

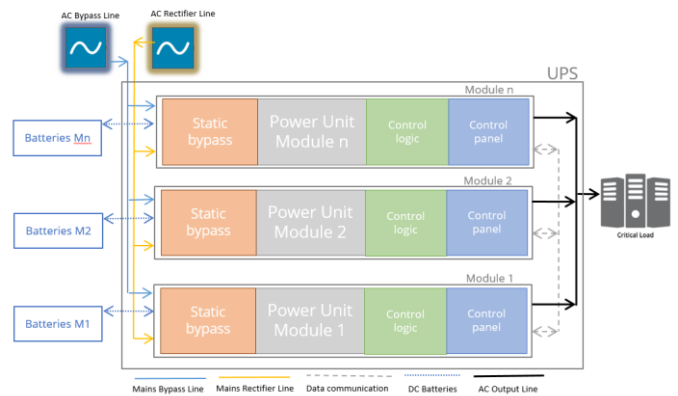
UNINTERRUPTIBLE POWER SUPPLY



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

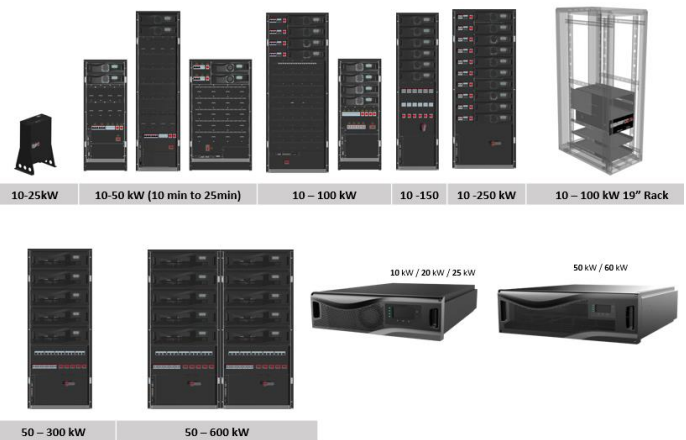
are potential single points of failure. Every MD or MD-X power module includes distributed power units, static bypass and control panel. The batteries can be configured separately for each module or common for all MD or MD-X modules.

The core technology of the TPH KING Modular product family is based on 5 intelligent modules 10, 20, 25 and 50, 60kW whose combination at equal power allows to create systems from 10kVA / kW to 3.6 MVA / MW.



POWER SCALABLE & FLEXIBLE FRAMES DESIGNED

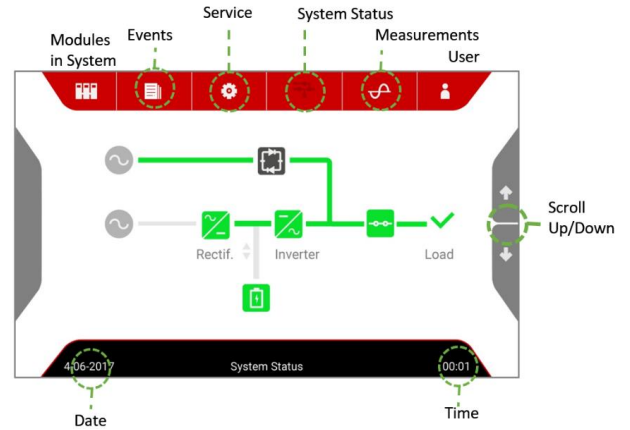
TPH KING MODULAR product family of Power Modules can be piled together to create systems up to 3.6MW. A series of standard frames are offered but not limited to it. The decentralized parallel architecture makes this feature possible and every added power module synchronize with the others and take care of the share load independently.



