Eaton 93PR UPS Range Brochure

Eaton 93PR UPS

Complete modular data centre solution

Lithium-ion Compatible

Powering Business Worldwide

UPS Technology Innovations through the years

2021
The first release of enhanced ECT (Easy Capacity Test) to test UPS installation including up/downstream switchgear without load bank, reducing cost and CO2.

2019
Eaton Gigabit Network Card – the first UPS connectivity device to meet the UL 2900-1 cybersecurity standard

2019
EnergyAware UPS - The first solution that enables data centres to contribute to renewable energy and generate revenues from the necessary investments.

2018
UPSG Container – Back up power for hours, allows the use of high starting current loads in a rated power grid.

2009
First UPS with double-conversion protection and 99% efficiency (ESS mode) up to 1100 kVA

2004
Modular transformer-free UPS up to 160 kVA, integrating an unmatched combination of power performance.

1996
First UPS with wireless paralleling (HotSync)

1993
First UPS with ABM technology to extend battery life

1989
First high-frequency transformer-free UPS

1987
First UPS with advanced pulse-width modulated (PWM) technology and microprocessor-based diagnostics

1972
First all digitally-controlled UPS

1962
First AC power inverter

93PR Features and Benefits

The Eaton 93PR UPS combines unprecedented efficiency and reliability with an eye-catching design. A space-saving, scalable and flexible device that's as easy to deploy as it is to manage, it's the perfect three-phase white or grey space solution for today's data centres, commercial buildings, healthcare industry and many other applications.

- Smaller footprint
- Modular and Hot-Swappable
- Silicon carbide IGBT based power converter
- Microprocessor based advanced algorithm
- Safer and long-lasting oil-filled capacitor
- Lithium-ion battery compatible
- Eaton EnergyAware technology

Ideal for mission-critical applications in:

• Data centres • Healthcare • Control centres
• Commercial buildings • Proccess Industries

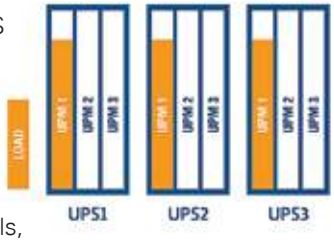
Hot Sync Technology

Hot Sync technology is an algorithm that eliminates the single point of failure in a parallel system and therefore enhances the system reliability. Each 93PR Module has its own compute capacity and it is utilised in both multi-module internal parallel and external parallel systems.

Variable Module Management System (VMMS)

Helps you achieve high efficiency even when UPS load levels are low – typical for redundant UPS systems. VMMS can optimise the load levels of power modules in a single UPS or in parallel UPS systems, by suspending extra UPS capacity.

This means not only greater efficiency at lower load levels, but optimum efficiency at all load levels, as illustrated below, whilst enhancing UPS reliability and longevity.



Extra Low Total Cost of Ownership

Conserves valuable data centre floor space with its compact footprint and internal redundancy design.

Reduces cost and unexpected future growth risks with its vertical scalability, enabling you to scale as you grow.

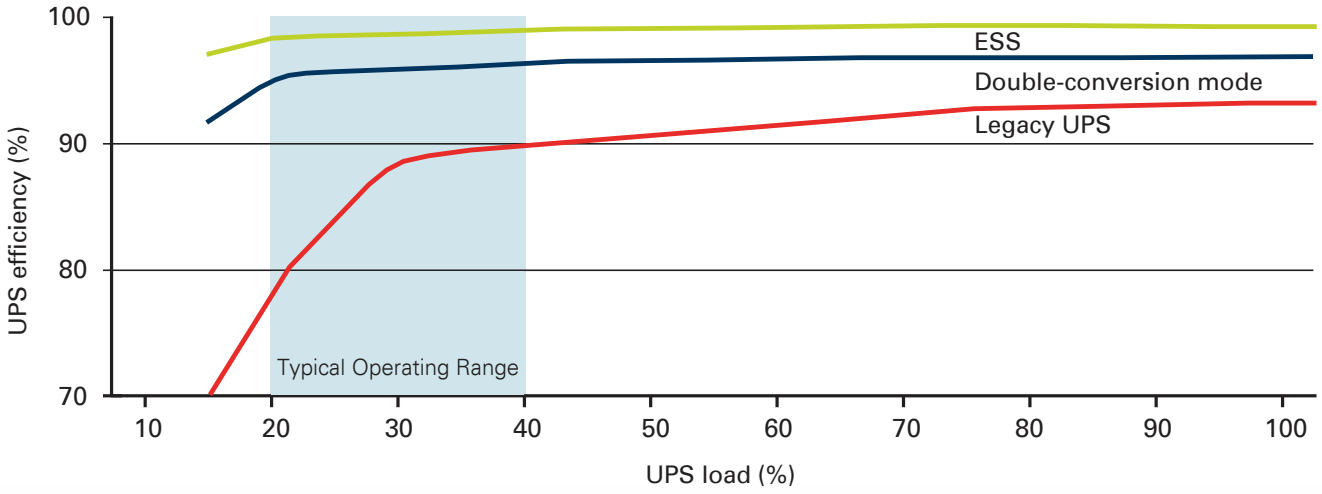
Reduces power and cooling OPEX through industry-leading energy efficiency.

