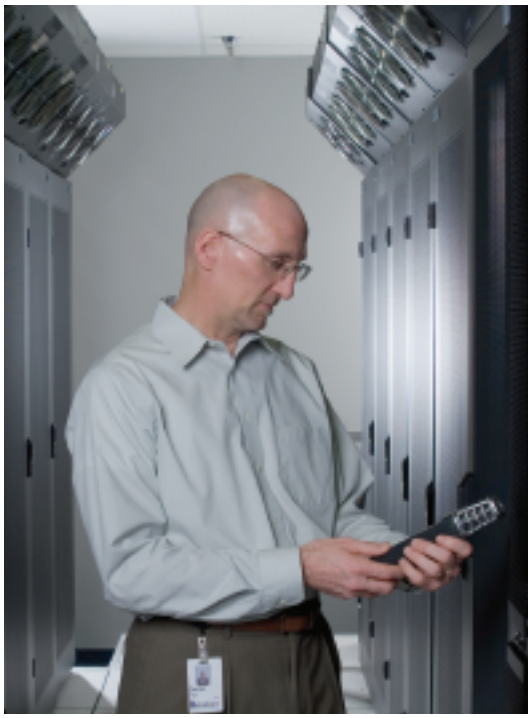
Solutions
For *Business-Critical Continuity™*

Liebert Integrated, Pre-Engineered Solutions

Complete Protection For Network Servers and Data Centers



Liebert®

EMERSON™
Network Power

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For more than 40 years, Liebert has been the global leader in the world of business-critical systems. The best run companies have relied on Liebert products, technologies and services to provide the flexibility and availability they've needed to succeed.

Today, we are solely dedicated to rapidly delivering the right solutions for your individual mission-critical applications.

Bringing Market-Leading Data Center Technology to Your Business.

Business information is more critical than ever to organizations of any size. All data centers are critical to their organizations. Likewise, they all face the same protection issues. Rising heat densities. More demand for reliable power. Ever-changing technology. Cost and floor space restrictions. No matter the size of your space, the days of compromising your critical data are over.

With Liebert, everything from small closets and computer rooms to centralized global data centers can capitalize on products and services designed for their individual needs.

Based on the unique needs of 1-60 rack data centers, we've integrated power, cooling, monitoring and service into a pre-engineered, easy-to-order solution. Plus, we offer optional services and local expertise and support that make your Liebert solution easy to order, configure, manage and implement.

Integrated solutions. Pre-engineered benefits.

Only Liebert can offer you the advantages of having a fully integrated–and pre-engineered–solution, from rack to room. By consolidating all your products and services with Liebert, you are assured that everything works together as one configured system.

- **Reliability** — Proven mission-critical technologies that minimize single points of failure produce the highest possible reliability for your IT systems, so you can work in confidence.
- **Single Source** — One source to select, configure, install and service all your products and technologies, with a single call to make.
- **Integration** — From rack to room, our products and services form a holistic system. With the Liebert name on each, our pre-engineered products are meant to work together.
- **Technical Support** — Local and factory support by application specialists is available to help you if needed. We also have the largest team of factory-trained Customer Engineers across the globe to provide you the breadth and depth needed to guarantee uptime assurance and downtime recovery.
- **Flexible Configurability** — As your IT requirements change, our products and technologies provide an adaptable and cost-effective path to support synchronized growth, so you're not stuck with the unexpected.

The end result? An infrastructure with the ability to anticipate and adapt to change.

A Total Solution. A Single Source.

Our pre-engineered solutions promise you flexibility and availability, which equates to the lowest cost of ownership.

How is this possible?

With the widest range of products in the marketplace, we can provide maximum flexibility to meet your most stringent demands. We're a single, global source with a long and successful legacy of protecting the operation of mission-critical systems. Before, during, and after the install, only Liebert can provide you with the products and services you need, and the peace of mind you deserve.

POWER

Surge Protection

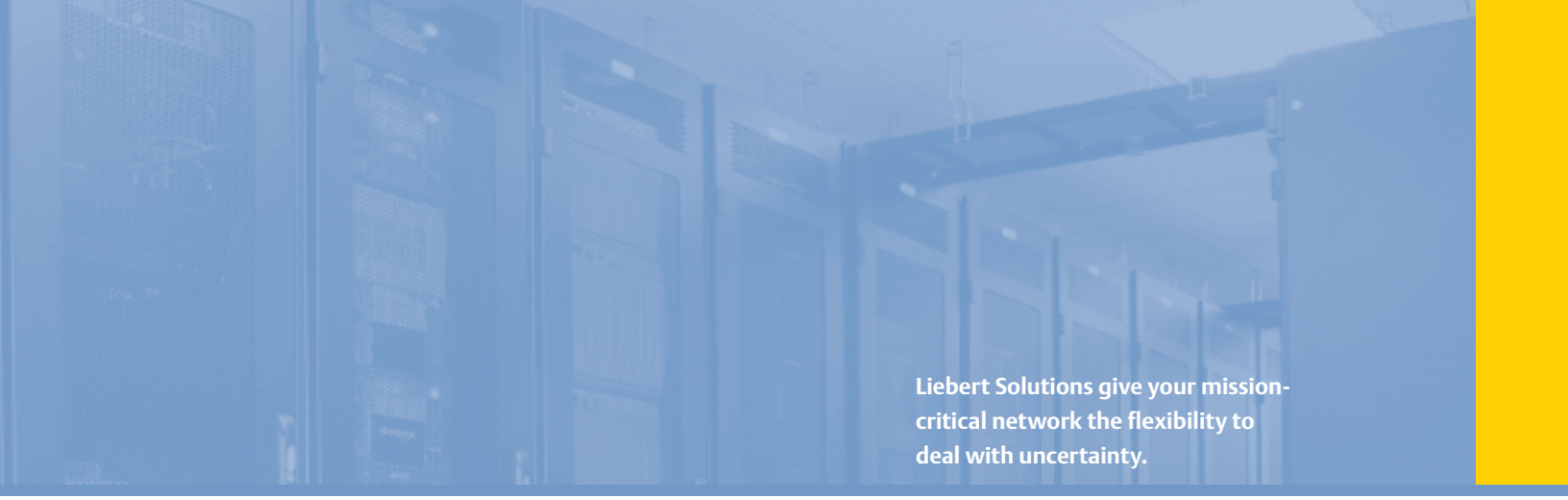
Surge suppression protects your IT equipment against damaging power spikes—and from catastrophic failure.

Uninterruptible Power

Availability depends on the continuity of power and the ability of an uninterruptible power supply to ride through outages and provide clean power to sensitive IT loads.

Power Distribution

From the room level to the rack level, delivering and managing power to each individual piece of IT hardware is critical in ensuring availability.



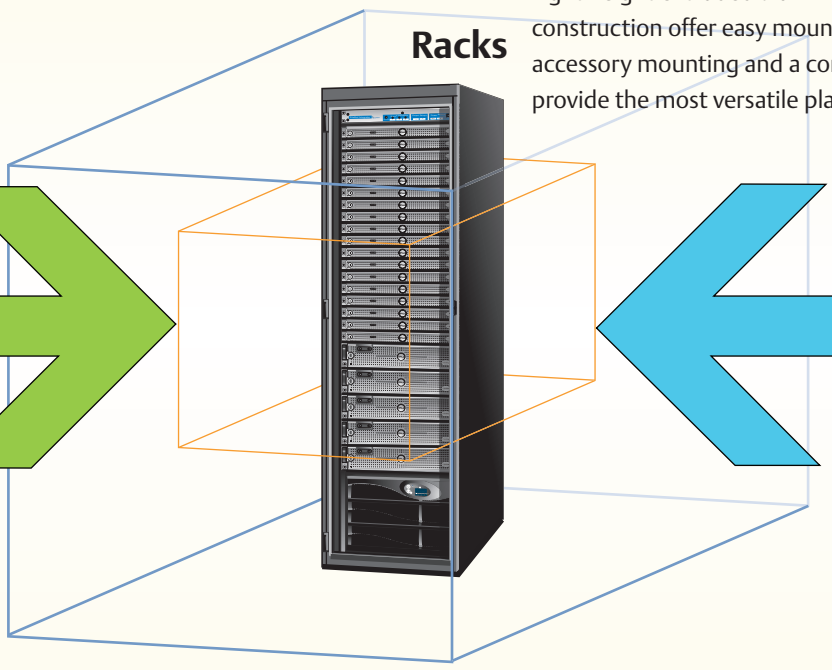
Liebert Solutions give your mission-critical network the flexibility to deal with uncertainty.

Knowing what is happening with your critical power and cooling equipment—and having automated processes to shut down servers in an orderly way if required—is vital to system reliability and uptime.

MONITORING

Racks

Lightweight extruded aluminum frames with modular construction offer easy mounting for all IT equipment. Tool-less accessory mounting and a complete cable management system provide the most versatile platform available.



COOLING

Precision Cooling

Active precision cooling provides precise temperature and humidity control as well as air filtration, protecting your critical equipment from heat and air impurities.

SUPPORT SERVICES

Offering the full spectrum of on-site support services for batteries, power and cooling products including preventive maintenance. And a live response team 24x7x365.

Glossary Of Terms

Adaptive Architecture

Liebert Adaptive Architecture
Liebert Adaptive Architecture is a family of products and technologies that demonstrate the ultimate in flexibility while balancing the importance of minimal TCO and high availability.

Open Architecture / Closed Architecture
Open architecture is a cooling method that utilizes cooling coils and room air volume as a thermal storage to ride through power outages.

Closed architecture fully encloses the rack with the cooling coils inside. Other provisions are required for power loss ride-through.

Redundancy
Level to which a system can sustain a failure or be serviced while continuing to provide 100% of the product's intended function.

- Systems with no redundancy may stop functioning when any single component fails or maintenance is required.
- Redundancy can be achieved by paralleling components, where at least one of the components is extra and not required for the system to provide 100% functionality. This design prevents major component failures or scheduled maintenance from affecting the performance of the product. This configuration can provide very high systems availability.
- The highest levels of redundancy are achieved by installing two independent systems, preferably with isolated input and output paths. Preventive maintenance or any component failure has no affect on system performance because the second system is capable of providing 100% of the product's intended function.

Industry Terms

Availability
When a proven technology or system design minimizes single points of failure or downtime in your IT systems.

Business-Critical Continuity
The promise that our customers' technology infrastructure will not go down and bring their businesses to a standstill.

Flexibility
Products or systems that can be reconfigured or added to meet the demands of new technologies, achieve higher protection results and adapt to growth/changing business requirements.

Total Cost Of Ownership
Cost evaluation based on sum of equipment purchase, future changes, and service costs.

Power

Power – Three Phase
A three phase circuit consists of three phases, ground and in some cases neutral. Typical three phase voltages are 208V, 480V and 600V. Three phase voltages with neutral are 208/120V, 480/277V and 600/347V.

Power – Single Phase
Single phase circuit is a two-wire circuit with ground. Typically 120V or 208V.

Power Density
More power. More heat. Less space. With the increase of processor capabilities within smaller spaces, power densities will also rise (sometimes from 50Watt per s.f. to over 300Watt per s.f.). This makes your data center hotter, at times creating localized "hot spots."

UPS Type – On-line or Line-Interactive
An online UPS is used in the protection of critical applications and consists of a continuous flow of power that protects from all power disturbances, including subtle harmonics and waveform distortion. A line-interactive UPS offers protection to ride out "dirty" power. This energy-efficient technology provides both power conditioning and battery back-up and is particularly effective where outages are rare, but power fluctuations are common.

Battery Capacity
The percentage of power you get from your batteries, attributed to age, usage, environment, temperature and maintenance. A typical VRLA battery may reach 80% capacity and need replacement within 3-5 years.

Battery Runtime
The length of time (minutes) your batteries will back-up and protect your information during a power outage or system failure.

Cooling

Heat Rejection
Countering the increase of heat with air-cooled condensers and drycoolers for any ambient temperature or altitude. Hot air and water are removed, and the water is cooled and recycled.

Precision Cooling
The accurate controlling and regulation of temperature, humidity and air filtration.

Hot Aisle / Cold Aisle
A highly recommended method of improving performance of existing raised floor cooling technology in high density rack-based applications. Rows of equipment racks are arranged in alternating "hot" and "cold" aisles. Only the cold aisles have perforated floor tiles that allow cool air to come up from under the raised floor.

Sensible Heat
Sensible heat is heat that can be felt or measured. It is the heat that causes a change in the temperature of a substance. Think of it as the temperature that the weatherman gives. It can be measured by a thermometer. Servers give off strictly sensible heat.

Latent Heat
Latent heat relates to the heat energy absorbed in the process of changing the form of a substance. In the air-conditioning cooling process, latent heat removal is the condensation of vapor in the air when it is cooled below its dew point (dehumidification). Removing latent heat does not affect the actual temperature that you feel.

Total Heat
Total heat is the sum of the heat content of the air (sensible heat) and the water vapor mix (latent heat). It translates to the rated capacity of the air-conditioner.

BTU
BTU is defined as the unit of heat quantity required to change the temperature of one pound of water 1 degree Fahrenheit at sea level. One ton of air-conditioning = 12,000 BTUs per hour.

Cooling Tons
A ton is the amount of heat removed by an air conditioning system that would melt 1 ton of ice in 24 hours. One refrigeration ton = 12,000 Btu/h = 3,025.9 k Calories/h.

System Sizing

Sizing a critical power system to meet present and future needsis a fundamental requirement.

Present Requirements

Estimating the present system size in kilovolt amperes (kVA) is done in a number of ways. Typical sources include computer site planning manuals, equipment nameplate data, and electrical service data. kVA and kW requirements are estimated using any of the following formulas:

V = volts	pf = power factor
A = amperes	
kVA = kilovolt-amperes	BTU/hr = British Thermal Units per hour (heat output)
kW = kilowatts	Kcal/hr = kilocalories per hour (heat output)

1. Power profile of equipment. (This is the most reliable base from which to estimate present kVA loading.)

For three-phase systems	For single-phase equipment
$kVA = \frac{V \bullet A\ (1.73)}{1000}$	$kVA = \frac{V \bullet A}{1000}$

2. Kilowatts (kW) and Power Factor (pf). (If pf is not given, assume 0.8).

$$kVA = \frac{kW}{pf}$$

3. Ampere specifications for the electrical service feeding the site (for three-phase systems).

$$A = kVA / V / (1.73) \bullet 1000$$

4. BTU/hr or Kcal/hr specifications: (if pf is not known, assume 0.8).

$$kVA = \frac{BTU/(hr)}{3413} = \frac{kcal/(hr)}{860}$$

$$kVA = \frac{kW}{pf}$$

After the present kVA requirement has been determined, the anticipated growth and the special characteristics of the load must be considered.

Growth Requirements

The critical power system should be sized to anticipate growth. Growth rates associated with data processing centers double power requirements in a short time. Therefore it is reasonable to size the system for twice the present kVA load. Even in a minimum growth environment, the power system should be sized for 125% of the estimated kVA load.

Special Load Characteristics

For special load characteristics, factory application engineers should be consulted for recommended system sizing.

System Grounding Considerations

The grounding of any power conditioning system is critical to its performance. The National Electrical Code provides for a safe electrical system. The ground path required by the NEC for safety should be enhanced or improved for system performance, never defeated or eliminated.

Scenario A

1-2 Racks — Network Access Closet
Single Phase

This is an example of a recommended solution:

Specifications	Scenario A
Input Power	120V - 1 phase
Raised Floor	No
kW Range	1 - 3 kW
Racks	1 - 2
UPS	Liebert PowerSure PSI Line-Interactive
Power Distribution	Liebert MP Advanced Power Strips
Cooling	-
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	-

Solution:

For the room in need of a single rack, this is an example of the Liebert solution you'll need to protect your IT equipment. Available in non-redundant and redundant configurations, get everything you need in one rack: managed power strips, uninterruptible power, rack-based heat removal, monitoring, server shutdown software, installation service and support – all pre-engineered to work as a single cohesive system.

Use this suggested scenario to begin framing the protection that suits your needs. To configure a solution, contact your local Liebert representative or call 1-800-877-9222.

Products:

- **Knurr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knurr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert PowerSure PSI UPS** – A rack-mounted, single-phase, line- interactive UPS that provides protection against input voltage fluctuations and outages, internal batteries, additional battery cabinets and remote communications.
- **Liebert XDA Airflow Enhancer** – A lightweight fan unit mounted to the exhaust side of a rack to effectively remove heat from the critical IT equipment within the rack.
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from power, cooling and monitoring.
- **Liebert MultiLink Shutdown Software** – Automated shutdown software permits configurable responses to UPS status changes.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.

For more detailed information about the Liebert products in this Scenario, go to the pages indicated.

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Scenario A

Liebert PowerSure PSI UPS
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Liebert XDA Airflow Enhancer

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Scenario B

1-2 Racks — Network Access Closet
Single Phase

This is an example of a recommended solution:

Specifications	Scenario B (Option 1)
Input Power	208 / 120V - 1 phase
Raised Floor	No
kW Range	up to 1.8 kW
Racks	1
UPS	Liebert GXT On-line
Power Distribution	Liebert MP Advanced Power Strips
Cooling	Liebert MCR
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	-

Specifications	Scenario B (Option 2)
Input Power	208 / 120V - 1 phase
Raised Floor	No
kW Range	up to 14 kW
Racks	1-2
UPS	Liebert GXT On-line
Power Distribution	Liebert MP Advanced Power Strips
Cooling	Liebert XDF
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	-

Solution:

A cost effective, integrated enclosure with self-contained precision cooling, uninterruptible power, managed power strips, monitoring, server shutdown software, installation service and support – this solution allows for easy implementation of your cooling requirements by integrating active precision cooling into the rack – all pre-engineered to work together

Use this suggested scenario to begin framing the protection that suits your needs. To configure a solution, contact your local Liebert representative or call 1-800-877-9222.

Products (Option 1):

- **Liebert MCR Integrated Enclosure** – An integrated rack and enclosure with active precision cooling designed to ensure the long-term viability of IT equipment.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert GXT UPS** – A rack-mounted single-phase true on-line UPS that offers power-factor correction, frequency conversion, internal batteries, additional battery cabinets, internal dynamic bypass and remote communications.
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from cooling and power equipment.
- **Liebert MultiLink Shutdown Software** – Automated shutdown software permits configurable responses to UPS status changes.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.

Products (Option 2):

- **Liebert XDF Integrated Enclosure** – An integrated rack and enclosure with active precision cooling designed to ensure the long-term viability of IT equipment.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert GXT UPS** – A rack-mounted single-phase true on-line UPS that offers power-factor correction, frequency conversion, internal batteries, additional battery cabinets, internal dynamic bypass and remote communications.
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from cooling and power equipment.
- **Liebert MultiLink Shutdown Software** – Automated software for orderly shutdown of servers based on configurable responses from UPS.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.

For more detailed information about the Liebert products in this Scenario, go to the pages indicated.

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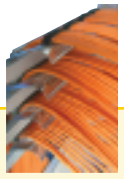

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Scenario B

Option 1:

Option 2:

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Scenario C

3-6 Racks — Small Data Room
Single Phase

This is an example of a recommended solution:

Specifications	Scenario C
Input Power	208 / 120V - 1 phase
Raised Floor	No
kW Range	7 - 16 kW
Racks	3-6
UPS	Liebert GXT On-line
Power Distribution	
- Power strips	Liebert MP Advanced Power Strips
- Maintenance Bypass	Liebert MicroPOD
Cooling	Liebert Challenger 3000
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	-

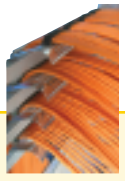
Solution:

For the room with 3–6 racks, this Liebert solution protects your servers, network and storage equipment. In addition to racks, managed power strips, uninterruptible power, monitoring, server shutdown software, installation service and support, you'll get room-based precision cooling from the most trusted name in the industry – all pre-engineered to work together.

Use this suggested scenario to begin framing the protection that suits your needs. To configure a solution, contact your local Liebert representative or call 1-800-877-9222.

Products:

- **Knurr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knurr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert GXT UPS** – A rack-mounted single-phase true online UPS that offers power-factor correction, frequency conversion, internal batteries, additional battery cabinets, internal dynamic bypass and remote communications.
- **Liebert MicroPOD** – Allows you to manually transfer your connected equipment to utility power via a maintenance bypass switch, permitting scheduled maintenance or UPS replacement without power disruption.
- **Liebert Challenger 3000 Precision Cooling** – An active precision cooling system providing a versatile and quiet room solution, including temperature, humidity, filtration and airflow in an extremely small footprint (< 9sq.ft.).
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from cooling and power equipment
- **Liebert MultiLink Shutdown Software** – Automated shutdown software permits configurable responses to UPS status changes.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.



For more detailed information about the Liebert products in this Scenario, go to the pages indicated.

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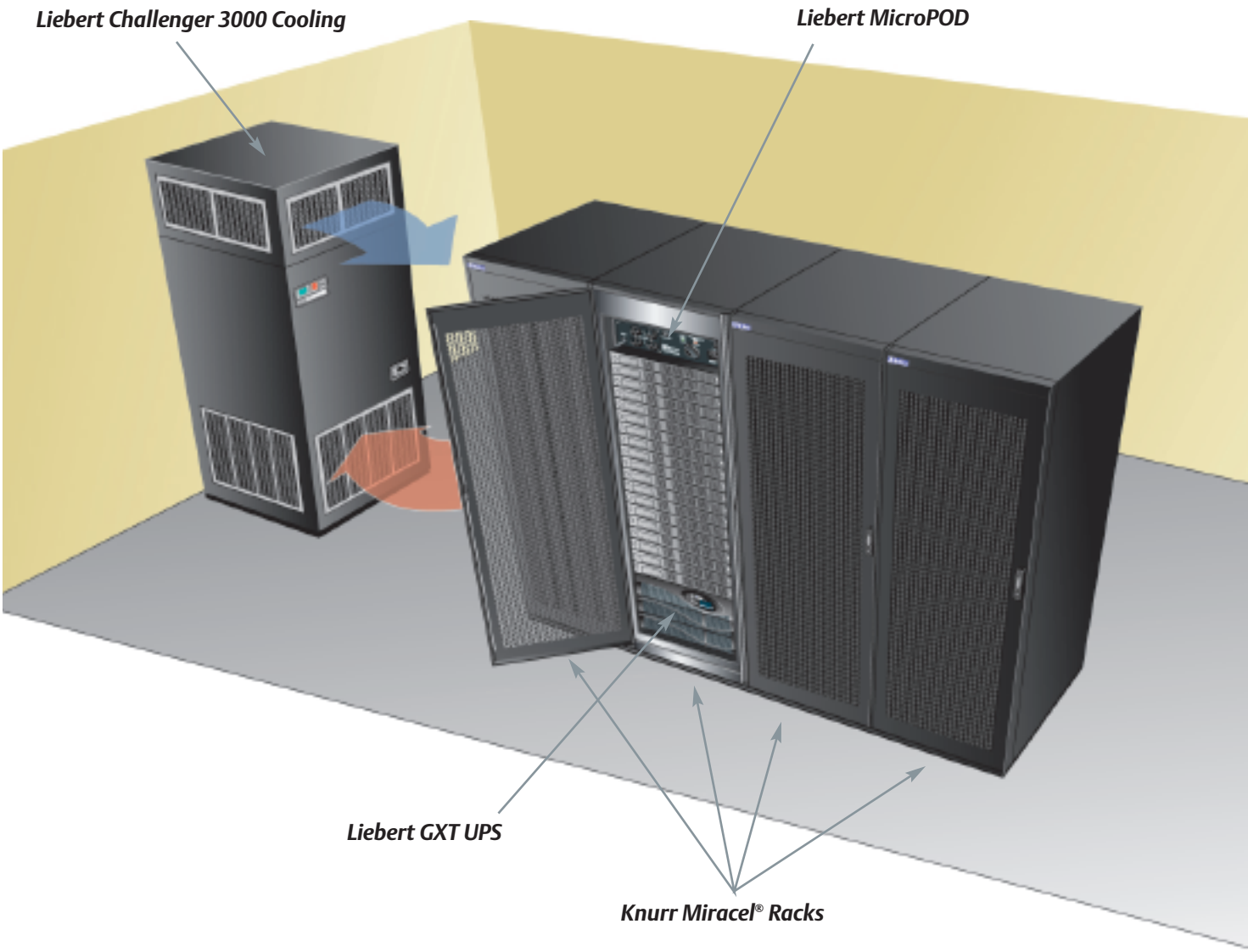
Scenario C



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Liebert MicroPOD

Liebert Challenger 3000 Cooling page 68

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Scenario D

7-10 Racks — Small Data Center
Three Phase

This is an example of a recommended solution:

Specifications	Sceanrio D
Input Power	208V/120V - 3 phase
Raised Floor	No
kW Range	8 - 24 kW
Racks	7 - 10
UPS	Liebert NX On-line
Power Distribution	
- Panelboards	Liebert NX Slimline
- Power strips	Liebert MP Advanced Power Strips
- Maintenance Bypass	Included in UPS
Cooling	Liebert Challenger 3000
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	Liebert AccuVar

Solution:

For the server room or small data center of 7–10 racks, this innovative and reliable Liebert solution is perfect for your needs. When information is critical and downtime inexcusable, this pre-engineered solution has the reliability you demand. Racks, managed power strips, precision cooling, uninterruptible power and power distribution, surge suppression, monitoring, server shutdown software, installation service and support – all pre-engineered to work together.

Use this suggested scenario to begin framing the protection that suits your needs. To configure a solution, contact your local Liebert representative or call 1-800-877-9222.

Products:

- **Knurr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knurr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert NX UPS** – A compact three-phase true on-line UPS that offers power-factor correction, frequency conversion, internal dynamic bypass, internal maintenance bypass switch, internal batteries, additional battery cabinets, intelligent local monitoring and remote communications.
- **Liebert NX SlimLine Power Distribution** – A compact power distribution unit integrated into the Liebert NX UPS that provides power distribution to the individual racks.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert Challenger 3000 Precision Cooling** – An active precision cooling system providing a versatile and quiet room solution, including temperature, humidity, filtration and airflow in an extremely small footprint (< 9sq.ft.).
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from cooling and power equipment.
- **Liebert MultiLink Shutdown Software** – Automated shutdown software permits configurable responses to UPS status changes.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.

For more detailed information about the Liebert products in this Scenario, go to the pages indicated.

