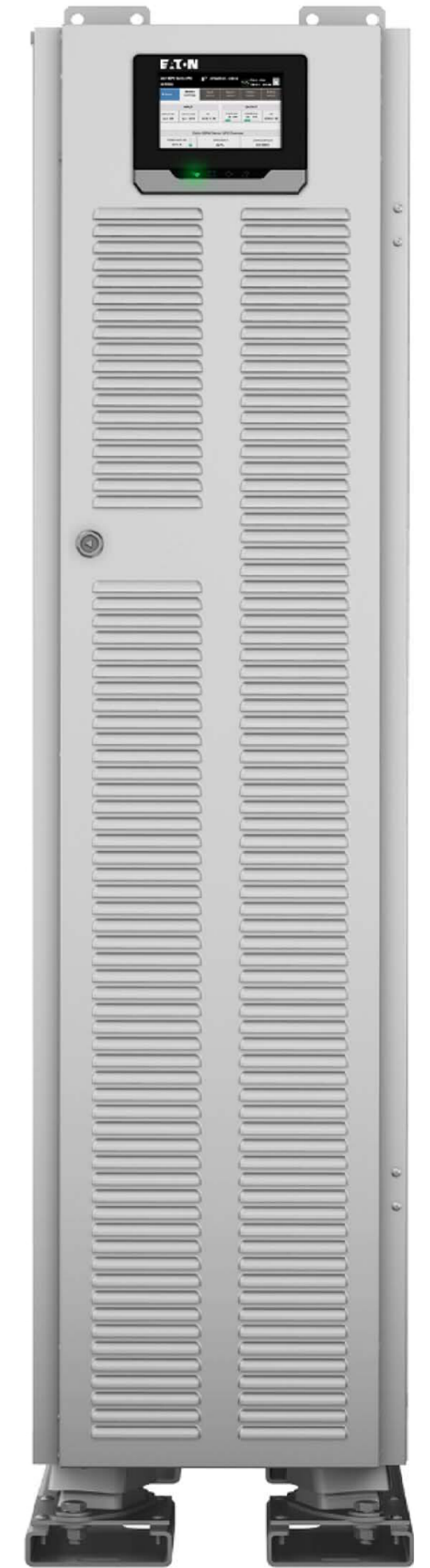




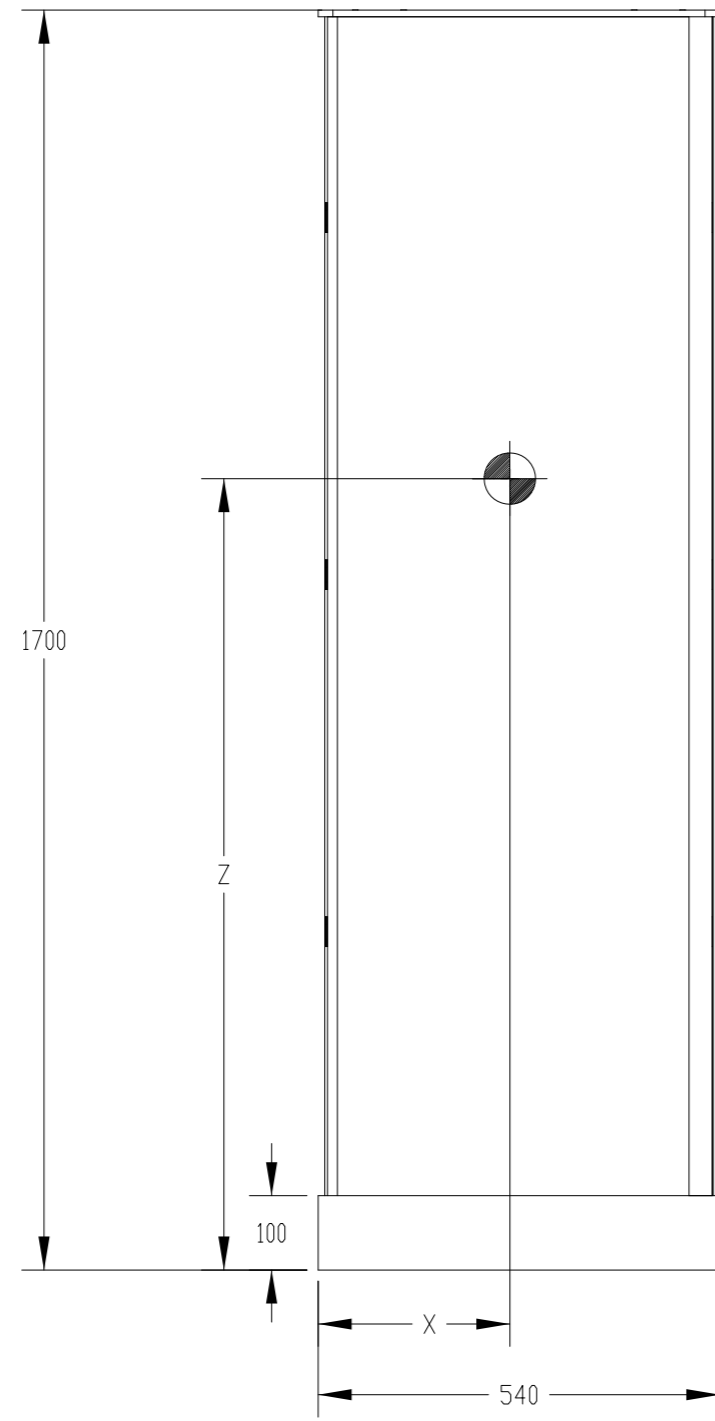
Powering Business Worldwide

SITE PLANNING DATA 93PS Marine 8-20 kW

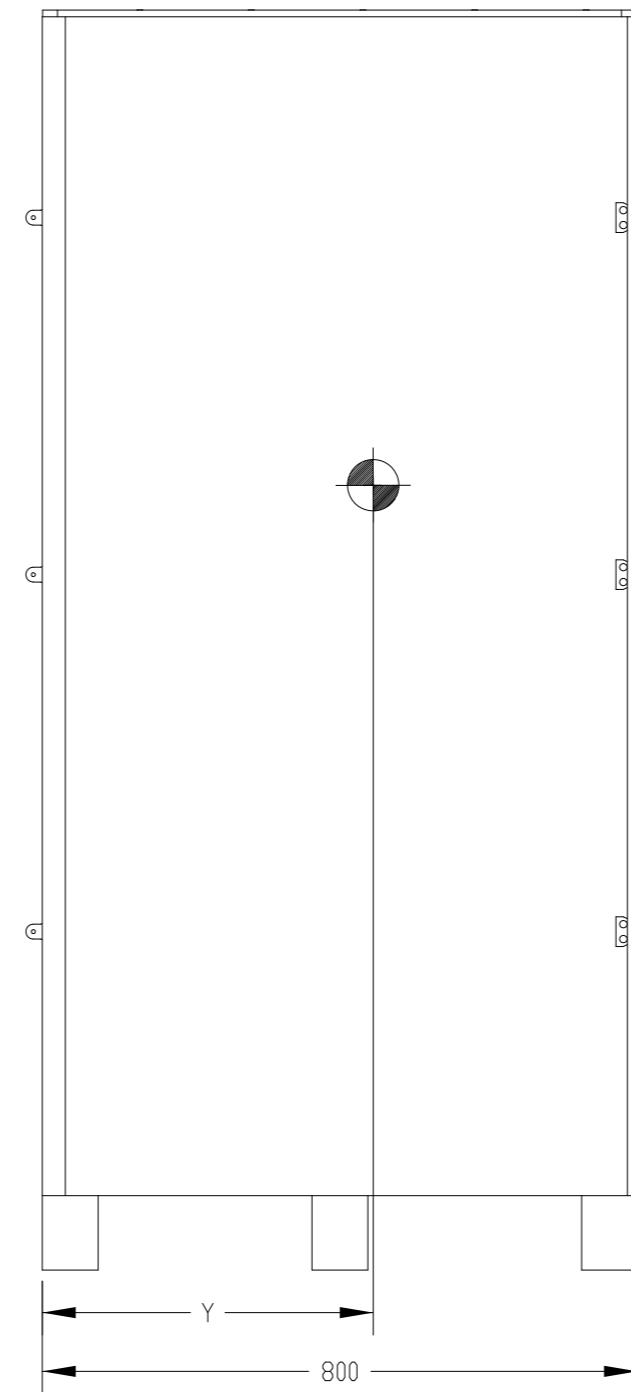
Page 1	Packaging Dimensions
Page 2	Dimensional Drawings
Page 3	COG and Clearance Dimensions
Page 4	Customer Connections
Page 5	Electrical Wiring of Single Unit
Page 6	Electrical Wiring of Parallel Units
Page 7	Electrical Wiring of Single Units with Transformers
Page 8	Electrical Wiring of Parallel Units with Transformers
Page 9	Product Specifications



METRIC					
<small>THIRD ANGLE PROJECTION DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.</small>					
DESCRIPTION: Site planning drawing 93PS Marine 8-20kW					
ORIGINATED:	HUOTARI J.	25-AUG-2017	ECD:	NAME:	REVISION: 01
MODIFIED:	ALAPASSI T.	22 DEC 2017			SIZE: A2
CHECKED:			DOCUMENT TYPE:	P-110000616	SCALE:
SAFETY:			PRO-E DRAWING		STATE: Release
APPROVED:					SHEET: 3/50
					0 OF 9
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FRONT VIEW



SIDE VIEW

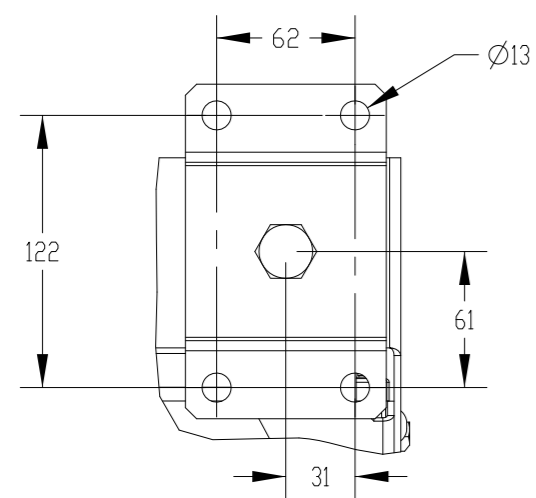
Approx. Center of Gravity			
Transformers	X [mm]	Y [mm]	Z [mm]
0	270	450	800
1	270	450	750
2	270	450	700

