

*Integrated, Pre-Engineered Solutions
Of Emerson Network Power
For Computing In Europe*



Table Of Contents

Introduction	Page 3	Bringing Market-Leading Data Center Technology To Your Business
	Page 4	A Perfect Solution – A Single Source
	Page 6	One Face To The Customer
	Page 8	Glossary of Terms
	Page 9	System Sizing
Solution Scenarios	Page 10	Scenario A • 1-2 Racks – Network Access Closet—Single Phase
	Page 12	Scenario B • 1-2 Racks – Network Access Closet—Single Phase
	Page 14	Scenario C • 3-6 Racks – Small Data Room—Three Phase
	Page 16	Scenario D • 7-10 Racks – Small Data Center—Three Phase
	Page 18	Scenario E - Opt.1 • 10-30 Racks – Small Data Center—Three Phase
	Page 20	Scenario E - Opt.2 • 10-30 Racks – Small Data Center—Three Phase
	Page 22	Scenario F - Opt.1 • 30-60 Racks – Medium Data Center—Three Phase
	Page 24	Scenario F - Opt.2 • 30-60 Racks – Medium Data Center—Three Phase
	Page 26	Scenario F - Opt.3 • 30-60 Racks – Medium Data Center—Three Phase
Racks	Page 28	Knürr Miracel® and Knürr Miracel Plus® Server Rack
	Page 31	Liebert MCR™ Mini Computer Room
	Page 34	Liebert XDFN™
	Page 38	Knürr CoolTherm®
	Page 39	Knürr CoolAdd®
	Page 40	Knürr RMS Compact II®
	Page 41	Knürr ARC® (Admin Rack Console)
Power	Page 42	Liebert PowerSure™ PSI UPS
	Page 45	Liebert GXT™ UPS
	Page 49	Liebert NX™ UPS (10-30 kVA)
	Page 51	Liebert NX™ UPS (40-200 kVA)
	Page 56	Knürr Cable Management
	Page 57	Knürr Di-Strip®
Surge Protection	Page 59	Liebert AccuVar®
Precision Cooling	Page 61	Precision Cooling
	Page 62	Liebert HPM™ S Cooling
	Page 65	Liebert HPM™ M-L Cooling
	Page 68	Liebert XD™ Systems
	Page 70	Liebert XDC™ Coolant Chiller
	Page 72	Liebert XDV™ Cooling Module
	Page 74	Liebert XDH™ Cooling Module
	Page 75	Knürr CoolLoop®
	Page 76	Knürr CoolFlex®
Monitoring	Page 78	Liebert Nform™ Software
	Page 83	Liebert MultiLink® Automated Shutdown Software
	Page 85	Liebert IntelliSlot™ Web Card
Service	Page 87	Liebert Services
	Page 88	Liebert Uptime Assurance
	Page 89	Liebert Response
	Page 91	Emerson Network Power Integrated, Pre-Engineered Solutions

*For Many Decades, **Emerson Network Power** Has Been A Global Leader In The World Of Business-Critical Systems. The Best Run Companies Have Relied On Our Product Solutions, Technologies And Services*



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 technologies. Cost and floor space restrictions.

With Knürr and 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 unique needs of various Data Centers, we as Emerson Network Power integrated rack systems, with thermal management, power, cooling, monitoring and service as a pre-engineered solution. Plus, we offer optional services and local expertise and support that make our solution easy to

Integrated solutions. Pre-engineered benefits. Energy efficient.

Only Emerson Network Power coupled with Knürr and other divisions 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 us, 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 our name on each, our pre-engineered products are meant to work together.
- **Technical Support** — Local and factory support by application specialists is available if needed. We as Emerson Network Power 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.
- **Energy Efficiency** — It has always been our commitment to our customers, which is why we are able to offer 'Green-IT' solutions that have become the benchmark in the ICT market. The end result? A Data Center infrastructure with the ability to anticipate and adapt to change.

A Perfect Solution – A Single Source

Solutions Of Emerson Network Power Give Your Mission-Critical Network The Flexibility To Deal With Uncertainty

Our pre-engineered solutions promise flexibility and availability, providing you 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 the most stringent demands.

We are a single, global source with a long and successful legacy of protecting the operation of mission-critical systems.

Only Emerson Network Power can provide you with Knürr and Liebert products as well as the services you need - before, during, and after the installation, and the peace of mind you deserve.

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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.

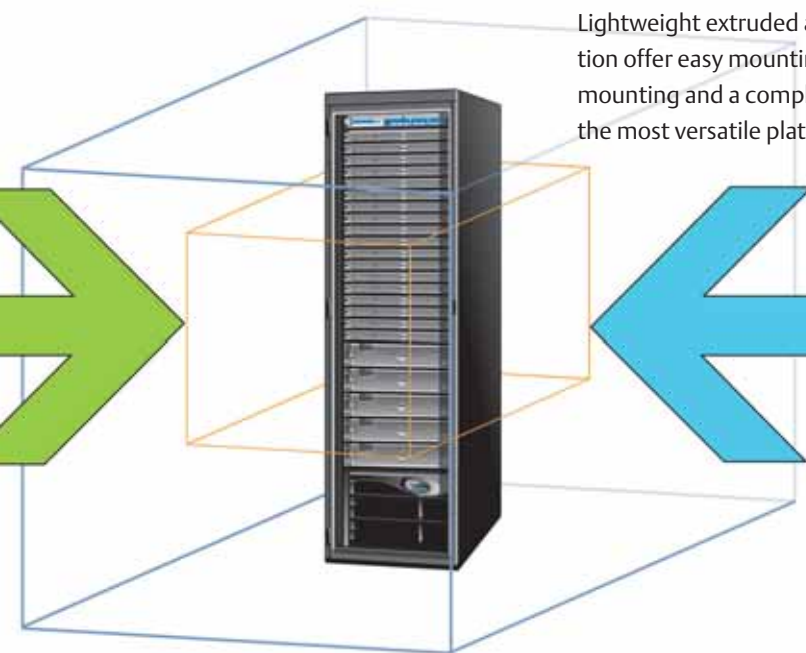
Knowing what is happening with your critical power and cooling equipment — and having automated processes to shut down servers in an orderly way if required — is vital to system reliability and uptime.



MONITORING

Rack Platform

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 including preventive maintenance.



One Face To The Customer

Best-In-Class Technologies From A Single Source

Center of Expertise:

When you partner with Emerson Network Power for your *Business-Critical Continuity™* needs across your enterprise, you benefit from not only Knürr and Liebert products and support, but also from the protection your technology infrastructure receives.



■ AC Power

Mission critical operations can't go down. With a full range of uninterruptible AC power systems and associated power distribution and enclosures, from individual products to integrated systems we keep Data Centers up and running.

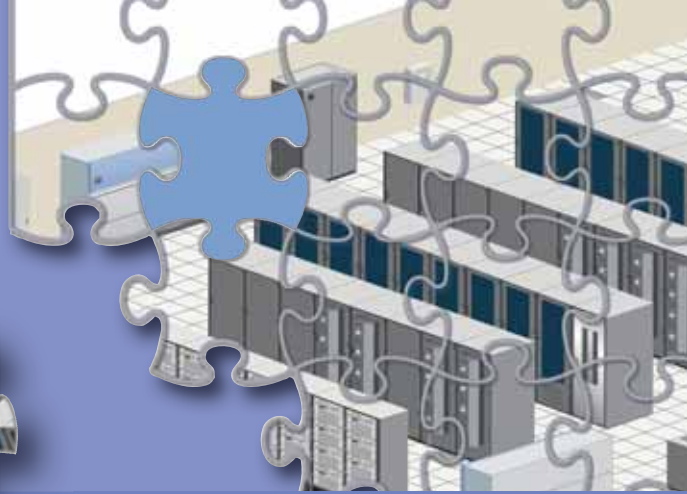
■ Connectivity

Keeping your voice, video and data flowing smoothly and quickly.

We deliver connectivity solutions, through a full line of products that safeguard network reliability.

■ DC Power

Supporting voice and communication networks with dependable DC power. We've built a DC Power technology platform, the next-generation global technology platform that delivers the most rigorous network-power applications, with DC power, distribution, control and monitoring systems.



■ Embedded Computing

Reducing time to market and software-development costs for the telecom industry. We deliver comprehensive, highly integrated platform solutions that draw on our deep expertise, plus a full line of products that bring real competitive advantage.

■ Outside Plant

Protecting and moving voice, video and data electronics from the central office closer to the subscriber or optimizing cellsite infrastructure. We deliver a full line of enclosures, cabinets and shelters that meet the networked world's demands for high speed without interruption.

■ Racks & Integrated Cabinets

Optimizing technology and performance needs for indoor IT applications.

We deliver standard and customized integrated cabinet solutions that meet unique and specific needs for computer rooms of all sizes to integrated enclosures that include self-contained air conditioning, UPS and wiring management in a sturdy, lockable cabinet.

■ Power Switching & Controls

Safeguarding facilities from operational disruption in case of electrical abnormality. We deliver power-transfer switches for an on-site power source that ensures power continuity for sensitive communications and data-processing electronics, while providing increased power control.

■ Services

Delivering network reliable programs backed by the largest global services organization in the industry. We encompass engineering, installation, project management and total on-site operations management, preventive maintenance and energy-consumption-monitoring.

■ Monitoring

Managing critical equipment activity at multiple sites and site monitoring around the clock – with 24x7 remote and self-monitoring systems and services that provide continuous oversight of Data Centers as well as wireless, wireline and enterprise telecom applications.

■ High Density Cooling

Maintaining precise temperature for reliable equipment performance. We deliver “chip-to-room cooling” – the most comprehensive range of precision- and high density cooling solutions, which protect mission-critical applications from even a slightest increase in temperature.

■ Surge Protection

Defending power, voice and data in a network against grid irregularities and dangerous electrical disturbances. We offer product solutions which provide power protection to reduce downtime, save crucial man-hours and extend equipment life.



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 (EMEA)

A three phase circuit consists of three phases, ground and in most cases neutral. Typical three phase voltages are 380V, 400V and 415V.

Power – Single Phase (EMEA)

Single phase circuit is a two-wire circuit with ground. Typically 220V 230V or 240V.

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 sqm to over 300Watt per sqm). 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.

kW

Standard unit of electrical power equal to 1000 watts, or an energy consumption rate of 1000 joules per second (where joule is the amount of energy required to raise the temperature of 1kg of water by 1°C)

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 needs is 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 Where V is the line-to-line voltage	For single-phase equipment
$kVA = \frac{V \cdot A (1.73)}{1000}$	$kVA = \frac{V \cdot A}{1000}$

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).

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

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.

Scenario A

1-2 Racks — Network Access Closet Single Phase

This is an example of a recommended solution:

Specifications	Scenario A
Input Power	230V - 1 phase
Raised Floor	No
kW Range	1 - 3 kW
Racks	1 - 2
UPS	Liebert PowerSure PSI Line-Interactive
Power Distribution	Knürr Di-Strip®
Cooling	-
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
Server Shutdown	Liebert MultiLink
Surge Suppression	-

Solution:

For the room in need of a single rack, this is an example of the Emerson Network Power 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 or Knürr representative.

Products:

- **Knürr Rack Miracel®** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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 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.



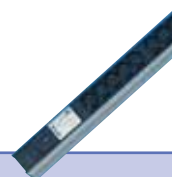
Knürr
19" Racks
Miracel®

page 28



Knürr
Cable
Management

page 56



Knürr
Di-Strip®

page 57



Knürr
RMS Compact II®

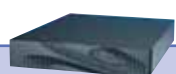
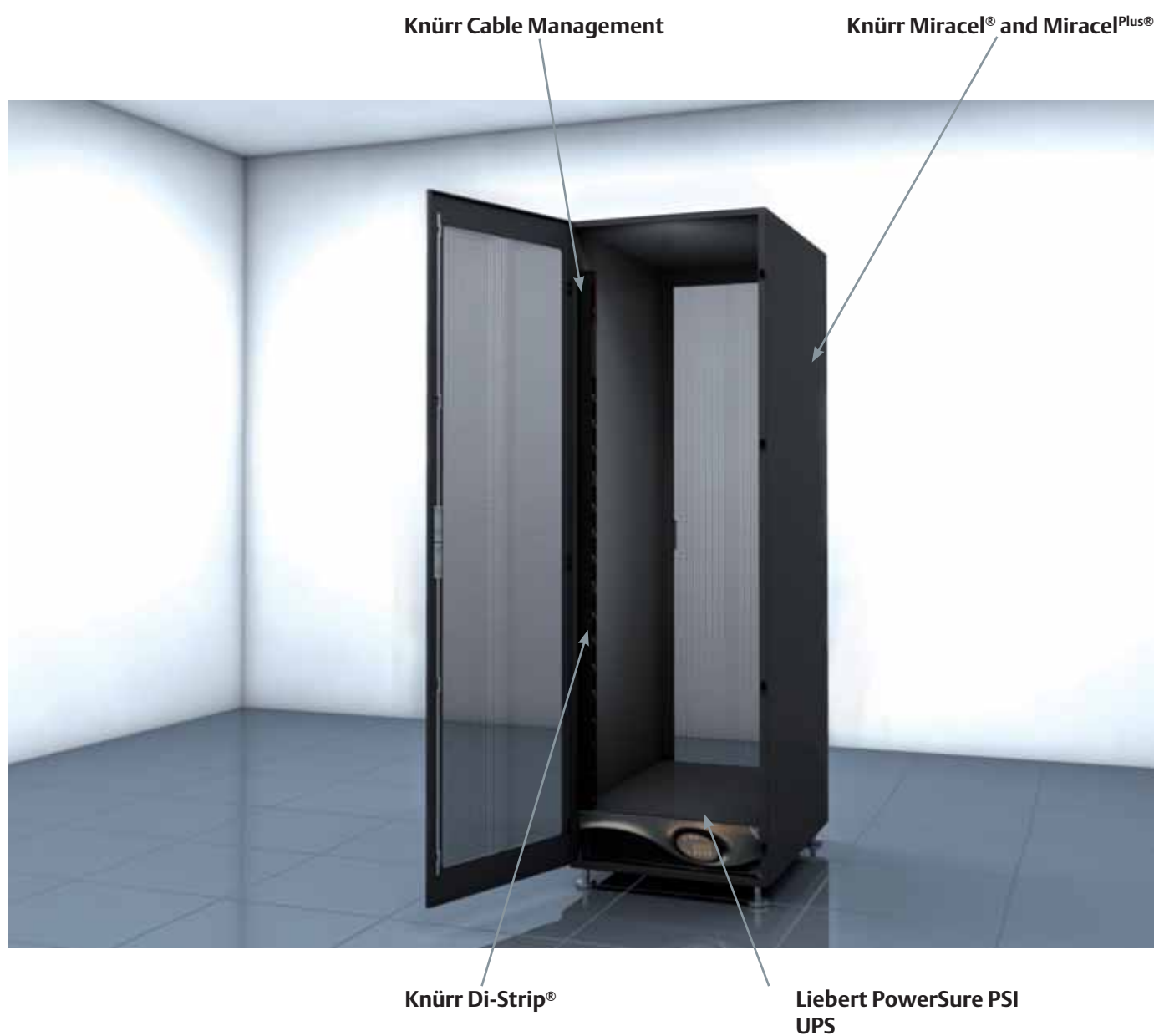
page 40



Knürr ARC
(Admin Rack
Console) and
KVM Switches
page 41

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

Scenario A



**Liebert
PowerSure
PSI UPS**

page 42



**Liebert
Monitoring
& Shutdown**

page 78



**Installation,
Support and
Services**

page 87

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	230V - 1 phase
Raised Floor	No
kW Range	up to 1.8 kW
Racks	1
UPS	Liebert GXT On-line
Power Distribution	Knürr Di-Strip®
Cooling	Liebert MCR
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
Server Shutdown	Liebert MultiLink
Surge Suppression	-

Specifications	Scenario B (Option 2)
Input Power	230V - 1 phase
Raised Floor	No
kW Range	up to 14 kW
Racks	1-2
UPS	Liebert GXT On-line single phase
Power Distribution	Knürr Di-Strip®
Cooling	Liebert XDFN three phase
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
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 or Knürr representative.

