



Product brochure

Vertiv™ Liebert® APM2

30 to 600 kW, 400 V

Technology-driven efficient and scalable power solution
for mission critical facilities.



Lithium-ion
Batteries

About Vertiv

Vertiv brings together hardware, software, analytics, and ongoing services to support its customers' vital applications run continuously, perform optimally and grow with their business needs. Vertiv solves the most important challenges faced by today's data centers, communication networks, and commercial and industrial facilities with a portfolio of power, cooling, and IT infrastructure solutions and services that extends from the cloud to the edge of the network. Headquartered in Columbus, Ohio, USA, Vertiv employs around 31,000 people and does business in more than 130 countries. For more information, and for the latest news and content from Vertiv, visit [Vertiv.com](https://www.vertiv.com).

Our purpose

We believe there is a better way to meet the world's accelerating demand for data - one driven by passion and innovation.

Our presence

Global presence

Manuf. and assembly locations **24**
 Service centers **220+**
 Service field engineers **3,500+**
 Technical support/response **220+**
 Customer experience centers/Labs **19**

Europe, Middle East and Africa

Manuf. and assembly locations **10**
 Service centers **65+**
 Service field engineers **650+**
 Technical support/Response **100+**
 Customer experience centers/Labs **5**



Americas

Manuf. and assembly locations **10**
 Service centers **80+**
 Service field engineers **1,600+**
 Technical support/Response **90+**
 Customer experience centers/Labs **5**

Asia Pacific and India

Manuf. and assembly locations **4**
 Service centers **75+**
 Service field engineers **1,250+**
 Technical support/Response **30+**
 Customer experience centers/Labs **9**



Highlights

The Vertiv Liebert APM2 CE UPS is an online, three-phase (in/out), 400V; UPS, optimized with a flexible high power density design.

Key benefits

- Higher capacity and more flexible ratings **30-120kVA 400V or 60-300/600kVA 400V**.
- Maximum efficiency up to **99% ECO** mode, **98.8% Dynamic Online** mode and **up to 97.5%** in Double Conversion mode.
- **Unity power factor** delivers more usable power.
- Optimal flexibility with **modular** and **scalable design**.
- **Easy serviceability** due to **hot swappable** power modules, bypass modules, HMI and communication modules and internal battery modules.
- Improved battery management with **intelligent BMS** for VRLA and Lithium-ion internal batteries 10-120kVA.
- **High-capacity continuous rated battery charger** enables quicker charging recovery and flexibility with battery energy storage applications.
- Compatible with **external VRLA or Lithium-Ion (Vertiv™ EnergyCore Li5/ Li7)** cabinet solutions optimized for modern application.
- Integrated **paralleling capability** up to **6 units** for capacity and redundancy.
- Operate **up to 50 °C** with derating above 40 °C cutting cooling costs and enabling broader application use.
- **Real time intelligent monitoring** with **predictive maintenance** alerts and **waveform capture** during faults enhances system visibility and responsiveness.
- **IP31** rated with **CPSS EN50171** and **Rail EN50121** Certifications for enhanced protection and compliance.
- AC input **phase reversal** detection and correction.

Consider the Vertiv™ Liebert® APM2, the next-generation mid-size UPS for mission critical applications.

The innovative Vertiv™ Liebert® APM2 Modular UPS delivers a flexible, high power density performance for mission-critical applications- for small, medium and large data centers, including high performance compute (HPC), commercial, light industrial, retail telecom, and healthcare applications. Evolved from the reliable Vertiv™ Liebert® EXM2 and Vertiv™ Liebert® APM Plus, the next-gen Vertiv Liebert builds on a proven legacy deployed across thousands of critical power sites.

The Vertiv Liebert APM2 UPS uses advanced three-level IGBT technology and Silicon Carbide converters to deliver up to 97.5% peak efficiency driving operational cost savings and reducing environmental impact. The modular and scalable design supports flexible capacity growth, while built-in system redundancies reduce single points of failure, improving reliability and optimizing TCO.



