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1. Change Log

Rev	Date	Author	Description	Number of Change
A	04/24/2026	TK	Initial Release	CO-1127543

2. Site Planning Datasheet

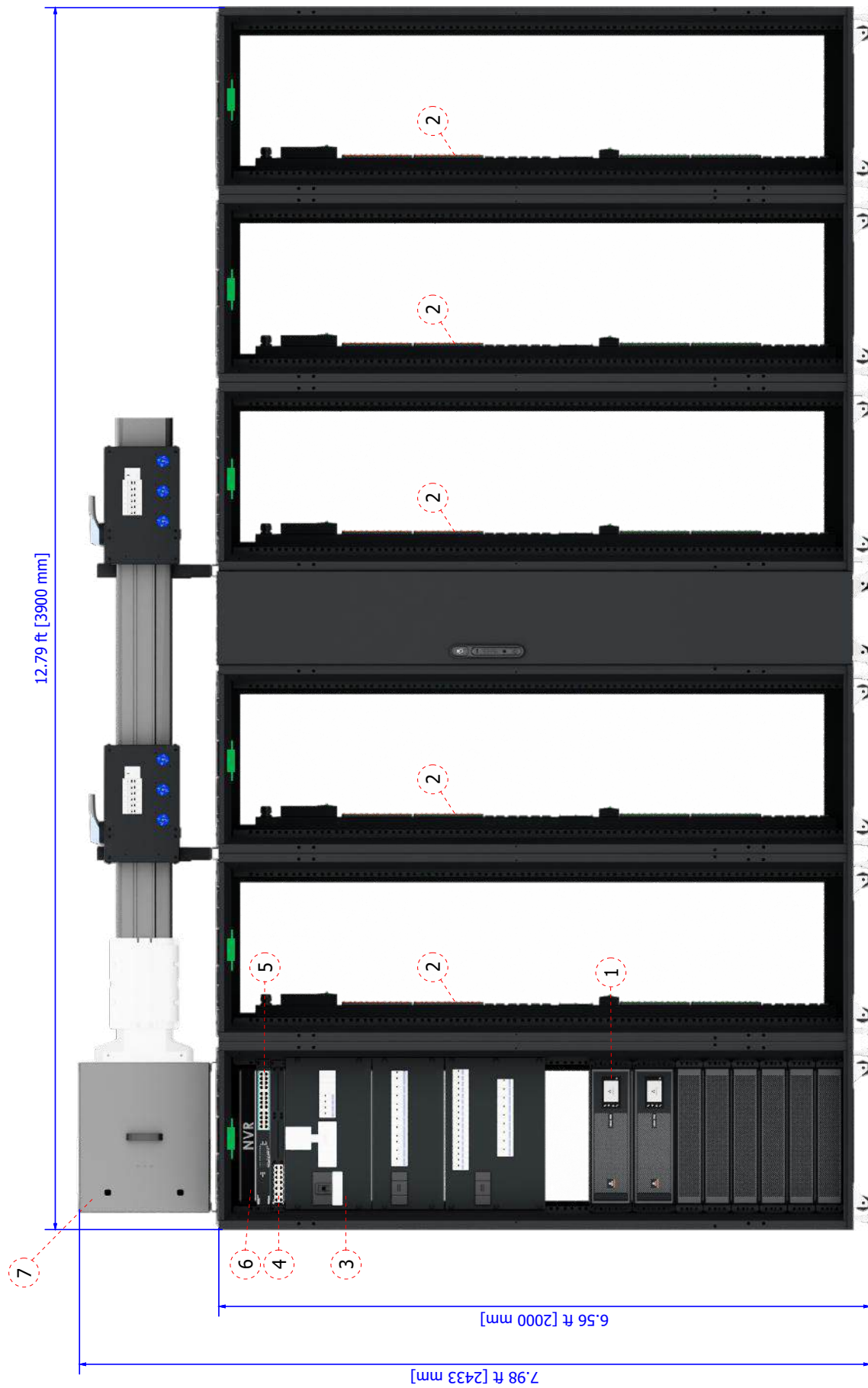
Smart Row 2 Site Planning Datasheet (208V, 3 phase + PE)

Configuration Number	Part Number	Max Row Capacity (kW)	IT Racks per Row	Capacity per Rack (kW)	Cooling Units per Row	Rack PDU Count	Main Input Breaker Size	Condenser Breaker Size	Condenser Dry Weight kg (lbs)	Row Dimensions (L x H x D) mm (in)	Row Weight kg (lbs)	Min. Staging Area m2 (ft2)
31	SR2N03030NAB1	30	3	10	1	3	200 A	70 A	193 (424.6)	2700 (106.3) x 2433 (95.8) x 1400 (55.1)	1858 (4095)	22.34 (240.47)
32	SR2N03030PAB1	30	3	10	1	6	200 A	70 A	193 (424.6)	2700 (106.3) x 2433 (95.8) x 1400 (55.1)	1959 (4318)	23.40 (251.88)
33	SR2N03030FAB1	30	3	10	2	6	200 A	70 A	193 (424.6)	3000 (118.1) x 2433 (95.8) x 1400 (55.1)	2385 (5258)	27.05 (291.16)
34	SR2N04030NAB1	30	4	7.5	1	4	200 A	70 A	193 (424.6)	3300 (129.9) x 2433 (95.8) x 1400 (55.1)	2069 (4562)	24.38 (262.42)
35	SR2N04030PAB1	30	4	7.5	1	8	200 A	70 A	193 (424.6)	3300 (129.9) x 2433 (95.8) x 1400 (55.1)	2178 (4802)	25.53 (274.80)
36	SR2N04030FAB1	30	4	7.5	2	8	200 A	70 A	193 (424.6)	3600 (141.7) x 2433 (95.8) x 1400 (55.1)	2604 (5742)	29.18 (314.09)
37	SR2N05030NAB1	30	5	6	1	5	200 A	70 A	193 (424.6)	3900 (153.5) x 2433 (95.8) x 1400 (55.1)	2281 (5028)	26.42 (284.38)
38	SR2N05030PAB1	30	5	6	1	10	200 A	70 A	193 (424.6)	3900 (153.5) x 2433 (95.8) x 1400 (55.1)	2397 (5284)	27.66 (297.73)
39	SR2N05030FAB1	30	5	6	2	10	200 A	70 A	193 (424.6)	4200 (165.4) x 2433 (95.8) x 1400 (55.1)	2823 (6224)	31.31 (337.02)
40	SR2N04040NAB1	40	4	10	2	4	200 A	70 A	193 (424.6)	3600 (141.7) x 2433 (95.8) x 1400 (55.1)	2484 (5476)	27.83 (299.56)
41	SR2N04040PAB1	40	4	10	2	8	200 A	70 A	193 (424.6)	3600 (141.7) x 2433 (95.8) x 1400 (55.1)	2581 (5690)	28.78 (309.79)
42	SR2N04040FAB1	40	4	10	3	8	200 A	70 A	193 (424.6)	3900 (153.5) x 2433 (95.8) x 1400 (55.1)	2007 (6630)	32.43 (349.07)
43	SR2N05040NAB1	40	5	8	2	5	200 A	70 A	193 (424.6)	4200 (165.4) x 2433 (95.8) x 1400 (55.1)	2709 (5973)	30.07 (323.67)
44	SR2N05040PAB1	40	5	8	2	10	200 A	70 A	193 (424.6)	4200 (165.4) x 2433 (95.8) x 1400 (55.1)	2828 (6234)	31.31 (337.02)
45	SR2N05040FAB1	40	5	8	3	10	200 A	70 A	193 (424.6)	4500 (177.2) x 2433 (95.8) x 1400 (55.1)	3254 (7174)	34.96 (376.31)
46	SR2N06040NAB1	40	6	6.8	2	6	200 A	70 A	193 (424.6)	4800 (189.0) x 2433 (95.8) x 1400 (55.1)	2951 (6505)	32.57 (350.58)
47	SR2N06040PAB1	40	6	6.8	2	12	200 A	70 A	193 (424.6)	4800 (189.0) x 2433 (95.8) x 1400 (55.1)	3096 (6827)	34.28 (368.99)
48	SR2N06040FAB1	40	6	6.8	3	12	200 A	70 A	193 (424.6)	5100 (200.8) x 2433 (95.8) x 1400 (55.1)	3523 (7767)	37.93 (408.28)
49	SR2N07040NAB1	40	7	5.7	2	7	200 A	70 A	193 (424.6)	5400 (212.6) x 2433 (95.8) x 1400 (55.1)	3169 (6986)	34.71 (373.62)
50	SR2N07040PAB1	40	7	5.7	2	14	200 A	70 A	193 (424.6)	5400 (212.6) x 2433 (95.8) x 1400 (55.1)	3329 (7339)	36.61 (394.07)
51	SR2N07040FAB1	40	7	5.7	3	14	200 A	70 A	193 (424.6)	5700 (224.4) x 2433 (95.8) x 1400 (55.1)	3755 (8279)	40.26 (433.36)
52	SR2N08040NAB1	40	8	5	2	8	200 A	70 A	193 (424.6)	6000 (236.2) x 2433 (95.8) x 1400 (55.1)	3380 (7452)	36.75 (395.57)
53	SR2N08040PAB1	40	8	5	2	16	200 A	70 A	193 (424.6)	6000 (236.2) x 2433 (95.8) x 1400 (55.1)	3547 (7821)	38.74 (416.99)
54	SR2N08040FAB1	40	8	5	3	16	200 A	70 A	193 (424.6)	6300 (248.0) x 2433 (95.8) x 1400 (55.1)	3974 (8761)	42.39 (456.28)

Notes:

1. System Environmental Conditions: Indoors, 41°F to 104°F (5°C to 40°C), RH to 80% with Max dew point of 82.4°F (28°C) Meets the requirements of data center or computer room environments.
2. Floor surface must be level and continuous (expansion joints sealed, raised floor tile gaps sealed) Ground bearing capacity is more than 1000 kg/m2
3. No building springler head should be within 19.7 in (0.5 m)
4. Install in accordance with national and local electrical codes
5. Cable Sizing (Main Input Breaker Size) 3/0 AWG
6. Row Dimensions do not include necessary space needed for access including per ADA or local codes

SHEET NO.	DRAWN BY:	DWG. NO.		 VERTIV[™]
CO. NO.	DESIGNED BY:	DATE (LATEST REV.)		
REF. DWG.	APPROVED BY:	REVISION	955 N. CLEVELAND AVE WESTERVILLE, OHIO 43081	
TITLE				
Smart Row 2 Site Planning Datasheet (208V, 3 phase + PE)				



Front View

No.	Components	No.	Components
1	ITA2 20k UPS 2+0	5	PoE Switch
2	rPDU Feed A	6	NVR (optional)
3	Power Management Part PMC40	7	IMPB System A
4	RDU501		

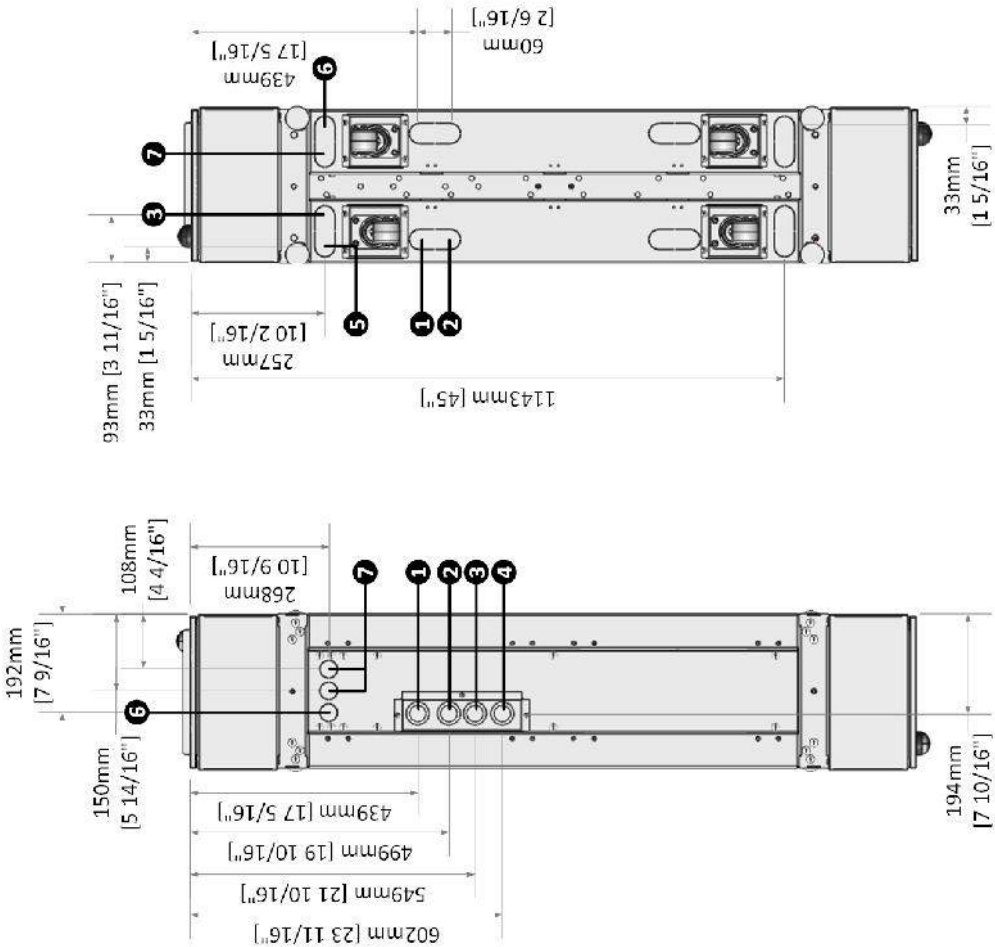
2T Sensor mounted on rack roof

Notes:

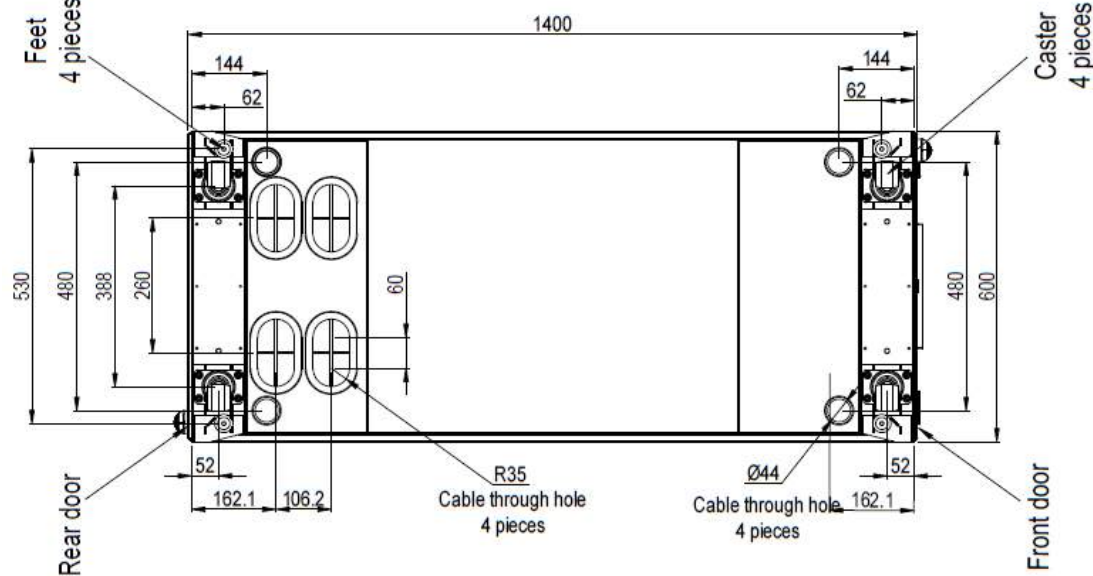
1. Row IT Load Capacity is driven by number of IT-Racks (IT-Rack x 6 kW per rack).
2. System Environmental Conditions: Indoors, 41 F to 104 F (5 C to 40 C), RH to 80% with Max dew point of 82.4 F (28 C).
3. Floor surface must be level and continuous (expansion joints sealed, raised floor tile gaps sealed, no floor drains, etc).
4. No building sprinkler head should be within 19.7 in (0.5 m).

SHEET NO. 2 / 16	DRAWN BY: Nilesh Patil	© 2020 VERTIV GROUP CORPORATION. CONFIDENTIAL AND PROPRIETARY. ALL RIGHTS RESERVED. VERTIV AND THE VERTIV LOGO ARE TRADEMARKS OR REGISTERED TRADEMARKS OF VERTIV GROUP CORPORATION. THIS DOCUMENT IS THE PROPERTY OF VERTIV GROUP CORPORATION AND IS TO BE USED ONLY FOR THE PROJECT AND/OR SPECIFIC INFORMATION CONTAINED HEREIN IN STRICTEST CONFIDENCE AND WILL NOT COPY, REPRODUCE, TRANSMIT, OR OTHERWISE DISCLOSE OR MAKE AVAILABLE TO ANY OTHER PERSON OR ENTITY WITHOUT THE EXPRESS WRITTEN PERMISSION OF VERTIV GROUP CORPORATION. THIS DOCUMENT SHALL BE RETURNED TO VERTIV GROUP CORPORATION IMMEDIATELY UPON REQUEST.	DWG NO. SR2N05030NAB1	 VERTIV TM
CHANGE NO.	APPROVED BY: Petr Harant		DATE (LATEST REV.) 01.09.2026	
TITLE / DESCRIPTION:		Vertiv TM SmartRow TM 2: 5x IT Rack 30kW 505 N. CLEVELAND AVE WESTERVILLE OH 43081		
PAGE DESCRIPTION: 2 - vRow Front View				

CRV Connection Details



PMC/IT Cabinet Connection Details



Item	Description	
A	Top Plate	
B	Bottom Plate	
1	RLT	Refrigerant liquid line inlet 5/8 in. O.D. copper sweat
2	RGT	Refrigerant gas line outlet 7/8 in. O.D. copper sweat
3	HS	Humidifier Supply Rc 1/2 in. female copper, threaded joint
4	CPT	Condensate pump outlet G 3/4 x Rc 1/2 in.
5	CGT	Condensate gravity outlet Rc 1/2 in. female copper, threaded joint
6	HVT	High voltage cable access Combination knockout:28 mm (1-1/8 in.)
7	LVT	Low voltage cable access Combination knockout:28 mm (1-1/8 in.)

Note :- Pipe sizes are for connection purposes and not the required line size.
Consult thermal manuals for line sizes.

SHEET NO.
4 / 16

CHANGE NO.

PAGE DESCRIPTION:
2.b - vRow Bottom View

DRAWN BY:
Nilesh Patil

APPROVED BY:
Petr Harant

TITLE / DESCRIPTION:
Vertiv™ SmartRow™ 2: 5x IT Rack 30kW

DWG NO.
SR2N05030NAB1

DATE (LATEST REV.)
01.09.2026

REVISION:
505 N. CLEVELAND
AVE WESTERVILLE
OH 43081

VERTIV™



Cable overview

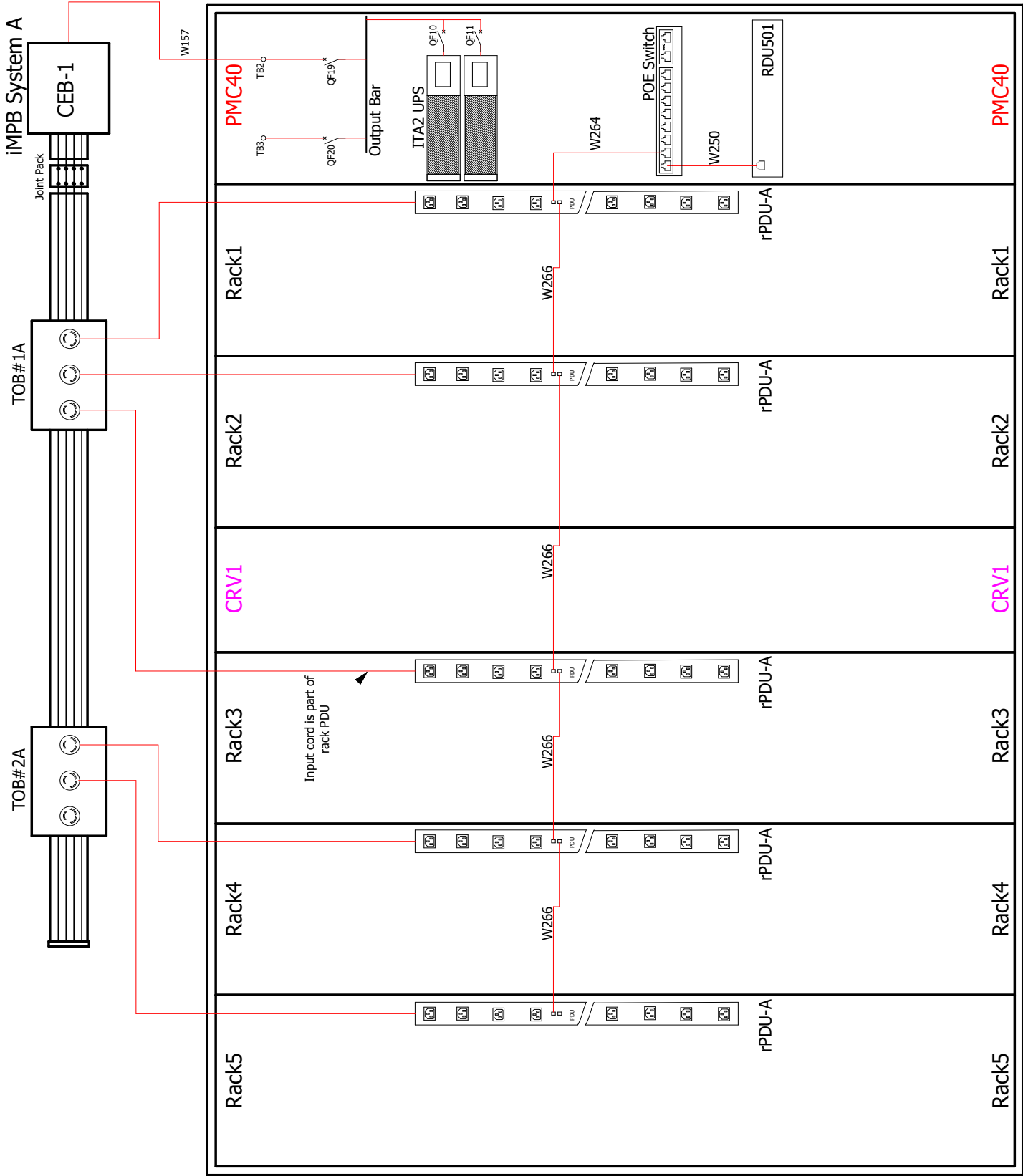
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Cable overview

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Geist PDUs -SR2 for 30K(5*ITRack)

