PREMIUS
1-10 kVA

User and Installation Manual

Table of Contents

1.1. Safety Instructions

1.1.1. The EMI filter in the UPS generates small leakage in current. It is necessary to double check that the ground wire of the UPS is properly grounded before connecting the UPS to the AC mains.

1.1.2. To ensure safety in all applications where a UPS is hard wired to the electrical supply, ensure that the system is installed by a qualified electrical contractor.

1.1.3. The UPS has its own internal energy source (battery). The battery is switched on when AC power is unavailable, the output terminals could have voltage.

1.1.4. Make sure that the AC utility outlet is correctly grounded.

1.1.5. Do not open the case as there are no serviceable parts inside. Opening the case voids the warranty.

1.1.6. Do not try to repair the unit yourself; as it will void the warranty. Contact your local supplier.

1.1.7. Please make sure that the input voltage of the UPS matches the supply voltage.

1.1.8. Use a certified input power cable with the correct plugs and sockets for the appropriate system voltage.

1.1.9. To prevent any overheating of the UPS keep all ventilation openings free from obstruction, and do not store things on top of the UPS. Keep the UPS at a safe distance from the wall (30 cms).

1.1.10. Ensure that the UPS is installed within the proper temperature range. (0-40°C and 0-90% non-condensing humidity).

1.1.11. Do not install the UPS in direct sunlight. Your warranty will be void if the batteries fail.

1.1.12. Install the UPS indoors as it is not designed for outdoor installation.

1.1.13. Dusty, corrosive and salty environment can damage any UPS.

1.1.14. Install the UPS away from objects that give off excessive heat and areas that are excessively wet.

1.1.15. If liquids are spilt onto the UPS or foreign objects dropped into the unit the warranty will be null and void.

1.1.16. The battery will discharge naturally if the system is unused for a long time.

1.1.17. The UPS should be recharged every 2-3 months if unused. If this is not done then the warranty will be null and void. When installed and being used, the batteries will be automatically recharged and in top condition.

1.1.18. This UPS supports electronic equipment in office, telecommunication, process-control, medical, and security applications. Non-authorized technicians are not allowed to install the UPS in the following areas:

a) Medical equipment directly related to human life
b) Elevators, subway systems, or any other equipment related to human safety
c) Public systems or critical computer systems

1.1.19. Do not install the UPS in an environment with sparks, smoke or hazardous gases.

1.1.20. Make sure the UPS is completely turned off when transporting it. It might cause electrical shock if the output is not cut completely.

1.1.21. The UPS includes a Maintenance Bypass Switch. Please follow the procedures strictly when switching the Maintenance Bypass Switch, On or Off.

1.1.22. The UPS offers a CVCF (Constant Voltage Constant Frequency) setting function.
a) For correct setting and wiring please contact your local utility agent
a) Do not set it yourself or your warranty will be void

1.1.23. This UPS has been designed and constructed to protect your assets from the wide range of power aberrations experienced on utility power lines today. It is your insurance for a reliable, clean and stable voltage supply. It is worth taking care to install the system correctly and to have it maintained correctly by your local dealer.

1.1.24. SAVE THESE INSTRUCTIONS. This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries. Read all safety, installation and operating instructions before operating the system.

1.1.25. The UPS is intended for installation in a controlled environment.

For PERMANENTLY CONNECTED EQUIPMENT, a readily accessible disconnect device shall be incorporated in the building installation wiring.

1.1.26. Install the UPS such that it is not likely to be in contact with people.

1.1.27. CAUTION - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

1.1.28. CAUTION - Do not dispose batteries in a fire. The batteries may explode.

1.1.29. To avoid electrical shock, turn off the unit and unplug it from the AC power source before and after servicing the battery.

1.1.30. CAUTION – Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

1.1.31. CAUTION – Do not install or replace batteries located in service access area.

The User Manual includes the following instructions for battery replacement and disposal:

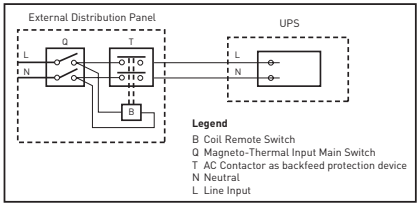
a) Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
b) When replacing batteries, replace with the same type and number of batteries or battery packs.
c) CAUTION: A battery can present a risk of electrical shock and high short-circuit current. Contact with any part of a grounded battery can result in electrical shock.

The following precautions should be observed when working on batteries:

a) Remove watches, rings, or other metal objects.
b) Use tools with insulated handles.
c) Wear rubber gloves and boots.
d) Do not lay tools or metal parts on top of batteries.
e) Disconnect charging source and load prior to installing or maintaining the battery.
f) Remove battery grounds during installation and maintenance to reduce likelihood of shock. Remove the connection from ground if any part of the battery is determined to be grounded.
g) Do not disconnect battery connectors under load.
h) Battery replacement and external battery cabinet installation shall be handled by SERVICE PERSONNEL only.
i) Connection to external battery shall be installed by SERVICE PERSONNEL only.

1.1.32. When UPS is without backfeed relay board, backfeed protection device (e.g., Magnetic Contactor) must be provided external to the equipment in final installation.

There is no standard backfeed protection inside, please isolate the UPS before working according to this circuit. The isolation device must be provided with suitable electrical ratings which are compatible with the UPS.



Before working on this circuit
- Isolate Uninterruptible Power System (UPS)
- Then check for Hazardous Voltage between all terminals including the protective earth.

Risk of Voltage Backfeed

1.2. Battery Care

If the UPS is unused for an extended period of time it must be stored in a moderate climate. The batteries should be charged for twelve hours every three months by plugging the UPS power cord into a wall receptacle and turning on the input breaker on the front panel. Repeat this procedure every two months under a high-temperature environment.

1.2.1 Disposal

Ref. standard: ISO 14001:2015

After unpacking the UPS and battery, the discarded packaging materials like polythene paper, polyethylene, carton box, nylon belt, nylon thread shall be collected and disposed through authorized recycler.

Batteries when found faulty / damaged, must be handed over to identified authorized recycler or to NUMERIC UPS, where it is disposed properly.

Battery contains harmful metals and chemicals such as nickel cadmium, alkaline, mercury, nickel metal hydride and lead acid, which contaminate if, they are not disposed properly.

When batteries containing cadmium is used in fills, they will eventually dissolve and release the toxic substance that can seep in to water supplies, posing serious health hazards for the population/society. Hence recycling of that batteries will prevent pollution and will also save resources.

In order to prevent any damage to the environment and harm to people, this product should be disposed of separately from other household waste by taking it to an authorized recycler.

2. Product Introduction

2.1. General Characteristics

2.1.1. True online architecture continuously supplies your critical device with stable, regulated, transient-free, pure-sine-wave AC power.

2.1.2. High efficiency PWM sine-wave topology yields excellent overall performance. The high crest factor of the inverter handles all high-inrush current loads without a need to upgrade the power rating.

2.1.3. The multi-functional LCD/LED panel displays various states of the UPS. The LED display shows the UPS working status, utility status and abnormal status. The LCD display shows input/output voltage, frequency, load status, inner cabinet temperature and abnormal phenomena.

2.1.4. The unit automatically switches to Bypass mode after 5 minutes to protect it from overheating, if loading is at 111~130% of rating. In case of overloading at 131~150% of rating, it switches to Bypass mode after 1 minute. In case of overloading at 151% of rating, it switches to Bypass mode immediately. It will automatically switch back to Inverter mode once the overload condition ceases for 5-10 kVA.

2.1.5. The UPS will automatically switch to Bypass mode in 30 seconds if loading is at 105% of rated capacity. It will automatically switch back to Inverter mode once the overload condition ceases for 1-3 kVA.

2.1.6. The UPS cuts the output automatically when the output gets short-circuited. The short-circuit situation needs to be removed manually.

2.1.7. When the unit gets overheated, the internal thermal switch detects the heat and switches to Bypass mode and vice versa.

2.1.8. The fully digitalized control circuit built into the UPS allows the upgrading of its functionality as well as reaching a high-level of protection of the UPS. Powerful communication capability enhances its ability for remote control and monitoring.

2.1.9. Maintenance-free, sealed batteries minimize after-sales service.

2.1.10. The maintenance Bypass switch provides an easy and safe troubleshooting or maintenance function when the utility is normal.

2.1.11. The unit provides four different working modes (Normal, ECO, CF50 and CF60) to be used in a wide variety of applications.

2.1.12. The DC-start function ensures the UPS starts up even in power outage.

2.1.13. A revolutionary battery management circuit analyzes the battery discharging status to adjust its cut-off point and extend the battery life.

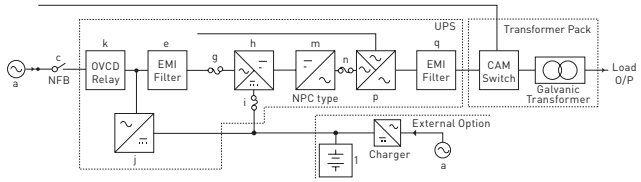
2.1.14. The intelligent, temperature-controlled fan not only extends the life of the fan but also reduces the annoying noise of sudden fan spin. This helps keep your office quiet and comfortable.

2.1.15. When the UPS malfunctions you can read the possible reason from the LCD screen directly, which reduces unnecessary repairs.

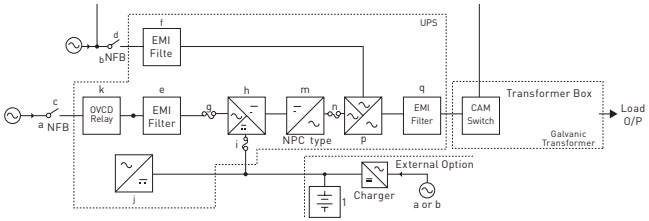
2.1.16. When the UPS is operated in CF50 or CF60 mode; the recommended load connected shall be 75% of rated capacity if the input voltage is 160-300 VAC, 50% of rated capacity if the input voltage is 140-160 VAC and 25% of rated capacity if the input voltage is 110-140 VAC.

