



**Foundation™**

**Enclosure Systems**

**PROTECTION FOR TODAY'S NEEDS...  
AND TOMORROW'S OPPORTUNITIES**



FOUNDATION



*An Adaptive, Comprehensive and  
Scalable Network Protection  
System To Meet Ever-Changing  
Computer Support Needs*



# TOO MUCH EQUIPMENT, TOO LITTLE PROTECTION

While sensitive electronics have changed over the past years, one thing remains constant — excessive heat, poor power quality and unauthorized access can damage or impair the operation of vital systems and peripherals.

The answer lies in finding the correct enclosure system to house critical components for both small and large facilities. There are, however, several key issues to consider before specifying one:

## Evolving Technology

Computer equipment can change size and shape very rapidly. This means an enclosure you buy today must be suited for the equipment you buy a year from now.

## Changes in Usage And Growth

The need to quickly change equipment locations or configurations can be a real nightmare if a rack is not flexible or if there is no enclosure at all. Cabling presents still another challenge. It is important to keep wiring orderly and easy to trace. In the event of a malfunction of crossed wire, you could spend half your time just trying to determine which cable is at fault.

## The Need To Keep It Organized And Safe

The downsizing and decentralization of computing, networking and telecommunications equipment has reduced the space required for these systems but created another dilemma...where do we put it all? And what about security? At best, an important piece of equipment could be accidentally disconnected. At worst, a system could be deliberately compromised.

## Conditions Must Be Optimal

Often very critical pieces of networking equipment are exposed and unprotected. In some cases, this equipment may be housed in an equipment closet or other small room. But what about proper ventilation and cooling for that equipment? Overheated components may malfunction or shutdown completely.

*If This Looks All Too Familiar... You Have A Problem*



# The Solution That Gives You Exactly The Right Amount Of Protection And Support

## Adaptive

Foundation's highly flexible design accommodates varied support installation and application requirements. It is designed to provide easy access for equipment changes and relocation.

## Comprehensive

Foundation features Liebert's full line of computer-grade support systems, including environmental, power, monitoring and security. Only Liebert has the capability to integrate all this support. Foundation provides "one stop shopping" for protection with single-source responsibility and complete solutions — now and in the future.

## Scalable

Foundation has the flexibility to accommodate both changes in equipment and future growth. It allows you to start with a basic rack/enclosure configuration and scale up in features and level of protection — all the way to a Mini Computer Room. The system also provides significant cost savings by permitting you to maintain and build upon your original investment.



# THE RIGHT ANSWER — NO MATTER WHAT YOUR NEEDS

The Foundation integration system is more than” just a rack”— it is the “foundation” of a mini-computer room. It is designed to deliver maximum flexibility today and to comprehensively accommodate future support needs in the rapidly changing network equipment environment.

It can start simply as a basic integration system to house and organize network components. Or you can specify it at any level of protection up to the self-contained MCR (Mini Computer Room) by adding support systems including computer-grade air conditioning, UPS, monitoring capabilities and security features.

The beauty of the system is that you don’t have to do it all at once. These features can be incorporated from the beginning or added at a later time to help meet both your current and future requirements.

## Evolving Design

The Foundation system provides an organized, secure, controlled environment for your sensitive electronic equipment. A few of the major improvements to the Foundation over previous enclosure designs are:

- Adjustable Rack Rails
- Reversible Hinged Door
- Improved Cable Management
- Easy Access Side Panels
- Multiple Door Options
- Complete Upgradability
- Top Or Bottom Mount ECM Unit
- Lower Noise Level
- Energy Saving Features

Adjustable shelves are designed to hold freestanding equipment.



Adjustable rack rails provide flexibility in mounting components.



Enclosures feature threaded or square rack rail holes and rack unit position markers.



A center mount rack rail is available providing full front to rear adjustment.




The Foundation's mounting frame accommodates most major network equipment.

**Cable Support Rails** — includes provisions for vertical cable runs with Velcro option tie down.

The heavy duty Foundation frame is 12-gauge steel construction and supports 2000 lbs. It can accommodate shelf or rack mounted equipment on either **19 or 23 inch rails**. The front and rear vertical frame members incorporate internal mounting rail options and provide space to route and manage cabling.

