GE
Critical Power

TLE Series UPS 225/250 kW With eBoost Technology

The new TLE Series Uninterruptible Power Supply (UPS) is a three-phase high power product with best-in-class multi-mode efficiency for global critical power needs. The TLE platform establishes GE UPS technology leadership in high power applications with industry leading differentiation in efficiency, output power capacity and footprint.

GE's TLE Series UPS is one of the most energy efficient multi-mode UPS in the industry, and provides world-class energy efficiency across the operating load range. The TLE Series delivers efficiency up to 97% in double conversion mode and 99% in eBoost operating mode. This system efficiency substantially reduces operating and cooling costs thus providing a reduced cost of ownership and improved power usage effectiveness (PUE) compared to conventional UPS.

Features and Benefits

Technology at Its Best

- Highly reliable and efficient tri-level conversion
- Automatic or manual multi-mode operation

"Best of Both Worlds" Operating Efficiency

- Up to 97% efficiency in premium protection mode (double conversion)
- Up to 99% efficiency in premium energy save mode (eBoost)

Electrical Environment Optimization

- Unity (1.0) Output Power Factor
- High (0.99) Input Power Factor
- Less than 5% Input Current Harmonic Distortion

Technology at Its Best

- Highly reliable and efficient tri-level conversion
- Automatic or manual multi-mode operation

Key Applications/Verticals

- Data Centers
- Healthcare Facilities
- Financial Institutions
- Colleges/Universities

- Multi-Mode Efficiency
- Superior Input, Output & Physical Characteristics
- Advanced User Interface
- UPS RPA Paralleling Architecture
- Reliability, Diagnostic & Monitoring Enhancements
- GE Capital Retrofit Program

TLE UPS 225/250 Technical Datasheet

GENERAL DATA					
Topology		True double conversion (VFI) Transformerless			
Nominal output power at pf = 1.0		225kVA (225 kW) / 250kVA (250 kW)			
System Efficiency in Double Conversion operating mode @1.0 PF lagging load, nominal voltage/frequency, energy storage disconnected		25% load	50% load	75% load	100% load
225kW		95.1%	96.6%	96.6%	96.5%
250kW		95.6%	96.7%	96.5%	96.4%
System Efficiency in eBoost Operating mode @1.0 PF load, nominal voltage/frequency, energy storage disconnected		25% load	50% load	75% load	100% load
225kW		97.6%	98.6%	98.8%	98.8%
250kW		97.7%	98.7%	98.9%	98.9%
Heat rejection in Double Conversion operating mode @1.0 PF load, nominal voltage/frequency, energy storage disconnected		25% load	50% load	75% load	100% load
225kW	BTU/hr	9889	13511	20266	27845
	kW	2.9	4.0	5.9	8.2
250kW	BTU/hr	9815	14555	23204	31856
	kW	2.9	4.3	6.8	9.3
Heat rejection in eBoost operating mode @1.0 PF load, nominal voltage/frequency, energy storage disconnected		25% load	50% load	75% load	100% load
225kW	BTU/hr	4720	5450	6994	9325
	kW	1.4	1.6	2.0	2.7
250kW	BTU/hr	5020	5618	7116	9488
	kW	1.5	1.6	2.1	2.8
Max Cooling Air (77°F - 86°F / 25°C - 30°C) (225/250kVA)	1400/1600 CFM				
Audible noise level (at 5 ft./1.52Mts)					
Double Conversion Mode	75 dB(A)				
eBoost Mode	65 dB(A)				
Operating temperature range					
UPS	32°F - 104°F (0°C - 40°C)				
Battery	68°F - 77°F (20°C - 25°C) (Note: Higher temperatures shorten battery life)				
Storage temperature range					
UPS	5°F - 122°F (-15°C to +50°C)				
Battery	32°F - 104°F (0°C - 40°C)				
(VRLA)	Storage time is 3 months at 77°F (25°C) (Note: Higher temperatures shorten battery life)				
Relative Humidity	0-95%, non-condensing				
Maximum Altitude	ft (M)	3281 / 1000 (no derating)			
	ft (M)	4921ft (1500Mts)	6562ft (2000Mts)	8202ft (2500Mts)	9843ft (2500Mts)
	Derating	-2.5%	-5.0%	-7.5%	-10.0%