2.1.17. Our selectable Bypass input voltage tolerance (sensitivity low/high) prevents under- or over-voltage being supplied to the loads in Bypass mode. The selectable voltage ranges are (i) Bypass Sensitivity Low: many selectable output voltages ±15% and (ii) Bypass Sensitivity High: many selectable output voltages ±10%. For example, if the output voltage setting is 230 V, the Bypass Sensitivity Low range is 230 V ±15%, i.e., 195.5-264.5 VAC

2.1.18. Single Input System Block for 5-10 kVA



2.1.19. Dual Input System Block (only for 5-10 kVA FM)



a) **UPS Utility Input:** To provide the AC source to the UPS rectifier circuit and charger

b) **UPS Bypass Input:** To provide the AC source to the UPS Bypass Input and Maintenance Bypass loop

c) **UPS Utility Input Breaker:** To protect the UPS Rectifier circuit from over-current

d) **UPS Bypass Input Breaker:** To protect the UPS Bypass circuit from over-current

e) **EMI Filter on UPS Utility Input:** To eliminate the magnetic interference from AC Source or UPS Utility Input

f) **EMI Filter on UPS Bypass Input:** To eliminate the magnetic interference from AC Source or UPS Bypass Input

g) **Fuse for UPS Utility Input:** To provide over-current protection for UPS Rectifier Circuit

h) **Rectifier and Booster:** When utility is normal, batteries will convert the AC to DC and correct input power factor. When utility is abnormal, they will be boosted to provide the DC voltage to the Inverter

i) **Input fuse for Battery:** To protect batteries when DC-Booster is out of order

j) **Charger:** The battery charging device

k) **OVCD Relay for UPS Utility input:** To provide over-voltage protection for UPS Rectifier Circuit

l) **External Battery Bank:** To provide longer backup time by adding additional Battery bank

m) **Inverter Generator:** To convert the DC voltage to AC voltage

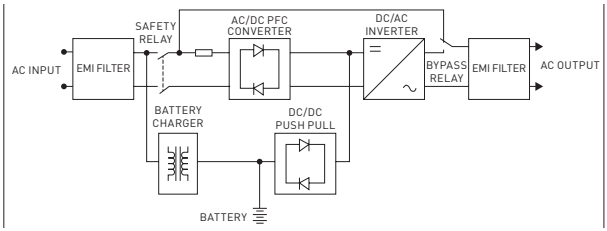
n) **UPS Inverter Output Fuse:** When the UPS is overloaded, the fuse will be opened

o) **Inverter Output Switch:** When the UPS is overloaded or abnormal, or the UPS is working on ECO mode or if EPO (Emergency Power Off) is activated, the Switch will be opened

p) **Auto Bypass Loop:** When the UPS is overloaded or abnormal, the UPS will switch the UPS to bypass output automatically from inverter output

q) **UPS Output EMI Filter:** To eliminate the magnetic interference from the UPS Output and avoid the interference caused by the output load and the UPS

2.1.20 Single Input System Block for 1-3 kVA



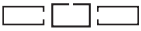
The above figure illustrates the True On-Line Double Conversion architecture of the UPS system. The major modules consist of:

1) An AC-to-DC power converter (rectifier) with PFC control circuit
2) A DC-to-AC high frequency inverter
3) An intelligent battery charger
4) A bank of stationary, maintenance-free batteries (external)
5) A DC-to-DC push/pull converter control circuit
6) A static bypass loop
7) Input and output EMI filters

The table below provides a summary of the UPS operating modes under various utility AC power source and battery conditions.

Utility Condition	UPS Operating Mode	LEDs
Normal	After the input power is switched on, the LEDs on the panel will blink and fans will start in approximately 5 seconds. Press the ON button for 1-5 seconds. The UPS starts up normally and Load LEDs remain lit.	~ 1 2
Abnormal (under or over voltage or absent)	Rectifier and charger will not work. Battery discharges via DC-DC boost circuit and supplies Inverter. Loads continue to receive supply from Inverter. Alarm buzzer beeps. UPS now in battery mode.	~ LED off, LED illuminated
Utility abnormal or absent, or battery voltage low	Rectifier and charger will not work. Battery discharges via DC-DC boost circuit and supplies Inverter. Alarm buzzer beeps quickly, indicating low battery power and Inverter may stop supplying soon.	LED off, and LEDs illuminated

2.2 Symbols on the LCD Display Panel

Item	Symbol	Description
1	INPUT	Utility or Bypass Source
2	Low ◀	Battery Low
3	Fault ◀	Battery Abnormal
4		UPS Overloading
5		UPS Working in Specified Mode*
6		Bypass Input Abnormal, UPS fails to transfer to Bypass, Bypass Abnormal at ECO mode
7		Utility Input Abnormal
8		UPS Shutoff
9		UPS Abnormal Lock
10		UPS Flow Chart
11		3-Digit Measurement Display
12		Indicates the Item to be Measured
13		UPS ON Switch or Alarm Silence
14		UPS OFF Switch
15		Previous Page or Setting Change
16		Next Page
17		Special Function Log In/Out
18		Enter or Reconfirm
19		Utility Input Normal LED
20		Bypass Input Normal LED
21		UPS under Redundancy Mode

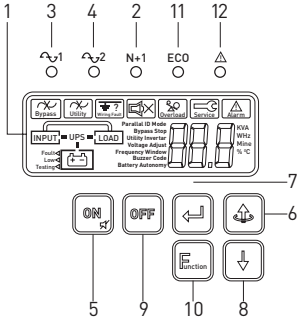
22	ECO	UPS under ECO Mode
23		UPS Fault or Abnormal Warning LED
24	**EPO**	Emergency Power Off
25	**Er05**	Battery Weak or Dead
26	**Er06**	Output Short Circuit
27	**Er10**	Inverter Over-current
28	**Er11**	The UPS is overheated
29	**Er12**	UPS Output Overloading
30	**Er14**	Fan Error
31	**Er15**	Wrong Procedure to Enter Maintenance Mode
32	**Er16**	Output Parameters Set Conflict in Parallel System
33	**Er17**	ID Numbers are in Conflict in Parallel System or ID Number Error in single unit
34	**Er21**	Parallel Communication Error (communication wire disconnected or failure to find ID1 UPS) in Parallel System
35	**Er24**	CVCF mode with Bypass input
36	**Er27**	The UPS must be Operated in Normal Mode in Parallel System
37	**Er28**	Bypass Overload Time out and Cut-off Output
38	**Er33**	Isolated Transformer is Overheated
39	**Er****	Other Error code

*The specified modes include Normal mode, ECO mode, CVCF mode, etc.

LED Indicator 1-3kVA	Symbol	Description
Normal Mode LED		1. Solid indicates normal utility voltage. Blinking indicates insufficient utility voltage for the full load. Off indicates abnormal utility voltage. 2. In Battery and Load Function mode indicates battery capacity is 50%.
Bypass Mode LED		1. Indicates load supplied by Bypass. 2. In Battery and Load Function mode indicates battery capacity is 75%.
Outlet1 LED	1	1. Indicates UPS Outlets 1 are enabled and ready to supply loads. (This function is optional.) 2. In Battery and Load Function mode indicates load capacity is 75%. 3. In Error Code Function mode indicates Error Code 4.
Outlet2 LED	2	1. Indicates UPS Outlets 2 are enabled and ready to supply loads. (This function is optional.) 2. In Battery and Load Function mode indicates load capacity is 25%. 3. In Error Code Function mode indicates Error Code 1.

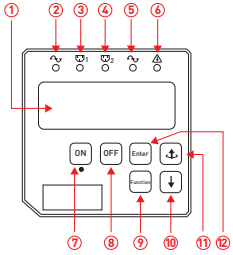
2.3 Panel Explanation

2.3.1 Front Panel for 5-10kVA



① LCD Information
② Green LED indicates that the UPS is able to run under redundancy mode
③ Solid green LED indicates that the utility input voltage is within the window
Flashing green LED indicates that the utility input voltage is outside the acceptable window
④ Green LED indicates that Bypass Input is normal
⑤ UPS ON/Alarm Silence
⑥ Go to previous page or change the setting of the UPS
⑦ Confirm a changed setting
⑧ Go to the next page
⑨ UPS OFF Switch
⑩ Special functions log in/out
⑪ UPS is working under ECO (Economical) mode
⑫ UPS Fault or Abnormal

Front Panel for 1-3 kVA

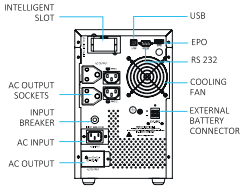


Item	Sign	Description
①		LCD Display
②		Green LED steadily lights up to indicate that the Utility input voltage is within the window (160 VAC~288 VAC); the LED flashes flickeringly to indicate that the Utility input voltage is within the acceptable window (120 VAC~159 VAC)
③ ④		Green LED lights up to indicate there is an output available at the Programmable Outlet 1 & Programmable Outlet 2
⑤		Amber LED lights up to indicate the Bypass Input is normal
⑥		UPS Fault LED
⑦	ON	UPS ON/Alarm Silence
⑧	OFF	UPS OFF Switch
⑨	Function	Special Functions Log In/Out
⑩		Go to Next Page
⑪		Go to Previous Page or Change the Setting of the UPS
⑫	Enter	To Re-confirm the Change of UPS Setting

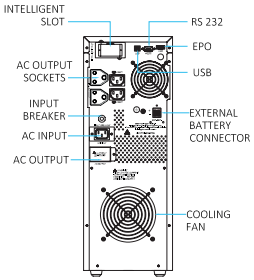
◎ Manual Bypass: Press "⑦ ON-KEY" and ⑪" Up-KEY" key simultaneously for approx. 3 seconds to transfer from "Inverter to Bypass" (The Bypass LED "blinks" continuously and the buzzer will beep intermediately or "Bypass to Inverter", when the UPS is on Line Mode and the Bypass Voltage Window is Normal.