**Cable Access and Routing** — provides entrance and routing points for cable feeds throughout Foundation.



**Universal Cable Management Channels** — offers horizontal cable support in front, rear and zero U areas.

The Foundation Integration System features a robust, flexible design. Systems are selected as either “non-sealed” (open frame or enclosure) or as “sealed” (basis for NEMA 12 enclosure). Internal mounting rails are full height, adjustable position, sheetmetal mounting rails with EIA hole/spacing for equipment and/or mounting options. Front/rear rails are offered, as well as a center mount rail option. A choice of fixed and pullout shelves and keyboard tray is also available.

Various cutouts are located at the top, bottom and rear for cable entry. Leveling feet that can support 2,000 lbs. of total weight are provided, while casters are optional.



**Wall Mount Systems** 12 U-Hinge Body “swing out” and 12” depth Low Profile available.



Doors with **perforated sheet metal** ventilation are available.

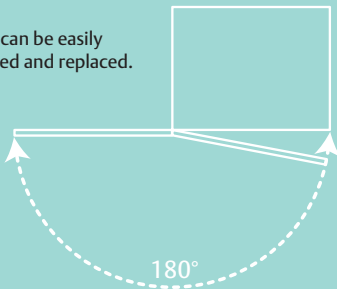
Where a minimal amount of equipment is needed, the Foundation 44” tall enclosure provides compact protection.



**Bundled UPS** systems available

## Easy Access To Equipment

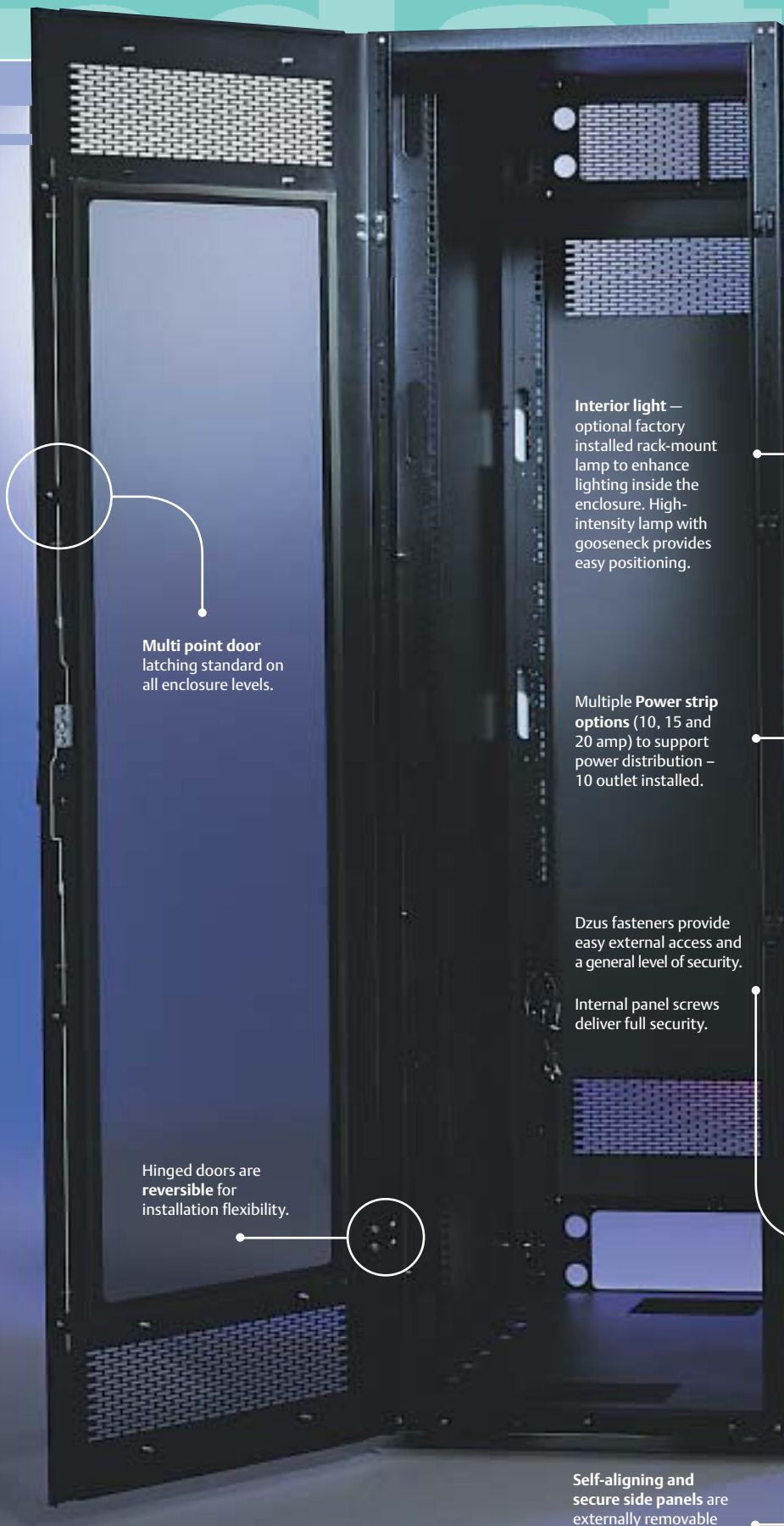
Doors can be easily removed and replaced.



