

Town of Redding Connecticut Police Department



120 Foot Monopole Communications Tower and Radio Equipment Room Construction Requirements and Concept Plan October 2015

The Town of Redding Connecticut is seeking proposals for the installation of a 120 foot monopole communications antenna support structure. The following document should be used as a guide to the general requirements for formulating a response to the Request for Proposal 2015- PD-01 Communications Tower.

BID OPENING:

Bids will be opened by the Town of Redding Finance Director or his designee on WEDNESDAY, OCTOBER 28, 2015 AT 12:00 NOON AT THE REDDING TOWN HALL, 100 HILL ROAD, REDDING, CONNECTICUT. Any questions relative to the bid opening should be directed to the Redding Finance Office (203) 938-8481.

General Requirements:

The town is seeking a turn-key solution for the installation of the monopole antenna support structure and construction of a radio equipment room that will include the following items:

- Design, provide and install monopole tower and foundation
- Monopole will be manufactured by Valmont, see attached tower design, attachment 01 Valmont project #256905. Comparable alternate tower manufactured by Engineering Endeavors (EEI), Fort Worth Tower (FWT) or Sabre Industries will be accepted upon approval of the towns project manager.
- Construction of new radio equipment room to include walls and flooring, electrical, HVAC, grounding and cable management per construction drawing specification and addendums. Centek Engineering job 14043.000
- Design, provide and install ice bridge and cable support
- Design, provide and install antenna transmission line cable management system and cable entry ports
- Design, provide and install tower grounding system
- Install all customer supplied antennas, lines and hardware as specified by the town
- Contractor must regularly perform land mobile radio (LMR) antenna and tower installation work as the main focus of their company business. Contractor must supply three references for projects similar in size and scope with the proposal.
- Contractor must provide resumes/employee profiles for key employees that will be assigned to this project
- Contractor employees must possess a valid Connecticut V7 antenna installation license. Contractor must provide a copy of this license(s) with the proposal.
- Contractor's tower workers must possess a valid Comtrain or equivalent Basic Tower Safety and Rescue training certification. Contractor must provide proof of such training certification with the proposal.

- Antenna system sweep testing is required as part of this project. Contractor must provide with the proposal proof of employee training or certification in the use of the sweep testing equipment to be used for this project.
- All work performed by the awarded contractor or its sub-contractors must comply with the then current Motorola R56 installation specifications. Work provided under this proposal will be subject to an R56 inspection by the town's radio service provider and/or Motorola directly and the awarded contractor will be required to correct any deficiencies at no additional cost to the town.

Qualified contractors must attend a pre-bid conference and site walk at Redding police Headquarters on Wednesday October 14, 2015 at 09:00 AM.

- Any alternate items or proposals shall be noted as exceptions to the RFP requirements with a complete explanation as to the nature of the alternate proposal
- Northeastern Communications Inc will be acting as the town's representative and will be responsible for coordination of all tower related construction. All questions related to the design, specification and construction schedule can be emailed to Eric Fine Project Manager at efine@norcomct.net

Award or Rejection:

All qualified bids will be evaluated. The award will be made to the Bidder whose overall arrangements are deemed to be in the best interest of the Town of Redding. Unless otherwise specified, all bids will be awarded within **30** working days. No Contracting Firm may withdraw their Bid for a period of thirty (30) calendar days after the Bid due date. Bidders should be advised that should budgetary constraints dictate part and/or all of the items listed in this bid might be rejected. The decision shall be final and not subject to recourse by the Bidder.

The Town of Redding retains the right without prejudice to reject any or all bids, in whole or in part and to waive any or all informalities or technical defects if it is in the best interest of the Town to do so. The Board of Selectmen will make the final determination as to which proposal is in the best interest of the Town.

The Town of Redding is an equal opportunity employer and we advise all Contracting Firms of our intent to negotiate business only with other equal opportunity employers. All individuals, corporations, businesses, vendors, distributors, contractors and subcontractors with whom the Town of Redding contracts with are obligated to provide equal opportunity without regard to race, creed, color, religion, national origin, age, sex, or handicap.

Statement of Bidder

All Bidders shall submit a notarized affidavit attesting that none of the owners or key management employees has ever been investigated, arrested and/or convicted for racketeering or any other crime involving the solid waste business anywhere in the United States.

Notification of Intention to Bid:

All costs incurred by Bidders in preparing or submitting bids are the Bidders sole responsibility. The Town will not reimburse any Bidder for costs incurred prior to the award of bid.

Bidder to be Bound:

The successful Bidder agrees to be bound by its bid, unless specifically noted. The bid will be incorporated into the contract to be negotiated between the Town and the Bidder.

Bidder's Representative:

The person signing the bid must be a legal representative of the firm authorized to bind the firm to the contract in the event of a successful bid.

Bidders agree to indemnify and hold harmless the Town of Redding, its officers, servants and employees against any and all liability, judgments, cost, expenses and other loss, and against all claims or actions including, but not limited to, those based upon or arising out of damage or injury (including death) to persons or property caused by or sustained in connection with the negligence of the successful Bidder, its officers, agents, servants and employees in the performance, or lack of performance, of the services covered under this Bid Package.

Time of Acceptance:

The Bidders agree to be bound by their bids for a period of 90 days from the date of submission. During which time the Town may request clarification of the bid for the purpose of evaluation.

Bid Terms and Conditions:

All bids submitted must be in Sealed Envelopes and must be marked with the Bid Name "RFP Redding Police Department Radio Tower and Equipment Room Project" on the front of the envelope. Amendments to or withdrawals of any section of the submitted bid received later than the time and date set for the bid submission date will not be considered. Bids received later than the time and date specified for submission will not be considered. Replies submitted, whether a bid or "no bid," must have the bid name clearly marked on the front of the envelope. Bidders not marking the envelope will have no recourse against any Town employee.

Any alleged oral agreement made by a bidder or contractor with any agency or employee of the Town of Redding will be disregarded.

The Town of Redding is exempt from the payment of taxes imposed by Federal Government and the State of Connecticut. Such taxes should NOT BE included in the bid price.

Execution of Contract:

After the award of the contract and within fifteen (15) days after the forms are presented for signature, the successful Bidder shall execute and deliver the contract to the Town.

The failure of the successful Bidder to execute such contract within fifteen (15) days after the prescribed forms are presented for signature shall constitute a default, and at the Town sole discretion, the Town may either award the Contract to the next responsible Bidder or reinstate desired or selected Bidders.

Payment of Licenses and Fees:

Bidder shall pay all licenses and permit fees now in existence or which may be incurred due to this agreement or the services provided. Bidder shall be responsible for complying with any applicable federal, state and local laws, codes and regulations concerning any or all services covered by this agreement.

Insurance

Proof of Insurance:

The Contractor shall take out and maintain during the life of the contract adequate Workmen's Compensations Insurance for all his employees employed. In case any of the employees are engaged in hazardous work under the contract at the site of the work, are not protected under

the Workmen's Compensation statute, the contractor shall provide Workmen's Compensation Insurance for the protection of his employees not protected otherwise.

Liability Insurance:

Take out and maintain during the life of the contract adequate public general liability insurance insuring against liability, to persons not employed by his company in an amount of not less than \$1,000,000 per occurrence/\$1,000,000 aggregate, \$1,000,000 automobile, and an umbrella policy of \$5,000,000.

The certificate(s) of insurance must name the Town of Redding, as the certificate holder/additional insured. It shall be delivered to the Town within five (5) days of award notification and must be submitted on a yearly basis.

All items are explained in greater detail in the attached statement of work.

Project Phasing:

Phase #1 Contract award, project review and radio equipment room construction, electrical and grounding installation. Relocation of exiting storage shed and make access to tower site.

Phase #1A Northeastern Communications to provide temporary tower and antenna systems for use while tower construction takes place. Norcom will relocate all RF equipment to new radio equipment room and transition all existing antenna connection to temporary tower. Phase #1A is being funded by the town directly with Norcom.

Phase #2 Existing tower and foundation demolition. New foundation excavation, building foundation underpinning and tower foundation construction and installation of tower grounding network. Materials testing as required by engineering.

Phase #3 Erecting of new tower steel and all associated hardware and Ice bridge. Installation of all customer supplied antennas, lines and grounding equipment per attached antenna schedule. Sweep testing of all antenna systems.

Phase #4 Norcom to migrate all RF equipment to new tower antennas and removal of the temporary tower and antenna systems. All phase #4 work funded by the town directly.

Phase #5 Final engineering inspections, submission of project closeout documents and project sign off.

CONCEPTUAL REPRESENTATION OF PROPOSED TOWER DESIGN

Northeastern Communications Inc	
Redding Police Department Proposed 120' Monopole Tower	
Case # C57340	Revision # 2
Drawn By E. Fine	Date: 09-28-2015

Concept Drawing Only

(4) 6' Side Arms With on Quad Mount
(1) DB 201
(1) DB Spectra DS1F06F36D-D
(1) DB Spectra DS1F03F36D-N Dual
(1) Comprod 871F-70TM
Spare Center Mount

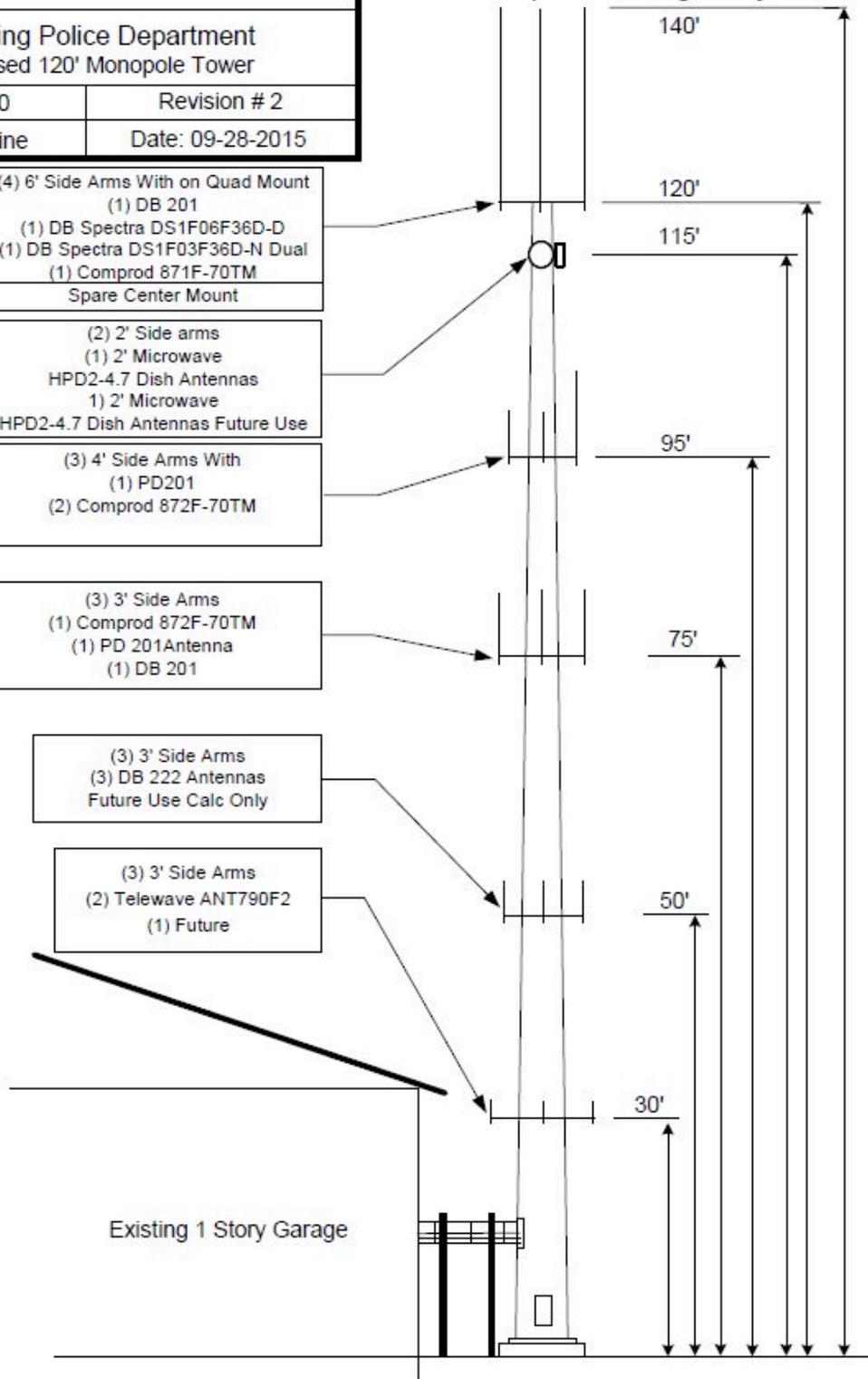
(2) 2' Side arms
(1) 2' Microwave
HPD2-4.7 Dish Antennas
(1) 2' Microwave
HPD2-4.7 Dish Antennas Future Use

(3) 4' Side Arms With
(1) PD201
(2) Comprod 872F-70TM

(3) 3' Side Arms
(1) Comprod 872F-70TM
(1) PD 201 Antenna
(1) DB 201

(3) 3' Side Arms
(3) DB 222 Antennas
Future Use Calc Only

(3) 3' Side Arms
(2) Telewave ANT790F2
(1) Future



STATEMENT OF WORK

Tower Design, Engineering, Certification and Site work

- Provide tower design engineering in accordance with TIA 222-G and Connecticut state building codes for 110 MPH, 3 second gust wind speed, Structural Classification-III, Exposure-C, Topographic Category-1
- Provide tower design that meets or exceeds all local building requirements, TIA 222-G standards and Connecticut state building codes
- Provide tower design and engineering to support all antennas as outlined in the attached conceptual drawing and antenna list to include all present and future use antennas as proposed. Three sets of shop drawings of proposed monopole tower must be provided with RFP submission.
- Provide the decommissioning of the existing 100' self-supporting tower, demolition and disposal of existing tower and foundation.
- Provide foundation construction and engineering for a pad and pier foundation per the attached concept foundation design. All required building foundation underpinning will be included at the location identified on the attached site construction drawings and foundation design. See construction specification addendum #1 for clarifications and changes to design specifications.
- Provide all materials, labor, electrical work and HVAC to construct radio equipment room inside the existing garage structure per the construction drawings and specifications developed by Centek Engineering dated 07/16/2015, Job # 14043.000
- Provide six sets of engineered and stamped shop drawings for the tower and foundation design by a Connecticut licensed professional engineer prior to start of construction
- Provide professional engineer oversight of the foundation construction and tower erection with special inspections as required to certify that all aspects of construction and installation is in accordance with the tower manufacturer's design criteria and state and local code requirements
- Provide final inspections report (six (6) copies); two (2) to be submitted to the town building official, two (2) to be submitted to the town's construction manager and two (2) to be submitted to the Police Chief

Supply and Install 120 Foot Monopole Tower Structure with the Following Features:

- 120' hot dipped galvanized steel tapered sleeve-fit monopole
- One quad collar and four (4) 6' antenna mounting side arms mounted at 119' with one (1) center mounted 2-3/8" antenna mounting mast.
- One tri collar and two (2) 2' Microwave dish mounting side arms mounted at 114' elevation

- One tri collar and three (3) 4' antenna mounting side arms mounted at 94' and 74' elevation
- One tri collar and three (3) 3' antenna mounting side arms mounted at 49' and 29' elevation
- Three hand hole/cable exits will be installed at each of the present and future antenna mounting elevations. Cable support hooks will be installed at each cable exit location.
- Three (3) cable access ports will be installed; one (1) at 3' elevation and two (2) at 8' elevation. Access ports at the 8' elevation will be installed at 0 and 90 degree orientation on the pole. Man way 16" X 32" access port at the 3ft elevation will be installed at 180 degree orientation on the pole.
- Tower will be supplied with step bolts
- Tower will be supplied with 120' safety climb cable and locking device
- Tower will be supplied with required anchor bolts and two templates. Anchor bolts must be shipped to customer location prior to the monopole to facilitate foundation construction prior to tower delivery.
- Include a cost option to provide the monopole with a weather resistant exterior finish treatment in white with a minimum of a five year warranty.

Supply and Install Tower and Site Grounding System:

- The site will be considered to include the tower, cable ice bridge, exterior cable management, exterior cable entrance, interior cable entry/ termination point and interior cable management
- The grounding system will include the tower grounding (Earthing), the grounding of all antenna cables at the antenna elevations (top), cable tower exit points (TGB, bottom), building cable entry location (EGB) and equipment room interior cable entry point (IGB)
- All grounding will be done in accordance with the then current Motorola R56 Standards and Guidelines for Communication Site Installation.

Supply and Install Cable Ice Bridge and Cable Management System:

- Cable ice bridge will be constructed of 24' wide galvanized steel Grip Span with a with double "Tee Bracket" cable supports spaced every 36" and stainless steel snap-in cable hangers
- Supply and install two (2) 16 port building entrance plate with boots. One (1) plate to be installed on the building exterior at the cable entrance location. The second entrance plate shall be installed on the interior wall of the communications equipment room. Boots will be supplied for all openings with appropriate sized cable cushions.

Antenna Installation Matrix and Requirement:

Redding PD 120' Monopole Tower Antenna Plan							
Ant #	Antenna	Elevation	Side Arm	Cable	Runs	USE	Color Code
1	DB Spectra DS1F03F36D-N Dual	120	6'	7/8	2	Combiner TX/RX	1 Blue, 2 Blue
2	DB Spectra DS1F06F36D-D	120	6'	7/8	1	Spare 6db VHF	3 Blue
3	Comscope DB201 Ground Plane	120	6'	7/8	1	Fire Low Band	4 Blue
4	Comprod 872F-70TM	120	6'	7/8	1	Spare 6db VHF	5 Blue
5	Future	120	Center				
6	PTP Radio Waves HPD2-4.7	115	2'	7/8	2	PTP Redding Ridge	1 Red, 1 Red\ Violet
7	Future PTP Radio Waves HPD2-4.7	115	2'	7/8	2	PTP Future	
8	Comprod 872F-70TM	95	4'	7/8	1	Spare 6db VHF	1 Orange
9	Comprod 872F-70TM	95	4'	7/8	1	VHF M/A	2 Orange
10	RFS 201-7N	95	4'	7/8	1	UHF M/A	3 Orange
11	Comprod 872F-70TM	75	3'	7/8	1	VHF M/A	1 Yellow
12	Comprod 872F-70TM	75	3'	7/8	1	VHF FAPER/N	2 Yellow
13	Comscope DB201 Ground Plane	75	3'	7/8	1	CSP Hot Line	3 Yellow
14	Comscope DB222	50	3'	7/8	1	Future	
15	Comscope DB222	50	3'	7/8	1	Future	
16	Comscope DB222	50	3'	7/8	1	Future	
17	Telewave ANT790F2	30	3'	7/8		Future	
18	Telewave ANT790F2	30	3'	7/8	1	I-Tac	1 Green
19	Telewave ANT790F2	30	3'	7/8	1	MTA Transit	2 Green

- The following list of antennas should be utilized to for the purpose of load calculation, tower design/engineering and quotation of installation of all supplied antenna systems
- All antennas, transmission lines, connectors, jumpers, hoisting grips and ground straps will be supplied by the customer and installed by the tower contractor
- Provide antenna sweep testing on all antenna systems upon completion of installation. Sweep testing will consist of the following tests:
 - Transmission line length
 - Transmission line return loss
 - Antenna return loss
 - Antenna VSWR
 - Antenna system return loss with Polyphaser surge protectors inline
- Supply test results in printed and electronic (PDF and Anritsu data file) format as part of the tower documentation submission upon project completion

Future use antennas will not be supplied for installation at time of construction.

Project Specifications and Pricing Requirement Exceptions:

Provide complete explanation of any and all exceptions to the RFP specifications, requirements and or pricing requirements you do not comply with.

Project Pricing Requirements:

The Town of Redding requires that the RFP submission be submitted in the following format. Two complete copies of the RFP submission shall be provided with all supporting documentation. The town reserves the right to modify the total scope of the work that will be awarded to the successful bidder. Each item shall be considered as a single phase of the total project.

Item #1

Provide design and structural engineering service for 120' monopole antenna support structure

\$ _____

Item #2

Supply 120' Monopole tower structure complete with antenna, side arms, mounting collars, safety climb and foundation anchor bolts with all shipping costs

\$ _____

Item #3

Provide design verification and structural engineer for pad and pier style tower foundation and existing building foundation underpinning work.

\$ _____

Item #4

Provide radio equipment room construction per specification and addendums.

\$ _____

Item #5

Decommissioning of existing tower and demolition and disposal of tower and foundation.

\$ _____

Item #6

Provide excavation and installation of pad and pier tower foundation and

existing foundation underpinning.

\$ _____

Item #7

Soil removal and dewatering

\$ _____

Item #8

Provide engineering oversight, third party materials testing and certification required for foundation installation

\$ _____

Item #9

Construction management for foundation installation

\$ _____

Item #10

Tower erection and RF antenna system installation including exterior ice bridge cable management systems.

\$ _____

Item #11

Provide engineering oversight and tower installation certification. Antenna system sweep testing and certification.

\$ _____

Item #12

Tower grounding system installation

\$ _____

Item #13

Crain service

\$ _____

Item #14

Tower installation project management

\$ _____

Item #15

Site restoration and tree installation

\$ _____

PROJECT TOTAL: \$ _____

Payment Requirements

All bidders should include a desired payment schedule and terms as part of their RFP submission. Final agreed upon payment schedule and terms will be attached to the project contact or purchase order upon town approval and execution of project contract or issuance of purchase order.

Hours of work

Hours of work will be permitted between 7 AM and 8 PM Monday through Sunday. Additional hours of work can be requested as needed but will require 24 hours notice and will be subject to approval by the town's project manager.

List of Attachments on RFP USB Flash Drive

01. Valmont permit drawing project #256905
02. Norcom concept drawing rev. #2
03. Centek Construction Drawings Rev.0 15.07.28
04. Square D QO_CQ0124M125RB100 electrical panel
05. Mitsubishi HVAC Units specification
06. Liebert GXT4-6000RT208 Manual
07. Liebert GXT4-6000RT208 Brochure
08. Marlite Wall Covering Brochure
09. Motorola R56 Standards

Radio Room Construction Specification Addendum #1

Item #1

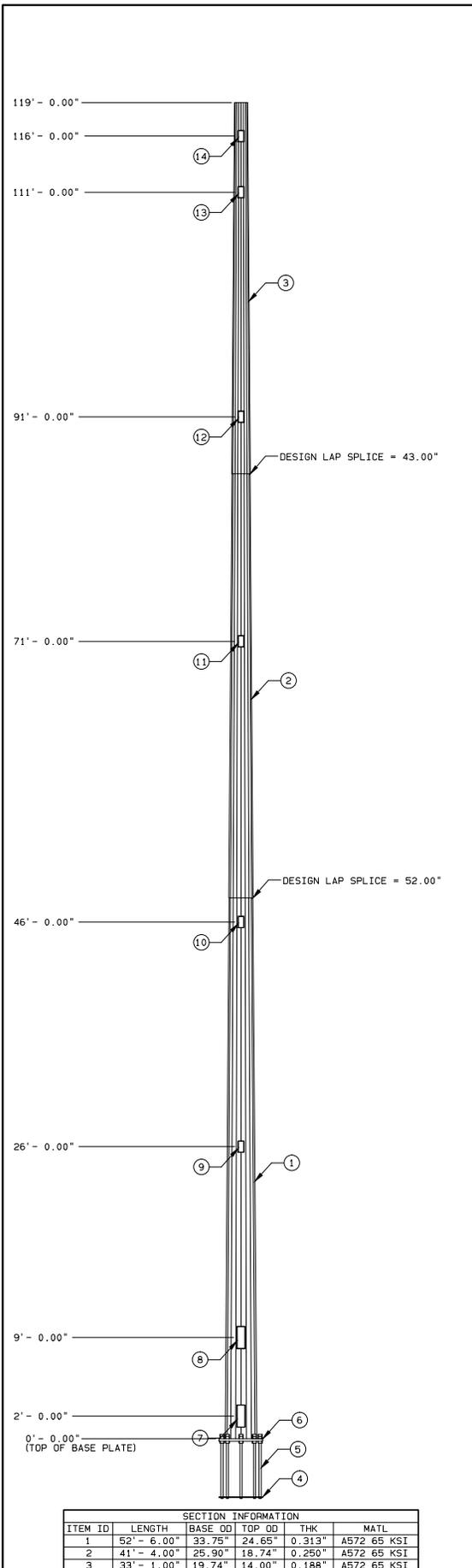
Change HVAC unit to Mitsubishi PKA-A18HA4 & PUZ-A18NHA4 18,000 BTU units

Item #2

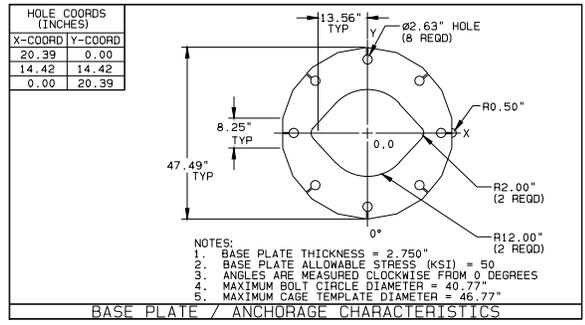
Change both MDP and UPS-1 electrical panels to Square D CQO124M125RB100 24 circuit panels.

Item #3

Interior wall FRP panels to be Marlite P100 White with M350, M360, M365 and M370 trim pieces as needed.



ITEM ID	NO. REQD	FEATURES	UNIT	WEIGHT (LBS)
1	1	SECTION A VALMONT S-22 0.313" THK (A572 GR65)		5,119
2	1	SECTION B VALMONT S-22 0.250" THK (A572 GR65)		2,463
3	1	SECTION C VALMONT S-22 0.188" THK (A572 GR65)		1,118
4	1	BOTTOM CAGE PLATE		82
5	8	2.25" ANCHOR BOLT, LENGTH=9.50' A615 GR75		92
6	1	BASE PLATE VALMONT S-56 2.750" THK (A572 GR50)		929
	1	TOP CAGE PLATE (REMOVE BEFORE SETTING POLE)		108
	1	SAFETY CLIMBING CABLE (LENGTH = 109.00')		88
	3	GROUNDING LUG		2
		GALVANIZING		230
86		STEP AND CLIP (VALMONT STANDARD)		1
7	1	HAND HOLE STD (9" x 24")		48
8	2	HAND HOLE STD (9" x 24")		48
9	3	HAND HOLE STD (6" x 12")		22
10	3	HAND HOLE STD (6" x 12")		22
11	3	HAND HOLE STD (6" x 12")		22
12	3	HAND HOLE STD (6" x 12")		22
13	3	HAND HOLE STD (6" x 12")		22
14	3	HAND HOLE STD (6" x 12")		22
	1	POLE CAP		12



- NOTES:
1. FACTORED REACTIONS FOR FOUNDATION DESIGN.
MOMENT = 17,328 IN-KIPS
SHEAR = 18,432 #
VERTICAL = 14,804 #
 2. GALVANIZED PER ASTM A-123.
 3. DESIGN CRITERIA: ANSI/TIA 222-G ADDENDUM 2
 4. THIS STRUCTURE HAS BEEN DESIGNED FOR THE FOLLOWING LOADING:
EXPOSURE CATEGORY = C
STRUCTURE CLASSIFICATION = 3
TOPOGRAPHY CATEGORY = 1
WIND LOAD CASES ARE BASED ON 3 SECOND GUST AND 100 YEAR WIND RETURN PERIOD
A. CASE 1: WIND = 110 MPH WIND SPEED
B. CASE 2: WIND = 50 MPH ICE AND WIND SPEED
C. CASE 3: WIND = 60 MPH WIND SPEED
D. EQUIPMENT
- | DESCRIPTION | MTG | CENTROID | WITHOUT ICE | | WITH ICE | |
|-------------------------------|----------|----------|-------------|----------|-------------|----------|
| | HT. (FT) | HT. (FT) | EPA (FT**2) | WT (LBS) | EPA (FT**2) | WT (LBS) |
| 1-DB SPECTRA DSF03F36D-N DUAL | 119.00 | 130.15 | 9.07 | 70 | 20.31 | 353 |
| 2-DB SPECTRA DSF06F36D-D | 119.00 | 129.95 | 17.88 | 120 | 40.10 | 676 |
| 1-DB SPECTRA DSF03F36D-N DUAL | 94.00 | 105.15 | 9.07 | 70 | 20.26 | 353 |
| 1-DB201 | 119.00 | 123.75 | 3.88 | 54 | 12.67 | 205 |
| 4-48" STANDOFF | 119.00 | 119.00 | 9.32 | 172 | 21.28 | 976 |
| 2-2" HIGH PERFORMANCE (5GHZ) | 114.00 | 114.00 | 9.42 | 134 | 13.62 | 344 |
| 2-24" STANDOFF | 114.00 | 114.00 | 4.60 | 58 | 8.10 | 256 |
| 1-DB222 | 94.00 | 99.29 | 5.26 | 53 | 15.60 | 226 |
| 1-PD201 | 94.00 | 97.88 | 2.68 | 30 | 7.18 | 181 |
| 3-48" STANDOFF | 94.00 | 94.00 | 6.99 | 129 | 15.78 | 711 |
| 1-DB222 | 74.00 | 79.29 | 5.26 | 53 | 15.39 | 219 |
| 1-PD201 | 74.00 | 74.88 | 2.68 | 30 | 7.09 | 174 |
| 1-DB201 | 74.00 | 78.75 | 3.88 | 54 | 12.30 | 194 |
| 3-36" STANDOFF | 74.00 | 74.00 | 5.85 | 111 | 11.85 | 543 |
| 2-DB222 | 49.00 | 54.29 | 10.52 | 106 | 30.10 | 418 |
| 3-36" STANDOFF | 49.00 | 49.00 | 5.85 | 111 | 11.64 | 519 |
| 3-ANT790F2 | 29.00 | 30.59 | 3.81 | 57 | 7.53 | 255 |
| 3-36" STANDOFF | 29.00 | 29.00 | 5.85 | 111 | 11.40 | 492 |
5. FEEDLINES ARE PLACED INTERIOR TO POLE SHAFT (UNLESS NOTED OTHERWISE).
 6. TOTAL POLE HEIGHT IS 120 FT AGL.
 7. ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE (APPROX. 1 FT AGL).
 8. DEFAULT TOPO AND EXPO CATEGORIES WERE USED.
 9. MAX COUNTY WINDSPEED USED BECAUSE NO SITE LOCATION WAS GIVEN.
 10. DESIGN ALSO MEETS TIA/EIA-222-F.

SECTION INFORMATION					
ITEM ID	LENGTH	BASE OD	TOP OD	THK	MATL
1	52' - 6.00"	33.75"	24.65"	0.313"	A572 65 KSI
2	41' - 4.00"	25.90"	18.74"	0.250"	A572 65 KSI
3	33' - 1.00"	19.74"	14.00"	0.188"	A572 65 KSI

ORDER	PROJECT	FILE ID	SCALE	DATE	ENGR
	256905	256905R0	NONE	05/19/14	JDN4
DESCRIPTION					
NORTHEASTERN COMMUNICATIONS 120' POLE, SITE: REDDING PD, CT, VAL					



Northeastern Communications Inc

Redding Police Department
Proposed 120' Monopole Tower

Case # C57340

Revision # 2

Drawn By E. Fine

Date: 09-28-2015

Concept Drawing Only

(4) 6' Side Arms With on Quad Mount
(1) DB 201
(1) DB Spectra DS1F06F36D-D
(1) DB Spectra DS1F03F36D-N Dual
(1) Comprod 871F-70TM
Spare Center Mount

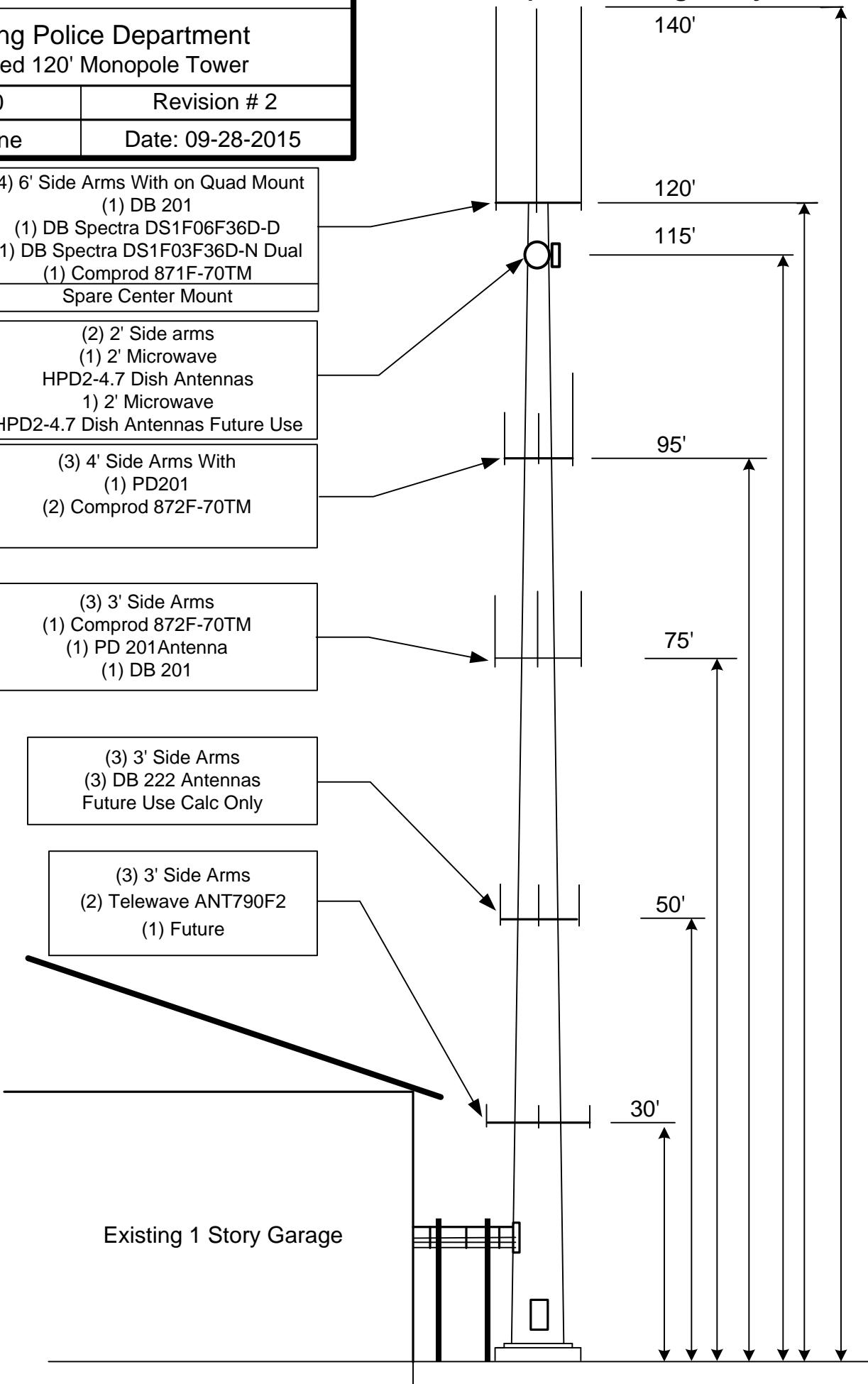
(2) 2' Side arms
(1) 2' Microwave
HPD2-4.7 Dish Antennas
(1) 2' Microwave
HPD2-4.7 Dish Antennas Future Use

(3) 4' Side Arms With
(1) PD201
(2) Comprod 872F-70TM

(3) 3' Side Arms
(1) Comprod 872F-70TM
(1) PD 201 Antenna
(1) DB 201

(3) 3' Side Arms
(3) DB 222 Antennas
Future Use Calc Only

(3) 3' Side Arms
(2) Telewave ANT790F2
(1) Future



140'

120'

115'

95'

75'

50'

30'

Existing 1 Story Garage

POLICE DEPARTMENT COMMUNICATIONS FACILITY 96 HILL ROAD REDDING, CT 06896

SITE INFORMATION

THE GENERAL SCOPE OF WORK IS DESCRIBED AS FOLLOWS:

1. THE CONSTRUCTION OF A 12'x13' EQUIPMENT ROOM LOCATED WITHIN THE EXISTING GARAGE.
2. THE INSTALLATION OF A 120-FT MONOPOLE TOWER AND ASSOCIATED REINFORCED CONCRETE FOUNDATION.
3. THE ELECTRIC AND TELCO UTILITIES FOR THE EQUIPMENT SHELTER WILL ORIGINATE FROM DEMARCS LOCATED WITHIN THE OR ADJACENT TO THE EXISTING BUILDING.

GENERAL NOTES

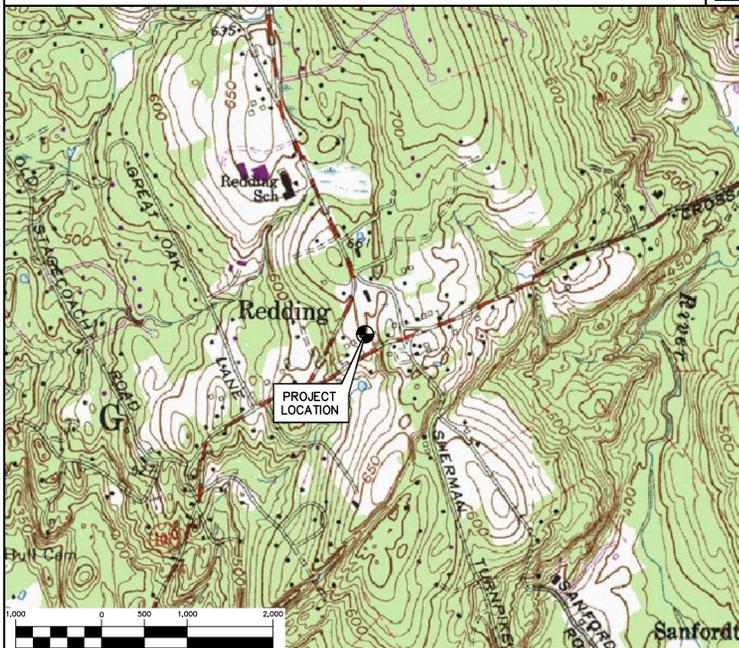
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, NFPA 101 WITH 2005 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S OPERATIONS, COORDINATE WORK WITH BLDG. OWNER.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE CLIENT DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO INCLUDED IN THE BID. NO "EXTRA" WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. THE BUILDING WILL BE OCCUPIED DURING THE COURSE OF THIS PROJECT. THE CONTRACTOR SHALL NOTIFY THE MANAGEMENT OF ANY AND ALL ACTIVITIES THAT MAY DISRUPT DAILY BUILDING OPERATIONS IN WRITING A MINIMUM OF THREE (3) DAYS IN ADVANCE. WORK SHALL BE ARRANGED FOR CONTINUOUS PERFORMANCE WHENEVER POSSIBLE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR, INCLUDING OVERTIME, IF REQUIRED, TO ASSURE THAT EXISTING OPERATING SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTIONS.
18. ALL CORE DRILLING REQUIRED SHALL BE DONE BY GENERAL CONTRACTOR. ALL ROOF PENETRATIONS, FLASHING AND WATER PROOFING SHALL BE DONE BY GENERAL CONTRACTOR, WORK SHALL BE PERFORMED BY AN APPLICATOR CERTIFIED BY THE EXISTING ROOF SYSTEM MANUFACTURER.
19. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
20. ANY DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ANY REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
21. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK.
22. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
23. COORDINATE ALL CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN-WORK, ETC.

