



Presenting Eltwin HYPER Surestart® soft starters

Achieve reduced peak loads and a smoother and more controlled startup of your unit





Introduction	3
Why is Surestart® better than other solutions?	5
Soften compressor start-up, and reduce peak loads with Eltwin Hyper Surestart®	6
Soft starters for single phase applications	7
State of the art technology endorsed in various industries	9
The potential of using soft starters off grid	10
About Eltwin	11

Introduction

Due to an increasing number of homeowners opting for off-grid living and seeking alternative power sources due to an unstable power grid, the HVAC industry faces a growing power demand.

Homeowners are integrating alternative energy sources such as generators, solar panels, or battery inverters for their air conditioning units, creating the need for a reduced start-up current.

This substantial power surge can easily cause light flicker, equipment failure, mechanical stress, power grid disturbances, and excessive peak loads.

Most inverters and undersized generators cannot withstand these high power requirements that the HVAC systems demand, posing a significant challenge for HVAC manufacturers. It is, therefore, paramount for HVAC manufacturers to comply with the rising demand for alternative power sources and deliver HVAC systems that prevent inverters from tripping or generators from stalling, ensuring that every HVAC system can run on these alternative power sources.

This is where soft starters come into play.

Eltwin Hyper SureStart® soft starters are innovative devices that reduce start-up current, providing a smoother and more controlled startup without stalling. Our SureStart® soft starters reduce the start-up current in HVAC systems by up to 70%, making it easy to operate for smaller generators and solar or battery inverters.

This saves homeowners the significant cost of an oversized generator or prevents the stalling of a smaller one - not to mention, they can still provide a full startup torque.

This way, HVAC manufacturers can offer homeowners a solution that can be packaged with a generator or a battery inverter installation for their homes.

In this product catalog, we will explore the various advantages offered by our range of single-phase SureStart® soft starters, helping you better understand our compact and innovative solutions designed to decrease the start-up current.

What is a soft starter?

A soft starter is an innovative device used to control the acceleration of an electric motor. It is designed to reduce the sudden, high start-up current that occurs when a motor starts up.

Instead of abruptly turning the motor on at full power, a soft starter gradually increases the motor's speed, reducing stress on a generator or battery inverter, helping prevent sudden power surges.

Soft starters are essential to modern HVAC systems, serving as a bridge between the power supply and the motor, ensuring a more controlled and reduced start-up current, light flickering, start-up noises, as well as giving compressor protection.

Would you like to know more about soft starters?

Let's start a conversation, and we will then be happy to provide you with more valuable knowledge and insights to employ soft starters in your HVAC systems.

[Book a meeting here](#)





Why is Surestart® better than other solutions?

Before we delve deeper into the benefits of our Eltwin Hyper Surestart® soft starters, let's address the elephant in the room: why is Surestart® superior to, for instance, a hard start kit?

Surestart® soft starters provide an optimal solution for both homeowners and industrial applications, seeking to operate HVAC systems off-grid with alternative power sources.

This is particularly relevant in remote locations where power access is limited or where long cable layouts, generators, or solar- and battery based inverters are necessary. However, a huge reliance on these power sources can result in inefficiencies, equipment strain, and even system failures.

The excess surge caused by start-up current can easily lead to issues such as brownouts, light flickering, and it might even trip other equipment on the same circuit.

Surestart® soft starters can significantly reduce the peak surge demand during motor startup, making sure the start-up current is more controlled and smooth, and, furthermore, it reduces stress and heating of the compressor motor, and thus it can lead to an extended lifetime of the unit.

Hard start versus Surestart®

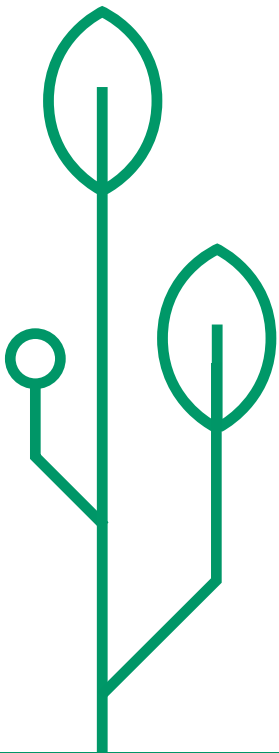
It's crucial to understand that Surestart® soft starters shouldn't be categorized as a hard start kit.

