610 Executive Campus Drive
Westerville, OH 43082
FAX:
PH: (614) 841-5401

BILL OF MATERIAL

Siemens Medical Solutions

225 kVA UPS System
EXMA225UMR1

Liebert EXM Single Module UPS System including: One (1) 225kVA Nameplate Liebert EXM UPS, model 51SA225MAA00HCS, with the following features:

- Fixed Capacity 225kVA / 225kW UPS System
- System Input Voltage of 480V, 60Hz, 3 Phase, 3 wire plus ground
- System Output Voltage of 480V, 60Hz, 3 Phase, 3 wire plus ground
- Single Input Configuration
- One (1) IntelliSlot Unity Dual Protocol Card; P/N: IS-UNITY-DP; Monitoring and configuration of Vertiv products and environmental sensors through stand-alone Web UI or integration with Trellis™, Liebert Nform, LIFE™ Services. Supports third-party management systems using SNMP, Modbus or BACnet.
- One (1) IS-RELAY Relay Contact Card
- 65kAIC Rating - Provides interrupting rating and labeling of 65kA
- Active Power Factor Corrected IGBT Input Converter
- PWM transistorized (IGBT) inverter
- Continuous Duty Static Bypass Switch
- Input Contacts - Dry contacts are available for functions including monitoring external breakers, on-generator signal, and other functions
- Output Contacts - Dry contacts are available for functions including a permissive signal to maintenance bypass SKRU, to trip external breakers, and other functions
- Generator Load Control - Suppresses battery charging reducing power demand by an external signal. Shifts unit from Eco Mode to double conversion (if applicable), and synchronizes the inverter output with the bypass
- DSP based controls - Provides digital control of power conversion and system operation
- Backlit LCD display - Monitors power conversion, UPS operation and utility conditions. Deviations are logged for troubleshooting
- Temperature-Compensated Charging/Battery Load Test
- Bottom cable entry to UPS, top cable entry through matching bypass or optional wiring cabinet
- Front only service access
- Local Emergency Power Off (EPO)
- LIFE™ Services for the 1st year
- IP 20 enclosure
- Casters and leveling feet
- UL and cUL Listed to UL Standard 1778 5th Edition
- Liebert EXM Factory Services Certified Test Report

The system includes **Two (2) Liebert EXM Battery Cabinet System(s), models 51BPMRXB2L10HCS and 51BPMRXB2L20HCS,** with the following features :

- 6 min @ 225 kVA, 2 - 1200MM External Cabinet(s) of ENERSYS HX330-FR Batteries
- 6 min: Run Time at Ordered KVA
- Cabinet Mounted Left Attached to Module
- Cabinet ships separate from the UPS Module
- The battery is provided with a 3 year full and 7 year prorated warranty

The system includes **One (1) Maintenance Bypass Matching Cabinet(s), model 51MBM33AA0R0HCS** with the following features:

- 3 Switching Devices (BIB,MBB,MIB)
- Padlock Provisions for Breakers MBB and MIB
- 300 Amp Breaker Trip Rating
- Cabinet Mounted Right Attached to Module with connecting cables factory supplied
- Cabinet ships attached to the UPS Module
- 300 MM - 11.8 inches Frame Size
- Front Access service design

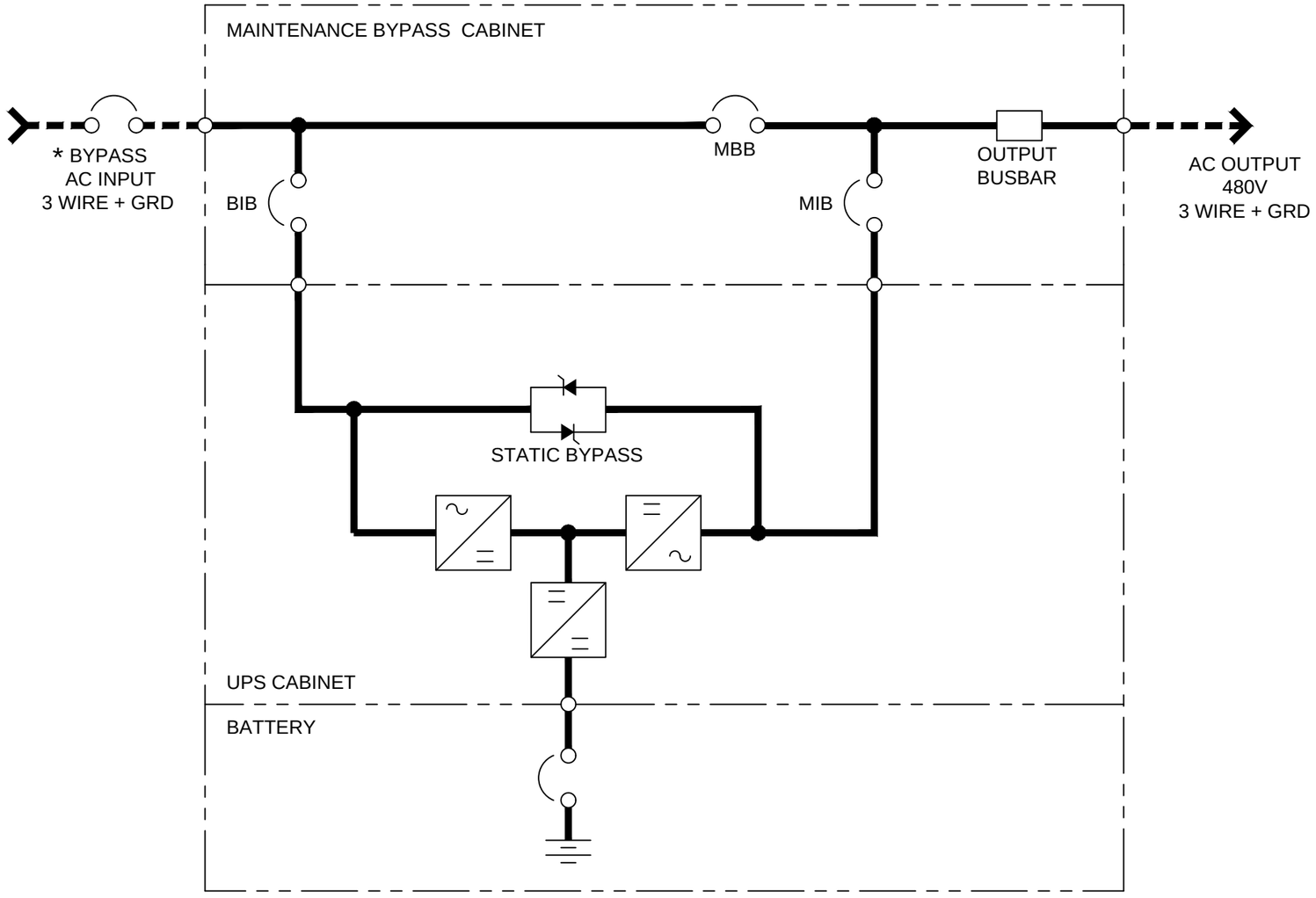
System Startup Services

Startup includes one site trip by a LS customer engineer after the UPS has been installed. The site trip includes the following services for one UPS module: non-powered inspection, UPS electrical and operational checkout, full parts and labor for any remedial work required on the UPS or battery cabinets, and customer operation training. Startup also includes remedial onsite labor, parts, and travel for the full warranty period.

- Startup 24x7 is scheduled at the customers designated time
- MBC/BDC/Wallmount Panel Startup is included

Optional Accessories (If Included in Order)

- Seismic Anchor Kits for UPS Module, Maintenance Bypass Cabinet, and Battery Pack(s) Where Applicable
- Remote Monitoring Panel



BIB - BYPASS ISOLATION BREAKER

MBB - MAINTENANCE BYPASS BREAKER

MIB - MAINTENANCE ISOLATION BREAKER

* EXTERNAL OVERCURRENT PROTECTION BY OTHERS

FIELD SUPPLIED WIRING

NOTES:
1. INSTALL IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
2. INPUT AND BYPASS MUST SHARE THE SAME SINGLE SOURCE.
3. GROUNDING CONDUCTORS ARE REQUIRED.
4. BYPASS AND RECTIFIER INPUTS AND OUTPUT CABLES MUST BE RUN IN SEPARATE CONDUITS.
5. CONTROL WIRING MUST BE RUN IN SEPARATE CONDUITS.

DRAWN BY K. STACY	SHEET NO. 1 OF 1	ONE-LINE DIAGRAM SINGLE INPUT 50kVA - 250kVA WITH 3 BREAKER MAINTENANCE BYPASS CABINET LIEBERT 480VAC eXM				VERTIV.
CHK BY M. ROCKWELL	ECN NO.					
REF. DWG.	ORDER NO.		DWG. NO. EXM41011	DATE 10/21/15	REV. # 0	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\A) One-Line Diagram\EXM41011-00.dwg

ELECTRICAL DATA									
kVA RATINGS	VOLTAGE		AC INPUT CURRENT "A"			BATTERY		AC OUTPUT CURRENT "A"	
	INPUT	OUTPUT	NOM.	MAX	REC. OPD	NOM. VDC	MAX. DISCHARGE, A	NOM.	REC. OPD
30	480	480	38	42	60	432	87	36	50
40	480	480	50	56	70	432	116	48	60
50	480	480	63	69	90	432	145	60	80
75	480	480	94	104	150	432	218	90	125
100	480	480	126	138	175	432	290	120	150
125	480	480	157	173	225	432	363	150	200
150	480	480	189	208	300	432	435	180	225
175	480	480	220	243	350	432	508	210	300
200	480	480	252	277	350	432	581	241	300
225	480	480	284	312	400	432	654	271	350
250	480	480	315	346	450	432	726	301	400

HEAT / WEIGHT INFORMATION			
kVA RATINGS	HEAT	WEIGHT PACKAGED, LBS (KG)	
	UPS (BTU/HR)	200kVA FRAME	250kVA FRAME
30	4,712	748 (339)	868 (394)
40	6,283	748 (339)	868 (394)
50	7,854	748 (339)	868 (394)
75	10,388	842 (382)	962 (436)
100	13,851	842 (382)	962 (436)
125	15,015	936 (425)	1056 (479)
150	18,019	936 (425)	1056 (479)
175	22,242	1030 (467)	1150 (522)
200	25,491	1030 (467)	1150 (522)
225	31,164	N/A	1244 (564)
250	34,627	N/A	1244 (564)

THIS CHART IS FOR UPS WEIGHTS ONLY. FOR MBC OR BDC WEIGHTS REFER TO SUBMITTAL EXM18014 OR EXM18015.

NOTES

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

SHEET NO. 1 OF 1	DRAWN BY: J. SHIPMAN	TITLE: TECHNICAL INFORMATION 50-250kVA, 60Hz, 480VAC IN, 480VAC OUT SINGLE INPUT LIEBERT 480VAC EXM	DWG. NO. EXM48001	VERTIV.
ECN NO.	DESIGNED BY: D. HUDSON		DATE (LATEST REV.) 06/04/2018	
REF DWG.	APPROVED BY: D. HUDSON		REVISION 5	1050 DEARBORN DR P.O. BOX 29186 COLUMBUS, OH 43229

Battery Cabinet Circuit Breaker Schedule						
Battery Cabinet	AF/AT	Ir Setting	Ii Setting	MFG	MFG P/N	Battery Code
880mm	600/300	NA	1500	Square D	LLF37030D88	HX, MX, GA, LA, PA, HR, MR, PR
880mm	600/400	NA	2000	Square D	LLF37040D88	PX
1200mm	600/400	NA	2000	Square D	LLF37040D88	RX, TA, RR,
1200mm	600/450	NA	2250	Square D	LLF37045D88	UX, VA, UR
1200mm	600/500	NA	2500	Square D	LLF37050D88	WA, WR
1200mm	600/600	NA	3000	Square D	LLF37060D88	WX, XX, YA, XR

Weight Information						
				Battery	Weight	
Battery Cabinet	kVA	Battery MFG	Battery Model Number	Code	lbs	kg
880mm	50-250	Enersys	12HX150E	HX	1738	788
			12HX205	MX	2350	1066
			12HX300	PX	2962	1344
		East Penn	HR1500	GA	1774	805
			HR2000	LA	2242	1017
			HR3000	PA	2818	1278
		C&D	UPS12-150MR	HR	1785	810
			UPS12-210MR	MR	2242	1017
			UPS12-300MR	PR	2904	1317
1200MM	50-250	Enersys	12HX330	RX	3647	1654
			12HX400	UX	3971	1801
			12HX505	WX	4799	2177
			12HX540	XX	4907	2226
		East Penn	HR3500	TA	3467	1573
			HR4000	VA	3755	1703
			HR5000	WA	4620	2096
			HR5500	YA	4943	2242
		C&D	UPS12-350MR	RR	3517	1595
			UPS12-400MR	UR	3820	1733
			UPS12-490MR	WR	4691	2128
			UPS12-540MR	XR	4691	2128

NOTES:
1. 250kVA eXM UPS REQUIRES A MINIMUM OF TWO CABINETS.

