



## FOUNDATION

### GUIDE SPECIFICATIONS

for Sealed and Non-sealed Systems; Fan or Convection Cooling, ECM-only, or ECM with Back-up Cooling Module, 120V/60Hz or 230V/50Hz Single Phase

Integrated Secure Protection for Electronic Equipment

### 1.0 GENERAL

#### 1.1 SUMMARY

This specification defines the electrical and mechanical characteristics and requirements for the Foundation product family, a series of adaptive and scaleable electronic equipment support systems. The Foundation shall be configurable as a basic open rack, or as a Foundation Enclosure. The Foundation Mini Computer Room (MCR) shall be configurable as an integrated support system with optional Environmental Cooling Module (ECM), or ECM with Back-up Cooling Module (BCM) cooling systems. Foundation Enclosures and Foundation MCR systems shall be available with optional UPS, optional communications/monitoring systems, and optional receptacle control to protect sensitive electronic equipment. The products shall include EIA-310 standard rack mount rails. The systems shall be factory assembled, ready for the installation of customer supplied electronic equipment. The Foundation basic open rack and Enclosures shall be flexible and upgradeable to a comprehensive Foundation MCR integrated support system.

#### 1.2 STANDARDS

The product shall be designed in accordance with the following agency standards or certifications. Where a conflict arises between these documents and statements made herein, the statements in this specification shall govern.

##### 1.2.1 Foundation Enclosure

EIA-310 Standard rack mount

No NEMA or IEC designation, factory or field upgradeable to NEMA Type 1 / IEC IP10 enclosure or NEMA Type 12 / IEC IP52 enclosure (HD/RD systems)

ISTA Procedure 1B

##### 1.2.2 Foundation MCR

EIA-310 Standard rack mount

NEMA Type 12 / IEC IP52 enclosure (HD/RD systems)

NRTL / ETL / CSA approved (120VAC/60Hz systems)

CE Compliance mark (230VAC/50Hz systems)

ISTA Procedure 1B

#### 1.3 DESIGN REQUIREMENTS

**1.3.1 Input Power:** Input power requirements of the product shall be as described below.

##### **A. ECM Cooling Options:**

All ECM options shall include a 9' / 2.7m input power cord.

120VAC nominal, 60Hz ECM: NEMA 5-15R, single-phase 2-wire plus ground 15A dedicated circuit.

230VAC nominal, 50Hz ECM: single-phase 2-wire plus earth 10A dedicated circuit. The 50 Hz ECM plug connection is field supplied and installed.

**B. UPS Options:**

Foundation systems utilizing both UPS options and ECM cooling options shall require separate dedicated circuits for the UPS and the ECM. UPS input requirements shall be:

120VAC Nominal

*PS700, PS1000, PS1400, GXT1000, GXT1500*: NEMA 5-15R, single-phase 2-wire plus ground 15A circuit.

*GXT2000*: NEMA 5-20R, single-phase 2-wire plus ground 20A circuit.

*PS2200 or GXT3000*: NEMA L5-30R, single-phase 2-wire plus ground 30A circuit.

230VAC Nominal

*PS700, PS1000, PS1400, GXT1000 or GXT1500*: single-phase 2-wire plus ground 10A circuit.

*GXT2000, PS2200 or GXT3000*: single-phase 2-wire plus ground 16A circuit.

230VAC UPS connection is field supplied and installed.

**C. No ECM or UPS Options:**

The Foundation shall be configurable with no ECM or UPS options. When the product is configured without these options, the input power specifications shall be determined by the optional power strip(s), FAN package, and/or user-supplied equipment.

**D. BCM Cooling Options:**

BCM Cooling Options shall be factory-installed and connected to the optional UPS. Where UPS options are not selected the input connection shall be field supplied. The BCM Cooling Options shall require either a 120VAC, 60Hz (NEMA 5-15R) or 230VAC, 50Hz (IEC60320 C14) circuit.

