Liebert®

IP Telephony Availability System

Power Availability

BRINGING HIGH AVAILABILITY TO THE EDGE OF THE NETWORK

On-Line UPS Protection, Security

And Remote Control Designed Especially

For Use With IP Telephony

EMERSON™
Network Power

YOUR BUSINESS DEPENDS ON THE ABILITY TO COMMUNICATE

Like a growing number of organizations, you are looking to IP telephony to bring a new level of efficiency to your business. But while it may operate over the existing IT network, end users expect much higher availability than what is found in other typical network applications.

Five Nines Reliability

Most users expect to maintain the high level of traditional "telephone system availability " from this new technology. To ensure this kind of performance, you must plan to protect the operation of the vital network components that make it possible in the first place.

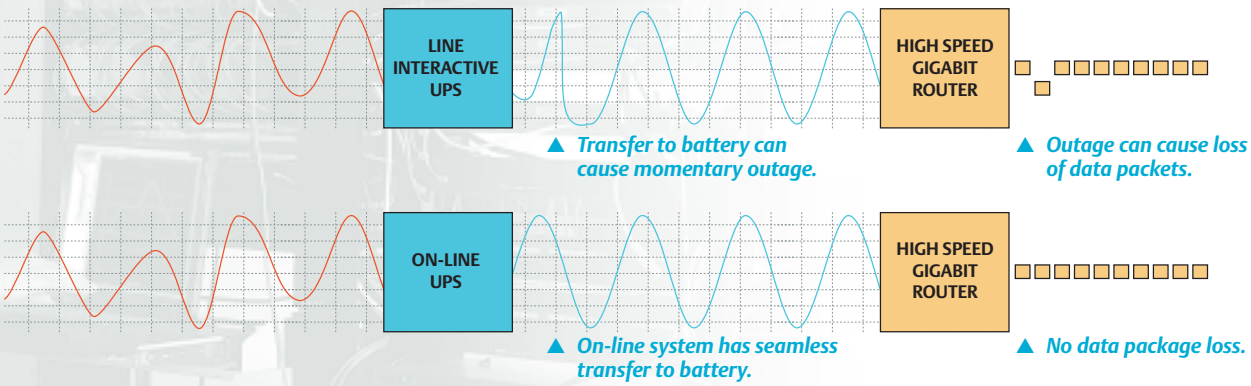
You may, however, have vulnerabilities of which you are not aware. Any one of these network components could be the weak link of the entire IP telephony system. It all has to work or none of it works, so you must protect all parts of the IP telephony system. This requires power protection and security for the sensitive servers, routers and switches that make up these systems — from your data center to branches and remote offices.

To attain the highest level of continuous availability in ultra-critical applications, it may be necessary to use redundant power supplies. You may also need to consider additional cooling capacity to ensure long operating life of these components. Your local Liebert Representative can advise you on solutions for environmental control and high availability power.

"Adequate" Protection Of Sensitive IP Components Is Not Enough

In many cases, data networks are protected by line-interactive UPS systems. This poses a problem, however, since these units cannot completely protect sensitive IP telephony components such as stackable switches and routers.

In cases of low voltage or "brownout" conditions, the line-interactive UPS will switch to battery to maintain the output voltage. Even though the transfer time is extremely brief (in the millisecond range), this short delay can still lead to the loss of data packets or even be enough to cause sensitive components to shut down completely. If power problems persist, this frequent switching to battery can quickly drain the reserve power and reduce battery life — leaving your critical systems with no protection at all during an outage.



For more information on the advantages of true on-line UPS systems, please see our white paper "Are Mission Critical Applications Outrunning Your System Protection?" at www.liebert.com or ask your Liebert Representative or Reseller for a copy.

What Can Really Happen?

A good example of why true on-line UPS systems are more appropriate for mission-critical applications than line-interactive units can be found at Time Warner Cable's operations in Manhattan, which were in the heart of the area most affected by the August, 2003, blackout in the Northeast.