Compact design



Robust



Flexible battery configurations



Vertiv™ Liebert® APM2
30-120kVA, 400V

Vertiv™ Liebert® APM2
60-300kVA, 400V



Vertiv™ Liebert® APM2
60-600kVA, 400V
with full switch assembly



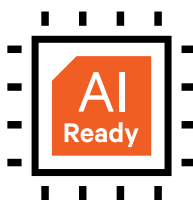
High efficiency



Proven
hot-swappable



Large and intuitive
9" Touchscreen HMI



Saves footprint of up to 55%

Innovation-enabling flexible architectures

The innovative and flexible architecture of the Vertiv™ Liebert® APM2 reduce costs, improve management, and speed deployment. The modular architecture of the Vertiv™ Liebert® APM2 allows a single unit capacity to be scaled up to a maximum of 600 kW in one single unit. There are two different frames available, each with a specific maximum cabinet capacity.

Vertiv™ Liebert® APM2 30-120 kW

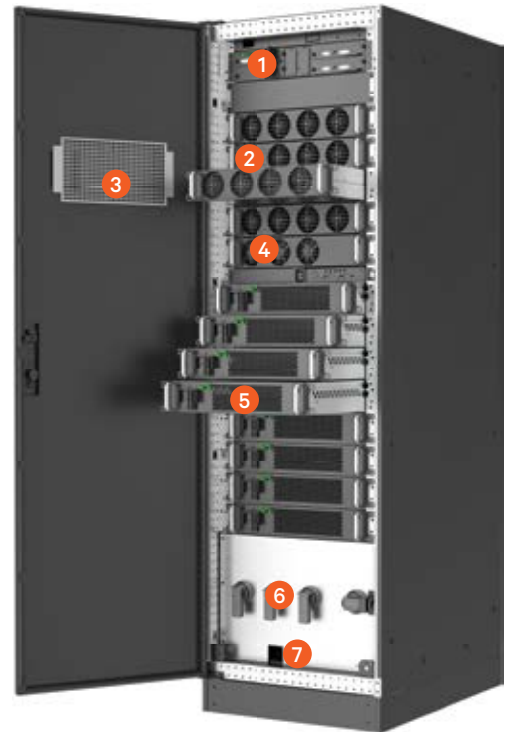
With Internal Batteries (Also available in compact version without Battery)

- 1 Communication module
- 2 30kW 2U Power modules (support 4+1 with redundancy)
- 3 Touch screen - GHMI
- 4 Bypass module
- 5 VRLA or Lithium-ion battery
- 6 Switch assembly
- 7 Cable entry terminals (Bottom)

Available in three variants:

1. Maintenance switch only 2. Full switch 3. Without switch

Optional C2 filter available for improved EMI compliance in demanding environments.



Vertiv™ Liebert® APM2

Vertiv™ Liebert® APM2 60-300 kW

With Top Cable Entry (Also available with Bottom Entry)

- 1 Cable entry terminals (Top)
- 2 Touch screen - GHMI
- 3 Switch assembly
- 4 Communication module
- 5 Bypass module
- 6 60kW 3U power modules

Available in three variants:

1. Maintenance switch only 2. Full switch 3. Without switch

Vertiv™ Liebert® APM2 60-600 kW

(Compact version with Top Cable Entry)

- 1 Cable entry terminals (Top)
- 2 Communication module
- 3 Bypass power module
- 4 Touch screen - GHMI
- 5 60kW 3U Power modules



Vertiv™ Liebert® APM2

Vertiv™ Liebert® APM2 60-600 kW

(Top or Bottom cable entry with Switch cabinet)

- 1 Touch screen - GHMI
- 2 Switch assembly
- 3 Communication module
- 4 Bypass power module
- 5 60kW 3U Power modules



Designed for easy service and maintenance



Vertiv™ Liebert® APM2

Designed for ease of service

Vertiv™ Liebert® APM2 is designed to allow access to cable terminal blocks, switches, and all the replaceable components including power modules, bypass modules, and communications from the front side for both installation and maintenance purposes.

