



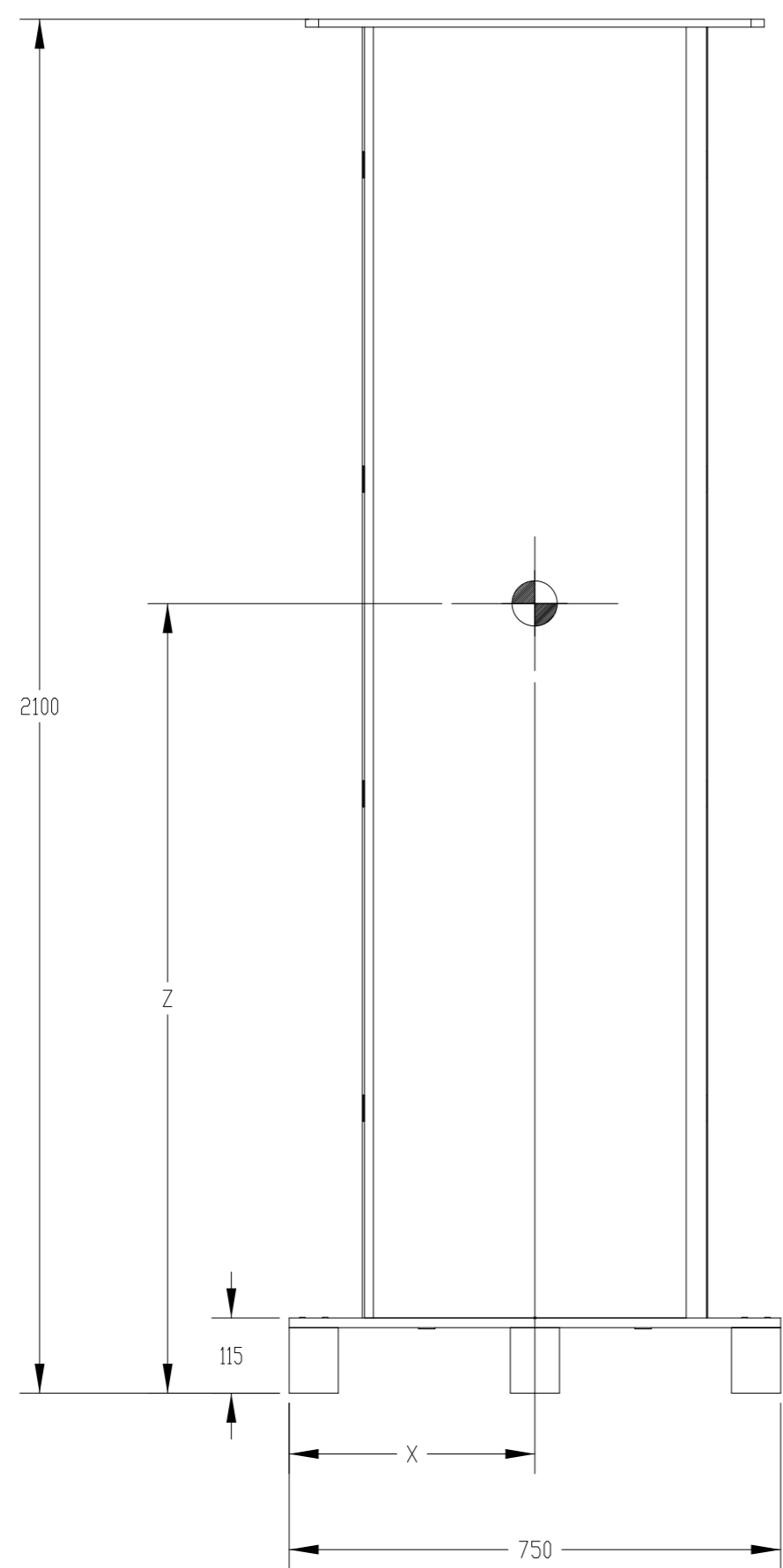
Powering Business Worldwide

SITE PLANNING DATA 93PS Marine Redundant 8+8-20+20 kW

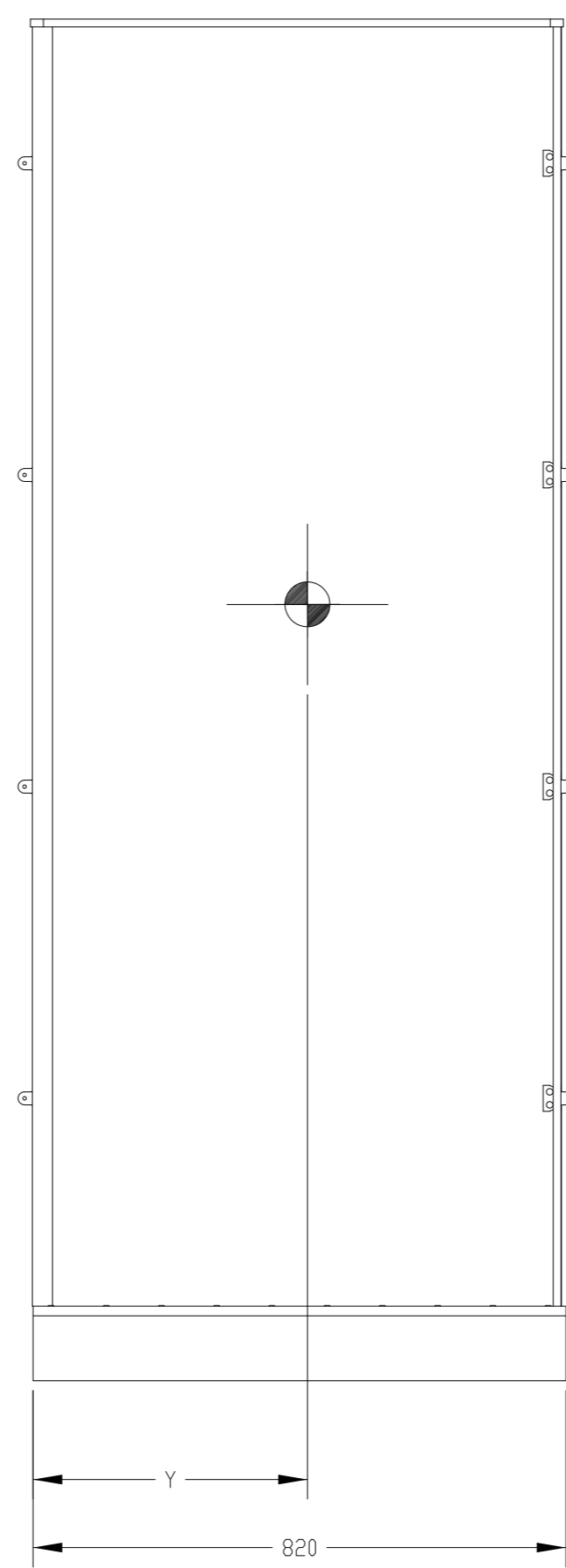
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DESCRIPTION: Site planning drawing 93PS Marine redundant 8+8-20+20kW					
ORIGINATED:	HUOTARI J.	25-AUG-2017	ECD:	NAME:	REVISION: 01
MODIFIED:	ALAPASSI T.	22 DEC 2017	DOCUMENT TYPE:	P-110000618	SCALE:
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FRONT VIEW



SIDE VIEW

Approx. Center of Gravity			
Transformers	X [mm]	Y [mm]	Z [mm]
0	375	500	1300
1	375	500	1150
2	375	500	1050

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+8-20+20	8+8-20+20	750x820x2100	617	442	242

Notes

- The CDG dimensions are approximated values with pallet and packaging including transformer amount variations.
The CDG dimensions of UPS cabinet with package are
X=375 mm, Y=500 mm, Z=1050 mm with 2 transformers,
X=375 mm, Y=500 mm, Z=1150 mm with one transformer and
X=375 mm, Y=500 mm, Z=1300 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.

