Eaton
93PM
G2
UPS

EAT•N

Powering Business Worldwide

Eaton 93PM G2 UPS

The Eaton 93PM G2 UPS builds on the success and customer value delivered by its predecessor – the first generation Eaton 93PM. Its modular, scalable design means capacity and power protection grows in line with business demand and its Hot Swap functionality means availability is even higher, something that e.g. Colocation data center customers will love.

The Eaton 93PM G2 UPS has **the lowest TCO** in its class, **designed-in safety, cybersecurity and remote monitoring,** built around a **HotSync** and **Hot Swap modular system.**

Modular and flexible
- Full bypass capacity from Day 1
- HotSync - Reliable paralleling of power modules and UPSs
- Hot Swap new modules without downtime

Scalable
- Add capacity in steps of 50 or 60 kVA at any time

Cost efficient
- Grows in line with business demand
- Improve cost control and ROI with up to 97% online efficiency
- Further optimize efficiency with ESS & VMMS

energyAWARE
- Contribute to grid, turning energy into a profit centre

Ease of management
- Built-in cyber secure remote monitoring
- Status LEDs for full system and power modules

Safety assured
- Pre-designed, pre-installed safety components

60 YEARS OF EXPERTISE

Over 60 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.

The 93PM G2 UPS represents 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 nearly 60 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 UPS

Whatever your mission-critical application, the 93PM G2 UPS offers the power performance, scalability, resiliency and efficiency you need.

It is ideal for:
- Colocation data centers
- Medium and large DCs
- Finance and banking critical infrastructure
- Commercial buildings and industrial complexes
- Transportation infrastructure
- Healthcare
- Telecommunications installations
- Process control equipment

Eaton 93PM G2 UPS
suits **every** need

Eaton 93PM G2 is easy to deploy in various applications from Data Centers to infrastructure and rail to healthcare equipment and process automation.
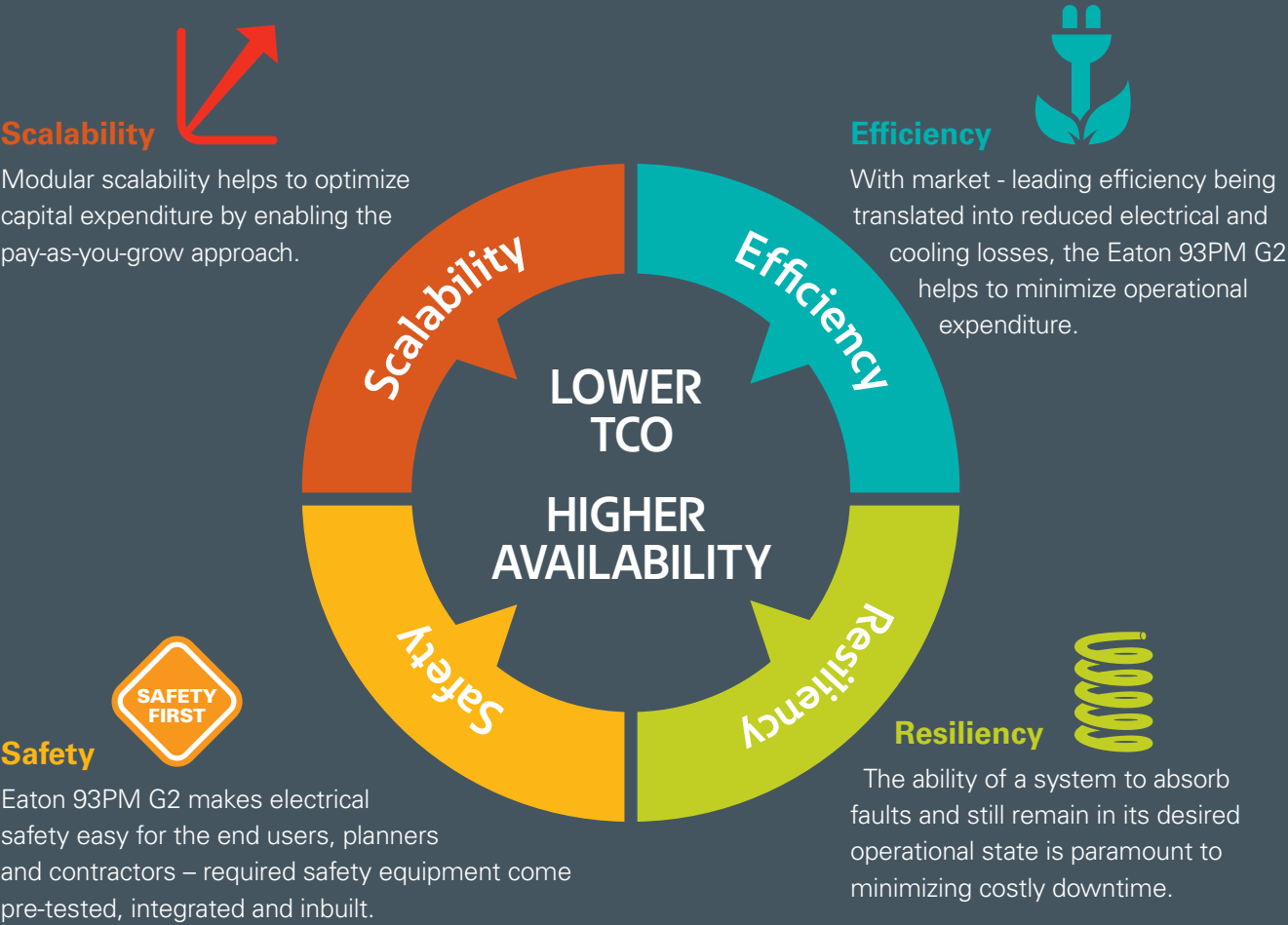