Product Specifications					
UPS Rating		Shipping Dimensions WxDxH	Approx. Shipping Weight with 2 Transformers	Approx. Shipping Weight with 1 Transformer	Approx. Shipping Weight without Transformers
kVA	kW	mm	kg	kg	kg
8-20	8-20	540x800x1700	367	277	137

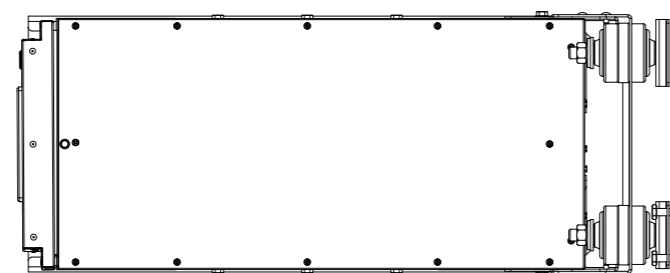
Notes

- The COG dimensions are approximated values with pallet and packaging including transformer amount variations.
The COG dimensions of UPS cabinet with package are
X=280 mm, Y=450 mm, Z=700 mm with 2 transformers,
X=280 mm, Y=450 mm, Z=750 mm with one transformer and
X=280 mm, Y=450 mm, Z=800 mm without transformers.
Maximum recommended tilting angle during shipment: 15°.
- Pallet and other wood packing materials are compliant with ISPM-15 guidelines.
- Store the unit in dry and clean environment. Protect the unit from high humidity, rain or other direct exposure.
- Optimal storing temperature for the unit without batteries is +15 °C to +30 °C and for batteries +20 °C to +25 °C.
- Units without batteries can be stored in -25 °C to +55 °C without risk of immediate damage.
- Storing batteries above +25 °C will shorten the battery lifetime.
- Batteries can be stored for six months without charging in temperatures between +20 °C to +25 °C, but batteries should not be stored uninstalled more than absolutely necessary.
- Batteries stored above +25 °C shall be charged every four months.
- Storing batteries longer than recommended without charging can harm the battery cells permanently.

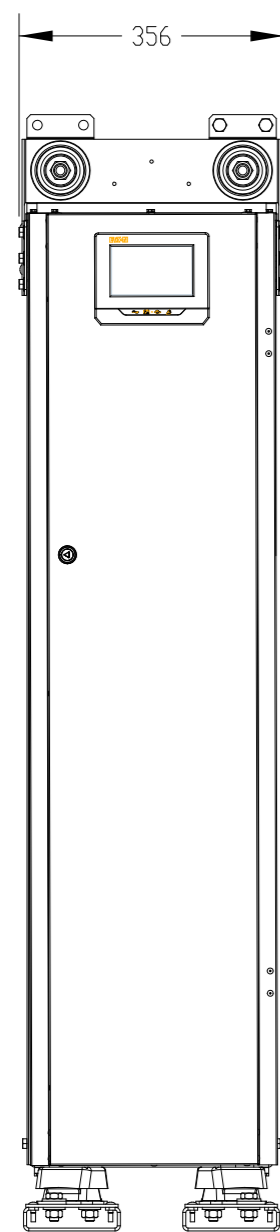
METRIC		THIRD ANGLE PROJECTION		EATON	
DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.					
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MODIFIED: ALAPASSI T.	13 DEC 2017			SCALE:	
CHECKED:		DOCUMENT TYPE:	P-110000616	STATE: Release	1:10
SAFETY:		PRO-E DRAWING		SHEET:	1 OF 9
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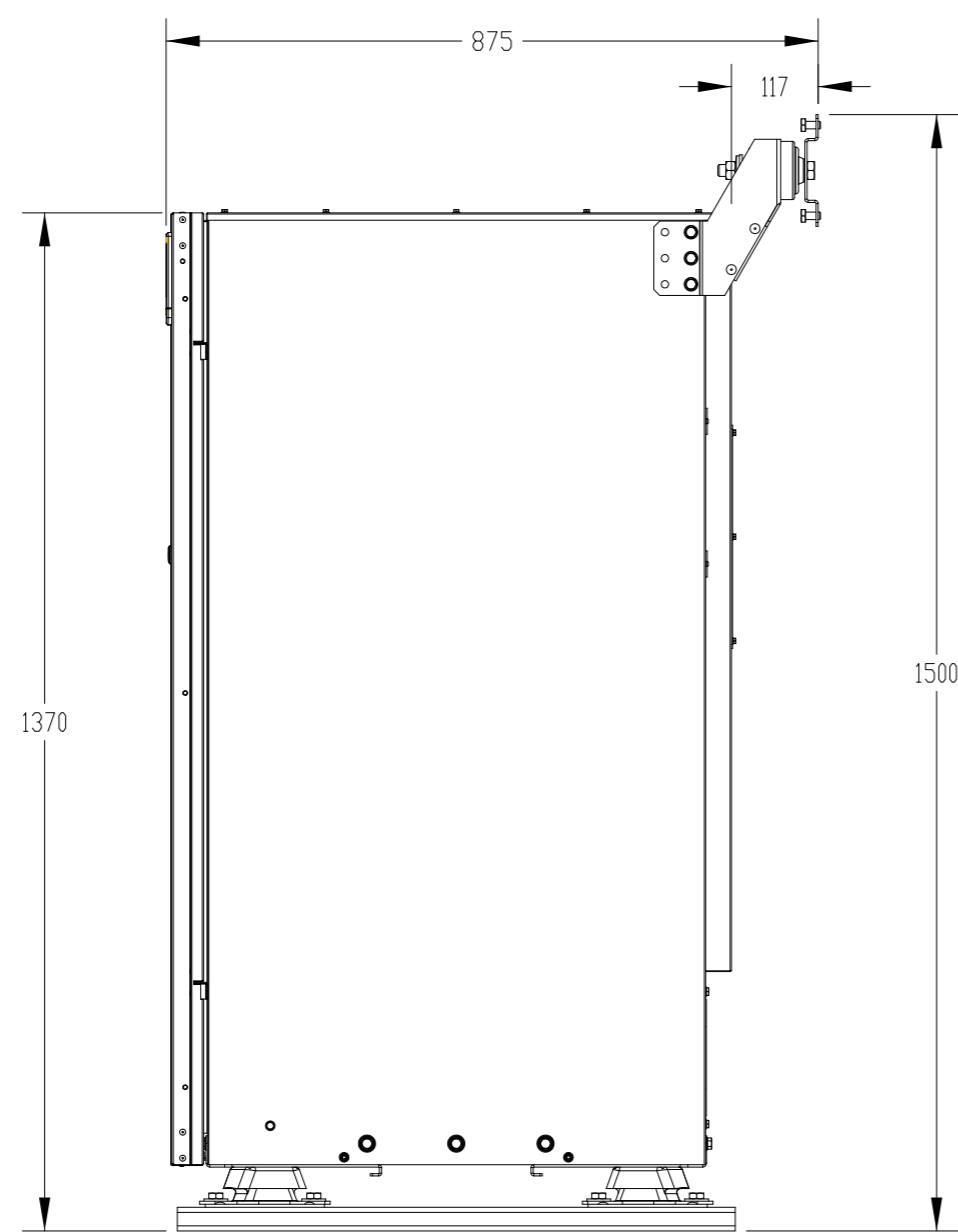
DETAIL C
SCALE 3/10



