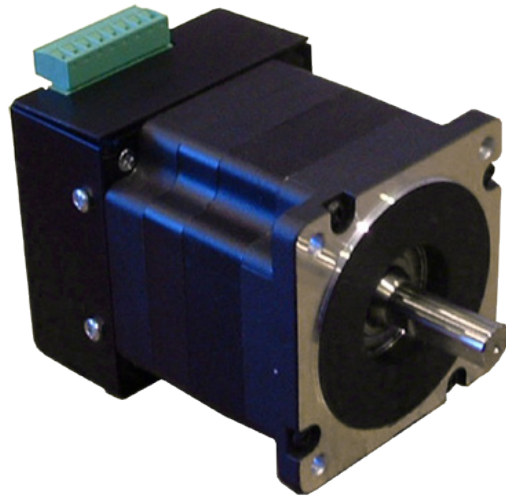


# BLY34MDA Series 50V, 30A Brushless Controller / Motor

## User's Guide



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## BLY34MDA Driver Features

- Constant Velocity Mode
- 0V to 5V External Voltage Speed Control
- 2-Quadrant Operation
- Hall Sensor Feedback
- Short Circuit Protection
- Maximum Current Limit at 30.0 Amps (peak)
- Speed Out
- Direction, Run/Stop, and Freewheel Input
- TTL-CMOS Compatible Inputs
- Compact Size
- Screw type Terminal Block

## General Description

The BLY34MDA Series is a compact construction that implements a DC Brushless controller and a DC Brushless motor in one streamline package. With the two parts combined into one casing, the need to wire up the motor has been eliminated. The DC Brushless controller can operate off a 24VDC or 48VDC power supply. The high-speed DC Brushless motor can operate at 3000RPM, can generate up to 300oz-in of continuous torque, and deliver as much as 700W with the BLY34MDA4 offering. Using hall sensor feedback, the DC Brushless controller operates in a constant velocity mode. The driver is protected against over current (cycle-by-cycle), hall sensor error and under voltage. An external potentiometer (10K) or external voltage (0-5VDC) can be used to control the speed. The direction of the motor can be preset by the direction control input. A Stop function can be done by grounding the Run/Stop input.

## Fault Protection

A cycle-by-cycle over current protection is provided when the motor peak current level exceeding the current limit of 30A is produced. When the over current protection is activated, the controller shuts off the outputs to the motor. For the shorter stack models of the BLY34MDA series, care must be taken not exceed the rated motor power.

## Closed Loop (Constant Velocity Mode)

The driver is set for Closed Loop operation. Closed Loop operation is used for applications where speed regulation is needed. Under closed loop operation, the speed is regulated despite changes to the load and the power supply voltage. Operation at maximum ratings may degrade constant velocity by 10%.

## Suggested Power Supplies

Part #	Description
PSEPM-0200-1-48V-4.2A	DC Power Supply 48VDC at 4.2 Amps
PSEPM-0200-1-48V-6.7A	DC Power Supply 48VDC at 6.7 Amps

## Specifications

### Speed Output: (TB1, Pin 1)

TTL-CMOS Compatible

The output is able to sink 50mA.

A 5V signal pulse out is available at a rate of 4 pulses for 1 revolution of an 8-pole motor.

8-pole motor RPM = 15 \* PG OUT (in Hz)

### Control Inputs: (TB1, Pins 2-4)

TTL-CMOS Compatible

Logic "0" = 0-0.8VDC

Logic "1" = OPEN

All three inputs (run/stop, freewheel, and direction) are pulled up through 20k ohm resistors.

### Direction Control: (TB1, Pin 2)

Logic "1" (open) - Clockwise

Logic "0" - Counterclockwise

### Freewheel: (TB1, Pin 3)

Logic "1" (open) - Motor is Enabled

Logic "0" - Motor is de-energized and will coast

### Run/Stop: (TB1, Pin 4)

Logic "1" (open) - Motor will not run and if running will come to a hard stop

Logic "0" - Motor will run.

