FARBER

FARBER PURE SINE WAVE UPS

750VA 1500VA

USER GUIDE

THETA SERIES

DELTA SERIES

Email : sales@farberpower.com
Website : www.farberpower.com

FARBER

Dear Customer,

At the very outset, allow us to congratulate you on your excellent choice of Home UPS. In a world of me-too products, you will find FARBER Pure Sine waveHome UPS, a generation ahead of the entire category. That's because our breakthrough 'chip embedded sine wave technology' delivers the same power as you get from your mains.

The distinguishing features of FARBER Pure Sine waveHome UPS are:

- SineWave Output suitable for PC
- DSP Based Intelligent Control Circuit
- DSP Based Smart Charger
- Smarter Overload Sense & Short Circuit Protection
- Easy to Service
- Battery State Monitoring
- ASIC Technology
- Great Power Saving
- Automatic Power Factor Correction
- Future Expandability possible

This manual has been specially created to give you a through understanding of your Home UPS and its optimum use. Do spare some time to read it carefully. In case you should need help at any time. please feel free to contact our dealer or mail us at Any suggestions, comments or grievances are welcome - after all, the ultimate 'Quality Manager' of any product is the customer. Your insights guide our innovations.

Once again, many thanks and best wishes.
FARBER Team

DELTA THETA

FARBER

Contents

DELTA THETA

OUR QUALITY POLICY

FARBER

To offer the best quality products and services conforming to National and International Quality Standards at competitive prices as per the committed delivery schedule.

Total customer satisfaction by meeting the customer's needs and wherever possible, exceeding the customer's expectations, through continuous improvement in the products, services and systems.

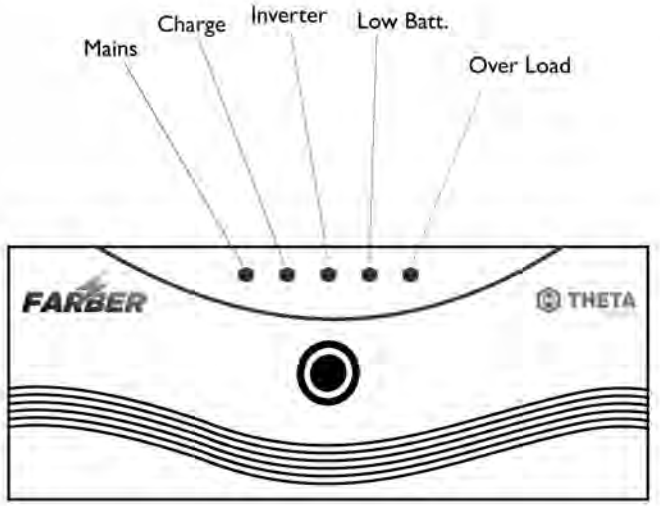
Human Resource Development and growth through continuous motivation and training.

Now let's begin the journey to explore various aspects of our FARBER Pure sine wave Home UPS. Welcome aboard. In its most basic form, a Home UPS transforms Direct Current (DC) to **Alternating Current (AC). The battery pack with the Home UPS acts as a reserve to ensure continuous** supply of power whenever mains supply from utility power is not available.

KNOWING YOUR INVERTER

FARBER

FRONT PANEL (LED MODELS)



On the front panel of the Home UPS there is ON/OFF switch and LED display for indications.

FARBER

Graphical Representation	Colour	State	Meaning
Mains On / Fuse Blown	White	Continuously On	Presence of Mains Supply
Mains On / Fuse Blown	White	Flashing with Beep Sound	Mains Fuse Blown
Home UPS	Blue	Continuously On	Home UPS Active
Battery Charging	Green	Blinking	Battery Charging
Battery Charging	Green	Continuous	Battery Charged
Low Battery	Red	Continuously On with Beep	Battery Low
Over Load / Short Circuit	Red		Short Circuit
Over Load / Short Circuit	Red	Blinking with Beep	Overload

