

- The highest UPS Capacity Per set means that we are reliable partner for your sensitive load

High reliability and robust manageability

- The POWERTECH Tornado Series Uninterruptible Power System (UPS) utilizes state-of-the-art design and construction to deliver industry-leading efficiency, reliability, performance, and flexibility to meet today's critical power demands Fifth-Generation Insulated Gate Bipolar Transistor (IGBT) Technology True On-Line, Double-Conversion UPS Input Power Factor > 0.99 Input Current THD < 3% 100% Unbalanced Load Capability Wide Input Voltage Range +15%, -20% (Without Utilizing Batteries) High Efficiency for Lower Operational Cost Smallest Footprint & Highest Power Density in Industry Electronic Battery Isolation for Battery Longevity Generator-Friendly Design & Compatibility Complete Front-Access for Installation, Operation, & Service Handles Leading Power Factor Loads (Without Derating) SNMP/Web-Based Monitoring Three-Year Warranty for Lower Cost of Ownership Qualifies for Buy America Act

SMALLEST FOOTPRINT WITH HIGHEST POWER DENSITY

A High Efficiency Design separates the Tornado Series from the competition. Efficiency greater than 94% at 25% loading means lower power losses, reduced air conditioning needs, and reduced utility costs across a wide load range without sacrificing frequency or output voltage stability.

A Transformer-Less Design allows the TORONADAO SERIES to be lighter with a smaller footprint. With its compact size, the TORONADAO SERIES has the highest energy density per square foot of any UPS of similar capacity.



ADVANCED FEATURES FOR MAXIMUM PERFORMANCE

Fast-Switching IGBT Control Technology delivers up to 97% efficiency.

A Full IGBT Rectifier & Harmonic Input Filter reduce input total harmonic distortion (THD) which also reduces heat loss in associated feed equipment and increases component life.

An IGBT DC-to-DC Chopper produces lower DC ripple on the charging circuit, extending battery and capacitor life.

A Hybrid Static-Bypass Switch offers the highest level of dependability.

Improved Output Voltage Regulation provides superior transient response, easily handling 100% step loads without requiring battery support.

A Generator-Friendly Design allows sizing of 1.1 kW generator capacities per 1.0 UPS kVA load.

Robustly Engineered Units are built using the highest quality components to ensure reliability

ANCILLARY OPTIONS

- VRLA and POWERTECH Lithium Titanate SCiB™ Rechargeable Batteries are two energy storage options compatible with the Toronado Series UPS. The robust recharge circuitry of the Toronado Series allows use of VRLA batteries in matching cabinets or wet cell batteries without requiring a supplemental charger.
- The Toronado Series UPS Tie Cabinet provides a simple and economical landing point for a multi-module Toronado Series system's output. POWERTECH's solution is a smaller, lighter option with no control electronics compared to those offered by competitors. An optional 15-inch color LCD display is available for centralized monitoring of module and system status as a supplement to individual module monitors. Allows paralleling of up to:
 - Four 80-225 kVA UPSs of equal kVA
 - Eight 300-750 kVA UPSs of equal kVA
 - Six 1000-2000 kVA UPSs of equal kVA
- Maintenance Bypass Cabinets are available in wall-mount and standalone versions, as well as a custom designed slim-line version that matches the height and depth of the Toronado Series to seamlessly blend with the UPS.
- Optional Power Distribution Units (PDU) with internal 480/208 transformers and remote power panels (RPP) are available in a range of sizes and capacities.



MONITORING OPTIONS

RemotEye 4® interface offers remote monitoring and analysis of UPS operation via HTTP and SNMP. Detailed Real-Time Status of UPS Email Notification of Status & Events Event & Alarm History Logging Remote Control of UPS via Internet Hard-Wired Remote Status Alarm Panel (RSAP) enables remotemonitoring of UPS alarm/status points up to 1000 feet away.

FACTORY WITNESS TESTING

POWERTECH has a 3 MVA Witness Test Facility at its plant in Houston, Texas. For a low cost, customers can perform witness testing to validate their system's performance specifications in all operating modes prior to taking delivery. Multi-module parallel configurations, including energy storage backup, can be assembled and tested in all modes before shipment for final installation.

