GLENTEK ALPHA SERIES DIGITAL PWM SERVO DRIVES
MODELS: SMB/SMC9410 & 9415

Revision: 11/22/19

Glentek's Alpha Series Digital PWM Servo Drives offer high performance DSP control of brushless (standard servo and high-speed spindle), brush type, rotary, linear, voice coil and AC induction motors. SMB/SMC9410 & 9415 drives are designed for use with quadrature encoder feedback. For resolver feedback use the SMB/SMC9210 & 9215. For a lower cost option that is slightly larger in size, also consider the SMB/SMC9515. SMB/SMC9410 drives are offered an an AC powered (stand alone) package. SMB/SMC9415 drives can be offered as a DC powered (module) or AC powered (stand alone, multi-axis) package. These drives incorporate Field Oriented Control (FOC) and Space Vector Modulation (SVM) algorithms which provide optimum control that enable motors to run cooler and at higher velocities. Set-up, tuning and system diagnostics is accomplished using MotionMaestro (Glentek's Windows-based software).

ELECTRICAL RATINGS							
Model Number [2]	**Input Voltage**		**Continuous Current (A)**	**Peak Current (A)**	**Available Package Configurations [3]**		
	VDC	**VAC**			**Module**	**Stand Alone**	**Multi-Axis**
SMB9410 (SP) SMC9410 (SP)	N/A	110-130 208-240	5	10		•	
SMB9410 (HP) SMC9410 (HP)	N/A	110-130 208-240	10 [4]	20 [4]		•	
SMB9415 (LP) SMC9415 (LP)	24-70 70-190 190-340	110-130 208-240	10	20	•	•	•
SMB9415 (SP) SMC9415 (SP)	24-70 70-190 190-340	110-130 208-240	15	30	•	•	•
SMB9415 (HP) SMC9415 (HP)	24-70 70-190 190-340	110-130 208-240	20	40	•	•	•

Notes: [2] LP = Low Power, SP = Standard Power, HP = High Power [3] All Multi-Axis versions can be ordered for operation from either 110-130 VAC or 208 VAC [4] Forced Air Cooling Required

Command/Control Modes
+/-10 VDC typical for current (torque) or velocity (RPM)
Pulse (step) and direction
Encoder follower
External Sine commutation (2-phase current mode)
RS-232
PWM for current (torque) or velocity (RPM)
Camming/Gearing

Feedback
Incremental quadrature encoder
Digital Hall sensors or commutation tracks from encoder
Analog tachometer
I/O
Dedicated I/O: Analog signal command, +/- limits, inhibit/enable, fault, reset, motor temperature, encoder and step & direction
Programmable analog out: 1 12-bit or optional 2 16-bit
General purpose relay: maximum 2 A @ 30 VDC. Nais P/N: TQSA-5V

