SUBMITTAL FOR APPROVAL
90 kVA LIEBERT APM
UNINTERRUPTIBLE POWER SUPPLY

Job Name  Jefferson Lab
Model NRF90CCSA0A3098
Quantity One (1)
Date  August 01, 2011
Quote # Q01590598
Purchaser Jefferson Lab
P.O. #  
Submitted By Heather Klesat – Liebert Virginia
Bill of Material
BILL OF MATERIAL &
ENGINEERING SPECIFICATION SHEET

One (1) UPS Capacity: 90 kVA / 90 kW Liebert APM Three Phase Uninterruptible Power Supply, model NRF90CCSA0A3098, with the following features and characteristics:

- System Input Voltage 480 VAC (3 Phase, 3 wire plus ground)
- System Output Voltage 208/120 VAC (3 Phase, 3 or 4 wire plus ground)
- UPS frame designed for and scalable from 15 kVA to 90KVA
- Single input, true on-line, double conversion
- Pulse-width modulated (PWM) rectifier
- Temperature compensated separate battery charger to allow use with valve-regulated lead acid (VRLA), wet cell lead acid, and NiCad battery systems
- Pulse-width modulated (PWM) inverter
- Automatic continuous duty static transfer switch
- Digital Signal Processing (DSP) based monitoring and control system
- Back-lit LCD Graphic Display with multilingual support and user friendly navigation menu
- Alarm History Database
- Three (3) Intellislot™ Communication Ports
- Air flow is from front to top (requires 24 inch clearance above unit)
- IP 20 enclosure
- Casters and leveling feet
- Meets ISTA transportation requirements
- FCC Part 15, Class A
- UL and cUL Listed to UL Standard 1778
- Withstand rating: 65kAIC
- Certified copy of the standard factory test documentation

Ship-Loose System Accessories Include:
- One (1) This IntelliSlot interface card delivers SNMP, SMS Text Messaging, 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 APM External Battery Cabinet System rated to provide 9 minutes backup for a UPS Capacity: 90 kVA / 90 kW with the following model number(s): NRBP9WX1L1A0101

- Battery Cabinets are shipped separately and include interconnecting cables to allow the battery cabinet to be bolted to the left side of the UPS module

Liebert APM Bypass Distribution Cabinet, model NRMB1A9C0RA0111, with the following features:
- Front Access service design
- Casters and leveling feet
- Three breaker wrap-around maintenance bypass with interlock by solenoid key release (SKRU)
- Shipped separately and include interconnecting cables for bolting the MBP-T cabinet to the right side of the UPS

UPS System Start-up Services, including the following: Start-up includes one site trip by a LS customer engineer after the UPS has been installed. The site trip includes the following services for one UPS module: non-powered inspection, UPS electrical and operational checkout, full parts and labor for any remedial work required on the UPS or battery cabinets, and customer operation training. Start-up also includes remedial onsite labor, parts, and travel for the full one-year warranty period.
- Startup is scheduled Monday thru Friday - 8 am to 5 pm
One (1) Liebert RDC, model RDC441GB25, with the following features and characteristics:

- AC input/output voltage 208V (three-phase, four-wire plus ground)
- 1 Input
- 24” x 24” footprint
- Front and rear key lockable doors with individual hinged panelboard access covers
- Doors and side panels painted ZP7021
- Current Monitoring Panel, phase and neutral current for each panelboard with front and rear displays
- 4 - 42 pole GE Bolt In panelboard with 22 kAIC panelboard main.

Start-up Services
- Start-Up 5x8
Layout & Control Wiring Drawings
NOTES:

1. INSTALL IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
2. INPUT AND BYPASS MUST SHARE THE SAME SINGLE SOURCE.
3. UPS SYSTEM INPUT AND OUTPUT CABLES MUST BE RUN IN SEPARATE CONDUITS.
4. CONTROL WIRING MUST BE RUN IN SEPARATE CONDUITS.
5. TRANSFORMER AVAILABLE: 480V OR 600V INPUT.

BIB - BYPASS ISOLATION BREAKER
MBB - MAINTENANCE BYPASS BREAKER
MIB - MAINTENANCE ISOLATION BREAKER
* EXTERNAL OVERCURRENT PROTECTION BY OTHERS

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**ONE-LINE DIAGRAM**
SINGLE INPUT 208V OUTPUT
WITH INPUT ISOLATION TRANSFORMER
AND 3 BREAKER BYPASS DISTRIBUTION CABINET
LIEBERT APM

**DRAWN BY**
V. CARMONA

**CHK BY**
J. BEALE

**REF. DWG.**

**SHEET NO.**
1 OF 1

**ECN NO.**

**ORDER NO.**

**DATE**
2/10/11

**REV. #**
2

**P.O. BOX 29166**
COLUMBUS, OHIO 43210

**EMERSON**
Network Power

**FILE NAME:** ICA0PL02h Apc1050 1540 kVar(A) One-Line Diagram/UA01002-02.006
<table>
<thead>
<tr>
<th>BDC POWER RATING</th>
<th>INPUT VOLTAGE</th>
<th>AC INPUT 3 PHASE 4 WIRE AND GROUND</th>
<th>DC INPUT 3 PHASE POSITIVE, MIDPOINT, AND NEGATIVE</th>
<th>AC OUTPUT 3 PHASE 4 WIRE AND GROUND</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>CURRENT NOM MAX</td>
<td>External Overcurrent Protection</td>
<td>NOMINAL VOLTAGE MAX DISCHARGE CURRENT NOMINAL CURRENT Overcurrent Protection</td>
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<tr>
<td>15KVA 15KW</td>
<td>208V</td>
<td>44 55 70A</td>
<td>288VDC (144 cells) 67 208V 42 60A</td>
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<tr>
<td></td>
<td>220V</td>
<td>42 53 70A</td>
<td></td>
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<tr>
<td></td>
<td>480V</td>
<td>20 25 30A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>600V</td>
<td>16 20 25A</td>
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<td></td>
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<tr>
<td>30KVA 30KW</td>
<td>208V</td>
<td>89 111 150A</td>
<td>288VDC (144 cells) 135 208V 83 125A</td>
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</tr>
<tr>
<td></td>
<td>220V</td>
<td>84 105 150A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>40 50 60A</td>
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<td></td>
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<tr>
<td></td>
<td>600V</td>
<td>32 40 50A</td>
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<td>45KVA 45KW</td>
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<td>133 166 200A</td>
<td>288VDC (144 cells) 202 208V 125 200A</td>
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<tr>
<td></td>
<td>220V</td>
<td>126 158 200A</td>
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<td></td>
<td>480V</td>
<td>60 74 90A</td>
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<td></td>
<td>600V</td>
<td>48 60 80A</td>
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<td>60KVA 60KW</td>
<td>208V</td>
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<td>288VDC (144 cells) 269 208V 167 225A</td>
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<tr>
<td></td>
<td>220V</td>
<td>168 210 300A</td>
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<td></td>
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<td>600V</td>
<td>64 79 100A</td>
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<td>75KVA 75KW</td>
<td>208V</td>
<td>221 276 350A</td>
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<td>480V</td>
<td>99 123 150A</td>
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<td>600V</td>
<td>79 99 125A</td>
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<td>90KVA 90KW</td>
<td>208V</td>
<td>266 332 400A</td>
<td>288VDC (144 cells) 404 208V 250 350A</td>
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<td></td>
<td>220V</td>
<td>251 314 400A</td>
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<td></td>
<td>480V</td>
<td>119 149 200A</td>
<td></td>
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<tr>
<td></td>
<td>600V</td>
<td>95 119 150A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
1. NOMINAL INPUT CURRENT (CONSIDERED CONTINUOUS) IS BASED ON FULL RATED OUTPUT LOAD. MAXIMUM CURRENT INCLUDES NOMINAL INPUT CURRENT AND MAXIMUM BATTERY RECHARGE CURRENT (CONSIDERED NONCONTINUOUS). CONTINUOUS AND NONCONTINUOUS CURRENT ARE DEFINED IN NEC 100. RECOMMENDED OVERCURRENT PROTECTION IS BASED ON 80% RATED DEVICES. *THE RECOMMENDED OVERCURRENT PROTECTION REPRESENTS 125% OF NOMINAL FULL LOAD CURRENT (CONTINUOUS) PER NEC 215.
2. MAXIMUM INPUT CURRENT IS CONTROLLED BY THE CURRENT LIMIT SETTING.
3. RECOMMENDED AC INPUT EXTERNAL OVERCURRENT PROTECTION IS BASED ON 80% RATED DEVICES AND MAXIMUM INPUT CURRENT LIMIT SETTING.
4. RECOMMENDED AC OUTPUT EXTERNAL OVERCURRENT PROTECTION IS BASED ON 80% RATED DEVICES AND FULL RATED OUTPUT CURRENT.
5. NOMINAL BATTERY VOLTAGE IS SHOWN AT 2.0 VOLTS / CELL.
6. INPUT POWER FACTOR OF 0.99 IS USED FOR THE CALCULATIONS.