SITE DIRECTIONS FROM: 7 GREAT HILL ROAD NAUGATUCK, CT TO: 96 HILL ROAD REDDING, CT

1. HEAD NORTH ON GREAT HILL ROAD TOWARD RAYTKWICH ROAD 1.2 MI
2. TURN LEFT ONTO SHERIDAN DRIVE 0.9 MI
3. TURN LEFT ONTO WATERBURY ROAD <0.1 MI
4. TURN RIGHT TO MERGE ONTO CT-8N 0.2 MI
5. MERGE ONTO CT-8N 2.5 MI
6. USE LEFT LANE TO TAKE EXIT 33 FOR I-84W TOWARD DANBURY 0.3 MI
7. MERGE ONTO I-84W 15.3 MI
8. TAKE EXIT 11 TOWARD CT-34/DERBY/NEW HAVEN 0.9 MI
9. TURN LEFT ONTO WASSERMAN WAY 1.0 MI
10. CONTINUE ONTO MILE HILL ROAD 0.5 MI
11. TURN RIGHT ONTO CT-25 N/S MAIN STREET 0.7 MI
12. TURN LEFT ONTO CT-302W/SUGAR STREET 2.5 MI
13. SLIGHT LEFT ONTO KEY ROCK ROAD 0.9 MI
14. CONTINUE ONTO POVERTY HOLLOW ROAD 3.7 MI
15. SLIGHT RIGHT ONTO CHURCH HILL ROAD 0.6 MI
16. CONTINUE ONTO CROSS HIGHWAY 1.9 MI
17. SHARP RIGHT ONTO CT-107N 0.1 MI
18. ARRIVE AT 96 HILL ROAD

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

SITE NAME: REDDING PD
 SITE ADDRESS: 96 HILL ROAD
 REDDING, CT 06896
 CLIENT: REDDING POLICE DEPARTMENT
 96 HILL ROAD
 REDDING, CT 08960
 CONTACT PERSON: CHIEF DOUGLAS FUCHS
 REDDING PD
 203-938-3400
 ENGINEER: CENTEK ENGINEERING, INC.
 63-2 NORTH BRANFORD RD.
 BRANFORD, CT. 06405
 PROJECT COORDINATES: LATITUDE: 41°-18'-14.77"N
 LONGITUDE: 73°-22'-56.29"W
 GROUND ELEVATION: 635± AMSL

LEGEND

SYMBOL	DESCRIPTION
	SECTION OR DETAIL NUMBER SHEET WHERE DETAIL/SECTION OCCURS
	ELEVATION NUMBER SHEET WHERE ELEVATION OCCURS

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
C-1	FLOOR PLANS AND NOTES	0
S-1	KEY PLAN FOUNDATION DETAILS AND NOTES	0
S-2	UNDERPINNING DETAILS AND NOTES	0
S-3	NOTES	0
M-1	MECHANICAL FLOOR PLANS AND NOTES	0
M-2	MECHANICAL SPECIFICATIONS	0
E-1	ELECTRICAL FLOOR PLANS AND NOTES	0
E-2	ELECTRICAL DETAILS	0
E-3	ELECTRICAL DETAILS	0

REV.	DATE	BY	CHK'D BY	DESCRIPTION
0	7/28/15	TUL	CFC	ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL
REVIEW SET
 NOT FOR CONSTRUCTION

CENTEK engineering
 Centek on Solutions
 (203) 488-0380
 (203) 488-8587 Fax
 652 North Branford Road
 Branford, CT 06405
 www.CentekEng.com

TOWN OF REDDING
 WIRELESS COMMUNICATIONS FACILITY
REDDING PD
 96 HILL ROAD
 REDDING, CT 06896

DATE: 07/16/15
 SCALE: AS NOTED
 JOB NO. 14043.000

TITLE SHEET

T-1
 Sheet No. 1 of 10

INTERIOR FINISH SCHEDULE

ROOM NAME	FLOORING	BASEBOARD	WALLS	CEILING
EQUIPMENT ROOM	VCT OVER CONCRETE FLOOR SLAB SURFACE	4" VINYL BASE	1/8" FIBERGLASS REINF. PANEL OVER 1 LAYER 5/8" PLYWOOD AND 1 LAYER 5/8" GYPSUM WALLBOARD (PLYWOOD, TELCO BOARD TO BE PAINTED "GRAY")	1/8" FIBERGLASS REINF. PANEL OVER 1 LAYER 5/8" PLYWOOD AND 1 LAYER 5/8" GYPSUM WALLBOARD
EXISTING GARAGE (NEW WALL CONSTRUCTION ONLY)	N/A	N/A	1 LAYER 5/8" GYPSUM WALLBOARD	N/A

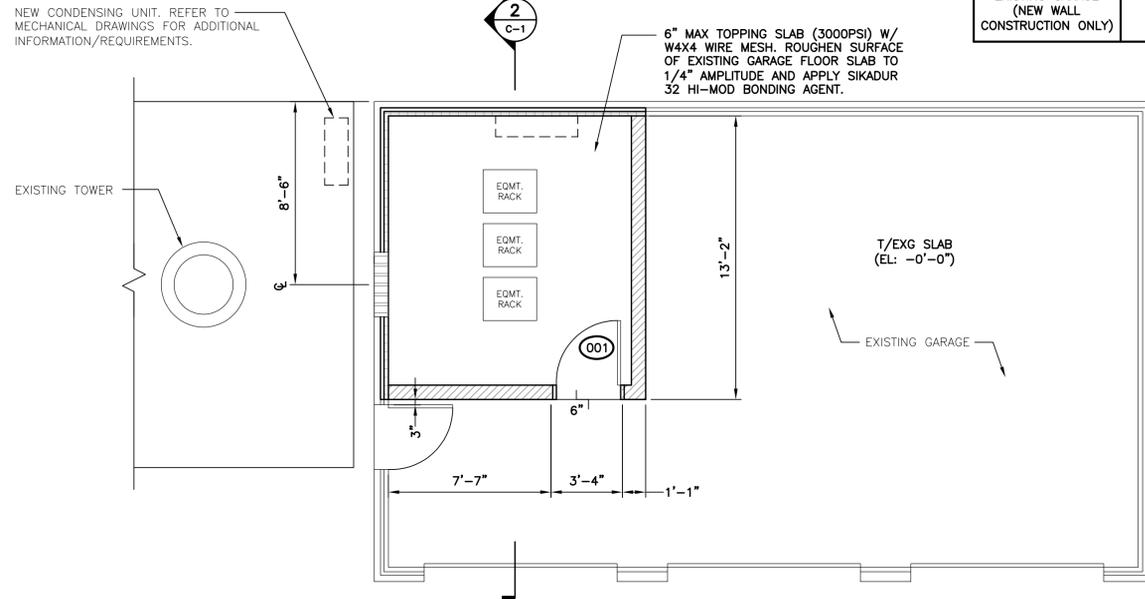
LEGEND:
 (#) DOOR NUMBER

DOOR SCHEDULE

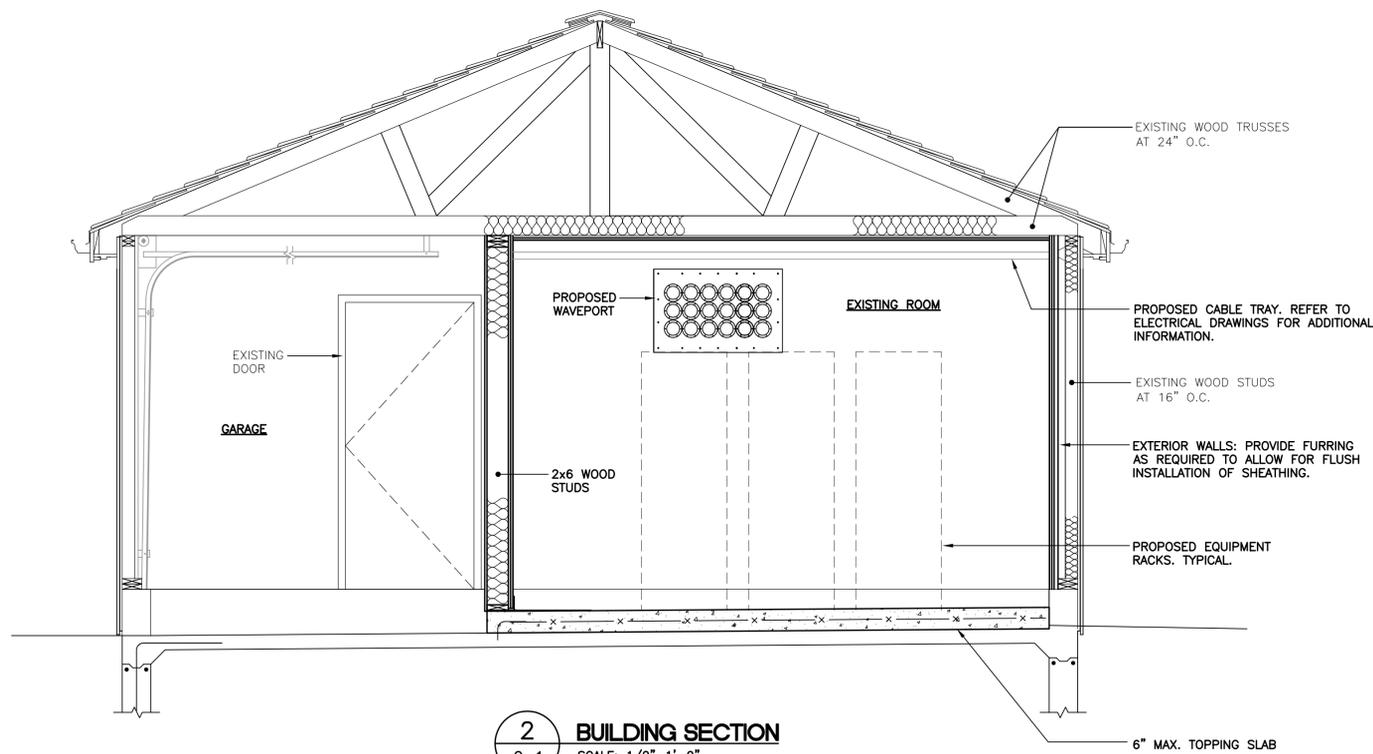
DOOR NO.	QTY.	DESCRIPTION	MANUF.	MODEL	HEIGHT	WIDTH	FINISH
001	1	FRAME	DE LA FONTAINE	SPLIT FRAME OPTION J7 (90 MIN. RATING)	7'-0"	3'-6"	PRIMED
	1	DOOR	DE LA FONTAINE	SERIES PA	7'-0"	3'-6"	PRIMED
	1.5	PAIR BUTT HINGES	HAGER	BB1199 4.5x4.5 NRP - STAINLESS STEEL	-	-	32D
	1	LOCKSET	PDQ	GT 115 PHL SFIC	-	-	26D
	1	CYLINDER	BEST ACCESS SYSTEMS	2 INTERCHANGEABLE	-	-	-
	1	DOOR CLOSER	HAGER	5200 MLT	-	-	686
	1	THRESHOLD	HAGER	412S	-	3'-6"	MIL
	1	AUTO DOOR BOTTOM	HAGER	747S	-	3'-6"	MIL
	1	WEATHERSTRIP SET	HAGER	870S	-	-	MIL
	1	LATCH PROTECTION	DON-JO	LP 211 SL	-	-	SILVER COATED

EQUIPMENT ROOM CONSTRUCTION NOTES

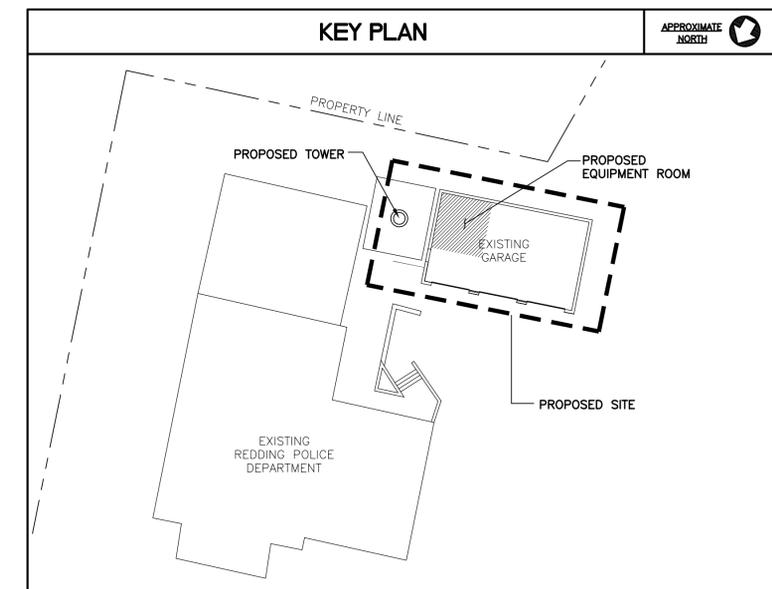
- WOOD STUDS** - NOM 2 BY 6 IN. SPACED 24 IN. OC, Laterally braced, and effectively fire stopped at top and bottom.
- WOOD STRUCTURAL PANEL SHEATHING** - NOM 15/32 IN. THICK, 4 FT WIDE APA RATED SHEATHING 32/16. EXPOSURE 1, PLYWOOD OR ORIENTED STRAND BOARD (OSB) PER PS1, PS2 OR APA STANDARD PRP-108. INSTALLED WITH LONG DIMENSION OF SHEET (STRENGTH AXIS) OR FACE GRAIN OF PLYWOOD, PARALLEL WITH STUDS. VERTICAL JOINTS CENTERED ON STUDS, AND STAGGERED ONE STUD SPACE FROM WALLBOARD JOINTS. HORIZONTAL JOINTS BACKED WITH NOM 2 BY 4 IN. WOOD BACKING, ATTACHED TO STUDS ON EXTERIOR SIDE OF WALL WITH 8D CEMENT COATED STEEL BOX NAILS SPACED 12 IN. OC ALONG INTERIOR STUDS AND 6 IN. OC AT PERIMETER OF PANELS.
- BATTS AND BLANKETS** - 3-1/2 IN. THICK FOIL-FACED GLASS FIBER BATTS, SUPPLIED IN ROLLS 23 IN. WIDE. DENSITY TO BE NOM 0.70 PCF. FRICTION-FITTED TO COMPLETELY FILL THE STUD CAVITY.
SEE BATTS AND BLANKETS* (BZJZ) CATEGORY FOR NAMES OF CLASSIFIED COMPANIES.
- GYPSUM BOARD** - 5/8 IN. THICK, 4 FT WIDE, APPLIED HORIZONTALLY OR VERTICALLY, ATTACHED TO STUDS THROUGH PLYWOOD SHEATHING WITH 8D CEMENT COATED NAILS 2-3/8 IN. LONG, 0.113 IN. SHANK DIAM. 9/32 IN. DIAM HEAD NAILS SPACED 7 IN. OC ALONG STUDS AND AT PERIMETER OF PANELS. WHEN USED IN WIDTHS OTHER THAN 48 IN., WALLBOARD IS TO BE INSTALLED HORIZONTALLY. JOINTS EXPOSED OR COVERED WITH TAPE AND COMPOUND.
ACADIA DRYWALL SUPPLIES LTD - 5/8 TYPE X, TYPE BLUEGLASS EXTERIOR SHEATHING
AMERICAN GYPSUM CO - TYPES AGX-1, M-GLASS, AG-C
CERTANTEED GYPSUM INC - TYPE C OR TYPE X (FINISHED RATING IS 23 MINUTES) TYPE EGRG, TYPE GLASROC. CGC INC - TYPE AR, C, IP-X2, IPC-AR, SCX, SHX, ULX, WRC, WRX.
GEORGIA-PACIFIC GYPSUM L L C - TYPES TG-C, TYPE X, VENEER PLASTER BASE - TYPE X, WATER RATED - TYPE X, SHEATHING - TYPE X, SOFFIT - TYPE X, GREENGLAS TYPE X, TYPE LWX, VENEER PLASTER BASE-TYPE LWX, WATER RATED-TYPE LWX, SHEATHING TYPE-LWX, SOFFIT-TYPE LWX, TYPE DGLW, WATER RATED-TYPE DGLW, SHEATHING TYPE-DGLW, SOFFIT-TYPE DGLW, TYPE LW2X, VENEER PLASTER BASE - TYPE LW2X, WATER RATED - TYPE LW2X, SHEATHING - TYPE LW2X, SOFFIT - TYPE LW2X, TYPE DGL2W, WATER RATED - TYPE DGL2W, SHEATHING - TYPE DGL2W, TYPE DGG, TYPE DAP, TYPE DS.
CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C - TYPES LGFC6, LGFC6A, LGFC-C, LGFC-C/A.
NATIONAL GYPSUM CO - TYPE FSW-6 (FINISH RATING 20 MIN).
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM - TYPES PG-11, PGS-WRS.
THAI GYPSUM PRODUCTS PCL - TYPE C OR TYPE X
UNITED STATES GYPSUM CO - TYPES AR, C, FRX-G, IP-X2, IPC-AR, WRC, SCX, SHX, ULX, USGX OR WRX.
USG MEXICO S A DE C V - TYPE AR, C, IP-X2, IPC-AR, SCX, SHX, ULX, WRC OR WRX.
5. **GYPSUM BOARD** - AS AN ALTERNATE TO ITEM 5 - (NOT SHOWN) - 5/8 IN. THICK GYPSUM PANELS, WITH BEVELED, SQUARE, OR TAPERED EDGES, APPLIED EITHER HORIZONTALLY OR VERTICALLY. GYPSUM PANELS FASTENED TO FRAMING WITH 1-1/4 IN. LONG TYPE W COARSE THREAD GYPSUM PANEL STEEL SCREWS SPACED A MAX 8 IN. OC, WITH LAST SCREW 1 IN. FROM EDGE OF BOARD. WHEN USED IN WIDTHS OTHER THAN 48 IN., GYPSUM BOARDS ARE TO BE INSTALLED HORIZONTALLY. JOINTS EXPOSED OR COVERED WITH TAPE AND COMPOUND.
AMERICAN GYPSUM CO - TYPES AGX-1, M-GLASS, AG-C (FINISHED RATING IS 25 MINUTES).
CERTANTEED GYPSUM INC - TYPE C OR TYPE X (FINISHED RATING IS 23 MINUTES) TYPE EGRG, TYPE GLASROC. CGC INC - TYPE AR, C, IP-X2, IPC-AR, SCX, SHX, ULX, WRC OR WRX. (FINISHED RATING IS 24 MINUTES).
THAI GYPSUM PRODUCTS PCL - TYPE C OR TYPE X
UNITED STATES GYPSUM CO - TYPE AR, C, FRX-G, IP-X1, IP-X2, IPC-AR, SCX, ULX, USGX OR WRX. (FINISHED RATING IS 24 MINUTES).
USG MEXICO S A DE C V - TYPE AR, C, IP-X1, IP-X2, IPC-AR, SCX, ULX, OR WRX. (FINISHED RATING IS 24 MINUTES).



1 ENLARGED FLOOR PLAN
 C-1 SCALE: 1/4"=1'-0"



2 BUILDING SECTION
 C-1 SCALE: 1/2"=1'-0"



ISSUED FOR CLIENT REVIEW	CFC	DATE	7/28/15
DRAWN BY	TSP	CHK'D BY	
REV.	0		

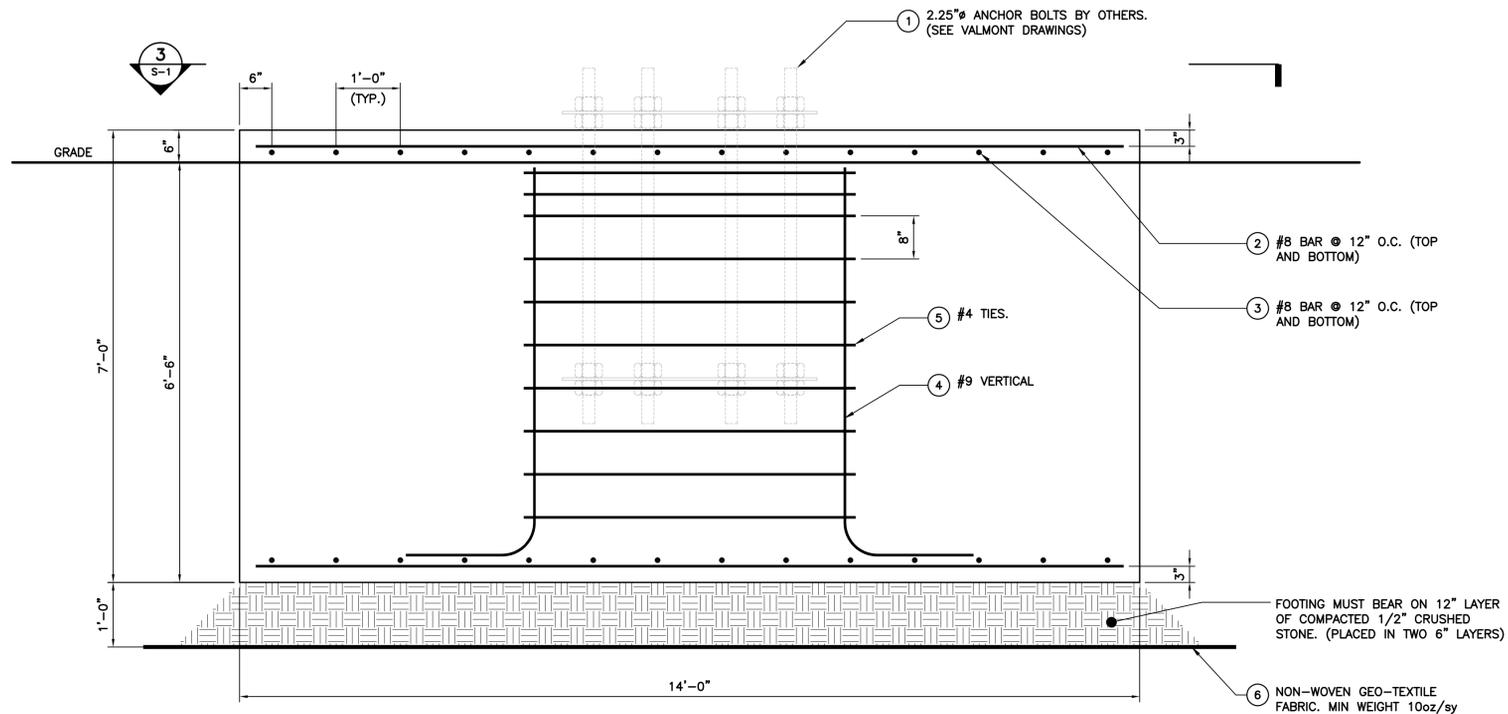
REVIEW SET
 NOT FOR CONSTRUCTION

CENITEK engineering
 Combined on Solutions
 (203) 488-0580 Fax
 (203) 488-5587
 652 North Branford Road
 Branford, CT 06405
 www.CenitekEng.com

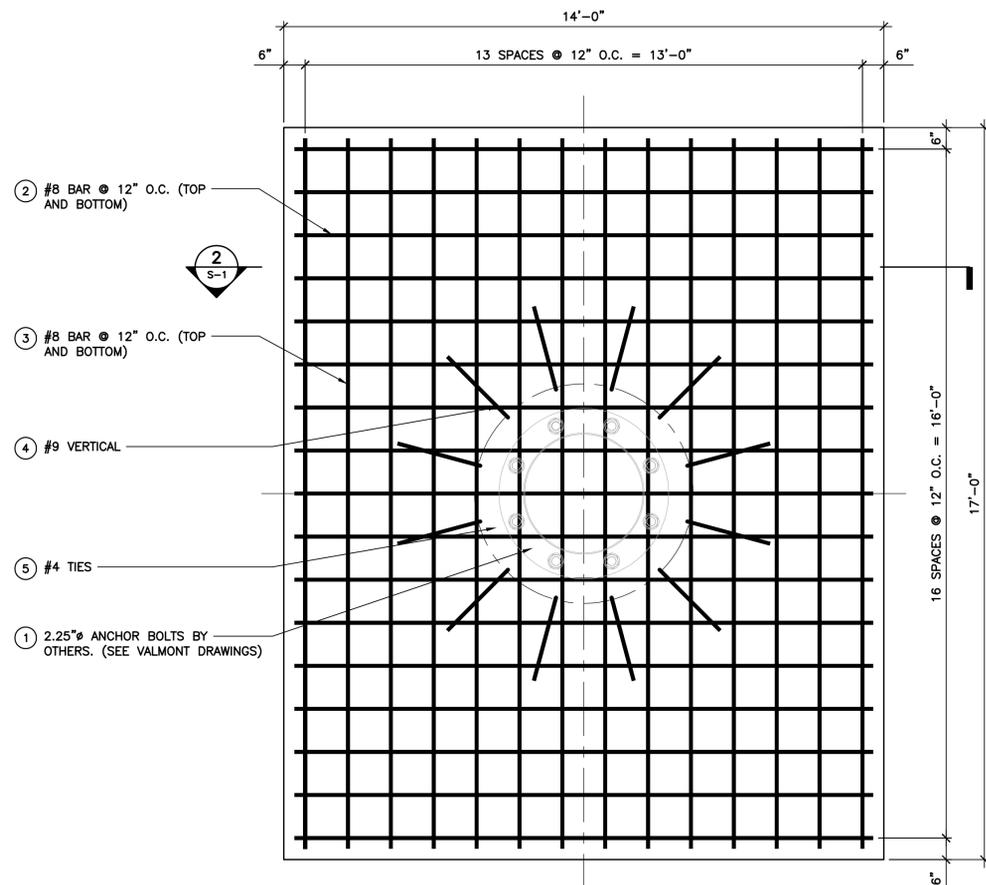
TOWN OF REDDING
 WIRELESS COMMUNICATIONS FACILITY
REDDING PD
 96 HILL ROAD
 REDDING, CT 06896

DATE: 07/16/15
 SCALE: AS NOTED
 JOB NO. 14043.000

FLOOR PLAN AND NOTES



2 FOUNDATION DETAIL
S-1 SCALE: 3/4" = 1'-0"



3 PAD REBAR LAYOUT
S-1 SCALE: 1/2" = 1'-0"

FOUNDATION DESIGN REACTIONS	
BASE REACTION TYPE	TIA-222-G
SHEAR (kips)	18.4
AXIAL (kips)	14.8
BASE MOMENT (ft-kips)	1444

NOTE:
1. REACTIONS SHOWN TAKEN FROM TOWER DESIGN AS PREPARED BY VALMONT. REFER TO GENERAL NOTE #1.

DESIGN BASIS

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.

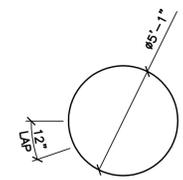
1. DESIGN CRITERIA:

- WIND SPEED OF 110 MPH (3 SECOND GUST) AND 50 MPH (3 SECOND GUST) CONCURRENT WITH 0.75" OF RADIAL ICE PER TIA-222-G. EXPOSURE CATEGORY C. STRUCTURE CLASS 3.
- SEISMIC LOAD: PER ASCE 7-95 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (DOES NOT GOVERN).

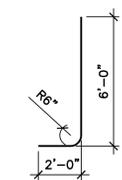
MATERIAL LIST			
ITEM	QTY.	LENGTH	DESCRIPTION
1	8	5'-6"	2.25"Ø A615-GR.75 ANCHOR BOLTS w/ (4) H.H.N. AND ANCHOR PLATES (x2) AS PROVIDED BY OTHERS.
2	34	13'-6"	#8 (ASTM A615-GR.60). (17 T&B)
3	28	16'-6"	#8 (ASTM A615-GR.60). (14 T&B)
4	12	8'-0"	#9 (ASTM A615-GR.60)
5	10	19'-0"	#4 TIE (ASTM A615-GR.60). PROVIDE (2) TIES WITHIN TOP 5 INCHES.
6	NA	18'-0"	NON-WOVEN GEO-TEXTILE FABRIC. (MIN WEIGHT = 10oz/sy)
CONCRETE	(cu.yd)	58.33	4000psi TYPE II CEMENT
STONE	(cu.yd)	9	1/2" CRUSHED STONE PER CTDOT GRADATION AND HARDNESS REQUIREMENTS

GENERAL NOTES

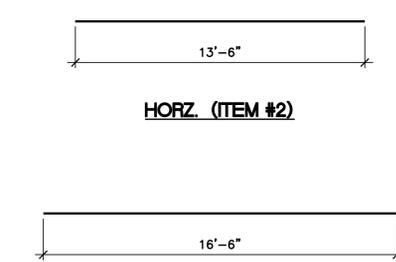
- FOUNDATION DESIGN IS BASED ON TOWER STRUCTURE DESIGN DRAWING PREPARED BY VALMONT, PROJECT No. 256905 DATED MAY 19, 2014.
- FOUNDATION DESIGN IS BASED ON GEOTECHNICAL REPORT PREPARED BY DESIGN EARTH TECHNOLOGIES, DATED JUNE 2, 2015 WITH A MAXIMUM ALLOWABLE BEARING PRESSURE OF 3 TONS/SF (6KSF).
- THE TOWER FOUNDATION MUST BEAR ON A 12" LAYER OF 1/2" CRUSHED STONE. PLACED IN TWO 6" LAYERS. EACH LAYER TO BE COMPACTED WITH A HAND OPERATED VIBRATORY ROLLER WEIGHING A MINIMUM OF 1000#, 6 PASSES PER LAYER EACH DIRECTION.
- BEARING SURFACE SHALL BE LEVEL. CLEANED OF ANY SOIL, LOOSE ROCK FRAGMENTS AND ANY UNSUITABLE BEARING MATERIAL. THE FINISHED BEARING SURFACE IS TO BE INSPECTED BY THE DESIGN ENGINEER FOR APPROVAL.
- ALL WORK SHALL BE SUBJECT TO SPECIAL INSPECTION RETAINED BY THE OWNER/CONTRACTOR AS PER THE 2005 CONNECTICUT STATE BUILDING CODE WITH 2009 SUPPLEMENT.
- REFER TO KEY PLAN BELOW FOR TOWER MAT FOUNDATION LOCATION AND EXISTING BUILDING FOUNDATION UNDERPINNING LOCATIONS.



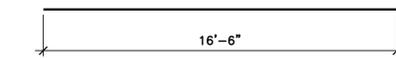
HORZ. TIES (ITEM #5)



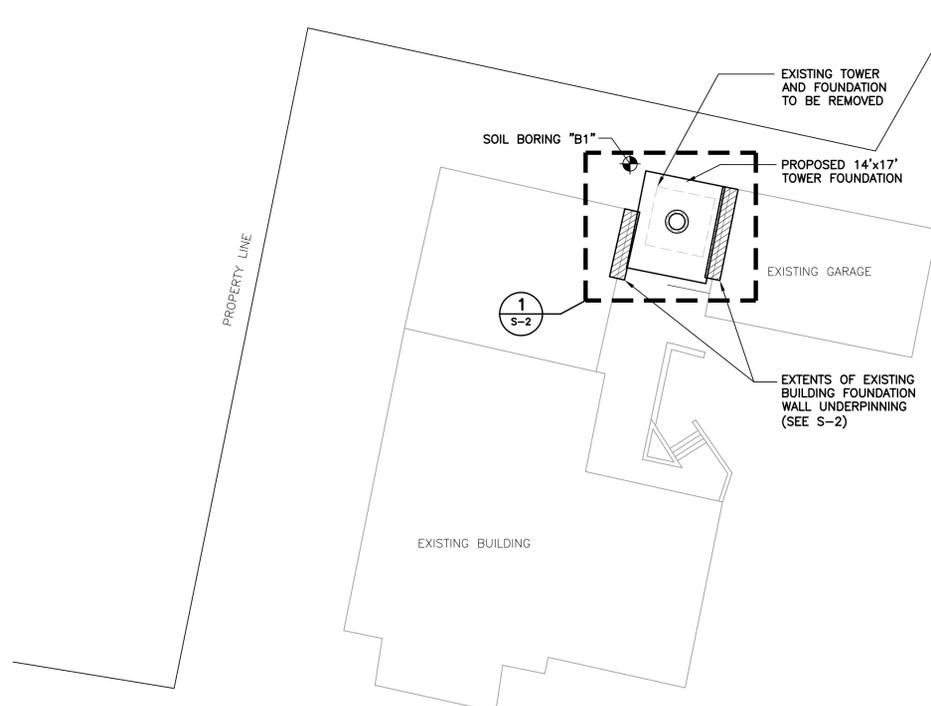
VERT. (ITEM #4)



HORZ. (ITEM #2)



HORZ. (ITEM #3)



1 KEY PLAN
S-1 SCALE: NOT TO SCALE



REV.	DATE	TITLE	ISSUED FOR CLIENT REVIEW
0	7/28/15	DRAWN BY CHK'D BY	DESCRIPTION

REVIEW SET
NOT FOR CONSTRUCTION

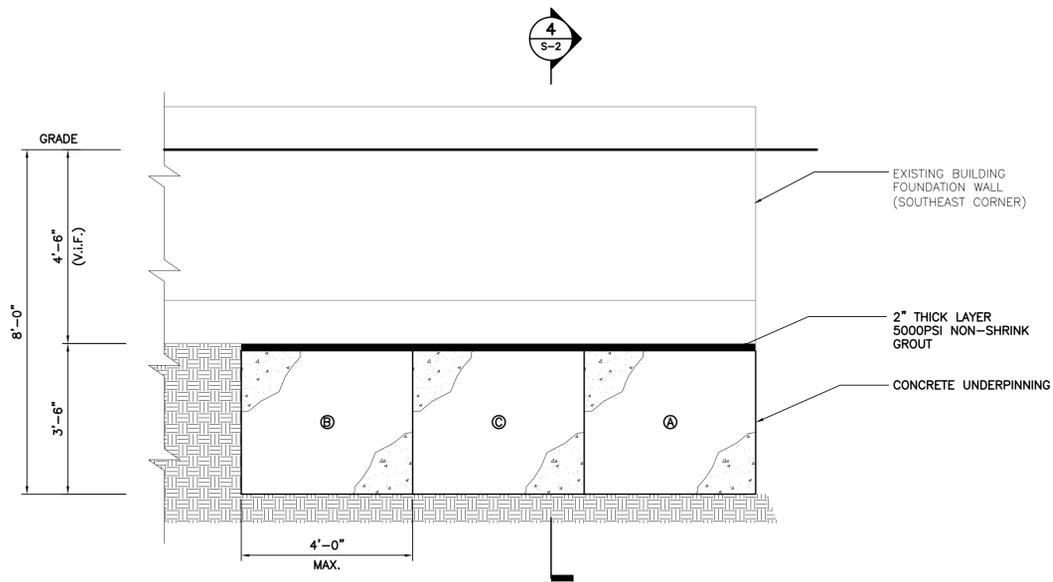
CENITEK engineering
Centered on Solutions™
203 488-0580
203 488-8587 Fax
62 North Branch Road
Branford, CT 06469
www.CenitekEng.com

TOWN OF REDDING
WIRELESS COMMUNICATIONS FACILITY
REDDING PD
96 HILL ROAD
REDDING, CT 06896

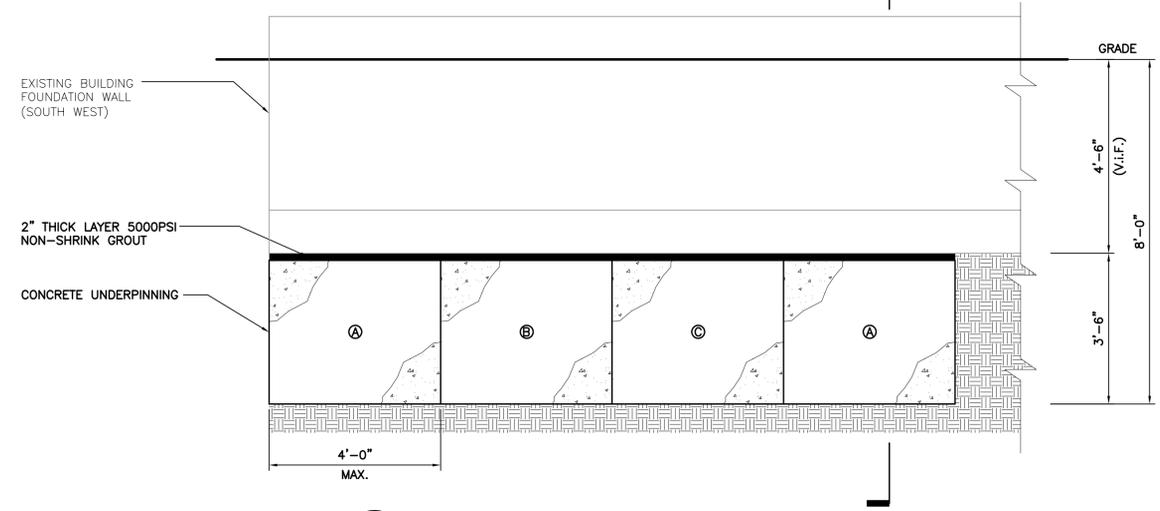
DATE: 07/16/15
SCALE: AS NOTED
JOB NO. 14043.000

KEY PLAN
FOUNDATION
DETAILS & NOTES

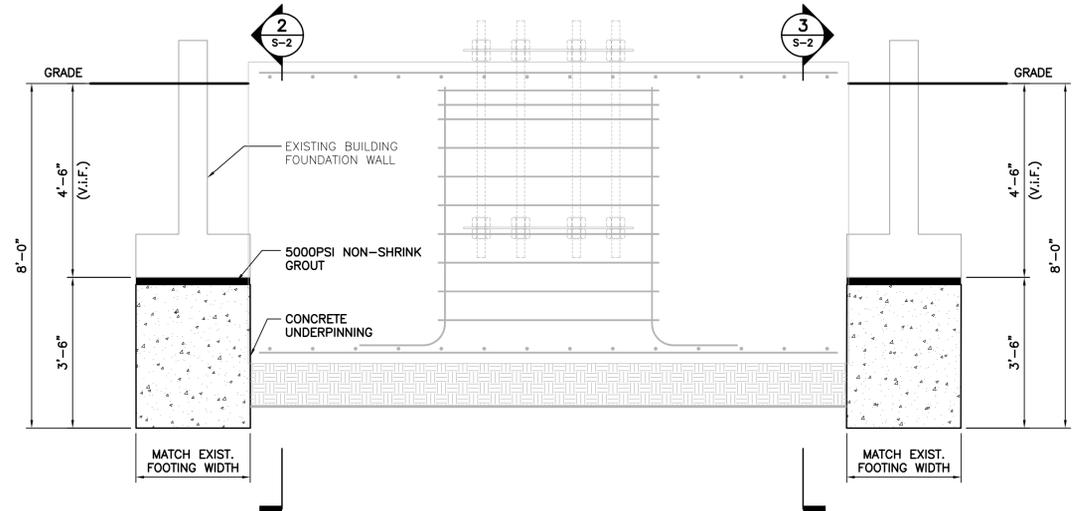
S-1
Sheet No. 3 of 10



2 BUILDING WALL ELEVATION
S-2 SCALE: 1/2" = 1'-0"

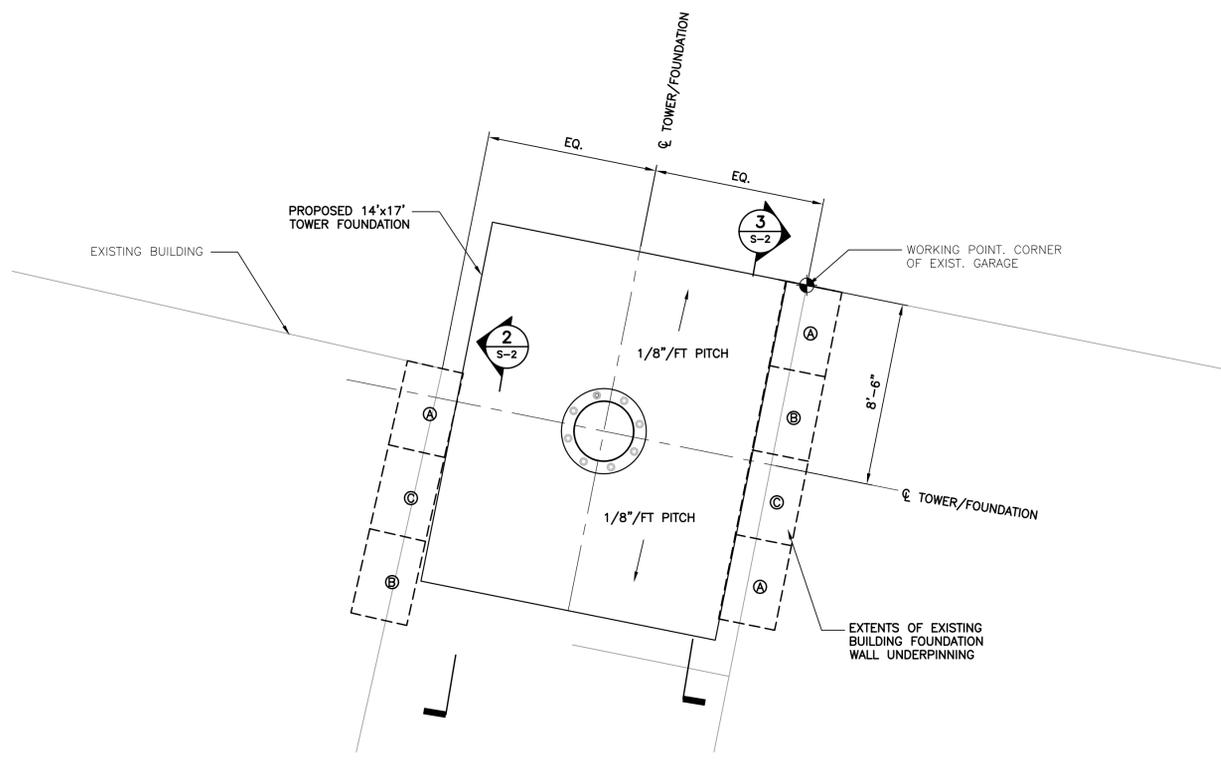


3 GARAGE WALL ELEVATION
S-2 SCALE: 1/2" = 1'-0"



4 UNDERPINNING DETAIL
S-2 SCALE: 1/2" = 1'-0"

- UNDERPINNING SEQUENCE:**
1. STARTING WITH SEGMENTS MARKED (A) ONLY DIG 4'-0" (MAX.) WIDE PITS, SIMULTANEOUSLY PLACING REQUIRED SHEETING AND BRACING ON ALL FOUR SIDES.
 2. CLEAN BOTTOM OF EXISTING FOOTING WITH STIFF BRUSH.
 3. RECOMPACT DISTURBED SOIL AT BOTTOM OF PIT WITH PAN TAMPERS.
 4. POUR NEW CONCRETE UNDERPINNING FOR SEGMENT (A) AFTER CONCRETE ATTAINS 50% OF DESIGN STRENGTH (OR AFTER 48 HOURS) PLACE 2'x4" TAPERED STEEL WEDGES AT 2'-0" o/c MIN. THEN PACK NON-SHRINK GROUT INTO VOID BETWEEN TOP OF UNDERPINNING AND BOTTOM OF EXISTING FOOTING.
 5. REPEAT STEPS 1-4 FOR OTHER SEGMENTS.



1 KEY PLAN
S-2 SCALE: 1/4" = 1'-0" APPROXIMATE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	ISSUED FOR
0	7/28/15	T.U.	CFC	CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL
REVIEW SET
NOT FOR CONSTRUCTION

CENITEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-5587 Fax
652 North Branch Road
Branford, CT 06405
www.CenitekEng.com

TOWN OF REDDING
WIRELESS COMMUNICATIONS FACILITY
REDDING PD
96 HILL ROAD
REDDING, CT 06896

DATE: 07/16/15
SCALE: AS NOTED
JOB NO. 14043.000

UNDERPINNING
DETAILS & NOTES

TEST BORING LOG B-1

TEST BORING REPORT										SHEET 1 OF 1		
Jaime Lloret DRILLER		ASSOCIATED BORINGS CO., INC. 119 MARGARET CIRCLE, NAUGATUCK, CT 06770 Tel (203) 729-5435 Fax (203) 729-5116						CME-45B				
Larry Marcik, Jr. INSPECTOR		PROJECT NAME: Redding Police Dept. Tower.						DRILLING EQUIPMENT Design Earth Technology		CLIENT		
SOILS ENGINEER		PROJECT NUMBER: 96 Hill Road										
Surface Elevation:		LOCATION: Redding, Connecticut										
Date Started: 5/26/2015		Auger		Casing		Sampler		Core Bar		Hole No. B-1		
Date Finished: 5/26/2015		Type HSA		SS		NQ-2		Line & Station				
Groundwater Observations		Size I. D. 2 1/4 in		2 in		Offset						
AT 9 'AFTER 0 HRS		Hammer		140 lb		Bit		N Coordinate				
AT 'AFTER HRS		Fall		30 in		E. Coordinate						
D E P T H	Casing blows per foot	SAMPLE					BLOWS PER 6 INCHES ON SAMPLER			STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)	
		DEPTH IN FEET FROM - TO	NO.	PEN. INCH	REC. INCH	TYPE	0-6	6-12	12-18			18-24
		3.0 - 4.3	1	15	6	D	9	25	50/3"	X	3	Br. M-F Sand, Some Silt, Some C-F Gravel Cobbles, (Fill) Hand Excavated to 3 feet
5		5.0 - 5.8	2	8	8	D	50	50/2"	X	X	7	Br. M-F Sand, Some Silt, Some C-F Gravel (Till)
		7.0 - 7.5	3	6	4	D	100/6	X	X	X	10.5	Br. M-F Sand and Silt, Decomposed Rock Fragments, (Till)
10		10.0 - 10.2	4	2	2	D	50/2"	X	X	X	10.5	Refusal - 10.5
15												
20												
25												
30												
35												
40												
From Ground Surface to		Feet Used		Inch Casing Then		Inch Casing For		Feet				
Footage in Earth 10.5		Footage in Rock 0.0		No. of Samples 4		Hole No. B-1						
SAMPLE TYPE CODING: D = DRIVEN		C = CORE		A = AUGER		UP = UNDISTURBED PISTON						
PROPORTIONS USED: TRACE = 1-10%		LITTLE = 10-20%		SOME = 20-35%		AND = 35-50%						

GENERAL NOTES:

- ALL WORK SHALL BE IN ACCORDANCE WITH TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES".
- THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- CONTRACTOR TO MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH OWNER.
- DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- TOWER INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS AND SUPPORT STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.
- IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A MINIMUM SLOPE OF 1:1 FROM THE TOE OF THE EXISTING BUILDING FOOTING DURING ALL PHASES OF TOWER FOUNDATION WORK.

SITE NOTES

- THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" TO HAVE EXISTING UTILITIES MARKED IN FIELD PRIOR TO EXCAVATION.
- ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
- DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE-MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.

