Description

The AZB60A8 PWM servo drive is designed to drive brushless DC motors at a high switching frequency. To increase system reliability and to reduce cabling costs, the drive is designed for direct integration into your PCB. The AZB60A8 is fully protected against over-voltage, under-voltage, over-current, over-heating and short-circuits. A single digital output indicates operating status. The drive interfaces with digital controllers that have analog +/-10V output. This servo drive requires only a single unregulated isolated DC power supply, and is fully RoHS (Reduction of Hazardous Substances) compliant.

See Part Numbering Information on last page of datasheet for additional ordering options.

Power Range

Peak Current	60 A
Continuous Current	30 A
Supply Voltage	10 - 80 VDC

Features

- High Power Density
- Compact Size
- Direct Board-to-Board Integration
- Lightweight
- High Switching Frequency
- Four Quadrant Regenerative Operation
- Wide Temperature Range
- High Performance Thermal Dissipation
- Differential Input Command
- Current Monitor Output
- Digital Fault Output Monitor
- 12VDC Operation

HARDWARE PROTECTION
- Over-Voltage
- Under-Voltage
- Over-Current
- Over-Temperature
- Short-circuit (phase-phase)
- Short-circuit (phase-ground)

INPUTS/OUTPUTS
- Digital Fault Output
- Digital Inhibit Input
- Analog Current Monitor
- Analog Command Input
- Analog Current Reference

FEEDBACK SUPPORTED
- Hall Sensors

MODES OF OPERATION
- Current

COMMUTATION
- Trapezoidal

MOTORS SUPPORTED
- Three Phase (Brushless)
- Single Phase (Brushed, Voice Coil, Inductive Load)

COMMAND SOURCE
- ±10 V Analog

COMPLIANCES & AGENCY APPROVALS
- UL
- cUL
- CE Class A (LVD)
- CE Class A (EMC)
- RoHS

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PIN FUNCTIONS

P1 - Signal Connector			
Pin	Name	Description / Notes	I/O
1	+REF IN	Differential Reference Input (±10 V Operating Range, ±15 V Maximum Input)	I
2	SIGNAL GND	Signal Ground	GND
3	-REF IN	Differential Reference Input (±10 V Operating Range, ±15 V Maximum Input)	I
4	CURRENT MONITOR	Current Monitor. Analog output signal proportional to the actual current output. Scaling is 20 A/V. Measure relative to signal ground.	O
5	$\overline{\text{INHIBIT IN}}$	TTL level (+5 V) inhibit/enable input. Leave open to enable drive. Pull to ground to inhibit drive. Inhibit turns off all power devices.	I
6	+V HALL OUT	Low Power Supply For Hall Sensors (+6 V @ 30 mA). Referenced to signal ground. Short circuit protected.	O
7	SIGNAL GND	Signal Ground	GND
8	HALL 1	Single-ended Hall/Commutation Sensor Inputs (+5 V logic level)	I
9	HALL 2		I
10	HALL 3		I
11	CURRENT REFERENCE	Measures the command signal to the internal current-loop. This pin has a maximum output of ±7.3 V when the drive outputs maximum peak current. Measure relative to signal ground.	O
12	FAULT OUT	TTL level (+5 V) output becomes high when power devices are disabled due to at least one of the following conditions: inhibit, invalid Hall state, output short circuit, over voltage, over temperature, power-up reset.	O
13	RESERVED	Reserved	-
14	RESERVED		-
15	RESERVED		-
16	RESERVED		-

P2 and P3 - Power Connector				
Pin		Name	Description / Notes	I/O
1b	1a	HIGH VOLTAGE	DC Power Input. 3A Continuous Current Rating Per Pin. Requires at least 470 µF / 100 V external electrolytic capacitor connected as close as possible to pins between High Voltage and Power Ground.	I
2b	2a	HIGH VOLTAGE		I
3b		NC	Not Connected (Reserved)	-
	3a	NC (KEY)	Key: No Connection (pin removed) for P2. Not Connected (Reserved) for P3.	-
4b	4a	PWR GND	Power Ground (Common With Signal Ground). 3A Continuous Current Rating Per Pin	GND
5b	5a	PWR GND		GND
6b	6a	MOTOR C	Motor Phase Outputs. Current output distributed equally across both P2 and P3 connectors – 8 pins per motor phase. At ambient temperatures above 50°C, 3A continuous current carrying capacity per pin. At 25°C ambient, 6A continuous current carrying capacity per pin.	O
7b	7a	MOTOR C		O
8b	8a	MOTOR B		O
9b	9a	MOTOR B		O
10b	10a	MOTOR A		O
11b	11a	MOTOR A		O

HARDWARE SETTINGS

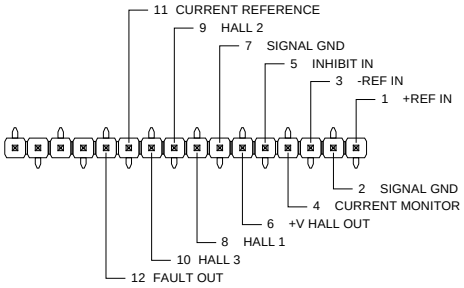
Jumper Settings

Jumpers are SMT, 0 ohm resistors located on the underside of the drive PCB. By default, the drive is configured with the jumpers installed. Typical drive operation will not require the jumpers to be removed. Please contact the factory before jumper removal.

