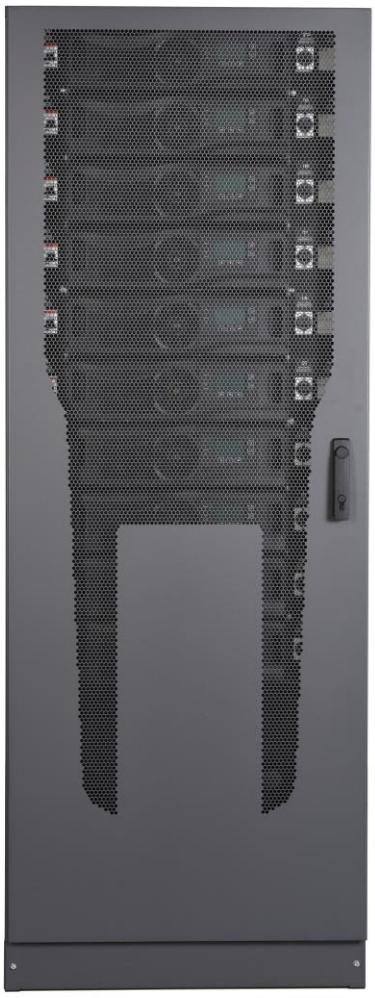
UNINTERRUPTIBLE POWER SUPPLY

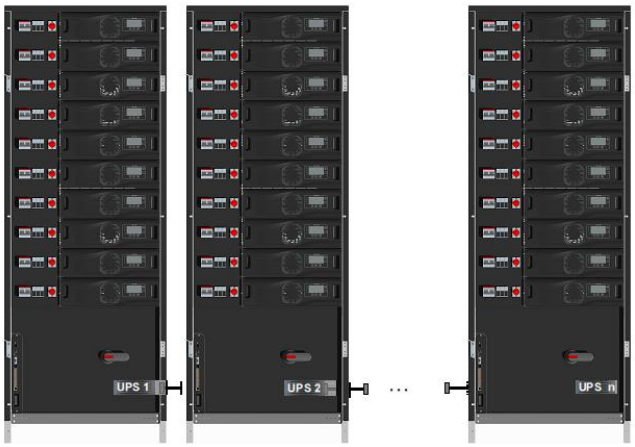


The TPH KING MODULAR UPS with power factor 1.0, represents the latest generation of three phase transformer-less of medium and big size. The power scalable parallel architecture and hot-swap modular topology with no break power transfer are the answers to CED and all other energy applications, where reliability and near zero downtime are a central need. The flexibility and the scalable features of this three phase modular UPS allow to increase the power during the time according to customer's power requirements grow. The possibility to right size the system power over time, and to add power without need of additional floor print space, with the high input PF and low THID UPS performance reduce the main impact parameters to the TCO Total Cost of Ownership.

The decentralized parallel architecture is based on independent safe swap modules, where each module includes the entire UPS hardware and software, eliminating all common parts which are potential single points of failure. Every MD or MD-X power module includes distributed power units, static bypass and control panel. The batteries can be configured separately for each module or unique for all MD or MD-X modules.
The power modules are available in different rated powers, 10kVA, 20kVA and 50kVA with cosphì=1 till a max rated power for each cabinet of 250kVA. If the power requirements grow above 250kVA, additional rack cabinets may be added to provide up to 1.5MVA total power system.

N+X POWER SCALABLE PARALLEL REDUNDANCY

The TPH KING MODULAR UPS system can be composed by up to no. 6 cabinets, CAB series, working in parallel, and every cabinet can be composed by up to no. 10 power modules, MD or no.5 MD-X series, working in parallel. The decentralized parallel architecture make this feature possible; every added power module synchronize with the others and take care of the share load independently.

