



Liebert®

ITA2™ 8-10kVA, 60Hz, 208/220V Three-Phase UPS

User Manual

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures. Visit <https://www.VertivCo.com/en-us/support/> for additional assistance.

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation of your Liebert ITA2 UPS. Read this manual thoroughly, paying special attention to the sections that apply to your installation, before working with the UPS. Retain this manual for use by installing personnel.



WARNING

Risk of electrical shock. Can cause personal injury or death.

This UPS has several circuits that are energized with high DC as well as AC voltages. Check for voltage with both AC and DC voltmeters before working within the UPS. Check for voltage with both AC and DC voltmeters before making contact.

Only properly trained and qualified personnel wearing appropriate safety headgear, gloves, shoes and glasses should be involved in installing the UPS or preparing the UPS for installation. When performing maintenance with any part of the equipment under power, service personnel and test equipment should be standing on rubber mats.

In case of fire involving electrical equipment, use only carbon dioxide fire extinguishers or those approved for use in fighting electrical fires.

Extreme caution is required when performing installation and maintenance.

Special safety precautions are required for procedures involving handling, installation and maintenance of the UPS system. Observe all safety precautions in this manual before handling or installing the UPS system. Observe all precautions in this manual before as well as during performance of all maintenance procedures. Observe all DC safety precautions before working on or near the DC system.



WARNING

Risk of electrical shock and fire. Can cause equipment damage, personal injury or death.

Under typical operation and with all UPS doors closed, only normal safety precautions are necessary. The area around the UPS system should be kept free of puddles of water, excess moisture and debris.

Only test equipment designed for troubleshooting should be used. This is particularly true for oscilloscopes. Always check with an AC and DC voltmeter to ensure safety before making contact or using tools. Even when the power is turned Off, dangerously high potential electric charges may exist at the capacitor banks and at the DC connections.

All wiring must be installed by a properly trained and qualified electrician. All power and control wiring must comply with all applicable national, state and local codes.

One person should never work alone, even if all power is disconnected from the equipment. A second person should be standing by to assist and to summon help in case of an accident.



WARNING

Risk of exposure to hazardous chemical. Can cause illness or death.

This product can expose you to chemicals including nickel, (metallic), which known to the State of California to cause cancer. For further information, go to

www.P65Warnings.ca.gov

**NOTE**

Materials sold hereunder cannot be used in the patient vicinity (e.g., use where UL, cUL or IEC 60601-1 is required). Medical applications such as invasive procedures and electrical life support equipment are subject to additional terms and conditions.

NOTICE

This unit complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits provide reasonable protection against harmful interference in a commercial environment. This unit generates, uses and radiates radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this unit in a residential area may cause harmful interference that the user must correct at his own expense.

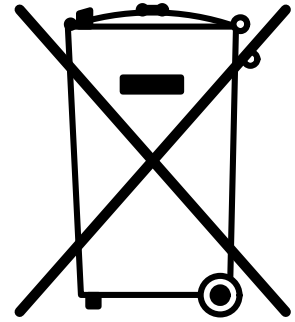
NOTICE

This product uses components that are dangerous for the environment, such as electronic cards and other electronic components. Any component that is removed must be taken to specialized collection and disposal centers. If this unit must be dismantled, this must be done by a specialized center for collection and disposal of electric and electrical appliances or other dangerous substances.

This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU.

Please be environmentally responsible and recycle this product through your recycling facility at its end of life. Do not dispose of this product as unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of WEEE.

The “crossed-out wheelee bin symbol” is placed on this product to encourage you to recycle whenever possible.



NOTE

The Liebert ITA2 has no user-serviceable parts. If the UPS malfunctions and requires service, contact Vertiv Support at 800-543-2378 or your local Vertiv representative.

1.0 INTRODUCTION

The Liebert ITA2 uninterruptible power system (UPS) is an intelligent, on-line UPS with sine wave output developed by Vertiv. The UPS offers reliable, high quality AC power to small-scale computer centers, networks, communication systems, automatic control systems and similar sensitive electronic equipment.

This chapter introduces the features, model configurations, appearance and components, operating principle, UPS state and operation mode, and specifications of the UPS.

This manual documents installation and operation of the 8kVA and 10kVA Liebert ITA2 UPS models.

1.1 Features

The Liebert ITA2 features:

- On-line, double-conversion efficiency up to 93.4% and Eco Mode efficiency up to 99%
- Output power factor of up to 1
- Tower installation and rack installation meet different installation requirements
- Parallel connection capability to achieve up to 1 + 1 parallel redundant power
- High-frequency, double-conversion topology with high input power factor, wide input voltage range
- Programmable output terminals
- Operation and display panel with color LCD for easy, intuitive operation
- Capable of Eco Mode

1.2 Model Configurations

The model configurations are shown in **Table 1**.

Table 1 Model configurations

Model #		Input/Output
8kVA (208 and 220V)	ITA2-08KRT208C Liebert IS-UNITY-DP Card Included	Single-input configuration (default), dual-input is field-configurable
	ITA2-08KRT208 Liebert IS-Unity card sold separately	
10kVA (208 and 220V)	ITA2-10KRT208C Liebert IS-UNITY-DP Card Included	Single-input configuration (default), dual-input is field-configurable
	ITA2-10KRT208 Liebert IS-Unity card sold separately	

All models above include a rack-mount rail kit, UPS-to-battery cable kit (ITA2-UPSEBCCBL1).

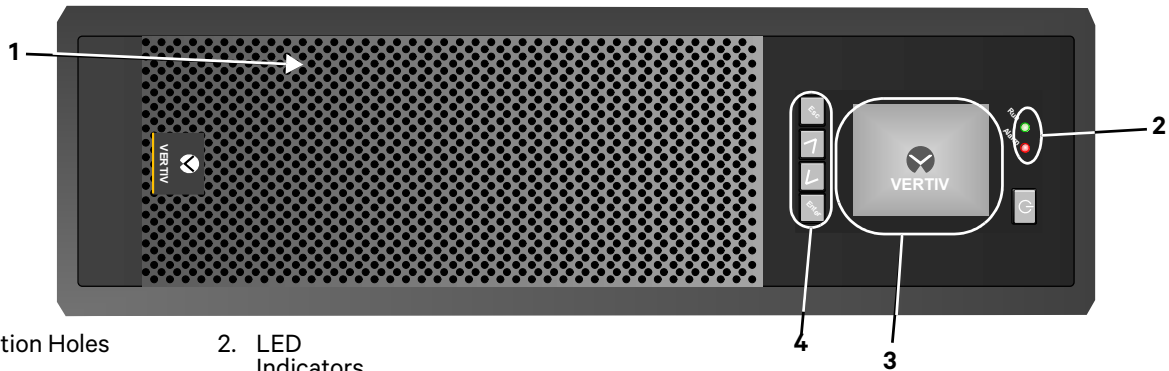
1.3 Appearance and Components

Figure 1 shows the controls and other features on the front of the unit. The rear panel and connections are shown in **Figure 2**.

1.3.1 Components—Front Panel

As shown in **Figure 1**, the UPS front panel provides ventilation holes, operation and display panel, LED indicators and function keys.

Figure 1 UPS front panel

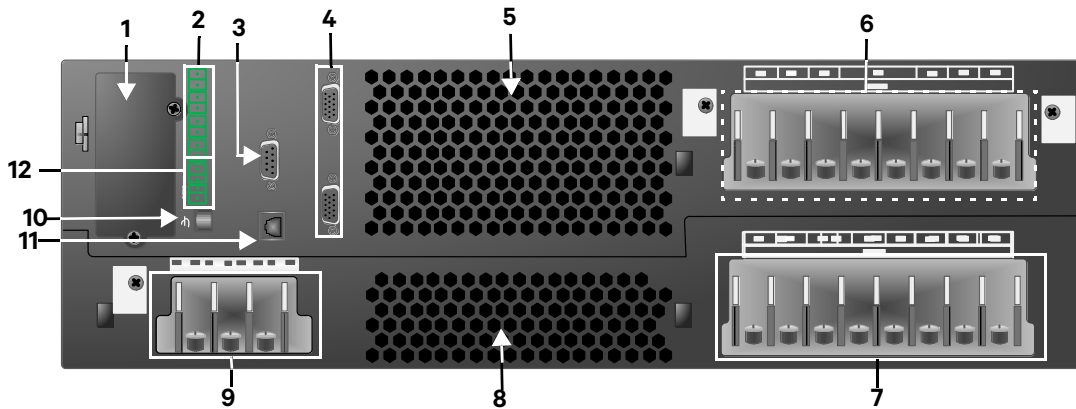


- | | |
|--------------------------|-------------------|
| 1. Ventilation Holes | 2. LED Indicators |
| 3. Operation and display | 4. Function |

1.3.2 Components—Rear Panel

As shown in **Figure 2**, the UPS rear panel features parallel/LBS ports, dry contact port, I/O terminal block, battery terminal block, Liebert IntelliSlot port, USB port, RS-232 port, REPO port and multi-function port. The Liebert IntelliSlot UNITY-DP™ card is standard.

Figure 2 UPS rear panel



- | | | | |
|-----------------------------|------------------------|-----------------------|----------------------|
| 1. Liebert IntelliSlot Port | 2. Dry Contact Port | 3. RS-232 Port | 4. Parallel/LBS Port |
| 5. Ventilation Holes | 6. AC Output Terminals | 7. AC Input Terminals | 8. Ventilation Holes |



WARNING

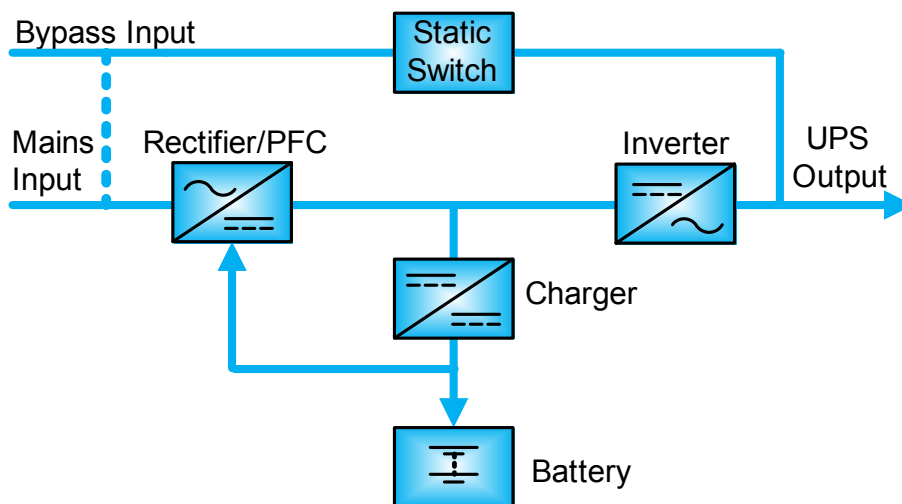
Risk of unauthorized changes and improper service. Can cause property damage, injury or death.

The Liebert ITA2 has no user-serviceable parts. Contact Vertiv Support at 800-548-2378 in the event of any malfunction that requires service. Unauthorized personnel must not open the UPS chassis cover.

1.4 Major Components

The UPS is composed of main/bypass input, TVSS and EMI/RFI filters, rectifier/PFC, inverter, DC-DC battery charger, static bypass transfer switch, external battery cabinets and main output.

Figure 3 UPS operating principle



1.4.1 Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters

These UPS components provide surge protection and filter both electromagnetic interference (EMI) and radio frequency interference (RFI). They minimize any surges or interference present in the mains line and protect the sensitive equipment even when on internal bypass power.

1.4.2 Rectifier/Power Factor Correction (PFC) Circuit

In normal operation, the rectifier/power factor correction (PFC) circuit converts mains AC power to regulated DC power for use by the inverter while ensuring that the wave shape of the input current used by the UPS is near ideal. Extracting this sine wave input current:

- Ensures efficient use of the mains power.
- Reduces distortion reflected on the mains.

This makes cleaner power available to other devices in the building not protected by the Liebert ITA2.

1.4.3 Inverter

In normal operation, the inverter utilizes the DC output of the power factor correction circuit and inverts it into precise, regulated sine wave AC power. When mains power fails, the inverter receives energy from the battery through the DC-to-DC converter. In both normal mode and bypass mode, the UPS inverter remains on-line, generating clean, precise, regulated AC output power.

1.4.4 DC-DC Charger

Whenever the Liebert ITA2 is connected to utility power and the rectifier is operating, the battery charger receives energy through the internal DC bus (output of rectifier/PFC) and regulates it to continuously float charge the batteries.

1.4.5 Static Bypass Switch

The Liebert ITA2 static bypass switch provides an alternate path for utility power to the connected equipment should the UPS have an output overload, overtemperature condition or any other failure. When UPS output power fails, the Liebert ITA2 automatically transfers the connected equipment to bypass power through the static bypass.

1.4.6 Battery Cabinets

The Liebert ITA2 utilizes valve-regulated, non-spillable, lead-acid batteries. To maintain battery design life, operate the UPS in an ambient temperature of 68°F to 77°F (20°C to 25°C). Additional battery cabinets are available to extend battery run times. For run times, see **Tables 13** and **14**.

1.5 UPS State and Operation Mode

For the LED indicators introduced in this section, refer to **3.1 - LED Indicators**.

The UPS state and operation mode include: Normal Mode, Bypass Mode, Battery Mode, ECO Mode, Fault state and Maintenance Bypass Mode. The operation schematic diagrams of Normal Mode, Bypass Mode, Battery Mode and Maintenance Bypass Mode are shown in **Figures 4** through **7**.



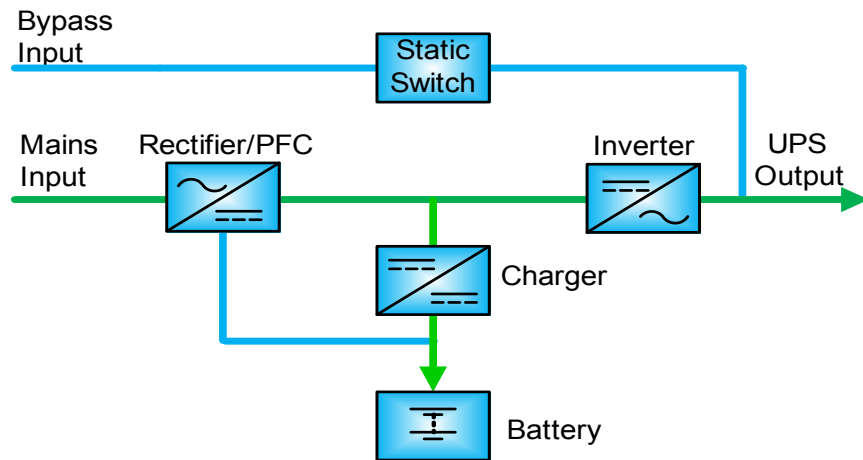
NOTE

Maintenance Bypass Mode is available only when the UPS system includes the optional MBC cabinet.

1.5.1 Normal Mode

The Liebert ITA2 will operate in Normal Mode and will supply the load with clean, conditioned, sine wave power when the utility input is normal. In Normal Mode, the battery charger will operate, charging the battery. The run indicator (green) will be On, the alarm indicator will be Off and the buzzer will be silent.

Figure 4 Normal Mode

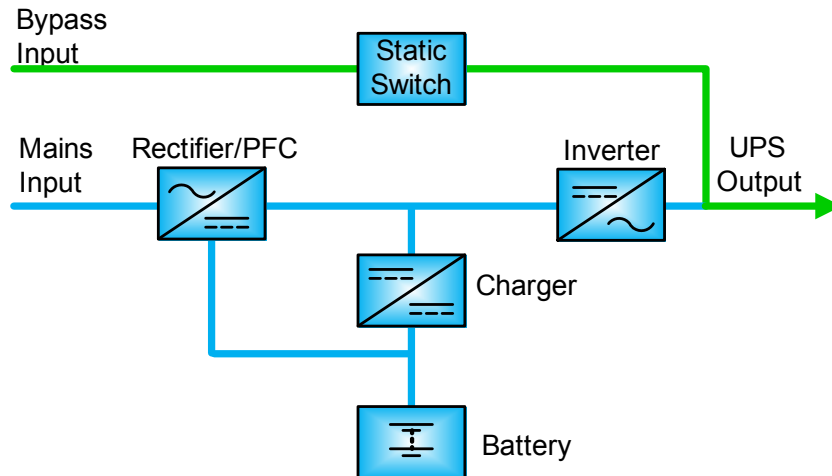


1.5.2 Bypass Mode

If an overload or a fault occurs during UPS operation in Normal Mode, the UPS will transfer to Bypass Mode, supplying the load through the bypass source.

In Bypass Mode, the run indicator will be green, the alarm indicator will be yellow and the buzzer will beep once every second. The Current Screen in the LCD will display *On Bypass*.

Figure 5 Bypass Mode



NOTICE

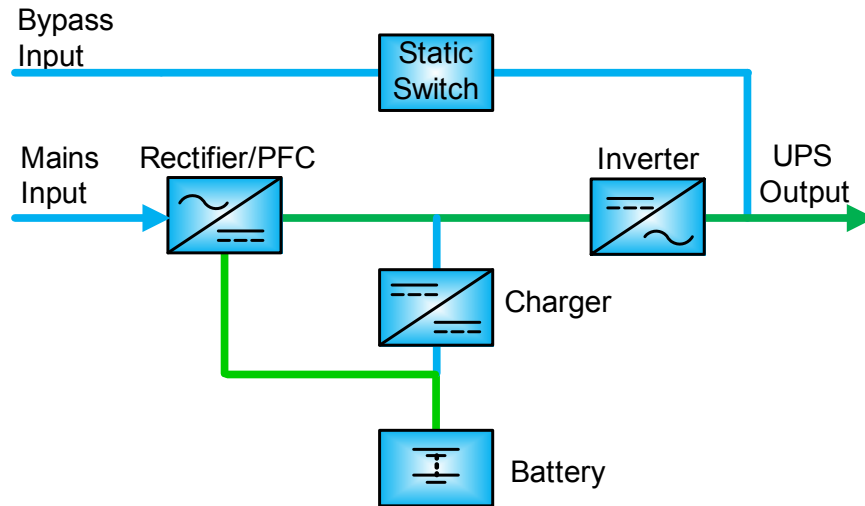
Risk of power interruption. Can damage the connected load.

In case of utility failure or utility voltage out of range in Bypass Mode, the UPS will shut down and shut Off the output power to the load.

1.5.3 Battery Mode

Upon utility failure or voltage out of range, the battery will supply power to the load through the inverter. In Battery Mode, the run indicator will be green, the alarm indicator will be yellow and the buzzer will beep once every second. The Current Screen in the LCD will display *On Battery*.

Figure 6 Battery Mode



NOTE

The battery has been fully charged before shipment. However, transportation and storage will inevitably cause some capacity loss. Therefore, it is required to charge the battery for 5-8 hours before putting the UPS into operation for the first time to ensure the adequate battery backup time.

