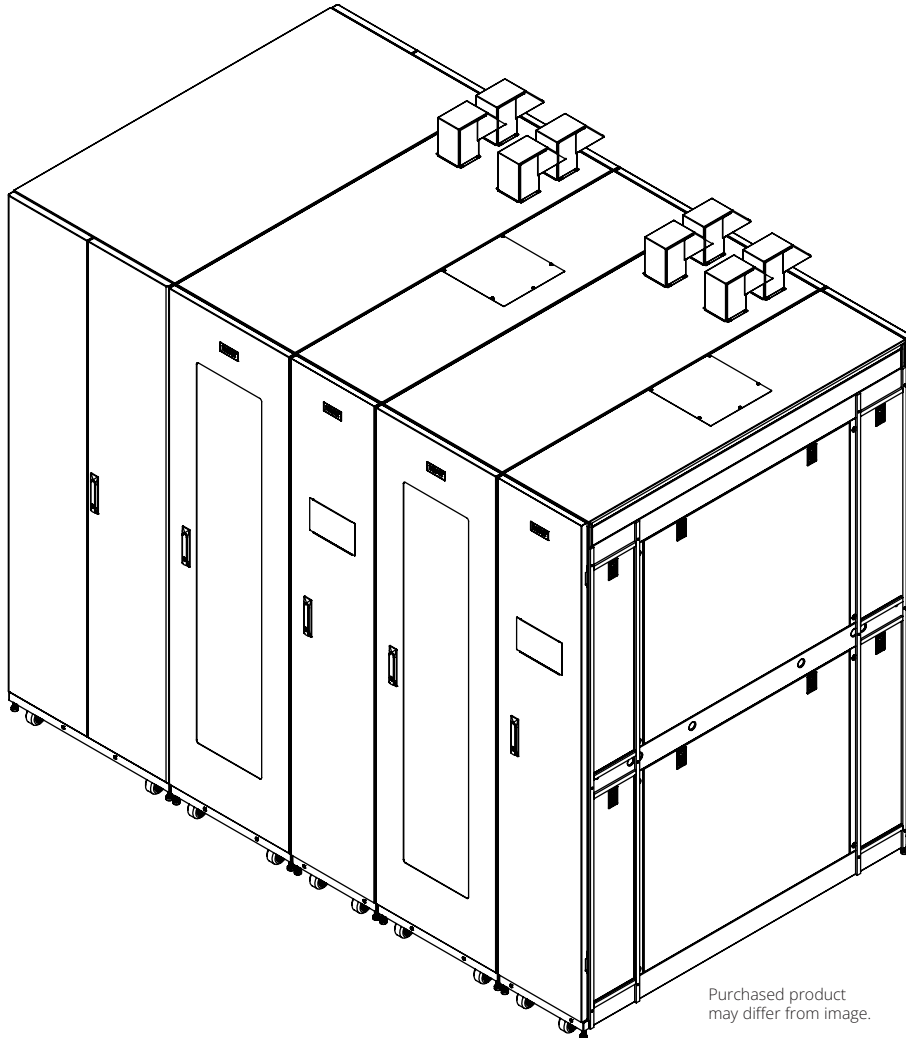


## SmartRack® Modular Data Centers



Purchased product may differ from image.

Este manual está disponible en español en la página de Eaton:  
[Eaton.com/support](http://Eaton.com/support)

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# 1. Important Safety Instructions



## SAVE THESE INSTRUCTIONS

All sections of this manual contain instructions and warnings that should be followed during the installation and use of the SmartRack Modular Data Center described in this manual. Read all instructions and warnings thoroughly before attempting to move, install or use the SmartRack Modular Data Center equipment as described in this manual. Failure to comply will create a risk of personal injury and property damage and may invalidate the warranty.

### 1.1 Explanation of Symbols



**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING** indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.



**CAUTION** indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

### 1.2 Cooling Enclosure Warnings

- Only qualified personnel may install, operate, maintain and service this equipment.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- This appliance is classified as **APPLIANCE NOT ACCESSIBLE TO THE GENERAL PUBLIC**. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. The appliance shall be installed in accordance with national wiring regulations
- The user must install a user-supplied residual current device (RCD) with an all-pole disconnection device with at least 0.118 in. (3 mm) separation distance and a rating of above 10mA into the fixed wiring according to national and local electrical codes.

#### Handling Information



#### **CAUTION**

Hazard of electric shock, explosion or arc flash:

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must be installed and serviced by qualified HVAC personnel only.
- Comply with all local and national wiring and safety regulations applicable where unit will be installed, e.g. National Electric Code (NEC) in the United States.
- Turn off all power supplying this equipment before working on or inside of the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors and covers before turning on power to this equipment.

# 1. Important Safety Instructions



## **WARNING**

Hazard from moving parts:

- Keep hands, clothing and jewelry away from moving parts. Check the equipment for foreign objects before closing the doors and starting the equipment.



## **CAUTION**

Hazard to equipment or personnel:

- All work must be performed only by qualified personnel.
- Make sure no spare parts or tools are in the equipment before handling the equipment.
- Do not operate unit without the air filter. This may cause dust accumulation that can damage the unit.



## **WARNING**

Hazard of equipment falling over:

- Use two or more persons at all times to move or turn this equipment.
- Always push, pull or turn while facing the front and rear of this equipment. Never push, pull or turn while facing the sides of this equipment.
- Slowly move this equipment across uneven surfaces or door thresholds.
- Lower leveling feet to floor when this equipment is at rest.
- Lower leveling feet and attach joining brackets to adjacent racks when this equipment is in final position.



## **CAUTION**

Refrigerant high pressure and hazard to equipment:

- This unit operates under high pressure. Observe proper safety precautions when operating or servicing the unit.
- The equipment is to be charged with R-410A refrigerant only.
- Copper pipe must support minimum 55 bar pressure.

**Failure to observe these warnings may result in death or serious injury. For more information, refer to the SRCOOLDXRW12/SRCOOLDXRW25's Unpacking Guide and Installation Manual.**

## 1.3 IT Rack Enclosure and Service Enclosure Warnings

- Keep the enclosures in a controlled indoor environment, away from moisture, temperature extremes, flammable liquids and gasses, conductive contaminants, dust and direct sunlight.
- Leave adequate space at the front and rear of the enclosures for proper ventilation. Do not block, cover or insert objects into the external ventilation openings of the enclosures.
- The enclosures are extremely heavy. Use caution when handling the enclosures. Do not attempt to unpack, move or install them unassisted. Use a mechanical device such as a forklift or pallet jack to move the enclosures in the shipping container.
- Do not place any object on the enclosures, especially containers of liquid, and do not attempt to stack the enclosures.
- Inspect the shipping container and the enclosures for shipping damage. Do not use the enclosures if they are damaged.
- Leave the enclosures in the shipping container until they have been moved as close as possible to the final installation location. The casters are designed for minor position adjustments within the final installation area only. The casters are not designed for moving the enclosures over longer distances.
- The casters are not designed to provide long-term support for the enclosures after final installation. Use the levelers to provide long-term support.
- Install the enclosures in a structurally sound area with a level floor that is able to bear the weight of the enclosure, all equipment that will be installed in the enclosures and any other enclosures and/or equipment that will be installed nearby.



# 1. Important Safety Instructions



- Install the cabinet securely to the building structure using the shipping brackets as illustrated in section **3.4 Leveling the POD Unit** section of this manual.
- **Do not push the enclosures from the side panels to move it. Pushing from the side panels will cause a tipping hazard.**
- **When rolling an enclosure on its casters, always push it from behind, never pull it toward you.**
- A rolling enclosure can cause personal injury and property damage if not properly supervised. If rolling the enclosure down a ramp is required, use extreme caution. Do not attempt to use ramps that have a slope steeper than 1:12.
- Use caution when cutting packing materials. The enclosure could be scratched, causing damage not covered by the warranty.
- Save all packing materials for later use. Repacking and shipping the enclosure without the original packing materials may cause product damage that will void the warranty.
- **DANGER: STABILITY HAZARD, RACKS ARE TO BE INSTALLED BY QUALIFIED SERVICE PERSONNEL ONLY.**

## 2. Overview

SmartRack® Modular Data Centers are composed of IT rack, cooling and service enclosures that together form a performance optimized data center, or POD. This reduces deployment time, lowers cost and simplifies the process of launching a new data center.

### Easy Configuration and Scalability

- IT rack enclosure houses up to 44U of rack-mounted equipment.
- Cooling enclosure houses a 300 mm wide 12 kW or 25 kW slim AC cooling unit.
- Service enclosures are empty to allow for customization. Available in three widths, the enclosures can house 3-phase UPS systems, power distribution panels, fire suppression systems or non-IT equipment that does not need to be in the environmental area of the rack and cooling unit (for thermal-managed service enclosure needs, customization is available).

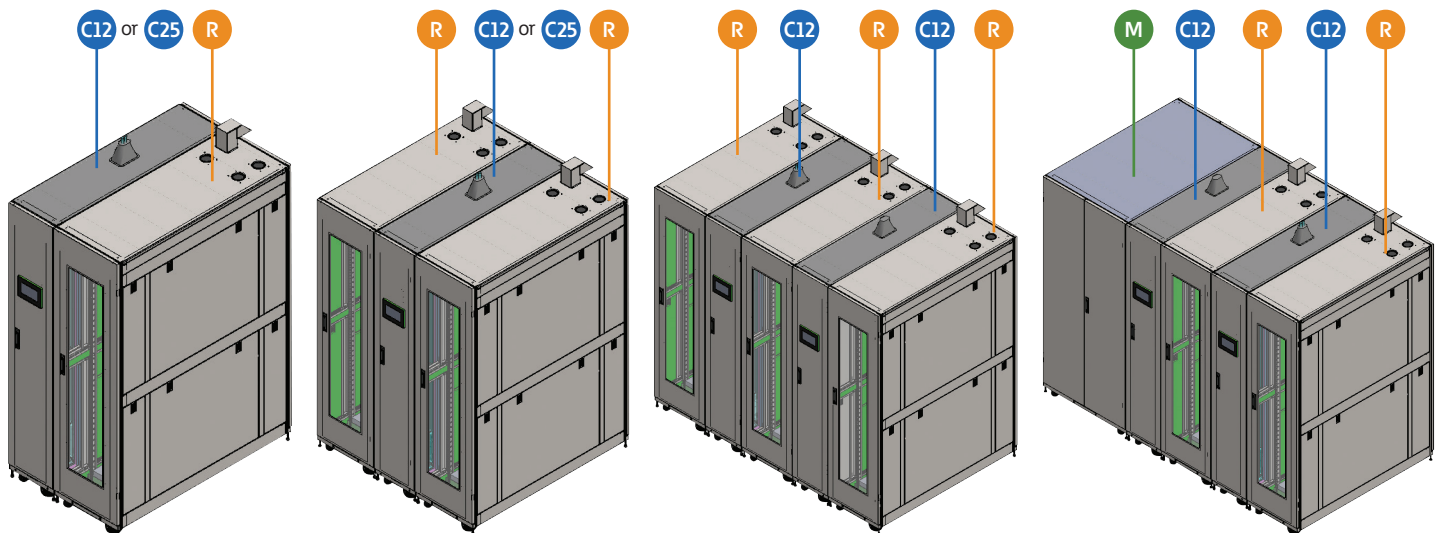
### Equipment Protection

- IT rack enclosures are designed to meet IP54 protection against splashes, dripping water and dust. The solid front and back doors with clear acrylic windows allow for monitoring equipment. Locking doors and panels help keep contents secure (TanLock door access security options including pin, fingerprint, keypad and RFID are also available).
- Power and data cables can be separated from cooling lines, protecting them from moisture.

### Efficient Cooling

- When the rack and cooling enclosures are connected, they form a closed-loop cooling system, helping prevent equipment malfunctions due to overheating or fluctuating temperatures.
- User-friendly color touchscreen allows local access to cooling unit status and settings, as well as diagnostics.
- The built-in remote network management card supports remote monitoring and management.

## 2.1 SmartRack Modular Data Center Components



Models: SRP-R-C12 and SRP-R-C25

Models: SRP-2R-C12 and SRP-2R-C25

Model: SRP-3R-2C12

Model: SRP-2R-2C12-M

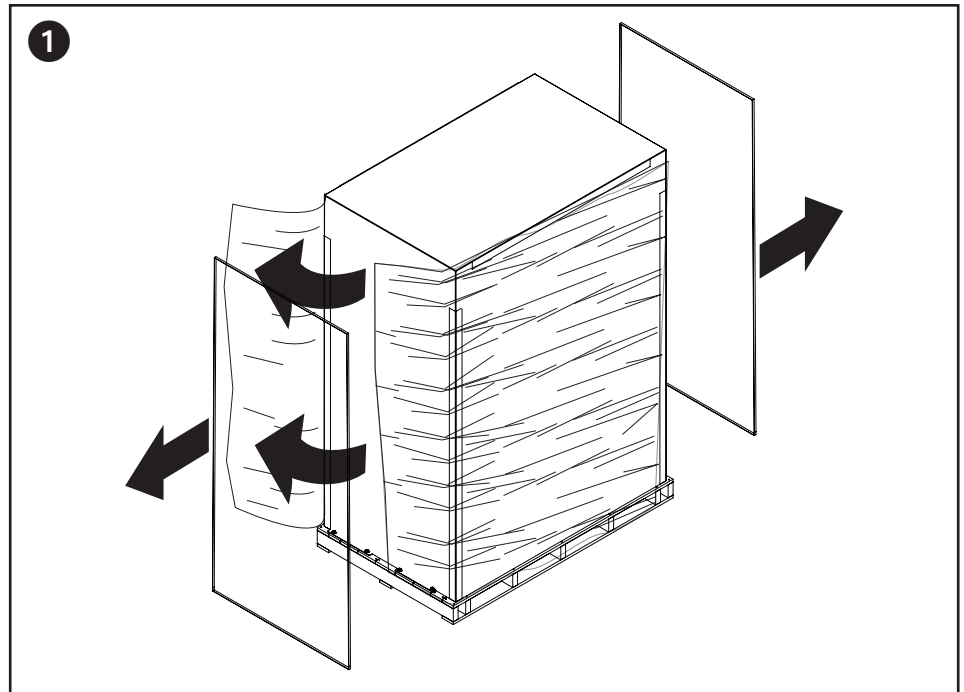
- **R** IT rack enclosure (44U) — Clear acrylic windows in the front and back doors allow equipment monitoring.
- **C12** or **C25** Cooling enclosure (12 kW or 25 kW) — Front-panel color touchscreen provides access to cooling unit data and status information.
- **S, M** or **L** Service enclosure (small, medium or large) — Empty enclosure can be customized.

## 3. Configuration

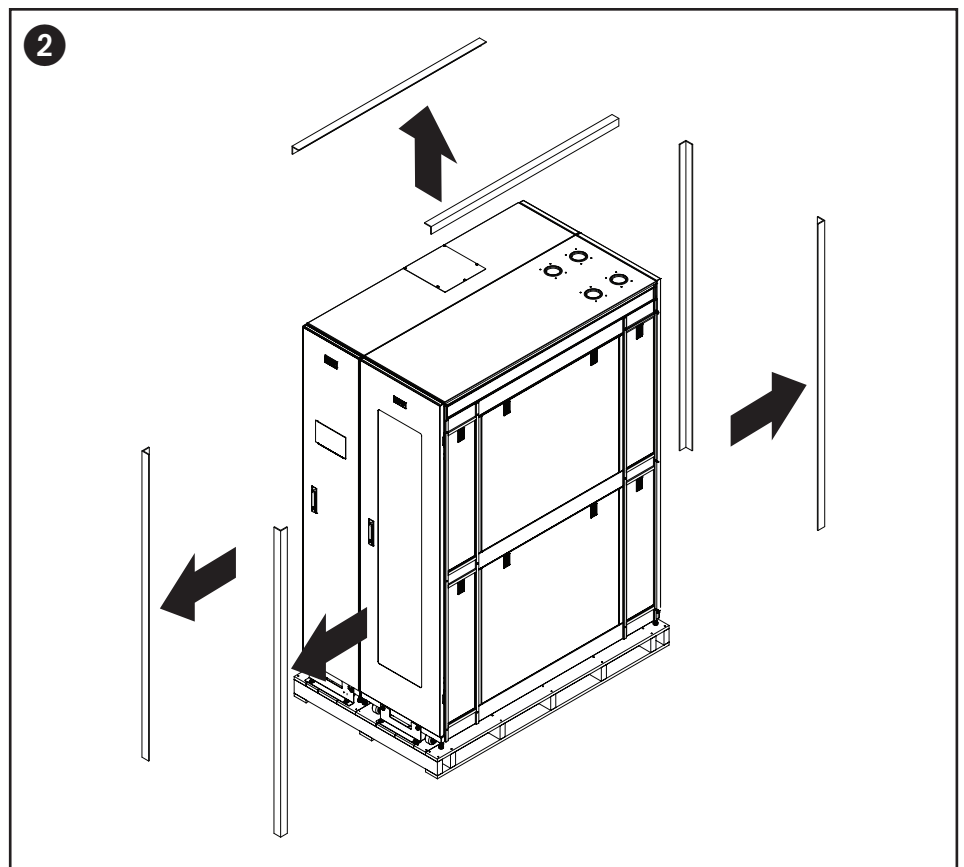
### 3.1 Unpacking the IT Enclosure / Service Enclosure / Bayed IT and Cooling Enclosures / Bayed Service and Cooling Enclosure

- 1 Confirm the shipping container is upright and stable, then use a utility blade to cut the shrink-wrap securing the corner protectors. Apply the utility blade directly over the corner protectors to prevent the utility blade from scratching the enclosure or cutting the heavy protective plastic bag beneath the shrink-wrap.

**WARNING: Do not scratch the enclosure or cut the heavy plastic bag beneath the shrink-wrap. Do not push or pull the enclosure while unpacking.**

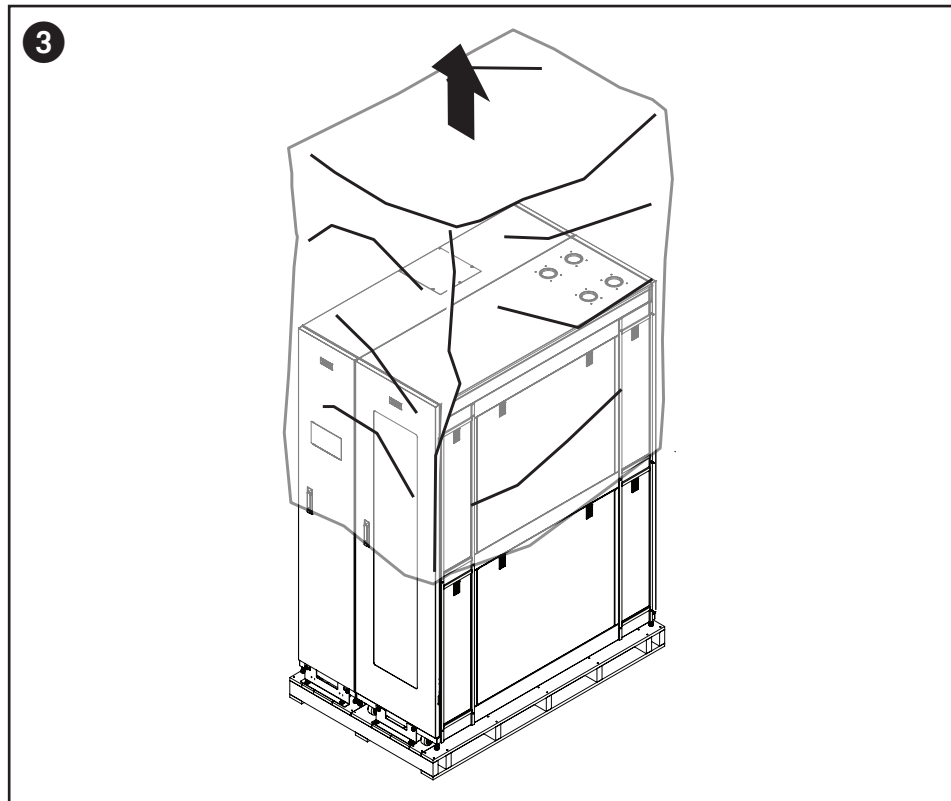


- 2 Remove the corner protectors. The packing materials are recyclable.

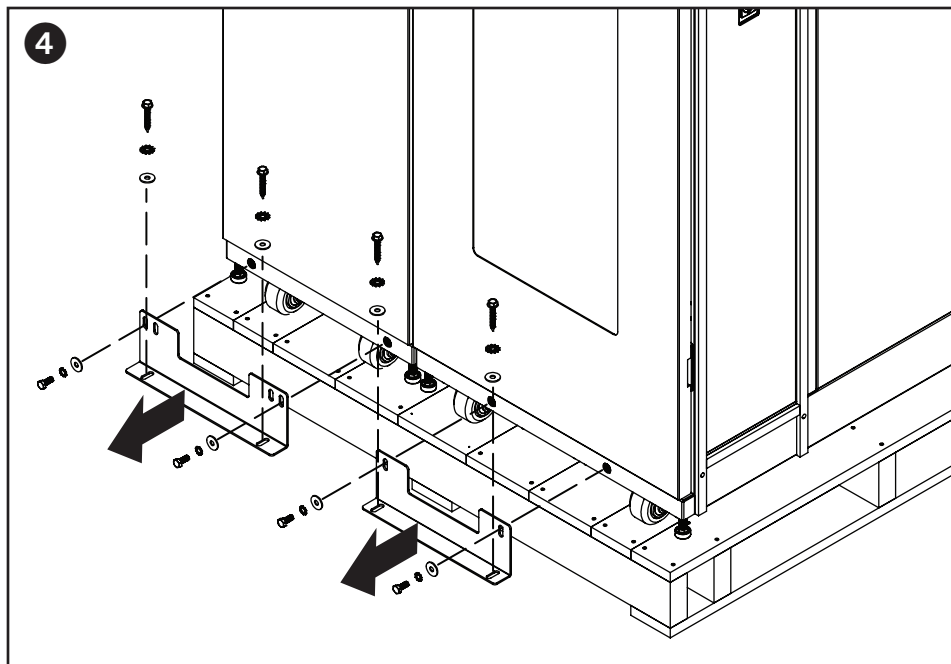


## 3. Configuration

- 3 Remove the heavy plastic bag surrounding the enclosure. Examine the enclosure for any damage or loose parts. Confirm all parts are present. If anything is missing or damaged, contact Eaton for assistance. Do not attempt to use the enclosure if it has been damaged.



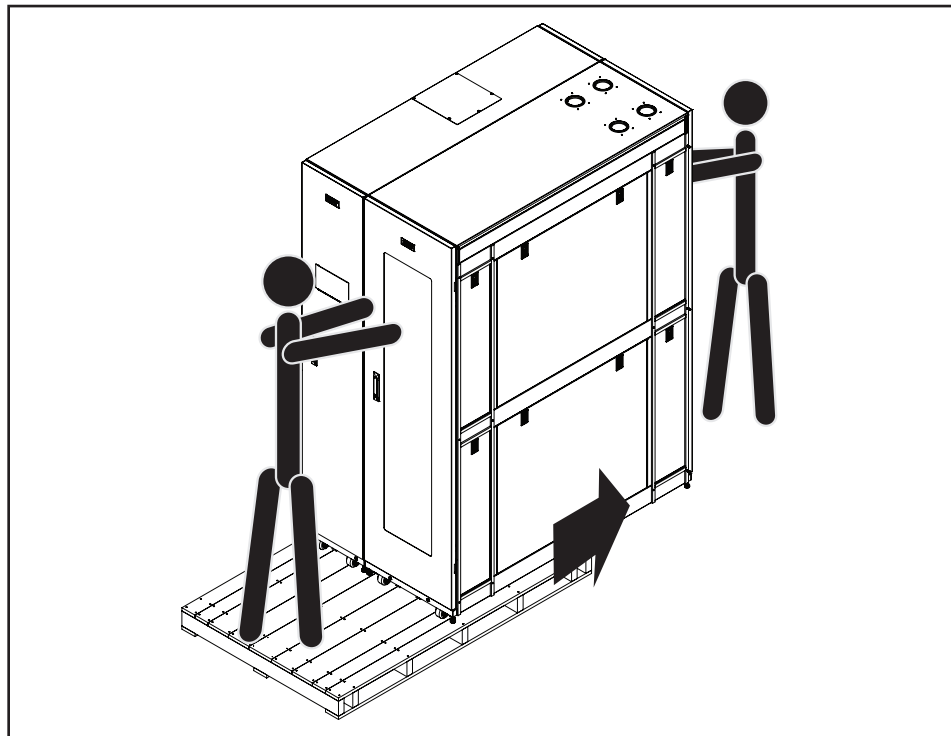
- 4 Use a 13 mm open-end wrench to remove the shipping brackets. Be extremely careful, as the enclosure could shift unexpectedly after bracket removal. Save the brackets and bracket hardware for later use.



