Stellar® SR22 Compact Soft Starters

Overview
SR22 semi-conductor soft starters provide many advantages when used instead of electro-mechanical contactors to control 3-phase AC induction motors. The SR22 soft starters use thyristors for controlled reduced voltage motor starting and stopping, then switch to internal contacts for efficient running at rated speed.

Features
- 3–22A @ 208–460V Class 10 starting
- 5–40A @ 208–460V (lightly loaded)
- 24 VDC control voltage
- Easily and separately adjustable motor start and stop times
- Two-phase control
- Internal bypass contacts for run
- 35mm DIN rail mounting
- Two standard-size widths: 45 & 55 mm
- Six error/trip indications: AC Supply, Control Supply, Overheated, Bypass Failure, Shear Pin, Overcurrent

Advantages
**Mechanical Advantages**
- Smooth acceleration; reduced shock and starting stress
- Extend lifespan of mechanical drive train components
- Fluid couplings and some clutches can be eliminated

**Electrical Advantages**
- Reduced starting current
- More motors or larger motors can be started from lower-capacity power sources
- Allows motors to be started more frequently
- Internal mechanical contacts open and close under reduced current, increasing lifespan and reliability

**Economic Advantages**
- Lower overall costs for new installations
- Reduced maintenance and replacement of mechanical drive train components
- Reduced starting current reduces electrical power costs

Standards & Approvals
- CE
- RoHS
- UL listed* (E333109)
  *optional fans are UL recognized: E132139, E77551, E89936

Optional Accessories
- Cooling fan (increases # of starts/hour)

Applications
- General purpose applications where traditional across-the-line starting or wye-delta starting would typically be appropriate.

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**SR22 Series Compact Soft Starters**

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<tr>
<td>Price</td>
<td>$125.00</td>
<td>$138.00</td>
<td>$148.00</td>
<td>$180.00</td>
<td>$201.00</td>
<td>$237.00</td>
<td>$319.00</td>
<td>$396.00</td>
<td>$478.00</td>
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</table>

**Rated Motor Current**
- std Class 10 starting
- lightly loaded Class 2 starting

**Rated Operational Voltage**
- 208–460 VAC (-15% +10%) @ 50–60 Hz (±2Hz); 3 phase (2 phases controlled)

**Impulse Withstand Voltage**
- 2.5 kV

**Insulation Voltage Rating**
- 500V

**Short Circuit Current Rating**
- 5kA Type 1 when protected by recommended semiconductor fuses

**Control Power**
- approx 4VA @ 24 VDC (external power supply required) (UL applications require max 4A UL listed fuse)

**Control Inputs**
- galvanically isolated opto-coupled inputs; require sourcing +24 VDC (control)

**Auxiliary Relay Output**
- 250 VAC: 2.5A resistive, 0.2A inductive / 30 VDC: 3.0A resistive, 0.7A inductive

**Start Time Setting Range**
- 1–30 seconds

**Start Voltage Setting Range**
- 30–100%

**Stop Time Setting Range**
- 0–30 seconds

**Start Duty**
- 3 x full load current for 10 seconds @ Trip Class 10

**Starts / Hour (standard)**
- 5 starts / hr

**Starts / Hour (with optional fan)**
- (30 starts / hr) + (30 soft stops / hr) internally bypassed

**Ambient Operating Temperature**
- 0–40 °C [32–104 °F] – Above 40 °C [104 °F] derate linearly by 2% of unit FLC per °C to a max derate of 40% @ 60 °C [140 °F]

**Transportation & Storage Temperature**
- -25–60 °C [-13–140 °F]

**Humidity**
- max 85% non-condensing; not exceeding 50% @ 40 °C [104 °F]

**Altitude**
- 1000m (3281 ft); 1000–2000m (3281–6562 ft) derate 1% of unit FLC per 100–2000m (328–6562 ft)

**Environmental Rating**
- IP20

**Shipping Weight**
- 400g [14 oz] 680g [24 oz] 725g [26 oz]

**Dimensions (HxWxD)**
- 143 x 45 x 117.8 mm (5.63 x 1.77 x 4.64 in)
- 167.5 x 55 x 117.8 mm (6.59 x 2.17 x 4.64 in)

**Accessories**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Price</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Fan (temperature controlled)**</td>
<td>SR22-FAN-45</td>
<td>$47.50</td>
</tr>
<tr>
<td></td>
<td>SR22-FAN-55</td>
<td>$47.50</td>
</tr>
</tbody>
</table>

**Important:** Care must be taken to select the correct SR22 for the application to ensure that the SR22 is not undersized. Refer to Selection Tables or to online selection tool (https://www.automationdirect.com/selectors/softstarters).

