

# Eaton 9315 UPS



*Powering Business Worldwide*

## Power range 225-750 kVA



225-300 kVA



300-500 kVA



625-750 kVA

The Eaton 9315 is a highly reliable and flexible three-phase UPS. Available in single modules from 225 kVA to 750 kVA, the 9315 can be paralleled for both redundancy and capacity using patented Powerware Hot Sync technology for systems up to 3324 MW.

### The pursuit of 100 percent availability

With technology fundamental to business survival, it's no wonder that IT managers, facility managers and CIOs feel increasing pressure to achieve zero downtime. As availability requirements rise, so does the search for the most reliable power protection system with the most advanced technology.

The 24/7 world is nothing new to us. For more than 40 years, that's exactly what our customers have demanded we address – and we've been doing it to provide maximum uptime to the most critical systems. So when we say we understand the pressure of “no downtime,” you can be sure we really mean it.

### The Eaton 9315 UPS

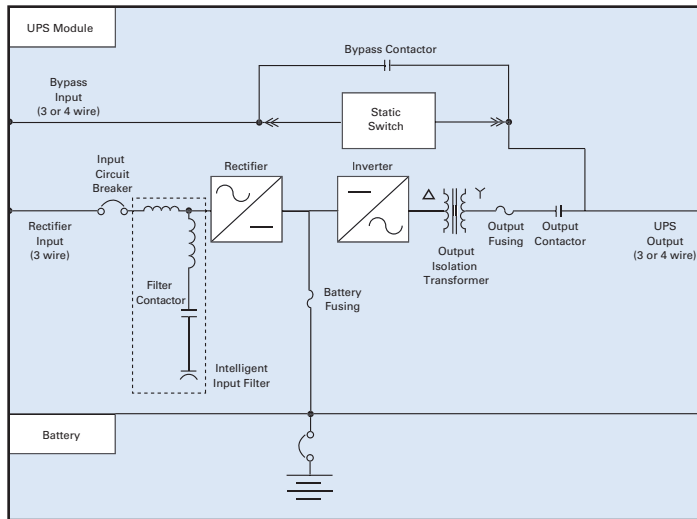
The 9315 UPS series gives you maximum flexibility, reliability and system availability for your entire enterprise, whether it's in a single building or spread around the world. With the highly reliable hardware, sophisticated power management software, and a multitude of accessories and options, combined with world class service, the 9315 offers the power solution – and system availability – that lets you get down to the business of your business.

### The 9315 is available in these system configurations:

- Single module – reverse transfer
- Multi-module – Powerware Hot Sync – redundant
- Multi-module – Powerware Hot Sync-capacity

### Applications

- Data centers
- Server farms
- Telecommunication installations
- Internet service providers
- Transportation systems
- Security operations
- Broadcasting and entertainment
- Process control equipment
- Financial systems
- Credit card operations
- Medical / healthcare
- Industrial systems



225-500 kVA

## Features and benefits

### Double-conversion technology

Double-conversion online technology protects the critical load from any power variations on the input

### DC Expert

Monitors and maintains battery health; provides state-of-charge and dynamically updates battery time remaining information

### Network access

Optional adapters provide LAN connectivity and SNMP compatibility

### Remote notify

UPS initiates outcall for user-selected events

### Intelligent input

Provides superior generator interface and additional isolation between input and output

### Intelligent design

Reduced component count significantly reduces single point-of-failure

### Monitor panel

Provides single-button controls to easily access data about UPS status

### Intelligent controls with DSP

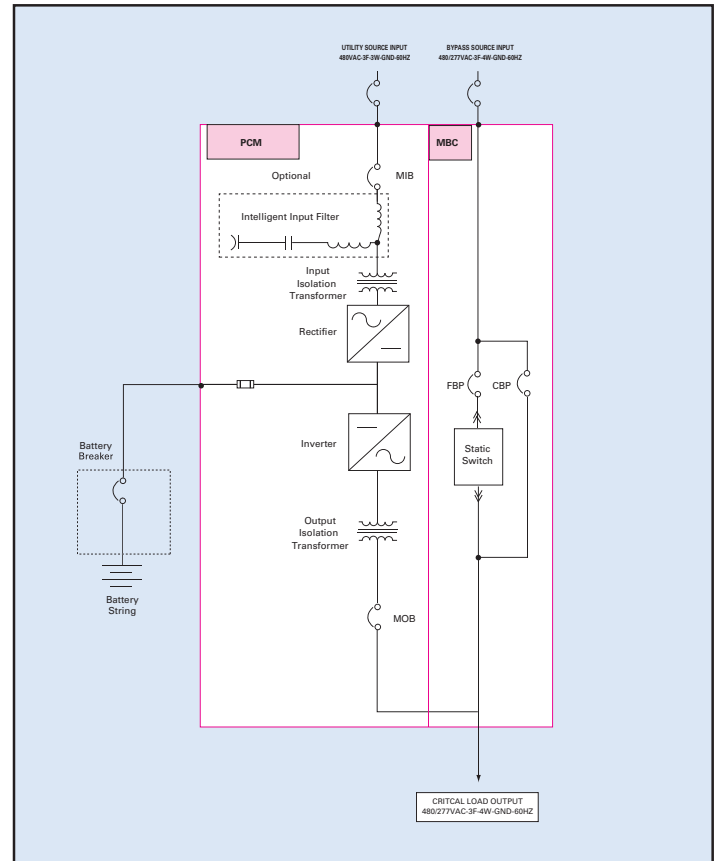
Digital signal processing provides more pristine output signal

