

EPS 6000 225/300/375/500 kVA

Uninterruptible Power Supply



Advanced Features

- ▶ Ultra energy efficient (up to 95%)
- ▶ Aircraft quality construction
- ▶ Digital Power Quality logic
- ▶ Advanced battery management
- ▶ Non-linear load optimized
- ▶ <4% output THD
- ▶ Modular assemblies
- ▶ Detailed remote monitoring and communication
- ▶ Computer aided diagnostics
- ▶ Industry leading reliability

The EPS 6000 has set the standard for critical power protection in high-powered environments. Chosen for some of the world's most mission critical applications, the EPS 6000's field proven performance delivers a level of comfort and reliability only available from MGE.

Featuring aircraft quality construction and MGE's Digital Power Quality (DPQ) logic, the EPS 6000 maximizes efficiency & output power quality under all load conditions. Optimized for 100% nonlinear loads, the EPS 6000 restricts output voltage distortion to under 4% even on 100% step loads. These rigid performance specifications guarantee computer grade power quality under the harshest conditions.

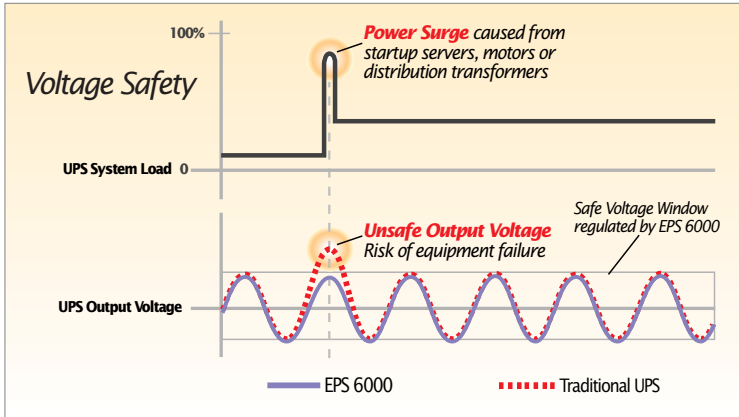
MGE UPS SYSTEMS ~ *the world's largest and most trusted three phase UPS manufacturer*

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MGE UPS SYSTEMS EPS 6000 ~ Where Power and Reliability Converge

Digital Power Quality Logic and IGBT Inverter Technology

MGE's unique digital inverter topology takes advantage of the clean switching characteristics of the new generation of IGBTs (Insulated Gate Bipolar Transistors) resulting in a simplified and more reliable inverter design. In addition to delivering a practically distortion free (<4% THD) output, the EPS 6000 also maintains precise voltage regulation on all phases even when exposed to large step loads/transients (common when starting distribution transformers and banks of IT equipment), a very unique but essential feature.



Superior step load capabilities separate the EPS 6000 from other UPS systems, providing the reassurance that your UPS output voltage will remain precisely regulated under all operating conditions.

Generator Friendly Technology

Traditional UPS modules often require that the generator be oversized to many times that of the UPS output power to avoid UPS/generator interaction issues. This is largely due to the leading input power factor created by UPS input filters. The EPS 6000 uses a unique approach to input filtering offering optional passive filter solutions that maintain exceptionally low input THD while ensuring that the power factor remains lagging or very close to lagging. A controlled input power factor minimizes the requirement for generator oversizing, resulting in significant cost savings and enhanced power system reliability.



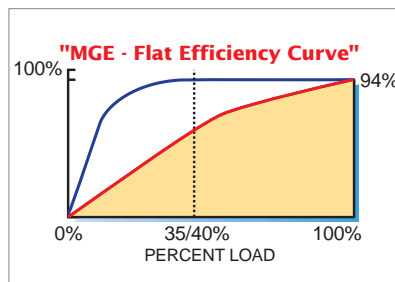
MGE Input Filters Feature:

- ▶ Low Input Distortion
- ▶ Very Low kVAR
- ▶ No Leading Power Factor
- ▶ No Mechanical Switching of Filters

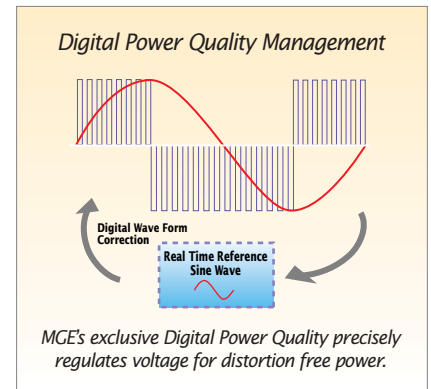
High Efficiency for Cost Savings that Matter

High Efficiency for Cost Savings

That Matter: The EPS 6000 boasts ultra high-energy efficiency even when lightly loaded, where most UPSs operate. This is a major cost savings advantage as many other UPSs drop their efficiency as the load drops. MGE's stable efficiency is due to its Digital Power Quality Logic system that constantly optimizes the switching frequency for the load level and load profile, minimizing switching losses.