UPS capacity range	50 – 240 kVA
Number of power modules	1 – 4
Power module rating	50 kW with PF 1.0 60 kVA with PF 0.9
Airflow	Front to back or front to top

UPS capacity range	50 – 360 kVA
Number of power modules	1 – 6
Power module rating	50 kW with PF 1.0 60 kVA with PF 0.9
Airflow	Front to back or front to top

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 93PM G2 helps to minimize operational expenditure.

Safety

Eaton 93PM G2 makes 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.

LOWER TCO HIGHER AVAILABILITY — Scalability · Efficiency · Resiliency · Safety

Lowest Total Cost of Ownership

Eaton 93PM G2 UPS costs you less to own because it is 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 an Eaton 93PM G2 has a **return on investment of 3 years.**

97%

3 YEARS PAYBACK TIME

Energy Saver System

Energy Saver System (ESS) improves the Eaton 93PM G2 **efficiency levels to above 99%**. ESS is the most proven and reliable energy saving system in the marketing 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
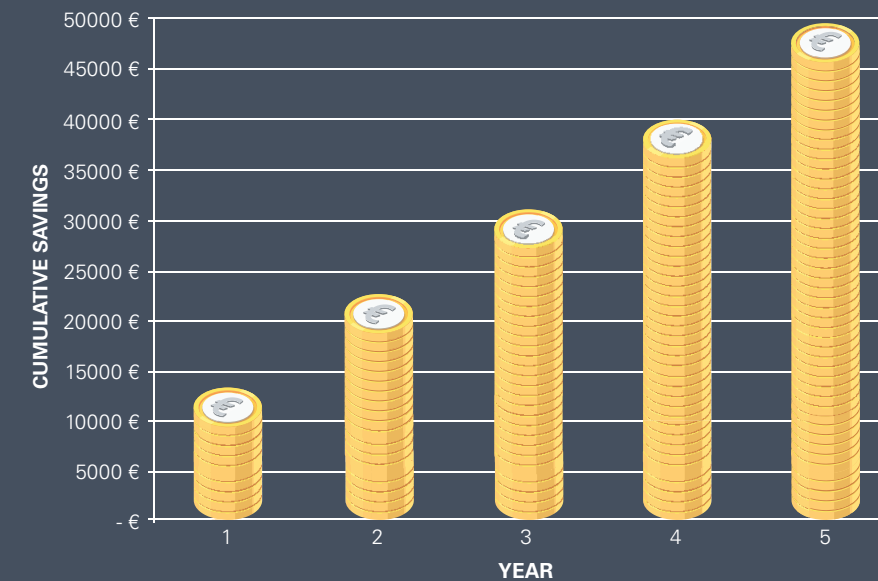**74% Less Losses**

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

What's in it for me?
Check Eaton's new TCO calculator **eaton.eu/TCO**

Eaton 93PM G2 UPS can save you 10 000 € annually in operating expenses

CUMULATIVE SAVINGS

50000 €
45000 €
40000 €
35000 €
30000 €
25000 €
20000 €
15000 €
10000 €
5000 €
- €

1 2 3 4 5
YEAR

DOUBLE YOUR SAVINGS
by utilizing **ESS MODE**
90 000 €/5 years

Data used for calculation

Eaton 93PM G2 vs. 95% efficiency UPS electricity price 0,121 € / kWh (Euro area average)
cooling ratio 20%, 300 kW load

Eaton 93PM G2 UPS is energyAWARE

Energy is often seen as a cost centre. But it can be a revenue generator.

