Modular UPS and Power Solutions

Advantage of SCU modular UPS

Modular UPS is taking the place of standalone UPS
Opening a new page of UPS development

Overview

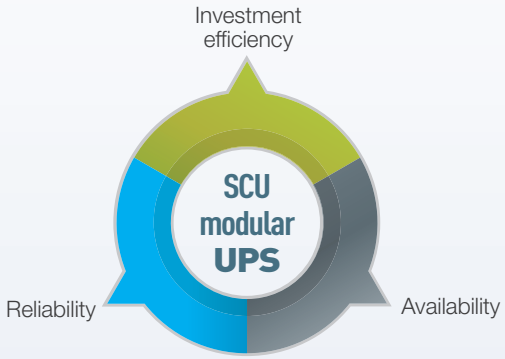
With the fast development of telecom and network technology, UPS is widely used in various industries and advanced UPS is greatly required. A new generation of integrated, flexible and reliable UPS is coming to the stage of UPS industry. SCU modular UPS is a true online double conversion modular UPS product. It could take the place of traditional 1+1/2+1 parallel system. It is a green power solution, with high input PF, Low THDI, high efficiency, stability and reliability. It has monitor software and communication interface for local and remote management. SCU has a full range of modular UPS product and many success customers in various industries.

In standard structure, SCU modular UPS takes small footprint. It is designed with UPS module as basic component and other excellent configurations, to provide perfect power solution to customers.

Features

High reliability

Reliability of UPS= MTBF+Redundancy. Hence redundancy design is the best way to increase reliability of UPS in current UPS industry.



SCU modular UPS marks a great breakthrough in UPS technology

Potential danger of Standalone UPSs parallel

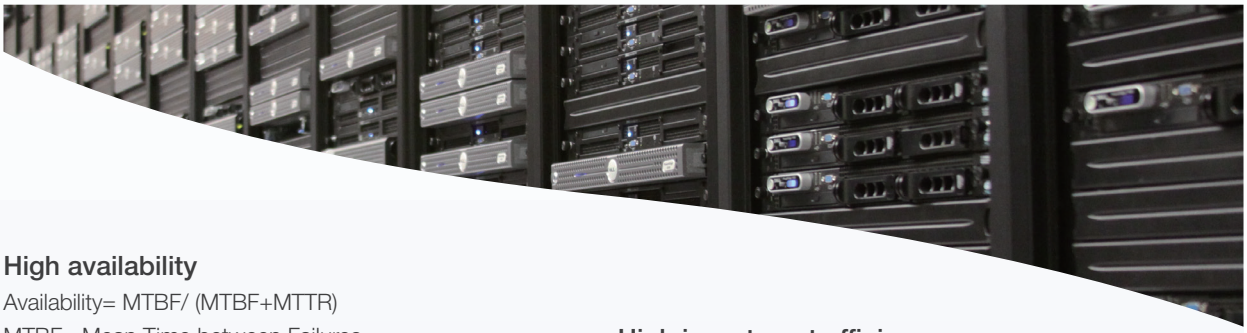
- Standalone UPSs parallel cause circulation or current circulation, even system downtime.
- If STS of any paralleled UPS fails, the whole system will fail.
- If the load power is not well distributed,. the system may fail.
- Great danger in online expansion, update and maintenance.
- In conclusion, the more standalone UPSs are parallel, the less reliable the system is.

SCU modular UPS design idea

- Eliminate circulation affection caused by UPS module parallel
- Centralized bypass and STS. Control circuit and switch device are separated from main power circuit.
- Multi-level decentralized control. All of the UPS module, monitor module and STS module are online hot-swappable, which help to make online expansion, updated and maintenance very safe.
- Current sharing control technology is used in input, charger, and output of UPS module.
- In conclusion, SCU modular UPS decreases future value and provide complete protection to load and UPS.

