

**Product brochure**  
Eaton 91PS and Eaton 93PS UPS

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**EATON**

*Powering Business Worldwide*

# Eaton 91PS and Eaton 93PS UPS

Lowest total cost of ownership and maximum availability – taking scalability, resiliency, safety, and efficiency to the next level.

The most advanced UPSs in their power range, the Eaton 91PS and 93PS are ideal for small data centers and other mission - critical applications where efficiency, reliability, safety and scalability are essential.

## Future-ready

The rapid adoption of the cloud, constant evolution of IT technologies, increased focus on environmental footprint and sophistication of mission - critical applications are demanding even more efficient, resilient, scalable and safe power protection solutions.

The new levels of efficiency and scalability offered by the Eaton 91PS and 93PS minimize Total Cost of Ownership while the safety and resiliency, both in infrastructure and IT layers, maximize availability and ensure business continuity.

## Eaton 91PS (single/three phase in & single phase out)

POWER RATING  
**8-30 kW**

## Eaton 93PS (three phase in & three phase out)

POWER RATING  
**8-40 kW**



# 50 YEARS OF EXPERTISE



## Over 50 years of UPS Leadership

Eaton's long history of UPS expertise encompasses small, medium and large data centers as well as industrial applications. We have a deep understanding of our customers' needs, ensuring more efficient and more reliable power supply solutions.

Innovation is integral to our heritage, with patented systems such as Best Power, Powerware, MGE Office Protection Systems and B-Line.

Eaton 91PS and 93PS UPSs represent the latest in our long line of market-leading, technologically advanced UPSs for mission-critical applications.

**MADE IN  
FINLAND**

## Made in Finland

Eaton manufacturing facility and center of competence for 3-phase UPS is located in Finland. Opened over 50 years ago, the factory has delivered more than 250 000 UPS units to date. The site hosts more than 500 visitors annually for Factory Acceptance Tests and UPS demonstrations.

## Your mission - critical UPSs

Whatever your mission-critical application, the Eaton 91PS and 93PS UPSs offer the power performance, scalability, resiliency and the efficiency you need.

They are ideal for:

- Small data centers
- Commercial buildings and industrial complexes
- Transportation systems
- Hospitals
- Finance and banking critical infrastructure
- Security operations
- Telecommunications installations
- Process control equipment



# Eaton 91PS and 93PS suit every need

Eaton 91PS and 93PS are easy to deploy in various applications from Data Centers to infrastructure and rail to healthcare equipment and process automation.



<b>Frame (maximum power)</b>		10kW
<b>Phases in/out</b>	Eaton 91PS	1:1 / 3:1
	Eaton 93PS	3:3
<b>Power range</b>		8 – 10 kW
<b>Runtime (internal batteries)</b>		8 - 15 min
<b>Number of power modules</b>		Monolithic



<b>Frame (maximum power)</b>	Eaton 91PS	15 kW
	Eaton 93PS	20 kW
<b>Phases in/out</b>	Eaton 91PS	3:1
	Eaton 93PS	3:3
<b>Power range</b>	Eaton 91PS	8 – 15 kW
	Eaton 93PS	8 – 20 kW
<b>Runtime (internal batteries)</b>		5 – 37 min
<b>Number of power modules</b>		1



<b>Frame (maximum power)</b>	Eaton 91PS	30 kW
	Eaton 93PS	40 kW
<b>Phases in/out</b>	Eaton 91PS	3:1
	Eaton 93PS	3:3
<b>Power range</b>	Eaton 91PS	8 – 30 kW
	Eaton 93PS	8 – 40 kW
<b>Runtime (internal batteries)</b>		5 – 85 min
<b>Number of power modules</b>		1-2

# All-round value

Our goal is to deliver the highest availability for mission critical applications at the Lowest Total Cost of Ownership for cost-efficient business continuity.



## Scalability

Modular scalability helps to optimize capital expenditure by enabling the pay-as-you-grow approach.



## Efficiency

With market - leading efficiency being translated into reduced electrical and cooling losses, the Eaton 91PS and 93PS help to minimize operational expenditure.