**E. ECM Heat Rejection Fan**

The ECM Heat Rejection Fan options shall require either a 120VAC, 15A, 60Hz or 230VAC, 10A, 50Hz circuit. The electrical connection shall be field supplied and installed.

**1.3.2 Environmental Conditions**

**A. ECM Ambient Operating Range:** The nominal external ambient operating range of the ECM shall be as described below.

*ECM1000L-60, ECM2000L-60*: 65°F (18°C) to 105°F (40°C)

*ECM1000L-50, ECM2000L-50*: 65°F (18°C) to 100°F (38°C)

**B. Audible Noise:** Noise generated by the Foundation cooling options as measured at 5’/1.5m from the enclosure shall not exceed the following parameters.

<i>FAN1000L-60</i> : 47dBA	<i>FAN1000L-50</i> : 45dBA
<i>FAN2000L-60</i> : 49dBA	<i>FAN2000L-50</i> : 47dBA
<i>FAN1000H-60</i> : 59dBA	<i>FAN1000H-50</i> : 57dBA
<i>FAN2000H-60</i> : 61dBA	<i>FAN2000H-50</i> : 59dBA
<i>ECM1000L-60</i> : 52dBA	<i>ECM1000L-50</i> : 52dBA
<i>ECM2000L-60</i> : 52dBA	<i>ECM2000L-50</i> : 52dBA
<i>BCM1000L-60</i> : 57dBA	<i>BCM1000L-50</i> : 55dBA
<i>BCM2000L-60</i> : 59dBA	<i>BCM2000L-50</i> : 57dBA

**C. Clearance Requirements:** Foundation MCR systems utilizing ECM cooling options shall require a minimum of 1’/0.3m airflow clearance about the front, rear and top of the Foundation MCR enclosure. Foundation MCR systems utilizing BCM cooling options shall require a minimum of 1’/0.3m airflow clearance about the rear of the enclosure. No side clearance shall be required.

## **2.0 PRODUCT**

### **2.1 FRAME**

The Foundation frame shall be constructed of heavy-duty 12-gauge steel and equipped with leveling feet rated for 1000 lbs. A compression-type grounding lug (1/0 AWG/35mm<sup>2</sup> wire max) shall be provided on the frame bottom and shall be removable for relocation to the top of the frame as required. Frame components shall be finished in powder-coat black (Z-0350) and factory rivet-assembled. Cable access cutouts shall be located in the top, bottom and rear plates for customer cable entry; cover plates shall be provided as sealing and cooling options require. The Foundation frame shall be available in eight standard sizes based on combinations of the following nominal dimensions. Usable mounting space shall be:

WIDTH - 19" rack mount (HK & HD Series) or 23" rack mount (RK & RD Series)  
HEIGHT – 22U/38.5"/97.8cm or 42U/73.5"/186.7cm  
DEPTH – 18.5"/47cm nominal or 26.5"/67.3cm nominal; adjustable as per 2.2 below

### **2.2 RACK MOUNTING RAILS**

All mounting rails shall be constructed of heavy-duty 12-gauge steel. The mounting rails shall support the EIA-310 Standard hole mounting pattern, be factory installed in the Foundation Frame and individually field-adjustable to allow for flexibility of mounting depth. The mounting rails shall include top-to-bottom U positioning indicators at one U increments, and be finished in powder-coat black (Z-0350). Rail options:

#### **2.2.1 Front / Rear Rail Option**

The Front / Rear Rail Option shall include 2 pairs of mounting rails (2 sets of 2); each rail fits in a vertical frame member. Each rail shall be easily adjustable from 18.5"/47cm to 22.5"/51.2cm deep (30" depth frame), or from 26.5"/67.3cm to 30.5"/77.5cm deep (38" depth frame). Additionally, inverting each rail shall allow for mounting depths to 26.5"/67.3cm deep (30" frame), or 34.5"/87.6cm deep (38" frame).