The primary function of Surestart® soft starters is to ensure that compressor motors start optimally every time, achieving a balance between delivering neither too much nor too little torque.

On the other hand, hard start kits are often compared as a soft starter.

Hard starters actually increase the start-up current, giving the compressor motors a harder and louder kick at each start while our SureStart® soft starter significantly reduces the start-up current, making a softer and quieter start.

Our Surestart® soft starters help optimize the startup time based on factors like compressor size, power supply, and loading. This approach promotes enhanced reliability during each startup.



Soften compressor start-up, and reduce peak loads with **Eltwin Hyper Surestart®**

Eltwin Hyper Surestart® soft starters are unique devices designed to control and reduce the peak loads during startup.

In other words - Eltwin Hyper Surestart® softens the start-up, so it doesn't break the power supply when it is used off grid.

Our SureStart® soft starters come packed with a wide range of protection features, and they allow users to minimize annoying start-up noise and light flicker. SureStart® soft starters are ideal for regions that face issues like power grid instability, rolling blackouts, or voltage fluctuations, namely making sure to stabilize the electrical system by eliminating sudden power surges.

Therefore, you can be assured that your HVAC system can run smoothly when running on off-grid power supply!

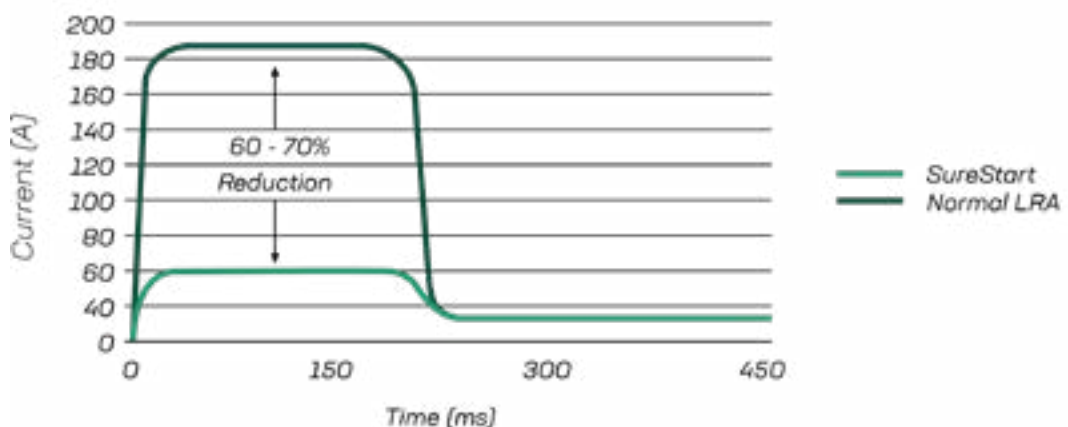
Our SureStart® soft starters can reduce the start-up current by up to 70% *(see graph)*.

With a more gradual acceleration, they help generators and inverters start up your HVAC system smoothly, and they minimize the mechanical stress the motors are often faced with. The peak load is therefore reduced, and the soft starters contribute to an extended lifespan of the compressor.

All of our models are optimized for use with off-grid power sources such as a back-up generators, solar-panels, and battery inverters.

Our SureStart® soft starters also make sure there's an automatic adjustment of the start-up current to match any compressor size and available supply voltage.

Figure 1: Normal 5.0 Ton LRA vs SureStart





Soft starters for single phase applications

Our Surestart® soft starters for single phase applications come with many benefits.

Not only will the single phase application eliminate light flicker, but it will also reduce start-up noise and extend the life of the compressor motor.

Our single phase solution protects your motor from stalling at low voltages - and if the SureStart® soft starter recognizes failure, it will trigger

the LED light to indicate a fault code on the issue.

Single phase soft starters are suitable for 1.75 to 7 horse power (hp) motors in the 220/230V models, and they are suitable between 0.75 to 1.75 hp for the 115V models.

Additionally, all single phase models work in both 60Hz and 50Hz applications.