### V Control: (TB1, Pin 5)

To control the speed of the motor with an external DC voltage, a voltage from 0VDC (min) - 5VDC (max) must be applied with reference to AGND (TB1, Pin 6).

0VDC - Motor will stop.

### Output Current Rating:

Adjustable 10.0 - 30.0 amperes per phase maximum operating peak current

(5.0 - 15.0 amperes per phase maximum operating continuous current)

### Power Requirements: (TB1, Pins 7 and 8)

20VDC (min) - 50VDC (max)

### Operating Temperature:

Heat Sink: 0°-70° C

## Heating Considerations

The temperature of the motor should never be allowed to rise above 70 degrees Celsius. If necessary, air should be blown across the heat sink to maintain suitable temperatures.

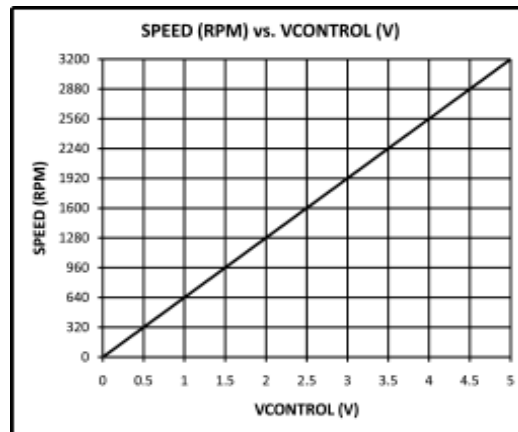
## Speed Adjust Setting

A voltage is used to control the speed of the motor, the 0V to 5V voltage can be tied on VCONTROL (TB1 - pin 4) with respect to AGND (TB1 - pin 6). A ramp up profile at start up on VCONTROL (TB1 - pin 4) would alleviate excessive current draw from the power supply. When the motor is rapidly accelerated from standstill, current drawn from the power supply can measure up to ten times the rated motor current. This startup current spike can shutdown power supplies by tripping the power supply's current limit.

A ramp down profile from max operating speeds would alleviate any back emf generated. When the motor is rapidly decelerated or stopped from high speed, the motor phase advances and this "returned energy" voltage appears on the drive's power supply pins. Returned energy voltages seen at the input pins in excess of 50V will damage the driver.

The maximum ramp times are determined per application. Both the ramp up and ramp down speed profiles would need to be done with an external controller.

The maximum voltage that can be placed on VCONTROL is 10V. A voltage exceeding 10V will cause damage to the driver. If a voltage other than 0V to 5V is needed to control the speed of the motor, contact Anaheim Automation for custom tuning of the VCONTROL input.



## Terminal Block Descriptions

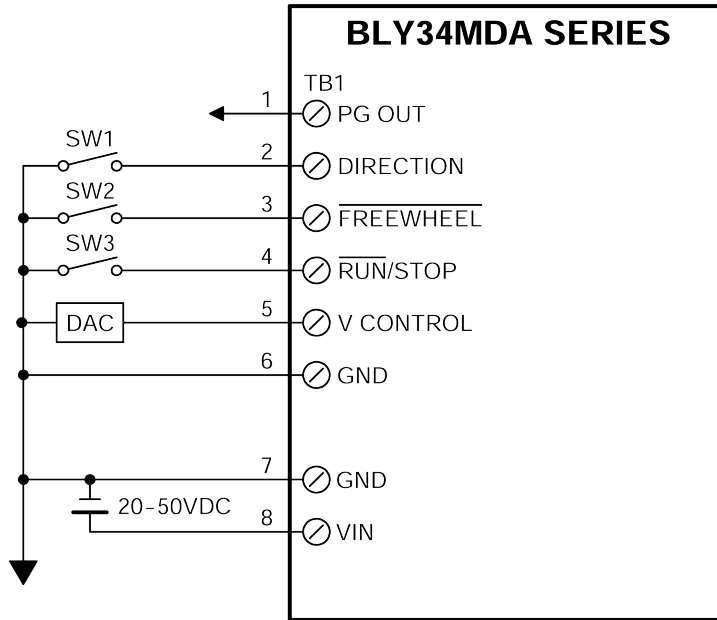
Pin #	Description
1	PG OUT
2	Direction
3	Freewheel
4	Run/Stop
5	VCONTROL
6	AGND
7	PGND
8	VIN