**DRAWN BY:**
V. CARMONA

**SHEET NO.**
1 OF 1

**CHK BY:**
J. BEALE

**ECN NO.**

**REF. DWG.**

**ELECTRICAL DATA SPECIFICATION SHEET**
SINGLE INPUT
15KVA - 90KVA UPS FOR BDC LIEBERT APM

**EMERSON.**
Network Power

**DWG. NO.**
LAM07004

**DATE**
3/10/11

**REV. #**
4

**FILE NAME:**
10APPL07004.APSAP10 15-90 KVA-D 15KVA 100V 700V4.DWG
NOTES:
1. ALL DIMENSIONS ARE IN INCHES [mm].
2. 24" [610] MINIMUM CLEARANCE ABOVE UNIT AND 36" [914] FRONT ACCESS REQUIRED FOR SERVICE.
3. KEEP CABINET WITHIN 15 DEGREES OF VERTICAL.
4. TOP AND BOTTOM CABLE ENTRY AVAILABLE THROUGH REMOVABLE ACCESS PLATES.
   REMOVE, PUNCH TO SUIT CONDUIT SIZE AND REPLACE.
5. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING.
6. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
7. ONLY COPPER CABLES ARE RECOMMENDED.
8. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
9. SEE PAGE 2 OF 2 DRAWING: UAM020128 FOR WEIGHT TABLE AND CENTERS OF GRAVITY.

LEFT SIDE VIEW

SEE PG. 2
DIM. Z
DIM. Y
SEE PG. 2

OVERALL
FRONT VIEW

CENTRAL OF
GRAVITY

DISPLAY

CENTER OF
GRAVITY

RIGHT SIDE VIEW

BOTTOM VIEW

TOP FAN

POWER CABLE ENTRY
21.26" (540mm) X 7.87" (200mm)

TOP VIEW

CASTER
MECH. STOP

TOP FAN

POWER CABLE ENTRY
21.26" (540mm) X 7.87" (200mm)

SEE DETAIL A

DIM. X
DIM. Z

OVERALL
FRONT VIEW

CENTER OF
GRAVITY

POWER CABLE ENTRY
21.26" (540mm) X 7.87" (200mm)

TOP FAN

SEE DETAIL A

DIM. Y
SEE PG. 2

LEFT SIDE VIEW

78.7" (200mm)
1.56" (40mm)

31.5" (800mm)

39.5" (1000mm)

31.6" (808mm)

7.6" (194mm)

8.5" (216mm)

29.3" (746mm)

30.7" (780mm)

28.3" (719mm)

1.4" (36mm)

3.0" (77mm)

4.8" (122mm)

23.4" (595mm)

11/1/10

0

FILE NAME: I0APPL010s AppNkr (15-90 kVAs) Outline Dwg & Terminal Detail\UAM02012A-00.DWG
### CENTER OF GRAVITY AND UNIT WEIGHTS
#### APM UPS (30KVA FRAME)

<table>
<thead>
<tr>
<th>KVA RATING</th>
<th>UPS DIMENSIONS CENTER OF GRAVITY WITHOUT BATTERIES</th>
<th>UPS W/O BATTERIES</th>
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<tr>
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<td>DIM. X</td>
<td>DIM. Z</td>
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<tr>
<td></td>
<td>INCH</td>
<td>mm</td>
</tr>
<tr>
<td>15</td>
<td>16.65</td>
<td>423</td>
</tr>
<tr>
<td>30</td>
<td>16.18</td>
<td>411</td>
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<tr>
<td>45</td>
<td>15.79</td>
<td>401</td>
</tr>
<tr>
<td>60</td>
<td>15.47</td>
<td>393</td>
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<td>75</td>
<td>15.16</td>
<td>385</td>
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<tr>
<td>90</td>
<td>14.88</td>
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</table>

### CENTER OF GRAVITY AND UNIT WEIGHTS
#### APM UPS (45KVA FRAME)

<table>
<thead>
<tr>
<th>KVA RATING</th>
<th>DIM. X</th>
<th>DIM. Z</th>
<th>DIM. Y</th>
<th>12HX100 BATTERIES</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>INCH</td>
<td>mm</td>
<td>INCH</td>
<td>LBS</td>
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<tr>
<td>15</td>
<td>14.29</td>
<td>363</td>
<td>21.09</td>
<td>541</td>
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<td>30</td>
<td>13.94</td>
<td>354</td>
<td>21.59</td>
<td>548.4</td>
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<tr>
<td>45</td>
<td>13.62</td>
<td>346</td>
<td>21.73</td>
<td>552</td>
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<table>
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<tr>
<th>KVA RATING</th>
<th>DIM. X</th>
<th>DIM. Z</th>
<th>DIM. Y</th>
<th>12HX150 BATTERIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INCH</td>
<td>mm</td>
<td>INCH</td>
<td>LBS</td>
</tr>
<tr>
<td>15</td>
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<td>362</td>
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<td>547</td>
</tr>
<tr>
<td>30</td>
<td>13.78</td>
<td>352</td>
<td>21.81</td>
<td>554</td>
</tr>
<tr>
<td>45</td>
<td>13.39</td>
<td>340</td>
<td>22.05</td>
<td>560</td>
</tr>
</tbody>
</table>
NOTES:
1. ALL SERVICE AND INITIAL CONNECTIONS OF BATTERIES MUST BE PERFORMED BY QUALIFIED SERVICE PERSONNEL.
2. THE JUMPER X107 MUST SHORT CIRCUIT PIN 1 AND PIN 2.
3. THE AUX. BLUE WIRE IS NOT USED.
4. SHUNT TRIP DRIVE IS 220VDC @ 2.4A.
NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING.

