

# **SELECTRONIC AUSTRALIA**

## **SPI 600*i*-12SS SPI 600*i*-24SS Owners Manual**

Selectronic Australia Pty Ltd.  
25 Holloway Drive, Bayswater, Victoria, 3153

**SELECTRONIC AUSTRALIA**  
**SPI 600i-12SS, SPI 600i-24SS**  
**Owners Manual**

<b>Contents:</b>	<b>Page:</b>
<b>GENERAL INTRODUCTION</b> .....	3
<b>INSTALLATION</b> .....	3
PORTABLE USE .....	4
FIXED INSTALLATION .....	4
AC WIRING: .....	4
LOW VOLTAGE DC WIRING: .....	5
<b>INVERTER STATUS</b> .....	5
<b>OPERATION - DETAILED DESCRIPTION</b> .....	7
<b>MAINTENANCE</b> .....	8
<b>FAULT FINDING AND REPAIRS</b> .....	8
<b>SPECIFICATIONS</b> .....	9
<b>APPENDIX I: DEMAND START SENSITIVITY</b> .....	10
<b>WARNING</b> .....	11
<b>PRODUCT WARRANTY CONDITIONS</b> .....	11

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## GENERAL INTRODUCTION

Congratulations on your wise choice of this Selectronic Silver Series 600 power inverter, which has been designed for a long, low maintenance life.

The INVERT-A-POWER range allows you to operate a variety of AC appliances, such as a TV set, from a 12 volt or 24 volt battery. This is achieved by electronically converting a low voltage direct current (DC) into a higher voltage alternating current (AC).

Reliable short term intermittent (or surge) power is available from these models, up to a maximum total load of 2300 Watts with the 12 volt model, and 3000 Watts for the 24 volt model.

The 600i SS INVERT-A-POWER models produce significantly lower electrical interference (RFI) than the previous 600 SS models. Interference on your AM radio and telephone system will, in most cases now be found to be quite acceptable.

Please be aware that some appliances that are not suitable for operation from a power inverter of this type. Note also that, when using compact fluorescent lamps, good quality lamps should be chosen, to ensure high reliability and high efficiency. If you have any queries about suitable appliances, please contact your INVERT-A-POWER agent for further advice.

Before you continue with the installation of this inverter, we strongly suggest that you read through the next few pages of this manual where we will explain a few other important points about the INVERT-A-POWER unit.

**PLEASE REMEMBER TO COMPLETE ALL DETAILS ON YOUR WARRANTY CARD AND RETURN IT AS SOON AS POSSIBLE.**

## INSTALLATION

**It is essential that all AC wiring be carried out by a qualified electrician.**

The INVERT-A-POWER operates in a similar fashion to a HIFI audio amplifier. However, unlike most audio amplifiers, inverters are often exposed to some or all of the following hazards:

- Moisture (possibly salt laden)
- Temperature extremes
- Generator exhaust fumes
- Dust
- Battery acid fumes
- Nesting animals

To help protect your investment, try to minimise the above factors, and if possible, choose a position for the inverter that will allow some natural cooling.

## PORTABLE USE

### (a) Preliminary

Two battery clips are provided that can be fitted to the red and black leads of the INVERT-A-POWER. Do not attempt to use cigarette lighter adapters in vehicles as insufficient current is available from such outlets.

### (b) Battery Connections

Connect the BLACK wire to battery NEGATIVE (-VE).  
Connect the RED wire to battery POSITIVE (+VE).

We recommend that your battery leads be firmly bolted to the battery wherever possible. There may be a small spark when the connection is completed; this is quite normal.

With both leads connected to the battery, the INVERT-A-POWER should be in its STANDBY mode. This can be verified by a flashing indicator lamp on the front panel marked "AC VOLTS ON". This means that the INVERT-A-POWER is ready for appliances to be plugged in and switched on.

#### **WARNING:**

**In STANDBY mode, the AC wiring is carrying potentially lethal voltages.  
Always disconnect the battery if you have to work with the mains wiring.**

At this stage, you can test the actual operation of the system.

