



Compact, wall mount design
Unmatched surge capacity
DC input options: 12, 24V(standard)
24VAC Pure Sinewave output
High efficiency - up to 92%
AC overload, AC short circuit protection
Thermal, DC voltage high/low protection
Sophisticated auto-start system
Fully Isolated AC / DC via toroidal transformer
Low standby current
High quality construction, Reliable product

DETAILED FEATURES

Microprocessor Based: The Snaptec SLS-24VAC Series Inverter utilizes the most advanced microprocessor algorithms which guarantees your power conversion is pure and stable.

Safety: All Snaptec inverters have an isolation rating of 3500V between AC and DC via the toroidal transformer, which ensures extremely safe and risk free operation. All the switching electronics and control circuitry are on the DC input. The inverter AC output is connected directly to the transformer output winding. Snaptec inverters have the AC output (active and neutral) floating with respect to the DC and the earth. The earth connection is connected to the case only. This configuration provides the highest safety and the most flexibility for installation wiring.

Wall mount design: Allows flexibility and ease of installation.

Performance: The Snaptec SLS-24VAC Series sinewave Inverter with unmatched surge power enables the operation of demanding appliances, such as fridges, microwaves washing machines & pumps.

Protection: Sophisticated circuitry provides protection against overload, short circuit, over temperature and high/low voltage shutdowns.

50/60Hz: The Inverter Output Frequency is switchable between 50Hz and 60Hz.

Instantaneous Undervolts: To protect your battery from excessive discharges, the inverter will disconnect if the battery voltage falls below 75% of the nominal battery voltage. When starting a big load on a small battery, the inverter might shut down in undervolts. To eliminate this, the instantaneous undervolts can be disabled.

Autostart: Sophisticated sensing circuitry automatically switches the inverter ON and OFF with applied appliances. The Autostart is an important feature as it maximises valuable battery capacity. Sensitivity of the Autostart can be easily adjusted to either start small appliances or run continuously.

Durable Construction: Snaptec inverters are a quality industrial product made to withstand vibration and constant movement in mobile or marine installations, as well as the diverse range of home or commercial applications.

Corrosion Conscious Design: Snaptec inverters are built for extreme environments using a recyclable powdercoated aluminium casing, a more noble metal than steel.

