



SINUS EVO
1 – 3 kVA
USER MANUAL



Important Notices!

Thank you for choosing INFORM UPS SINUS EVO product to supply your Critical Application.

SINUS EVO has been designed with advanced technologies and the latest components generation; realized to satisfy both users and installers in their operational needs of high availability and performance.

This manual contains important information about commissioning, usage and technical properties of the UPS. It also contains safety information for operator and instructions to secure your critical load. Applying the recommendation detailed in this manual is necessary to use UPS safely and correctly.



Read the manual completely before working on this equipment!



Keep this manual in UPS's front cover's pocket for easy consultation!



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The manufacturer reserves the rights to change the technical specifications and design without notice.



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Units that are labelled with a CE mark comply with the Standard: EN 62040-1 and EN 62040-2.



Description of the Symbols Used in the Manual



This symbol points out the instructions which are especially important.



This symbol points out the risk of electric shock if the following instruction is not followed.



This symbol points out the instructions, which may result with injury of the operator or damage of the equipment if not followed.



All packing material must be recycled in compliance with the laws in force in the country where the system is installed.



PB: PROTECTIVE BONDING



PE: PROTECTIVE EARTH

Description of the Abbreviations Used in the Guide

UPS: Uninterruptible Power Systems

EPO: Emergency Power Off

RS232: Serial Communication Protocol

SNMP: Simple Network Management Protocol

CVCF: Constant Voltage Constant Frequency

V: Voltage

A: Ampere

P: Power

For Input, Output and Manual Bypass Circuit Breaker;

“I” (ON): Closing the Circuit

“O” (OFF): Opening the Circuit

For Battery Circuit Breaker;

Active (ON/I): Closing the Circuit

Passive (OFF/O): Opening the Circuit

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1. WARRANTY

2.1. Terms of Warranty

- Warranty is defined by General Conditions of Sale and Delivery.
- The UPS including all the internal parts is under the warranty of INFORM.
- If the UPS malfunctions because of component, manufacturing or installation (if it's done by authorized INFORM UPS Technical Service Personnel) problems during the warranty period, the UPS will be repaired (spares and labour) by the Manufacturer under warranty.

2.2. Out of Warranty Terms and Conditions

This Warranty does not apply if:

- UPS not commissioned or maintained by an authorized INFORM UPS Technical Service staff or an authorized INFORM distributor Technical Service staff
- UPS not used according the terms of operating and installation manual
- Product serial number label has been removed or lost

This Warranty does not cover any defects or damages caused by:

- Neglect, accident, misuse, misapplication
- Failure due to fortuitous circumstances or force majeure (lightning, floods...etc.),
- Unloading and transportation damage and failures after delivery,
- Damage or injuries caused by negligence, lack of inspection or maintenance, or improper use of the products,
- Faulty electrical wiring,
- Defects arising either from designs or parts imposed or supplied by the purchaser,
- Defects and damage by fire and lightning,
- Failures due to modification in the products without INFORM approval,
- Improper installation, testing, operation, maintenance, repair, alteration, adjustment, or modification of any kind by unauthorized personnel,

The Manufacturer will repair the device in such cases for a fee and is not responsible for the shipment of the equipment.

The Battery warranty does not apply if the temperature in the room exceeds 25 °C.

Extended battery warranty does not apply if:

- UPS has not been commissioned
- A yearly preventive maintenance visit has not been performed

By an authorized INFORM UPS Technical Service staff or authorized INFORM distributor Technical Service staff.

The UPS may contain batteries that should be recharged 24Hours min after 6 month storage duration to avoid deep battery discharge. Warranty cannot apply on batteries that have suffered of deep discharge.

2. SAFETY



Information related to safety of the UPS, battery, load and the user is summarized below. But the equipment should not be installed before reading the manual completely.

