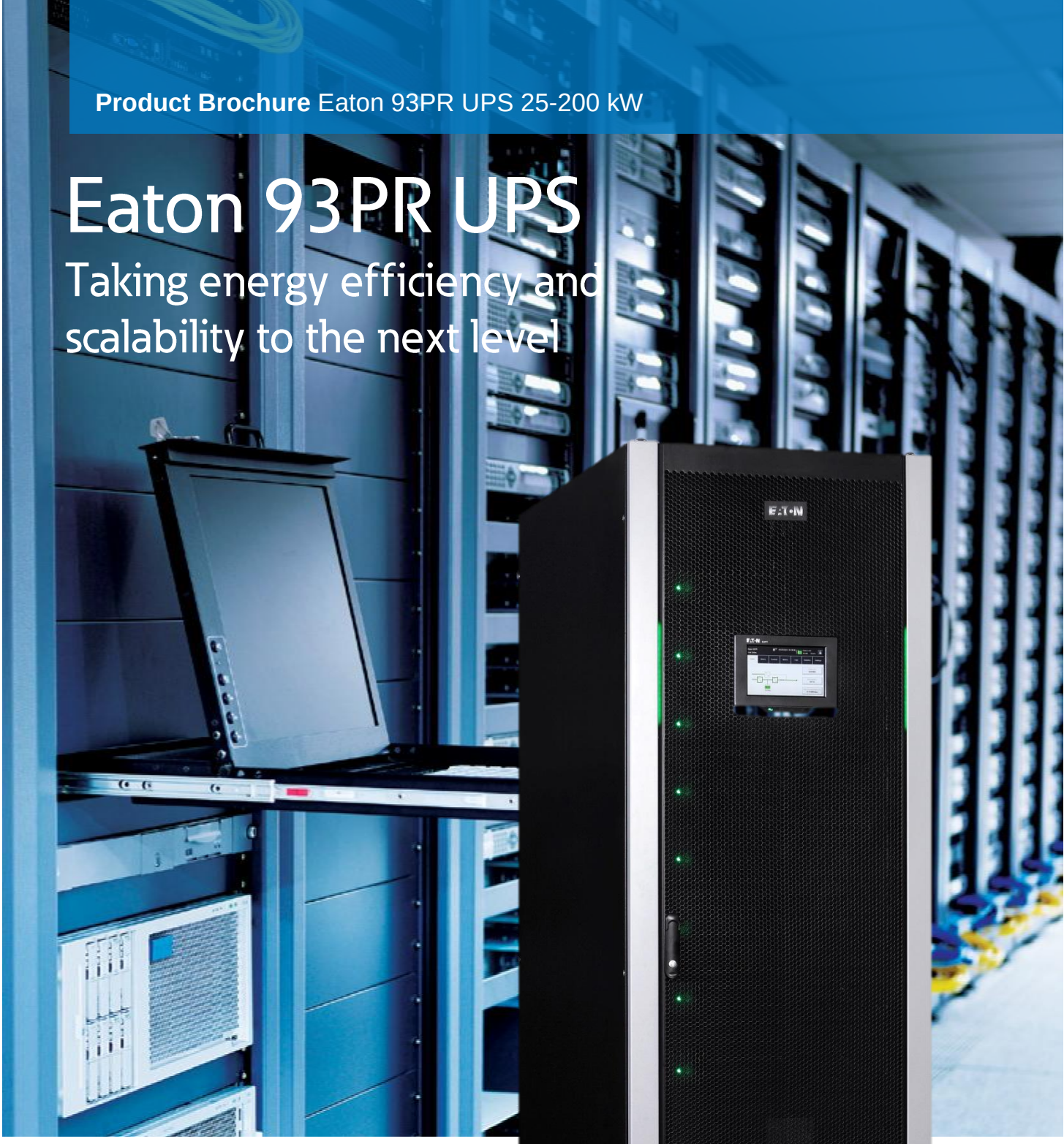
Product Brochure Eaton 93PR UPS 25-200 kW

Eaton 93PR UPS

Taking energy efficiency and scalability to the next level



Powering Business Worldwide

Eaton's heritage in industry-leading UPS design and production

For more than 50 years, Eaton has been safeguarding the critical systems of businesses across the globe. Whether protecting a single desktop or the largest data centre, Eaton solutions provide clean, uninterrupted power to keep mission-critical applications working.

We offer a comprehensive range of environmentally-sensitive, efficient, reliable UPSs, surge protective devices, power distribution units (PDUs), remote monitoring, meters, software, connectivity, enclosures, airflow management and professional services.

We work with IT and facilities managers to effectively manage power in virtually every business segment, including data centres, retail outlets, healthcare organisations, governmental agencies, manufacturing firms, broadcasting companies, financial institutions, and a wide variety of other applications.

Our solutions provide the power to make a difference, helping you achieve your business goals while maintaining environmentally sustainable enterprises.

A world-class support structure

As an industry-leading UPS provider, at Eaton we're constantly working to ensure that our service standards meet your needs precisely. Our trained service team is on hand 24/7 to minimise risks by detecting and addressing problems before they happen. In the Asia-Pacific region, this service network consist of field engineers who receive comprehensive, up-to-date training on the latest products and technologies.

The experience and know-how of our servicing resources provide a dedicated support package which helps to ensure your equipment is running safely, reliably, sustainably and energy-efficiently at all times.

Committed to creating and maintaining powerful customer relationships based on a foundation of excellence.

