



**VERTIV™**

**Liebert®**

APM™ UPS

30kW - 300kW

The Compact Row-Based UPS

With Flexpower Technology



## Anticipating Technology Changes Through Adaptive Architecture

Today, you need a power infrastructure that can work across your enterprise and respond to constant change.

An infrastructure that allows you to deploy blade servers and other high-density equipment safely and cost-effectively.

An infrastructure that can meet the strict power quality requirements of VoIP switches.

An infrastructure that allows you to add capacity without compromising availability or serviceability.

Scalability alone can't get you there. You need an infrastructure that takes it one step further. An infrastructure that can adapt to your needs.



## The Adaptive Power Manager For Your Dynamic IT Infrastructure

The Liebert® APM™ is the compact UPS system designed to operate with the maximum energy efficiency in the minimum footprint for the protection of the small medium computer rooms.

It features FlexPower™ technology, which incorporates distributed intelligence and scalable power in a common assembly.

It is suitable for small and medium businesses with the attitude to grow fast: thanks to its architecture that enables the UPS system capacity to start as low as 30kW which can grow with the business up to 600kW\*

### Lowest Cost Of Ownership

Liebert® APM™ is designed to minimize capital equipment expense, to protect your technology investment and to optimize operational efficiency.

### Enhanced Operational Flexibility

In response to the demands for new technologies, adaptability to customer and market's changing, Vertiv has developed a scalable platform that allows you to configure your own AC Power system with basic building blocks, that is able to grow accordingly with your future requirements.

### "All The Power You Need, Just The Power You Need"

With Liebert® APM™ you can deploy power modules that best match your system rating and its enhanced flat efficiency curve (up to 96% for load above 30% and up to 94% for loads above 20%)

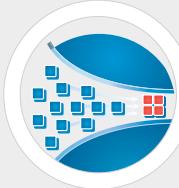
### Higher System Availability

Liebert® APM™ provides a mission-critical technology minimizing the single points of failure in your infrastructure. A UPS that delivers the highest possible level of availability to your IT system, with Liebert proven reliability, and by decreasing MTTR with the new hot-swappable power modules.



### INFRASTRUCTURE MANAGEMENT

Improving performance of the IT infrastructure and environment



### HIGH DENSITY

Delivering high density architectures to minimize space and cost



### ECO AVAILABILITY

Balancing high levels of availability and efficiency



### FLEX CAPACITY

Adapting to IT changes for continuous optimization and design flexibility

## Efficient And Adaptive Power For All Your Critical Applications

The Liebert® APM™ VERTIV is an efficient, space saving and flexible solution for your network.

With Best In class true online double conversion efficiency of 96% in a compact, single frame 19" enclosure, Liebert® APM™ keeps your network protected while saving on cost and data center space.