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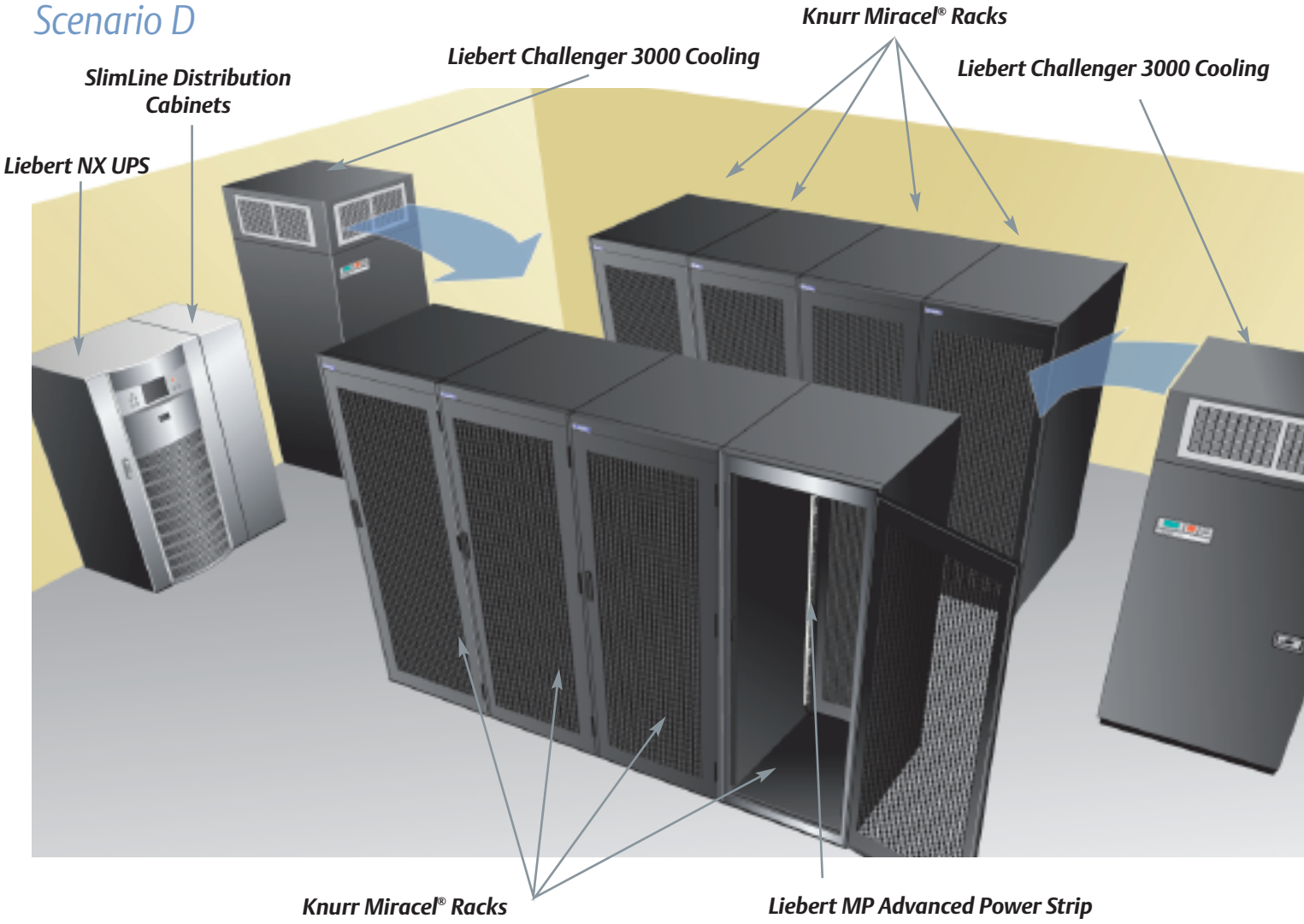
Scenario D



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NX SlimLine Power Distribution

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Scenario E

10-30 Racks — Small Data Center
Three Phase

This is an example of a recommended solution:

Specifications	Sceanrio E
Input Power	480 / 208V - 3 phase
Raised Floor	Optional
kW Range	36 - 72 kW
Racks	10 - 30
UPS	Liebert NX On-line
Power Distribution	
- Panel boards	Liebert FPC
- Power strips	Liebert MP Advanced Power Strips
- Maintenance Bypass	Included in UPS
Cooling	Liebert DS
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	Liebert AccuVar

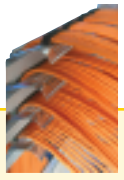
Solution:

As your system needs grow more complex, Liebert has the right solution for you. Designed specifically for the data center of 10 – 30 racks, this example combines racks, managed power strips, energy efficient precision cooling, uninterruptible power, power distribution, surge suppression, monitoring, server shutdown software, installation service and support – all pre-engineered to work as a cohesive system.

Use this suggested scenario to begin framing the protection that suits your needs. To configure a solution, contact your local Liebert representative or call 1-800-877-9222.

Products:

- **Knurr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knurr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert NX UPS** – A compact three-phase true on-line UPS that offers power-factor correction, frequency conversion, internal dynamic bypass, internal maintenance bypass switch, internal batteries, additional battery cabinets, intelligent local monitoring and remote communications.
- **Liebert NX Battery Cabinet** –Extended battery cabinets are also available for longer back-up times. The Extended Battery Cabinet is a modular cabinet that will hold a maximum of 12 battery modules with the same level of monitoring and control as the battery modules fitted in the UPS.
- **Liebert FPC Power Distribution** – A self-contained rack that provides power isolation, power distribution to the individual racks, IT equipment-grade grounding and local monitoring.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert DS Precision Cooling** – An active precision room cooling system providing a highly energy-efficient solution, including temperature, humidity, filtration and airflow.
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from cooling and power equipment.
- **Liebert MultiLink Shutdown Software** – Automated shutdown software permits configurable responses to UPS status changes.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.



For more detailed information about the Liebert products in this Scenario, go to the pages indicated.

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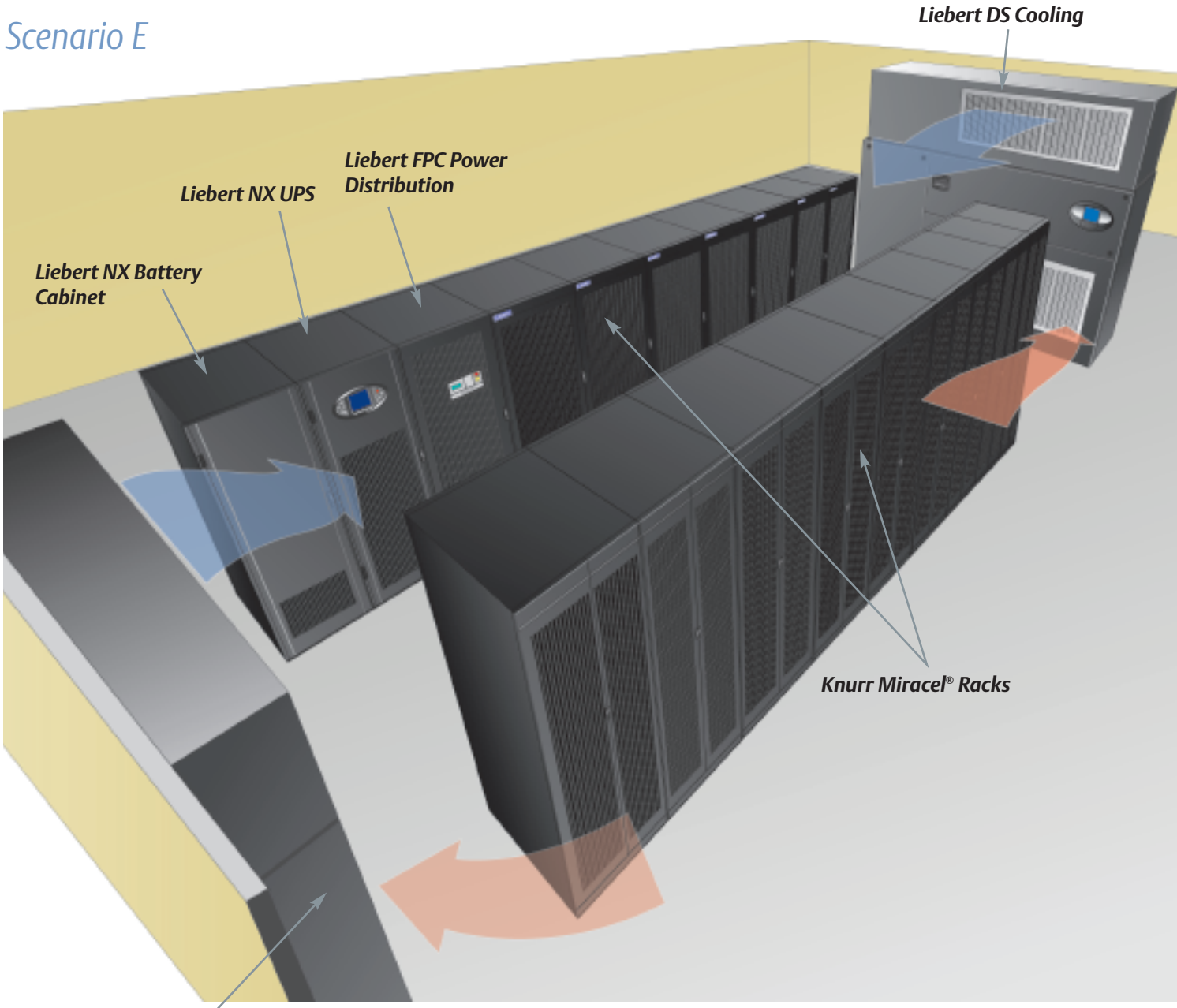
Scenario E



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Scenario F

30-60 Racks — Medium Data Center
Three Phase

This is an example of a recommended solution:

Specifications	Sceanrio F
Input Power	480 / 208V - 3 phase
Raised Floor	Optional
kW Range	72 - 144 kW
Racks	30 - 60
UPS	Liebert NX On-line
Power Distribution	
- Panelboards	Liebert FPC
- Power strips	Liebert MP Advanced Power Strips
- Maintenance Bypass	Included in UPS
Cooling	
- Room	Liebert DS
- High Density (Top of Rack)	Liebert XDV
- High Density (in-line)	Liebert XDH
- High Density Refrigerant Chiller	Liebert XDC
Monitoring	Liebert Nform
Server Shutdown	Liebert MultiLink
Surge Suppression	Liebert AccuVar

Solution:

As your application grows in size to 30 – 60 racks and heat densities rise to unmanageable levels, Liebert is able to deliver a customized solution that is optimized specifically for your needs. This system consists of racks, managed power strips, precision cooling, extreme density rack cooling, redundant uninterruptible power, power distribution, surge suppression, monitoring, server shutdown software, installation service and support – all pre-engineered as a single system to meet your critical data protection needs.

Use this suggested scenario to begin framing the protection that suits your needs. To configure a solution, contact your local Liebert representative or call 1-800-877-9222

Products:

- **Knurr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knurr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Liebert MP Advanced Power Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Liebert NX UPS** – A compact three-phase true on-line UPS that offers power-factor correction, frequency conversion, internal dynamic bypass, internal maintenance bypass switch, internal batteries, additional battery cabinets, intelligent local monitoring and remote communications.
- **Liebert NX Battery Cabinet** – Extended battery cabinets are also available for longer back-up times. The Extended Battery Cabinet is a modular cabinet that will hold a maximum of 12 battery modules with the same level of monitoring and control as the battery modules fitted in the UPS.
- **Liebert FPC Power Distribution** – A self-contained rack that provides power isolation, power distribution to the individual racks, IT equipment-grade grounding and local monitoring.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert DS Precision Cooling** – An active precision room cooling system providing a highly energy-efficient solution, including temperature, humidity, filtration and airflow.
- **Liebert XDC High Density Refrigerant Chiller** – Specifically designed to support the Liebert XDV and XDH high-density cooling system – circulates pumped refrigerant.
- **Liebert XDV High Density Cooling** – A flexible high-density spot and zone cooling system that mounts on the top of the rack, taking up zero floor space.
- **Liebert XDH High Density Cooling** – A flexible high-density cooling system that sits in-line with rack enclosures.
- **Liebert Nform Monitoring Software** – Network-based monitoring of alarm notifications from cooling and power equipment.
- **Liebert MultiLink Shutdown Software** – Automated shutdown software permits configurable responses to UPS status changes.
- **Installation & Support Services** – Utilize Liebert's local expertise to assist in assembling turnkey installation services as well as world-class service contracts for all of Liebert's power and cooling products.

Knurr Racks & Enclosures page 20

Cable Managment page 24

Liebert MP Advanced Power Strip page 56

Liebert NX UPS page 48

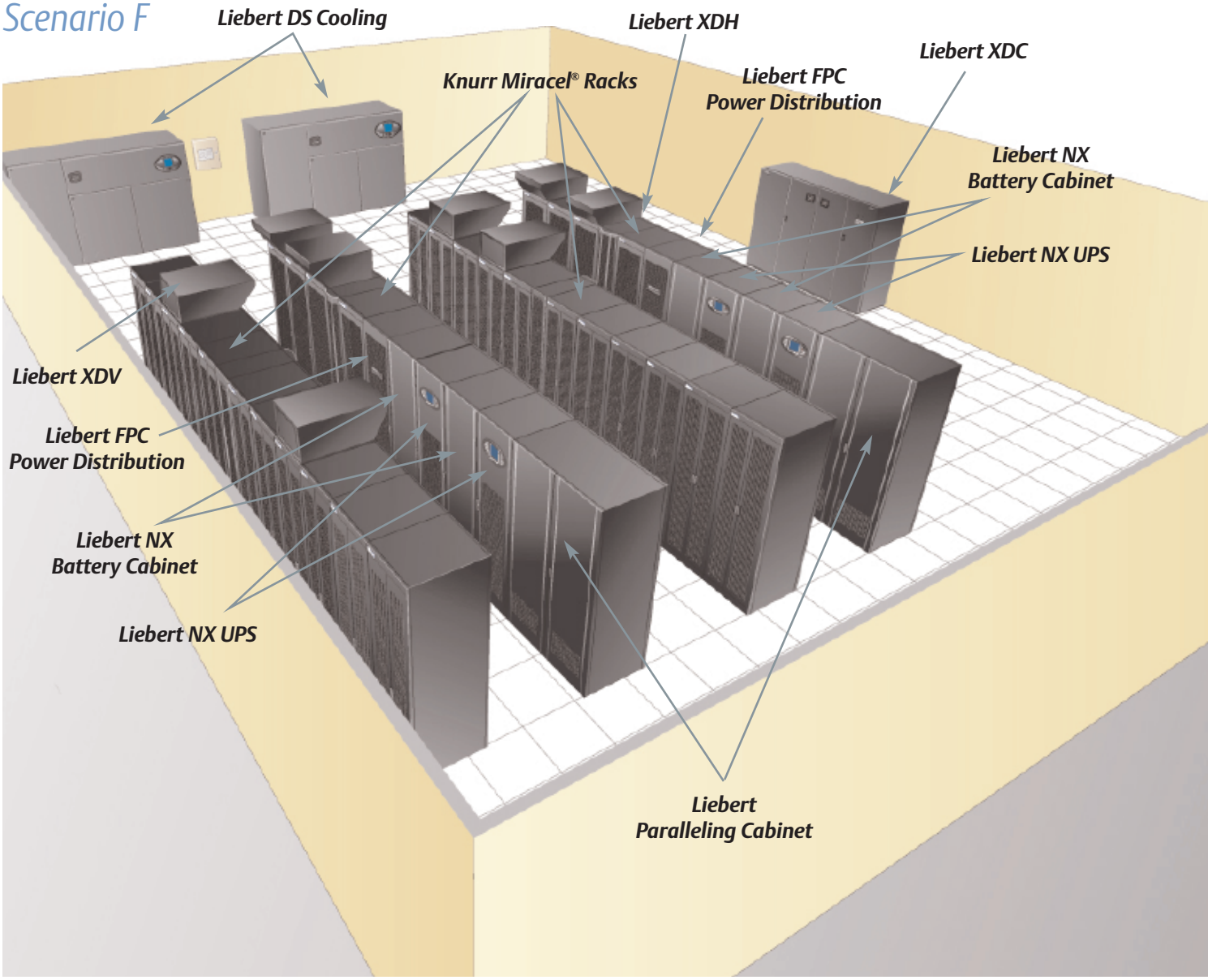
Liebert NX Paralleling Cabinet

Liebert NX Battery Cabinet

Liebert FPC Power Distribution page 52

For more detailed information about the Liebert products in this Scenario, go to the pages indicated.

Scenario F



Liebert AccuVar
page 64

Liebert DS Cooling
page 68

Liebert XDC
page 74

Liebert XDH
page 78

Liebert XDV
page 76

Liebert Monitoring & Shutdown
page 80

Installation, Support and Services
page 92

Knurr Miracel® Server Rack

This unique, modular construction allows for flexible mounting of accessories, as well as a complete cable management system with an extensive range of accessory components. The server rails guarantee easy mounting of 19" servers of all types plus Knurr accessories. With fully perforated doors (83% open area) this enclosure is set up for optimal thermal management – far exceeding server OEM requirements for effective heat dissipation.

Features & Benefits

Flexibility:

- Patented aluminum extrusion creates channels allowing for easy mounting almost anywhere in the cabinet.
- Cabinet and accessories designed as a system allowing customization with standard accessories.
- Complete cable management system provides management for the user's needs and requirements.
- Standard power strip mounting bracket allows power strips to be mounted virtually anywhere in the cabinet.

Higher Availability:

- Cabinet and accessory items designed as a complete system, providing a more complete and flexible solution for most applications.
- Logical cable management system reduces obstructions to airflow, reducing the adverse effects of heat on computer equipment.
- The power strip can be conveniently mounted in the zero U space, making it more accessible for the user.

Lowest Total Cost Of Ownership:

- Simplified installation of components reduces overall installation time, reducing costs.
- No specialized components necessary, reducing costs and lead times.
- Using a standard cable management system eliminates the need for a special system, reducing costs.
- Maximizes the amount of usable space in the cabinet, ultimately reducing cabinet count.

Frequently Asked Questions

Question	Resolution
Your cabinet frame is manufactured from aluminum. Is that strong enough for a server cabinet?	Many high load products are made from aluminum, because it offers a significantly lower product weight in tandem with a stiff, strong frame. These products include airplanes, automobiles and spacecraft. Aluminum performs very well in high weight load applications.
I have been using the same cabinet manufacturer for the past few years. Why would I consider switching to Knurr?	One of the primary reasons users change brands is because a change in technology renders the current cabinet obsolete. The best example of that over the past few years is due either to the depth of the cabinet or the amount of airflow through the cabinet. Knurr offers cabinets in standard depths of 40" and 44", both with doors that offer 83% open area – the highest in the industry. Couple that with the ease of working with the Knurr cabinet and a move to Knurr is logical.
What is unique about Knurr and the Miracel cabinet?	Besides the lightweight, but strong aluminum frame, Knurr offers the T Slot channel in the frame. This T Slot, with a spring nut, allows for components to be mounted virtually anywhere in the cabinet. The same T Slot also allows for the easy mounting of tool-less cable management accessories.

Competitive Comparison

Knurr Miracel	APC SX	Hewlett Packard	Rittal	The Knurr Advantage
Patented aluminum extruded frame that is 50 lbs lighter than corresponding steel cabinet	Traditional folded sheet steel design	Roll form sheet steel frame	Roll form sheet steel frame	Lighter weight frame makes it easier for one technician to install cabinets.
Patented channel allows for a spring nut to be installed virtually anywhere in the cabinet frame	Holes at 1" centers	Repeating holes on 25mm centers	Repeating holes on 25mm centers	The ability to have a spring nut installed virtually anywhere in frame channel allows for the greatest flexibility in mounting components. Also, the channel allows for the use of tool-less cable management accessories.
Wide accessory line, offering hundreds of accessory items	Less than 25 cabinet accessory items	Less than 25 cabinet accessory items	Wide accessory line, offering hundreds of accessory items	Wide range of standard accessory items allows for "customization" using standard accessory items.
Full line of structured cable accessories, including tool-less cable management items	Metal D rings	Metal D rings	Wide cable management accessory line	Full line of cable management items make it easy to effectively route cables in cabinet. Tool-less items make the installation very user-friendly.
83% open perforated area	65% open area	78% open area	65% open area	The more open area a door provides means a much greater airflow through the cabinet, reducing the buildup of heat.

Knurr Miracel® Server Rack

Specifications

ENCLOSURE DIMENSIONS

	Overall Frame Dimensions		Rack					
42U	**Width**	**Depth**	**Internal Rack Width**	**IT Component Width**	**Adjustable Rack Depth**	**Internal Rack Height**		**Side Panel**
Model	**In. (mm)**	**In. (mm)**	**In. (mm)**	**In. (mm)**	**Max In.(mm)**	**RACK UNITS**	**In. (mm)**	
010200012	23.6 (600)	39.3 (1000)	21.1 (535)	17.8 (450)	36.8 (935)	42	73.5 (1867)	No
010200013	23.6 (600)	39.3 (1000)	21.1 (535)	17.8 (450)	36.8 (935)	42	73.5 (1867)	Yes
002185450	23.6 (600)	43.3 (1100)	21.1 (535)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	No
002185460	23.6 (600)	43.3 (1100)	21.1 (535)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	Yes
002185250	23.6 (600)	43.3 (1100)	21.1 (535)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	No
002185260	23.6 (600)	43.3 (1100)	21.1 (535)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	Yes
002185410	23.6 (600)	47.2 (1200)	21.1 (535)	17.8 (450)	44.7 (1135)	42	73.5 (1867)	No
002185420	23.6 (600)	47.2 (1200)	21.1 (535)	17.8 (450)	44.7 (1135)	42	73.5 (1867)	Yes
010200016	31.5 (800)	43.3 (1100)	28.9 (735)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	No
010200017	31.5 (800)	43.3 (1100)	28.9 (735)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	Yes
002185270	31.5 (800)	43.3 (1100)	28.9 (735)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	No
002185280	31.5 (800)	43.3 (1100)	28.9 (735)	17.8 (450)	40.7 (1035)	42	73.5 (1867)	Yes
010200008	31.5 (800)	47.2 (1200)	28.9 (735)	17.8 (450)	44.7 (1135)	42	73.5 (1867)	No
010200009	31.5 (800)	47.2 (1200)	28.9 (735)	17.8 (450)	44.7 (1135)	42	73.5 (1867)	Yes

ENCLOSURE DIMENSIONS

	Overall Frame Dimensions		Rack					
47U	**Width**	**Depth**	**Internal Rack Width**	**IT Component Width**	**Adjustable Rack Depth**	**Internal Rack Height**		**Side Panel**
Model	**In. (mm)**	**In. (mm)**	**In. (mm)**	**In. (mm)**	**Max In.(mm)**	**RACK UNITS**	**In. (mm)**	
010200014	23.6 (600)	39.3 (1000)	21.1 (535)	17.8 (450)	36.8 (935)	47	82.25 (2089.2)	No
010200015	23.6 (600)	39.3 (1000)	21.1 (535)	17.8 (450)	36.8 (935)	47	82.25 (2089.2)	Yes
002185470	23.6 (600)	43.3 (1100)	21.1 (535)	17.8 (450)	40.7 (1035)	47	82.25 (2089.2)	No
002185480	23.6 (600)	43.3 (1100)	21.1 (535)	17.8 (450)	40.7 (1035)	47	82.25 (2089.2)	Yes
010200006	23.6 (600)	47.2 (1200)	21.1 (535)	17.8 (450)	44.7 (1135)	47	82.25 (2089.2)	No
010200007	23.6 (600)	47.2 (1200)	21.1 (535)	17.8 (450)	44.7 (1135)	47	82.25 (2089.2)	Yes
010200018	31.5 (800)	43.3 (1100)	28.9 (735)	17.8 (450)	40.7 (1035)	47	82.25 (2089.2)	No
010200019	31.5 (800)	43.3 (1100)	28.9 (735)	17.8 (450)	40.7 (1035)	47	82.25 (2089.2)	Yes
010200010	31.5 (800)	47.2 (1200)	28.9 (735)	17.8 (450)	44.7 (1135)	47	82.25 (2089.2)	No
010200011	31.5 (800)	47.2 (1200)	28.9 (735)	17.8 (450)	44.7 (1135)	47	82.25 (2089.2)	Yes

Knurr Miracel Related Products

Liebert OpenComms EM and Liebert OpenComms vEM-14 Controllers
Liebert OpenComms EM controllers are network-enabled devices for monitoring temperature, humidity and contact closures inside critical environments, including racks and small computer rooms.

Liebert PowerSure PSI
The most price competitive UPS in its class with a factory-installed Liebert IntelliSlot Web Card for network communications. Available in 1000, 1440, 1920, 2200 and 3000 VA ratings.

Liebert GXT
A fault-tolerant, network-enabled UPS capable of delivering data center quality power protection to racks and small rooms. Available in 500, 700, 1000, 1500, 2000, 3000, 6000, and 10,000 VA.

Liebert MicroPOD™
Maintenance bypass switch that permits scheduled maintenance or UPS replacement without discontinuing power to critical equipment.

Liebert Nform
A simple to use monitoring and communications software solution that allows network monitoring of power and cooling equipment.

Liebert MultiLink™ Shutdown Software
Monitors UPS battery status, warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

Liebert MP Advanced Power Strips
“Smart” power strips allow customers to monitor and control equipment at the receptacle level.

Knurr Miracel® Side Panel

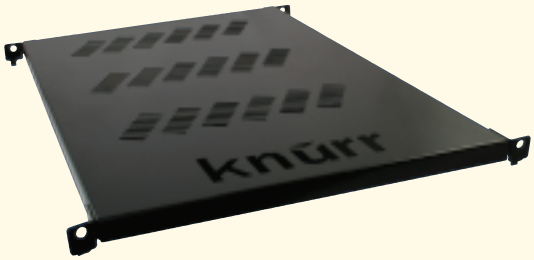
- **Material:** Sheet steel, 1.0 mm
- **Finish/Color:** Powder-coated texture, black
- **Supply Schedule:** 1 side panel & mounting material
- **Supplied:** Flat packed kit

Depth In. (mm)	Height In. (mm)	HU/U	Order Number	Up
39.37" (1000)	78.74" (2000)	42	01.020.002.2	1 unit
39.37" (1000)	86.61" (2200)	47	01.020.002.4	1 unit

Knurr 19" Tool-less Shelf

With perforation to optimize airflow

- **Material/Finish:** Sheet steel, Powder-coated texture
- **Color:** Black
- **Load Rating:** 150 lbs static per item
- **Supply Schedule:** 1 complete shelf
- **Supplied:** Flat box, fully assembled

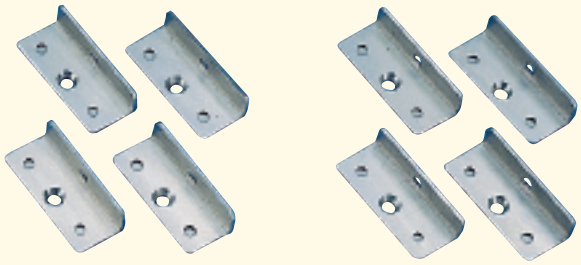


W	D In. (mm)	W In. (mm)	L In. (mm)	for rack type	Order Number	Up
19"	23.75" (603)	17.25" (438)	23.75" (603)	all EIA racks with square	00.218.500.0	1 unit

Knurr Miracel® Baying Kit

For mechanical, stable connection of rack and cabinet units.

- **Material/Finish:** Sheet steel, 0.08" (2 mm), zinc passivated
- **Supply Schedule:** 8 mounting brackets (for connecting 2 racks/cabinets), mounting material
- **Supplied:** Flat packed kit



Order Number	Up
01.130.935.7	1 unit

Knurr Miracel® Casters

Can be mounted on the threaded eyelet of the basic rack.