**Cooling fans do not run continuously.**
Step 1: Select the application from the list and follow that column down.

Step 2: Confirm the rated starting capability of the soft start against the application.

Step 3: Consider the operating environment and make the model selection on a higher horsepower rating.

Step 4: Select SR22 model based on your motor Voltage and Horsepower

Notable Points:
- Do NOT use the Class 2 rating when there is a possibility of the motor starting under a heavy load.
- The SR22 is not suitable for very high inertia loads such as centrifuges or loaded crushers with start times > 30s.
- * For centrifuges make selection at I(A) = motor FLA * 2.3
- ** 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

SR22 Internal Overcurrent Trip Curve
The internal overcurrent trip of the soft starter does not replace the required external overcurrent device.

SR22 Max UL Overcurrent Protection

UL Maximum Overcurrent Protection Devices * for 5kA @ 480V Short Circuit Rating

<table>
<thead>
<tr>
<th>Soft Starter Model Number</th>
<th>Maximum Non-Time-Delay Trip Rating *</th>
<th>Circuit Breaker * (600V rated)</th>
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<tbody>
<tr>
<td>SR22-05</td>
<td>15A</td>
<td>N/A</td>
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<tr>
<td>SR22-07</td>
<td>15A</td>
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<td>SR22-09</td>
<td>30A</td>
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<td>SR22-12</td>
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<td>SR22-16</td>
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<td>SR22-22</td>
<td>80A</td>
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<td>SR22-36</td>
<td>125A</td>
<td>125A</td>
</tr>
<tr>
<td>SR22-40</td>
<td>150A</td>
<td>150A</td>
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</table>

* 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.)

For the latest prices, please check AutomationDirect.com.
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SR22 Dimensions
Dimensions = mm [in]

Frame Size 45 (SR22-05 – SR22-10)

Frame Size 55 (SR22-22 – SR22-40)

SR22 – PLC I/O Compatibility

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Module Type</th>
<th>Module Numbers</th>
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<tbody>
<tr>
<td>CLICK</td>
<td>PLC</td>
<td>C0-00AR-D, C0-00DD2-D, C0-00DR-D, C0-02DD2-D, C0-02DR-D</td>
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<td></td>
<td>DC Output</td>
<td>C0-08TD2, C0-16TD2</td>
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<td>Relay Output</td>
<td>C0-04TRS, C0-08TR</td>
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<td>Productivity3000</td>
<td>DC Output</td>
<td>P3-08ND3S, P3-16ND3, P3-32ND3, P3-64ND3</td>
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<td>P3-08TAS, P3-16TA, P3-08TRS, P3-16TR, P3-08TRS-1</td>
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<td>DL05</td>
<td>PLC</td>
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<td>DL06</td>
<td>PLC</td>
<td>D0-06AR, D0-06DD2-D, D0-06DR, D0-06DR-D</td>
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<td>DL05/06/S06</td>
<td>DC I/O</td>
<td>D0-07CDR</td>
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<td>DC Output</td>
<td>D0-10TD2, D0-16TD2, D0-08TR, F0-04TRS</td>
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<td>PLC</td>
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<td>DL205</td>
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<td>Relay Output</td>
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<td>DL405</td>
<td>DC Output</td>
<td>D4-16TD2, D4-32TD2</td>
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<tr>
<td>Terminator I/O</td>
<td>DC Output</td>
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<tr>
<td></td>
<td>Relay Output</td>
<td>T1K-08TR, T1K-08TRS, T1K-16TR</td>
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