



UNINTERRUPTIBLE POWER SUPPLY



The TPH KING PT PF1 series represents the latest generation of UPS PF1 in three-phase medium power systems without transformer (VFI-SS-111).

TPH KING PT provides the perfect solution for small and medium-sized data centers, communication rooms, IT networks, and any mission critical application that requires high power and energy efficiency.

TPH KING PT has a solution with integrated internal batteries from 10 to 60kW, minimizing the size of use. The flexibility in the number of configurable batteries from 30 to 50 monoblocs allows to optimize costs and back up time.

The high efficiency in ON-LINE mode of 96.6% (VFI) and 99.4% in OFF-LINE mode guarantees maximum energy savings.

## PRINCIPLES OF WORKING

Under normal power supply conditions, the load is fed directly by the Inverter while the rectifier supplies the necessary power to the Inverter and to charge the batteries.

If one of the following conditions occurs on the power supply: mains failure, lack of a phase, voltage out of tolerance, the battery provides the necessary energy to the inverter to supply the load in zero transfer time. Once normal operating conditions are restored, the rectifier charges the battery and at the same time feeds the load through the inverter.

If one of the following conditions occurs: overload, Inverter input or output voltage out of tolerance, Inverter failure, overtemperature, the load is automatically transferred, zero transfer time, to the emergency line. When normal operating conditions are restored, the load is automatically transferred back to the Inverter.

## FEATURES

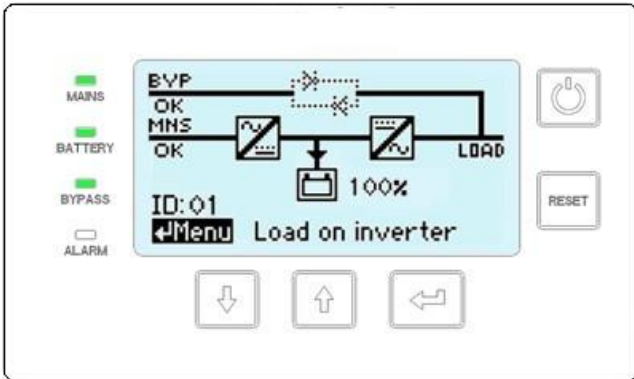
- Input power factor 0.99
- Output power factor PF1, kVA = kW
- Harmonic distortion THiD input ≤ 3%
- Efficiency 96.6% VFI
- Zero transfer time
- Sinusoidal voltage, filtered & stabilized
- Parallelable up to 30 units (7.5MW)
- Footprint <0.35m<sup>2</sup> up to 60kW
- High short circuit capacity (3 x In)
- Continuous overload up to 120%
- Flexible battery configuration
- Full discharge battery protection
- ONLINE / OFFLINE operating mode
- RS232, basic dry contact port and bluetooth

### Optional

- 7 inches graphical touchscreen display
- Interfaccia SNMP, RS485, additional dry contact port
- Insulation transformer
- Triple independent mode parallel bus
- Synchro kit
- Parallel kit
- Back feed protection
- Dual input feed (opt on 10-60kW / std on 80-250 kW)

**CONTROL PANEL**

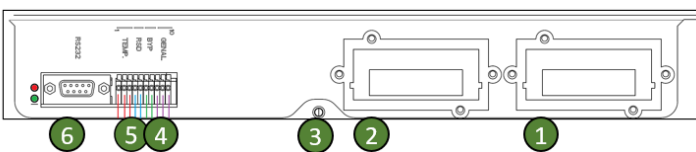
The UPS is equipped with a 3 "LCD graphic display, four LED indicators and a dial with five buttons.



The four LED indicators, mains, battery, bypass and alarm offer a quick and simple view of the UPS operating status. Each LED can have two states, ON or OFF. The display of the 3 "module shows the operating mode of the system. Furthermore, it allows the display of a series of parameters, commands and configurations of the specific module, electrical measurements, UPS status, event log, configurations and service.

**INTERFACES**

The TPH KING PT series UPS is equipped with a standard interface, PC0310, and 2 slots for SNMP and additional dry contacts port.



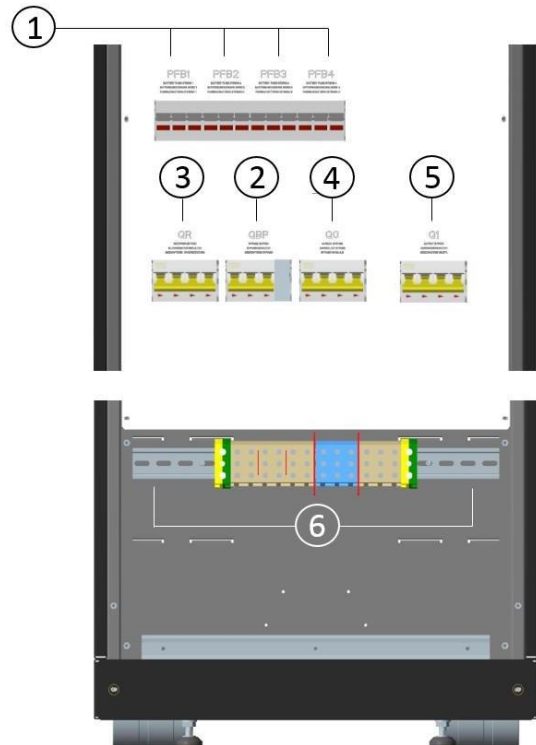
The UPS is standard equipped with following input ports:

1. Slot for SNMP adapter
2. Slot for optional I/O connectivity board
3. Bluetooth (mobile iOS/Android)
4. 1x dry output contact, general alarm
5. 3x input ports: monitoring of external manual bypass, remote shutdown and battery temperature sensor PT100
6. 1x RS232 serial communication

Optional:  
Multidrop connections  
SNMP/Modbus adaptor

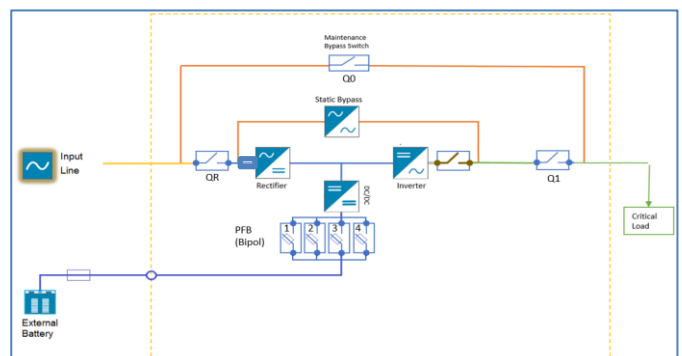
- I/O Dry port relay board (5 dry output contacts, 4 dry input contacts) – PC0311
- Battery temperature sensor
- Ambient temperature sensor
- Humidity sensor

**INPUT AND OUTPUT**



1. Battery fuses
2. Bypass switch (if provided with dual input feed option)
3. Input switch
4. Manual bypass switch
5. Output switch
6. Connections and wiring

**BLOCK DIAGRAM**





CATALOGO PRODODOTTI

UPS 3PH PF1 TRANSFORMER-LESS  
10 ÷ 250kVA

Rev. 0 TPH KING PT Series

| MODEL              | TPH KING PT 10 | TPH KING PT 20 | TPH KING PT 30 | TPH KING PT 40 | TPH KING PT 60 |
|--------------------|----------------|----------------|----------------|----------------|----------------|
| Rated power kVA/kW | 10/10          | 20/20          | 30/30          | 40/40          | 60/60          |

| INPUT                     |   |  |  |  |  |
|---------------------------|---|--|--|--|--|
| Rated voltage             | 380-400-415Vac 3PH+N+PE                             |  |  |  |  |
| Voltage range             | -25%, +20% @100%; -32.5% +20% @80%; -35%, +20% @60% |  |  |  |  |
| Input power factor        | 0.99  |  |  |  |  |
| Frequency                 | 40 ÷ 70Hz   |  |  |  |  |
| Total Harmonic Distortion | <3% for linear load; <5% for non-linear load        |  |  |  |  |
| Peak current              | Absent  |  |  |  |  |

| OUTPUT              |  |  |  |  |  |
|---------------------|--|--|--|--|--|
| Rated voltage       | 380-400-415Vac 3PH+N+PE  |  |  |  |  |
| Stabilità tensione  | ±1% static stability; ±3% dynamic stability  |  |  |  |  |
| THDV                | <3% for linear load, <5% for non-linear load   |  |  |  |  |
| Frequency           | 50Hz/60Hz  |  |  |  |  |
| Frequency tolerance | ±0.1% (battery mode)   |  |  |  |  |
| Waveform            | Sinusoidal   |  |  |  |  |
| Transfer time       | 0 ms.  |  |  |  |  |
| Output power factor | 1  |  |  |  |  |
| Efficiency          | 96.6% on-line - 99.4% off-line   |  |  |  |  |
| Overload            | Inverter < 120% continuous; ≥ 125% for 10 min; ≥ 150% for 1 min<br>Bypass 135% for long term; <1000% for 100ms |  |  |  |  |
| Crest factor        | 3:1  |  |  |  |  |

| BATTERY       |                             |      |      |      |      |
|---------------|-----------------------------|------|------|------|------|
| Type          | Lead-Acid / NiCad / Lithium |      |      |      |      |
| Charger       | 20 A                        | 20 A | 40 A | 40 A | 40 A |
| Rated voltage | 360-480Vdc                  |      |      |      |      |