TECHNICAL DATA SHEET - 225 / 250 kW UL LISTED			
Enclosure			
Type	Indoor (IP20) and NEMA PE 1		
Safety	Internal dead front construction		
Cooling	Forced Air		
Color	Black (RAL 9005)		
Installation			
Rigging	Suitable for handling by forklift		
Mounting	Floor mounting holes provided		
Installation and maintenance access	Front access required for normal maintenance		
Conduit Entry	Top and Bottom standard		
Standards	ETL Listed to UL 1778, ANSI C62.41b		
Electrostatic discharge immunity	4kV contact / 8kV air discharge		
Configuration			
Standard	Stand-alone		
Optional	Redundant Parallel Architecture (RPA) - up to 6 modules may be paralleled in any combination for redundancy or capacity		
Fault current rating	UPS is designed for installation in an electrical system up to 65kA		
RECTIFIER			
Configuration	Three phases rectifier bridge with three level IGBT technology		
Input			
Voltage	480VAC, 3-phase, 4 wire + ground OR 3 wire + ground		
	(+/- 15% without battery discharge)		
Frequency	60Hz, +/-10% (54-66Hz)		
Harmonic Current Distortion	<5%		
Power Factor (Typical)	0.99 lagging		
Inrush current	Limited by soft-start circuit		
Power walk-in	30 seconds (Adjustable)		
Output Voltage Tolerance	+/- 1%		
DC ripple voltage	+/- 1%		
DC ripple current	Max. 5% of battery capacity expressed in amps		
UPS RATING vs. CURRENT LIMITS		225 kVA/kW	250 kVA/kW
Nominal input (100% load)	Current[A]:	283.5	315.0
(1.0 PF load, fully chrg'd bat.)	kVA	235.7	261.9
	kW	233.3	259.2
Maximum input (100% load)	Current[A]:	310.2	341.7
(1.0 PF load, max. chrg current)	kVA	257.9	284.1
	kW	255.3	281.2
Max. charge current	A:	45	45

BATTERY			
Battery compatibility	Lead-acid or NiCd, VRLA or flooded		
Number of cells	240 (lead-acid)		
Float voltage at 68°F (20°C)	540VDC		
Minimum discharge voltage	396VDC (adjustable)		
Recharge time	10 times the discharge time		
Battery ground fault detection	Standard		
Automatic and manual battery test	Standard		
UPS RATING		225 kVA/kW	250 kVA/kW
@100% load, 1.0 PF	kWB:	234	260
Maximum Discharge Current (1.65V cell)	A:	592	658
INVERTER			
Nominal output voltage	480VAC, 3-phase, 4 wire + ground OR 3 wire + ground		
Inverter bridge	Three phases inverter bridge with three level IGBT technology IGBT		
Output waveform	True sine wave		
Output voltage tolerance			
Static	+/- 1%		
Load step 0% - 100% - 0%	+/- 3%, recovering to within +/- 1% in 1 cycle		
Load step 0% - 50% - 0%	+/-2%, recovering to within +/- 1% in 1 cycle		
100% unbalanced load (Ph-N)	+/- 3%		
Output voltage distortion			
100% linear load	3% THD maximum		
100% non-linear load (per IEC 62040)	5% THD maximum		
Crest factor capability	< 3:1		
Output neutral rating	200%		
Phase displacement			
100% balanced load	120°+/- 1%		
100% unbalanced load	120°+/- 2%		
Output frequency			
Free running	60Hz, +/- 0.1%		
Synchronized with utility	+/- 4% (adjustable from 57.6Hz to 62.4Hz)		
Overload capability (on inverter)	125% at 1.0 PF for 1 minutes		
	150% at 1.0 PF for 30 seconds		
Short circuit capability (on inverter)	220% for 100 ms, electronically limited		
UPS RATING	(kW)	225 kVA/kW	250 kVA/KW
Maximum Output Current @ 1.0 pf	A	270.6	300.7

