# User Manual

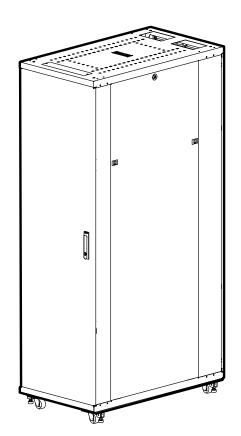
# **Racks and Accessories**

NetShelter SV

AR2200, AR2201, AR2280, AR2400, AR2400FP1, AR2401, AR2407, AR2480, AR2487, AR2500, AR2501, AR2507, AR2580, AR2587

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### **Please Note:**

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

No responsibility is assumed by Schneider Electric for any consequences arising from the use of this material.

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### Introduction

The NetShelter<sup>®</sup> SVcabinet is for storage of industry-standard (EIA/ECA-310), 19-inch rack-mount hardware, which includes servers and voice, data, networking, internetworking, and Schneider Electric power protection equipment.

This manual provides installation and customization instructions for the following:

- NetShelter SV 42 U, 600 mm (23.6 in.) wide, 1000 mm (39.4 in.) deep cabinet (AR2200)
- NetShelter SV 42 U, 600 mm (23.6 in.) wide, 1000 mm (39.4 in.) deep cabinet without side panels (AR2201)
- NetShelter SV 42 U, 600 mm (23.6 in.) wide, 1060 mm (41.7 in.) deep cabinet (AR2400)
- NetShelter SV 42 U, 600 mm (23.6 in.) wide, 1060 mm (41.7 in.) deep cabinet without side panels (AR2401)
- NetShelter SV 42 U, 600 mm (23.6 in.) wide, 1200 mm (47.2 in.) deep cabinet (AR2500)
- NetShelter SV 42 U, 600 mm (23.6 in.) wide, 1200 mm (47.2 in.) deep cabinet without side panels (AR2501)
- NetShelter SV 42 U, 800 mm (31.5 in.) wide, 1000 mm (39.4 in.) deep cabinet (AR2280)
- NetShelter SV 42 U, 800 mm (31.5 in.) wide, 1060 mm (41.7 in.) deep cabinet (AR2480)
- NetShelter SV 42 U, 800 mm (31.5 in.) wide, 1200 mm (47.2 in.) deep cabinet (AR2580)
- NetShelter SV 48 U, 600 mm (23.6 in.) wide, 1060 mm (41.7 in.) deep cabinet (AR2407)
- NetShelter SV 48 U, 600 mm (23.6 in.) wide, 1200 mm (47.2 in.) deep cabinet (AR2507)
- NetShelter SV 48 U, 800 mm (31.5 in.) wide, 1060 mm (41.7 in.) deep cabinet (AR2487)
- NetShelter SV 48 U, 800 mm (31.5 in.) wide, 1200 mm (47.2 in.) deep cabinet (AR2587)

### NOTICE

NetShelter SV cabinets are intended for use with approved equipment. If you install other than approved equipment, fully evaluate the safety of your configuration.
Use qualified personnel to install the cabinet.

# Safety

### **Important Safety Information**

Read the instructions carefully to become familiar with the equipment before trying to assemble, operate, service or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **A**DANGER

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

### **A**WARNING

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

### 

Indicates a potentially hazardous situation which, if not avoided, can result in moderate injury.

### NOTICE

Addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.

### NOTICE

Schneider Electric is not responsible for damage sustained during shipment of this product.

# Inspection



Upon receipt, inspect the package and contents for damage. Verify the contents are complete.

Report missing contents, damage, or other problems immediately to Schneider Electric or your Schneider Electric reseller. Keep all packaging for inspection if damage is found.



### **Please Recycle**



The shipping materials are recyclable. Save them for later use, or dispose of them appropriately.