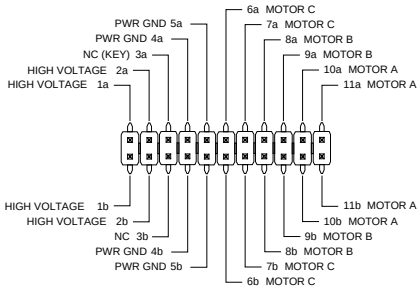
Jumper	Description	Configuration	
	SMT Jumper (0Ω Resistor)	Not Installed	Installed
JE1	Inhibit logic. Sets the logic level of inhibit pins. Labeled JE1 on the PCB of the drive.	Low Enable	Low Inhibit
JE2	Hall sensor phasing. Selects 120 or 60 degree commutation phasing. Labeled JE2 on the PCB of the drive.	60 degree	120 degree

MECHANICAL INFORMATION

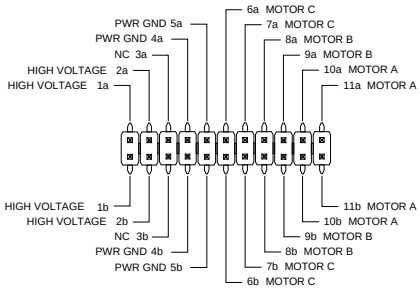
P1 - Signal Connector		
Connector Information		16-pin, 2.54 mm spaced header
Mating Connector	Details	Samtec: BCS-116-L-S-PE
	Included with Drive	No



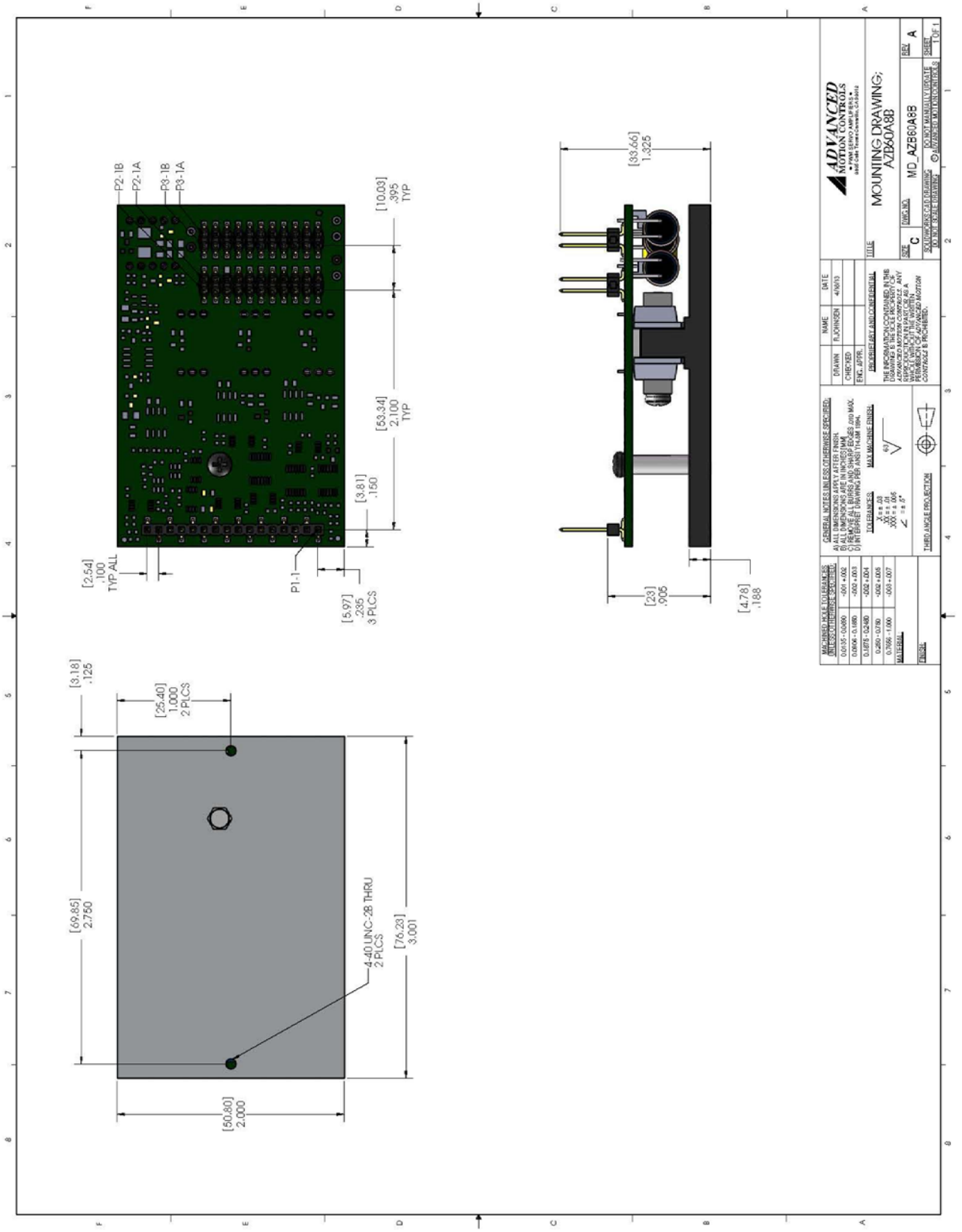
P2 - Power Connector		
Connector Information		22-pin, 2.54 mm spaced, dual-row header
Mating Connector	Details	Samtec: SSM-111-L-DV
	Included with Drive	No