| MISCELLANEOUS             |  |              |                                    |                                    |                                    |
|---------------------------|--|--------------|------------------------------------|------------------------------------|------------------------------------|
| Relative humidity         | 0-95% no condensing  |              |                                    |                                    |                                    |
| Operating temperature     | 0-40°C (No power derating)   |              |                                    |                                    |                                    |
| Storage Temperature       | -40°C +70°C  |              |                                    |                                    |                                    |
| Operating Altitude        | 1000 m. Above 1000 m, derating 1% for each additional 100 m  |              |                                    |                                    |                                    |
| Audible noise             | < 65dBA  |              |                                    |                                    |                                    |
| Communication             | Std 1 x RS232, 2 x Dry In, 1 x Dry Out, 2x Expansion slots, Bluetooth<br>Option 5 x Dry Output contacts, 4 x Dry Input contacts, SNMP Slot |              |                                    |                                    |                                    |
| Colour                    | RAL 9017   |              |                                    |                                    |                                    |
| Dimensions mm             | 350x850x1075   | 350x850x1075 | 350x850x1075<br>or<br>520x850x1725 | 350x850x1075<br>or<br>520x850x1725 | 350x850x1075<br>or<br>520x850x1725 |
| Weight without batteries  | 80kgs  | 80kgs        | 105kgs                             | 105kgs                             | 105kgs                             |
| Cabinet protection degree | IP20   |              |                                    |                                    |                                    |

| STANDARDS   |            |
|-------------|------------|
| Safety      | EN 62040-1 |
| EMC         | EN 62040-2 |
| Performance | EN 62040-3 |



| MODEL              | TPH KING PT 80 | TPH KING PT 100 | TPH KING PT 120 | TPH KING PT 160 | TPH KING PT 200 |
|--------------------|----------------|-----------------|-----------------|-----------------|-----------------|
| Rated power kVA/kW | 80/80          | 100/100         | 120/120         | 160/160         | 200/200         |

| INPUT                     |   |  |  |  |  |
|---------------------------|---|--|--|--|--|
| Rated voltage             | 380-400-415Vac 3PH+N+PE                             |  |  |  |  |
| Voltage range             | -25%, +20% @100%; -32.5% +20% @80%; -35%, +20% @60% |  |  |  |  |
| Input power factor        | 0.99  |  |  |  |  |
| Frequency                 | 40 ÷ 70Hz   |  |  |  |  |
| Total Harmonic Distortion | <3% for linear load; <5% for non-linear load        |  |  |  |  |
| Peak current              | Absent  |  |  |  |  |

| OUTPUT              |  |  |  |  |  |
|---------------------|--|--|--|--|--|
| Rated voltage       | 380-400-415Vac 3PH+N+PE  |  |  |  |  |
| Stabilità tensione  | ±1% static stability; ±3% dynamic stability  |  |  |  |  |
| THDV                | <3% for linear load, <5% for non-linear load   |  |  |  |  |
| Frequency           | 50Hz/60Hz  |  |  |  |  |
| Frequency tolerance | ±0.1% (battery mode)   |  |  |  |  |
| Waveform            | Sinusoidal   |  |  |  |  |
| Transfer time       | 0 ms.  |  |  |  |  |
| Output power factor | 1  |  |  |  |  |
| Efficiency          | 96.6% on-line – 99.4% off-line   |  |  |  |  |
| Overload            | Inverter < 120% continuous; ≥ 125% for 10 min; ≥ 150% for 1 min<br>Bypass 135% for long term; <1000% for 100ms |  |  |  |  |
| Crest factor        | 3:1  |  |  |  |  |

| BATTERY       |                             |      |      |       |       |
|---------------|-----------------------------|------|------|-------|-------|
| Type          | Lead-Acid / NiCad / Lithium |      |      |       |       |
| Charger       | 64 A                        | 80 A | 96 A | 120 A | 160 A |
| Rated voltage | 240-600Vdc                  |      |      |       |       |

| MISCELLANEOUS             |   |              |              |              |              |
|---------------------------|---|--------------|--------------|--------------|--------------|
| Relative humidity         | 0-95% no condensing   |              |              |              |              |
| Operating temperature     | 0-40°C (No power derating)  |              |              |              |              |
| Storage Temperature       | -40°C +70°C   |              |              |              |              |
| Operating Altitude        | 1000 m. Above 1000 m, derating 1% for each additional 100 m                                 |              |              |              |              |
| Audible noise             | < 69dBA   |              |              |              |              |
| Communication             | Std 1x RS232, 1x RS485, 5x Dry output contacts, 4x Dry input contacts, Bluetooth, SNMP slot |              |              |              |              |
| Colour                    | Grigio scuro RAL9017  |              |              |              |              |
| Dimensions mm             | 600x600x1985  | 600x600x1985 | 600x600x1985 | 600x730x1985 | 600x730x1985 |
| Weight without batteries  | 80kgs   | 80kgs        | 105kgs       | 105kgs       | 105kgs       |
| Cabinet protection degree | IP20  |              |              |              |              |

| STANDARDS   |            |
|-------------|------------|
| Safety      | EN 62040-1 |
| EMC         | EN 62040-2 |
| Performance | EN 62040-3 |

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