Time Warner uses both room-scale and rack-scale UPS systems at this facility. The rack-scale systems include the Liebert UPStation® GXT, a double conversion UPS, and some non-Liebert, line-interactive systems. The blackout highlighted significant performance differences between the double conversion and line-interactive units including:

- Batteries in the line-interactive UPS did not have the capacity to support the connected load while the back-up generators were started and stabilized. Many of them shut down well before their rated back-up time and dropped critical loads unexpectedly. This is because line-interactive units transfer to battery to provide power conditioning when incoming power falls outside the specified voltage window — as was the case with the initial power feed from the generators.
- The line-interactive UPS units were unable to support start-up on exhausted batteries. When the utility restarted with "dirty" power, the line-interactive UPS attempted to go to their depleted batteries to provide conditioning, causing the units to shut down unexpectedly and drop the load.
- After the blackout, the incoming power lost its neutral and voltage jumped to 150 on one pole and dropped to 90 on the other. The line-interactive UPS let this power anomaly through, destroying the power supplies on seven servers.

The Liebert double conversion GXTs performed flawlessly throughout these conditions. None of the disturbances — including the loss of neutral — affected the output power from the Liebert systems.

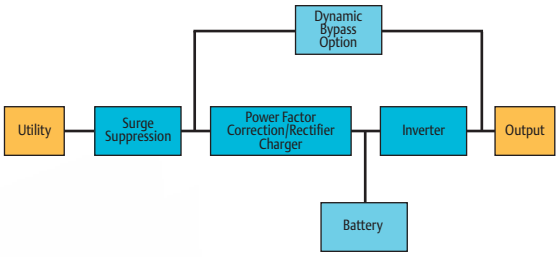
None of the August, 2003, blackout disturbances in the Northeastern USA affected the output power from the Liebert systems in use.

For more information on how true on-line UPS systems performed during a major power blackout, please see our white paper "Protecting Critical Systems During Utility Outages: The Role Of UPS Topology" at www.liebert.com or ask your Liebert Representative or Reseller for a copy.

LIEBERT IS THE PROTECTION CHOICE WHETHER IT'S THE CORE — OR THE EDGE OF YOUR NETWORK

While the core of your information systems may be adequately protected against power and heat-related threats, many critical pieces of the system — such as these IP telephony components — actually reside on the edge of the network. Liebert is the one source with the knowledge and tailored solutions that can help you protect vital functions along all points of your network. Your local Liebert Representative and Solution Provider are the experts you can turn to for help in protecting critical IP telephony applications.

Only A True On-Line, Double-Conversion Topology Provides Total Protection



A double-conversion UPS delivers 100% power conditioning, zero transfer time to battery, no change in output voltage and better transient suppression than line-interactive units. On-line systems also offer a wider input voltage window that allows the UPS to absorb deeper voltage sags without having to transfer to battery, as well as the ability to correct frequency deviations caused during generator start-up. Because on-line systems provide completely regenerated power, they have the ability to stop all surges and other fluctuations without depleting the battery.

On-line topology is the right product for these edge-of-network applications. And Liebert has a wider selection of these systems than anyone. There are many other situations where line-interactive UPS systems are a good fit. Liebert's knowledgeable application engineers have the ability to help you select the right product for your circumstances based on your true availability needs.

Continuous Availability Depends On Many Different Aspects Of Protection

Power Quality - It doesn't take a power outage to affect critical equipment and processes. You may already be dealing with hidden problems created by subtle power disturbances that can pass through simple UPS systems. A power system must be able to handle a wide array of power fluctuations, including some that are generated by your own network equipment.

Redundancy - For maximum availability, power must be maintained to the critical system even during routine maintenance. A simple bypass system can meet this need and permit the removal and reinstallation of the UPS without shutdown.

Proper Cooling - The performance and even the service life of IP Telephony equipment can be diminished by excessive heat or humidity. Liebert is the undisputed leader in precision environmental control equipment for any facility from a server closet to a data center.

