POWSYS

POWSYS Industrial UPS Power System 10KVA–160KVA

Professional UPS Product
From Military Technology

Intelligent True On–Line Power Frequency Input/output Double Isolation (10KVA–160KVA)

Application: Transformer Substation
Power Plant
Power Management
Petrochemical Industries

High Performance UPS

POWSYS UPS has industrial power supply special design for power and industrial control system, which using true on–line double conversion technology. The AC input is 380V, DC input is DC384V or DC100V/220V, which is suitable for industrial system, the output voltage is AC220V/110V. The standard design has input/output isolation transformer, and it fully satisfies the industrial requirements. In case of total control for power status is required, and for UPS users need high level of monitor ability, flexibility, reliability and serviceability, POWSYS UPS is the best choice.

Industrial UPS System

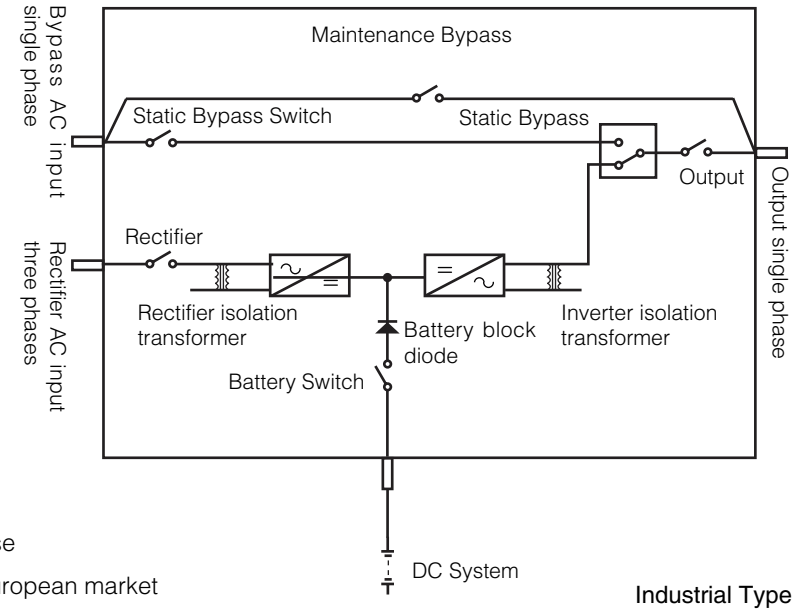
6–Pulse/12–Pulse Semi–Conductor controller rectifier provides rated DC voltage output to inverter and charge to parallel batteries sets. 6–Pulse/12–Pulse Semi–Conductor controller rectifier provides DC output with high stability, low disturbance and noise, which using the following technology:

- Semi–conductor controller rectifier static switch technology
- Microprocessor controller
- Input filter (realize high input power factor and low input THDi)
- DC over voltage protection

Characteristics

- True on–line double conversion technology
- Zero transfer time
- High input power factor
- Low input THDi filter (optional)
- ± 1% accurate voltage adjustment
- Fully microprocessor controller
- Optional rectifier input isolation transformer for full isolation of the DC circuit
- Built–in inverter isolation transformer

- High frequency, PWM controlled, full bridge IGBT inverter
- Output isolation transformer
- DC start up
- High charge current, extension back up time
- Battery charge current limit
- Automatic & Manual battery test
- Afford balanced or unbalanced load, linear or non–linear load
- Multiple input/output voltage and frequency
- LCD display with power analyzer function
- SNMP management (optional)
- Maximum 200 events record
- RS232 port with intelligent software
- Real time clock
- Separate output voltage control for each phase
- DC voltage satisfies battery requirement of European market



Industrial Type

Option 1

- External static switch module connected, high reliability
- Parallel Redundant
- Effective current sharing system
- Faulty unit fully mechanical isolation

Option 2

- Efficiency of economical mode is over 99%

Option 3

- Input filter (i)

