

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

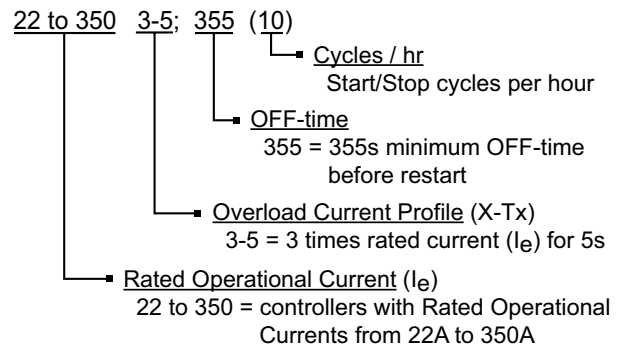
SR33 Soft Starter Index Ratings

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	I_e (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	Molding Machine	Ball mill	Pump - Positive displacement	Centrifuge*
		Bow Thruster - Zero Pitch	Plastic and textile machines	Bow Thruster - Loaded	Reciprocating	*For centrifuges make selection at I(A) = motor FLA x 2.3
		Compressor - Rotary Vane	Pump - Submersible	Compressor - Centrifugal	Pump - Positive displacement	Crusher
		Compressor - Scroll	Centrifugal	Compressor - Reciprocating	Rotary Jack	Fan - High Inertia > 85A
		Conveyor - Unloaded	Pump - Submersible	Compressor - Rotary Screw	Rolling mill	Shredder
		Fan - Low Inertia < 85A	Rotodynamic	Conveyor - Loaded	Roots Blower	Wood chipper
		Feeder - screw	Saw - Band	Grinder	Saw - Circular	Press, flywheel
		Lathe machines	Transformers, voltage regulators	Hammer mill	Screen - Vibrating	
		Mixer - Unloaded		Mills - Flour, etc.	Tumblers	
				Mixer - Loaded		
		Pelletizers				
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 Temperature	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	-	-

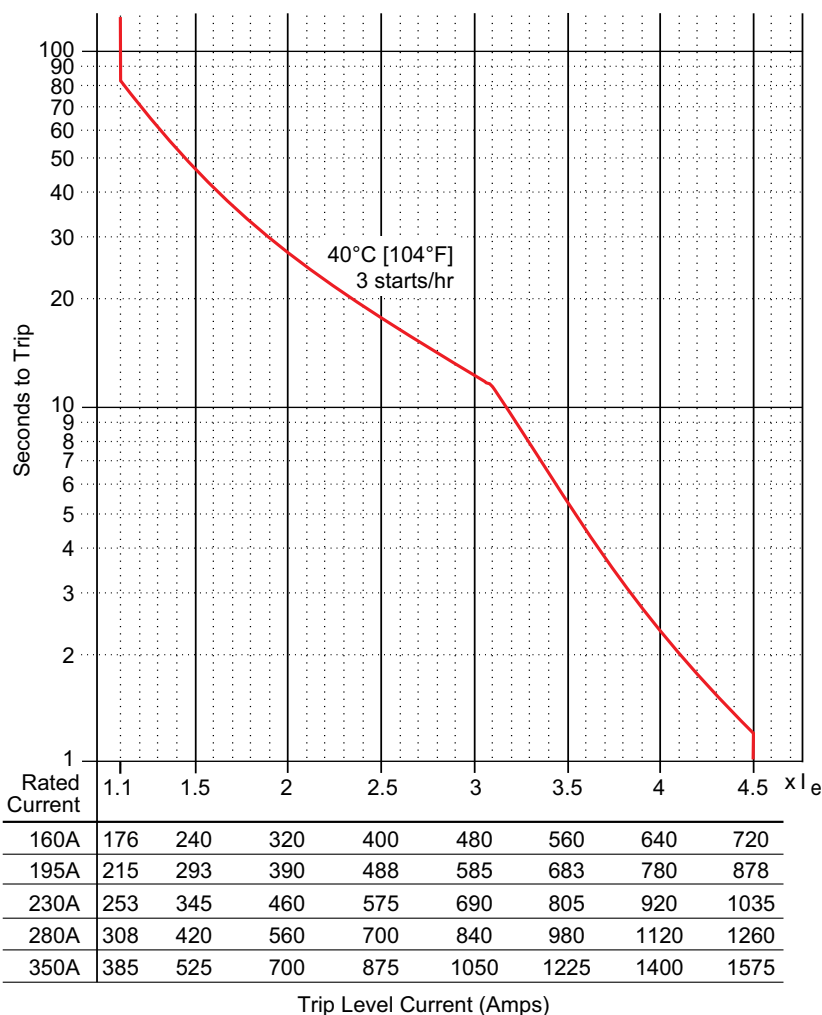
* A separate overload protection device with a rating corresponding to the applicable trip class must be used with the SR33.



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



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 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.

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).

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		2061032.200A	125A
SR33-80		175A		JHL175
SR33-97		200A		JHL200
SR33-132		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).