

**LD200-12 Operating Manual**



Serial No \_\_\_\_\_ Purchase Date \_\_\_\_\_

*Note - Your 2 Year Warranty can only be valid once your warranty card is completed and returned to Selectronic Australia*



Part No ST-M-LD200 Rev 4 18/11/04



**LD200-12 Volt Owners Manual**

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Selectronic Australia  
 Suite 5, 20 Fletcher Road  
 Mooroolbark  
 Victoria 3138  
 Australia  
 Ph: +61 3 9727 6600  
 Fax: +61 3 9727 6601  
 service@selectronic.com.au

Burley TV Service  
 278 Edmondson Ave.  
 Austral  
 NSW 2171  
 Australia  
 Ph: 02 9606-0279

Rainbow Power Company  
 1 Alternative Way  
 Nimbin  
 NSW 2480  
 Australia  
 Ph: 02 6689 1430  
 Fax: 02 6689 1109

Solar Inverter Services  
 13 Thirteenth Ave.  
 Sawtell  
 NSW  
 2452  
 Ph: 02 66581733

Reid Technology Ltd  
 3-5 Auburn Street  
 Takapuna  
 North Shore City  
 Auckland NZ  
 Ph: 9 489-8100  
 Fax: 9 489-8585  
 ps@reidtechnology.co.nz

Legend for Symbols		
		
Warnings and electrician's notes	Hints and Pointers	Examples

## LD200 12 Volt Specifications

**Inverter Type** Microprocessor control circuit with PWM full bridge power stage. True sine wave AC output.

Current draw from Battery	
Condition	Amperage
Inverter ON, with no Load	0.30 Amps
Maximum Continuous Load (200 Watt)	20.0 Amps
Surge rating (600 Watt)	55 Amps

Inverter Power Ratings @ 25° C		
Condition	Total Inverter output	
	Wattage @ 1.0pf	Current
Continuous	200 Watt	0.83 Amps
Half hour rating	250 Watt	1.04 Amps
Surge rating (3 seconds)	600 Watt	2.0 Amps

Battery Voltage Range	Voltage
Low DC Volts Cut Out–10 second delay	11 volts
Low DC Volts Cut In	12 volts
High DC Volts Cut Out–Instantaneous	17 volts

Miscellaneous Specifications	
Reverse Polarity Protection	Full Electronic Protection
Output Voltage Accuracy 0-200 watts	± 4% @ 12 volt input
Output Frequency	50Hz ± 0.01%
Total Harmonic Distortion	<4%
Operating Temperature Range	-10° C to 50° C
Socket Outlet	10 Amp Single Pole
Chassis	Powder Coated Zinc Steel

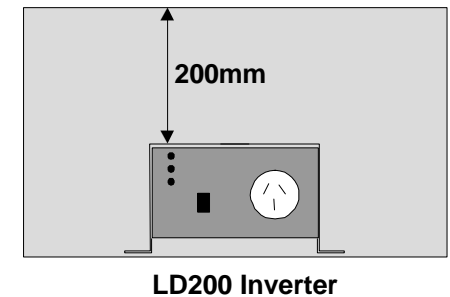
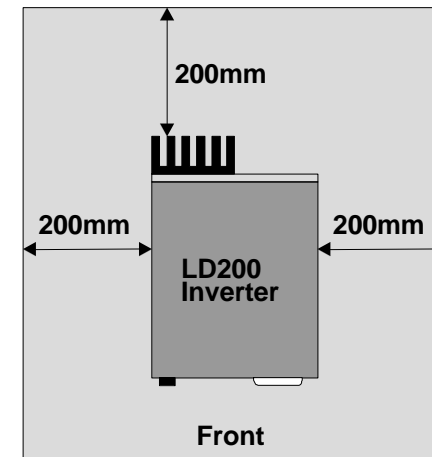
## Introduction

*Thank you for choosing to purchase the Selectronic LD200 True Sine Wave Inverter. Many hours of Research and Development have gone into the LD200 to ensure this inverter provides you with many years of reliable service*

## Warranty Card

It is imperative that you complete your warranty card NOW. Your LD200 is covered by a TWO year warranty; this warranty is in addition to your rights under the trade practices act of your state or territory. Returning your completed warranty card will register your warranty and avoid any possible delays should service be required. If you have any comments about our product that will not fit on the warranty card please feel free to drop us a line. Yes, constructive criticism will also be welcome.