2.3.2 Rear Panel

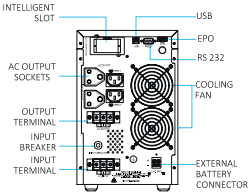
1 kVA



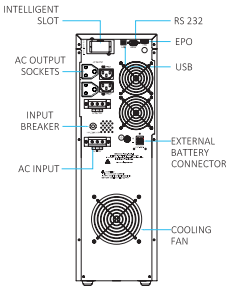
1 kVA FMI



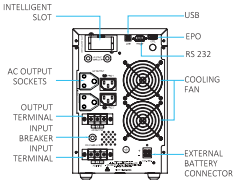
2 kVA FM



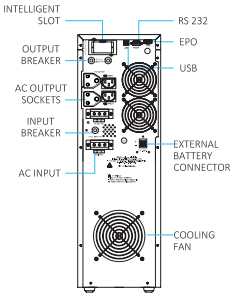
2 kVA FMI



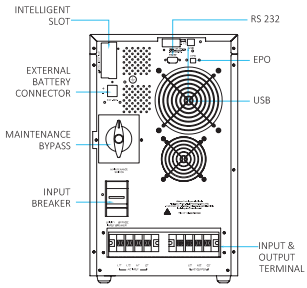
3 kVA FM



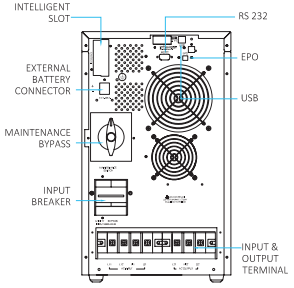
3 kVA FMI



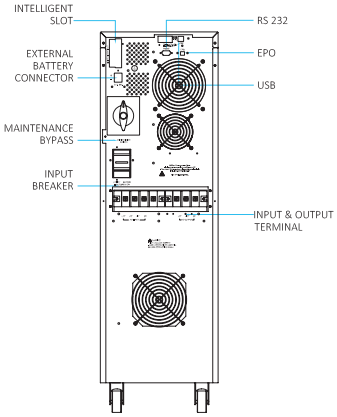
5 kVA / 6kVA FM



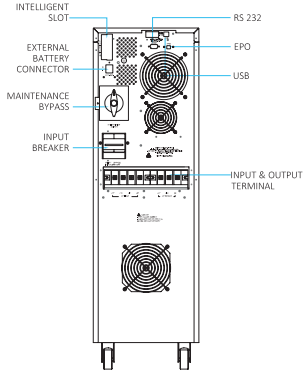
7.5 kVA / 10kVA FM



5 kVA / 6kVA FMI



7.5 kVA / 10kVA FMI



2.4 Communication Port

2.4.1 The UPS is equipped with USB communication, RS232 port as standard with the UPS monitoring software to remotely monitor the power and UPS status.

2.4.1.1. You may use optional interfaces cards for RSE-F (RS-485), DCE (Dry Contact) and SNMP.

2.4.1.2. The software bundled (downloaded from Legrand website) with the UPS is compatible with many operating systems such as Windows 2000, XP, Server 2003, VISTA, Server 2008, Win7 and Win8 and Linux.

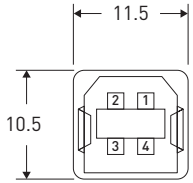
2.4.1.3. When the optional interface cards are used together with the onboard USB port the EPO signals will get highest priority, then the SNMP/WEB card, then the shutdown command at the DCE, RSE-F cards and then finally the onboard USB port gets the lowest priority.

2.4.2 USB Definition:

2.4.2.1. Complies with USB version 1.0,1.5 Mbps

2.4.2.2. Complies with USB HID version 1.0

2.4.2.3. Pin Assignments:



1 → VCC (+5V)

2 → D-

3 → D+

4 → Ground

EPO/ROO

+ Gnd

Pin Assignments:

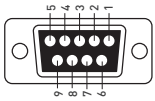
Function setting :
1. EPO NC → Shutdown UPS (default)
2. EPO NO → Shutdown UPS
3. EOO NC → Start up UPS
4. ROO NO → Start up UPS

(this function setting by setting tool)

True RS-232
The RS-232 interface must be configured as follows.

Baud Rate	2400 bps
Data Length	8bits
Stop Bit	1
Parity	None

Pin Assignments:



Pin 3: RS-232 Rx
Pin 2: RS-232 Tx
Pin 5: Ground

3 Installation and Operation

Inspect the UPS carefully for shipping damage before installation. Retain the packing material for future use.

3.1 Unpacking

3.1.1 Standard package contents:

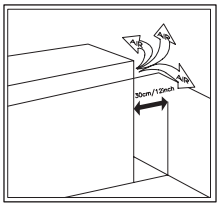
- User manual
- USB cable
- Connecting cable for battery
- IEC output cables (for 1-3 kVA UPS only)
- Input cable – Power cord (for 1 kVA only)
- Input cable – Hard wire (for 2-3 kVA)

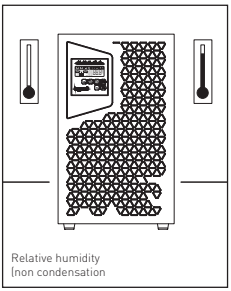
Model	Wire Size in sq. mm./No. of Runs	Recommended Input Breaker	Recommended Battery Breaker
1 kVA – FM /FMI	2.5/3	16A AC (C Curve)	50A DC (C Curve)
2 kVA – FM /FMI	6/3	32A AC (C Curve)	50A DC (C Curve)
3 kVA – FM /FMI	10/3	40A AC (C Curve)	63A DC (C Curve)
5-6 kVA – FM /FMI	16/3	63A AC (C Curve)	50A DC (C Curve)
7.5-10 kVA – FM /FMI	25/3	100A AC (C Curve)	63A DC (C Curve)

3.2 Selecting Installation Position

Install the UPS in a proper environment to minimize the possibility of damage to the UPS and to extend the life of the UPS. Please follow these rules:

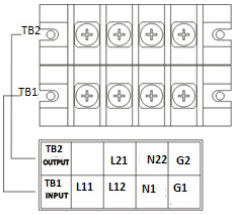
1. Keep at least 30 cms (12 inches) clearance from the rear panel of the UPS to the wall
2. Do not block the air flow to the ventilation openings of the unit
3. Ensure that the installation site is not excessively hot or moist
4. Do not place the UPS in an environment near dust, corrosive or salty material, or flammable objects
5. Do not expose the UPS to the outdoors





3.3 Terminal Block Explanation for 5-10 kVA

1. Turn off the UPS utility input and external battery cabinet breaker.
2. Remove the external battery connector covers from the UPS and the external battery cabinet and connect one end of the external battery cable to the UPS and one end to the battery cabinet.
3. Secure the external battery cable connector to UPS enclosure via Secure kit by screw.
4. Once the UPS and external battery cabinet are connected, turn on external battery cabinet breaker.

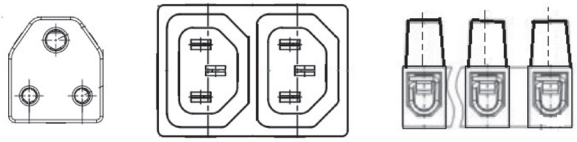


- **L11-N1:** The terminal for Bypass Input to provide the power source when the UPS is working under Bypass/ECO mode
- **L12-N1:** The terminal for Utility Input to provide the power source when the UPS is working under Normal mode
- **G1:** The terminal for UPS Input Ground
- **L21-N22:** The terminals for UPS Output
- **G2:** The terminal for UPS Output Ground

Remarks:
If the UPS is DIM (Dual Input Model) type but you want to use as Single Input Model, please add a cable bridge between Input L11 and L12

3.4 Socket Details for 1-3 kVA

1. 2 Nos 10 A, IEC 320-C13 used for programmable outlet(factory configurable)
2. 2 Nos 6 A, IS1293 used for direct output (bis approved socket)
3. 1No 30 A, Terminal Block used for direct output



3.5 Installation and Operation

3.5.1 Startup in Normal Mode for 5-10 kVA

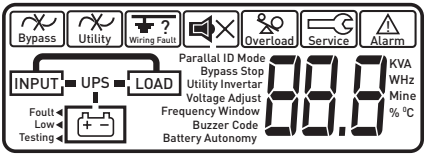
3.5.1.1. Open the terminal block cover on the rear panel. (Refer to 2.3.2.) Before starting the installation make sure the grounding is connected properly.

3.5.1.2. Make sure the utility breaker and the UPS' Utility breaker and Bypass breaker are in the "off" position.

3.5.1.3. Make sure the utility voltage matches the input voltage window of the UPS.

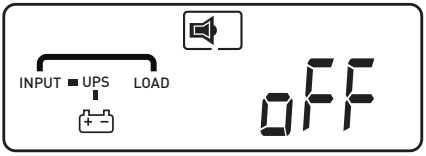
3.5.1.4. Connect the utility separately to the terminal blocks of the UPS' Utility and Bypass inputs. Switch on the power breaker of the distribution panel and the breakers of the UPS' Utility and Bypass inputs. Green LEDs ⏦1 and ⏦2 show that the Utility and Bypass inputs are normal. UPS with parallel function enabled will display first figure A1, then figure A2, and then figure B. Otherwise the LCD will display figure A1 directly followed by figure B.

A1.



A2.

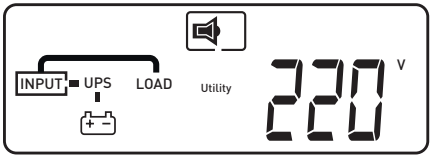
B.



3.5.1.5. The UPS is in Bypass Mode now. It will proceed to self-test automatically. If no abnormal message appears then the pre-startup of the UPS was successful and the charger starts to charge the batteries.