SNMP

- Modbus/RTU
- Modbus/TCP
- BACnet MSTP
- BACnet IP
- AB EtherNet/IP
- Metasys N2

- POWERTECH 's growing network of more than 120 authorized service providers supply factory trained technicians to service and support POWERTECH UPSs throughout the contiguous United States, Canada, Caribbean, Mexico, and Central & South America

MAINTENANCE AGREEMENTS

- Three standard levels of maintenance agreement packages are available to provide the service support appropriate customer needs and budgets while maximizing the performance and life of the POWERTECH UPS. Tailored, site-specific service agreements range from simple scheduled preventive maintenance programs to a Platinum Service Agreement with guaranteed response times, 24/7/365 coverage, and discounted replacement parts

PREVENTIVE MAINTENANCE

- Derived mean time between failure (MTBF) rates are based on an ideal operating environment. Real operating environments vary from benign to outright hostile. Preventive maintenance will help ensure you get the maximum service out of your POWERTECH system. The maintenance needs of a Toronado Series UPS are minimal but crucial.
- Periodic inspection, calibration, and adjustment of the control and monitoring systems are necessary to ensure continued optimal performance and the highest level of reliability.
- Regular maintenance can help detect early signs of degradation in capacitors, fans, and other components, allowing for timely repair without the UPS unexpectedly failing. This is particularly important in harsh environments with excessive humidity, temperature extremes, frequent out-of-specification voltage excursions, and abrasive air particles.

WARRANTY

- The Toronado Series UPS and the accompanying energy storage system are supported by POWERTECH 's industry-leading

three-year parts and labor warranty* and a 24/7/365 hotline. This ensures that customers get the quickest

possible resolution to any warranty or service issues that may arise.

SINGLE MODULE

- Single- or Dual-Source Input
- DC-to-DC Isolation
- Internal Hybrid Static Bypass Circuit
- Controllable at Local LCD Panel or Through Customer Supplied Interface
- Monitor UPS Locally or Remotely

MULTI-MODULE

- Parallel Units without Additional Control Circuitry
- Load Capacity 100 kVA to 12 MVA
- Distributed Bypass Eliminates Potential Single Point of Failure in Bypass Mode
- Tie Cabinet Does Not Require Special Control Circuitry for Future Expansion
- Individual Modules & Entire System Monitored & Controlled via Local Displays in Each UPS or Through Optional System Display in TTC
- Load Balance & Synchronization Intelligence are Self-Contained in Each UPS Module & Not in External Sync Controller, Increasing System Reliability & Making Expansion/Reconfiguration of Parallel Multi-Module Systems Easy





Toronado Series 100-225Kva

MODEL NUMBER	Capacity (KVA/KW)	100	160	225
INPUT	Topology	True On-Line, Double-Conversion, All-IGBT Technology		
	Voltage (Standard)	480V Three-Phase, Three-Wire + Ground Dual Input		
	Voltage Range	-20% to +15% (Without Using Battery)		
	Power Factor	> 0.99		
	Current THD	<3% at 100% Load		
	Frequency	60 +/- 10% Hz		
	OUTPUT	Voltage (Standard)	480 V: Three-Phase, Three-Wire + Ground	
Frequency		60 +/- 0.01% Hz		
Voltage Regulation		+/-1%		
Power Factor		0.9 Lagging		
Power Factor Range		0.9 Lagging to 1.0 within kW Rating		
Voltage THD		<2% at 100% Linear Load, <5% at 100% Non-Linear Load		
Overload Capacity		Inverter: 125% for 2 Minutes, 150% for 60 Seconds, Bypass: 1000% for 1 Cycle		
BATTERY	DC Link	480 V		
	Temperature Range	32° to 104°F (0° to 40°C)		
	Relative Humidity	5% to 95% Non-Condensing		
ENVIRONMENT	Heat Rejection	13.5 kBTU/Hour	17.8 kBTU/Hour	25.1 kBTU/Hour
	Full-Load Efficiency	96.6%	96.4%	96.8%
	25% Load Efficiency	94.2%	95.1%	95.7%
	Altitude	7380 ft. (2250 m) Maximum Without Derating		
	Audible Noise	70 dBA @ 1 m Typical		
DIMENSIONS	Dimensions	27.6" W x 32.8" D x 80.6" H		27.6" W x 32.8" D x 80.6" H
	Weight	772 lbs. (350 kg)	860 lbs. (390 kg)	1,080 lbs. (490 kg)
COLOR	Munsell N1.5 (Black)			
MONITORING	Touchscreen Operator Interface, UPS Status N/O Dry Contacts, RS232 Port, Optional RemotEye® 4 Intelligent Monitoring System			
OPTIONS	Dual-Input Feed, RemotEye 4 Intelligent Monitoring System, Remote Status Alarm Panel, Air Filters, Spare Parts Kits			
FEATURES	Digital Signal Processor (DSP) Control, Fully Digital IGBT Converter & Inverter, High Efficiency Over Wide Load Range, Transformer-Less Design, N+1 & N+N (Up to Four in Parallel) Capability, Dual-Input Feed, Electronic Battery Isolation, RS232 and Dry Contact Interface, Small Footprint, & Lightweight Design, Energy Star® Certified			
STANDARDS	UL/CUL 1778 Listed, ISO 9001, ISO 14001, ANSI C62.41 (IEEE 587), FCC Class A-Article 47 - Part 15 B, OSHPD, IBC Code ICC-ES AC156, (CBC) Section 1708A.			
WARRANTY	3-Year On-Site Warranty; 5-Year Warranty Available; See POWERTECH Warranty Policy for Full Details			
SERVICE	24-Hour, 365-Day Technical Support: 1-877-867-8773			