1.5.4 Auto Restart Mode

Auto restart mode, when enabled (default setting), allows the UPS to automatically restart and provide conditioned, protected power to the connected equipment after the UPS shut down due to a depleted battery due to an extended power outage. The Liebert ITA2 has a built-in auto restart delay of 10 seconds after power is restored that allow the input source to startup other equipment in the building first and stabilize. The UPS will begin recharging the battery during the 10 second delay.

1.5.5 Eco Mode—Single UPS

Eco Mode is an energy-saving operation mode in which UPS efficiency approaches 99% that can be used to reduce power consumption. In Eco Mode, the load is powered by bypass if the bypass voltage is normal; when the bypass voltage is outside the specified range, the load will be powered by inverter.



NOTE

In Eco Mode, if the bypass failure or abnormal bypass voltage notification appears when the output is not overloaded, the UPS will transfer to Normal Mode. However, if the bypass failure or abnormal bypass voltage notification appears when the output is overloaded, the UPS will shut down the bypass.

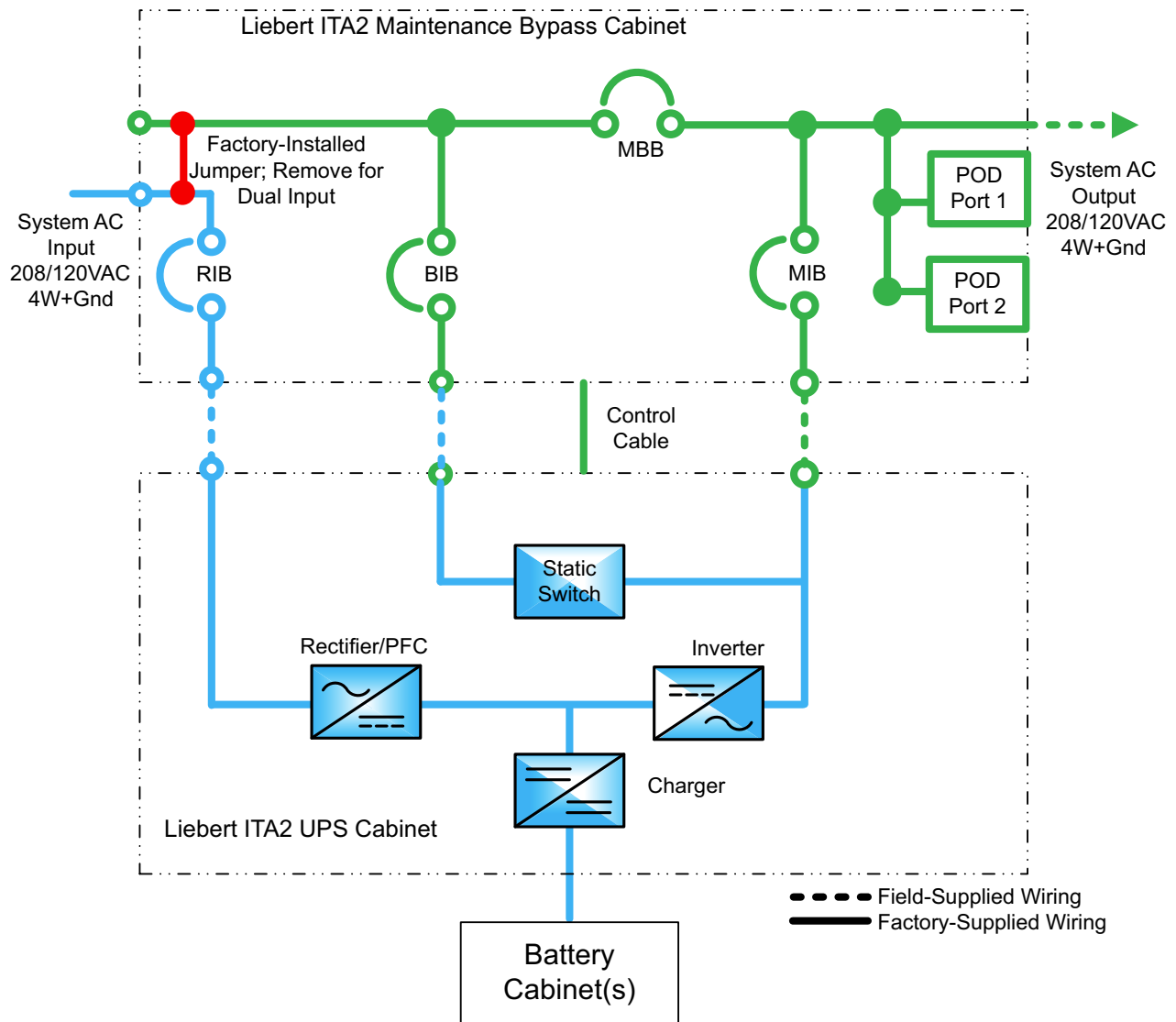
1.5.6 Fault State

In Normal Mode, the UPS will transfer to Bypass Mode if the inverter fails or if UPS overtemperature occurs. In Battery Mode (with no bypass utility), the UPS will shut down and stop output power if the inverter fails or if a UPS overtemperature occurs. In UPS Fault state, the alarm indicator (red) will be On, the buzzer will beep continuously and the fault information will be displayed on the LCD.

1.5.7 Maintenance Bypass Mode

For maintenance and repair, the load can be switched to Maintenance Bypass through the optional maintenance bypass, and the power to the load will not be interrupted. The Maintenance Bypass Breaker is on the front panel of the Maintenance Bypass Cabinet (MBC). For details, refer to the Liebert ITA2 MBC user manual, SL-26252. The manual is available at Vertiv’s Web site: www.vertivco.com

Figure 7 Maintenance Bypass Mode



NOTE

The Liebert ITA2 has no user-serviceable parts. If the UPS malfunctions and requires service, contact Vertiv Support at 800-543-2378 or your local Vertiv representative.

2.0 SINGLE UPS INSTALLATION AND COMMISSIONING

This chapter introduces the installation, cable connection and commissioning of the single UPS. Because each site is different, this chapter provides general installation procedures and methods for the installation engineer who should conduct the installation according to the site conditions and requirements.



WARNING

Risk of improper installation. Can cause property damage, injury or death.

The UPS must be installed according to the information contained in this chapter by properly trained and qualified personnel. If any problem is found, contact Vertiv Support immediately at 800-543-2378.

The UPS must not be powered On without approval of the commissioning engineer.



NOTE

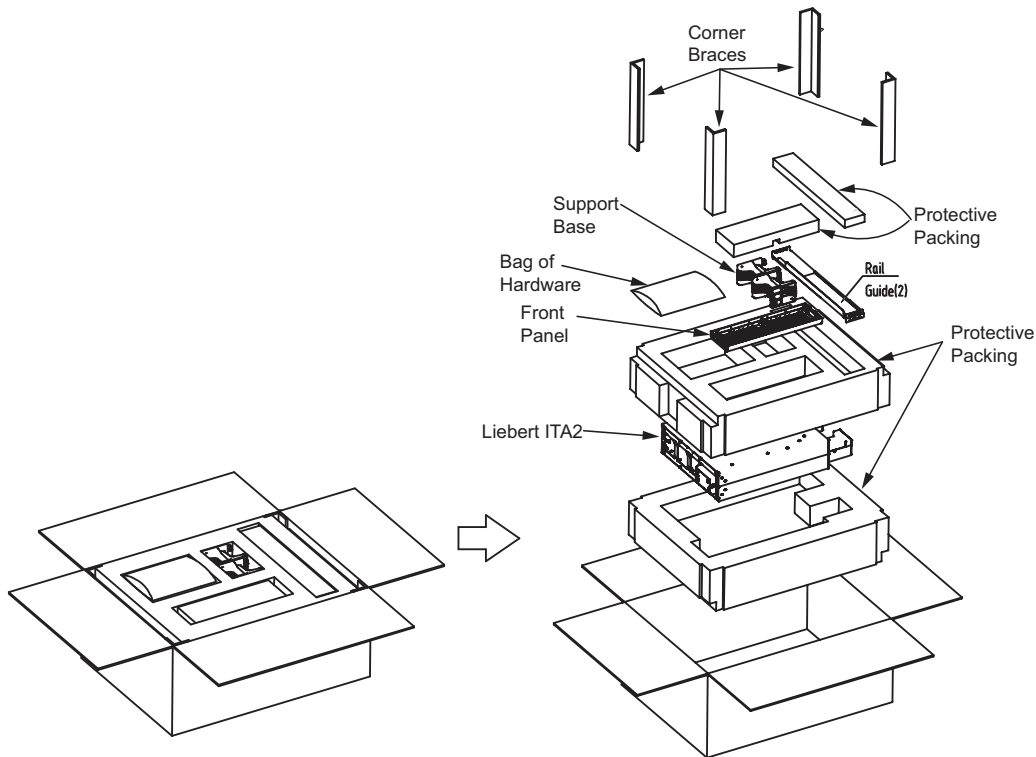
Three-phase, five-wire for power input—The UPS can be connected to three-phase, five-wire (A, B, C, N, PE) TN, TT and IT AC power distribution system (IEC60364-3).

2.1 Unpacking and Inspection

The 8 and 10kVA models are shipped in a cardboard box. To unpack the UPS:

1. Stand the box upright.
2. Open the carton and remove the packing.
3. Lift out the accessories and set them aside.
4. Lift the UPS out of the box and stand it or lay it aside.
5. Remove the UPS, as shown in **Figure 8**.

Figure 8 Unpacking cardboard box



After the UPS and accessories are unpacked,

1. Inspect the UPS for damage. If any problem is found, file a damage claim with the carrier immediately and send a copy to Vertiv at:
 Vertiv
 1050 Dearborn Drive
 P.O. Box 29186
 Columbus, Ohio 43085 USA
2. Check the accessories and models against the delivery list. If any problem is found, notify your local Vertiv representative immediately.

2.2 Moving the UPS

The UPS cabinet can be moved manually by an adequate number of personnel or with mechanical lifting equipment.

NOTICE

Risk of improper transport. Can cause damage to the UPS.

Never attempt to lift or move the Liebert ITA2 with the rack brackets. The brackets and screws are not designed to be used to lift the unit.

2.3 Installation Preparation

2.3.1 Location

For proper operation and to extend the UPS life, install the unit in an area with:

- Convenient wiring
- Adequate operator access area
- Good ventilation
- No corrosive gases
- No excessive moisture
- No excessive dust
- Compliance with firefighting requirements
- Operating temperature within the specifications shown in **Table 15**

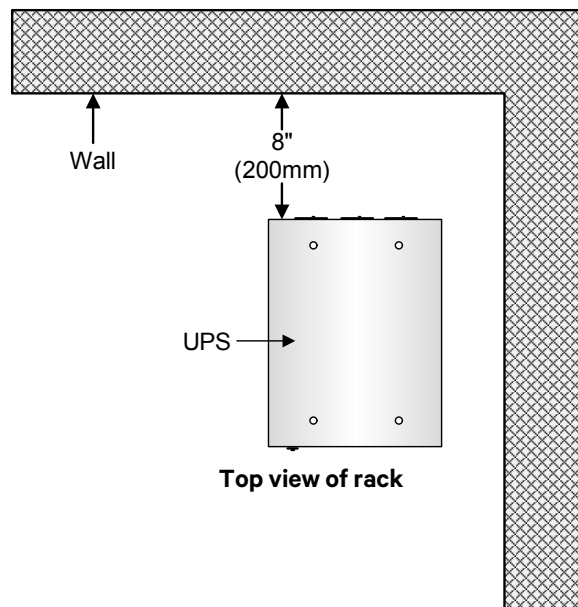
2.3.2 Environmental Requirements

UPS Room

The UPS is designed for indoor installation in a clean, well-ventilated environment with the ambient temperature within the specifications shown in **Table 15**.

The internal fans provide forced air cooling for the UPS. Cooling air enters the UPS through the front panel, and exhausts the hot air through the back. Maintain at least 8" (200mm) clearance in the front and rear of the UPS (see **Figure 9**), to avoid obstructing the UPS ventilation and heat dissipation.

Figure 9 Installation clearances



Storage

If the UPS is not installed immediately, it must be stored indoors and protected from excessive moisture, heat and other harsh conditions. The battery in the external battery cabinet requires dry, well-ventilated environment for storage with a storage temperature range of 68°F ~ 77°F (20°C ~ 25°C)

NOTICE

Risk of failure to properly charge batteries. Can cause permanent damage to batteries and void the warranty.

Batteries will self-discharge during storage. Batteries must be recharged as recommended by the battery manufacturer. The batteries must be recharged every 3 to 6 months, depending on storage temperature:

- 68-77°F (20-25°C): 6 months
- 78-86°F (26-30°C): 3 months
- 87°F or higher (31°C or higher): 1 month.

2.3.3 Installation Tools



WARNING

Risk of electric shock. Can cause property damage, injury or death.

All tools used to install or maintain the Liebert ITA2 must be insulated. The tools below are for reference only; follow the all local and national regulations when installing or servicing the Liebert ITA2.

- Slotted Screwdriver
- Insulated Torque Wrench
- Multimeter
- #3 Phillips Screwdriver
- T10 Torx Screwdriver
- Clip-on Ammeter

2.4 External Protective Devices

A circuit breaker or other protective devices must be installed at the external AC input end of the UPS. This section provides general guidance for installation by a properly trained and qualified engineer.

2.4.1 Rectifier and Bypass Input

Overcurrent

An appropriate overcurrent protective device should be installed on the utility input power distribution, and the current capacity of power cable and the system overload requirements should be taken into account in installation (see **Table 2**).

Dual-Input

In a dual-input system, separate protective devices should be installed for the rectifier and bypass inputs at the utility input power distribution panel.

Main/Bypass Back-Feed Protection

The UPS has main/bypass back-feed protection function in the event of a fault.

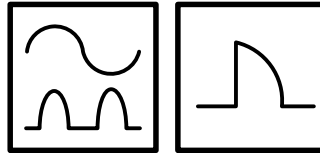
Earth Leakage Current

The residual current detector (RCD) for the UPS upstream input power distribution should be:

- Sensitive to the DC unidirectional pulse (Level A) in power distribution network
- Insensitive to the transient current pulse
- General sensitivity type, settable: 0.3A ~ 1A

The residual current circuit breaker (RCCB) must be sensitive to the DC unidirectional pulse (level A) in power distribution network, but insensitive to the transient current pulse, as shown in **Figure 10**.

Figure 10 RCCB symbols



When using the earth RCD in a split-bypass system or parallel system, the RCD should be installed at the upstream input power distribution end to prevent false alarms.

The earth leakage current fed by the RFI filter in the UPS ranges from 3.5mA to 100mA. Vertiv recommends verifying the sensitivity of each differential device of the upstream input power distribution and downstream power distribution (to load).

2.4.2 Battery Input

Battery cabinets provided by Vertiv have a built-in overcurrent protective device.

2.4.3 UPS Output

A protective device must be installed for the UPS output power distribution.

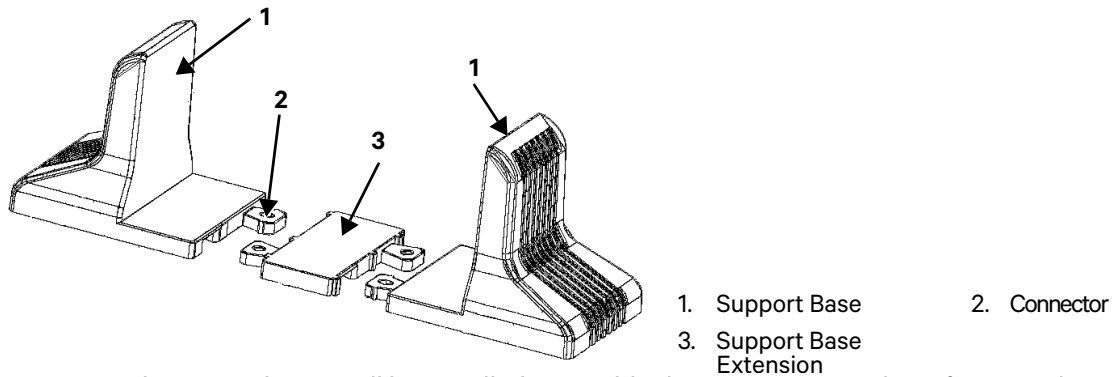
2.5 Mechanical Installation

The Liebert ITA2 may be installed in a tower or rack configuration. If the installation includes batteries or a Maintenance Bypass Cabinet review the user manuals for those components before beginning to install the Liebert ITA2 UPS. The MBC and battery cabinets should be installed before the UPS is installed.

2.5.1 Tower Installation

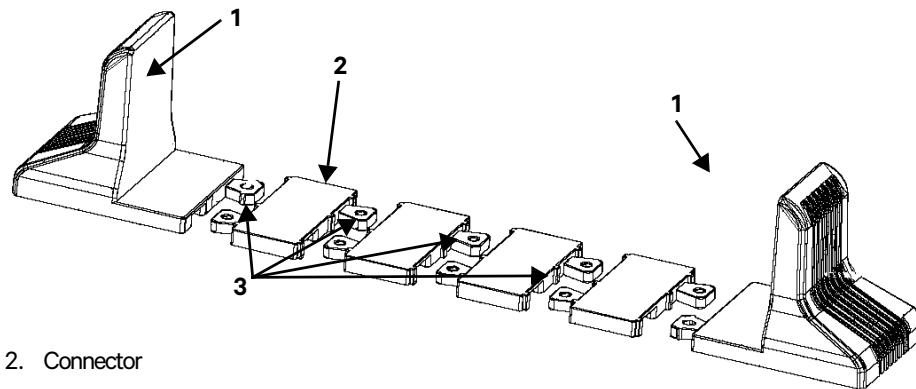
1. Assemble a pair of support bases and a support base extension, as shown in **Figure 11**.
2. Put the assembly on a flat installation surface.

Figure 11 Connecting the support base with support base extension



3. If one or more battery cabinets will be installed, assemble the necessary number of support bases as shown in **Figure 12**.

