AC Power Systems for
Business-Critical Continuity

Liebert NX - Next Generation UPS
for protecting your Business Critical Systems

EMERSON
Network Power

Advanced UPS Technology Protects Modern IT Equipment

Today's advanced digital computing, communications, process control and medical systems require power protection that is just as innovative. These systems, however, face many of the traditional threats to their availability - foremost among them is a lack of high quality power required to operate sensitive electronics.

Emerson Network Power's goal is solving these challenges with a power solution that combines high performance, compact size, reliability and cost-efficiency. Emerson Network Power's Liebert NX is the Next Generation of True On-Line, Double-Conversion digital UPS. Designed to meet the high availability power needs of a wide variety of applications, the Liebert NX combines innovation, simplicity and low cost of ownership. The result is a power system that delivers both reliability and a return on investment beyond what has been traditionally offered.

The Liebert NX An Outstanding Performer

The system's advanced True On-Line, double conversion topology features a digital signal processor (DSP) controlled IGBT rectifier and a digital signal processor (DSP) controlled IGBT inverter.

DSP Power Factor Corrected IGBT Rectifier

The rectifier provides ≥ 0.99 Input Power Factor (PF), less than 3% of Input Current Total Harmonic Distortion (THDi) and the widest input voltage window and frequency tolerances.

Near to Unity Power Factor ensures maximization of active power leading to reduced electricity pay-out, minimization of cables, associated switchgear and backup generator sizing requirements leading to reduced investment costs.

Low input current THDi avoids disturbance to other loads connected upstream the power distribution bus without the need to oversize generator set.
Wide input voltage window and frequency tolerances contribute to higher battery life by minimizing battery usage.

High performance rectifier design helps low Neutral potential over ground and thus ensures safety of equipment.

DSP Controlled IGBT inverter

Advanced inverter control technology provides the highest output power quality, ensuring very clean output voltage waveform (very low THDv) to protect connected loads.

It operates under a wide variety of conditions, handling 100% non-linear loads with 3:1 crest factor, as well as 100% unbalanced loading.

The inverter control makes Liebert NX to be suitable for the widest ranges of loads required by the market; including 0.9 leading PF loads.

True On Line Double Conversion UPS
Only a double-conversion topology provides 100% protection with complete input to output isolation and totally regenerated power.
A double-conversion UPS delivers 100% power conditioning, zero transfer time to battery, great stability of output voltage and frequency and better transient suppression than line-interactive units.
Double-conversion systems also offer a wider input voltage window that allows the UPS to absorb deeper sags without having to transfer to battery.

DSP Control
Fully digital control technology provides a highly accurate, drift-proof control compared to traditional analog electronics.
These features enable the UPS to provide accurate, reliable power protection under a wide range of conditions.

Extended Load Ranges
Modern Data Centers, Blade Servers, and IT applications in general, need more active power. Moreover, in some instances, new Data Centers have capacitive, or leading, features, while traditional systems had inductive power factors, also known as lagging.

Leading Power Factor
Today's Redundant Power Supply Topology in Critical Servers uses Power Factor Correction circuit. Due to lower degree of actual running of load on each of these Power Supplies (SMPS) the overall running Power factor on contemporary servers tends to reach near unity or even Leading (Capacitive).
The next generation UPS systems face the challenge to support leading Power Factor loads and still deliver its high quality performance.
Thanks to superior Performance of Liebert NX, that helps to handle the challenge efficiently and does it at ease.

The best investment you can make in a UPS system: Reliability, Efficiency and Value in a compact package.

How can I get the Highest levels of Protection and Availability?

- The Liebert NX gives you built-in reliability with redundant power supply cards, highly efficient stratified cooling of critical components and optional redundant cooling fans.
- Wider input voltage and frequency tolerances contribute to high power availability.
- Digital controls provide the fastest possible power management to enhance reliability, accuracy and efficiency while reducing component count.
- Dual bus compatibility and system redundancy further enhance the availability of power.
- High overload protection handles 110% overload for 60 minutes, 125% for 10 minutes, and 150% for 1 minute.

How can I save on my electricity bill and investment costs?

- The improved input power factor of the Liebert NX can actually reduce your electricity usage.
- It delivers the highest possible input power factor - greater than 0.99 at rated linear and non-linear loads - for maximum efficiency.
- The unique ability of the Liebert NX to adjust power walk-in from 5 seconds to 30 seconds, along with reduced input current distortion and power factor correction, also enables you to save money by reducing back-up generator sizing requirements.
- The unit's compact footprint requires less floor space, leaving you with more room for other equipment.
- Liebert NX Load Bus Synchronization (LBS) option can be used for Synchronization between two independent power systems, one of which should be Liebert NX UPS system.

How can I satisfy the requirements of the latest generation servers?

- Liebert NX is capable of driving wide ranges of loads, from 0.5 lagging to 0.9 leading; this feature makes the UPS able to follow the latest IT industry trends, with more active power available for all kind of loads.