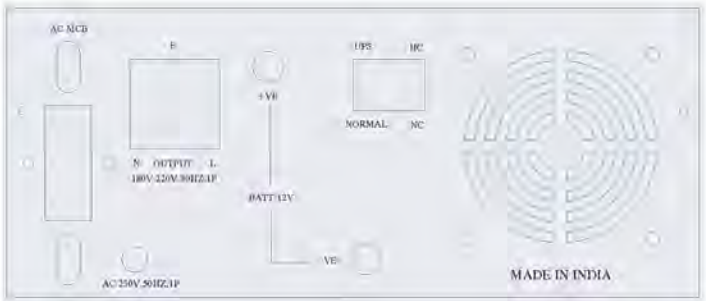
FRONT PANEL SWITCH OPERATION

Power Switch : Press for a second to power ON or OFF the Home UPS,

Charging : Press for a second to change charging as Fast or Normal of the batteries via Home UPS.

Mode : Press for second to change mode as UPS or Normal (Inverter) of Home UPS.

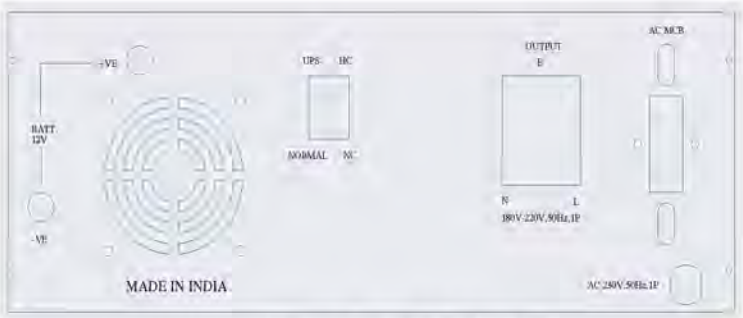
Back Panel



SYSTEM CAPACITY 750VA

DELTA SERIES THETA SERIES

FARBER



SYSTEM CAPACITY 1500VA

Sine Wave Home UPS has two battery wires coming out from the rear side, a MCB, An output socket, and a Power Cord to connect with mains supply.

Battery wires are red and black in color, the red color wire has to be connected to the POSITIVE TERMINAL of the battery and black one to the NEGATIVE TERMINAL. Two selector slide switches for UPS/NORMAL and HC/NC (Only for LED Models).

Caution: Do not reverse the battery connections, as it will blow the battery fuse. A power cord has been provided to connect the Home UPS to incoming AC mains. Ensure that incoming phase (or Line) is connected to 'L' (Red), neutral is connected to 'N' (Black) and earth is connected to 'E' (Green). Output of Home UPS is connected through OUTPUT socket of the Home UPS.

DELTA SERIES THETA SERIES

SAFETY INSTRUCTION

FARBER

Before proceeding further kindly go through the safety instructions carefully.

General Precautions:

- Before using the Farber Pure sine Wave Home UPS read all instructions and caution markings on the Home UPS, the batteries & all appropriate sections of this instruction manual.
- Do not expose Farber Pure sine Wave Home UPS to any type of chemicals. The Farber Pure sine Wave Home UPS is designed for interior only.
- Do not disassemble the Farber Pure sine Wave Home UPS; take it to a qualified Farber Engineering Service Center when service or repair is required. Opening by unqualified personnel can lead to electrical shock or fire hazard.
- To reduce risk of electric shock, disconnect all wiring before cleaning.
- **Warning:** Avoid exposing the Home UPS or batteries to any type of explosive gases (in the vicinity, as batteries generate explosive gases during normal operation). Provide ventilation to outdoors from the battery compartments. The battery enclosures should be designed to prevent accumulation and concentration by hydrogen gas in "pockets" at the top of the compartment. Vent the battery compartment from the highest point. A sloped lid can also be used to direct the flow to the vent opening location. To reduce the risk of the battery explosion, follow all the instructions of battery supplier or any equipment you intend to use in the vicinity of batteries.
- Use the correct tools to make AC/DC wiring connections.
- Do not install this Farber Pure sine Wave HOME UPS on or near flammable materials (plywood, chemicals, gas online etc.)