An Eaton EnergyAware UPS supports the environment and wider use of renewable energy through demand response and ancillary services, positively impacting Corporate Social Responsibility while creating savings and additional revenue – all of which increases a data centre's competitiveness. All this in a fail safe and controlled way, using stored energy in parallel with mains and keeping enough energy to meet back-up time requirements and always prioritizing critical load protection.
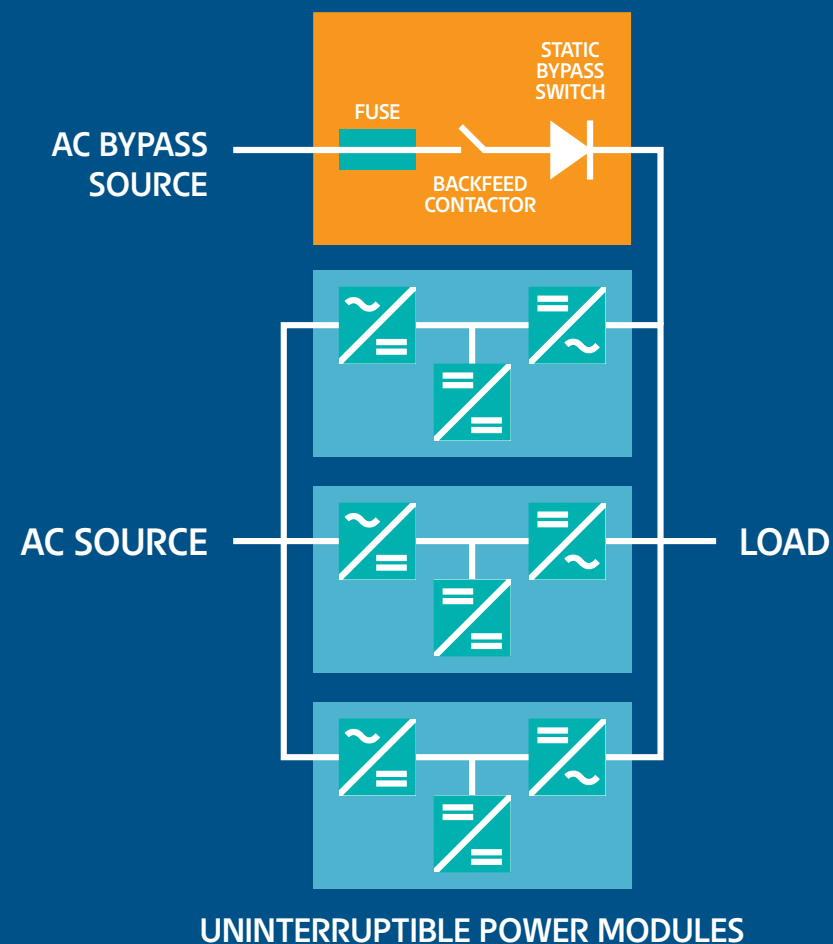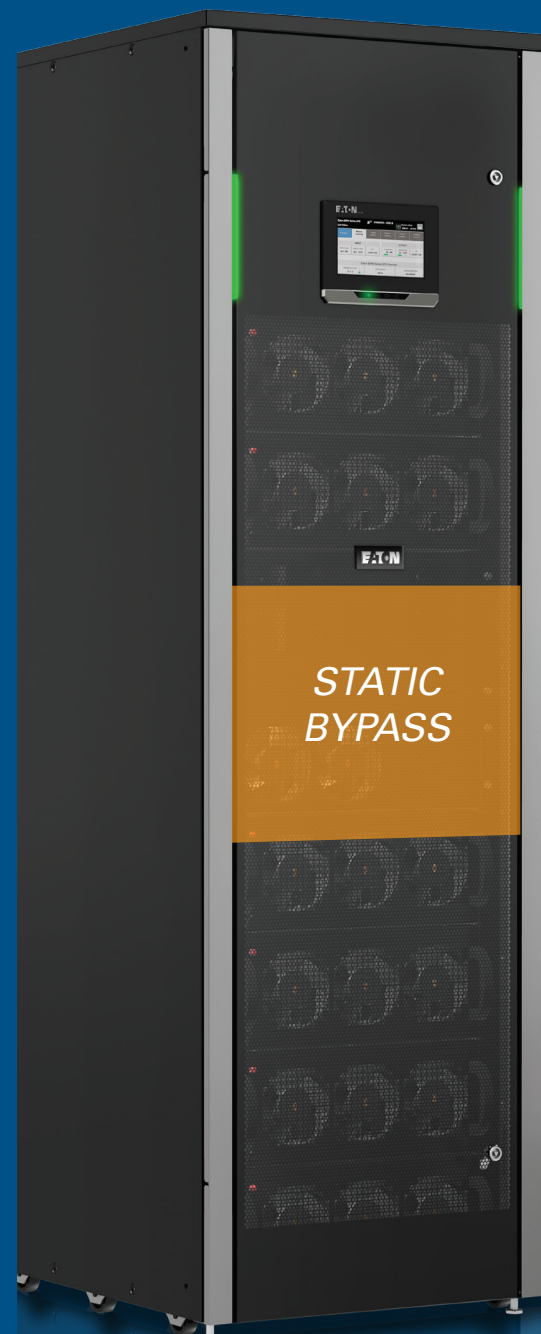
TO/FROM GRID   CRITICAL LOAD
TO/FROM BATTERY