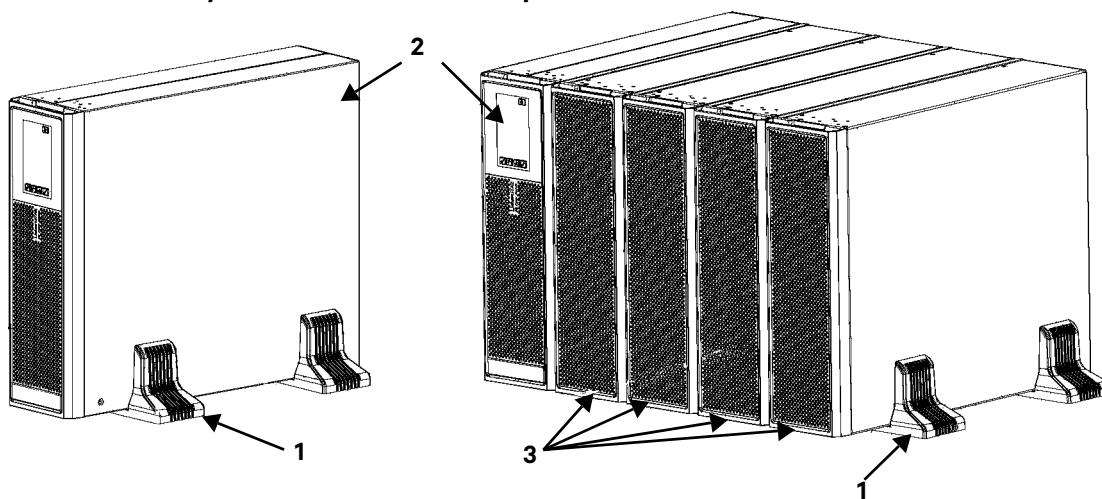
Figure 12 Assemble the support base for UPS and battery cabinets



1. Support Base
2. Connector
3. Support Base Extension

4. Place the UPS on the support bases and support base extensions, as shown in **Figure 13**.

Figure 13 UPS and battery cabinet installation complete



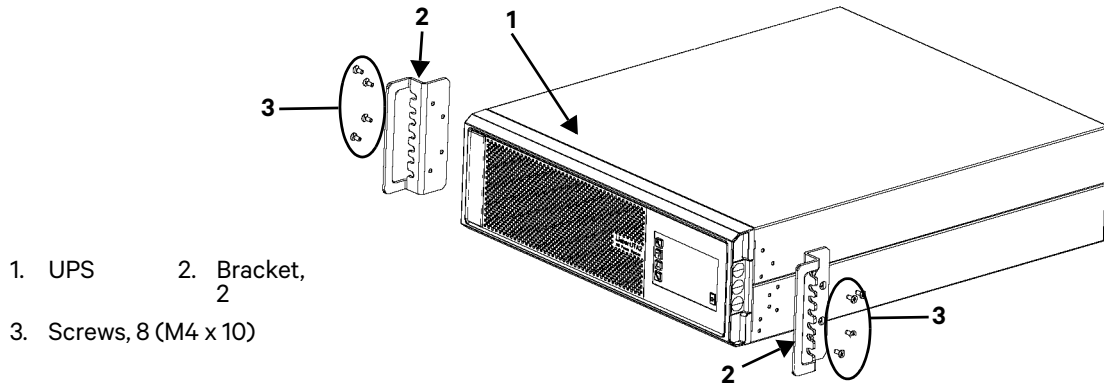
1. Support Base
2. UPS
3. Battery Cabinet, 4

2.5.2 Rack Installation

Installation procedures for UPS

1. Use eight M4 × 10 screws to attach two brackets, one on each side of the UPS front panel, as shown in **Figure 14**.

Figure 14 Installing brackets



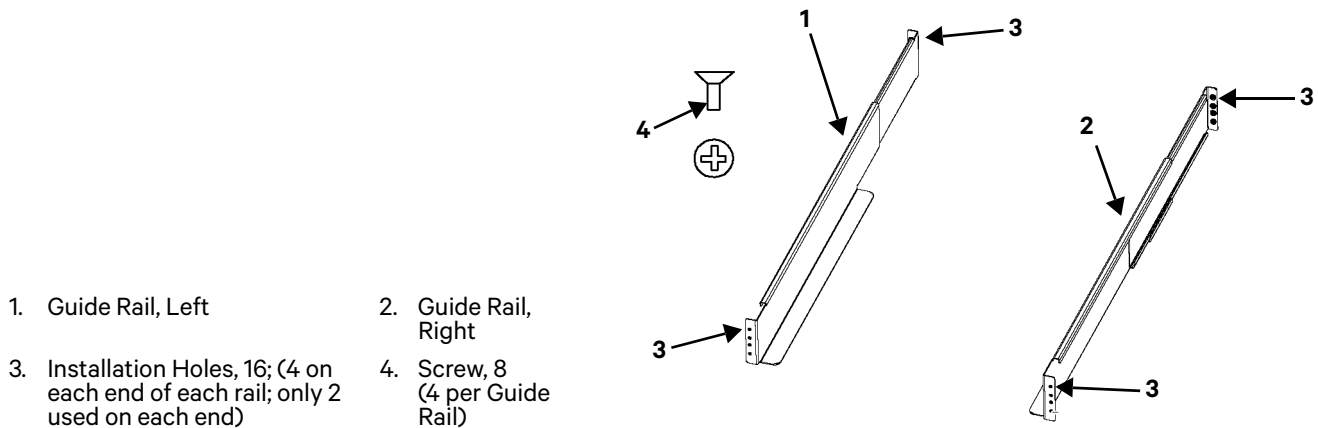
NOTICE

Risk of improper transport. Can cause damage to the UPS.

Never attempt to lift or move the Liebert ITA2 with the rack brackets. The brackets and screws are not designed to be used to lift the unit.

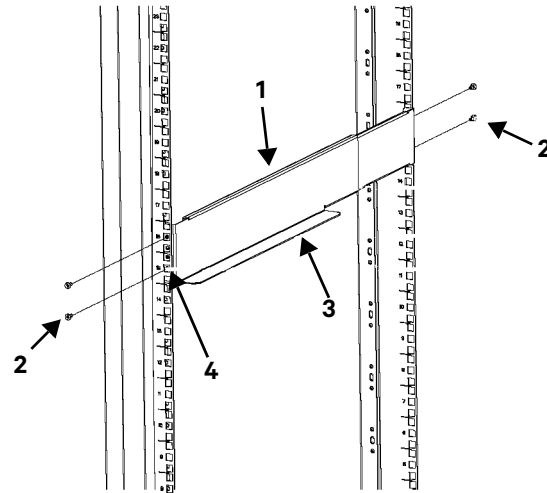
2. Install the guide rails, required for rack installation.
 - a. Take out the guide rails (one left guide rail and one right guide rail), guide rail screws and panel screws from the package, distinguish the left guide rail and right guide rail according to **Figure 15**, and confirm its retractable function.

Figure 15 Guide rail and screw



- b. Adjust the length of the guide rail according to the dimensions of the rack.
- c. Align the installation holes of the guide rail with the square holes of the rack, fix the guide rail onto the rack through the guide rail screws (total of eight), each left guide rail and right guide rail requires four guide rail screws, as shown in **Figure 16**.

Figure 16 Installing the guide rail



- | | |
|----------------------|--|
| 1. Guide Rail | 2. Guide Rail Screws, 4 per Guide Rail |
| 3. Guide Rail Holder | 4. Square Hole in Rack Rail |



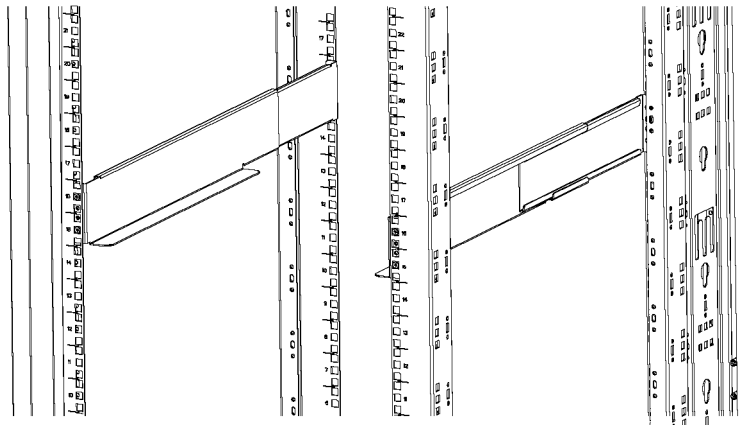
NOTE

The guide rail holder must be nearer the front of the rack.

*Each end of a guide rail has four installation holes (see **Figure 15**). Do not use the two installation holes in the middle when attaching the guide rail. Vertiv recommends using the top and bottom installation holes.*

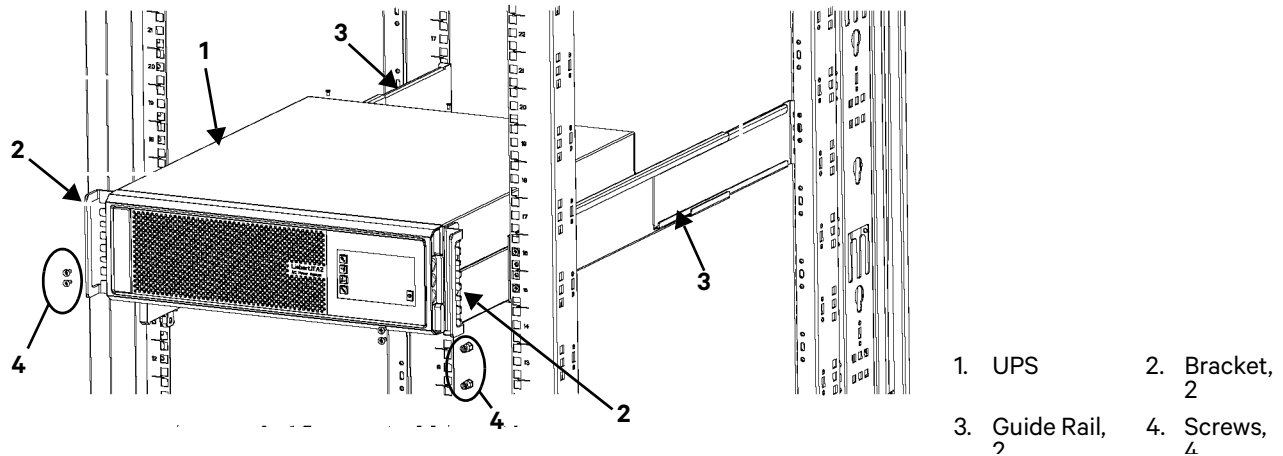
The completed guide rail installation is shown in **Figure 17**.

Figure 17 Guide rails installed



- Place the UPS on the guide rails in the rack, and push it completely into the rack. Use four M6 × 16 screws to mount the UPS in the rack through the brackets, as shown in **Figure 18**.

Figure 18 Installing the UPS



- 1. UPS
- 2. Bracket, 2
- 3. Guide Rail, 2
- 4. Screws, 4

Install the Battery Cabinets

Battery cabinets are installed the same as the UPS. Repeat the preceding procedures to install the battery cabinets and a UPS in the rack, one at a time.

The battery cabinets weigh 11.5 lb. (52kg) each and require two people to install. The battery cabinets should be installed first, beginning with the slots lowest in the rack. The UPS should be installed last and placed above the battery cabinets.

NOTICE

Risk of improper transport. Can cause damage to the UPS or battery cabinets.
Never attempt to lift or move the Liebert ITA2 or battery cabinets with the rack brackets. The brackets and screws are not designed to be used to lift the units.

NOTICE

Risk of improper installation. Can make rack top-heavy and cause a tipping hazard.
The battery cabinets are heavier than the Liebert ITA2 UPS. Vertiv recommends installing the battery cabinets as near the bottom of the rack as possible to maintain a low center of gravity. Install the UPS above the battery cabinets.
Each battery cabinet must be installed on its own set of rack-mount rails because the rail kit is not designed to support the weight of more than one battery cabinet.

2.6 Connecting Power Cables

Input/output cables are required. When connecting the cables, follow the local wiring regulations, take the environment situation into account and refer to NEC Table 3B of IEC60950-1.

The recommended minimum cable CSA is listed in **Tables 2**. Select the appropriate cables (see **Tables 2** and **3**).

Table 2 Currents and wire size—UPS rectifier input, single-source configuration

Unit Rating	Maximum Input Current, A	75°C THW Copper Wire (phase) *Number of Cables per Phase: 1	75°C THW Copper Wire (neutral) * Number of Cables: 1	75°C THW Copper Wire (Ground) * Number of Cables: 1
8KVA	24	8AWG	8AWG	10AWG
10KV A	37	6AWG	6AWG	10AWG

Table 3 AC currents and cables—UPS bypass input* and output

Unit Rating	Maximum Current (A)	75°C THW Copper Wire (phase)	75°C THW Copper Wire (neutral)	75°C THW Copper Wire (Ground)
8KVA	23	10AWG	10AWG	10AWG
10KVA	28	8AWG	8AWG	10AWG

* Input sizes and values apply to dual-source configuration.

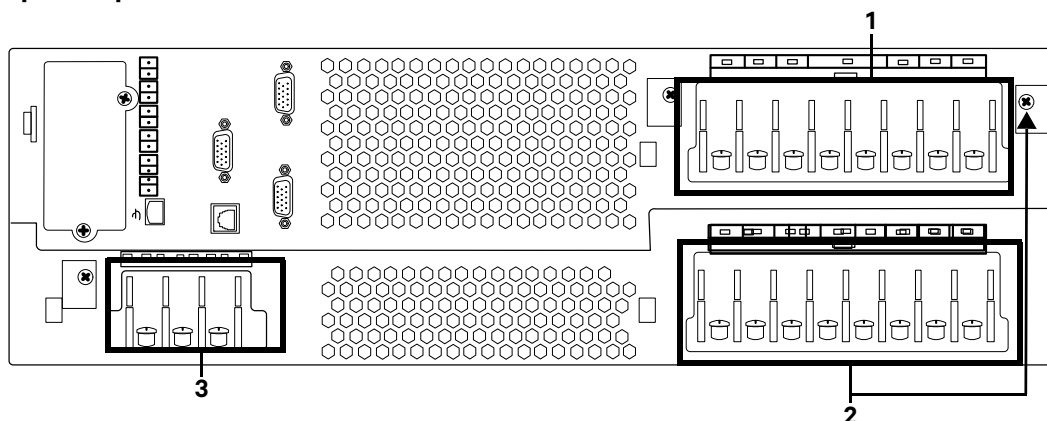
Table 4 Ring terminal part numbers

Part #	AWG (mm ²)		
	10 (5.26)	8 (8.36)	6 (13.3)
	McMaster-Carr: 7113K462	McMaster-Carr: 7113K444	McMaster-Carr: 7113K366
	Thomas & Betts: RC10-14	Thomas & Betts: RDV717	Thomas & Betts: RE6-14
	Tyco Electronics: 1577648-1	Tyco Electronics: 132331-1	—

2.6.1 Connecting I/O Cables

Connect the UPS power cables to the I/O terminal block on the UPS rear panel as shown in Figure 19.

Figure 19 Input/output cable terminals



1. Output Terminals C, B, A, N, N, pC, pB, pA
2. Input Terminals N, N, bC, rC, bB, rB, bA, rA
3. Battery Terminals BAT-: Battery Negative Terminal BATN: Battery Neutral Terminal BAT+: Battery Positive Terminal



WARNING

Risk of improper installation. Can cause equipment damage, injury and death. After the power cables are connected, the protective cover board of the I/O terminal block must be reinstalled to remove the electric shock hazard.

Power Distribution Mode

There are two modes for UPS power distribution:

- optional Maintenance Bypass Cabinet, and
- self-distribution.

2.6.2 Single-Input Configuration



WARNING

Risk of electrical shock. Can cause equipment damage, injury and death.

Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked out and tagged appropriately to prevent activation during the installation.

1. Remove the conduit box cover to gain access to the input and output terminal blocks.
2. Remove the knockout plates and attach the conduits to the rear of the conduit box.

Hardwire Connections—UPS Input

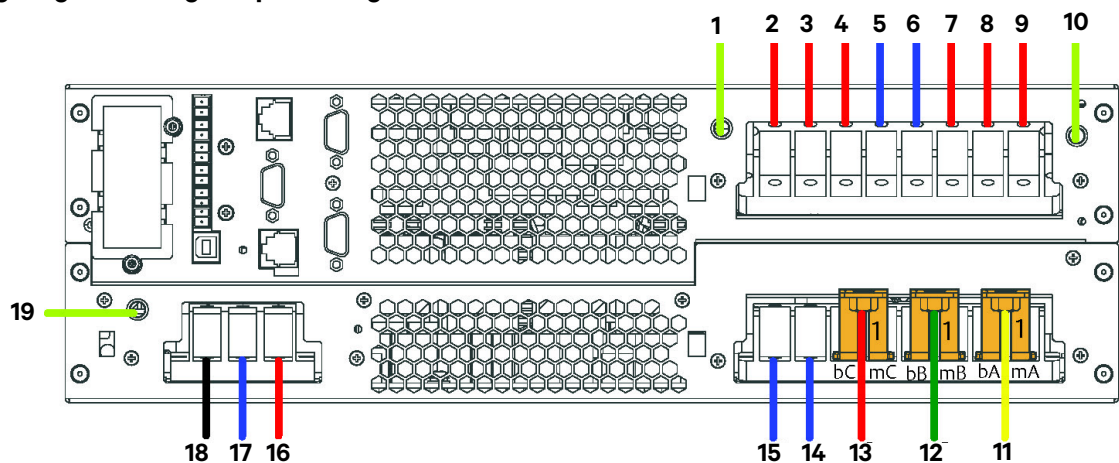
3. Leave the shorting busbars in place on the UPS input terminal block.
4. Using **Figure 20**, make these connections:
 - Phase A cable from the upstream feeder panel to UPS Jumper 11
 - Phase B cable from the upstream feeder panel to UPS Jumper 12
 - Phase C from the upstream feeder panel to UPS Terminal 13
 - Neutral from the upstream feeder panel to UPS Terminal 14 or 15
 - The safety equipment ground cable from upstream feeder panel to UPS ground stud 10

Hardware Connections—UPS Output

The UPS has two output terminal block sections, one is always on and the other is programmable/controllable. These instructions will list the always-on connections first, followed by the programmable connections inside parentheses.

5. Using **Figure 20**, make these connections:
 - Phase A cable from UPS Terminal 4 (9) to the downstream distribution panel Phase A on the panelboard main breaker
 - Phase B cable from UPS Terminal 3 (8) to the downstream distribution panel Phase B on the panelboard main breaker
 - Phase C cable from UPS terminal 2 (7) to the downstream distribution panel Phase C on the panelboard main breaker
 - Neutral cable from UPS terminal 5 (6) to the downstream distribution panel neutral bus
 - The safety equipment ground cable from UPS Ground Stud 1 to the downstream distribution panel ground bus
6. Replace the conduit box cover and secure it.

Figure 20 Wiring diagram—Single-input configuration



- | | | |
|-------------------------------------|------------------------------------|-------------------------------------|
| 1. PE: Output PE Terminal | 2. C: AC Output Terminal Phase C | 3. B: AC Output Terminal Phase B |
| 4. A: AC Output Terminal Phase A | 5. N: Output Neutral Line Terminal | 6. N: Output Neutral Line Terminal |
| 7. pC: AC Output Terminal Phase C | 8. pB: AC Output Terminal Phase B | 9. pA: AC Output Terminal Phase A |
| 10. PE: Output PE Terminal. | 11. L1: Input Line Phase A | 12. L2: Input Line Phase B |
| 13. L3: Input Line Phase C | 14. N: Input Neutral Line Terminal | 15. N: Input Neutral Line Terminal |
| 16. BAT+: Battery Positive Terminal | 17. BATN: Battery Neutral Terminal | 18. BAT-: Battery Negative Terminal |
| 19. PE: Battery PE Terminal | | |

2.6.3 Dual-Input Configuration

Dual input configuration for the UPS requires that both feeds be from the same source.