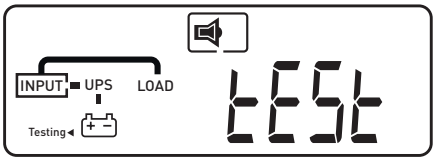
3.5.1.6. Press the UPS On Switch ⏻ for approximately three seconds. The Buzzer sounds twice and the LCD display changes from figure B to figure C.

C.



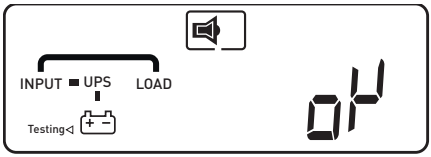
3.5.1.7. The UPS is in self-test mode again. The LCD display will change from figure C to figure D, and the UPS will remain in battery mode for approximately four seconds. Then the display will change from figure E1 to figure F if the self-test was successful.

D



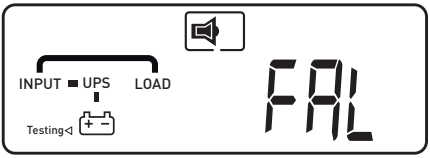
"test"

E1



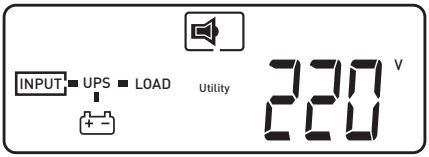
"OK" in self-test

E2



"Fail" in self-test

F



220 VAC' in Utility Input

3.5.1.8. If the self-test fails the LCD display will change from figure D to figure E2. Then an error code or error status will appear on the screen.

3.5.1.9. Startup operation of the UPS is complete now. Make sure the UPS is plugged into the wall receptacle for charging at least 8 hours and the batteries are fully charged before connecting the device to be protected.

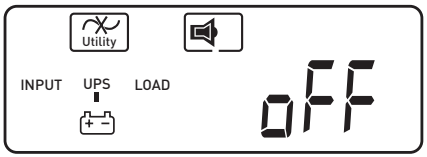
3.5.2 Startup in Battery Mode (Cold Start)

3.5.2.1. Make sure the UPS has at least one set of batteries

3.5.2.2. Push the UPS on Switch ⏻ once for approximately 5 seconds to awaken the UPS. The buzzer will sound twice. The LCD display will change from figure A to figure G for approximately 15 seconds.

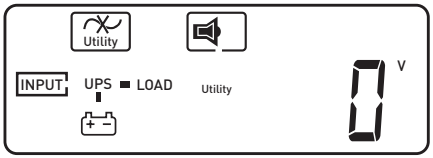
3.5.2.3. Press the UPS On Switch ⏻ again for about three seconds until the LCD display changes from figure G to figure H. Then the UPS will be in self-test mode. The UPS may offer energy to the output in a minute, and the LCD displays figure I. In case of failure in pushing the UPS On Switch for 15 seconds, the UPS will automatically turn off. You must then repeat steps **3.4.2.1** to **3.4.2.3.**

G



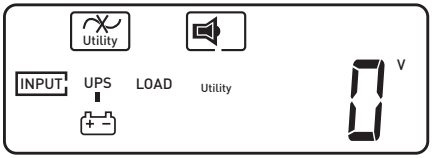
"Off", which means the UPS pre-start was successful

H



Utility input is '0' and Utility Abnormal

I

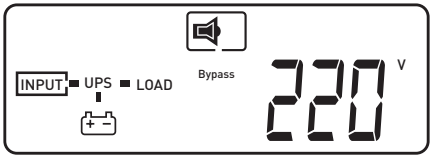


3.5.3 Check Measured Values and Figures detected by the UPS

3.5.3.1. If you would like to check the measured values and figures detected by the UPS use the scroll up (↑) and scroll down (↓) keys. When you scroll down the LCD will display

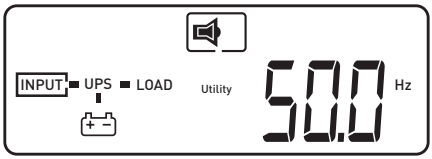
figure C (Voltage from Utility Input)
figure I1 (Voltage from Bypass Input)
figure J (Frequency from Utility Input)
figure K (Frequency from Bypass Input)
figure L (UPS Output Voltage)
figure M (UPS Output Frequency)
figure N (UPS Output Load %)
figure O1 (UPS Battery Voltage)
figure O2 (UPS Battery Numbers)
figure P (UPS Inner Temperature).

I1



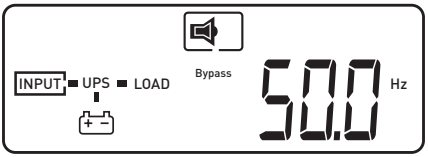
Voltage comes from Bypass Input

J



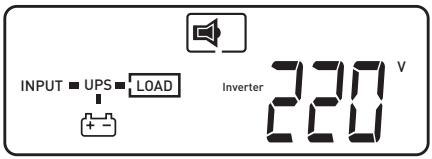
Frequency of Utility Input

K



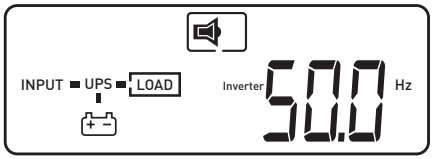
Frequency of Bypass Input

L



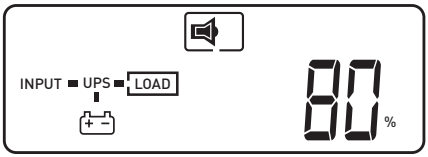
UPS output voltage

M



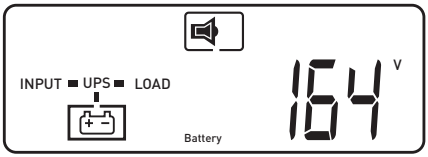
UPS output frequency

N



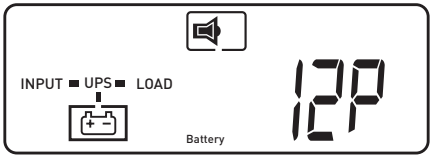
UPS output load level (%)

01



UPS battery voltage

O2



UPS battery numbers

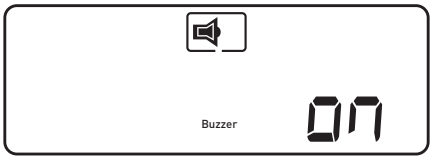
P

UPS inner temperature

3.5.4 UPS Default Data and Special Function Execution

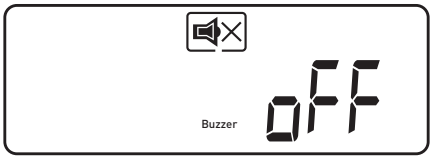
3.5.4.1. After the UPS completely starts up, press the ↩ key to change the LCD display to figure Q1.

Q1



Buzzer 'on'

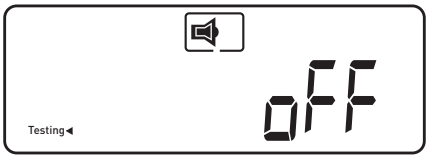
Q2



Buzzer 'off'

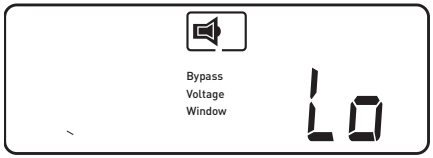
3.5.4.2. Press the ↑ key to scroll through the UPS settings. The LCD will display in sequence figure Q1 (buzzer)
figure R1 (Self-test)
figure S1 (Bypass Voltage Windows)
figure T (Output Frequency Synchronization Window)
figure U (Inverter Output Voltage)
figure V1 (UPS Operation Mode)
figure W (Output Voltage Micro Tune Value)
figure X (UPS Id)
figure Y (Parallel function status)
figure Z (Battery cabinet/capacity setting)

R1



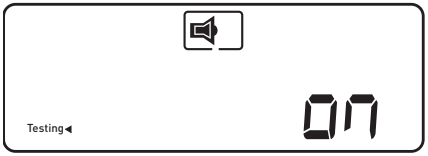
Self-test is not 'on'

R2



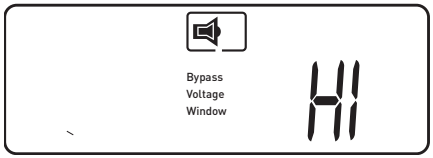
Self-test is 'on'

S1



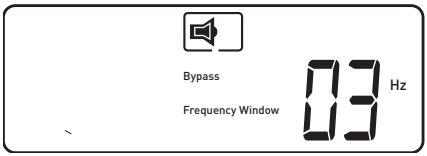
Bypass Voltage is adjusted to wide range

S2



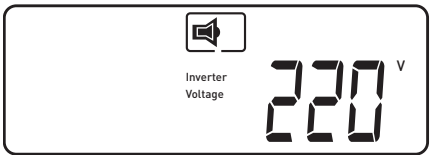
Bypass Voltage is adjusted to narrow range

T



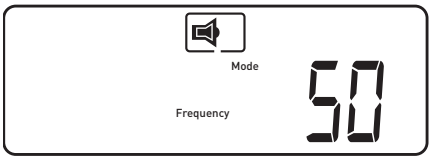
Frequency Window is ±3 Hz

U



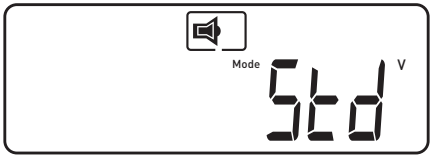
Inverter output voltage

V1



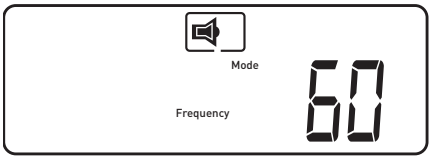
The UPS is operating in 'normal mode'