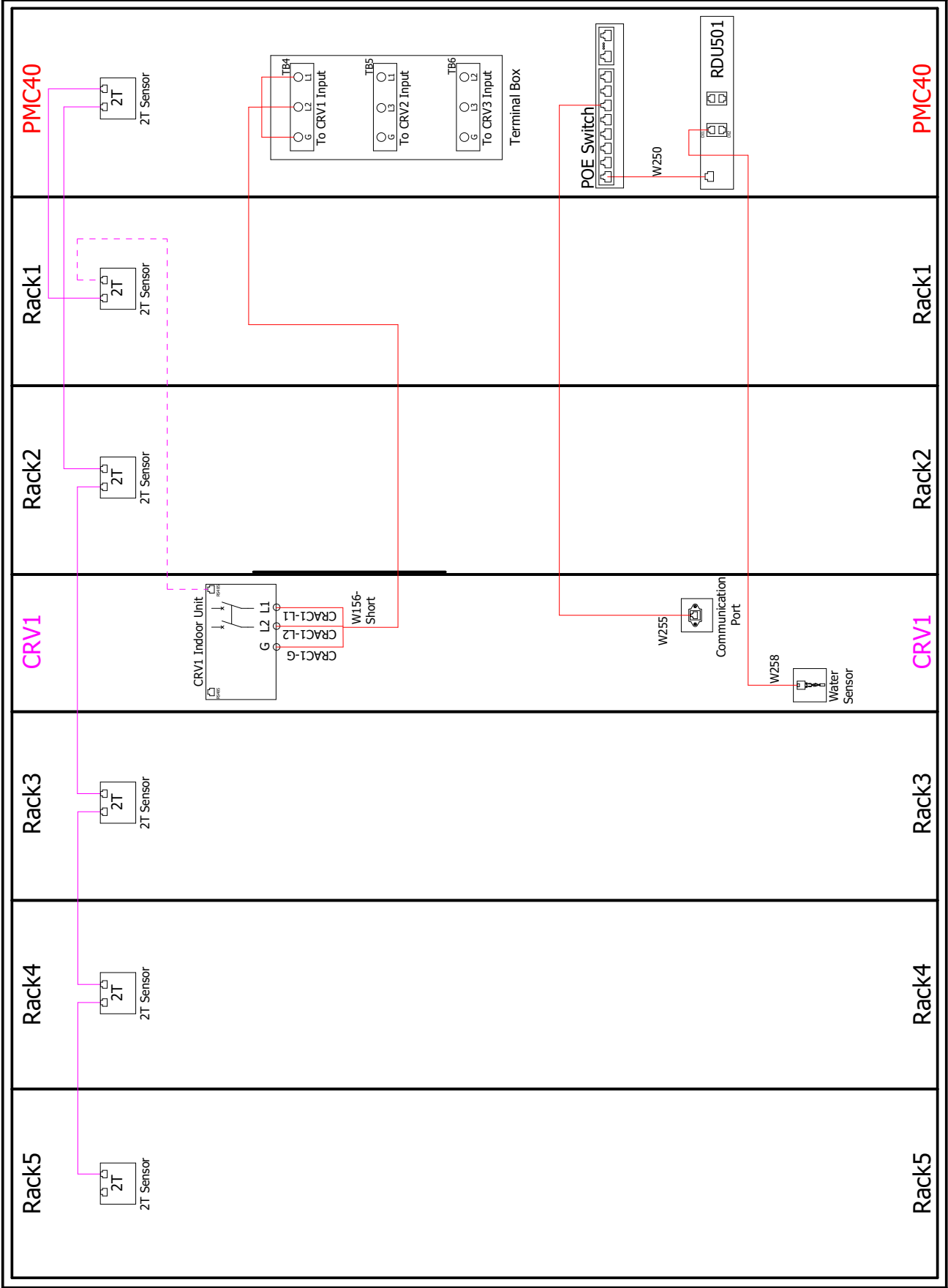


Factory connected cables
Cables connected at assembly

Rear View

SHEET NO. 9 / 16		DRAWN BY: Nilesh Patil		DWG NO. SR2N05030NAB1		VERTIV™
CHANGE NO.		APPROVED BY: Petr Harant				
PAGE DESCRIPTION: 4 - PDU wiring diagram		TITLE / DESCRIPTION: Vertiv™ SmartRow™ 2: 5x IT Rack 30kW				
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CRVs(CRD30)-SR2 for 30K (5*ITrack)

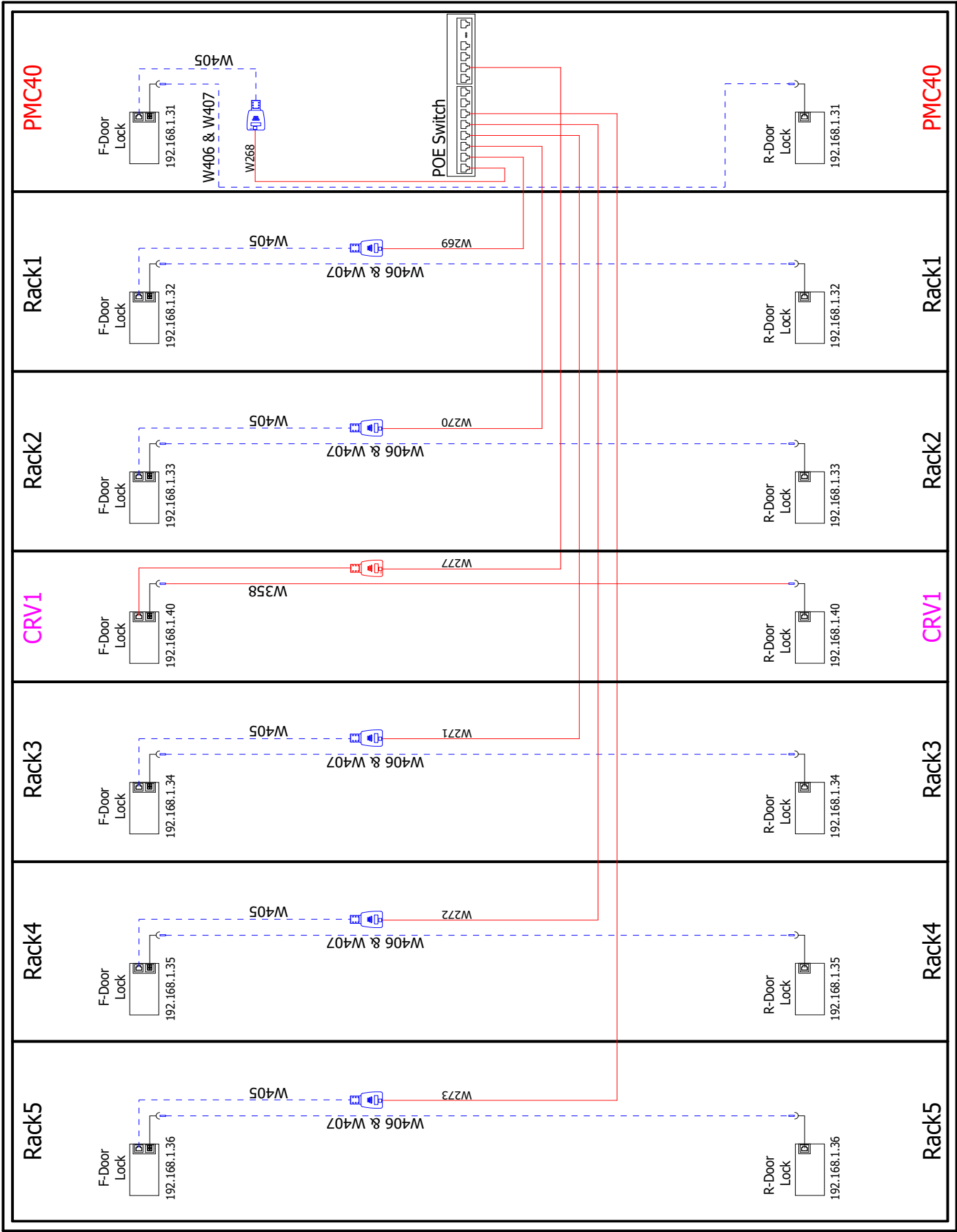


Rear View

- Factory connected cables
- Cables connected at assembly
- 300157G2 (10 ft)
- 300157G1 (6 ft)

SHEET NO. 10 / 16		DRAWN BY: Nilesh Patil		DWG NO. SR2N05030NAB1		VERTIV™
CHANGE NO.		APPROVED BY: Petr Harant				
PAGE DESCRIPTION: 4.a - Air conditioner wiring diagram						
TITLE / DESCRIPTION: Vertiv™ SmartRow™ 2: 5x IT Rack 30kW						
REVISION: 505 N. CLEVELAND AVE WESTERVILLE OH 43081						
DATE (LATEST REV.) 01.09.2026						
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POE Locks -SR2 for 30K (5*ITRack)

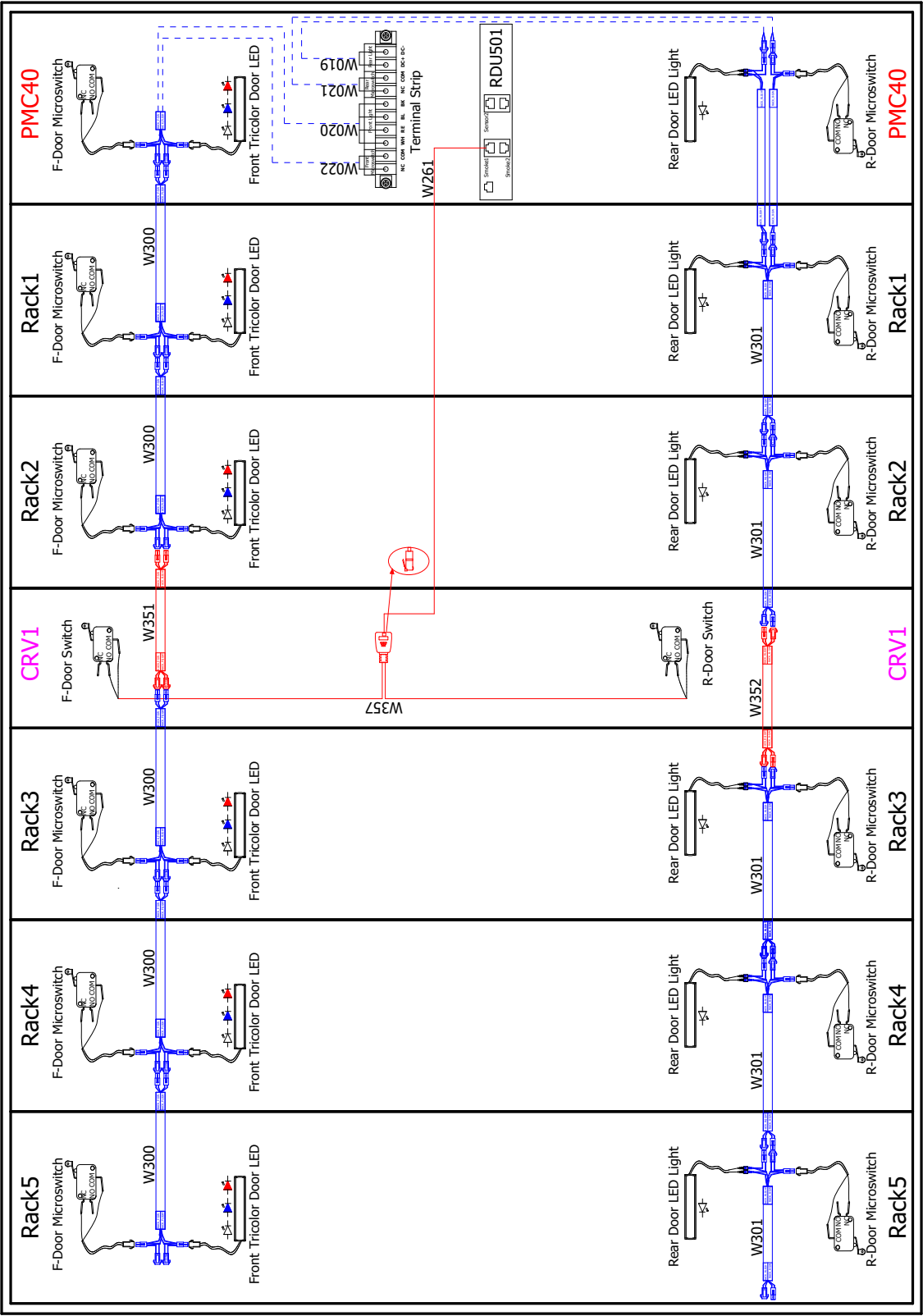


Rear View

----- Factory connected cables
----- Cables connected at assembly

SHEET NO. 11 / 16		DRAWN BY: Nilesh Patil		DWG NO. SR2N05030NAB1	 VERTIV™
CHANGE NO.		APPROVED BY: Petr Harant			
PAGE DESCRIPTION: 4.b - Intelligent lock wiring diagram		TITLE / DESCRIPTION: Vertiv™ SmartRow™ 2: 5x IT Rack 30kW			
		REVISION: 505 N. CLEVELAND AVE WESTERVILLE OH 43081			
		DATE (LATEST REV.) 01.09.2026			

LED & Micro Switch -SR2 for 30K (5*ITRack)

