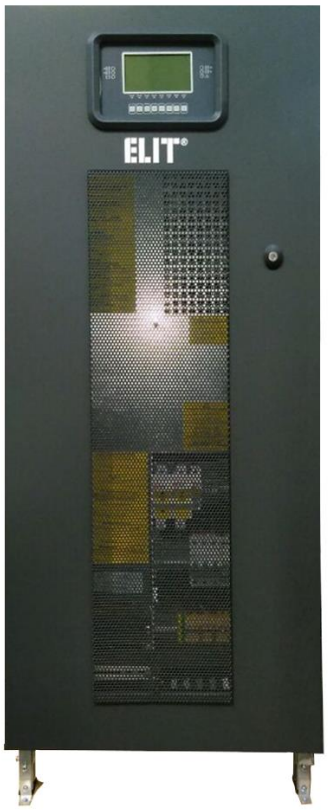
UNINTERRUPTIBLE POWER SUPPLY



TPH IND series represents the last transformer double conversion (VFI) power protection technology designed to protect a wide area of critical applications including server rooms, networks, telecommunication system, industrial processes and medical equipment. Unmatched reliability, excellent electrical performance, exceptionally compact size and outstanding cost-efficiency housed in an attractive enclosure are only some features of this new UPS solution. 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, RS485, dry contact or SNMP interface. The TPHIND series is available from 10kVA to 200kVA models.

PRINCIPLES OF WORKING

The backup series is composed by: Rectifier, Inverter with transformer, 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

- Backfeed protection to prevent voltage backfeed on the input line due to internal fault
- LCD remote panel as option
- Input power factor with full load 0.9.
- Output power factor 0.9.
- Zero transfer time.
- Parallelable features till 8 units as option.
- Filtered, stabilized and regulated sinewave supply.
- Wide input voltage and frequency range, minimizing the battery usage.
- 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.
- IGBT inverter with transformer.
- Accessory slot, 2nd RS 232, dry contact, RS485 and SNMP.
- Dual input feed as option.
- Personalizing 60Hz output converter.
- Personalizing stabilizer features.

CONTROL PANEL

The control panel consists of a graphic display, 6 LEDs of visual signal and 4 function keys. 5.1" LCD Display with 16 lines and up to 40 characters each. The resolution is 240x128 pixels in black and white.

Messages are available in the following languages: Italian, English, French, German, Spanish, Polish, Chinese, and Russian. A large graphic display is located at the center of the control panel, enabling you to always have a detailed overview of UPS status in the foreground and in real time. Directly from the control panel, the user can turn on / off the UPS, check the electrical measurements of the network, output, battery, etc., and perform the main machine settings.

INTERFACES

The front panel (behind the door) allows access to the following communication ports:

- Serial port, available with RS232 connector and USB connector.
- EPO
- No. 2 Expansion Slots for additional interface cards.

Dry contact card

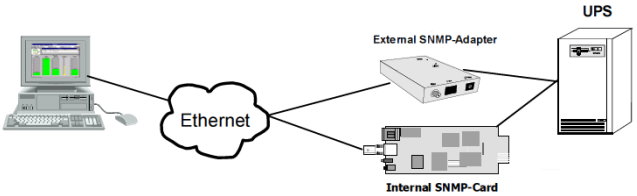
There are two accessory types of dry contact cards, with 4 and 8-way programmable.

Emergency Power Off – EPO

The isolated contact is used to turn off the UPS in an emergency. The Emergency Power Off facility must use a Normally Closed contact, which opens to operate the emergency stop sequence. The EPO circuit is self-powered with SELV circuits. No external power supply is required.

SNMP

The SNMP network adapter manages UPS through the LAN by using one of the main TCP/IP, HTTP, HTTPS, and SNMP v1 and SNMP v3 network communication protocols. The software allows UPS to be integrated into medium and large networks and to provide reliable communication between the UPS and the management system used.



RS485

Modbus / Jbus protocol converter via RS485 output for UPS monitoring in BMS (Build Management System).

Profibus DP

External accessory that allows the UPS to be integrated into a Profibus DP network. With this device UPS management and monitoring can be integrated into a control system based on one of the most widely used bus buses in the industrial field for communication between control / automation systems and distributed I/O.

