

# STABILINE®

Uninterruptible Power Supply

## Model SBK350

### Line Interactive UPS

## Installation, Operation and Maintenance Manual



### *Congratulations*

*Thank you for purchasing the SBK350 Series STABILINE® Uninterruptible Power Supply... another Superior product!*

*Expect exceptional performance. The unit is built to the highest standards for your complete satisfaction.*

*To assure many years of uninterrupted service, please read and save this Manual. The Manual is a guide to install and use the UPS. It includes important safety instructions for operation and correct installation of the UPS. If you should have any problems with the UPS, please refer to this manual before calling customer service.*



## ***Superior Electric***

## Important Safety Instructions - Save These Instructions

- **WARNING (SAVE THESE INSTRUCTIONS):** This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.
- **WARNING (CONTROLLED ENVIRONMENT):** These units are intended for installation in a temperature controlled, indoor area, conductive free environment.
- **CAUTION:** Risk of electric shock, do not remove cover. Refer servicing to qualified service personnel.
- **CAUTION:** Do not dispose of batteries in a fire, they may explode.
- **CAUTION:** Do not open or mutilate the battery, released electrolyte is harmful to the skin and eyes. It may be toxic.
- **CAUTION:** A battery can present a risk of electric shock and high short circuit current. The following precautions should be observed when working on batteries  
Remove watches, rings or other metal objects.  
Use tools with insulated handles.  
Wear rubber gloves and boots.  
Do not lay tools or metal parts on top of batteries.  
Disconnect charging source prior to connecting or disconnecting battery terminals.
- Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.
- When replacing battery, replace with same type.
- Do not connect any additional batteries by yourself.
- Symbol for On/Off is displayed and defined.
- **CAUTION:** To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70.

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## Introduction - Save These Instructions

### Intelligent Microprocessor Control

The SBK350 STABILINE Uninterruptible Power Supply is an advanced line-interactive UPS based on microprocessor control. This means that it operates with the newest technology, high performance and powerful function.

The SBK350 provides pure, reliable AC power to the critical loads - protecting them from utility power blackout, swells, sags, surges and interference. The loads could include sensitive medical instruments, small servers, workstations, personal computers, telecommunication systems, and industrial automation equipment. Under normal power conditions, the line-interactive design enables the system to adjust and filter power fluctuations continuously and automatically. In the event of a power failure, it can provide immediate back-up power from the battery without any interruption. Complete transference will be achieved within 4 milliseconds, with no interruption.

When the utility power is connected, the UPS charger will work automatically even when the power switch is OFF. Furthermore, in order to save the battery energy, the UPS can be set to turn itself OFF under BACKUP MODE if none of the connected loads are operating.

### Advanced Battery Management

The visual and audible indicators of the SBK350 present the UPS's status. A self-test function lets the UPS detect a weak battery before it is put into service. The UPS normally performs a self-test at power up and a manual self-test function can be performed via the ON/OFF power switch

## 1. Presentation

The UPS is a line interactive uninterruptible power system (UPS). When utility input is normal, the UPS will provide surge protection and energy to charge the internal battery. If the utility input is abnormal, the UPS can supply AC power to the loads immediately.

- (1). Utilizing microprocessor based controls, it will minimize the dependency on hardware, ...maximize system flexibility and optimizes the assurance of reliability.
- (2). Automatic frequency selection to match with utility power.
- (3). High-grade battery charger to prolong battery's life and fully charge the battery.
- (4). Overload protection both in line and battery mode.

## 1.1 Front View

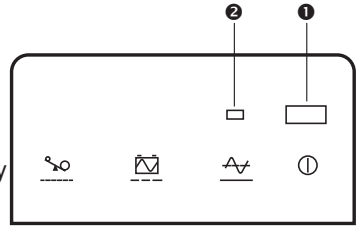
### ❶ ON/OFF/TEST/SILENCE Power Switch

Press the ON/OFF/TEST/SILENCE power switch until the beep stops to turn ON or to turn OFF the UPS. When the UPS is working under normal (utility present) LINE MODE, the UPS's self-test function can be activated by pressing the ON/OFF power switch for less than 1 second.