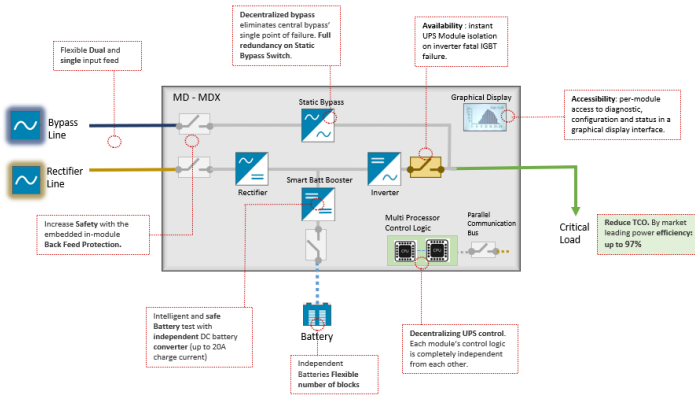
Therefore it is possible the realizing of parallel systems to increase the power capacity or to configure a parallel redundant UPS system, changing during the time and according to the customer needs. It doesn't exist anymore the so-called single point failure, that could create

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. The so-called single point failure is overcome also in the parallel connection of more cabinets with triple mode parallel bus option, obtaining a redundancy also in the multi-frame connection

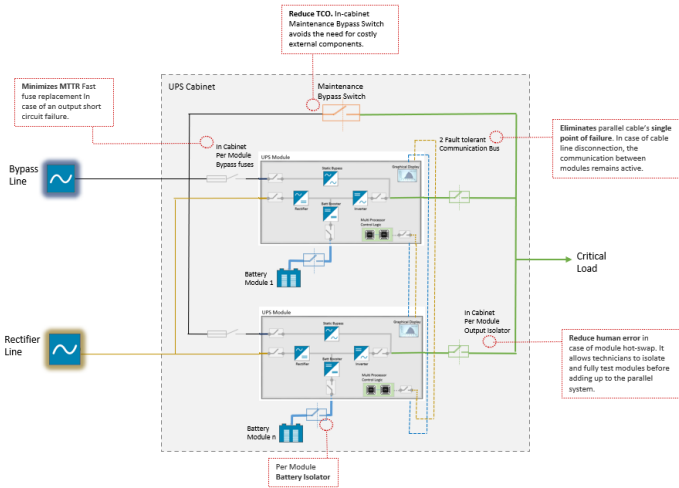
As accessory is available a centralized LCD panel to see all system parameters.



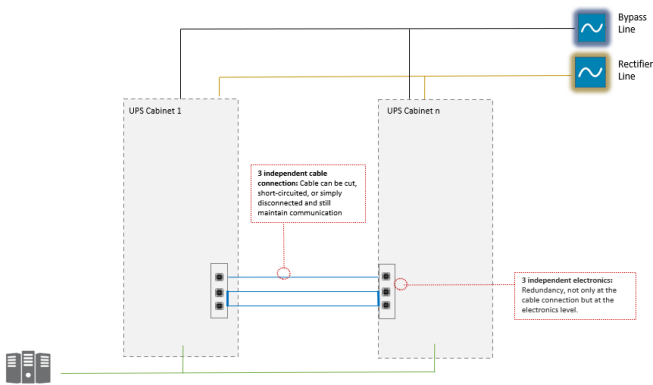
Power module features and benefits



Cabinet features and benefit

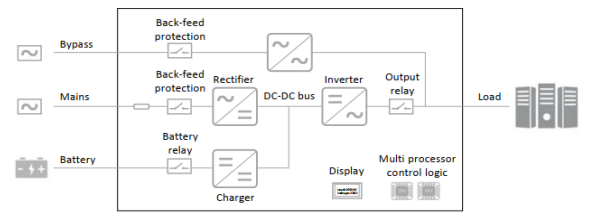


Multi frame level, triple mode parallel bus



FEATURES

- Frames flexibility
- High efficiency in double conversion 97%, 99.4% in ECO mode
- Output PF. 1 (kVA = kW)
- High Short Circuit Capability (3 x In)
- Continuous Overload Capability at 120%
- Wide Battery Range 20 to 50 Blocks.
- Full Bypass redundancy
- No single point of failure
- Distributed redundant architecture
- Hot swappable without switching over the load to bypass
- Smart Battery Booster architecture
- High battery charging current capability
- Per-module 3" graphical user interface
- Back-feed protection
- Triple-mode parallel bus as option for multi frame connections
- Common Li-Ion batteries availability
- Safe power-upgrades with parallel isolators
- Scalability up to 600KVA power per cabinet, 3.6MVA total.