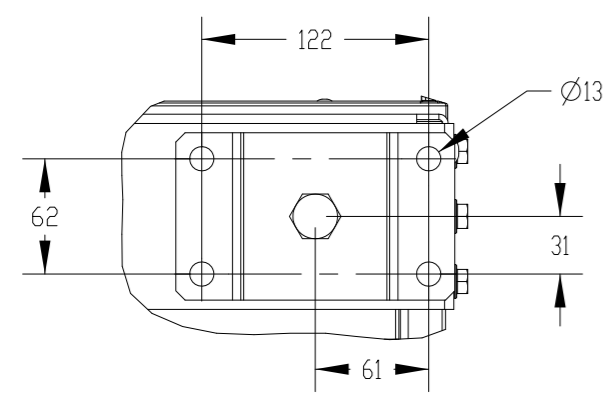
METRIC

THIRD ANGLE PROJECTION

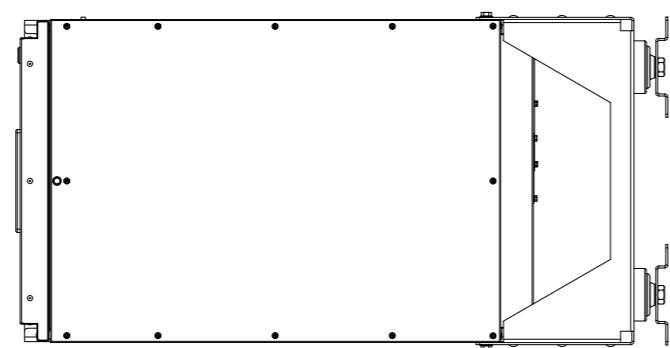
DESCRIPTION: Site planning drawing 93PS Marine redundant 8+8-20+20kW

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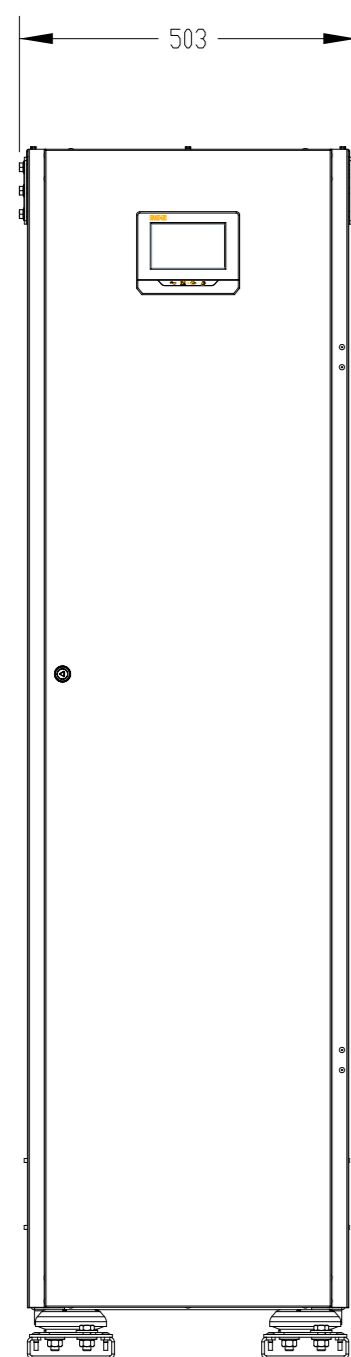


DETAIL C
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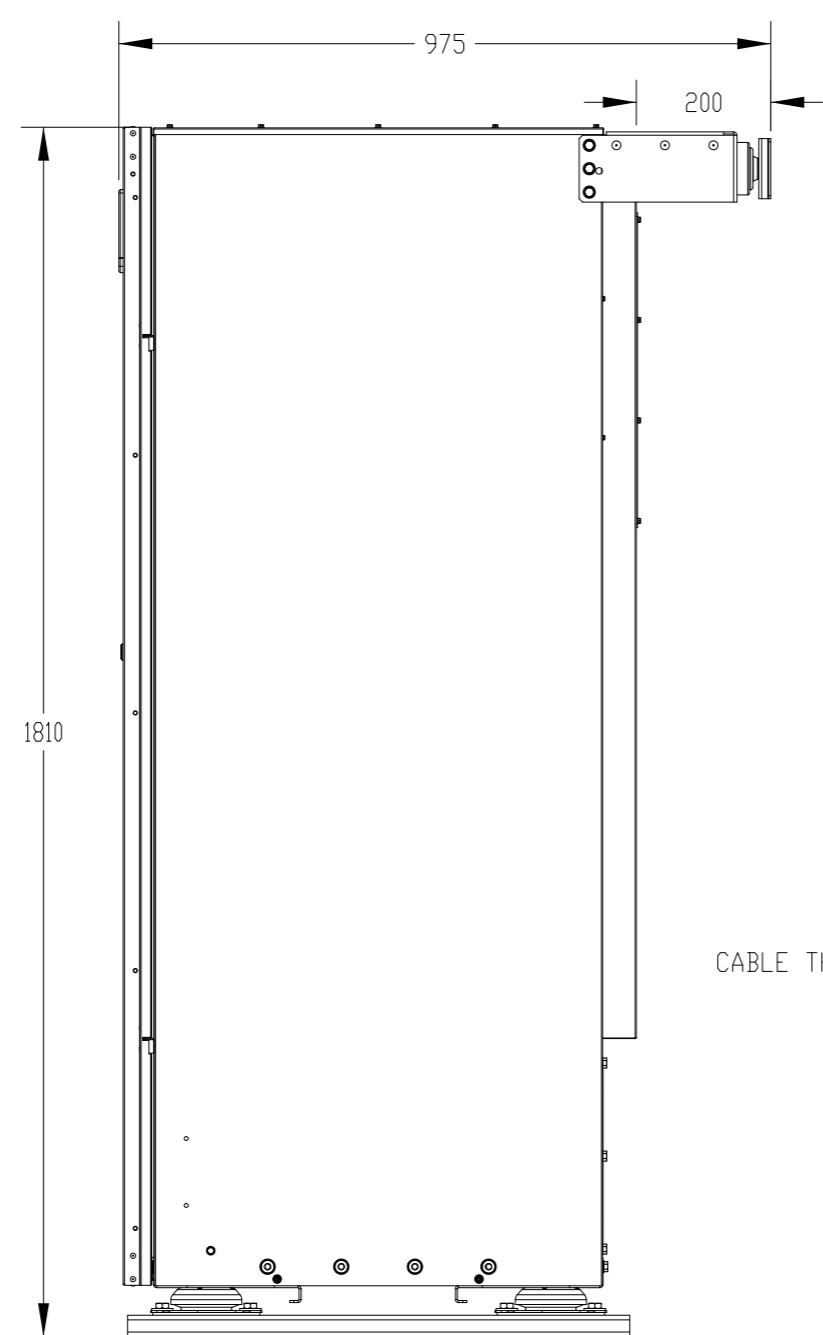