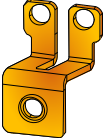


WARNING

Risk of electrical shock. Can cause equipment damage, injury and death.

Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked out and tagged appropriately to prevent activation during the installation.

Table 5 Shorting copper bar

Bypass Shorting Copper Bar	Drawing
2-Pin Copper Bar	

1. Remove the conduit box cover to gain access to the input and output terminal blocks.
2. Remove the knockout plates and attach the conduits to the rear of the conduit box.

Dual-Input Hardwire Connections—Main Input

3. Using **Figure 20**, remove the shorting busbars from the UPS input terminal block on Terminals 11, 12 and 13

Dual-Input Hardwire Connections—UPS Rectifier Input

4. With the shorting busbars removed from the UPS input terminal block, using **Figure 21**, make these connections:
 - Phase A cable from the upstream feeder panel to UPS Terminal 11
 - Phase B cable from the upstream feeder panel to UPS Terminal 13
 - Phase C from the upstream feeder panel to UPS Terminal 15
 - Neutral from the upstream feeder panel to UPS Terminal 17
 - The safety equipment ground cable from the upstream feeder panel to UPS ground stud 10.

Dual-Input Hardwire Connections—UPS Bypass Input

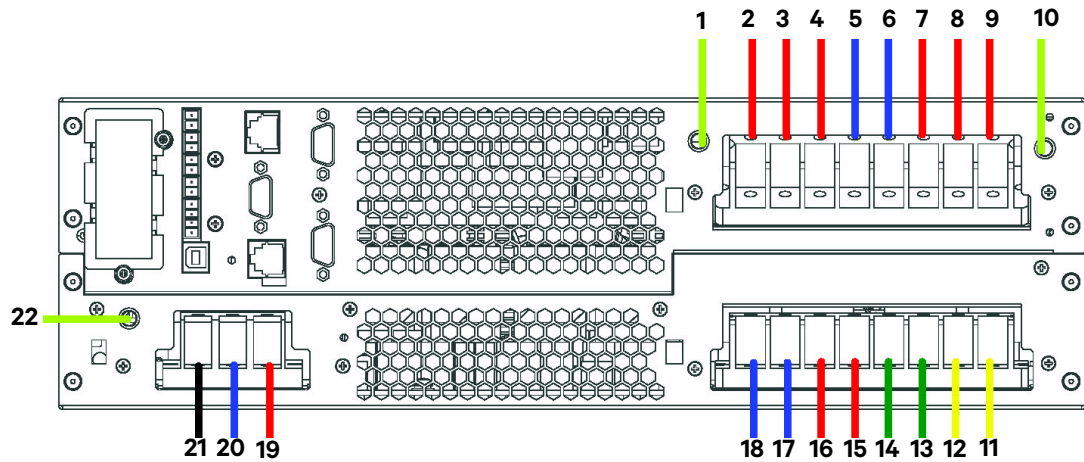
5. With the shorting busbars removed on the UPS input terminal block, using **Figure 21**, make these connections:
 - Phase A cable from the upstream feeder panel to UPS Terminal 12
 - Phase B cable from the upstream feeder panel to UPS Terminal 14
 - Phase C from the upstream feeder panel to UPS Terminal 16
 - Neutral from the upstream feeder panel to UPS Terminal 18
 - The safety equipment ground cable from the upstream feeder panel to UPS Ground Stud 10.

Dual-Input Hardwire Connections—UPS Output

The UPS has two output terminal block sections, one is always on and the other is programmable/controllable. These instructions will list the always-on connections followed by the programmable connections inside parentheses.

6. Using **Figure 21**, make these connections:
 - Phase A cable from UPS Terminal 4 (9) to the downstream distribution panel Phase A on the panelboard main breaker
 - Phase B cable from UPS Terminal 3 (8) to the downstream distribution panel Phase B on the panelboard main breaker
 - Phase C cable from UPS Terminal 2 (7) to the downstream distribution panel Phase C on the panelboard main breaker
 - Neutral cable from UPS Terminal 5 (6) to the downstream distribution panel neutral bus
 - The safety equipment ground cable from UPS Ground Stud 1 to the downstream distribution panel ground bus
7. Replace the conduit box cover and secure it.

Figure 21 Wiring diagram—Dual input configuration



- | | | |
|-------------------------------------|--|--|
| 1. PE: Output PE Terminal | 2. C: AC Output Terminal Phase C | 3. B: AC Output Terminal Phase B |
| 4. A: AC Output Terminal Phase A | 5. N: Output Neutral Line Terminal | 6. N: Output Neutral Line Terminal |
| 7. pC: AC Output Terminal Phase C | 8. pB: Programmable AC Output Terminal Phase B | 9. pA: Programmable AC Output Terminal Phase A |
| 10. PE: Input PE Terminal. | 11. rA: AC Rectifier Input Phase A | 12. bA: Bypass Input Phase A |
| 13. rB: AC Rectifier Input Phase B | 14. bB: Bypass Input Phase B | 15. rC: AC Rectifier Input Phase C |
| 16. bC: Bypass Input Phase C | 17. N: Input Neutral Line Terminal | 18. N: Input Neutral Line Terminal |
| 19. BAT+: Battery Positive Terminal | 20. BATN: Battery Neutral Terminal | 21. BAT-: Battery Negative Terminal |
| 22. PE: Battery PE Terminal. | | |

2.6.4 Connecting Battery Cables

Do not reverse the polarity of the battery cables.

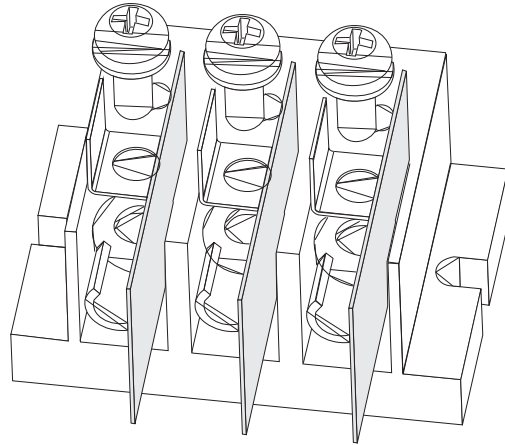
Before replacing the battery cabinet and connecting the battery cables, ensure the battery breaker on the rear of the battery cabinet is open (Off).

Installing Battery Insulating Plates

The battery terminals need insulating plates to guarantee the sufficient insulation distance between the battery external cables connection to protect against faults such as arcing and short circuits.

To install the insulating plates, connect the external cable to the battery terminals as shown in **Figure 22**

Figure 22 Battery insulating plate



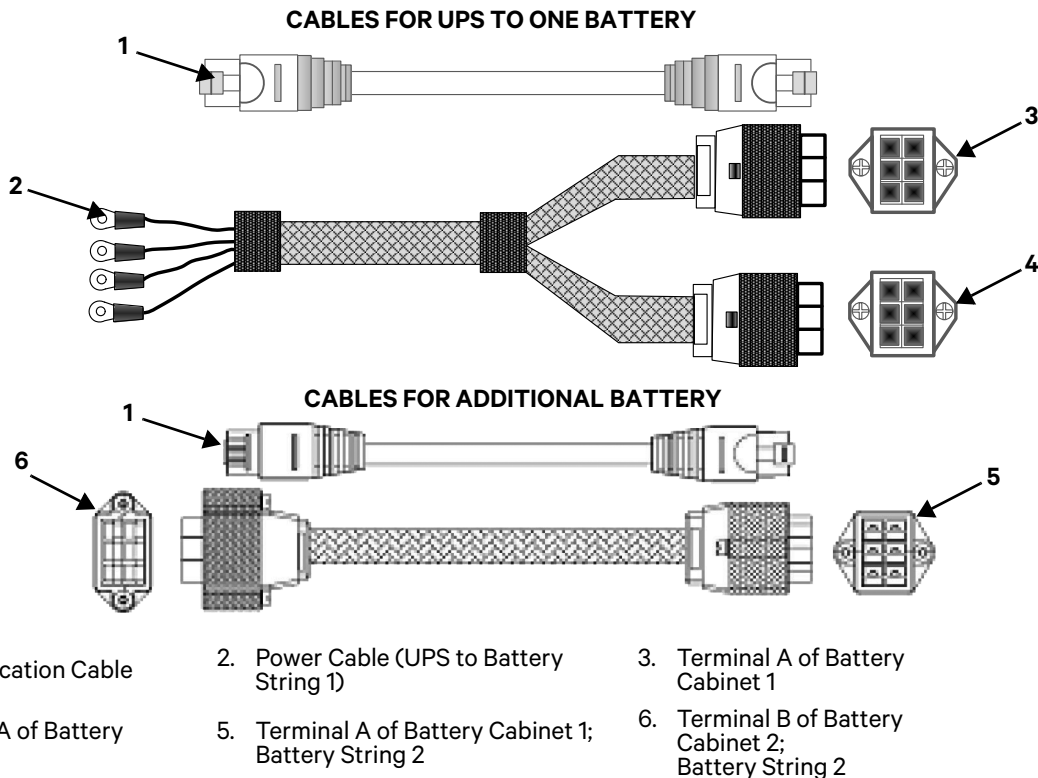
Installing the Battery Cabinet

1. Before installation, inspect the appearance and accessories of the battery, and cabinet and if there are any signs of damage, contact Vertiv Services at 800-543-2378.
2. Maintain at least 10mm clearances between the front, rear, side panels of the battery and the wall or adjacent equipment to keep well-ventilated.
3. Maintain some clearances between the top of the battery and the upper baffle to facilitate monitoring and maintenance of the battery.
4. Install the batteries from the bottom to the top to minimize any tipping hazard. Place the battery well to avoid shake and impact.

Connecting Battery Cabinet Cables

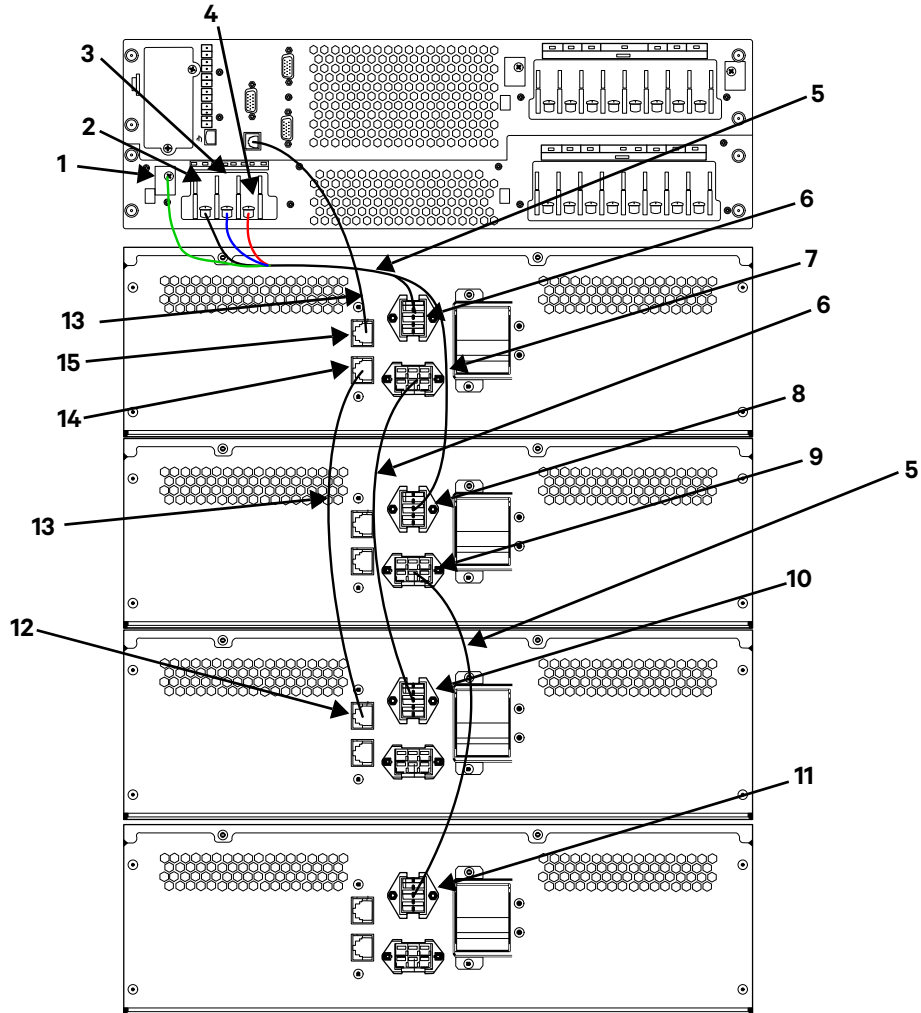
When more than one string is installed, use the factory-provided cable to connect the battery cabinets, use the factory-provided cable shown in **Figure 23**, Terminal A of the first string connects to the UPS. Terminal B of the first string will connect to Terminal A of the second string.

Figure 23 Cables between Liebert ITA2 and battery cabinets



The cable connections between the battery cabinet and the UPS are shown in **Figure 24**.

Figure 24 Cable the UPS to two battery strings in parallel

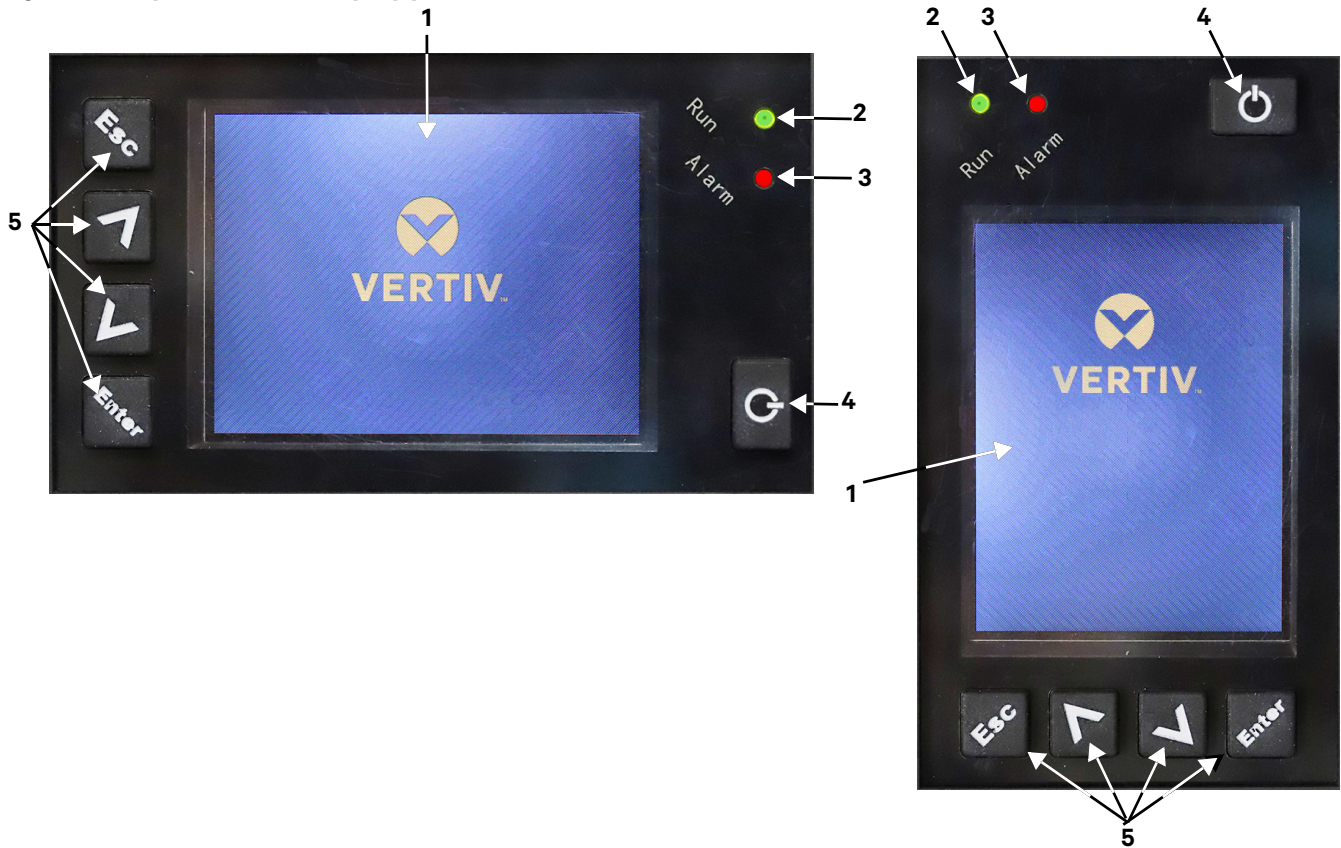


- | | | | |
|----------------------------------|---|---|---|
| 1. PE (Battery Ground) on UPS | 2. BAT - on UPS | 3. BAT N on UPS | 4. BAT + on UPS |
| 5. Extension Cable | 6. Terminal A, Battery Cabinet 1 | 7. Terminal B, Battery Cabinet 1 | 8. Terminal A, Battery Cabinet 2 |
| 9. Terminal B, Battery Cabinet 2 | 10. Terminal A, Battery Cabinet 3 | 11. Terminal A, Battery Cabinet 4 | 12. Communication Port 1 of Battery Cabinet 3 |
| 13. RJ-45 Communication Cables | 14. Communication Port 2 of Battery Cabinet 1 | 15. Communication Port 1 of Battery Cabinet 1 | |

3.0 OPERATION AND DISPLAY PANEL

This chapter describes the Liebert ITA2 controls, particularly the operation and display panel on the front of the UPS unit. The panel has an On/Off button, four menu navigation buttons, two LED indicators and a liquid crystal display (LCD) as shown in **Figure 25**.

Figure 25 Operation and display panel



- 1. LCD
- 2. Run Indicator
- 3. Alarm Indicator
- 4. Power Button
- 5. Menu Keys



NOTE

The LCD automatically changes orientation depending on how the UPS is installed, either rack or tower.

3.1 LED Indicators

The LED indicators are composed of the run indicator and alarm indicator. **Table 6** details the indicators' appearance and meaning.

Table 6 LED indicators description

Indicator	Color	State	Meaning
Run indicator	Green	On	UPS has output
		Blinking	Inverter is starting
		Off	UPS has no output
Alarm indicator	Yellow	On	Alarm occurs
	Red	On	Fault occurs
	N/A	Off	No alarm, no fault

3.1.1 Audible Alarm (Buzzer)

The UPS operation is accompanied with the following two different kinds of audible alarms shown in **Table 7**.

Table 7 Audible alarm description

Sound	Meaning
Continuous beep	Generated when a UPS fault appears, such as a fuse or hardware failure
One beep every 0.5 second	Generated when a UPS critical alarm appears, such as inverter overload
One beep every second	Generated when a UPS critical alarm appears, such as battery low voltage
One beep every 3.3 second	Generated when a UPS general alarm appears

3.1.2 LCD And Function Keys

The operation and display panel provides five function keys; described in **Table 8**.