Typical returns up to
50 000 € per MW
of power allocated to grid support per year

Best of both - Benefits of modularity combined with resiliency

Each power module includes all components required for double conversion operation. In addition, there is one common fully rated static bypass per UPS. This topology enables combining the benefits of modularity – flexibility, availability and scalability – with the resiliency of centralized static bypass.

STATIC BYPASS

AC BYPASS SOURCE

FUSE

STATIC BYPASS SWITCH

BACKFEED CONTACTOR

AC SOURCE

LOAD

UNINTERRUPTIBLE POWER MODULES

Modular, Scalable, Flexible

- **Pay as you grow.** Buy what you need, when you need it, adding multiples of 50 or 60 kVA whenever required.
- **Flexible growth options.** Add a new UPS to the existing installation or increase the capacity of existing UPSs just by adding a new power module.
- **Full bypass capacity.** Even in scalable designs full bypass capacity from day one is a must. Eaton modular UPS enables design with full bypass capacity regardless of power range. Double-conversion capacity and static bypass capacity can be sized separately providing flexibility to match site requirements without investing in additional UPS capacity in case of high fault current levels.

Improve Cost Control and ROI

- **Buy the capacity required,** from 50 kVA to 360 kVA. **Build as you grow,** adding capacity as needed for fine-grained cost control.
- Energy efficiency is up to 97% in double-conversion mode. Replacing an older generation UPS with the 93PM G2 would see a **payback time within 2-3 years.**

Availability

Whatever the changing conditions – and however quickly they change – the Eaton 93PM G2 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 93PM G2.

RELIABILITY
What makes the difference when evaluating the reliability of UPS?

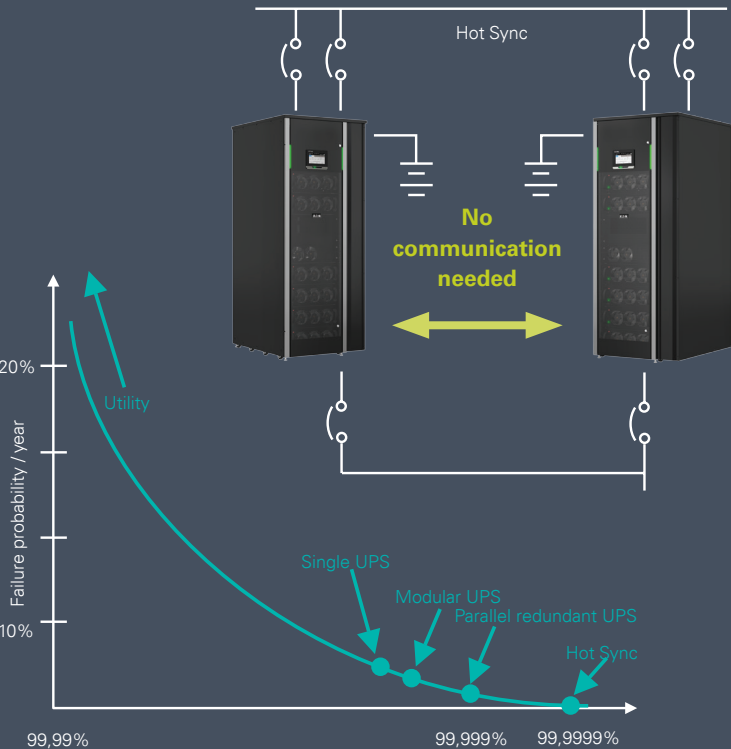| EXPERIENCE	PRODUCT DESIGN	MANUFACTURING PROCESS	PRODUCT FEATURES

Designed for 100% uptime

HotSync

Eliminating single points of failure

A UPS exists to provide continuous, reliable power. In a traditional UPS system, a loss of communication between UPSs would cause it to go on by-pass, effectively removing the backup system.

