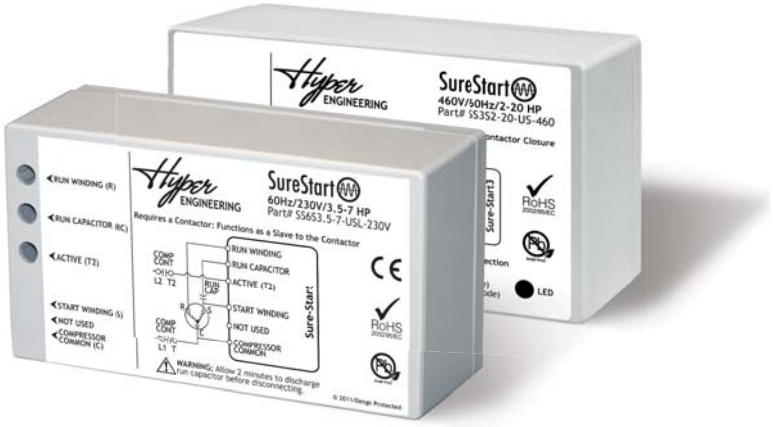


SureStart

Single & Three-Phase Soft Starters

Submittal Data
English Language/IP Units
11/13

Hyper ENGINEERING

Contact Information:
Hyper Engineering, Pty. Ltd.
9000 Conservation Way
Fort Wayne, IN 46809

www.hypereng.com
sales@hypereng.com
(877) 304-0724

CE ETL RoHS 2002/95/EC Pb lead-free

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

Model Nomenclature

1	2	3	4	5-9	10	11
S	S	0	A	08-16	S	N

Type
S – SureStart

Contactor Function
P – Primary[1]
S – Secondary[2]

Nominal Voltage Rating
0 – 115/60/1
1 – 208-230/50-60/1
2 – 208-230/50-60/3
3 – 380/50-60/3
4 – 415/50/3
5 – 460/60/3

Vintage
A - Current

Auxiliary Alarm Relay
R – Aux Alarm Relay (Three Phase Only)
N – None

Standard
S – Standard

Full Load Amps (FLA)
12-20 – (115V Single Phase)
08-16 – (230V Single Phase)
16-32 – (230V Single Phase)
04-28 – (208-230 Three-Phase)
04-27 – (380V, 460V Three Phase)
04-34 – (415V Three-Phase)

Rev.: 30 September 2013D

Notes:
1 – Not available in the United States.
2 – Primary includes a contactor. Secondary operates in series with contactor.

