

March 2002

Reduced Voltage Motor Starters

Contents

Description

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IT. Intelligent Technologies

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Note: Supplement to Publication No. CA08102001E.



S801 Soft Starters

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S751 Open Soft Starters



S751

Product Description

The S751 Line of Reduced Voltage Soft Starters is very compact, multi-functional, easy to install and easy to program. Designed to control acceleration and deceleration of 3-phase motors, the Line is available for current ranges from .25 to 27 amps. The S751 is suitable for mounting in motor control centers or in enclosed control (NEMA 1, 4, 4X and 12) applications.

The S751 is also designed to be a complete package combining the SCR devices, bypass contactor and overload in one, very compact package. The S751 comes complete with everything needed to set up and program the soft starter.

Application Description

Designed to be the smallest, most compact soft starter in the world today, the S751 is designed to fit in place of your existing soft starter or across-the-line NEMA or IEC starter today. Designed to work with 3-phase motors from 200 – 600V AC, the S751 combines the overload and bypass contactor into one package for fast and easy installation. The unit also provides all necessary overload protection for the motor. The built-in bypass contactor ensures a minimal amount of heating internal to the enclosure. The unit provides for smooth starting and stopping of motors to reduce both mechanical and electrical shock to the system. Short circuit protection can be provided by fuses.

Features

- Built-in overload protection (30 – 100% adjustment)
- Built-in bypass contactor for minimal heat generation
- Adjustable ramp times (.5 – 30 secs)
- Adjustable internal torque (0 – 95%)
- Adjustable deceleration times (0 – 30 secs)
- Seven segment digital display
- Multiple trip class settings (10, 20 and 30)
- Six SCR control
- Physically fits in places of most NEMA and IEC starters
- Rated operational voltage 200 – 600V AC
- Selectable phase loss/unbalance protection

Benefits

- Reduced wear on belts, gears chains, clutches, shafts and bearings
- Allows for controlling the inrush current to the motor
- Reduced water-hammer in pumping applications
- Less shock to product on connector lines and material handling gear
- 24V DC control enhances personnel and equipment safety
- All-in-one design reduces number of components and makes installation simpler and faster

Standards and Certifications

- IEC 947 Compliant
- EN 60947-4-2
- CE marked
- CSA Certified
- UL Listed

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Intelligent Technologies — S751 Open Soft Starters

Technical Data — Specifications

Table 39-1. S751 Open Soft Starters

Soft Starter (Partial Catalog Number)	S751 L01	S751 L02	S751 L04	S751 L09	S751 L16	S751 L27
Maximum Current Capacity	.8	1.9	4.4	9.0	16	27
Dimensions						
Width in Inches (mm)	2.13 (54)	2.13 (54)	2.13 (54)	2.13 (54)	2.13 (54)	2.13 (54)
Height in Inches (mm)	6.92 (175.7)	6.92 (175.7)	6.92 (175.7)	6.92 (175.7)	6.92 (175.7)	6.92 (175.7)
Depth in Inches (mm)	4.13 (104.8)	4.13 (104.8)	4.13 (104.8)	4.13 (104.8)	4.13 (104.8)	4.13 (104.8)
Weight in lbs. (kg)	2.80 (1.27)	2.80 (1.27)	2.80 (1.27)	2.80 (1.27)	2.80 (1.27)	2.80 (1.27)
Drawing	See Figure 39-1 (Page 39-16)					
Electrical Characteristics						
Line Voltage (V AC)	200 – 600	200 – 600	200 – 600	200 – 600	200 – 600	200 – 600
Operating Frequency (Hz)	47 – 63	47 – 63	47 – 63	47 – 63	47 – 63	47 – 63
Leakage Current	15 mA AC max.					
Min. Operating Current	100 mA					
Control Voltage (24V ±10%)	21.6 – 26.4	21.6 – 26.4	21.6 – 26.4	21.6 – 26.4	21.6 – 26.4	21.6 – 26.4
Response Time Max.	250 mS	250 mS	250 mS	250 mS	250 mS	250 mS
Control Steady State Current	200 mA	200 mA	200 mA	200 mA	200 mA	200 mA
Inrush Current (During Bypass)	3.6A @ 50 mS	3.6A @ 50 mS	3.6A @ 50 mS	3.6A @ 50 mS	3.6A @ 50 mS	3.6A @ 50 mS
Control Wiring						
Wire Sizes (AWG)	22 – 12	22 – 12	22 – 12	22 – 12	22 – 12	22 – 12
Number of Conductors (Stranded)	2 (or one AWG 12)					
Torque Requirements (lb-in)	3.5	3.5	3.5	3.5	3.5	3.5
Solid, Stranded or Flexible Max. Size (mm ²)	3.31	3.31	3.31	3.31	3.31	3.31
Cabling Capacity						
Number of Conductors	1	1	1	1	1	1
Wire Sizes	14 – 8	14 – 8	14 – 8	14 – 8	14 – 8	14 – 8
Type of Connectors	Box Lugs	Box Lugs	Box Lugs	Box Lugs	Box Lugs	Box Lugs
Environmental Characteristics						
Temperature — Operating (no derating)	-35° – 50°C	-35° – 50°C	-35° – 50°C	-35° – 50°C	-35° – 50°C	-35° – 50°C
Temperature — Derate >50°C (max. 65°C)	-1/2% per°C	-1/2% per°C	-1/2% per°C	-1/2% per°C	-1/2% per°C	-1/2% per°C
Temperature — Storage	-40° – 80°C	-40° – 80°C	-40° – 80°C	-40° – 80°C	-40° – 80°C	-40° – 80°C
Altitude (Meters) — No Derating	2000	2000	2000	2000	2000	2000
Altitude > 2000M	-1/2% per °C	-1/2% per °C	-1/2% per °C	-1/2% per °C	-1/2% per °C	-1/2% per °C
Humidity	95% Non-condensing					
Operating Position	Vertical ± 30°					
Impulse Withstand Voltage IEC 947-4-1	4000V	4000V	4000V	4000V	4000V	4000V
Rated Insulation Voltage (Ui)	660V					
Installation Category	III					
Vibration	IEC 68-2-6 3g 10 – 150 Hz					
Shock	15g	15g	15g	15g	15g	15g
Degree of Protection	IP20	IP20	IP20	IP20	IP20	IP20
Agency Approvals	UL, CSA, CE					