- **Caster Diameter:** 2.95” (75 mm)
- **Threaded Bolt:** M12
- **Loaded Capacity Per Caster:** 220 lbs
- **Supply Schedule:** 2 Casters swivel locking, 2 Casters swivel non locking, 4 Casters brackets
- **Supplied:** Flat packed kit

Height In. (mm)	Order Number	Up
4.31” (109.5)	01.350.615.9	1 unit

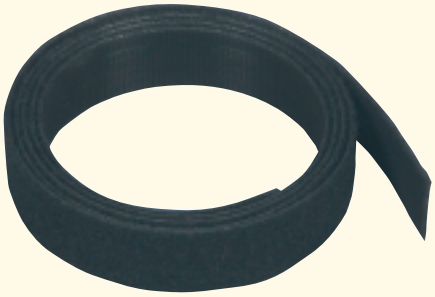
Cable Management — Lobster Claw

Easy to install cable management piece that holds bundles of cable for efficient routing in the cabinet. The Lobster Claw installs, without the need for any tools, in less than one second, making installation the easiest in the industry. For custom cable routing, the Lobster Claw can be mounted in the T-Slot in every face of the frame extrusion.

Dimensions	Order Number	Up
4.75” x 3”	002185050	Pack of 10

Cable Management — Velcro Loop

For stress-free mounting and bundling of copper and fiber-optic cables. Can be cut to any length required.

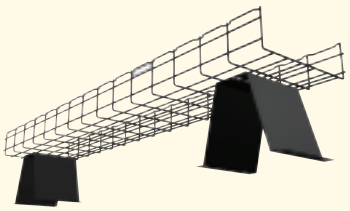


- **Material/Color:**
  Black: One Wrap Fastener, F.R.T., UL 94-V2
- **Supply Schedule:** 1 meter or 25 meter Velcro strip
- **Supplied:** Meter Strips

Order Number	
050400609	

Cable Management — Laddering

Today’s racks hold more critical equipment than ever before. Inadequate cable management can block critical airflow or access. Knurr wire basket provides proper cable management for power or data cables within the rack.



Dimensions	Order Number	
5’ section x 12”	002185230	

Liebert MCR Mini Computer Room

Liebert Foundation MCR is featured in this Scenario: Scenario B 1-2 Racks Single Phase page 10

The Liebert Foundation MCR is a self-contained rack enclosure system that includes a load-sized, precision cooling unit located at the bottom of the enclosure, with the option of a top mount design, supplying cool air to sensitive equipment on all levels. A back-up cooling system ensures environmental security. Power can be supplied and protected through an optional Liebert GXT online UPS or Liebert PowerSure PSI line interactive UPS.

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Designed as a plug-and-play system ready to install. ▪ Wheel-mounted cabinet for easy relocation. ▪ Adjustable racks and rack rails support a wide variety of equipment. ▪ Optional top mounted precision cooling allows maximum use of internal rack space or can be used to double cooling capacity with the internal precision cooling unit.	▪ Cools IT equipment to eliminate downtime from overheating. ▪ Lockable door protects against unauthorized access. ▪ Specially designed door gasket and sealed cable entrance ensure stable cooling environment. ▪ Back-up cooling assures continued cooling in the event of a power loss. ▪ Improved cable access and management improves airflow to reduce overheating of protected IT equipment.	▪ Competitively priced as an integrated system, compared to purchasing separate components. ▪ Simplified plug-and-play installation reduces overall implementation time, reducing costs. ▪ Optional energy saver control saves money by allowing back-up cooling to operate as primary enclosure cooler. ▪ Integrated precision cooling reduces potential downtime costs by assuring proper system operation.

Frequently Asked Questions

Question	Resolution
Can't I just buy a cabinet and put in an air conditioner?	The Liebert Foundation MCR provides a complete solution. There is no need to purchase and install separate add-on components. The Liebert Foundation MCR is a self-contained system ready to go right from the start with components that are specifically designed to work together.
What if we decide to move our offices?	The Liebert Foundation MCR is mounted on wheels so it is easy to install and relocate. Just position the unit and hook it up for installation. It's just as easy to relocate as needs or room layouts change.
What if we don't have a special room for our computer system?	The Liebert Foundation MCR accommodates spaces not designed for cooling. It fits through standard-sized doorways and is air-cooled so it can operate without access to chilled water.
Isn't it going to get really hot inside that cabinet?	The Liebert Foundation MCR includes computer-grade high availability precision cooling plus a backup cooling module that removes heat in the event of a power outage.

Competitive Comparison

Feature	Liebert Foundation MCR	APC High-Density Cooling Enclosure (HDCE)	Rittal LCP	Sanmina Ecobay	The Liebert Advantage
Complete, self-contained unit	Includes rack, cooling, monitoring and control.	Includes rack, coil fan only, no active cooling (i.e. compressor is outside the rack).	Includes rack, coil fan only, no active cooling (i.e. compressor is outside the rack).	Includes rack, coil fan only, no active cooling (i.e. compressor is outside the rack).	The self-contained Liebert unit provides plug-and-play installation with no on-site assembly or mechanical connections required.
Cooling method	Self-contained air cooled.	Chilled water cooling.	Chilled water cooling.	Chilled water cooling.	The self-contained cooling system does not introduce water piping into the room or in the rack with equipment. Features low-noise operation, suitable for use in occupied spaces.
Backup ventilation capability	Backup cooling module provides cooling during a loss of utility power or high internal temperature conditions.	No backup ventilation.	No backup ventilation.	Spring-loaded door opens for backup ventilation.	Backup cooling module of the Liebert Foundation MCR ensures cooling in emergency conditions for higher availability without the use of spring-loaded doors that require additional space clearances and may conflict with safety codes or practices.
Fits through standard sized doorways	23.5" W x 37.5" D x 77" H	39" W x 48" D x 90" H	36" W x 40" D x 80" H	26" W x 46" D x 86" H	Liebert Foundation MCR is designed to fit through standard-sized doorways.
Fan location	Located at the bottom.	Side of cabinet.	Side of cabinet.	In rear door of cabinet.	Liebert Foundation MCR provides its air circulation/cooling function even when the rear door is open for service access.
Airflow type	Rear of unit.	Side of unit.	Side of unit.	Located in rear door.	The air flow pattern in the Liebert Foundation MCR provides a more uniform air circulation throughout the cabinet to prevent hot spots within the enclosure.

Specifications

ENCLOSURE DIMENSIONS

Model	Overall Frame Dimensions			Rack		Adjustable Rack Depth		Internal Rack Height	
	Height*	Width**	Depth***	Width	Available Width	B****			
	In. (mm)			In. (mm)	In. (mm)	Max In.(mm)	Min In.(mm)	RACK U	In. (mm)
HD_780	77 (1956)	23.5 (597)	30 (762)	19 (483)	17.8 (450)	22.5 (571.5)	18.5 (470)	42	73.5 (1867)
HD_788	77 (1956)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	42	73.5 (1867)
RD_780	77 (1956)	27.5 (699)	30 (762)	23 (584)	22.8 (580)	22.5 (571.5)	18.5 (470)	42	73.5 (1867)
RD_788	77 (1956)	27.5 (699)	38 (965)	23 (584)	22.8 (580)	30.5 (775)	26.5 (673)	42	73.5 (1867)

* Casters add 1.5" to overall height of frame = 2000mm.
** Side panels add 0.75" each to overall width of frame.
*** Doors add 0.1" each to overall depth of frame, BCM option adds an additional 3.00" to overall depth of frame.
**** Max dimension is for ex-factory configuration. Rails can be inverted to provide an additional 4.00" of adjustment.
***** EX Expansion system option available in 3 sizes, increases front and/or rear depth (nominal / actual): 2" / 2"; 4" / 3.85"; 6" / 5.5."

ECM (Environmental Cooling Module) PERFORMANCE DATA

	Rated Capacity	Supported Load		Height	Width	Depth	Total Heat Rej.	Input Power (1PH)						Sound
Model Number	BTUH (Watts)	BTUH (Watts)	Max Ambient	In (mm) - U	In (mm)	In (mm)	BTUH (Watts)	Volts	Hertz	FLA	WSA	OPD	Plug	Lpa (1.5 m)
ECM1000L*-C60	5315 (1557)	2811 (824)	105°F / 41°C	12.25 (311)-7	17.43 (443)	29 (737)	7146 (2094)	120	60	7.3	8.6	15	NEMA 5-15P	52
ECM2000L*-C60	6897 (2021)	5621 (1647)	105°F / 41°C	12.25 (311)-7	17.43 (443)	29 (737)	10935 (3204)	120	60	9.8	11.7	15	NEMA5-15P	52

"* T (top mount) and R (rack mount). Top mount weight does not include interface plenum. The interface plenum for a 19"" rack x 30 "" deep cabinet is 38 lbs."
Sound data based on sound pressure A- weighted scale for free field spherical radiation at 1.5 meters from cabinet.
Sound data reflects only rack mount design. Consult factory for top mount data.

BCM (Back-Up Cooling Module) PERFORMANCE DATA

	Rated Capacity	Supported Load		Height	Width	Depth	Weight	Total Heat Rej.	Input Power (1PH)					Sound
Model Number	BTUH (Watts)	BTUH (Watts)	Max Ambient	In (mm) - U	In (mm)	In (mm)	lbs (kg)	BTUH (Watts)	Volts	Hertz	FLA	WSA	OPD	Lpa (1.5 m)
BCM 1000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	3038 (890)	120	60	1.0	1.3	15	57
BCM 2000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	3038 (890)	120	60	2.0	2.5	15	59

Above BCM weight includes rear door weight of 17 Lbs.
Sound data based on sound pressure A- weighted scale for free field spherical radiation at 1.5 meters from cabinet.

Liebert MCR Mini Computer Room Related Products

Liebert OpenComms EM and Liebert OpenComms vEM-14 Controllers
Liebert OpenComms EM controllers are network-enabled devices for monitoring temperature, humidity and contact closures inside critical environments, including racks and small computer rooms.

Liebert PowerSure PSI
The most price competitive UPS in its class with a factory-installed Liebert IntelliSlot web card for network communications. Available in 1000, 1440, 1920, 2200 and 3000 VA ratings.

Liebert GXT
A fault-tolerant, network-enabled UPS capable of delivering data center quality power protection to racks and small rooms. Available in 500, 700, 1000, 1500, 2000, 3000, 6000, and 10,000 VA.

Liebert MicroPOD™
Maintenance bypass switch that permits scheduled maintenance or UPS replacement without discontinuing power to critical equipment.

Liebert Nform
A simple to use monitoring and communications software solution that combines network monitoring of power and cooling equipment.

Liebert MultiLink™ Shutdown Software
Monitors UPS battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

Liebert MP Advanced Power Strips
“Smart” power strips allowing customers to monitor and control equipment at the receptacle level.

Liebert XDF

Liebert XDF is featured in this Scenario: Scenario B 1-2 Racks Single Phase page 10

Liebert XDF is a secured enclosure with integrated high heat density cooling, providing the benefits of big room support in a cost-effective package. Optimized horizontal air circulation cools the protected equipment, both in standard mode and in the backup ventilation mode

Frequently Asked Questions

Question	Resolution
What makes the Liebert XDF the right choice?	▪ Innovative Design - The Liebert XDF includes advanced features not found in competing systems, including Digital Scroll cooling technology, adaptive controls, the broadest selection of heat rejection methods – air, water, glycol. ▪ A Total Solution - Because the Liebert XDF is designed as an integrated system, it has more flexibility for installation and reconfiguration than a traditional ceiling mounted cooling system with the associated rack and ductwork. ▪ Sized Right — Liebert XDF capacity of 14.4 kW is sufficient for most rack equipment being deployed.
What are some of the best places to consider using the Liebert XDF?	▪ Network closets with high-density servers and switches. ▪ Small data centers with high-density server deployments, including IDFs and MDFs. ▪ Wiring closets housing VoIP systems and other sensitive equipment. ▪ Telecom shelters. ▪ Manufacturing facilities with remote mission-critical IT equipment. ▪ Warehouses with RFID installations
How difficult is installation?	▪ Eliminates high heat up to 14kW per rack. ▪ Includes emergency ventilation in the event of an unplanned shutdown. ▪ Lower energy costs through the use of a Digital Scroll compressor for continual and precise adjustments in cooling. ▪ Multiple coolant options - air, water or glycol-cooled units use remote heat rejection to support the in-rack cooling system and protect up to 42U of equipment. Air-cooled systems have 36U of space. ▪ Network control and monitoring. ▪ Easily adaptable, plug-and-play installation. Self-contained. ▪ Air-cooled model requires only an AC power connection.

Liebert XDF Features & Benefits

Feature:	Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
■ Standard integrated unit includes rack with extreme density cooling system with built-in monitoring and control	■ All integrated cooling, power, monitoring and other accessories are designed for optimum compatibility and factory tested to ensure operational integrity upon installation.	■ Integrated unit is plug-and-play and requires no on-site assembly.	■ Standard features reduce installation and maintenance costs, and increase uptime.
■ Digital Scroll compressor	■ Allows for continual and precise adjustments in cooling to optimize environmental control and reduce threats to the integrity of network equipment.	■ Responds automatically to fluctuations in heat output from rack equipment.	■ More cost-effective than traditional cooling systems, with lower energy consumption and less wear and tear.
■ Automatic “back up” ventilation	■ Uses room air for emergencies to provide greater ride-through with greater cooling capacity.	■ Can be installed without power backup for cooling.	■ Increased availability eliminates costly downtime.
■ Comes with casters	■ N/A	■ Can be easily moved for initial installation.	■ Lower installation and maintenance costs.
■ Standard height and depth	■ N/A	■ 35" width and 82" height allow the unit to fit through standard-sized doorways.	■ Standard size eliminates the need for special installation work.
■ Intelligent controls	■ Liebert iCOM control system ensures system maintenance and wellness by monitoring the cooling system and environmental conditions.	■ iCOM can be monitored locally and via remote access.	■ The ability to anticipate and detect system status helps to ensure uptime and reduce the cost of system administration.
■ Horizontal air circulation	■ Provides uniform airflow throughout the cabinet to ensure better cooling for all equipment within the rack.	■ Enables servers to be installed anywhere within the rack and still receive uniform cooling.	■ Reduces operating costs through increased uptime and less likelihood of equipment damage.
■ Optional integrated power distribution	■ Liebert Managed Power Advanced Power Strips are also available as an installed option for improved equipment power control.	■ Provides the ability to monitor and control power at the receptacle level.	■ More efficient control of equipment saves energy costs and increases system uptime.
■ Built-in monitoring capability	■ Greater visibility and control of systems and conditions within the enclosure ensure rapid notifications of potential problems affecting availability.	■ Options are available for connecting to Liebert remote monitoring devices or for standard Building Management System interfaces via MODbus or SNMP.	■ Reduces the risk and associated costs of unplanned downtime.
■ Optional UPS system	■ An optional Liebert GXT rack-mounted UPS features online power protection, remote monitoring, an external maintenance bypass and extended battery runtimes.	■ Offers compact, high availability power protection within the enclosure itself.	■ Ensures continuous system availability; reduces downtime and associated costs.
■ Multiple cooling options	■ N/A	■ Choose between air-cooled (integrated condenser or remote condenser) or water/glycol-cooled systems to accommodate existing infrastructure conditions.	■ Ensures lower installation costs compared to systems offering just one type of cooling.
■ Two power cords	■ Allows for separate power (with low-amp draw) to backup fans and controls in the event of an outage to the primary cooling system.	■ N/A	■ Greater uptime due to backup power availability, and lower installation costs as a result of flexible plug-and-play implementation.

Competitive Comparison

Feature	Liebert XDF	Liebert Advantages
Complete, self- contained unit	Includes rack, cooling, monitoring and control.	The self-contained Liebert unit provides plug-and-play installation with no on-site assembly or mechanical connections required.
Cooling method	Three options: 1. Self-contained air cooled 2. Air cooled with remote condenser. 3. Water/ glycol-cooled.	Multiple options on the Liebert XDF provide greater installation flexibility and lower cost of ownership by allowing customers to accommodate existing infrastructure conditions. The self- contained and remote air-cooled condenser versions do not introduce water piping into the room or in the rack with equipment..
Backup ventilation capability	Has emergency ventilation in case of unplanned shutdown, as effective as the primary cooling system.	Backup ventilation of the Liebert XDF supports greater ride-through for higher availability without the use of spring-loaded doors that require additional space clearances and may conflict with safety codes or practices. Liebert XDF is designed to fit through standard-sized doorways.
Fits through standard-sized doorways	35" W x 48" D x 82" H	Liebert XDF is designed to fit through standard-sized doorways.
Fan location	Side of cabinet.	Liebert XDF provides its air circulation/cooling function even when the rear door is open for service access.
Airflow type	Side of unit	The horizontal airflow pattern in the Liebert XDF provides a more uniform airflow throughout the cabinet.
Nominal cooling capacity	14.4 kW	The Liebert XDF capacity is sufficient for most rack equipment being deployed.

Specifications

Liebert XDF	XDFS141 Air Cooled, Self Contained	XDFW141 Water/Glycol Cooled
Height, In. (mm)		
Overall	82-1/4 (2089)	80-3/4 (2051)
Cabinet Only	79-3/4 (2026)	79-3/4 (2026)
Fan Guard	2-1/2 (57)	N/A
Equipment Rack Area	36U	42U
Width, In. (mm)		
Overall	34-1/8 (867)	
EIA Nominal	19 (483)	
Inside Dimension	17-13/16 (452)	
Depth, In. (mm)		
Overall	49-1/2 (1257)	
Mounting Depth, adjustable, minimum	49-1/2 (1257)	
Mounting Depth, adjustable, maximum	32-11/32 (821)	
Weight, Lb (kg)		
Cabinet Only	710 (322)	668 (303)
Equipment Capacity	1200 (544)	

Electrical Data	XDFS141 Air Cooled, Self Contained	XDFW141 Water/Glycol Cooled
Control & Fan Supply		
Voltage	120	120
Ph	1	1
Hz	60	60
Unit FLA	8.3	5.0
Max Fuse or Circuit Breaker Amps	15	15
Min. Supply Circuit Ampacity	9.2	5.2
Receptacle required	NEMA 5-15R	NEMA 5-15R
Compressor Supply		
Voltage	208	208
Ph	3	3
Hz	60	60
Unit FLA	15.7	15.7
Max Fuse or Circuit Breaker Amps	35	35
Min. Supply Circuit Ampacity	19.6	19.6
Receptacle required	NEMA L21-30R	NEMA L21-30R
Condensate Pump Amps (Optional)	0.72	0.72

Total Heat Rejection	
Rating Point, Ambient °F (°C)	95 (35)
Supply Air Temperature, °F (°C)	77 (25)
Load, kW	14.1
Total Heat Rejection, kW	20

Liebert PowerSure PSI UPS

Liebert PowerSure PSI is featured in this Scenario: Scenario A 1-2 Racks Single Phase page 8

Liebert PowerSure PSI UPS offers an unbeatable combination of features and value in only 2U of rack space. The unit is rack/tower configurable, and has options for extended battery time and communication/shutdown. The PowerSure PSI is also available with factory installed Web/SNMP Card in the PowerSure PSI "w" models.

The Liebert PowerSure PSI is a 2U-size line-interactive UPS available in 1000, 1440, 1920, 2200 and 3000 VA ratings, in 120V and 230V models.

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Easier to configure for extended runtimes — the same 2U rack model can operate stand-alone or in an extended runtime application. ▪ Configurable Input Voltage Window: Allows the UPS to be properly matched to the incoming utility power and adjusts its input window and transfer points to supply precisely regulated power to its connected loads within the selected range. ▪ Easiest system management — options available for Web Based, SNMP, or RS232 monitoring and control software for remote management. ▪ Delivered fully assembled and ready for installation, the unit includes fixed rack rails and tower stand.	▪ Extended battery runtime — batteries can be added to the existing UPS and are user-replaceable. ▪ Wide input voltage window means it transfers to battery less often, saving battery wear and tear. ▪ Advanced early warning of UPS status via automatic and manual battery test feature. ▪ Batteries fully charged at the factory and tested for safe transport — Certified to International Safe Transit Association standards. ▪ Remote emergency power off.	▪ Most price competitive product in its class with a factory-installed Liebert IntelliSlot Web Card for enhanced UPS communications and control. ▪ Reduced installation time and costs — UPS is shipped with batteries connected and charged. ▪ Two-year, no-hassle replacement warranty with paid shipping both ways.

Frequently Asked Questions

Question	Resolution
Why don't your units come out best in our specification for this product?	Make sure the specification is an apples-to-apples comparison. If it is, the sale may be a long shot. If it's not, determine whether the specification is accidental or deliberate (that is, a specification written to allow only one product to survive a competitive process). Offer to prepare a true apples-to-apples comparison to include the level of power protection required; maintenance, service and warranty considerations; and price.
I've been using APC SmartUPS line-interactive technology for years, so why use Liebert's PowerSure PSI systems now?	The Liebert PowerSure PSI offers significant advantages over the SmartUPS system and other line-interactive systems. Advantages include: ▪ Lower price when ordered network-enabled. ▪ Network enabled on delivery, with the Liebert IntelliSlot Web Card factory installed. ▪ Extended battery option on same unit, so you don't have to upgrade to another UPS to add battery cabinets as you do with the APC SmartUPS. ▪ Delivered fully assembled — batteries connected and activated at the factory. ▪ Two-year, no hassle replacement warranty, in which we replace the unit usually in 24 hours — and pay shipping both ways.
I can get my normal brand of UPS shipped very quickly. How quickly can Liebert deliver?	Liebert maintains a warehouse of products for quick distribution. Ingram Micro and Tech Data also stock many standard Liebert UPS products for next day shipment.

Competitive Comparison

The Liebert PowerSure PSI can be ordered network-enabled from the factory with the Liebert IntelliSlot Web Card installed for SNMP communications. This option makes the Liebert PowerSure PSI Network Solution Package the most competitively priced UPS on the market when compared to similar products. Plus, you can add extended battery backup without replacing the existing unit with a larger model. See the table below for other product differentiators:

Feature	Liebert PowerSure PSI Network Solution Package	APC SmartUPS	Powerware 5125	Tripplite Smart Pro
Network enabled on delivery.	**Yes**	Some Models	No	No
Extended battery option on same unit.	**Yes**	Some Models	**Yes**	**Yes**
Delivered fully assembled–batteries connected and activated at the factory.	**Yes**	No	**Yes**	**Yes**
Two-year, no hassle replacement warranty.	**Yes**	No	No	No
Four communications options.	**Yes**	**Yes**	**Yes**	**Yes**
Rack rails/tower stand as standard equipment.	**Yes**	**Yes**	**Yes**	**Yes**

Liebert PowerSure PSI Bundles

PowerSure PSI UPS	PS1000RT2-120	PS1440RT2-120	PS1920RT2-120	PS2200RT2-120	PS3000RT2-120
VA/ Watts	1000/750	1440/1080	1920/1500	2200/1650	3000/2250
UPS Battery	internal	internal	internal	internal	internal
External Battery Cabinet Batteries	PS2-48VBATT	PS2-48VBATT	PS2-72VBATT	PS2-72VBATT	PS2-72VBATT
Rack Mounting Hardware	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets
Web/SNMP Card	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD
MicroPOD	MP2-115A	MP2-115A	MP2-120C	N/A	MP2-130C

PowerSure PSI UPS	PS1000RT2-120W	PS1440RT2-120W	PS1920RT2-120W	PS2200RT2-120W	PS3000RT2-120 W
VA/Watts	1000/750	1440/1080	1920/1500	2200/1650	3000/2250
UPS Battery	internal	internal	internal	internal	internal
External Battery Cabinet Batteries	PS2-48VBATT	PS2-48VBATT	PS2-72VBATT	PS2-72VBATT	PS2-72VBATT
Rack Mounting Hardware	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets	Included with all UPSs and Battery Cabinets
Web/SNMP Card	Factory installed IS-WEBCARD Included w/UPS	Factory installed IS-WEBCARD Included w/UPS	Factory installed IS-WEBCARD Included w/UPS	Factory installed IS-WEDCARD Included w/UPS	Factory installed IS-WEBCARD Included w/UPS
MicroPOD	MP2-115A	MP2-115A	MP2-120C	N/A	MP2-130C

Specifications

Model Number	PS1000RT2-120	PS1440RT2-120	PS1920RT2-120	PS2200RT2-120	PS3000RT2-120
Model Number with Liebert IntelliSlot Web/SNMP Card Installed	PS1000RT2-120W	PS1440RT2-120W	PS1920RT2-120W	PS2200RT2-120W	PS3000RT2-120W
Power Rating, VA/W	1000VA/750W	1440VA/1080W	1920VA/1500W	2200VA/1650W	3000VA/2250W
Dimensions, W x D x H, in (mm)					
Unit	3.43 x 22 x 17 (87 x 557 x 430)	3.43 x 22 x 17 (87 x 557 x 430)	3.43 x 24.1 x 17 (87 x 612 x 430)	3.43 x 24.1 x 17 (87 x 612 x 430)	3.43 x 24.1 x 17 (87 x 612 x 430)
Weight, lbs (kg)					
Unit	61.7(28.0)	68.2(31.0)	77.0 (35.0)	77.0 (35.0)	81.6 (37.0)
Input AC Parameters					
Surge Protection	570J				
Voltage Range Without Battery Operation	78VAC - 150VAC, configurable				
Frequency Range	45 - 65 Hz (±0.1 Hz)				
Input Power Cord	10 ft. (3m) attached, w/NEMA 5-15 P	10 ft. (3m) attached, w/NEMA 5-15 P	10 ft. (3m), attached, NEMA 5-20 P	10 ft. (3m) attached, w/NEMA L5-30 P	10 ft. (3m) attached, w/NEMA L5-30 P
Output AC Parameters					
Output Receptacles	(8) NEMA 5-15 R	(8) NEMA 5-15 R	(6) NEMA 5-15 R 2) NEMA 5-20 R T-Slot, accepts 15APlug	(6) NEMA 5-15 R (2) NEMA 5-20 R T-Slot, accepts 15APlug	(4) NEMA 5-15 R (2) NEMA 5-20 R (1) NEMA L5-30 R T-Slot, accepts 15APlug
Voltage (Normal mode)	110 / 120 / 127 VAC (configurable) ±10%				
Voltage (Battery Mode)	110 / 120 / 127 VAC (configurable); ±5% before low battery warning; ±8% after low battery warning				
Transfer Time	4-6 ms typical				
Waveform	Sinewave				
Frequency (Normal Mode)	45 - 65 Hz (±0.1 Hz)				
Frequency (Battery Mode)	50 or 60 Hz (±5%); auto sensing				
Battery Parameters					
Load%	**PS1000RT2-120(W)**	**PS1440RT2-120(W)**	**PS1920RT2-120(W)**	**PS2200RT2-120(W)**	**PS3000RT2-120(W)**
Internal Battery Runtime					
20%	65 min.	45 min.	52 min.	47 min.	47 min.
40%	37 min.	24 min.	25 min.	23 min.	22 min.
60%	24 min.	14 min.	15 min.	13 min.	14 min.
80%	16 min.	9 min.	10 min.	8 min.	9 min.
100%	11 min.	5 min.	6 min.	5 min.	6 min.
Recharge Time	4 hours to 90% of rated capacity, after full discharge into resistive load				
External Battery Cabinet Model Number	PS2-48VBATT	PS2-48VBATT	PS2-72VBATT	PS2-72VBATT	PS2-72VBATT
Internal Battery Runtime + 1 External Battery Cabinet					
50%	119 min.	72 min.	105 min.	99 min.	67 min.
100%	46 min.	30 min.	43 min.	40 min.	29 min.
Internal Battery Runtime + 2 External Battery Cabinets					
50%	209 min.	133 min.	163 min.	150 min.	129 min.
100%	98 min.	56 min.	89 min.	77 min.	52 min.
Internal Battery Runtime + 3 External Battery Cabinets					
50%	274 min.	209 min.	237 min.	222 min.	168 min.
100%	136 min.	95 min.	128 min.	120 min.	88 min.
Internal Battery Runtime + 4 External Battery Cabinets					
50%	305 min.	257 min.	281 min.	274 min.	222 min.
100%	188 min.	125 min.	150 min.	144 min.	118 min.
Environmental					
Operating Temperature	+32°F to + 104°F (0°C to + 40°C)				
Storage Temperature	+5°F to + 104°F (-15°C to + 40°C)				
Relative Humidity	0% to 95%, non-condensing				
Operating Altitude	Up to 10,000 ft. (3000m) at 95°F (35°C) without derating				
Audible Noise	<40 dBA, internal fan(s) off <50 dBA, internal fan(s) on		<40 dBA, internal fan(s) off <60 dBA, internal fan(s) on		
Agency					
Safety	UL 1778, c-UL Listed				
Surge Immunity	IEEE 587, Category A				
Emissions (RFI/EMI)	FCC Part 15, Class B		FCC Part 15, Class A		
Transportation	ISTA Procedure 1A Certification				

Liebert PowerSure PSI Related Products

Mounting Kits
Rack slide kits, wall mount bracket kits and telecom/relay rack shelves are available for use with the Liebert PowerSure PSI.

