

# Eaton 93PR 25-200kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	25-200 kVA/kW
	Model catalogue reference	93PR-XXX(200)-
	UPS options	Internal battery breaker Internal maintenance bypass switch (MBS) External battery cabinets (EBC) Parallel tie cabinet (PTC)
	Upgradability	Yes, up to 200kW
	External paralleling	Up to 8 units with HotSync technology
5.1.1	UPS topology	Double conversion
5.3.4	UPS performance classification	VFI-SS-111

## MECHANICAL

	UPS dimensions (W x D x H)	603 x 1013 x 2050 mm
	Weight, UPS frame w/o UPM	425 kg
	Weight, UPM (power module)	28 kg (< 25 kg w/o fan panel & DC capacitors)
	UPS Cable entry	Rear top & rear bottom
	UPS Degree of protection	IP 20
	UPS colour	Black; RAL 9005
	Mean Time To Repair (MTTR)	< 10 minutes

## ENVIRONMENTAL

6.5.5	Acoustic noise at 1 m, in 25 °C ambient temperature	< 70 dBA in double conversion < 55 dBA in ESS
4.1.4	Ambient UPS storage temperature range	- 25 °C to + 60 °C without batteries, 0 °C to + 25 °C with batteries, indoors in the protective package
4.2.1.1 and 5.4.2.2 h	Ambient service temperature range UPS Internal battery	0 °C to + 40 °C without output power derating + 20 °C to + 25 °C recommended for optimized battery lifetime
4.2.1.1	Relative humidity range	5 to 95%, no condensation allowed
4.2.1.2	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

**CONFIDENTIAL**

Author: Jorge Aguinaga

Updated: 8.16.2016

Document: Eaton 93PR 25-200kW technical specification V20160816.docx

The technical specification is subject to change without notice

Page 1 of 6

# Eaton 93PR 25-200kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	25-200 kVA/kW
-----------------------	-------------------------	---------------

EFFICIENCY										
5.3.2 r and 6.4.1.6	Efficiency in double-conversion, rated linear load	100% load	<u>25 kW</u>	<u>50 kW</u>	<u>75 kW</u>	<u>100 kW</u>	<u>125 kW</u>	<u>150 kW</u>	<u>175 kW</u>	<u>200 kW</u>
		75% load	95.0%	95.0%	95.0%	95.6%	95.6%	95.7%	95.7%	95.7%
		50% load	95.3%	95.3%	95.3%	96.1%	96.1%	96.1%	96.1%	96.1%
		25% load	95.5%	95.5%	95.5%	96.3%	96.3%	96.3%	96.3%	96.3%
	Heat dissipation (watt) in double conversion	100% load	<u>25 kW</u>	<u>50 kW</u>	<u>75 kW</u>	<u>100 kW</u>	<u>125 kW</u>	<u>150 kW</u>	<u>175 kW</u>	<u>200 kW</u>
		75% load	1316	2632	3947	4603	5753	6904	8054	9205
		50% load	987	1974	2961	3206	4008	4810	5611	6413
		25% load	616	1233	1849	2029	2536	3044	3551	4058
	Efficiency in ESS, rated linear load	100% load	<u>25-75 kW</u>				<u>100-200 kW</u>			
		75% load	98.8%				99.3%			
			98.8%				99.3%			

ELECTRICAL CHARACTERISTICS										
INPUT										
5.2.1.a and 5.2.1 b	Rated input voltage Voltage tolerance	Rectifier input Bypass input	220/380 V; 230/400 V; 240/415 V 305 to 478 V rated voltage -15% / +10%							
5.2.1 c and 5.2.1 d	Rated input frequency Frequency tolerance		50 or 60 Hz, user configurable 40 to 72 Hz							
5.2.2 a and 5.2.2 b	Number of input phases	Rectifier input Bypass input	3 phases + neutral 3 phases + neutral							
5.2.2 d	Input power factor, double conversion 100% load		> 0.99							
5.2.2 c	Rated input r.m.s. current	380V 400V 415V	<u>25 kW</u>	<u>50 kW</u>	<u>75 kW</u>	<u>100 kW</u>	<u>125 kW</u>	<u>150 kW</u>	<u>175 kW</u>	<u>200 kW</u>
			40 A	80 A	120 A	159 A	199 A	239 A	278 A	318 A
			38 A	76 A	114 A	151 A	189 A	227 A	264 A	302 A
			37 A	73 A	110 A	146 A	182 A	219 A	255 A	291 A
5.2.2 f	Maximum input r.m.s. current		<u>25 kW</u>	<u>50 kW</u>	<u>75 kW</u>	<u>100 kW</u>	<u>125 kW</u>	<u>150 kW</u>	<u>175 kW</u>	<u>200 kW</u>
			45 A	90 A	135 A	180 A	225 A	270 A	315 A	360 A
5.2.2 h and	Input current distortion at rated input current		< 3%, 100% load							

**CONFIDENTIAL**

# Eaton 93PR 25-200kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	25-200 kVA/kW
5.2.2 i	Earth Leakage Current	<3% of Nominal Input Current
5.2.2 e	In-rush current	6 x Rated Peak Current for 20 Msec
5.2.2 k	Genset Compatibility	1.5 x Rated UPS Capacity
	Rectifier ramp-up, rectifier start, and load step	5 A/s (default), configurable. Minimum 1 A/s.
	Minimum Short Current Power Capacity	25 x Rated UPS Capacity for 20 Msec