- This UPS utilizes voltage that may be hazardous. Do not attempt to disassemble the unit. The unit contains no user replaceable parts. Only factory service personnel may perform repairs.
- The mains socket outlet that supplies the UPS shall be installed near the UPS and shall be easily accessible.
- During the installation of this equipment it should be assured that the sum of the leakage currents of the UPS and the connected loads does not exceed 3.5mA.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to UPS output sockets.
- The UPS can be operated by any individuals with no previous experience.
- Connect the UPS system only to an earthed shockproof outlet which must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring outlet (shockproof outlet).
- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.
- Connection to any other type of receptacle other than a two-pole, three-wire grounded receptacle may result in shock hazard as well as violate local electrical codes.
- In the event of an emergency, press the "OFF" button and disconnect the power cord from the AC power supply to properly disable the UPS.
- Do not disconnect the mains cable on the UPS system or the building wiring outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF/Enter button to disconnect the mains.
- Prevent no fluids or other foreign objects from inside of the UPS system.
- Do not allow any liquids or any foreign object to enter the UPS. Do not place beverages or any other liquid-containing vessels on or near the unit.
- This unit intended for installation in a controlled environment (temperature controlled, indoor area free of conductive contaminants). Avoid installing the UPS in locations where there is standing or running water, or excessive humidity.
- Do not plug the UPS input into its own output.
- Do not attach a power strip or surge suppressor to the UPS.
- Do not attach non-computer-related items, such as medical equipment, life-support equipment, microwave ovens, or vacuum cleaners to UPS.
- Do not dispose of batteries in a fire as they may explode.
- Attention, hazardous through electric shock. Also with dis-connection of this unit from the mains, hazardous voltage still may be accessible through supply from battery. The battery supply should be therefore disconnected in the plus and minus pole at the connectors of the battery when maintenance or service work inside the UPS is necessary.
- To reduce the risk of overheating the UPS, do not cover the UPS' cooling vents and avoid exposing the unit to direct sunlight or installing the unit near heat emitting appliances such as space heater or furnaces.
- Unplug the UPS prior to cleaning and do not use liquid or spray detergent.
- Please replace the fuse only with the same type and amperage in order to avoid fire hazards.
- **WARNING:** This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures. (only for 220/230/240 VAC system)

Important Notice for Battery

- **The batteries may only be installed and commissioned by authorized LEGRAND UPS Technical Service Personnel.**
- Make sure that the battery quantity is proper for the unit and they are same type and capacity. Otherwise danger of explosion and fire is within the bounds of possibility.
- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- In case of electrolyte in contact with skin, immediately wash the contaminated skin with water.
- Replaced batteries must be disposed of at authorized battery waste disposal centres.
- **A battery can present risk of electric shock and high short circuit currents.**
The following precautions should be observed when working on batteries;
 - ❖ Remove rings, watches, necklaces, bracelets and all metal objects.
 - ❖ Only use tools with insulated handles.
 - ❖ Wear rubbers gloves and a rubber apron when handling batteries.
 - ❖ Do not lay tools or metal parts on top of batteries.
 - ❖ Eye protection should be worn to prevent injury from accidental electrical arcs.
- **Before a maintenance or repair work on the UPS;**
 - ❖ Switch the input, output and battery circuit breakers to “OFF” position.
 - ❖ If UPS has external batteries; also switch the circuit breakers of the battery cabinet to “OFF” position.
 - ❖ Determine if the battery is inadvertently grounded. If inadvertently grounded; remove source of ground. Contact with any part of a grounded battery can result in electrical shock.

3. REQUIREMENT

3.1. Transportation



The UPS must be placed and stand in a vertical position throughout the transportation.



The equipment shall be packed properly during transportation. Therefore it is recommended to keep the original package for future need.



All packing material must be recycled in compliance with the laws in force in the country where the system is installed.



In order to profit from optimal ventilation, the side panels must remain in place for UPS with internal battery.



The UPS should be mounted on a concrete surface and non-combustible surface.

3.2. Placement

This product meets the safety requirements for devices to be operated in restricted access locations according to EN 60950-1 safety standard, which states that the owner should guarantee the following:

- UPS is not designed for outdoor application.
- The equipment and the batteries should not be exposed to direct sunlight or placed near to a heat source.
- Recommended operating temperature and humidity values are listed on the [Appendix-1 Technical Specifications](#).
- Avoid dusty environments or areas where dust of conductive or corrosive materials is present.
- Recommended environmental humidity condition is between 20-95% (non-condensing).

3.3. Storage

Please store the UPS in an environment where the temperature is between -25°C + 55°C , no receipt of direct sunlight, far from the heating, in a dry place.