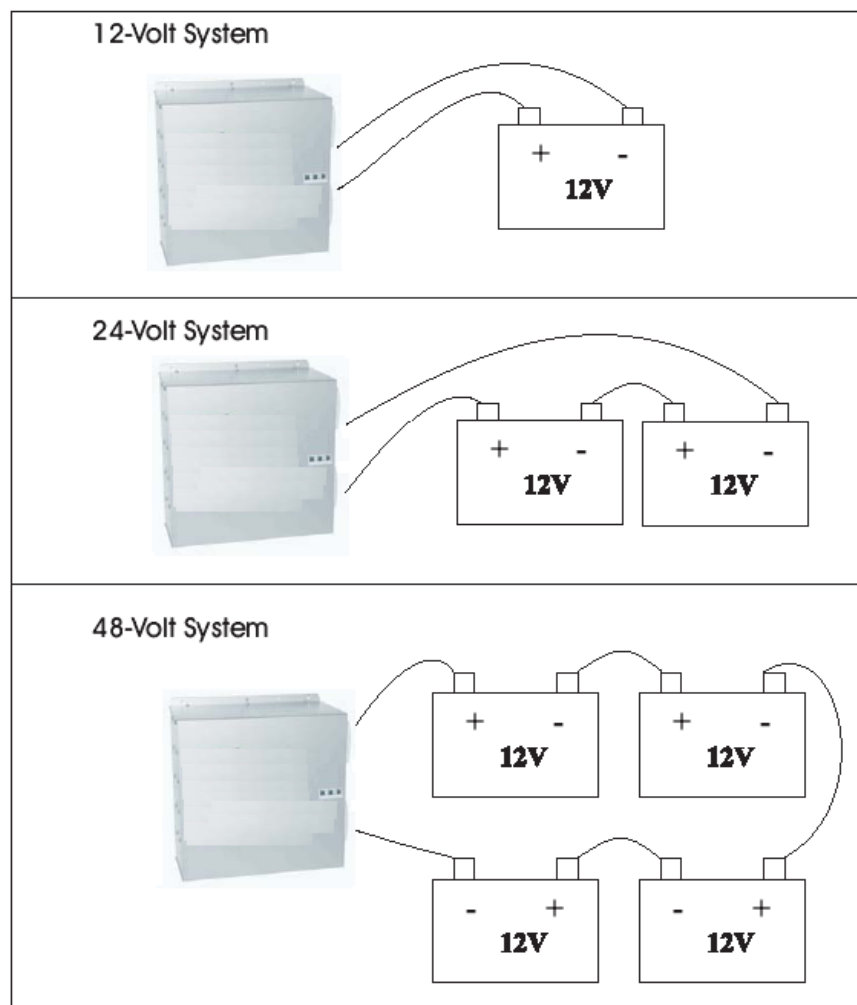
INSTALLATION

- ◆ Ensure the Inverter has not been damaged in transit.
- ◆ The unit must be placed in a well-ventilated and protected area, not exposed to the open environment, and free from contaminants (i.e. exhaust gases, sea air, battery gases, dust).
- ◆ A space of 10cm is needed on each side of the Inverter for adequate transfer internal heat.
- ◆ The Inverter can be mounted vertically on a wall or horizontally on a table or shelf.
- ◆ For best performance, the unit should be placed as close as possible, but not directly on top of the Battery Supply.
- ◆ The Inverter DC input voltage is stated on the identification label of the Inverter. Check that it is the same voltage as the Battery Supply.
- ◆ The Inverter is designed to operate on a Battery Supply only.
- ◆ The Inverter is fitted with a circuit breaker in line with the Battery Positive Lead, which negates the need for a Battery Fuse.
- ◆ Ensure the Inverter is switched OFF before connecting the DC supply. Turn the Circuit Breaker switch to the OFF position.
- ◆ Connect the Inverter DIRECTLY to the Battery Terminals for best performance.
- ◆ Input leads marked RED = (positive), & BLACK = (negative).

OBSERVE POLARITY

NOTE Cables connecting the Inverter to the Battery are designed to achieve maximum efficiency and output power: **DC CABLES SHOULD NOT BE EXTENDED**

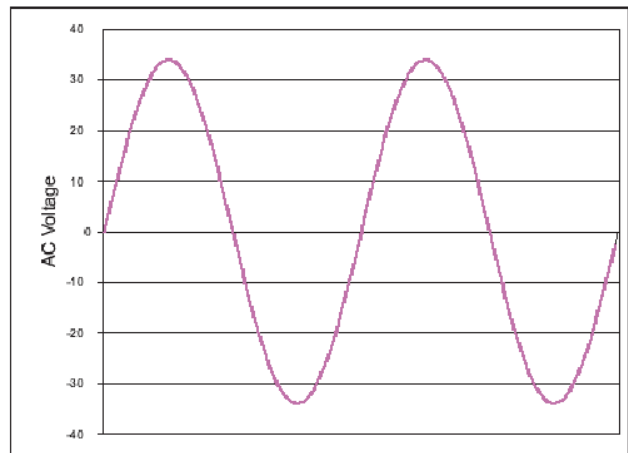
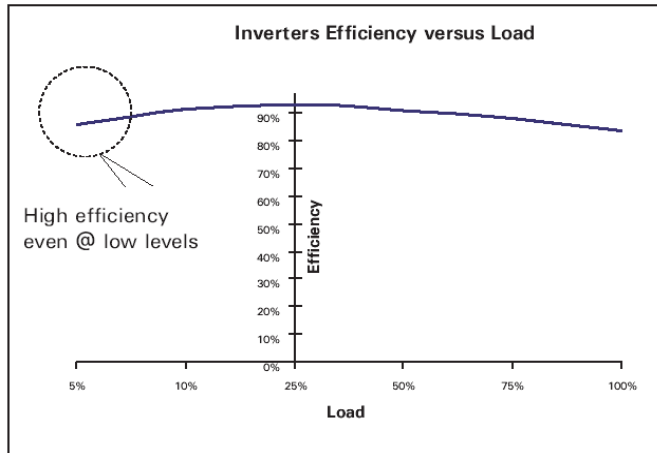
WIRING DIAGRAM FOR 12V, 24V & 48V DC Systems