Eaton 93PR UPS 25-200 kW

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

The most advanced UPS in its power range, the Eaton 93PR is ideal for small to mid-sized data centres 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 is demanding even more efficient, resilient, scalable and safe power protection solutions.

The new levels of efficiency and scalability offered by the 93PR minimise Total Cost of Ownership while the safety and resiliency, both in infrastructure and IT layers, maximise availability and ensure business continuity.

All-round value

Available in 200kW frame sizes, the 93PR's modular design enables it to suit a wide range of requirements. And, whichever one you choose, you can be sure it will provide the lowest Total Cost of Ownership combined with maximum availability, for cost-efficient business continuity.

Ensuring that you can always access the power your mission-critical application requires – under all circumstances – without compromising business performance or safety, the 93PR is the most efficient, scalable, Cloud-ready and safe UPS you can choose.

Efficiency

With high efficiency being translated into reduced electrical and cooling losses, the 93PR helps to minimise operational expenditure costs, in addition to addressing the cost pressures resulting from commoditisation of IT services. Increased efficiency also leads to higher sustainability, through reduced carbon emissions.

Scalability

Scalability helps to optimise capital expenditure by only deploying additional equipment when necessary and providing additional flexibility to respond to your changing needs. The scalability of the 93PR also provides increased flexibility to accommodate the changing requirements of rapidly evolving technologies.

SAFETY FIRST

Safety

Ensuring safety in any electrical installation is a must. Safe hot-swappable design and in-built back-feed protection ensures safety and compliance with regulations.

Resiliency, virtualisation & cloud-readiness

The ability of a system to absorb faults and still remain in its desired operational state is paramount to minimising costly downtime. The 93PR takes resiliency to the next level by bridging electrical and IT infrastructures.

Maximum Energy Efficiency
Lowest TCO

The Eaton 93PR is simply the most efficient UPS in its class, offering the lowest Total Cost of Ownership. Thanks to Eaton's advanced algorithms and energy- saving features, the 93PR achieves up to 99% efficiency. This efficiency is well proven with installations in major datacentre hubs in the Asia Pacific region and around the world.

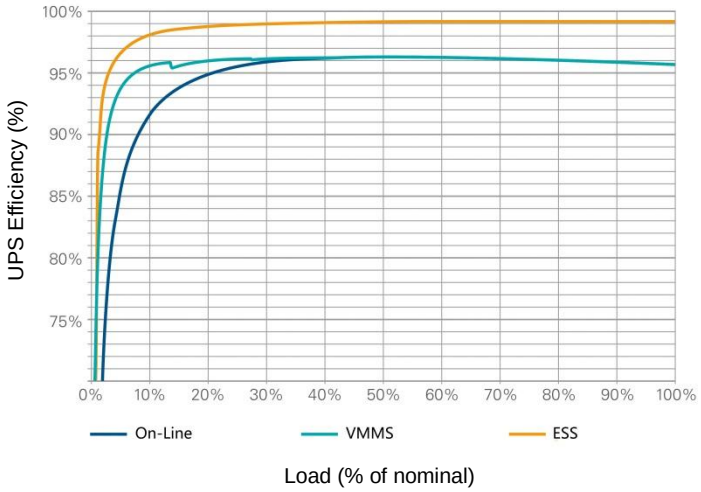
99% efficiency - Energy Saver System (ESS)

Improves the 93PR efficiency levels to 99%, by suspending the power modules when power conditioning is not required.

The power is fed through the static bypass switch, and in the event of exceeding pre-set input limits the UPS is ready to switch to double-conversion mode in under two milliseconds. In addition to extremely low losses, the ESS mode provides filtering against fast low-energy transients. It is simply the most advanced, most reliable, fastest-reacting energy-saver architecture available.

In addition to saving energy, this technology enhances the reliability of the system by reducing electrical stress in the power electronic components, extending the UPS life time and thus reducing total cost of ownership.

Eaton 93PR Efficiency in all modes



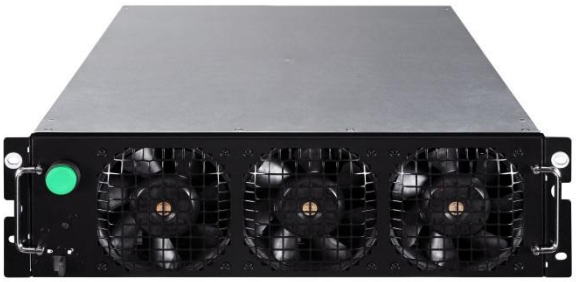
Optimised double conversion efficiency - Variable Module Management System (VMMS)

For applications where ESS may not be optimal, for example with very low quality mains, VMMS technology includes automatic variable power module management. The system automatically suspends and engages modules as appropriate, to optimise efficiency both at UPS and system level.

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 93PR UPS or in parallel systems, by suspending extra UPS capacity. This means not only greater efficiency at lower load levels, but optimum efficiency at all load levels.

Maximum double conversion efficiency

The 93PR still offers the highest double conversion efficiency in the market, reaching above 96%.



The 93PR 25kW UPM (Uninterruptible Power Module)

Highest power density

The unity power factor maximises the true available power of the 93PR. This means it can deliver up to 20% more real power than other UPSs in its class.

