



Liebert®

NXL™ 1100kVA / 1100kW UPS

Maximum UPS Protection  
for Large Data Centers



## Maximum Protection And An Energy Efficient Design



Every business has unique needs for their data center. For those who deem maximum protection as their top concern, look for a robust UPS designed to provide features to maintain quality power at all times. And for those requiring maximum protection and low total cost of ownership - there is the Liebert® NXL™ 1100 kVA UPS.

### Now There's A High Power Liebert UPS That Provides Maximum Protection

A key component in a Maximum Protection strategy, Liebert NXL 1100kVA UPS systems from Vertiv™ utilize the latest power protection technology to create a new level of reliability with efficiency options for data center applications.

The UPS has a robust design engineered to provide unmatched reliability for businesses focused on maximum protection. Its fault-tolerant design utilizes magnetics that provide full DC fault isolation and the capacity to support output overloads even when the DC stored energy source is disconnected. This makes the Liebert NXL 1100kVA UPS uniquely applicable to different forms of DC stored energy, such as large flooded batteries, flywheel systems and emerging high rate batteries.

For full compatibility with modern server power supplies the Liebert NXL 1100kVA UPS supports a unity power factor load without need for derating, supplying 1100kW of output power. The Liebert NXL 1100kVA UPS also offers the highest level of operational efficiency within the Maximum Protection design platforms.



## MAXIMUM PROTECTION

### Liebert® NXL™ UPS is the right choice for critical, high power applications:

- Listed and labeled to UL1778 fourth edition. The fourth edition is more harmonized with internationalized standards and requires testing for both safety and performance resulting in a more reliable UPS.
- Fuse-less bypass design allows fault coordination of distribution system.
- Handles a wide window of input voltage and frequency, including power from backup generators.
- Battery ground fault isolation results in normal system operation even under battery ground fault conditions - the system does not go to bypass. An alarm will direct the user to take corrective action, but operation is maintained.

### Liebert NXL UPS Stack-Up Performance

Robust design allows operation at 100% load under a “stack-up” of conditions that would require other systems to de-rate their output or compromise system availability. Simultaneous conditions such as clogged air filters, high ambient temperature, high altitude, fan failure, and low or high line conditions have been mitigated to ensure full rating at 100% operating loads.

- High inverter overload rating allows the UPS to stay on inverter delivering full regulated power, even in overload situations.
- Continuous duty rated Bypass Static Switch ensures maximum fault clearing capability in case of extreme overload or downstream short-circuits.

### Higher Availability:

- Unity power factor load performance capacity @ full kVA rating.
- 480/575/600VAC input and output options.
- 100% rated continuous duty bypass static switch - unfused.
- Superior handling of present and future leading power factor computer loads.
- Short Circuit Withstand Rating (SCWR) withstand capability: 480V - 100kA, 125kA; 600V - 65kA, 100kA
- Color touch screen display improves user interface and reduces risk of human error.
- Built-in galvanic isolation provides proper grounding without requiring a neutral.
- Excellent dynamic performance.

100% LOAD

LOW & HIGH LINE CONDITIONS

40 °C / 104 °F TEMPERATURE

50% CLOGGED AIR FILTER

FAN FAILURE

HIGH ALTITUDE 1500 METERS

- Liebert ActiveStar® Digital Signal Processor (DSP) controls — all digital controls.
- Multi-module configurations provide for greater total capacity and module redundancy.
- Module level redundant components— fans and power supplies.
- Generator and utility friendly with low input current distortion.
- Highest documented MTBF > 5 million hours.

### Withstand Tested and Labeled

Liebert NXL is the only UPS in its class that is withstand tested and labeled by UL - up to 125kA @ 480V, 100kA @ 600V, and 200kA for modules with remote breakers.

