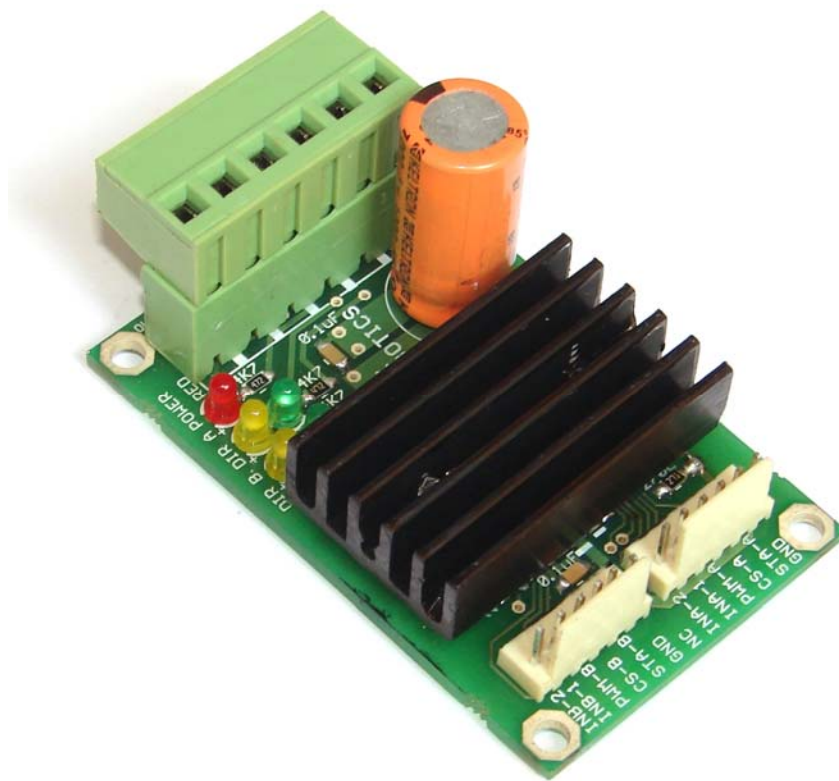


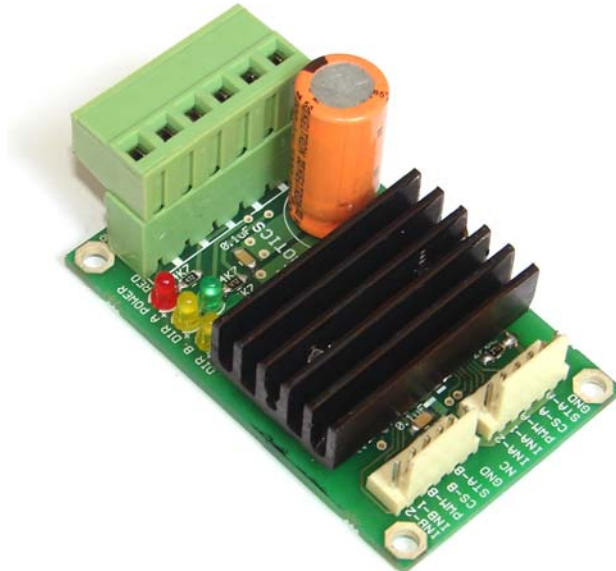


8V-28V, 5Amp Dual DC Motor Driver with Current Sense

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Introduction

8V-28V, 5Amp Dual DC Motor Driver with Current Sense can drive 2 DC motors with current up to 5Amps. It can work between 8 to 28V DC and gives current sense output for each motor. Motor driver has built-in protection from over temperature, over current, short circuit. It also gives out fault indications for the over/under voltage, over temperature, over current / short circuit. Motor driver has 6-pin removable XY connector on the power side and separate 6 pin 2510 relimate connectors for logic connections of each motor driver section.

Motor driver can drive 2 motors with peak load of 5Amps. If temperature of the motor driver goes beyond 150⁰C motor driver will restrict maximum output current to 4Amps. When temperature of the motor driver reaches above 170⁰C motor driver will shutdown. You need to restart motor driver to resume operation. If output current exceeds 6.5Amps the motor driver will turnoff the motor driver output to protect it against short circuit.