EARTHWORK NOTES

- COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.
- CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSES OF COMPACTOR PER LIFT.
- COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 1/2"	100
No. 4	40-70
No. 100	5-20
No. 200	4-8
- CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
3/4"	90-100
1/2"	0-15
3/8"	0-5
- SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".
- GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 8" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.
- NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

UNDERPINNING NOTES:

- ALL TEST PITS, BORINGS AND UNDERPINNING OPERATIONS ARE SUBJECT TO CONTROLLED INSPECTION.
- THE CONTRACTOR AND/OR SUB-CONTRACTOR SHALL BE EXPERIENCED IN UNDERPINNING.
- ALL ADJACENT PROPERTIES, INCLUDING BUT NOT LIMITED TO EXTERIOR WALLS AND FOOTINGS ARE TO BE OBSERVED BY THE ENGINEER OF RECORD PRIOR TO WORK COMMENCING.
- THE UNDERPINNING FOUNDATIONS SHALL BEAR ON SUBGRADE HAVING A BEARING CAPACITY EQUAL TO OR GREATER THEN THAT OF THE EXISTING FOUNDATION SUBGRADE.
- AFTER EXCAVATION SUBGRADE SHALL BE INSPECTED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
- BUILDING LOADS SHALL NOT BE TRANSFERRED TO THE UNDERPINNING FOUNDATIONS UNTIL THE CONCRETE HAS ATTAINED 50% OF THE DESIGN STRENGTH AS VERIFIED BY CYLINDER TESTS (OR AFTER 48 HOURS).
- BACKFILL SHALL NOT BE PLACED AGAINST THE UNDERPINNING FOUNDATIONS UNTIL THE CONCRETE HAS ATTAINED 50% OF THE DESIGN STRENGTH AS VERIFIED BY CYLINDER TESTS (OR AFTER 48 HOURS).
- ALL CONCRETE SHALL BE NORMAL WEIGHT WITH A MIN COMPRESSIVE STRENGTH OF 4,000PSI AT 28 DAYS.
- ALL GROUT SHALL BE NON-SHRINK WITH A MIN COMPRESSIVE STRENGTH OF 5,000PSI.
- ALL SHEETING AND BRACING THAT WILL REMAIN IN PLACE MUST BE PRESSURE TREATED LUMBER.
- EXCAVATION BELOW THE WATER TABLE SHOULD BE AVOIDED (IF POSSIBLE). DEWATER THE SITE PRIOR TO EXCAVATION IF REQUIRED.
- IF WATER IS ENCOUNTERED IN THE PIT, PROVIDE A WELL POINT NEAR THE PIT. THE ENGINEER OF RECORD AND THE CONTRACTOR SHALL DETERMINE THE LOCATION OF THE WELL POINT(S) AND METHOD FOR REMOVAL OF THE WATER.
- ALL SIDES OR SLOPES OF EXCAVATIONS OR EMBANKMENTS SHALL BE INSPECTED AFTER RAINSTORMS.
- EXCAVATION EQUIPMENT AND ANY OTHER SUPERIMPOSED LOADS SUCH AS TRUNKS AND EQUIPMENT SHALL NOT BE PLACED CLOSER TO THE EDGE OF THE EXCAVATION THAN 1-1/2 TIMES THE DEPTH OF THE EXCAVATION.
- EXISTING STONE/RUBBLE WALLS TO BE UNDERPINNED SHALL BE TREATED WITH PRESSURE INJECTED GROUT AT THE DIRECTION OF THE ENGINEER OF RECORD.

FOUNDATION CONSTRUCTION NOTES

- ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING ADEQUATE BEARING CAPACITY AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL. ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.
- SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE COMPACTION. DETERMINE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557-70 AND MAKE ONE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D2167-66 FOR EACH 50 CUBIC YARDS OF COMPACTED FILL. BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.
- ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.
- WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.
- ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.
- FOUNDATION WATERPROOFING AND DAMPPROOFING (WHERE APPLICABLE) SHALL COMPLY WITH BUILDING CODE REQUIREMENTS UNLESS A MORE SUBSTANTIAL SYSTEM IS INDICATED OR SPECIFIED.

CONCRETE CONSTRUCTION NOTES

- CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:
 - ACI 211 - STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE.
 - ACI 301 - SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
 - ACI 302 - GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION
 - ACI 304 - RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.
 - ACI 306.1 STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING
 - ACI 318 - BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
- CONCRETE SHALL DEVELOP COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:
 - MONOPOLE FOUNDATION 4,000 PSI
 - PORTLAND CEMENT: ASTM C150, TYPE II, (540 LBS/CUBIC YARD)
 - AGGREGATE: ASTM C33, No. 67, TYPICAL
 - WATER: POTABLE WITH MAXIMUM WATER CEMENT RATIO OF .55
 - SLUMP: 3" TO 4"
 - ADMIXTURES: USE AIR ENTRAINING AGENT CONFORMING TO ASTM C260 WITH 4 TO 6% TOTAL AIR. USE WATER REDUCING AGENT CONFORMING TO ASTM C494, TYPE A, IN ALL CONCRETE. CALCIUM CHLORIDE MAY NOT BE USED TO ACCELERATE THE CONCRETE SETTING TIME.
- REINFORCING STEEL SHALL BE 60,000 PSI YIELD STRENGTH.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM- A-185.
- ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
- CONCRETE COVER OVER REINFORCING SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE SHOWN:
 - BOTTOM OF FOOTINGS 3 INCHES
 - SURFACES NOT EXPOSED TO EARTH OR WEATHER 1-1/2 INCHES
 - BARS BONDED TO GROUNDING 3 INCHES MIN SYSTEM
- NO STEEL WIRE, METAL FORT TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.
- ALL REINFORCEMENT SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. SPLICES SHALL BE WELL STAGGERED. ADDITIONAL BARS AND SPECIAL BENDING DETAILS ARE REQUIRED AT INTERSECTING WALLS AND AT JOINTS. SUCH DETAILS SHALL COMPLY WITH ACI 315 RECOMMENDATIONS UNLESS OTHERWISE SHOWN.
- NO TACK WELDING OF REINFORCING WILL BE PERMITTED.
- NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 1% CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.
- UNLESS OTHERWISE NOTED, ALL LAP SPLICES SHALL BE 48 BAR DIAMETERS.
- SLAB ON GRADE FINISHES:
 - EXTERIOR SLAB: NON-SLIP BROOM FINISH
 - INTERIOR SLAB: STEEL TROWEL FINISH
- INSPECTION AND TESTING OF CONCRETE WORK SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, PAID BY THE OWNER, AND APPROVED BY THE ARCHITECT. THE INSPECTOR SHALL OBSERVE CONDITION OF SOILS AND FORMWORK BEFORE FOOTINGS ARE PLACED, SIZE, SPACING AND LOCATION OF REINFORCEMENT, AND PLACEMENT OF CONCRETE.
- THE TESTING COMPANY SHALL ALSO OBTAIN A MINIMUM OF THREE (3) COMPRESSIVE STRENGTH TEST SPECIMENS FOR EACH CONCRETE MIX DESIGN. ONE SPECIMEN TESTED AT 7 DAYS, ONE AT 28 DAYS, AND ONE HELD IN RESERVE FOR FUTURE TESTING, IF NEEDED.
- FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ARCHITECT WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ISSUED FOR CLIENT REVIEW	DATE	07/28/15
DRAWN BY	TUL	0
CHK'D BY	CFC	
REV.		

REVIEW SET

NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions

(203) 488-0580
(203) 488-5587 Fax
652 North Branford Road
Branford, CT 06405
www.CentekEng.com

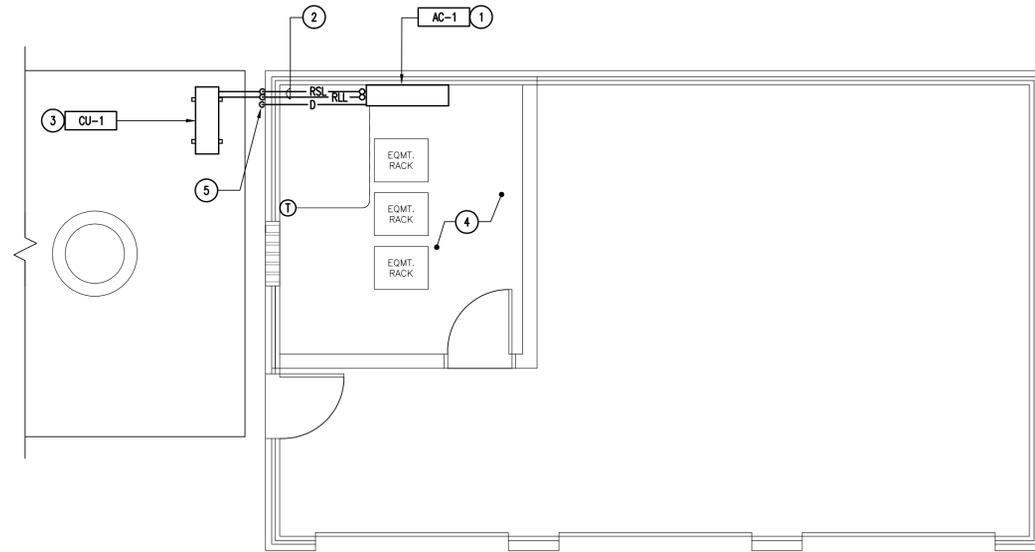
TOWN OF REDDING
WIRELESS COMMUNICATIONS FACILITY
REDDING PD
96 HILL ROAD
REDDING, CT 06896

DATE:	07/16/15
SCALE:	AS NOTED
JOB NO.	14043.000

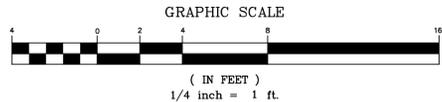
NOTES

S-3

Sheet No. 5 of 10



2
M-1
ENLARGED PLAN - MECHANICAL
SCALE: 1/4"=1'-0"



AC UNIT SCHEDULE

SYMBOL	MANUFACTURER MODEL NUMBER	TYPE	LOCATION	AIRFLOW CFM LOW/HIGH	COOLING BTUH	HEATING BTUH	(VOLTS/PHASE)	WEIGHT	NOTES
AC-1	DAIKIN PKA-A36KAL	WM	SEE PLANS	705/920	34,200	37,000	208-1Ø	46 LBS	ALL

TYPE: WM = WALL MOUNTED
NOTES:
 1. PROVIDE ISOLATION BALL VALVES.
 2. PROVIDE WITH CONDENSATE PUMP IF REQUIRED. PROVIDE 1" COPPER DRAIN PIPE TO EXTERIOR OF BUILDING. COORDINATE LOCATION WITH CONSTRUCTION MANAGER.
 3. PROVIDE WITH WIRED REMOTE THERMOSTAT.
 4. PROVIDE AND INSTALL AND SIZE REFRIGERANT PIPING PER ALL MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.

AIR COOLED CONDENSING UNIT SCHEDULE

SYMBOL	MANUFACTURER MODEL NUMBER	TYPE	LOCATION	COOLING CAPACITY MBH	(VOLTS/PHASE)	WEIGHT	NOTES
CU-1	DAIKIN PUZ-A36NHA3	SS	GRADE	36	208-1Ø	165 LBS	ALL

TYPE: SS= SPLIT SYSTEM
NOTES:
 1. COORDINATE EXACT LOCATION WITH CONSTRUCTION MANAGER.
 2. PROVIDE WITH OUTDOOR WIND BAFFLE.
 3. PROVIDE WITH PAR-31MAA CONTROLLER AND PROGRAM FOR LEAD/LAG OPERATION.

MECHANICAL WORK NOTES

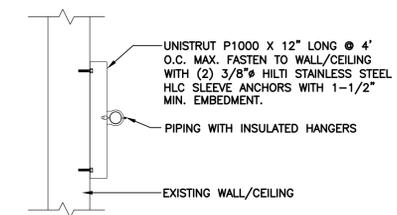
- ① WALL MOUNTED AC UNIT WITH REMOTE WALL MOUNTED THERMOSTAT.
- ② REFRIGERANT PIPING (RLL/RSL) DOWN. COORDINATE ENTRY LOCATION WITH ALL OTHER TRADES. PROVIDE ALL REQUIRED BRACKETS AND SUPPORTS FOR ALL REFRIGERANT PIPING. REFER TO DETAIL THIS SHEET.
- ③ CONDENSING UNIT MOUNTED ON CONCRETE HOUSEKEEPING PAD. PROVIDE ALL REQUIRED BRACKETS AND SUPPORTS REQUIRED FOR COMPLETE REFRIGERANT PIPING INSTALLATION. EXACT LOCATION SHALL BE COORDINATED WITH ALL TRADES AND APPROVED BY OWNER.
- ④ NORTHEAST COMMUNICATIONS MECHANICAL EQUIPMENT ROOM.
- ⑤ 1" COPPER CONDENSATE DRAIN PIPING TERMINATING THRU EXTERIOR WALL.

MECHANICAL SYMBOLS

①	WALL MOUNTED THERMOSTAT
—○—	PIPE RISER
—∩—	PIPE DROP
—RSL—	REFRIGERANT SUCTION LINE
—RLL—	REFRIGERANT LIQUID LINE
—D—	CONDENSATE DRAIN

ABBREVIATIONS

AFG ABOVE FINISHED GRADE	AC AIR CONDITIONING UNIT
BTU BRITISH THERMAL UNIT	CU CONDENSING UNIT
CFM CUBIC FEET PER MINUTE	MBH BTU PER HOUR (THOUSAND)
RLL REFRIGERANT LIQUID LINE	T THERMOSTAT
RSL REFRIGERANT SUCTION LINE	TYP TYPICAL
	V VOLTS



3
M-1
INTERIOR/EXTERIOR WALL/CEILING MOUNTED PIPE SUPPORT
N.T.S.

REV.	DATE	DRAWN BY	CHK'D BY	ISSUED FOR	DESCRIPTION
0	7/28/15	KHS	FRC	FOR CLIENT REVIEW	

REVIEW SET
NOT FOR CONSTRUCTION

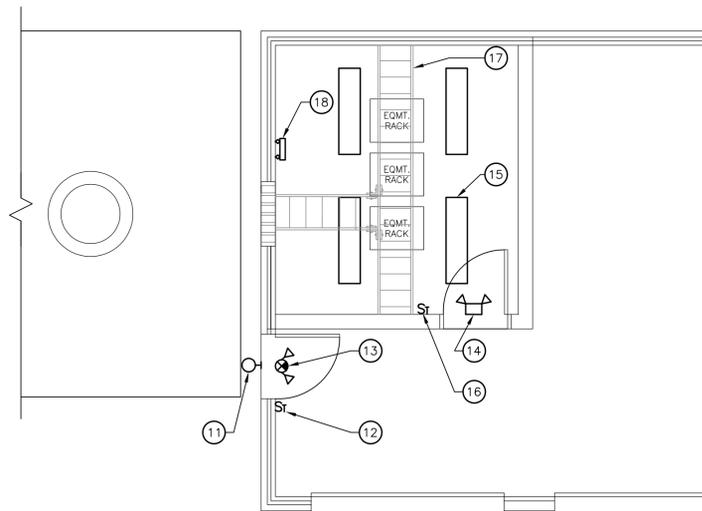
PROFESSIONAL ENGINEER SEAL

CENITEK engineering
 Centered on Solutions™
 (203) 488-0580
 (203) 488-3587 Fax
 682 North Branford Road
 Branford, CT 06405
 www.CenitekEng.com

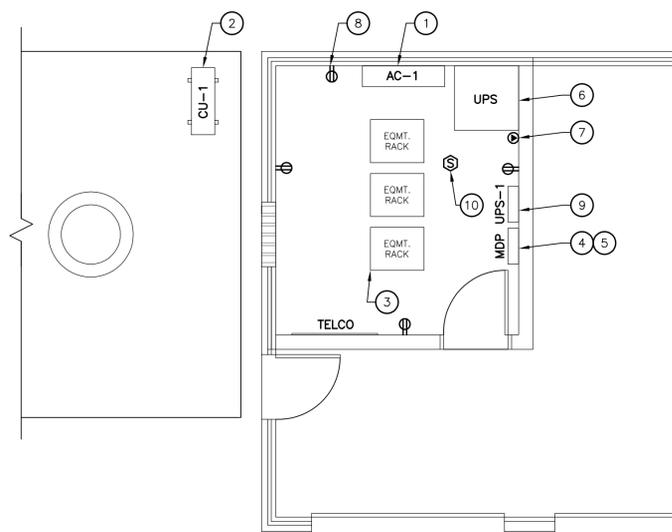
TOWN OF REDDING
 WIRELESS COMMUNICATIONS FACILITY
REDDING PD
 96 HILL ROAD
 REDDING, CT 06896

DATE: 07/16/15
 SCALE: AS NOTED
 JOB NO. 14043.000

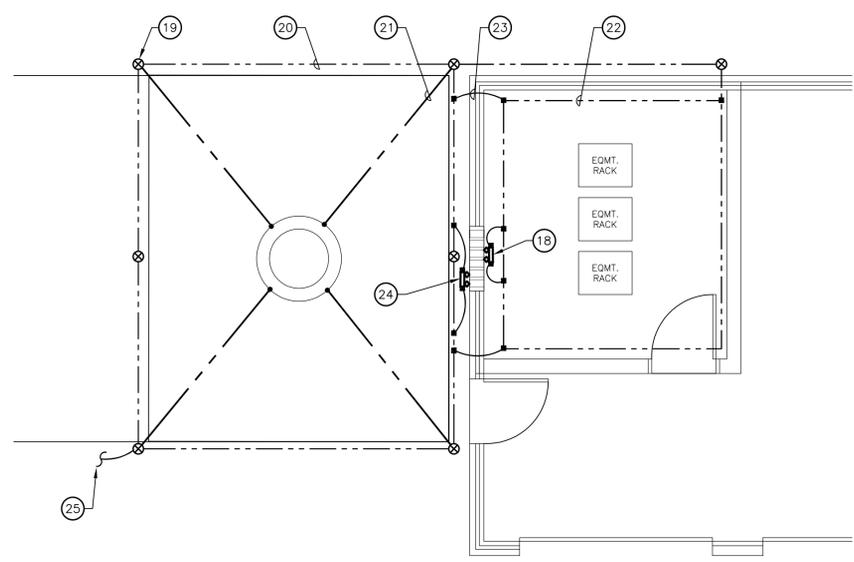
MECHANICAL FLOOR PLANS AND NOTES



1 ENLARGED LIGHTING PLAN
 SCALE: 1/4"=1'-0"
 GRAPHIC SCALE
 (IN FEET)
 1/4 inch = 1 ft.



2 ENLARGED POWER PLAN
 SCALE: 1/4"=1'-0"
 GRAPHIC SCALE
 (IN FEET)
 1/4 inch = 1 ft.



3 ENLARGED GROUNDING PLAN
 SCALE: 1/4"=1'-0"
 GRAPHIC SCALE
 (IN FEET)
 1/4 inch = 1 ft.

ELECTRICAL WORK NOTES

- 1 AIR HANDLING UNIT "AC-1". PROVIDE CIRCUIT AND FUSED DISCONNECT SWITCH AS SPECIFIED BY MANUFACTURER. COORDINATE ADDITIONAL REQUIREMENTS WITH MECHANICAL PLANS.
- 2 CONDENSING UNIT "CU-1". PROVIDE CIRCUIT AND FUSED DISCONNECT SWITCH AS SPECIFIED BY MANUFACTURER. COORDINATE ADDITIONAL REQUIREMENTS WITH MECHANICAL PLANS.
- 3 TELCO EQUIPMENT BACK BOARD. PROVIDE 3/4"x4"x8' BCX PLYWOOD, PRIMED AND PAINTED LIGHT GRAY.
- 4 MAIN DISTRIBUTION PANEL "MDP" WITH THE FOLLOWING SPECIFICATIONS: 120/240V, 100A, SINGLE PHASE, 3W, 42 POSITION, BOLT-ON BREAKERS, FRONT HINGED TO CABINET, AIC RATING TO MATCH SOURCE PANEL, PROVIDE WITH ALL REQUIRED CIRCUIT BREAKERS PLUS (6) 20A, 1P SPARES.
- 5 CONNECT PANEL TO EXISTING HOUSE SERVICE PANEL. INSTALL NEW 100A, 2P CIRCUIT BREAKER IN AVAILABLE POSITION, AND INSTALL CONDUIT AND CONDUCTORS PER NEC. PROVIDE GROUNDING PER NEC.
- 6 30 KW UPS.
- 7 30A, 240V, OUTLET FOR UPS. PROVIDE OUTLET AS SPECIFIED BY MANUFACTURER. CONNECT TO NEW 30A, 2P CIRCUIT BREAKER IN PANEL MDP.
- 8 SPECIFICATION GRADE DUPLEX RECEPTACLE. INSTALL ONE PER WALL IN OWNER SPECIFIED LOCATION. PROVIDE DEDICATED 20A, 120V CIRCUIT TO PROVIDE POWER TO ALL 4 RECEPTACLES.
- 9 UPS DISTRIBUTION PANEL, HAVING SAME SPECIFICATIONS AS MAIN DISTRIBUTION PANEL. CONNECT TO UPS OUTPUT PER UPS MANUFACTURER'S SPECIFICATIONS, PROVIDE (16) 20A DUPLEX RECEPTACLES LOCATED IN EQUIPMENT RACKS WITH EACH RECEPTACLE WIRED TO A DEDICATED 20A, 1P CIRCUIT BREAKER IN UPS DISTRIBUTION PANEL. LOCATION OF RECEPTACLES TO BE COORDINATED WITH OWNER.
- 10 SMOKE DETECTOR. PROVIDE CONNECTION TO EXISTING HOUSE FIRE ALARM SYSTEM. DEVICE SHALL BE COMPATIBLE WITH HOUSE FIRE ALARM SYSTEM AND SHALL MATCH EXISTING BUILDING STANDARD.
- 11 EXTERIOR FULL CUTOFF LED LUMINAIRE WITH 40W LED (LUMARK: WP). TRIM AND FINISH TO BE COORDINATED WITH OWNER. CONNECT TO ROOM LIGHTING CIRCUIT.
- 12 4-HOUR TIMER SWITCH FOR CONTROL OF EXTERIOR LIGHT.
- 13 EXIT SIGN WITH INTEGRAL EMERGENCY LIGHT HEADS AND EMERGENCY OPERATION (COOPER: UNH SERIES). TRIM AND FINISH TO BE COORDINATED WITH OWNER. CONNECT TO ROOM LIGHTING CIRCUIT.
- 14 EMERGENCY LIGHTING UNIT (DUAL-LITE: EZ-2). CONNECT TO ROOM LIGHTING CIRCUIT.
- 15 1x4 LED LINEAR FIXTURE WITH 3900 LUMENS (FLUXSTREAM: LF). CONNECT TO DEDICATED 20A, 1P CIRCUIT FOR ROOM LIGHTING.
- 16 12-HOUR TIMER SWITCH WITH "HOLD" FEATURE FOR CONTROL OF INTERIOR LIGHTS.
- 17 18" WIDE LADDER RACK PER OWNER SPECIFICATIONS. INSTALL PER MANUFACTURER'S REQUIREMENTS.
- 18 1/4" X 4" X 30' SOLID COPPER GROUND BAR MOUNTED TO WALL WITH INSULATORS IN OWNER APPROVED LOCATION. COORDINATE HOLE PATTERN WITH OWNER. BOND TO HALO GROUND AND EXTERIOR GROUNDING ELECTRODE SYSTEM.
- 19 GROUND ROD, PER DETAILS.
- 20 #2/0 AWG TOWER GROUND RING.
- 21 BOND TOWER TO GROUND RING WITH # 2/0 AWG. TYPICAL OF 4.
- 22 #2 AWG GREEN INSULATED INTERIOR HALO GROUND. PROVIDE #2 AWG BONDING JUMPER TO ALL EQUIPMENT RACKS, ELECTRICAL EQUIPMENT, AND EXPOSED METAL OBJECTS IN ROOM.
- 23 BOND HALO GROUND TO GROUND RING PER DETAILS (TYPICAL OF 3).
- 24 GROUND BAR AT CABLE PORT. BOND TO GROUND RING WITH (2) # 2 AWG SOLID TINNED BARE COPPER WIRES.
- 25 BOND TO EXISTING BUILDING GROUNDING ELECTRODE SYSTEM PER NEC.

CELLULAR GROUNDING NOTES

OBJECTIVE
 PROVIDE A CELLULAR GROUNDING SYSTEM WITH MAXIMUM ALTERNATING CURRENT RESISTANCE OF 5 OHMS BETWEEN ANY POINT ON THE GROUNDING SYSTEM AND REFERENCE GROUND. PROVIDE EXTERIOR GROUNDING SCHEME WITH OWNER'S ENGINEER APPROVAL AS REQUIRED TO ACHIEVE DESIRED MAXIMUM AC RESISTANCE TO GROUND.

TESTING
 CONTRACTOR TO PROVIDE AN INDEPENDENT TESTING CONTRACTOR TO DETERMINE THE GROUNDING SYSTEM RESISTANCE BY USE OF THE THREE POINT TEST AND AN AEMC MODEL 4500, OR APPROVED EQUAL. TEST TO BE PERFORMED PRIOR TO CONNECTION OF POWER SUPPLY TO THE CELL SITE AND CONNECTION OF THE GROUNDING SYSTEM TO THE WATER MAIN OR AC SUPPLY AS APPLICABLE.

CONDUCTOR USED FOR CELLULAR GROUNDING SYSTEM
 EGR - #2 AWG ANNEALED SOLID TINNED BARE COPPER
 IGR - #2 AWG ANNEALED STRANDED (7 STRAND) 'THW' GREEN COLORED INSULATION
 INTER-BUS EXTENSION (FROM IGR TO EGR) - SEE DETAILS
 EXTERNAL BOND CONNECTIONS TO EGR - #2 ANNEALED SOLID TINNED BARE COPPER
 INTERIOR BOND CONNECTIONS TO IGR - #6 ANNEALED STRANDED (7 STRAND) 'THW' GREEN COLORED INSULATION

MINIMUM BENDING RADIUS
 EGR #2 : 1'-0" NOMINAL AND 8" MINIMUM
 IGR #2 : 2'-0" NOMINAL AND 8" MINIMUM
 CELLULAR GROUNDING CONDUCTOR SHALL BE AS STRAIGHT AS POSSIBLE WITH MINIMUM 6" BENDING RADIUS.

FASTENER FOR CELLULAR GROUNDING CONDUCTOR
 USE NON-METALLIC FASTENER AND STANDOFF 'CLIC' (AVAIL. FROM NEFCO 203-289-0285) TO SURFACE SUPPORT CONDUCTOR 3" AWAY FROM SURFACES.
 SPACING OF FASTENERS: 2'-0" O.C. OUTSIDE BUILDING
 3'-0" O.C. INSIDE BUILDING

GROUNDING ELECTRODE
 GROUNDING ELECTRODE SHALL BE 5/8" DIA. x 10'-0" I. COPPER CLAD STEEL ROD. ADJUST LOCATION OF GROUNDING ELECTRODE IF SOIL CONDITION IS NOT CONDUCTIVE (GRAVEL, SANDY SOIL, ROCKS). SPACE GROUNDING ELECTRODES 20'-0" APART (SPACING MAY BE REDUCED WHERE REQUIRED TO ACCOMMODATE FIELD CONDITIONS BUT SHALL NOT BE LESS THAN 10'-0"). ELECTRODES SHALL BE DRIVEN ONLY WITH PROPER DRIVER SLEEVE TO PREVENT MUSHROOMING TOP OF ROD. WHEN ROCK BOTTOM IS ENCOUNTERED, THE ELECTRODE SHALL BE DRIVEN AT AN OBLIQUE ANGLE NOT TO EXCEED 45° FROM THE VERTICAL AWAY FROM STRUCTURES. TOP OF GROUNDING ELECTRODE SHALL BE MIN. 3'-6" BELOW FINISH GRADE.

CONNECTIONS ABOVE GRADE (MECHANICAL)
 COMPRESSION LUG CONNECTOR - 15 TON COMPRESSION, 2 HOLE, LONG BARREL, ELECTRO TINNED PLATED, HIGH CONDUCTIVITY, COPPER 600V RATED. USE 1/4" Ø BOLT, 3/4" SPACING LUGS TO BOND OBJECTS FROM THE IGR. (CONNECTOR SHALL BE BURNDY HYLUG SERIES OR EQUAL.)
 EXOTHERMIC WELD LUG CONNECTOR - 2 HOLE, OFFSET, ELECTRO TINNED PLATED, HIGH CONDUCTIVITY, COPPER 600V. USE 1/2" Ø BOLT, 1-3/4" SPACING LUGS. CONNECTOR SHALL BE CADWELD CONNECTION STYLE (CABLE TO SURFACE) TYPE LA, LUG SIZE 1/8 x 1. EXOTHERMIC WELD TO LUG AS REQUIRED.
 C-TAP COMPRESSION CONNECTOR - HIGH CONDUCTIVITY COPPER FOR MAIN TO BRANCH LINE TAPPING. (CONNECTOR SHALL BE BURNDY HYTAP SERIES OR EQUAL.)

MECHANICAL CONNECTIONS
 USE MATCHING MANUFACTURER TOOL AND DIE FOR COMPRESSION CONNECTION.
 APPLY ANTI-OXIDANT CONDUCTIVITY ENHANCER COMPOUND ON SURFACES THAT ARE COMPRESSED.
 SURFACES INTENDED TO BE CONNECTED WITH MECHANICAL CONNECTORS SHALL BE BARE METAL TO BARE METAL. PRIME AND PAINT OVER BONDED AREA TO PREVENT CORROSION.

WHEN BONDING #2 TO #2
 EXTERIOR OF BUILDING - USE EXOTHERMIC WELD CONNECTION
 INTERIOR OF BUILDING - USE COMPRESSION CONNECTION ON STRANDED CONDUCTORS ONLY.
 - USE EXOTHERMIC WELD CONNECTION ON SOLID CONDUCTOR.

WHEN BONDING #2 TO FENCE POST
 USE EXOTHERMIC WELD 'CADWELD TYPE VS' CONNECTION TO FENCE POST STEEL SURFACE. TEST WELD FOR POSSIBLE BURN THRU. PATCH WELDED AREA WITH GALVANIZED COATING AS REQUIRED FOR PROPER WELDED PERMANENT BOND. REFER TO MANUFACTURER'S REQUIREMENTS FOR DETAILS

GROUNDING SYSTEM INTERCONNECTION
 BOND THE EGR DOWN CONDUCTORS, AND/OR BURIED GROUND RING TO ANY METALLIC OBJECT OR EXISTING GROUNDING SYSTEM WITHIN 6'.

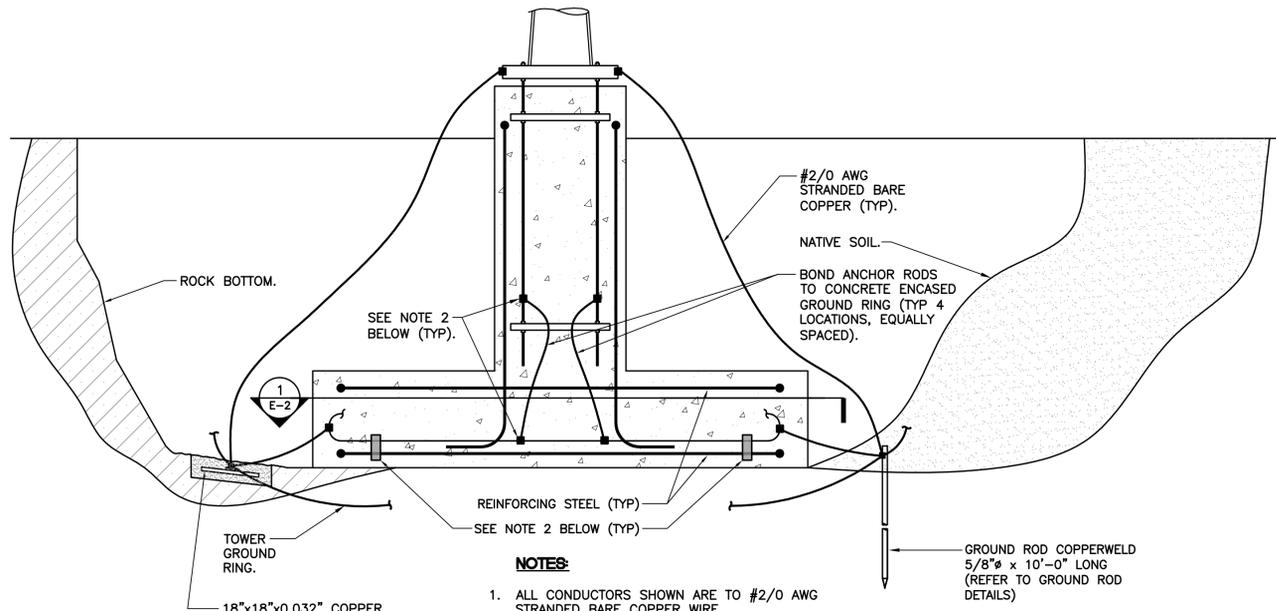
WHEN BONDING #2 TO TOWER GROUND PLATE
 TOWER GROUND PLATE SHALL BE 6" x 8" x 1/4" COPPER AND BE MADE AVAILABLE TO TOWER CONTRACTOR TO BE INSTALLED DURING TOWER CONSTRUCTION. USE EXOTHERMIC WELD 'CADWELD TYPE HS' TO TOWER GROUND PLATE TEST WELD FOR POSSIBLE BURN THRU. COORDINATE THE SIZE OF THE MOUNTING HOLE WITH TOWER CONTRACTOR.

METALLIC CONDUITS
 BOND ALL STEEL CONDUITS TO PANELS AT POINT OF CONTACT WITH APPROVED GROUNDING BUSHING.

GENERAL NOTES

1. ALL CIRCUITS SHALL ORIGINATE FROM NEW PANEL MDP, UNLESS OTHERWISE SPECIFIED.
2. ALL CONDUCTORS SPECIFICATIONS BASED ON 75 DEGREE C COPPER WIRES.
3. ALL CIRCUIT WIRING SHALL BE RUN IN RIGID GALVANIZED METAL CONDUIT.
4. THE ENTIRE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE CURRENT EDITION OF THE NATIONAL ELECTRIC CODE, CT STATE BUILDING CODE, AND THE OWNER'S REQUIREMENTS.
5. ALL GROUNDING SHALL COMPLY WITH THE CURRENT EDITION OF THE NATIONAL ELECTRIC CODE, CT STATE BUILDING CODE, CURRENT EDITION OF EIA/TIA, AND THE OWNER'S REQUIREMENTS.
6. ELECTRICAL EQUIPMENT LAYOUT SHOWN APPROXIMATE. VERIFY FINAL LAYOUT WITH OWNER AND ADJUST LOCATIONS AS REQUIRED TO MEET NEC CLEARANCE REQUIREMENTS.
7. INSTALL ALL EQUIPMENT PER OWNER'S SPECIFICATIONS AND REQUIREMENTS.

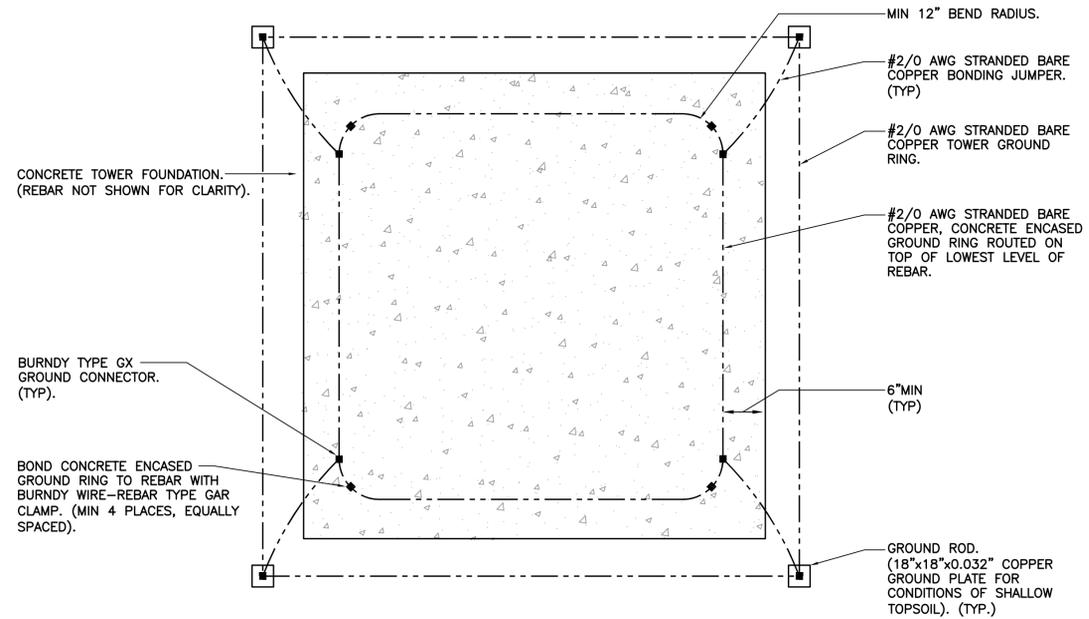
PROFESSIONAL ENGINEER SEAL
REVIEW SET
 NOT FOR CONSTRUCTION
 CENTEK engineering
 Connected on Solutions™
 (203) 488-0580
 (203) 488-8587 Fax
 652 North Branford Road
 Branford, CT 06405
 www.CentekEng.com
 TOWN OF REDDING
 WIRELESS COMMUNICATIONS FACILITY
REDDING PD
 96 HILL ROAD
 REDDING, CT 06896
 DATE: 07/16/15
 SCALE: AS NOTED
 JOB NO. 14043.000
 ELECTRICAL FLOOR PLANS AND NOTES
E-1
 Sheet No. 8 of 10



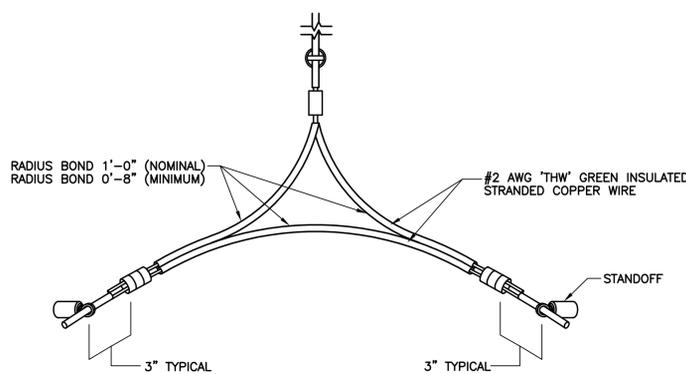
18"x18"x0.032" COPPER GROUND PLATE (HARGER P/N: 335). TO BE USED ONLY FOR CONDITIONS OF SHALLOW TOPSOIL WHERE GROUND ROD EMBEDMENT CAN NOT BE OBTAINED. (REFER TO GROUND PLATE DETAILS)

- NOTES:**
1. ALL CONDUCTORS SHOWN ARE TO #2/0 AWG STRANDED BARE COPPER WIRE.
 2. COPPER CONDUCTORS SHALL BE BONDED TO REINFORCING STEEL INSTALLED ON TOP OF LOWEST LAYER OF REBAR AND AT EACH CORNER USING BURNDY TYPE GAR WIRE-REBAR CLAMPS.
 3. REFER TO ALL OTHER GROUNDING DETAILS FOR ADDITIONAL INFORMATION.
 4. DESIGN IS BASED ON BARE STEEL REBAR FASTENED TOGETHER WITH THE USUAL STEEL TIE WIRES. CONTACT ENGINEER IF CONDITIONS VARY.

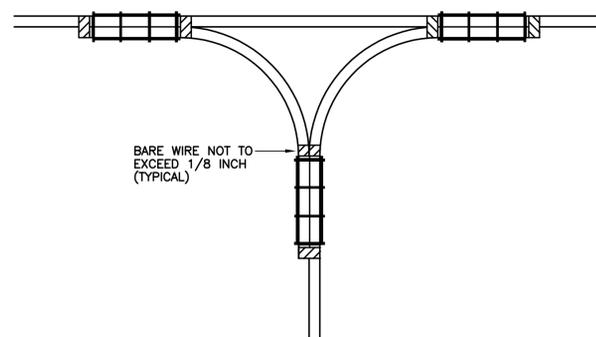
1 TOWER FOUNDATION GROUNDING DETAIL
E-2 NOT TO SCALE



2 CONCRETE ENCASED GROUND RING PLAN VIEW
E-2 NOT TO SCALE

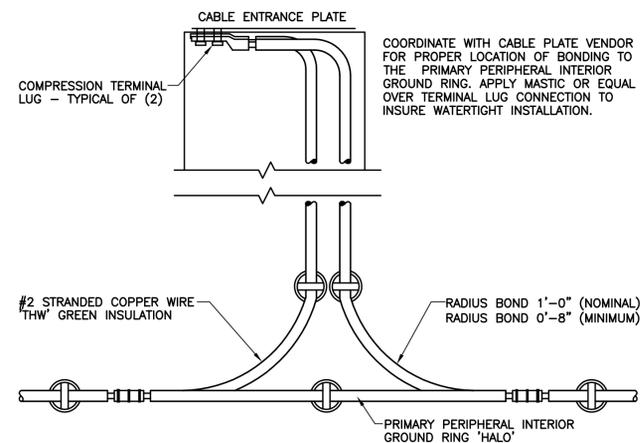


3 ISOMETRIC VIEW OF VERTICAL NONDIRECTIONAL SPLICE FOR CORNER INSTALLATION
E-2 N.T.S.

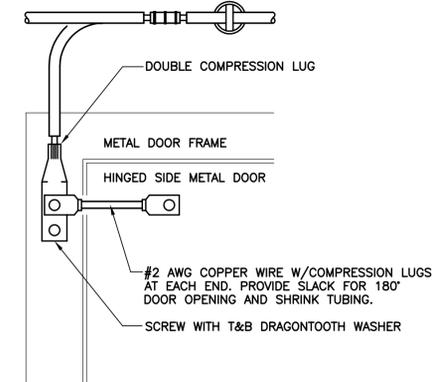


HORIZONTAL OMNI-DIRECTIONAL SPLICE FOR CONNECTING:
1. SUPPLEMENTARY BUS TO SUPPLEMENTAL BUS.
2. SUPPLEMENTARY BUS TO PRIMARY PERIPHERAL INTERIOR GROUND RING.

4 HORIZONTAL NONDIRECTIONAL SPLICE
E-2 N.T.S.



5 BONDING CABLE ENTRANCE PLATE TO PRIMARY PERIPHERAL INTERIOR GROUND RING
E-2 N.T.S.



6 BONDING METAL DOOR FRAME AND DOOR TO INTERIOR GROUNDING RING
E-2 N.T.S.

ISSUED FOR CLIENT REVIEW	CHK'D BY	DATE	REV.
		7/28/15	0

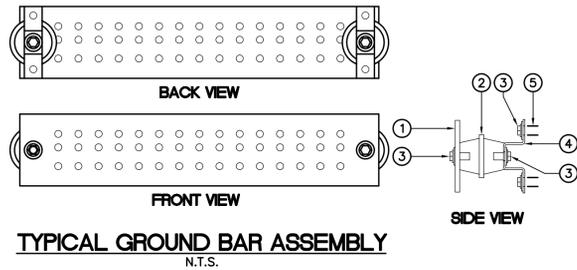
REVIEW SET
NOT FOR CONSTRUCTION

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
662 North Straits Road
Branford, CT 06405
www.CentekEng.com

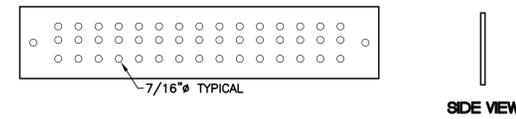
TOWN OF REDDING
WIRELESS COMMUNICATIONS FACILITY
REDDING PD
96 HILL ROAD
REDDING, CT 06896

DATE: 07/16/15
SCALE: AS NOTED
JOB NO. 14043.000

ELECTRICAL DETAILS

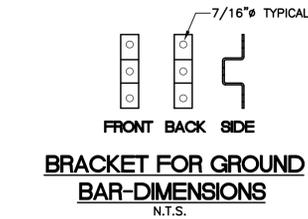


TYPICAL GROUND BAR ASSEMBLY
N.T.S.



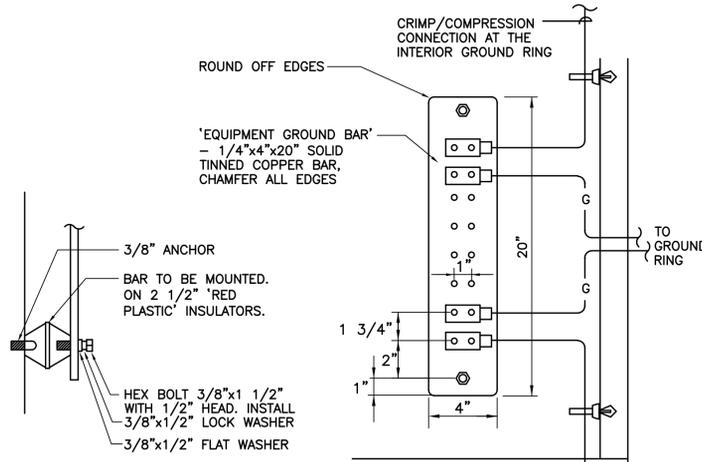
TYPICAL GROUND BAR - DIMENSIONS
N.T.S.

