Integrated Cabinet Solutions for Business-Critical Continuity

Liebert Foundation™ Protection For Today's Needs And Tomorrow's Challenges







Rapid Change, Too Little Protection, Inflexible Solutions

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 an enclosure system to house critical components that can accommodate this volatile environment. 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 or 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

Foundation Integration System The Solution That Fits Your Protection and Support Needs

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 or Mini-Computer Room and scale up in features and level of protection. The system also provides significant cost savings by permitting you to maintain and build upon your original investment.



The Right Answer— No Matter What Comes Your Way

The Foundation integration system is more than "just a rack." It is a highly efficient protection solution designed to accommodate your equipment support needs in a rapidly changing network environment.

You can select a Liebert Foundation enclosure as a basic integration system to house and organize network components. Or you can specify a higher level of protection with the self-contained Liebert Foundation MCR (Mini Computer Room), complete with support systems such as computer-grade air conditioning, UPS, monitoring capabilities and security features.

The beauty of the system is in its flexibility. With the added capabilities of the Liebert Foundation EX Expansion System for enclosures and the many protection choices of the Foundation MCR, this product line is uniquely positioned to meet both your current and future requirements.

Evolving Design

The basic Foundation system provides an organized, secure, controlled environment for your sensitive electronic equipment. Features include:

- Adjustable Rack Rails
- Reversible Quick Release Doors
- Improved Cable Management
- Easy Access Side Panels
- Multiple Door Options
- Broad Upgradability
- Top Or Bottom Mount ECM Unit
- Low Noise Level
- Energy Saving Features

Adjustable rack rails provide flexibility in mounting components.



Rack mounting rails include number U's to ease equipment installation.



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



Multiple cable
pass through and
access points
support cable
routing.

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.

Liebert Foundation Enclosure With EX Expansion Channels



Foundation EX **Expansion Channels** offer three sizes for changing rack depth and space requirements.

Liebert Foundation EX Cable Management Channels as top cable troughs speed and simplify rack-torack cabling.



EX Expansion Channels accommodate optional EX Cable Rings, Cable Spools, Cable Trays, and Velcro to speed installation and simplify cable management.



Liebert continues its leadership in critical space thermal, power and equipment management by introducing the Liebert Foundation EX System. This flexible solution to rackenclosure space and cable problems utilizes a patent-pending "Expansion Channel" platform to provide adaptive space for airflow, equipment and cabling support.

Adaptive Design

The new Liebert Foundation EX System uniquely equips the Foundation rack-enclosure to quickly adapt to changing requirements, equipment and configurations.

- Adaptive space.
- Structured cabling environment.
- Enhanced heat rejection.
- High utilization cost effective design.
- Improved equipment access.
- Reduced cost of ownership.
- Optimized performance of Liebert systems.
- "Hot-Swappable" add, remove and reconfigure EX Expansion Channels as required without removing existing equipment.

Innovative cutouts allow easy integration and attachment of boltdown devices with the use of optional Carriage Bolts.

Liebert Foundation Integration System Features and Options

The Liebert 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, sheet metal 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.

Bundled UPS systems available



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



Doors with perforated sheet metal ventilation are available.





Easy Access To Equipment Outside-positioned door hinge allows complete 180 degree opening for easier access for both single and split doors.





Liebert Foundation Wall Mount Systems 12 U Hinge Body "swing out" and 12" depth Low Profile available.



Dual-Split Rear Door available



Interior light optional factory installed rackmount lamp to enhance lighting inside the enclosure. Highintensity lamp with gooseneck provides easy positioning.

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.

Basic, remote monitoring and receptacle control power strips in a wide platform range (single and 3-phase, 10-30 amp, 120-240 VAC).

Liebert Foundation Mini-Computer Room (MCR) Self-Contained Integration System

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. The Liebert Foundation MCR selfcontained 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 Liebert PowerSure[®] Interactive UPS.

And with a built-in Liebert SiteNet[®] Integrator, the Liebert 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

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

Capabilities

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 minicomputer 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 Foundation MCR Support Systems

Foundation Mini Computer Room: Creating The Perfect Environment For Your Critical Systems

Only Liebert can offers 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 Liebert Foundation Integration System is available with a Liebert ECM (Environmental Control Module). The ECM is a selfcontained, 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 re-evaporation 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

Internal ECM

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

Back-Up Cooling

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.

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

External ECM

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.

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. 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.

systems enhancing thermal and sound performance.

Separate power connections for ECM and UPS units.

Control And Power For Continuous System Protection

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

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.

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

Liebert Intellislot OpenComms Webcard

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.

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.

Remote Power Control

Liebert MP Advanced Power Strips, with remote monitoring and/or control capabilities for power distribution at the load/equipment level, support growth in rack electrical needs while meeting the new demands for remote power management. The MP Advanced Power Strips monitor electrical attributes of an individual power strip, including real-time remote and local display of total strip RMS volts, amps and watts. These products are a part of the Liebert MP Product Family — a group of power distribution and switching systems designed to manage power from the UPS all the way to each individual piece of computing and communications hardware.

Basic, remote monitoring and receptacle control in a wide platform range (single and 3-phase, 10-30 amp, 120-240 VAC).

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 connectibility, 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.

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

Your Liebert 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.

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.

Specifications

ENCLOSURE DIMENSIONS

Model	Overall Frame Dimensions			Rack	(Adjustable I	Rack Depth	Internal Rack Height		
	Height*	Width**	Depth***	Width	Available Width	B****				
_ = D or K	In. (mm)			ln. (mm)	In. (mm)	Max In.(mm)	Min In.(mm)	RACK U	ln. (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.
EX Expansion system option available in 3 sizes, increases front and/or rear depth (nominal / actual): 2" / 2"; 4" / 3.85"; 6" / 5.5."

FAN PERFORMANCE DATA

Model Number	Fans	Airflow	Sound		Input Power (1PH)							
		CFM	dBa	Volts	Hertz	FLA	WSA	OPD				
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)		ln (mm) - U	In (mm)	In (mm)	BTUH (Watts)	Volts	Hertz	FLA	WSA	OPD		Lpa (1.5 m)
ECM1000L*-C60	5315 (1557)	2811 (824)	105°F / 41°C	12.25 (311)-7	17.43 (443)	29 (737)	7146 (2094)	120	60	7.3	8.6	15	NEMA 5-15P	52
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)		In (mm) - U	In (mm)	In (mm)	lbs (kg)	BTUH (Watts)	Volts	Hertz	FLA	WSA	OPD	Lpa (1.5 m)
BCM 1000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	3038 (890)	120	60	1.0	1.3	15	57
BCM 2000L-60	N/A	2811 (824)	105°F / 41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	3038 (890)	120	60	2.0	2.5	15	59
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

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

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

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SL-15600 (R03/06) Printed in USA

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Site Monitoring Surge & Signal Protection

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