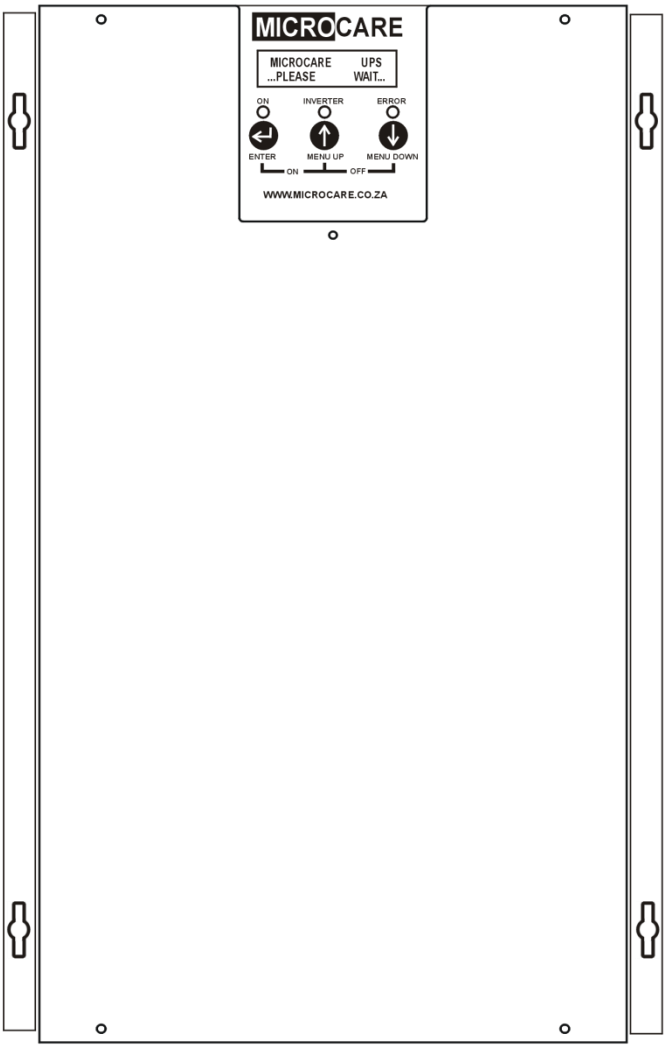
Pure Sine Wave Inverter
1 – 5 kW
User Manual



Manual Version: INV-1-5kW-LION- 2018-4-V10R5/6

Table of Contents

This manual applies to all Microcare 1-5kW Inverters with Software Version:

V10R5 and V10R6

Please Note:

This Inverter is pre-programmed with a set of default values.
These settings might not be correct for your battery type.
Please contact your battery supplier for your battery specifications
“Battery Float Voltage, Boost Voltage, Boost to Float Time “ Absorb Time”
and program the Inverter accordingly

Unpacking and Inspection

Upon receipt the unit should be unpacked and inspected for any damage during shipment. Verify that the contents of the box include:

1 x Inverter as per the Identification Label
1 x Wall mounting bracket
1 x User Manual (Warrantee registration information)

The identification label is positioned on the top of the inverter

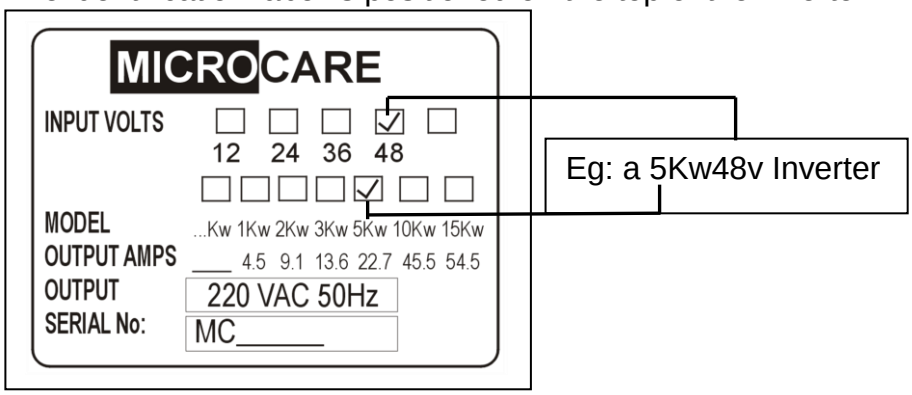


Figure 1-0-1

This manual applies to all Microcare 1-5kW Inverters with Software Version: 10R5

Please Note:

This Inverter is pre-programmed with a set of default values.
These settings might not be correct for your battery type.
Please contact your battery supplier for your battery specifications
“Battery Float Voltage, Boost Voltage, Boost to Float Time “ Absorb Time”
and program the Inverter accordingly

Glossary of Terms

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AC	Alternating Current
Ah	Rated battery capacity specified in Ampere-Hour.
AC Run To	The level the solar regulator will charge the battery to before the inverter switches back to battery power
AC Source	The primary AC input that is connected to the inverter, e.g., Mains Grid or Generator.
Bat Run To	The level the battery discharges to before switching to mains power
Bat Off At	The voltage at which the inverter will disconnect the load from the batteries.
DC	Direct Current
Grid Connected	A system that is connected to the grid
Inverter	Is an electronic device or circuitry that changes direct current (DC) to alternating current (AC).
Inverter Mode	The inverter is producing AC from the batteries.
LED	Light emitting diode.
Load	Electrical appliance or device to which an electrical voltage is fed
Off-Grid	A system not connected to the grid
Solar Array	A collection of Solar Panels.
PV	Photo Voltaic solar power
State of Charge	(SoC) Referring to the battery charge condition.
Sealed Battery	A lead acid battery with no access to the electrolyte - either valve regulated or gel. No hydrogen gas discharge during normal operation.
Flooded Battery	A lead acid battery with access caps for maintaining the electrolyte - replacing water lost during recharge operations. Hydrogen gas discharged during normal recharge
SoC	State of Charge is the amount of charge in the battery bank expressed as a % of the battery capacity. When SoC = 100% the battery is fully charged. When the SoC is 50% then the battery is half charged.

1. IMPORTANT INFORMATION AND SAFETY INSTRUCTIONS

- Installers should be qualified electricians or technicians
- The installation information in the manual is for information purposes only.
- The monitoring and operation information in this manual is intended for anyone who needs to operate the inverter.
- The inverter output cannot be paralleled with another inverter or AC source.
- Read the instructions carefully before installing and operating the Inverter.
- Inverter connection and installation instructions must be followed.
- The unit should only be opened by skilled personal.
- To reduce risk of electric shock, disconnect all wiring before making any attempt to maintain or to clean the unit. Turning off the INVERTER will not reduce this risk.
- Retain the load within the rating of Inverter to prevent faults.
- Keep the Inverter clean and dry.
- The Inverter will not operate without batteries.
- The Inverters should be installed indoors, in a ventilated and dry area.
- The mounting surface should be able to support the weight of the inverter.
- Mount the inverter vertically.
- Do not install the Inverter on a rugged or inclined surface.
- Do not install the Inverter near water or in a damp environment.
- Do not install the Inverter where it would be exposed to direct sunlight.
- Do not remove the inverter casing while the unit is powered on.
- Keep the Inverter away from heat emitting sources.
- Do not block the inverter ventilation openings.
- Do not leave objects on top of the Inverter.
- Do not expose the Inverter to any corrosive gasses.
- Install the inverter away from any explosive gasses.
- Ambient temperature: 0°C – 40°C
- AC Input and Output circuit breakers have not been provided and must be installed.
- The INVERTER must be used with a battery supply of nominal voltage that matches the inverter as on the “Identification Label”.
- Sketches are intended for illustrative purposes only and are not intended to provide an electrical design.
- Do not disconnect the batteries while the Inverter is switched on.
- When shutting down the system, disconnect the load first, then disconnect the Grid and then power down the inverter.

Do not switch the battery breaker off when the unit is operating or in any other mode when connected to the grid.
Damage caused by reverse polarity, lightning and surges is not covered by warranty.

WARNING
High AC voltage present and is capable of causing severe injury. .

2. INTRODUCTION

2.1 General Description

The Microcare Inverters comes with the latest software included, to improve the automatic change over from the grid to the Inverter. Our cutting edge software innovations allow for uninterrupted supply to a range of applications from a sensitive server room to industrial machines. The Inverter is able to anticipate load failure and pre-charges the circuits for rapid transfer of power and change-over up to 4 times faster. The Microcare Inverter can run at 200% the capacity continuously when the grid is present and should the grid fail, the Inverter will return to its rated power. Microcare Inverters use galvanic isolation which makes them highly robust and reliable with low standby current and high efficiency

2.2 Key Features

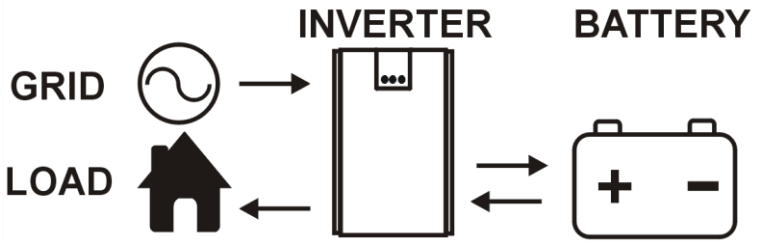
- Bi-Directional Inverter.
- Available for 12/24/36/48 (VDC) systems.
- Output power from 1–5kW.
- UPS, Off-Grid or Solar Grid Assisted Mode.
- LCD display and low idle current.
- High surge capacity for motor start.
- Timed overload capacity with auto shutdown.
- Adjustable transfer switch time.
- 3-Attempt auto restart with short circuit protection.
- Built in, high rate, multi-stage battery charger.
- Minimum local service turnaround time with a 3 year warranty.
- Fan cooling for optimum performance and component longevity.
- Audible buzzer indicating faults, overload and status.
- Wall Mounted.
- User adjustable settings.
- Remote monitoring via GSM (Optional) or Battery Monitor and Web Logger (Optional)
- Manufactured in South Africa.

3. OPERATION MODES

3.1 UPS System

The inverter is used as an ***UPS.*** This operation mode is used for systems that have the grid available as the main AC supply. The grid will supply the load. When the grid supply is interrupted or lost, then the inverter switches to inverter mode. The batteries power the load via the inverter circuitry. When the grid power returns, the load reconnects with the grid. The internal charger charges the batteries when the grid is available.
For this mode of operation select "**Normal Sense"** in the UPS mode setup menu.

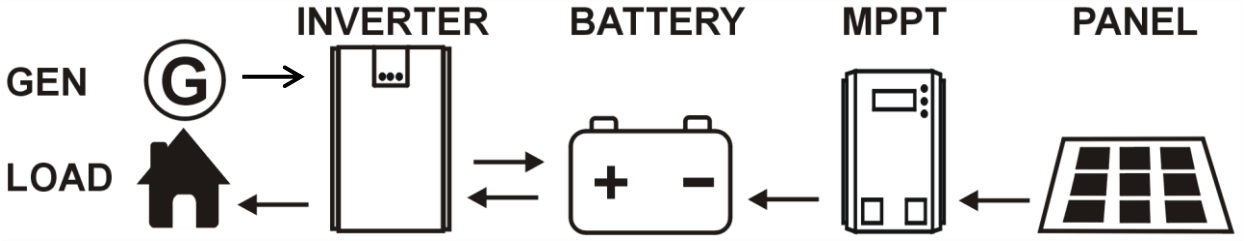
Figure 3-1



3.2 Off-Grid System (No Grid Supply)

When the inverter is used as an ***OFF-Grid*** solution**,** the inverter runs in inverter mode. The batteries power the load via the inverter circuitry. Renewable energy charges the batteries.
For this mode of operation select "**Normal Sense"** in the UPS mode system setup menu.
A generator can be connected to the inverter to assist with charging and supplying the load when required.

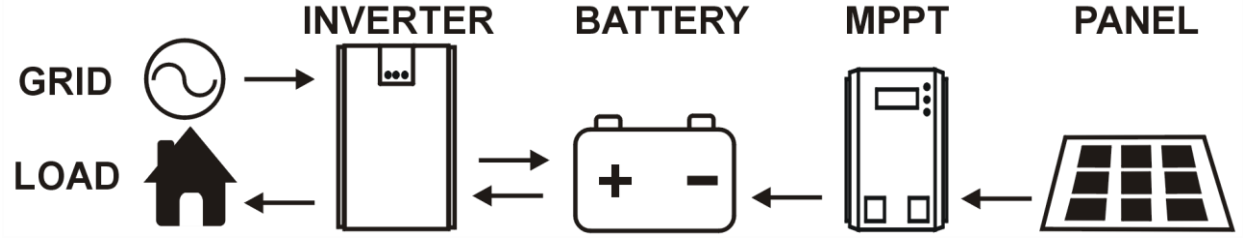
Figure 3-2



3.3 Grid Assisted Solar Power System

In a Grid assisted system the inverter mainly runs in the inverter mode and the batteries power the load via the inverter circuitry. Renewable energy charges the batteries. The load runs from battery power until the batteries have discharged to a set level. At this level, the load is disconnected from the batteries and the load is connected to the grid. As soon as the batteries are charged to a set level, the load disconnects from the grid and the load is powered from battery power.
For this mode of operation select "**Solar Control"** in the UPS mode system setup menu.