- NOTES**
- HIGH CONDUCTIVITY TINNED COPPER BAR
1'-8" L x 4" W x 1/4" D.
 - RED COLORED STANDOFF INSULATOR PLASTIC
#1872-1A.
 - STAINLESS STEEL TRUSS SPANNER MACHINE
SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
 - 1" W x 1/8" T STAINLESS STEEL TYPE 304 BRACKET.
 - STAINLESS STEEL TYPE 304 HARDWARE - 3/8" Ø
EXPANSION BOLT FOR CONCRETE.

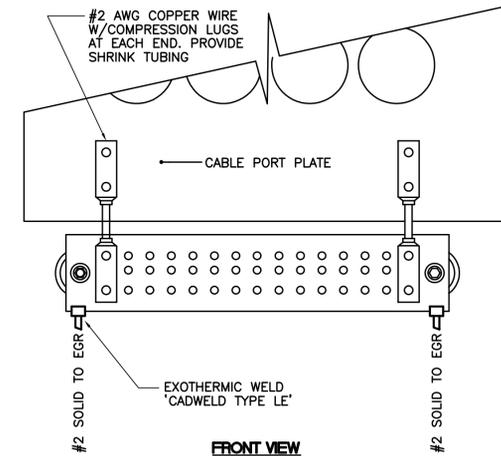


**BRACKET FOR GROUND
BAR - DIMENSIONS**
N.T.S.

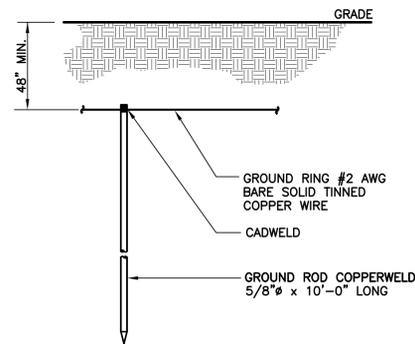
1 MASTER/EQUIPMENT GROUND BAR DETAILS
E-3 N.T.S.



2 EQUIPMENT GROUND BAR DETAIL
E-3 NOT TO SCALE

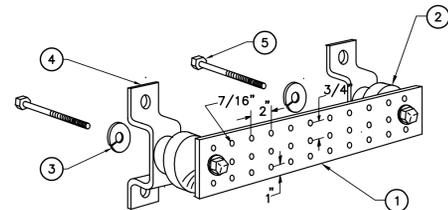


3 CABLEPORT GROUND BAR LUG CONNECTION
E-3 NOT TO SCALE



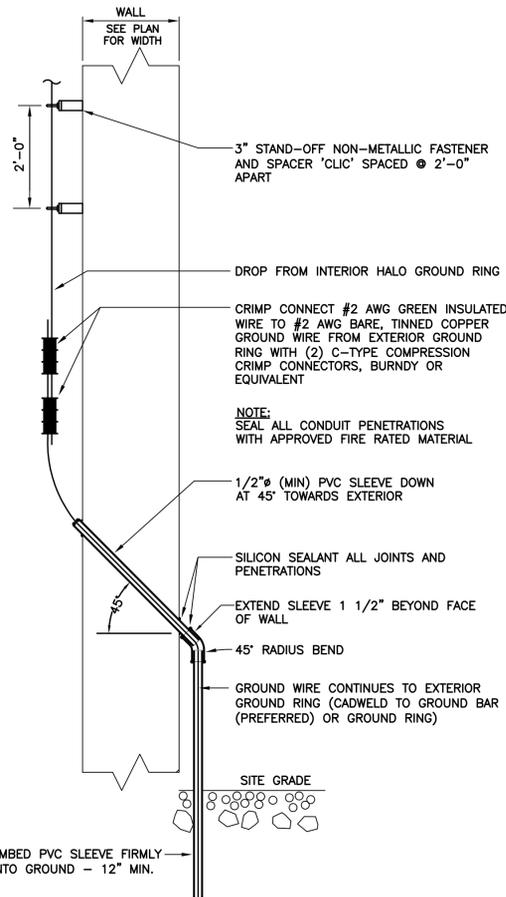
- NOTES:**
- USE GROUND PLATE DETAIL IF 10 FT. GROUND ROD
DEPTH CANNOT BE ACHIEVED DUE TO LEDGE
CONDITION OR IF EXISTING TOWER FOUNDATION IS
ENCOUNTERED.

4 GROUND ROD DETAIL
E-3 NOT TO SCALE



- NOTES**
- TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON
INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE
LUG CONFIGURATION.
 - INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
 - 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO.
3015-8.
 - WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT
NO. A-6056.
 - 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE
SCREWS.

5 GROUND BAR DETAIL
E-3 NOT TO SCALE

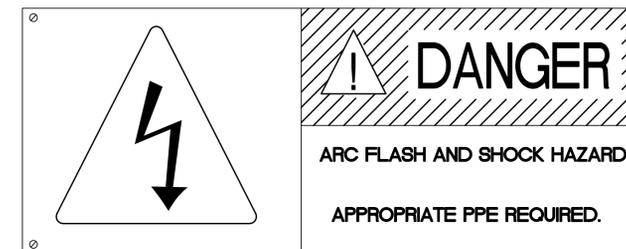


**6 CELLULAR GROUNDING CONDUCTOR
SECURED ON WALL**
E-3 N.T.S.



- NOTES:**
- REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE
REQUIREMENTS.
 - PROVIDE WARNING LABEL ON ALL SERVICE EQUIPMENT IN
ACCORDANCE WITH 2011 NEC 110.24.

7 DETAIL OF TYPICAL FAULT CURRENT SIGN
E-3 NOT TO SCALE



- NOTES:**
- REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE
REQUIREMENTS.
 - PROVIDE WARNING LABEL ON ALL SWITCHBOARDS,
DISTRIBUTION PANELS, PANELBOARDS IN ACCORDANCE WITH
2005 NEC 110.16.

8 DETAIL OF TYPICAL FLASH PROTECTION WARNING SIGN
E-3 NOT TO SCALE

ISSUED FOR CLIENT REVIEW	CAD	DATE	REV.
DRAWN BY	TJB	7/28/15	0
CHK'D BY			

REVIEW SET
NOT FOR CONSTRUCTION

CENITEK engineering
Center on Solutions
(203) 488-0580
(203) 488-8587 Fax
682 North Bridge Road
Branford, CT 06405
www.CenitekEng.com

TOWN OF REDDING
WIRELESS COMMUNICATIONS FACILITY
REDDING PD
96 HILL ROAD
REDDING, CT 06896

DATE: 07/16/15
SCALE: AS NOTED
JOB NO. 14043.000

ELECTRICAL
DETAILS

Product data sheet

Characteristics

CQO124M125RB100

QO LOADCENTER 24CT 125A 1PH 100A MB

Price*: 954.00 USD

Main

Commercial Status	Commercialised
Product or component type	Load Centre
Range of product	QO
Load centre type	Convertible Mains (breaker)
Line Rated Current	100 A
Number of spaces	24
Short-circuit current	22 kA
Number of circuits	24
Number of tandem circuit breakers	0
Phase	1 phase
System Voltage	120/240 V AC

Complementary

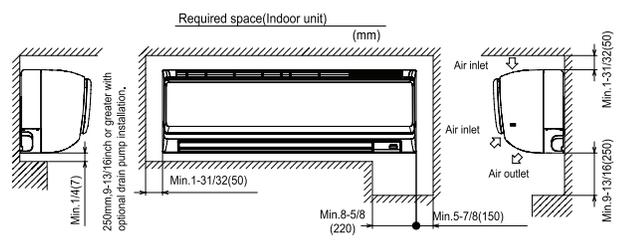
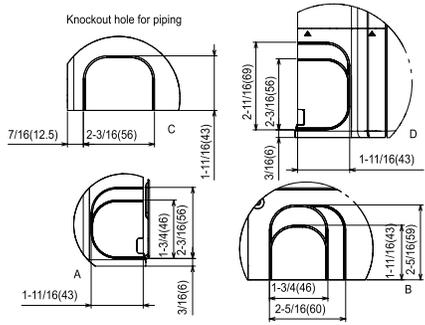
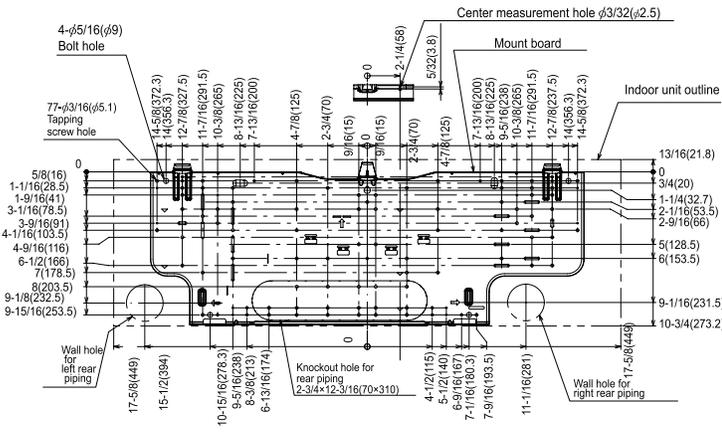
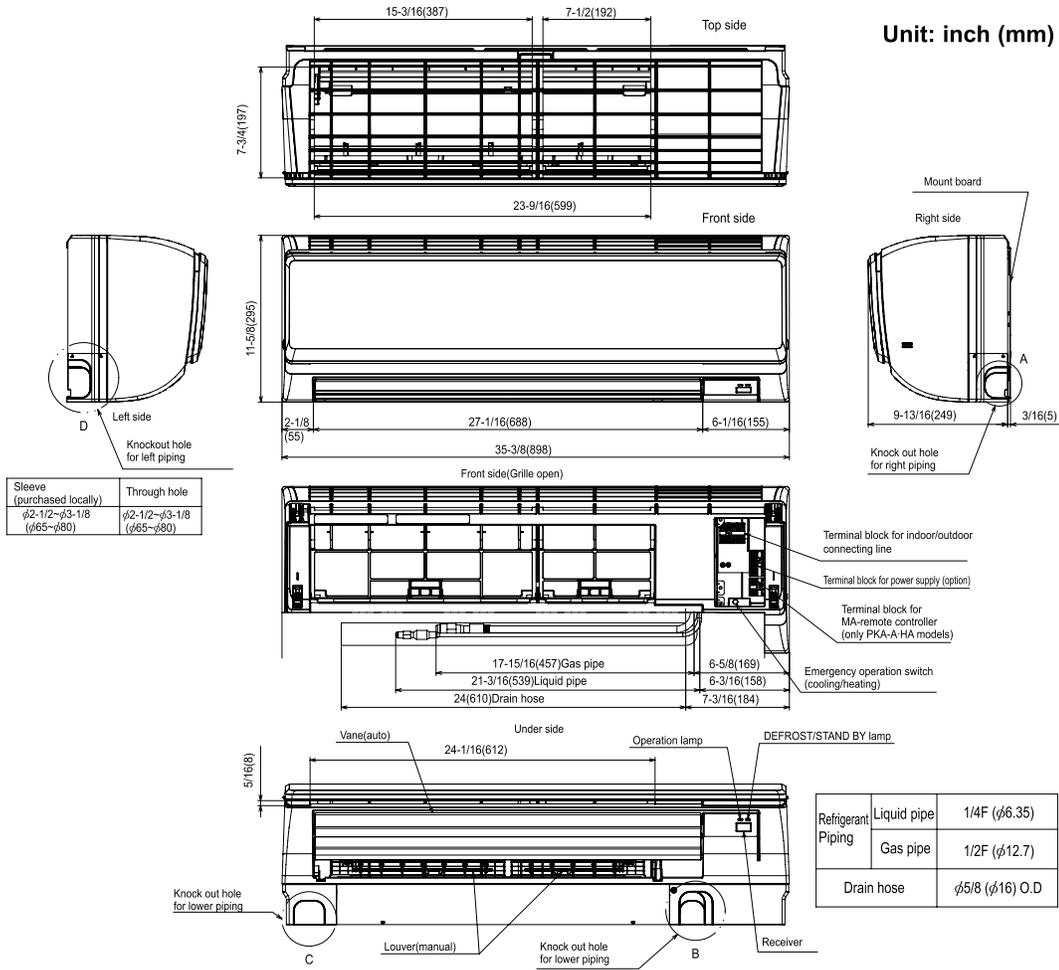
NEMA degree of protection	NEMA 3R outdoor
Cover type	Surface cover
Device composition	Grounding bar (ordered separately)
Electrical connection	Lugs
Wiring configuration	3-wire
Material	Tin plated copper busbar
Product certifications	CSA

Ordering and shipping details

Category	00156 - CANADIAN LOAD CTRS
Discount Schedule	DE3A
GTIN	00785901206644
Nbr. of units in pkg.	1
Package weight(Lbs)	26.31
Returnability	Y
Country of origin	US

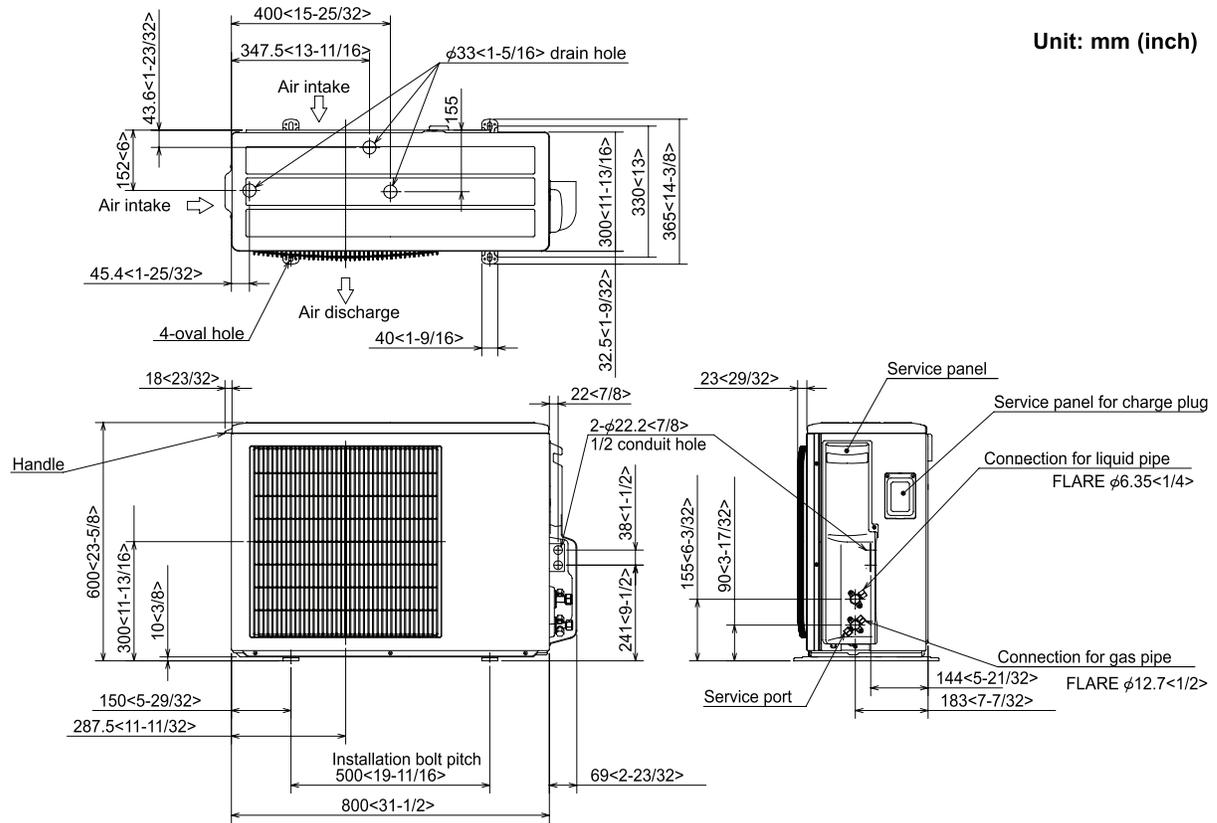
DIMENSIONS: PKA-A18HA4

Unit: inch (mm)

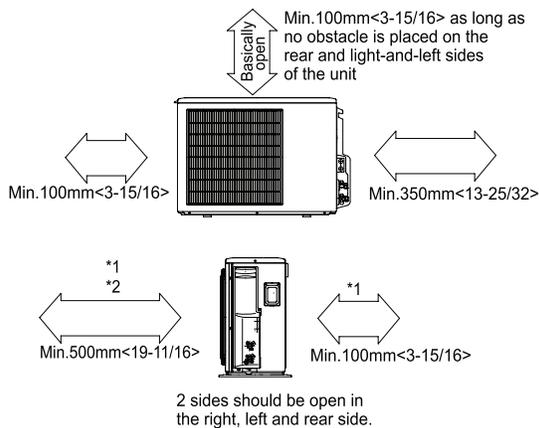


DIMENSIONS: PUZ-A18NHA4

Unit: mm (inch)

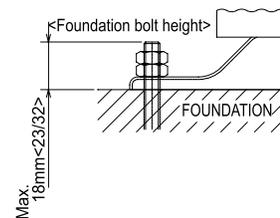


Clearance space around the outdoor unit



FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation M10<W3/8> bolts. (Bolts, washers and nut must be purchased locally.)



PIPING-WIRING DIRECTION

Piping and wiring connection can be made from the rear direction only.

Minimum installation space for outdoor unit

- *1 In the place where short cycle tends to occur, cooling and heating capacity and power consumption might get lowered 10%. Air outlet guide (optional) will help them improve.
- *2 If air discharges to the wall, the surface might get stained.



HVAC Advanced Products Division
 3400 Lawrenceville Suwanee Rd
 Suwanee, GA 30024
 Tele: 678-376-2900 • Fax: 800-889-9904
 Toll Free: 800-433-4822 (#3)
 www.mehvac.com
Specifications are subject to change without notice.

Liebert® GXT4™ UPS, 5kVA-10kVA
Intelligent, Reliable UPS Protection



Liebert® GXT4™ UPS, 5kVA-10kVA Systems: Best Protection for Critical Network Applications

Today's converged networks require increased availability and reliability. IT professionals require higher density power protection systems that adapt to mixed load voltages and plug types, while remaining easy to install and maintain.

The Emerson Solution

The Liebert GXT4 UPS meets the need for higher power capacities in small spaces. This true on-line double conversion UPS system is available in larger capacity models of 5kVA – 10kVA, and features integrated maintenance bypass, as well as optional extended battery runtime. Plus, Liebert Services provides an optional Power Assurance Package for life-cycle support for your UPS, including installation, start-up, and on-site service.

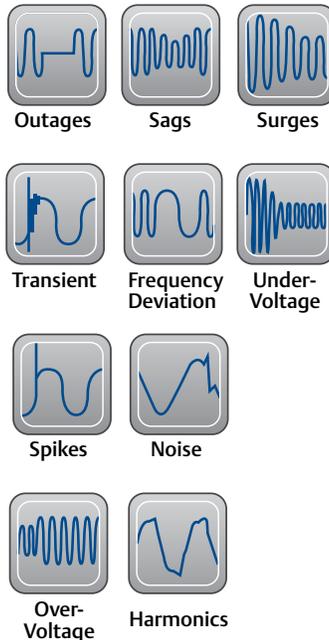
The Liebert GXT4 UPS is designed for use in either rack or tower configurations.

220V, 230V and 240V 50/60 Hz models are offered with CE and C-tick markings.

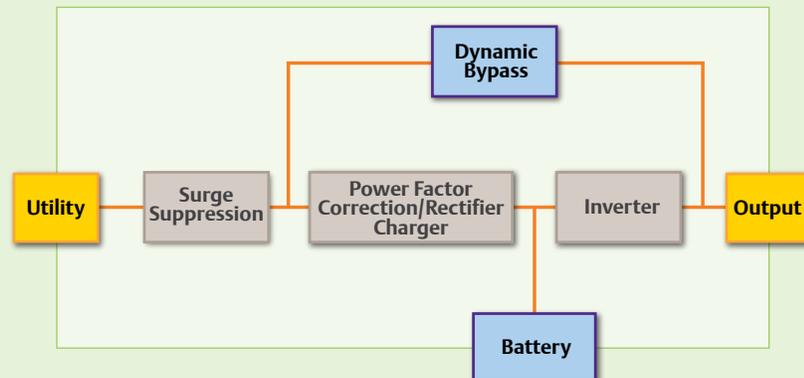
Dual Voltages For Multiple Applications

Output voltages of 240/120, 208/120, 230/115, 220/110, or 200/100 VAC provide the flexibility to adapt to multiple load requirements without the need to add additional transformers that take up extra space and add weight. Input power factor correction to 0.99 reduces current harmonics and their heating effects.

The Protection You Need



■ On Line, Double Conversion UPS For Best in Protection



Liebert® GXT4™ UPS includes these outstanding features:

Flexibility:

- **Rack/tower configuration.** The versatile unit installs in either configuration, and includes a rotating color LCD display.
- **Automatic frequency detection.** Detects and matches line input frequencies of either 60 or 50 Hz and can also be programmed to convert from one to the other.
- **Replaceable hot-swappable internal batteries.** Provide 5-8 minutes of runtime at full load depending on the model.
- **Additional runtime with additional battery cabinets.** UPS cabinet includes rear panel plug-and-play connections for optional battery cabinets. Cabinet sizes: 5/6 kVA 208/120V - 2U, 6 kVA 208V and 8-10 kVA 208/120V - 4U.
- **Optional Unity communications card with environmental sensors** (Options for temperature, humidity, leak detection, door open status and more).
- **Liebert IntelliSlot™ communications port.** Provide SNMP and web-based monitoring and control of your UPS.
- **Includes Windows-based configuration program.** Allows various operating parameters to be adjusted and tests to be scheduled.
- **Built-in USB communications for use with Liebert MultiLink™ Automated Shutdown Software.** Allows you to monitor communication between the UPS and a server, and ensures a graceful unattended shutdown.
- **Built-in closure signals.** Provides notification to monitoring systems of operating conditions.
- **Emergency Power Off (EPO).** Terminal connections to integrate into your Emergency Power Off (EPO) system.

Higher Availability:

- **Wider input voltage window minimizes battery use.** Features a wide input voltage window that allows the UPS to support the critical load without having to transfer to battery, extending battery life for when it is truly needed.
- **Internal automatic and manual bypass.** Assures continuity of power to critical loads during system maintenance or in case of internal fault.
- **Self-diagnostics.** Automatically tests unit electronics and batteries. Designed to simplify maintenance and troubleshooting.

Lowest Total Cost Of Ownership:

- **Selectable Eco-Mode** - Connected equipment can be powered through the bypass while the inverter remains at idle, reducing electricity consumption.
- **Standard two-year advanced replacement warranty.** No-hassle warranty provides paid shipping both ways. Optional one-year and three year extensions available.
- **Battery cutoff voltage** Automatically adjusts based on load, extending battery life by preventing over-discharge of batteries.
- **ENERGY STAR® qualified UPS models** UPS products meeting the EPA's requirements use an average of 35% less energy than their standard counterparts.



Communications For Power Monitoring And Control

The Unity communications card has been enhanced with direct sensor support.



- Up to 10 Liebert sensors can be wired in series and can report a discrete SNMP trap when their status changes.
- Any SNMP monitoring and notification software, such as Liebert Nform can be used to monitor a change in state of these sensors.
- Monitor temperature, humidity, door open status, leak detection and more

The Liebert GXT4 UPS is also fully compatible with:

- Liebert MultiLink™ Automated System Shutdown Software
- Liebert Nform™ Monitoring Software
- Liebert Universal Monitor And Remote Power Monitor Panels
- Liebert SiteScan®
- Trellis™ Platform
- Third-Party Monitoring Systems



Optional Unity communications card provides SNMP and web based management as well as connection for optional environmental sensors

5 and 6kVA Models Offer True On-Line Power In A Convenient Rack Configuration

Liebert® GXT4™ UPS 5 and 6kVA models are true on-line UPS systems that provide internal batteries and dual output voltage. They are an ideal fit for applications where the power requirements are demanding such as network closets or small equipment racks.

Adaptable Design

For installation flexibility, the Liebert GXT4 UPS 5 and 6kVA models allow you to choose from several different wiring configurations made possible by the use of removable power distribution boxes (PODs) that simply plug into the rear of the UPS. The standard box provides terminal blocks for hardwired input and output connections. An optional hardwire version that includes a maintenance bypass is also available.

When the ease of plug-and-play power connections is desired, optional versions of the power distribution box convert Liebert GXT4 UPS 5 and 6kVA units to a cord-type input with receptacles for output distribution, and also offers maintenance bypass capability that allows hot-swapping of the entire UPS without interruption of power to the connected load.

The UPS has an adaptable dual inverter design, capable of providing output voltages of 240/120, 208/120, 230/115, 220/110, or 200/100 and an output power factor of 0.8.



5 and 6 kVA Model shown in rack mount position



6 kVA Model shown in tower orientation

8kVA and 10kVA Models Provide Even More Power

The Liebert® GXT4™ UPS 8 and 10kVA units offer a flexible solution for protecting rack-mount equipment, including VoIP and PoE.

Specifically designed for use with the new generation of high power switches, these compact UPS systems pack 8kVA (7.2kW) or 10kVA (9kW) of power into a 6U rack/tower package with flexible output voltage and optional output distribution. The UPS includes built-in, replaceable batteries for up to 5-8 minutes of runtime at full load depending on model.

Adaptable Design

The UPS has a dual inverter design, capable of providing 5 output voltages of 240/120, 208/120, 230/115, 220/110, or 200/100 and an output power factor of 0.9. The 6U size is the smallest for 208/120 selectable voltage in the 8-10kVA model range.

The unit features integrated internal automatic and manual maintenance bypass, power module, battery modules, and optional plug-and-play distribution plates.

The standard 8 and 10kVA models include terminal blocks for hardwired connections of both input and output. Optional power distribution modules (PODs) are available to add output receptacles to the rear panel of the unit.

Hot-Swappable Operation

Liebert GXT4 UPS 8 and 10kVA units feature three bays for one power module and two battery modules. The chassis contains a bypass switch that allows all modules to be removed without powering down the connected load.



UPS is hardwire input/output with maintenance bypass and includes no POD standard.



Optional PODs available



8-10 kVA Models

Total Care and Support for Critical Systems

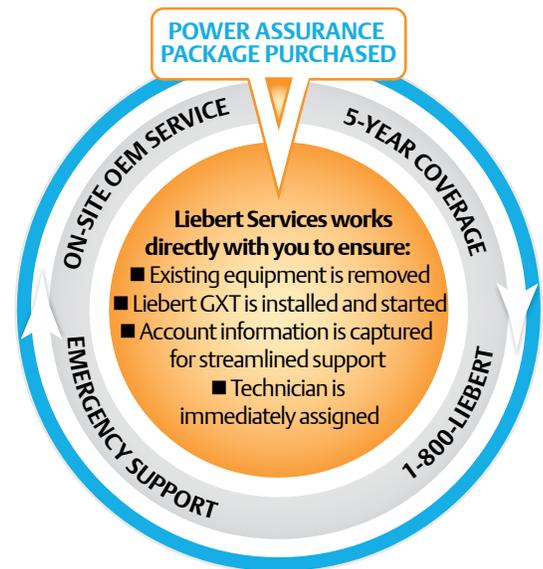


Power Assurance Package: Comprehensive On-site Services – A Partner To Assure Uptime

- **Five-year protection plan:** with 100% parts coverage and 7x24 emergency service.
- **On-site installation and start-up:** Installation and start-up of UPS and internal batteries (excludes hard-wired applications), configuration of new UPS and accessories, and, if purchased, safe removal and disposal of old UPS and batteries.
- **On-Site service support:** 7x24 support (within 150 miles of regional service center) and 100 percent labor and travel coverage.
- **100% parts coverage:** For internal batteries, POD (Power Output Distribution) and web card.
- **7x24 Access** to customer resolution center and on-line access to Customer Services Network.
- **Preventative Maintenance** in third to fifth year for 5-10kVA models only.

Key Benefits:

- **Pain-free multi-site rollout management**
- **Frees up time-strapped IT staff** by managing and tracking UPS health, maintenance and service.
- **Reduces the worry** of critical equipment downtime.
- **Ensures rapid recovery** in the event of failure within 24-48 hours.
- **Frees you** from the responsibility of handling and documenting the disposal of hazardous materials, like batteries.



Product Specifications

Liebert GXT4 UPS specifications—5, 6, 8 and 10 kVA models

Model Number	GXT4-5000RT208	GXT4-6000RT208	GXT4-8000RT208	GXT4-10000RT208	GXT4-6000RTL630
Model Rating	4000W/5000VA	4800W/6000VA	7200W/8000VA	9000W/10000VA	4200W/6000VA
Dimensions, Rack Mount, W x D x H Unit in. (mm)	16.9 x 26.1 x 6.8 (430 x 662 x 173)		16.9 x 26.5 x 10.3 (430 x 672 x 261)		16.9 x 22.6 x 8.5 (430 x 574 x 217)
Weight Unit, lb (kg)	131.8 (69.9)		212.7 (96.7)		132.2 (60)

Input AC Parameters

Nominal Operating Frequency	50 or 60Hz (Factory Default is 60Hz)	50 or 60Hz (Factory Default, 60)
Factory Default VAC	120/208VAC at 120 degrees	208VAC
Factory Default L1-N, L2-N VAC	120 VAC nominal	-
Input Frequency w/o Battery Operation	40 - 70 Hz	40 - 70Hz
Input Power Connection	Hardwire Terminal Block 3W + G (L-L-N-G)	L6-30P Plug (on PD-L630 power distribution box)
L1-N, L2-N Maximum Allowable VAC	150VAC	-

Output AC Parameters

Factory Default VAC	120/208VAC @ 120 degrees	208
Factory Default L1-N, L2-N VAC	120VAC nominal	-
User Configurable L1-N, L2-N VAC	100/110/115/120/VAC, ±2%	-

Overload Rating

105% to 130%	1 Minute
131% to 150%	10 seconds
151% to 200%	1 second
>200% (impact load)	At least 5 cycles

Environmental

Operating Temp, °F (°C)	32 to 104 (0 to 40)	32 to 104 (0 to 40)
Storage Temp, °F (°C)	5 to 122 (-15 to 50)	
Audible Noise	Less than 55dBA at 3.2ft. (1m) rear; less than 50dBA at 3.2ft. (1m) front and sides	
Operating Elevation	Up to 10,000 ft. (3000m) at 77°F (25°C) without derating	
Relative Humidity	0% to 95%, non-condensing	

Agency

Safety	UL 1778, c-UL Listed	
RFI/EMI	FCC Class A	
Surge Immunity	IEEE/ANSI C62.41 Category A & B	EN61000-4-5
Transportation	ISTA Procedure 1E	
ENERGY STAR® qualified	YES	

Replacement internal battery part numbers

Model Number	GXT4-144VBATKIT	GXT4-240VBATKIT	GXT4-288VBATKIT
Used with UPS Model	GXT4-5000RT208 GXT4-6000RT208	GXT4-6000RTL630	GXT4-8000RT208 GXT4-10000RT208
Dimensions, W x D x H, Unit in (mm)	8.1 x 19.3 x 2.8 (206 x 490 x 70)	7.2 x 15.4 x 4.4 (184 x 390 x 113)	8.1 x 19.7 x 5.3 (207 x 500 x 135)
Weight, Unit lb (kg)	75.8 (34.4)	45.4 (20.6)	71.1 (32.3)

Battery Parameters

Type	Valve-regulated, non-spillable, flame retardant, lead acid		
Kit Quantity x Battery Quantity x V x Rating	2 x 6 x 12V x 9.0 AH	2 x 10 x 12V x 5.0AH	2 x 12 x 12V x 9.0 AH
Recharge Time	3 hours to 90% capacity after full discharge into 100% load		

External battery cabinet specifications

Model Number	GXT4-144VBATT	GXT4-240VBATT	GXT4-288VBATT
Used w/UPS Model	GXT4-5000 & GXT4-6000RT208	GXT4-6000RTL630	GXT4-8000 & GXT4-10000RT208
Dimensions, W x D x H, Unit (with bezel) in. (mm)	16.9 x 26.1 x 3.3 (430 x 662 x 85)	16.9 x 22.6 x 6.8 (430 x 574 x 173)	16.9 x 26.5 x 6.8 (430 x 672 x 173)
Weight, Unit lb (kg)	99.9 (45.3)	143.3 (65)	167.6 (76.2)

Battery Parameters

Type	Valve-regulated, non-spillable, lead acid		
Kit Quantity x Battery Quantity x Rating	2 x 6 x 12V x 9.0 AH	2 x 10 x 12V x 9.0 AH	2 x 12 x 12V x 9.0 AH
Environmental	Operating Temp, Storage Temp, Operating Elevation, and Relative Humidity: Same as UPS		

Power distribution box specifications: GXT4-5000RT208, GXT4-6000RT208 and GXT4-6000RTL630 *

Power Distribution Box Model Number	PD2-HDWR -MBS	PD2-001	PD2-002	PD2-003	PD2-004	PD2-005	PD2-006	PD2-007	PD2-L630*
Dimensions, W x D x H, Unit in (mm)	5.2x15.5x3.5 (132x393x88)								4.7x13.2x4.1 (119x335x105)
Weight, lb (kg)	8.2 (3.7)	11 (5)	10.8 (4.9)	10.8 (4.9)	12.1 (5.5)	12.8 (5.8)	11.7 (5.3)	11.7 (5.3)	8.8 (4)

Electrical Specifications

Amp Rating	30A 2-pole input breaker for UPS input power								
Input Power Connections	Hardwired	L14-30P							(1) L6-30P on a 10.5 foot (3.2m) cord
Output Power Connection	Hardwired	(1)L6-30R, (1)L14-30R, (4) 5-15/20R T-slot	(2)L6-20R (2)5-15/20R T-slot	(2)L6-30R (4)5-15/20R T-slot	(4) L5-20R (2) L5-30R	(4) L5-20R (2) L6-30R	(4) L6-20R	(2) L6-20R (2) L5-20R	(2) L6-20R (2) L6-30R

* PD2-L630 is only compatible with the GXT4-6000RTL630 UPS model

Power distribution box specifications for GXT4-8000RT208 and GXT4-10000RT208

Power Distribution Box Model Number	PD2-101	PD2-102	PD2-103	PD2-104	PD2-105	PD2-106
Dimensions, W x H, Unit in. (mm)	7.4 x 5.7 (188 x 145)					
Weight, Unit lb (kg)	4.4 (2)	6.6 (3)	6.6 (3)	6.6 (3)	4.4 (2)	6.6 (3)

Electrical Specifications

Amp Rating	63 Amps					
Input Power Connections	Custom Connector 3W + G(L-L-N-G) to UPS					
Output Power Connection	(2) L6-30R (8) 5-15/20R T-slot	(4) L6-20R (4) 5-15/20R T-slot	(4) 5-15/20R T-slot (4) L6-30R	(4) 5-15/20R T-slot (2) L6-30R (2) L6-20R	(4) 5-15/20R T-slot (2) L5-30R (2) L5-20R	(4) L6-20R (4) L5-20R

Power distribution box specifications for GXT4-8000RT208 and GXT4-10000RT208

Power Distribution Box Model Number	PD2-107	PD2-108	PD2-109	PD2-200	PD2-201	PD2-202	PD2-204
Dimensions, W x H, Unit in. (mm)	7.4 x 5.7 (188 x 145)						
Weight, Unit lb (kg)	6.6 (3)			4.4 (2)		12 (5.4)	

Electrical Specifications

Amp Rating	63 Amps						
Input Power Connections	Custom Connector 3W + G(L-L-N-G) to UPS						
Output Power Connection	(4) L5-20R (4) 5-15/20R T-slot	(2) L6-20R (2) L6-30R	(2) L14-30R	(4) IEC320-C19 (4) IEC320-C13	(2) IEC320-C19 (8) IEC320-C13	(12) IEC320-C13	(2) IEC309-32A (4) IEC320-C13

Emerson Network Power

Global Headquarters

1050 Dearborn Drive
P.O. Box 29186
Columbus, Ohio 43229
800 877 9222 Phone (U.S. & Canada Only)
614 888 0246 Phone (Outside U.S.)
Contact@EmersonNetworkPower.com

**Emerson Network Power
Caribbean and Latin America**

Office – United States of America
+1-954-984-3452 Phone
Ask.Cala@Emerson.com

Emerson Network Power Canada

3580 Laird Rd Unit 1
Mississauga
Ontario L5L 5Z7
+1 905 569 8282
Ask@EmersonNetworkPower.com

liebert.com

24 x 7 Tech Support

800 222 5877 Phone
614 841 6755 (outside U.S.)

EmersonNetworkPower.com

While every precaution has been taken to ensure accuracy and completeness in this literature, Liebert Corporation assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. © 2015 Liebert Corporation. All rights reserved throughout the world. Specifications subject to change without notice. All names referred to are trademarks or registered trademarks of their respective owners. ® Liebert is a registered trademark of the Liebert Corporation.

Emerson Network Power and the Emerson Network Power logo are trademarks and service marks of Emerson Electric Co. ©2015 Emerson Electric Co.

SL-23196 (R03/15) Printed in USA

Liebert® GXT4™ 208V, 5000-10,000VA, 6000RTL630
User Manual



TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS	1
SAVE THESE INSTRUCTIONS	1
GLOSSARY OF SYMBOLS	3
1.0 PRODUCT DESCRIPTION	4
1.1 Features	4
1.2 Available Models	4
1.3 Appearance and Components	4
1.3.1 Appearance	4
1.3.2 Rear Panel Features	5
1.4 Removable Power Distribution Box	7
1.5 Internal Battery Packs	10
1.6 Major Components	10
1.6.1 Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters	10
1.6.2 Rectifier/Power Factor Correction (PFC) Circuit	10
1.6.3 Inverter	11
1.6.4 Battery Charger	11
1.6.5 DC-to-DC Converter	11
1.6.6 Battery	11
1.6.7 Internal Bypass	11
1.6.8 Maintenance Bypass	11
1.7 Operating Mode	11
1.7.1 Mains Mode	11
1.7.2 Manual Bypass Mode	12
1.7.3 Battery Mode	12
1.7.4 Battery Recharge Mode	12
1.7.5 Frequency Converter Mode	12
1.7.6 Active ECO Mode	13
2.0 INSTALLATION	14
2.1 Unpacking and Inspection	14
2.2 What's Included	14
2.3 Preparation for Installation	14
2.3.1 Installation Environment	14
2.4 Install the Main Cabinet	15
2.4.1 Tower UPS Installation	15
2.4.2 Rack Installation	16
2.5 External Battery Cabinet Installation	16
2.6 Connect Input/Output Power	17
2.6.1 Remove the Power Distribution Box from 5000 and 6000VA Models	18
2.6.2 Remove the Power Distribution Cover from 8000 and 10,000VA Models	18
2.6.3 Install the Power Distribution Box on 5000 and 6000VA Models	19
2.6.4 Install the Power Distribution Box on 8000 and 10,000VA Models	19
2.6.5 Distribution Box Electrical Connections	20

3.0	OPERATION AND DISPLAY PANEL	22
3.1	LED Indicators	22
3.2	Control Buttons	23
3.3	LCD	23
3.4	Menu Structure	24
3.4.1	Startup Screen	25
3.4.2	Default Screen	26
3.4.3	Main Menu Screen	26
3.4.4	Prompt List	34
3.4.5	Warning List	34
3.4.6	Fault List	35
4.0	OPERATION	36
4.1	Startup Checklist for the Liebert GXT4	36
4.2	Starting the UPS	36
4.3	Manual Battery Test	36
4.4	Manual Bypass	36
4.5	Shut Down the Liebert GXT4	37
4.6	Disconnecting Input Power from the Liebert GXT4	37
4.7	Maintenance Bypass	37
5.0	COMMUNICATION	38
5.1	Liebert IntelliSlot Communication Cards	38
5.1.1	Liebert MultiLink	38
5.2	USB Port Communication	39
5.2.1	Configuration Program	39
5.3	Terminal Block Communication	40
5.3.1	Any Mode Shutdown	40
5.3.2	Battery Mode Shutdown	41
5.3.3	On Battery	41
5.3.4	Low Battery	41
5.4	Remote Emergency Power Off	42
6.0	MAINTENANCE	43
6.1	Replacing the Internal Battery Pack	43
6.1.1	Battery Replacement Procedures	44
6.2	Battery Charging	45
6.3	Precautions	45
6.4	Checking UPS Status	46
6.5	Checking UPS Functions	46
6.6	Replacing the Power Module on 8000 and 10,000VA models	46
7.0	TROUBLESHOOTING	48
7.1	UPS Symptoms	48
7.1.1	Indicator and LCD	48
7.1.2	Audible Alarm	49

7.2	Troubleshooting	49
8.0	SPECIFICATIONS	50
8.1	Auto-Learning Battery Run Times	57
8.2	Product Warranty Registration	57
8.3	Technical Support.	57

FIGURES

Figure 1	Liebert GXT4 5000VA and 6000VA, front view	5
Figure 2	Liebert GXT4 5000VA and 6000VA with input power hard-wired box—rear view	5
Figure 3	Liebert GXT4-6000RTL630, rear view.	6
Figure 4	Liebert GXT4 8000VA and 10,000VA rear view	6
Figure 5	Power distribution models for 5000VA and 6000VA models of Liebert GXT4	7
Figure 6	Power distribution models for 8000VA and 10,000VA models of Liebert GXT4	8
Figure 7	Power distribution models for 8000VA and 10,000VA models of Liebert GXT4 (<i>continued</i>)	9
Figure 8	Internal battery pack with connector	10
Figure 9	Support bases	15
Figure 10	Remove the front plastic bezel cover	15
Figure 11	Rotate the operation and display panel.	15
Figure 12	External battery cabinets connected to 6000VA Liebert GXT4	16
Figure 13	Power distribution box removal from 5000 and 6000VA models	18
Figure 14	Power distribution box removal from 8000 and 10,000VA models	19
Figure 15	Distribution box electrical connections diagram	20
Figure 16	Terminal block connections	21
Figure 17	Operation and display panel	22
Figure 18	Menu structure	24
Figure 19	Startup screen	25
Figure 20	Startup screens	25
Figure 21	Starting and Start Successful screens	25
Figure 22	Default screen	26
Figure 23	Main Menu screen.	26
Figure 24	Status screens	27
Figure 25	CONFIGURATION screen	27
Figure 26	UPS screens.	28
Figure 27	Battery screen	28
Figure 28	ECO Mode screen	29
Figure 29	LCD screen	29
Figure 30	Language screen	30
Figure 31	Color screen	30
Figure 32	Factory Default screen	30
Figure 33	Control screen	31
Figure 34	Turn UPS On or Off screen	31
Figure 35	Alarm Control screen	31
Figure 36	Batt Test screen	32
Figure 37	Log screens	32
Figure 38	Clear Log screen	32
Figure 39	About screen	33
Figure 40	Network screens	33
Figure 41	Terminal Block Communication pin layout.	40
Figure 42	Removing the front plastic bezel cover and battery door	44

Figure 43	Disconnecting the battery plug and battery receptacle (front view)	44
Figure 44	Pulling out the battery packs	45
Figure 45	Removing power module from Liebert GXT4 8000 and 10,000VA models	47

TABLES

Table 1	UPS models, power ratings	4
Table 2	Branch circuit breaker ratings	20
Table 3	Electrical specifications	20
Table 4	LED indicators	22
Table 5	Control buttons	23
Table 6	Prompts and meanings	34
Table 7	Warning list	34
Table 8	Fault list	35
Table 9	Output voltage option, all models	39
Table 10	Internal battery pack models	43
Table 11	Description of the displayed fault	48
Table 12	Audible alarm description	49
Table 13	Troubleshooting table	49
Table 14	UPS specifications—5000, 6000, 8000 and 10,000 models	50
Table 15	UPS specifications—Liebert GXT4-6000RTL630	51
Table 16	Internal battery cabinet specifications	52
Table 17	Power distribution specifications: GXT4-5000RT208, GXT4-6000RT208 and GXT4-6000RTL630 *	53
Table 18	External battery cabinet specifications	53
Table 19	Power distribution box specifications for GXT4-8000RT208 and GXT4-10000RT208	54
Table 20	Power distribution box specifications for GXT4-8000RT208 and GXT4-10000RT208	54
Table 21	Battery run time, minutes	55

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important safety instructions. Read all safety and operating instructions before operating the uninterruptible power system (UPS). Adhere to all warnings on the unit and in this manual. Follow all operating and user instructions. This equipment can be operated by individuals without previous training.

