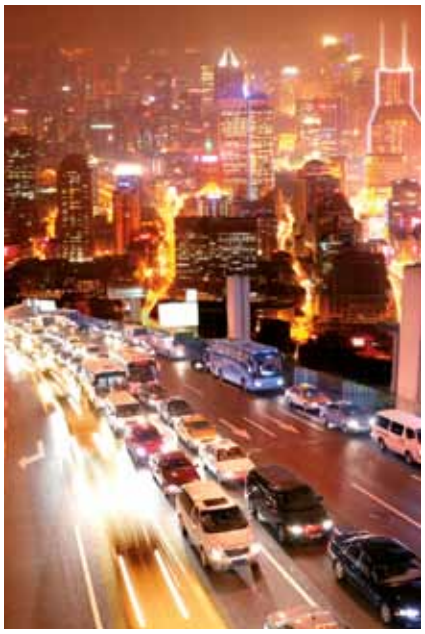
AC Power for
Business-Critical Continuity™

Liebert® APM from 30 - 150 kW

The Compact Row-Based UPS With FlexPower Technology™

EMERSON
Network Power

Emerson Network Power, a division of Emerson, is a global company that combines technology with design to supply innovative solutions for the benefit of its customers.
Emerson Network Power is the leader in the "***business-critical continuity***" field, thanks to the company's products and services.
Emerson Network Power's broad technology base and global expertise support a full spectrum of enterprise-wide solutions for today's vital business needs.



Regardless of your size, you can't afford for your critical business systems to go down and you can't waste time recovering your IT infrastructure after a disruption.

Leave that to us, the experts in business-critical continuity: from grid to chip, from the biggest to the smallest data centers, we are ready to serve your needs with the solutions we have developed.

More standardization, so you don't need further budget allocations to install it.
More simplification so you don't need to be a specialist to get the best for your business.
More support, so while you are enjoying doing business, we are protecting you.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Liebert® APM from 30 - 150 kW

Features and Performances

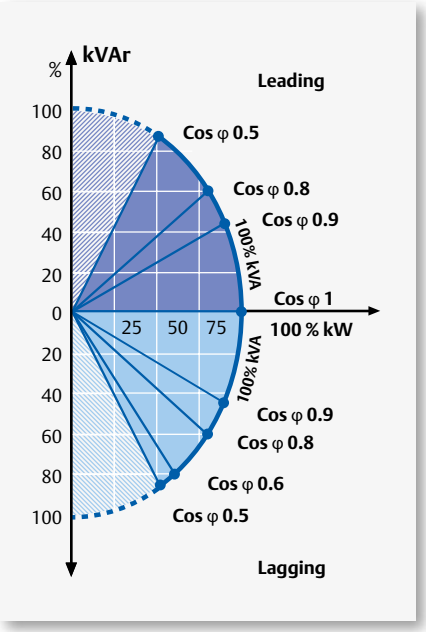
- Industry's highest double conversion efficiency - up to 96%
- Flat efficiency curve
- Highest power density in the market
- Rack architecture
- Modular and scalable
- Hot- swappable power modules
- Independent module control system
- Unitary output power factor and symmetrical power factor diagram
- Integrated parallel and load bus synchronization
- 4.5 kW battery charger per power module
- Integrated autonomy for ratings up to 90 kW

The Liebert® APM is a compact, row-based, transformer-free UPS designed to operate with a maximum energy efficiency of up to 96% for the protection of medium sized business-critical applications.

Its modular rack configuration houses both power and battery modules inside the same UPS cabinet, allowing for scalability while delivering the ideal balance of high availability, reliability and efficiency without increasing the system footprint.

The in-built scalability of the Liebert® APM also allows for fast, simple increases in system capacity through featured FlexPower technology™. Each 30 kW power module combines scalable power with independent DSP control to auto-regulate operation, thus enhancing overall availability.

The Liebert® APM is able to reach a total of 150 kW of active power in a single unit and up to a maximum of 600 kW in a complete parallel configuration. At the same time it delivers an excellent integrated autonomy of up to 30 minutes for a 30 kW configuration and up to five minutes in the 90 kW configuration.



Liebert® APM - output power factor diagram

Efficiently Protecting Mission-Critical Loads

Enhanced Active Power

With its unitary output power factor (kVA=kW), Liebert® APM offers an increased level of active power to support mission- critical loads.

