



## UNINTERRUPTIBLE POWER SUPPLY



The TPH KING ST PF1 series represents the latest generation of UPS PF1 in three-single-phase medium power transformer-less systems (VFI-SS-111).

TPH KING ST PF1 provides the perfect solution for small to medium sized data centers, communication rooms, IT networks, and any mission critical application that requires high power and energy efficiency.

TPH KING ST PF1 has a solution with integrated internal batteries from 10 to 60kW, reducing the footprint to a minimum. Available in three cabinet solutions, they are distinguished by the ability to contain a different number of batteries or accessories, such as an output isolation transformer, air filters on the front door or higher levels of IP protection.

## PRINCIPLES OF WORKING

Under normal power supply conditions, the load is powered 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 network: power failure, lack of a phase, voltage out of tolerance, the battery provides the necessary energy for the inverter to power the load without interruption. Once normal operating conditions have been restored, the rectifier charges the battery and at the same time powers the load through the inverter.

If one of the following conditions occurs: overload, Inverter output voltage out of tolerance, Inverter input voltage out of tolerance, Inverter fault, overtemperature, the load is automatically transferred, without interruption, to the emergency network. When normal operating conditions are restored, the load is automatically transferred back to the Inverter.

## FEATURES

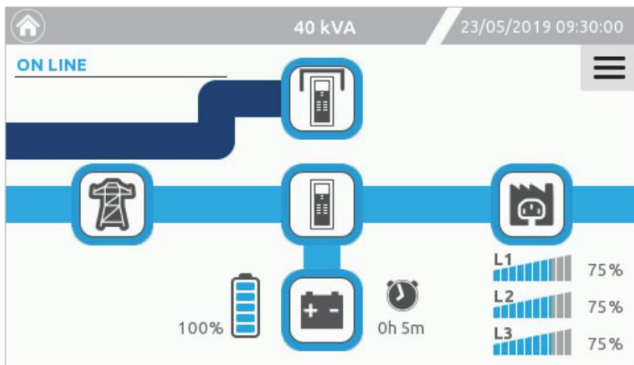
- Input power factor 0.99
- Output power factor PF1, kVA = kW
- Harmonic distortion THiD input  $\leq 3\%$
- Harmonic distortion THD output  $< 1.5\%$
- 96.6% VFI efficiency
- 5" graphic touchscreen display
- three different frame types available
- Transfer time zero
- Sinusoidal voltage, filtered stabilized
- Intelligent battery management
- Cold start
- Parallelable up to 8 units (N + 1)
- Full discharge battery protection.
- ONLINE / OFFLINE operating mode
- RS232, basic contact port and Bluetooth

### Optional

- SNMP interface, RS485, dry contacts
- Isolation transformer
- Synchronization kit
- Parallel kit
- Battery and local temperature probe
- LCD remote panel
- External manual bypass
- Separate emergency line
- CC-ES AC 156 (2020) seismic standard
- IP31 cabinet protection degree

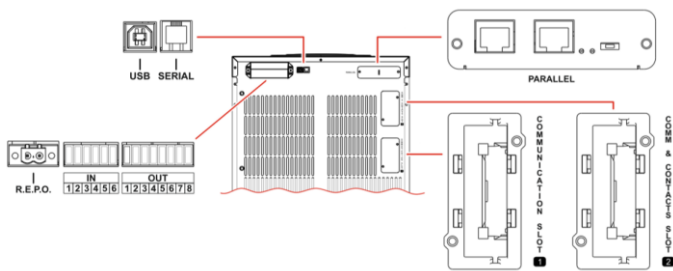
## CONTROL PANEL

ELIT's UPS are equipped with a colored graphic touch screen display providing UPS information, measurements, operating states and alarms in different languages. The default screen displays the status of the UPS, various graphic indicators relating to the path of energy through the UPS and the operating conditions of the various components (rectifier, batteries, inverter, bypass) inside the UPS



## INTERFACES

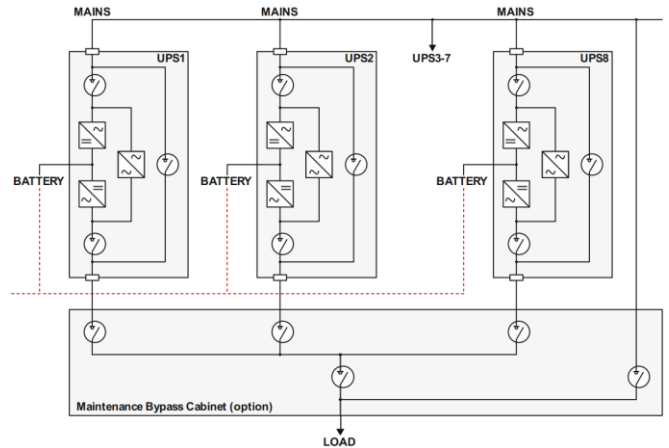
The TPH KING ST PF1 series UPS is equipped with a standard USB interface, EPO terminals for NC emergency shutdown, 2 slots for SNMP and additional accessory cards such as RS485 Modbus, contact port, slot for parallel and connection accessory card for external battery temperature probe.



