UNINTERRUPTIBLE POWER SUPPLY

TPH KING series represents the last transformer-less double conversion (VFI-SS-111) power protection technology designed to protect a wide area of critical applications including server rooms, networks, telecommunication system, industrial processes and medical equipment. Reliability, electrical performance, exceptionally compact size and outstanding cost-efficiency, housed in an attractive enclosure are only some features of this new UPS solution.
TPH KING series is available in a variety of sizes: 10-15-20-30-40-50-60 and 80kVA. TPH KING series is provided in three cabinet size in order to allow longer battery backup times therefore avoid the use of additional battery cabinets. Monitoring and control data are shown on an easy to understand front panel display featuring pushbutton controls, LCD read out for event logs and diagnostics and a mimic diagram for system status. The power protection system can be remotely monitored via RS232, dry contact or SNMP interface.

PRINCIPLES OF WORKING

The backup 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 blackout 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

- Input power factor 0.99 at full load
- Output rated power factor 0.9
- Input Current distortion THiD ≤ 3%
- High efficiency up to 95.5%
- Up to 20 units in parallel configuration
- Filtered, stabilized and regulated sine wave supply
- Wide input voltage and frequency range, minimizing the battery usage
- Zero transfer time
- Superior overload capability
- Battery monitoring and temperature dependent charging function as option
- LCD display for measurements, alarms and power history
- Device to avoid a complete battery discharge
- ON LINE – OFF LINE working settable
- Insulation transformer as option
- Low audible noise, variable load-dependent DC fan speed
- Customer slot, RS232 and base dry contact interface as standard, advanced dry contact, USB, RS485 and SNMP as option
- Dual input feed as option
- Personalizing 60Hz output converter
- Emergency Power Off.

CONTROL PANEL

The user friendly control panel si composed by three parts:

- Power Management LCD Display (PMD).
- LED indicators.
- Keys.

Power Management Display (PMD)

The 2x20 character LCD simplifies the communication with the UPS and provides the necessary monitoring information about the UPS.
The menu driven LCD enables the access to the:

- Event register.
- Monitor the input and output V, I, f, P.
- Battery runtime.
- Start up and shutdown of UPS.
- ON LINE – OFF LINE modality settable.
- Diagnosis (Service Mode).
- Adjustments and testing.

LED indicators

The mimic diagram serves to indicate the general status of the UPS. The LED indicators show the power flow status and in the event of mains failure and load transfer from inverter to by-pass and vice-versa. The corresponding LED indicators will change colors from green (normal) to red (warning).

Keys

The keys allow the user to operate the UPS to perform settings and adjustments, to start up and shut down the UPS, to monitor on the LCD display the voltages, currents, frequencies and other values.

INTERFACES

The TPH KING is provided with two standard interfaces:

- Serial RS232.
- Base dry contacts.

Standard serial RS 232

The smart port is an intelligent RS232 serial port that allows the UPS to a computer. The connector is a standard D-Type, 9 pin, female. The software optionally allows the computer to monitor the mains voltage and the UPS status continuously.

Standard dry port (volt-free contacts)

The base dry port may be used for:
Emergency Power Off (NC), GEN-ON (NC), Programmable Customer's Inputs, Temp. Sensor for Battery Control and 12 Vdc source (max. 200 mA).

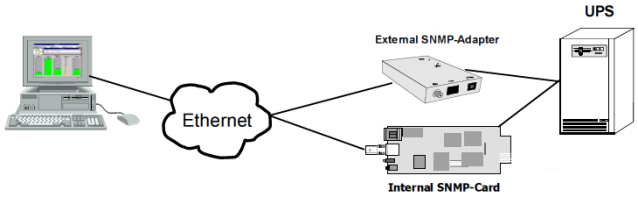
The UPS TPH KING is provided with the following accessory cards:

Optional relay card for:
Common alarm, Load to bypass/Load to inverter No & NC, Battery load/battery ok, Mains failure/Mains present.

USB port for remote signaling and automatic computer shutdown

SNMP card for monitoring and integration in network management. The Simple Network Management Protocol (SNMP) is a worldwide-standardized communication-protocol. It is

used to monitor any device in the network via simple control language.



N+X POWER SCALABLE PARALLEL REDUNDANCY

The TPH KING UPS may be paralleled for power capacity or for redundancy up to 20 units to increase the power capacity or configuring a parallel redundant UPS system. The standard version is not provided with this feature which is optional and field upgradable.