### True PWM technology

High speed DSP enables IGBTs to work at their highest capacity, increasing system reliability and ensuring perfect power on the output

### Powerware Hot Sync

Patented paralleling technology requires no communication between modules, eliminating a system-level single point-of-failure; available for both redundant and capacity systems.



625-750 kVA

## FORESEER

FORESEER Enterprise Management System is the ultimate solution to proactively monitor and manage critical facility infrastructure. Regardless of manufacturer, from UPSs, air handlers and battery monitoring to simple temperature/humidity sensors, FORESEER monitors them all. Its interface capability and unparalleled performance analysis tools deliver the information you need to identify dangerous trends, execute corrective action and prevent failures. Information comes across clearly and intuitively via the most advanced graphical user interface.

### Intelligent Input Filter

The Intelligent Input Filter on the 9315 mitigates the damaging effects of harmonics, and automatically turns itself off when conditions dictate, such as when the power source switches from utility to auxiliary generator power. Because it automatically configures itself, and turns itself on/off, you can be assured that your critical systems are protected, no matter what power anomaly comes their way.

## Eaton 9315 (225-300 kVA) Shown with doors removed

### 1 Monitor panel

Full size liquid crystal display provides graphical performance data, statistics, alarm history and metering

### 2 Control panel

Easy-to-use control panel provides:

- One button start-up (with optional battery breaker)
- Bypass transfer control
- Input circuit breaker operation

### 3 Communication panel

External communication interface accommodates remote monitoring and configuration by network or direct connection:

- Internal modem option, powered by the UPS
- System monitoring and control from any location through:
  - RRS-232 and accessory ports
  - Remote terminal capabilities
  - X-slot cards
- UPS remote control capability via programmable building alarms

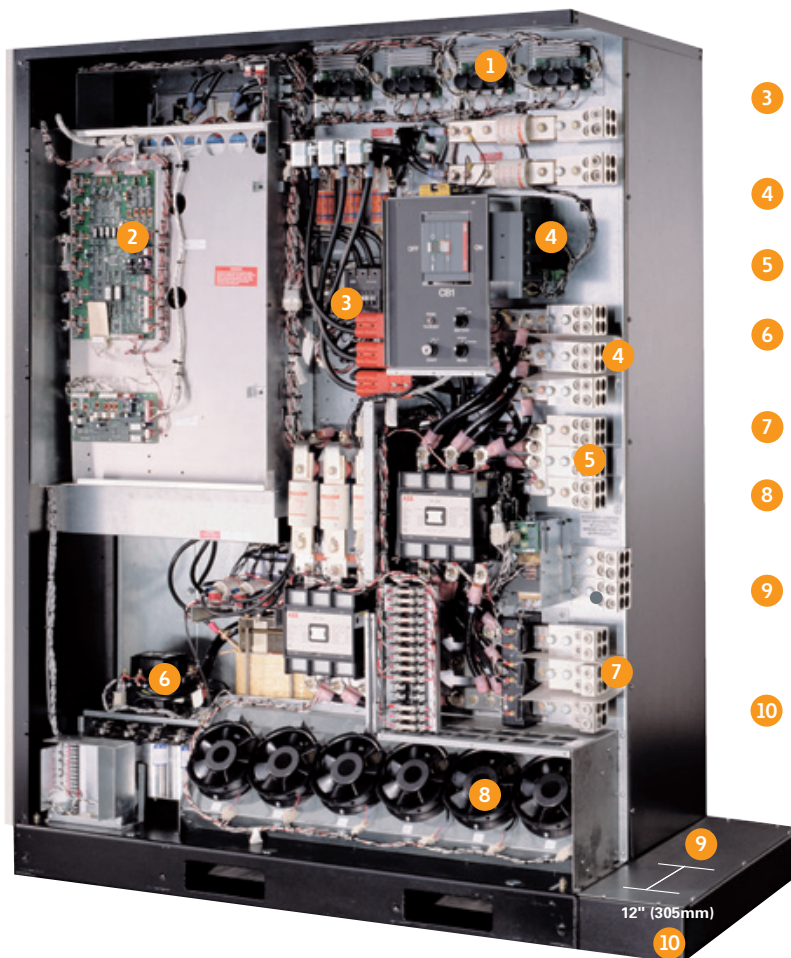


Eaton 9315 (225-300 kVA)

