

FIELD INSTALLABLE  
POWER UPGRADE

TRUE  
ON-LINE

MODULAR BATTERY  
UPGRADE

# POWER PROTECTION



Series 300 UPS

## TOTAL SYSTEM POWER PROTECTION FOR SENSITIVE ELECTRONIC LOADS

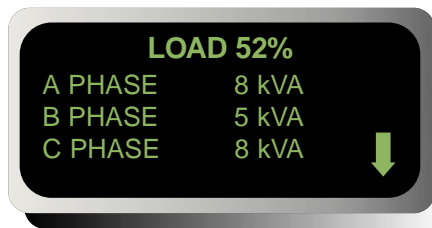


- FLEXIBILITY IN APPLICATION
- FIELD-INSTALLABLE POWER UPGRADE
- EASY TO INSTALL
- EASY TO OPERATE
- APPROVED FOR SAFETY
- 24-HOUR SUPPORT

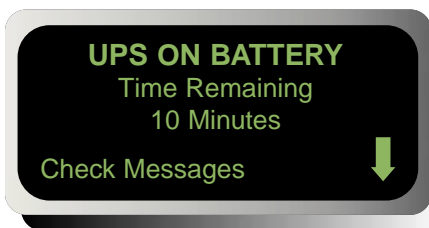
**ISO 9000  
CERTIFIED  
COMPANY**

# TRUE ON-LINE POWER PROTECTION

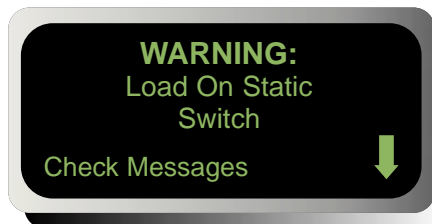
The true on-line design of Series 300 protects your computer equipment from utility frequency and voltage variations that often result in downtime. This reliable, constant power protection has made Series 300 the most universally selected UPS to support 10-125 kVA critical loads.



The Load Power monitoring screen displays the percent load your UPS is supporting, as well as the kVA distribution on each phase.



Continuous operation is inherent in the on-line design of the Series 300 UPS. There is no interruption in power flow when the load is assumed by the system battery.



Series 300 alerts you to system alarm conditions. These alarm messages are archived to provide a path for faster diagnosis and service.

## COMPUTER-GRADE POWER

Power quality is maintained by a transistorized, Pulse Width Modulation Inverter. It continually adjusts the output wave form to the load's requirements. The result is computer grade power within your system's specifications.

## COMPLETE LOAD HANDLING

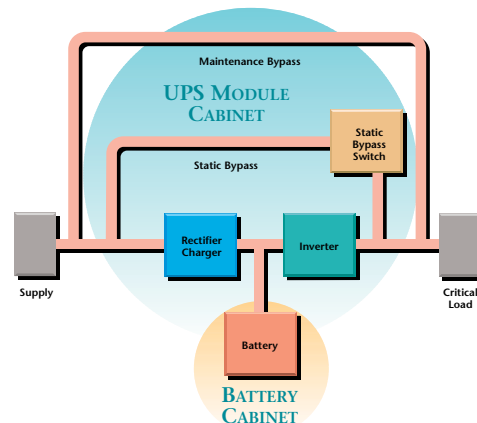
Series 300 has superior load handling capabilities for both three-phase and single-phase loads. It supports unbalanced and 100% non-linear loads, common in computer applications. In addition, Series 300 has one of the highest overload capabilities in the industry.

## CONTINUOUS OPERATION

Because the Series 300 is an on-line UPS, there is no interruption in the power flow as the load is assumed by the battery. Battery cabinets provide five or more minutes of standby power, using valve-regulated lead-acid batteries.

## BYPASS OPERATION

Both static bypass and maintenance bypass are standard, allowing your critical load to operate on utility power when necessary. The UPS will temporarily switch to static bypass during very high overload conditions to maintain continuous power to the critical load. Maintenance bypass is performed manually for UPS servicing to switch the load to utility power without shutdown.