This product is designed for commercial/industrial use only. It is not intended for use with life support and other designated “critical” devices. Maximum load must not exceed that shown on the UPS rating label. The UPS is designed for data processing equipment. If uncertain, consult your dealer or local Emerson Network Power representative.

This UPS is designed for use on a properly grounded (earthed), 100/200, 110/220, 115/230, 120/208, 120/240 or 127/220VAC, 50 or 60Hz supply. The factory default setting is 120/208VAC, 60Hz. Installation instructions and warning notices are in this manual.

The Liebert GXT4 208VAC 5000 - 10000 is designed for use with a four-wire input (L1, L2, N, G).

The Liebert GXT4-6000RTL630 is designed be used with a three-wire, two-phase utility source (L1, L2, G).



WARNING

The battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when replacing the battery pack:

- Wear rubber gloves and boots
- Remove rings, watches and other metal objects.
- Use tools with insulated handles.
- Do not lay tools or other metal objects on the batteries.
- If the battery kit is damaged in any way or shows signs of leakage, contact your local Emerson representative immediately.
- Do not dispose of batteries in a fire. The batteries may explode.
- Handle, transport and recycle batteries in accordance with local regulations.



WARNING

Although the Liebert GXT4 has been designed and manufactured to ensure personal safety, improper use can result in electrical shock or fire. To ensure safety, observe the following precautions:

- Turn Off and unplug the Liebert GXT4 before cleaning it.
- Clean the UPS with a dry cloth. Do not use liquid or aerosol cleaners.
- Never block or insert any objects into the ventilation holes or other openings of the UPS.
- Do not place the Liebert GXT4 power cord where it might be damaged.

ELECTROMAGNETIC COMPATIBILITY—The Liebert GXT4 complies with the limits for a Class A digital device, pursuant to Part 15 of FCC rules.

Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation. Operating this device in a residential area is likely to cause harmful interference that users must correct at their own expense.

The Liebert GXT4 series complies with the requirements of EMC Directive 2004/108/EC and the published technical standards. Continued compliance requires installation in accordance with these instructions and use of accessories approved by Emerson.

NOTICE

This is a product for restricted sales distribution to informed partners. Installation restrictions or additional measures may be needed to prevent radio interference.

Operate the UPS in an indoor environment only in an ambient temperature range of 0-40°C (32-104°F). Install it in a clean environment, free from moisture, flammable liquids, gases and corrosive substances.

The Liebert GXT4-5000RT208, Liebert GXT4-6000RT208 and the Liebert GXT4-6000RTL630 contain no user-serviceable parts except the internal battery pack. The Liebert GXT4-10000RT208 and the Liebert GXT4-8000RT208 contain no user-serviceable parts except the internal battery pack and the Power Module. The UPS On/Off push buttons do not electrically isolate internal parts. Under no circumstances attempt to gain access internally due to the risk of electric shock or burn.

Do not continue to use the UPS if the front panel indications are not in accordance with these operating instructions or the UPS performance alters in use. Refer all faults to your dealer.

Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from the batteries. Keep unauthorized personnel away from the batteries. Proper disposal of batteries is required. Refer to your local laws and regulations for disposal requirements.

Never block or insert any object into the ventilation holes or other openings.

DO NOT CONNECT equipment that could overload the UPS or demand DC current from the UPS, for example: electric drills, vacuum cleaners, laser printers, hair dryers or any appliance using half-wave rectification.

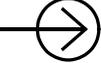
Storing magnetic media on top of the UPS may result in data loss or corruption.

Turn Off and isolate the UPS before cleaning it. Use only a soft cloth, never liquid or aerosol cleaners.

Information for the Protection of the Environment

UPS SERVICING—This UPS makes use of components dangerous for the environment (electronic cards, electronic components). The components removed must be taken to specialized collection and disposal centers.

GLOSSARY OF SYMBOLS

	Risk of electrical shock
	Indicates caution followed by important instructions
	AC input
	AC output
	Requests the user to consult the manual
	Indicates the unit contains a valve-regulated lead acid battery
	Recycle
	DC voltage
	Equipment grounding conductor
	Bonded to ground
	AC voltage
	WEEE

1.0 PRODUCT DESCRIPTION

The Liebert GXT4 is a compact, online uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. The UPS is designed to supply microcomputers and other sensitive electronic equipment with clean sine wave input power, 5000VA, 6000VA, 8000VA and 10,000VA.

Upon generation, AC power is clean and stable. However, during transmission and distribution it is subject to voltage sags, spikes and complete failure that may interrupt computer operations, cause data loss and damage equipment.

The Liebert GXT4 protects equipment from these disturbances. The Liebert GXT4 continuously charges its batteries from the mains, enabling it to supply power to connected loads, even when the mains fail.

This section describes the UPS, its features, models, appearance and components, operating principles and operating mode.

1.1 Features

The UPS includes these features:

- Intelligent battery management to extend battery life
- LCD for user-friendly operation and local monitoring and configuration of operational parameters
- Flexible network management with Liebert MultiLink® software
- Fan fault self-inspection and automated diagnostic function
- Intelligent fan operation, automatically changing rotation speed depending on system requirements, to decrease power consumption and noise
- Input circuit breaker to ease recovery from overloads
- Safety approval from UL and cUL
- Communication options: USB port, Liebert IntelliSlot® port and terminal block communication
- Dry contacts for remote monitoring
- Input power factor greater than 0.99
- Output voltage selection function

1.2 Available Models

Available models of the UPS are listed in **Table 1**:

Table 1 UPS models, power ratings

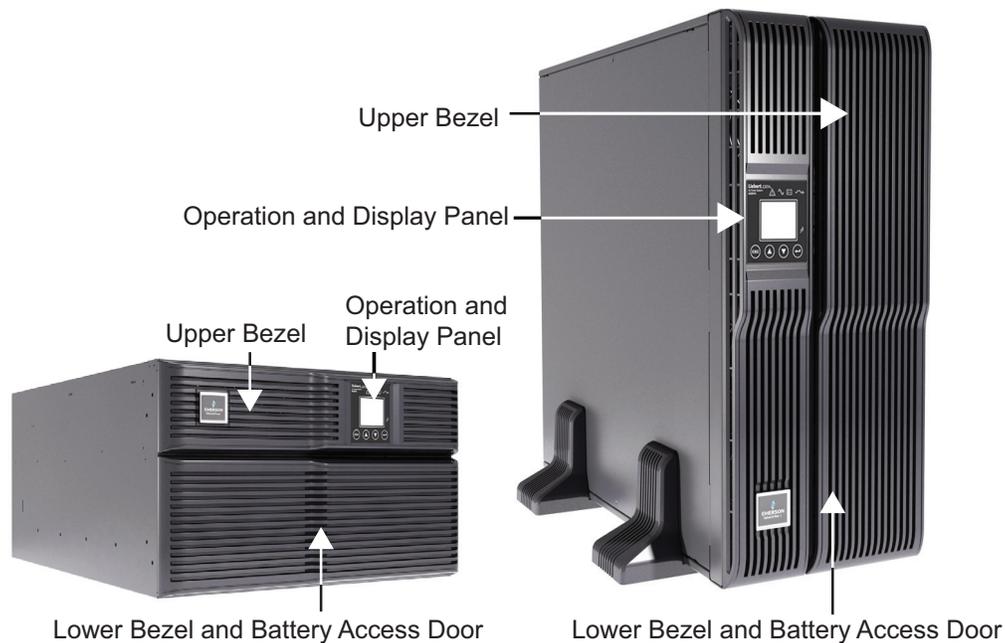
Model Number	Nominal Power Rating
GXT4-5000RT208	5000VA / 4000W
GXT4-6000RT208	6000VA / 4800W
GXT4-6000RTL630	6000VA / 4200W
GXT4-8000RT208	8000VA / 7200W
GXT4-10000RT208	10000VA / 9000W

1.3 Appearance and Components

1.3.1 Appearance

The Liebert GXT4 rack/tower models in various power ratings have the same general appearance, controls and features (see **Figure 1**). The various rack/tower models differ largely in the type of receptacles each has.

Figure 1 Liebert GXT4 5000VA and 6000VA, front view

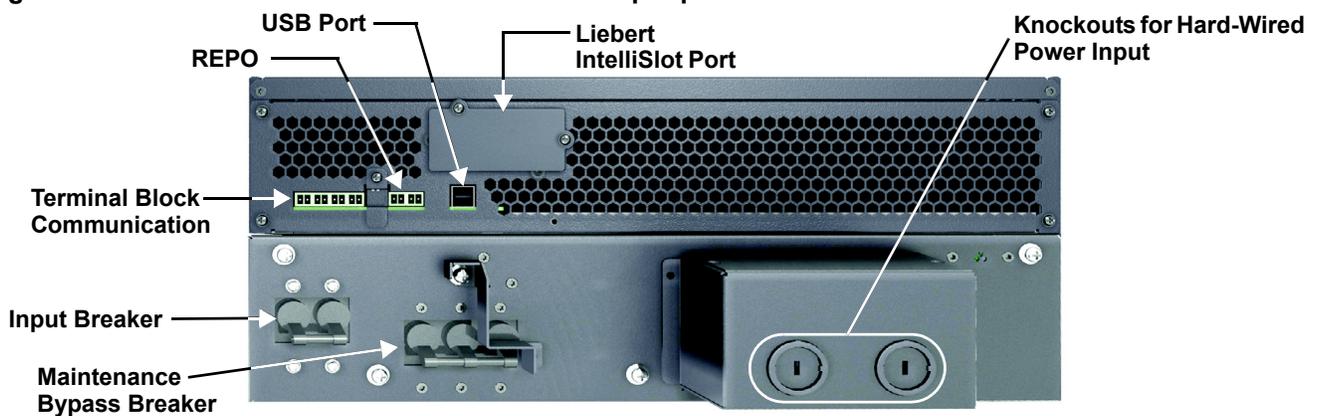


1.3.2 Rear Panel Features

The rear panel of the Liebert GXT4 has these features:

- Liebert IntelliSlot® Port
- USB port
- Input Circuit Breaker
- Maintenance Bypass Breaker
- REPO connection
- Input Receptacle
- General Output Receptacles (on optional PODs)
- External Battery Connector
- Cooling Fan
- Terminal Block Communication
- Output Circuit Breakers (on optional PODs)

Figure 2 Liebert GXT4 5000VA and 6000VA with input power hard-wired box—rear view



NOTE

Hard-wired and hard-wired/receptacle boxes that include a manual bypass switch permit AC power to continue to flow from the utility input to the load while the box is removed from the UPS. For details, refer to 1.4 - Removable Power Distribution Box.

Figure 3 Liebert GXT4-6000RTL630, rear view

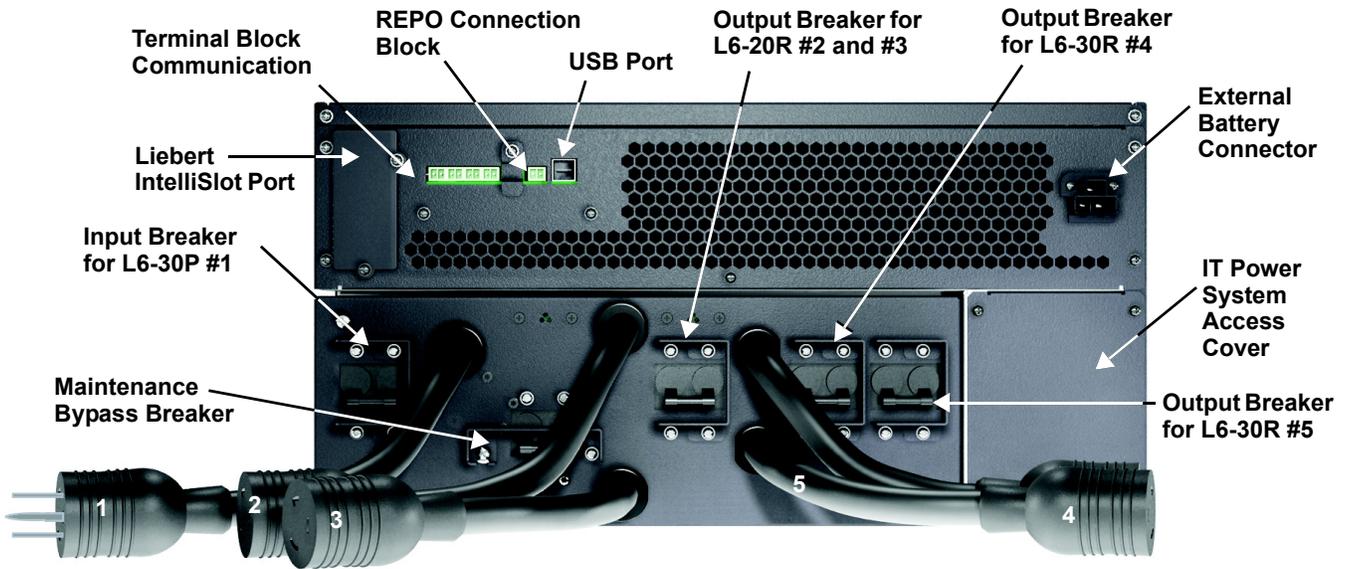
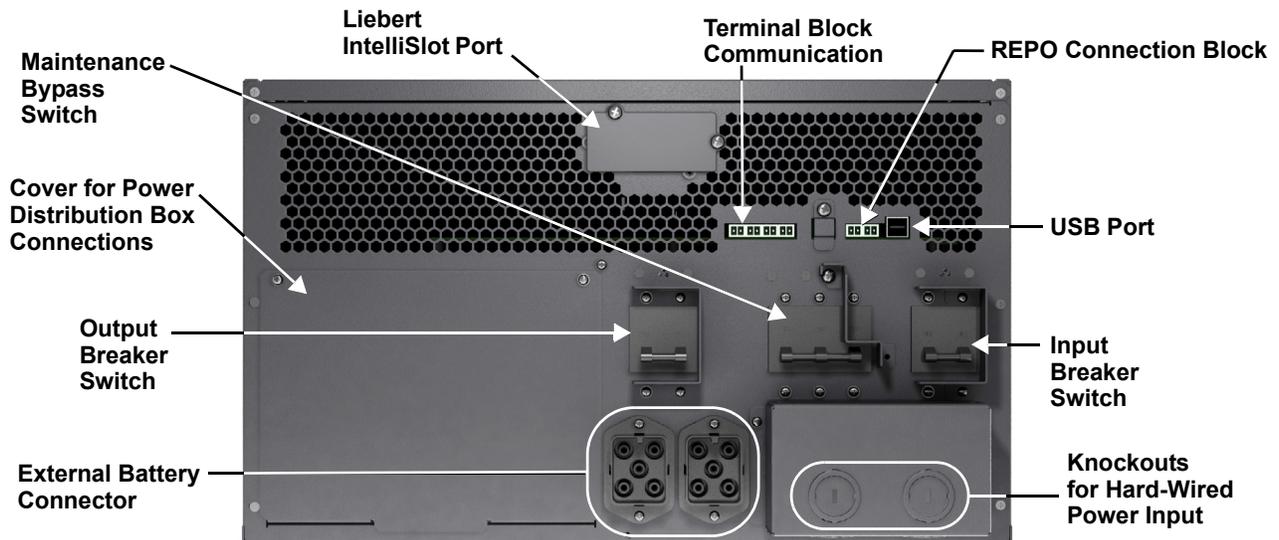


Figure 4 Liebert GXT4 8000VA and 10,000VA rear view



1.4 Removable Power Distribution Box

The UPS is shipped with a power distribution pack installed. This box contains the UPS input circuit breaker.

Figure 5 Power distribution models for 5000VA and 6000VA models of Liebert GXT4

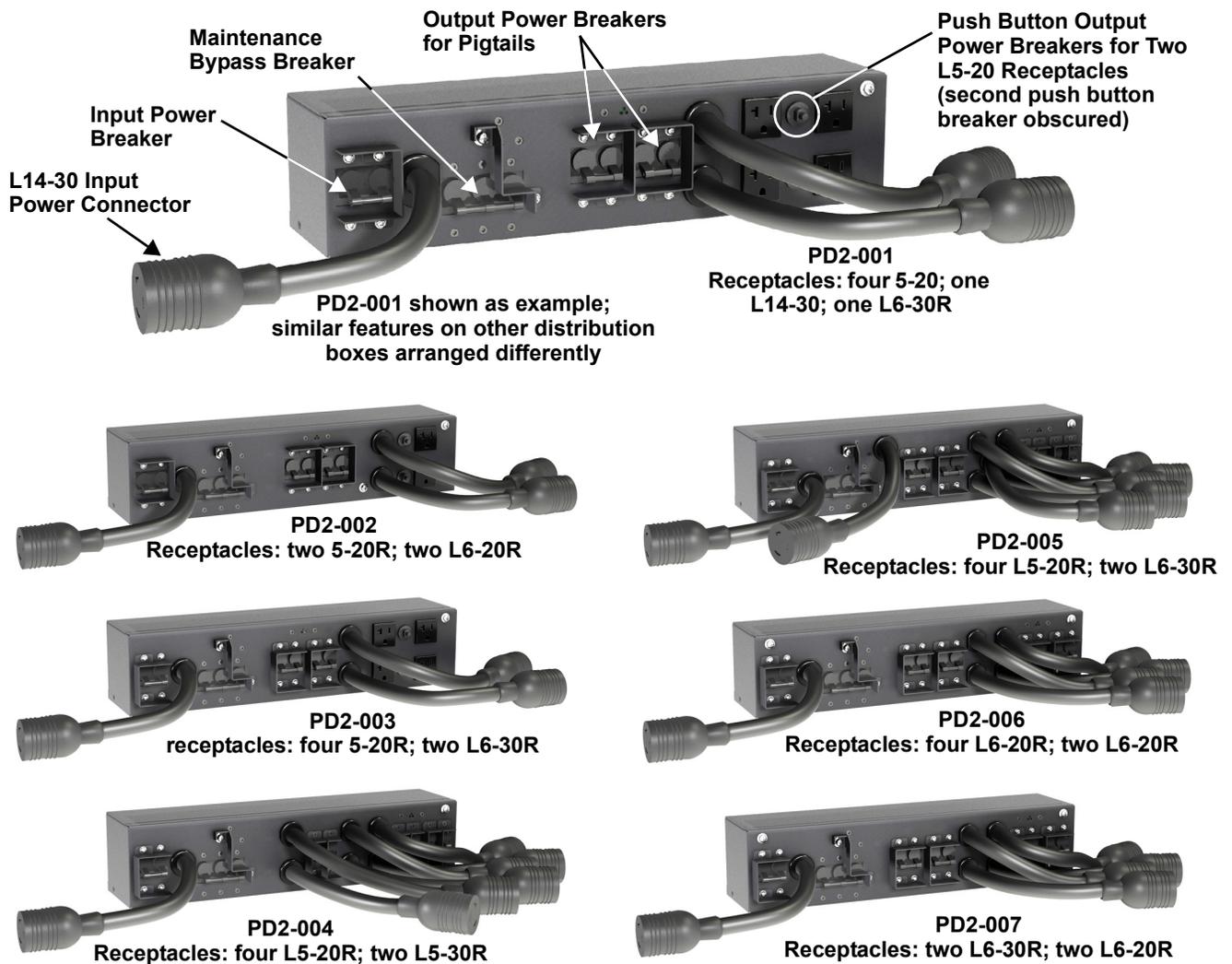


Figure 6 Power distribution models for 8000VA and 10,000VA models of Liebert GXT4

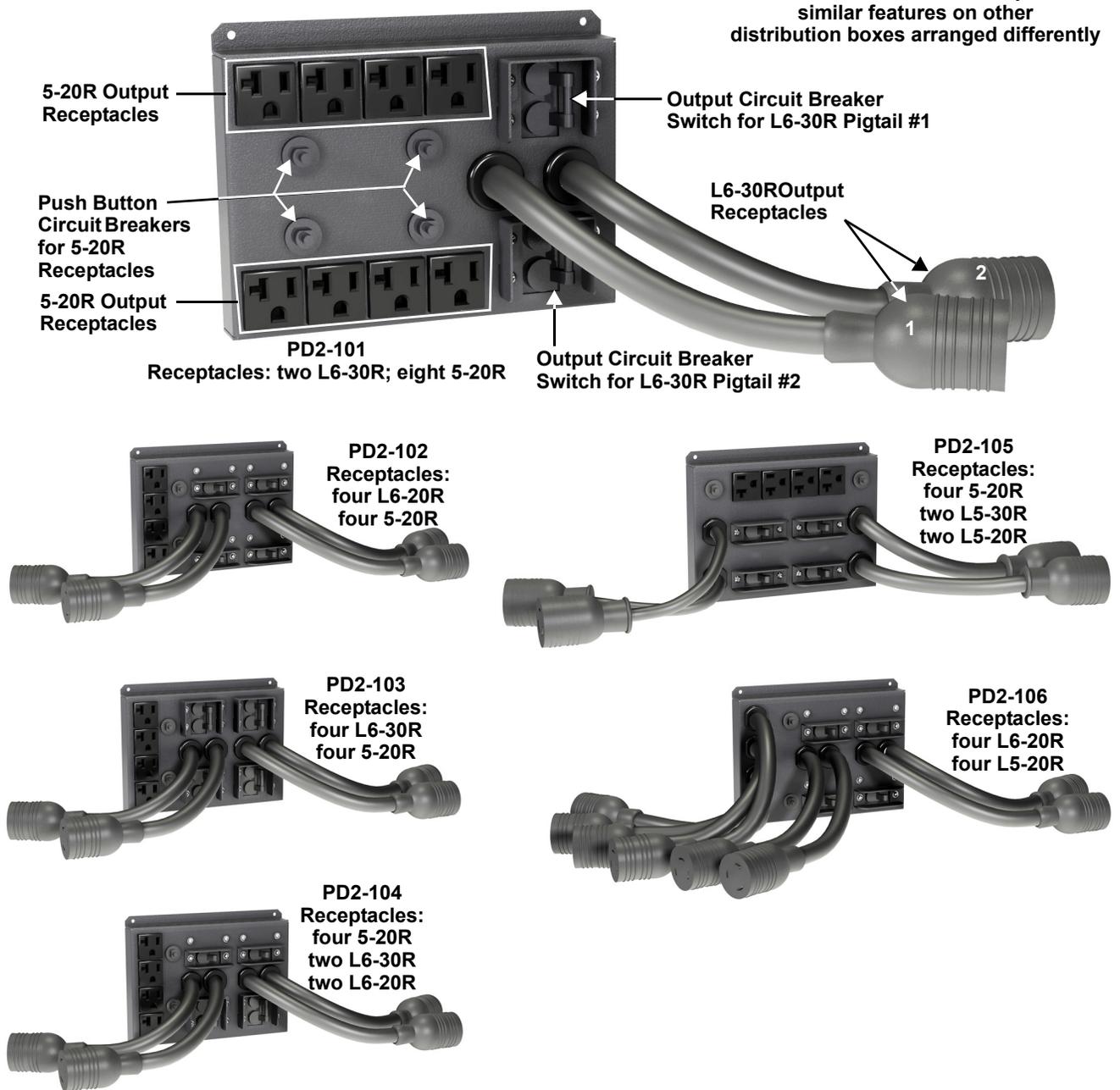
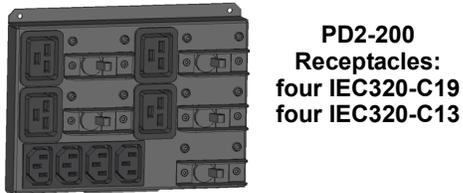
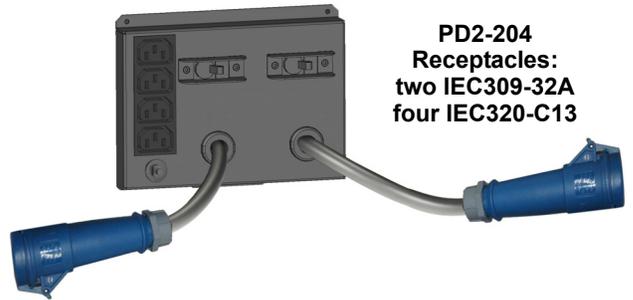
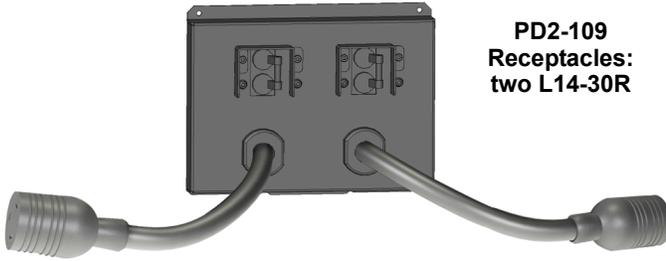
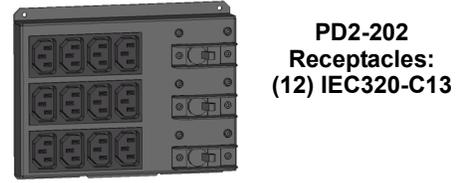
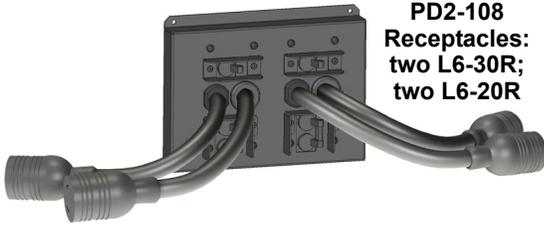
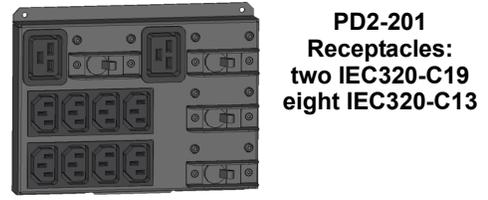


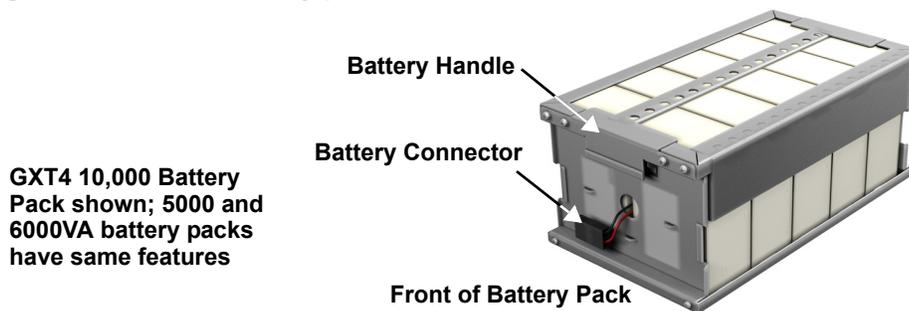
Figure 7 Power distribution models for 8000VA and 10,000VA models of Liebert GXT4 (continued)



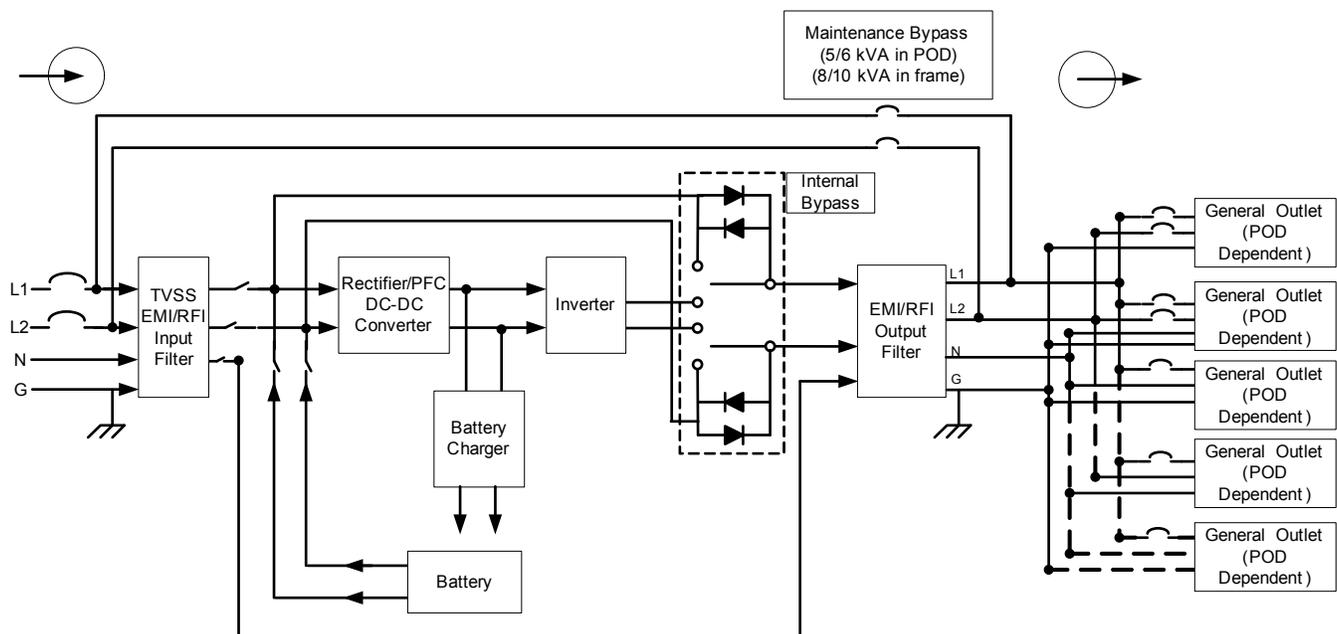
1.5 Internal Battery Packs

The UPS has two internal battery packs behind a battery access door on the front of the unit. Each internal battery pack is fitted with a connector to link to the UPS.

Figure 8 Internal battery pack with connector



1.6 Major Components



The UPS is composed of mains input, TVSS and EMI/RFI filters, rectifier/PFC, inverter, battery charger, DC-to-DC converter, battery, dynamic bypass and UPS output.

1.6.1 Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters

These UPS components provide surge protection and filter both electromagnetic interference (EMI) and radio frequency interference (RFI). They minimize any surges or interference present in the mains line and keep the sensitive equipment protected.

1.6.2 Rectifier/Power Factor Correction (PFC) Circuit

In normal operation, the rectifier/power factor correction (PFC) circuit converts mains AC power to regulated DC power for use by the inverter while ensuring that the waveshape of the input current used by the UPS is near ideal. Extracting this sinewave input current achieves two objectives:

- The mains power is used as efficiently as possible by the UPS.
- The amount of distortion reflected on the mains is reduced.

This results in cleaner power being available to other devices in the building not being protected by the Liebert GXT4.

1.6.3 Inverter

In normal operation, the inverter utilizes the DC output of the power factor correction circuit and inverts it into precise, regulated sinewave AC power. Upon a mains power failure, the inverter receives its required energy from the battery through the DC-to-DC converter. In both modes of operation, the UPS inverter is on-line and continuously generating clean, precise, regulated AC output power.

1.6.4 Battery Charger

The battery charger utilizes energy from the mains power and precisely regulates it to continuously float charge the batteries. The batteries are being charged whenever the Liebert GXT4 is connected to mains power.

1.6.5 DC-to-DC Converter

The DC-to-DC converter utilizes energy from the battery system and raises the DC voltage to the optimum operating voltage for the inverter. This allows the inverter to operate continuously at its optimum efficiency and voltage, thus increasing reliability.

1.6.6 Battery

The Liebert GXT4 utilizes valve-regulated, nonspillable, lead acid batteries. To maintain battery design life, operate the UPS in an ambient temperature of 15°C to 25°C (59°F to 77°F). Optional external battery cabinets are available to extend battery run times. For run times, see **Table 21**.

1.6.7 Internal Bypass

The Liebert GXT4 provides an alternate path for mains power to the connected load in the unlikely event of a UPS malfunction. Should the UPS have an overload, overtemperature or any other UPS failure condition, the UPS automatically transfers the connected load to bypass. Bypass operation is indicated by an audible alarm and illuminated amber Bypass LED (other LEDs may be illuminated to indicate the diagnosed problem). To manually transfer the connected load from the inverter to bypass, press the Standby/Manual Bypass button once and hold it for about 2 seconds

1.6.8 Maintenance Bypass

The Liebert GXT4 provides a manual maintenance bypass in a removable section of the rear of the UPS. This allows replacement of the UPS in the event of a UPS malfunction while keeping the connected equipment powered with utility power.



NOTE

The bypass power path does NOT protect the connected equipment from disturbances in the mains supply.

1.7 Operating Mode

The UPS operation modes include the following: Mains (AC) Mode, Bypass Mode, Battery Mode, Battery Recharge Mode, Active ECO Mode and Frequency Converter Mode.

Refer to **3.0 - Operation and Display Panel** for details about the operating mode indicators and control buttons.

1.7.1 Mains Mode

During Mains Mode, the mains provides input power to the Liebert GXT4. The filters, PFC circuit and inverter process this power to provide high-quality sine wave power to connected loads. The UPS maintains the batteries in a fully charged state.

1.7.2 Manual Bypass Mode

Manual Bypass Mode occurs when the unit is manually placed in internal bypass by navigating the LCD menu to select *3 Control > 1 Turn On & Off > Turn UPS Bypass*. Bypass operation is indicated by an audible alarm and illuminated amber bypass indicator. (If other indicators are illuminated, refer to **7.0 - Troubleshooting**). During Bypass Mode, mains power bypasses the inverter and provides energy to the connected load.

NOTICE

Risk of loss of power to the connected load. Can cause equipment damage.

Turning Off the UPS in Bypass Mode will result in loss of output power to the connected load.

1.7.3 Battery Mode

The Liebert GXT4 enters Battery Mode when mains power fails or is outside acceptable limits. The battery system supplies power through the DC-to-DC converter to the inverter to generate clean AC power for the connected loads.

When the Liebert GXT4 enters Battery Mode, the UPS sounds a half-second beep at 10-second intervals. When approximately 2 minutes of run time remains, the beeps sound every 5 seconds to warn that the battery is getting low (this Low Battery Warning is user-configurable).

In Battery Mode, the battery indicator will illuminate and the LCD will show the prompt *utility power not available*.

Press either the Up or Down button once, then press the Enter button to clear the prompt and silence the audible alarm. Once the alarm prompt has been acknowledged, the screen showing the estimated battery run time and battery capacity will be visible. Refer to **7.0 - Troubleshooting**.

For approximate battery run times, refer to **Table 21**.

NOTICE

Risk of loss of power to the connected load. Can cause equipment damage.

Turning Off the Liebert GXT4 when it is in Battery Mode will result in loss of output power to the connected load.

If the UPS is turned Off manually, it must be manually restarted after mains power returns.

If the UPS is turned Off by a communication signal or because the batteries are depleted, it will operate as set in the configuration program for Auto-Restart (Refer to **5.2.1 - Configuration Program**).

1.7.4 Battery Recharge Mode

Once mains power is applied to the Liebert GXT4, the Battery Charger begins charging the batteries.

1.7.5 Frequency Converter Mode

All models of the Liebert GXT4 are capable of frequency conversion. Frequency Conversion Mode can be selected using the configuration program. Allowable frequency operating modes include:

- Auto Sensing - 50Hz or 60Hz – Bypass Enabled
- Auto Sensing - 50Hz or 60Hz – Bypass Disabled
- Frequency Converter - 50Hz – Bypass Disabled
- Frequency Converter - 60Hz – Bypass Disabled



NOTE

The default for all models of the Liebert GXT4 is “Auto Sensing - 50Hz or 60Hz – Bypass Enabled.”



CAUTION

Risk of electric shock. Can cause injury or death.

Never touch the AC input receptacle while the UPS is operating. Voltage may still be present even when the AC input indicator is Off.

1.7.6 Active ECO Mode

All Liebert GXT4 models can operate in Active ECO Mode. In this mode, the connected equipment is powered through the bypass path to increase efficiency, reducing the electrical costs.

Active ECO mode keeps the rectifier and inverter operating, allowing the inverter to remain synchronized to bypass. This synchronization allows the transfer of the connected equipment to UPS inverter power almost seamlessly if bypass power falls outside the user-set limits. Once bypass power returns within the acceptable parameters, the UPS will return to Active ECO Mode operation.

The default setting is Active ECO Mode Off.

2.0 INSTALLATION

Do NOT attempt to start the UPS, turn on any circuit breaker or energize the input power until instructed to do so in **4.2 - Starting the UPS**.

2.1 Unpacking and Inspection

Unpack the UPS and conduct the following checks:

- Inspect the UPS for shipping damage. Report any shipping damage to the carrier and your local dealer or Emerson® representative immediately.
- Check the accessories against the delivery list. If there is any discrepancy, contact your local dealer or your Emerson representative immediately



CAUTION

The UPS is heavy (see **8.0 - Specifications**). Take proper precautions when lifting or moving it.

2.2 What's Included

The Liebert GXT4 is shipped with the following items:

- Terminal Block Communication terminals
- Liebert IntelliSlot® Web card (IS-WEBCARD), factory-installed
- Compact Disk with
 - Liebert MultiLink®
 - Configuration program
 - User manual (electronic version)
- USB cable, one; 1.2m (3.9 ft.)
- Rack mounting hardware including screws, handles, and rack slide kit (not included with model numbers ending in an “E”)
- Power Distribution Box, installed on Liebert GXT4
- Support base set, one
- Warnings, Safety Instructions booklet and WEEE recycling sheet (ISO 14001 compliance)



NOTE

The GXT4 External Battery Cabinet shipping package includes one battery cabinet, two spacers for tower configuration, one DC power cable and rack mounting hardware, including screws, handles and mounting rail kit (not included with model numbers ending with “E”).

2.3 Preparation for Installation

2.3.1 Installation Environment

Install the Liebert GXT4 indoors in a controlled environment, where it cannot be accidentally turned Off. Place it where air flows unrestricted around the unit. The installation location must be free of water, flammable liquids, gases, corrosives and conductive contaminants. Maintain a minimum clearance of 100mm (4 inches) in the front and rear of the UPS. Maintain an ambient temperature range of 0 to 32 -104°F (0-40°C).



NOTE

UPS operation in sustained temperatures outside the range of 15-25°C (59°-77°F) reduces battery life.

Installation Clearances

Maintain a clearance of at least 100mm (4 inches) in the front and rear of the Liebert GXT4. Do not obstruct the air inlets on the front panel or rear panel of the UPS—blocking the air inlets reduces ventilation and heat dissipation, shortening the service life of the Liebert GXT4.

2.4 Install the Main Cabinet

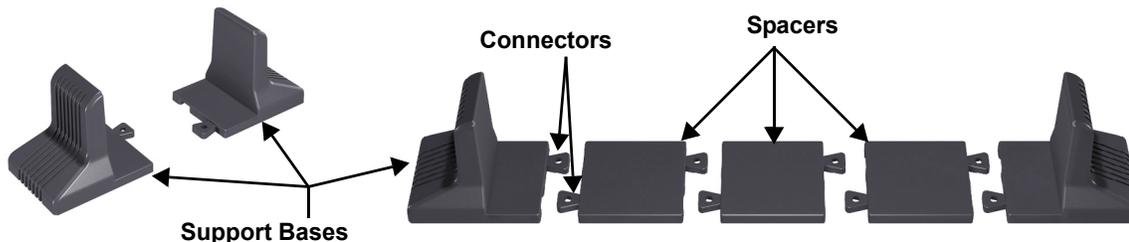
The Liebert GXT4 may be installed in either a tower configuration or in a rack, depending on available space and use considerations. Determine the type of installation and follow the appropriate instructions in either **2.4.1 - Tower UPS Installation** or **2.4.2 - Rack Installation**.

2.4.1 Tower UPS Installation

To install the Liebert GXT4 as a tower:

1. Take the support bases out of the accessories bag (see **Figure 9**).

Figure 9 Support bases



2. If optional Liebert external battery cabinets will be connected to the Liebert GXT4, take out the spacers shipped with the battery cabinet.
3. Connect the spacers and the support bases as shown in **Figure 9**. Each Liebert GXT4 needs two assembled support bases, one in the front and one in the rear.
4. Adjust the direction of the operation and display panel and logo on the Liebert GXT4.
 - a. Remove the front plastic bezel cover as shown in **Figure 10**.

Figure 10 Remove the front plastic bezel cover



- b. Pull the operation and display panel gently, rotate it 90 degrees clockwise and snap it back into position, as shown in **Figure 11**.

Figure 11 Rotate the operation and display panel



- c. Pull the logo on the front plastic bezel cover gently, rotate it 90 degrees clockwise and snap it back into position. The rotated front plastic bezel cover is shown in **Figure 11**.

- d. Replace the front plastic bezel cover on the Liebert GXT4. At this point, the UPS operation and display panel and logo have been rotated 90 degrees clockwise, which provides upright viewing for users.
5. Place the Liebert GXT4 and any battery cabinets on the support bases. Each Liebert GXT4 needs two support assemblies.

2.4.2 Rack Installation

The Liebert GXT4 UPS and external battery cabinets (EBC), when installed in a rack enclosure, must be supported by a shelf or rack-mount rails. The Liebert GXT4 UPS and EBC units ship with all required hardware to allow rack-mount installation (not included with model numbers that end in "E"). Because different rack-mount options install differently, refer to the installation instructions provided with the rack mount kit being used.

2.5 External Battery Cabinet Installation



WARNING

Risk of electric shock. Can cause injury or death.

Disconnect all local and remote electric power supplies before working within.

Ensure that the Liebert GXT4 is shut down and power has been disconnected before beginning any work on or in the unit.

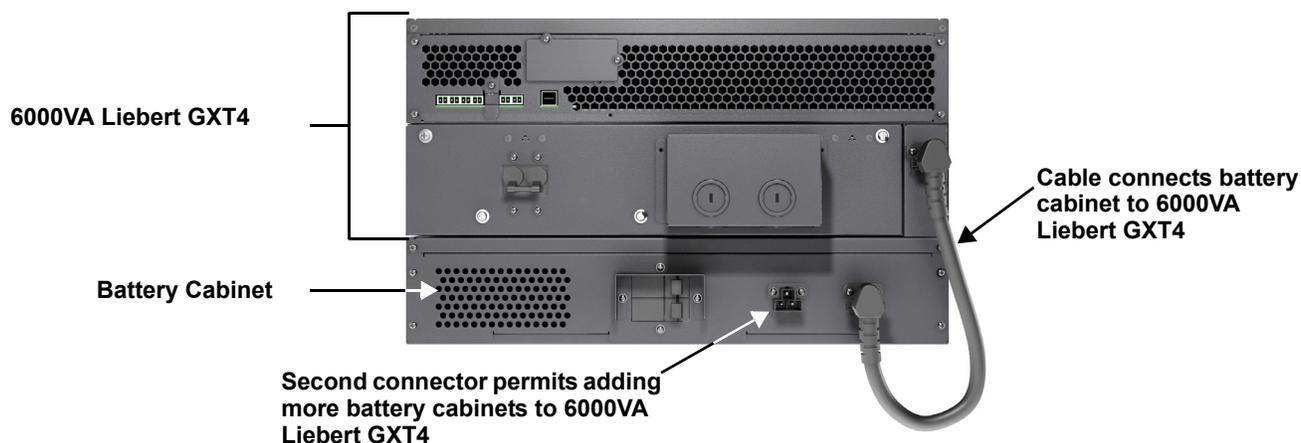


CAUTION

The external battery cabinet(s) are heavy (see **Table 17**). Take proper precautions when lifting them.