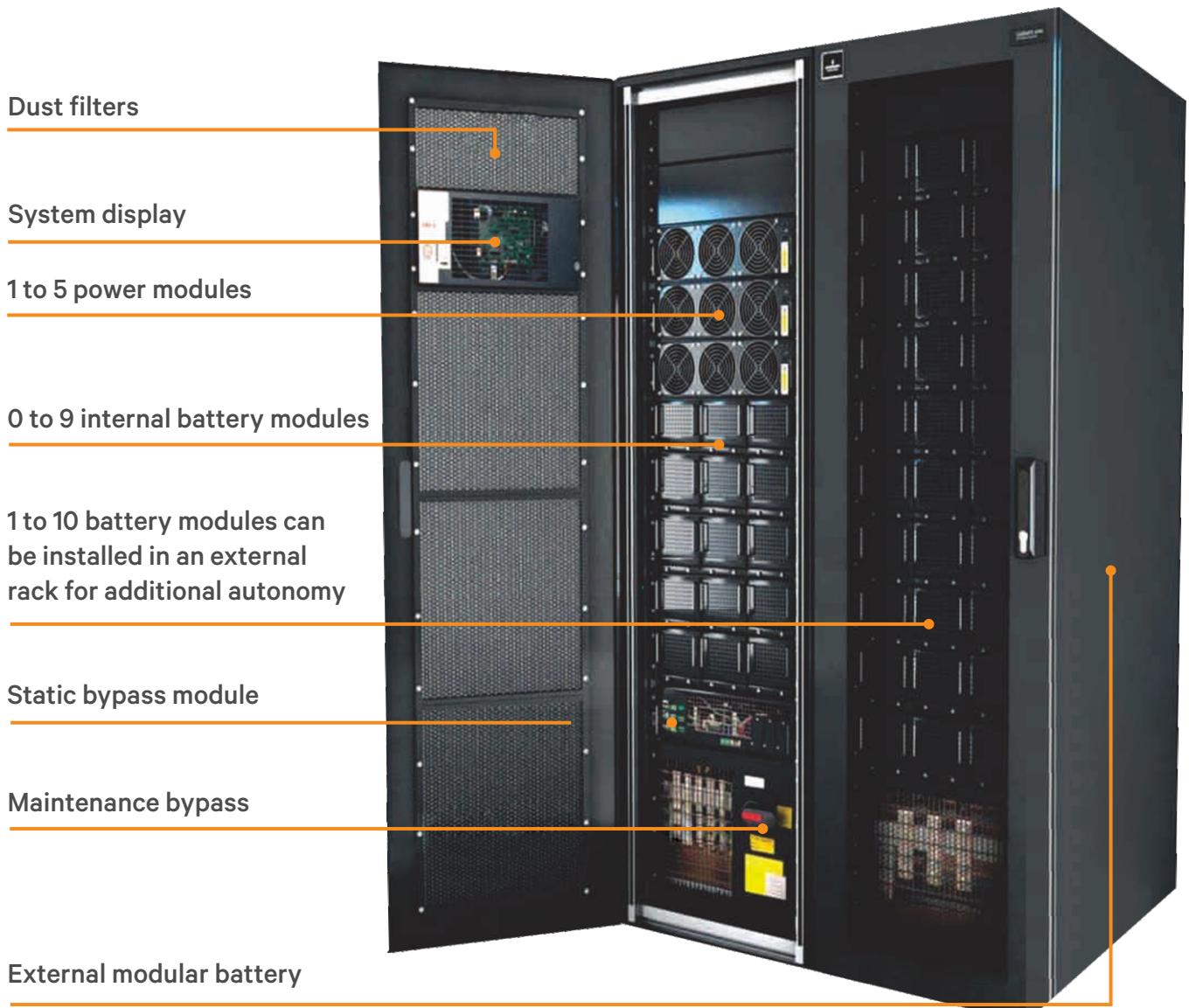
With redundancy options and flexible battery configurations, Liebert® APM™ provides high level of reliability you have come to expect from a Liebert® UPS.



- High efficiency rating of up to 96% true online double conversion mode
- FlexPower Technology: Allows the configuration of a completely redundant power system, sized to match the capacity of the protected equipment. The unit capacity is easily added, without increasing the system footprint
- Parallel technology allowing maximum system capacity of up to 600kW, without the need for centralized bypass cabinet and additional external control modules\*
- Thanks to the compactness of the power module, the best in the market, within the same rack there is room to accommodate internal batteries providing a backup time up to 30 minutes in the 30kW configuration and up to 5 minutes in the 90kW configuration\*\*. Different combinations of internal and external batteries are available to cope with the various application scenarios
- Flexible battery configuration: 30 to 40 battery blocks per string

\* On selected configuration

# “Integrated Power and Distribution Management in a Modular Rack”



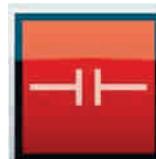
## ENERGY EFFICIENCY

Liebert® APM™ has been designed to be the benchmark of efficiency for double conversion UPS



## COMPACT FOOTPRINT

A UPS and Battery system that could give you 60kW of UPS power complete with 10 minutes runtime in just 0.66sqm would be unimaginable just a few years ago!



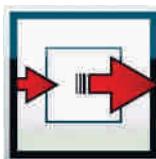
## WIDER SAFE OPERATING AREA

Lagging or Leading Power factors, there's virtually no load that cannot be driven by Liebert® APM™



## MODULARITY

With fewer basic building blocks you can build a power source tailored to your needs and ready to evolve with them



