Contents

S752

Product Description

Eaton's Cutler-Hammer® Intelligent Technologies (*IT.*) S752 Line of Reduced Voltage Soft Starters is very compact, multi-functional, easy to install and easy to program. Designed to control the acceleration and deceleration of three-phase motors, the device is available in configurations to be applied either in the line of the motor, or in the delta windings of the motor. The in-line device is available for current ranges from 0.25 to 50 amps. The inside-the-delta device is available for current ranges from 0.44 to 78 amps.

The S752 is a redesign of the popular S751 soft starter. Design enhancements include an increased current rating, short circuit coordination ratings with breakers and fuses, and inside-the-delta control. The S752 has replaced the S751 in the Cutler-Hammer product offering.

The S752 is designed to be a complete package combining the SCRs, bypass contactor and overload in one, very compact device. The S752 is available as a component for panel mounting, in Motor Control Centers or in Enclosed Control (NEMA Type 1, 3R, 4, 4X, 7/9 and 12).

Application Description

The S752 combines the soft starter overload, bypass contactor into one device for fast and easy installation. With its small size, it can easily fit in place of existing soft starters, wye-delta starters or across-the-line NEMA and IEC starters. This feature allows easy upgrades to existing systems.

The in-line version is designed for use with three-phase motors in a delta (three-lead) configuration. The product is designed to be wired in the three-phase line feeding the three motor input leads as is done for normal across-the-line starting.

The inside-the-delta version is to be used on 6-lead or 12-lead wye-delta motors. The device is wired into the windings of the motor. A reduced voltage start is achieved without the need to reconnect the motor in wye and delta configurations. The S752 offers enhanced performance over traditional wye-delta electromechanical starters.

The starter uses Silicon Controlled Rectifiers (SCRs) to ramp the voltage to the motor, providing smooth acceleration and deceleration of the load. After the motor is started, the internal run bypass contactor closes, resulting in the motor running directly across-the-line. Internal run bypass significantly reduces the heat generated as compared to non-bypass starters. The soft stop option allows for a ramp stop time that is longer than the coast-to-stop time.

The built-in solid-state overload protects the motor from overload conditions with sophisticated algorithms that model true motor heating, resulting in better motor protection and fewer nuisance trips. Advanced protective and diagnostic features reduce downtime.

The S752 was designed with safety in mind. The device features a fully motor-rated run bypass contactor. The bypass contactor is capable of breaking the motor load in failed SCR conditions. Short circuit protection ratings are offered with both circuit breakers and fuses. Safety is enhanced with the use of green materials, 24V DC control and finger safe IP20 terminals.

Features and Benefits

- Run bypass significantly reduces the heat generated as compared to non-bypass soft starters. Less heat minimizes enclosure size and cooling requirements and maximizes the life of all devices in the enclosure.
- Run bypass mode greatly reduces internal heating created by the power dissipation across the SCRs. The bypass contactor directly connects the motor to the line and improves system efficiency by reducing internal power losses.
- Solid-state overload protection provides accurate current measurement and trip settings. Sophisticated algorithms solve a series of differential equations that model true motor heating and cooling, resulting in superior motor overload protection while minimizing nuisance trips. Advanced selectable protective features safeguard the motor and system against a variety of system faults.
- Six SCRs control all three motor phases providing smooth acceleration and deceleration performance.
- Easy to read LED displays device status and provides fault indication.
- Internal run bypass contactors and overload protection eliminate the need for additional devices, thereby reducing enclosure sizes, minimizing installation and wiring time and reducing overall assembly size and cost.
- Variable ramp times and torque control settings provide unlimited starting configurations, allowing for maximum application flexibility.
- Soft stop control suits applications where an abrupt stop of the load is not acceptable.

- Wide range of overload FLA settings (31 – 100% of rated current) and selectable trip class (10, 20, 30) allows for wide application range while offering users the flexibility to fine tune the starter to match their specific application requirements.
- Soft acceleration and deceleration reduces wear on belts, gears, chains, clutches, shafts and bearings.
- Minimizes the peak inrush current's stress on the power system.
- Minimizes peak starting torque to diminish mechanical system wear and damage.
- 24V DC control module enhances personnel and equipment safety.
- Removable, lockable control terminal block reduces maintenance replacement costs. Also provides the opportunity for OEMs to reduce assembly and test costs by utilizing pre-assembled wire harnesses.