SAFETY INSTRUCTION

FARBER

CAUTION :

Personal Precautions :

- Someone should be within the range of your voice to come to your aid when you work near batteries.
- Have plenty of fresh water and soap nearby in the event that battery acid contact skin, clothing or eyes.
- Wear complete eye protection and clothing protection.
- Avoid touching eyes while working near batteries. Wash your hands when done.
- If battery acid come in contact with skin or clothing, wash immediately with soap and water. If acid enters eyes immediately flood eyes with running cool water for at least 15 minutes and get medical attention immediately.
- Baking soda neutralizes battery electrolyte. Keep a supply in the battery area handy.
- NEVER smoke or allow spark or a flame in the vicinity of the battery.
- Be extra cautions when working with metal tools on and around batteries. It could short-circuit the batteries or other electrical parts, producing a spark that could cause an explosion.
- Remove personal metal items such as rings, bracelets, necklace, and watches when working with the battery. Battery can produce a short-circuit current high enough to cause severe burns.
- Never attempt to charge a frozen battery.
- Before touching the battery terminal makes sure that the Home UPS front switch is OFF and AC Mains to the Home UPS is also OFF.
- If it is necessary to remove any battery, always remove the grounded terminal from the battery first. Make sure all the accessories are off, so as not to cause arcing.
- Be sure that the area around the battery is well ventilated.
- Clean battery terminals. Be careful not to allow corrosion to come in contact with eyes.
- Study all battery manufacturer's specific precautions and recommended rates of charge.
- Add only distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without caps, carefully follow manufacturer's recharging instructions.

CHARGING MODE

FARBER

Five Charging Mode

Bulk : Batteries are charged at maximum allowed continuous constant charging current at constant voltage for speedy charging battery up to 13.6V (For a 12V Battery).

Boost : The charger checks the charging current when the battery voltage reaches 13.6V for 12V batteries. The boost mode of the charger will be activated, which will boost the battery up to 20% more than its rated voltage (14.4V for 12V batteries) and charging current reduce to 50% of bulk charging rate (i.e. 4 to 5AMP).

Taper : When the voltage level of battery is 20% more than its rated voltage, the taper mode of the charger will be activated, which will keep the charging current about 4AMP to achieve the specific gravity of electrolyte for fully charged battery.

Float : In float stage, the charger keeps the charging voltage current level at its trickle charging set point maximum 13.8V (For a 12V Battery) with minimum charging current of 1.0Amp.

Pulse (Reset) : To maintain the float level, the charger resets to zero current at 13.6V (For a 12V Battery) for sometime and starts again with pulse charging for <1AMP current at the same voltage. This keeps the battery in full charge condition even when not in use.

Special Notice :

- The Home UPS charger is for use with nominal battery supply voltage of 12V DC.
- No AC or DC disconnects are provided as an integral part of this Home UPS. Both AC and DC disconnects must be provided as part of system installation.
- No over current protection for the battery supply is provided as an integral part of this Home UPS. Over current protection for the battery cables must be provided as part of the system installation.
- No over current protection for the AC output wiring is provided as an integral part of this Home UPS. Over current protection for the AC output wiring must be provided as part of the system installation.
- **Grounding Instructions :** This Home UPS must be connected to a grounded, permanent wiring system.
- Never disconnect the battery cables while Home UPS is working.
- Company recommends you to have point to point wiring of the Home UPS.

INVERTER FEATURES

FARBER

DSP based Sine Wave Output :

Farber Pure sine Wave Home UPS has a DSP based circuit that increases the efficiency and accuracy of the Home UPS .This technology makes possible a high level of internal Home UPS management and generation of Sine Wave Output.

Auto Reset

Farber Pure sine Wave Home UPS has auto-reset function in case of Overload & Low Battery. It will reset itself automatically and will make 6 attempts for Overload and 4 attempts for low battery. Otherwise it will shut off and you will have to reset the Home UPS manually by turning ON/OFF switch on its front panel.