Every module includes

- Static bypass
- Power unit
- Control logic
- Control panel
- Back-feed protection

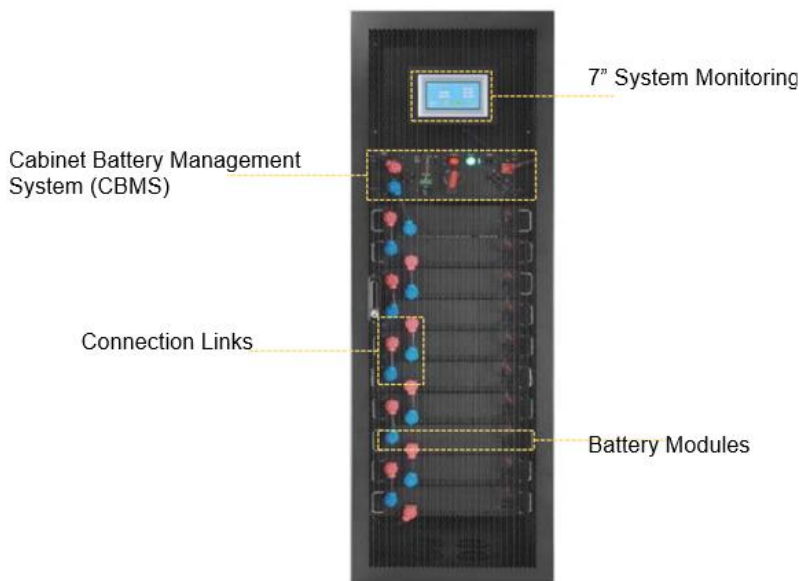
HOT SWAP MODULAR TECHNOLOGY

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; every single module in a frame can be fully isolated from the parallel system thanks to the parallel isolator. Such isolator allows technicians to perform a full module test and parameters configuration in a running system without the need for load disconnection or commutation to bypass. This feature eliminates the possibility of connecting a faulty module to the parallel system that could compromise the connected load.



LITHIUM BATTERIES

Integrated module and BMS, modules form high voltage system by strings then connect into CBMS, standard 19inch cabinet design with size 600*1000*2000mm.



RACK BMS, in charge of module management. Integrated with breaker, relay, Hall element, diode, precharge resistance, etc; Integrated management system, realtime analysis and processing of data transmitted by BMU, real-time control of modules, generation of real-time operation report, feedback to system BMS.

CBMS adopts ac-dc two-way power supply, giving priority to ac. After ac is broken, it can be directly switched to dc power supply without switching time.

INTERFACES

Each UPS cabinet is equipped with a Customer Interface (PC0110), which allows the user to monitor the condition of the system with different communication devices.

The TPH KING Modular UPS can be equipped with several options, specific for customer applications.

The main options are:

- Multidrop for parallel multi-cabinet configuration;
- Dry port with NC or NO contacts
- Battery Temperature Probe
- SNMP
- 7" TFT system Display





MODULE	MD 10	MD 20	MD 25	MDX 50	MDX 60
kVA/kW	10/10	20/20	25/25	50/50	60/60

INPUT					
Nominal voltage	380-400V-415V 3Ph+N				
Voltage tolerance	300-480V @100% load; 280-480V @85% load; 260-480V @75% load				
Power factor	0.994 @100% load				
Nominal frequency	30 ÷ 70Hz				
Current distortion	THDI <3% for linear load, THDI 5% for non-linear load				
Inrush current	< Rated input current (Woke-in, smoothed ramp) Max 1.8 sec with 100% load				
THDI	≤2% @100% load with linear load; <5% with no-linear load				