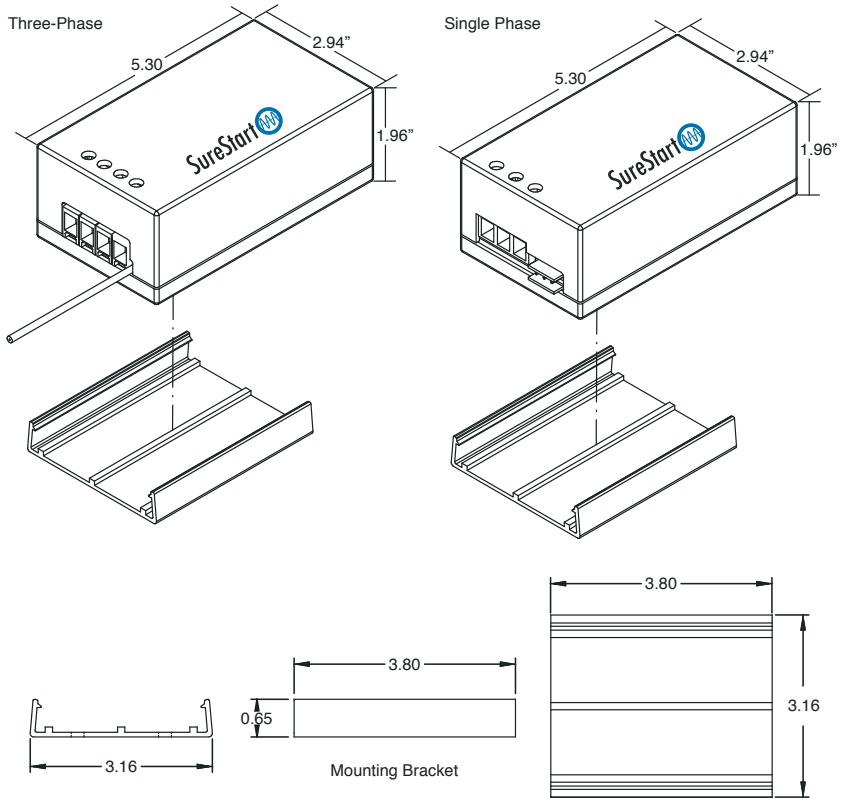
Contractor: _____ P.O.: _____

Engineer: _____

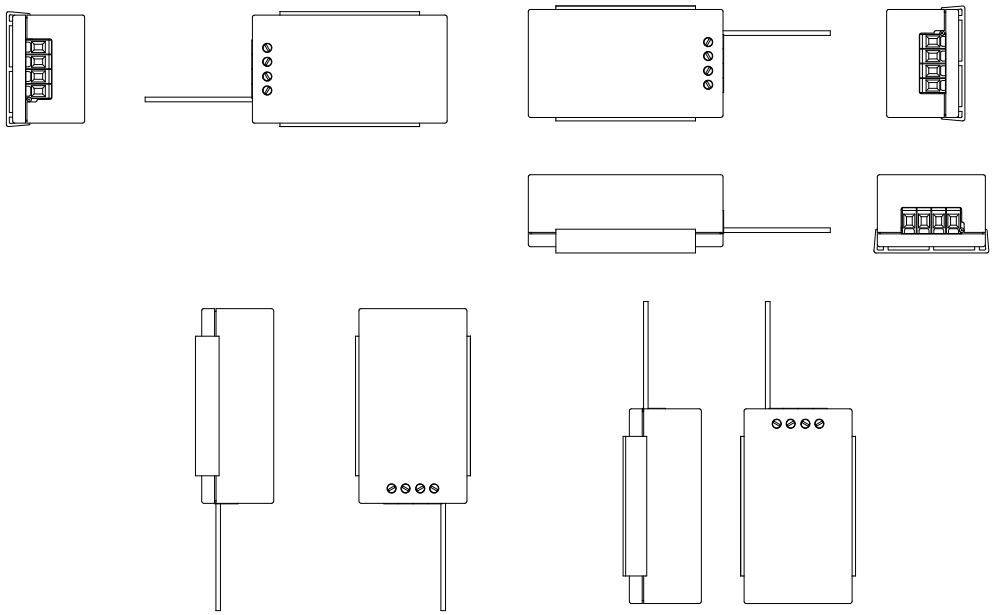
Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

Dimensional Data



Mounting Positions



Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

Physical Characteristics

SureStart Model	Single Phase			Three Phase		
	SS0A12-20	SS1A08-16	SS1A16-32	SS2A04-28	SS3A04-27	SS4A04-34 SS5A04-27
Storage Temperature, °F [°C]	-40 [-40] to 185 [85]			-40 [-40] to 185 [85]		
Case Material	ABS Flameproof UL-94 V0			ABS Flameproof UL-94 V0		
IP Rating	IP207			IP207		
Line Conductor, AWG	14 - 6	14 - 6	14 - 6	14 - 6	14 - 6	14 - 6
Line Conductor Strip Length, in. [mm]	0.4 [10]	0.4 [10]	0.4 [10]	0.4 [10]	0.4 [10]	0.4 [10]
Minimum Line Conductor Length, in. [mm]	15.7 [400]	15.7 [400]	15.7 [400]	15.7 [400]	15.7 [400]	15.7 [400]
Line Terminal Tightening Torque, in-lbs [N-m]	10.5 [1.2]	10.5 [1.2]	10.5 [1.2]	10.5 [1.2]	10.5 [1.2]	10.5 [1.2]
Start Winding & Compressor Common, AWG	16-12	16-12	16-12			
T3 Wire Gauge, AWG				18	18	18
T3 Wire Lead Length, in. [mm]				24.4 [620]	24.4 [620]	24.4 [620]
T3 Wire Termination, in. [mm]				0.2 [5] insulated open fork lug		