Pin #	Description
*	Pot (+) Top
5	Pot Wiper
6	Pot (-) Bottom

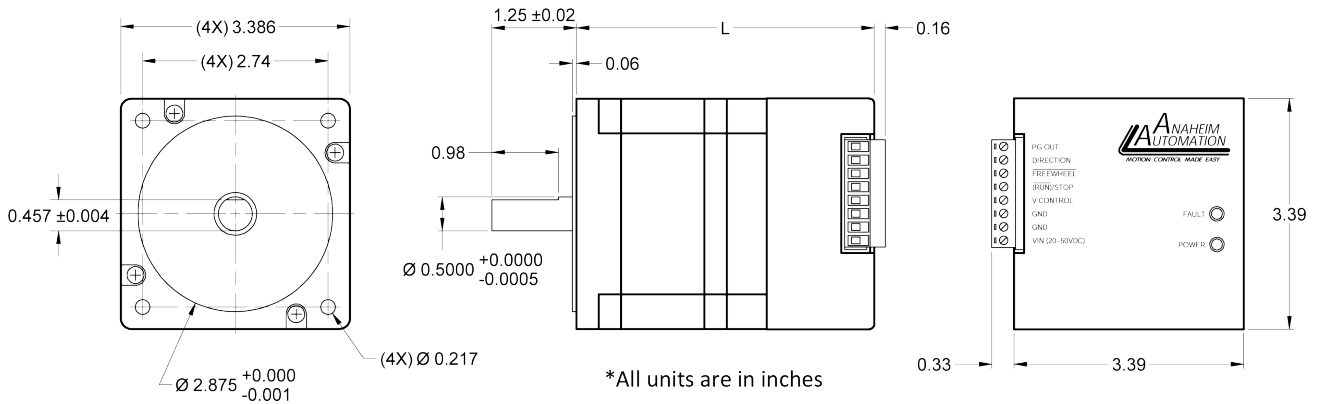
\* External +5V supply  
P1: 10K External Pot