## Safety

Eaton 91PS and 93PS make electrical safety easy for the end users, planners and contractors – required safety equipment come pre-tested, integrated and inbuilt.



## Resiliency

The ability of a system to absorb faults and still remain in its desired operational state is paramount to minimizing costly downtime.

# Lowest Total Cost of Ownership

Eaton 91PS and 93PS cost you less to own because they are more efficient, thanks to a number of leading technologies.

## Leading Efficiency Technologies resulting in ultimate savings

### Double conversion efficiency

High online efficiency significantly lowers operation costs and provides savings in cooling. Replacing an older generation UPS with a Eaton 91PS/93PS will be paid back in 3 years.

**96.2%** **3** YEARS PAYBACK TIME

### Energy Saver System

Energy Saver System (ESS) improves Eaton 91PS and 93PS efficiency levels to 99%. ESS is the most proven and reliable energy saving system in the market with many years of usage within a wide install base. Even when comparing to extremely high double conversion efficiency, ESS mode can further reduce the losses by 74% with a typical UPS load.

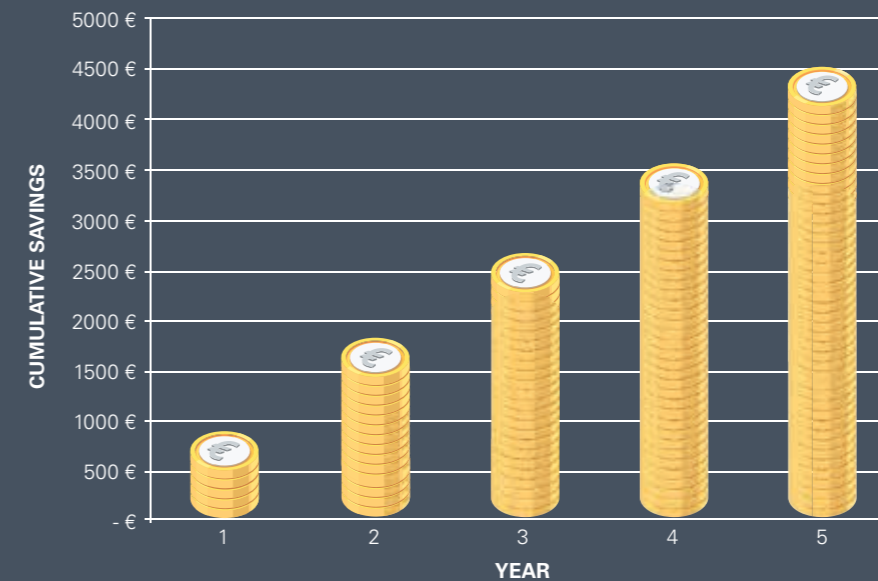
**900000 kVA**  
of UPS CAPACITY IN ESS MODE  
**74% Less Losses**

## Optimized double conversion

Variable Module Management System (VMMS) helps to achieve high efficiency even when UPS load levels are low – typical for redundant UPS systems.

**25%** VMMS  
**75%** ESS  
**REDUCTION IN OPERATION EXPENSES**

## Eaton 91PS and 93PS will save you close to 1000 € annually in operating expenses



More than **DOUBLE YOUR SAVINGS** by utilizing **ESS MODE** **10 000 €/5 years**

### Data used for calculation

Eaton 91PS or 93PS vs. 94% efficiency UPS  
electricity price 0,121 € / kWh (Euro area average)  
cooling ratio 20 %, 30 kW load