- Large, easy-to-read LCD measures 7.5" x 6" (191mm x 152mm)
- Push-button controls allow easy access to data through user-friendly Windows interface
- DC Expert provides state-of-charge and dynamically updates battery time remaining
- Operational metering features:
  - True RMS sensing of voltage and current
  - Real-time display
  - Displays up to 400 of the most recent events; all data is accessible via modem
- Unique system performance statistics include summary information on:
  - UPS and bypass availability
  - Frequency and length of on-battery conditions
  - Building alarms
  - Time on bypass, and much more



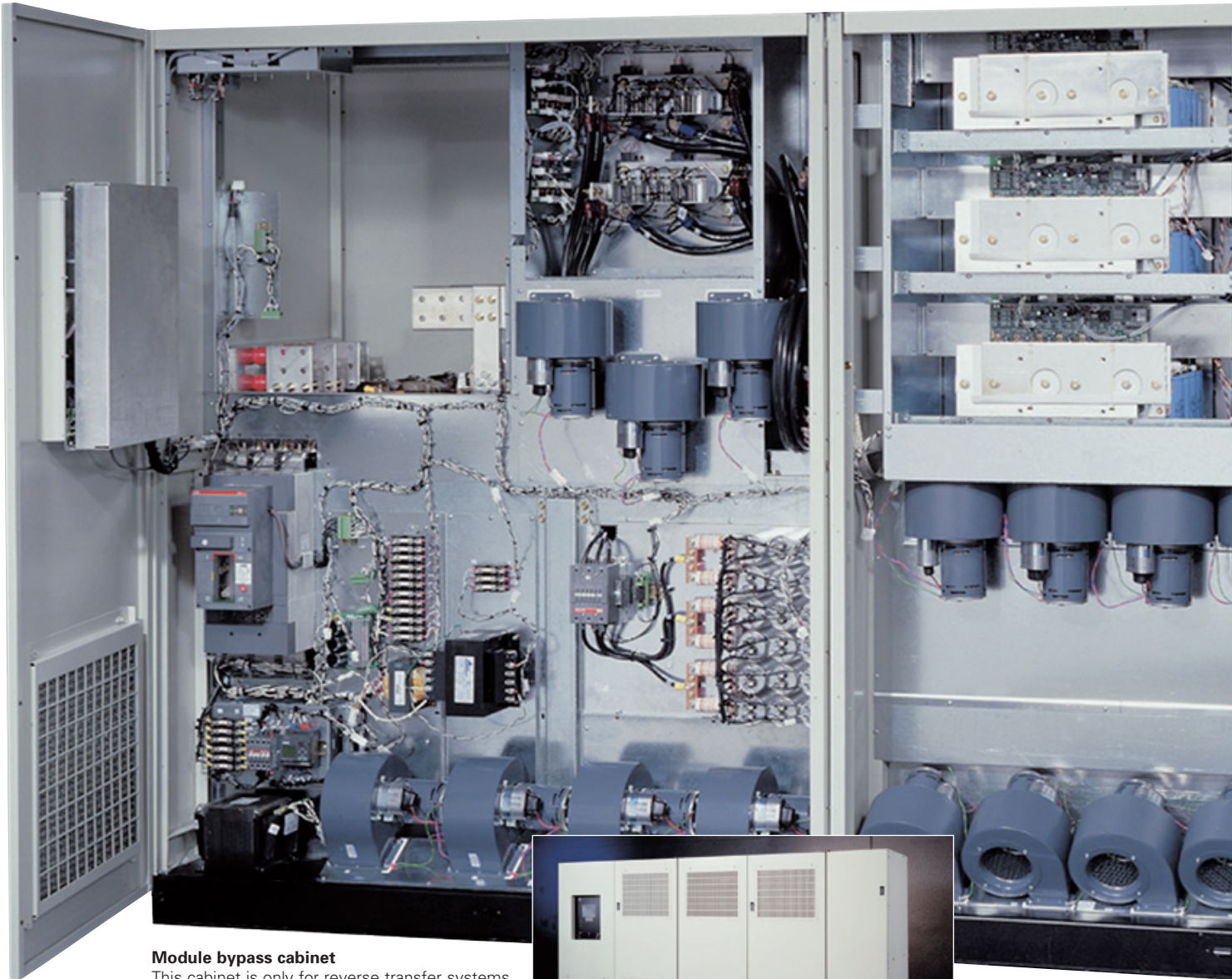
**Eaton 9315 (225-300 kVA)**  
**Shown with safety shields removed**