**Outside-positioned door hinge** — allows complete 180 degree opening for easier access for both single and split doors.



**Dual-Split Rear Door** available



**Multi point door**  
latching standard on  
all enclosure levels.

**Interior light** —  
optional factory  
installed rack-mount  
lamp to enhance  
lighting inside the  
enclosure. High-  
intensity lamp with  
gooseneck provides  
easy positioning.

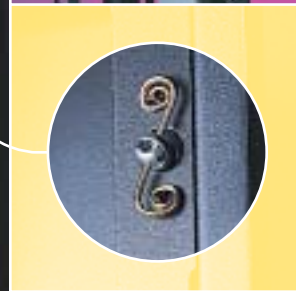


**Multiple Power strip**  
options (10, 15 and  
20 amp) to support  
power distribution —  
10 outlet installed.



Dzus fasteners provide  
easy external access and  
a general level of security.

Internal panel screws  
deliver full security.



Hinged doors are  
**reversible** for  
installation flexibility.



**Self-aligning and**  
**secure side panels** are  
externally removable  
for quick access.



# TOTAL PROTECTION UNDER ONE ROOF

The Foundation MCR (Mini Computer Room) provides the peace-of-mind that comes from knowing that Liebert's expertise and experience are protecting your vital network equipment and the integrity of your data.

Based on the industry award winning Little Glass House® design, the Foundation MCR self-contained integration system brings together all of the elements necessary to ensure the long-term viability of network components or other critical electronics.

A load-sized, computer-grade air conditioner can be located at either the top or bottom of the enclosure, driving cool air through sensitive equipment on all levels. A back-up cooling system ensures environmental security.

Power is supplied and protected through either a Liebert GXT 2U on-line UPS or a PowerSure® Interactive UPS.

And with a built-in Liebert SiteNet® Integrator, the Foundation MCR becomes an intelligent network peripheral, capable of monitoring conditions and initiating pre-set actions when problems arise.



## Critical Features Designed To Protect Critical Equipment

### Capabilities

The capabilities and features of the Foundation MCR are designed to provide maximum protection for systems housed within the enclosure:

**Comprehensive, integrated Liebert design** — combines computer-grade support systems, including cooling, power, monitoring and security into a single, pre-tested system.

**Mobile design for quick deployment** — let's you put a self-contained mini-computer room right where you need it, today or tomorrow.

**Agency approved as a system** — pre-qualified and ready for installation.

### Features

**ECM (Environmental Control Module)** — computer-grade air conditioning load matched to UPS.

**BCM (Back-up Cooling Module)** — provides cooling in the event of a power loss or can be utilized to reduce energy consumption with the **BCM Energy Saver Control**.