HotSync eliminates this single point of failure, providing increased reliability. Each unit runs a patented Digital Signal Processor (DSP) algorithm. If there is a common bypass this synchronises output. If there is not a common bypass the DSP algorithm adjusts inverter frequency to find a common frequency and create load balance between all the operating units. Each UPS can work completely independently from the others, still ensuring continuous clean power for the load.

Hot Sync

No communication needed

Failure probability / year

20%

10%

Utility

Single UPS

Modular UPS

Parallel redundant UPS

Hot Sync

99,99%   99,999%   99,9999%

Ease of Deployment

Hot Air

Wall Configuration   Cold Air

Hot Air

Row Configuration   Cold Air

Hot Air

Aisle Configuration   Cold Air

Airflow management

The fully front-accessible design allows quick access for service and maintenance. Front access, together with innovative thermal management options of front-to-top or front-to-rear airflow in the same dimensions, also enables installation against a wall or back-to-back, in row or in hot/cold aisle configuration – maximizing deployment flexibility.
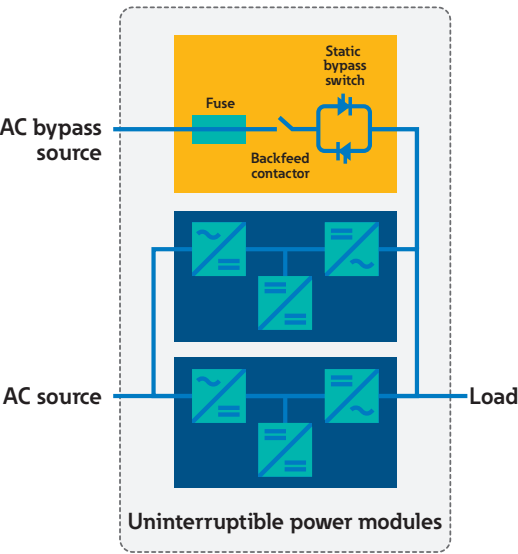
Hot Swap

Modules can be replaced or added to the Eaton 93PM G2 at any time — **without powering the system down or going to bypass.** Units in steps of 50 or 60 kVA can be added while the system is up and running. Growing capacity is easy, efficient and timely. Critical load is not affected. System downtime is not required.
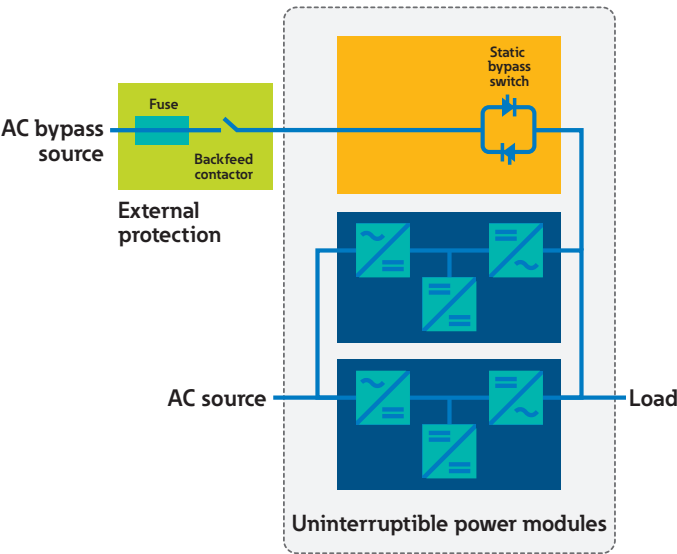

Electrical safety made easy

By its nature, a UPS works with high voltages, meaning there is an ever-present danger that a power surge or failure could damage equipment, impact business continuity and even create a serious risk to personnel. The Eaton 93PM G2 UPS, like all of Eaton's premium 3-phase UPSs, **features pre-designed, pre-tested and pre-installed components to deliver regulatory compliance and ensure safe use.** This is **safer and more cost-effective** than installing additional external protection, typically saving over €1000 for backfeed protection and €500 for external static switch fuses.

Eaton premium UPS

Typical UPS without internal static bypass fuse or backfeed contactor

Static bypass switch

Fuse

AC bypass source

Backfeed contactor

AC source   Load

Uninterruptible power modules

Static bypass switch

Fuse

AC bypass source

Backfeed contactor

External protection

AC source   Load

Uninterruptible power modules

IPM Manage and Optimize Editions bridge the gap between physical power infrastructure and virtual IT.