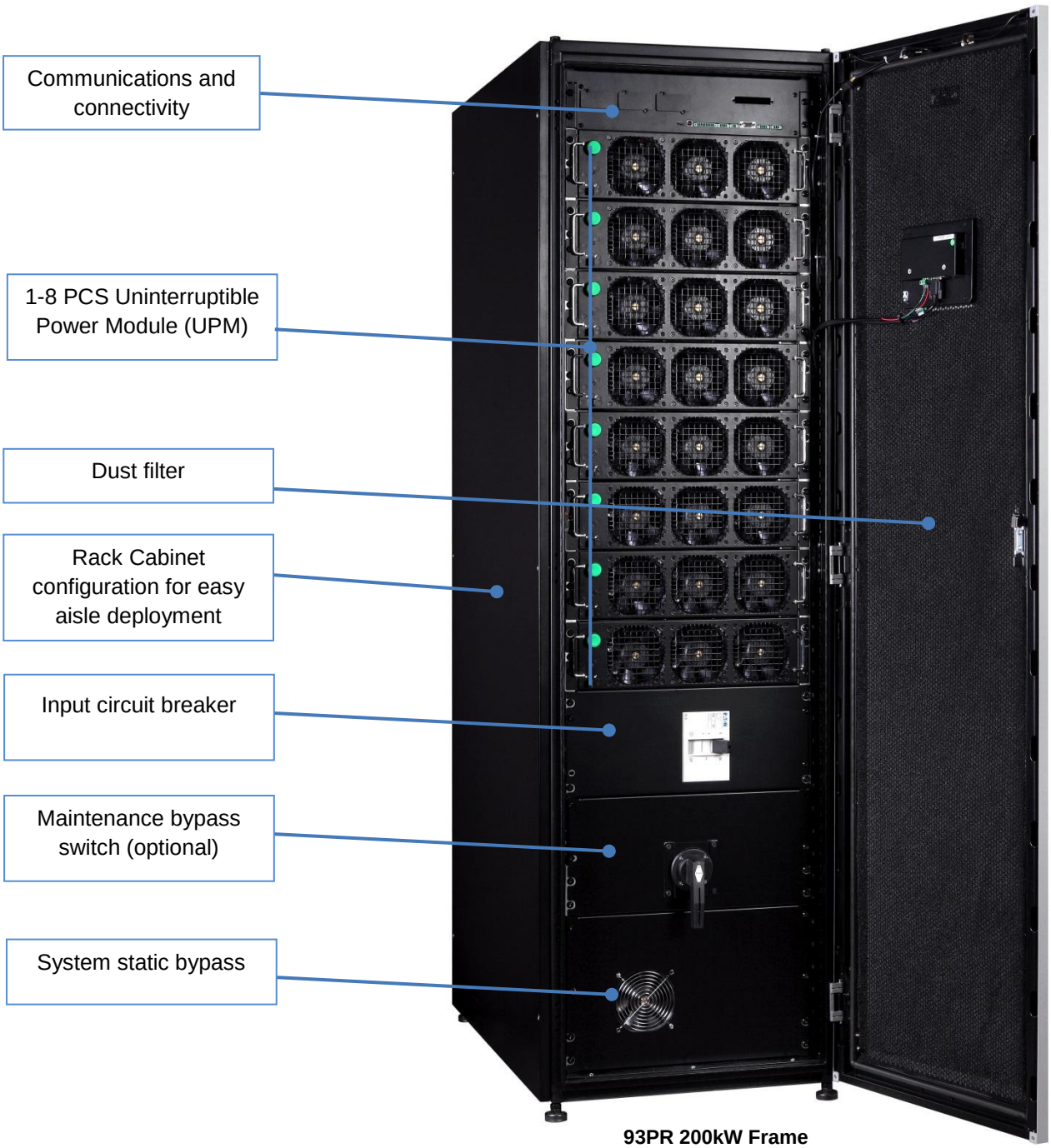
The 200kW frame can house an internal Maintenance Bypass Switch(MBS) or DC breaker

The highly scalable nature of the 93PR means that scaling up in response to increased demand takes minutes rather than hours. Scaling up can also be achieved without increasing the footprint – saving valuable floor space. The modular design allows for internal redundancy, which eliminates the need for an additional UPS for N+1 configurations.

External redundancy also improves scalability, by paralleling up to 8 frames for a total system size of up to 1600 kW.

Maximum Availability

Maximum availability is integral to business continuity, and integral to the design of the Eaton 93PR UPS. It ensures you can always access the power your mission-critical application requires.



93PR 200kW Frame

Hot swappable and hot scalable

Due its modular design, a 93PR power module can be replaced or added while another module continues protecting the load. This eliminates the need to go to bypass for module replacement or upgrading (MTTR: 0 minutes). Replacement and upgrade (N+1) operations typically take less than 10 minutes.

Centralised topology

The 93PR's centralised topology is ideal for scalable systems, as it provides full bypass capacity from day one, whereas modular designs with static switches in every power module can have a severe negative impact on the selectivity of the system due to undersized static bypass. This can compromise the availability of the overall system.

Take complete control

Managing and controlling your 93PR UPS is easy. Designed for the most advanced IT environments, the 93PR comes equipped with intuitive user interfaces, a large touchscreen LCD providing useful status information and back logs, and a full suite of power management and connectivity options.

The complete solution

The Eaton 93PR UPS is designed for the most advanced IT environments, and it comes with interfaces for Web and SNMP as standard.

In the event of an alert, the UPS system notifies users and administrators by email. If there's a prolonged power failure, the protected computer systems can be shut down smoothly using the Intelligent Power® Protector software also incorporated with the 93PR.