Protective Features

Motor Overload

The S752 includes electronic overload protection as standard. The overload meets applicable requirements for a motor overload protective device. The overload protects the motor from over heat conditions with the use of sophisticated algorithms that model true motor heating resulting in superior motor protection and fewer nuisance trips.

The S752 calculates a thermal memory value. A 100% value represents the maximum safe temperature of the motor. When the thermal memory value reaches 100%, an overload trip will occur removing power to the motor. Upon trip, the S752 stores the calculated motor heating value and will not allow a motor re-start until the motor has sufficiently cooled. This feature ensures the motor will not be damaged by repeated overload trip and re-start cycles.

The trip current is adjusted to match the specific application requirements by adjusting the overload FLA setting. The FLA adjustment includes a 3 to 1 adjustment range. The overload trip class is selectable for class 10, 20 and 30. The overload is ambient temperature compensated, meaning its trip characteristics will not vary with changes in ambient temperature.

Short Circuit

The use of a short circuit protective device in coordination with the S752 is required in branch motor circuits by most electrical codes. Short circuit coordination ratings with both Cutler-Hammer molded case circuit breakers and fuses are available providing customers with design flexibility. The S752 has short circuit coordination ratings as an open component, an enclosed starter, and in a Motor Control Center.

Pole Over Temperature

High ambient temperatures, extended ramp times and high duty cycle conditions may cause the S752 power pole conductors to reach a temperature that exceeds their thermal rating. The S752 is equipped with sensors that monitor the temperature of the power poles. Over temperature protection exists if the device's thermal capacity is exceeded. The soft starter will trip in over temperature conditions, preventing device failure.

Phase Loss

Loss of a phase can cause a significant increase in current drawn in the remaining two phases. Phase loss can lead to motor damage before an eventual overload trip occurs. Phase loss is typically an indication of a failure in the electrical distribution system. The S752 can detect a phase loss and after 10 seconds a phase loss trip will occur. The phase loss protection can be enabled or disabled.

Phase Imbalance

Phase current or voltage imbalance can cause a significant increase in the current drawn in the other phases. Phase imbalance can lead to motor damage before an eventual overload trip. Phase loss is typically an indication of a failure in the electrical distribution system or the motor. A phase current imbalance trip will occur if one or two of the line currents are 50% or less of the remaining line(s) for longer than 10 seconds. The phase imbalance protection can be enabled or disabled.

Reset Mode

The S752 can be set up for automatic or manual reset on trip. The manual reset mode requires the operator to physically press the RESET button located on the soft starter. The automatic reset mode allows the soft starter to be automatically reset as soon as the trip condition is no longer present. With the automatic reset mode, after the fault is no longer present, the motor will be restarted as soon as a valid start signal is present. The overload can be reset through the communications network. The overload can also be electrically reset by energizing a 24V DC control input on the control terminal block.

Bypass Dropout

The S752 can detect if the bypass contactor fails to close after the ramp start or opens while the motor is running. The S752 will trip on a bypass dropout fault if either of these conditions occur.

Diagnostic Features

The S752 has an easy to read LED that displays the device status as well as identifying the condition that caused a fault. The fault display is a useful tool in system troubleshooting. The following fault cross-reference is listed on the overload cover of the device to facilitate fault identification:

Table 39-13. S752 Diagnostic Features

LED Display Code	Device Status or Fault
0	Ready To Start
1	Line Phase Reversal
2	Phase Loss Fault
3	Phase Imbalance Fault
4	SCR Over Temperature Fault
5	Overload Trip Fault
6	Test Trip Fault
7	Bypass Dropout Fault
8	Overload Communications Fault
9	Temperature Sensor Fault

Communication Capabilities

Communications are enabled with the S752 soft starter with the addition of a SNAP (Starter Network Adapter Product). The SNAP allows for network control and monitoring of system parameters. See **Tab 50** for more information on SNAPs.