TOP VIEW

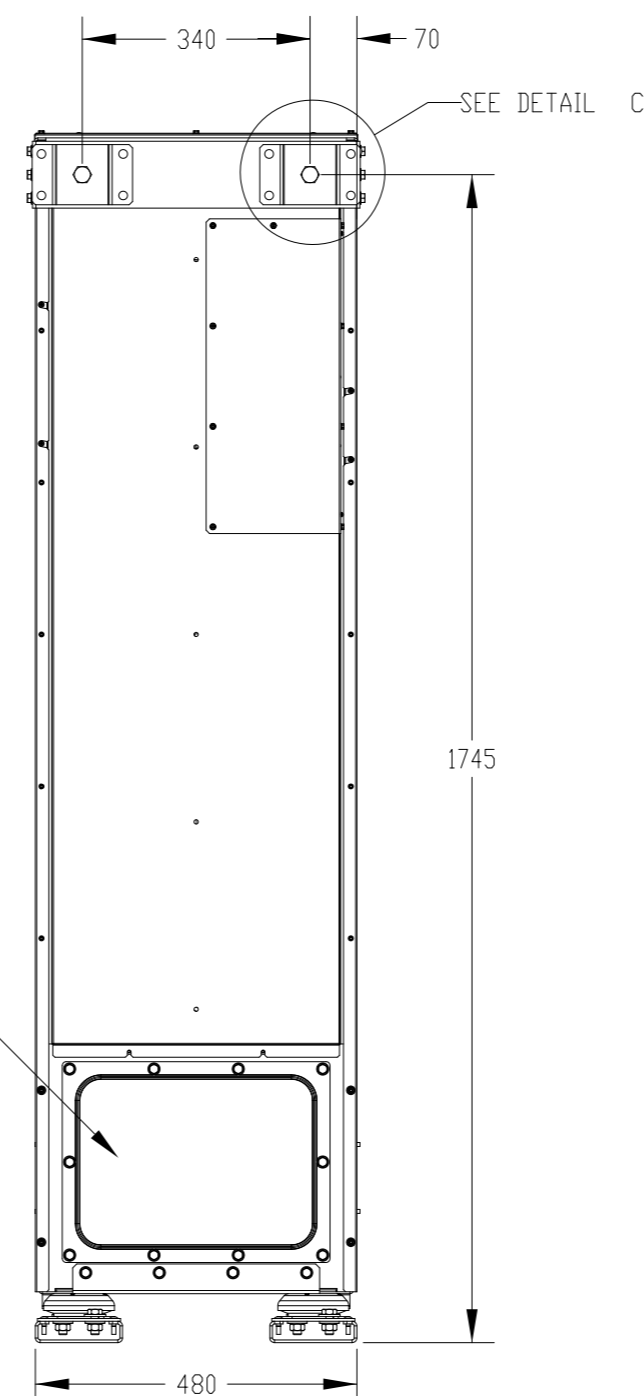
Product Specifications							
UPS Rating		Max Heat Dissipation at 100% Load with 2 Transformers	Cabinet Dimensions WxDxH	Approx. Weight Cabinet with 2 Transformers	Approx. Weight Cabinet with 1 Transformer	Approx. Weight Cabinet without Transformers	Floor Landing
kVA	kW	kW	mm	kg	kg	kg	kg/m ²
8+8	8+8	0.6	503x975x1810	582	407	207	1.478
10+10	10+10	0.7	503x975x1810	582	407	207	1.478
15+15	15+15	0.9	503x975x1810	582	407	207	1.478
20+20	20+20	1.1	503x975x1810	582	407	207	1.478



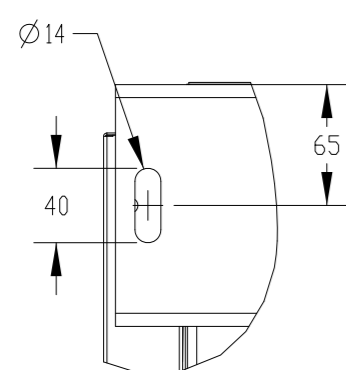
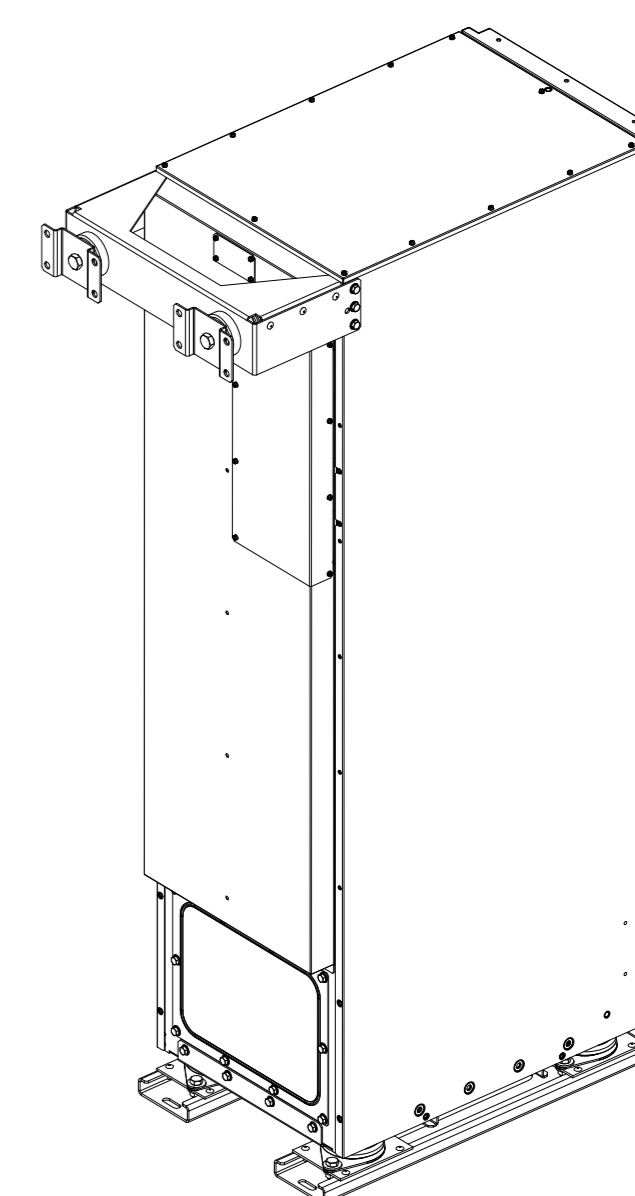
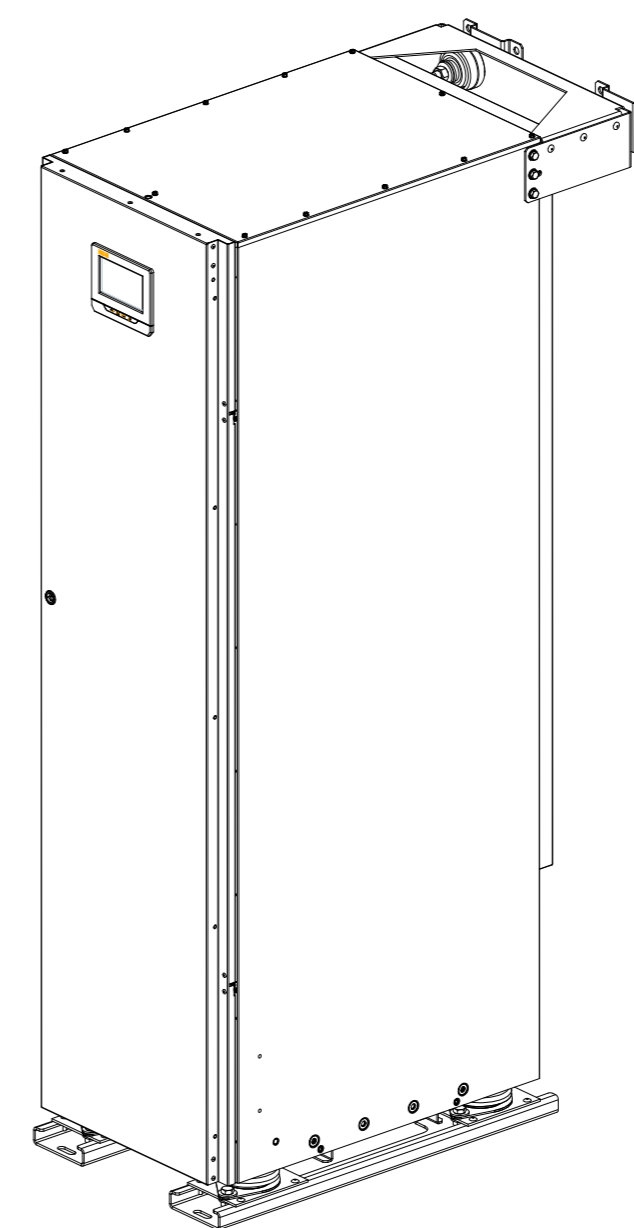
FRONT VIEW



