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 16 Click

PID: MIKROE-5926

H-Bridge 16 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 DRV8262, a dual H-Bridge motor driver from Texas Instruments. The motor driver is designed for a variety of industrial applications and can drive one or two brushed DC motors, one stepper motor, and one or two thermoelectric coolers (TEC). It can operate in a wide supply voltage range of 4.5V to 65V. This Click board™ makes the perfect solution for the development of factory automation, medical equipment, robotics, TEC drivers, and more.

H-Bridge 16 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 16 Click is based on the DRV8262, a dual H-Bridge motor driver from Texas Instruments. It has a high output current capability and supports up to 8A peak current as a dual H-Bridge driver. You can configure the interface of operation between PH/EN and PWM. The PH/EN mode allows the H-Bridge to be controlled with a speed and direction type of interface. The PWM interface allows the H-Bridge outputs to become Hi-Z. There are two potentiometers (REF2 and REF1), which are reference voltage inputs for bridges 2 and 1. They are used to set the current limit for bridges. The integrated sensing uses a current mirror to limit the output current.

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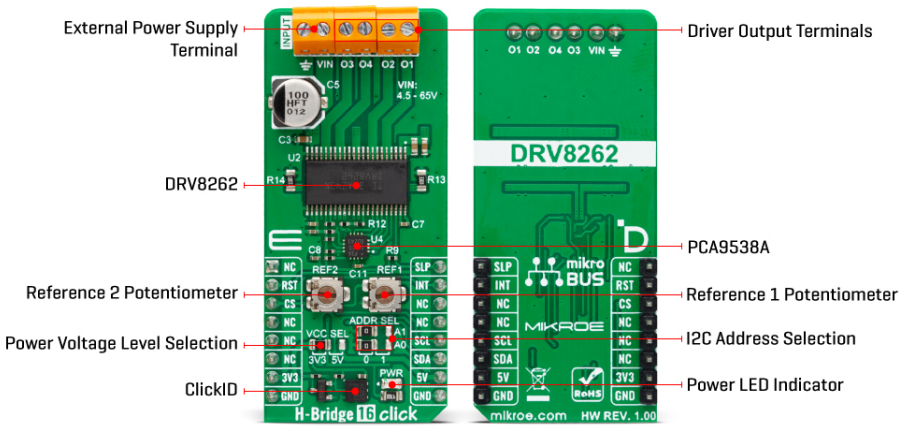

The H-Bridge 16 Click uses the PCA9538A, a low-voltage 8-bit I/O port to control the IO pins of the motor driver. Over this I/PO port, you can set all four PWM inputs for both bridges. The Decay mode can be set between the slow decay for brake or high-side re-circulation and smart tune dynamic Decay mode. By setting the logic states on Mode2 of the motor driver, you can choose between the phase/enable and PWM interfaces. You can also determine the fault recovery method between the latch-off and auto-recovery. Finally, using the PCA9538A, you can monitor the fault indication of the motor driver.

H-Bridge 16 Click uses a standard 2-wire I2C interface of the PCA9538A to allow the host MCU to control the motor driver. You can reset the PCA9538A over the RST pin and read the interrupts of the motor driver through the I/O port over the INT pin. The I2C address can be selected over the ADDR SEL jumper. The host MCU can control the sleep mode of the motor driver directly over the SLP 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 the development of factory automation, medical equipment, robotics, TEC drivers, and more
On-board modules	DRV8262 - dual H-Bridge motor driver from Texas Instruments
Key Features	A dual H-Bridge motor driver, can drive one or two brushed DC motors, one stepper motor, and one or two thermoelectric coolers (TEC), high output current capability, programmable interface of operation, integrated current sense and regulation, and more
Interface	I2C
Feature	ClickID

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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 H-Bridge 16 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	**SLP**	Sleep Mode
Reset	**RST**	2	RST	INT	15	**INT**	Interrupt
ID COMM	**CS**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	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
JP3-JP4	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1
VR1	REF1	-	Reference Voltage 1 potentiometer
VR2	REF2	-	Reference Voltage 2 Potentiometer

H-Bridge 16 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
External Power Supply	4.5	-	65	V
Output Current Peak	-	-	8	A

Software Support

We provide a library for the H-Bridge 16 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

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(recommended), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for H-Bridge 16 Click driver.

Key functions

- hbridge16_set_pins H-Bridge 16 set pins function.
- hbridge16_set_mode H-Bridge 16 set mode function.
- hbridge16_set_out_state H-Bridge 16 set output function.

Example Description

This example demonstrates the use of the H-Bridge 16 click board™ by driving the motor in both directions with braking and freewheeling.

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.HBridge16

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

PCA9538A datasheet

DRV8262 datasheet

H-Bridge 16 click 2D and 3D files

H-Bridge 16 click schematic

H-Bridge 16 click example on Libstock