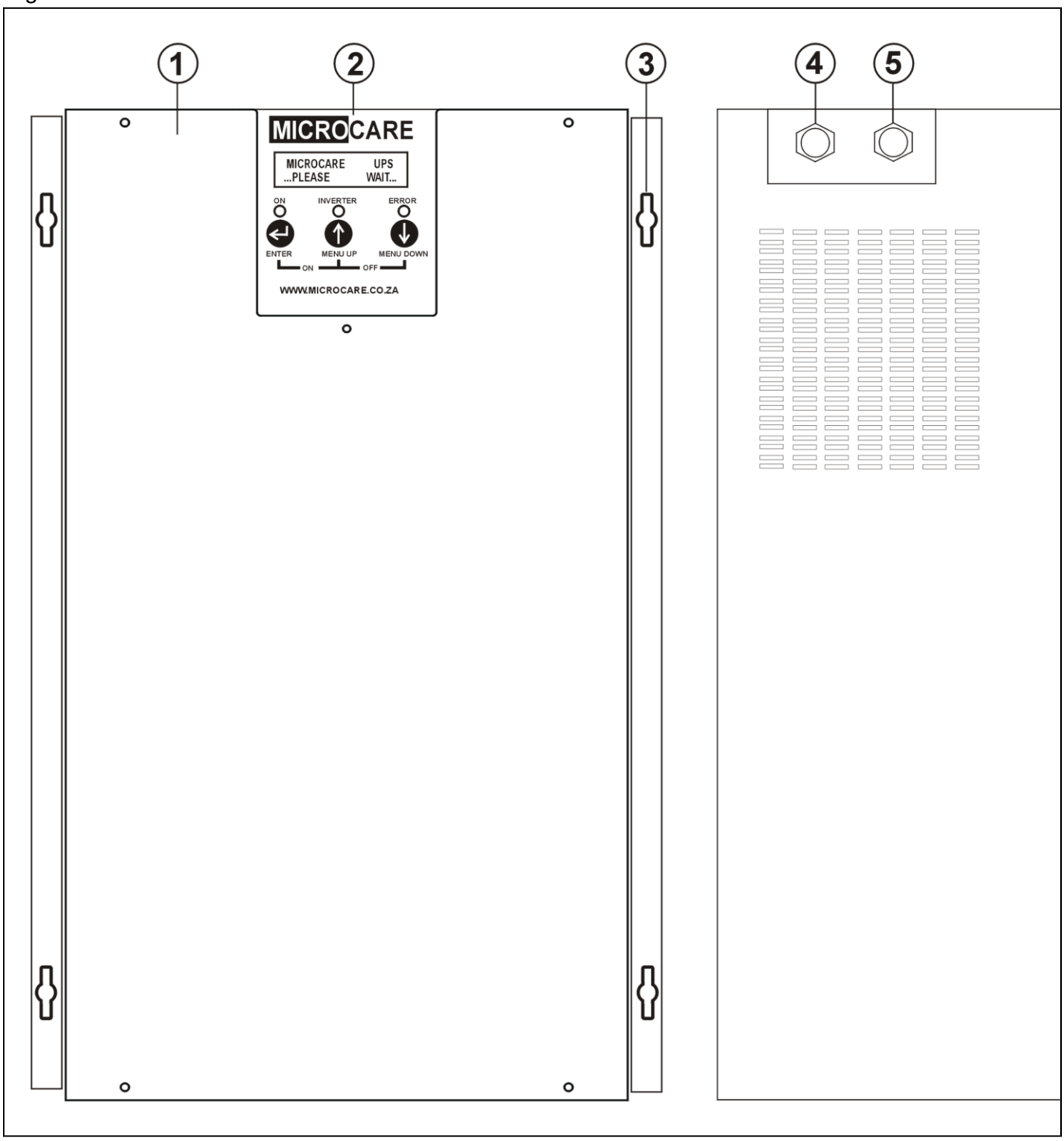
Figure 3-3



4. NVERTER OVERVIEW

4.1 Inverter Front & Side View

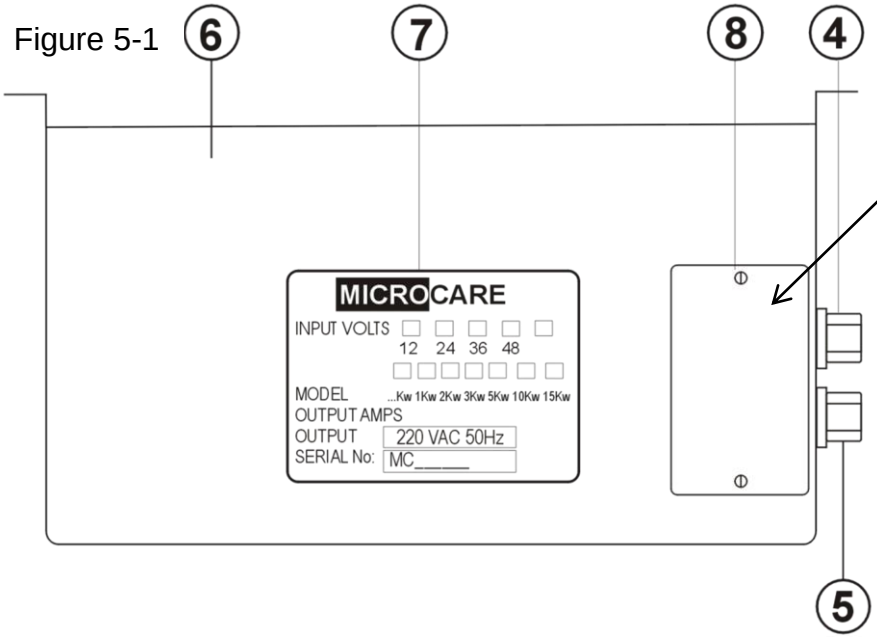
Figure 4-1



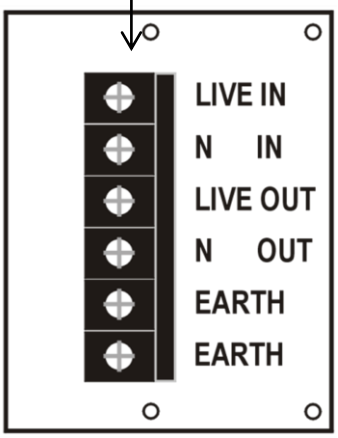
5. INVERTER OVERVIEW

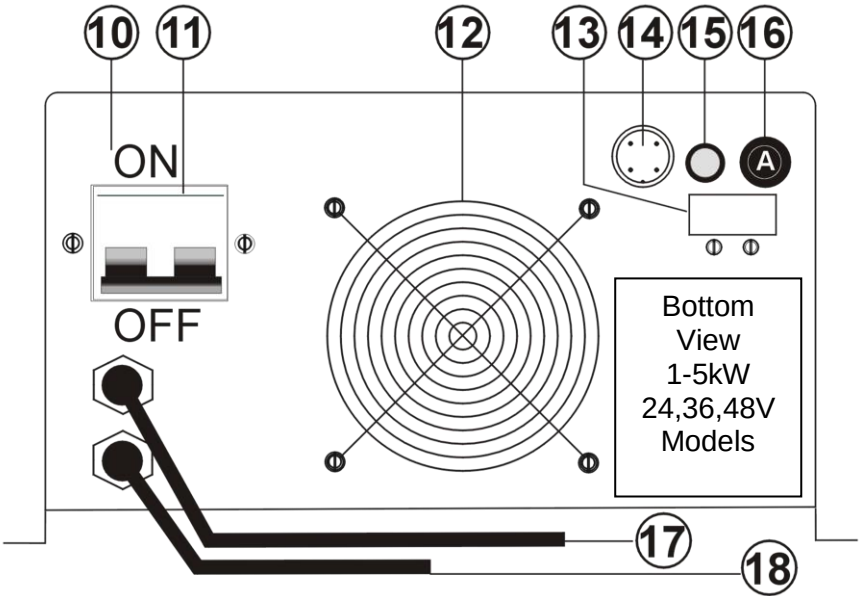
5.1 Inverter Layout

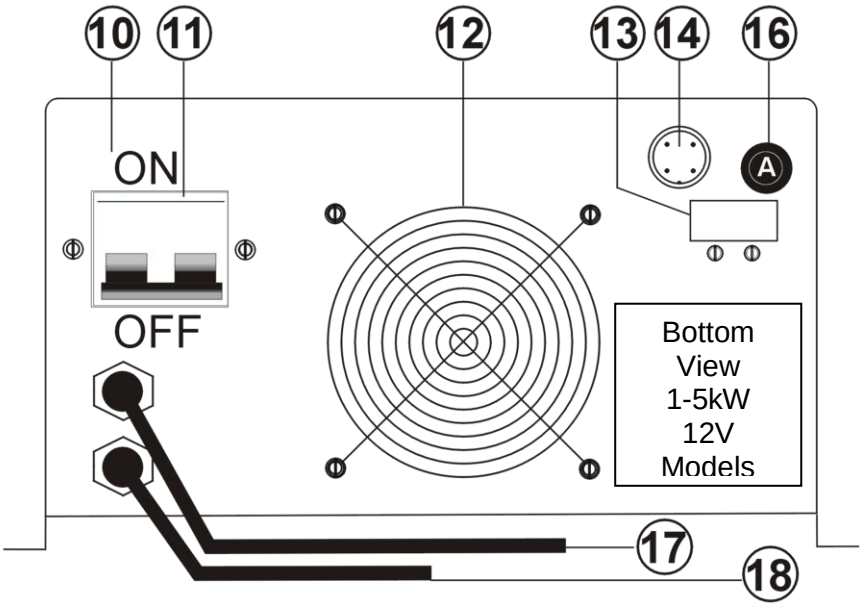
Figure 5-1



Remove AC terminal Cover Plate “8” to access the AC wiring terminals







1. Inverter Front View
2. LCD display & Keypad
3. Support Holes
4. AC in wiring gland
5. AC load output wiring gland
6. Top View
7. Identification label
8. AC wiring terminal cover plate
9. Reserved for certain models
10. Inverter Bottom View
11. DC battery circuit breaker
12. System fan
13. Comms Port (Optional)
14. Lithium ION Interface (Optional)
15. Pre-charge Button
16. System Fuse
17. Positive Battery Lead
18. Negative Battery Lead

6. INVERTER INSTALLATION

Consider the following when installing the inverter.

6.1 Planning the Installation

Location

- Install the Inverter indoor in a dry protected location away from any sources of moisture.
- Find a suitable temperature resistant surface to mount the inverter.
- Provide enough space for the routing of external wiring, Sub DB board and additional accessories.
- The mounting surface must support the weight of the inverter.
- Exposure to saltwater is particularly destructive.
- Do not mount the inverter in a closed container.
- Unrestricted airflow is required for the inverter to operate at optimal efficiency.
- Ensure a 200mm unrestricted clearance at the top, left and right side of the inverter
- Do not install the inverter in the same compartment as non-sealed batteries.
- Locate the Inverter as close as possible to the batteries in order to keep the battery cables as short as possible as supplied with the inverter.
- If flooded batteries are used, install them in a separate room or compartment.

Orientation

The unit must be mounted in a **"VERTICAL POSITION**" against the wall.

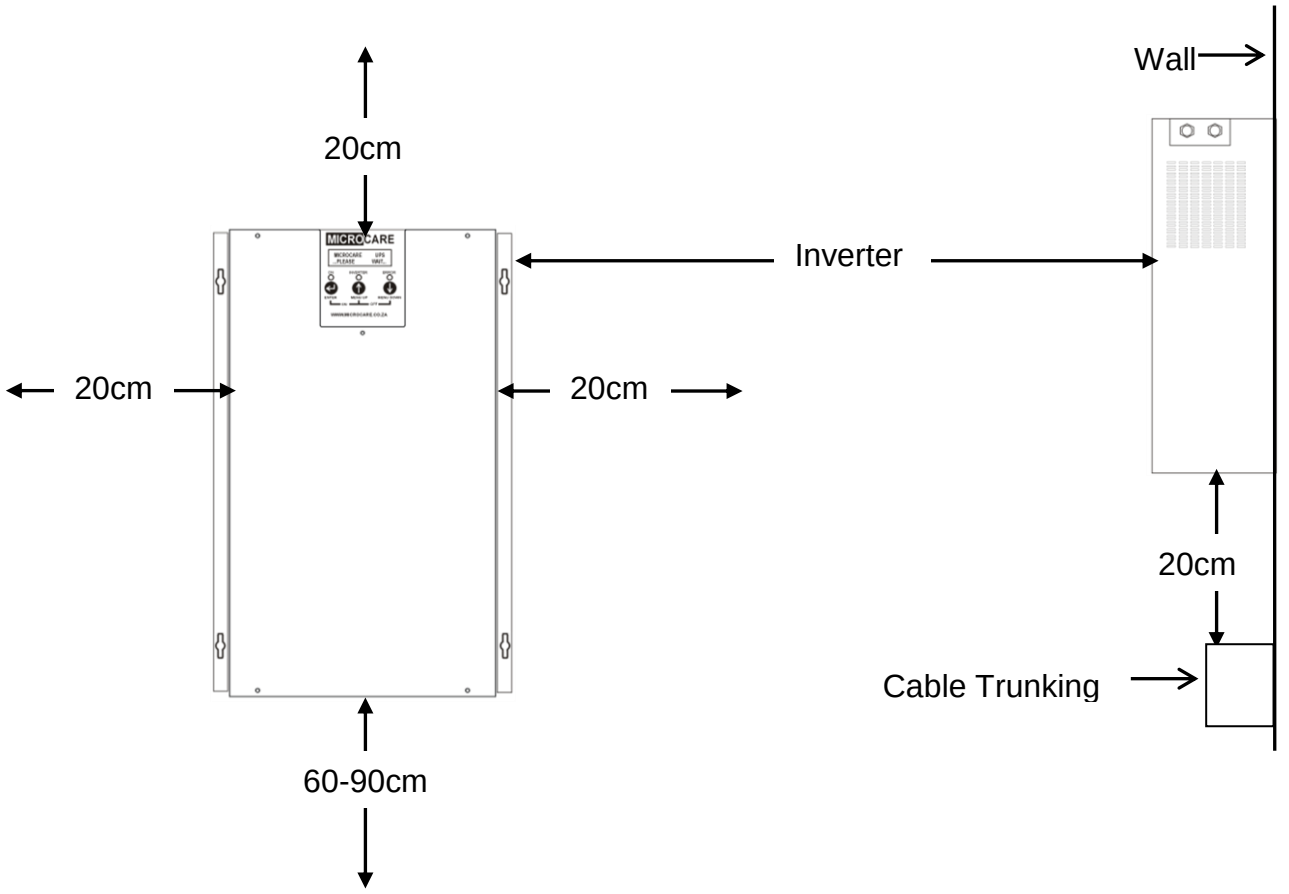
Temperature

Away from sources of high temperature.

