Eaton 93PS 8-10kW UPS Technical Specification

Manufacturer's declaration in accordance with IEC 62040-3

IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	8 kW	10 kW
	Model catalogue reference	93PS-8(10)	93PS-10(10)
	Number of internal batteries	0 to 1 x 32 blocks	0 to 1 x 32 blocks
	UPS options	External maintenance bypass switch External battery cabinets	
	Upgradability	Yes, to 10kW	No
	External paralleling	Up to 4 units with HotSync technology	
5.1.1	UPS topology	Double conversion	
5.3.4	UPS performance classification	VFI-SS-111	

MECHANICAL

	UPS dimensions (width x depth x height)	335 x 750 x 950 mm
	Weight, UPS and internal batteries UPS + 0 BAT UPS + 1 BAT	 73 kg 163 kg
	External Battery Cabinet (EBC-H) dimensions (width x depth x height)	335 x 750 x 950 mm
	UPS Cable entry	Rear
	UPS Degree of protection	IP 20
	UPS colour	Black; RAL 9005
	Mean Time To Repair (MTTR)	< 25 minutes

ENVIRONMENTAL

6.5.5	Acoustic noise at 1 m, in 25 °C ambient temperature	< 54 dBA in double conversion < 47 dBA in ESS
4.1.4	Ambient UPS storage temperature range	- 25 °C to + 55 °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 life time
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

EFFICIENCY

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5.3.2 r and 6.4.1.6	Efficiency in double-conversion, rated linear load 100% load	96.0%	96.1%
	75% load	95.9%	96.0%
	50% load	95.2%	95.8%
	25% load	92.5%	93.6%
	Heat dissipation in double conversion 100% load	325 W	406 W
	75% load	257 W	305 W
	50% load	202 W	220 W
	25% load	137 W	171 W
	Efficiency in ESS, rated linear load 100% load	98.6%	98.7%
	75% load	98.3%	98.5%
	50% load	97.7%	98.2%
	25% load	95.7%	96.4%

ELECTRICAL CHARACTERISTICS

INPUT

5.2.1.a and 5.2.1 b	Rated input voltage	220/380 V; 230/400 V; 240/415 V	
	Voltage tolerance Rectifier input	187 to 276 V	
	Bypass input	rated voltage -15% / +10%	
5.2.1 c and 5.2.1 d	Rated input frequency	50 or 60 Hz, user configurable	
	Frequency tolerance	40 to 72 Hz	
5.2.2 a and 5.2.2 b	Number of input phases		
	Rectifier input	3 phases + neutral	
	Bypass input	3 phases + neutral	
5.2.2 d	Input power factor, double conversion 100% load	0.99	0.99
	75% load	0.99	0.99
	50% load	0.98	0.99
	25% load	0.92	0.95
5.2.2 c	Rated input r.m.s. current 380V	13 A	16 A
	400V	12 A	15 A
	415V	12 A	15 A
5.2.2 f	Maximum input r.m.s. current	15 A	19 A
5.2.2 h and 5.2.2. i	Input current distortion at rated input current Resistive load	< 3.5%	< 3.0%
	Non-linear load	< 6.5%	< 5.0%
5.2.2 e	In-rush current	< Rated input current (input filter components only)	

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IEC 62040-3 Subclause	MODEL RATING (1.0 p.f.)	8 kW	10 kW
5.2.2 k	AC power distribution system compatibility	TN, TT, IT (4-wire)	
	Rectifier ramp-up, rectifier start and load step	4 A/s (default), configurable. Minimum 1 A/s.	
	Back feed protection	Yes, for rectifier and bypass lines	
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 100% non-linear load	 < 1.5% < 3.5%	
5.3.2 q	Voltage unbalance at reference unbalanced load	< 0.5%	
5.3.2 j	Voltage transient (r.m.s) at 100% step load Recovery time to steady state at 100% step load	4 % 100 ms	
5.3.2 c	Rated output frequency Output frequency variation Slew rate	50 or 60 Hz, configurable ± 0.1 Hz 0.8 - 1 Hz/s	
5.3.2 d and 5.3.2 e	Maximum frequency range for synchronization with bypass Maximum synchronized phase error Maximum slew-rate when synchronizing	± 4 Hz as default. User settable 0.5 to 5 Hz. < 2° with static balanced load 1 Hz/s	
5.3.2 k	Rated output power	8 kW / 8 kVA	10 kW / 10 kVA
5.3.2 l	Overload capability On inverter	10 min 102-110% load 60 sec 111-125% load 10 sec 126-150% load 300 ms >150% load	
	Overload capability On inverter, stored energy mode	10 min 102-110% load 60 sec 111-125% load 10 sec 126-150% load 300 ms >150% load	

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	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	36 A, 300ms	
6.4.2.10.3 and 6.4.2.10.4	Fault clearing capability	Circuit breaker B6 / C4	
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	UPS will stay on double-conversion for one hour (user adjustable), after which the unit will automatically return to operate on ESS.

BYPASS		
	Type of bypass	Static
	Bypass rating	10 kW
	Bypass voltage range	220/380 V; 230/400 V; 240/415 V tolerance -15% / +10% of rated voltage
	Transfer time break	No break
	Maintenance bypass	Optional; internal or external
	Bypass fuse i^2t value, Pre-arc i^2t Total clearing i^2t	 390 A^2s 2500 A^2s (at 415 V)
	Required external bypass protective fuse, recommended rating	20A gG
	Rated conditional short-circuit current, I_{cc}	50 kA (with recommended protective fusing)

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BATTERY CHARACTERISTICS

5.4.2.2 d	Battery technology	12 V, VRLA
5.4.2.2 a	Battery design life	5 or 10 years
5.4.2.2 b	Battery quantity Internal External	32 blocks, 192 cells per battery string 28-40 blocks per string
5.4.2.2 c	Battery voltage Internal External	384 V 336V – 480V
5.4.2.2 e	Nominal Ah capacity (C10)	9Ah
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	1.67 VPC to 1.75 VPC Configurable or automatic (load adaptive)
5.4.2.2 r	Charge current limit Default Load ≤80% Load >80%	5A, configurable 1…12.5A 1…3.5A
	Battery start option	Yes

COMMUNICATION CIRCUITS

5.6	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
	Complete list of indications and interface devices	See User's and Installation Guide

COMPLIANCE WITH STANDARDS

IEC 62040-1	Safety Access Degree of protection	Restricted access IP 20; protection against medium sized foreign matter (incl. finger), no protection against vertically dripping water.
IEC 62040-2	Electromagnetic Compatibility Immunity Emissions	 EMC Category C3 EMC Category C2
IEC 62040-4 EN 50581	Environmental Aspects - Requirements and Reporting	Yes

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