

# SureServo2

# AC Servo Systems

## Drive features

- Power:
  - 1 phase 110VAC: 100W-2kW
  - 1 phase 220VAC: 100W-2kW
  - 3 phase 220VAC: 100W-15kW
  - 3 phase 460VAC: 400W-15kW
- Fully digital with up to 3.1 kHz bandwidth velocity loop response
- Easy setup and diagnostics with built-in keypad/display or the SureServo2 Pro PC-based software
- Field upgradeable firmware ensures the drive can always be upgraded to the latest operating system
- Communications include:
  - Serial Modbus (native/built-in)
  - Optional Modbus TCP card
  - Optional Ethernet/IP card (this card can use implicit and explicit messaging. SureServo2 Pro software can generate an EDS file to transfer custom data between PLC and drive)
- Command options include:
  - $\pm$  10V torque or velocity command
  - Pulse train or master encoder position command (accepts line driver or open collector) with electronic gearing
  - Powerful built-in motion controller for position control using 99 preset positions (enter these during development, or send them through the communications options above during runtime)
  - Internal sequencing for position/speed



commands, registration (capture/compare), electronic camming, homing (10 different options), Jumps, and arithmetic statements.

- The 3.1 kHz bandwidth allows for high-level automatic tuning. Several modes of tuning are available including Auto Tune that can estimate the load inertia and fine-tune the system when all the loads are attached.
- Optically isolated digital inputs (10) and outputs (6), analog outputs for monitor signals (2), and line driver output for encoder (with scalable resolution).
- Other Features:
  - Secondary/Auxiliary encoder feedback (for true closed loop control)
  - Registration ability
  - Analog positioning
  - Safe Torque Off (STO) included - so no need for large, bulky contactors to disconnect power from the drive in E-stop situations
  - Absolute Encoder operation (with optional encoder battery backup)
  - Electronic camming (you can define the cam with SureServo2 Pro software or you can import an Excel spreadsheet)
  - Advanced Scope feature that can monitor a variety of command and status signals, including output speed, torque, power, etc.

## Motor features

- Low inertia models:
  - 100W, 200W, 400W, 750W, 1kW, 1.5 kW, and 2kW
  - Speeds up to 6,000 rpm
- Medium inertia models:
  - 1kW, 1.5 kW, 2kW, and 3kW
  - Speeds up to 3,000 rpm
- High inertia models:
  - 3kW, 4.5 kW, 5.5 kW, 7.5 kW, 11kW, and 15kW
  - Speeds up to 3,000 rpm
- Permanent magnet 3-phase synchronous motor
- Keyed drive shafts support clamp-on style couplings or key-style couplings
- Integrated encoder with 16,777,216 encoder pulses/revolution plus marker pulse (once per revolution)
- Optional 24 VDC spring-set holding brakes (xxxxB series motors)
- Standard hook-up cables for motor power, encoder, and brake (separate brake cable for brake motors 230V systems 5.5kW and larger or 460V systems 11kW and larger)
- Motor cables available in standard or flex-rated lengths of 3, 5, 10, and 20m
- Standard 50-pin DIN-rail mounted break-out kit for the drive's CN1 connector (with screw terminal connections), or 20-pin spring clamp terminal block (limited I/O) that mounts directly to the drive

## SureServo2 tuning technology

The SureServo2 drive closes the loop on current, velocity, and position (depending on control mode selection). The 3.1 kHz bandwidth in the drive assures precise speed and current control and easy tuning. Proportional gain, integral gain and compensation, feed forward compensation, command low pass filter, and five (5) notch filters for resonance suppression are available. Auto Tuning has been greatly improved and can easily tune systems with as much as 60:1 inertia mismatch.

There is an inertia estimation function that analyzes the motor and load to measure how much inertia is coupled to the motor.

The drive has several tuning methods available:

- One Touch Auto Tuning—the drive tunes the motor without any motion (static motor/system analysis)
- Normal Auto Tuning—the drive tunes the load while an external controller or the drive's internal indexer provides point-to-point moves
- Assisted Tuning—3 modes where the drive tunes the motor while moving. The user can adjust responsiveness while the drive is analyzing the system
- Manual Tuning—20+ parameters are available to give power users the ultimate flexibility to tune their systems.

## SureServo2 Built-in motion controller

While the SureServo2 drives can accept traditional commands from host controls, they can also provide their own internal motion control. For example, up to 99 index moves can be pre-defined and stored in the drive and then selected and executed using digital inputs (inputs as events or inputs used as a multiplexer) or communication (serial Modbus, Modbus TCP, or Ethernet/IP). The index profiles can also be changed while in-process with digital events or via comms. The internal motion can consist of incremental or absolute moves, and can be sequenced internally with delays in between the moves or moves can be linked together so they are processed one after the other.

Multi-axis systems can be controlled via digital inputs, or serial/Ethernet communication. The motion can be commanded from a powerful external controller that sends out high speed pulses to each drive, or the motion can be initiated by a low-level controller (the simple CLICK PLC) since each drive has a powerful motion controller inside. Applications include press feeds, auger fillers, rotary tables, robots for pick and place, test or assembly operations, drilling, cutting, tapping, and similar applications using simple index moves for single or multi-axis motion.

## SureServo2

### Optional Holding Brake

Each SureServo2 motor rating can be ordered with an optional 24VDC spring-set holding brake that holds the motor in place when power is removed.

## SureGear® Precision Gearboxes for Servo motors

**Inertia balancing issue in your design?**

The SureGear PGA series easily mates to SureServo2 motors. Everything you need to mount your SureServo2 motor is included!

