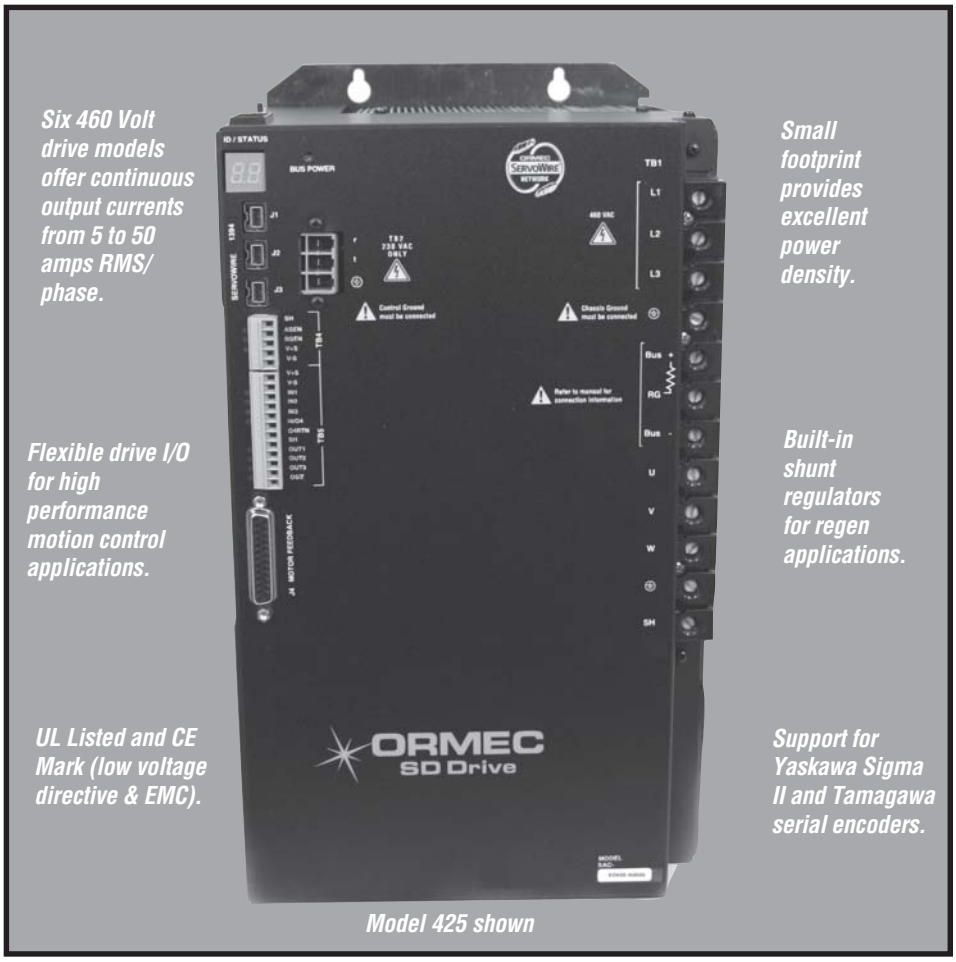
ServoWire® SD 460 Series Drives

Up to 16 ServoWire SD drives can be interfaced to the SMLC utilizing the ServoWire protocol for motion control networking. Six models offer continuous output currents from 5 to 50 amps RMS/phase, and an all-digital design eliminates all manual drive setup including pots and jumpers.

Drive Features

- ✔ *Small Footprint:* higher power density reduces space requirements
- ✔ *Sinusoidal commutation:* improves low speed torque ripple and system efficiency
- ✔ *Trapezoidal commutation & DC operation:* provides user flexibility
- ✔ *Field Oriented Control (FOC) and Space Vector Modulation (SVPWM):* optimal performance at all motor speeds.
- ✔ *Integral shunt regulators:* for regenerative load dissipation
- ✔ *UL/CE approvals:* UL Listed and CE Mark (low voltage directive & EMC)
- ✔ *Status Indicator:* Two digit display for network ID & drive status
- ✔ *ServoWire Network Interface:* Three connectors provide an all-digital control link to ServoWire Network, which is galvanically isolated from the drive and powered by SMLC.
- ✔ *Drive Power Inputs:* 230 or 460 VAC (nominal) input bus power with separate 115/230 VAC logic supply and 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. Diagnostic LEDs aid debugging and terminal blocks make connecting easy.
- ✔ *External Regen & Bus Connections:* Allows bus power to be shared between drives and/or the addition of an external resistor for dissipating regenerative energy from the system.
- ✔ *Feedback Types:* All models available with Encoder or Resolver feedback interface.
- ✔ *Brushless Motor Feedback Interface:* Versatile encoder feedback interface accommodates quadrature feedback, and differential or single-ended hall tracks.
- ✔ *Serial Encoders:* Supports serial encoders including Yaskawa Sigma II and Tamagawa.
- ✔ *Analog I/O:* One 14-bit input; one 14-bit output.



Up to 16 drives can be networked directly to the SMLC using standard cabling.

Integrated Drive I/O

- ✔ *High Speed Sensors*: Each drive provides interfaces for two high-speed sensors. The ASEN and BSEN 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 0.375 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 as an E-Stop and general purpose input.
- ✔ *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.
- ✔ *Diagnostic LEDs*: Each I/O point has a visual indicator of its state.
- ✔ *Terminal Blocks*: Easy wiring to 3.81mm pitch terminal blocks.