## Highest power density

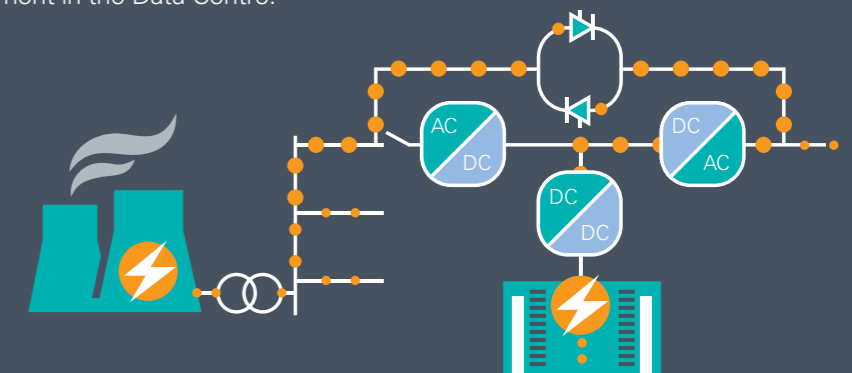
The unity power factor maximizes the true available power of the Eaton 91PS and 93PS. This means they can deliver up to 25% more real power than other UPSs in its class.

## Reduced footprint

The extremely small footprints of the Eaton 91PS and 93PS can free up valuable space for revenue generating equipment in the Data Centre.

### Easy Capacity Test

Load testing can be costly and time consuming – but not with the Eaton 91PS and 93PS. Its Easy Capacity Test (ECT) feature recirculates the energy from the UPS for testing. Hence there's no need to rent costly load banks and no time or energy wasted on temporary load connections.



What's in it for me?  
Check Eaton's new TCO calculator [eaton.eu/TCO](http://eaton.eu/TCO)

# Availability

Whatever the changing conditions – and however quickly they change – the Eaton 91PS and 93PS UPSs are designed to maintain a steady, uninterrupted, clean power supply. This market-leading resiliency is the result of a number of advanced technologies built-in to the Eaton 91PS and 93PS.

## RELIABILITY

What makes the difference when evaluating the reliability of UPS?



EXPERIENCE



PRODUCT DESIGN



MANUFACTURING PROCESS



PRODUCT FEATURES

### Reliable load sharing

Hot Sync is a patented load-sharing technology for parallel operation of UPS inverters, without communication or load-share signals. Not relying on communication link or master-control topology, Eaton 91PS and 93PS UPSs provide the highest possible reliability by eliminating the single point of failure in a parallel operating UPS system.

### Increased battery life

The Advanced Battery Management extends the life of valve-regulated lead-acid (VRLA) batteries, through an intelligent charging routine. This prevents unnecessary charging and significantly retards the battery wear rate. ABM technology is widely used and accepted technology with a 20-year proven track-record.

### Electrical installation safety made easier

Designing safe electrical installations are made easy for the designers and end users of Eaton UPS. The important safety requirements are implemented into the UPS design as standard.

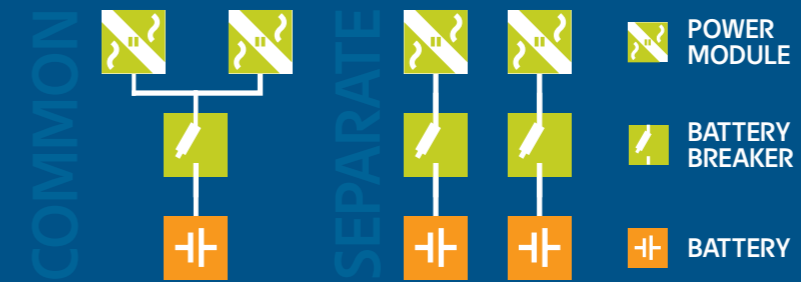
The installation fault current levels are determined by the size of incoming transformer. The UPS is validated for prospective short circuit current of  $I_{cc}$  100kA, which is suitable for practically all installations. Eaton 91PS and 93PS UPSs come with an integrated Bussmann ultra-rapid fuse in its bypass line. Eaton UPSs are guaranteed to be safe and compatible with any installation fault current levels, no conditions apply.

The UPS safety standard (IEC/EN 62040 Part 1) also requires backfeed isolation device to be connected in the UPS static bypass path due to human safety under thyristor short circuit condition. Eaton UPS come with backfeed isolation contactor integrated internally in the unit. This also guarantees that a shorted thyristor will have no effect to the double conversion operation of the UPS, removing the single point of failure.

## Redundancy on battery as well as on power module level

Eaton 91PS and 93PS offer the possibility to have either common or separate battery configurations.

