



Installation Manual and Datasheet

RHINO MOTION CONTROLS

RMCS-2301

50V 20A servo drive / controller

Digital Step/Direction input interface (Max. 50Vdc and 20A)



Key Features

- Smooth and quiet operation at all speeds
- Zero-Backlash DC Servo Motor Performance
- Input supply voltage from 12VDC to 50VDC
- Selectable Gain Multiplier
- Selectable Error Limit
- PULSE and DIRECTION inputs with opto-isolated interface
- Pots for tuning of Proportional, Integral and Differential Gains.
- Pot for limiting the current.
- 2.5V, 3.3V and 5V compatible PULSE and DIRECTION inputs with 2-wire opto-isolated interface
- LED indication for power and error states

Description

Thank you for purchasing RMCS-2301 50V 20A servo drive/controller. The position of the DC servo motor can be controlled by a STEP/PULSE and DIRECTION digital interface similar to stepper motors.

The PULSE/STEP, DIRECTION inputs are optically isolated. Both inputs work with 2.5V, 3.3V or 5V logic drive signals. The input drive current is 5mA at 2.5V so almost all logic family (74LS, 74HC, etc.) can be used to drive these inputs. Each input provides individual anode and cathode connections to the opto-isolator allowing for multiple input drive interfaces.

Technical Specifications

Specification	Min	Max	Units	Comments
Supply Voltage	12	50	Volts DC	Between +Ve and GND
Current	0.5	20	Amps	Current Limit Pot
PUL and DIR Voltage	2.5	7	Volts DC	Between + and – input pins
Ambient Temp.	0	70	Celsius	
Humidity	0	95%		Non condensing
Step Frequency	—	100	kHz	
Direction Setup time	500	—	ns	Steps is clocked on positive edge

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High-Torque Encoder DC Servo Motor and Driver [RMCS-225X]



Mechanical Specifications

Specification	Details
Dimensions (L * W * H)	100mm * 75mm *25mm
Weight	155gms
Heat Sink	Anodized Aluminum 3mm thickness
Mounting Screw Holes	3.6mm minimum diameter

Power and Motor Terminal Assignments

Terminal No.	Terminal Name	Description
Terminal 1	GND	Power Ground or Power –Ve
Terminal 2	+V	Power +Ve (12VDC to 50VDC Max wrt. GND)
Terminal 3	Motor 1	DC motor connection 1
Terminal 4	Motor 2	DC motor connection 2

Encoder and Input Terminal Assignments

Terminal No.	Terminal Name	Description
Terminal 5	ENA	Encoder A input
Terminal 6	ENB	Encoder B input
Terminal 7	5V	5V volt for Encoder only
Terminal 8	Gnd	Gnd for Encoder only
Terminal 9	Dir-	—
Terminal 10	Dir+	—
Terminal 11	Pulse-	—
Terminal 12	Pulse+	—

Selection of Overall Gain for servo control loop (This depends upon the input voltage applied to the drive)

Gain Multiplier	SW1	SW2
Servo Gain 1x	OFF	OFF
Servo Gain 2x	OFF	ON
Servo Gain 4x	ON	OFF
Servo Gain 8x	ON	ON



Setting Error Limit and Multiplier

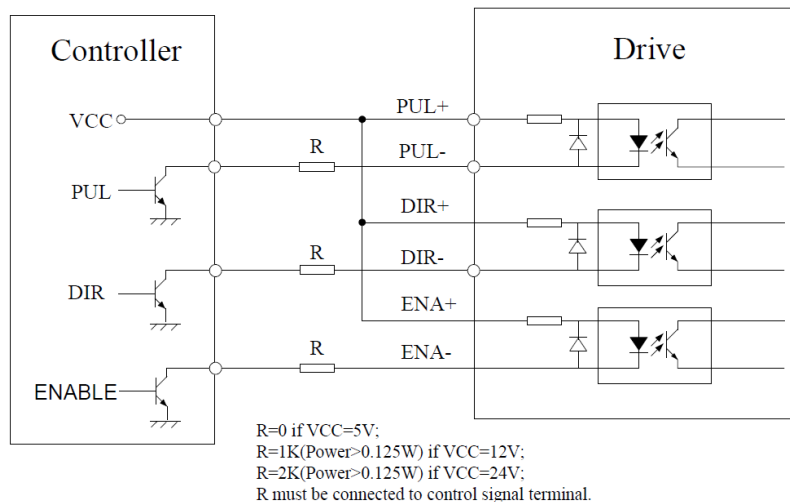
Multiplier	SW3	SW4
Step Input Multiplier 8x	OFF	OFF
Step Input Multiplier 4x	OFF	ON
Step Input Multiplier 2x	ON	OFF
Step Input Multiplier 1x	ON	ON

