



## CLEANSOURCE® PLUS MMS MODULAR UPS SYSTEMS

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60Hz | 250kW TO 1000kW | 400/415V  
FLYWHEEL TECHNOLOGY



# CLEANSOURCE® PLUS MMS MODULAR UPS SYSTEMS

## Overview

CLEANSOURCE® PLUS MMS Modular UPS System offers a wide range of modular and redundant back-up power systems from 250kW to 2000kW.

The built-in flywheel energy storage takes up less than half the footprint of battery-based systems, delivers efficiency up to 98% and lowers total cost of ownership by up to 40% over the life of the product.

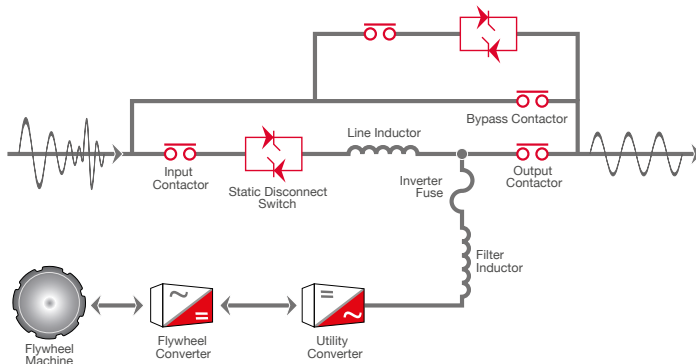
This field-proven technology is based on a highly fault tolerant IGBT architecture designed to protect all critical loads, such as data centers, industrial processes and health care applications. Stored energy will provide ride-through up to 2 minutes depending upon configuration, making the CLEANSOURCE® PLUS MMS a clear alternative to modular static UPS systems reliant on battery storage.

The CLEANSOURCE® PLUS MMS Modular UPS System has more than enough energy storage for diesel starting and synchronization, even when paralleling generating sets. Elimination of batteries saves space and weight, reduces site testing and maintenance and removes the need for routine replacement after a few years of service life.

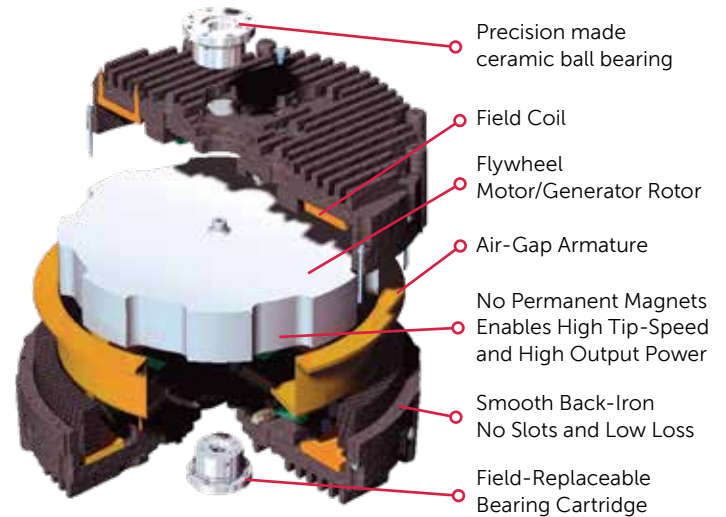
## Parallel Online Architecture

The CLEANSOURCE® PLUS MMS Modular UPS is based on Active Power's Parallel Online Architecture which provides excellent isolation between input and output, while delivering Class 1 voltage regulation and dynamically cancelling effects of non-linear load harmonics.

This topology continuously provides online power protection to your operation, creating a clean sinusoidal output waveform and protecting critical operations against all nine IEEE power disturbances in a power dense, reliable, and energy-efficient package.



## FLYWHEEL TECHNOLOGY



- ▶ STORES 6.2 MJ OF ENERGY
- ▶ UP TO 2 MINS. OF RUN-TIME (LOAD DEPENDENT)
- ▶ WIDE OPERATING TEMPERATURE RANGE FROM 32°F TO 104°F
- ▶ HIGH DENSITY, HIGH EFFICIENCY DESIGN

## KEY BENEFITS AND FEATURES

- UP TO 98% EFFICIENT
- HALF THE SPACE OF LEGACY BATTERY-BASED UPS
- FIELD EXPANDABLE
- REDUNDANT FANS AND CONTROL POWER UNITS
- LOWER COOLING REQUIREMENTS
- LOWER MAINTENANCE AND SERVICE
- COST-EFFECTIVE INSTALLATION
- COLOR LCD TOUCH SCREEN DISPLAY
- REMOTE MONITORING
- BUILT-IN POWER FACTOR CORRECTION
- GENERATOR COMPATIBILITY
- DUAL INPUT AND INTEGRATED MAINTENANCE BYPASS OPTION
- SEISMIC PROVISIONS – CONSULT FACTORY
- 20-YEAR DESIGN LIFE
- 250kW BUILDING BLOCKS EXPANDABLE TO 2000kW