The UPS system includes single input power feed; static bypass and maintenance bypass; rectifier/charger filter; and PWM inverter.

## STAND-OUT, STANDARD FEATURES

A multitude of standard features contribute to the popularity of Series 300. These features provide desirable qualities such as reliability, simple installation and space saving design.

### SPACE SAVING DESIGN

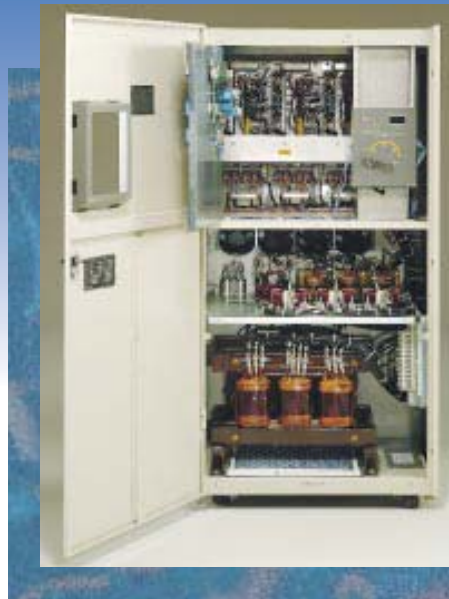
The UPS doesn't require back access, so it can be placed against a wall for best use of computer room floorspace. All standard features, including the monitoring system, and maintenance bypass switch, are installed within the UPS cabinet—no additional cabinetry, wiring or floorspace is required.

### EASY INSTALLATION

For simplified installation, Series 300 has casters for mobility, and requires only a single input power feed for the entire system. Optional flexible distribution cables are specified to match your equipment and room lay-out, and have identifying labels to simplify hook-up. This convenient total system approach puts your system on-line quickly, and results in lower installation cost.

### FIELD-SELECTABLE INPUT VOLTAGE

For flexible installation, most models can operate from either 208 or 480 volt input power. This standard feature allows you to change locations and input voltage without buying expensive transformers or a new UPS. 600 volt input is available separately.

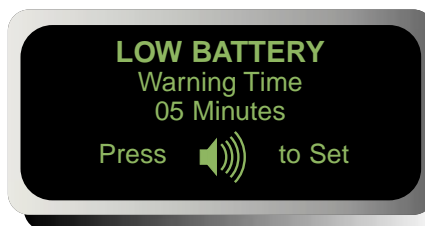


### BATTERY RELIABILITY TESTING

To ensure battery quality, Series 300 periodically and automatically tests the integrity of the battery and the supporting components. The monitoring system will alert you to any problems, allowing for battery service before an outage occurs.

### AUTO RESTART

The UPS can automatically turn the load back on when power returns, if an extended power failure forces a shut-down. This feature is user selectable from the control menu. When power returns after an outage, the UPS waits for 10 seconds to ensure that the power is stable and then restarts the load. The UPS executes self tests to verify that the major internal power and control sections are operating properly before transferring the load to the inverter. If any problems occur during the self test, the UPS aborts testing and disables the load.



During battery discharge, Series 300 provides the true battery time based on your running load and battery condition. The low battery warning signal can be user-selected for 1-99 minutes, allowing you to maximize time on battery before initiating a shutdown.

## ADDITIONAL OPTIONS TO MEET A VARIETY OF APPLICATIONS

A variety of system options are available to provide flexibility for your application. Power options prepare your site for maximum protection, while the communications packages offer effective, tailored site management.

### BATTERY POWER PACKS

Matching battery cabinets are available in a wide range of capacities to meet any application requirements. Bolt-on cabinets, only 22 inches wide, are available for 10-50 kVA models. Compact, stand-alone cabinets are standard for 65-125 kVA models, and also provide extended back-up times for all systems.