V2



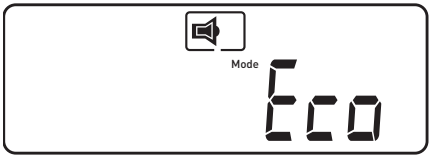
The UPS is operating in 'Eco mode'

V3



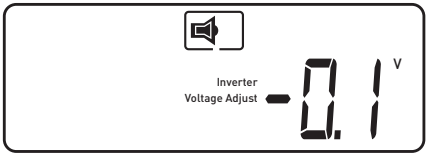
The UPS is operating in 'CVCF 50 Hz mode

V4



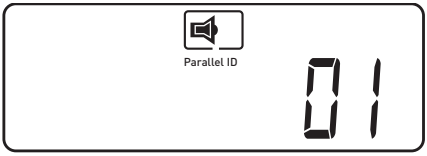
The UPS is operating in 'CVCF 60 Hz mode

W



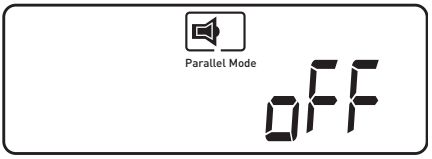
Output Voltage Adjustment (±6.0V, 0.1V/Per-scale)

X



UPS position in parallel mode

Y



The parallel function is disabled

3.5.4.3 Press the scroll up (↑) key to execute special functions. The functions include buzzer ON (as in figure Q1), buzzer OFF (as in figure Q2, Alarm silence for UPS Warning), and self-test OFF (as in figure R1) or self-test ON (as in figure R2). The UPS will execute the battery test for ten seconds. If the self-test is successful it will display figure E1; otherwise, it will display figure E2 and an error message at the same time.)

3. 5.5 UPS Default Settings and their alternatives

3.5.5.1. Make sure the UPS is not 'On'. Press the ON (⏻) and scroll down (↓) keys simultaneously for approximately three seconds. The buzzer will sound twice and the LCD will display figure Q1, indicating that the UPS is in setting mode.

3.5.5.2. To scroll through the options refer to section **3.4.4.2.**

3.5.5.3. Except for Buzzer (figures Q1 and Q2) and Self-test (figures R1 and R2) all of the other default settings may be changed by pressing the scroll up (↑) key.

3.5.5.4. Figures S1 and S2 indicate the bypass input acceptable window. It follows the inverter output voltage. Please refer specification for details.

3.5.5.5. Figure T indicates the bypass frequency window of the Inverter Output. The acceptable setting values are ±3 Hz and ±1 Hz.

3.5.5.6. Figure U indicates the acceptable Inverter Output Voltage. Possible values are 200, 208, 220, 230, or 240 VAC.

3.5.5.7. Figures V1, V2, V3 and V4 indicate the operation modes of the UPS. Possible values are Online, ECO (Economical) mode, fixed 50 Hz Output, and fixed 60 Hz Output.

3.5.5.8. Figure W indicates the fine tune range of inverter voltage which can be set from -6 V to +6 V of rating voltage. (The minimum adjustable scale is 0.1 V).

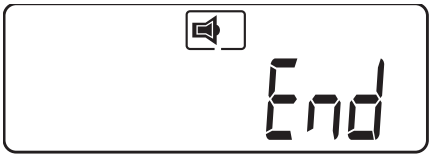
3.5.5.9. Figure X indicates the position of the UPS when the UPS is in Parallel mode. Possible positions are 1, 2, 3, and 4. The position must be 1 if the UPS is not in Parallel mode.

3.5.5.10. Figure Y indicates the parallel function status. 'OFF' and 'ON' separately indicate disabled and enabled.

3.5.5.11. Figure Z indicates the last page of settable parameters.

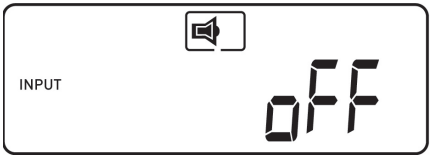
3.5.5.12. After changing settings, you must press the enter (↵) key to save all of your changes and exit the setting mode. Then the LCD will display figure AA, figure A1, then figure A2, and then figure B.

Z



* Press the Enter key to save changes

AA



The UPS is locked

3.5.5.13. Turn off the utility input breaker.

3.5.5.14. Your setting changes are now complete.

3.5.6 Troubleshooting when the UPS malfunctions due to unknown reasons:

3.5.6.1. If there is a serious abnormal condition the UPS will lock itself in the "OFF" position as shown in figure AB, and an "abnormal" message will appear on the LCD.

3.5.6.1.1. After three seconds all messages will be locked except both Bypass messages (LED 2 and LCD Bypass) and Utility messages (LED 1 and LCD Utility). If the Bypass or Utility is abnormal after the UPS is locked, the related LED 2 or 1 will be extinguished and also the related LCD symbol Bypass or Utility will appear.

3.5.6.2. To release the UPS lock proceed as follows:

3.5.6.2.1. Check the recorded error messages.

3.5.6.2.2. Check the error messages in section 2.2 to help troubleshoot the problem. For further help consult your local distributor.

3.5.6.2.3. Press the Off ⏻ key for five seconds. A buzzer will sound twice.

3.5.6.2.4. Turn off the utility input breaker.

3.5.6.2.5. Even if the UPS lock problem is solved now, consult with your local distributor to make sure that the error condition is resolved.

3.5.7 Shut off

3.5.7.1. Press the Off ⏻ key for five seconds. The inverter output will be turned off and the output load will be supplied by the Bypass loop. The LCD will display figure B.

3.5.7.2. Turn off the utility and bypass input breakers.

3.5.7.3. The UPS is now turned off completely.

3.5.8 Maintenance Bypass Mode

3.5.8.1. Maintenance Bypass Mode is for UPS maintenance only. Only authorized technicians are allowed to perform the following procedures. If there is any damage during unauthorized execution of these procedures your warranty will be void immediately.

3.5.8.1.1. Press the Off ⏻ key for approximately five seconds. The LCD will display figure B, and the UPS output will be in Bypass mode.

3.5.8.1.2. Remove the cover of the CAM Switch (Maintenance Bypass Switch), then turn on the CAM Switch to "Bypass" mode. In the upper right- hand corner of the LCD a Service sign will appear.

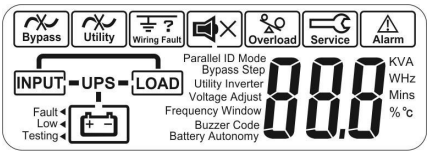
3.5.8.1.3. Turn off the UPS Utility breaker as well as the Bypass Input Breaker. You may proceed with UPS maintenance now.

3.5.8.1.4. When you are done with UPS maintenance put the UPS back into normal working mode as explained in section 3.5.1.4. Then return the CAM switch to "INV" mode, replace the cover, and repeat sections 3.4.1.5 to 3.4.1.8. The UPS will switch back to Inverter mode.

3.5.8.1.5. You must perform section 3.4.8.1.1 before section 3.4.8.1.2. If you skip section 3.4.8.1.1 the UPS will alert for ten seconds to warn that the procedure is abnormal and may damage the UPS due to uncertain utility status. The UPS will switch back to Inverter mode immediately if you turn the CAM switch back to 'INV'

Startup in Normal AC Mode for 1 - 3 kVA

1. Before commencing ensure that the grounding is connected properly
2. Ensure that the utility voltage matches the input voltage window of the UPS
3. Connect the UPS main power cord into the utility AC power source receptacle
4. Switch on the AC power source
5. Please ensure the outlet of power source is proper grounded
6. Ensure the voltage rating of power source is matched with UPS spec
7. Plug in UPS to the AC source
8. UPS will start initializing after AC input power is available 5 seconds. LED/LCD indicator will be all lit and dim once and fan will start spinning. Full LCD display looks as below figure:



9. Press UPS 

button and hold till beep heard twice UPS begins starting procedures for 5 second LCDdisplay will show as below figure-A and then figure-B sequentially. LEDs will light up to indicate that the Utility and the Bypass are normal. And then", ", ", " LED remain lit during figure-B LCD display.

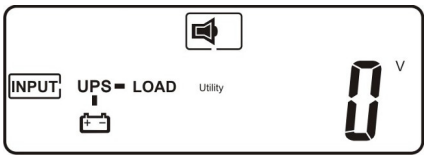
A

B

When you see figure-B, it means that the startup procedure is finished. Please ensure UPS recharges in line mode for at least 4 hours to get it fully recharged before the first backup test if it's a new installed unit.

10. Back up test – Unplug inlet power cord or switch off power source to simulate power failure condition. Green LED indicator ~ will be dimmed and Amber LED " ω_1 ", ω_2 " will be light. Intermittent audible alarm will be heard and LCD display shows as below figure-C:

C



Cold Start (DC start)

1. Ensure the internal battery is available or external battery set well connected to the UPS.

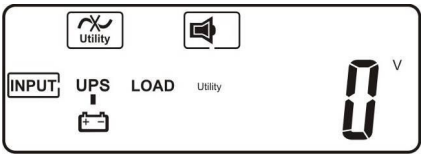
Press and hold 

key for 3 seconds until two beeps heard,

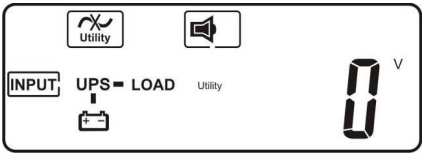
release the button and press for 3 seconds until two beeps are heard again to confirm cold start procedure. If the 2nd button confirmation is not finished within 10 seconds of the 1st two beeps, UPS will not cold start and shutoff after 10 seconds.