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Operating Characteristics

SureStart Model	Single Phase			Three Phase			
	SS0A12-20	SS1A08-16	SS1A16-32	SS2A04-28	SS3A04-27	SS4A04-34	SS5A04-27
Rated Voltage, VAC	115	208-230	208-230	208-230	380	415	460
Rated Phase	1	1	1	3	3	3	3
Rated Frequency, Hz	60	50/60	50/60	50/60	50/60	50	60
Maximum Load Current, Amps	16	16	32	38	38	38	38
Maximum Starting Current, Amps	35	35	65	150	150	150	150
Control input, VAC	Auto-Start at Power Up						
Number of Starts/Hour (Evenly Distributed)	15	15	15	20	20	20	20
Short Circuit Current Rating (SCCR), kA	5	5	5	5	5	5	5
Shutdown on Low Voltage	103	190	190	176	323	353	391
Minimum Startup Voltage	90	195	195	187	342	373	414
Maximum High Voltage	126	253	253	253	422	460	510
Operating Ambient, °F [°C]	-4 [-20] to 140 [60]			-4 [-20] to 140 [60]			
Life Expectancy (At Maximum Rated Load)	Minimum 100,000 Operations						

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Software Characteristics

SureStart Model	Single Phase			Three Phase		
	SS0A12-20	SS1A08-16	SS1A16-32	SS2A04-28	SS3A04-27	SS4A04-34 SS5A04-27
Software Fault Delay, seconds	300	300	300	180	180	180
Initial Power on Delay, seconds, 60 Hz [50Hz]	1 [2]	1 [2]	1 [2]	1 [1]	1 [1]	1 [1]
Power Loss Reset, milliseconds	100	100	100	100	100	100
Contactor Chatter Protection	Yes	Yes	Yes	Yes	Yes	Yes
Motor Reversal Protection	Yes	Yes	Yes			
Reverse Phase Protection				Yes	Yes	Yes
Software Optimization	Auto tune			Auto tune		

10/01/13

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

SureStart Compatibility Guide

Nominal Supply Voltage*	Single Phase			Three Phase			
	SS0A12-20	SS1A08-16	SS1A16-32	SS2A04-28	SS3A04-27	SS4A04-34	SS5A04-27
115/60/1	•						
208-230/50-60/1		•	•				
208-230/50-60/3				•			
380/50-60/3					•		
415/50/3						•	
460/60/3							•
Full Load Amperage, FLA (Typical)	12-20	08-16	16-32	04-28	04-27	04-34	04-27

* - Voltage/Hz/Phase

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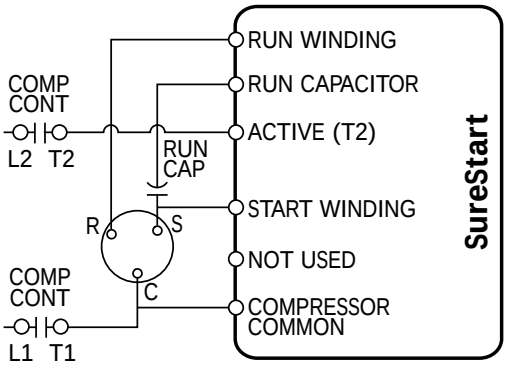
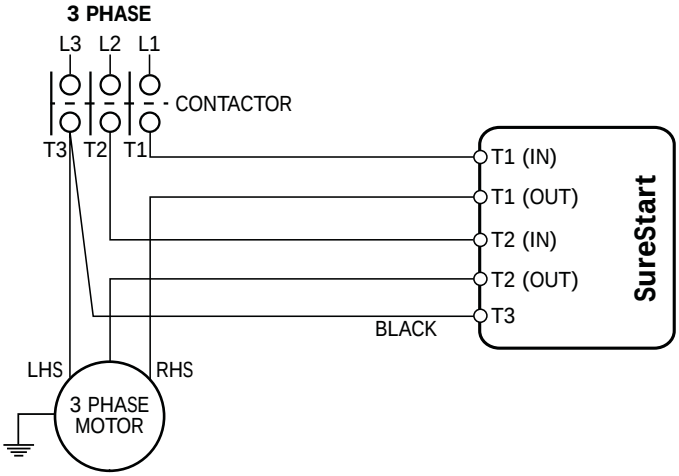
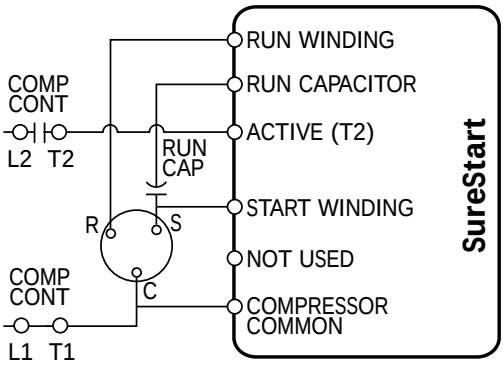
Wiring Schematics



