Office of Statewide Health Planning and Development

Facilities Development Division *www.oshpd.ca.gov/fdd*
400 R Street. Suite 200, Sacramento, California 95811-6213 Phone (916) 440-8300 Fax (916) 654-2973

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP – 0228-10

Check whether application is: NEW [ ] RENEWAL [X]

1.0

Emerson Network Power — *Manufacturer*

Jeff Herring — *Manufacturer's Technical Representative*

975 Pittsburgh Drive, Delaware, OH 43015 — *Mailing Address*

(740) 833-8540 — *Telephone*

Jeff.Herring@emerson.com — *E-mail Address*

2.0

Liebert NX 480V and Precision Power Center (PPC) Power Distribution Cabinet — *Product Name*

Uninterruptable Power Supply; Bypass Distribution Cabinet; Power Distribution Cabinet; Battery Cabinet — *Product Type*

FNA20ANNNN6; PPA200C327; 38S UPS (40kVA-200kVA); 38BP 480V Wide and Narrow Battery Cabinets

Product model No (List all unique product identification numbers and/or serial numbers)

General Description: This product line includes uninterruptable power supplies (UPS) and associated bypass distribution cabinet and battery cabinets. The PPC product is a stand-alone power distribution cabinet. All units hard-mounted with bolts directly to floor. The UPS and PPC include side panels; the Bypass Distribution Cabinet does not include side panels. This OSP is not valid with snubbers or isolators. Seismic enhancement made to the test units and modifications required to address the anomalies observed during the tests shall be incorporated into the production units.

3.0

Emerson Network Power — *Applicant Company Name*

Jeff Herring — *Contact Person*

975 Pittsburg Drive, Delaware, OH 43015 — *Mailing Address*

(740) 833-8540 — *Telephone*

Jeff.Herring@emerson.com — *E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

Signature of Applicant

3/15/12 — *Date*

Senior Design Engineer — *Title*

Emerson Network Power — *Company Name*

4.0 ***Registered Design Professional Preparing the Report***

Buehler & Buehler Structural Engineers, Inc.
Company Name

Ryan Miller, P.E., S.E. — *Contact Name*
C70940; S5556 — *California License Number*

600 Q Street, Suite 200, Sacramento, CA 95811
Mailing Address

(916) 443-0303 — *Telephone*
rmiller@bbse.com — *E-mail Address*

5.0 ***California Licensed Structural Engineer Review and Acceptance of the Report***

Buehler & Buehler Structural Engineers, Inc.
Company Name

Scott Hooker, S.E. — *Contact Name*
S3937 — *California License Number*

600 Q Street, Suite 200, Sacramento, CA 95811
Mailing Address

(916) 443-0303 — *Telephone*
shooker@bbse.com — *E-mail Address*

6.0 ***Anchorage Pre-Approval***

☐ *Anchorage is pre-approved under OPA-*
(Separate application for anchorage pre-approval is required)

☒ Anchorage is not Pre-approved

70. ***Certification Method***

☒ *Testing in accordance with:* ☒ *ICC-ES AC-156* ☐ *Other (Please Specify):*

☐ *Analysis*
☐ *Experience data*
☐ *Combination of Testing, Analysis, and/or Experience Data (Please Specify):*

8.0 ***Testing Laboratory (if applicable)***

Qualtech NP — *Company Name*
Marie Nemier — *Contact Name*

4600 East tech Drive, Cincinnati, OH 45245
Mailing Address

(513) 528-7900 — *Telephone*
mnemier@curtisswright.com — E-mail:

9.0 ***Approval Parameters***

Design in accordance with ASCE 7-05 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = See Table 1B