Environmental humidity must be between 20-95% (non-condensing).

Recommended storage temperature, humidity and altitude values are listed on the [Appendix-1 Technical Specifications](#) section.

If the batteries will be stored for longer than 6 months, they shall be charged periodically. Charge period depends on the storage temperature, as shown below:

- ❖ Every 9 months if the temperature is below 20°C ,
- ❖ Every 6 months if the temperature is between 20°C and 30°C ,
- ❖ Every 3 months if the temperature is between 30°C and 40°C ,
- ❖ Every 2 months if the temperature is over 40°C

4. INSTALLATION

When the UPS is delivered, examine the packaging and product carefully to see if any damage occurred during transport.

If either possible or ascertained damage is found report it immediately to:

- the carrier;
- INFORM Technical Assistance Centre.

Make sure that the unit received corresponds to the material specified on the delivery document. The UPS SINUS EVO packaging protects the equipment against mechanical and environmental damages. For greater protection it is also wrapped in a transparent film.

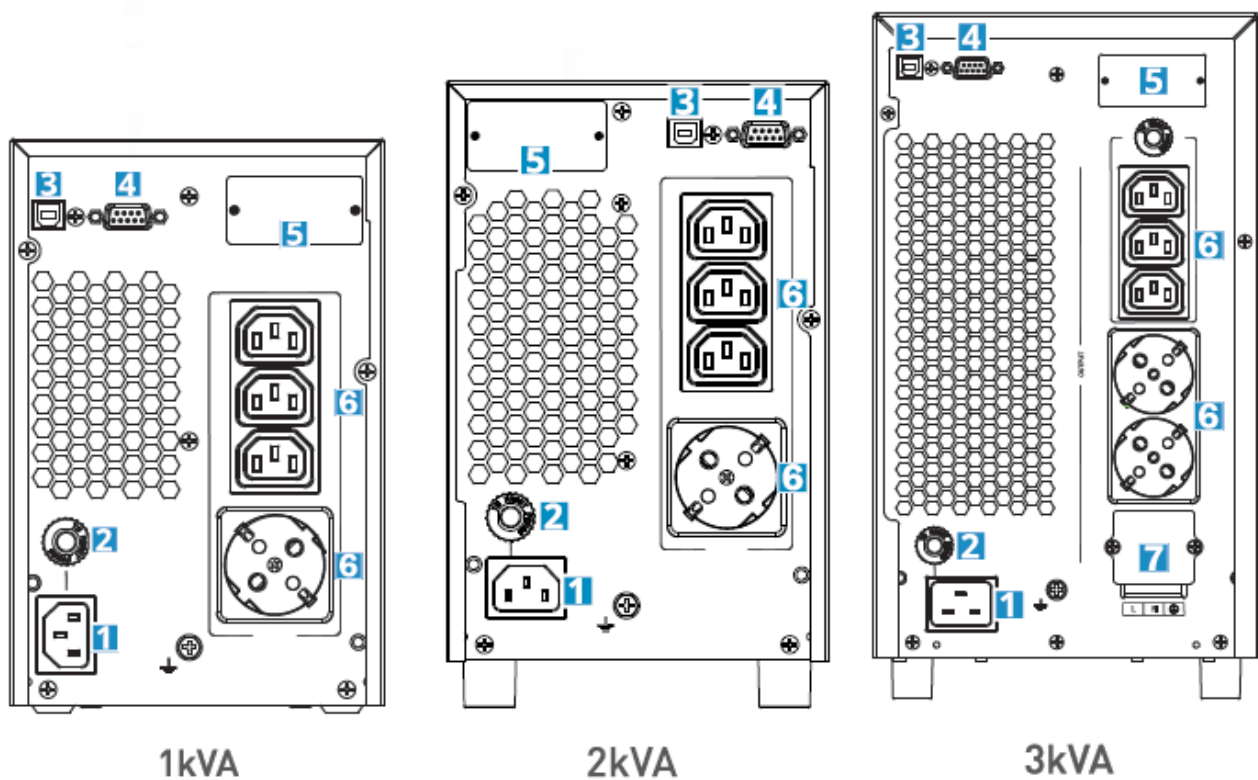
Check if the following are provided with the equipment

- UPS
- User Manual



Before the installation, please check if your UPS is customized following your special requirements (if any).