Employing our Surestart® for single phase applications has a wide range of advantages from motor protection functions to valuable benefits for the homeowner:

- › Automatic adjustment to cover the range of 1.75 to 7 hp
- › Fully self-contained in a conveniently small, double-insulated, and flame retardant enclosure
- › Consumes less than 2W average in running mode
- › Reduces start-up current by up to 70% at startup
- › Reduces light flicker
- › Reduces startup noise and vibration
- › Avoids torque stress fracture on pipes
- › Automatic optimization of motor start-up current
- › Reduces the voltage dip in the power line during startup
- › Reduces mechanical stress and prevents overheating of compressor motors, solar panels and battery inverters.
- › Extends motor lifetime immensely
- › LED indicator for any fault diagnosis
- › Easy installation with supplied wiring



Type	SSOB12-20SN	SS1B08-16SN	SS1B16-32SN	SS1B08-20PN
Nominal Voltage rating	110-115VAC	208-230VAC	208-230VAC	208-230VAC
Single/Three phase	Single Phase	Single Phase	Single Phase	Single Phase
Main Frequency (Tolerance +/- 3 Hz)	60Hz	50Hz/60hz	50Hz/60Hz	50Hz/60Hz
Motor Current, max RLA/FLA range	12A-20A	8A-16A	16A-32A	08A-20A
Contactors	Secondary	Secondary	Secondary	Secondary
LRA max	85A	85A	180A	150A
Start Current Reduction	60% - 70% of LRA	60% - 70% of LRA	60% - 70% of LRA	20% - 50% of LRA
Startup torque reduction	30-40%	30-40%	30-40%	10-30%
Degree of protection	IP20	IP20	IP20	IP20
Operating Temperature (°C /°F)	-20° to 60°C/ -4° to 140°F	-20° to 60°C/ -4° to 140°F	-20° to 60°C/ -4° to 140°F	-20° to 60°C/ -4° to 140°F
Storage Temperature (°C /°F)	-40° to 85°C / -40 to 185°F	-40° to 85°C / -40 to 185°F	-40° to 85°C / -40 to 185°F	-40° to 85°C / -40 to 185°F
Number of starts per hour	15 starts/hr	15 starts/hr	15 starts/hr	10 starts/hr
Minimum startup voltage	103V	180V	180V	180V
Maximum high voltage	130V	253V	253V	253V
Shutdown on low voltage	90V	175V	175V	175V
Short Circuit Current Rating SCCR, kA	5	5	5	5
Power Supply & Control Voltage	Auto-Start at Power up	Auto-Start at Power up	Auto-Start at Power up	Auto-Start at Power up
Dimensions	5.30" x 1.96" x 2.94" (135 x 50 x 75mm)	5.30" x 1.96" x 2.94" (135 x 50 x 75mm)	5.30" x 1.96" x 2.94" (135 x 50 x 75mm)	5.30" x 1.96" x 2.94" (135 x 50 x 75mm)
Weight g/B	> 500g /1.1 lb	500g /1.1 lb	500g /1.1 lb	500g /1.1 lb

State of the art technology endorsed in various industries

Our efficient and reliable SureStart® technology is well endorsed globally by a wide range of industries including:

- > Residential Air Conditioning
- > Commercial/Industrial Air Conditioning
- > Residential Heat Pumps
- > Recreational Vehicles (RV)
- > Generator
- > Refrigeration
- > Marine
- > Submersible Pumps

All our Surestart® soft starters are equipped with auto-optimization to adapt to a wide range of compressor motors without any user interface.

Moreover, the controlled startup reduces the risk of electrical fires and overheating, which helps enhance the overall safety in residential, commercial, and industrial applications.

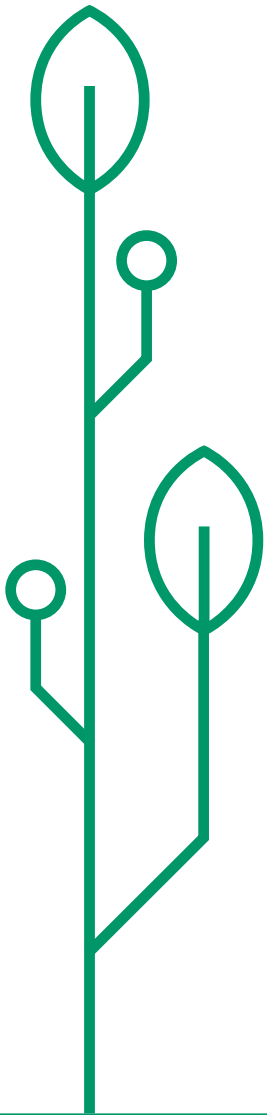
Our solutions are among the most compact solutions on the market with

a simple design, providing you with an easy installation, and they work with all compressors models*. Therefore, it won't be necessary to purchase new models or compressors.