**Liebert On-Line or Line Interactive UPS** — provides back-up power protection.

**SiteNet Integrator** — alarms and status monitoring.

**Liebert SiteNet Integrator**

**Sealed entrance — cable raceway** provides a means for cable access to a “sealed” Foundation enclosure while maintaining the seal.

**Sealed door —** specially designed rubber gasket provides **NEMA12** sealing protection.

An external **keyboard tray** option provides access to secured equipment without interrupting the internal conditions.

**BCM (Back-up Cooling Module)**

**GXT 2U**

**Secure door —** lockable door provides an extra measure of security by limiting access to critical equipment. A **multi-point latch** with key lock is provided.

**Environmental Control Module**



# CREATING THE PERFECT ENVIRONMENT FOR YOUR CRITICAL SYSTEMS

Only Liebert can offer a real choice of computer-grade cooling options designed to meet your most demanding protection needs.

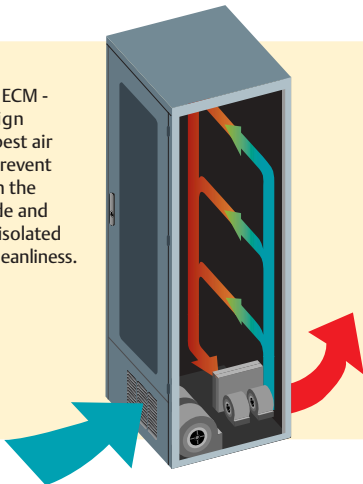
For systems without ECM air conditioning, **fan cooling** provides enhanced heat removal. Either 1 or 2 “low noise” or “high ambient” fans can be factory installed – up to 5 fans can be installed in the field. Fans can be located either on top or back panel of the Foundation.

Your Foundation Integration System is available with a Liebert **ECM (Environmental Control Module)**. The ECM is a self-contained, air conditioning system that provides round-the-clock cooling to components housed within a Foundation enclosure. The ECM features low-noise operation, suitable for use in occupied spaces and includes an automatic condensate reevaporation system. A hot gas by-pass provides automatic load matching and enhanced ECM life. All systems utilize “green” R-407C refrigerant.

A **BCM (Back-up Cooling Module)** can be added to the ECM to insure cooling in emergency conditions. With the addition of the Energy Saver Control the BCM can operate in “economizer” mode to save energy when conditions are right.

## Exclusive Uninterruptible Environmental Support

The integrated ECM - enclosure design promotes the best air circulation to prevent hotspots within the enclosure. Inside and outside air are isolated for maximum cleanliness.



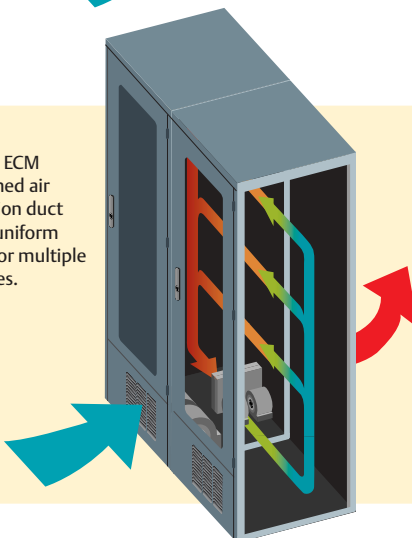
Internal ECM

During high internal temperature or power outage conditions, the BCM (Back-Up Cooling Module) — powered by the enclosure's UPS — is automatically activated, drawing in filtered outside air to ensure continuous air flow to protected equipment.



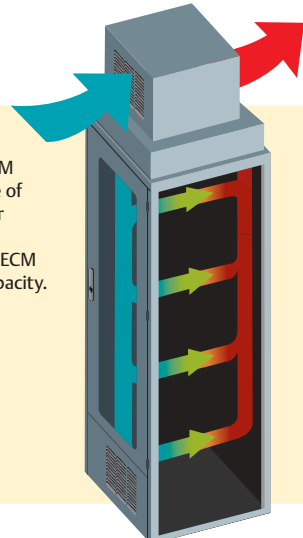
Back-Up Cooling

Exclusive ECM conditioned air distribution duct ensures uniform air flow for multiple enclosures.



