

Automation Modules, Inc.

BA481

TECHNICAL REFERENCE MANUAL

Revision 1.01, May 2002

Preliminary

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Introduction

The BA481 PWM servo amplifier is designed to drive brushed or brushless, DC motors or voice coil actuators. The BA481 interfaces with the host controller via an industry standard $\pm 10V$ analog command signal resulting in a maximum output current ± 8 amps. The BA481 features an INHIBIT input for disabling the output and a STATUS output signal to indicate whether the output is enabled and functioning properly. There are 15-turn potentiometers allowing adjustment of the maximum output current and offset neutralization. Two LEDs indicate the presence of power and the status of the device. The BA481 output will be disabled and the STATUS output turned on if the internal temperature of the device exceeds approximately $65^{\circ} C$.

Specifications

Description	PWM Servo amplifier
Operating Mode	Constant Current
DC Supply Voltage	12 - 48 VDC
Output Current	± 4 Amps Continuous, ± 8 Amps Peak
Nominal Input Voltage Range	0 to ± 10 Volts
Maximum Input Voltage	± 15 Volts
Input Impedance	Approx. 25K
Quiescent Current	Approx. 80 mA at 24 VDC
Enable Input Current	Approx. 2 mA
Status Output Sat. Voltage	Approx. 0.8V at 8 mA
Maximum Input / Output Gain	Approx. 0.8 Amps / Volt
PWM Frequency	Approximately 52 KHz
Output Phase Shift	Approx. 43° with 2 KHz Sine Wave Input (330 uH Load)
Inputs	Analog Command (± 10 V Max.), Inhibit (+5 V Max.)
Output	Status
Hall Sensor Input	Single-ended or Differential
Hall Supply Voltage	5 VDC
Hall Input Voltage	5.5 VDC Max., -0.1 VDC Min.
Operating Temperature Range	$0^{\circ} C \leq T_o \leq 50^{\circ} C$
Storage Temperature Range	$-40^{\circ} C \leq T_o \leq 70^{\circ} C$
Dimensions	Approximately 5.0" Long by 3.3" Wide by 1.1" Thick
Weight	Approx. 10 oz.

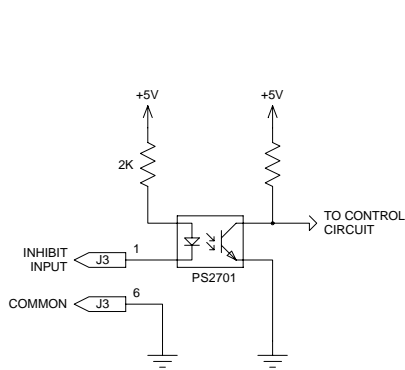
DIP Switch Settings

The BA481 provides 3 DIP switches for setting various operating configurations.

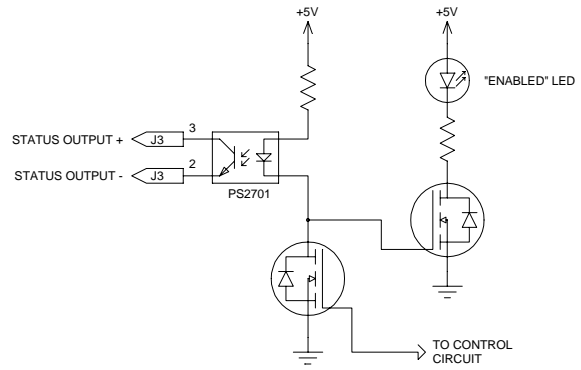
- TEST/OFFSET - When in the OFFSET position, the OFFSET adjustment potentiometer can be adjusted to neutralize any unwanted output bias. When in the TEST position, the OFFSET potentiometer becomes much more influential and can be used as an input signal for testing.
- $60^{\circ}/120^{\circ}$ - Place this switch at the appropriate setting to match the commutation sensor configuration for the motor to be driven.
- INVERT/NORMAL - This determines the logic sense of the INHIBIT input. If this switch is in the NORMAL position, the INHIBIT input must be connected to common to disable the output. When the switch is in the INVERT position, the INHIBIT input must be connected to common to enable the output.