4.1. Rear Panel



1. AC input
2. Input circuit breaker
3. USB communication port
4. RS-232 communication port
5. SNMP intelligent slot (option)
6. Output receptacles
7. Output terminal

4.2. UPS Input Connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.

- For 208/220/230/240VAC models: The power cord is supplied in the UPS package.
- For 110/115/120/127VAC models: The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1K model and NEMA 5-20P for 2K model.

4.3. UPS Output Connection

- For socket-type outputs, simply connect devices to the outlets.
- For terminal-type input or outputs, please follow below steps for the wiring configuration:
 - ❖ Remove the small cover of the terminal block
 - ❖ Suggest using AWG14 or 2.1mm² power cords for 3KVA (208/220/230/240VAC models). Suggest using AWG12-10 or 3.3mm²-5.3mm² power cords for 3KVA (110/115/120/127VAC models). Please also install a circuit breaker (40A) between the mains and AC input of UPS in 3KVA (110/115/120/127VAC models) for safety operation.
 - ❖ Upon completion of the wiring configuration, please check whether the wires are securely affixed.
 - ❖ Put the small cover back to the rear panel.

4.4. Communication Connection

Communication port:

USB port

RS-232 port

Intelligent slot



To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable one end to the USB/RS-232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with intelligent slot perfect for either SNMP or AS400 card. When installing either SNMP or AS400 card in the UPS, it will provide advanced communication and monitoring options.



USB port and RS-232 port can't work at the same time.

4.5. Communication Connection

Press the ON/Mute button on the front panel for two seconds to power on the UPS.

Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

4.6. Install Software

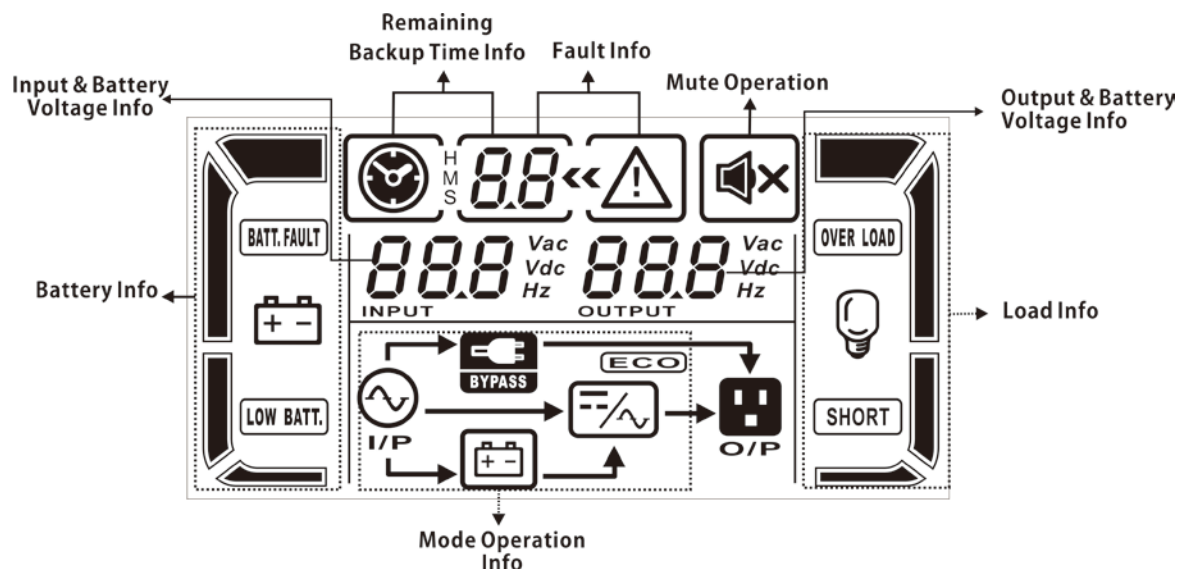
For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. You may insert provided CD into CD-ROM to install the monitoring software.




