### SLIM LINE DISTRIBUTION

This power distribution cabinet is easily attached to the UPS module, adding only 10 inches to the width of the unit. The cabinet can be specified with one or two 42-pole panelboards and plug-in or bolt-in circuit breakers. If a one-panelboard model is selected, a second panelboard can be field installed at a later date.

### DISTRIBUTION CABLES

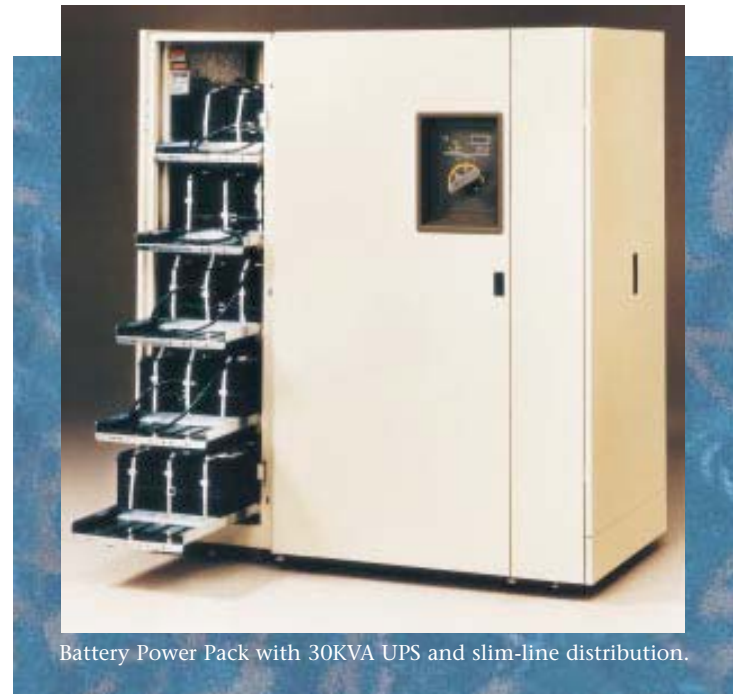
Liebert flexible distribution cables can be delivered with the slim-line distribution unit. These cables are custom-made for each application, with customer-specified connectors, identifying labels and cable lengths. Each cable assembly is individually UL listed and labeled to preserve the UL listing of Series 300.

### INPUT ISOLATION

The input isolation transformer requires no additional cabinetry. It improves power quality by isolating utility power from your critical load. The transformer is a single-point ground for the system, attenuating common mode noise for all operating conditions, including static and maintenance bypass. The transformer also adapts the UPS input for all utility configurations, and lowers installation costs by eliminating the need for input neutral wiring.

### INPUT FILTERING

The input filter reduces reflected input current distortion to 10% at full load. It lowers distortion to a level approved for office equipment, minimizing the impact of the UPS to upstream non-protected loads operating from the same utility service. The filter also improves compatibility between an on-site generator and the UPS. The input filter also improves input power factor to 90% minimum, even at partial load. The result is smaller wiring requirements and lower installation cost. Series 300 will help with power factor correction, which could save on utility costs.



Battery Power Pack with 30KVA UPS and slim-line distribution.

LIEBERT CORPORATION  
**S E R I E S 3 0 0 U P S**



The bolt-on slim-line distribution cabinet includes one or two 42-pole panelboards and custom flexible output cables to distribute power to your computer equipment.