# **Moving the Equipment**

Recommended tools for moving the equipment while it is still on the pallet:

Pallet Jack

Forklift





# Unpacking

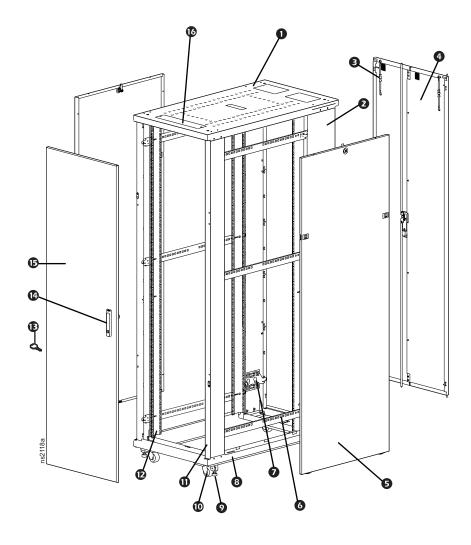
### **WARNING**

### TIP HAZARD

This cabinet is easily tipped. Use extreme caution when unpacking or moving.
Use at least two people to unpack and move the cabinet.
Before moving the cabinet on its casters, load 158 kg (350 lbs) of equipment into the bottom of the cabinet for extra stability.
When moving on its casters, make sure the leveling feet are up and push the cabinet from the front or rear.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

- 1. Move the shipping pallet to a firm, level surface.
- 2. Inspect for visible signs of shipping damage. If damage has been detected, contact Schneider Electric Customer Support using the contact information on the back cover of this manual.
- 3. Remove the plastic stretch wrap, cardboard corners, and polyethylene bag surrounding the equipment.
- 4. Use the Torx T30/#2 Phillips wrench (provided) and 13 mm wrench (not provided) to remove the four pallet mounting brackets. Save these mounting brackets if you plan to bolt the cabinet to the floor.
- 5. Carefully roll the equipment off the pallet and onto the floor.

# **Component Identification**



Item	Description	Qty
0	Roof	1
0	Rear Frame	1
Ø	Grounding wire	3
4	Rear Split Doors	2
Ø	Side Panels	2
6	Horizontal Side Braces	6
0	Accessory Mounting Brackets	4
8	Base	1

Item	Description	Qty
Ø	Leveling Feet	4
<b>O</b>	Casters	4
0	Front Frame	1
Ø	Vertical Mounting Flanges	4
B	Door and Side Panel Keys	2
<b>G</b>	Door Handles	2
œ	Front Door	1
ſ	Roof/Base Access Panels	2

### **Equipment Installation Hardware**











Plastic cup washers (30)

M6 x 16 Phillips Cage nuts (30) head screws (30)

Joining Brackets for M5 x 12 screws (4) 24 in. centers (4) for joining cabinets

### **Tools (provided)**



Torx® T30/#2 Phillips wrench

Cage nut tool

### Tools (not provided)



6

Torque wrench

Open end wrench

# **Moving the Cabinet**

### WARNING

#### TIP HAZARD

This cabinet is easily tipped. Use extreme caution when unpacking or moving.

• Use at least two people to unpack and move the cabinet.

• Before moving the cabinet on its casters, load 158 kg (350 lb) of equipment into the bottom equipment mounting space of the cabinet for extra stability.

When moving on its casters, make sure the leveling feet are up and push the cabinet from the front or rear.
 Failure to follow these instructions can result in death, serious injury, or
 equipment damage.

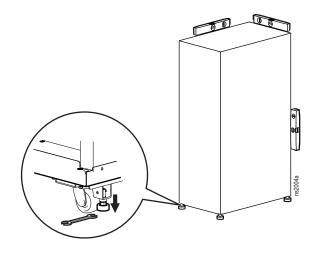
# MAX: 460 kg (1,014 lb)

### NOTICE

The leveling feet provide a stable base if the floor is uneven, but cannot compensate for a steeply sloped surface.

# Level the Cabinet

- 1. Using a 13 mm wrench, lower each leveling foot until in makes contact with the floor.
- 2. Adjust each foot until the equipment is level and plumb.



# **Joining Cabinets**

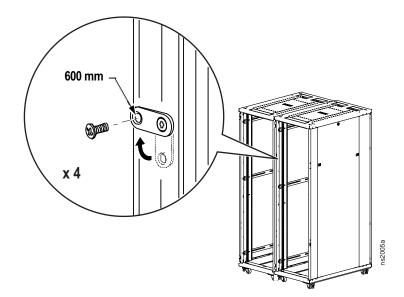
Cabinets can be joined with or without side panels installed to provide for alignment and some stability. The cabinets are shipped with pre-installed joining brackets for 600 mm centers. To join on 24 in. centers, the cabinet is provided with 24 in. joining brackets in the hardware bag.

### **WARNING**

TIP HAZARD Joining cabinets provides limited stability. Ensure the cabinet is secured to the floor before installing equipment.