BATTERY CABINET (900mm)
(VIEWED LOOKING TOP DOWN)

UPS
(VIEWED LOOKING TOP DOWN)

DISTRIBUTION BYPASS CABINET
(VIEWED LOOKING TOP DOWN)
Battery System
Data & Drawings
## Bypass Distribution Cabinet Circuit Breaker Information

<table>
<thead>
<tr>
<th>BDC Rating (kW)</th>
<th>Breaker Type</th>
<th>Mfg</th>
<th>Mfg PN</th>
<th>Frame Amps</th>
<th>Trip Amps</th>
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<tr>
<td>45</td>
<td>BIB</td>
<td>SQ-D</td>
<td>JGF36200AEYE</td>
<td>F-200</td>
<td>200A</td>
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<tr>
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<td>MBB/MIB</td>
<td>SQ-D</td>
<td>JGF36175YE</td>
<td>F-175</td>
<td>175A</td>
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<td>BIB</td>
<td>SQ-D</td>
<td>DGF36400E20AE</td>
<td>F-400</td>
<td>400A</td>
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<td>SQ-D</td>
<td>DGF36400E20</td>
<td>F-400</td>
<td>350A</td>
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</table>
### Backup Time versus Load

**UPS Model:** NRF90CCSA0A0  **Battery Model:** HX505-FR  **Cell Count:** 144  **Quantity of 1**

#### UPS Load in KW

<table>
<thead>
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<th>UPS Load</th>
<th>Backup Time</th>
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<tbody>
<tr>
<td>22.5 KW</td>
<td>64 Minutes</td>
</tr>
<tr>
<td>24.8 KW</td>
<td>55 Minutes</td>
</tr>
<tr>
<td>27.0 KW</td>
<td>50 Minutes</td>
</tr>
<tr>
<td>29.3 KW</td>
<td>46 Minutes</td>
</tr>
<tr>
<td>31.5 KW</td>
<td>40 Minutes</td>
</tr>
<tr>
<td>33.8 KW</td>
<td>38 Minutes</td>
</tr>
<tr>
<td>36.0 KW</td>
<td>35 Minutes</td>
</tr>
<tr>
<td>38.3 KW</td>
<td>33 Minutes</td>
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<table>
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<td>40.5 KW</td>
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<tr>
<td>45.0 KW</td>
<td>26 Minutes</td>
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<tr>
<td>47.3 KW</td>
<td>25 Minutes</td>
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<td>49.5 KW</td>
<td>23 Minutes</td>
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<tr>
<td>51.8 KW</td>
<td>22 Minutes</td>
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<td>54.0 KW</td>
<td>21 Minutes</td>
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<td>56.3 KW</td>
<td>20 Minutes</td>
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</tr>
<tr>
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<tr>
<td>63.0 KW</td>
<td>17 Minutes</td>
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<tr>
<td>65.3 KW</td>
<td>16 Minutes</td>
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<tr>
<td>67.5 KW</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>69.8 KW</td>
<td>14 Minutes</td>
</tr>
<tr>
<td>72.0 KW</td>
<td>14 Minutes</td>
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<tr>
<td>74.3 KW</td>
<td>13 Minutes</td>
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<table>
<thead>
<tr>
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<th>Backup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.5 KW</td>
<td>12 Minutes</td>
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<tr>
<td>78.8 KW</td>
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</tr>
<tr>
<td>81.0 KW</td>
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</tr>
<tr>
<td>83.3 KW</td>
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<td>85.5 KW</td>
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</tr>
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<td>87.8 KW</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>90.0 KW</td>
<td>9 Minutes</td>
</tr>
</tbody>
</table>

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[Notice and Conditions]  [Contacts]
Introduction to . . . The DataSafe® HX Battery Range

The DataSafe® HX battery range of valve regulated lead acid batteries has been designed to offer superior solutions for the Information Technology and Uninterruptible Power Supply markets.

DataSafe HX batteries are the ideal source of power to protect vital systems. DataSafe HX batteries incorporate select design features that maximize reliability while ensuring superior performance and an excellent service life.

Gas recombination technology for valve regulated lead acid batteries has totally changed the concept of standby power.

The minimal level of gas evolution allows battery installation in cabinets or on stands, in offices or near main equipment, maximizing space utilization and reducing storage and maintenance costs.

DataSafe HX batteries deliver superior performance, occupying less space than conventional standby power batteries.

Construction

1 High conductivity terminals
   Brass insert with threaded receptacle (HX80-HX800), bolt terminal (HX80-HX150), or faston tab (HX25-HX50) for maximum conductivity and ease of installation.

2 High integrity terminal seal
   Compression grommet (HX205-HX800) or dual welded/epoxy seal (HX25-HX150) designed for long life.

3 Self-regulating relief valve
   Low pressure non-return valve prevents ingress of atmospheric oxygen.

4 Rugged high performance positive plates
   Grids designed to resist corrosion and prolong active life.

5 Balanced negative plates
   Ensure optimum recombination efficiency.

6 Tough cell containers
   Thick-wall plastic, highly resistant to shock and vibration. Flame retardant material is the standard offering.

7 Separators
   Low resistance microporous glass fiber. The electrolyte is absorbed within this material.

Features & Benefits

- Positive and negative plate grids made of lead-calcium-tin alloy for long life and efficient recharge.
- Flame retardant case and cover to meet UL1778.
- Individual cell vents.
- DataSafe® HX battery containers and covers are hermetically sealed to provide leak resistance over the life of the product.
- AGM separators - The electrolyte is completely absorbed into the separator.
- High performance brass threaded receptacle, bolt terminal, and faston terminals.
- Increased energy density.
- Computer optimized electrochemistry for increased power up to the 15 minute rate.
- 100% initial battery capacity.
**Range Summary**

**GENERAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Ah</th>
<th>Voltage (V)</th>
<th>Watts/Cell</th>
<th>Nominal Dimensions</th>
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<td>12HX25</td>
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<td>23</td>
<td>107</td>
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<td>12HX35</td>
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<td>6HX50</td>
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<td>53</td>
<td>99</td>
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<td>12HX50</td>
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<tr>
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<td>21</td>
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<td>28</td>
<td>135</td>
<td>180</td>
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<td>12HX150</td>
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<td>32</td>
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<tr>
<td>12HX205</td>
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<td>204</td>
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<td>12HX300</td>
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<td>381</td>
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<td>12HX505</td>
<td>12</td>
<td>119</td>
<td>506</td>
<td>272</td>
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<td>6HX800</td>
<td>6</td>
<td>200</td>
<td>780</td>
<td>211</td>
</tr>
</tbody>
</table>

**TERMINAL**

- Normal operating temperature range -4°F/-20°C to 122°F/50°C
- Float charging voltage 2.25 - 2.28 Volts per cell at 77°F/25°C
- Charging current DataSafe® HX batteries can be safely recharged at high current rates.
- Storage time DataSafe HX batteries can be stored for up to 6 months at 77°F/25°C before a freshening charge is required. At higher temperatures this time interval will be reduced.
- Torque specifications:
  - M5 Bolt - 40 in-lbs (4.5 Nm) ± 5%
  - M6 Bolt - 58 in-lbs (6.5 Nm) ± 5%
  - M5 Receptacle - 31 in-lbs (3.5 Nm) ± 5%
  - M6 Receptacle - (HX80-HX150) 44 in-lbs (5 Nm) ± 5%
  - M6 Receptacle - (HX205-HX800) 60 in-lbs (6.8 Nm) ± 5%
  - DataSafe HX batteries are designed to be installed on their base. Consult your local EnerSys® dealer before installing in any other orientation.