OUTPUT					
Voltage	380-400V-415V 3Ph+N				
Voltage stability	±1% Static stability, ≤3% dynamic stability				
Frequency	50Hz or 60Hz				
F. tolerance	±2%/±4% selectable synch window; 0.1% free run frequency stability				
Waveform	Sinusoidal				
THDU	<1% liner load; ≤3% no-linear load				
Crest factor	3 : 1				
Nominal Current	14.5A	29A	36A	72A	87A
Overload	125% for 10 minutes, 150% for 1 minute				
short capability 40ms	3x In	3x In	2.4x In	3x In	2.4x In

BATTERY					
No. battery blocks	36-50	36-50	44-50	36-50	36-50
Max current	20 A	20 A	20 A	40 A	40 A

MISCELLANEOUS					
Relative humidity	Max 95% without condensing				
O. temperature	from 0°C to 40°C (20-25°C recommended with internal batteries)				
Altitude	≤1000m asl without derating, above dearting 1% for each 100m				
Noise	<39dBA	<39dBA	<46dBA	<65dBA	<65dBA
Dissipation no load	93W	118W	118W	145W	145W
Interface	RS485, RS232 standard, dry contacts, SNMP, Bluetooth as options				
Dimensions	442x603x132	442x603x132	442x603x132	660x800x197	660x800 x197
Weight	25kgs	27kgs	27kgs	55.2kgs	55.2kgs

UPS CABINET	CAB050-I080-A1	CAB100-E-A1	CAB050-I240-A0	CAB150-E-A0
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Power per frame	≤ 50kW - 80x9Ah	≤ 100kW	≤ 50kW - 240x9Ah	≤ 150kW
Power per module	10-20-25kW			
Number of modules	1-2	1-4	1-2	1-6
Dimensions mm	510x815x1315	510x815x1315	510x815x1980	510x815x1980
Weight kgs	125	107	180	148

UPS CABINET	CAB100-I320-B0	CAB251-E-B0
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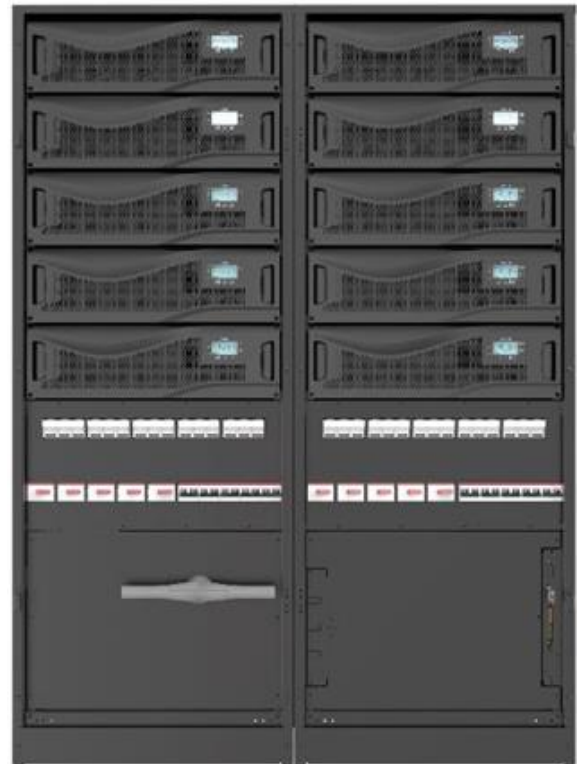


Power per frame	≤ 100kW - 320x9Ah or 80x28Ah	≤ 250kW
Power per module	10-20-25kW	
Number of modules	1-4	1-10
Dimensions mm	730x815x1980	730x815x1980
Weight kgs	225	210

UPS CABINET

CAB-CP300B-E-B0

CAB-CP600B-E-D0



Power per frame	≤ 3000kW	≤ 600kW
Power per module		50-60kW
Number of modules	1-5	1-10
Dimensions mm	730x845x1980	1460x835x1980
Weight kgs	350	600

STANDARDS

Safety	IEC/EN 62040-1-1, IEC/EN 60950-1
EMC	IEC/EN 62040-2
Performance	EN 62040-3