#### **2.2.2 Center Mount Rail Option**

The Center Mount Rail Option shall include 1 pair of mounting rails (set of 2) to be used in lieu of 2.2.1. The Center Mount Rails can be positioned the full depth of the Frame. The Center Mount Rail Option shall be available with either square-hole or threaded-hole EIA-310 hole pattern (per 2.2.3 or 2.2.4).

#### **2.2.3 Square Hole Option**

The Square Hole option shall provide the Rail Option (2.2.1 or 2.2.2) rails with punched square-holes to the EIA-310 Standard hole pattern. The square-hole selection accommodates mounting via caged nuts.

#### **2.2.4 Threaded Hole Option**

The Threaded Hole option shall provide the Rail Option (2.2.1 or 2.2.2) rails with tapped with 10/32 threads holes to the EIA-310 Standard hole pattern.

### **2.3 ENCLOSURE OPTIONS**

The Foundation frame shall be factory or field configurable with optional doors and side panels as a non-sealed enclosure, as a NEMA 1 / IP10 (non-sealed) enclosure, or as a NEMA 12 / IP52 (sealed) enclosure. Foundation enclosures shall be field-upgradeable to NEMA 12 / IP52 enclosures. Units with NEMA 12 provisions shall be factory-designated as "HD" or "RD" in the part number. Enclosure doors and panels shall be finished in powder-coat black (Z-0350). Optional colors shall be available as per the Standard Unit Colors in the Liebert Color Selector (SL-10010), doors and side panels must be the same color. Overall dimensions of the Foundation enclosure with doors and panels shall be:

WIDTH – 25"/63.5cm (19" rack mount) or 29"/73.7cm (23" rack mount)  
HEIGHT – 42"/106.7cm (22U) or 77"/195.6cm (42U)  
DEPTH - 30"/76.2cm or 38"/96.5cm

For additional enclosure dimensional information refer to sections 2.3.1.D and 2.3.3.

### 2.3.1 Doors

The Foundation doors shall be of 16-gauge sheetmetal construction with air circulation vents at the top and bottom portions of the door. All variations of the Foundation door shall be removable and field-reversible for left- or right-hand opening, and include four-point (42U) or two-point (22U) latch with key lock. The insulation option shall be required on Foundation MCR (HD/RD) “sealed” systems using ECM cooling. Optional variations to the Foundation door shall be as follows:

**A. Sheetmetal Door** shall be of sheetmetal construction. HK/RK “non-sealed” systems shall be provided with air circulation vents only at the door top and bottom. Foundation MCR (HD/RD) “sealed” systems with Rack mount ECM shall include a fixed air-intake plate and no air circulation vents.

**B. Plexiglas Front Door** shall be of sheetmetal construction with a smoked acrylic scratch and impact resistant insert to allow for external viewing of customer equipment. HK/RK “non-sealed” systems shall be provided with air circulation vents at the door top and bottom. Foundation MCR (HD/RD) “sealed” systems with Rack mount ECM shall include a fixed air-intake plate and no air circulation vents.

**C. Perforated Door** shall be of sheetmetal construction with a perforated sheetmetal insert to maximize ventilation. This option shall not be applicable to Foundation MCR (HD/RD) “sealed” enclosures.

**D. BCM Rear Door** shall be of sheetmetal construction and is required for BCM applications. The BCM option shall not be applicable to 22U height, and adds 3”/7.62cm to overall enclosure depth. The rear door insulation shall be supplied for BCM rear door applications.

### 2.3.2 Side Panels

The Foundation side panels shall be of 20-gauge sheetmetal construction, be removable from the outside of the enclosure, and also include internal security provisions to prevent the removal of the side panels. The insulation option shall be required for side panels on Foundation MCR (HD/RD) “sealed” systems using ECM cooling.

### 2.3.3 Casters

The Caster option shall be a set of four (4) non-locking factory installed casters, rated to support 1000lbs/453.6kg of total Foundation enclosure plus user equipment weight. Casters are 2”/0.5cm tall and add 1.5”/3.8cm to overall frame height.

