

BLY34MDA Offline Series 110VAC, 15A Brushless Controller / Motor

User's Guide



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BLY34MDA Offline Series Driver Features

- Requires 85 - 135 VAC Power Input
- Maximum Current Limit of 15.0 Amps
- 2-Quadrant Operation
- Hall Sensor Feedback
- Short Circuit Protection
- 0.5V to 5V External Voltage Speed Control
- Constant Velocity Mode
- Freewheel, Run/Stop and Direction Inputs
- Optically Isolated Inputs and Outputs
- Compact Size
- Detachable Screw Type Terminal Blocks

General Description

The BLY34MDA Offline Series is a compact construction that implements an Offline 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 Offline Brushless Controller operates off 110VAC. The high-speed Brushless Motor can operate at 3000RPM, can generate up to 297 oz-in of continuous torque, and deliver as much as 665W, with the BLY34MDA4 Offline offering. Using hall sensor feedback, the Offline 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 (0.5-5VDC) 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 opening the Run/Stop input.

Pin Descriptions

The inputs on the BLY34MDA Offline Series are optically isolated with the cathodes (-) both out to the user. The anodes (+) are tied to the internal isolated 5V supply. With no current going through the Direction, Freewheel, and Run/Stop opto-diodes, the input is considered high. To enable the motor to run, current must go through the Run/Stop input opto-diode. To Freewheel, remove energy from the motor, current must go through the Freewheel input opto-diode. This is done simply by grounding the cathode input of the opto-diode. The PG Out on the BLY34MDA Offline Series is an opto-decoupled open collector and open emitter output. When normal operation occurs, this output will conduct current into the emitter. Care must be taken not to pass more than 50mA through this transistor.

Absolute Maximum Ratings

Hi-Pot Rating (10 seconds):

Line to Ground 1200VAC, 10mA

Output Current Rating:

15.0 amperes per phase maximum operating current

Power Requirements: (TB1, Pins 1 and 2)

85VAC (min) - 135VAC (max)

Operating Temperature:

Heat Sink: 0°-70° C

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.

Motor Freewheel

The motor freewheel feature allows the de-energizing of the motor phases. A low at this input causes the motor to coast to a stop, while a high (open) input causes the motor to run at the given speed.

Motor Run/Stop

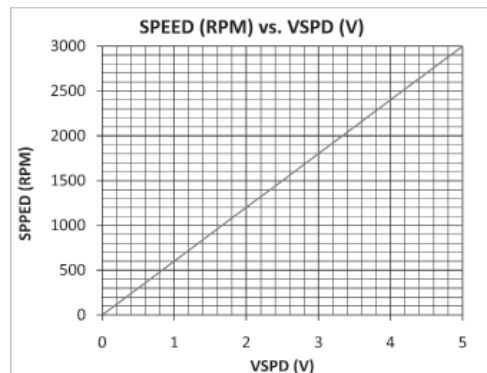
The motor stop feature allows the stopping of a motor by shorting out the bottom drives of the three phases. A low at this input allows the motor to run, while a high (open) input does not allow motor operation and if operating, causes rapid deceleration. When a run command is made from a stopped condition, there is a 3 second ramp up to maximum speed.

Motor Direction

The motor direction feature allows the changing of the rotation of the motor. This input should not be changed while motion is in progress. A low at this input causes the motor to turn in the CW direction, while a high (open) input causes the motor to turn in the CCW direction.

Speed Adjust, ISO 5V, and ISO GND

To adjust the motor speed, the external voltage input can be varied from 0V to 5V. Speeds under 300RPM and 0.5V on VSPD may have cogging. The internal unregulated isolated +5VDC supply is referenced to ISO GND. Unloaded, the ISO 5V output is 5.7V. The ISO 5V is internally connected to the anodes of Run/Stop, Freewheel, and Direction. (See typical hookup drawing section)



Fault Protection

Over current protection is provided by means of an over current latch function. If a motor current level exceeding the fixed current limit is produced, an over current latch is activated, shutting off the output. This driver is equipped with a FAULT LED to alert the user of the following conditions.