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.
- **Knürr Di Strip** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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 worldclass service contracts for all of Liebert's power and cooling products.

Products (Option 2):

- **Liebert XDFN Integrated Enclosure** – Integrated equipment cabinet with built in cooling, power distribution, racks, monitoring and fire extinguish system offering full redundancy and back up ventilation.
- **Knürr Di-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.



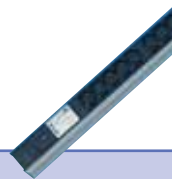
Liebert
Foundation
MRC™

page 31



Knürr
Cable
Management

page 56



Knürr
Di-Strip®

page 57



Knürr
RMS Compact II®

page 40



Knürr ARC
(Admin Rack
Console) and
KVM Switches

page 41

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

Scenario B

Knürr Cable Management
Option 1:



Liebert GXT UPS

Liebert MCR enclosure
with integrated cooling

Option 2:



Liebert GXT UPS

Liebert XDFN



Liebert GXT UPS

page 45



Liebert XDFN

page 34



Liebert Monitoring
& Shutdown

page 78



Installation,
Support and
Services

page 87

Scenario C

3-6 Racks – Small Data Room Three Phase

This is an example of a recommended solution:

Specifications	Scenario C
Input Power	400V - 3 phase
Raised Floor	No
kW Range	7 - 16 kW
Racks	3-6
UPS	Liebert GXT On-line
Power Distribution	
- Power strips	Knürr Di-Strip®
- Maintenance Bypass	Liebert MicroPOD
Cooling	Liebert HPM S
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
Server Shutdown	Liebert MultiLink
Surge Suppression	-

Solution:

For the room with 3–6 racks, this 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 or Knürr representative.

Products:

- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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 HPM 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 (< 0,56 m²).
- **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.



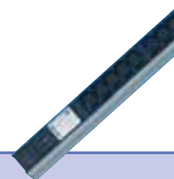
Knürr
19" Racks
Miracel®

page 31



Knürr Cable
Managment

page 56



Knürr
Di-Strip®

page 57



Knürr
RMS Compact II®

page 40



Knürr ARC
(Admin Rack
Console) and
KVM Switches
page 41

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

Scenario C



**Liebert
PowerSure
PSI UPS**

page 42



**Liebert
MicroPOD**

page 55



**Liebert
HPM S
Displacement**

page 62



**Liebert
Monitoring
& Shutdown**

page 78



**Installation,
Support and
Services**

page 87

Scenario D

7-10 Racks — Small Data Center Three Phase

This is an example of a recommended solution:

Specifications	Scenario D
Input Power	400V - 3 phase
Raised Floor	Optional
kW Range	8 - 24 kW
Racks	7 - 10
UPS	Liebert NX On-line
Power Distribution	
- Power strips	Knürr TriplePower®
- Maintenance Bypass	Included in UPS
Cooling	Liebert HPM S Displacement
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
Server Shutdown	Liebert MultiLink
Surge Suppression	Liebert AccuVar

This solution is also available with under floor air distribution.
In this case the scenario will use Liebert HPM U type

Solution:

For the server room or small data center of 7–10 racks, this innovative and reliable Emerson Network Power 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 or Knürr representative.

Products:

- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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 AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert HPM 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 (< 0,56 m²).
- **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 and Knürr products in this Scenario, go to the pages indicated:



**Knürr
19" Racks
Miracel®**

page 31



**Knürr Cable
Managment**

page 56



**Knürr
Di-Strip®
TriplePower®**

page 57



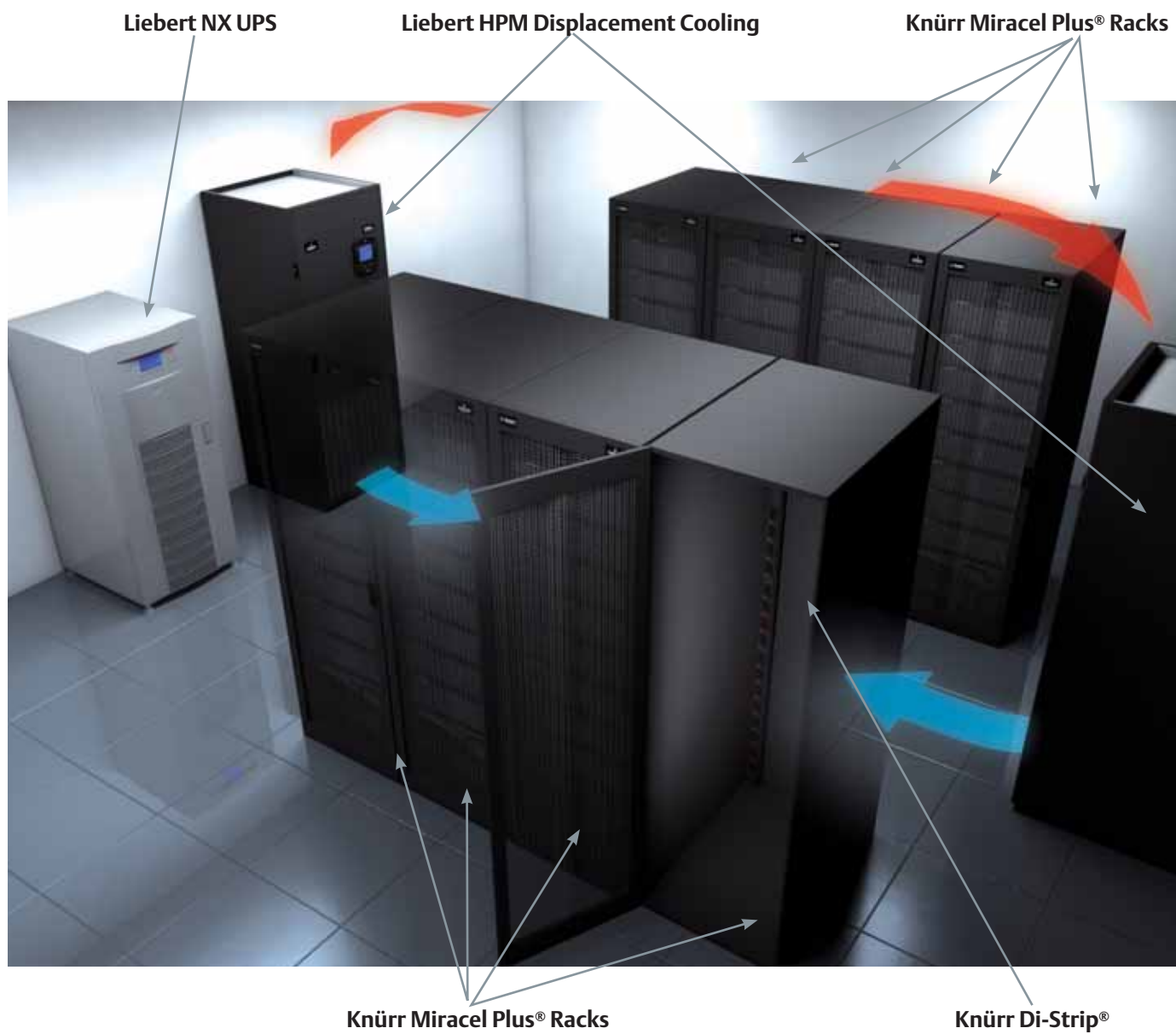
**Knürr
RMS Compact II®**

page 40



**Knürr ARC
(Admin Rack
Console) and
KVM Switches**
page 41

Scenario D



Liebert
NX UPS

page 49



Liebert
AccuVar

page 59



Liebert
HPM S
Displacement
Cooling

page 62



Liebert
Monitoring
& Shutdown

page 78



Installation,
Support and
Services

page 87

Scenario E - Option 1

10-30 Racks – Small Data Center Three Phase

This is an example of a recommended solution:

Specifications	Scenario E
Input Power	400V - 3 phase
Raised Floor	Optional
kW Range	36 - 72 kW
Racks	10 - 30
UPS	Liebert NX On-line
Power Distribution	
- Power strips	Knürr TriplePower®
- Maintenance Bypass	Included in UPS
Cooling	Liebert HPM M
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
Server Shutdown	Liebert MultiLink
Surge Suppression	Liebert AccuVar

Solution:

As your system needs grow more complex, we have 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 or Knürr representative.

Products:

- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert HPM 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.



Knürr
19" Racks
Miracel®

page 31



Knürr Cable
Managment

page 56



Knürr
Di-Strip®
TriplePower®

page 57



Knürr
RMS Compact II®

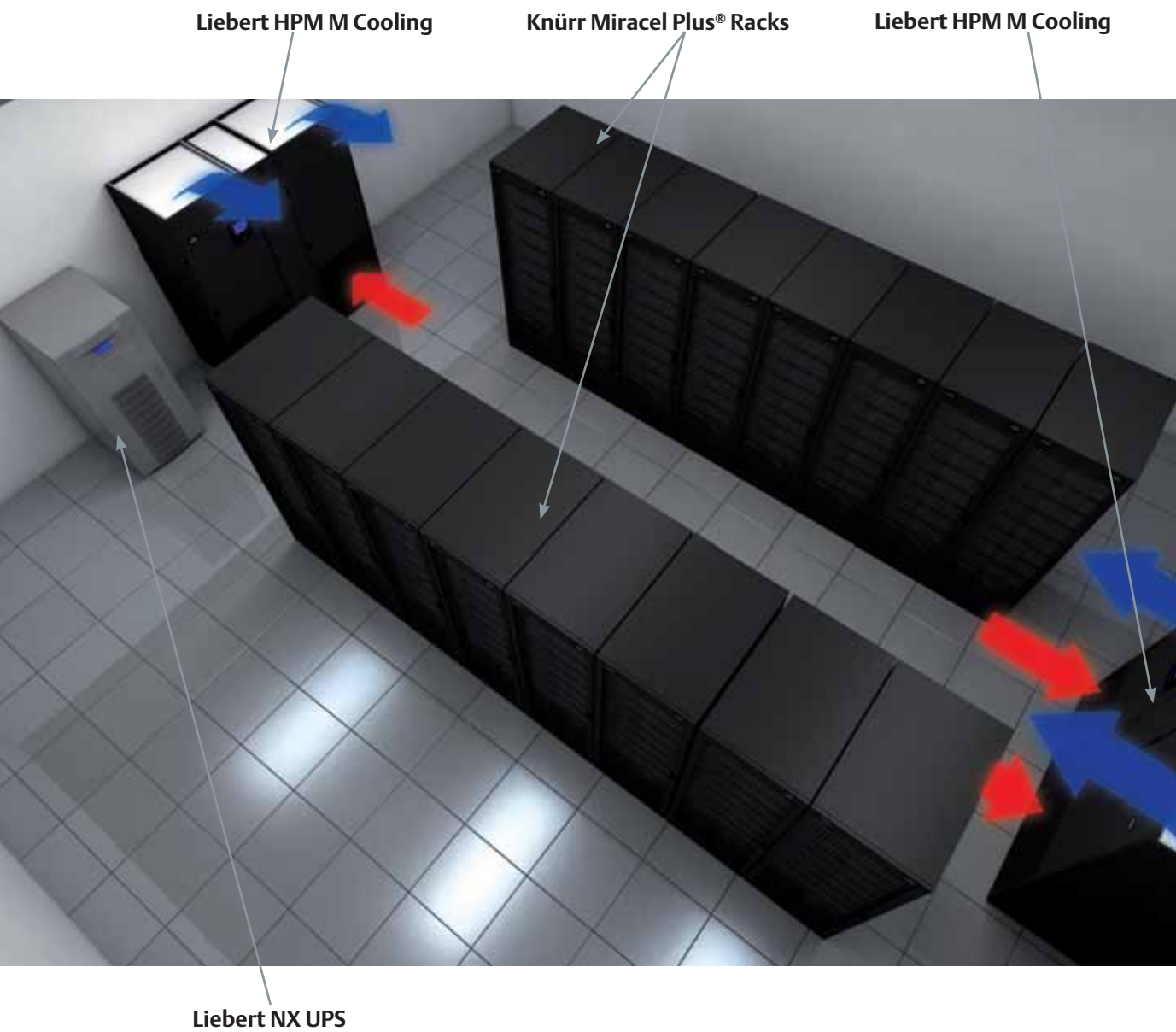
page 40



Knürr ARC
(Admin Rack
Console) and
KVM Switches
page 41

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

Scenario E - Option 1



Liebert
NX UPS

page 49



Liebert
AccuVar

page 59



Liebert
HPM M-L
Cooling

page 62



Liebert
Monitoring
& Shutdown

page 78



Installation,
Support and
Services

page 87

Scenario E - Option 2

10-30 Racks – Small Data Center Three Phase

This is an example of a recommended solution:

Specifications	Scenario E
Input Power	400V - 3 phase
Raised Floor	Optional
kW Range	36 - 72 kW
Racks	10 - 30
UPS	Liebert NX On-line
Power Distribution	
- Power strips	Knürr TriplePower®
- Maintenance Bypass	Included in UPS
Cooling	Liebert HPM M
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
Server Shutdown	Liebert MultiLink
Surge Suppression	Liebert AccuVar

Solution:

As your system needs grow more complex, we have 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 or Knürr representative.