## 3. Configuration

- 5 Position at least one person at the front of the enclosure and one person at the rear of the enclosure. Slowly push the enclosure toward the back of the shipping pallet until all four casters go over the edge of the pallet and touch the floor.

**WARNING: Use at least one assistant when removing the enclosure from the pallet. Be extremely careful when moving the enclosure.**



## 3. Configuration

### 3.2 Placement



#### **IMPORTANT!**

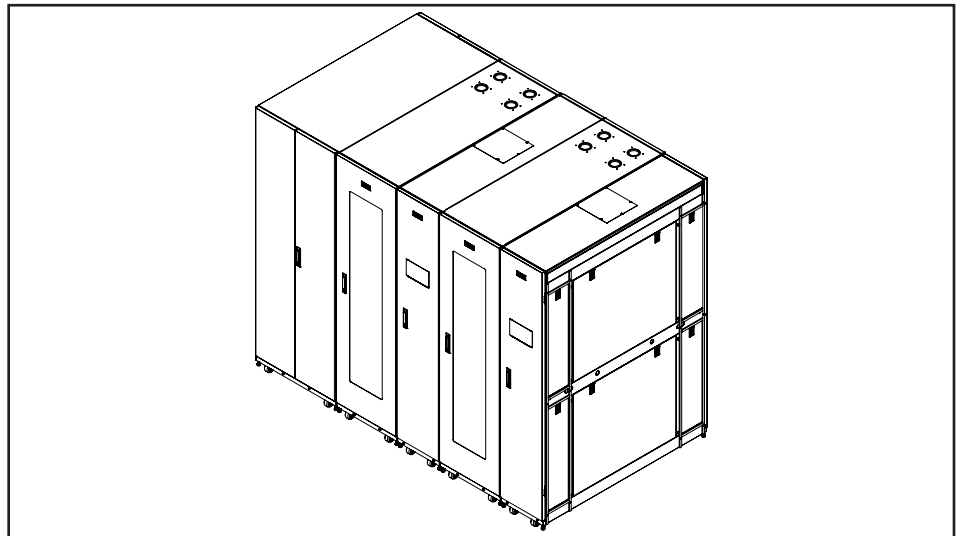
Cooling units are top-heavy and can present a tipping hazard if handled incorrectly. Please refer 1.2 Cooling Enclosure Warnings before proceeding with the SRPOD configuration.

Use the casters to move all combined or individual enclosures for a short distance over a level, smooth, stable surface by pushing it from the front or rear (not the side panels). Do not attempt to roll the enclosures over long distances. The enclosures should be moved close to their installation location before they are unpacked (use a forklift or pallet jack, if necessary).

**WARNING: Do not push or pull the enclosures at the side panels or pull the enclosures toward you.**

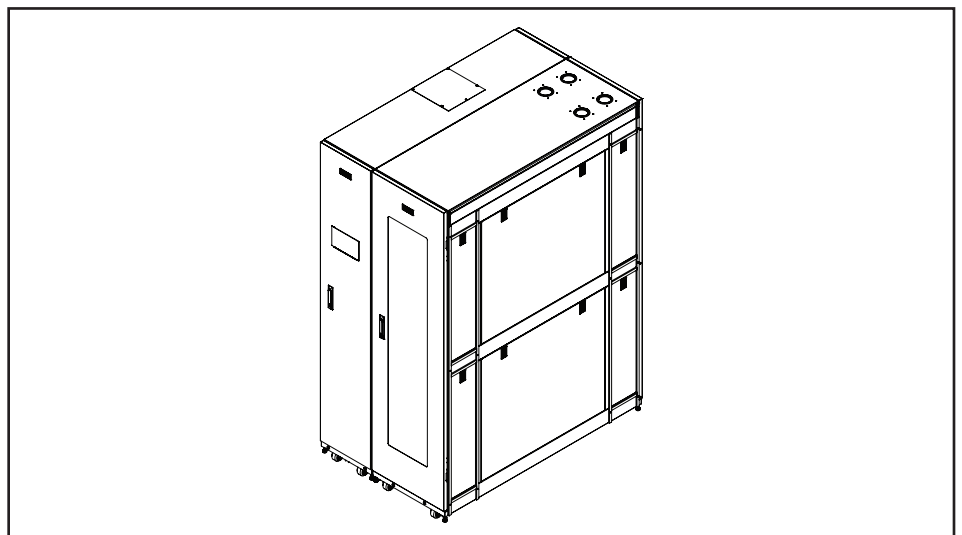
### 3.3 Assembly

The following assembly steps show sample modular data center model: SRP-2R-2C12-M.



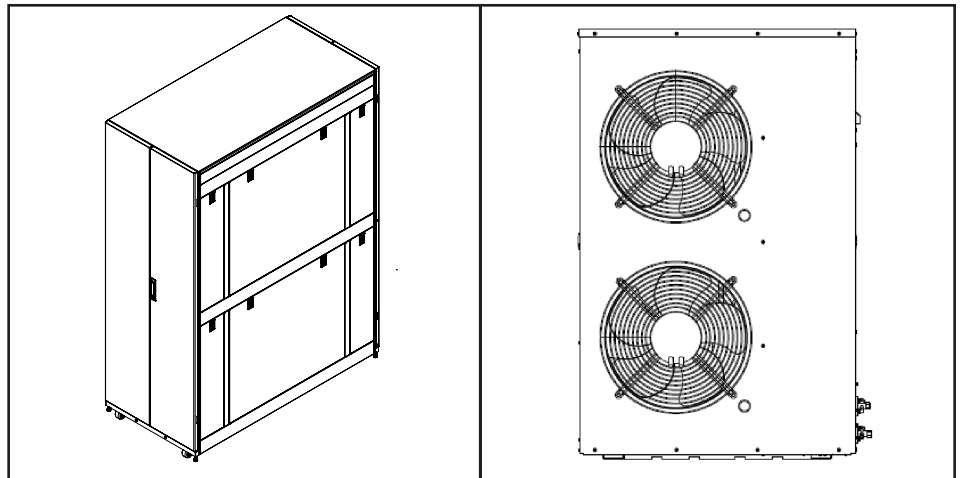
**For this particular model, you will receive five pallets.**

- 2 pallets: Each pallet contains one IT rack enclosure attached to a cooling enclosure. The cooling enclosure contains the InRow cooling unit pre-installed.



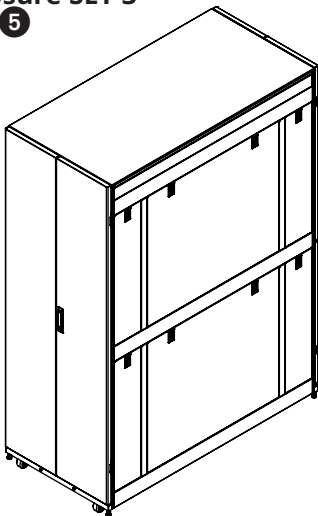
## 3. Configuration

- 1 pallet: Contains one medium service enclosure.
- 2 pallets: Each pallet contains one outdoor condenser unit.

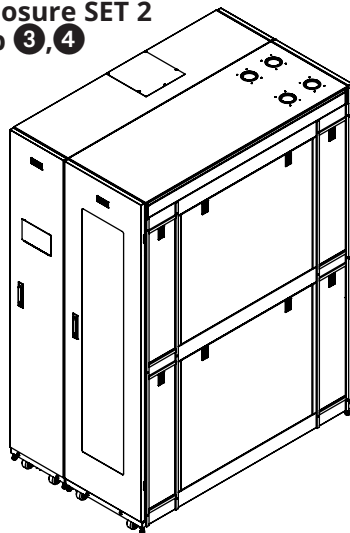


After unpacking the pallets noted above, then proceed with the configuration assembly and follow these steps, starting from the right side of the final configuration.

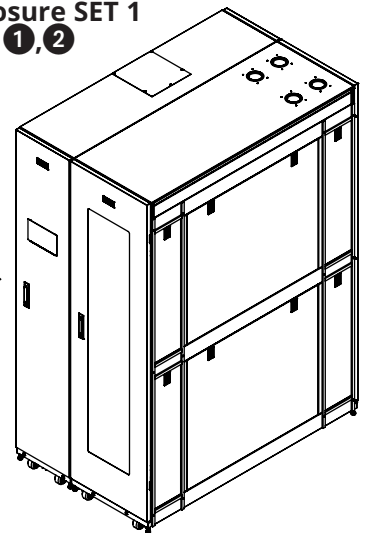
**Enclosure SET 3**  
Step 5



**Enclosure SET 2**  
Step 3, 4



**Enclosure SET 1**  
Step 1, 2



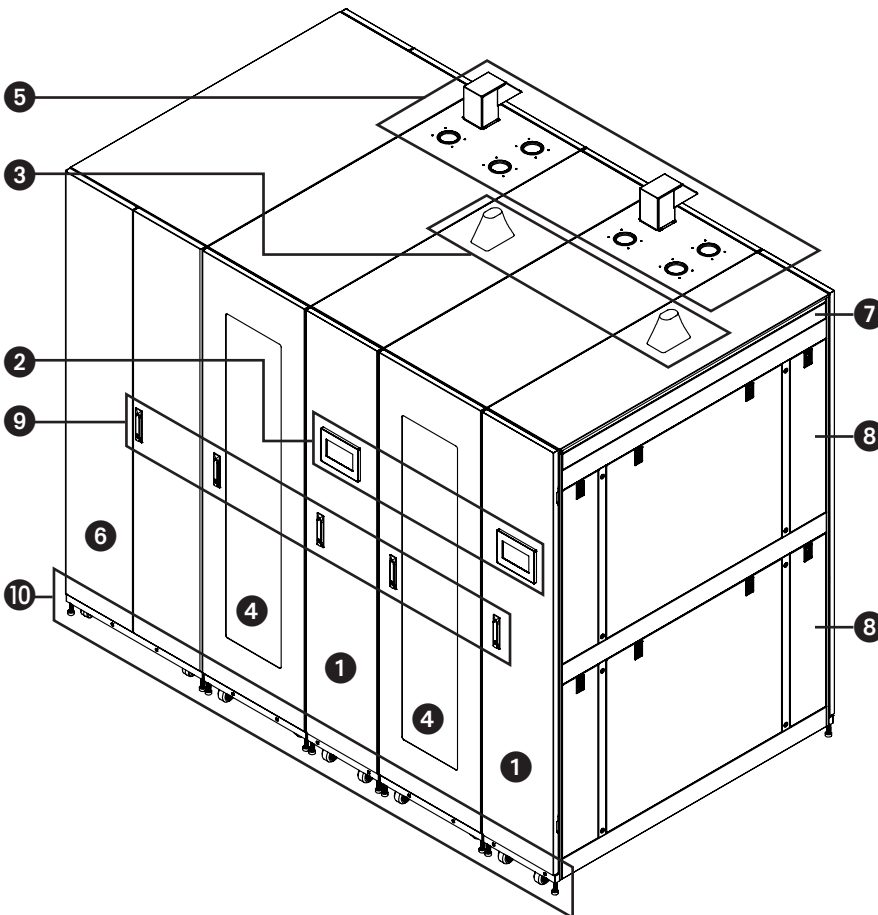
**Note:** Outdoor condensers included but not shown above.

- 1 **Roll SET 1 of enclosures to final installation position.** Move the IT rack enclosure attached to the cooling enclosure set to the final installation position. Do not attach any other enclosures to the cooling enclosure side before performing step 2 below.
- 2 **Power, refrigerant connectorization and charging of the cooling unit.** Remove the side and top panels of the cooling enclosure as needed and have a local certified HVAC professional connect the cooling unit to the outdoor condenser and power connections to the cooling unit. Please follow the cooling unit installation manual to charge the cooling unit accordingly.  
[SRCOOLDXRW12 Documentation and Support](#)  
[SRCOOLDXRW25 Documentation and Support](#)
- 3 Reattach the side panels of the cooling enclosure and roll SET 2 of enclosures against SET 1.
- 4 Using the included long screws, secure the enclosures together at the top, middle and bottom of the units.
- 5 Repeat step 2.
- 6 Once steps 4/2 have been completed and the cooling enclosure's side panels have been reattached, proceed to roll SET 3 (service enclosure) against the SET 2.
- 7 Repeat step 4.

## 3. Configuration

The final configured and assembled sample model SRP-2R-2C12-M should appear like the illustration below.

- ① Cooling System with Enclosure and Outdoor Condenser  
(Not Shown)
- ② 7" Touchscreen Cooling Display
- ③ Refrigerant Tubes Entry  
(Top or Bottom Entry)
- ④ IT Rack Enclosure with Clear Acrylic Window
- ⑤ Adjustable Cable Service Hood with 4 Cable Entry Hole Options
- ⑥ Customizable Service Enclosure with Vented Door
- ⑦ Cable Management Plenum
- ⑧ Locking, Removable Side Panels
- ⑨ Locking Handle  
(Security Lock Options Available)
- ⑩ Casters and Leveling Feet



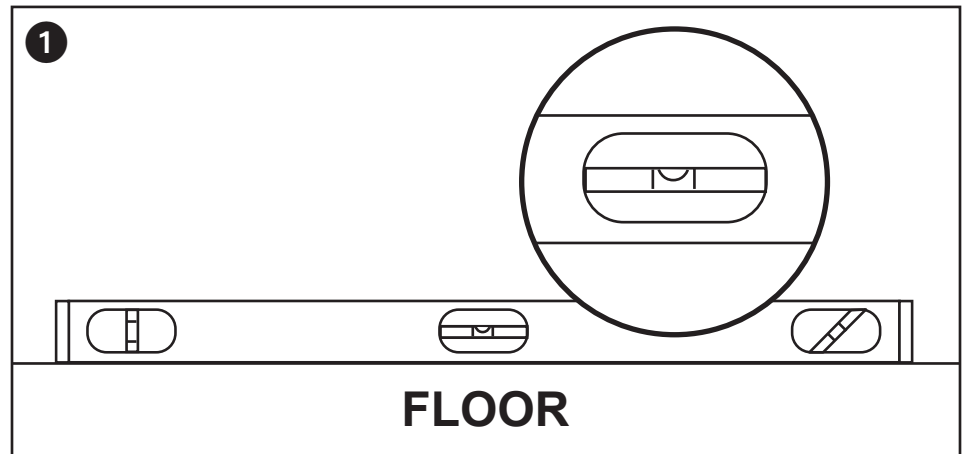


## 3. Configuration

### 3.4 Leveling the POD Unit

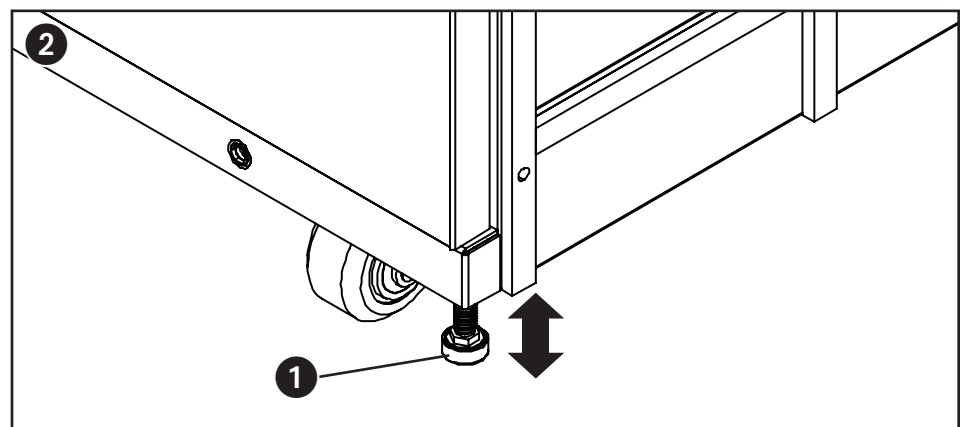
**WARNING:** Level the enclosure before attempting to install equipment. The casters are not designed to provide long-term support for the enclosure. Use the levelers to provide long-term support. Install the POD unit in a structurally sound area with a level floor that can bear the weight of the enclosures, all equipment that will be installed in the enclosures and any other enclosures and/or equipment that will be installed nearby.

- 1 Once the POD unit has been moved to the installation location, ensure the entire unit is level for proper condensate drainage. Use a carpenter's level to check the slope of the floor. If the floor slopes more than 1%, choose an alternate installation site.

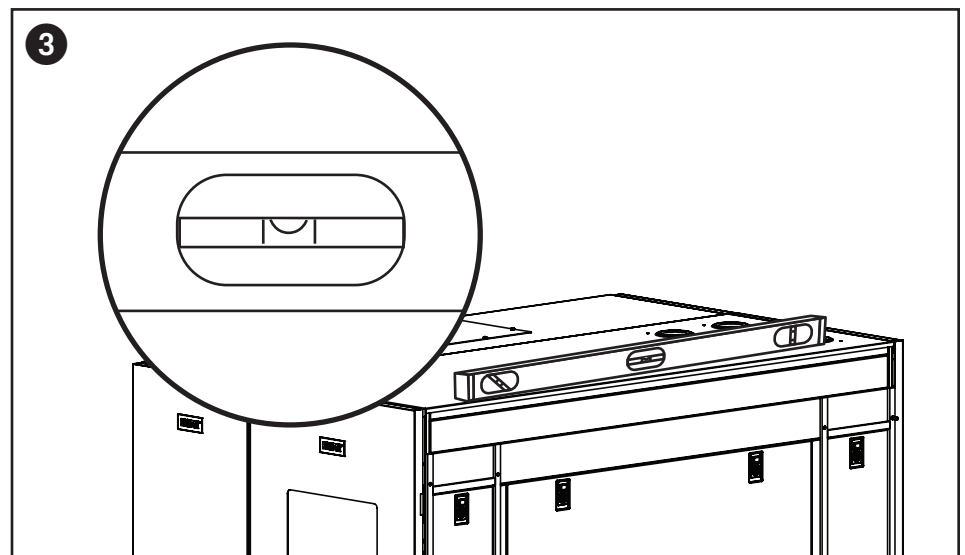


- 2 Use an 18 mm open-end wrench to lower each level 1 until it touches the floor (there are 4 levelers: 2 at the front and 2 at the rear). Make sure each leveler contacts the floor firmly.

**Note:** Lower a leveler by turning it clockwise; raise a leveler by turning it counter-clockwise.

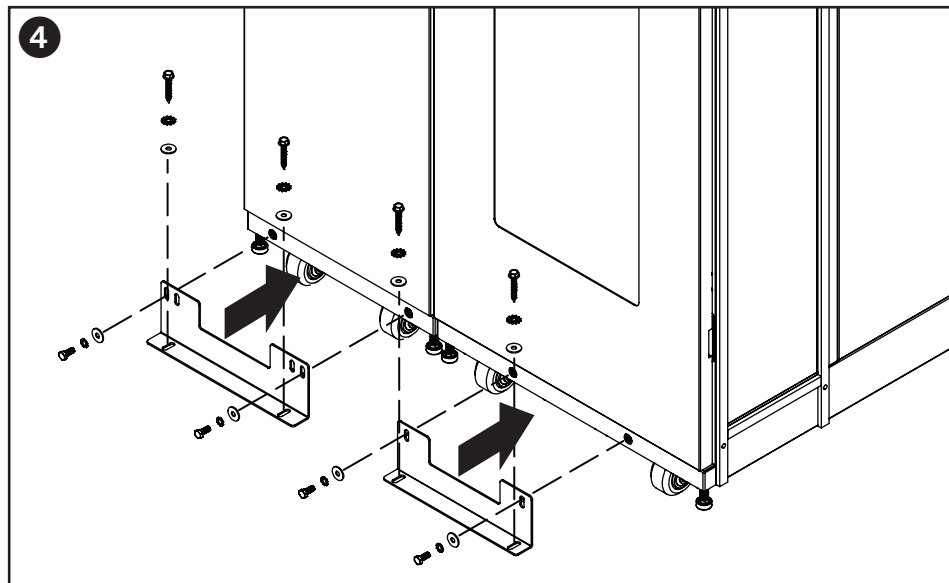


- 3 After lowering each leveler, use the carpenter's level to confirm that the POD unit is level in all directions. Adjust the levelers as required until the enclosures/POD unit is level.



### 3. Configuration

- 4 To secure the POD unit to the building structure for stability, attach the shipping bracket hardware used to secure the enclosures to the shipping pallets. Use a 13 mm open-end wrench to connect the brackets to each enclosure's outer bracket mounting points. Then attach the brackets to secure mounting points in the floor with user-supplied hardware or Eaton's SmartRack Bolt-Down Kit (Model: SRBOLTDOWN).



## 4. Installation

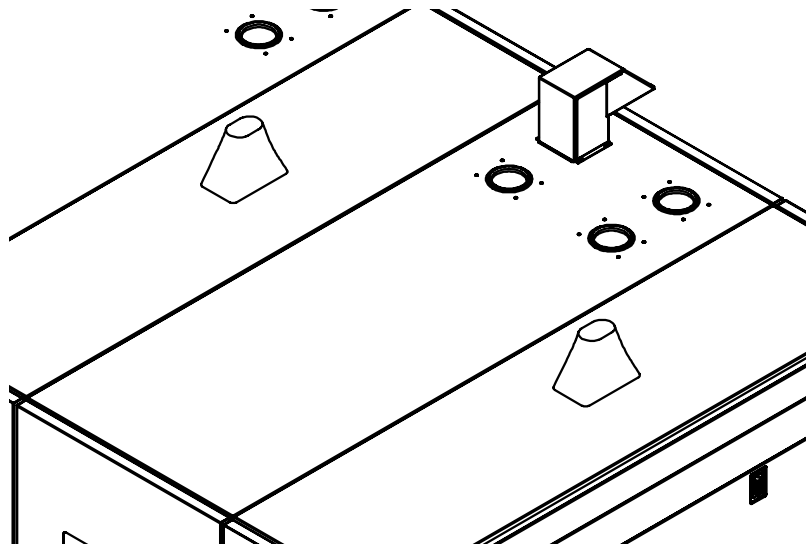
### 4.1 Cooling Unit Installation

For complete installation, startup and commissioning instructions for the Cooling Enclosure, refer to the [SRCOOLDRXW12/SRCOOLDRXW25 Installation Manual](#).

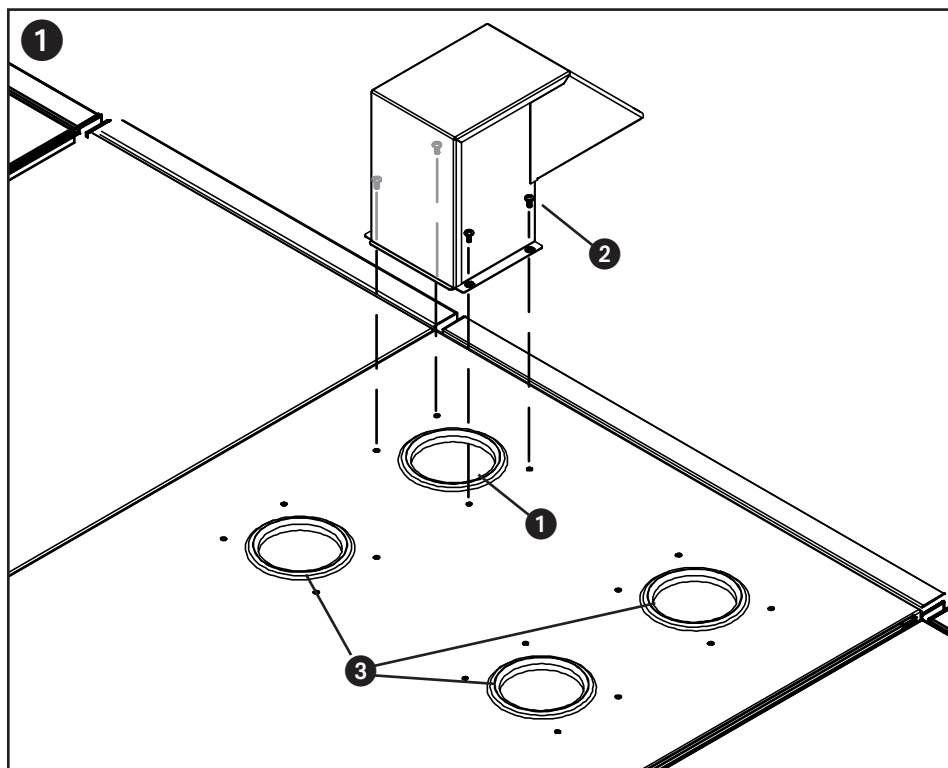
### 4.2 IT Enclosure Installation

#### 4.2.1 IT Enclosure Roof Panel

The IT Enclosure's roof panel is adjustable.