So SCU modular is a revolution of UPS operation mode.It greatly improves reliability of UPS

SCU

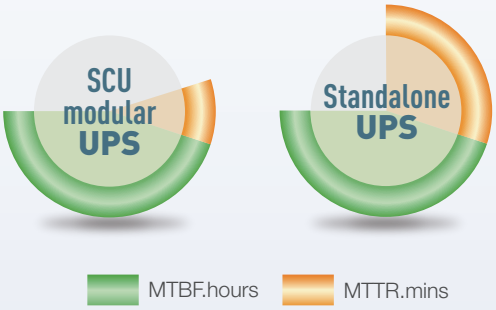


High availability

Availability= MTBF/ (MTBF+MTTR)

MTBF= Mean Time between Failures

MTTR= Mean Time to Repair



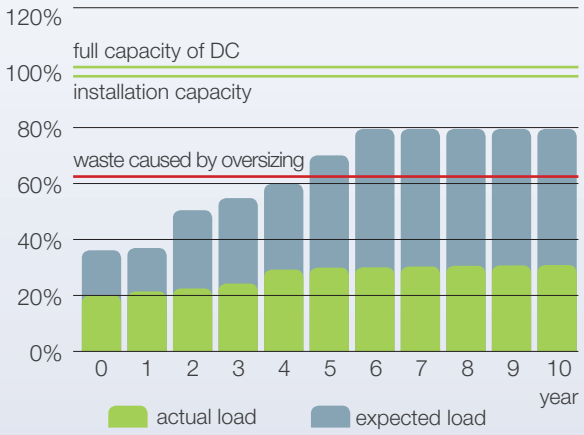
- If a UPS module fails, the UPS system will still work normally.
- No need of trouble shooting. Remove the failing module to solve the problem. So the user can conduct maintenance by themselves.
- MTTR is 5 minutes. Standalone UPS needs 8 hours
- Simple spare parts decrease maintenance costs.
- If the monitor module fails, UPS keeps normal operation
- Support by online maintenance at any time. Eliminate potential failure
- High reliability and stability ensure the best protection to the load.
- High availability provides full time protection to both load and UPS

High investment efficiency

Investment efficiency includes:

Reduce initial investment, expansion, maintenance costs

SCU UPS is a flexible modular structure. UPS module can be added or removed online, without forced shutdowns. It is pay as you grow.



Oversizing results in energy waste

Decrease operation cost

Final targets of power equipment: High efficiency, No pollution, Energy saving

Advantage of SCU modular UPS:

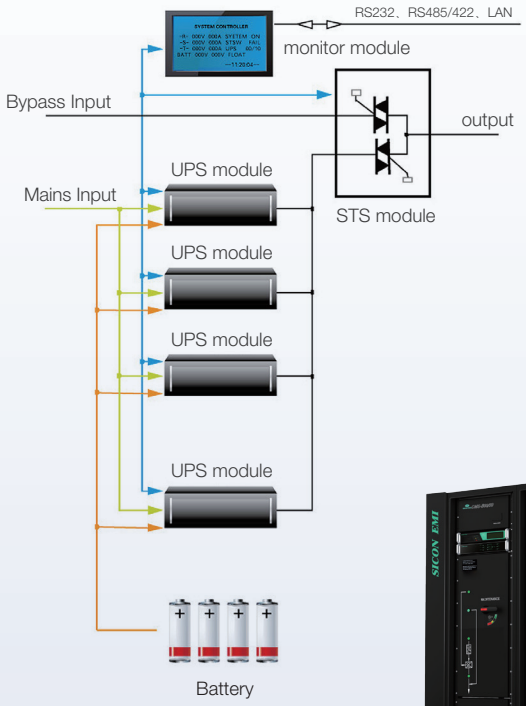
≥96% overall efficiency;

THDI≤3%;

