

# Eaton 93PR 25-200kW Scalable UPS Technical Specification

CONSTRUCTION	25/200 kW	50/200 kW	75/100 kW	100/200 kW	125/200 kW	150/200 kW	175/200 kW	200/200 kW
Model	93PR-25(200)	93PR-50(200)	93PR-75(200)	93PR-100(200)	93PR-125(200)	93PR-150(200)	93PR-175(200)	93PR-200(200)
Initial Rating (all operating modes)	25kVA/25kW	50kVA/50kW	75kVA/75kW	100kVA/100kW	125kVA/125kW	150kVA/150kW	175kVA/175kW	200kVA/200kW
Initial Internal Redundancy rating	-	25kW N+1	50kW N+1	75kW N+1	100kW N+1	125kW N+1	175kW N+1	-
Configured Upgradability	Up to 200kW							
External Paralleling	Up to 4 units with Hot Sync® technology							
UPS Topology	Double Conversion, IGBT Converters, three level converters							
Performance classification	VFI-SS-111							
UPS Dimensions: W x D x H (mm)	608 x 1011 x 2050							
Weight (kg) excluding batteries	396	424	452	480	508	536	564	592
Degree of protection	IP20, with front door washable dust filter							
Cabinet colour	Black, RAL 9005							
Switchgear (Internal)	Optional Battery Breaker, Optional Maintenance Bypass							
Cable entry	Bottom/Rear or Top/Rear							

ENVIRONMENT	
Ambient storage temperature	Range of -25 to +55°C in the protective package
Ambient service temperature	Power electronics part: 0 to +40°C without de-rating Battery part: +5 to 25°C without reducing battery life
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	<70dBA at 100% load fully configured capacity
Electromagnetic Compatibility	Immunity and emission to IEC/EN 62040-2

USER INTERFACE & COMMUNICATIONS	
Display	7" Touchscreen Colour display and 4 separate summary LEDs for system status, door mounted LED bars for long range view of system status
Standard Communication Ports	3x Mini-Slot , 1x EPO input (NC or NO), 1x Relay output (NO/NC), 5x Building Alarm inputs, 1x USB, 1x RS232 Service Port
Optional Communication Ports	Mini-Slot cards: Web/SNMP, Relay/RS232, Industrial Relay, ModBus, Power Xpert

ELECTRICAL INPUT CHARACTERISTICS	
Earthing system compatibility	TN, TN-S, TN-C, TN-C-S, TT (Three-phase, four-wire + PE), IT – optional Three Phase, three-wire
Rated input voltage and voltage tolerance	<u>Rectifier:</u> 230/400Vac nominal (220/380, 240/415 Selectable) Tolerance: 196/340–276/480V (-15%,+20%) at 100% load 138/240–276/480V (-40%,+20%) at 50% load without battery discharge  <u>Bypass:</u> 230/400Vac nominal (220/380, 240/415 Selectable) Tolerance: 196/340 – 253/438V (-15%, +10% of nominal)
Operating frequency / tolerance	50 or 60Hz; Tolerance 40-72Hz
Input current distortion	<3% THDi (Linear load condition at rated input current)
Input power factor	0.99pf
Inrush current	<100% of rated current. Rectifier ramp-up 10A/s (default), configurable, min.1A/s
Number of input phases	3 phases + Neutral
Rectifier input current @400V Initial/Fully Configured (rms)	Rated: 38/302A 76/302A 114/302A 151/302A 189/302A 227/302A 264/302A 302A Max.: 45/360A 90/360A 135/360A 180/360A 225/360A 270/360A 315/360A 360A
Bypass input current @400V Recommended/Maximum (rms)	36/45A 72/90A 108/135A 144/180A 180/225A 216/270A 252/315A 288/360A

ELECTRICAL OUTPUT CHARACTERISTICS - NORMAL MODE	
Rated output voltage	220/380, 230/400, 240/415Vac, three phase
Output voltage variation	<1% static load, 4% with 100ms recovery from 100% load step
Crest factor	3:1
Rated output frequency	50Hz (default) or 60Hz
Output frequency variation	±0.1Hz with slew rate 1Hz/s
Total output voltage distortion	<1% linear load, <5% non-linear load
Short circuit capability	2 x Rated output current
Overload capacity without bypass	At 40°C: 10min >102–110% load, 1min >111–125% load, 10sec 126-150% load, 300ms >150% load At 35°C: Continuous <100-110%, 10min >110–125% load, 1min >125–150% load, 300ms >150% load

