

Ensuring The High Availability Of Mission-Critical Data And Applications.

About Emerson Network Power

Emerson Network Power, a business of Emerson (NYSE:EMR), delivers software, hardware and services that maximize availability, capacity and efficiency for data centers, healthcare and industrial facilities. A trusted industry leader in smart infrastructure technologies, Emerson Network Power provides innovative data center infrastructure management solutions that bridge the gap between IT and facility management and deliver efficiency and uncompromised availability regardless of capacity demands. Our solutions are supported globally by local Emerson Network Power service technicians. Learn more about Emerson Network Power products and services at

www.EmersonNetworkPower.eu

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EMERSON. CONSIDER IT SOLVED.™

Liebert® eXM™ UPS from 80 to 200 kW

Efficient, Flexible Power Optimized for Medium Size Applications





Emerson Network Power, a division of Emerson, is a global company that provides a unique combination of industry expertise, technology, and resources to make the future of your business possible.

As a trusted industry leader in smart infrastructure technologies, the company provides innovative data center infrastructure management solutions that bridge the gap between IT and facility management, delivering efficiency and uncompromised availability regardless of capacity demands.



The wide product portfolio and integration capabilities enhanced by complete life cycle services support data centers, communication networks, healthcare and industrial facilities from project launch to performance optimization.

Emerson Network Power's areas of established expertise include solutions and services for AC and DC power, thermal management systems, infrastructure management & monitoring, integrated racks and enclosures, power switching and controls.

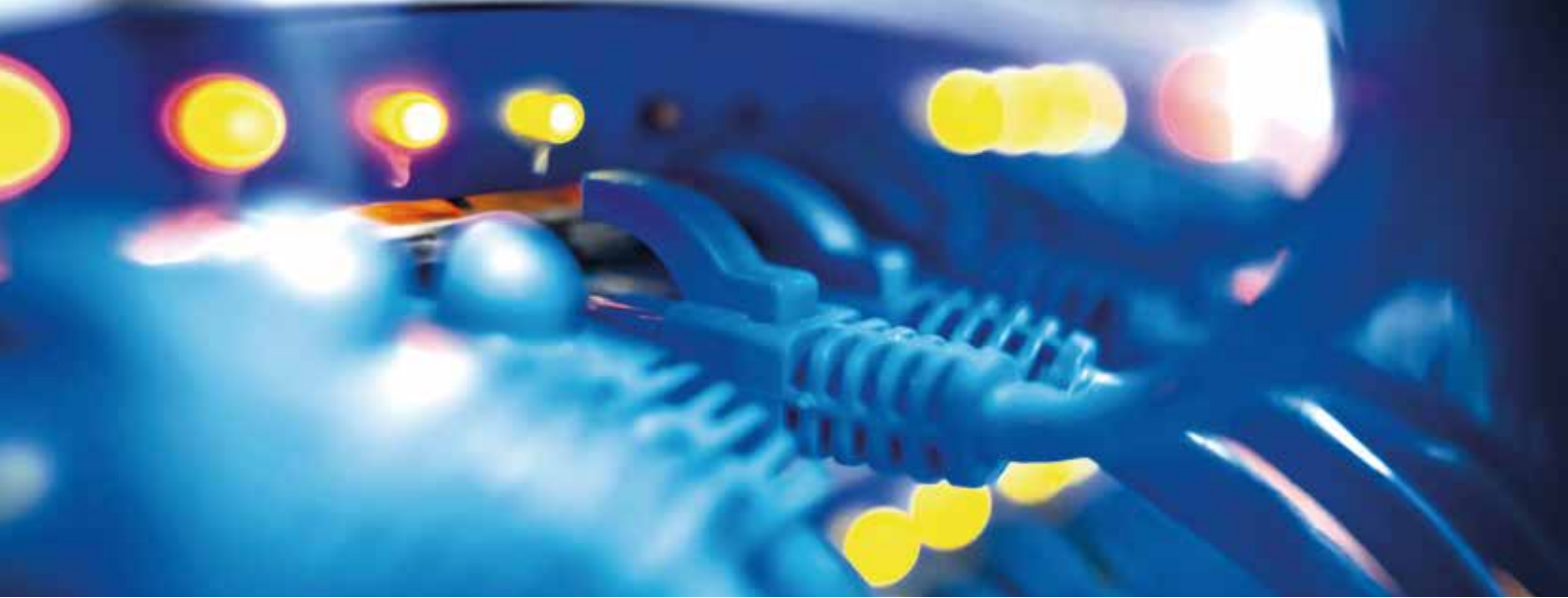
With presence in over 150 countries backed by the local service and support of over 3,200 certified professionals, Emerson Network Power is uniquely positioned to provide comprehensive solutions wherever you are located.