Toronado Series 300 -750Kva

MODEL NUMBER	Capacity (KVA/KW)	300	500	650	750
INPUT	Topology	True On-Line, Double-Conversion, All-IGBT Technology			
	Voltage (Standard)	480V Three-Phase, Three-Wire + Ground Dual Input			
	Voltage Range	-20% to +15% (Without Using Battery)			
	Power Factor	> 0.99			
	Current THD	<3% at 100% Load			
	Frequency	60 +/- 10% Hz			
	Voltage (Standard)	480 V, Three-Phase, Three-Wire + Ground			
	Frequency	60 +/- 0.01% Hz			
OUTPUT	Voltage Regulation	+/-1%			
	Power Factor	1.0 (Unity)			
	Power Factor Range	0.9 Lagging to 0.95 Leading			
	Voltage THD	<2% at 100% Linear Load, <5% at 100% Non-Linear Load			
BATTERY	Overload Capacity	Inverter: 125% for 10 Minutes, 150% for 60 Seconds, Bypass: 1000% for 1 Cycle			
	DC Link	480 V			
	Temperature Range	32° to 104°F (0° to 40°C)			
ENVIRONMENT	Relative Humidity	5% to 95% Non-Condensing			
	Heat Rejection	31.7 kBTU/Hour	52.8 kBTU/Hour	68.6 kBTU/Hour	79.2 kBTU/Hour
	Full-Load Efficiency	97.0%	97.0%	97.0%	97.0%
	25% Load Efficiency	94.4%	94.8%	95.4%	95.5%
	Altitude	7380 ft. (2250 m) Maximum Without Derating			
	Audible Noise	70 dBA @ 1 m Typical		71 dBA @ 1 m Typical	
DIMENSIONS	Dimensions	51.2" W x 32.8" D x 80.7" H	70.9" W x 32.8" D x 80.7" H	90.6" W x 32.8" D x 80.7" H	90.6" W x 32.8" D x 80.7" H
	Weight	2,260 lbs. (1026 kg)	3,300 lbs. (1497kg)	4,250 lbs. (1497 kg)	4,250 lbs. (1928 kg)
COLOR	Munsell N1.5 (Black)				
MONITORING	Touchscreen Operator Interface, UPS Status N/O Dry Contacts, RS232 Port, Optional RemotEye 4 Intelligent Monitoring System				
OPTIONS	Dual-Input Feed, RemotEye 4 Intelligent Monitoring System, Remote Status Alarm Panel, Air Filters				
FEATURES	Digital Signal Processor (DSP) Control, Fully Digital IGBT Converter & Inverter, High Efficiency Over Wide Load Range, Transformer-Less Design, N+1 & N+N (Up to Eight in Parallel) Capability, Dual-Input Feed, Electronic Battery Isolation, RS232 and Dry Contact Interface, Small Footprint, & Lightweight Design, Energy Star® Certified				
STANDARDS	UL/CUL 1778 Listed, ISO 9001, ISO 14001, ANSI C62.41 (IEEE 587), IEC 62040-2 Cat. C3				
WARRANTY	3-Year On-Site Warranty; 5-Year Warranty Available; See POWERTECH Warranty Policy for Full Details				
SERVICE	24-Hour, 365-Day Technical Support: 1-877-867-8773				



