VERTIV.

Liebert®

APS
from 5 to 20 kVA

Modular Power Protection for Immediate and Future Load Demands

Vertiv™

Vertiv designs, builds and services mission critical technologies that enable the vital applications for data centers, communication networks, and commercial and industrial environments. We support today's growing mobile and cloud computing markets with our portfolio of power, thermal, infrastructure management products, software and solutions, all complemented by our global service network. Bringing together global reach and local knowledge, and our decades-long heritage including brands like ASCO®, Chloride®, Liebert®, NetSure™ and *Trellis*™, our team of experts is ready to take on your most complex challenges, creating solutions that keep your systems running—and your business moving. Together, we're building the future of a world where critical technologies always work.

YOUR VISION, OUR PASSION.
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Liebert® APS From 5 to 20 kVA

The Liebert® APS is a modular, single phase output UPS, with both single and three phase input options, designed for the protection of IT equipment such as workstations, servers and networks, as well as telecommunications-related applications.

The modular, scalable architecture of the Liebert APS is specifically designed to meet immediate load requirements as well as efficiently adapt to future increase needs, allowing expansion in increments of 5 kVA up to a total of 20 kVA with the simple installation of additional power modules.

Featured FlexPower Technology™ ensures that such power expansions can be carried out without the need for transferring the load to bypass (hot swap) thus extending the load protection and system availability during service and upgrade operations.

Maximized system availability can be further achieved in all Liebert APS configurations with redundant power modules reaching the maximum configuration of 20 kVA with an additional 10 kVA of redundancy.

The Liebert APS 5 kVA/4.5 kW power modules deliver an enhanced level of active power when compared to UPS of equal size in both standard and extended autonomy configurations, thus providing customers with more power to support larger loads. Increased active power also contributes to minimizing initial investment costs and optimizing TCO.

Optimization of TCO is further extended to batteries which can be housed inside the UPS cabinet together with power modules. The compact battery modules allow significant extension of back up time without increasing the overall cabinet footprint.

With a double conversion efficiency of 92% coupled with an output power factor of 0.9 , Liebert APS rises to the top of its class delivering both optimized CAPEX and OPEX.

FEATURES AND PERFORMANCES

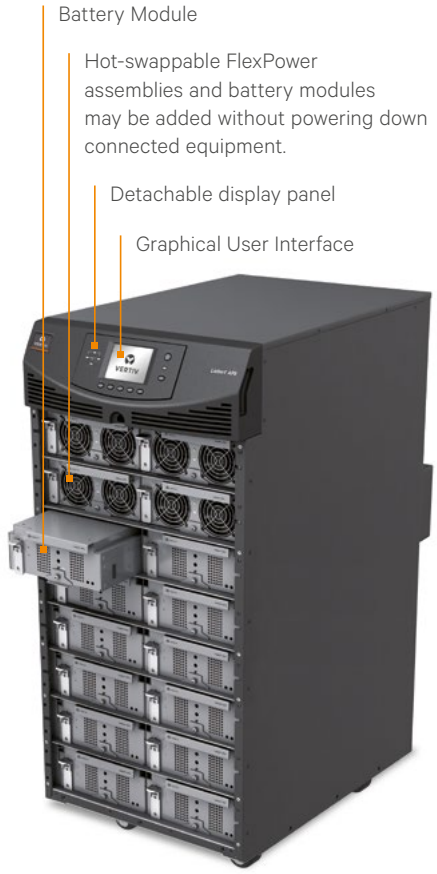
- 5 kVA / 4.5 kW single phase output power modules
- Site configurable as single or three phase input
- Stand alone or rack mountable
- Hot-Swappable power and battery modules
- Intelligent battery modules
- Double conversion efficiency: 92%
- Integrated autonomy up to 1h @ 4.5 kW
- 1.8 A charging current per module
- Optional 10 A charger module
- Terminal block or output socket
- Fully rated @ 40°C.

Flexible System Architecture

Installation in both stand alone and rack mount configurations gives the Liebert APS the flexibility to adapt to the demands of a wide range of installation environments.

Flexibility is further granted through the multiple output distribution and communications options available. In addition to the traditional terminal block input/output management, the Liebert APS also offers the option of selecting between multiple Power Output Distribution boxes (PODs) to meet specific application connection requirements.

Furthermore, the Liebert APS is equipped with three Vertiv™ Intellislot® ports to allow integration and simultaneous communication with an array of infrastructure management solutions, leading to superior power optimization and visibility.



Fully populated Liebert APS complete with both power and battery modules.

Intelligent Battery System for Maximizing Availability

The Liebert® APS battery modules are housed inside the UPS cabinet, providing 5 minutes of integrated autonomy at full load when the battery string number equals that of the power modules. With additional battery strings, the integrated autonomy may be extended to up to more than one hour at 4.5 kW.

For further extension of autonomy requirements, matching external battery cabinets may be connected, together with an additional charger module, ensuring sufficient current is provided for the recharge.