EMERSON

Liebert 650

EMERSON
Network Power



Medium Size UPS As Dynamic As Your Business

Highlights

- Double conversion Efficiency exceeding 96% at partial load
- ECO mode available also for parallel configurations
- Unitary Output Power Factor
- Battery charger power: 6 kW / 10 A per every 40 kW
- Back or top air exhaust
- Top or bottom cable entry
- Integrated transformer option
- Full frontal access for installation and service
- LIFE™ remote diagnostic and preventive monitoring service

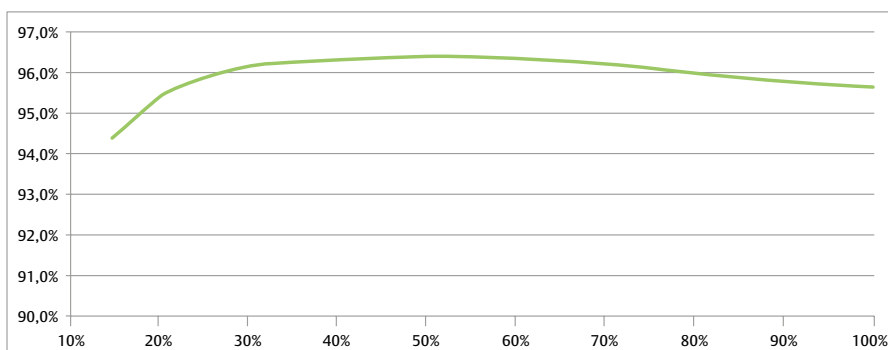
Uninterruptible power solutions for medium size applications often need features found within both larger and smaller applications.

The **Liebert® eXM™** UPS provides an ideal mix of both row-based and room-based benefits, optimized to deliver excellent performance. With its intelligent controls, the **Liebert eXM** UPS is the ideal match for ensuring efficient operation and reliable protection. Flexible configurations provide low total cost of ownership and allow organizations to meet stringent Service Level Agreements.

Efficient, Cost Effective, High Density Design

The **Liebert eXM** UPS provides efficient power protection that can meet your capital requirements.

- Unity Power Factor ensures more power is provided in a smaller footprint, thus increasing system capacity while minimizing cabling and installation costs.
- Winning operating efficiencies—our unique Eco Mode option delivers 99% efficiency, while the Double Conversion Mode has been optimized to exceed 96%.
- Efficiency level remains high (>94.5%) even at very low load (15%) accommodating for a load decrease or allowing a gradual deployment of the IT equipment without wasting energy.
- Emerson's transformer-free design saves space, capital, weight and shipping costs.



Liebert eXM efficiency curve in double-conversion mode: Liebert eXM UPS saves over EUR 1,000/year for every percentage point gain in efficiency.*

* EUR 0.1/kWh

Flexible Configuration and Design Options

Customized to Fit Specific Needs

Liebert® eXM™ provides a power protection solution of proven quality for customers' IT services that optimizes the total cost of ownership of the electrical infrastructure and easily adapts to different installation requirements. From a row of racks in a data center to the corner of a technical room (fed from cables running above the units or beneath the raised floor) **Liebert eXM UPS** provides excellent installation flexibility and reliability in configurations that

deliver fast deployment and rapid pay-back time. For installations that require full galvanic isolation, **Liebert eXM** can come equipped with an integrated transformer, offering a certified solution with a zero footprint impact.

The **Liebert eXM** charger is sized to deliver an additional 15% to the nominal UPS power for battery recharge, thus being able to provide adequate current to charge even batteries with a long backup time.



UPS with isolation transformer



Liebert eXM detached from the wall



Liebert eXM in a corner



Liebert eXM with top cable entry



Efficient System Availability

The true on-line, double conversion design delivers the most reliable power and highest uptime levels of any UPS design.

