

Comet

40/50/65/80/100/125/150 kVA

*Power Protection for
Mission Critical Environments*



Advanced Features

- ▶ Whisper quiet operation
- ▶ High reliability transformerless topology
- ▶ Very high efficiency for lowest operating costs
- ▶ True on-line double conversion topology for complete isolation from utility
- ▶ Small footprint
- ▶ Integrated input filter for distortion free power
- ▶ Field upgradeable
- ▶ Power surge stabilization for managing start-up of IT equipment
- ▶ User friendly graphical interface with color touchscreen
- ▶ Web based monitoring options
- ▶ Advanced battery management for maximum battery life
- ▶ Protected by factory trained MGE Field Service Engineers
- ▶ Comet is available as a UL 924 system for Emergency Lighting Applications

Critical load protection from the world's largest three phase UPS manufacturer

Engineered for optimum reliability – Whether you are operating an enterprise system or an air traffic control tower, MGE understands the concept of critical power. That's why more people worldwide use MGE for critical three phase power solutions than any other UPS company. Ideal for computer and network applications, the **Comet** offers the advantage of a **centralized power source**, while still allowing **individual control of servers over the network**.

Packaged in a **space-saving footprint** complete with maintenance bypass, harmonic elimination input filter, and options available to suit any user, the **Comet** is the right choice for your critical power application.

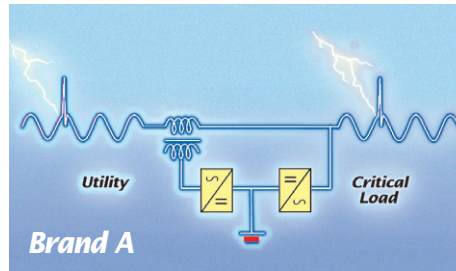
Installed in over 3,500 critical applications

THE UNINTERRUPTIBLE POWER PROVIDER

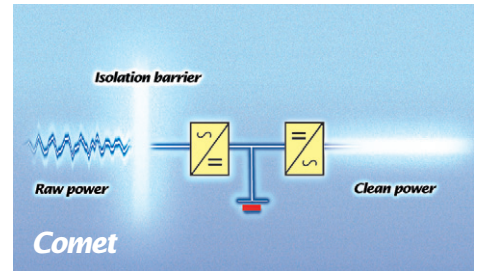
M G E
UPS SYSTEMS

True On-line Topology that Provides 100% Isolation from Raw Utility

The Comet's on-line double conversion topology (the only recognized true "on-line" topology for use in high reliability applications) uses the rectifier & inverter to isolate devices on the UPS output from the dangers of raw utility power. Other conversion topologies allow poor power conditions, such as low voltage surges, to travel through the UPS and reach devices on the UPS output. Double conversion topology also allows the UPS to regulate the output frequency without switching to battery power, a necessity for continued reliable operation with a generator.



Other conversion topologies have limited isolation from the dangers of utility power, letting raw utility power flow right through the UPS to devices on the output.



Double conversion topology completely regenerates 100% of the output power from the inverter ensuring that only clean, regulated power is fed to the output. The inverter is an effective isolation barrier against poor power conditions. No raw utility power ever reaches sensitive devices on the output.

High Reliability Transformerless Topology

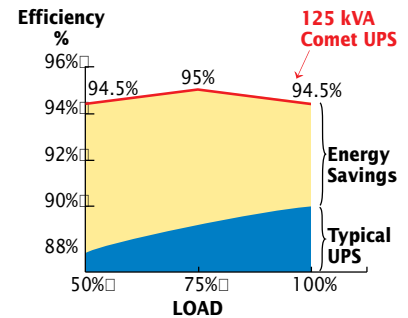
The Comet uses a state of the art transformerless topology, which eliminates the requirement for an output transformer found on just about all UPS. The result is a 100% high frequency switching design that offers benefits including:

- ▶ Increased efficiency due to no large magnetic losses
- ▶ Increased reliability and the ability to place voltage conversion transformers inside the UPS cabinet for significant space savings