# 40%

## TCO SAVINGS

PERMANENT ENERGY STORAGE  
UP TO 98% ENERGY-EFFICIENT  
LESS EXPENSIVE TO INSTALL  
AND COMMISSION

# 12x

## LESS LIKELY TO FAIL

MOST RELIABLE ENERGY  
STORAGE SYSTEM  
MINIMIZE RISK AND DISRUPTION  
FROM MAINTENANCE  
AND REPLACEMENT

# 9x

## LESS CARBON EMISSIONS

90% LESS CARBON USED  
IN UPS MANUFACTURE  
OVER 40% LESS CARBON  
EMITTED OVER 20 YEARS

CLEANSOURCE® PLUS MMS combines a competitive initial cost with lower ongoing operational expense – up to 40% lower than traditional UPS over 20 years. The result is a dramatic TCO benefit for your application, with net savings.

### ► SUPERIOR ENERGY EFFICIENCY

Over 96% efficient at 40% load.

### ► REDUCED COOLING NEEDS

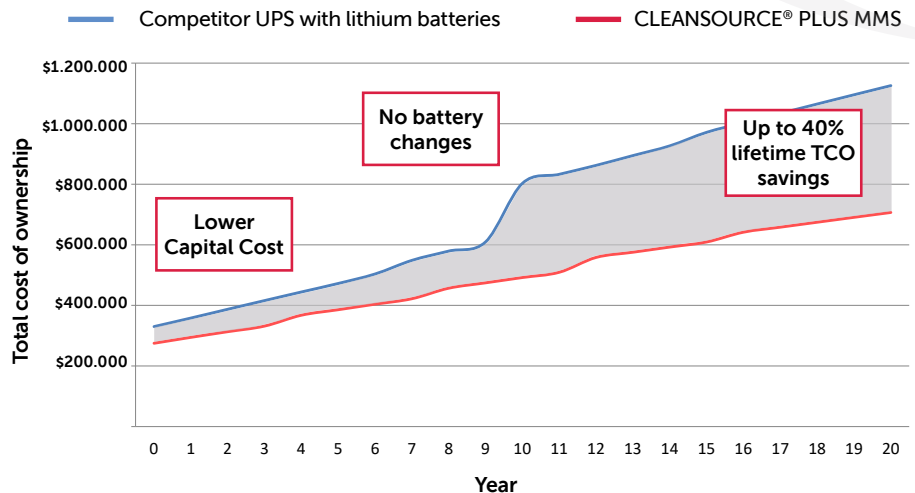
No need for dedicated cooling for batteries

### ► LOWER MAINTENANCE REQUIREMENTS

Routine annual check-up and bearing change every third year.

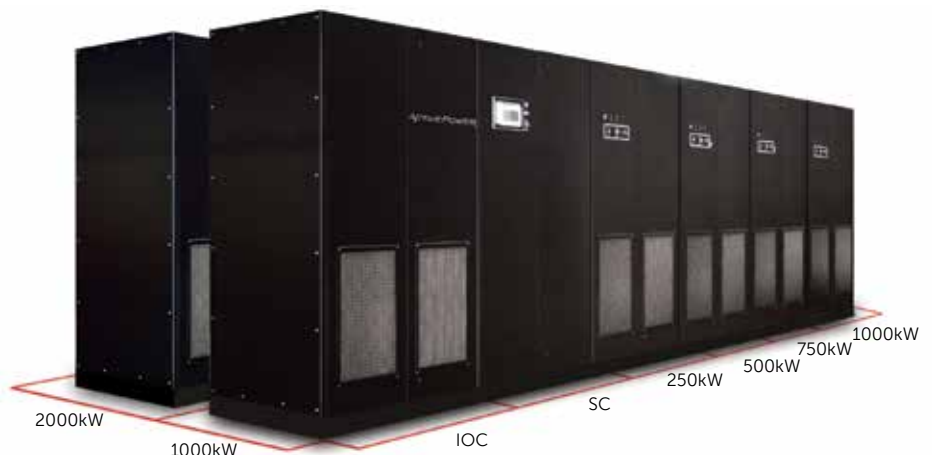
### ► NO BATTERY CHANGES

Integrated flywheel with 20-year life.