Certificate No. 01606Q10387R0S

global assurance

Certificate Number: 20390

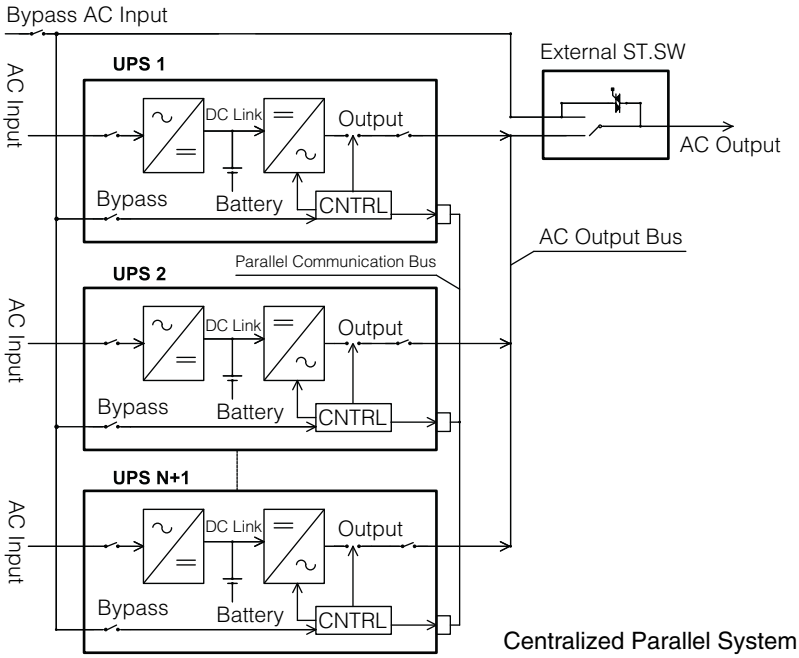
Parallel Redundant UPS System

Parallel redundant system provides load:

- Uninterrupted, stable and pure sine wave AC voltage
- On-line double conversion N+1 redundant UPS system
- Direct connection of up to 10 units in parallel
- Precise synchronization via microprocessor based-digital PLL
- Active current sharing circuit ensures accurate sharing of load between paralleled units
- Available in both centralized and decentralized topologies

Each separate UPS including:

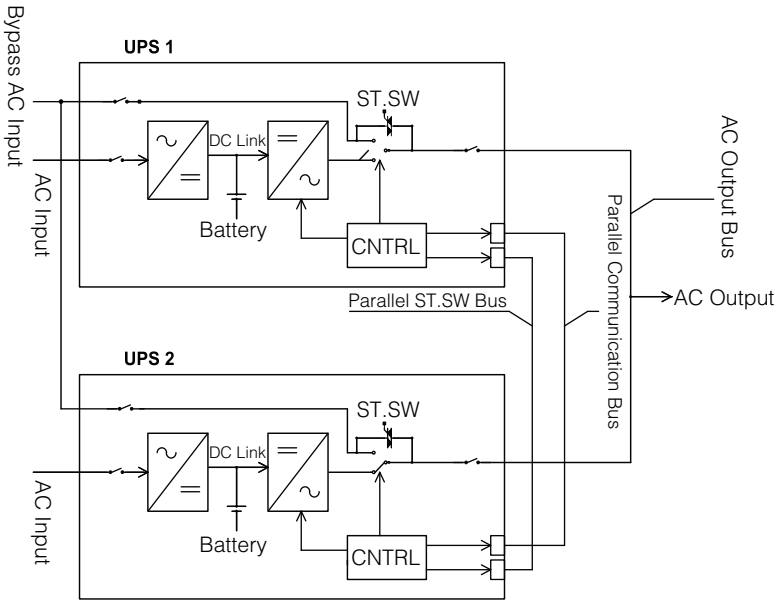
- Logic control unit
- Accurate synchronization circuit
- Current sharing circuit ensures load to be shared equally between each unit
- Five microprocessor ensure reliability
- Rectifier module
- IGBT module
- Digital PLL
- LCD controller circuit, button and RS232 port
- Battery configuration
- Main input connection
- Parallel type of output connection
- Communication cable for synchronization and current sharing



Centralized Parallel System

Parallel system used for:

- Three phase input/Three phase output UPS system
- Three phase input/Single phase output UPS system
- Single phase input/Single phase output UPS system
- Optional to choose deferent voltage and frequency