Cost Savings that Matter

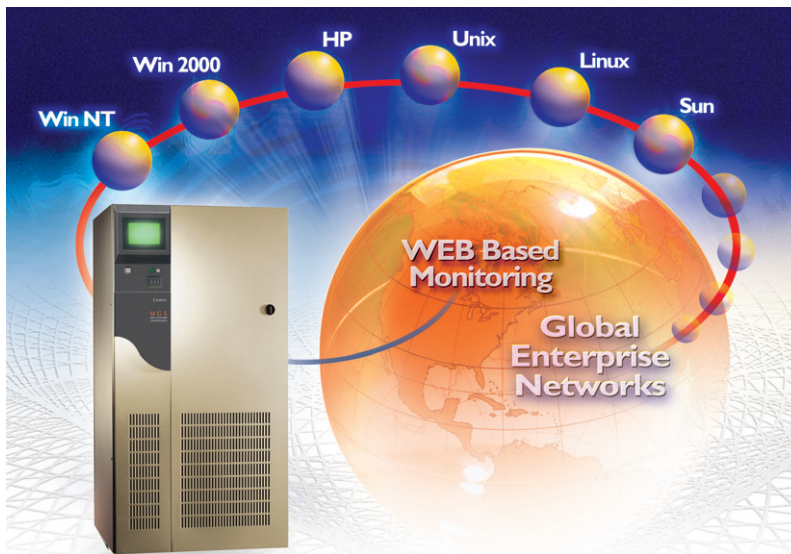
Energy efficiency: With efficiencies as high as 95% for non-linear computer loads, the Comet can deliver significant operating cost savings (close to the value of the UPS over a few years). Furthermore, most UPS operate at approximately 50% of their rated output where their efficiency drops sharply. Comet's efficiency stays virtually constant from 50% to 100% of rated power ensuring your savings.

Fact: A 3% energy efficiency advantage can save the average user \$20,000 in 3 years.



Energy savings can equal the value of the UPS in as little as a few years! This often makes Comet the least expensive choice in the long run.

Versatile Power Management Software

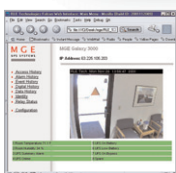


Solution-Pac 2

- ▶ Automatic shutdown/reboot of an unlimited number of servers
- ▶ View power system status from any point on the WAN
- ▶ Distributed, TCP/IP-based architecture for universal o/s compatibility
- ▶ Trap reception acknowledgement minimizes network bandwidth usage by UPS
- ▶ Integration with Enterprise-wide management systems
- ▶ Pager or E-mail notification of power events
- ▶ Load shedding for optimized use of backup power
- ▶ Environmental monitoring and management

Enterprise Power Manager

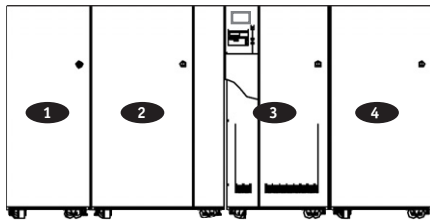
- ▶ Network Management & Building Management Cards
- ▶ Enterprise-wide management of multiple power devices
- ▶ Multiple branded device recognition
- ▶ Real-time monitoring and asset management
- ▶ Shutdown software for redundant/multi-module UPS configurations



Web Monitoring Module

MGE's new web based monitoring module makes supervising your critical power system easier than ever! The system features detailed alarm notification and operates independently of any servers or networks.

Comet System Components



- Comet UPS System**
- 1 External Maintenance Bypass Cabinet: 2 or 3 circuit breaker wrap around maintenance bypass
 - 2 Distribution Cabinet (84 pole distribution or submain breakers)
 - 3 UPS Module (with input filter & optional voltage conversion transformers)
 - 4 Battery Cabinet: (includes internal disconnect)



