

## Eaton 9E 80-200kVA UPS Technical Specification

CONSTRUCTION	80kVA	100kVA	120kVA	160kVA	200kVA
Model:	9E-100/80	9E-100/100	9E-120/120	9E-200/160	9E-200/200
kVA/kW Rating	80/72	100/90	120/108	160/144	200/180
MTBF	150 000h (MIL217)				
Classification	VFI-SS-111				
UPS Dimensions: W x D x H (mm)	600 x 800 x 1880				
Weight (kg) without batteries	283		311	457	
<b>ENVIRONMENT</b>					
Ambient storage temperature	Range of -15 to +55°C in the protective package				
Ambient service temperature	Power electronics part: +0 to +40°C Battery part: +5 to 25°C without reducing battery life				
Maximum service altitude	1000m above sea level max. 2000m with 1% de-rating per +100m				
Relative humidity	5 to 95%, no condensation allowed				
Degree of protection	IP20 (EN60529)				
Acoustic noise at 1m (ISO7779) @ 75% Load	Normal mode - ≤65dBA; Stored energy - ≤65dBA			Normal mode - ≤70dBA; Stored energy - ≤70dBA	
Electromagnetic Compatibility	Immunity and emission to IEC/EN 62040-2				
<b>USER INTERFACE</b>					
Display	Graphical LCD with blue backlight, 4x LEDs for notice and alarm				
Standard Communication Ports	1x RS232, 1x USB, 2x Mini-Slot , 1x Emergency Power Off input (NC or NO), 3x Building Alarm inputs				
Optional	Mini-Slot cards; Web/SNMP, Relay, ModBus				
<b>ELECTRICAL CHARACTERISTICS – INPUT</b>					
Rated input voltage and voltage tolerance	<u>Rectifier:</u> 3 x 230/400Vac nominal (220/380, 240/415 Selectable) Tolerance: 190/330–276/478V (-15%, +20%) at 100% load, 116/201-276/478V (-50%, +20%) at 50% load <u>Bypass:</u> 3 x 230/400V nominal (220/380, 240/415 Selectable) Tolerance: 207/359 – 253/438V (±10% of nominal, selectable up to ±20%)				
Operating Frequency / Tolerance	50 or 60Hz; Tolerance 42-70Hz				
Input current distortion	<5% THDi (Linear load condition at rated input current)				
Input power factor	0.99pf at 100% load				
Inrush Current	<100% of rated current				
Number of input phases	3 phases + Neutral (3 phase input)				
Rated Rectifier Input Current (rms)	112	140	169	225	280
Max Rectifier Input Current (rms)	137	173	207	277	344
Bypass Input Current Recommended/Maximum (rms)	112/137	140/173	169/207	225/277	280/344
<b>ELECTRICAL OUTPUT CHARACTERISTICS – NORMAL MODE</b>					
Rated power kVA/kW	80/72	100/90	120/108	160/144	200/180
Transfer–normal to/from stored energy	No break				
Rated output voltage	230/400 Vac, three phase, (220/380, 240/415 selectable)				
Output voltage variation	±1% Balance static load, ±5% Dynamic Load (EN62040-3)				
Crest factor	3:1				
Rated output frequency	50 Hz (default) or 60 Hz				
Output frequency variation (synchronised if applicable)	±4Hz (default) selectable from ±1Hz to ±4Hz , with slew rate 0.5Hz/sec (default)				
Output frequency synchronised phase error at change of mode	Maximum of 2.5 degrees				
Total voltage distortion	<2% (Across a linear load); 7.5% (Across a reference non-linear load defined according to EN62040-3)				
Short circuit capability	300A < 300ms	376A < 300ms	450A < 300ms	602A <300ms	752A<300ms
Overload capacity without bypass	102–125% load 10 minutes, 126–150% load 1 minute, >151% load 150msec at 30°C				
Overload capacity with bypass	115% load continuous, 1000% for 20ms at 40°C and ≤1000m altitude Selected external Bypass fuses or breaker may limit the overload capability				

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Load power factor range	0.7 lagging- 0.9 leading without de-rating				
Number of output phases	3 Phase				
Output Voltage dynamic variation	0% during transfer from stored energy to normal mode ±6% with 5msec recovery from 10% to 90% load step				
Max output freq rate of change	0.5Hz/s (default), 2.5Hz/s, or 7.5 Hz/s				

### ELECTRICAL OUTPUT CHARACTERISTICS – STORED ENERGY

Rated power kVA/kW	80/72	100/90	120/108	160/144	200/180
Waveform	Sine Wave				
Rated output voltage	230/400 Vac, three phase, (220/380, 240/415 selectable)				
Output voltage variation	±1% Balance static load, ±5% Dynamic Load (EN62040-3)				
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	<2% (Across a linear load); 5% (Across a non-linear load)				
Short circuit capability	300A < 300ms	376A < 300ms	450A < 300ms	602A <300ms	752A<300ms
Overload capability	102–125% load 1 minute, 126–150% load 30 seconds, >151% load 150msec at 30°C				
Load power factor range	0.7 lagging- 0.9 leading without de-rating				
Number of output phases	3 Phase				
Output voltage dynamic variation	0% during transfer from stored energy to normal mode ±5% with 10msec recovery from 10% to 90% load step				

### EFFICIENCY (Input/Output)

Linear Load Efficiency	100% load:	93.5%	93.5%	93.5%	93.8%	93.8%
	75% load:	93.3%	93.3%	93.3%	93.5%	93.5%
	50% load:	93%	93%	93%	93.5%	93.5%
	25% load:	92.5%	92.5%	92.5%	92.5%	92.5%
Linear Load Efficiency – HE Mode	98% at full load, 97% at half load					98.5% @ 100% load, 97.5% @ 50% load

### SYNCHRONISATION (If applicable)

Acceptable voltage difference	±5%
Range of frequency synch	±3Hz/s default, up to 7Hz/s user settable for single UPS, up to 0.5 Hz/s for parallel UPS

### BATTERY

Battery Nominal Voltage	432V (216 Cells) or 456V (228 Cells) or 480V (240 Cells, Default)				
Float Charge Voltage	216/228/240 x 2.30V = 497/524/552V				
Maximum Charge Voltage	216/228/240 x 2.35V = 508/536/564V				
Battery cut off voltage	216 Cells = 1.8V/Cell, 228 Cells = 1.73V/Cell, 240 Cells = 1.67V/Cell				
Restored energy time to 90%	Maximum 10 hours recommended (dependant on battery size)				
Charging Current (at full load)	32A	40A	48A	64A	80A
Battery recharge profile	Advanced Battery Management (ABM <sup>®</sup> ) = 90% resting, 10% floating/charging (typical)				

### BYPASS CHARACTERISTICS

Automatic bypass	Static Bypass, continuously rated, no break transfer				
Backfeed protection	Optional Internal backfeed contactor				
Separate bypass input feed	Standard				
Manual bypass switch (internal)	Optional			Not available	