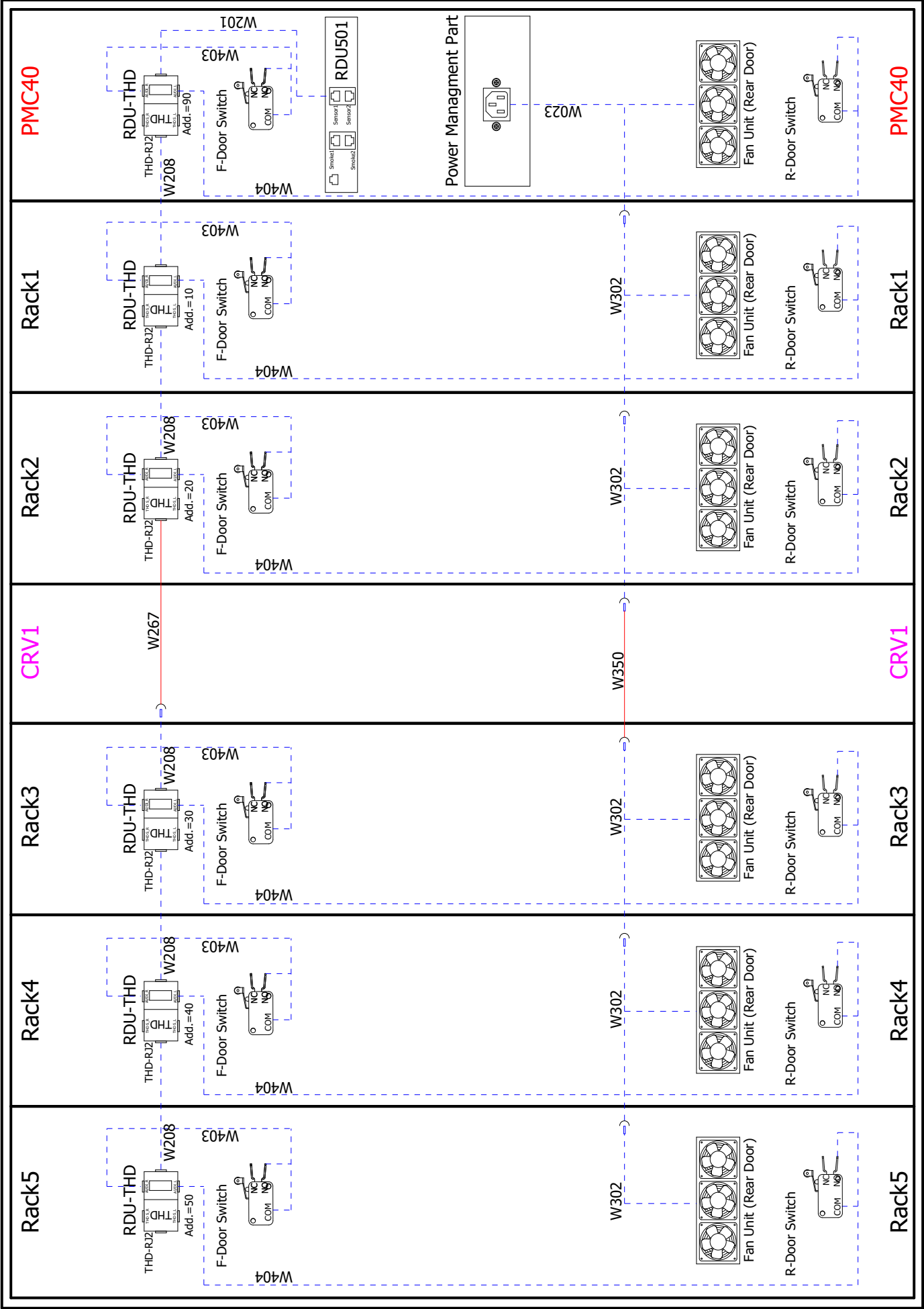


Rear View

- Factory connected cables
- Cables connected at assembly

SHEET NO. 12 / 16		DRAWN BY: Nilesh Patil		DWG NO. SR2N05030NAB1	 VERTIV™
CHANGE NO.		APPROVED BY: Petr Harant			
PAGE DESCRIPTION: 4.c - LED&Micro Switch wiring diagram		TITLE / DESCRIPTION: Vertiv™ SmartRow™ 2: 5x IT Rack 30kW			
DATE (LATEST REV.) 01.09.2026				REVISION: 505 N. CLEVELAND AVE WESTERVILLE OH 43081	

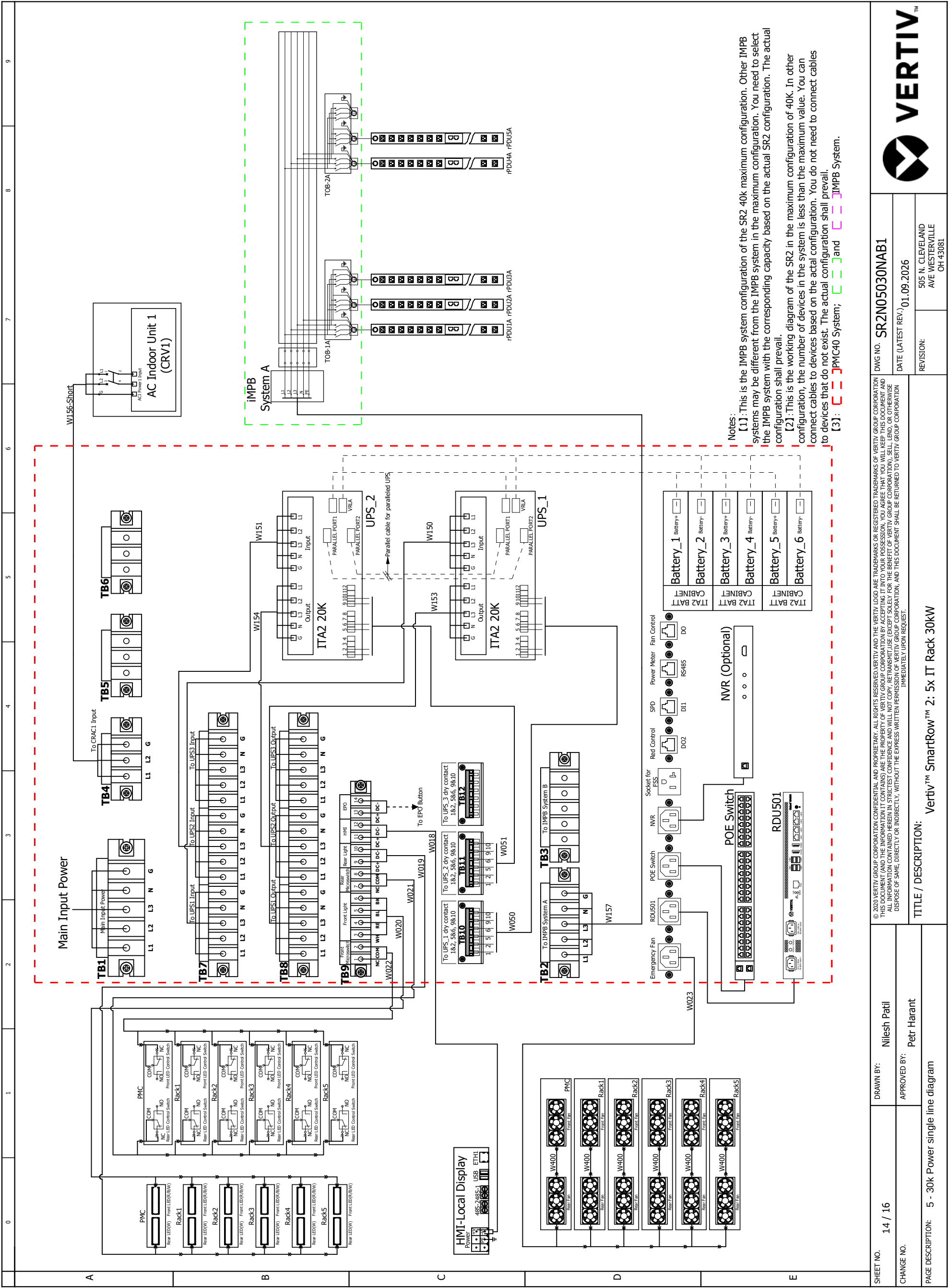
Fans & THDs -SR2 for 30K (5*ITrack)