TB1: Power In, Control  
Inputs and Outputs

# Typical Hookup Drawing

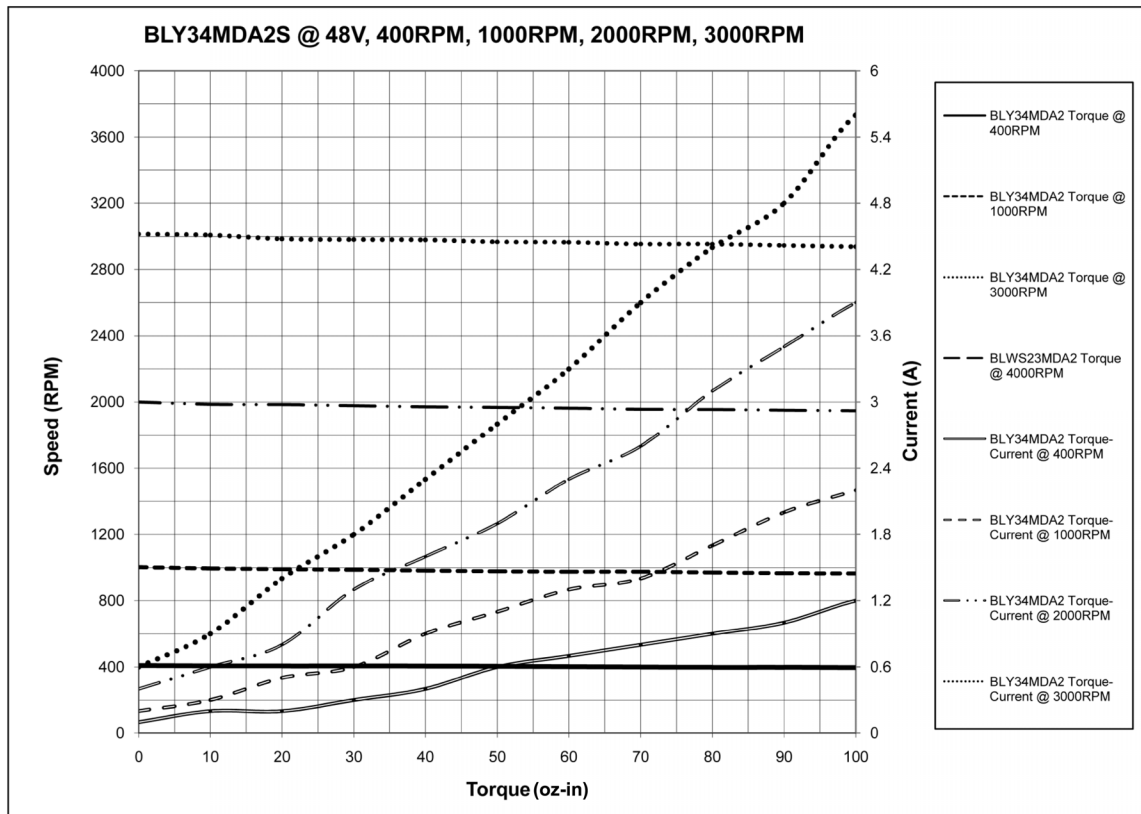
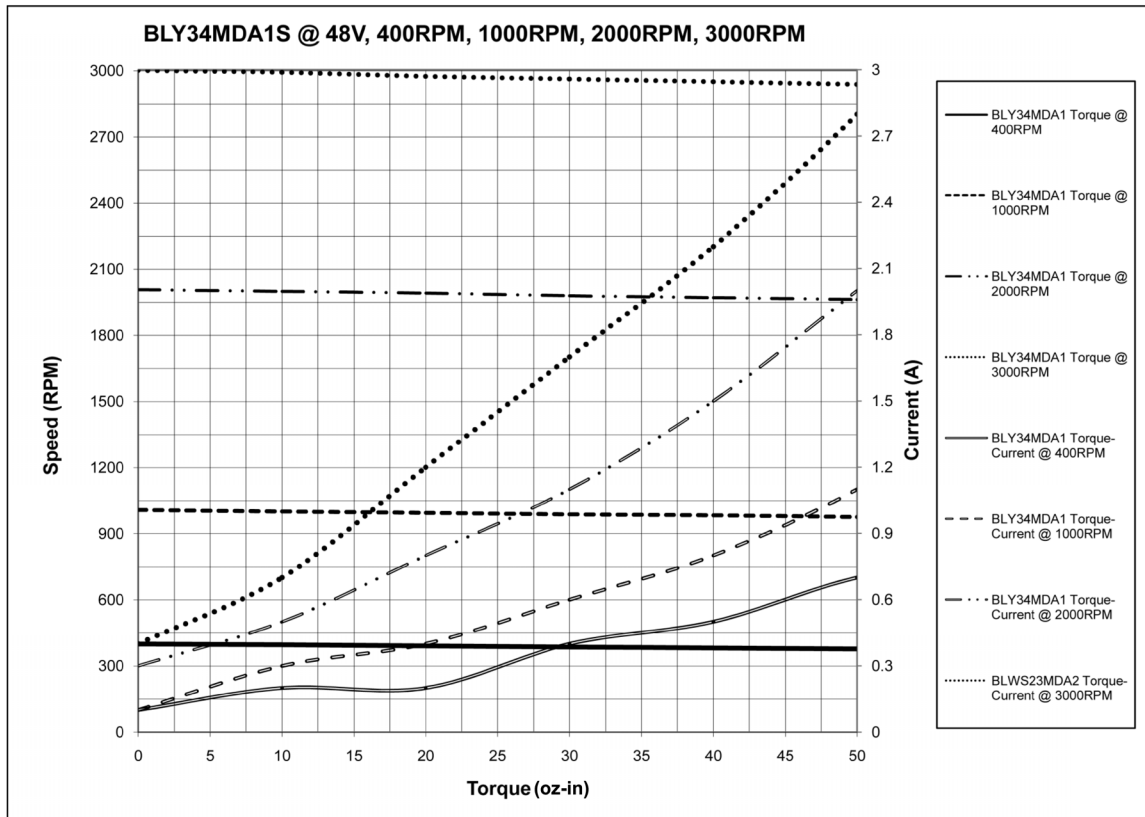