**Standards**

- UL listing - File No MH16464 (HX25-HX150) or MH12544 (HX205-HX800)
- Manufactured to EnerSys standards in ISO 9001 registered production facilities worldwide.
- Approved for shipping as non-hazardous, non-spillable - per IATA Special Provision A67 and 49 CFR

www.enersys.com
Remote Distribution Cabinet
### LIEBERT RDC CIRCUIT BREAKER SCHEDULE

#### MAIN PANELBOARD CIRCUIT BREAKER

<table>
<thead>
<tr>
<th>VOLTAGE 60 Hz</th>
<th>VENDOR</th>
<th>TYPE</th>
<th>FRAME AMPS</th>
<th>TRIP AMPS</th>
<th>MODEL NUMBER</th>
<th>INTERRUPTING RATING AIC</th>
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</thead>
<tbody>
<tr>
<td>208V</td>
<td>ABB</td>
<td>FIX MTD</td>
<td>225A</td>
<td>225A</td>
<td>T3N225TW</td>
<td>22K</td>
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<tr>
<td>208V</td>
<td>ABB</td>
<td>PLUG-IN</td>
<td>225A</td>
<td>225A</td>
<td>T3S225TW</td>
<td>22K</td>
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#### PANELBOARD BRANCH CIRCUIT BREAKER

<table>
<thead>
<tr>
<th>VOLTAGE 60 Hz</th>
<th>VENDOR</th>
<th>TYPE</th>
<th>FRAME AMPS</th>
<th>TRIP AMPS</th>
<th>MODEL NUMBER</th>
<th>INTERRUPTING RATING AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>208V</td>
<td>SQUARE D</td>
<td>PLUG-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>QO</td>
<td>10K</td>
</tr>
<tr>
<td>208V</td>
<td>SQUARE D</td>
<td>BOLT-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>QOB</td>
<td>10K</td>
</tr>
<tr>
<td>208V</td>
<td>SQUARE D</td>
<td>PLUG-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>QOxxVH</td>
<td>22K</td>
</tr>
<tr>
<td>208V</td>
<td>SQUARE D</td>
<td>BOLT-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>QOBxxVH</td>
<td>22K</td>
</tr>
<tr>
<td>208V</td>
<td>GE</td>
<td>PLUG-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>THQL</td>
<td>10K</td>
</tr>
<tr>
<td>208V</td>
<td>GE</td>
<td>BOLT-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>THQB</td>
<td>10K</td>
</tr>
<tr>
<td>208V</td>
<td>GE</td>
<td>PLUG-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>THHQL</td>
<td>22K</td>
</tr>
<tr>
<td>208V</td>
<td>GE</td>
<td>BOLT-IN</td>
<td>100A</td>
<td>15-100A</td>
<td>THHQB</td>
<td>22K</td>
</tr>
</tbody>
</table>
A CLEARANCE OF 18" [457mm] IS RECOMMENDED ABOVE UNIT FOR COOLING AIR FLOW.

A CLEARANCE OF 36" [914mm] MINIMUM IS RECOMMENDED AT FRONT, REAR, AND ONE SIDE FOR SERVICE ACCESS.

120' DOOR SWING

PROJECTION OF BEZELS (FRONT AND REAR) 0.63" [16mm]

OVERALL DIMENSION 28.6" [726mm]

21.6" [549mm] CLEARANCE HOLE

5.0" [127mm]

FOOTPRINT

REMOVE ONE 24" X 24" FLOOR TILE FOR INPUT/OUTPUT CABLE ACCESS

NOTES:
1. WEIGHT: 750 LBS (340 KG)
2. HEAT OUTPUT: 3,412 BTU/HR (1 KW)

K. STACY
B. BARCUS
CURRENT MONITORING PANEL MONITORS AND DISPLAYS THE FOLLOWING PARAMETERS:

- Phase current for each panelboard
- Neutral current for each panelboard
1. MATERIAL TO BE COPPER.
2. BUSBAR APPROX. .25 INCH THICK.
1. MATERIAL TO BE COPPER.
2. BUSBAR APPROX. .25 INCH THICK.
BOTTOM VIEW OF STANDARD CONDUIT PLATES

AREA PROVIDED FOR CONTRACTOR TO PUNCH HOLES FOR INPUT CONDUITS. MAXIMUM CONDUIT SIZES ARE:

(2) - 3" DIA. OR (1) - 4" DIA.

SIZED FOR (62) 1/2" CONDUITS

SIZED FOR (45) 1/2" CONDUITS

SIZED FOR (62) 1/2" CONDUITS
Start Up
Scopes of Work
UNINTERRUPTIBLE POWER SYSTEMS
ALL 3-PHASE MODELS
SCOPE OF WORK

START-UP SERVICE 8X5

- One site trip within the 48 contiguous states by a factory trained Liebert Customer Engineer after the UPS System has been installed and cabling terminated. Visit to be scheduled during standard work hours; Monday-Friday, 8am-5pm, (excluding national holidays).

- Any customer site visit is limited to eight (8) hours per visit. Any time beyond forty (40) hours/wk or eight (8) hrs/day will be billed separately.

- Includes parts and labor coverage for repair of defects found during commissioning which are a result of manufacturing. Defects or damage resulting from installation are not covered.

- Visit must be scheduled 10 business days in advance of need by contacting the Liebert Services Customer Response Center at 1-800-LIEBERT, or by contacting the region office.

- Start-up expenses incurred due to delays beyond the control of Liebert Services will be billed at cost.

- LS start-up validates 12-month material and labor warranty on Liebert UPS System.

- Subject to all Terms & Conditions as noted in the Liebert Services Terms & Conditions.

SERVICE PERFORMED

1. Perform a complete visual inspection of the equipment, checking for broken, damaged, or stressed components.
2. Check all nuts, bolts, screws, and connectors for tightness.
3. Clean any foreign material and dust from equipment.
4. Verify that the system is installed correctly.
5. Perform an operational test of the system including unit transfer and battery discharge.
6. Ensure that input, output, and DC voltages are within tolerance.
7. Verify proper operation of installed options.
8. Calibrate UPS meters and ensure all UPS metering is within UPS specification.
9. Verify proper operation with customer load, if available.
10. Verify proper operation with generator, if available.
11. Review equipment installation and train customer on unit operation.
Note1: Start-Up Plus (if purchased) includes one annual preventative maintenance visit during the warranty period. See 3-Phase UPS PM Only scope of work for details.
SEALED VRLA BATTERIES
SCOPE OF WORK

START-UP SERVICE 8X5

- Any customer site visit is limited to eight (8) hours per visit. Any time beyond forty (40) hours/wk or eight (8) hrs/day will be billed separately.
- Flooded battery systems not installed by Liebert Services do not include parts or labor coverage for repair of defects found during commissioning, which are a result of manufacturing or installation.
- Liebert Services start-up validates 12-month material and labor warranty on Liebert Battery Cabinets.
- Liebert supplied cabinets include parts and labor coverage for repair of defects found during commissioning which are a result of manufacturing.
- Start-up expenses incurred due to delays beyond the control of Liebert Services will be billed at cost.
- Two site trips within the 48 contiguous states by a factory trained Liebert Customer Engineer after the UPS System has been installed and cabling terminated. Visit to be scheduled by the customer between 8 am-5 pm, Monday-Friday (excluding national holidays).
- Visit must be scheduled 10 business days in advance of need by contacting the Liebert Services Customer Response Center at 1-800-LIEBERT, or by contacting the region office.
- Subject to all Terms & Conditions as noted in the Liebert Services Terms & Conditions.

