



Compatible with major UPS brands as a battery-free alternative or supplementing or replacing battery strings in existing UPS installations driving down lifecycle cost while improving reliability.



250-2000 kW **CLEANSOURCE® DC**

battery-free energy storage

high reliability

99% efficiency

20 year design life

250-2000 kW

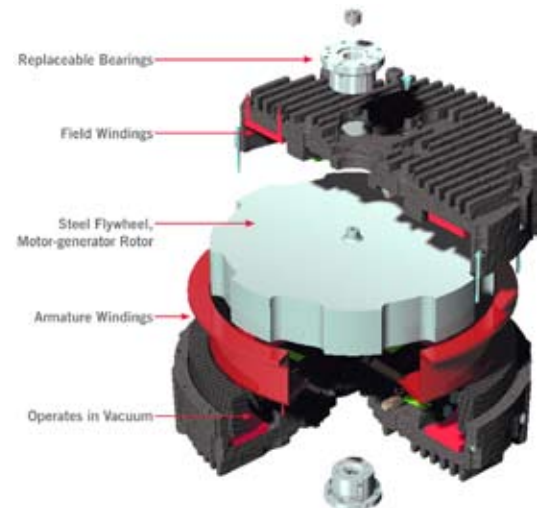
SYSTEM FEATURES

- Predictable flywheel energy storage
 - 99% efficiency
- Multi-vendor UPS and generator compatibility
 - Handles multi-load characteristics
 - Cost-effective lifecycle cost
 - Redundant architecture
 - Parallel capability up to 2,000kW
 - 20-year design life
- Low service and maintenance requirements
 - Smallest available footprint
 - Rapid recharge time
 - Predictive failure analysis
- Wide operating temperature range
- Remote and local monitoring
 - Quiet operation
 - Fault compartmentalization
- Simple and cost-effective installation
 - Field-proven reliability
 - No hazardous waste material

Optional Features

- Remote SNMP/MODBUS monitoring capability
- CSView™ – advanced real-time monitoring
- Remote status panel
- Front panel DC disconnect
- Seismic provisions
- Additional flywheels for capacity or redundancy
- GenSTART™ Generator Start Power

FLYWHEEL TECHNOLOGY



intelligently
EFFICIENT

inherently
RELIABLE

economically
GREEN

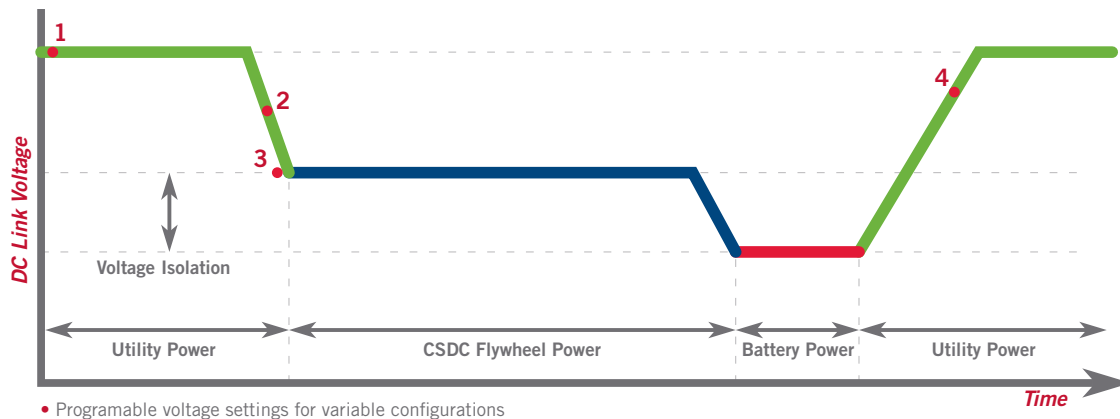
SINGLE CABINET CSDC SOLUTIONS

kW										
Model	50	100	150	200	250	300	350	400	450	500
CSDC-250	69.0	34.5	23.0	17.3	13.8	Time in Seconds				
CSDC-500	138.0	69.0	46.0	34.5	27.6	23.0	19.7	17.3	15.3	13.8
CSDC-750	207.0	103.5	69.0	51.8	41.4	34.5	29.6	25.9	23.0	20.7
CSDC-1000	276.0	138.0	92.0	69.0	55.2	46.0	39.4	34.5	30.7	27.6
CSDC-1250	345.0	172.5	115.0	86.3	69.0	57.5	49.3	43.1	38.3	34.5
CSDC-1500	414.0	207.0	138.0	103.5	82.8	69.0	59.1	51.8	46.0	41.4
CSDC-1750	483.0	241.5	161.0	120.8	96.6	80.5	69.0	60.4	53.7	48.3
CSDC-2000	552.0	276.0	184.0	138.0	110.4	92.0	78.9	69.0	61.3	55.2