5. DISPLAY

5.1.Button Operation

Button	Function
ON/Mute Button	<ul style="list-style-type: none"> Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS. Mute the alarm: When the UPS is on battery mode, press and hold this button for at least 5 seconds to disable or enable the alarm system. But it's not applied to the situations when warnings or errors occur. Up key: Press this button to display previous selection in UPS setting mode. Switch to UPS self-test mode: Press and hold ON/Mute button for 5 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.
OFF/Enter Button	<ul style="list-style-type: none"> Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button. Confirm selection key: Press this button to confirm selection in UPS setting mode.
Select Button	<ul style="list-style-type: none"> Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, output voltage and output frequency. It will return back to default display when pausing for 10 seconds. Setting mode: Press and hold this button for 5 seconds to enter UPS setting mode when UPS is in standby mode or bypass mode. Down key: Press this button to display next selection in UPS setting mode.
ON/Mute + Select Button	<ul style="list-style-type: none"> Switch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 5 seconds. Then UPS will enter to bypass mode. This action will be ineffective when the input voltage is out of acceptable range.

5.2.LCD Panel



Display	Function
Remaining backup time information	
	Indicates the remaining backup time in pie chart.
H M S 	Indicates the remaining backup time in numbers. H: hours, M: minute, S: second
Fault information	
	Indicates that the warning and fault occurs.
	Indicates the warning and fault codes, and the codes are listed in details in 3-5 section.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output & Battery voltage information	
 OUTPUT	Indicates the output voltage, frequency or battery voltage. Vac: output voltage, Vdc: battery voltage, Hz: frequency
Load information	
	Indicates the load level by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates overload.
	Indicates the load or the UPS output is short circuit.
Mode operation information	
	Indicates the UPS connects to the mains.
	Indicates the battery is working.
	Indicates the bypass circuit is working.
	Indicates the ECO mode is enabled.
	Indicates the Inverter circuit is working.
	Indicates the output is working.
Battery information	
	Indicates the Battery level by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates the battery is fault.
	Indicates low battery level and low battery voltage.
Input & Battery voltage information	
 INPUT 12	Indicates the input voltage or frequency or battery voltage. Vac: Input voltage, Vdc: battery voltage, Hz: input frequency

5.3. Audible Alarm

Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Overload	Sounding twice every second
Fault	Continuously sounding
Bypass Mode	Sounding every 10 seconds

5.4. LCD Display Wordings Index

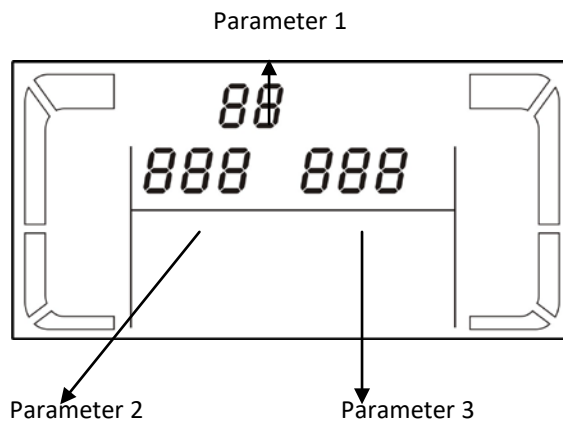
Abbreviation	Display content	Meaning
ENA	<i>ENR</i>	Enable
DIS	<i>di S</i>	Disable
ESC	<i>ESC</i>	Escape
HLS	<i>HLS</i>	High loss
LLS	<i>LLS</i>	Low loss
BAT	<i>bAt</i>	Battery
CF	<i>CF</i>	Converter
TP	<i>TP</i>	Temperature
CH	<i>CH</i>	Charger
FU	<i>FU</i>	Bypass frequency unstable
EE	<i>EE</i>	EEPROM error

5.5. UPS Setting

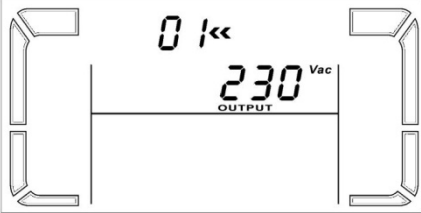
There are three parameters to set up the UPS.

Parameter 1: It's for program alternatives. Refer to below table.


Parameter 2 and parameter 3 are the setting options or values for each program.