- 1 Determine the cable routing hole(s) where the cable hood(s) will be positioned **1**. Use the included screws to attach the cable hood(s) to the cable routing hole(s) **2**. Attach any covers over the cable routing holes to cover the roof panel **3**.

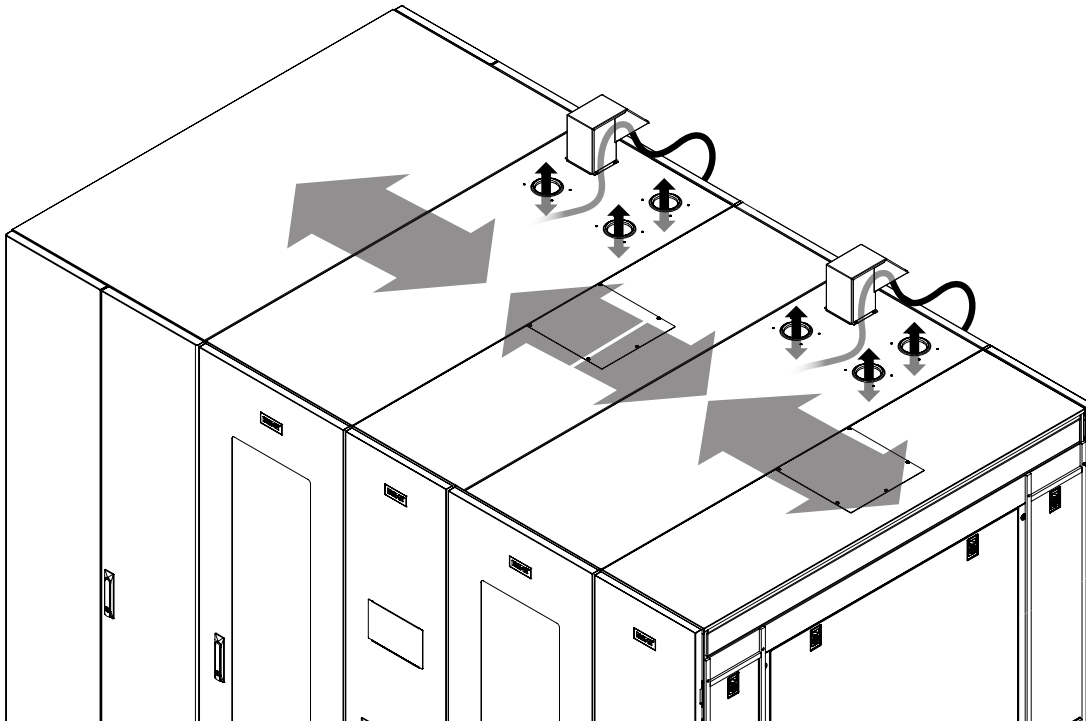


## 4. Installation

### 4.2.2 Cable Management and Routing

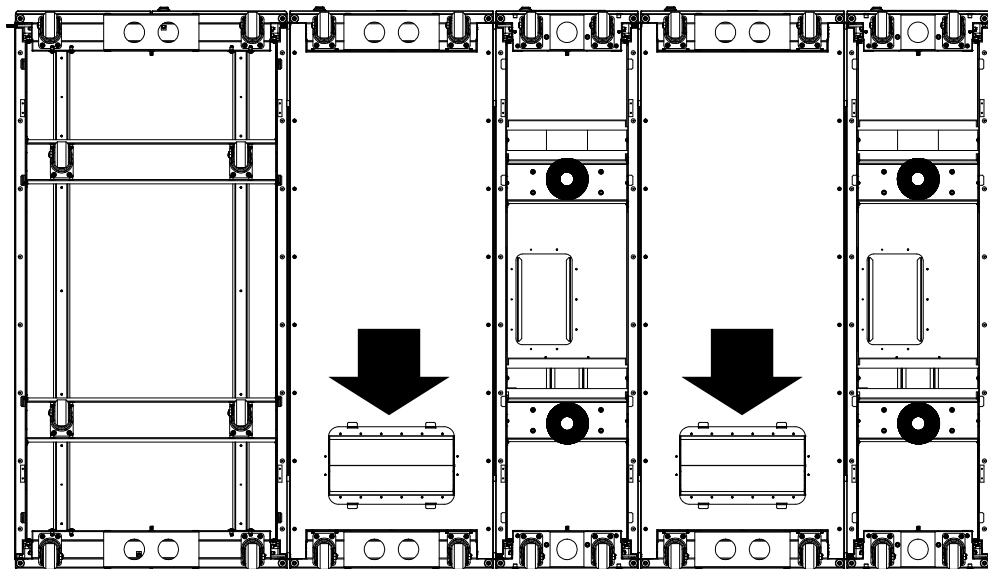
This section will provide steps and options to route power, ethernet and fiber cables. There are three cable routing options.

#### Option 1: Routing cables directly into each IT Rack enclosure from the top.



Route the cable(s) from the IT Enclosure through the brush strips into the cable plenums on the top of the enclosure and out through the cable hood.

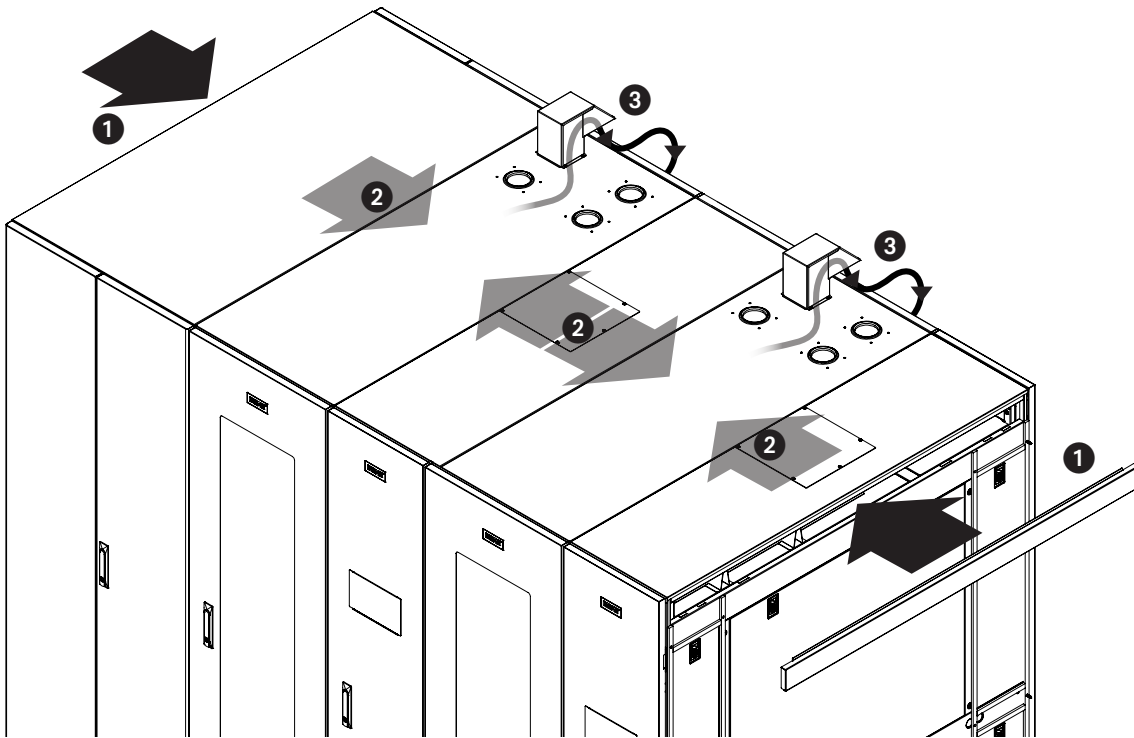
#### Option 2 (Raised-Floor Installations Only): Routing cables directly into each IT Rack enclosure from the bottom of each rack.



Route the cable(s) from the IT enclosure through the brush strips on the bottom of the enclosure through the floor plenum.

## 4. Installation

**Option 3: Routing cables from the service compartment and across the cable plenum at the top of all IT and cooling enclosures.**



- ❶ Remove the top horizontal beams of the enclosures you wish to run wire through.
- ❷ Run the cable(s) through the brush strips and across to the neighboring racks
- ❸ **(Optional)** Depending on the cable management strategy, run the cable(s) out to the PDU(s) housed in the service enclosure and through the roof panel's cable hood.

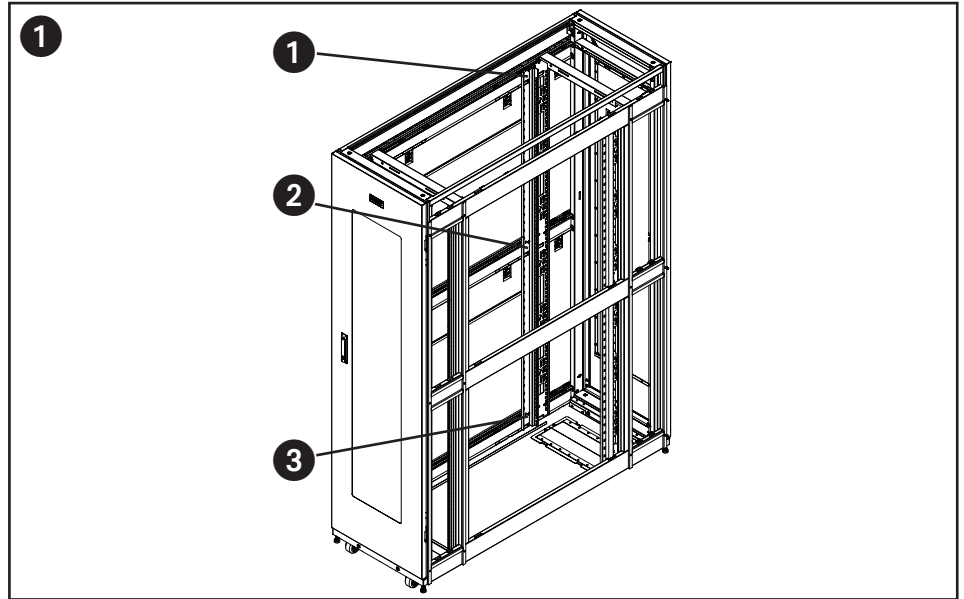
## 4. Installation

### 4.2.3 Adjusting Mounting Rails and Cable Management Rails

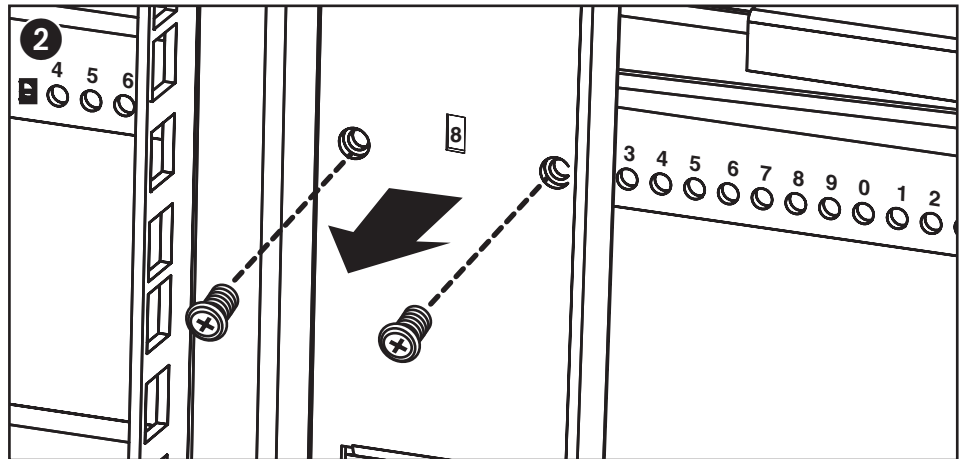
**WARNING: Do not attempt to adjust rails without assistance. Do not attempt to adjust rails while equipment is installed in the enclosure. Do not attempt to use rails without screws installed (6 per rail).**

The 4 mounting rails are pre-installed to accommodate equipment with a mounting depth of 30 inches (762 mm). Do not adjust the mounting rails unless your equipment requires a different mounting depth. The front and rear sets of rails can be adjusted independently in ¼-inch (6 mm) increments.

- 1 Each rail is connected to the enclosure with 6 screws - 1 pair at the upper beam 1, 1 pair at the middle beam 2 and 1 pair at the lower beam 3.

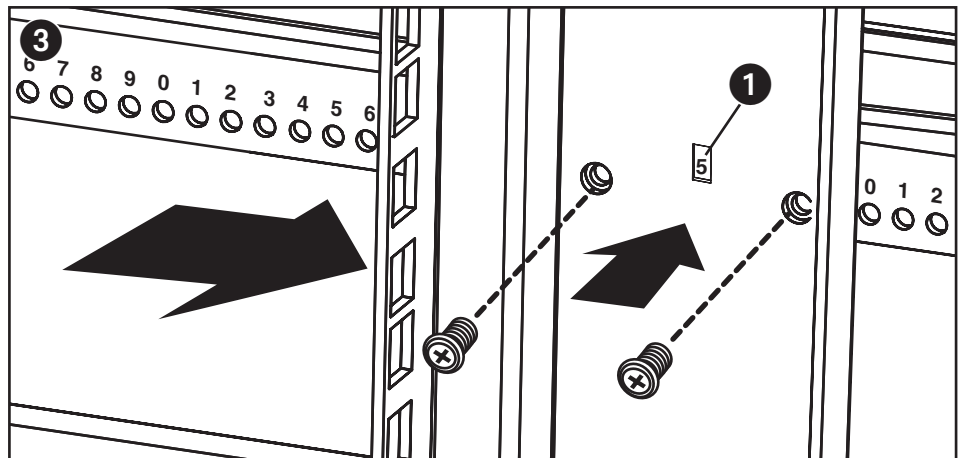


- 2 Remove the screws fastening each of the rear mounting rails to the enclosure. (If adjustment of the front rails is required, you can also remove the screws from the front rails.)



- 3 Slide the mounting rails to the desired depth and reattach them using the screws you removed in Step 2. The rail attachment points are numbered 1 to help you align each pair of rails at the same depth.

The depth of the 2 cable management rails can be adjusted using the same method.

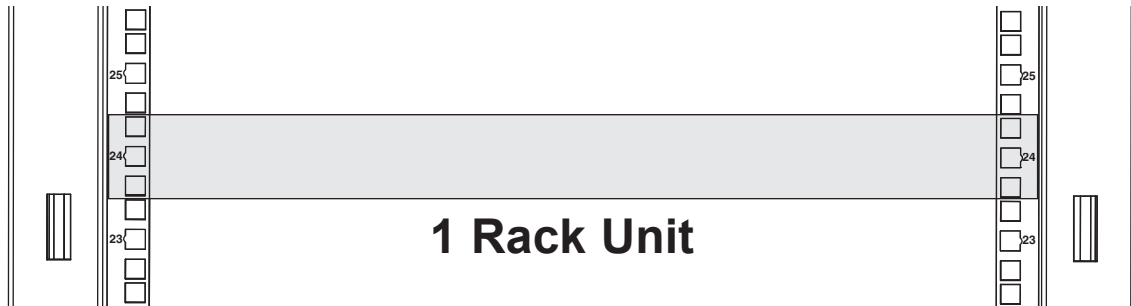


# 4. Installation

## 4.2.4 Equipment Installation

**WARNING:** Do not install equipment until you have stabilized the enclosure. Install heavier equipment first and install it toward the bottom of the enclosure. Install equipment starting from the bottom of the enclosure and proceeding toward the top of the enclosure - never the reverse. If using sliding equipment rails, be careful when extending the rails. Do not extend more than one set of sliding equipment rails at one time. Avoid extending sliding equipment rails near the top of the enclosure.

**Note:** The square holes at the middle of each rack unit are numbered and also include a small notch to aid identification. A single rack unit includes the space occupied by the numbered hole and the holes directly above and below.



## 4.2.5 Installing or Removing Cage Nuts

**WARNING:** The flanges of the cage nuts should engage the sides of the square opening in the rail, not the top and bottom. Follow the instructions in your equipment documentation to ensure proper installation of your equipment.

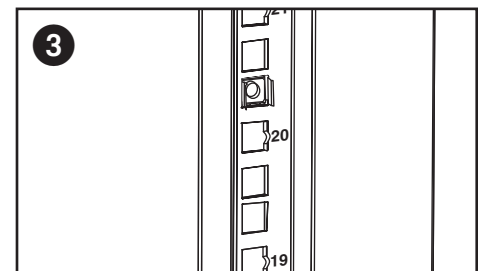
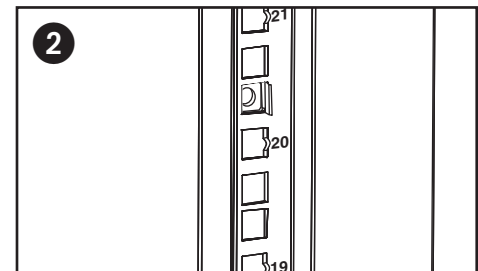
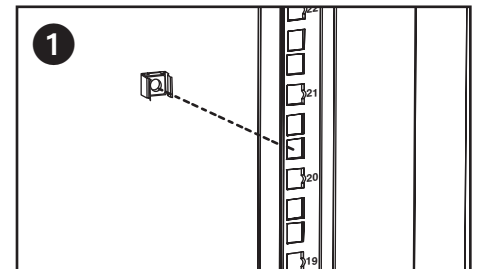
### Installing Cage Nuts

- 1 Locate the numbered square openings in the mounting rails where you plan to install your equipment. You will install cage nuts (included) into the square openings to provide an attachment point for the mounting screws (included).

**Note:** Consult your equipment documentation to determine how many cage nuts will be required and where they will need to be installed.

- 2 From the inside of the mounting rail, insert one of the flanges of the cage nut through the square opening. Press it against the side of the square opening. Each flange should engage one side of the square opening, not the top or bottom.

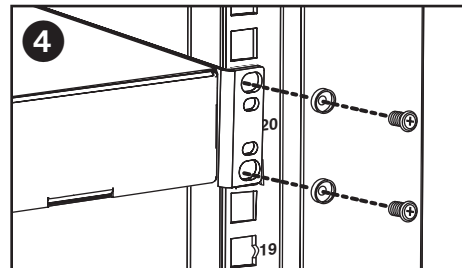
- 3 Compress the cage nut at the sides slightly to allow the remaining flange to fit through the square opening. When the cage nut is properly installed, both flanges will protrude through the square opening and will be visible on the outer surface of the mounting rail. Repeat steps 1-3 until all required cage nuts are installed.



## 4. Installation

- 4 After installing the required cage nuts, use the included mounting screws and cup washers to secure your equipment to the rack rail. Place the cup washers between the screws and the equipment mounting brackets.

**Note:** Your equipment may also include mounting hardware. Read the mounting instructions that came with your equipment before installing your equipment.



### To Remove Cage Nuts, Reverse Steps 1-3

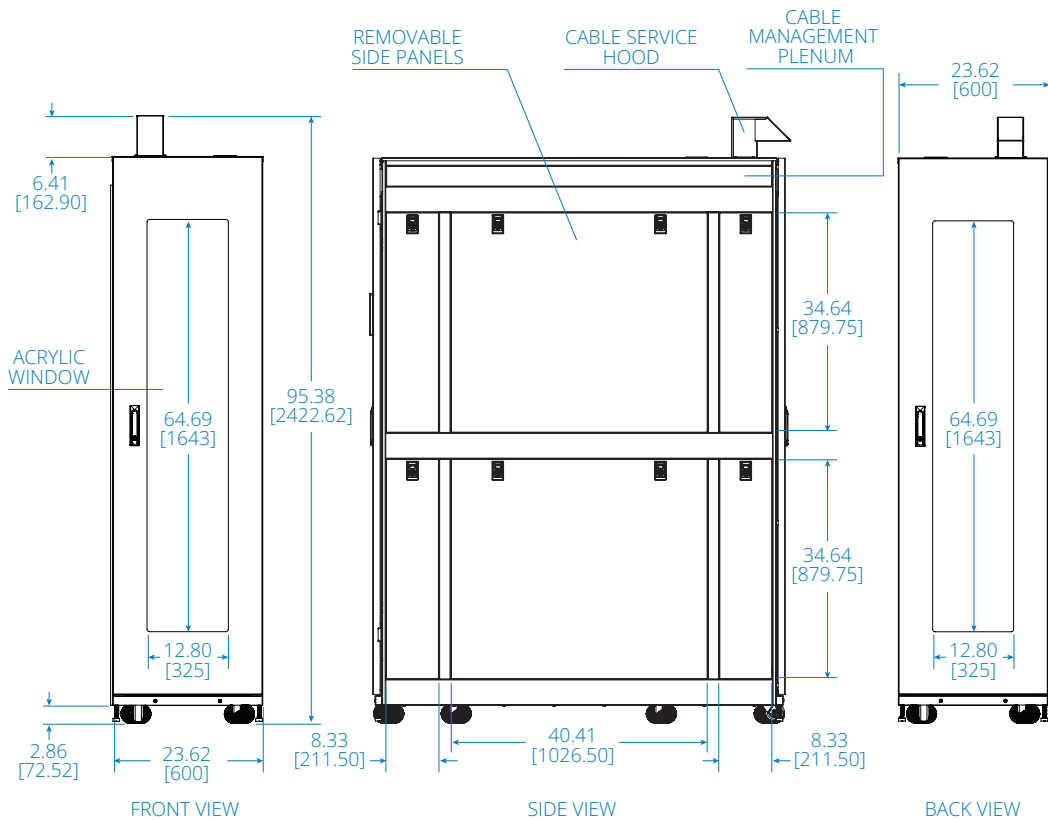
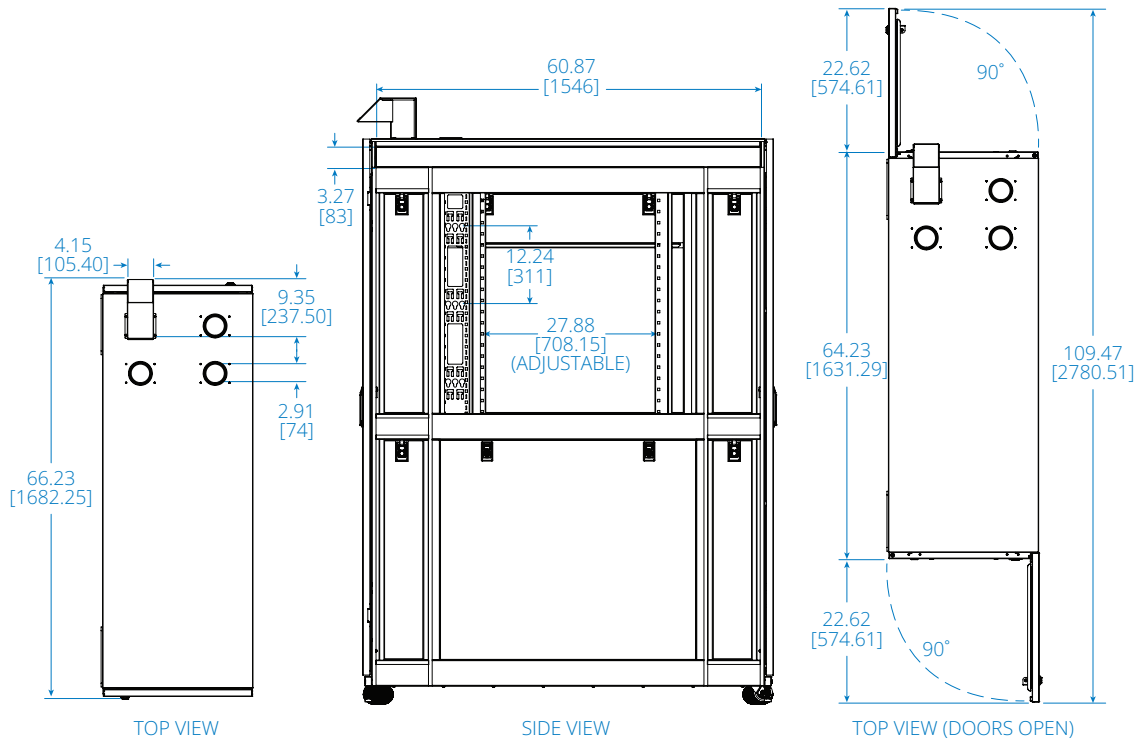
**Note:** You may wish to use a cage nut tool (user-supplied) to aid cage nut installation and removal