Protection Circuit

Farber Pure sine Wave Home UPS is protected from low battery voltage and over current conditions. When the Home UPS sense one of these situations, it will protect itself by disconnecting from the load, and will signal an error condition by displaying along with the buzzer.

State-of-the-art DSP based Technology

The technology used in Farber Pure sine Wave Home UPS is DSP based technology that uses **Auto Sense Intelligent Control** (ASIC). ASIC technology gives maximum power and backup time. DSP monitors the output level & battery voltage and also adjust the amplitude & wave shape of the sine wave according to that. The DSP also corrects the Power Factor while the battery is in charging mode.

Automatic Low Battery Cutout

The Farber Pure sine Wave Home UPS protects your batteries from damage caused by over-discharging, by automatically shutting itself off when battery voltage falls to a preset level. This feature is called the low battery cutout. The Farber Pure sine Wave Home UPS comes from the factory with a LBCO voltage set at 10.8±0.2V per battery.

Automatic High Battery Cutout

When battery voltage rises above 14.4 volts per battery, the charger stops its normal charging and comes to the trickle mode so as to take care of the self-discharging of the battery. The charger automatically resumes operation when battery voltage drops below 13.7 volts per battery.

INVERTER FEATURES

FARBER

Overload Current Cutout

Farber Pure Sine Wave Home UPS is protected from overload current conditions. When the load being run demands more current then the Home UPS will shutdown automatically along with the display indication.

Battery Type Optimisation

Farber Pure Sine Wave Home UPS is designed to prevent damage and extent life of your batteries by regulating the charging voltage and duration. To do this, the Home UPS must be configured for the type of batteries in the system.

Charge Rate Regulation

Batteries can overheat if the charge rate is too high. With High and Low charging Mode selection and ASIC technology Sinergy Sine Wave Home UPS protects your batteries by limiting the charging current, so that the regulation can adjust the charging current to the optimum level. There are two option for charging current as 14±1A (Fast / High Charging mode) and 10±1A (Normal Charging mode)

Note : The Fast / Normal charging mode can be selected from the switch on back panel (For LED models)

Volts AC Dropout

Farber Pure Sine Wave Home UPS monitors the voltage of the AC power passing through to the charge and AC loads. When AC voltage falls below the preset level, the Home UPS automatically transfers from AC to DC power (i.e. it comes to Back Up mode). This dropout voltage is factory preset at 100±15 V (for NORMAL mode) and 180±5V (for UPS mode). So when the AC voltage drops to this level, the Home UPS automatically transfers from AC to DC power.

It will revert to mains with a hysteresis of 20V

NOTE: The NORMAL / UPS mode can be selected from the switch on back panel. (For LED Models)

Reduces Power Consumption of Home UPS

In Farber Pure Sine Wave Home UPS the circuitry design reduces power intake of the Home UPS when battery is in trickle charge mode and also minimizes the evaporation of battery electrolyte.

GETTING STARTED

FARBER

MOUNTING

Mount Home UPS Securely in a clean, dry and ventilated area.

DC Cabling :

- Ensure that the ON/OFF Switch on the front panel of the Home UPS is in the OFF Position before you begin the installation.
- Connect the positive terminal of the battery to the positive (Red) wire of the Home UPS, it is advised to not to use any other extra cable for batteries other than those supplied by the company.
- Connect the negative terminal of the battery bank to the negative (Black) wire of Home UPS.

AC Cabling :

- Plug in the power cord to the mains sockets on the wall. The cabling should have PROPER EARTHING.

DC Over Current Protection :

Fuses and disconnects must be sized to protects the wiring in the system. The fuse is required to blow before the wire reaches its maximum current carrying capacity.

AC and DC wiring separation

Do not mix AC and DC wiring in the same conduit. A separate conduit should be used for each, where DC wiring must cross AC and vice-versa. Make the wires at the crossing point 90 degree to one another.