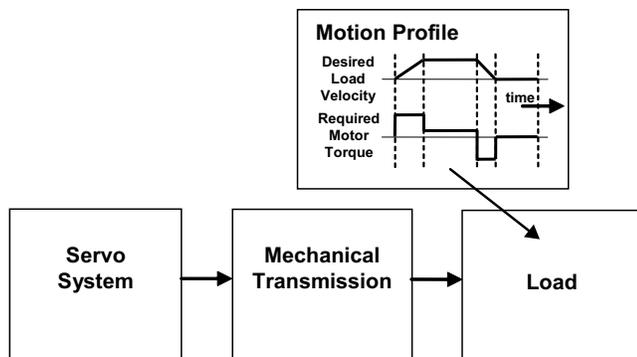


- Four gear ratios available (5, 10, 15, 25:1)
- Mounting hardware included for attaching to SureServo2 motors
- Industry-standard mounting dimensions
- Thread-in mounting style
- Best-in-class backlash (5 arc-min)
- 5-year warranty

## How to select and apply SureServo2 systems

The primary purpose of the AC servo system is to precisely control the motion of the load. The most fundamental considerations in selecting the servo system are “reflected” load inertia, servo system maximum speed requirement, servo system continuous torque requirement, and servo system peak torque requirement. In a retrofit application, select the largest torque SureServo2 system that most closely matches these parameters for the system being replaced. In a new application, these parameters should be determined through calculation and/or measurement. SureServo2 Pro has the ability to measure the load (reflected) inertia and accurately measure the motor torque output.

AutomationDirect has teamed with Copperhill Technologies to provide free servo-sizing software. “VisualSizer-SureServo” software will assist in determining the correct motor and drive for your application by calculating the reflected load inertia and required speed and torque based on the load configuration. “VisualSizer-SureServo” software can be downloaded from [www.automationdirect.com](http://www.automationdirect.com) on the store page for your drive.



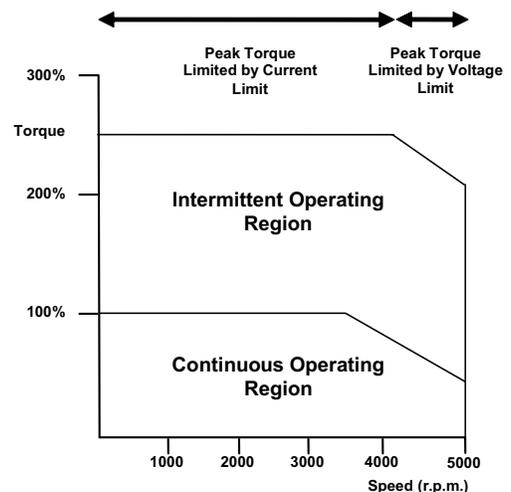
### 1. “Reflected” load inertia

The inertia of everything attached to the servo motor driveshaft needs to be considered and the total “reflected” inertia needs to be determined. This means that all elements of any mechanical transmission and load inertia need to be translated into an equivalent inertia as if attached directly to the motor driveshaft. The ratio of “reflected” load inertia to motor inertia needs to be carefully considered when selecting the servo system.

In general, applications that need high response or bandwidth will benefit from keeping the ratio of load inertia to motor inertia as low as possible and ideally under 10:1. Systems with ratios as high as 200:1 can be implemented, but corresponding lower bandwidth or responsiveness must be accepted. The servo response including the attached load inertia is determined by the servo tuning. SureServo2 systems may be tuned manually, fully Automatically, or via a hybrid mode where the software tunes the system with input for system responsiveness from the user.

### 2. Torque and speed

With knowledge of the motion profile and any mechanical transmission between the motor and load, calculations can be made to determine the required servo motor continuous torque, peak torque, and maximum motor speed. The required amount of continuous torque must fall inside the continuous operating region of the system torque-speed curve (you can check the continuous torque at the average speed of the motion profile). The required amount of peak torque must also fall within the servo system’s intermittent operating region of the system torque-speed curve (you need to check this value at the required maximum speed or torque). If you have a SureServo2 system, these values are easily captured and recorded with the Scope feature built into SureServo2 Pro. If you are designing the system, use VisualSizer to define the system and calculate expected inertia and required power.





# AC Servo Systems

## Application tip - coupling considerations

The SureServo2 motors have keyed shafts that can be used with keyed couplings or with clamp-on or compression style couplings. "Servo-grade" clamp-on or compression style couplings are usually the best choice when you consider the stiffness, torque rating, and inertia. Higher stiffness

(lb-in/radian) is needed for better response but there is a trade-off between the stiffness and the added inertia of the coupling. Concerning the torque rating of the coupling, use a safety factor of 1.25 over the SureServo2 **peak** torque requirement of your application.

## Available Couplings

## Mechanical transmissions

Common mechanical transmissions include leadscrews, rack & pinion mechanisms, conveyors, gears, and timing belts. The use of leadscrew, rack & pinion, or conveyor are common ways to translate the rotary motion of the servo motor into linear motion of the load. The use of a speed reducer such as a gearbox or timing belt can be very beneficial as follows:

### 1. Reduction of reflected load inertia

As a general rule, it is beneficial to keep the reflected load inertia as low as possible while using the full range of servo speed. SureServo2 systems can go up to 6,000 rpm for the low inertia motors and up to 3,000 rpm for the medium inertia motors.

Example: A gearbox reduces the required torque by a factor of the gear ratio, and reduces the reflected load inertia by a factor of the gear ratio squared. A 10:1 gearbox reduces output speed to 1/10, increases output torque 10 times, and decreases reflected inertia to 1/100.

However, when investigating the effect of different speed reduction ratios DO NOT forget to include the added inertia of couplings, gearbox, or timing belt pulleys. These added inertias can be significant, and can negate any inertia reduction due to the speed reduction.

### 2. Low speed and high torque applications

If the application requires low speed and high torque then it is common to introduce a speed reducer so that the servo system can operate over more of the available speed range. This could also have the added benefit of reducing the servo motor torque requirement which could allow you to use a smaller and lower cost servo system. Additional benefits are also possible with reduction in reflected inertia, increased number of motor encoder counts at the load, and increased ability to reject load disturbances due to mechanical advantage of the speed reducer.

### 3. Space limitations and motor orientation

SureServo2 motors can be mounted in any orientation, but the shaft seal should not be immersed in oil (open-frame gearbox, etc.). Reducers can possibly allow the use of a smaller motor or allow the motor to be repositioned. For example, some reducers would allow for in-line, right angle, or parallel mounting of the motor.

For more information, refer to the website listed below.

## Mechanical Transmission: Timing Belts and Pulleys Precision Gearboxes

## Ordering guide instructions

The following four pages are your ordering guide for SureServo2 systems. Each system has a torque-speed curve included for reference. This is the fundamental information that you need to select the servo motor and matching drive for your application.

