

μ PS-SP Series



Stand Alone and Parallel On-Line Double Conversion UPS
Three-Phase, 6kVA to 200kVA



GAMATRONIC
ELECTRONIC
INDUSTRIES LTD

PURE POWER



μPS-SP SERIES

Stand Alone and Parallel On-Line Double Conversion UPS VFI
Three-Phase, 6kVA to 200kVA

VERSION 001

The μPS-SP series is the next generation of the winning model μPS. This unbeatable model has been renewed with extended software and hardware designs, offering even more features and advantages for YOU! From pre-sale, commissioning to after sale-service.

The following are the added new features of the μPS-SP:

- ▶ Universal software enables to configure the UPS on-demand for different types and setups.
- ▶ Improved on site service procedure - boards can be configured on site inside the UPS
- ▶ Single design for Stand-alone and Parallel configuration models
- ▶ Extended range of events on UPS log provides detailed information of UPS anomaly history
- ▶ New option for connecting additional input/output

Main Features

- ▶ True Double Conversion on-line topology
- ▶ On-line batteries. No transfer time to batteries
- ▶ Precise DC voltage regulation of $\pm 1\%$
- ▶ Full microprocessor control
- ▶ Variety of options, configurable from panel
- ▶ Output isolation transformer
- ▶ DC Soft-Start
- ▶ Enlarged charger for longer backup time

- ▶ Automatic and manual battery tests
- ▶ Operates with both symmetrical and non-symmetrical loads, and linear and non-linear loads
- ▶ Designed for both Wye and Delta load connections
- ▶ Various input/output voltages and frequencies
- ▶ Large LCD display
- ▶ Logs up to 256 events
- ▶ RS232 interface with smart software option
- ▶ Real time clock
- ▶ Independent output voltage control for any single phase
- ▶ Charger Voltage regulation according to EURO BATT requirements

Options

- ▶ External STSW module connection for increased reliability
- ▶ Redundant parallel connection, with active current sharing
- ▶ Input filter for 7%-10% THDI
- ▶ Isolation transformer for static switch
- ▶ High input PF 0.95-0.96
- ▶ Battery charge current limit
- ▶ SNMP management
- ▶ WING - wireless management card

VERSION 001

Parallel Redundant UPS System

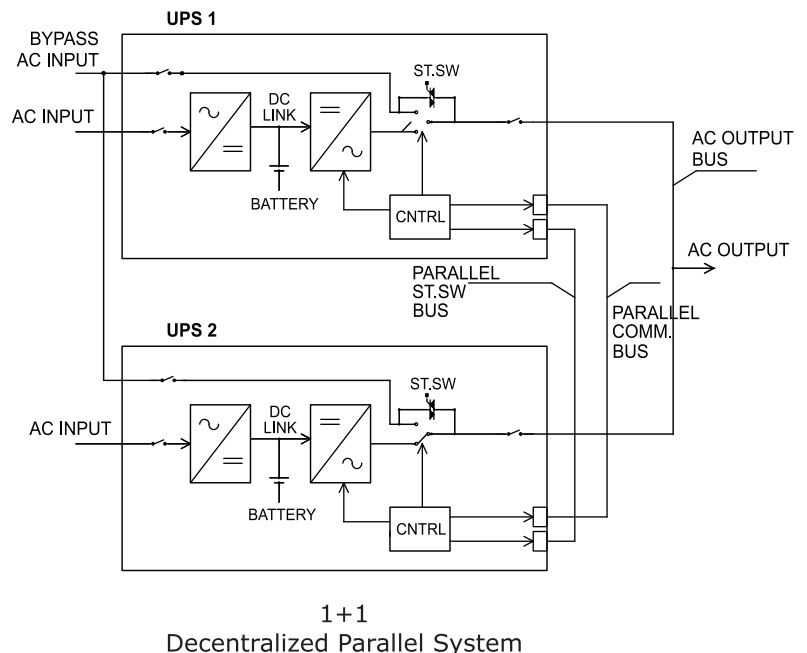
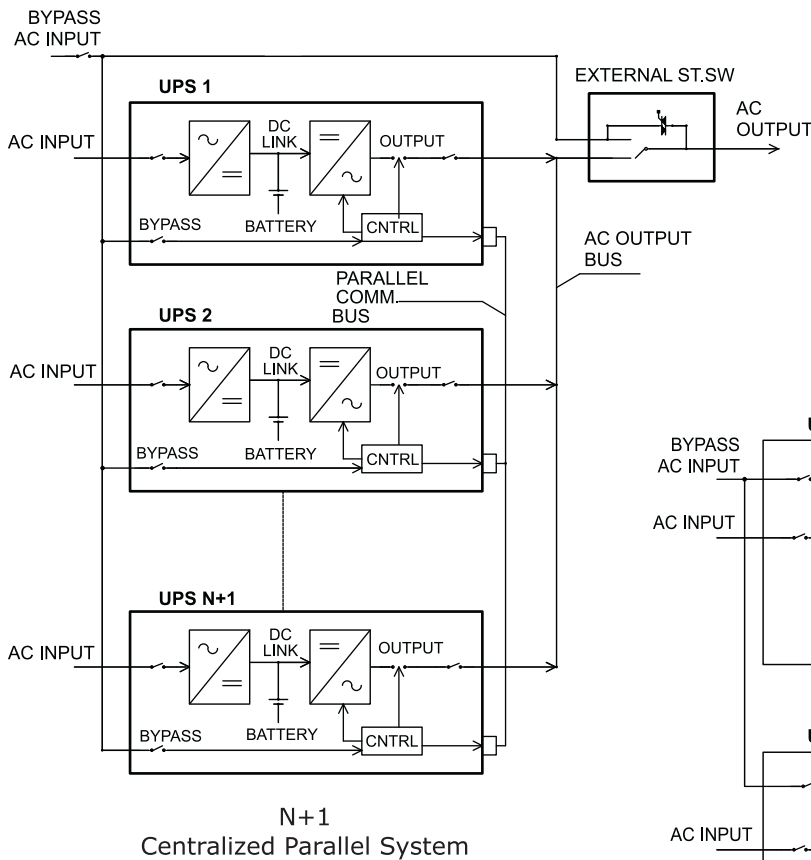
Similar μPS-SP units may be interconnected in Parallel to create an enhanced security redundant system, implementing the following features:

- ▶ Master-Slave logic
- ▶ Precision synchronization control circuitry
- ▶ Active current sharing circuit to distribute the load equally between the UPS units
- ▶ Unique diagnostic system employed to detect and isolate a faulty UPS unit
- ▶ Digital Phase Locked Loop system (PLL)
- ▶ Each UPS equipped with its own battery set
- ▶ Output connected directly in parallel mode without any additional device
- ▶ A ten-wire signal bus for synchronization and active current sharing between units
- ▶ Centralized and Decentralized STSW configurations are both available (as illustrated below)

The parallel connection is available for:

- ▶ μPS-SP 3/3*
- ▶ μPS-SP 3/1*
- ▶ MS-SP 1/1*

* Note: the UPS units should include the optional output inductor



μPS-SP Technical Specifications

INPUT	
Voltage	See following tables
Voltage Range	+20%-15%
Frequency	47÷53Hz (57÷63Hz)
Power Walk-in	12 sec.
Protection	Circuit breaker, RFI filter
Power Factor (PF)	0.8 (0.92-0.94)*
THD	28% (7-10%)*
OUTPUT	
Voltage (V)	See following tables, no DC component
Voltage Regulation	±2% (±1 optional)
Frequency Tracking Range	±0.5, ±1, ±2, ±3, ±4Hz (selectable)
Free-running Frequency	50/60Hz ±0.1Hz
Slew Rate	1 Hz/sec.
Overload	125% 10 min., 150% 30 sec., 1000% 1 cycle
Load PF	0.8
Waveform	Sinusoidal
THD	Less than 2% (at linear load)
Crest Factor	3:1
Protection	Overload and short circuit, over temperature (Heat Sink and inverter transformer)
Dynamic Response to 100% Load Change	2%
Static Switch Bypass Transition Time	Less than 0.5 msec.
Rejection Ratio	More than 100 dB
ENVIRONMENT & OTHER	
Ambient temperature:	
Operating	-10 to 40 ^o C
Storage	-20 to 60 ^o C
Relative Humidity	95% max., non-condensation
Altitude	1500m w/o derating
UPS Standard:	
General & Safety	EN50091-1 ; IEC62040-1
EMC	EN50091-2 ; IEC62040-2
Design	ENV50091-3 ; IEC62040-3
MTBF	100,000 hours, 250,000 hours with static switch
LCD DATA	
Input	Voltage (current - optional)
Output & Inverter	Voltage, Current, Frequency
Bypass	Voltage & frequency
Batteries	Voltage (current optional)
Real Time and Accumulated Operational Time	
Log (events memory)	Last 256 events
OPTIONS	
Maintenance Bypass	
Extended Backup Time	
Custom Input/Output Volt./Freq. combinations	
Galvanic Isolation between AC Inputs and Outputs - Input Isolation Transformer	
19" Cabinet (up to 20kVA)	
Battery Charge Current Limit	
Battery Voltage Temp. Compensation	
COMMUNICATION OPTIONS	
Alarm Interface	
shutdown software	
Remote indication panel	
RS232 Interface	
GMaCi - SNMP TCP/IP management card	
WING - GSM/GPRS wireless management card	