BATTERIES

- ◆ **BATTERY SIZING:** It is important to match your Battery size according to the power rating of the Inverter.
- ◆ To ensure peak performance, it is important to choose the right Battery for your Inverter. The Battery size required will depend on the load and intended running time. Use this formula as a general guide:
 - ◆ Recommended Battery Size= Inverter rating in watts ÷ input voltage × 10 e.g. $1200W \div 12V \times 10 = 1000Ah$
 - ◆ Minimum Battery Size = Inverter rating in watts ÷ input voltage × 3 e.g. $1200W \div 12V \times 3 = 300Ah$.
- ◆ Do not use an undersized Battery as this may result in an Inverter that does not start or that will rapidly discharge the Battery and may cause damage to the Battery.
- ◆ Battery Terminals require frequent care and maintenance. Very high current (up to several hundred amps), is drawn by the Inverter when starting electrical motors and other high power appliances. We recommend an inspection of the Batteries and the interconnecting cable connections once every 1-3 months or as recommended by the Battery manufacturer.
 - ◆ **Regularly check all connections:** make sure they are always tight. Battery terminals are made of soft lead which will slowly compress over time eventually causing loose connections.
 - ◆ **Check all connections are free of corrosion:** Remove any corrosion and coat the terminals with Vaseline or grease to help prevent future corrosion.
 - ◆ **Take specific gravity or SG readings of each cell using a hydrometer to check the level and performance of each Battery:** Alternatively a Battery Voltage reading for each cell will suffice but may not be accurate for multiple Batteries connected in parallel. Report any serious imbalance to your system installer or Battery supplier for corrective action.
- ◆ When working on Batteries protective clothing and eye wear should be worn. Extreme care should be taken not to short circuit any Battery terminals especially with tools. If in doubt have the work carried out by qualified personnel.

INVERTER EFFICIENCY & OUTPUT WAVEFORM



INVERTER SAFETY

- ◆ SLS-24VAC Inverters have an isolation rating of 3500V between AC and DC via the toroidal transformer, which ensures extremely safe and risk free operation.
- ◆ All the switching electronics and control circuitry are on the DC input.
- ◆ The single pole circuit breaker assembly ensures that when the inverter is switched off, it is isolated from the battery supply.
- ◆ Please refer to relevant Australian Standards for safety procedures.
- ◆ Make sure the Inverter is switched OFF before working on the mains wiring. Turn the circuit breaker switch into OFF position.
- ◆ The active and neutral of the 24V AC output are electrically isolated from the battery negative, battery positive, and earth connections.
- ◆ The Inverter AC output is connected directly to the Transformer output winding.
- ◆ SLS-24VAC Inverters have the AC output (active and neutral) floating with respect to the DC and Earth. The Earth connection is connected to the case only. This configuration provides the highest safety and most flexibility for installation wiring.
- ◆ The Earth is connected internally to the Inverter case.
- ◆ ***Ensure that power will never be fed into the Inverter AC output Junction Box from the Mains or Generator. This would result in the destruction of the unit and will not be covered by warranty.***
- ◆ ***WARNING:The Inverter output is an AC source, thus it is important that all AC wiring complies with the requirements of the relevant wiring standards, (AS 3000). Any work carried out on AC wiring is to be performed by Qualified and Licensed personnel only.***
- ◆

RADIO FREQUENCY INTERFERENCE

Radio Frequency Interference (RFI) is a phenomenon that exists in modern society and is a problem in many areas of electronics. For Inverter users, RFI normally presents itself in the form of static and/or interference when listening to an AM radio and in unusual cases may interfere with TV reception.

The SLS-24VAC series is a result of many years of continuous and significant investment in time and effort in the reduction of RFI related emissions from the entire product range, so that they comply with the appropriate International and/or Australian Standards. Even with this compliance, there are situations where RFI may still be a cause for concern, and can differ greatly from installation to installation. Accordingly, the following is a list of recommendations made to assist in the overall reduction of RFI.