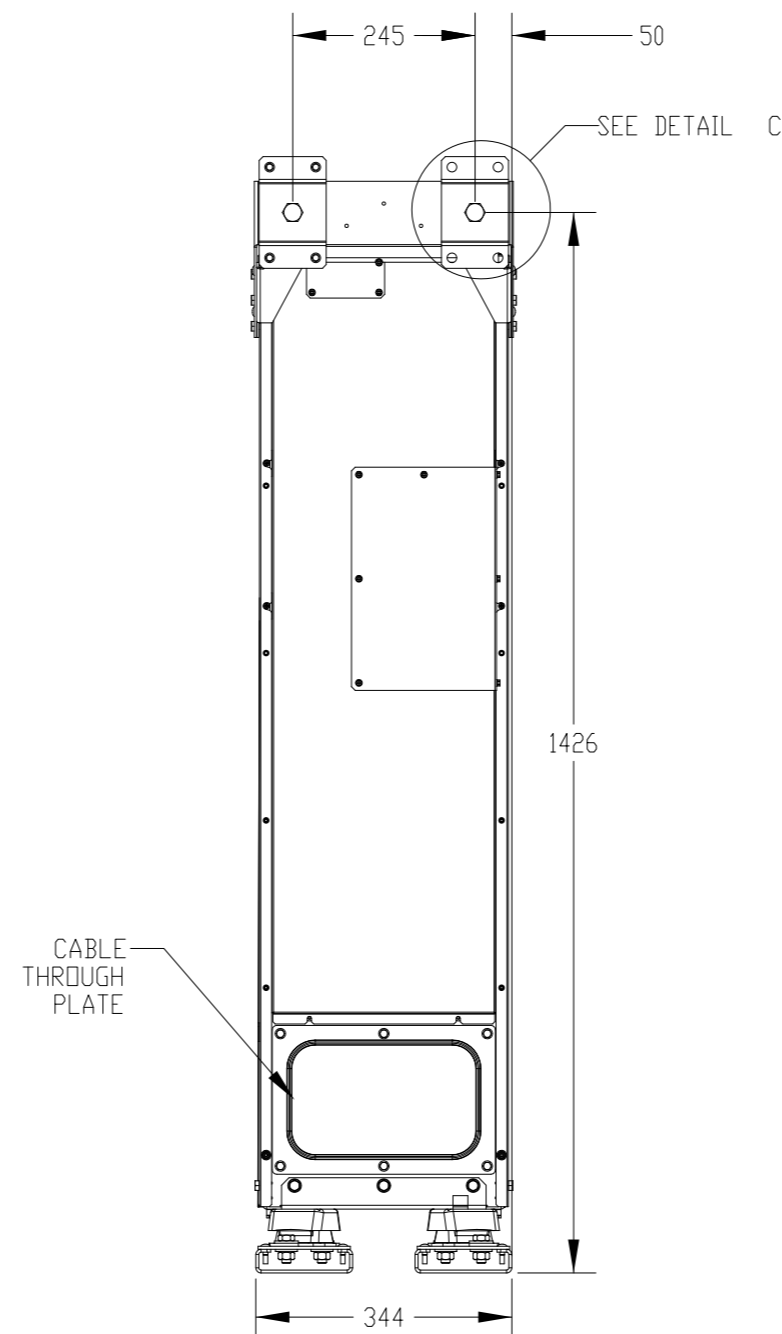
TOP VIEW



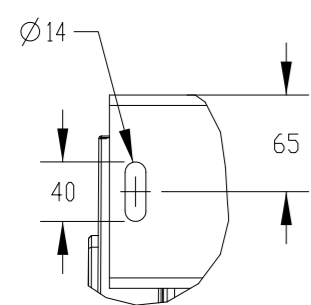
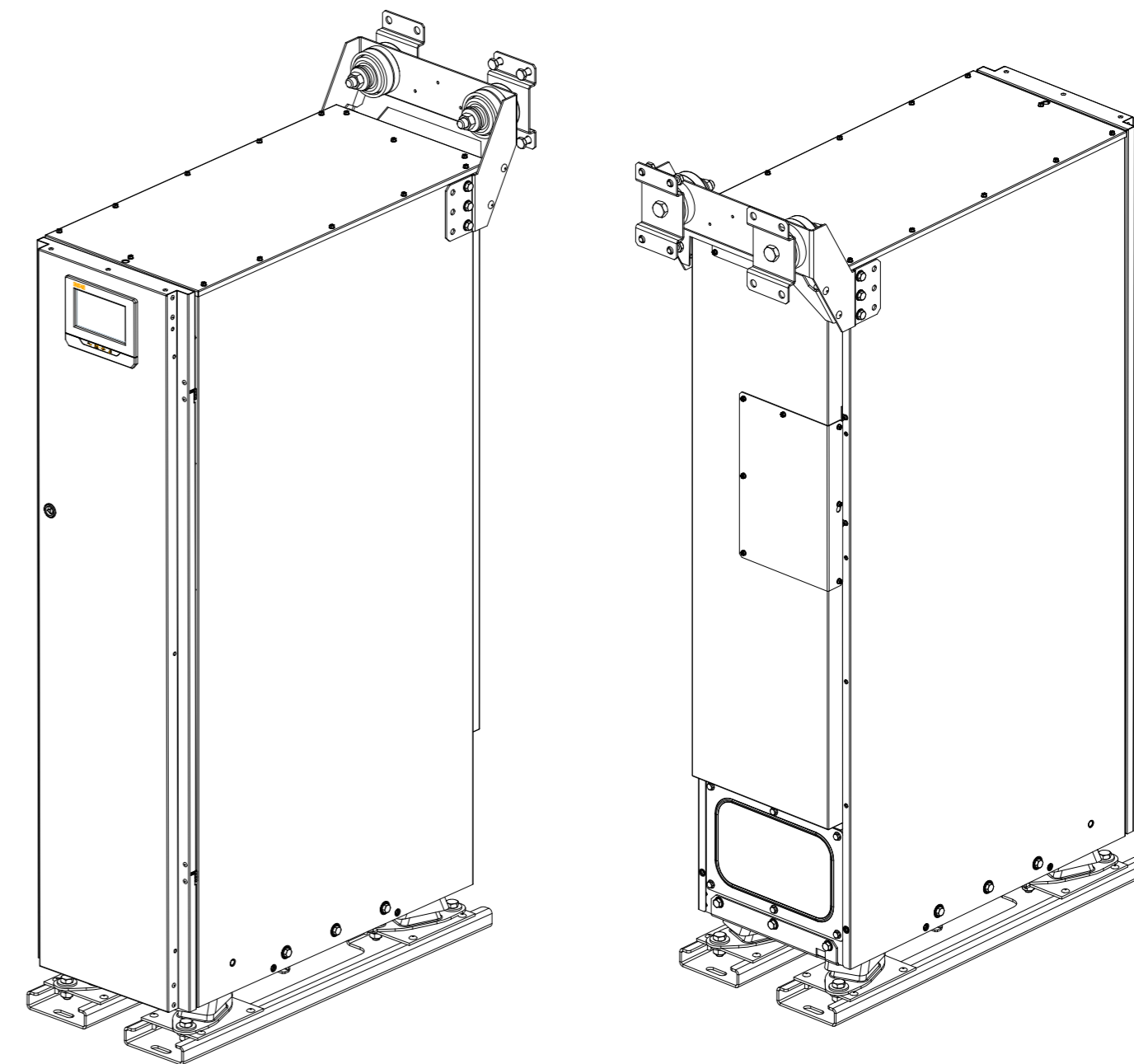
FRONT VIEW



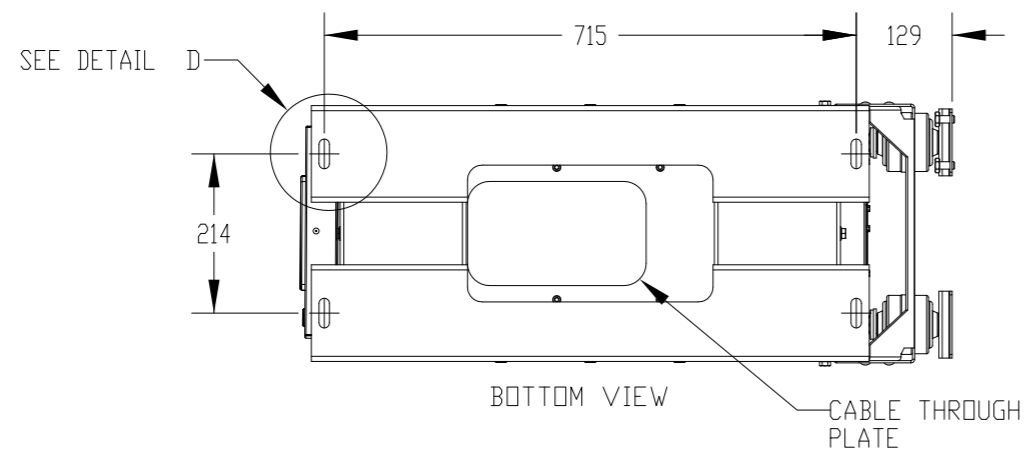
RIGHT VIEW



REAR VIEW



DETAIL D
SCALE 1/5



BOTTOM VIEW

Notes:

1. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
2. Continuous ambient temperature range: 0-45 °C (32-113 °F) at sea level; Maximum relative humidity: 95% non-condensing.
3. The UPS can be installed in line-up-and-match or standalone configurations.
4. There are 2 blind cable through steel plates (bottom and rear side) that should be custom-modified to suit conduit sizes.