## LOW TOTAL COST OF OWNERSHIP

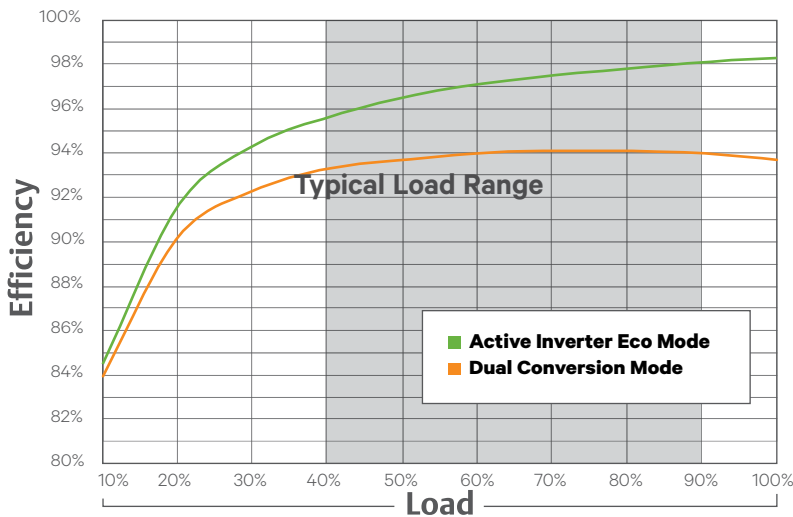
### Active Inverter Eco-Mode™ Capability Pushes Efficiency To 98%.

When Active Inverter Eco-Mode operation is selected, the load is powered from the bypass source and remains there as long as the bypass source frequency, slew rate and voltage are within the adjusted operating parameters. During this mode of operation, the inverter remains operating with the ability to instantaneously assume the load. Should the bypass source go outside the adjusted limits, the static bypass switches turn off, isolating the load from the bypass while the inverter assumes the full critical load.

This increases overall efficiency when the voltage and frequency of the bypass source are within acceptable parameters. Once the bypass source returns to within acceptable parameters, Active Inverter Eco-Mode operation continues.

- Up to 98% efficiency when operating in Active Inverter Eco-Mode. Up to 94% operating efficiency in dual conversion mode.
- Optimized part-load efficiencies.

### Industry's best efficiency at this power rating



### Designed to reduce time and cost of installation and maintenance:

- Front access for installation and service.
- Internal bypass backfeed breaker avoids the complication of a device in the distribution switchgear that must be controlled from the UPS but trip power provided from a source energized when the bypass is deenergized.
- Reduced installation and service time.
- Improved cable access results in faster installation.
- Built-in battery cabinet breaker isolates string for ease of service.
- Battery cabinet with interconnecting bussing reduces site cabling.



ENERGY STAR® qualified UPS (480V models) – UPS products meeting the EPA's requirements use an average of 35% less energy than their standard counterparts.

## More Ways To Achieve The Level Of Protection And Reliability You Need

### CAPACITY

With unity power rating - 1100kVA / 1100kW - Liebert® NXL™ UPS has the highest capacity of any monolithic UPS in the industry. The result is real savings versus installing multiple smaller units to achieve capacity with a reduction in requirements for floorspace, maintenance and installation costs. In addition, the UPS is available in multi-module configurations for Tier levels 2, 3 and 4, ensuring the right level of power redundancy for any critical application.

#### Single-Module Configuration

Single-module systems provide a basic protection configuration. The critical bus is powered by a single UPS system with bypass capability.

#### Multi Module Configurations

Liebert NXL UPS 1100kVA units can be paralleled to obtain higher total capacity or to obtain redundancy. Many facilities have added redundant UPS modules to their critical power systems, to meet the need for maximum reliability. A redundant UPS system adds fault management capability by preventing a single module or single battery failure from taking down the critical output bus. Use of redundant UPS modules also improves maintainability since one UPS module at a time can be taken off-line for service without shutting down the whole system.

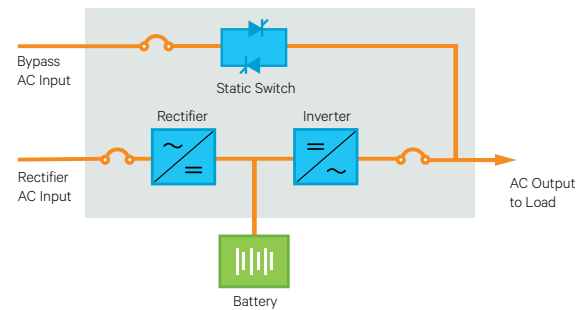
#### 1+N Parallel Configuration - Up To 6 Modules

- Paralleling of single UPS units, offers easy scalability for capacity or redundancy.
- Each unit has its own bypass static switch.
- Provides multi-module operation without the need for a system control cabinet.
- Bypass sharing is assured through integral bypass load sharing inductors.
- System capacity is maintained even with unequal site wiring lengths.
- System level commands may be given at any module.