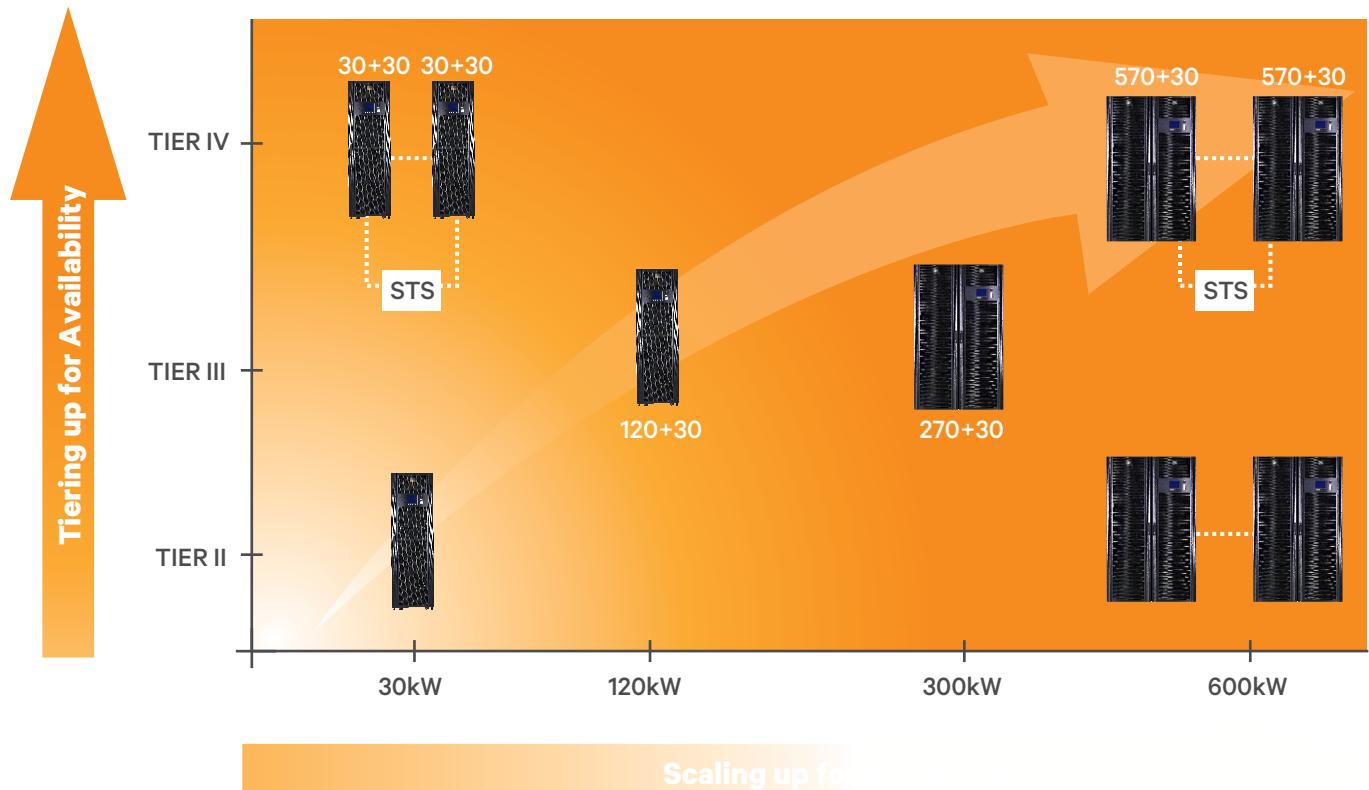
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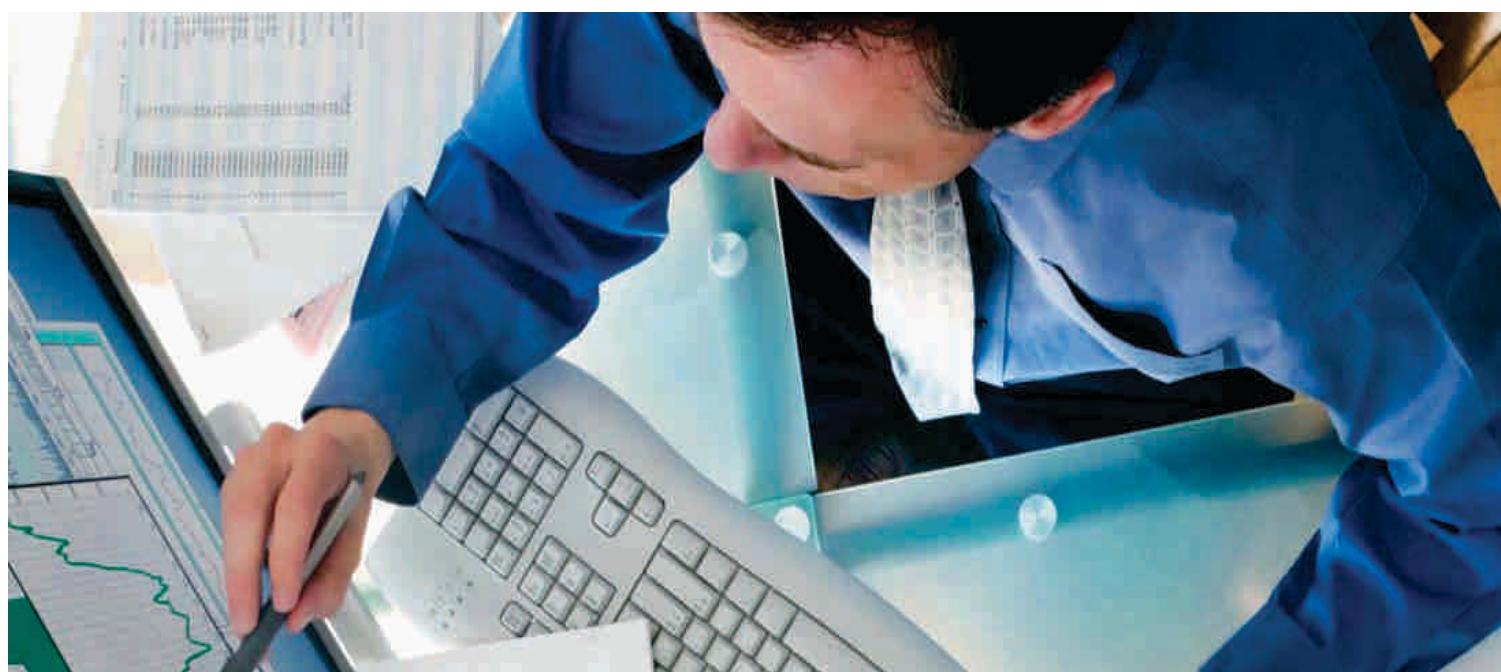