Operation

Voltage Ramp Start

Provides a voltage ramp to the motor resulting in a constant torque increase. The most commonly used form of soft start, this start mode allows you to set the initial torque value and the duration of the ramp to full voltage conditions. Bypass contactor(s) close after ramp time.

- Adjustable initial torque 0 – 95% of locked rotor torque.
- Adjustable ramp time .5 – 30 seconds.

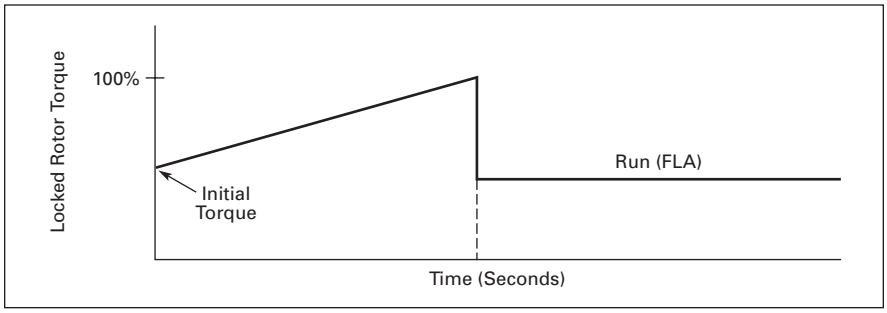


Figure 39-5. Starting Characteristics — Ramp Start

Soft Stop

Allows for a controlled stopping of a load. Used when a stop-time that is greater than the coast-to-stop time is desired. Often used with high friction loads where a sudden stop may cause system or product damage.

- Stop time = 0 – 30 seconds.

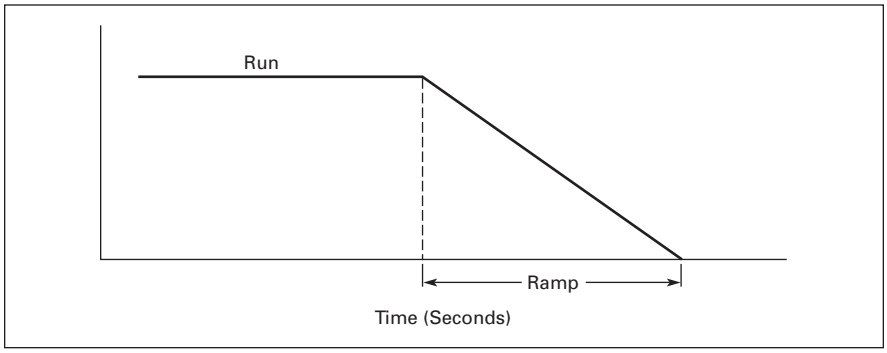
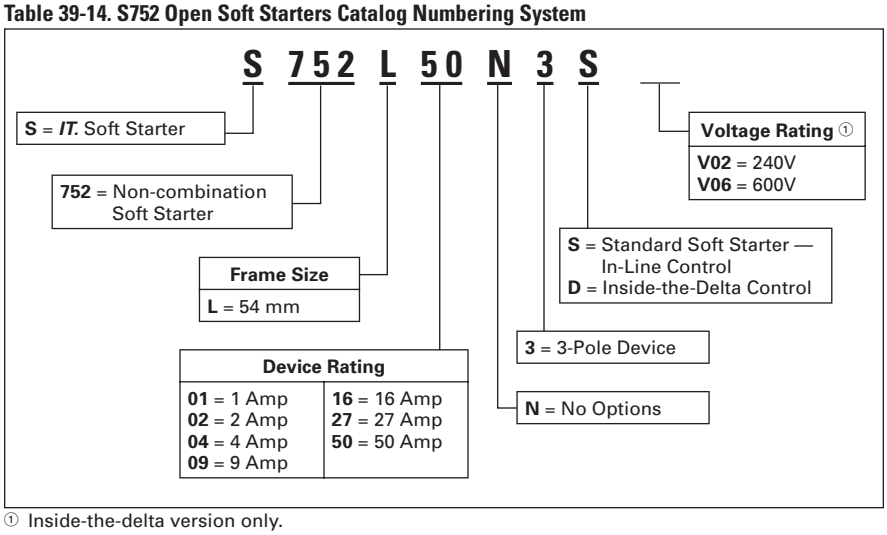


Figure 39-6. Starting Characteristics — Soft Stop

Catalog Number Selection

Table 39-14. S752 Open Soft Starters Catalog Numbering System



① Inside-the-delta version only.