Furthermore, all our Sure-Start products are approved under CE and UL standards, and they ensure compliance to RoHS, REACH, 3TG and Prop65 regulations.

**(please note the voltages range from either single or three phase applications).*





The potential of using soft starters off grid

With an increasing number of natural disasters occurring over the past decade, the need for off-grid power solutions has never been more crucial.

Regions prone to frequent hurricanes, earthquakes, or wildfires require reliable off-grid power generation and distribution systems to ensure uninterrupted access to electricity.

This growing demand has led homeowners to explore alternative power solutions such as generators and solar- or battery-based inverters. However, these alternative power sources pose challenges for the homeowners as their air conditioners or heat pumps create too large start-up currents, causing them to seek out oversized and expensive generators, or causing the inverters of the solar/ battery systems to trip.

Our revolutionary SureStart® technology helps HVAC systems that are operated on generators or solar and battery inverters become more appealing to off-grid homeowners by ensuring a smooth and more controlled start without overwhelming the power source.

In doing so, it erases the need for oversized equipment and prevents unnecessary power interruptions, thereby simplifying and enhancing the off-grid experience.

The versatility makes them an ideal choice for homeowners looking to secure a reliable source of power during times of crisis, and HVAC manufacturers or others become able to meet their customers at the time of this crisis.

Have we piqued your interest?

Soft starters offer a world of possibilities, and within this product catalog, we've only scratched the surface of what can be accomplished. Our versatile and hassle-free soft starters provide solutions to the various challenges faced when using generators or solar- or battery based inverters off the grid.

At Eltwin, we proudly offer the most compact soft starters on the market, effectively reducing peak loads while minimizing startup noises and light disturbances.

If you have any questions or are eager to delve deeper into our soft starters and the technology behind, please don't hesitate to reach out.

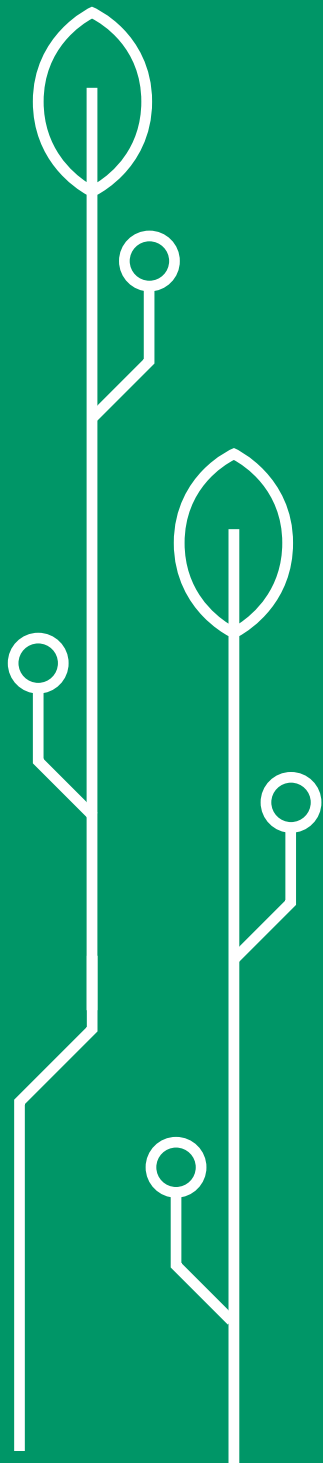


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About Eltwin

For more than 40 years, we have created tailored solutions that cater to the unique needs of our customers, ensuring compatibility with various equipment types and optimizing system performance.

With a team of experts in R&D, engineering, and business development, we have the knowledge and experience to provide effective solutions to a wide range of electrical challenges.

Our Surestart® soft starters are a good example of our collected knowledge throughout the years, providing you with the most compact and innovative solutions for off grid power supplies.

All of our products boast exceptional quality with a failure rate of less than 1%, providing our customers with reliable and long-lasting solutions for the future.

When partnering with Eltwin Group, you get access to a wide range of specialist competencies that will help meet your specific needs.

Our group consists of Eltwin, Eltwin Hyper, Eltwin IC, and Eltwin Motron. Each of the four brands house dedicated specialists who are setting new standards within automation controls.

Our solutions match your application needs!