Note:

In this motor driver 0% PWM duty cycle corresponds to full power and 100% PWM duty cycle corresponds to zero power.

Specifications

- Dual DC Motor Driver
- Operating voltage: 8V to 28V
- Peak output current: 5Amps per channel
- Maximum PWM Frequency: 11 KHz
- Current sense output: 0.648 V/Amp
- Over current and under voltage shutdown
- Thermal shutdown
- Motor fault diagnostics outputs for over temperature or short circuit
- Power Connector: 6-Pin removable XY Connector
- Logic Connector: Two 6 pin 2510 type relimate connector
- Size: 67.5mm x 42.5mm

Package contains:

8V-28V, 5Amp Dual DC Motor Driver
 15cm, two 6-pin 2510 relimate connector with wire
 Four 10mm mounting studs
 Eight M3 mounting screw

On-Board Connector configuration:

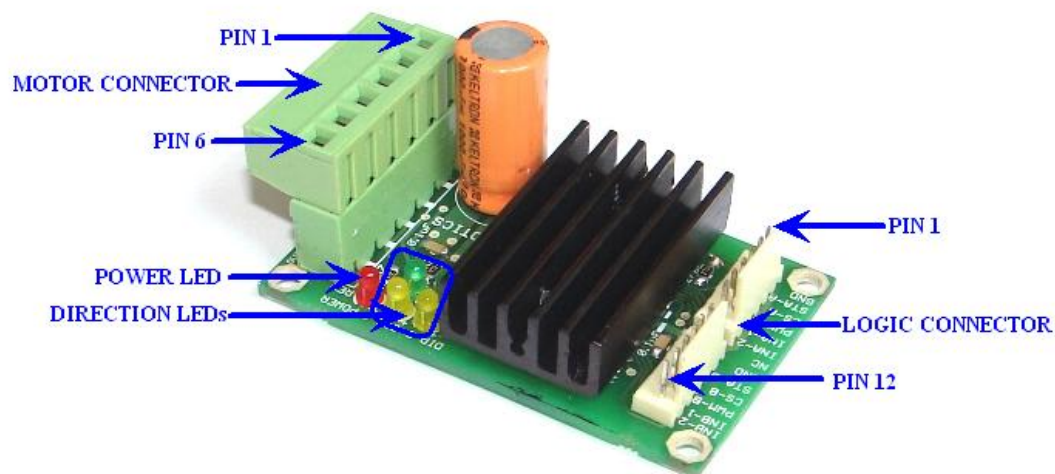


Figure 1: pin configuration of Hercules Lite motor driver

Power Connector Pin Functionality:

Pin No.	Pin	Functionality
1	OUTA1	Output 1 for the motor A
2	OUTA2	Output 2 for the motor A
3	Ground	Ground pin to be connected to the supply
4	Vcc	Motor supply 8V to 28V DC
5	OUTB1	Output 1 for the motor B
6	OUTB2	Output 2 for the motor B

Table 1: Motor Connector Pin Functionality

Logic input Connector Pin Functionality:

Pin No.	Pin	Functionality
1	GND	Ground
2	STA-A	Status flag output reports fault conditions from channel A.
3	CS-A	Current sense output from channel A
4	PWM-A	Used to apply Pulse Width Modulation to control motor velocity connected at channel A OUT pins
5	INA-1	Logic input control signal for channel A1 (OUTA1)
6	INA-2	Logic input control signal for channel A2 (OUTA2)
7	GND	Ground
8	STA-B	Status flag output reports fault conditions from channel B
9	CS-B	Current sense output from channel B
10	PWM-B	Used to apply Pulse Width Modulation to control motor velocity connected at channel B OUT pins
11	INB-1	Logic input control signal for channel B1 (OUTB1)
12	INB-2	Logic input control signal for channel B2 (OUTB2)

Table 2: Logic Input Connector Pin Functionality

Note:

Ground of the Power Connector and Logic input Connector are internally shorted.

If you want to drive motor without using PWM then connect PWM pin to 0V logic level.