## Installation



Please leave a clearance of 200mm on all sides and top of the Inverter. The LD200 must be installed in a dry, cool, dust-free environment. It is recommended that the inverter be placed as far from any radio receivers as possible.



Large amounts of DC current can be drawn by your LD200, *care must be taken.*

### Fixed Installation



All fixed installation battery connections must be securely bolted, using stainless steel nuts and bolts. To protect the connection from corrosion smear a small amount of Vaseline or similar over the joint. Never place batteries directly onto a concrete floor, place timber or similar material beneath the batteries.

### Warning

As a matter of safety, Selectronic strongly recommend that all fixed installations be designed and installed by appropriately qualified person. The Business Council for Sustainable Energy in your state or territory can provide names of accredited system designers and installers.

**The output voltage from an inverter is as lethal as mains electricity.**

All AC wiring **MUST** be carried out by an accredited electrician and must conform to AS3000 and/or any relevant local standards.



### Electricians Note

- All Earths, AC and DC, should be bonded
- RFI/Lightning Earth stake should be within 3m of the inverter
- The LD200 is suitable for connection to MEN wiring
- Any AC changeover switch must be a 'break before make' type

## Product Warranty Conditions

### Warranty

Selectronic Australia Pty Ltd warrants your inverter to be free from defects in materials and workmanship under normal use and service, for an initial period of two (2) years. Defective parts will be replaced or repaired free of charge within this period.

### Conditions

This warranty is applicable only from the date of original purchase.

The provision of this warranty shall not apply if the unit has been subject to misuse, neglect, act of God, accidental damage or has been used for a purpose for which it is not intended.

Unauthorised modification or repair will void your warranty.

To ensure a smooth and speedy response to your warranty claim, please complete and return your reply paid warranty card within 30 days from date of purchase.

### Within Australia & New Zealand

The inverter must be returned, at the owner's cost, to an authorised service centre listed in this manual. There will be no charge for the return of the inverter.

### Outside Australia & New Zealand

Product purchased for use outside Australia & New Zealand must be returned to Selectronic Australia's Service Centre to enable warranty claims to be processed. Freight cost to be borne by the customer. No charge will be made for the product return.

## Fault Finding

### No indicators ON when power is first applied

When first connected, if the LD200 shows no indicators the battery connections may be reversed. Check that the red battery wire (6) is connected to the battery positive, and the black battery wire (7) is connected to the battery negative.