Products:

- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert HPM 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.



Knürr
19" Racks
Miracel®

page 31



Knürr Cable
Managment

page 56



Knürr
Di-Strip®
TriplePower®

page 57



Knürr
RMS Compact II®

page 40

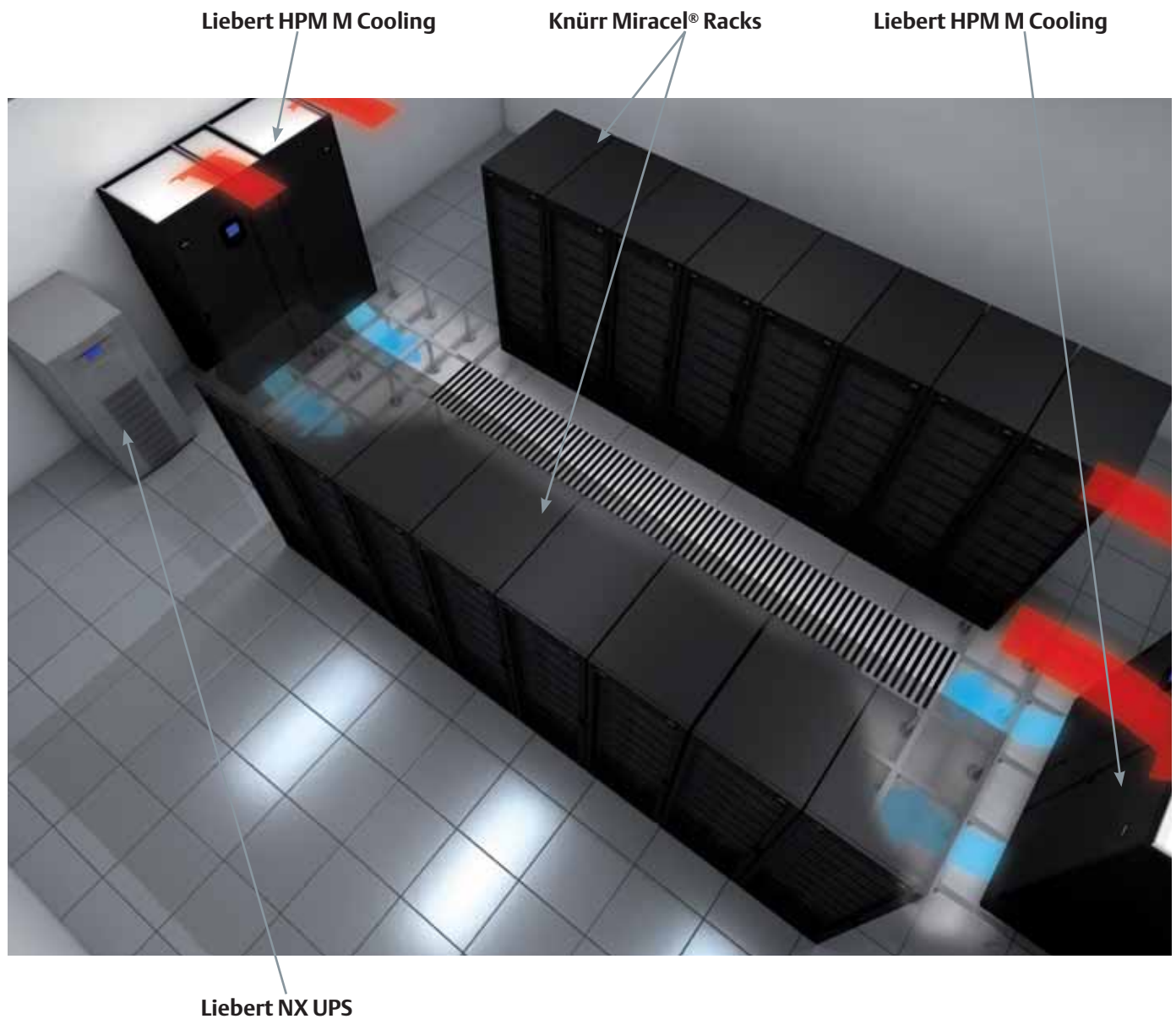


Knürr ARC
(Admin Rack
Console) and
KVM Switches

page 41

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

Scenario E - Option 2



**Liebert
NX UPS**

page 49



**Liebert
AccuVar**

page 59



**Liebert
HPM M-L
Cooling**

page 62



**Liebert
Monitoring
& Shutdown**

page 78



**Installation,
Support and
Services**

page 87

Scenario F - Option 1

30-60 Racks – Medium Data Center Three Phase

This is an example of a recommended solution:

Specifications	Scenario F
Input Power	400V - 3 phase
Raised Floor	Yes
kW Range	72 - 144 kW
Racks	30 - 60
UPS	Liebert NX On-line
Power Distribution	
- Power strips	Knürr Di-Strip® TriplePower®
- Maintenance Bypass	Included in UPS
Cooling	
- Room	Liebert HPM M-L
- High Density (Top of Rack)	Liebert XDV
- High Density (in-line)	Liebert XDH
- High Density Refrigerant Chiller	Liebert XDC
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
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, Emerson Network Power 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 – naturally, 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 or Knürr representative.

Products:

- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert HPM 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.



Knürr
19" Racks
Miracel®

page 31



Knürr Cable
Managment

page 56



Knürr
Di-Strip®
TriplePower®

page 57



Knürr
RMS Compact II®

page 40



Knürr ARC
(Admin Rack
Console) and
KVM Switches

page 41



Liebert
NX UPS

page 49



Liebert
NX Maintenance
Bypass Cabinet

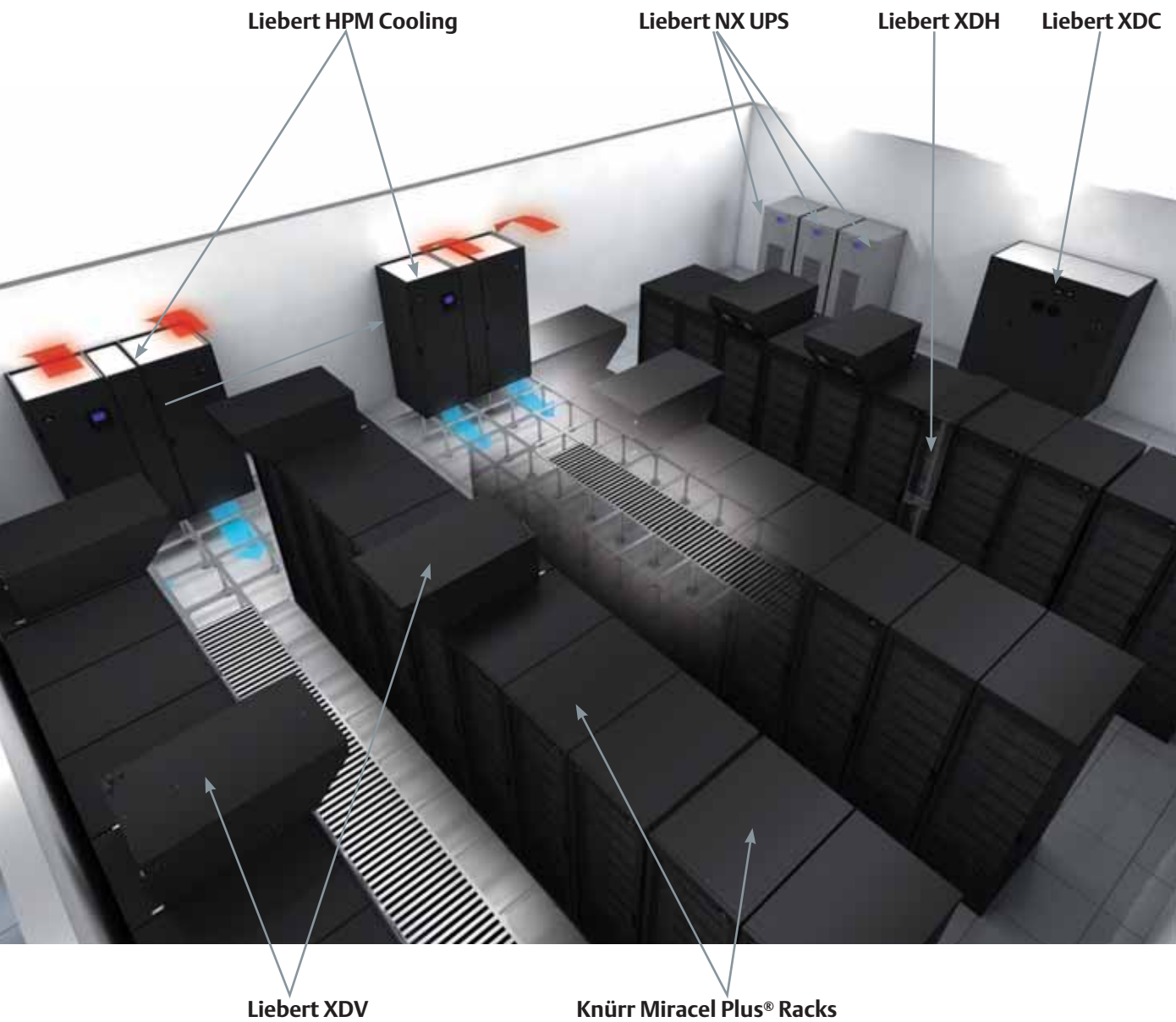
page 55



Liebert
NX Battery
Cabinet

page 55

Scenario F Option 1



						
Liebert AccuVar	Liebert HPM Cooling	Liebert XDC	Liebert XDH	Liebert XDV	Liebert Monitoring & Shutdown	Installation, Support and Services
page 59	page 62	page 70	page 74	page 72	page 78	page 87

Scenario F - Option 2

30-60 Racks – Medium Data Center Three Phase

This is an example of a recommended solution:

To be updated

Specifications	Scenario F
Input Power	400V - 3 phase
Raised Floor	Yes
kW Range	72 - 144 kW
Racks	30 - 60
UPS	Liebert NX On-line
Power Distribution	
- Power strips	Knürr Di-Strip® TriplePower®
- Maintenance Bypass	Included in UPS
Cooling	
- Room	Liebert HPM M-L
- High Density (Top of Rack)	Liebert XDV
- High Density (in-line)	Liebert XDH
- High Density Freecooling Chiller	Liebert HPC
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
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, we are 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 – naturally, 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 or Knürr representative.

Products:

- **Knürr CoolAdd®** – The universal retrofit solution against overheating in server racks
- **Knürr CoolTherm® 4-35 KW** – Energy-efficient Server Cabinet Technology With Outstanding Benefits, To Minimize Energy Costs In The Data Center And Help Reduce Carbon Dioxide Emissions
- **Knürr CoolLoop®** – Side-mounted cabinets unit for highly efficient cooling in server cabinets from 10 to 30 kW – with significant reductions in data centre energy costs
- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert HPM 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 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.



Knürr
19" Racks &
Enclosures

page 31



Knürr
CoolAdd®

page 39



Knürr
CoolTherm®
4-35 KW

page 38



Knürr
CoolLoop®

page 75



Knürr Cable
Management

page 56



Knürr
Di-Strip®
TriplePower®

page 57



Knürr
RMS Compact II®

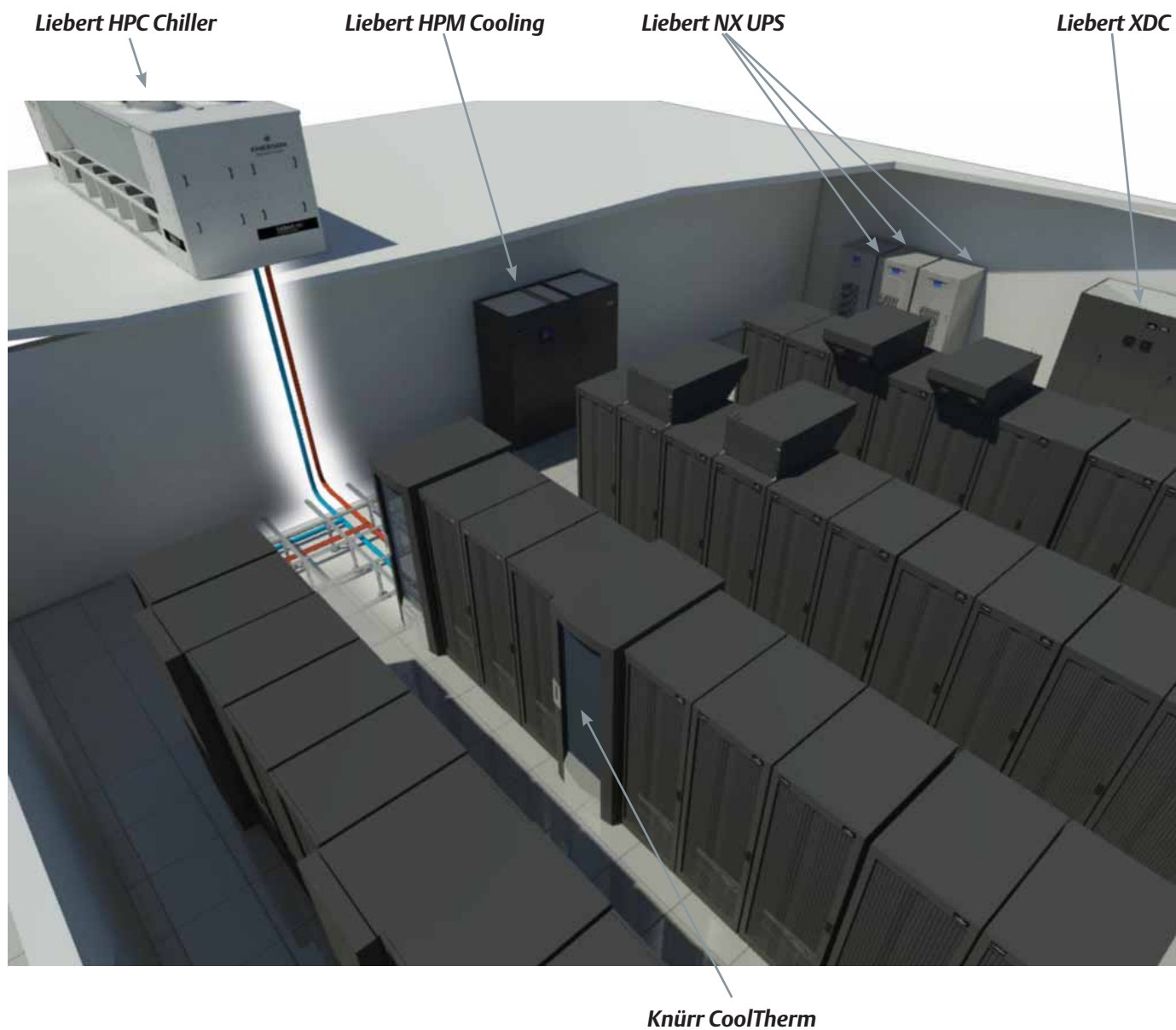
page 40



Liebert
NX UPS

page 49

Scenario F option 2



**Liebert
NX Maintenance
Bypass Cabinet**

page 55



**Liebert
NX Battery
Cabinet**

page 55



**Liebert
HPM Cooling**

page 62



**Liebert
XDC**

page 70



**Liebert
XDH**

page 74



**Liebert
XDV**

page 72



**KVM,
Monitoring
& Shutdown**

page 41/78



**Installation,
Support and
Services**

page 87

Scenario F - Option 3

30-60 Racks – Medium Data Center Three Phase

This is an example of a recommended solution:

To be updated

Specifications	Scenario F
Input Power	400V - 3 phase
Raised Floor	Yes
kW Range	72 - 144 kW
Racks	30 - 60
UPS	Liebert NX On-line
Power Distribution	
- Power strips	Knürr Di-Strip® TriplePower®
- Maintenance Bypass	Included in UPS
Cooling	
- Room	Liebert HPM M-L
- High Density (Top of Rack)	Liebert XDV
- High Density (in-line)	Liebert XDH
- High Density Freecooling Chiller	Liebert HPC
Monitoring	Liebert Nform
	Knürr RMS
	Knürr ARC
	Knürr KVM
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, Emerson Network Power 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 or Knürr representative.

Products:

- **Knürr CoolFlex®** – Energy-efficient use of existing cooling power in data centers, with new installations or as installation-friendly upgrades for all brands.
- **Knürr CoolAdd®** – The universal retrofit solution against overheating in server racks
- **Knürr CoolTherm® 4-35 KW** – Energy-efficient Server Cabinet Technology With Outstanding Benefits, To Minimize Energy Costs In The Data Center And Help Reduce Carbon Dioxide Emissions
- **Knürr CoolLoop®** – Side-mounted cabinets unit for highly efficient cooling in server cabinets from 10 to 30 kW – with significant reductions in data centre energy costs
- **Knürr Rack** – Lightweight, modular racks that offer 83% ventilation and simple add-on options.
- **Knürr Cable Management** – A full line of cable management accessories for effective control of any cabling requirements.
- **Knürr Di-Strip®** – Designed to distribute and manage power within the rack and meet the requirements of any rack-mounted IT equipment.
- **Knürr RMS Compact II®** – Damage prevention with checks and controls. Rack sensors: fan speed, temperature, humidity, smoke detector, door contact
- **Knürr ARC (Admin Rack Console)** – a familie of 1U rack mountable LCD drawers.
- **Knürr KVM Products** – for administration, monitoring, check up and controlling.
- **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.
- **Liebert AccuVar Surge Suppressor** – Provides unparalleled protection from transient surges and electrical line noise.
- **Liebert HPM 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 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.



Knürr
19" Racks &
Enclosures

page 31



Knürr
CoolAdd®

page 39



Knürr
CoolTherm®
4-35 KW

page 38



Knürr
CoolLoop®

page 75



Knürr Cable
Management

page 56



Knürr
Di-Strip®
TriplePower®

page 57



Knürr
RMS Compact II®

page 40



Liebert
NX UPS

page 49

Scenario F option 3



**Liebert
NX Maintenance
Bypass Cabinet**

page 55



**Liebert
NX Battery
Cabinet**

page 55



**Liebert
HPM Cooling**

page 62



**Liebert
XDC**

page 70



**Liebert
XDH**

page 74



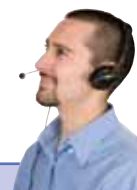
**Liebert
XDV**

page 72



**KVM,
Monitoring
& Shutdown**

page 41/78



**Installation,
Support and
Services**

page 87

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 Knürr 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:	Higher Availability:	Lowest Total Cost Of Ownership:
- 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.	- 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.	- 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 air-planes, 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 Knürr?	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. Knürr 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
What is unique about Knürr and the Miracel Plus® cabinet?	Besides the lightweight, but strong aluminum frame, Knürr 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 Advantage

Knürr Miracel Plus®	The Knürr Advantage
Patented aluminum extruded frame that is 50 lbs lighter than corresponding steel cabinet	Patented aluminum extruded frame that is 50 lbs lighter than corresponding steel cabinet
Patented channel allows for a spring nut to be installed virtually anywhere in the cabinet frame	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	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	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	The more open area a door provides means a much greater airflow through the cabinet, reducing the buildup of heat.



Knürr Miracel®



Also available in
RAL 7021 dark-grey



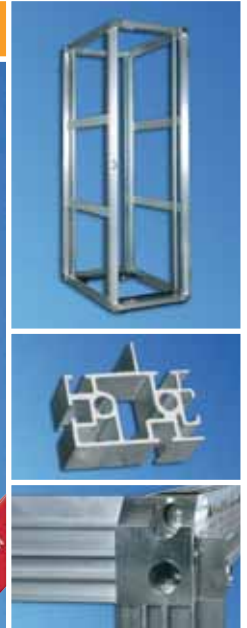
Miracel® 19"-rack system The Knürr system platform best-seller

- **Installation dimensions in accordance with IEC 60297 and IEC 60917**
 - 23 U / 37 U / 41 U / 46 U
 - e.g. 41 U with 2000 mm external height and 41 U with 2100 mm and mobile plinth
 - 66-module / 74-module / 82-module (1 module = 25 mm)
 - Width: 482.6 mm (19"), 535 mm (20-module)
- **Static load rating**
 - 5000 N for the stationary version
 - 3000 N with mobile plinth
- **Convenient**
 - 180° door opening angle
- **Air partitioning**
 - Available as an option

Knürr Miracel^{Plus}®



Also available in
RAL 7035 light-grey



Miracel^{Plus}® 19" heavy duty server rack An additional asset for the innovation rack

- **Installation dimensions in accordance with IEC 60297**
 - 42 U / 46 U
 - e.g. 42 U with 2000 mm external height with castors
 - Width: 482.6 mm (19")
- **Static load rating**
 - 15000 N for the stationary version
 - 10000 N with castors
 - Stability has been greatly improved by more stable extrusions and reinforced corner joints
- **Convenient**
 - Door assembly without tools
- **Air partitioning**
 - Standard



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 energy efficient UPS in its class with a factory-installed Liebert IntelliSlot Web Card for network communications. Available in 1000, 1440, 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 700, 1000, 1500, 2000, 3000, 4500, 6000, and 10,000 VA.

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.



Specifications

ENCLOSURE DIMENSIONS

	Overall Frame Dimensions			Rack		Adjustable Drack Depth		Internal rack Height	
	Width	Depth	Height	Internal Rack Width	Adjustable Width	B***			
Model	mm	mm	mm	mm	mm	Max mm	Min mm	RACK U	mm
HD780C000S-EU1	597	762	1956	535	450	571.5	18.5	42	1867
HD7880000S-EU1	597	965	1956	535	450	775	26.5	42	1867
HD780C000S-EU1	597	965	1956	735	450	775	26.5	42	1867
HD7880000S-EU1	597	965	1956	735	450	775	26.5	42	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 (1.5m)
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	NEMA 5-15P	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.

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		LPa (1.5m)
BCM 1000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	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)	6076 (1780)	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.

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 Advantage		
Feature	Liebert Foundation MCR	
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	Self-contained air cooled.	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.
Fits through standard sized doorways	Backup cooling module provides cooling during a loss of utility power or high internal temperature conditions.	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	Liebert Foundation MCR is designed to fit through standard-sized doorways.
Fan location	Located at the bottom.	Liebert Foundation MCR provides its air circulation/cooling function even when the rear door is open for service access.
Airflow type	Rear of unit.	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.

The Liebert XDFN is an integrated equipment cabinet with built in cooling, power distribution, racks for server location, monitoring and fire extinguish system offering full redundancy and back up ventilation. Liebert XDFN is designed in order to provide cooling system for servers up to about 25 kW maximum (net cooling).

Liebert XDFN provides a safe protection to customers servers from risks related to server over heating providing a complete solution for redundancy, power protection, fire extinguish, back up ventilation.

In order to cover different heat loads and number of racks, multiple configurations or Liebert XDFN are available.



Frequently Asked Questions

Question	Resolution
What makes the Liebert XDFN the right choice?	▪ Innovative Design - The Liebert XDFN 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 and chilled water. ▪ A Total Solution - Because the Liebert XDFN 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 XDFN is available in several sizes with net cooling capacity up to 25kW, so is sufficient for most rack equipment being deployed.
What are some of the best places to consider using the Liebert XDFN?	▪ 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 25kW net per rack. ▪ Provides N+1 redundancy. ▪ Includes emergency ventilation in the event of an unplanned shutdown. ▪ Multiple configurations available. ▪ Each rack up to 42U equipment. ▪ Lower energy costs through the use of a Digital Scroll compressor for continual and precise adjustments in cooling. ▪ Multiple coolant options - air, water/glycol or chilled water. ▪ Easily adaptable, plug-and-play installation. Self-contained.

Liebert XDFN Features & Benefits

Flexibility:	Flexibility	Higher Availability:	Lowest Total Cost Of Ownership:
Standard integrated unit includes rack(s) 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 just easy 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.
EC fan	N/A	Soft start included.	Lower energy consumption resulting in lower operation costs.
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.
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.
Front to back 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	Knürr Di-Strip® 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 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, water/glycol-cooled or chilled water systems to accommodate existing infrastructure conditions.	Ensures lower installation costs compared to systems offering just one type of cooling.



Competitive Advantage		
Feature	Liebert Foundation MCR	Liebert Advantage
Complete, self-contained unit	Includes rack, cooling, monitoring and control.	The self-contained Liebert unit provides plug-and-play installation with easy on-site assembly and mechanical connections required.
Cooling method	Three options: 1. Air cooled with remote condenser. 2. Water/ glycol-cooled. 3. Chilled Water-cooled	Multiple options on the Liebert XDFN provide greater installation flexibility and lower cost of ownership by allowing customers to accommodate existing infrastructure conditions. The 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 XDFN 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 XDFN is designed to fit through standard-sized doorways.
Fits through standard sized doorways	Width of the modules max 850 mm	Liebert XDFN is designed to fit through standard-sized doorways.
Air circulation	Bottom to top and front to back of the cabinet.	Liebert XDFN provides its air circulation/cooling function even when the front or rear door is open for service access.
Nominal cooling capacity	Several sizes, up to 25kW net sensible	The Liebert XDFN capacity is sufficient for most rack equipment being deployed.

Specifications

PHYSICAL DATA

Liebert XDFN	X13UA Air Cooled	X20UA Air Cooled	X25UC Chilled Water
Height, Width, Depth (overall) - mm	All 2400 / 750 / 1200		
Weight, Cabinet Only - kg	413	435	410

ELECTRICAL DATA

Power Supply	400 / 3ph / 50Hz		
Unit Power Input - kW	4.38	6.46	2.07
Fan absorbed power - kW	0.84	1.35	1.87
Fan FLA - A	1.36	2.2	1.87
Fan LRA - A	0.1	0.1	0.1
Compressor absorbed power - kW	3.34	4.91	N/A
Compressor FLA - A	10	10.8	N/A
Compressor LRA - A	50	71	N/A

PERFORMANCES

Rating point, Ambient - °C	35	35	N/A
Chilled Water Temperature (pure water) - °C	N/A	N/A	7/12
Supply Air Temperature - °C	22	22	22
Net Sensible cooling, kW	14.5	20.8	25.1
Net EER (Energy Efficiency Ratio)	3.31	3.22	12.1

RACK SPECIFICATIONS

Height, Width, Depth - mm	2400 / 850 / 1200		
Equipment Height	42U		
Equipment Width (EIA Nominal)	483 (19 inch.)		
Power input (for back up ventilation)	0.6 kW		
Fire Extinguist	optional		
UPS for back up ventilation and equipment	optional		
Power strips	optional		

Energy-efficient server cabinet technology with outstanding benefits, to minimize energy costs in the data center and help reduce carbon dioxide emissions

CoolTherm® has set a benchmark that is now widely-used and recognised in the industry, and as a result has matured to become the standard.

CoolTherm® therefore ranks as one of the best performing components of a perfected complete IT solution.