### (c) To Apply AC Power to Appliances:

Turn front panel switch to ON, the appliance switch also to ON, and AC power will now be supplied to the appliance.

The "AC VOLTS ON" indicator will now be illuminated continuously. This will be the case under most conditions. If you find that any of the other lamps are on, please refer to table 1 on page 6 for an explanation of these states.

## FIXED INSTALLATION

### AC WIRING:

ELECTRICIANS - Please take note of the following points:

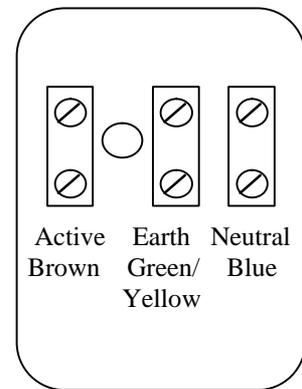
Both AC active and neutral have complete electrical isolation from both battery connections and also from the metal case of the inverter. However, when wired up as an "MEN" system, the Neutral and Earth can be connected together at the switchboard.

The earth pin of the 3-pin plug is connected internally to the case of the inverter.

Disconnect the DC wiring from the inverter **before** working on the mains wiring. The pulsing type of demand start system used produces potentially dangerous voltages in standby mode.

Power factor capacitors are **NOT** required with this inverter. Check fluorescent light fittings and remove capacitors where fitted.

The AC output of this INVERT-A-POWER can be hard-wired using the covered AC connector at the rear of the unit, the connections being as shown:



If an inverter/generator changeover switch is used, it is vital that AC from the generator must not be allowed to be fed back into the inverter or permanent damage will result. Thus a “break-before-make” type of AC switch (or relay) is required.

Occasionally it is found that, in an installation, the inverter will not return to the “Standby” mode when all AC loads are switched off. In such cases, the sensitivity of the demand start system may have to be reduced. This will require access to the circuit board, and the procedure for this adjustment is outlined in the Appendix section at the end of this manual.

If it is required to check the AC output voltage of the INVERT-A-POWER, please note that the multimeter must be of a true RMS type to read the correct voltage. Any meter other than true RMS will invariably read too low a voltage, around 180-210V.

**NOTE:**  
**ALL AC WIRING MUST BE CARRIED OUT BY A LICENSED ELECTRICIAN  
 AND MUST CONFORM TO AS 3000 WIRING REGULATIONS,  
 OR RELEVANT STANDARDS.**

**LOW VOLTAGE DC WIRING:**

Do not extend the length of battery leads, or include any DC switching devices such as relays or changeover switches without consulting an INVERT-A- POWER agent.

To minimise interference on AM radios and TV pictures, we suggest that the battery leads be twisted around each other prior to connection to the batteries. This action can reduce the amount of radiated electrical noise.

**INVERTER STATUS**

This INVERT-A-POWER automatically switches itself off when either the battery voltage is too low, the battery voltage is too high, or the internal temperature of the inverter is too high. The respective indicator lamps will stay lit until the above conditions are restored to normal.

INDICATOR LAMP	INVERTER STATUS	REMEDY
"AC VOLTS ON" Flashing	Standby mode	
"AC VOLTS ON" Continuously lit	Normal Running	
"AC OVERLOAD"	Appliance load too large	Reduce total load
"DC VOLTS HIGH"	Battery voltage too high	Switch off battery charging sources
"DC VOLTS LOW"	Battery voltage too low	Charge battery
"OVER TEMP"	Inverter overheating	Reduce or remove load

table 1

## **OPERATION - DETAILED DESCRIPTION**

To help in your understanding of the operation of this INVERT-A-POWER, the following features will be discussed in more detail:

### **Demand Start System**

Most appliances will be sensed by the advanced Demand Start system used in this INVERT-A-POWER. Generally, appliances that consume at least 2 watts of power will start this INVERT-A-POWER. When all of the appliances are switched off, the INVERT-A-POWER reverts to the standby state again. In the rare instances where the INVERT-A-POWER remains in Standby even when the appliance switch is turned on, you may need to fit a double adapter with a small additional load plugged into it as well, such as a 15 watt lamp, to activate the Demand Start.