Eaton Intelligent Power® Manager (IPM) Manage and Optimize Editions integrate seamlessly with your power hardware **to provide unparalleled business continuity capabilities.** Both Editions manages all network connected power infrastructure devices, including UPSs and rack based power distribution units (ePDU®s), triggers virtual machine migration plans and shuts down non-essential devices in order to keep your business running during power and environmental events.
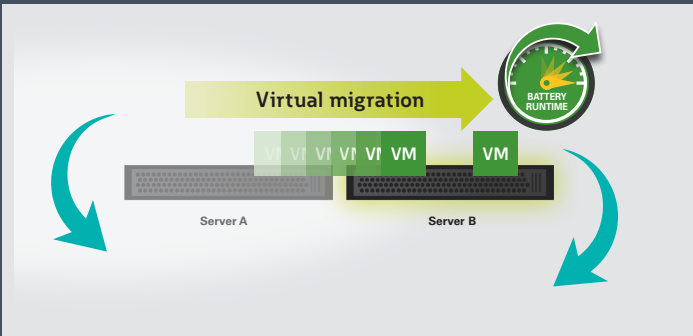
Understand Edition - Contextual visibility of metrics & capacity

Manage Edition - Basic monitoring & management

Optimize Edition - Advanced virtualization

Reduce your cybersecurity risk

All network connected devices require cybersecurity. Network connectivity is provided by Eaton Gigabit Network Card and Industrial Gateway Card — the first in the industry to receive IEC 62443-4-2 and UL 29001-1 certifications, providing protection against cybersecurity threats.

Ensure business continuity

Virtual migration

BATTERY RUNTIME

Server A   Server B

Automate business continuity

with flexible policies based on physical infrastructure events, including power and environmental conditions.

Define and execute sequential load shedding or disaster recovery policies for a VM, a vApp, or groups of VMs/vApps from directly within Intelligent Power Manager.

Workload management

Remotely and gracefully shut down servers and select storage devices during a power event.

Prioritise and shed non-critical loads to extend runtime during an extended power outage.

Trigger VMware vMotion, Citrix XenMotion and other migration applications to transparently move virtual machines to an available server on the network.

Failover

Trigger VMware Site Recovery Manager disaster recovery plans during a power outage.

Power capping

Keep critical workloads running longer during a power outage by limiting server power consumption.

Eaton Cyber Secured Monitoring

Eaton Cyber Secured Monitoring is the right solution to connect your device without any compromise to security and availability. It runs on a secured cloud and allows enabling services such as Remote Monitoring, Health Reports and early anomaly detection that help to mitigate downtime risk associated with the critical components (battery, capacitors, FANs,...). Eaton Cyber Secured Monitoring runs in any supported Eaton UPS equipped with the gigabit network card or the industrial gateway card. Wireless options are available.

Eaton Cyber Secured Monitoring

Eaton Deliverables	Benefits
24/7 monitoring by EATON specialist team	**Faster response to malfunctions** reducing delay related to travel to site
UPS remote monitoring portal including real-time UPS diagnostics to evaluate situation before travelling to site.	**Minimized Risk** related to power interruption due to reduced MTTR and increased first time fix rate
Early anomalies notification enabled by **alarms management system** managed by EATON service expert team	**Improved Reliability performance** by addressing early signs of degradation
Comprehensive monthly Health report of UPS performance and EATON recommendations.	Proactive **maintenance investment optimization** to execute only the tasks that are needed.

New Service Offerings Tailored to You

Flexible service levels adapt to your needs

UPS MAINTENANCE

- Preventive maintenance and inspection
- System diagnosis
- Cybersecurity firmware update
- System efficiency update

UPS Maintenance package increases system reliability, enhances cybersecurity protection and efficiency

TECHNICAL SUPPORT

- Helpdesk 8h/5
- Expert hotline 8h/7
- UPS operations training
- Cyber secured monitoring
  - UPS performance dashboard
  - UPS system health report (anomalies detection)
  - Maintenance records portal (My.Eaton.com)

Technical support package guarantees access to Eaton experts, enables remote diagnostics and optimizes life cycle management of the UPS through predictive health reports

