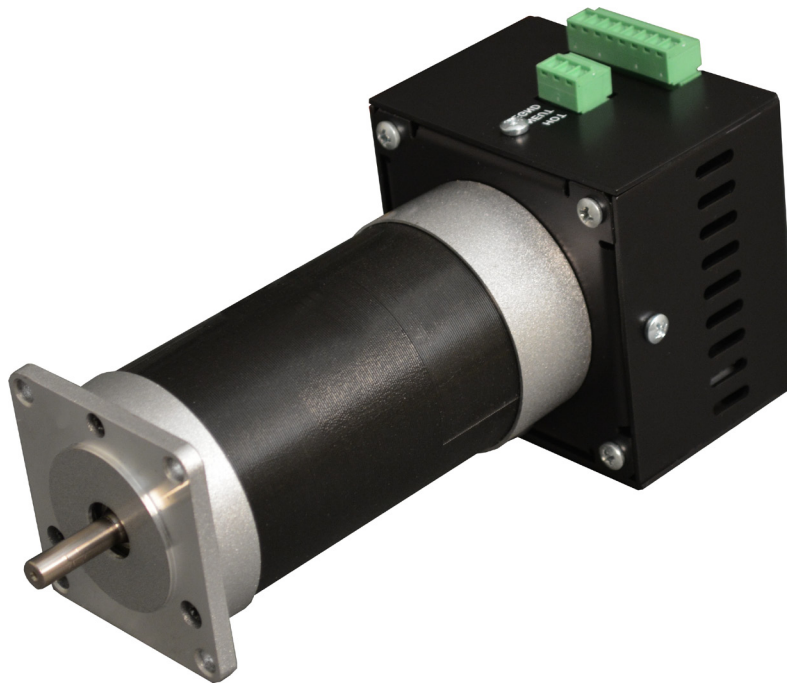


BLWS23MDAxS-160 Offline Series 110VAC, 3A Brushless Controller / Motor

User's Guide



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BLWS23MDA Offline Series Driver Features

- Requires 85 - 135 VAC Power Input
- Maximum Current Limit at 3.0 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 BLWS23MDA 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 71 oz-in of continuous torque, and deliver as much as 157W, with the BLWS23MDA5 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 grounding the Run/Stop input.

Pin Descriptions

The inputs on the BLWS23MDA Offline Series are optically isolated with an anode (+) and cathode (-) both brought out to the user. The anode (+) is tied to the external isolated 5V internally. 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) 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 BLWS23MDA 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.

Optically Isolated Inputs and Outputs

The following inputs and outputs to the BLWS23MDA Offline Series are Optically Isolated:

Item	Pin #
PG Out	7 & 8
Direction	6
Freewheel	4
Run/Stop	5
VSPD*	2

To enable an input, you must ground the cathode inputs.

*0.5 - 5V signal referenced to ISO GND.

Absolute Maximum Ratings

Output Current Rating:

3.0 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 and the power supply voltage.

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.

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. An external +5VDC supply, referenced to ISO GND, needs to be provided to power the inputs. (See typical hookup drawing section)

Fault Protection

Over current protection can be 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 cycle-by-cycle current limiting or 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

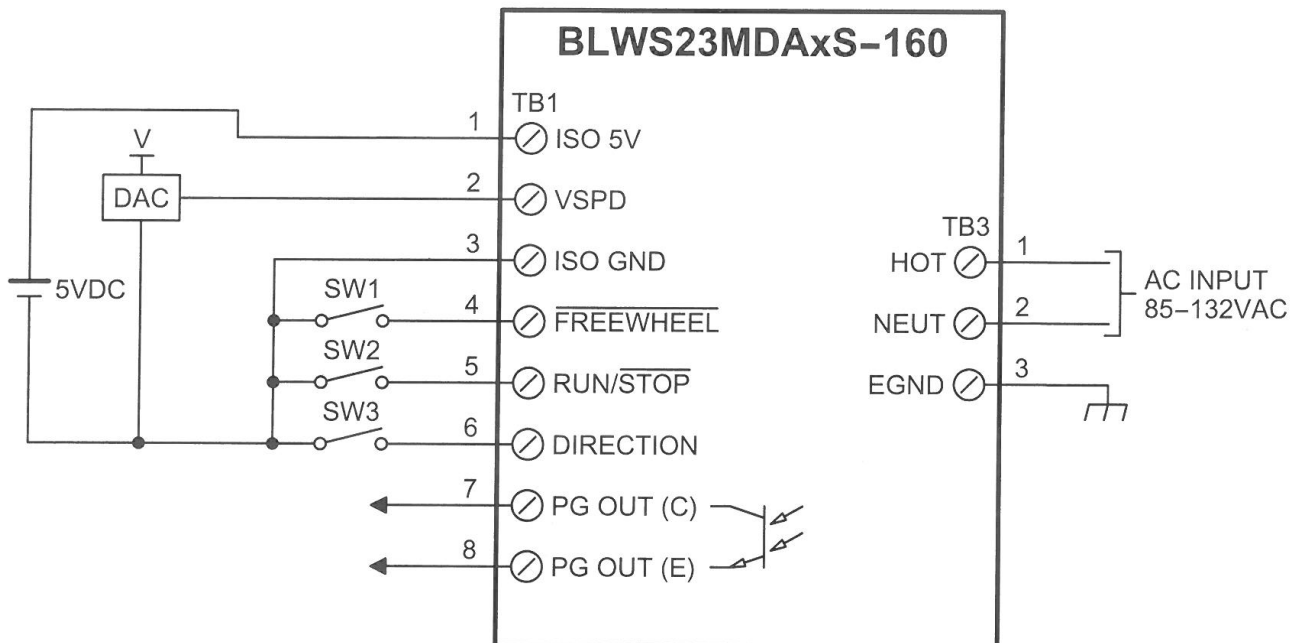
Pin #	Description
1	ISO 5V
2	VSPD
3	ISO GND
4	Freewheel
5	Run/Stop
6	Direction
7	PG OUT (C)
8	PG OUT (E)