2. 5 seconds after cold starting, amber LED" ω_1 ", ω_2 " will be lit, intermittent audible alarm will be heard and LCD will show sequentially as below figure-D and figure-E

D



E



Operation of measurements display

1. UPS measurements can be checked after UPS has started by pressing select

key. The display sequences are as below:

figure-F (AC input voltage)

figure-G (AC input frequency)

figure-H (UPS output voltage)

figure-I (UPS output frequency)

figure-J (UPS loading percentage)

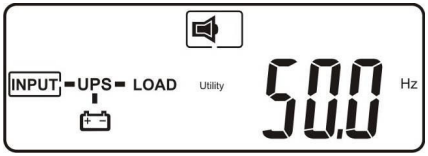
figure-K (UPS output current)

figure-L (Battery voltage)

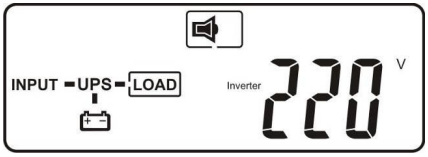
figure-M (UPS inner temperature) and back to figure-F.

F

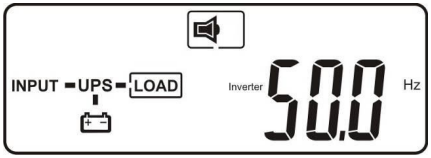
G



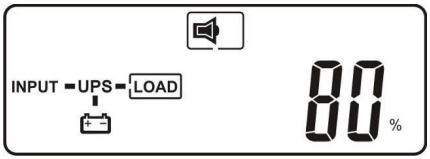
H



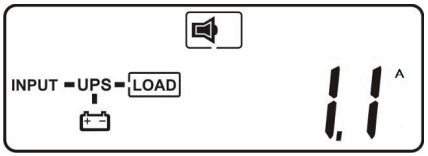
I



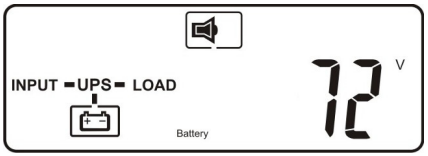
J



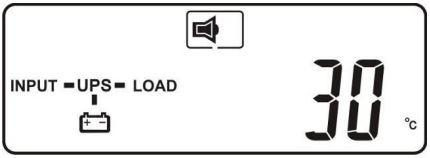
K



L



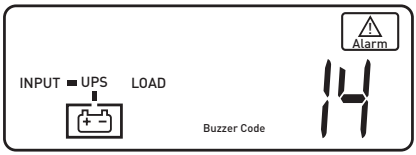
M



UPS will lock itself, if there is a critical abnormality or failure condition

UPS may lock itself up while there was critical abnormal or failure condition happened.
User may see LCD display as below figure-N.

N



The procedures to release UPS from locked up status are as below:

a) Check and record the error code

(b) Check user's manual to understand possible cause, solve the problem or call service provider

(c) Press OFF key [OFF] and hold for 5 seconds until two beeps are heard

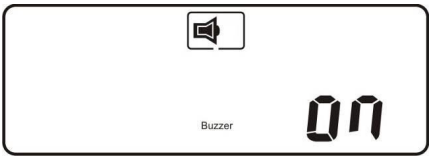
(d) Unplug AC input power cord or turn off power source switch

(e) After UPS is completely shut off, the UPS is unlocked

UPS Default Data and Special Function Execution

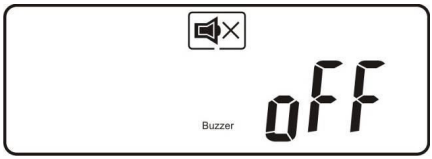
After the UPS completely starts up, press the [Function] key to change the LCD display to figure Q1.

Q1



buzzer 'On'

Q2



buzzer 'Off'

Press the [↓] key to scroll through the UPS settings. The LCD will display in sequence figure Q1 (buzzer)

figure R1 (Self-test)

figure S1 (Bypass Voltage Windows)

figure T (Output Frequency Synchronization Window)

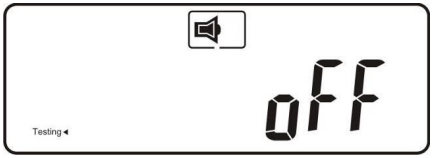
figure U (Inverter Output Voltage)

figure V1 (UPS Operation Mode)

figure W (Output Voltage Micro Tune Value)

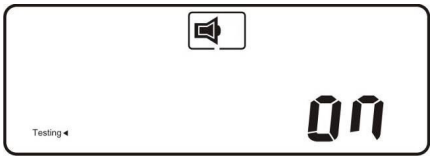
figure X (UPS Id)

R1



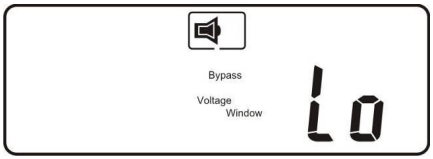
Self-test is not 'On'

R2



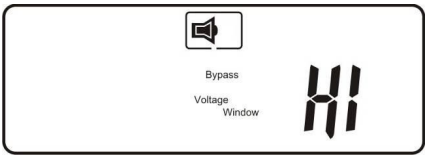
Self-test is 'On'

S1



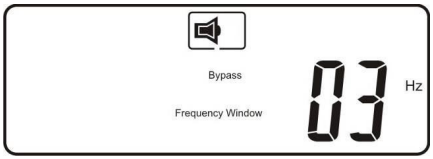
Bypass Voltage is adjusted to wide range

S2



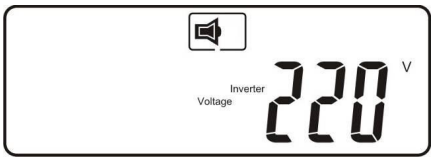
Bypass Voltage is adjusted to narrow range.

T



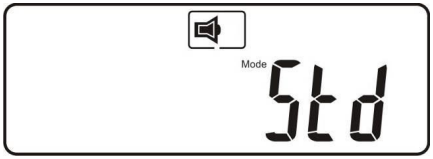
Frequency Window is +/-3 Hz.

U



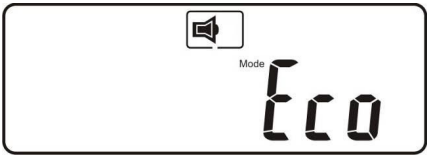
inverter output voltage

V1



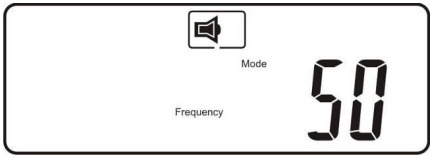
The UPS is operating in 'normal mode'

V2



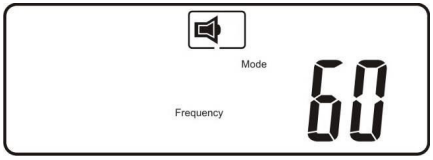
The UPS is operating in 'ECO mode'

V3



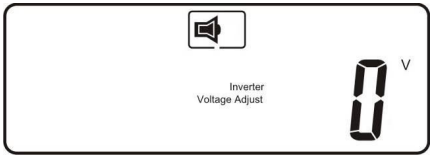
The UPS is operating in 'CVCF 50 Hz mode'

V4



The UPS is operating in 'CVCF 60 Hz mode

W



Output Voltage Adjustment (-6.0V ~ +6.0V)

Press the scroll up key to execute special functions. The functions include buzzer ON (as in figure Q1), buzzer OFF (as in figure Q2, Alarm silence for UPS warning, and self-test OFF (as in figure R1) or self-test ON (as in figure R2). The UPS will execute the battery test for ten seconds.

UPS Default Settings and their alternatives

Make sure the UPS is not "On". Press the On (ON) and scroll down keys simultaneously for approximately three seconds. The buzzer will sound twice, and the LCD will display figure Q1, indicating that the UPS is in setting mode.

Except for Buzzer (figures Q1 and Q2) and Self-test (figures R1 and R2) all of the other default settings may be changed by pressing the scroll up key.

Figures S1 and S2 indicate the bypass input acceptable window. It follows the inverter output voltage. Please refer specification for details.

Figure T indicates the bypass frequency window of the Inverter Output. The acceptable setting values are ±3 Hz and ±1 Hz.

Figure U indicates the acceptable Inverter Output Voltage. Possible values are 200, 208, 220, 230, or 240 VAC.

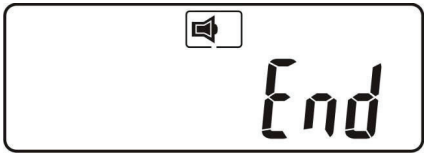
Figures V1, V2, V3 and V4 indicate the operation modes of the UPS. Possible values are Online, ECO (Economical) mode, fixed 50 Hz Output, and fixed 60 Hz Output.

Figure W indicates the adjustment of the Inverter Output, which may be set to 0%, +1%, -1%, +2%, -2%, +3%, or -3%.

After changing settings you must scroll to the 'End' screen (figure X) and then

press the enter (Enter) key to save all of your changes.

X



* Press the Enter key to save changes.

Turn Off the Utility Input breaker.

Your setting changes are now complete.

Turn UPS off

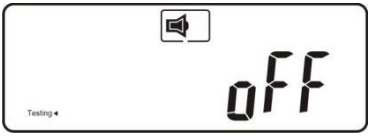
(1) **Line mode (AC input available):** Press Off key (OFF) and hold till two beeps are heard, UPS output will shut off. UPS will stay in standby mode, fan(s) keep spinning and battery will continue recharging if AC input still available after output is off, else it will shutdown completely

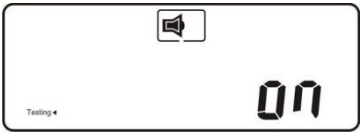
(2) **Backup mode (AC input not available):** Press Off key (OFF) and hold till two beeps are heard, UPS output will shut off. 10 seconds later, the fan will stop spinning and the unit will shutdown completely

Self-Test (Line mode only)

This function is for checking battery capacity of battery pack in AC mode. It will perform backup mode test for 10 seconds after receiving self-test command by front panel. You can press Function key 

, next page key  and then previous page key  to perform the 10 seconds self-test. The LCD2 screen will change as following figures.