## FLEXPOWER TECHNOLOGY™

Liebert® APM™ features Flexpower Technology™, which incorporates distributed intelligence and scalable power in a common assembly



The Liebert® APM™ system can be utilized with either single or dual power inputs. The dual power features allows you to take advantage of a secondary power source. In addition, up to 4 racks can be paralleled to achieve increased redundancy for more power and 2 sets of racks can be deployed in a Dual Bus architecture.



# The Best Investment You Can Make In A UPS System

## Efficiency, Reliability And Value In A Compact Package

### Get The Most Out Of Your Investment

- Liebert® APM™ with its unity power factor (kVA=kW), offer more real power to support customer's mission critical load satisfying the requirements of the latest servers
- With up to 96% online double conversion efficiency, Liebert® APM™ saves you operating cost compared to traditional UPS Systems

### Get The Optimum Protection

- High overload protection handles 110% overload for 60 minutes, 125% for 10 minutes, and 150% for 1 minute.

### Get The Minimum Footprint

- Liebert® APM™ is a compact UPS with low footprint
- Grows from 30kW or 300kW in a single standard rack cabinet. (additional I/O Box needed)\*
- Internal output PDU\*
- Internal BCMS\*
- Standard Bottom / Top cable entry

### Get The Highest Availability

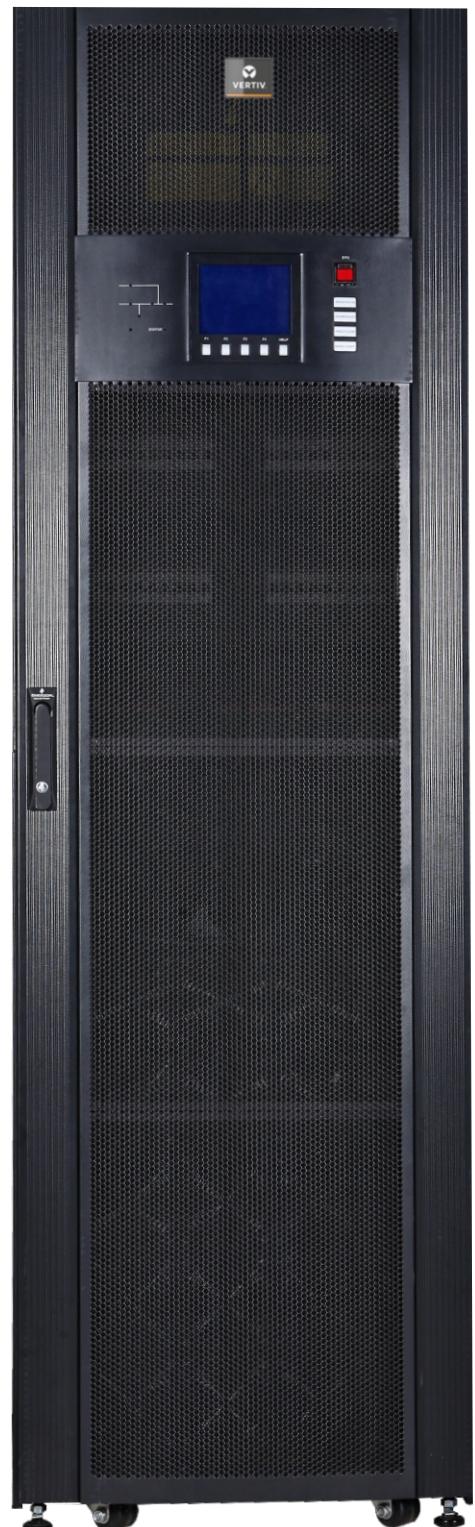