SERVICE PERFORMED

Visual Inspections

1. Visually inspect the battery room for safety concerns, i.e. lighting, signage, water present or leaking, ventilation, clearances, etc.
2. Visually inspect the battery installation to insure the batteries are installed according to the manufacturer's recommendations.
3. Visually inspect the batteries, wires, cables, and buss bars, for cracks, leaks, swelling, corrosion, proper hardware, labeling, loose connections, cable stress relief, and general cleanliness.
4. Visually inspect the cabinet or rack for proper installation including grounding, cabinet ventilation, loose hardware, and proper clearances.
5. On systems utilizing cabinets, insure placement of air barriers if applicable.

Mechanical Inspections

1. Verify all inter-cell connections for proper torque.
2. Verify all hardware connections on the rack or cabinet are tight or torqued according to the manufacturer's specifications.
3. Connect all inter-tier connections and torque accordingly (battery cabinets only).
**Measurements**

1. Measure and verify the open circuit voltage of the individual batteries and the battery string to insure proper voltage.
2. Check for proper polarity of the battery string at the battery breaker or fuses and at the UPS.
3. Measure the ambient temperature.
4. Verify that no ground faults are present.

**Charging**

1. Perform an initial or freshening charge according to the manufacturer’s specifications.
2. After the initial or freshening charge, place the system on the proper float charge according to the manufacturer’s recommendation.
3. Measure and record system values after initial or freshening charge.
POWER DISTRIBUTION SYSTEMS
NX BYPASS DISTRIBUTION CABINET
SCOPE OF WORK

<table>
<thead>
<tr>
<th>START-UP SERVICE 8X5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Any customer site visit is limited to eight (8) hours per visit. Any time beyond forty (40) hours/wk or eight (8) hrs/day will be billed separately.</td>
</tr>
<tr>
<td>• Visit must be scheduled 10 business days in advance of need by contacting the Liebert Services Customer Response Center at 1-800-LIEBERT, or by contacting the region office.</td>
</tr>
<tr>
<td>• Includes parts and labor coverage for repair of defects found during commissioning which are a result of manufacturing. Defects or damage resulting from installation are not covered.</td>
</tr>
<tr>
<td>• One site trip within the 48 contiguous states by a factory trained Liebert Customer Engineer after the Power System has been installed and cabling terminated. Visit to be scheduled during standard work hours; Monday-Friday, 8am-5pm, (excluding national holidays).</td>
</tr>
<tr>
<td>• LS start-up validates 12-month material and labor warranty on Liebert Power System.</td>
</tr>
<tr>
<td>• Start-up expenses incurred due to delays beyond the control of Liebert Services will be billed at cost.</td>
</tr>
<tr>
<td>• Subject to all Terms &amp; Conditions as noted in the Liebert Services Terms &amp; Conditions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perform a complete visual inspection of the equipment, checking for broken, damaged, or stressed components.</td>
</tr>
<tr>
<td>2. Check all nuts, bolts, screws, and connectors for tightness.</td>
</tr>
<tr>
<td>3. Check continuity of all fuses.</td>
</tr>
<tr>
<td>4. Clean any foreign material and dust from equipment.</td>
</tr>
<tr>
<td>5. Verify that the system is installed and configured correctly.</td>
</tr>
<tr>
<td>6. Check all control wiring is installed in accordance with applicable schematics.</td>
</tr>
<tr>
<td>7. Verify proper phase rotation for the Input, Output (including panelboard main and/or subfeed breakers), and Maintenance Bypass (if applicable).</td>
</tr>
<tr>
<td>8. (If permitted) Measure voltage and current on the input and output and verify values are within specification.</td>
</tr>
<tr>
<td>9. (If applicable) Verify the voltage and current readings match the displayed values. Calibrate if necessary.</td>
</tr>
<tr>
<td>10. Verify the Maintenance Bypass Interlock (Kirk Key) option is operating properly (if installed).</td>
</tr>
<tr>
<td>11. Install or perform Engineering Field Change Notices (FCN) as necessary.</td>
</tr>
<tr>
<td>12. (If applicable) Verify proper operation of installed options (ION6200, LDM and VPMP Monitoring).</td>
</tr>
<tr>
<td>13. (If applicable) Perform operational test of the system (i.e. Maintenance Bypass and monitoring options).</td>
</tr>
<tr>
<td>14. Verify proper operation with customer load, if available.</td>
</tr>
<tr>
<td>15. Conduct thermal scan on all connections, components and transformer terminals for evidence of overheating.</td>
</tr>
</tbody>
</table>
16. Check that all interior and exterior protective panels and covers have been replaced and no holes or gaps are present.
17. Review equipment installation and train customer on unit operation.
POWER DISTRIBUTION SYSTEMS
ALL MODELS
SCOPE OF WORK

START-UP SERVICE 8X5

- Any customer site visit is limited to eight (8) hours per visit. Any time beyond forty (40) hours/wk or eight (8) hrs/day will be billed separately.

- Includes parts and labor coverage for repair of defects found during commissioning which are a result of manufacturing. Defects or damage resulting from installation are not covered.

- LS start-up validates 12-month material and labor warranty on Liebert Power System.

- Start-up expenses incurred due to delays beyond the control of Liebert Services will be billed at cost.

- Visit must be scheduled 10 business days in advance of need by contacting the Liebert Services Customer Response Center at 1-800-LIEBERT, or by contacting the region office.

- One site trip within the 48 contiguous states by a factory trained Liebert Customer Engineer after the Power System has been installed and cabling terminated. Visit to be scheduled during standard work hours; Monday-Friday, 8am-5pm, (excluding national holidays).

- Subject to all Terms & Conditions as noted in the Liebert Services Terms & Conditions.

SERVICE PERFORMED

1. Perform a complete visual inspection of the equipment, checking for broken, damaged, or stressed components.
2. Check all nuts, bolts, screws, and connectors for tightness.
3. Clean any foreign material and dust from equipment.
4. Verify that the system is installed and configured correctly.
5. Verify proper input voltage phase rotation.
6. Verify that all voltage and current readings are within tolerance.
7. Verify proper operations of any installed options (Tie-Breaker, LDM, ION 6200 etc.).
8. Conduct a thermal scan of the interior of equipment and subassemblies for evidence of overheated components.
9. Install or perform Engineering Field Change Notices (FCN) as necessary.
10. Verify proper operation with customer load, if available.
11. Verify proper operation with generator, if available.
12. Review equipment installation and train customer on unit operation.
Warranty
LIMITED WARRANTY FOR UPS PRODUCTS

This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of each purchaser's business.

General:

Liebert Corporation products and systems are in our opinion the finest available. We take pride in our products and are pleased that you have chosen them. Under certain circumstances we offer with our products the following One Year Warranty Against Defects in Material and Workmanship.

Please read your Warranty carefully. This Warranty sets forth our responsibilities in the unlikely event of defect and tells you how to obtain performance under this Warranty.