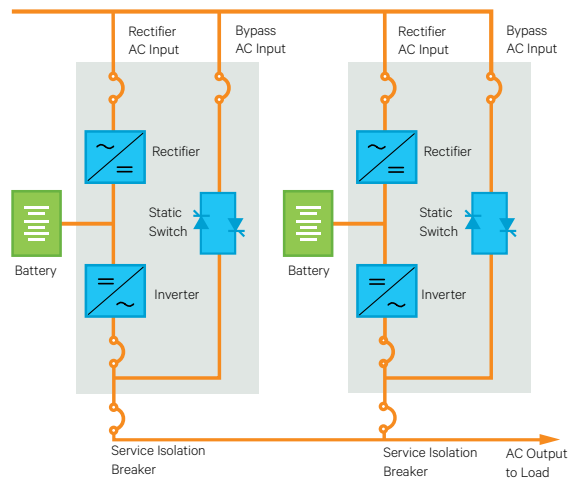
#### N+1 Parallel Configuration - Up To 6 Modules

- Paralleling of units allows planned expansion with a fully rated centralized static switch.
- System Control and Bypass Static Switch can be easily integrated into any switchgear solution.
- Continuous rated fuseless Bypass Static Switch offers high fault clearing capability and high availability.
- System level commands are given at the System Controls.

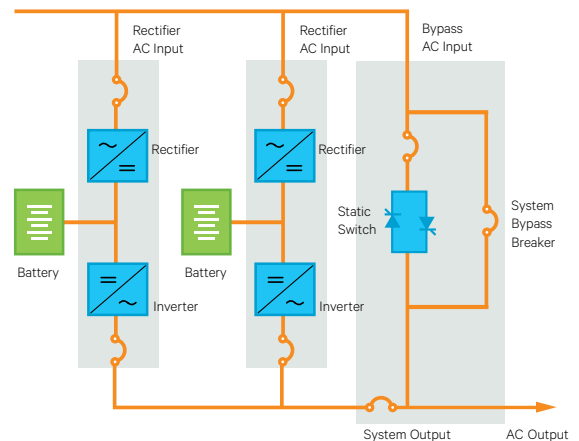
#### Liebert NXL Single Module System One-Line



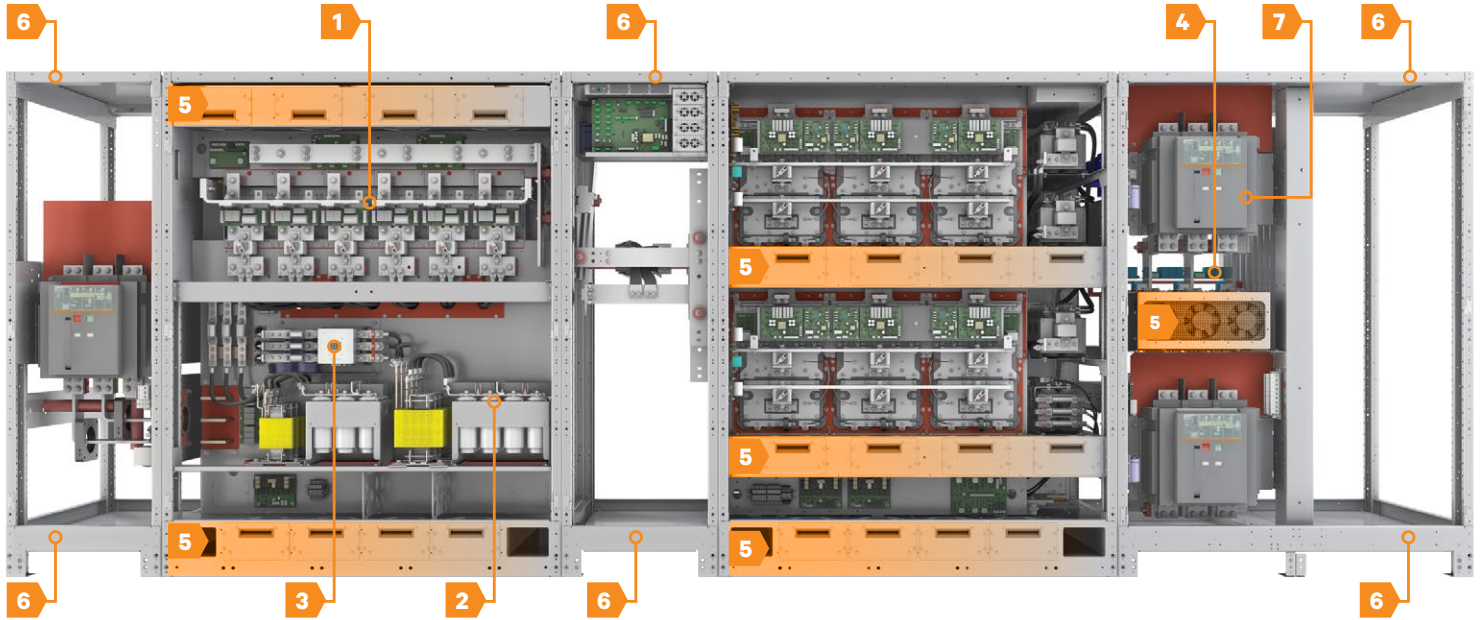
#### Liebert NXL 1+N Distributed Bypass Multi-Module System