V35® air-to-water heat exchanger

Heat volume to be dissipated:

CoolTherm® 22kW nominal as an example

- Water-side Pre-run temperature: 12°C (preferred)
Post-run temperature: 18°C (preferred) Max. pressure loss: 0.5bar
Volume flow: 0.9 l/s Ventilation valve
- Air-side Up to 5500m³/h Air outlet: 20°C to 25°C

effective cooling capacity	Width	Height	Depth	Useable height	Useable depth	Weight	Water content	Electrical data
4 kW	600mm 700mm 800mm	2000mm or 2200mm	1200mm	39 HU 43 HU 47 HU	840mm		2,9 kg	207 – 243 VAC 50/60 Hz 190Watt
8 kW	800mm 800mm 800mm	800mm 800mm 800mm	1200mm	36 HU 40 HU 47 HU	840mm		2 x 2,9 kg	207 – 243 VAC 50/60 Hz 380Watt
12 kW	700mm 700mm 700mm	800mm 800mm 800mm	1200/1300mm	29 HU 33 HU 38 HU	740/840mm	290 kg	5,9 kg	200 – 264V 50/60 Hz 550W
17 kW	800mm 800mm 800mm 800mm	800mm 800mm 800mm 800mm	1200/1300mm	31 HU 35 HU 40 HU 44 HU	740/840mm	310 kg	7,9 kg	200 – 264V 50/60 Hz 850W
25 kW	800mm 800mm	800mm 800mm	1200/1300mm	37 HU 42 HU	740/840mm	340 kg	9,9 kg	200 – 264V 50/60 Hz 1150W
35 kW	800mm 800mm	800mm 800mm	1200/1300mm	37 HU 42 HU	740/840mm	340 kg	9,9 kg	200 – 264V 50/60 Hz 1150W

Spread chilled water: 12/18°C * 12/22°C
Air temperature to server: 22°C * 25°C
Air temperature return from server: 35°C * 50°C
Connection heat exchanger: 1" female thread
Connection condensate tray: 5/8" water hose connection

Pressure loss (heat exchanger): 0.5bar
max. operation pressure heat exchanger: 10bar
max. absolute humidity on site: 8g/kg
Standard colours: RAL 7021 (black grey)
RAL 7035 (light grey)

Knürr CoolAdd® represents the ideal retrofit solution for data centers and IT rooms. It safeguards against the risk of hotspots and helps to avoid overheating of the server racks. A special feature of this quick and highly effective solution is that the existing server rack remains within the data center. In addition, the entire wiring may remain as it is, without the need for any alterations!



Cooling capacity	Width	Height	Depth	Weight	Water content	Fans	Air-Volume flow
8 kW	600mm 700mm 800mm	2000mm or 2200mm	160mm	41 kg up to 47 kg	1.6 l	4 Fans	2500m3/h

Spread chilledwater: 14 / 20°C
Exhaust temperature after heat exchanger: 22°C
Connection heat exchanger: 3/4" male thread
Cooling water volume flow: 1.15m3/h
Pressure loss (heat exchanger): 400 mbar

Max. operating pressure heat exchanger: 10 bar
Max. absolute humidity on site: 8 g / kg
Standard colours: RAL 7021 (black grey)
Elt. Connection (fans / fan control): 230 V / 50 Hz 525-725W
Protection class: IP 20

System and network management requirements mean the systems' ambient conditions must be monitored. Reliability and system availability are indispensable. Compliance with the required ambient parameters is extremely important for the fault-free operation of high-grade components.

Inadmissible fluctuations in temperature or air humidity often cause hardware defects. Constant automatic monitoring of these parameters is therefore a basic requirement for ensuring properly functioning operability.

With the rack monitoring systems offered by Knürr, this information can be recorded and forwarded directly to a higher-level management system.

This recording is not, however, sufficient to ward off damages. For short response times when faults occur, it is helpful if the monitoring system can perform actions automatically (e.g. activate additional fans).

When defined incidents occur, Knürr RMS Compact II® can immediately send a message as an "SNMP trap" to the management system or directly as an e-mail to a technician or an SMS gateway.



Rapid error finding and removal is valuable! The ability to connect additional sensors to monitoring systems not only allows racks to be monitored – so too can complete rooms or building sections. All important environmental parameters of a system can consequently be recorded and evaluated in an easy and straightforward way.

RMS Compact II® Sensors



Fan speed sensor

- the RMS automatically recognizes this sensor as an analog sensor
- offset and alarm parameters can be set in RMS
- the sensor does not have to be recalibrated
- no additional power supply required



Temperature sensor ECO

- insensitive to disturbances
- no additional power supply required
- the sensor does not have to be recalibrated



Humidity sensor

- insensitive to disturbances
- no additional power supply required
- the sensor does not have to be recalibrated



Smoke detector

- optical smoke detector with VdS approval
- for early fire detection with smoke emission
- power supply provided via RMS Compact II®



Door contact sensor

- magnet bridge sensor, works on every magnetic conductive material
- can also be used for monitoring side panels and roof



The advantages of Knürr's modern rack monitoring system:

- Guarantees fault-free operation
- Detects disturbances early
- Logs incidents
- Makes service assignments easier with automatic monitoring
- Activates countermeasures in the event of a fault
- Central control of consumables (filters, paper, toner, meter readings, inspection intervals, etc.)
- Connection of up to 12 sensors in any arrangement

Knürr ARC (Admin Rack Console)

Knürr ARC (Admin Rack Console)

- For installation in all 19" racks
- Space-saving with only 1U installation height
- Without or with integrated 8 and 16 port KVM Switch
- Integrated, country-specific keyboard with touchpad
- TFT in the pushed in status protected from below
- Interlocking full extension rails
- Hand support of foam rubber for relaxed writing
- Touchpad with integrated right mouse button function
- Touchpad with scroll function
- Right and left mouse button
- Integrated wide range input power supply (100 - 240 VAC) with IEC 320 socket
- Keyboard with number block



Integrated KVM switch

- To control 8 or 16 computers direct and up to 256 computers total
- Selection and control all Computers via an easy to use on-screen user interface.
- Connection between the KVM Switch and the computers via Cat cable and adapter module.
- The adapter module is connected to the keyboard, video, mouse connector of the respective computer and provides failure safe access.
- The RICC module is connected to the keyboard, monitor and mouse outputs of the respective computer and provides failure-safe access to the computer with the keyboard/mouse emulation
- Multi-platform capable RICCs (in accessories range) enable the combination of PCs, SUNs and devices with USB interface
- The keyboard and mouse emulation is integrated in the RICC for fault-free operation with interrupted cable connection

Display	Width	Height	Depth	KVM	Keyboard Language	Colour
17" LCD	19"	1U	500 mm	single port	English (US, UK), Germany, France, Italy Spain, Denmark, Benelux, Switzerland, Sweden, US/Rus, US/Chinese	RAL 7035 light grey RAL 7021 dark grey
17" LCD	19"	1U	550-850 mm	8/16 port	English (US, UK), Germany, France, Italy Spain, Denmark, Benelux, Switzerland, Sweden, US/Rus, US/Chinese	RAL 7035 light grey RAL 7021 dark grey

Demands & Benefits

Demands in the Data Center:	Customer Benefit
■ facility and distance independent management of remote sites have driven up the demand for remote access KVM solutions. ■ Key facts: • Increasing temperatur and colling airflow • High noise exposure • Closed high density cooling systems • Lights-out data center • Co-location facility • More servers on less administrators ■ Some are bursting to capacity as new devices are added, security measurements taken and infrastructures swelling to keep pace with the need for more complex applications and technologies. ■ Many large companies do not realize the great pains that network administrators go through to maximize real estate in an enterprise-class data center. ■ Space is costly and network administrators continually rely upon devices that help them do more with less. ■ One such tool to aid in this effort is the KVM (keyboard/video/mouse) switch that enables IT pros to easily and effectively manage servers and other network devices – within the data center or from remote locations. Data centers are continuing to expand.	■ When using KVM remotely, the interface, at first view, may seem similar to remote control software such as pcAnywhere, Windows® Terminal Services / Remote Desktop, VNC, etc. However, because IP KVM is not a software but a hardware solution, it's much more powerful: • OS- and hardware-independent - a KVM Switch can be used to manage servers running many popular OS, including Intel®, Sun®, PowerPC running Windows, Linux®, Solaris™, etc. • State-independent / Agentless - IP KVM switches does not require the managed server OS to be up and running, nor does it require any special software to be installed on the managed server. • Out-of-Band - Even if the managed server's own network connection is unavailable, it can still be managed through a KVM. • BIOS-level access - Even if the server is hung at boot up, requires booting to safe mode, or requires system BIOS parameters to be altered, the KVM still works flawlessly to enable these configurations to be made. • More efficiency in the administration • Elimination of unnecessary travel times • Reduction of MTTR times • planning reliability • Investment protection at system or platform change • Integration of KVM, Power und Enviromental Management

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 Liebert PowerSure PSI is a 2U-size line-interactive UPS available in 1000, 1440, 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 run-times - 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. ▪ Reduced installation time and costs — UPS is shipped with batteries connected and charged. ▪ Two-year, no-hassle replacement warranty. ▪ High Energy Efficiency.

Frequently Asked Questions	
Question	Resolution
I've been using other line-interactive UPSs for years, so why use Liebert's PowerSure PSI systems now?	The Liebert PowerSure PSI offers significant advantages over other line-interactive systems. Advantages include: ▪ Extended battery option on same unit, so you don't have to upgrade to another UPS to add battery cabinets as you do with competitor UPSs. ▪ Delivered fully assembled — batteries connected and activated at the factory. ▪ Two-year, no hassle replacement warranty.
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. Major Distributors also stock many standard Liebert UPS products for next day shipment.

Competitive Advantage

The Liebert PowerSure PSI can operate in a network environment with the Liebert IntelliSlot Web Card installed for SNMP communications. Plus, you can add extended battery backup without replacing the existing unit with a larger model.

Feature	Liebert PowerSure PSI Network Solution Package advantage
Extended battery option on same unit	Yes
Two-year, no hassle replacement warranty	Yes
Four communications options	Yes
Rack rails/tower stand as standard equipment	Yes
Fully featured with comms cable, output cables, telecom cable	Yes

Liebert PSI and Accessories

PowerSure PSI UPS	PS1000RT2-230	PS1000RT2-230	PS2200R2T-230E*	PS3000RT2-230E*
VA/Watts	1000/750	1440/1080	2200/1650	3000/2250
UPS Battery	internal	internal	internal	internal
External Battery Cabinet Batteries	PS2-48VBATT	PS2-48VBATT	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
Web/SNMP Card	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD
MicroPOD	MP2-210K	MP2-210K	MP2-220L	MP2-220L



Technical Data:

Model	PS1000RT2-230	PS1440RT2-230	PS2200RT2-230E	PS3000RT2-230E
Power Rating				
VA/W	1000/750	1440/1080	2200/1650	3000/2250
Dimensions				
Unit (WxDxH mm)	87 (2U) x 557 x 430	87 (2U) x 557 x 430	87 (2U) x 612 x 430	87 (2U) x 612 x 430
Shipping (WxDxH mm)	300 x 706 x 598	300 x 706 x 598	333 x 864 x 598	333 x 864 x 598
Weight				
Unit (kg)/Shipping (kg)	28/36,6	31//39	35/43,6	37/45,6
Input Parameters				
Surge Protection	660J			
Voltage Range w/o Battery Operation	158-283 VAC, configurable - Dip switch selectable 220-230-240V			
Frequency Range	45-65Hz (±0.1)			
Input Power Connection	1 IEC-320-C14	1 IEC-320-C14	1 IEC-320-C20	1 IEC-320-C20
Output Parameters				
Output Receptacles	8 IEC-320-C13	8 IEC-320-C13	8 IEC-320-C13 + 1 IEC-320-C19	8 IEC-320-C13 + 1 IEC-320-C19
Output Power Cables	2 m detached IEC-320-C14			
Tension (mode normal)	220-230-240VAC ±10%			
Voltage (Battery Mode)	230VAC ±8%			
Waveform (Battery mode)	Sinewave			
Frequency	50 or 60Hz (auto-sensing)			
Overload warning	>100 - 110% (Normal and Battery Mode)			
Overload Shutdown	>200% - shortcircuit; after 15 cycles (normal mode)			
Battery Parameters				
Type - Approved manufacturers	Valve-regulated, non-spillable, lead acid - B&B Batteries, CSB, Panasonic, EnerSys			
Quantity x Voltage x Rating	4 x 12 V x 7Ah	4 x 12 V x 7Ah	6 x 12 V x 7Ah	6 x 12 V x 9Ah
Transfer time	4-6ms typical			
Backup Time	At 25°C resistive loading with fully charged batteries			
Full load (minutes)/Half load (minutes)	11/26	5/16	5/16	6/16
Recharge time	4 Hours to 90% capacity, after full discharge into a resistive load			
Battery test	Every 14 days			
Hot Swap Batteries	Yes			
Deep discharge protection	Yes			
Black start (w/omains)	Yes			
Environmental				
Noise	< 40dB normalmode operation			
Operating temperature	0°C to +40°C			
Operating Altitude	Up to 2000m without derating	Up to 3000m without derating	Up to 3000m without derating	Up to 3000m without derating
Communications				
USB, Serial RS232, Contact Closure,Web and SNMP (optional card)				
USB Compatibility	Windows 2000,Windows XP, Apple Mac OS			
Software Compatibility	MultiLink 3.X supports MSWindows NT/2000/XP/95/98/ME, AIX, Linux, Sun Solaris, HP-UX, Novell Netware			
Warranty	2 Years - Standard (+1Year warranty extension available)			
Standards & Requirements				
Safety	EN 62040-1-1; CE low voltage directive; TUV Certificate			
EMI / EMC	EN 50091-2, Class B; CE EMC directive			
Design	Line Interactive IEC62040-3 VI, EN61000-3, EN61000-4, EN60950			
Battery Cabinets				
Extensible Batteries	PS2-48VBATT	PS2-48VBATT	PS2-72VBATT	PS2-72VBATT
Unit (WxDxH mm)	87 x 557 x 430	87 x 557 x 430	87 x 612 x 430	87 x 612 x 430
Shipping (WxDxH mm)	300 x 706 x 598	300 x 706 x 598	333 x 864 x 598	333 x 864 x 598
Weight				
Unit (kg)/Shipping (kg)	30/38,6	30/38,6	46/53,6	46/53,6
Quantity x Voltage x Rating	2 by 4 x 12V x 7Ah	2 by 4 x 12V x 7Ah	2 by 6 x 12V x 9Ah	2 by 6 x 12V x 9Ah
Approved Manufacturers	CSB, B&B, EnerSys			
Battery cabinet package	(1) Battery Cable, Tower stand support base, Rackmount handles and fixed rail kits			
Extended Backup time				
1 Cabinet (full/half load)	46/119	30/72	40/99	29/67
2 Cabinets (full/half load)	98/209	56/133	77/150	52/129
3 Cabinets (full/half load)	136/274	95/209	120/222	88/168
4 Cabinets (full/half load)	188/305	125/257	144/274	118/222

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 700, 1,000, 1,500, 2,000, 3,000, 4,500, 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 applications. - 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.

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. Major distributors also stock many standard Liebert UPS products for next day shipment.