Auxiliary Contacts

The S751 Line allows for the use of top mounted auxiliary contacts. These contacts can be used for up-to-speed indication.

Table 39-2. S751 Auxiliary Contacts

Poles	Catalog Number	Price U.S. \$
1NO	EMA13	20.90
1NC	EMA14	20.90
1NO/1NC	EMA15	28.00
2NO	EMA16	28.00
2NC	EMA17	28.00
1NO/1NC Logic Level	EMA70	33.00

Table 39-3. S751 — Maximum Number of Auxiliary Contacts

EMA13 1NO	EMA14 1NC	EMA15 1NO/1NC	EMA16 2NO	EMA17 2NC	EMA70 1NO/1NC Logic Level
3	3	2 ①	2 ①	2 ①	3

① One EMA70 or one EMA13/EMA14 may be used in the center position in conjunction with two of these devices in the outer positions.

Table 39-4. S751 — Auxiliary Contact Ratings (EMA13 – EMA17)

DC-13		AC-15	
U _e Voltage	I _e Amps	U _e Voltage	I _e Amps
24	5	48	8
48	2.5	120	6
125	1.1	240	4
250	.55	440	2

Table 39-5. S751 — Auxiliary Contact Ratings (EMA70)

U _e Voltage	I _t Amps
125 – 250	.1

Approximate Dimensions

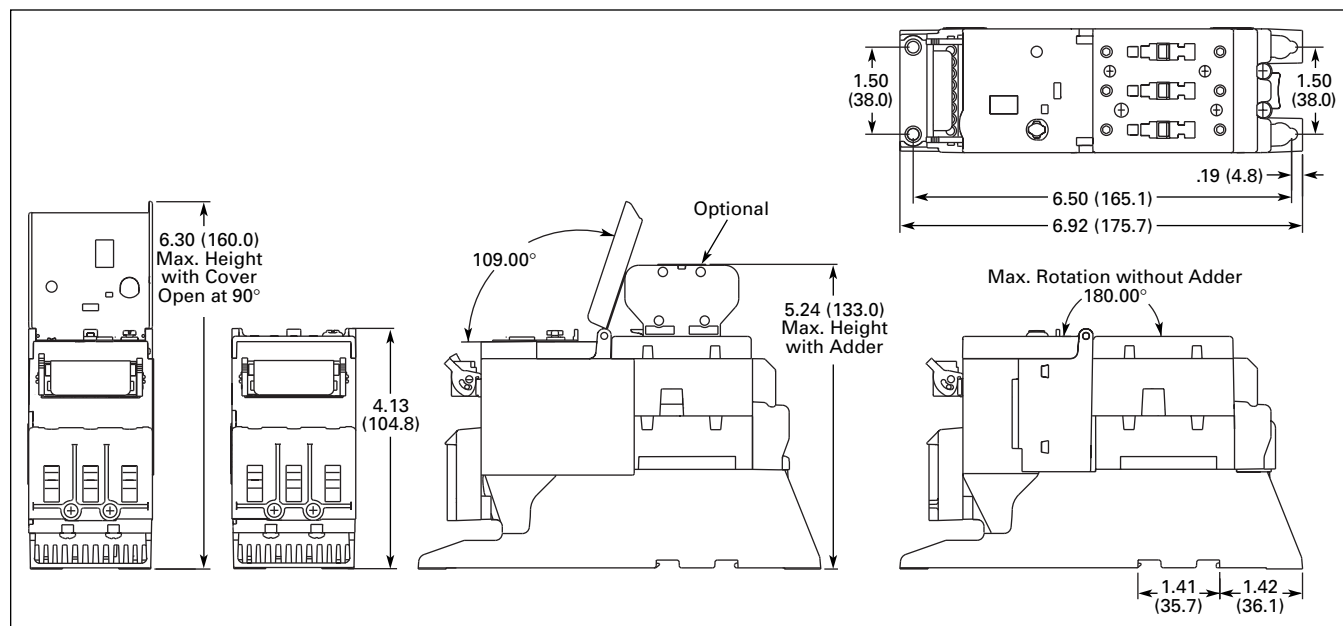


Figure 39-1. S751 Approximate Dimensions

Product Selection

IT. S751 Soft Starter Duty Ratings

Standard Duty

Typical standard duty ratings for the IT. S751 Soft Starter are shown in **Table 39-6**.

Standard duty ratings are defined as those that do not exceed any of the following combinations:

- 25 second ramp, 2 starts per hour, 40°C ambient
- 15 second ramp, 4 starts per hour, 40°C ambient
- 10 second ramp, 6 starts per hour, 40°C ambient
- 7.5 second ramp, 8 starts per hour, 40°C ambient
- 3 second ramp, 15 starts per hour, 40°C ambient

Note: For applications above 40°C, derate .5 Amps per °C.

