


Eaton® 93PR 300kVA Modular UPS Technical Specification

Model	60-300kW
Catalog	93PR-300
CTO	4 switches with internal back-feed protection CTO: 9RZ06A0500E01B0 9106-43202 4 switches with internal back-feed protection, Sidecar & top exhaust CTO: 9RZ06A0500J00B0 9106-43204
Outlook	 (default: GLACIER WHITE, optional: BLACK)
UPM Rating (all operating modes)	62.5kVA/62.5kW at 230VAC, 30°C 60kVA/60kW at 230VAC, 35°C 55kVA/55kW at 230VAC, 40°C
UPS Rating (all operating modes)	250kVA/250kW pf 1.0 at 30°C (4 UPM) 300kVA/300kW pf 1.0 at 35°C (5 UPM) 275kVA/275kW pf 1.0 at 40°C (5 UPM)
Configurable Upgradability	60kW*N (1≤N≤5), 62.5kW*N (1≤N≤4)
Parallel Capability	4 x parallel, maximum 1.2MW. Could extend to 8 x units in parallel on special order
UPS Topology	Double Conversion, IGBT Module Converters, three level Static UPS
Performance classification	VFI-SS-111, IEC62040-3
UPM Dimensions: W x D x H (mm)	439 x 700 x 173.4 (4U height) 590 x 980 x 325 (Packaged)
UPM Weight	39kg Net, 44kg Gross, Modules shipped separately
UPS Dimensions: W x D x H (mm)	600 x 1100 x 2000 (4x19" frame unpackaged) 800 x 1100 x 2000 (with side car & top exhaust kit)
Frame Weight (kg)	375 kg
Degree of protection	IP20, with front door washable dust filter
Cabinet color theme	Default: Glacier White, Optional: Black, RAL 9005
Switchgear (Internal)	Standard: 4 switches (INPUT/ OUTPUT/ Bypass/ Maintenance) Optional: MBS only (Maintenance)
Cable entry	Top & Bottom (side car is required for bottom entry)
Ventilation	Rear exhaust standard, top exhaust optional
Accessories	Side Car and top exhaust fan kit Load Sync Box

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ENVIRONMENT

Ambient storage temperature	Range of -25°C to +55°C in a protective package
Ambient service temperature	300kVA/ 300kW at 35°C, 230VAC 275kVA/ 275kW at 40°C, 230VAC
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	75~80dBA
Electromagnetic Compatibility	Immunity and emission to IEC/EN 62040-2 C3

USER INTERFACE & COMMUNICATIONS

Display	7" Touchscreen Color 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 Host, 1x USB Slave, 1x RS232 Service Port
Optional Connectivity Options	Web/SNMP Relay/RS232 Industrial Relay PXGMS Industrial Gateway Card, PXGMS, SNMP/Modbus/BACnet

ELECTRICAL INPUT CHARACTERISTICS

Earthing 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) Tolerance: (-10%, +10%) at 100% load (-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% THD (Linear load condition at rated input current)
Input power factor	>0.99pf @ 20-100% load, >0.95 @ 10-20% load
Inrush current	<50A
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 +PE
Rated rectifier input current	452.5A, 300kW at 400V
Max. rectifier input current	475A at 400V
Bypass input current (rms @ 400V) Recommended/Maximum	435A (300kW Rated) 543.75A (Maximum)

ELECTRICAL OUTPUT CHARACTERISTICS - NORMAL MODE

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Rated output voltage	220/380, 230/400, 240/415Vac, three phases
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
Total output voltage distortion	<1% linear load, <5% non-linear load
Short circuit capability	2 x I _n per Module
Fault clearing capability (without bypass)	180A*N gL/ gG fuse (N stands for installed UPM number)
Overload capacity without bypass	30 min >102–110% load 10 min >110%~125% load 30sec 126-150% load 300ms > 150% load
Overload capacity with bypass	125% continuous @ 30°C 115% continuous @ 40°C
Load power factor range	0.8 lagging to 0.8 leading without de-rating
Range of frequency sync with bypass	± 4Hz as default. User selectable from 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 phases
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	250Amp per UPM 400ms
Fault clearing capability	900gL/gG fuse
Overload capability	102~110% 1mins @30°C >110% 300ms @30°C
Load power factor range	0.8 lagging to 0.8 leading without de-rating
Number of output phases	3 Phase + Neutral

EFFICIENCY (Input/Output)

		60kW X 5	62.5kW X 4
Linear Load	100% load:	96%	96%
Efficiency, Double	75% load:	96.5%	96.5%
Conversion Mode	50% load:	97%	97%

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@ 400V/50Hz	25% load:	96%	96.9%
Heat Dissipation, Double	100% load:	12.1kW	10.14kW
	75% load:	8.1kW	6.5 kW
Conversion Mode	50% load:	4.6kW	3.81 kW
@ 400V/50Hz	25% load:	3.1kW	2.01 kW
Linear Load	100% load:	99.2%	98.96%
Efficiency,	75% load:	99.2%	99.01%
ESS Mode	50% load:	99.0%	99.00%
@ 400V/50Hz	25% load:	98.6%	98.78%
Air Flow	(m ³ /h):	2513	2094
	L/s:	698	582

BYPASS CHARACTERISTICS

Automatic bypass	Static bypass switch, continuously rated, no break transfer
Automatic bypass nominal rating	Maximum 300kVA
Automatic bypass thyristor i ² t value	1805000 A ² s
Bypass fuse	900A
Back-feed protection	Optional internal back-feed contactor
Separate bypass input feed	Standard (single feed cable links fitted on site)
Manual bypass switch	Standard

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	< 75dBA @ 1m in 25C 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

BATTERY

Battery nominal voltage	432V (36 x 12V, 216 Cells) 50kW 456V (38 x 12V, 228 Cells) 55kW 480V (40 x 12V, 240 Cells) 60kW/62.5kW Other configurations are available
Float charge voltage	216 x 2.30V = 497Vdc 50kW

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	228 x 2.30V = 524Vdc 55kW 240 x 2.30V = 552Vdc 60kW/62.5kW Other configurations are available
End of Discharge Voltage	216 x 1.67V = 360Vdc 50kW 228 x 1.67V = 380Vdc 55kW 240 x 1.67V = 400Vdc 60kW/62.5kW Other configurations are available
Maximum charge voltage	VRLA: 294 x 2.35V = 690Vdc (ABM enabled) Lithium: 700Vdc
Battery technology	2-wire, no center tapping required Valve Regulated Lead Acid Ni-Cad Certified Lithium-ion battery
Stored energy time	No limitation within allowable ambient temperature.
Charging current (Default/Maximum)	25A default, Maximum 40Amp Per UPM, future extend to 60Amp by firmware upgrade
Restored energy time to 90%	Typically, 10 x Discharge time
Battery recharge profile	Advanced Battery Management (ABM®) = 90% resting, 10% floating/ charging
VRLA Battery cut off voltage	The total Battery voltage is limited by EOD 1.67 to 1.75 VPC, Configurable or automatic (load adaptive)
Battery cold start	Support
Common battery	Common for internal parallel UPM
Battery Trip	+48V Shunt trip by default
Battery Auxiliary	Standard equipped

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