### Modular and Scalable Architecture

CLEANSOURCE® PLUS MMS Systems are modular and capable of multiple redundancy levels. Customers may readily expand their systems in line with their own growth needs by adding further modules over time. Each system consists of an input/output cabinet (IOC), a system cabinet (SC) and the ability to connect up to four 300kW modules with built-in wireway. In total, 8 modules can operate in a single system, providing up to 2400kW of high efficiency, battery-free UPS power. CLEANSOURCE® PLUS MMS Series UPS can be configured from 250kW up to 2000kW.



60Hz | 250kW TO 1000kW | 400/415V

# PRODUCT SPECIFICATIONS

MODEL	PLUS MMS 250y	PLUS MMS 500y	PLUS MMS 750y	PLUS MMS 1000y			
<b>RATING</b>							
Maximum kVA	275	550	825	1100			
Maximum kW	250	500	750	1000			
<b>INPUT</b>							
Voltage <sup>1</sup>	400/415 VAC 3-phase, 4-wire plus ground (3-wire optional)						
Voltage Range	+10% / -15% (programmable)						
Frequency	60 Hz +/- 10% maximum (programmable) +/- 3% (default)						
Power Factor	0.99 at rated load and nominal voltage						
Harmonic Current Distortion	Linear load	<2% at 100% load					
	Non-linear <sup>2</sup>	<8% at 100% load					
Current – Nominal (400 VAC)	375A	751A	1014A	1352A			
Current – Nominal (415 VAC)	362A	724A	978A	1303A			
Current – Max. Continuous	450A	900A	1350A	1800A			
Current – Max. Non-Continuous	470A	940A	1410A	1980A			
Surge Withstand	Meets IEEE 587/ANSI C62.41						
Walk-in	1 to 15 seconds (programmable)						
<b>OUTPUT</b>							
Voltage	400/415 VAC 3-phase, 4-wire plus ground (3-wire optional)						
Voltage Regulation	Steady State	+/-1% for +/-10% input					
	Flywheel Mode	+/-1% steady state					
	Transient	+/-1% within 50 mSec for 100% load step					
Voltage Distortion <sup>2</sup>	<1% linear loads and <5% for 100% non-linear loads						
Frequency	60Hz (mains synchronized) (normal operation +/- 0.2% free running)						
Slew Rate	Adjustable from 0.2Hz/second to 3.0Hz/second						
Current – Nominal (400 VAC)	397A	794A	1191A	1588A			
Current – Nominal (415 VAC)	383A	765A	1148A	1530A			
Overload Capability-Mains Operation		Cont. 10 min 105%	5 min <110%	1 min <125%	10s <150%	10s lmd. <200%	>200%
Efficiency – Energy Storage Online	97.5%						
<b>ENERGY STORAGE</b>							
Type	Integrated Steel Flywheel spinning at 10,000RPM						
Flywheel Run Time (% Load)		100% 24.5s	75% 32s	50% 47s	25% 84s		
Flywheel Recharge Time <sup>3</sup>	< 3 min (nominal) at 65kW						
<b>GENERAL</b>							
Internal Maintenance Bypass Panel	Yes (optional)						
N+1 Redundant Module	Yes (optional)						
OSHPD Seismic Rated	Consult factory						
<b>ENVIRONMENTAL</b>							
Audible Noise	<75 dBA at 1 meter						
Operating Temperature	32 to 104°F (0 to 40°C)						
Storage Temperature	-13 to 158°F (-25 to 70°C)						
Humidity	5% to 95% (non-condensing)						
Altitude	Up to 3,000 feet (914m) / 1.2 C derating for every 1,000ft above 3,000ft						
Emissions and Immunity	FCC Part 15 Class A, EN 62040-2						
Heat Rejection – Online	6.4kW/21,851BTU/Hr	12.8kW/43,701BTU/Hr	20.9kW/71,014BTU/Hr	27.9kW/94,913BTU/Hr			
<b>PHYSICAL DATA</b>							
Height	78.0in/1,981mm Excl. Wireway. 96.0in/2,438mm Inc. Wireway						
Width	127.0in/3,226mm	170in/4,318mm	213.0in/5,410mm	256.0in/6,502mm			
Depth	34.0in/865mm	34.0in/865mm	34.0in/865mm	34.0in/865mm			
Weight	6,750lbs/3,063kg	11,250 lbs/5,103kg	15,750lbs/7,144kg	20,250lbs/9,185kg			
Cable Entry	Top or Bottom						
Safety	UL 1778 Listed. CUL CAN/CSA 22.2 No. 107.1 Listed						

<sup>1</sup> From grounded WYE source. <sup>2</sup> EN 62040-3. <sup>3</sup> kW recharge value is per flywheel.



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