Optional Liebert external battery cabinets may be connected to the UPS to provide additional battery run time. External battery cabinets are designed to be placed on one side of the UPS in a tower configuration or stacked beneath the UPS in a rack configuration.

Figure 12 External battery cabinets connected to 6000VA Liebert GXT4



1. Inspect the external battery cabinet for freight damage. Report damage to the carrier and your local dealer or Emerson representative.
2. Optional rack-mount hardware is shipped with the external battery cabinet and may be installed at this time if desired.
3. Use the enclosed support bases for the tower option to prevent tip-over. One additional set of support base extensions ships with each external battery cabinet.
4. Verify the External Battery Cabinet breaker is in the Off position.
5. Connect the supplied external battery cabinet cable to the rear of the external battery cabinet, then to the rear of the UPS.
6. Turn the External Battery Cabinet breaker to the On position.
7. Verify the circuit breaker on the External Battery Cabinet is in the On position.

8. Use the included configuration program or the LCD to program the UPS with the number of external battery cabinets connected. Instructions for the configuration program are in **5.2.1 - Configuration Program**.
9. The UPS is now equipped with additional backup battery run time. For approximate battery run times, refer to **Table 21**.

**NOTE**

When removing the External Battery Cabinet, the circuit breaker on the rear of the cabinet must be turned off before disconnecting the cable.

**NOTE**

If the UPS is to be shipped or stored for an extended time, the connector should be disconnected. This will minimize any standby current drain on the batteries and help attain their design life.

2.6 Connect Input/Output Power



WARNING

Risk of electric shock. Can cause injury or death.

Disconnect all local and remote electric power supplies before working within. Ensure that the Liebert GXT4 is shut down and power has been disconnected before beginning any work on or in the unit.

The Liebert GXT4-5000RT208, Liebert GXT4-6000RT208 and Liebert GXT4-6000RTL630 are shipped with a power distribution box attached. The Liebert GXT4-8000RT208 and Liebert GXT4-10000RT208 are shipped with a cover plate over the power distribution connector.

Follow the instructions below for removal and installation.

**NOTE**

Do not operate the UPS with the power distribution box removed. To shut off all power to this box and to the load, utility input power must be disconnected.

2.6.1 Remove the Power Distribution Box from 5000 and 6000VA Models

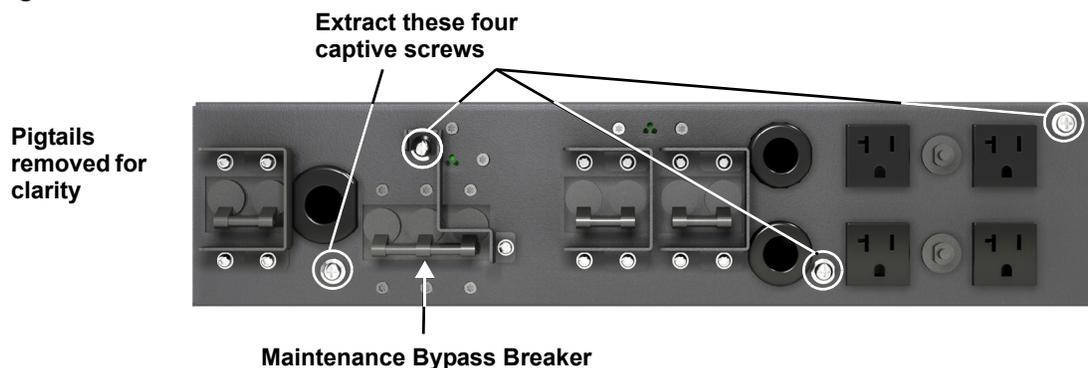
1. Manually transfer the connected equipment to the internal bypass.
 - a. From the main menu select CONTROL, then press **Enter**.
 - b. Select TURN ON & OFF and press **Enter**.
 - c. Select TURN UPS BYPASS and press Enter. The UPS will transfer the connected loads to the internal bypass. (For help, refer to 4.4 - **Manual Bypass**.)
 - d. Loosen the captive screw over the maintenance bypass breaker (see **Figure 13** for the breaker's location).
 - e. Turn the maintenance bypass breaker On.

NOTICE

The load is unprotected from disturbances in the power supply while the UPS is on bypass.

2. Turn the output and input breakers Off.
3. Loosen other captive screws until the power distribution box releases.
4. Remove the power distribution box from the UPS and set it aside.
5. Loosen the screws over the plastic cover for the connector on the rear of the panel.
6. Slide the plastic cover over the connector and tighten the screws.

Figure 13 Power distribution box removal from 5000 and 6000VA models



2.6.2 Remove the Power Distribution Cover from 8000 and 10,000VA Models

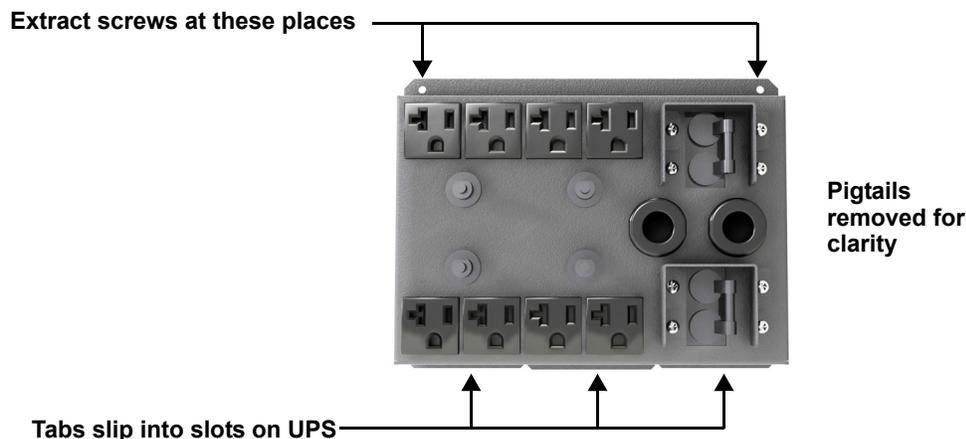
1. Shut down the Liebert GXT4 (for help, refer to 4.5 - **Shut Down the Liebert GXT4**).
 - a. From the Main Menu select CONTROL, press Enter, then select TURN ON & OFF.
 - b. Press the enter key.
 - c. Select TURN UPS OFF, then press Enter.
Power to the connected loads is now Off.
2. Loosen the captive screw over the maintenance bypass breaker (see **Figure 4** for the breaker's location).
3. Turn the maintenance bypass breaker On.

NOTICE

The load is unprotected from disturbances in the power supply while the UPS is on bypass.

4. Turn the output and input breakers Off.
5. Support the power distribution box and remove the two screws at the top of the box.
6. Remove the cover or power distribution box from the UPS and set it aside.
7. If removing a power distribution box, carefully pull apart the power distribution box connector and the UPS connector.

Figure 14 Power distribution box removal from 8000 and 10,000VA models



2.6.3 Install the Power Distribution Box on 5000 and 6000VA Models

1. Align the connectors and press the power distribution box onto the UPS.
2. Hold the box firmly against the UPS and tighten the captive screws except the one over the maintenance bypass breaker.
3. Turn the output and input breakers On.
4. Start the UPS according to startup instructions.
5. Verify that the UPS lamp is illuminated.
6. Turn the maintenance bypass breaker Off.
7. Insert the maintenance bypass cover behind the captive screw and tighten the screw.



NOTE

The maintenance bypass breaker cover must be installed behind the captive screw and the screw must be tightened for the UPS to operate in inverter mode.

2.6.4 Install the Power Distribution Box on 8000 and 10,000VA Models

1. With the cover or distribution box removed, press the UPS and distribution box connectors together. Ensure that the connectors are fully seated.
2. Align the screw holes and press the power distribution box onto the UPS, making sure that the tabs at the bottom of the box fit into the slots on the UPS.
3. Attach the box to the UPS by installing screws into the two holes at the top of the box.
4. Tighten the screws.
5. Turn the output and input breakers On.
6. Start the UPS according to startup instructions.
7. Verify that the UPS lamp is illuminated.

2.6.5 Distribution Box Electrical Connections

Electrical connections are made through a removable power distribution box that attaches to the rear of the UPS.

- PD2-HDWR-MBS, PD2-001, PD2-002, PD2-003, PD2-004, PD2-005, PD2-006 and PD2-007 models fit the 5000 and 6000VA models of the Liebert GXT4
- PD2-L630 fits the GXT4-6000RTL630
- PD2-101, PD2-102, PD2-103, PD2-104, PD2-105, PD2-106, PD2-107, PD2-108, PD2-109, PD2-200, PD2-201, PD2-202, PD2-204 models fit the 8000 and 10,000VA models of the Liebert GXT4

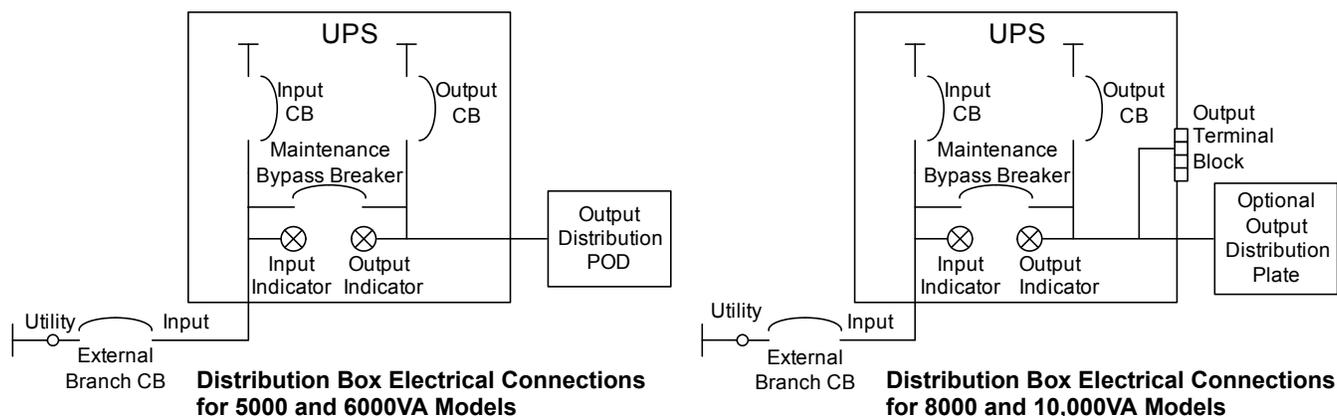
The installer must provide an upstream branch circuit breaker. The input circuit breaker on the distribution box and the output circuit breaker on the rear of the power distribution box disconnect all power between the main cabinet and the distribution box.

Models equipped with a manual bypass breaker pass bypass power directly to the bypass breaker from the input terminal block. The input circuit breaker on the distribution box does not disconnect power from the manual bypass breaker.

Table 2 Branch circuit breaker ratings

Unit Rating	Maximum Breaker Rating
5000VA	D Type 30A Long Delay
6000VA	
8000VA	D Type 60A Long Delay
10,000VA	

Figure 15 Distribution box electrical connections diagram



Terminal Block Connections

Conduit entry holes are provided on the rear and side of the box. Input and output wiring should not share the same conduit. Emerson recommends using strain relief when installing the wire.

Table 3 Electrical specifications

UPS Model	Recommended (Maximum) External Overcurrent Protection	Recommended Wire (Including ground wire) (75°C copper wire)	Maximum Wire Accepted by Terminal Block	Terminal Tightening Torque
GXT4-5000RT208 GXT4-6000RT208 GXT4-6000RTL630	30A	10AWG (4mm ²)	8AWG (6mm ²)	20 in-lb (2.26 Nm)
GXT4-8000RT208 GXT4-10000RT208	60A	6AWG (10mm ²)	4AWG (16mm ²)	

Figure 16 Terminal block connections

Liebert GXT4-5000 and 6000RT208

	L2	N	L1	L2	N	L1	
OUTPUT				INPUT			

Liebert GXT4-8000 and 10,000RT208

	L2	N	L1		L2	N	L1
OUTPUT				INPUT			

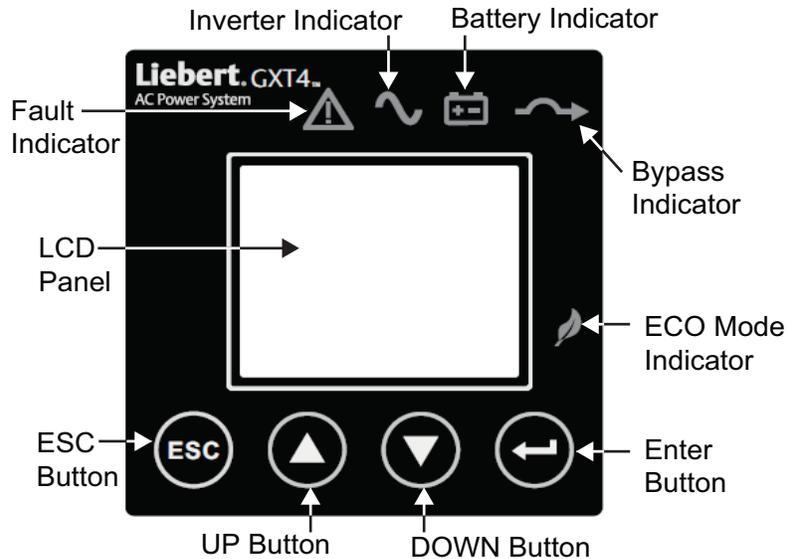
**NOTE**

1. Emerson recommends installing a UL489-approved breaker upstream of unit.
2. The installer must provide circuit breaker protection according to local codes. The utility disconnect should be within sight of the UPS or have appropriate an appropriate lock-out. Maintain service space around the UPS or use flexible conduit.
3. The installer must provide output distribution panels, circuit breaker protection or emergency disconnects according to local codes. Output circuits must not share a common conduit with any other wiring.

3.0 OPERATION AND DISPLAY PANEL

This chapter describes the Liebert GXT4 controls, particularly the operation and display panel on the front of the Liebert GXT4. The panel has four control buttons, seven LED indicators and a liquid crystal display (LCD), as shown in **Figure 17**.

Figure 17 Operation and display panel



3.1 LED Indicators

The five LED indicators on the front of the operation and display panel are:

- Inverter
- Battery
- Bypass
- ECO Mode
- Fault

Figure 17 shows the indicators' locations; their descriptions and functions are shown in **Table 4**.

Table 4 LED indicators

LED Indicators	LED Color	Description
Inverter	Green	On when the inverter is supplying power
Bypass	Amber	On when the load is supplied by the mains through automatic/manual bypass
Battery	Amber	On when the load is supplied by the battery
Fault	Red	On when an error has occurred within the UPS
ECO Mode	Green	On when the UPS is in ECO Mode

3.2 Control Buttons

The four control buttons on the front of the operation and display panel are:

- ESC
- Up
- Down
- Enter

Figure 17 shows the buttons' locations; their descriptions and functions are shown in **Table 5**.

Table 5 Control buttons

Control Buttons	Description
ESC Button	Pressing this button returns to the previous menu or aborts any change in the input data field before confirming.
Up Button	Pressing this button can move the cursor up or increase the value displayed in the input data field. When a menu is displayed on several screens, pressing the button can scroll up.
Down Button	Pressing this button can move the cursor down or decrease the value displayed in the input data field. When a menu is displayed on several screens, pressing the button can scroll down.
Enter Button	Pressing this button can enter the next level menu or confirm the parameter setting value.

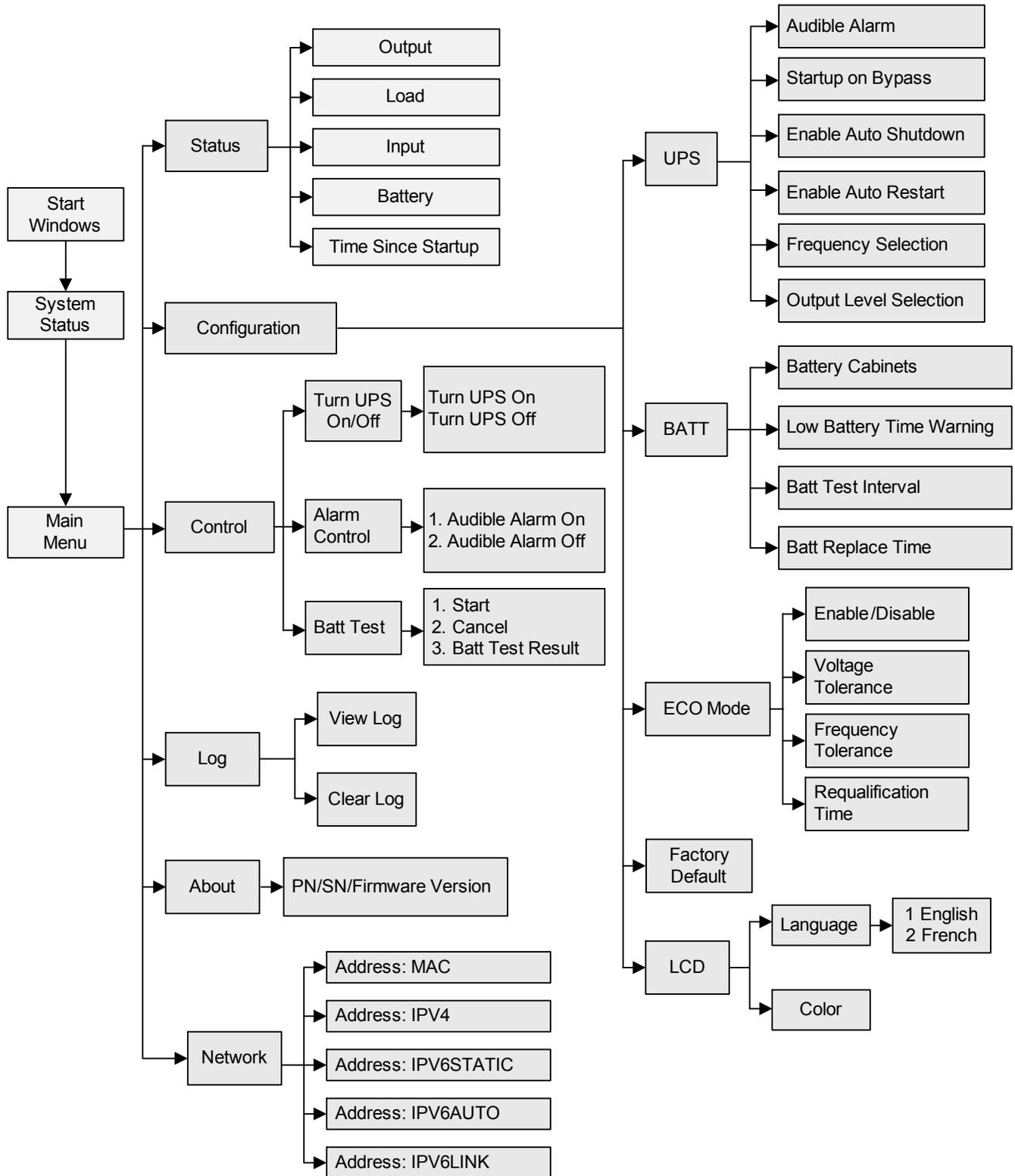
3.3 LCD

The LCD panel shows the UPS status and enables changes to the UPS settings by assisting in navigating through the Liebert GXT4's menu (see **3.4 - Menu Structure**).

3.4 Menu Structure

The menu structure of the LCD is shown in **Figure 18**.

Figure 18 Menu structure



3.4.1 Startup Screen

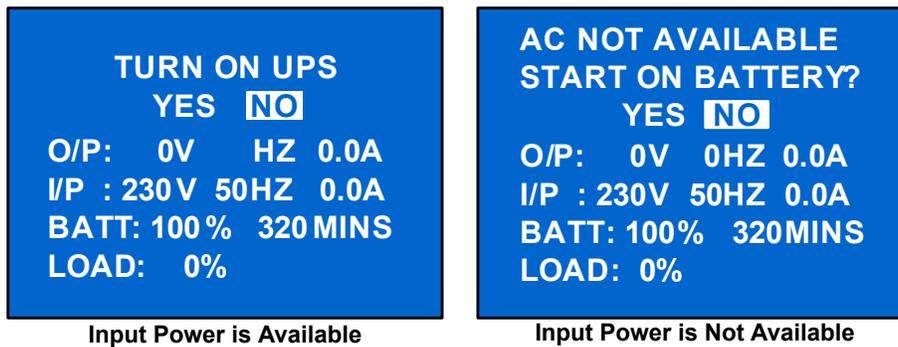
When the Liebert GXT4 is starting up, it initiates a self-test and displays the screen shown in **Figure 19** for about 10 seconds.

Figure 19 Startup screen



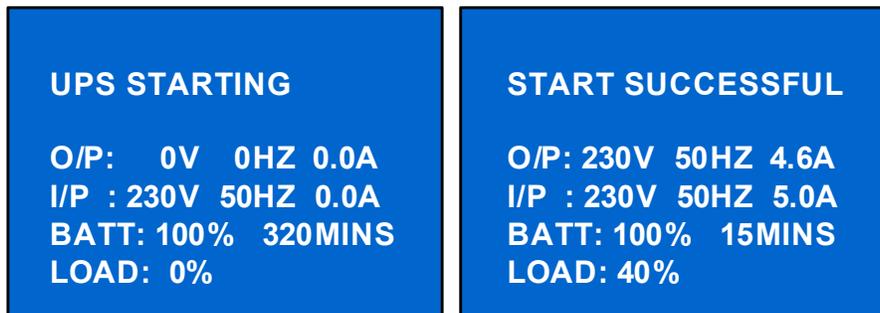
After about 10 seconds, the LCD shows one of the On screens in **Figure 20**; the screen shown depends on whether input power is available.

Figure 20 Startup screens



To turn on the UPS, press either the Up or Down button to select *YES* and press the Enter button. The UPS will start up, the LCD will display *UPS STARTING* and then *START SUCCESSFUL* after the UPS is turned On, as shown in **Figure 21**.

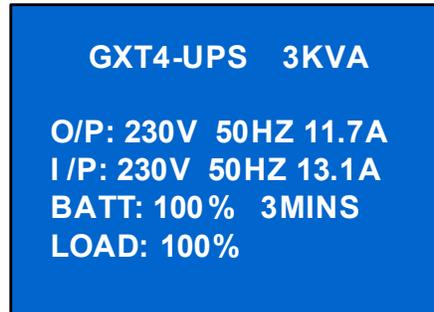
Figure 21 Starting and Start Successful screens



3.4.2 Default Screen

Press any button in the START SUCCESSFUL screen to enter the default interface, shown in **Figure 22**.

Figure 22 Default screen



Values shown will vary according to installation and configuration.

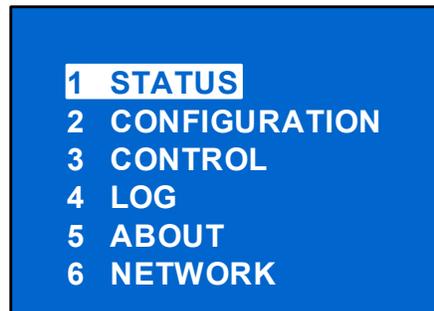
In the default screen, the LCD shows the UPS model, output parameters, input parameters, battery capacity with run time estimate and load percentage. The UPS operation mode (online /inverter, ECO, Battery or Bypass) will be indicated by the LED indicators.

If no control button (ESC, Up, Down, Enter) is pressed for 2 minutes, the LCD will enter the screen saver mode (backlight turns off). It will remain off until a control button is pressed.

3.4.3 Main Menu Screen

Press the Enter button in the default screen to enter the MAIN MENU screen, as shown in **Figure 23**.

Figure 23 Main Menu screen

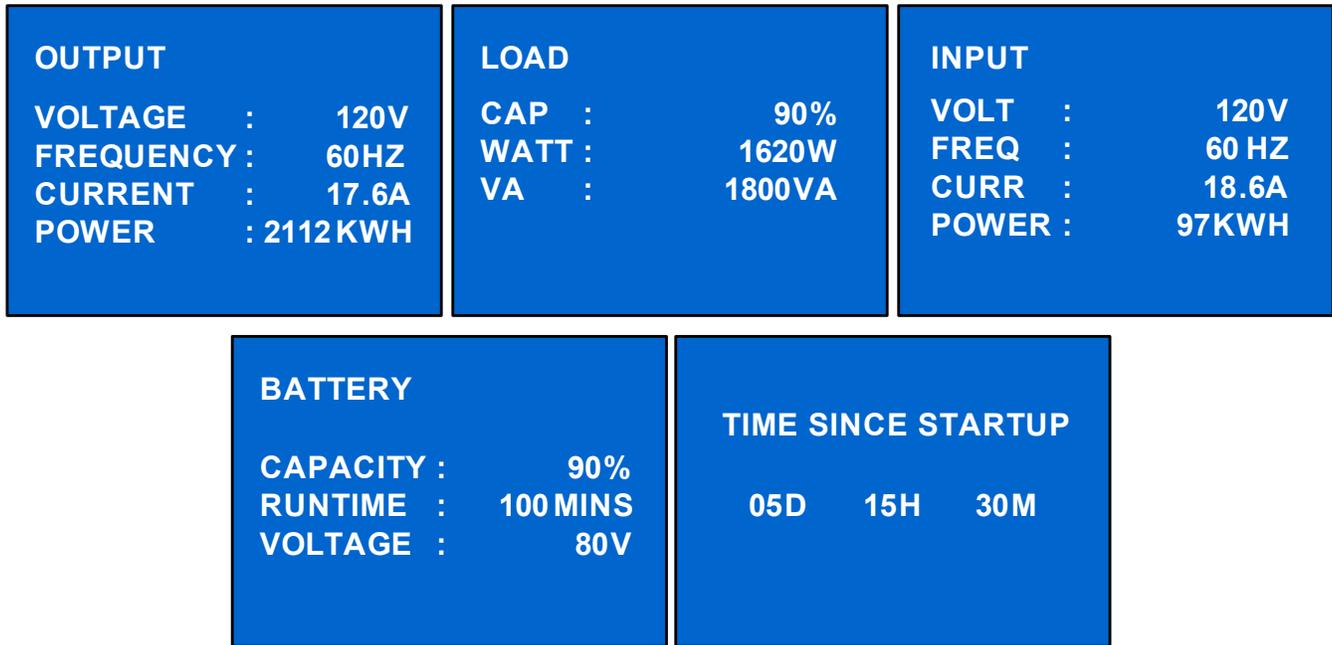


To select a submenu, press the Up or Down button to move the cursor to the required item, then press the Enter button to enter its submenu or set its parameter.

STATUS Screen

In the MAIN MENU screen, select *STATUS* to enter the Status Screen, displaying OUTPUT, LOAD, INPUT, BATTERY and TIME SINCE STARTUP, as shown in **Figure 24**.

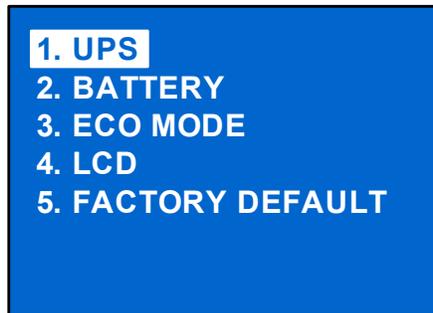
Figure 24 Status screens



CONFIGURATION Screen

Select *MAIN MENU* > *CONFIGURATION* to enter the Configuration menu. This menu has seven submenus, as shown in **Figure 25**.

Figure 25 CONFIGURATION screen

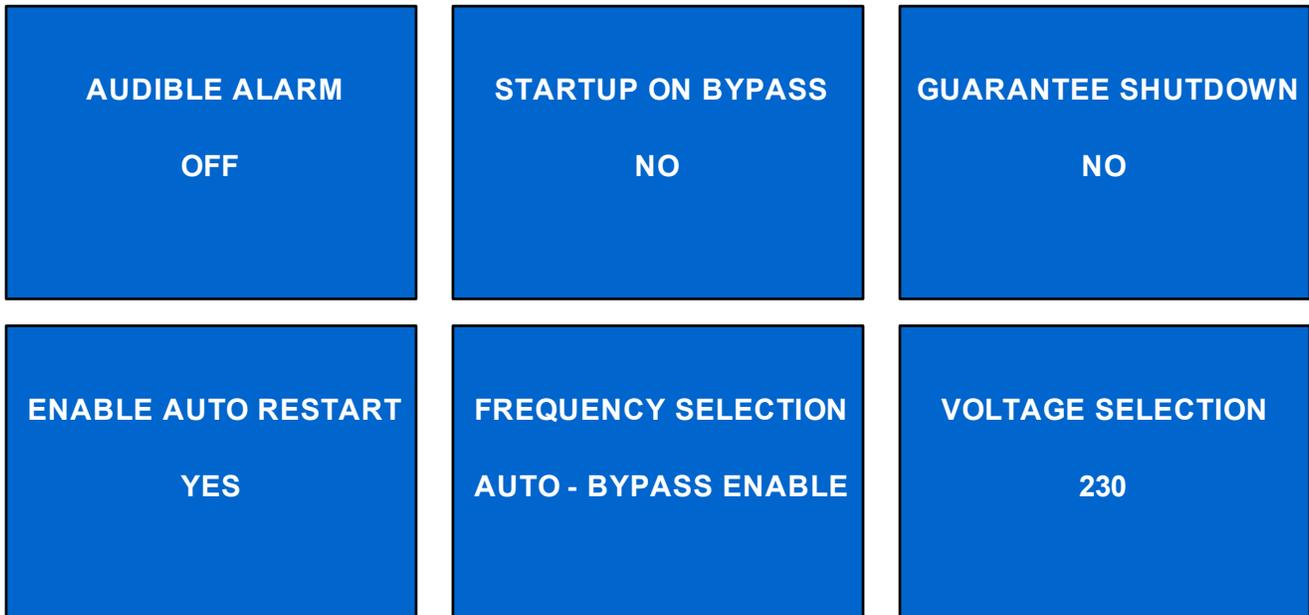


In the CONFIGURATION screen, press the Up or Down button to move the cursor to the required item, then press the Enter button to enter a submenu or set its parameters.

UPS Screen

Select *MAIN MENU > CONFIGURATION > UPS* to enter the UPS screen. This menu has six screens, as shown in **Figure 26**.

Figure 26 UPS screens

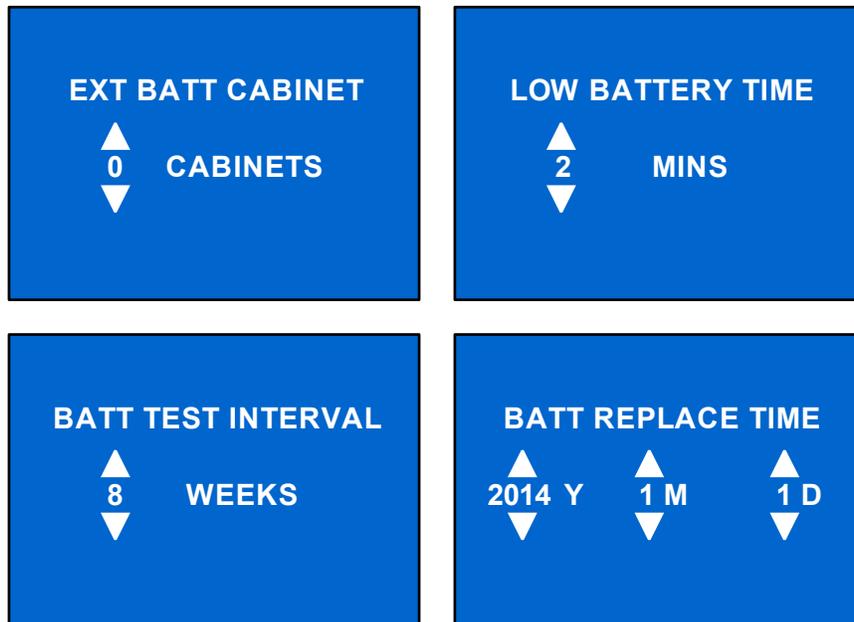


Press the Up or Down button to move the cursor to the required item, and press the Enter button to confirm the settings.

Battery Screen

Select *MAIN MENU > CONFIGURATION > BATTERY* to enter the BATTERY screen. This menu has four screens, as shown in **Figure 27**.

Figure 27 Battery screen

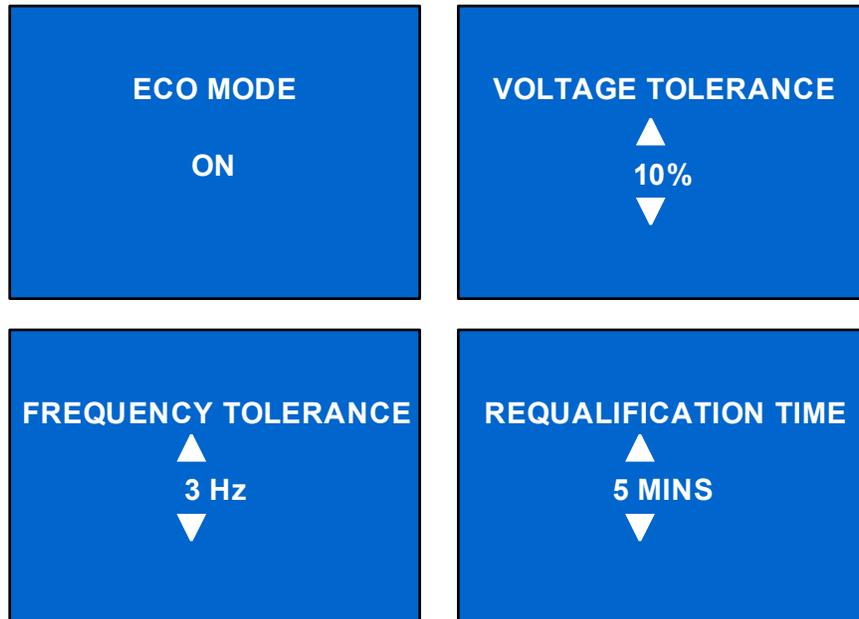


Press the Up or Down button to increase or decrease the value of the settings, and press the Enter button to confirm it.

ECO Mode Screens

Select *MAIN MENU* > *CONFIGURATION* > *ECO MODE* to enter the ECO MODE screens, as shown in **Figure 28**.

Figure 28 ECO Mode screen



Press the Up or Down button to move the cursor to the required item, and press the Enter button to confirm the settings.

LCD screen

Select *MAIN MENU* -> *2 CONFIGURATION* -> *6 LCD* to enter the LCD screen. This menu has two submenus, as shown in **Figure 29**.

Figure 29 LCD screen



Select **1 LANGUAGE** and press the Enter button to enter the LANGUAGE screen, as shown in **Figure 30**.

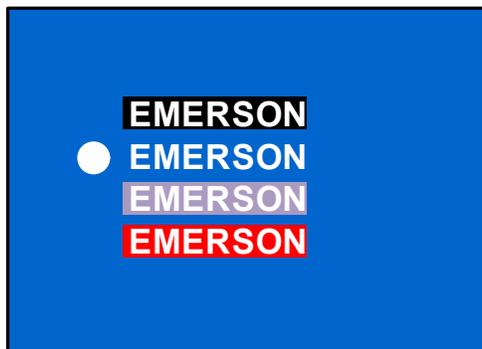
The Liebert GXT4 is capable of supporting multiple languages. For the list of supported languages and instructions on how to upload them, refer to the Configuration Program user manual on the included CD.

Figure 30 Language screen



Select **2 COLOR** and press the Enter button to enter the COLOR screen, as shown in **Figure 31**.

Figure 31 Color screen



FACTORY DEFAULT screen

Select Main Menu -> **2 CONFIGURATION** -> **7 FACTORY DEFAULT** to enter the FACTORY DEFAULT screen, as shown in **Figure 32**.

Figure 32 Factory Default screen



Control Screen

Select Main Menu -> **3 CONTROL** to enter the CONTROL screen. This screen has three submenus, as shown in **Figure 33**.

Figure 33 Control screen

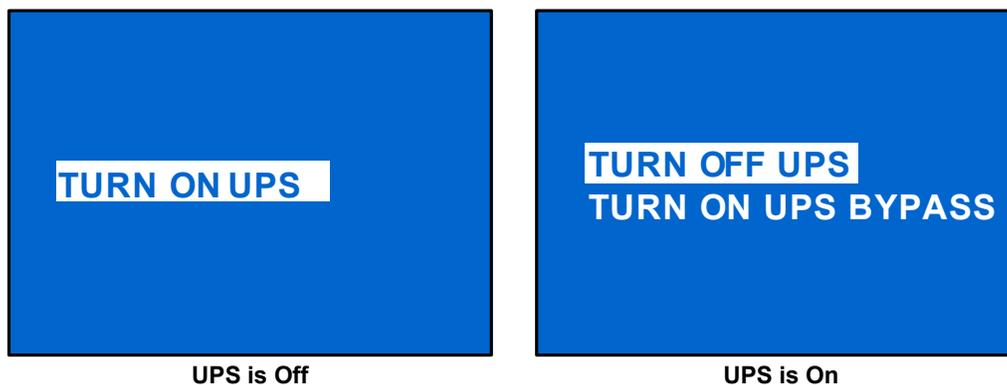


In the CONTROL screen, press the Up or Down button to move the cursor to the required item, and press the Enter button to enter its submenu.

TURN ON & OFF screen

Select Main Menu -> **3 CONTROL** -> **1 TURN ON & OFF** to enter the TURN ON & OFF screen. This screen shows one of two displays, depending on the state of the UPS, as shown in **Figure 34**.

Figure 34 Turn UPS On or Off screen



ALARM CONTROL screen

Select Main Menu -> **3 CONTROL** -> **2 ALARM CONTROL** to enter the ALARM CONTROL screen, as shown in **Figure 35**. This section allows active audible alarms to be silenced. To completely turn off the audible alarm, refer to CONFIGURATION > UPS as shown in Figure 26

Figure 35 Alarm Control screen



BATT TEST screen

Select *MAIN MENU* -> *3 CONTROL* -> *3 BATT TEST* to enter the BATT TEST screen, as shown in **Figure 36**.

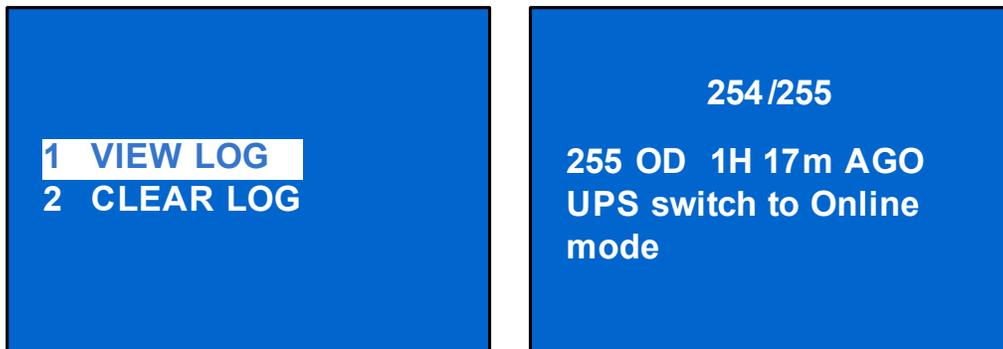
Figure 36 Batt Test screen



Log Screen

Select *MAIN MENU* -> *4 LOG* to enter the LOG screen. This screen has two submenus, as shown in **Figure 37**.

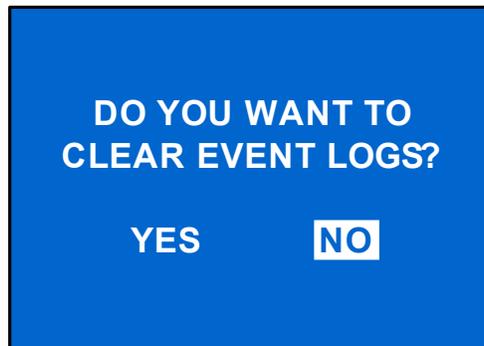
Figure 37 Log screens



CLEAR LOG Screen

Select *MAIN MENU* > *LOG* > *CLEAR LOG* to enter the CLEAR LOG screen, as shown in **Figure 38**.

Figure 38 Clear Log screen



Press the Up or Down button to move the cursor to the required item. Press the Enter button to confirm the settings.

ABOUT Screen

Select Main Menu> ABOUT to enter the ABOUT screen, as shown in **Figure 39**.

Figure 39 About screen



The ABOUT screen displays UPS model, serial number, software version and hardware version.

Network

Select *MAIN MENU>NETWORK* to enter the NETWORK screen.

The NETWORK screen displays the MAC address and the IPv4 IP address. If the Liebert GXT4 is fitted with an optional Liebert IntelliSlot Web card (Liebert IS-WEBCARD), the screen will display IPv6 IP address settings (IPv6 requires configuration), as shown in **Figure 40**.

Figure 40 Network screens



3.4.4 Prompt List

A prompt screen is displayed during the operation of the system to alert you to certain conditions and/or to require your confirmation of a command or other operation. See **Table 6** for the system prompts and meanings.

Table 6 Prompts and meanings

Prompt	Meanings
Mains Power Restored	The mains power returns and the UPS transfers back to mains (AC) mode.
UPS Return From A Low Battery Condition	The UPS transfers back to mains (AC) mode from battery low mode.
UPS Return From Battery Mode	The UPS transfers back to mains (AC) mode from battery mode.
UPS Self Test Successful	The UPS self-test is successfully performed.
UPS Shutdown Command Received	The UPS shut down was initiated through communication.
UPS Turn Off	The UPS shuts down and has no output power.
UPS Turn On	The UPS starts up successfully and supplies protected power to the load.
UPS Shutdown Process Had Been Cancelled	The shutdown command sent through Liebert MultiLink or SNMP card to the UPS is canceled,
ECO Mode Enabled	The UPS is configured to ECO mode operation,
ECO Mode Disabled	The UPS is configured to Online mode, supplying protected power to the load through the inverter.
UPS Internal Temperature Return To Normal	The internal temperature of the UPS recovers to normal range.
UPS Load Return From Overload	The loads are reduced, and the UPS recovers to normal state from overload.
Load On Inverter	The inverter is on and supplies protected power to the load.
Load On ECO Bypass	The UPS is on ECO mode; the mains is supplying power to the load directly to reduce energy usage.
Bypass Power Restored	The bypass power recovered and the UPS can now transfer to bypass.

3.4.5 Warning List

All UPS warning messages are described in **Table 7**.

Table 7 Warning list

Warning	Description
Utility power not available	The utility power is not available, or it cannot satisfy the requirements for the UPS to operate
UPS batteries low and exhausted soon	The battery capacity is low and will be exhausted soon
UPS has switched to battery mode	The utility power is abnormal or the PFC side is faulty, the UPS transfers back to Battery mode
Load on Bypass	The UPS transfers to Bypass mode, at this point, the input utility power supplies power to the load directly, and the load is not protected
Input power wiring error	L-N line reverse or N line not connected
Bypass power not available	The bypass power is not available, or it cannot satisfy the requirements for the UPS transfers to bypass
UPS Maintenance bypass output	The UPS transfers to maintenance bypass
AC input not qualified, cannot start UPS	The utility power is not qualified, the inverter cannot be powered up
Output disabled	REPO terminal connect error

3.4.6 Fault List

All UPS fault messages are described in **Table 8**.

Table 8 Fault list

Fault	Description
UPS Self-Test Failed	The battery is bad or weak or not connected.
UPS Overload	The UPS is overloaded.
Inverter Out Of Order	The inverter has failed.
Battery Weak/Bad	The battery is bad or weak.
Output Short Circuit	The output connection is short-circuited.
DC Bus Overvoltage	The DC bus is faulty.
UPS Overtemperature	Overtemperature occurs to the UPS and the UPS will transfer to Bypass mode.
Charger Out Of Order	The charger has failed.
Fan Out Of Order	At least one fan is failed.
DC Bus Discharge Fail	DC-DC failure occurs.
Rectifier Out Of Order	Rectifier failure occurs.