## ELECTRICAL CHARACTERISTICS

### OUTPUT

5.3.2 f	Number of output phases	3 phases + neutral							
	Crest factor	3							
5.3.2 b	Rated output voltage	220/380 V; 230/400 V; 240/415 V, configurable							
5.3.2 b	Output voltage variation, steady state	< 1%							
5.3.2 i	Total voltage harmonic distortion								
	100% linear load	< 1%							
	100% non-linear load	< 5%							
5.3.2 q	Voltage unbalance at reference unbalanced load	< 0,1%							
	Phase Displacement at reference unbalanced load	< +/-3,0°							
5.3.2 j	Voltage transient Vrms L-L and L – N (r.m.s) at 100% step load	<4 %							
	Recovery time to steady state at 100% step load	100 ms							
5.3.2 c	Rated output frequency	50 or 60 Hz, configurable							
	Output frequency variation	± 0,1 Hz							
	Slew rate	0.8 - 1 Hz/s							
5.3.2 d and 5.3.2 e	Maximum frequency range for synchronization with bypass	± 4 Hz as default. User settable 0,5 to 5 Hz.							
	Maximum synchronized phase error	< 1° with a static balanced load							
	Maximum slew -rate when synchronizing	1 Hz/s							
5.3.2 k	Rated output power	25 kW / 25 kVA	50 kW / 50 kVA	75 kW / 75 kVA	100 kW / 100 kVA	125 kW / 125 kVA	150 kW / 150 kVA	175 kW / 175 kVA	200 kW / 200 kVA

**CONFIDENTIAL**

Author: Jorge Aguinaga

Updated: 8.16.2016

Document: Eaton 93PR 25-200kW technical specification V20160816.docx

The technical specification is subject to change without notice

Page 3 of 6

# Eaton 93PR 25-200kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	25-200 kVA/kW
5.3.2 l	Overload capability On inverter	10 min 102-110% load @ Unity PF Load 60 sec 111-125% load @ Unity PF Load 10 sec 126-150% load @ Unity PF Load 60 Min 102-110% load @ 0.9 PF Load 10 Min 111-125% load @ 0.9 PF Load 60 sec 126-150% load @ 0.9 PF Load 300 ms >150% load
	Overload capability On the inverter, stored energy mode	10 min 102-110% load @ Unity PF Load 60 sec 111-125% load @ Unity PF Load 10 sec 126-150% load @ Unity PF Load 60 Min 102-110% load @ 0.9 PF Load 10 Min 111-125% load @ 0.9 PF Load 60 sec 126-150% load @ 0.9 PF Load 300 ms >150% load
	Overload capability ESS mode	Continuous < 110% load 20 ms 1000% load
	Overload capability On bypass	Continuous < 125% load 20 ms 1000% load
5.3.2 m	Output current limitation, short-circuit capability	800 Amps for 300 msec
6.4.2.10.3 and 6.4.2.10.4	Fault clearing capability	Circuit breaker B10 / C6 per UPM
5.3.2 o and 5.3.2 p	Load power factor Rated Permitted range	1.0 0.8 lagging to 0.8 leading

## ESS MODE CHARACTERISTICS

	Transfer time to double-conversion Mains available Mains failure	No break Typically 2 ms
	Output voltage variation setting	± 10% of nominal voltage, default
	Output frequency variation setting	± 4 Hz, default
	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	PS will stay on double conversion for one hour (user adjustable), after which the unit will automatically return to operate on ESS.

**CONFIDENTIAL**

Author: Jorge Aguinaga

Updated: 8.16.2016

Document: Eaton 93PR 25-200kW technical specification V20160816.docx

The technical specification is subject to change without notice

Page 4 of 6



# Eaton 93PR 25-200kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	25-200 kVA/kW
--------------------------	-------------------------	---------------

## BYPASS

Type of bypass	Static
Bypass rating	200kW
Bypass voltage range	220/380 V; 230/400 V; 240/415 V tolerance -15% / +10% of rated voltage
Transfer time break	No break-in Synchronized Conditions 2 ms typical under Unsynchronized Conditions
Maintenance bypass	Internal optional
Bypass thyristor $i^2t$ value	120 kAmps

## BATTERY CHARACTERISTICS

5.4.2.2 d	Battery technology	Certified Lithium-ion battery
5.4.2.2 a	Battery design life	10 years for LiB
5.4.2.2 b	Battery quantity	DC cut off 3.2VPC x 128 cells = 409.6 Vdc (LiB)
5.4.2.2 c	Battery voltage	3.8VPC x 128 cells = 486.4VDC (LiB)
5.4.2.2 e	Nominal Ah capacity (C10)	67Ah
5.4.2.2 f	Stored energy time	See separate declaration
5.4.2.2 o	Recharge profile	ABM or float
5.4.2.2 q	End of discharge voltage	3.2VPC x 128 cells = 409.6 Vdc (LiB)
5.4.2.2 r	Charge current limit	Default 5A, configurable, maximum 25A per UPM
	Battery start option	Yes

## COMMUNICATION CIRCUITS

**CONFIDENTIAL**

Author: Jorge Aguinaga  
 Updated: 8.16.2016  
 Document: Eaton 93PR 25-200kW technical specification V20160816.docx

Page 5 of 6

The technical specification is subject to change without notice



# Eaton 93PR 25-200kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	<b>MODEL RATING (1.0 p.f.)</b>	<b>25-200 kVA/kW</b>
--------------------------	--------------------------------	----------------------

5.6	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

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

**CONFIDENTIAL**

Author: Jorge Aguinaga  
 Updated: 8.16.2016  
 Document: Eaton 93PR 25-200kW technical specification V20160816.docx

Page 6 of 6

The technical specification is subject to change without notice