The intelligent battery system adopted by the Liebert APS is designed to preserve battery life and in turn maximize overall system availability.

Each battery module contains a dedicated board the role of which is to continuously monitor battery health automatically taking anomalous batteries off-line to ensure the continued performance and availability of the remaining strings.

Both internal and external batteries are protected via integral battery monitoring and temperature compensated charging, which prolong battery life, in turn minimizing replacement costs.

In addition, the large input voltage window capabilities further contribute to prolonging battery life and minimizing the need of transfer to battery.

Liebert APS with matching modular battery cabinet for extended autonomy applications.

Ease of Installation and Serviceability

The Liebert APS is designed to optimize installation and simplify service with its easy to remove power and battery modules.

The hot-swappable module-based architecture considerably minimizes the time needed for repairs and optimizes serviceability.

Individual power and battery modules can be added or replaced, while remaining modules continue to power the connected load, avoiding the need to shutdown or revert to bypass, thus resulting in maximized system availability.

Software connectivity

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

Vertiv™ SiteScan® is a centralized site monitoring system which ensures maximum visibility and availability of critical operations. Vertiv 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.

The Liebert APS UPS can be installed on raised floors, traditional flooring, or in rack enclosures.

VERTIV™ *TRELLIS*™ PLATFORM

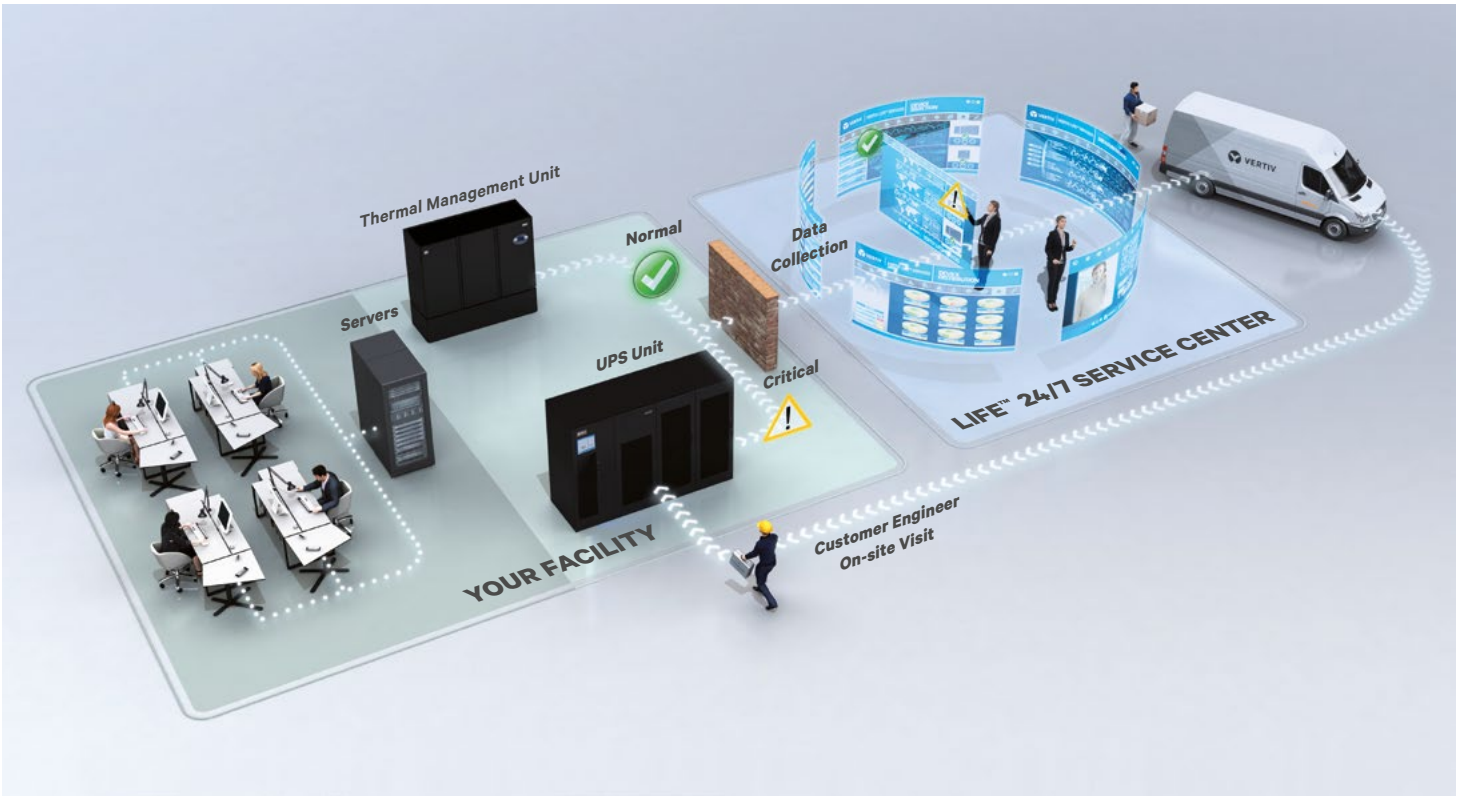
Vertiv's *Trellis*™ platform is a real-time infrastructure optimization platform that enables the unified management of data center IT and facilities infrastructure.