- Liebert® APM™ offers you the possibility to choose between internal module/vertical redundancy and/or external frame horizontal redundancy up to Tier 4,
- Back-feed protection sensing ensures system integrity

### Modular design of Liebert APM allows you to swap power modules without disrupting the whole system

- Replacing failed battery strings can be made by swapping the new battery module while system is running
- With Liebert® APM TM 's modular design lowers the UPS system's MTTR at the same time increasing system availability

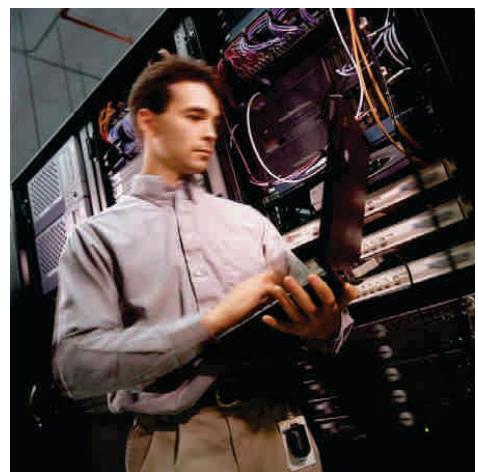
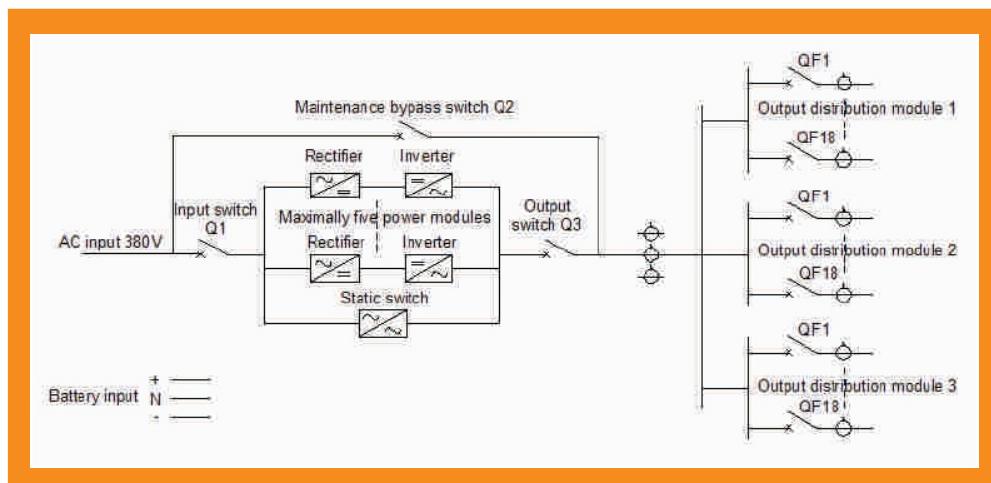
### Get The Liebert APM, Simply with Additional Features

- Monitoring: Offers communication through Web, Modbus and SNMP Protocol
- Flexibility: Allows variable number and type of batteries, form single to multi-unit configurations, and an array of internal and external power and communication options
- Ultra-quiet operations with noise levels below 52 dBA



Designed to improve the utilization and management of your IT systems, Liebert® APM™ increases your system's availability and flexibility as you deal with change. The features of Liebert® APM™ flex as IT applications and systems evolve, removing constraints to growth and allowing you to implement new systems and applications while leveraging on your initial investment.