FEATURES

Performance	
FOC	All Alpha Series employ Field Oriented Control method which allows accurate control in both steady state or transient operation, and optimal orientation of the magnetic field.
Space Vector Modulation	Glentek's advanced algorithms allow for maximum utilization of the DC bus voltage while generating minimum harmonic distortion of the currents in the winding of 3-phase AC motor.
Digital current loops	Current loop bandwidths up to 3 kHz.
Digitally tuned	All parameters set digitally. No potentiometers to adjust. DSP control for the ultimate in high performance.
Parametric filtering	Provides control engineers advanced filtering to eliminate unwanted system mechanical resonance.
Smart-Comm Initialization	Eliminates the need for Hall sensor or commutation tracks for many applications.
Auto Phase Advance	Plug and Play for all types of three phase brushless motors. Provides control engineers the ability to connect any motor to the drive's motor outputs. The drives smart algorithm will automatically find and align the motor phases to allow for the most optimized smoothness and efficient commutation.
Sinusoidal commutation	For the ultimate in efficiency and smooth motion, commutates from almost any resolution linear, rotary encoder, or Hall sensors only.
Fault protection	Short from output to output, short from output to ground, amplifier RMS over current, drive under/over voltage, amplifier over temperature, motor over temperature.
On-the-fly mode switching	This feature allows the drive to switch between any mode of operation on-the-fly. That is, the drive can switch between current to velocity (or velocity to current), current to position (or position to current), and velocity to position (or position to velocity) while the motor is in motion. This feature is available upon request. Please contact Glentek application engineers for assistance.
Software configurable	Glentek's Windows™ based MotionMaestro© software provides ease of set-up, monitoring and tuning with no previous programming experience required. This software is Windows™ 95/98/2000/XP, NT, Vista, 7, and 8 compatible.
Silent operation	25 kHz PWM standard.
Command/control Modes	+/-10 VDC for current (torque) or velocity (RPM), pulse (step) and direction, encoder follower, external Sine commutation (2-phase current mode), RS-232, RS-485, PWM for current (torque or velocity (RPM), and camming/gearing.
Regulatory	
RoHS compliance	RoHS compliance optional.
Connectivity	
RS-232 or RS-485	High speed (115.2K baud) serial communication interface for setup and tuning and diagnostics. Note: RS-485 is optional.
Feedback	
Encoder feedback	Accepts nominal encoder signals up to 5 MHz (maximum frequency of up to 10 MHz is possible, but is system dependent).
Tachometer feedback	Accepts analog signals from all types of tachometer feedback.
I/O	
Dedicated I/O	Analog sig. command, +\- limits, inhibit/enable, fault, reset, motor temp, encoder and step & direction. Programmable analog out: 1 12-bit or optional 2 16-bit. General purpose relay: maximum 2 A @ 30 VDC. Nais P/N: TQSA-5V.
Input	
Wide operating voltage	24-340 VDC for drive modules. All stand-alone and multi-axis versions can be ordered for operation from either 110-130 VAC or 208-240 VAC (single or 3-phase, 50/60 Hz). Note: Non-standard voltages can be ordered on request.
Direct AC operation	The stand-alone units and multi-axis chassis include DC bus power supplies, cooling fans and a regen clamp with dumping resistor
External logic supply	24-48 VDC, 600 mA min @ 24 VDC powers all logic & encoder. This works as a "keep alive" for the SMC9410 and SMC9415 drives.
Build	
Complete isolation	Complete isolation between signal and power stage.
Non-volatile memory	All parameters are stored in non-volatile memory for reliable start up. In addition, up to four different configurations can be stored in the amplifier's non-volatile memory.
Relay outputs	Two pins provide an interface for the relay. They turn on when a desired condition occurs.
Status indicator	7-segment display indicates drive status and diagnostics.
SMT construction	Provides ultra compact size, cost competitive package and high reliability.

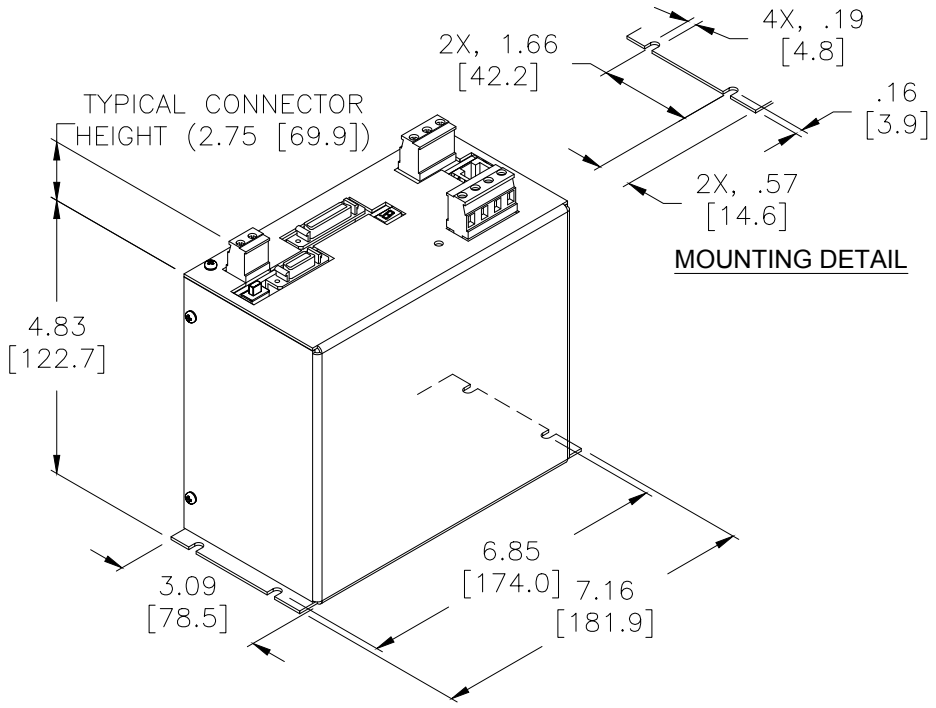
ENVIRONMENTAL CONDITIONS	
Storage Temperature:	-40°C to 80°C
Operating Temperature:	Standard: 0°C to 40°C without current derating, up to 50°C with 25% current derating Special: -20°C to 40°C without current derating, up to 50°C with 25% current derating
Humidity:	5% to 95% relative humidity, non-condensing
Altitude:	Up to 1000m without derating, derate current 10% per 1000m above 1000m