- 1 Redundant power supplies support control logic for reliable online operation and provide local and remote failure notification
- 2 Intelligent controls incorporating digital signal processing provide 5 percent output THD,  $\pm 1$  percent output voltage regulation, programmable operating limits and failure-proof make-before-break bypass transfers
- 3 Static switch assembly can be removed for servicing without interrupting the critical load; all electrical connections feature quick disconnects for safe access
- 4 Standard dual feed inputs for 480V and 400V increase availability (optional for other voltages)
- 5 2x-rated neutral supports higher currents associated with non-linear loads
- 6 Intelligent Input Filter disconnects from rectifier input with loss of utility and low load conditions, providing superior generator compatibility
- 7 Mechanical connectors on all input and output terminals reduce installation time
- 8 Redundant fans ensure direct consistent cooling and quiet operation and provide local and remote failure notification while supporting operational full rating up to 5000 without derating
- 9 Modular design and construction places all serviceable components within a 12" (305mm) depth for easy maintenance; only requires front access for servicing convenience and low mean time-to-repair
- 10 Nine-inch removable wireway sections aid in installation

- Intelligent alarm management-event record separates informational notices from situations requiring operator intervention
- In addition to the LCD panel, LEDs indicate UPS operating status at a glance
- A hinged access cover protects an emergency power-off (EPO) that quickly de-energizes the UPS and critical load
- All power wiring is secured to magnetics with maintenance-free, cold-welded connections, eliminating periodic retorquing of fasteners and rear access requirements
- Standard top or bottom entry allows for installation flexibility
  - 9315 (200-300 kVA) reduces from 65" (1654mm) to 56" (1422mm)
  - 9315 (300-500 kVA) reduces from 74" (1880mm) to 65" (1654mm)

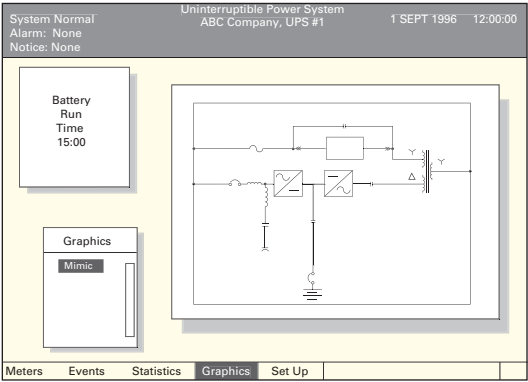
Eaton 9315 (625-750 kVA)  
Internal view



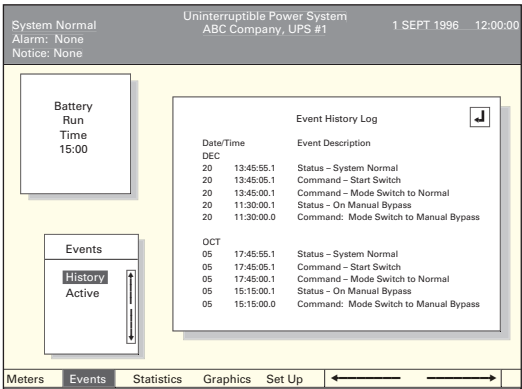
**Module bypass cabinet**  
This cabinet is only for reverse transfer systems



Eaton 9315 (625-750 kVA)