In BACKUP MODE, press the ON/OFF power switch about 1 second to activate the UPS's SILENCE function.

### ❷ LED (Green Color) Indicator

The LED indicator indicates the UPS's status. The indicator is illuminated steady when the UPS is supplying utility power to the connected loads (LINE MODE). The LED indicator flashes slowly (about once every 2 seconds) when the UPS is supplying battery power to the connected loads (BACKUP MODE). The LED indicator flashes rapidly (about once every 0.5 second) when the loads connected to the UPS exceed the UPS's capacity (OVERLOAD).



## 1.2 Rear Panel

### ❶ AC INPUT POWER

Review the utility input power to make sure that the utility voltage matches that of the SBK350 (120 VAC). Plug the UPS power cord into a grounded wall outlet.

### ❷ INPUT CIRCUIT BREAKER

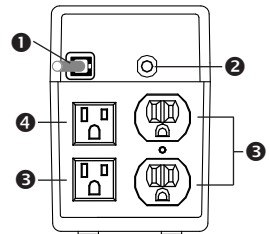
It trips when the connected loads exceed the UPS's capacity.

### ❸ UPS RECEPTACLES

When utility power is normal (LINE MODE), the UPS receptacles are powered by utility power with the AVR function activated. Higher or lower utility voltage will be regulated by the AVR function. When utility power has failed, the UPS will be in BACKUP MODE and the UPS receptacles are powered from the battery.

### ❹ CONVENIENCE OUTLET

The UPS provides for one convenience receptacle. When utility power is present to the UPS, this receptacle will provide utility power with voltage spike filtering.



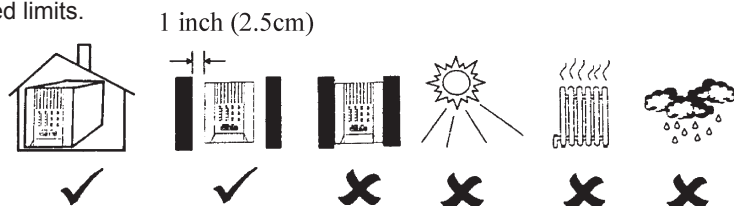
SBK350

## 2. Installation

Inspect the UPS upon receipt. Remove the rubber protective piece covering the ON/OFF/TEST/SILENCE power switch on the front panel. The packaging is recyclable, keep it for reuse or dispose of properly.

### 2.1 Placement:

Install the UPS in a protected area with adequate ventilation and free of excessive dust. Do not operate the UPS where the temperature and humidity are out of the specified limits.



### 2.2 Connect to Utility:

Review the utility input power to make sure that the utility voltage matches that of the SBK350 (120 VAC). Plug the UPS power cord into a grounded wall outlet.

### 2.3 Charge the Battery:

The UPS charges its battery whenever it is connected to utility power. For best results, connect the UPS to the input power source and allow the battery to charge for at least 8 hours prior to initial use.

### 2.4 Connect the Loads:

Connect the power cord of each load to be UPS protected (such as a personal computer) to the UPS receptacles. One convenience receptacle is provided for a non-UPS protected load.

**CAUTION:** Never connect a laser printer or plotter to the UPS outlets. A laser printer or plotter periodically draws significantly more power than when it is idle, and may overload the UPS.

## 3. Operation

### 3.1 Turn UPS on with Green Mode Enabled

The Green Mode Function automatically shuts down the UPS under a no load or light load condition (less than 15 watts) when in the BACKUP MODE. The Green Mode Function is automatically enabled during normal turn on by pressing and holding the ON/OFF power switch until the beep stops.

**ATTENTION:** With the Green Mode Function enabled the UPS will automatically shutdown after approximately 4 minutes if the connected loads are not operating during a power failure. Once the utility power returns, the UPS will return to normal LINE MODE operation.

**CAUTION:** Never connect a laser printer or plotter to the UPS. These devices draw significantly more power operating than they do at idle.

### 3.2 Turn UPS on with Green Mode Disabled

Press and hold the ON/OFF power switch until the alarm beeps twice (approximately 3 seconds). The UPS is now energized and the Green Mode Function is disabled.