Input PF≥0.99

Modular UPS

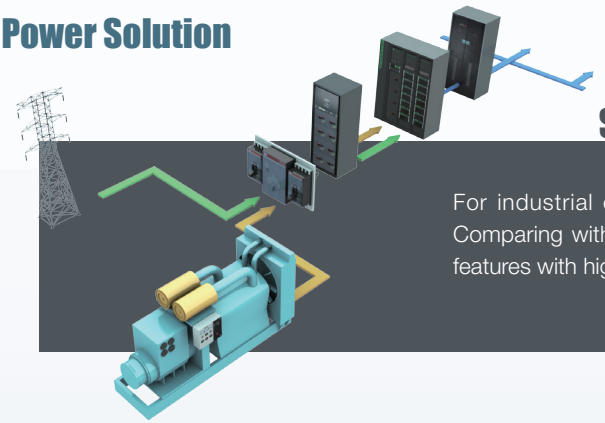
Topological diagram of SCU modular UPS



Modular UPS components

Pay as you grow

Power Solution

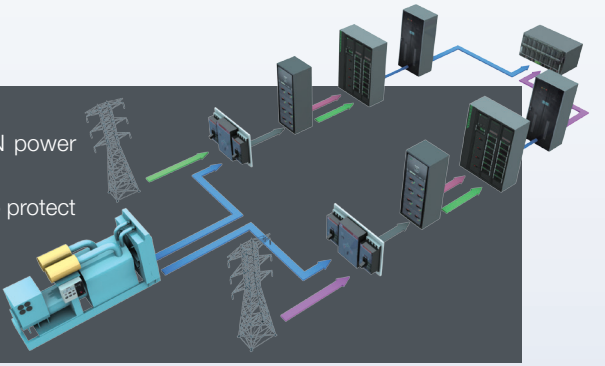


Solution1： INDUSTRIAL CASE STUDY

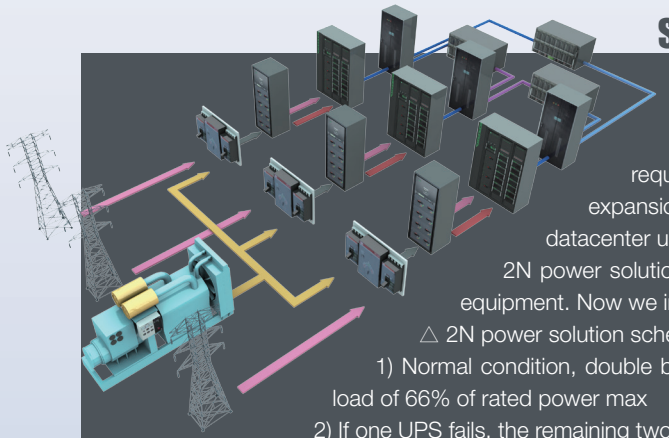
For industrial customers, we recommend modular UPS N+X solution. Comparing with standalone UPS 1+1 solution, modular UPS N+X solution features with high reliability and high cost-efficiency.

Solution2： TELECOM CASE STUDY

In the cases where UPS is used to power IT equipment, 2N power mode is the safest with the best security solution.
2N power solution, provide two independent power sources to protect the electrical systems against unexpected power failure. The loads are powered by both power sources, or the two sources feed power independently to their own loads.



Solution3： DATACENTER CASE STUDY



There are many critical computers and other load equipment in modern datacenter, which has very strict requirement on power supply system. Easy maintenance, easy expansion, fault tolerance, cost-effective, and energy saving are all datacenter user's concern.

2N power solution and △ 2N power solution both apply to the datacenter equipment. Now we introduce the △ 2N power solution in details

△ 2N power solution scheme

1) Normal condition, double bus solution for each group of load. Each UPS could bear load of 66% of rated power max

2) If one UPS fails, the remaining two UPSs share the three group of load.

CMS Series Modular UPS

Truly Modular UPS

Full UPS functioned UPS Module

Choice of UPS Module (10kVA, 25kVA, 50kVA) result in Rational Redundancy
Modular, hot-swappable, field-replaceable STS, Monitor, UPS module
Scalable from 10kVA to 800kVA. Parallel-capable up to 3200kVA.

Product Overview

CMS UPS units are non-isolated, industrial level, green UPS, adopting advanced modular power protection concept. It delivers the best combination of rectifier, filter, charger, inverter and intelligent power protection. Applying innovative current sharing rectifier control, master-slave synchronization in sequence control, multi-level decentralized control and 3-level sine wave modulation technology, it features great efficiency, flexibility and reliability.

CMS Modular architecture can scale power as demand grows or as higher levels of availability are required. CMS UPS provide industry-leading efficiency, availabiliy and performance for small, medium and large data centers and mission critical environments.