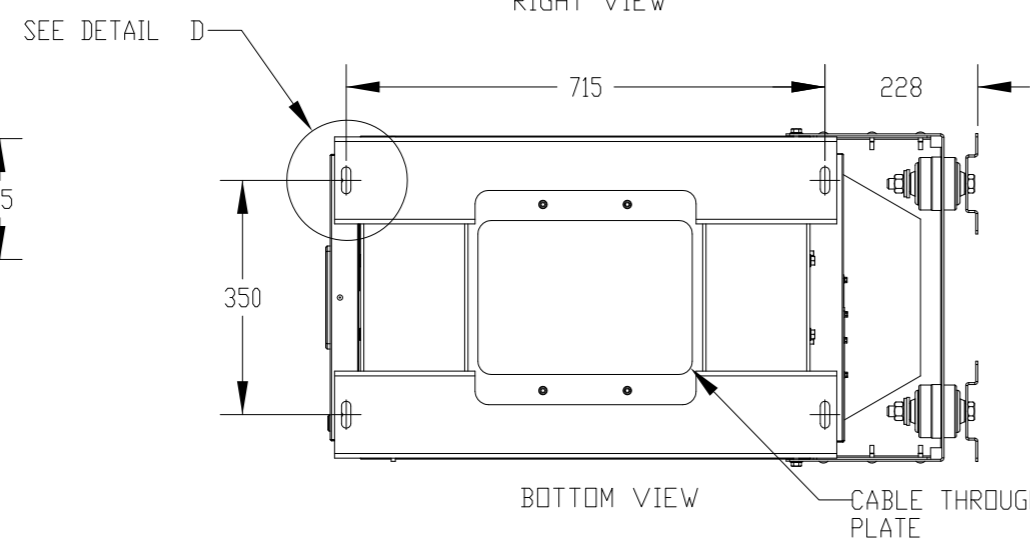
RIGHT VIEW



REAR VIEW



DETAIL D
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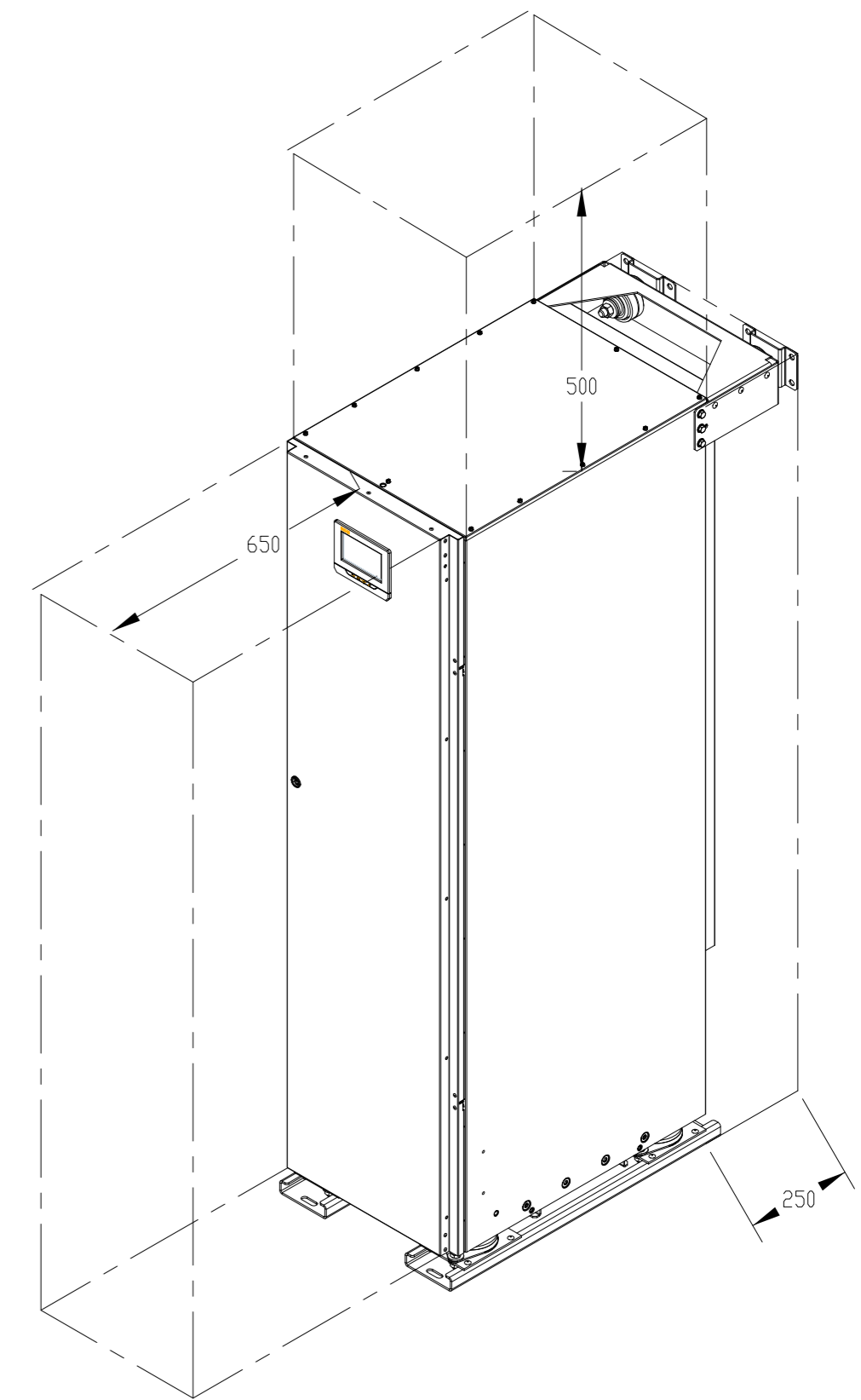
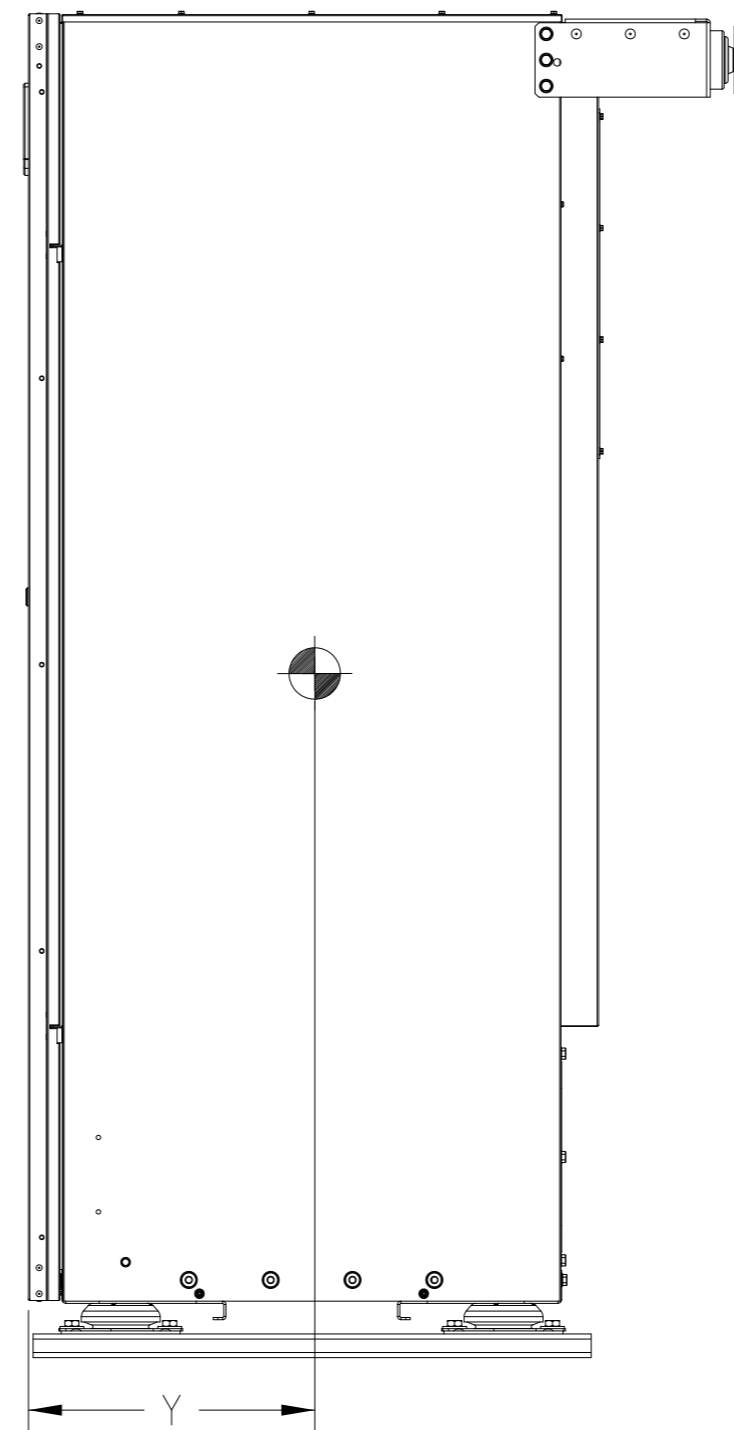
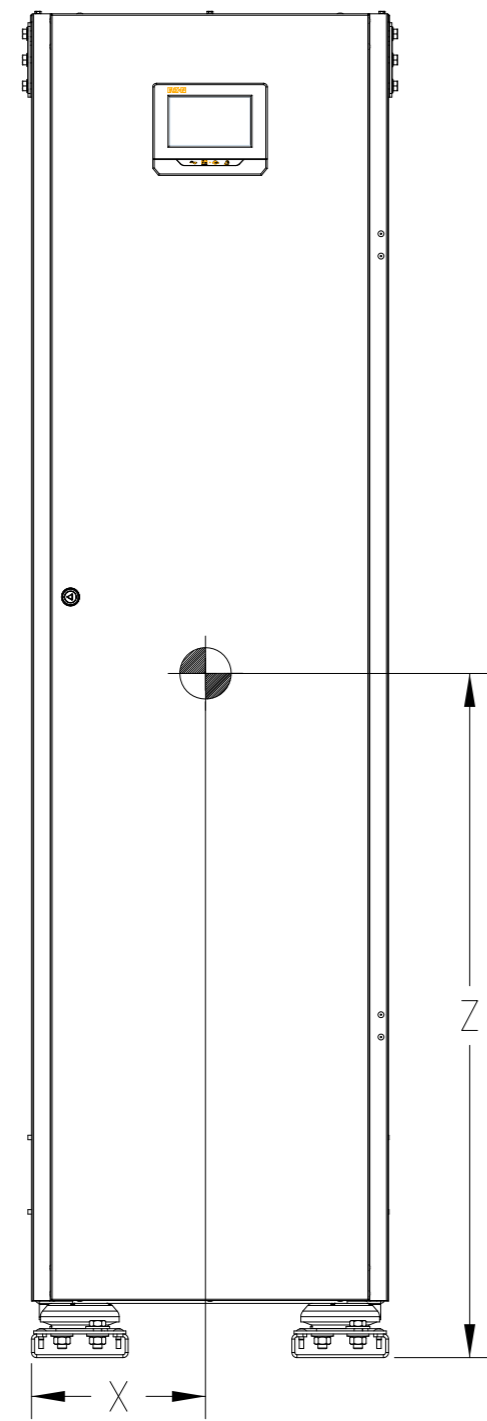


