

Product brochure
Eaton 93E-HE UPS 80-500kVA

Eaton 93E-HE UPS

Practical and versatile power protection
ready to drive your goals.

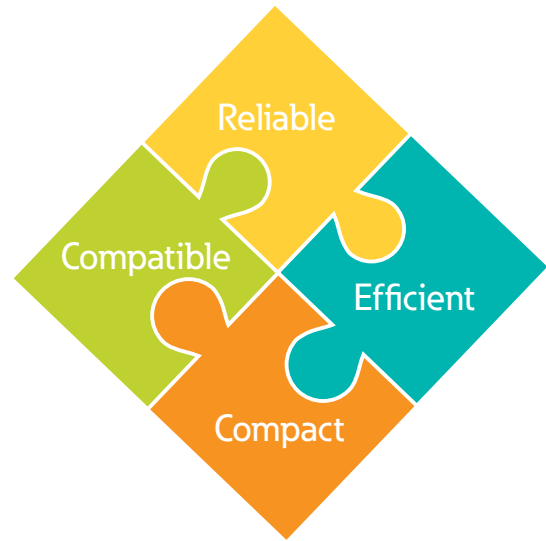


EATON

Powering Business Worldwide

Eaton 93E-HE Practical and versatile

Eaton 93E-HE UPS provides a vital power protection for ever-expanding loads in versatile electrical and IT applications. Facilitating lower Total Cost of Ownership (TCO) through a combination of energy-efficiency, high reliability and a compact footprint, Eaton 93E-HE is the ideal solution for small to medium-sized data centers and other applications demanding reliable power protection.



POWER RATING

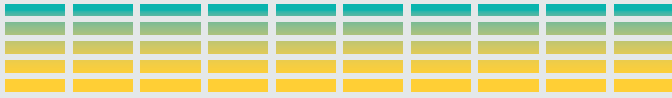
80-500 kVA

EFFICIENCY up to

96%



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 93E-HE belongs to our long-line family of market-leading, technologically advanced UPSs for versatile applications.

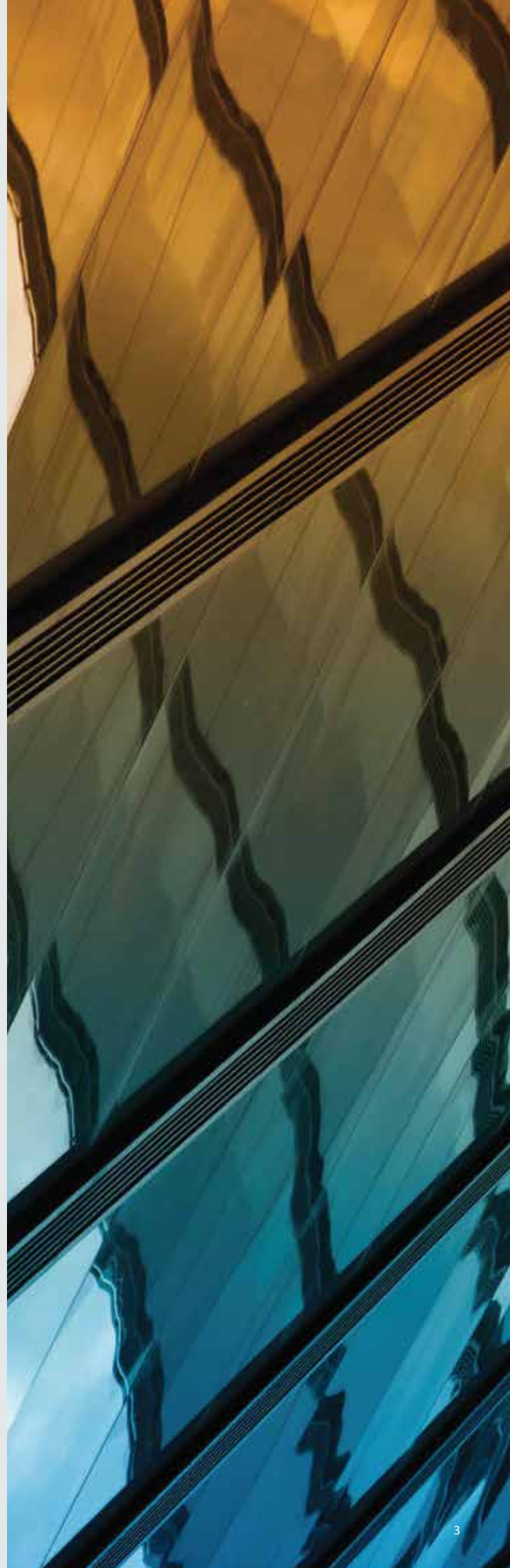
Your versatile UPS

Whatever your application, Eaton 93E-HE UPS offers the power performance, reliability, compatibility and efficiency you need.