DRAWN BY K. STACY	SHEET NO. 1 OF 1	TECHNICAL INFORMATION BATTERY CABINETS LIEBERT 480VAC EXM				VERTIV.
CHK BY M. OLLER	ECN NO.					
REF. DWG.	ORDER NO.		DWG. NO. EXM48003	DATE 3/30/16	REV. # 2	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\H) Technical Information\EXM48003-02.dwg

2-Breaker MBC Circuit Breaker Schedule							
KVA Rating	MIB/MBB						
	AF/AT	Ir	Isd	Ii/Im	MFG	MFG PN	KAIC
50	150/80	Fixed	NA	10	Square D	HJF36080YE	65
100	150/150	Fixed	NA	10	Square D	HJF36150YE	65
150	250/225	Fixed	NA	10	Square D	JJF36225YE	65
200	400/300	300	1.5	9	Square D	LJF36400TU33XTW	65
250	400	400	1.5	10	Square D	LJF36400TU33XTW	65

WEIGHT INFORMATION		
MBC WIDTH	kVA RATING	WEIGHT lb (kg)
200mm	50-100	195 (90)
300mm	150-250	288 (131)
300mm W/CHOKE	50-100	408 (185)
600mm W/CHOKE	150-250	649 (295)

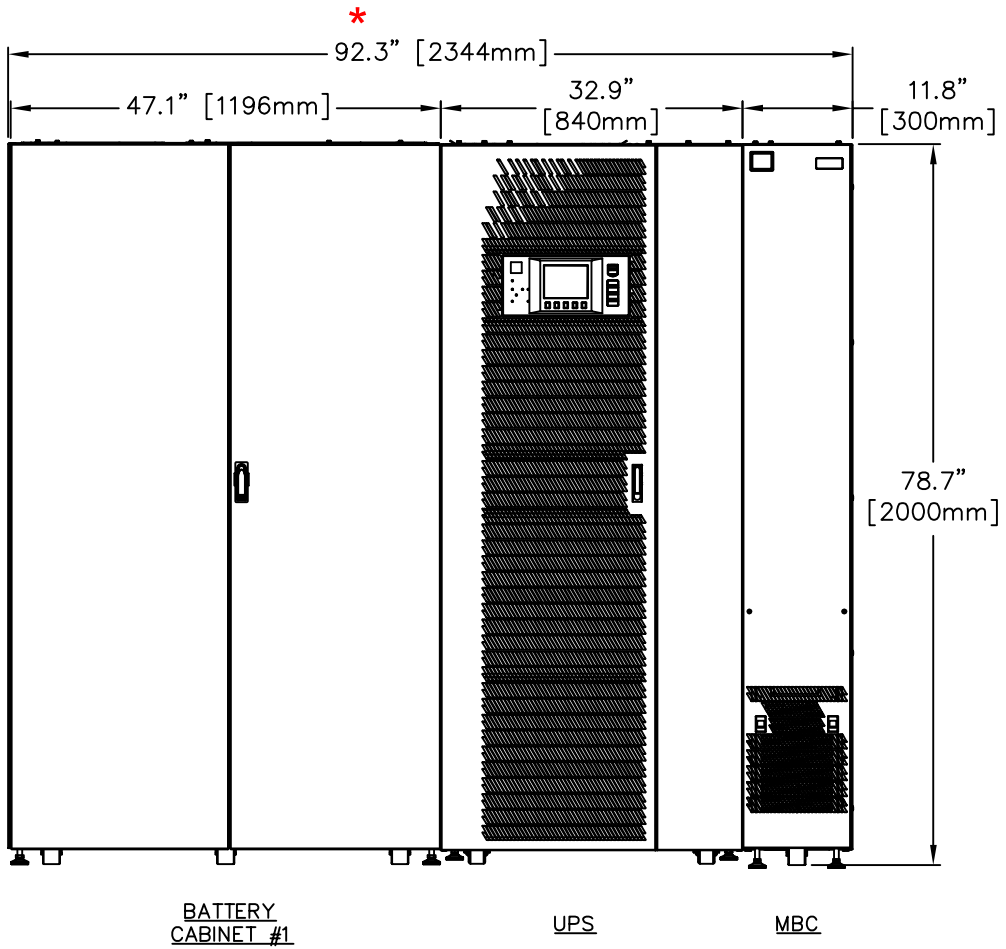
3-Breaker MBC Circuit Breaker Schedule														
KVA Rating	BIB							MIB/MBB						
	AF/AT	Ir	Isd	Ii/Im	MFG	MFG PN	KAIC	AF/AT	Ir	Isd	Ii/Im	MFG	MFG PN	KAIC
50	150/90	Fixed	NA	10	Square D	HJF36090YE	65	150/80	Fixed	NA	10	Square D	HJF36080YE	65
100	250/175	Fixed	NA	10	Square D	JJF36175TYE	65	150/150	Fixed	NA	10	Square D	HJF36150YE	65
150	400/300	300	1.5	9	Square D	LJF36400TU33XTW	65	250/225	Fixed	NA	10	Square D	JJF36225YE	65
200	400/350	350	1.5	10	Square D	LJF36400TU33XTW	65	400/300	300	1.5	9	Square D	LJF36400TU33XTW	65
250	600/450	450	1.5	8	Square D	LJF36600TU33XTW	65	400	400	1.5	10	Square D	LJF36400TU33XTW	65
225	600/400	400	1.5	8	Square D	LJF36600U33X	65	400/350	350	1.5	10	Square D	LJF36400U33X	65

4-Breaker MBC Circuit Breaker Schedule																							
KVA Rating	RIB							BIB							MIB/MBB								
	AF/AT	Ir	Isd	Ii/Im	MFG	MFG PN	KAIC	AF/AT	Ir	Isd	Ii/Im	MFG	MFG PN	KAIC	AF/AT	Ir	Isd	Ii/Im	MFG	MFG PN	KAIC		
50	150/90	Fixed	NA	10	Square D	HJF36090YE	65	150/80	Fixed	NA	10	Square D	HJF36080YE	65	150/80	Fixed	NA	10	Square D	HJF36080YE	65		
100	250/175	Fixed	NA	10	Square D	JJF36175TYE	65	150/150	Fixed	NA	10	Square D	HJF36150YE	65	150/150	Fixed	NA	10	Square D	HJF36150YE	65		
150	400/300	300	1.5	9	Square D	LJF36400TU33XTW	65	250/225	Fixed	NA	10	Square D	JJF36225YE	65	250/225	Fixed	NA	10	Square D	JJF36225YE	65		
200	400/350	350	1.5	10	Square D	LJF36400TU33XTW	65	400/300	300	1.5	9	Square D	LJF36400TU33XTW	65	400/300	300	1.5	9	Square D	LJF36400TU33XTW	65		
250	600/450	450	1.5	8	Square D	LJF36600TU33XTW	65	400	400	1.5	10	Square D	LJF36400TU33XTW	65	400	400	1.5	10	Square D	LJF36400TU33XTW	65		

SHEET NO. 1 OF 1	DRAWN BY: K. STACY	TITLE	DWG. NO. EXM48004
ECN NO.	DESIGNED BY: D. McLAURIN	TECHNICAL INFORMATION MAINTENANCE BYPASS CABINETS (MBC) LIEBERT 480VAC EXM	DATE (LATEST REV.) 8/9/2017
REF DWG.	APPROVED BY: D. McLAURIN		REVISION 2

1050 DEARBORN DR
P.O. BOX 29186
COLUMBUS, OH 43229

VERTIV.



FRONT VIEW

NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. 24" [610] MINIMUM CLEARANCE ABOVE UNIT FOR AIR EXHAUST. 36" [914] FRONT ACCESS REQUIRED FOR SERVICE.
3. KEEP CABINET WITHIN 15 DEGREES OF VERTICAL.
4. TOP AND BOTTOM CABLE ENTRY AVAILABLE THROUGH REMOVABLE ACCESS PLATES. REMOVE, PUNCH TO SUIT CONDUIT SIZE AND REPLACE.
5. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING.
6. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
7. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
8. ALL BATTERY CABINETS MUST BE POSITIONED ON THE LEFT SIDE OF UPS.

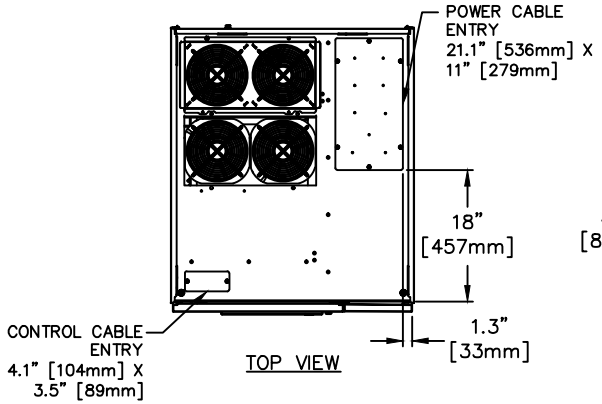
TOTAL WIDTH WITH ADDITIONAL BATTERY CABINETS	
NO. OF BATT. CABINETS	TOTAL WIDTH
* 2	139.6" [3548mm]
3	186.9" [4748mm]
4	234.1" [5948mm]

DRAWN BY K. STACY	SHEET NO. 1 OF 1	LINE-UP DETAIL 250kVA UPS TO BATTERY CABINET (1200mm) AND MAINTENANCE BYPASS CABINET (300mm) LIEBERT 480VAC EXM			
CHK BY J. SHIPMAN	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM43008	DATE 3/17/17	REV. # 2

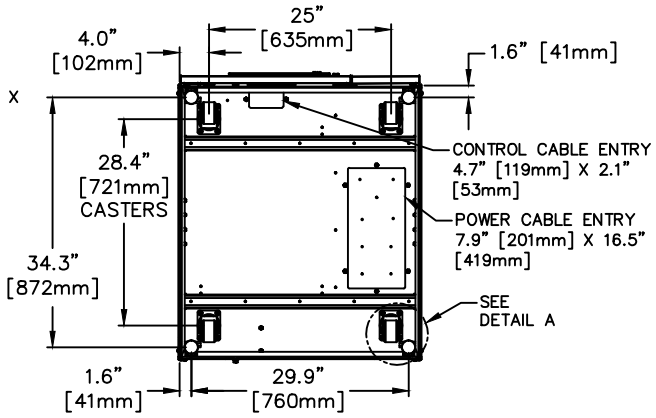
VERTIV.

1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\(C) Line-Up Detail\EXM43008-02.dwg

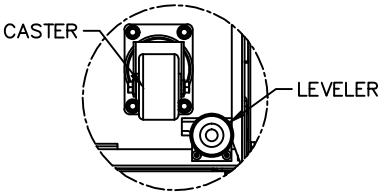


TOP VIEW

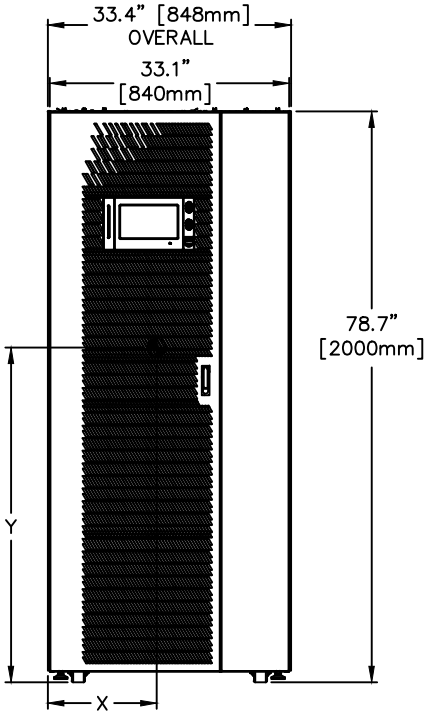


BOTTOM VIEW

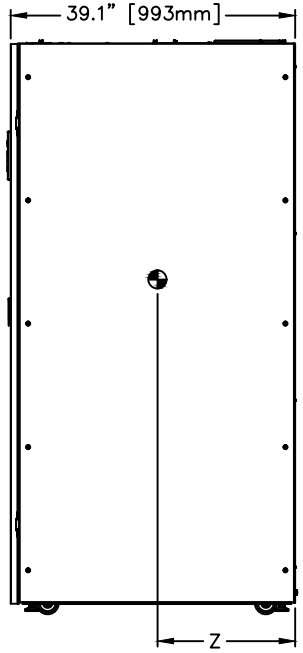
NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. 24" [610] MINIMUM CLEARANCE ABOVE UNIT AIR EXHAUST. 36" [914] FRONT ACCESS REQUIRED FOR SERVICE.
3. KEEP CABINET WITHIN 15 DEGREES OF VERTICAL.
4. TOP AND BOTTOM CABLE ENTRY AVAILABLE THROUGH REMOVABLE ACCESS PLATES. REMOVE, PUNCH TO SUIT CONDUIT SIZE AND REPLACE.
5. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING.
6. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
7. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
8. OVERALL DIMENSIONS ARE SHOWN WITH SIDE PANELS.