### Each system needs:

- Motor
- Drive
- Motor Power Cable
- Motor Encoder Cable
- I/O connections (either CN1 cable + RTB breakout board, or an LTB20 breakout board that mounts on the drive)
- For brakemotors 4.5 kW and below, the brake wiring is included in the power cable. For brakemotors 5.5 kW and above, a separate brake cable is required.

A wide variety of optional accessories are also available, such as Ethernet cards, RS485 splitters/terminators, toroids, etc.

You can also use the SureServo2 selector tool on the AutomationDirect.com website to help you configure your system.





# AC Servo System Configuration

## Torque to SureServo2 System Quick Reference

230V System Torque			
System Rated Torque (N-m)	System Maximum Torque (N-m)	Suggested Servo Motor	Required Servo Drive
0.32	1.12	<a href="#">SV2L-201N</a> or <a href="#">SV2L-201B</a>	<a href="#">SV2A-2040</a>
0.64	2.24	<a href="#">SV2L-202N</a> or <a href="#">SV2L-202B</a>	<a href="#">SV2A-2040</a>
1.27	3.96	<a href="#">SV2L-204N</a> or <a href="#">SV2L-204B</a>	<a href="#">SV2A-2040</a>
2.39	7.86	<a href="#">SV2L-207N</a> or <a href="#">SV2L-207B</a>	<a href="#">SV2A-2075</a>
3.18	8.12	<a href="#">SV2L-210N</a> or <a href="#">SV2L-210B</a>	<a href="#">SV2A-2150</a>
4.77	14.32	<a href="#">SV2M-210N</a> or <a href="#">SV2M-210B</a>	<a href="#">SV2A-2150</a>
7.16	14.88	<a href="#">SV2M-215N</a> or <a href="#">SV2M-215B</a>	<a href="#">SV2A-2150</a>
9.55	24.54	<a href="#">SV2M-220N</a> or <a href="#">SV2M-220B</a>	<a href="#">SV2A-2200</a>
17.55	48.29	<a href="#">SV2M-230N</a> or <a href="#">SV2M-230B</a>	<a href="#">SV2A-2300</a>
28.65	71.62	<a href="#">SV2H-245N</a> or <a href="#">SV2H-245B</a>	<a href="#">SV2A-2550</a>
35.01	87.53	<a href="#">SV2H-255N</a> or <a href="#">SV2H-255B</a>	<a href="#">SV2A-2550</a>
47.74	119.36	<a href="#">SV2H-275N</a> or <a href="#">SV2H-275B</a>	<a href="#">SV2A-2750</a>
70	175	<a href="#">SV2H-2B0N</a> or <a href="#">SV2H-2B0B</a>	<a href="#">SV2A-2F00</a>
95.4	224.0	<a href="#">SV2H-2F0N</a> or <a href="#">SV2H-2F0B</a>	<a href="#">SV2A-2F00</a>

460V System Torque			
System Rated Torque (N-m)	System Maximum Torque (N-m)	Suggested Servo Motor	Required Servo Drive
1.27	4.45	<a href="#">SV2L-404N</a> or <a href="#">SV2L-404B</a>	<a href="#">SV2A-4040</a>
2.24	7.58	<a href="#">SV2L-407N</a> or <a href="#">SV2L-407B</a>	<a href="#">SV2A-4075</a>
3.18	9.54	<a href="#">SV2L-410N</a> or <a href="#">SV2L-410B</a>	<a href="#">SV2A-4150</a>
4.77	14.32	<a href="#">SV2M-410N</a> or <a href="#">SV2M-410B</a>	<a href="#">SV2A-4150</a>
7.16	18.1	<a href="#">SV2L-415N</a> or <a href="#">SV2L-415B</a>	<a href="#">SV2A-4150</a>
9.55	28.65	<a href="#">SV2L-420N</a> or <a href="#">SV2L-420B</a>	<a href="#">SV2A-4200</a>
19.1	49.38	<a href="#">SV2H-430N</a> or <a href="#">SV2H-430B</a>	<a href="#">SV2A-4300</a>
28.65	64.61	<a href="#">SV2H-445N</a> or <a href="#">SV2H-445B</a>	<a href="#">SV2A-4550</a>
35.01	73.48	<a href="#">SV2H-455N</a> or <a href="#">SV2H-455B</a>	<a href="#">SV2A-4550</a>
47.74	93.71	<a href="#">SV2H-475N</a> or <a href="#">SV2H-475B</a>	<a href="#">SV2A-4750</a>
70	175	<a href="#">SV2H-4B0N</a> or <a href="#">SV2H-4B0B</a>	<a href="#">SV2A-4F00</a>
95.4	224.0	<a href="#">SV2H-4F0N</a> or <a href="#">SV2H-4F0B</a>	<a href="#">SV2A-4F00</a>



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations

	Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
<b>100W Low Inertia System</b>	120V		<a href="#">SV2L-201N</a>	<a href="#">SV2A-2040</a>	SV2C-PA18-xxNN	SV2C-E122-xxNN
			<a href="#">SV2L-201B</a>		SV2C-PA18-xxFN	SV2C-E122-xxFN
	230V		<a href="#">SV2L-201N</a>		SV2C-PA18-xxNN	SV2C-E122-xxNN
			<a href="#">SV2L-201B</a>		SV2C-PA18-xxFN	SV2C-E122-xxFN
<b>200W Low Inertia System</b>	120V		<a href="#">SV2L-202N</a>	<a href="#">SV2A-2040</a>	SV2C-PA18-xxNN	SV2C-E122-xxNN
			<a href="#">SV2L-202B</a>		SV2C-PA18-xxFN	SV2C-E122-xxFN
	230V		<a href="#">SV2L-202N</a>		SV2C-PA18-xxNN	SV2C-E122-xxNN
			<a href="#">SV2L-202B</a>		SV2C-PA18-xxFN	SV2C-E122-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.