Product Selection

IT. S752 Product Selection — In-Line

Standard Duty Ratings

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

- 25 second ramp, 2 starts per hour, 40°C ambient, 300% FLA current
- 15 second ramp, 4 starts per hour, 40°C ambient, 300% FLA current
- 10 second ramp, 6 starts per hour, 40°C ambient, 300% FLA current
- 7.5 second ramp, 8 starts per hour, 40°C ambient, 300% FLA current
- 3.0 second ramp, 15 starts per hour, 40°C ambient, 300% FLA current

Table 39-15. *IT.* S752 Soft Starter Standard Duty Ratings ① — In-Line

Maximum Continuous Current	FLA Current Range	kW Rating (50 Hz)			Horsepower Rating (60 Hz)				Catalog Number	Price U.S. $
		230V	380 – 400V	440V	200V	230V	460V	575V		
0.8	0.25 – 0.8	0.3	0.37	0.55	1/8	1/6	1/3	1/3	**S752L01N3S**	
1.9	0.59 – 1.9	0.6	1.1	1.1	1/3	1/3	3/4	1	**S752L02N3S**	
4.4	1.4 – 4.4	1.5	2.2	3	3/4	1	2	3	**S752L04N3S**	
9	2.8 – 9.0	3	5.5	5.5	2	2	5	7-1/2	**S752L09N3S**	
16	5.0 – 16	5.5	10	11	3	5	10	10	**S752L16N3S**	
27	8.4 – 27	10	15	18.5	7-1/2	7-1/2	20	25	**S752L27N3S**	
50	16 – 50	12.5	22	30	15	15	30	40	**S752L50N3S**	

① For applications above 40°C, derate 1% per °C.

Heavy Duty Ratings

Heavy duty ratings are defined as those that do exceed any of the following operating conditions:

- 25 second ramp, 2 starts per hour, 40°C ambient, 400% FLA current
- 15 second ramp, 4 starts per hour, 40°C ambient, 400% FLA current
- 10 second ramp, 6 starts per hour, 40°C ambient, 400% FLA current
- 7.5 second ramp, 8 starts per hour, 40°C ambient, 400% FLA current
- 3.0 second ramp, 15 starts per hour, 40°C ambient, 400% FLA current

Table 39-16. *IT.* S752 Soft Starter Heavy Duty Ratings ② — In-Line

Maximum Continuous Current	FLA Current Range	kW Rating (50 Hz)			Horsepower Rating (60 Hz)				Catalog Number	Price U.S. $
		230V	380 – 400V	440V	200V	230V	460V	575V		
0.8	0.25 – 0.8	0.3	0.37	0.55	1/8	1/6	1/3	1/3	**S752L01N3S**	
1.9	0.59 – 1.9	0.6	1.1	1.1	1/3	1/3	3/4	1	**S752L02N3S**	
4.4	1.4 – 4.4	1.5	2.2	3	3/4	1	2	3	**S752L04N3S**	
9	2.8 – 9.0	3	5.5	5.5	2	2	5	7-1/2	**S752L09N3S**	
16	5.0 – 16	5.5	10	11	3	5	10	10	**S752L16N3S**	
27	8.4 – 27	10	15	18.5	5	7-1/2	15	20	**S752L27N3S**	
50	16 – 50	12.5	15	20	7-1/2	10	20	25	**S752L50N3S**	

② For applications above 40°C, derate 1% per °C.

Severe Duty Ratings

Severe Duty ratings are defined as those that do exceed any of the Heavy Duty operating conditions. Please contact the Technical Resource Center for Severe Duty application assistance.