Failure to follow these instructions can result in serious injury or equipment damage.

- 1. Remove the front and rear doors.
- 2. The cabinet is preinstalled with 600 mm centers. To join with 24 in. centers, replace the preinstalled joining brackets with 24 in. joining brackets (provided in the hardware bag).
- 3. Align the cabinets and join them using one M5 x 12 flat-head screw (provided in the hardware bag) per bracket—two brackets for the front and two brackets for the rear.
- 4. Reinstall the doors.



### **Secure the Cabinet**

### NOTICE

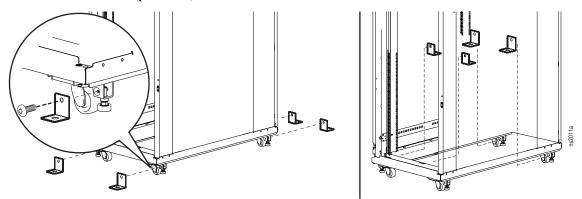
Bolt-down brackets secure the cabinet to the pallet during shipment. Remove them from the cabinet and pallet and save them to secure the cabinet to the floor during installation.

### **WARNING**

#### TIP HAZARD

Secure the cabinet to the floor before installing equipment. Failure to follow these instructions can result in serious injury or equipment damage.

To secure the cabinet to the floor, use fastener locations on the outside or inside of the cabinet and the bolt-down brackets (provided).

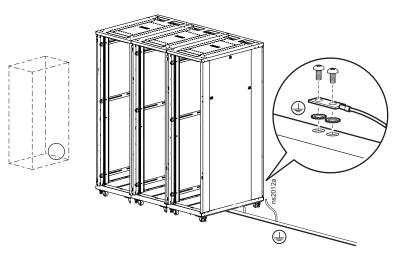


### **Ground the Cabinet**

Each cabinet should be bonded directly to a common ground using the designated grounding location (two M6 threaded inserts) at the bottom rear of the cabinet.

- Use a Common Bonding Network Jumper kit (not provided). For example, Listed [KDER] Panduit<sup>®</sup> RGCBNJ660PY or equivalent.
- Use paint-piercing washers between ground terminal and cabinet frame or remove paint on frame under ground terminals per NEC NFPA 70 Article 250.12
- Torque screws to (60 in-lb, 6.8 N-m).

### **Bonding Location on the Cabinet**

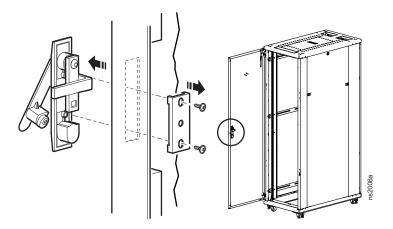


# **Customize the Cabinet**

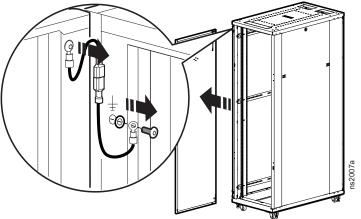
# **Reverse the Front Door**

You can reverse the front door so that the door is hinged on the opposite side.

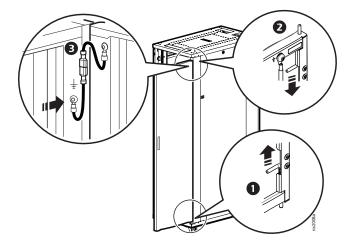
1. Remove the handle using the Torx T30/#2 Phillips wrench (provided).



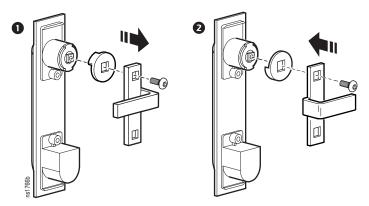
2. Unfasten the ground wire from the cabinet and door, then remove the door.



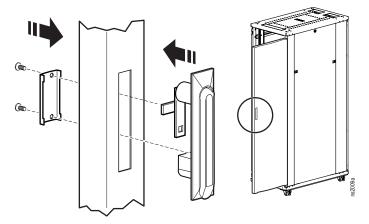
3. Rotate and reinstall the door to the opposite side. Remove any plastic hole plugs and reinstall the ground wire to the door and cabinet.



4. Remove and reinstall the latch and washer oriented as shown using a Torx T30/#2 Phillips wrench. The washer is rotated 90 degrees from its original orientation, and the latch is rotated 180 degrees.