S_{DS} (Spectral response acceleration at short period) = see Table 1B

a_p (In-structure equipment or component amplification factor) = See Table 1B

R_p (Equipment or component response modification factor) = See Table 1B

I_p (Importance factor) = 1.5

z/h (Height factor ratio)= 1.0

Equipment or Component fundamental period(s) = See Table 1A

Building period limits (if any) =N/A

Overall dimensions and weight (or range thereof) =See Table 1A

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) =

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient)=1.0

Ω_0 (System overstrength factor) =1.0

C_d (Deflection amplification factor) =1.0

I_p (Importance factor) =1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: ☐ Yes ☒ No

10.0 ***List of attachments supporting the special seismic certification of equipment or components:***

☒ *Test Report*	☐ *Drawings*	☒ *Manufacturer's Catalog*
☐ *Calculations*	☒ *Others (Please Specify): Operability Test Witness Letters*	

11.0 ***OSHPD Approval*** *(For Office Use Only)*

3/16/2012	**December 31, 2016**
Signature & Date	*Approval Expiration Date*
M. R. Karim, SHFR	S_{DS} (g) = **See Section 9.0** z/h = **1.0**
Name & Title	*Special Seismic Certification Valid Up to*

Condition of Approval (if any):

Table 1A. Summary of Tested Units [4]

Liebert NX 480V and PPC

Model Number	Function/Size	UUT Mark	Mounting	Excitation Direction [2]	Frequency (Hz)	Width (in)	Depth (in)	Height (in)	Operating Weight (lbs)
FNA20ANNNN6	NX 200kVA Bypass Distribution Cabinet	UUT-2 [1]	Base - Hard Mount	X	6.5	24.0	38.8	78.7	1,650
				Y	15.7				
				Z	N/A				
PPA200C327	PPC 200kVA PDC	UUT-3 [1]	Base - Hard Mount	X	6.9	44.0	32.6	68.0	2,100
				Y	5.4				
				Z	16.2				
38SB200A0A01	NX 200kVA UPS, MMU	UUT-4 [1]	Base - Hard Mount	X	5.9	64.4	39.0	78.7	2,696
				Y	4.5				
				Z	15.1				
38SB040A0A00	NX 40kVA UPS	UUT-1 [3]	Base - Hard Mount	X	5.0	25.5	39.0	78.7	1,290
				Y	3.8				
				Z	19.4				
38BP200XWX1BNS	NX Wide Battery Cabinet	UUT-5 [5]	Base - Hard Mount	X	5.3	48.8	39.0	78.7	4,752
				Y	5.0				
				Z	15.1				
38BP080XMX1BNS	NX Narrow Battery Cabinet	UUT-6 [5]	Base - Hard Mount	X	3.3	33.5	39.0	78.7	2,325
				Y	4.5				
				Z	14.6				

Notes

1. Test performed 9/29/2011 through 10/3/2011 at QualTech Laboratory in Cincinnati, OH (Report #Q1148.0 Rev 2)
2. Excitation Direction: X = side-side; Y = front-back; Z = vertical
3. NX 40kVA test performed 6/11/2010 at QualTech Laboratory in Cincinnati, OH (Report #Q0029.0 Rev 0)
4. All units tested with included side panels, except Bypass Distribution Cabinet (no side panels)
5. Tests performed 2/27/2012 and 2/28/2012 at QualTech laboratory in Cincinnati, OH (Report #Q1205.0 Rev 1)

Table 1B. Summary of Tested Units - ASCE7-05 Chapter 13 Parameters

Liebert NX 480V and PPC

Model Number	Function/Size	UUT Mark	Fp/Wp	Sds	ap	Rp	Ip	z/h
FNA20ANNNN6	NX 200kVA Bypass Distribution	UUT-2	1.76	2.34	2.5	6.0	1.5	1.0
PPA200C327	PPC 200kVA PDC	UUT-3	1.41	1.875	2.5	6.0	1.5	1.0
38SB200A0A01	NX 200kVA UPS, MMU	UUT-4	1.41	1.875	2.5	6.0	1.5	1.0
38SB040A0A00	NX 40kVA UPS	UUT-1	1.41	1.875	2.5	6.0	1.5	1.0
38BP200XWX1BNS	NX Wide Battery Cabinet	UUT-5	1.44	2.00	1.0	2.5	1.5	1.0
38BP080XMX1BNS	NX Narrow Battery Cabinet	UUT-6	1.26	1.75	1.0	2.5	1.5	1.0

