# GLENTEK ALPHA SERIES DIGITAL PWM SERVO DRIVES
# MODELS: SMB9445 & SMC9445

Revision: 1/12/18

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/SMC9445 drives are designed for use with quadrature encoder feedback. For resolver feedback use the SMB/SMC9245. SMB/SMC9445 drives are offered as an AC powered (stand alone) 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).

| Model | Logic Power |
|---|---|
| **SMB** | Bus Power Logic |
| **SMC** | 24 VDC External Logic Power |

| ELECTRICAL RATINGS | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Model Number** | **Input Voltage** | | **Continuous Current (A)** | **Peak Current (A)** | **Available Package Configurations** | | |
| | **VDC** | **VAC** | | | **Module** | **Stand Alone** | **Multi-Axis** |
| **SMB9445 SMC9445** | N/A | 110-130 208-240 | 45 | 80 | | • | |

| 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** | All stand-alone versions can be ordered for operation from either 110-130 VAC or 208-240 VAC (single or 3-phase, 50/60 Hz).<br>Note: Non-standard voltages can be ordered on request. |
| **Direct AC operation** | The stand-alone units include a DC bus power supply, cooling fans and regen clamp with a 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 SMC9445 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. |

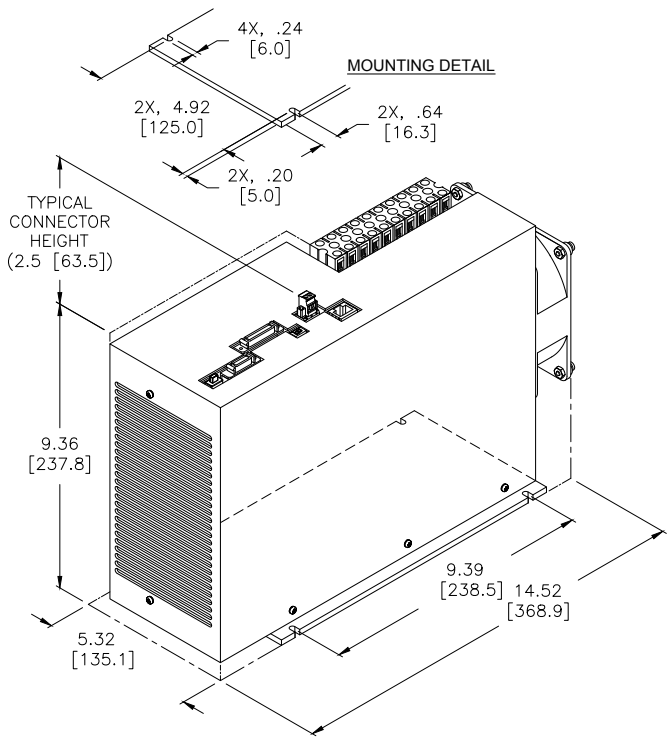
| ENVIRONMENTAL CONDITIONS | |
|---|---|
| Storage Temperature: | -40°C to 80°C |
| Operating Temperature: | Standard: 0°C to 40°C without current derating, up to 50°C with 25% current derating<br>Special: -20°C to 40°C without current derating, up to 50°C with 25% current derating |
| Humidity: | 5% 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 regen/clamp with a dumping resistor. |

### SMB/SMC9245-1B Stand Alone

Dimensions are inches [millimeter]

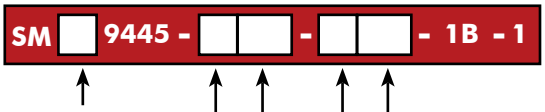



| Weight | 11.8 lb / 5.4 kg |
|---|---|

## 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** 45 = 45 A Continuous, 80 A Peak
**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** B = Stand Alone with Built In Regen Clamp




| 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** | 208-240 VAC, Standard Power |
| **03** | 110-130 VAC, Standard 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 |