It is also possible to add an external manual bypass to the UPS for maintenance, which allows, for example, to replace the UPS without interrupting the load.

## N+X POWER SCALABLE PARALLEL

This function, with the dedicated accessory card inserted in the appropriate slot, allows the UPS to operate in redundancy, when the necessary power is lower than the rated power of the single group (N + 1), and to operate in power (2N) when for inrush or more power needed, the power of the single UPS is exceeded.

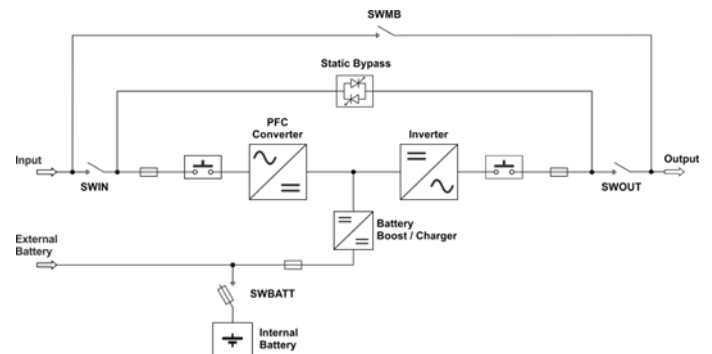


## REMOTE PANEL

The remote panel enables the remote monitoring of the UPS and gives a real time detailed summary of the machine status. The device ensures that the operator can monitor the electrical values of the mains power, outputs, batteries, etc. and locate any alarm conditions



## BLOCK DIAGRAM





MODEL	TPH KING ST 10 PF1	TPH KING ST 15 PF1	TPH KING ST 20 PF1
Rated power kVA/kW	10/10	15/15	20/20

INPUT			
Voltage	380-400-415Vac 3PH+N+PE		
Voltage tolerance without switching to battery power	320÷480 @100% load 240÷480 @50% load		
Power factor	≥0.99		
Frequency	40 ÷ 72Hz		
Max input current	21 A	31.5 A	40 A
THDi	≤3% with full load and source THDv <1%		
Converter technology	IGBT high frequency		
Peak current	Absent		

OUTPUT			
Nominal voltage	380-400-415Vac 3PH+N+PE		
Voltage stability	±0.5% static stability; ±1% dynamic stability		
Voltage distortion	< 1% with linear load; ≤ 1.5% with distorting load (EN62040-3)		
Nominal frequency	50Hz or 60Hz		
Frequency stability	±0.01%		
Waveform	Sinusoidal		
Transfer time	0 ms.		
Output power factor	1		
Efficiency	95.9%	96.4%	96.4%
Overload	110% 60 min - 125% 10min - 150% 60sec - 200% 0.5sec - > 200% 0.2sec		
Short circuit current PH-N	2.7 x In for 200 msec + 1.5In for 300 msec (standalone)		

BATTERY			
Battery recharge	Two level recharge (default)		
Battery charger current	4A (6A @94% load)	6A	6A
Battery voltage	±240Vdc 20+20pcs 12V blocks with Neutral central point		

MISCELLANEOUS			
Relative ambient humidity	5 - 95% (without condensing)		
Ambient temperature	0°C +40°C		
Audible noise at 1 mt	45 @ 50% load 52 @ 100% load	50 @ 50% load 56 @ 100% load	50 @ 50% load 56 @ 100% load
User interfaces	USB, EPO - 2x Slot for accessory cards (SNMP, RS485, RS232, dry contacts), 1x Slot for accessory parallel card		
Color	RAL9017 dark grey		
Dimensions mm	Cab A: 280x840x700mm - Cab B: 380x850x1025mm Cab C: 440x840x1320mm		
Weight without battery	Cab A: 48kgs Cab B: 72kgs Cab C: 103kgs	Cab A: 50kgs Cab B: 74kgs Cab C: 105kgs	Cab A: 52kgs Cab B: 76kgs Cab C: 107kgs
Cabinet protection degree	IP20		