The final two digits indicate flex rating and motor brake compatibility:

SV2C-xxxx-xxNN is a non-flex, non-brake motor cable

SV2C-xxxx-xxNB is a non-flex, brake motor cable

SV2C-xxxx-xxFN is a flex-rated, non-brake cable

SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**

OR

**SV2-CN1-LTB20**



**SureServo2 System Selector  
Online**



# AC Servo System Configuration

SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
120V		SV2L-204N	SV2A-2040	SV2C-PA18-xxNN	SV2C-E122-xxNN
				SV2C-PA18-xxFN	SV2C-E122-xxFN
		SV2L-204B		SV2C-PB18-xxNB	SV2C-E122-xxNN
				SV2C-PB18-xxFB	SV2C-E122-xxFN
230V		SV2L-204N	SV2A-2040	SV2C-PA18-xxNN	SV2C-E122-xxNN
				SV2C-PA18-xxFN	SV2C-E122-xxFN
		SV2L-204B		SV2C-PB18-xxNB	SV2C-E122-xxNN
				SV2C-PB18-xxFB	SV2C-E122-xxFN
460V		SV2L-404N	SV2A-4040	SV2C-PA18-xxNN	SV2C-E122-xxNN
				SV2C-PA18-xxFN	SV2C-E122-xxFN
		SV2L-404B		SV2C-PB18-xxNB	SV2C-E122-xxNN
				SV2C-PB18-xxFB	SV2C-E122-xxFN

400W Low Inertia System

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

SV2-CN1-CBL50xxx + SV2-CN1-RTB50

OR

SV2-CN1-LTB20



**SureServo2 System Selector  
Online**



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

750W Low Inertia System	Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
	120V		<a href="#">SV2L-207N</a>	<a href="#">SV2A-2075</a>	<a href="#">SV2C-PA18-xxNN</a>	<a href="#">SV2C-E122-xxNN</a>
			<a href="#">SV2L-207B</a>		<a href="#">SV2C-PA18-xxFN</a>	<a href="#">SV2C-E122-xxFN</a>
	230V		<a href="#">SV2L-207N</a>	<a href="#">SV2A-2075</a>	<a href="#">SV2C-PA18-xxNN</a>	<a href="#">SV2C-E122-xxNN</a>
<a href="#">SV2L-207B</a>			<a href="#">SV2C-PA18-xxFN</a>		<a href="#">SV2C-E122-xxFN</a>	
460V		<a href="#">SV2L-407N</a>	<a href="#">SV2A-4075</a>	<a href="#">SV2C-PA18-xxNN</a>	<a href="#">SV2C-E122-xxNN</a>	
		<a href="#">SV2L-407B</a>		<a href="#">SV2C-PA18-xxFN</a>	<a href="#">SV2C-E122-xxFN</a>	
				<a href="#">SV2C-PB18-xxNB</a>	<a href="#">SV2C-E122-xxNN</a>	
				<a href="#">SV2C-PB18-xxFB</a>	<a href="#">SV2C-E122-xxFN</a>	

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**



OR

**SV2-CN1-LTB20**





[SureServo2 System Selector Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
120V		SV2L-210N	SV2A-2150	SV2C-PC16-xxNN	SV2C-E222-xxNN
				SV2C-PC16-xxFN	SV2C-E222-xxFN
		SV2L-210B		SV2C-PC16-xxNB	SV2C-E222-xxNN
				SV2C-PC16-xxFB	SV2C-E222-xxFN
230V		SV2L-210N	SV2A-2150	SV2C-PC16-xxNN	SV2C-E222-xxNN
				SV2C-PC16-xxFN	SV2C-E222-xxFN
		SV2L-210B		SV2C-PC16-xxNB	SV2C-E222-xxNN
				SV2C-PC16-xxFB	SV2C-E222-xxFN
460V		SV2L-410N	SV2A-4150	SV2C-PC16-xxNN	SV2C-E222-xxNN
				SV2C-PC16-xxFN	SV2C-E222-xxFN
		SV2L-410B		SV2C-PC16-xxNB	SV2C-E222-xxNN
				SV2C-PC16-xxFB	SV2C-E222-xxFN

1.0 kW Low Inertia System

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

SV2-CN1-CBL50xxx + SV2-CN1-RTB50

OR

SV2-CN1-LTB20



**SureServo2 System Selector**  
[Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*	
120V		SV2M-210N	SV2A-2150	SV2C-PC12-xxNN	SV2C-E222-xxNN	
					SV2C-PC12-xxFN	SV2C-E222-xxFN
		SV2M-210B			SV2C-PC12-xxNB	SV2C-E222-xxNN
					SV2C-PC12-xxFB	SV2C-E222-xxFN
230V		SV2M-210N	SV2A-2150	SV2C-PC12-xxNN	SV2C-E222-xxNN	
					SV2C-PC12-xxFN	SV2C-E222-xxFN
		SV2M-210B			SV2C-PC12-xxNB	SV2C-E222-xxNN
					SV2C-PC12-xxFB	SV2C-E222-xxFN
460V		SV2M-410N	SV2A-4150	SV2C-PC16-xxNN	SV2C-E222-xxNN	
					SV2C-PC16-xxFN	SV2C-E222-xxFN
		SV2M-410B			SV2C-PC16-xxNB	SV2C-E222-xxNN
					SV2C-PC16-xxFB	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

SV2-CN1-CBL50xxx + SV2-CN1-RTB50

OR

SV2-CN1-LTB20



[SureServo2 System Selector Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

	Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*	
<b>1.5 kW Medium Inertia System</b>	120V		<a href="#">SV2M-215N</a>	<a href="#">SV2A-2150</a>	SV2C-PC12-xxNN	SV2C-E222-xxNN	
			<a href="#">SV2M-215B</a>		SV2C-PC12-xxFN	SV2C-E222-xxFN	
	230V		<a href="#">SV2M-215N</a>		SV2C-PC12-xxNN	SV2C-E222-xxNN	
			<a href="#">SV2M-215B</a>		SV2C-PC12-xxFN	SV2C-E222-xxFN	
<b>1.5 kW Low Inertia System</b>	460V		<a href="#">SV2L-415N</a>	<a href="#">SV2A-4150</a>	SV2C-PC16-xxNN	SV2C-E222-xxNN	
			<a href="#">SV2L-415B</a>		SV2C-PC16-xxFN	SV2C-E222-xxFN	
						SV2C-PC16-xxNB	SV2C-E222-xxNN
						SV2C-PC16-xxFB	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**