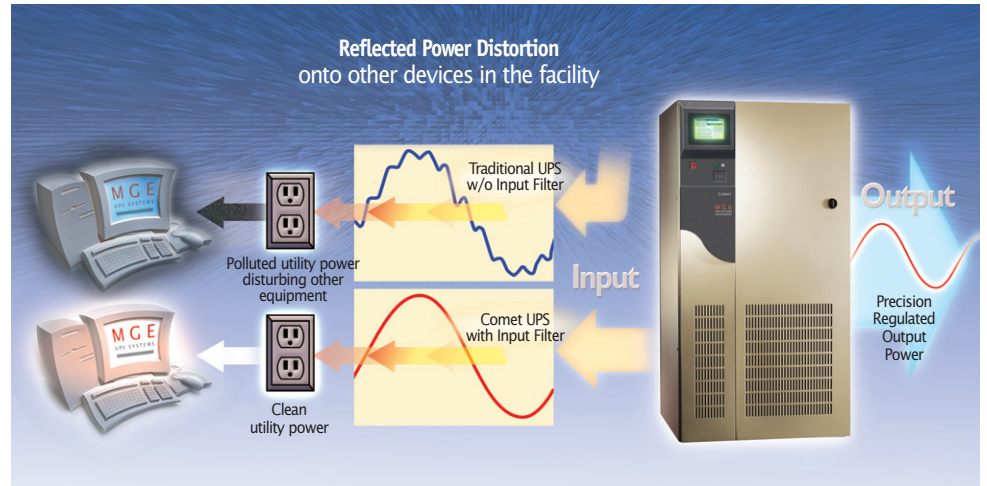
All Comet UPS are manufactured in MGE's Costa Mesa, California flagship plant. Before shipment

each unit is individually tested and operated for four to eight hours, ensuring reliable on site operation.

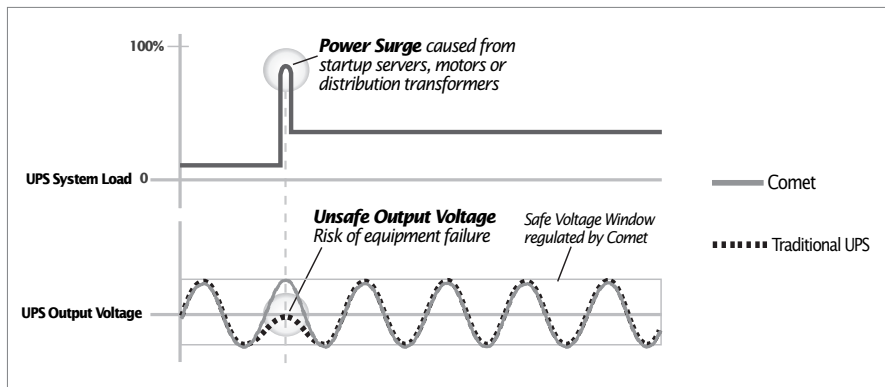
Integrated Input Filter Keeps Facility Power Clean

While a UPS provides clean power on the output, they can often have an adverse affect on input (utility) power, reflecting powerful harmonics onto the utility and disturbing other equipment sharing the facility power. The Comet's integrated input filter tames reflected harmonics, keeping the input power clean and safe for other equipment.

- ▶ Clean input and output power
- ▶ Utility power is kept clean for all devices in the facility
- ▶ No hidden costs for input filter "options"



Load Surge Management Technology



Computer power supplies and distribution transformers draw extreme surge currents when powered up. This often causes sags and surges on the UPS output compromising other devices already on UPS power. To eliminate this frustrating phenomenon, the Comet UPS was designed to instantaneously provide 100% of its rated power while still precisely regulating the output voltage, eliminating disturbances to other equipment during start-ups.

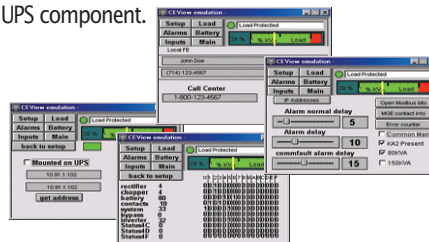
Advanced Graphical User Interface

An LCD **touch screen** complements the Comet controls to provide features including active mimic diagrams, alarm/event logs and more. The simplicity of the display helps operators of all knowledge levels understand UPS status and operation at a glance, limiting operator errors.



Details you can understand!

Component level screens like the battery management page and the output power page provide a very detailed view of the status of each UPS component.



The GUI's alarm and event log tracks all changes in UPS status along with a corresponding time stamp. This along with a trending record of key parameters aids in keeping an accurate measurement of UPS performance.