DETAIL A



FRONT VIEW



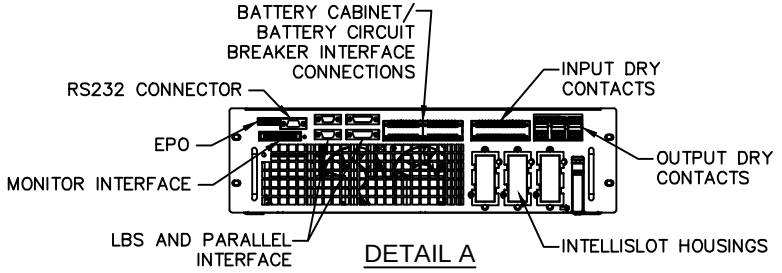
RIGHT SIDE VIEW

UPS kVA RATING	CENTER OF GRAVITY in(mm)		
	X	Y	Z
50	12.00"(305mm)	33.47"(850mm)	18.90"(480mm)
100	12.00"(305mm)	37.40"(950mm)	18.90"(480mm)
150	12.00"(305mm)	41.34"(1050mm)	18.90"(480mm)
200	12.00"(305mm)	45.27"(1150mm)	18.90"(480mm)
250	14.96"(380mm)	45.98"(1168mm)	18.90"(480mm)

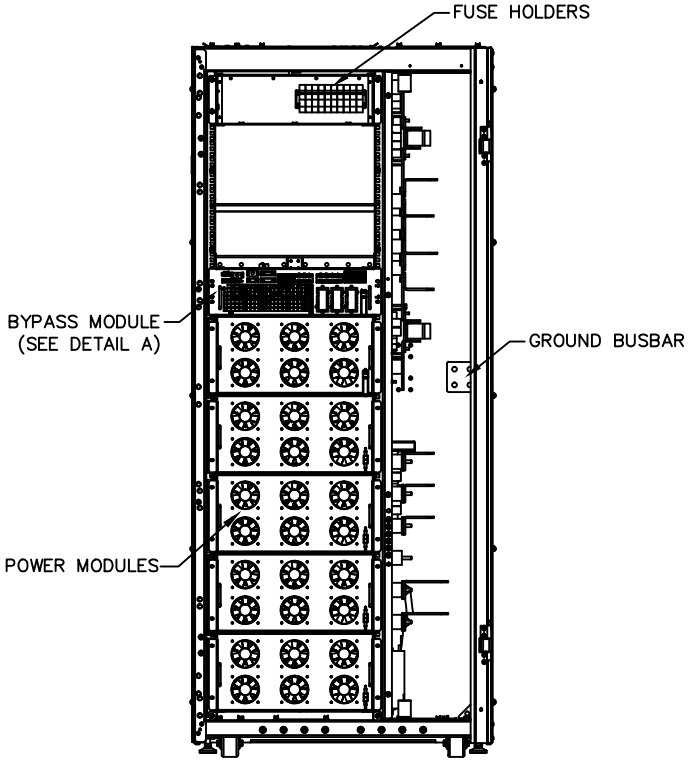
DRAWN BY J. SHIPMAN	SHEET NO. 1 OF 2	OUTLINE DRAWING 50kVA - 250kVA UPS LIEBERT 480VAC EXM			
CHK BY B. SANBORN	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM42002A	DATE 7/10/18	REV. # 3

VERTIV.
1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

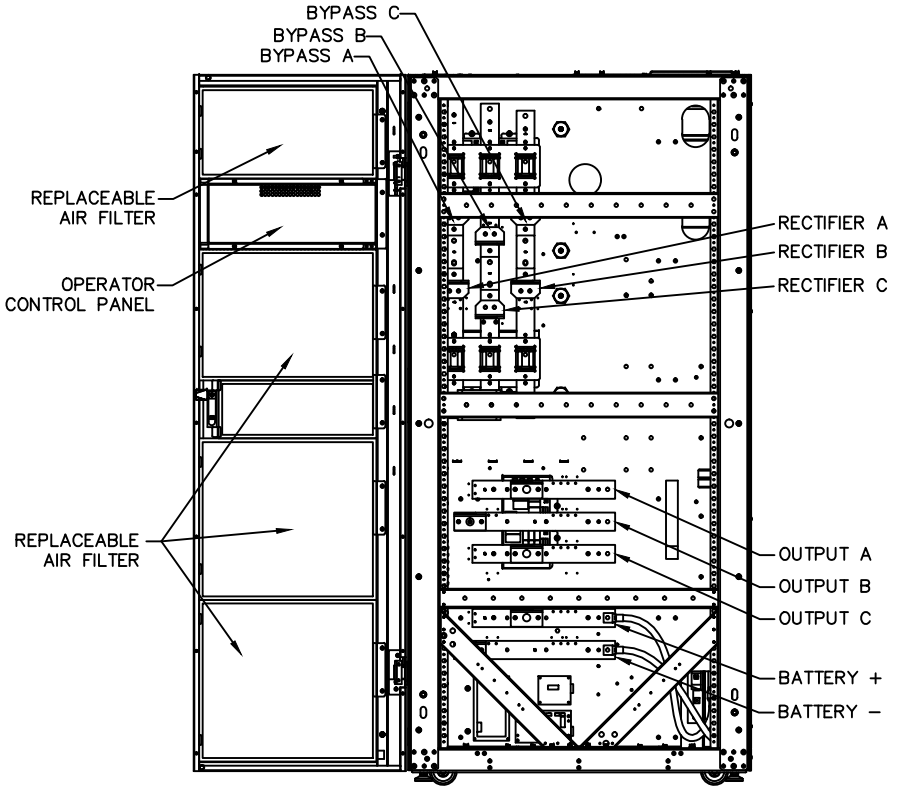
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DETAIL A



FRONT VIEW
WITH DOOR OPENED



RIGHT SIDE VIEW
WITH DOOR OPENED
(AND SIDE PANEL REMOVED)

DRAWN BY J. SHIPMAN	SHEET NO. 2 OF 2
CHK BY B. SANBORN	ECN NO.
REF. DWG.	ORDER NO.

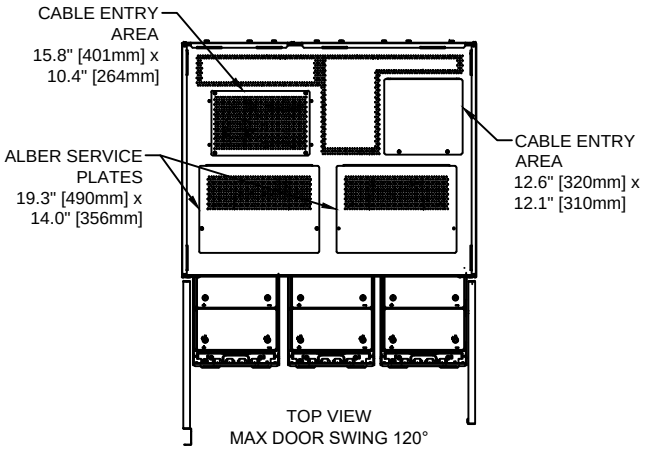
OUTLINE DRAWINGS
MAIN COMPONENTS LAYOUT
50kVA - 250kVA UPS
LIEBERT 480VAC EXM

DWG. NO.	DATE	REV. #
EXM42002B	7/10/18	3

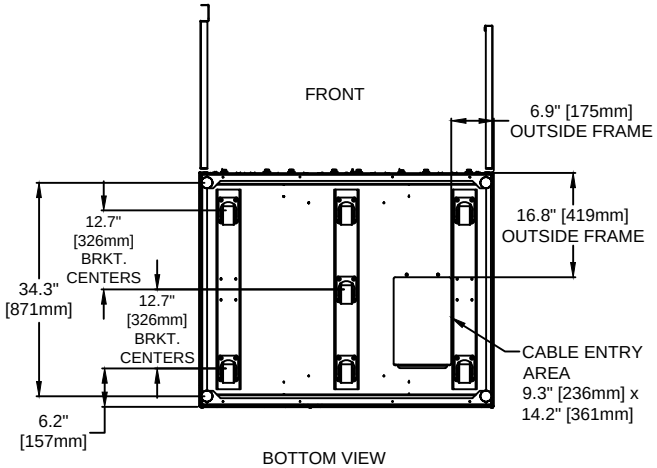
1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

VERTIV.

FILE NAME: I:\appl-DLW\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\B) Outline Dwg\EXM42002B-03.dwg



TOP VIEW
MAX DOOR SWING 120°

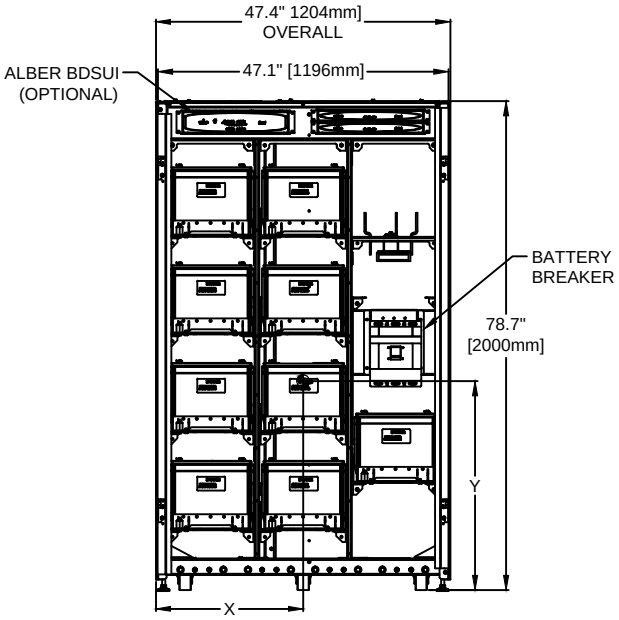


BOTTOM VIEW
(VIEWED FROM FLOOR)

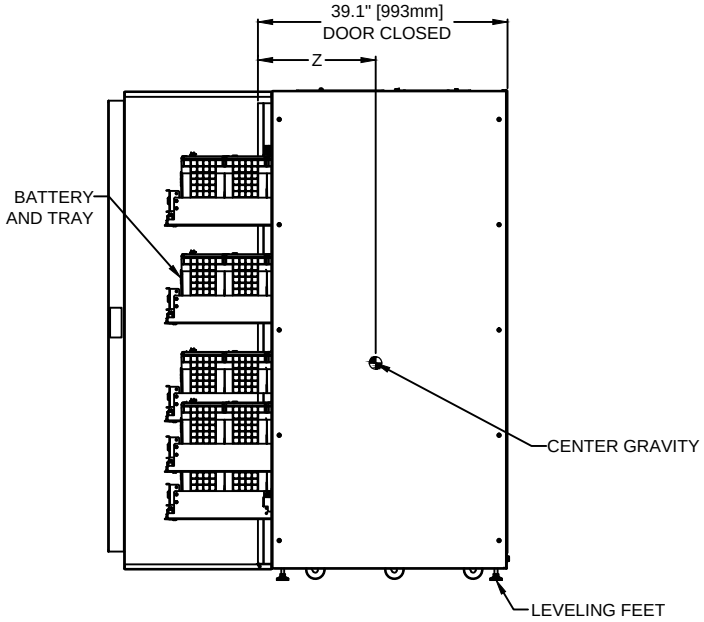
NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. 24" [610mm] MINIMUM CLEARANCE ABOVE UNIT FOR AIR EXHAUST. 36" [914mm] FRONT ACCESS REQUIRED FOR SERVICE.
3. KEEP CABINET WITHIN 15 DEGREES OF VERTICAL.
4. TOP AND BOTTOM CABLE ENTRY AVAILABLE THROUGH REMOVABLE ACCESS PLATES. REMOVE, PUNCH TO SUIT CONDUIT SIZE AND REPLACE.
5. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
6. COPPER CABLES ONLY ARE RECOMMENDED.
7. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
8. OVERALL DIMENSIONS ARE SHOWN WITH SIDE PANELS.