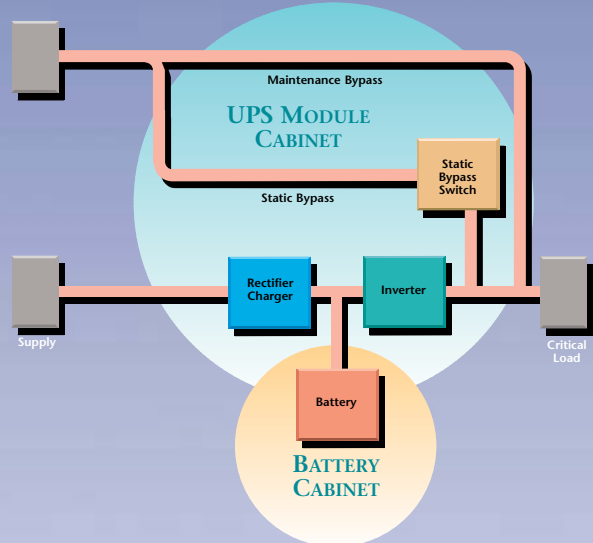
## AN ENGINEERED UPS SOLUTION FOR DUAL INPUT APPLICATIONS

When your site requires dual utility input for UPS operations, Liebert offers an engineered solution—Series 300 DT Dual Input UPS.

This field-proven UPS system has separate input power connections for rectifier/charger and bypass inputs, providing power protection for engineered applications. The 300 DT is built for reliability and ruggedness, for the computer room or industrial applications.

- On-line, reverse transfer configuration.
- Separate utility inputs for rectifier and bypass.

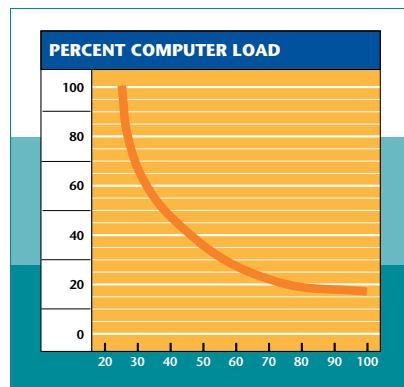
### BLOCK DIAGRAM SERIES 300 DT DUAL INPUT UPS



The UPS system includes separate rectifier and bypass power inputs, static bypass and maintenance bypass; rectifier/charger and PWM inverter.

### On Battery Operating Time

Battery time available is based on your running load and battery charge level—the lighter the load, the greater the time available.



# FAIL-SAFE CONTROL AND MONITORING

Simplified control and comprehensive monitoring are integral to a successful UPS. The convenient Series 300 design eliminates operator error by leading the user through each step of control and monitoring—there are no complicated instructions to memorize.

## SINGLE POINT OF CONTROL

To ensure operator safety, Series 300 is designed so the user will never have to open the cabinet doors. All operating procedures—start-up, control, shutdown and bypass—are performed with the rotary switch on the front of the UPS module. Lighted prompts and message screens lead the operator through these simple procedures.

The monitoring and control system, a standard part of the Series 300 UPS, is easily operated without complicated instructions.



**STARTUP**  
Test Passed. Turn rotary switch to Position 3

**STARTUP**  
Testing Inverter [20]

Self diagnostics are performed during start-up to ensure the system is prepared to handle your computer load.

## SYSTEM DIAGNOSTICS

At start-up, the UPS will perform self-diagnostics to ensure that all components are ready to handle your critical load. Self-diagnostics and alarm histories are battery-backed and time/date stamped to assist in service and maintenance.

## COMPREHENSIVE MONITORING

System operating information is displayed on the 64 character LCD screen. The menu-driven system allows you to check parameters including phase loading, battery condition and time remaining, voltages, frequency and current.

## ALARM MESSAGES

During unusual operating conditions, an audible alarm will sound. The LCD panel will display an explanation of the problem, allowing you to take corrective measures. The UPS also saves an alarm history, providing a tool for faster diagnosis and service.

## FIELD SELECTABLE PARAMETERS

Using the buttons and display screen, you can tailor Series 300 operation to your site needs. You can select operating parameters for auto restart, rectifier/charger walk-in, frequency synchronizing range, slew rate, low battery signal time, and time and date. Text can be displayed in English, Spanish, French, German and Italian.

## SYSTEM START-UP AND SERVICE

After installation, Liebert Customer Service and Support will perform an orderly start-up to ensure proper system operation. Service and maintenance are available 24-hours a day from the largest service organization in the industry. We support you with factory-trained engineers who have the tools and specialized knowledge to keep your equipment running at its best.