Severe Duty

Severe duty ratings for the IT. S751 Soft Starter are shown in **Table 39-7**. Severe duty is defined as any requirement which exceeds the length or ramp or number of starts per hour of the standard duty combinations noted above.

Table 39-6. Standard Duty Product Selection

Maximum Current	kW Rating (50 Hz)			Horsepower Rating (60 Hz)				Catalog Number	Price U.S. \$
	230V	380 – 400V	440V	200V	230V	460V	575V		
.8	.3	.37	.55	1/8	1/6	1/3	1/3	S751L01N3S	790.
1.9	.6	1.1	1.1	1/3	1/3	3/4	1	S751L02N3S	790.
4.4	1.5	2.2	3	3/4	1	2	3	S751L04N3S	790.
9	3	5.5	5.5	2	2	5	7-1/2	S751L09N3S	800.
16	5.5	10	11	3	5	10	10	S751L16N3S	810.
27	10	15	18.5	7-1/2	7-1/2	20	25	S751L27N3S	825.

Table 39-7. Severe Duty Product Selection

Maximum Current	kW Rating (50 Hz)			Horsepower Rating (60 Hz)				Catalog Number	Price U.S. \$
	230V	380 – 400V	440V	200V	230V	460V	575V		
.8	.3	.37	.55	1/8	1/6	1/3	1/3	S751L01N3S	790.
1.9	.6	1.1	1.1	1/3	1/3	3/4	1	S751L02N3S	790.
4.4	1.5	2.2	3	3/4	1	2	3	S751L04N3S	790.
9	3	5.5	5.5	2	2	5	7-1/2	S751L09N3S	800.
16	4	7.5	7.5	2	2	5	7-1/2	S751L16N3S	810.
27	7.5	12.5	15	3	5	10	15	S751L27N3S	825.

S801 Open Soft Starters



S801

Product Description

The S801 Line of Reduced Voltage Soft Starters is very compact, multi-functional, easy to install and easy to program. Designed to control acceleration and deceleration of 3-phase motors, the line is available for current ranges from 12 amp all the way through 1000 amp applications and is suitable for mounting in motor control centers or in enclosed control (NEMA 1, 4, 4X and 12) applications.

The Intelligent Technology S801 Line of Reduced Voltage Soft Starters comes standard with the following features:

- Control Interface Module

Application Description

The S801 line of Intelligent Technologies Soft Starters is designed to be the smallest, most compact soft starter in the market today. With this small size, it can easily fit in place of existing soft starter designs, wye-delta starters or across-the-line NEMA and IEC starters. This feature allows easy retrofits of existing Motor Control Centers or Enclosures and saves the expense of replacing existing structure or adding a new one to house a soft starter.

The product is designed to work with 3-phase motors in a Delta (3-lead) configuration. The S801 works with all motors from fractional horsepower up to motors requiring 1000 amps of steady state current. The built-in overload (in ranges from 12 – 1000 amps) and run bypass contactor make installation and setup quick and easy. The overload also offers some advanced protective functions to give additional motor protection.

With the pump control option, it is the number one soft starter available for pumping applications. The unique soft stopping control provides a smooth transition for stopping a motor and eliminating the “water-hammer” effect that can damage pipes, valves and pumps.

Features

- Built-in overload protection
- Adjustable ramp times
- Adjustable torque control
- Adjustable kick start control
- Programmable overload settings, 31 – 100% (3.2:1) of rated current for the unit
- Physically fits in place of most NEMA and IEC starters
- Easy to use control interface module
- Soft stop control
- Built-in run bypass contact
- Multiple trip class settings (5, 10, 20 and 30)
- Six SCR control
- Optional pump control

Benefits

- Reduced wear on belts, gears, chains, clutches, shafts and bearings
- Allows for controlling the inrush current to the motor
- Reduced inrush current leads to more stable power grid and can lower peak demand charges
- Elimination of water-hammer in pumping applications
- Less shock to product on conveyor lines and material handling gear
- 24V DC control enhances personnel and equipment safety

Operation

Overload Functionality

Overtemperature

Protects the device from overheating. Starter will shutdown at 110°C.

Jam

Selectable protective feature, unit trips to prevent damage to motor during normal run.

Stall

Selectable protective feature, unit trips to protect system in event motor can not get to rated speed in the defined ramp period.

Phase Loss

Selectable protective feature, trips under voltage loss condition to any phase.

Phase Reversal

Selectable protective feature, trips when phase rotation is something other than A-B-C.

Kick Start

Selectable feature which provides a current “kick” of up to 550% of full load current for 0 to 2.0 seconds. This provides the additional torque required at startup to break free a motor.

Ramp Start

Provides a constant increase in torque to the motor.

Current Limit Start

Limits the maximum current available to the motor during the startup phase.

Soft Stop

Allows for a controlled stopping of a frictional load.

Shorted SCR Detection

Monitors for shorted SCR in the power polls.

Starting Characteristics

Kick Start

Provides an initial boost of current to the motor to help break free the rotor and start spinning the motor.

- 0 – 85% of locked rotor torque.
- 0 – 2.0 seconds duration.