- **01: Output Voltage Setting**

Interface	Setting
	<p>Parameter 3: Output voltage For 208/220/230/240 VAC models, you may choose the following output voltage: 208: presents output voltage is 208Vac 220: presents output voltage is 220Vac 230: presents output voltage is 230Vac (Default) 240: presents output voltage is 240Vac For 110/150/120/127 VAC models, you may choose the following output voltage: 110: presents output voltage is 110Vac 115: presents output voltage is 115Vac 120: presents output voltage is 120Vac (Default) 127: presents output voltage is 127Vac</p>

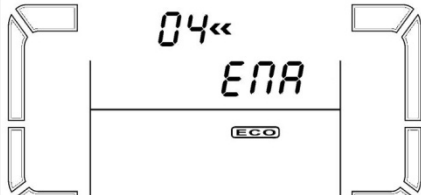
- **02: Frequency Converter Enable/Disable**

Interface	Setting
	<p>Parameter 2 & 3: Enable or disable converter mode. You may choose the following two options: CF ENA: converter mode enable CF DIS: converter mode disable(Default)</p>


- **03: Output Frequency Setting**

Interface	Setting
	<p>Parameter 2 & 3: Output frequency setting. You may set the initial frequency on battery mode: BAT 50: presents output frequency is 50Hz BAT 60: presents output frequency is 60Hz If converter mode is enabled, you may choose the following output frequency: CF 50: presents output frequency is 50Hz CF 60: presents output frequency is 60Hz</p>


- **04: ECO Enable/Disable**

Interface	Setting
	<p>Parameter 3: Enable or disable ECO function. You may choose the following two options: ENA: ECO mode enable DIS: ECO mode disable (Default)</p>


- **05: ECO Voltage Range Setting**

Interface	Setting
	<p>Parameter 2 & 3: Set the acceptable high voltage point and low voltage point for ECO mode by pressing Down key or Up key.</p> <p>HLS: High loss voltage in ECO mode in parameter 2. For 208/220/230/240 VAC models, the setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V) For 110/115/120/127 VAC models, the setting range in parameter 3 is from +3V to +12V of the nominal voltage. (Default: +6V)</p> <p>LLS: Low loss voltage in ECO mode in parameter 2. For 208/220/230/240 VAC models, the setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V) For 110/115/120/127 VAC models, the setting voltage in parameter 3 is from -3V to -12V of the nominal voltage. (Default: -6V)</p>


- **06: Bypass Enable/Disable When UPS is Off**

Interface	Setting
	<p>Parameter 3: Enable or disable Bypass function. You may choose the following two options:</p> <p>ENA: Bypass enable</p> <p>DIS: Bypass disable (Default)</p>

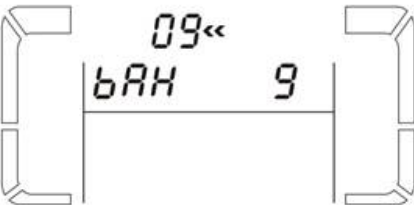
- **07: Bypass Voltage Range Setting**

Interface	Setting
	<p>Parameter 2 & 3: Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key.</p> <p>HLS: Bypass high voltage point For 208/220/230/240 VAC models: 235-264: setting the high voltage point in parameter 3 from 235Vac to 264Vac. (Default: 264Vac) For 110/115/120/127 VAC models: 125-132: setting the high voltage point in parameter 3 from 115Vac to 132Vac (Default: 132Vac)</p> <p>LLS: Bypass low voltage point For 208/220/230/240 VAC models: 184-225: setting the low voltage point in parameter 3 from 184Vac to 225Vac. (Default: 195Vac) For 110/115/120/127 VAC models: 98-115: setting the low voltage point in parameter 3 from 98Vac to 115Vac. (Default: 98Vac)</p>