BOTTOM VIEW

CABLE THROUGH PLATE

- 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.

METRIC		THIRD ANGLE PROJECTION		EATON	
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Clearances	
From Top of cabinet	500 mm
From Front of cabinet	650 mm
From Back of cabinet	250 mm

Notes

1. The COG dimensions are approximated values including different transformer variations.
2. The COG dimensions of UPS cabinet without package are X=240 mm, Y=400 mm, Z=1170 mm with 2 transformers, X=240 mm, Y=400 mm, Z=1020 mm with 1 transformer and X=240 mm, Y=400 mm, Z=920 mm with no transformers
3. Minimum overhead clearance above the UPS cabinet is 500 mm (20in.) for servicing space.
4. Minimum 650 mm (26in.) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
5. Minimum 250 mm (10in.) 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	240	400	1170
1	240	400	1020
2	240	400	920

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

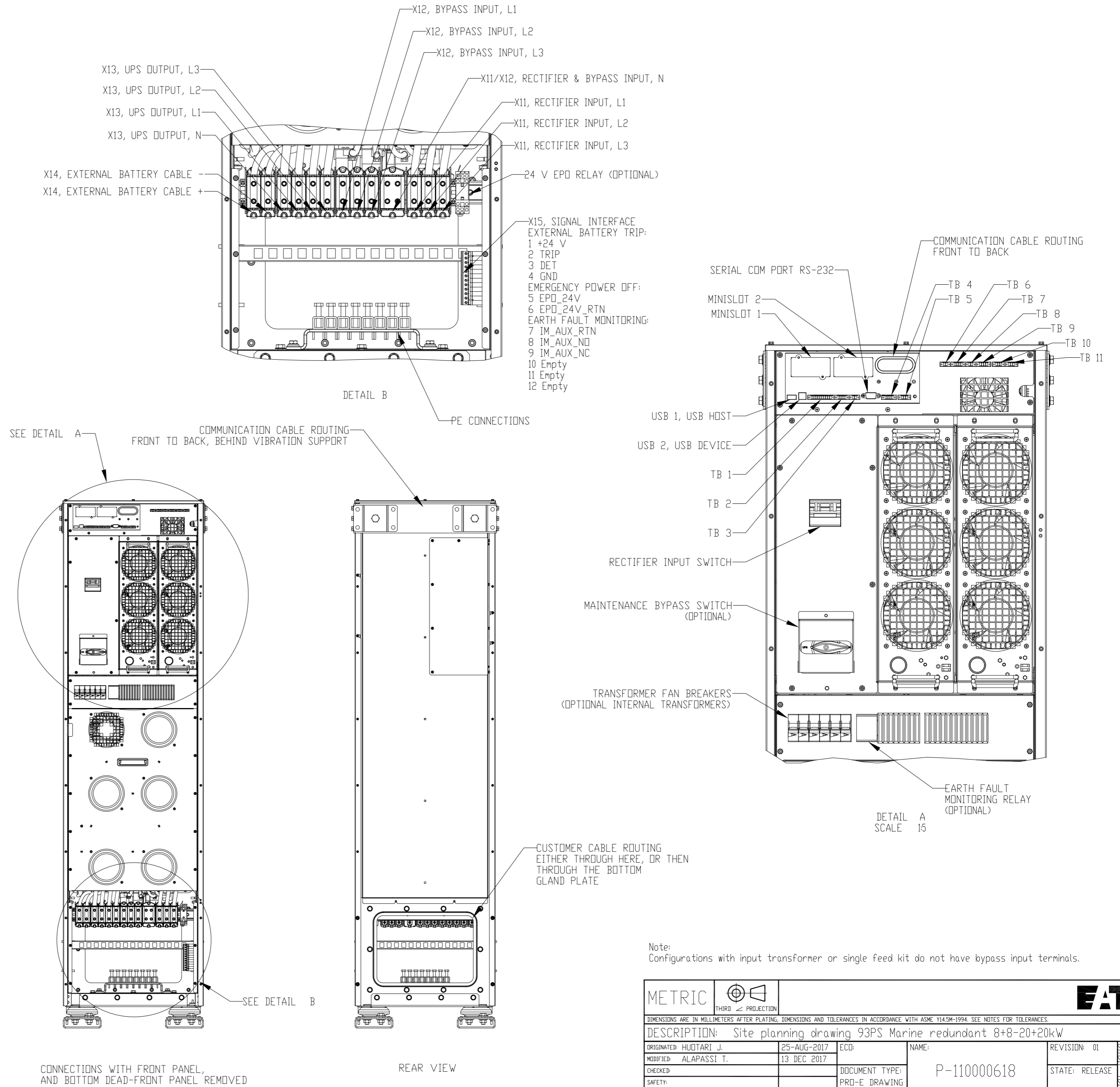
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Minimum recommended cable and fuse sizes for rectifier and bypass input, UPS output and external battery bank (Internal transformers are used for voltages other than 380, 400 and 415 Vac)	UPS rating				
	8+8kW	10+10kW	15+15kW	20+20kW	
208Vac	Phase cable (mm ²)	6	10	16	25
	PE cable (mm ²)	6	10	16	16
230Vac	Rectifier and bypass fuse (A)	32	40	63	80
	Phase cable (mm ²)	6	10	16	25
380Vac	PE cable (mm ²)	6	10	16	16
	Rectifier and bypass fuse (A)	32	40	50	80
400Vac	Phase cable (mm ²)	2.5	4	6	10
	PE cable (mm ²)	2.5	4	6	10
415Vac	Rectifier and bypass fuse (A)	20	25	32	40
	Phase cable (mm ²)	2.5	4	6	10
440Vac	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	4	6	10
690Vac	Rectifier and bypass fuse (A)	10	16	20	25
	Phase cable (mm ²)	2.5	2.5	2.5	4
Ext. Batteries	Positive & negative line (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 95 mm² and stranded wire with ferrule 70 mm². PE maximum conductor cross section 70 mm². Always use ferrule with stranded wire.