## POWER UPGRADE

Just as computers allow for expansion, the Series 300 allows you to buy for your present power requirements while providing a cost-effective upgrade when additional capacity is needed. With no additional cabinetry, a Liebert service engineer can upgrade 10, 20, 40, 65, and 100kVA models to the next higher capacity.

L I E B E R T   C O R P O R A T I O N  
S E R I E S   3 0 0   U P S

# OPTIONAL COMMUNICATIONS FEATURES MAKE SERIES 300 EVEN MORE USER FRIENDLY

## REMOTE STATUS PANEL

This wall mounted panel displays basic operating and alarm parameters, allowing remote monitoring of UPS operation.

## COMPUTER INTERFACE SIGNALS

Communication connector cables, sensors and contacts are available in configurations to match requirements of IBM, DEC and others. These kits deliver all the components needed to provide communications between Series 300 and your computer.

## REMOTE CONTACT BOARD

This option allows for remote indication of several UPS operating parameters, through use of form "C" contact closures.

## RS232 COMMUNICATIONS

You can also access UPS operating status in ASCII format on a dedicated terminal or computer system, with the simple addition of the RS232 communications package.

## SITESCAN MONITORING SYSTEM

This Liebert system is an on-line, centralized monitoring center for all computer support equipment including the Series 300. The software-based system is programmable, menu-driven and upgradeable. Models are available to suit small to large sites.



The remote status panel displays basic operating parameters for the Series 300.



SiteScan centralized monitoring system provides operating status for all computer support systems.

## REMOTE FRONT PANEL (ENHANCED TERMINAL MODE)

When connected to a remote terminal from the RS-232C interface, the UPS will "draw" a picture of its own display panel on the terminal screen, and will treat the terminal as if it were the front panel LCD display and pushbuttons. The user may view screens, set modifiable values, turn the load on or off, or perform any other function available from the front panel of the Series 300.

## ENHANCED STANDARD PROTOCOL SUPPORT (ESP)

ESP support has been extended to provide more information and greater control for users who wish to write applications to allow a computer to communicate with the UPS directly. The new extensions are backward-compatible with previous versions, so existing applications will not need to be rewritten or appended.

## INTERNAL MODEM

The UPS can dial out and notify up to two remote computers, terminals, PCs, or pocket pagers when important events occur. You may also call a modem-equipped UPS from a remote terminal, computer, or PC and monitor, and remotely control the UPS or check system status.

## INTERNAL SNMP (SIMPLE NETWORK MANAGEMENT PROTOCOL) SUPPORT

An SNMP adapter allows the UPS to be directly connected to any I.P. based network using Token Ring or Ethernet media. From a network management station, the system administrator can monitor system measurements, and alarm status. Other functions, such as battery tests, and load power on/off, can also be performed from the management station.

## Liebert Series 300 UPS

### INPUT:

**Voltage:** 208, 480 or 600 VAC, 60 Hz,  
3 or 4-Wire plus ground.

**Voltage Range:** +10%, -25%.

**Frequency Range:** 60 Hz  $\pm$  5%.

**Current Limit:** 125% of full load input current.

**Current Walk-In:** 20 seconds to full load.

**Surge Protection:** Sustains input surges without damage, per criteria listed in ANSI C62.41-1980 (IEEE 587).

### OUTPUT:

**Voltage:** 208, 480 or 600 VAC, 60 Hz,  
3 or 4-Wire plus ground.

**Voltage Regulation:**  $\pm$ 1% for balanced load.

**Voltage Unbalance:**  $\pm$ 1% for balanced load,  $\pm$ 2% for  
50% unbalanced load,  $\pm$ 5% for 100% unbalanced load.

