SureServo series drives and motors part numbering system

**Series**
SV: SureServo AC servo

**Component Option**
- 0: Drive
- Blank: Motor without brake
- B: Motor with brake

**Rated Output Power**
- 01: 100W
- 02: 200W
- 04: 400W
- 07: 750W
- 10: 1000W
- 20: 2000W
- 30: 3000W

**Nominal Input Voltage**
- 2: 230VAC; 50/60 Hz

Here is what you will need to order a complete servo system:

1. **Servo Drive**
2. **Servo Motor**
3. **Motor Power Cable**
4. **Motor Encoder Cable**
5. **ZIPLink I/O Interface**

**SureServo AC servo drive, motor, and cable combinations**

<table>
<thead>
<tr>
<th>Inertia &amp; Power</th>
<th>Drive and Motor</th>
<th>Power Cables (from Drive to Motor)</th>
<th>Encoder Feedback Cables</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low inertia</td>
<td>Servo Drive</td>
<td>Servo Motor without brake (note)</td>
<td>10 ft</td>
<td>20 ft</td>
</tr>
<tr>
<td>100W</td>
<td>SVL-201</td>
<td>SVC-PFL-010</td>
<td>SVC-PFL-020</td>
<td>SVC-PFL-030</td>
</tr>
<tr>
<td>Medium inertia</td>
<td>Servo Drive</td>
<td>Servo Motor with brake (note)</td>
<td>10 ft</td>
<td>20 ft</td>
</tr>
</tbody>
</table>

**Note:** Each servo motor requires an encoder feedback cable and a power cable. The motor power cable includes brake power wires for the optional motor brake.

For the latest prices, please check AutomationDirect.com.
**100W Low Inertia System**

- **Torque (N·m)**
  - Intermittent Duty Zone
  - Continuous Duty Zone

- **Speed (rpm)**

**Continuous Duty Zone**

- **Torque (in·lb)**
  - 0
  - 4.4
  - 8.9
  - 13.3
  - 17.7
  - 22.1

**Intermittent Duty Zone**

- **Torque (in·lb)**
  - 0
  - 0.5
  - 1.0
  - 1.5
  - 2.0
  - 2.5

**Motor Inertia**

- 100W Low Inertia System
  - Motor Inertia = 0.000027 lb-in-s² (0.000003 kg - m²)

---

**200W Low Inertia System**

- **Torque (N·m)**

- **Speed (rpm)**

**Continuous Duty Zone**

- **Torque (in·lb)**
  - 0
  - 4.4
  - 8.9
  - 13.3
  - 17.7
  - 22.1

**Intermittent Duty Zone**

- **Torque (in·lb)**
  - 0
  - 0.5
  - 1.0
  - 1.5
  - 2.0
  - 2.5

**Motor Inertia**

- 200W Low Inertia System
  - Motor Inertia = 0.000016 lb-in-s² (0.000018 kg - m²)

---

**400W Low Inertia System**

- **Torque (N·m)**

- **Speed (rpm)**

**Continuous Duty Zone**

- **Torque (in·lb)**
  - 0
  - 4.4
  - 8.9
  - 13.3
  - 17.7
  - 22.1

**Intermittent Duty Zone**

- **Torque (in·lb)**
  - 0
  - 0.5
  - 1.0
  - 1.5
  - 2.0
  - 2.5

**Motor Inertia**

- 400W Low Inertia System
  - Motor Inertia = 0.00003 lb-in-s² (0.000034 kg - m²)

---

**For all systems:**

Order programming software & programming cable if needed. See pgs. TMCN-116 & 45.

**SureServo Motor**

- SVC-201
  - SVC-201B (w/brake)

**Motor Encoder Cable (1)**

- SVC-EFL-010 (10')
  - SVC-EFL-020 (20')
  - SVC-EFL-030 (30')
  - SVC-EFL-060 (60')

**ZL-Link I/O Interface**

- ZL-RTB50
  - and one cable below:
    - ZL-SVC-CBL50 (0.5m)
    - ZL-SVC-CBL50-1 (1m)
    - ZL-SVC-CBL50-2 (2m)

**SureServo Motor**

- SVC-202
  - SVC-202B (w/brake)

**Motor Encoder Cable (1)**

- SVC-EFL-010 (10')
  - SVC-EFL-020 (20')
  - SVC-EFL-030 (30')
  - SVC-EFL-060 (60')

**ZL-Link I/O Interface**

- ZL-RTB50
  - and one cable below:
    - ZL-SVC-CBL50 (0.5m)
    - ZL-SVC-CBL50-1 (1m)
    - ZL-SVC-CBL50-2 (2m)

**SureServo Motor**

- SVC-204
  - SVC-204B (w/brake)

**Motor Encoder Cable (1)**

- SVC-EFL-010 (10')
  - SVC-EFL-020 (20')
  - SVC-EFL-030 (30')
  - SVC-EFL-060 (60')

**ZL-Link I/O Interface**

- ZL-RTB50
  - and one cable below:
    - ZL-SVC-CBL50 (0.5m)
    - ZL-SVC-CBL50-1 (1m)
    - ZL-SVC-CBL50-2 (2m)

---

**For the latest prices, please check AutomationDirect.com.**

---

**For all systems:**

Order programming software & programming cable if needed. See pgs. TMCN-116 & 45.