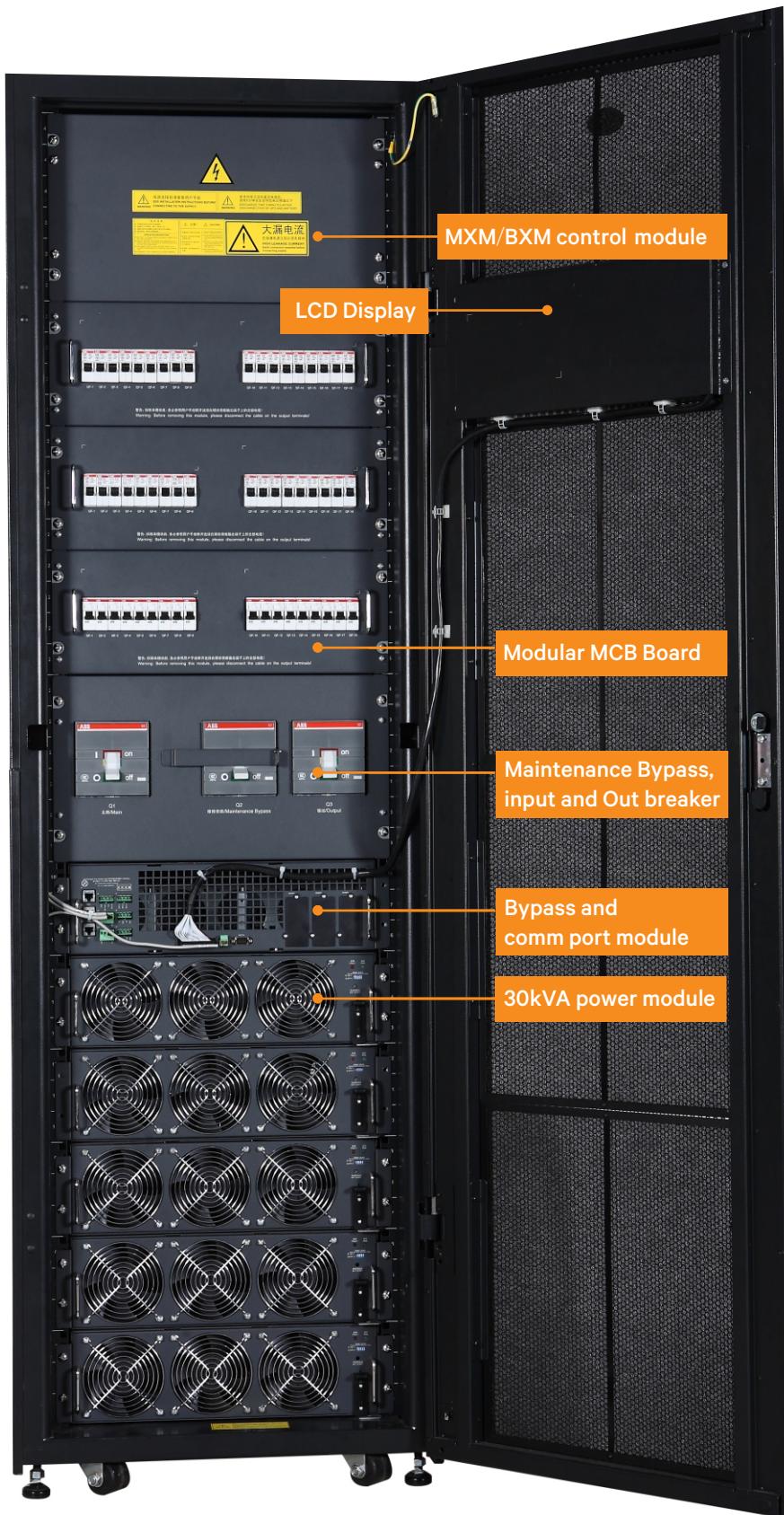
- Scalable-Dedigned to power high density equipment, the Liebert® APM™ comes in power ratings of 30, 60, 90, 120 and 150kW in N+1 redundancy.
- Modular-Its modular redundancy features allow capacity to grow as needed while reducing maintenance cost. Its modules are hot-swappable, allowing more flexibility for the user.
- Adaptive-Easy to configure dual-bus system. Users can also choose battery cell quantity from 30, 32, 36, 40x12V battery block.



