



Liebert iTrust 3-Phase UPS System

Power Availability

TRUE ON-LINE SINEWAVE UPS SYSTEM FOR THE NETWORKED ECONOMY



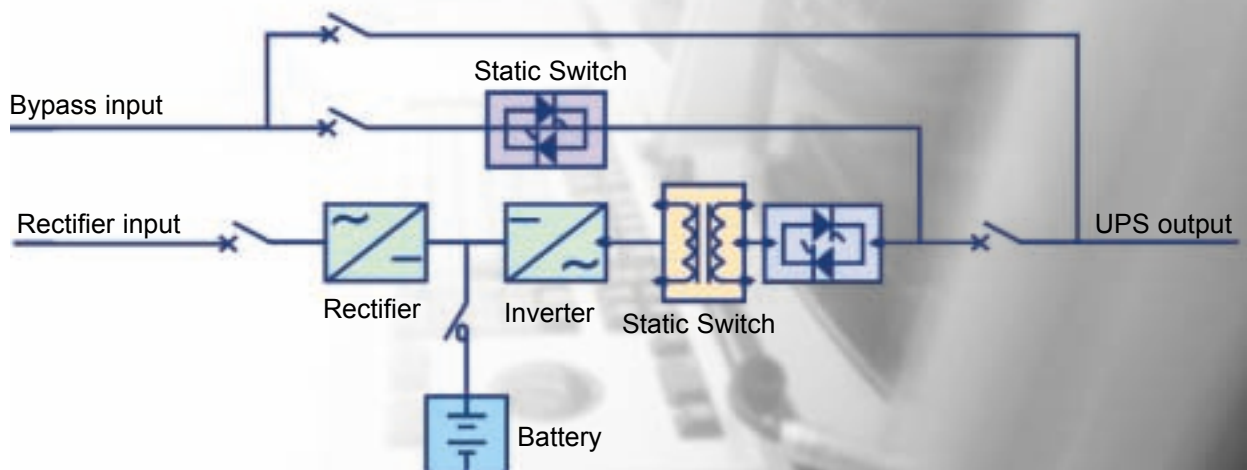
Advanced UPS System that offers Round-the-Clock Secure Power for Data Centers, Server Farms, Telecom, Medical and Industrial Applications



iTRUST 3-PHASE UPS SYSTEM AT YOUR SERVICE...TODAY and EVERYDAY

The Liebert iTrust 3-phase is a true on-line sine wave 3x3 UPS system that provides the user with clean computer grade power for continuous operation of his critical load, regardless of any disturbance on the upstream AC power. The system offers many innovative features to give the user maximum reliability and flexibility at the lowest operating cost. With Liebert iTrust 3-phase UPS system, you have complete peace of mind.

- 20, 30, 40, 60 kVA Models
- Parallel for Redundancy or Capacity for up to 4 units
- Full Digital Signal Processing using the latest DSP technology
- Wide Input Voltage Range
- Low Current Harmonic Distortion of less than 3%
- High Input Power Factor
- High Overload and Short-Circuit Capacities
- Compatible with Engine Generators
- High Reliability for Maximum System Availability
- Handles 3:1 Crest Factor Loads
- Intelligent Battery Management
- Large LCD Display and Mimic Panel for Real-time information
- IP21 Protection Level
- Output Isolation between UPS and Critical Load
- Low Electromagnetic Interference
- Complies with EN50091-2 Class A



STATE-OF-THE-ART FEATURES IN A COMPACT SYSTEM

IGBT Rectifier

Employing the latest rectifier technology, the iTrust IGBT rectifier offers an input power factor of greater than 0.99, and input current distortion of less than 3% . Therefore it does not pollute the input utility supply or other devices sharing the same utility source.

IGBT Inverter

High speed IGBT inverter gives low output distortion and clean sinusoidal waveform for excellent performance and high reliability. Both IGBT rectifier and inverter share common parts which means the UPS is easier to maintain.

Digital Signal Processing

The iTrust uses the most advanced DSP technology. Using high sampling rate possible only with DSP, output and system parameters are tightly controlled and maintained throughout the various modes of operation.

