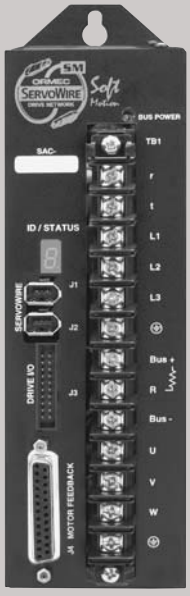
ServoWire® SM 230 Series Drives

Up to 16 ServoWire SM drives can be interfaced to the SMLC using a standard FireWire network adapter, and utilize ServoWire protocol for motion control networking. Eight models offer continuous output currents from 2.4 to 60 amps RMS/phase at 115 or 230 VAC, and an all-digital design eliminates all manual drive setup including pots and jumpers.

Up to 16 ServoWire SM drives can be networked directly to the SMLC using an OHCI FireWire adapter and standard cabling.

Drive Features

- ✔ *Small Footprint:* higher power density reduces space requirements
- ✔ *Sinusoidal commutation:* improves low speed torque ripple and system efficiency
- ✔ *Trapezoidal commutation & DC operation:* provide user flexibility
- ✔ *Integral shunt regulators:* add protection (All models except SAC-SMM203 & SMM205).
- ✔ *UL/CE approvals:* UL Listed and CE Mark (low voltage directive & EMC)
- ✔ *Status Indicator:* Single digit display for network ID & drive status
- ✔ *ServoWire Network Interface:* Two connectors provide an all-digital control link to ServoWire Network, which is galvanically isolated from the drive and powered by the SMLC.
- ✔ *Drive Power Inputs:* Input power accepts 115 or 230 VAC nominal featuring separate logic and bus power supplies with overvoltage protection.
- ✔ *Flexible Drive I/O:* ServoWire drives provide two high speed sensor inputs, four optically isolated outputs (one output can be used as a user-configurable fail-safe brake control output and another as a drive ready output), three optically isolated inputs (one input can be used as an e-stop input and/or as hardware overtravel limit switch inputs) and one bi-directional I/O point.
- ✔ *External Regen & Bus Connections:* Allows bus power to be shared between drives (Models SAC-SMM225, SMM235 & SMM260 only) and/or the addition of an external resistor for dissipating regenerative energy from the system (All models except SAC-SMM203 & SMM205).
- ✔ *Brushless Motor Feedback Interface:* Versatile feedback interface accommodates quadrature encoders and differential or single-ended hall tracks, serial encoders and resolvers (optional).



Integrated Drive I/O

- ✔ *High Speed Sensors*: Each drive provides interfaces for two high-speed sensors. The AS and BS inputs, along with the internal encoder reference signal, can capture real-time axis position for either or both axes within *one microsecond* of assertion. They can initiate axis motion on the next position loop update (between 0.4 and 1.0 msec delay—depending on loop rate).
- ✔ *E-Stop and Overtravel Limit Inputs*: Each drive provides optically isolated inputs, which can be configured as hardware overtravel limits or an E-Stop.
- ✔ *Brake Output*: A user-configurable output is provided for control of fail-safe brakes. Brake options are available for H-Series servomotors.
- ✔ *Drive Ready*: A user-configurable output is provided to indicate when the drive is operating normally, without faults. This output is intended for use in the system e-stop interlock circuit.
- ✔ *Zero Reference Output*: A buffered motor zero reference (index mark) output signal is available.

Specifications

Main Circuit Power
- ❒ 115 or 230 VAC +15%, -20%, 50/60 Hz, single phase or three phase

Control Circuit Power
- ❒ 115 or 230 VAC, +15%, -20%, 50/60 Hz, 56 watts RMS, single phase

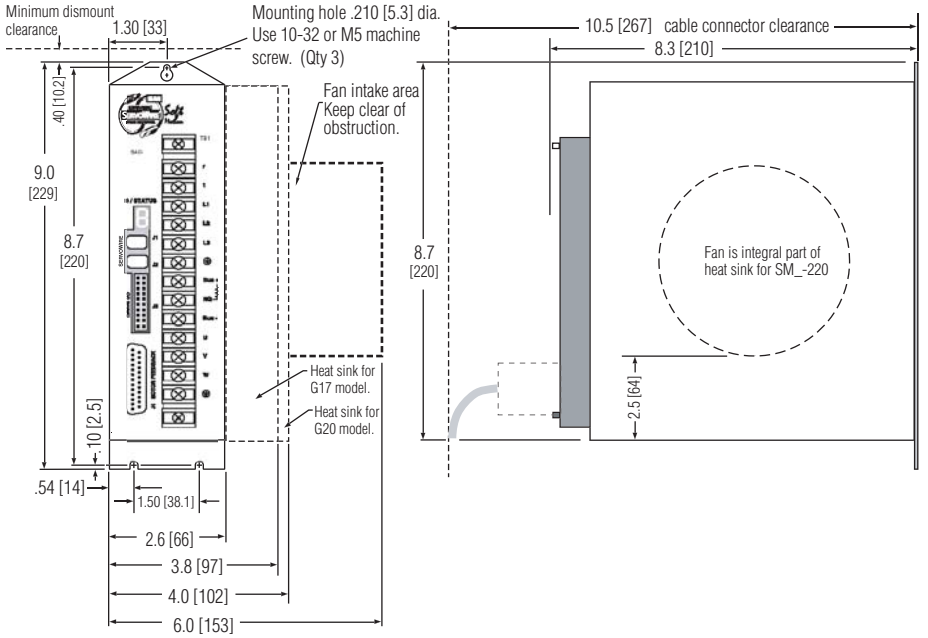
Position Command/Control Loop Update Rates
- ❒ Digital position command from the host PC via the ServoWire® network.
- ❒ Position loop updated on command at up to 4 kHz (application dependent).
- ❒ Velocity loop update rate: 2.5 kHz
- ❒ Torque loop update rate: 10 kHz