Competitive Advantage

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

Feature	Liebert GXT
Capacity range down to 700VA.	Yes
Widest input frequency window (40-70Hz).	Yes
Delivered fully assembled — batteries connected and activated at the factory.	Yes
Standard rack ears and tower pedestal.	Yes
Two-year, no hassle replacement warranty	Yes

Liebert GXT Product Ancillary Guide

Liebert GTX UPS	GXT2-700RT230	GXT2-1000RT230	GXT2-1500RT230	GXT2-2000R230
VA/Watts	700/490	1000/700	1500/1050	2000/1400
UPS Battery Kit	internal	internal	internal	internal
External Battery Cabinet	GXT2-48VBATT	GXT2-48VBATT	GXT2-48VBATT	GXT2-48VBATT
4-Post Rack Mounting Kit	RMKIT18-32	RMKIT18-32	RMKIT18-32	RMKIT18-32
Web/SNMP Card	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD
MicroPOD	MP2-210K	MP2-210K	MP2-210K	MP2-210K

Liebert GTX UPS UPS	GXT2-3KRT230E	GXT2-4500RT230	GXT2-6000RT230	GXT2-10000R230*
VA/Watts	3000/2100	4500/3150	6000/4200	10000/7000
UPS Battery Kit	internal	internal	internal	GXT2-240RVBATT√
External Battery Cabinet	GXT2-72VBATT	GXT2-240VBATT	GXT2-240VBATT	GXT2-240RVBATT
4-Post Rack Mounting Kit	RMKIT18-32	RMKIT18-32	RMKIT18-32	RMKIT18-32
Web/SNMP Card	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD	IS-WEBCARD
MicroPOD	MP2-220L	PD-CEHDWRBYP	PD-CEHDWRBYP	-

* GTX2 10000 is also available in tower version

√ Required UPS Components



Technical Data - GTX2

Model	GTX2 700RT230	GTX2 1000RT230	GTX2 1500RT230	GTX2 2000RT230	GTX2 3KRT230E	GTX2 4500RT230	GTX2 6000RT230
Power Rating							
VA	700	1000	1500	2000	3000	4500	6000
W	490	700	1050	1400	2100	3150	4200
Dimensions & Weight							
Unit (WxDxH mm)	87 (2U) x 547 x 430				87 (2U) x 618 x 430	221 (5U) x 547 x 430	
Shipping (WxDxH mm)	268 x 692 x 585				268 x 692 x 585	560 x 690 x 500	
Weight							
Unit (kg)/Shipping (kg)	22.5/26.5	22.6/26.6	23.2/27.2	24.7/28.7	31.9/35.9	67/76.5	67/76.5
Input Parameters							
Voltage and Frequency	220 / 230 / 240 VAC user selectable; 40 - 70 Hz						
Voltage Range w/o Battery	119 / 280 VAC variable depending on load					176 - 276 VAC	
Frequency Range	40 - 70Hz autosensing						
Input Power Connection	IEC-320-C14				IEC-320-C20	Hardwired	
Output Parameters							
Output Receptacles	(4) IEC-320-C13				(4) IEC-320-C13+ (1) IEC-320-C19	Hardwired+ (2) IEC-320-C19	
Waveform & Frequency	Sinewave; 50 or 60 Hz Nominal (50 Hz default)						
Overload Warning	200% for 8 Cycles; 130% for 10 seconds with transfer to bypass					>200% for 96 milliseconds; 131-199% for 2 seconds; 112-129% for 10 seconds with transfer to bypass	
Battery Parameters							
Type	VRLA non-spillable, flame retardant						
Approved manufacturers	China Storage Battery / CSB FR 1270 F2			Panasonic UP-VW 1245P1		Yuasa / REW 28 - 12 FR	
Quantity x Voltage x Rating	4 x 12 V x 7.0Ah			4 x 12 V x 9.0Ah	6 x 12 V x 9.0Ah	20 x 12 V x 5.0Ah	
Backup Time							
Half load (minutes)	44	25	20	14	16	24	17
Full load (minutes)	17	11	7	6	6	10	7
Recharge time	5 Hours to 95%						
Batteries, other features	Hot Swap Batteries; Deep Discharge Protection; Black Start (w/o mains)						
Battery Test	Automatic, User configurable 7-28 days						
Environmental							
Noise	< 50dB			< 55dB			
Operating temperature	0°C to +40°C						
Operating Altitude	0 - 3000 m						
Communications							
Common Package	Serial RS232 standard, USB Card, Relay card and SNMP/Web Card optional						
Additional Components	(2) 10A IEC320-C13 / 14 Output Cables				+ (1) Schucko CEE 7/7 to IEC320 C19 and (1) BS136 to IEC320 C19, 16A input power cord	Input/output distribution PD-CEHDWR input/output distribution with maintenance bypass PD CEHDWRBYP (optional)	
Warranty	2 Years						
Standards & Requirements							
Safety	EN 50091-1-1; CE compliance mark, for both Low Voltage and EMC Directives					EN62040-1-1: TÜV/GS, CE EMC Directive	
Design, EMI / EMC, Transportation	VFI SS 111 according to IEC6204-3; EN 50091-2, Class A; EN61000-4; ISTA Procedure IA						
Extended Battery Cabinets							
Models	GTX2-48V Battery				GTX2-72V Battery	GTX2-240V Battery	
Unit (WxDxH mm)	87 (2U) x 547 x 430				87 (2U) x 618 x 430	176 (4U) x 522 x 430	
Shipping (WxDxH mm)	268 x 692 x 585				268 x 692 x 585	560 x 690 x 455	
Weight							
Unit (kg)	28.3				42.5	65	
Shipping (kg)	32.3				46.5	76	
Quantity x Voltage x Rating	2 x 4 x 12V x 7.0Ah				2 x 6 x 12V x 9.0Ah	20 x 12V x 9.0Ah	
Approved Manufacturers	China Storage Battery / CSB FR 1270 F2				Panasonic / UP-VW 1245P1	Yuasa / REW 28 - 12 FR	
Battery cabinet package	(1) Battery Cable, Tower stand support base, Rackmount handles and fixed rail kits						
Extended Backup time							
1 Cabinet (full/half load)	68 / 176	44 / 100	28 / 80	18 / 42	20 / 64	31 / 70	21 / 49
2 Cabinets (full/half load)	136 / 152	88 / 200	56 / 169	42 / 98	40 / 128	54 / 120	38 / 85
3 Cabinets (full/half load)	204 / 528	132 / 300	84 / 240	60 / 140	60 / 192	80 / 164	55 / 123
4 Cabinets (full/half load)	272 / 704	176 / 400	112 / 320	90 / 210	80 / 256	106 / 208	75 / 156

Specification:

UPS UNIT	GXT2-10000R230
Power VA /W	10000 / 7000
Dimensions (WxDxH mm)	410 x 660 (UPS body, handles and plugs excluded) x 130 (3U)
Weight - Unit (kg)	27kg (electronics does not include batteries)
Degree of protection	IP20
Color	IBM Black - Ral 9005
Input Voltage	230V L-N single phase L,N,G
Input/Output Frequency	50/60Hz autoselect input, configurable output
Input Voltage Tolerance	176-276V - 84V / 120V / 160 V
With output derating:	50% / 75% / 90%
Input Frequency Tolerance	±5% within nominal
Input Power Factor & THDi	0,97 - <5%
Input & Output Connections	Hardwired
Output Wave Form	Sinewave
Battery Module	
Overload warning	125% 1 minute / 150% 10 seconds / 300% 2 seconds
Short circuit current for 5 cycles	160A peak (typical)
Efficiency	92%
Acoustic Noise	<55dBA
Operating temp and altitude	0 - 40°C (with batteries) / -25 - +55°C (without batteries)
Relative Humidity	0-90% non condensing
Communications	DB9, Intellislot, Relay Comms
Battery Cabinet	
Models	GXT2-240RVBATT
Dimensions	(WxDxH mm) 410 x 660 (UPS body, handles and plugs excluded) x 130 (3U)
Weight - Unit (kg)	67
Backup timeminutes	
1 / 2 / 3 / 4 Cabinets Full load - Half load	6 / 15 / 26 / 37 - 15 / 37 / 61 / 87
Batteries	Yuasa: NPW45-12 or REW45-12 / (20 x 12V / 45W / 9Ah)
Battery Test	automatic (configurable to 7,14,21,28 days)
Warranty and Standards	
Warranty	2 years
Standards & Requirements	CE Mark
Safety	IEC / EN 62040-1-1 / CE Low Voltage directive 73/23/EEC
Electromagnetic compatibility	IEC / EN 62040-2 - Class A / CE EMC directive 89/336/EEC
Design	IEC 62040-3 VFI-SS-111
Transport	ISTA Level 1A

The Liebert NX is a true on-line, double conversion, mid-sized, 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 is offered in three single-phase (NXf) and four three-phase (NXe) popular ratings combining compact size, capacities up to 6 parallel 30kVA units, advanced operating features and low cost of ownership.



Features & Benefits		
Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Communications available through a Relay Contact Card, Liebert IntelliSlot™ Web Card and Liebert MultiLink™ shut-down software. ▪ Ultra-quiet performance with noise level from 51dB (10kVA) to 56dB (30kVA) allows greater latitude in where to place the unit. ▪ Large and user-friendly LCD display provides operating information in 12 languages. ▪ Up to 6 Liebert NX can be paralleled for capacity or 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.	▪ True online double conversion technology corrects all types of power fluctuations. ▪ Capable to give 320% of nominal current for 200ms to clear branch circuit breakers. ▪ Advanced inverter control technology provides the highest output power quality. ▪ Redundant power supply boards, 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. ▪ Highest level of availability with virtually no downtime ever (Tier 4) ▪ High overload rating handles 110% for 1 hour 125% for 10 minutes 150% for one minute. ▪ An intelligent battery management algorithm monitors the battery to detect any premature battery failure.	▪ Temperature-compensated battery charging extends battery life. ▪ Highest possible input power factor to safe on electricity bill and generator sizing. ▪ 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 Advantage		
The Liebert NX offers a number of advantages over the competition, making the Liebert NX UPS the ideal UP for mission critical applications.		
Feature	Liebert NX 10-30 kVA	The Liebert Advantage
Battery Use Permissible Input Voltage Range (VAC)	from 305V to 477V	Less battery use means fewer battery replacements and results in a lower total cost of ownership.
Audible Noise	From 51 dbA (10kVA) to 56 dbA (30 kVA)	You can utilize an NX in an office environment.
Handling Of Overload Conditions	125% for 10 minutes 150% for 1 minute	The user can connect a load to the NX without worrying about driving the UPS into bypass or shut-down.
Easy to install	Compact design, internal battery	In many cases, your customer's facility people can install it to keep their costs down.



Technical Characteristics

Models	NXf			NXe			
Rated Power @ 0.8 PF [kVA]	10	15	20	10	15	20	30
Rectifier Input							
Rectifier Type	IGBT-based Vector Controlled PFC (PF Corrected)						
Input Voltage [Vac]	380 / 400 / 415 3ph+N (Accepted from 305 to 477 without batt. use)						
Input Frequency [Hz]	50 or 60 (Accepted range from 40 to 70)						
Input Current THD	<3% (without any Filter)						
Input Power Factor	≥ 0.99 (without any Filter)						
Power Walk-In [s]	5 to 30 (selectable)						
Bypass Input							
Input Voltage [Vac]	220 / 230 / 240 1ph+N			380 / 400 / 415 3ph+N			
Battery							
Battery Type	VRLA (Valve Regulated Lead Acid) or Wet / Flooded or NiCd						
End-Cell Voltage [Vdc/Cell]	Selectable from 1.60 to 1.90 (for VRLA)						
DC Ripple Current (float)	<5% (of C10 AH capacity) RMS value						
DC Ripple Voltage (float & const VCh)	<1% (RMS value)						
Temp. Comp. Charge	Standard (where internal batteries) and Optional (for all other battery configurations)						
Output							
Inverter Type	IGBT-based Vector, Repetitive & PI Controlled						
Output Power [kW]	8	12	16	8	12	16	24
Output Voltage [Vac]	220 / 230 / 240 +/- 1% 1ph+N			380 / 400 / 415 +/- 1% 3ph+N			
Output Frequency [Hz]	50 or 60 +/- 0.05% adjustable						
Output Voltage THD	1% (max) linear load						
Max. Load Crest Factor	3:1 (compliant with IEC 62040-3)						
Transient Volt. Resp. [ms]	10 to recover ± 5% of Nominal Voltage for 0% to 100% or 100% to 0% step load						
Min. Leading PF Load	Down to 0.9						
Voltage Displacement [°el]	Not applicable			120° +/- 1° el (with 100% unbalanced load)			
Overload	110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute						
Efficiency							
AC-AC	up to 97.7%			up to 96.6%			
Physical Parameters							
Width [mm]	600						
Depth [mm]	700						
Height [mm]	1400						
Weight (approx.) without batt. [kg]	180	200	200	180	204	204	210
UPS Enclosure IP	IP 20 (even with open front door)						
Standards							
Safety:	IEC/EN/AS 62040-1-1 incorporating requirements of IEC/EN/AS 60950-1						
EMC:	IEC/EN/AS 62040-2 (C2 emission, C3 immunity) complying with low conducted and radiated emission limits required by office and data-centre environments of CISPR22 Class A and with high electrostatic, electrical field, fast transient, surge/lightning and radio frequency immunity levels of IEC/EN/AS 61000-4-2, -3, -4, -5, -6 required by both commercial and light industrial environments						
Test and Performance:	IEC/EN/AS 62040-3						
CE:	The UPS conforms to the following European Community directives: Low Voltage Directive 73/23/EEC (amended 93/68/EEC) Electro-magnetic Compatibility Directive 89/336/EEC (amended 92/31/EEC)						
Environmental							
Storage Temp. [°C]	-20 to 70 (UPS) & -20 to 30 (Battery)						
Operating Temp. [°C]	0 to 40 (UPS) & 25 +/- 5 (Battery)						
Relative Humidity	0 to 95% (non-condensing)						
Maximum Altitude [m] above Mean Sea Level	1000 (as per IEC 62040-3)						

The Liebert NXa is a true on-line, double conversion, UPS system, that delivers complete, centralized power protection for mission critical systems. Designed to meet the high availability power needs of small and medium datacenters, the Liebert -NX is offered in 8 3-phase popular ratings combining compact size, capacities up to 6 parallel 200kVA units, advanced operating features, and low costs of ownership delivering.