# Appendix

## Appendix A: Submittal Drawings

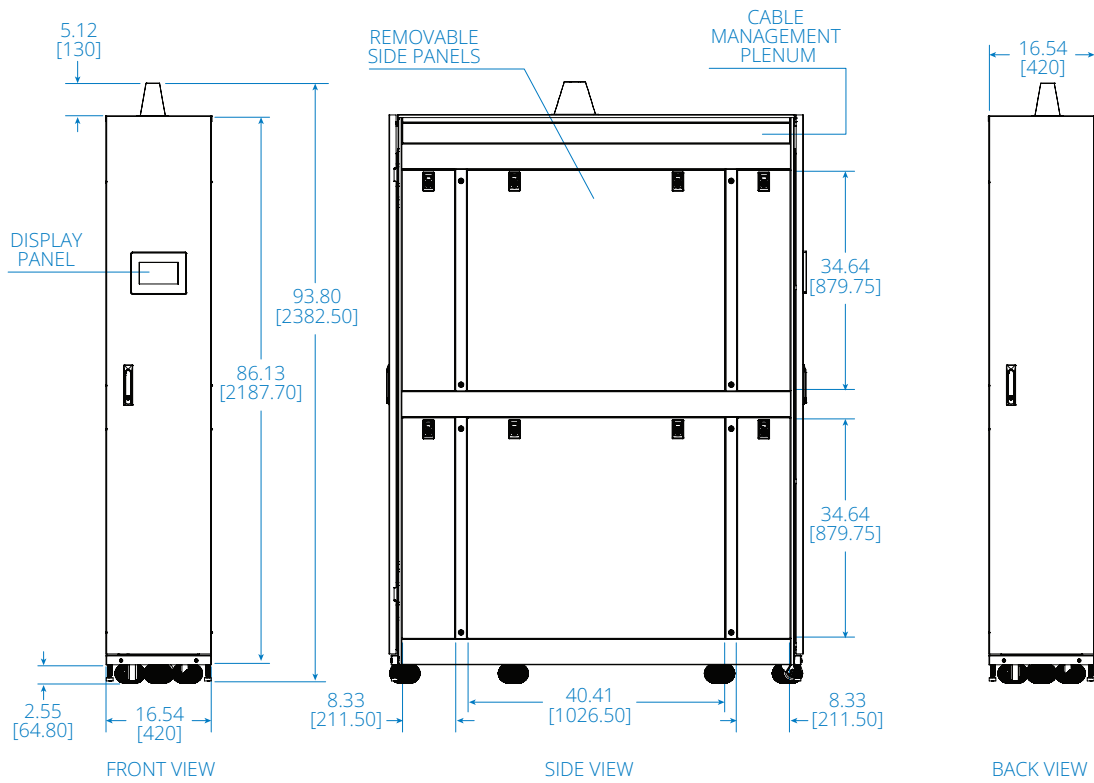
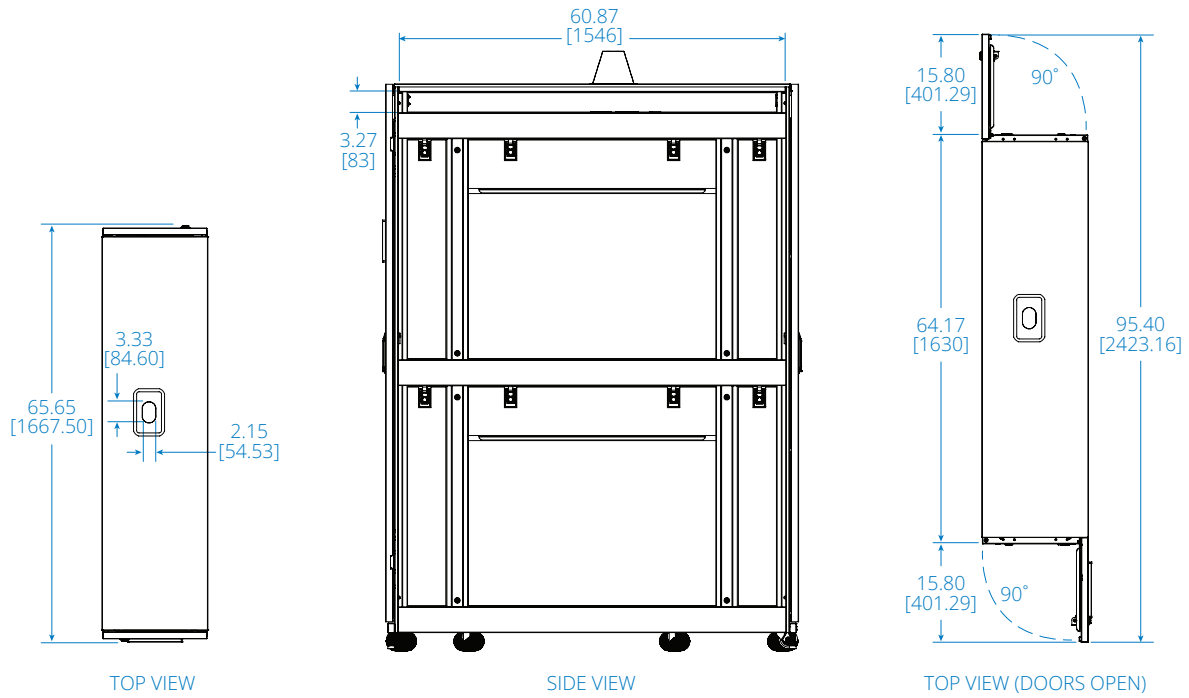
### IT Rack Enclosure



Dimensions: INCHES [mm]

# Appendix

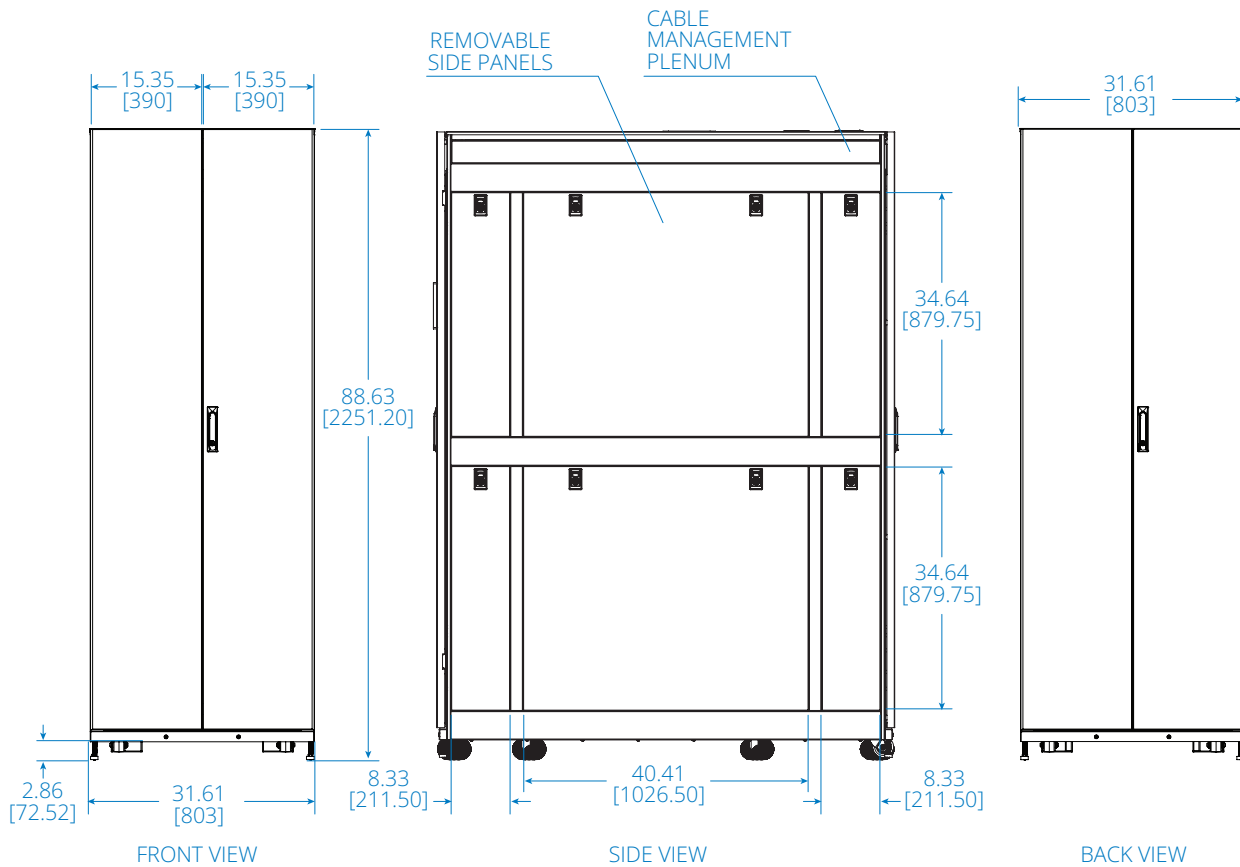
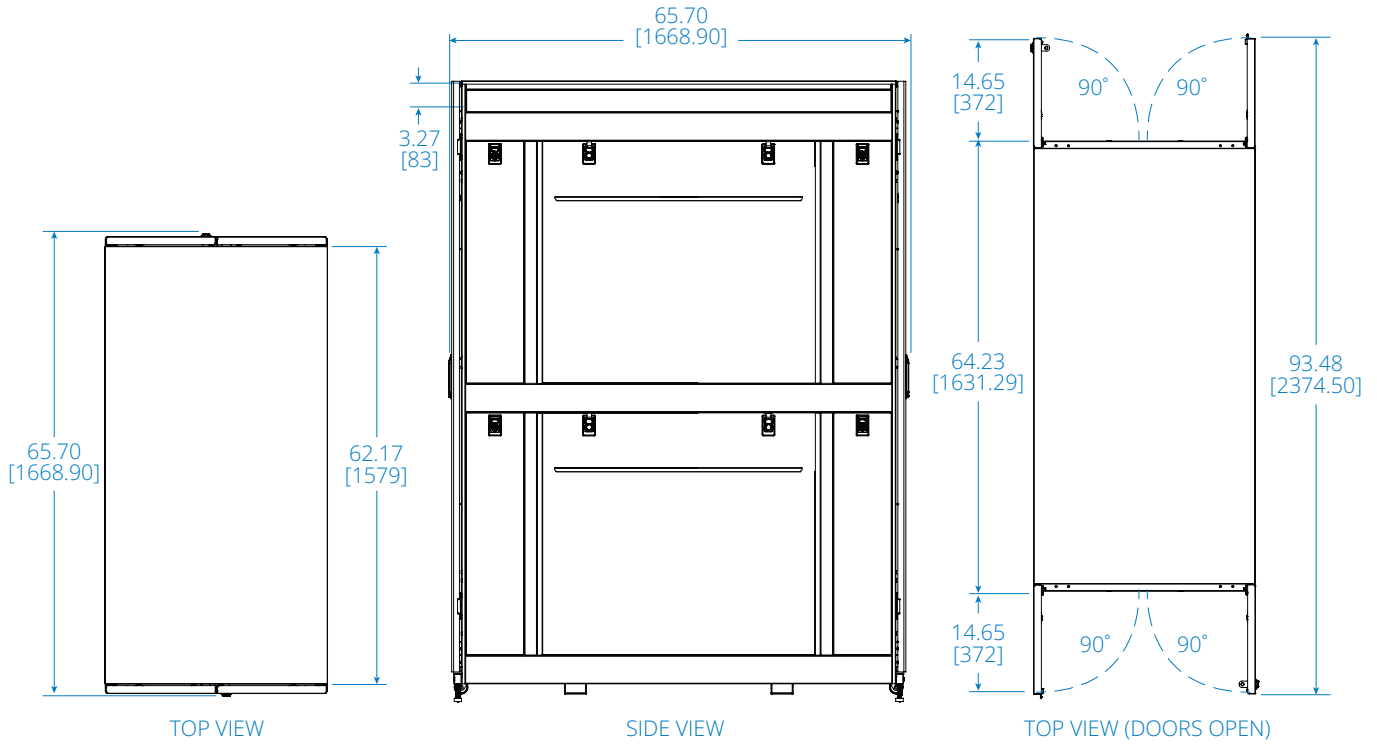
## Cooling Enclosure



Dimensions: INCHES [mm]

# Appendix

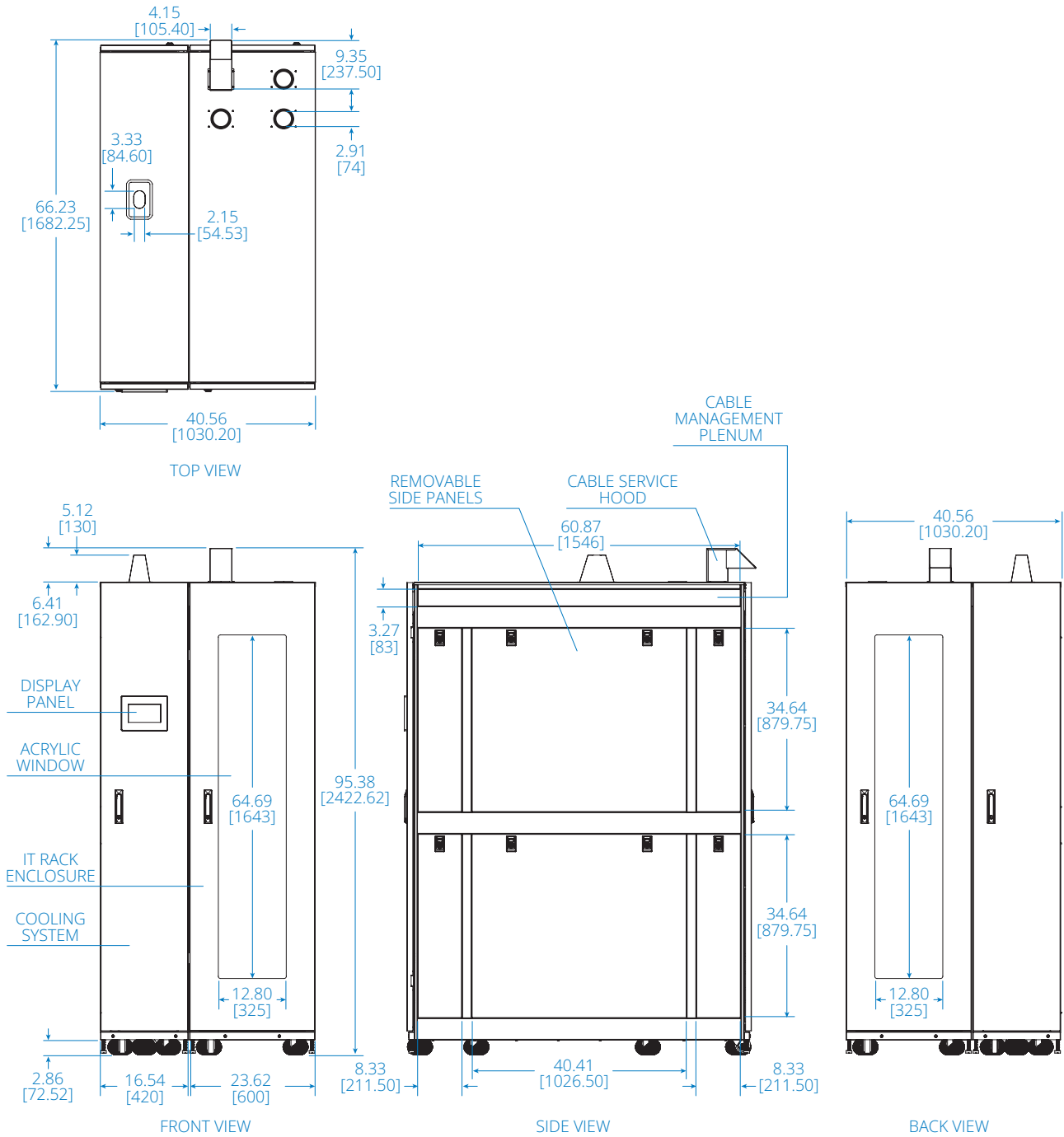
## Service Enclosure



Dimensions: INCHES [mm]

# Appendix

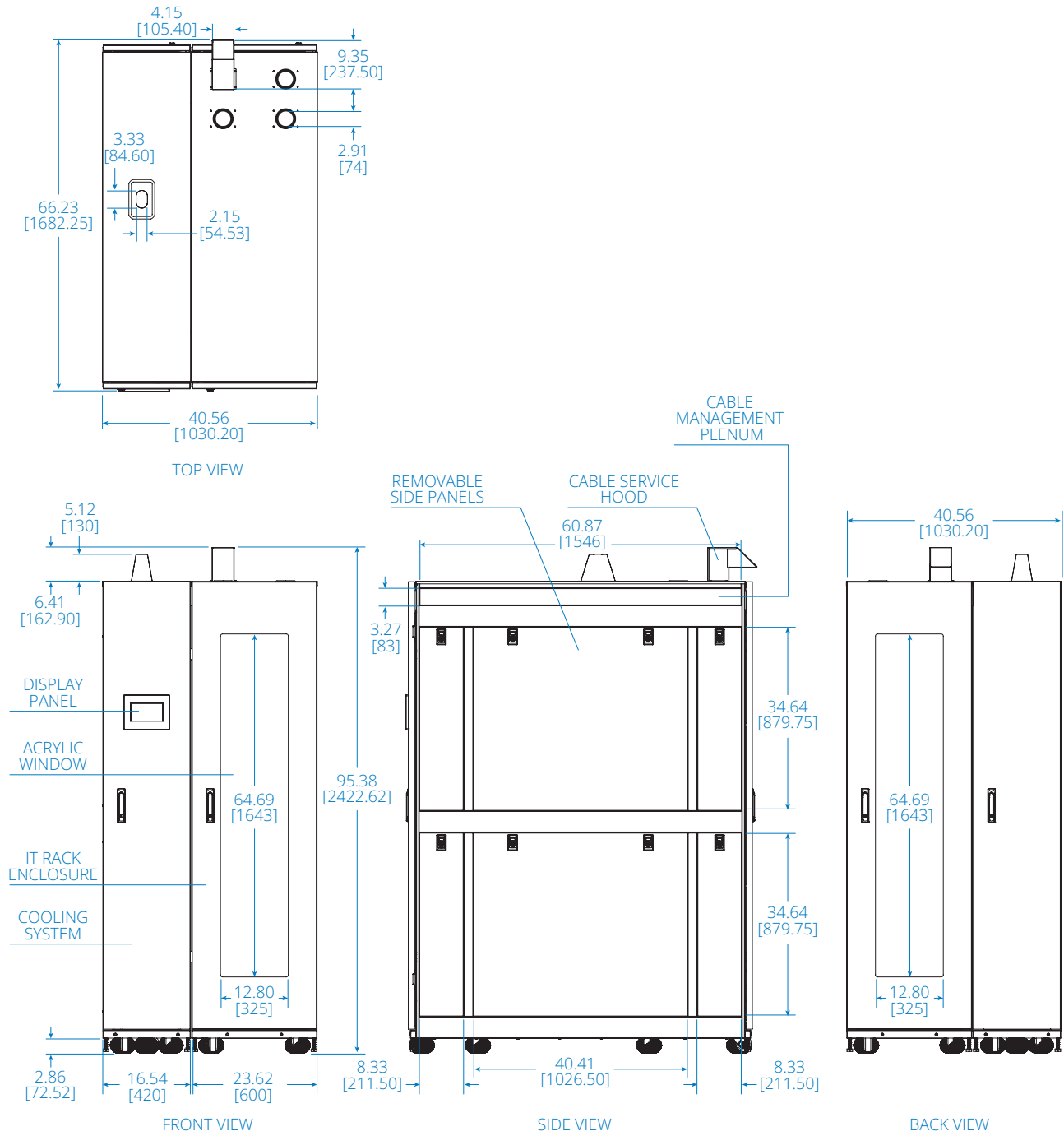
## SRP-R-C12



Dimensions: INCHES [mm]

# Appendix

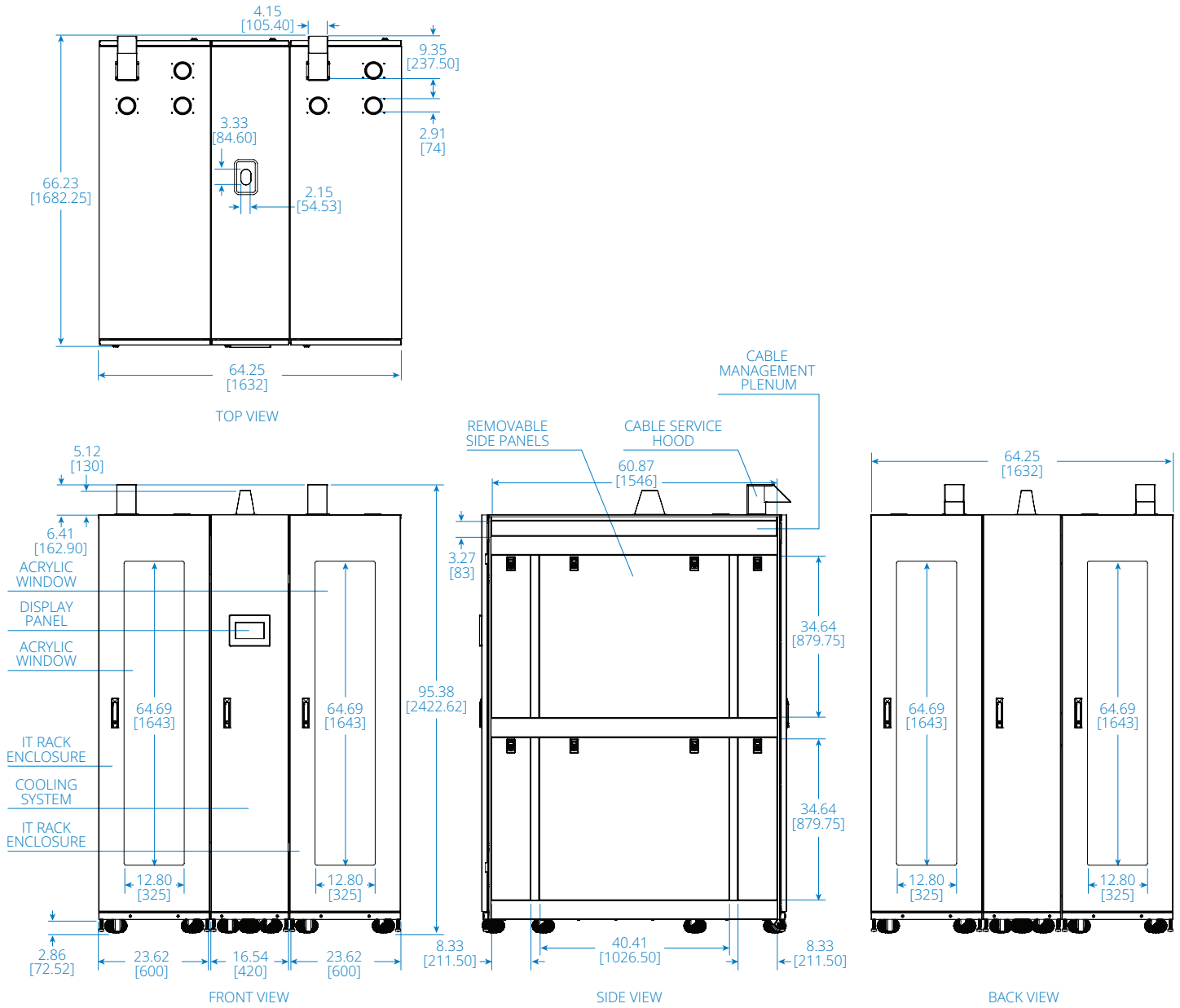
## SRP-R-C25



Dimensions: INCHES [mm]