- **8: Autonomy Limitation Setting**

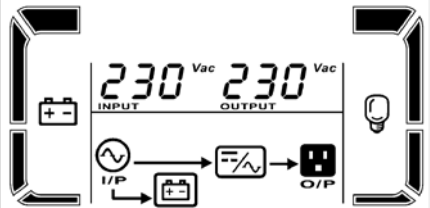
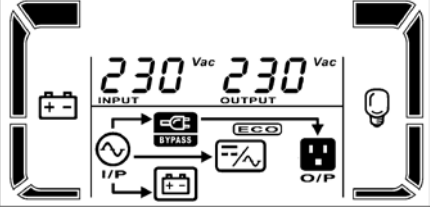
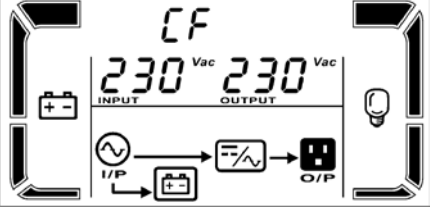
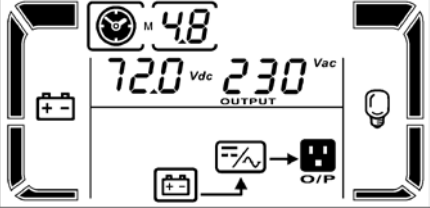
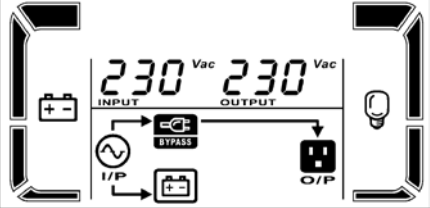
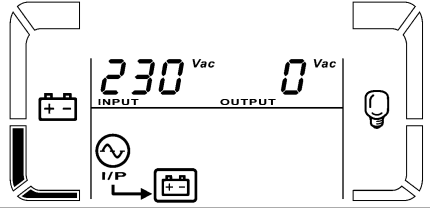
Interface	Setting
	<p>Parameter 3: Set up backup time on battery mode for general outlets.</p> <p>0-999: setting the backup time in minutes from 0-999 for general outlets on battery mode.</p> <p>0: When setting as “0”, the backup time will be only 10 seconds.</p> <p>999: When setting as “999”, the backup time setting will be disabled. (Default)</p>

- **9: Total Battery Ah**

Interface	Setting
	<p>Parameter 3: Set up total battery AH value of the UPS. (unit: AH)</p> <p>7-999: setting the total battery capacity from 7 to 999. Please set up this figure if external battery pack is connected.</p> <p>If the UPS is standard model, the default setting is 9AH.</p> <p>If the UPS is long-run model, the default setting is 65AH.</p>

- **00: Exit Setting**





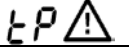
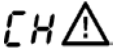


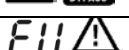
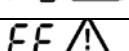
5.6. Operating Mode Description

Operating Mode	Description	LCD Display
Online mode	When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery at online mode.	
ECO mode	Energy saving mode: When the input voltage is within voltage regulation range, UPS will bypass voltage to output for energy saving.	
Frequency Converter mode	When input frequency is within 40 Hz to 70 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge battery under this mode.	
Battery mode	When the input voltage is beyond the acceptable range or power failure and alarm is sounding every 4 second, UPS will backup power from battery.	
Bypass mode	When input voltage is within acceptable range but UPS is overload, UPS will enter bypass mode or bypass mode can be set by front panel. Alarm is sounding every 10 second.	
Standby mode	UPS is powered off and no output supply power, but still can charge batteries.	

5.7. Fault Code Table








Fault Event	Fault Code	Icon	Fault Event	Fault Code	Icon
Bus start fail	01	x	Inverter output short	14	SHORT
Bus over	02	x	Battery voltage too high	27	BATT. FAULT
Bus under	03	x	Battery voltage too low	28	BATT. FAULT
Bus unbalance	04	x	Over temperature	41	x
Inverter soft start failure	11	x	Overload	43	OVER LOAD
Inverter voltage high	12	x	Charger failure	45	x
Inverter voltage Low	13	x			

5.8. Warning Indicator

Warning	Icon (flashing)	Alarm
Low Battery		Sounding every second
Overload		Sounding twice every second
Battery is not connected		Sounding every second
Over Charge		Sounding every second
Over temperature		Sounding every second
Charger failure		Sounding every second
Battery fault		Sounding every second
Out of bypass voltage range		Sounding every second
Bypass frequency unstable		Sounding every second
EEPROM error		Sounding every second

6. TROUBLESHOOTING

If the UPS system does not operate correctly, please solve the problem by using the table below.