In turn, this enables the data center to scale up and be more flexible as its availability goes from Tier2 to Tier3, Liebert® APM™ allows the user to easily ass modules using a plug-and-play structure while distributing work load through its intelligent control system.

\* On selected configuration

## Integrated Power Distribution Management in



- Unique in its class, the Liebert® APM™ Provides complete, high efficient power protection and distribution in a single cabinet, eliminating the complexity of two-stage power distribution.
- UPS and battery systems fit in an IT rack
- Built-in 30kw rack-mounted UPS (weight 35kg, height:3U, up to 5 sets paralleled in one rack)
- Built-in input/output distribution switch and manual maintenance bypass
- Built-in intelligent server power management system SPM, able to detect status, voltage, current, power factor, harmonic and electricity consumption of each branch, and set 2 level current load pre-warning
- Optional swap-able distribution module with 18-way circuit breaker for expansion and output distribution circuit adjustment
- Optional hot swap-able circuit breaker. Branch switch expansion or load phase adjustment can be operated without turning off the main circuit UPS power supply.

## Meet Your Power Demand

### Energy Efficient:

- Up to 96% Efficiency at 50-75% load; Up to 95% Efficiency at 25% load. Input Power Factor ~1; Input Harmonic current <3%

### Powerful Loading Capacity:

- Output Power Factor ~1 with leading and lag power factor (no derating)

### Easy to Install:

- Top/Bottom cable inlet/outlet available. Needs no feeder cabinet; Integrates UPS and power distribution in a single cabinet.

### Easy to Maintain:

- Front access provides easy bypass maintenance and replacement of rectifiers, inverter and fans.

### Easy to Configure

- Battery adopts 12V x 36/38/40 cell design and features flexible configuration. Original battery system can be modified and poor cells can be replaced without affecting UPS performance.

- Taking into account the growing need for high availability and energy efficiency, Liebert® APM™ provides 96% efficiency and is most suitable for midsize data centers of financial & securities, IDC and enterprise markets.

To meet your power demand, Liebert® APM™ allows you to parallel up to two Liebert® APM™ each with 300kW of highest power quality to support your business' power need. You can start having 30kW of power to grow up to 600kW as your business grows without sacrificing your system's efficiency and availability.

To further support your business' growth and power demand, you can configure Liebert® APM™ as a standalone UPS configuration or you can use Liebert® APM™ in either parallel or dual bus to increase your system's availability all by just adding parallel or LBS cables between APM UPS systems.

- Liebert® APM™ will be available in modular racks of your choice for 150 kW and 300kW in a single rack. Which ever you go with, rest assured that you will get the same rich features, high efficiency & maximum availability UPS for your mission critical systems.



## Monitoring And Control Capabilities That Keep You Informed

Liebert® APM™ has a large display that leads the user through logical menu sequences to view the required information. The microprocessor based display is autonomous of the system control logic. The simple menu-driven system virtually eliminates the possibility for diagram or mimic panel. It can also display advanced metering information, alarms, configuration or start-up/shutdown/transfet information.

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- Quickly check operational status
- Monitor power for through UPS along with all meter readings
- Menu-driven operator procedures to ensure safe operation

Check status reports and history files

Adjustment of programmable parameters (access limited by security access function)



## Centralized Monitoring And Control For the IT Environment

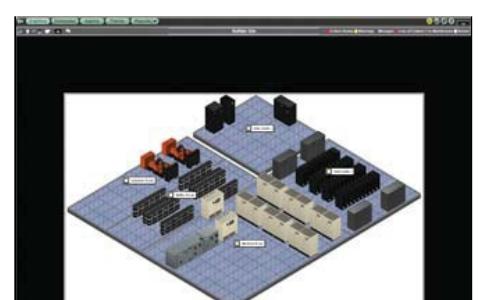
Intended for the IT Manager, Liebert® Nform™ is a net work communications system that will enable you to leverage the distributed monitoring capabilities of your network connected equipment. This software solution combines full-scale monitoring with cost-eddective deployment through the use of the existing network infrastructure. It is both scalable and adaptable so it can grow as your systems expand and business needs change. Liebert® Nform™ can be configuration to monitor your Liebert® APM™ for alarm notifications . These alarms can be processed to trigger event actions such as email alerts or local notifications



## Centralized Monitoring And Control Through Your Existing

Liebert® Sitescan™ is centralized site monitoring system assuring maximum visibility and availability of your critical operations. Liebert® Sitescan™ Web allows you leverage Web technology to oversee and control critical support systems-anywhere, anytime. Liebert® Sites™ can Web allows you to monitor and control virtually any piece of critical support equipment- whether is located in the next room or in a facility on the other side of the country. The web-based system provides centralized oversight of any Liebert® precision air, power and UPS units, as well as many other analog or digital devices. Features include real-time monitoring and control, data analysis and trend reporting, and event management.