Liebert® eXM™ efficiency in double conversion mode exceeds 95.5% from 20% load level onwards, and has been optimized to exceed 96% at medium load level (from 27 to 77%); which is where the UPS will most likely operate especially when units are paralleled to provide redundancy.

The **Liebert eXM** comes complete with communication and synchronization features, making it ready for parallel and dual-bus configurations, as well

as fit for Tier 2 and complex Tier 4 data centers.

When two or more UPS are paralleled to reach the required capacity, an Intelligent Paralleling algorithm can be set up to maximize the total system efficiency, managing the activation of the UPS in order to make them function at maximum possible efficiency levels. Furthermore, Intelligent Paralleling evenly distributes the operating hours across the connected UPS units by rotating the active ones thus prolonging the life of UPS components.

Finally, when energy saving is the priority, the ideal UPS must

intervene to protect the load only when necessary having hardly any loss.

Liebert eXM gives customers the ability to achieve such types of efficiency (99%) while running in ECO mode.

Liebert eXM is able to do so even in parallel operation without the need for an external centralized static switch, thus saving on installation space and initial cost.

With its advanced efficiency techniques, **Liebert eXM** contributes to minimizing the carbon footprint of mission critical applications, helping data centers to meet the industry's environmental and efficiency compliance standards.



Three units @ 18% load each = 95.1% efficiency



Three units @ 28% load each = 96.1% efficiency



LIFE™ Remote Diagnostic and Preventive Monitoring Service

Emerson Network Power's service program is designed to ensure that your critical power protection system is maintained in an optimum state of readiness at all times.

The **LIFE** remote diagnostic and preventive monitoring service provides early warning of UPS conditions and out of tolerances. This allows effective proactive maintenance, fast incident response and remote trouble shooting, giving customers complete security and peace of mind.



With **LIFE** services you will benefit from:

Uptime Assurance

Constant monitoring of UPS parameters, thus maximizing the system's availability.

First Time Fix Rate

Pro-active monitoring and data measuring ensure that when our customer engineers are dispatched on-site, they arrive prepared for first time resolution.

Proactive Analysis

From **LIFE** service centers, our experts proactively analyze the data and trends of your equipment, to recommend actions to ensure their best performance.

Minimized Total Cost of Ownership of Your Equipment

The continuous monitoring of all relevant parameters in turn maximizes unit performance, reduces on-site maintenance and extends the life of your equipment.

Fast Incident Response

LIFE allows for immediate definition of the best course of action, as a result of the regular communication between your **Liebert® eXM™** system and our **LIFE** service centers.

Reporting

You will receive a comprehensive report detailing the working order of your equipment and its operational performance.

Customer Monitoring Interfaces

Intelligent and intuitive, interface, system monitoring and DCIM solutions combined to make your infrastructure ready to enhance performance today and tomorrow.

Human-Machine Interface

A comprehensive, easy to use LCD interface provides robust monitoring and control, as well as a user-friendly graphical display, reducing the likelihood of human error.

A Single-line mimic diagram shows system status at a glance.

Hardware Connectivity

Liebert® eXM™ allows for

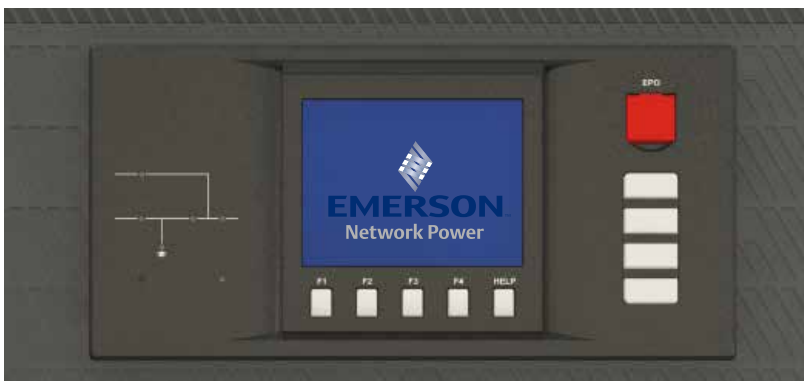
the monitoring and control of networked UPS through different protocol options:

- The integration of UPS in Network Management Systems through SNMP protocol
- The integration of UPS with Building Monitoring and Automation Systems via MODBUS RTU, MODBUS/TCP or JBUS protocols

- The integration with synoptical panels via a dry contact board
- Direct Interface with **Liebert Sitescan®** via a proprietary protocol

Software Connectivity

Liebert® Nform™ will monitor the **Liebert eXM** via SNMP protocol. Authenticated alarm management, trend analysis and event notification delivers a comprehensive monitoring solution.