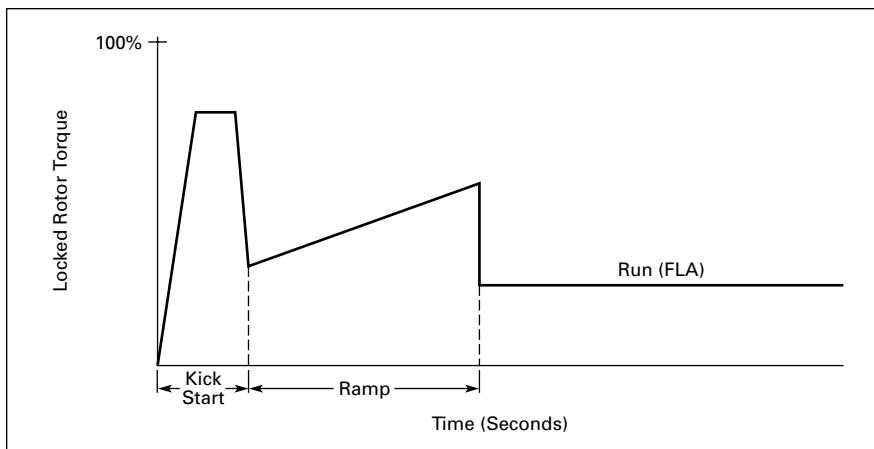


Figure 39-2. Starting Characteristics — Kick Start

Ramp Start

The most commonly used form of soft start. This allows you to set the initial torque value (of the ramp) and then raises it to full voltage conditions.

- Adjustable initial torque = 0 – 85% of locked rotor torque.
- Adjustable ramp time = .5 – 180 seconds (can be extended with factory modification).

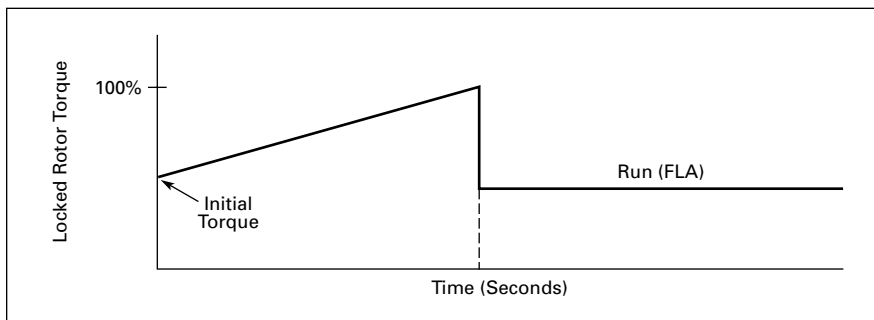


Figure 39-3. Starting Characteristics — Ramp Start

Current Limit

This mode of soft starting is used when it becomes necessary to limit the maximum starting current due to long start times or to protect the motor.

- Maximum current of 0 – 85% locked rotor current.
- Adjustable ramp time = .5 – 180 seconds (can be extended with factory modification).

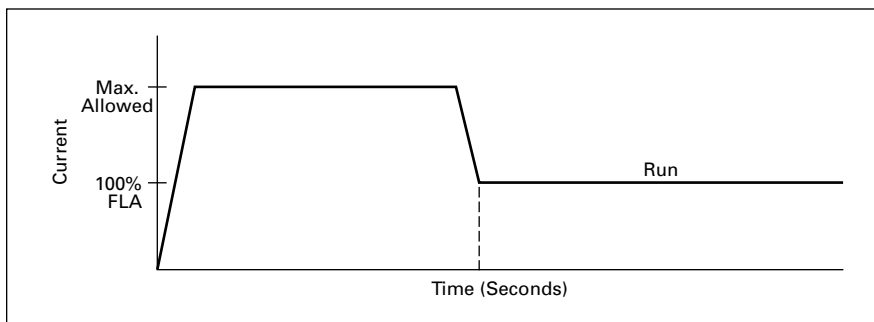


Figure 39-4. Starting Characteristics — Current Limit

Soft Stop

Used when an extended coast-to-rest period is desired. Often used with high friction loads where a sudden stop may cause system or product damage.

- Stop time = 0 – 60 seconds.

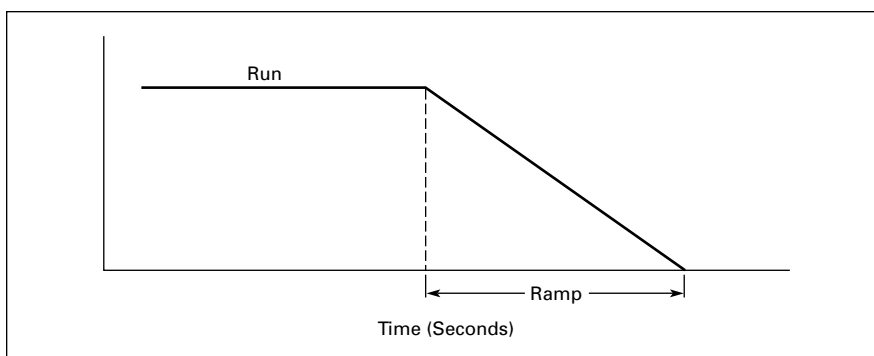


Figure 39-5. Starting Characteristics — Soft Start

Standards and Certifications

- IEC 947 compliant
- EN 60947-4-2
- CSA Certification
- cUL_{US} Listed (File # E202571)
- CE marked