Table 2. Approved Unit List [2]
Liebert NX 480V and PPC

Model Number	Description	Type	Tested/ Interpolated	Width (in)	Depth (in)	Height (in)	Operating Weight (lbs)
FNA20ANNNN6	NX Bypass Distr. Cabinet	200kVA	UUT-2 [3,4]	24.0	38.8	78.7	1650
PPA200C327	PPC 200kVA PDC	200kVA	UUT-3 [4]	44.0	32.6	68.0	2100
38SA040A0A00	40kVA UPS	SMS	UUT-1 [1]	25.5	39.0	78.7	1290
38SB040A0A00	40kVA UPS	MMU	Interpolated	25.5	39.0	78.7	1340
38SA060A0A00	60kVA UPS	SMS	Interpolated	25.5	39.0	78.7	1290
38SB060A0A00	60kVA UPS	MMU	Interpolated	25.5	39.0	78.7	1340
38SA080A0A00	80kVA UPS	SMS	Interpolated	25.5	39.0	78.7	1290
38SB080A0A00	80kVA UPS	MMU	Interpolated	25.5	39.0	78.7	1340
38SA081A0A00	80kVA UPS	SMS	Interpolated	25.5	39.0	78.7	1422
38SB081A0A00	80kVA UPS	MMU	Interpolated	25.5	39.0	78.7	1483
38SA081A0A01	80kVA UPS	SMS	Interpolated	41.0	39.0	78.7	1847
38SB081A0A01	80kVA UPS	MMU	Interpolated	41.0	39.0	78.7	1908
38SA100A0A00	100kVA UPS	SMS	Interpolated	25.5	39.0	78.7	1422
38SB100A0A00	100kVA UPS	MMU	Interpolated	25.5	39.0	78.7	1483
38SA100A0A01	100kVA UPS	SMS	Interpolated	41.0	39.0	78.7	1847
38SB100A0A01	100kVA UPS	MMU	Interpolated	41.0	39.0	78.7	1908
38SA120A0A00	120kVA UPS	SMS	Interpolated	25.5	39.0	78.7	1422
38SB120A0A00	120kVA UPS	MMU	Interpolated	25.5	39.0	78.7	1483
38SA120A0A01	120kVA UPS	SMS	Interpolated	41.0	39.0	78.7	1847
38SB120A0A01	120kVA UPS	MMU	Interpolated	41.0	39.0	78.7	1908
38SA160A0A00	160kVA UPS	SMS	Interpolated	48.8	39.0	78.7	2201
38SB160A0A00	160kVA UPS	MMU	Interpolated	48.8	39.0	78.7	2271
38SA160A0A01	160kVA UPS	SMS	Interpolated	64.4	39.0	78.7	2626
38SB160A0A01	160kVA UPS	MMU	Interpolated	64.4	39.0	78.7	2696
38SA200A0A00	200kVA UPS	SMS	Interpolated	48.8	39.0	78.7	2201