---

**For the latest prices, please check AutomationDirect.com.**
AC Servo System Configuration

750W Low Inertia System

**Torque (N·m)**

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Intermittent Duty Zone</th>
<th>Continuous Duty Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.0</td>
<td>17.7</td>
</tr>
<tr>
<td>1000</td>
<td>6.0</td>
<td>53.1</td>
</tr>
<tr>
<td>2000</td>
<td>8.0</td>
<td>70.8</td>
</tr>
<tr>
<td>3000</td>
<td>10.0</td>
<td>75.0</td>
</tr>
<tr>
<td>4000</td>
<td>12.0</td>
<td>88.5</td>
</tr>
<tr>
<td>5000</td>
<td>14.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**750W Low Inertia System**

J_m = Motor Inertia = .00096 lb-in-s² (0.000108 kg - m²)

1 kW Low Inertia System

**Torque (N·m)**

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Intermittent Duty Zone</th>
<th>Continuous Duty Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.0</td>
<td>17.7</td>
</tr>
<tr>
<td>1000</td>
<td>6.0</td>
<td>53.1</td>
</tr>
<tr>
<td>2000</td>
<td>8.0</td>
<td>70.8</td>
</tr>
<tr>
<td>3000</td>
<td>10.0</td>
<td>75.0</td>
</tr>
<tr>
<td>4000</td>
<td>12.0</td>
<td>88.5</td>
</tr>
<tr>
<td>5000</td>
<td>14.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**1 kW Low Inertia System**

J_m = Motor Inertia = .0023 lb-in-s² (0.00026 kg - m²)

1 kW Medium Inertia System

**Torque (N·m)**

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Intermittent Duty Zone</th>
<th>Continuous Duty Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.0</td>
<td>17.7</td>
</tr>
<tr>
<td>1000</td>
<td>6.0</td>
<td>53.1</td>
</tr>
<tr>
<td>2000</td>
<td>8.0</td>
<td>70.8</td>
</tr>
<tr>
<td>3000</td>
<td>10.0</td>
<td>75.0</td>
</tr>
<tr>
<td>4000</td>
<td>12.0</td>
<td>88.5</td>
</tr>
<tr>
<td>5000</td>
<td>14.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**1 kW Medium Inertia System**

J_m = Motor Inertia = .0053 lb-in-s² (0.000108 kg - m²)

For all systems:
Order programming software & programming cable if needed.
See pgs. IMNC-117 & 45.

SureServo Motor

- SVL-207
- SVL-207B (w/brake)
  - SVL-207: $320.00
  - SVL-207B: $760.00

Motor Power Cable (1)

- SVC-PFL-010 (10’): $31.00
- SVC-PFL-020 (20’): $57.00
- SVC-PFL-030 (30’): $70.00
- SVC-PFL-060 (60’): $128.00

Motor Encoder Cable (1)

- SVC-EFL-010 (10’): $51.00
- SVC-EFL-020 (20’): $80.00
- SVC-EFL-030 (30’): $94.00
- SVC-EFL-060 (60’): $123.00

ZIPLink I/O Interface

- ZL-RTB50: $47.00
- ZL-SVC-CBL50 (0.5m): $35.00
- ZL-SVC-CBL50-1 (1m): $36.00
- ZL-SVC-CBL50-2 (2m): $38.00

**For the latest prices, please check AutomationDirect.com.**

For all systems:
Order programming software & programming cable if needed.
See pgs. IMNC-117 & 45.

SureServo Motor

- SVM-210
- SVM-210B (w/brake)
  - SVM-210: $634.00
  - SVM-210B: $951.00

Motor Power Cable (1)

- SVC-PHM-010 (10’): $87.00
- SVC-PHM-020 (20’): $101.00
- SVC-PHM-030 (30’): $113.00
- SVC-PHM-060 (60’): $146.00

Motor Encoder Cable (1)

- SVC-EHH-010 (10’): $87.00
- SVC-EHH-020 (20’): $101.00
- SVC-EHH-030 (30’): $113.00
- SVC-EHH-060 (60’): $146.00

ZIPLink I/O Interface

- ZL-RTB50: $47.00
- ZL-SVC-CBL50 (0.5m): $35.00
- ZL-SVC-CBL50-1 (1m): $36.00
- ZL-SVC-CBL50-2 (2m): $38.00

**For the latest prices, please check AutomationDirect.com.**

For all systems:
Order programming software & programming cable if needed.
See pgs. IMNC-117 & 45.