Remote Panel

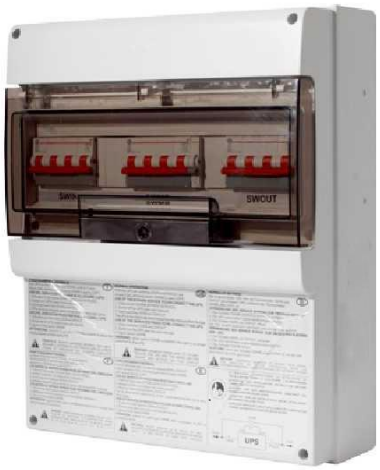
Remote Panel that allows remote UPS monitoring and real-time detailed overview of operating conditions; it can display on the display the values of the UPS specifying input and output, and battery measurements. The graphic display has a high definition and manages 7 languages: English, Italian, German, French, Spanish, Russian and Chinese.

External battery temperature sensor

The UPS has a dedicated input to detect the temperature inside a Remote Battery Box and display the temperature on the UPS display.

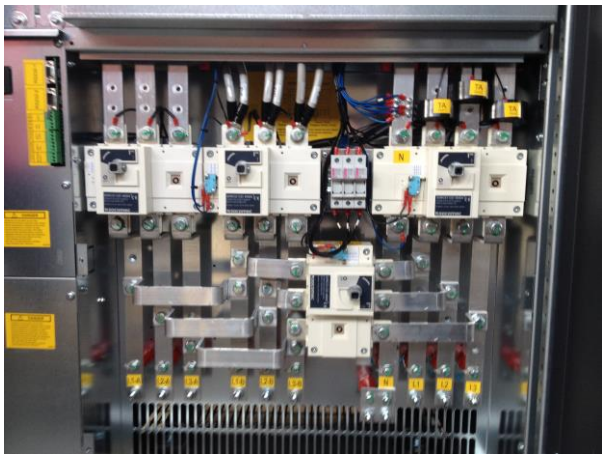
External maintenance bypass

You can install a remote maintenance bypass on a peripheral electrical board, for example to allow UPS to be replaced without interrupting power supply.



INPUT AND OUTPUT

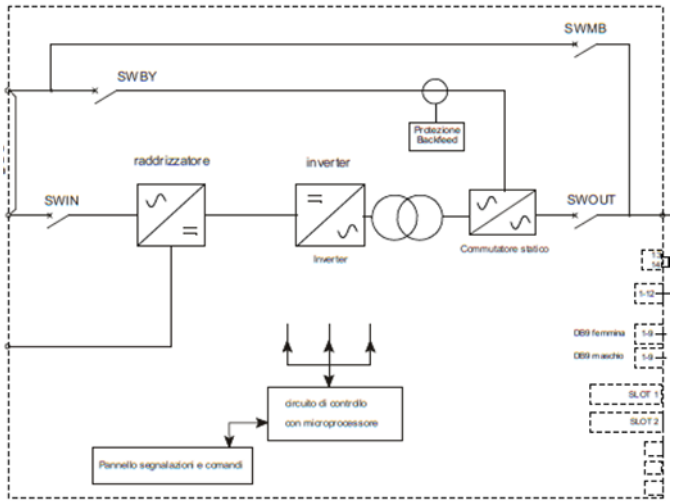
In/outlet terminals are placed in the front bottom under the switch isolators of the apparatus. On request is possible to provide the apparatus with input/output and battery terminals from the top.



N+X POWER SCALABLE PARALLEL REDUNDANCY

The TPH IND UPS may be paralleled for power capacity or for redundancy up to 8 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.

BLOCK DIAGRAM



Model	TPH IND 10	TPH IND 15	TPH IND 20	TPH IND 30
Rated power kVA/kW	10/9	15/13.5	20/18	30/27
INPUT				
Nominal voltage	380-400-415Vac Three phase with neutral			
Voltage tolerance	300÷480Vac @ 100% load			
Power factor	≥0.9 at full load			
Frequency tolerance	45 ÷ 65Hz			
Current distortion THDI	≤25% (5% as option)			
Inrush current	Absent			
OUTPUT				
Voltage	380-400-415Vac Three phase with neutral			
Voltage tolerance	±1% static stability; ±5% dynamic stability			
Voltage distortion	<1% with linear load, <3% with non-linear load			
Frequency	50Hz or 60Hz			
Frequency stability during battery operation	0.05%			
Waveform	Sinusoidal			
Transfer time	0 ms.			
Crest factor	3:1			
Overload	110% for 60 min. – 125% for 10 min. – 150% 1 min. – 300% 1 sec.			
BATTERY				
Type	Sealed Lead Acid maintenance free – NiCd – Li-ion			
Max recharge current @ 80% load	7A	7A	14A	21A
Nominal voltage	384Vdc			
EFFICIENCY				
OFF LINE mode	Up to 98%			
MISCELLANEOUS				
Relative humidity	90% without condensing			
Operating temperature	from 0°C to + 40°C			
Noise level 1mt (0-100% Load)	60-62dBA			
Interfaces	RS232 & EPO standard, dry contact, SNMP, RS485 as option			
Colour	Dark grey RAL7016			
Dimensions w/o battery	555x740x1400mm			
Net weight w/o battery	230kgs	240kgs	260kgs	3115kgs
Protection degree	IP20			
STANDARDS				
Safety	EN 62040-1			
EMC	EN 62040-2			
Performance	EN 62040-3			