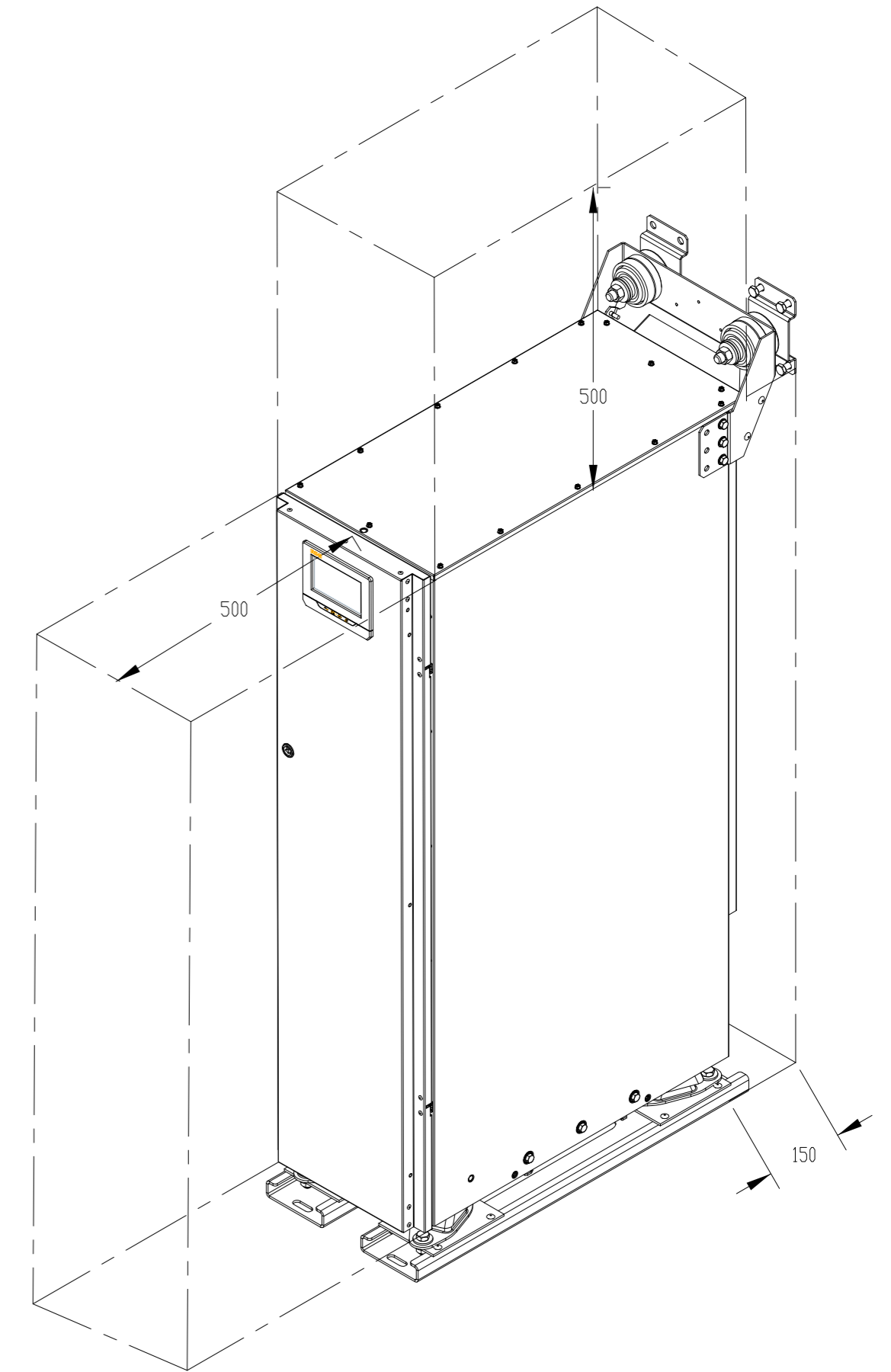
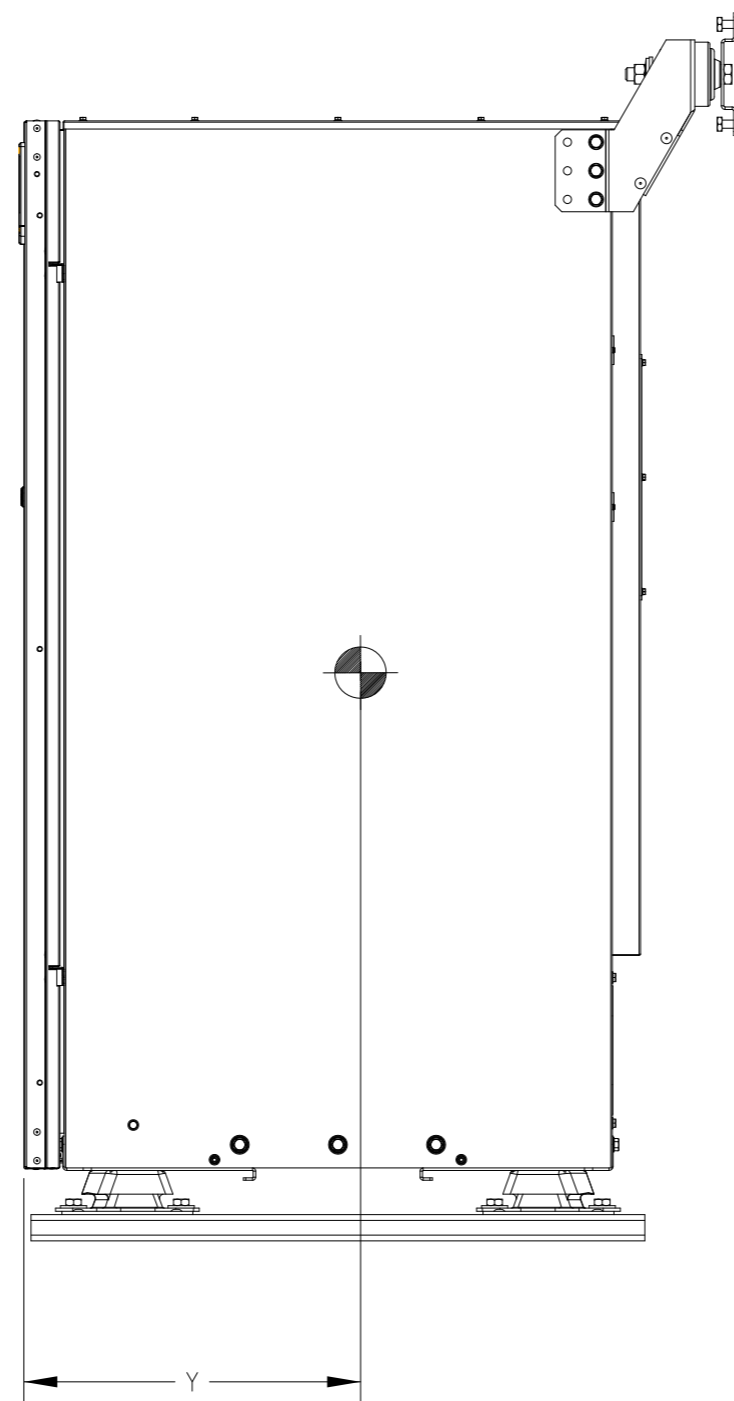
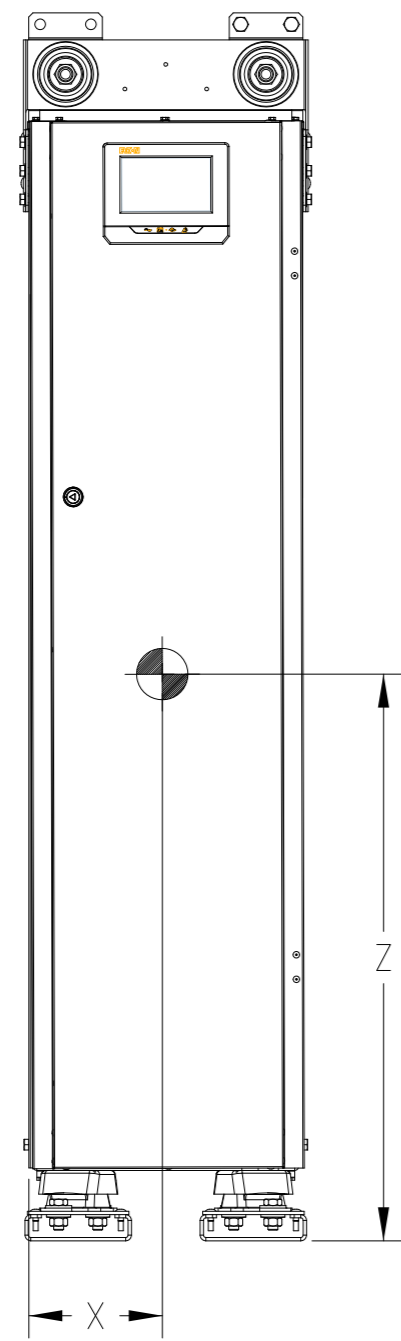
Product Specifications

UPS Rating		Max Heat Dissipation at 100% Load with 2 Transformers	Cabinet Dimensions WxDxH	Approx. Weight Cabinet with 2 Transformers	Approx. Weight Cabinet with 1 Transformer	Approx. Weight Cabinet without Transformers	Floor Landing
kVA	kW	kW	mm	kg	kg	kg	kg/m ²
8	8	0.5	356x875x1370 *)	342	252	112	1.007
10	10	0.6	356x875x1370 *)	342	252	112	1.007
15	15	1.0	356x875x1370 *)	342	252	112	1.007
20	20	1.3	356x875x1370 *)	342	252	112	1.007

*) height 1500 with wall bracket

METRIC		THIRD ANGLE PROJECTION		EATON	
DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.					
DESCRIPTION: Site planning drawing 93PS Marine 8-20kW					
ORIGINATED: HUOTARI J.	25-AUG-2017	ECD:	NAME:	REVISION: 01	SIZE: A2
MODIFIED: ALAPASSI T.	13 DEC 2017	DOCUMENT TYPE:	P-110000616	STATE: Release	SCALE: 3:50
CHECKED:		PRO-E DRAWING			SHEET: 2 OF 9
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Clearances	
From Top of cabinet	500 mm
From Front of cabinet	500 mm
From Back of cabinet	150 mm