Height

Install the inverter so that the display is at eye level.

Fig 6-1: Minimum clearance distances



6.2 Installing the Inverter Mounting Bracket

- Find a suitable temperature resistant surface to mount the inverter.
- Provide enough space for the routing of external wiring, Sub DB board and additional accessories.
- The mounting surface must support the weight of the inverter.
- Check for existing electrical or plumbing prior to drilling holes in the walls.
- Position the wall mounting bracket against the wall at a height where the top of the inverter is at eye level.
- Ensure a 200mm unrestricted clearance at the top, left and right side of the inverter.
- Level the wall mounting bracket and mark the 3 holes on the surface. Fig 6-1.
- Drill the 3 holes into the wall.
- Using anchor bolts, secure the bracket against the wall
- Mount the inverter on the wall bracket
- **The inverter is heavy and if dislodged from the mounting bracket can cause damage to external wiring and can cause bodily harm**.

For additional support, support the inverter from dislodging by doing the following

- Mark the support holes on the wall.
- Remove the inverter from the mounting bracket.
- Drill the supporting holes into the wall.
- Re-mount the inverter on the wall bracket.
- Fit the support wall plugs and tighten firmly.

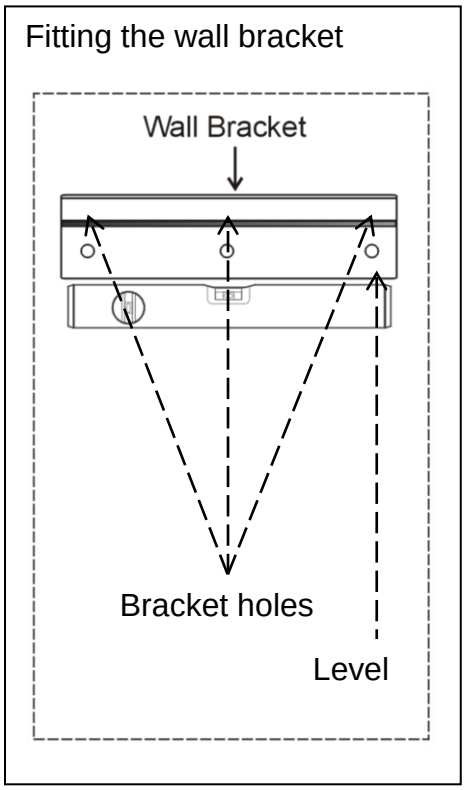


Figure 6-1

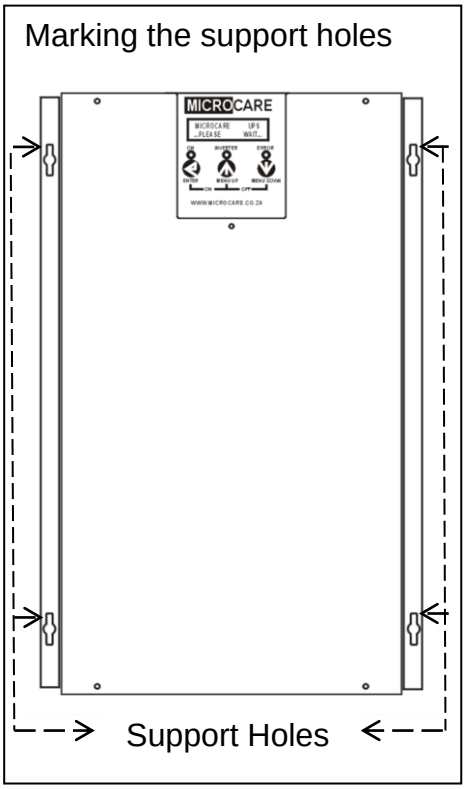


Figure 6-2

7. GENERAL WIRING INFORMATION

- Wiring must be performed by qualified personnel / certified electrician. .
- Familiarize yourself with the content of the manual following before commencing with the wiring
- The line voltage “AC” applied must comply with the inverter’s specified input voltage.
- The AC connections are located at the top of the inverter under the wiring terminal cover.
- Do not connect the AC output of the inverter directly to another AC source.
- The inverter is not designed for parallel operation with another inverter.

- If an electrical load distribution board or sub distribution board is fed from the inverter AC output and the load is also required to be powered from another AC source, the AC load, AC source and the inverter output should be connected to a manual or automatic transfer switch.
- An earth leakage must be fitted at the inverter AC output and not on the AC source input line.
- Make sure the BATTERY INPUT CIRCUIT BREAKER is OFF before attempting any wiring
- Battery interconnection cables must be a minimum of 35mm² and as short as possible.
- Connect the Positive terminal of the inverter battery cable to the Positive post of the battery and connect the Negative terminal of the inverter battery cable to the Negative post of the battery. .

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Warning! The inverter battery input is not reverse polarity protected.

Reverse polarity will damage the unit!!

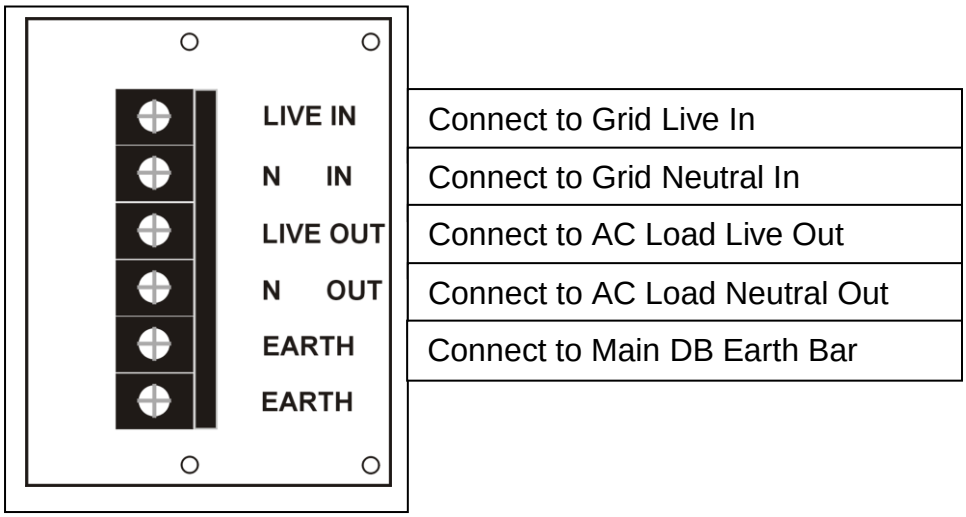
7.1 Earthing Of The Equipment

Equipment surge protection products are an effective way of controlling dangerous surges that can enter a facility.
When strategically placed and correctly installed, the Surge Protectors will effectively reduce harmful over voltage conditions that can damage electrical and electronic equipment. It is important that the protection system includes both structural and surge protection equipment.
When lightning current passes into the ground through any conductor (Example: Tree Trunk) a powerful electromagnetic force is set up due to the fast rise times of the strike. This electromagnetic force then couples into any inductive loops that may be available in nearby buildings. When these currents equalize, damage usually occurs to the equipment.

Table 7-1

Lightning Protection Zones	
LPZOA	This zone is an area where a direct hit to the structure is possible. The current may rise to a value of 200000A (10/350us) producing extremely high electromagnetic fields. Any conductor system must be capable of carrying the full lightning current.
LPZOB	This zone is an area where a direct hit is not possible, but high electromagnetic fields will be present. This zone is determined by the effectiveness of the structural protection system.
LPZ1	Again, a direct hit in this area is not possible due to the screening measures applied. The electromagnetic field is much lower than LPZOA and LPZOB. It is in this zone where appropriate surge arresters may be fitted that will limit the value of surge current entering a facility.
LPZ2	The value of surge current and electromagnetic field will be lower than that of LPZ1 when correct protection principles have been applied. It is in this area where sensitive electromagnetic equipment may be safely installed.

Figure 7-1



When Mains is connected to the inverter the Neutral connection is bonded to Earth via the Mains utility supply, earth bar.

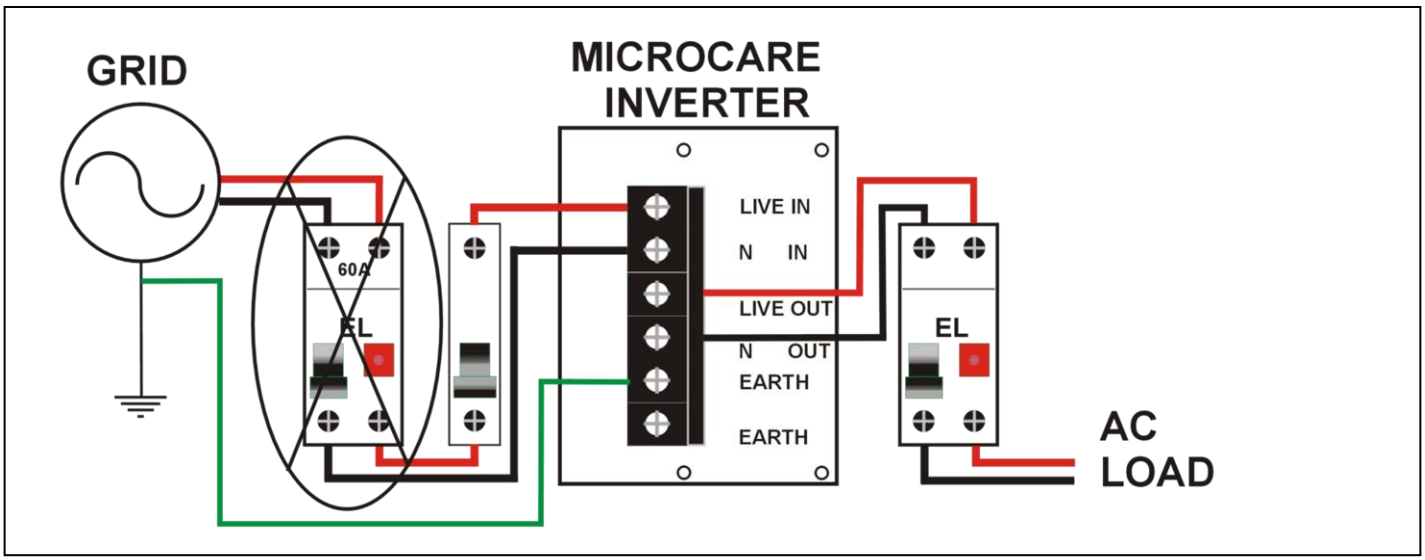
If the Inverter is connected as a stand-alone inverter with no Mains Connection, the Neutral is required to be earthed using an earth spike.
If the Inverter is not earthed; warranty will be null and void.

7.2 Inverter Neutral Connection

7.2.1 Inverter Connected to the Grid

When connecting the inverter to AC from the grid, the inverter input must not be connected via an earth leakage.
The earth leakage must be connected directly after the inverter
Keep the inverter neutral input connected to the **GRID neutral** at all times.
Connect the inverter Earth to the Earth Bar on the DB board.
When switching off the GRID input to the inverter, only **SWITCH OFF LIVE**. **Refer to Figure 7-2**
The grid will pull the inverter neutral to 0v.

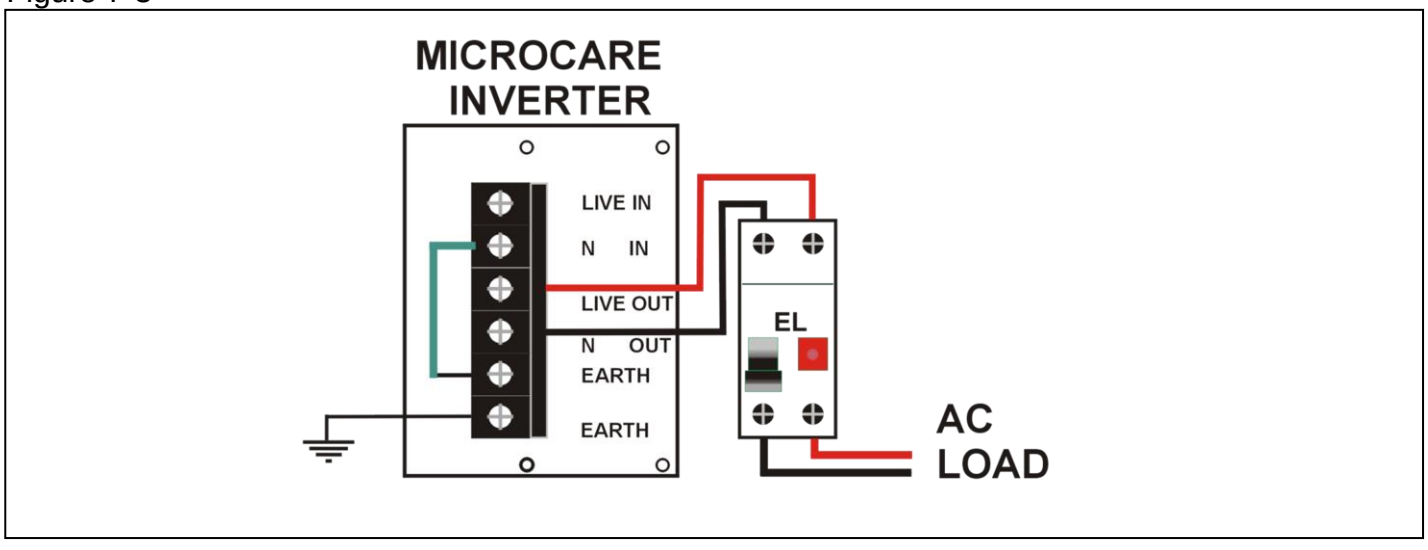
Figure 7-2



7.2.2 Off-Grid Connection

For an **OFF-GRID** application you need to bridge the **Neutral Input** to the **Earth** terminal on the inverter AC wiring terminal block.
You can now fit an earth leakage after the inverter. **Refer to Figure 7-3**

Figure 7-3



7.3 AC Wiring

The inverter AC input and AC load output wiring must be sized correctly and fitted with appropriate circuit breakers. Refer to Table 7-2 : AC Wiring - Wiring and circuit breakers for the correct wiring and circuit breaker sizes.