Your 93PR can be connected directly to your corporate network and the internet. This means you can then monitor and manage your UPS through a standard web browser.

Intelligent, intuitive, integral

The world-class Intelligent Power® Manager intelligent software solution of your 93PR UPS plugs into leading virtualisation management systems, including VMware vCenter, Microsoft SCVMM and Citrix XenCenter.

This user-friendly monitoring tool enables you to monitor and manage your UPS system as an integral part of your power infrastructure. It collects data through the network, then stores it in a database for viewing and analysis.

Information, access, ease of use

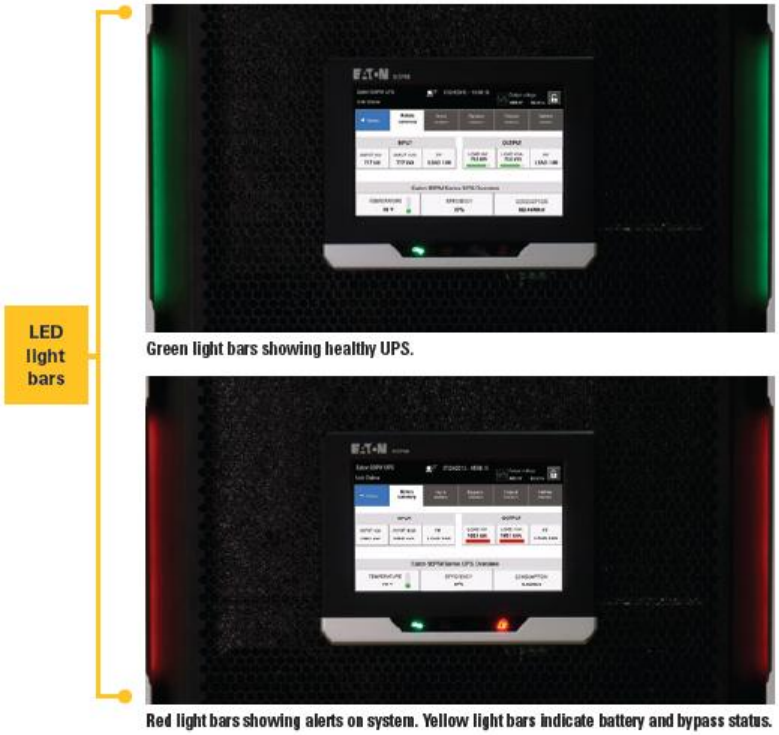
Intelligent Power Manager® (IPM) can be used to monitor and manage all Intelligent Power Protectors running in the network. This dramatically reduces the administrator's workload, and minimises the possibility of error.

The web-based interfaces of the Intelligent Power® software simplify usage, by allowing access from any computer in the LAN, as well as remotely via the internet. Power information is consolidated in the same tool used to monitor and manage physical and virtual servers, storage and networks.

In the event of power failure, IPM can trigger protective actions such as live migration of virtual machines, controlled shutdown, or disaster recovery.

vmware® READY

CITRIX® ready™



Green light bars showing healthy UPS.

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

Easy management

The 93PR provides easier access to detailed status information through its large, user-friendly 7" 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.

General								
UPS output power rating (1.0 p.f.)	25kW	50kW	75kW	100kW	125kW	150kW	175kW	200kW
Efficiency in double conversion mode	>96%							
Efficiency in Energy Saver System (ESS)	> 99%							
Static bypass rating	200kW							
External paralleling	up to 4 units with HotSync technology							
UPS topology	Double conversion							
UPS degree of protection	IP20							
Acoustic noise at 1 m, in	< 70 dBA in double conversion							
25 °C ambient temperature	< 55 dBA in ESS							
Altitude (max)	1000m above sea level at 40 °C. Maximum 2000m with 1% derating per each add. 100 m							
Input								
Rated input voltage	220/380 V, 230/400 V, 240/415 V 50/60 Hz							
Voltage tolerance:								
Rectifier input	187 to 276							
Bypass input	rated voltage -15% / +10%							
Rated input frequency	50 or 60 Hz, user configurable							
Frequency tolerance	40 to 72 Hz							
Input wiring	3 phase + neutral							
Input power factor	0.99							
Input ITHD	< 3%							
Rated input r.m.s current	25kW	50kW	75kW	100kW	125kW	150kW	175kW	200kW
380V	40 A	80 A	120 A	159 A	199 A	239 A	278 A	318 A
400V	38 A	76 A	114 A	151 A	189 A	227 A	264 A	302 A
415V	37 A	73 A	110 A	146 A	182 A	219 A	255 A	291 A
Soft start capability	Yes							
Internal backfeed protection	Optional							
Output								
Output wiring	3 phase + neutral							
Rated output voltage rating	220/380 V, 230/400 V, 240/415 V, configuratble							
Total voltage harmonic distortion	< 1% (100% linear load); < 5% (100% non-linear load)							
Output power factor	1.0							
Permitted load power factor	0.8 lagging to 0.8 leading							
Overload on inverter	10 min 102-110%, 60 sec 111-125%, 10 sec 126-150%, 300 ms > 150%.							
Overload on bypass	Continuous < 125%, 20 ms 1000%							
Battery								
Battery type	12V, VRLA							
Charging method	ABM technology or Float							
Temperature compensation	Optional							
Battery nominal voltage (VRLA)	480 V							
Battery quantity	36 to 44 blocks. Default is 40 blocks							
Charge current limit	Default 5A, configurable maximum 25A per UPM							
Battery start capability	Yes							
Communications								
Minislot	3 communication bays							
Network/SNMP interface	Yes, standard							
Serial ports	Built-in host and device USB							
Standard connectivity ports	Mini-slot ports for optional cards, Device USB and Host USB, RS-232 service port, relay output, 5 building alarm inputs and a dedicated EPO, Web and SNMP card							
Accessories								
	MiniSlot connectivity (Web/SNMP, ModBus/Jbus, Relay) External Battery Cabinet (EBC) Parallel Tie Cabinet (PTC) External Maintenance Bypass Switches (EMBS) External Battery Cabinet Breaker (EBCB)							
Compliance with standards								
Safety	IEC 62040-1							
EMC	IEC 62040-2							
Performance	IEC 62040-3							
Mechanical								
Weight without UPM	368 Kg							
UPS dimensions (W x D x H)	603 x 1013 x 2050 mm							

Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customised, integrated solutions to solve our customers' most critical challenges. Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority.

For more information, visit www.eaton.com/powerquality

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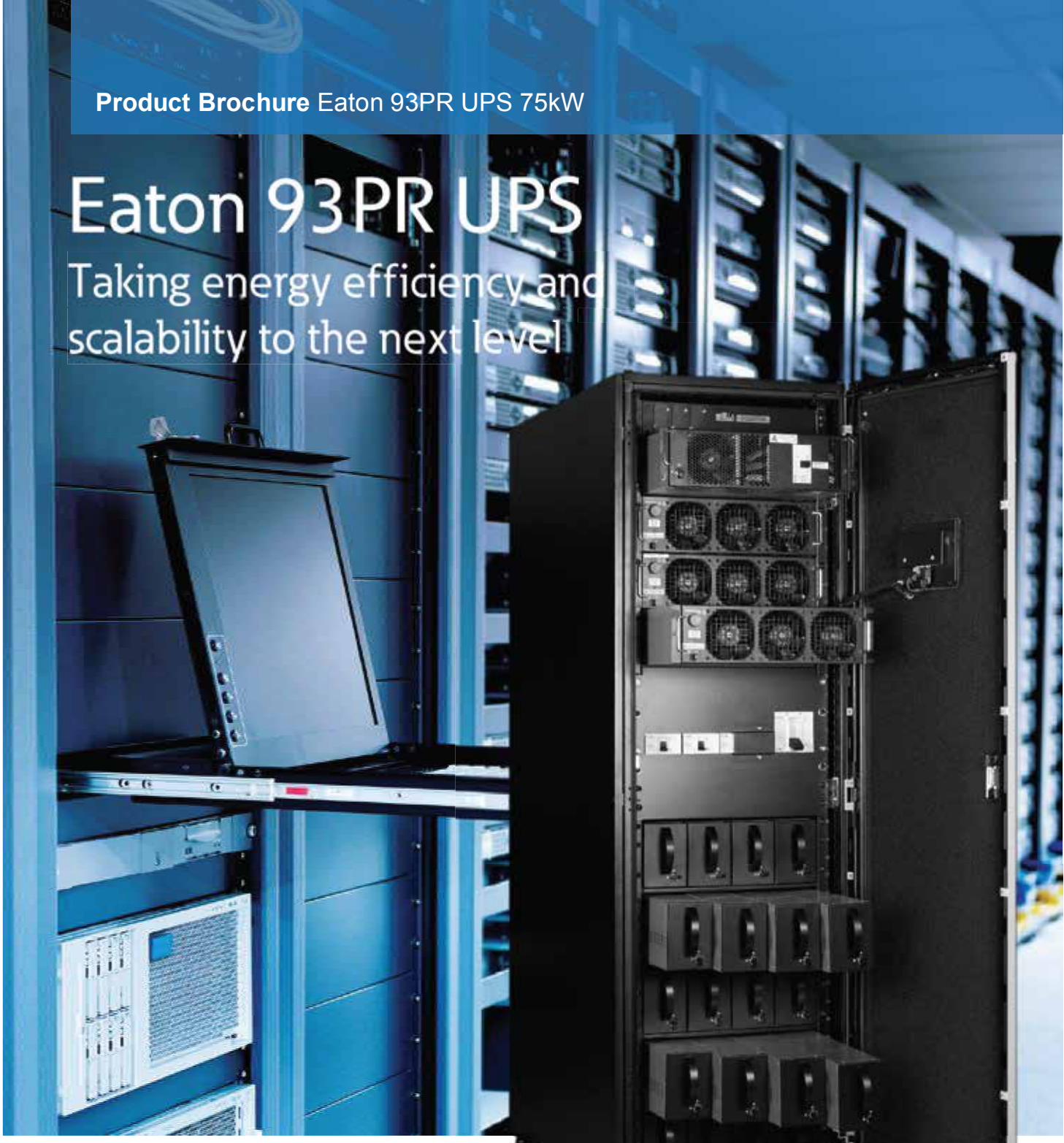
Product Brochure Eaton 93PR UPS 75kW

Eaton 93PR UPS

Taking energy efficiency and scalability to the next level



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Eaton 93PR UPS 75kW

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

The most advanced UPS in its power range, the Eaton 93PR is ideal for small to mid-sized data centres 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 is demanding even more efficient, resilient, scalable and safe power protection solutions.

The new levels of efficiency and scalability offered by the 93PR minimise Total Cost of Ownership while the safety and resiliency, both in infrastructure and IT layers, maximise availability and ensure business continuity.