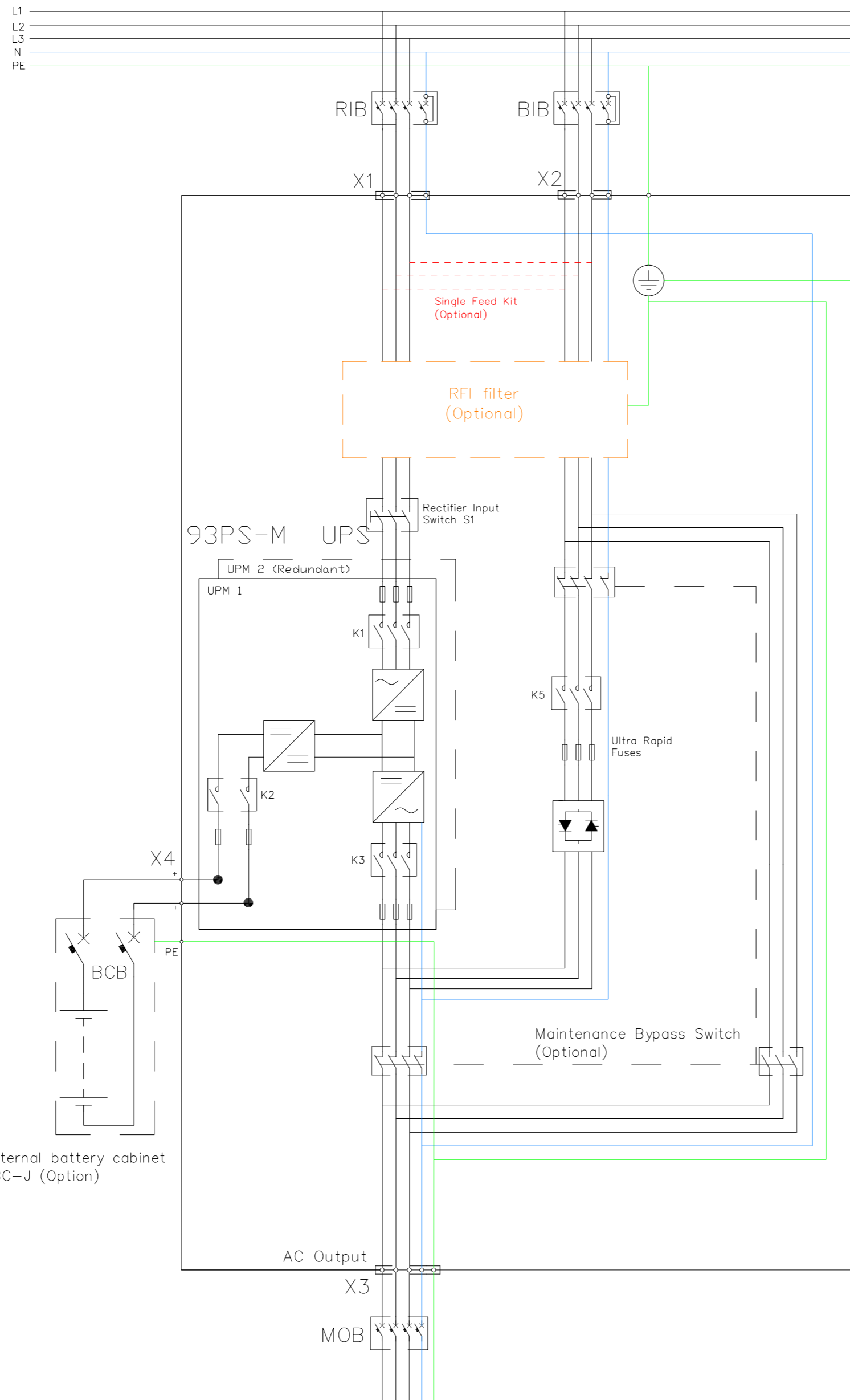
Power upgrading of the UPS is possible only if the sizing of external cables is sufficient. Alternatively, external cabling must be upgraded as well. The type of the fuses is gL.

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.

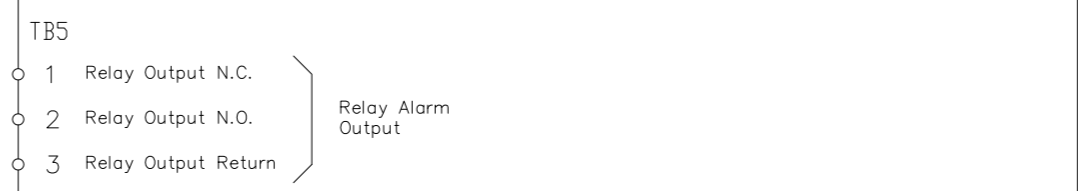
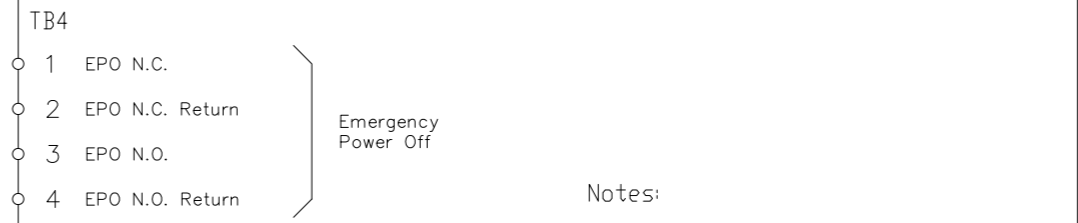
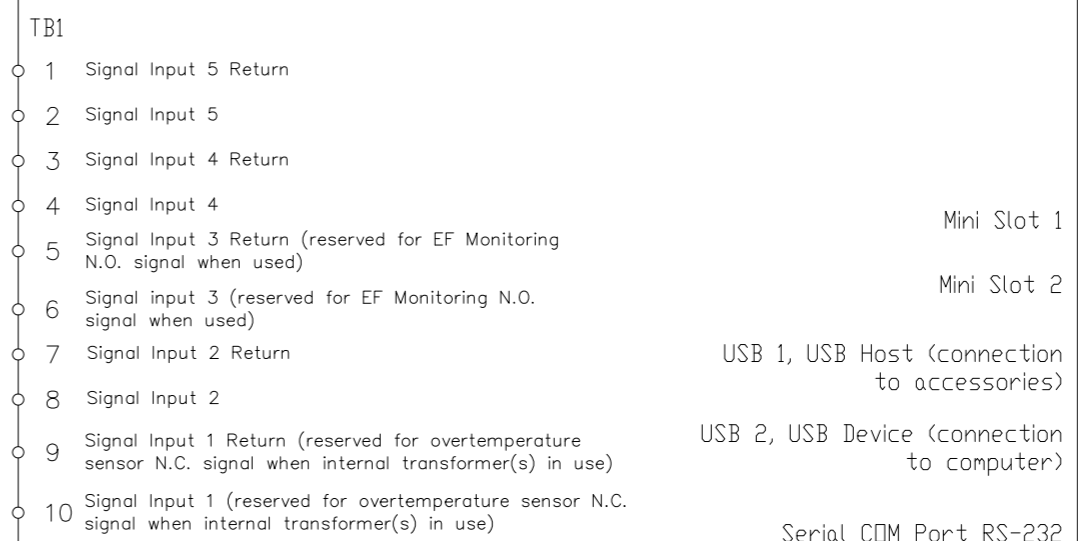
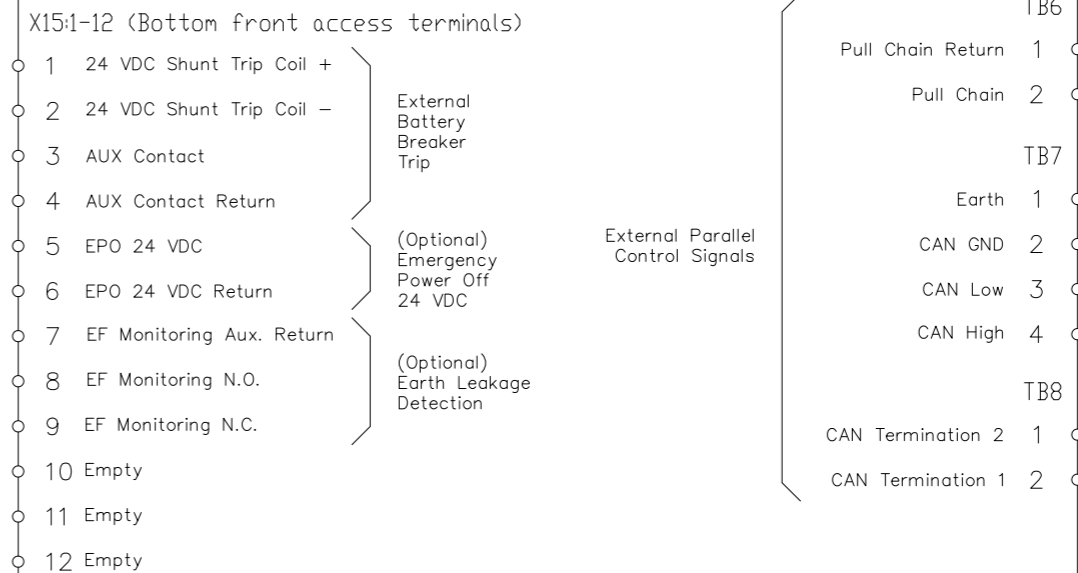