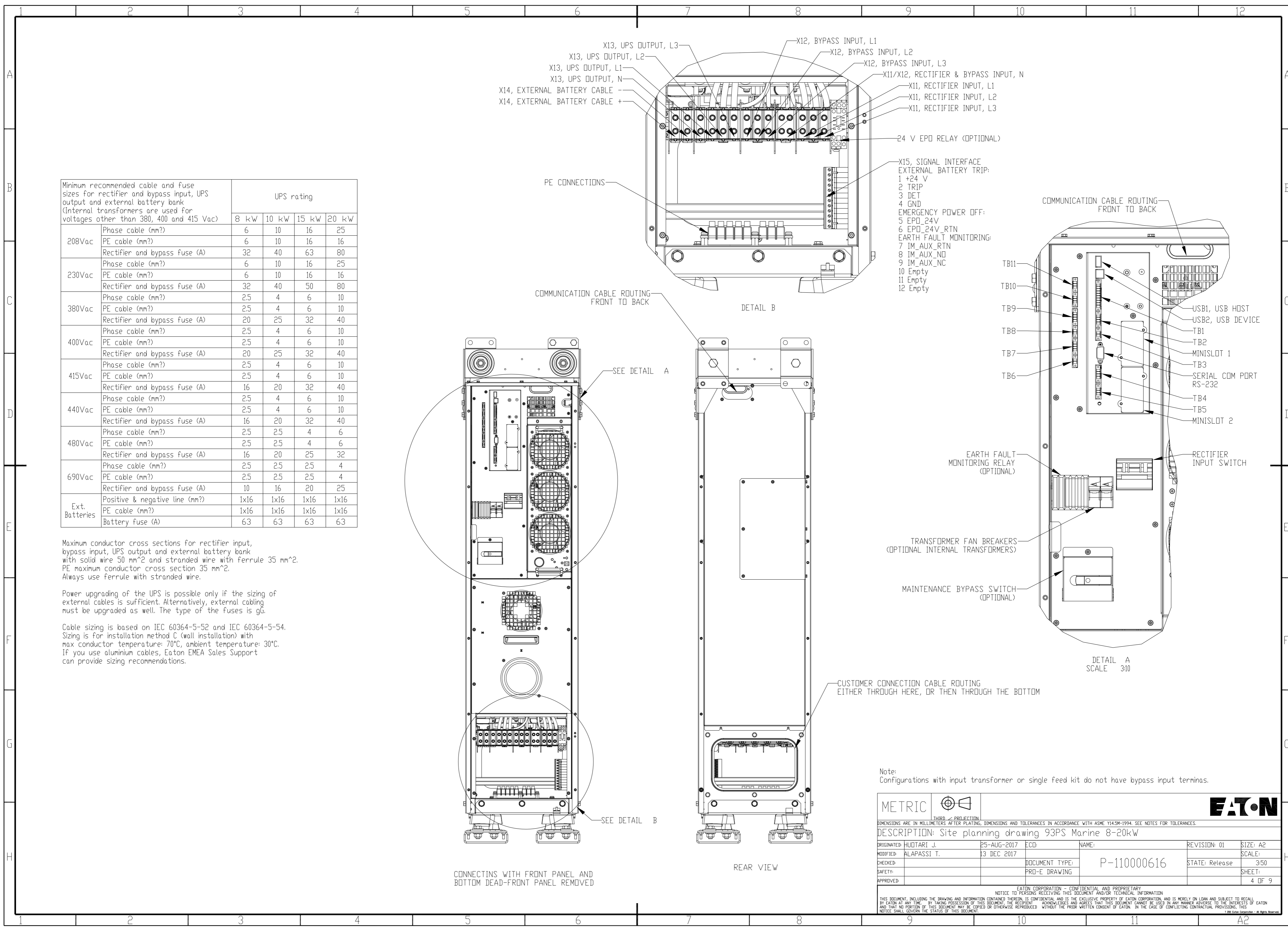
Notes

1. The COG dimensions are approximated values including different transformer variations.
2. The COG dimensions of UPS cabinet without package are X=170 mm, Y=420 mm, Z=700 mm with 2 transformers, X=170 mm, Y=420 mm, Z=650 mm with 1 transformer and X=170 mm, Y=420 mm, Z=600 mm with no transformers
3. Minimum overhead clearance above the UPS cabinet is 500 mm (20in.) for servicing space.
4. Minimum 500 mm (20in.) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
5. Minimum 150 mm (6in.) clearance in back of the UPS cabinet is required for cooling air exhaust.

Approx. Center of Gravity			
Transformers	X [mm]	Y [mm]	Z [mm]
0	170	420	700
1	170	420	650
2	170	420	600

UPS Color	Ingress Protection Class
Grey (RAL 7035) textured powder coat, min. thickness 0.05 mm.	IP 23

METRIC		THIRD ANGLE PROJECTION		EATON	
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MODIFIED: ALAPASSI T.	13 DEC 2017	DOCUMENT TYPE:	P-110000616	STATE: Release	SCALE: 7:100
CHECKED:		PRO-E DRAWING			SHEET: 3 OF 9
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Minimum recommended cable and fuse sizes for rectifier and bypass input, UPS output and external battery bank (Internal transformers are used for voltages other than 380, 400 and 415 Vac)		UPS rating			
		8 kW	10 kW	15 kW	20 kW
208Vac	Phase cable (mm ²)	6	10	16	25
	PE cable (mm ²)	6	10	16	16
	Rectifier and bypass fuse (A)	32	40	63	80
230Vac	Phase cable (mm ²)	6	10	16	25
	PE cable (mm ²)	6	10	16	16
	Rectifier and bypass fuse (A)	32	40	50	80
380Vac	Phase cable (mm ²)	2.5	4	6	10
	PE cable (mm ²)	2.5	4	6	10
	Rectifier and bypass fuse (A)	20	25	32	40
400Vac	Phase cable (mm ²)	2.5	4	6	10
	PE cable (mm ²)	2.5	4	6	10
	Rectifier and bypass fuse (A)	20	25	32	40
415Vac	Phase cable (mm ²)	2.5	4	6	10
	PE cable (mm ²)	2.5	4	6	10
	Rectifier and bypass fuse (A)	16	20	32	40
440Vac	Phase cable (mm ²)	2.5	4	6	10
	PE cable (mm ²)	2.5	4	6	10
	Rectifier and bypass fuse (A)	16	20	32	40
480Vac	Phase cable (mm ²)	2.5	2.5	4	6
	PE cable (mm ²)	2.5	2.5	4	6
	Rectifier and bypass fuse (A)	16	20	25	32
690Vac	Phase cable (mm ²)	2.5	2.5	2.5	4
	PE cable (mm ²)	2.5	2.5	2.5	4
	Rectifier and bypass fuse (A)	10	16	20	25
Ext. Batteries	Positive & negative line (mm ²)	1x16	1x16	1x16	1x16
	PE cable (mm ²)	1x16	1x16	1x16	1x16
	Battery fuse (A)	63	63	63	63

Maximum conductor cross sections for rectifier input, bypass input, UPS output and external battery bank with solid wire 50 mm² and stranded wire with ferrule 35 mm². PE maximum conductor cross section 35 mm². Always use ferrule with stranded wire.

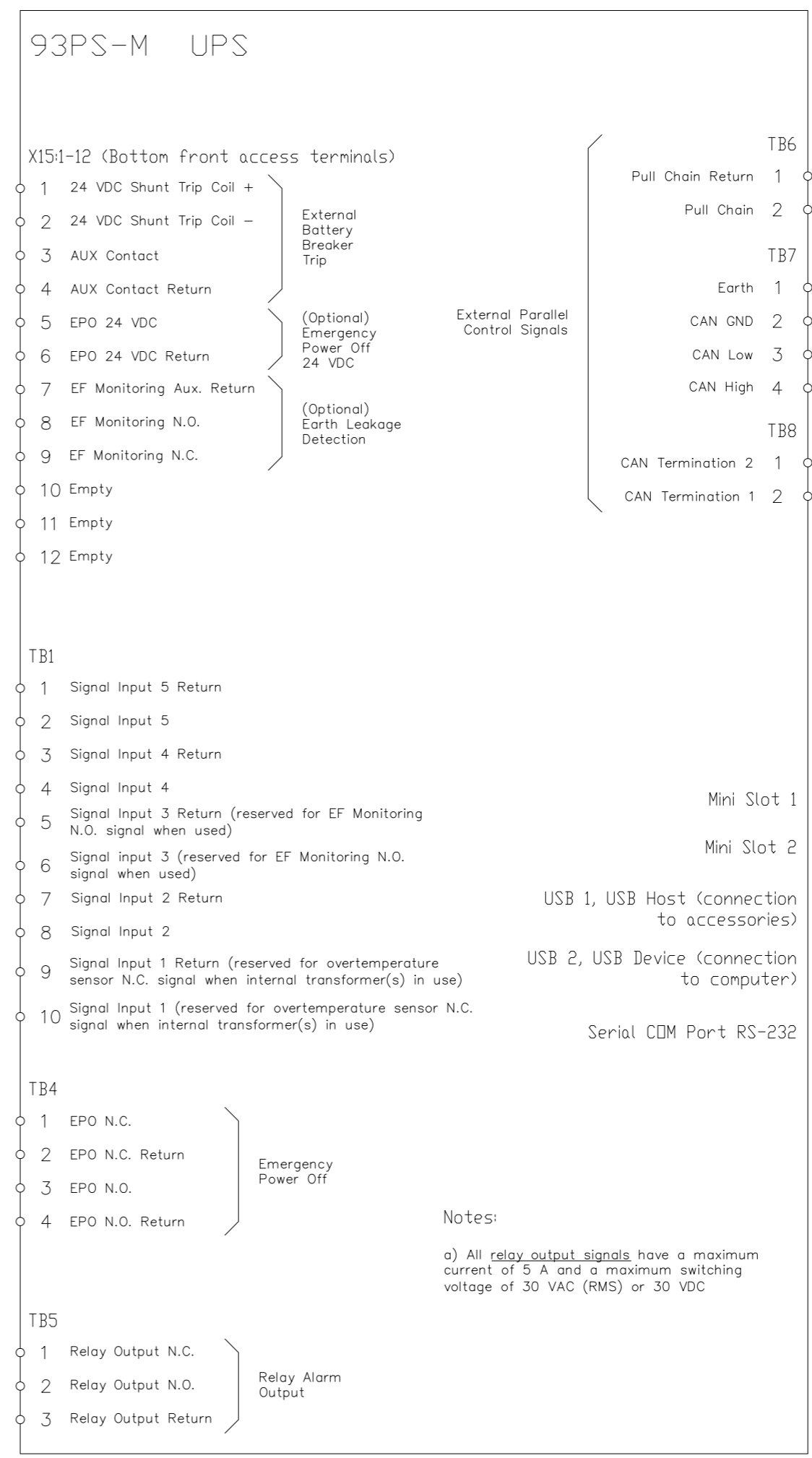
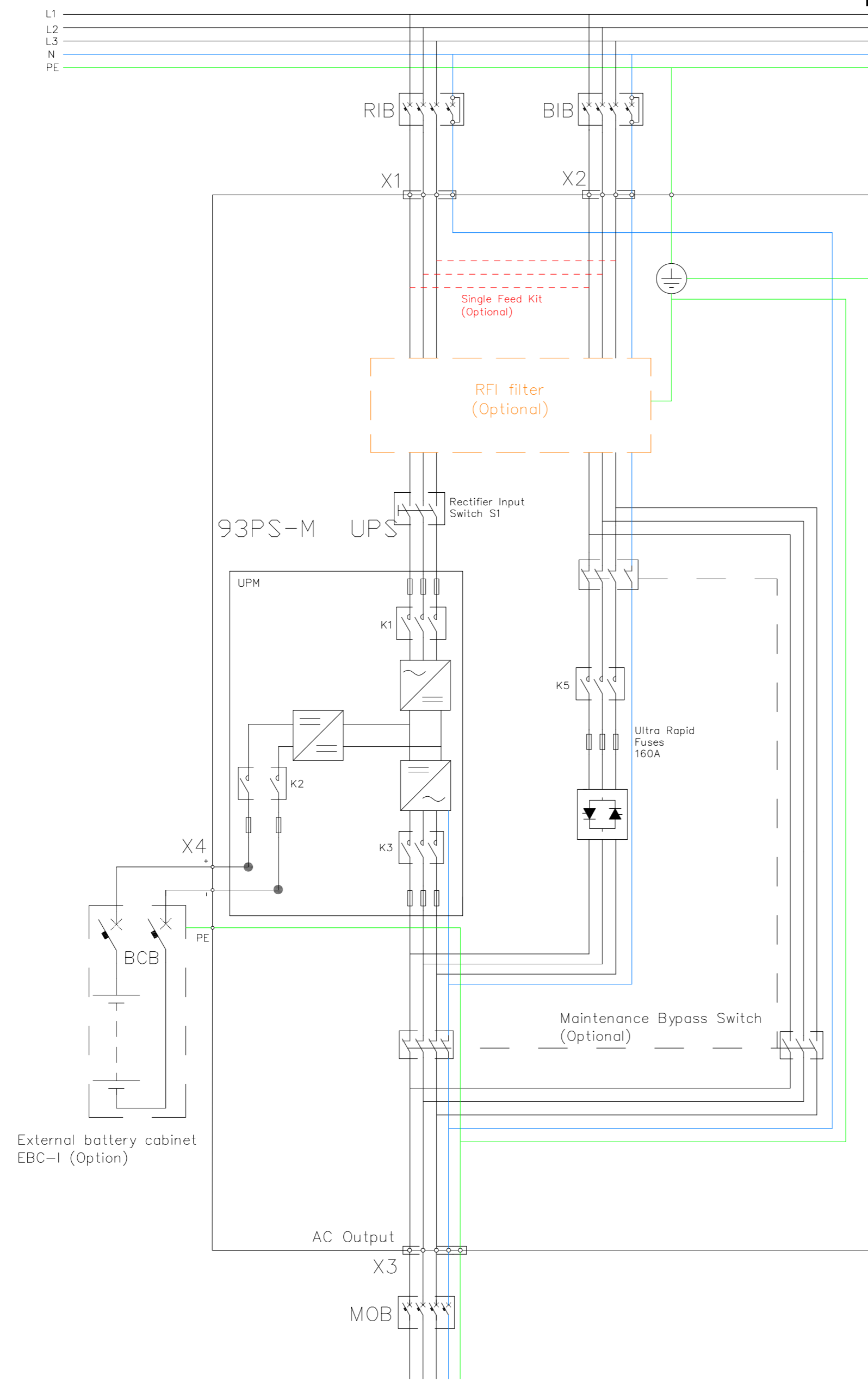
Power upgrading of the UPS is possible only if the sizing of external cables is sufficient. Alternatively, external cabling must be upgraded as well. The type of the fuses is gG.