7.4 Pre-Wiring Procedure

Make sure that the wiring to and from the inverter is not connected to any AC sources.
Switch off the inverter battery circuit breaker,
Remove the AC wiring terminal cover plate by unscrewing the 2 cover plate screws.
Remove the 2 cable glands from the terminal compartment.
Install the supplied glands.
Unscrew the wiring terminal screws until a clicking noise is heard, this is to ensure that the terminals are screwed fully open.
AC wiring should be fed through the appropriate glands and terminated into the correct terminals.

AC Wiring Terminals

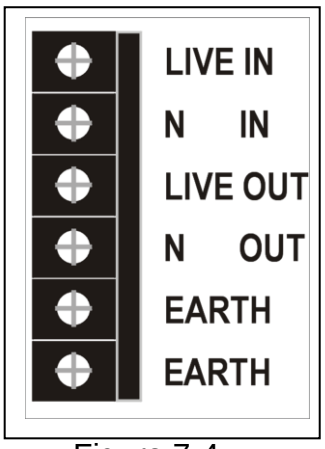


Figure 7-4

7.5 Inverter AC Input wiring

Feed the AC Input wiring through the correct gland.
Strip adequate insulation from the end of each wire.
Individually insert the bear end of the: Live In, Neutral In and Earth Wires fully into the correct terminal slots till it stops and tighten the screws firmly.
Tighten the cable gland ends.

7.6 Inverter AC Output wiring

Feed the AC output wiring through the correct gland
Strip adequate insulation from the end of each wire.
Individually insert the bear end of the Live Out and Neutral Out wires fully into the correct terminal slots till it stops and tighten the screws firmly.
Tighten the cable gland ends.

⚠ The neutral conductor must be maintained such that the operation of the inverter isolator will not alter the bonding between Neutral and Earth.

⚠ Earth the inverter by connecting the earth from the Main Distribution Board “DB” to the inverter Earth wiring terminal.

⚠ Earth leakage devices must be fitted after the inverter. On the load AC wiring side. Refer to Figure 7-2

7.7 AC Input Wiring and Circuit Breaker Sizes at 100% Output

Table 7-2 : AC Wiring - Wiring and circuit breakers

Inverter Model	Wattage	Inverter Input Circuit Breaker Current Rating	Conductor Size: Cross-Sectional Area mm²
1kW12V	1000	10 A	1,50
1Kw24V	1000	10 A	1,50
1Kw36V	1000	10 A	1,50
1Kw48V	1000	10 A	1,50
2Kw12V	2000	20 A	2,50
2Kw24V	2000	20 A	2,50
2Kw36V	2000	20 A	2,50
2Kw48V	2000	20 A	2,50
3Kw24V	3000	25 A	2,50
3Kw36V	3000	25 A	2,50
3Kw48V	3000	25 A	2,50
5Kw24V	5000	45 A	6,00
5Kw36V	5000	45 A	6,00
5Kw48V	5000	45 A	6,00

7.8 AC Input Wiring and Circuit Breaker Sizes at 200% Output

Table 7-3 : AC Wiring - Wiring and circuit breakers

Inverter Model	Wattage	Main Input Circuit Breaker Current Rated at 125% of Total Current	Conductor Size: Cross-Sectional Area mm²
1kW12V	1000	15 A	1,50
1Kw24V	1000	15 A	1,50
1Kw36V	1000	15 A	1,50
1Kw48V	1000	15 A	1,50
2Kw12V	2000	25 A	2,50
2Kw24V	2000	25 A	2,50
2Kw36V	2000	25 A	2,50
2Kw48V	2000	25 A	2,50
3Kw24V	3000	40 A	6,00
3Kw36V	3000	40 A	6,00
3Kw48V	3000	40 A	6,00
5Kw24V	5000	60 A	10,00
5Kw36V	5000	60 A	10,00
5Kw48V	5000	60 A	10,00

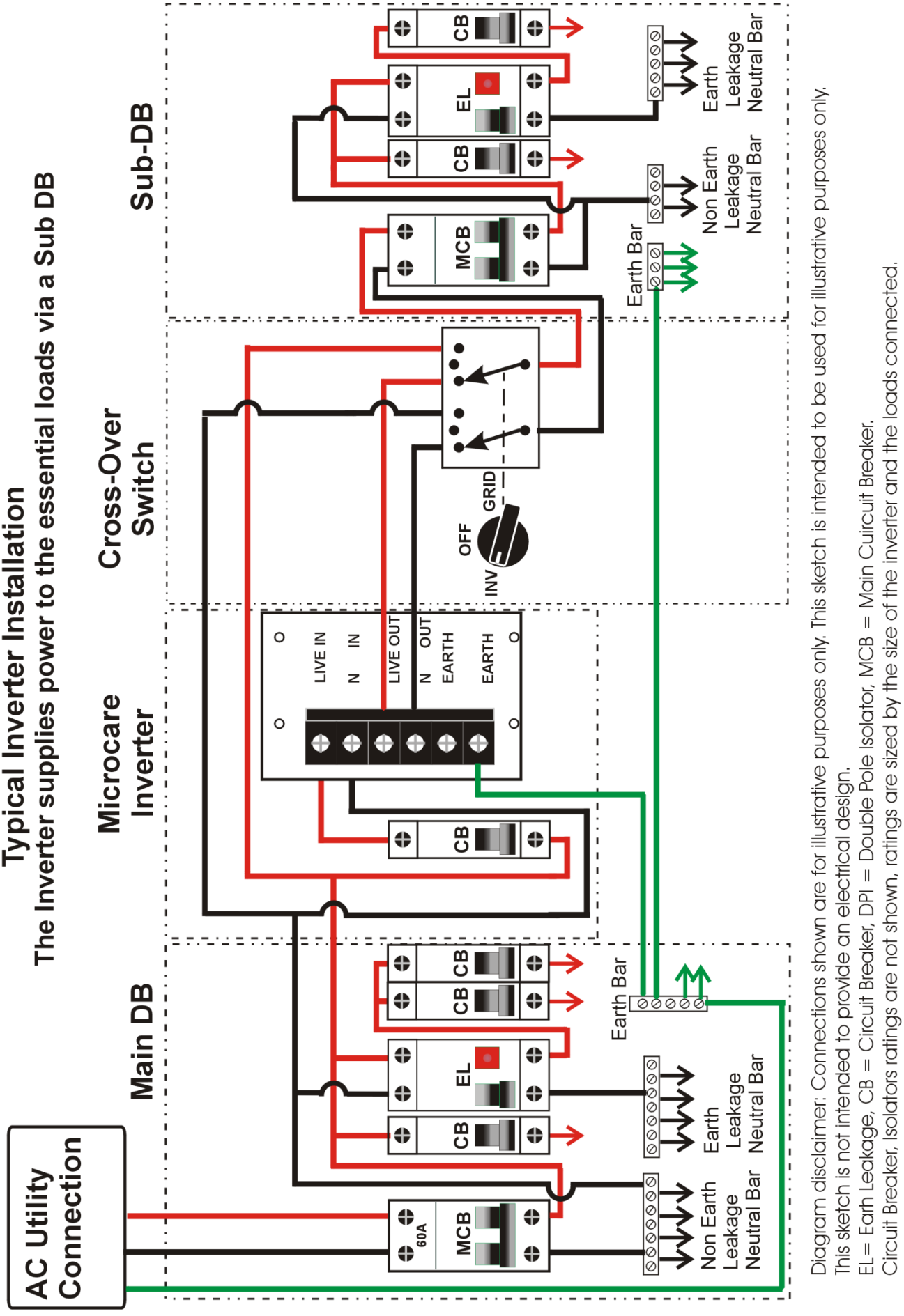


Figure 7-4: Sample Wiring Diagram

7.9 DC Wiring

Warning! The Inverter battery input is not reverse polarity protected.
Reverse polarity will damage the unit!!

The battery connection leads between the inverter and batteries should be kept to a minimum length. The inverter comes supplied with pre-fitted battery cables and must not be shortened. Shortening the battery leads will void the warranty of the inverter.

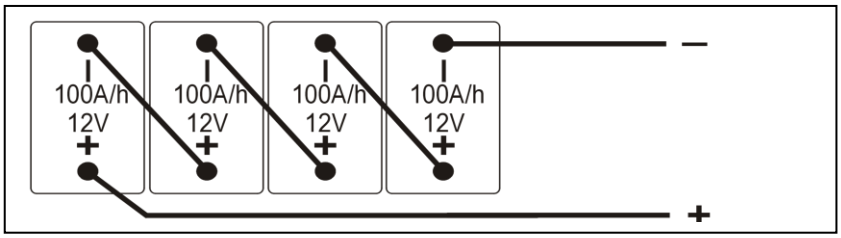
Before connecting the battery leads to the battery/batteries make sure that the batteries are connected according to the correct operating voltage for the model of inverter.eg: 12 VDC, 24 VDC system, etc. Refer to section 7.10

Connect the Positive (Red) battery lead terminal from the inverter to the positive post of the battery.
Connect the Negative (Black) battery lead terminal from the inverter to the negative post of the battery.

7.10 Battery Connection Methods

7.10.1 Series Connection

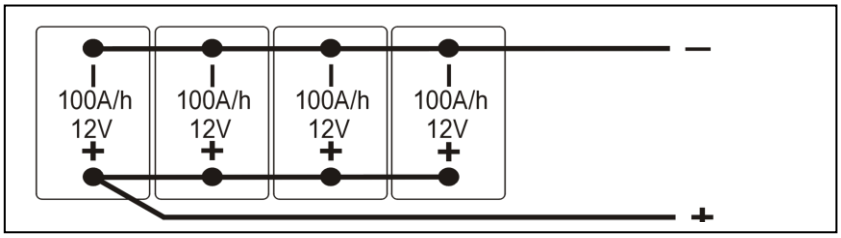
12V + 12V + 12V + 12V = 48V A/h remains at 100 A/h



Series Connection (Voltage increases, amperage stays the same as a single battery)

7.10.2 Parallel Connection

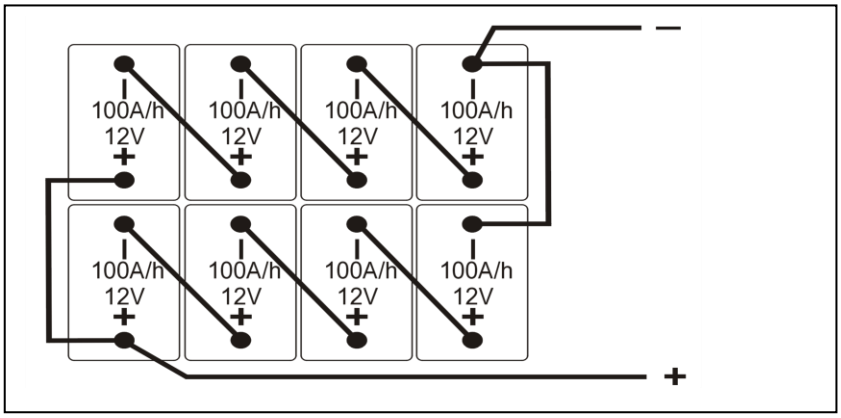
Voltage remains at 12V 100 A/h + 100 A/h + 100 A/h + 100 A/h = 400 A/h



Parallel Connection (Voltage stays the same as a single battery, amperage increases)