Liebert MicroPOD™
Maintenance bypass switch that permits scheduled maintenance or UPS replacement without discontinuing power to critical equipment.

Liebert IntelliSlot Web Card
Delivers SNMP and web-management communications capability to a Liebert PowerSure PSI unit.

Liebert Nform
A simple to use monitoring and communications softwaresolution that combines network monitoring of power and cooling equipment.

Liebert MultiLink Shutdown Software
Monitors battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

Extended Warranties
One-year and three-year warranty extensions are available at the time of the UPS sale to cost-effectively extend the life of the UPS.

5-Year Power Assurance Package
For UPSs 1000VA and larger, includes 5-year warranty, on-site service, and equipment disposal. For UPSs 6kVA and larger, also includes startup and preventive maintenance.

Liebert GXT UPS

Liebert GXT is featured in these Scenarios:
Scenario B 1-2 Racks Single Phase page 10
Scenario C 3-6 Racks Single Phase page 12

Liebert GXT UPS leads the industry in combining the best total cost of ownership with small size, high capacity and function-rich features. This true online UPS offers internal batteries, unlimited extended external batteries, and internal bypass capability, resulting in continuous uptime for the connected equipment.

Designed for rack-mount or tower modes, the Liebert GXT is available in 500, 700, 1,000, 1,500, 2,000, 3,000, 6,000, and 10,000 VA ratings, in both 120V and 230V models.

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Unit can be installed in either rack or tower configuration. ▪ The Liebert GXT automatically detects and matches line input frequencies of either 60 or 50 Hz. ▪ Compatible with backup generator — handles frequency variations and other power fluctuations that occur during generator operation. ▪ Configuration program allows selection of UPS features including output voltage, auto-restart enable/disable, and other features.	▪ Protection and conditioning against all forms of power anomalies. ▪ Internal automatic and manual bypass assure continuity of power to critical loads during system maintenance or in case of internal fault. ▪ Wide input voltage window allows the UPS to support the critical load without having to transfer to battery, extending system availability for when battery backup is truly needed. ▪ User-replaceable hot-swappable internal batteries. ▪ Advanced early warning of UPS status via automatic and manual battery test feature.	▪ Corrects for frequency variations without switching to battery, resulting in longer battery life. ▪ Two-year, no-hassle replacement warranty with paid shipping both ways.

Frequently Asked Questions

Question	Resolution
Why should I consider using online, double-conversion UPS technology?	While line interactive UPS technology is appropriate for many situations, there may be times when you need greater power capacity or higher levels of availability offered by online double-conversion technology. With zero transfer time when switching to battery, online technology's clean power (through 100% power conditioning) causes less stress on power supplies, creating the highest level of equipment protection. Over time, the online, double-conversion Liebert GXT also offers an attractive total cost of ownership. Because an online system corrects for frequency variations without switching to battery, it can greatly extend the lifetime of the UPS battery.
Is the Liebert GXT compatible with a backup generator?	Generators do not provide computer grade AC power required by today's sensitive electronics. A true online UPS such as the Liebert GXT will work with a generator and provide tight voltage and frequency regulation. The UPS will bridge the gap between loss of AC power and the time it takes your generator to come up to speed and your loads to be switched to generator power — can your business-critical applications be without power for even a few minutes?
How fast can I get a Liebert GXT shipped to my customer?	Liebert maintains a warehouse of products for quick distribution. Ingram Micro and Tech Data also stock many standard Liebert UPS products for next day shipment.

Competitive Comparison

The Liebert GXT offers a number of advantages over the competition, which you can use to generate new high-margin sales.

Feature	Liebert GXT	APC SmartUPS-RT	Powerware 9125	Tripplite Smart Online
Capacity range down to 500VA.	**Yes**	No	No	No
Widest input frequency window (40-70Hz).	**Yes**	No	No	No
Delivered fully assembled — batteries connected and activated at the factory.	**Yes**	No	No	**Yes**
Standard rack ears and tower pedestal.	**Yes**	No	No	**Yes**
Two-year, no hassle replacement warranty.	**Yes**	No	No	No

Liebert GXT Product Ancillary Guide

Liebert GXT UPS	GXT2-500RT120	GXT2-700RT120	GXT2-1000RT120	GXT2-1500RT120	GXT2-2000RT120
VA/Watts	500/350W	700/490W	1000/700W	1500/1050W	2000/1400W
UPS Battery Kit	internal	internal	internal	internal	internal
External Battery Cabinet	GXT2-48VBATT	GXT2-48VBATT	GXT2-48VBATT	GXT2-48VBATT	GXT2-48VBATT
4-Post Rack Mounting Kit	RMKIT18-32	RMKIT18-32	RMKIT18-32	RMKIT18-32	RMKIT18-32
Web/SNMP Card	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD
MicroPOD	MP2-115A	MP2-115A	MP2-115A	MP2-115A	MP2-120C

Liebert GXT UPS	GXT2-3000RT120	GXT2-2700RT208	GXT2-6000RTL630	GXT2-6000RT208	GXT2-10000RT208
VA/Watts	3000/2100W	2700/890W	6000/4200W	6000/4200W	10000/8000W
UPS Battery	internal	internal	GXT2-240BATKIT [1] √	GXT2-144BATKIT [1] √	GXT2-288RTBKIT [2] √
External Battery Cabinet	GXT2-72VBATT	GXT2-72VBATT	GXT2-240VBATTUL	GXT2-144VBATT	GXT2-288RTVBATT
4-Post Rack Mounting Kit	RMKIT18-32	RMKIT18-32	RMKIT18-32	RMKIT18-32	RMKIT18-32
Web/SNMP Card	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD
MicroPOD	MP2-130C	MP2-220N	PD-L630 √	PD-002	PD-101

√ Required UPS Components

Specifications

Model Number	GXT2-500RT120	GXT2-700RT120	GXT2-1000RT120	GXT2-1500RT120
Model Rating VA/W	500VA/350W	700VA/ 490W	1000VA / 700W	1500VA / 1050W
Dimensions: in (mm) W x D x H	3.5 x 21.5 x 17 in. (89 x 546 x 432 mm)	3.5 x 21.5 x 17 in. (89 x 546 x 432 mm)	3.5 x 21.5 x 17 in. (89 x 546 x 432 mm)	3.5 x 21.5 x 17 in. (89 x 546 x 432 mm)
Weight: lbs. (kg)	49 lbs. (22 kg)	49 lbs. (22 kg)	50 lbs. (23 kg)	51 lbs. (23 kg)
Input AC Parameters				
Voltage Range	120 VAC nominal, (60 to 140VAC Variable based upon output load)			
Frequency	40 - 70 Hz; Auto Sensing			
Input Power Cord	6 ft. attached, w/ NEMA 5-15 plug	6 ft. attached, w/ NEMA 5-15 plug	10 ft. attached, w/ NEMA 5-15 plug	10 ft. attached, w/ NEMA 5-15 plug
Output AC Parameters				
Output Receptacles	(6) NEMA 5-15R	(6) NEMA 5-15R	(6) NEMA 5-15R	(6) NEMA 5-15R
Voltage	100/110/115/120/127 (user configurable) VAC; ±3%			
Frequency	50 Hz or 60 Hz			
Waveform	Sinewave			
Typical Battery Backup Time				
Full Load	28 minutes	17 minutes	11 minutes	7 minutes
Half Load	66 minutes	44 minutes	25 minutes	20 minutes
Recharge Time	5 Hours to 95% capacity after full discharge into 100% load			
Agency				
Safety	UL 1778; c-UL Listed			
RFI/EMI	FCC Part 15, Subpart B, Class A			
Surge Immunity	IEEE 587 Category A & B			
Transportation	ISTA Procedure 1A			

Model Number	GXT2-2000RT120	GXT2-2700RT208	GXT2-3000RT120
Model Rating VA/W	2000VA / 1400W	2700VA/1890W	3000VA / 2100W
Dimensions: in (mm) W x D x H	3.5 x 21.5 x 17 in. (89 x 546 x 432 mm)	3.5 x 24.2 x 17 in. (89 x 615 x 432 mm)	3.5 x 24.2 x 17 in. (89 x 615 x 432 mm)
Weight: lbs. (kg)	54 lbs. (24kg)	75.2 (34.1)	69 lbs. (31kg)
Input AC Parameters			
Voltage Range	120 VAC nominal, (60 to 140VAC Variable based upon output load)	208 VAC nominal, (119 to 280VAC Variable based upon output load)	120 VAC nominal, (60 to 140VAC Variable based upon output load)
Frequency	40 - 70 Hz; Auto Sensing	40 - 70 Hz; Auto Sensing	40 - 70 Hz; Auto Sensing
Input Power Cord	10 ft. attached, w/ NEMA 5-20 plug	10 ft. attached w/ NEMA L6-20 plug 5-15 plug	10 ft. attached, w/ NEMA L5-30 plug
Output AC Parameters			
Output Receptacles	(6) 5-20 T-Slot receptacles	(2) NEMA L6-15R (1) NEMA L6-20R	(6) NEMA 5-15R (1) NEMA L5-30R on 12" cord
Voltage	100/110/115/120/127 (user configurable) VAC; ±3%	200/208/220/230/240 (user configurable) VAC; ±3%	100/110/115/120/127 (user configurable) VAC; ±3%
Frequency	50 Hz or 60 Hz	50 Hz or 60 Hz	50 Hz or 60 Hz
Waveform	Sinewave	Sinewave	Sinewave
Typical Battery Backup Time			
Full Load	6 minutes	5 minutes	5 minutes
Half Load	14 minutes	16 minutes	16 minutes
Recharge Time	5 Hours to 95% capacity after full discharge into 100% load		
Agency			
Safety	UL 1778; c-UL Listed		
RFI/EMI	FCC Part 15, Subpart B, Class A		
Surge Immunity	IEEE 587 Category A & B		
Transportation	ISTA Procedure 1A		

Specifications

Model Number	GXT2-6000RT208	GXT2-10000RT208
Model Rating	4200W/5200VA at 120/208 (120 or 240 degrees)	8000W/8660VA at 120/208 (120 or 240 degrees)
	4200W/6000VA at 120/240 (180 degrees)	8000W/10000VA at 120/240 (180 degrees)
DIMENSIONS Unit W x D x H in. (mm)	6.9 x 24.2 x 16.9 (176 x 615 x 430)	10.5 x 26.0 x 16.9 (267 x 660 x 430)
WEIGHT lbs (kg) Unit	67 (30.3)	109 (49.3)
Input AC Parameters		
Nominal Operating Frequency	50 or 60 Hz (Factory Default = 60)	
Factory Default VAC	120/208 VAC at 120 degrees	
L1-L2 Factory Default Input Phase Angle	120 degrees	
Allowable Input Phase Angle	120, 180, 240 degrees, Auto-sensing on application of AC (Restrictions for L-N voltages other than 120 VAC)	
Factory Default L1-N, L2-N VAC	120 VAC nominal	
Input Frequency w/o Battery Operation	40 - 70 Hz	
Output AC Parameters		
Factory Default VAC	120/208 VAC @ 120 degrees	
L1-L2 Factory Default Output Phase Angle	120 degrees	
Allowable Output Phase Angle	120, 180, 240 degrees Auto-sensing on initial application of input AC	
Factory Default L1-N, L2-N VAC	120 VAC nominal	
User Configurable L1-N, L2-N VAC	100/110/115/120/127 VAC, ±3%	
Frequency	50 Hz or 60 Hz, Nominal	
Waveform	Sinewave	
Overload Rating	200% for 8 cycles; 130% for 10 seconds with transfer to bypass	200% for 8 cycles then shutdown; 130% for 60 seconds with transfer to bypass
Environmental		
Operating Temp	+32°F to +104°F (0°C to +40°C)	
Storage Temp	+5°F to +122°F (-15°C to +50°C)	
Relative Humidity	0% to 95%, non-condensing	
Operating Elevation	Up to 10,000 ft. (3000m) at 104°F (40°C) without derating	
Storage Elevation	50,000 ft. (15,000 m) maximum	
Audible Noise	<55 dBA, at 1 meter from the rear; <50 dBA, at 1 meter from the front or sides	
Agency		
Safety	UL 1778, c-UL Listed (Suitable for computer room applications)	
RFI/EMI	FCC Part 15, Subpart B, Class A	
Surge Immunity	IEEE/ANSI C62.41 Category A & B	
Transportation	ISTA Procedure 1A	
Internal Battery		
Model Number	GXT2-144BATKIT (one required)	GXT2-288RTBKIT (two required)
WEIGHT lbs (kg)	79 (35.8) (one required)	78.1 (35.5) (two required)
Type	Valve-regulated, non-spillable, flame retardant, lead acid	
Quantity x V x Rating	12 x 12V x 9.0 AH (one required)	12 x 12V x 9.0 AH (two required)
Battery Mfg / Part #	Yuasa / REW 45-12 FR	
Recharge Time	6 Hours to 90% capacity after full discharge into 100% load	
Optional Extended Battery Cabinet		
Model Number	GXT2-144VBATT	GXT2-288RTVBATT (requires two GXT2-288RTBKIT)
DIMENSIONS W x D x H in.(mm)	3.5 x 24.2 x 16.9 (87 x 618 x 430)	7.0 x 26.0 x 16.9 (178 x 660 x 430)
WEIGHT lbs (kg) Unit	93.6 (42.5)	41.6 (18.9) (two required)
BATTERY PARAMETERS		
Type	Valve-regulated, non-spillable, flame retardant, lead acid	
Qty x V x Rating	12 x 12V x 9.0 AH per kit	12 x 12V x 9.0 AH per kit (two required)
Battery Mfg / Part #	Yuasa / REW 45-12 FR	
ENVIRONMENTAL		
Operating Temp	+32°F to +104°F (0°C to +40°C)	
Storage Temp	+5°F to +122°F (-15°C to +50°C)	
Relative Humidity	0% to 95%, non-condensing	
Operating Elevation	Up to 10,000 ft. (3000m) at 104°F (40°C) without derating	
Storage Elevation	50,000 ft. (15,000m) maximum	
AGENCY		
Safety	UL 1778, c-UL Listed (Suitable for computer room applications)	
RFI/EMI	FCC Part 15, Subpart B, Class A	
Transportation	ISTA Procedure 1A	

Note: *Part Numbers GXT2-6000RT208 and GXT2-10000RT208 do not include internal battery kits. When calculating total unit weight, add weight of internal batteries.*

Specifications

POWER DISTRIBUTION

GXT 2-6000RT208

Model Number	Amp Rating	Input Power Connection	Output Power Connection
PD-HDWR	30 No Bypass	Hardwire Terminals	Hardwire Terminals
PD-HDWR-MBS	30 With Bypass	Hardwire Terminals	Hardwire Terminals
PD-001	30 With Bypass	L14-30P	(1) L6-30R,(1) L14-30R, (4) 5-15/20R T-slot
PD-002	30 With Bypass	L14-30P	(2) L6-20R, (2) 5-15/20R T-slot
PD-003	30 With Bypass	L14-30P	(2) L6-30R, (4) 5-15/20R T-slot
PD-004	30 With Bypass	L14-30P	(4) EN60320 / C19
PD-005	30 With Bypass	L14-30P	(4) L5-20R, (2) L5-30R
PD-006	30 With Bypass	L14-30P	(4) L5-20R, (2) L6-30R
PD-007	30 With Bypass	L14-30P	(4) L6-20R

GXT 2-6000RTL630

Model Number	Amp Rating	Input Power Connection	Output Power Connection
PD-L630	30	L6-30P	(2) L6-30R, (2) L6-20R

GXT 2-10000RT208

Model Number	Amp Rating	Input Power Connection	Output Power Connection
PD-101	50	Hard Wired	(8) 5-15/20R T-slot, (2) L6-30R
PD-102	50	Hard Wired	(4) 5-15/20R T-slot, (4) L6-20R
PD-103	50	Hard Wired	(4) 5-15/20R T-slot, (4) L6-30R
PD-104	50	Hard Wired	(4) 5-20R T-slot, (2) L6-30R, (2) L6-20R
PD-105	50	Hard Wired	(4) 5-20R T-slot, (2) L6-30R, (2) L5-20R

BATTERY CABINETS

UPS Model	Runtime with Internal Batteries @ Full Load	Extended Battery Cabinet P/N	Voltage	Total Runtime with Internal and Extended Battery Cabinets/Full Load	
				One Cabinet	Two Cabinets
GXT2-500RT120	28 minutes	GXT2-48VBATT	48 VDC	115 min.	231 min.
GXT2-700RT120	17 minutes	GXT2-48VBATT	48 VDC	68 min.	136 min.
GXT2-1000RT120	11 minutes	GXT2-48VBATT	48 VDC	44 min.	88 min.
GXT2-1500RT120	7 minutes	GXT2-48VBATT	48 VDC	28 min.	56 min.
GXT2-2000RT120	6 minutes	GXT2-48VBATT	48 VDC	18 min.	42 min.
GXT2-3000RT120	5 minutes	GXT2-72VBATT	72 VDC	20 min.	40 min.
GXT2-2700RT208	5 minutes	GXT2-72VBATT	72 VDC	20 min.	40 min.
GXT2-6000RTL630	7 minutes	GXT2-240VBATTUL	240 VDC	21 min.	38 min.
GXT2-6000RT208	5 minutes	GXT2-144VBATT	144 VDC	14 min.	25 min.
GXT2-10000RT208	6 minutes	GXT2-288VBATT	288 VDC	17 min.	28 min.

PARALLEL CAPABILITY

GXT2-10000RT208

Model	Description
GXT2-PP20KRT208	Paralleling POD maximum (3) GXT2-10000RT208 connection for 20kVA capacity plus 10kVA redundancy (requires (1) paralleling cable p/n GXT2-20KPC-6 for connection to each GXT2-10000RT208)
GXT2-20KPC-6	Paralleling cable, approximately 6 feet long

SYSTEM CONFIGURATION

Capacity / Redundancy	GXT2-10000RT208	GXT2-288RTBKIT	GXT2-PP20KRT208	GXT2-20KPC-6	PD-201
10kVA / 10kVA	2*	4*	1*	2*	1
20kVA / -	2*	4*	1*	2*	1
20kVA / 10kVA	3*	6*	1*	3*	1

* Required Paralleling Components

Liebert GXT Related Products

Rack-Mounting Kits
These kits are required to mount a Liebert GXT and external battery cabinets within equipment racks.

Liebert MicroPOD™
A maintenance bypass switch that permits scheduled maintenance or UPS replacement without discontinuing power to critical equipment.

Liebert IntelliSlot Web Card
The Liebert IntelliSlot Web Card delivers SNMP and web management communications capability to a Liebert GXT unit.

Liebert Nform
A simple to use monitoring and communications softwaresolution that combines network monitoring of power and cooling equipment.

Liebert MultiLink™ Shutdown Software
Monitors battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

Extended Warranties
One-year and three-year warranty extensions are available at the time of the UPS sale to cost-effectively extend the life of the UPS.

5-Year Power Assurance Package
For UPSs 1000VA and larger, 5-year warranty, onsite service, and equipment disposal. For UPSs 6kVA and larger, also includes startup and preventive maintenance.

Liebert NX UPS (10-30 kVA)

Liebert NX is featured in this Scenario: Scenario D 7-10 Racks Three Phase page 14

The Liebert NX is a true on-line, double conversion, mid-sized, three-phase UPS system that delivers complete, centralized power protection for mission-critical systems. Designed to meet the high availability power needs of a wide variety of IT applications, the Liebert NX combines compact size, capacities up to 30 kVA (parallel up to three 20 or 30kVA units for capacity up to 60kVA or 90kVA, parallel up to four 20 or 30kVA units for redundancy), advanced operating features and low cost of ownership.

Features & Benefits

Flexibility:

- Power communications available through a Relay Contact Card, Liebert IntelliSlot™ Web Card and Liebert MultiLink™ shutdown software.
- Ultra-quiet performance with noise levels below 54dB allows greater latitude in where to place the unit.
- Large and user-friendly LCD display provides operating information in twelve languages.
- Up to three Liebert NX 20kVA or 30kVA modules can be paralleled for capacity and a fourth added for redundancy without using a centralized controller or centralized static switch.
- For safe and convenient servicing of the UPS, the Liebert NX includes a built-in maintenance bypass. An optional wrap-around maintenance bypass cabinet is also available.
- Easy servicing due to front accessibility of critical components, self-diagnostics and various monitoring options.

Higher Availability:

- True online double conversion technology corrects all types of power fluctuations.
- Advanced inverter control technology provides the highest output power quality.
- Redundant power supply cords, redundant cooling fans and highly efficient cooling of critical components.
- Minimized transfer to battery, reducing the number of charging and discharging cycles, due to the wider input voltage window of +10 to -20% and a frequency tolerance of 40Hz to 72Hz.
- Compatibility with dual bus synchronization system enables you to transfer the load to an alternate power source for maintenance activities.
- High overload rating handles 125% for 10 minutes, 150% for one minute and a 1000% overload for 10 milliseconds.
- An intelligent battery management algorithm monitors the battery to detect any premature battery failure.

Lowest Total Cost Of Ownership:

- Temperature-compensated battery charging extends battery life.
- Highest possible input power factor for maximum efficiency.
- Adjustable power walk-in from 5 seconds to 30 seconds, along with reduced input current distortion and power factor correction, also enables you to save money by reducing backup generator sizing requirements.
- The unit's compact footprint requires less floor space, leaving you with more room for other equipment.

Frequently Asked Questions

Question	Resolution
Besides providing backup when the electricity goes out, does the Liebert NX take care of all power problems?	Yes. It utilizes true on-line double conversion technology that corrects all types of power fluctuations.
Is it more expensive to operate than several UPS systems?	The Liebert NX actually offers a lower total cost of ownership than many smaller UPS units. Longer battery life and scheduled maintenance ensure proper system operation and prevent the costs of downtime.
What if the UPS fails — will all my systems go down?	The Liebert NX features a built-in automatic bypass that allows the unit to provide power even if a component fails.
What if the batteries suddenly fail and the equipment is without protection?	The Liebert NX utilizes an intelligent battery management system that monitors the battery to detect any premature battery failure.
How reliable is the Liebert NX?	The Liebert NX features built-in reliability with a redundant auxiliary power supply board and redundant cooling fans.

Competitive Comparison

The Liebert NX offers a number of advantages over the competition, making the Liebert NX UPS the ideal UPS for mission critical applications.

Feature	Liebert NX 10-30 kVA	Mitsubishi 2033C	Powerware 9355	APC SmartUPS-VT	The Liebert Advantage
Battery Use Permissible Input Voltage Range (VAC)	+10% -40%	+15%, -25%	Input Voltage Range -15%, +10% from nominal at 100% load without depleting battery	Input voltage range for main operations 165 - 240V	Less battery use means fewer battery replacements and results in a lower total cost of ownership.
Audible Noise	0%= 50.5dB, 100% linear load = 51.5dB, 100% non linear load= 51.7 dB	"low acoustic noise"	Audible Noise: <58 dBA at 1 meter depending on load	Audible noise at 1 meter from surface of unit - 54 to 58 dBA, depending on capacity	You can utilize an NX in an office environment.
Handling Of Overload Conditions	125% for 10 minutes 150% for 1 minute	105% to 150% for 1 minute	150% for 5 sec 125% for 1 min (online), 110% for 10 min	125% for 1 minute, 150% for 30 seconds	The user can connect a load to the NX without worrying about driving the UPS into bypass or shutdown.
Easy to install	Compact design, integral battery	All in one design	All in one design	All in one with internal modules	In many cases, your customer's facility people can install it to keep their costs down.

Liebert NX UPS (10-30 kVA)

Liebert NX Bundles

Liebert NX UPS	General Description	Quantity of Liebert NX UPS*	kVA/kWatts	External Battery Cabinet	SNMP Card ø	System Paralleling Cabient §
38SB030C0CHR √	Parallel UPS system rated 30kVA to 90kVA redundant, 208/120V input, 208/120V output	1 to 4	30/24 to 90/72 Redundant	38BP030RHR1BNS	IS-WEBLB	38SC030CC64UR0T
38SB020C0CHR √	Parallel UPS system rated 20kVA to 60kVA redundant, 208/120V input, 208/120V output	1 to 4	20/16 to 60/48 Redundant	38BP020RHR1BNS	IS-WEBLB	38SC020CC64UR0T

Liebert NX UPS	Liebert FPC	Liebert FDC	Slimline Distribution Cabient ∞	Paralleling Cable ∫
38SB030C0CHJ √	n/a	FDC4412SB10	38DU030C5G000	531614-10
38SB030C0CHJ √	n/a	FDC4412SB10	38DU030C5G000	531614-10

√ Required Components

* Add additional UPS modules for capacity or redundancy

ø Optional — for monitoring UPS via web browser or SNMP

§ Available for 20 kVA

∞Optional output distribution cabinet

∫ Required when paralleling UPS. One kit required per UPS.

Liebert NX Related Products

Liebert NX Extended Battery Cabinet
Liebert NX extended battery cabinets are available when longer backup time is critical to protected loads.