Decentralized Parallel System

Model	PS										
Rating	3/1	10KVA	15KVA	20KVA	30KVA	40KVA	50KVA	60KVA	80KVA	100KVA	125KVA	160KVA
Topology	VFI, True On–Line double conversion, built–in inverter isolation transformer, optional AC double isolation.										
Control	High performance multi–task RISC micro–controller for full and precise digital control of power circuits, protections, synchronization, measurements, and communication										
Rectifier											
Input Voltage	3X380/400/415 Vac ±20%, other voltages available on request										
Frequency	50/60Hz ± 5Hz										
Rectifier Topology	6–pulse phase–controlled rectifier (optional 12–pulse phase controller rectifier)										
Power Factor	>0.8 for 6–pulse controller rectifier, >0.9 for 12–pulse controller rectifier										
THDi	<30% for 6–pulse controller rectifier, <10% for 12–pulse controller rectifier										
Nominal DC Voltage	110V/220/384VDC ±1%, other voltages available on request										
AC Ripple	< 1% RMS										
Walk in Time	12–15 Seconds										
DC Isolation	Optional input Isolation transformer for full isolation of Dc–circuit from AC input and output										
Protections	AC input and battery circuit breakers, rectifier DC current limit,, battery recharge current limit, DC–over voltage protection, and rectifier over–temperature protection										
Inverter											
Topology	High frequency PWM–controlled IGBT full bridge with built–in inverter isolation transformer										
Output Voltage	220/230/240VAC ±1%, 3X380VAC/400/415VAC ±1%. Other voltages available on request										
Frequency	Free running: 50Hz/60Hz ±0.01% Tracking range: ±0.5/1/2/3/4Hz selectable										
Slew Rate	1Hz/second										
Waveform	Pure sinusoidal										
THDv	<2% at linear load										
Dynamic Response	±2%, recovery within 10msec										
Phase Displacement	±1° includes even under asymmetrical load (for three–phase output models)										
Load Power Factor	0.8 rated, allowable power factor range 0.6 lag to 0.6 lead										
Load Crest Factor	Up to 3:1										
Overload	Transfer to bypass: 125% for 10min, 150% for 1min, 1000% for 20msec										
Protections	Inherent inverter pulse by pulse protection (over current and short–circuit electronic protection), Over and under DC input voltage protection, Over and under AC voltage protection. Input semi–conductor fuse, overload, inverter over temperature, Fast monitor transfers the load immediately to bypass when DC voltage is lost										
Rejection Ration	>100dB										
Static Switch Bypass and Output											
Topology	Hybrid–type static switch with dual SCRs										
Transfer time	⩽ 2msec										
Efficiency	> 99%										
Overload	600% for 2 sec, 1000% for 1 sec										
Protections	Bypass input circuit breaker; AC output circuit breaker; built in back feed protection; programmable bypass input over and under voltage protection; programmable over and under bypass frequency; output voltage monitor transfers the load to bypass on inverter fail. Optional “live static switch” option always outputs bypass on inverter shutdown										
System and General											
AC–AC efficiency		90%	90%	90%	90.5%	90.5%	91%	91%	91.5%	92%	93%	93%
DC–AC efficiency		93.5%	93.5%	94%	94%	94%	94.5%	95%	95%	96%	98%	98%
Noise		51dB	52dB	56dB	60dB	62dB	63dB	64dB	64dB	65dB	65dB	65dB

MTBF	>280,000 hours with standard static switch bypass
Battery Management and Protections	● ABM automatic battery management includes: adjustable recharge current limit, temperature compensated charger, automatic battery test every 200 hours, manual battery test ● Programmable End of discharge (Inverter cutoff) voltage level ● Optional battery recharges blocking system with monitoring for battery systems with external battery charger ● Adjustable float charging voltage ● Battery back up remaining time calculation
Front Panel	● LCD display which shows the status of the system, the measurements, and the alarm messages. ● Mimic diagram that shows the flow of power ● Information and function buttons ● Buzzer alarm ● Log of last 256 events
System Displayed Parameters	● Rectifier:AC input voltage, DC voltage, battery current, and AC input currents (optional) ● Inverter: AC voltage, frequency, and synchronization ● Bypass: AC voltage, current, and frequency ● Output: AC voltage, current, and frequency ● Internal temperature and status over–temperature protections ● Battery voltage and current status ● Real time clock and accumulative run–time
Parallel Operation	Direct Parallel connection, precise synchronization via digital–PLL, accurate current sharing. Available in Centralized and Decentralized topologies for N+1 redundancy and /or power sharing
Communication Interfaces	● Dry–contact alarm relay board extendable up to 25 alarms ● RS232 interface ● Optional RS485 interface ● Optional SNMP adaptor (GMACi) ● Optional Wireless communication device via cellular interface
Cooling	Redundant forced air cooling
Noise Level	< 55–68 dBA depending on type and load percentage
Temperature	Operating: –10 to 45 ℃ Storage: –20 to 70 ℃
Humidity	Up to 95% (non–condensing)
Altitude	1500 m w/o de–rating
Available cabinets	Front access, protection grade IP32
Dimensions (W x D x H)	Single unit : 60KVA below (include 60KVA) : 800 x 800 x 1900 mm 60KVA upper : 800 x 1350 x 1900 mm Parallel units : 60KVA below (include 60KVA) : 800 x 800 x 1900 mm 60KVA upper : 800 x 1350 x 1900 mm
Color	RAL 7047
Safety	IEC 62040–1
EMC	IEC 62040–2, EN–50091–2
Design & Performance	IEC 62040–3
Conformity	CE