Cable sizing is based on IEC 60364-5-52 and IEC 60364-5-54. Sizing is for installation method C (wall installation) with max conductor temperature: 70°C, ambient temperature: 30°C. If you use aluminium cables, Eaton EMEA Sales Support can provide sizing recommendations.

Note: Configurations with input transformer or single feed kit do not have bypass input terminas.

METRIC		THIRD ANGLE PROJECTION		EATON	
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DESCRIPTION: Site planning drawing 93PS Marine 8-20kW					
ORIGINATED: HUOTARI J.	25-AUG-2017	ECD:	NAME:	REVISION: 01	SIZE: A2
MODIFIED: ALAPASSI T.	13 DEC 2017	DOCUMENT TYPE:	P-110000616	STATE: Release	SCALE: 3:50
CHECKED:		PRO-E DRAWING			SHEET: 4 OF 9
SAFETY:					
APPROVED:					

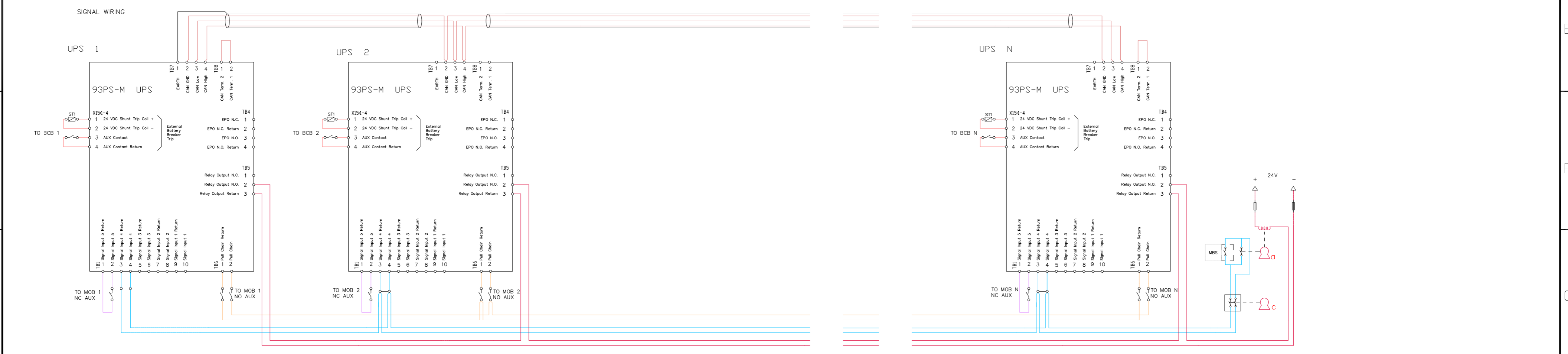
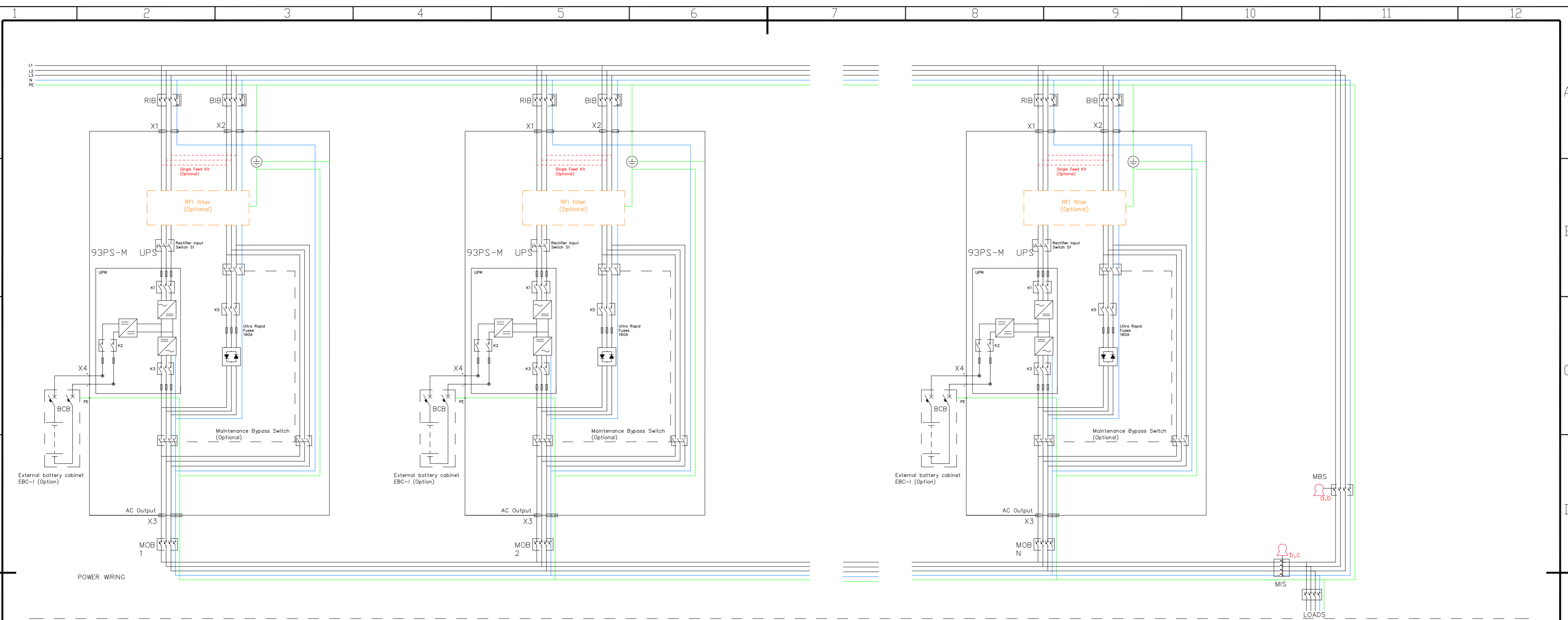
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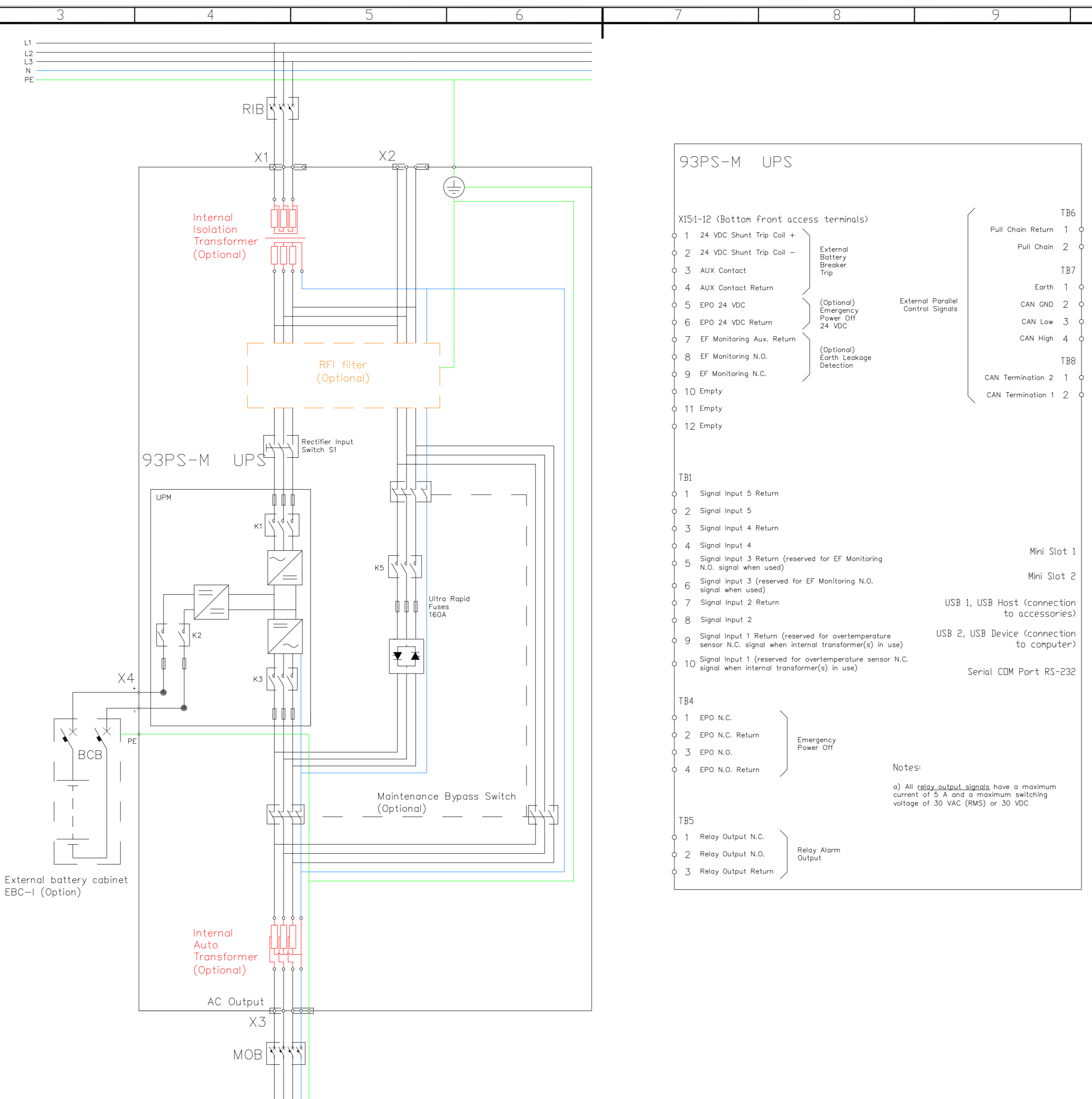
Optional Single Feed Kit
 Rectifier, static bypass and MBS (when used) lines are fed from input terminals X1.