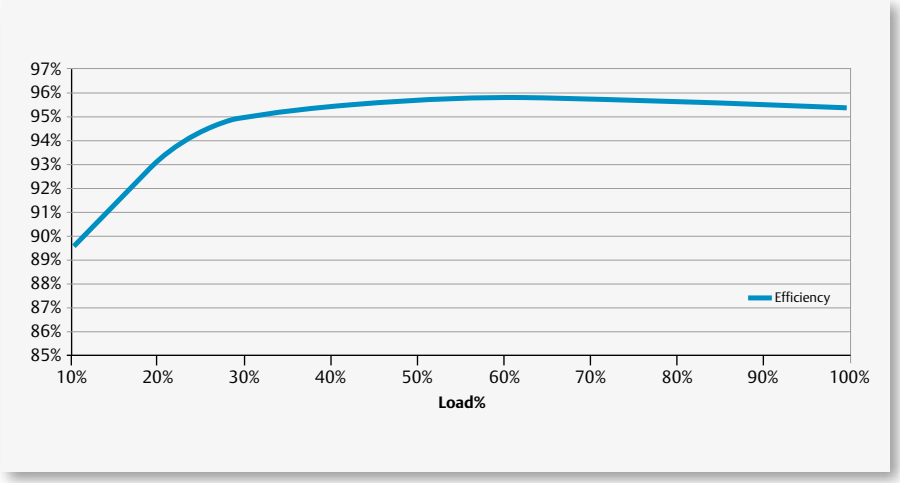
The added advantage of increased active power allows customers to select the most appropriate rating for their critical application, sizing the system based on the actual active power requirements, thus minimizing the initial investment and maximizing TCO.

Liebert® APM provides enhanced flexibility to ensure superior protection for all load types (lagging or leading) without derating.

Efficiency

The Liebert® APM is capable of reaching the industry's highest efficiency level of up to 96% in true online double conversion mode.

With its flat efficiency curve - the Liebert® APM delivers maximum efficiency regardless of the load level. It is capable of achieving an efficiency above 95% from full load down to 30% as well as maintaining an efficiency above 94% down to 20% load. This level of operating efficiency results in significant cost savings while at the same time contributing to reducing the carbon footprint of the installation and optimizing power usage effectiveness (PUE). Furthermore, whenever the input conditions and load nature allow, Liebert® APM is further able to increase efficiency to above 98% by operating in Eco mode.



Liebert® APM - efficiency curve

Modular, Scalable Configuration

Flexible Battery Configuration
The flexible battery configuration of the Liebert® APM is designed to meet individual installation availability and back up time requirements.

Liebert® APM is compatible with numerous battery configurations including internal and external modular solutions, as well as traditional external battery banks with string lengths between 30 and 40 batteries.

In a parallel system batteries can be installed in a common bank to maximize cost effectiveness and minimize floor space. Alternatively, a single battery bank can be dedicated to each UPS, delivering full redundancy and avoiding the possibility of a single point of failure.

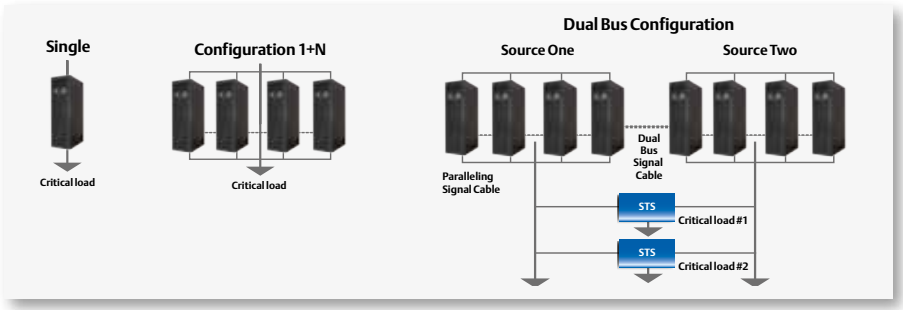
Extended battery life is further ensured through a temperature compensated charging algorithm which prevents battery damage, thus prolonging lifespan.

The modular architecture of the Liebert® APM allows single unit capacity to be scaled up to a maximum of 150 kW without impacting on the system footprint or modifying the installation layout.

Increases in capacity and redundancy can be made both vertically and horizontally by adding 30 kW power modules to an existing rack or, alternatively by connecting up to four complete UPS systems in parallel in order to reach a maximum of 600 kW of active power.

Parallel and Dual Bus Ready

Liebert® APM can be connected with up to four units in parallel. A single unit can be set up to work in parallel through the use of a communication cable set, allowing the system to be customized for the required configuration. Additionally, Liebert® APM allows easy deployment of Tier 4 architecture through its integrated dual bus control.



Liebert® APM - parallel and dual bus configurations

In The Field

Communication

Liebert® APM features a large multi-lingual LCD display giving users access to key operating information including alarm status, configuration, start-up/ shutdown, transfer and advanced metering.
The micro-processor based display functions independently from the system control and provides access to:

- real-time meter readings of system currents, voltages, active and reactive power
- status reports and history files
- system power flow one-line diagram

Liebert® APM also offers communication features through Web (HTTP), Modbus and SNMP protocol.

Software Connectivity

Liebert® Nform™ network communications system enables customers to leverage the distributed monitoring capabilities of network connected equipment for providing centralized management of distributed systems.

Liebert® SiteScan is a centralized site monitoring system which ensures maximum visibility and availability of critical operations. Liebert® SiteScan Web allows users to monitor and control virtually any piece of critical support equipment. Its features include real-time monitoring and control, data analysis, trend reporting, and event management.