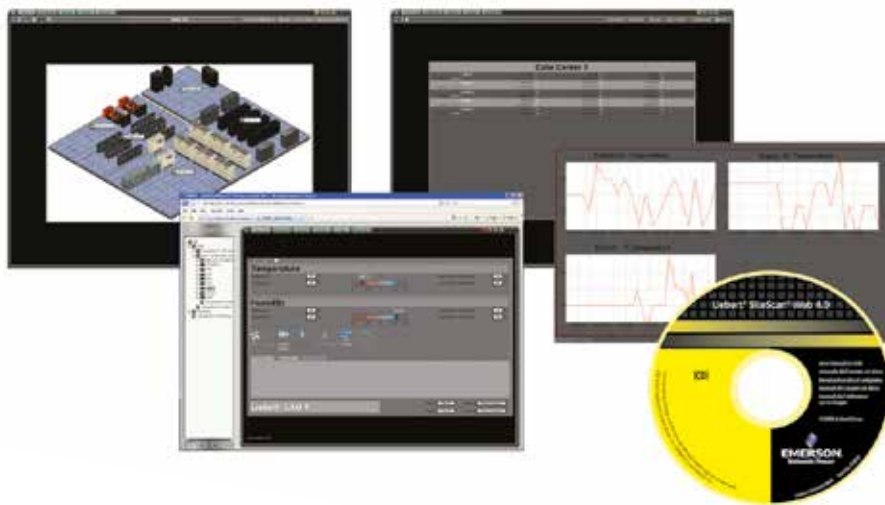


Liebert eXM LCD interface



Available in a variety of versions to suit anything from small computer rooms to multiple

Liebert SiteScan® is a centralized site monitoring system which ensures maximum visibility and



location distributed IT networks, Liebert Nform enables:

- Condition based system state recording
- Alarm event exporting to disk
- SMTP email
- Execution of external program
- Shut down clients

availability of critical operations.

Liebert SiteScan Web allows users to virtually monitor and control any piece of critical support equipment. Its features include real-time monitoring and control, data analysis, trend reporting, and event management.

Trellis™ Platform

Emerson Network Power's Trellis™ platform is a real-time infrastructure optimization platform that enables the unified management of data center IT and facilities infrastructure.

The Trellis platform software can manage capacity, track inventory, plan changes, visualize configurations, analyze and calculate energy usage, and optimize cooling and power equipment. The

Trellis platform monitors the data center, providing a thorough understanding of system dependencies to help IT and facilities organizations keep the data center running at peak performance. This unified and complete solution, delivers the power to see the real situation in your data center, make the right decision and take action with confidence.



Maintainability and Serviceability

Liebert® eXM™ has been designed to maximize the availability of secure power, leveraging Emerson's experience and expertise in designing high Mean-Time- Between-Failure (MTBF) UPS solutions and optimizing the Mean Time To Repair (MTTR) through a Design-for-Serviceability/Maintainability construction.

In fact, **Liebert eXM** makes use of standardized, modular

assemblies that can quickly be removed and replaced in case of need and of sub-assemblies that can be serviced and maintained in full working order during preventive maintenance visits. Thanks to this architecture, **Liebert eXM** benefits from an enhanced fault tolerance compared to traditional monolithic UPS through the ability to support partially loaded server rooms or data centers

without going to bypass even after a first failure. The full frontal access facilitates all service operations and also allows installation in constricted spaces. Internal diagnostic capabilities combined with **LIFE™** remote diagnostic services ensure rapid incident response time and that when our customer engineers are dispatched on-site, they arrive prepared for first time resolution.