4 Troubleshooting Guide

4.1. Troubleshooting

If the UPS malfunctions during operation, check the following:

a. Are the input and output wiring correct?

b. Is the input voltage of the utility within the input window of the UPS?

If problems still exist check the following for proper adjustment. Should the problem still persist, please contact your local distributor for help.

Situation	Check Items	Solution
Red Fault LED	Check the error code shown on the LCD.	
	1. Er05, Low◄ & Fault◄	1. Check for proper battery connection, then recharge the batteries for 8 hours to see whether the UPS provides backup power normally; otherwise, consult your local distributor right away.
	2. Er06, Er10, Er12, Er28 & Overload	2. If breaker is tripped, turn off the UPS completely and keep the CAM switch at position INV before pressing breaker. Then remove some uncritical load at the UPS output end. If there is any damage to the insulation of the AC power cord, please replace it with a new one.
	3 Er07	3. Remove the short circuit at the EPO terminal.
	4. Er11, Er33	4. Remove any objects blocking the ventilation holes.
	5. Er14	5. Check that the cooling fans on the rear panel are working normally.
	6. Er15	6. Make sure the UPS is operated normally. If it is in CVCF mode you must Turn Off and Turn On the UPS again.
	7. Er16, Er17, Er27	7. All of the parameters except ID Number in a parallel UPS must be the same. Please refer to section 3.5.5 to set them again.
	8. Er21	8. Disconnect and reconnect the RJ45 connector or set a UPS with ID=1.
	9. Er24	9. When the UPS is in CVCF mode it is prohibited from having Bypass input. You must Turn Off the UPS and Bypass input and then restart the UPS.
	10. Er28	10. Check the bypass overload
	11. Er39	11. Check the input voltage <90V
	12. Other error code	12. Consult your local distributor for help.
UPS fails to offer battery backup or its backup power time is shorter than calculated.		If the backup power time is still too short after 8 hours of charging please contact your local distributor for battery replacement.
UPS locks itself and cannot be turned off.		Refer to section **3.4.6** to troubleshoot the problem; otherwise, consult your local distributor for help.

If the problem persists contact our nearest after sales service department by visiting the website or call Toll Free no: 1800-425-3266 with the following information.

1 Model number, serial number.

2 Date on which the problem occurred.

3 LCD/LED display status, Buzzer alarm status.

4 Utility power condition, load type and capacity, environment temperature, ventilation condition.

5 The information (battery capacity, quantity) of external battery pack if the UPS is with external battery.

6 Other information for complete description of the problem.

Maintenance

1. Clean the dust from the ventilation openings and intakes on the rear panel.
2. Turn off the UPS and wipe the casing with a damp cloth. Be careful to avoid getting water in the UPS.
3. Periodically unplug the power cord of the UPS from the wall receptacle to test the condition of the batteries Be sure you have saved your data in any open computer applications before you proceed with this battery test.

5 Communication Software

5.1. Hardware Setup

1. Connect the male connector of the USB cable to the UPS communication port.
2. Connect the female connector of the USB cable to a dedicated USB port of the attached computer.
3. For optional interface cards refer to Chapter 6 for installation.

5.2. Software Installation

For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. You may download the software in https://ups.legrand.com/en/software/software-download and install the monitoring software.

7 Specifications

Specifications 5-10 kVA Without Isolation Transformer

Rating Capacity (kVA/kW)		5 kVA/5 kW	6 kVA/6 kW	7.5 kVA/7.5 kW	10 kVA/10 kW
INPUT					
Voltage Range	Voltage – Low Transfer	110/140/160 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 80% / 81 ~ 100%)			
	Voltage – Low Comeback	135/165/185 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 80% / 81 ~ 100%)			
	Voltage – High Transfer	300 VAC ± 5 V			
	Voltage – High Comeback	285 VAC ±5 V			
Frequency		45 ~ 70 Hz			
Phase/Wire		Single-in, Line + Neutral + Ground			
Input Connection		75A 4W Terminal Block		100A 4W Terminal Block	
Power Factor		Up to 0.99 at 100% Linear Load			
Current THD (100% linear load)		<5%			
OUTPUT					
Voltage		220/ 230/ 240 VAC Selectable			
Frequency Regulation		±1 Hz, ±3 Hz Selectable			
Voltage Regulation		±1%			
Rated Power Factor		1.0			
Output Connection		75A 3W Terminal Block		100A 3W Terminal Block	
Sine Waveform Distortion	100% Liner Load	<2%			
	100% Non-Liner Load	<5%			
Frequency Stability		<0.2% (Free Running)			
Transfer Time AC-DC		0 ms			
Transfer Time (Inverter to Bypass)		4 ms			
Crest Factor		3:1			
Overload Capacity (tolerance±1%)		<105% continuous 106-110% UPS works with warning at battery mode and in utility mode. 111-130% UPS shuts down after 5min at battery mode or transfer to bypass when the utility is normal. 131-150% UPS shuts down after 1min at battery mode or transfer to bypass when the utility is normal >150% Immediately trip at battery mode or transfer to bypass when the utility is normal			

Rating Capacity (kVA/kW)	5 kVA/5 kW	6 kVA/6 kW	7.5 kVA/7.5 kW	10 kVA/10 kW
BATTERY				
Battery Type	Depending on the capacity of external batteries			
Number of Batteries	20			
Maximum Battery AH	160			
CHARGER				
Charging Current	1A/2A/3A/4A (selectable)			
Floating Voltage (±1%)	274			
INDICATION				
Status On LED + LCD	Line Mode, Battery Mode, ECO Mode, Bypass Supply, Battery Low Battery Bad/ Disconnect, Overload, Transferring with interruption, UPS Fault			
Readings on LCD	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Inner Temperature.			
Self-Diagnostics	Front Panel Setting & Software Control, Upon Power-on, 24-hour routine checking			
ALARMS				
Audible and Visual	Line Failure, Battery Low, Transfer to Bypass, System Fault Conditions			
PHYSICAL				
Dimensions (W x D x H) mm	260 x 692 x 437			
Net Weight (kg)	28.5		33	
ENVIRONMENTAL				
Operating Temperature	Operating: 0°C ~ 40°C, Storage: -10°C ~ 50°C			
Noise Level	≤50 dB @ 1M			
Relative Humidity	30-90% (without condensation)			
INTERFACE				
Standard	EPO/ROO,RS-232,USB			
Option	Dry Contact Relay, SNMP/WEB Card, RS 485 card			
Compatible Platforms	Microsoft Windows series, Linux			
Safety Standard	EN 62040-1, IS16242:2014			
EMC Standard	IEC/EN 62040-2			
Markings	BIS, CE, RoHS			

Specifications 5-10 kVA With Isolation Transformer

Rating Capacity (kVA/kW)		5 kVA/5 kW	6 kVA/6 kW	7.5 kVA/7.5 kW	10 kVA/10 kW
INPUT					
Voltage Range	Voltage – Low Transfer	115/150/180 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 80% / 81 ~ 100%)			
	Voltage – Low Comeback	140/175/205 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 80% / 81 ~ 100%)			
	Voltage – High Transfer	300 VAC ± 5 V			
	Voltage – High Comeback	285 VAC ±5 V			
Frequency		45 ~ 70 Hz			
Phase/Wire		Single-in, Line + Neutral + Ground			
Input Connection		75A 4W Terminal Block		100A 4W Terminal Block	
Power Factor		Up to 0.99 at 100% Linear Load			
Current THD (100% linear load)		<5%			
OUTPUT					
Voltage		220/ 230/ 240 VAC Selectable			
Frequency Regulation		±1 Hz, ±3 Hz Selectable			
Voltage Regulation		±1%			
Rated Power Factor		1.0			
Output Connection		75A 3W Terminal Block		100A 3W Terminal Block	
Sine Waveform Distortion	100% Liner Load	<2%			
	100% Non-Liner Load	<5%			
Frequency Stability		<0.2% (Free Running)			
Transfer Time AC-DC		0 ms			
Transfer Time (Inverter to Bypass)		4 ms			
Crest Factor		3:1			
Overload Capacity (tolerance±1%)		<105% continuous 106-110% UPS works with warning at battery mode and in utility mode. 111-130% UPS shuts down after 5min at battery mode or transfer to bypass when the utility is normal. 131-150% UPS shuts down after 1min at battery mode or transfer to bypass when the utility is normal >150& Immediately trip at battery mode or transfer to bypass when the utility is normal			

Rating Capacity (kVA/kW)	5 kVA/5 kW	6 kVA/6 kW	7.5 kVA/7.5 kW	10 kVA/10 kW
BATTERY				
Battery Type	Depending on the capacity of external batteries			
Number of Batteries	20			
Maximum Battery AH	160			
CHARGER				
Charging Current	1A/2A/3A/4A (selectable)			
Floating Voltage (±1%)	274			
INDICATION				
Status On LED + LCD	Line Mode, Battery Mode, ECO Mode, Bypass Supply, Battery Low,Battery Bad/Disconnect, Overload, Transferring with interruption, UPS Fault			
Readings on LCD	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Inner Temperature.			
Self-Diagnostics	Front Panel Setting & Software Control, Upon Power-on, 24-hour routine checking			
ALARMS				
Audible and Visual	Line Failure, Battery Low, Transfer to Bypass, System Fault Conditions			
PHYSICAL				
Dimensions (W x D x H) mm	260 x 692 x 844			
Net Weight (kg)	72.5	75	85	96.5
ENVIRONMENTAL				
Operating Temperature	Operating: 0ºC ~ 40ºC, Storage: -10ºC ~ 50ºC			
Noise Level	⩽50 dB @ 1M			
Relative Humidity	30-90% (without condensation)			
INTERFACE				
Standard	EPO/ROO, RS-232, USB			
Option	Dry Contact Relay, SNMP/WEB Card, RS 485 card			
Compatible Platforms	Microsoft Windows series, Linux			
Safety Standard	EN 62040-1, IS16242:2014			
EMC Standard	IEC/EN 62040-2			
Markings	BIS, CE, RoHS			

