Golden Ding Series Analog Servo Drives

Power Range	
Peak Current	12 A
Continuous Current	6 A
Supply Voltage	20 - 80 VDC

Description

The CABDC12A80 PWM servo drive is designed to drive brushless and brushed DC motors at a high switching frequency. The CABDC12A80 is fully protected against over-voltage, over-current, over-heating and short-circuits. A single digital output indicates operating status. The drive interfaces with digital controllers that have digital PWM output. The PWM IN duty cycle determines the output current and DIR input determines the direction of rotation.

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

Features

- Four Quadrant Regenerative Operation
- Built-in regenerative and shunt regulator
- Lightweight
- High Switching Frequency
- Wide Temperature Range
- High Performance Thermal Dissipation
- Differential Input Command
- Digital Fault Output Monitor
- Current Monitor Output
- Single Supply Operation
- Compact Size
- High Power Density

HARDWARE PROTECTION

- Over-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

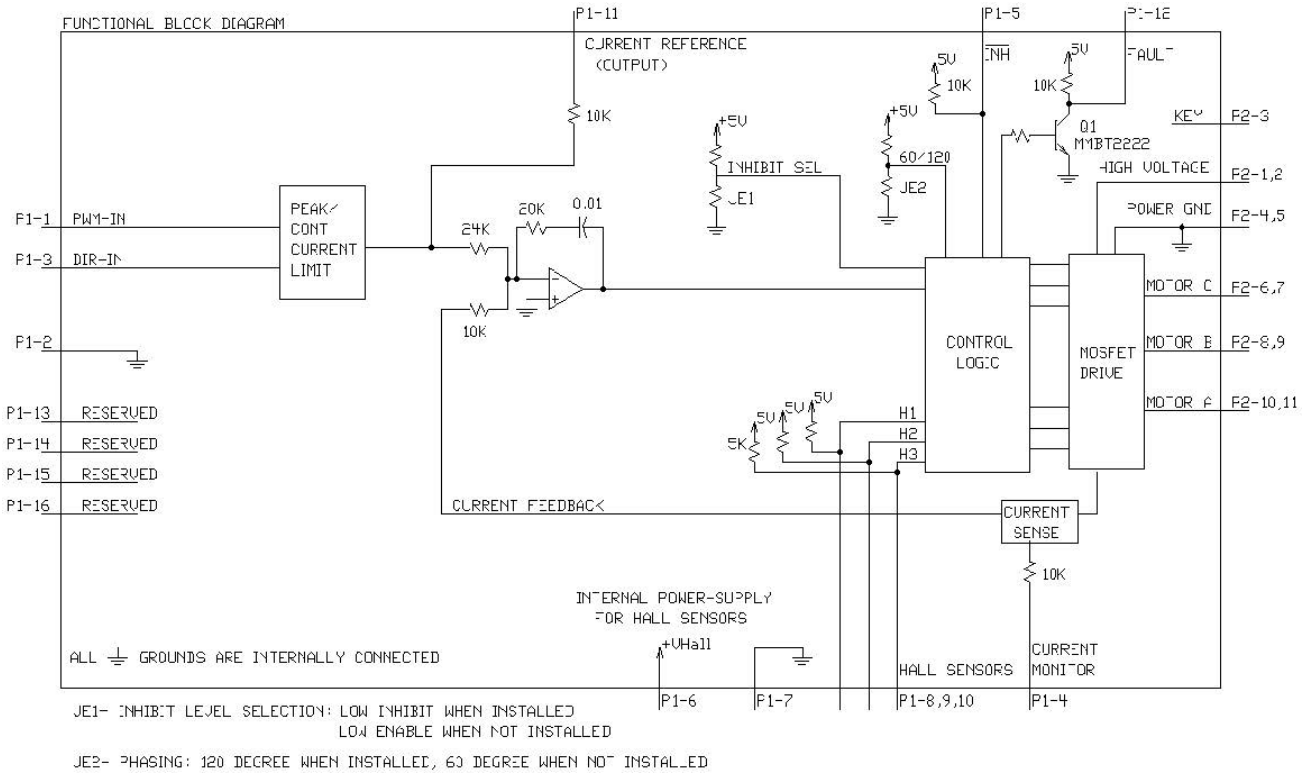
MOTORS SUPPORTED

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

COMMAND SOURCE

- PWM

BLOCK DIAGRAM



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.