SCU

Wire in/out mode:
3/3, 3/1,1/3, 1/1

CMS FEATURES

- Rational redundant structure
  UPS module: 10kVA, 25kVA, 50kVA; System: 50kVA, 100kVA, 150kVA, 250kVA, 350kVA, 500kVA, 800kVA.
- Great performance index
  overall efficiency ≥ 96%(AC-AC), inverter efficiency ≥ 98%(DC-AC), THDI ≤ 3%, and input PF ≥ 0.99
- N+X module-level redundancy UPS System
- Multi-level decentralized control technology and Master-slave synchronization in sequency control eliminating the system failure bottleneck
- Each module automatically equally shares the input and output current, all UPS modules share the batteries
- Battery management:
  Battery discharge management, auto-transfer between floating and equal charging, temperature compensation
- Space-saving high density design, Rack-based for agility and aesthetics
- Monitor Function
  C/S-Oriented Architecture Software which is available to monitor multiple UPS up to 600 sets;
  B/S-Oriented Architecture which is available to check via internet browser
- Standard configuration
  Manual bypass, SPD (Class C), RS232, RS485 Communication ports, Remote monitor software, dry contacts
- Optional configuration
  Input/output Transformer, Battery Bank, IPDS (Intelligent Power Distribution System)

CMS Series Modular UPS

CMS-50/10

Adaptable 10 to 50 kVA power capacity

10 kVA UPS module (CM10)

Configuration: 5 slots

Components: STS module, Monitor module, UPS module, Power distribution

Top or bottom feed

System Dimension: 600*800*1200 (W*D*H) mm

Module Dimension: 482*465*89 (W*D*H) mm

CMS-100/10

Adaptable 10 to 100 kVA power capacity

10 kVA UPS module (CM10)

Configuration: 10 slots

Components: STS module, Monitor module, UPS module, Power distribution

Top or bottom feed

System dimension: 600*800*1600 (W*D*H) mm

Module dimension: 482*465*89 (W*D*H) mm

CMS-150/25

Adaptable 25 to 150 kVA power capacity

25 kVA UPS module (CM25)

Configuration: 6 slots

Components: STS module, Monitor module, UPS module, Power distribution

Top or bottom feed

System Dimensions: 600*800*1600 (W*D*H) mm

Module Dimensions: 482*464*133 (W*D*H) mm

CMS-250/25

Adaptable 25 to 250 kVA power capacity

25 kVA UPS module (CM25)

Configuration: 10 slots

Components: STS module, Monitor module, UPS module, Power distribution

Top or bottom feed

System Dimensions: 800*800*2000(W*D*H) mm

Module Dimensions: 482*464*133(W*D*H) mm

SCU

CMS-350/50

Adaptable 50 to 350 kVA power capacity
25 kVA UPS module (CM50)
Configuration: 7 slots
Components: STS module, Monitor module, UPS module, Power distribution
Top or bottom feed
System Dimensions: 800*1000*2000(W*D*H) mm
Module Dimensions: 482*700*176(W*D*H) mm

CMS-500/50

Adaptable 50 to 500 kVA power capacity
50 kVA UPS module (CM50)
Configuration: 10 slots
Components: STS module, Monitor module, UPS module, Power distribution
Top or bottom feed
System Dimensions: 1400*1000*2000(W*D*H) mm
Module Dimensions: 482*700*176(W*D*H) mm

CMS-800/50

Adaptable 50 to 800 kVA power capacity
50 kVA UPS module (CM50)
Configuration: 16 slots
Components: STS module, Monitor module, UPS module, Power distribution
Top or bottom feed
System Dimensions: 2000*1000*2000(W*D*H) mm
Module Dimensions: 482*700*176(W*D*H) mm

CMS Series Modular UPS

UPS Module

CM10,CM25,CM50

CM10, CM25, CM50 UPS module

- Rated power: 10KVA, 25KVA , 50KVA
- Online double conversion technology ensures reliable power supply
- High efficiency reduces power and cooling costs.
- Each UPS module is a fully functioned UPS, delivering a combination of converter, inverter, charger, and controller.
- It has various protections and intelligent communication ports. Dust proof design: IP30; online cleanable airfilter; functions well, even in poor environment.

