Eaton 93PM 80-200kW Standard UPS Technical Specification

	80kW	100kW	120kW	150kW	160kW	200kW
Model	93PM-80(100)	93PM-100(100)	93PM-120(150)	93PM-150(150)	93PM-160(200)	93PM-200(200)
Rating (all operating modes)	80kVA/ 80kW	100kVA/ 100kW	120kVA/ 120kW	150kVA/ 150kW	160kVA/ 160kW	200kVA/ 200kW
Internal Redundancy rating	40kW N+1	50kW N+1	80kW N+1	100kW N+1	120kW N+1	150kW N+1
Standard Upgradability	100kW	-	150kW	-	200kW	-
Configurable Upgradability	200kW (Pre-configured for scalability – refer to separate specification)					
UPS Topology	Double Conversion, IGBT Converters, three level Inverter					
Performance classification	VFI-SS-111					
UPS Dimensions: W x D x H (mm)	560 x 914 x 1876				760 x 914 x 1876	
Weight (kg) without batteries	338		438		556	
Degree of protection	IP21, with front door washable dust filter					
Cabinet colour	Black, RAL 9005					
Switchgear (Internal)	Optional Input Breaker, Optional Battery Breaker, Optional Maintenance Bypass Switch				External only	
Cable entry	Bottom/Front or Rear, optional Top entry kit				Top/Bottom or 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	<65dBA at 100% load					
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					
Rated input voltage and voltage tolerance	Rectifier: 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 Bypass: 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 @ 20-100% load, >0.95 @ 10-20% load					
Inrush current	≤150A	≤150A	≤180A	≤180A	≤380A	≤380A
Rectifier ramp-up, rectifier start and load step	<100% of rated current. Rectifier ramp-up 10A/s (default), configurable, min.1A/s					
Number of input phases	3 phases + Neutral					
Rated rectifier input current @ 400V	121A rms	151A rms	181A rms	226A rms	241A rms	301A rms
Max. rectifier input current	200A rms	200A rms	300A rms	300A rms	400A rms	400A rms
Bypass input current (rms @ 400V) Recommended/Maximum	116A/138A	145A/172A	174A/206A	218A/258A	231A/275A	289A/344A
ELECTRICAL OUTPUT CHARACTERISTICS - NORMAL MODE						
Rated output voltage	220/380, 230/400, 240/415Vac, three phase					
Output voltage variation	<1% static load, 4% with 50ms 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					

Eaton 93PM 80-200kW Standard UPS Technical Specification

		80kW	100kW	120kW	150kW	160kW	200kW
Total output voltage distortion		<1% linear load, <5% non-linear load					
Short circuit capability		345A 400ms	345A 400ms	510A 400ms	510A 400ms	670A 400ms	670A 400ms
Fault clearing capability (without bypass)		35A gL/gG fuse		63A gL/gG fuse			
Overload capacity without bypass		10min >102–110% load, 1min >111–125% load, 10sec 126-150% load, 300ms >150% load					
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					
ELECTRICAL OUTPUT CHARACTERISTICS - STORED ENERGY MODE							
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 50ms 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		345A 400ms	345A 400ms	510A 400ms	510A 400ms	670A 400ms	670A 400ms
Fault clearing capability		35A gL/gG fuse		63A gL/gG fuse			
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					
EFFICIENCY (Input/Output)							
Linear Load Efficiency, Double Conversion Mode @ 400V/50Hz	100% load:	96.6%	96.4%	96.7%	96.5%	96.6%	96.4%
	75% load:	96.7%	96.6%	96.7%	96.7%	96.7%	96.7%
	50% load:	96.6%	96.7%	96.7%	96.7%	96.6%	96.7%
	25% load:	95.5%	96.0%	95.7%	96.1%	95.3%	95.9%
Heat Dissipation, Double Conversion Mode @ 400V/50Hz	100% load:	2816W	3734W	4095W	5440W	5630W	7400W
	75% load:	2047W	2640W	3071W	3839W	4100W	5100W
	50% load:	1408W	1706W	2048W	2559W	2820W	3300W
	25% load:	942W	1041W	1350W	1690W	1970W	2050W
Linear Load Efficiency, ESS Mode @ 400V/50Hz	100% load:	99.2%	99.3%	99.2%	99.3%	99.2%	99.2%
	75% load:	99.1%	99.2%	99.2%	99.2%	99.1%	99.2%
	50% load:	98.9%	99.0%	99.0%	99.2%	99.0%	99.0%
	25% load:	98.5%	98.6%	98.4%	98.7%	98.4%	98.6%
BYPASS CHARACTERISTICS							
Automatic bypass		Static bypass switch, continuously rated, no break transfer					
Automatic bypass nominal rating		100kW		150kW		200kW	
Automatic bypass thyristor i^2t value		13,500 A^2s		16,500 A^2s		69,500 A^2s	
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				No	
ESS (Energy Saver System) MODE CHARACTERISTICS							
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		<47dBA @ 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					

Eaton 93PM 80-200kW Standard UPS Technical Specification

	80kW	100kW	120kW	150kW	160kW	200kW
EARTH LEAKAGE CURRENTS						
Online/Bypass @ full resistive load	0.7A		0.5A		3.7A	
Stored Energy @ full resistive load	0.9A		0.6A		1.2A	
BATTERY						
Battery nominal voltage	432V (36 x 12V, 216 Cells) or 480V (40 x 12V, 240 Cells)					
Float charge voltage	216 x 2.30V = 497V or 240 x 2.30V = 552V					
Maximum charge voltage	216 x 2.35V = 508V or 240 x 2.35V = 564V					
Battery technology	Valve Regulated Lead Acid, 5 or 10 year design life					
Stored energy time	See separate information					
Charging current (Default/Maximum)	24/33A		36/50A		48/66A	
Restored energy time to 90%	Typically 10 x Discharge time					
Battery recharge profile	Advanced Battery Management (ABM®) = 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					