

**Output Power
Factor 1**

MKL-DSP SERIES - THREE PHASE

**Double conversion
True On-Line UPS**
3 Phase Input - 3 Phase Output



COMPUTER POWER®

The Next Level in Digital Convergence®

- 160 KVA/KW • 200 KVA/KW • 250 KVA/KW
- 300 KVA/KW • 400 KVA/KW • 500 KVA/KW
- 600 KVA/KW • 800 KVA/KW

Models for: 380/220 VAC • 400/230 VAC / 60Hz.

Advanced 3 Phase Protection for Server Rooms, Data Centers, Industrial, Telecom and other mission-critical Applications.

FEATURES:

- Three Level Rectifier & Three Level Inverter Technology
- Output Power Factor 1 (kVA=KW)
- On Line-Double Conversion Technology (Class VFI-SS-111)
- IGBT PWM Rectifier & Inverter Technology
- DSP Control
- High Efficiency up to 96%
- Low Input Current THD (<3%)
- High Input Power Factor (>0.99)
- Dual Input
- Optional DC/DC Charger/Booster
- Wide Input Voltage Range (Optional)
- Advanced Battery Management
- Short Circuit and Overload Protection
- Paralellable Modules up to 8 units
- 500 Real Time Event Log with Detailed Parameters
- Static & Manual Bypass Operation
- Overload and Short Circuit Protection
- Small Footprint and Easy Maintenance
- Advanced Communication Capabilities
- Perfect Generator Compatibility

BENEFITS:

- High uptime
- High efficiency with energy-saving ECO mode
- Low distortion to utility power
- Extends battery lifespan
- Operating cost savings
- Small footprint and ease of maintenance
- User-friendly and programmable
- Scalability and redundancy
- Parallel ready

OPTIONS:

- SNMP communications card
- Modbus communications card
- Dry contact interface
- Dual Input

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The Computer Power 160 KVA/KW - 800 KVA/KW MKL-DSP Series is the next generation true Online Double Conversion fully digital controlled UPS. Designed to meet high availability and high power quality needs of a variety of critical applications. It is a result of advanced development in the field of modern UPS technology. Fully DSP controlled inverter technology provides highly accurate, drift-proof control compared to traditional analog electronics. These features enable the UPS to provide accurate, reliable power protection under a wide range of conditions.

All the control mechanisms of Computer Power MKL-DSP Series are implemented through software. The UPS designed with "All in One" technology and compact construction to meet minimum space requirements in technical environments.

The Computer Power MKL-DSP Series combines:

- High efficiency,
- High reliability,
- Low cost of ownership and flexibility.

It handles the challenge to keep running today's critical applications which need more active power.

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DSP Power Factor Corrected IGBT Three Level Rectifier:

IGBT Three Level based power correction technology provides near 1 Input Power Factor Correction (≥ 0.99) and Input Current Total Harmonic Distortion (THDi) less than 3% which avoids disturbances to connected loads.

- 0.99 Input Power Factor ensures clean and sinusoidal input current. Maximizes active power leading to reduced electricity pay-out, minimizes cable, switchboard, fuse, generator requirement to reduced investment cost.

DSP Controlled IGBT Three Level Inverter:

DSP controlled IGBT Three Level inverter provides the highest quality output power, ensures the cleanest output voltage sinewave to protect connected loads. It also produces the highest efficiency in the market.

Perfect Generator Compatibility:

Computer Power MKL-DSP Series is perfectly compatible with diverse sources generators. The UPS ensures clean, uninterrupted power to protected equipment when generator power is used thanks to its robust IGBT rectifier.

With IGBT Three Level rectifier Low THD is kept less than <3% without compromising efficiency. UPS is therefore uniquely compatible with a wide range of generators. With power performance of Computer Power MKL-DSP UPS, the user can choose a generator only 20% higher rated than the UPS.

Computer Power MKL-DSP Series has the ability to adjust power walk-in from 5 seconds to 15 seconds, along with reduced input current distortion. The UPS gradually increases the power supplied source to the load on the output port based on the measured current level at the input port. The power supplied from the input port to the load on the output port, however, varies according to the input voltage, input current and input power factor.