#### Liebert NXL N+1 Central Bypass Multi-Module System



Quality, Robust Design



Single module or 1+N system shown.

Outstanding Features Make Liebert® NXL™ UPS the New Benchmark in Large-Scale UPS Systems

Liebert NXL UPS Standard Features

- 1. 12 pulse phase controlled SCR rectifier
- 2. Input filter with fuses
- 3. Automatic input filter disconnect for input power factor control
- 4. Continuous duty static bypass with internal back feed breaker
- 5. Redundant cooling fans with individual failure detection
- 6. Top and bottom cable entry
- 7. Internal backfeed breaker
- Two step input current limit
- Two step battery charger limit
- Automatic retransfer
- Back-lit color touch screen display
- Temperature compensated battery charging/battery load test
- Latest UL 1778 Rev. 4 Listing and Labeling
- DSP controls
- Safe and easy replacement of air filters and addition of Liebert IntelliSlot cards without shutting down the unit





## Designed For Ease Of Installation, Operation And Service



### FLEXIBILITY

- Available in single-module and multi-module configurations with both single and multi-bus distribution
- Bypass withstand rating achieved without fuses to allow coordination with downstream feeder circuit breakers
- Multiple voltages and grounding configurations available
- Compatible with switch mode and traditional power supplies and rated 1000kW for a 0.95 leading power factor load
- Liebert® IntelliSlot® communication cards for site monitoring and management

#### Liebert NXL™ UPS Factory Installed Options

- Up to two programmable relay boards – 8 channels of status and alarm contacts on each relay board.
- Up to two input contact isolator boards – 8 user programmable alarm inputs each.
- Emergency Module Off (EMO).
- Display Keylock.
- Load Bus Sync for multi-bus systems.
- Power Tie™ for multi-bus systems.

#### Liebert NXL UPS Field Installed Options

- Remote Alarm Status Panel.
- External Battery Temperature Sensor.
- Seismic Anchoring Kit.

#### The Liebert NXL 1100 UPS is Ideally Suited For:

- Enterprise data centers
- Web Hosting
- Co-location
- Government
- Healthcare
- Finance
- Education
- Insurance
- Any other application requiring high levels of power availability and computer-grade power quality

#### Liebert NXL UPS: Unmatched Flexibility Features

- Highest withstand rating - 480V: 100kA standard, 125kA optional; 575V & 600V: 65kA standard, 100kA optional.
- High resistance ground compatible.
- Input/Output voltages of 480, 575, 600VAC.

## System-Matched Ancillary Products Enhance UPS Flexibility And Availability

A comprehensive line of ancillary products provides a matched, tested and reliable power line-up, customized for your system and site needs.



### Liebert® NXL™ UPS Matching Battery Cabinet

- System matched for all Liebert NXL systems.
- Optional Albér integrated battery monitoring.
- Breaker for safe battery service without shutdown.
- Parallelable for extended runtime or redundancy.
- Internal bussing between attached cabinets to minimize site wiring.
- Integral thermal measurement in each cabinet for temperature compensated charging and per cabinet thermal runaway prevention.