DIMENSIONS

Mounting Configurations	
Stand Alone	This package consists of a drive module, DC bus power supply, in-rush current limiting protection at power-on, fuses, fans, and optional regen clamp with dumping resistor.
Module	This package consists of a drive module, without a DC bus power supply. This type of package is typically used for cost sensitive applications where the customer provides DC bus power supply, forced-air cooling and regen clamp or it can be integrated into a Glentek multi-axis package.
Multi-Axis	This package consists of an open frame base plate chassis with DC bus power supply, regen clamp with dumping resistor, in-rush current limiting protection at power-on, fuses and cooling fans. Available in 2, 4 & 5 axis packages. This type of package is typically used for multi-axis applications.

SMB/SMC9410-1D Stand Alone

Dimensions are inches [millimeter]

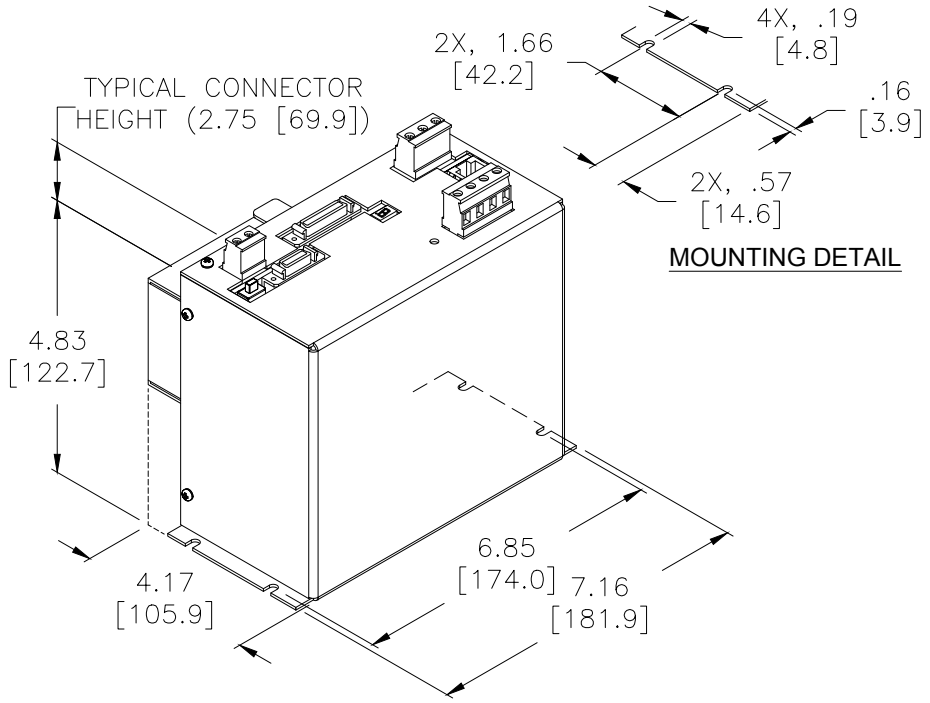


Weight	2.5 lb / 1.1kg

DIMENSIONS

SMB/SMC9410-1F Stand Alone

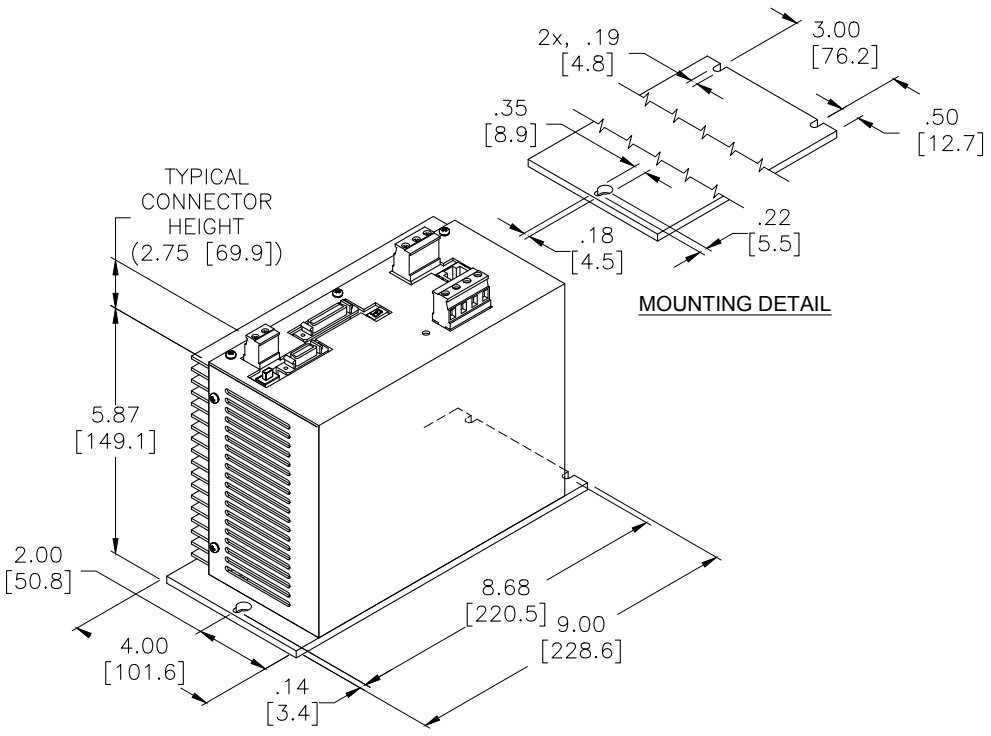
Dimensions are inches [millimeter]