How can I also protect my upstream connected devices?

- The Liebert NX provides the Clean-est level of upstream power with the lowest level of input current THDi in the industry.
- Low THDi avoids disturbance to other loads connected upstream the power distribution bus.

How can I extend the system when I need more power?

- Liebert NX features easy and simple scalability and redundancy, in fact up to six Liebert NX modules may be paralleled in a redundant configuration for added reliability and serviceability.
- Liebert NX LBS option can be used for Synchronization between two independent power systems, one of which should be Liebert NX UPS system

How can I protect and extend the life of my batteries?

- Liebert NX minimizes transfers to batteries thanks to its wide input voltage tolerance down to 305 V.
- Temperature-compensated battery charging extends battery life.

How can I ensure the UPS will work under the most severe conditions?

- The wide input voltage window of +10 to -20% (-45% at typical loads) and a frequency tolerance of 40Hz to 70Hz provide high quality power, even when input parameters are below standard. This helps to minimize transfer to battery, reducing the charging and discharging cycles.
- Back-feed protection sensing ensures system integrity.
- Short-circuit-proof, DSP controlled inverter provides highest output power quality.

How can I easily maintain my UPS?

- Liebert NX includes a built-in maintenance bypass, optional wrap-around maintenance bypass with IP 20 UPS enclosure protection - even with the front doors open.

- Redundant configuration allows you to utilize one module while the other is being serviced.
- Dual bus compatibility enables you to transfer the load to an alternate power source for maintenance activities.

How can I monitor and communicate with my UPS?

- To meet a variety of needs, the Liebert NX can provide power simultaneous communications through a Relay Contact Card, OpenComms® Web Card and MODbus J-Bus Card and MultiLink® shutdown software.

How can I check my UPS status?

- The Liebert NX features easy access for service with front accessibility of critical components, self-diagnostics and various monitoring options.
- Large and user-friendly LCD display provides operating information in twelve different languages.

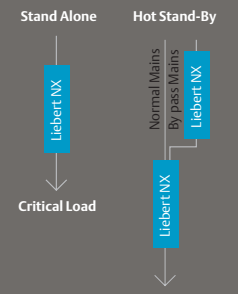
How can I satisfy my particular installation needs?

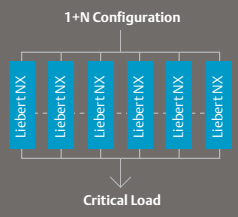
- Flexibility is achieved through many choices, including type of battery, number of single and multi-unit configurations, and an array of internal and external power and communication options.
- Auto restart capability provides added availability.
- Ultra-quiet performance with noise levels below 54dB allows greater flexibility with unit placement.
- Adjustable power walk-in, numerous user-specified settings, a choice of power monitoring communications alternatives and user friendly control are all handled through the menu-driven LCD control panel with detailed data reporting.
- Emerson Network Power is recognized as a global solutions provider. Please contact your local Emerson Network Power office or Liebert representative to discuss your system requirements.

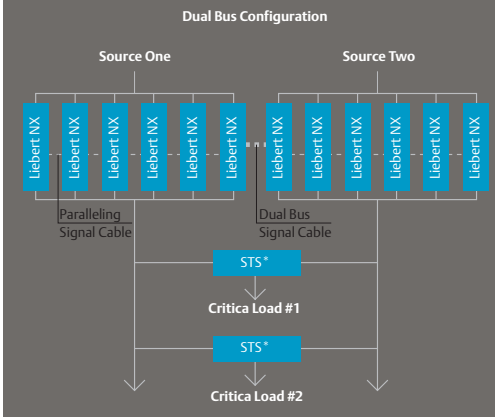
Configurations: A Full Range Of Features To Meet All Your Power Availability Needs

Single Or Dual Input Operation

Your Liebert NX power system can be utilized with either single or dual power inputs. The dual power feature allows you to take advantage of a secondary power source. An optional wrap-around maintenance bypass is also offered for the single input configuration.







* Static Transfer Switch

Advanced Monitoring and Communications Capabilities Keep You in Control

Communications Options
The Liebert NX includes three Intellislot® ports designed to house multiple electronic cards for a variety of monitoring and communication applications. These optional cards include:
OpenComms® Web Card - to meet the needs of network managers by providing interface to network management systems.
Relay Contact Card - addresses the basic monitoring and communications needs of users/maintenance personnel.
OpenComms® MODbus-Jbus Card - to interface with advanced Building Management Systems for facility monitoring.

Other Remote Communications
The Liebert NX provides other communications alternatives through RS-232 & RS-485 ports.

In addition to remote communications, service personnel can also use the RS-232 port for local downloading of data, while the RS-485 port can be utilized for a variety of remote communication applications.

Local Communications
Liebert NX provides excellent local communications through its LED-based mimic diagram and LCD panel.
While the mimic shows the live power path, the back-lit contrast-adjusting LCD provides you with detailed data on the unit and the system in twelve different languages through a user-friendly menu.