EMERGENCY RESPONSE
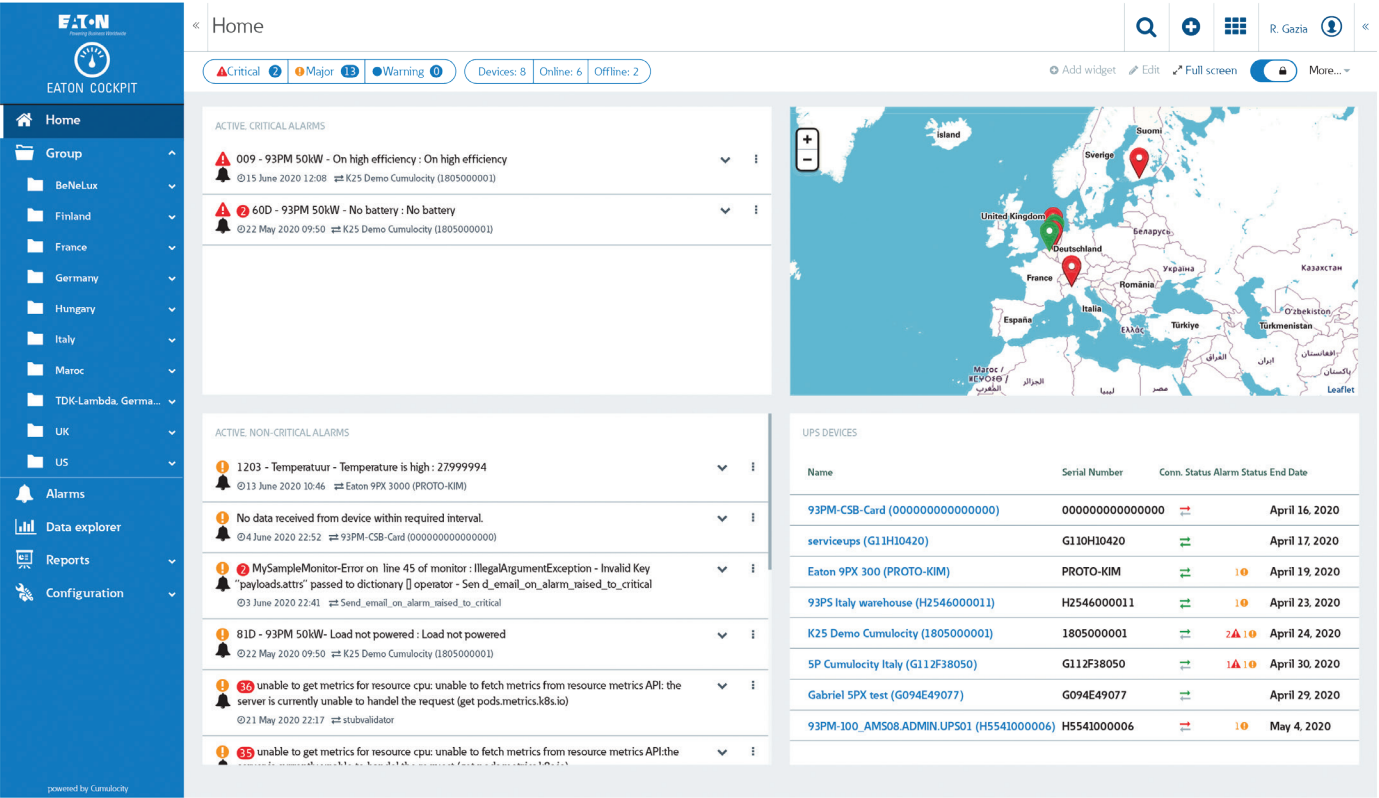
- Guaranteed response time
- Root cause analysis
- Tailored contingency planning

Emergency response package minimizes time to restore the system functionality, guaranteeing 24/7 response by a certified Eaton engineer

Periodical check up by Health Report

The **Health Report** of the system gives an **in-depth view** of its status, **detects** any anomaly, warns of its condition and **highlights future investments** allowing to plan the budget on time.

Eaton Cyber Secured Monitoring can be purchased separately or with one of the Eaton service plans.
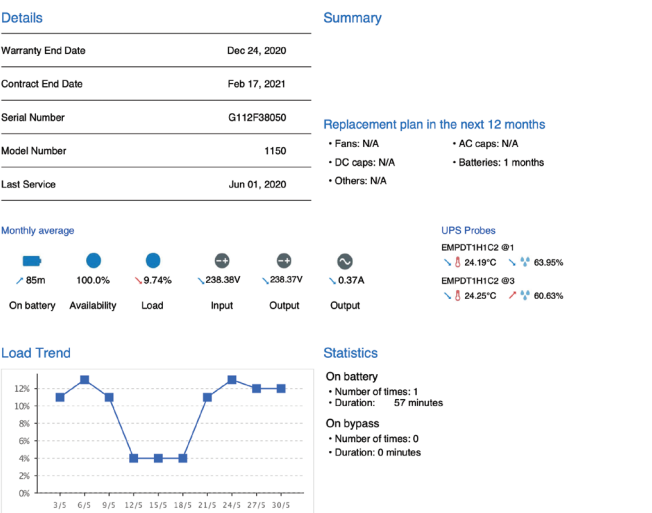
Technical specifications