EPS 6000 efficiency remains stable even when the UPS is lightly loaded, offering a large efficiency advantage over other UPS manufacturers.



The EPS 6000 achieves these performance characteristics by generating the output waveform using true high frequency digital pulses (Pulse Width Modulation). Every pulse of the output waveform is precisely controlled by MGE's unique Digital Power Quality (DPQ) management system. The DPQ system compares the output waveform to a computer generated reference sine wave. A feedback circuit then actively corrects any waveform imperfections for clean, precision regulated power and unprecedented dynamic load control.

Input Filter Technology

Low kVAR Filter: The EPS 6000 offers a low kVAR filter which limits reactive current and leading power factor to far below that of conventional input filters. Unlike other contactor based solutions that disengage the input filter at low loads, the low kVAR filter is always engaged and uses no mechanical components.

Shunt Inductor Filter: For large UPS systems, the MGE shunt inductor filter offers no leading power factor under all operating conditions with an extremely low THD level. This permits one of the lowest UPS-to-generator sizing ratios of any UPS system, and unprecedented UPS generator compatibility.

Annual Cost Savings of a 1-3% efficiency advantage

UPS Load	Efficiency Advantage		
	1%	2%	3%
1,000 kW	\$68,000	\$136,000	\$204,000
800 kW	\$54,000	\$108,000	\$163,000
600 kW	\$41,000	\$81,000	\$122,000
Savings Per Year			

*Calculated as future value at 7% cost of capital compounded monthly at \$0.1 kWh plus air conditioning costs. Savings will vary with energy rates.

Fault Tolerant Circuitry

Robust enough to withstand the most difficult circumstances.

EPS 6000 UPSs are equipped with unique fault tolerant circuitry. Even when exposed to dead shorts on the output that often prove fatal to other UPSs, the EPS 6000 will recover without sustaining damage or clearing fuses, and immediately continue to protect the critical load. Because changes on the load side of the UPS are increasingly common, output fault tolerant circuitry is the best protection against user-induced faults and load side equipment faults.

The EPS 6000/Galaxy UPS has been installed in over 5,000 critical sites world wide, making it the leading choice for data center critical power protection

Graphical User Interface

EPS 6000 modules can be equipped with an optional state of the art color graphical user interface (GUI). In addition to displaying mimic diagrams, alarm/event logs and detailed operating parameters, the GUI is also equipped with a web enabled Ethernet port, allowing the contents of the screen to be accessed over the Internet without the requirement for an external server or any specialized software.



Large Power Systems Solutions

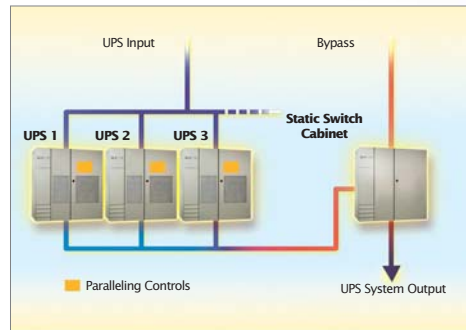
Why use the MGE Power Systems?

- ▶ Unique paralleling technology with controls/no single points of failure
- ▶ Critical Bus Synchronization for dual bus systems
- ▶ Complete product line to satisfy all project requirements
- ▶ Experienced Power Systems Team
- ▶ Proven track record on the world's largest projects

MGE's complete line of power system products offer the efficiency of a single vendor and benefit of a single source of project accountability!



Parallel Systems: The EPS 6000 can be paralleled with up to six modules for redundancy or capacity. MGE's unique Shared Parallel system places intelligence for paralleling in each individual UPS module eliminating a centralized single point of failure. The output of the UPSs are centrally bussed through a Static Switch Cabinet (SSC) which also provides a seamless system transfer to a bypass source when needed.



You're Backed up by the Best Service Organization in the Industry

MGE's 120 factory trained Field Technicians are dedicated to exclusively servicing MGE equipment and are strategically located throughout North America ensuring a rapid response with 7x24 service. MGE's 100% solid state design (free of any manual calibration), modular components and Computer Aided Diagnostics facilitate rapid diagnostics and service.