If a fault occurs, the UPS automatically switches to Bypass Mode. The original operating mode will be maintained only in the case of a battery disconnection fault. The fault message alternates with UPS Mode once a second, the red fault indicator on the operation and display panel lights up and the alarm sounds continuously.

If a fault occurs, proceed as follows:

1. Enter the ALARM CONTROL screen (see **Figure 35**), and select *AUDIBLE ALARM ON* or *AUDIBLE ALARM OFF* to switch the alarm On or Off.
2. Enter the EVENT LOG screen (see **Figure 37**), and select *VIEW LOG* to view the entire Event log.



NOTE

There will be a short delay before the EVENT LOG screen displays the historical fault log to allow the log to load.

4.0 OPERATION

This section describes checks to be made before starting the UPS, how to start the UPS, manual battery test, manual bypass, shutting down the UPS and disconnecting mains power from the UPS.



NOTE

The Liebert GXT4's battery has been fully charged before delivery, but some charge will be lost during storage and shipping. To ensure that the battery has adequate reserve power to protect the connected load, charge the battery for three hours before putting the UPS into service.

4.1 Startup Checklist for the Liebert GXT4

Before starting the UPS, perform these checks:

- ___ 1. Check that the input plugs and loads are connected properly and reliably.
- ___ 2. Check that the battery cable is connected properly.
- ___ 3. Check that the communication cables are connected properly.

4.2 Starting the UPS

1. Plug the UPS into the appropriate AC outlet.
2. Close the input breaker on the rear of the unit.
3. The UPS will begin the startup sequence once AC power is present. *The UPS will sound an audible alarm, this is normal.*
4. On the LCD, press either the Up or Down button once, then press the Enter button to turn On the UPS. *The UPS will sound the audible alarm again as the output receptacles are now being powered by the internal bypass, then will sound one more time as the inverter powers the connected equipment.*
5. Check the LCD and LED indicators to ensure the UPS is operating normally.
6. Check the load percentage on the default screen to ensure the connected equipment is not exceeding the UPS rated capacity.

The UPS is now providing conditioned and protected power to the connected equipment.

4.3 Manual Battery Test

To initiate a manual battery test, select *MAIN MENU > CONTROL>BATT TEST>START*.

- If the battery test results show *FAILED*, allow the UPS to recharge the batteries for 24 hours.
- Retest the batteries after 24 hours of charging.
- After the batteries have been retested, if the battery test still shows *FAILED*, contact your local Emerson® representative or Emerson Network Power Channel Support.

4.4 Manual Bypass

To manually transfer the connected equipment to the internal bypass:

1. From the main menu select Control then press enter.
2. Select *TURN ON & OFF* and press Enter.
3. Select *TURN UPS BYPASS* and press Enter. The UPS will transfer the connected loads to the internal bypass.

If the internal bypass is not available because of mains power problems, pressing this button once will be ignored. Bypass operation is indicated by an audible alarm and illuminated amber Bypass indicator. (If other indicators are illuminated, refer to **7.0 - Troubleshooting**.)

4.5 Shut Down the Liebert GXT4

To shut down the UPS from the LCD:

1. From the Main Menu select CONTROL, press Enter, then select TURN ON & OFF.
2. Press the enter key.
3. Select TURN UPS OFF, then press Enter. Press either the up or down button to move the cursor to confirm the turn off command and press enter. *Note: the UPS will sound an audible alarm, this is normal.*
4. Power to the connected equipment is now off.

The UPS display will still be illuminated because the batteries are still being charged. The UPS may now be disconnected from AC power, and the UPS will completely shut down in approximately 15 seconds.

4.6 Disconnecting Input Power from the Liebert GXT4

1. After the UPS has been shut down as detailed in 4.5 - **Shut Down the Liebert GXT4**, disconnect the input cable from the wall socket.
2. Wait 30 seconds and verify that all indicators have turned Off and the fan has stopped; this indicates that the power-off is complete.
3. Turn the external battery cabinet breaker switch to the Off position if the UPS has an external battery cabinet.

After powering Off the UPS, the UPS ceases output and the load is powered Off.

4.7 Maintenance Bypass

Maintenance Bypass Mode is used when maintenance or replacement is required. To place the unit in Maintenance Bypass:

1. Place the UPS on internal bypass. This may be done by either of the following methods:
 - a. Refer to 4.4 - **Manual Bypass**.
 - b. Slide the bracket away from the manual bypass breaker on the rear of the UPS. This requires loosening the captive screw and sliding the bracket up and away from the Manual Bypass breaker.
2. Move the Manual Bypass breaker on the rear of the UPS to the bypass position. This requires loosening the captive screw and sliding the bracket up and away from the Manual Bypass breaker.

5.0 COMMUNICATION

This section describes the three types of communication ports on the rear of the UPS:

- Liebert IntelliSlot® port
- USB port (standard B-type)
- Terminal Block Communication



CAUTION

To maintain safety (SELV) barriers and for electromagnetic compatibility, signal cables should be segregated and run separate from all other power cables.

5.1 Liebert IntelliSlot Communication Cards

The Liebert IntelliSlot port accepts four optional cards:

- Liebert IntelliSlot Web Card (IS-WEBCARD)
- Liebert IntelliSlot Relay Card (IS-RELAY)
- Liebert IntelliSlot MultiPort Card (IS-MULTIPOINT)
- Liebert IntelliSlot Unity Card (IS-UNITY-DP)

The Liebert IntelliSlot Web Card provides SNMP monitoring and control of the UPS across the network.

The Liebert IntelliSlot Relay Card provides dry contact relay outputs for custom-wired applications and delivers support for Liebert MultiLink® shutdown software.

The Liebert IntelliSlot MultiPort Card provides four sets of contacts for support of up to four computers that have Liebert MultiLink installed.

The Liebert IntelliSlot Unity Card provides SNMP and/or RS-485 monitoring of the UPS across the network and/or building management system. The Liebert IntelliSlot UNITY card also enables monitoring external temperature, humidity and contact closure inputs using external sensors. (The Liebert IS-UNITY-DP compatibility will be a future release, contact your Emerson sales representative for availability.)

Follow instructions provided with the Liebert IntelliSlot card to configure Liebert MultiLink®, the UPS or any additional ancillary product for the Liebert GXT4. These instructions are available at:

multilink.liebert.com

5.1.1 Liebert MultiLink

Liebert MultiLink monitors the UPS continuously and can shut down the computer or server in the event of an extended power failure. Liebert MultiLink can also be configured to shut down the UPS.

Liebert MultiLink can communicate with the UPS via the USB port, RS232 port, contact closures via terminal block or over the network via SNMP using the Liebert IS-WEBCARD. An optional Liebert MultiLink license kit permits shutting down multiple computers that are protected by the UPS.

For more information about the Liebert IntelliSlot SNMP Card, Liebert IntelliSlot Web Card and Liebert MultiLink License Kits, visit the Liebert Web site (www.liebert.com) or contact your local Emerson® representative.

5.2 USB Port Communication

The standard B-type USB port is used to connect the UPS and network server or other computer system using Liebert MultiLink®.

A standard B-type USB port is provided to allow connection to a computer or network server. The USB port can be used to communicate with the Liebert GXT4 configuration program (see section 5.2.1 for details) or Liebert MultiLink (refer to 5.1.1 - Liebert MultiLink for description) that is provided on the CD that is included with the UPS.

5.2.1 Configuration Program

The configuration program is on the Liebert GXT4 CD and can be used instead of making configuration setting changes from the LCD panel. The configuration program communicates to a computer running a Microsoft® Windows® operating system via the included USB cable.

For most users, the factory default settings are adequate. This section give a brief overview of the features and parameters that are available for modification, as well as the factory default settings. Should any changes be necessary, refer to the Configuration Program User Manual that is located on the included CD for further details.

The configuration program allows these features of the Liebert GXT4 to be changed:

- Change and set the display language
- Enable/Disable Auto-Restart (default is Enable)
- Select frequency converter operation with a fixed output frequency of 50Hz or 60Hz, bypass disabled (default is Auto-Select with bypass enabled)
- Set the Low Battery Warning alarm time from 2 to 30 minutes (default is 2 minutes)
- Enable/Disable the Auto-Battery test (default is Enable)
- Enable/Disable Auto-Restart after removing Remote shutdown (default is Disable)
- Set the wiring mode of Remote shutdown (default is normally open)
- Set the Auto-Enable output after remote shutdown (default is Disable)
- Set the Auto-Battery test to 8, 12, 16, 20, or 26 weeks (default is 8 weeks)
- Select the number of external battery cabinets connected to the UPS to adjust the remaining run time calculated by Emerson® software products (default is zero)
- Select one of multiple output voltages to match various voltages (see Table 9).

Table 9 Output voltage option, all models

Factory Default Setting	Output Voltage Option
208VAC	200V, 208V, 220V, 230V, 240V

NOTICE

The output voltage settings cannot be changed while the UPS is On and powering connected loads.



NOTE

Programming the output voltage of the Liebert GXT4-5000RT208, GXT4-6000RT208, GXT4-8000RT208, and GXT4-10000RT208 models to 220/110VAC automatically derates both the VA and Watt ratings to 90% of the units ratings and programming the output voltage to 200/100VAC automatically derates both the VA and Watt ratings to 80% of the units ratings (refer to 8.0 - Specifications for the VA and Watt ratings)



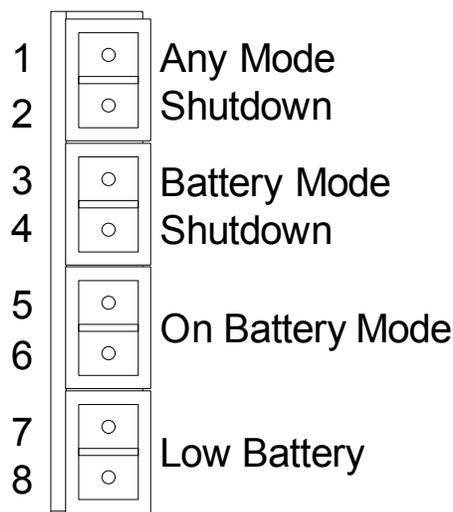
NOTE

- *This program is compatible with UPS models beginning with 'GXT4,' as in 'GXT4-3000RT230.' It is not compatible with earlier versions of the Liebert GXT UPS.*
- *A computer running Microsoft® Windows 2000®, Windows XP®, Windows Vista®, Windows 7 or Windows 8 is required to set up and run the configuration program.*

5.3 Terminal Block Communication

The Terminal Block includes eight pins, as shown in **Figure 41**.

Figure 41 Terminal Block Communication pin layout



5.3.1 Any Mode Shutdown

The purpose of Any Mode Shutdown is to shut down the UPS output by turning Off the rectifier, inverter and static switch so that there is no power to the loads.

Any Mode Shutdown can be operated locally or remotely:

- Local Any Mode Shutdown can be performed by shorting Pin 1 and Pin 2.
- Remote Any Mode Shutdown can be performed using a switch connected to Pin 1 and Pin 2 and mounted at a remote location.



NOTE

Remote Power Off will be performed either by NO or NC contact of Any Mode Shutdown, depending on the settings in the configuration program.

A current-limited source for this optocoupler (+12VDC, 50mA) will be available from the UPS.

The connection to the UPS for remote connection will be via terminal block connector.

Any Mode Shutdown wiring must conform to all national, regional and local wiring regulations.



WARNING

When the Auto-Enable output option is selected and the UPS output is disabled using Pin 1 and Pin 2, the Liebert GXT4's output can turn On automatically and without warning if the Pin 1 and Pin 2 connection is changed.

5.3.2 Battery Mode Shutdown

Battery Mode Shutdown permits shutting down the UPS by turning Off the rectifier, inverter and static switch so that there is no power to the load when the UPS is On Battery. The auxiliary power for the UPS will still be active.

Battery Mode Shutdown can be performed locally or remotely:

- Local Battery Mode shutdown can be performed by shorting Pin3 and Pin4.
- Remote Battery Mode Shutdown can be performed using a switch connected to Pin3 and Pin4 and mounted at remote location.



NOTE

Remote Power Off will be performed by NO contact.

A current-limited source (+12VDC, 50mA) will be available from UPS.

The connection to the Liebert GXT4 for remote connection will be via terminal block connector.

Battery Mode Shutdown wiring must conform to all national, regional and local wiring codes and laws.

This signal must last for 1.5 seconds or longer.

A battery shutdown signal will not cause an immediate shutdown. It will start a 2-minute shutdown timer. This timer cannot be stopped once triggered. If the mains power returns during this countdown, the Liebert GXT4 will still shut down and must remain shut down for 10 seconds. Whether the UPS turns back On when the power is restored depends on the auto-restart setting.

5.3.3 On Battery

On Battery signal is a Normally Open (NO) dry contact. When the UPS is supplying output power from the battery this dry contact will be closed.

5.3.4 Low Battery

Low Battery signal is a Normally Open (NO) dry contact. When the UPS is supplying output power from the battery and has reached the Low Battery Warning time selected in the configuration program, this dry contact will be closed.



NOTE

The rated values for the dry contacts for the On Battery and Low Battery signals are:

- *Rated Voltage: 30V (AC or DC)*
- *Rated Current: 300mA*

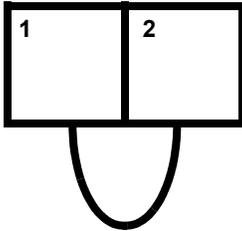
5.4 Remote Emergency Power Off

The UPS is equipped with a Remote Emergency Power Off (REPO) connector.

The user must supply a means of interfacing with the REPO circuit to allow disconnecting the UPS input feeder breaker to remove all sources of power to the UPS and connected equipment to comply with national and local wiring codes and regulations.

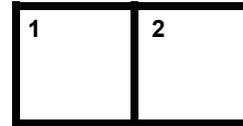
REPO switch connection diagram

UPS ships with REPO jumper installed allowing the UPS to operate



Normally closed switch system
(fail-safe)

Opening the REPO connection will disable the UPS. Manual restart using the front panel is required after the REPO connection is closed again.



CAUTION

To maintain safety (SELV) barriers and electromagnetic compatibility, signal cables should be shielded and run separately from power cables.

6.0 MAINTENANCE

This section describes replacing the internal battery pack, precautions, checking the Liebert GXT4's status and checking UPS functions.

6.1 Replacing the Internal Battery Pack

The Liebert GXT4 is designed to allow the user to replace the internal battery pack safely. Refer to **Table 10** for internal battery pack part numbers for Liebert GXT4 UPS.

Table 10 Internal battery pack models

UPS Model Number	Replacement Internal Battery Kit Model #	Quantity Required
GXT4-5000RT208 GXT4-6000RT208	GXT4-144VBATKIT	1
GXT4-6000RTL630	GXT4-240VBATKIT	2
GXT4-8000RT208 GXT4-10000RT208	GXT4-288VBATKIT	2

Read all safety cautions before proceeding. A trained user can replace the internal battery pack when the UPS is always in a restricted access location (such as a rack or server closet). Contact your local dealer or Emerson representative to obtain the pricing of the appropriate replacement battery pack.



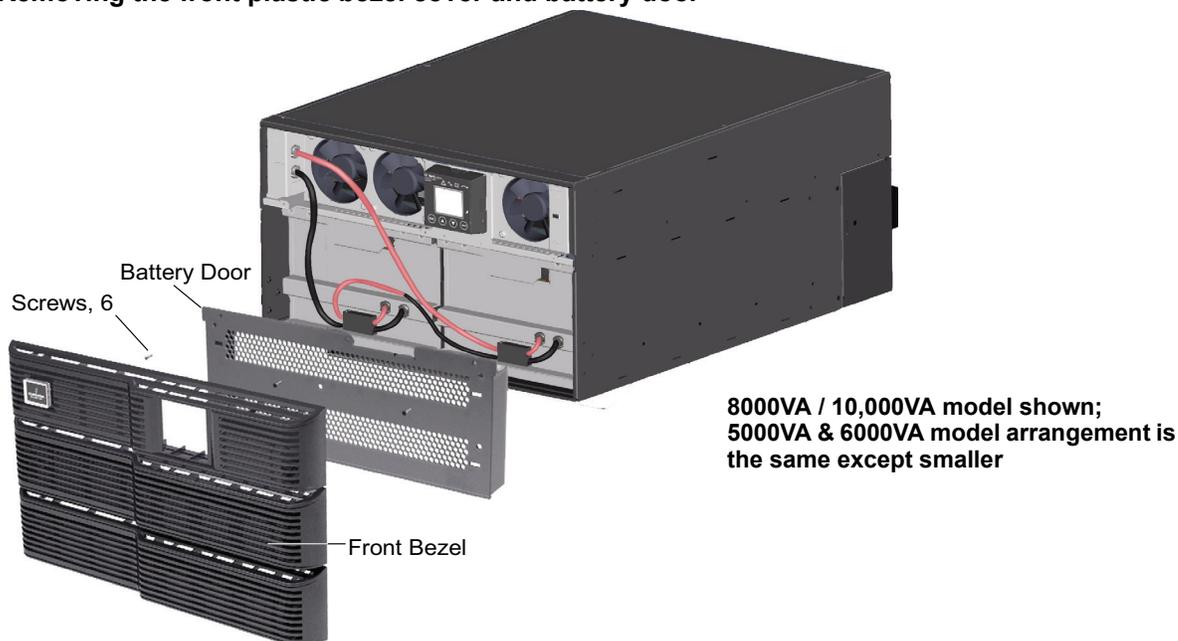
CAUTION

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

6.1.1 Battery Replacement Procedures

1. Gently remove the front plastic bezel cover from the UPS.
2. Loosen and remove the six screws on the battery door, as shown in **Figure 42**.
3. Lay the battery door and screws aside for reassembly.

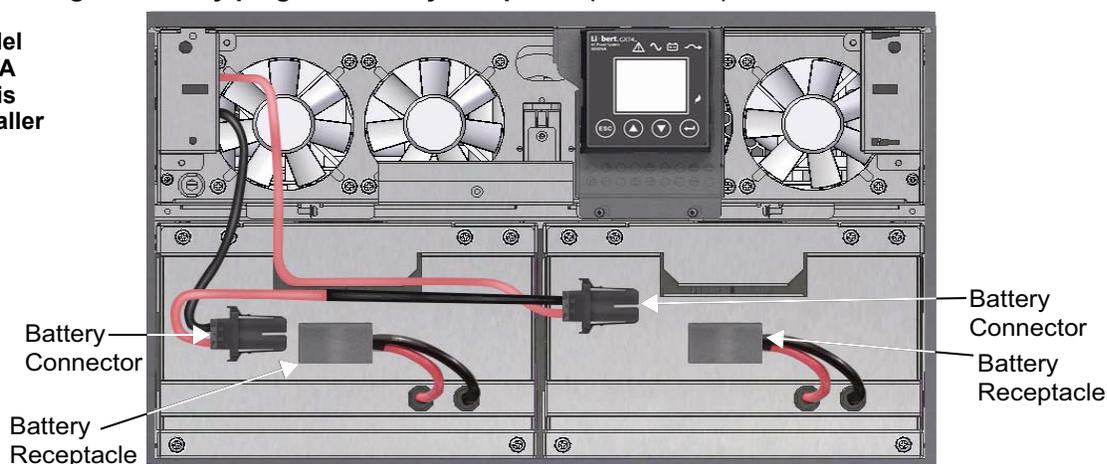
Figure 42 Removing the front plastic bezel cover and battery door



4. Gently pull the battery wires out and disconnect the battery plugs and battery receptacles, as shown in **Figure 43**.

Figure 43 Disconnecting the battery plug and battery receptacle (front view)

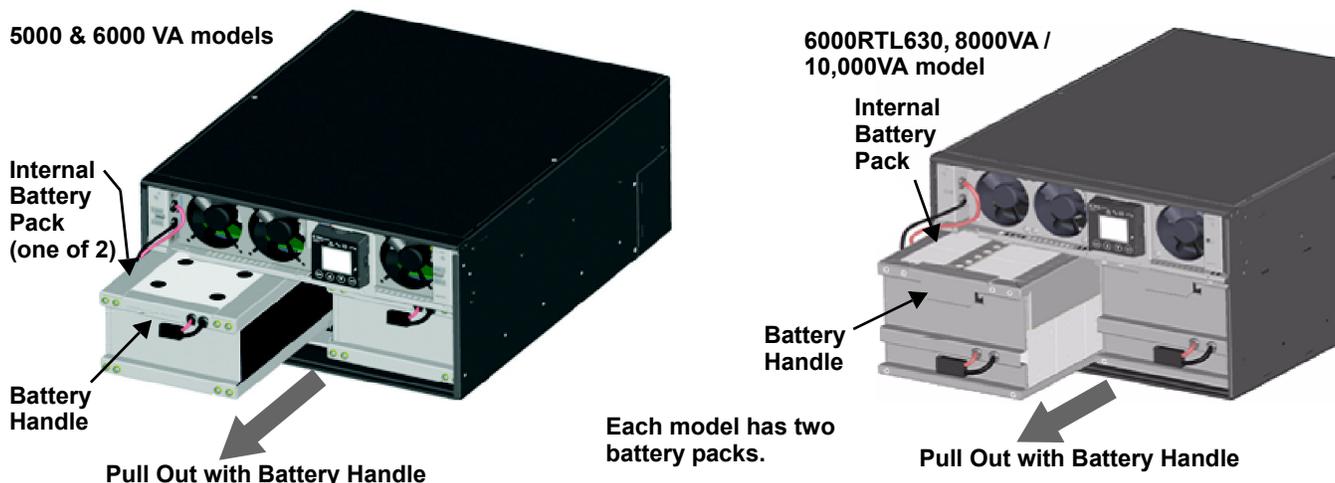
8000 / 10,000VA model shown; 5000 / 6000VA model arrangement is the same except smaller



5. Grasp the battery handle and pull one of the internal battery packs out of the UPS, as shown in **Figure 44**.

Repeat this step if both battery packs will be replaced. Each model has two battery packs

Figure 44 Pulling out the battery packs



6. Unpack a new internal battery pack. Take care not to destroy the packing. Compare the new and old internal battery packs to make sure they are the same type and model. If they are the same, proceed with **Step 7**; if they are different, stop and contact your local Emerson representative or Emerson Channel Support.
7. Line up and slide in the new internal battery pack.
8. Repeat **Steps 6** and **7** if replacing both battery packs. Each model has two battery packs.
9. Reconnect the battery plugs and battery receptacles.
10. Gently push the battery wire into the UPS battery compartment.
11. Reattach the front battery door with the six screws.
12. Reattach the front plastic bezel cover to the UPS.

**NOTE**

The internal battery pack is hot-swappable. However, caution should be exercised because the load is unprotected from disturbances and power failures during this procedure. Do not replace the battery while the UPS is operating in Battery Mode. This will result in a loss of output power and will drop the connected load.

6.2 Battery Charging

The batteries are valve-regulated, nonspillable, lead acid and should be kept charged to attain their design life. The Liebert GXT4 charges the batteries continuously when it is connected to the utility input power.

If the Liebert GXT4 will be stored for a long time, Emerson recommends connecting the UPS to input power for at least 24 hours every four to six months to ensure full recharge of the batteries.

6.3 Precautions

Although the Liebert GXT4 has been designed and manufactured to ensure personal safety, improper use can result in electrical shock or fire. To ensure safety, observe the following precautions:

- Turn Off and unplug the Liebert GXT4 before cleaning it.
- Wear rubber gloves and boots.
- Clean the UPS with a dry cloth. Do not use liquid or aerosol cleaners.
- Never block or insert any objects into the ventilation holes or other openings of the UPS.
- Do not place the Liebert GXT4 power cord where it might be damaged.

6.4 Checking UPS Status

Emerson recommends checking the UPS operation status every six months.

- Check whether the UPS is faulty: Is the Fault Indicator on? Is the UPS sounding an alarm?
- Check whether the UPS is operating in Bypass Mode. Normally, the UPS operates in Normal Mode. If it is operating in Bypass Mode, stop and contact your local Emerson representative, or Emerson Channel Support.
- Check whether the battery is discharging. When the utility input is normal, the battery should not discharge. If the UPS is operating in Battery Mode, stop and contact your local Emerson representative or Emerson Channel Support.

6.5 Checking UPS Functions



NOTE

UPS function check procedures may interrupt power supply to the connected load.

Emerson recommends checking the UPS functions once every six months.

Back up the load data before conducting the UPS functions check. Procedures are as follows:

1. Press the Standby/Manual Bypass button to check whether the buzzer and indicators are normal.
2. Press the On/Alarm Silence/Manual Battery Test button to check again whether the indicators are on and the UPS is operating normally.
3. Press the On/Alarm Silence/Manual Battery Test button for three seconds after Inverter Mode. The UPS should initiate a battery self-test. Check to determine whether the battery is operating normally. If not, stop and contact your local Emerson representative or Emerson Channel Support.

6.6 Replacing the Power Module on 8000 and 10,000VA models



CAUTION

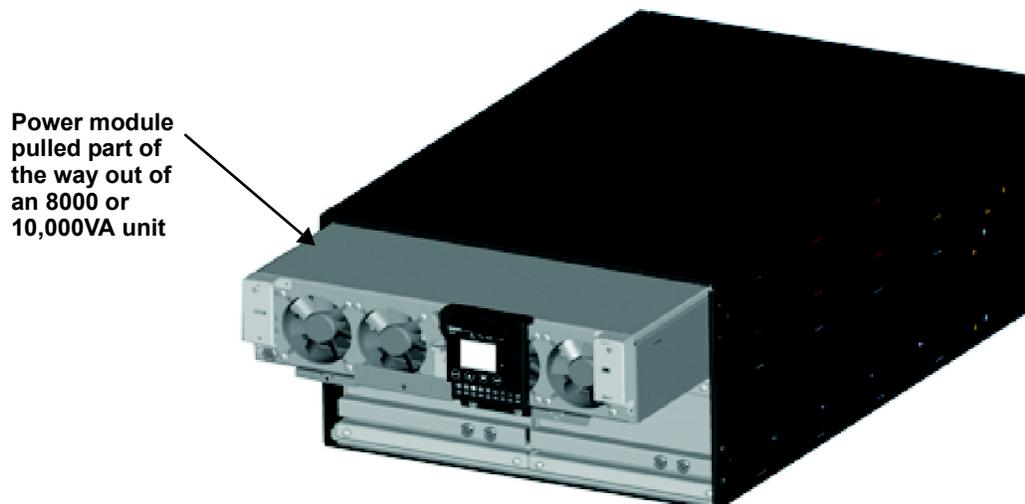
The UPS must be switched to manual bypass before personnel begin to replace the power module.

NOTICE

During the procedure, the connected load will not be protected from power disturbances, such as spikes, sags and failure.

To remove the UPS power module without shutting off power to the connected load:

1. Place the UPS on internal bypass. This may be done by any of the three following methods:
 - a. Refer to **4.4 - Manual Bypass**.
 - b. Slide the bracket away from the manual bypass switch on the rear of the UPS; this requires loosening the captive screw and sliding the bracket away from the manual bypass switch.
 - c. Remove the front grille covering the power module.
2. Move the manual bypass breaker on the rear of the UPS to the bypass position; this requires loosening the captive screw and sliding the bracket away from the manual bypass switch (see **Figure 6**).
3. Open the input circuit breaker on the rear of the UPS (see **Figure 6**).
4. Open the output circuit breaker on the rear of the UPS (see **Figure 6**).
5. Remove the top two front plastic bezels by pulling them forward.
6. Remove the power module cover grille and the battery cover grille with the screws securing them to the frame.
7. Disconnect the slotted battery connectors from the internal battery packs.
8. If additional external batteries are used, disconnect the two external battery connectors.
9. Slide power module restraint lever up out of the locked position.
10. Slide the power module out the front, supporting its weight as it is withdrawn.

Figure 45 Removing power module from Liebert GXT4 8000 and 10,000VA models

11. Insert the replacement UPS power module.
12. Slide the power module restraint lever back into the locked position.
13. Reconnect the slotted internal battery connectors.
14. Reconnect the external battery cables, if used.
15. Reattach both front cover grilles.
16. Reattach the front plastic bezels.
17. Close the input circuit breaker on the rear of the UPS (see **Figure 6**).
18. Close the output circuit breaker on the rear of the UPS (see **Figure 6**).
19. Move the bypass breaker on the rear of the UPS back to the INVERTER position (see **Figure 6**).
20. Slide the bracket back next to the manual bypass breaker and tighten its thumbscrew.
21. Press the On button on the front panel one time to return the UPS to Normal Mode operation (see **Figure 17**).

**NOTE**

The power module restraint lever must be fully engaged for the UPS to operate in Normal Mode.

7.0 TROUBLESHOOTING

This section indicates various UPS symptoms a user may encounter and provides a troubleshooting guide in the event the UPS develops a problem. Use the following information to determine whether external factors caused the problem and how to remedy the situation.

7.1 UPS Symptoms

The following symptoms indicate the Liebert GXT4 is malfunctioning:

- The relative indicators illuminate, indicating the UPS has detected a problem.
- An alarm buzzer sounds, alerting the user that the UPS requires attention.

7.1.1 Indicator and LCD

In addition to the fault indicator being illuminated, the LCD will display the fault. The displayed fault on the LCD is described in **Table 11**

Table 11 Description of the displayed fault

Displayed Fault	Cause	Corrective Steps
UPS self test failed	The battery is bad or weak.	Contact customer service.
UPS shutdown command received	The UPS shuts down through communication.	Contact customer service.
UPS overload	The UPS is overloaded.	Reduce the load and contact customer service.
Inverter Out of Order	The inverter is faulty.	Contact customer service.
Battery Weak/Bad	The battery is bad or weak.	Replace the battery.
Output Short Circuit	The output connection is short-circuited.	Shut down the equipment and contact customer service.
DC Bus Overvoltage	The DC bus is faulty.	Contact customer service.
UPS Overtemperature	Over-temperature occurs to the UPS and the UPS will transfer to Bypass mode.	Reduce the load and contact customer service.
Charger Out of Order	The charger is faulty.	Contact customer service.
Fan Out of Order	At least one fan is faulty.	Contact customer service.
DC Bus Discharge Fail	A DC-DC failure occurs.	Contact customer service.



NOTE

If the UPS encounters a fault and no correction attempt is performed within 2 minutes, the LCD backlight will flash (on 1 second and off 1 second) as an alert.

Press any button to exit the alert mode. If no correction attempt is performed on the UPS, the LCD backlight will flash again until the UPS fault is corrected.

7.1.2 Audible Alarm

An audible alarm will sound in conjunction with the visual indicators to indicate a change in UPS operating status. The audible alarm will sound as described in **Table 12**.

Table 12 Audible alarm description

Condition	Alarm
Battery discharge	Half-second beep every 10 seconds
Low battery	Two half-second beeps every 5 seconds
UPS fault, load on bypass	1-second beep every 4 seconds
UPS fault, no power to load	Continuous
Overload	Half-second beep every half second
Battery replacement	2-second beep every 2 minutes
Battery loss	Continuous
Wiring problem (loss of proper grounding for UPS)	Continuous
Bypass reminder	1-second beep every 60 seconds

7.2 Troubleshooting

In the event of an issue with the UPS, refer to **Table 13** to determine the cause and solution. If the fault persists, contact Emerson® Channel Support.

Table 13 Troubleshooting table

Problem	Cause	Solution
UPS fails to start	UPS is short-circuited or overloaded	Ensure UPS is Off. Disconnect all loads and ensure nothing is lodged in output receptacles. Ensure loads are not defective or shorted internally.
	Batteries are not charged enough or not connected	Check to ensure the internal battery is connected. If it is not, make the connection and try to start the unit. If the battery is connected, leave the UPS connected to input power for 24 hours to recharge batteries, then try to start the unit.
Battery indicator is illuminated	UPS is not plugged in	UPS is operating from battery mode. Ensure UPS is securely plugged into the wall receptacle.
	UPS input protection fuse has blown/opened	UPS is operating from battery mode. Save data and close applications. Replace UPS input fuse, then restart UPS.
	Mains power is out of tolerance	UPS is operating from battery mode. Save data and close applications. Ensure mains supply voltage is within acceptable limits for UPS.
UPS has reduced battery backup time	Batteries are not fully charged	Keep UPS plugged in continuously at least 24 hours to recharge batteries.
	UPS is overloaded	Check load level indicator and reduce the load on the UPS.
	Batteries may not be able to hold a full charge due to age	Replace batteries. Contact your local dealer, Emerson representative or Emerson Channel Support for replacement battery kit.
Battery indicator is flashing.	Battery source is not available; continuous horn.	Check battery connections, completely power down and restart UPS. NOTE: If the battery circuit opens while the UPS is running, it will be detected when the next battery test is performed.
Bypass indicator is flashing.	Because the voltage or frequency is outside acceptable limits, the bypass is disabled.	The AC input powers the PFC input and serves as the bypass source. If the AC is present but the voltage or frequency exceeds the acceptable range for safe operation with a load, the bypass will be disabled and this indicator will flash, indicating that the bypass is unavailable.

When reporting a UPS issue to Emerson, include the UPS model and serial number. These are located in several places for your ease of location: on the top panel (rack mount orientation); the left side (tower orientation); the rear panel; on the front of the unit behind the front plastic bezel; and on the LCD select *Main Menu > About*.

8.0 SPECIFICATIONS

Table 14 UPS specifications—5000, 6000, 8000 and 10,000 models

Model Number	GXT4-5000RT208	GXT4-6000RT208	GXT4-8000RT208	GXT4-10000RT208
Model Rating	4000W/5000VA	4800W/6000VA	7200W/8000VA	9000W/10000VA
Dimensions, Rack Mount, W x D x H				
Unit, in. (mm)	16.9 x 26.1 x 6.8 (430 x 662 x 173)		16.9 x 26.5 x 10.3 (430 x 672 x 261)	
Shipping, in. (mm)	20.3 x 29.3 x 20.9 (516 x 745 x 530)		20.9 x 29.3 x 22.2 (530 x 745 x 563)	
Weight lb (kg)				
Unit, lb (kg)	131.8 (69.9)		212.7 (96.7)	
Shipping, lb (kg)	165.4 (75.2)		247.5 (112.5)	
Input AC Parameters				
Nominal Operating Frequency	50 or 60Hz (Factory Default is 60Hz)			
Factory Default VAC	120/208VAC at 120 degrees		120/208VAC at 120 degrees	
L1-L2 Factory Default Input Phase Angle	120 degrees		120 degrees	
Allowable Input Phase Angle	120, 180, 240 degrees, auto-sensing on application of alternating current (Restrictions for L-N voltages other than 120VAC)			
Factory Default L1-N, L2-N VAC	120 VAC nominal			
User Configurable L1-N, L2-N VAC	100/110/115/120VAC (can be modified with configuration program)			
Input Frequency w/o Battery Operation	40 - 70 Hz			
Input Power Connection	Hard-Wired Terminal Block 3W + G (L-L-N-G)			
L1-N, L2-N Maximum Allowable VAC	150VAC			
Output AC Parameters				
Factory Default VAC	120/208VAC @ 120 degrees			
L1-L2 Factory Default Output Phase Angle	120 degrees			
Allowable Output Phase Angle	120, 180, 240 degrees, auto-sensing on initial application of input AC			
Factory Default L1-N, L2-N VAC	120VAC nominal			
User Configurable L1-N, L2-N VAC	100/110/115/120VAC, $\pm 2\%$			
L1-N, L2-N, Operating Load Range				
105% to 130%	1 Minute			
131% to 150%	10 seconds			
151% to 200%	1 second			
>200% (impact load)	At least 5 cycles			
Bypass Protection Limits				
Disable Bypass Operation	If input voltage exceeds $\pm 15\%$ of the nominal voltage			
Re-Enable Bypass Operation	If input voltage returns to within $\pm 10\%$ of nominal output voltage			
Disable Bypass Operation	When the input frequency prevents synchronous operation			
Environmental				
Operating Temp, °F (°C)	32 to 104 (0 to 40)			
Storage Temp, °F (°C)	5 to 122 (-15 to 50)			
Relative Humidity	0% to 95%, non-condensing			
Operating Elevation	Up to 10,000 ft. (3000m) at 77°F (25°C) without derating			
Audible Noise	less than 55dBA at 3.2ft. (1m) rear; less than 50dBA at 3.2ft. (1m) front and sides			
Agency				
Safety	UL 1778, c-UL Listed			
RFI/EMI	FCC Class A			
Surge Immunity	IEEE/ANSI C62.41 Category A & B			
Transportation	ISTA Procedure 1E			

Table 15 UPS specifications—Liebert GXT4-6000RTL630

Model Number	GXT4-6000RTL630
Model Rating	4200W/6000VA
Dimensions, Rack Mount, W X D X H, in. (mm)	
Unit	16.9 x 22.6 x 8.5 (430 x 574 x 217)
Shipping	20.3 x 29.3 x 20.9 (516 x 745 x 530)
Weight, lb (kg)	
Unit	132.2 (60)
Shipping	156.5 (71)
Input AC Parameters	
Nominal Operating Frequency	50 or 60Hz (Factory Default, 60)
Factory Default VAC	208VAC
User Configurable VAC	208/220/230/240VAC (may be modified with configuration program)
Operating Voltage Range Without Battery Operation	176 – 280VAC
Maximum Allowable VAC	280VAC
Input Frequency Without Battery Operation	40 - 70Hz
Input Power Connection	L6-30P Plug (on PD-L630 power distribution box)
Output AC Parameters	
Factory Default VAC	208
Output Connections	(2) L6-20R and (2) L6-30R on 12" (300mm) cords (on PD-L630 power distribution box)
Frequency	50Hz or 60Hz, Nominal
Waveform	Sinewave
Duration Inverter Will Support Rated Load	
105% to 130%	1 Minute
131% to 150%	10 seconds
151% to 200%	1 second
>200% (impact load)	At least 5 cycles
Bypass Protection Limits	
Disable Bypass Operation	If input voltage exceeds $\pm 15\%$ of the nominal voltage
Re-Enable Bypass Operation	If input voltage returns to within $\pm 10\%$ of nominal output voltage
Disable Bypass Operation	When the input frequency prevents synchronous operation
Environmental	
Operating Temp, °F (°C)	32 to 104 (0 to 40); No Derating
Storage Temp, °F (°C)	5 to 122 (-15 to 50)
Humidity	0% to 95% Relative Humidity, non-condensing
Operating Elevation	Up to 10,000 ft. (3000m) at 77°F (25°C) without derating
Audible Noise	Less than 55dBA at 3.2ft. (1m) rear; Less than 50dBA at 3.2ft. (1m) front and sides
Agency	
Safety	UL 1778, c-UL Listed
EMI/EMC	FCC Class A
ESD	EN61000-4-2
Radiated Susceptibility	EN61000-4-3
Electrical Fast Transient	EN61000-4-4
Surge Immunity	EN61000-4-5
Transportation	ISTA Procedure 1E

Table 16 Internal battery cabinet specifications

Model Number	GXT4-144VBATKIT	GXT4-240VBATKIT	GXT4-288VBATKIT
Used with UPS Model	GXT4-5000RT208 GXT4-6000RT208	GXT4-6000RTL630	GXT4-8000RT208 GXT4-10000RT208
Dimensions, Rack Mount, W x D x H, in (mm)			
Unit	8.1 x 19.3 x 2.8 (206 x 490 x 70)	7.2 x 15.4 x 4.4 (184 x 390 x 113)	8.1 x 19.7 x 5.3 (207 x 500 x 135)
Shipping	10.3 x 23.7 x 12.2 (262 x 602 x 310)	10.3 x 18.4 x 7 (262 x 467 x 178)	9.5 x 23.9 x 12.2 (242 x 607 x 310)
Weight lb (kg)			
Unit	75.8 (34.4)	45.4 (20.6)	71.1 (32.3)
Shipping	81.1 (36.8)	50.7 (23)	76.4 (34.7)
Type	Valve-regulated, non-spillable, flame retardant, lead acid		
Quantity x V x Rating	2 x 6 x 12V x 9.0 AH	2 x 10 x 12V x 5.0AH	2 x 12 x 12V x 9.0 AH
Battery Mfr / Part #	CSB UPS12460F2	CSB/HR1221W	CSB UPS12460F2
Backup Time	See Table 21		
Recharge Time	3 hours to 90% capacity after full discharge into 100% load		
Environmental			
Operating Temp, °F (°C)	32 to 104 (0 to 40)		
Storage Temp, °F (°C)	5 to 122 (-15 to 50)		
Relative Humidity	0% to 95%, non-condensing		
Operating Elevation	Up to 10,000 ft. (3000m) at 77°F (25°C) without derating		
Agency			
Safety	UL 1778, c-UL Listed		
RFI/EMI	FCC Class A		
Transportation	ISTA Procedure 1A		

Table 17 External battery cabinet specifications

Model Number	GXT4-144VBATT	GXT4-240VBATT	GXT4-288VBATT
Used w/UPS Model	GXT4-5000 & GXT4-6000RT208	GXT4-6000RTL630	GXT4-8000 & GXT4-10000RT208
Dimensions, W x D x H, in. (mm)			
Unit (with bezel)	16.9 x 26.1 x 3.3 (430 x 662 x 85)	16.9 x 22.6 x 6.8 (430 x 574 x 173)	16.9 x 26.5 x 6.8 (430 x 672 x 173)
Shipping	25.8 x 34.3 x 12.3 (655 x 872 x 312)	20.9 x 29.3 x 18.7 (530 x 745 x 475)	24.5 x 33.1 x 18.7 (622 x 842 x 475)
Weight, lb (kg)			
Unit	99.9 (45.3)	143.3 (65)	167.6 (76.2)
Shipping	121 (55)	176.4 (80)	198 (90)
Battery Parameters			
Type	Valve-regulated, non-spillable, lead acid		
Qty x V	2 x 6 x 12V x 9.0 AH	2 x 10 x 12V x 9.0AH	2 x 12 x 12V x 9.0 AH
Battery Mfr., Part #	CSB UPS12460F2; CSBHR1234WF2		
Backup Time	See Table 21		
Environmental			
Operating Temp, °F (°C)	32 to 104 (0 to 40)		
Storage Temp, °F (°C)	5 to 122 (-15 to 50)		
Relative Humidity	0% to 95%, non-condensing		
Operating Elevation	Up to 10,000 ft. (3000m) at 77°F (25°C) without derating		
Agency			
Safety	UL 1778, c-UL Listed		
RFI/EMI	FCC Class A		
Transportation	ISTA Procedure 1A		

Table 18 Power distribution specifications: GXT4-5000RT208, GXT4-6000RT208 and GXT4-6000RTL630 *

PD Model #	Power Distribution Box Model #								
	PD2-HDWR-MBS	PD2-001	PD2-002	PD2-003	PD2-004	PD2-005	PD2-006	PD2-007	PD2-L630 *
Dimensions, W x D x H, in (mm)									
Unit	5.2x15.5x3.5 (132x393x88)								4.7x13.2x4.1 (119x335x105)
Shipping	9.5x20.7x9.1 (242x527x230)								10.2x18.4x8.7 (260x467 x222)
Weight, lb (kg)									
Unit	6 (2.7)	8.8 (4)	8.6 (3.9)	8.6 (3.9)	9.9 (4.5)	10.6 (4.8)	9.5 (4.3)	9.5 (4.3)	8.8 (4)
Shipping	8.2 (3.7)	11 (5)	10.8 (4.9)	10.8 (4.9)	12.1 (5.5)	12.8 (5.8)	11.7 (5.3)	11.7 (5.3)	11 (5)
Electrical Specifications									
Amp Rating	30A 2-pole input breaker for UPS input power								
Input Power Connections	Hard-Wired Terminal Block 3W + G (L-L-N-G)	(1) L14-30P on a 10.5 ft. (3.2m) cord							(1) L6-30P
Output Power Connection	Hard-Wired Terminal Block 3W + G (L-L-N-G)	(4) 5-20R (1) L14-30R (1) L6-30R	(2) 5-20R (2) L6-20R	(4) 5-20R (2) L6-30R	(4) L5-20R (2) L5-30R	(4) L5-20R (2) L6-30R	(4) L6-20R	(2) L6-30R (2) L6-20R	(2) L6-30R (2) L6-20R

* PD2-L630 is only compatible with the GXT4-6000RTL630 UPS model

Table 19 Power distribution box specifications for GXT4-8000RT208 and GXT4-10000RT208

POD Model #	Power Distribution Box Model #					
	PD2-101	PD2-102	PD2-103	PD2-104	PD2-105	PD2-106
Dimensions, W x D x H, in. (mm)						
Unit	7.4 x 5.7 (188 x 145)					
Shipping	11.9 x 20.6 x 8.7 (302 x 522 x 220)					
Weight, lb (kg)						
Unit	4.4 (2)	6.6 (3)	6.6 (3)	6.6 (3)	4.4 (2)	6.6 (3)
Shipping	6.6 (3)	8.8 (4)	8.8 (4)	8.8 (4)	6.6 (3)	8.8 (4)
Electrical Specifications						
Amp Rating	2-pole 60A Input Breaker					
Input Power Connection	Custom Connector 3W + G(L-L-N-G) to UPS					
Output Power Connections	(2) L6-30R (8) 5-15/20R	(4) L6-20R (4) 5-15/20R	(4) 5-15/20R (4) L6-30R	(4) 5-15/20R (2) L6-30R (2) L6-20R	(4) 5-15/20R (2) L5-30R (2) L5-20R	(4) L6-20R (4) L5-20R

Table 20 Power distribution box specifications for GXT4-8000RT208 and GXT4-10000RT208

POD Model #	Power Distribution Box Model #						
	PD2-107	PD2-108	PD2-109	PD2-200	PD2-201	PD2-202	PD2-204
Dimensions, W x D x H, in. (mm)							
Unit	7.4 x 5.7 (188 x 145)						
Shipping	11.9 x 20.6 x 8.7 (302 x 522 x 220)						
Weight, lb (kg)							
Unit	6.6 (3)			4.4 (2)			6.6 (3)
Shipping	8.8 (4)			6.6 (3)			15 (6.8)
Electrical Specifications							
Amp Rating	2-pole 60A Input Breaker						
Input Power Connection	Custom Connector 3W + G(L-L-N-G) to UPS						
Output Power Connections	(4) L5-20R (4) 5-15/20R	(2) L6-20R (2) L6-30R	(2) L14-30R	(4) IEC320-C19 (4) IEC320-C13	(2) IEC320-C19 (8) IEC320-C13	(12) IEC320-C13	(2) IEC309-32A (4) IEC320-C13

Table 21 Battery run time, minutes

Number of External Battery Cabinets	Load Percent of Capacity	208/120 VAC RT Models				208 VAC RT Model
		5 kVA	6 kVA	8 kVA	10 kVA	6 kVA (L630)
Internal Battery	10%	129	106	144	112	100
	20%	52	46	69	48	50
	30%	36	27	43	30	38
	40%	25	19	28	21	26
	50%	18	14	22	16	19
	60%	14	11	18	12	15
	70%	11	9	14	10	12
	80%	9	7	11	8	10
	90%	8	5	10	6	9
	100%	6	5	8	5	8
Internal Battery + 1 External Battery Cabinet	10%	217	188	312	201	200
	20%	131	108	145	120	132
	30%	82	67	102	73	98
	40%	53	46	71	49	73
	50%	45	37	50	40	52
	60%	37	28	43	31	46
	70%	28	23	36	26	40
	80%	25	19	28	21	34
	90%	21	16	26	18	28
	100%	18	14	22	16	25
Internal Battery + 2 External Battery Cabinets	10%	341	321	428	330	345
	20%	165	152	199	157	205
	30%	133	109	146	121	150
	40%	100	77	113	82	124
	50%	74	53	92	64	101
	60%	53	47	71	49	80
	70%	48	40	53	43	68
	80%	42	33	48	37	52
	90%	37	27	43	31	49
	100%	31	25	38	27	46
Internal Battery + 3 External Battery Cabinets	10%	438	424	450	430	433
	20%	221	192	314	204	316
	30%	158	143	180	149	196
	40%	134	109	147	122	157
	50%	106	82	126	95	138
	60%	83	68	103	73	113
	70%	70	51	82	60	101
	80%	53	46	71	49	83
	90%	49	41	60	44	75
	100%	45	36	50	40	67

Table 21 Battery run time, minutes

Number of External Battery Cabinets	Load Percent of Capacity	208/120 VAC RT Models				208 VAC RT Model
		5 kVA	6 kVA	8 kVA	10 kVA	6 kVA (L630)
Internal Battery + 4 External Battery Cabinets	10%	454	442	463	447	456
	20%	323	300	340	310	420
	30%	194	161	218	165	304
	40%	153	138	164	144	200
	50%	134	110	147	122	160
	60%	110	92	130	99	145
	70%	95	74	109	79	130
	80%	77	62	96	68	111
	90%	67	50	79	53	102
	100%	53	46	71	49	93
Internal Battery + 5 External Battery Cabinets	10%	464	454	480	459	466
	20%	343	324	429	332	430
	30%	224	194	316	206	332
	40%	166	153	203	158	225
	50%	150	134	161	140	195
	60%	134	110	147	122	161
	70%	112	95	133	102	149
	80%	100	77	113	82	137
	90%	82	67	102	73	126
	100%	74	53	91	64	110
Internal Battery + 6 External Battery Cabinets	10%	480	463	480	467	480
	20%	430	341	442	420	452
	30%	317	219	334	301	423
	40%	204	164	227	183	321
	50%	162	148	191	153	227
	60%	148	131	159	138	195
	70%	134	110	147	122	162
	80%	120	97	135	104	152
	90%	103	80	122	92	142
	100%	92	71	107	77	133

Run times in this table are approximate. They are based on new, fully charged standard battery modules at a temperature of 77°F (25°C) with 100% resistive UPS loading. Run times listed above can vary by ±5% due to manufacturing variances of the individual batteries.