### Inverter shuts down during the middle of the day, and comes back ON late in the afternoon

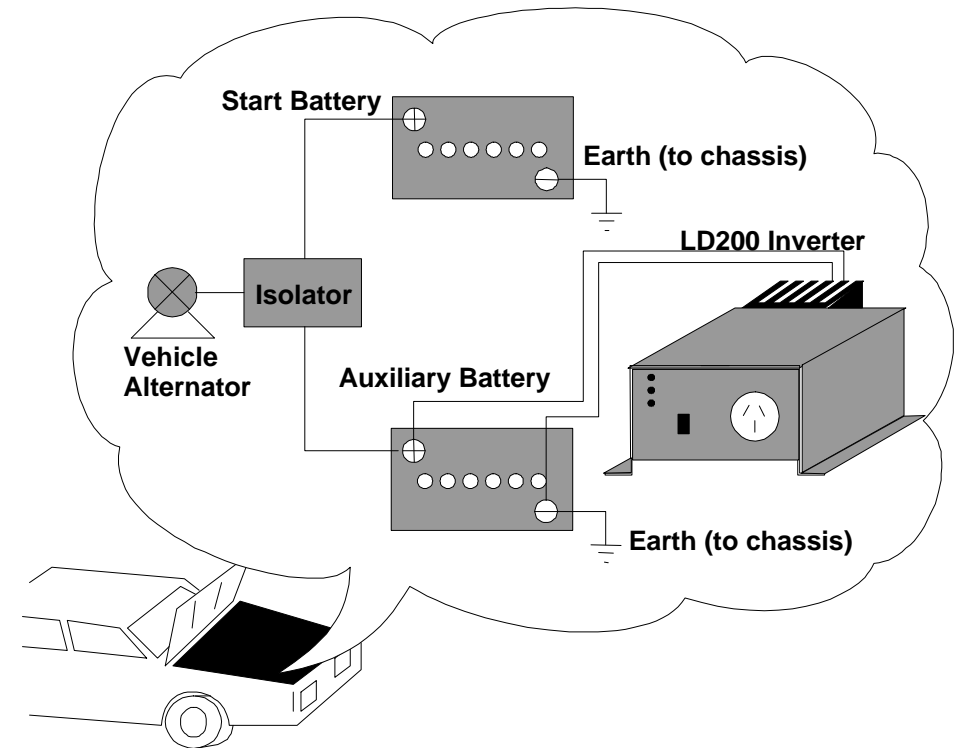
This is more than likely caused by high battery volts during peak charging times from Solar Panels. Battery volts should never exceed 17 volts. If this is the case, have your Solar Regulator checked.

## Portable Use

By connecting battery clips, the LD200 can be clipped directly to a vehicle battery. When using battery clips ensure they have a tight grip around the battery post. Wherever possible battery connections should be bolted. If connecting the LD200 through a cigarette lighter socket the maximum power output of the LD200 will be *severely* restricted, this practice should be avoided. Check with your supplier or installer if you are unsure.



**Do not use battery clips in a moving vehicle**



By incorporating an auxiliary battery in the manner above, the starting battery should remain charged for vehicle starting (see your auto electrician).

The LD200 has sufficient battery cable length to allow it to sit underneath the vehicle whilst in use. If the ground is wet, place the LD200 on a waterproof liner.

## Batteries and Connections

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Batteries are the key to maximum performance from your LD200, if a battery is too small or not fully charged it may result in de-rated performance from your LD200.

### Battery ratings

Batteries can be rated in one of two ways:

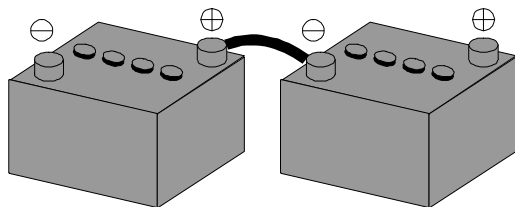
1. CCA = Cold Cranking Ability. This is the amount of power or current that a battery can deliver for a short period, typically a few seconds. This how a car battery would normally be rated.
2. Ah = Ampere Hours. This is the maximum amount of energy that can be stored in a battery; this figure will generally be stated at a particular hour rate. This is how a deep cycle or storage battery would normally be rated.



100Ah @ 100hr, this means that when this battery is discharged over a period of 100 hours, the battery has a capacity of 100Ah. This in theory means 1 Amp for 100 hours, although this would in practice result in a totally discharged battery that may not then recover.

To achieve maximum performance from your LD200 you must have a battery capable of delivering 50 Amps for a short period whilst maintaining at least 10.5 volts. To increase the capacity of your battery you may need to join more than one battery together.

- Where batteries are joined in *series*, add the voltage of each battery.



The capacity will equal the capacity of the smallest battery. 2 x 12 Volt 100 Ah batteries connected in series would have a total capacity of 24 Volts – 100 Ah. This would *not* suit your 12 Volt LD200.

3. Once a fortnight or as directed in your battery manufacturer, check the specific gravity (SG) of each battery cell using a hydrometer, to ensure that all cells are performing correctly and are properly charged. Any serious imbalance should be reported to your system designer in case remedial action needs to be taken.