### Common versus Separate Battery configuration



## Hot swappable and hot scalable

Due to its modular designs, Eaton 91PS or 93PS power modules can be replaced or added while other modules continue protecting the load. This eliminates the need to go to bypass for module replacement or upgrading (MTTR: 0 minutes). Replacement and upgrade operations typically take less than 10 minutes.



Eaton 91PS and 93PS designs ensure ease of deployment, with pre-designed, pre-tested and pre-installed safety components integrated as standard. Eliminating the need to design them into the upstream panel reduces the total cost of installation.



# Eaton 91PS and Eaton 93PS user display

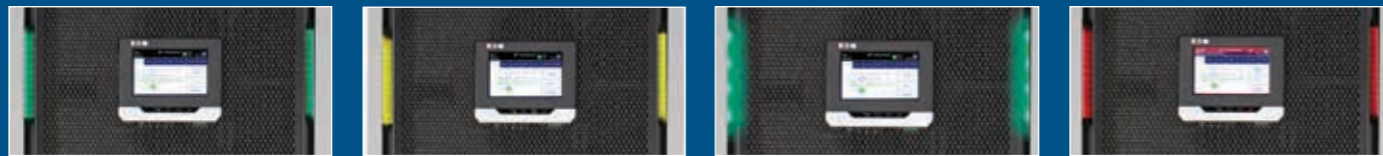
For user safety and convenience, the Eaton 91PS and 93PS display a range of colored LED indicators as operating status alerts. These are displayed both on the cabinet door of the UPS and on screen.

**Normal operation**

**Bypass mode**

**Battery mode (blinking)**

**Alarm**



## More intelligence

Eaton 91PS and 93PS are uniquely intelligent UPSs, which are both virtualisation- and cloud-ready.

**Monitoring your UPS** locally or over the cloud increases its reliability significantly and enables advanced actions **to ensure business continuity**. There could be environmental problems like too high temperature, component failures or switches in wrong position, and with a timely notification these could be corrected before they cause problems. Some actions can also be automated, like migrating virtual machines to another site if runtime is limited or availability compromised.

UPS network interfaces enable monitoring by dedicated software like Eaton's Intelligent Power Manager as well as general purpose network monitoring software, SCADA and building management systems using standard protocols like SNMP and Modbus.

While such capability is valuable, it also creates a possible target for cyberattacks. Therefore it is of utmost importance that UPS network interfaces are designed to highest security standards. Eaton's latest UPS connectivity card, **Gigabit network card, was the first UPS connectivity device to receive the UL 2900-2-2 cybersecurity certification.**

### Single pane of glass

Utilising **Eaton's Intelligent Power Software** (Intelligent Power Manager – IPM – and Intelligent Power Protector – IPP) the Eaton 91PS and 93PS integrate with leading virtualisation and storage platforms, and allow users to view, monitor and administer physical and virtual servers, UPSs, PDUs and other power devices, from a single pane of glass.

Network- and power-related alerts will be provided through the virtualisation management application, and the Eaton 91PS and 93PS will take the resiliency of the system to the next level, by bridging the electrical and IT infrastructures.



# At your service everywhere

With three Power Quality manufacturing facilities in the EMEA region, plus a strong local service presence, Eaton will provide your UPS with expert support from day one to the end of its service life.

### Peace of mind

Eaton has a service team on call 24/7, to minimize risks through early detection of problems and timely action, before disturbances or downtime result.

There are over 120 Eaton field engineers operating across EMEA – all comprehensively trained and continually updated on the latest products and technologies.

The dedicated support package they provide will ensure your equipment runs safely, reliably, sustainably and with the utmost energy efficiency, at all times.

### The proof is in the testing

The quality and reliability of the Eaton 91PS and 93PS is not something you have to wait to experience, Eaton's 5 MW state-of-the-art testing facilities in Finland allow you to conduct standard and customized tests to meet your specific needs, and to address your "what if" scenarios.

## Service contracts

At Eaton, we like to keep things simple. So, we have compiled service plans to match different types of maintenance needs and budgets. Whichever plan you choose, you can rest assured it will deliver power security and reliability that will keep your business running.