ONE YEAR LIMITED WARRANTY
AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP

LIEBERT PRODUCTS COVERED:

Liebert® Series 300™ UPS, Liebert® Series 600™ UPS, Liebert® Series 610™ UPS, Liebert® UPStation® S3 UPS, Liebert® Npower™ UPS, Liebert® NX™ UPS, Liebert NXL™ UPS, Liebert APM™ UPS

Terms of Warranty:

As provided herein, the Liebert product is warranted to be free of defects in material and workmanship for a period of one year from the Warranty Inspection date, provided that Warranty Inspection is performed by Liebert personnel, occurs within six (6) months of the Liebert shipping date and the product has been stored in a suitable environment prior to Warranty Inspection. The Warranty Inspection date will be determined only from the completed inspection and Warranty Inspection sheet provided by Liebert to User. The product shipment date will be determined only from the Liebert bill of lading. If any part or portion of the Liebert product fails to conform to the Warranty within the Warranty period, Liebert, at its option, will furnish new or factory remanufactured products for repair or replacement of that portion or part.

Warranty Extends to First Purchaser for Use, Non-transferable:

This Warranty is extended to the first person, firm, association or corporation for whom the Liebert product specified herein is originally installed for use (the "User") in the fifty United States or Canada. This Warranty is not transferable or assignable without the prior written permission of Liebert.

Assignment of Warranties:

Liebert assigns to User any warranties which are made by manufacturers and suppliers of components of, or accessories to, the Liebert product and which are assignable, but Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of such warranties, assumes NO RESPONSIBILITY for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components or accessories.

Drawings, Descriptions:

Liebert warrants for the period and on the terms of the Warranty set forth herein that the Liebert product will conform to the descriptions contained in the certified drawings, if any, applicable thereto, to Liebert's final invoices, and to applicable Liebert product brochures and manuals current as of the date of product shipment ("Descriptions"). Liebert does not control the use of any Liebert product. Accordingly, it is understood that the Descriptions are NOT WARRANTIES OF PERFORMANCE and NOT WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

Warranty Claims Procedure:

Within a reasonable time, but in no case to exceed thirty (30) days, after User's discovery of a defect, User shall contact Liebert at (800) LIEBERT (543-2378). Subject to the limitations specified herein, a Liebert field service representative will repair the non-conforming Liebert product warranted hereunder, without charge for material or labor, provided Liebert personnel performed the Warranty Inspection of the Liebert product. Warranty coverage will be extended only after Liebert's inspection discloses the claimed defect and shows no signs of treatment or use that would void the coverage of this Warranty. All defective products and component parts replaced under this warranty become the property of Liebert.

Warranty Performance of Component Manufacturers:

It is Liebert's practice, consistent with its desire to remedy Warranty defects in the most prompt and effective manner possible, to cooperate with and utilize the services of component manufacturers and their authorized representatives in the performance of work to correct defects in the product components. Accordingly, Liebert may utilize third parties in the performance of Warranty work, including repair or replacement hereunder, where, in Liebert's opinion, such work can be performed in less time, with less expense, or in closer proximity to the Liebert product.
**Items Not Covered By Warranty:**

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, negligence, inappropriate on site operating conditions, repair by non-Liebert designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, Acts of God, theft or installation contrary to Liebert's recommendations or specifications, or in any event if the Liebert serial number has been altered, defaced, or removed.

THIS WARRANTY DOES NOT COVER shipping costs, installation costs, external circuit breaker resetting or maintenance or service items and further, except as may be provided herein, does NOT include labor costs or transportation charges arising from the replacement of the Liebert product or any part thereof or charges to remove or reinstall same at any premises of User.

THIS WARRANTY IS VOID if User allows any battery for the Liebert product to discharge below the minimum battery voltage cutoff point. The warranty is void if the User does not start recharging a discharged, or partially discharged, battery within forty-eight (48) hours of the discharge period.

THE PRODUCTS LISTED IN THIS WARRANTY ARE NOT FOR USE IN THE CONTROL AREA OR ANY REACTOR CONNECTED OR SAFETY APPLICATIONS OR WITHIN THE CONTAINMENT AREA OF A NUCLEAR FACILITY OR WHERE THE PRODUCTS HAVE POTENTIAL FOR DIRECT PATIENT CONTACT OR WHERE A SIX (6) FOOT CLEARANCE FROM A PATIENT CANNOT BE MAINTAINED AT ALL TIMES. THE PRODUCTS LISTED IN THIS WARRANTY MAY BE USED IN APPLICATIONS INVOLVING LIFE-SUSTAINING OR LIFE-SUPPORTING DEVICES ONLY WHERE THE END-USE CUSTOMER HAS SIGNED LIEBERT’S HEALTHCARE APPLICATION SALES AGREEMENT, OTHERWISE THE WARRANTY IS VOID.

REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT OR PART THEREOF DOES NOT EXTEND THE ORIGINAL WARRANTY PERIOD.

**Limitations:**

THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE LIEBERT PRODUCT AS SET FORTH HEREIN.

IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, LIEBERT'S RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED THE NET PRODUCT PURCHASE PRICE.

IN NO EVENT SHALL LIEBERT ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, OR OTHERWISE.

**Miscellaneous:**

NO SALESPERSON, EMPLOYEE OR AGENT OF LIEBERT IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. Warranty terms may be modified, if at all, only by a writing signed by a Liebert officer.

Liebert obligations under this Warranty are conditioned upon Liebert timely receipt of full payment of the product purchase price and any other amounts due. Liebert reserves the right to supplement or change the terms of this Warranty in any subsequent warranty offering to User or others.

In the event that any provision of this Warranty should be or becomes invalid and/or unenforceable during the warranty period, the remaining terms and provisions shall continue in full force and effect.

This Warranty shall be governed by, and construed under, the laws of the State of Ohio, without reference to the conflict of laws principles thereof.

This Warranty represents the entire agreement between Liebert and User with respect to the subject matter herein and supersedes all prior to or contemporaneous oral or written communications, representations, understandings or agreements relating to this subject.
LIMITED WARRANTY FOR TEN (10) YEAR DESIGN LIFE VRLA BATTERIES & BATTERY CABINET PRODUCTS

This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of each purchaser's business.

General:

Liebert Corporation products and systems are in our opinion the finest available. We take pride in our products and are pleased that you have chosen them. Under certain circumstances we offer with our products the following Warranty Against Defects in Material and Workmanship.

Please read your Warranty carefully. This Warranty sets forth our responsibilities in the unlikely event of defect and tells you how to obtain performance under this Warranty.

LIMITED WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP

PRODUCTS COVERED:

Ten (10) Year Design Life Valve Regulated Lead Acid (VRLA) Batteries, and Liebert-manufactured battery cabinets, for Uninterruptible Power Supply (UPS) system applications.

Terms of Warranty:

Liebert- Manufactured Battery Cabinets (not including batteries): As provided herein, each Liebert-manufactured battery cabinet is warranted to be free of defects in material and workmanship for a period of: (i) one year from the start-up date provided start-up is performed by Liebert Global Services personnel, occurs within six (6) months of the Liebert shipping date and the product has been stored in a suitable environment prior to start-up; or (ii) in any event, a maximum of eighteen (18) months from date of product shipment from Liebert. The warranty duration shall be whichever period described in the preceding sentence expires first. The start-up date will be determined only from the completed inspection and start-up sheet provided by Liebert Global Services to User. The product shipment date will be determined only from the Liebert bill of lading. If any part or portion of the Liebert product fails to conform to the Warranty within the Warranty period, Liebert Global Services, at its option, will furnish new or factory remanufactured products for repair or replacement of that portion or part.