EPS 6000 Battery Systems *Backup time in minutes (100%/50% load)*

225 kVA	300 kVA	375 kVA	500 kVA	Cabinets	Weight (lbs)	CB (DC A)
100%/50%	100%/50%	100%/50%	100%/50%			
NA /14	NA /9	NA /6		x1	3,730	250
NA /19	NA /12	NA /7		x1	4,910	400
8/25	5/16	NA /11	NA /7	x2	3,070	250
14/35	9/25	6/19	NA /12	x2	3,730	250
16/42	10/30	7/22	NA /14	x3	3,070	250
19/52	12/35	8/26	NA /17	x2	4,910	400
26/57	17/41	12/31	7/22	x3	3,730	250
37/80	24/60	17/47	10/31	x3	4,910	400
38/90	26/62	19/48	12/32	x4	3,730	250
54/110	37/80	27/65	17/47	x4	4,910	400

Battery System features

- ▶ Individual cabinet dimensions: 75"Hx50"Wx33"D
- ▶ All cabinets have a standard internal battery disconnect
- ▶ Longer duration battery banks and wet cell batteries are available upon request
- ▶ All batteries specified above are sealed, low maintenance cells

- ▶ Run time specifications are for 77°F/25°C and may differ with temperature
- ▶ Cabinets may be ordered adjacent to the UPS or remote (subtract 2" width per cabinet for remote)
- ▶ Above battery systems are housed in a matching enclosure.
- ▶ Max DC current (A DC): 225kVA (472 A), 300kVA (625 A), 375kVA (782 A), 500kVA (1,049 A)

Advanced Battery Management

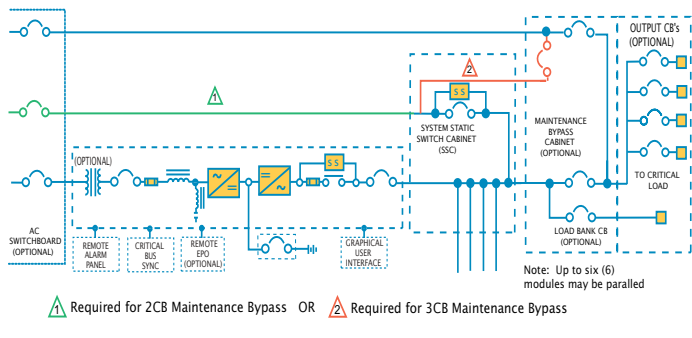
All EPS 6000s come equipped with MGE's Advanced Battery Management System, monitoring the battery bank on a system level to ensure optimal charging conditions for optimum battery life, as well as alert operators to any abnormalities.

Alber Battery Monitoring

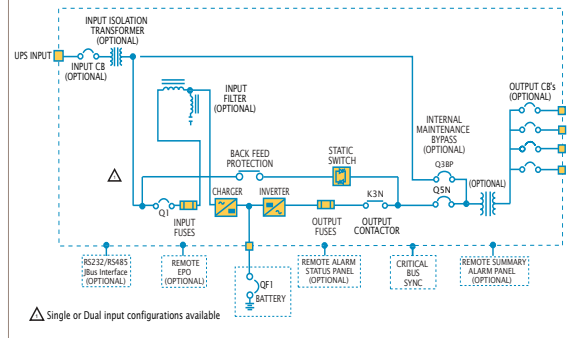
While system level battery monitoring provides a general view of battery status, weak cells that can compromise system performance can only be detected. The Alber Battery Monitoring option for the EPS 6000 automatically diagnoses individual battery jars, alerting users to battery performance issues that would go undetected by any other system.

The monitoring system is factory integrated into the MGE battery cabinet, making it one of the only UL approved system level solutions and is the single largest addition you can make to the reliability of your UPS system.