### Radio Frequency Interference

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Radio Frequency Interference (RFI) can be a problem for owners of inverters. RFI in a domestic situation may produce noise or interference on a radio or TV receiver.

Considerable development time has resulted in a reduction of the RFI generated by the inverter to a level that complies with C-tick requirements. Compliance to this standard means RFI is low, but how well the inverter performs in a particular installation can vary. Below are some suggestions to help reduce the effects of RFI in your installation;

- It is recommended that the power system including the inverter be housed at least 15 metres from the home.
- Ensure an earth stake is placed as close to the inverter as possible and connected to the inverter via a short length of wire. See page 2 for wiring details.
- Avoid running DC cables into the home, if at all possible. If this cannot be avoided, run DC and AC in separate conduits separated by as much distance as practicable. All DC wiring should also be kept together and be as short as possible.
- If your inverter is to be installed in a mobile home or similar, try to keep your inverter at least one metre away from your radio or audio equipment. The further the better.

### Inverter

Periodic maintenance of your LD200 inverter involves little more than checking for any obstructions to the black cooling heatsink at the rear of the inverter. The heatsink must be cleared of any accumulated foreign matter that may have lodged itself between the fins since the last maintenance check, e.g. insect nests. Also verify that airflow around the inverter has not become restricted.

### Batteries

1. Every week, carry out a thorough visual inspection of all battery wiring, taking particular note of the condition of inter-connections between cells. This maintenance should be carried out in conjunction with the battery manufacturers recommended maintenance.

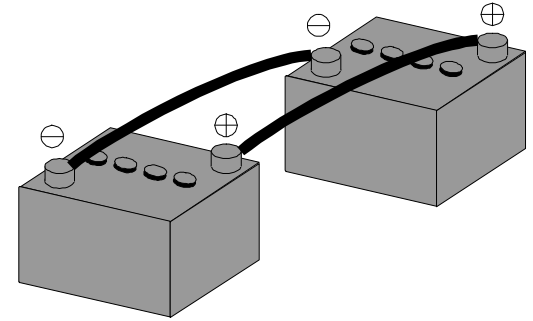
#### Safety Hint



When working on batteries of such high capacity it is essential that you wear protective clothing, some form of eye protection and rubber-soled work boots. Please regard your batteries with a great deal of caution, and if in any doubt, entrust this work to your supplier / installer.

2. Check that the stainless steel inter-connecting bolts are tight and have no corrosion. If corrosion is evident, carefully follow the following procedure.
  - Disconnect the system battery fuse before working on the battery bank.
  - Unbolt the stainless steel bolts and nuts of any corroded connections and thoroughly clean the joint with a wire brush or file, taking extreme care not to short circuit any battery cells with any tools.
  - Re-assemble and smear a small amount of Vaseline or similar grease over the surface of the joint to slow down any future corrosion.

- Where batteries are joined in **parallel**, add the capacities together, the voltage will remain the same as each batteries voltage.



2 x 12 Volt 100 Ah batteries connected in parallel would have a capacity of 12 Volts – 200 Ah.



Only use identical batteries when joining batteries together.

### How long will my battery last

To work out how long your battery will last follow this basic guide.



This guide presumes commencing with a fully charged battery.

Take the total rating of the appliance being run

1	light globe	25watts
1	20 inch TV	67watts
1	VCR	30watts

**Total load** =122watts

*Divide this figure (122) by 10 to know the approximate DC current draw*  
=12.2Amps

*To convert this to Ampere hours, multiply by the number of hours used -*  
Say 1 hour =12.2Ah

So if we have a 50Ah battery, then with the above example we should have 50 minus 12.2 = 37.8 Ah remaining in the battery.