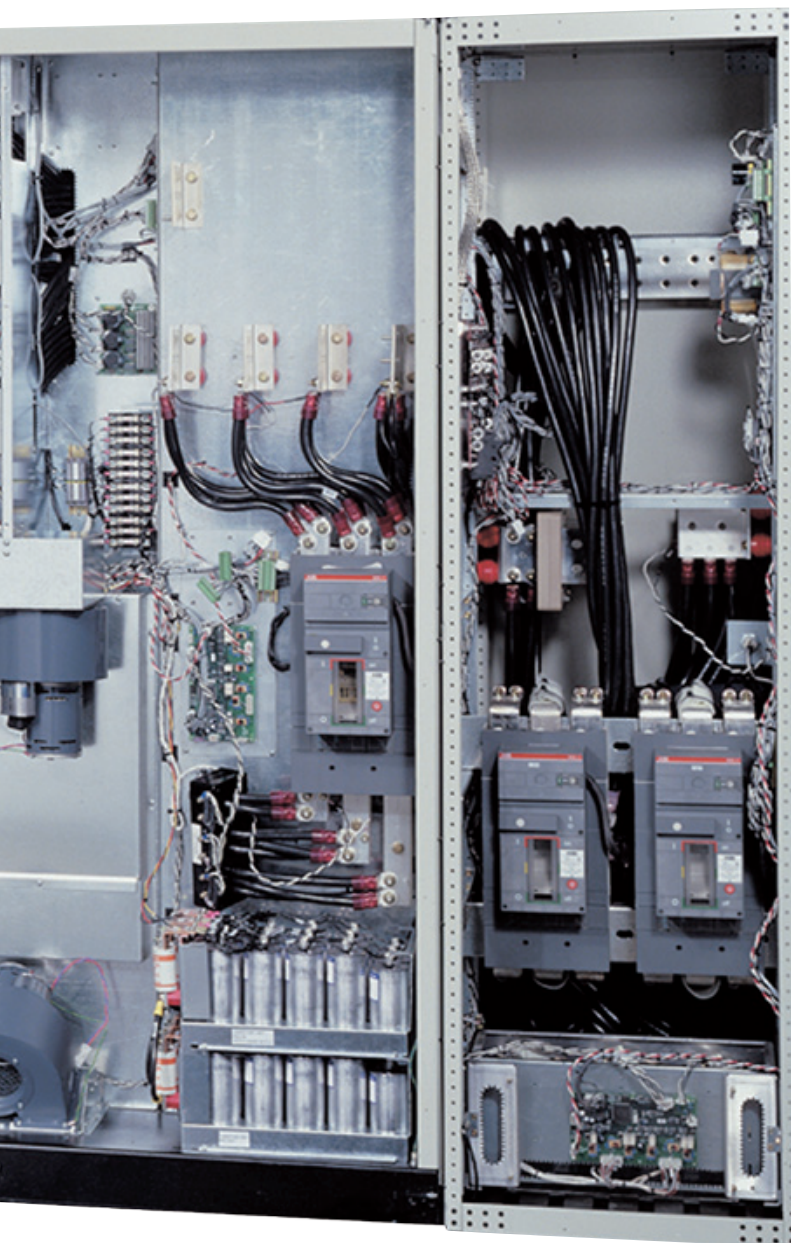


Mimic screen



Event history log





## Eaton 9315-750

The 9315-750 expands the 9315 family to include a single module 750 kVA UPS. The 9315-750 includes:

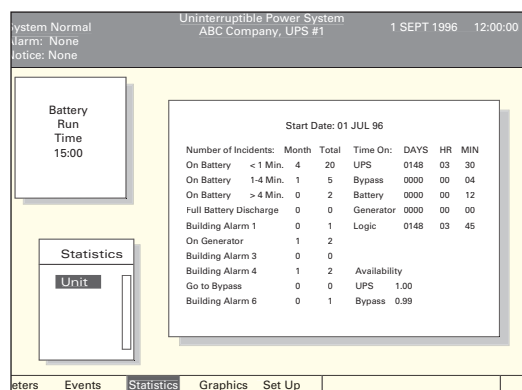
- 12-pulse rectifier
- High efficiency
- High speed PWM IGBT inverter
- Input isolation transformer
- Multi-module systems

### Input/Rectifier Section

- Top cable entry and dedicated wireway area (shown without cover panel)
- Motor-operated input circuit breaker automatically opens/closes as required to transfer to and from all operational modes
- Optional inrush current limiter limits the inrush current to 100 percent of the UPS module rated current
- Communication panel is an easy-to-use control panel providing:
  - One button start-up (with optional battery breaker)
  - Bypass transfer control
  - Input circuit breaker operation
- Optional Intelligent Input Filter disconnects from rectifier input with loss of utility and low load conditions, providing superior generator compatibility

### Output/Inverter Section

- High-speed IGBT, PWM inverter section
- Redundant fans ensure direct consistent cooling, quiet operation and provide local and remote failure notification
- Motor operated output circuit breaker automatically opens/closes as required



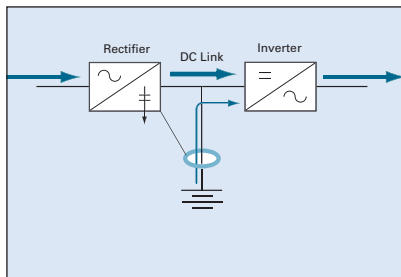
Statistics screen



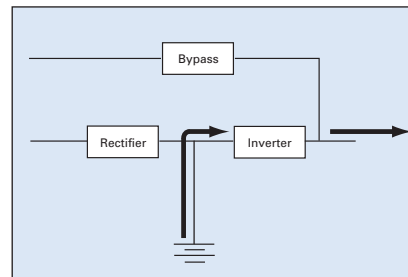
### DC Expert battery management (200-500 kVA)

DC Expert provides real-time information on battery string health and battery runtime remaining. With this integral feature, you always know the condition of your battery string. Most importantly, DC Expert allows you to plan for battery maintenance and avoid

any unexpected load losses due to battery deterioration. DC Expert's battery test method outperforms the competition. Compare its battery test method to the method used by other manufacturers, and see for yourself how DC Expert's technique offers the highest level of assurance and battery runtime accuracy.



During the battery test, the rectifier regulates DC link voltage to obtain consistent battery power discharge month to month.