STATIC BYPASS		
Input configuration	Single input (standard) or dual input (optional)	
Primary components	Fully rated continuous duty static switch	
	Back feed protection + Semiconductor fuse for clearing fault currents	
Transfer limits	+/- 10% of nominal output voltage (adjustable)	
Overload capability (on bypass)	110% continuous	
	150% for 1 minute	
Short circuit capability (on bypass)	1000% for 1/2 cycle (non-repetitive)	
eBoost™ OPERATING MODE		
Input wiring configuration	480VAC, 3-phase, 4 wire + ground OR 3 wire + ground	
Output waveform	Continuously monitored	
Transfer time to Inverter	<2ms (typical)	
Transfer limits		
Steady-state RMS tolerance	+/-20 Vrms (adjustable)	
Instantaneous voltage distortion (with respective to Normal Sine wave)	Magnitude	+/-75Vp
	Duration	500µs (adjustable)
Steady-state frequency tolerance	+/-3 Hz	
Instantaneous phase shift	0.15 radians (8.5 Deg)	
EXTERNAL INTERFACE		
Alarm contacts (voltage-free)		
Standard	6 user defined contacts (form 'C') (1A / 24V DC)	
Optional	12 user defined contacts (form 'C') (1A / 24V DC)	
	(23 selectable signals include aux. Inputs 1 & 2)	
Communication	RS-232 / SNMP / MODBUS	
Input signals	Emergency Power Off (user supplied N.C. contact)	
	Aux. input 1 * (default = On Generator)	
	Aux. input 2 * (configurable)	
	* Status displayed on LCD panel	
Diagnostics	Internal Waveform Capture. Input and output w/pre and post event data (Field Service Only)	

FRONT PANEL CONTROLS, SIGNALS & ALARMS		
Touch Screen Graphic Display		
Mimic Diagram	Represents operational status of the UPS on Home Page of LCD	
Operation	Visual indicator when load is on inverter OR load is on bypass	
	BLINK during service check	
Alarm	Visual indicator and audible signal, activates approx. 3 minutes (adjustable) before complete and automatic load shutdown due to the battery is fully discharged and the load cannot be transferred on utility or Over temperature or overload condition (>125%) and the load cannot be transferred on utility.	
Warning LED	Visual indicator and audible signal active when any alarm condition is present	
	BLINK when alarm is active and not acknowledged	
Load Level / Battery Run Time	Bar graph status indicator on Home Page of LCD	
	Load level in %, Battery run time in min.	
Multilanguage Graphic LCD	Display of UPS metering functions , event history, configuration of parameters and helps perform critical UPS Operations	
	Supports 14 Languages(Chinese, Czech, Dutch, English, Espanola, Francais, German, Italiano, Polish, Portuguese, Russian, Slovensko, Soumi, Swedish)	
Touch screen Push Buttons	Inverter On	Inverter Off
OPTIONAL FEATURES		
RPA	-Redundant Parallel Operation	
eBoost™ (Multi-Mode)	-High Efficiency Operating Mode for Single and Multi module applications	
Dual Input	-Integral to UPS cabinet. No additional cabinet required	
Input/Output Transformers	-Available in external cabinets for isolation or voltage transformation	
Internal Maintenance Bypass	-Integral to UPS cabinet. No additional cabinet required	
External Maintenance Bypass	-Available in external or as a part of output switchgear cabinet	
Protection Software	-PC operated remote monitoring, control and diagnostics	
SNMP Communication	-Ethernet interface for network connection	

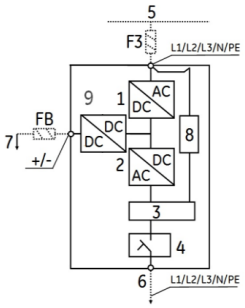
MECHANICAL DATA

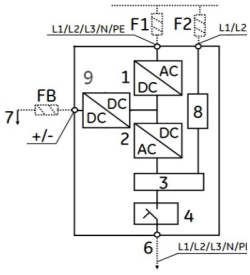
225/250 kW Enclosure

Dimensions (inches / mm)	Width (W)	Depth (D)	Height (H)
	44.10/1120	34.06/865	75.00/1905
Configuration	Weight (lbs./ Kg)	floor load (lbs./sq ft / Kg/sq m)	
	1323/600	127/620	

UPS BLOCK DIAGRAM

	Standard configuration	With separate Bypass Mains
1 Rectifier		
2 Inverter		
3 Static Bypass		
4 Load switch		
5 Utility		
6 Load Output		
8 RPA Cable Saver Inductor		
9 Booster/Charger		
FB Battery Fuses or Circuit Breaker		
F1, 2, 3 AC Input Fuses or Circuit Breaker		





Notes

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