Eaton 93PM G2 UPS 50-360 kVA

Technical specifications

General

UPS output power rating	50-300 kW (PF 1.0)
	60-360 kVA (PF 0.9)
Power module power rating	50 kW (PF 1.0)
	60 kVA (PF 0.9)
Efficiency in double conversion mode	up to 97%
Efficiency in Energy Saver System (ESS)	> 99%[1]
Inverter/rectifier topology	Transformer-free IGBT with PWM
Paralleling capability	Up to 4 units
UPS topology	Online / Double conversion
UPS dimensions (width x depth, height)	800 x 990 x 1987 mm
UPS Degree of protection	IP 20
Altitude (max)	1000 m without derating (max 2000 m)

Input

Input wiring	3ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V
Rated input frequency	50 or 60 Hz, user configurable
Frequency tolerance	40 to 72 Hz
Input Power Factor	0.99
Input ITHD	< 2,5%
Soft start capability	Yes
Internal backfeed protection	Yes

Battery

Battery type	VRLA
Charging method	ABM technology or Float
Temperature compensation	Optional
Battery nominal voltage (VRLA)	384-528 V (32-44 blocks)
Battery start capability	Yes
Alternative backup power technologies	Li-ion batteries, NiCd batteries, Wet cell batteries, Supercapacitors

1. IEC 62040-3 Class 3 output

Output

Output	50-300 kW (PF 1.0)	60-360 kVA 60-360 kVA (PF 0.9)
Output wiring	3ph + N + PE	
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz	
Output UTHD	<1% (100% linear load)	
	< 3% (reference non-linear load)	
Overload on inverter	60 min 110%	10 min 110%
	10 min 125%	1 min 125%
	60 s 150%	10 s 150%
Overload when bypass available	Continuous <125% / <115%	
	Note: Bypass fuses may limit the overload capability!	

Options and accessories

External cabinets with VRLA batteries, Li-ion batteries or Supercapacitors
Top air exhaust kit (front to top airflow)
Integrated Maintenance bypass switch (200 kW frame)
Sync control for synchronizing the output of two separate UPS systems
MiniSlot connectivity (Network/SNMP, Modbus/Jbus, Relay)
Power Conditioner mode
Frequency Converter mode

Communications

MiniSlot	4 communication bays
Serial ports	Built-in host and device USB
Relay inputs/outputs	5 relay inputs and dedicated EPO 1 relay output
Software	Eaton Intelligent Power Manager Eaton Intelligent Power Protector

Compliance with standarts

Safety (CB certified)	IEC 62040-1
EMC	IEC 62040-2
Performance	IEC 62040-3
RoHS	EU directive 2015/863/EU
WEEE	EU directive 2012/19/EU

Due to continuous product imrovement programmes, specifications are subject to change without notice.

Eaton 93PM 50-300 kW (PF 1.0) range

Model	Rating	Power module qty	Dimensions	Weight
93PM-G2-50(200)	50 kW	1	800 x 990 x 1987 mm	361 kg
93PM-G2-100(200)	100 kW	2	800 x 990 x 1987 mm	404 kg
93PM-G2-150(200)	150 kW	3	800 x 990 x 1987 mm	447 kg
93PM-G2-200(200)	200 kW	4	800 x 990 x 1987 mm	490 kg
93PM-G2-250(300)	250 kW	5	800 x 990 x 1987 mm	533 kg
93PM-G2-300(300)	300 kW	6	800 x 990 x 1987 mm	576 kg

Eaton 93PM 60-360 kVA (PF 0.9) range

Model	Rating	Power module qty	Dimensions	Weight
93PM-G2-60(240)	60 kVA	1	800 x 990 x 1987 mm	361 kg
93PM-G2-120(240)	120 kVA	2	800 x 990 x 1987 mm	404 kg
93PM-G2-180(240)	180 kVA	3	800 x 990 x 1987 mm	447 kg
93PM-G2-240(240)	240 kVA	4	800 x 990 x 1987 mm	490 kg
93PM-G2-300(360)	300 kVA	5	800 x 990 x 1987 mm	533 kg
93PM-G2-360(360)	360 kVA	6	800 x 990 x 1987 mm	576 kg

FATON

Powering Business Worldwide

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