It is ideal for:

- Industrial automation equipment
- Healthcare
- Small and Medium data centers
- Financial services
- Building management
- Telecommunications
- Government

Eaton's multiple solutions help you drive your goals so your business can achieve maximum excellence.





Reliable

By the merits of its long experience, Eaton has developed a design and manufacturing process that is proven to be reliable. Moreover, regardless of application, Eaton's UPSs benefit from the wide service network and monitoring options that will deliver peace of mind.

Safe and easy installation

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 UPS safety standard (IEC/EN 62040 Part 1) requires backfeed isolation device to be connected to the UPS static bypass path due to human safety under thyristor short circuit condition. **Unlike many in the market, Eaton UPSs come with an internal backfeed isolation contactor integrated in the unit.** This also guarantees that a shorted thyristor will have no effect on the double conversion operation of the UPS, removing the single point of failure. All Eaton 93E-HE models include an internal backfeed protection device, ensuring compliance and eliminating any unnecessary costs and effort installing an external device.

Reliable load sharing

Patented Eaton Hot Sync® technology makes it possible to parallel up to four UPSs for increased redundancy or capacity. The technology enables load sharing without any communication between the units, thus eliminating a single point of failure.

Increased battery life

Eaton's Advanced Battery Management (ABM) 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 a widely used and accepted technology with a 20-year proven track record.

At your service everywhere

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 110 Eaton field engineers operating across India – 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.

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.

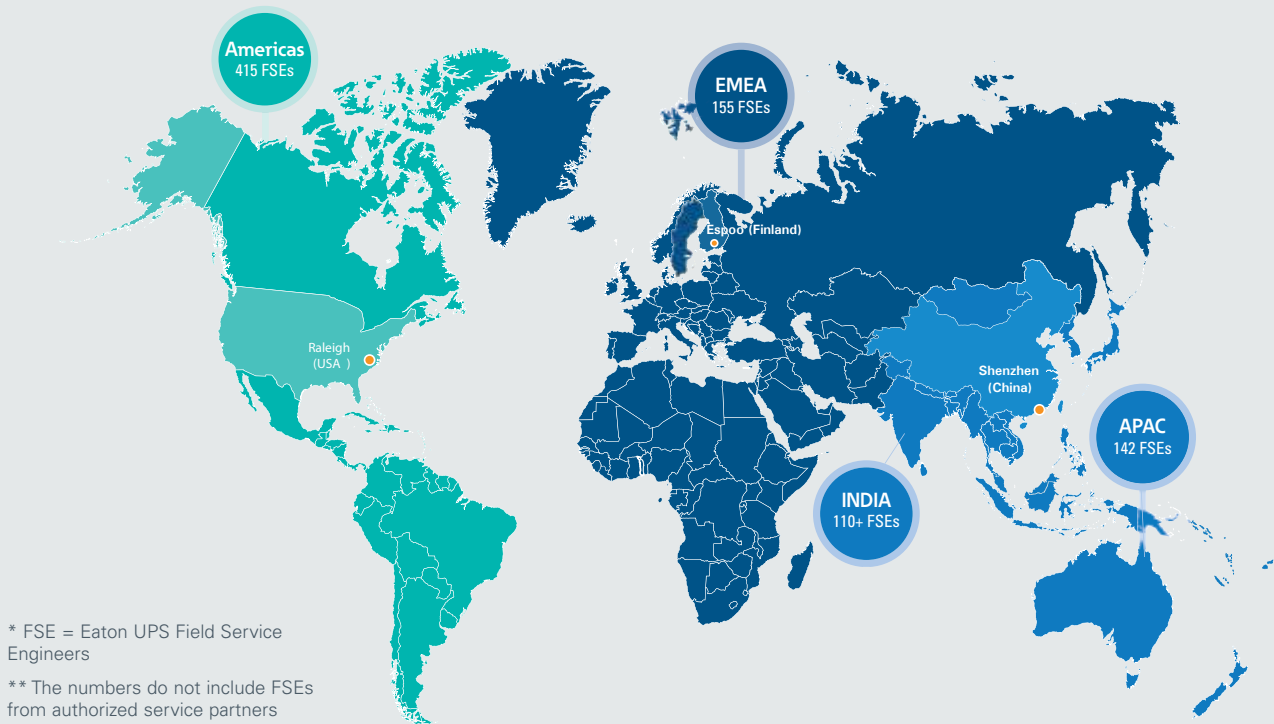
Move to a 24/7 Remote Service

We can offer 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 is country-dependent. Please contact your Eaton service office to check the local agreements.