Liebert Maintenance Bypass Cabinet
These matching enclosures bolt to the left side of the UPS module and provide “make-before-break” operation to and from maintenance bypass via a single rotary switch without the need for interlocking schemes.

Liebert NX Slimline Distribution Cabinet
Includes one 42-pole panelboard for mission critical load distribution from the UPS output. Panelboard includes a main circuit breaker. The standard Liebert Slimline distribution cabinet is designed as a bolt-on section to the UPS module cabinet, or the Liebert Maintenance Bypass Cabinet,if supplied.

Specifications

Models	NX 10 kVA	NX 15 kVA	NX 20 kVA	NX 30 kVA	NX Battery Cabinet 10kVA-30kVA	NX Maintenance Bypass Cabinet 10-30 kVA	NX Parallel Cabinet 20-30 kVA	NX Slimline Distribution Cabinet 10kVA-30kVA
Power Rating - kVA	10	15	20	30	N/A	10, 15, 20, 30	20 to 90 kVA	N/A
Power Rating - kW	8	12	16	24	N/A	8, 12, 16, 24	16 to 72	N/A
Input AC Specifications								
Phase	3				N/A	3	3	3
Power Factor	0.99				N/A	N/A	N/A	N/A
Frequency - Hz	50 or 60				N/A	60	60	60
Frequency Range - Hz	+/- 5 Hz				N/A	N/A	N/A	N/A
Input Voltage	120/208				N/A	120/208, 220, 480, 600	208,480, 600	208/120
Input Voltage Range	+10,-20				N/A	N/A	N/A	N/A
General Specifications								
UPS Technology	On-Line, Double Conversion				N/A	N/A	N/A	N/A
Battery Specifications								
Battery Test Type	On-Line				N/A	N/A	N/A	N/A
Battery Technology	VRLA, Wet Cells				VRLA	N/A	N/A	N/A
Output AC Specifications								
Nominal Voltage	120/208				288 VDC	120/208	120/208	120/208
Frequency - Hz	50 or 60				60	60	60	60
Output Waveform	Sinewave				Sinewave	Sinewave	Sinewave	Sinewave
Panelboards or Receptacles	N/A				N/A	N/A	N/A	1 Panelboard (42 poles)
User Interface								
LCD Display	Yes				N/A	N/A	N/A	N/A
Communications								
Communications Options	Intellislot, SNMP, Relay Card, MultiLink				N/A	N/A	N/A	N/A
Physical Data								
Form Factor	Stand Alone				Stand Alone	Stand Alone	Stand Alone	Stand Alone
Unit Height - inches (mm)	63 (1,600)				63 (1,600)	63 (1,600)	63 (1,600)	63 (1,600)
Unit Width - inches (mm)	24 (600)				27 (686)	27 (686)	27 (686)	11 (279)
Unit Depth - inches (mm)	32.5 (825)				32.5 (825)	32.5 (825)	32.5 (825)	32.5 (825)
Unit Weight - lbs. (kg)	450 (205) to 1250 (567) w/ internal batteries				1350 (612) to 3740 (1697)	620(281) to 1400 (635)	904 (410) to 1912 (867)	250 (115)
Shipping Height - inches (mm)	69 (1,753)				69 (1,753)	69 (1,753)	69 (1,753)	69 (1,753)
Shipping Width - inches (mm)	32 (813)				35 (889)	35 (889)	35 (889)	35 (889)
Shipping Depth - inches (mm)	40 (1,016)				40 (1,016)	40 (1,016)	40 (1,016)	40 (1,016)
Shipping Weight - lbs. (kg)	600 (273) to 1400 (635) w/ internal batteries				1,500 (680) to 3940 (1787)	770 (349) to 1550 (703)	1104 (500) to 2112 (958)	400 (182)
Environmental								
Operating Temperature, Min., °F (°C)	32 (0)				32 (0)	32 (0)	32 (0)	32 (0)
Operating Temperature, Max., °F (°C)	104 (40)				104 (40)	104 (40)	104 (40)	104 (40)
Storage Temperature, Min., °F (°C)	-4 (-20)				-4 (-20)	-4 (-20)	-4 (-20)	-4 (-20)
Storage Temperature, Max., °F (°C)	158 (70)				158 (70)	158 (70)	158 (70)	158 (70)
Relative Humidity	0% to 95%, Non Condensing				0% to 95%, Non Condensing	0% to 95%, Non Condensing	0% to 95%, Non Condensing	0% to 95%, Non Condensing
Operating Elevation - ft. (m)	to 3,300 (1000)				to 3,300 (1000)	to 3,300 (1000)	to 3,300 (1000)	to 3,300 (1000)
Storage Elevation - ft. (m)	to 40,000 (12,200)				to 40,000 (12,200)	to 40,000 (12,200)	to 40,000 (12,200)	to 40,000 (12,200)
Sound Emission/Audible Noise	<54 dBA, at 1meter				N/A	N/A	N/A	N/A
Cooling	Fan Cooled				Convection Cooled	Convection Cooled	Convection Cooled	Convection Cooled
Agency/Certification/Conformance								
Agency Approval	UL 1778, c-UL, FCC Class A				UL 1778, c-UL, FCC Class A	UL 1778, c-UL, FCC Class A	UL 1778, c-UL, FCC Class A	UL 1778, c-UL, FCC Class A
Warranty								
Standard	1 Year				1 Year	1 Year	1 Year	1 Year

Liebert IntelliSlot Web Card
The Liebert IntelliSlot Web Card delivers SNMP and web-management communications capability to a Liebert NX UPS.

Liebert MultiLink™ Shutdown Software
Liebert MultiLink software monitors battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

Liebert Nform
A simple to use monitoring and communications software solution that combines network monitoring of power and cooling equipment.

Installation And Service
Only Emerson can provide the industry's largest, most experienced service organization with a proactive approach that prevents failures and extends equipment life.

Liebert NX UPS with SoftScale™ (40-120 kVA)

Liebert NX is featured in these Scenarios:
Scenario E 10-30 Racks Three Phase page 16
Scenario F 30-60 Racks Three Phase page 18

The new Liebert NX UPS with SoftScale™ technology combines the industry's most flexible approach to scalability with an efficiency rating of up to 97%. It is designed for small and medium size data centers that are facing unpredictable changes in their IT systems.

The Liebert NX with SoftScale™ can be sized to current requirements and then be easily scaled up in 20kVA increments. When an upgrade is purchased an Emerson Customer Engineer will visit the site and install a software key to complete the capacity upgrade. Modules can adapt from 40 kVA to 60 kVA to 80 kVA or from 80 kVA to 100 kVA to 120 kVA. In addition, modules with identical or different ratings can work in parallel to handle higher capacities.

These Liebert NX modules can be positioned in a row of racks alongside the IT equipment it protects to optimize space utilization.

Features & Benefits

Flexibility:

- Parallel units that are the same or different capacities for greater flexibility in managing power growth.
- Generator compatible.
- Power communications available through Liebert IntelliSlot® Web Card LB and Liebert MultiLink™ shutdown software.
- Large and user-friendly LCD display provides operating information in twelve languages.
- Internal automatic bypass transfers load to bypass in the unlikely event that a fault occurs in the UPS. Optional wrap-around maintenance allows the UPS to be powered down or taken out of service without disconnecting power to the load.
- Easy servicing due to front accessibility of critical components, self-diagnostics and various monitoring options.

Higher Availability:

- Wider input voltage window and frequency tolerances help to minimize transfer to battery, reducing the number of charging and discharging cycles.
- High overload rating capable of clearing a 20 A branch circuit breaker.
- Integrated ground fault detection allows for effective transformerless design, saving space and lowering the weight.
- True on-line double conversion technology protects and conditions against the full range of power irregularities, requiring fewer transfers to battery.
- Advanced inverter control technology provides the highest output power quality to maximize efficiency and operating life of connected equipment.
- Load Bus Synchronization provides the capability to synchronize the outputs of two independent UPS modules when they are configured as a redundant system feeding independent distribution paths.
- An intelligent battery management algorithm monitors the battery to detect any premature battery failure.

Lowest Total Cost Of Ownership:

- Soft-switching technology optimizes operation with the same high efficiency at 40% utilization as at 100% utilization.
- Adaptive input voltage window results in fewer hits on the battery.
- The unit's compact footprint requires less floor space, leaving you with more room for other equipment.
- Temperature-compensated battery charging extends battery life.

Frequently Asked Questions

Question	Response
What are the advantages of the Liebert NX with SoftScale compared to similar capacity UPS systems?	**Here are some important differences:** ■ Parallel units for added capacity as your needs grow. ■ Complete Power Conditioning — True online double conversion technology corrects all types of power fluctuations. ■ Save On Energy Usage — The Liebert NX offers improved efficiency up to 97%, which results in lower operating costs.

Competitive Comparison

Feature	Liebert NX 40 – 120 kVA	MGE Galaxy 4000 40 – 75kVA	MGE Comet 40 – 150kVA	Powerware 9390 40 – 160kVA	APC Symmetra PX 10 – 80kVA	The Liebert Advantage
Usable Input Voltage Range (VAC)	**480 VAC:** 288 to 552 VAC when connected load is less than 80%	**208 VAC:** 166 to 240 VAC	**208 VAC:** 177 to 233 VAC **480 VAC:** 408 to 538 VAC	**208 VAC:** 176 – 228 VAC for all load conditions **480 VAC:** 408 – 528 VAC for all load conditions	**208 VAC:** Input voltage range for main operations 177 – 240 VAC	A broader input voltage range results in less battery use, fewer battery replacements and a lower total cost of ownership.
Audible Noise	62-64 dBA	69 dBA	65 dBA	<65 dBA	71 dBA	Lower noise level provides more flexibility when locating UPS near an office environment.
Handling Of Overload Conditions	125% for 10 minutes 150% for 1 minute	130% for 1 minute 145% for 30 seconds	105% - 110% of rated load for 10 minutes >110% - 130% of rated load for 1 minute	Not listed in specifications	Not listed in specifications	The user can connect a load to the NX without worrying about driving the UPS into bypass or shutdown.
Fast Battery Recharge	Triple mode charger provides faster battery recharging	Standard internal charger	Standard internal charger	Uses a threestage charging technique	Not listed in specifications	Fast recharge times enhance system availability.

Liebert NX UPS with SoftScale™ (40-120 kVA)

Liebert NX Bundles

Liebert NX UPS	General Description	Quantity of Liebert NX UPS	kVA/Watts	External Battery Cabinet	SNMP Card	System Paralleling Cabient	Paralleling Cable
38SB080A0A00 ü√	Parallel UPS system rated 40kVA to 240kVA redundant	1 to 4	40/36 to 240/216 Redundant.	38BP080XMR1BNS √	OCWEB-LB	38SC080AA64KB0S	531614-10 ü
38SB080A0A00 ü √	Parallel UPS system rated 80kVA to 360kVA redundant	1 to 4	480/72 to 360/324 Redundant.	38BP080XMR1BNS (2) √	OCWEB-LB	38SC120AA64KB0S	531614-10 ü

Liebert NX UPS	Liebert FPC	Liebert FDC
38SB040A0A00	FPA10C211P	FDA4411SB10
38SB080A0A00	FPA30C412P	FDA4411SB10
38SB081A0A00	FPA12C211P	FDA4411SB10
38SB120A0A00	FPA20C412P (2)	FDA4422SB10

Liebert NX Related Products

Liebert NX Extended Battery Cabinet
Liebert NX extended battery cabinets allow you to configure battery time to best meet room back-up requirements.

Liebert NX Paralleling Cabinet
Paralleling cabinet available in multiple configurations to parallel Liebert NX SoftScale™ UPS modules rated 40kVA to 80kVA and 80kVA to 120kVA.

Liebert FPC
Provides higher quality, more flexible power distribution for high-density data centers. This self-contained system provides voltage transformation power isolation, power distribution, computer-grade grounding and power monitoring.

Liebert IntelliSlot Web Card
The Liebert IntelliSlot Web Card delivers SNMP and web-management communications capability to a Liebert NX UPS.

Specifications

Models	NX 40 kVA	NX 60 kVA	NX 80 kVA	NX 100 kVA	NX 120 kVA	NX Battery Cabinet 40-120 kVA	NX Parallel Cabinet Type E1 40-120 kVA
Power Rating - kVA	40	60	80	100	120	80/120	80/120
Power Rating - kW	36	54	72	90	108	80/120	80/120
Input AC Specifications							
Phase	3					2	3
Power Factor	> 0.99 at full load; >0.98 at half load					N/A	N/A
Frequency - Hz	50 or 60Hz.					N/A	60
Input Voltage	480, 3 Wire + Ground					N/A	480V or 600V, 3-wire plus ground
Input Voltage Range	+15, -20					N/A	N/A
General Specifications							
UPS Technology	On-Line, double conversion						
Battery Specifications							
Battery Test Type	On-Line						
Battery Technology	VRLA, Wet Cells					VRLA	
Output AC Specifications							
Nominal Voltage	480VAC, 3wire plus ground					480 VDC	480 VAC, 3wire plus ground
Frequency - Hz	60 (50 Hz in frequency converter mode)					N/A	60
Output Waveform	Sinewave					N/A	Sinewave
Panelboards or Receptacles	N/A					0	1
User Interface							
LCD Display	Yes					No	No
Communications							
Communications Options	Intellislot, SNMP, Relay Card, MultiLink					Dry Contact (back to UPS)	Dry Contact (back to UPS)
Physical Data							
Form Factor	Rack					Rack	Rack
Unit Height - inches (mm)	78.5 (2000)					78.7 (2000)	78.7 (2000)
Unit Width - inches (mm)	23.6 (600)					33.2 (845)	33.2 to 48.8 (845 to 1240)
Unit Depth - inches (mm)	38 (965)					38 (965)	38 (965)
Unit Weight - lbs. (kg)	1290 (585)	1290 (585)	1290 (585)	1422 (645)	1422 (645)	Weight based on selected configuration	
Shipping Height - inches (mm)	84.5 (2146)					84.5 (2146)	84.5 (2146)
Shipping Width - inches (mm)	48 (1220)					48 (1220)	48 to 74 (1220 to 1880)
Shipping Depth - inches (mm)	48 (1220)					48 (1220)	54 (1372)
Shipping Weight - lbs. (kg)	1490 (676)	1490 (676)	1490 (676)	1622 (736)	1622 (736)	Weight based on selected configuration	
Environmental							
Operating Temperature, Min., °F (°C)	32 (0)					32 (0)	
Operating Temperature, Max., °F (°C)	104 (40)					104 (40)	
Storage Temperature, Min., °F (°C)	-4 (-20)					-4 (-20)	
Storage Temperature, Max., °F (°C)	158 (70)					158 (70)	
Relative Humidity	0% to 95%, Non Condensing					0% to 95%, Non Condensing	
Operating Elevation - ft. (m)	≤ 3,300 (1000) per IEC 62040/3					≤ 3,300 (1000) per IEC 62040/3	
Sound Emission/Audible Noise	62	62	62	64	64		
Cooling	Fan Cooled					Convection Cooled	
Agency/Certification/Conformance							
Agency Approval	UL 1778, c-UL, FCC Class A					UL 1778, c-UL, FCC Class A	
Warranty							
Standard	1 Year					1 Year	

Liebert MultiLink™ Shutdown Software
Liebert MultiLink software monitors battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

Liebert Nform
A simple to use monitoring and communications software solution that combines network monitoring of power and cooling equipment.

Installation And Service
Only Emerson can provide the industry's largest, most experienced service organization with a proactive approach that prevents failures and extends equipment life.

Liebert FPC Power Distribution Unit

Liebert FPC is featured in these Scenarios:
Scenario E 10-30 Racks Three Phase page 16
Scenario F 30-60 Racks Three Phase page 18

The rack-size Liebert FPC provides higher quality, more flexible power distribution for high-density data centers. It is engineered to combine the convenience and cost savings of a pre-packaged, factory-tested unit with the flexibility of a custom-tailored power system. This self-contained system provides voltage transformation power isolation, power distribution, computer-grade grounding and power monitoring.

Features & Benefits

Flexibility:

- Sub-feed breakers or I-Line panelboards give you the flexibility to add distribution capacity as needed to adapt to growing room loads.
- Utilizes inline 42-pole panelboards, which provide wide-open wiring access channels for easy installation of additional circuits.
- Various cabling options provide flexibility — top exit for non-raised floor and bottom exit for raised floor applications
- Full front and rear access for easy maintenance.

Higher Availability:

- Factory testing ensures reliable, consistent performance, so unplanned downtime is avoided.
- Local and remote power monitoring capabilities enable you to attain maximum availability for your critical operations.

Lowest Total Cost Of Ownership:

- Four panelboard capacity saves money by eliminating need for multiple cabinets.
- Ability to install additional distribution capacity within the same cabinet as needs change helps to manage costs over service life of system.
- Larger kVA capacity rating means fewer units will be needed to support IT growth.
- In-rack location places power distribution closer to the load, thereby reducing cabling to the rack, making cable movements simpler and less expensive.

Frequently Asked Questions	
Question	**Resolution**
Why do I need a product like this in my data center?	As your rack-mount systems grow in number, complexity and criticality — so must your power distribution system. Creating high quality power is a major step towards protecting the operation of a critical facility. The Liebert FPC power center is designed to manage power from the UPS all the way to each individual piece of computing and communications hardware The Liebert FPC features a compact, space saving design, flexible breaker configurations, plus local and remote power monitoring capabilities. Available in capacities from 15 kVA up to 150 kVA the Liebert FPC offers flexibility to fit both the space and electrical requirements of IT equipment.
What does the Liebert FPC do?	The Liebert FDC is designed to optimize power distribution at the rack level with "plug-and-play" flexibility. It is a self-contained system that provides: ▪ Power Isolation ▪ Power Distribution ▪ Computer-Grade Grounding ▪ Power Monitoring
What makes the Liebert FPC stand out from the competition?	▪ It is engineered to combine the convenience and cost savings of a prepackaged, factory-tested unit with the flexibility of a custom-tailored power system. ▪ The packaged system approach is convenient and space-saving, reducing installation time and cost compared to a conventional approach using multiple interconnected components. ▪ The Liebert FPC is built on a proven system design used in thousands of installations, and unlike one-of-a-kind, built-up distribution arrangements constructed at the site, it undergoes thorough factory testing as a complete system to assure reliable, consistent performance. ▪ A capacity range of 15-150kVA enables it to accommodate increasing power densities when growth occurs. ▪ With optional Liebert Distribution Monitoring, the Liebert FPC has more comprehensive monitoring than any other product on the market. With the ability to go beyond the branch circuit monitoring, you increase the likelihood that you will be alerted to potential problems before they can affect your connected equipment, thereby reducing the chance of costly unplanned downtime. ▪ The Liebert FPC offers a variety of cable management options–cables can be routed across the top of the racks, under the floor or through the bottom of the cabinet–providing flexibility.

Liebert FPC Power Distribution Unit

Competitive Comparison

Feature	Liebert FPC	APC InfraStruXure	PDI Powerpack PDU	MGE Power Management Module	United Power PDM	The Liebert Advantage
Monitoring	Local and remote monitoring is standard. Liebert Distribution Monitoring (optional) can adapt monitoring to include any combination of panelboard main breaker, branch breaker, sub-feed breakers and / or output breaker.	Branch circuit monitoring optional (local and remote)	Local and remote branch circuit monitoring optional. Local monitoring optional.	Branch circuit monitoring optional. Advanced monitoring (advanced multi-function meter options that encompass additional metering and monitoring features) is optional.	Remote monitoring is standard. Branch circuit monitoring is optional.	Unlike competitive products that are limited to two alarms and branch circuit monitoring only, Liebert's monitoring with optional Liebert Distribution Monitoring provides over 500 monitoring and alarm points per panelboard and has dozens of monitoring parameters to choose from. Liebert's comprehensive monitoring increases the likelihood that users are alerted of potential problems before those problems can affect the connected equipment, thereby reducing the chance of costly unplanned downtime.
Panelboard Space	Two panelboards for 15-125 kVA. Additional panelboard space, 4 instead of 2, for 50-125kVA. Unique in-line panelboards provide additional wiring space (50% more space than our old product) in the wiring area. 42 poles in a single row versus side-by-side.	Two panelboards	Two panelboards standard. Two additional panelboards optional.	Two panelboards, Additional panelboards are optional by adding distribution cabinet.	Two panelboards, Additional panelboards are optional by adding distribution cabinet.	The Liebert FPC has more panelboard options, for 50 kVA and greater. Since panelboards provide expansion opportunities so there are always enough branch circuits, the FPC has the greatest flexibility to expand as power densities increase, while keeping costs low.
Sizes WxDxH	19"x38.5"x78.5" and 47"x38.5"x78.5"	29"x36"x81"	(33"x38"x69") 2 panelboards. 41"W with 4 panelboards	42"x27x"72" 2 panel boards. 72"W with 4 panel boards	One size (34"x34"x69")	The Liebert FPC's two sizes provide IT professionals with more flexibility than competitors' cabinets as users configure their spaces.

Specifications

Liebert FPC	15-125 KVA	150 KVA
Power Rating		
Rating (kVA)	15, 30, 50, 75, 100, 125	150
Rating (kW)	15, 30, 50, 75, 100, 125	150
Input AC Specifications		
Input Voltage	480	480
Input Voltage Range	-13% to +6%	-13% to +6%
Input Current (Amps)	19-156	185
Frequency (Hz)	60	60
Frequency Range	+/-0.5Hz	+/-0.5Hz
Phase	3	3
Power Factor	0.75 to 1.0	0.75 to 1.0
Surge Protection	ANSI/IEEE C62.41 Category B3	ANSI/IEEE C62.41 Category B3
Input Circuit Breaker (Amps)	25-200	250
Input Connections	Junction Box w/10 ft field wired cable	Junction Box w/10 ft field wired cable
Output AC Specifications		
Panelboards	2	4
Nominal Voltage	208/120	208/120
Branch Circuit Breakers	84	168
Frequency (Hz)	60	60
Efficiency	96.5 to 98%	96.5 to 98%
Output Waveform	Sine Wave	Sine Wave
Crest Factor	Up to 3.5	Up to 3.5
Distortion	0.5% Max Additive	0.5% Max Additive
Transformer Specifications		
Type	Double Shielded	Double Shielded
Windings	Copper	Copper
NEMA Standard	TP1	TP1
Temperature Rise	150°C	150°C
Impedance	4.5% to 4.7%	4.5% to 4.7%
Taps	6 (-10% to +5%)	6 (-10% to +5%)
Overload Protection	2 Sensors per winding (180°C & 200°C)	2 Sensors per winding (180°C & 200°C)

Specifications

Liebert FPC	15-125 kVA	150 kVA
User Interface		
Display Type	LCD	LCD
Audible Alarms	Yes	Yes
Communications		
Communications Standard	RS-422, RS-232	RS-422, RS-232
Communications Options	Liebert IntelliSlot Web/485 Card with Adapter, LDM	Liebert IntelliSlot Web/485 Card with Adapter, LDM
Environmental		
Operating Temperature—Minimum	32° (0°C)	32° (0°C)
Operating Temperature—Maximum	104°F (40°C)	104°F (40°C)
Storage Temperature—Minimum	-67°F (-55°C)	-67°F (-55°C)
Storage Temperature—Maximum	185°F (85°C)	185°F (85°C)
Relative Humidity	0% to 95% without condensing	0% to 95% without condensing
Operating Elevation	Up to 6,600 ft. (2,000m)	Up to 6,600 ft. (2,000m)
Storage Elevation	Up to 40,000 ft. (12,200m)	Up to 40,000 ft. (12,200m)
Sound Emission/Audible Noise	ANSI C89	ANSI C89
Heat Dissipation	.73kW to 3.37kW	3.66kW
Cooling	Convection	Convection
Physical Data		
Shipping Depth in(mm)	48 (1220)	70 (1778)
Shipping Height in(mm)	84 (2134)	84 (2134)
Shipping Width in(mm)	48 (1220)	54 (1372)
Shipping Weight lbs(kg)	1100 (499) to 1740 (789)	2630 (1193)
Unit Depth in(mm)	39.5 (1003)	39.5 (1003)
Unit Height in(mm)	78.5 (1994)	78.5 (1994)
Unit Width in(mm)	23.5 (597)	47 (1194)
Unit Weight lbs(kg)	1010 (458) to 1650 (748)	2490 (1129)
Color	Black	Black
Agency/Certification/Conformance		
Safety	UL 60950	UL 60950
	ANSI, CSA, NEC, NEMA	ANSI, CSA, NEC, NEMA
	NFPA 75	NFPA 75
RFI/EMI	FCC Part 15 EMI Class A	FCC Part 15 EMI Class A
Transportation	ISTA - Procedure 1H	ISTA - Procedure 1H
Seismic	None	None
Options		
	Input Lightning/Surge Arrester	Input Lightning/Surge Arrester
	Output Surge Suppression Module	Output Surge Suppression Module
	Subfeed Output Circuit Breaker	Subfeed Output Circuit Breaker
	K-Rated Transformer	K-Rated Transformer
	Floor Pedestals	Floor Pedestals
	Liebert IntelliSlot Web/485 Card with Adapter	Liebert IntelliSlot Web/485 Card with Adapter
	Liebert Distribution Monitoring (LDM)	Liebert Distribution Monitoring (LDM)
Warranty		
Standard	1 year or 18 months after ship date	1 year or 18 months after ship date
Extended	None	None

Liebert FPC Related Products

Liebert FDC
Fits in the rack row to provide power distribution to individual racks when used with the Liebert FPC.

Liebert NX (40-120kVA)
The new Liebert NX with SoftScale™ UPS platform can be sized to current requirements and then easily scaled as needs change.

Installation And Service
Only Emerson can provide the industry's largest, most experienced service organization with a proactive approach that prevents failures and extends equipment life.

Liebert Nform
A simple to use monitoring and communications software solution that combines network monitoring of power and cooling equipment.

Liebert MP® Advanced Power Strips

Liebert MP Advanced Power Strips are designed to distribute and manage power within network cabinets and server racks. Models are available with remote monitoring and/or control capabilities for power distribution at the load/equipment level. Liebert MP is available in multiple configurations that provide a choice of capacities and number of receptacles to meet the power management requirements of any rack-mounted equipment.

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Broad selection of products to support specific user needs. ▪ Easy to use local status displays and remote monitoring and management. ▪ Monitoring and control capabilities include SNMP support and e-mail alarm notification.	▪ Higher reliability with PCB receptacle mount construction. ▪ Load monitoring and control supports continuous uptime, minimizes disruptions.	▪ Lower cost of ownership via reduced maintenance and repair and consolidated IP addressing.