Table 8 Control button description






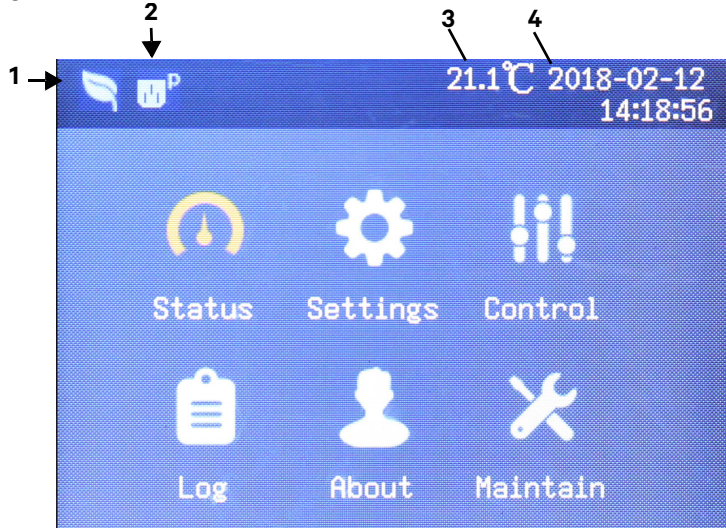
Function Key	Description
Confirm	 Used to Confirm or Enter
Up	 Move to Previous Page, increase value, Move left in tower configuration.
Down	 Move to Next Page, reduce value, move right in tower configuration.
Escape	 Go Back or Escape
Power	 Used to Power On, Power Off or transfer to Bypass mode

Figure 26 LCD screen

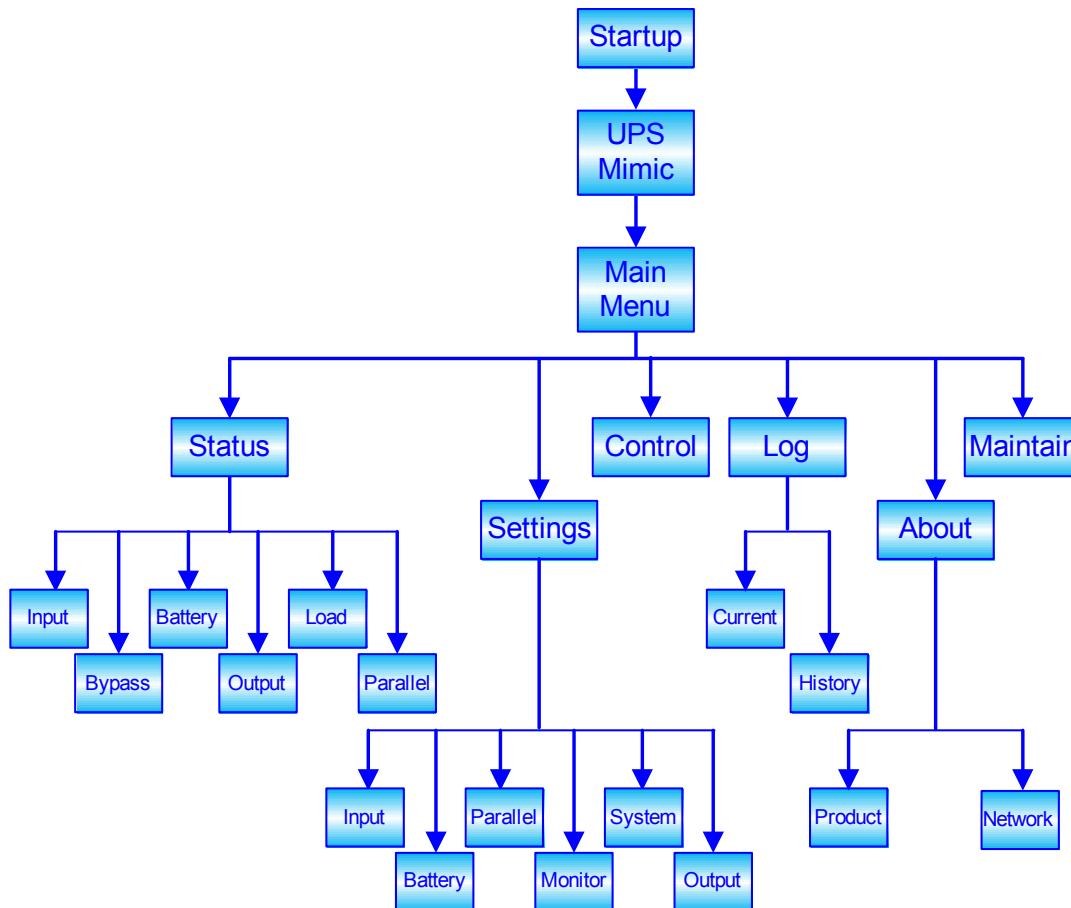


- 1. Eco Mode
- 2. Programmable Output
- 3. Ambient Temperature/ Humidity (displayed only when sensor is connected)
- 4. Date and Time

The user-friendly, menu-driven LCD permits browsing the UPS status, viewing operational parameters, customizing settings, controlling the UPS and viewing current and past alarms and stored events.

3.2 LCD Menu Structure

Figure 27 LCD menu structure



3.3 LCD Screen Types

3.3.1 Start Screen

Upon startup, the UPS executes a system test, and the start screen, shown in **Figure 28**, appears for about 10 seconds.

Figure 28 Start screen

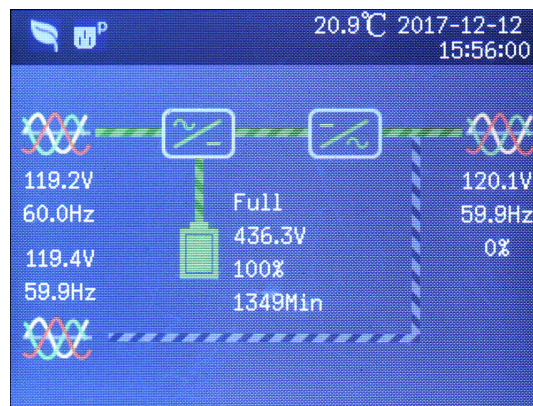



3.3.2 UPS Mimic Screen

After the system test, the UPS Mimic shown in **Figure 29** will appear.

The UPS Mimic page shows the UPS status, including input, bypass, rectifier, battery, inverter and output, etc. The working modes are shown in color and the invalid modes in gray.

Figure 29 UPS Mimic

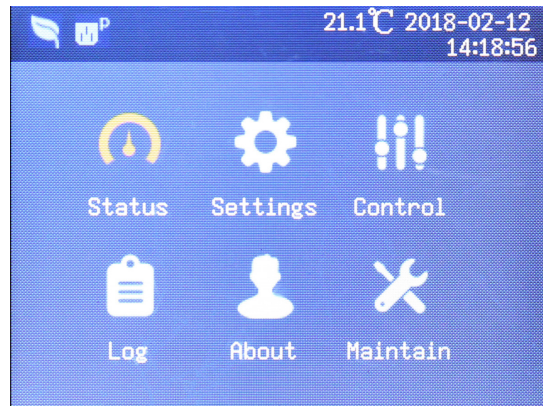


At the UPS Mimic page, press the Enter button  to enter the main menu screen.

3.3.3 Main Menu Screen

The main menu screen offers six commands: *Status*, *Settings*, *Control*, *Log*, *About* and *Maintain*, as shown in **Figure 30**.

Figure 30 Main menu screen



At the main menu screen, press the **Esc** key to display the UPS Mimic page. Press the **↶** or **↷** key to move the cursor to select the menu needed, then press the **Enter** key to confirm it.

3.3.4 Submenu Screen

The submenu screen contains the UPS parameters and item settings.

After entering the submenu screen, if there is a tab control, move the cursor to the tab. At this time, you can press the **↶** or **↷** key to switch the tab. Press the **Enter** key to move the cursor to a certain item.

After entering the submenu screen, if there is no tab control, then the cursor will stop at a certain item.

Press the **Esc** key to back to the previous screen.

For details about the submenu screen, see following pages.

Status Screen

The Status screen contains five tabs for the Input, Bypass, Battery, Output and Load to display the voltages, currents, frequencies and other UPS parameters.

Figure 31 Status page menus

20.7°C 2017-12-12 15:58:41

Input	Bypass	Battery	Output
L-N voltage(V)	119.0	119.4	118.8
L-N current(A)	0.9	0.4	1.1
Frequency(Hz)	60.00	60.00	60.00
L-L voltage(V)	207.0	206.6	206.1
Power factor	0.37	0.00	0.35
Energy(kWh)	9		

20.9°C 2017-12-12 15:58:48

Input	Bypass	Battery	Output
L-N voltage(V)	119.6	119.6	119.5
Frequency(Hz)	59.98	59.98	59.98
L-L voltage(V)	207.6	207.1	207.0

20.8°C 2017-12-12 15:59:37

Input	Bypass	Battery	Output
Battery status	Full	Full	
Battery voltage(V)	218.5	217.7	
Battery current(A)	0.04	0.01	
Backup time(Minutes)	1349.4		
Remaining capacity(...)	100		
External battery ca...	1		

21.0°C 2017-12-12 16:00:00

Input	Bypass	Battery	Output
L-N voltage(V)	120.1	119.4	120.5
L-N current(A)	0.0	0.0	0.0
Frequency(Hz)	59.98	59.98	59.98
L-L voltage(V)	208.7	209.1	208.4

21.0°C 2017-12-12 16:00:06

Load			
Sout(kVA)	0.00	0.00	0.00
Pout(kW)	0.00	0.00	0.00
Power factor	0.00	0.00	0.00
Load percent(%)	0.0	0.0	0.0

Settings Page

The Settings page shows the *Output*, *Battery*, *Parallel*, *Monitor*, *System* and *Outlet*. Changing the settings requires entering a password; see **Figure 32**.



NOTE

The default password (111111) must be entered before the UPS's configuration or parameters can be changed. Vertiv recommends recording the password and storing it in an accessible location for later retrieval.

For details about the parameters setting, refer to **3.6.1 - LCD Parameter Settings**.

Figure 32 Settings Page password

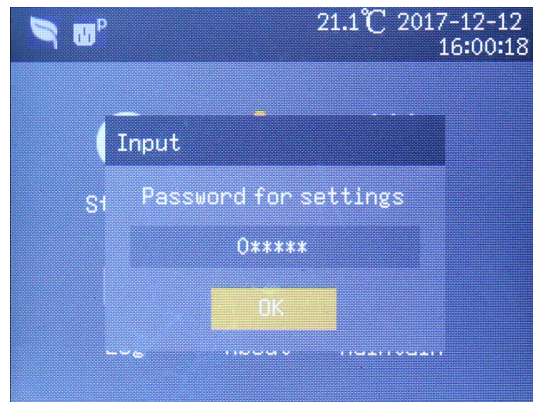


Figure 33 Settings Page menus

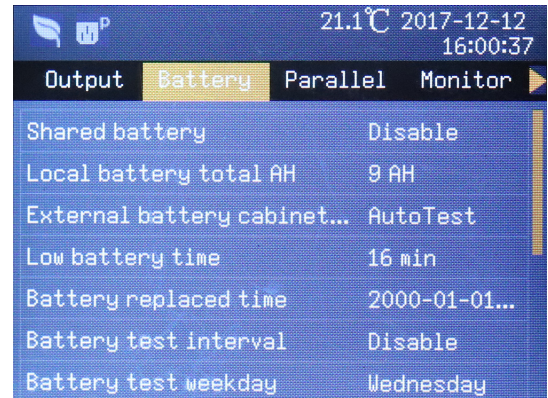
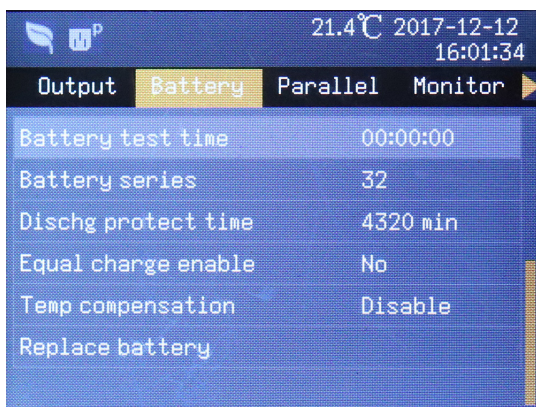
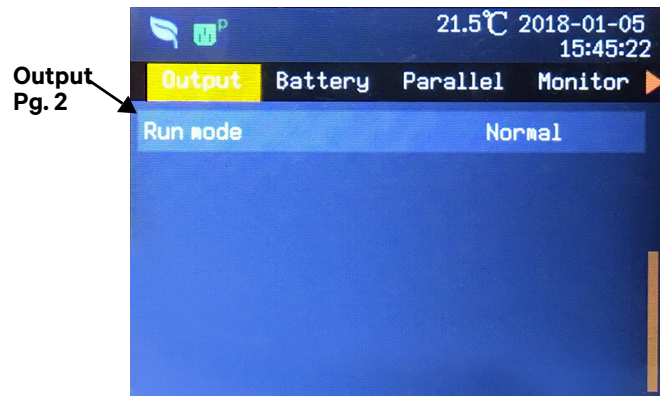
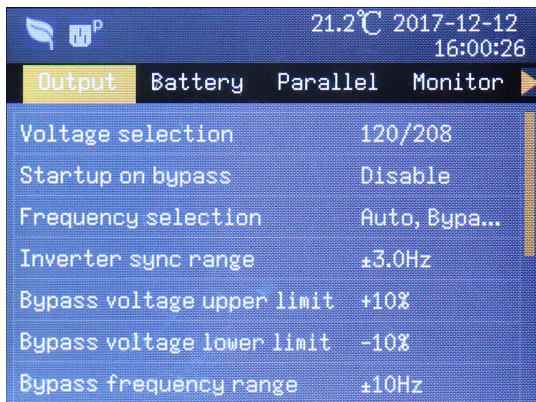
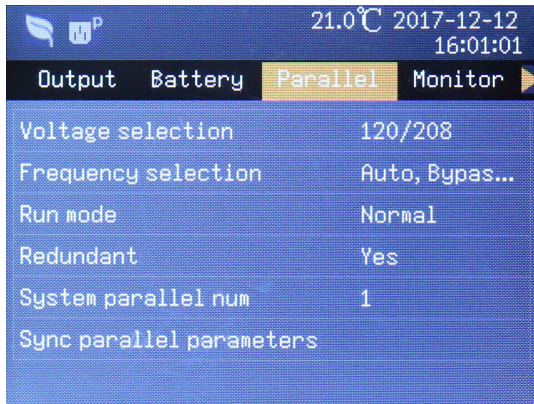
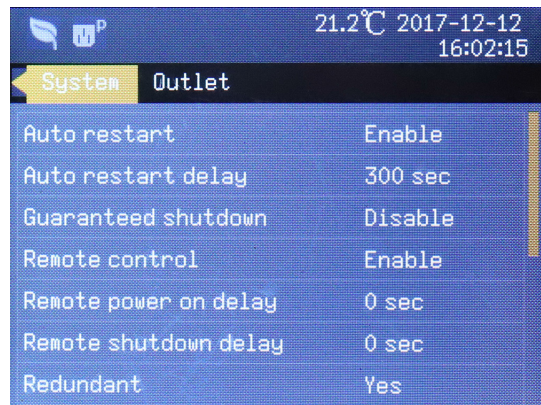
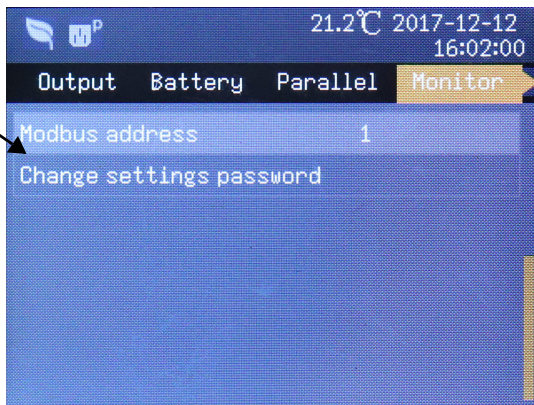


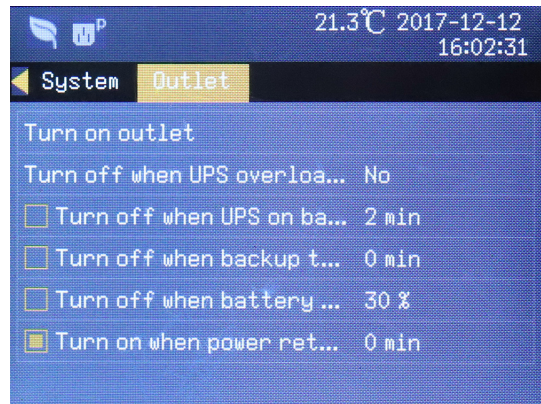
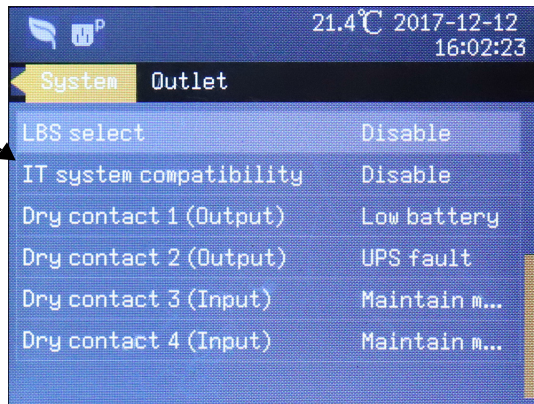
Figure 34 Settings Page menus—continued



Monitor
Pg. 2



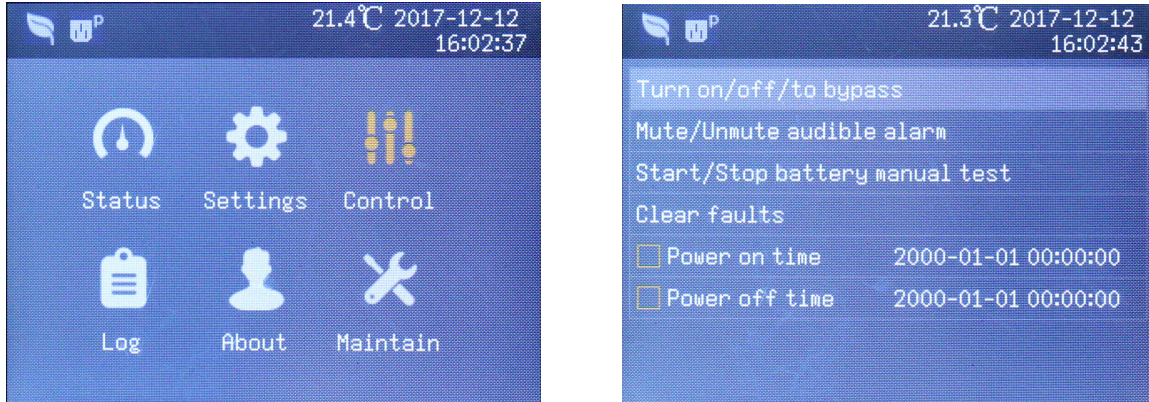
System
Pg. 2



Control Page

The Control page shows *Turn ON/OFF/to BYPASS* and *Manual battery test*, etc. See below:

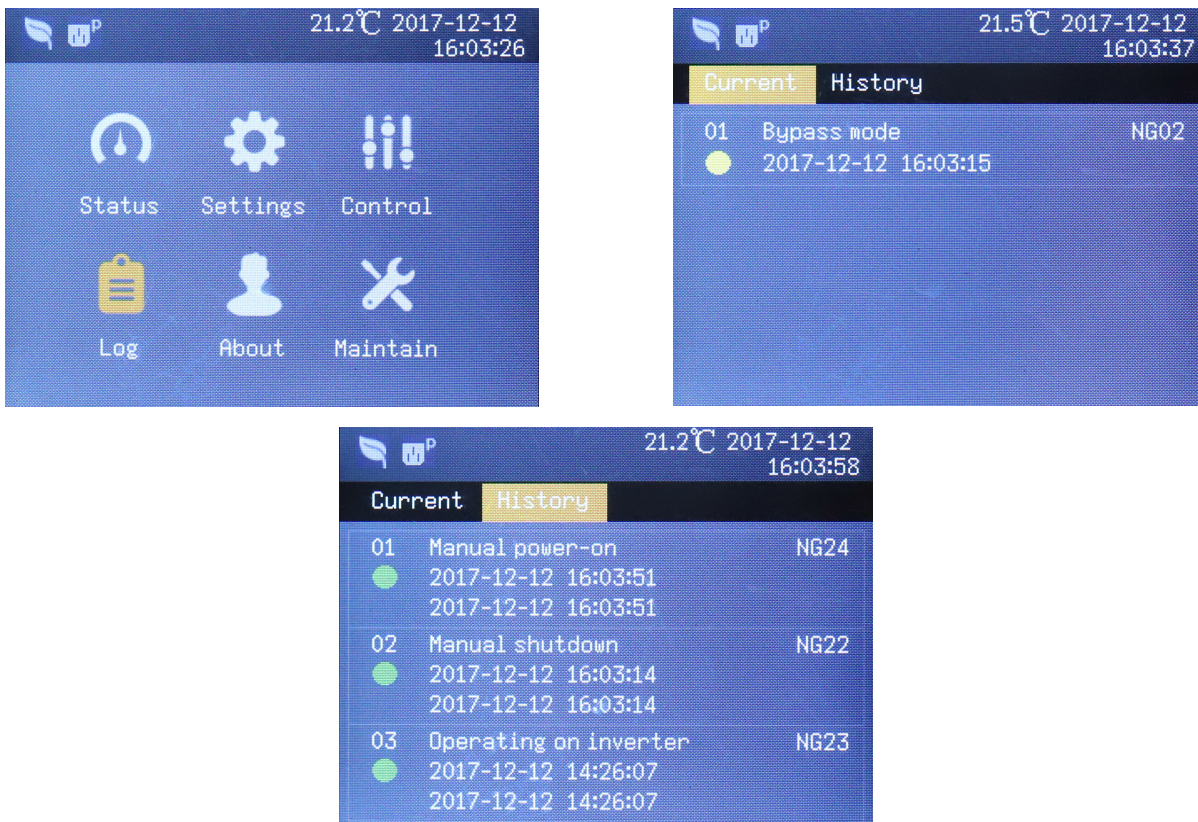
Figure 35 Control page menus



Log Screen

The Log Screen contains the *Current* and *History*. See below:

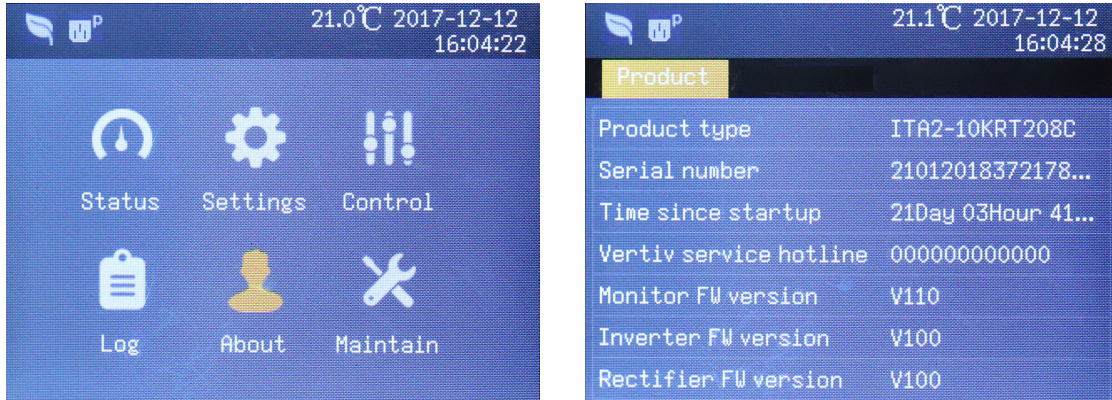
Figure 36 Log Screen menus



About Screen

The About Screen shows information about *Product* and *Network*. See below:

Figure 37 About Screen menus



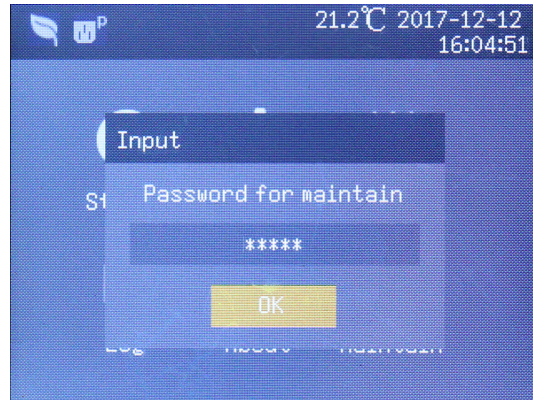
Maintain Screen



NOTE

The Maintain Screen is protected with a password. It is available only to Vertiv service engineers.

Figure 38 Maintain Screen—Password required



3.4 Language Selection

LCD menus are available in English, Chinese, French, Portuguese and Spanish.

To select a language:





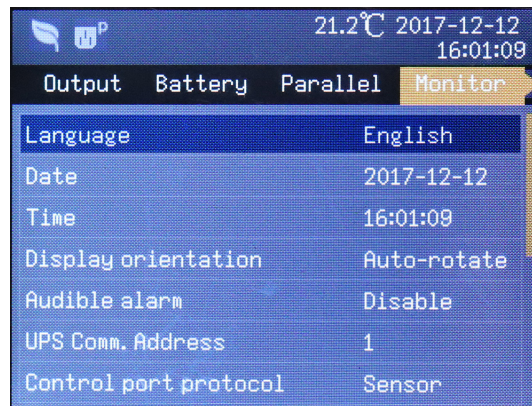





1. At the main menu screen, press the  or  key to select *Settings*.
2. Enter the password and press the Enter key  to confirm. See **Figure 43**.
3. Press the  key to select *Monitor*, see **Figure 39**.

Figure 39 Monitor interface



4. Press the Enter key  to highlight the language.
5. Select the language the interface will use by pressing the  or  key to highlight it, then press the Enter key  to confirm the choice. The LCD will display elements in the designated language.
6. Press the  key several times to return to the main menu.

3.5 Changing Current Date And Time

Procedures for changing the system date and time:











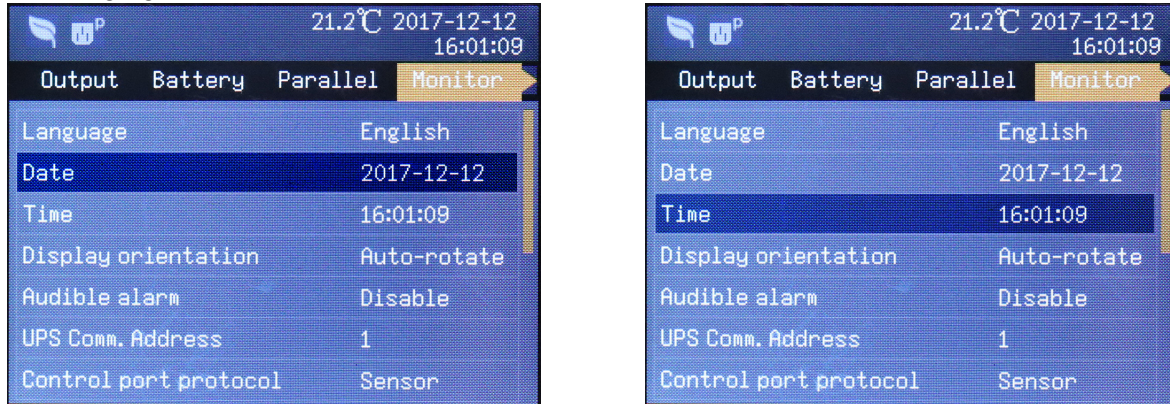


1. At the main menu, press the  or  key to select *Settings*, then press the Enter key  to confirm it. See **Figure 43**.
2. Press the  key to select *Monitor*, see **Figure 39**.
3. Press the Enter key , and press the  or  key to highlight the date or time; see **Figure 40**.
4. Press the Enter key , move the cursor and press the  or  key to change the date or time; see **Figure 40**.

Figure 40 Changing date and time



5. Press the Enter key  to confirm the change, and then press the  key several times to return to the main menu.

3.6 Setting the Password




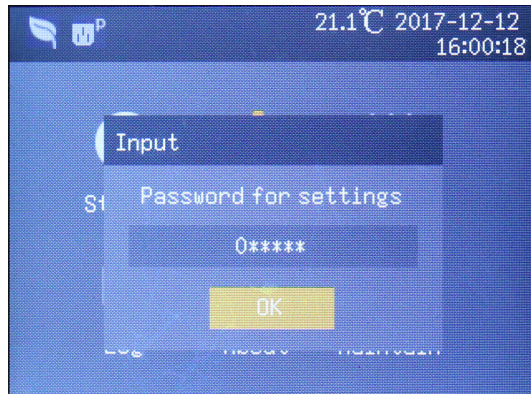
1. At the main menu screen, press the  or  key to select *Settings*. See **Figure 43**.
2. Press the Enter key , the interface shown in **Figure 41** will appear.
3. Enter the password and press *OK*.

Figure 41 Entering password






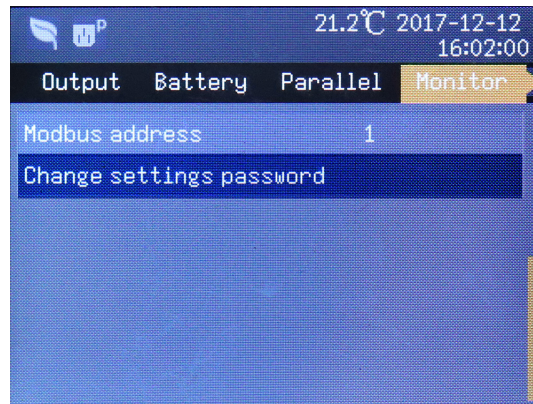
4. Press the  key to move the cursor to *Monitor*; see **Figure 42**.
5. Press the Enter key , then press the  key to select the *Change settings password*, see **Figure 42**.

Figure 42 Monitor interface—Change settings password





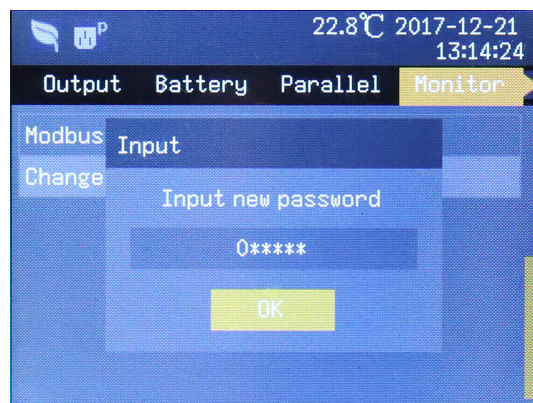
6. Press the Enter key , the interface shown in **Figure 43** will appear.
7. Enter the existing password, press the Enter key  to confirm it, then enter a new password. See **Figure 43**.

Figure 43 Password for settings




8. After entering the new password, press the Enter key  to confirm it. The system requires confirming the new password; see **Figure 44**.
9. Re-enter the new password.

Figure 44 Confirm new password




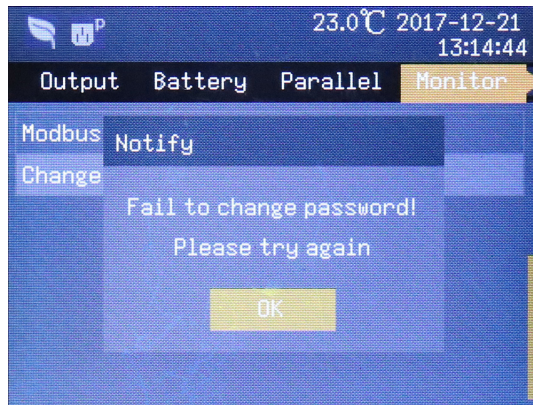
10. After re-entering the new password, press the Enter key ; the system will display a notification that the password change succeeded. If the confirmation is incorrect, the display will prompt re-entry of the password and seek confirmation. See **Figure 45**.

Figure 45 Password confirmation incorrect, password change failed



11. After correctly entering and confirming the new password, press the Enter key several times to back to the main menu screen.



NOTE

The correct password (default: 11111) must be entered before the UPS's configuration or parameters can be changed. Vertiv recommends recording the password and storing it in an accessible location for later retrieval.

3.6.1 LCD Parameter Settings

Table 9 LCD parameter settings

Menu	Item	Setting Range	Default Setting
System	Auto restart	Disable, Enable	Enable
	Auto restart delay	0 ~ 999 seconds	10; Single unit only
	Guaranteed shutdown	Disable, Enable	Disable
	Remote control	Disable, Enable	Enable
	Remote power on delay	0 ~ 999 seconds	0
	Remote shutdown delay	0 ~ 999 seconds	0
	Redundant	NO, YES	YES
	IT earthing system	Disable, Enable	Disable
	Dry contact 1 (Output)	Low battery, On bypass, On battery, UPS fault	Low battery
	Dry contact 2 (Output)	Low battery, On bypass, On battery, UPS fault	UPS fault
	Dry contact 3 (Input)	Battery mode shutdown, Any mode shutdown, Maintain mode	Maintain mode
	Dry contact 4 (Input)	Battery mode shutdown, Any mode shutdown, Maintain mode	Maintain mode

Table 9 LCD parameter settings (continued)

Menu	Item	Setting Range	Default Setting	
Output	Voltage selection	208/220V	208V	
	Startup on bypass	Disable, Enable	Disable	
	Frequency selection	Auto, BypEna; Auto, BypDisa; 50Hz, BypDisa; 60Hz, BypDisa	Auto, BypEna	
	Inverter sync range	±0.5Hz, ±1.0Hz, ±2.0Hz, ±3.0Hz, ±4.0Hz, ±5.0Hz	±3.0Hz	
	Bypass voltage upper limit	+10%		
	Bypass voltage lower limit	-10%, -15%, -20%	default -10%	
	Bypass frequency range	±5Hz, ±10Hz	±10Hz	
	Run mode	Normal, ECO mode	Normal	
	ECO voltage range	±10%	±10%	Appear only when 'Run mode' is set to 'ECO mode'
	ECO frequency range	±1Hz, ±2Hz, ±3Hz	±3Hz	
	ECO requalification time	5, 15, 30 (min)	5	
Parallel	Voltage selection	208/220V	208V	
	Frequency selection	Auto, BypEna; Auto, BypDisa; 50Hz, BypDisa; 60Hz, BypDisa	Auto, BypEna	
	Run mode	Normal, ECO mode	Normal	
	Redundant	NO, YES	YES	
	System parallel No.	1~2	1	
	Sync parallel parameters	By HMI Interface Button	N/A	
Battery	External battery cabinet group No.	Auto test, 0 ~ 10	Auto test	
	Low battery time	2 ~ 30 (min)	2	
	Battery replaced time	YYYY-MM-DD HH:MM:SS	2000-01-01 0:00:00	
	Battery test interval	Disable, 8 weeks, 12 weeks, 16 weeks, 20 weeks, 26 weeks	Disable	
	Battery test weekday	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday	Wednesday	
	Battery test time	HH:MM:SS	0:00:00	
	Discharge protect time	1~4320 (min)	4320	
	Equal charge enable	NO, YES	NO	
	Temperature compensation	Disable, Enable	Disable	
	Replace battery	By HMI Interface Button	Button	

Table 9 LCD parameter settings (continued)

Menu	Item	Setting Range	Default Setting
Outlet	Turn outlet On	—	Appears only when outlet off
	Turn outlet Off	—	Appears only when outlet on
	Reboot outlet	—	Appear sonly when outlet on
	Turn Off when UPS overload on battery	YES, NO	NO
	Turn off when UPS on battery for	0~4320 (min)	2
	Turn Off when backup time less than	0~4320 (min)	0
	Turn Off when battery capacity less than	20~80%	30%
	Turn on when power returns for	0~4320 (min)	0
Monit or	Language	English, Chinese, Spanish, French	English
	Date	YYYY-MM-DD	2016-10-01
	Time	HH:MM:SS	00:00:00
	Display orientation	Auto-Rotate, Horizontal, Vertical	Auto-rotate
	Audible alarm	Enable, Disable	Enable
	Control port protocol	Modbus, Sensor	Sensor
	Modbus address	1 ~ 128	1
	IPv4 address	ddd.ddd.ddd.ddd ('d' is a decimal number)	—
	Subnet mask		—
	Gateway address		—
	Change settings password	The six-digit numeric password can be any numeral 0 to 9.	11111

3.6.2 Default Screen


During UPS operation, if there is no alarm or user interaction within two minutes, the default screen, shown in **Figure 46**, will appear. At the default screen, if there is an alarm or a fault or if the user presses any key, the UPS Mimic Screen will reappear.

Figure 46 Default screen



4.0 OPERATING INSTRUCTIONS

This chapter gives a detailed description of the UPS operating procedures.

During operation, the buzzer alarm may appear. Pressing the  key for 3 seconds will silence the audible alarm.

WARNING

Risk of electric shock. Can cause injury or death.

No user accessible parts are located behind the protective covers that require a tool for removal.

Only properly trained and qualified service personnel are authorized to remove covers. If rack maintenance is needed, be aware that the neutral line is live.

4.1 UPS Startup

The startup procedures can be performed after the installation is finished and the external input MBC's are closed.

WARNING

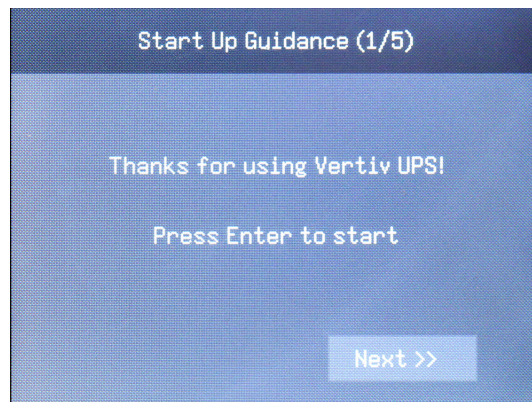
Risk of electric shock. Can cause injury or death.