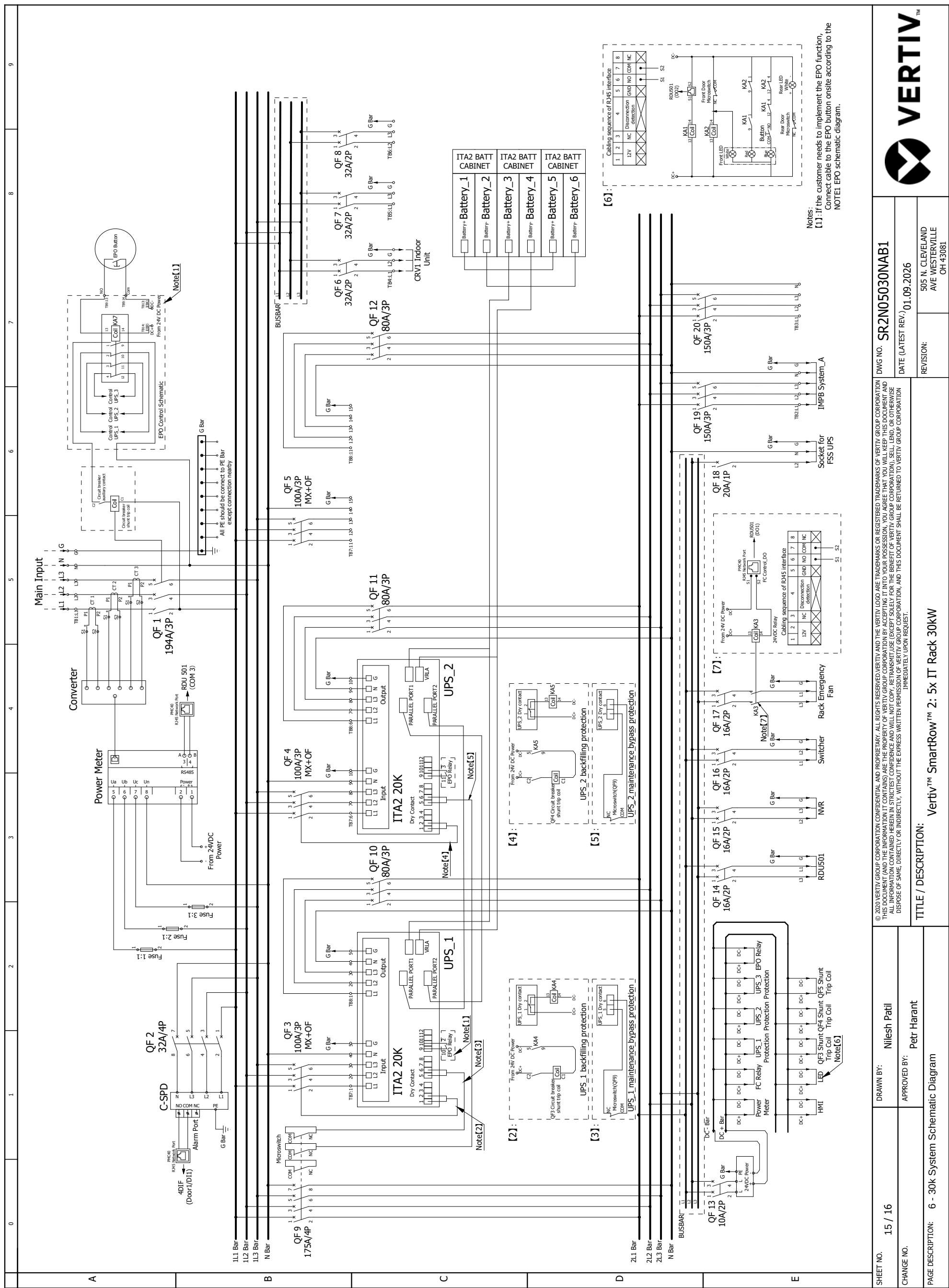
Rear View

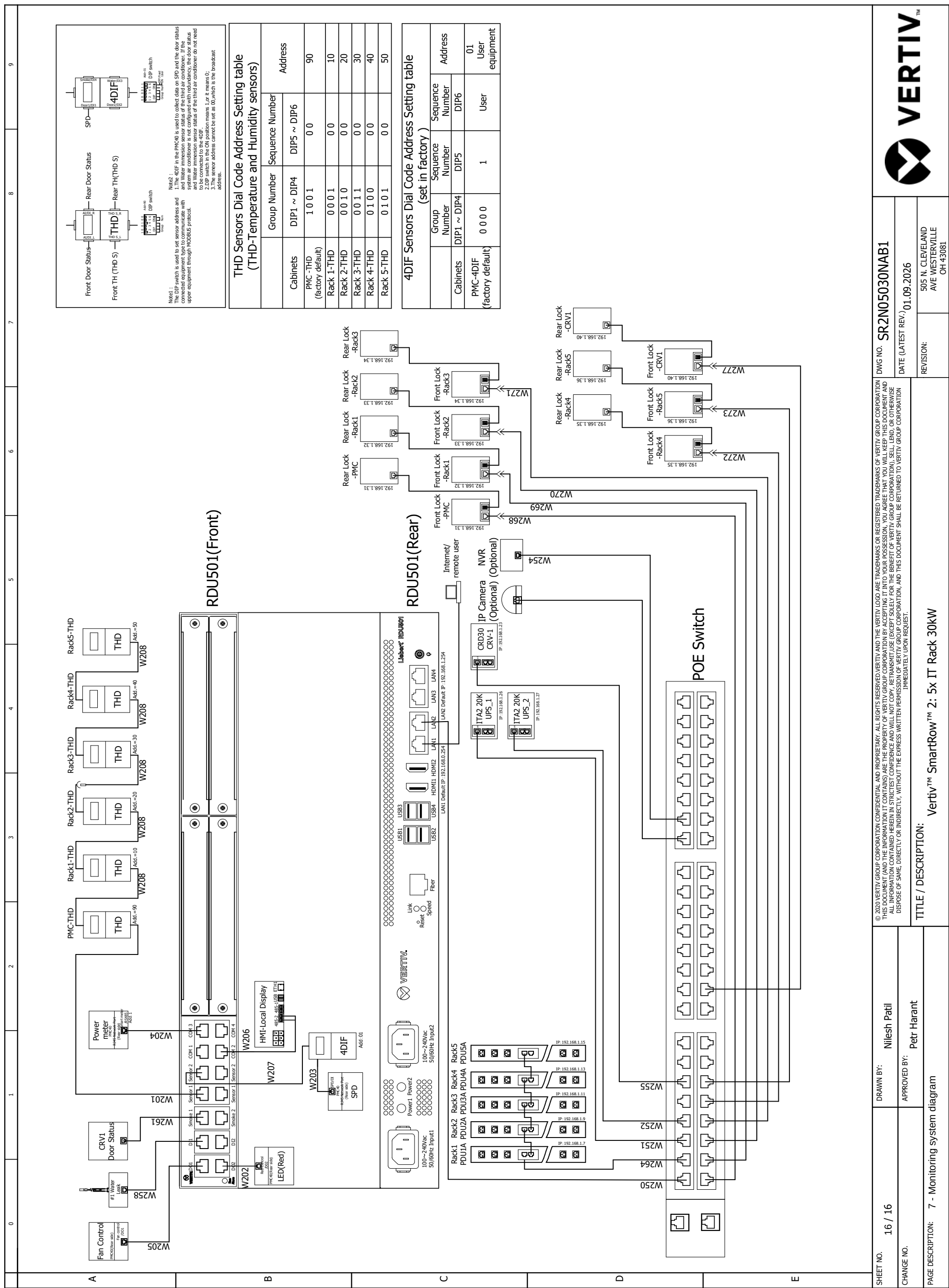
Factory connected cables
Cables connected at assembly

SHEET NO. 13 / 16		DRAWN BY: Nilesh Patil		DWG NO. SR2N05030NAB1	DATE (LATEST REV.) 01.09.2026	REVISION:	505 N. CLEVELAND AVE WESTERVILLE OH 43081
CHANGE NO.		APPROVED BY: Petr Harant					
PAGE DESCRIPTION: 4.d - THD& Emergency Fan wiring diagram							
TITLE / DESCRIPTION: Vertiv™ SmartRow™ 2: 5x IT Rack 30kW				© 2020 VERTIV GROUP CORPORATION. CONFIDENTIAL AND PROPRIETARY. ALL RIGHTS RESERVED. VERTIV AND THE VERTIV LOGO ARE TRADEMARKS OR REGISTERED TRADEMARKS OF VERTIV GROUP CORPORATION. THIS DOCUMENT (AND THE INFORMATION IT CONTAINS) ARE THE PROPERTY OF VERTIV GROUP CORPORATION. BY ACCEPTING IT INTO YOUR POSSESSION, YOU AGREE THAT YOU WILL KEEP THIS DOCUMENT AND THE INFORMATION IT CONTAINS CONFIDENTIAL AND PROPRIETARY, AND YOU WILL NOT REPRODUCE, COPIY, DISTRIBUTE, DISCLOSE, OR OTHERWISE MAKE AVAILABLE TO ANY OTHER PERSON THE CONTENTS OF THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN WITHOUT THE EXPRESS WRITTEN PERMISSION OF VERTIV GROUP CORPORATION, AND THIS DOCUMENT SHALL BE RETURNED TO VERTIV GROUP CORPORATION IMMEDIATELY UPON REQUEST.			
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CHANGE NO.				APPROVED BY:		Petr Harant											
PAGE DESCRIPTION:				5 - 30k Power single line diagram				TITLE / DESCRIPTION:				Vertiv™ SmartRow™ 2: 5x IT Rack 30kW					
												REVISION:				505 N. CLEVELAND AVE WESTERVILLE OH 43081	
												DATE (LATEST REV.)				01.09.2026	
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4. Field Supplied Cable & Part List

[illegible]

Technical drawing of a VERTIV MSR2-NR6P server rack, showing front, rear, top, and side views with dimensions in inches and millimeters.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES (MM)
2. FRONT AND REAR DOOR WITH THE GLASS AND INTELLIGENT LOCKS.
3. SWING RADIUS OF 120° (FRONT AND REAR DOORS).
4. EACH RACK HAS FOUR FEET BOLT AND ROLL WHEELS;
5. ON THE BOTTOM FRONT DOOR SIDE, THERE IS A EMERGENCE FAN UNIT(3 FANS) ON THE TOP OF REAR DOOR SIDE, THERE IS A EMERGENCE FAN UNIT(3 FANS);
6. ON THE TOP FRONT FRAME SIDE THERE IS A TRI-COLOR LED AND MICRO SWITCH; ON THE TOP REAR FRAME SIDE, THERE IS A WHITE COLOR LED AND MICRO SWITCH.

VERTIV

MSR2-NR6P

DWG. NO. **MSR2-NR6P**

DATE (LATEST REV.)

REVISION 505 N. CLEVELAND AVE WESTERVILLE, OHIO 43082

1

2

FORM NO. DPN004659 REV - A

Technical drawing of a CRD30 PLENUM POE (Plenum Optical End) component, showing front, rear, and side views with dimensions and a table of specifications.

Dimensions:

- Overall length: 1945 mm
- Overall width: 1400 mm
- Overall height: 300 mm

Views:

- FRONT:** Shows the front face of the component with a central rectangular opening and mounting points.
- REAR:** Shows the rear face of the component with a central rectangular opening and mounting points.
- CRD30:** A detail view of the CRD30 PLENUM POE component, showing its internal structure and mounting points.

Table of Specifications:

Allgemeintoleranzen General tolerances		Oberfläche Finish		Werkstoff / Material		Gewicht: Weight :	
ISO 2768-mK							
Drawn	29.4.2025	Name					
Checked	29.4.2025	Vodolan					
Approved		Franc					
		Bezeichnung / Description					
		CRD30 PLENUM POE					
		Zeichnungs-Nr. / Drawing no.					
		60210827DRW					
		Verwendet in / Used in					
		Meisstab Scale					
		2:25					
		Blatt/Sheet					

VERTIV
Vertiv Integrated Systems GmbH
Mariakirchner Straße 38
94424 Amstorf, Germany