CENTER OF GRAVITY TABLE (mm)

X	Y	Z
20.0" (510)	35.6" (905)	19.8" (504)



FRONT VIEW
(WITHOUT COVERS)



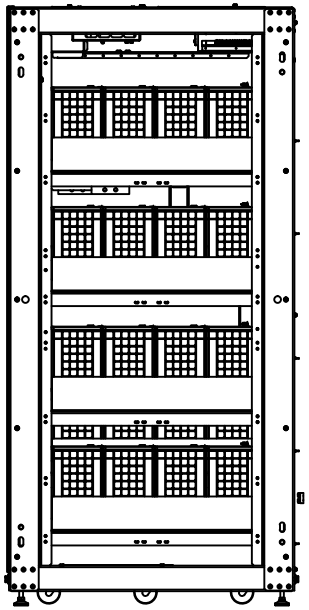
RIGHT SIDE VIEW

DRAWN BY J. SHIPMAN	SHEET NO. 1 OF 2	OUTLINE DRAWING BATTERY CABINET (1200mm) LIEBERT 480VAC EXM			
CHK BY B. SANBORN	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM42004A	DATE 4/6/18	REV. # 4

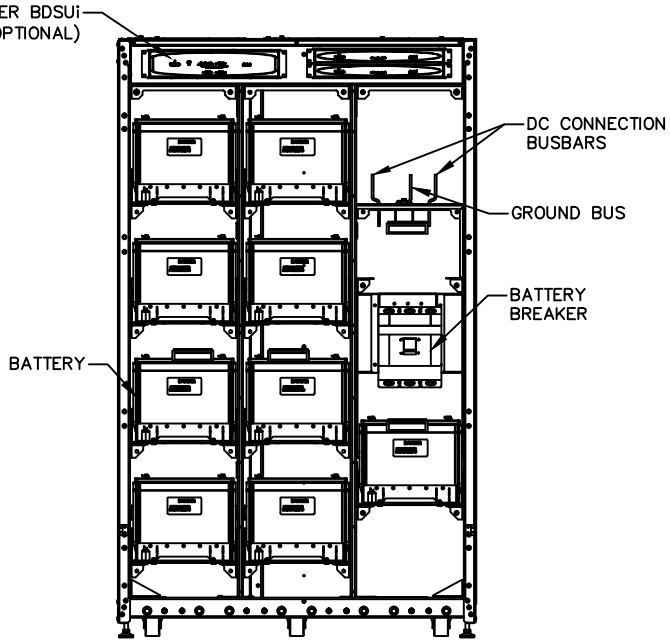
1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

VERTIV.

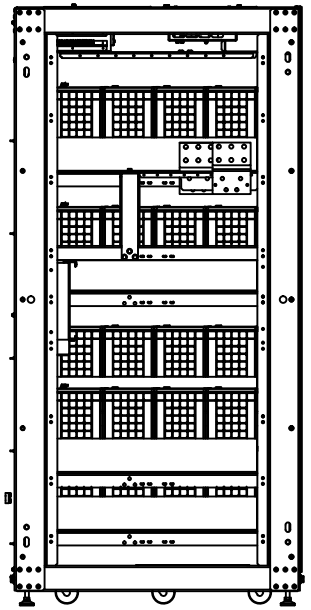
FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\B) Outline Dwg\EXM42004A-04.dwg



LEFT SIDE VIEW
WITH PANEL REMOVED



FRONT VIEW
WITH DOOR REMOVED

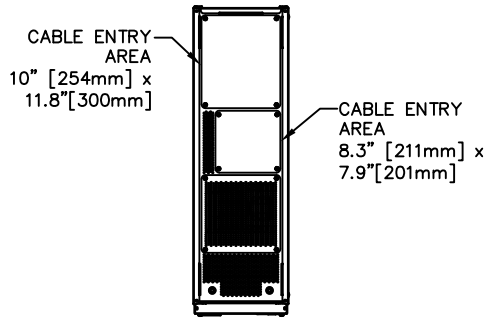


RIGHT SIDE VIEW
WITH PANEL REMOVED

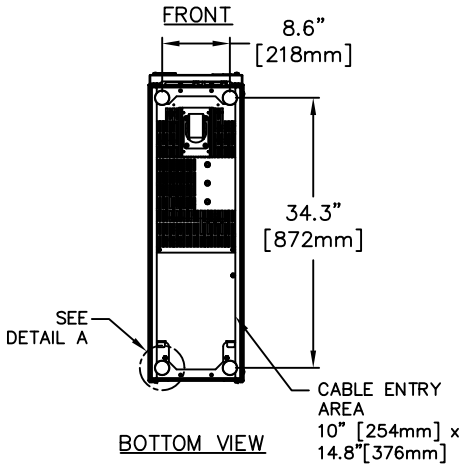
DRAWN BY J. SHIPMAN	SHEET NO. 2 OF 2	OUTLINE DRAWING MAIN COMPONENTS LAYOUT BATTERY CABINET (1200mm) LIEBERT 480VAC EXM			
CHK BY B. SANBORN	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM42004B	DATE 4/6/18	REV. # 4

1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\B) Outline Dwg\EXM42004B-04.dwg

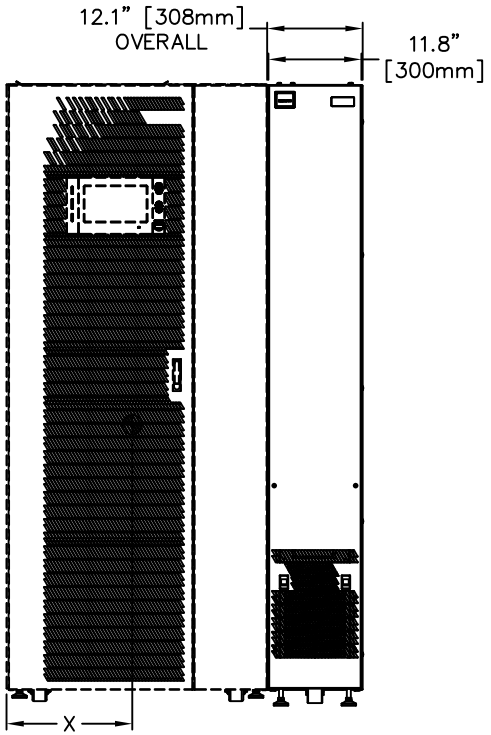


TOP VIEW

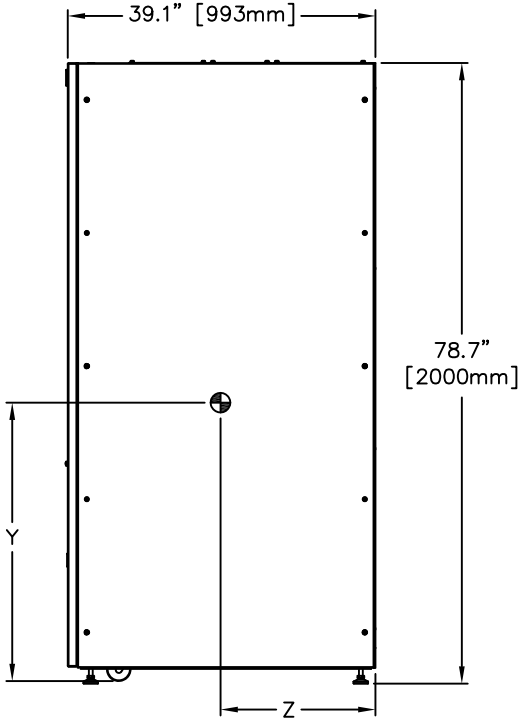


BOTTOM VIEW

NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. 24" [610] MINIMUM CLEARANCE ABOVE UNIT FOR AIR EXHAUST. 36" [914] FRONT ACCESS REQUIRED FOR SERVICE.
3. KEEP CABINET WITHIN 15 DEGREES OF VERTICAL.
4. UPS – BOTTOM CABLE ENTRY THROUGH REMOVABLE PLATES. MBC – TOP AND BOTTOM CABLE ENTRY THROUGH REMOVABLE PLATES. REMOVE, PUNCH TO SUIT CONDUIT SIZE AND REPLACE.
5. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING.
6. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
7. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
8. UPS SHOWN FOR REFERENCE ONLY. REFER TO OUTLINE DRAWING OF YOUR UPS FOR ACCURATE DIMENSIONS.
9. OVERALL DIMENSIONS ARE SHOWN WITH SIDE PANELS.

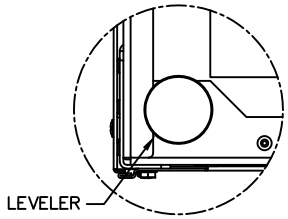


FRONT VIEW
(SEE NOTE 8)



RIGHT SIDE VIEW

UPS kVA RATING	CENTER OF GRAVITY in(mm)			NOTE
	X	Y	Z	
250	16 (406)	35.4 (900)	19.7 (502)	WITH MBC



DETAIL A

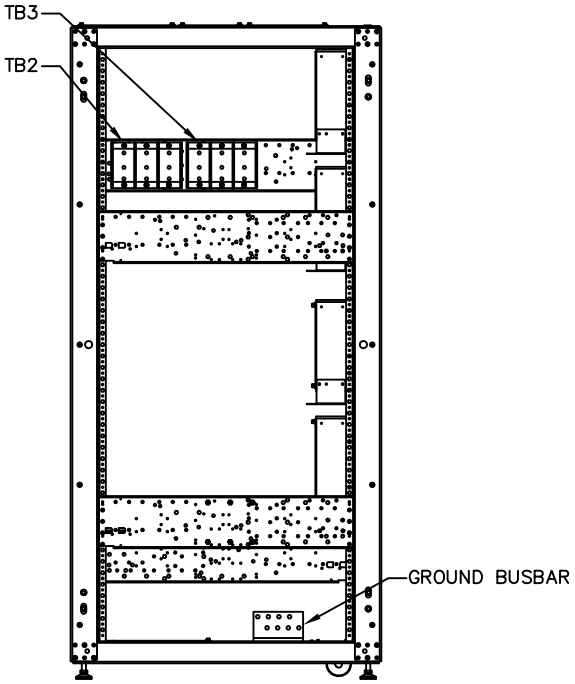
DRAWN BY K. STACY	SHEET NO. 1 OF 2
CHK BY J. SHIPMAN	ECN NO.
REF. DWG.	ORDER NO.

OUTLINE DRAWING
250kVA
2-4 BREAKER MAINTENANCE BYPASS CABINET (300mm)
LIEBERT 480VAC EXM

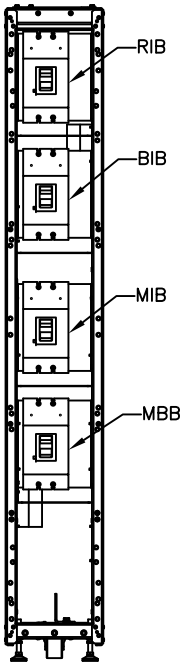
DWG. NO.	DATE	REV. #	
EXM42006A	3/17/17	4	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

VERTIV.

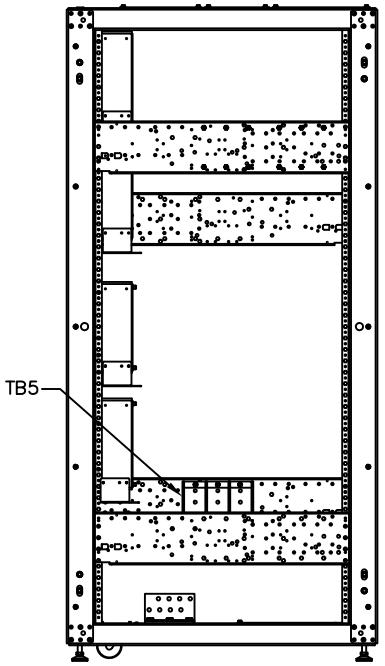
FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\B) Outline Dwg\EXM42006A-04.dwg



LEFT SIDE VIEW
WITH PANEL REMOVED



FRONT VIEW
WITH DOOR REMOVED



RIGHT SIDE VIEW
WITH PANEL REMOVED

NOTES:
1. 2–BREAKER MBC CONSISTS OF MBB AND MIB.

2. 3–BREAKER MBC CONSISTS OF MBB, MIB, AND BIB.