This procedure results in mains voltage being applied to the UPS output terminals. Confirm that the load power is safe, if there is a load to be connected with the UPS output terminal. Ensure that the load is isolated with the UPS output terminal, if the load is not ready for accepting the power.

4.1.1 Initial Startup Guide

When the UPS is first started, the interface shown in **Figure 47** will appear to guide the user to set basic parameters.

Figure 47 Initial startup guidance, Pg. 1



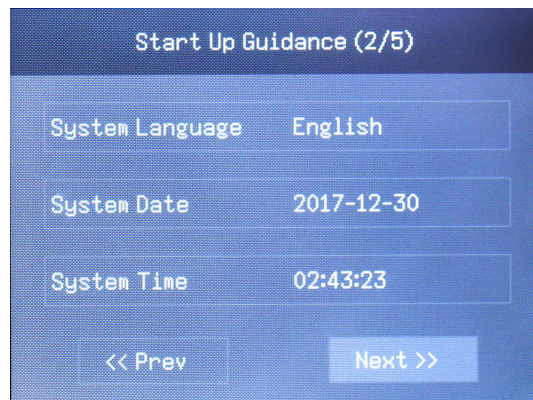
Welcome Screen

Press the Enter button  to start the guide.

Language, Date and Time

This screen permits setting the language, date and time.

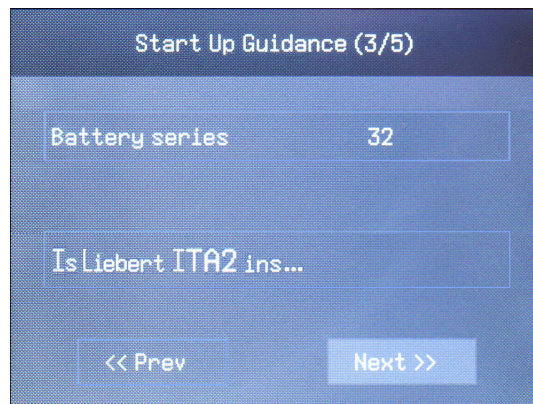
Figure 48 Initial startup guidance, Pg. 2



Battery Parameters Screen

This screen shows the number of batteries. The default is 32. See **Figure 49**.

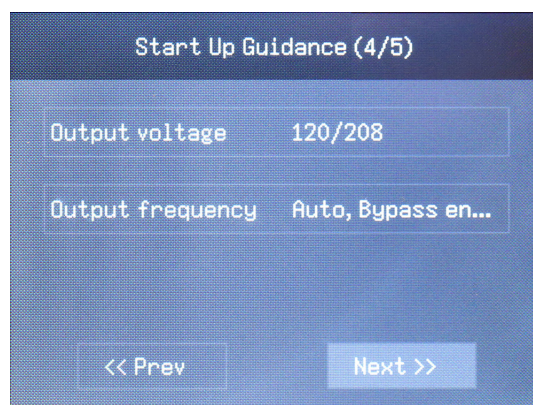
Figure 49 Initial startup guidance, Pg. 3



Output Screen

As shown in **Figure 50**, output voltage and output frequency can be set.

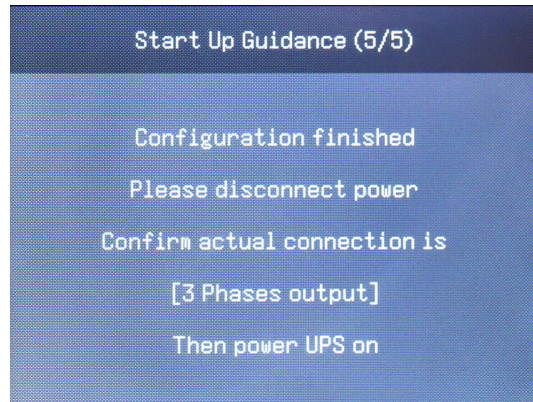
Figure 50 Initial startup guidance, Pg. 4



Finish Screen

The interface shown in **Figure 51** will appear. Click *Finish* to enter the UPS Mimic Screen. The the UPS will begin normal operation.

Figure 51 Initial startup guidance, Pg. 5



4.2 Transfer Between Operation Modes

4.2.1 Transfer from Inverter Mode to Bypass Mode

To transfer to the internal bypass or turn Off the UPS when the UPS is operating in Normal Mode (the inverter is supplying clean and protected power to the connected equipment):

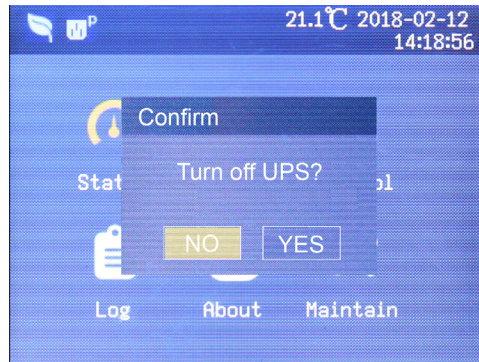
1. Press and hold the Power button for 2 seconds. If the bypass power is within normal operating range the screen shown at the top left in **Figure 52** will appear, permitting transfer *To The Bypass* or *Turn Off UPS*.
2. Use the Up/Down arrow keys to change or make a selection.
3. Press the Enter key to confirm the action.
4. Press the Enter key again.

If the bypass power is outside normal operating range, the screen shown in **Figure 53** will appear where the only selection is to *Turn Off UPS* and confirm the action and press the Enter key.

Figure 52 Bypass normal interface



Figure 53 Bypass abnormal interface



NOTE

In Bypass mode, the load is powered directly by utility power.

4.2.2 Transfer From Bypass Mode to Inverter Mode

To transfer to the inverter (normal operation) or turn Off the UPS when the UPS is on internal bypass mode:

1. Press and hold the power button for 2 seconds. The screens shown in **Figure 54** will appear with the choice of *Turn On UPS* or *Turn Off UPS*.
2. Use the Up/Down arrow keys to change or make the selection.
3. Press the Enter key.
4. Confirm the action and press the Enter key.

If the UPS is operating in Eco Mode, the screen shown in **Figure 55** will appear with the only choice is *Turn Off UPS*. To do so, confirm the action and press the Enter key.

Figure 54 Transfer to Inverter Mode from Bypass Mode

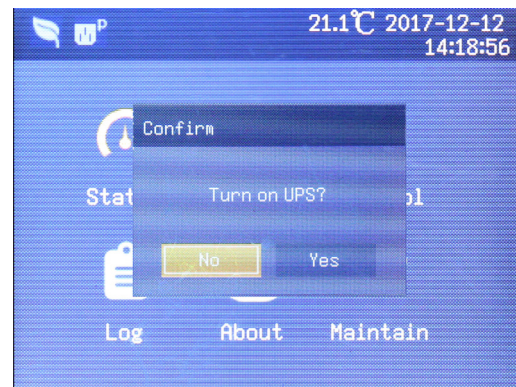
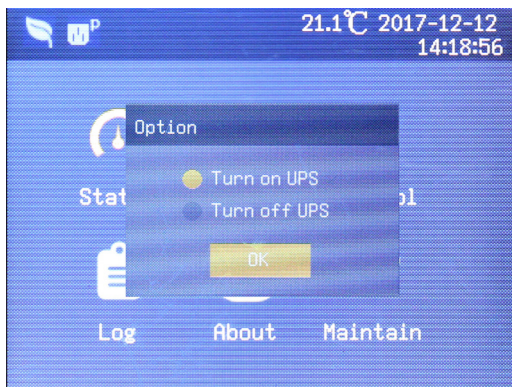
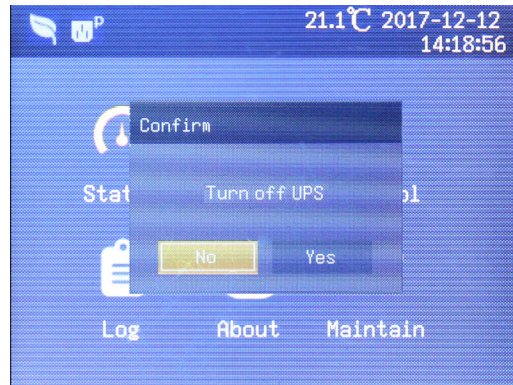


Figure 55 Eco Mode enabled interface



4.3 REPO

The Liebert ITA2 is equipped with a Remote Emergency Power Off (REPO) connector for either Normally Open (N.O.) or Normally Closed (N.C.) systems.

An interface with the REPO circuit must be field-supplied to allow disconnecting the UPS input feeder breaker to remove all sources of power to the UPS and connected equipment to comply with national and local wiring codes and regulations.

5.0 COMMUNICATION

This chapter briefly introduces UPS communication.

The communication ports include: Liebert IntelliSlot™ card port, dry contact port, built-in port, RS-232 port, control port and USB port.



NOTE

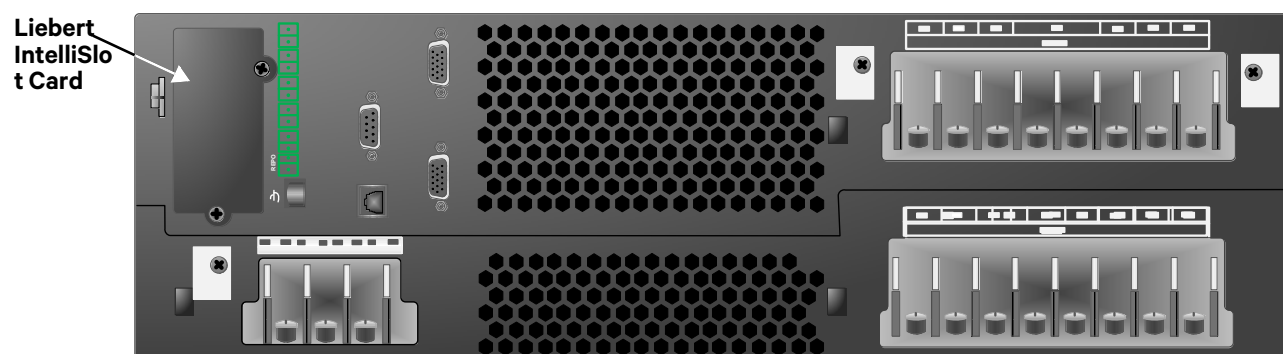
Vertiv recommends using a signal cable less than 9 ft. (3m). Do not route the communication cable near power cables or batteries to prevent interference.

5.1 Liebert IntelliSlot Port

5.1.1 Liebert IS-UNITY-DP Card

The Liebert ITA2 features a port for the Liebert IS-UNITY-DP Card (see **Figure 56**). The Liebert IntelliSlot port and USB port can be used at the same time.

Figure 56 Liebert IntelliSlot Card location



Liebert IS-UNITY-DP Card PERMITS communication to two third-party platforms: SNMP, Modbus, BACnet and YDN-23 protocols. This card communicates to Vertiv's Trellis NMS and LIFE Services. Not all protocols are available at the same time.

Refer to the relevant user manual for the installation and operation guide. The manual ships with the card and is available at Vertiv's Web site: www.vertivco.com

5.1.2 Liebert IS-Relay Card

Provides dry contact alarm information, including signals for: On Battery, On Bypass, Low Battery, Summary Alarm, UPS Fault and On UPS for communication to a remote monitoring system or for use with Liebert MultiLink® software. This card also can accept input signals to shut down the UPS in any mode.

Refer to the relevant user manual for the installation and operation guide. The manual ships with the card and is available at Vertiv's Web site: www.vertivco.com

5.2 Connection Cables for Dry Contact Port

The UPS provides five dry contact ports numbered 1 ~ 12. The pin layout of each dry contact port is shown in **Figure 57**; the port description is shown in **Table 10**.

Figure 57 Pin layout of dry contact ports

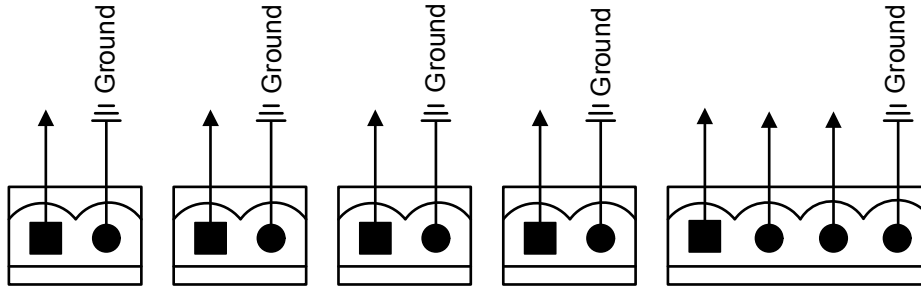


Table 10 Dry contact port descriptions

Port #/Name	Pin #	Pin Name	Meaning
1/Output Port 1	1	LOW_BATTERY/ON_BATTERY /ON_BYPASS/UPS_FAULT/Main back-feed protection enabled	Default: LOW_BATTERY, can be set via the LCD Settings Screen. Change main back-feed via Paramset. When the system has an alarm, short Pin 1 and Pin 2.
	2	GND	Ground
2/Output Port 2	3	LOW_BATTERY/ON_BATTERY /ON_BYPASS/UPS_FAULT/Bypass back-feed protection enabled	Default: UPS_FAULT, can be set via the LCD Settings Screen. Change bypass back-feed via Paramset. When the system has an alarm, short Pin 3 and Pin 4
	4	GND	Ground
3/Input Port 1	5	Battery Mode shutdown/Any mode shutdown (Remote Comms Shutdown)/ Maintain mode	Default: Maintain Mode; can be set via the LCD Settings Screen. When Pin 5 and Pin 6 are shorted, the function is valid.
	6	GND	Ground
4/Input Port 2	7	Battery mode shutdown/Any mode shutdown (Remote Comms Shutdown)/ Maintain mode	Default: Maintain mode, can be set via the LCD Settings Screen. When Pin 7 and Pin 8 are shorted, the function is valid.
	8	GND	Ground
5/REPO Input Port*	9	+5V	REPO power supply, 5VDC 100mA
	10	REPO Coil-NC	NC, EPO activated when Pin 9 and Pin 10 are open.
	11	REPO Coil-NO	Trigger REPO when Pin 11 and Pin 12 are closed.
	12	GND	REPO Ground

* The I/O dry contact port capacity: 125VAC, 0.5A; 30VDC, 1A.

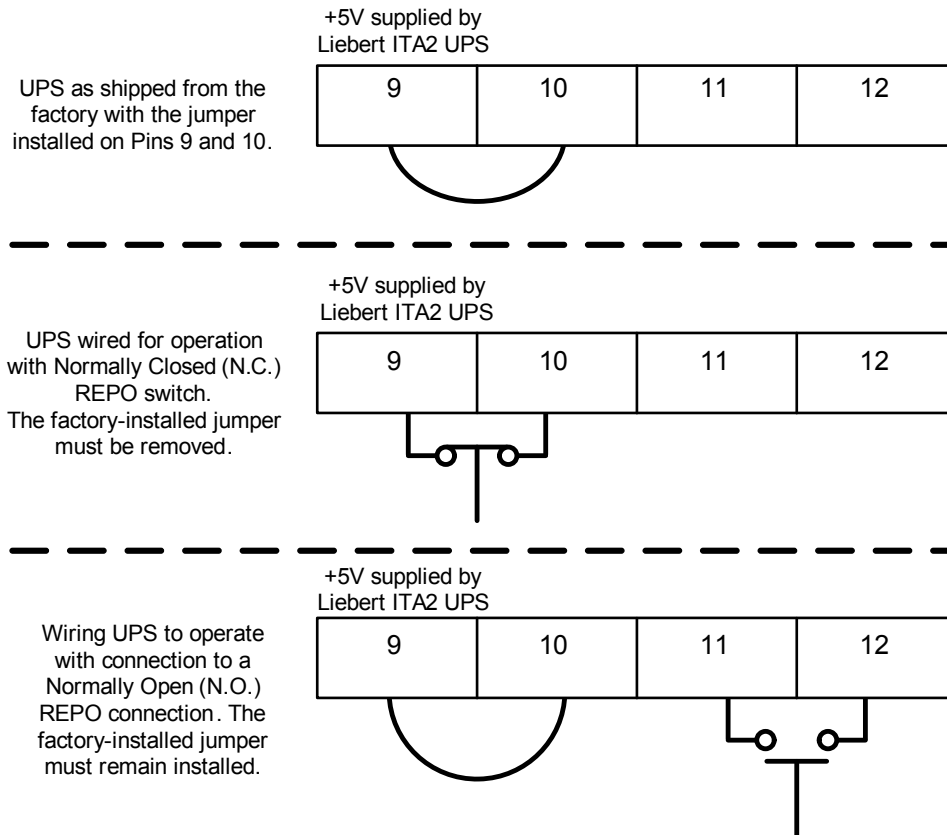


WARNING

Risk of electrical shock. Can cause equipment damage, injury and death.

The EPO action of the UPS will shut down the rectifier, inverter and static bypass, but it does not disconnect input power from the UPS. To electrically isolate the UPS, disconnect the upstream input MBC when generating the EPO.

Figure 58 REPO cable connections



NOTE

Vertiv recommends using 0.82mm² ~ 0.33mm² (signal cable of 18AWG ~ 33AWG) copper core cable.

5.3 Connecting USB Communication Cables

A standard USB Type B port is provided to allow connection to a computer or network server (see **Figure 2** for the location). The USB protocol is USB HID for Power Devices, which can be used to communicate with Liebert MultiLink[®] or the built in Microsoft[®] Windows[™] operating support for USB devices

5.4 Connecting Serial Port Communication Cables

To connect the serial port communication cable, insert one end of the DB-9 serial port communication cable to the DB-9 serial port (see Port 5 in **Figure 2**) on the rear panel of the UPS; connect the other end to the computer's DB-9 port.

The port uses the RS-232 protocol.

Table 11 DB-9 pinout

Pin No.	Function
2	Send data
3	Receive data
5	Common terminal

5.5 Connecting MultiFunction Port

The control port adopts the standard RJ-45 port, which supports the Modbus/Jbus port and connects the Vertiv temperature/temperature and humidity sensor.

The user can select Modbus/Jbus protocol function or sensor function via the Settings Screen of the control on the LCD.

6.0 MAINTENANCE

This chapter focuses on the UPS maintenance, including the battery and UPS cleaning.



NOTE

Never perform maintenance while the UPS is on-line. Ensure that the UPS has been completely powered Off when performing the UPS internal maintenance.

6.1 Battery Maintenance



WARNING

Risk of electrical shock and high short circuit current. Can cause property damage, injury and death

The following precautions must be observed before replacing the battery pack:

- Remove rings, watches and other metal objects.
- Use tools with insulated handles.
- Do not lay tools or other metal objects on the batteries.
- If the battery cabinet is damaged in any way or shows signs of leakage, contact your local Vertiv representative immediately.
- Do not dispose of batteries in a fire. The batteries may explode.
- Handle, transport and recycle batteries in accordance with local regulations.