- NK **Separate DC and AC wiring:** avoid running DC and AC cables in the same conduits and/or cable trenches. It is strongly recommended that DC and AC wiring be separated by the greatest distance possible. In extreme cases, the use of shielded conduit may be necessary.
- OK **Minimize length of DC cabling:** DC cables can act as an aerial, therefore all such cables should be kept as short as is practicable. For best performance minimize DC cable length to Inverter and Batteries and if possible avoid the use of auxiliary DC loads.
- PK **Earth:** For household installations, it is recommended that a $\pm 0.5\text{m}$ earth rod be installed nearby the Inverter as is possible.
- QK **AM and HF Radios:** These types of radio equipment inherently suffer from all forms of RFI, especially when the received signal level is weak. In such cases reception can sometimes be improved by relocation of the radio itself, alternatively the use of an appropriate external antenna and co-axial cable may be necessary. External antennas should be located in a manner that ensures maximum signal strength whilst affording the greatest possible distance away from the Inverter and Batteries.
- RK **Televisions:** TV signals are transmitted as FM waveforms. This type of signal fundamentally reduces the effects of RFI, therefore the use of a good antenna and feeder cable is normally sufficient to ensure quality reception. Locating the television as far as possible from the Inverter may also improve picture clarity.
- SK **Mobile Installations:** Due to the limitations of this type of installation, the best results for the minimization of RFI are usually obtained by maximizing the distance between the Inverter and the Radio/Television.

FAULT FINDING

Should the Inverter appear to be malfunctioning we suggest the following to eliminate any external problems:

1. Turn the Inverter "OFF" via the Circuit Breaker switch on the front panel.
2. Disconnect all AC wiring from the Inverter.
3. Disconnect DC Battery leads from Battery. Clean all terminals by removing all grease/corrosion on both DC leads and Battery terminals.
4. Ensure you have sufficient Battery capacity at the nominal voltage (specified on the compliance label of your Inverter). Please note: Use minimum 100AH Battery or the size of a substantial Car Battery.
5. Make connection directly to Battery terminals and ensure all connections are tight.
6. Ensure Battery voltage is within the correct limits as outlined in the section **INVERTER SPECIFICATIONS** of this manual. If you do not have a DC voltmeter or multimeter check the front panel for Overvolts and Undervolts LED'S.
7. Turn the Inverter ON via the Circuit Breaker switch on the front panel. Observe the lights on the front left of your Inverter. Refer to **INVERTER OPERATION** for explanation of Indicator lights.
8. Plug in various appliances and monitor the Inverters operation.

HELPFUL HINTS

- ◆ Remember that the Inverter automatically starts when a load is applied.
- ◆ Make sure leads and terminals are not corroded or faulty in any way.
- ◆ Make sure the Inverter goes into STANDBY with no load switched on.
- ◆ Make sure the Circuit Breaker is reset properly. If unsure switch OFF and ON again.

WARRANTY CONDITIONS

- ◆ All conditions and warranties expressed or implied by statute, common law, equity, trade, custom, usage, or otherwise howsoever are hereby expressly excluded to the maximum extent permitted by law. Where so permitted the liability of Snaptec for a breach of condition or warranty that cannot be excluded is limited (at Snaptec option) to the replacement or repair of the goods or of acquiring equivalent goods or the cost of replacing or repairing the goods or of acquiring equivalent goods. Snaptec shall not be liable in any way whatsoever for indirect or consequential loss or damage whatsoever (whether based on tort or contract or otherwise).
- ◆ Damage caused by unauthorized repair, alteration or substitution of non-standard parts, incorrect installation, misuse, negligence, accident or similar cause, or usage other than in accordance with the operating instructions, is not covered under warranty.
- ◆ Unauthorized opening of the goods will render the Warranty invalid. The company may, at its discretion, agree to act as agent for the owner where delivery is requested and all costs for cartage and insurance will be for the owners account.
- ◆ The replacement of any part or labor involved will not have the effect of extending the period of the warranty of the goods.
- ◆ Any faulty part replaced under Warranty becomes the property of the Company for purpose of examination and claim under proprietary Warranty.
- ◆ Keep your receipt as proof of purchase, should any difficulties arise concerning the return of the registration card.
- ◆ Inverters are supplied by the manufacturer, or the manufactures agents, under the express condition that no responsibility is implied or accepted by the above parties for any damage to any appliance, equipment or property associated with the correct or otherwise operation of the Inverter.
- ◆ If service is required contact your local supplier/installer, or contact Snaptec direct. Please ensure that you have the Inverter Model and Serial number available to enable prompt processing.

INVERTER OPERATION

Circuit Breaker ON/OFF Switch

The circuit breaker is designed for ease of operation and safety. By pushing the switch "Up", the battery supply is connected to the Inverter. The circuit breaker will turn OFF automatically if too large a load is left on the Inverter continuously. Reset the switch after allowing approximately 5 minutes to cool. If the Inverter shuts down due to Overload, Undervolts or Overvolts it can be reset by turning the circuit breaker OFF, waiting 10 seconds (or until LED goes out), then turning it on again.