38SB200A0A00	200kVA UPS	MMU	Interpolated	48.8	39.0	78.7	2271
38SA200A0A01	200kVA UPS	SMS	Interpolated	64.4	39.0	78.7	2626
38SB200A0A01	NX 200kVA UPS	MMU	UUT-4 [4]	64.4	39.0	78.7	2696
38BPXXXXXX1BNS	NX Wide Battery Cabinet	HX540-FR	UUT-5 [5]	48.8	39	78.7	5342
38BPXXXXPX1BNS	NX Wide Battery Cabinet	HX300-FR	UUT-5 [5]	48.8	39	78.7	3502
38BPXXXXRX1BNS	NX Wide Battery Cabinet	HX330-FR	UUT-5 [5]	48.8	39	78.7	3942
38BPXXXXUX1BNS	NX Wide Battery Cabinet	HX400-FR	UUT-5 [5]	48.8	39	78.7	4302
38BPXXXXWX1BNS	NX Wide Battery Cabinet	HX500-FR	UUT-5 [5]	48.8	39	78.7	5222
38BPXXXXPR1BNS	NX Wide Battery Cabinet	UPS12-300MR	UUT-5 [5]	48.8	39	78.7	3438
38BPXXXXRR1BNS	NX Wide Battery Cabinet	UPS12-350MR	UUT-5 [5]	48.8	39	78.7	3798
38BPXXXXUR1BNS	NX Wide Battery Cabinet	UPS12-400MR	UUT-5 [5]	48.8	39	78.7	4134
38BPXXXXWR1BNS	NX Wide Battery Cabinet	UPS12-490MR	UUT-5 [5]	48.8	39	78.7	5102
38BPXXXXXR1BNS	NX Wide Battery Cabinet	UPS12-540MR	UUT-5 [5]	48.8	39	78.7	5102
38BPXXXXPA1BNS	NX Wide Battery Cabinet	27HR3000	UUT-5 [5]	48.8	39	78.7	3342
38BPXXXXRA1BNS	NX Wide Battery Cabinet	27HR3500	UUT-5 [5]	48.8	39	78.7	3742
38BPXXXXUA1BNS	NX Wide Battery Cabinet	31HR4000	UUT-5 [5]	48.8	39	78.7	4062
38BPXXXXWA1BNS	NX Wide Battery Cabinet	31HR5000	UUT-5 [5]	48.8	39	78.7	5022
38BPXXXXPR1BNS	NX Narrow Battery Cabinet	UPS12-100MR	UUT-6 [5]	33.5	39	78.7	1750
38BPXXXXRR1BNS	NX Narrow Battery Cabinet	UPS12-150MR	UUT-6 [5]	33.5	39	78.7	2000
38BPXXXXUR1BNS	NX Narrow Battery Cabinet	UPS12-210MR	UUT-6 [5]	33.5	39	78.7	2500
38BPXXXXMX1BNS	NX Narrow Battery Cabinet	HX205-FR	UUT-6 [5]	33.5	39	78.7	2620
38BPXXXXPA1BNS	NX Narrow Battery Cabinet	U1HR1500	UUT-6 [5]	33.5	39	78.7	1980
38BPXXXXLA1BNS	NX Narrow Battery Cabinet	45HR2000	UUT-6 [5]	33.5	39	78.7	2500