Features & Benefits		
Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Communications available through a Relay Contact Card, Liebert Intellislot Web Card and Liebert Multilink shut-down software ▪ Ultra-quiet performance with noise level between 55dB and 66dB allows greater latitude in where to place the unit ▪ Large and user friendly LCD display provides operating information in 12 languages ▪ Up to 6 Liebert NX can be paralleled for capacity or 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 diagnostic and various monitoring options	▪ True on line double conversion technology corrects all types of power fluctuations ▪ Capable to give 320% of nominal current for 200ms to clear branch circuit breakers ▪ Advanced inverter control technology provides the highest output power quality ▪ Redundant power supply boards , redundant cooling fans and highly efficient cooling of critical components ▪ Minimized transfer to battery, reducing the numbers of charging and discharging cycles, due to the wider input voltage window of +10 -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 110% for 1 hour 125% for 10 minutes 150% for one minute	▪ Temperature-compensated battery charging extend battery life ▪ Highest possible input power factor to safe on electricity bill and generator sizing ▪ Adjustable power walk-in from 5 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.

Competitive Advantage		
Feature	Liebert NX 40-200 kVA	The Liebert Advantage
Usable Input Voltage Range (VAC)	305V to 477V (100% Load) 208V to 477V (70% Load)	A broader input voltage range results in less battery use, fewer battery replacements and a lower total cost of ownership.
Audible Noise	55-66 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	The user can connect a load to the NX without worrying about driving the UPS into bypass or shut-down.
Fast Battery Recharge	Intelligent battery management	Fast recharge times enhance system availability.

Liebert NX™ UPS (40-200 kVA)



Technical Characteristics

Models	NXa							
Rated Power @ 0.8 PF [kVA]	40	60	80	100	120	140	160	200
Rectifier Input								
Rectifier Type	IGBT-based Vector Controlled PFC (PF Corrected)							
Input Voltage [Vac]	380 / 400 / 415 3ph+N (Accepted from 305 to 477 without batt. use)							
Input Frequency [Hz]	50 or 60 (Accepted range from 40 to 70)							
Input Current THD	<3% (without any Filter)							
Input Power Factor	≥ 0.99 (without any Filter)							
Power Walk-In [s]	5 to 30 (selectable)							
Bypass Input								
Input Voltage [Vac]	380 / 400 / 415 3ph+N							
Battery								
Battery Type	VRLA (Valve Regulated Lead Acid) or Wet / Flooded or NiCd							
End-Cell Voltage [Vdc/Cell]	Selectable from 1.60 to 1.90 (for VRLA)							
DC Ripple Current (float)	<5% (of C10 AH capacity) RMS value							
DC Ripple Voltage (float & const VCh)	<1% (RMS value)							
Temp. Comp. Charge	Standard (where internal batteries 40 kVA) and Optional (for all other battery configurations)							
Output								
Inverter Type	IGBT-based Vector, Repetitive & PI Controlled							
Output Power [kW]	32	48	64	80	96	112	128	160
Output Voltage [Vac]	380 / 400 / 415 +/- 1% 3ph+N							
Output Frequency [Hz]	50 or 60 +/- 0.05% adjustable							
Output Voltage THD	1% (max) linear load							
Max. Load Crest Factor	3:1 (compliant with IEC 62040-3)							
Transient Volt. Resp. [ms]	10 to recover ± 5% of Nominal Voltage for 0% to 100% or 100% to 0% step load							
Min. Leading PF Load	Down to 0.9							
Voltage Displacement [°el]	120° +/- 1° el (with 100% unbalanced load)							
Overload	110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute							
Efficiency								
AC-AC	up to 95.7%							
Physical Parameters								
Width [mm]	600			700		1000		
Depth [mm]	825			825		825		
Height [mm]	1600			1800		1800		
Weight (approx.)								
without batt. [kg]	341	401	445	730	730	900	900	1060
UPS Enclosure IP	IP 20 (even with open front door)							
Standards								
	Safety: IEC/EN/AS 62040-1-1 incorporating requirements of IEC/EN/AS 60950-1 EMC: IEC/EN/AS 62040-2 (C2 emission, C3 immunity) complying with lowconducted and radiated emission limits required by office and data-centre environments of CISPR22 Class A and with high electrostatic, electrical field, fast transient, surge/lightning and radio frequency immunity levels of IEC/EN/AS 61000-4-2, -3, -4, -5, -6 required by both commercial and light industrial environments Test and Performance: IEC/EN/AS 62040-3 CE: The UPS conforms to the following European Community directives: Low Voltage Directive 73/23/EEC (amended 93/68/EEC) Electromagnetic Compatibility Directive 89/336/EEC (amended 92/31/EEC)							
Environmental								
Storage Temp. [°C]	-20 to 70 (UPS) & -20 to 30 (Battery)							
Operating Temp. [°C]	0 to 40 (UPS) & 25 +/- 5 (Battery)							
Relative Humidity	0 to 95% (non-condensing)							
Maximum Altitude [m] above Mean Sea Level	1000 (as per IEC 62040-3)							

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 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 inter-locking schemes.



Liebert IntelliSlot® Web Card

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



Liebert Nform™

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



Liebert MultiLink® Shutdown Software

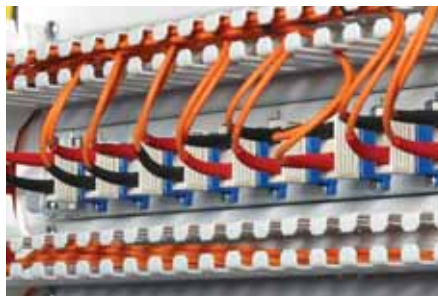
Liebert MultiLink software monitors battery status and warns users of impending power loss and automatically shuts down systems in a safe and orderly manner.



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.

Related Products – Cable Management



It must be ensured when laying cables that every kind of mechanical stress is avoided.

Bending loads

The bending radii may never be less than the values provided by the cable manufacturer in the respective data sheets. At points that bend too much, the electrical properties of the cable change and reduce the transmission bandwidths and ranges.

If manufacturer specifications are not available, then the following rule of thumb applies:

With loose cabling, at least 15 times the external cable diameter and with fixed cabling, at least

10 times the external cable diameter.

Kink stress

The most extreme bending loads can cause the cable to break.

Tensile stress

This is only determined by the copper cross-section of the conductor, as all other materials are too soft. The cable may not be stressed more than 50N/mm^2 (Cu cross-section) as otherwise the conductors are stretched and the cross-section is reduced. If higher “pulling” forces are required, then cables with additional strain relief elements must be used.

Compressive stress

Compressive stress is caused by loads bearing down from above, fixed clamping or sharp cable kinking and must always be avoided, as otherwise the “loose” cable structure changes and the electrical transmission properties are impaired.

Torque strains (twisting)

These must never have an effect on the cable, as they drive the cable elements into one another and therefore impair the transmission properties.

The prescribed radii are preset with thermal limiter. These components ensure that neither a reduction of the transmission bandwidths and ranges nor a cable break occur.



Competitive Advantage	
Feature	Knürr Di-Strip®
Material/Finish	Casing: closed sheet steel extrusion, zinc-plated, powder-coated texture Plastic parts: Vampamid 6 0024 VO (UL94), recyclable
Dimensions	Socket spacing: 24 mm - Height: 45.5 mm - Casing width: 44.4 mm (= 1 HU)
Approval / Certificates	CE Label in accordance with low voltage directive 2006/95/EEC EMC Directive 2006/108/EEC - Innova-GS - CB- scheme
Colour	Casing: RAL 7035 light-grey Plastic parts: RAL 7021 dark-grey
Load Rating	250 VAC / 10 A
Approval Symbols	VDE, UR, CSA

Order Number	L mm	N	F1	Model	Up
03.632.010.1	483	10	•	With switch	1 unit



Features & Benefits			
Cost Conscious:	Feed:	At a Glance:	Installation:
- Quick and easy mounting on the rack extrusion. - Costs reduction with regard to mounting and wiring.	3x16A as standard - Ideal for implementing redundancies (e.g. 96 A)	Phase assignment colour coding (L1, L2, L3).	Optimum distribution over the entire rack height (standard: 23 HU and 41 HU).

Competitive Advantage	
Feature	Knürr Di-Strip®
Material/Finish	Casing: closed sheet steel extrusion, zinc-plated, powder-coated texture Plastic parts: Vampamid 6 0024 VO (UL94), recyclable
Dimensions	Socket spacing: 24 mm - Height: 45.5 mm - Casing width: 44.4 mm (= 1 HU)
Approval / Certificates	- CE Label in accordance with low voltage directive 2006/95/EEC EMC Directive 2006/108/EEC - Innova-GS - CSA NRTL/C - CB-scheme
Colour	Casing: RAL 7035 light-grey Plastic parts: RAL 7021 dark-grey
Load Rating	100-240/173-415 Vac - Input: 3x 16 A - Output: 10 A (NA 15 A)
Approval Symbols	VDE, UR, CSA

Order Number	L mm	N	F1	Model	Up
03.600.024.1	1033	24	•	-	1 unit
03.600.048.1	1833	48	•	-	1 unit
03.600.824.1	1033	24	•	With plug	1 unit
03.600.848.1	1833	48	•	With plug	1 unit

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	3,7 kg

UL 1449 second edition clamping data					EMI/RFI Noise Rejection		
Voltage	L-N	L-G	L-L	N-G	Single Unit	Frequency	System Installation
120/208	400	400	800	400	120/208	400	400
120/240	400	400	800	400	120/240	400	400
240	X	800	800	X	240	X	800
277/480	800	800	1500	800	277/480	800	800
36/600	1200	1200	2000	1200	36/600	1200	1200
480	X	1500	1500	X	480	X	1500
600	X	2000	2000	X	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		Nominal (L-G)		Source Configuration		Source Configuration	
ACV		Voltage Codes					
	ACCUVAR	120	120V		1 Phase L-N 2w + gnd	R	Standard Options – (Red & Green LED's, Audible Alarm with Enable/Disable Feature)
	65kA	208	208V		(must put "-" in part number)	RE	Standard Options + Enhanced EMI/RFI Filtering
	Per Mode	230	230V		1 Phase L-L 2w + gnd	RK	Standard Options + Alarm Relay Contacts
		240	240V		(must put "-" in part number)	RKE	Standard Options + Enhanced EMI/RFI Filtering & Alarm Relay Contacts
ALL		277	277V	S	Split Phase 3w + gnd		
	ACCUVAR II	346	346V	Y	3 Phase Wye 4w + gnd		
	80kA	480	480V	D	3 Phase Delta 3w + gnd		
	Per Mode	600	600V	H	3 Phase Delta Hi-leg 4w+ gnd		

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.



Frequently Asked Questions	
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

Liebert HPM S 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, datacenter 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:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Small footprint. ▪ Total front access for service. ▪ Provides a complete environmental control package, including both precision air conditioning and humidity control. ▪ Upflow, downflow and displacement models available. ▪ Air, water, glycol and chilled water units available. ▪ Advanced microprocessor control.	▪ Built with Liebert quality components from the most trusted name in the industry. ▪ Engineered for year-round operation. ▪ Multiple options for communications and real-time monitoring event notification. ▪ Reliable hermetic scroll compressor technology in combination with standard hot gas bypass gives flexibility to adjust to various room loads. ▪ Optional digital scroll compressor provides continuous load modulation and advanced flexibility.	▪ 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 supported by the Service Network - the largest network of service providers in our industry - for installation, start-up and preventive maintenance. ▪ Even more cost effective by using digital scroll compressor, with lower energy consumption and less wear and tear.

Frequently Asked Questions

Question	Resolution
Why is a Liebert HPM S precision cooling system better than ordinary building air conditioning?	The HPM S 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 HPM S 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?	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
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 HPM S offers an extremely compact footprint for facilities where space is at a premium.
Does the Liebert HPM S cost more to operate than a regular building air conditioning system?	Because of its reliability, compact size and efficient energy usage, the Liebert HPM S is actually less expensive to operate over its life cycle compared to comfort cooling equipment.

Competitive Advantage

You may be asked about the advantages of the Liebert HPM S 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 HPM S also utilizes a scroll compressor for maximum energy efficiency.
Lower Total Cost of Ownership	In addition to energy efficiency, the Liebert HPM S is designed to withstand the test of time.

Specifications

Liebert HPM S based refrigerant R-407C

System Type: D-DA= Digital Scroll Compressor; Displacement w/o raised floor

	Air Cooled with External Condenser	
Indoor Unit (based on 24°C, 50% RH, 35°C ambient)	HPM D13DA	HPM D23DA
Cooling Capacity Data - Standard Air Volume	kW	kW
Total	14.9	26.2
Sensible	13.3	22.7
Indoor Cabinet Dimensions - Both D13 & D17		
Unit Height /Depth/Length (mm)	750 / 750 / 1950	
Indoor Unit Weight		
Net Weight (kg)	240	270
Indoor Unit Electrical Data - With electric reheat and humidifier (steam-generating)		
Power Supply [V]	400V / 3ph / 50Hz	
Unit Power input (cooling only) [kW]	3.77	7.2
Fan FLA / LRA (EC fan) [A]	4 / 0.1	4 / 0.1
Compressor FLA / LRA [A]	8 / 55	16.4 / 95
Heater Power input / FLA [kW/A]	5.85 / 8.6	5.85 / 8.6
Humidifier Power input / FLA [kW/A]	5.8 / 9	5.8 / 9
Outdoor Unit Condenser - Air Cooled Condensers		
Model	HCE17 for D13DA	HCE29 for D23DA
Number of Fans	1	
Unit Power Supply	230V / 1ph / 50Hz	
Max Power Input [kW]	0.27	0.56
Unit FLA / LRA [A]	1.2 / 2.7	3 / 7
Fan Speed Controller	included in the internal HPM unit	
Outdoor Unit Condenser Dimensions		
Cabinet with legs (Height x Width x Length) [mm]	995 x 960 x 1120	1010 x 1175 x 1410
Net Weight [kg]	65	96

This is just an extract of the whole HPM product range, for more information please call your local Liebert representative.

Related Products



Cold Fire display

This display can monitor and set the Units just plugging it into the LAN. It can be plugged in case of need or it can be fixly installed on the wall or on board of any Unit.