- 99% efficiency with ESS
- > 97% efficiency in double conversion model

Your UPS cost will be recovered in 3 years' time thanks to the significant energy savings in Eaton ESS/ double conversion efficiency.

Calculate your 93PR savings with ESS at **Eaton.com/in**

The 93PR's vertical scalability, internal redundancy and compact footprint design



The functional core of the 93PR UPS

Illustrated with 93PR-600 model, applicable to other models in the range.

A Cable entry
Top and bottom cable entry available

B Communications and connectivity
- Built-in device and host USB
- Five alarm inputs and dedicated EPO
- Alarm relay output
- Four connectivity/ communication slots

C 60kW HOT-SWAPPABLE power modules (1~10)
Conformally coated PCB

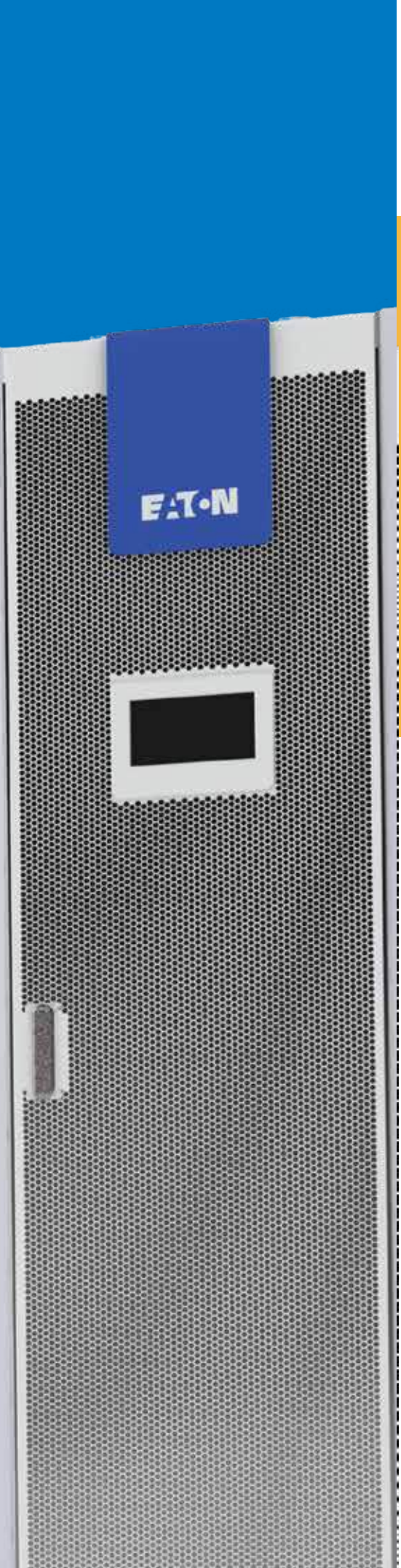
D HOT-SWAPPABLE STATIC SWITCH module
600kW static switch with fast protection bypass fuse and optional back-feed protection, Innovative boost handle for easy removal