Discount Symbol **1CD1**

IT. S752 Product Selection — Inside-the-Delta

Standard Duty Ratings

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

- 10 second ramp, 6 starts per hour, 40°C ambient, 300% FLA current
- 7.5 second ramp, 8 starts per hour, 40°C ambient, 300% FLA current
- 3.0 second ramp, 15 starts per hour, 40°C ambient, 300% FLA current

Table 39-17. *IT.* S752 Soft Starter Standard Duty Ratings ① — Inside-the-Delta

Maximum Continuous Current	FLA Current Range	kW Rating (50 Hz)			Horsepower Rating (60 Hz)				Catalog Number ②	Price U.S. $
		230V	380 – 400V	440V	200V	230V	460V	575V		
1.3	0.44 – 1.3	0.18	0.37	0.55	1/4	1/3	1/2	3/4	**S752L01N3D_ _ _**	
3.2	1.1 – 3.2	0.55	1.1	1.5	1/2	3/4	1-1/2	2	**S752L02N3D_ _ _**	
7.6	2.5 – 7.6	1.5	3	4	1-1/2	1-1/2	3	5	**S752L04N3D_ _ _**	
15	4.9 – 15	3.7	6.5	8	3	3	7-1/2	10	**S752L09N3D_ _ _**	
27	8.7 – 27	6.5	12.5	15	7-1/2	7-1/2	15	25	**S752L16N3D_ _ _**	
46	15 – 46	12.5	22	25	10	15	30	40	**S752L27N3D_ _ _**	
78	28 – 86	22	37	45	25	25	60	75	**S752L50N3D_ _ _**	

① For applications above 40°C, derate 1% per °C.
② For Voltage Suffix, See **Table 39-18**.

Table 39-18. Voltage Suffix Code

Voltage Suffix	Voltage
V02	< 240V
V06	250 – 600V

Heavy Duty Ratings

Heavy duty ratings are defined as those that do not exceed any of the following operating conditions:

- 10 second ramp, 6 starts per hour, 40°C ambient, 400% FLA current
- 7.5 second ramp, 8 starts per hour, 40°C ambient, 400% FLA current
- 3.0 second ramp, 15 starts per hour, 40°C ambient, 400% FLA current

Table 39-19. *IT.* S752 Soft Starter Heavy Duty Ratings ③ — Inside-the-Delta

Maximum Continuous Current	FLA Current Range	kW Rating (50 Hz)			Horsepower Rating (60 Hz)				Catalog Number ④	Price U.S. $
		230V	380 – 400V	440V	200V	230V	460V	575V		
1.3	0.44 – 1.3	0.18	0.37	0.55	1/4	1/3	1/2	3/4	**S752L01N3D_ _ _**	
3.2	1.1 – 3.2	0.55	1.1	1.5	1/2	3/4	1-1/2	2	**S752L02N3D_ _ _**	
7.6	2.5 – 7.6	1.5	3	4	1-1/2	1-1/2	3	5	**S752L04N3D_ _ _**	
15	4.9 – 15	3.7	6.5	8	3	3	7-1/2	10	**S752L09N3D_ _ _**	
27	8.7 – 27	6.5	12.5	15	7-1/2	7-1/2	15	25	**S752L16N3D_ _ _**	
46	15 – 46	12.5	22	25	10	15	30	40	**S752L27N3D_ _ _**	
78	28 – 86	15	25	30	15	20	40	60	**S752L50N3D_ _ _**	

③ For applications above 40°C, derate 1% per °C.
④ For Voltage Suffix, See **Table 39-20**.

Table 39-20. Voltage Suffix Code

Voltage Suffix	Voltage
V02	< 240V
V06	250 – 600V

Severe Duty Ratings

Severe Duty ratings are defined as those that do exceed any of the Heavy Duty operating conditions. Please contact the Technical Resource Center for Severe Duty application assistance.

Discount Symbol **1CD1**

Accessories

Auxiliary Contacts

The S752 allows for the use of top mounted auxiliary contacts. These contacts can be used for up-to-speed indication.