Ten (10) Year Design Life VRLA Batteries: Liebert does not manufacture batteries, but does warrant certain ten (10) year design life VRLA batteries. Subject to the further conditions and limitations set forth in this document, C&D brand Dynasty model “UPS High Rate,” “UPS High Rate Max,” and EnerSys brand DataSafe model “HX” ten (10) year design life VRLA batteries (the “VRLA Warranty Batteries”) that are purchased from Liebert and used in Liebert-manufactured battery cabinets are warranted to be free of defects in material and workmanship for a period of: (i) three years from date of shipment on a full replacement basis with a functionally equivalent battery; and (ii) after the third year, an additional seven years on a pro rata basis. The product shipment date will be determined only from the Liebert bill of lading. Additional conditions and limitations applicable to this ten (10) year design life VRLA battery warranty are set forth below.

From time-to-time Liebert is requested by Users, as defined below, to procure non-VRLA Warranty Batteries for User on a per-order basis. Liebert assigns to User any warranties which are made by the manufacturers and suppliers of such non-VRLA Warranty Batteries and which are assignable, but Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of such warranties, assumes NO RESPONSIBILITY for any matters that may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such non-VRLA Warranty Batteries.

Warranty Extends to First Purchaser for Use, Non-transferable:

This Warranty is extended to the first person, firm, association or corporation for whom the Liebert product specified herein is originally installed for use in the United States or Canada (the "User"). This Warranty is not transferable or assignable without the prior written permission of Liebert.

Drawings, Descriptions:

Liebert warrants for the period and on the terms of the Warranty set forth herein that the covered product will conform to the descriptions contained in the certified drawings, if any, applicable thereto, to Liebert's final invoices, and to applicable Liebert product brochures and manuals published as of the date of product shipment ("Descriptions"). Liebert does not control the use of any product. Accordingly, it is understood that the Descriptions are NOT WARRANTIES OF PERFORMANCE and NOT WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

Warranty Claims Procedure:

Within a reasonable time, but in no case to exceed thirty (30) days, after User's discovery of a defect, User shall contact Liebert Global Services (LGS) at 1-(800) LIEBERT (543-2378). All defective products and component parts replaced under this warranty become the property of Liebert.
Liebert-Manufactured Battery Cabinets: Subject to the terms and conditions specified herein, should Liebert determine that the battery cabinet is defective, an LGS field service representative will repair or replace (at Liebert’s option) the non-conforming Liebert product warranted hereunder, without charge for material or labor, provided start-up of the Liebert product was performed by LGS personnel. In all other instances, User will be charged for labor performed at Liebert's then current rates. Warranty coverage will be extended only after Liebert's inspection discloses the claimed defect and shows no signs of treatment or use that would void the coverage of this Warranty.

Ten (10) Year Design Life VRLA Batteries: Subject to the terms and conditions specified herein, should Liebert determine that a VRLA Warranty Battery is defective within the initial three year warranty period, LGS will replace the VRLA Warranty Battery with a functionally equivalent battery. During the pro rata portion of the warranty period, LGS will replace a VRLA Warranty Battery that Liebert determines to be defective based on the below pro rata formula. The formula yields a pro rata credit value, which shall be applied against the manufacturer’s then current published list purchase price of a new product of equal or greater Ampere Hour capacity.

Non-VRLA Warranty Batteries: With respect to non-VRLA Warranty Batteries procured by Liebert for Users, Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of warranties that may be assigned to Users for such non-VRLA Warranty Batteries, assumes NO RESPONSIBILITY for any matters that may be warranted by manufacturers or suppliers of non-VRLA Warranty Batteries and extends no coverage under this Warranty to such non-VRLA Warranty Batteries.

PRO RATA CALCULATION FOR CREDIT:
\[
\left( \frac{\text{Manufacturer’s Then Current Published List Purchase Price for the VRLA Warranty Battery}}{\# \text{ of Months of Un-Expired Warranty}} \right) \times \# \text{ of Months of Total Warranty} = \text{Pro Rata Credit Value}
\]

Warranty Performance of Component Manufacturers:
It is Liebert's practice, consistent with its desire to remedy Warranty defects in the most prompt and effective manner possible, to cooperate with and utilize the services of component manufacturers and their authorized representatives in the performance of work to correct defects in the Liebert components. Accordingly, Liebert may utilize third parties in the performance of Warranty work, including repair or replacement hereunder, where, in Liebert's opinion, such work can be performed in less time, with less expense and in closer proximity to the Liebert product.

Items Not Covered By Warranty:

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, inadequate water or drain services, negligence, inappropriate on site operating conditions, repair by non-Liebert designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, Acts of God, theft or installation contrary to Liebert's recommendations or specifications, or in any event if the Liebert (for cabinets) or other manufacturer’s (for batteries) serial number has been altered, defaced, or removed.

THIS WARRANTY DOES NOT COVER shipping costs, installation costs, circuit breaker resetting or maintenance or service items and further, except as may be provided herein, does NOT include labor costs or transportation charges arising from the replacement of the product or any part thereof or charges to remove same from any premises of User.

THIS WARRANTY IS VOID if User allows any battery for the Liebert UPS product to discharge below the minimum battery voltage cutoff point. The warranty is void if the user does not start recharging a discharged battery within forty-eight hours.

REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT OR PART THEREOF DOES NOT EXTEND THE ORIGINAL WARRANTY PERIOD.

Limitations

• THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

• USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE PRODUCT AS SET FORTH HEREIN.

• IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, LIEBERT'S RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED ONE TIMES THE NET PRODUCT PURCHASE PRICE.

• IN NO EVENT SHALL LIEBERT ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, OR OTHERWISE.

Additional Limitations & Conditions for Batteries

• A battery will only be considered defective if it fails to deliver at least 80 percent of its rated capacity during the warranty period. Rated capacity is that which is published in the manufacturer’s official product literature for the specific product at the
• Batteries must be charged, discharged, stored and serviced in accordance with applicable manufacturer’s instructions.

• Each battery must be the proper size, design and capacity for its intended UPS application at 25 degrees Centigrade.

• The purchaser (end user) shall give a freshening charge to the battery every six months after the date code on the battery until final installation.

• Temperature:
  a. Average annual temperature shall not exceed 25 degrees Centigrade (77 degrees Fahrenheit).
  b. Cell temperature shall not exceed 32 degrees Centigrade (90 degrees Fahrenheit) for any 30-day period.
  c. Operation or storage of any product for any length of time in an environment having a temperature above 40 degrees Centigrade will void the warranty with respect to those products.

• The warranty period shall be adjusted based on actual operating conditions such as temperature and frequency of discharge as published and specified by the battery manufacturer. The warranty period will be reduced 50% for every 8 degrees Centigrade increase in operating temperature above 25 degrees Centigrade (base temperature).

• Batteries in the same string must be the same manufacturer, same model. If not, the warranty is void.

• The warranty does not apply to batteries used in cycle application.

**Miscellaneous:**

• NO SALESPERSON, EMPLOYEE OR AGENT OF LIEBERT IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. Warranty terms may be modified, if at all, only by a writing signed by a Liebert officer.

• Liebert obligations under this warranty are conditioned upon timely receipt of full payment of the product purchase price and any amounts due from User under this Warranty. Liebert reserves the right to supplement or change the terms of this Warranty in any subsequent warranty offering to User or others.

• In the event that any provision of this Warranty should be or becomes invalid and/or unenforceable during the warranty period, the remaining terms and provisions shall continue in full force and effect.

