

Stellar® SR22 Compact Soft Starters

SR22 Soft Starters – Selection									
Step 1: Select the application from the list and follow that column down.									
Typical applications	Standard Duty			Medium Duty			Heavy Duty	Light 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	Unloaded / Lightly loaded motor			
Step 2: Confirm the rated starting capability of the soft start against the application.									
Trip Class	10			20			30	2	
Rated Starting Capability	3x Motor Current - 23s 3.5x Motor Current - 17s			4x Motor Current - 19s			4x Motor Current - 29s	3x Motor Current - 5s	
Max Starts per Hour	5 starts/hr (or 30 starts/hr with fan) 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 30 start/hr will cause the starter to overheat and fail.								
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								
Step 4: Select SR22 model based on your motor Voltage and Horsepower (3Ph only; 1Ph on next page)									
Motor HP						Trip Class			
208VAC		230VAC		460VAC		3-23:697	4-19:701	4-19:691	3-5:355
HP	I _e (A)	HP	I _e (A)	HP	I _e (A)	10	20	30**	2***
0.5	2.4	0.5	2.2	1.5	3	SR22-05	SR22-07	SR22-09	SR22-05
0.75	3.5	0.75	3.2	2	3.4	SR22-07	SR22-09	SR22-12	SR22-05
1	4.6	1	4.2	3	4.8	SR22-09	SR22-12	SR22-16	SR22-05
1.5	6.6	2	6.8	3	4.8	SR22-12	SR22-16	SR22-22	SR22-07
2	7.5	3	9.6	5	7.6	SR22-16	SR22-22	SR22-30	SR22-12
3	10.6	3	9.6	7.5	11	SR22-22	SR22-36	SR22-40	SR22-12
3	10.6	5	15.2	10	14	SR22-30	SR22-40	SR22-40 w/fan	SR22-16
5	16.7	5	15.2	10	14	SR22-36	SR22-40	SR22-40 w/fan	SR22-22
5	16.7	7.5	22	15	21	SR22-40	SR22-40 w/fan	–	SR22-22
7.5	24.2	10	28	20	27	SR22-40 w/fan	–	–	SR22-30

* A separate overload protection device with a rating corresponding to the applicable trip class must be used with the SR22.

** The SR22 is not suitable for very high inertia loads such as centrifuges or loaded crushers with start times > 30s.

*** Do NOT use the Class 2 rating when there is a possibility of the motor starting under a heavy load.

Online Product Selection Tool:

<https://www.automationdirect.com/selectors/softstarters>

Stellar® SR22 Compact Soft Starters

SR22 Soft Starters – Selection (Cont'd)

Step 4: Select SR22 model based on your motor Voltage and Horsepower (1Ph only)

Motor HP				Trip Class			
110-120V		220-240V		3-23:697*	4-19:701*	4-29:691*	3-5:355**
HP	I _e (A)	HP	I _e (A)	10	20	30	2
-	-		1.2	SR22-05	SR22-05	SR22-05	SR22-05
-	-	0.1	1.6	SR22-05	SR22-05	SR22-07	SR22-05
-	-	0.12	1.9	SR22-05	SR22-05	SR22-07	SR22-05
-	2.4	0.16	2.3	SR22-05	SR22-07	SR22-09	SR22-05
0.1	3.3	0.25	2.9	SR22-07	SR22-09	SR22-12	SR22-05
0.12	3.8	0.33	3.9	SR22-09	SR22-12	SR22-16	SR22-05
0.16	4.5	0.5	-	SR22-09	SR22-12	SR22-16	SR22-05
0.25	5.8	-	5.5	SR22-12	SR22-16	SR22-22	SR22-07
-	-	0.75	-	SR22-12	SR22-16	SR22-22	SR22-07
0.33	7.9	1	7.3	SR22-16	SR22-22	SR22-30	SR22-09
0.5	11	1.5	10	SR22-22	SR22-36	SR22-40	SR22-12
0.75	-	2	13	SR22-30	SR22-40	SR22-40 w/fan	SR22-16
1	15	3	-	SR22-40	SR22-40 w/fan		SR22-22
1.5	21	-	19	SR22-40	SR22-40 w/fan		SR22-22
2	26	-	24	SR22-40 w/fan			SR22-30
-	-	5	27	SR22-40 w/fan			SR22-30
-	-	-	30	SR22-40 w/fan			SR22-30
3	37	-	-				SR22-40
-	-	7.5	41				SR22-40