* FSE = Eaton UPS Field Service Engineers

** The numbers do not include FSEs from authorized service partners

More intelligence

Eaton 93E-HE is an intelligent UPS, which is both virtualization and cloud-ready. The LCD graphically displays the UPS status and offers easy access to measurements, controls and settings in multiple languages.

Single pane of glass

Utilizing Eaton's Intelligent Power Software (Intelligent Power Manager – IPM – and Intelligent Power Protector – IPP), Eaton 93E-HE integrates with leading virtualization and storage platforms, and allows 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 virtualization management application, and Eaton 93E-HE will take the resiliency of the system to the next level, by bridging the electrical and IT infrastructures.



IPM provides several options to ensure business continuity, e.g.:

- Load shedding: non-critical services can be suspended or gracefully shut down. By reducing the load to 50%, the UPS will have 150% more runtime on batteries
- Migration of critical applications to an unaffected host



Efficient

Eaton minimizes operational expenditure with higher efficiency, which also enhances higher sustainability, through reduced carbon emissions.

Double conversion
EFFICIENCY up to

96%

Double conversion

Double conversion provides the highest level of protection available by isolating the output power from all input anomalies. This allows the 93E-HE to consistently provide clean and conditioned power to the load. A high double conversion efficiency of up to 96% translates to reduced power loss which leads to higher energy conservation.

High-efficiency mode

With a transformer-free design and sophisticated sensing and control circuitry, Eaton 93E-HE is capable of achieving up to a **99%** high-efficiency mode rating, which makes it one of the most energy-efficient UPSs in its class - and it still provides maximum load protection. Unlike most high-efficiency UPSs, Eaton 93E-HE provides surge suppression for the load and switches back to double-conversion operation in less than 4ms.

Savings in your pocket

Eaton designs its UPSs with a low total cost of ownership in mind. With Eaton's **TCO calculator**, the value of an Eaton UPS can be quantified and the total cost compared to that of different UPSs. Check your potential savings with either the web version and the mobile application.



Find out more at
eaton.eu/TCO





Compatible

UPSs are usually complimented with generators for the continuous power supply of critical equipment. The compatibility of the electrical characteristics between them guarantees their harmony.

Active power factor correction (PFC) provides 0.99 input power factor and <3% ITHD, thus eliminating interference with other critical equipment in the same network and enhancing compatibility with generators. Eaton 93E-HE is optimized for protecting modern 0.9 p.f. rated IT equipment without the need to oversize.

Compact

To overcome the rising cost of storage and to exploit limited spaces, the footprint of a UPS plays an important role in maximizing the potential of every inch.

Small footprint occupies minimal floor space:

- Up to 30% smaller than similar competitive solutions
- 600 mm wide UPS cabinet enables seamless "in-row" integration with IT racks

30% SMALLER
than similar competitive solutions



Eaton 93E-HE 80-500kVA HE UPS Technical Specification as per IEC62040-3

GENERAL

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
kVA/kW Rating (Default, @40°C)	80/72	100/90	120/108	160/144	200/180	300/270	400/360	500/450
kVA/kW Rating (ETO, @30°C)	80/80	100/100	120/120	160/160	200/200	300/300	400/400	500/500
kVA/kW Rating (ETO, @45°C)	80/64	100/80	120/96	160/128	200/160	300/240	400/320	500/400
UPS Topology	Double Conversion, IGBT Converters							
Performance classification	IEC62040-3							
UPS Dimensions: WxDxH (mm)	600 x 800 x 1880			600 x 830 x 1880		1600 x 820 x 1880		
Degree of protection	IP20, with front door mounted washable dust filter(IP 21 optional)							
Cabinet colour	Black, RAL 9005							
Cable entry	Bottom/Front or Rear, optional Top entry kit			Bottom/Rear, optional top entry kit		Bottom or Top		
Weight (kg) without batteries	273		299		427		1020	
							1044	