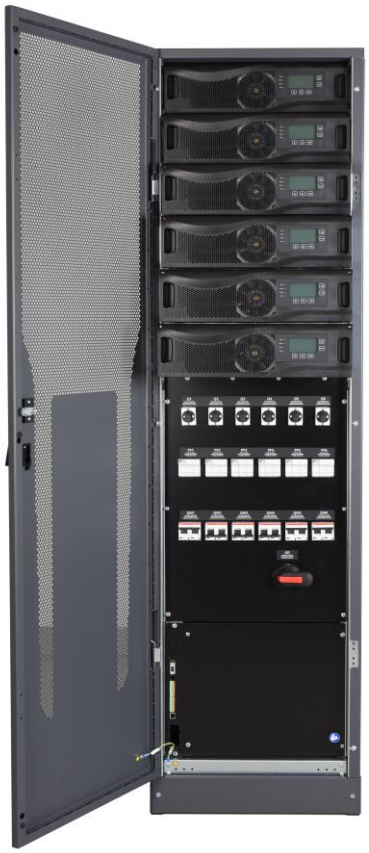


Therefore it is possible the realizing of parallel systems to increase the power capacity or to configure a parallel redundant UPS system, changing during the time and according to the customer needs. It doesn't exist anymore the so-called single point failure, that could create an out of service of all the system, as consequence of a fault in a single point. The

power modules, MD or MD-X, that compose the UPS, are completely independent, with an own static bypass, an own LCD control panel and with an own battery. As accessory is available a centralized LCD panel to see all system parameter. The TPH KING MODULAR UPS may set the system with a decentralized battery or a common one according to the customer needs.

HOT SWAP MODULAR TECHNOLOGY

The TPH KING MODULAR UPS, and his safe-swappable power modules, allow the hot insertion or the hot removal of power modules from host system without removing the power to the load and without transferring the load to the mains; it means no downtime and no risk.



ELECTRIC POLLUTION – THDI < 3%

The TPH KING MODULAR UPS absorb an input sinusoidal current, with a power factor till 0.99 and with a THDI till 3% at full load. With these features the UPS minimizes the impact of conducted disturbs on the mains and the losses due to dissipation.

BATTERY

The battery can be set single or, as alternative, each UPS module can have its own battery. The choice depends on the degree of reliability to be achieved, if each UPS has its own battery, you will reach the maximum reliability. The battery monitoring and temperature dependent charging function allows to optimize the operating life of the battery.

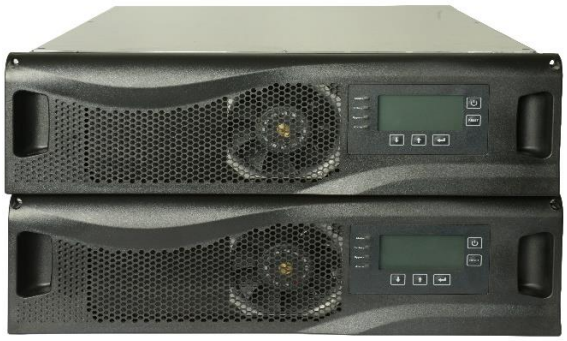
FEATURES

- High performance.
- Input current harmonic distortion, THDI <3%
- Modularity, N+X parallel decentralized architecture.
- Scalability up to 250KVA power per cabinet, 1.50MVA total.
- UPS modules are hot swappable.
- Common or independent batteries for each UPS module, settable.
- Minimum footprint for installed capacity.
- Minimum MTTR (Mean Time To Repair)
- Minimization operating costs (TCO), Total Cost of Ownership.
- Wide input voltage range without the battery. High reliability of the batteries (automatic and manual battery test) and battery monitoring and temperature dependent charging function. Protection device battery full discharge. Features online / offline selectable.
- Optional isolation transformer.