Industrial Inverter

Model		IN-VPS										
Rating	3-phase	10KVA	15KVA	20KVA	30KVA	40KVA	60KVA	80KVA	100KVA	125KVA	160KVA	
	1-phase	10KVA	15KVA	20KVA	30KVA	40KVA	60KVA	80KVA				
Topology	High frequency PWM-controlled IGBT full bridge with built-in inverter isolation transformer											
Control	High performance multi-task RISC micro-controller for full and precise digital control of power circuit, protections, synchronization, measurements, and communication											
Inverter												
DC input	110/220/384 Vdc (± 20%) Other voltages available on request											
Output voltage	3X380/400/415 Vac ± 1% Other voltages available on request											
Frequency	Free running: 50/60Hz ± 0.01%											
	Tracking range: ± 0.5/1/2/3/4Hz selectable											
Slew rate	1Hz/second											
Waveform	Pure sinusoidal											
THDv	<2% with linear load											
Dynamic response	± 2%, recovery within 10 msec											
Phase displacement	± 1° for three-phase output models includes asymmetrical loads											
Load power factor	0.8, allowable power factor range 0.3 lag to 0.6 lead											
Load crest factor	Up to 3:1											
Overload	Transfer to bypass : 125% for 10 min, 150% for 1 min, and 1000% for 20msec											
Protections	Inherent inverter pulse-by-pulse protection (over current and short-circuit electronic protection); over-and under-voltage for DC and AC input; input semi-conductor fuse; overload, inverter over-temperature; fast monitor transfers the load to bypass immediately when DC voltage is lost; DC input circuit breaker											
Rejection ration	>100dB											
Static Switch Bypass and Output												
Topology	Hybrid-type static switch with dual SCRs											
Transfer time	≤2 msec											
Efficiency	>99%											
Overload	600% for 2 sec, 1000% for 1 sec											
Protections	Bypass input circuit breaker; AC output circuit breaker; built-in back feed protection; programmable bypass input over and under voltage protection; programmable over and under bypass frequency; output voltage monitor transfers the load to bypass on inverter fail. Optional "live static switch" option always outputs bypass on inverter shutdown											
System and General												
DC-AC efficiency		93.5%	93.5%	94%	94%	94%	94.5%	95%	95%	96%	98%	98%
MTBF	>280,000 hours with standard static switch bypass											
Front panel	● LCD screen: displays system status, measurements, alarm messages ● Mimic diagram illustrating the power flow ● Information and function buttons ● Indication LEDs ● Buzzer alarm ● Log of last 256 system events											
Viewable parameters includes	● Input: DC voltage and current ● Inverter: AC voltage, frequency, and synchronization ● Bypass: AC voltage, current, and frequency ● Output: AC voltage, current, and frequency ● Internal temperature and status of over-temperature protections ● Real time clock and accumulated operation time											
Parallel operation	Direct parallel operation, precise synchronization via digital-PLL, accurate current-sharing. Available in centralized and decentralized topologies for N+1 redundancy and/or power sharing											

Communication interfaces	● Dry–contact alarm relay board ● RS232 interface ● Optional RS485 interface ● Optional SNMP adaptor (GMACi) ● Optional Wireless communication device via cellular interface
Cooling	Redundant forced air cooling
Noise level	<55– 68dBA depending on type and load percentage
Temperature	Operating: –10 to 45 ℃ Storage: –20 to 70 ℃
Humidity	Up to 95% (non–condensing)
Altitude	1500 m without de–rating
Available cabinets	Front access, protection grade IP32
Dimension (W x D x H)	60KVA below (include 60KVA) : 800 x 800 x 1900 mm 60KVA upper : 800 x 1350 x 1900 mm
Color	RAL 7047
Safety	IEC62040–1
EMC	IEC62040–2, EN50091–2
Design & performance	IEC62040–3
Conformity	CE

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