*with optional Filter

All specifications given are typical and subject to change without notice



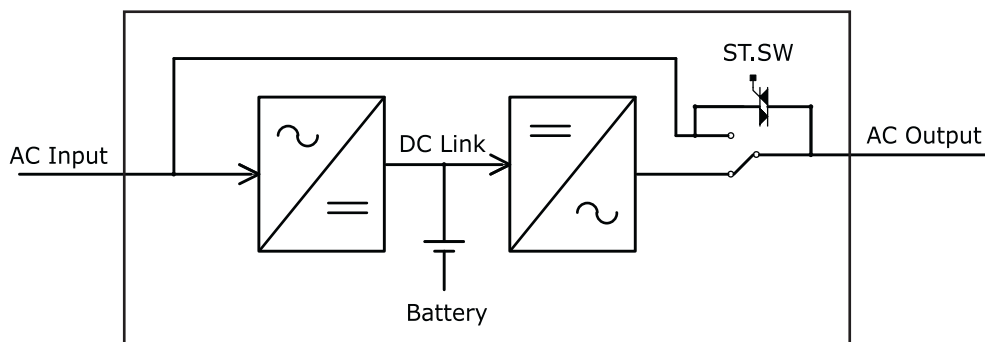
μPS-SP 3/1 Technical Specifications

MODEL	6K	8K	10K	15K	20K	30K	40K	50K	60K	80K
INPUT										
Voltage	3 X 380/400/415Vac (208 / 220 optional)									
Frequency	47÷53 Hz (57÷63 Hz)									
OUTPUT										
Voltage	220/230/240Vac (no DC components)									
Power (kVA)	6	8	10	15	20	30	40	50	60	80
(kW)	4.8	6.4	8	12	16	24	32	40	48	64
Efficiency AC - AC @ 100% Load (%)	90.5		91.5		92		92.3		92.5	
@ 50% Load (%)	90		91		90.5		91.8		92	
Efficiency DC-AC @100% Load (%)	94.5							95	95.5	96
Heat Dissipation (W) @ Full Load (1W = 3.4 BTU)	499	672	839	1114	1486	2086	2782	3336	4004	5189
BATTERY OPERATION										
DC Voltage	432Vdc for standard models									
Backup Time	According to customer requirements									
Battery Recharge Time	Approx. 6-8 hrs.					Approx. 4-6 hrs.				
Expected Battery Life	5 Years (10-12 years optional)									
PHYSICAL										
Size (cm)*	Height		75		95		130		190	
	Width		24		40		55.5		70	
	Depth		80		83.5		111		80	
Weight (kg) w/o Batteries	85	110	140	200	280	350	430	480	600	
Audible Noise (dB) @ 1.5m	51	52	53	56	60	62	64			

* Size of cabinet may change according to UPS specification

All specifications given are typical and subject to change without notice

Gamatronic Double Conversion, On-Line Batteries UPS System Topology





μPS-SP 3/3 Technical Specifications

MODEL	10K	15K	20K	30K	40K	50K	60K	80K	100K	125K	150K	200K
INPUT												
Voltage	3 x 380 / 400/415 / 440Vac (208 / 220 optional)											
OUTPUT												
Voltage	3 X 380 / 400 / 415Vac (208 / 220 optional)											
Power (kVA)	10	15	20	30	40	50	60	80	100	125	150	200
(kW)	8	12	16	24	32	40	48	64	80	100	120	160
Efficiency AC-AC	91	91.5		92		92.5	93	93.5				
Efficiency DC-AC @ full load (%)	93	93.5	94		94.5			95		95.5		
Dissipation (W) @ Full Load (1W=3.4BTU)	791	1114	1486	2086	2782	3242	3612	4448	5561	6951	8342	11123
BACKUP OPERATION												
Backup Time	As per customer specifications											
DC Voltage	432VDC for standard models											
Batteries (12VDC each)	Sealed Lead-Acid, external											
Battery Recharge Time	Approx. 6-8 hours						Approx. 4-6 hours					
Expected Battery Life	5 years (10-12 years optional)											
DIMENSIONS												
Height (cm)	75		95		130			190	190			
Width (cm)	24		40		55.5			70	135			
Depth (cm)	80		83.5		111			80	80			
Weight (kg) W/O batteries	125	145	190	250	300	450	500	780	950	1100	1300	1600
Audible Noise (dB) @ 1.5m	60		61		62			65				67

External Battery Cabinet

TYPE	WIDTH (cm)	HEIGHT (cm)	DEPTH (cm)	WEIGHT of BATTERIES (Kg)
32x7AH	64	65	25	105
32X17/20AH	80	85	32	240
32X24/26AH	157	89	45	363
32X38/40AH	157	89	45	516
32X65AH	165	125	42	800
32X90AH	155	145	45	1100

- Size of cabinet may change according to UPS specification
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