Weight	2.9 lb / 1.3kg

SMB/SMC9415-1A Stand Alone

Dimensions are inches [millimeter]

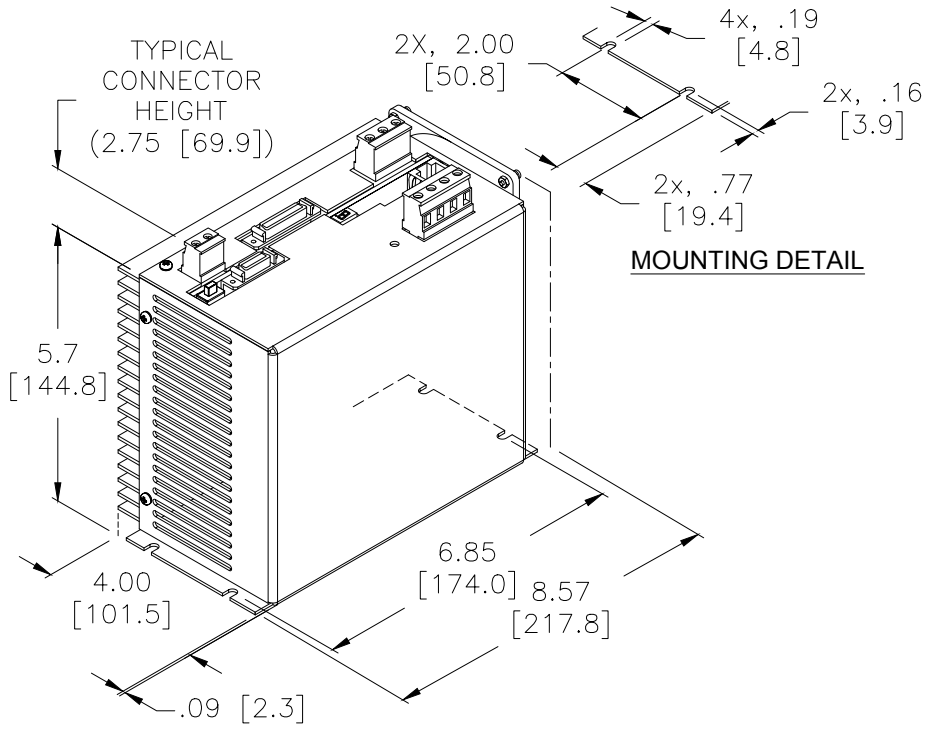


Weight	4.7 lb / 2.1kg

DIMENSIONS

SMB/SMC9415-1D Stand Alone

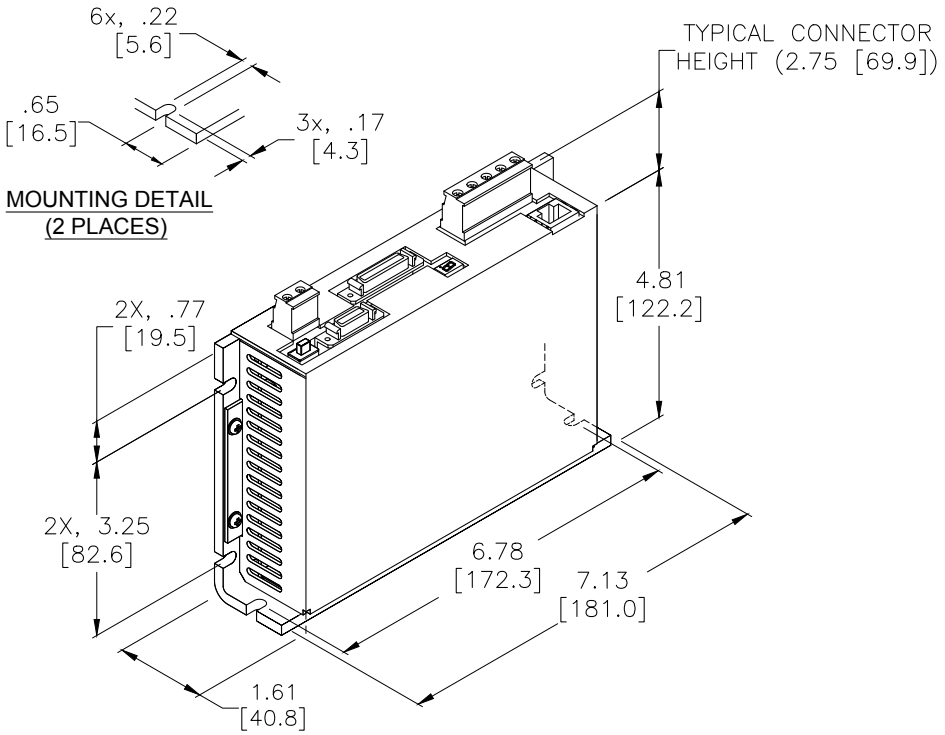