Back-feed Protection:

Back-feed protection, in Computer Power MKL-DSP Series UPS, prevents the risk of electric shock from any electric current feeding back from UPS output in the event of a mains supply failure. When mains fails and connected loads are protected by UPS, back-feed protection prevents current from being passed back to the input terminals of the UPS from the inverter output. This is extremely important for health and safety reasons because it enables a service engineer to work on the incoming supply side of the UPS without risk of receiving an electronic shock.

Reverse Energy Tolerance for Regenerative Loads:

The Computer Power MKL-DSP Series UPS can be used with regenerative loads, such as synchronous motors. The regenerative loads pumps the energy back to mains. Traditional UPS systems burn this feedback energy. This causes lower efficiency. Computer Power MKL-DSP Series UPS with IGBT rectifier can absorb intermittent load generated power. Additionally, this reverse power tolerance permits important system operations like closed transitions transfers of the UPS load directly to an engine generator source.

Advanced Communication Capabilities:

Computer Power MKL-DSP Series has a wide range of advanced communication options. Provides remote management of the UPS over the network and enables centralized management via MAKNET Software.

Advantages:

- Automatic Shutdown/ restart of unlimited number of servers
- Power systems status view from any point of WAN
- Integration with all management systems
- Communication cards for every application
- Environmental monitoring and management
- Load shedding for optimized use of backup power
- Email notification of power events



Communications:



RS232, RS485 Communication Port:

With RS232 and 485 communication port and MAKNET software, the UPS input-output parameters can be observed and controlled. By MAKNET software the changes in UPS status are reported by email and operating systems on network can be shutdown safely.



SNMP:

SNMP is Simple Network Management Protocol that can monitor and manage the UPS over TCP/IP network. All the UPSs on network can be monitored and managed via MAKNET SNMP software and adaptor. UPS events can be recorded. Warning messages, notifications can be sent by email.

Options:

External Battery Management Kit:

This kit consists of two different cards. These are following:



a) R326-R01A Data Expansion Module:

R326-R01A module is directly connected to one of two expanding slots of UPS. The main duty of this module is to collect information from other battery cabinets. Here, in physical intercommunication environment CAN works with MAKBUS protocol.



b) R336-R01A External Battery Cabinet Temperature Sensor:

R336-R01A module is mounted on battery cabinet. From the batteries inside the cabinet, position information about the key on the cabin besides temperature details. A single card of this type is needed for each cabin.



Dry Contact Card:

A "dry" contact is a contact that is not initially connected to a voltage source and provides isolated dry contact signals which indicate any failure of UPS. Relay contacts are totally isolated from UPS and Ground. All isolated contacts can operate between 3.3Vdc-24Vdc. By using isolated contacts UPS can be controlled remotely and via other devices.

Modbus/JBUS:

Modbus is an industrial automation communication port. This device provides continuous, reliable, accurate remote monitoring of a UPS system through a Building Management System or Industrial Automation System. It connects to the network via RS-485 through either an isolated DB-9 port or terminal block.



Remote Panel:

The UPS remote panel helps the user to observe the operational status of the UPS from a distant place. The user can be informed via LCD of remote panel, about all operational status, events and parameters of UPS.



GPRS Modem:

The GPRS Modem allows the system to notify email/ SMS. It helps to reduce the repair and troubleshooting time.

Remote Ethernet Led

TCP/IP Based Remote Power Switch

Sensors (temperature, humidity, etc).

Advanced Battery Management:



Computer Power Series guarantee enhanced battery life and maximizes battery performance, life, and reliability through intelligent, precision charging.

Temperature Compensated Battery Charging monitors external and internal battery temperature changes and adjusts the charge current rate accordingly. The UPS adjusts charge parameters automatically when the battery capacity is entered through LCD panel.

Advanced battery management provides real-time information about battery capacity and back up time. This information can be seen from LCD panel. The UPS tests the batteries at adjustable periods by users without switching off the system. The tests can be done automatically or manually. Computer Power MKL-DSP Series UPS with its hot-swap feature allows battery charge without disconnecting the unit.