### Liebert NXL UPS System Control Cabinet

- For N+1 parallel systems, the System Control Cabinet controls the operation of the system, and also contains the system Static Bypass Switch.
- Integrated into the switchgear of the customers choice.
- Allows control of parallel systems with up to 6 UPS units.
- Drawout design Bypass Static Switch is continuous duty type to ensure highest availability.
- Advanced color touch screen display allows easy monitoring and operation of the entire parallel system.
- 200,000kA withstand for static switch.
- Up to 5000A at 480V.



## Monitoring And Control Capabilities That Keep You Informed And In Charge

### VISIBILITY

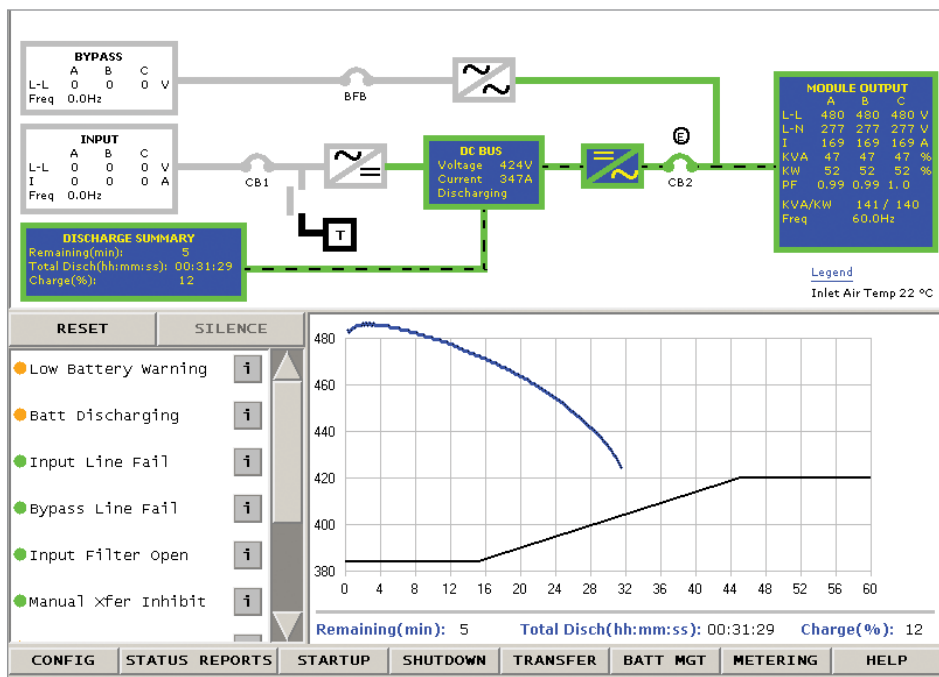
#### Integrated Control And Monitoring Main Display Screen

Liebert® NXL™ UPS has a large, color touchscreen display that leads the user through logical menu sequences to view needed information.

The color, backlit, micro-processor based display is autonomous of the system control logic. The simple menu-driven system virtually eliminates the possibility for human error.

The large touch screen display can be set to show a system one-line diagram or mimic panel. It can also display advanced metering information, alarms, configuration or start-up/shutdown/transfer information.

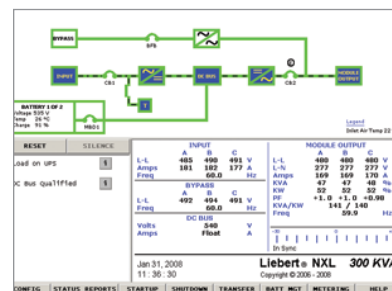
- Quickly check operational status.
- Monitor power flow through UPS along with all meter readings.
- Menu-driven operator procedures to ensure safe operation.
- Check status reports and history files.
- Adjustment of programmable parameters. Password is needed for both operations and adjustments.



Liebert NXL UPS Display Screen

#### Battery Cycle Monitor

The Liebert NXL UPS system firmware collects and retains information on the last 132 events that involved discharging the UPS battery. The battery discharges are categorized by discharge duration, and crucial event details are stored, providing onscreen access to information that affects battery health. Summary information on the total number of events, cumulative ampere hours and the total discharge time since a given date is also stored and available for review. All information may also be collected remotely through the Remote Service Terminal application program.



#### Liebert IntelliSlot™ Unity Card Communications Interface Card

The Liebert IntelliSlot Unity communications platform is the next generation of communications interface enhancing the enablement of Vertiv™ software tools and services, including *Trellis™*, Liebert Nform™, and LIFE™ Services, as well as third-party customer protocols for Vertiv equipment.