Notes

1. 40kVA UPS (UUT-1) tested 6/11/2010 at Qualtech Laboratory in Cincinnati, OH. Test Report #Q0029.0 Rev 0
2. Approved units include manufacturer provided side panels, typical unless noted otherwise.
3. Side panels not included.
4. Test performed 9/29/2011 through 10/3/2011 at QualTech Laboratory in Cincinnati, OH (Report #Q1148.0 Rev 2)
5. Tests performed 2/27/2012 and 2/28/2012 at QualTech laboratory in Cincinnati, OH (Report #Q1205.0 Rev 1)

Table 3. Tested Unit Subcomponent List
Liebert NX 480V and PPC

	Sub-Component	Catalog Option No.	Material	Description	Manufacturer	Part No.
UUT-2 NX 200kVA Bypass Distribution Cabinet	Relay	N/A	Molded Plastic	Relay, 3P3T, 24VAC Coil	Potter & Brumfield	KUP-14AT5-24
	Transformer	N/A	Carbon Steel/Copper	Xfmr, 50VA, 208/600V-24 w/ Fuse	Altran	C-2218
	Transformer	N/A	Carbon Steel/Copper	Xfmr, 50VA, 480/120V	Square-D	9070TF5D1RO2
	Fuse Block	N/A	Molded Plastic	Fuse Block, 2P, 30A/600V	Cooper Bussmann	CHCC2D
	Fuse	N/A	Melamine Tube w/ Nickel-Plated Brass Endcaps	Fuse, 0.5A	Cooper Bussmann	BK/FNQ-R-1/2
	Solenoid Key Release	N/A	Copper/metal	Solenoid Key Rel w/2 1-in lkg	Kirk Key Interlock	519321G1
	Circuit Breaker #1	N/A	Molded Plastic	CB, 600A, 65KA, 24V ST	Square-D	DJF36600E20SO
	Circuit Breaker #2	N/A	Molded Plastic	CB, 400A, 65KA, 24V ST	Square-D	DJF36400E20SO
	Housing / Side Panels	N/A	Carbon Steel Cold Rolled 20ga	Panel, Rear, Painted 7021	Emerson Network Power	536659P1

	Sub-Component	Catalog Option No.	Material	Description	Manufacturer	Part No.
UUT-3 PPC 200kVA PDC	Current Transformer #1	N/A	Molded Plastic	Xfmr, Current, 1500/5A	Crompton Instruments	7RL-152-TL24
	Current Transformer #2	N/A	Molded Plastic	Xfmr, Current, 50/5A	Crompton Instruments	7DRL-500-HA-TL24
	LCD	N/A	Liquid-Crystal	Display, LCD, 4x20 Backlight	Apex Science & Eng Corp	HC204001FHLYB-E1
	Circuit Breaker #1	N/A	Molded Plastic	CB, 225A, 250V, 25K	Square-D	QDP32225TP
	Circuit Breaker #2	N/A	Molded Plastic	CB, 400A, 65K, 24V ST	Square-D	DJF36400E20SO
	Transformer, Isolation	N/A	Carbon Steel/Copper	Xfmr, 200K, 480/208Y-60Hz K20	Emerson Network Power	TA200CK20PYR
	Transformer, Power	N/A	Carbon Steel	Xfmr, 50VA, 208/600-24	Altran	C-2218
	Housing / Side Panels	N/A	Carbon Steel Cold Rolled 20ga	Panel, Side, Painted Z-0430	Emerson Network Power	COLORP043

	Sub-Component	Catalog Option No.	Material	Description	Manufacturer	Part No.
UUT-4 NX 200kVA UPS	Fan & Motor Assy. #1	N/A	Plastic: Frame + Impeller; Ball Bearing	Fan, 24V, 4000CFM	Delta	FFB1224EHE
	Fan & Motor Assy. #2	N/A	Plastic: Frame + Impeller; Ball Bearing	Fan, 24V, 5700CFM	Delta	FFB0824EHE
	DC Capacitor	N/A	Aluminum w/ PVC Sleeve	Cap, 6800uF, 450V	HICON/Jianghai	CD138S
	AC Capcitor	N/A	Aluminum	Cap, 99uF, 400V	Xiamen Faratronic Co	CBB65
	Circuit Breaker	N/A	Molded Plastic	CB, 400A	Square-D	DJF36400E20
	Bypass Inductor	B	Carbon Steel/Copper	Inductor, 25uH, 350A	Emerson Network Power	02-817979-00
	Rectifer Inductor	N/A	Iron-Silicon-Aluminium	Inductor, 2.4uH, 150A	Emerson Network Power	UHK351L4
	Inverter Inductor	N/A	Iron-Silicon-Aluminium	Inductor, 1.8uH, 150A	Emerson Network Power	UHK351L6
	Rectifer Common Mode Inductor	N/A	Ferrite/Aluminum	Inductor, 6mH, 335A	Emerson Network Power	UHK351L2
	Inverter Common Mode Inductor	N/A	Ferrite/Aluminum	Inductor, 6mH, 270A	Emerson Network Power	UHK351L7
	Input Inductor	N/A	Ferrite/Aluminum	Inductor, 6uH, 335A	Emerson Network Power	UHK351L3
	Transformer, Power Supply	N/A	Iron/Steel/Copper	Xfmr, 480/208V, 220VA	Emerson Network Power	UHK351T5
	Fuse	N/A	Not specified	Fuse, 350A, 700V	Cooper Bussman	170M3018
	(Option) Relay Card	N/A	Laminate PWB + Metal Plate	Relay Communication Card	Benchmark Elecrtronics (Thailand) PCL	IS-RELAY
	(Option) 485/ModBus Card	N/A	Laminate PWB + Metal Plate	OpenComms 485 Communication Card	Benchmark Elecrtronics (Thailand) PCL	OC-485
	(Option) Web Card	N/A	Laminate PWB + Metal Plate	Web Communication Card	Benchmark Elecrtronics (Thailand) PCL	IS-WEBLB
	Housing / Side Panels	N/A	Carbon Steel Cold Rolled 20ga	Panel, Painted 7021	Emerson Network Power	201053P1-7021