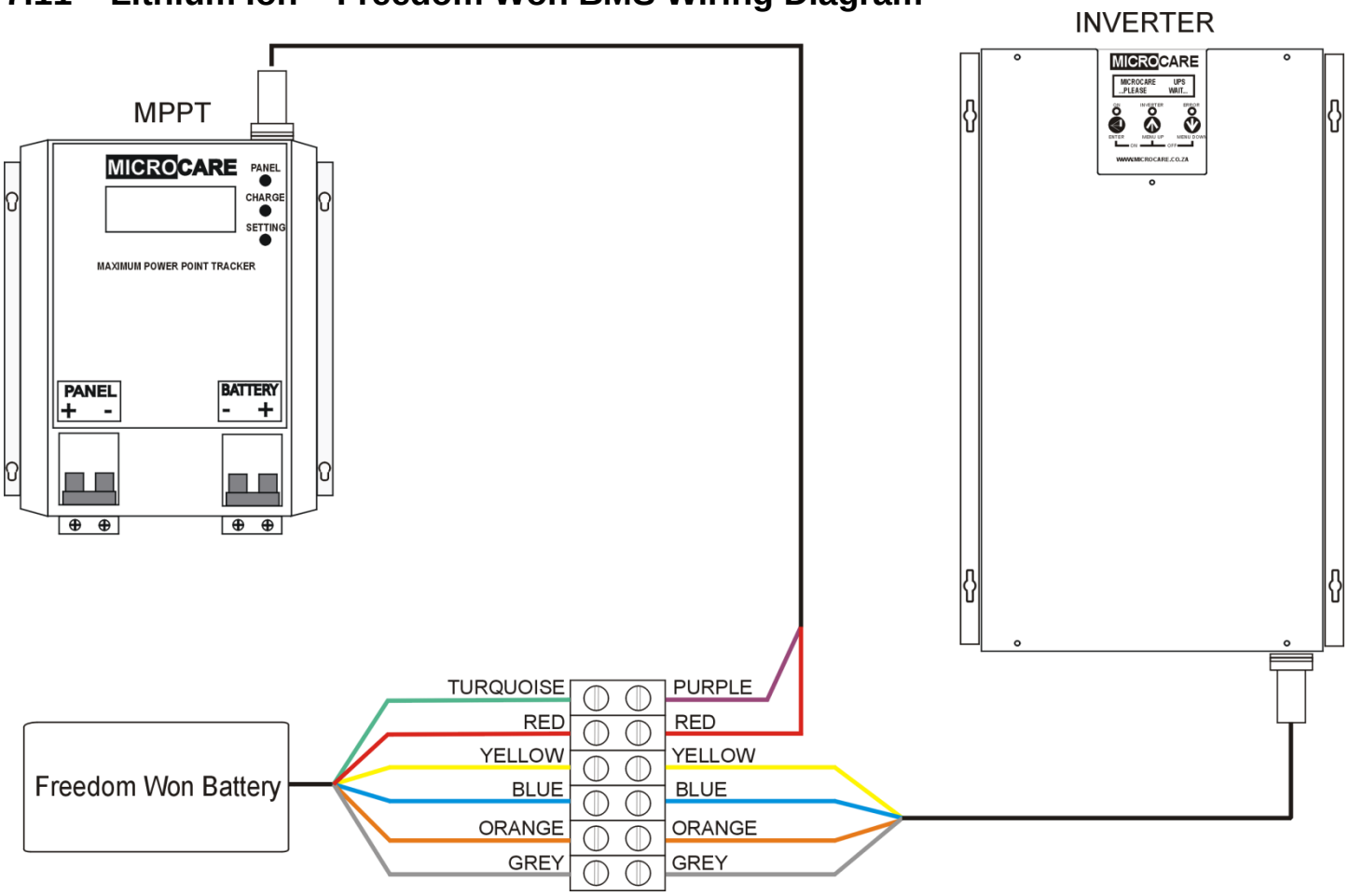
7.10.3 Series and Parallel Connection

Voltage increases to 48 V A/h increases to 200 A/h



2 Strings of batteries in series, connected in parallel
Series/Parallel Connection (both voltage and amperage increase)

7.11 Lithium Ion – Freedom Won BMS Wiring Diagram



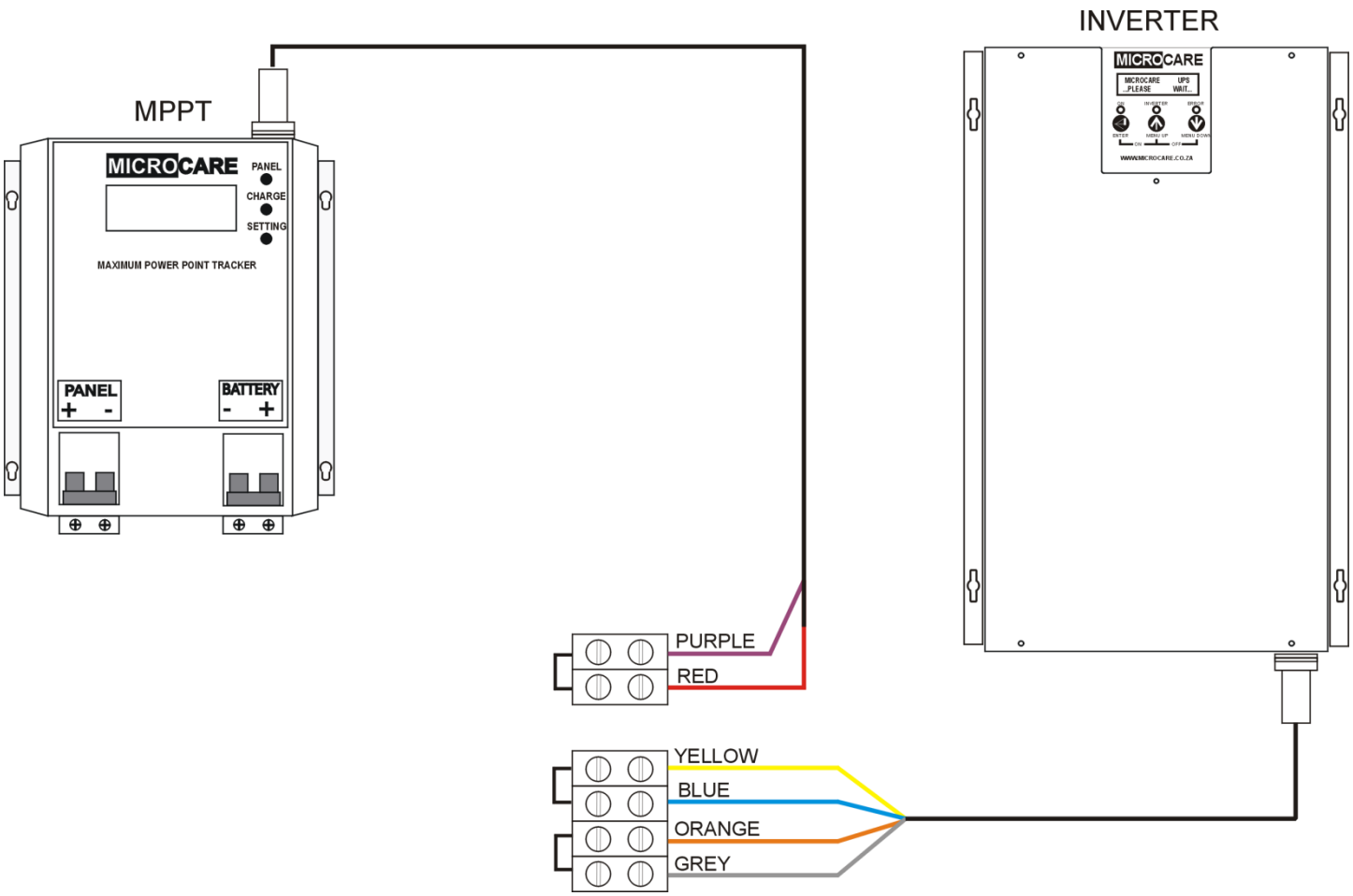
7.11.1 Wiring Designation

WIRE COLOUR	MPPT WIRE FUNCTION	MPPT PIN NUMBER
RED	Solar Charge Controller Enable (NO)	2
TURQUIOSE	Solar Charge Controller Enable (COM)	1

WIRE COLOUR	INVERTER WIRE FUNCTION	INVERTER PIN NUMBER
YELLOW	Inverter Enable (NO)	3
BLUE	Inverter Enable (COM)	1
ORANGE	Inverter Charge Enable (NO)	2
GREY	Inverter Charge Enable (COM)	1

(NO = Normally Open) (COM = Common)

7.12 Lithium Ion With No BMS



If the Lithium Ion battery has no BMS installed connect:

MPPT:

- Connect the Purple wire to the Red wire to enable charging.

Inverter :

- Connect Yellow wire to the Blue wire.
- Connect the Orange wire to the Grey wire t enable inverter charging.

7.13 Maintenance and service

Caution – Risk of Electric Shock.
Batteries may cause electric shock and have a high short-circuit current.
Please take the precautionary measures specified below and any other measures necessary when working with batteries.
Remove wristwatches, rings and other metal objects.
Use only tools with insulated grips and handles.
Wait a minimum of five minutes after power has been turned OFF before starting an inspection.
Also confirm that the charge light is OFF and that the DC bus voltage has dropped below 25Vdc.
Never touch high voltage terminals in the inverter.
Make sure power to the inverter is disconnected before disassembling the inverter.
Only authorized personnel should perform maintenance, inspection, and replacement operations.

8. INVERTER OPERATION

8.1 Front Panel LCD Display/Keypad and Description

Figure 8-1: LCD Display & Keypad

The front Panel Display/Keypad indicates the Inverter's operational information, including output voltage, battery voltage, output load, internal temperature and is used for programming.
Panel Display/Keypad operation explained.

Button Function Description

Symbol	Button Name	Function description
	Enter	Confirms or store DATA, increment or decrement values and to reset alarm conditions.
	Menu Up	Navigates through the list of operational information, parameters and functions.
	Menu Down	Navigates through the list of operational information, parameters and functions.

Press and hold both turns the inverter "ON".
Press and hold both turns the inverter "OFF"

8.2 Inverter Status LED's

Indicator	Indicator Name	Description
	On	Led on: Indicates the INVERTER is turned on and operating normally
	Inverter	Led on: Notification that the Inverter is inverting power from DC Power to AC Power
	Error	Led on: Indicates the INVERTER is in a fault condition because of inverter shutdown or over temperature

8.2.1 Inverter ON and Grid Supplying the Load

ON	INVERTER	ERROR	

8.2.2 Inverter ON and the Battery Supplying the Load “Inverter Mode”

ON	INVERTER	ERROR	

8.2.3 Inverter Displaying WARNING “Battery Low Battery Capacity”

			WARNING!!! LOW BATTERY CAPACITY Steady “ON”, Green , Yellow and Red LED Buzzer sounds continuously Press ↵ to clear the buzzer and warning
ON	INVERTER	ERROR	

8.2.4 Inverter Warning Switched OFF due to Battery LOW/HIGH Battery Voltage

			UPS LOW/HIGH BATTERY Steady “ON”, Yellow and Red LED Buzzer sounds continuously
ON	INVERTER	ERROR	

Please Note:

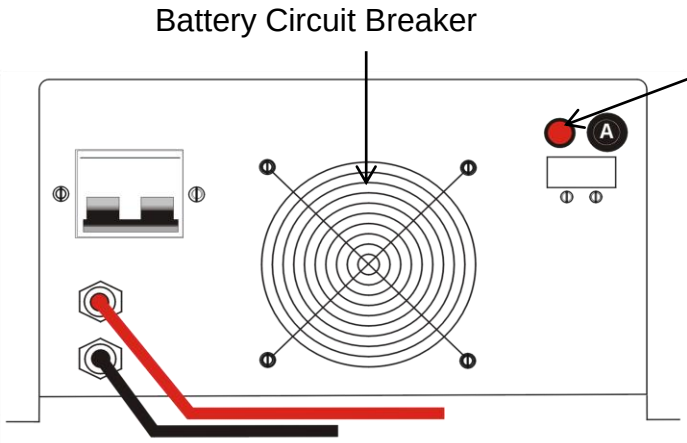
This Inverter is pre-programmed with a set of default values.
These settings might not be correct for your battery type.
Please contact your battery supplier for your battery specifications
“Battery Float Voltage, Boost Voltage, Boost to Float Time “ Absorb Time”
and program the Inverter accordingly

8.3 Checks Prior To Start-Up

Ensure the INVERTER is mounted vertically.
Check if the Input and Output cables are secured.
Check if the Battery voltage meets the INVERTER rating.
Ensure that the polarity of the battery connections is correct.
AC supply to the inverter is switched off.
External Load circuit breaker is switched off.

8.4 Start-Up Procedure

Press and hold the **RED PRECHARGE BUTTON** for 3 seconds until the display shows writing then turn on the **BATTERY CIRCUIT BREAKER** while holding the **RED PRECHARGE BUTTON** in.
Once the BATTERY CIRCUIT BREAKER has been turned ON, the **RED PRECHARGE BUTTON** can be released.



NOTE: The pre-charge button is not fitted on our 12 V Inverters.

To start-up a 12 V Inverter,
Turn on the battery breaker.

Figure 8-2: Pre-Charge button position

The display will show the following:

MICROCARE UPS
…PLEASE WAIT…

The display then changes to

UPS TURNED OFF
…CALIBRATING…

The display then changes to

UPS TURNED OFF

Press the ENTER Button and the display will change to:

MICROCARE 5KW
INVERTER OFF

8.5 Switching the Inverter On & Off

8.5.1 Switching the inverter "ON"

MICROCARE 5KW
INVERTER ON

Press and hold both ↵ **and** ↑ **buttons** for up to 3 seconds.
The UPS will start up and the Green LED will light up to indicate the power is being supplied from the inverter to the load. (Yellow when no mains)

8.5.2 Switching the inverter "OFF"

MICROCARE 5KW
INVERTER OFF

Press and hold both ↑ **and** ↓ **buttons** for up to **3 seconds**, the UPS will turn **OFF** after two beeps.

9. INVERTER MENU

In either the inverter ON or OFF mode, use the ↑ OR ↓ buttons to view the menu displays on the LCD screen explained below.

9.1 Power rating of the UPS

The load drawn as a % of the rated power is displayed.

MICROCARE 5KW
INVERTER = 47%

By turning on a load, the **OUTPUT %** will change to indicate the **LOAD** as a **%** of the unit being used in KW. Above 5% of load is displayed.
This status menu is displayed when the inverter runs from the grid or in inverter mode.

9.2 Battery Volts and Amps

Battery voltage and the **amps** that the UPS is drawing from the battery when the inverter runs from the battery.

BATT VOLTS : 54.2
BATT AMPS : 7.0

This status menu is only displayed in inverter mode, the Green and Yellow LED is on.

9.3 Battery Charge Amps and Volts

This shows the **Charge Amps** that are being put back Into the battery bank from the charging source.

BATT VOLTS : 54.2
CHGR AMPS : 10.0

The inverter only charges the batteries when a grid connection is present
This status menu is only displayed when the inverter runs from the grid, the Green LED is on.

9.4 Output Volts and Amps

AC Output voltage and amps that the load is drawing In inverter mode.

UPS VOLTS : 220
UPS AMPS : 7.0

This status menu is displayed when the inverter runs in inverter mode, the Green and Yellow Led is on.