Hot-swappable design

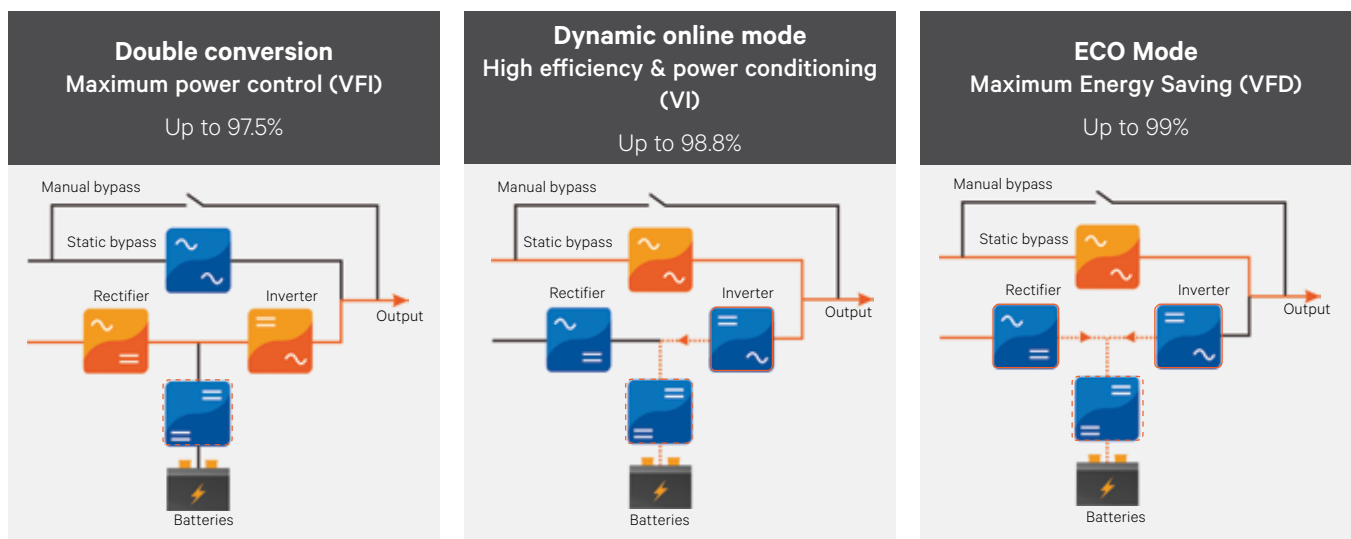
Hot-swappable building blocks sub-assembly enables an easy and fast on-site replacement, thus reducing MTTR.

Provides optimum performance with maximum efficiency

Vertiv™ Liebert® APM2 delivers an **outstanding double conversion efficiency of up to 97.5%**, which further increases up to 98.8% with the dynamic online mode, consequently **reducing operating costs and energy dissipation (kW)** to a minimum. Dynamic online mode also supports in parallel operation, this significantly minimizes the consumption of the cooling system, providing an overall TCO reduction and rapid payback time.

Furthermore, the Vertiv Liebert APM2 can optimize efficiency at partial load thereby attaining additional cost savings through the intelligent paralleling feature. The efficiency and electricity cost savings of Vertiv Liebert APM2 can be attributed to:

- Latest generation IGBT
- Adoption of a three-level converter topology
- DC-controlled fan speed
- Intelligent paralleling mode
- Advanced digital technology and fast transfer



Vertiv™ Liebert® APM2 series is powered by the latest generation three-level IGBT topology in conjunction with Silicon Carbide (SiC) converter that helps to reduce recovery losses and thereby improves system efficiency.

The seamless activation of Vertiv Liebert APM2's functioning modes supports the highest level of efficiency without **compromising power quality and availability**. The Dynamic online mode delivers Class 1⁺ output performance under most stringent conditions:

- Network fault (voltage variation, high/ low impedance mains failures)
- Load fault (short circuit downstream of the UPS)
- Type of load connected (PDU transformer)

The unit discriminates between various interferences and responds rapidly, meanwhile also **supports compatibility with downstream equipment** (such as Transformers, STS, mechanical loads, etc).



Robust and proven design

Innovative internal air channel

Designed in a way that internal hot air drives directly toward the heat sink without distressing the PCBs and other internal sensitive circuits, improving the service life of components and UPS reliability.

Conformal coating

Applied as a standard feature for all PCBs in Vertiv™ Liebert® APM2. Its primary purpose is to protect the electronics from environmental elements and corrosion. The coating acts as both a protective shield and insulative material for a PCB.