**Voltage Adjustment Range:**  $\pm$ 5%.

**Frequency:** 60 Hz  $\pm$ 0.1%.

**Load Power Factor Range:** 0.9 Leading to 0.5 Lagging.

**Power Rating:** Rated kVA at 0.8 lagging power factor.

**Harmonic Distortion:** 5% maximum total for linear loads.  
3% maximum for single harmonics.

**Phase Displacement:** 120°  $\pm$ 1° for balanced load.  
120°  $\pm$ 3° for unbalanced load.

**Transient Response:**  $\pm$ 1% for loss or return of input power.  $\pm$ 4%  
for 20% step load or a manual transfer  
of 100% load.  $\pm$ 5% for 30% step load.  $\pm$ 8% for  
50% step load.

**Transient Recovery Time:** To within 1% of output  
voltage within 50 milliseconds.

**Overload Capability:** 125% for 10 minutes.  
150% for 30 seconds.

**Fault Clearing Current:** 300% subcycle.

### ENVIRONMENTAL:

**Operating Temperature:** 32°F to 104°F (0°C to 40°C) (UPS).  
68° to 86°F (20°C to 30°C) (Battery).

**Non-Operating Temperature:** -4°F to 158°F (-20°C to 70°C)  
For battery, check manufacturer's recommendations.

**Relative Humidity:** 0 to 95% non-condensing.

**Altitude:** Up to 2000 meters. Derated for higher  
elevations.

**Audible Noise Level:** 65 dBA measured at 1 meter  
from the UPS.

### PHYSICAL

**Cabinet:** NEMA Type 1 freestanding. Provided with casters and  
leveling feet.

**Cooling:** Forced air. Redundant fans.

**Cable Entry:** Top or bottom.

**Access:** Front access only.

UPS CABINET						
kVA	kW	Battery Req. (Cells)	Size WxDxH in.(cm)	Weight lbs.(kg)	Heat Dissipation (BTU/HR)	
10/15	8/12	102	36x28x72 (91x71x183)	1100(499)	6000/8000	
20/30	16/24	180	36x28x72 (91x71x183)	1400(635)	8900/12300	
40/50	32/40	180	36x28x72 (91x71x183)	1900(862)	16400/18700	
65/75	52/60	180	54x28x72 (137x71x183)	2500(1134)	24200/25400	
100/125	80/100	180	54x28x72 (137x71x183)	2700(1225)	33800/38000	

MATCHING BATTERY CABINETS									
Battery Time (In Minutes)									
UPS Rated kVA					Width in.(cm)	Weight lbs.(kg)			
10	15	20	30	40	50	65			
24	14					22(56)	760(345)		
37	21					22(56)	1000(454)		
60	39					22(56)	1300(590)		
	13	7				22(56)	985(447)		
	22	12	8	5		22(56)	1150(522)		
	34	19	11	7		22(56)	1500(680)		
	56	35	24	17		36(91)	2050(930)		
		47	35	27		36(91)	2750(1247)		
				11	9	36(91)	2050(930)		
				18	15	36(91)	2750(1247)		
				31	27	18	12	72(183)	4100(1860)
				36	31	21	16	72(183)	5000(2268)

POWER DISTRIBUTION CABINET		
kVA	Dimensions WxDxH	Weight lbs.(kg)
all	10x28x72 in. (25x71x183 cm)	210(95)

METERING			
Metered Parameters	Input	Battery	Output
Voltage	■	■	■
Frequency	■		■
Current	■	■	■
% Load			■
kVA/Phase			■
Time Remaining		■	

### LIEBERT CORPORATION

1050 DEARBORN DRIVE  
P.O. BOX 29186  
COLUMBUS, OHIO 43229  
800.877.9222 PHONE  
614.841.6022 FAX

### LIEBERT EUROPE

ELGIN DRIVE  
SWINDON, WILTSHIRE  
SN2 6DX, ENGLAND  
44.1 793.553355  
44.1 793.553402

### LIEBERT WEB SITE

<http://www.liebert.com>

While every precaution has been taken to ensure accuracy and completeness in this brochure, Liebert Corporation assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

© 1995 Liebert Corporation. All rights reserved throughout the world.  
Specifications subject to change without notice.

All names referred to are trademarks or registered trademarks of their respective owners.