Hardwire - 3 Terminal Output Junction Box
For distribution of AC output power.

Battery Leads
RED = Battery positive.
BLACK = Battery negative.

Hardwire - 3 Terminal Input Junction Box
For connection of AC Input Power e.g. from Generator.
(Available only when AC Transfer Switch option is fitted).

Fan
If the temperature inside the Inverter reaches preset levels, the dual speed fan will switch on initially in low speed and then into high speed if the temperature continues to increase. Obstruction of the air intake and output will reduce the power rating of the Inverter.

INVERTER OPERATION

When the Inverter is switched on all 3 LED'S light up for 1 second while the microprocessor performs a start up and system check procedure.

Standby/240 volts (Green LED)

This LED flashes when in Standby mode (i.e. no loads connected). When a load is applied the LED will illuminate continuously to indicate that 240V AC is being supplied.

Over temp./Over load (Red LED)

If the internal temperature exceeds safe operating limits of the components for more than five seconds, the Inverter will shut down in Over temp with this LED on continuously.

Allow 5 minutes for the Inverter to cool and reset the unit. If the APPLIED load demands more current than the Inverter can safely supply for more than 5 seconds, the Inverter will shutdown in Over load and this LED will flash.

Undervolts/Overvolts (Red LED)

In order to protect the battery the Inverter will shutdown after 5 seconds if the battery voltage falls below its limit, (Undervolts), or exceeds the maximum, (Overvolts), as specified in the Electrical Specifications table.

For Undervolts the LED will remain on continuous, while for an Overvolts situation the LED will continue to flash.

AutoStart Sensitivity Adjustment

The screwdriver adjustment slot permits the operator to adjust sensitivity between 0- 20W. Due to lengthy 240V AC cables the Inverter may sense fake loads. To combat this, turn the control clockwise. Alternatively turning the control in the opposite direction increases sensitivity. Turning the control fully anti-clockwise will disable the Auto Start feature and the Inverter will remain constantly ON.

SELECTION TABLE 500W

Model	SLS-12-300-24VAC-50Hz	SLS-24-300-24VAC-50HZ	SLS-48-300-24VAC-50HZ	SLS-110-300-24VAC-50HZ	SLS-125-300-24VAC-50HZ
Nominal Battery Voltage	12 V	24 V	48 V	110 V	125 V
Continuous Power	300 W	300 W	300 W	300 W	300 W
Input Voltage Range	10.5-17 V	21-34 V	42-68 V	80-140 V	96-160 V
Instantaneous Shutdown	9 V	18 V	36 V	68 V	85 V
Standby Current	27 mA	22 mA	19 mA	16 mA	15 mA
Inverter ON – no load	0.42 A	0.31 A	0.18 A	0.15 A	0.14 A
Peak Efficiency	90 %	92 %	92 %	92 %	92 %
Weight	5.5 Kg	5.5 Kg	5.5 Kg	5.5 Kg	5.5 Kg
Dimensions	260mm L x 160mm W x 100mm H				
Battery Leads	1.0m Long with 10mm Mounting Lug				
Output Wiring	Single GPO				
Chassis	Powder Coated 2mm Aluminium				
Output Voltage	24 VAC (+/- 4%)				
Output Waveform	True Sinewave				
Total Harmonic Distortion	< 4%				
Output Frequency	50Hz (+/- 0.1%)				
Power Factor	All Conditions				
Operating Temperatures	-10deg to +50deg				
Auto Start Sensitivity	0 - 20 W adjustable				
Input/Output Isolation	3500 V				
Protection Circuitry	Overtemperature - Overload/Short Circuit - Battery Undervoltage - Battery Overvoltage				
DC Isolation	3500 V				
Standards	AS2279, AS3000, AS3001, EN55014, & C-Tick				