Parallel Module EPS 6000 Single Line Diagram



Single Module EPS 6000



UPS Module Specifications

	225kVA/180kW				300kVA/240kW				375kVA/300kW				500kVA/400kW	
Input Voltage (V)	208	480	480	600	208	480	480	600	208	480	480	600	480	600
Output Voltage (V)	208	208	480	600	208	208	480	600	208	208	480	600	480	600
Nominal Input w/o Filter (A)	700	300	300	240	930	400	400	320	1,140	500	500	400	615	240
Maximum Input w/o Filter (A)	870	320	320	300	1,160	430	500	400	1,420	540	540	500	716	300
Nominal Input with Filter (A)	560	240	240	200	740	320	320	260	930	400	400	320	545	200
Maximum Input with Filter(A)	700	300	300	240	930	400	400	320	1,160	500	500	400	681	240
Input Breaker: Frame Size (A)	400	400	400	400	1,000 (1)	1,000	1,000	1,000	1,000 (1)	1,000	1,000	1,000	1,000	400
Trip (A)	400	400	400	400	600 (1)	600	600	600	700 (1)	700	700	700	1,000	400
•Nominal Bypass Current (A)														
•Bypass Input Contactor: Frame Size (A)	625	271	271	271	833	361	361	361	1,041	451	451	451	601	271
•MAINT. Bypass CB and Output CB: Frame Size (A)	200	200	200	200	420	420	420	420	420	420	420	420	700	200
Trip (A)														
UPS Output Current (A)	400	400	400	400	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	400
10 min OL Current (A)	350	350	350	350	500	500	500	500	600	600	600	600	800	350
Inverter Efficiency at 100%	625	625	271	625	833	833	361	289	1,041	1,041	451	361	601	625
Non-linear System Efficiency:	687	687	298	688	916	916	397	318	1,145	1,145	496	397	751	688
100%	95	95	95	95	95	95	95	95	95	95	95	95	95	95
75%														
50%	93	93	94.5	93	93	93	94.5	93	93	93	94.5	93	94.5	93
Full Load Heat Rejection _{90%}	93	93	94.5	93	93	93	94.5	93	93	93	94.5	93	94.5	93
92	92	92	94	92	91	92	94	92	91	92	94	92	94	92
Module Volume (cu ft)	49,797	46,227	39,202	46,250	66,396	61,636	52,269	61,666	82,995	77,045	65,336	77,000	87,140	46,250
Module Width: (75"Hx33"D) (2)	131	97	63.5	131	162	113	63.5	162	162	113	63.5	162	113	(3)
(without filter)UPS Weight(lbs)	6,644	5,876	4,510	6,644	9,815	8,379	5,555	9,815	10,440	8,836	5,620	10,440	6,737	(3)

(1) @480 volts. Contact MGE for optional input CB at 208 volts (2) Input filter: 300-375 kVA add 18 inches, 480/480 only, 225 & 500kVA internal to UPS
(3) Call factory for details ■ Single Module Only

Static Switch Cabinet Specifications

	80% rated molded case circuit breakers					100% rated insulated case circuit breakers						
SSC Rating (A)	400	600	800	1000	1200	800	1000	1200	1600	2000	3000	4000
Input Voltage (V)	480	480	480	480	480	480	480	480	480	480	480	480
Output Voltage (V)	480	480	480	480	480	480	480	480	480	480	480	480
Nominal Bypass Current (A)	320	480	640	800	960	800	1000	1200	1600	2000	3000	4000
Bypass Breaker (65 kAIC std.)												
Frame Size (A)	1000	1000	1000	1000	1200	800	1000	1200	1600	2000	3000	4000
Trip (A)	400	600	800	1000	1200	800	1000	1200	1600	2000	3000	4000
Maintenance Bypass _{2 or 3 CB(1)40}												
Frame Size (A)	1000	1000	1000	1000	1200	800	1000	1200	1600	2000	3000	4000
Trip (A)	400	600	800	1000	1200	800	1000	1200	1600	2000	3000	4000
Nominal UPS Output Current (A)	320	480	640	800	960	800	1000	1200	1600	2000	3000	4000
SSC Dimensions (inches)												
Height	75	75	75	75	75	78	78	78	78	78	78	90
Depth	33	33	33	33	33	48	48	48	48	48	48	60
Width	36	36	36	36	36	72	72	72	72	72	72	75
Approximate SSC Weight (lbs)	1150	1150	1150	1150	1150	2900	2900	2900	2900	2900	2900	3200
Maintenance Bypass Dim. _{2 or 3 CB(1)}												
Height	75	75	75	75	75	78	75	78	78	78	78	90
Depth	33	33	33	33	33	48	48	48	48	48	48	60
Width	22	22	22	22	22	22	22	22	22	36	36	48
Maintenance Bypass Cabinet Wt.	550	550	550	550	550	2400	2400	2400	2400	2400	2400	2400

(1) Maintenance Bypass optional with Static Switch Cabinet (2) 100% rated for continuous duty static switch optional; 100% insulated case CB on Maintenance Bypass; 100% rated insulated case CB dimensions may change (3) Other SSC current ratings available upon request (4) Key interlocks standard (5) Fixed mount circuit breakers standard with optional draw out circuit available.

Selected systems available in 280, 220 V and 600 V

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EPS6k 101
Effective: April 2002