Frequently Asked Questions

Question	Resolution
What makes Liebert MP Advanced Power Strips worth the extra money compared to a standard strip?	Liebert MP Advanced Power Strips are more than several times the value of ordinary power strips that do nothing more than distribute power. They can monitor power use at the strip level and can control power at the outlet level. The Liebert MP-M Series Strips provide real-time local and remote display of total strip volts, amps and true RMS watts, with re-nameable receptacles for inventory tracking. The Liebert MP-C Series Strips have the same monitoring capabilities and can be used to switch power on and off to individual plugs, preventing unauthorized connections. Most data center customers realize a payback in under a year from reduced administration and problem prevention. And customers with remote locations can get full payback on their investment by preventing a single service call.
What makes these better than others I've seen for sale?	For greater reliability, Liebert MP Advanced Power Strips use "PCB distribution" to connect receptacles to the power bus. Other types of connections used by competitive units, such as punch-down connectors, provide far less reliability over time, because they may fail more often.
How difficult are Liebert MP Advanced Power Strips to install and setup?	With both in-rack and vertical power strips, single-phase or three-phase inputs, and a variety of output plug types, the Liebert MP Advanced Power Strips will work with almost every manufacturer of power, rack or cabinet systems. The Liebert MP Advanced Power Strips come with an easy-to-use "Quick Start" guide. Most people have no problems with installation.

Competitive Comparison

Feature	Liebert MP Advanced Power Strips	APC	Geist
Power Readings	Current, Voltage & Power	Current Only	Current Only
Switched Receptacles	Yes	Yes	Not Available
Zero U Models	120/208 VAC20/30 AMP 21 Receptacles 208V 3PH 24 Receptacles	120/208 VAC 20 AMP 16 Receptacles 208V 3PH 24 Receptacles	Single Phase 120/208 VAC 24 Receptacles 3PH 120/208 VAC 24 Receptacles
Rackmount Models	120/208 VAC 20/30 AMP 18 Receptacles	120/208 VAC 20/30 AMP 16 Receptacles	120/208 VAC 20/30 AMP 16 Receptacles
IP Connecticity (*)	One IP per 32 Power Strips	One IP per power strip	Not Available
Rackmount Models	PCB	Insulation Displacement/Wire Solder	Insulation Displacement/Wire Solder

Specifications

	INPUT (Rated)		Connection(s)				OUTPUT (Rated)		Connection(s)			Monitoring	Liebert
Form Factor	**Voltage**	**Current**	**Phase**	**Type**	**Quan**	**Length**	**Voltage**	**Current**	**Phase**	**Type**	**Quan**	**LCD/LED**	**Part Number**
Liebert MP Advanced Power Strips (Monitoring) / MP-M Series													
Rckmnt / 1U	120	15	1PH	5-15P	1	6’	120	15	1PH	5-15/20R	10	LCD	MP-M5109
Rckmnt / 1U	120	20	1PH	5-20P	1	6’	120	20	1PH	5-15/20R	10	LCD	MP-M5110
Rckmnt / 1U	120	20	1PH	L5-20P	1	6’	120	20	1PH	5-15/20R	10	LCD	MP-M5111
Rckmnt / 1U	120	30	1PH	L5-30P	1	6’	120	30	1PH	5-15/20R	10	LCD	MP-M5112
Rckmnt / 1U	200-240	20	1PH	L6-20P	1	6’	200-240	20	1PH	IEC-C13	10	LCD	MP-M5113
Rckmnt / 1U	200-240	30	1PH	L6-30P	1	6’	200-240	30	1PH	IEC-C13	10	LCD	MP-M5114
Vert / 33.25”	120	15	1PH	5-15P	1	10’	120	15	1PH	5-15/20R	12	LCD	MP-M5115
Vert / 33.25”	120	20	1PH	5-20P	1	10’	120	20	1PH	5-15/20R	12	LCD	MP-M5116
Vert / 33.25”	120	20	1PH	L5-20P	1	10’	120	20	1PH	5-15/20R	12	LCD	MP-M5117
Vert. / 50.75”	120	20	1PH	5-20P	1	10’	120	20	1PH	5-15/20R	24	LCD	MP-M5118
Vert. / 50.75”	120	20	1PH	L5-20P	1	10’	120	20	1PH	5-15/20R	24	LCD	MP-M5034
Vert. / 50.75”	120	30	1PH	L5-30P	1	10’	120	30	1PH	5-15/20R	24	LCD	MP-M5035
Vert. / 57.75”	200-240	20	1PH	L6-20P	1	10’	200-240	20	1PH	IEC-C13	24	LCD	MP-M5036
Vert. / 57.75”	200-240	30	1PH	L6-30P	1	10’	200-240	30	1PH	IEC-C13	24	LCD	MP-M5037
Vert. / 68.25”	120/208	20	3PH	L21-20P	1	10’	208 & 120	20	1PH	IEC-C13+5-20R	24+2	LED	MP-M5119
Liebert MP Advanced Power Strips (Controlled) / MP-C Series													
Rckmnt / 1U	120	15	1PH	5-15P	1	6’	120	15	1PH	5-15/20R	8	LCD / LED	MP-C5120
Rckmnt / 1U	120	20	1PH	5-20P	1	6’	120	20	1PH	5-15/20R	8	LCD / LED	MP-C5121
Rckmnt / 1U	120	20	1PH	L5-20P	1	6’	120	20	1PH	5-15/20R	8	LCD / LED	MP-C5122
Rckmnt / 1U	120	30	1PH	L5-30P	1	6’	120	30	1PH	5-15/20R	8	LCD / LED	MP-C5123
Rckmnt / 1U	200-240	20	1PH	L6-20P	1	6’	200-240	20	1PH	IEC-C13	8	LCD / LED	MP-C5124
Rckmnt / 1U	200-240	30	1PH	L6-30P	1	6’	200-240	30	1PH	IEC-C13	8	LCD / LED	MP-C5125
Vert. / 68.25”	120	20	1PH	5-20P	1	10’	120	20	1PH	5-15/20R	20+1	LCD / LED	MP-C5147
Vert. / 68.25”	120	20	1PH	L5-20P	1	10’	120	20	1PH	5-15/20R	20+1	LCD / LED	MP-C5148
Vert. / 68.25”	120	30	1PH	L5-30P	1	10’	120	30	1PH	5-15/20R	20+1	LCD / LED	MP-C5131
Vert. / 68.25”	200-240	20	1PH	L6-20P	1	10’	200-240	20	1PH	IEC-C13	20+1	LCD / LED	MP-C5132
Vert. / 68.25”	200-240	30	1PH	L6-30P	1	10’	200-240	30	1PH	IEC-C13	20+1	LCD / LED	MP-C5133
Vert. / 68.25”	120/208	20	3PH	L21-20P	1	10’	120	20	1PH	5-15/20R	21	LCD / LED	MP-C5134
Vert. / 68.25”	120/208	20	3PH	L21-20P	1	10’	208	20	3PH/1PH	NEMA L21-20 + IEC320 C13	1 + 18	LCD / LED	MP-C5135
Vert. / 68.25”	120/208	30	3PH	L21-30P	1	10’	208	30	3PH/1PH	NEMA L21-20 + IEC320 C13	1 + 18	LCD / LED	MP-C5136

Liebert MP Advanced Power Strips (Access Series) / MP-S Series							
Form Factor	**Input Voltage**	**Input Plug**	**Length**	**PDU’s Supported**	**Installed Network Cards**	**Installed RS232 Cards**	**Part Number**
Rckmnt / 1U	120	5-15P	6’	4 (Expand to 8)	1	1	MP-S5137-125
Rckmnt / 1U	200-240	IEC-C14	6’	4 (Expand to 8)	1	1	MP-S5137-230
Rckmnt / 1.5U	120	5-15P	6’	4 (Expand to 20)	1	1	MP-S5138-125
Rckmnt / 1.5U	200-240	IEC-C14	6’	4 (Expand to 20)	1	1	MP-S5138-230
Rckmnt / 2U	120	5-15P	6’	4 (Expand to 32)	1	1	MP-S5139-125
Rckmnt / 2U	200-240	IEC-C14	6’	4 (Expand to 32)	1	1	MP-S5139-230

Expansion Module				
Form Factor	**Type**	**Input Voltage**	**Connection**	**Part Number**
Card	RS-232	NA	4X RS232	MP-DS74

Liebert MP Strips Related Products

Knurr Racks
Complete line of racks and cabinets, featuring adjustable racks and rack rails, reversible quick release doors, improved cable management, easy access side panels and multiple door options.

Liebert MCR
Self-contained cabinet with cooling and options for power protection and management systems.

Liebert Nform
A simple to use monitoring and communications software solution that combines network monitoring of power and cooling equipment.

Liebert XDF
A secured enclosure with integrated high heat density cooling, providing the benefits of big room support in a cost-effective package. Optimized horizontal air circulation cools the protected equipment, both in standard mode and in the backup ventilation mode

Liebert OpenComms EM and Liebert OpenComms vEM-14 Controllers
Liebert OpenComms EM controllers are network-enabled devices for monitoring temperature, humidity and contact closures inside critical environments, including racks and small computer rooms.

Liebert AccuVar

Liebert AccuVar is featured in these Scenarios:
Scenario D 7-10 Racks Three Phase page 14
Scenario E 10-30 Racks Three Phase page 16
Scenario F 30-60 Racks Three Phase page 18

The Liebert AccuVar Series is a multi-phase, multi-mode distribution panel mounted transient voltage surge suppressor (TVSS) that offers continuous protection from damaging transients and electrical line noise. LED lights indicate operation status and an audible alarm will sound if protection becomes unavailable. Remote monitoring provides an indication of suppression system failure, under voltage, phase, or power loss.

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Retrofits easily on existing panelboards. ▪ Attaches directly to breaker panel.	▪ Monitors all modes of failure, including neutral to ground, with patented detection circuitry ▪ Offers easy, safe, and maintenance-free operation. ▪ Retrofits easily to existing distribution panels	▪ Provides repeatable surge current capability for long product life. ▪ Protects your investment with a standard warranty: 10 years for parts.

Frequently Asked Questions

Question	Resolution
How far away from the panel can the Accuvar be mounted?	The Accuvar should be mounted as close as physically possible to the connected panel; General rule is five feet or less.
What if a neutral is not available in the panel to connect to?	If a neutral terminal is provided in the Accuvar it must be connected to. Make sure the number of conductors needed is determined in advance.
Can you use a Delta Accuvar on a Wye system?	Liebert maintains a warehouse of products in Mississippi for quick distribution. Ingram Micro and Tech Data also stock many standard Liebert UPS products for next day shipment.
Can the Accuvar be directly connected to the panels bus bars?	The Accuvar must be behind the main circuit breaker coming into a facility. A dedicated breaker feeding the TVSS provides an easy means of disconnecting from the power source, but is not required.
What is the recommended breaker and wire size?	It is recommended that the Accuvar is connected to the panel using #10 gauge wire and a 30 amp circuit breaker.

AccuVar TVSS Technical Specifications

Maximum Continuous	
Operating Voltage (MCOV)	120V 125%, all others 115%
Fault Current Rating (AIC)	200 kAIC
Operating Frequency Range	47 – 63 Hz
Connection	Parallel (10-14 AWG)
50 EMI/RFI Attenuation	10 kHz-100MHz
(60 dB – Optional)	(60 dB – Optional)
Response Time	<0.5 ns
Operating Humidity	0% to 95%
Status Indication	LEDs, Audible Alarm (Standard), Dry Contacts (Optional)
Certifications	UL 1449 & 1283, CSA, CE,
NEMA LS-1, ISO 9001	NEMA LS-1, ISO 9002
Enclosure	NEMA 4X
Warranty	10 Years parts
Shipping Weight	8 lb.

UL 1449 second edition clamping data

Voltage	**L-N**	**L-G**	**L-L**	**N-G**
120/208	400	400	800	400
120/240	400	400	800	400
240	X	800	800	X
277/480	800	800	1500	800
36/600	1200	1200	2000	1200
480	X	1500	1500	X
600	X	2000	2000	X

EMI/RFI Noise Rejection

Single Unit	**Frequency**	**System Installation**
120/208	400	400
120/240	400	400
240	X	800
277/480	800	800
36/600	1200	1200
480	X	1500
600	X	2000

Life Cycle Surge Testing - 10kA, 20kV, IEEE Cat. C3

Unit	**Per Mode(L-N/L-G/N-G)**	**Per Phase**
ACV	6,000 / 6,000 / 6,000	12,000
All	8,000 / 8,000 / 8,000	16,000

Model/Surge Current

ACV	
	ACCUVAR
	65kA
	Per Mode
ALL	
	ACCUVAR II
	80kA
	Per Mode

Nominal (L-G)

Voltage Codes	
120	120V
208	208V
230	230V
240	240V
277	277V
346	346V
480	480V
600	600V

Source Configuration

-	1 Phase L-N 2w + gnd
	(must put "-" in part number)
-	1 Phase L-L 2w + gnd
	(must put "-" in part number)
S	Split Phase 3w + gnd
Y	3 Phase Wye 4w + gnd
D	3 Phase Delta 3w + gnd
H	3 Phase Delta Hi-leg 4w+ gnd

Option Codes

R	Standard Options – (Red & Green LED's, Audible Alarm wit hEnable/Disable Feature)
RE	Standard Options + Enhanced EMI/RFI Filtering
RK	Standard Options + Alarm Relay Contacts
RKE	Standard Options + Enhanced EMI/RFI Filtering & Alarm Relay Contacts

Today's computing technologies compound conventional cooling problems. Blade servers, communications switches and other electronics are being packed into tighter and tighter spaces. Computing capacity that once filled an entire room is now contained in a single rack — creating extreme power and heat densities.

To solve heat density problems, the growing trend among today's IT professionals is an integrated precision cooling solution — one that solves both room-level and rack-level cooling challenges.

Precision Cooling Advantages

Question	Resolution
Provides Protection Under All Conditions	Yes, computers have changed — but the threats to their operation are as real as ever. An air conditioning system that maintains the temperature and humidity at the proper levels in your critical facility is an absolute necessity for the viability of your business.
Keep Moisture And Air Cleanliness Right Where They Need To Be	Ordinary building air conditioning and heating systems are designed to keep people comfortable. Computers and other sensitive electronics require a system that provides humidity control to meet equipment specifications — and air filtration designed to keep airborne particles from causing problems
Designed to Meet The Cooling Needs Of Any Critical Space	A mission-critical cooling system can be engineered to match just about any type or size of facility. There are downflow systems for raised floor facilities and upflow units where the floors are not raised. Supplemental systems can be used where equipment is tightly packed in racks. Compact models are ideal for small or remote facilities.
Engineered To Get The Most From Every Energy Dollar	Energy efficiency is no longer just an option for users of air conditioning. Today's systems offer a choice of compressor types, microprocessor controls and other optional features designed to reduce power consumption and maximize energy savings.
Designed To Operate Year-Round	Because most critical computing and communications facilities function on a 24 x 7 basis — so must the environmental equipment that is protecting it. Mission-critical cooling is designed to run around-the-clock, no matter what the outside weather conditions

Why Liebert Precision Cooling?

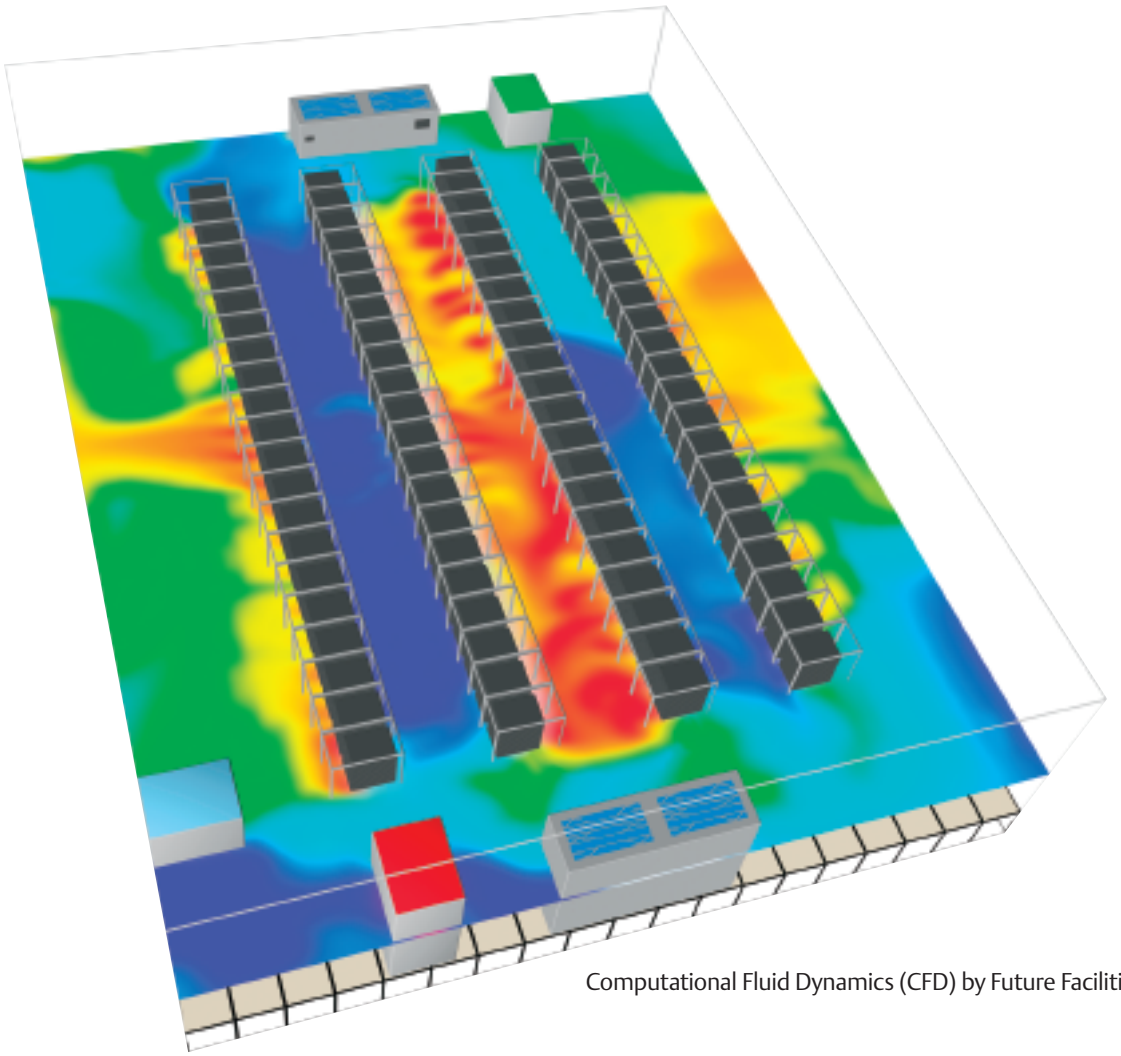
From the first precision-cooling system in 1965, to the first enclosed protection system in 1994, to the first high-density cooling system in 2002, Liebert has been the global leader in the world of business-critical systems.

In fact, more companies rely on Liebert for critical cooling than all other competitors combined.

Designed and built with the most rugged refrigeration components, Liebert mission-critical precision air conditioning systems have been in constant use for over 30 years — a purchase that has spanned generations of computers. Liebert Precision Cooling Products are recognized as the world's standard for reliable operation and lowest total cost of ownership.

We Surround You with Expertise

One of our most unique aspects is our network of local Liebert cooling experts, who offer Liebert cooling solutions tailored to your requirements. Our local Liebert Representatives have an average of 16 years of experience – the most in the industry. They will assess your needs, recommend appropriate solutions and provide any post-installation support. The combination of the Liebert's local expertise, Liebert Authorized Resellers and factory trained and certified local mechanical contractors, Liebert is able to provide the most comprehensive cooling solutions designed to meet your ever changing IT equipment needs. It's all part of delivering the Liebert Experience our customers have come to expect since 1965.



Computational Fluid Dynamics (CFD) by Future Facilities.

Liebert Challenger 3000 Cooling

Liebert Challenger is featured in these Scenarios:

Scenario C
3-6 Racks
Single Phase
page 12

Scenario D
7-10 Racks
Three Phase
page 14

Liebert Challenger 3000 precision air conditioning system provides complete environmental control, including precise temperature, humidity and air filtration. Designed to fit in the crowded confines of an equipment room or laboratory, it offers an extremely compact footprint for facilities where space is at a premium. All of the critical components are accessible from the front, so the unit can be installed in a corner or flush against other equipment.

Features & Benefits

Flexibility:

- Advanced microprocessor control
- Split system allows the compressor and condenser to be located remotely to reduce noise levels within room unit
- Small footprint
- Total front access for service
- Provides a complete environmental control package, including both precision air conditioning and humidity control
- Upflow and downflow models available
- Air, water, glycol and chilled water units available

Higher Availability:

- Built with Liebert quality components from the most trusted name in the industry
- Engineered for year-round operation
- SNMP communications for real-time monitoring event notification
- Reliable scroll compressor technology
- Standard hot gas bypass gives flexibility to adjust to various room loads

Lowest Total Cost Of Ownership:

- Refrigeration system utilizes Scroll compressor for maximum energy efficiency.
- Fast response microprocessor controls minimize short cycling and other wasteful operating patterns.
- Liebert precision air conditioning products are backed by the Liebert Service Partner Network (LSNP) - the largest nationwide network of service providers in our industry - for installation, start-up and preventive maintenance.

Frequently Asked Questions

Question	Resolution
Why is a Liebert Challenger 3000 precision cooling system better than ordinary building air conditioning?	The Liebert Challenger 3000 offers a much higher level of reliability compared to comfort cooling systems. It uses rugged refrigeration components that are designed to operate 24 hours a day, 365 days a year. The Liebert Challenger 3000 also provides the precise temperature and humidity control required by sensitive electronic computer equipment.
Does this type of cooling system use a lot more energy?	No. Because the Liebert Challenger has a greater sensible heat removal capability compared to a comfort cooling system of the same size, it will save money and even pay back part of your investment over the life of the system.
Does it take up a lot of room?	Designed to fit in the crowded confines of a small data center or equipment room, the Liebert Challenger 3000 offers an extremely compact footprint for facilities where space is at a premium.
Does the Liebert Challenger 3000 cost more to operate than a regular building air conditioning system?	Because of its reliability, compact size and efficient energy usage, the Liebert Challenger 3000 is actually less expensive to operate over its life cycle compared to comfort cooling equipment.

Competitive Advantages

You may be asked about the advantages of the Liebert Challenger 3000 cooling system compared to building air conditioning or other types of cooling systems. Here are some important differences that make the Liebert solution the right choice for many applications:

Feature	
High Reliability Compared to Comfort Cooling Systems	Reliable refrigeration components designed to operate 24 hours a day, 365 days a year.
Easy Maintenance	Front access for easy service access to internal components.
Energy Efficient	Combined with greater sensible heat removal, the Liebert Challenger also utilizes a scroll compressor for maximum energy efficiency.
Lower Total Cost of Ownership	In addition to energy efficiency, the Liebert Challenger is designed to withstand the test of time.

Specifications

Liebert Challenger based refrigerant R-22

System Type BU= Up Flow w/o raised floor BF= Down Flow w/ raised floor	Self-Contained Air Cooled			
Indoor Unit (based on 72°F, 45% RH)	BF/BU 042A		BF/BU 067A	
Net Capacity Data - Standard Air Volume	**BTU/H**	**kW**	**BTU/H**	**kW**
Total	37,900	11.1	58,300	17.1
Sensible	37,900	11.1	58,300	17.1

Indoor Cabinet Dimensions - Both 042A & 067A

Unit Height, in (mm)	Depth, in (mm)	Length, in (mm)
76 (1930)	33.5 (826)	33.5 (826)

Indoor Unit Weight - 60 Hz Models

Model	BF042A	BF067A	BU042A	BU067A
lbs (kg)	595 (270)	640 (291)	595 (270)	640 (291)

Indoor Unit Electrical Data - 60 Hz Models

Model Type	Self Contained Air Cooled			
	3 Ton B 042A		5 Ton B 067A	
Voltage- With electric reheat &	All voltages are 3 phase			
humidifier (infrared or steam-generating)	208	480	208	480
Motor	**.75 hp (.56kW)**		**1.5 hp (1.1kW)**	
Full load amps	42.0	19.6	68.0	32.3
Wire size amps	51.8	24.2	83.6	39.7
Overload protection device	50	25	90	40

Outdoor Unit Electrical Data - Air Cooled Condensers

Model CS083	Use for both BU/BF 042 and 067 Models at 95° F				
Number of Fans	1				
Motor (V/P/H)	**Hp**	**ph**	**FLA**	**WSA**	**OPD**
Fan Speed Controller - 20°F outside design					
208 / 230 / 1 / 60	0.75	1	4.8	6.0	15.0
208 / 230 / 3 / 60	0.75	3	4.8	6.0	15.0
480 / 1 / 60	0.75	1	2.5	3.1	15.0
480 / 3 / 60	0.75	3	2.5	3.1	15.0
Lee Temp Controller/Fan Cycling - 30°F outside design					
208 / 230 / 3 / 60	0.75	3	3.5	4.4	15.0
480 / 3 / 60	0.75	1	1.7	2.1	15.0

Outdoor Unit Condenser Dimensions

Condenser Size	Cabinet (with legs) Dimensions, inches (mm)			
	Height	Width	Length	Net Weight lb (kg)
CS-083	43 1/8 (1095)	43 9/16 (1108)	51 1/2 (1908)	425 (193)

Liebert Challenger Related Products

Liebert Liqui-tect® Leak Detection Systems
Provide quick sensing, accurate reporting and precise location of leaks below the floor or above the ceiling in critical facilities, allowing you to find and correct a leak before moisture can damage computers, wiring connections or other sensitive electronics.

Liebert Universal Monitor
This all-purpose, simple to use monitoring panel features multi-sensing, remote monitoring and remote control capabilities.

Liebert Nform
A simple to use monitoring and communications software solution that combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure.

Liebert IntelliSlot Web/485 card with adapter
Enables the Network and Building Management Systems that monitor your computing, communication and facility infrastructure to also monitor your Liebert cooling equipment through your existing network.

Liebert DS Cooling

Liebert DS is featured in these Scenarios:

Scenario E
10-30 Racks
Three Phase
page 16

Scenario F
30-60 Racks
Three Phase
page 18

Liebert DS precision cooling system provides efficient, precise, reliable control of room temperature, humidity and airflow for proper operation of critical electronic equipment. The flexible Liebert DS offers high energy efficiency, user-friendly iCOM controls, modular frame, front service access, and compressor options.

For more information about this product and its applications, go to www.liebert.com or contact your local Liebert Representative

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Air, Water, Glycol and GLYCOOL™ models. ▪ Upflow and downflow models available. ▪ Provides a complete environmental control package, including both precision air conditioning and humidity control. ▪ Choice of compressors, including Digital Scroll™, Scroll and semi-hermetic four-step models. ▪ Total front access for service. ▪ Modular frame construction for easy installation. ▪ Liebert iCOM control brings high-level supervision to networking multiple mission-critical cooling units.	▪ Built with Liebert quality components from the most trusted name in the industry. ▪ New Copeland Digital Scroll™ Compressors stepless variable capacity control for ultimate control and reliability. ▪ The Liebert DS is built for year-around operation. ▪ Uses environmentally friendly R-407c refrigerant.	▪ Ultra energy efficient GLYCOOL and Dual Cool hybrid models available. ▪ NEMA premium efficiency motors enable the unit to exceed today's most stringent government efficiency requirements. ▪ Liebert precision air conditioning products are backed by the Liebert Service Partner Network (LSNP) - the largest nationwide network of service providers in our industry - for installation, start-up and preventive maintenance.