PARALLELED CABINET CSDC SOLUTIONS

kW										
Model	525	600	675	750	900	1000	1250	1500	1750	2000
CSDC-750	19.7	17.3	15.3	13.8	Time in Seconds					
CSDC-1000	26.3	23.0	20.4	18.4	15.3	13.8	Time in Seconds			
CSDC-1250	32.9	28.8	25.6	23.0	19.2	17.3	13.8	Time in Seconds		
CSDC-1500	39.4	34.5	30.7	27.6	23.0	20.7	16.6	13.8	Time in Seconds	
CSDC-1750	46.0	40.3	35.8	32.2	26.8	24.2	19.3	16.1	13.8	Time in Seconds
CSDC-2000	52.6	46.0	40.9	36.8	30.7	27.6	22.1	18.4	15.8	13.8

BATTERY LIFE EXTENSION CONFIGURATION

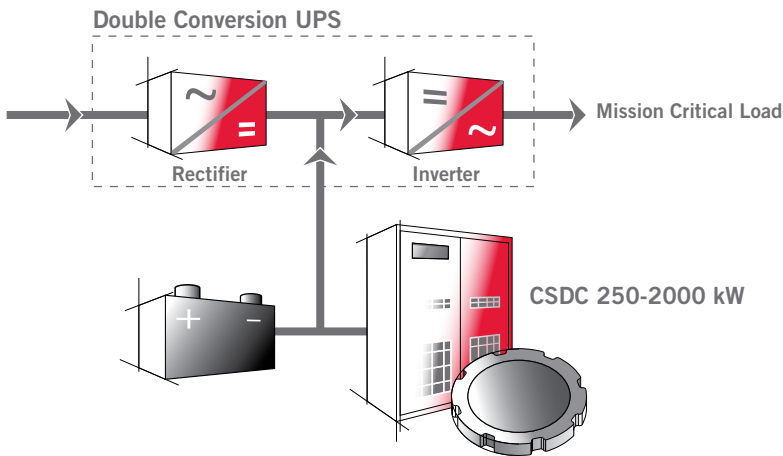


OPERATIONAL CHARACTERISTICS PARAMETERS

These four programmable parameters determine the operational characteristics of the CSDC. The parameters allow for customized installations to support any DC bus in the range of 360 to 600 VDC.

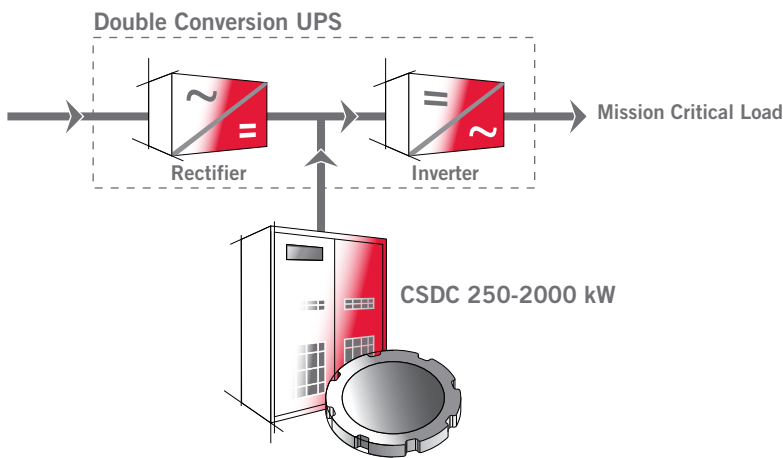
- 1. UPS Float Voltage:** Reference parameter.
- 2. Discharge Trigger Voltage:** DC voltage level at which the CSDC reacts to the falling DC link voltage level and goes into a discharge to support the load.
- 3. CSDC Discharge Voltage:** DC voltage level that is held constant throughout the CSDC discharge.
- 4. CSDC Recharge Threshold Voltage:** DC voltage level at which the CSDC will start to recharge. Ensures the CSDC does not recharge if the UPS is on battery power.