Dimensions are inches [millimeter]



Weight	4.7 lb / 2.1 kg

SMB/SMC9415 Module (LP & SP)

Dimensions are inches [millimeter]

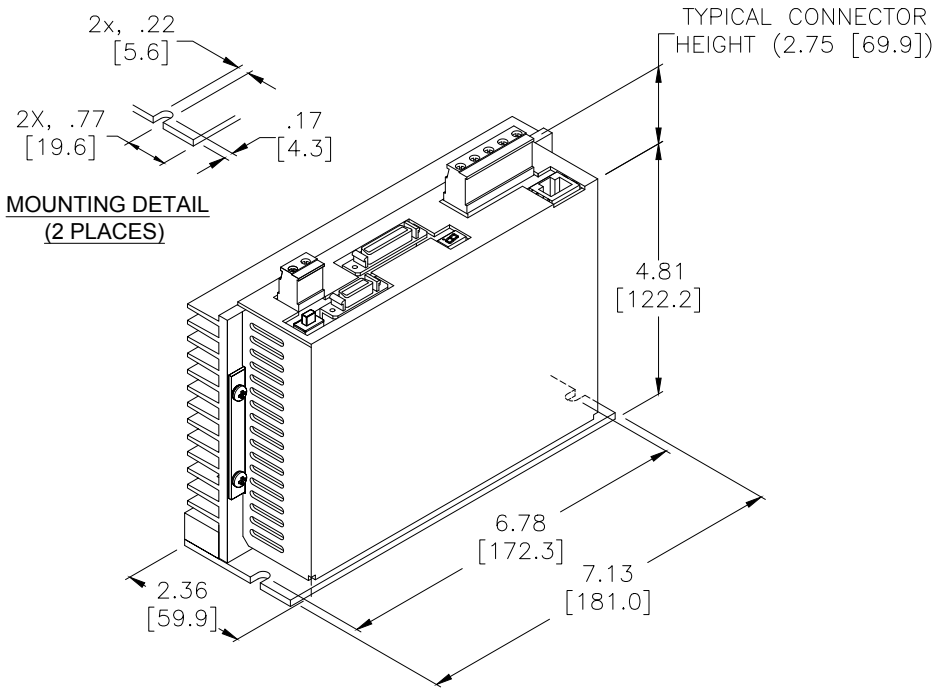


Weight	1.8 lb / 0.8 kg

DIMENSIONS

SMB/SMC9415 Module (HP)