WARM - UP

- Secure all the wiring with ties or other non-conductive fasteners to prevent damage. Check to see that the Home UPS front switch is in the off position, then reconnect to AC power source.
- Turns the Home UPS to the ON position and check Home UPS operations.

FARBER

INSTALLING YOUR Home UPS

Environment

Home UPS are sophisticated devices and must be treated accordingly. Keep the Home UPS in non-condensing, well-ventilated environment, ensuring that there is no ingress of moisture or foreign material.

Location

Home UPS should be kept as close as possible to the battery in order to keep the battery cables short, however do not locate the Home UPS in the same compartment as non-sealed batteries. Batteries generate gases, which are very corrosive to electronic equipment and every thing else.

Connect the power cord of AC input to the wall output socket, AC input supply should remain ON once the Home UPS is installed.

Connect the load to output socket of the Home UPS.

Important Precaution

The output side of the Home UPS AC wiring should never be connected to a generator or incoming utility power. This condition is far worse than a short circuit. If the unit survives this condition, it will shutdown until correction is made.

OPERATION

Once the AC and DC wiring have been installed and connected, take a moment to re-examine all the connections and make sure they are secured and in the proper terminals.

Check to see that the Home UPS is turned off, and then apply battery (DC) power to it. Ensure that all wiring has been installed properly. **It is recommended that wiring should be point to point.** Next turn on the battery bank DC disconnects or connect the proper fuse in line to the battery to complete the battery circuit.

Put On/OFF switch to the ON position. The Home UPS should run a load without AC input (battery only). Place a load on the Home UPS and make sure it works.

FARBER

To charge your batteries connect AC power to the Home UPS by plugging in the AC power and turning on the MAIN line. This shows that charger is working properly. Any AC load powered by the Home UPS should also work at this point since a portion of the AC power is passed though the Home UPS to power the load. The delay before connecting is provided within acceptable frequency and voltage limits.

Disconnect the AC power. The Home UPS should transfer to Back-up mode immediately. This will be indicated by a clicking sound as the internal transfer relay changes position. The Home UPS will begin to take power from the batteries and use it to power the load, and the load continues to operate uninterrupted.

The above steps will complete a functional test of the Home UPS. If all areas pass, the Home UPS is ready for use. If anything fails, figure out why before proceeding.

Nomenclatures

Here is a description of terms which you may not be familiar with:

Electrolyte: Typically a mixture of water and sulphuric acid, it is commonly referred to as battery acid.

Plates: Originally made of lead, now fabricated from lead oxide. Plates connect to the battery terminals and provide a structure for the chemicals that create current. There are several plates in each cell; each insulated from the other by separators.

Sulphating: As the battery discharges, its places get covered with lead sulphate. During recharging the lead surface leaves the plates and recombines with electrolyte. If the lead sulphate remains on the plates for an extended period of time (over two months), it hardens, and recharging will not remove it. This reduces the effective plate area and the battery's capacity.

Stratification: Over time a battery's electrolyte (liquid) tends to separate. The electrolyte at the top of the battery becomes watery while at the bottom it becomes more acidic. This effect is corrosive to the plates.

Deep Discharging: A deep discharge occurs when a battery is discharged to less than 20% of its capacity (80% depth of discharge).

FARBER

There are two principal type of batteries; starting and deep cycle. There are several different types of battery constitutions including liquid lead acid, nickel iron, nickel cadmium, alkaline, and maintenance free. Batteries are sealed or vented.

Starting Batteries

Starting batteries are designed for high cranking power but not deep cycling, Do not use them with your Home UPS. They do not affect the Home UPS, but they will simply not last long in a deep cycle application. They use lot of thin plates to maximize the surface area of the battery. This allows very high starting current but less plates wrap when the battery is cycled.

Deep Cycle Batteries

Deep Cycle batteries are best suited for use with Home UPS. They are designed to have the majority of their capacity used before recharge. Available in many sizes and types, the most common type is the non-sealed. Sealed types have battery caps. The cap should be removed at least once a month to check the level of electrolyte. When a cell is low, only distilled water should be added. The electrolyte level should be checked and topped up if needed, after recharging.

