

EMS (Embedded Module Series)

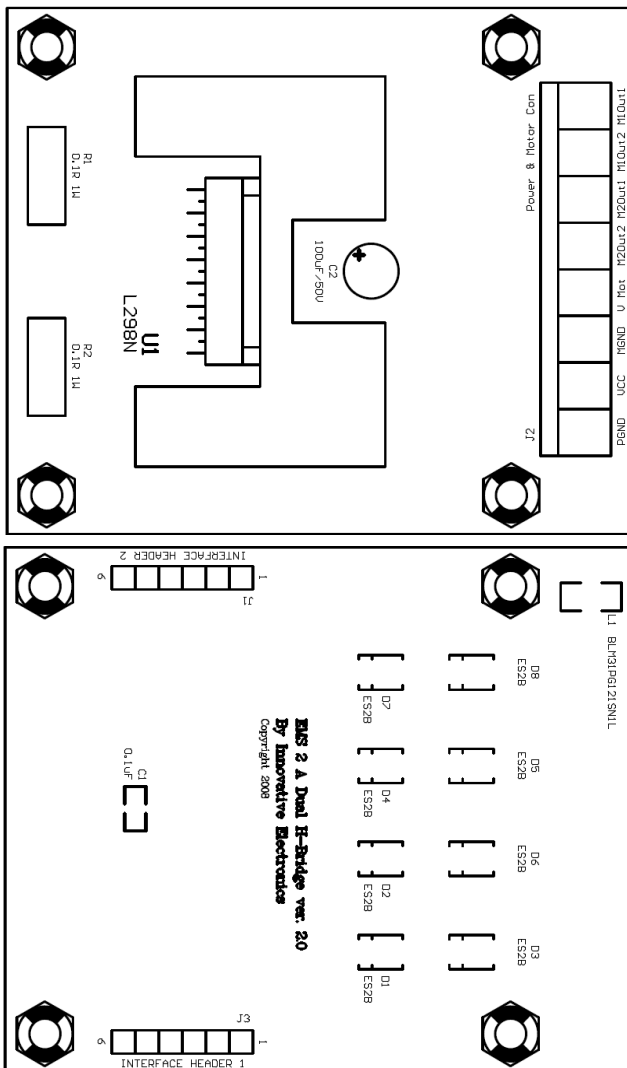
2 A Dual H-Bridge ver 2.0

Embedded Module Series (EMS) 2 A Dual H-Bridge is a H-Bridge designed to generate 2 ways drive with continuous current up to 2 A at 4.8 Volts to 46 Volts voltage. Each H-Bridge is equipped with a current sensor that can be used as a feedback to the controller. This module can drive inductive loads such as relay, solenoid, DC motor, motor stepper, and other kinds of loads.

Specifications

1. Consists of 2 full H-Bridge driver that could be paralleled.
2. Each driver can pass 2 A continuous current. When they are paralleled, each pair can pass 4 A continuous current.
3. Load voltage ranges from 4.8 V to 46 V.
4. Compatible with TTL and CMOS level input.
5. Power supply input for the driver (VCC) is separated from power supply input for the loads (V Mot).
6. Tri-state output.
7. Equipped with external diodes as a protection from inductive loads.
8. Equipped with current sensor for each H-bridge.

Layout



Pin Interface Header 1 J3 Allocation			
Pin	Name	I/O	Function
1	M1IN1	I	Input pin to determine the M1OUT1 output
2	M1IN2	I	Input pin to determine the M1OUT2 output
3	M1CS	O	Analog output of current sensor from H-Bridge M1 (Output range 0 – 0.3 V)
4	M1EN	I	Enable pin for M1 output pair (M1OUT1 and M1OUT2)
5	VCC	-	Connected to power supply input (5 Volt)
6	PGND	-	Ground reference for power supply input

Pin Interface Header 2 J1 Allocation			
Pin	Name	I/O	Function
1	M2IN1	I	Input pin to determine the M2OUT1 output
2	M2IN2	I	Input pin to determine the M2OUT2 output
3	M2CS	O	Analog output of current sensor from H-Bridge M2 (Output range 0 – 0.3 V)
4	M2EN	I	Enable pin for M2 output pair (M2OUT1 and M2OUT2)
5	VCC	-	Connected to power supply input (5 Volt)
6	PGND	-	Ground reference for power supply input

Power & Motor Con J2 Connector Allocation	
Name	Function
PGND	Ground reference for power supply input
VCC	Connected to power supply input (5 Volt)
MGND	Ground reference for power supply for the load
V MOT	Connected to power supply for the load
M2OUT2	Output of second half H-Bridge on the H-Bridge M2 pair
M2OUT1	Output of first half H-Bridge on the H-Bridge M2 pair
M1OUT2	Output of second half H-Bridge on the H-Bridge M1 pair
M1OUT1	Output of first half H-Bridge on the H-Bridge M1 pair

Truth table from the H-Bridge module is as follows:

INPUT			OUTPUT	
M1EN	M1IN1	M1IN2	M1OUT1	M1OUT2
H	H	L	V MOT	MGND
H	L	H	MGND	V MOT
H	L	L	MGND	MGND
H	H	H	V MOT	V MOT
L	X	X	Z	Z

INPUT			OUTPUT	
M2EN	M2IN1	M2IN2	M2OUT1	M2OUT2
H	H	L	V MOT	MGND
H	L	H	MGND	V MOT
H	L	L	MGND	MGND
H	H	H	V MOT	V MOT
L	X	X	Z	Z

Both drivers can be paralleled to pass current up to 4 A.

CONNECTED		BECOMES
M1EN	M2EN	Enable (MEN)
M1IN1	M2IN2	Direction Input 1 (MIN1)
M1IN2	M2IN1	Direction Input 2 (MIN2)
M1OUT1	M2OUT2	Load Output 1 (MOUT1)
M1OUT2	M2OUT1	Load Output 2 (MOUT2)

The truth table is as follows:

INPUT			OUTPUT	
MEN	MIN1	MIN2	MOUT1	MOUT2
H	H	L	V MOT	MGND
H	L	H	MGND	V MOT
H	L	L	MGND	MGND
H	H	H	V MOT	V MOT
L	X	X	Z	Z

Description:

H = High L = Low
X = don't care Z = High Impedance (Tri-state)

The current (In Ampere) passing through H-Bridge can be calculated with the following equation:

$$I = \frac{\text{output_voltage_on_MxCS_pin}}{0.1}$$

CD/DVD Content

1. EMS 2 A Dual H-Bridge Manual & Quick Start.
2. Datasheet.
3. Innovative Electronics Website.

Testing Procedure

- Connect the power supply source for input (VCC) and the power supply for load (V Mot).
- Perform testing by giving a High logic (+5V) or Low (0V) to the input (**M1IN1**, **M1IN2**, **M1EN**, **M2IN1**, **M2IN2**, and **M2EN**) that matches the truth table.
- Output terminals (**M1OUT1**, **M1OUT2**, **M2OUT1**, and **M2OUT2**) will produce output voltage that matches the functions stated in the truth table.

◆ Thank you for your confidence in using our products, if there are difficulties, questions, or suggestions regarding this product please contact our technical support :

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