Technical Data

Table 39-8. Specifications— IT Soft Starter

Soft Starter (Partial Catalog Number)	S801 N37	S801 N66	S801 R10	S801 R13	S801 T18	S801 T24	S801 T30	S801 V36	S801 V42	S801 V50	S801 V65	S801 V72	S801 V85	S801 V10 ①
Max. Current Capacity	37	66	105	135	180	240	304	360	420	500	650	720	850	1000
Dimensions														
Width in Inches (mm)	2.60 (66.1)		4.38 (111.3)		7.65 (194.4)			11.04 (280.27)						
Height in Inches (mm)	7.38 (187.4)		7.92 (201.1)		12.71 (322.9)			16.57 (420.81)						
Depth in Inches (mm)	6.63 (168.4)		7.03 (178.6)		6.69 (169.8)			7.69 (195.25)						
Weight in lbs. (kg)	5.8 (2.6)		10.5 (4.8)		48 (21.8) w/Lugs 41 (18.6) w/o Lugs			103 (46.8) w/Lugs 91 (41.4) w/o Lugs						
General Information														
Bypass Mechanical Lifespan	10M													
Insulating Voltage Ui	660V													
Ramp Time Range	.5 – 180 Seconds (.5 – 360 Seconds Extended Ramp)													
Resistance to Vibration	3g													
Resistance to Shock	15g													
Electrical Information														
Operating Voltage	200 – 600V													
Operating Frequency	47 – 63 Hz													
Overload Setting	30 – 100%													
Trip Class	5, 10, 20, & 30													
Cabling Capacity (IEC 947)														
Number of Conductors	1		1		1 or 2			2, 4 or 6						
Wire Sizes	14 – 2		14 – 4/0		4 AWG to 500 MCM			2/0 to 500 MCM						
Type of Connectors	Box Lug				Add-On Lug Kit									
Control Wiring (12-Pin)														
Wire Sizes in AWG	22 – 14													
Number of Conductors (Stranded)	2 (or one AWG 12)													
Torque Requirements in lb-in	3.5													
Solid, Stranded or Flexible Max. Size in mm²	3.31													
Control Power Requirements														
Voltage Range (24V ± 10%)	21.6 – 26.4													
Steady State Current Amps	1.0		1.0		1.0			1.4						
Inrush Current Amps	10		10		10			10						
Ripple	1%													
Relays (1) Class A and C														
Voltage AC — maximum	240													
Voltage DC — maximum	120													
Amps — maximum	3													

① UR Recognized Product

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Intelligent Technologies — S801 Open Soft Starters

Table 39-8. Specifications— IT Soft Starter (Continued)

Soft Starter (Partial Catalog Number)	S801 N37	S801 N66	S801 R10	S801 R13	S801 T18	S801 T24	S801 T30	S801 V36	S801 V42	S801 V50	S801 V65	S801 V72	S801 V85	S801 V10
Max. Current Capacity	37	66	105	135	180	240	304	360	420	500	650	720	850	1000
Environment														
Temperature — Operating	-30 – 50°C (No derating) Consult factory for operation > 50° C													
Temperature — Storage	-50 – 70°C													
Altitude	<2000 Meters — Consult factory for operation > 2000m													
Humidity	<95% Non-condensing													
Operating Position	Any													
Pollution degree IEC947-1	3													
Impulse withstand Voltage IEC947-4-1	6000V													

Power Supply

The Intelligent Technologies Product Line is designed around 24V DC. For additional information on power supplies and options, refer to Publication No. CA03903001E. 24V DC offers many advantages including:

- Improved safety
- Global acceptance (CE/UL/CSA)

- Lowest cost
- Consistent cycle time
- Fault tolerance
- Ride-through
- Reliability

The IT Soft Starters require 24V DC converter power. During normal operations, the IT Soft Starters require between 1.0 – 1.4 Amps and 10 Amps inrush during bypass closure. The PSS55X is designed to work with the S801 Line. (See **Page 39-23** for pricing.)

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Table 39-9. Specifications — Power Supply

Catalog Number	PSS55A	PSS55B	PSS55C
Output Specifications			
Output Voltage Nominal	24V DC	24V DC	24V DC
Voltage Regulation	±3%	±3%	±3%
Steady State Wattage	55W	55W	55W
Outrush Wattage	240W	240W	240W
Outrush Hold Up Time (msecs)	180 msecs	180 msecs	180 msecs
Output Current	2.3A	2.3A	2.3A
Maximum Capacitive Load	10000 µF	10000 µF	10000 µF
Hold Up Time (msecs)	120 msecs	120 msecs	120 msecs
Overload Protection	Overcurrent shutdown with automatic restart	Overcurrent shutdown with automatic restart	Overcurrent shutdown with automatic restart
Input Specifications			
Input Voltage Nominal	115V AC	230V AC	360 – 480V AC
Voltage Range	±15%	±15%	±15%
Input Frequency	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz
Input Current	.9A	.53A	.13A
Input Protection			
Inrush Current	15A	30A	15A
Overvoltage	390V AC	390V AC	550V AC
Fused	Yes	Yes	Yes
Switching Frequency	100 kHz	100 kHz	100 kHz
Efficiency (At Maximum Load)	80%	80%	85%
Maximum Ripple	±1%	±1%	±1%
Operating Specifications			
Dielectric Strength Input to Output	3 kV AC	3 kV AC	3 kV AC
Dielectric Strength Input/Output to DIN Rail	3 kV AC	3 kV AC	3 kV AC
Dielectric Strength Input to Ground	1.5 kV AC	1.5 kV AC	1.5 kV AC
Dielectric Strength Output to Ground	200V AC	200V AC	200V AC
Temperature			
Operating (Consult factory > 50°C)	-25 – 50°C	-25 – 50°C	-25 – 50°C
Storage	-40 – 85°C	-40 – 85°C	-40 – 85°C
Altitude (Consult factory > 2000m)	<2000 meters 20 to 85% RH	<2000 meters 20 to 85% RH	<2000 meters 20 to 85% RH
Operating Humidity	Non-condensing	Non-condensing	Non-condensing
Vibration	3g	3g	3g
RFI Specification	Class A	Class A	Class A
Degree of Protection (IEC529)	IP20	IP20	IP20