Tolerates higher ambient temperatures

Internal components and circuitry of Vertiv Liebert APM2 are designed to seamlessly operate up to 40 °C without any capacity impact and further can sustain high ambient temperatures up to 50 °C with auto-derating.

Integrated backfeed contacts

Backfeed helps reduce any potential risk from electric shock on the UPS mains and bypass input AC terminals in the event of a failure of the rectifier and bypass static switch SCR. The control circuit includes output dry contacts that activate an external isolating device (optional) upon backfeed detection.

Scalable up to 3.6 MW

6 units of intelligent paralleling help to achieve maximum capacity of up to 3.6 MW. Comes with integrated parallel and LBS communication ports, and allows a single touch to initiate inverter ON/OFF for all parallel connected UPS systems.

Symmetrical power factor compatibility

Vertiv Liebert APM2 is fully adapted to meet diverse system requirements in terms of power capacity and redundancy allowing different system designs.

- Output power factor up to 1
- No power derating from 0.5 lagging to 0.5 leading
- Optimum space/power ratio

Flexible battery configuration

Compatible with numerous battery configurations that include traditional external battery banks with string lengths varying between 30 & 44 batteries for 30-120 kW and 30 & 50 batteries for 60-600 kW. In a parallel system, batteries can be installed in a common bank to maximize cost-effectiveness and minimize floor space. Extended battery life is further supported through a temperature compensated charging algorithm which helps prevent battery damage, thus supporting longer life span adding lithium-ion battery.

Higher short-circuit withstand capacity

During the short circuit, the load will be transferred via bypass to clear higher short circuit currents.

Fuse is considered optionally to clear short circuit capacity of up to 65 kA. It is available for selected models only.

Vertiv™ EnergyCore Lithium-Ion battery compatibility

The Vertiv™ EnergyCore Battery System brings efficient,

space-saving, and longlasting energy storage to UPS and critical infrastructure applications.

With a focus on reliability and modernization, it helps organizations meet today's performance and sustainability goals.

Globally compliant:

- UL 1973
- UL 950A Tested



Compact and resilient design

Saves footprint of up to 30%

Thanks to the innovative design and the latest three-level IGBT topology, coupled with Silicon carbide (SiC) converter, Vertiv Liebert APM2 is capable of delivering one of the highest power densities.

Compact footprint saves significant white floor space. This design let to optimize the overall footprint.



Matching system ancillary suite provides an optimized UPS solution

The Vertiv™ Liebert® APM2 UPS includes optional OEM matching ancillary cabinet products to provide the ultimate line-in-match solutions to optimize the overall UPS system, integration, and performance.

External battery cabinets (EBC)

The flexible battery configurations of the Vertiv Liebert APM2 provides a superior range of optimized energy solutions to meet various applications and user requirements.

Vertiv Liebert APM2 is compatible with numerous battery configurations including internal modular solutions (VRLA/ Lithium-Ion), modular VRLA cabinet (10-120kVA), traditional VRLA external battery cabinets, and premium Lithium-Ion cabinet technologies.



*Vertiv™ Standard
VRLA EBC*



*Vertiv™ Modular VRLA Battery
Cabinet, 10-120kVA*



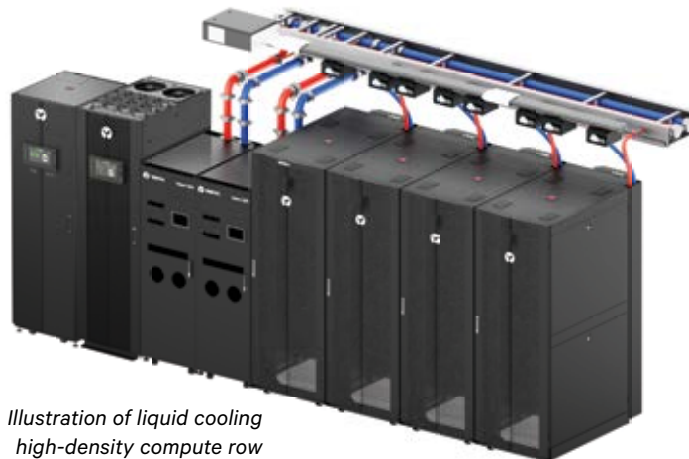
*Vertiv™ Liebert® EnergyCore
– Lithium-Ion 5 (Li5)*