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

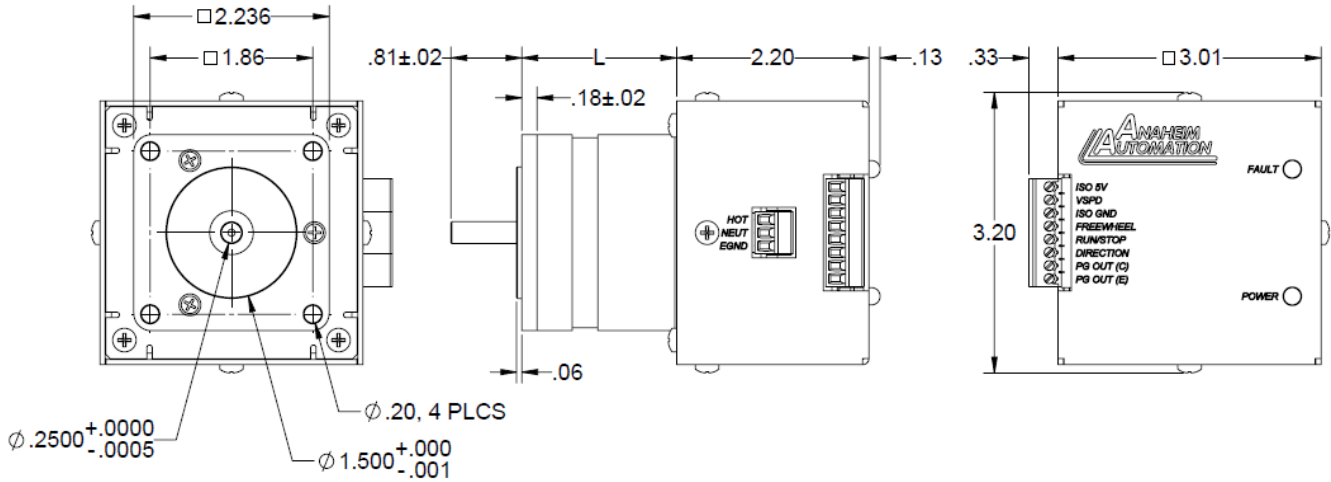
Pin #	Description
1	AC Line (HOT)
2	AC Neutral
3	Earth GND

TB3: AC Voltage Input Terminals

Typical Hookup Drawing



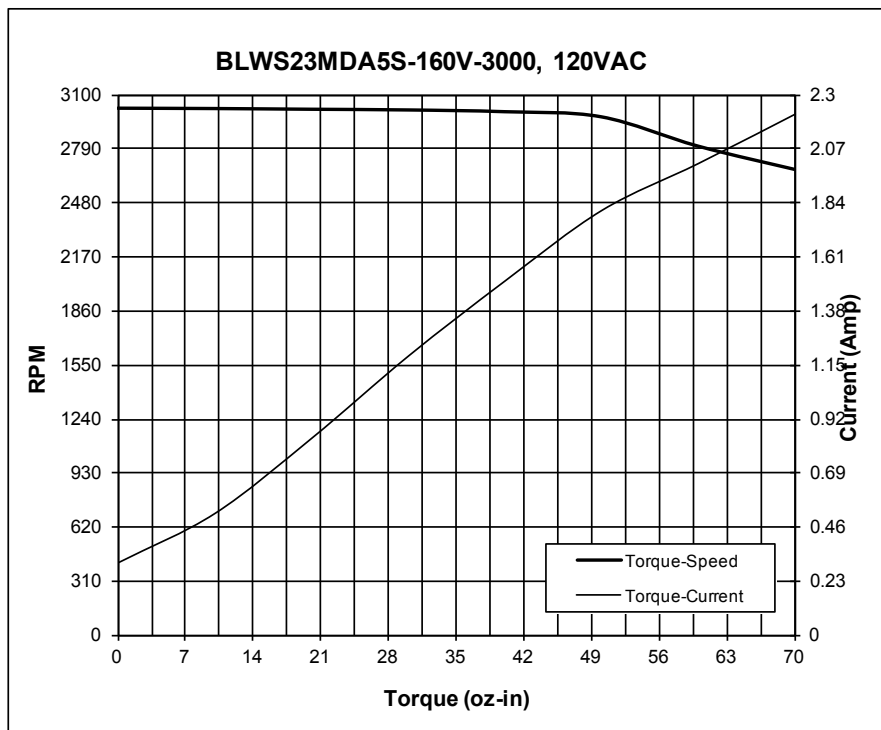
Dimensions



Lengths & Ratings

Model	Rated Speed (RPM)	No Load Speed (RPM)	L (in.)	Torque (oz-in)	Power (W)	Weight (lbs.)
BLWS23MDA3S-160V-3000	3000	4400	2.89	31.15	69	1.6
BLWS23MDA4S-160V-3000	3000	4200	3.69	46.73	103	2.1
BLWS23MDA5S-160V-3000	3000	4600	4.47	71	157	2.6

Torque Curve



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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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