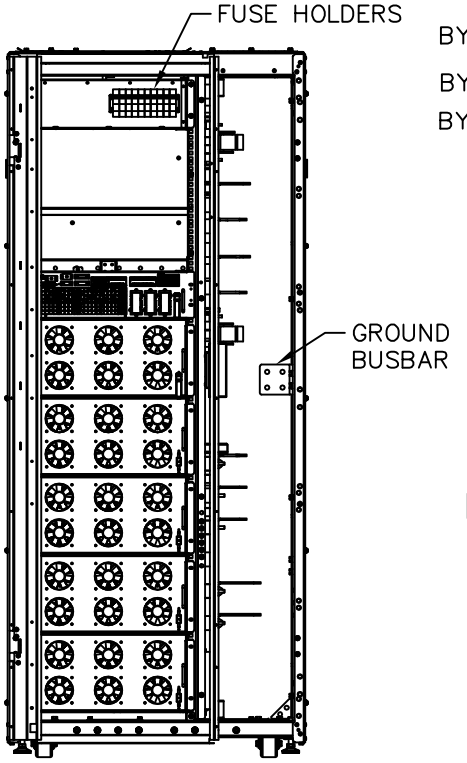
3. 4–BREAKER MBC CONSISTS OF MBB, MIB, BIB, AND RIB.

DRAWN BY K. STACY	SHEET NO. 2 OF 2	OUTLINE DRAWING MAIN COMPONENTS LAYOUT 250kVA 2-4 BREAKER MAINTENANCE BYPASS CABINET (300mm) LIEBERT 480VAC EXM			VERTIV.
CHK BY J. SHIPMAN	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM42006B	DATE 3/17/17	REV. # 4

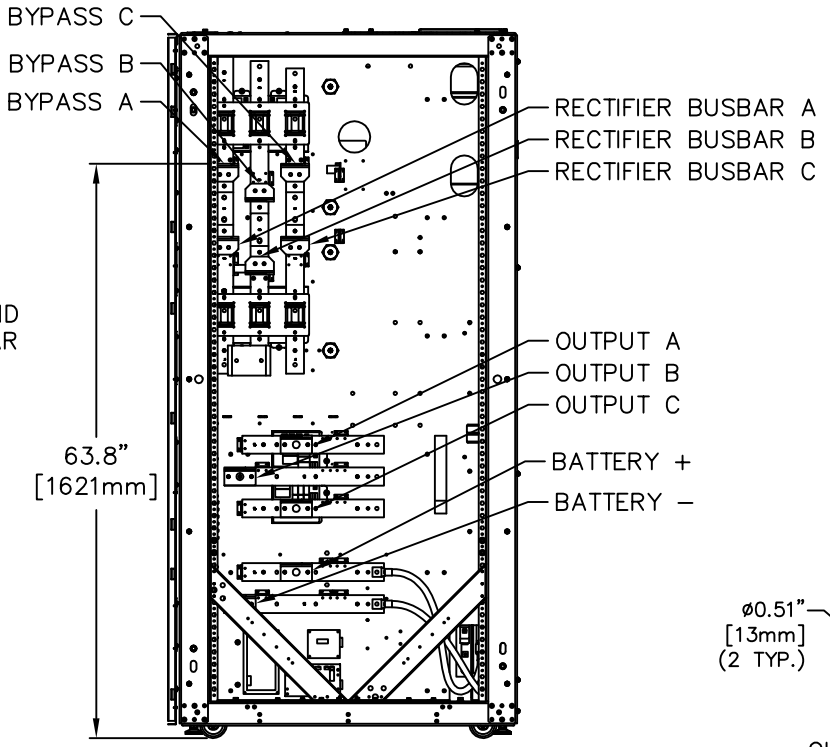
1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

FILE NAME: I:\appl-DLW\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\B) Outline Dwg\EXM42006B-04.dwg

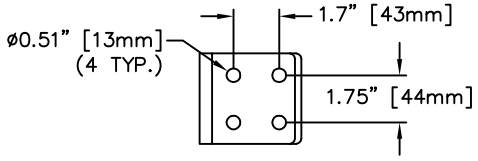
NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
3. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.



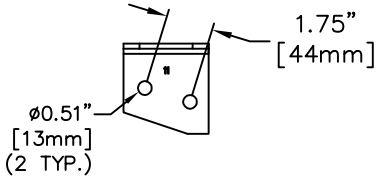
FRONT VIEW
WITH DOOR REMOVED



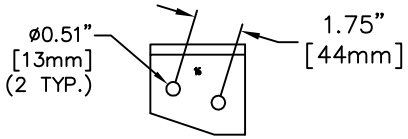
RIGHT SIDE VIEW
WITH PANEL REMOVED



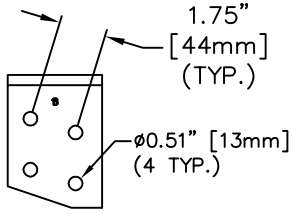
GROUND BUSBAR



BYPASS AND RECTIFIER BUSBARS



OUTPUT BUSBAR



BATTERY BUSBAR

TERMINAL SPECIFICATIONS			
UNIT RATING	UTILITY CONFIGURATIONS		
	BOLT SHAFT SIZE	TORQUE	
		LB-IN	N-M
250	M12	428	48

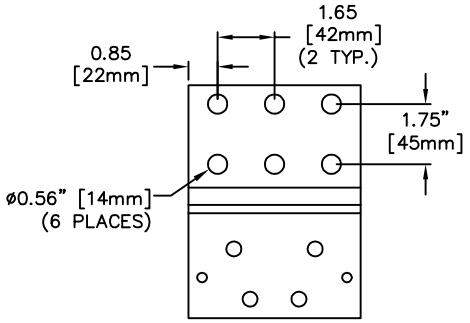
DRAWN BY K. STACY	SHEET NO. 1 OF 1
CHK BY M. ROCKWELL	ECN NO.
REF. DWG.	ORDER NO.

TERMINAL DETAIL
50kVA - 250kVA UPS
LIEBERT 480VAC EXM

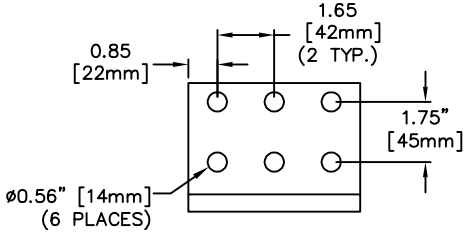
DWG. NO.	DATE	REV. #	
EXM46002	6/7/16	3	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

VERTIV.

FILE NAME: I:\appl-DLW\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\F) Terminal Details\EXM46002-03.dwg



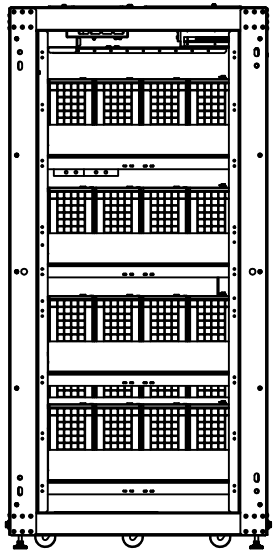
POSITIVE/NEGATIVE BUSBARS



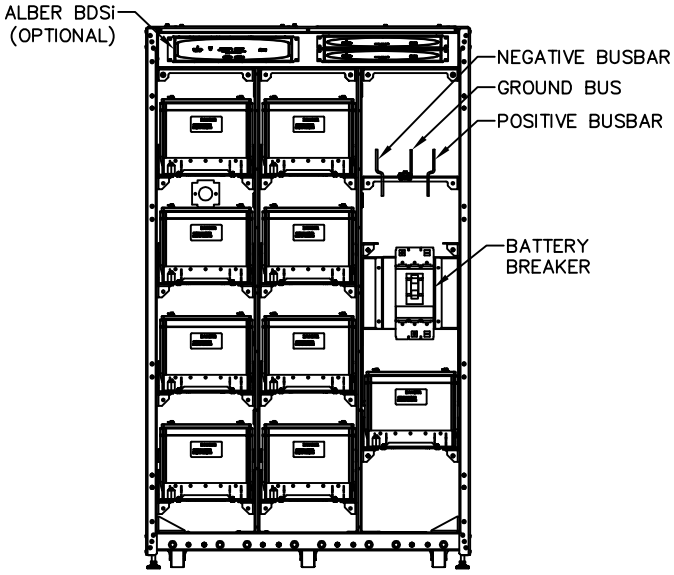
GROUND BUSBAR

NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
3. COPPER CABLES ONLY ARE RECOMMENDED.
4. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
5. IF BATTERY CABINET IS ATTACHED TO UPS, LIEBERT WILL SUPPLY INTERCONNECT CABLES.

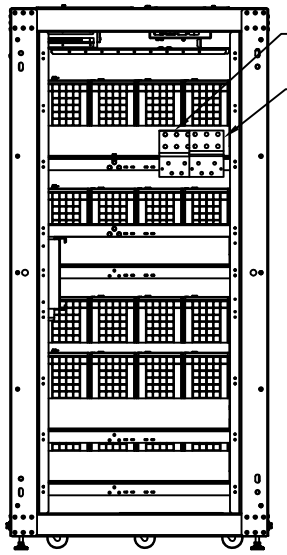
TERMINAL SPECIFICATIONS			
UNIT RATING	UTILITY CONFIGURATIONS		
	BOLT SHAFT SIZE	TORQUE	
		LB-IN	N-M
50-250	M12	428	48



LEFT SIDE VIEW
WITH PANEL REMOVED



FRONT VIEW
WITH DOOR REMOVED



RIGHT SIDE VIEW
WITH PANEL REMOVED

DRAWN BY K. STACY	SHEET NO. 1 OF 1
CHK BY M. ROCKWELL	ECN NO.
REF. DWG.	ORDER NO.

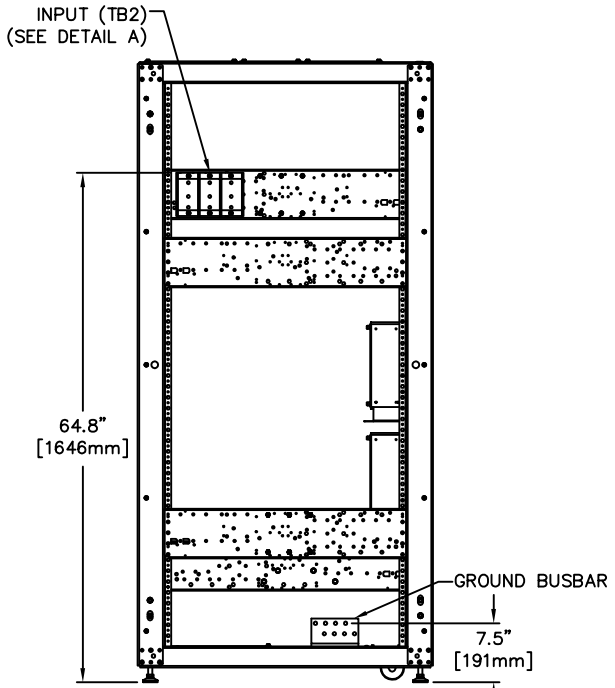
TERMINAL DETAIL
BATTERY CABINET (1200mm)
LIEBERT 480VAC EXM

DWG. NO.	DATE	REV. #	
EXM46004	12/1/15	0	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

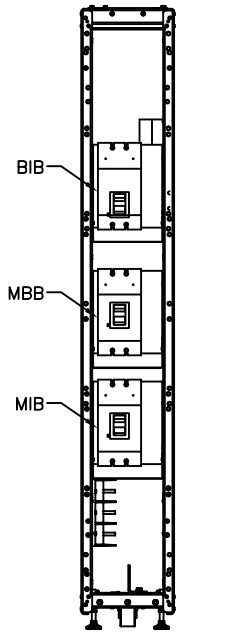
VERTIV.

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\F) Terminal Details\EXM16004-02.dwg

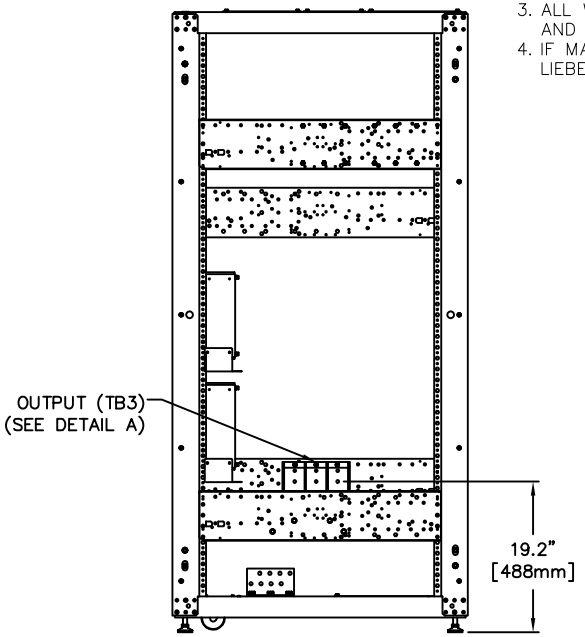
NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. CONTROL WIRING AND POWER WIRING MUST BE RUN IN SEPARATE CONDUITS.
3. ALL WIRING IS TO BE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
4. IF MAINTENANCE BYPASS CABINET IS ATTACHED TO UPS, LIEBERT WILL SUPPLY THE INTERCONNECTION CABLES.