### 2.3.4 Cluster Kit

The cluster kit shall supply hardware necessary to cluster (gang) Foundation frames or enclosure systems of the same height and depth. Clustered systems shall be interconnected in the field.

### 2.3.5 Power Strips

The power strip options shall be factory (10-outlet) or field-installed (6-outlet) in a vertical frame member; the option for one or two strips is available. Power strips options shall be as described below.

**6 Outlet / 15 Amp 120 VAC/60 Hz** includes six 5-15R receptacles, 5-15P plug connection, circuit breaker, and TVSS protection and is 12”/0.3m long with a 6’/1.8m power cord (field-installed).

**10 Outlet / 15 Amp 120 VAC/60 Hz** includes ten 5-15R receptacles, 5-15P plug connection and circuit breaker protection and is 36”/0.9m long with a 15’/4.5m power cord, or with a 6’/1.8m power cord when a UPS option is included.

**10 Outlet / 20 Amp 120 VAC/60 Hz** includes ten 5-15R receptacles, 5-20P plug connection and circuit breaker protection and is 36”/0.9m long with a 15’/4.5m power cord, or with a 6’/1.8m power cord when a UPS option is included.

**10 Outlet / 10 Amp 230 VAC/50 Hz** for 230V systems, includes ten IEC60320-C13 receptacles, IEC60320-C14 plug connection, circuit breaker protection and is 36"/0.9m long with a 15'/4.5m power cord, or with a 6'/1.8m power cord when a UPS option is included.

### **2.3.6 External Keyboard Tray**

The external keyboard option tray shall be a swing open sealed sheetmetal enclosure, factory installed on the front door. The enclosure shall include an integral slide-out mouse tray, and may be used to house a user-supplied standard enhanced keyboard. The keyboard tray enclosure shall be accessible via a key lock latch that opens a swing down door for access to the keyboard while keeping the Foundation cabinet sealed.

### **2.3.7 Internal Light**

The internal light option shall be a factory installed rack mount rack lamp to enhance lighting inside the enclosure. The single high intensity lamp is on the end of a 16"/40.6m flexible arm (gooseneck) that provides easy positioning. The Internal Light shall be available for 120VAC or 230VAC applications.

### **2.3.8 Sealed Cable Entrance**

The Sealed Cable Entrance Raceway option shall provide a means for cable access to a Foundation HD or RD enclosure while maintaining the enclosure's NEMA 12 seal. All Foundation MCR HD/RD enclosures shall be provided with a single Sealed Entrance - Cable Raceway.

#### **Sealed Entrance - Cable Raceway**

The raceway is a module that fits in any of the square top/bottom or rear cable access holes and allows for insertion of cables or cable bundles up to 1"/2.5cm in diameter. All sealed HD/RD enclosures shall be provided with a single Sealed Entrance - Cable Raceway. Selection of this ship loose option provides additional cable access.

#### **Sealed Entrance - Cable Bundle**

The ship loose item shall be a contoured fitting that fits in the round enclosure entrances and can be cut to adapt to cable bundle size. 2"/5.1cm and 4"/10.2cm sizes shall be available to accommodate holes on the top and bottom plates.

### **2.3.9 Cable Rings**

Cable Ring options shall provide a means of internal cable management. Cable rings shall support a 2"/5.1cm-diameter cable bundle, and be field-installed on the rack mounting rails. Mounting hardware shall be provided with each option.

**Vertical Cable Rings** shall support internal cable management from top to bottom. A set of 5 rings and mounting provisions are provided per option.

**Horizontal Cable Rings** shall support internal cable management from side to side on a rack mount plate. Mounting provisions are provided.

### **2.3.10 Lifting Lugs**

Lifting lug options shall be a quantity of 4 ship loose, field installed eyebolts (1"/2.5cm diameter) used for enclosure relocation. The lugs shall support Foundation enclosure and user equipment up to 600lbs/273kg of total weight.