E DC start controls
Available in each power module

F Input / output isolations
Input/ Output/ Bypass/ MBS isolation switches

G Redundancy and speed controllable fans

H 7”Color display



Eaton 93PR UPS

Up to 50% footprint saving

Flexible ventilation options

On-line replaceable UPM, STSW & Communication module, MTTR as low as 5 minutes

Robust components using oil-filled capacitors & SiC Hybrid IGBT modules

NEW

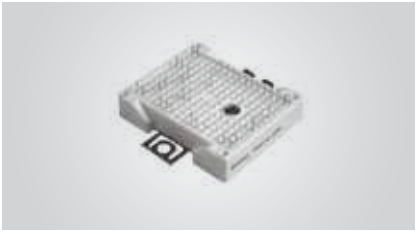
93PR 400kW

Power Module

Perfect integration with Lithium-ion battery, compatible with multiple Lithium-ion

High efficiency UPM module, efficiency > 97%

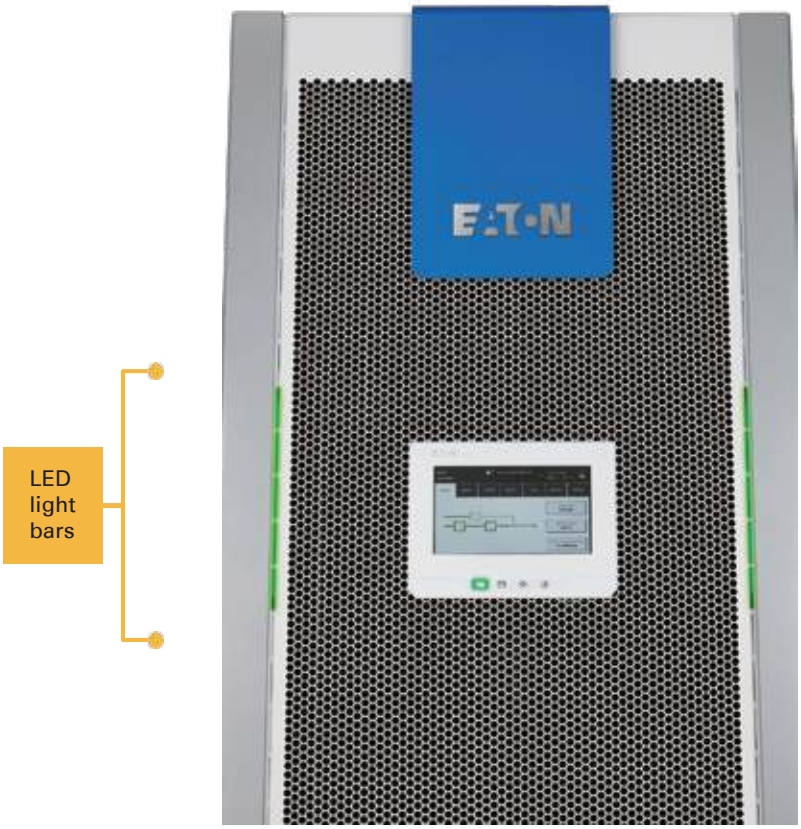
Complete power isolation as default for 300kW and 600kW (Input/ Output/ Bypass/ MBS)



Enhanced efficiency and reliability with SiC Hybrid IGBT Module

Long life oil-filled capacitor with safety disconnection switch

Easy management



Red light bars showing alerts on system. Yellow light bars indicate battery and bypass status.

Provides easier access to detailed status information through its large, user-friendly LCD touchscreen interface

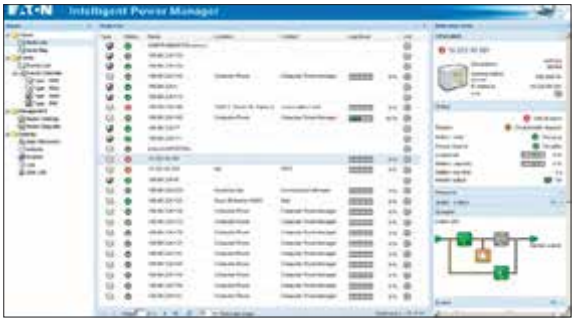
With the 93PR's graphical LCD interface you can track stats on energy savings, battery time, outage tracking, load profiling and much more.

The green/yellow/red LED light- bars make system status visible from a distance in data centres.