Air Distribution

The top mounted ECM allows maximum use of internal rack space or can be used with the internal/rack mount ECM to double cooling capacity.



External ECM

An optional **top mounted ECM** allows for maximum use of internal rack space and can be used to double capacity with internal/rack mount ECM.

The Foundation ECM drives cool air through sensitive equipment on all levels.

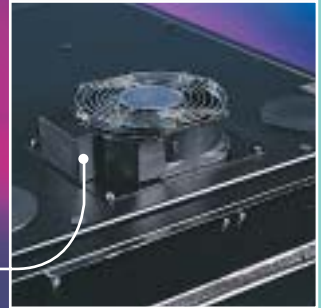
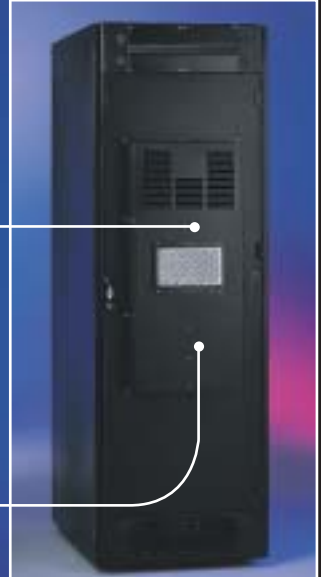
**BCM (Back-Up Cooling Module)** provides cooling during a loss of utility power or high internal temperature conditions.

Optional **BCM Energy Saver Control** saves money by allowing BCM to operate as primary enclosure cooler. This feature measures enclosure external and internal air conditions and, if appropriate, cycles off the ECM and activates the BCM to reduce energy consumption.

Separate power connections for ECM and UPS units.

The **optional fan package** provides enhanced cooling. The fan is either "low noise" or "high ambient" design. Up to five fans can be installed. A **fan filter** option is available to provide basic air intake filtration.

Panels are **insulated** on ECM supported systems enhancing thermal and sound performance.



# POWER AND CONTROL FOR CONTINUOUS SYSTEM PROTECTION

On-line UPS power protection — plus complete monitoring and communications capabilities — give your Foundation system the highest level of intelligent operation.

## Power protection and battery back-up

State-of-the-art power protection is available in the Foundation integration system through the addition of a Liebert GXT 2U on-line uninterruptible power supply (UPS) system.

As a true on-line UPS, the GXT 2U includes power factor correction, continuous output regulation, internal batteries, external battery connectivity, and internal automatic and manual bypass capability.

An additional battery pack for extra battery runtime is also offered. The UPS and battery pack are mounted inside the enclosure with a mounting bracket for support and relocation as required.

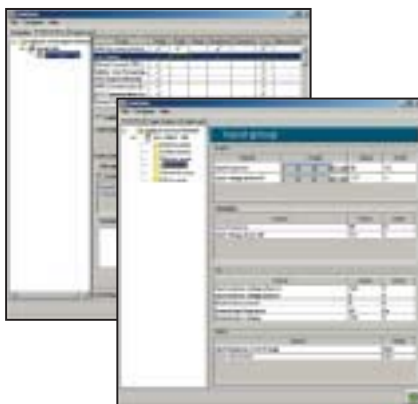
## Monitoring and communications

Complete monitoring and communications capability can be built into the Foundation system through the use of the Liebert SiteNet® Integrator. The SiteNet Integrator ties into your Ethernet network and can be enhanced with optional input sensors. These sensors include internal and external temperature and humidity, door sensor, high temperature alarm, smoke detector and water detection.

For enhanced UPS communications and control, the Intellislot® OpenComms Webcard will deliver SNMP and web-management communications capability to the GXT 2U unit contained in your Foundation system. This feature will provide flexibility in how you monitor and control your UPS over the network.