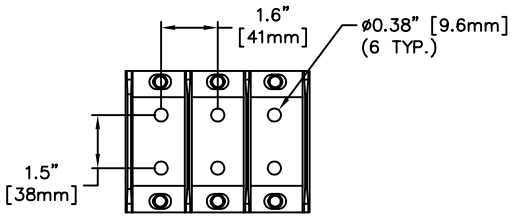
LEFT SIDE VIEW
WITH PANEL REMOVED



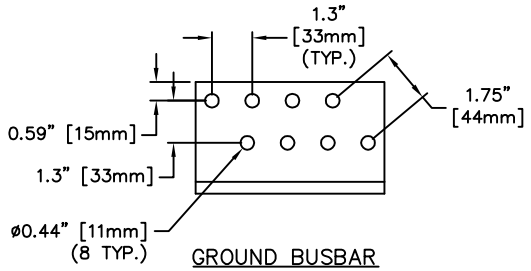
FRONT VIEW
WITH DOOR REMOVED



RIGHT SIDE VIEW
WITH PANEL REMOVED



DETAIL A

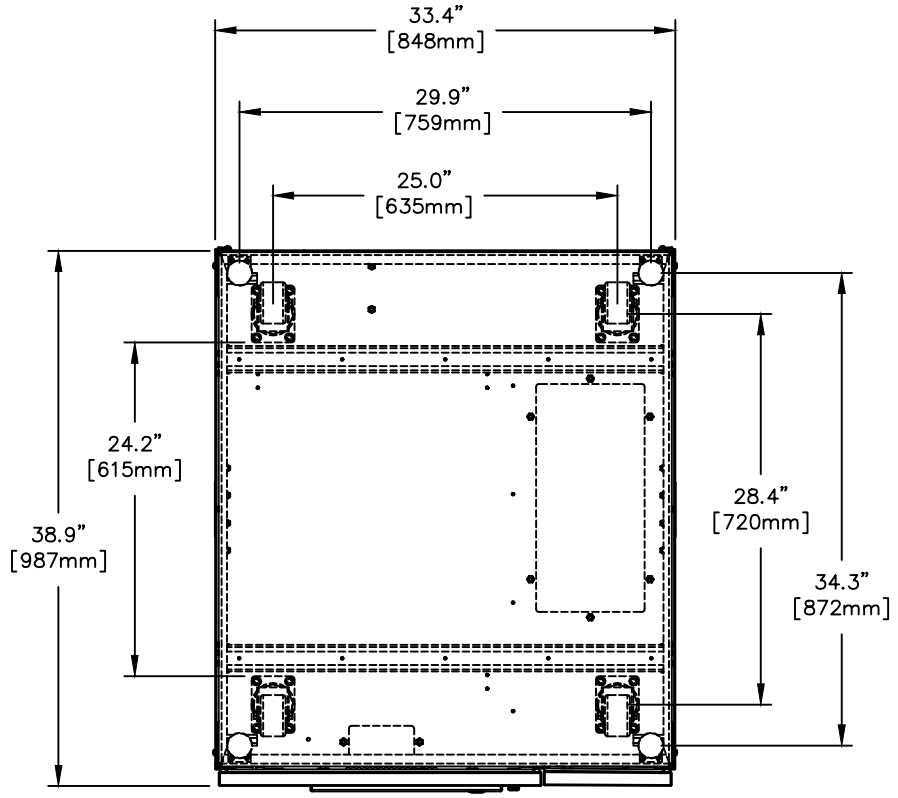


GROUND BUSBAR

DRAWN BY K. STACY	SHEET NO. 1 OF 1	TERMINAL DETAIL 3 BREAKER MAINTENANCE BYPASS CABINET (300mm) FOR USE WITH 150kVA - 250kVA UPS LIEBERT 480VAC EXM			VERTIV.
CHK BY M. ROCKWELL	ECN NO.				
REF. DWG.	ORDER NO.				
		DWG. NO. EXM46009	DATE 12/2/15	REV. # 0	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\F) Terminal Details\EXM46009-00.dwg

NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING

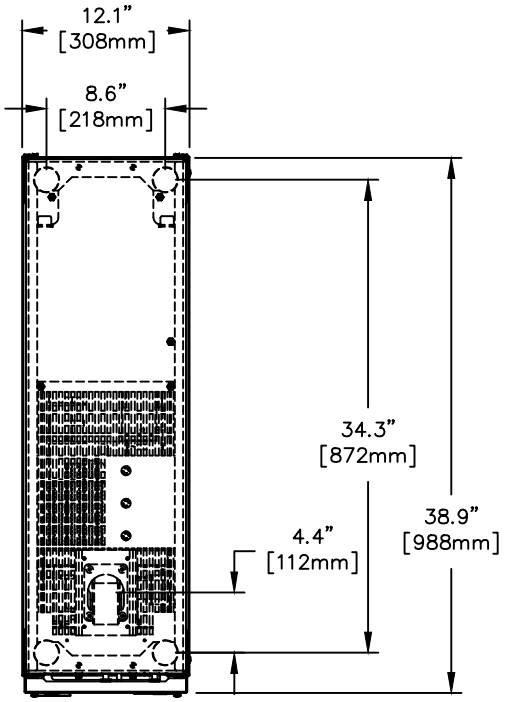


FRONT
(VIEWED LOOKING TOP DOWN)

DRAWN BY J. SHIPMAN	SHEET NO. 1 OF 1	BASE DETAIL 250kVA UPS LIEBERT 480VAC EXM				VERTIV.
CHK BY J. SHIPMAN	ECN NO.					
REF. DWG.	ORDER NO.		DWG. NO. EXM49002	DATE 1/31/18	REV. # 2	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\I) Seismic & Base Details\EXM49002-02.dwg

NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING

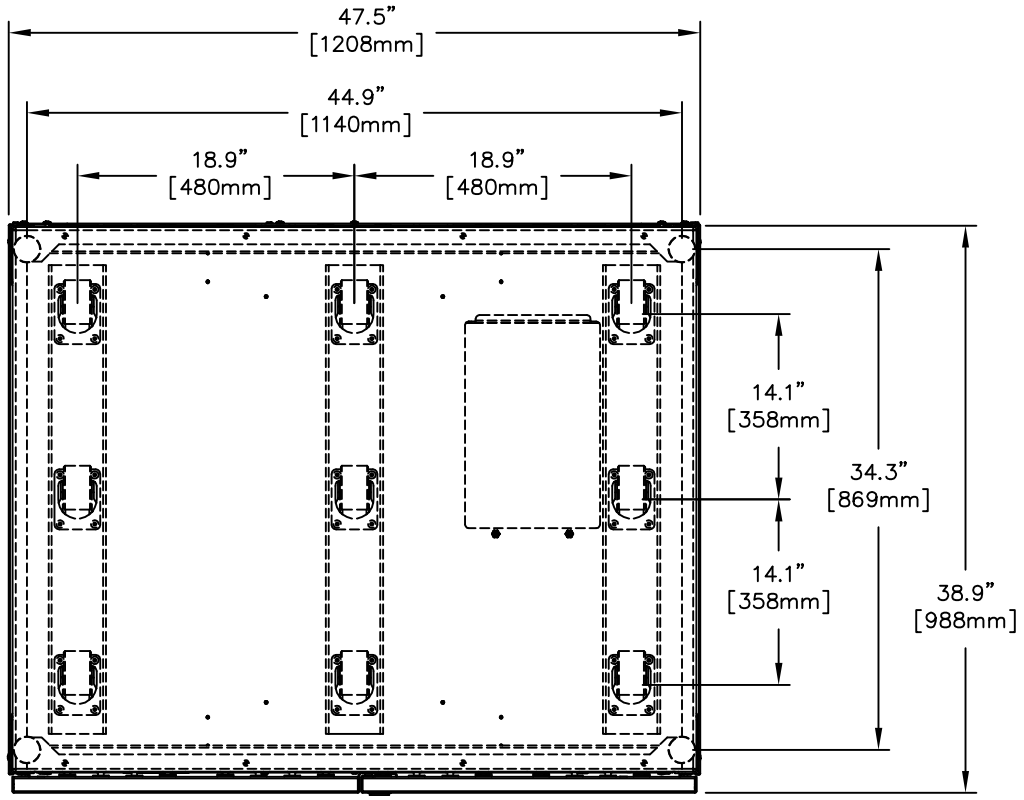


FRONT
(VIEWED LOOKING TOP DOWN)

DRAWN BY J. SHIPMAN	SHEET NO. 1 OF 1	BASE DETAIL MAINTENANCE BYPASS CABINET (300mm) LIEBERT 480VAC EXM				VERTIV.
CHK BY J. SHIPMAN	ECN NO.					
REF. DWG.	ORDER NO.		DWG. NO. EXM49005	DATE 1/31/18	REV. # 0	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\I) Seismic & Base Details\EXM49005-01.dwg

NOTES:
1. ALL DIMENSIONS ARE IN inches [mm].
2. UNIT BOTTOM IS STRUCTURALLY ADEQUATE FOR FORKLIFT HANDLING



FRONT
(VIEWED LOOKING TOP DOWN)

DRAWN BY K. STACY	SHEET NO. 1 OF 1	BASE DETAIL BATTERY CABINET (1200mm) LIEBERT 480VAC EXM			
CHK BY M. ROCKWELL	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM49007	DATE 12/17/15	REV. # 0

VERTIV.

1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\I) Seismic & Base Details\EXM49007-00.dwg

Cable Group #3 - From UPS to Battery Cabinet #1 or MBD				
Terminal Designation		Color	Signal Name	Recommended Wire
From	To			
TB1-6	X9J22-1	Black	+12V_BCB_DRV	18G
TB1-7	X9J22-3	Brown	BCB_STATE	18G
TB1-8	X9J22-5	White	GND_Dry	18G
TB1-9	X9J22-7	Green	BCB_ONLINE	18G
TB1-10	X9J22-11	Black	GND_Dry	18G
TB1-11	X9J22-13	White	TEMP_BAT	18G
TB1-12	X9J22-15	Red	+12V_A	18G

DRAWN BY K. STACY	SHEET NO. 1 OF 1	CONTROL WIRING CABLE GROUP #3 UPS TO BATTERY CABINET #1 OR MODULE BATTERY DISCONNECT (MBD) LIEBERT 480VAC EXM				VERTIV.
CHK BY L. BRAZIS	ECN NO.					
REF. DWG.	ORDER NO.		DWG. NO. EXM44008	DATE 2/25/16	REV. # 1	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\D) Power & Control Wiring\EXM44008-01.dwg

Cable Group #4 - From Battery Cabinet to Battery Cabinet				
Terminal Designation		Color	Signal Name	Recommended Wire
From	To			
TB1-1	TB1-1	Black	Shunt Trip	18G
TB1-2	TB1-2	White	Shunt Trip	18G
TB1-3	TB1-3	Green	Aux Contact	18G
TB1-4	TB1-5	Red	Aux Contact	18G

DRAWN BY K. STACY	SHEET NO. 1 OF 1	CONTROL WIRING CABLE GROUP #4 BATTERY CABINET TO BATTERY CABINET LIEBERT 480VAC EXM				VERTIV.
CHK BY M. ROCKWELL	ECN NO.					
REF. DWG.	ORDER NO.		DWG. NO. EXM44009	DATE 1/27/16	REV. # 0	1050 DEARBORN DRIVE P.O. BOX 29186 COLUMBUS, OHIO 43229