### DC Expert battery test method

- Consistent testing proactively provides battery runtime information, accurate to  $\pm 3$  percent
- During a utility outage, battery time remaining automatically updates with load shedding
- Battery string health determined during periodic testing
- Programmable, automatic monthly testing, any day, any time
- The monthly battery tests perform very light battery discharges, removing less than 10 percent of available battery runtime, to ensure you are always ready for a utility outage
- Light load testing does not impact battery life
- Rectifier does not turn off during battery testing; rectifier shares load with battery for consistent battery load testing regardless of inverter load
- Since the rectifier does not turn off, the critical load is never at risk during battery testing. If a battery should fail during the test, the system will recover 100 percent.
- DC Expert log stores results of last 30 tests for trending analysis
- Accommodates either valve regulated ("maintenance-free") or wet cell batteries

### Other UPS manufacturers' battery test methods

- Other UPS manufacturers turn off the rectifier to initiate battery testing
- The battery fully supports the inverter load
- As the critical load changes from test to test, so does the battery load
- Inconsistent battery test load yields inaccurate battery runtime estimates
- If the battery fails during testing, the inverter must perform an emergency transfer to bypass to prevent dropping the critical load



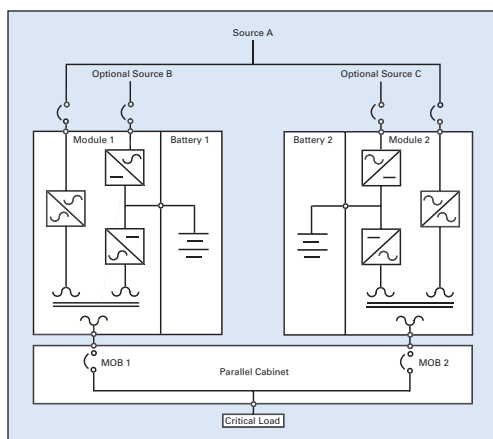
With the world teeming with technology that must run 24/7, 365 days a year, it's no surprise that power protection has been elevated from a dusty corner in the basement to an integral and sophisticated part of an organization's overall technology infrastructure. The 9315 offers a variety of power systems designed to integrate with your technology and meet your availability requirements.

### Powerware Hot Sync technology

Today, your critical loads demand even greater protection. That's why we developed a unique paralleling system that provides redundancy and capacity capability with high 9's system availability.

While you may be familiar with paralleling, the patented Powerware Hot Sync's technology eliminates more risks to your system. Typically, in order for modules to operate in parallel as a system, they must communicate with each other through intricate wiring to coordinate the primary paralleling operations of output synchronization, load sharing and selective tripping of a module. But this traditional method of communication introduces a system-level single point-of-failure. If this communication link goes down; or a master controller fails, so does your critical load. And that's a risk you just can't afford to take.

Instead, Powerware Hot Sync technology eliminates the need for the modules to communicate with each other. Each UPS module has the ability to synchronize and support the critical load independent of the other modules. This unique approach to paralleling completely eliminates the traditional single point-of-failure.



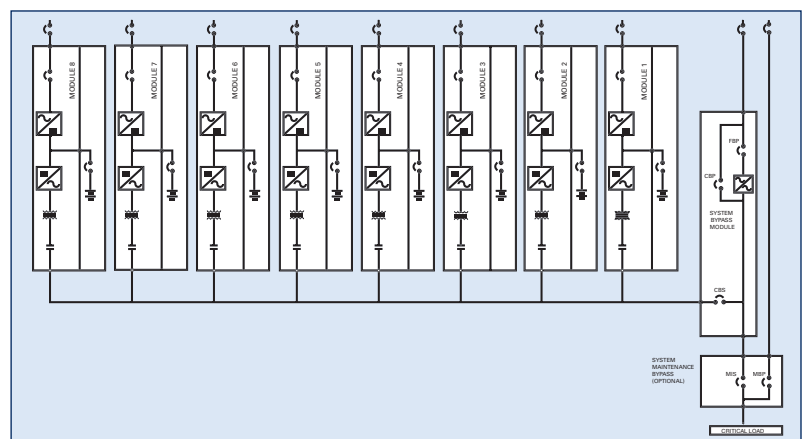
**Powerware Hot Sync-redundant**  
(225-500 kVA modules)

### Powerware Hot Sync-redundant

This two-module system provides unmatched system reliability and availability. This configuration allows full maintenance to be performed on both modules and the parallel cabinet without need for an external maintenance bypass and without having to remove the critical load from conditioned power. No other UPS manufacturer can provide this capability.

### Powerware Hot Sync-capacity

This system topology can accommodate up to eight modules in parallel for your larger and most critical applications. Superior monitoring and highly automated controls make this system as easy to operate as a single module system.