Intelligent Technologies — S801 Open Soft Starters

Table 39-9. Specifications — Power Supply (Continued)

Catalog Number	PSS55A	PSS55B	PSS55C
Insulation Stripping Length			
Wire Size Primary Clamp Screw Tightening Torque in lb-in (Nm)	20 – 12 AWG 4.38 (.5)	21 – 12 AWG 4.38 (.5)	22 – 12 AWG 4.38 (.5)
Wire Size Secondary Clamp Screw Tightening Torque in lb-in (Nm) Output Connections	20 – 12 AWG 4.38 (.5) 2	20 – 12 AWG 4.38 (.5) 2	20 – 12 AWG 4.38 (.5) 1
Insulation Stripping Length in Inches (mm)	.35 (9)	.39 (10)	.43 (11)
Mounting Method DIN Rail Mounting Kit (35 mm)	Panel Mount PSSDIN	Panel Mount PSSDIN	Panel Mount PSSDIN
Dimensions and Standards			
Mechanical Dimensions in mm	53 x 98 x 142	53 x 98 x 142	59 x 107 x 172
Approximate Weight in kg	.480	.48	.53
Certifications/Standards	cULus, IEC	cULus, IEC	cULus, IEC

Options

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Extended Ramp

For a longer ramp acceleration time of .5 – 360 seconds, change the last digit in the Catalog Number from **Page 39-25** to **L**.

Table 39-10. Extended Ramp Option

Frame Size	Max. Current	Catalog Number	Price U.S. \$
N	37	S801N37N3L	1,795.
	66	S801N66N3L	2,600.
R	105	S801R10N3L	3,790.
	135	S801R13N3L	4,475.
T	180	S801T18N3L	4,730.
	240	S801T24N3L	5,005.
	304	S801T30N3L	5,295.
V	360	S801V36N3L	6,095.
	420	S801V42N3L	6,815.
	500	S801V50N3L	7,640.
	650	S801V65N3L	8,560.
	720	S801V72N3L	9,790.
	850	S801V85N3L	11,795.
	1000	S801V10N3L	20,170.

Extended Ramp — 690V Option

For voltage ratings of 690V, use the table below.

Table 39-11. 690V Option

Frame Size	Max. Current	Catalog Number	Price U.S. \$
T	180	S801T18V3S	4,730.
	240	S801T24V3S	5,005.
	304	S801T30V3S	5,295.
V	360	S801V36V3S	6,095.
	420	S801V42V3S	6,815.
	500	S801V50V3S	7,640.
	650	S801V65V3S	9,790.
	720	S801V72V3S	11,795.
	850	S801V85V3S	20,170.

Pump Control

For pump control option, use the following table to select the product you are looking for. For sizing information, use the tables on **Page 39-25**.

Table 39-12. Pump Control Option

Frame Size	Max. Current	Catalog Number	Price U.S. \$
N	37	S801N37P3S	2,415.
	66	S801N66P3S	3,220.
R	105	S801R10P3S	4,410.
	135	S801R13P3S	5,100.
T	180	S801T18P3S	5,360.
	240	S801T24P3S	5,630.
	304	S801T30P3S	5,920.
V	360	S801V36P3S	6,720.
	420	S801V42P3S	7,440.
	500	S801V50P3S	8,260.
	650	S801V65P3S	9,190.
	720	S801V72P3S	10,410.
	850	S801V85P3S	12,420.
	1000	S801V10P3S	20,800.

Accessories

Surge Suppressors

The surge suppressor can mount on either the line or load side of the IT Soft Starter. It is designed to clip the line voltage (or load side induced voltage).

Table 39-13. Surge Suppressors

Description	Catalog Number	Price U.S. \$
600V MOV for 65 mm and 110 mm units	EMS38	147.
600V MOV for 200 mm and 290 mm units	EMS39	147.
690V MOV for 200 mm and 290 mm units	EMS41	165.



Surge Suppressor



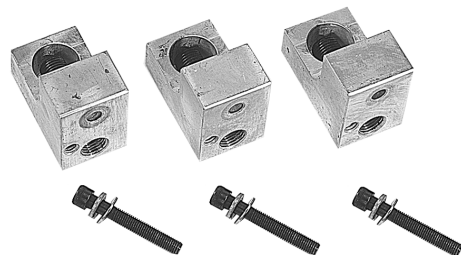
Surge Suppressor Mounted on a 200 mm Device

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Intelligent Technologies — Open Soft Starters

Lug Kits

The 200 mm and 290 mm soft starters each have different lug options based on your wiring needs. Each lug kit contains three lugs which can be mounted on either the load or line side.



Lug Kits — EML23

Table 39-14. Lug Kits

Frame Size	Frame Designation	Description	Catalog Number	Price U.S. \$
200 mm SSRV	T	2 cable connections, 4 AWG to 1/0 cable	EML22	145.00
		1 cable connection, 4/0 to 500 MCM cable	EML23	151.00
		2 cable connections, 4/0 to 500 MCM cable	EML24	192.00
		1 cable connection, 2/0 to 300 MCM cable	EML25	135.00
		2 cable connections, 2/0 to 300 MCM cable	EML26	171.00
290 mm SSRV	V	2 cable connections, 4/0 to 500 MCM cable	EML28	311.00
		4 cable connections, 4/0 to 500 MCM cable	EML30	312.00
		6 cable connections, 4/0 to 500 MCM cable	EML32	451.00
		4 cable connections, 2/0 to 300 MCM cable	EML33 ①	316.00

① The EML33 does not have a CSA Listing.