P3 - Power Connector		
Connector Information		22-pin, 2.54 mm spaced, dual-row header
Mating Connector	Details	Samtec: SSM-111-L-DV
	Included with Drive	No



MOUNTING DIMENSIONS



PART NUMBERING INFORMATION

AZ B 60 A 8 -

AZ Analog Drive Series

Drive Type
Blank: Brushed Drive
B: Brushless drive
BDC: Brushless Drive, PWM Command

Feedback Supported
Blank: Current Mode only
E: Encoder Velocity Mode Available
H: Hall velocity Mode Available

Peak Current (Amps)

6: 6 Peak, 3 Continuous 12: 12 Peak, 6 Continuous 25: 25 Peak, 12.5 Continuous 40: 40 Peak, 20 Continuous 60: 60 Peak, 30 Continuous	80V Models
10: 10 Peak, 6 Continuous 25: 25 Peak, 12.5 Continuous	175V Models

Max DC Bus Voltage (~1:10 in Volts)
8: 80
20: 175

PWM Command
DDC: Brushed Drive, PWM Command

Additional Options*
INV: Inverted Inhibit Logic

*Options available for orders with sufficient volume.
Contact *ADVANCED* Motion Controls for more information.

ADVANCED Motion Controls AZ series of servo drives are available in many configurations. Note that not all possible part number combinations are offered as standard drives. All models listed in the selection tables of the website are readily available, standard product offerings.

ADVANCED Motion Controls also has the capability to promptly develop and deliver specified products for OEMs with volume requests. Our Applications and Engineering Departments will work closely with your design team through all stages of development in order to provide the best servo drive solution for your system. Equipped with on-site manufacturing for quick-turn customs capabilities, *ADVANCED* Motion Controls utilizes our years of engineering and manufacturing expertise to decrease your costs and time-to-market while increasing system quality and reliability.

Examples of Modifications and Customized Products

- Integration of Drive into Motor Housing
- Mount OEM PCB onto Drive Without Cables
- Multi-axis Configuration for Compact System
- Custom PCB and Baseplate for Optimized Footprint
- RTV/Epoxy Components for High Vibration
- OEM Specified Connectors for Instant Compatibility
- OEM Specified Silkscreen for Custom Appearance
- Increased Thermal Limits for High Temp. Operation
- Integrate OEM Circuitry onto Drive PCB
- Custom Control Loop Tuned to Motor Characteristics
- Custom I/O Interface for System Compatibility
- Preset Switches and Pots to Reduce User Setup
- Optimized Switching Frequency
- Ramped Velocity Command for Smooth Acceleration
- Remove Unused Features to Reduce OEM Cost
- Application Specific Current and Voltage Limits

Feel free to contact Applications Engineering for further information and details.

Available Accessories

ADVANCED Motion Controls offers a variety of accessories designed to facilitate drive integration into a servo system. Visit www.a-m-c.com to see which accessories will assist with your application design and implementation.

Power Supplies

Shunt Regulators

Mounting Card MC1XAZ01-HR

Drive(s)

Filter Cards

To Motor

All specifications in this document are subject to change without written notice. Actual product may differ from pictures provided in this document.

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