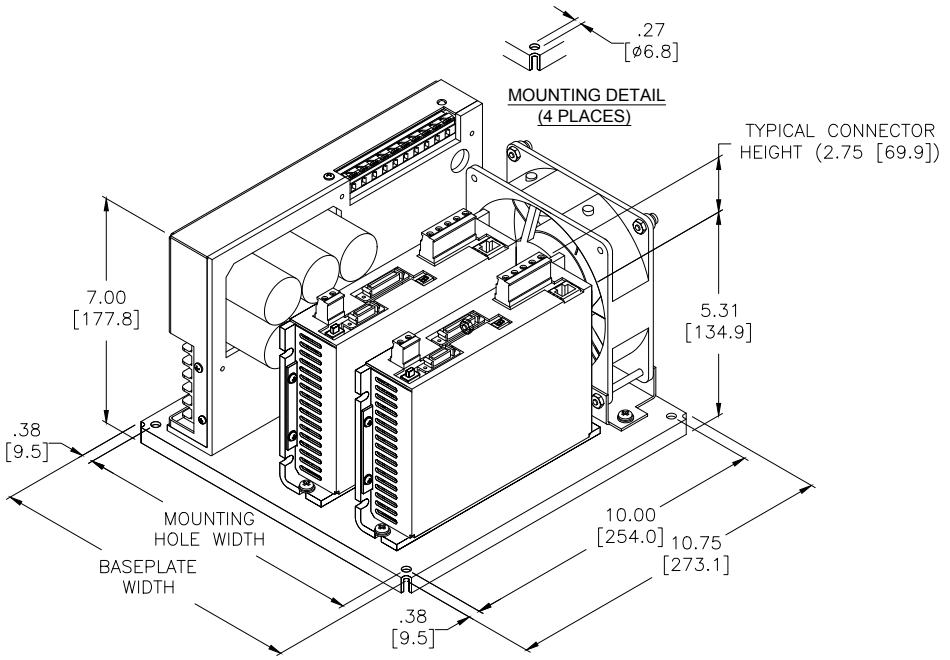
Dimensions are inches [millimeter]



Weight	2.8 lb / 1.3 kg

SMB/SMC9415 2-Axis Package

Dimensions are inches [millimeter]

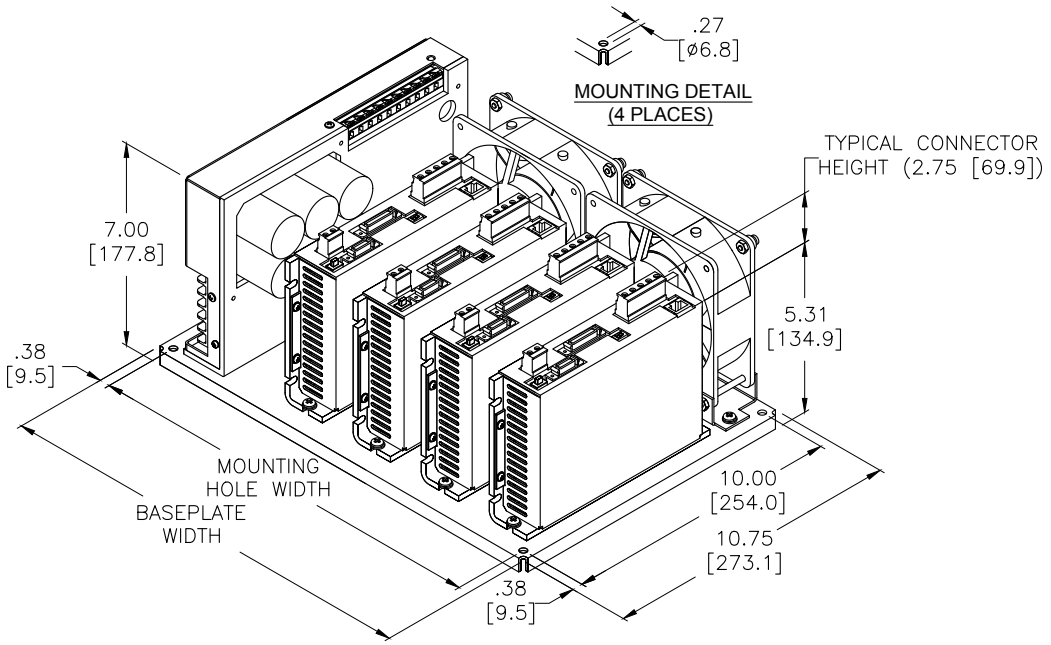


Power Rating	Weight	Mounting Hole Width	Baseplate Width
Low Power & Standard Power	9.5 lb / 4.3 kg	8.3 [211]	9.0 [229]
High Power	11.5 lb / 5.2 kg	9.0 [228]	9.8 [249]