OR

**SV2-CN1-LTB20**



**[SureServo2 System Selector Online](#)**

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

	Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*	
<b>2.0 kW Medium Inertia System</b>	120V		<a href="#">SV2M-220N</a>	<a href="#">SV2A-2200</a>	<a href="#">SV2C-PD12-xxNN</a>	<a href="#">SV2C-E222-xxNN</a>	
			<a href="#">SV2M-220B</a>		<a href="#">SV2C-PD12-xxFN</a>	<a href="#">SV2C-E222-xxFN</a>	
	230V		<a href="#">SV2M-220N</a>		<a href="#">SV2C-PD12-xxNN</a>	<a href="#">SV2C-E222-xxNN</a>	
			<a href="#">SV2M-220B</a>		<a href="#">SV2C-PD12-xxFN</a>	<a href="#">SV2C-E222-xxFN</a>	
<b>2.0 kW Low Inertia System</b>	460V		<a href="#">SV2L-420N</a>	<a href="#">SV2A-4200</a>	<a href="#">SV2C-PC16-xxNN</a>	<a href="#">SV2C-E222-xxNN</a>	
			<a href="#">SV2L-420B</a>		<a href="#">SV2C-PC16-xxFN</a>	<a href="#">SV2C-E222-xxFN</a>	
						<a href="#">SV2C-PC16-xxNB</a>	<a href="#">SV2C-E222-xxNN</a>
						<a href="#">SV2C-PC16-xxFB</a>	<a href="#">SV2C-E222-xxFN</a>

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable          SV2C-xxxx-xxFB is a flex-rated, brake motor cable

**All Systems I/O**
**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**
**SV2-CN1-LTB20**

+
OR



**[SureServo2 System Selector](#)**  
**[Online](#)**



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
230V		SV2M-230N	SV2A-2300	SV2C-PD12-xxNN	SV2C-E222-xxNN
				SV2C-PD12-xxFN	SV2C-E222-xxFN
		SV2M-230B		SV2C-PD12-xxNB	SV2C-E222-xxNN
				SV2C-PD12-xxFB	SV2C-E222-xxFN
460V		SV2H-430N	SV2A-4300	SV2C-PD12-xxNN	SV2C-E222-xxNN
				SV2C-PD12-xxFN	SV2C-E222-xxFN
		SV2H-430B		SV2C-PD12-xxNB	SV2C-E222-xxNN
				SV2C-PD12-xxFB	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

SV2-CN1-CBL50xxx + SV2-CN1-RTB50



OR

SV2-CN1-LTB20





**SureServo2 System Selector**  
[Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
230V		SV2H-245N	SV2A-2550	SV2C-PD08-xxNN	SV2C-E222-xxNN
				SV2C-PD08-xxFN	SV2C-E222-xxFN
		SV2H-245B		SV2C-PD08-xxNB	SV2C-E222-xxNN
				SV2C-PD08-xxFB	SV2C-E222-xxFN
460V		SV2H-445N	SV2A-4550	SV2C-PD08-xxNN	SV2C-E222-xxNN
				SV2C-PD08-xxFN	SV2C-E222-xxFN
		SV2H-445B		SV2C-PD08-xxNB	SV2C-E222-xxNN
				SV2C-PD08-xxFB	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**

**OR**

**SV2-CN1-LTB20**



[SureServo2 System Selector Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
230V		<a href="#">SV2H-255N</a>	<a href="#">SV2A-2550</a>	SV2C-PF06-xxNN	SV2C-E222-xxNN
				SV2C-PF06-xxFN	SV2C-E222-xxFN
		<a href="#">SV2H-255B</a>		SV2C-PF06-xxNN and SV2C-B120-xxxx	SV2C-E222-xxNN
				SV2C-PF06-xxFN and SV2C-B120-xxxx	SV2C-E222-xxFN
460V		SV2H-455N	SV2A-4550	SV2C-PD08-xxNN	SV2C-E222-xxNN
				SV2C-PD08-xxFN	SV2C-E222-xxFN
		SV2H-455B		SV2C-PD08-xxNN	SV2C-E222-xxNN
				SV2C-PD08-xxFN	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**

**OR**

**SV2-CN1-LTB20**



**SureServo2 System Selector**  
[Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
230V		SV2H-275N	SV2A-2750	SV2C-PF06-xxNN	SV2C-E222-xxNN
				SV2C-PF06-xxFN	SV2C-E222-xxFN
		SV2H-275B		SV2C-PF06-xxNN and SV2C-B120-xxxx	SV2C-E222-xxNN
				SV2C-PF06-xxFN and SV2C-B120-xxxx	SV2C-E222-xxFN
460V		SV2H-475N	SV2A-4750	SV2C-PD08-xxNN	SV2C-E222-xxNN
				SV2C-PD08-xxFN	SV2C-E222-xxFN
		SV2H-475B		SV2C-PD08-xxNN	SV2C-E222-xxNN
				SV2C-PD08-xxFN	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**

**OR**

**SV2-CN1-LTB20**



[SureServo2 System Selector Online](#)



# AC Servo System Configuration

SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
230V		SV2H-2B0N	SV2A-2F00	SV2C-PF06-xxNN	SV2C-E222-xxNN
				SV2C-PF06-xxFN	SV2C-E222-xxFN
		SV2H-2B0B		SV2C-PF06-xxNN and SV2C-B120-xxNB	SV2C-E222-xxNN
				SV2C-PF06-xxFN and SV2C-B120-xxFB	SV2C-E222-xxFN
460V		SV2H-4B0N	SV2A-4F00	SV2C-PF08-xxNN	SV2C-E222-xxNN
				SV2C-PF08-xxFN	SV2C-E222-xxFN
		SV2H-4B0B		SV2C-PF08-xxNN and SV2C-B120-xxNB	SV2C-E222-xxNN
				SV2C-PF08-xxFN and SV2C-B120-xxFB	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