	Sub-Component	Catalog Option No.	Material	Description	Manufacturer	Part No.
UUT-1 (Lab Report Q0029.0 Rev 0) NX 40kVA UPS	Fan & Motor Assy. #1	N/A	Plastic: Frame + Impeller; Ball Bearing	Fan, 24V, 4000CFM	Delta	FFB1224EHE
	Fan & Motor Assy. #2	N/A	Plastic: Frame + Impeller; Ball Bearing	Fan, 24V, 5700CFM	Delta	FFB0824EHE
	DC Capacitor	N/A	Aluminum w/ PVC Sleeve	Cap, 6800uF, 450V	EPCOS	B43457-S5688-M3
	AC Capcitor	N/A	Aluminum	Cap, 99uF, 400V	Xiamen Faratronic Co	CBB65
	Circuit Breaker	N/A	Molded Plastic	CB, 225A	ABB	T3S225ULR1503PFF
	Bypass Inductor	N/A	Carbon Steel/Copper	Inductor, 25uH, 350A	Emerson Network Power	02-817892-00
	Rectifer Inductor	N/A	Iron-Silicon-Aluminium	Inductor, 4.0uH, 70A	Emerson Network Power	UHC351L4
	Inverter Inductor	N/A	Iron-Silicon-Aluminium	Inductor, 5.6uH, 70A	Emerson Network Power	UH8351L4
	Rectifer Common Mode Inductor	N/A	Ferrite/Aluminum	Inductor, 8mH, 137A	Emerson Network Power	UH8351L2
	Inverter Common Mode Inductor	N/A	Ferrite/Aluminum	Inductor, 9.2mH, 116A	Emerson Network Power	UH8351L7
	Input Inductor	N/A	Ferrite/Aluminum	Inductor, 4.5uHH, 117A	Emerson Network Power	UH8351L3
	Transformer, Power Supply	N/A	Iron/Steel/Copper	Xfmr, 480/208V, 220VA	Emerson Network Power	UHK351T5
	(Option) Web Card	N/A	Laminate PWB + Metal Plate	Web Communication Card	Benchmark Elecrtronics (Thailand) PCL	IS-WEBLB
	Fuse	N/A	Not specified	Fuse, 160A, 700V	Cooper Bussman	170M3014
	Housing / Side Panels	N/A	Carbon Steel Cold Rolled 20ga	Panel, Painted 7021	Emerson Network Power	201053P1-7021