Integrates with the leading virtual platforms through its full suite of power management and connectivity software

Designed for the most advanced IT environments, the 93PR supports optional communication cards that allow remote access via the HTTP(S), SNMP, MODBUS TCP/IP, Modbus RTU and BACnet IP protocols. In addition, Eaton's Power Xpert® software and Intelligent Power Manager® Software Suite give you all the tools you need to manage power devices in your physical or virtual environment.

Learn more at Eaton.com/in



Intelligent Power Manager® (IPM) is a world class power management software platform. It seamlessly monitors power and environmental conditions while providing business continuity for workloads using VMware®, Citrix® and Microsoft® platforms. IPM also optimises power and environmental conditions for data centres using OpenStack® or HPE OneView®.

Connectivity options:

- Power Xpert Gateway Minislot UPS Card
- Industrial Relay Card - MS
- Industrial Gateway Card
- Gigabit Network Card (Network-M2)
- SNMP

Connectivity Cards

Eaton's Gigabit Network and Industrial gateway cards are certified with UL 2900-1 and IEC 62443-4-2 cybersecurity standards to protect against cyberthreats which are industry-first.

Lithium-ion battery

UL9540A Certified Lithium-ion Battery System

Eaton's lithium-ion battery systems provide a reliable and flexible solution that ensures 24/7 system uptime while delivering significant total-cost-of- ownership (TCO) savings. Capable of providing mega-watts of power in a small footprint, this battery solution comprises of lightweight battery strings designed to seamlessly connect to a Power Xpert™ 9395, 9395P, 93E, 93HE, 93PR and 93PM UPS.

Lithium-ion chemistry demonstrates superior characteristics in UPS applications, this results in high energy density, long life, flexible installation, improved cycle life and a lower TCO.

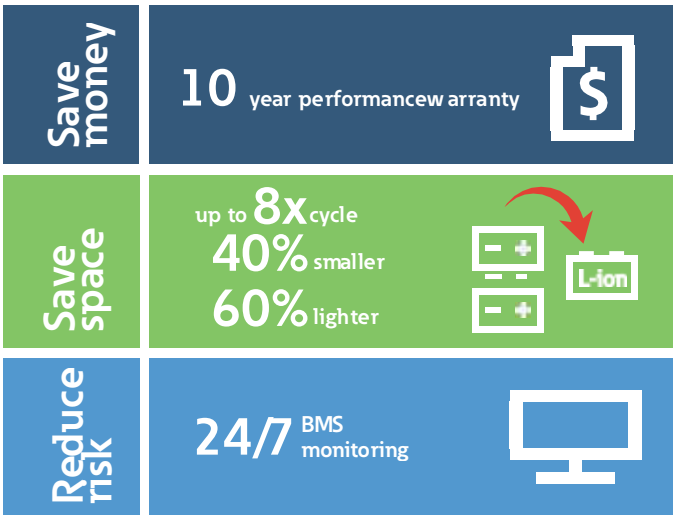
Contact Eaton for backup times and configurations. A wide range of runtimes from 3 minutes to an hour + are available.

The lithium-ion battery integrates a powerful battery management system (BMS), providing cell protection (temp, current, over/under voltage), cell balancing, state of charge and health and alarms/ reports.

The BMS processes critical parameters such as voltage levels, temperature, and current at the module and solution levels. Abnormal conditions (warnings and alarms) are quickly detected and, if necessary, the BMS will protect the system from damage by disconnecting the affected battery.

The BMS incorporates cell and module balancing controls. This function optimises the voltages of each module to maximize performance and increase service life.

Benefits of lithium-ion



For more information on Lithium-ion battery, visit
Eaton.com/in

With Eaton's EnergyAware kits upgrade, UPS with lithium battery can do much more beyond UPS.

Demand charge management
User avoids demand charges by discharging at peak times.

Time-of-use optimisation
Shifts energy consumption to avoid peak energy usage.

Demand response
Utility company requests reduction in power usage.