Specifications 1-3 kVA Without Isolation Transformer

MODEL	ITEM	1 kVA FM	2 kVA 72 V FM	2 kVA 96 V FM	3 kVA 72 V FM	3 kVA 96 V FM
CAPACITY		1000 VA/ 1000 W	2000 VA/2000 W		3000 VA/3000 W	
INPUT	Voltage – Low Transfer	110/140/160 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 75% / 76 ~ 100%)				
	Voltage – Low Comeback	135/165/185 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 75% / 76 ~ 100%)				
	Voltage – High Transfer	300 VAC ± 5 V				
	Voltage – High Comeback	290 VAC ±5 V				
	Frequency Range	44-66 Hz 50 Hz fin> 44 Hz and fin < 56 Hz 60 Hz fin> 54 Hz and fin < 66 Hz				
	Phase	Single phase with ground				
	Power Factor	⩾ 0.99 (with full linear load)				
	Generator Input	Supported				
	Input Connection	16A, IEC 320-C20	30A, Terminal Block		40A, Terminal Block	
OUTPUT	Voltage	230 V, adjustable to 220/230/240				
	Voltage Regulation	within ±1% until low-battery warning				
	Frequency (Synchronized Range)	3 Hz or 1 Hz (selectable)				
	Frequency					
	(Battery Mode)	50/60 Hz ±0.2% unless synchronized to line				
	Current Crest Ratio	3:1				
	Harmonic Distortion	< 3% at full linear load < 5% at full non-linear load				
	Output Waveform	Pure sine wave				
	Outlets	2Nos 10 A, IEC 320-C13 & 2Nos 6 A, IS1293 & 1No 30 A, Terminal Block				

MODEL	ITEM	1 kVA FM	2 kVA 72 V FM	2 kVA 96 V FM	3 kVA 72 V FM	3 kVA 96 V FM
OUTPUT	Overload Capacity (tolerance±1%)	<105% continuous 106-120% UPS shuts down after 30sec at battery mode or transfer to bypass when the utility is normal. 121-150% UPS shuts down after 10sec at battery mode or transfer to bypass when the utility is normal. >150% Immediately trip at battery mode or transfer to bypass when the utility is normal.				
	Transfer Time (AC to DC)	0 ms				
	Transfer Time (Inverter to Bypass)	4 ms (Typical)				
BATTERY	Battery Type	Depending on the capacity of external batteries				
	Number of Batteries	3	6	8	6	8
	Maximum Battery AH	160				
	Rated Battery Voltage	36 V	72 V	96 V	72 V	96 V
CHARGER	Charging Current	2A/4A/6A/8A (selectable)				
	Floating Mode Charging Voltage(±1%)	40.9 V±1%	81.9 V±1%	109.2 V±1%	81.9 V±1%	109.2 V±1%
Indication	LED	Utility Normal, Battery Mode, Programmable Outlet1/ Programmable Outlet2, Bypass Mode & Fault				
	LCD	Voltage –Input, Output, Battery. Frequency – Input, Output. Current –Output & Load level % Warning & Fault codes.				
Audible Alarm	Battery Mode	Sounds once every 1.5 seconds				
	Low Battery	Sounds once every 0.2 seconds				
	Overload	Continuous tone				
	Normal Alarm	Sounds once every 3 seconds				
	Fault	Continuous tone				
Protection	Short Circuit	Normal Mode: Output Breaker/Electronic Circuit Battery Mode: Output Breaker/Electronic Circuit				
	Battery	Battery Low & High / Electronic Circuit				
	EPO	UPS shuts down immediately				
	Over Temperature	Normal Mode: Transfer to Bypass Mode Battery Mode: UPS shuts down immediately				

MODEL	ITEM	1 kVA FM	2 kVA 72 V FM	2 kVA 96 V FM	3 kVA 72 V FM	3 kVA 96 V FM
Physical	Dimensions (W x D x H) mm	190 x 490 x 302				
	Weight (kg)	11.5	13.5		13.5	
Environmental	Operating Temperature	Operating: 0ºC ~ 40ºC, Storage: -10ºC ~ 50ºC				
	Noise Level	≤50 dB @ 1M				
	Relative Humidity	0-90% (without condensation)				
Interface	Standard	EPO/ROO, RS-232, USB				
	Option	Dry Contact Relay, SNMP/WEB Card, RS485 card				
	Compatible Platforms	Microsoft Windows series, Linux				
Standards and Certifications	Safety	IEC/EN 62040-1, IS 16242:2014				
	EMC	EN62040-2, EN61000-3-2, EN61000-3-3				
	Markings	BIS, CE, RoHS				

Specifications 1-3 kVA With Isolation Transformer

MODEL	ITEM	1 kVA FMI	2 kVA 72V FMI	2 kVA 96 V FMI	3 kVA 72 V FMI	3 kVA 96 V FMI
CAPACITY		1000 VA/1000 W	2000 VA/2000 W		3000 VA/3000 W	
INPUT	Voltage – Low Transfer	115/150/180 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 75% / 76 ~ 100%)				
	Voltage – Low Comeback	140/175/205 VAC ± 5 V (Based on load percentage 0 ~ 60% / 61 ~ 75% / 76 ~ 100%)				
	Voltage – High Transfer	295 VAC ± 5 V				
	Voltage – High Comeback	285 VAC ±5 V				
	Frequency Range	44-66 Hz 50 Hz fin> 44 Hz and fin < 56 Hz 60 Hz fin> 54 Hz and fin < 66 Hz				
	Phase	Single phase with ground				
	Power Factor	⩾ 0.99 (with full linear load)				
	Generator Input	Supported				
	Input Connection	16A, IEC 320-C20	30A, Terminal Block		40A, Terminal Block	
OUTPUT	Voltage	230 V, adjustable to 220/230/240				
	Voltage Regulation	within ±1% until low-battery warning				
	Frequency (Synchronized Range)	3 Hz or 1 Hz (selectable)				
	Frequency (Battery Mode)	50/60 Hz ±0.2% unless synchronized to line				
	Current Crest Ratio	3:1				
	Harmonic Distortion	< 3% at full linear load < 5% at full non-linear load				
	Output Waveform	Pure sine wave				
	Outlets	2 Nos 10 A, IEC 320-C13 & 2 Nos 6 A, IS1293 & 1No 30 A, Terminal Block				

MODEL	ITEM	1 kVA FMI	2 kVA 72V FMI	2 kVA 96 V FMI	3 kVA 72 V FMI	3 kVA 96 V FMI
OUTPUT	Overload Capacity (tolerance±1%)	<105% continuous 106-120% UPS shuts down after 30sec at battery mode or transfer to bypass when the utility is normal. 121-150% UPS shuts down after 10sec at battery mode or transfer to bypass when the utility is normal. >150% Immediately trip at battery mode or transfer to bypass when the utility is normal.				
	Transfer Time (AC to DC)	0 ms				
	Transfer Time (Inverter to Bypass)	4 ms (Typical)				
BATTERY	Battery Type	Depending on the capacity of external batteries				
	Number of Batteries	3	6	8	6	8
	Maximum Battery AH	160				
	Rated Battery Voltage	36 V	72 V	96 V	72 V	96 V
CHARGER	Charging Current	2A/4A/6A/8A (selectable)				
	Floating Mode Charging Voltage(±1%)	40.9 V±1%	81.9 V±1%	109.2 V±1%	81.9 V±1%	109.2 V±1%
Indication	LED	Utility Normal, Battery Mode, Programmable Outlet1/ Programmable Outlet2, Bypass Mode & Fault				
	LCD	Voltage –Input, Output, Battery. Frequency – Input, Output. Current –Output & Load level % Warning & Fault codes.				
Audible Alarm	Battery Mode	Sounds once every 1.5 seconds				
	Low Battery	Sounds once every 0.2 seconds				
	Overload	Continuous tone				
	Normal Alarm	Sounds once every 3 seconds				
	Fault	Continuous tone				
Protection	Short Circuit	Normal Mode: Output Breaker/Electronic Circuit Battery Mode: Output Breaker/Electronic Circuit				
	Battery	Battery Low & High / Electronic Circuit				
	EPO	UPS shuts down immediately.				
	Over Temperature	Normal Mode: Transfer to Bypass Mode Battery Mode: UPS shuts down immediately.				

MODEL	ITEM	1 kVA FMI	2 kVA 72V FMI	2 kVA 96 V FMI	3 kVA 72 V FMI	3 kVA 96 V FMI
Physical	Dimensions (W x D x H) mm	190 x 490 x 512	190 x 490 x 590			
	Weight (kg)	32.8	37.5		45	
Environmental	Operating Temperature	Operating: 0ºC ~ 40ºC, Storage: -10ºC ~ 50ºC				
	Noise Level	⩽50 dB @ 1M				
	Relative Humidity	0-90% (without condensation)				
Interface	Standard	EPO/ROO, RS-232, USB				
	Option	Dry Contact Relay, SNMP/WEB Card, RS485 card				
	Compatible Platforms	Microsoft Windows series, Linux				
Standards and Certifications	Safety	IEC/EN 62040-1, IS 16242:2014				
	EMC	EN62040-2, EN61000-3-2, EN61000-3-3				
	Markings	BIS, CE, RoHS				

SCAN TO FIND OUR
NEAREST BRANCH

NUMERIC®

A Group brand | legrand®

Head Office: 10th Floor, Prestige Center Court, Office Block,
Vijaya Forum Mall, 183, N.S.K Salai, Vadapalani, Chennai - 600 026.

Contact our 24x7 Customer Excellence Centre:
Email : customer.care@numericups.com | Phone : 0484-3103266 / 4723266
www.numericups.com