### **Overloading the INVERT-A-POWER**

If you wish to use appliances whose total load exceeds 620 watts for 12V or 660W for 24V, consult the specification section on page 9 to obtain approximate operating times. These figures apply if the inverter is initially at a temperature of 25°C.

Most appliances are fitted with a plate which states the power that they consume. Some experimentation may be required with other loads. When trying various appliances, bear in mind that the INVERT-A-POWER is fully protected, so if the load is too great, the INVERT-A-POWER will shut down automatically.

### **Battery Voltage Range**

The INVERT-A-POWER will switch off if the battery voltage is outside the normal range of operation for lead acid batteries. For example, operation below 10 volts for a 12 volt battery (or 20 volts for a 24 volt system) is prevented, except in the short term (20 seconds maximum). This prevents damage to battery cells.

To prevent damage from occurring to the INVERT-A-POWER, it will shut down if the battery voltage exceeds 16 volts for a 12 volt system (or 32 volts for a 24 volt system).

If you find either of these shutdown modes occurring frequently, we suggest that you have the charging system checked for correct operation.

## **MAINTENANCE**

It is very important to keep the battery connectors and terminals in good condition. Loose connections or faulty battery cells can cause excessive voltages during charging and damage to the inverter could occur. Therefore:

1. Periodically check that the lugs on the battery leads are tightly bolted to the battery posts or if battery clips are fitted, check that they are in good condition.
2. Check for signs of corrosion and take action to prevent it from spreading.
3. When cleaning external surfaces, use a soft, lint free cloth, with polish. e.g. Mr Sheen.

## **FAULT FINDING AND REPAIRS**

If your INVERT-A-POWER appears to be malfunctioning, we suggest that you follow the steps below so that operational or wiring problems can be eliminated first.

1. Disconnect any suspect appliances.
2. Temporarily unplug the 3-pin plug from the front of the INVERT-A-POWER.
3. Ensure that the battery voltage is within the correct range. If you have a DC voltmeter or multimeter, the reading should be in the range 11.5 to 13.5 volts DC for a 12V system or 23 to 27 volts DC for a 24V system. If you do not have access to a meter, check the front panel indicator lamps for any abnormal DC voltage.
4. Check battery connections and then maintain if required. Reconnect battery.

The inverter should now be ready for an operational test:

5. Observe the "AC VOLTS ON" indicator which should be flashing. If not, check that the battery connections are correct- Red to positive, Black to negative.
6. Plug in various appliances, for example a 40 watt lamp, and check operation.

By performing these tests, you should be able to determine whether there is a fault in your INVERT-A-POWER. If you are having problems that you are unable to solve, we advise you to contact your re-seller for help.

Please note that there are no user serviceable parts within this inverter. If the outer cover is removed, the warranty will be void.

If, for any reason you need to return your INVERT-A-POWER to your agent, it would be preferred if you use the original carton and packing material. Therefore, do not dispose of the carton. A list of authorised service centres is provided in the warranty section of this manual. See page 11.

## SPECIFICATIONS

### INVERTER TYPE

Crystal locked, 50Hz, reverse polarity protected, PWM switching with Energy Recovery.

### DEMAND START (Auto Start)

Type:	Pulsing
Minimum Load Power to start:	1.5W or 3W, selectable
Maximum wiring- capacitance: length (2.5mm twin + earth)	0.2uF 250m
Standby current from battery:	30mA

BATTERY VOLTAGE RANGE	12V MODEL	24V MODEL
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Minimum Delayed Cut-out:	10V	20V
Delayed Cut-in:	11.5V	23V
Maximum- Fast Cut-out:	16V	32V
Fast Cut-in:	15.5V	30V

### TOTAL APPLIANCE RATING (at 25 deg C)

Continuous Power:	620W	660W
30 Minute rating:	880W	1150W
5 Minute rating:	1200W	1800W
1 Minute rating:	2200W	2800W
Surge rating:	2300W	3000W

Short Circuit Current:	230ADC	150ADC
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Electrical Isolation: Input to Output	2kV
Crystal Oscillator Accuracy:	± 0.02%

External Dimensions:	Height	Width	Depth
(measured in mm)	180	235	285

Weight (excluding packing material):	8.5Kg
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Note: All power ratings are at a Power Factor of 1.0.  
Through a policy of continued development, specifications, size or features are subject to change without notice.