**CAUTION:** If the load is lighter than 15W, it is recommended that the Green Mode Function be disabled to avoid any inconvenience from automatic UPS shut-down.

### 3.3 Turn UPS off

Press the ON/OFF power switch and keep pressing for more than 3 seconds to turn off the UPS in LINE MODE or BACKUP MODE.

**ATTENTION:** The UPS will automatically charge itself in the OFF mode when connected to the utility source.

### 3.4 Silence Audible Alarm

When the UPS is in BACKUP mode, press the ON/OFF power switch about 1 second to silence the audible alarm (the UPS will still beep for a LOW BATTERY or OVERLOAD condition).

### 3.5 Initiate Self-Test Function

Press the ON/OFF power switch with the UPS in LINE MODE (about 0.5 second), the UPS will perform a self-test procedure automatically.

## 4. Audible Alarms

### 4.1 “BACKUP” (slow alarm)

When the UPS is working in BACKUP mode, the UPS will emit an audible alarm. The alarm stops when the UPS returns to LINE MODE operation.

**ATTENTION:** The alarm for BACKUP mode is going to beep every 2 seconds (slow-speed beep).

**ATTENTION:** The UPS provides for a mute function when in the BACKUP warning mode. When the beeping sound occurs, press the ON/OFF power switch to stop it and press the ON/OFF power switch again to resume the sound.

### 4.2 “LOW BATTERY” (rapid alarm)

In the BACKUP mode, when the battery reaches about 20% to 30% capacity the UPS beeps rapidly until the UPS shuts down from battery exhaustion or returns to LINE mode operation.

**ATTENTION:** The rapid alarm under LOW BATTERY will beep every 0.5 second and this condition cannot be disabled.

### 4.3 “OVER LOAD” (continuous alarm)

When the UPS is working under an overload condition (the UPS connected loads exceed the maximum rated capacity), the UPS will emit a continuous alarm to warn of an overload condition. In order to protect the unit and the loads, the UPS will be automatically turned off. Please disconnect nonessential devices from the UPS to eliminate the overload alarm.

## 5. Maintenance and Storage

### 5.1 Maintenance

- 5.1.1. Keep the unit clean and vacuum the ventilation intake periodically.
- 5.1.2. Wipe with soft damp cloth.
- 5.1.3. Check for loose and bad connections monthly.
- 5.1.4. Never leave the unit on an uneven surface.
- 5.1.5. Position the unit to allow at least 4 inches clearance between the rear panel and the wall. Keep the ventilation intake open.
- 5.1.6. Avoid direct sunlight, rain and high humidity.
- 5.1.7. Stay away from fire and extremely hot location.
- 5.1.8. Do not stack materials on top of the unit.
- 5.1.9. The unit should not be exposed to corrosive air.
- 5.1.10 The normal operating temperature is 0° C to 30° C (32° F to 86° F).

### 5.2 Storage Conditions

Store the UPS covered and upright in a cool and dry location, with its battery fully charged. Before storing, charge the UPS for at least 6 hours.

### 5.3 To Extend the Storage

- 5.3.1. In an environment where the ambient temperature is -15° C to 30° C (5° F to 86° F), charge the UPS's battery every 6 months.
- 5.3.2. In an environment where the ambient temperature is 30°C to 35° C (86° F to 95° F), charge the UPS's battery every 3 months.

## 6. Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTIONS
<ul style="list-style-type: none"> <li>• UPS can't be turned on</li> </ul>	Time of pressing the ON/OFF power switch is too short	Press the ON/OFF power switch for more than 1 second
	Less than 30W load while in Battery Mode	Normal condition, "no load shutdown - Green Mode function" is active. See section 3.2
<ul style="list-style-type: none"> <li>• No "ON/OFF" power switch LED</li> </ul>	PCB (circuit-board) failure	Contact Factory
	Battery voltage less than 10V	Recharge the UPS at least 24 hours
<ul style="list-style-type: none"> <li>• UPS always in "BATTERY MODE"</li> </ul>	Input power cord loose	Plug in the input power cord Replace fuse or reset circuit breaker
	AC fuse or circuit breaker burned out	
	Utility input voltage too high, too low or black out condition	Normal Condition
	PCB (circuit-board) failure	Contact Factory
<ul style="list-style-type: none"> <li>• Constant Alarm</li> </ul>	The UPS is overloaded	Remove less critical equipment loads
<ul style="list-style-type: none"> <li>• Back up time is too short</li> </ul>	Weak battery or battery is not fully charged	Recharge the UPS at least 6 hours
	PCB (circuit-board) failure	Contact Factory