Battery Management

Proper testing, charging, discharging and management of the battery system is a very important aspect of the UPS control system. In the iTrust UPS, the batteries are constantly monitored by an intelligent battery management algorithm. Any fault detected in the batteries is immediately reported to the user.

Paralleling Capability

The iTrust can be paralleled up to a maximum of four single modules for added capacity or redundancy. The units can also be installed in a Hot-Standby configuration for added reliability and flexibility.

High Efficiency ECO Mode

In situation where the utility supply is relatively stable the iTrust can be set to energy saving ECO mode. An efficiency of greater than 97% can be achieved. The load is never in danger as the switching is done by high speed solid state devices.

Wide Input Voltage Range

The iTrust features a wide input voltage range of +15%, -20% at full load under normal conditions. However, it can have a lower input limit of - 45% with linear derating while still maintaining the specified output stability. This is extremely useful in very poor input power supply situations as the battery energy is not utilized and can be preserved for more prolonged outages.

User Friendly Display and Communication

The LED mimic diagram gives clear indication of real time status and power flow through the UPS. Dual-color LED indicates the status of major modules.

The neatly displayed push-buttons give functions such as menu selection, inverter startup and shutdown, emergency shutdown and alarm.

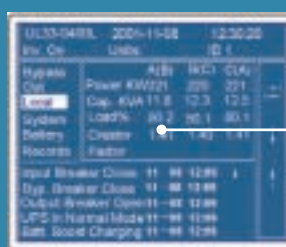
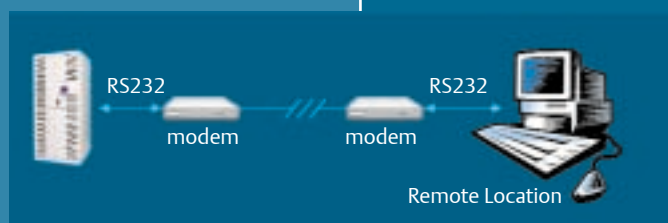
The large LCD graphical display provides an array of performance parameters, fault information and 220 historical event log that are useful for troubleshooting.

COMMUNICATIONS

Communication to the outside world is never a problem with the Liebert iTrust. The system provides voltage-free relay contact of common alarms, RS232 & RS485 signals for remote monitoring, and SNMP (optional) for web-based monitoring.

In addition, each system comes with a standard monitoring software that can be used to monitor a single unit or units in parallel through RS232 or Modem connection.

With self-diagnosis and self-protection, audio and visual alarm indications are available and these alarm notifications can be sent by e-mail or paging to the service personnel.



User friendly interface panel consists of a LED mimic diagram, 9 push buttons and a large blue 120mm x 90mm graphical LCD Display