SureServo Motor

- SVM-210
- SVM-210B (w/brake)
  - SVM-210: $816.00
  - SVM-210B: $1,133.00

Motor Power Cable (1)

- SVC-PHM-010 (10’): $92.00
- SVC-PHM-020 (20’): $103.00
- SVC-PHM-030 (30’): $152.00
- SVC-PHM-060 (60’): $212.00

Motor Encoder Cable (1)

- SVC-EHH-010 (10’): $87.00
- SVC-EHH-020 (20’): $101.00
- SVC-EHH-030 (30’): $113.00
- SVC-EHH-060 (60’): $146.00

ZIPLink I/O Interface

- ZL-RTB50: $47.00
- ZL-SVC-CBL50 (0.5m): $35.00
- ZL-SVC-CBL50-1 (1m): $36.00
- ZL-SVC-CBL50-2 (2m): $38.00

**For the latest prices, please check AutomationDirect.com.**
AC Servo System Configuration

For all systems:
Order programming software &
programming cable if needed.
See pgs. 44 & 45.

For the latest prices, please check AutomationDirect.com.

SureServo Communications Cables for Muti-drop Networks

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVC-MDCOM-CBL</td>
<td>$19.50</td>
<td>RS-422/485 serial communication cable for use with multidrop networks; 3ft length; IEEE 1394 plug to unterminated wires; compatible with all SureServo systems.</td>
</tr>
<tr>
<td>SVC-232RJ12-CBL-2</td>
<td>$7.75</td>
<td>ZIPLink SureServo Drives cable with 6-pin RJ12 connector to a 6-pin IEEE 1394 connector, shielded, twisted pair, 2.0 meter (6.6 ft.) length. For RS-232 connection to all SureServo amplifiers.</td>
</tr>
<tr>
<td>SVC-485RJ12-CBL-2</td>
<td>$9.75</td>
<td>ZIPLink SureServo amplifier communication cable, RJ12 male to 6-pin IEEE 1394 connector, shielded, twisted pair, 2.0 meter (6.6 ft.) length. Cable used in conjunction with ZL-C2DM-RJ12xx distribution module can access a compatible RS-485 device network.</td>
</tr>
<tr>
<td>SVC-485HD15-CBL-2</td>
<td>$8.25</td>
<td>ZIPLink SureServo Drives cable with a HD 15-pin male to a 6-pin IEEE 1394 connector, shielded, twisted pair, 2.0 meter (6.6 ft.) length. For RS-485 connection to all SureServo amplifiers.</td>
</tr>
</tbody>
</table>

* Refer to the ZIPLinks Wiring Solutions section for complete information regarding the ZIPLink cables.
AC Servo System Software

SureServo Pro configuration software

SureServo Pro is an optional free downloadable configuration software package for the SureServo drives. With SureServo Pro installed, the personal computer may be directly connected to the servo drive’s serial port via the PC’s RS-232 serial port*. A six-foot configuration cable (SVC-PCCFG-CBL, $19.50) is available to make the connection between the drive serial port and PC DB-9 serial port simple.

*Note: Use our USB-RS232 converter cable in conjunction with the SVC-PCCFG-CBL cable on PCs having only USB ports.

Features

- Quick Start - The basic setup when you have limited time and just want to get up and running ASAP.
- Maintenance keypad allows the user to operate the servo system from the PC. This is a great aid during start-up to allow the servo to perform some basic motion and to check the I/O.
- Detailed - The complete setup for all the drive parameters
- Tune and check the servo response live using the scope feature.
- Upload and download the drive setup. Save the drive setup as a file for future use.
- Edit the drive setup
- View all drive faults
- Trend drive variables in real time

Parameter views

The SureServo Pro configuration tool logically organizes over 165 servo drive parameters into five tabbed groups. Each parameter has a factory default that usually allows the servo to run “out-of-the-box”.

The parameters can be easily changed with available options or setting ranges displayed. Tuning modes and parameters can also be changed using SureServo Pro. After the parameters have been defined, the complete setup can be stored and archived. Drive configurations can be uploaded, edited, saved, and downloaded as often as necessary.

SureServo Software and Configuration Cables

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV-PRO</td>
<td>Free</td>
<td>SureServo Pro configuration software for use with all SureServo servo systems. FREE download from <a href="http://www.sureservo.com">www.sureservo.com</a> or <a href="http://www.automationdirect.com">www.automationdirect.com</a> websites.</td>
</tr>
<tr>
<td>SV-PRO</td>
<td>$9.00</td>
<td>CD with SureServo Pro configuration software</td>
</tr>
<tr>
<td>SVC-PCCFG-CBL</td>
<td>$19.50</td>
<td>Six-foot RS-232 communications cable, connects servo drive serial port to PC DB-9 serial port. For PCs having only USB ports, use our USB-RS232 converter cable in conjunction with the SVC-PCCFG-CBL cable.</td>
</tr>
<tr>
<td>SVC-485CFG-CBL-2 *</td>
<td>$11.00</td>
<td>ZIPLink SureServo amplifier configuration cable, 8-pin IEEE 1394 connector to RJ45 connector, shielded, twisted pair, 2.0 meter (6.6 ft.) length. Use this cable in conjunction with our USB-485M serial adapter to connect any SureServo amplifier to a PC. Eliminates the need to reprogram networked servo drives from RS485 to RS232 when connecting to a PC.</td>
</tr>
</tbody>
</table>