Customer Experience Center

Emerson Network Power's state-of-the-art Customer Experience Center located in Castel Guelfo (Bologna - Italy), enables our customers to experience first-hand a wide variety of data center technologies, supported by constant consultation from R&D and engineering specialists.



Customers visiting the center will be able to witness pre-installation demonstrations, covering the technical performance, interoperability and efficiency of Emerson UPS systems under real field conditions. These processes can be experienced from the facility's control room, where real-time performance measurements and reporting will be available while providing full visibility of the demonstration area. The center can host simultaneous tests at full load of up to 4000 A.

The customer validation area specifically dedicated to UPS consists of four testing stations, each one providing up to 1.2 MVA of capacity. Testing includes individual modules, as well as complete power systems, with the added possibility of the customer's switchgear support systems being connected, thus guaranteeing smooth, rapid installation and commissioning of large power systems. Testing is also customized based on the complexity, size and number of UPS components in the configuration.

Our Customer Experience Center offers three validation experiences:

- **Demo** - carried out on new products to demonstrate UPS performance
- **Standard** - validation test showing UPS standard technical performances in compliance with UPS catalogue and IEC 62040-3 standards
- **Customized** - session tailored to validating customer's specific technical performance needs.

#CustomerExperienceCenter 

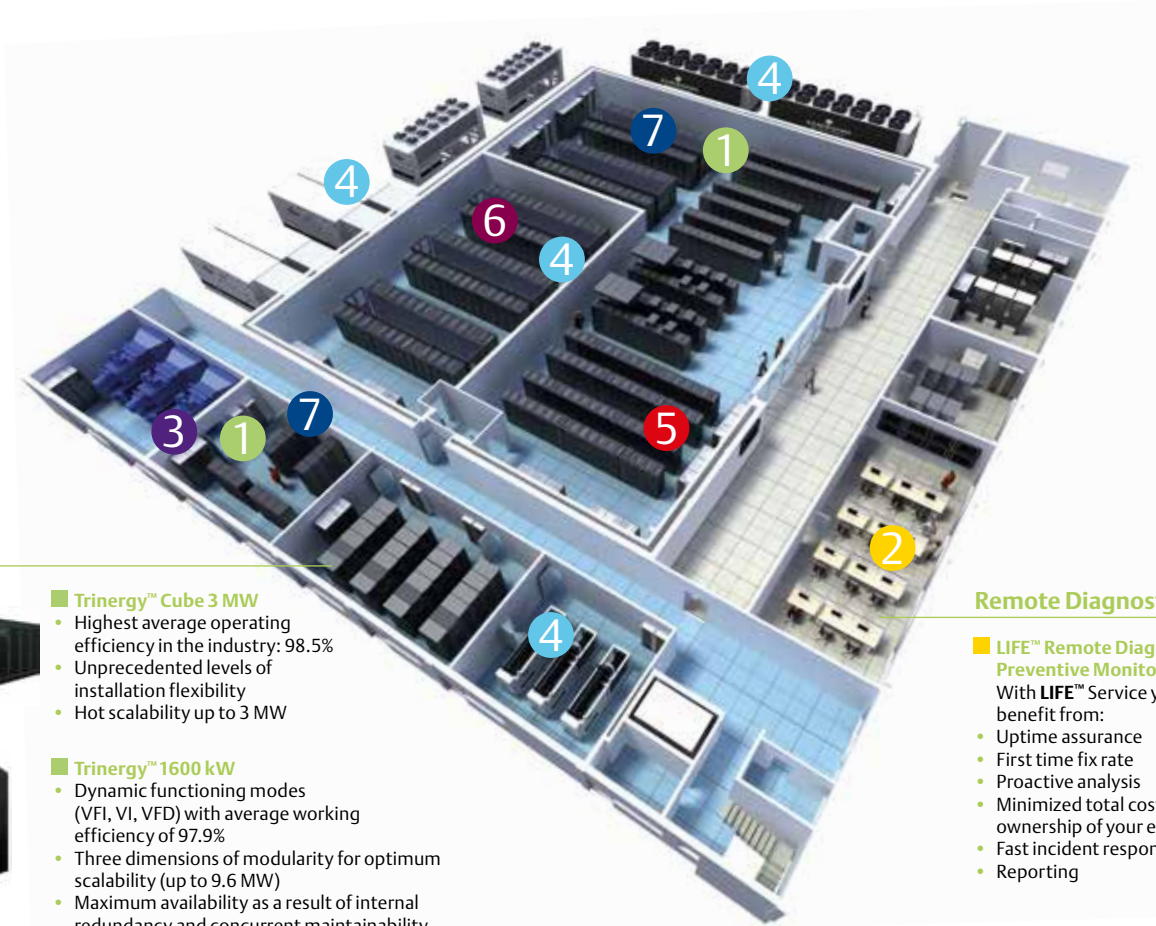


Liebert® eXM™ Specifications

Technical Characteristics					
Nominal Ratings (kVA)	80 kVA	100 kVA	120 kVA	160 kVA	200 kVA
Input					
Nominal input voltage (V)	380/400/415				
Input voltage range without battery discharge (V)	229~478				
Nominal input frequency (Hz)	50/60				
Input frequency range (Hz)	40-70				
Bypass voltage tolerance (%)	Upper limit: +10%, +15%, or +20% default: +15% Lower limit: -10%, -20%, -30% or -40% default: -20%				
Bypass frequency tolerance (%)	+/- 10% or +/- 20% default: +/- 20%				
Input power factor (kW/kVA)	>0.99				
Current THD at full linear load (THDI%)	<3%				
Battery					
Number 12 V battery per string (min - Max)	30 - 44				
Voltage temperature compensation (mV/°C/Cell)	0-5 mV/°C/Cell; 3 mV/°C/Cell				
Battery charger max. power (A)	20	30	30	40	50
Output					
Nominal output voltage (V)	380/400/415				