ENVIRONMENT REQUIREMENTS

For long life and good performance, batteries need to be located in protected enclosures insulated from extreme temperature.

Location

Battery should be located in an accessible location with access to the battery caps and terminals. At least six inches of clearance above is recommended. They must be located as close as possible to the Home UPS.

FARBER

Enclosures

Batteries must be kept inside a ventilated enclosure. The enclosure should be ventilated to the outdoors from the highest point to prevent accumulation of hydrogen gases released in the charging process. An air intake should also be provided at a low point in the enclosure, to allow air to enter the enclosure to promote good ventilation . For most systems, a one-inch diameter vent pipe from the top of the enclosure is adequate to prevent accumulation of hydrogen.

BATTERY BANK SIZING

Batteries are the Home UPS's fuel tank. Higher the Amp-hour capacity, longer the backup time before recharging. An undersized battery bank results in reduced battery life and disappointing system performance.

Batteries should not be discharged to more than 50% of their capacity on a regular basis. Under extreme condition cycling to a discharge level of 80% is acceptable. Totally discharging a battery may result in permanent damage and reduce its life.

TROUBLESHOOTING

FARBER

Symptoms	Rectification
Main power is coming. Still Home UPS show Mains output off	Reduce/disconnect the load and Reset the MCB given at rear side of Home UPS
Back-up mode but no power condition	*Check LED indicator if low battery is present.Remove all loads and switch the power switch ON/OFF. Allow the battery to charge when the mains is resumed,before running the Home UPS on battery again. *Check LED indicator if overload/sort circuit condition is present.Reduce load and switch the power switch ON/OFF.
Home UPS does not operate & no LED indication	Check the battery connections and the mains connection
Home UPS trips frequently at back-up mode	Reduce the load and reset the Home UPS

Symptoms	Problems	Remedy
There is no Output power	Low battery	Check condition of batteries and recharge
	Losse or corroded battery connection	Check and clean all connection
	Losse AC output connection	Check all AC output connection
Home UPS shut down after 20 sec no display at all	Output of Home UPS is wired back to its own input	Check for proper AC input and output and output wiring
Low surege power	Weak batteries,batteries cable too Long	refer to cable and battery recommenfdation in this manual
Unit overheats	Unit is hot	Reduce load and let the Unit cool down

DELTA THETA

SPECIFICATIONS

FARBER

Parameters	Specification	
Capacity	750VA	1500VA
Output		
Phase	Single Phase	
Voltage	220V ± 5V (at no load)	
	200V ± 10% (at full load)	
Frequency	50HZ ± 0.5HZ	
Peak Efficiency	> 73%	
Total Harmonic Distortion	< 3% (At Linear Load)	
BATTERY		
Battery voltage	12V	
Type	65AH to 200AH	
INPUT		
Phase	Single Phase	
	Normal Mode	UPS Mode
Mains input Voltage range	100V to 280V	180V to 265V
Input Frequency	45 to 55Hz	
Mains low cut	100V ±15V	180V ± 5V
Main low-cut recovery	110V ± 10V	190V ± 5V
Main High cut	280V ± 15V	265V ± 5V
Mains high cut recovery	270V ± 10V	255V ± 5V
BATTERY CHARGER		
Normal charging Current	10A	12A
Fast charging Current	13.5A	17A
Boost charging Voltage	14.5V ± 0.2V	
Float charging Voltage	13.8V ± 0.2V	
Charging Technique	ASIC TECHNOLOGY	
CHANGE OVER TIME		
Mains to inverter	50msec	
Mains to UPS	12msec	
PROTECTIONS		
Over load protection	> 100% ± 3% (With Auto Reset Function)	
Battery Voltage low Protectio	10.4V ± 0.2V	10.8V ± 0.2V
short Circuit Protecion	MCB trip	
Thermal Protection	> 90° C	

DELTA THETA