Stellar[®] SR33 Series Basic Soft Starters

SR33 Soft Starter Accessory

SR33 Series Basic Soft Starters – Accessory					
Part Number Name Price Description					
<u>SR33-HS1</u>	Insulation Kit	\$;4_[:	Heat-shrink insulation required for soft starters SR33-132 to SR33-280 used in UL applications. Can also be used with SR33-350		

SR33 Soft Starter Index Ratings

Index Rating Example - Bypassed Operation (AC-53b Utilization Category per IEC 60947-4-2)

- AC-53b = controller semiconductors provide squirrel-cage motor Start control only; bypassed for Run and Stop.
- IEC Index Ratings are comprised of Rated Operational Current (I_e), Utilization Category, Overload Current Profile (X-Tx), OFF-time.

SR33 Index Ratings – AC-53b (Bypassed Operation) *					
Trip Class	Model #				
10	3-23; 697 (5)	29 to 280	<u>SR33-55</u> to <u>SR33-280</u>		
	3-23; 1177 (3)	350 to 482	<u>SR33-350</u>		
20	4-19; 701 (5)	29 to 350	SR33-55 to SR33-350		
30	4-29; 691 (5)	41 to 430	<u>SR33-55</u> to <u>SR33-350</u>		

* Index rating AC-53b is specified by IEC standard # 60947-4-2



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SR33 Soft Starter Selection

SR33 Sizing Guide

The SR33 is designed for general purpose applications and where a traditional Wye/Delta is currently used (or considered appropriate). Generally the motor will start off-load, and the time to accelerate to full speed will be in the range of a few seconds.

The standard SR33 range is suitable for the majority of applications, and conforms to Trip Class 10, which means it is capable of withstanding three times Full Load Current for \approx 10-second starts. However, there are instances where a different start profile is required. To satisfy these applications, the SR33 has two other ratings; Class 20 and Class 30.

These ratings correspond to IEC thermal/electronic overload trip classes, and the SR33 must be used with an overload protection device that has a rating corresponding to the Trip Class selected.

When using the selection tables to select the most appropriate SR33 model, please note the following:

- The SR33 is not suitable for very high inertia loads, such as centrifuges or loaded crushers, with starts > 30 seconds.
- 2-pole motors may take longer to start.

SR33 Soft Starters – Selection – Steps 1 & 2 (of 4)							
Step 1: Select the application from the list and follow that column down.		Typical Applications					
		Standard Duty		Medium Duty		Heavy Duty	
		Default Agitator Bow Thruster - Zero Pitch Compressor - Rotary Vane Compressor - Scroll Conveyor - Unloaded Fan - Low Inertia < 85A Feeder - screw Lathe machines Mixer - Unloaded	Molding Machine Plastic and textile machines Pump - Submersible Centrifugal Pump - Submersible Rotodynamic Saw - Band Transformers, voltage regulators	Ball mill Bow Thruster - Loaded Compressor - Centrifugal Compressor - Reciprocating Compressor - Rotary Screw Conveyor - Loaded Grinder Hammer mill Mills - Flour, etc. Mixer - Loaded Pelletizers	Pump - Positive displacement Reciprocating Pump - Positive displacement Rotary Pump Jack Rolling mill Roots Blower Saw - Circular Screen - Vibrating Tumblers	Centrifuge* *For centrifuges make selection at I(A) = motor FLA x 2.3 Crusher Fan - High Inertia > 85A Shredder Wood chipper Press, flywheel	
Trip Class		10		20		30	
Step 2: Confirm the rated starting capability of the soft start against the application.	Rated Starting Capability	3x Motor Current - 23s		4x Motor Current - 19s		4x Motor Current - 29s	
	Max Starts per Hour	<u>SR33-55</u> to - <u>SR33-280</u> : 5 starts/hr <u>SR33-350</u> : 3 starts/hr		SR33-55 to -SR33-350: 5 starts/hr		<u>SR33-55</u> to - <u>SR33-350</u> : 5 starts/hr	
		Index Rating Standard (Class5) AC53b: 3-5: 355; Overcurrent = 3 x I _{rated} for 5 seconds					
		Warning: Applying more starts per hour than the specified 5 or 3 starts/hr will cause the starter to overheat and fail.					