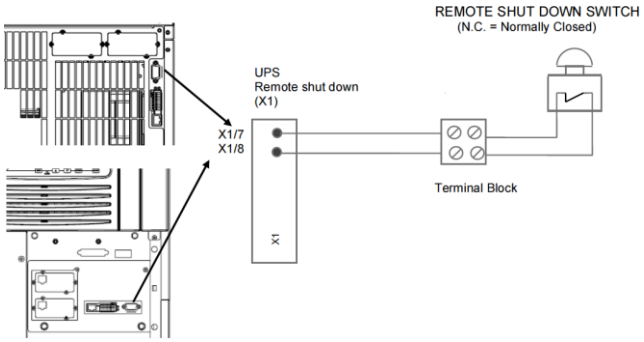
The TPH KING parallel architecture is based on a decentralized bypass architecture i.e. every UPS is provided with its own static bypass. Every UPS unit in a parallel configuration is provided with a proper output parallel Isolator which, when opened isolates the corresponding unit from the parallel system. Once the parallel isolator of a unit is open that unit is isolated from the rest of the parallel system and therefore does not provide power to the output.

EMERGENCY POWER OFF

The Emergency Power Off facility must use a normally closed contact, which opens to operate the emergency stop sequence. The Emergency Power Off port is located at the front or at the back of the UPS TPH KING UPS, according to the model.

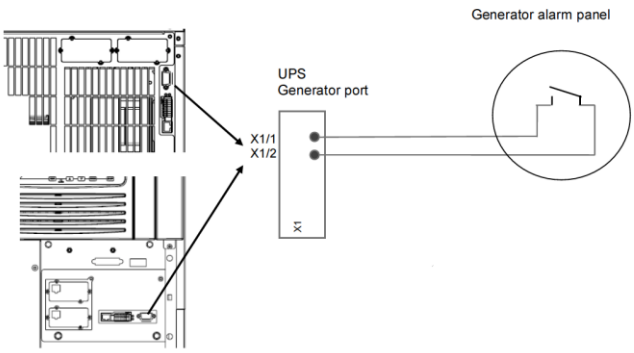
In order to allow removal, maintenance or testing of any remote emergency stop facility without disturbing the normal operation of the UPS, it is recommended that a terminal block, with linking facilities, be installed between the UPS and the stop button.

1. Use a screened cable with 1 pair (section of wire 0.5mm2) and maximum length of 100m.
2. Connect the cable as shown in figure.



GENERATING SET CONNECTION

The Generating set ON facility must use a Normally Open contact that closes to indicate that a generator is running and supplying input power to UPS. is located at the front or at the back of the UPS TPH KING UPS, according to the model. When used, this facility disables the UPS static bypass and prevents the UPS from transferring the load on to the generator power supply and/or block the battery charger during the time the UPS is supplied from the genset.



Model	TPH 10	TPH 15	TPH 20	TPH 25	TPH 30	TPH 40	TPH 50	TPH 60	TPH 80
Rated power VA/kW	10/9	15/13.5	20/18	25/22.5	30/27	40/36	50/45	60/54	80/72

INPUT									
Nominal voltage	3x380/220V+N, 3x400V/230V+N, 3x415/240V+N								
Voltage tolerance	Load <100% (-23% +15%), <80% (-30% +15%), <60% (-40% +15%)								
Power factor	0.99 at full load								
Nominal frequency	35 ÷70Hz					40 ÷ 72Hz			
Current distortion	THiD ≤ 3% at full load								
Inrush current	Absent								
OUTPUT									
Voltage	400V 3F+N								
Voltage stability	<±1% static, <±4% dynamic (step load 0-100% or 100-0%)								
Voltage distortion	<2% with linear load, <4% with non-linear load (EN62040-3)								
Frequency	50Hz or 60Hz								
F. tolerance	±0.1% free running, ±2% or ±4% with mains, adjustable								
Waveform	Sinusoidal								
Transfer time	0 ms.								
Crest factor	3 : 1								
Overload	125% for 10 minutes, 150% for 1 minute at pf 0.8								
Unbalanced load	100% all 3 phases regulated independently								
Short capability	Inverter 3 In for 40 msec – Bypass 10 In for 10msec								
BATTERY									
Type	Maintenance free VRLA								
Recharge time	5h at 90%								
Nominal voltage	±288Vcc								
Charging Curve	Ripple free ; IU (DIN 41773)								
Battery Test	Automatic and periodically (adjustable)								
T. compensation	temperature sensor optional								
EFFICIENCY									
ON LINE mode	95.5% at 100% load, 95% at 50% load								
OFF LINE mode	98%								
MISCELLANEOUS									
Battery storage	Max 6 months at ambient temperature								
Operating Temp.	from 0°C to + 40°C								
Noise 100-50%	55/49	55/49	57/49	57/49	58/50	59/50	59/50	62/55	62/55
Interfaces	RS232 and EPO standard, dry contacts, SNMP, RS485 & USB optional								
Positioning	Min. 20cm rear space for fan ventilation								
Dimensions (mm)	345x710x720		345x710x1045		440x910x1420			500x850x1600	
Weight w/o batt.	60	65	95	100	160	165	170	180	200
Protection degree	IP20								
Colour	Grey RAL 7024								
Immunity class	C3								
STANDARDS									
Safety	IEC/EN 62040-1-1, IEC/EN 60950-1								
EMC	IEC/EN 62040-2, IEC/EN61000-3-2, IEC/EN61000-6-2,								
Performance	EN 62040-3								