*Vertiv™ Liebert® EnergyCore
– Lithium-Ion 5 (Li7)*

Powering critical cooling equipment

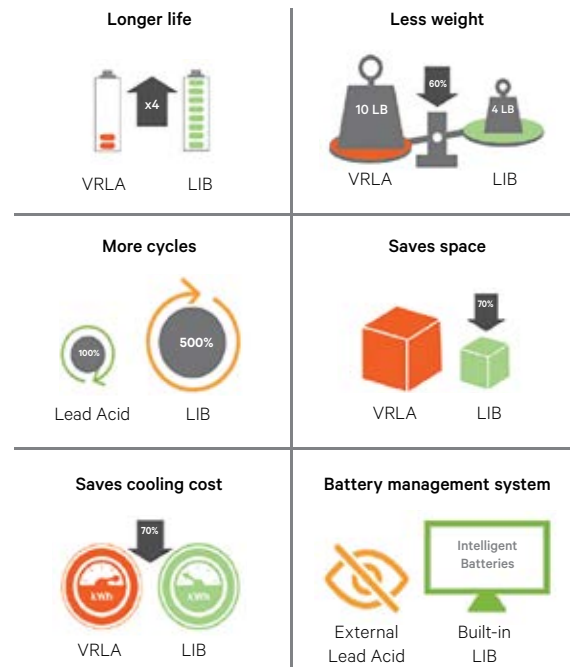
The Vertiv Liebert APM2 provides robust performance features and technologies that enable compatibility to supply power backup for critical liquid cooling equipment including the Vertiv™ Liebert® XDU and Vertiv™ Liebert® XDM liquid cooling products used for liquid cooling of high performance compute (HPC) applications. Vertiv Liebert APM2, with its modular and compact high-density architecture, wide range of capacities and operating voltages, and battery technologies makes this a leading product on the market in this application. Please consult with Vertiv technical support for sizing and equipment verification.



*Illustration of liquid cooling
high-density compute row*

Lithium-ion battery compatibility

- Considering the benefits lithium-ion batteries provide over traditional battery deployments Not only do users enjoy the longer life, more cycles and fewer replacements, they also benefit from the compact, smaller size and lower weight. Plus, the higher operating temperature and lower maintenance add to the savings.
- All these advantages directly impact IT facilities to drive and impressive total cost of ownership experience.
- Vertiv leverages its DNA in critical systems to deliver a lithium-ion battery system that is integrated seamlessly into the power chain.
- Our capabilities and processes come together so that the UPS, batteries, monitoring, management, service, and support offerings are designed to deliver on our customer expectations.



Internal Modular Lithium-ion battery compatibility

High power and density

- High power:** Up to 30KVA per module. Ability to supply the full 120KVA load with only 4 modules. 8 modules could support 240KVA
- High Density:** 14AH per module, 4 strings up to 56AH with UPS frame
- Longer runtime:** Ability to supply the full 120KVA load for 10 minute within 8 modules

Simple and easy:

- Modular design:** plug-in and lock, unlock and pull-out
- Easy:** Easy and fast installation and startup, self-configuring
- Hot-swappable:** Easy and fast on-site replacement within few minutes

Smart and flexible:

- Rich battery data and information on display:** All battery cell voltage and temperature. SOC, SOH, Runtime
- Estimated runtime:** real-time predictive runtime based on real load
- Pre-charging circuit:** pre-charging the battery with temperature monitoring algorithm



Vertiv™ Liebert® APM2's
Lithium Battery Module

Safe and availability:

- Smart BMS inside each lithium battery module, enhanced protection for the battery
- Improve availability when installing additional batteries
- Extra fire prevention design inside module
- Quick charging:** UPS could charge the battery from 0% to 100% in 1.8h

[Note: This quick charging time does not include the battery cooling time after high power discharging]