## 7. Specifications - Model SBK350

<b>INPUT</b>	Nominal Voltage	110 / 115 / 120 VAC	
	Voltage Range	± 25 % of Input Nominal (90-150 for 120 VAC Nominal)	
	Current	8 A Max. (including Convenience Receptacles)	
	Frequency	± 10 % (45-66 Hz), 50/60 Hz Auto Sensing	
<b>OUTPUT</b>	Nominal Voltage	120 VAC	
	VA Rating	500 VA	
	Power (Resistive Load)	300 Watts	
	Current <sup>1</sup>	4.1 A	
	On Line Voltage Regulation	-15%, +10% (102 – 132 for 120 Nominal)	
		AVR Circuit Increases Output Voltage 15% when Nominal Utility Voltage is -9 % to -25 %	
		AVR Circuit Decreases Output Voltage 13% when Nominal Utility Voltage is +9 % to +25 %	
	On Battery Voltage Regulation	± 5 % Typical	
	Frequency	50 / 60 Hz Auto Sensing	
	On Battery	50 or 60 Hz ± 1 Hz	
	Waveform	Simulated Sine Wave	
Transfer Time	4 Milliseconds Typical, Including Detection Time		
Surge Protection	480 Joules, 2ms		
Unit Protection	Circuit Breaker for Overload & Short Circuit		
Overload Protection	UPS Automatic Power Off / Overload Exceeds 110 % of Nominal for 60 Seconds and/or 130 % for 3 Seconds		
<b>BATTERY</b>	DC Voltage	12 VDC	
	Type	Sealed, Lead-acid, Maintenance-free, Valve-regulated (VRLA)	
	Number (Internal)	(1) 12V, 34W	
	Run Time <sup>2</sup>	20 Minutes Typical	
		5 Minutes	
	PC with 15-Inch Monitor	12 Minutes	
	Full Load	6 Hours to 90 %	
	Half Load		
Recharge Time			
<b>GENERAL SPECIFICATIONS</b>	Special	Buck & Boost Automatic Voltage Regulator (AVR) Circuit, Green Mode and DC (Cold Start)	
	Controls & Indicators	LED	AC Input Present, Battery Mode and Overload
		Audible Alarms	Battery Backup Mode, Low Battery, Overload and Green Mode
	Computer Communications	None	
	Temperature	Operating	0° C to 30° C (32° F to 104° F)
		Storage	0° C to 35° C (32° F to 95° F)
	Humidity	10 - 95 % Non-condensing	
	Altitude	Operating	11,500 Feet (3,500 Meters) above Sea Level without Derating
		Storage	50,000 Feet (15,000 Meters) above Sea Level Maximum
	Audible Noise	< 40 dBA at 1 Meter (3.2 Feet)	
	Cooling	Convection (no fans)	
	Input Connection	6-Foot Cord with NEMA 5-15P Plug	
	Output Receptacles	UPS	(3) NEMA 5-15R
		Convenience	(1) NEMA 5-15R
	Weight	15.3 lbs. (6.9 kg)	
Dimensions H x W x D	Inches	5.3 x 3.8 x 12.5	
	(mm)	(135 x 97 x 320)	
Warranty	1 Year		
Agency Listing	UL, cUL, FCC Class A		

1. Computer Load

2. Backup time is for reference only. Actual duration may vary depending on temperature, battery condition and type of load.

Specifications subject to change without notice.

### Telephone and Fax Numbers

Telephone 860-507-2025

Fax 860-507-2050

Customer Service 860-507-2025, Ext. 70782

Product Application 860-507-2025, Ext. 72058

### Toll-Free (in USA and Canada only)

Telephone: 1-800-787-3532

Fax 1-800-821-1369

Customer Service 1-800-787-3532, Ext. 70782

Product Application 1-800-787-3532, Ext. 72058



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