Using the configuration program, the user may specify the number of external battery cabinets attached to the UPS. The factory default is programmed for internal batteries only.

Table 21 shows the estimated run times at different loads.

8.1 Auto-Learning Battery Run Times

As batteries age, the estimated run times may become less accurate. The Liebert GXT4 is programmed to “learn” from a full battery discharge and modify the estimated run time for the measured battery capacity. This can improve accuracy and compensate for aging batteries or batteries that operate at different ambient temperatures.

The UPS will update the anticipated run time calculation only under certain conditions.

- The UPS must have a steady load that is greater than 20%.
- The UPS must be at 100% charge at the start of a battery discharge.
- The battery discharge must continue uninterrupted until the batteries reach their end-of-discharge voltage.

If all conditions are not met, the run time calculation will not be modified.

If the configuration program is used to change the number of battery cabinets, then the values in **Table 21** will be restored. This will override any value that is Auto-Learned.

8.2 Product Warranty Registration

Registration is not required to activate the product warranty on a Liebert UPS. Registration is required to qualify for the Product Protection Promise. To register, visit the Emerson Network Power® Web site to fill out the online form at:

www.emersonnetworkpower.com/en-US/Forms/Pages/LiebertProductWarrantyRegistration.aspx

- To contact warranty support by e-mail: dpg.warranty@emerson.com

8.3 Technical Support

Technical support contacts are listed on the back cover of this document. To contact Emerson Channel Product Support:

Phone

- NORTH AMERICA: 1-800-222-5877
- OUTSIDE NORTH AMERICA: 00-800-1155-4499

E-mail

- TECHNICAL SUPPORT: liebert.upstech@emerson.com

Technical Support / Service

Web Site

www.liebert.com

Monitoring

liebert.monitoring@emerson.com

800-222-5877

Outside North America: +00800 1155 4499

Single-Phase UPS & Server Cabinets

liebert.upstech@emerson.com

800-222-5877

Outside North America: +00800 1155 4499

Three-Phase UPS & Power Systems

800-543-2378

Outside North America: 614-841-6598

Environmental Systems

800-543-2778

Outside the United States: 614-888-0246

Locations

United States

1050 Dearborn Drive

P.O. Box 29186

Columbus, OH 43229

Europe

Via Leonardo Da Vinci 8

Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

+39 049 9719 111

Fax: +39 049 5841 257

Asia

29/F, The Orient Square Building

F. Ortigas Jr. Road, Ortigas Center

Pasig City 1605

Philippines

+63 2 687 6615

Fax: +63 2 730 9572

While every precaution has been taken to ensure the accuracy and completeness of this literature, Liebert Corporation assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

© 2014 Liebert Corporation

All rights reserved throughout the world. Specifications subject to change without notice.

© Liebert is a registered trademark of Liebert Corporation.

All names referred to are trademarks

or registered trademarks of their respective owners.

SL-23194_REVO_10-14

Emerson Network Power

Liebert

www.emerson.com

DESIGNER WALL SYSTEMS

Functional Yet Beautiful Products For Secondary Spaces



Induro™ FRP • Artizan™ FRP • Symmetrix™ FRP • Envue™ FRP
Standard FRP • Plank and Panels • Slatwall





Secondary Spaces

Markets Served

Healthcare Facilities
Schools & Universities
Restaurants
Hotels & Casinos
Houses of Worship

Transportation Terminals
Office & Residential Buildings
Fitness Centers & Spas
Grocery, Convenience & Drug Stores
Government Buildings

Walls That *work*

Secondary Spaces: Dining rooms, patient rooms, fitness areas, kitchens, restrooms, merchandising displays, service counters

Functional
Easy to Clean
Safe
Secure
Protective
Useful



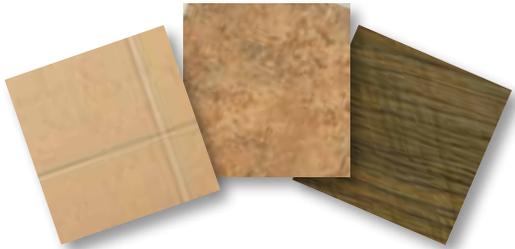
Marlite FRP

FRP was once considered bland and boring, but Marlite now offers the industry's most innovative FRP products. Marlite FRP (fiberglass reinforced plastic) wall panels provide ultimate durability, satisfying the most stringent demands. Marlite FRP is tough, water-resistant, economical to install and easy to maintain. Only Marlite allows you to design beautiful, affordable interiors for high wear spaces. Once limited to kitchens and restrooms, these products enhance classrooms, hospital rooms, waiting rooms, offices, hallways, corridors, dining rooms and recreational areas – virtually any space within commercial interiors.



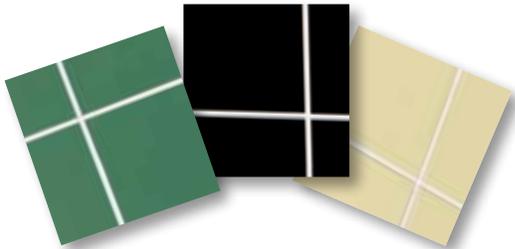
Induro™ FRP

Unmatched durability in a wide array of attractive laminate finishes. See pages 6 and 7



Artizan™ FRP

Unique surface technology offers exceptional wood grain and abstract patterns. See pages 8 and 9



Symmetrix™ FRP

Precision grid score lines provide the look of tile without the installation and maintenance difficulties. See pages 10 and 11



Envue™ FRP

Create dramatic photo or graphic mural walls. See pages 12 and 13



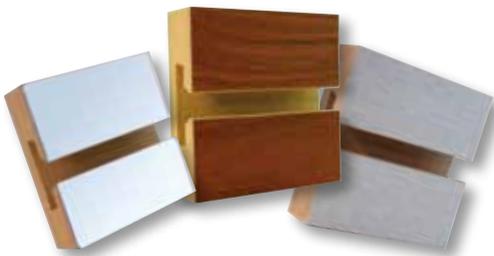
Standard FRP

Classic colors on smooth or pebble textured surfaces. See pages 14 and 15



Plank™ and Panels

Pre-finished interlocking panels and wood molding create a complete wainscot wall system. Features a variety of durable, yet affordable finish options. See pages 20-23



Slatwall

Economical and functional slatwall offers many options in core type, finish, groove treatments and size configurations. See pages 24-29



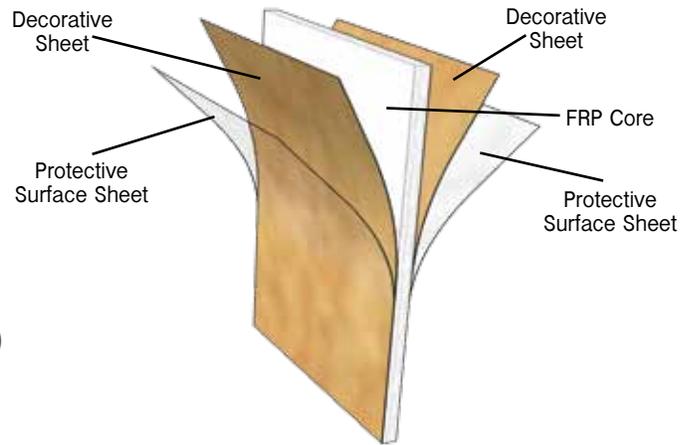
Induro™ FRP

The ultimate in wall protection, Induro Decorative Laminate FRP is an exceptionally wear resistant panel created through an exclusive process of thermally bonding melamine impregnated surfacing materials directly to the FRP core. Designed to match and coordinate with popular high pressure laminates (HPL), the panels are available in a wide array of woodgrains, solid colors and abstract prints.

Features and Benefits

- Offers the same outstanding durability as HPL.
- Possesses the same impact and moisture resistant properties as FRP.
- Balanced for panel integrity.
- Coordinates beautifully with HPL tabletops and case goods.
- Class A and Class C fire-ratings.
- The easiest, most affordable way of applying laminate to walls.

Exclusive Panel Construction



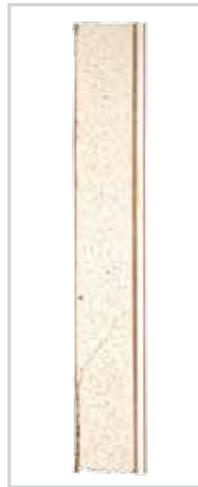
Panel Dimensions – 47 1/2” x 95 1/2” x 3/32” (nominal)

Impact Test

ASTM D5420-04 product on 1/2” Drywall



Rigid plastic wall panel - complete structural failure.



Induro™ FRP wall panel - nominal damage.



Induro Finish Options

Faux Woodgrains



7925 Monticello
Maple



7061 Natural Pear



FP610 Hard Rock
Maple



7922 Brighton
Walnut



7924 Biltmore
Cherry



7939 Blonde Echo

Abstract Patterns



4143 Neutral Glace



4746 Woolamai
Brush



FP612 Graphic
Spectrum



4810 Titanium



4893 Tumbled
Mosaic



4873 Western
Bronze

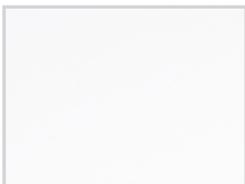


4878 Pewter Mesh



4745 Maroochy
Brush

Solid Colors



D354 Designer White



D381 Fashion Grey



Induro FRP can be special ordered in laminate finishes from WilsonArt, Nevamar, Pionite and Arborite.



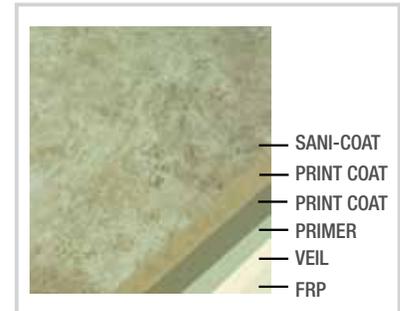
Artizan™ FRP

Artizan special formula FRP has a richly detailed and easy-to-maintain surface that is more economical than decorative laminates. The base coat, precision and print coats and melamine topcoats are applied to create a tough, durable finish.

Features and Benefits

- Replaces bland walls with exciting ambience.
- Resists impact, stains, bacteria, mold and mildew and won't crack.
- Costs less installed than most ceramic tile, HPL or vinyl materials.
- Wipes clean easily with standard cleaning solutions.
- Meets USDA/FSIS requirements.
- Available in Class III/C and Class I/A Fire-rating.

Panel Dimensions – 4' x 8' x 3/32" (nominal)



For Artizan FRP, create your own Marlite finish by providing a pattern swatch.



Artizan FRP Finish Options

Faux Woodgrains



148 Monticello
Anigre



310 Sierra Maple



715 Mahogany



5408 Monterey
Sand



5409 Townsend



5340 Sorrel



5341 Isabelline



5342 Grullo



5343 Cremello

Abstract Patterns



194 Cody



209 Adara



211 Grizel

Stone Grid - Smooth Finish FRP Panels



181-G1212 Dusk
(12x12 1/4" score)



182-G1212 Oxide
(12x12 1/4" score)



5415-G88 Coronado
(8x8 1/4" score)



5416-G88 Catalina
(8x8 1/4" score)

Stone Grid - Textured Finish FRP Panels



T936-G44 Milan
(4x4 1/8" score)



T938-G44 Tuscany
(4x4 1/8" score)



T938-G88 Tuscany
(8x8 1/4" score)



T939-G44 Verona
(4x4 1/8" score)



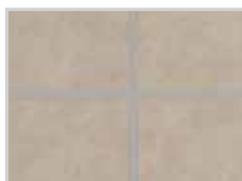
T939-G88 Verona
(8x8 1/4" score)



T5413-G1212 Genoa
(12x12 1/4" score)



T5417-G88 Salerno
(8x8 1/4" score)



5348-G1212 Oyster
(12x12 1/4" score)



5349-G1212 Amanita
(12x12 1/4" score)



5350-G1212 Portabello
(12x12 1/4" score)

Symmetrix™ FRP

Symmetrix scored FRP Panels with Sani-Coat provide a superior visual appearance over ceramic tile at minimal cost and without the installation and maintenance difficulties. Choose from an array of colors, patterns and scoring options to create a multitude of designs.

Features and Benefits

- Resists staining, scratching, mold and mildew and won't crack or deteriorate like ceramic tile grout lines.
- Provides outstanding impact resistance due to fiberglass core.
- Costs less installed than most ceramic tile.
- Wipes clean easily with standard cleaning solutions.
- Meets USDA/FSIS requirements.
- Available in Class III/C Fire-rating.

Panel Dimensions – 4' x 8' x 3/32"
4' x 10' x 3/32" (select finishes)

Coated Groove Advantage

Marlite's Innovative Sani-Coat topcoat seals the groove of each Symmetrix panel offering several advantages over ceramic tile grout lines.

- Protects against mold and mildew growth.
- Is easy to clean, requiring no brushing or scrubbing.
- Won't deteriorate due to moisture or dirt.
- Possesses the same outstanding stain resistance as the panel face.
- Won't crack.

Meets ASTM D3273-94, D3274-95



Ceramic Tile
5X Magnification



Symmetrix FRP
5X Magnification



Symmetrix FRP Finish Options

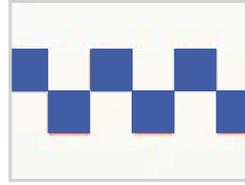
Checkerboard & Accents



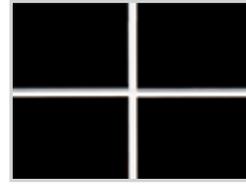
C 150 G44
White with Black



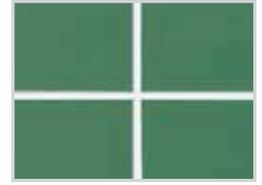
C 151 G44
White with Everglade



C 153 G44
White with Periwinkle



C 105 G44
Black



C 131 G44
Everglade

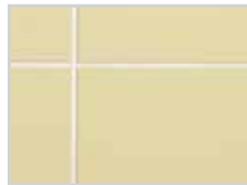


C 133 G44
Periwinkle

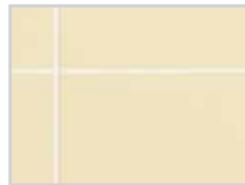
Classic Colors



C 100-G44 White*
C100-G66 White



C 118-G44 Almond*



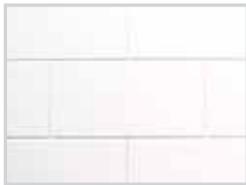
C 140-G44 Ivory



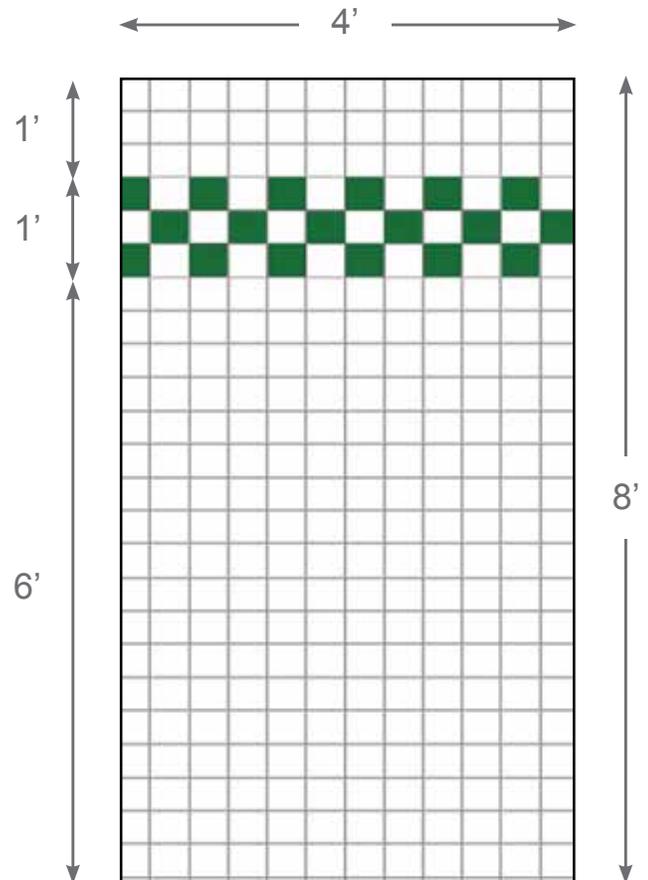
C 145-G44 Silver

*Available in 4' x 10' x 3/32"

Subway Tile



C 100-G63 White



Full panel Checkerboard, nominal sizes.
Other pattern configurations available.

Envue™ FRP

Design hi-res mural walls that create a stunning visual effect – on a tough, sanitary surface. Envue FRP wall panels provide optimum graphic reproduction, protected by Marlite’s Sani-Coat sealer. Installed panels are resistant to moisture, stains, mold and mildew – and are easily wiped clean.

Features and Benefits

- Offers feature wall appeal for high wear spaces.
- Resists impact, stains, bacteria, mold and mildew, and won’t crack.
- Costs less installed than custom-printed HPL and vinyl wall coverings.
- Wipes clean easily with standard cleaning solutions.
- Meets USDA/FSIS requirements.
- Available in Class III/C and Class I/A Fire-rating.

Panel Dimensions – up to 4’ x 10’ x 3/32” (nominal)

Create Graphics with Ease

Creating a stunning custom graphic wall has never been easier. Simply provide high resolution art, and Marlite will bring it to life. Photographs, logos, artwork or abstract patterns – from subtle accents to breathtaking graphics large enough to cover an entire wall – Marlite delivers.



Coffee

Fountain



Standard FRP

Standard FRP is available in textured and smooth surfaces that provide excellent durability in high wear spaces. It is tough, water-resistant, economical to install and easy to maintain. Standard FRP is GREENGUARD Children & Schools Certified for low chemical emissions.



Features and Benefits

- Resists stains, chemicals, scratches and abrasions and possesses high impact strength.
- Resistant to moisture, making the panel ideal for wet environments and does not support the growth of mold or mildew.
- Costs less installed than most other high impact products.
- Wipes clean easily with standard cleaning solutions.
- Meets USDA/FSIS requirements.
- Approved by Canadian Food Inspection Agency and Agriculture Canada.
- Available in Class III/C and Class I/A Fire-rating.

Panel Dimensions

- 4' x 8' x 3/32"
- 4' x 9' x 3/32" (select finishes)
- 4' x 10' x 3/32"
- 4' x 12' x 3/32" (select finishes)

FRP Ceiling Panels

FRP P100CP White

- Fire Rating - Class C, Class A
- Size - 2' x 4' x .090
- 2' x 2' x .090

FRP P100CP w/ Gypsum

- Fire Rating - Class A
- Size - 2' x 4' x 23/32*
- *.090 FRP Laminated to 5/8" Fire Rated Gypsum





Standard FRP Finish Options

Pebbled Surface

Dimensions – 4' x 8' x 3/32"
 4' x 10' x 3/32"
 *Also available in 4' x 9' x 3/32"



P 100 White*
 P 100 White Class A*



P 118 Natural Almond*
 P118 Nat. Almond Class A



P 145 Silver*
 P 145 Silver Class A



P 199 Bright White*
 P 199 Bright White Class A



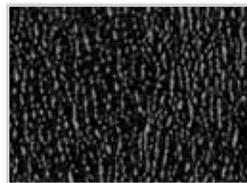
P 106 Beige
 P 106 Beige Class A



P 140 Ivory*
 P 140 Ivory Class A



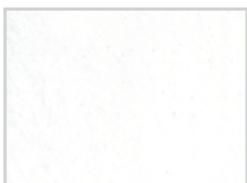
P 151 Light Grey*
 P 151 Light Grey Class A



P 807 Black

Smooth Surface

Dimensions – 4' x 8' x 3/32"
 4' x 10' x 3/32"



S 100 S/2/S White



S 100G White



S 118G Almond



FRP Trim Options

Aluminum Trim

- Length - 8'
- Colors - As specified with FRP
- Material - Extruded aluminum with durable finish

Designer Trim

Available in Clear Satin Anodized or harmonizing color



Ribbed F566



Radius F567



Square Channel F568

Harmonizing Trim

Durable painted aluminum trim molding harmonizes with any FRP finish



Inside Corner A551



Outside Corner A560



Division A565



Edge A570

Anodized Trim

Satin, Bright Satin or Black Satin anodized aluminum trim molding for use with any FRP finish



Inside Corner F550



Outside Corner F561



Division F565



Edge F570

PVC Trim

- Length - 8' and 10'
- Colors - Standard FRP colors- white, beige, natural almond, ivory, silver, light grey, black
- Material - Extruded PVC with integral color



M350 Inside Corner



M360 Outside Corner



M365 Division



M370 Edge

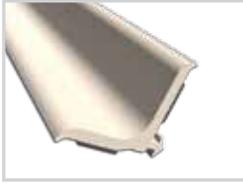
Sani-SEAL Trim

(For use with smooth, unscored panels only. Not for use with Induro FRP.)

Length – 10' (unless noted otherwise)

Colors – White, Umber, Tan, Slate, Black

Material – Extruded polypropylene, monprene



Inside Corner S650



Outside Corner S660



Division 665
8ft. length



Edge S670

Base Molding and Corner Guards



M612 Base

Base Molding

Length – 4" wide x 10' long

Colors – P200 Black, P203 Quarry Red

Material – Rigid Extruded PVC



M 651 Inside Corner



M 660 Outside Corner



End Caps
M 625 RH End Cap
M 620 LH End Cap



Butt Joint
Connector
Included with Base
Molding Strips



M 961
PVC Outside
Corner Guard

Corner Guard

Length – 8' and 10' long

Material – Stainless Steel or Rigid Extruded PVC

Colors – Most standard Marlite FRP colors-White, Natural
Almond, Ivory*, Silver*, Light Grey*

*Denotes 10' length only



F 560SS Stainless
Corner Guard



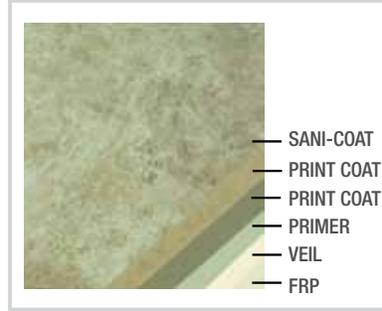
Custom FRP Capabilities

Marlite's custom FRP capabilities are virtually limitless. Contact us today to learn how we can deliver superior durability and the exact aesthetic you envision.

Custom Finishes



For Induro FRP, select from an array of laminates from any major brand.



For Artizan FRP, create your own Marlite finish by providing a pattern swatch.



For Symmetrix FRP, select any solid color, from Lime Green to Raspberry Red.

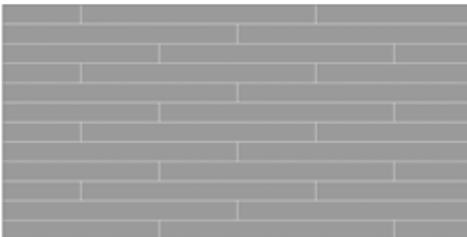
(Minimum order quantities and other terms may apply.)

Strata Patterns

(Only for use with Artizan FRP and Symmetrix FRP)

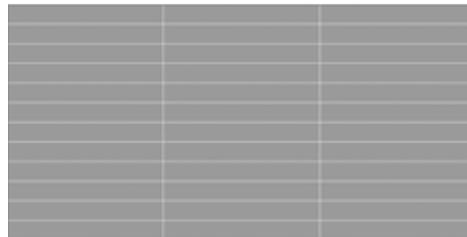
Running Bond Pattern:

Each block segment - 48" w x 4" h



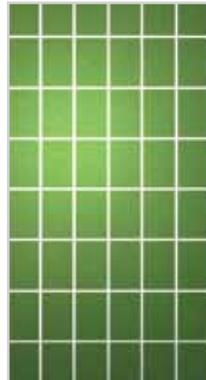
Stacked Pattern:

Each block segment - 32" w x 4" h



Custom Grooves

Feature large grids, small grids, rectangles, brick patterns, diamonds, even company logos and intricate designs.



Installation

FRP panels install easily and in a fraction of the installation time of ceramic tile. Installation varies depending on FRP type. Contact Marlite or visit www.marlite.com for specific installation instructions.

Adhesives

C-375 Adhesive	3.5 gallon can
Adv Polymer Panel Adhesive.....	3.5 gallon can
C-551 Adhesive	3.5 gallon can

Sealants

MS-250 Clear	10 oz. cartridge
MS-251 White.....	10 oz. cartridge
Color Matched	10 oz. cartridge

Trowel..... 3/16" W x 1/4" D x 1/2" C-C notch



FRP panels can be easily cut with shears or a carbide tip saw.



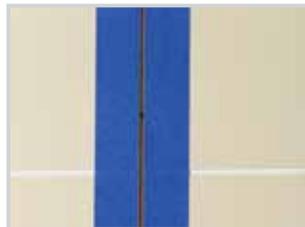
Apply Marlite Brand Adhesive to the back of panels and apply them to a subwall.



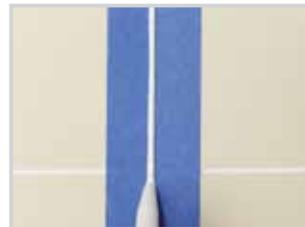
Seam Joint Installation



Place a 6 penny spacing nail between panels.



After adhesive dries one hour, remove nail and protect face with tape.



Place a bead of harmonizing sealant in the gap.



Using your finger, place a slight indentation in the gap.



Remove tape to reveal a grooved and matched seam joint.

Plank™ and Panels

Plank and Wood Molding is an interlocking wainscoting system featuring 16" wide tongue and groove panels in a variety of durable, yet affordable finish options. When used in conjunction with score lines, the panel joint is completely inconspicuous. Finishes are also available in 4'x8' and 4'x10' panels.

Features and Benefits

- 16" wide panels are easy to handle, easy to fabricate and produce minimal waste.
- High Density Fiberboard (HDF) core provides outstanding durability and moisture resistance.
- Pre-finished panel ensures color variation control and eliminates the need for jobsite sanding, staining or painting.
- Tongue and groove joinery creates an inconspicuous joint when used in conjunction with score lines and requires no visual fasteners.
- Wood Molding includes chamfered rabbet profiles making them easy to apply and mistake-proof.

Plank Dimensions – 16" x 8' x 1/4" (nominal)

Panel Dimensions – 4' x 8' x 1/4" (nominal)
4' x 10' x 1/4" (nominal)

Exclusive Marlite Finish



The Exclusive Marlite Finish is a richly detailed and easy-to-maintain surface that is more economical than decorative laminates. The base coat, precision coat, print coats and melamine top coat are all applied to the most select substrate. Each panel is then baked, creating a tough, durable finish that is easy to maintain.



Plank and Panels Finish Options

Faux Woodgrains



321-S2 Natural Oak



323-S2 Plantation Oak



324-S2 Laredo Oak



329-S2 Novato Oak



310-S4 Sierra Maple



317-S4 Alum Rock
Maple



463-S4 Eastern Walnut



715-S4 Mahogany



791-S4 Wild Cherry



925-S4 Autumn Cherry



5344-S4 Willow Bark



5345-S4 Coastal
Silver



5346-S4 Caramel



5347-S4 Wheat



5408-S4 Monterey
Sand



148 Monticello Anigre



318 Windsor Anigre



319 Whittier Anigre



5340 Sorrel



5341 Isabelline



5409 Townsend



5410 Sebring

Solid Colors



1001-BG2 Paintable
White



5440-S2 Quiescent
White



5446-S2 Morning
Haze



1001-S4 Paintable
White

Abstract Prints



192 Laramie



193 Rawlins



194 Cody



195 Saratoga

Plank and Panels Trim and Wood Molding Options

Standard Molding Chamfered Profile

Maple, Oak & Poplar - 8' - 10' random lengths



WG 477
Large Chair Rail



WG 475
Small Chair Rail



WG 474
Double Rabbet
Chair Rail



WG 474 & WG 475
Small Chair Rail
as Cap

Base, Corner & Edge Molding

Maple, Oak & Poplar - 8' - 10' random lengths



WG 1261
Base Molding



WG 1647
I/O Corner Molding



WG 2620
Edge Molding

Aluminum Trim

Pre-finished aluminum trim in 8' lengths, painted to match



M451
90° Inside Corner



M460
90° Outside Corner



M465
Division
(for use with panels)



M470
Edge

Wood Molding Finishing

Moldings are stained to match or accent



WG 477
Single Chair Rail
WG 1261
Base Molding



WG 475
Small Chair Rail
WG 1261
Base Molding



WG 474
Double Rabbet
Chair Rail
WG 1261
Base Molding



WG 474
Double Rabbet Chair
Rail
WG 475
Small Chair Rail
WG 1261
Base Molding



THINKING OF FIXING UP THE OLD HOME? WE CAN HELP. WITH A FREE FEDERAL EQUITY BANK OF TEXAS

HOME EQUITY LOAN

NO CLOSING COSTS!

No Appraisal Fees!

No Application Fees!

Borrow at Prime Rate*

APPLY TODAY!



Advertisement sign on the right side of the counter, featuring a circular seal or logo at the bottom.

Slatwall and Slatwall EQ

Marlite Slatwall is one of the most widely used economical and functional retail merchandising systems in the industry. Marlite offers a variety of solutions that provide load capacities to meet your requirements and finishes to complete your design. Slatwall is ideal for all types of apparel, specialty items, shoes and other horizontal displays.

Step 1: Choose the Panel Core



Marlite Slatwall

- Uses industry-wide standard MDF.
- Provides the greatest flexibility and excellent performance.
- Made in the USA.



Slatwall EQ

- Uses high pine content particleboard core.
 - Possesses panel hang-strength equal to or better than conventional slatwall.
 - Is economically priced less than MDF slatwall.
 - Carries the following certifications and attributes: Carb exempt, 100% post-industrial recycled/recovered content, NAF - no added formaldehyde
 - Made in the USA.
 - Available upon request: SGSNA, FSC
-

Step 2: Choose the Finish



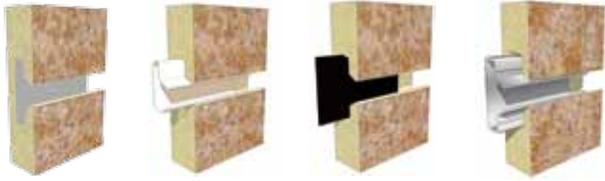
Marlite Slatwall Selections

Low Pressure Melamine (LPM)
High Pressure Laminate (HPL)
Paint Ready Finish
Marlite Finish
Painted Finish
Specialty Finishes
Graphic Panels

Slatwall EQ Selections

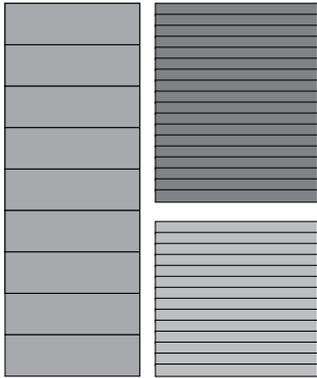
Low Pressure Melamine (LPM)
High Pressure Laminate (HPL)
Paint Grade

Step 3: Choose the Groove Treatment



Marlite offers the most choices for grooves. Keep things basic with raw or painted grooves. Add a splash of color with trim strips, ColorSnaps™ or vinyl inserts. Or add load capacity with aluminum inserts.

Step 4: Choose the Panel Size and Configuration



Multiple panel sizes, shapes and groove spacing options provide the ultimate in custom design.



Slatwall Finish Options

All grain patterns on Slatwall run the 8' dimension.

Marlite Finish



310 Sierra Maple



317 Alum Rock Maple



318 Windsor Anigre



319 Whittier Anigre



342 Champagne Maple

Painted Finish



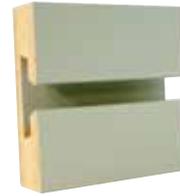
703 Brite White



415 Frost White



515 Almond



764 Crystal Gray

Specialty Finishes



020 Red Oak Veneer



041 White Birch Veneer



601 Clear Mirrored Acrylic



Printed Graphics

Other Available Options

Graphic Designs

Creating a stunning custom graphic wall has never been easier. Simply provide high resolution art and Marlite will bring it to life. Photographs, logos, artwork or abstract patterns – from subtle accents to breathtaking graphics large enough to cover an entire wall – Marlite delivers.





Slatwall & Slatwall EQ Finish Options

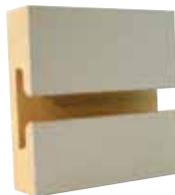
Low Pressure Melamine



750 Goshen White LPM



751 Stone Gray LPM



742 Tornado Gray LPM



744 Swiss Almond LPM



844 Trojan Black LPM



738 Brushed Aluminum LPM



975 Cherry LPM



692 Fine Oak LPM



711 Linn Birch LPM



687 Hard Maple LPM



872 Mahogany LPM



874 Pearwood LPM

Paint Grade



001 Paint Grade

Other Available Options

High Pressure Laminates

High Pressure Laminate (HPL) offers decorative finishes with excellent durability. Select from an array of woodgrains, abstracts and metallic laminates from any major brand.



Groove Options



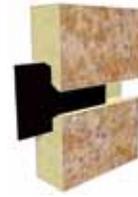
1000 Series Slatwall
Light duty-holds 1/4"
glass or acrylic
shelving.



2000 Series Slatwall
Painted grooves.
Factory painted.



2000 Series Slatwall
Vinyl ColorSnaps™ -
white, red,
platinum, black,
ivory.
Field install.



2000 Series Slatwall
Vinyl trimstrips -
white, black.
Field install.



2000 Series Slatwall
Medium duty-
aluminum inserts mill
finish.
Field install.

* For Metal
accessories only.



5000 Series Slatwall
Light duty-vinyl
inserts-
white, black.
Factory installed.

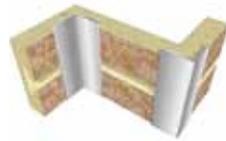


7000 Series Slatwall
Medium duty-
aluminum
inserts-mill, black.
Factory installed.

Trim



A770 Aluminum Edge
1/2" x 13/16" x 96"
Mill Finish



A760 Aluminum
Inside/Outside Corner
1" x 1" x 96"
Mill Finish



W770 Wood Edge
9/16" x 1" x 96"
Poplar Field Finish



P770 PVC Edge
7/8" x 1/2" x 96"
D100 White
D101 Black
D109 Gray



P760 PVC
Inside/Outside Corner
1 3/8" x 1 3/8" x 96"
D100 White
D109 Gray

Installation Rail Assembly

Combination - Mounting track and panel bar create Marlite Rail Assembly.
Mounting track and panel bar are predrilled for easy installation.



Color Match Screws
1000 pcs/box
#6 - 1 5/8"
415 Frost White



Mounting Track
5/8" x 1 7/8" x 96"
Steel, Silver, Powder Coat

Panel Bar
1 1/2" x 1 1/2" x 84"
Silver, Powder Coat

Standard Panel Size and Configurations

Horizontal Panel Format:

- 4' x 8' – 3" on-center grooves (48"H x 96"W x 3/4"T).
- Long edges have half groove to facilitate concealed joints and vertical stacking.
- Short edges (48") are square cut.



Vertical Panel Format:

- 8' x 4' – 3" on-center grooves (96"H x 48"W x 3/4"T).
- All edges are square cut.



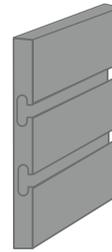
Custom Capabilities

Custom Panels:

- Custom sizes available up to 5' x 10' or 10' x 5'
- Custom edge machining available
- Custom slot lengths and spacing available

Machining:

- Standard groove: 3" on-center.
- Optional groove spacing available. Examples include 4", 6", 8" or 12" on-center. Grid/Brick grooves available
- Grid any on-center groove (groove in both directions). Horizontal and vertical patterns are available as well as curves and irregular shapes.
- Edge machining for both decorative and installation purposes are available to help you minimize jobsite fabrication.
- Special tenons, rabbets, borings, mortising or other machining are available upon request.



Distance between grooves is measured from the center of each groove.



Dado cuts and other types of customized machining are available.



Grooves can be placed on both sides of the panels.



Edge machining and radius corners can help minimize jobsite work.

Custom Panels and Shelving

Panels:

- Finish: Low Pressure Melamine, High Pressure Laminate, Painted
- Thickness: 3/4", 1/2", 3/8", 1/4"*
*Painted and low pressure melamine only
- Type: MDF, HDF, Particle Board
- Edge Treatment: High Pressure Laminate, PVC, Painted (1/4" raw edge only)
- Size: cut to size

Shelves:

- Finish: Low Pressure Melamine, High Pressure Laminate
- Thickness: 3/4"
- Type: MDF, Particle Board
- Edge Treatment: High Pressure Laminate, PVC, Painted
- Size: cut to size

Marlite offers other dynamic products for commercial interiors. Please visit www.marlite.com for more details.

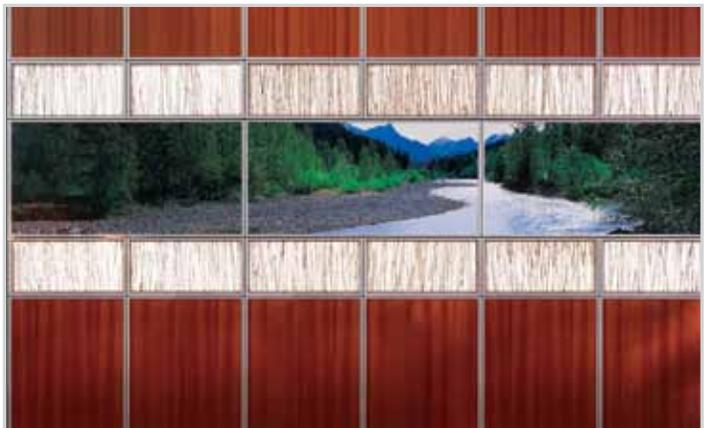
Walls That *welcome*



Primary Spaces: Atriums, lobbies, main corridors, executive suites, conference rooms, offices

Surface Systems®
Modules™
Sieva™

Walls That *wow*



Feature Walls: Focal areas and special accent walls. Perfect for branding.

Myriad™
Volta™
Volta Flex™



EXIT

TRASH



Dover, Ohio 44622
www.marlite.com

Ph: 800.377.1221
info@marlite.com

Form No. DC98-081501

Effective Date: 08/15/15

Printed in USA

Marlite is committed to protecting our environment and sustaining resources for future generations.

Printed on Recycled Paper