With Advanced battery management capability of Computer Power MKL-DSP Series UPS you can have confidence that your batteries are managed for maximum performance and life time and are always ready for critical role they play in your power protection system.

Functions:

- Automatic and manual battery test
- Accurate back up time prediction
- Temperature compensating battery charging
- Charging by main control board
- Low current and voltage ripple
- High accurate runtime prediction
- Full and quick battery test
- Deep-discharge protection
- Records for all battery usage
- Records for all battery temperature statistics
- Allows battery charge without disconnecting the UPS

High Efficiency and Low Cost of Ownership:

Computer Power MKL-DSP Series UPS consumes less energy to supply the loads with its high efficiency up to 96%.

Thanks to this high efficiency rate, the percentage of energy that is produced as heat becomes minimum. As a result power loss becomes very low and users can reduce their electricity usage and air conditioning requirement.

Also with reduced THDi and 0,99 power factor correction Computer Power UPS enables to save money by reducing generator size requirements.

EPO (Emergency Power Off):

EPO function is designed to switch off the UPS in emergency conditions (fire, flood, etc). The system will turn off the rectifier, inverter and stop powering the load immediately (including the inverter and bypass), and the battery stops charging and discharging.

If the input utility is present, the UPS's controls will remain active; however, the output will be turned off. To remove all power from the UPS, the external feeder breaker should be opened.

Digital Control System:



Digital Control System of Computer Power MKL-DSP Series increases integration and provides lower system cost. Noise immunity, programmability advantage and reduction of hardware are the qualities of this new approach. The UPS ensures uninterrupted operation and protects the loads in abnormal cases that may cause failure thanks to its complex control algorithms which operates with floating point controllers.

All the control functions for Computer Power MKL-DSP Series UPS, which includes power-on start-up control, input stage power factor control, battery charging and boosting control, output stage ac voltage regulation, and shutdown control, are realized by using single DSP control board.

DSP-controlled UPS system can achieve fast dynamic response for nonlinear loads and high power factor under various loading conditions.

Static & Manual Maintenance Bypass:

Computer Power MKL-DSP Series includes standard static and manual bypass.

Static bypass provides safe transfer to mains if the UPS is overloaded or develops a fault condition. Where EMI filters are used to help neutralize spikes and electrical noise, the load may be routed through these on bypass to provide further protection.

During normal system operation the load is connected to the inverter; but in the event of a UPS overload or inverter failure, the load is automatically transferred to the static bypass with no interruption. To achieve this, the inverter output and bypass supply must be fully synchronized during normal operation conditions.

Manual bypass function is intended for maintenance work. A manually controlled, maintenance bypass supply is incorporated into the Computer Power UPS design. It is used to power down the UPS without interrupting the power to the load. It is thus possible to work in a faulty UPS in complete safety.

Auto Restart:

When the main and bypass sources fail, the UPS draws power from the battery system to supply the load until the batteries are depleted. When the UPS reaches its end of discharge, it will shut down. The UPS will automatically restart and enable output power when utility power is restored, after the "Auto Start Delay Time" expires (the default delay is 5 minutes).

Parallel and Redundant Operation:

Computer Power MKL-DSP Series features easy and simple scalability and redundancy. It is ready to grow with your business demands.

Power increase: The UPSs can be connected in parallel to increase total capacity of the system. If one UPS goes out of order, the critical loads are transferred to bypass.

Redundancy: In redundant operation N number of units supply the load and one more unit (N+1) remains as redundant. All units in this system share the loads equally. If one of the UPSs goes out of order because of failure or maintenance, the remaining UPS continue feeding the critical loads without interruption.

Parallel Operation Features:

- Internal standard parallel microprocessor for all models.
- Parallelable up to 8 units.
- Parallel connection with ring cable.
- Autosensing disconnected parallel cable.
- Equal current share with DSP control.
- All parallel system can be controlled from one unit's front panel.
- Full synchronization between parallel units.
- Isolated parallel operation card.
- Static bypass for all units.