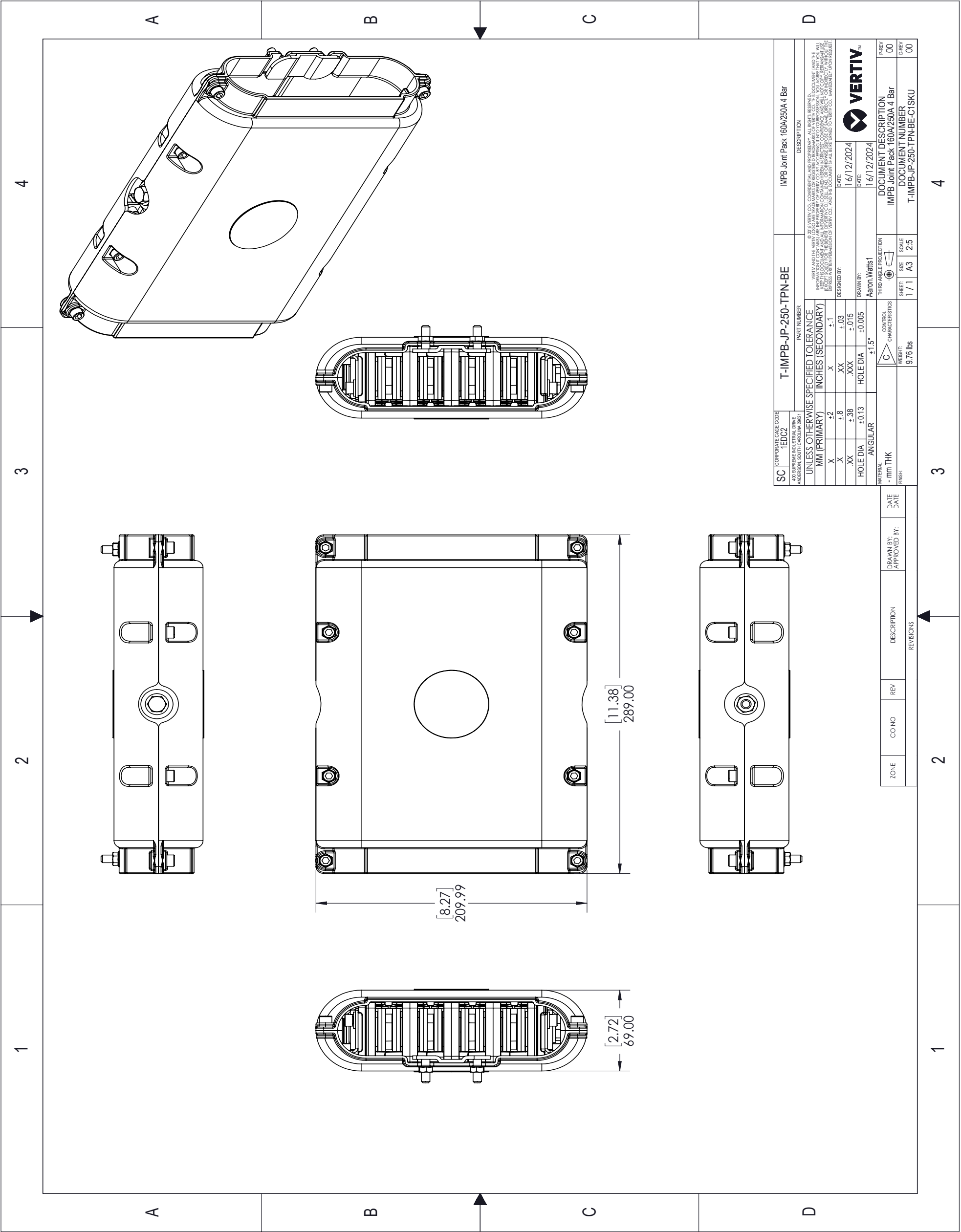
Rev. Change Date Name

C	CO-1128442	21.10.25	Pucelik
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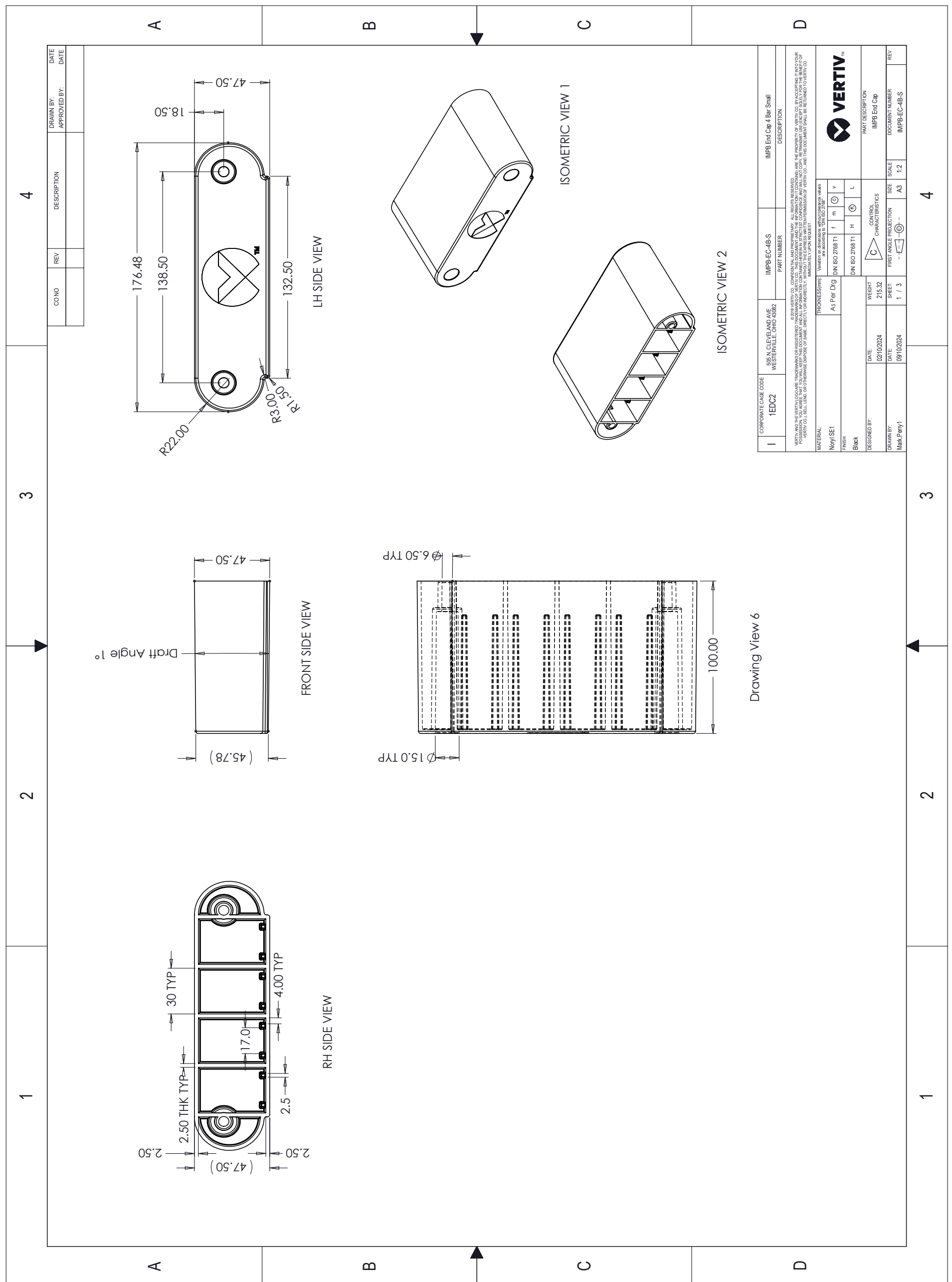
Platline:

RoHS Compliant

10. JOINT PACK (T-IMPB-JP-250-TPN-BE)



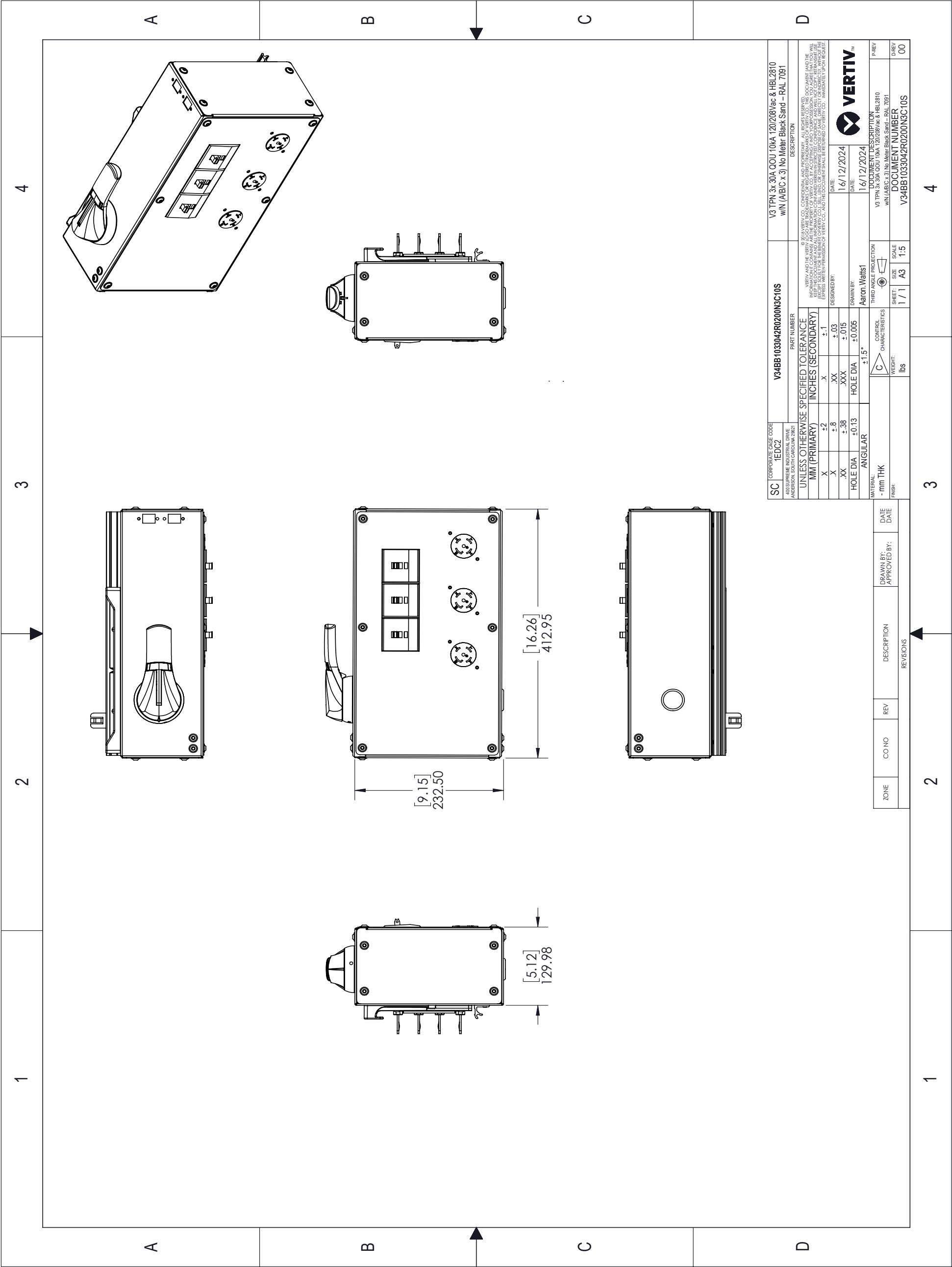
11. END CAP (IMPB-EC-4B-S)



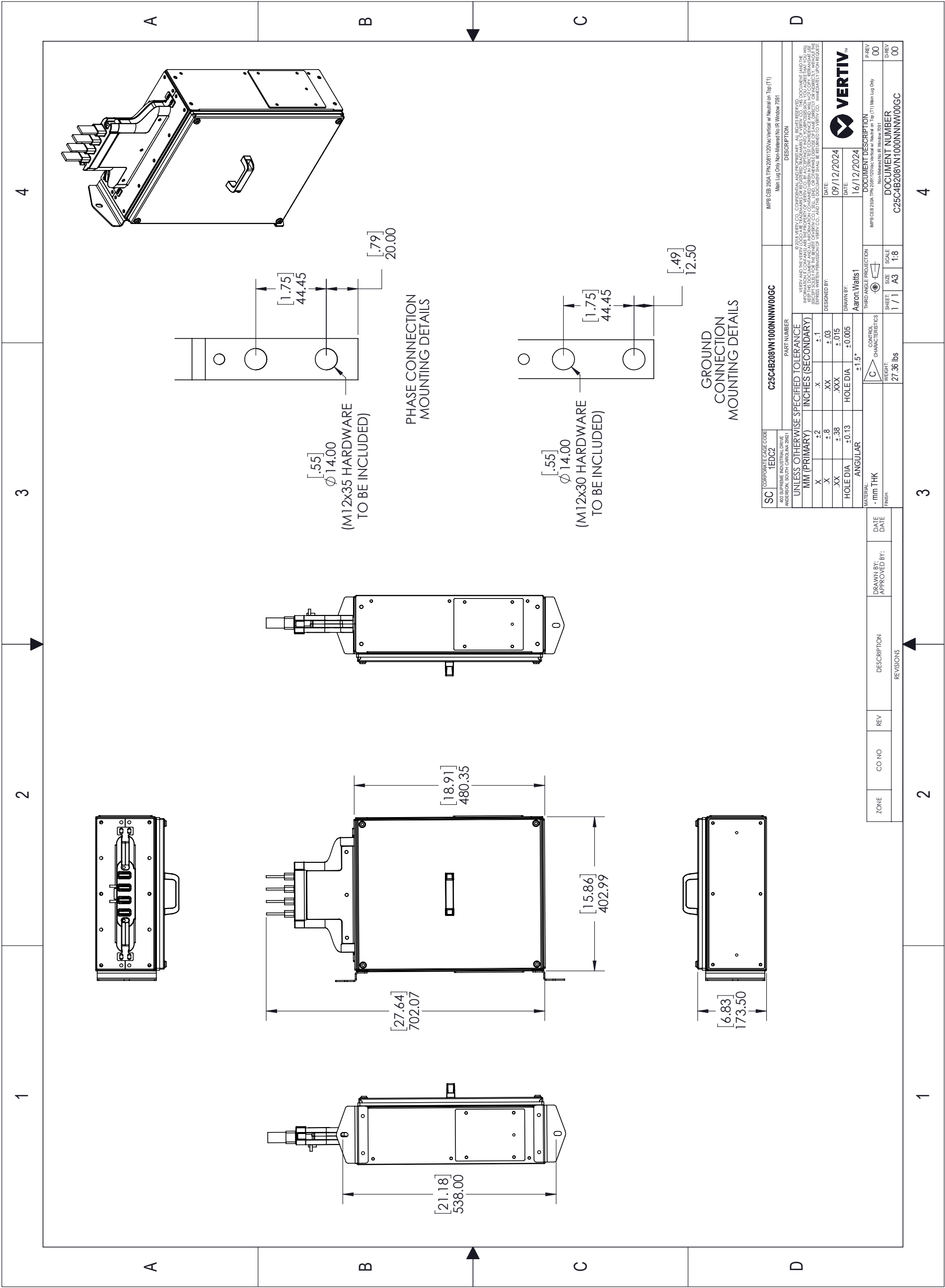
12. ROOF BRACKETS (C1 SKU IMPB-RMB-GA-001)

[illegible]

13. V3 TPN 3x 30A (C1 SKU V34BB1033042R0200N3C10S)



14. IMPB CEB 250A TPN (C25C4B208VN2000NNNW00GC)



SC	CORPORATE CASE CODE 1EDC2		PART NUMBER C25C4B208VN1000NNNW00GC		IMPB CEB 250A TPN 208V/120Vac Vertical w/ Neutral on Top (T1) Main Lug Only Non-Measured No R Window 7931			
	400 SUPREME INDUSTRIAL DRIVE ANDERSON, SOUTH CAROLINA 29611		DESCRIPTION					
UNLESS OTHERWISE SPECIFIED TOLERANCE			VERTIV AND VERTIV CO. CONFIDENTIAL AND PROPRIETARY. ALL RIGHTS RESERVED. YOU AGREE THAT THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF VERTIV CO. BY ACCEPTING IT AND BY USING IT, YOU WILL BE DEEMED TO HAVE AGREED TO THE TERMS AND CONDITIONS OF THIS AGREEMENT. NO PART OF THIS DOCUMENT SHALL BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN PERMISSION OF VERTIV CO. AND THE DOCUMENT SHALL BE RETURNED TO VERTIV CO. IMMEDIATELY UPON REQUEST.					
MM (PRIMARY)			INCHES (SECONDARY)		DESIGNED BY:			
X			X		DATE:			
X			X		DATE:			
X			X		DRAWN BY:			
X			X		DATE:			
HOLE DIA.			HOLE DIA.		DRAWN BY:			
ANGULAR			ANGULAR		DATE:			
- mm THK			- mm THK		DRAWN BY:			
FINISH			FINISH		APPROVED BY:			
CONTROL CHARACTERISTICS			CONTROL CHARACTERISTICS		ZONE			
THIRD ANGLE PROJECTION			THIRD ANGLE PROJECTION		CO NO			
WEIGHT:			WEIGHT:		REV			
27.36 lbs			27.36 lbs		DESCRIPTION			
1 / 1			1 / 1		REVISIONS			
A3			A3		ZONE			
1.8			1.8		CO NO			
C25C4B208VN1000NNNW00GC			C25C4B208VN1000NNNW00GC		REV			
00			00		DESCRIPTION			
00			00		REVISIONS			