All-round value

Available in 75kW frame sizes, the 93PR's modular de sign enables it to suit a wide range of requirements. And, whichever one you choose, you can be sure it will provide the lowest Total Cost of Ownership combined with maximum availability, for cost-efficient business continuity.

Ensuring that you can always access the power your mission-critical application requires – under all circumstances – without compromising business performance or safety, the 93PR is the most efficient, scalable, Cloud-ready and safe UPS you can choose.

Efficiency

With high efficiency being translated into reduced electrical and cooling losses, the 93PR helps to minimise operational expenditure costs, in addition to addressing the cost pressures resulting from commoditisation of IT services. Increased efficiency also leads to higher sustainability, through reduced carbon emissions.

Scalability

Scalability helps to optimise capital expenditure by only deploying additional equipment when necessary and providing additional flexibility to respond to your changing needs. The scalability of the 93PR also provides increased flexibility to accommodate the changing requirements of rapidly evolving technologies.

Safety

Ensuring safety in any electrical installation is a must. Safe hot-swappable design and in-built back-feed protection ensures safety and compliance with regulations.

Resiliency, virtualisation & cloud-readiness

The ability of a system to absorb faults and still remain in its desired operational state is paramount to minimising costly downtime. The 93PR takes resiliency to the next level by bridging electrical and IT infrastructures.

Maximum Energy Efficiency
Lowest TCO

The Eaton 93PR is simply the most efficient UPS in its class, offering the lowest Total Cost of Ownership. Thanks to Eaton's advanced algorithms and energy- saving features, the 93PR achieves up to 99% efficiency. This efficiency is well proven with installations in major datacentre hubs in the Asia Pacific region and around the world.

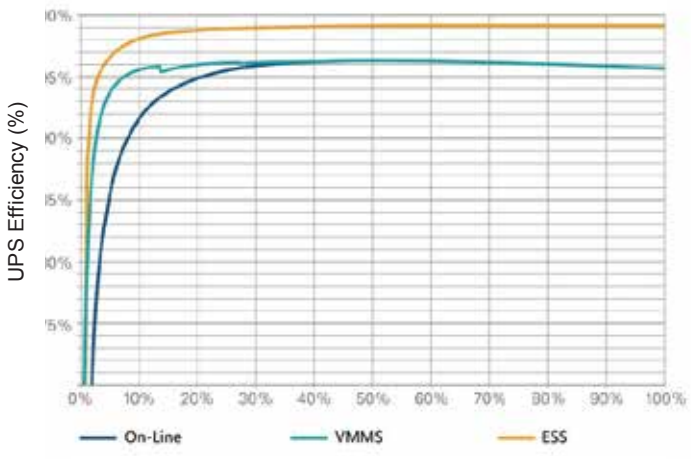
99% efficiency - Energy Saver System (ESS)

Improves the 93PR efficiency levels to 99%, by suspending the power modules when power conditioning is not required.

The power is fed through the static bypass switch, and in the event of exceeding pre-set input limits the UPS is ready to switch to double-conversion mode in under two milliseconds. In addition to extremely low losses, the ESS mode provides filtering against fast low-energy transients. It is simply the most advanced, most reliable, fastest-reacting energy-saver architecture available.

In addition to saving energy, this technology enhances the reliability of the system by reducing electrical stress in the power electronic components, extending the UPS life time and thus reducing total cost of ownership.

Eaton 93PR Efficiency in all modes



Load (% of nominal)

Optimised double conversion efficiency - Variable Module Management System (VMMS)

For applications where ESS may not be optimal, for example with very low quality mains, VMMS technology includes automatic variable power module management. The system automatically suspends and engages modules as appropriate, to optimise efficiency both at UPS and system level.

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 93PR UPS or in parallel systems, by suspending extra UPS capacity. This means not only greater efficiency at lower load levels, but optimum efficiency at all load levels.

Maximum double conversion efficiency

The 93PR still offers the highest double conversion efficiency in the market, reaching above 96%.

The 93PR 25kW UPM (Uninterruptible Power Module)

Highest power density

The unity power factor maximises the true available power of the 93PR. This means it can deliver up to 20% more real power than other UPSs in its class.

The 75kW frame house an internal Maintenance Bypass Switch(MBS), DC breaker (Internal Battery version), Fast-acting bypass fuse.