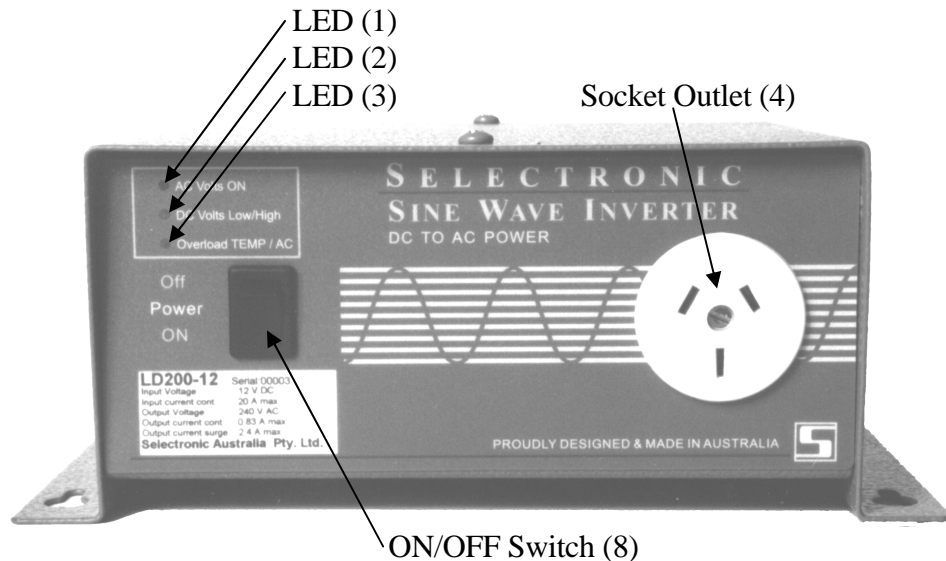
As a general guide never discharge a battery below 50%. The deeper a battery is discharged on a regular basis, the less life you can expect from the battery. See you battery specifications for full details.

## Getting Started Quickly

If you want to get powered up quickly here are the 10 simple steps.

1. Familiarise yourself with the details in the first 6 pages on this manual.
2. Unpack the LD200 from the packaging.
3. Check unit for any damage that may have resulted during transport, if any damage is evident report this to your supplier immediately.
4. Make sure the LD200 ON/OFF switch (8) is in the off position.
5. Connect battery positive wire (red) (6) to battery positive or battery fuse.
6. Connect battery neg. wire (black) (7) to battery negative or battery fuse.
7. Plug a 230 - 240V appliance into inverter front power point (4) but do not switch on.
8. Turn ON/OFF switch (8) to ON.
9. LED (1) will illuminate. If no LEDs light, check for correct connection to battery.
10. You're away.

## Parts Identification.



Positive (Red) Battery lead (6) can be viewed from the rear.  
Negative (Black) Battery Lead (7) can be viewed from the rear.

## Operation

Three LEDs are provided on the front panel to indicate the operating Status of the LD200 Inverter.

### STATUS indicator LED's

**LED 1, "ON"**. Indicates that the inverter is supplying power to the load.

### LED 2, DC Volts Low / DC Volts High.

**"Flashing"** If the inverter shuts down due to low battery voltage ( the battery is flat) then LED 2 will flash. Charge the battery by starting the vehicle or use a battery charger. When the battery is charged the battery voltage will rise, LED 2 will turn OFF and the inverter re-activate.

**"Permanently ON"** If the inverter shuts down due to high battery voltage then LED 2 will stay ON. When the battery voltage is reduced LED 2 will turn OFF and the inverter re-activate.

### LED 3, Over temperature / AC Overload.

**"Flashing"** If the inverter shuts down due to internal components getting too hot, then LED 3 will FLASH, and will FLASH until the temperature has dropped to a safe level. LED 3 will then turn OFF and the inverter re-activate.

- If LED 3 is FLASHING regularly, either reduce the amount of load on the inverter or, if possible, move the inverter to a cooler location.

**"Permanently ON"** If the inverter shuts down due to too much AC load being drawn from it then LED 3 will come ON. The inverter will remain in this condition for 1 minute after the AC load has been decreased to a safe level.

- If the inverter remains in this overload condition beyond one minute, switch 8 (ON /OFF Switch ) should be turned OFF and then back ON to re-activate the inverter.