SR33 Soft Starters – Selection – Step 3 (of 4)

Step 3: Consider the operating environment and make the model selection on a higher horsepower rating.					
Height Above Sea Level	Standard operating height is 3280ft. For every 328ft, increase motor HP by 1%, up to 6600ft. Example: For a 100HP motor at 4900ft, make model selection based on 105HP (5% higher).				
Operating Temp- erature	Standard operating temperature is 122°F. For every 1°F above increase motor HP by 2.2%, up to 140°F. Example: For a 100HP motor at 132°F, make model selection based on 122HP (22% higher).				
Increased Starts per Hour	Use our online tool to select the model: https://www.automationdirect.com/selectors/softstarters				

SR33 Soft Starters – Selection – Step 4 (of 4)

Step 4: Select SR33 model based on your motor Voltage and Horsepow

step 4. Select Sh33 model based on your motor voltage and horsepower								
	Moto	or HP		Trip Class *				
23	OVAC	460VAC		3-23:697	4-19:701	4-19:691		
HP	HP I _e (A)		I _e (A)	10	20	30		
			-	5 start/hr				
5	15.5	10	15.5	<u>SR33-22</u>	-	-		
10	29	20	29	-	-	<u>SR33-55</u>		
10	34	25	34	-	<u>SR33-55</u>	<u>SR33-66</u>		
15	41	30	41	<u>SR33-55</u>	<u>SR33-66</u>	<u>SR33-97</u>		
20	55	40	55	<u>SR33-66</u>	<u>SR33-97</u>	<u>SR33-132</u>		
20	66	50	66	<u>SR33-80</u>	SR33-132	<u>SR33-132</u>		
30	80	60	80	SR33-132	SR33-132	-		
30	97	75	97	SR33-132	-	-		
50	132	100	132	-	SR33-280	<u>SR33-280</u>		
60	160	125	160	SR33-280	<u>SR33-350</u>	<u>SR33-350</u>		
-	-	-	-	3 start/hr				
75	241	200	241	SR33-350	-	-		

* A separate overload protection device with a rating corresponding to the applicable trip class must be used with the SR33.



For Motor Overload Protection, the SR33 must be used with a separate customer-supplied Overload Protection Device that has a rating corresponding to the applicable Trip Class.

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SR33 Soft Starter Circuit Protection



Trip Level Current (Amps)

The SR33 can be used at ratings other than those
stated. Use the above trip curves to determine the
required unit for the duty.

As an example, the SR33-280 will run a 150hp motor (195 Amp) at the maximum continuous running current and will allow an overload of 3 x 150 Amp (450A) for 12 seconds, 3 times per hour. The unit would also allow a 3.5 x overload (525A) for approximately 51/2 seconds, 3 times per hour.

Following an overload trip, subsequent restarts need to be restricted due to a cooling time. The severity of overload determines the cooling time, which has a maximum value of 10 minutes.



The Soft Starter Overload Trip curve shown on this page applies only to model numbers SR33-280 through SR33-482, and it provides protection only for the Soft Starter. For Motor Overload Protection, a separate

customer-supplied Overload Protection Device must be provided.

UL Short Circuit Protection **						
SR33 Short Model Circui Number * Rating		Class J High-Speed or RK5 Time-Delay Current-Limiting Fuse *** Rated 600VAC	Circuit Breaker Rated 600VAC			
<u>SR33-22</u>	5kA	35A	-			
<u>SR33-55</u>	5kA	80A	_			
<u>SR33-66</u>	10kA	125A	-			
<u>SR33-80</u>	10kA	175A	-			
<u>SR33-97</u>	10kA	200A	-			
<u>SR33-132</u>	10kA	250A	350A			
<u>SR33-280</u>	18kA	450A	-			

* Soft starters SR33-350 to SR33-482 are NOT UL listed or recognized.

** Suitable for use on a circuit capable of delivering not more than the RMS symmetrical Amperes as indicated at 480VAC maximum, when protected by fuses or inverse-time circuit breakers with rated maximum Amperes as indicated.

*** Fuse comparable to Edison type JHL (class J) or ECSR (class RK5).

RECOMMENDED FUSING						
SR33 Rated Short SIBA Score Class J High-Speed or RK5 Time-D Current-Limiting Fuse*						
Number	Circuit Current	Fuse	Amp	Rated 600VAC Edison JHL Part #		
SR33-22	5kA	2018920.50A	35A	JHL35		
SR33-55		2018920.125A	80A	<u>JHL80</u>		
SR33-66	10kA		125A	JHL125		
<u>SR33-80</u>		2061032.200A	175A	<u>JHL175</u>		
<u>SR33-97</u>			200A	<u>JHL200</u>		
<u>SR33-132</u>		2061032.250A	250A	JHL250		
<u>SR33-280</u>	18kA	2062032.630	450A	<u>JHL450</u>		
SR33-350		2063032.1000		-		

* Fuse comparable to Edison type JHL (class J) or ECSR (class RK5).