Lug Cover Kits

Replacement covers for the T and V frame are available in case of damage to the existing covers.

Table 39-15. Lug Cover Kits

Description	Catalog Number	Price U.S. \$
Lug Cover T Frame	EML27	62.50
Lug Cover V Frame	EML34	78.00

Control Interface Module

The Control Interface Module (CIM) is available as a replacement part in two versions.

Table 39-16. CIM

Description	Catalog Number	Price U.S. \$
Blank Cover (Filler)	EMA68	46.75
CIM for Standard Unit	EMA71	219.00
CIM for Pump Control Option	EMA72	219.00
Panel Mounting Kit — 2 ft. Cable 4 ft. Cable 6 ft. Cable	EM69A EM69B EM69C	Consult Factory

Control Wire Connector

Table 39-17. Control Wire Connector

Description	Catalog Number	Price U.S. \$
12 pin, 5 mm pitch Connector for Control Wiring	EMA75	10.40

Sales Demo Kit

A Demo Kit is available for use in customer presentations. It comes in a solid, lightweight carry case for easy use. The kit includes the following items:

- S801N66N3S — 65 Amp Soft Starter or S801R13N35
- PSS55A — 55 Watt Power Supply
- IT. Soft Starter brochure
- Cutout pictures of the four frame sizes
- Family photo

Table 39-18. Sales Demo Kits

Description	Catalog Number	Price U.S. \$
Functional Kits		
S801N66N3S	S801DEMOW	2,505.00
S801R13N3S	S801RDEMOW	4,380.00
Non-working Kits		
S801S66N3S	S801DEMO	1,140.00
S801R13N3S	S801RDEMO	1,735.00

User Manual

A user manual is available for all frame sizes.

Table 39-19. User Manual

Description	Catalog Number	Price U.S. \$
User Manual	S801USERMAN	10.40

Mounting Plates

The Mounting Plates are designed to help make it easy to install or retrofit the soft starter into enclosures and MCCs. The soft starter can be mounted onto the plate prior to installation. The mounting plate is designed with tear drop mounting holes for easier installation.

Table 39-20. Mounting Plates

Description	Catalog Number	Price U.S. \$
Mounting Plate N Frame	EMM13N	48.75
Mounting Plate R Frame	EMM13R	67.50
Mounting Plate T Frame	EMM13T	75.00
Mounting Plate V Frame	EMM13V	96.50

Vibration Plates

The Vibration Plates allow the soft starter to be applied in high shock and vibration applications. The vibration plate allows vibration up to 5g and shock in up to 40g. The soft starter is mounted onto the vibration plate prior to installation in the panel.

Table 39-21. Vibration Plates

Description	Catalog Number	Price U.S. \$
Vibration Plate N Frame	EMM14N	125.00
Vibration Plate R Frame	EMM14R	135.00
Vibration Plate T Frame	EMM14T	156.00
Vibration Plate V Frame	EMM14V	182.00

Power Supplies

24V DC Power Supply which can be used with the S801 SSRV or as a stand-alone device.

Table 39-22. Power Supplies

Description	Catalog Number	Price U.S. \$
115V AC Input 24V DC Output	PSS55A	217.00
230V AC Input 24V DC Output	PSS55B	217.00
380 – 480V AC Input 24V DC Output	PSS55C	259.00

DIN Rail Power Supply Mounting Kit (35 mm)

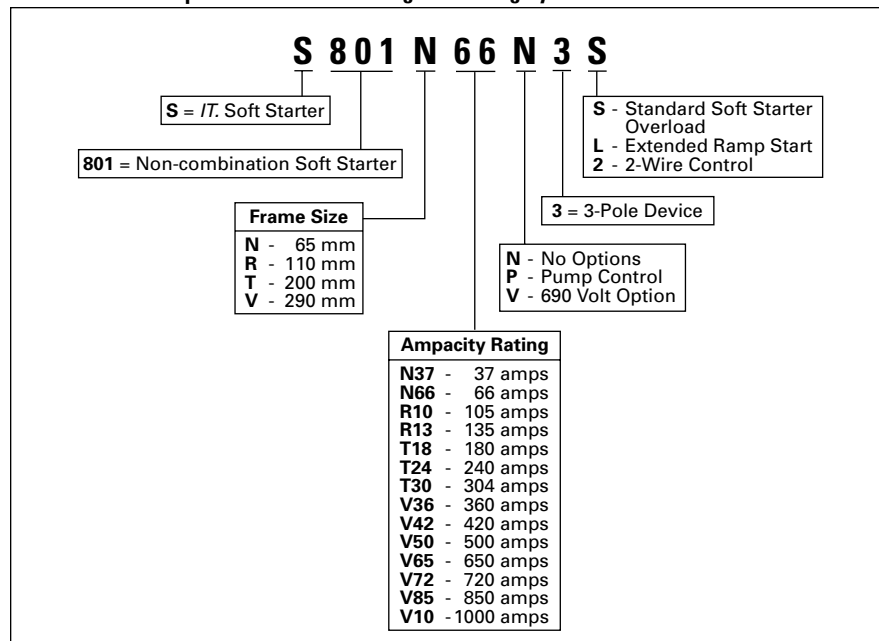
Table 39-23. DIN Rail Mounting Kit

Description	Catalog Number	Price U.S. \$
DIN Rail Mounting Kit (35 mm)	PSSDIN	20.70

Discount Symbol 1-CD1

Catalog Number Selection

Table 39-24. S801 Open Soft Starters Catalog Numbering System



65 mm, Catalog Number S801N



110 mm, Catalog Number S801R



200 mm, Catalog Number S801T



290 mm, Catalog Number S801V

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Intelligent Technologies — S801 Open Soft Starters

Product Selection

Base Ratings

The table below is the base ratings for the Intelligent Technology Soft Starter. The tables included in this catalog are meant to be a selection table for different applications, but to match a unit to your exact application, consult with your local Eaton's Cutler-Hammer representative or contact us directly at www.ch.etn.com/product/it.

