

## Hercules 6V-36V, 16Amp Motor Driver


**Product ID: NR-MDR-003**

**Weight: 120 gms**

**Price: Rs.2,158.80**

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Quantity: 1

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**In Stock: 13**

### Introduction

Hercules 6V-36V, 15Amp Motor Driver can take up to 30A peak current load and can be operated up to 10 KHz PWM. Motor driver can be interfaced with 3.3V and 5V logic levels. Motor driver has built-in protection from under / over voltage, over temperature and short. Motor Driver has optional ACS714 current sensor for current sensing. You can choose current sensor installation option at the time of placing the order. The Motor driver has terminal block as power connector and 10 pin 2510 type relimate connector for the logic connection. It is suitable for high performance robots, Robocon, Robo-cup, US First, Battle robots etc.

### Note:

ACS714 current sensor is an optional accessory. You can choose current sensor installation option at the time of placing the order.

Hercules 6V-36V, 17Amp Motor Driver can take up to 20Amp current if fan is installed on top of heat sink.

### Specifications

- Operating voltage: 6V to 36V
- Continuous output current: 15Amp (17Amp if fan is installed)
- Peak output current: 30Amps
- Maximum PWM Frequency: 10KHz
- Over voltage and under voltage shutdown
- Thermal shutdown
- Protection against loss of GND and Vcc.
- Motor fault diagnostics outputs for over temperature or short circuit
- Power Connector: 4 Pin Terminal Block
- Logic Connector: 10 pin female 2510 relimate connector
- Size: 84.7mm x 44.7mm

### Package contains

Hercules 6V-36V, 15Amp Motor Driver (ACS714 is optional)  
15cm, 10 pin female 2510 type relimate connector  
Four 10mm mounting studs  
Eight M3 mounting screw

### Download Product Manual

### Important

- Use multithread copper wire with at least 1.5mm<sup>2</sup> area of cross section for proper current handling capacity.
- It is highly recommended to use of 15A or 20A fuse in between motor driver's supply line.
- Motor driver is not reverse polarity protected. Applying reverse polarity will instantly damage the motor driver.
- Make sure that motor supply ground and logic ground is common.
- If you change motor's direction suddenly while motor is moving in one direction even at 4Amps, depending on the type of the motor, surge current may reach to very high value and motor driver may go in to protection mode. Do not reverse the motor's direction suddenly unless its required. It's a good practice to give stop

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command to the motor for 10 to 100 milliseconds between sudden direction changes.

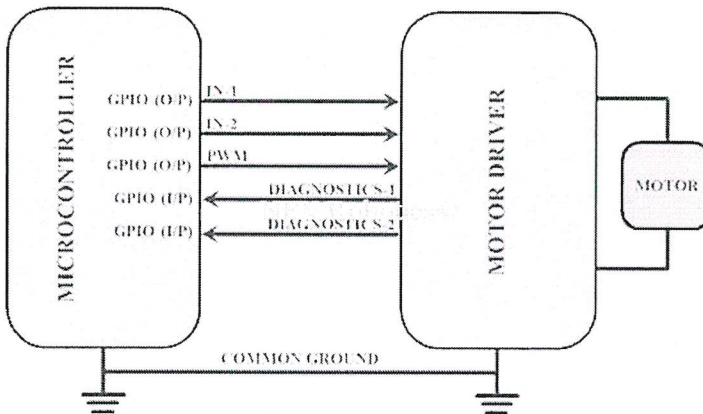
### Correct Motor Driver Selection

For generic motion control applications we recommend Hercules series motor driver that provides satisfactory performance at affordable price. However, for precision servo control applications, Super Hercules series motor driver is strongly recommended. Following is the difference between these two series of the motor drivers.

In case of the Hercules series Motor Drivers, the PWM OFF signal switch off the lower MOSFETs. Which means during PWM off period the motor is free wheeling. DC brakeing is achieved by connecting IN-1 and IN-2 to the logic 1 or logic 0 simultaneously.

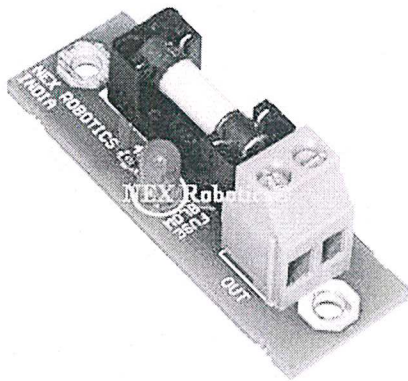
Super Hercules series Motor Drivers actually shorts the motor winding during PWM off cycle for tight motion control. It also uses Synchronous Rectification to reduce power dissipation across MOSFETs when motor windings are shorted. In order to do all this, it uses high power MOSFETs and smart motion control methods. In this case, DC brakeing is achieved by simply setting PWM to logic low.

### Interfacing motor driver with the microcontroller



To drive the motor controller you just need PWM, INA and INB pins. These pins can have 5V as well as 3.3V logic levels. Diagnostics 1 (DG-1) and Diagnostics-2 (DG-2) pins are internally pulled up at 5V at the motor driver side and are only required if you want to detect over temperature and short circuit faults. Most of the microcontrollers which operate at 3.3V have 5V tolerant input pins. If pins are not 5V tolerant then to interface them to 3.3V logic level you need to scale down 5V to 3.3V logic using open collector buffers or any other 5V to 3.3V logic converters.