Model	TPH IND 40	TPH IND 60	TPH IND 80	TPH IND 100
Rated power kVA/kW	40/36	60/54	80/72	100/90
INPUT				
Nominal voltage	380-400-415Vac Three phase with neutral			
Voltage tolerance	300÷480Vac @ 100% load			
Power factor	≥0.9 at full load			
Frequency tolerance	45 ÷ 65Hz			
Current distortion THDI	≤27% (5% as option)			
Inrush current	Absent			
OUTPUT				
Voltage	380-400-415Vac Three phase with neutral			
Voltage tolerance	±1% static stability; ±5% dynamic stability			
Voltage distortion	<1% with linear load, <3% with non-linear load			
Frequency	50Hz or 60Hz			
Frequency stability during battery operation	0.05%			
Waveform	Sinusoidal			
Transfer time	0 ms.			
Crest factor	3:1			
Overload	110% for 60 min. – 125% for 10 min. – 150% 1 min. – 300% 1 sec.			
BATTERY				
Type	Sealed Lead Acid maintenance free – NiCd – Li-ion			
Max recharge current @ 80% load	27A	41A	56A	69A
Nominal voltage	384Vdc			396Vdc
EFFICIENCY				
OFF LINE mode	Up to 98%			
MISCELLANEOUS				
Relative humidity	90% without condensing			
Operating temperature	from 0°C to + 40°C			
Noise level 1mt (0-100% Load)	60-62dBA			
Interfaces	RS232 & EPO standard, dry contact, SNMP, RS485 as option			
Colour	Dark grey RAL7016			
Dimensions w/o battery	555x740x1400mm			800x800x1900mm
Net weight w/o battery	335kgs	460kgs	540kgs	600kgs
Protection degree	IP20			
STANDARDS				
Safety	EN 62040-1			
EMC	EN 62040-2			
Performance	EN 62040-3			

Model	TPH IND 120	TPH IND 160	TPH IND 200
Rated power kVA/kW	120/108	160/144	200/180
INPUT			
Nominal voltage	380-400-415Vac Three phase with neutral		
Voltage tolerance	300÷480Vac @ 100% load		
Power factor	≥0.9 at full load		
Frequency tolerance	45 ÷ 65Hz		
Current distortion THDI	≤27% (5% as option)		
Inrush current	Absent		
OUTPUT			
Voltage	380-400-415Vac Three phase with neutral		
Voltage tolerance	±1% static stability; ±5% dynamic stability		
Voltage distortion	<1% with linear load, <3% with non-linear load		
Frequency	50Hz or 60Hz		
Frequency stability during battery operation	0.05%		
Waveform	Sinusoidal		
Transfer time	0 ms.		
Crest factor	3:1		
Overload	110% for 60 min. – 125% for 10 min. – 150% 1 min. – 300% 1 sec.		
BATTERY			
Type	Sealed Lead Acid maintenance free – NiCd – Li-ion		
Max recharge current @ 80% load	75A	100A	125A
Nominal voltage	396Vdc		
EFFICIENCY			
OFF LINE mode	Up to 98%		
MISCELLANEOUS			
Relative humidity	90% without condensing		
Operating temperature	from 0°C to + 40°C		
Noise level 1mt (0-100% Load)	68dBA		
Interfaces	RS232 & EPO standard, dry contact, SNMP, RS485 as option		
Colour	Dark grey RAL7016		
Dimensions w/o battery	800x800x1900mm		
Net weight w/o battery	610kgs	690kgs	790kgs
Protection degree	IP20		
STANDARDS			
Safety	EN 62040-1		
EMC	EN 62040-2		
Performance	EN 62040-3		