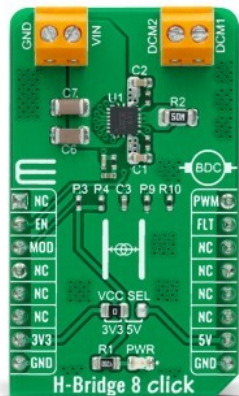


H-Bridge 8 Click



PID: MIKROE-4775

H-Bridge 8 Click is a compact add-on board that contains H-bridge current regulator. This board features the [MP6519](#), a monolithic, step-down, current-source driver for applications that require accurate and fast current-response control from [MPS](#). It achieves excellent load and line regulation over a wide input supply range up to 28V. The four integrated MOSFET H-bridge control provide a fast dynamic load response and an ultra-high efficiency solution. Complete protection features include load open, load-short protection, over-current protection (OCP), over-temperature protection (OTP), and input over-voltage protection (OVP). This Click board™ is suitable as a current-regulator brushed DC motor/solenoid driver for various applications.

H-Bridge 8 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?

H-Bridge 8 Click as its foundation uses the MP6519, a monolithic current-source driver for applications that require accurate and fast current-response control from Monolithic Power Systems (MPS). The MP6519 works in step-down mode with four fully integrated MOSFET H-bridges to provide small size and high efficiency and uses pulse-width-modulation (PWM) signal with average current control to achieve a bidirectional current output and fast dynamic current response. It also has current polarity controlled by a GPIO pin alongside the programmable switching frequency from 30kHz to 300kHz.

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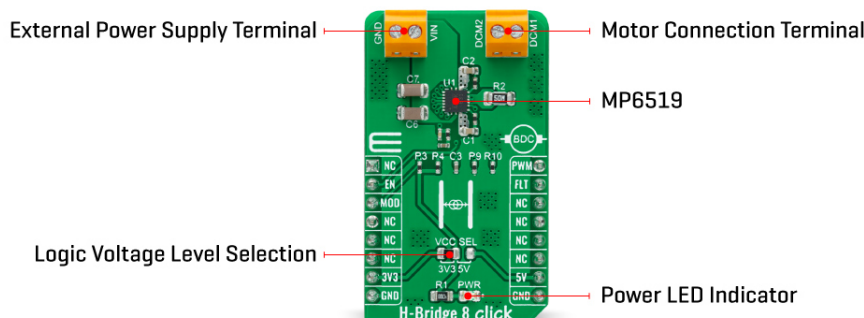
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This Click board™ communicates with MCU using several GPIO pins. The Enable pin, labeled as EN and routed to the RST pin of the mikroBUS™ socket, optimizes power consumption and is used for power ON/OFF purposes (driver operation permission). Also, the Forward/Reverse mode or current direction flowing can be selected according to a logic level of the control signal routed to the CS pin of the mikroBUS™ socket, marked as MOD. In addition, the H-Bridge 8 Click also has a fault pin labeled as FLT routed to the INT pin of the mikroBUS™ socket, which indicates the fault condition to the external system if any fault occurs during operation.

The MP6519 can enter four modes to control the working sequence: Shutdown, Standby, Normal Switching, and Current Polarity Mode. In Shutdown mode, all circuits and blocks are disabled, and the MP6519 consumes less than 1µA. Standby is an initial mode in which control blocks begin working except for the gate drive block for the internal switching MOSFETs. Normal Switching mode activates when both PWM and EN pins are at high logic state (active), while Current Polarity mode is set by MOD pin, and determines the polarity of the current, more precisely, the direction of rotation of the motor.

The H-Bridge 8 Click supports an external power supply for the MP6519, which can be connected to the input terminal labeled as VIN and should be within the range of 2.5V to 28V, while the DC motor coils can be connected to the terminals labeled as DCM1 and DCM2.

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 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 for applications that require accurate and fast current-response control
On-board modules	MP6519 - monolithic current-source driver for applications that require accurate and fast current-response control from MPS
Key Features	Low power consumption, excellent load and line regulation over wide input supply range, fast dynamic load response, ultra-high

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	efficiency, controllable output polarity, various protection features, and more
Interface	GPIO,PWM
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V,External

Pinout diagram

This table shows how the pinout on H-Bridge 8 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	PWM	PWM Signal
Enable	EN	2	RST	INT	15	FLT	Fault Condition Indication
Forward/Reverse Direction	MOD	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	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

H-Bridge 8 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage VCC	3.3	-	5	V
External Supply Voltage VIN	2.5	-	28	V
Maximum Output Current	-	-	5	A
Operating Temperature Range	-40	+25	+125	°C

Software Support

We provide a library for the H-Bridge 8 Click as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika [development boards](#).

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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 8 Click driver.

Key functions:

- hbridge8_cfg_setup - Config Object Initialization function.
- hbridge8_init - Initialization function.
- hbridge8_default_cfg - Click Default Configuration function.

Example description

This library contains an API for the H-Bridge 8 Click driver. This demo application shows the use of a H-Bridge 8 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.HBridge8

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. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

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™](#)

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Downloads

[H-Bridge 8 click example on Libstock](#)

[H-Bridge 8 click 2D and 3D files](#)

[MP6519 datasheet](#)

[H-Bridge 8 click schematic](#)

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