

H-Bridge 14 Click



PID: MIKROE-5916

H-Bridge 14 Click is a compact add-on board with an H-Bridge gate driver, also known as a full-bridge pre-driver. This board features the [DRV8873](#), an automotive H-Bridge motor driver from [Texas Instruments](#). The DRV8873 is an N-channel H-Bridge motor driver that can drive one bidirectional brushed DC motor, two unidirectional brushed DC motors, solenoids, or other resistive inductive loads. The motor driver operates from a single power supply and supports a wide input supply range from 4.5V to 38V. This Click board™ makes the perfect solution for the development of electronic throttle control, exhaust gas recirculation, side-view mirror tilt, e-shifter, air-flow diverter valve control, and more.

H-Bridge 14 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the [mikroBUS™](#) standard. It comes with the [mikroSDK](#) open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this Click board™ apart is the groundbreaking [ClickID](#) feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

H-Bridge 14 Click is based on the DRV8873, an automotive H-Bridge motor driver from Texas Instruments. It uses two logic inputs to control the H-Bridge driver, which consists of four N-channel MOSFETs. Those MOSFETs drive motors bi-directionally with up to 10A peak current. The motor has a configurable motor interface, a PH/EN or PWM, and an independent half-bridge control. The selection can be made over the software and the host MCU. The motor driver integrates current sensing and features proportional current output. It also features protections such as VM under-voltage lockout, charge pump undervoltage, overcurrent protection, open load detection, thermal shutdown, fault conditions, and more. The power supply for the motor

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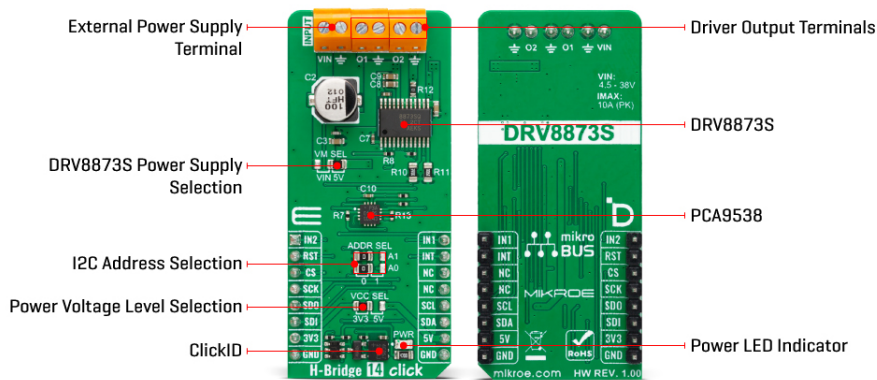


ISO 27001: 2013 certification of informational security management system.
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can be selected between the external and the 5V from the mikroBUS™ power rail.



H-Bridge 14 Click uses a standard 4-wire SPI serial interface to communicate with the host MCU. Two control inputs are labeled IN1 and IN2. The onboard [PCA9538](#) 8-bit I/O port from NXP controls the sleep and bridge disable inputs. It also monitors the fault indication pin of the motor driver and interrupts the host MCU over the INT pin. The I2C address of the PCA9538 can be set over the ADDR SEL jumper. This I/O port can be reset over the RST pin.

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	Brushed
Applications	Can be used for electronic throttle control, exhaust gas recirculation, side-view mirror tilt, e-shifter, air-flow diverter valve control, and more
On-board modules	DRV8873 - automotive H-Bridge motor driver from Texas Instruments
Key Features	N-channel H-Bridge motor driver can drive one bidirectional brushed DC motor, two unidirectional brushed DC motors, solenoids, or other resistive and inductive loads, wide operating range, integrated current sensing, proportional current output, configurable control interface, thermal shutdown, overcurrent protection, open load detection, UVLO, CPUV, and more
Interface	I2C,SPI
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)

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Input Voltage	3.3V or 5V, External
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Pinout diagram

This table shows how the pinout on H-Bridge 14 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Driver Control	IN2	1	AN	PWM	16	IN1	Driver Control
Reset / ID SEL	RST	2	RST	INT	15	INT	Interrupt
SPI Select / ID COMM	CS	3	CS	RX	14	NC	
SPI Clock	SCK	4	SCK	TX	13	NC	
SPI Data OUT	SDO	5	MISO	SCL	12	SCL	I2C Clock
SPI Data IN	SDI	6	MOSI	SDA	11	SDA	I2C Data
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
JP2	VM SEL	Right	DRV8873 Power Supply Selection VIN/5V: Left position VIN, Right position 5V
JP3,4	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

H-Bridge 14 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Motor Power Supply	4.5	-	38	V
Peak Current Drive	-	-	10	A

Software Support

We provide a library for the H-Bridge 14 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

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This library contains API for H-Bridge 14 Click driver.

Key functions

- hbridge14_set_pins H-Bridge 14 set pins function.
- hbridge14_sleep_state H-Bridge 14 control sleep function.
- hbridge14_drive_motor H-Bridge 14 drive motor function.

Example Description

This example demonstrates the use of the H-Bridge 14 board by driving the motor in both directions with braking and coasting in between.

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.HBridge14

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™](#)

[ClickID](#)

Downloads

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[H-Bridge 14 click example on Libstock](#)

[H-Bridge 14 click schematic](#)

[PCA9538A datasheet](#)

[DRV8873 datasheet](#)

[H-Bridge 14 click 2D and 3D files](#)

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