Nominal output frequency (Hz)	50/60				
Nominal active power (kW)	PF=1				
THDv with 100% linear load (%)	<1%				
Inverter overload capacity	110% for 60 min; 125% 10 min; 150% for 1 min				
Efficiency(*)					
Double conversion efficiency 100%	95,7%				
Double conversion efficiency 75%	96%				
Double conversion efficiency 50%	96,4%				
Double conversion efficiency 25%	95,9%				
Dimensions and weight					
Dimensions (W x D x H) mm	600 x 1000 x 2000		600 (1000 with I/O BOX) x 1000 x 2000		
Weight	354	396	396	438	480
General					
Noise at 1 m (dBA)	58,9	60,4	60,4	61,2	61,7
Ventilation	Front to back standard/front to top as an option				
Protection level IEC (60529)	IP20 STANDARD				
General and safety requirements for UPS EN/IEC/AS 62040-1	EN/IEC 62040-1				
UPS classification according to CEI EN 6240-3	VFI-SS-111				

(*) note: input=415 Vac

Emerson Network Power Data Center Infrastructure for Medium & Large Applications



UPS



Trinergy™ Cube 3 MW

- Highest average operating efficiency in the industry: 98.5%
- Unprecedented levels of installation flexibility
- Hot scalability up to 3 MW



Trinergy™ 1600 kW

- Dynamic functioning modes (VFI, VI, VFD) with average working efficiency of 97.9%
- Three dimensions of modularity for optimum scalability (up to 9.6 MW)
- Maximum availability as a result of internal redundancy and concurrent maintainability



Liebert® NXL 800 kVA

- UPS for critical high power applications
- Provides greater power capacity along with superior reliability
- Meets power requirements and energy efficiency in high availability data centers



Liebert® eXM™

- Double Efficiency exceeding 96% at partial load
- ECO mode available also for parallel configurations
- Integrated transformer option
- Full frontal access for Installation and Service

Static Transfer Switch



Chloride CROSS

- Ensures redundant power for critical loads, switching between two independent power sources
- Solid-state transfer switch available as 2/3/4P versions with full PF range to guarantee compatibility with all load types
- Extremely reliable and flexible architecture

Remote Diagnostics

LIFE™ Remote Diagnostic and Preventive Monitoring Service

With LIFE™ Service you will benefit from:

- Uptime assurance
- First time fix rate
- Proactive analysis
- Minimized total cost of ownership of your equipment
- Fast incident response
- Reporting

1 AC Power

2 Infrastructure Management & Monitoring

3 Power Switching & Controls

4 Thermal Management

5 Racks & Integrated Cabinets

6 Surge Protection

7 DC Power