# Appendix

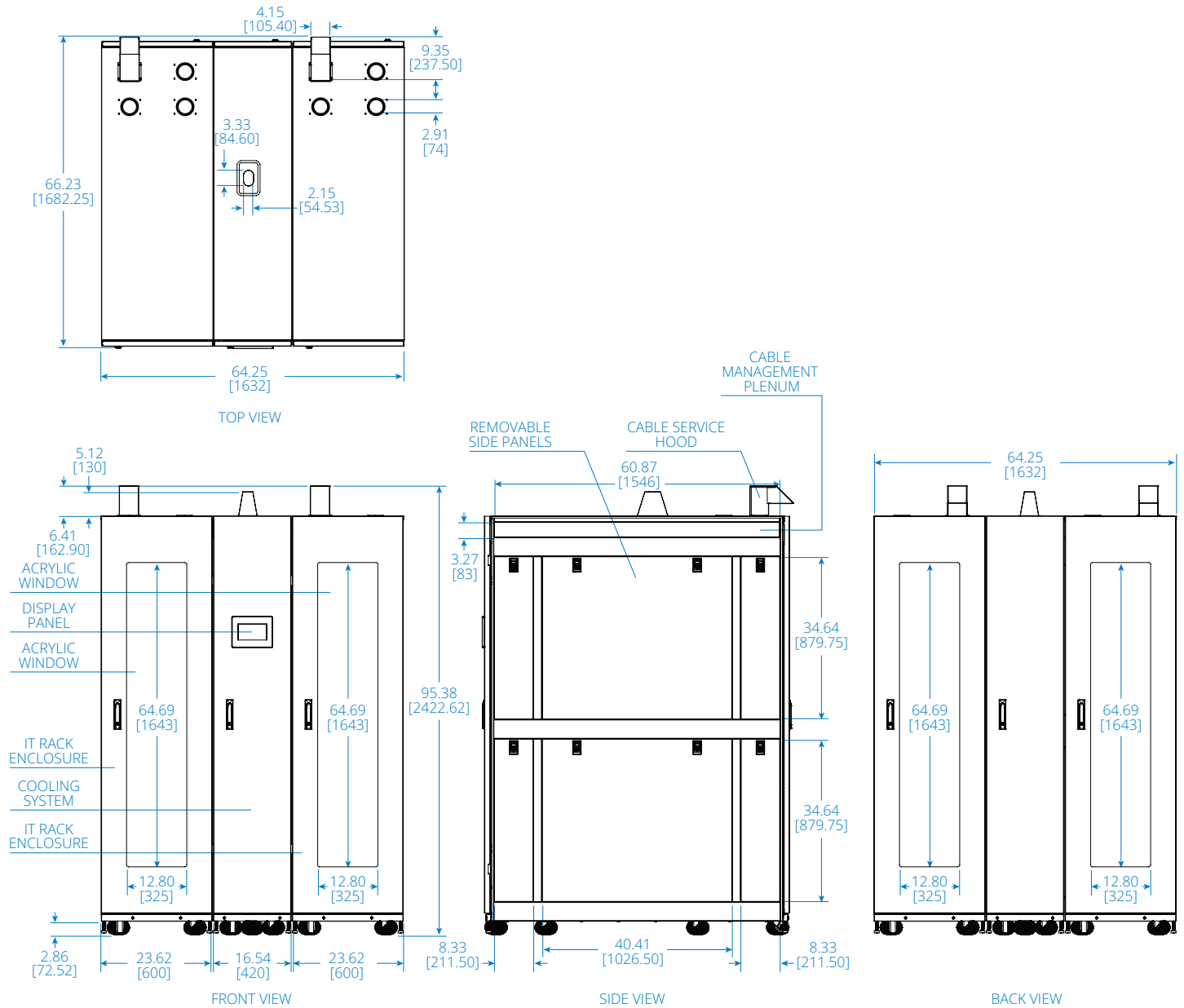
## SRP-2R-C12



Dimensions: INCHES [mm]

# Appendix

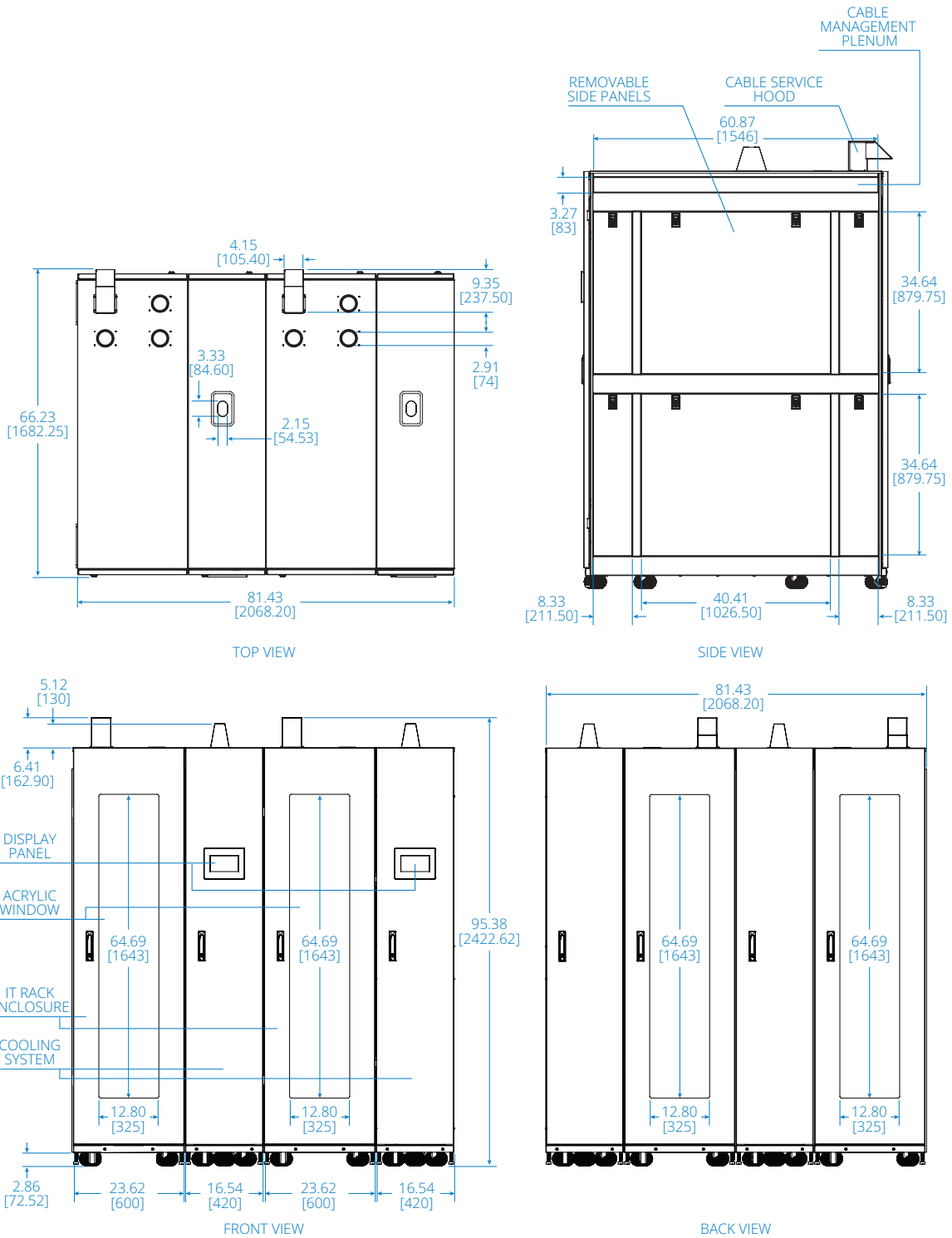
## SRP-2R-C25



Dimensions: INCHES [mm]

# Appendix

## SRP-2R-2C12

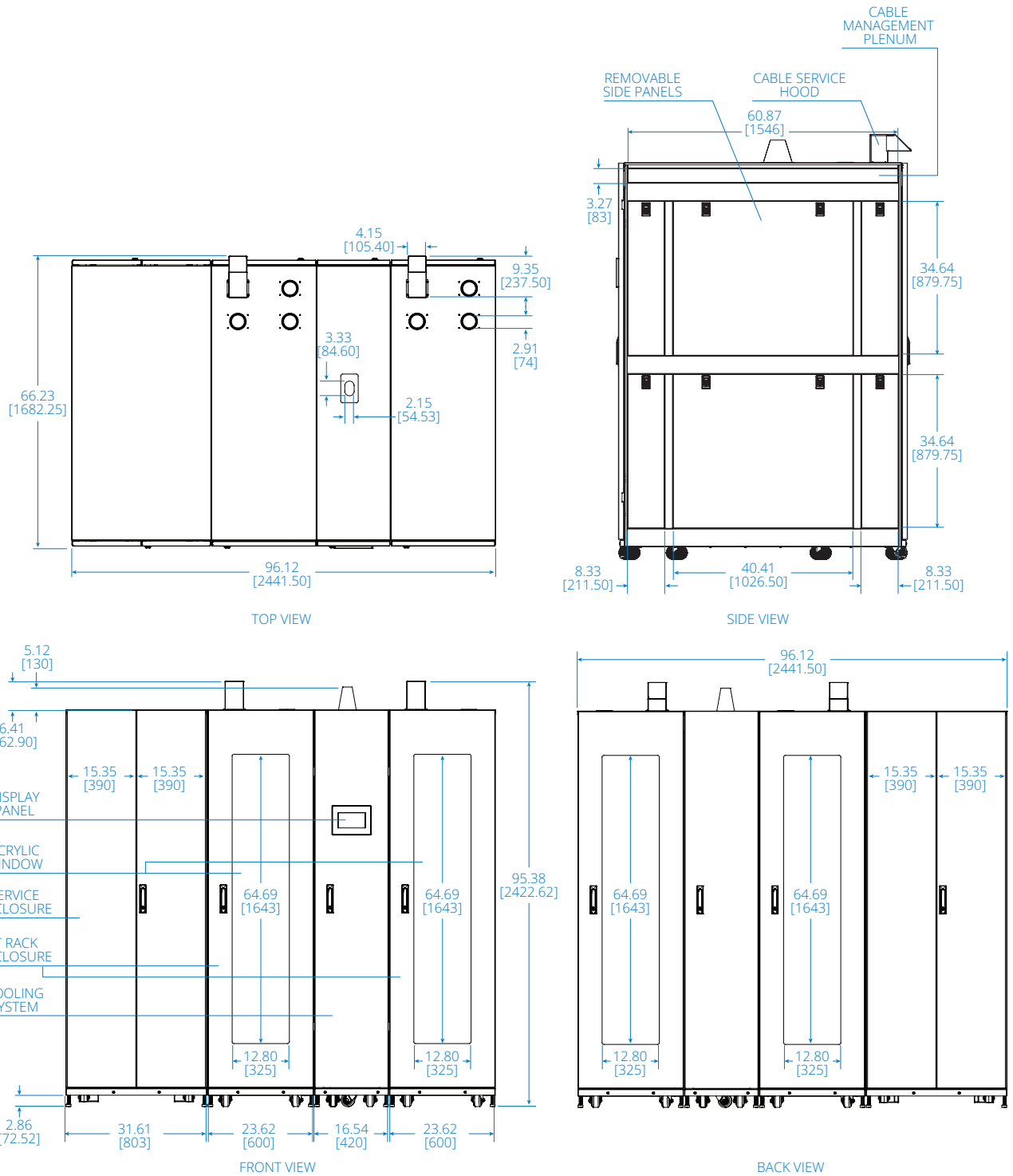


Dimensions: INCHES [mm]



# Appendix

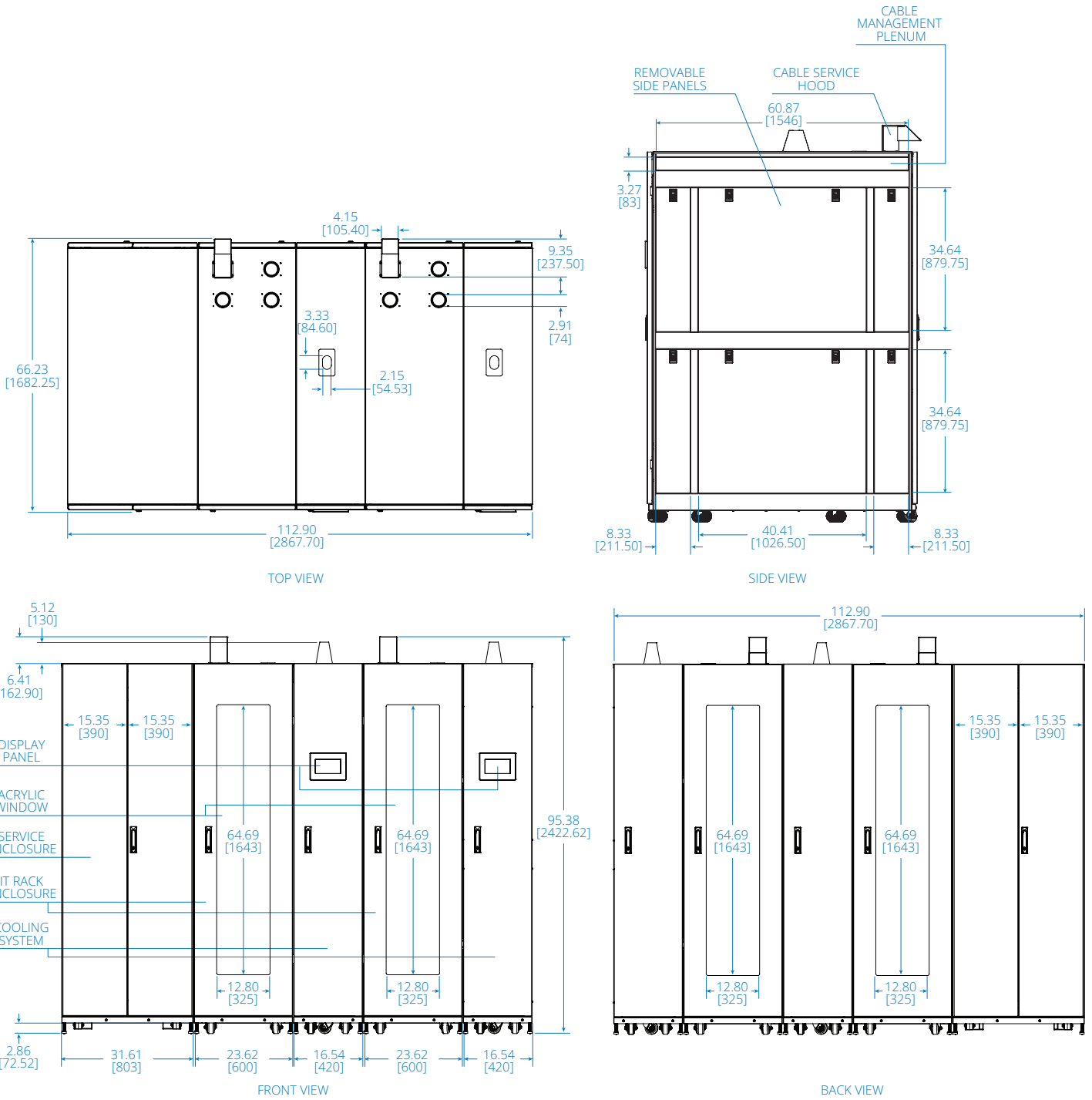
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Dimensions: INCHES [mm]

# Appendix

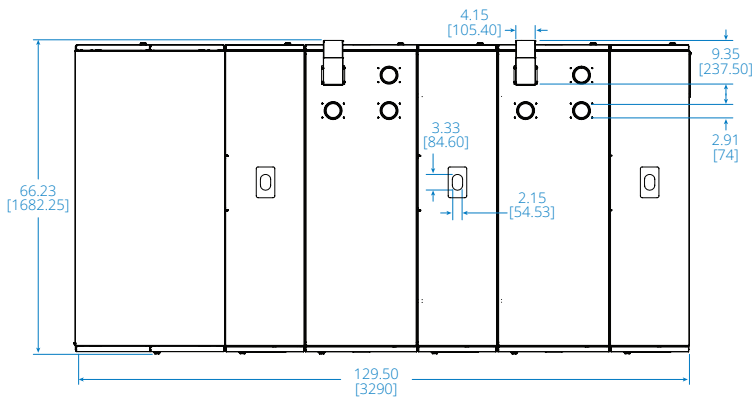
## SRP-2R-2C12-M



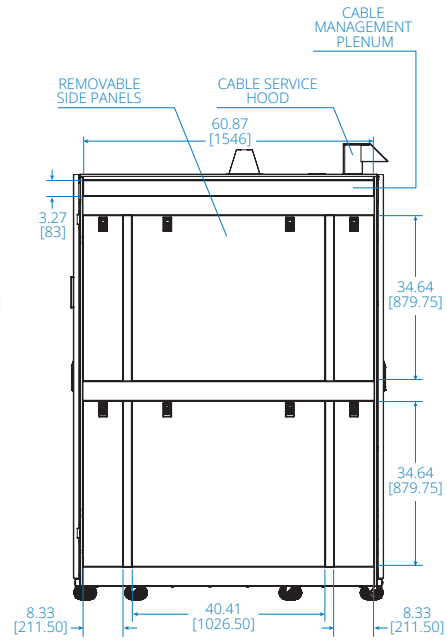
Dimensions: INCHES [mm]

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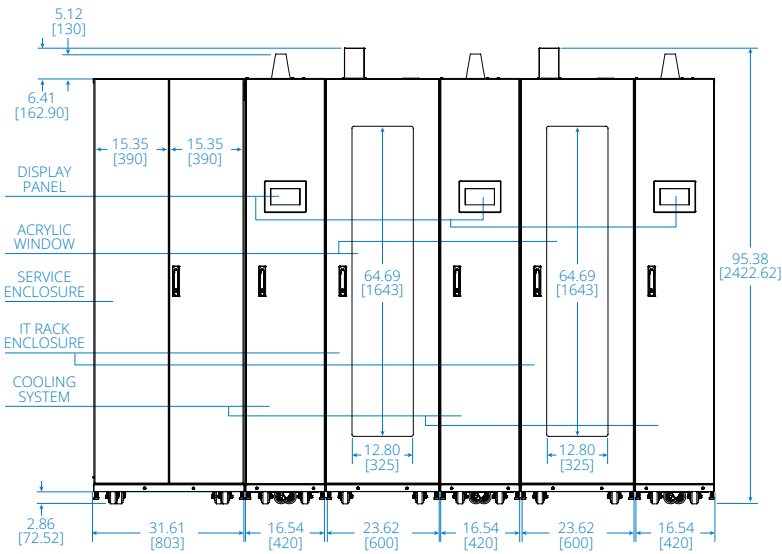
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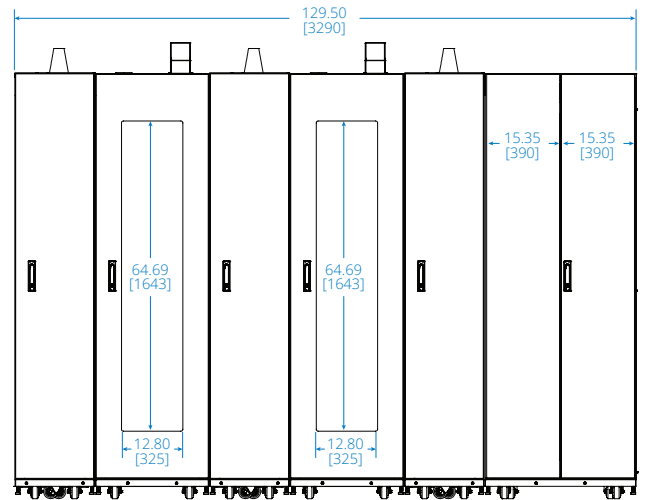
TOP VIEW



SIDE VIEW



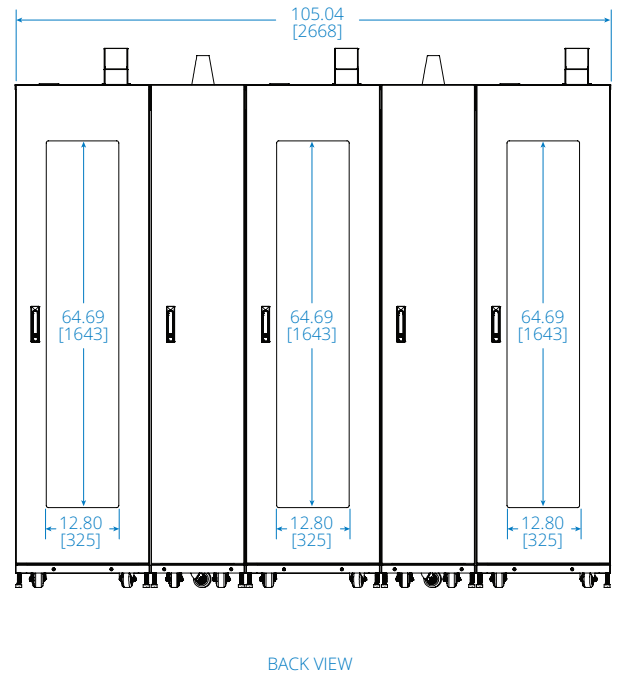
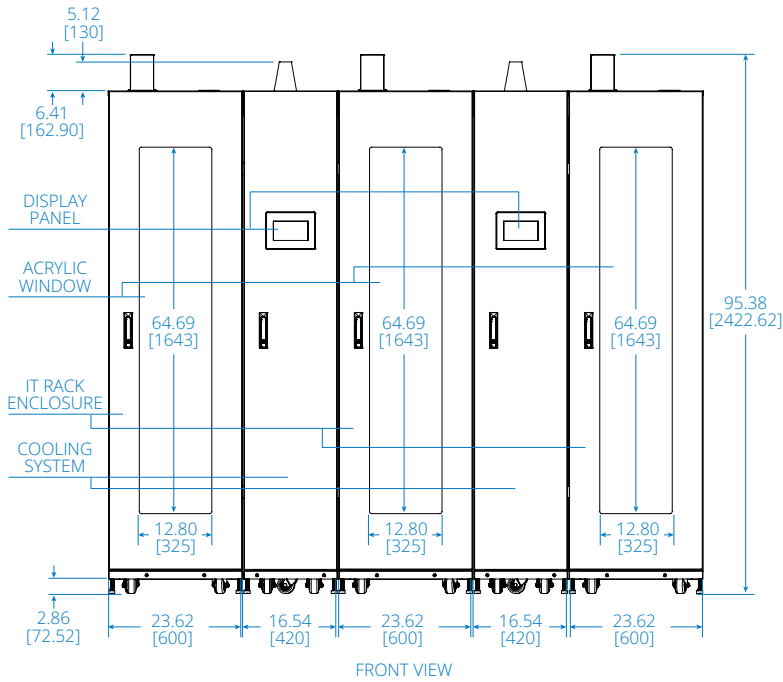
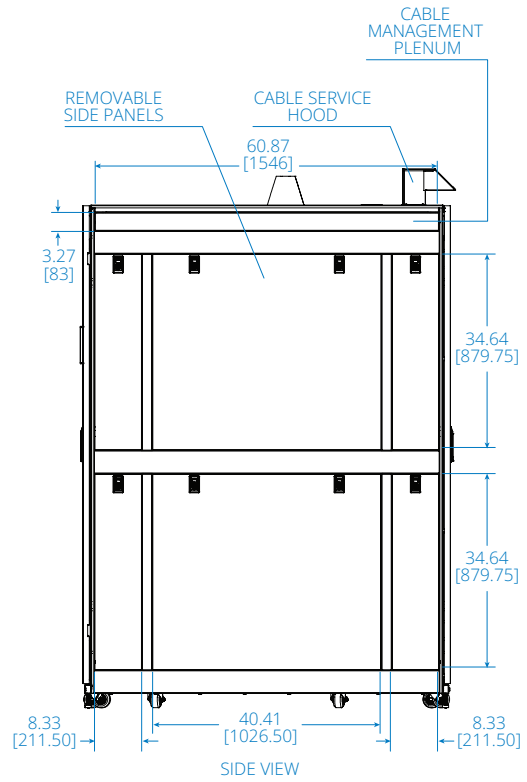
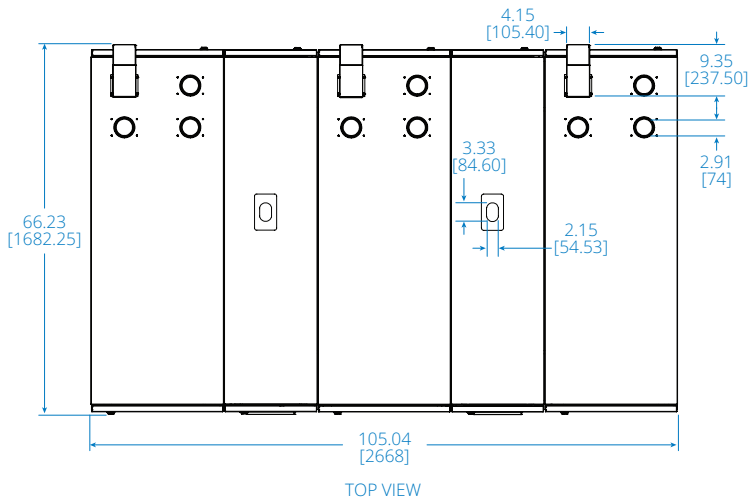
FRONT VIEW