Table 39-21. S752 Auxiliary Contacts

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

Table 39-22. S752 — 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 39-23. S752 — Auxiliary Contact Ratings (EMA13 – EMA17)

DC-13		AC-15	
U_e Voltage	I_e Amps	U_e Voltage	I_e Amps
24 48	5 2.5	48 120	8 6
125 250	1.1 0.55	240 440	4 2

Table 39-24. S752 — Auxiliary Contact Ratings (EMA70)

DC-12		AC-12	
U_e Voltage	I_e Amps	U_e Voltage	I_e Amps
30	0.1	250	0.1

Renewal Parts

The only renewal part available for the S752 Soft Starter is the Control Terminal Block. There are no serviceable or replaceable internal parts.

Table 39-25. S752 Control Terminal Block

Description	Catalog Number	Price U.S. $
Locking Terminal Block	**EMA76LS**	

S751 Replacement Cross-Reference

The S752 has replaced the S751 in the Cutler-Hammer product offering. **Table 39-26** summarizes the S752 Catalog Numbers that are used to replace an existing S751 device:

Table 39-26. S751 Replacement Cross-Reference

Current Range in Amps	S751 Catalog Number	Replacement S752 Catalog Number
0.25 – 0.8	**S751L01N3S**	**S752L01N3S**
0.59 – 1.9	**S751L02N3S**	**S752L02N3S**
1.4 – 4.4	**S751L04N3S**	**S752L04N3S**
2.8 – 9.0	**S751L09N3S**	**S752L09N3S**
5.0 – 16	**S751L16N3S**	**S752L16N3S**
8.4 – 27	**S751L27N3S**	**S752L27N3S**

Standards and Certifications

- IEC 60947-4-2
- EN 60947-4-2
- UL Listed (NMFT)
- CSA Certified (321106)
- CSA Elevator Duty (241103)
- CE marked