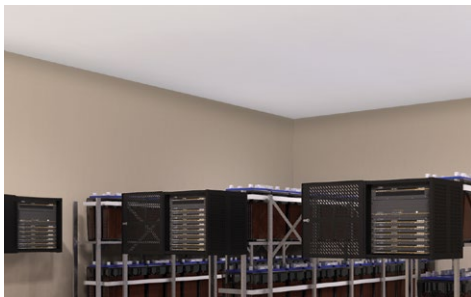


Liebert IntelliSlot Web Card

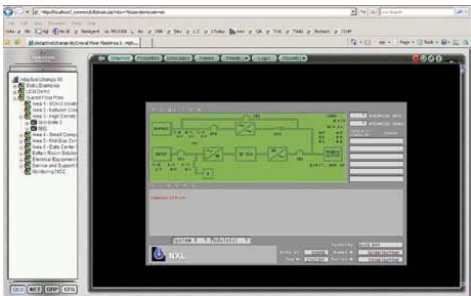
When the UPS goes into battery mode, it is vital to ensure that your batteries have enough life to run the system until the generators are available. The Liebert NXL UPS has the ability to monitor the expected run time of the batteries and provide alarms.



*Albér BDSi Integrated Battery Monitoring for Liebert NXL Matching Battery Cabinets*



*Albér BDS-256XL Monitors and Reports on the Health of Wet Cell Batteries*



*Liebert SiteScan Centralized Site Monitoring Provides Visibility and Control of All Data Center Support Equipment.*

## Battery Monitoring

Preventing battery failure is essential for delivering maximum availability and effective data center management. Albér battery monitoring technologies continuously monitor battery health, allowing proactive battery replacement and optimized availability.

### Continuous Battery Monitoring

- Liebert® NXL™ UPS battery cabinets are available with factory-integrated Albér battery monitoring.
- Albér BDS-256-XL monitors and reports on the health of wet cell batteries.

### Albér Monitoring Systems

- Windows-based software for real-time viewing, automatic data collection, data analysis, and report generating.
- Remote notification to third party systems via Modbus and networks.
- Scans pertinent battery parameters every 4 seconds, including total voltage, cell voltage, current and temperature.
- Automatic proactive internal DC resistance tests.
- Discharges are automatically detected and data saved for retrieval.
- Trend analysis provides the ability to analyze performance and aid in trouble shooting.
- Also allow for battery monitoring management by Liebert Services, enabling proper, timely maintenance by local, trained Customer Engineers.

## Centralized Monitoring Integration

Liebert SiteScan® Web centralized monitoring software offers maximum control, monitoring and visibility to Liebert NXL UPS.

- Allows information to be collected remotely through the Remote Service Terminal application program.
- Pre-programmed with the alarms and data recording features critical to system oversight.
- The Liebert NXL UPS also comes with the ability to output data directly to your network for integration with other monitoring systems.

### Real-time Status

Liebert IntelliSlot Web Card™ monitoring cards for Web, Modbus 485, and Modbus IP provide connection to Liebert SiteScan Web:

- Provides real-time status updates.
- Provides tools to analyze data about Liebert equipment.
- Allows access to current data in graphic programming.

## Tested To Be The Best

### QUALITY

#### The Liebert® Power Systems Test Center



The Liebert Power Systems Test Center for large UPS systems is a state-of-the-art test facility designed to provide customers with pre-installation testing of the performance, interoperability, and efficiency of Liebert UPS modules and systems under a variety of conditions. Located in Delaware, Ohio, the 25,600 square-foot facility, including a 2,600 square-foot customer observation station, is the largest and most comprehensive in the industry.

Testing includes individual modules as well as the complete power system — including large UPS units such as the Liebert NXL UPS, Liebert STS2 static transfer switches and associated switchgear support systems — and is essential to the smooth, rapid installation and commissioning of large power systems. Customers leave the Liebert Power Systems Test Center with documented proof and confidence that their complex power system will operate seamlessly in accordance with business-critical availability requirements.

Offering you the UPS industry's largest power systems testing center is another way that Vertiv™ strives to make sure our product solutions are a perfect match for your critical power requirements.