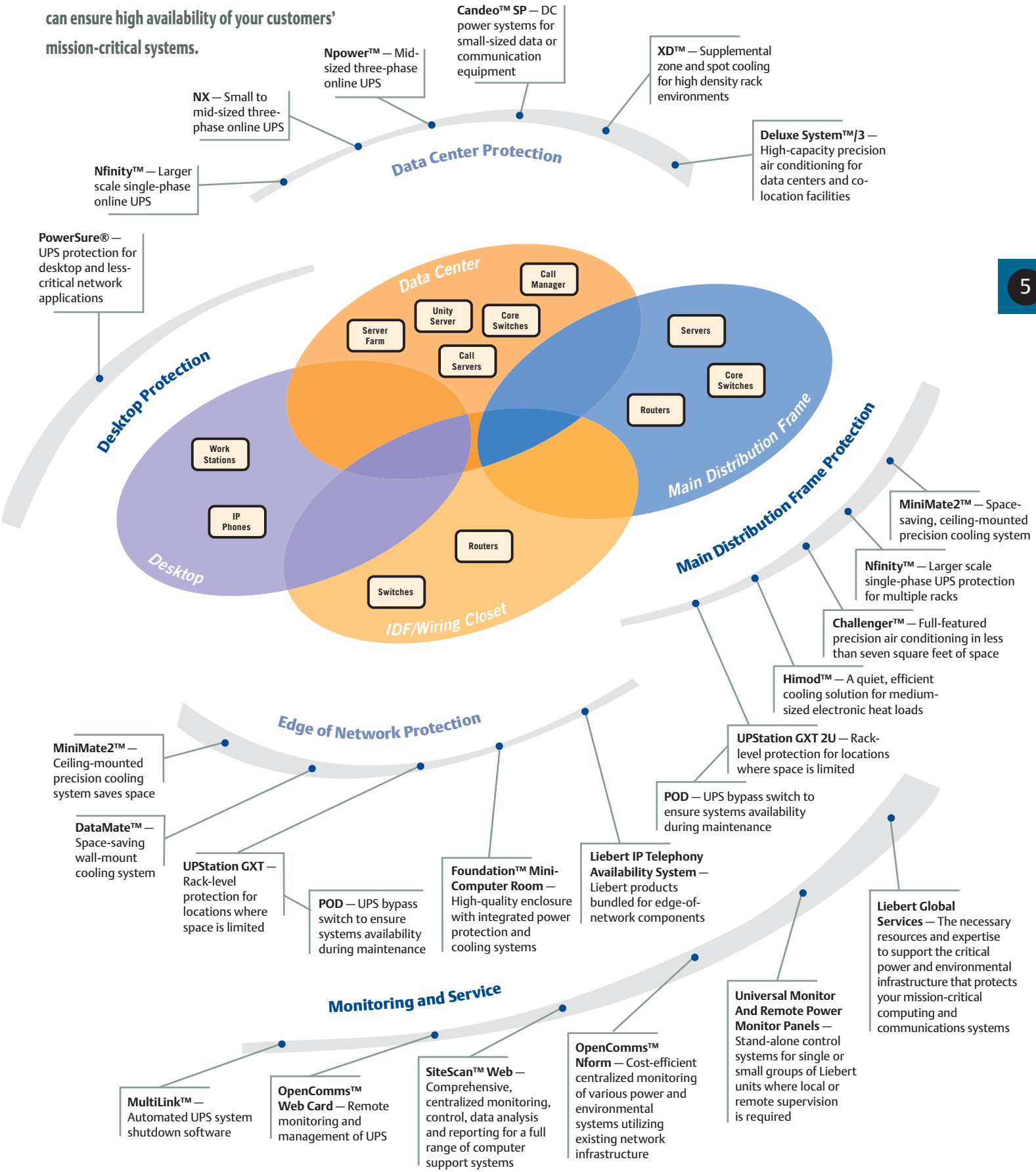
Monitoring and Control - The price you pay for not knowing what is happening within your facility may be too large to pay. Liebert offers monitoring and control packages that communicate vital system data via SNMP or building management systems.

Physical Security - IP Telephony equipment is often located in remote, unmanned locations where physical security may be an issue. Liebert offers a lockable enclosure to secure the vital systems in these locations.

Rapid Response Service - Service and maintenance is critical to the performance of these system-protection equipment. Only Liebert offers a nationwide network of local representatives, resellers and service engineers to provide rapid response to any service need.

Liebert IP Telephony Solutions

Liebert provides power protection and cooling solutions from the data center to the desktop. Your local Liebert Representative can help you determine which products can ensure high availability of your customers' mission-critical systems.



A TAILORED SOLUTION FOR IP TELEPHONY APPLICATIONS

In the past, the highest level of reliability wasn't always necessary. Today, however, the increasingly critical nature of these IP telephony systems requires a rethinking of your protection strategy.