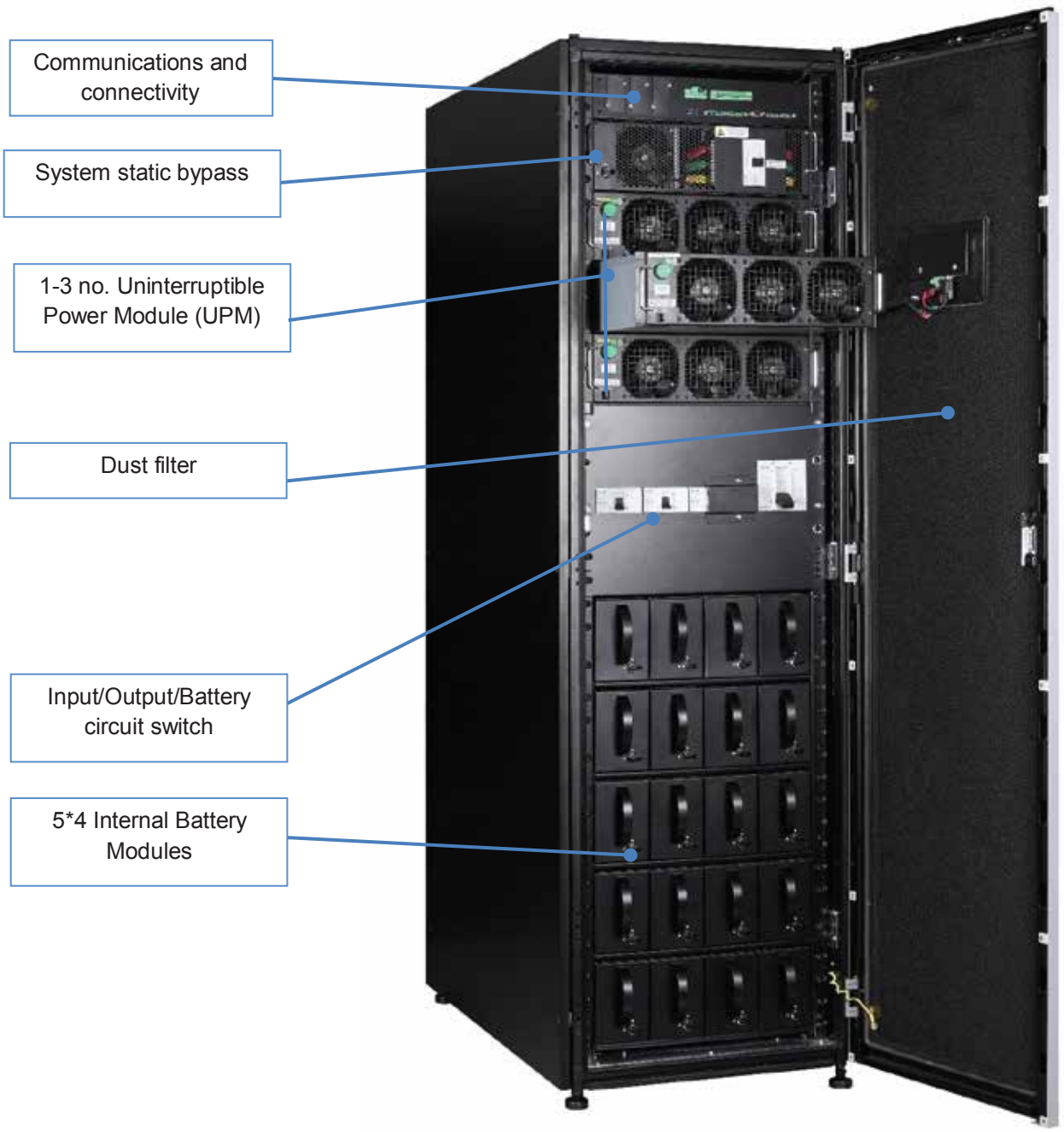
Maximum scalability

The highly scalable nature of the 93PR means that scaling up in response to increased demand takes minutes rather than hours. Scaling up can also be achieved without increasing the footprint – saving valuable floor space. The modular design allows for internal redundancy, which eliminates the need for an additional UPS for N+1 configurations.

External redundancy also improves scalability, by paralleling up to 8 frames for a total system size of up to 600 kW.

Maximum Availability

Maximum availability is integral to business continuity, and integral to the design of the Eaton 93P R UPS. It ensures you can always access the power your mission-critical application requires.



93PR 75kW Frame

Hot swappable and hot scalable

Due its modular design, a 93PR power module can be replaced or added while another module continues protecting the load. This eliminates the need to go to bypass for module replacement or upgrading (MTTR: 0 minutes). Replacement and upgrade (N+1) operations typically take less than 10 minutes.

Centralised topology

The 93PR's centralised topology is ideal for scalable systems, as it provides full bypass capacity from day one, whereas modular designs with static switches in every power module can have a severe negative impact on the selectivity of the system due to undersized static bypass. This can compromise the availability of the overall system.

Take complete control

Managing and controlling your 93PR UPS is easy. Designed for the most advanced IT environments, the 93PR comes equipped with intuitive user interfaces, a large touchscreen LCD providing useful status information and back logs, and a full suite of power management and connectivity options.

The complete solution

The Eaton 93PR UPS is designed for the most advanced IT environments, and it comes with interfaces for Web and SNMP as standard.

In the event of an alert, the UPS system notifies users and administrators by email. If there's a prolonged power failure, the protected computer systems can be shut down smoothly using the Intelligent Power® Protector software also incorporated with the 93PR.

Your 93PR can be connected directly to your corporate network and the internet. This means you can then monitor and manage your UPS through a standard web browser.

Intelligent, intuitive, integral

The world-class Intelligent Power® Manager intelligent software solution of your 93PR UPS plugs into leading virtualisation management systems, including VMware vCenter, Microsoft SCVMM and Citrix XenCenter.

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Information, access, ease of use

Intelligent Power Manager® (IPM) can be used to monitor and manage all Intelligent Power Protectors running in the network. This dramatically reduces the administrator's workload, and minimises the possibility of error.

The web-based interfaces of the Intelligent Power® software simplify usage, by allowing access from any computer in the LAN, as well as remotely via the internet. Power information is consolidated in the same tool used to monitor and manage physical and virtual servers, storage and networks.

In the event of power failure, IPM can trigger protective actions such as live migration of virtual machines, controlled shutdown, or disaster recovery.

Green light bars showing healthy UPS.

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

Easy management

The 93PR provides easier access to detailed status information through its large, user-friendly 7″ 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.