Specifications

Main Circuit Power
- ❒ 230 - 480 VAC +10%, -20%, 50/60 Hz, three phase

Control Circuit Power
- ❒ 115 or 230 VAC, +15%, -20%, 50/60 Hz, 56 watts RMS, single phase (230 VAC only on SDM435 and SDM450 models)

Position Command/Control Loop Update Rates
- ❒ Position loop updated on command at up to 2.66 kHz (application dependent).
- ❒ Velocity loop update rate: up to 5 kHz
- ❒ Torque loop update rate: 10 kHz

ServoWire® Drive Output
- ❒ 2,400 to 24,000 watts of output power (see Servomotor Selection Charts for power requirements on matching drives)
- ❒ IGBT pulse width-modulated with sinusoidal or trapezoidal commutation
- ❒ Internal shunt regulator for regenerative load dissipation
- ❒ Peak currents up to 200% of RMS continuous capability

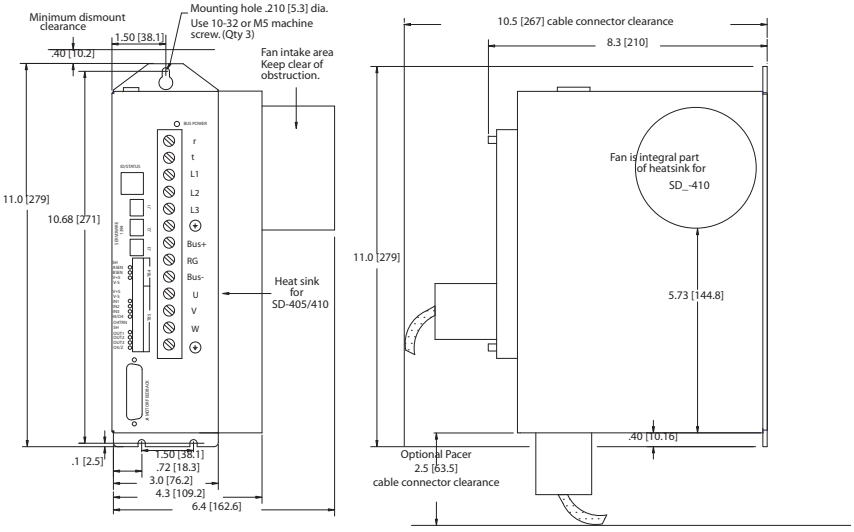
ServoWire® Drive I/O
- ❒ High speed sensor inputs are software configurable for NPN or PNP output transistors, level or edge triggered response, one microsecond position capture and can initiate motion within one servo loop update
- ❒ Externally powered 5-24 VDC optically isolated general purpose I/O and motor encoder reference output, controlled at the servoloop update

Motor Feedback Interface
- ❒ Encoder or Resolver Interface
- ❒ Quadrature feedback 4x decoding with data rates to 8 MHz (after decode) and open wire detection
- ❒ Three differential input channels for motor commutation feedback
- ❒ Support for serial encoders including Yaskawa Sigma II and Tamagawa
- ❒ Industry standard D-sub interface connector (25-pin: Encoder/female; Resolver/male)
- ❒ Input for high temp contact from motor

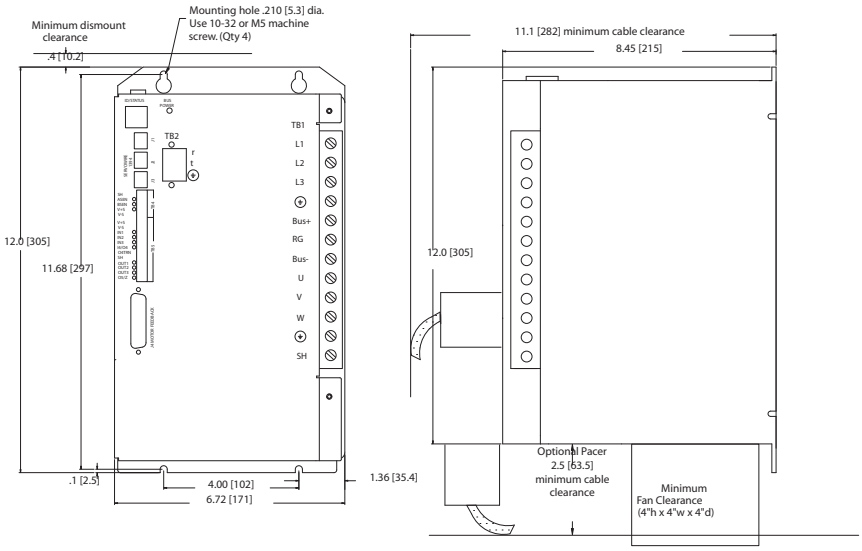
Environmental
- ❒ Ambient operating is 0 to 50C
- ❒ Ambient storage is -20 to 70C
- ❒ Humidity operating/storage is 90% RH or less (non-condensing).

Drive Weights
- ❒ SAC-SDM405, 7.9 lbs (3.7 kg)
- ❒ SAC-SDM410, 8.3 lbs (3.9 kg)
- ❒ SAC-SDM417, 17.7 lbs (8.0 kg)
- ❒ SAC-SDM425, 17.7 lbs (8.0 kg)
- ❒ SAC-SDM435, 22 lbs (10.1 kg)
- ❒ SAC-SDM450, 22 lbs (10.1 kg)

Mounting Information for SAC-SDM-405 & 410



Mounting Information for SAC-SDM-417 & 425



Mounting Information for SAC-SDM-435 & 450