Potentiometer settings (From left of board)

Pot No.	Pot Name	Description
Pot 1	Proportional Gain	—
Pot 2	Integral Gain	—
Pot 3	Differential Gain	—
Pot 4	Current Limit	—

Control Signal Connection NPN pull-down

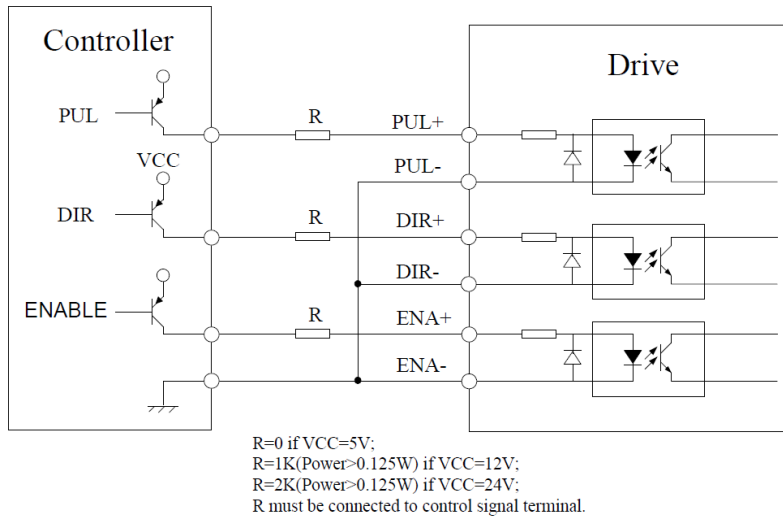
In this connection technique all the signal +ve inputs are connected to a common high voltage VCC. The opto-isolators LED is turned-on by a pull-down on the -Ve terminals by an NPN-transistor output





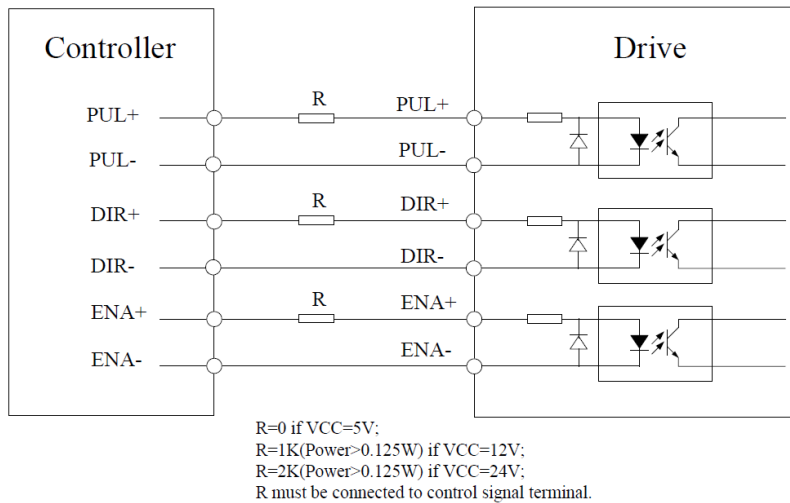
Control Signal Connection PNP pull-up

In this connection technique all the signal -ve inputs are connected to a common low voltage GND. The opto-isolators LED is turned-on by a pull-up on the +ve terminals by an PNP-transistor output



Control Signal Connection Differential

In this connection technique each input is differential controlled and no necessity for a common voltage



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Guide to General Problems

Problem Symptom

Possible Reasons and Solutions

RED Led blinks thrice

Encoder isn't connected correctly
Load is too high or pulses are being given too fast for servo to respond.
Check all Gain settings

Power Supply Selection

A high-torque DC motor requires high current during startup and during high load or irregular load conditions. The general rule of thumb to make sure your power supply is adequate for a DC motor is to make sure it can supply the maximum current required by the motor during stall condition. It is also good practice to have sufficient low ESR decoupling capacitors on the output of the supply before you connect it to a DC motor drive. This is to make sure that the motor driver does not reset or suffer from variations in speed due to an insufficient or unregulated supply.

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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

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.

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