**Powerware Hot Sync-capacity**  
(225-750 kVA modules)

You may not require this level of reliability now, if you are just purchasing a single UPS module. However, after the purchase you can effortlessly expand from a single module system to a two-module Powerware Hot Sync redundant system and on to an eight-module Powerware Hot Sync capacity system. Isn't it reassuring to know that the 9315 provides this degree of scalability – if you need it?



### Powerware Sync Control Technology

Enabling the uninterrupted transfer of critical loads from one source to another requires the sophistication of Powerware Sync Control Technology. This optional feature facilitates the synchronization of two totally separate UPS system outputs (whether they are single module or Powerware Hot Sync capacity systems). Through a series of downstream solid-state transfer switches, Powerware Sync Control Technology automatically transfers the critical load from one UPS system to another. Because Powerware Sync Control Technology ensures that the outputs remain in phase with one another, should a scheduled or unscheduled maintenance event occur, there is peace-of-mind in the fact that all critical loads will be supported by UPS-grade power, 24/7, 365 days a year. Powerware Sync Control Technology also provides remote monitoring of the control operation and alarms.



### Powerware Hot Tie Technology

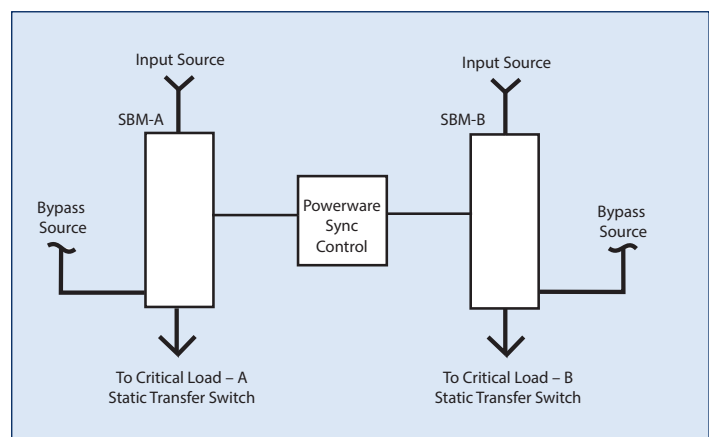
Powerware Hot Tie Technology is an ideal solution when there are two UPS systems powering two separate loads. Hot Tie allows you to transfer the load of one unit to the other, so that the loads are always protected.

Powerware Hot Tie Technology has become more important than ever with the development of Powerware Hot Sync Technology. Hot Tie Technology enables two systems, whose units are paralleled with Powerware Hot Sync Technology, to be together for an even greater level of redundancy and protection.



### Powerware Hot Tie works in four modes:

1. Normal mode – the tie is open, output is synced to bypass
2. Parallel mode – the tie is closed, output is synced to one of the UPS bypasses
3. Combined load mode – the tie is closed, one UPS is operating (service mode)
4. System isolation mode – the tie is open, loads and UPS are removed from the isolated load bus
5. Automatic mode – the tie is continuously available, dual power path redundancy is always present and not limited to scheduled maintenance



**Powerware Sync Control**  
(225-750 kVA modules)

## Accessories

### Maintenance bypass module (MBM)

This floor-mounted, enclosed cabinet provides continuous support for critical loads during servicing or testing of the UPS module. The MBM includes the maintenance isolation breaker (MIS) and maintenance bypass breaker (MBP).

### Power distribution module (PDM)

The PDM provides distribution of output power from the UPS to critical applications. Each PDM includes two panels, each containing 42 poles that can be assigned depending upon application requirements. If additional distribution is required, these cabinets can be daisy-chained to increase distribution capacity.

### Remote monitor panel (RMP)

The RMP allows customers to monitor the operational status of the UPS system from virtually any location within a facility. The RMP uses simple backlit status indicators and an alarm horn to notify customers of changes in the operational status of the UPS system. This option can be installed in multiple locations throughout a customer's facility.

### Relay interface module (RIM)

The RIM provides a critical communications link to optimize reliability, uses serial interface and relay contact closures to support up to eight critical loads. The RIM notifies customers of operational status changes, allowing them to respond with the appropriate action.



Maintenance bypass module

## Service Plans

The 9315 is supported by Eaton's comprehensive service plans to provide you with system uptime, convenience, and value. We support the UPS, batteries, and related equipment with remote monitoring and onsite services to meet your specific site or application needs. Our Customer Reliability Center is open seven days a week, 24 hours a day to monitor your systems and respond to your needs. Our factory-trained service technicians are deployed across the world to deliver speedy, reliable services.

### Additional service offerings

- Installation and project management
- Complete line of power system maintenance plans (covering parts and labor) to match any need – from basic UPS and/or battery support to all-inclusive packages that deliver ongoing piece-of-mind.
- Remote monitoring services to support maximum uptime
- First responder training classes for your employees
- kVA upgrades and power system enhancements for existing equipment
- Spare parts kits

### Custom solutions

For any set of customer specifications, there are many possible approaches that will work. Eaton can identify the best approach from among several feasible alternatives that deliver dramatic cost savings and performance enhancements for you. Eaton works with your engineering firms to design, source, integrate, test and project manage large systems that include generators, switchgear and other electrical products from Eaton or other manufacturers.