**SV2-CN1-CBL50xxx + SV2-CN1-RTB50**

**OR**

**SV2-CN1-LTB20**



**SureServo2 System Selector**  
[Online](#)



# AC Servo System Configuration

## SureServo2 AC servo drive, motor, and cable combinations, *continued*

Input Voltage	Torque Chart	SureServo2 Motor	SureServo2 Drive	Power Cable*	Encoder Cable*
230V		SV2H-2F0N	SV2A-2F00	SV2C-PF04-xxNN	SV2C-E222-xxNN
				SV2C-PF04-xxFN	SV2C-E222-xxFN
		SV2H-2F0B		SV2C-PF04-xxNN and SV2C-B120-xxNB	SV2C-E222-xxNN
				SV2C-PF04-xxFB and SV2C-B120-xxFB	SV2C-E222-xxFN
460V		SV2H-4F0N	SV2A-4F00	SV2C-PF08-xxNN	SV2C-E222-xxNN
				SV2C-PF08-xxFN	SV2C-E222-xxFN
		SV2H-4F0B		SV2C-PF08-xxNN and SV2C-B120-xxNB	SV2C-E222-xxNN
				SV2C-PF08-xxFN and SV2C-B120-xxFB	SV2C-E222-xxFN

Note: "xx" in the cable part numbers represents cable length: SV2C-xxxx-10xx is a 10m cable.  
 The final two digits indicate flex rating and motor brake compatibility:  
 SV2C-xxxx-xxNN is a non-flex, non-brake motor cable      SV2C-xxxx-xxFN is a flex-rated, non-brake cable  
 SV2C-xxxx-xxNB is a non-flex, brake motor cable      SV2C-xxxx-xxFB is a flex-rated, brake motor cable

All Systems I/O

SV2-CN1-CBL50xxx + SV2-CN1-RTB50

OR

SV2-CN1-LTB20



[SureServo2 System Selector Online](#)



# AC Servo System Accessories

## Accessories, continued

### Motor Cables

Use the table to the right to select the correct SV2 motor cables (power, encoder, and brake) for your SureServo2 motor. Note that the largest frame brakemotors require a separate brake cable: 230V motors 5.5–15 kW and 460V motors 11kW–15kW. For smaller brakemotors, the brake wiring is incorporated into the motor power cable.

First find the motor part number in the left column, then reference the required cable part series under the Power, Encoder, and Brake columns. The first two "x" digits in the part numbers below are placeholders to represent length in meters while the 3rd "x" denotes flex (F) or non-flex (N) cabling. Brake vs non-brake cables are represented by a "B" or "N" at the end of the part number. For example, a 20m non-flex non-brake cable would end in 20NN, while a 3m flex-rated brake motor cable would end in 03FB. Note that SV2H series motors (5.5 kW and greater) use a separate cable to power the brake, so use an "N" cable for motor power. Also, if you use a flex-rated power cable (F series) you should use flex-rated encoder and brake power cables. The flex cables may not feel more flexible when compared side-by-side with the non-flex versions, but they are constructed with finer strands of wire and are designed to withstand millions of flex cycles (continuous flexing) without suffering from "cable corkscrew".

Specs and prices for the various cable options in each series can be found in the tables on the following pages.

**Example:**

You are purchasing an SV2L-201B brake motor and want 10m flex-rated cabling. What cables do you need? The abbreviated motor chart below shows that the SV2L-201B brake motor needs a PB18 series power cable and an E122 series encoder cable. Brake power is supplied through the power cable. The cable charts on subsequent pages enumerate all the various options and show that a 10m, flex, E122 series encoder cable is SV2C-E122-10FN and that a 10m, flex, PB series power cable is SV2C-PB18-10FB.

SureServo2® Motor		Power Cable	Encoder Cable	Brake Cable
230V	460V			
SV2L-201N SV2L-202N SV2L-204N SV2L-207N	SV2L-404N SV2L-407N	SV2C-PA18-xxxN	SV2C-E122-xxxN	n/a
SV2L-201B SV2L-202B SV2L-204B SV2L-207B	SV2L-404B SV2L-407B	SV2C-PB18-xxxB		
SV2L-210N	SV2L-410N SV2M-410N SV2L-415N SV2L-420N	SV2C-PC16-xxxN		
SV2L-210B	SV2L-410B SV2M-410B SV2L-415B SV2L-420B	SV2C-PC16-xxxB		
SV2M-210N SV2M-215N	-	SV2C-PC12-xxxN		
SV2M-210B SV2M-215B	-	SV2C-PC12-xxxB		
SV2M-220N SV2M-230N	SV2H-430N	SV2C-PD12-xxxN		
SV2M-220B SV2M-230B	SV2H-430B	SV2C-PD12-xxxB		
SV2H-245N	SV2H-445N SV2H-455N SV2H-475N	SV2C-PD08-xxxN	SV2C-E222-xxxN	
SV2H-245B	SV2H-445B SV2H-455B SV2H-475B	SV2C-PD08-xxxB		
SV2H-255N SV2H-275N SV2H-2B0N	-	SV2C-PF06-xxxN		
SV2H-255B SV2H-275B SV2H-2B0B	-	SV2C-PF06-xxxN		
SV2H-2F0N	-	SV2C-PF04-xxxN	n/a	
SV2H-2F0B	-	SV2C-PF04-xxxN	SV2C-B120-xxxB	
-	SV2H-4B0N SV2H-4F0N	SV2C-PF08-xxxN	n/a	
-	SV2H-4B0B SV2H-4F0B	SV2C-PF08-xxxN	SV2C-B120-xxxB	



Power Cables



Encoder Cables



Separate Brake Cable  
(for large frame motors (see table))



# AC Servo System Accessories

## Accessories, continued

### SV2C-E122 Series Encoder Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-E122-03NN</a>	\$60.00	N	3m	22	<a href="#">PDF</a>	SV2C-E1-CON	SV2L-201x SV2L-202x SV2L-204x SV2L-207x SV2L-404x SV2L-407x
<a href="#">SV2C-E122-05NN</a>	\$82.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-E122-10NN</a>	\$130.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-E122-20NN</a>	\$213.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-E122-03FN</a>	\$77.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-E122-05FN</a>	\$109.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-E122-10FN</a>	\$182.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-E122-20FN</a>	\$316.00		20m		<a href="#">PDF</a>		