ELECTRICAL INPUT CHARACTERISTICS

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
Power Distribution System compatibility	TN, TN-S, TN-C, TN-C-S, TT (Three-phase, four-wire + PE)							
Rated input voltage and voltage tolerance	"Rectifier: 230/400Vac nominal (220/380, 240/415 Selectable) 190/330–276/478V (-15%, +20%) at 100% load, 126/201-276/478V (-50%, +20%) at 50% load Bypass: 3 x 230/400V nominal (220/380, 240/415 Selectable) 207/359 – 253/438V (±10% of nominal, selectable up to ±20%)"							
Operating frequency / tolerance	50 or 60Hz; Tolerance 40-72Hz							
Input current distortion	<2% THDi at rated linear load, <5% THDi at >50% of rated load; <3% THDi rated non-linear load							
Input power factor	0.99pf at 100% load							
Inrush current	≤120% of rated current for ≤2 cycles							
Number of input phases	3 phases + Neutral + PE (3 phase input)							
Rated rectifier input current (rms @ 400V)	120A	150A	180A	240A	300A	450A	600A	750A
Maximum rectifier input current (rms @ 400V)	131A	164A	197A	262A	327A	490A	628A	831A
Bypass input current (rms @ 400V) Recommended/Max	115/ 133A	144/ 166A	173/ 199A	231/ 266A	289/ 332A	433/ 498A	577/ 664A	722/ 830A

BYPASS CHARACTERISTICS

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
Automatic bypass	"Static bypass switch, continuously rated", no break transfer *bypass capable of 115% continuous load"							
Automatic bypass rating	100kVA		120kVA		200kVA		500kVA	
Automatic bypass SCR i2t value	275,000 A²s			450,000 A²s		1805,000 A²s		1805,000 A²s
Back-feed protection	Optional Internal back-feed contactor							
Separate bypass input feed	Standard (single feed cable links supplied for field fitting)							
Manual bypass switch (internal)	Inbuilt			Optional				

ENVIRONMENTAL PARAMETER

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
Ambient service temperature	UPS: 0 to +40°C							
Maximum service altitude	1000m above sea level. Maximum 2000m with 1% de-rating per each additional 100m above 1000m							
Relative humidity	5 to 95%, no condensation allowed							
Acoustic noise at 1m (ISO7779)	≤62dB @ 75% Load		≤65dB @ 75% Load			≤72dB @ 75% Load		

USER INTERFACE & COMMUNICATIONS PARAMETER

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
Display	114mm x 64mm 5" Graphical LCD with blue backlight, 4x LEDs for notice and alarm							
Standard Communication Ports	2x Mini-Slot, 1x Emergency Power Off input (NC or NO), 3x Building Alarm inputs, 1x RS232 & 1x USB (exclusively for service tool use)							
Optional Communication Ports	Mini-Slot cards: Web/SNMP, Relay/RS232, Industrial Relay, ModBus							

ELECTRICAL OUTPUT CHARACTERISTICS - NORMAL MODE

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
Rated output voltage	230/400 Vac, three phase, (220/380, 240/415 selectable)							
Output voltage variation	+/-1% Balanced static load, +/-6% with 5ms recovery from 10% to 90% load step, +/-5% Balanced dynamic load (EN62040-3)							
Crest factor	3:1							
Rated output frequency	50 Hz (default) or 60 Hz							
Total voltage distortion	<1.5% with linear load, <5% with non-linear load defined according to EN62040-3							
Short circuit capability, <400ms	400A	400A	480A	800A	800A	1500A	1500A	2000A
Overload capacity w/out bypass	102–110% load 60mins @ 30°C; 111-125% load 10 minutes, 126–150% load 1 minute, >151% load 500ms @ 40°C							
Overload capacity with bypass	"115% load continuous, 1000% for 20ms at 40°C and ≤1000m altitude Note: Selected external Bypass fuses or breaker may limit the overload capability"							
Load power factor range	0.7 lagging to 0.9 leading without de-rating							
Range of frequency synchronisation with bypass	+/-3Hz/s default, up to 7Hz/s user settable for single UPS, up to 0.5 Hz/s for parallel UPS					0.8Hz/s		
Efficiency under Double Conversion Mode	96.0%							
Efficiency under ESS Mode	99.0%							

BATTERY CHARACTERISTICS

Construction	80kVA	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA
Battery nominal voltage	216 to 252 Cells, 240 Cells Default (Continual selectable)							
Float charge voltage	216/228/240 x 2.30V = 497/524/552V							
Maximum charge voltage	216/228/240 x 2.35V = 508/536/564V							
Battery cut off voltage	216 Cells = 1.85V/Cell, 228 Cells = 1.75V/Cell, 240 Cells = 1.67V/Cell							
Restored energy time to 90%	Maximum 10 hours recommended (dependant on battery size)							
Charging current (at full load)	20A(default), 40A(max)		40A (default), 80A(max)		60A (default), 120A(max)		75A (default), 120A(max)	
							100A (default), 160A(max)	
Battery recharge profile	Advanced Battery Management (ABM®) = 90% resting, 10% floating/charging (typical)							