* Refer to the ZIPLinks Wiring Solutions section for complete information regarding ZIPLink cable SVC-485CFG-CBL-2.
AC Servo System Software

SureServo Pro configuration software - Parameter views (continued)

Parameter View Example Screen - Monitor Parameters

SureServo Pro includes a powerful scope function that allows the user to have as many as three channels of data displayed simultaneously. Each channel has a drop-down table to select the data to be displayed. The scope also has a trigger mode and timebase selection. This function is a valuable tool for tuning SureServo drives.

Parameter View Example Screen - Extended Parameters

Parameter View Example Screen - Communication Parameters

Maintenance screen

A maintenance keypad allows the user to operate the servo system from the PC. This is a great aid during start-up to allow the servo to perform some basic motion and to check the I/O.
SureServo systems run “out-of-the-box”... but may be reconfigured for many applications!

The SureServo drives are fully digital and include over 165 programmable parameters. For convenience, the parameters are grouped into five categories:

1) Monitor parameters
2) Basic parameters
3) Extended parameters
4) Communication parameters
5) Diagnostic parameters.

All parameters have commonly used default values which allow you to operate the SureServo system “out-of-the-box”. However, the programmability and large variety of parameters make the SureServo systems suitable for a very broad range of applications, including almost all types of general purpose industrial machinery such as assembly, test, packaging, machine tool, and robotics.
## General Drive Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permissible Frequency</strong></td>
<td>50/60 Hz ±5%</td>
</tr>
<tr>
<td><strong>Encoder Resolution / Feedback Resolution</strong></td>
<td>2500 lines / 10000 ppr</td>
</tr>
<tr>
<td><strong>Control of Main Circuit</strong></td>
<td>SVPWM (Space Vector Pulse Width Modulation) Control</td>
</tr>
<tr>
<td><strong>Tuning Modes</strong></td>
<td>Easy / Auto / Manual</td>
</tr>
<tr>
<td><strong>Dynamic Brake</strong></td>
<td>Built-in control</td>
</tr>
<tr>
<td><strong>Analog Monitor Outputs (2)</strong></td>
<td>Monitor signal can be set by parameters (Output voltage range: ±8V, Resolution: 12.8 mV/count)</td>
</tr>
<tr>
<td><strong>8 Programmable Digital Inputs (45 selectable functions)</strong></td>
<td>Serve enable, Alarn reset, Gain switching, Pulse counter clear, Fault stop, CW/CCW over-travel</td>
</tr>
<tr>
<td><strong>Scalable Encoder Output</strong></td>
<td>Encoder signal output A, /A, B, /B, Z, /Z, Line Driver</td>
</tr>
<tr>
<td><strong>5 Programmable Outputs (9 selectable indicators)</strong></td>
<td>Serve ready, Servo On, Low velocity, Velocity reached, In Position, Torque limiting, Serve fault, Electromagnetic brake control, Home search completed</td>
</tr>
<tr>
<td><strong>Communication Interface</strong></td>
<td>RS-232 / RS-485 / RS-422 / Modbus ASCII &amp; RTU up to 115k Baud</td>
</tr>
<tr>
<td><strong>Protective Functions</strong></td>
<td>Overcurrent, Overvoltage, Undervoltage, Overload, Excessive velocity/position error, Encoder error, Regeneration error, Communication error</td>
</tr>
<tr>
<td><strong>Installation Site</strong></td>
<td>Indoor location (free from direct sunlight), no corrosive liquid and gas</td>
</tr>
<tr>
<td><strong>Altitude</strong></td>
<td>1000m (3281 ft) above sea level – maximum</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>0 to 55 °C (32 to 131 °F) (If operating temperature is above 55°C, forced cooling is required). For long-term reliability, the ambient temperature of SureServe systems should be under 45°C (113°F).</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-20° to 65°C (-4° to 149°F)</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>0 to 90% (non-condensing)</td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
<td>9.81 m/s² (1G) less than 20 Hz, 5.88 m/s² (0.6G) 20 to 50 Hz</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>IP 20</td>
</tr>
<tr>
<td><strong>Agency Approvals</strong></td>
<td>CE; UL Certified (U.S. and Canada)</td>
</tr>
</tbody>
</table>
## Model and Mode Specific Drive Specifications