## Remote Power Control

The Load Control Module (LCM) is offered as an installed, add-on package to the Ethernet SiteNet Integrator. With the LCM, you can conduct remote shutdowns and cold restarts automatically. The LCM provides remote power management of up to six pieces of connected equipment. With the LCM, you can cycle power to reboot equipment or turn off connected systems by direct control or shut down based on pre-set alarm conditions.



Your Foundation system can also be supplied with Liebert MultiLink shutdown software. This package automatically shuts down computer operating systems in a smooth and orderly manner if UPS battery capacity runs low.






With the **bundled Liebert SiteNet Integrator**, your Foundation system becomes an intelligent network node. It is capable of monitoring conditions such as temperature and humidity, as well as initiating user-defined actions when problems arise.

Your Foundation enclosure can also be **bundled** with the **Liebert PowerSure® Interactive UPS**. With its advanced line-interactive technology, this unit filters utility power to eliminate spikes, noise and other transients. It also contains a voltage “buck and boost” circuit that corrects input voltage — without switching to battery back-up.



**Door ajar sensor** — option includes factory installed micro switches mounted on the front and rear doors of the Foundation enclosure to detect an open door. For use with the SiteNet Integrator.



The compact **CXT 2U** on-line uninterruptible power supply (UPS) system can be **bundled** in the Foundation enclosure to provide advanced power conditioning plus battery back-up. A battery pack can also be added for extra runtime.

# Specifications

## ENCLOSURE DIMENSIONS

Model	Overall Frame Dimensions			Rack		Adjustable Rack Depth		Internal Rack Height	
	Height*	Width**	Depth***	Width	Available Width	B****		RACK U	In. (mm)
_ = D or K	In. (mm)			In. (mm)	In. (mm)	Max In.(mm)	Min In.(mm)		
H_440	42 (1067)	23.5 (597)	30 (762)	19 (483)	17.8 (450)	22.5 (571.5)	18.5 (470)	22	38.5 (978)
H_448	42 (1067)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	22	38.5 (978)
R_440	42 (1067)	27.5 (699)	30 (762)	23 (584)	22.8 (580)	22.5 (571.5)	18.5 (470)	22	38.5 (978)
R_448	42 (1067)	27.5 (699)	38 (965)	23 (584)	22.8 (580)	30.5 (775)	26.5 (673)	22	38.5 (978)
H_780	77 (1956)	23.5 (597)	30 (762)	19 (483)	17.8 (450)	22.5 (571.5)	18.5 (470)	42	73.5 (1867)
H_788	77 (1956)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	42	73.5 (1867)
R_780	77 (1956)	27.5 (699)	30 (762)	23 (584)	22.8 (580)	22.5 (571.5)	18.5 (470)	42	73.5 (1867)
R_788	77 (1956)	27.5 (699)	38 (965)	23 (584)	22.8 (580)	30.5 (775)	26.5 (673)	42	73.5 (1867)
H_840	84 (2134)	23.5 (597)	30 (762)	19 (483)	17.8 (450)	22.5 (571.5)	18.5 (470)	46	80.5 (2045)
H_848	84 (2134)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	46	80.5 (2045)
R_840	84 (2134)	27.5 (699)	30 (762)	23 (584)	22.8 (580)	22.5 (571.5)	18.5 (470)	46	80.5 (2045)
R_848	84 (2134)	27.5 (699)	38 (965)	23 (584)	22.8 (580)	30.5 (775)	26.5 (673)	46	80.5 (2045)

\* 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.

## FAN PERFORMANCE DATA

Model Number	Fans	Airflow	Sound	Input Power (1PH)				
				CFM	dBa	Volts	Hertz	FLA
FAN1000L-60	1	114	47	120	60	0.2	0.3	15
FAN2000L-60	2	228	49	120	60	0.4	0.5	15
FAN1000L-50	1	94	45	230	50	0.1	0.2	10
FAN2000L-50	2	188	47	230	50	0.2	0.4	10
FAN1000H-60	1	235	59	120	60	0.3	0.4	15
FAN2000H-60	2	470	61	120	60	0.6	0.8	15
FAN1000H-50	1	200	57	230	50	0.1	0.1	10
FAN2000H-50	2	400	59	230	50	0.2	0.3	10