[illegible]

16. SCOPE OF WORK

SMART ROW 2 – ASSEMBLY & START-UP

SERVICE SUMMARY

Feature	Detail
On-site Service	One site trip within the 48 contiguous states to start-up the system. Visit to be scheduled by the customer between 8am-5pm, Monday-Friday (excluding national holidays).
Customer Support	Includes access to the Customer Resolution Center (1-800-543-2378) and the Vertiv Customer Services Network Online Internet portal for extent of product warranty.
Consolidation	The SmartRow2 includes numerous shippable units (typically pallets or boxes) that originate from multiple factories and suppliers. Vertiv consolidates these items into a single customer shipment and reduces the likelihood of shippable units being lost at the customer site. This benefits the customer by relieving the burden of keeping track of multiple partial shipments.
Inside Delivery	Vertiv Service will move the shippable units from the delivery truck to the Staging Area. Vertiv Services will unpackage the shippable units and remove/dispose of the packaging material so that it is ready for assembly. Vertiv will verify that all material on the sales order has been received.
Project Management	Included with Consolidation and Inside Delivery. Vertiv will assign a project manager for the project. The Project Manager will supervise the Consolidation and Inside Delivery Process and communicate hardware shipment schedules with the customer.
Assembly	SmartRow2 is assembled onsite by Vertiv factory-trained and authorized technicians equipped with Vertiv. Proprietary tools and software. Vertiv CEs and Vertiv Partners are the only approved OEM service providers for Vertiv products. These technicians are supervised by a Site Manager who also gathers site- specific requirements like safety and work procedures.
Factory Startup	Warranty inspection and startup validates the warranty and initializes the warranty coverage period.

SERVICE PERFORMED

Consolidated Shipment

Shippable units may be available at time of order or built-to-order with a lead time. Vertiv safely stores these items in-warehouse until the customer is ready to receive the SmartRow2 in a single shipment. Other limits may apply; see Assumption and Clarifications as applicable for more details.

Inside Delivery

Vertiv Services will deliver the shippable units from the delivery truck to the Staging Area. Vertiv Services will unpackage the shippable units and remove/dispose of the packaging material so that it is ready for assembly. Vertiv will verify that all material has been received.

Change order option:

- There must be an appropriate loading dock with continuous, level floor from the dock to the staging area. If the shippable units must be moved up/downstairs, the customer must provide a suitable elevator, or charges for special rigging will be incurred. If the customer does not have an appropriate loading dock, nominal charges may/ may-not apply for a lift-truck delivery.

Project Management

Vertiv will assign a project manager and a site manager for the project.
The Project Manager will supervise the Consolidation and Inside Delivery Process and communicate schedules with the customer.
The Site Manager will supervise the assembly, startup, warranty inspection and turn over the SmartRow2 to the customer.

Site-Specific Requirements

All personnel will be available for up to two hours per week for Site Access, Safety Training, and other site-specific requirements.

Change Order Option:

- Vertiv can quote a price for additional man-hours if 2 hours per week is insufficient.

Assembly

There shall be continuous, level floor between the Staging Area and the Installation Location so that heavy items can be moved via casters/pallet jacks.
Change Order Option:

- If there is not continuous level floor, the customer must provide or pay for any necessary lift/rigging equipment.

Vertiv PMC, including RDU501 SmartRow2 Controller/Display

Vertiv will position, level, and bay together the PMC as described in the submittal documents. The customer is responsible for providing primary electrical power to the PMC.

Vertiv will program and configure the SmartRow2 RDU501 controller/display. This includes setting IP addresses so that the customer can monitor the system status remotely.

Change Order Option:

- Vertiv will quote IP addressing of equipment on the customer network, but this would be done by other personnel and scheduled separately. This is outside the scope of SmartRow2 assembly.

Vertiv IT Rack(s)

Vertiv will position, level, and bay together the Vertiv IT Racks as described in the submittal documents. Vertiv will not populate racks with customer IT gear, including blanking panels, servers, shelves, etc.

The customer must define addressing conventions (1,2,3,4, right-to-left or left-to-right) prior to start of work.

Cable Trays

Vertiv will install the SmartRow2 cable trays that are included with the SmartRow2 solution as described in the submittal documents.

Liebert® CRV's, Temperature Sensors, Modbus cables, and associated Plenums

Vertiv will position and level the Liebert® CRV and attach the associated plenums to provide cooling to the SmartRow2.

Vertiv will connect the necessary temperature sensors.

The customer is responsible for piping and primary power to the CRV along with connecting CANBus cable between the CRV and heat rejection. All specific requirements (such as piping traps and proper electrical grounding) for correct product installation are detailed in the product installation manual.

After the SmartRow2 is assembled and the Liebert® CRV is piped and powered by the customer in accordance with the product installation manual, Vertiv will perform a factory warranty inspection along with the rest of the SmartRow2.

Liebert® MC / CCD Condensers for Liebert® CRVs

The customer is responsible for installing the associated heat rejection. This includes primary power, CANBus communication wire, piping, refrigerant charging, and all other tasks in the Installation Manual. Any/all penetration points in the walls/ceilings/floors for any wiring or piping are also the customer's responsibility.

Rack PDUs

Vertiv will install and connect all rack PDUs (if applicable) including GXT5 power extensions (if applicable) as described in the submittal documents.

Liebert® GXT5 Single Phase UPS

Vertiv will install and connect all Liebert® GXT5 UPS's and connect power within the PMC cabinet and output to the PDUs as described in the submittal documents.

Additionally, Vertiv will install ancillary equipment such as Maintenance bypass and PD2-103 cabling and connectors if not already preinstalled.

After the SmartRow2 is assembled and Primary Power to the SmartRow2 is provided by the customer, Vertiv will perform factory startup of all GXT5 equipment along with the rest of the SmartRow2.

Switch

Vertiv will install and connect the switch within the PMC cabinet. as described in the submittal documents.

Firmware Updates

Vertiv will update firmware of any/all units to the current revision level. Shippable units are sourced globally, and firmware evolves as products may be in stock with prior revisions.

Wiring

Vertiv will run all necessary wiring for power and communication between cabinets as part of assembly. This includes setting IP/DIP switch settings for proper communication between the device and the PMC.

Accessories

The SmartRow2 is available with lights, door locks/sensors, temperature sensors that Vertiv will connect and install. Services associated with cameras are sold separately and out-of-scope for the SmartRow2 Assembly

RDU Monitor SmartRow2 mobile application.

Services associated with the RDU Monitor SmartRow2 mobile applications are quoted separately and out-of-scope for SmartRow2 assembly.

Fire Suppression Cabinet Assembly (if Applicable)

Vertiv will unpackage the Fire Suppression cabinet so that it is ready for installation.

Position level and bolt together the Fire Suppression cabinet to the adjoining cabinets.

Ensure all the wirings are connected, according to the information available in the submittal documents.

Install the piping in all the other cabinets in accordance with system drawings.

CUSTOMER RESPONSIBILITIES

In order to provide timely, accurate and thorough execution of the services described herein, Vertiv requests the following:

- Point of Contact: Provide an authorized point of contact(s), specific for the scope of work, for scheduling and coordination purposes.
- Scheduling: Make dates available for scheduling service. All visits must be requested 4 weeks in advance for assembly and 10 days for startup/warranty-inspection of need by contacting the Vertiv Project Manager. Site must be available for 5 consecutive business days. Customer may choose to pay for premium time if weekend work is necessary.
- Site Access: Prior to time of scheduled work, provide site access including any customer required escort, security clearance, safety training and badging for Vertiv personnel.
- Equipment Access: Convenient access to the equipment covered by the Scope of Work. Prior to scheduled time of work, notify Vertiv personnel of any special requirements for equipment access including lifts, ladders, etc.
- Shutdown: Service may require shutdown of load to ensure electrical connection integrity.
- Notification: If for any reason the work cannot be performed during scheduled time, notify Vertiv personnel 24-hours prior to scheduled event.
- Provide Method of Procedure (MOP) requirements/ templates, and required review period(s)

ASSUMPTIONS AND CLARIFICATIONS

- Vertiv will cover one month of storage costs as part of the consolidation service. If the original ship date is changed due to non-Vertiv delays, the customer is liable for any costs associated with the extended storage time.
- Vertiv start-up validates product warranty.
- Defects or damage resulting from installation not performed by Vertiv are not covered.
- Parts and Labor coverage is in accordance with Product Warranty. If a modified warranty is purchased, terms default to that specific package.
- Any customer site visit is limited to eight (8) hours per visit. Any time beyond forty (40) hours/wk or eight (8) hrs/day or additional Startup visits will be billed separately.
- Expenses incurred due to delays that are beyond the control of Vertiv may be billed at cost.
- Startup visit must be scheduled confirmation of proper installation (if Vertiv not involved with installation).
- This pricing excludes any load bank testing. This can also be quoted separately if required.
- Pricing excludes activities associated with 3rd party commissioning.
- Pricing excludes any type of circuit breaker NEMA testing. This can also be quoted separately if required.
- Customer/Installing contractor is responsible for providing elevated access as necessary.
- Any additional requests beyond the scope of this document will be billed separately by Vertiv.
- Vertiv will not perform physical changes to the site building (such as drilling holes, etc.)

TERMS AND CONDITIONS

Subject to all Terms & Conditions as noted in the Vertiv Terms & Conditions or the terms of a Master Agreement between the parties, if any, shall apply.

SCOPE OF WORK

SMART ROW 2 – FIRE SUPPRESSION

START-UP & OPTIONAL SERVICES

SERVICE SUMMARY

Feature	Detail
On-site Service	One site trip within the 48 contiguous states to start-up the system. Visit to be scheduled by the customer between 8am-5pm, Monday-Friday (excluding national holidays).
Service Professional	Performed by Vertiv factory-trained and authorized technician equipped with Vertiv Proprietary tools and software. Vertiv CEs and Vertiv Partners are the only approved OEM service providers for Vertiv products.
Permitting	Permits are the responsibility of the customer to see if one is required. Additional fees may apply and can vary based on the customer's location. (see Assumptions and Clarifications).
Optional services	Optional system integrity services can be requested by the customer as part of the startup and installation.

SERVICE PERFORMED

Fire Suppression Start-up:

1. Verify that 120V AC circuit has been ran to the fire suppression panel.
2. Verify all the items on the Fire Suppression readiness punch list have been completed and acknowledged.
3. Functionality test all input and output circuits for proper operation.
4. Complete the warranty inspection of the system.
5. Provide training to the customer on the operation of the Fire Suppression system.

Door Fan Test (if applicable):

1. Conduct a door fan test with the standardized Fan test system.
2. Measure the pressure retention rate and calculate the amount of air flowing through the Door fan.
3. Determine the total size of the air leaks (if any).
4. Provide the customer with the pressure test report.

Discharge Test (if applicable):

1. Replace the system cylinder with the Proinert test cylinder provided by the manufacturer.
2. Conduct a discharge test on the system.
3. Ensure that the oxygen level falls below 15% and maintains that level for a minimum of 10 minutes.
4. Place the system cylinder back into place and arm the system.
5. Provide the customer with a discharge test report.

CUSTOMER RESPONSIBILITIES

In order to provide timely, accurate and thorough execution of the services described herein, Vertiv requests the following:

- Point of Contact: Provide an authorized point of contact(s), specific for the scope of work, for scheduling and coordination purposes.
- Scheduling: Make dates available for scheduling service. All visits must be requested 10 business days in advance of need by contacting the Vertiv Customer Resolution Center at 1-800-543-2378.
- Site Access: Prior to time of scheduled work, provide site access including any customer required escort, security clearance, safety training and badging for Vertiv service personnel.
- Equipment Access: Convenient access to the equipment covered by the Scope of Work. Prior to scheduled time of work, notify Vertiv service personnel of any special requirements for equipment access including lifts, ladders, etc.
- Shutdown: Service may require shutdown of load to ensure electrical connection integrity.
- Notification: If for any reason the work cannot be performed during scheduled time, notify Vertiv service personnel 24-hours prior to scheduled event.