9.5 Grid Volts and Grid Amps

Grid Volts and power draw from the grid power supply:

GRID VOLTS : 227
GRID AMPS : 10.0

This status menu is displayed when running from the grid, the Green LED is on

9.6 Temperature

Internal temperature of the inverter.

TEMPERATURE
26.3 Deg/Cel

9.7 Signal Strength

Control cards in the Inverter have 100% communication.

SIGNAL STRENGTH
DISPLAY- UPS 100%

9.8 Serial Number & Software Version

Serial number of the inverter.
Software version of the inverter.

SN: MCxxx7777
FW: VXXXX

The Serial number of the inverter needs to be noted and supplied when requesting any fault support information.

9.9 System Setup

This menu allows the user **TO CHANGE** the system settings

ENTER SETUP MENU?

Sections 10 and 11 Covers the programming of the different parameters.
Set the “Battery Setup Menu” values first and then make changes to the “System Setup Menu”.

9.10 Battery Setup

This menu allows the user **TO CHANGE** the battery settings

ENTER BATTERY MENU?

Sections 10 and 11 Covers the programming of the different parameters.
Set the “Battery Setup Menu” values first and then make changes to the “System Setup Menu”.

9.11 Log Menu

ENTER LOG MENU?

9.12 Exit & Save

This menu allows the user **TO SAVE** all the new setting changes

EXIT AND SAVE SETUP MENU?

9.13 Restore Factory Settings

This menu allows the user **TO RESTORE** the factory default settings

RESTORE FACTORY SETUP MENU?

9.14 Exit Do Not Save

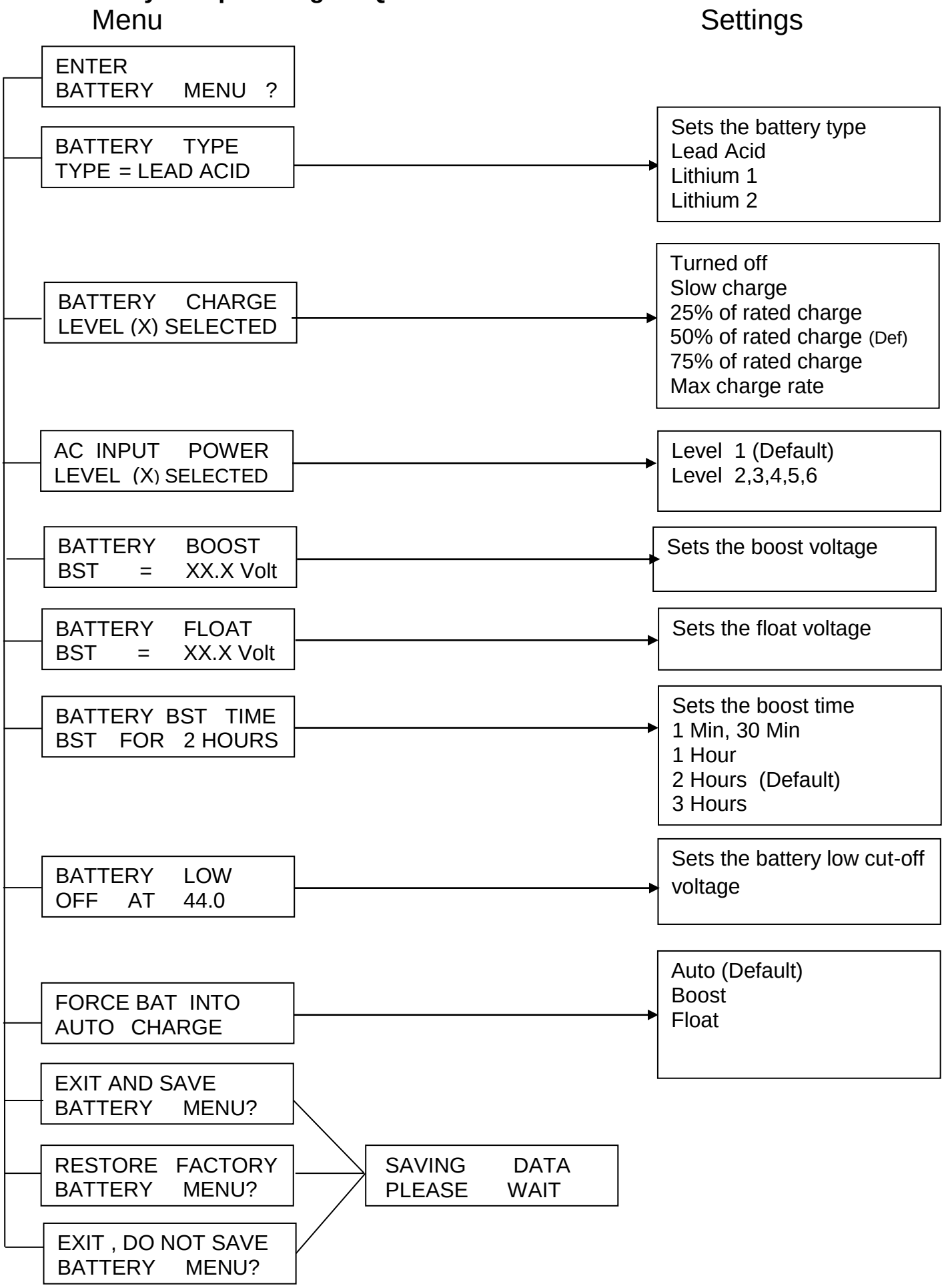
This allows the user **NOT TO SAVE** any system settings that were changed.

EXIT DO NOT SAVE SETUP MENU?

Sections 10 and 11 Covers the programming of the different parameters.
Set the “Battery Setup Menu” values first and then make changes to the “System Setup Menu”.

10. BATTERY SETUP SETTINGS

10.1 Battery Setup Settings - Quick Reference Guide



10.2 Battery Setup Procedure

Please consult your battery supplier for the correct battery charging specifications

Press ↑ OR ↓ to select BATTERY Set-Up Menu: → **ENTER BATTERY MENU**

Press ↵ to access the Battery Setup Menu:

Press ↑, the menu changes to Battery Type

10.3 Battery Type

To change the **BATTERY TYPE** settings, Press ↵

BATTERY TYPE
TYPE = LEAD ACID

This allows the user to select the **BATTERY TYPE**.

BATTERY TYPE
TYPE = LEAD ACID

OR

BATTERY TYPE
TYPE = LITHIUM 1

OR

BATTERY TYPE
TYPE = LITHIUM 2

"Please consult your battery supplier for the correct battery charging specifications"

Press ↑, the menu changes to Battery Charging Rate

10.4 Battery Charging Rate

BATTERY CHARGE
LEVEL (X) SELECTED

To change the **BATTERY CHARGE** settings, Press ↵ :

TURNED OFF	-	0% of charge rate as per the list supplied below.
SLOW CHARGE	-	5% of charge rate as per the list supplied below.
25% OF RATED CHR	-	25% of charge rate as per the list supplied below.
50% OF RATED CHR	-	50% of charge rate as per list supplied below. (Default)
75% OF RATED CHR	-	75% of charge rate as per the list supplied below
.MAX CHARGE RATE	-	100% of charge rate as per the list supplied below.

Below is the list of available charge amps for the inverters.

Table 10-1: Battery Setup - Battery Charging rates

INVERTER	**Charging Rate (A)**				
Model	5%	25%	***50% - Default***	75%	100%
1kW12V	2	10	***20***	30	40
1Kw24V	1	5	***10***	15	20
1Kw36V	0,75	3,75	***7,5***	11,25	15
1Kw48V	0,5	2,5	***5***	7,5	10
2Kw12V	4	20	***40***	60	80
2Kw24V	2	10	***20***	30	40
2kW36V	1,5	7,5	***15***	22,5	30
2Kw48V	1	5	***10***	15	20
3Kw24V	3	15	***30***	45	60
3Kw36V	2	10	***20***	30	40
3Kw48V	1,5	7,5	***15***	22,5	30
5Kw24V	5	25	***50***	75	100
5Kw36V	3,5	17,5	***35***	52,5	70
5Kw48V	2,5	12,5	***25***	37,5	50

Regarding the battery charge level. The level selected will allow the battery charge to the batteries.

- Great care should be taken when charging batteries. Please consult your battery supplier for the optimum battery charging rate for the batteries you have purchased for your installation.
- Also inform your battery supplier of how many batteries you will be connecting in series, parallel or in series and parallel.
- The charging rate will determine the correct setting as in Table 10-1.
- Overcharging and undercharging can reduce the life of the batteries.

To change the Menu press , the menu changes to AC Input Power

10.5 AC Input Power From Generator

AC INPUT POWER LEVEL (X)

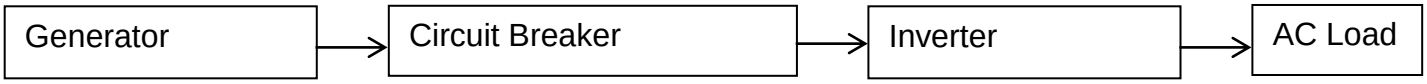
To change the **AC INPUT POWER** settings, Press

This allows the inverter to extract the maximum amount of power from a generator.
The inverter constantly monitors the Voltage from the generator and then applies maximum charge.

LEVEL 1 is the highest load to the generator while
LEVEL 6 is the minimum.
The factory default LEVEL is 1.
This setting only needs to be adjusted if there is a generator connected.

When a generator is running the generator will supply the AC Load first and the inverter charges the batteries with any excess power created from the generator.

Always install a generator with a circuit breaker or contactor connection
Keep the circuit breaker off until the generator is running fully.
Turn of the circuit breaker before switching off the generator.



Circuit breaker must be placed within 1m from the Inverter

To change the Menu press , the menu changes to Battery Boost Voltage

10.6 Battery Boost Voltage

BATTERY		BOOST
BST	=	58.4 V

To change the **BATTERY BOOST** settings, Press ↵

This allows the user to adjust the **BATTERY BOOST** voltage.
The boost settings can be changed as follows

10.6.1 Battery Boost Voltage Settings

Table 10-2A: Battery Setup - Battery Boost Voltage Firmware V10R5

12V System	24V System	36V System	48V System	
13.4	26.8	40.2	53.6	
13.8	27.6	41.4	55.2	
14	***28***	***42***	***56.0***	***Default – Lithium 2***
14.1	***28.2***	***42.3***	***56.4***	***Default - Lithium 1***
14.4	28.8	43.2	57.6	
14.6	***29.2***	***43.8***	***58.4***	***Default – Lead Acid***
14.9	29.8	44.7	59.6	
15.2	30.4	45.6	60.8	
15.5	31	46.5	62	

Table 10-3B: Battery Setup - Battery Boost Voltage Firmware V10R6

12V System	24V System	36V System	48V System	
13.7	27.4	41.1	54.8	***Default Lithium 1 & 2***
13.8	27.6	41.4	55.2	
14	***28***	***42***	***56.0***	
14.05	***28.1***	***42.15***	***56.2***	
14.1	***28.2***	***42.3***	***56.4***	
14.4	28.8	43.2	57.6	
14.6	***29.2***	***43.8***	***58.4***	***Default – Lead Acid***
15	30	45	60	
15.5	31	46.5	62	

"Please consult your battery supplier for the correct battery charging specifications"

To change the Menu press ↑, the menu changes to Battery Float Voltage

10.7 Battery Float Voltage

BATTERY		**Float**
FLOAT	**=**	**55.2 V**

To change the **BATTERY FLOAT VOLTAGE** settings, Press ↵

This allows the user to adjust the **BATTERY FLOAT** voltage.
The float settings can be changed as follows

10.7.1 Battery Float Voltage Settings

Table 10-3A: Battery Setup - Battery Float Voltage Firmware V10R5

12V System	24V System	36V System	48V System	
13.2	26.4	39.6	52.8	
13.4	26.8	40.2	53.6	
13.5	27	40.5	54.0	
13.6	**27.2**	**40.8**	**54.4**	***Default – Lithium 1***
13.8	***27.6***	***41.4***	***55.2***	***Default – Lead Acid***
14	***28***	***42***	***56.0***	***Default – Lithium 2***
14.2	28.4	42.6	56.8	

Table 10-3B: Battery Setup - Battery Float Voltage Firmware V10R6

12V System	24V System	36V System	48V System	
13.4	26.8	40.2	53.6	
13.5	27	40.5	54.0	
13.6	**27.2**	**40.8**	**54.4**	***Default – Lithium 1***
13.7	**27.4**	**41.1**	**54.8**	
13.8	***27.6***	***41.4***	***55.2***	***Default Lead Acid***
13.9	***27.8***	***41.7***	***55.6***	
14	***28***	***42***	***56.0***	***Default – Lithium 2***

"Please consult your battery supplier for the correct battery charging specifications"

To change the Menu press ↑, the menu changes to Battery Boost Time

10.8 Battery Boost Time

BATTERY	**BST**	**TIME**
BST	**FOR**	**2 HOURS**

To change the **BATTERY BOOST TIME** settings, Press ↵

This allows the user to select the **TIME duration** that the **BOOST VOLTAGE** will be held at before changing to FLOAT.

By Pressing ↵ you can select 1 min, 30min, 1, 2 or 3 hours.

"Please consult your battery supplier for the correct battery charging specifications"

To change the Menu press ↑, the menu changes to Battery Low Off At

10.9 Battery Low Voltage Shut Down

To change the **BATTERY LOW OFF AT** settings, Press ↵

BATTERY	**LOW**
OF AT	**44.0 V**

This selects at what **BATTERY LOW VOLTAGE** the inverter will shut down
"Also known as: low battery voltage cut-out"
This function prevents the inverter from draining the batteries completely.
When the DC voltage drops below a specified level, the inverter will stop functioning.
The system display will give a Low Battery Voltage message or Low Battery Voltage error.
This function is intended to protect both the batteries and the inverter's output.
This voltage is adjustable as below.
By Pressing ENTER you can select to change the Battery Low OFF At voltage.