*5 starts/hour without fan; 30 starts/hour with fan

**10 starts/hour without fan; 60 starts/hour with fan

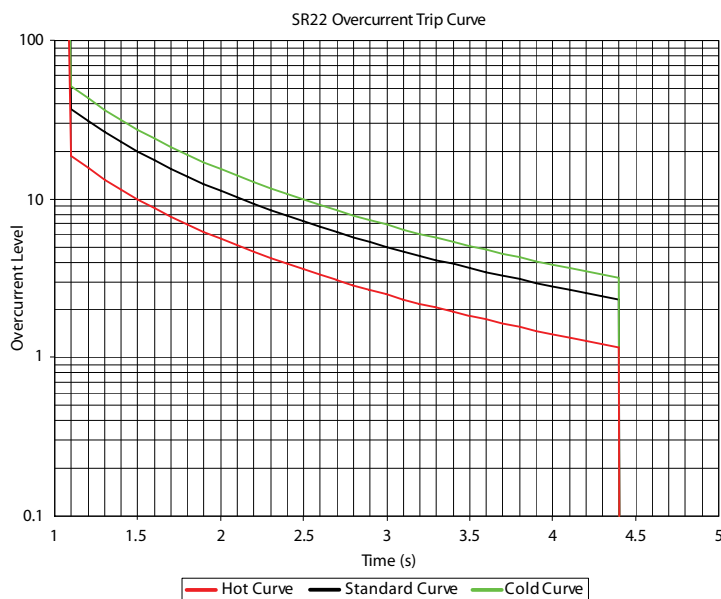
Online Product Selection Tool:

<https://www.automationdirect.com/selectors/softstarters>

SR22 Max UL Overcurrent Protection

SR22 Internal Overcurrent Trip Curve

The internal overcurrent trip of the soft starter does not replace the required external overcurrent device.



UL Maximum Overcurrent Protection Devices *

for 5kA @ 480V Short Circuit Rating

Soft Starter Model Number	Maximum Non-Time-Delay Trip Rating *	
	Fuse * – Class J or T (600V rated)	Circuit Breaker * (600V rated)
SR22-05	15A	N/A
SR22-07	15A	
SR22-09	30A	
SR22-12	40A	
SR22-16	50A	
SR22-22	80A	80A
SR22-30	100A	100A
SR22-36	125A	125A
SR22-40	150A	150A

* Maximum trip ratings are for non-time-delay overcurrent protection devices.

* Motor branch circuit protection must be based on MOTOR Full Load Current, and must comply with applicable local electrical codes. The 2008 NEC section 430.52 recommends a maximum of 175% (up to 225% absolute maximum) of motor FLC for time-delay fuses. (Class CC time-delay fuses are permitted up to the non-time-delay fuse maximum rating.)