Liebert Power Monitoring Capabilities:
- MultiLink® Automated System Shutdown Software
- OpenComms® Nform Monitoring System
- SiteScan® Web Comprehensive
- Remote Power Monitor Panels
- Third-Party Monitoring Systems

Emerson Network Power Global Service

Emerson Network Power Global Service offers a wide variety of services and maintenance programs designed to keep your mission critical equipment operating continuously and smoothly.
Our aim is to design and offer an overall service package to meet customer's needs from a technical and commercial perspectiuve. More and more organizations around the world trust Emerson Network Power Global Service to minimize critical systems emergencies and interruptions. We're backed by the largest technical support and customer response organization in the industry with factory-trained customer engineers and service professionals in more than 100 service centers ready to assist in maintaining your equipment and increasing uptime, 24 hours a day, 365 days a year.
Emerson Network Power Global Service can provide service capability for your entire business-critical infrastructure: AC and DC power systems, battery systems communication systems and environmental and site monitoring services.

Technical Characteris

Models		NXe			NXa								
Rated Power @ 0.8 PF	[kVA]	10	15	20	30	40	60	80	100	120	140*	160*	200*
Rectifier Input													
Rectifier Type		IGBT-based Vector Controlled PFC (PF Corrected)											
Input Voltage	[Vac]	380 / 400 / 415 (Accepted from 305 to 477 without batt. Use)											
Input Frequency	[Hz]	50 or 60 (Accepted range from 40 to 70)											
Input Current THD		<3% (without any Filter)											
Input Power Factor		≥ 0.99 (without any Filter)											
Power Walk-In	[s]	5 to 30 (selectable)											
Bypass Input													
Input Voltage	[Vac]	380 / 400 / 415											
Battery													
Battery Type		VRLA (Valve Regulated Lead Acid) or Wet / Flooded or NiCd											
End-Cell Voltage	[Vdc/Cell]	Selectable from 1.60 to 1.90 (for VRLA)											
DC Ripple Current (float)		<5% (of C10 AH capacity) RMS value											
DC Ripple Voltage (float & const V Ch)		<1% (RMS value)											
Temp. Comp. Charge		Standard (where internal batteries 10, 15, 20, 30, 40 kVA) and Optional (for all other battery configurations)											
Output													
Inverter Type		IGBT-based Vector, Repetitive & PI Controlled											
Output Power	[kW]	8	12	16	24	32	48	64	80	96	112	128	160
Output Voltage	[Vac]	380 / 400 / 415 +/- 0.5 Regulation (3-phase RMS average)											
Output Frequency	[Hz]	50 or 60 with +/- 0.05 Regulation											
Output Voltage THD		1% (max)											
Max. Load Crest Factor		3:1 (compliant with IEC 62040-3)											
Transient Volt. Resp.	[ms]	10 to recover ± 5% of Nominal Voltage for 0% to 100% or 100% to 0% step load											
Max. Leading PF Load		Up to 0.9											
Voltage Displacement	[°el]	120°+/-10 el (with 100% unbalanced load)											
Overload		110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute											
Efficiency													
AC-AC		up to 96%											
Physical Parameters													
Width	[mm]	600			600				700		1000		
Depth	[mm]	700			825				825		825		
Height	[mm]	1400			1600				1800		1800		
Weight (approx.) without batt.	[kg]	180	204	204	312	341	401	445	720	720	824	973	973
UPS Enclosure IP		IP 20 (even with open front door)											
Standards		IEC 62040-3, IEC 62040-2, IEC 62040-1-1, IEC 60146-1-1, IEC 61000-4-2, 4, 5, 6, 8,11, EN 50091-1-1, EN 50091-2, EN 50091-3, EN 60950, EN 60529, ANSI C62.41 (IEEE 587)											
EMC Class		Class-A (Applicable for both Radiated & Conducted)											
Environmental													
Storage Temp.	[°C]	-20 to 70 (UPS) & -20 to 30 (Battery)											
Operating Temp.	[°C]	0 to 40 (UPS) & 25 +/-5 (Battery)											
Relative Humidity		0 to 95% (non-condensing)											
Maximum Altitude above Mean Sea Level	[m]	1000 (as per IEC 62040/3)											

*Available from July 2006

Liebert NX comes in 12 popular ratings: 10, 15, 20, 30, 40 60, 80, 100, 120, 140, 160 & 200kVA (400V, 50/60Hz).
The complete range of NX UPS have the same look and feel.

Liebert NX 10 to 40 kVA is designed to house an optional internal battery bank within the UPS cabinet for a specific run time, minimizing the UPS overall footprint.

A complete range of external cabinets are available for all Liebert NX UPS. These include battery cabinets, battery cabinets, transformer cabinets, and maintenance bypass cabinets.

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- Integrated Cabinet Solutions
- Outside Plant
- Precision Cooling
- Site Monitoring and Services