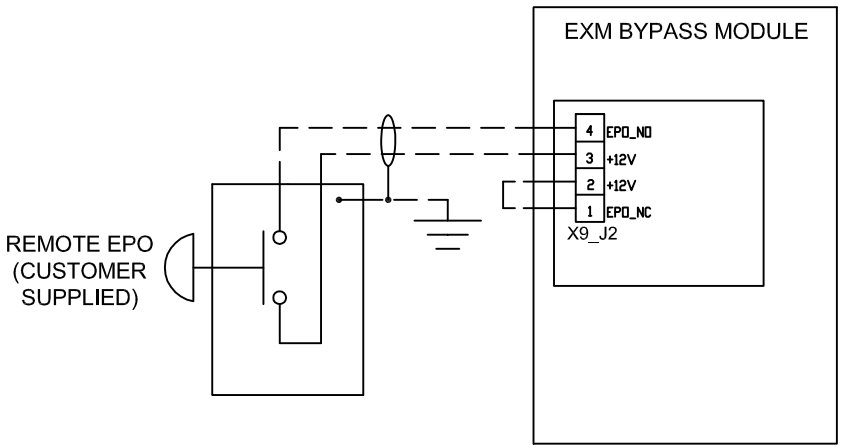
FILE NAME: I:\appl\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\D) Power & Control Wiring\EXM44009-00.dwg

CABLE GROUP #10A - MIB/MBB AUX CONTACTS								
TERMINAL DESIGNATION		COLOR	SIGNAL NAME	MAXIMUM VOLTAGE	MAXIMUM CURRENT	UPS TERMINATION WIRE RANGE	MAXIMUM LENGTH	REMARKS
FROM	TO							
TB1-3	X9J26-9	BLACK	MBB STATUS	30VDC/ 250VAC	8A	#16-20AWG	200FT	
TB1-4	X9J26-11	WHITE	GROUND					
TB1-5	X9J26-13	BLACK	MIB STATUS					
TB1-6	X9J26-15	WHITE	GROUND					
CABLE GROUP #10B - BIB SHUNT TRIP								
TERMINAL DESIGNATION		COLOR	SIGNAL NAME	MAXIMUM VOLTAGE	MAXIMUM CURRENT	UPS TERMINATION WIRE RANGE	MAXIMUM LENGTH	REMARKS
FROM	TO							
TB1-7	X9J23-3	RED	BFP_S	30VDC/ 480VAC	4A	#16-20AWG	200FT	
X9J23-1	F5/F7	BLACK	BFP_O					
TB1-8	F6/F8	BLACK	SHUNT TRIP					
CABLE GROUP #10C - RIB SHUNT TRIP								
TERMINAL DESIGNATION		COLOR	SIGNAL NAME	MAXIMUM VOLTAGE	MAXIMUM CURRENT	UPS TERMINATION WIRE RANGE	MAXIMUM LENGTH	REMARKS
FROM	TO							
TB1-10	X9J24-3	RED	MFP_S	30VDC/ 480VAC	4A	#16-20AWG	200FT	
X9J24-1	F5/F7	BLACK	MFP_O					
TB1-9	F6/F8	BLACK	SHUNT TRIP					
CABLE GROUP #10D - UPS ON BYPASS								
TERMINAL DESIGNATION		COLOR	SIGNAL NAME	MAXIMUM VOLTAGE	MAXIMUM CURRENT	UPS TERMINATION WIRE RANGE	MAXIMUM LENGTH	REMARKS
FROM	TO							
TB1-11	X9J23-6	BLACK	INV_C	30VDC/ 250VAC	8A	#16-20AWG	200FT	
TB1-12	X9J23-4	WHITE	INV_S					

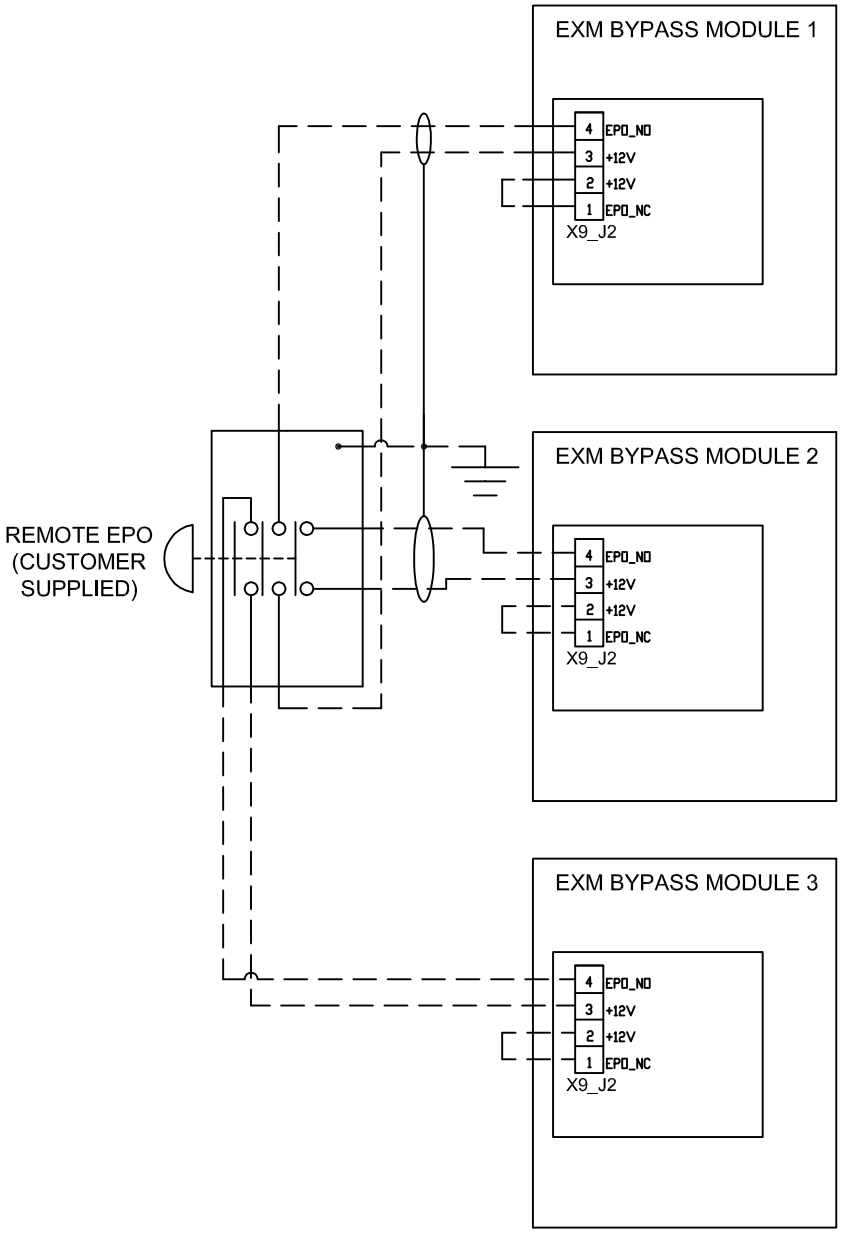
SHEET NO.: 1 OF 1	DRAWN BY: J. SHIPMAN	TITLE: CONTROL WIRING CABLE GROUP #10 UPS TO MAINTENANCE BYPASS CABINET (MBC) LIEBERT 480VAC EXM	DWG. NO.: EXM44015	VERTIV™
ECN NO.:	DESIGNED BY: G. HOGE		DATE (LATEST REV.): 11/29/2017	
REF DWG.:	APPROVED BY: G. HOGE		REVISION: 4	1050 DEARBORN DR P.O. BOX 29186 COLUMBUS, OH 43229

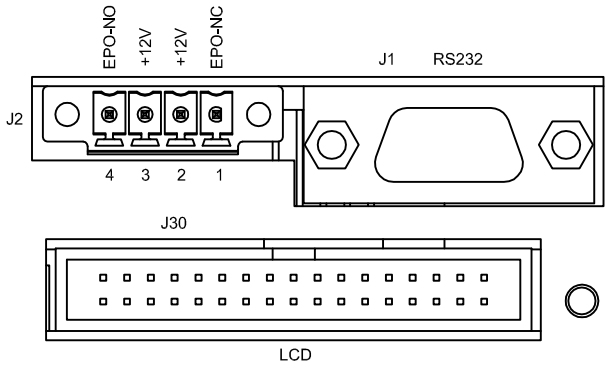
— — FIELD SUPPLIED WIRING

SINGLE EXM MODULE



THREE MODULES IN PARALLEL





EXM BYPASS MODULE

DRAWN BY K. STACY	SHEET NO. 1 OF 1	WIRING DIAGRAM REMOTE EPO 50kVA - 250kVA LIEBERT 480VAC EXM			
CHK BY N. JENKINS	ECN NO.				
REF. DWG.	ORDER NO.		DWG. NO. EXM44016	DATE 5/3/16	REV. # 0

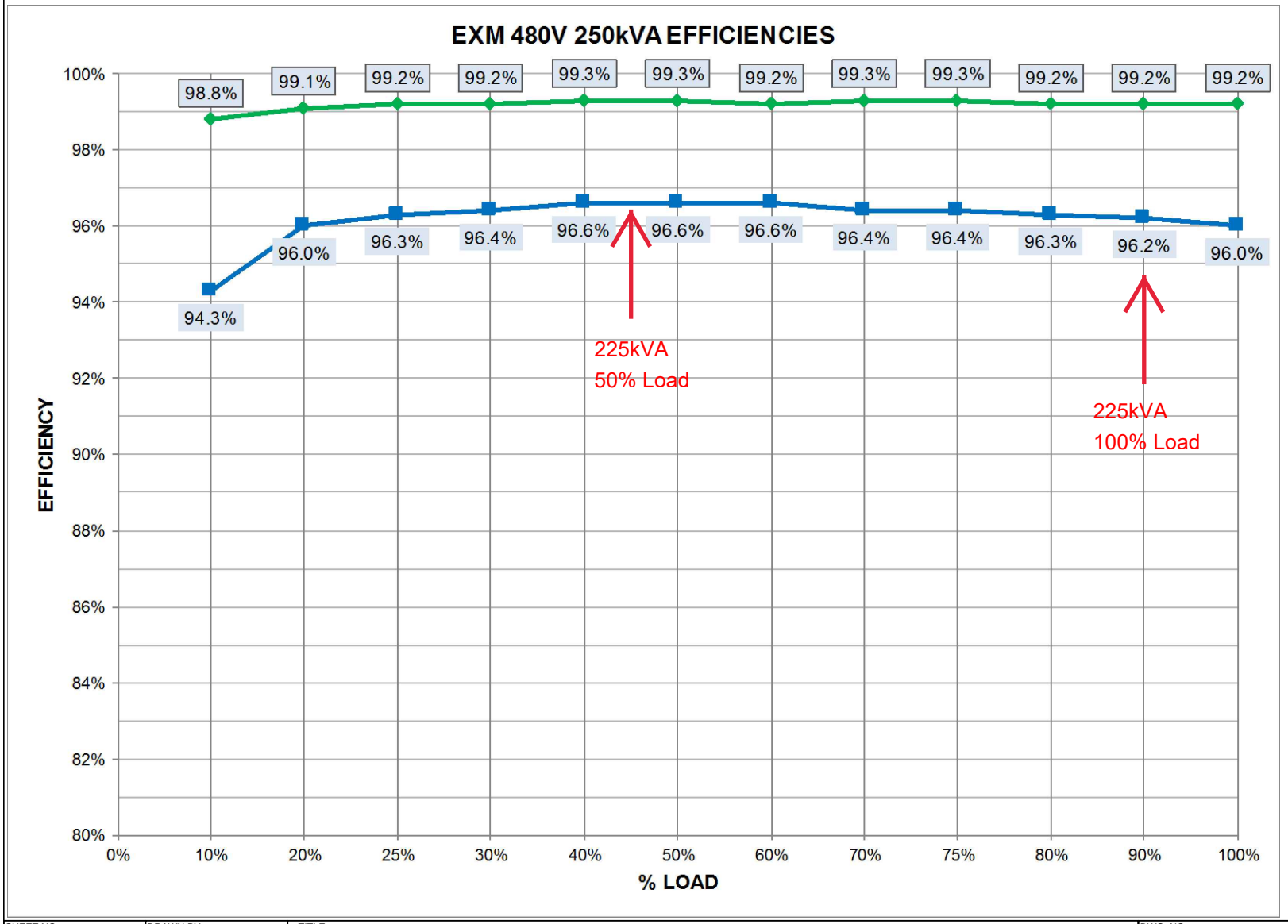
VERTIV™

1050 DEARBORN DRIVE
P.O. BOX 29186
COLUMBUS, OHIO 43229

FILE NAME: I:\appl-DLW\Ohio Appl\AE Submittals - Standard\eXM dwg\480V\D) Power & Control Wiring\EXM44016-00.dwg

NOTES

1. NO LOAD POWER LOSS: 1.85 kW



ECO MODE

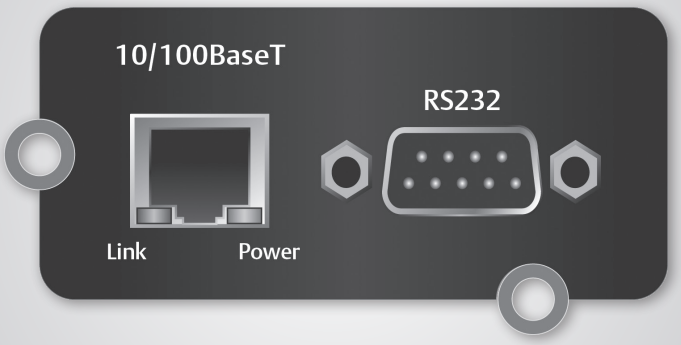
NORMAL MODE

SHEET NO.: 1 OF 1	DRAWN BY: J. SHIPMAN	TITLE: UPS EFFICIENCY 250 kVA LIEBERT 480VAC EXM	DWG. NO.: EXM47011	VERTIV
ECN NO.	DESIGNED BY: B. SANBORN		DATE (LATEST REV.): 12/06/2018	
REF DWG.	APPROVED BY: B. SANBORN		REVISION: 0	1050 DEARBORN DR P.O. BOX 29186 COLUMBUS, OH 43229

LIEBERT® INTELLISLOT™ CARDS
Product Specification/Installation Guide

VERTIV™

Liebert® IntelliSlot Web Card



INTELLISLOT™ WEB CARD FAMILY

- Liebert® IntelliSlot Web Card
- Liebert® IntelliSlot Web Card-LB
- Liebert® IntelliSlot WebCard-LBDS

The Liebert IntelliSlot Web Card family delivers enhanced communications and control to Liebert UPS, Power Management and Precision Cooling systems.