1. Invalid Sensor Input Code
2. Over Current. The driver is equipped with over current latch.
3. Under-voltage Lockout activation at 9.1VDC for the input voltage and 4.5VDC for Hall Sensor voltage.

Heating Considerations

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

Terminal Block Descriptions

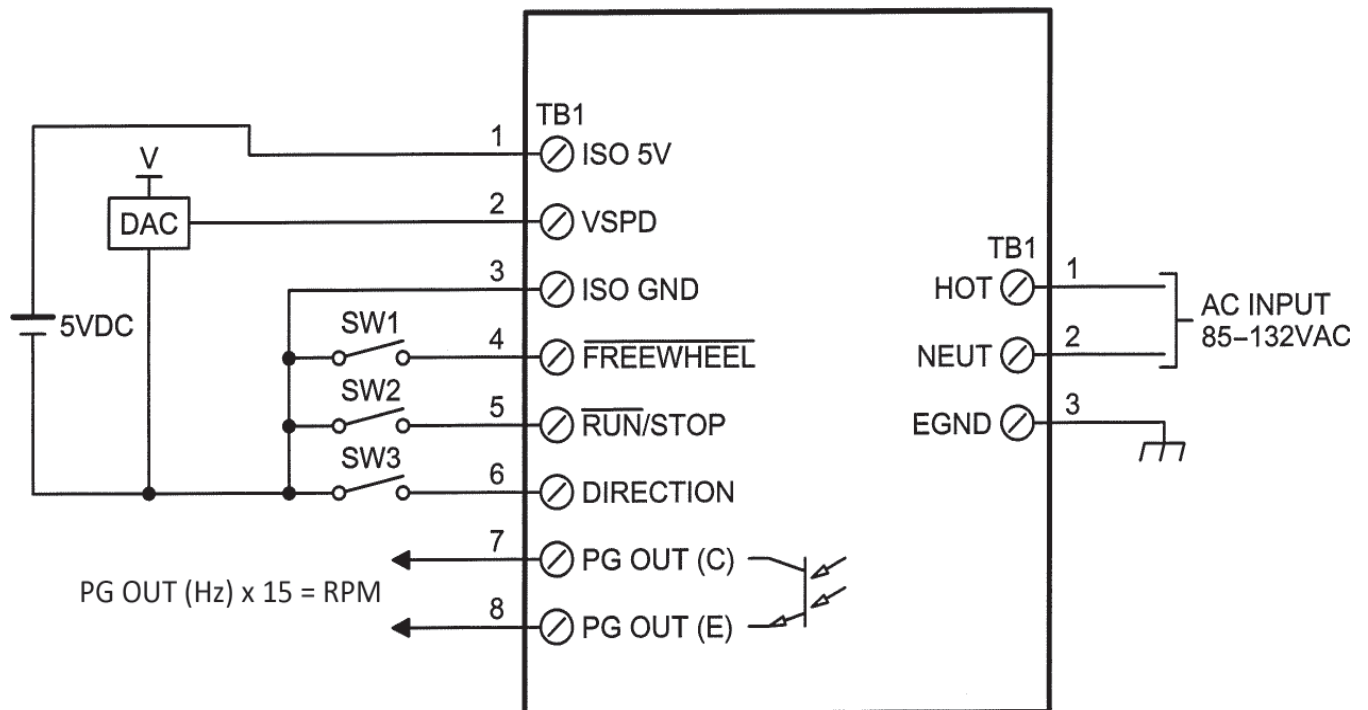
Pin #	Description
1	ISO 5V
2	VSPD
3	ISO GND
4	Freewheel
5	Run/Stop
6	Direction
7	PG OUT (C)
8	PG OUT (E)