Instructional Leaflets

Instruction Manual	MN03902001E
Outline Drawings	S752: 10-8673 S751: 10-8328

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Discount Symbol **1CD1**

Technical Data and Specifications

Table 39-27. S752 Open Soft Starters

Soft Starter (Partial Catalog Number)	S752 L01	S752 L02	S752 L04	S752 L09	S752 L16	S752 L27	S752 L50
In-Line Current Capacity	0.8	1.9	4.4	9.0	16	27	50
Inside-the-Delta Current Capacity	1.3	3.2	7.6	15	27	46	78
Dimensions							
Width in Inches (mm)	2.14 (54)	2.14 (54)	2.14 (54)	2.14 (54)	2.14 (54)	2.14 (54)	2.14 (54)
Height in Inches (mm)	7.78 (198)	7.78 (198)	7.78 (198)	7.78 (198)	7.78 (198)	7.78 (198)	7.78 (198)
Depth in Inches (mm)	5.13 (130)	5.13 (130)	5.13 (130)	5.13 (130)	5.13 (130)	5.13 (130)	5.13 (130)
Weight in lbs. (kg)	3.5 (1.6)	3.5 (1.6)	3.5 (1.6)	3.5 (1.6)	3.5 (1.6)	3.5 (1.6)	3.5 (1.6)
Drawing	See **Figure 39-7**.						
Electrical Characteristics							
Line Voltage (V AC)	200 – 600	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	47 – 63
Leakage Current	15 mA AC max.						
Min. Operating Current	100 mA						
Control Voltage (24V DC ±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	21.6 – 26.4
Response Time Max.	100 mS	100 mS	100 mS	100 mS	100 mS	100 mS	100 mS
Control Steady State Current	200 mA	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	3.6A @ 50 mS
Control Wiring							
(+ and -) 1 Wire per Terminal	14 – 12 AWG (1.5 – 2.5 mm^2)	14 – 12 AWG (1.5 – 2.5 mm^2)	14 – 12 AWG (1.5 – 2.5 mm^2)	14 – 12 AWG (1.5 – 2.5 mm^2)	14 – 12 AWG (1.5 – 2.5 mm^2)	14 – 12 AWG (1.5 – 2.5 mm^2)	14 – 12 AWG (1.5 – 2.5 mm^2)
(+ and -) 2 Wires per Terminal	14 AWG (1.5 mm^2)	14 AWG (1.5 mm^2)	14 AWG (1.5 mm^2)	14 AWG (1.5 mm^2)	14 AWG (1.5 mm^2)	14 AWG (1.5 mm^2)	14 AWG (1.5 mm^2)
(P,F,1,2,3) 1 Wire per Terminal	22 – 12 AWG (0.5 – 2.5 mm^2)	22 – 12 AWG (0.5 – 2.5 mm^2)	22 – 12 AWG (0.5 – 2.5 mm^2)	22 – 12 AWG (0.5 – 2.5 mm^2)	22 – 12 AWG (0.5 – 2.5 mm^2)	22 – 12 AWG (0.5 – 2.5 mm^2)	22 – 12 AWG (0.5 – 2.5 mm^2)
(P,F,1,2,3) 2 Wires per Terminal	18 – 14 AWG (0.75 – 1.5 mm^2)	18 – 14 AWG (0.75 – 1.5 mm^2)	18 – 14 AWG (0.75 – 1.5 mm^2)	18 – 14 AWG (0.75 – 1.5 mm^2)	18 – 14 AWG (0.75 – 1.5 mm^2)	18 – 14 AWG (0.75 – 1.5 mm^2)	18 – 14 AWG (0.75 – 1.5 mm^2)
Torque (max.)	4.5 lb-in (0.5 Nm)	4.5 lb-in (0.5 Nm)	4.5 lb-in (0.5 Nm)	4.5 lb-in (0.5 Nm)	4.5 lb-in (0.5 Nm)	4.5 lb-in (0.5 Nm)	4.5 lb-in (0.5 Nm)
Driver	0.13 (3.5 mm) Flat	0.13 (3.5 mm) Flat	0.13 (3.5 mm) Flat	0.13 (3.5 mm) Flat	0.13 (3.5 mm) Flat	0.13 (3.5 mm) Flat	0.13 (3.5 mm) Flat
Terminals L1, L2, L3/T1, T2, T3 — Use Class B 75°C copper wire only							
1 Wire per Terminal	14 – 4 AWG (1.5 – 16 mm^2)	14 – 4 AWG (1.5 – 16 mm^2)	14 – 4 AWG (1.5 – 16 mm^2)	14 – 4 AWG (1.5 – 16 mm^2)	14 – 4 AWG (1.5 – 16 mm^2)	14 – 4 AWG (1.5 – 16 mm^2)	14 – 4 AWG (1.5 – 16 mm^2)
2 Wires per Terminal	14 – 6 AWG (1.5 – 12 mm^2)	14 – 6 AWG (1.5 – 12 mm^2)	14 – 6 AWG (1.5 – 12 mm^2)	14 – 6 AWG (1.5 – 12 mm^2)	14 – 6 AWG (1.5 – 12 mm^2)	14 – 6 AWG (1.5 – 12 mm^2)	14 – 6 AWG (1.5 – 12 mm^2)
Torque (max.) 14 – 10 AWG (1.5 – 6 mm^2) 8 AWG (10 mm^2) 6 – 4 AWG (6 – 4 mm^2)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)	 35 lb-in (4 Nm) 40 lb-in (4.5 Nm) 45 lb-in (5 Nm)
Connector Type	Box Lug	Box Lug	Box Lug	Box Lug	Box Lug	Box Lug	Box Lug
Driver	3mm Hex Key	3mm Hex Key	3mm Hex Key	3mm Hex Key	3mm Hex Key	3mm Hex Key	3mm Hex Key
Environmental Characteristics							
Temperature — Operating (no derating)	-35° – 50°C	-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% per °C	-1% per °C	-1% per °C	-1% per °C	-1% per °C	-1% per °C	-1% per °C
Temperature — Storage	-40° – 80°C	-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	2000
Altitude > 2000M	1% per 100m	1% per 100m	1% per 100m	1% per 100m	1% per 100m	1% per 100m	1% per 100m
Humidity	95% Non-condensing						
Operating Position	Vertical ± 30°						
Impulse Withstand Voltage IEC 947-4-1	4000V	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	15g
Degree of Protection	IP20	IP20	IP20	IP20	IP20	IP20	IP20
Agency Approvals	UL, CSA, CE						