Table 10-4: Battery Setup – Lead Acid Battery Low Voltage Shutdown

12V System	24V System	36V System	48 V System	
10	20	30	40	
10.5	21	31.5	42	
11	***22***	***33***	***44***	Default – Lead Acid
11.5	23	34.5	46	
12	24	36	48	
12.5	25.5	36.7	50	

Table 10-5; Battery Setup – Lithium Ion Battery Low Voltage Shutdown

12V System	24V System	36V System	48V System	
11.7	23.4	35.1	46.8	
11.9	23.8	35.7	47.6	
12.1	24.2	36.3	48.4	
12.3	***24.6***	***36.9***	***49.2***	Default – Lithium 1 & 2
12.5	25	37.5	50.0	
12.7	25.4	38.1	50.8	

To change the Menu press ↑, the menu changes to Force Bat Into

10.10 Force Charge

To change the **FORCAE BAT INTO** settings, Press ↵

FORCE	**BAT**	**INTO**
AUTO		**CHARGE**

It is possible to **FORCE** the charger to go into another charge mode on a temporary basis.
If the charger is in **FLOAT** but you require it to go back into **BOOST** then the next menu will allow this.

Pressing ↵ allows the charge to be changed from, **AUTO** to **BOOST** or **FLOAT**.

Pressing ↑ will give you 3 options to **SAVE** the changed data.

This will give you the options of saving the changes that have been made. Press ↵ at the correct **SAVE** menu.

EXIT AND SAVE SETUP MENU?	OR	**RESTORE FACTORY SETUP MENU?**	OR	**EXIT , DO NOT SAVE SETUP MENU?**

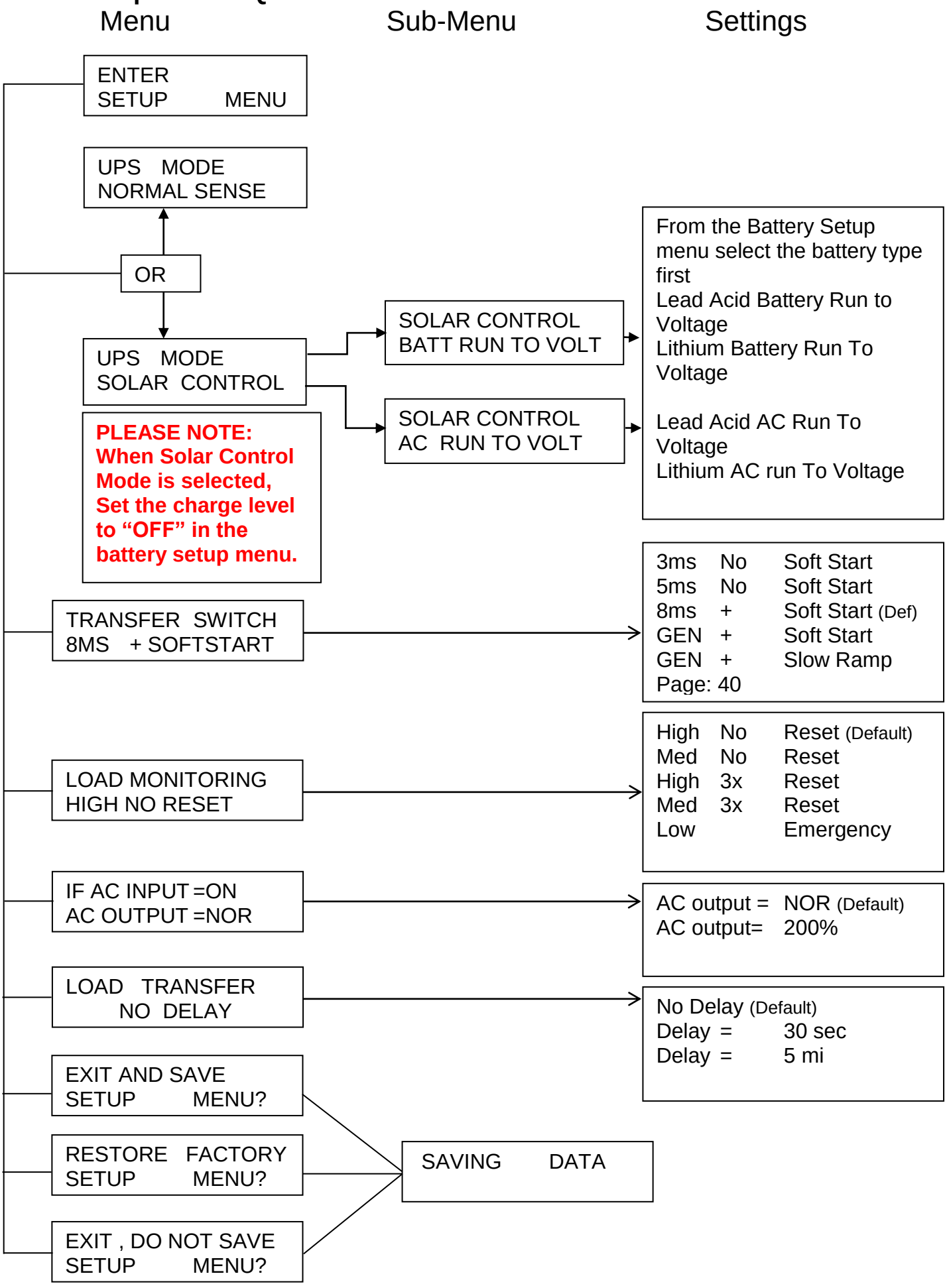
If the changes to the settings need to be **saved** Press **ENTER,**
When the enter button is pressed then the inverter will show:

SAVING DATA
PLEASE WAIT

If no entry is made for 1 minute the display will return to the main menu and the back light will turn off

11. SETUP MENU SETTINGS

11.1 Setup Menu - Quick Reference Guide



11.2 Setup Menu Settings

Press ↑ OR ↓ until the **ENTER SETUP MENU** appears

ENTER		
SETUP	MENU	?

Press ↵ to enter the **SETUP** menu.

To menu changes to Normal Sense

By Pressing ↵ you can select whether the inverter runs in NORMAL SENSE or SOLAR CONTROL mode

11.3 Normal Sense

UPS	MODE
NORMAL	SENSE

When to select Normal Sense?

UPS application – "The load is connected to the Grid most of the time**"**

- The grid "ESKOM" is the primary energy source and the system switches to inverter mode when disconnected from the grid eg: "load shedding".
- As soon the Grid is restored, the load re-connects to the GRID.
- The batteries will only charge when the Grid is present.

OR

Off-Grid application – "No Grid connection is available**"**

- The battery bank is the primary energy source and the inverter **"IS NOT"** connected to the grid.
- Renewable energy is used to charge the batteries.
- A generator can be connected to supply the system when needed.

If normal sense is required, press ↑, *the menu changes to* ***Transfer Switch Time, section 11.7***

If Solar Control Mode is required press ↵, the menu changes to **Solar Control Mode**

11.4 Solar Control Mode

UPS	MODE
SOLAR	CONTROL

SOLAR CONTROL MODE EXPLAINED

When to select Solar Control Mode?

- The batteries are the primary energy source and the inverter **"IS"** connected to the grid. **"Grid assisted solar power system"**
- The system uses renewable energy to charge the batteries.
- If the system is correctly sized the inverter will run mostly in inverter mode and will only connect to the grid when the batteries are discharged to a set level.
- The system will run from the batteries for as long as the batteries can be sustained.
- When the battery voltage reaches the set " Battery Run To Voltage", the inverter connects the load to the grid.
- When the battery reaches the set "AC Run To" voltage, the inverter transfers back to inverter mode.
- The inverter charger should be switched off in order for the battery bank to be effectively charged from the renewable energy source.

For Solar Control Mode the following setting must also be changed from the battery setup menu:

Refer to section 10.4. Charging Rate

Battery Charging Rate

TURNED OFF - 0% of charge rate

BATTERY	CHARGE
LEVEL (X)	0%

⚠ Please note: Do not connect a generator when operating in the solar control mode.

To change the Menu, press ↑, the menu changes to: Batt Run To

11.5 Battery Run To Voltage

SOLAR	**CONTROL**
BATT RUN TO	**46.0V**

"This setting only applies for Solar Control Mode"

This allows the user to set the level the battery discharges to before switching to mains power.

Press ↵ to change the Battery "Run To Voltage".
Battery Run To settings can be changed as follows:

Table 11-1:
Lead Acid Battery Run to Voltage settings

12V System	24V System	36V System	48V System	
10.5	21	31.5	42	
11	22	33	44	
11.5	***23***	***34.5***	***46***	***Default Lead Acid***
12	24	36	48	
12.5	25	37.5	50	

Table 11-2
Lithium Battery Run to Voltage settings

12V System	24V System	36V System	48V System	
12.6	25.2	37.8	50.4	
12.7	25.4	38.1	50.8	
12.8	***25.6***	***38.4***	***51.2***	Default Lithium 1 & 2
12.9	25.8	38.7	51.6	
13	26	39	52.0	

The battery low of at voltage in the "BATTERY SETUP MENU section 11.5 must be set as:
For a 48V Lead Acid Battery system : Battery low of at = Batt run to Voltage - 4V

For a 48V Lead Acid Battery system: If the Battery run to voltage is selected as 46V then:
Battery low of at = 46V - 4V = 42V

To change the Menu, press ↑, the menu changes to AC Run To

11.6 AC Run To Voltage

SOLAR	**CONTROL**
AC RUN TO	**54.0V**

"This setting only applies for Solar Control Mode"

This allows the user to set the level the solar regulator will
charge the battery to before the inverter switches back to battery power.

Press ↵ to change the AC Run To Voltage,
The AC Run To settings can be changed as follows:

AC Run to Settings
Table 11-3:
Lead Acid AC Run to Voltage settings

12v System	24V System	36V System	48 V System	
12	24	36.0	48	
12.5	25	37.5	50	
13	26	39	52	
13.5	***27***	***40.5***	***54***	***Default Lead Acid***
14	28	42	56	

Table 11-4:
Lithium AC Run to Voltage Settings

12V System	24V System	36V System	48V System	
13.4	26.8	40.2	53.5	
13.6	27.2	40.8	54.2	
13.7	27.4	41.1	54.8	
13.8	***27.6***	***41.4***	***55.2***	***Default Lithium 1 & 2***
14	28.0	42.0	56.2	

To change the Menu, press , the menu changes to Transfer Switch Time

11.7 Transfer Switch Time

To change the **Transfer Switch Time** settings press ↵.

TRANSFER SWITCH
5MS NO SOFT START

The inverter uses a transfer relay to switch between the Grid and Inverter Mode.
The transfer time can be changed. In most applications the default vale will suffice.
For applications where Servers, Desktop Computers, DSTV are connected to the inverter, change the transfer time to “5mS NO SOFTSTART”.

The Menu settings can be changed as follows

Table 11-5: System Setup - Transfer Switch time settings

3mS NO SOFTSTART	3 milli second transfer time and will restart load instantly - with mains fail prediction.
5mS NO SOFTSTART	5 milli second transfer time and will restart load instantly - with mains fail prediction.
8mS + SOFTSTART*	(Default) 8 milli second transfer time and will ramp the RMS voltage up in less than 1 second - with mains fail prediction. **Default Setting**
GEN + SOFTSTART	8 milli second transfer time and will ramp the RMS voltage up in less than 1 second - with **no** mains fail prediction.
GEN + SLOW RAMP	8 milli second transfer time and will ramp the RMS voltage up in 3 seconds - with **no** mains fail prediction.

To change the Menu, press ↑, the menu changes to Load Monitoring

11.8 Load Monitoring

To change the **Load Monitoring** settings press ↵.

LOAD	MONITORING
HIGH	NO RESET

The sensitivity of the **SHORT CIRCUIT TRIP** may be changed by 5 different settings.

The settings in Table 4 below will determine how the inverter reacts to a short circuit or overload.

- The RED LED lights up and the internal buzzer sounds.
- The inverter switches off if this overload or short circuit persists.
- You can restart the inverter after the overload or short circuit is removed.
- Pressing the Enter button clears the trip, buzzer and the RED Led switches off.
- To start the inverter Press and hold both the **Enter-key** and the **MENU UP-key** for up to 3 seconds.

The Menu settings can be changed as follows

Table 11-6: System Setup – Load monitoring settings

HIGH NO RESET*	High sensitivity to short circuits - will trip the inverter after a short delay time period. **Default Setting.**
MED NO RESET	Medium sensitivity to short circuits - will trip the inverter after a medium delay time period.
HIGH 3x RESET	High sensitivity to short circuits - will trip the inverter after a short delay time period, with soft start to prevent in rush current.
MED 3x RESET	Medium sensitivity to short circuits - will trip the inverter after a short delay time period, with soft start to prevent in rush current.
LOW EMERGENCY	Low sensitivity to short circuits - will trip the inverter after a long delay time period. **Only to be Used in Emergency Situations.**

To change the Menu press ↑, the menu changes to Inverter Output Power

11.9 Inverter Output Power

To change the **Inverter Output Power** settings press ↵.