Eaton 93PR 25-50-75 kW Technical Specification sheet as per IEC 62040-3

GENERAL

Ratings	25 kW	50 kW	75 kW
Upgradability	Yes, up to 75kW		
External paralleling	Up to 4 units with HotSync® technology		
UPS topology	IGBT PWM Double conversion		
UPS performance classification	VFI-SS-111		

ENVIRONMENTAL PARAMETER

Ratings	25 kW	50 kW	75 kW
"Acoustic noise at 1 m,"	"< 65 dBA in double conversion"		
"Ambient service temperature range"	"0 °C to + 40 °C without output power derating"		
Relative humidity range	5 to 95%, no condensation allowed		
Maximum service altitude	"1000 m (3300 ft) above sea level at 40 °C Maximum 2000 m (6600 ft) with 1 % derating per each add. 100 m"		
RoHS/WEEE compliancy	Yes		

INPUT CHARACTERISTICS

Ratings	25 kW	50 kW	75 kW
Rated input voltage	220/380 V; 230/400 V; 240/415 V		
Voltage tolerance Rectifier input	305 to 478 V		
Voltage tolerance Bypass input	rated voltage -15% / +10%		
Rated input frequency Frequency tolerance	50 or 60 Hz, user configurable 40 to 72 Hz		
"Number of input phases"	"3 phases + neutral"		
Input power factor, double conversion 100% load	> 0.99		
Rated input r.m.s. current			
380V	40 A	80 A	120 A
400V	38 A	76 A	114 A
415V	37 A	73 A	110 A
Maximum input r.m.s. current	45 A	90 A	135 A
Input current distortion at rated input current	"< 3%, 100% load"		
Rectifier ramp-up, rectifier start and load step	"5 A/s (default), configurable. Minimum 1 A/s."		
Back feed protection	Option, for rectifier and bypass lines		
Genset Compatibility	1.5 x Rated UPS Capacity		

BYPASS CHARACTERISTICS

Ratings	25 kW	50 kW	75 kW
Type of bypass	Static		
Bypass rating	75kW		
Bypass voltage range	"220/380 V; 230/400 V; 240/415 V tolerance -15% / +10% of rated voltage"		
Transfer time break	No break 2 ms typical		
Maintenance bypass	Internal Standard		
Bypass thyristor i2t value	145000 A^2s		

COMMUNICATION CIRCUITS

Ratings	25 kW	50 kW	75 kW
Standard connectivity ports	"3 Mini-slot ports for optional cards, USB, RS-232 service port, relay output, 5 building alarm inputs and a dedicated EPO Web and SNMP card"		
Complete list of indications and interface devices	See User's and Installation Guide		

COMPLIANCE WITH STANDARDS

Ratings	25 kW	50 kW	75 kW
Safety Access as per IEC 62040-1	Restricted access		
Degree of protection as per IEC 62040-1	IP 20; protection against medium sized foreign matter (incl. finger), protection against vertically dripping water.		
Electromagnetic Compatibility Immunity Emissions as per IEC 62040-2	EMC Category C3 EMC Category C3		

MECHANICAL PARAMETER

Ratings	25 kW	50 kW	75 kW
UPS dimensions (W x D x H)	600 x 1100 x 2020 mm		
Gross Weight, UPS frame w/o UPM	"265kg (N.W) 375kg (C.W) 9106-9292 339kg (N.W) 449kg (C.W) 9106-9295"		
UPS Cable entry	Rear top (default) & rear bottom (optional)		
UPS Degree of protection	IP 20		
UPS colour	Black; RAL 9005		
Mean Time To Repair (MTTR)	< 10 minutes		

EFFICIENCY & HEAT DISSIPATION

Ratings	25 kW	50 kW	75 kW
Efficiency in double-conversion, rated linear load			
100% load	95.8%	95.8%	95.8%
75% load	96.1%	96.1%	96.1%
50% load	96.4%	96.4%	96.4%
25% load	96.0%	96.0%	96.0%
Heat dissipation (watt) in double conversion			
100% load	1906	2192	3288
75% load	761	1522	2283
50% load	467	934	1400
25% load	260	521	781
Efficiency in ESS, rated linear load			
100% load	99%		
75% load	99.1%		

OUTPUT CHARACTERISTICS

Ratings	25 kW	50 kW	75 kW
Number of output phases	3 phases + neutral		
Crest factor	3:1		
Rated output voltage	220/380 V; 230/400 V; 240/415 V, configurable		
Output voltage variation, steady state	< 1%		
Rated output frequency Output frequency variation Slew rate	"50 or 60 Hz, configurable± 0,1 Hz 0.8 - 1 Hz/s"		
Rated output power	25 kW / 25 kVA	50 kW / 50 kVA	75 kW / 75 kVA
Overload capability On inverter	10 min 105-110% load 60 sec 111-125% load 10 sec 126-150% load 300 ms >150% load		
Load pow er factor	1.0		
Rated Permitted range	0.8 lagging to 0.8 leading		

BATTERY CHARACTERISTICS

Ratings	25 kW	50 kW	75 kW
Battery technology	12 V, VRLA		
Battery quantity	"40 to 42 blocks, 240 to 252 cells per battery string"		
Battery voltage	480 to 504 V, default 480V		
Charge current limit	Default 4A, configurable, maximum 25A per UPM with derating to 60% Capacity with Charger current increamental		
Battery start option	Yes		

Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customised, integrated solutions to solve our customers' most critical challenges. Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority.

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