## ECM PERFORMANCE DATA

Model Number	Rated Capacity	Supported Load	Max Ambient	Height	Width	Depth	Total Heat Rej.	Input Power (1PH)					Plug	Sound
	BTUH (Watts)	BTUH (Watts)						Volts	Hertz	FLA	WSA	OPD		
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
ECM1000L*-C50	5306 (1555)	2811 (824)	100°F / 38°C	12.25 (311)-7	17.43 (443)	29 (737)	7698 (2255)	230	50	3.5	4.1	10	IEC320-10A	52
ECM2000L*-C60	6897 (2021)	5621 (1647)	105°F / 41°C	12.25 (311)-7	17.43 (443)	29 (737)	10935 (3204)	120	60	9.8	11.7	15	NEMA5-15P	52
ECM2000L*-C50	6708 (1965)	5621 (1647)	100°F / 38°C	12.25 (311)-7	17.43 (443)	29 (737)	10375 (3040)	230	50	4.8	5.7	10	IEC320-10A	52

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

## BCM PERFORMANCE DATA

Model Number	Rated Capacity	Supported Load	Max Ambient	Height	Width	Depth	Weight	Total Heat Rej.	Input Power (1PH)					Sound
	BTUH (Watts)	BTUH (Watts)							Volts	Hertz	FLA	WSA	OPD	
BCM 1000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	3038 (890)	120	60	1.0	1.3	15	57
BCM 2000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	3038 (890)	120	60	2.0	2.5	15	59
BCM 1000L-50	N/A	5621 (1647)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	5918 (1734)	230	50	0.5	0.6	10	55
BCM 2000L-50	N/A	5621 (1647)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	5918 (1734)	230	50	1.0	1.2	10	57

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.

## UPS PERFORMANCE DATA

Model Number	VA / Watts	Input Power (1PH)					Model Number	VA / Watts	Input Power (1PH)				
		Volts	Hertz	WSA	OPD	Plug			Volts	Hertz	WSA	OPD	Plug
GXT2-1000RT120	1000 / 700	120	60	15	15	NEMA 5-15P	PS700RM-120	700 / 450	120	60	15	15	NEMA 5-15P
GXT2-1500RT120	1500 / 1050	120	60	15	15	NEMA 5-15P	PS1000RM-120	1000 / 670	120	60	15	15	NEMA 5-15P
GXT2-2000RT120	2000 / 1400	120	60	20	20	NEMA 5-20P	PS1400RM-120	1400 / 950	120	60	15	15	NEMA 5-15P
GXT2-3000RT120	3000 / 2100	120	60	30	30	NEMA L5-30P	PS2200RM-120	2200 / 1600	120	60	30	30	NEMA L5-30P
GXT2-1000RT230	1000 / 700	230	50	10	10	IEC320-10A	PS700RM-230	700 / 450	230	50	10	10	IEC320-10A
GXT2-1500RT230	1500 / 1050	230	50	10	10	IEC320-10A	PS1000RM-230	1000 / 670	230	50	10	10	IEC320-10A
GXT2-2000RT230	2000 / 1400	230	50	10	10	IEC320-10A	PS1400RM-230	1400 / 950	230	50	10	10	IEC320-10A
GXT2-3000RT230	3000 / 2100	230	50	16	16	IEC320-16A	PS2200RM-230	2200 / 1600	230	50	16	16	IEC320-16A

# Service and Support Whenever You Need It

Liebert has the largest service team in the power protection industry: more than 100 service centers around the world. Customers get professional support without having to hire and train staff, or retain different vendors at different sites. Liebert service customers get service with response times that set the industry standard for performance.