Jumpe	Description	Configuration	
	SMT Jumper(0Ω Resustor)	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

Notes:

Any damage done to the drive while performing these modifications will void the product warranty.It is recommended to contact AMC China's technical staff before setting of JPE1 and JPE2.

SPECIFICATIONS

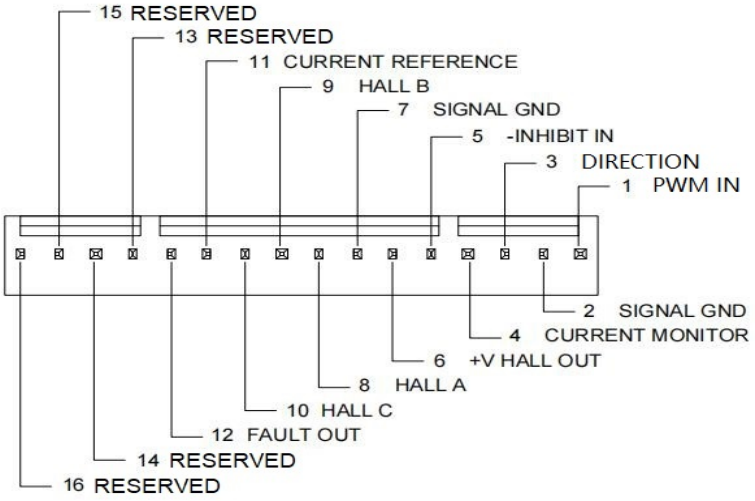
Power Specifications		
Description	Units	Value
DC Supply Voltage Range	VDC	20 - 80
DC Bus Under Voltage Limit	VDC	18
DC Bus Over Voltage Limit	VDC	88
Maximum Peak Output Current[1]	A	12
Maximum Continuous Output Current	A	6
Maximum Continuous Output Power	W	456
Maximum Power Dissipation at Continuous Current	W	24
Minimum Load Inductance (Line-To-Line)[2]	µH	100
Internal Bus Capacitance[3]	µF	333
Low Voltage Supply Outputs	-	+6 VDC (30 mA)
Switching Frequency	kHz	31
Control Specifications		
Description	Units	Value
Command Sources	-	PWM
PWM Input Frequency Range	kHz	10-25
Feedback Supported	-	Halls
Commutation Methods	-	Trapezoidal
Modes of Operation	-	Current
Motors Supported	-	Three Phase (Brushless), Single Phase (Brushed, Voice Coil, Inductive Load)
Hardware Protection	-	Invalid Commutation Feedback, Over Current, Over Temperature, Over Voltage, Short Circuit (Phase-Phase & Phase-Ground)
Mechanical Specifications		
Description	Units	Value
Size (H x W x D)	mm	127 x 77.5 x 44.5
Operating Temperature Range	°C (°F)	0 - 75 (32 - 167)
StorageTemperature	°C (°F)	-40 - 85 (-40 - 185)
Relative Humidity	-	0 - 90% Non-Condensing
P1 Connector		16 Pin, pitch 2.54 mm connector
P2 Connector		8Pin pitch 5.08 mm Pluggable terminal block

Notes

1. Maximum duration of peak current is ~2 seconds. Peak RMS value must not exceed continuous current rating of the drive.
2. Lower inductance is acceptable for bus voltages well below maximum. If the motor inductance is lower than the minimum inductance, please contact the factory for customized modification.