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Overload capacity with bypass	Continuous >100–125% load, 10ms 1000% load *Selected external Bypass fuses or breaker may limit the overload capability								
Load power factor range	0.8 lagging to 0.8 leading without de-rating								
Range of frequency sync with bypass	±4Hz as default. User settable 0.5 to 5 Hz								
<b>ELECTRICAL OUTPUT CHARACTERISTICS - STORED ENERGY MODE</b>									
Transfer to/from stored energy	No break								
Rated output voltage	220/380, 230/400, 240/415Vac, three phase								
Output voltage variation	<2% static load, 4% with 100ms recovery from 100% load step								
Crest factor	3:1								
Rated peak output voltage	325V, ±20V								
Rated output frequency	50Hz (default) or 60Hz								
Output frequency variation	±0.005Hz (single module), ±0.07Hz (Parallel system)								
Total output voltage distortion	5%								
Short circuit capability	2 x Rated output current								
Overload capability	10min >102–110% load, 1min >111–125% load, 300ms >125% load								
Load power factor range	0.8 lagging to 0.8 leading without de-rating								
Number of output phases	3 Phase								
<b>EFFICIENCY (Input/Output, initial load)</b>									
Linear Load Efficiency, Double Conversion Mode @ 400V/50Hz	100% load:	95.0%	95.0%	95.0%	95.5%	95.5%	95.5%	95.5%	95.5%
	75% load:	95.0%	95.0%	95.0%	95.5%	95.5%	95.5%	95.5%	95.5%
	50% load:	95.5%	95.5%	95.5%	96.0%	96.0%	96.0%	96.0%	96.0%
	25% load:	94.5%	94.5%	94.5%	95.0%	95.0%	95.0%	95.0%	95.0%
Linear Load Efficiency, ESS Mode @ 400V/50Hz	100% load:	98%	98%	98%	99%	99%	99%	99%	99%
	75% load:	98%	98%	98%	99%	99%	99%	99%	99%
<b>BYPASS CHARACTERISTICS</b>									
Automatic bypass	Static bypass switch, continuously rated, no break transfer								
Automatic bypass nominal rating	200kW								
Automatic bypass thyristor $i^2t$ value	69,500 A <sup>2</sup> s								
Back-feed protection	Standard internal back-feed contactor								
Separate bypass input feed	Standard (single feed cable links fitted on site)								
Manual bypass switch (internal)	Optional								
<b>ESS (Energy Saver System) MODE CHARACTERISTICS</b>									
Performance classification	VFD, transferring to VFI (Double Conversion mode) if limits are exceeded								
Transfer time to double conversion	Mains available: No break (0ms), Mains failure: 2ms typical								
Acceptable output voltage variation	±10% of nominal voltage								
Acceptable output freq. variation	±3Hz								
UPS Audible Noise	<55dBA @ 1m in 25°C ambient temperature								
Storm Detection	UPS locks into double-conversion mode when three power line disturbances have forced the unit to double-conversion three times (user adjustable) within a one-hour period (user adjustable)								
High Alert mode	UPS will stay on double-conversion for one hour (user adjustable), after which the unit will automatically return to operate in ESS mode								
<b>BATTERY</b>									
Battery nominal voltage	432V (36 x 12V, 216 Cells) or 480V (40 x 12V, 240 Cells) Default = 480V								
Float charge voltage	240 x 2.30V = 552V or 216 x 2.30V = 497V								
Maximum charge voltage	240 x 2.35V = 564V or 216 x 2.35V = 508V								
Battery technology	Valve Regulated Lead Acid, 5 or 10 year design life								
Stored energy time	See separate information								
Maximum Charging current (Default/Maximum)	5/25A	10/50A	15/75A	20/100A	25/125A	30/150A	35/175A	40/200A	
Restored energy time to 90%	Typically 10 x Discharge time (dependent on configuration)								
Battery recharge profile	Advanced Battery Management (ABM <sup>®</sup> ) = 90% resting, 10% floating/charging								
Battery cut off voltage	1.67 to 1.75 VPC, Configurable or automatic (load adaptive)								
Battery start option	Yes, standard								