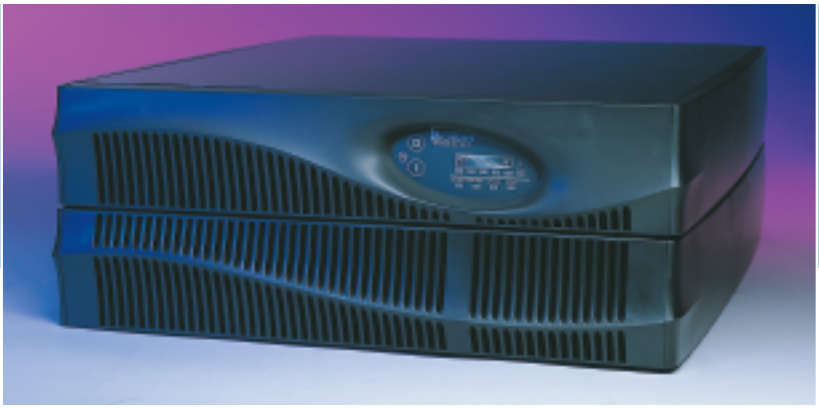
This is why Liebert has brought together several of our product solutions to create the **Liebert IP Telephony Availability System**...especially designed for stackable switches, routers and other critical network equipment. This solution is ideal for use in remote locations such as branch offices, retail stores and other edge of the network applications.

The continuous operation of your critical network components is too important to leave to chance. Protecting the flow of clean, reliable power to these systems requires a protection solution that will fully safeguard them from all variations as well as blackouts.

The Liebert IP Telephony Availability System

Liebert offers users of stackable routers, switches and other similar network components a comprehensive protection solution that will assure the continuous operation of your IP telephony system. The Liebert IP Telephony Availability System is ideal for use in remote access points such as branch offices, retail stores and other edge of the network applications.

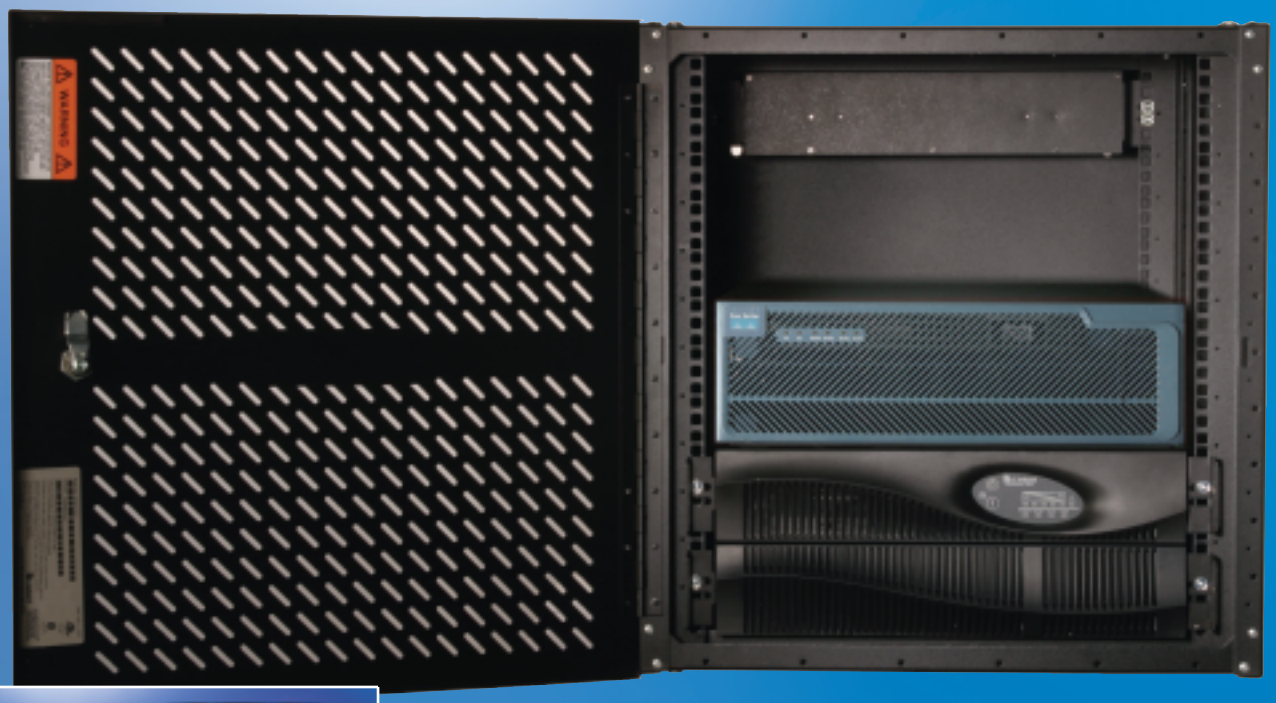
Every Liebert IP Telephony Protection System Includes:



Liebert UPStation® GXT 2U 700 VA On-Line UPS System For Power Protection — A true double conversion UPS, The Liebert UPStation GXT 2U delivers the high level power quality required to fully protect critical network switching components from all power problems. Available in sizes from 700 up to 3000 VA, the GXT 2U provides easy user operation through an LED display that provides annunciation of battery capacity, percentage of UPS load, battery operation, bypass operation and UPS fault condition. All this is housed in a compact 2U size cabinet that includes internal batteries.