### SV2C-E222 Series Encoder Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors	
<a href="#">SV2C-E222-03NN</a>	\$130.00	N	3m	22	<a href="#">PDF</a>	SV2C-E2-CON	SV2L-210x	SV2L-410x
<a href="#">SV2C-E222-05NN</a>	\$213.00		5m		<a href="#">PDF</a>		SV2M-210x	SV2M-410x
<a href="#">SV2C-E222-10NN</a>	\$265.00		10m		<a href="#">PDF</a>		SV2M-215x	SV2L-415x
<a href="#">SV2C-E222-20NN</a>	\$350.00		20m		<a href="#">PDF</a>		SV2M-220x	SV2L-420x
<a href="#">SV2C-E222-03FN</a>	\$168.00	Y	3m		<a href="#">PDF</a>		SV2M-230x	SV2H-430x
<a href="#">SV2C-E222-05FN</a>	\$206.00		5m		<a href="#">PDF</a>		SV2H-245x	SV2H-445x
<a href="#">SV2C-E222-10FN</a>	\$317.00		10m		<a href="#">PDF</a>		SV2H-255x	SV2H-455x
<a href="#">SV2C-E222-20FN</a>	\$453.00		20m		<a href="#">PDF</a>		SV2H-275X	SV2H-475X
							SV2H-2B0x	SV2H-4B0x
							SV2H-2F0x	SV2H-4F0x

### SV2C-PA18 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-PA18-03NN</a>	\$41.00	N	3m	18	<a href="#">PDF</a>	SV2C-PA-CON	SV2L-201N SV2L-202N SV2L-204N SV2L-207N SV2L-404N SV2L-407N
<a href="#">SV2C-PA18-05NN</a>	\$54.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PA18-10NN</a>	\$80.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PA18-20NN</a>	\$128.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PA18-03FN</a>	\$57.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PA18-05FN</a>	\$77.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PA18-10FN</a>	\$124.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PA18-20FN</a>	\$212.00		20m		<a href="#">PDF</a>		



# AC Servo System Accessories

## Accessories, continued

### SV2C-PB18 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-PB18-03NB</a>	\$48.00	N	3m	18	<a href="#">PDF</a>	SV2C-PB-CON	SV2L-201B SV2L-202B SV2L-204B SV2L-207B SV2L-404B SV2L-407B
<a href="#">SV2C-PB18-05NB</a>	\$63.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PB18-10NB</a>	\$100.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PB18-20NB</a>	\$163.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PB18-03FB</a>	\$72.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PB18-05FB</a>	\$105.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PB18-10FB</a>	\$176.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PB18-20FB</a>	\$313.00		20m		<a href="#">PDF</a>		

### SV2C-PC16 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-PC16-03NN</a>	\$140.00	N	3m	16	<a href="#">PDF</a>	SV2C-PC-CON	SV2L-210N SV2L-410N SV2M-410N SV2L-415N SV2L-420N
<a href="#">SV2C-PC16-05NN</a>	\$166.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-10NN</a>	\$219.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-20NN</a>	\$318.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-03FN</a>	\$154.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-05FN</a>	\$186.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-10FN</a>	\$261.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-20FN</a>	\$401.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-03NB</a>	\$164.00	N	3m	16	<a href="#">PDF</a>	SV2C-PC-CON	SV2L-210B SV2L-410B SV2M-410B SV2L-415B SV2L-420B
<a href="#">SV2C-PC16-05NB</a>	\$198.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-10NB</a>	\$274.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-20NB</a>	\$415.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-03FB</a>	\$184.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-05FB</a>	\$230.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-10FB</a>	\$335.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PC16-20FB</a>	\$537.00		20m		<a href="#">PDF</a>		



# AC Servo System Accessories

## Accessories, continued

### SV2C-PC12 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors	
<a href="#">SV2C-PC12-03NN</a>	\$192.00	N	3m	12	<a href="#">PDF</a>	SV2C-PC-CON	SV2M-210N SV2M-215N	
<a href="#">SV2C-PC12-05NN</a>	\$251.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-10NN</a>	\$391.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-20NN</a>	\$659.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-03FN</a>	\$210.00	Y	3m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-05FN</a>	\$279.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-10FN</a>	\$443.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-20FN</a>	\$760.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-03NB</a>	\$213.00	N	3m	12	<a href="#">PDF</a>		SV2C-PC-CON	SV2M-210B SV2M-215B
<a href="#">SV2C-PC12-05NB</a>	\$280.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-10NB</a>	\$442.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-20NB</a>	\$752.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-03FB</a>	\$235.00	Y	3m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-05FB</a>	\$316.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-10FB</a>	\$513.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PC12-20FB</a>	\$892.00		20m		<a href="#">PDF</a>			

### SV2C-PD12 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors	
<a href="#">SV2C-PD12-03NN</a>	\$203.00	N	3m	12	<a href="#">PDF</a>	SV2C-PD-CON	SV2M-220N SV2M-230N SV2H-430N	
<a href="#">SV2C-PD12-05NN</a>	\$259.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-10NN</a>	\$397.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-20NN</a>	\$662.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-03FN</a>	\$218.00	Y	3m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-05FN</a>	\$286.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-10FN</a>	\$449.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-20FN</a>	\$761.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-03NB</a>	\$225.00	N	3m	12	<a href="#">PDF</a>		SV2C-PD-CON	SV2M-220B SV2M-230B SV2H-430B
<a href="#">SV2C-PD12-05NB</a>	\$291.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-10NB</a>	\$449.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-20NB</a>	\$754.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-03FB</a>	\$246.00	Y	3m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-05FB</a>	\$328.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-10FB</a>	\$520.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD12-20FB</a>	\$892.00		20m		<a href="#">PDF</a>			



# AC Servo System Accessories

## Accessories, continued

### SV2C-PD08 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors	
<a href="#">SV2C-PD08-03NN</a>	\$328.00	N	3m	8	<a href="#">PDF</a>	SV2C-PD-CON	SV2H-245N SV2H-445N SV2H-455N SV2H-475N	
<a href="#">SV2C-PD08-05NN</a>	\$447.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-10NN</a>	\$750.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-20NN</a>	\$1,334.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-03FN</a>	\$356.00	Y	3m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-05FN</a>	\$495.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-10FN</a>	\$843.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-20FN</a>	\$1,527.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-03NB</a>	\$318.00	N	3m	8	<a href="#">PDF</a>		SV2C-PD-CON	SV2H-245B SV2H-445B SV2H-455B SV2H-475B
<a href="#">SV2C-PD08-05NB</a>	\$449.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-10NB</a>	\$771.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-20NB</a>	\$1,390.00		20m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-03FB</a>	\$373.00	Y	3m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-05FB</a>	\$527.00		5m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-10FB</a>	\$908.00		10m		<a href="#">PDF</a>			
<a href="#">SV2C-PD08-20FB</a>	\$1,643.00		20m		<a href="#">PDF</a>			