Toronado Series 1000 -2000Kva

MODEL NUMBER	Capacity (KVA/KW)	1000	1330	1500	1660	2000
	Topology	True On-Line, Double Conversion, Advanced Multi-Level IGBT Technology				
	Voltage (Standard)	480V Three-Phase, Three-Wire + Ground Dual Input				
INPUT	Voltage Range	-20% to +15% (Without Using Battery)				
	Power Factor	>0.99	>0.98			
	Current THD	<3% at 100% Load				
	Frequency	60 +/- 10% Hz				
	Voltage (Standard)	480 V, Three-Phase, Three-Wire + Ground				
OUTPUT	Frequency	60 +/- 0.01% Hz				
	Voltage Regulation	+/-1%				
	Power Factor	1.0 (Unity)				
	Power Factor Range	0.7 Lagging to 0.8 Leading				
	Voltage THD	<2% at 100% Linear Load, <5% at 100% Non-Linear Load				
BATTERY	Overload Capacity	Inverter: 125% for 10 Minutes, 150% for 60 Seconds, Bypass: 1000% for 1 Cycle				
	DC Link	480 V				
	Temperature Range	32° to 104°F (0° to 40°C)				
	Relative Humidity	5% to 95% Non-Condensing				
ENVIRONMENT	Heat Rejection	112.8 kBTU/Hour	159.7 kBTU/Hour	180.1 kBTU/Hour	199.4 kBTU/Hour	240.2 kBTU/Hour
	Full-Load Efficiency	96.8%	96.6%	96.6%	96.6%	96.6%
	25% Load Efficiency	96.3%	96.1%	96.1%	96.1%	96.1%
	Altitude	6500 ft. (1980 m) Maximum Without Derating				
	Audible Noise	71 dBA @ 1 m Typical	72 dBA @ 1 m Typical	73 dBA @ 1 m Typical	73 dBA @ 1 m Typical	74 dBA @ 1 m Typical
DIMENSIONS	Dimensions	118.2" W x35.5" D x80.7" H	167.3" W x 35.5" D x 80.7" H	190.9" W x 35.5" D x 80.7" H	198.8" W x 35.5" D x 80.7" H	222.4" W x 35.5" D x 80.7" H
	Weight	6,283lbs. (2850 kg)	9,590 lbs (4350 kg)	11,354 lbs. (5150 kg)	11,795lbs. (5350 kg)	13,558lbs. (6150 kg)
	COLOR	Munsell N1.5 (Black)				
MONITORING	Touchscreen Operator Interface, UPS Status N/O Dry Contacts, RS232 Port, Optional RemotEye 4 Intelligent Monitoring System					
OPTIONS	Dual-Input Feed, RemotEye 4 Intelligent Monitoring System, Remote Status Alarm Panel, Air Filters					
FEATURES	Digital Signal Processor (DSP) Control, Fully Digital IGBT Converter & Inverter, High Efficiency Over Wide Load Range, Transformer-Less Design, N+1 & N+N (Up to Six in Parallel) Capability, Dual-Input Feed, Electronic Battery Isolation, RS232 and Dry Contact Interface, Small Footprint, & Lightweight Design, Energy Star® Certified, Redundant and Expandable "Go as you Grow" Power Modules					
STANDARDS	UL/CUL 1778 Listed, ISO 9001, ISO 14001, ANSI C62.41 (IEEE 587), IEC 62040-2 Cat. C3					
WARRANTY	3-Year On-Site Warranty; 5-Year Warranty Available; See POWERTECH Warranty Policy for Full Details					
SERVICE	24-Hour, 365-Day Technical Support: 1-877-867-8773					