### **2.3.11 Insulation**

Insulation shall be required for all Foundation MCR HD/RD "sealed" systems using ECM cooling. The insulation shall comply with UL94-5V, and provide thermal insulation and sound abatement.

### **2.3.12 Stabilizing Plate**

The Stabilizing Plate shall be a ship loose 10-gauge sheetmetal plate to attach to the front or rear of the frame and the floor as a means to enhance the frame/enclosure stability.

## 2.4 COOLING OPTIONS

The product shall be configurable with no cooling options, with FAN packages, ECM cooling, or ECM with Backup Cooling Module as described below.

### 2.4.1 No Primary Cooling

No Primary Cooling shall be configurable in applications where external environmental control is available or if environmental control is being provided via an ECM in an adjacent cabinet (an ECM Extension Duct shall be required in this case).

### 2.4.2 FAN Cooling

The Foundation Enclosures and Foundation MCR shall be available with optional FAN cooling to provide enhanced primary cooling for rack/enclosure systems. The FAN options shall be a one fan (FAN1000) or two fan (FAN2000) system in either “low noise” or “high ambient” versions. Fan(s) are available either as factory installed or as “ship-with” field installed. Fan(s) are installed in top plate cutouts and can be field relocated to rear access holes. Up to 5 fans may be installed into the enclosure top plate and rear. Block-off plates are provided to enhance air circulation. The 60Hz fans are rated 120VAC and include 15’/4.5m power cords with NEMA 5-15P plug(s). The 50 Hz fans are rated 230 VAC and include 15’/4.5m power cord(s); plug connection is field supplied and installed. FAN capacities shall be as follows:

**FAN1000** provides a fan rated for 114 CFM (60Hz) or 94 CFM (50Hz) for “low noise” option and 235 CFM (60Hz) or 200 CFM (50Hz) for “high ambient” option.

**FAN2000** provides two fans each individually rated for 114 CFM (60Hz) or 94 CFM (50Hz) for “low noise” option and 235 CFM (60Hz) or 200 CFM (50Hz) for “high ambient” option.

**A FAN Filter** option shall provide basic FAN air intake filtration. Filters shall be factory installed in the front and rear doors and require selection of non-Perforated Front and Rear Door options.

### 2.4.3 ECM (Environmental Cooling Module) Cooling

The ECM cooling option shall be a Foundation MCR (HD/RD) option. The ECM shall be a self contained, DXAC (direct expansion air-cooled), primary cooling system to provide cooling to customers’ components inside the Foundation MCR. Two independent air paths shall circulate cool air inside and reject equipment heat to outside the enclosure. The ECM features low noise operation suitable for use in occupied spaces, and an automatic condensate re-evaporation system (no condensate drain is required). A hot gas by-pass provides automatic load matching and enhanced ECM life.

All Rack Mount ECMs shall be 19” rackmount and require 12.25”/31.1cm/7U rack space. For enclosures with 23” rack mounting, 23”-19” adapter plates are provided. All 60Hz ECMs shall be provided with a single NEMA 5-15 plug and 9’/2.7m attached power cord. All 50Hz ECMs shall be provided with a 9’/2.7m input power cord for input power connection; an appropriate plug shall be field supplied and installed. All systems shall utilize “Green/environmentally friendly” R-407C refrigerant. ECM cooling options shall require the enclosure Insulation option. The Rack Mount ECM shall not be available on 44”/111.8cm (22U) tall enclosures. ECM cooling capacities shall be as follows:

**ECM1000** provides adequate cooling to maintain internal Foundation MCR environmental conditions in environments up to 105°F (60 Hz) / 100°F (50 Hz) outside the enclosure, with internal electronics load up to 800 watt total (including UPS).

**ECM2000** provides adequate cooling to maintain internal Foundation MCR environmental conditions in environments up to 105°F (60 Hz) / 100°F (50 Hz) outside the enclosure, with internal electronics load up to 1650 watt total (including UPS).