The battery cabinet uses a sealed, lead-acid, maintenance-free battery. Battery life depends on the ambient temperature, charge and discharge times. High ambient temperatures shorten battery life.

To prolong battery life:

- Keep the ambient temperature from 15°C to 25°C
- Prevent small current discharge.
- Charge the battery for at least 12 hours, if the battery hasn't been charged for three months at specified ambient temperature, or two months at high ambient temperature.

The waste lead-acid battery is dangerous waste material. Its storage, transportation, usage and disposal must follow the national and local law and other criteria about the dangerous waste material and the waste battery pollution prevention.

According to the related regulations, recycle the waste lead-aid battery; other disposal methods are prohibited. Disposing of the waste lead-aid battery in a landfill or other waste dump can result in serious environment pollution and violates national and local laws.

Vertiv has a service network and recycle system to assist users to deal with the waste battery by law. Contact Vertiv Services at 800-543-2378 for information about recycling the waste battery.

6.2 Cleaning the UPS

Clean the UPS periodically, especially the ventilation holes, to ensure free airflow inside the UPS. If necessary, clean the UPS with a vacuum cleaner or wipe with a dry cloth. Confirm that the ventilation holes are unobstructed.

7.0 OPTIONS

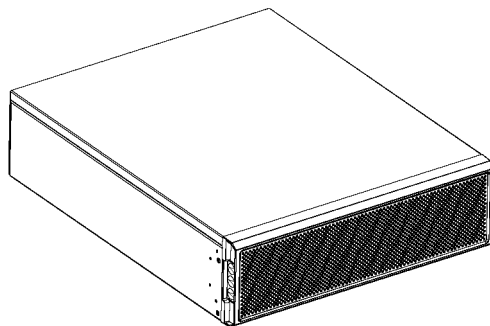
Table 12 Option list

Option	Model	Description
Battery Cabinet	ITA2-BCI0020K03	(3U each cabinet) Battery cabinet with built-in 16 12V (9Ah) batteries
Battery Cable Kit	ITA2-BCI20K02L3	Replaceable cable that was supplied with the UPS for UPS to Battery cabinet connections 1 meter long
	ITA2-BCI20K02L4	UPS-to-Battery Cable Kit 2 meters long
	ITA2-BCI20K02L2	Battery-to-Battery Cable Kit, 1 meter long
Rack-Mounting Kit	ITA2-RMKIT	Guide rail for rack installation; supplied with UPS; includes one left and one right guide rail and mounting hardware. The rails will support 110 lb. (50kg). The kit is compatible with various server cabinets, UPS's, battery cabinets and POD's.
Communication Options	IS-RELAY	Liebert IntelliSlot Relay Card
	IS-UNITY-DP	Liebert IntelliSlot Unity card for network communication
Ambient Temperature Sensor Kit	IRM-S01T	Ambient Temperature Sensor
Parallel Communication Cable (An N + 1 communication cable is required for each UPS in an N + 1 parallel system.)	ITA2-PARACBL1M	3 ft. (1m)
	ITA2-PARACBL3M	9.8 ft. (3m)
	ITA2-PARACBL4M	13 ft. (4m)
	ITA2-PARACBL10M	32.8 ft. (10m)

7.1 Battery Cabinet Appearance

Figure 59 shows a battery cabinet.

Figure 59 Battery cabinet



There is no operation or display panel on the front panel of the battery cabinet. The plastic panel can be removed; refer to the battery manual, SL-26250, which ships with the battery and is available at Vertiv's Web site, www.vertivco.com

The battery cabinet provides ventilation holes, battery ports and battery output switch on the rear panel.

7.1.1 Standard Battery Cabinet Backup Time with a Single UPS.



NOTE

Run times shown in **Tables 13 and 14** are approximate. They are based on new, fully charged batteries at a temperature of 77°F (25°C) with 100% resistive UPS loading. Different loading will change the actual run times. Run times listed may vary by ±5% due to manufacturing variances of the batteries.

Table 13 Backup time in minutes—8kVA/7.2kW

Number Of Battery Strings	Load Level											
	100%	90%	80%	75%	70%	60%	50%	40%	30%	25%	20%	10%
	7.2k W	6.48k W	5.76k W	5.4k W	5.04k W	4.32k W	3.6k W	2.88k W	2.16k W	1.8k W	1.44k W	0.72k W
1	13	15	18	19	21	26	33	40	56	75	101	166
2	33	36	40	45	49	61	76	102	135	151	167	345
3	52	61	71	77	82	103	126	147	167	211	330	650
4	76	91	103	109	121	137	152	181	227	323	480	880
5	103	112	130	137	143	156	181	219	328	347	600	1020

Table 14 Backup time in minutes—10kVA/10kW

Number Of Battery Strings	Load Level											
	100%	90%	80%	75%	70%	60%	50%	40%	30%	25%	20%	10%
	10kW	9kW	8kW	7.5kW	7kW	6kW	5kW	4kW	3kW	2.5kW	2kW	1kW
1	8	9	11	12	13	17	22	29	43	54	72	150
2	22	25	29	33	36	43	55	74	102	124	157	318
3	38	43	50	54	59	74	89	116	159	193	240	497
4	54	62	74	80	85	103	125	160	214	262	330	676
5	74	83	94	103	111	132	160	202	274	335	422	868

8.0 SPECIFICATIONS

Table 15 Specifications

Item	Description	8kVA	10kVA
Input 3 Phase 4W+Gnd	Rated Voltage	208/220VAC, 3 Phase, 4W+Gnd	
	Voltage Range, VAC	96 ~ 144	
	Rated Frequency Hz	60	60
	Frequency Range, Hz	40 ~ 70	
	Power Factor	≥0.99, at full load; ≥0.98, at half load	
Output 3 Phase 4W+Gnd	Rated Power	8 kVA/7.2kW	10kVA/10kW
	Voltage	208/220VAC (3 Phase 4W+Gnd)	
	Frequency Synchronization Range	Rated frequency ±3Hz. Configurable range: ±0.5Hz ~ ±5Hz	
	Frequency Track Rate	0.5Hz/s. Configurable Range: 0.2/0.5/1Hz/s (Single UPS), 0.2Hz/s (Parallel System)	
	Rated Power Factor	0.9	1
	Crest Factor	3:1	3:1
	Voltage Harmonic Distortion	< 4% (linear load); < 5% (non-linear load)	
	Dynamic Response Recovery Time, ms	60	60
	Overload Capacity	At 25°C: 105% ~ 125%, 5min; 125% ~ 150%, 1min; 150%, 200ms	
	Bypass Voltage	Upper Limit: +10% Lower Limit: -10%, -15%, -20%; default -10%	
	AC-AC Efficiency	Up to 93.4%	
Battery	Type	Sealed, Lead-Acid, Maintenance-Free	
	Number of Cells	192 by Default	
	Rated Voltage, VDC	384	
	Charge Current, Maximum, A	1.8	3.5
Transfer Time	Utility to Battery, ms	0	0
	Inverter to Bypass	Synchronous Transfer: 0ms Asynchronous Transfer (default): ≤20ms (40ms, 60ms, 80ms, 100ms and 200ms are available)	
Noise, db	<55	<55	
Panel Display Mode	Color LCD		
Safety	IEC/EN62040-1; UL/CSA cULus (UL 1778 5th Edition, CSA No.22.2 107.3)		
EMC	Conduction Emission	IEC/EN62040-2; FCC Part 15, Class A	
	Harmonic Current	IEC/EN61000-3-12	
Surge Protection	IEC/EN-61000-4-5, Endurance Level 4 (4kV) (live line to earth), Level 3 (2kV) (during live lines); ANSI C62.41, 6kV/20ohms		
Protection Level	IP20	IP20	
Ambient Condition	Operating Temperature	32 ~ 122°F (0 ~ 50°C) (0.7 will be derated above 122°F [50°C])	
	Storage Temperature	No Battery: -40 ~ 158°F (-40 ~ +70°C); With Battery: -13 ~ 131°F (-25 ~ +55°C)	
	Relative Humidity	5% RH ~ 95% RH, non-condensing	
	Altitude, ft. (m)	Sea Level to 10,000 (3000) without derating	
Dimensions, W x D x H, in. (mm)	Net	16.9 x 19.7 x 5.1 (430 x 500 x 130)	
	Shipping	33.1 x 13.8 x 25.3 (842 x 350 x 642)	

Table 15 Specifications

Item	Description	8kVA	10kVA
Weight, lb. (kg)	Net	50.7 (23)	
	Shipping	70.5 (32)	

APPENDIX A - UPS PROMPTS AND ALARMS

A.1 Prompt Window

A prompt window is displayed during the operation of the system to alert you to certain conditions and/or to require confirmation of a command or other operation. **Table 16** lists the prompts and meanings.

Table 16 UPS prompts and meanings

Prompt	Meaning
System setting is different, please check	Appears when the parallel parameters are different.
Cannot set this on-line, please shut down output	If the user wants to change some important settings under condition of output (output voltage, output frequency, output phase No.), the prompt will appear
Incorrect password, please input again	Appears when the user incorrectly inputs the Settings password
Operation failed, condition is not met	Appears when the user wants to execute a certain operation but conditions are not met
Password changed OK	Appears when the user successfully change the Settings password
Fail to change password, please try again	Appears when the user tries to change the Settings password but input two different new passwords
The time cannot be earlier than system time	Appears when the user sets the time of 'Turn on delay' or 'Turn off delay' is earlier than the current system time.
Turn on failed, condition is not met	When users press the power button (or execute the command of 'Turn on/Turn off/to Bypass' under 'Control' Screen), the prompt will appear
Please disconnect power, check output: 1 phase, 3 phase, then power UPS On	Appears when the output phase is changed. The system requires the user to power Off and check the cable connections, then power On the UPS again to guarantee the safety.

A.2 UPS Alarm Message List

Table 17 lists all UPS alarm messages based on the *Current* and *History* menus.

Table 17 UPS alarm messages

Alarm message	Description
Communication fail	Internal communication is abnormal; verify that the communication cables are connected correctly.
Rectifier fault	A rectifier fault has been detected.
DC/DC fault	The battery charger has a fault.
DC bus abnormal	The DC bus has a fault. The load will transfer to bypass if the bypass is available.
Charger fault	The charger output voltage is abnormal, and the charger is Off.
Aux. power fault	The auxiliary power output voltage exceeds the normal range.
Input back-feed	A rectifier short circuit is detected while in Battery Mode.
Inverter fault	The inverter is Off when the inverter output voltage and current exceed the setting range. If bypass is available, the UPS will transfer to bypass mode, otherwise the system will power Off.
Output short	Check that the output cables are not shorted.
Bypass backfeed	A bypass short circuit is detected while in Battery mode.
Output off, voltage is not zero	When there is no output, the system detects that the output has a voltage.

Table 17 UPS alarm messages (continued)

Alarm message	Description
Inverter relay welded	The inverter relay is shorted.
Parallel No. abnormal	The parallel online number is different from the setting number. Check that the parallel number at the Settings Screen is the same as the actual on-line number and that the parallel cables are normal.
Parallel comm fault	The local UPS and its online frequency configuration is different or the parallel address is conflicted. Please check that the parallel system parameter setting is the same as the local parameter setting.
Parallel cable connection abnormal	Detect the parallel cables are loosened
Input neutral lost	The AC input mains N line is not detected. Please check that the input N line is opened or loosened.
Input ground lost	Check that the PE line is well connected, and the alarm can be cleared on line.
Input phase reversed	The mains AC input phase is reversed. Normally, Phase B lags Phase A of 120 degrees, and Phase C lags Phase B of 120 degrees.
Input abnormal	The rectifier and charger are off due to the mains voltage and frequency exceeding normal range. Check that the rectifier input phase voltage and frequency exceed the normal range or that the mains has power-off.
Rectifier overload	The output power is larger than the rectifier overload point. Check that the input voltage meets the output load, mains input 176V ~ 100V, the load 100% ~ 50% linear derating.
Battery reversed	The battery positive and negative are reversed. Reconnect the battery and check the battery cables connection.
Battery low pre-warning	This alarm occurs when the battery reaches the EOD. After the pre-warning, the battery capacity allows two minutes discharge at full load. The user can set the time ranging from 2min~30min, (2 min by default). Please shut down the load timely.
Battery voltage abnormal	When battery is connected, the system checks that the battery voltage exceeds the normal setting range. Check that the battery terminal voltage exceeds the normal range.
No battery	Check the battery and battery cables connection.
Battery series not qualified	The actual connected battery cells are different from the setting cells. Please change to the same.
Battery aged	The battery capacity is less than 25% of the initial capacity. Battery replacement is recommended
Battery test fail	The battery low voltage is detected when the battery has manual or periodic self-test. Battery replacement is recommended.
Battery overtemp	Battery ambient temperature too high. Check that the battery ambient temperature is higher than setting value 40 ~ 60? (default: 50?).
Battery cabinet not connected	The battery cabinet is not connected to the system.
Fan fault	At least one fan is faulty. Check that the fan is blocked or the cables connection is loosened.
System overtemp	Internal heat sink temperature too high, and the inverter is off. Only each module heat sink temperature decreased to the setting value can you silence the alarm. The system can automatically start after overtemperature fault is solved. If overtemperature, check: Ambient temperature too high or not Dust is blocked or not Fan fault or not
Inverter overload	Inverter load capacity is larger than the rated value, overload delay time is up, inverter shuts down. If bypass is available, the system will transfer to the bypass mode, otherwise the output is failure. Check that the actual inverter load capacity, if overloaded, just reduce the load capacity, and the system will transfer to the inverter mode after five minutes with alarm cleared.

Table 17 UPS alarm messages (continued)

Alarm message	Description
Bypass phase reversed	The bypass voltage phase sequence is reversed. Normally, Phase B lags Phase A by 120 degrees, and Phase C lags Phase B by 120 degrees. Check that the UPS bypass input phase sequence is correct. If not, just modify it.
Bypass overcurrent	The bypass current exceeds the rated value. Overload delay time is up, inverter shuts down.
Parallel bypass cable connection abnormal	The bypass phase number is different from the output phase number under <i>Monitor</i> . Verify that the bypass cables connection is the same as the configured phase number.
Bypass abnormal	Maybe caused by bypass voltage and frequency outside of range, bypass power-off and incorrect bypass cables connection. Verify that the bypass voltage and frequency are within the setting range. Verify the bypass cables connection.
Bypass abnormal in ECO mode	The ECO mode is available, and the bypass voltage and frequency are outside of the setting range. Check that the bypass input voltage and frequency are within the setting range.
Output LPE short	The output and enclosure are shorted. Check whether the output cables connection and the enclosure are shorted.
Output disabled	The system is in standby state, and the dry contact shutdown is enabled. Determine whether the shutdown dry contact is enabled.
Version incompatible	The version between monitoring board and DSP board is incompatible.
Electric leak alarm	Short circuit between bus and enclosure or between battery and enclosure. Determine whether the bus and battery cables connection are shorted with the enclosure.
On maintenance bypass	The dry contact in maintenance bypass state is activated.
Battery mode	The UPS is on battery, and the inverter starts.
Bypass mode	The UPS is on bypass.
System overload	The parallel system load capacity is larger than the max. load capacity outputed by parallel sets. Confirm the parallel system load capacity, if it is overloaded, reduce the load by disconnecting equipment.
Loss of redundancy	After the parallel redundancy is enabled, the system load capacity is larger than the rated load of (online set minus one).
Load sharing abnormal	Load sharing is abnormal in parallel system.
System parallel settings async	Verify that parallel setting parameters of each unit are the same.
Local parallel settings async	Verify that the Settings Screen is the same on each UPS in the system.
LBS abnormal	Determine whether the LBS cables are normal, the system is in standby state, or the system is on bypass and the bypass is unable to trace.
REPO	Shutdown caused by the REPO terminal normally closed contact open.
Bypass phase reversed	During parallel connection, the bypass phase sequence is not the same. Check the parallel bypass cable connection.
System battery low pre-warning	In parallel system, all the devices powered by the battery inverter have battery low-voltage pre-warning
Battery test started	The battery periodic self-test or manual self-test started.
Battery test stopped	The battery self-test or manual self-test finished.
EOD turn off	The inverter is Off due to EOD. Shut down the connected load.
Guaranteed shutdown	Under forced EOD mode, the battery discharging finished, then system shuts down.

Table 17 UPS alarm messages (continued)

Alarm message	Description
Shutdown due to overtemp	During the UPS operation, the system checks that the heat sink temperature exceeds the setting range. If overtemperature, check: <ul style="list-style-type: none"> • Is the ambient temperature too high • Are ventilation holes blocked • Is the fan operating properly (fan fault).
Remote shutdown	Dry contact activated at any mode shutdown
Remote power-on	Remotely power On.
Remote shut-off	Remotely power Off.
Load off due to shutdown on battery	Shutdown in battery mode.
Output off due to bypass abnormal	The bypass is abnormal, and the bypass is in standby state from working state. Check whether the bypass input is normal.
Battery to utility transition	The UPS is powered by utility power instead of the battery.
Manual power-on	Set power-on on the LCD.
Manual shutdown	Set shutdown on the LCD.
Restore factory defaults	Under UPS standby state, set <i>Restore Factory Defaults</i> function via the Maintain Screen
Output phase No. set to 1	The output phase is changed from 3-phase to 1-phase.
UPS is out of service	The UPS is out of service.
Turn on programmable outlet	The programmable outlet status is changed from <i>Turn Off</i> to <i>Turn On</i> .
Turn off programmable outlet	The programmable outlet status is changed from <i>Turn Off</i> to <i>Turn On</i> .
System parallel settings atart sync	Manually set the 'Sync parallel parameters' command to activate the event.
Local settings sync OK	Local parameters are successfully synchronized.
System settings sync OK	All the parameters are successfully synchronized.
Load Off due to output short	The inverter or the bypass has a short circuit.
Output off due to overload & bypass abnormal	The output is Off due to output overload and bypass abnormal.
Parallel No. abnormal	The parallel on-line number and the configured number are different. Verify that the parallel number on the Settings Screen is the same as the actual on-line number and that the parallel cables are normal.
Bypass disabled	In <i>Settings->Output->Frequency selection, Auto, BypDisa; 50Hz, BypDisa; 60Hz, BypDisa</i> is set, the LCD will generate BypDisa alarm.
Battery cabinet connect abnormal	The system detects more than six battery cabinets, then reports the battery cabinet connection is abnormal.
Battery cabinet not connected	The battery cabinet group number is specified, but the communication cables are not connected.
Battery EOD	Battery end of discharge.
Faults cleared	Press the <i>Clear faults</i> button under <i>Control</i> .
Manual shut off	After the user shuts Off the UPS output, then the system will record this event.
System warning	In parallel system, the alarm occurs when the UPS's self-adapting output frequency is inconsistent. Solution: Power On again
System fault	The alarm occurs when model identification is incorrect. Contact service.

NOTES