Liebert IntelliSlot Web cards bring SNMP, Telnet and Web-management capability to many models of Liebert UPS, power and cooling equipment. The cards employ an Ethernet network to monitor and manage a wide range of operating parameters, alarms and notifications.

ADDITIONAL FEATURES

- SNMPv1, SNMPv2c and with MIB-II support
- HTTP/HTTPS 1.1
- Telnet
- BootP, DHCP per RFC2131/2132
- Remote sockets
- Remote firmware updates via HTTP

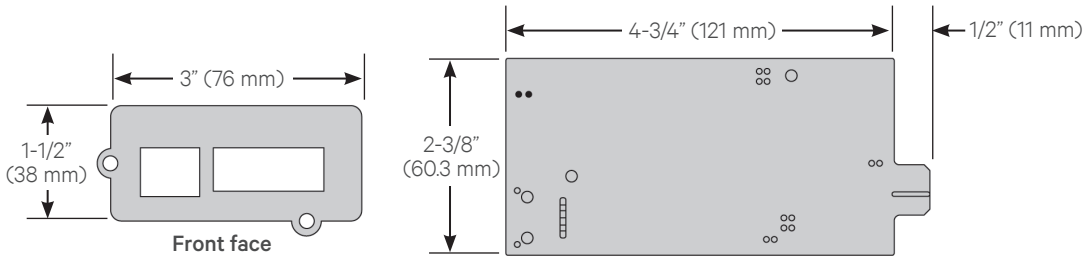
COMPATIBILITY with Liebert Equipment

IntelliSlot Web Card	Part Number	Compatible with:		
Liebert IntelliSlot Web Card	IS-WEBCARD	• Liebert PowerSure PSI™ • Liebert GXT™	• Liebert GXT™ 6kVA • Liebert GXT™ 6kVA	• Liebert GXT2U™ • Liebert Nfinity®
Liebert IntelliSlot Web Card-LB	IS-WEBLB	• Liebert NX™	• Liebert Hinet™	
Liebert IntelliSlot Web Card-LBDS	IS-WEBLBDS	• Liebert DS™ Precision Cooling Unit		

COMPATABILITY with Communication Protocols

IntelliSlot Web Card	Part Number	Compatible with:					
		SNMP	HTTP	HTTPS	EMAIL	SMS	TELNET
Liebert IntelliSlot Web Card	IS-WEBCARD	✓	✓	✓	✓	✓	✓
Liebert IntelliSlot Web Card-LB	IS-WEBLB	✓	✓	✓	✓	✓	✓
Liebert IntelliSlot Web Card-LBDS	IS-WEBLBDS	✓	✓	—	—	—	✓

DIMENSIONS



SPECIFICATIONS

Power Requirements	AC Inputs	18 - 24 VAC; 50/60 Hz
	DC Inputs	12 - 36VDC
	Power Consumptions:	6VA maximum (1.75W)
Dimensions, W x D x H	3 x 5-1/4 x 2-3/8 (76 x 134 x 38 mm)	
Weight (assembled)	Net:	7 oz (0.2 kg)
	Shipping:	1.3 lb (0.6 kg)
Ambient Operating Environment	32 to 104°F (0 to 40°C); 10% to 90% RH (non-condensing)	
Ambient Storage Temperature	–4 to 140°F (–20 to 60°C)	
Protection	SELV Isolated User Connections, Watchdog Timer Circuitry	
Communication Ports	Service Terminal (RS-232)	DB9F, DTE
	Ethernet Communications	RJ45

WIRING

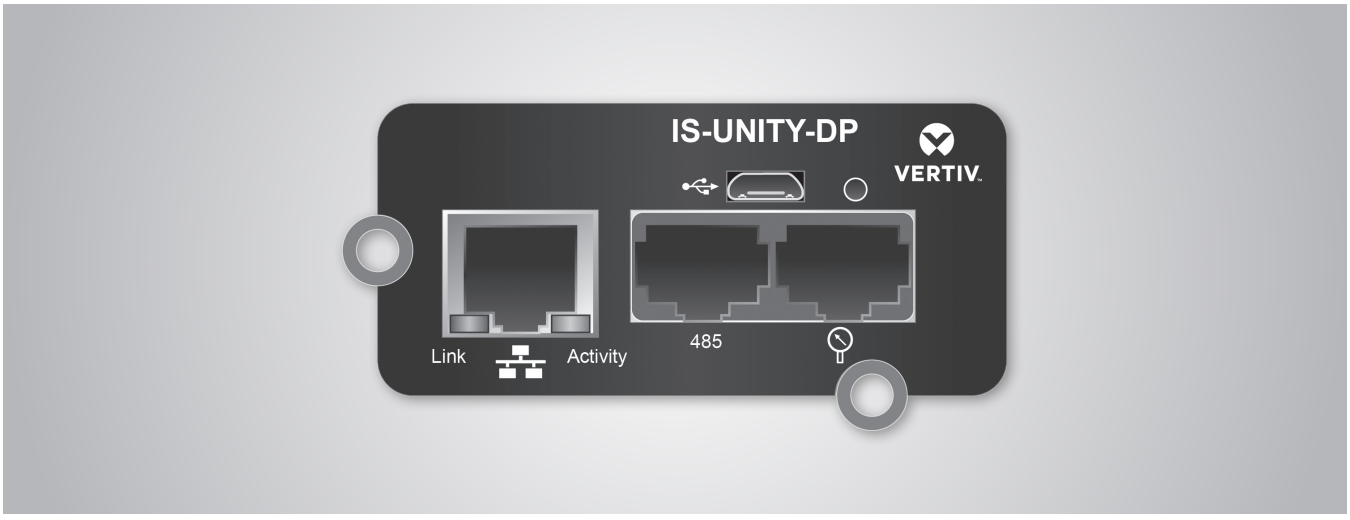
Connection	Supported Wire Type	Max. Wire Length
1RS-232	Null Modem Cable	50 ft. (15.3m)
DB9F Connector	DTE Null Modem Cable	50 ft. (15m)
RJ45 Connector	Standard Category 5 Cable	328 ft. (100m)

To contact Vertiv Technical Support: visit www.VertivCo.com

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LIEBERT® INTELLISLOT™ UNITY PLATFORM CARDS

Product Specification/Installation Guide



The Liebert IntelliSlot Unity Platform brings SNMP, BACnet IP, BACnet MSTP, Modbus TCP, Modbus RTU, YDN23 and Web management capability to many models of Vertiv's power and cooling equipment. The cards employ Ethernet and RS-485 networks to monitor and manage a wide range of operating parameters, alarms and notifications. The card also supports communication for LIFE™ Services by VERTIV.

ADDITIONAL FEATURES

- SNMPv1, SNMPv2c and SNMPv3 with MIB-II support
- HTTP/HTTPS 1.1
- BootP
- DHCP per RFC2131/2132
- Remote firmware updates via a Web browser
- IPv6 support for HTTP/HTTPS, DHCPv6, e-mail, SMS, SNMP v1/v2c/v3 and Modbus TCP
- Liebert SN Environmental Sensor Support (Web, SNMP, SMS and SMTP): Temperature, Humidity, Door Closure, Contact Closure and Leak Detection: Liebert SN-2D, Liebert SN-3C, Liebert SN-L, Liebert SN-T, Liebert SN-TH, Liebert SN-Z01, Liebert SN-Z02 and Liebert SN-Z03

IntelliSlot Unity cards are a form, fit, and function replacement for several Liebert IntelliSlot Web and 485 cards.

COMPATABILITY with Liebert Equipment

IntellSlot Card	Compatible with			
IS-UNITY-DP IS-UNITY-SNMP IS-UNITY-LIFE	Alber BDSU-50™	Liebert Deluxe System/3™	Liebert GXT3™	Liebert PeX™ *
	Liebert APM™	Liebert DS™	Liebert GXT4™	Liebert PPC™
	Liebert APS™	Liebert DSE™	Liebert HPC™	Liebert RDC™
	Liebert Challenger 3000™	Liebert EPM™	Liebert HPC-S/M/R/W/Generic™	Liebert RX™
		Liebert EXC™	Liebert HPM™	Liebert XDC™
	Liebert CRV™	Liebert eXL™	Liebert NX™ 225-600 kVA	Liebert XDP™
	Liebert CW™	Liebert EXL™ S1	Liebert NXC™	Liebert XDP-Cray™
	Liebert DCL™	Liebert eXM™	Liebert NXL™ *	
	Liebert DCP™	Liebert FDC™	Liebert NXR™	
		Liebert FPC™	Liebert PCW™/PDX™	

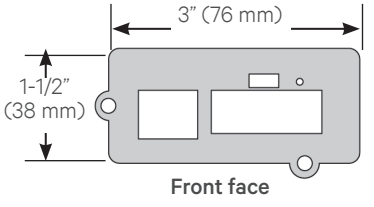
** YDN23 supported only for Liebert PeX and Liebert NXL.*

COMPATABILITY with Communication Protocols

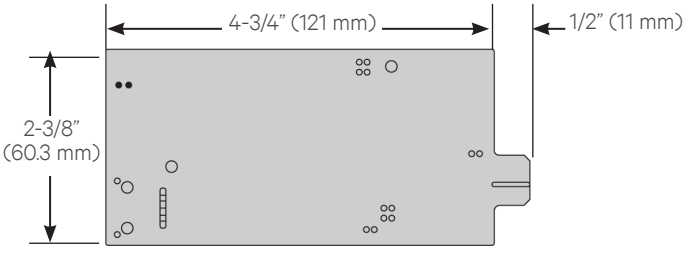
Liebert IntelliSlot Card	Life Services Support	Communication Protocol							
		HTTP HTTPS	Velocity Protocol	Email	SMS	SNMP v1, v2c, v3	BACnet IP BACnet MSTP	Modbus TCP Modbus RTU	YDN23*
IS-UNITY-DP	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS-UNITY-SNMP	✓	✓	✓	✓	✓	✓	—	—	—
IS-UNITY-LIFE	✓	✓	✓	✓	✓	—	—	—	—

* YDN23 supported only for Liebert PeX and Liebert NXL.

DIMENSIONS



Front face



Board

SPECIFICATIONS

Power Requirements	DC Inputs	7 to 12 VDC
	Power Consumptions:	3.6 W maximum
Dimensions, W x D x H	2.97 x 5.2 x 1.45 in. (75.5 x 15 x 37 mm)	
Weight (assembled)	Net:	7 oz (0.2 kg)
	Shipping:	1.3 lb (0.6 kg)
Ambient Operating Environment	32 to 104°F (0 to 40°C); 10% to 90% RH (non-condensing)	
Ambient Storage Temperature	–4 to 140°F (–20 to 60°C)	
Communication Ports	Ethernet Communication	RJ-45 (LIFE™ Services requires a network connection to the Internet)
	RJ-45 (RJ-45 to 2-position terminal-block adapter)	

WIRING

10/100 Mb/s Ethernet connector	Standard Category 5E Cable	328 ft. (100m)
RJ-45 - One-Wire Connector	Liebert® Integrated One-Wire Sensor Cable or 2m Cat 5E to Modular 1-Wire	65.6 ft. (20m)

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