<table>
<thead>
<tr>
<th>AC Servo Model</th>
<th>SVA-2040</th>
<th>SVA-2100</th>
<th>SVA-2300</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td>$483.00</td>
<td>$654.00</td>
<td>$1,091.00</td>
</tr>
<tr>
<td><strong>Voltage Phase</strong></td>
<td>Single-phase or Three-phase</td>
<td>Three-phase</td>
<td></td>
</tr>
<tr>
<td><strong>Voltage and Frequency Range</strong></td>
<td>3-phase: 170–255 VAC @ 50/60 Hz ±5%; 1-phase: 200–255 VAC @ 50/60 Hz ±5%</td>
<td>170–255 VAC @ 50/60 Hz ±5%</td>
<td></td>
</tr>
<tr>
<td><strong>Main Circuit Input Current</strong></td>
<td>Single Phase: 3.4A @ 400W; 8.0A @ 1kW</td>
<td>Three Phase: 6.2A @ 400W; 10.4A @ 1kW; 13.6A @ 3kW</td>
<td></td>
</tr>
<tr>
<td><strong>Main Circuit Inrush Current</strong></td>
<td>44A</td>
<td>77A</td>
<td>87A</td>
</tr>
<tr>
<td><strong>Main Circuit Power Cycling</strong></td>
<td>Maximum 1 power cycle per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control Circuit Current and Voltage</strong></td>
<td>43 mA @ 200–255 VAC, 1 phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control Circuit Inrush Current</strong></td>
<td>32A maximum</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cooling System</strong></td>
<td>Natural Air Circulation</td>
<td>Internal Cooling Fan</td>
<td></td>
</tr>
<tr>
<td><strong>Drive Heat Loss</strong></td>
<td>Motor-driven</td>
<td>Motor-driven</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heat Loss</td>
<td>Heat Loss</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SVA-201(B)</td>
<td>SVA-202(B)</td>
<td>SVA-204(B)</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>12W</td>
<td>15W</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.5 kg [3.3 lb]</td>
<td>2kg [4lb]</td>
<td>3kg [7lb]</td>
</tr>
<tr>
<td><strong>Max. Input Pulse Frequency</strong></td>
<td>Max. 500 kpps (Line driver); Max. 200 kpps (Open collector)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pulse Type</strong></td>
<td>Pulse + Direction, A phase + B phase Quadrature, CCW pulse + CW pulse</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Command Source</strong></td>
<td>External pulse train / Onboard indexer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electronic Gear</strong></td>
<td>Electronic gear N/M multiple; N: 1–32767, M: 1–32767(1/50&lt;N/M&lt;200)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Torque Limit Operation</strong></td>
<td>Set by parameters or by analog input</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feed Forward Compensation</strong></td>
<td>Set by parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analog Input Command</strong></td>
<td>Voltage Range</td>
<td>Bipolar ±10 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Input Resistance</td>
<td>10 kΩ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Constant</td>
<td>2.2 µs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resolution</td>
<td>(Varies with input voltage) 13 bits @ 0V<del>1V; 13</del>10 bits @ 1V<del>2V; 10 bits @ 2V</del>10V</td>
<td></td>
</tr>
<tr>
<td><strong>Speed Control Range</strong></td>
<td>1:5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Command Source</strong></td>
<td>External analog signal / Onboard indexer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Torque Limit Operation</strong></td>
<td>Set by parameters or via analog input</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Frequency Response Characteristic</strong></td>
<td>Maximum 450 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Speed Accuracy (at rated rotation speed)</strong></td>
<td>0.01% or less at 0 to 100% load fluctuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.01% or less at ±10% power fluctuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.01% or less at 0 to 50°C ambient temperature fluctuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analog Input Command</strong></td>
<td>Voltage Range</td>
<td>Bipolar ±10 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Input Resistance</td>
<td>10 kΩ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Constant</td>
<td>2.2 µs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resolution</td>
<td>10 bits</td>
<td></td>
</tr>
<tr>
<td><strong>Torque Control Mode</strong></td>
<td>Permissible Time for Overload</td>
<td>8 sec. under 200% rated output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Command Source</td>
<td>External analog signal / Onboard indexer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoothing Strategy</td>
<td>Low-pass filter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speed Limit Operation</td>
<td>Set by parameters or via analog input</td>
<td></td>
</tr>
</tbody>
</table>

* Drive heat loss varies depending upon which motor is connected to the drive.
AC Servo Motor Specifications

Motor Power and Brake Connector
1-foot cable with 6-position connector
(Not liquid tight)

Encoder Connector
1-foot cable with 9-position connector
(Not liquid tight)

Motor Power and Brake Connector
(Liquid tight when using AutomationDirect cables)

Encoder Connector
(Liquid tight when using AutomationDirect cables)

Low and Medium Inertia Motors
Low Inertia Model
- 1 kW 100 mm flange

Medium Inertia Models
- 1 kW 130 mm flange
- 2 kW 180 mm flange
- 3 kW 180 mm flange

Low Inertia Motors
- 100W 40 mm flange
- 200W 60 mm flange
- 400W 60 mm flange
- 750W 80 mm flange

Keyless Shafts
- 100W 8 mm diameter
- 200W 14 mm diameter
- 400W 14 mm diameter
- 750W 19 mm diameter

With Shaft Seal
(limited tight)

IP65 Housing

All SureServo motors have keyless shafts for use with servo-grade clamp or compression couplings.