## The Customer Response Center

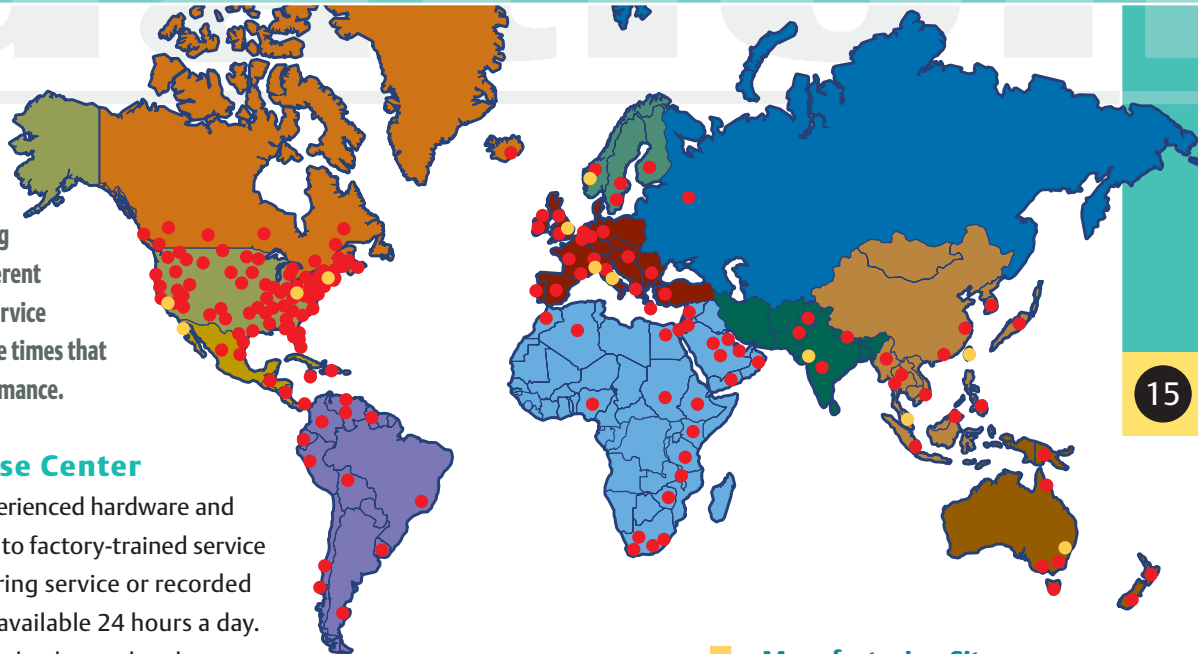
The Center is staffed with experienced hardware and software specialists with access to factory-trained service technicians. There is no answering service or recorded message...representatives are available 24 hours a day. Many times, problems can be solved over the phone, especially when Liebert can access the customer's network via modem to download an event log for analysis and response. Liebert can also monitor battery status and other factors that affect the reliability of your power protection, then conduct regular maintenance and appropriate service to ensure maximum readiness.

## Field Automation System

This proprietary database puts a complete set of customer information in the hands of Liebert Customer Engineers in the field. Stored in laptops and accessible via wireless modem, the Field Automation capability includes a complete service history of all installed equipment, and a list of current system parameters, including traps and alarms.

## Remote Monitoring

For organizations that want a 24-hour watch over their critical systems, Liebert can provide automated diagnostic software that connects vital network nodes to the Customer Response Center. The Remote Monitoring software instantly locates alarms, measures criticality, and identifies appropriate responses. Within seconds, Liebert is implementing a pre-set response plan. And this happens around the clock...some Remote Monitoring customers arrive at work to find that an overnight problem has already been detected and solved.



■ Manufacturing Sites  
■ Sales Offices



# TOTAL CONFIDENCE IN THE DECISION YOU'VE MADE.



## Foundation™

## Enclosure Systems

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

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

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

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

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

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

*Truly protecting complex computing and communications systems just can't be done with a simple "out-of-the-box" solution. Liebert helps you make the **smart decision** — one that will consistently meet your requirements for availability and reliability.*



That Is  
**The Liebert Experience**

### LIEBERT CORPORATION

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### LIEBERT WEB SITE

<http://www.liebert.com>

### 24 x 7 TECH SUPPORT

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614 841 6755 (OUTSIDE U.S.)

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