

RHINO MOTION CONTROLS

RMCS-3002

Brushless DC motor Driver 50W
(Max. 30VDC and 3A per phase)



Installation Manual and Datasheet

RMCS-3002

<http://www.rhinomc.com>

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BLDC Motor Drive 50W [RMCS-3002]

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Chapter 1: Safety Precautions:

For the sake of personal safety and avoidance of property loss, please read these safety precautions carefully before testing and using the driver. The following safety measures must be strictly followed

Before operation:

- Read this document carefully before installing and utilizing the drive
- Use multi-meter to verify the voltage supplied is within Maximum ratings.
- Never plug or unplug motor terminals while the driver is in ON condition; else it may damage the driver.
- To avoid personal injury and property loss, only qualified and service-trained personnel should operate the driver.
- Do not insert any object into the driver, which may cause damage to the driver.
- If any fault occurs to the driver while operations, please return it for maintenance/repair. Trying to repair the driver without any authorization or improper operation may cause damage to the driver and void the warranty clause.

Electrical safety measures:

- Input voltage to the driver must not exceed the maximum of 30VDC.
- Supplying Reverse polarity input voltage will damage the Driver.
- Connecting the power supply wires to the motor coil terminals will damage the driver.
- Excess humidity or condensation can damage the driver.
- While changing the Direction, apply 5V or 0V to DIR pin.

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Chapter 2: Drive Overview:

RMCS-3002 is Rhino Motion Controls introductory Brushless low voltage (10–30V) DC driver designed for smooth and quiet operation without compromising on torque and control at higher speeds. It has short-circuit protection for the motor outputs, over-voltage and under-voltage protection and will survive accidental motor disconnects while powered-up.

Driver Acceptance:

Upon receiving the driver, please check the following aspects:

- Make sure the driver model is consistent with that ordered.
- Unpack the driver and make sure it is free from damage and no part is missing.
- Make sure that all sets of screws in the driver are securely tightened.

Key Features:

- Smooth and quiet operation at all speeds and extremely low motor heating
- DC Input supply voltage rated at 10V to 30V
- Rated current : 1.6A
- Peak current : 5A
- Short-circuit protection for the motor outputs, over-voltage and under-voltage protection

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Applications:

Typical applications include CNC routers, laser cutters, laser markers, medical equipments, X-Y tables, measurement equipments, etc.

Chapter 3: Drive Parameters and Connections:

Drive Technical Characteristics:

Table 1: Electrical Characteristic

Specification	Min	Max	Units	Comments
Supply Voltage	10	30	Volt DC	Between +ve and GND
Phase Current	0.5	3	Ampere	As demanded by load

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Connector Description:

Table 2: Hall Sensor Terminal

Terminal No.	Terminal Name	Wire Color	Description
Terminal 1	GND	-	Ground
Terminal 2	+5V	-	Power+ve(+5V output)
Terminal 3	HW	BLUE	Hall W
Terminal 4	HV	GREEN	Hall V
Terminal 5	HU	Yellow	Hall U

Table 3: Motor Terminal Assignments

Terminal No.	Terminal Name	Description
Terminal 6	W	Motor Phase
Terminal 7	V	Motor Phase
Terminal 8	U	Motor Phase

Table 4: Power Terminal Assignments

Terminal No.	Terminal Name	Description
Terminal 9	+V	+ve Power supply(10VDC to 30VDC Max w.r.t. GND)
Terminal 10	GND	Power Ground or Power -ve

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Table 5: Control Input Assignments

Terminal No.	Terminal Name	Description
Terminal 11	GND	COM
Terminal 12	RXD	Connect to Receive pin
Terminal 13	TXD	Connect to Transmit pin
Terminal 14	ENA	Enable (Motor Free) +ve Input
Terminal 15	ADC	ADC
Terminal 16	DIR	Direction (Motor Change Directions) +ve Input
Terminal 17	BRK	Brake (Motor Lock) +ve Input

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Power supply Selection:

The general rule of thumb to get the most out of the motor is to drive it with a supply voltage that is at-least 3 to 4 times its rated supply voltage. A DC regulated power supply with good low-ESR decoupling capacitors on its output is recommended for best performance of this drive.

Chapter 4: Trouble Shooting:

Self testing:

The user can self test the driver if the power supply section is OK (if green LED glows). For self testing connect the motor phase properly and make sure that LED status is correct. Supply the 3.3v/5V to enable pin to enable the rotation of motor shaft. Also change the current settings in potentiometer if necessary. Current setting potentiometer is provided inside the drive. You need to remove the top to change the current gain. Speed can be altered using external potentiometer. Also check whether direction and Brake states are working by connecting the corresponding pins to +5V with respect to ground. These are the steps to check the basic functionality of a drive.

User Level Trouble Shooting Guide:

The table given below shows some user level trouble shooting tips which may useful while working with RMCS-3002 with an external pulse generator.

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Service and Support

Service and support for this product are available from the Rhino Motion Controls Web site (<http://www.rhinomc.com>) and our customer service email: info@rhinomc.com, support@robokits.co.in

Six-Month Warranty

Rhino Motion Controls (rhinomc.com) warrants its products against defects in materials and workmanship for a period of 6 months from shipment delivery. During the warranty period, Rhino Motion Controls will either, at its option, repair or replace products which proved to be defective.

Exclusions

The above warranty does not extend to any product damaged by reasons of improper or inadequate handlings by customer, improper or inadequate customer wirings, unauthorized modification or misuse, or operation beyond the electrical specifications of the product and/or operation beyond environmental specifications for the product.

Obtaining Warranty Service

To obtain warranty service, please contact our customer service department at info@rhinomc.com before returning product for service. Please make sure that you have gone through this entire installation manual and datasheet before deciding that your product is liable for replacement or repair under this 6-month warranty. Customer shall prepay shipping charges for products returned to Rhino Motion Controls for warranty service, and Rhino Motion Controls shall pay for return of products to customer.

Warranty Limitations

Rhino Motion Controls makes no other warranty, either expressed or implied, with respect to the product. Rhino Motion Controls specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not allow limitations on how long and implied warranty lasts, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the 6-month duration of this written warranty.

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