1 kW and above

750W and below

For the latest prices, please check AutomationDirect.com.
## AC Servo Motor Specifications

### Motor Specifications

<table>
<thead>
<tr>
<th>Inertia Range</th>
<th>Low</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Name: Sxx-xxx</td>
<td>SVL-201</td>
<td>$322.00</td>
</tr>
<tr>
<td></td>
<td>SVL-202</td>
<td>$407.00</td>
</tr>
<tr>
<td></td>
<td>SVL-204</td>
<td>$498.00</td>
</tr>
<tr>
<td></td>
<td>SVL-207</td>
<td>$532.00</td>
</tr>
<tr>
<td></td>
<td>SVL-210</td>
<td>$634.00</td>
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<tr>
<td></td>
<td>SVM-210</td>
<td>$816.00</td>
</tr>
<tr>
<td></td>
<td>SVM-220</td>
<td>$862.00</td>
</tr>
<tr>
<td></td>
<td>SVM-230</td>
<td>$1,315.00</td>
</tr>
<tr>
<td>Model with brake: Sxx-xxxB</td>
<td>SVL-201B</td>
<td>$543.00</td>
</tr>
<tr>
<td></td>
<td>SVL-202B</td>
<td>$602.00</td>
</tr>
<tr>
<td></td>
<td>SVL-204B</td>
<td>$702.00</td>
</tr>
<tr>
<td></td>
<td>SVL-207B</td>
<td>$760.00</td>
</tr>
<tr>
<td></td>
<td>SVL-210B</td>
<td>$851.00</td>
</tr>
<tr>
<td></td>
<td>SVM-210B</td>
<td>$1,133.00</td>
</tr>
<tr>
<td></td>
<td>SVM-220B</td>
<td>$1,178.00</td>
</tr>
<tr>
<td></td>
<td>SVM-230B</td>
<td>$1,500.00</td>
</tr>
</tbody>
</table>

### Rotor Inertia

- **w/o brake**: kg·m²
  - SVL-201: 0.03E-4
  - SVL-202: 0.18E-4
  - SVL-204: 0.34E-4
  - SVL-207: 1.08E-4
  - SVL-210: 2.6E-4
  - SVM-210: 5.98E-4
  - SVM-220: 15.8E-4
  - SVM-230: 43.3E-4
- **with brake**: kg·m²
  - SVL-201: 0.06E-4
  - SVL-202: 0.28E-4
  - SVL-204: 0.44E-4
  - SVL-207: 1.32E-4
  - SVL-210: 3.1E-4
  - SVM-210: 8.8E-4
  - SVM-220: 27.8E-4
  - SVM-230: 56.3E-4

### Drive input current

- **1 phase A**: A
  - SVL-201: 1.0
  - SVL-202: 1.7
  - SVL-204: 3.4
  - SVL-207: 5.9
  - SVL-210: 8.0
  - SVM-210: 8.0
  - SVM-220: 9.1
  - SVM-230: 13.6
- **3 phase A**: A
  - SVL-201: 0.8
  - SVL-202: 1.3
  - SVL-204: 2.6
  - SVL-207: 4.7
  - SVL-210: 6.2
  - SVM-210: 6.2
  - SVM-220: 9.1
  - SVM-230: 13.6

### Weight

- **without brake**: kg
  - SVL-201: 0.5
  - SVL-202: 0.9
  - SVL-204: 1.3
  - SVL-207: 2.5
  - SVL-210: 4.7
  - SVM-210: 4.8
  - SVM-220: 12.0
  - SVM-230: 17.0
- **with brake**: kg
  - SVL-201: 1.1
  - SVL-202: 1.98
  - SVL-204: 2.87
  - SVL-207: 5.5
  - SVL-210: 10.36
  - SVM-210: 10.58
  - SVM-220: 26.46
  - SVM-230: 37.48

### Agency Approvals

- CE, UL recognized (U.S. and Canada)

**NOTE:** U.S. customary units are for reference only.
AC Servo System Wiring

Standard wiring examples

This wiring diagram shows basic wiring only, and additional wiring configurations are possible for some I/O. Refer to the "Installation and Wiring" chapter of the User Manual for more detailed wiring information.

Position (Pr & Pt) Control Modes

(CN1*))

Com.Trig. (Pr mode)/Clear Com. (Pt mode)
Alarm Reset
Reverse Inhibit Overtravel
Forward Inhibit Overtravel
Fault Stop

Servo Ready
At Zero Speed
Homing Complete
At Position
Alarm
User Supplier 24 VDC

Servo Enable

† Remove Jumper at D if using External Resistor
†† Optional user Supplied 24 VDC
††† Remove jumper at D if using External Resistor

† Remove jumper at D if using External Resistor
†† Remove jumper at D if using External Resistor
††† Remove jumper at D if using External Resistor

* Use connection kit part #s ZL-RTB50 & ZL-SVC-CBL-50(-x) for CN1 terminal connections.
** Use cable part # SVC-Exx-0x0 for CN2 terminal connections.
*** Use cable part # SVC-MDCOM-CBL for CN3 terminal Modbus network connections.