Table 39-27. Standard Duty Ratings

Starting Method	Ramp Current % of FLA	Ramp Time Seconds	Starts per Hour	Ambient Temp
vs. Soft Start	300%	30 sec.	3	50°C
vs. Full Voltage	500%	10 sec.	3	50°C
vs. Wye-Delta	350%	20 sec.	3	50°C
vs. 80% RVAT	480%	20 sec.	2	50°C
vs. 65% RVAT	390%	20 sec.	3	50°C
vs. 50% RVAT	300%	20 sec.	4	50°C

Table 39-25. Product Selection — Standard Duty Rating Open Soft Starters

Frame Size	Max. Current	Three-Phase Motor												Catalog Number ①②	Price U.S. \$
		kW Rating (50 Hertz)			hp Rating (60 Hertz)										
		230	380 – 400	440	200V		230V		460V		575V				
		Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF			
N	37	10	18.5	18.5	10	10	10	10	25	20	30	30	S801N37N3S	1,485	
	66	18.5	30	37	20	15	20	20	50	40	60	50	S801N66N3S	2,290	
R	105	30	55	59	30	25	40	30	75	60	100	75	S801R10N3S	3,480	
	135	40	63	80	40	30	50	40	100	75	125	100	S801R13N3S	4,165	
T	180	51	90	110	60	50	60	60	150	125	150	150	S801T18N3S	4,420	
	240	75	110	147	75	60	75	75	200	150	200	200	S801T24N3S	4,695	
	304	90	160	185	100	75	100	100	250	200	300	250	S801T30N3S	4,985	
V	360	110	185	220	125	100	150	125	300	250	350	300	S801V36N3S	5,785	
	420	129	220	257	150	125	175	150	350	300	450	350	S801V42N3S	6,505	
	500	150	257	300	150	150	200	150	400	350	500	450	S801V50N3S	7,330	
	650	200	355	425	250	200	250	200	500	450	600	500	S801V65N3S	8,250	
	720	220	400	450	—	—	300	250	600	500	700	600	S801V72N3S	9,480	
	850	257	475	500	—	—	350	300	700	600	900	700	S801V85N3S	11,485	
	1000	315	560	600	—	—	400	350	800	700	1000	800	S801V10N3S	19,860	

① For a longer ramp acceleration time of .5 to 360 seconds, see Page 39-22.

② For 2-wire (level sensing) control, change the last digit from S to 2.

Severe Duty Ratings

Motor applications and customer needs come in many different varieties. With the standard and severe duty rating tables, we have attempted to provide guidelines on what the Intelligent Technologies soft starter is capable of. If the application falls under these categories, you can use these charts. For other applications, or when a question arises, a program in Bid Manager is designed to assist you in selecting the proper soft starter.

Table 39-28. Severe Duty Ratings

Starting Method	Ramp Current % of FLA	Ramp Time Seconds	Starts per Hour	Ambient Temp
vs. Soft Start	450%	30 sec.	4	50°C
vs. Full Voltage	500%	10 sec.	10	50°C
vs. Wye-Delta	350%	65 sec.	3	50°C
vs. 80% RVAT	480%	25 sec.	4	50°C
vs. 65% RVAT	390%	40 sec.	4	50°C
vs. 50% RVAT	300%	60 sec.	4	50°C

Table 39-26. Product Selection — Severe Duty Rating Open Soft Starters

Frame Size	Max. Current	Three-Phase Motor											Catalog Number ①②	Price U.S. \$
		kW Rating (50 Hertz)			hp Rating (60 Hertz)									
		230	380 – 400	440	200V		230V		460V		575V			
		Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF		
N	22 42	5.5 11	10 18.5	11 22	5 10	5 10	7-1/2 15	5 10	15 30	10 25	20 40	15 30	S801N37N3S S801N66N3S	1,485. 2,290.
R	65 80	15 22	30 40	33 45	15 25	15 20	20 30	15 25	50 60	40 50	50 75	50 60	S801R10N3S S801R13N3S	3,480. 4,165.
T	115 150 192	33 45 55	59 80 100	63 90 110	30 50 60	30 40 50	40 50 75	30 50 60	75 100 150	75 100 125	100 150 200	100 125 150	S801T18N3S S801T24N3S S801T30N3S	4,420. 4,695. 4985.00
V	240 305 365 420 480 525 600	75 90 110 129 147 160 185	110 160 185 220 257 280 315	147 185 220 257 295 335 375	75 100 125 150 150 150 200	60 75 100 125 150 150 150	75 100 150 150 200 200 250	75 100 125 150 150 150 200	200 250 300 350 400 450 500	150 200 250 300 350 450 450	200 300 350 450 500 500 600	200 250 300 350 450 450 500	S801V36N3S S801V42N3S S801V50N3S S801V65N3S S801V72N3S S801V85N3S S801V10N3S	5,785. 6,505. 7,330. 8,250. 9,480. 11,485. 19,860.

① For a longer ramp acceleration time of .5 to 360 seconds, see Page 39-22.

② For 2-wire (level sensing) control, change the last digit from S to 2.

Discount Symbol 1CD1

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