Vertiv™ Liebert® APM2

User interface and advanced diagnostic



Vertiv™ Liebert® APM2

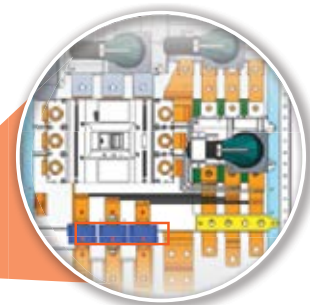


- **Intuitive** to use
- **Consistent** with other Vertiv™ touchscreens
- **Customer configurable data** & views
- **Status-At-A Glance** LED light bar
- **Multiple** screen colors available



Short-circuit withstand capacity

The Vertiv™ Liebert® APM2 provides robust performance features and technologies that enable compatibility to supply power backup for critical liquid cooling equipment including the Vertiv™ Liebert® XDU and Vertiv™ Liebert® XDM liquid cooling products used for liquid cooling of high performance compute (HPC) applications. Vertiv Liebert APM2, with its modular and compact high-density architecture, wide range of capacities and operating voltages, and battery technologies makes this a leading product on the market in this application. Please consult with Vertiv technical support for sizing and equipment verification.



KAIC fuses

Flexible monitoring and management options

Hardware connectivity

Vertiv™ Liebert® APM2 allows for the monitoring and control of networked UPS through different protocol options.

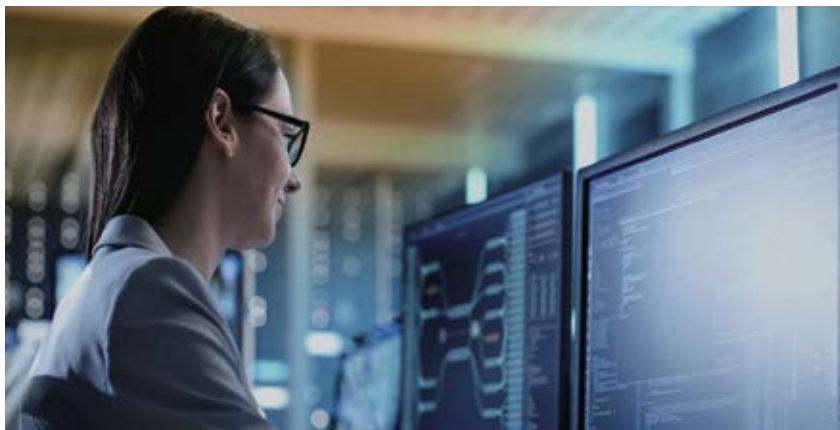
The integration of UPS with network management systems, via SNMP protocol, and building management systems, via MODBUS TCP/RTU and BACnet MSTP/IP. As an option, environmental sensors can also be attached to the UPS via a monitoring card.

The integration with synoptic panels via a dry contact board.

Software

Vertiv connects and protects your network with core-to-edge solutions and unmatched expertise.

For maximum visibility and effective monitoring in one view, pair your Vertiv™ UPS with a software solution.

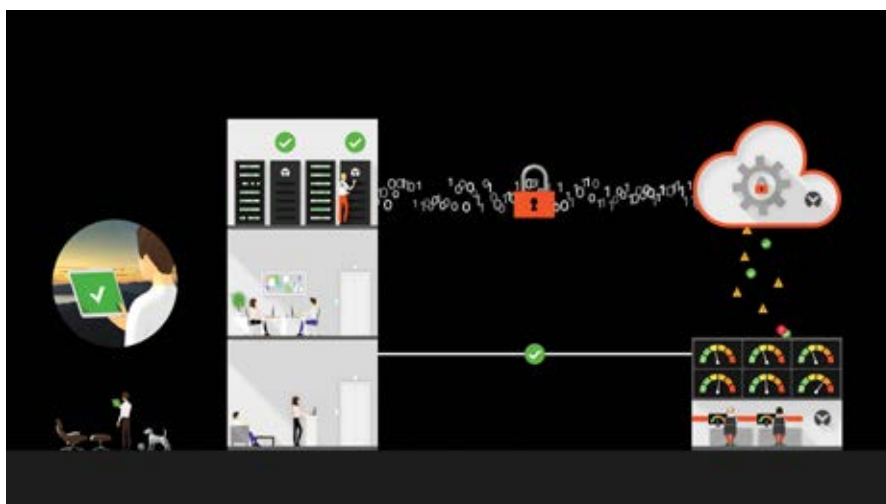


Vertiv™ Environet™ Alert

Vertiv™ Environet™ Alert provides industrial companies with critical facility monitoring software that is affordable and easy to use. This solution delivers superior monitoring, alerting, trending, and data organization. Get monitoring, alerting, and trending at a price that's right for your business.