BACK VIEW

# Appendix

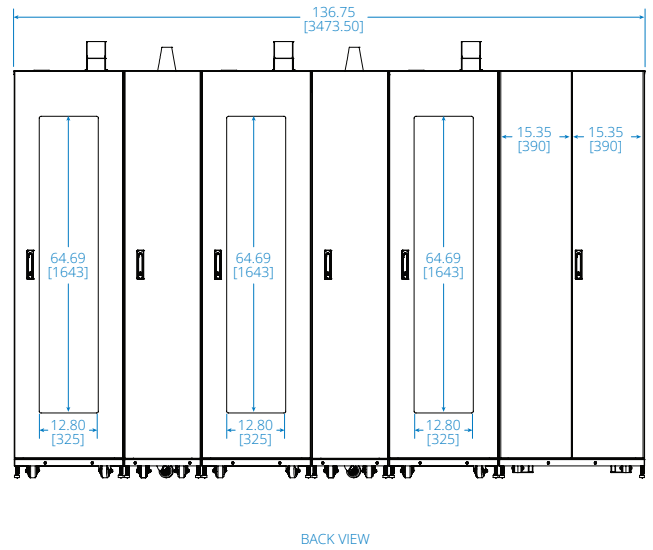
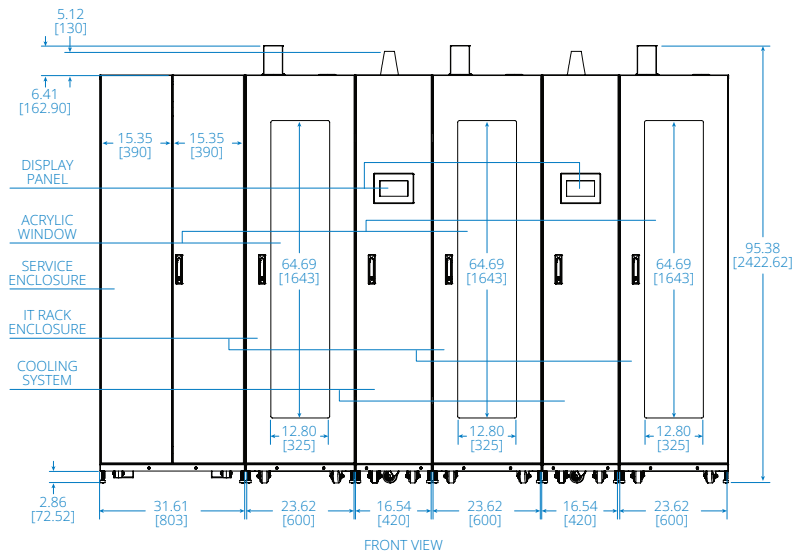
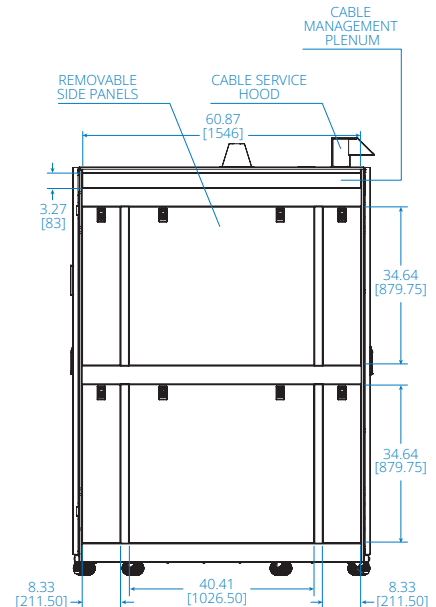
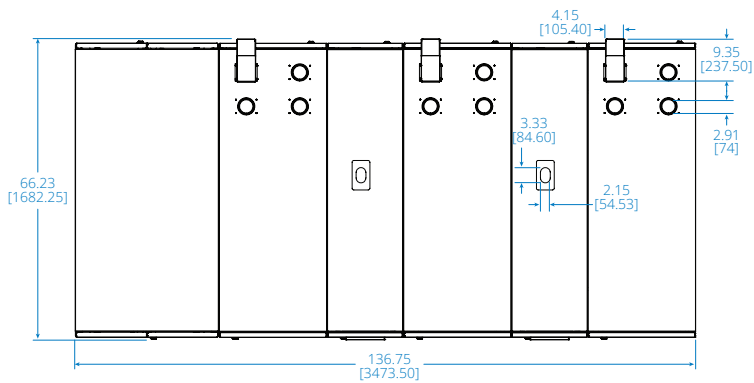
## SRP-3R-2C12



Dimensions: INCHES [mm]

# Appendix

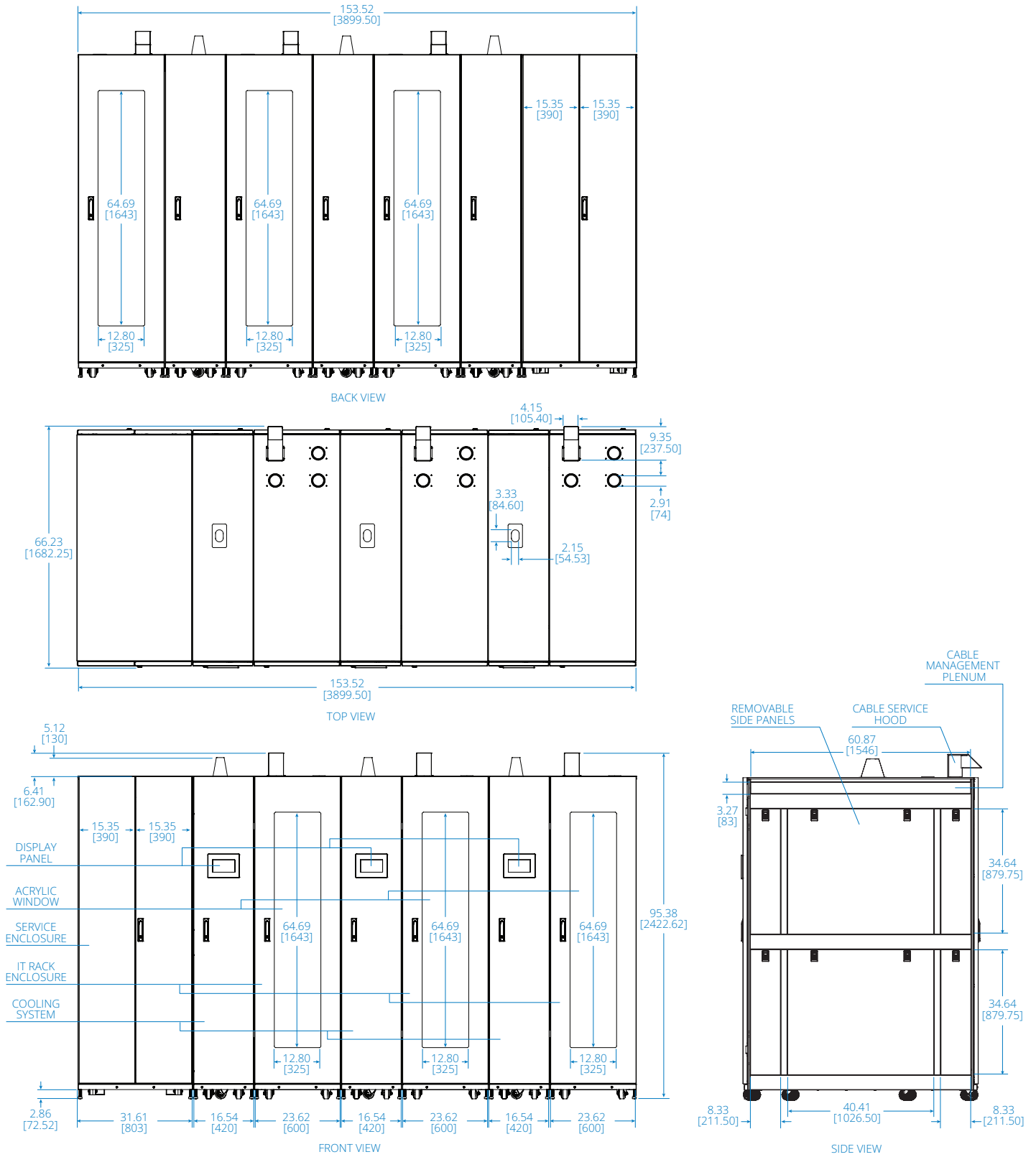
## SRP-3R-2C25-M



Dimensions: INCHES [mm]

# Appendix

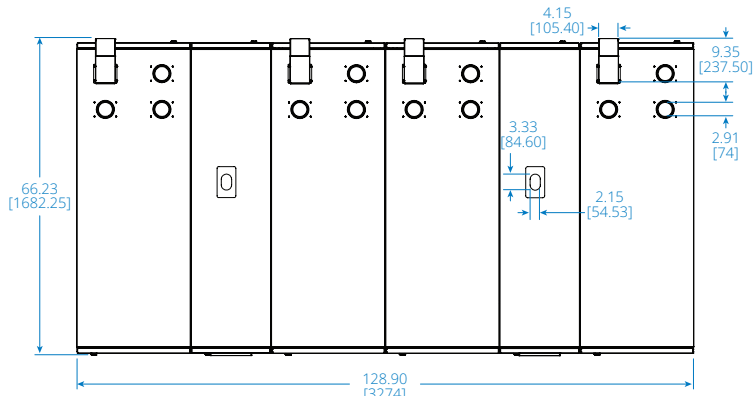
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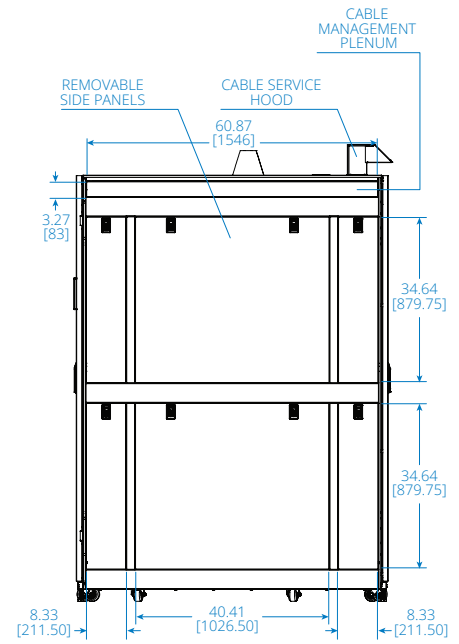
Dimensions: INCHES [mm]

# Appendix

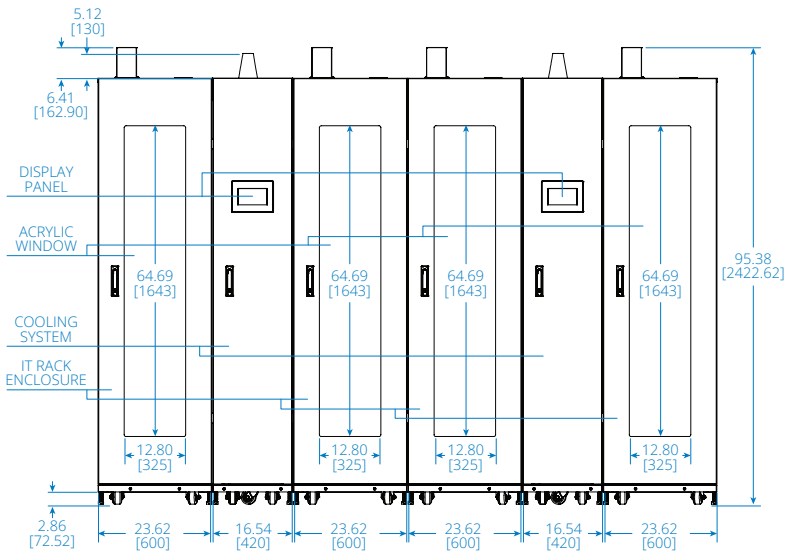
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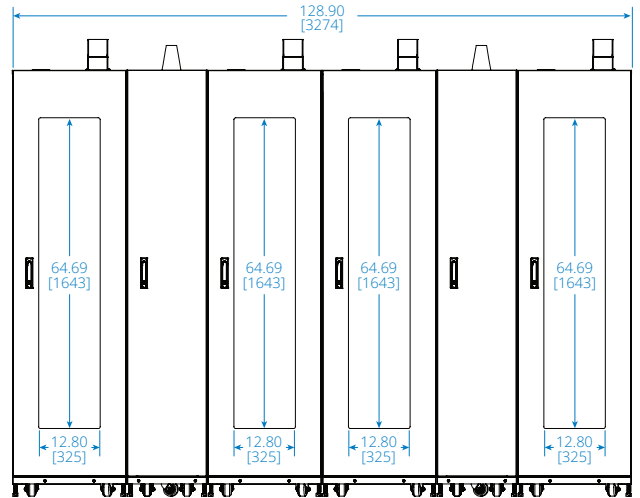
TOP VIEW



SIDE VIEW



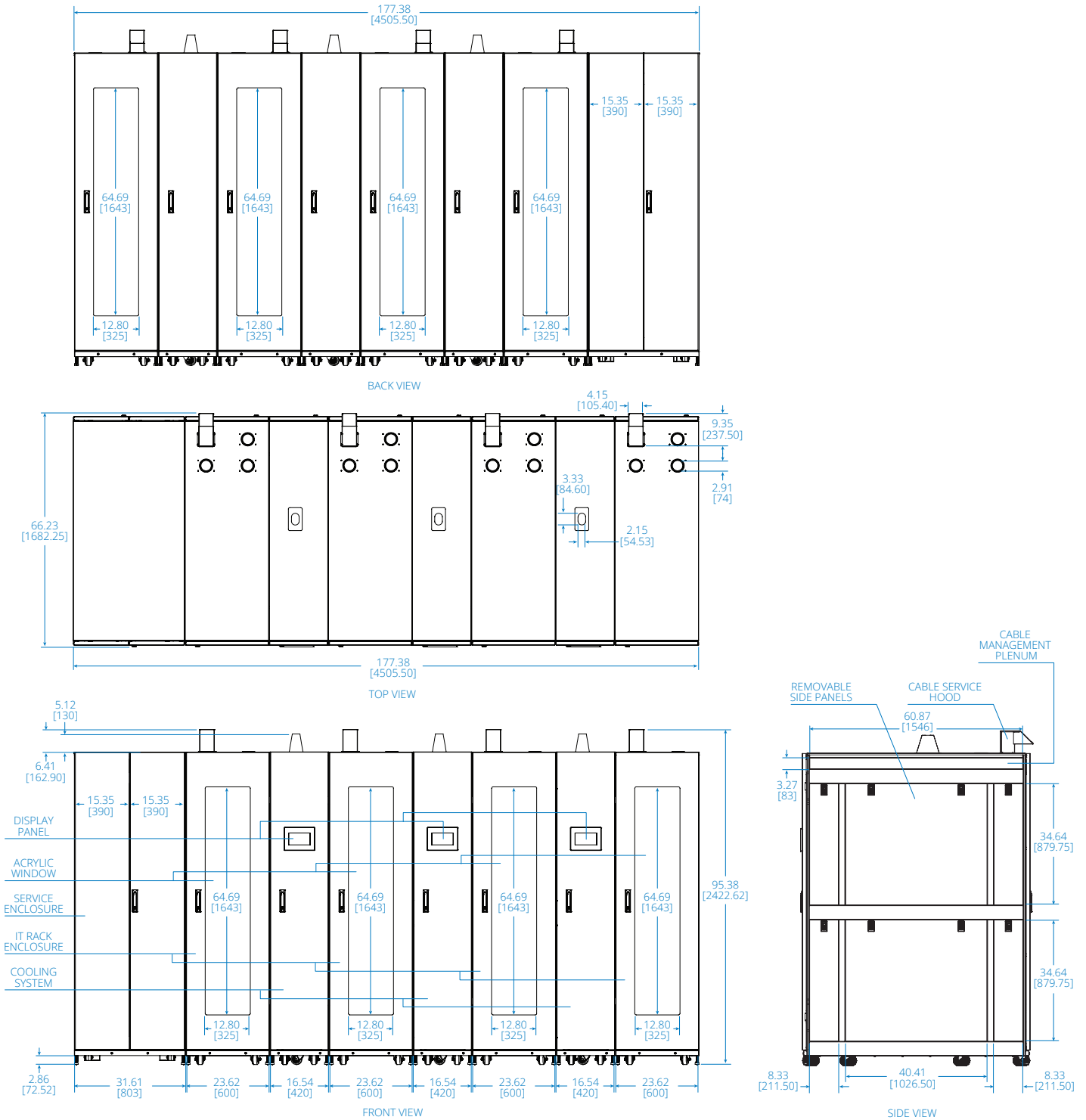
FRONT VIEW



BACK VIEW

# Appendix

## SRP-3R-3C12-M



Dimensions: INCHES [mm]



MODELS:

# SRCOOLDXRW12, SRCOOLDXRW25

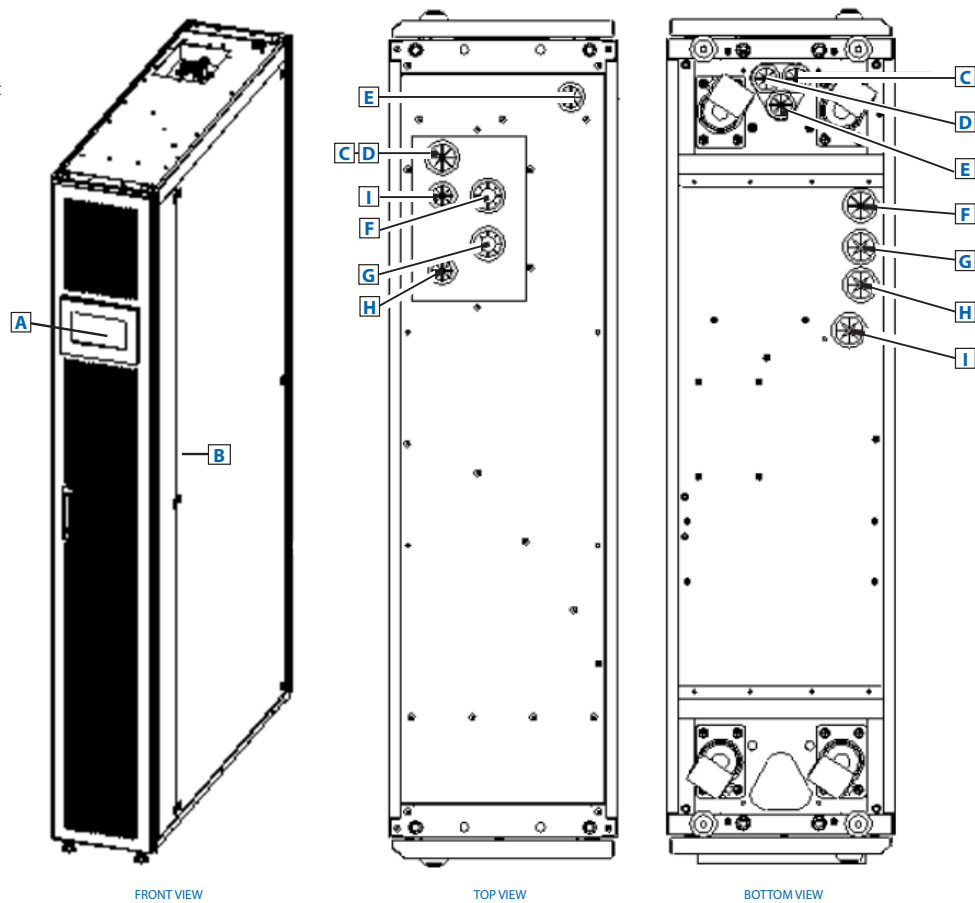
SmartRack® In-Row Precision Air Conditioning Units

## FRONT VIEW

- A** Touchscreen
- B** Side Air Discharge

## PIPING CONNECTIONS

- C** Main Electrical Input
- D** Outdoor Unit Electrical Input
- E** Signal Wiring Input
- F** Gas Pipe
- G** Liquid Pipe
- H** Accessory and Network Cable Access Port
- I** Water Drainpipe



- Robust cooling in a space-saving footprint for your data center, IT room or other edge location
- Up to 88,000 BTU of cooling power
- Built-in casters all for easy expansion or movement as IT cooling needs change
- Pre-installed WEBCARDLXMINI network interface offers 24/7 remote access