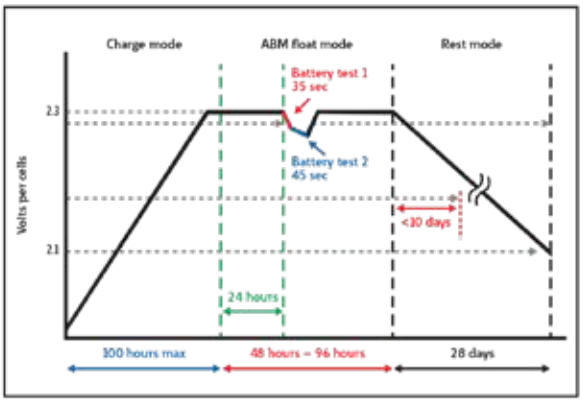
Frequency regulation
Charge or discharge battery on command to stabilize the grid.

Aggregation services
Manage multiple assets in a building or campus to work as a single entity.

To find out more about EnergyAware, visit
Eaton.com/in

Advanced Battery Management System

For VRLA SMF Batteries



Eaton's three-stage battery-charging technique.

Only with Eaton

Eaton is the only UPS manufacturer that can increase battery life by 50% and provide advanced warning of pending battery failure, with the fastest recharge time.ABM is not a new battery management feature. Eaton has been using ABM in its UPS products and it has proven itself beneficial in the field for more than two decades. When you purchase an Eaton UPS, you are assured of the maximum network power protection. These features, combined with competitive pricing and comprehensive warranties, make Eaton the only logical choice when it comes to selecting a UPS to protect your mission-critical equipment.

Eaton 93PR UPS technical specifications*

Catalogue	93PR-300	93PR-400 (420kW)	93PR-600	93PR-1200
Model	300kVA/ kW	400kVA/ kW	600kVA/ kW (Frame Capacity)	1200kVA/ kW
Power offering (kW)	300kW in 60kW increments	400kW in 60kW increments	600kW in 62.5kW increments	1200kW in 60kW increments
Power converter topology	Advanced 3-level SIC hybrid IGBT rectifier and inverter.			
Frame Options				
Frame offering	Standard input, output, MBS, Bypass input switch • 300kVA/ 300kW at 40°C continuous • Standard dust filters	Standard input, output, MBS, Bypass input switch • 400kVA/ 400kW at 40°C continuous • Standard dust filters	Standard input, output, MBS, Bypass input switch • 600kVA/ 600kW at 40°C continuous • Standard dust filters	Standard I/O panel for cable termination • 1200kVA/ 1200kW at 40°C continuous • Standard dust filters
General Characteristics				
Efficiency in Energy Saver System (ESS)	Up to 99%			
Efficiency in double-conversion mode	> 97%			
Parallel capability	4 x parallel, extendable to 8x with customisation	4 x parallel, extendable to 8x with customisation	4 x parallel, extendable to 8x with customisation	4 x parallel, maximum 4.8MW
Cold start	Available			
Softstart	Rectifier ramp up, compatible with generator, ramp up rate configurable			
Input Characteristics				
Voltage	380/400/415V			
Voltage range:	301~478V L-L175~276V L-N			
Frequency range	50/60 Hz			
Power factor	>0.99			
Input current distortion	< 3% @ 100% load**			
Battery				
Battery Type	Lithium, VRLA, Ni-Cad			
Battery Voltage	360~700 Vdc			
Battery Connection options	Support 1+1 common battery			
Output				
Voltage	380/400/415V,			
Voltage THD	< 1% linear load, < 3% non-linear load			
Frequency range	50/60 Hz			
Regulation	±1% steady state			
Voltage Overload	110% - 60 min, 125% - 10 min, 150% - 1 min			
Optional accessories	• Communication: Dry contacts, ModBus RTU/TCP/IP, SNMP cards, • External Sync Control Box, • Top exhaust kits			
Crest Factor	3:1			
Certification				
Safety	IEC62040-1			
EMC	IEC62040-2			
Performance	IEC62040-3			
Certificate	CE			
UPS dimensions (mm)				
Height x Width x Depth	2000 x 600 x 1100	2050 x 900 x 1100	2069 x 1200 x 1100	2069 x 2400 x 1100
UPM dimensions (mm)				
Height x Width x Depth	173.4 (4U) x 439 x 700			
Weight (kg)				
UPS (w/o UPM)	375	700	766	1528
UPM	39	39	39	39
Environment				
Operating Temperature / Humidity	0-40 degree C without derating / 5-95% RH, non-condensing			
IP Level	IP 20			

* Due to continuous improvement, specifications are subject to change without notice.

** @source THDv < 1%

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