BATTERY LIFE EXTENSION CONFIGURATION



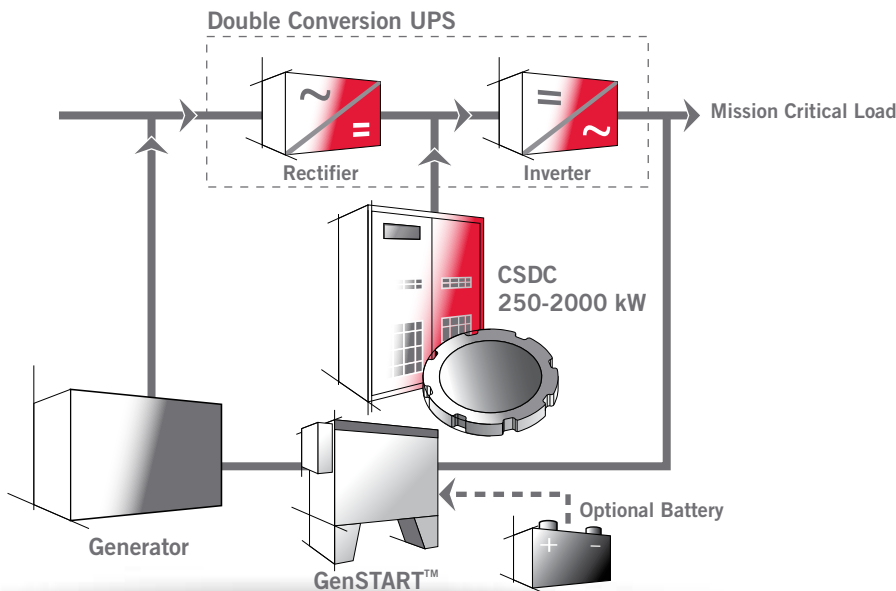
- Extends Life of Batteries
- Battery Isolation & Redundancy
- Increases System Reliability
- Adaptive Voltage Settings
- No Special Connections
- Parallel up to 2000 kW or Extended Runtime (~120 Seconds)
- Small Footprint

GLITCH PROTECTION CONFIGURATION



- Battery-Free Operation
- No Generator Expense
- Industrial Process Protection
- Addresses 98% of Power Events
- Operational Range 0° to 40° C
- Parallel up to 2000 kW or Extended Runtime (~120 Seconds)
- Small Footprint

CONTINUOUS POWER CONFIGURATION



- Battery-Free Operation
- Small Footprint
- Increases System Reliability
- Programmable Voltage Settings
- Parallel up to 2000 kW or Extended Runtime (~120 Seconds)
- Small Footprint
- Reliable Bridging to Generator



PRODUCT SPECIFICATIONS

Model	CSDC-250	CSDC-500
Rating		
Maximum kW	250	500
Input, DC		
Float Voltage	400 to 600 VDC	
Charging Current	15 to 100 Amps per Flywheel	
Charging Time from Discharge	< 2.5 Minutes per Flywheel at Maximum Recharge Current	
Charging Time at Start-Up	< 7.5 Minutes per Flywheel at Maximum Recharge Current	
Standby Current (average)	2-3 ADC	4-6 ADC
Input, AC		
Auxiliary Voltage	120/240/480 VAC	
Auxiliary Frequency	50 or 60Hz	
Auxiliary Current (120 VAC)	28 Amps	
Auxiliary Current (240 VAC)	14 Amps	
Auxiliary Current (480 VAC)	7 Amps	
Output, DC		
Discharge Voltage	360 to 550 VDC	
Maximum Rated Output Power ¹	480 to 550 VDC	
DC Voltage Regulation	+/- 1% steady state	
DC Ripple	< 2 %	
Environmental		
Audible Noise	<70 dBA at 1 meter	<72 dBA at 1 meter
Temperature		
Operating	0 to 40 degree Celsius	
Storage	-25 to 70 degree Celsius	
Humidity	5% to 95% (non-condensing)	
Altitude ³	Up to 4,000 ft / 1,219 meter	
Heat Rejection		
kW	2.5	4.1
BTU/Hr	8,554	14,154
Physical Data		
Height	78 in 1,981 mm	
Width	42 in 1,067 mm	59 in 1,499 mm
Depth	34 in 865 mm	
Weight	1,561 kg 3,441 lbs	2,735 kg 6,030 lbs
Cable Entry	Top or bottom entry ²	
Safety		
EN64040-1-1		

¹Power rating decreases in a linear fashion as discharge voltage setting is reduced from 480 to 360 VDC

²CSDC-250 require an optional (17 in / 432 mm) side car for bottom entry

³Derate operating temperature for higher elevations



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