DIMENSIONS

SMB/SMC9415 4-Axis Package

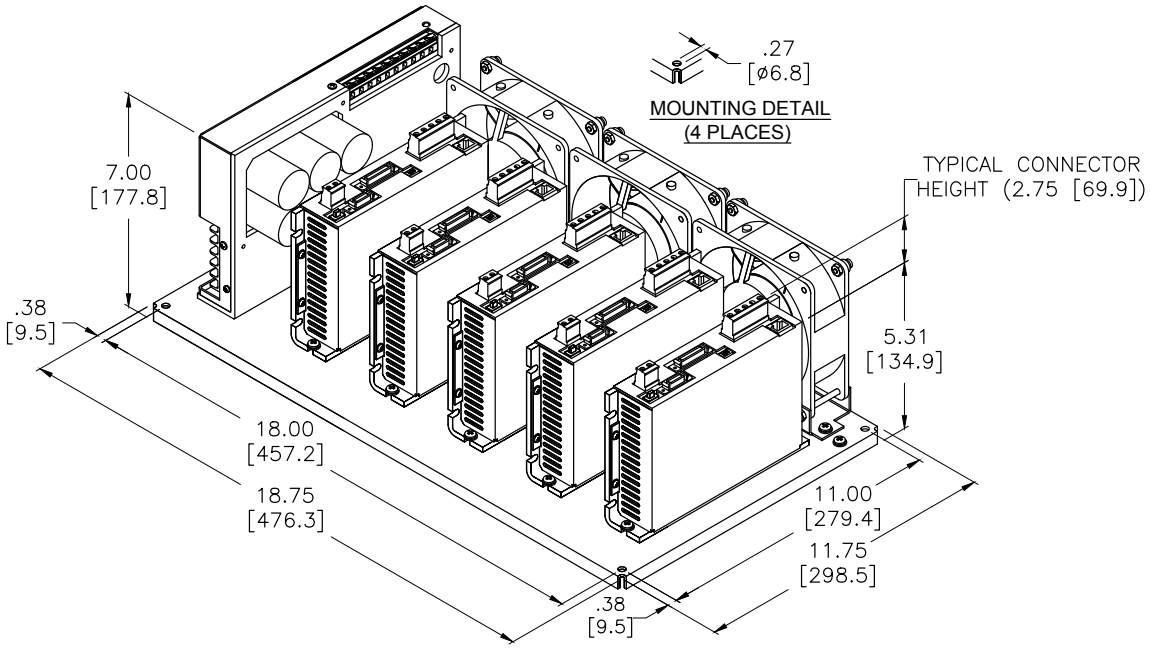
Dimensions are inches [millimeter]



Power Rating	Weight	Mounting Hole Width	Baseplate Width
Low Power & Standard Power	15.1 lb / 6.7 kg	12.3 [312]	13.0 [330]
High Power	19.1 lb / 8.7 kg	14.1 [358]	14.9 [378]

SMB/SMC9415 5-Axis Package

Dimensions are inches [millimeter]



Power Rating	Weight
Low Power & Standard Power	17.9 lb / 8.1 kg
High Power	22.9 lb / 10.4 kg

STAND ALONE MODEL NUMBERING

This section explains the model numbering system for Glentek's Alpha Series Digital PWM Brushless Servo Drives. The model numbering system is designed so that you, our customer, will be able to quickly and accurately create the model number for the drive that best suits your requirements. Please complete the drive configuration code you require using the information on this page. After completing your model number, please contact a Glentek Sales Engineer to confirm that the model number you have created is correct.

On-Board or External Bus Logic C = 24 VDC External Logic Power, Keep Alive
Drive Power 10 = 5 A Cont. (SP), 10 A Cont. (HP), dependent on input Voltage & Power Rating selected
Bus Type 1 = SMC
Input Voltage & Power Rating 03 = 110-130 VAC, Standard Power
I/O & Motor Feedback Connectors 0 = High Density Mini-D Connector
Logic Board 07 = Pulse Follower
Stand Alone Package Configuration F = Stand Alone with Built In Regen Clamp (extra resistor required)

On-Board or External Bus Logic	
B	Bus Power Logic, Encoder Based
C	24 VDC External Logic Power, Keep Alive

Drive Power	
10	5 A Continuous (SP) 10 A Continuous (HP) [1]
15	10 A Continuous (LP) 15 A Continuous (SP) 20 A Continuous (HP)

Logic Power	
0	SMB (Bus Power Logic)
1	SMC (24 VDC External Logic Power, Keep Alive)

Input Voltage & Power Rating	
00	208-240 VAC, Standard Power
01	208-240 VAC, High Power
02	208-240 VAC, Low Power
03	110-130 VAC, Standard Power
04	110-130 VAC, High Power
05	110-130 VAC, Low Power

I/O & Motor Feedback Connectors	
0	High Density Mini-D
1	Molex

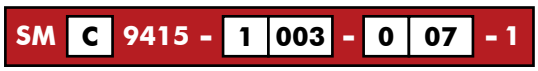
Logic Board	
01	Standard Features, +/-10 VDC typical for current (torque) or velocity (RPM)
07	Pulse Follower
09	External Sine Commutation / 2 Phase Currrent Mode
11	Brush Type and Encoder
13	Brush Type and Tachometer