For the latest prices, please check AutomationDirect.com.
AC Servo System Wiring

Standard wiring examples (continued)

**Velocity and Torque Control Modes**

This wiring diagram shows basic wiring only, and additional wiring configurations are possible for some I/O. Refer to the "Installation and Wiring" chapter of the user manual for more detailed wiring information.

![Wiring Diagram](image)

- **Default Settings**
  - Servo Ready
  - At Zero Speed
  - At Speed
  - Brake Control
  - Alarm
  - User Supplier 24 VDC

- **Default Settings**
  - 100 mA max
  - 1.5k Ohm min load impedance
  - Use diodes if driving inductive load

- **Modbus communications to PC, PLC, etc.**
- **Line Driver Encoder Signal Output**
  - (scalable pulse output)
  - 40 mA max

- **Regenerative Resistor†**
  - † Remove jumper at D if using External Resistor

- **Analog Signal**
  - Connect 35 to 17 only with open collector pulse

- **Digital I/O**
  - DO 1+, DO 1–
  - DO 2+, DO 2–
  - DO 3+, DO 3–
  - DO 4+, DO 4–
  - DO 5+, DO 5–

- **Servo Enable**
  - TrqLimEn(Vmode)/SpdLimEn(Tmode)
  - VCS0(Vmode) / TCS0(Tmode)
  - VCS1(Vmode) / TCS1(Tmode)

- **Alarm Reset**
  - Reverse Inhibit Overtravel
  - Forward Inhibit Overtravel

- **Fault Stop**

- **Servo Drive**
  - R S T
  - L1 L2
  - N(3kW only)

- **Servo Motor**
  - Encoder

- **Power Supply**
  - 230 VAC Single-phase or Three-phase 50/60 Hz

- **VCC**
  - +5V

- **GND**

- **CN1***
  - VDD
  - COM+
  - COM–

- **CN2**
  - Internally Supplied 12Vdc

- **CN3***
  - Internally Supplied 24Vdc

- **Output Signals**
  - A phase pulse
  - B phase pulse
  - Z phase pulse

- **Modbus Cable Set**
  - SVC-Exx-0x0

- **Encoder Cable Set**
  - SVC-Pxx-0x0

- **User Supplier 24 VDC**

- **External P/Internal D**

- **†† Remove jumper if external 24VDC is used**

- **†† Optional user Supplied 24 VDC**

* Use connection kit part # ZL-RTB50 & ZL-SVC-CBL-50(-x) for CN1 terminal connections.
** Use cable part # SVC-Exx-0x0 for CN2 terminal connections.
*** Use cable part # SVC-MDCOM-CBL for CN3 terminal Modbus network connections.

For the latest prices, please check AutomationDirect.com.
AC Servo System Dimensions

Servo drive dimensions

**SVA-2040**

**Recommended user supplied mounting screw is M6.**

*Tighten to 14 kgf-cm (1.37 N·m).*

**SVA-2100**

**Recommended user supplied mounting screw is M6.**

*Tighten to 14 kgf-cm (1.37 N·m).*

For the latest prices, please check AutomationDirect.com.
Servo drive dimensions (continued)

SVA-2300

**NOTE:** Recommended user supplied mounting screw is M6. Tighten to 14 kgf-cm (1.37 N·m).

UNITS: mm (in)
(Inch values are for reference only.)

Servo motor dimensions

Low inertia models SVL-201(B), SVL-202(B), SVL-204(B), SVL-207(B)

### SureServo® Motor Dimensions – 100W-750W Low Inertia

<table>
<thead>
<tr>
<th>Dimension</th>
<th>SVL-201(B)</th>
<th>SVL-202(B)</th>
<th>SVL-204(B)</th>
<th>SVL-207(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>4.5 [0.1772]</td>
<td>5.5 [0.2165]</td>
<td>6.6 [0.2598]</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>8 +0.0/-0.009 (8h6)</td>
<td>14 +0.0/-0.011 (14h6)</td>
<td>19 +0.0/-0.013 (19h6)</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>30 +0.0/-0.021 (30h7)</td>
<td>50 +0.0/-0.025 (50h7)</td>
<td>70 +0.0/-0.030 (70h7)</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>25 [0.98]</td>
<td>30 [1.18]</td>
<td>35 [1.38]</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>5 [0.197]</td>
<td>6 [0.236]</td>
<td>8 [0.315]</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>2.5 [0.098]</td>
<td>3 [0.118]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable length: 300mm (12 inches)

**UNITS:** mm [in]. (Inches are for reference only; not included on diameter dimensions for accuracy.)

For the latest prices, please check AutomationDirect.com.
AC Servo System Dimensions

Servo motor dimensions (continued)

Low inertia models SVL-210(B)