Brush Type Motors

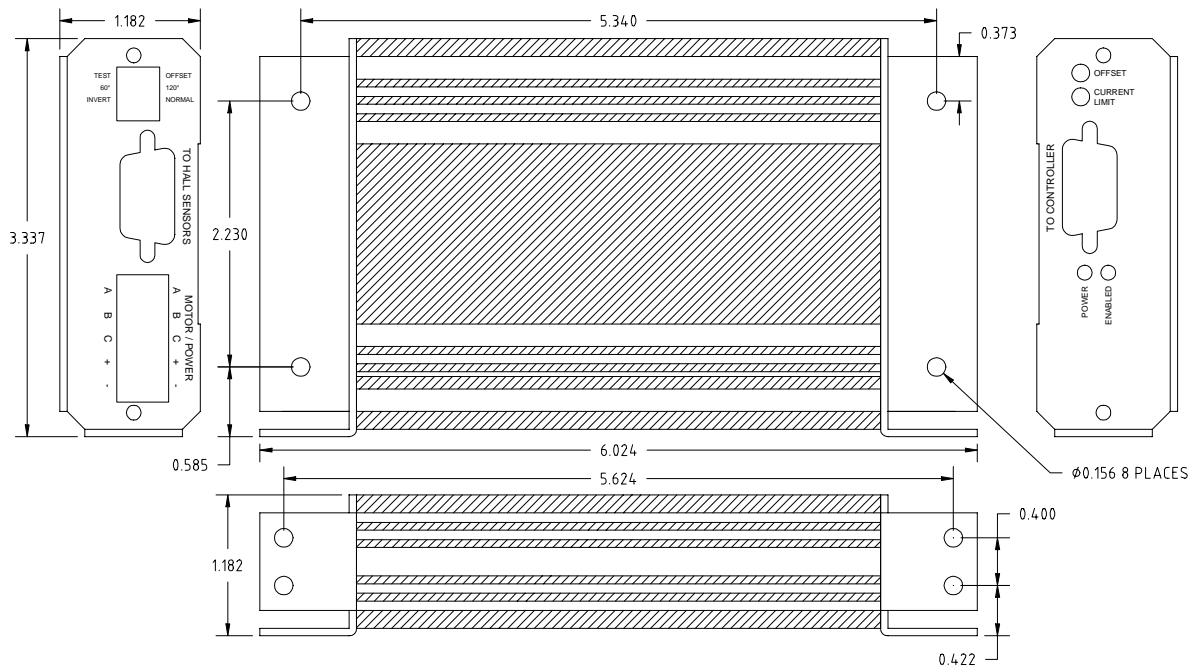
The BA481 can be easily made to drive brush type DC motors or voice coil actuators. All that is necessary is to leave all hall effect sensor inputs unconnected, set the phasing DIP switch to 60° and then connect the motor to outputs A and B.



BA481 Inhibit Input

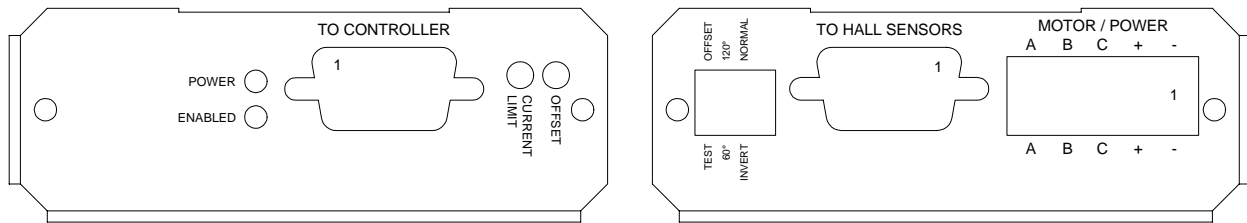


BA481 Status Output



BA481 Nominal Dimensions

BA481 Connector Pin Definitions



J1 - Power Interface : 5-Pin 5.08mm Centers Phoenix

Mating Connector: OnShore# EDZ950/5

Digi-Key# ED1719

1. Main power return (Common)
2. Main V+ power input
3. Motor output C
4. Motor output B
5. Motor output A

J2 - Servo Interface : 9-Pin Female D-Sub

Mating Connector: NorComp# 171-009-102-001

Digi-Key# 209M

1. No connection
2. Hall Sensor C+
3. Hall Sensor B+
4. Hall Sensor A+
5. +5 VDC
6. Hall Sensor C-
7. Hall Sensor B-
8. Hall Sensor A-
9. Common

J3 - User I/O Interface : 9-Pin Male D-Sub

Mating Connector: NorComp# 171-009-202-001

Digi-Key# 209F

1. Inhibit input +
2. Status output -
3. Status output +
4. Analog command input +
5. Analog command input -
6. Common
7. Common
8. Common
9. Common