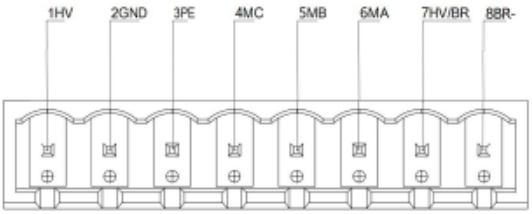
PIN FUNCTIONS

P1 Signal Interface Definitions		
Connector information		16 Pin, pitch 2.54 mm connector
Matching Connector	Part No.	Molex: P/N 22-01-3167 (Housings) and P/N 08-50-0114 (CRIMP TERMINAL)
	Remark	Connectors need to be ordered separately
Pin	Signal	Description
1	PWM / IN	10 – 25 kHz pulse width modulated digital input command (+5V). Input duty cycle commands the output current.
2	SIGNAL GND	Signal Ground
3	DIRECTION	Direction Input (+5 V)
4	CURRENT MONITOR	Current Monitor. Analog output signal proportional to the actual current output. Polarity is reversed from command voltage. Scaling is 4 A/V. Measure relative to signal ground.
5	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.
6	+V HALL OUT	Low Power Supply For Hall Sensors (+6 V @ 30 mA). Referenced to signal ground. Short circuit protected.
7	SIGNAL GND	Signal Ground
8	HALL 1	Single-ended Hall/Commutation Sensor Inputs (+5 V logic level)
9	HALL 2 [1]	
10	HALL 3	
11	CURRENT REFERENCE	Measures the command signal to the internal current-loop. This pin has a maximum output of ±7.45 V when the drive outputs maximum peak current. Measure relative to signal ground.
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.
13	RESERVED	RESERVED
14	RESERVED	
15	RESERVED	
16	RESERVED	