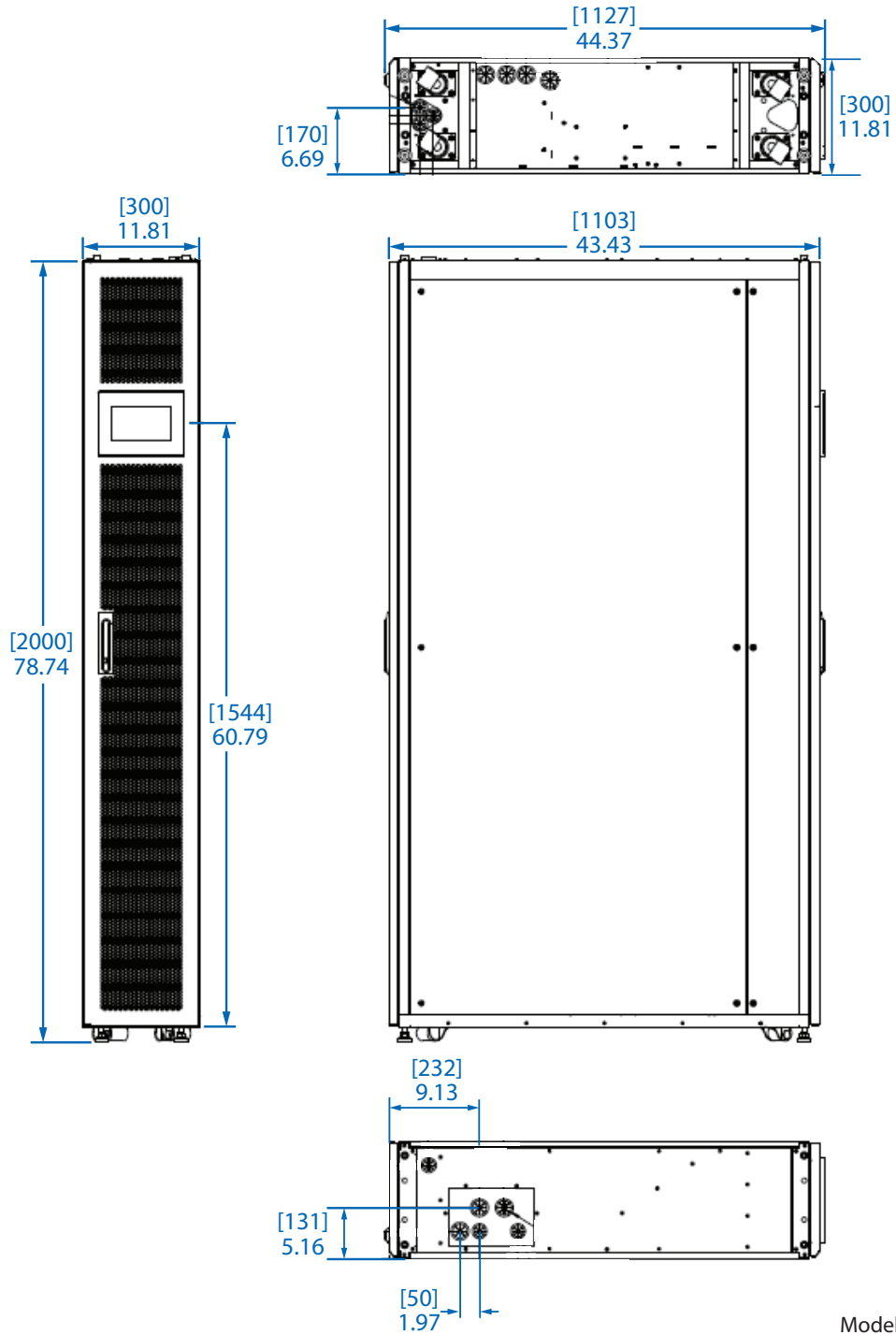
# Appendix

## Specifications

Models	SRCOOLDXRW12	SRCOOLDXRW25
Model Includes	In-Row Cooler + External Condenser	In-Row Cooler + External Condenser
Rated Cooling Capacity	12.8 kW (43,686 BTU/hr)	25.8 kW (88,033 BTU)
Input Power	208V, 3-Phase	208V, 3-Phase
Min. Circuit Ampacity (MCA)	19A	33A
Max. Overcurrent Protection (MOP)	25A	50A
Frequency	60 Hz	60 Hz
Refrigerant Type	R410A	R410A
Input Power Cable (Phases)	8 AWG 10 mm <sup>2</sup> (0.02 in <sup>2</sup> )	8 AWG 10 mm <sup>2</sup> (0.02 in <sup>2</sup> )
Input Cable (Neutral & Ground)	8 AWG 10 mm <sup>2</sup> (0.02 in <sup>2</sup> )	8 AWG 10 mm <sup>2</sup> (0.02 in <sup>2</sup> )
Cable Fixation Torque	1.5~1.8 N·m	1.5~1.8 N·m
Unit Height	2000 mm (78.7 in.); 42U	2000 mm (78.7 in.); 42U
Unit Depth	1100 mm (43.3 in.)	1100 mm (43.3 in.)
Unit Width	300 mm (11.8 in.)	300 mm (11.8 in.)
Unit Weight	180 kg (397 lb.)	198 kg (437 lb.)
Unit Carton Weight	215 kg (474 lb.)	233 kg (514 lb.)
<b>External Condenser Units</b>		
Input Power, From Indoor Cooling Unit	208V, 1-Phase	208V, 3-Phase
Input Power Cable (Phases)	16 AWG 1.5 mm <sup>2</sup> (0.002 in. <sup>2</sup> )	16 AWG 1.5 mm <sup>2</sup> (0.002 in. <sup>2</sup> )
Input Power Cable (Neutral)	16 AWG 1.5 mm <sup>2</sup> (0.002 in. <sup>2</sup> )	(No Neutral line)
Cable Fixation Torque	0.6~0.8 N·m	Terminal: 0.6~0.8 N·m Breaker: 3.5~4 N·m
Unit Height	1239 mm (48.78 in.)	723 mm (28.46 in.)
Unit Depth	425.1 mm (16.74 in.)	997 mm (39.25 in.)
Unit Width	800 mm (31.5 in.)	1407 mm (55.39 in.)
Leg Height	N/A (Vertical Standing)	452 mm (17.80 in.)
Unit Weight	62 kg (136.6 lb.)	87 kg (191.8 lb.)
Unit Carton Weight	78 kg (172 lb.)	120 kg (265 lb.)

Models:  
**SRCOOLDXRW12/  
SRCOOLDXRW25**

# Appendix

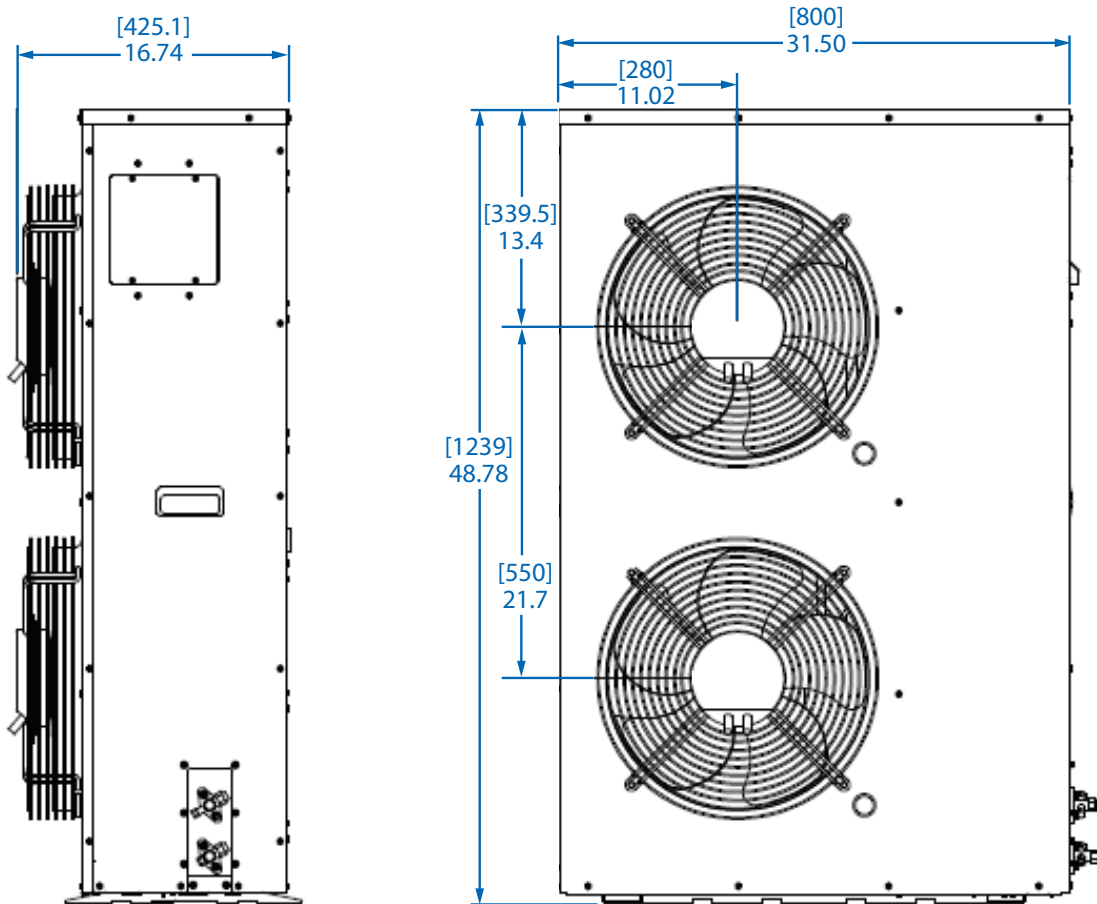


Models:  
**SRCOOLDXRW12/**  
**SRCOOLDXRW25**

Dimensions: [mm] inches

# Appendix

Outdoor unit for SRCOOLDXRW12

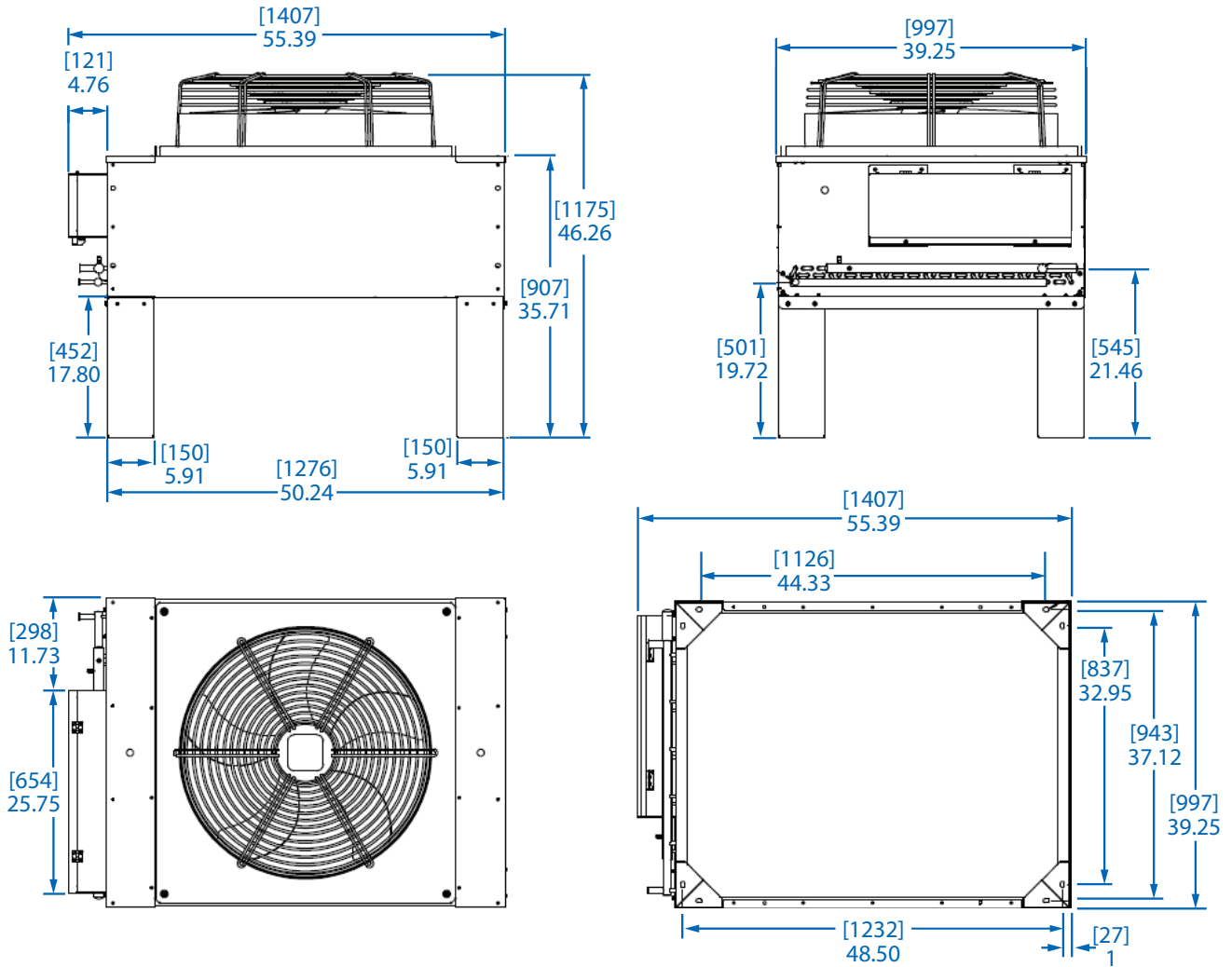


Models:  
**SRCOOLDXRW12/  
SRCOOLDXRW25**

Dimensions: [mm] inches

# Appendix

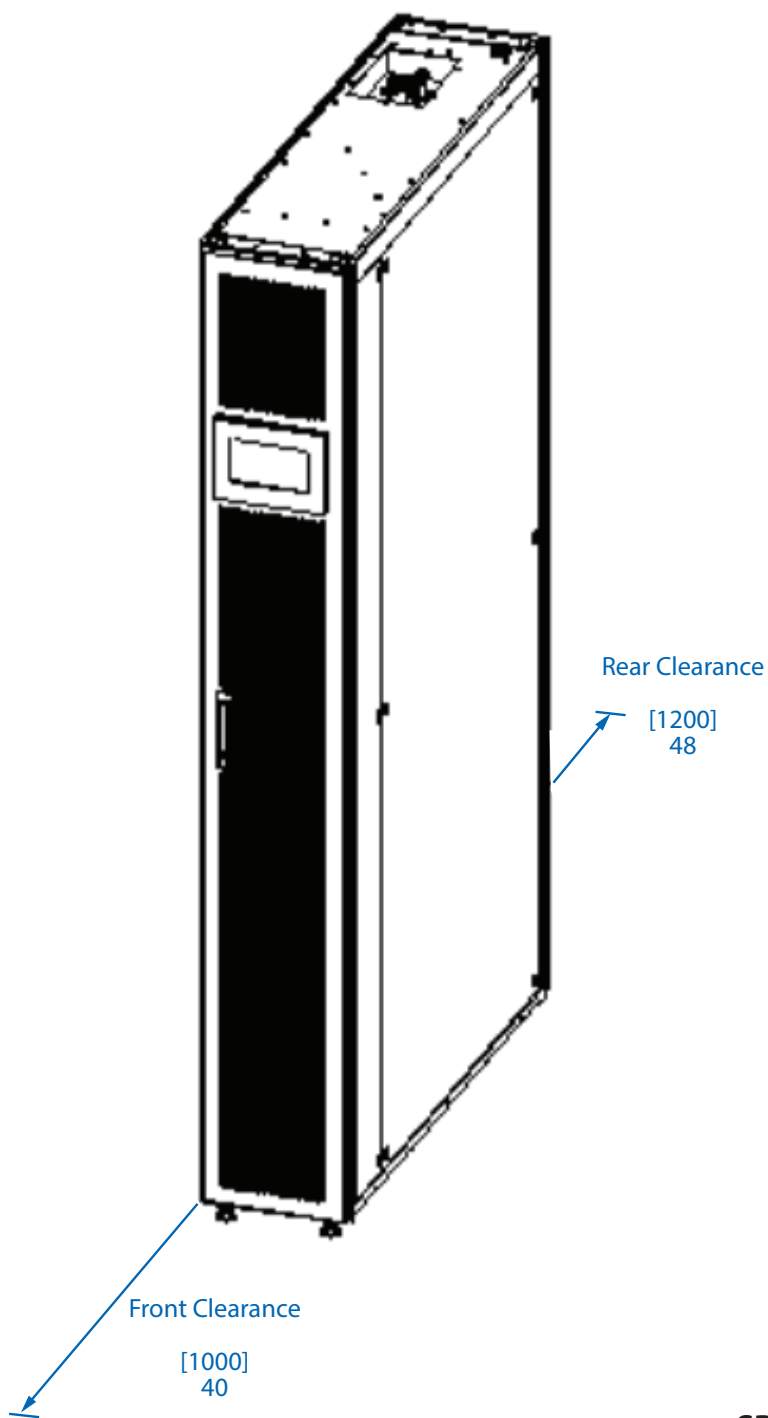
## Outdoor unit for SRCOOLDXRW25



Models:  
**SRCOOLDXRW12/**  
**SRCOOLDXRW25**

Dimensions: [mm] inches

## Clearance Requirements (Indoor Units)

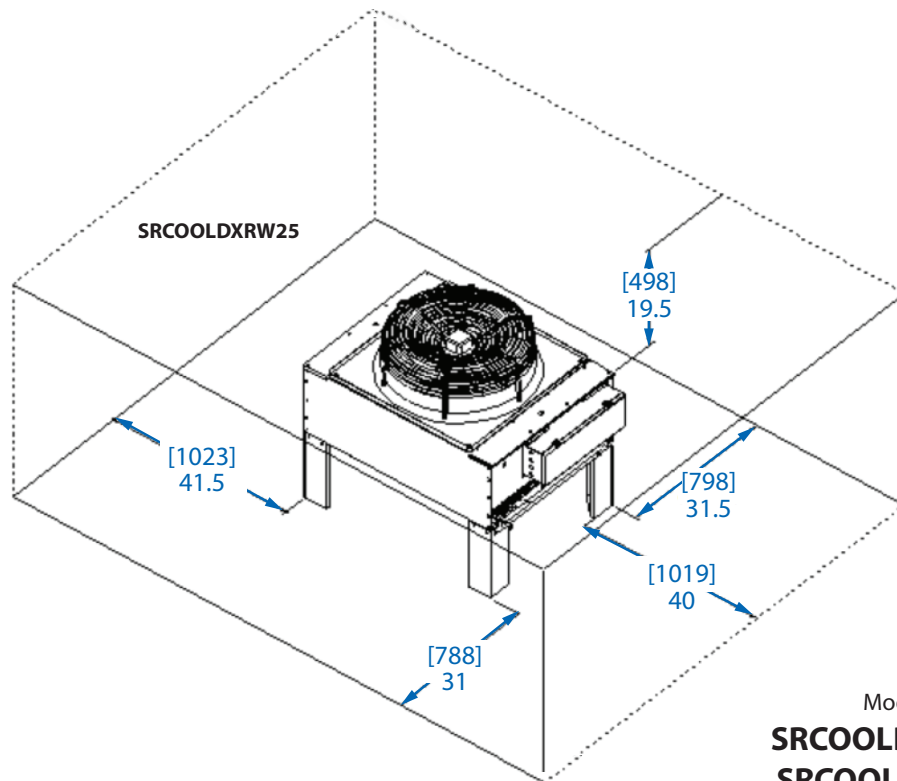
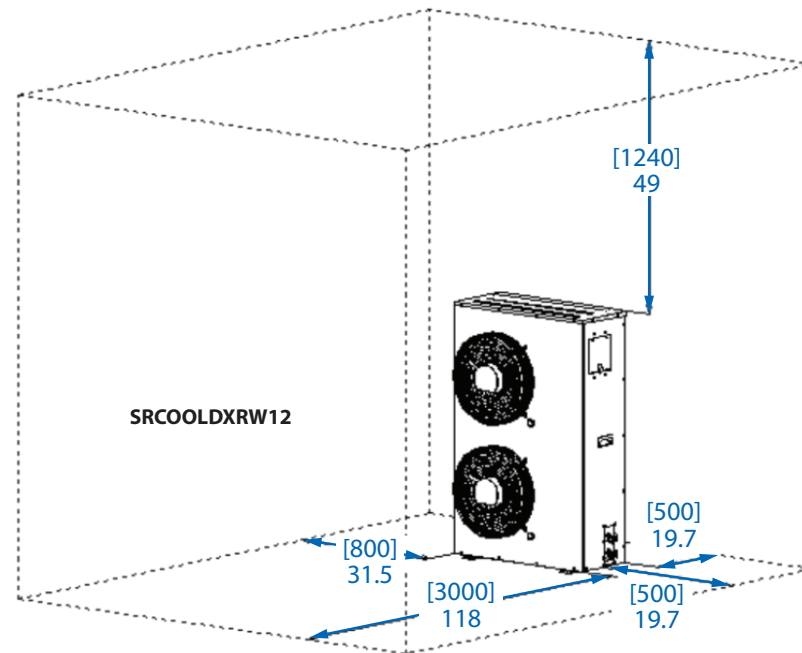


Models:  
**SRCOOLDXRW12/  
SRCOOLDXRW25**

Dimensions: [mm] inches

# Appendix

## Clearance Requirements, Outdoor Units



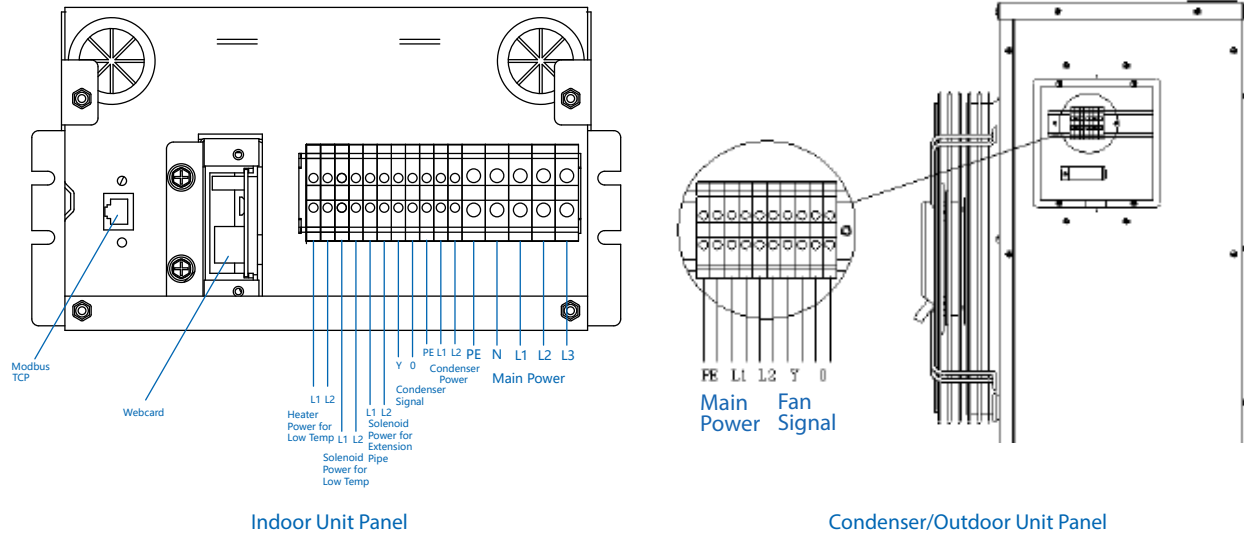
Models:  
**SRCOOLDXRW12/  
SRCOOLDXRW25**

Dimensions: [mm] inches

# Appendix

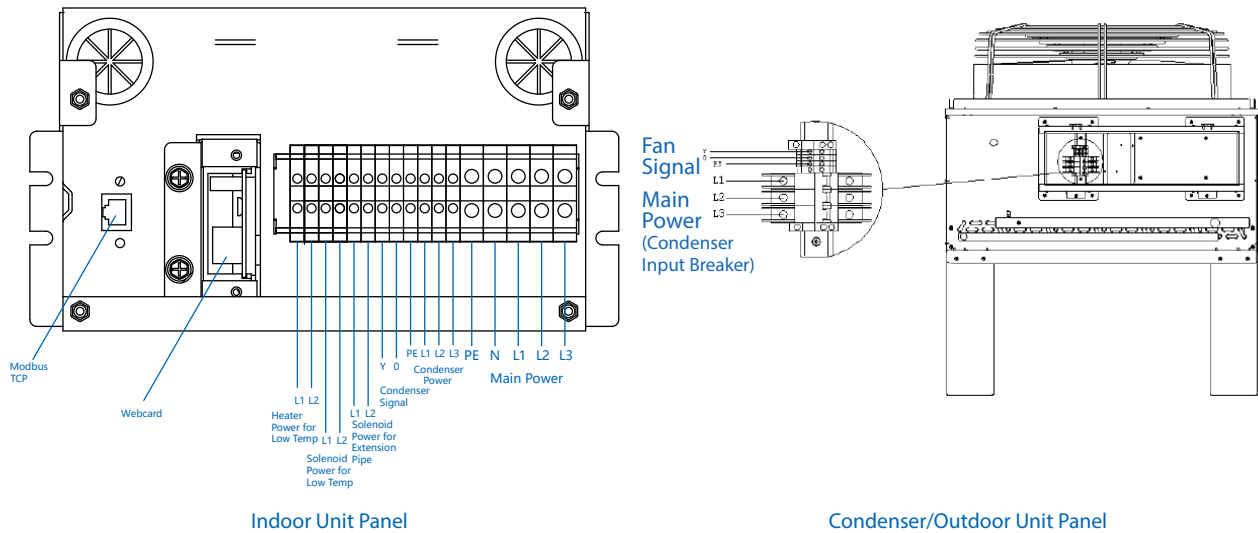
## Electrical Panel

### SRCOOLDXRW12



Power to the condenser unit comes from the indoor unit. For additional required electrical connections, please consult local NEC codes.