ASSUMPTIONS AND CLARIFICATIONS

- Assembly: The assembly of the Fire Suppression cabinet is included in the SmartRow2.
- Punch list: This document confirms system readiness and must be completed before startup. It is included in the submittal package.
- Permitting: The customer is responsible for any permits (if required), as it falls outside the original scope. While the process can be facilitated, the customer will be responsible for all permitting costs, including any optional services listed above.
- Maintenance: Per NFPA 2001, the FIKE Proinert IG-55 SHP Pro suppression system protecting the SmartRow2 shall be inspected on a semi-annual basis. These inspections are not only important in ensuring the included clean agent system is functionally operational but are necessary to qualify for any manufacturer warranties. Per the manufacturer's warranty guidelines, the equipment must be maintained on a semi-annual frequency by an authorized FIKE distributor commencing with the date of Startup.
- Optional Integrity testing: Manufacturer intends to provide both the integrity test services (Door fan test and Discharge test) at the customer's facility either directly or through a local Fike distributor. This pricing includes the necessary labor, equipment, and materials to complete this testing.
- Manufacturer does not guarantee a passing test after the system has been handed over to the customer and is not responsible for the patching and sealing of the enclosure if the cable and CRV penetrations have not been sealed.

TERMS AND CONDITIONS

Subject to all Terms & Conditions as noted in the Vertiv Terms & Conditions or the terms of a Master Agreement between the parties, if any, shall apply.



SmartRow 2

Scope of Work Checklist

Customer Name: _____

Project Name: _____

Project Number: _____

This document is to serve as a checklist to help identify and budget the various work activities involved with assembling and installing a SmartRow 2. It is the customers responsibility to ensure all tasks are assigned to partners which will result in a successful SmartRow 2 project.

Contact Vertiv for available local support resources to provide technical guidance as needed. Call 800 543-2378

The **X** indicates the responsible party for that task. Multiple **X**'s indicate shared responsibility.

This document is provided as a reference document and does not replace any product manuals or supporting documentation. Always read all product documentation before performing any work.

Customer (Name) *includes responsibility for Mechanical, Electrical, and/or General Contractors as needed :* _____

Project Management: _____

Assembly Team Lead: _____

Consolidator: _____

Vertiv Warranty Inspection Tech: _____

Vertiv Sales Rep (LVO): _____

	Customer	Local Vertiv Sales Rep	Project Management	Assembly Team	Consolidator / Inside Delivery	Flagship/FIKE Rep	Vertiv Warranty Inspection Tech	Tasks
1	Pre-Sale Activities							
1,01	X	X	☐	☐	☐	☐	☐	Perform / arrange Site Visit to qualify deployment. Add any incremental site-specific Tasks in Section 6 of this checklist.
1,02	X	X	☐	☐	☐	☐	☐	Assess whether the building has enough power available to support the SmartRow 2 and heat rejection.
1,03	X	X	☐	☐	☐	☐	☐	Advise if a floor loading analysis should be conducted.
1,04	☐	X	☐	☐	☐	☐	☐	Ensure the customer understands and adheres to the minimum and maximum SmartRow 2 heat load and rack density limits.
1,05	X	X	☐	☐	☐	☐	☐	Assess if a crane will be required to locate the heat rejection on a roof and plan accordingly.
1,06	X	X	☐	☐	☐	☐	☐	If a freight elevator will be used, confirm adequate lifting capacity and dimensional clearances (PMC cabinet is typically the heaviest piece of equipment at 1998mm height, 1400mm depth, 600mm width and up to 1,600 lb weight.)
2	Post Sale, Equipment Pre-Delivery Activities							
2,01	☐	X	☐	☐	☐	☐	☐	Ensure every task in this Trade SOW Guide is assigned to at least one responsible party (Marked by X). This guide is specific to the SmartRow 2.
2,02	☐	X	☐	☐	☐	☐	☐	Send a completed copy of this document to all involved parties.
2,03	☐	X	X	☐	☐	☐	☐	Ensure all trades receive a current and accurate manual and set of submittals.
2,04	☐	X	☐	☐	☐	☐	☐	Acknowledge all tasks listed in the Trade SOW Checklist are completed by all the responsible parties.
2,05	X	X	☐	☐	☐	☐	☐	Verify whether permits are necessary for the installation of the Fire Suppression System.
2,06	X	X	X	☐	☐	☐	☐	Asses whether the customer requires any onsite system integrity tests as part of the Fire suppression System Startup activity.
2,07	X	X	☐	☐	☐	☐	☐	Complete SmartRow 2 Delivery Service (Inside Delivery) checklist and return to factory within 10 days of PO receipt (Document MBFM 7160-10 in submittal packet).
2,08	X	X	☐	☐	☐	☐	☐	Ensure indoor space meets all SmartRow 2 requirements (see SmartRow 2 manual); identify any issues and resolve: (1) Floor surface must be level and continuous (expansion joints sealed, raised floor tile gaps sealed, no floor drains, etc). (2) Mezzanine/roof can support outdoor heat rejection (if applicable) (3) Adequate service, egress and electrical clearances (see submittal packet) (4) Room containing SmartRow 2 maintained year-round within 0°C – 40°C. (5) The room and floor must be clean and free of debris. (6) Ensure there is at least 24 inches clearance above the rack top plates (7) Ensure no part of the SmartRow 2 will be closer than 18 inches to a sprinkler head (per NFPA 13)
2,09	X	X	☐	☐	☐	☐	☐	Make sure condenser is within 300 equivalent feet (see cooling equipment manuals for calculation guidance).Outdoor Condenser Installation. Follow Installer/User Guide. (1) Condenser is bolted, mounted and leveled (2) Provide and install (2) low voltage twisted pair wires between each indoor cooling unit and outdoor heat rejection (condenser / drycooler) for CANbus communication and dry contact closure. (3) This includes qty (3) vacuum pulls of the refrigerant lines (oil must be changed in the vacuum pump between each pull, and readings should be 250 microns or less. Provide picture with date/time to confirm) (4) Refrigerant lines charged with freon (5) The outdoor piping are wrapped in aluminum and braced
2,10	X	X	☐	☐	☐	X	X	Confirm that the nearest drain for condensate is within the cooling unit's pump head limitations (see cooling equipment manuals).
2,11	X	X	☐	☐	☐	☐	☐	Provide and install utility over-current protection and circuit for each outdoor condenser/drycooler when applicable.
2,12	X	X	☐	☐	☐	☐	☐	Provide and install utility over-current protection and circuit for main input row connection in PMC.
2,13	X	X	X	☐	☐	☐	☐	Schedule delivery. If new construction, installation is recommended before office furniture is installed but after building construction is completed. Permanent, continuous power must be available.
2,14	☐	X	X	☐	☐	☐	☐	Schedule Vertiv Cooling System Warranty Inspection.
2,15	☐	X	X	☐	☐	☐	☐	Schedule Vertiv UPS System Warranty Inspection.

3	SmartRow 2 Assembly							
3,01	☐	☐	☐	☐	X	☐	☐	Receive shipment(s).
3,02	☐	☐	☐	☐	X	☐	☐	Bring equipment from truck into room, unpackage and remove debris (included with SmartRow 2 Delivery Service).
3,03	☐	☐	☐	☐	X	☐	☐	Review equipment for shipping damage (recommended the same party who receives the equipment).
3,04	☐	☐	☐	X	☐	☐	☐	Assemble, gasket and level PMC unit per submittal package.
3,05	☐	☐	☐	X	☐	☐	☐	Assemble, gasket and level indoor cooling unit(s) per submittal package.
3,06	☐	☐	☐	X	☐	☐	☐	Assemble, gasket and level racks per submittal package.
3,07	☐	☐	☐	X	☐	☐	☐	Assemble and attach rubber cable grommets.
3,08	☐	☐	☐	X	☐	☐	☐	Connect door switch wire and rack lighting wire harnesses.
3,09	☐	☐	☐	X	☐	☐	☐	Install cable troughs on top of equipment.
3,10	☐	☐	☐	X	☐	☐	☐	Neatly connect and route CANbus communication cables and address rack temperature 2T-sensors (set dip switches).
3,11	☐	☐	☐	X	☐	☐	☐	Neatly route the rack temperature 2T temperature probes into position in front of EIA rails.
3,12	☐	☐	☐	X	☐	☐	☐	Neatly route and connect all Ethernet cables between SmartRow 2 Network vNSA switch, and all UPS and cooling unit Unity monitoring cards, primary rack-PDU RPC2 monitoring cards, and cooling unit teamwork connections.
3,13	☐	☐	☐	X	☐	☐	☐	Neatly route and connect all rack-PDU array Ethernet cables.
4	SmartRow 2 Installation including the Fire Suppression System							
4,01	☐	☐	☐	X	☐	☐	☐	Install PMC to MBC (20KVA) or PMC to UPS (10KVA) interconnect cabling (cables provided with SmartRow 2)
4,02	☐	☐	☐	X	☐	☐	☐	Install UPS to MBC (20KVA) interconnect cabling (cables provided with SmartRow 2) or Mount POD (Included in SmartRow 2) on UPS (10KVA).
4,03	☐	☐	☐	☐	☐	☐	X	Connect low voltage wires to indoor cooling unit and outdoor heat rejection.
4,04	X	☐	☐	☐	☐	☐	☐	Provide and connect condensate drain line to each indoor cooling unit.
4,05	X	☐	☐	☐	☐	☐	☐	Connect utility high voltage building feed to main input in PMC.
4,06	X	☐	X	☐	☐	☐	☐	Ensure the handover document is completed and acknowledged by all responsible parties if startup activities are scheduled at different times.
5	SmartRow 2 Startup							
5,01	☐	☐	☐	X	☐	☐	☐	Ensure all rubber cable grommets are installed
5,02	☐	☐	☐	☐	☐	☐	X	Cooling system Warranty Inspection.
5,03	☐	☐	☐	☐	☐	☐	X	UPS system Warranty Inspection.
5,04	☐	☐	☐	☐	☐	☐	X	Configure RDU501 Controller
5,05	☐	☐	☐	X	☐	☐	☐	Close breakers on rack-PDUs.
5,06	☐	☐	☐	X	☐	☐	☐	Perform final SmartRow 2 functional test (Door switches, backup fans, HMI).
5,07	☐	☐	☐	X	☐	☐	☐	Clean entire SmartRow 2, inside and outside. When cleaning see-through Plexiglas doors follow instructions in manual to avoid scratching.
5,08	☐	☐	☐	X	☐	☐	☐	Ensure the SmartRow 2 Startup Form has been completed.
6	Fire Suppression System Start up							
6,01	X	X	☐	X	☐	X	☐	Ensure all the required parties are present on site for the installation of the Fire Suppression System.
6,02	☐	☐	☐	X	☐	☐	☐	Position, level and bolt together the Fire suppression cabinet to the rest of the row.
6,03	☐	☐	☐	X	☐	☐	☐	Ensure all the wiring is connected, according to the information available in the submittals.
6,04	☐	☐	☐	X	☐	☐	☐	Install the piping in all the other cabinets.
6,05	X	X	☐	☐	☐	X	☐	Ensure the Punch list items are completed and signed by the responsible parties.
6,06	X	X	☐	☐	☐	X	☐	Review the closeout document with the information about the pre-test conducted at Flagship.
6,07	☐	☐	☐	☐	☐	X	☐	Validate the warranty of the Fire supression system.
6,08	☐	☐	☐	☐	☐	X	☐	Verify that all components are functioning as intended.
6,09	X	☐	☐	☐	☐	X	☐	Provide training to the customer on the system.
7	Optional - Fire Suppression System Integrity Test (upon customer request)							
7,01	☐	☐	☐	☐	☐	X	☐	Conduct a door fan test with the standardized Fan test system.
7,02	☐	☐	☐	☐	☐	X	☐	Measure the pressure retention rate and calculate the amount of air flowing through the Door fan.
7,03	☐	☐	☐	☐	☐	X	☐	Determine the total size of the air leaks.
7,04	☐	☐	☐	☐	☐	X	☐	Provide the customer with the pressure test report.
7,05	☐	☐	☐	☐	☐	X	☐	Replace the system cylinder with the Proinert test cylinder provided by the manufacturer.
7,06	☐	☐	☐	☐	☐	X	☐	Conduct a discharge test on the system.
7,07	☐	☐	☐	☐	☐	X	☐	Ensure that the oxygen level falls below 15% and maintains that level for a minimum of 10 minutes.
7,08	☐	☐	☐	☐	☐	X	☐	Place the system cylinder back into place and arm the system.
7,09	☐	☐	☐	☐	☐	X	☐	Provide the customer with a discharge test report.