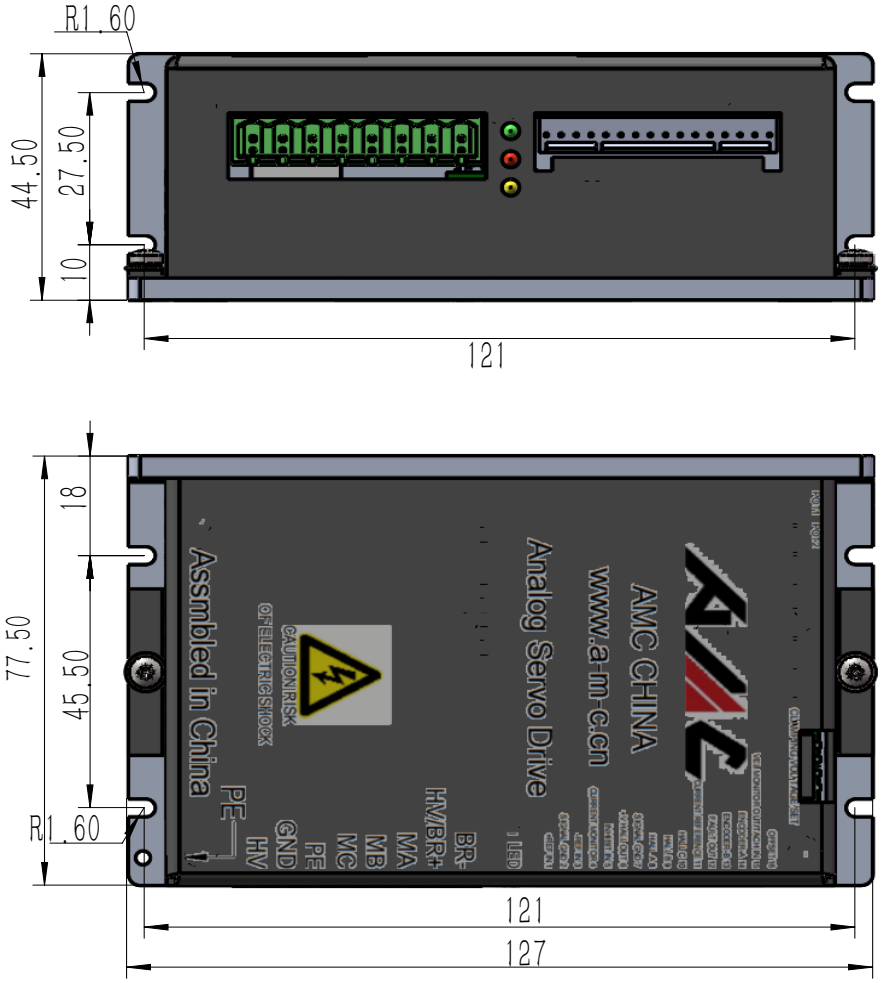


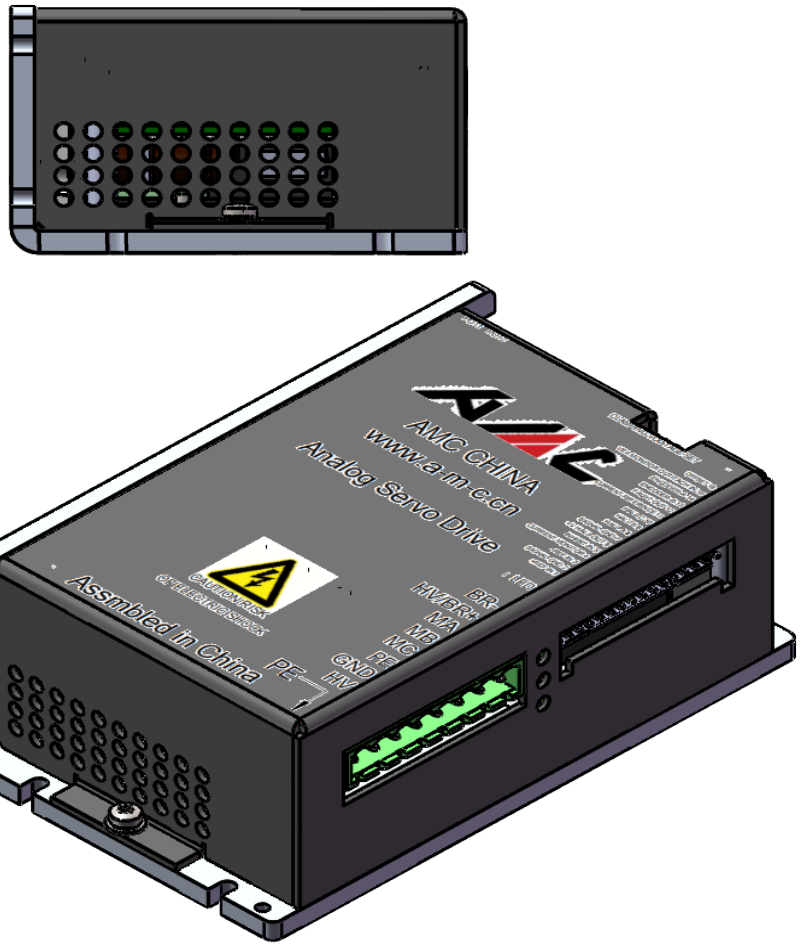
1. For use with Single Phase (Brushed) motors, ground Hall 2 and only connect motor leads to Motor A and Motor B.

P2 Power Interface Definitions		
Connector information		8Pin pitch 5.08 mm Pluggable terminal block
Matching Connector	Part No.	KF2EDGK5.08
	Remark	Connectors need to be ordered separately
Pin	Signal	Description
1	HV	DC+ Power Input
2	GND	Power Ground (Common With Signal Ground).
3	PE	Protective ground (Connect motor cable shield)
4	MC	Motor Phase W
5	MB	Motor Phase V
6	MA	Motor Phase U
7	HV/BR+	External braking resistor connection. Connect a resistor between BR+ and BR-.
8	BR-	



DIMENSIONS (mm)





PART NUMBERING INFORMATION

CA BDC __ 12 A 80 __

CA: Golden Ding Series Analog Drives

Drive Type

B: ± 10V Analog
BDC: PWM Command

Feedback

Blank: Hall Sensor
H: Hall Sensor & Tachometer
E: Hall Sensor & Incremental Encoder &Tachometer

Peak Current (Amps)

6: 6A Peak Current, 3A Continuous Current
8: 8A Peak Current, 4A Continuous Current
10: 10A Peak Current, 5A Continuous Current
12: 12A Peak Current, 6A Continuous Current
15: 15A Peak Current, 7.5A Continuous Current
16: 16A Peak Current, 8A Continuous Current
20: 20A Peak Current, 10A Continuous Current
25: 25A Peak Current, 12.5A Continuous Current
40: 40A Peak Current, 20A Continuous Current
60: 60A Peak Current, 30A Continuous Current

Max DC Bus Voltage

36: 36VDC
80: 80VDC
175: 175VDC

Operating Temperature

Blank: -25-75℃
X: -40-75℃