ServoWire® Drive Output
- ❒ 600 to 15,000 watts of output power (see Servomotor Selection Charts for power requirements on matching drives)
- ❒ IGBT pulse width-modulated with sinusoidal or trapezoidal commutation
- ❒ Large heat sinks with temperature monitor (fan cooled on SAC-SMM220 – SMM260)
- ❒ Internal shunt regulator for regenerative load dissipation on all except SMM203 & SMM205
- ❒ Peak currents up to 200% of RMS continuous capability
- ❒ DC Bus voltage of 325 VDC at nominal input of 230 VAC and 163 VDC at 115 VAC

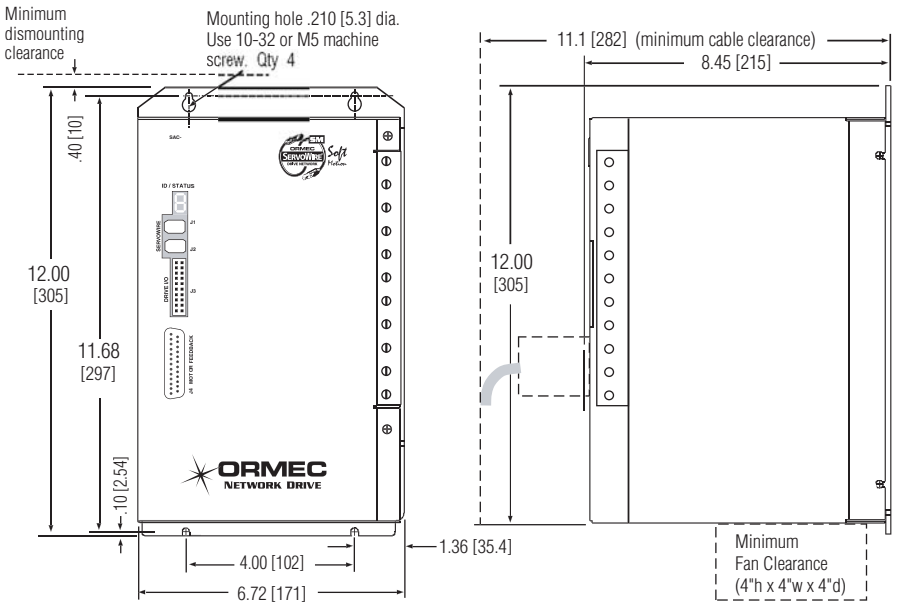
ServoWire® Drive I/O
- ❒ Sensor inputs are software configurable for either NPN or PNP output transistor types and level or edge triggered response
- ❒ Sensor inputs provide one microsecond response time to capture machine position and initiate motion within one servo loop update
- ❒ Optically isolated interface for general purpose and motor reference outputs updated every servo loop update with a maximum sink current of 33ma per output
- ❒ External I/O power supply connections will accept 5-24 VDC (240mA maximum) to power input and output circuits

Motor Feedback Interface
- ❒ Three differential input channels for encoder position feedback with 5.3 volt encoder power supplied
- ❒ Quadrature feedback 4x decoding with data rates to 8 MHz (after decode)
- ❒ Support for serial encoders including Yaskawa Sigma II and Tamagawa

Mounting Information for SAC-SMM-203, 205, 210, 217 & 220



Mounting Information for SAC-SMM-225, 235 & 260



NOTE: Dimensions in inches [millimeters]

- ❒ Resolver (optional)
- ❒ Three differential input channels for motor commutation feedback
- ❒ Open-wire detection on quadrature channels A and B
- ❒ Input connections for thermal contact from motor windings
- ❒ Industry standard D-sub connector (25-pin female) interface

Environmental
- ❒ Ambient operating is 0 to 50C
- ❒ Ambient storage is -20 to 70C
- ❒ Humidity operating/storage is 90% RH or less (non-condensing).

Drive Weights
- ❒ SAC-SMM203/S, 3.7 lbs (1.7 kg)
- ❒ SAC-SMM205/S, 3.7 lbs (1.7 kg)
- ❒ SAC-SMM210/S, 4.1 lbs (1.9 kg)
- ❒ SAC-SMM217/S, 5.8 lbs (2.6 kg)
- ❒ SAC-SMM220/S, 6.6 lbs (3.0 kg)
- ❒ SAC-SMM225/S, 17.7 lbs (8.0 kg)
- ❒ SAC-SMM235/S, 17.7 lbs (8.0 kg)
- ❒ SAC-SMM260/S, 17.7 lbs (8.0 kg)