Note:
Configurations with input transformer or single feed kit do not have bypass input terminals.

METRIC		THIRD ANGLE PROJECTION		EATON	
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93PS-M UPS



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

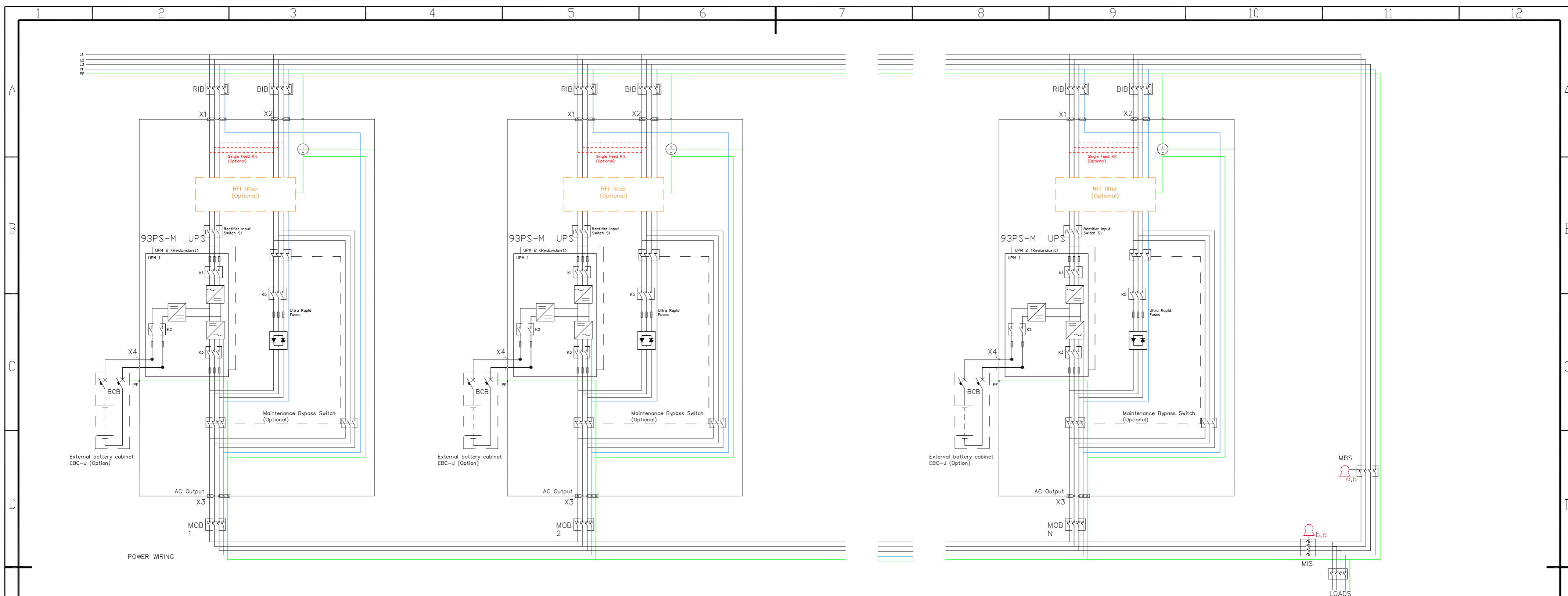
Optional RFI Filter
This filter attenuates EMI noise as follows:

Conducted emissions - DNV Class A EMC criteria and IEC 62040-2 C2
Radiated emissions - DNV Class A EMC criteria and IEC 62040-2 C2

Internal Redundancy
Internal redundancy is achieved by adding a second power module to the UPS and the redundant system can be rated up to 20kW maximum.
UPSs with internal redundancy come with the following standard ratings:

8 + 8 kW
10 + 10 kW
15 + 15 kW
20 + 20 kW

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DESCRIPTION: 93PS Marine Redundant Wiring Single Unit					
ORIGINATED: Miguel Moreira	21.12.2017	ECO:	NAME:	REVISION: 01	SIZE: A2
MODIFIED:				STATE: Release	SCALE: 1:10
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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

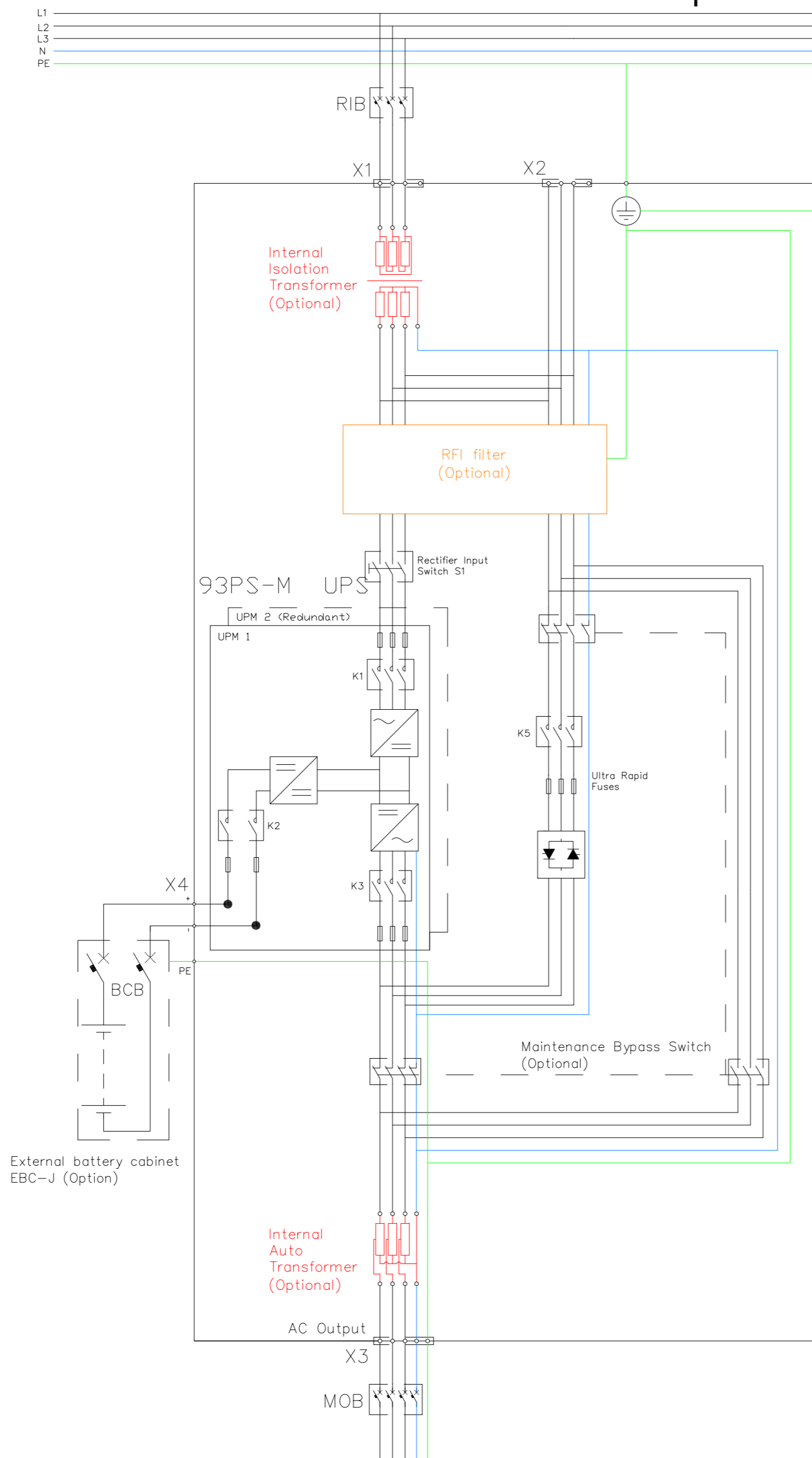
PCAN (DUAL AS OPTION)
Provided by Eaton, Installed by Eaton

