-Bridge MOSFET board for H-Bridge Driver Click in our shop.

How does it work?

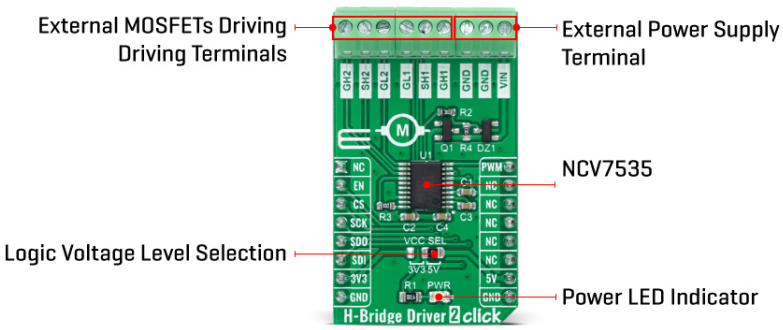
H-Bridge Driver 2 Click as its foundation uses the NCV7535, H-bridge gate driver (or full-bridge pre-driver) with independent high and low-side driver channels from ON Semiconductor. This monolithic H−bridge pre-driver has an enhanced feature set helpful in various applications for a DC motor drive. It allows bi-directional or uni-directional motor operations, with integrated MOSFET and load protection.

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).

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



The onboard VIN terminal is the device's power supply input, allowing a wide operating voltage range from 6V to 18V. The NCV7535 also comes with built-in protection features against short-circuit and overtemperature conditions, under-voltage (UV), overvoltage (OV), and overcurrent events. When the supply returns to a level above the UV threshold or below the OV threshold, the device resumes regular operation according to the established condition of the input pins.

H-Bridge Driver 2 Click communicates with MCU through a standard SPI interface supporting the common SPI mode, SPI Mode 0, providing data in digital format of 24-bits. It also uses the Enable pin labeled as EN and routed to the RST pin of the mikroBUS™ socket to optimize power consumption, used for its power ON/OFF purposes. Besides, by using the PWM signal from the mikroBUS™ socket, combined with the SPI interface and its control register, the user can also use active or passive free-wheeling bridge configurations.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. This way, it is allowed for both 3.3V and 5V capable MCUs to 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	Brushed
Applications	Can be used to drive external MOSFETs, thus providing control of a DC-motor
On-board modules	NCV7535 - H-bridge gate driver (or full-bridge pre-driver) with independent high and low-side driver channels from ON Semiconductor
Key Features	Active and standby operating modes, active/passive free-wheeling, single or dual H-bridge mode, 24-bit SPI interface, UVLO and OVLO, protection features, PWM, and more
Interface	PWM,SPI
ClickID	No
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)

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).

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

Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on H-Bridge Driver 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	**PWM**	PWM Signal
Enable	**EN**	2	RST	INT	15	NC	
SPI Chip Select	**CS**	3	CS	RX	14	NC	
SPI Clock	**SCK**	4	SCK	TX	13	NC	
SPI Data OUT	**SDO**	5	MISO	SCL	12	NC	
SPI Data IN	**SDI**	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	Right	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

H-Bridge Driver 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
External Power Supply	6	-	18	V
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the H-Bridge Driver 2 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

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

Library Description

This library contains API for H-Bridge Driver 2 Click driver.

Example key functions

- hbridgedriver2_run_forward H-Bridge Driver 2 run forward function.

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.

ISOQAR REGISTERED
UKAS MANAGEMENT SYSTEMS
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.
TÜV SÜD ISO 9001
ISO 9001: 2015 certification of quality management system (QMS).

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

- hbridgedriver2_run_backward H-Bridge Driver 2 run backward function.
- hbridgedriver2_stop_with_brake H-Bridge Driver 2 stop with brake function.

Example Description

This library contains API for the H-Bridge Driver 2 Click driver. This demo application shows the use of a H-Bridge Driver 2 Click board™.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.HBridgeDriver2

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 MikroElektronika compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika 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™

Downloads

H-Bridge Driver 2 click example on Libstock

H-Bridge Driver 2 click 2D and 3D files

NCV7535 datasheet

H-Bridge Driver 2 click schematic

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.

ISOQAR REGISTERED
UKAS MANAGEMENT SYSTEMS
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.

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