Medium inertia models SVM-210(B), SVM-220(B), SVM-230(B)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>SVL-210(B)</th>
<th>SVM-210(B)</th>
<th>SVM-220(B)</th>
<th>SVM-230(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100 (3.937)</td>
<td>130 (5.118)</td>
<td>180 (7.087)</td>
<td>210 (8.268)</td>
</tr>
<tr>
<td>B</td>
<td>9 (0.3543)</td>
<td>9 (0.3543)</td>
<td>13.5 (0.5315)</td>
<td>16.5 (0.650)</td>
</tr>
<tr>
<td>C</td>
<td>115 +0.2/-0.2 (4.528)</td>
<td>145 +0.2/-0.2 (5.709)</td>
<td>200 +0.2/-0.2 (7.874)</td>
<td>230 +0.2/-0.2 (9.055)</td>
</tr>
<tr>
<td>D</td>
<td>22 +0.0/-0.013 (22h6)</td>
<td>22 +0.0/-0.013 (22h6)</td>
<td>35 +0.0/-0.016 (35h6)</td>
<td>40 +0.0/-0.016 (40h6)</td>
</tr>
<tr>
<td>E</td>
<td>95 +0.0/-0.035 (95h7)</td>
<td>110 +0.0/-0.035 (110h7)</td>
<td>114.3 +0/-0.035 (114.3h7)</td>
<td>129 +0/-0.035 (129h7)</td>
</tr>
</tbody>
</table>

Units: mm [in] (Inches are for reference only; not included on diameter dimensions for accuracy.)
**AC Servo System Accessories**

## Accessories

### External Regeneration Resistors

Use external resistors to provide additional regenerative capacity and to dissipate heat away from the servo drive.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Resistance</th>
<th>SureServo Drives</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS-25PO-BR</td>
<td>40Ω</td>
<td>SVA-2040</td>
<td>$78.00</td>
</tr>
<tr>
<td>GS-2010-BR-ENC</td>
<td>20Ω</td>
<td>SVA-2100, SVA-2300</td>
<td>$237.00</td>
</tr>
</tbody>
</table>

Note: These EMI filters are electrically compatible with the SureServo drives. However, they are intended to be mounted next to the servo drive. Do not mount the filter under the drive. The drive mounting holes on these units are intended to be used only with AutomationDirect's line of VFDs.

### AC Line Filters

Input EMI filters reduce electromagnetic interference or noise on the input side of the servo drive. They are required for CE compliance and recommended for installations prone to or sensitive to electromagnetic interference.

<table>
<thead>
<tr>
<th>SureServo® Drives</th>
<th>AC Input Power</th>
<th>EMI Filter Rating</th>
<th>EMI Filter Part Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVA-2040</td>
<td>Single-Phase</td>
<td>250V, 1-phase, 20A</td>
<td>20DRT1W3S</td>
<td>$79.00</td>
</tr>
<tr>
<td></td>
<td>Three-Phase</td>
<td>250V, 3-phase, 10A</td>
<td>10TDT1W4C</td>
<td>$84.00</td>
</tr>
<tr>
<td>SVA-2100</td>
<td>Single-Phase</td>
<td>250V, 1-phase, 20A</td>
<td>20DRT1W3S</td>
<td>$79.00</td>
</tr>
<tr>
<td></td>
<td>Three-Phase</td>
<td>250V, 3-phase, 10A</td>
<td>10TDT1W4C</td>
<td>$84.00</td>
</tr>
<tr>
<td>SVA-2300</td>
<td>Three-Phase</td>
<td>250V, 3-phase, 26A</td>
<td>26TDT1W4C</td>
<td>$117.00</td>
</tr>
</tbody>
</table>

### Edison Fuses & Fuji Contactors

<table>
<thead>
<tr>
<th>SureServo® Drives</th>
<th>Input Type</th>
<th>Input Voltage</th>
<th>Edison Fuse - Class CC</th>
<th>Price*</th>
<th>Contactor**</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVA-2040</td>
<td>Main Input Power</td>
<td>230V 3-Phase</td>
<td>HCTR4</td>
<td>$97.00</td>
<td>SC-E02-xxx</td>
<td>varies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>230V 1-phase</td>
<td>HCTR7-5</td>
<td>$107.00</td>
<td>SC-E03-xxx</td>
<td>varies</td>
</tr>
<tr>
<td>SVA-2100</td>
<td></td>
<td></td>
<td>HCTR15</td>
<td>$91.00</td>
<td>SC-E04-xxx</td>
<td>varies</td>
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<tr>
<td>SVA-2300</td>
<td></td>
<td></td>
<td>HCTR4</td>
<td>$97.00</td>
<td>SC-E02-xxx</td>
<td>varies</td>
</tr>
<tr>
<td>SVA-2040</td>
<td>Control Input Power</td>
<td>230V 1-phase</td>
<td>HCTR2-5</td>
<td>$100.00</td>
<td>SC-E03-xxx</td>
<td>varies</td>
</tr>
<tr>
<td>SVA-2100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVA-2300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Fuses are sold in packages of 10.

** Note: For contactors, xxx = coil voltage (for example, SC-E02-220VAC).