Stand Alone Package Configuration	
A	9415 Stand Alone with Built In Regen Clamp
D	9410/9415 Stand Alone with No Built In Regen Clamp
F	9410 Stand Alone with Built In Regen Clamp (extra resistor required)

[1] Forced Air Cooling Required

MODULE MODEL NUMBERING

This section explains the model numbering system for Glentek's Alpha Series Digital PWM Brushless Servo Drives. The model numbering system is designed so that you, our customer, will be able to quickly and accurately create the model number for the drive that best suits your requirements. Please complete the drive configuration code you require using the information on this page. After completing your model number, please contact a Glentek Sales Engineer to confirm that the model number you have created is correct.



On-Board or External Bus Logic C = 24 VDC External Logic Power, Keep Alive
Drive Power 15 = 10 A Cont. (LP), 15 A Cont. (SP), 20 A Cont. (HP), dependent on input Voltage & Power Rating selected
Bus Type 1 = SMC
Input Voltage & Power Rating 003 = 70-190 VDC/ 110-130 VAC, Standard Power
I/O & Motor Feedback Connectors 0 = High Density Mini-D Connector
Logic Board 07 = Pulse Follower

On-Board or External Bus Logic	
B	Bus Power Logic, Encoder Based
C	24 VDC External Logic Power, Keep Alive

Logic Power	
0	SMB (Bus Power Logic)
1	SMC (24 VDC External Logic Power, Keep Alive)

Input Voltage & Power Rating	
00	190-370 VDC / 208-240 VAC, Standard Power
01	190-370 VDC / 208-240 VAC, High Power
02	190-370 VDC / 208-240 VAC, Low Power
03	70-190 VDC / 110-130 VAC, Standard Power
04	70-190 VDC / 110-130 VAC, High Power
05	70-190 VDC / 110-130 VAC, Low Power
06	24-70 VDC / 17-50 VAC, Standard Power
07	24-70 VDC / 17-50 VAC, High Power
08	24-70 VDC / 17-50 VAC, Low Power

I/O & Motor Feedback Connectors	
0	High Density Mini-D
1	Molex

Logic Board	
01	Standard Features, +/-10 VDC typical for current (torque) or velocity (RPM)
07	Pulse Follower
09	External Sine Commutation / 2 Phase Currrent Mode
11	Brush Type and Encoder
13	Brush Type and Tachometer

MULTI-AXIS MODEL NUMBERING

This section explains the model numbering system for Glentek's Alpha Series Digital PWM Brushless Servo Drives. The model numbering system is designed so that you, our customer, will be able to quickly and accurately create the model number for the drive that best suits your requirements. Please complete the drive configuration code you require using the information on this page. After completing your model number, please contact a Glentek Sales Engineer to confirm that the model number you have created is correct.

On-Board or External Bus Logic	
B	Bus Power Logic, Encoder Based
C	24 VDC External Logic Power, Keep Alive

Logic Power	
0	SMB (Bus Power Logic)
1	SMC (24 VDC External Logic Power, Keep Alive)

Input Voltage & Power Rating	
00	190-370 VDC/ 208-240 VAC, Standard Power
01	190-370 VDC / 208-240 VAC, High Power
02	190-370 VDC / 208-240 VAC, Low Power
03	70-190 VDC / 110-130 VAC, Standard Power
04	70-190 VDC / 110-130 VAC, High Power
05	70-190 VDC / 110-130 VAC, Low Power
06	24-70 VDC / 17-50 VAC, Standard Power
07	24-70 VDC / 17-50 VAC, High Power
08	24-70 VDC / 17-50 VAC, Low Power

I/O & Motor Feedback Connectors	
0	High Density Mini-D
1	Molex

Logic Board	
01	Standard Features, +/-10 VDC typical for current (torque) or velocity (RPM)
07	Pulse Follower
09	External Sine Comm. / 2 Phase Currrent Mode
11	Brush Type and Encoder
13	Brush Type and Tachometer

Mounting Configuration	
2B	2-Axis Chassis
4B	4-Axis Chassis
5B	5-Axis Chassis

Number of Drive Modules Installed	
1	1 Drive Module (2-Axis Chassis)
2	2 Drive Modules (2-Axis Chassis)
3	3 Drive Modules (4-Axis Chassis)
4	4 Drive Modules (4-Axis Chassis)
5	5 Drive Modules (5-Axis Chassis)

Fan Power	
1	115 VAC
2	230 VAC