230V with Two Pole Contactor





115V/230V with Single Pole Contactor

CAUTION: SureStart must be installed in a location that ensures that the external heat from a hot gas line, compressor discharge piping, or similar heat source will not cause damage. Minimum 3" [76mm] clearance is recommended.

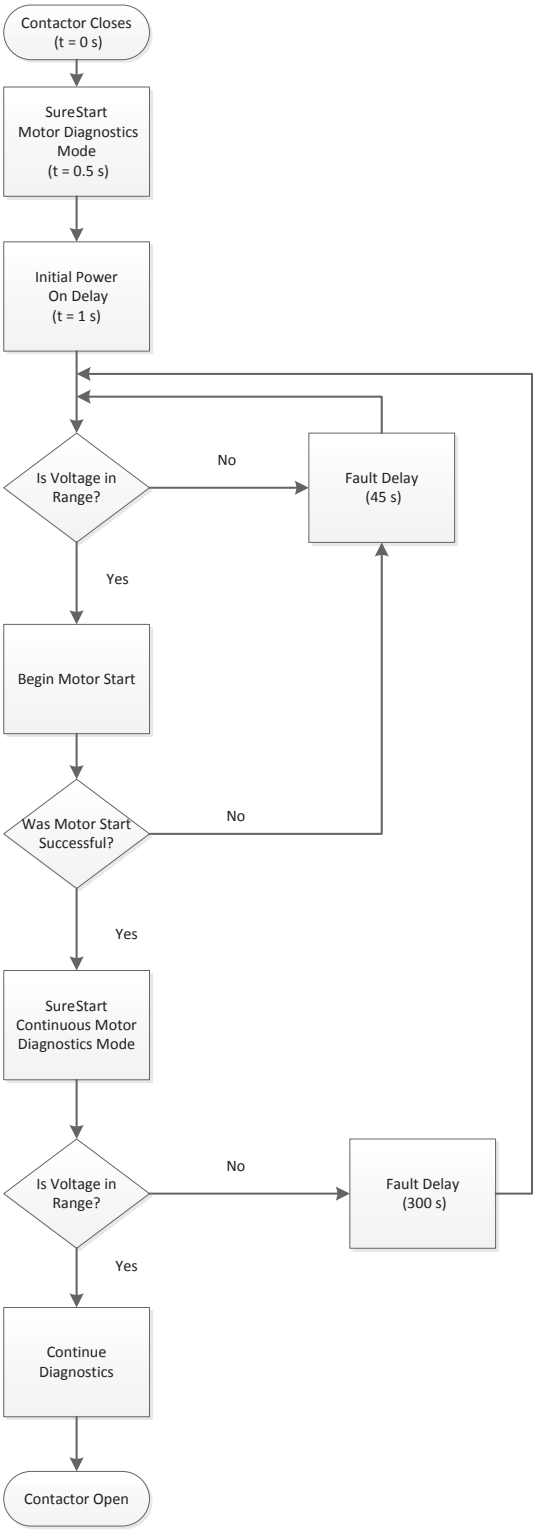
Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

SureStart Mode of Operation



Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

Declaration of Conformity

SureStart technology has been tested and certified under the following standards that apply.