• User shall complete the attached User Information Card and forward it to Liebert within thirty (30) days of receipt of the Liebert product.

• This Warranty shall be governed by, and construed under, the laws of the State of Ohio.

• This Warranty represents the entire agreement between Liebert and User with respect to the subject matter herein and supersedes all prior or contemporaneous oral or written communications, representations, understandings or agreements relating to this subject.
This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of each purchaser's business.

General:

Liebert Corporation products and systems are in our opinion the finest available. We take pride in our products and are pleased that you have chosen them. Under certain circumstances we offer with our products the following One Year Warranty Against Defects in Material and Workmanship.

Please read your Warranty carefully. This Warranty sets forth our responsibilities in the unlikely event of defect and tells you how to obtain performance under this Warranty.

**ONE YEAR LIMITED WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP**

**LIEBERT PRODUCTS COVERED:**

Computer Isolation Transformer, Precision Power Center, Datawave® Magnetic Synthesizer, Static Transfer Switch, Static Transfer Switch 2, Static Transfer Switch 2 Power Distribution Unit, SmartSwitch®, Remote Distribution Cabinet, Expansion Cabinet, Liebert FPC, Liebert FDC

**Terms of Warranty:**

As provided herein, the Liebert product is warranted to be free of defects in material and workmanship for a period of: (i) one year from the Warranty Inspection date provided Warranty Inspection is performed by Liebert authorized personnel, Warranty Inspection occurs within six (6) months of the Liebert shipping date, and the product has been stored in a suitable environment prior to Warranty Inspection; or (ii) in any event, a maximum of eighteen (18) months from date of product shipment by Liebert. The warranty duration shall be whichever period described in the preceding sentence expires first. The Warranty Inspection date will be determined only from the completed inspection and Warranty Inspection sheet provided to User by Liebert. The product shipment date will be determined only from the Liebert bill of lading. If any part or portion of the Liebert product fails to conform to the warranty within the warranty period, Liebert, at its option, will furnish new or factory remanufactured parts for repair or replacement of that portion or part. If Liebert performs the Warranty Inspection service, then labor and travel costs are covered under this warranty. If Liebert does not perform the Warranty Inspection, the warranty covers parts only, and labor, travel and other costs will be charged at then-current rates.

**Warranty Extends to First Purchaser for Use, Non-transferable:**

This Warranty is extended to the first person, firm, association or corporation for whom the Liebert product specified herein is originally installed for use (the "User") in the fifty United States or Canada. This Warranty is not transferable or assignable without the prior written permission of Liebert.

**Assignment of Warranties:**

Liebert assigns to User any warranties which are made by manufacturers and suppliers of components of, or accessories for, the Liebert product and which are assignable, but Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of such warranties, assumes NO RESPONSIBILITY for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this warranty to such components or accessories.

**Drawings, Descriptions:**

Liebert warrants for the period and on the terms of the Warranty set forth herein that the Liebert product will conform to the descriptions contained in the certified drawings, if any, applicable thereto, Liebert's final invoices, and to applicable Liebert product brochures and manuals published as of the date of product shipment ("Descriptions"). Liebert does not control the use of any Liebert product. Accordingly, it is understood that the Descriptions are NOT WARRANTIES OF PERFORMANCE and NOT WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

**Warranty Claims Procedure:**

Within a reasonable time, but in no case to exceed thirty (30) days, after User's discovery of a defect, User shall contact Liebert at 1-(800) LIEBERT (543-2378). Subject to the limitations specified herein, a Liebert field service representative will repair the non-conforming Liebert product warrantied hereunder, without charge for material or labor, provided Liebert personnel performed the Warranty Inspection of the Liebert product. In all other instances, User will be charged for labor performed, and associated travel expenses, at Liebert's then current rates, or User may elect to perform the necessary labor at User's own expense using materials provided by Liebert. If replacement parts or components are shipped or caused to be shipped by Liebert prior to inspection of the product claimed to be defective, the replacement part or portion shall be invoiced in the full current price amount and shipped freight collect F.O.B. the Liebert facility. Warranty coverage will be extended only after Liebert's inspection discloses the claimed defect and shows no signs of treatment or use that would void the coverage of this Warranty. All defective products and component parts replaced under this Warranty become the property of Liebert.

**Warranty Performance of Component Manufacturers:**
It is Liebert's practice, consistent with its desire to remedy warranty defects in the most prompt and effective manner possible, to cooperate with and utilize the services of component manufacturers and their authorized representatives in the performance of work to correct defects in the product components. Accordingly, Liebert may utilize third parties in the performance of warranty work, including repair or replacement hereunder, where, in Liebert's opinion, such work can be performed in less time, with less expense, or in closer proximity to the Liebert product.

**Items Not Covered By Warranty:**

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, negligence, repair by non-Liebert designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, acts of nature, theft or installation contrary to Liebert's recommendations, or in any event if the Liebert serial number tag has been altered, defaced, or removed.

THIS WARRANTY DOES NOT COVER shipping costs, installation costs, circuit breaker resetting or maintenance or service items and further, except as may be provided herein, does NOT include labor costs or transportation charges arising from the replacement of the Liebert product or any part thereof or charges to remove or reinstall the same at any premises of User.

THE PRODUCTS LISTED IN THIS WARRANTY ARE NOT FOR USE IN THE CONTROL AREA OR ANY REACTOR CONNECTED OR SAFETY APPLICATIONS OR WITHIN THE CONTAINMENT AREA OF A NUCLEAR FACILITY OR WHERE THE PRODUCTS HAVE POTENTIAL FOR DIRECT PATIENT CONTACT OR WHERE A SIX (6) FOOT CLEARANCE FROM A PATIENT CANNOT BE MAINTAINED AT ALL TIMES. THE PRODUCTS LISTED IN THIS WARRANTY MAY BE USED IN APPLICATIONS INVOLVING LIFE-SUSTAINING OR LIFE-SUPPORTING DEVICES ONLY WHERE THE END-USE CUSTOMER HAS SIGNED LIEBERT’S HEALTHCARE APPLICATION SALES AGREEMENT, OTHERWISE THE WARRANTY IS VOID.

REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT OR PART THEREOF DOES NOT EXTEND THE ORIGINAL WARRANTY PERIOD.

**Limitations:**

THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE LIEBERT PRODUCT AS SET FORTH HEREIN.

IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, LIEBERT'S RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED THE NET PRODUCT PURCHASE PRICE.

IN NO EVENT SHALL LIEBERT ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL EXEMPLARY OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, OR OTHERWISE.

**Miscellaneous:**

NO SALESPERSON, EMPLOYEE OR AGENT OF LIEBERT IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. Warranty terms may be modified, if at all, only by a writing signed by a Liebert officer.

Liebert obligations under this warranty are conditioned upon Liebert timely receipt of full payment of the product purchase price and any other charges due. Liebert reserves the right to supplement or change the terms of this Warranty in any subsequent warranty offering to User or others.

In the event that any provision of this Warranty should be or becomes invalid and/or unenforceable during the warranty period, the remaining terms and provisions shall continue in full force and effect.

This Warranty shall be governed by, and construed under, the laws of the State of Ohio, without reference to the conflict of laws principles thereof.

This Warranty represents the entire agreement between Liebert and User with respect to the subject matter herein and supersedes all prior or contemporaneous oral or written communications, representations, understandings or agreements relating to this subject.