### 2.4.4 ECM Cooling Options

#### **A. Top Mount ECM**

The ECM shall be available as an external Top Mount version, mountable on the outside the Foundation MCR onto the top plate of the enclosure. The Top Mount ECM shall otherwise maintain all features, benefits and cooling capacity of the comparable rack mount ECM. Top Mount ECMs shall ship separate for field installation. The Top Mount ECM cooling option shall be applicable to Foundation MCR enclosures only and shall require the enclosure Insulation option.

#### **B. ECM Extension Duct**

The ECM Extension Duct shall distribute cool ECM air from a Foundation MCR with ECM to an adjacent Foundation MCR without ECM. For rack mount ECM applications the duct is factory installed and located in the bottom of the enclosure and is 5.25"/13.4 cm/3U tall. For top mount ECM applications the duct is field installed and located above the enclosure. A maximum of one enclosure with ECM Extension Duct can be used with one ECM. Foundation enclosures utilizing the ECM Extension Duct shall be field-attached on the right side of the ECM enclosure.

#### **C. Multiple ECM Cooling**

The Foundation MCR shall be able to accommodate electronics loads exceeding the parameters in 2.4.3 via the application of additional ECMs. Foundation MCR enclosures may be clustered together, with each enclosure utilizing an ECM, or one rack mount and one top mount ECM may be applied to a single Foundation MCR. When clustering enclosures with ECM cooling systems, a Dual ECM Barrier shall be required between adjacent ECMs.

#### **D. Dual ECM Barrier**

The Dual ECM Barrier shall allow two Foundation MCRs, each with ECM, to be attached together without a side panel on adjoining sides. The factory installed 29"/73.7cm barrier shall prevent the cold air discharge from the left ECM from impacting the adjacent right ECM, and shall not impact usable rack space. Top mount ECM cluster applications require the Dual ECM Barrier to be field relocated to the top of the enclosure.

#### **E. ECM Heat Rejection Fan**

The ECM Heat Rejection Fan shall assist in the removal of rejected ECM heat from alcoves or confined spaces without otherwise adequate ventilation. The ship loose package includes a combination blower with inlet air louver plate. The package provides provisions for ceiling grid installations, and the optional connection of customer supplied 8"/20.4cm duct as may be required per site. Electrical connection shall be field-supplied as per 1.3.E.

### **2.4.5 BCM (Back-up Cooling Module) Cooling Systems & Options**

The BCM is an optional self-contained back-up cooling system to provide cooling to customers' components inside the Foundation MCR. The BCM shall activate when high temperature condition is sensed inside the Foundation MCR. The BCM circulates filtered outside air through the enclosure. The BCM features low noise operation, suitable for use in occupied spaces. The BCM is supplied mounted on the enclosure rear door and requires selection of the BCM Rear Door. The BCM shall require the High Temperature Alarm option to operate and is powered as described in 1.3.D. The BCM shall not be available on 44"/111.8cm (22U) tall enclosures.

**A. BCM1000** provides adequate cooling to maintain Foundation MCR environmental conditions with up to 800 watt internal electronics load.

**B. BCM2000** provides adequate cooling to maintain Foundation MCR environmental conditions with up to 1650 watt internal electronics load.

#### **C. BCM Energy Saver Control**

The BCM ES Control shall be an add-on device that provides energy cost saving by allowing the BCM to operate as the primary enclosure cooler. The BCM ES Control along with the High Temperature Alarm (required on BCM applications) measures enclosure external and internal air conditions and, if appropriate, cycles off the ECM and activates the BCM to reduce energy consumption.

## **2.5 UNINTERRUPTIBLE POWER SUPPLY (UPS) OPTIONS**

The Foundation shall be available with optional factory-installed on-line UPStation GXT 1000, 1500, 2000 or 3000VA, or line-interactive PowerSure Interactive 700, 1000, 1400 or 2200VA rackmount UPS. For enclosures with 23" rack mounting, 19" adapter plates are provided. Refer to separate UPS Guide Specifications or Literature for detailed UPS descriptions.

