

**UNINTERRUPTIBLE POWER SUPPLY**

TPH series represents the maximum protection for every load condition as electro medical, networks, security and industrial applications. The TPH series UPS are ON-LINE double conversion devices provided with output transformer comply to EN 62040-3 standard. TPH series is available in a variety of models: 100-120-160-200-250-300-400-600-800kVA.

**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;
- High efficiency > 93%;
- Filtered, stabilized and regulated sine wave supply;
- Unity input power factor for energy saving and low reflected harmonic pollution to the utility;
- Wide input voltage window and input frequency window, the battery usage is minimized;
- Zero transfer time;
- Superior overload capability;
- Battery monitoring and temperature dependent charging function and automatic battery testing to provide advanced indication of potential battery failures;
- LCD display for measurements, alarms and power history;
- Device to avoid a complete battery discharge;
- ON LINE – OFF LINE working settable;
- isolation transformer through neutral;
- Customer slot, RS 232 and dry contact interface as standard, 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 2x40 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 U, 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**

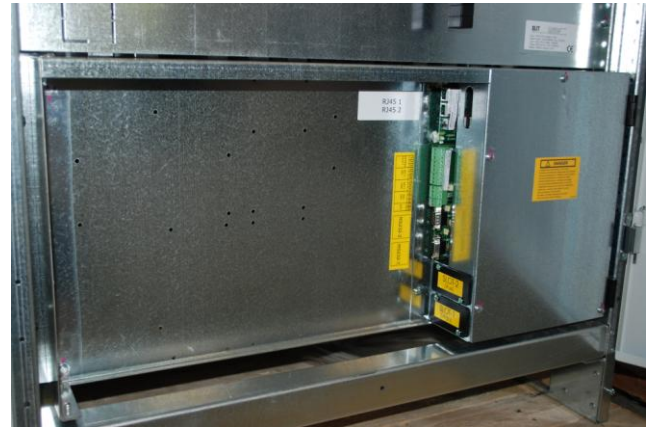
The mimic diagram serves to indicate the general status of the UPS. The LED indicators show the power flow status and in the event of mains failure or load transfer from inverter to by-pass and vice-versa. The corresponding LED indicators will change colors from green (normal) to red (warning).

**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.

**N+1 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 8 units using the CAN-bus RJ45 cables on the front of the TPH series UPS. The TPH 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.

**REMOTE CONTROL & SIGNALS**

The TPH series is provided with two standard interfaces:

- Serial RS232;
- Dry contacts.

**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.

**Dry Port (volt-free contacts)**

The dry port may be used for:

- Connection of remote emergency stop facilities;
- Connection of remote status panel;
- Provision of signals for the automatic and orderly shutdown of servers or IBM AS400

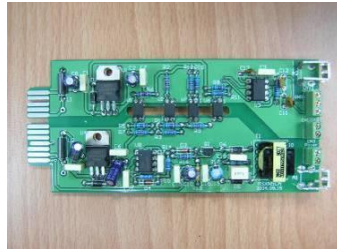
NO – NC available contacts: mains, common alarm, inverter, battery and EPO.

The UPS TPH is provided with the following accessories:

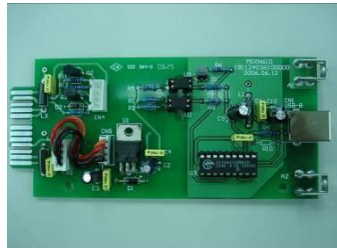
2nd RS232



RS485 interface



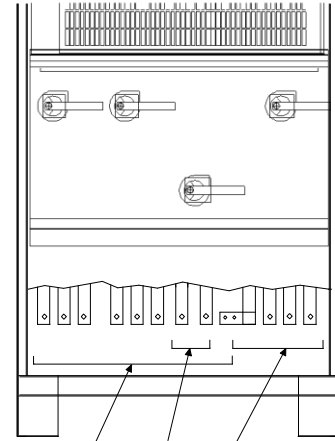
USB interface



SNMP interface



**MAINS, LOAD & BATTERY CONNECTIONS**



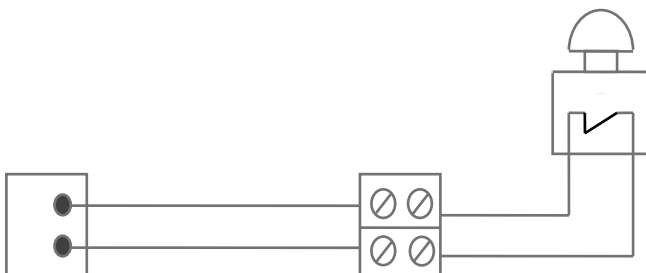
- AC rectifier input supply;
- DC input/output;
- UPS output;
- By-pass input supply;
- Input switch;
- Emergency line switch;
- Battery switch;
- Manual by-pass switch;
- Dry contact interface;
- RS 232 interface;
- Customer options Slot.

**EMERGENCY POWER OFF**

The Emergency Power Off facility must use a normally closed contact, which opens to operate the emergency stop sequence. 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 0.6mm<sup>2</sup>) and maximum length of 100m.
2. Connect the cable as shown in figure.

**EMERGENCY STOP SWICHT**  
(N.C. = Normally Closed)



Model	TPH100	TPH120	TPH160	TPH200	TPH250	TPH300
Rated power kVA/kW	100/80	120/96	160/128	200/160	250/200	300/240
<b>INPUT</b>						
Nominal voltage	400V 3F+N					
Voltage tolerance	±20%					
Power factor	> 0.90 standard, > 0.93 12p configuration, > 0.95 12p with filters config.					
Nominal frequency	45 ÷ 65Hz					
Current distortion	< 25% standard, < 5% 12p configuration, < 3% 12p with filters config.					
Inrush current	Absent					
<b>OUTPUT</b>						
Voltage	400V 3F+N					
Voltage tolerance	±1% static, ±3% dynamic					
Voltage distortion	<1% linear load, <3% not linear load					
Frequency	50Hz o 60Hz					
Frequency tolerance	±0.05% free running, ±1% ÷ ±6% with mains, adjustable					
Waveform	Sinusoidal					
Transfer time	0 ms.					
Power factor	3 : 1					
Overload	125% for 10 minutes, 150% for 1 minute					
<b>BATTERY</b>						
Type	Sealed Lead Acid maintenance free					
Recharge time	5h at 90%					
Nominal voltage	396Vcc					
Standard back up time	10'					
<b>EFFICIENCY</b>						
ON LINE mode	> 93%					
OFF LINE mode	98%					
<b>MISCELLANEOUS</b>						
Relative humidity	< 90% without condensing					
Operating temperature	from 0°C to + 40°C					
Noise	63dBA	65dBA	68dBA	70dBA		
Interfaces	RS232, dry contact and EPO standard, SNMP, RS485 & USB optional					
Heat dissipation	3kW	3.6kW	4.4kW	5.6kW	7kW	8.4kW
Dimensions (mm)	800x800x1900				1600x900x1900	
Net weight w/o (kg)	600	650	750	800	2000	2400
Protection degree	IP20					
<b>STANDARDS</b>						
Safety	EN 62040-1-2, EN 60950-1					
EMC	EN 61000-6-4, EN62040-2, EN 61000-6-2, EN 61000-4-3/4/5					
Performance	EN 62040-3					