



The SPH KING series on line double conversion UPS with full time Digital Signal Processor control technology is the perfect solution for mission critical users who demand high reliability, availability and performance from a UPS. Input power factor correction, high efficiency and parallel redundant capability provide a superior level of power quality for sensitive electronic equipment and computers loads.

PRINCIPLES OF WORKING

The back up series is composed by: Rectifier, Inverter, Static Switch, manual by-pass and Battery.

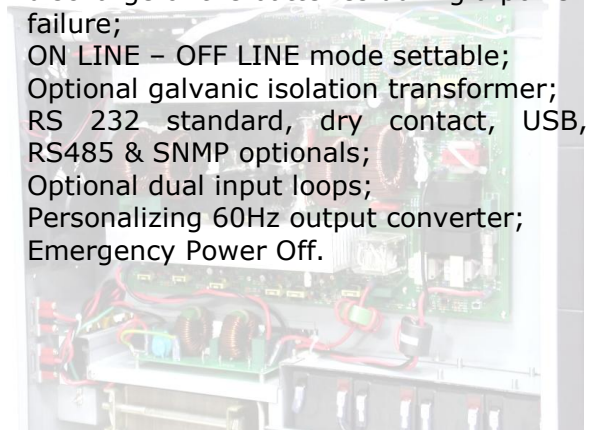
The Rectifier-Inverter line normally feeds the users, and the Battery is kept charged by the Rectifier.

If a black out occurs, the Battery supplies power energy to users always through the Inverter. When the black out is over, the Rectifier provides for Battery charge.

If a short circuit or an overload occurs to the users, the Static By-pass switches the load over the emergency line. When the fault is over, the Inverter feeds users.

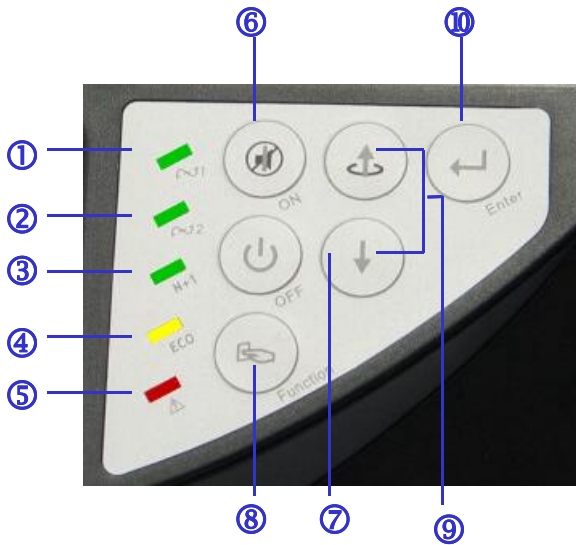
FEATURES

- Simple Parallel installation;
- Full time Digital Signal Processor Control;
- Filtered, stabilized and regulated sine wave supply;
- High input power factor and low current THD;
- Wide input voltage window and input frequency window, the battery usage is minimized;
- Zero transfer time;
- Add matching battery cabinets and extend the backup time up to several hours. With its isolation conversion technology plus precision control, the optional charger can be installed in parallel up to 4 units;
- Superior overload capability;
- High battery reliability (battery test, manual and automatic);
- LCD display provides real time status and parameter readings;
- Advanced battery discharge management
The ABDM function prevents the deep discharge of the batteries during a power failure;
- ON LINE – OFF LINE mode settable;
- Optional galvanic isolation transformer;
- RS 232 standard, dry contact, USB, RS485 & SNMP optionals;
- Optional dual input loops;
- Personalizing 60Hz output converter;
- Emergency Power Off.

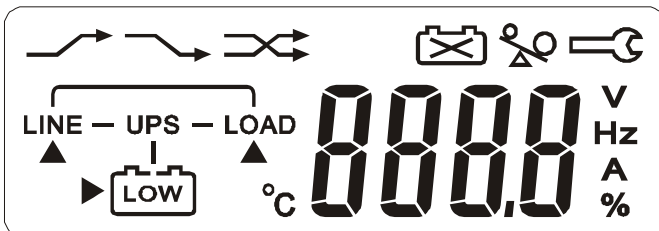


CONTROL PANEL

The front display panel provides all major systems parameters and operational status of the UPS that include full diagnostics for simple, easy servicing. The TPH KING series UPS with DSP control, systematically checks each component and displays the result using on LCD display. This feature allows service technicians the ability to pinpoint and repair the UPS very quickly.



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|--------------------|----------------------------|
| ■ LED indicators: | ■ Control Keypads: |
| 1 Mains_1 LED | 6 ON (& Alarm Silence) Key |
| 2 Mains_2 LED | 7 OFF Key |
| 3 Redundancy LED | 8 Function Key |
| 4 ECO Mode LED | 9 Scroll Keys |
| 5 Common Alarm LED | 10 Enter Key |



- LCD Display Explanations:
- ✓ Status
Line Mode, Back up Mode, ECO Mode, Bypass Supply, Battery Low Voltage, Battery Bad/Disconnect, Overload, Transferring with Interruption & UPS fault.
- ✓ Parameters
AC Voltage, Frequency, Load Percentage, Battery Voltage & Temperature

N+X POWER SCALABLE PARALLEL REDUNDANCY

The standard apparatus to increase the power capacity or configuring a parallel redundant UPS system can be simply interconnected up to 4 units using the CAN-bus RJ45 cables on the rear of the SPH series UPS. The SPH series UPS used an inverter control technology that allows to achieve N+1 scalable redundant

power without the use of additional components. The system is fully modular and allows to increase the overall power output, battery runtime, and redundancy as your needs and requirements grow. Parallel Distribution Box are available till 200 A (40kVA).