Our dedicated application engineers translate specifications into a proposal. Project engineers make sure that proposal is manufactured, sourced, integrated and tested to meet those specifications. Sales engineers provide a dedicated point of contact.

Eaton can deliver a customized solution that matches your needs more closely than anyone else can.



LISTED





## PRODUCT (kVA MODELS)

	9315-200 (200 kVA)	9315-225 (225 kVA)	9315-250 (200-250 kVA)	9315-300 (225-300 kVA)	9315-400 (400-500 kVA)	9315-500 (400-500 kVA)	9315-625 (500 –625 kVA)	9315-750 (625-750 kVA)
<b>Standard features</b>								
Casters and leveling feet	—	—	—	—	—	—	—	—
DC Expert system	•	•	•	•	•	•	—	—
Ethernet compatibility	•	•	•	•	•	•	•	•
Field kVA upgrade capability	—	—	•	•	•	•	•	•
Input filter (THD 7%) in U.S.	—	—	—	—	—	—	—	—
LCD monitor panel	•	•	•	•	•	•	•	•
Output isolation	•	•	•	•	•	•	•	•
Bypass isolation	—	—	—	—	—	—	—	—
SNMP capability	•	•	•	•	•	•	•	•
Token ring compatibility	•	•	•	•	•	•	•	•
Top and bottom wire entry	•	•	•	•	•	•	—	—
ProActive service plan	•	•	•	•	•	•	•	•
<b>Optional features</b>								
ConnectUPS adapters	•	•	•	•	•	•	•	•
Hot Sync redundant	•	•	•	•	•	•	—	—
Hot Sync capacity	•	•	•	•	•	•	•	•
Input filter (THD 7%) U.S.	•	•	•	•	•	•	•	•
Input filter (THD 7%) non U.S.	•	•	•	•	•	•	•	•
Input isolation transformer	•	•	•	•	•	•	2	2
Internal modem	•	•	•	•	•	•	•	•
Maintenance bypass panels	•	•	•	•	•	•	•	•
Output power distribution panels	•	•	•	•	•	•	•	•
Power management software	•	•	•	•	•	•	•	•
Relay interface module	•	•	•	•	•	•	•	•
Remote monitor panel	•	•	•	•	•	•	•	•
Remote notify	•	•	•	•	•	•	•	•
Server shutdown via OnliNet/LanSafe	•	•	•	•	•	•	•	•
SNMP adapters	•	•	•	•	•	•	•	•

1. For 300/400/415 V, 50/60 Hz. 2. Standard feature

### Environmental specifications

Ambient temperature:	0°C to +40°C
Storage:	-20°C to +70°C
Relative humidity:	0-95% non-condensing
Altitude:	1500 meters (5000ft.) at 40°C ambient temperature without load derating
Audible noise:	At 1 meter; in accordance with ISO 7779: 9315 (225-300 kVA): less than 69dBA 9315 (300-500 kVA): less than 72dBA 9315 (500-750 kVA): less than 75dBA
Electrostatic discharge:	Withstands 6 kV (up to 500 kVA withstands 8 kV) without damage or disturbance to the load; exceeds requirements of IEC 801-2 EMC: Meets FCC Class A 5 and EN 50091-2 (CISPR 22, Class A)

### Input specifications

Voltage range:	(refer to product data sheets)
Frequency range:	(60 Hz) 57-63 Hz; (50 Hz) 47-53 Hz
Surge protection:	Meets IEEE 587, Category A & B, EN 50091-2 and EN 50082-2
Power factor:	0.95 typical at full load with optional input filter Input current distortion less than 7% typical with optional input filter

### Output specifications

Output voltage THD:	(linear load): less than 3% for a 100%; (linear load); 2% for a single harmonic; Output voltage THD (non-linear): less than 5% when tested in accordance with EN50091-3.
Voltage regulation:	Better than ±1%
Transient response:	Less than 5% for 100% load step; full recovery within 1 cycle
Frequency:	(Free run) ±0.005 Hz
Frequency sync range:	±0.5 Hz
Frequency slew rate:	1 Hz/second maximum
Voltage adjustment range (Operator):	±5%

### Battery Specifications

Matching battery type:	Sealed, valve regulated lead acid
Recharge time:	10–12 times the discharge time to 95%
Other battery options:	Wet cell and nickel-cadmium batteries; open racks available

### Safety

UL1778 Listed  
UL CAN/CSA C22.2 NO.107.1 Listed, EN 50091-1  
All cabinets provide seismic mounting features  
Selectable DC ground fault detection capability

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