Truth Table in Normal Operating Conditions:

Status	Input Conditions			Status flag	Outputs	
	PWM-x	INx-1	INx-2		OUTx1	OUTx2
Forward	L	H	L	H	H	L
Back	L	L	H	H	L	H
Soft Stop	L	L	L	H	L	L
Hard Stop	L	H	H	H	H	H
Under Voltage	X	X	X	L	Z	Z
Over Temperature	X	X	X	L	Z	Z
Short Circuit	X	X	X	L	Z	Z

Table 3: Truth Table in Normal Operating Conditions

Where 'x' is A or B & 'X' is 1 or 0

Important:

Status Flag (STA-x) have to be pulled up externally with the 10K resistor to 5V, to get the over temperature, under voltage, short circuit diagnostic.

Interfacing motor driver with the microcontroller:

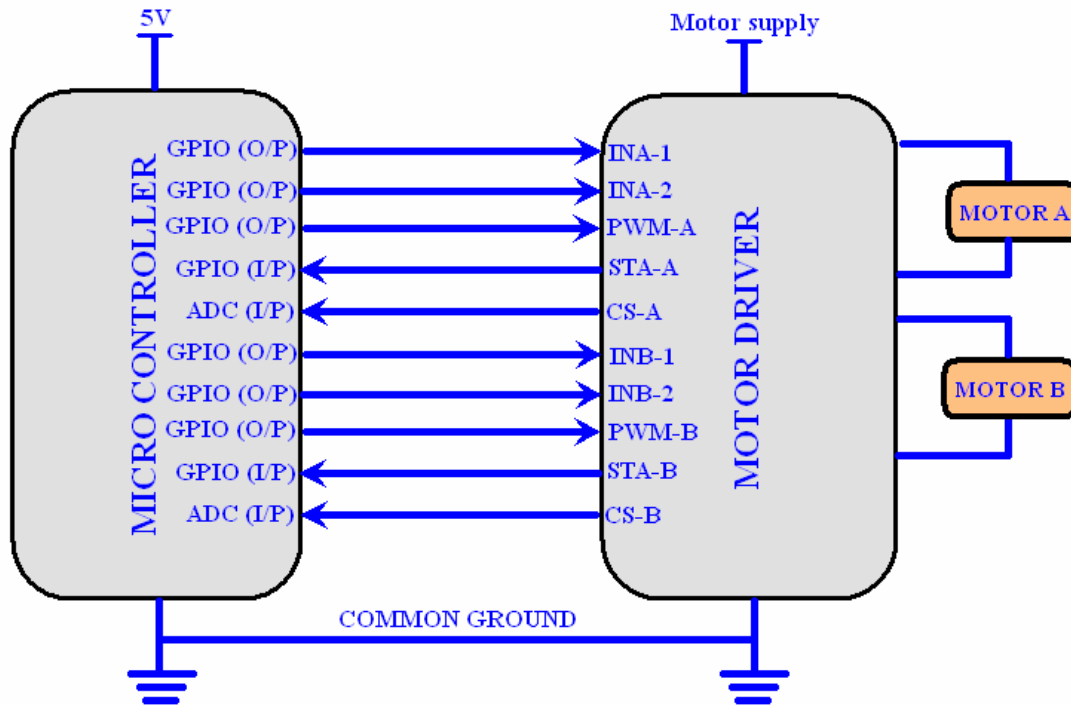


Figure 2: Block diagram of interfacing

To drive the motor controller you just need PWM, IN-1 and IN-2 pins and can be controlled from microcontroller. These pins can have 5V as well as 3.3V logic levels. The status flag (STA-A and STA-B) pins have to be externally pulled up at Vcc (5V / 3V3). These pins are only required if you want to detect over temperature and short circuit faults. Any input/output pin of the microcontroller configured as input can be used to detect the logic level of this flag. The CS (current sense) pins of the motor driver can be connected directly to the microcontroller's ADC pins.

Note:

You can connect 0.1uF to 1uF capacitor between CS (Current Sense) pin and ground to reduce ripples in the CS out for more accurate current sensing.

Notice

The contents of this manual are subject to change without notice. All efforts have been made to ensure the accuracy of contents in this manual. However, should any errors be detected, NEX Robotics welcomes your corrections. You can send us your queries / suggestions at info@nex-robotics.com



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- ⚠ **Product's electronics is static sensitive. Use the product in static free environment.**
- ⚠ **Read the user manuals completely before start using this product**



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