INTERFACES



The SPH Series UPS also provides two additional customer options communication slots in addition to the standard RS232:

2nd RS232



RS485



USB



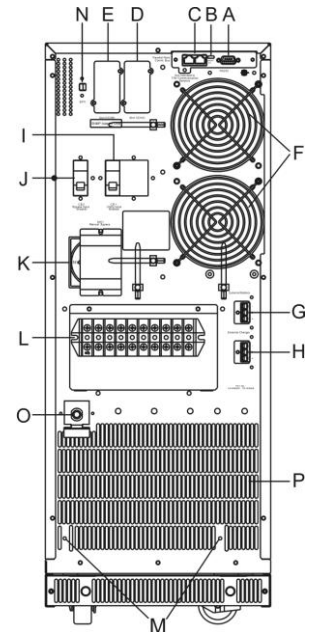
Dry Contact



SNMP



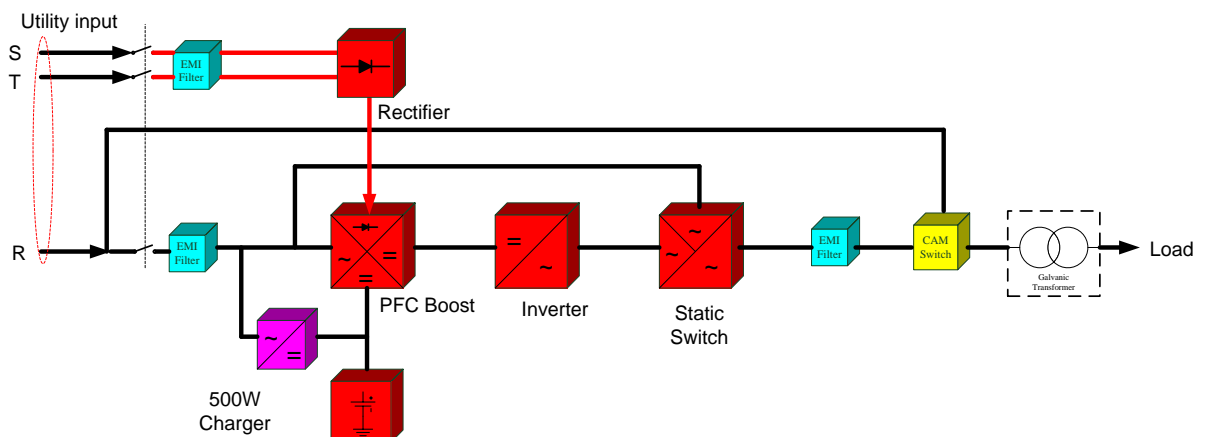
REAR PANEL EXPLANATION



EMERGENCY POWER OFF

The Emergency Power Off facility must use a normally NO contact, which closes to operate the emergency stop procedure. The emergency stop port is located at the rear of the UPS SPH KING module. Through the dry contact interface it is available also a NC contact.

- A) RS232 port
- B) Terminal Resistor for Parallel Function
- C) CAN Bus Connection Port for Parallel System
- D) Customer Options Slot 1
- E) Customer Options Slot 2
- F) Cooling Fan
- G) External Battery Connector
- H) External Charger Connector
- I) Utility Input Breaker CB1
- J) Bypass Input Breaker CB2 (for Dual Input Model Only)
- K) CAM Switch (Maintenance Bypass Switch)
- L) Input/Output Terminal Block
- M) Fixing Holes for External Charger Cabinet
- N) EPO (Emergency Power Off): Short to enable the Function
- O) Thermal Breaker for the Protection of Load in Abnormal Condition: CB3
- P) Air Ventilation Hole



Model	SPH6000	SPH10000	SPH150000	SPH20000
Rated power VA/W	6000/4200	10000/7000	15000/10500	20000/14000

INPUT				
Nominal Voltage	400V (277 ÷ 485V) 3F+N			
Frequency	45 ÷ 66Hz			
Power factor	> 0.95	> 0.98	> 0.95	> 0.98
Distortion (THiD)	< 10%	< 5%	< 10%	< 5%

OUTPUT				
Voltage	220/230/240V ± 2% single phase, adjustable			
Frequency	50Hz or 60Hz ± 0.2%			
Waveform	Sinusoidal			
Distortion (THD)	< 3%			
Transfer time	0 ms.			
Crest factor	3 : 1			
Overload	150% for 1'	150% for 3''	150% for 1'	150% for 1'

BATTERY				
Type	Sealed Lead Acid maintenance free			
Recharge time	5h at 90%			
Nominal voltage	± 120Vdc	240Vdc	± 264Vdc	± 288Vcc
Standard back up time	15'	10'	10'	10'

PROTECTION	
Short circuit	Switch off immediately
Over temperature	Switching by-pass
Noise suppression	Complies with EN62040-2
Spike suppression	Complies with EN61000-4-5

MISCELLANEOUS				
Relative humidity	< 90% without condensing			
Operating temperature	from 0°C to + 40°C			
Noise	< 50 dBA			
Interfaces	RS232 & EPO (dry contact, RS485, USB, SNMP optional)			
Parallel availability	No	Yes	No	No
Heat dissipation	400W	600W	800W	800W
Input/output connection	Terminals			
Ext. battery connection	Terminals	Plug-in & Play	Terminals	Plug-in & Play
Dimensions (mm)	200x690x690	290x645x881	2x200x690x690	450x860x1250
Weight (kgs)	90	100	150	210

STANDARDS	
Safety	EN 62040-1-1, UL1778
EMC	EN 62040-2, EN 61000-3-2, EN 61000-3-3, FCC A class
Marks	CE, cUL, UL