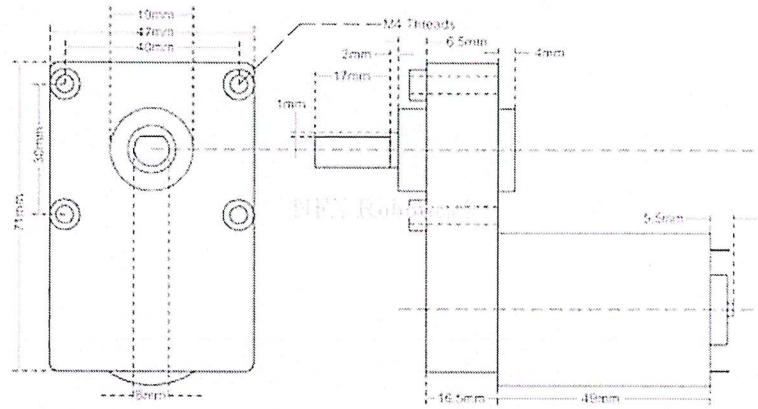
Use Fuse Holder with Fuse Blow Indicator to protect motor driver from overload



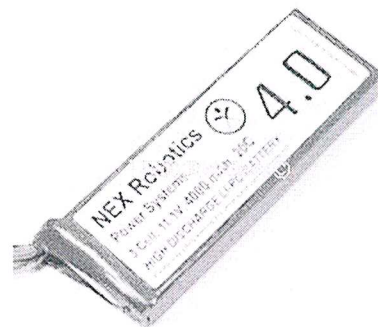
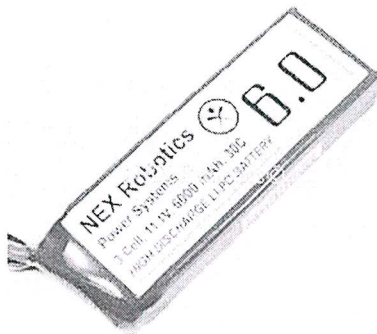
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### Recommended Motors

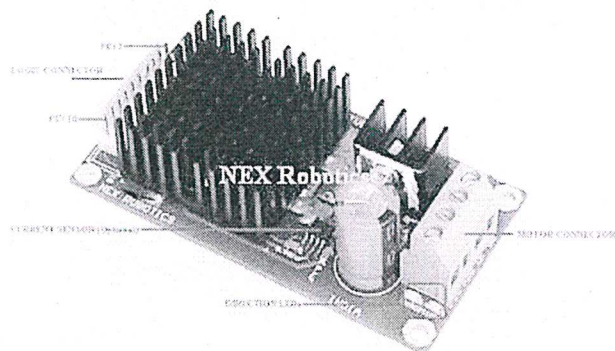
Super Hercules DC Motor with Planetary Gearbox and Side Shaft Super Heavy Duty DC Gear Motors



**Recommended Battery** Any High discharge 3cell 11.1V Lithium Polymer battery above 1800mAh.



## Connections



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## Motor Connector Pins

Pin	Functionality
Ground	Ground pin to be connected to the supply
Vcc	Motor supply 6V to 36V DC
OUT-1 (A)	Output 1 for the motor
OUT-2 (B)	Output 2 for the motor

## Logic input Connections

Pin No.	Pin	Functionality
1	ENA	Ground
2	IN-1	Logic input for the motor direction.



3	Diagnostic 1 (DG-1)	Output pin with logic 1 output in normal operation. Represents side of the internal H bridge corresponding to IN-1. Pin is pulled to logic low by the motor driver in case of over temperature or overload due to short circuit.
4	PWM	Used to apply Pulse Width Modulation to control motor velocity
5	Diagnostic 2 (DG-2)	Output pin with logic 1 output in normal operation. Represents side of the internal H bridge corresponding to IN-2. Pin is pulled to logic low by the motor driver in case of over temperature or overload due to short circuit.
6	IN-2	Logic input for the motor direction..
7	CS	No Connection
8	GND-ACS714*	Ground of current sensor ICACS714, it should be made common with ground of motor driver IC (pin no 1 on same connector) if ACS714 is installed.
9	CS-ACS714	Current Sense output from ACS714 IC, 100mV per Amp (if installed).
10	Vcc-ACS714*	Give 5V supply for ACS714 current sensor if installed

\* If you want true isolation between motor driver and logic circuit (microcontroller circuit etc) then for logic connections use opto-coupler such as MCT2E and connect Vcc and ground of the ACS714 sensor directly to the logic circuit. Vcc, ground and sensor out of the ACS714 are not connected with any of the circuit of the motor driver.

If you want to drive motor without using PWM then connect PWM pin to 5V logic level

#### Truth Table in Normal Operating Conditions

IN-1	IN-2	Diagnostic 1 (DG-1)	Diagnostic 2 (DG-2)	OUT-1 (A)	OUT-2 (B)	CS	Mode of Operation
1	1	1	1	H	H	N.A.	Break to VCC
1	0	1	1	H	L	Yes	Clockwise(CW)
0	1	1	1	L	H	Yes	Counterclockwise (CCW)
0	0	1	1	L	L	N.A.	Break to GND

In all above cases logic 0 and logic 1 on PWM pin will turn off or turn on internal low side MOSFETs.

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ROHS Compliant :  
NO

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#### Customers who bought this product also bought this/these product(s)

Red Led (SMD)

Rs.3.00

FRC FEMALE 10 pin



Rs.4.80

10 PIN FRC Cable



Rs.3.93

Fuse Holder with Fuse Blow Indicator



Rs.72.00