Vertiv™ Life™ services remote diagnostic and preventive monitoring



Vertiv's service program is designed to help maintain your critical power protection system in an optimum state of readiness.

Vertiv™ Life™ services provides continuous insight into critical equipment operation to improve performance, streamline service processes for faster issue resolution, and add deep equipment and service expertise to any organization without overhead.

With Vertiv Life services you will benefit from:

- Data-driven Insight
- Real-time response
- Connected service
- Reduce downtime
- Maintain optimum performance
- Minimize overhead

- Comprehensive information

Technical specifications

Models (kVA/kW)	Vertiv™ Liebert® APM2 30-120 kW	Vertiv™ Liebert® APM2 60-300 kW	Vertiv™ Liebert® APM2 60-600 kW		
Input					
Power module capacity	30 kW		60 kW		
Nominal input voltage	380/400/415 V (3-phase 4-wire + N + PE)				
Input voltage range without battery discharge*	228 to 478 V		139-490V (with derated load conditions)		
Nominal input frequency	50/60 Hz				
Input frequency range	40 to 70 Hz				
Input power factor at full load	0.99				
Current THD at full linear load*	≤ 3%				
Bypass voltage tolerance	Upper limit: +10% Vac, +15% Vac, or +20% Vac Default: +15% Vac Lower limit: -10% Vac, -20% Vac, -30% Vac, -15% Aac or -40% Vac Default: -20% Vac	Upper limit: +10% Vac, +15% Vac, +20% Vac Default: +15% Vac Lower limit: -10% Vac, -20% Vac, -30% Vac or -40% Vac Default: -20% Vac			
Bypass frequency tolerance	±10%				
VRLA Battery					
Battery blocks per string*	30 to 44 Blocks of 12 V		30 to 50 Blocks of 12 V		
Voltage temperature compensation	-3.0 mV/°C/Cell				
Battery charger max. current*	140 A	600 A	1200 A		
Weight	Lead AcidBattery module	-			
	30 kg				
Lithium Battery Module					
Battery blocks per string	2				
Nominal voltage per string	475.2V				
Minimum voltage per string	382.8V				
Nominal capacity per string	14AH				
Dimensions (W×D×H) mm	796 x 440 x 87 mm				
Weight	36 Kg				
Output					
Nominal output voltage	380/400/415 V (three-phase + N + PE)				
Nominal output frequency	50/60 Hz				
Output power factor	Unity				
THDv at full linear load	≤ 1%				
Inverter overload capacity*	≤105% Continuous; 105% to 110% for 60 min; 110% to 125% for 10 min; 125% to 150% for 1 min; >150% to 200% for 200 ms				
Double conversion efficiency	Up to 97%		Up to 97.5%		
Dynamic online	Yes				
ECO mode efficiency	Up to 99%				
Power Module					
Dimensions (W x D x H), mm	440 x 518 x 87 mm		440 x 600 x 132 mm		
Weight	25 kg		38 kg		
Dimensions and Weight	Compact version	For internal battery	Full switch assembly	Compact version	Full switch assembly
Dimensions (W x D x H), mm	600 x 800 x 1600 mm	603 x 931 x 2003 mm	600 x 900 x 2000 mm	600 x 1000 x 2000 mm	1200 x 1000 x 2000 mm
Weight	380 kg	544 kg	285 kg	510 kg	830 kg
General					
Noise within 1 m	≤ 65 dB			≤ 70 dB	
Maximum altitude	<1500 m without derating				
Operating temperature	0 °C to 40 °C full performance, 40 °C to 50 °C with automatic derating				
Protection level IEC (60529)	IP20				
General and safety requirements for UPS	IEC 62040-1				
EMC requirements for UPS	IEC 62040-2				
UPS classification according to IEC EN 62040-3	VFI-SS-111				
UPS environmental factors, requirements and reports	EN62040-4/IEC62040-4/AS62040-4 (VFI SS 111)				

* Conditions apply * Specifications are subject to change without any further notification.