Frequently Asked Questions

Question	Resolution
Why is a Liebert DS precision cooling system better than ordinary building air conditioning?	The Liebert DS offers a much higher level of reliability compared to comfort cooling systems. It uses rugged refrigeration components that are designed to operate 24 hours a day, 365 days a year. The Liebert DS also provides the precise temperature and humidity control required by sensitive electronic computer equipment.
Does this type of cooling system use a lot more energy?	No, due to a greater sensible heat removal capability compared to a comfort cooling system of the same size, the Liebert DS will save money and even pay back part of your investment over the life of the system.
What if you don't have a raised floor in your data center?	The Liebert DS is available in upflow models for use in facilities without raised flooring, as well as downflow models designed to be used with raised floors.
Does the Liebert DS cost more to operate than a regular building air conditioning system?	Specifically designed for the demanding requirements of year-round operation, the Liebert DS is actually less expensive to operate over its life cycle compared to both comfort cooling equipment and competitive precision air conditioning products.

Competitive Advantages

You may be asked about the advantages of the Liebert DS cooling system compared to building air conditioning or other types of cooling systems. Here are some important differences that make the Liebert solution the right choice for many applications:

Feature	
Wide Choice of Capacities	Downflow models (for raised floor applications) from 35-105 kW (8-30 tons) capacities and upflow models (for non-raised floor applications) in 35-105 kW (8-12 tons) sizes.
High Reliability Compared to Comfort Cooling Systems	Reliable refrigeration components designed to operate 24 hours a day, 365 days a year.
Easy Maintenance	Front access for easy service access to internal components.
Energy Efficient	Combined with greater sensible heat removal, the Liebert DS also utilizes a digital scroll compressor for maximum efficiency.
Lower Total Cost of Ownership	In addition to energy efficiency, the Liebert DS is designed to withstand the test of time.

Specifications

Air-cooled capacity data - R-407C refrigerant

Model Size (kW)	035	053	070	105
Compressor Size	Digital Scroll	Digital Scroll	Digital Scroll	4 step semi hermatic
Net capacity data kW (BTUH), standard air volume and evaporator fan motor				
72˚F DB, 58.6˚F WB (22.2˚C DB, 14.8˚C WB) 45% RH				
Total kW (BTUH)	33.0 (112,700)	49.3 (168,400)	61.7 (210,600)	85.4 (291,400)
Sensible kW (BTUH)	33.0 (112,700)	49.3 (168,400)	57.2 (195,100)	80.5 (274,600)

Indoor Unit Dimensions, In (mm)

Model No. (kW)	Height	Depth	Length
035	76 (1930)	34 3/4 (883)	73 (1854)
053	76 (1930)	34 7/8 (886)	98 (2489)
070	76 (1930)	34 7/8 (886)	98 (2489)
105	76 (1930)	34 7/8 (886)	132 (3353)

Indoor Unit Dry Weights - down flow, air cooled lb (kg) Approx.

Model No.	035	053	070	105
Air Cooled	1440 (653)	1920 (873)	1970 (896)	3040 (1379)

Indoor Unit Electrical Data

Reheat Options		Electric, Standard, kW			
Humidifier Options		Infrared or Steam Generating Canister			
Model	Motor hp	Volts	208	230	480
035	3.0	FLA	72.9	69.4	34.5
		WSA	88.5	84.4	41.9
		OPD	90	90	45
053	3.0	FLA	112.1	107.2	53.9
		WSA	137.5	131.6	66.2
		OPD	150	125	70
070	5.0	FLA	127.5	122.1	59.5
		WSA	155.2	148.8	72.5
		OPD	175	150	80
105	10.0	FLA	171.6	164.4	89.8
		WSA	201.1	197.6	103.0
		OPD	225	225	125

Outdoor Unit Condenser Selection

	Air-Cooled Condenser Selection		Liebert DS Size			
Refrigerant	Condenser Type	Ambient Tempeture ˚F (˚C)	035	053	070	105
R-407C	Outdoor Condenser	95˚ (35˚)	CD-205	CD-251	CD-308	CD-415
		100˚ (38˚)	CD-205	CD-308	CD-415	CD-616
		105˚ (41˚)	CD-251	CD-415	CD-415	CD-616

Outdoor Unit Condenser Dimensions

CondensorCabinet (with legs) Dimensions, inches (mm)

Size	Height	Width	Length	Net Weight lb (kg)
CD-165	43 1/8 (1095)	43 9/16 (1106)	91 1/2 (2324)	425 (193)
CD-205	43 1/8 (1095)	43 9/16 (1106)	91 1/2 (2324)	495 (225)
CD-251	43 1/8 (1095)	43 9/16 (1106)	131 1/2 (3340)	500 (227)
CD-308	43 1/8 (1095)	43 9/16 (1106)	131 1/2 (3340)	670 (305)
CD-415	43 1/8 (1095)	43 9/16 (1106)	171 1/2 (4356)	815 (370)
CD-510	43 1/8 (1095)	43 9/16 (1106)	171 1/2 (4356)	1188 (540)
CD-616	43 1/8 (1095)	87 1/8 (2213)	131 1/2 (3340)	1380 (627)

Liebert DS Related Products

Liebert Liqui-tect® Leak Detection Systems
Provide quick sensing, accurate reporting and precise location of leaks below the floor or above the ceiling in critical facilities, allowing you to find and correct a leak before moisture can damage computers, wiring connections or other sensitive electronics.

Liebert Universal Monitor
This all-purpose, simple to use monitoring panel features multi-sensing, remote monitoring and remote control capabilities.

Liebert Nform
A simple to use monitoring and communications software solution that combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure.

Liebert IntelliSlot Webcard
Delivers SNMP, Telnet and web-management capability for enhanced communications and control of Liebert UPS, Power Management or Precision Cooling systems. The card manages a wide range of operating parameters, alarms and notifications, transmitting data over the network.

Liebert XD Systems

Liebert XD Systems are featured in this Scenario: Scenario F 30-60 Racks Three Phase page 18

Liebert XDC

Liebert XDV

Liebert XDH

Adding targeted cooling is more cost-efficient than trying to lower the temperature of localized hot spots by increasing the overall room air conditioning capacity.

The Liebert XD solution for high heat density cooling applications is a hybrid approach using a combination of floor mount mission-critical cooling units and supplemental cooling from the Liebert XD Series.

Added as heat loads increase, supplemental Liebert XD cooling capacity allows your room to adapt as heat loads rise — allowing cooling solutions to be added and reconfigured to react to the changes in your environment. Individual systems can improve interior air flow, cool hot air ejected from the enclosure or cool hot spots near the racks.

Liebert XD Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Floor-mount or rack-mount modules, plus a choice of cooling capacities, cover any application requirements. ▪ Plug and play for initial installation and future growth. ▪ Can cool more than 30 kW per rack.	▪ The Liebert XD solution assures continuous operation of critical IT systems under extreme heat conditions. ▪ Designed to work with the hot aisle/cold aisle approach in both raised floor and non-raised floor applications, by efficiently drawing hot air out of equipment racks and moving cool air into the cold aisle.	▪ Total energy savings potential of up to 40% can be achieved with the Liebert XD solution. ▪ Minimal floor space requirements allow more room for IT equipment. ▪ Liebert precision air conditioning products are backed by the Liebert Service Partner Network (LSNP) - the largest nationwide network of service providers in our industry - for installation, start-up and preventive maintenance.

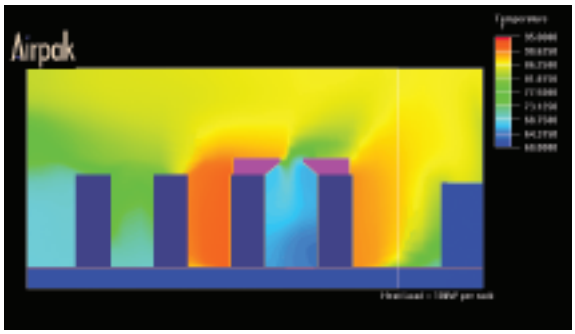
Frequently Asked Questions	
Question	**Resolution**
I already have a cooling system. Why do I need XD?	In many cases, high heat density hot spots or zones require targeted cooling solutions. The Liebert XD systems are specifically designed to address the higher heat loads that result from implementing blade servers or server consolidation strategies.
What are the advantages of pumped refrigerant technology over water-based solutions?	A leak in a water piping connection means that water could leak into the data center thus causing damage to equipment. Instead of water, Liebert uses environmental friendly refrigerant R-134a as the coolant in the XD cooling modules. The refrigerant would become a gas if a leak were to occur, thus causing no damage to the equipment within the space. In addition, the pumping unit (XDC) controls the refrigerant fluid temperature to always be above the actual dew point in the room so no condensation can occur.
What is the warranty for the Liebert XD?	The Liebert XD comes with a 1-year warranty and is available with preventive maintenance service options to ensures maximum efficiency of your equipment.
How difficult is installation?	The Liebert XD systems are designed as plug-and-play units and can be easily connected and disconnected to refrigerant lines. They can be easily reconfigured as heat densities in your computer room change. Additionally, Liebert offers complete installation and start-up services through the largest service organization in our industry.

Competitive Advantages You may be asked how the Liebert XD systems compare to other cooling methods or competitive products. Here are some major advantages:	
Feature	
No Risk of Water Leaks	The Liebert XD systems use pumped refrigerant, eliminating risk of leakage that can occur from using chilled water.
Greater Capacity	The Liebert XDV and XDH rated capacity of up to 30 kW is achieved at a lower rating point (lower inlet air temperatures and higher entering fluid temperatures) than other systems, thereby efficiently providing more capacity than the competition.
Easily Reconfigured	The Liebert XD flexible connection piping with quick-connect fittings makes the systems much easier to re-configure and expand than other types of cooling units that use limited flexibility plastic piping.

Hot Aisle / Cold Aisle Approach

A common way to improve performance of existing raised floor cooling applications has been the “hot aisle/cold aisle” approach. In this configuration, rows of equipment racks are arranged in alternating "hot" and "cold" aisles. Only the cold aisles have perforated floor tiles that allow cool air to come up from under the raised floor.

The Liebert XD units enhance the Hot Aisle / Cold Aisle approach by filling the cold aisle with air at the temperature required for proper operation of the electronic equipment.



Views of Computational Fluid Dynamics (CFD) by Fluent.

Liebert XDC Coolant Chiller

Liebert XDC is featured in this Scenario: **Scenario F 30-60 Racks Three Phase page 18**

The Liebert XDC Coolant Chiller is a specially designed indoor unit that connects directly to Liebert XDH and Liebert XDV units, providing chilled pumped refrigerant circulation and control. The packaged unit includes Enclosure, Pumps, Heat Exchanger, Scroll Compressors, Receiver Tank, Controls, Valves and Piping.

Liebert XDC Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Scaleable. ▪ Available in air-cooled, water and glycol configurations.	▪ The Liebert XDC monitors room conditions and prevents coil condensation by maintaining the coolant being pumped to the cooling modules at a temperature above the room dew point. All functions, such as temperature control, switching pumps are automatic. ▪ All functions, such as temperature control and switching pumps, are automatic. ▪ Uses environmentally friendly R-134a and R-407c refrigerant.	▪ Energy efficient. Uses Liebert XD™ pumped refrigerant, an off-the-shelf product that operates at low pressure and becomes a gas at room temperatures, making it ideal for use around electronic equipment. ▪ Floor space efficient. ▪ Easy to install. ▪ Liebert precision air conditioning products are backed by the Liebert Service partner Network (LNSP) — the largest nationwide network of service providers in our industry — for installation, start-up and preventive maintenance

Specifications

LIEBERT XDC	
Nominal Capacity	60 Hz 160 kW / 46 Ton
Nominal Capacity	50 Hz 130 kW / 37 Ton
Input Voltage	460 V, 3 ph, 60 Hz
	380/420 V, 3 ph, 50 Hz
Full load amps	79 A
Height	78" (1981 mm)
Width	74" (1879 mm)
Depth	34" (863 mm)
Weight, empty	2000 lbs (907 kg)

Liebert XDC Related Products

Liebert Liqui-tect® Leak Detection Systems
Provide quick sensing, accurate reporting and precise location of leaks below the floor or above the ceiling in critical facilities, allowing you to find and correct a leak before moisture can damage computers, wiring connections or other sensitive electronics.

Liebert Universal Monitor
This all-purpose, simple to use monitoring panel features multi-sensing, remote monitoring and remote control capabilities.

Liebert Nform
A simple to use monitoring and communications software solution that combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure.

Liebert IntelliSlot Web/485 card with adapter
Enables the Network and Building Management Systems that monitor your computing, communication and facility infrastructure to also monitor your Liebert cooling equipment through your existing network.

Liebert XDV
A flexible high density spot and zone cooling system that mounts on the top of the rack taking up zero floor space.

Liebert XDH
A flexible high density cooling system that sits in-line with rack enclosures.

Liebert XDV Cooling Module

Liebert XDV is featured in this Scenario: **Scenario F 30-60 Racks Three Phase page 18**

The Liebert XDV Cooling Module mounts vertically above or on the IT rack enclosure, drawing hot air from inside the cabinet or from the hot aisle. It then cools the air and discharges it down to the cold aisle. This space saving solution requires zero floor space.

Liebert XDV Features & Benefits

Flexibility:

- Requires no floor space.
- Complements Liebert precision cooling.
- Provides an excellent solution for spot and zone cooling.
- Offers flexible installation with several connection possibilities.
- Threaded quick-connect fittings allows adaptive and scalable expansion without interruption of cooling operation.

Higher Availability:

- Uses pumped refrigerant, which is ideal for use around electronic equipment.
- Includes coil, controls, fans and piping for a complete, packaged unit.
- Dual (A and B) detachable power cords for increased uptime.

Lowest Total Cost Of Ownership:

- Operates with high energy efficiency due to lower fan power.
- Offers superior cooling cost per high density rack due to 100% sensible cooling.
- Easy to install.
- Uses zero floor space.
- Liebert precision air conditioning products are backed by the Liebert Service partner Network (LNSP) — the largest nationwide network of service providers in our industry — for installation, start-up and preventive maintenance.

Specifications

	XDV10	
Nominal Capacity, 60 Hz1	10 kW / 2.8 Ton	
Nominal Capacity, 50 Hz1	8 kW / 2.3 Ton	
Nominal Airflow, 60 Hz	1000 CFM (1700 m^3/h)	
Nominal Airflow, 50 Hz	830 CFM (1410 m^3/h)	
Input Voltage	120 V, 1 ph, 60 Hz	
	230 V, 1 ph, 50/60 Hz	
Full load amps	2A @ 120V, 1ph, 60 Hz 1A @ 230V, 1ph, 50 Hz	
Audible Noise, 60 Hz / 50 Hz	78 dBa / 73 dBa Sound Power	
Height, module only	14" (355 mm)	
Width	23" (581 mm)	
Depth	29.5"-39.5" (749-1003 mm)	
Weight, empty	77 lbs (35 kg)	
Options	Quick Connect Couplings (for Flexible Piping)	
	Condensate Detection (dry contacts)	

1 Nominal Capacity Rating is @ 55°F (13°C) Entering Fluid Temperature and 98°F (37°C) Entering Air Temperature.
Max capacity 60Hz: XDV10 - 11.8kW @ 106 F (41 C)
Max capacity 50Hz: XDV10 - 11.8kW @ 116 F (47 C)

Liebert XDV Related Products

Liebert Liqui-tect® Leak Detection Systems
Provide quick sensing, accurate reporting and precise location of leaks below the floor or above the ceiling in critical facilities, allowing you to find and correct a leak before moisture can damage computers, wiring connections or other sensitive electronics.

Liebert Universal Monitor
This all-purpose, simple to use monitoring panel features multi-sensing, remote monitoring and remote control capabilities.

Liebert Nform
A simple to use monitoring and communications software solution that combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure.

Liebert IntelliSlot Web/485 card with adapter
Enables the Network and Building Management Systems that monitor your computing, communication and facility infrastructure to also monitor your Liebert cooling equipment through your existing network.

Liebert XDC
Extreme Density Heat Rejection
Specifically designed to support the Liebert XDV and XDH high-density cooling system that removes the heat from the critical space.

Liebert XDH Cooling Module

Liebert XDH is featured in this Scenario: **Scenario F 30-60 Racks Three Phase page 18**

The modular Liebert XDH Horizontal Row Cooler is placed directly in line with rack enclosures. Air from the hot aisle is drawn in through the rear of the unit, cooled, and then discharged through the front of the unit into the cold aisle. The modular and adaptive design of the Liebert XDH allows it to be easily added as the demand for cooling increases.

Liebert XDH Features & Benefits

Flexibility:

- Optional pre-charged flexible piping with threaded quick-connect fittings allows adaptive and scalable expansion without interruption of cooling operations.
- Offers flexible installation with several connection possibilities.
- Complements Liebert precision cooling.
- Provides an excellent solution for spot and zone cooling.
- Offers flexible installation with several connection possibilities.
- Complete packaged unit includes enclosure, coils, controls, fans and piping.
- Complements Liebert precision cooling units.

Higher Availability:

- Cools more than 30 kW per rack.
- Dual (A and B) detachable power cords for increased uptime.
- Uses pumped refrigerant which is ideal for use around electronic equipment.
- Two pumped refrigerant circuits allow interlaced connection to two XD refrigerant sources (Liebert XDC) to enhance reliability.
- Includes coil, controls, fans and piping for a complete, packaged unit.

Lowest Total Cost Of Ownership:

- Offers superior cooling cost per high density rack due to 100% sensible cooling.
- Operates with high energy efficiency due to lower fan power.
- Uses minimal floor space.
- Easy to install.
- Liebert precision air conditioning products are backed by the Liebert Service partner Network (LNSP) — the largest nationwide network of service providers in our industry — for installation, start-up and preventive maintenance.

Specifications

	XDH20	XDH32	
Nominal Capacity, kW (Tons)	**22 (4.7)**	**30 (6.4)**	
Voltage/Phase/Frequency	208/ 1 / 60		
	220 / 1 / 60		
	120 / 1 / 60		
Physical Data			
Height - Inches (mm)	78 (1981)		
Width - Inches (mm)	12 (305)		
Depth - Inches (mm)	42 (1067)		
Weight - lbs. (kg)	233 (106)	246 (112)	
Footprint			
Unit (sf)	3.5		
Unit with Service Area	4.5		
Warranty			
Unit	Liebert Stand.		
Labor	Liebert Stand.		
Parts	Liebert Stand.		
Compressor	N/A		
Agency Approvals			
CSA	Yes		

Liebert XDH Related Products

Liebert Liqui-tect® Leak Detection Systems
Provide quick sensing, accurate reporting and precise location of leaks below the floor or above the ceiling in critical facilities, allowing you to find and correct a leak before moisture can damage computers, wiring connections or other sensitive electronics.

Liebert Universal Monitor
This all-purpose, simple to use monitoring panel features multi-sensing, remote monitoring and remote control capabilities.

Liebert Nform
A simple to use monitoring and communications software solution that combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure.

Liebert IntelliSlot Web/485 card with adapter
Enables the Network and Building Management Systems that monitor your computing, communication and facility infrastructure to also monitor your Liebert cooling equipment through your existing network.

Liebert XDC
Extreme Density Heat Rejection
Specifically designed to support the Liebert XDV and XDH high-density cooling system that removes the heat from the critical space.

Liebert Nform Software

Liebert Nform is a network communications system that will enable you to leverage the distributed monitoring capabilities of your network connected equipment. This software solution combines full-scale monitoring with simple to use deployment through the use of the existing network infrastructure. It is both scalable and adaptable so it can grow as your systems expand and business needs change.

Features & Benefits

Feature:	Higher Availability:	Flexibility:	Lowest Total Cost Of Ownership:
Auto-discovery of Liebert Equipment	The ability to add multiple device types quickly for centralized management.	Multiple Network Segments can be scanned for networked equipment.	Simplified installation and configuration reduces overall installation time, reducing costs.
Supports non-Liebert equipment	The ability to monitor and control a wide range of support systems.	Provides monitoring of systems by multiple vendors eliminating the need for 3rd party software.	Supports current investments of existing systems deployed across the enterprise, keeping costs down.
Web Integration	Simple navigation of monitored systems from a centralized location.	NA	Eliminates the need for customized interfaces by utilizing the standard interface native to each piece of equipment.
44 Base Device Templates	Since the device templates are installed with every Nform system, monitoring of new equipment is readily available.	As infrastructure changes to the demands of a flexible business model, the Nform software by default is ready to adapt to changes to the critical infrastructure.	As additional equipment is deployed the monitoring of that equipment is simple, no additional cost is required to add systems to the Nform Software.
Alarm Filtering – Trap Forwarding	Filtering of alarms lessens the burden on a Network Management System with numerous alarms that often hide the critical alarm events.	The software can be configured to forward specific alarms to a Network Management System.	Now send only alarms that need some type of response. Reduce downtime by focusing on the root-cause of the immediate incident.
Device Management	No understanding of SNMP or MIB's required for basic monitoring.	N/A	Most systems require a good understanding of SNMP and MIB's. Device templates remove the technical aspects of monitoring SNMP based equipment.
Notification Update	When system uptime is in question to due to power fluctuations causing battery runtime, the software can send shutdown commands to the non-critical system first giving more runtime to system most critical.	N/A	As alarms are received by the system, notification reports detail every system or individual that has been alerted, allowing resources to respond accordingly and remove the redundancy of alarm reaction.
Desktop View	Quickly view the availability of the overall system with a summarized view.	Provides a dashboard view of the entire critical management system.	This dashboard view allows an immediate response to changes in the critical system, ensuring higher availability and reducing the downtime.

Features & Benefits *continued*

Feature:	Higher Availability:	Flexibility:	Lowest Total Cost Of Ownership:
Device Surveillance	Ensures the availability of each monitored piece of equipment by active monitor polling.	As long as the device supports SNMP, the system can actively poll equipment and determine the online status.	Some monitoring systems determine the availability of equipment by a simple ICMP ping. Nform determines availability by SNMP, testing the interface that is key to successful monitoring. This reduces the cost associated with unplanned downtime due to failure of alarm notifications.
Device Diagnostics Report	Diagnostic reports can be run on monitored equipment, detailing each critical interface: SNMP, ICMP, WEB and Telnet, and its reliability.	N/A	Reporting on system availability and the overall state of monitored equipment and all its interfaces allows quicker response to problems with the system, reducing downtime and creating a more reliable system.
Shutdown of Workstation and Servers	When system uptime is in question due to power fluctuations causing battery runtime, the software can send shutdown commands to the non-critical system first, giving more runtime to the system most critical.	The software can be configured to send shutdown notifications to servers and workstations on any alarm event.	Increases the runtime for critical equipment; orderly shutdowns prevent the loss of data for key business systems.
Communications Loop-Back	The software will execute an internal SNMP Trap that will be sent on the network and re-routed back to Nform, ensuring the software is operating per its configuration and confirming monitoring availability.	This loop-back test offers tremendous flexibility. It can be set up with any type of notification and configured to run at any time of the day.	Due to changes in security policies, often firewalls and new routers are setup which prevent the passing of valid communications of alarm events from monitored equipment. This loop-back test is crucial to availability; reducing the cost associated with downtime due to the lack of critical alarm notifications.
Condition Based Device Commands	When changes or fault conditions are imminent, the software can be configured to take appropriate actions on the monitored equipment, automating the desired reaction such as turning on additional cooling or rebooting of systems.	The software can be configured to take immediate action on equipment, taking a holistic approach on the overall critical system.	Maximizes efficiency, automates operational changes to system to automatically respond to environmental or alarm events. This ultimately reduces the cost associated with dispatching personnel to alarm events.

Frequently Asked Questions	
Question	**Resolution**
Can Liebert Nform shutdown operating systems when an alarm is received, as your Liebert MultiLink software does?	Yes, by adding the Liebert MultiLink shutdown license, Liebert Nform can be setup to send shutdown commands to Liebert MultiLink 1.5 clients.
If I am not using Liebert equipment, can I still use Nform?	Yes. Liebert can custom build templates for your UPSs to work with Liebert Nform.
Do I need a dedicated machine to run the system?	No, Liebert Nform can be installed on your computer to manage a few devices.
I have a NMS (Network Management System) why do I need Liebert Nform?	Liebert Nform is specifically designed to manage the critical equipment working with an NMS. It can be used to filter alarms and send only the most critical alarms to an NMS.

Liebert Nform Competitive Comparison			
Feature		**Liebert**	**APC**
Lock Application	Lets you select the alarm that you wish to delete, acknowledge it, close it using the tool bar ribbon buttons.	Yes	No
Desktop View	Provides a desktop overview of all managed devices. Users can quickly identify all devices operating normally, any present alarms and any devices not communicating properly.	Yes	No
Notification Updates	Users can quickly view the notifications on a device. This can be displayed per device.	Yes	No
Device Diagnostic	Provides a managed device summary report that includes version number of device, agent, alarm notification and alarm status. The report will also test each of the communication interfaces on the device; SNMP, Web, Telnet, ICMP.	Yes	No
Parametric Data View	User can view all the SNMP parametric data available on the device.	Yes	No
Network Statistics	The system will provide the NMS statistical data on the agent and how it performs on the customer's network.	Yes	No
Alarm Management	All alarm history can be viewed and managed. Users can view the history of each device or the complete system. User can acknowledge alarms and add comments to the alarms to define why a specific event happened.	Yes	Yes
Alarm Definition	User can view detail information on events or parametric data, explaining why an event happened and the parametric data for the managed equipment.	Yes	Yes
Auto-Logoff	Can automatically log the user out of the application. This essentially works like a screen saver. The system will be in "Lock Application" mode.	Yes	No
Users	The system supports two users; an administrator and power user, access level for system configuration or just alarm management.	Yes	Yes

Liebert Nform Software

Specifications

Software Options

System Features	Liebert Nform Software **Download Edition	Liebert Nform Software Professional Edition	Liebert Nform Software Enterprise Edition
Local Client Viewer	1	1	1
Remote Concurrent Client Viewer	No	No	5
Supported Operating Systems	Windows NT 4.0 w/SP6 or higher, Windows 2000, Windows XP, Windows 2003 Server	Windows NT 4.0 w/SP6 or higher, Windows 2000, Windows XP, Windows 2003 Server	Windows NT 4.0 w/SP6 or higher, Windows 2000, Windows XP, Windows 2003 Server
Real-Time Monitoring and Control			
Device Status Polling	Yes	Yes	Yes
Default Devices Supported	1	30	100
Web Card Integration	Yes	Yes	Yes
Open Architecture (Monitoring of non-proprietary SNMP devices) Device Template Included	Standard RFC1628 UPS Device Template Included	Standard RFC1628 UPS Device Template Included	Standard RFC1628 UPS
Device Supported	All Liebert UPS, Environmental, Power Distribution, and Monitoring products that support a SNMP interface	All Liebert UPS, Environmental, Power Distribution, and Monitoring products that support a SNMP interface	All UPS Liebert, Environmental, Power Distribution, and Monitoring products that support a SNMP interface
Notifications and Alerts			
Propagate Application to foreground	Yes	Yes	Yes
Load Local Viewer	Yes	Yes	Yes
Play Sound Wave	Yes	Yes	Yes
Play Default Beep	Yes	Yes	Yes
Flash Application when Minimized	Yes	Yes	Yes
Standard Actions			
E-mail Notification	Yes	Yes	Yes
Run External Program Capability	Yes	Yes	Yes
File Write			
Shutdown Network License*	Yes	Yes	Yes
Shutdown ML Clients			
Advance Notifications*	No	No	Unlimited Included
SNMP Set Request(s)	No	No	Yes
SNMP Get Request(s) Report	No	No	Yes

* **Note: These add-on packages can be added to the system with Licensing**

** **Software available at no charge at Nform.liebert.com**

Liebert Nform Additional Licenses

PART NUMBERS	Nform Additional Managed Device Licenses
NFORM-30N NFORM-100N NFORM-500N	Managed Device License kits allow the user to incrementally add support for monitoring additional numbers of network devices. Node Licenses are additive and manageable through License Key Administrator.
Liebert Nform Managed Device Licenses	
NFORM-1CUSER NFORM-5CUSER NFORM-10CUSER	Concurrent Client License allows the user to incrementally add support for additional numbers of connected clients. Concurrent Client Licenses are additive and manageable through License Key Administrator.
Liebert Nform Advance Notification License	
NFORM-ANOTIFY	Advance Notification License allows the user to add support for SNMP SET/GET Requests Actions.
Liebert MultiLink® Network Shutdown License, Unrestricted	
MLLKU	Liebert MultiLink Network Shutdown License allows you to efficiently shutdown workstations and servers running Liebert MultiLink throughout the network via Event-Alarm conditions from Liebert Nform.