### SRCOOLDXRW25

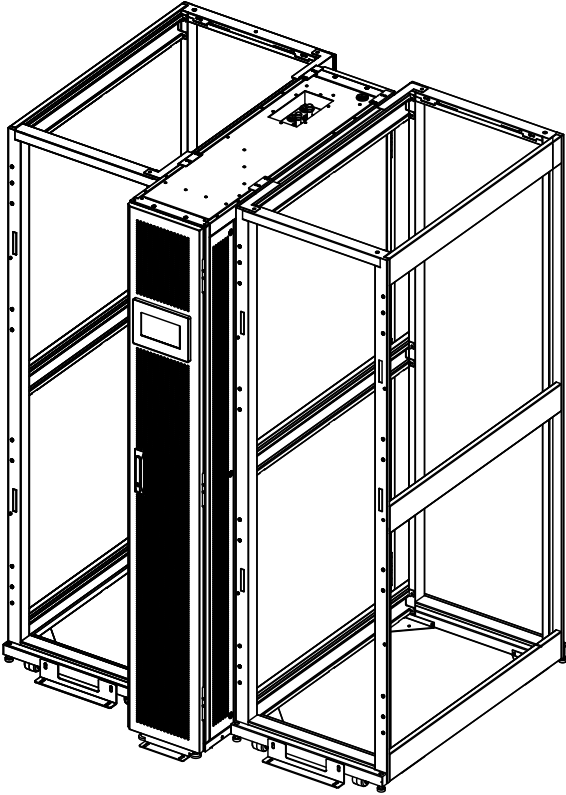


Power to the condenser unit comes from the indoor unit. For additional required electrical connections, please consult local NEC codes.

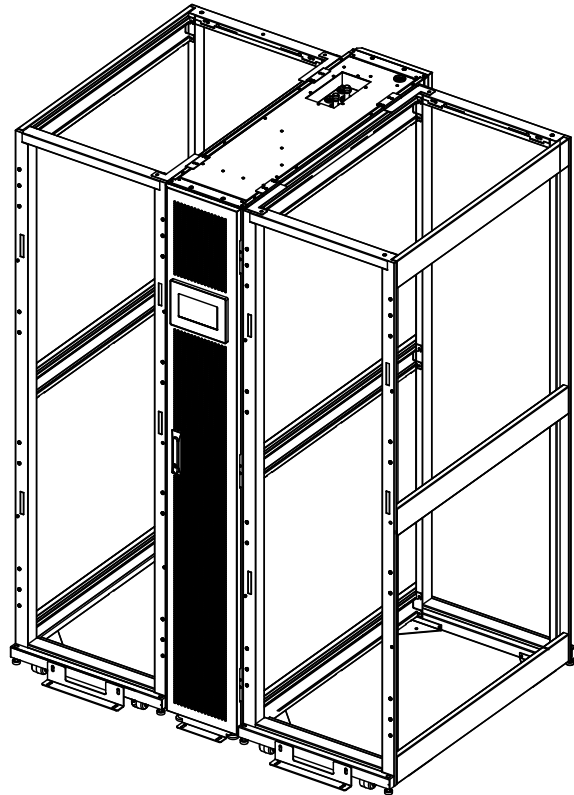
Models:  
**SRCOOLDXRW12/**  
**SRCOOLDXRW25**



## Placement Configuration



Protruded installation:  
For side air discharge configuration



Flush installation:  
For front air discharge configuration

Models:

**SRCOOLDXRW12/  
SRCOOLDXRW25**

# Bid Specifications

## SmartRack<sup>®</sup> In-Row Precision Cooling – DX Split

Models: SRCOOLDXRW12, SRCOOLDXRW25

### Standard Features

- EC fans
- Inverter-driven compressor
- Side and/or front air discharge
- Color touchscreen user interface
- Air filtration
- R-410A refrigerant
- Outdoor air-cooled condenser
- Electronic expansion valve
- Top/bottom piping and electrical connections
- Onboard logic controller
- High sensible cooling coil
- Condensate pan with pump
- Maintenance mode
- Grouping (multi-unit) capability
- MODBUS TCP/IP
- SNMP Network Management Card (WEBCARDLXMINI)

### Accessories

- Long piping kit - **SRCOOLLONGPKIT** - for linear piping distances >100 ft. (30 m)
- Low temperature kit - **SRCOOLDXRWLTKIT** - for outdoor temperatures <-4°F (-20°C)

# Appendix

## A. PERFORMANCE

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Working conditions</b>		
Rated cooling capacity (see Section CC for additional detail)	12.8 kW (43 kBTU)	25.8 kW (88 kBTU)
Rated indoor return air temperature and RH 24%.*	98.6°F (37°C)	98.6°F (37°C)
Rated outdoor temperature	95°F (35°C)	95°F (35°C)
Energy Efficiency Rating (EER) W/W	3.8	3.9
Approx minimum cooling capacity (continuous)	4 kW	8 kW
Maximum cooling capacity**	13.2 kw (45 kBTU)	27.3 kw (93.2 kBTU)
Maximum outdoor operating temperature	up to 113°F (45°C)	up to 113°F (45°C)
Minimum outdoor operating temperature without low temp kit installed	down to -4°F (-20°C)	down to -4°F (-20°C)
Minimum outdoor operating temperature with low temp kit (SRCOOLDXRWLTKIT) installed	down to -40°F (-40°C)	down to -40°F (-40°C)
Acceptable humidity operating range (indoor)	5 to 80% RH	5 to 80% RH
Maximum operational altitude (see chart in Section DD for altitude correction factors)	up to 13,000 ft. (4,000 m)	up to 13,000 ft. (4,000 m)

\* For maximum cooling capacity and RH operating scenarios, see chart in Section CC.

\*\* With indoor return air temperature of 104°F (40°C) and 20% RH (see Section CC for additional detail).

## B. COMPLIANCE APPROVALS

1. ANSI/UL 60335-1 and ANSI/UL 60335-2-40
2. CAN/CSA-C22.2 No. 60335-2-40-2017
3. FCC/ICES Compliant; CLASS A; 47 CFR FCC PART 15 SUBPART B; ICES-003 Issue 7
4. NOM
5. RoHS

## C. CABINET (IN-ROW)

1. 300 mm wide for maximum cooling capacity with minimal floorspace consumption
2. Horizontal airflow pass-thru: no raised floor required
3. Matching cabinet depth and height with standard IT rack
4. Rigid formed steel cabinet
5. Removable side panels both left and right for easy servicing
6. Front and rear doors for easy servicing
7. Color code RAL 9005

# Appendix

## D. INVERTER AND COMPRESSOR

1. Modulates compressor speed between 30~100%
  - a. SRCOOLDXRW12: 60~180 Hz
  - b. SRCOOLDXRW25: 90~270 Hz
2. Conserves energy by operating the compressor at partial load
3. Fault indicator on the inverter for easy troubleshooting
4. Soft start (in-rush current less than full load) to downsize breaker size
5. Rotary compressor for energy efficient and reliable operation

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Compressor</b>		
Type	Rotary	Rotary
Drive	Inverter-driven	Inverter-driven
Modulation	Variable speed	Variable speed
Speed	60~180 Hz	90~270 Hz
Operating range	30~100%	30~100%
Fault indicator	Yes	Yes

## E. EVAPORATOR FANS

1. Qty. 3 fans (SRCOOLDXRW12), Qty. 6 fans (SRCOOLDXRW25)
2. EC (variable speed), adjusts automatically according to heat load to meet the user-specified setpoint
3. Airflow
  - a. SRCOOLDXRW12: 1233 CFM @ 2543 RPM (default max); 0~1475 CFM (absolute max)
  - b. SRCOOLDXRW25: 2400 CFM @ 2753 RPM (default max); 0~2950 CFM (absolute max)
4. Centrifugal type, quieter than axial
  - a. Sound rating at 10 ft. (3 m) at rated conditions = 68dBA
5. Fan array extends entire height of cooling cabinet for uniform cold air top to bottom
6. Horizontal airflow through the cabinet negates the need for a raised floor
7. All fans operate in unison (matching RPM)
8. Finger protection guards
9. Built-in redundancy – if one fan fails, the others will continue operating and even compensate for missing fan
10. Fan power each: 69W/SRCOOLDXRW12 and 84W/SRCOOLDXRW25
11. Fan size: 225 mm

# Appendix

## F. CONDENSER

1. Remote condenser rejects all heat to the outdoors, no building HVAC or commercial cooling system required
2. Properly sized, comes standard with each In-Row (indoor) cooler
3. Powered via In-Row (indoor), no separate power source required
4. Vertical mount condenser for space savings (SRCOOLDXRW12)
5. Horizontal (legs included) or vertical mount condenser for space savings (SRCOOLDXRW25)
6. Up to 200 ft. (61 m) equivalent distance between condenser and In-Row
7. Up to 65 ft. (20 m) vertical elevation (condenser above In-Row)
8. Down to -16 ft. (-5 m) vertical elevation (condenser below In-Row)
9. Galvanized aluminum chassis for anti-rust/anti-corrosion
10. Optional long piping kit (SRCOOLLONGPKIT) for linear equiv distance >100 ft. (30 m), prevents liquid refrigerant floodback; powered from In-Row (indoor) unit
11. Total heat rejection rate of condenser captures both the cooling capacity as well as the compressor heat:
  - a. SRCOOLDXRW12: 18kW
  - b. SRCOOLDXRW25: 38kW

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Condenser</b>		
Maximum total heat rejection (condenser)	18 kW	38 kW
Discharge fitting size	5/8 in.	7/8 in.
Liquid-line fitting size	1/2 in.	5/8 in.

## G. CONDENSER FAN

1. Qty. 2 fans (SRCOOLDXRW12) and qty. 1 fan (SRCOOLDXRW25)
2. AC type fans, no belts
3. Variable speed for consistent condensing temperature and pressure
4. Airflow
  - a. SRCOOLDXRW12: 4984 CFM @ 1700 RPM
  - b. SRCOOLDXRW25: 7908 CFM @ 700 RPM
5. Sound rating at 10 ft. (3 m): <74dBA
6. Finger guard

## H. TEMPERATURE AND HUMIDITY SENSORS

1. Rear temperature and humidity sensor for return air measurement
2. Front temperature sensor for supply air measurement
3. Used for cooling mode to control both fan and compressor speeds independently
4. Cooling mode can switch between return air and supply air control methods
5. User can specify the target supply/return air temperature
6. Humidity sensor controls dehumidification mode: if humidity becomes too high, the system will remove moisture from the air
7. User can specify the target humidity level

# Appendix

## I. REFRIGERANT

1. Sight glass (included)
  - a. Assists in checking refrigerant quality and charge level
2. Nominal charge:
  - a. SRCOOLDXRW12: 12.1 lb. (5.0 kg)
  - b. SRCOOLDXRW25: 17.4 lb. (8.0 kg)
  - c. Actual charge depends on application (see installation manual)
3. R410A refrigerant
  - a. Ozone depletion potential: 0
  - b. Global warming potential: 2088 (i.e. 2088 times more than CO<sup>2</sup>)
  - c. ASHRAE standard: 34 Safety Rating: A1 (best)
  - d. Environmentally friendly, non-ozone depleting
  - e. Industry standard
4. The product shall not require any water to operate
5. Refrigerant Piping
  - a. Downward pitch at least 1 in. per 10 ft./ (10 mm per 1 m)
  - b. Minimum exposure temperature: 32°F (0°C)

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Refrigerant Piping</b>		
Refrigerant	R-410A	R-410A
Discharge fitting size	5/8 in.	5/8 in.
Liquid line fitting size	1/2 in.	5/8 in.
Discharge horizontal piping diameter	Varies -- see installation manual	
Discharge vertical piping diameter	Varies -- see installation manual	
Liquid line piping diameter	Varies -- see installation manual	
Copper pipe type	ACR Type L - hard drawn preferred	
S-trap (vertical discharge piping)	Every 20 ft. (6 m) (combined)	
Maximum condenser elevation	65 ft. (20 m) above In-Row	
Minimum condenser elevation	-16 ft. (-5 m) below In-Row	
Maximum equivalent piping distance	Up to 200 ft. (60 m)	
Connection location (indoor)	Top or bottom	Top or bottom
Protection	Grommets	Grommets
Discharge piping downward pitch	At least 1 in. per 10 ft. (10 mm per 1 m)	
Sight glass	Included	Included
Filter drier	Included	Included
Oil separator	Included	Included

## J. DIRECTIONAL AIRFLOW

1. Optional side air discharge panels
  - a. Directs air either left or right (or both) along the fronts of adjacent racks
  - b. Comes as standard feature
2. Front airblock
  - a. Blocks air from discharging out the front and instead redirects it to the sides
  - b. Comes as a standard feature
3. Flush or staggered row alignment
  - a. In-Row can be positioned either flush with adjacent cabinets (front only discharge) or protruded (side air discharge)

# Appendix

## K. STABILIZERS

1. Casters
  - a. Qty. 4 all four corners
  - b. Full swivel for each
  - c. Allows cabinet to be maneuvered from room to room and into position without the need for special lifting equipment
2. Leveling feet
  - a. Qty. 4 adjustable leveling feet all four corners
  - b. Stabilizes cabinet into place
3. Baying brackets
  - a. Included with package
  - b. Supports both flush and protruded/staggered installation

## L. EXPANSION VALVE AND FILTER DRIER

1. Electronic Expansion Valve (EEV)
  - a. Comes standard with electronic type, for better stability and control over thermal type
  - b. Increased cooling precision
  - c. Improved energy efficiency
  - d. Improved turndown ratio (improves minimum capacity)
2. Filter drier
  - a. Included in refrigeration circuit to catch particulates and remove moisture inside the piping

## M. PIPING AND ELECTRICAL CONNECTIONS

1. Top or bottom entry: piping/electrical can be routed from top or bottom into the In-Row cooler; no modifications required
2. Designated ports both top and bottom with grommets to protect against vibration
3. Strain relief provided for electrical terminal connections

## N. POWER INPUT

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Power input (In-Row cooler)</b>		
Rated Input Power, Indoor Unit	208V, 3ph, 60 Hz	208V, 3ph, 60 Hz
Voltage input range	200-240V	200-240V
Voltage input tolerance	±10%	±10%
Frequency range	48-62 Hz	48-62 Hz
Connection type	Hardwired	Hardwired
MCA (Minimum Current Ampacity)	19A	33A
MOP (Maximum Overcurrent Protection)	25A	50A
In-rush current	Soft-start	Soft-start
Strain Relief	Included	Included
<b>Power input (condenser)</b>		
Input Power from Indoor Cooling Unit	208V, 1ph, 60 Hz	208V, 3ph, 60 Hz
Voltage input range	200-240V	200-240V
Voltage input tolerance	±10%	±10%
Frequency range	48-62 Hz	48-62 Hz
Connection type	Hardwired from In-Row (Indoor Unit)	Hardwired from In-Row (Indoor Unit)
Signal wire (from In-Row)	20 AWG	20 AWG
FLA	2.9A	3.2A

# Appendix

## O. MAINTENANCE MODE

1. Instantly switches the In-Row unit into max-cooling mode to help exhaust the hot aisle of hot air while technicians are working
2. No password required; no hassle of getting permissions to access the settings menu
3. Automatic timeout: after 30 minutes (or as specified by the owner) system returns to normal operation
4. Allowing/disabling this feature can be managed in the settings menu

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Maintenance Mode</b>		
Maintenance Mode (MM)	Included	Included
MM default run time (timeout)	30 min.	30 min.
MM fan speed	100%	100%
MM password	Not required	Not required
MM disable	Settings menu	Settings menu

## P. ALARMS

1. Return air humidity sensor failure
2. Return air temperature high
3. Return air temperature low
4. Return air temperature sensor failure
5. Suction pressure low
6. Suction pressure sensor failure
7. Suction temperature sensor failure
8. Supply air temperature high
9. Supply air temperature low
10. Supply air temperature sensor failure
11. High water level (condensate overflow prevention)
12. Display communications lost
13. Compressor maintenance needed
14. Discharge pressure high
15. Discharge pressure sensor failure
16. Filter maintenance needed
17. High pressure / high discharge switch fault
18. Indoor fan maintenance needed
19. Liquid-pipe temperature sensor failure
20. Return air humidity high
21. Return air humidity low

## Q. COMMUNICATION

1. MODBUS TCP/IP
  - a. MODBUS register map provided
2. SNMP Network Management Card included (WEBCARDLXMINI)
3. Monitor and manage all essential functions remotely



# Appendix

## R. GROUPING

1. Group (link) multiple In-Row coolers together for:
  - a. Rotation
  - b. Redundancy
2. Inter-compatibility between SRCOOLDXRW12 and SRCOOLDXRW25
3. Rotation
  - a. Balance runtimes among all In-Row units in a group to ensure even wear and tear
4. Redundancy
  - a. Set up a fallback In-Row unit; should a given In-Row unit fail, its back up will resume automatically

## S. COOLING COIL

1. Full length coil: extends from top to bottom, providing maximum face area for maximum cooling capacity
2. Face area  $\geq 700 \text{ in.}^2$  (4516  $\text{cm}^2$ )
3. Copper tube diameter 3/8 in.
4. Vertical fin to allow condensate to drain downward naturally to the drain pan
5. 3 rows deep: to provide maximum cooling capacity without increasing static pressure and without producing excess latent cooling
6. Counterflow design: for maximum cold air temperature delta
7. Draw-thru design: allows fans to pull air evenly across coil rather than forcing air past that can lead to leaks and inefficiency
8. Condensate drain pan affixed directly below the cooling coil to accumulate condensate

## T. DEHUMIDIFICATION MODE

1. Automatically removes excess moisture from the air
2. User-specified humidity setpoint
3. Can be enabled or disabled by the user
4. Rejects condensate via condensate pump

## U. CONDENSATE PUMP

1. Standard feature
2. Activated by primary water sensor
3. Protection against dry running
4. Overflow alarm: secondary drain pan sensor detects if condensate pump has failed or if there is a clog in the drain system

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Condensate management system</b>		
Connection size	1/4 in.	
Drain tube length	13 ft. (4 m)	
Max flow	2.4 gal/h (9 L/h)	
Maximum lift	26.5 ft. (8 m)	
Maximum distance	150 ft. (45 m)	
Downward pitch	At least 1 in. per 10 ft. (10 mm per 1 m)	
Minimum exposure temperature	>32°F (0°C)	
Dehumidification mode	Included	
Dehumidification setting	User specified	

# Appendix

## V. USER INTERFACE

1. 7 in. color touchscreen high resolution interface
2. Allows user and service personnel to adjust settings mentioned throughout this document
  - a. User supply air temp setting range: 64~99°F (18~37°C)
3. Features home screen with status indicators
4. Features 3 password protected service levels: 1) User, 2) Service, and 3) Factory settings
5. Features temperature and pressure graphing/plotting screen for easy visual tracking of system performance and behavior
6. Features dedicated alarm list and log
7. Features a read-only, real-time data parameter screen
8. Firmware upgradeable in field

## W. CONTROLLER

1. Supports all commands locally and remotely
2. Governs the speed of the compressor and fans
3. Utilizes the return air temperature and humidity sensor, supply air temperature sensor, along with other sensors, to control system behavior
4. Firmware upgradeable in field

## X. FILTERS

1. Qty. 2, extending full height of cabinet
2. Efficiency rating: G4
3. Replaceable and easy to service from the rear of the cabinet
4. Size/Dimensions: 33 x 8.5 in. (84 x 22 cm)

## Y. LOW TEMPERATURE KIT (SRCOOLDXRWLTKIT, OPTIONAL)

1. Optional accessory
2. Comes with all necessary components preassembled, includes a heater mounted to the receiver tank
3. Powered from In-Row (indoor unit)
4. Necessary for outdoor ambient temperature ranging from -4°F (-20°C) to -40°F (-40°C)

## Z. PROTECTION METHODS

1. Oil separator
  - a. Ensures proper oil return to the compressor for maximum reliability
2. Tip-N-Tell
  - a. Determines whether the product has been potentially damaged by tracking the angle of the package
  - b. Indicator is visible on the outside package
3. ISTA testing
  - a. ISTA-1B tested: shock, vibration, and drop

## AA. SPARE PARTS

1. Full range of spare parts to allow full servicing in the field

# Appendix

## BB. DOCUMENTATION

1. Content:
  - a. Installation Guide (shipped with product)
  - b. Owner's Manual (shipped with product)
  - c. Submittal Drawing (website)
  - d. Service Manual (for certified technicians)
  - e. Bid Specifications (website)
2. Translations for manuals:
  - a. English
  - b. Spanish
  - c. French

## CC. PERFORMANCE DATA

	SRCOOLDXRW12	SRCOOLDXRW25
Performance data	Sensible / Total	Sensible / Total
104°F/40°C DB, 20% RH, 71.6°F/22°C WB	13.2 kW / 13.2 kW	27.3 kW / 27.3 kW
98.6°F/37°C DB, 24% RH, 70.34°F/21.3°C WB	12.8 kW / 12.8 kW	25.8 kW / 25.8 kW
95°F/35°C DB, 26% RH, 68.9°F/20.5°C WB	12.6 kW / 12.6 kW	25.1 kW / 25.2 kW
89.6°F/32°C DB, 29% RH, 66.56°F/19.2°C WB	11.8 kW / 11.8 kW	23.4 kW / 24.2 kW
86°F/30°C DB, 34% RH, 65.84°F/18.8°C WB	10.9 kW / 11.7 kW	21.6 kW / 23.9 kW
82.4°F/28°C DB, 45% RH, 67.1°F/19.5°C WB	9.4 kW / 11.9 kW	18.4 kW / 24.3 kW
82.4°F/28°C DB, 38% RH, 64.58°F/18.1°C WB	10.2 kW / 11.4 kW	20.0 kW / 23.3 kW
77°F/25°C DB, 40% RH, 61.16°F/16.2°C WB	9.6 kW / 10.7 kW	18.9 kW / 21.8 kW
77°F/25°C DB, 50% RH, 62.6°F/17°C WB	8.5 kW / 11 kW	16.7 kW / 22.4 kW
77°F/25°C DB, 45% RH, 62.78°F/17.1°C WB	9.1 kW / 11 kW	17.9 kW / 22.4 kW
71.6°F/22°C DB, 55% RH, 59.72°F/15.4°C WB	7.8 kW / 10.7 kW	15.5 kW / 21.7 kW

^^ to convert to BTU, multiple kW by 3,412

## DD. COOLING AT ALTITUDE

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Altitude: cooling capacity correction factors</b>		
0 ft. (0 m)	1.00	1.00
3280 ft. (1000 m)	0.94	0.94
6560 ft. (2000 m)	0.88	0.88
9840 ft. (3000 m)	0.82	0.82
13120 ft. (4000 m)	0.76	0.76

# Appendix

## EE. SOUND PROFILE

	SRCOOLDXRW12	SRCOOLDXRW25
<b>Indoor Sound Profile in dBA @ rated airflow @ a distance of 10 ft. (3m)</b>		
63 Hz	33	30
125 Hz	43	40
250 Hz	50	50
500 Hz	56	55
1000 Hz	61	61
2000 Hz	64	64
4000 Hz	59	61
8000 Hz	56	60
Sum	67	68

## FF. OPERATION

### Cooling modes:

- Cooling (either supply or return temperature control)
- Dehumidification (if enabled, automatically engages when necessary during cooling mode)
- Maintenance (up to 30 minutes of max cooling)
- Standby

### Settings:

- Temperature setting
- Humidity
- Fan speed
- Alarm and temperature thresholds
- Restart delay
- Front/rear temperature control mode
- Maintenance mode duration
- Group rotation

### Alarms:

- Display communications lost
- Compressor maintenance needed
- Discharge pressure high
- Discharge pressure sensor failure
- Filter maintenance needed
- High pressure / high discharge switch fault
- Indoor fan maintenance needed
- Liquid-pipe temperature sensor failure
- Return air humidity high
- Return air humidity low
- Return air humidity sensor failure
- Return air temperature high
- Return air temperature low
- Return air temperature sensor failure
- Suction pressure low
- Suction pressure sensor failure
- Suction temperature sensor failure
- Supply air temperature high
- Supply air temperature low
- Supply air temperature sensor failure
- High water level (condensate overflow prevention)

### Data items:

- High pressure
- Low pressure
- Condensing temperature
- Liquid temperature
- Subcooling temperature
- Compressor speed
- Indoor fan speed
- Return temperature
- Supply temperature
- Evaporator temperature
- Suction temperature
- Superheat temperature
- Electronic expansion valve position
- Outdoor fan speed
- Return humidity

### Graphic (user interface):

- Supply temperature
- Return temperature
- Humidity
- Low (suction) pressure
- High (discharge) pressure

Eaton has a policy of continuous improvement. Product specifications are subject to change without notice. Photos and illustrations may differ slightly from actual products.



Powering Business Worldwide

Eaton  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com

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