	Sub-Component	Catalog Option No.	Material	Description	Manufacturer	Part No.
UUT-5 NX Wide Battery Cabinet	Circuit Breaker	N/A	Molded Plastic	CB, 600A, 3P, 500VDC, LG-Frame	Siemens	HLK3B600MA2REX6
	Temp Sensor	N/A	Metal	Sensor, TMP12Z	Emerson - Liebert	33010102
	Terminal Strip	N/A	Plastic	Term Strip, 12-position	Connectron	K-12
	Battery	XX	Lead-Acid	Battery, 12V HX540 FR, VRLA	Enersys Inc	12HX540-FR
	Battery	PX	Lead-Acid	Battery, 12V HX300 FR, VRLA	Enersys Inc	12HX300-FR
	Battery	XR	Lead-Acid	Battery, 12V UPS12-540MR, VRLA	C&D Technologies	UPS12-540MR
	Battery	PR	Lead-Acid	Battery, 12V UPS12-300MR, VRLA	C&D Technologies	UPS12-300MR
	Battery	WA	Lead-Acid	Battery, 12V 31HR5000, VRLA	East Penn Mfr Co	31HR5000
	Battery	PA	Lead-Acid	Battery, 12V 24HR3000, VRLA	East Penn Mfr Co	24HR3000
	Housing / Side Panels	N/A	Carbon Steel Cold Rolled 20ga	Panel, Side, Painted 7021	Emerson Network Power	201053P1-7021

	Sub-Component	Catalog Option No.	Material	Description	Manufacturer	Part No.
UUT-6 NX Narrow Battery Cabinet	Circuit Breaker	N/A	Molded Plastic	CB, 225A, 3P, 500VDC, VL Series	Siemens	HFX3B225MA2REX6
	Temp Sensor	N/A	Metal	Sensor, TMP12Z	Emerson - Liebert	33010102
	Terminal Strip	N/A	Plastic	Term Strip, 12-position	Connectron	K-12
	Battery	HX	Lead-Acid	Battery, 12V HX150E FR, VRLA	Enersys Inc	12HX150E-FR
	Battery	MX	Lead-Acid	Battery, 12V HX205 FR, VRLA	Enersys Inc	12HX205-FR
	Battery	MR	Lead-Acid	Battery, 12V UPS12-210MR, VRLA	C&D Technologies	UPS12-210MR
	Battery	FR	Lead-Acid	Battery, 12V UPS12-100MR, VRLA	C&D Technologies	UPS12-100MR
	Battery	LA	Lead-Acid	Battery, 12V 45HR2000, VRLA	East Penn Mfr Co	45HR2000
	Battery	GA	Lead-Acid	Battery, 12V U1HR1500, VRLA	East Penn Mfr Co	U1HR1500
	Housing / Side Panels	N/A	Carbon Steel Cold Rolled 20ga	Panel, Side, Painted 7021	Emerson Network Power	201053P1-7021

Table 4. Nomenclature
Liebert NX 480V UPS

Model Number Designation		Liebert NX UPS 40 – 200kVA Single and Multi-Module Systems				
38	SB	080	C	0	C	00
Product Line	System Configuration	kVA Rating	Rectifier Input Voltage	Single / Dual Input	Output Voltage	Installation Configuration
NX UPS	SA Single Module System w/ Softscale Technology	040 – 40kVA Scalable to 80kVA 060 – 60kVA Scalable to 80kVA 080 – 80kVA Scalable to 80kVA	A 480/480V 3W + G	0 [2] Single or Dual Input Module	A 480/480V 3W + G	00 Use With or Without Liebert NX BDC, Wiring Cabinet Extension Not Required
NX UPS	SB [1] Multi-Module System w/ Softscale Technology	040 – 40kVA Scalable to 80kVA 060 – 60kVA Scalable to 80kVA 080 – 80kVA Scalable to 80kVA	A 480/480V 3W + G	0 [2, 3] Single or Dual Input Module	A 480/480V 3W + G	00 Use With or Without BDC, Wiring Cabinet Extension Not Required
NX UPS	SA Single Module System w/ Softscale Technology	081 – 80kVA Scalable to 120kVA 100 – 100kVA Scalable to 120kVA 120 –120kVA Scalable to 120kVA 160 – 160kVA Scalable to 2000kVA 200 – 200kVA Scalable to 200kVA	A 480/480V 3W + G	0 [2] Single or Dual Input Module	A 480/480V 3W + G	00 Use with BDC, Wiring Cabinet Extension Not Required 01 [4] Use Without BDC, Wiring Cabinet Extension Included
NX UPS	SB [1] Multi-Module System w/ Softscale Technology	081 – 80kVA Scalable to 80kVA 100 – 100kVA Scalable to 80kVA 120 – 120kVA Scalable to 120kVA 160 – 160kVA Scalable to 200kVA 200 – 200kVA Scalable to 200kVA	A 480/480V 3W + G	0 [2, 3] Single or Dual Input Module	A 480/480V 3W + G	01 [4] Wiring Cabinet Extension Included