Symptom	Possible cause	Remedy
No indication and alarm even though the mains is normal.	The AC input power is not connected well.	Check if input power cord firmly connected to the mains.
	The AC input is connected to the UPS output.	Plug AC input power cord to AC input correctly.
The icon  and  flashing on LCD display and alarm is sounding every second.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
Fault code is shown as 27 or 28 and the icon  is lighting on LCD display and alarm is continuously sounding.	Battery voltage is too high/low or the charger is fault.	Contact your dealer.
The icon  and  is flashing on LCD display and alarm is sounding twice every second.	UPS is overload	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 43 and The icon  is lighting on LCD display and alarm is continuously sounding.	The UPS shut down automatically because of overload at the UPS output.	Remove excess loads from UPS output and restart it.
Fault code is shown as 14 and the icon  is lighting on LCD display and alarm is continuously sounding.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Fault code is shown as 01, 02, 03, 04, 11, 12, 13, 41 and 45 on LCD display and alarm is continuously sounding.	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplied by power.	Contact your dealer
Battery backup time is shorter than nominal value	Batteries are not fully charged	Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries defect	Contact your dealer to replace the battery.
Warning code "EP" is displayed in LCD panel when turn on.	The internal temperature is too high.	1. Temperature sensor problem. Please contact your dealer. 2. Wait until internal temperature cool down. Then, turn on the UPS again.

Appendix-1: Technical Specifications

MODEL		Sinus EVO 1-3 KVA	
Output Power Factor		0.9	
INPUT			
Input Voltage Range		120- 300VAC	
Input Frequency Range		40Hz ~ 70 Hz	
Phase		1PH - N - PE	
Power Factor		≥ 0.99 @ nominal voltage (input voltage)	
OUTPUT			
Output Voltage		110/115/120/127VAC or 208/220/230/240VAC	
Voltage Regulation		$\pm 1\%$ (Battery Mode)	
Frequency		47 ~ 53 Hz or 57 ~ 63 Hz (Synchronized Range)	
Frequency (@Battery Mode)		50 Hz \pm 0.5% or 60Hz \pm 0.5%	
Overload		105%~110%: 10 minute ,110%~130%: 1 minute, >130%: 3 second	
Crest Factor		3:1	
THD		$\leq 3\%$ THD (linear load); $\leq 6\%$ THD (non-linear load)	
Transfer Period	Online Mode - Battery Mod	0	
	Inverter- Bypass	4 ms (typical)	
Battery Mode Waveform		Pure Sinus	
Outputs	1kVA	3 IEC Type + 1 Schuko	
	2kVA	3 IEC Type + 1 Schuko	
	3kVA	3 IEC Type + 2 Schuko	
ECO MOD		EXIST	
Frequency Converter		EXIST	
EFFICIENCY			
Online Mode		90%	
Battery Mode		88%	
BATTERY			
Battery Type		12 V / 9 AH	
QTY	1kVA	2 x 7 Ah	
	2kVA	4 x 9 Ah	
	3kVA	6 x 9 Ah	
Charge Time		4 hour 90% capacity (typical)	
Charge Current		1.0 A (max.)	
Automatic Battery Test		EXIST (@ start-up, 1/per week)	
External Battery		Optional, with battery connector	
Charge Voltage	1kVA	27.4 VDC \pm 1%	
	2kVA	54.7 VDC \pm 1%	
	3kVA	82.1 VDC \pm 1%	

PHSICAL		
Dimensions W X D X H (mm)	1kVA	282 X 145 X 220
	2kVA	397 X 145 X 220
	3kVA	421 X 190 X 318
Weight (kg)	1kVA	9,8
	2kVA	17,0
	3kVA	27,6
LCD Display (mm)		55x27.5
ENVIRONMENTAL		
Humidity - Temperature		95 % RH @ 0- 40°C (non-condensing)
Acoustic (@ 1m)		<50dBA
COMMUNICATION		
Standard		Smart RS-232 and USB (Software)
Optional		SNMP, Dry Contact, Modbus, Maintenance Bypass, EPO

* The manufacturer reserves the rights to change the technical specifications and design without notice.