TB1: Opto-Isolated Control Inputs, Outputs and Speed Control

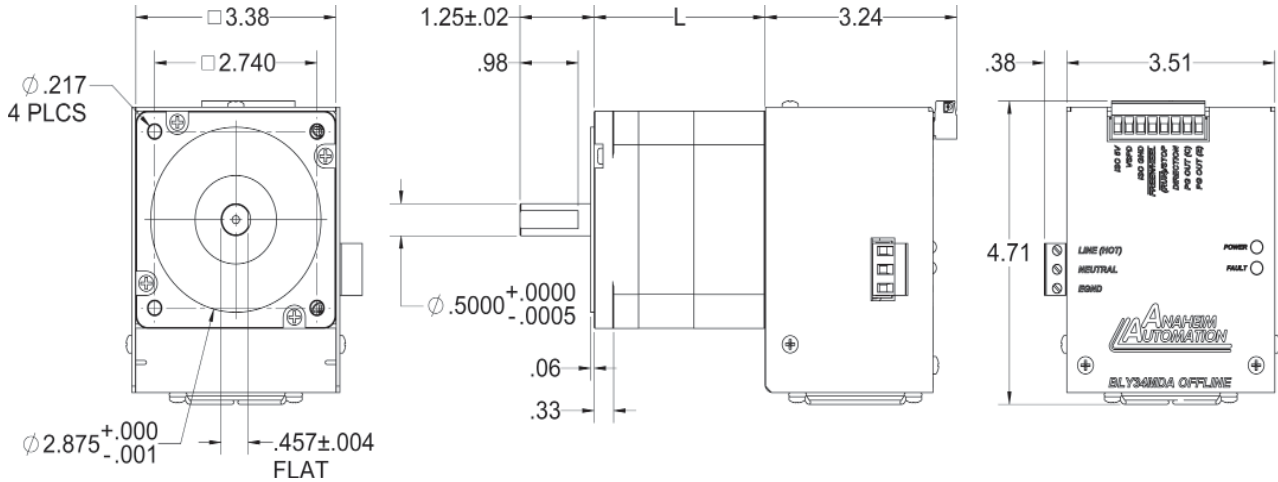
Pin #	Description
1	AC Line (HOT)
2	AC Neutral
3	Earth GND