Application Notes:

1. *38SB… part numbers are required when paralleling modules.*
2. *All models configured for single input at factory, remove jumpers during installation for dual input configuration.*
3. *Paralleled UPS modules must be wired as single input only; dual input is not available when paralleled.*
4. *Installation configuration type "01" include top or bottom entry wiring cabinet which extends UPS cabinet width by approximately 15.5 inches. When UPS is installed with Liebert NX BDC the wiring cabinet is not required.*

Table 4. Nomenclature (continued)
Liebert NX Bypass Distribution Cabinet

Liebert NX 160kVA Scalable to 200kVA Single-Module BDC							
Input Voltage	Output Voltage	3-Breaker Bypass	Output Distribution	Access Requirements	Width	Monitoring	Part Number
480	480	Yes	None	Front	24	None	FNA20ANNNN6

Table 4. Nomenclature (continued)
Liebert NX Battery Cabinet

Model Number Designation	Liebert NX UPS 40 – 200kVA Single Module and Multi-Module Battery Cabinet							
38	**BP**	**080**	**X**	**PX**	**1**	**B**	**N**	**S**
Product Line	**Battery Pack**	**KVA Rating**	**No. Of Cells**	**Battery Model**	**No. Of Strings Per Cabinet**	**Over current Protection Device**	**Features**	**Mounting Location**
NX UPS	BP	080 (40 to 80KVA)	X – 240	**Enersys Batteries**	1 – 1 String	B – Circuit Breaker	N – None	S – Stand Alone
				HX – 12HX150EFR				**Note:** When Right or Left side mounting is selected, Inter-Cabinet Wiring Kits will automatically be added to order, however the battery cabinet itself will be configured as "S" Stand Alone.
				MX – 12HX205FR				
		120 (80 to 120KVA)		PX – 12HX300FR				
				RX – 12HX330FR				
		200 (160 to 200kVA)		UX – 12HX400RF				
				WX – 12HX505FR				
				East Penn Batteries				
				GA – U1HR1500				
				LA – 45HR2000				
				PA – 24HR3000				
				RA – 27HR3500				
				UA – 31HR4000				
				WA – 31HR5000				
				C&D Batteries				
				FR – UPS12-100MR				
				HR – UPS12-150MR				
				MR – UPS12-210MR				
				PR – UPS12-300MR				
				RR – UPS12-350MR				
				UR – UPS12-410MR				
				WR – UPS12-490MR				
				XR – UPS12-540MR				

Test Setup Photos
Liebert NX 480V and PPC

Figure 1: NX Bypass Distribution Cabinet (left) and PPC 200kVA UPS (right)
Attachment Method: hard-mount - 5/8"dia bolts to table, angle brackets by Liebert

Test Setup Photos
Liebert NX 480V and PPC

Figure 2: NX 200kVA UPS
Attachment Method: hard-mount - 5/8"dia bolts to table, angle brackets by Liebert

Test Setup Photos
Liebert NX 480V and PPC

Figure 3: NX 40kVA UPS
Attachment Method: hard-mount - 1/2"dia bolts to table, angle brackets by Liebert

Test Setup Photos
Liebert NX 480V and PPC

Figure 4: NX Wide Battery Cabinet
Attachment Method: hard-mount - 5/8"dia bolts to table, angle brackets by Liebert

Test Setup Photos
Liebert NX 480V and PPC

Figure 5: NX Narrow Battery Cabinet (front door open)
Attachment Method: hard-mount - 5/8"dia bolts to table, angle brackets by Liebert