The Vertiv *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 Vertiv *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.

Vertiv™ LIFE™ Services Remote Diagnostic and Preventive Monitoring

Vertiv'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 Vertiv™ LIFE™ Services Remote Diagnostic and Preventive Monitoring 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 **Vertiv 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 Vertiv LIFE Services 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

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

Reporting

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

Liebert® APS Specifications

TECHNICAL CHARACTERISTICS	
RATINGS	
Frame Rating (kVA/kW)	20/18
Power Module rating (kVA/kW)	5/4.5
Maximum number of power module per frame	6
INPUT DATA	
Nominal Input Voltage (V)	220/230/240; Single-Phase - 380/400/415; Three-Phase
Input voltage range without battery discharge at 70% load (V)	140-280 Single-Phase; - 242-485 Three-phase
Nominal Input Frequency (Hz)	50/60
Input Frequency Range (Hz)	40 to 70 auto-sensing
Input Power Factor (kW/kVA)	Single-Phase Input, > 0.99 - Three-phase Input, > 0.95
Input Current Distortion, THDi (%)	< 5
BATTERY MODULE	
Battery Cells Per String	72
Backup Time, Minutes, Full Load (for non-redundant system which has equal number of battery strings and power modules) (min)	5
Maximum Charge Current (Full, Load) (A)	Power module internal charger: 1.8 - Extra Charger module: 10
Voltage temperature compensation	Yes
OUTPUT DATA	
Nominal Output Voltage (V)	220/230/240 Single-Phase
Voltage Regulation (%)	±3
Voltage Stability (100% Step Load) (%)	±7
Voltage Recovery Time (ms)	≤ 60
Output Voltage Distortion, THDv (%)	≤ 3, linear load ≤ 5, non-linear load
Output Frequency (Hz)	50/60
Nominal load power factor (kW/kVA)	0.9
Output Overload Capability (s)	130% for 60s; 150% for 10s - 200% for 1s; > 201% for 0.25s
DIMENSIONS AND WEIGHT	
Unit Weight (empty frame) (kg)	145
Power Module Weight (kg)	8.2
Battery Module Weigth (kg)	16.4
Dimensions, W x D x H (mm)	440 x 850 x 970
GENERAL & ENVIRONMENTAL	
Operating Temperature, continuous, without derating (°C)	0 - 40
Double conversion Efficiency (AC-AC) (%)	92
Eco Mode Efficiency (AC-AC) (%)	>98
Environmental	WEEE and ROHS2 (6 by 6), REACH Compliant
Acoustic Noise Level @ 1 meter (dBA)	< 55dB (< 50% load), < 65dB (51-100% load)
UPS Classification According to IEC EN 62040-3	VFI-SS-111
Protection Degree IEC60529	IP 20
Color	RAL 7021

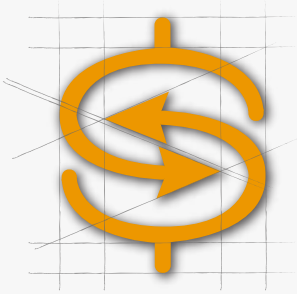
Four Keys to Low TCO with the Liebert® APS UPS

The Liebert® APS 5-20 kVA UPS from Vertiv™ offers design and operational efficiencies that are unmatched in its class to deliver a low total cost of ownership.

1

CLASS-LEADING ENERGY EFFICIENCY

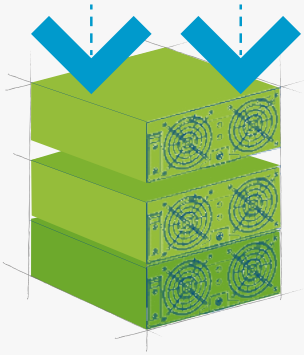
Up to 92% in double conversion mode.



2

SCALABLE DESIGN

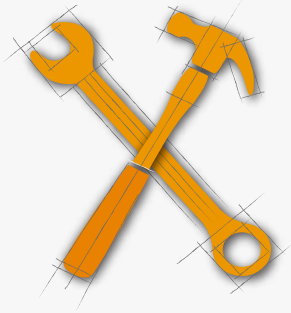
Allows addition of power capacity or extended back-up runtime, without additional floorspace - buy what you need now, and add capacity later.



3

HIGH AVAILABILITY

With redundant operation, and Vertiv LIFE™ Services Remote Diagnostic, real-time communication technology.



4

MODULAR DESIGN

Enables easy maintenance and service, minimizing time to repair.

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