For United States, Canada, & Mexico

UL 508/ CSA 22.2 # 14 (ETL control # 4004190)

For European Union, Australia, and other countries accepting CE Marking

Low Voltage Directive (LVD)
IEC/ EN 60947-4-2: Low Voltage switchgear and control gear: contactors and motor-starters
IEC/ EN 60335-1 & IEC/ EN 60335-2-40: Safety requirements for electrical heat pumps, air conditioners, dehumidifiers.

Electromagnetic Compliance (EMC)

IEC/ EN 55014-1	Conducted & radiated emissions
IEC/ EN 61000-3-11	Flicker
IEC/ EN 61000-3-12	Harmonics emissions
IEC/ EN 61000-3-2	Harmonic current emissions
IEC/ EN 55014-2	Conducted & radiated immunity
IEC/ EN 61000-6-1	Immunity for residential, light commercial, and light industrial
IEC EN 61000-3-3	Voltage fluctuations
IEC/ EN 61000-4-2	Electrostatic discharge (ESD) immunity test
IEC/ EN 61000-4-3	Radiated, radio-frequency, electromagnetic field immunity test
IEC/ EN 61000-4-4	Electrical fast transient/burst immunity test
IEC/ EN 61000-4-5	Surge Immunity Test
IEC/ EN 61000-4-6	Conducted radio-frequency immunity
IEC/ EN 61000-4-11	Voltage dips, short interruptions, and voltage variations immunity tests

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

Definitions

Case Material – SureStart enclosure material

Line conductor – Wiring that connects to the "run winding" and "active" terminations on the SureStart6. On SureStart3, it is the wiring on the "in" and "out" for T1/T2 connections.

Line Conductor Strip Length – This is the length of insulation stripped away in order to properly insert into the SureStart.

Line Terminal Tightening Torque – The necessary torque needed to secure line conductors to the SureStart.

Rated Voltage – This is the nominal supply voltage to the SureStart.

Rated Frequency – This is the nominal frequency, Hz, of the power supply to the SureStart.

Maximum Starting Current – The maximum current at motor startup for the largest motor that can be applied to the SureStart.

Control Input – AC voltage that is applied to the "Active" and "Common" terminals of the SureStart6.

Short Circuit Current Rating – This is the maximum fault current that can be applied without damaging the SureStart.

Shutdown on Low Voltage – SureStart will shutdown motor if the supply voltage falls below this threshold.

Maximum High Voltage – The maximum voltage that can be applied to SureStart.

Maximum Operating Ambient – The maximum temperature the SureStart can properly operate.

Maximum Load Current – This is the maximum current the SureStart is capable of handling.

Minimum Startup Voltage – SureStart will not attempt a motor start if the supply voltage is below this limit.

Software Fault Delay – This is the time delay that will initiate if the SureStart encounters a problem during motor operation.

Initial Power Delay – The time delay from when the SureStart receives powers and motor start occurs.

Power Loss Reset – SureStart is designed to turn motor off in the event power is lost for more than this time period.

Contactor Chatter Protection – SureStart can detect faulty contactor conditions and shut the motor off.

Reverse Phase Protection – SureStart will prevent a 3 phase motor from reverse rotation.

Software Optimization – The maximum number of starts required to achieve optimized motor starting.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Notes

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

SureStart
Single & Three-Phase
Soft Starters

Revision Guide

Pages:	Description:	Date:	By:
5	Updated Physical and Operational Characteristics	21 Nov 2013	DS
6	Updated SureStart Compatibility Guide	21 Nov 2013	DS
All	Updated Model Nomenclature	10 Oct 2013	DS
All	First Published	26 Jun 2013	DS

Contact Information:
Hyper Engineering, Pty. Ltd.
9000 Conservation Way
Fort Wayne, IN 46809

www.hypereng.com
sales@hypereng.com
(877) 304-0724