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

For more information about this product and its applications, contact your local Liebert Representative



Features & Benefits		
Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ Air, Water, Glycol and Chilled water cooled 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™ and Scroll. ▪ Total front access for service. ▪ 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 HPM is built for year-around operation. ▪ Uses environmentally friendly R-407c refrigerant. R22 as an option.	▪ Ultra energy efficient freecooling and Dual Cool hybrid models available. ▪ Refrigeration system utilizes Scroll compressor for maximum energy efficiency. ▪ Even More cost-effective by using Digital scroll compressor, with lower energy consumption and less wear and tear. ▪ Liebert precision air conditioning products are supported by the Service network - 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 HPM precision cooling system better than ordinary building air conditioning?	The Liebert HPM 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 HPM 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 HPM 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 HPM 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 HPM cost more to operate than a regular building air conditioning system?	Specifically designed for the demanding requirements of year-round operation, the Liebert HPM 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 HPM 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 24-89 kW (Air or Water/Glycol cooled) or 35-172 kW (Chilled Water Cooled) capacities and upflow models (for non-raised floor applications) in 24-59 kW (Air or Water/Glycol cooled) or 36-65 kW sizes (Chilled Water Cooled).
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 HPM also utilizes a digital scroll compressor for maximum efficiency.
Lower Total Cost of Ownership	In addition to energy efficiency, the Liebert HPM S is designed to withstand the test of time.

Specifications			
Air-cooled capacity data - R-407C refrigerant			
Model Type	D35UA	D66UA	L99UA
Compressor Size	1 Digital Scroll	1 Hermetic Scroll + 1 Digital Scroll	2 Hermetic Scroll
Cooling Capacity rated at standard air volume DB, ambient 35°C, room conditions 24 °C / 50% RH			
Total Cooling [kW]	36.7	70.2	104.6
Sensible Cooling [kW]	35	58.4	89.3
Indoor Unit Dimensions and Weights			
Height x Depth x Length [mm]	1950 x 850 x 1750	1950 x 850 x 1750	1950 x 890 x 2550
Weight [kg]	580	670	1000
Indoor Unit Electrical Data With electric reheat & humidifier (steam generating)			
Power Supply	400 V / 3 ph / 50 Hz		
Unit Power Input - cooling only [kW]	10	19.53	28.83
Fan FLA / LRA - EC fan [A]	8 / 0.2	8 / 0.2	10 / 0.2
Compressor FLA / LRA [A]	21.2 / 135	42.4 / 270	60 / 396
Heater Power Input / FLA [kW/A]	15 / 22	15 / 22	18 / 28
Humidifier Power Input / FLA [kW/A]	9 / 13	9 / 13	9 / 13

Outdoor Unit Condenser Selection			
Air-Cooled Condenser Selection Liebert HPM M/L Size			
Refrigerant	R-407C		
Condenser Type	Outdoor, Low Noise		
Ambient Temperature °C	35°C	40°C	46°C
D35UA	HCE42	HCE49	HCE87
D66UA	2xHCE42	2xHCE49	2xHCE87
L99UA	2xHCE49	2xHCE74	2xHCE95

Outdoor Unit Condenser Dimensions				
Condenser Cabinet (with legs) Dimensions, mm				
Size	Height	Width	Length	Weight incl.packing (kg)
HCE42	1010	1195	2420	143
HCE49	1010	1195	2420	143
HCE74	1010	1195	3420	206
HCE87	1010	1195	3420	235
HCE95	1010	1195	3420	265

This is just an extract of the whole HPM product range, for more information please call your local Liebert representative.



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 supported by the Liebert Service Network - the largest network of service providers in our industry - for installation, start-up and preventive maintenance.

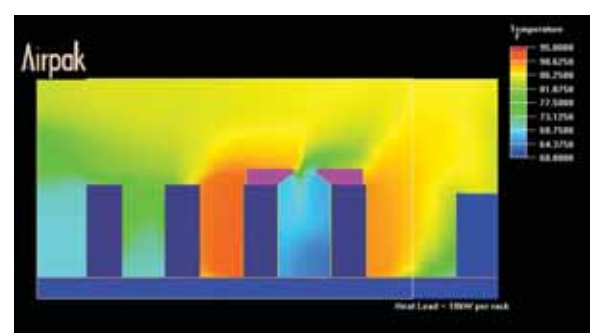
Frequently Asked Questions	
Question	Resolution
I already have a cooling system. Why do I need XD?	In many cases, high heat density hot spots or zones require targeted cooling solutions. The Liebert XD systems are specifically designed to address the higher heat loads that result from implementing blade 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?	Li- The Liebert XD comes with a 1-year warranty and is available with preventive maintenance service options to ensure 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 Advantage	
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.

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.



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 supported by the Liebert Service Network - the largest 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
Input Voltage	380/420 V, 3 ph, 50 Hz
Full load amps	79 A
Height	78" (1981 mm)
Width	74" (1879 mm)
Depth	74" (1879 mm)
Weight, empty	907 kg

Related Products



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 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.

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:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ 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.	▪ 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.	▪ 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 supported by the Liebert Service Network - the largest network of service providers in our industry - for installation, start-up and preventive maintenance.

Specifications	
	Liebert XDC
Nominal Capacity, 60 Hz ¹	10 kW / 2.8 Ton
Nominal Capacity, 50 Hz ¹	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	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)

Related Products



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™

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.

The modular Liebert XDH Horizontal in the 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:	Higher Availability:	Lowest Total Cost Of Ownership:
▪ 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.	▪ 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.	▪ 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 supported by the Liebert Service Network - the largest network of service providers in our industry - for installation, start-up and preventive maintenance.

Side-mounted cabinets unit for highly efficient cooling in server cabinets from 10 to 30 kW – with significant reductions in data centre energy costs



Knürr CoolLoop® Features & Benefits

Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
The Knürr CoolLoop® has a modular setup that can be equipped with one to four fan units. Cooling is therefore adapted to suit the actual requirement within the data centre. The cooling range per Knürr CoolLoop® is 10 – 30 kW. Selection of the required capacity can be determined by the data centre operator. This ensures investment security for the data centre operator, and only provides the required cooling power relative to the heat load produced by the data centre.	The Knürr CoolLoop® makes no compromises when it comes to availability, reliability and safety. The fans are configured with n+1 redundancy. Two Knürr CoolLoops® can be positioned on one server cabinet to meet the highest requirements of a tier 4 data centre. This ensures complete 2n redundancy of server cabinet cooling.	The Knürr CoolLoop® represents the highest standards in data room cooling capacities. The main focus is selecting the methods and procedures that save the most energy by using the most modern components. This is why the tried, tested and proven EC fan technology is used consistently. The air path is constantly monitored and adjusted through the heat exchangers and moisture eliminators, which results in minimum energy consumption by the fans. The Knürr CoolLoop® not only sets standards with regard to pressure loss, but relatively high cold water pre run temperature for optimum server cooling also ensures improved use of the cold water system with a high coefficient of performance (COP). The design also enables a high level of free cooling, which facilitates significant savings potential with cold water generation. Short air paths and the arrangement of the fans after the heat exchanger also help to reduce energy consumption. This arrangement not only increases the useful lifetime of the fans, it also increases the cooling airflow volume as a result of the higher air density. This in turn conserves resources and further reduces energy consumption.

Energy-efficient use of existing cooling power in data centers, with new installations or as installation-friendly upgrades for all brands.

- **The cross braces**
are used for sealing areas off and precise positioning, and also provide stability as tilt restraint.
- **Blanking elements**
close off the areas between racks with different heights.
- **Door systems and safety/security**
Double doors or sliding doors can be chosen for the front, and close with automatic door closers. In the event of an emergency, the cold aisle can be quickly exited by simply pushing the doors open. The doors can be fitted with glass or Plexiglas windows.
- **Early fire detection**
and extinguishing: Knürr CoolFlex® does not cause any disadvantages for most of the early fire detection systems on the market. On the contrary! In conventional DCs the mixing of cold and warm air can cause delays in alarm systems. With regard to fire extinguishing, various systems must be considered when installing the Knürr CoolFlex®



Better work conditions		
Flexibility:	Higher Availability:	Lowest Total Cost Of Ownership:
Raised floor	■ High pressure ■ High volume flow ■ Low temperatures	■ Lower pressure ■ Lower volume flow ■ Pleasant temperature
Cold aisle	■ High volume flow (storm) ■ High temperature differences (cold at bottom, warm at top)	■ More pleasant, lower volume flow ■ Pleasant temperature
Warm aisle	■ Pleasant to high temperature	■ Somewhat increased temperature
All other areas	■ Pleasant temperature	■ High temperature

Specifications		
	XDH20	XDH32
Nominal Capacity, kW	22	30
Voltage/Phase/Frequency	230/ 1 / 50	
Physical Data		
Height - Inches (mm)	78 (1981)	
Width - Inches (mm)	12 (305)	
Depth - Inches (mm)	42 (1067)	
Weight - (kg)	106	
Footprint		
Unit (m²)	0.33	
Unit with Service Area (m²)	0.42	
Warranty		
Unit	Liebert Stand.	
Labor	Liebert Stand.	
Parts	Liebert Stand.	
Compressor	N/A	
Agency Approvals		
CSA	Yes	
CE	Yes	

Related Products



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™

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 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.
Alarm Filtering – Trap Forwarding	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.	N/AProvides 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 <i>continued</i>			
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 re-booting 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 Advantage		
Feature		Liebert
Lock Application	Lets you select the alarm that you wish to delete, acknowledge it, close it using the tool bar ribbon buttons.	Yes
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
Notification Updates	Users can quickly view the notifications on a device. This can be displayed per device.	Yes
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
Parametric Data View	User can view all the SNMP parametric data available on the device.	Yes
Network Statistics	The system will provide the NMS statistical data on the agent and how it performs on the customer's network.	Yes
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
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
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
Users	The system supports two users; an administrator and power user, access level for system configuration or just alarm management.	Yes

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
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 Liebert UPS, 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.

Related Products



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™ (40-200kVA)

A true on-line, double conversion, mid-sized, three-phase UPS system that delivers complete, centralized power protection for mission-critical systems.



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 HPM™ Cooling

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



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 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 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.

Specifications

Software Options			
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)
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 Transmission Equipment)	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.

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 (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 availability. - 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 Advantage	
Feature	Liebert IS-WEBCARD
Enterprise Management System Compatible	Yes
Fault notification	Yes
Integrates with system shutdown software	Yes
Password security	Yes
Reboot equipment remotely	Yes
Remote device management (software)	Yes
SNMP Management	Yes
UPS MIB (RFC-1628) Support	Yes
Web Management	Yes
Secure Web (SSL)	Yes
Network Firmware Upgrade	Yes
Email Support	Yes
Multiple Browser Support	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

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 do not 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

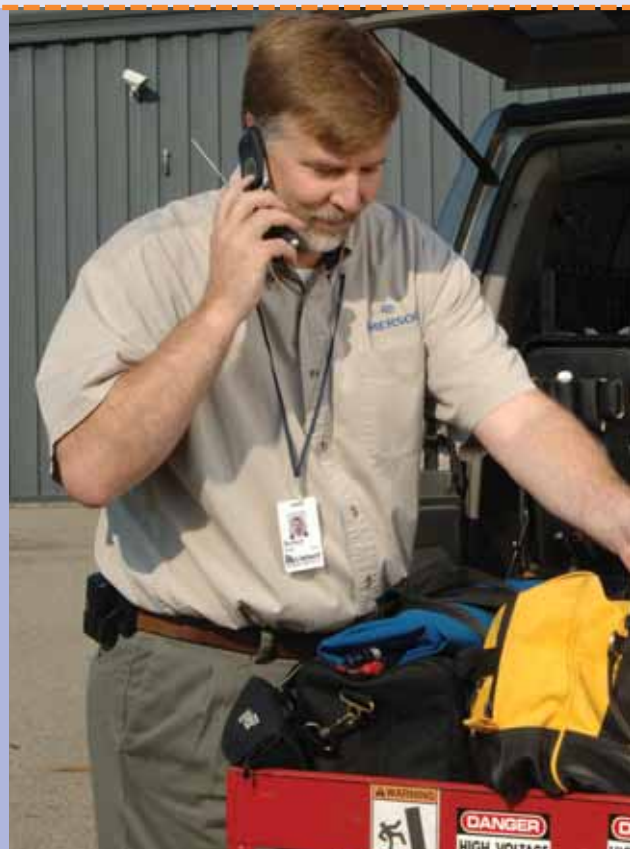
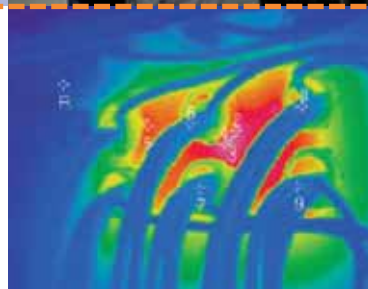
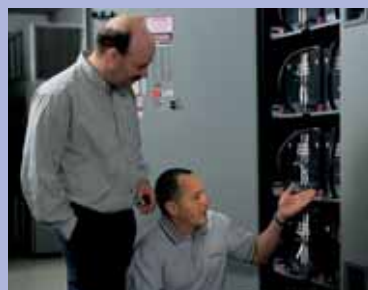


Delivering *Uptime Assurance*.

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.





Emerson Network Power Integrated, Pre-Engineered Solutions

Designed For Your IT-World, Make Energy Efficient.

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 key components:

- **Mission Critical Power**
- **Mission Critical Cooling**
- **Rack and Enclosure Systems**
- **Monitoring and Management**
- **Proactive Maintenance**

In addition, Emerson Network Power has created new power, cooling, rack and enclosure systems as well as 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.



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

Emerson Network Power, a division of Emerson (NYSE:EMR), is the world's leading provider of Business-Critical Continuity™ "Grid-to-Chip" solutions for telecommunication networks, data centers, medical facilities and industrial systems.

Emerson Network Power provides innovative solutions and expertise in areas such as AC and DC power supply, precision cooling systems, embedded computer and power supply systems, integrated racks and enclosures, network circuits and controls, monitoring and connectivity. All solutions are supported locally all over the world by Emerson Network Power customer service technicians. You will find more information on Emerson Network Power's products and support services at

www.emersonnetworkpower.com
www.eu.emersonnetworkpower.com
www.emerson.com
www.knuerr.com

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Emerson Network Power™

The Global leader in Business-Critical Continuity™ solutions.

■ AC Power	■ Embedded Computing	■ Outside Plant	■ Racks & Integrated Cabinets
■ Connectivity	■ Embedded Power	■ Power Switching & Controls	■ Services
■ DC Power	■ Infrastructure Management & Monitoring	■ Precision Cooling	■ Surge Protection

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