### SV2C-PF08 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-PF08-03NN</a>	\$315.00	N	3m	8	<a href="#">PDF</a>	SV2C-PF-CON	SV2H-4B0N SV2H-4B0B SV2H-4F0N SV2H-4F0B
<a href="#">SV2C-PF08-05NN</a>	\$385.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PF08-10NN</a>	\$563.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PF08-20NN</a>	\$975.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PF08-03FN</a>	\$396.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PF08-05FN</a>	\$522.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PF08-10FN</a>	\$825.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PF08-20FN</a>	\$1,495.00		20m		<a href="#">PDF</a>		

### SV2C-PF06 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-PF06-03NN</a>	\$437.00	N	3m	6	<a href="#">PDF</a>	SV2C-PF-CON	SV2H-255N SV2H-255B SV2H-275N SV2H-275B SV2H-2B0N SV2H-2B0B
<a href="#">SV2C-PF06-05NN</a>	\$647.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PF06-10NN</a>	\$1,129.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PF06-20NN</a>	\$2,042.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PF06-03FN</a>	\$509.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PF06-05FN</a>	\$716.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PF06-10FN</a>	\$1,238.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PF06-20FN</a>	\$2,250.00		20m		<a href="#">PDF</a>		



# AC Servo System Accessories

## Accessories, continued

### SV2C-PF04 Series Power Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-PF04-03NN</a>	\$509.00	N	3m	4	<a href="#">PDF</a>	SV2C-PF-CON	SV2H-2F0N SV2H-2F0B
<a href="#">SV2C-PF04-05NN</a>	\$719.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PF04-10NN</a>	\$1,211.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PF04-20NN</a>	\$2,203.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-PF04-03FN</a>	\$578.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-PF04-05FN</a>	\$815.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-PF04-10FN</a>	\$1,419.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-PF04-20FN</a>	\$2,592.00		20m		<a href="#">PDF</a>		

### SV2C-B120 Series Brake Cables

Part Number	Price	Flex Rated	Length	Gauge	Drawing	Connector	Compatible Motors
<a href="#">SV2C-B120-03NB</a>	\$88.00	N	3m	20	<a href="#">PDF</a>	SV2C-B1-CON	SV2H-255B SV2H-275B SV2H-2B0B SV2H-2F0B SV2H-4B0B SV2H-4F0B
<a href="#">SV2C-B120-05NB</a>	\$102.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-B120-10NB</a>	\$128.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-B120-20NB</a>	\$172.00		20m		<a href="#">PDF</a>		
<a href="#">SV2C-B120-03FB</a>	\$95.00	Y	3m		<a href="#">PDF</a>		
<a href="#">SV2C-B120-05FB</a>	\$112.00		5m		<a href="#">PDF</a>		
<a href="#">SV2C-B120-10FB</a>	\$149.00		10m		<a href="#">PDF</a>		
<a href="#">SV2C-B120-20FB</a>	\$214.00		20m		<a href="#">PDF</a>		

## Accessories, continued

### External Encoder CN5 Cables

CN5 secondary encoder cables can be used to connect an external secondary encoder to a SureServo2 drive. The CN5 uses a wire not present in standard VGA cables - you must use one of these cables, standard HD15 VGA cables will not work.

Part Number	Price	Description	Length	Drawing	Compatible Drives
<a href="#"><u>ZL-HD15M-CBL-2P</u></a>	\$19.00	ZIPLink communication cable, 15-pin D-sub HD15 male to pigtail, shielded, twisted pair.	2m	<a href="#"><u>PDF</u></a>	All SV2 drives
<a href="#"><u>ZL-HD15M-CBL-DB15F*</u></a>	\$20.50	ZIPLink communication cable, 15-pin female D-sub to 15-pin D-sub HD15 male, shielded, twisted pair.	2m	<a href="#"><u>PDF</u></a>	

\* ZL-RTB-DB15 is required to use the ZL-HD15M-CBL-DB15F cable

Pin Number	Color	Signal	Function
1	Black/White	Opt_/Z	/Z phase input
2	Blue/White	Opt_/B	/B phase input
3	Blue	Opt_B	B phase input
4	Green	Opt_A	A phase input
5	Green/White	Opt_/A	/A phase input
6	Yellow Yellow/Black	GND	Encoder grounding
7	Red/White	GND	Encoder grounding
8	Red	+5V	Encoder power
9	Black	Opt_Z	Z phase input
10	Orange	Reserved	Reserved
11	Orange/White	Reserved	Reserved
12	Brown	Reserved	Reserved
13	Brown/White	Reserved	Reserved
14	Purple	Reserved	Reserved
15	Purple/White	Reserved	Reserved



ZL-HD15M-CBL-2P



ZL-RTB-DB15



ZL-HD15M-CBL-DB15F



SV2-BBOX-CBL

### Battery Box

An optional external battery can be used to power SureServo2 encoders. The battery allows the use of Absolute Encoder Mode. This mode will keep track of the motor actual position (regardless of number of turns) even if control power is removed from the drive.

SV2-BBOX-1 attaches to the encoder cable. There is a small connector protruding from each encoder cable several inches from the drive-end connector. This connector plugs into the SV2-BBOX-1.

SV2-BBOX-CBL is not required for most applications. Use this cable to extend the length from the encoder cable's connector to the BBOX. This is used if you do not want the BBOX clamped onto the encoder cable right under the drive.

Part Number	Price	Description	Length	Drawing	Compatible Drives
<a href="#"><u>SV2-BBOX-1</u></a>	\$22.50	SureServo2 encoder single battery box, for use with all SureServo2 drives. (1) AA ER14505 lithium battery included.	-	<a href="#"><u>PDF</u></a>	All SV2 drives
<a href="#"><u>SV2-BBOX-CBL</u></a>	\$3.00	SureServo2 battery box cable, mating connectors, 7.8 in/200mm cable length. For use with SureServo2 encoder battery box.	200mm	<a href="#"><u>PDF</u></a>	



SV2-BBOX-1  
Motion Control