CONTROL PANEL

Each power modules, MD or MD-X is provided with his LCD to see all module parameter. Besides, as option is available a 7" central display, door mountable.
The user friendly control panel is composed by three parts:

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



Power Management Display (PMD)

The 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…

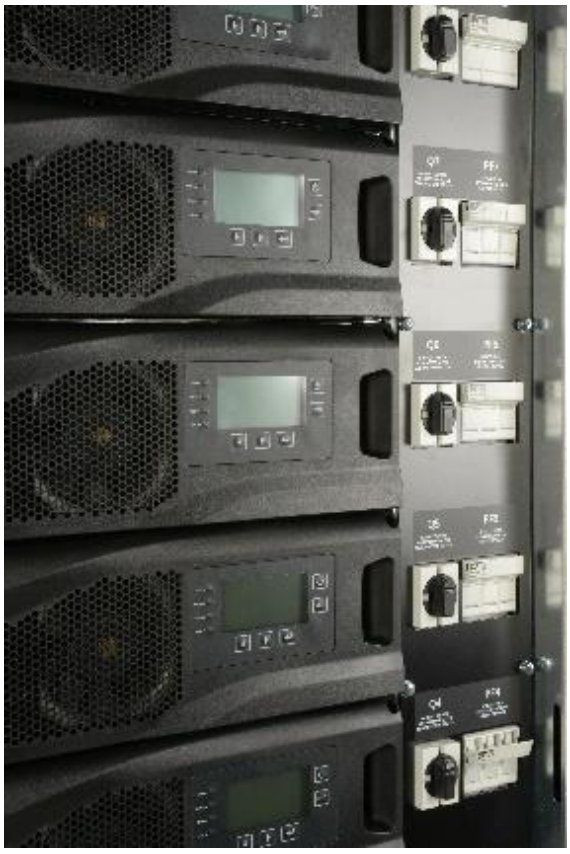
Acting on the dip switches on the front of the UPS module it is possible to determine whether the module is in single or multiple configuration. Similarly, by adjusting the dip switches on the front of the UPS cabinet TPH KING modular you can define whether it is single or if the cabinet is a multi-closet configuration.

INTERFACES

The TPH KING modular UPS has the following communication interface available:

Standard interface
- RS232
- EPO
- RS485

Accessory interface
- dry contacts for remote alarms.
- USB interface.
- SNMP Ethernet card
- Bluetooth



MODULE	MD 10	MD 20	MDX 50
Rated power kVA/kW	10/10	20/20	50/50

INPUT	
Nominal voltage	380-400V-415V 3Ph+N
Voltage tolerance	load <100% (-20% +15%), <80% (-26% +15%), <60% (-35% +15%)
Power factor	0.99
Nominal frequency	40 ÷70Hz
Current distortion	THDI <3% for linear load, THDI 5% for non-linear load
Inrush current	Absent

OUTPUT	
Voltage	380-400V-415V 3Ph+N
Voltage stability	Static stability ±1% , dynamic stability ±4%
Voltage distortion	<1% with linear load, <3% with non-linear load
Frequency	50Hz or 60Hz
F. tolerance	±0.1% from battery, ±2% o ±4% from mains settable
Waveform	Sinusoidal
Phases control	Independent
Crest factor	3 : 1
Overload	125% for 10 minutes, 150% for 1 minute

BATTERY			
Type	Maintenance free VRLA		
Charging Curve	DIN 41773		
Temperature control	Standard		
Max current	20 A	20 A	40 A

EFFICIENCY	
ON LINE mode	97%
OFF LINE mode	98%

MISCELLANEOUS	
Relative humidity	Max 95% without condensing
Operating temperature	from 0°C to 40°C
Noise	<65dBA
Interface	RS485, RS232 standard, dry contacts, SNMP , Bluetooth as options

CABINET	CAB 40	CAB 80	CAB 120	CAB 200	CAB X 250
Power per module	MD 10 & MD 20				MDX 50
Power per frame	40kW	80kW	120kW	200kW	250kW
Number of modules	1-2	1-4	1-6	1-10	1-30
System power range	10-1.500kW				

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