## **2.6 COMMUNICATION OPTIONS**

### **2.6.1 SiteNet Integrator (SNI)**

The SiteNet Integrator shall be a Foundation option. The SNI is a rackmount SNMP agent, offered in Ethernet or Token Ring versions that can be enhanced with optional input sensors. SNI provides monitoring capabilities for the optional Liebert UPS, and shall include 10 dry contact digital inputs, two temperature/humidity inputs, one temperature-only input, and two programmable relay outputs. Selection of the SNI option shall include mounting in the Foundation and input power connection. Refer to separate SiteNet Integrator & LCM Guide Specifications or Literature for detailed descriptions.

### **2.6.2 SiteNet Integrator Additional Options**

#### **A. Load Control Module (LCM)**

The LCM for Foundation is offered as an installed, add-on package to the Ethernet SiteNet Integrator. The LCM provides the capability to individually switch six NEMA 5-15R power receptacle outputs via SNMP commands to the SiteNet Integrator and/or in response to a digital sensor input to the SiteNet Integrator. LCM installation includes mounting in the Foundation, connection to the Integrator, and power connection.

**B. 9-9 Pin RS232 Interface Cable** provides communications between the SNI and optional Liebert UPS and is required for SNI applications with UPStation GXT or PowerSure Interactive UPS.

**C. Internal Temperature & Humidity** option is a factory installed sensor package, which provides temperature and humidity monitoring inside the Foundation enclosure. This option will interface with SNI only.

**D. External Temperature & Humidity** option is a field located sensor package with 30'/9m cable, which provides temperature and humidity monitoring outside the Foundation enclosure. Temperature can be measured from 32°F to 140°F (0°C to 60°C) and humidity from 20 to 80%RH. This option will interface with SNI only.

**E. 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. The switches are wired in parallel; no distinction is made between front and rear door signals.

**F. High Temperature Alarm** is a factory installed sensor / controller module to enunciate internal enclosure high temperature conditions. When a factory set 100°F/38°C is met, an audible alarm (with manual reset) is activated along with the BCM (if selected). The High Temp. Alarm is powered by either the ECM or BCM, if neither ECM nor BCM is available a Power Supply option must be selected.

**G. Water Detector** is a field installed LT400S for single point detection and 30’/9m wiring with termination to connect to the detector and Foundation unit. If neither ECM nor BCM is available a Power Supply option must be selected.

**H. Power Supply – High Temp Alarm & Water Detected** is a factory installed 24 VDC power source which is required for High Temp Alarm and Water Detector options when a ECM and BCM is not supplied. Only one Option Power Supply is required for any combination of Water Detector and High Temp Alarm options.

**I. Smoke Detector** is factory mounted inside the Foundation near the top of the enclosure. Activation provides a contact closure signal to the SiteNet Integrator. This option requires the High Temperature Alarm selection.

### **3.0 MOUNTING OPTIONS**

Mounting Options shall be field-installed and include mounting hardware and installation instructions. All Mounting options are for application with the Front / Rear Internal Mounting Rails unless noted otherwise.

#### **3.1 Fixed Shelf**

The Fixed Shelf is a vented surface shelf for mounting to the Foundation Front and Rear Internal Mounting Rails. The shelf shall be of 16-gauge sheetmetal construction, finished in powder-coat black (Z-0350), and will support 200 lb. evenly distributed. The shelf shall be available to fit either 19” or 23” rackmount widths, and adjusts from 18.5”/47cm to 32”/81.2cm deep. Detachable cable ties are provided to anchor to the rear of the shelf for cable management.

#### **3.2 Pullout Shelf**

The Pullout Shelf is a vented shelf for mounting to the Foundation Front and Rear Internal Mounting Rails. The pullout shelf can extend 26”/66cm and can support 130 lb. evenly distributed in the extended position. The pullout shelf shall be of 16-gauge sheetmetal construction and be finished in powder-coat black (Z-0350). The pullout shelf shall be available to fit either 19” or 23” rackmount and is 18.5”/47cm deep or 26.5”/67.3cm deep. Detachable cable ties are provided to anchor to the rear of the shelf for cable management.