*Note: Please consult Vertiv representative for software compatibility*



## Specifications

| Rated Power (In kVA/kW)*                      | 30-150  | 30-300             |
|---|---|--------------------|
| <b>Input</b>                                  |   |                    |
| Rated input voltage                           | 380/400/415Vac, 3-phase and 4 -wire   |                    |
| Input voltage range                           | 305-477V, 208V - 304V with linear derating up to 70% load   |                    |
| Rated operating frequency                     | 50/60Hz   |                    |
| Input frequency range                         | 40-70Hz   |                    |
| Input power factor                            | =0.99 at full load, >0.98 at half load  |                    |
| THDi*   | <3%   |                    |
| Input power walk-in duration                  | ,5-30s selectable   |                    |
| <b>Bypass</b>                                 |   |                    |
| Bypass input voltage                          | 380/400/415VAC, three-phase four-wire   |                    |
| Bypass voltage range                          | Upper limit: +10,+15,+20; Lower Limit: -10,-20,-30,-40 (Selectable)   |                    |
| Bypass overload capacity                      | Long term for 110%, 10min for 170%, 100ms for 1000%   |                    |
| <b>Output</b>                                 |   |                    |
| Inverter output voltage                       | 380/400/415Vac, 3-phase and 4-wire  |                    |
| Output power factor*                          | 1 (kW = kVA)  |                    |
| Inverter overload capacity                    | 1 hour for 110%; 10 mins for 125%; 1 min for 150%; 200ms for >150%  |                    |
| Voltage Stability                             | ±1% (balanced)  |                    |
| Steady state response time                    | <20ms   |                    |
| Phase shift                                   | <1° (With 100% balanced load); <1.5° (With 100% unbalanced load)  |                    |
| Total THD (THDv)                              | <1% (100% linear load)  |                    |
| Frequency                                     | <4% (100% linear load)  |                    |
| Slew rate                                     | 0.6Hz/sec   |                    |
| Measured frequency precision (internal clock) | 50Hz / 60Hz ±.25%   |                    |
| <b>DC Features</b>                            |   |                    |
| Battery bus charging voltage                  | 300-576 Vdc   |                    |
| DC ripple voltage                             | <1% Vfloat  |                    |
| <b>SPM intelligent distribution system**</b>  |   |                    |
| Number of branch switches                     | 18 routes x 3   |                    |
| DC ripple voltage                             | 25A as standard, 10-63A optional  |                    |
| Monitoring function                           | Main circuit and branch ON/OFF status, voltage, current, power factor, harmonic, energy consumption, 2-level current pre-warning                                  |                    |
| <b>System</b>                                 |   |                    |
| Paralleling                                   | Up to 4*  | Up to 2            |
| Efficiency                                    | 96% (On line mode), Up to 98% (Eco mode)*   |                    |
| <b>Dimensions and weight</b>                  |   |                    |
| Dimensions (W x D x H) (mm)                   | 600 x 1100 x 2000   | 1200 x 1100 x 2000 |
| Weight(kg)-C excluding batteries)             | 263   | 704                |
| <b>General</b>                                |   |                    |
| Operating temperature range                   | 0-40°C (For details, refer to user manual)  |                    |
| Relative humidity                             | 0-95% RH non condensing   |                    |
| Storage temperature                           | -25-70°C (excluding battery)  |                    |
| Max operation altitude                        | =<1000, When operating at 1000-2000m, derated by 1% for every 100m increase of altitude   |                    |
| IP Class                                      | IP20 (with built-in dust filter)  |                    |
| Noise (1m)                                    | 56  | 65                 |
| Standard                                      | Safety: EN50091-1; IEC62040-1/AS62040-1; EMC: EN50091-2/IEC62040-2/AS 62040-2(C3) specifying the performance and test: EN50091-3/IEC62040-3/AS 62040-3 VFI SS 111 |                    |

\*Note: Condition apply

\*\* On selected configurations only

Please consult with Vertiv representative for specific Liebert APM configuration



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