Serviceability and Maintainability

The Liebert® APM is designed to facilitate effortless installation and simplify service with its easy to remove power modules. The hot-swappable module-based architecture considerably decreases the mean time to repair (MTTR) and facilitates maintenance operations by allowing single modules to be serviced while the remaining modules continue to power the load.
All power modules and critical components are easily accessible from the front of the unit.

Trellis™ Platform

Emerson Network Power's Trellis™ platform is a real-time infrastructure optimization platform that enables the unified management of data centre 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 as well as enable for virtualization.

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.

trellis™

Servicing Critical Infrastructure

Proactive equipment maintenance reduces downtime and extends equipment life which in turn maximizes return on investment and increases system availability. Emerson Network Power supports entire critical infrastructures with an extensive service offering, guaranteeing network availability and total peace of mind 24/7.

Our approach to servicing critical infrastructure covers all aspects of availability and performance, from single units to entire mission critical systems, providing customers with tailored services to meet their individual business needs and further guaranteeing Business-Critical Continuity™.

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™.net remote monitoring and diagnostic 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.

Maximize Availability

Pre-Emptive Maintenance

Regular preventive maintenance increases uptime. Emerson Network Power's LIFE™. net provides early warning of operating anomalies allowing real-time diagnosis and swift identification and resolution.

Minimize Downtime

Immediate Identification of Problems

Should an emergency condition arise, an engineer in the 24/7 manned LIFE™.net service center carries out an immediate fault analysis and instigates appropriate corrective action.

Reduce Operating Costs

Superior Asset Management

Through comprehensive data collection and analysis, LIFE™.net's detailed reporting system provides valuable information on power and equipment trends, over any selected period of time.

Liebert® APM Specifications

Technical Characteristics					
Power (kVA)	30	60	90	120	150
Power (kW)	30	60	90	120	150
System Efficiency					
AC - AC on-line double conversion efficiency (%)	Between 95% and 96% for load >30%				
AC - AC Eco mode efficiency (%)	>98%				
Input Parameters					
Rated input voltage	380/400/415 VAC, three-phase four-wire				
Rated operating frequency (Hz)	50/60Hz				
Input voltage range (Hz)	477V - 305V at full load, 477V - 228V at 70% load				
Input frequency range	40Hz - 70Hz				
Input power factor	>0 .99 at full load, >0.98 at half load				
Input THDI (%)	<5%				
DC Parameters					
Battery number	30,32,34,36,38,40				
Battery Compensation	Yes				
Maximum runtime with internal battery	30’	10’	5’	N/A	N/A
DC ripple current	≤0.05C_{10}				
Output Parameter					
Inverter output voltage	380/400/415 VAC, three-phase four-wire				
Inverter output frequency (Hz)	50/60Hz				
Output frequency stability (Hz)	50Hz/60Hz±0.02%				
Voltage stability in steady state	±1%				
Voltage stability in transient state	Complies with IEC/EN 62040-3, class 1				
Inverter overload capacity	1 hour for 105%, 10 mins for 125%, 1 min for 150%, 200ms for >150%				
Phase Shift					
With 100% balanced load	<1°				
With 100% unbalanced load	<1.5°				
THDv					
100% linear load	<1				
100% non-linear load	<4				
Bypass Parameter					
Bypass input voltage	380/400/415 VAC, three-phase four-wire				
Bypass voltage range settable through software	Default: -20% to + 15%, other values, such as -40%, -30%, -10% to + 10%, +15%				
Bypass overload capacity	135% long term, 170% for 1 hour, 1000% for 100ms				
Environmental Conditions					
Operating temperature range (˚C)	0 - 40˚C*				
Storage temperature (˚C)	-25 to 70˚C				
Maximum Operating altitude	≤1 000m, when operating at 1000>2000m, derated by 1% for every 100 m increase of altitude				
Relative Humidity	≤95%				
Noise (1m)	52 - 62 dBA, adjusted according to load rate and number of modules				
Protection Level	IP20				
Standards					
Low Voltage Directive	2006/95/EC with the Amendment Directive 93/68/EEC Directive for electromagnetic compatibility 2004/108/EC				
General and safety requirements for UPS used in operator access areas	IEC/EN 62040-1:2008				
Electromagnetic compatibility (EMC) requirements for UPS	IEC/EN 62040-2: Immunity category C2, Emission category C2				
Dimensions and Weight					
Dimension, w x h x d (mm)	600x1996x1100 mm				
Weight (kg)	280	315	350	385	420

* conditions apply

Emerson Network Power Business-Critical Continuity™ Expert

Today's successful businesses depend on adaptable technologies to help them respond quickly to market demands. Your data center must be built on a support infrastructure designed to match the power and cooling needs of rapidly changing IT initiatives such as virtualization and consolidation. Each IT change, move or addition will affect the entire support infrastructure so you need products and support that ensure your IT systems will operate reliably in these environments.

www.EmersonNetworkPower.eu

More than 35,000 organizations in 70 countries depend on our Business - Critical Continuity™ Promise: your IT infrastructure stays up to support your Business!

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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The global leader in enabling Business-Critical Continuity™.

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- Services
- Surge Protection