#### **3.3 Fixed Rails**

The Fixed Rails include two horizontally positioned 90° “L” rails which extend between the Foundation Front and Rear Internal Mounting Rails, and include hardware necessary for mounting. The rails shall be of 16-gauge sheetmetal construction, will support up to 150 lb. evenly distributed, and be finished in powder-coat black (Z-0350).

#### **3.4 Keyboard Tray (19” Mini Keyboard)**

The Keyboard Tray (19” Mini Keyboard) is a pullout shelf to hold a keyboard(s) with a handrest in the front of the tray. The tray is for the 19” (HD/HK) Mounting Frame and is sized for a single 19” Rack keyboard. The tray mounts to the Front and Rear internal Mounting Rails.

#### **3.5 Keyboard Tray (Standard Keyboard)**

The Keyboard Tray (Standard Keyboard) is a pullout sheetmetal shelf to hold a keyboard(s), with a handrest in the front of the tray. The tray is for the 23” (RD/RK) Mounting Frame and is sized for a single standard keyboard tray. The tray mounts to the Front and Rear internal Mounting Rails.

### **3.6 23" to 19" Rack Rail Adapters**

The 23" to 19" Rack Rail Adapters are a pair of sheetmetal plates with punched holes used to mount 19" rack equipment in 23" rack enclosures. Adapters are available in 1, 2, 3, 4, 5U and 10U increments (1U = 1.75 in. per EIA -310 standard), are painted black (Z-0350) and include mounting hardware.

### **3.7 Mounting Clipnuts and Screws**

Mounting Clipnuts and Screws for rack mounting are a clip with a welded nut which fits over vertical rack rail holes. Each package includes 10 Clipnuts (10/32 or M6 threaded) holes and mating screws.

## **4.0 UPGRADE / RELOCATION PACKAGES**

The Foundation integration system can be field modified via a range of Upgrade Packages. Most packages correspond to standard pricebook options such as doors and panels. Other packages are available to upgrade a performance level (i.e. add Top Mount ECM). All Upgrade Packages include installation instructions and/or drawings/sketches as required.

## **5.0 WARRANTY (US SALES ONLY)**

### **5.1 STANDARD WARRANTY**

The Foundation frame and enclosure shall be warranted against defects in materials and workmanship for two (2) years parts from date of shipment. Optional ECM and/or BCM shall be warranted against defects for two (2) years parts, 90 days labor, from date of shipment. Optional UPStation GXT, PowerSure Interactive UPS, or SiteNet Integrator and/or Load Control Module shall be warranted against defects for two (2) years parts, from date of shipment. The ECM and/or BCM shall be repaired or replaced at the discretion of Liebert Applications Engineering. Liebert shall provide a replacement unit for the Liebert UPS, SNI or LCM. Refer to separate warranty statements for details.

### **5.2 EXTENDED WARRANTY OPTIONS**

**5.2.1** Extended labor warranty shall be available on both the ECM and/or BCM via optional Foundation MCR Start-Up performed by Liebert factory-authorized personnel. Foundation MCR Start-Up shall extend the standard ECM and BCM warranty to include (2) years parts and labor from the date of start-up. Liebert shall repair or replace the ECM and/or BCM, subject to the same conditions and limitations as the standard warranty.

**5.2.2** Optional Liebert UPStation GXT, PowerSure Interactive UPS, or Liebert SiteNet Integrator and/or Load Control Module shall offer separate extended warranty options of 1 or 3 years. Liebert shall provide a replacement unit for the Liebert UPS, SNI or LCM, subject to the same conditions and limitations as the standard warranty. The customer may purchase this program at any time during the standard warranty. Refer to separate warranty statements for details.