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

- 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

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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		TB7 CAN GND 2
5	EPO 24 VDC	(Optional) Emergency Power Off 24 VDC	TB7 CAN Low 3
6	EPO 24 VDC Return		TB7 CAN High 4
7	EF Monitoring Aux. Return	(Optional) Earth Leakage Detection	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)		Mini Slot 2
6	Signal input 3 (reserved for EF Monitoring N.O. signal when used)		
7	Signal Input 2 Return		USB 1, USB Host (connection to accessories)
8	Signal Input 2		USB 2, USB Device (connection to computer)
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)		Serial COM Port RS-232

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

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

Optional input isolation transformer, Dyn11, 50kVA, 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, 40kVA, 50/60 Hz

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

Optional Internal Transformers Special Configurations:

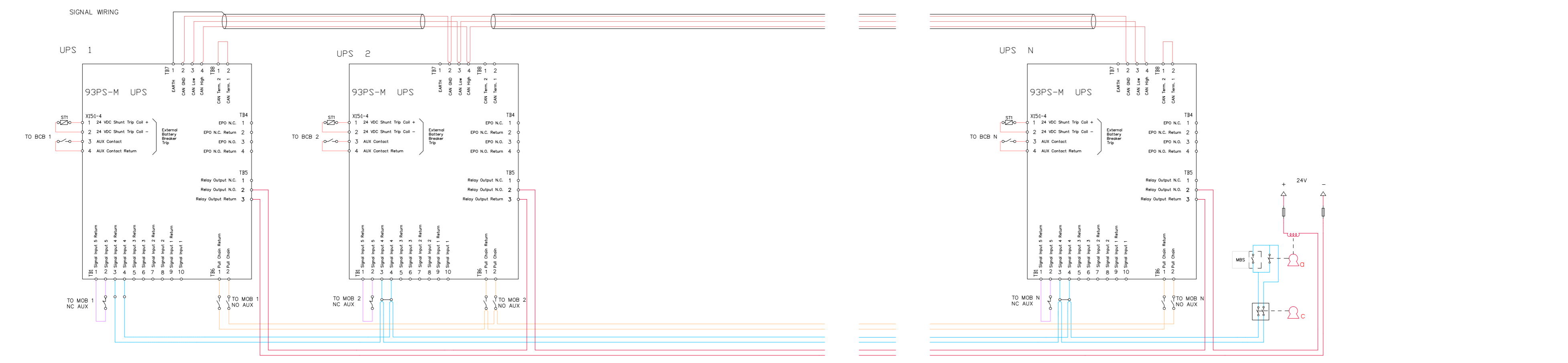
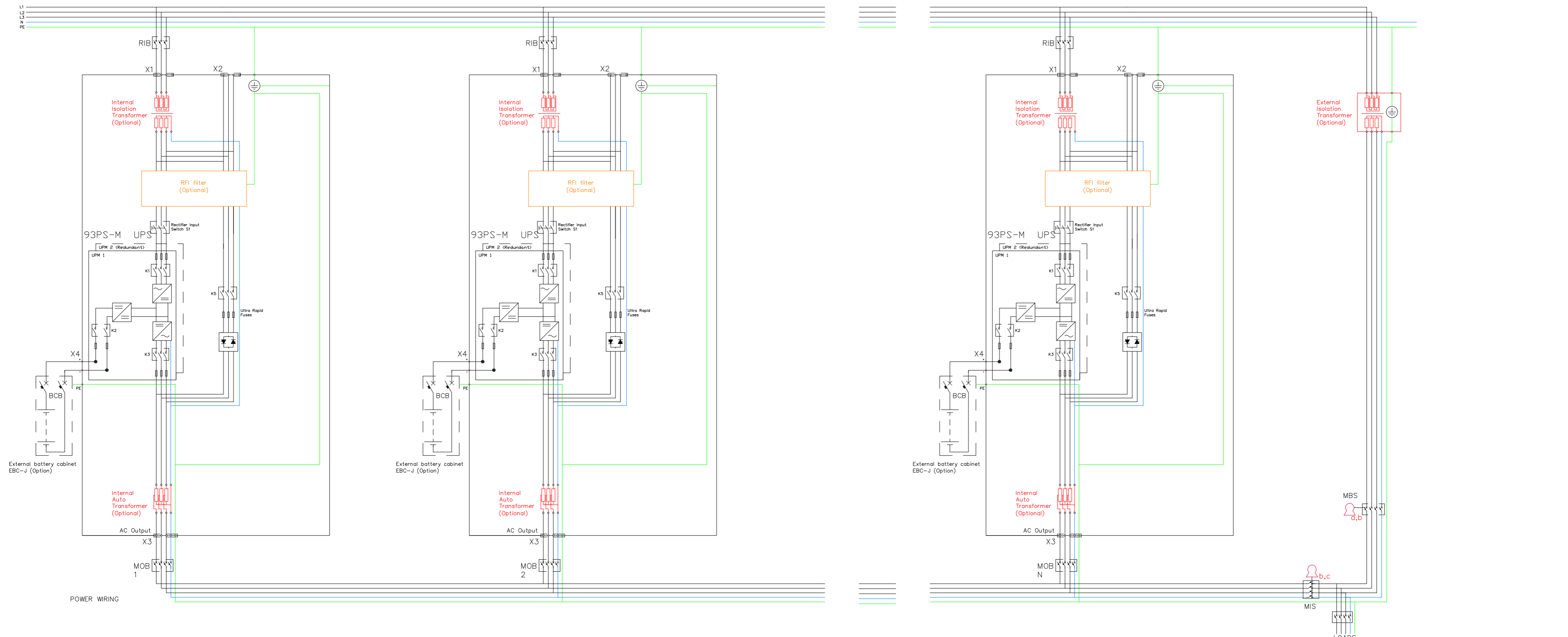
Please contact Sales-Support-CPS-EMEA@Eaton.com for any of the configurations below:

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 97% efficiency and auto transformers 96% 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 Redundant 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-110000618	STATE: Release	SCALE: 1:10
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SAFETY:					
APPROVED:					
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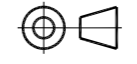



- MBS STATUS** (Provided by others, Installed by others)
0.75 - 2.5mm² twisted pair (if possible, else shielded)
No earth needed
- PULL CHAIN (REDUNDANT ON BYP STATUS)**
Provided by Eaton, Installed by Eaton
- MOB STATUS** (Provided by others, Installed by others)
0.75 - 2.5mm² twisted pair (if possible, else shielded)
No earth needed
- 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
- PCAN (DUAL AS OPTION)**
Provided by Eaton, Installed by Eaton

- 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			EATON	
DIMENSIONS ARE IN MILLIMETERS AFTER PLATING, DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994. SEE NOTES FOR TOLERANCES.				
DESCRIPTION: 93PS Marine Redundant Wiring Parallel Units W/ Int. Transformer(s)				
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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
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  

THIRD ANGLE PROJECTION

DESCRIPTION: Site planning drawing 93PS Marine redundant 8+8-20+20kW

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