Specifications

Trust3-Phase

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Capacity		20kVA	30kVA	40kVA	60kVA	
Rectifier Input	Input Voltage	380/400/415V (line-to-line voltage)				
	AC Power Input	Three-phase three-wire				
	Power Factor	>0.99				
	Harmonic Current	<3% (Voltage distortion lower than 2% at rated load)				
	Voltage Range	+15%~-20%				
		Lowest Operating Voltage: -45%				
	Input Current Limit	When input current is smaller than 115%In, the UPS can operate continuously; When input current is 115~140%In, the UPS can operate for 5 minutes;and when input current is 140~165%In, the UPS can operate for 1minute; Current limiting function is activated when input current is over 165%In (In—the rated output current at full load)				
Frequency Range		50Hz ± 10%				
Bypass Input	Input Voltage	380/400/415V(line-to-line voltage)				
	Input Voltage Range	± 10%				
	AC Power Input	Three-phase four-wire				
	Frequency Range	50Hz ± 10%				
	Voltage Regulation (Balanced Load)	380/400/415V ± 1% (± 5% adjustable)				
	Voltage Transient Response	± 5% (0~100%linear load)				
	Transient Recovery Time	<40ms				
	Voltage Distortion (Linear Load)	THD<1% (line-to-neutral voltage) (battery float charge state, rated balance load)				
	Voltage Distortion (Nonlinear Load)	THD<4% (line-to-neutral voltage) (battery float charge state, rated balance load)				
	Power Factor	0.8 (lagged)				
Frequency Syn. Range		50Hz ± 2Hz				
Frequency Regulation (Battery Mode)		± 0.1%				
Output	Phase Displacement (Three-Phase)		120 ± 1° (balanced load or unbalanced load)			
	Voltage Unbalance Rate at 100% Unbalance Load		± 2% (battery float charge state)			
	Frequency Slew Rate		<1Hz/s			
	Overload Capability (Inverter)		105% < load < 125% , transfer to bypass mode after 10 ± 0.1min; 125% < load < 150% , transfer to bypass mode after 1 minute; When load > 150%, transfer to bypass mode after 200ms			
	Overload Capability (Bypass)		135% Rated current continuously 135%~170% for 1 minute >170%, shutdown in 2s 1000% rated current for 20ms (a standard for selecting static switch)			
	Ratio of Output Current Peak Value to RMS Value		3 : 1			
	Transfer Time (Normal Mode)		0 (uninterrupted transfer),15ms (interrupted transfer)			
	Transfer Time (ECO Mode)		15ms			
	System Efficiency (Linear Load)		87%	87%	88%	89%
	Efficiency in Battery Mode (Linear Load)		92%	93%	93%	94%
	Display		LCD+LED			
	EMC/EMI	Conduction	EN50091-2			
		Radiation	EN50091-2 CLASS-A			
		Harmonic	IEC1000-3-4			
	Lmmunity		EN 61000-4-2.3.4..6.8.9.11 Level III, EN 61000-4-5 Level IV			
	MTBF (Inverter)		30,000 hours			
	MTBF (Single UPS)		150,000 hours			
	MTBF (1+1 Parallel Operation System)		400,000 hours			
System	Audible Noise at 2m		<60dB		<65dB	
	Cross Current Without Load (1+1)		<1A			
	Cross Current Without Load (3+1)		<2A			
	Current Unbalance Rate (1+1)		<2%			
	Current Unbalance Rate (3+1)		<3%			
	Insulation Resistance		>2M (500VDC)			
	Dielectric Strength		(input to earth, output to earth)2820Vdc, leakage current lower than 3.5mA, 1min without arc			
	Surge Immunity		Satisfy the class IV requirements specified by IEC60664-1, the ability to withstand 1.2/50us+8/20us not lower than 6kV/3kA			
	Protection Index		IP21			
	Number of Battery Cells		180 cells			
Installation	Cable Access Mode	Top/bottom cable access modes optional				
Physical Dimensions (WxHxD)mm		600x1400x860	600x1400x860	800x1800x860	800x1800x860	
Weight (kg)		440	528	654	811	

iTrust 3-Phase

Power Availability

For over 35 years, Liebert has been providing tailored solutions for protecting the operation of critical electronic systems in a variety of industries. From communications to industrial business networks, we have used our expertise to tailor the right products, site monitoring and global service capabilities into a variety of specific solutions.

Liebert's years of experience and knowledge of leading edge technologies enables us to truly understand your needs—both in terms of overall reliability and specific areas of equipment protection. Whether it's a new or existing facility, we listen to you and your preferences to help develop solutions that are right for your application.

We recognize that each situation has its own unique requirements and are better prepared than any other manufacturer to deliver the right level of reliability at the right price. We do this through a combination of knowledge, experience, product selection and service capability.

Someone Nearby to Help Before And After The Sale

Specifying a high-availability facility support system requires someone who is knowledgeable in all phases of environmental and power protection. Knowing where to turn for ongoing maintenance or service is just as important.

One of the many things that differentiates Liebert from others in our business is local presence. We have the most extensive sales and service network in the world. Liebert's extensive network of technical sales associates, backed by the industry's largest service organization, enables us to respond quickly to customer needs.

Emerson Network Power

Representing Liebert, Emerson Energy Systems and Asco Power Technologies, Emerson Network Power is uniquely positioned to provide you end-to-end system solutions with the Widest Scale, Size, Breadth, Technology & Geographic Presence.

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<http://www.liebert.com>

EMERSON NETWORK POWER WEB SITE

<http://www.emersonnetwork-ap.com>

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