Stellar® SR33 Series Basic Soft Starters

SR33 Soft Starter Accessory

SR33 Series Basic Soft Starters – Accessory			
Part Number	***Name***	***Price***	***Description***
SR33-HS1	Insulation Kit	$9.25	Heat-shrink insulation required for soft starters SR33-132 to SR33-280 used in UL applications. Can also be used with SR33-350

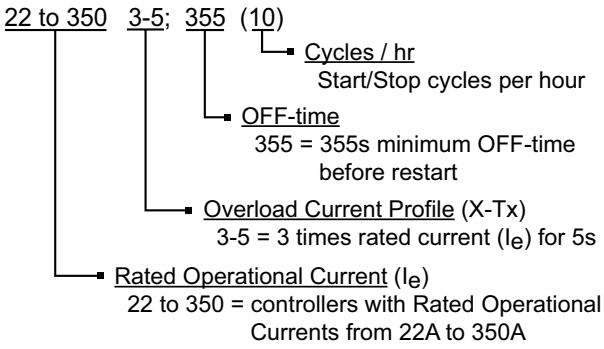
SR33 Soft Starter Index Ratings

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	***X-Tx; OFF-time***	***Ie (A)***	***Model #***
10	3-23; 697 (5)	29 to 280	***SR33-55 to SR33-280***
	3-23; 1177 (3)	350 to 482	***SR33-350***
20	4-19; 701 (5)	29 to 350	***SR33-55 to SR33-350***
30	4-29; 691 (5)	41 to 430	***SR33-55 to SR33-350***

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



Stellar® SR33 Series Basic Soft Starters

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 ≈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)

		Typical Applications		
		Standard Duty	**Medium Duty**	**Heavy Duty**
Step 1: Select the application from the list and follow that column down.		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
Step 2: Confirm the rated starting capability of the soft start against the application.	***Trip Class***	10	20	30
	Rated Starting Capability	3x Motor Current - 23s	4x Motor Current - 19s	4x Motor Current - 29s
	Max Starts per Hour	SR33-55 to -SR33-280: 5 starts/hr SR33-350: 3 starts/hr	SR33-55 to -SR33-350: 5 starts/hr	SR33-55 to -SR33-350: 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 Horsepower

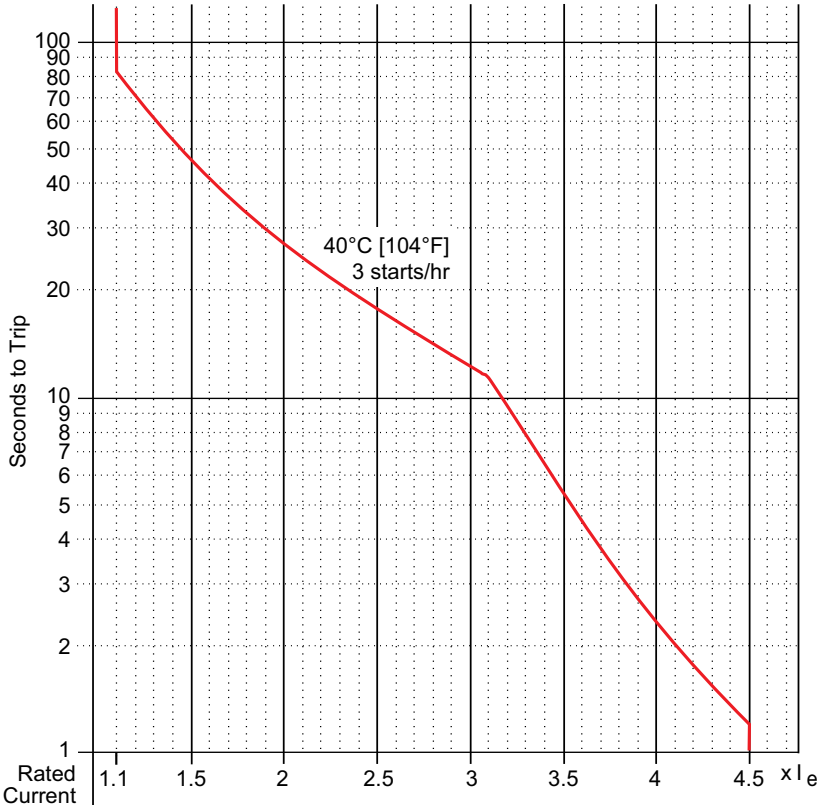
Motor HP				***Trip Class ****		
230VAC		***460VAC***		***3-23:697***	***4-19:701***	***4-19:691***
HP	***I_e (A)***	***HP***	***I_e (A)***	***10***	***20***	***30***
–	–	–	–	***5 start/hr***		
5	15.5	10	15.5	SR33-22	-	-
10	29	20	29	-	-	SR33-55
10	34	25	34	-	SR33-55	SR33-66
15	41	30	41	SR33-55	SR33-66	SR33-97
20	55	40	55	SR33-66	SR33-97	SR33-132
20	66	50	66	SR33-80	SR33-132	SR33-132
30	80	60	80	SR33-132	SR33-132	-
30	97	75	97	SR33-132	-	-
50	132	100	132	-	SR33-280	SR33-280
60	160	125	160	SR33-280	SR33-350	SR33-350
–	–	–	–	***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.

Stellar® SR33 Series Basic Soft Starters

SR33 Soft Starter Circuit Protection



Rated Current	1.1	1.5	2	2.5	3	3.5	4	4.5
160A	176	240	320	400	480	560	640	720
195A	215	293	390	488	585	683	780	878
230A	253	345	460	575	690	805	920	1035
280A	308	420	560	700	840	980	1120	1260
350A	385	525	700	875	1050	1225	1400	1575

Trip Level Current (Amps)

UL Short Circuit Protection **			
*SR33 Model Number **	*Short Circuit Rating*	*Class J High-Speed or RK5 Time-Delay Current-Limiting Fuse *** Rated 600VAC*	*Circuit Breaker Rated 600VAC*
SR33-22	5kA	35A	–
SR33-55	5kA	80A	–
SR33-66	10kA	125A	–
SR33-80	10kA	175A	–
SR33-97	10kA	200A	–
SR33-132	10kA	250A	350A
SR33-280	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).**

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 5½ 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.

RECOMMENDED FUSING for IEC Type 1 Coordination Short Circuit Protection				
SR33 Model Number	*Rated Short Circuit Current*	*SIBA Semiconductor Fuse*	*Class J High-Speed or RK5 Time-Delay Current-Limiting Fuse* Rated 600VAC*	
			Amp	*Edison JHL Part #*
SR33-22	5kA	2018920.50A	35A	JHL35
SR33-55		2018920.125A	80A	JHL80
SR33-66	10kA		125A	JHL125
SR33-80		2061032.200A	175A	JHL175
SR33-97			200A	JHL200
SR33-132		2061032.250A	250A	JHL250
SR33-280	18kA	2062032.630	450A	JHL450
SR33-350		2063032.1000	–	

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