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



MODEL	TPH KING ST 30 PF1	TPH KING ST 40 PF1	TPH KING ST 60 PF1
Rated power kVA/kW	30/30	40/40	60/60

INPUT			
Voltage	380-400-415Vac 3PH+N+PE		
Voltage tolerance without switching to battery power	320÷480 @100% load 240÷480 @50% load		
Power factor	≥0.99		
Frequency	40 ÷ 72Hz		
Max input current	63 A	80 A	120 A
THDi	≤3% with full load and source THDv <1%		
Converter technology	IGBT high frequency		
Peak current	Absent		

OUTPUT			
Nominal voltage	380-400-415Vac 3PH+N+PE		
Voltage stability	±0.5% static stability; ±1% dynamic stability		
Voltage distortion	< 1% with linear load; ≤ 1.5% with distorting load (EN62040-3)		
Nominal frequency	50Hz or 60Hz		
Frequency stability	±0.01%		
Waveform	Sinusoidal		
Transfer time	0 ms.		
Output power factor	1		
Efficiency	96.5%	96.5%	96.68%
Overload	110% 60 min - 125% 10min - 150% 60sec - 200% 0.5sec - > 200% 0.2sec		
Short circuit current PH-N	2.7 x In for 200 msec + 1.5In for 300 msec (standalone)		

BATTERY			
Battery recharge	Two level recharge (default)		
Battery charger current	10 A	10 A	10 A
Battery voltage	±240Vdc 20+20pcs 12V blocks with Neutral central point		

MISCELLANEOUS			
Relative ambient humidity	5 - 95% (without condensing)		
Ambient temperature	0°C +40°C		
Audible noise at 1 mt	45 @ 50% load 52 @ 100% load	50 @ 50% load 56 @ 100% load	50 @ 50% load 68 @ 100% load
User interfaces	USB, EPO - 2x Slot for accessory cards (SNMP, RS485, RS232, dry contacts), 1x Slot for accessory parallel card		
Color	RAL9017 dark grey		
Dimensions mm	Cab B: 380x850x1025mm Cab C: 440x840x1320mm		
Weight without battery	Cab B: 78kgs Cab C: 112kgs	Cab B: 82kgs Cab C: 116kgs	Cab B: 87kgs Cab C: 130kgs
Cabinet protection degree	IP20		

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



MODEL	TPH KING ST 80 PF1	TPH KING ST 100 PF1	TPH KING ST 120 PF1
Rated power kVA/kW	80/80	100/100	120/120

INPUT			
Voltage	380-400-415Vac 3PH+N+PE		
Voltage tolerance without switching to battery power	320÷480 @100% load 240÷480 @50% load		
Power factor	≥0.99		
Frequency	40 ÷ 72Hz		
Max input current	155 A	195 A	230 A
THDi	≤3% with full load and source THDv <1%		
Converter technology	IGBT high frequency		
Peak current	Absent		

OUTPUT			
Nominal voltage	380-400-415Vac 3PH+N+PE		
Voltage stability	±0.5% static stability; ±1% dynamic stability		
Voltage distortion	< 1% with linear load; ≤ 1.5% with distorting load (EN62040-3)		
Nominal frequency	50Hz or 60Hz		
Frequency stability	±0.01%		
Waveform	Sinusoidal		
Transfer time	0 ms.		
Output power factor	1		
Efficiency	94.15%	95.37%	94.07%
Overload	110% 60 min - 125% 10min - 150% 60sec - 200% 0.5sec - > 200% 0.2sec		
Short circuit current PH-N	2.7 x In for 200 msec + 1.5In for 300 msec (standalone)		

BATTERY			
Battery recharge	Two level recharge (default)		
Battery charger current	12A	12A	10A @full load 20A @87.5% load 30A @75% load
Battery voltage	±240Vdc 20+20pcs 12V blocks with Neutral central point		

MISCELLANEOUS			
Relative ambient humidity	5 - 95% (without condensing)		
Ambient temperature	0°C +40°C		
Audible noise at 1 mt	54 @ 50% load 62 @ 100% load	54 @ 50% load 63 @ 100% load	54 @ 50% load 68 @ 100% load
User interfaces	USB, EPO - 2x Slot for accessory cards (SNMP, RS485, RS232, dry contacts), 1x Slot for accessory parallel card		
Color	RAL9017 dark grey		
Dimensions mm	500x830x1600mm		
Weight without battery	172kgs	180kgs	198kgs
Cabinet protection degree	IP20		

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

ELIT Srl reserves his right to do modifications to his products without notice.