# Dimensions

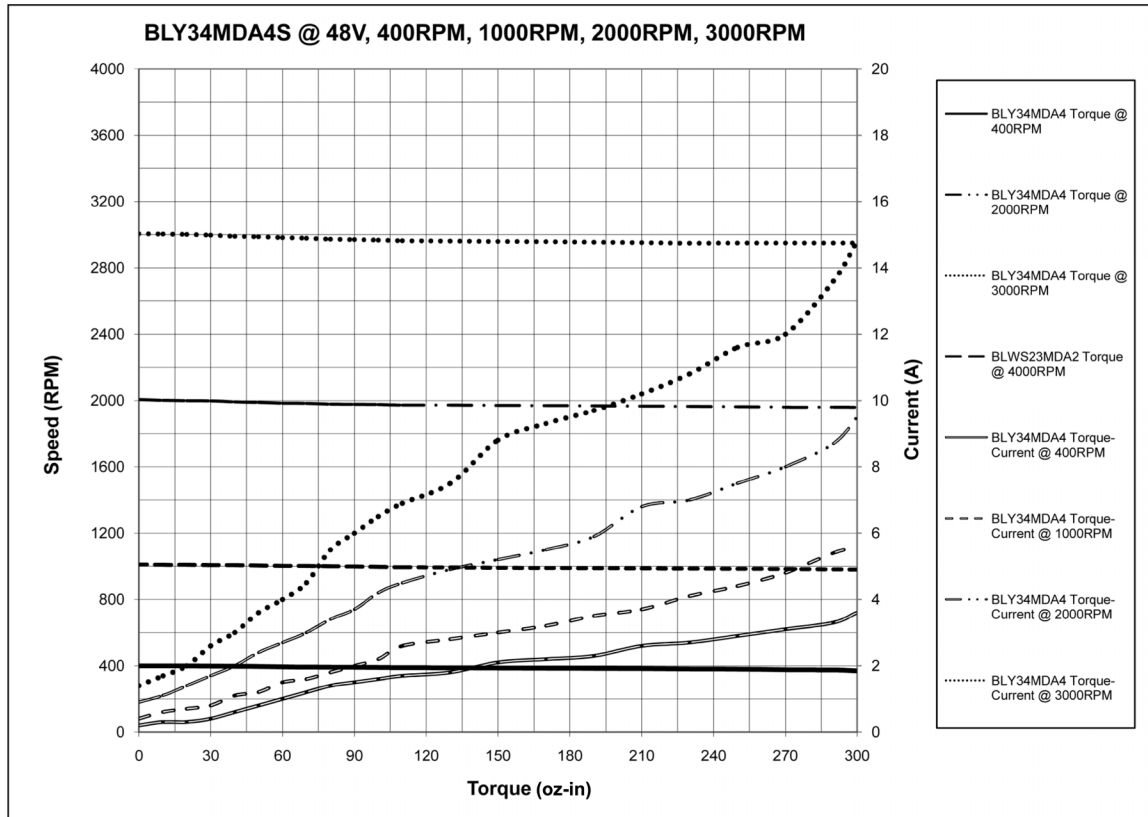
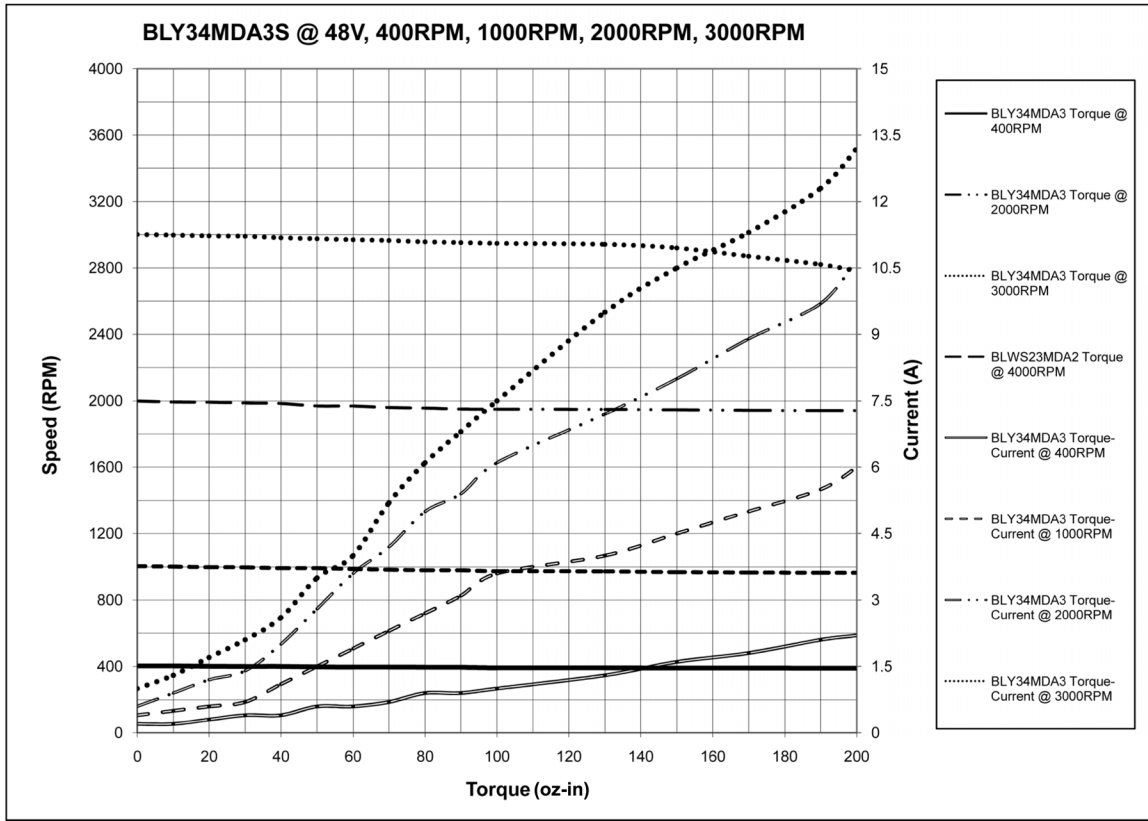


Part #	L (in)
BLY34MDA1	4.49
BLY34MDA2	4.99
BLY34MDA3	6.09
BLY34MDA4	7.09

# Torque Speed Curves



# Torque Speed Curves (cont.)



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Anaheim Automation will repair or replace at its' option, any product which has been found to be defective and is within the warranty period, provided that the item is shipped freight prepaid, with previous authorization (RMA#) to Anaheim Automation's plant in Anaheim, California.

## **TECHNICAL SUPPORT**

If you should require technical support or if you have problems using any of the equipment covered by this manual, please read the manual completely to see if it will answer the questions you have. If you need assistance beyond what this manual can provide, contact your Local Distributor where you purchased the unit, or contact the factory direct.

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