Dimensions

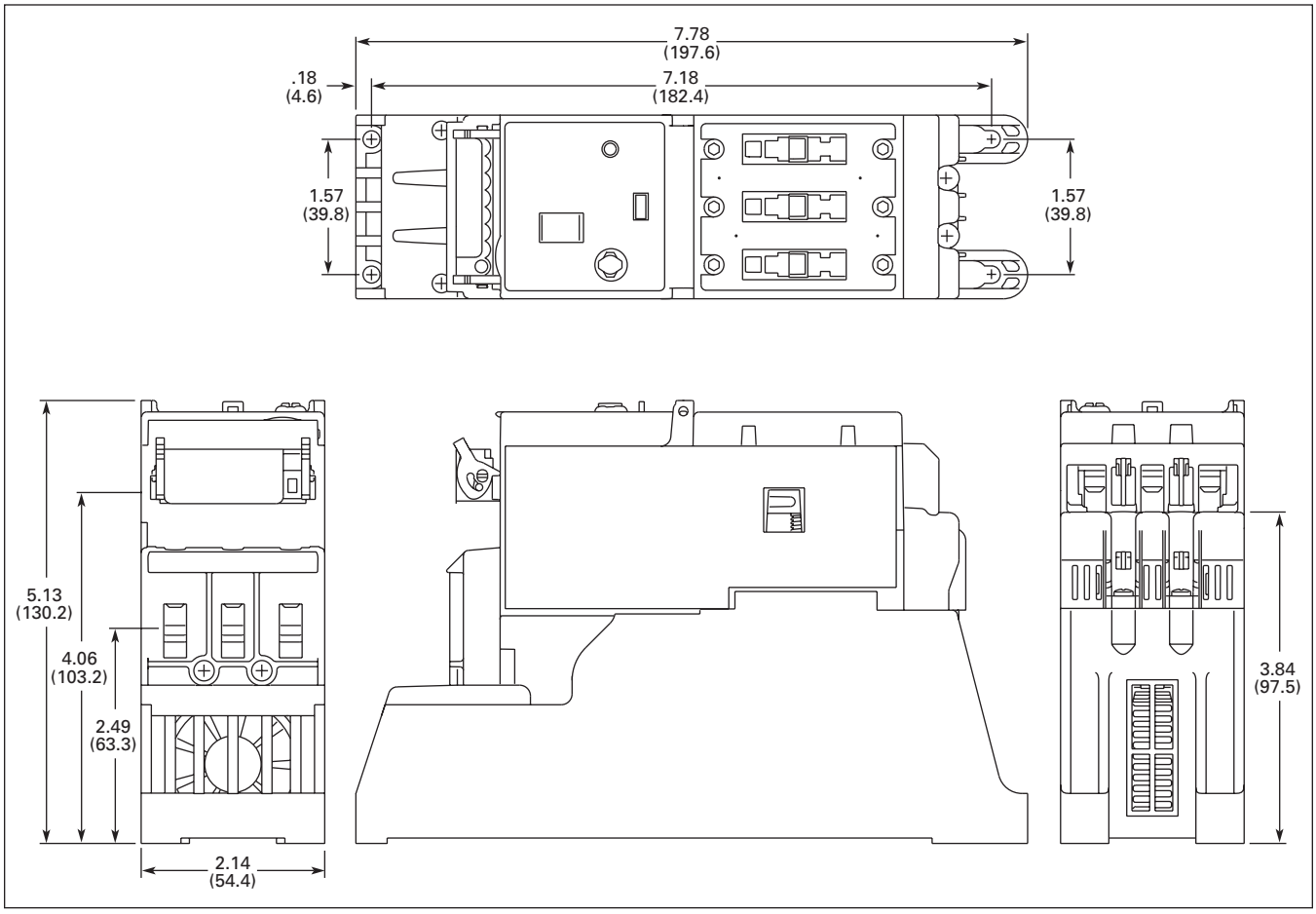

Figure 39-7. S752 Approximate Dimensions in Inches (mm)