Advanced User Interface:

Computer Power MKL-DSP Series UPS has a large and user friendly graphic display which provides operating information in four different languages. Thanks to this user friendly advanced display, all parameters can be monitored and controlled, 500 events can be recorded by UPS.



Single or Dual Input Operation:

Computer Power MKL-DSP Series can operate for either single or dual power inputs. Dual input feature increases availability by allowing the UPS to be connected to two different power sources. In dual configuration, the rectifier is fed from utility (main source), and the static and maintenance bypass is fed from a secondary source.

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TECHNICAL SPECIFICATIONS

MKL-DSP SERIES THREE PHASE

MODELS	MKL-DSP 160K	MKL-DSP 200K	MKL-DSP 250K	MKL-DSP 300K	MKL-DSP 400K	MKL-DSP 500K	MKL-DSP 600K	MKL-DSP 800K
Phase	Three Phase In / Three Phase Out							
Capacity	160 KVA/160 KW	200 KVA/200 KW	250 KVA/250 KW	300 KVA/300 KW	400 KVA/400 KW	500 KVA/500 KW	600 KVA/600 KW	800 KVA/800 KW
Power Factor	Unity (1)							
INPUT								
Input Nominal Voltage	220 / 380 VAC ; 230 / 400 VAC					3P+N+G		
Input Voltage Range	Standard: -15% + 18%, Optional: -37% +22%							
Input Power Factor	At Full Load ≥ 0.99							
Input Frequency Range	45 - 65 Hz (Selectable)							
Rectifier	Three Level IGBT Technology							
Total Harmonic Distortion (THDi)	<3%							
OUTPUT								
Output Nominal Voltage	220 / 380 VAC ; 230 / 400 VAC ; 240/ 415 VAC ±1%					3P+N+G		
Output Frequency Range	50/60 Hz ± 0.5% Synchronous with Network							
	50/60 Hz ± 0.2% Battery Mode							
Total Harmonic Distortion (THDv)	Linear Load < 2% ; Non-Linear Load < 5%							
Crest Factor (CF)	3:1							
Efficiency	96%, Eco Mode 98%							
Inverter	Three Level IGBT Technology, Pure Sine Wave							
Overload Capacity	At 125% Load 10min; at 150% Load 1min							
Recovery	0% - 100% - 0% Load, Maximum Output Tolerance 5%, 1% Back to Band <40ms							
BATTERY								
Quantity (12V DC VRLA)	2 x 31, ± 372 VDC							
Type of battery	External, Maintenance free sealed batteries							
Backup time	Standard 10 minutes/ Other configurations available							
COMMUNICATION & MANAGEMENT								
Communication Ports	RS-232 (standard), SNMP (optional), RS-485 (optional)							
Communication Cards	SNMP (Optional) , ModBus (Optional)							
Protocols	SEC, TELNET							
Compatibility	Supports Windows® 2000/2003/XP/Vista/2008, Windows®7, Linux, Unix, and MAC							
Display	320 x 240 Touch Panel LCD Graphic Display							
Dry Contacts	Optional							
GENERAL								
Dimensions (WxDxH) (mm)	830x870x1800			1480x850x1790			1830x863x2010	3400x806x1904
Net Weight (kg)	450	485	650	700	850	1350	1400	1850
Running Temperature	For UPS: 0°C to 40°C					For Batteries: 0°C to 25°C		
Storage Temperature	For UPS: -15°C to 45°C					For Batteries: -10°C to 60°C		
Humidity	0-95%							
Altitude Operational	<2000m							
Noise	60 dBA							
Protection Class	IP20							
Chassis	Anti-Static Paint Protection							
Alarms	500 Event Log							
Parallel Operation	Parallel Power Increase up to 8 pcs.							
EPO (Emergency Power Off)	Standard							
Isolation Transformer	Optional							
STANDARDS & CERTIFICATIONS								
Quality	ISO 9001 ; ISO 14001 ; ISO 18001							
Compliance	EN62040 -3 (VFI-SS-111); EN62040 - 2 ; EN62040 -1 ; EN60950 ; CE							

3 Phase in / 1 Phase Out is available (10 to 30 KVA) (optional)

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