TB2: AC Voltage Input Terminals

Typical Hookup Drawing



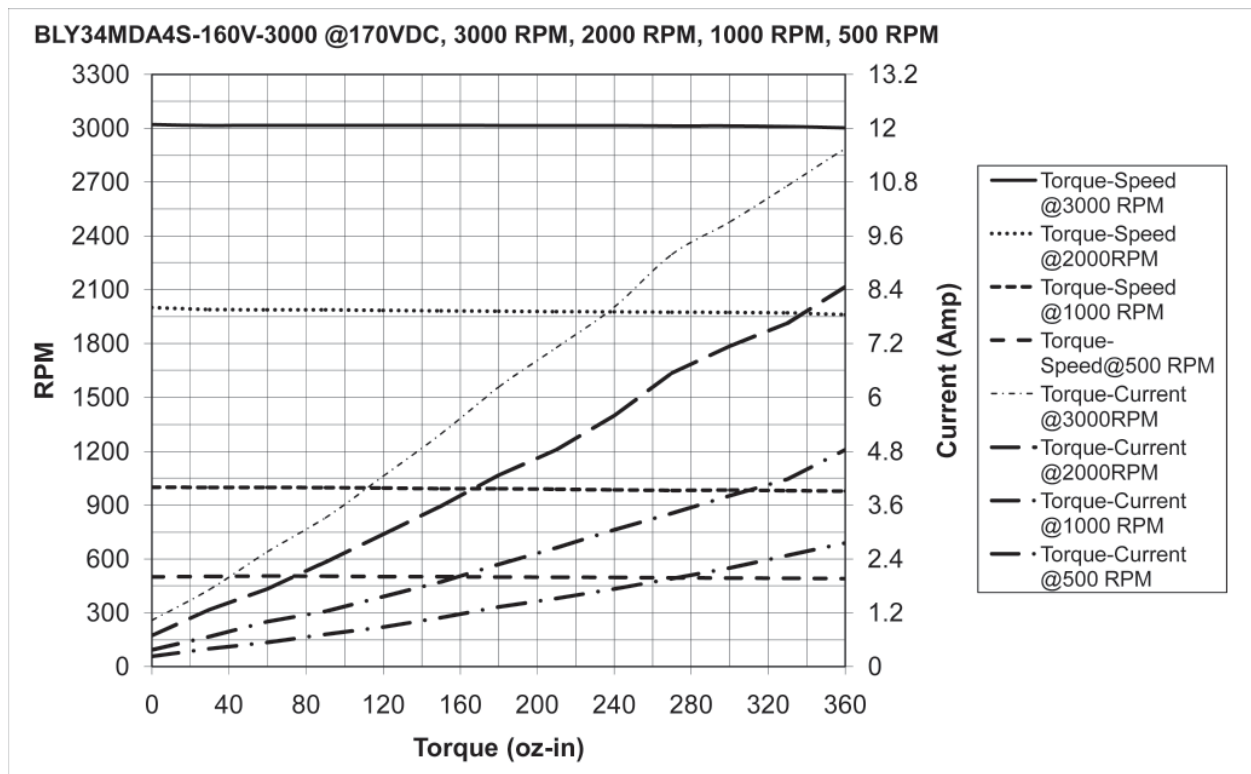
Dimensions



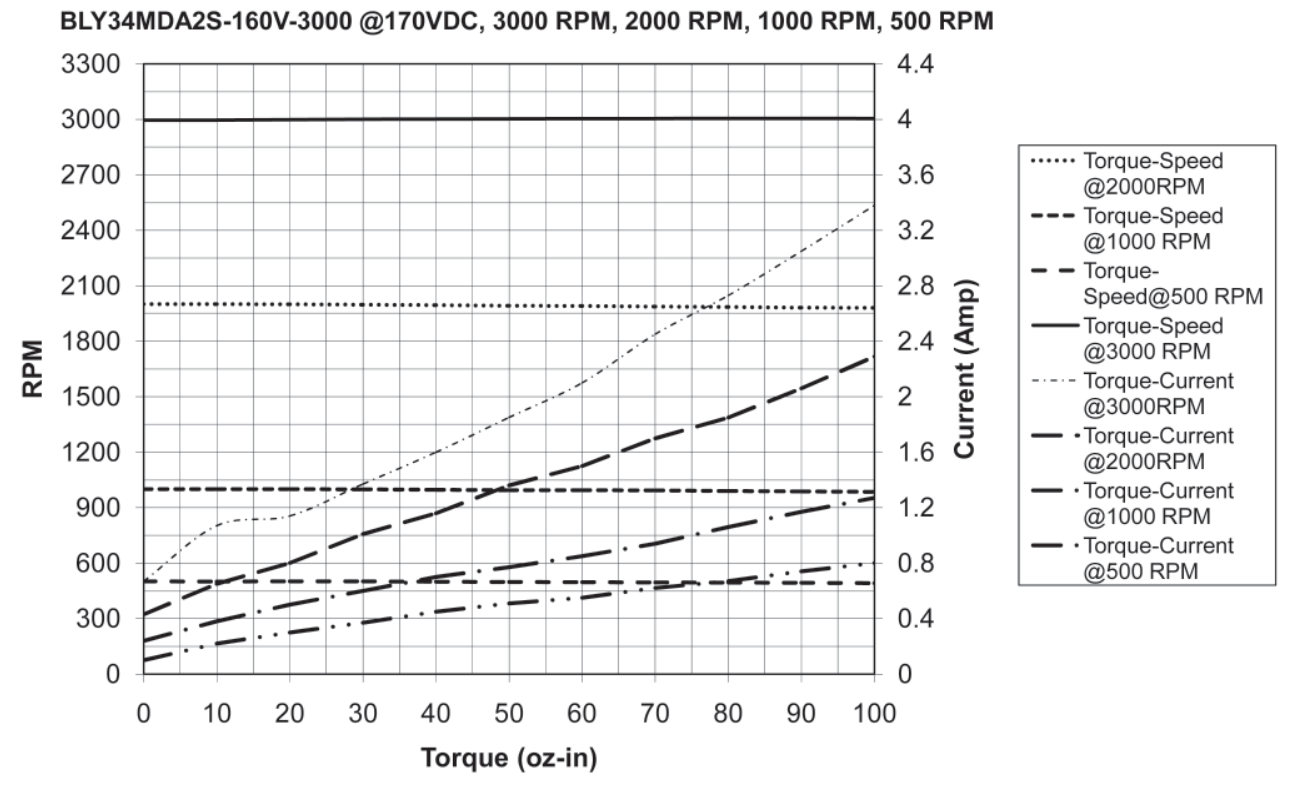
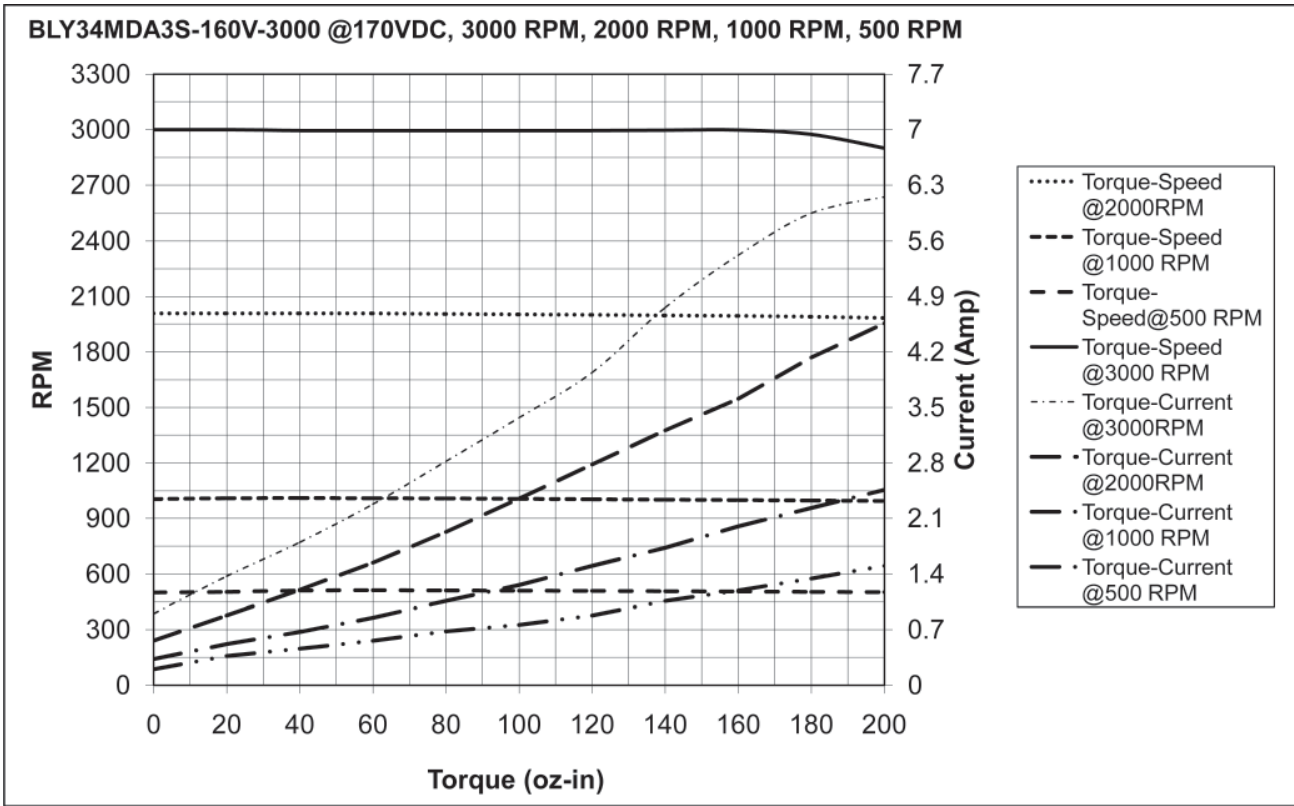
Lengths & Ratings

Model	Rated Speed (RPM)	L (in.)	Torque (oz-in)	Power (W)	Weight (lbs.)
BLY34MDA1S-160V-3000	3000	6.08	49	110	4.73
BLY34MDA2S-160V-3000	3000	6.63	99	220	5.28
BLY34MDA3S-160V-3000	3000	7.69	192	440	6.93
BLY34MDA4S-160V-3000	3000	8.75	297	660	10.01

Torque Curves



Torque Curves (cont.)



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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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