## Move to a 24/7 Remote Service

We can offer new service plans which are both faster and greener. These plans are designed to provide the highest level of service to cover your needs and offer you the full peace of mind..

### \*Benefits:

- increased power reliability
- peace of mind (Eaton experts available)
- stay informed
- faster response time/improved First Time Fix rate
- Eaton expert analysis
- optimized preventive maintenance
- overall system monitoring and reporting

\*Availability of the benefits are country-dependent. Please contact your Eaton service office to check the local agreements.



Check out the service offering [eaton.eu/upsservice](http://eaton.eu/upsservice)

# Technical specifications

General		
UPS output power rating	Eaton 91PS	8-30 kW
	Eaton 93PS	8-40 kW
Efficiency in double conversion mode		96 %
Efficiency in Energy Saver System (ESS) mode		99 %
Paralleling capability		up to 4 units
Audible noise	10 kW frame	< 54 dBA in double conversion
	15-40 kW frame	< 60 dBA in double conversion
Altitude (max)		1000 m without derating (max 2000m)

Input		
Input wiring	Eaton 91PS (1:1)	1 phase + N + PE
	Eaton 91PS (3:1) & 93PS (3:3)	3 phases + N + PE
Nominal voltage rating	Eaton 91PS (1:1)	220 V ; 230 V ; 240 V 50/60 Hz
	Eaton 91PS (3:1) & 93PS (3:3)	220/380 V; 230/400 V; 240/415 V 50/60 Hz
Input frequency range		40 to 72 Hz
Input power factor		0.99
Input iTHD	8-10 kW	< 5 %
	15-40 kW	< 4 %
Soft start capability		Yes
Internal backfeed protection		Yes

Output		
Output wiring	Eaton 91PS (1:1 & 3:1)	1 phase + N + PE
	Eaton 93PS (3:3)	3 phases + N + PE
Nominal voltage rating	Eaton 91PS (1:1 & 3:1)	220 V ; 230 V ; 240 V 50/60 Hz
	Eaton 93PS (3:3)	220/380 V; 230/400 V; 240/415 V
Load power factor range		0.8 lagging – 0.8 leading

Battery		
Battery type		VRLA
Charging mode		Advanced Battery Management (ABM) or Float
Temperature compensated charging		Option
Battery quantity	Internal	32 blocks, 192 cells per battery string
	External	28-40 blocks per string
Charge current limit	10 kW frame	Configurable, maximum 12.5 A
	15/20 kW frame	Configurable, maximum 18/25 A
	30/40 kW frame	Configurable, maximum 36/50 A
Battery start capability		Yes
Alternative backup power sources		Li-Ion batteries Supercapacitors Wet cell batteries NiCd batteries

Options and accessories	
Long life batteries	
External battery cabinets and supercapacitor cabinets	
External maintenance bypass switches	
Battery breaker enclosures for rack batteries	

Connectivity	
Native relay inputs/outputs	5 relay inputs and dedicated EPO 1 relay output More relay contacts available as option
Software	Eaton Intelligent Power Manager Eaton Intelligent Power Protector
Gigabit Network card (NETWORK-M2)	Web/SNMP Third party certified cybersecurity Up to 3 optional sensors (EMPDT1H1C2): Temperature, humidity and two status inputs
Industrial Gateway card (INDGW-M2)	Web/SNMP/Modbus RTU and TCP Third party certified cybersecurity Up to 3 optional sensors (EMPDT1H1C2): Temperature, humidity and two status inputs
Power Xpert UPS Minislot card (PXGMSUPS)	Web/SNMP/Modbus RTU and TCP/BACnet IP Optional Sensor (EMP001): Temperature, humidity and two status inputs
Industrial Relay-MS card (INDRELAY-MS)	5 relay outputs / 1 relay input

Compliance with standards	
Safety	IEC 62040-1; CB certified
EMC	IEC 62040-2
Performance	IEC 62040-3
RoHS	EU directive 2011/65/EU
WEEE	EU directive 2012/19/EU

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