Optional RFI Filter
 This filter attenuates EMI noise as follows:
 Conducted emissions - DNV Class B EMC criteria for bridge room and open deck
 Radiated emissions - DNV Class B EMC criteria for bridge room and open deck and IEC 62040-2 C2

METRIC		THIRD ANGLE PROJECTION		EATON	
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DESCRIPTION: 93PS Marine 8/20KW Wiring Single Unit					
ORIGINATED: Miguel Moreira	21.12.2017	ECO:	NAME:	REVISION: 01	SIZE: A2
CHECKED:		DOCUMENT TYPE:	P-110000616	STATE: Release	SCALE: 1:10
SAFETY:		AUTOCAD DRAWING			SHEET: 5 OF 9
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<p>MBS STATUS (Provided by others, Installed by others) 0.75 - 2.5mm² twisted pair (if possible, else shielded) No earth needed</p> <p>MOB STATUS (Provided by others, Installed by others) 0.75 - 2.5mm² twisted pair (if possible, else shielded) No earth needed</p> <p>PCAN (DUAL AS OPTION) Provided by Eaton, Installed by Eaton</p>	<p>PULL CHAIN (REDUNDANT ON BYP STATUS) Provided by Eaton, Installed by Eaton</p> <p>ON BYPASS STATUS (NO INVERTORS ONLINE) 0.75 - 2.5mm², provided by others, Installed by others</p>	<p>Mechanical bypass interlocking sequence</p> <ol style="list-style-type: none"> Place UPS system to bypass. On bypass status (K3) will energize Key A solenoid to release it Removing key A will switch on "force bypass" to the UPS system Place key A to MBS breaker and close breaker. Key B will be released. Aux contact of MBS will keep "force bypass" on UPS system Place key B to MIS breaker and open MIS to isolate UPS system from load. Key C will be released Place key C to it's dedicated keyhole to release "force bypass" command to allow UPS system testing 	<p>METRIC THIRD ANGLE PROJECTION</p> <p>DESCRIPTION: 93PS Marine 8/20KW Wiring Parallel Units</p> <p>ORIGINATED: Miguel Moreira 21.12.2017 ECO: NAME: P-110000616</p> <p>MODIFIED: REVISION: 01 SIZE: A2</p> <p>CHECKED: DOCUMENT TYPE: AUTOCAD DRAWING STATE: Release SCALE: 1:1</p> <p>SAFETY: SHEET: 6 OF 9</p> <p>APPROVED:</p> <p>EATON CORPORATION - CONFIDENTIAL AND PROPRIETARY</p> <p>NOTICE TO PERSONS RECEIVING THIS DOCUMENT AND/OR TECHNICAL INFORMATION: THIS DOCUMENT, INCLUDING THE DRAWING AND INFORMATION CONTAINED THEREON, IS CONFIDENTIAL AND IS THE EXCLUSIVE PROPERTY OF EATON CORPORATION AND IS HEREBY ON LOAN AND SUBJECT TO RECALL BY EATON AT ANY TIME. BY TAKING POSSESSION OF THIS DOCUMENT, THE RECIPIENT ACKNOWLEDGES AND AGREES THAT THIS DOCUMENT CANNOT BE USED IN ANY MANNER ADVERSE TO THE INTERESTS OF EATON AND THAT NO PORTION OF THIS DOCUMENT MAY BE COPIED OR OTHERWISE REPRODUCED WITHOUT THE PRIOR WRITTEN CONSENT OF EATON. IN THE CASE OF CONFLICTING CONTRACTUAL PROVISIONS, THIS NOTICE SHALL GOVERN THE STATUS OF THIS DOCUMENT.</p> <p>© 2011 Eaton Corporation - All Rights Reserved</p>
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93PS-M UPS

X151-12 (Bottom front access terminals)		External Parallel Control Signals	
1	24 VDC Shunt Trip Coil +	External Battery Breaker Trip	TB6 Pull Chain Return 1
2	24 VDC Shunt Trip Coil -		TB6 Pull Chain 2
3	AUX Contact		TB7 Earth 1
4	AUX Contact Return	(Optional) Emergency Power Off 24 VDC	TB7 CAN GND 2
5	EPO 24 VDC		TB7 CAN Low 3
6	EPO 24 VDC Return	(Optional) Earth Leakage Detection	TB7 CAN High 4
7	EF Monitoring Aux. Return		TB8 CAN Termination 2 1
8	EF Monitoring N.O.		TB8 CAN Termination 1 2
9	EF Monitoring N.C.		
10	Empty		
11	Empty		
12	Empty		

TB1		Mini Slot 1	
1	Signal Input 5 Return		
2	Signal Input 5		
3	Signal Input 4 Return		
4	Signal Input 4		
5	Signal Input 3 Return (reserved for EF Monitoring N.O. signal when used)		
6	Signal Input 3 (reserved for EF Monitoring N.O. signal when used)		
7	Signal Input 2 Return		
8	Signal Input 2		
9	Signal Input 1 Return (reserved for overtemperature sensor N.C. signal when internal transformer(s) in use)		
10	Signal Input 1 (reserved for overtemperature sensor N.C. signal when internal transformer(s) in use)		

TB4		Emergency Power Off	
1	EPO N.C.		
2	EPO N.C. Return		
3	EPO N.O.		
4	EPO N.O. Return		

TB5		Relay Alarm Output	
1	Relay Output N.C.		
2	Relay Output N.O.		
3	Relay Output Return		

Notes:

a) All relay output signals have a maximum current of 5 A and a maximum switching voltage of 30 VAC (RMS) or 30 VDC

Optional input isolation transformer, Dyn11, 25kVA, 50/60 Hz

Standard voltages:
690/400V, 480/400V, 440/400V, 415/400V
400/400V, 380/400V, 230/400V, 208/400V

Optional output auto transformer, YNan0, 20kVA, 50/60 Hz

Standard voltages:
400/690V, 400/480V, 400/440V, 400/415V
400/380V, 400/230V, 400/208V

Optional Internal Transformers Special Configurations:

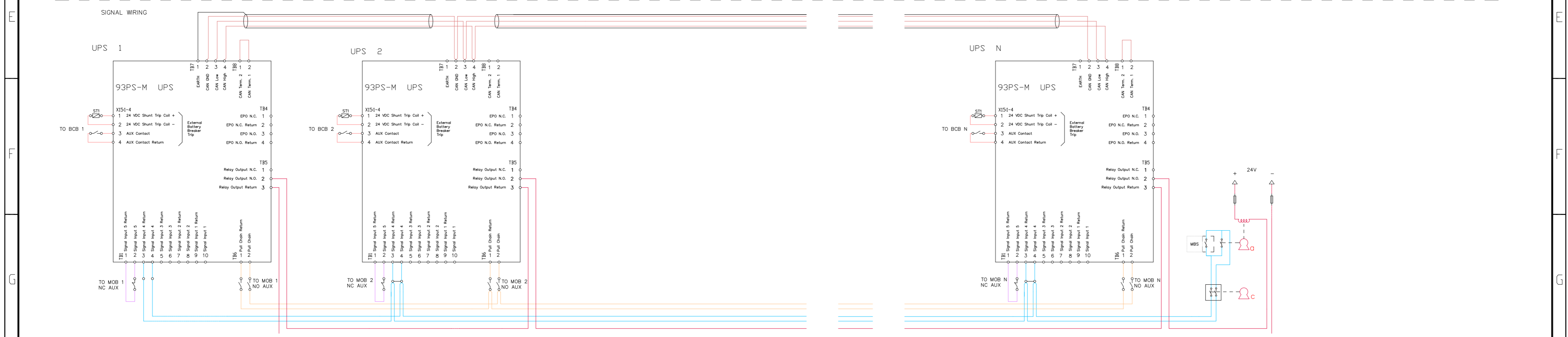
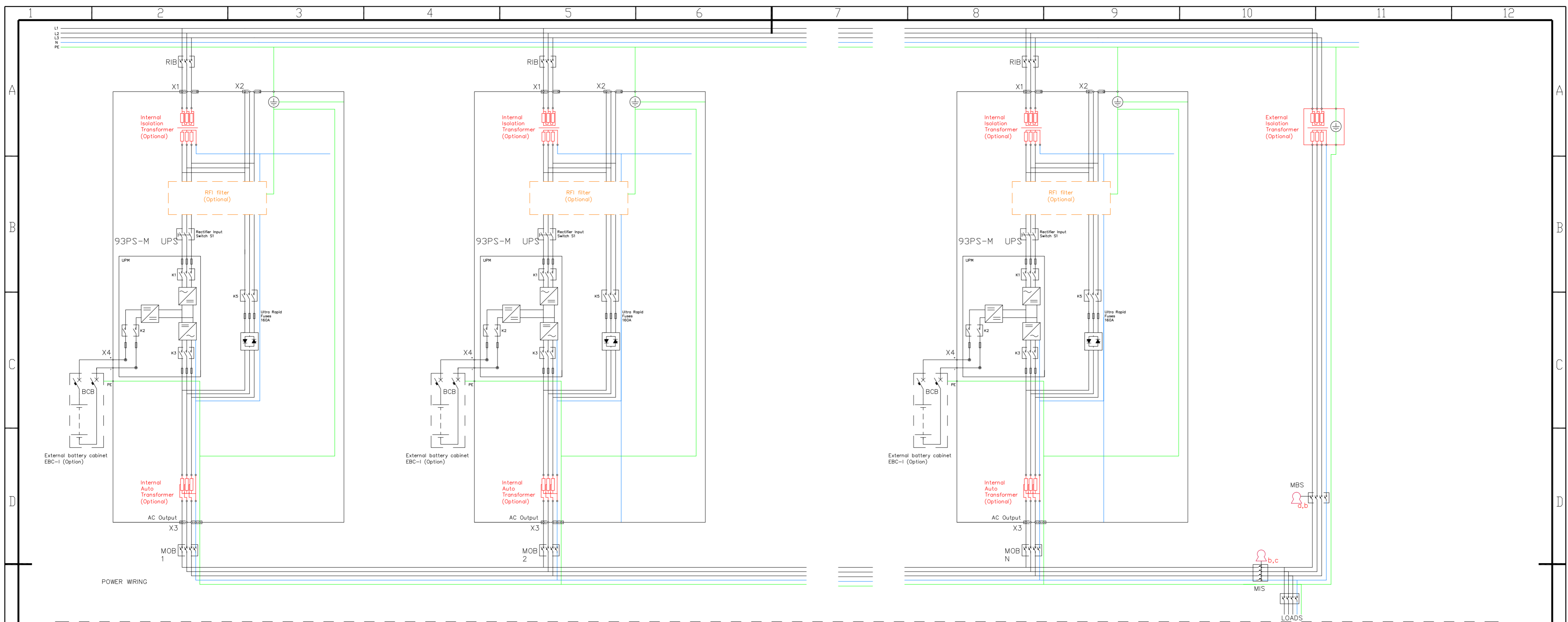
Please contact Sales-Support-CPS-EMEA@Eaton.com for any of the configurations below:

1. Output isolation transformer
2. Non-standard transformer voltages
3. Separate rectifier and bypass transformers
4. Bypass transformer only
5. Bypass and output transformers

Specifications of Internal Standard Transformers:

1. Voltage tolerance range +/- 10%
2. Isolation transformers operate with 96% efficiency and auto transformers 95% efficiency
3. Temperature class F
4. Temperature rise 85°C
5. Max inrush current 8 x In
6. Transformers are equipped with temperature sensors in the secondary windings, 150 °C (N.C.), 3 pcs total
7. Transformers comply with IEC 60076, IEC 60950-1 and IEC 62477-1

METRIC		THIRD ANGLE PROJECTION		EATON	
DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.					
DESCRIPTION: 93PS Marine 8/20KW Wiring Single Unit W/ Int. Transformer(s)					
ORIGINATED: Miguel Moreira	21.12.2017	ECO:	NAME:	REVISION: 01	SIZE: A2
MODIFIED:		DOCUMENT TYPE: AUTOCAD DRAWING	P-110000616	STATE: Release	SCALE: 1:10
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SAFETY:					
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MBS STATUS (Provided by others, Installed by others)
0.75 - 2.5mm² twisted pair (if possible, else shielded)
No earth needed

MOB STATUS (Provided by others, Installed by others)
0.75 - 2.5mm² twisted pair (if possible, else shielded)
No earth needed

PCAN (DUAL AS OPTION)
Provided by Eaton, Installed by Eaton

PULL CHAIN (REDUNDANT ON BYP STATUS)
Provided by Eaton, Installed by Eaton



ON BYPASS STATUS (NO INVERTORS ONLINE)
0.75 - 2.5mm², provided by others, Installed by others

UPSs WITH INTERNAL TRANSFORMERS
External bypass line shall have a transformer that creates the same phase shift between primary and secondary coils as the internal transformers, as well as having the same voltage ratio of the input/output of the system

- Mechanical bypass interlocking sequence
1. Place UPS system to bypass. On bypass status (K3) will energize Key A solenoid to release it
 2. Removing key A will switch on "force bypass" to the UPS system
 3. Place key A to MBS breaker and close breaker. Key B will be released.
 4. Aux contact of MBS will keep "force bypass" on UPS system
 5. Place key B to MIS breaker and open MIS to isolate UPS system from load. Key C will be released
 6. Place key C to it's dedicated keyhole to release "force bypass" command to allow UPS system testing

METRIC		THIRD ANGLE PROJECTION		EATON	
DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.					
DESCRIPTION: 93PS Marine 8/20KW Wiring Parallel Units W/ Int. Transformer(s)					
ORIGINATED: Miguel Moreira	21.12.2017	ECO:	NAME:	REVISION: 01	SIZE: A2
MODIFIED:		DOCUMENT TYPE: AUTOCAD DRAWING	P-110000616	STATE: Release	SCALE: 1:1
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UPS Rating		AC Input	3P+Bolted N Rectifier Input Switch (RIS)			3P+Bolted N Bypass Input Switch (BIS)			AC Output	4P Inverter AC output Breaker MOB			Battery Breaker (BCB) (Ratings at the end of discharge, 1.67VPC)			For Single Unit Maintenance Bypass Switch (MBS)	For Parallel Units Common Maintenance Bypass Switch (MBS)			
			Nominal Current without transformer	Nominal Current before transformer	Maximum Current before transformer	Nominal Current before transformer	Maximum Current before transformer at 10% under voltage	Intergrated Bypass Fuse		Output Current	Inverter Short Circuit Current	Auxiliary Switches	Rating, nominal	Rating, maximum	Common Battery Configuration (UPS Battery)		Trip Device (Shunt Trip)	Auxiliary Switches	Nominal Current before transformer	Nominal Current before transformer
kVA	kW	V	A	A	A	A	Type	V	A	A / 300 ms	Qty	VDC	VDC	A	VDC	Qty	A	A	Qty	
8	8	208	-	24	41	22	31	160 FEE	208	21	32	2	480	580	18	24	1	41	41xN	1
		230	-	22	37	20	28	160 FEE	230	19	29	2	480	580	18	24	1	37	37xN	1
		380	13	13	22	12	17	160 FEE	380	12	18	2	480	580	18	24	1	22	22xN	1
		400	12	12	21	12	16	160 FEE	400	11	17	2	480	580	18	24	1	21	21xN	1
		415	12	12	21	11	15	160 FEE	415	11	16	2	480	580	18	24	1	21	21xN	1
		440	-	11	19	10	14	160 FEE	440	10	15	2	480	580	18	24	1	19	19xN	1
		480	-	10	18	10	13	160 FEE	480	9	14	2	480	580	18	24	1	18	18xN	1
690	-	7	12	7	9	160 FEE	690	6	10	2	480	580	18	24	1	12	12xN	1		
10	10	208	-	30	47	28	38	160 FEE	208	27	40	2	480	580	22	24	1	47	47xN	1
		230	-	27	43	25	35	160 FEE	230	24	36	2	480	580	22	24	1	43	43xN	1
		380	16	16	26	15	21	160 FEE	380	15	22	2	480	580	22	24	1	26	26xN	1
		400	15	16	24	14	20	160 FEE	400	14	21	2	480	580	22	24	1	24	24xN	1
		415	15	15	24	14	19	160 FEE	415	13	20	2	480	580	22	24	1	24	24xN	1
		440	-	14	22	13	18	160 FEE	440	13	19	2	480	580	22	24	1	22	22xN	1
		480	-	13	20	12	17	160 FEE	480	12	17	2	480	580	22	24	1	20	20xN	1
690	-	9	14	8	12	160 FEE	690	8	12	2	480	580	22	24	1	14	14xN	1		
15	15	208	-	45	62	42	57	160 FEE	208	40	60	2	480	580	33	24	1	62	62xN	1
		230	-	41	56	38	52	160 FEE	230	36	55	2	480	580	33	24	1	56	56xN	1
		380	24	25	34	23	31	160 FEE	380	22	33	2	480	580	33	24	1	34	34xN	1
		400	23	23	32	22	30	160 FEE	400	21	31	2	480	580	33	24	1	32	32xN	1
		415	22	22	31	21	29	160 FEE	415	20	30	2	480	580	33	24	1	31	31xN	1
		440	-	21	29	20	27	160 FEE	440	19	28	2	480	580	33	24	1	29	29xN	1
		480	-	19	27	18	25	160 FEE	480	17	26	2	480	580	33	24	1	27	27xN	1
690	-	14	19	13	17	160 FEE	690	12	18	2	480	580	33	24	1	19	19xN	1		
20	20	208	-	60	77	56	76	160 FEE	208	54	80	2	480	580	44	24	1	77	77xN	1
		230	-	54	70	50	69	160 FEE	230	48	73	2	480	580	44	24	1	70	70xN	1
		380	32	33	42	30	42	160 FEE	380	29	44	2	480	580	44	24	1	42	42xN	1
		400	30	31	40	29	40	160 FEE	400	28	42	2	480	580	44	24	1	40	40xN	1
		415	29	30	39	28	38	160 FEE	415	27	40	2	480	580	44	24	1	39	39xN	1
		440	-	28	36	26	36	160 FEE	440	25	38	2	480	580	44	24	1	36	36xN	1
		480	-	26	33	24	33	160 FEE	480	23	35	2	480	580	44	24	1	33	33xN	1
690	-	18	23	17	23	160 FEE	690	16	24	2	480	580	44	24	1	23	23xN	1		

METRIC		EATON CORPORATION		
DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.				
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