Comet Technical Specifications

| Rated Power | 40 kVA/32 kW | | | | 50 kVA/40 kW | | | | 65 kVA/52 kW | | | | 80 kVA/64 kW | | | |
|---------------------------------------|--------------|-------|-------|-------|--------------|-------|-------|-------|--------------|-------|-------|-------|--------------|-------|-------|-------|
| Input Voltage (V) | 208 | 480 | 480 | 600 | 208 | 480 | 480 | 600 | 208 | 480 | 480 | 600 | 208 | 480 | 480 | 600 |
| Output Voltage (V) | 208 | 208 | 480 | 208 | 208 | 208 | 480 | 208 | 208 | 208 | 480 | 208 | 222 | 208 | 480 | 208 |
| Nominal Input Current (A) on Bypass | 111 | 48 | 48 | 38 | 139 | 60 | 60 | 48 | 180 | 78 | 78 | 63 | 222 | 96 | 96 | 77 |
| Maximum Input Current (A) | 131 | 57 | 57 | 45 | 164 | 71 | 71 | 56 | 212 | 92 | 92 | 74 | 261 | 113 | 113 | 91 |
| Maintenance Bypass Switch Frame Size | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| UPS Output Current (A) | 111 | 111 | 48 | 111 | 139 | 139 | 60 | 139 | 180 | 180 | 78 | 180 | 222 | 222 | 96 | 222 |
| System Efficiency 100% | 90 | 90 | 93 | 90 | 90 | 90 | 93 | 90 | 91 | 92 | 94 | 91 | 91 | 91 | 94 | 91 |
| Full Load Heat Rejection (000's BTUs) | 13.5 | 12.1 | 8.2 | 13.5 | 16.9 | 15.2 | 10.3 | 16.9 | 17.6 | 15.4 | 11.3 | 17.6 | 21.6 | 21.6 | 13.5 | 21.6 |
| Module Dimension | | | | | | | | | | | | | | | | |
| Height" | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 |
| Width" | 32.75 | 32.75 | 32.75 | 59.29 | 32.75 | 32.75 | 32.75 | 59.29 | 32.75 | 32.75 | 32.75 | 59.29 | 32.75 | 32.75 | 32.75 | 59.29 |
| Depth" | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 |
| Weight (lbs)** | 1,760 | 1,360 | 880 | 2,460 | 1,760 | 1,360 | 880 | 2,460 | 2,115 | 1,590 | 970 | 2,690 | 2,115 | 1,590 | 970 | 2,190 |

| Rated Power | 100 kVA/80kW | | | | 125 kVA/100kW | | | | 150 kVA/120K | | | |
|---------------------------------------|--------------|-------|-------|-------|---------------|-------|-------|-------|--------------|-------|-------|-------|
| Input Voltage (V) | 208 | 480 | 480 | 600 | 208 | 480 | 480 | 600 | 208 | 480 | 480 | 600 |
| Output Voltage (V) | 208 | 208 | 480 | 208 | 208 | 208 | 480 | 208 | 208 | 208 | 480 | 208 |
| Nominal Input Current (A) on Bypass | 278 | 120 | 120 | 96 | 347 | 150 | 150 | 120 | 417 | 180 | 180 | 145 |
| Maximum Input Current (A) | 327 | 141 | 141 | 107 | 407 | 177 | 177 | 129 | 490 | 212 | 212 | 154 |
| Maintenance Bypass Switch Frame Size | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| UPS Output Current (A) | 278 | 278 | 120 | 278 | 347 | 347 | 150 | 347 | 417 | 417 | 180 | 417 |
| System Efficiency 100% | 91 | 93 | 95 | 91 | 90 | 92 | 95 | 90 | 90 | 92 | 94 | 90 |
| Full Load Heat Rejection (000's BTUs) | 28.3 | 22.3 | 15.4 | 28.3 | 38.2 | 30.7 | 20.8 | 38.2 | 50.7 | 41.6 | 26.3 | 50.7 |
| Module Dimension | | | | | | | | | | | | |
| Height" | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 | 66.7 |
| Width" | 69.29 | 42.75 | 42.75 | 69.29 | 69.29 | 42.75 | 42.75 | 69.29 | 69.29 | 42.75 | 42.75 | 69.29 |
| Depth" | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 | 33.42 |
| Weight (lbs)** | 3,400 | 2,450 | 1,460 | 3,400 | 3,400 | 2,450 | 1,460 | 3,400 | 3,400 | 2,450 | 1,460 | 3,400 |

* 600 VAC output available
 ** Consult installation drawings for specific weights