SELECTION TABLE 1000W & 1200W

Model	SLS-12-500-24VAC-50HZ	SLS-24-600-24VAC-50HZ	SLS-48-600-24VAC-50HZ	SLS-110-600-24VAC-50HZ	SLS-125-600-24VAC-50HZ
Nominal Battery Voltage	12 V	24 V	48 V	110 V	125 V
Continuous Power	500 W	600 W	600 W	600 W	600 W
Input Voltage Range	10.5-17 V	21-34 V	42-68 V	80-140 V	96-160 V
Instantaneous Shutdown	9 V	18 V	36 V	68 V	85 V
Standby Current	37 mA	28 mA	22 mA	18 mA	17 mA
Inverter ON – no load	0.45 A	0.25 A	0.19 A	0.15 A	0.14 A
Peak Efficiency	91 %	92 %	94 %	94 %	94 %
Weight	11 Kg	11 Kg	11 Kg	11 Kg	11 Kg
Dimensions	330 mm L x 296 mm W x 150 mm H				
Battery Leads	1.5m long with 10mm mounting lugs				
Output Wiring	Single power outlet & junction box				
Chassis	Powder coated 3mm Aluminium				
Output Voltage	24 VAC (+/- 4%)				
Output Waveform	True Sinewave				
Total Harmonic Distortion	< 4%				
Output Frequency	50Hz (+/- 0.1%)				
Power Factor	All Conditions				
Operating Temperatures	-10deg to +50deg				
Auto Start Sensitivity	0 - 20 W adjustable				
Input/Output Isolation	3500 V				
Protection Circuitry	Overtemperature - Overload/Short Circuit - Battery Undervoltage - Battery Overvoltage				
DC Isolation	3500 V				
Standards	AS2279, AS3000, AS3001, EN55014, & C-Tick				

SELECTION TABLE 1500W & 1800W

Model	SLS-800-12-24VAC-50HZ	SLS-24-1000-24VAC-50HZ	SLS-48-1000-24VAC-50HZ	SLS-110-1000-24VAC-50HZ	SLS-125-1000-24VAC-50HZ
Nominal Battery Voltage	12 V	24 V	48 V	110 V	125 V
Continuous Power	800 W	1000 W	1000 W	1000 W	1000 W
Input Voltage Range	10.5-17 V	21-34 V	42-68 V	80-140 V	96-160 V
Instantaneous Shutdown	9 V	18 V	36 V	68 V	85 V
Standby Current	42 mA	30 mA	24 mA	18 mA	17 mA
Inverter ON – no load	0.67 A	0.32 A	0.26 A	0.21 A	0.19 A
Peak Efficiency	91 %	94 %	94 %	94 %	94 %
Weight	14 Kg	14 Kg	14 Kg	14 Kg	14 Kg
Dimensions	330 mm L x 296 mm W x 150 mm H				
Battery Leads	1.5m long with 10mm mounting lugs				
Output Wiring	Single power outlet & junction box				
Chassis	Powder coated 3mm Aluminium				
Output Voltage	24 VAC (+/- 4%)				
Output Waveform	True Sinewave				
Total Harmonic Distortion	< 4%				
Output Frequency	50Hz (+/- 0.1%)				
Power Factor	All Conditions				
Operating Temperatures	-10deg to +50deg				
Auto Start Sensitivity	0 - 20 W adjustable				
Input/Output Isolation	3500 V				
Protection Circuitry	Overtemperature - Overload/Short Circuit - Battery Undervoltage - Battery Over-voltage				
DC Isolation	3500 V				
Standards	AS2279, AS3000, AS3001, EN55014, & C-Tick				

OPTIONS AVAILABLE FOR THE SLS-24VAC SERIES

Other DC Input Voltages (Available for all SLS-24VAC power levels): DC Input voltages are available in a range from 12V DC to 125V DC.

Conformal-coating of circuit boards to Mil Spec MIL-I-46058C : Reduces the effects of harsh environments such as salt spray on electronic components.

Vibration Proofing : Special attention is given to components which might become suspect to vibration damage. Additional fixing points and extra protection is provided. "Ruggedised" SLS-24VAC series inverters have been used extensively by Railways and Service Vehicles throughout Australia.

Alarm Contact Output (extra j-box included) : The alarm output is provided by a relay contact. Wiring is via fixed terminals located in the junction box marked "Alarm Output" on the rear of the Inverter. The relay contact changes state when the Inverter's AC output is not present.

Automatic Reset (Standard Option): In unattended situations where total shutdown is not desirable, the automatic reset option can be selected. Should the Inverter shut down due to under voltage, over temperature or any fault condition, the Inverter is reset every eight minutes (other settings available on request) until the fault condition clears (for example Inverter cools or batteries recharge) and operation resumes. See Manual for Details

Instantaneous Undervolts (Standard Option): If you operate the Inverter on a Transformer Powersupply with only a small battery attached, the Inverter might shut down in instantaneous undervolts when trying to start bigger loads!