IF AC INPUT	**= ON**
AC OUTPUT	**= NOR**

For UPS operation, either select AC Output = NOR or AC Output =200% (All 1-5kW Inverters)

For Off-Grid operation, select AC Output = NOR. (All 1-5kW Inverters)

For Grid Assisted operation, select AC Output = NOR. (All 1-5kW Inverters)

For Grid Assisted operation, select AC Output = NOR or AC Output = 200%. (5kW48V Inverters only)

11.9.1 AC Output = Normal

- When the Grid supply is available, the inverter allows the GRID to supply the load at the rated inverter power.
- When the Grid Supply is not available, the INVERTER supplies the load at the rated inverter power.
- A 5Kw Inverter can only supply 5kw of Power. If the load exceeds the rated inverter power, the inverter shuts down due to overload

11.9.2 AC Output = 200%

Selecting AC output = 200% for UPS operation (1-5kW Inverters)

- When the Grid supply is available, the inverter allows the GRID to supply a load up to 200% of the rated power inverter power.
- Eg: A 5Kw Inverter allows the GRID to supply 10kW of power to the load.
- If the grid fails and the load is exceeding 200% of the rated inverter power, the inverter will shut down due to overload

Selecting AC output = 200% for Grid Assisted operation (5kW48V Inverter Only)

When the Grid supply is available in “Solar Control Mode”, the inverter allows the Grid to supply a load up to 200% of the rated inverter power.

When the load is powered from the batteries “Inverter mode” and the load exceeds 100% of the rated inverter power, the inverter will re-connect the load to the GRID.
The load stays connected to the GRID.
The inverter switches back to Inverter Mode when the load is reduced to 80% of the rated inverter power.

To change the Menu, press ↑, the menu changes to Load Transfer

11.10 Load Transfer Time

LOAD TRANSFER NO DELAY

To change the **Load Transfer Time** settings press ↵.

This setting applies when the system is connected to the grid.

- When the grid connection is lost eg: Load shedding or any other unforeseen grid loss, the load will be connected to the battery powered inverter.
- When the grid is restored the inverter delays the connection from battery to the grid.
- Transfer time can be set as in Table 10-5.

The settings available are as follows:

Table 11-7: System Setup - Load Transfer Time

NO DELAY*	As soon as Grid power is available the Inverter will synchronise and switch from battery to Grid. **Default Setting**.
DELAY = 30Sec	30 seconds after Grid power is available the Inverter will synchronise and switch from battery to Grid.
DELAY = 5 Min	5 minutes after Grid power is available the Inverter will synchronise and switch from battery to Grid.

To change the menu Press ↑, the menu changes to the following

11.11 Save/Restore/ Do Not Save Menu

Pressing ↑ will give you 3 options to **SAVE** the changed data. The display will show:

EXIT AND SAVE SETUP MENU?	OR	RESTORE FACTORY SETUP MENU?	OR	EXIT , DO NOT SAVE SETUP MENU?

If the changes to the settings need to be **saved** Press **ENTER,**

When ↵ is pressed then the inverter will show:

SAVING DATA PLEASE WAIT

If no entry is made for 1 minute the display will return to the main menu and the back light will turn off.

12. LOGS

Press ↑ OR ↓ until the **ENTER LOG MENU** appears

ENTER LOG MENU ?

Press ↵ to enter the **LOG** menu.

12.1 Battery Voltages

Displays the max (Vm) and min (Vn) DC battery voltage.

Press ↑ to view the next log.

Battery Voltages
Vm: 39.6 Vn: 37.6

12.2 Battery Currents

I – Displays the Max Battery Discharge Current.

I + Displays the Max Battery Charge Current.

Press ↑ to view the next log.

Battery Currents
I – 25.3 I + 7.8

12.3 Grid Voltage

Displays the max (Vm) and min (Vn)Grid AC voltage.

Press ↑ to view the next log.

Grid Voltage
Vm: 245 Vn: 220

12.4 Grid Current

Displays the max (Im) and min (In) AC Load Current.

Press ↑ to view the next log.

Grid Currents
Im: 4.0 In: 3.5

12.5 UPS Voltages

Displays the max (Vm) and Min (Vn) UPS Voltage.

Press ↑ to view the next log.

UPS Voltages
Vm: 231 Vn:228

12.6 UPS Current

Displays the Inverter Max (Im) and Min (In) AC Load Current.

Press ↑ to view the next log.

UPS Currents
Im: 52.5 In:58.7

12.7 Thermal Log

Press ↑ to view the next log.

Thermal Log
24.4 deg/cel Max

12.8 Total Run Time

Press ↑ to view the next log.

Total Run Time
0D 0H 16M

12.9 Run Time On Battery

Press ↑ to view the next log.

Run Time on Batt
0D 0H 4M

12.10 Time on Battery

Press ↑ to view the next log.

Time on Batt (R)
0D 0H 4M

12.11 No of Overloads

Press ↑ to view the next log

No of Overloads
0 counts

12.12 No of Short Circuits

Displays the Short Circuit counts.

Press ↑ to view the next log.

No of Short Circ
0 counts

12.13 Forced Shutdown Counts

Displays the Forced Shutdown counts due to

Forced Shutdown
0 counts

12.14 Power Failure Counts

To change the **Inverter Output Power** settings press.

Press ↑ to view the next log

Power Failure (R)
4 counts

12.15 Reset a few logs

To change the **Inverter Output Power** settings press.

Press ↑ to view the next log.

Reset (R)
Recorded Logs?

12.16 Exit Recorded Log

To Exit the recorder log screen press ↵.

Exit
Recorded Log ?

12.17 Delete All Logs

Press ↑ OR ↓ until the **ENTER LOG MENU** appears

ENTER LOG
MENU ?

13. TROUBLESHOOTING

Symptom	Possible Cause	Remedy
Inverter not charging	The unit is inverting or not connected to the grid	Connect inverter input to AC Source
Inverter not charging	The unit is connected to the grid but is in a mode or stage that does not use the charger such as Solar Control mode	
Inverter not charging	The unit is connected to the grid but the charger has been turned off	Enable charging in the Battery setup menu.
Inverter not switching on	Batteries are discharged to a low level	Recharge the batteries
Inverter not switching on	Battery breaker turned off	Turn the breaker on
Inverter inverting all the time In UPS mode	Grid disconnected	
Inverter fan runs all the time	Charging above 50% of rated charge rate or the Load is above 60% of rated Inverter capacity	Switch off some loads
Inverter Inverting all the time	Solar Control mode, battery in limits	
Inverter not switching on	Fuse blown	Replace fuse

14. SPECICATIONS OF INVERTERS

The Specifications apply when the Inverter Setting is set for AC Output = Normal Section11.9.1

14.1 12 V Inverter Specifications

Model		1kW12V	2kW12V
Capacity	Watt	1000	2000
DC Input	Nominal Voltage	12 VDC	12 VDC
	Acceptable Voltage	10-15 VDC	10-15 VDC
	Maxi Input Amps	100 A	200 A
	Standby Power	15 W	25 W
AC Output	Voltage	230 VAC	
	Amps	5 A	10 A
	Voltage Regulation	< 3 % RMS for entire battery voltage range	
	Frequency	50Hz	
	Frequency Regulation	± 0.1Hz	
	Power Factor	1	
	Wave Form	Pure Sine Wave	
	Efficiency	90%	
	Hardware Protection	Circuit Breaker	
	Overload Protection	Programmable Overload levels and Auto Retry	
Charger	Float Voltage	Refer to Section 10.7	
	Boost Voltage	Refer to Section 10.6	
	Boost Time	Selectable 1, 2, 3 hours.	
	Maximum Current	40 A	80 A
	Generation Mode	Depending on the generator power available.	

14.2 24 V Inverter Specifications

Model		1kW24V	2kW24V	3kW24V	5kW24V
Capacity	Watt	1000	2000	3000	5000
DC Input	Nominal Voltage	24 VDC	24 VDC	24 VDC	24 VDC
	Acceptable Voltage	20-30 VDC	20-30 VDC	20-30 VDC	20-30 VDC
	Maxi Input Amps	50 A	100 A	150 A	250 A
	Standby Power	15 W	25 W	40 W	60 W
AC Output	Voltage	230 VAC			
	Amps	5 A	10 A	14 A	22 A
	Voltage Regulation	< 3 % RMS for entire battery voltage range			
	Frequency	50Hz			
	Frequency Regulation	± 0.1Hz			
	Power Factor	1			
	Wave Form	Pure Sine Wave			
	Efficiency	90%			
	Hardware Protection	Circuit Breaker			
	Overload Protection	Programmable Overload levels and Auto Retry			
Charger	Float Voltage	Refer to Section 10.7			
	Boost Voltage	Refer to Section 10.6			
	Boost Time	Selectable 1, 2, 3 hours			
	Maximum Current	20 A	40 A	60 A	100 A
	Generation Mode	Depending on the generator power available.			

14.3 36 V Inverter Specifications

Model		1kW36V	2kW36V	3kW36V	5kW36V
Capacity	Watt	1000	2000	3000	5000
DC Input	Nominal Voltage	36 VDC	36 VDC	36 VDC	36 VDC
	Acceptable Voltage Range	30-40 VDC	30-40 VDC	30-40 VDC	30-40 VDC
	Maxi Input Amps	33 A	66 A	100 A	166 A
	Standby Power	15 W	25 W	40 W	60 W
AC Output	Voltage	230 VAC			
	Amps	5 A	10 A	14 A	22 A
	Voltage Regulation	< 3 % RMS for entire battery voltage range			
	Frequency	50Hz			
	Frequency Regulation	± 0.1Hz			
	Power Factor	1			
	Wave Form	Pure Sine Wave			
	Efficiency	90%			
	Hardware Protection	Circuit Breaker			
	Overload Protection	Programmable Overload levels and Auto Retry			
Charger	Float Voltage	Refer to Section 10.7			
	Boost Voltage	Refer to Section 10.6			
	Boost Time	Selectable 1, 2, 3 hours			
	Maximum Current	15 A	30 A	40 A	70 A
	Generation Mode	Depending on the generator power available.			

14.4 48 V Inverter Specifications

Model		1kW48V	2kW48V	3kW48V	5kW48V
Capacity	Watt	1000	2000	3000	5000
DC Input	Nominal Voltage	48 VDC	48 VDC	48 VDC	48 VDC
	Acceptable Voltage Range	40-60 VDC	40-60 VDC	40-60 VDC	40-60 VDC
	Maxi Input Amps	25 A	50 A	75 A	125 A
	Standby Power	15 W	25 W	40 W	60 W
AC Output	Voltage	230 VAC			
	Amps	5 A	10 A	14 A	22 A
	Voltage Regulation	< 3 % RMS for entire battery voltage range			
	Frequency	50Hz			
	Frequency Regulation	± 0.1Hz			
	Power Factor	1			
	Wave Form	Pure Sine Wave			
	Efficiency	90%			
	Hardware Protection	Circuit Breaker			
	Overload Protection	Programmable Overload levels and Auto Retry			
Charger	Float Voltage	Refer to Section 10.7			
	Boost Voltage	Refer to Section 10.6			
	Boost Time	Selectable 5min, 1, 2, 3 hours			
	Maximum Current	10 A	20 A	30 A	50 A
	Generation Mode	Depending on the generator power available.			

15. DESTRIER ELECTRONICS LIMITED CARRY- IN WARRANTY

Destrier Electronics warrants this 1-5kW range of inverters against defects in workmanship and materials, fair wear and tear accepted, for a period of 3 (three) years from the date of delivery/collection and is based on a carry-in basis. Where the installation of the product makes it impractical to carry-in to our workshops, Destrier Electronics reserves the right to charge for travel time and kilometres travelled to and from the site where the product is installed.

During this warranty period, Destrier Electronics will, at its own discretion, repair or replace the defective product free of charge. This warranty will be considered void if the unit has suffered any physical damage or alteration, either internally or externally, and does not cover damages arising from improper use such as, but not exclusive to:

- Reverse of battery polarity.
- Inadequate or incorrect connection of the product and/or of its accessories.
- Mechanical shock or deformation.
- Contact with liquid or oxidation by condensation.
- Use in an inappropriate environment (dust, corrosive vapour, humidity, high temperature, biological infestation.)
- Breakage or damage due to lightning, surges, spikes or other electrical events.
- Connection terminals and screws destroyed or other damage such as overheating due to insufficient tightening of terminals.
- When considering any electronic breakage except due to lightning, reverse polarity, over-voltage, etc. the state of the internal control circuitry determines the warranty.

This warranty will not apply where the product has been misused, neglected, improperly installed, or repaired by anyone else than Destrier Electronics or one of its authorised Qualified Service Partners. In order to qualify for the warranty, the product must not be disassembled or modified. Repair or replacement are our sole remedies. Destrier Electronics shall not be liable for damages, whether direct, incidental, special, or consequential, even caused by negligence or fault. Destrier Electronics owns all parts removed from repaired products. Destrier Electronics uses new or re-conditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Destrier Electronics repairs or replaces a part of a product, its warranty term is not extended. Removal of serial nos. may void the warranty.

All remedies and the measure for damages are limited to the above. Destrier Electronics shall in no event be liable for consequential, incidental, contingent or special damages, even if having been advised of the probability of such damages. Any and all other warranties expressed or implied arising by law, course of dealing, course of performance, usage of trade or otherwise, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited in duration to a period of 3 (three) years from the date of purchase.

Life Support Policy:
As a general policy, Destrier Electronics does not recommend the use of any of its products in life support applications where failure or malfunction of the Destrier Electronics product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness.

Destrier Electronics does not recommend the use of any of its products in direct patient care. Destrier Electronics will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Destrier Electronics that the risks of injury or damage have been minimised, the customer assumes all such risks, and the Liability of Destrier Electronics is adequately protected under the circumstances.

Caution:
Our products are sensitive. While all care is taken by us to dispatch goods with adequate packaging, Destrier Electronics is not responsible for any damages caused to products after they have left our premises.

16. REGISTRATION OF MY MICROCARE PRODUCT

Product Serial Number: _____

Product Description: _____

Date Purchased _____

From Whom was the Inverter Purchased:

Company Name _____

Contact Person _____

Contact Number _____

E-mail Address _____

Installation Company Information:

Company Name _____

Contact Person _____

Contact Number _____

E-mail Address _____

Details of Product Owner

Name & Surname _____

Address _____

City & Province _____

Contact Number _____

E-mail Address _____

Date Installed _____

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