#### Typical UPS system verification, testing and test capabilities include but are not limited to the following:

- DC functions.
- Transfer functions.
- Alarms and display verification.
- Parallel module tests.
- Module and system Internal fault testing such as component failures or power supply failures.
- Module and system loading from no load up to 150% load.
- Unbalanced loading.
- Battery discharge simulation.
- Module and system step loading from 0 to 100%.
- Integrated tests with UPS, flywheels, switchboards, static switches, power distribution, etc.
- Short circuit tests.
- Integrated Load Bus Sync testing with multiple UPS systems.
- Integrated Power Tie™ testing.
- Integral switchgear testing.
- Power quality meters.
- High resistance ground.
- Power monitoring.
- Mimic panels.
- Current and voltage harmonic analysis.
- Key interlock systems.
- PLC or relay based transfer controls.
- Module and system level full load heat runs.
- Infrared scanning.
- Thermal scanning.



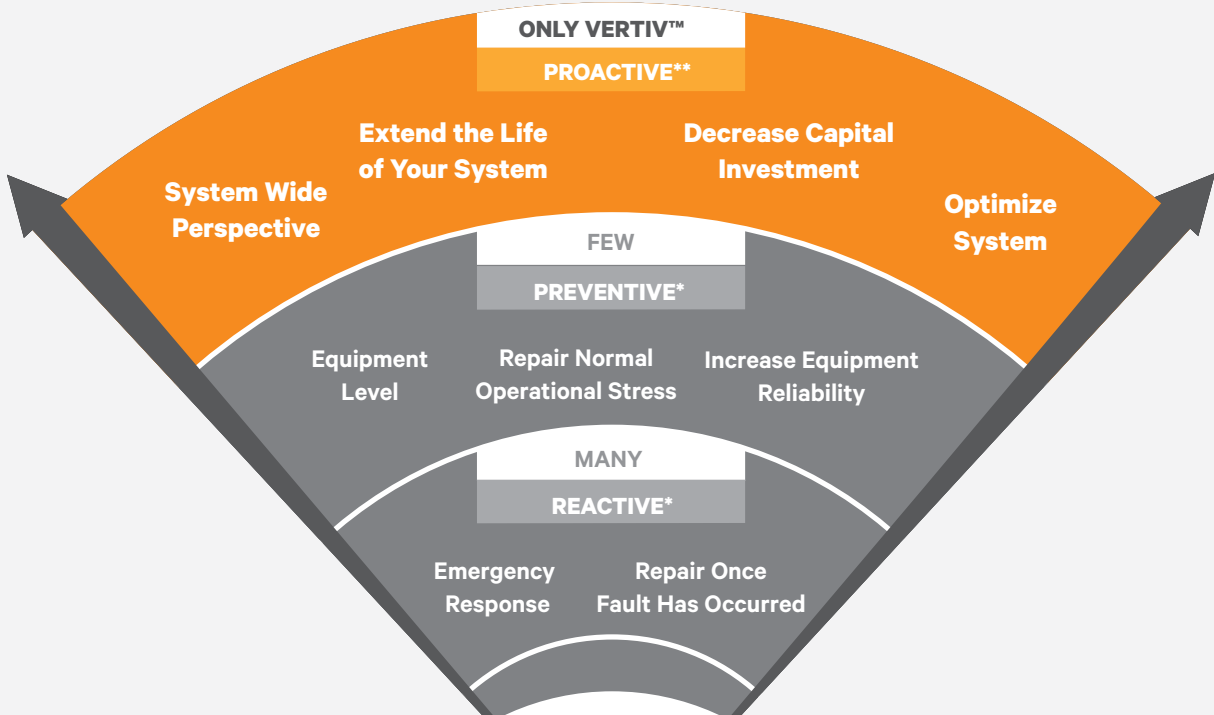
## Service Options

### SUPPORT

Maximizing the performance and efficiency of your data center's uninterruptible power supply (UPS) and other power distribution systems requires they be properly maintained by factory-trained technicians.

**Vertiv™, Liebert® Services has the only service organization in the world that has been factory trained on Liebert power equipment and is continuously supported and updated by the engineers who built the equipment.**

No one knows your Liebert equipment better than we do. We are the service arm of the Liebert equipment manufacturer, we are the factory. Our Customer Engineers have a better knowledge of how to maintain Liebert equipment and integrate it into the overall data center infrastructure support strategy than any service provider.