External plug and play, 2U size battery cabinets are also available for additional backup time. Thanks to the GXT 2U's unlimited external battery connectability, any number of these 2U battery cabinets can be added to supply extended runtime.

Protecting The Edge Of The Network



Foundation™ Wall Mount 24" Enclosure Or 44" High Freestanding Enclosure For Security — These freestanding enclosures are designed to protect your critical network equipment, no matter where it is located, by combining high durability, security and compact size. These units are the perfect place to house both the switching and power protection components, especially in areas where floorspace is at a minimum and equipment is unattended.

A Liebert 2U POD™ For Continuous Power During UPS Maintenance — In most cases, your critical routers and other network components cannot be without power even for scheduled UPS maintenance. To meet this need, the Liebert 2U Power Output Distribution (POD) system ensures continuous uptime by providing maintenance bypass capability as well as power output distribution. The 2U POD enables you to manually transfer your connected equipment to utility power via a maintenance bypass switch. This allows scheduled maintenance or replacement of the UPS without disrupting power to critical equipment.

An OpenComms™ Web Card Housed Within The UPS For Power System Monitoring And Communications — The OpenComms™ Web Card, housed within the UPS, will deliver SNMP and web-management communications capabilities to your power system, including the ability to remotely reboot the switch by cycling the UPS power off and on. It enables the GXT 2U to take full advantage of your Ethernet network with remote monitoring available from your computer desktop, operations center or wherever network access is permitted.

THMnet For Environmental Monitoring — Connects temperature and humidity sensors for monitoring via SNMP communications. A third input is also available for use with an additional contact sensor. Can be used with Liebert OpenComms Nform monitoring or network management systems.

TOTAL CONFIDENCE IN THE DECISION YOU'VE MADE.

Liebert®

IP Telephony Protection System

Power Availability

No organization in the world today has a better understanding of exactly what it takes to keep critical information and industrial processes operating continuously than Liebert.

We are the only company in this business that maintains a strong local presence of Representatives, Distributors and Resellers. This resource, coupled with our broad product line, gives Liebert the ability to create a "tailored solution" that will meet your protection needs precisely and efficiently.

There are Liebert systems designed for nearly every application — from basic protection for network PCs, servers or point-of-sale terminals...to highly engineered systems for computer rooms, telecommunications centers, Internet hosting sites, colocation facilities and industrial control rooms. But no matter what the size or complexity, the availability of these critical electronic systems is Liebert's primary focus.

With your purchase of a Liebert product, you are buying into a company that stands behind its products. You are also aligning yourself with an organization that has a reputation for quality and reliability that is second to none.

After the sale, Liebert provides comprehensive support wherever and whenever it's needed, with the largest service organization in the industry.

In the systems protection business it's when you need someone to count on that you find out whether you've made the right choice. Liebert customers — many of them with us for over three decades — already know how good their decision was.

Liebert Corporation

1050 Dearborn Drive
P.O. Box 29186
Columbus, Ohio 43229
800.877.9222 Phone (U.S. & Canada Only)
614.888.0246 Phone (Outside U.S.)
614.841.6022 FAX

Via Leonardo Da Vinci 8
Zona Industriale Tognana
35028 Piove Di Sacco (PD)
Italy
39 049 9719 111 Phone
39 049 5841 257 FAX

23/F Allied Kajima Bldg.
138 Gloucester Road
Wanchai
Hong Kong
852 2 572 2201 Phone
852 2 831 0114 FAX

Liebert Web Site

http://www.liebert.com

24 x 7 Tech Support

800 222 5877 Phone
614 841 6755 (outside U.S.)

Keeping your vital systems secure, year after year — Liebert provides peace-of-mind protection for critical facilities.

That Is
The Liebert Experience

EMERSON™
Network Power

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