Stellar® SR22 Compact Soft Starters



45mm Stellar Compact Soft Starter

55mm Stellar Compact Soft Starter

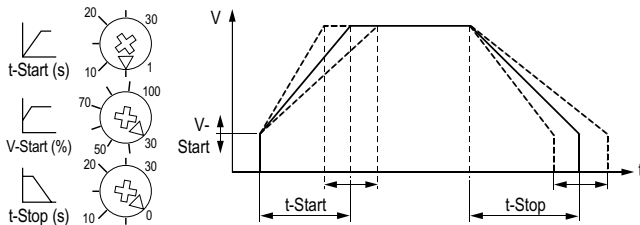


Cooling Fan for 45mm Soft Starters

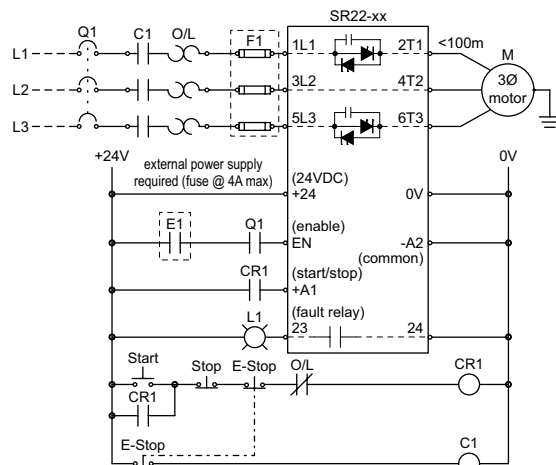


Cooling Fan for 55mm Soft Starters

SR22 Start/Stop Timing Diagram



SR22 Wiring Diagram

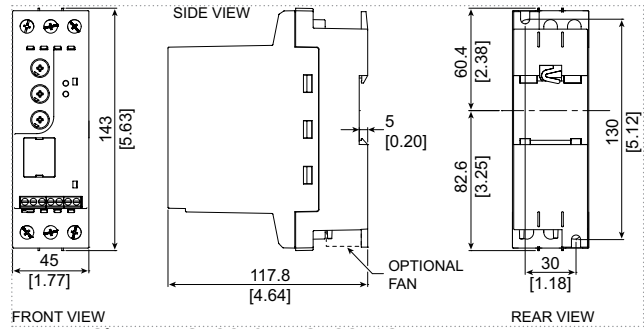


External Control Elements:

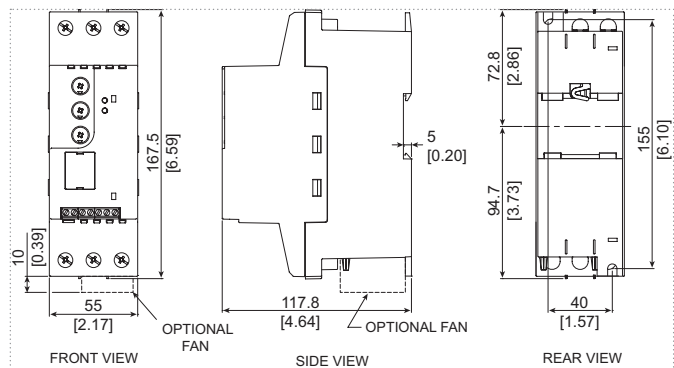
- C1 = E-Stop contactor
- CR1 = Start contactor
- E1 = Optional switch to allow trip reset without opening main breaker Q1
- F1 = Optional semiconductor fuse for Type 1 Coordination (in addition to Q1)
- O/L = Overload relay
- Q1 = Cable protection circuit breaker
- L1 = Indicator lamp: ON = Ready; OFF = Fault
- E-Stop/Start/Stop = E-Stop/Start/Stop pushbuttons

SR22 Dimensions

Dimensions = mm [in]



Frame Size 45 (SR22-05 – SR22-16)



Frame Size 55 (SR22-22 – SR22-40)

SR22 – PLC I/O Compatibility

SR22 – PLC & I/O Compatibility		
Product Line	Module Type	Module Numbers
CLICK	PLC	C0-00AR-D, C0-00DD2-D, C0-00DR-D, C0-02DD2-D, C0-02DR-D
	DC Output	C0-08TD2, C0-16TD2
	Relay Output	C0-04TRS, C0-08TR
Productivity3000	DC Output	P3-08TD2S, P3-16TD2
	Relay Output	P3-08TAS, P3-16TA, P3-08TRS, P3-16TR, P3-08TRS-1
DL05	PLC	D0-05AR, D0-05DR, D0-05DR-D
DL06	PLC	D0-06AR, D0-06DD2, D0-06DD2-D, D0-06DR, D0-06DR-D
DL05/DL06	DC I/O	D0-07CDR
	DC Output	D0-10TD2, D0-16TD2, D0-08TR, F0-04TRS
DL105	PLC	F1-130-DR, F1-130-DR-D
DL205	DC I/O	D2-08CDR
	DC Output	D2-08TD2, D2-16TD2-2, D2-32TD2, F2-16TD2P
	Relay Output	D2-04TRS, D2-08TR, D2-12TR, F2-08TR, F2-08TRS
DL305	DC Output	D3-08TD2, D3-16TD2
	Relay Output	D3-08TR, D3-16TR
DL405	DC Output	D4-16TD2, D4-32TD2
	Relay Output	D4-08TR, D4-16TR, F4-08TRS-1, F4-08TRS-2
Terminator I/O	DC Output	T1K-08TD2-1, T1K-16TD2-1
	Relay Output	T1K-08TR, T1K-08TRS, T1K-16TR