### The Vertiv Critical Difference

Many service organizations can perform basic repair activities and maintain equipment at some level of competency, but Vertiv, Liebert Services can take your critical maintenance to the next level — proactive maintenance that can significantly extend the life of your power systems, decrease your capital investment, optimize system efficiency and effectiveness, and increase overall system availability.

## VERTIV SERVICES

### **We are the Largest**

With over 650 Customer Engineers and Field Technicians, our factory trained service force is twice the size of the next largest competitor.

### **We Fix it Right the First Time**

On average we can touch your equipment in 5,000 service events without an error; the lowest error rate in the industry. Our power technical support group has over 20 dedicated experts who support our Customer Engineers with an Average of 17 years experience on Liebert Equipment.

### **We are the Fastest**

Our onsite response time averages 1.67 hours. In addition, over 80% of emergency calls are resolved over the phone—in a matter of minutes—by our expert staff that can be reached at 1-800-LIEBERT.

### **We Have the Parts**

With over \$10 Million in parts inventory in eight strategically located warehouses and parts hubs throughout the US, nearly 100% of emergency parts orders are delivered in less than 24 hours.

### **We Have the Best Tools**

Our factory trained force of customer engineers has \$10,000 minimum of equipment at their disposal.

### **We Care About Safety**

We maintain and follow all safety and compliance regulations necessary to keep our employees from harm and protect our customer from liability.

## Specifications

<b>LIEBERT® NXL™ MODEL SIZE</b>		<b>1100KVA / 1100KW</b>
<b>INPUT AC PARAMETERS</b>		
Input Voltage to Rectifier	480/575/600 VAC 3-phase, 3-wire	
Input Voltage to Bypass	480/575/600 VAC 3-phase, 3- or 4-wire	
Input Voltage Range	+10%, -15% (-30% battery assist)	
Input Frequency	60 Hz	
Permissible Input Frequency Range	55 to 65 Hz	
Input THDi at nominal voltage at full load, %	<5% with passive filter	
Power Walk-in	1 to 30 (selectable) in 1 sec. Increments	
<b>BATTERY &amp; DC PARAMETERS</b>		
Battery Type	VRLA (Valve Regulated Lead Acid) or FLA (Flooded Lead Acid) or Liebert FS Flywheel	
Nominal Battery Bus	480 VDC	
Battery Float Voltage	540 VDC	
Recharge capacity @ full load	55kW	
DC Ripple Voltage in Float and Const V Ch. mode, %	<1 (RMS value) < 3.4% Vpp	
Temperature Compensated Battery Charging	Standard (with temperature sensor)	
<b>OUTPUT PARAMETERS</b>		
Inverter Type	IGBT PWM Control	
Output Power	1100kVA	
Output Power	1100kW	
Output Voltage	480/575/600 VAC 3-phase, 3- or 4-wire	
Output Voltage Regulation, %	< 1% (3-phase RMS average)	
Output Voltage Regulation (100% Unb. Load)	< 2% (3-phase RMS average)	
Output Frequency	60 Hz	
Output Frequency Regulation, %	± 0.1%	
Output THD at Nominal Voltage (Linear Load), %	<2%	
Output THD at nominal voltage including a 100kVA Non Linear Load per EN 62040-3, %	2.5% (max)	
Efficiency	Up to 94%	
Transient Recovery	Within 5% peak to peak in one line cycle	
Voltage Displacement	120 deg +/- 1 deg (50% unbalanced load)	
Unbalanced loads current capacity	50% of nominal phase current	
Overload	110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute, 200% for 200ms	
<b>PHYSICAL CHARACTERISTICS</b>		
	<b>SINGLE MODULE/1+N</b>	<b>MULTI-MODULE/N+1</b>
Width	228.3 in (5,799 mm)	197.5 in (5,017 mm)
Depth	47.2 in (1,199 mm)	47.2 in (1,199 mm)
Height	78.7 in (1,999 mm)	78.7 in (1,999 mm)
Weight, unpackaged, approx.	21,800 lb (9,888 kg)	20,050 lb (9,095 kg)
Color	Black, RAL 7021	
Protection Class, UPS Enclosure	NEMA 1, IP 20 (with and without front door open)	
<b>STANDARDS</b>		
Transportation	ISTA Procedure 1H	
Safety	UL 1778 4th Edition; CSA 22.2 1073	
EMI	FCC Part 15, Class A	
Surge	ANSI C62.41 B3	
ENERGY STAR® qualified UPS	480V models	







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