Comet Technology

Standard Features

- True on-line operation
- Digital Power Quality logic
- High efficiency (up to 95%)
- IGBT PWM inverter
- Microprocessor-controlled operation
- Advanced battery monitoring system
- Modular power assemblies
- Computer-aided diagnostics
- Maintenance bypass switch
- LCD display (multi-lingual)
- Input harmonic elimination filter
- Top and bottom cable entry
- Single input
- UL 1778, cUL and UL924 listed
- FCC compliant

Environmental Specifications

- Audible noise: 65 dBA @ 3'
- Operating temperature: 0°C to 40°C
- Non-operating Temperature: -20°C to +45°C
- Relative humidity: 0 to 95% non-condensing

AC Power Input Rating

- Voltage: 600, 480, 220, 208 VAC+12, -15
- Phase: 3 ϕ , 3 wire plus ground
- Frequency: 60 Hz \pm 4%
- Surge tolerance: meets IEEE 587/ANSI C62.41
- Up to 0.98 power factor

Power Output Rating

- Voltage: 480 VAC 3 ϕ , 3 wire plus ground; 208/120; 220/127, 480/277, 600/346, 3 ϕ , 4 wire plus ground
- Frequency: 60 Hz \pm 0.1% when bypass not available
- Power: Rated kVA @ 0.8 power factor
- Voltage regulation: \pm 1% steady state; \pm 5% for a 100% step load
- Voltage recovery time: 16.6 msec. (one cycle)
- Voltage distortion: <2% THD for linear loads, <3% THD for non-linear loads with crest factor of 3.0
- Unbalanced load: Up to 100% 120° \pm 3% maximum angle displacement, \pm 2.5% maximum voltage deviation

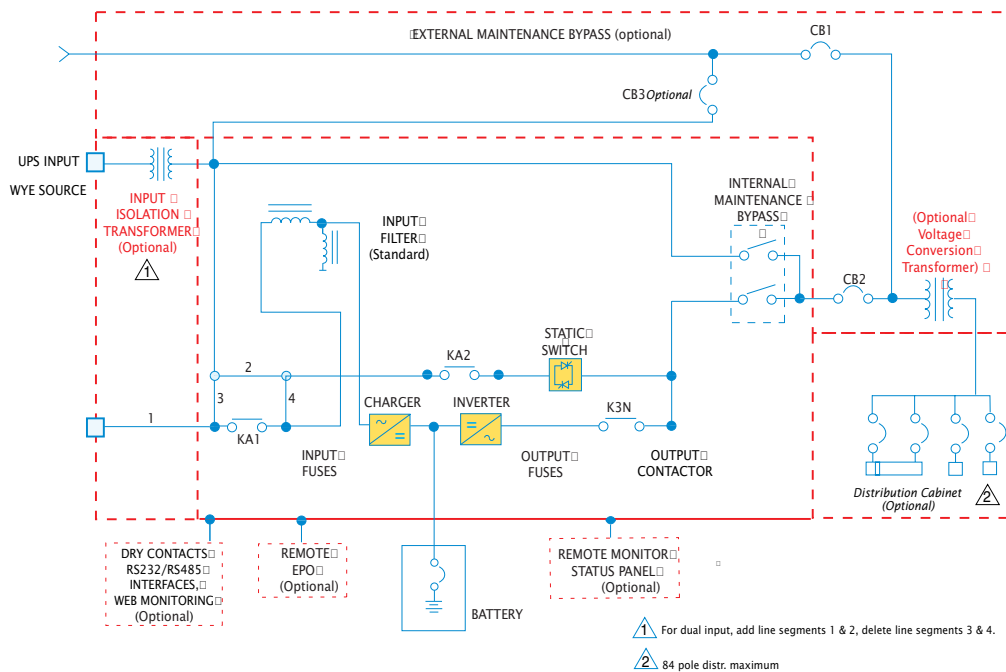
Bypass Input

- Bypass configurable as single or dual input

Options

- Extended operation battery banks
- External battery disconnect
- External maintenance bypass
- Power distribution unit
- Dual input
- Seismic brackets
- Remote Alarm Status Panel (RASP)
- Remote Summary Alarm Panel (RSAP)
- RS232, RS485 & dry contacts
- Advanced power management software
- Network Management Card/Web SNMP
- IBM AS400 Interface
- RemotePowerMonitoring™ by MGE PowerServices™

Comet Schematic



MGE UPS SYSTEMS

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