CM10(2U)

CM25(3U)

CM50(4U)

Montior Module

CMS-CSU

CMS-CSU monitor module

- Dual-core 16-bit processor
- Easy-to-read 240x64 LCD Touch Screen
- CMS decentralizes its controller in each UPS module. The monitor module is for display and communication only. Online replacement without forced shutdowns, STS module and UPS module。

  Display of important operational information:
  - General information
  - System information
  - Battery information
  - Module information
  - System output
  - Event record
  - Index setup
- Communication (local and remote)

RS232, RS485 communication interface

Output dry contacts

TCP/IP, SNMP (optional) for remote monitor

STS Module

CMS-STS

CMS-STS STS module

- Parallel of SCR and AC contactor
- High reliability and overload ability (1000% -1 min)
- Transfer time < 1 ms
- Functions such as self-diagnose, interlock and protection.
- RS485 communication
- Can be replaced easily without forced shutdowns.

UPS MODULE TECHNICAL SPECIFICATION

Model	CM10	CM25	CM50
Rated power	10 kVA	25 kVA	50 kVA
Input/Output mode	3/3, 3-phase + N + E		
Input PF	⩾ 0.99		
THDI (%)	⩽ 3%		
Overload ability	125%, 10mins		
max charging power	2.5KW	6KW	12KW
max heat dispassion	475W	1187W	2375W
Dimension (mm)	482(W)×465(D)×89(H)	482(W)×464(D)×133(H)	482(W)×700(D)×176(H)
Weight (kg)	16	20	40

UPS SYSTEM TECHNICAL SPECIFICATION

System model		CMS-50/10	CMS-100/10	CMS-150/25	CMS-250/25	CMS-350/50	CMS-500/50	CMS-800/50
Maximum power		50kVA	100kVA	150KVA	250KVA	350KVA	500KVA	800KVA
UPS module model		CM10		CM25		CM50		
Mains Input	Input mode	3-phase +N +E, 1-phase +N +E						
	Input voltage	380V/220V±20%, 400V/230V±20%, 415V/240V±20%						
	Input frequency	50Hz±10%, 60Hz±10%						
	Power woke-in (Sec.)	60sec						
	THDI (%)	< 3%						
	Input PF	⩾ 0.99						
Bypass Input	Input voltage	380V/220V±20%, 400V/230V±20%, 415V/240V±20%						
	Input frequency	50 Hz, 60 Hz						
	Range of Frequency Synchro	50 Hz±4%, 60 Hz±4%						
DC Input	Rated Input voltage	±384VDC						
	Input voltage tolerance	±345V~±440V DC						
Battery charging	Charging current limited	yes						
	Charging ability	10 hours (2 hours back up)						
	Stability of charging voltage	±1%						
AC output	UPS power factor	0.9						
	Output voltage	380V/220V AC, 400V/230V AC, 415V/240V AC						
	Output frequency	±4%; ±0.2%(battery supply)						
	Output voltage stability	±1%						
	Output voltage recovering time	< 20ms (load 0~100% change)						
	Overload ability	Operate 10mins with 125% load						
	Transfer from mains to battery supply	0ms						
	Transfer from bypass to inverter supply	<1ms						
	Peak factor	3:1						
	Waveform distortion	⩽ 1% (linear load), ⩽ 3%(non-linear load)						
	Overall efficiency	⩾ 96% (AC~AC), ⩾ 98% (DC~AC)						
	Load share precision	⩽ 5%						
Operation environment	Ambient temperature	-25℃ ~ 60℃						
	Operating temperature	-5℃ ~ 40℃						
	Maximum operation altitude	⩽ 1500m						
	Relative humidity	⩽ 95% non-cadency						
	Protection degree	IP30						
	Cooling	Air cooling						
	Applicable safety standards	EN62040-1-1:2003 IEC60950-1:2001						
	Electromagnetic compatibility	EN62040-2:2006						
	Acoustic noise	⩽ 55DB						
Others	Cabinet	Standard 19 inch cabinet						
	Monitor management system	UPSupervisor						
	Interface	RS232, RS485 and 8 dry contact, TCP/IP adapter, SNMP(optional)						
	Display	Touch LCD/LED Screen						
	Weight (kg)	150	200	200	260	400	500	700