Liebert Nform Related Products

Liebert IntelliSlot Webcard
Delivers SNMP, Telnet and web-management capability for enhanced communications and control of Liebert UPS, Power Management or Precision Cooling systems. The card manages a wide range of operating parameters, alarms and notifications, transmitting data over the network.

Liebert IntelliSlot Web/485 card with adapter
Enables the Network and Building Management Systems that monitor your computing, communication and facility infrastructure to also monitor your Liebert cooling equipment through your existing network.

Liebert MultiPort4
Relay contact multiplexing unit communicates the On Battery and Low Battery status of a single UPS to connected PCs, servers, or workstations. The user-installable, hot-swappable card provides UPS communications to a host computer and up to four additional computer systems with the Liebert IntelliRack multiplexing unit or UPS systems equipped with the Liebert IntelliSlot communication port.

Liebert MP Advanced Power Strips
"Smart" power strips allowing customers to monitor and control equipment at the receptacle level.

Liebert GXT
A fault-tolerant, network-enabled UPS capable of delivering data center quality power protection to racks and small rooms. Available in 500, 700, 1000, 1500, 2000, 3000, 6000, and 10,000 VA.

Liebert NX (40-120kVA)
The new Liebert NX with SoftScale™ UPS platform can be sized to current requirements and then easily scaled as needs change.

Liebert NX (10-30 kVA)
A compact three-phase true online UPS that offers power-factor correction, frequency conversion, internal dynamic bypass, internal maintenance bypass switch, internal batteries, additional battery cabinets, intelligent local monitoring and remote communications.

Liebert DS Cooling
An active precision room cooling system providing a highly energy-efficient solution, including temperature, humidity, filtration and airflow.

Liebert MultiLink™ Automated Shutdown Software

Liebert MultiLink is the perfect complement to a Liebert UPS system, preventing unexpected server shutdowns and minimizing downtime. The software provides unattended, orderly shutdown for one computer or many, and is especially effective with large server farms. Available for all popular operating systems, Liebert MultiLink has full event management and displays UPS instrumentation on screen.

Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Full functionality and automated shutdown protection right out of the box—virtually no configuration is required. ▪ Orderly shutdown on virtually an unlimited number of computer systems. ▪ User-selectable language interface—English, Canadian French, Latin American Spanish and Simplified Chinese. ▪ Quick configuration through the unique event manager matrix—from one screen, configure specific event actions while maintaining a view of the overall system configuration.	▪ Supports multiple shutdown configurations that incorporate network and serial based shutdown solutions for one or many computer systems. ▪ Includes integration to the Liebert IntelliSlot Web/485 Card with Adapter and the Liebert IntelliSlot Web Card interface, advanced action logging, enhanced unattended shutdown configurations and support for three-phase UPS systems.	▪ Using the network to send alarm messages and data can dramatically reduce cable and installation costs. ▪ Remote management of distributed Liebert MultiLink systems is also available with the network administration license, enabling any Liebert MultiLink installation on your network to be controlled from one centralized computer for more efficient management of your power protection.

Frequently Asked Questions

Question	Resolution
Do I need a Network Administration License for Liebert MultiLink?	You only need the Network Administration License when you are monitoring multiple UPSs or remotely controlling one Liebert MultiLink 3.x workstation from another Liebert MultiLink 3.x workstation.
Does the Liebert MultiLink Unlimited License work for all of my sites?	Each of the Liebert MultiLink License Kits is per one UPS. Each UPS must have a Liebert MultiLink License Kit when shutting down multiple computers / servers.

Competitive Comparison

Feature	Liebert MultiLink	PowerWare LanSafe5	APC PowerChute Business Edition	MGE Power Management Module
Type of Monitoring Connection	Serial, Contact Closure, SNMP	Serial, Contact Closure, SNMP	Serial, Contact Closure, SNMP	Serial, Contact Closure, SNMP
E-Mail Notification	Yes	Yes	Yes	Yes
Paging Notification	Yes	Yes	Yes	Yes
Configurable Alarm Text Messages	Yes	Yes	Yes	Yes
Multiple Computer Automated Shutdown	Yes	Yes	Yes	Yes

Liebert MultiLink Automated Shutdown Software

Specifications

System Features	MultiLink 1.5	Multilink Fundamental Version 3.6	Multilink Advanced Version 3.6 [1]
Type of Monitoring Connection	Contact Closure, SNMP	Serial, Contact Closure, SNMP	Serial, Contact Closure, SNMP
Graphs	No	Yes (Bar)	Yes (Bar)
Diagnostics Tests	No	Yes (Battery)	Yes (Battery)
Battery Replacement Notification	No	Yes	Yes
Output Control	No	Yes	Yes
Audible Alarm	No	Yes	Yes
Broadcast Notification	No	Yes	Yes
Automated Shutdown	Yes	Yes	Yes
E-mail Notification	No	No	Yes
Paging Notification	No	No	Yes
Event Based Command Scripts	Yes	No	Yes
Data Logging	No	No	Yes
Event Logging	Yes	Yes	Yes
Action Logging	No	Yes	Yes
HTML Integration (Hot Link to UPS Web Card)	No	Yes	Yes
Power Flow View	No	Yes	Yes
Secure Shutdown Options	No	Yes	Yes
UPS On Bypass Notification	No	Yes	Yes
Three-Phase UPS Certification	No	Yes	Yes
Global Notification Address Book	No	No	Yes
UPS Alarm Silence	No	Yes	Yes
Multiple Device Monitoring(LAN)	Yes	Yes	Yes
Multiple Device Monitoring(Out-of-Band)	Yes	Yes	Yes
Multiple Computer Automated Shutdown	Yes	Yes	Yes
UPS Compatibility	All Models	All Models	All Models As Previous Version
SNMP Trap Forwarding	No	Yes	Yes
Data Integrity (Protecting Network TransmissionEquipment)	No	Yes	Yes
Configurable Alarm Text Messages	No	Yes	Yes
Alert Message Delay	No	Yes	Yes
Remote Management	No	Yes	Yes
Remote Access Password Protection	No	Yes	Yes
OS Compatibility	http://multilink.liebert.com	http://multilink.liebert.com	http://multilink.liebert.com

1 MultiLink Advanced, version 3.6 can be purchased using part number MLADV. MultiLink Fundamental, version 3.6 can be upgraded to MultiLink Advanced, version 3.6 without the loss of configuration data or installed license files.

Liebert MultiLink Related Products

Liebert MultiPort4
Relay contact multiplexing unit communicates the On Battery and Low Battery status of a single UPS to connected PCs, servers, or workstations. The user-installable, hot-swappable card provides UPS communications to a host computer and up to four additional computer systems with the Liebert IntelliRack multiplexing unit or UPS systems equipped with the Liebert Intellislot communication port.

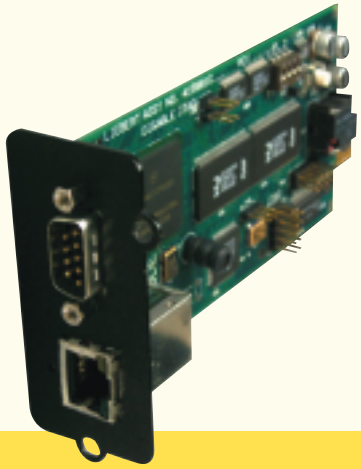
Liebert CommSure™
A redundant UPS interface that allows network managers to create their own high availability power system using existing UPS systems. The system eliminates false shutdown signals that occur when separate UPS systems are used to power computers with redundant power supplies.

Liebert MultiLink License Kits
Enable in-band shutdown on more than one computer utilizing your existing network infrastructure. MultiLink License kits decrease installation time and cost removing the need to run additional cable to each server or workstation that will be shutdown.

Liebert IntelliSlot Web Card

Liebert IntelliSlot Web Card is featured in these Scenarios:	Scenario A 1-2 Racks Single Phase page 8	Scenario B 1-2 Racks Single Phase page 10	Scenario C 3-6 Racks Single Phase page 12	Scenario D 7-10 Racks Three Phase page 14	Scenario E 10-30 Racks Three Phase page 16	Scenario F 30-60 Racks Three Phase page 18

Liebert IntelliSlot Web Card (formerly Liebert OpenComms Web Card and Liebert OpenComms NIC Card) delivers SNMP and Web management to a Liebert UPS, Power Management or Precision Cooling system connected to any 10 or 100 Mbit Ethernet network. The interface provides for remote web or in-the-field firmware upgrade. Alarms and parameters are transmitted over the network using SNMP, email, and SMS text. In addition, Liebert IntelliSlot Web Card w/Adapter supports Modbus.



Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Allows systems to be viewed from the network using a web browser. ▪ Delivers SNMP, Telnet and web management. ▪ Provides security using HTTPS message encryption. ▪ Supports 10 and 100MBit Ethernet for legacy and modern networks.	▪ Provides compatibility with Liebert MultiLink shutdown software to prevent data loss and ensure data availibility. ▪ Supports Liebert SiteScan WEB enterprise monitoring software to provide trending for proactive analysis and maintenance to ensure facility uptime. ▪ Interfaces with Liebert Nform alarm notification software to facilitate quick corrective action.	▪ Allows use of existing network, saving the cost of dedicated wiring. ▪ Requires no additional software installation for basic monitoring. ▪ Provides notification in the absence of a comprehensive monitoring system. ▪ Provides a single point of information/control.

Frequently Asked Questions

Question	Resolution
What Liebert products are supported by the IS-WEBCARD?	Liebert PowerSure PSI line-interactive UPS, Liebert GXT on-line UPS, Liebert GXT 6 & 10kVA on-line UPS, Liebert GXT 2U on-line UPS and Liebert Nfinity on-line UPS
What Liebert products are supported by the IS-WEBLB?	Liebert NX on-line UPS and Liebert Hinet on-line UPS.
Where can I obtain a user manual for my Liebert IntelliSlot Web Card?	http://www.liebert.com/product_pages/Product.aspx?id=184
Where can I view and test drive the web interface for the product I am purchasing?	http://demos.liebert.com/
What is the default User Name and Password for the Liebert IntelliSlot Web Card?	User Name: Liebert Password: Liebert
How many SNMP Trap targets can I configure in the Liebert IntelliSlot Web Card?	20
Is the Liebert IntelliSlot Web Card hot-swappable?	Yes, you will not be required to shutdown your UPS to install this card.
Can I obtain a list of the supported SNMP Traps and parameters from the card?	Yes, on the Support Tab of the Web interface is the SNMP capabilities Information (i.e. Traps/Events, Parameters). In addition, this information is available via the serial connection and Telnet. Consult the User Manual for more details.

Competitive Comparison - Network Card Comparison (for small UPS products only)

Feature	Liebert IS-WEBCARD	APC-MGE AP9619	Powerware ConnectUPS-E	Tripp Lite SNMPCARD
Enterprise Management System Compatible	Yes	Yes	Yes	Yes
Fault notification	Yes	Yes	Yes	Yes
Integrates with system shutdown software	Yes	Yes	Yes	Yes
Password security	Yes	Yes	Yes	Yes
Reboot equipment remotely	Yes	Yes	Yes	Yes
Remote device management (software)	Yes	Yes	Yes	Yes
SNMP Management	Yes	Yes	Yes	Yes
UPS MIB (RFC-1628) Support	Yes	NO	Yes	Yes
Web Management	Yes	Yes	Yes	Yes
Secure Web (SSL)	Yes	Yes	Yes	Yes
Network Firmware Upgrade	Yes	Yes	Yes	NO
Email Support	Yes	Yes	Yes	Yes
Multiple Browser Support	Yes	NO	Yes	Yes
Email Support	Yes	Yes	Yes	Yes
Multiple Browser Support	Yes	Yes	Yes	Yes

Specifications

Power Requirements	
AC Inputs	18 - 24 VAC; 50/60 Hz
DC Inputs	12 - 36VDC 18 - 24 VAC; 50/60 Hz
Power Consumption	6VA maximum (1.75W)
Dimensions - W x D x H: in. (mm)	3 x 5-1/4 x 1-1/2 (76 x 134 x 38)
Net Weight - oz. (kg)	7 (0.2)
Shipping Weight - lb. (kg)	1.3 (0.6)
Ambient Operating Environment, °F (°C)	32 to 104 (0 to 40); 10% to 90% RH (non-condensing)
Ambient Storage Temperature, °F (°C)	-4 to 140 (-20 to 60)
Protection	SELV Isolated User Connections, Watchdog Timer Circuitry
Communication Ports	
Service Terminal (RS-232)	DB9F, DTE
Ethernet Communications	RJ45

Liebert IntelliSlot Related Products

Liebert Nform
A simple to use monitoring and communications software solution that combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure.

Liebert MultiLink™ Shutdown Software
Liebert MultiLink software monitors battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.

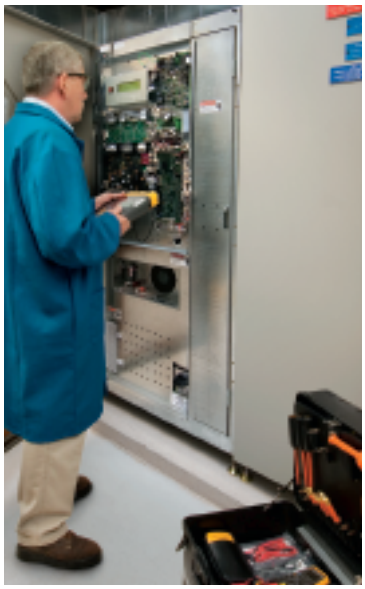
Servicing All Your Power And Related Equipment.

Your investment in power and cooling equipment is worthless if you don't maintain it. Not even the best equipment can function properly unless it's serviced with a regular maintenance schedule.

Emerson Network Power services the complete spectrum, from UPS to precision air systems to batteries and related power distribution equipment in your data center or in the other critical facilities where continuous availability of systems is essential.

The critical equipment we service includes:

- All UPS and Batteries
- Automatic Transfer Switch
- Static Transfer Switch
- System Control Cabinets
- PDUs
- Bypass Cabinets
- Power Conditioning
- Precision Air Systems
- Generators
- DC Power Equipment



Nobody Keeps Your Network Running Better.

Peace-of-mind. It's confidence you've done everything possible to assure system uptime. It's confidence the critical support systems you rely on are operating at peak performance. It's confidence you've selected the best partner available to bring you back online in the event of unexpected downtime.

When it comes to selecting a service organization to maintain your critical support systems—including installation, maintenance and service—only Emerson can provide you the breadth and depth needed to guarantee uptime assurance and downtime recovery. Only Emerson can provide you with complete confidence.

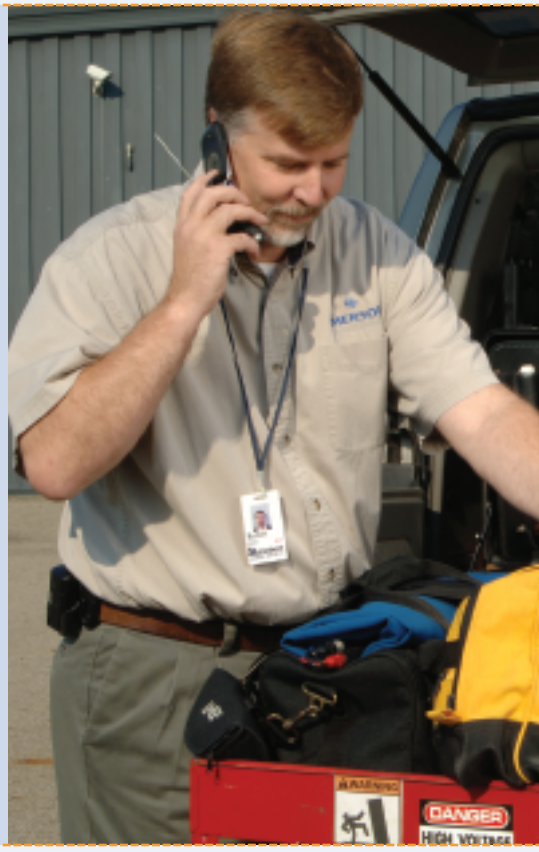
And creating this level of confidence is probably why 99% of our customers are satisfied with the service we provide. In fact, 96% of them would recommend us to someone else (source: MRSI).

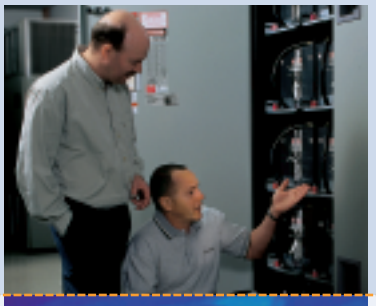
Delivering Uptime Assurance.

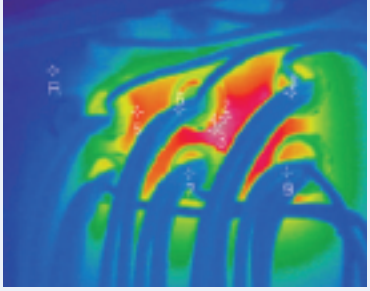
Emerson Network Power has the proprietary tools, industry knowledge and robust service infrastructure to deliver real assurance that your systems will be available when you need them. Our grid-to-chip maintenance strategy takes a system-focused approach to your critical equipment service, an approach that goes beyond standard offerings. It's a comprehensive Service Solution that looks at the power and cooling needs of your entire enterprise. And here are a few of the reasons we're able to deliver on such a promise.

The Critical Equipment We Service Includes:

- Design Services—Availability assessments, infrared testing, electrical testing, cooling assessments, facility power audits.
- Preventive Maintenance—Regular maintenance ensures that your vital equipment always operates at peak performance. This extends availability and reduces total cost of ownership.
- Predictive Maintenance—Predicting issues and potential failures before they arise. This creates a more sustainable and dependable network.
- Enterprise Remote Monitoring—Monitoring of all your critical support equipment, regardless of manufacturer. For when you need to know what's happening in all your facilities, but don't have the time or resources to do it yourself.







You'll Get A Response. And A Resolution.

Unplanned downtime can occur any day, any time. Confident customers know their critical systems services partner will have them back and running quickly and efficiently. After all, if downtime should strike, you need a partner that can get you back online quickly with intelligent answers, rapid service response and parts where and when you need them.

We Have The Resources

Our Customer Resolution Center supports you 24x7x365. It's always staffed by knowledgeable people who understand your technology and your equipment. No messages. No answering services. We handle over 100,000 calls per year, and resolve them in an average time of 2.5 minutes.

We Have The People

The Service Business of Emerson Network Power has the coverage and capabilities to get you through just about anything. We have the most and the best factory-trained Customer Engineers in the industry—over 375 of them located across the country. What's that mean to you? Our average onsite response time in 2006 was just 1.6 hours.

We Have The Parts

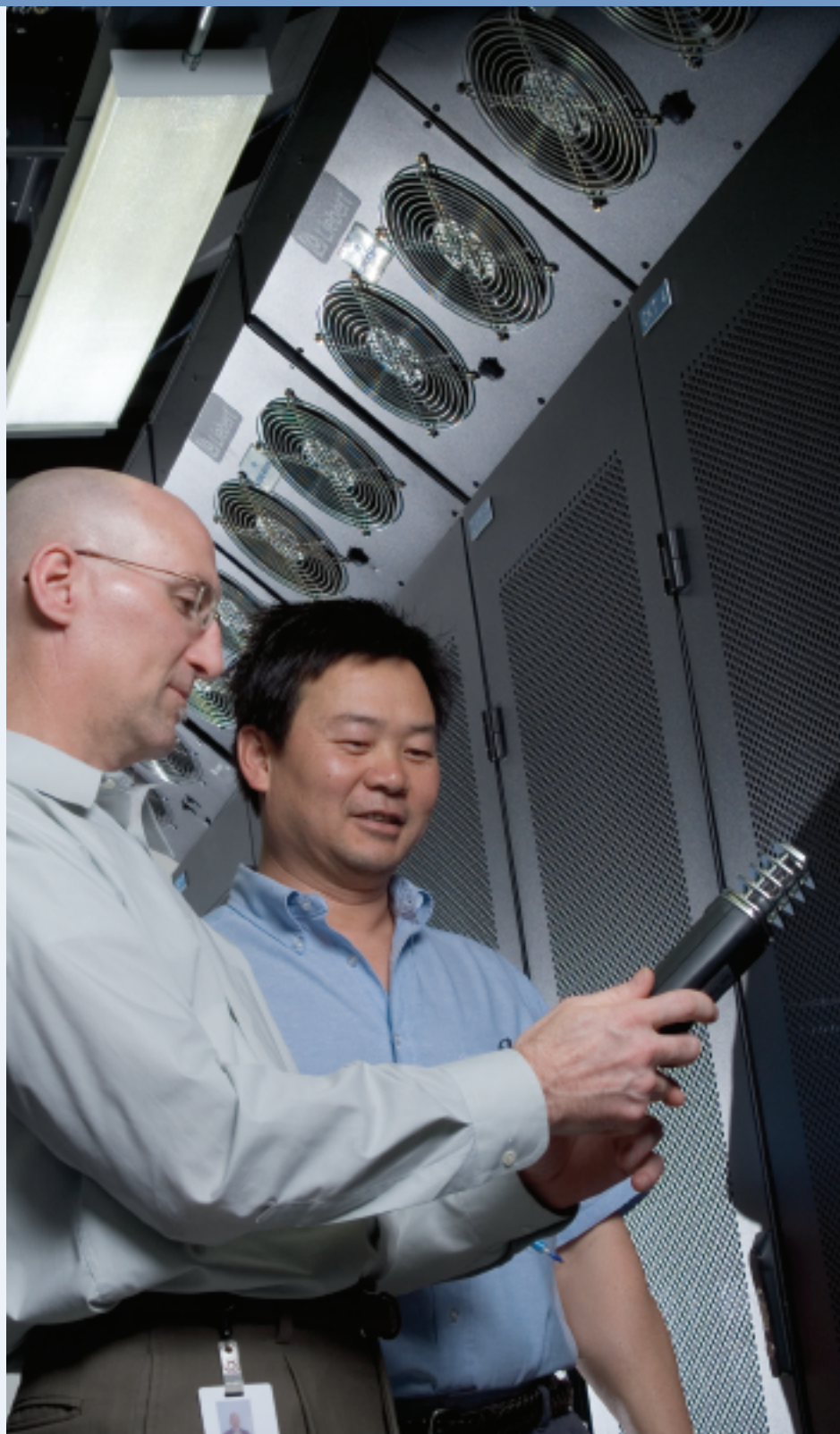
To make sure the job gets done when it needs to, we have the most factory-certified parts—and the most sophisticated logistics system to get them wherever they're needed. You won't wait on parts to get your system up and running, because nearly 100% of emergency parts orders are delivered in less than 24 hours.

The Company That Invented Critical Systems Protection.

We invented the precision cooling system in 1965. We synchronized the first UPS load bus in 1991. We constructed the first enclosed protection system in 1994. And, in 2002, our innovation spawned the first high-density cooling system. For decades, Liebert technology has given IT organizations the reliability and flexibility they need to succeed.

There's a good reason why every company in the Fortune 500 relies on Liebert technology to protect their mission-critical systems. Liebert has consistently developed the power, cooling and monitoring technologies that IT organizations rely on to manage growth and integrate new technologies. As part of Emerson Network Power, network resiliency and adaptability is evident through our family of solutions. Whether it's racks, power, cooling and monitoring products or service support and installation, our technologies provide critical protection from power grid connection to data processor crunching.

We Provide The Network That Protects Your Network.



Solutions Designed For Your World.

Achieving mission-critical network availability requires the installation, management, and continuous support of your network's infrastructure.

This continuous availability rests on the power and cooling infrastructure that supports these systems, and requires four key components:

1. Mission Critical Power
2. Mission Critical Cooling
3. Monitoring And Management
4. Proactive Maintenance

In addition, Liebert has created new power, cooling and monitoring solutions that help deliver continuous availability—and real value beyond the sum of the part.

We offer unsurpassed adaptability, customization, and the ability to integrate across multiple products and services. Here are some ways that our power, cooling and monitoring solutions create significant value for our customers:

- Greater knowledge gain of your needs and ability to meet those needs.
- Solutions that are more reliable, more comprehensive and more suitable to your needs—delivering greater strategic and operational impact, higher reliability, flexibility and lower total cost of ownership.
- Collaborative effort benefits—combining our knowledge, expertise and resources to meet your needs.

The end result is an infrastructure with the ability to anticipate and adapt to change.

Liebert Adaptive Architecture.

The Liebert Adaptive Architecture is a combination of power, cooling and monitoring technologies that provide mission-critical IT support across your entire enterprise. The Liebert Adaptive Architecture delivers higher performance with greater flexibility than any other infrastructure design.

Flexibility

Products or systems can be reconfigured or added to meet the demands of new technologies, achieve higher protection results and adapt to growth/changing business requirements.

Higher Availability

Proven technologies and system designs minimize single points of failure or downtime in your IT systems. So your network is ready, when you need it to be.

Lowest Total Cost Of Ownership

Philosophy that what costs more now will pay off in the long run. The efficiency and ability to adapt to change or expansion extends the life span of Liebert technologies. Saving you money in the future.

Ensuring The High Availability Of Mission-Critical Data And Applications.

Emerson Network Power, the global leader in enabling business-critical continuity, ensures network resiliency and adaptability through a family of technologies – including Liebert power and cooling technologies – that protect and support business-critical systems. Liebert solutions employ an adaptive architecture that responds to changes in criticality, density and capacity. Enterprises benefit from greater IT system availability, operational flexibility, and reduced capital equipment and operating costs.

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