# APPENDIX I: DEMAND START SENSITIVITY

## Demand Start Sensitivity Selection

This INVERT-A-POWER incorporates a 2 position switch, located on the circuit board, to enable one of two preset levels of demand start sensitivity to be selected. This switch is set to the highest sensitivity position (1.5 Watts of AC load) at the factory.

### 2. Situations Requiring Reduced Demand Start Sensitivity

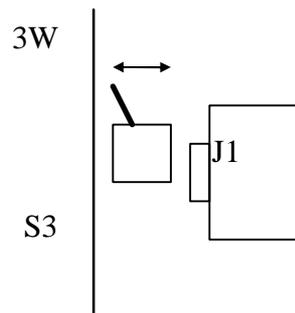
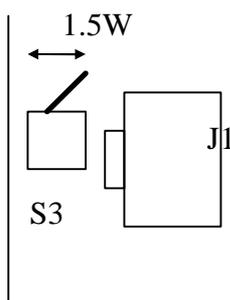
In installations that involve an unusually large amount of AC wiring, the inverter may not revert to its “Standby” mode even when all appliances are turned off. This is usually caused by high wiring capacitance which the inverter cannot distinguish from a small appliance.

Check also that there are no “phantom” loads, such as small DC adapters, which will also keep the inverter switched on.

### 3. To Alter Demand Start Sensitivity

**WARNING: This procedure should be carried out by a licensed electrician.**

1. Disconnect at least one battery lead
2. Unscrew all 9 Philips head screws and remove the lid
3. Locate switch S3 near the 6-pin connector J1
4. Select the required switch setting as shown below.



## WARNING

### THE OUTPUT VOLTAGE FROM AN INVERTER IS AS LETHAL AS LANDLINE POWER.

It is therefore absolutely necessary for your safety to ensure that all Remote Area power installations meet and comply with the relevant provisions and requirements of AS3000 wiring standards.

It is imperative that you ensure that only Electrical contractors are permitted to install any AC wiring in your system.

## PRODUCT WARRANTY CONDITIONS

Selectronic Australia Pty Ltd warrants your SPI 600i-SS inverter to be free from defects in materials and workmanship under normal use and service, for one (1) year.

This warranty is applicable only from the date of original purchase. All parts will be replaced or repaired free of charge within this period. The unit shall be returned at no cost to the owner.

The provision of this warranty shall not apply if the unit has been subject to misuse, neglect, accidental damage, damage from external influences e.g. corrosion, used for a purpose it is not intended, acts of God or has not been installed in accordance with the manufacturers latest installation requirements. (Any installation updates will be mailed to your last known address.)

Freight charges to the point of purchase and the cost of any repairs resulting from damages occurring during this freighting will be borne by the owner.

Any alterations or repairs by unauthorised parties will void your warranty.

To ensure fast efficient handling of any warranty claims, please complete and return your reply paid warranty card within 30 days from date of purchase.

If service is required, please return your inverter in its original carton with proof of purchase and a brief description of the fault, to your point of service or any of the following service centres:

Selectronic Australia 25 Holloway Drive Bayswater Victoria 3153 Australia Ph: 03 9762 4822 Fax: 03 9762 9646	Burley TV Service 278 Edmondson Ave Austral NSW 2171 Australia Ph: 02 606-0279	Reid Technology Ltd 3-5 Auburn Street Takapuna North Shore City Auckland NZ Ph: 9 489-8100 Fax: 9 489-8585	RF Analysis Harness Cask Road Dorrigo NSW 2453 Australia Ph: 066 57 8003 Fax: 066 57 8002
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