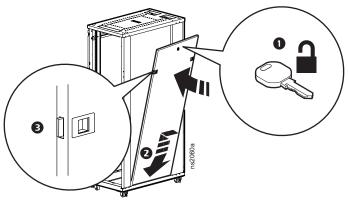


5. Reinstall the handle to the door. Torque the screws to 28 - 30 in-lb (3.2 - 3.4 N-m).



# Side Panels

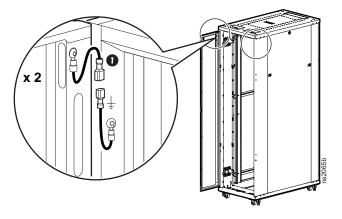
### Remove and install side panels



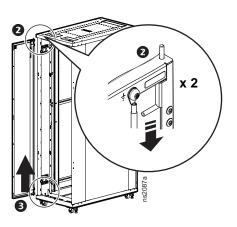
# **Rear Doors**

### Removal

1. Disconnect the grounding wires attached to the rear doors at the connector.

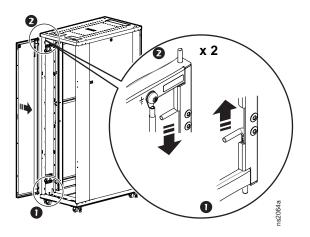


- 2. Remove the left and right rear doors by pulling the top hinge pin down to release the pin from the hole securing it to the frame.
- 3. Lift the door to remove the bottom hinge pin from the hole in the cabinet base.

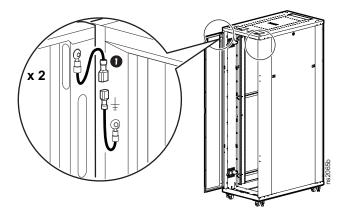


### Installation

- 1. Install the left and right rear doors by aligning the bottom hinge pin to the hole in the cabinet base.
- 2. Pull the top hinge pin down, align with the hole in the roof, then release.



3. Connect the grounding wires.



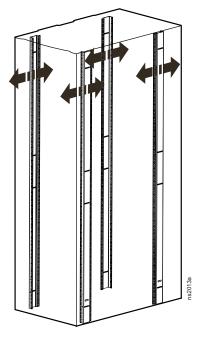
# **Equipment Installation**

### NOTICE

NetShelter SV cabinets are intended for use with Listed equipment. If you install un-Listed equipment, you should evaluate the safety of your configuration.

# **Adjust Vertical Mounting Flanges**

Vertical mounting flanges come factory-installed in the proper location for use with rack-mountable equipment. The mounting flanges are adjustable towards the front or the rear of the cabinet to fit different rails or equipment with other depths to accommodate a wide variety of networking and telecommunications equipment.



#### Adjustable Vertical Mounting Flange

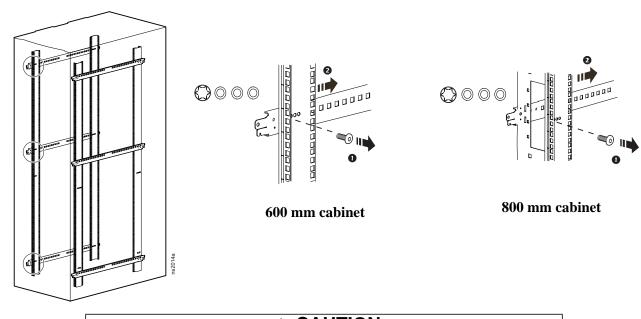
<b>Cabinet Depth</b>	<b>Factory Installed</b>	<b>Minimum Depth</b>	Maximum Depth
1000 mm	678 mm (26.7 in.)	168 mm (6.6 in.)	718 mm (28.3 in.)
1060 mm	738 mm (29.1 in.)	168 mm (6.6 in.)	778 mm (30.6 in.)
1200 mm	738 mm (29.1 in.)	258 mm (10.2 in.)	918 mm (36.1 in.)

### **NOTICE** If the vertical mounting flanges are adjusted from their factory mounting position more than 60 mm (2.4 in.), the vertical mounting flanges attach to the cabinet side brace using cage nuts and fasteners. Refer to the instructions on page 15.

### Installation

1. Use the Torx T30/#2 Phillips wrench (provided) to adjust a vertical mounting flange. Remove the T30 screws at the top, middle, and bottom of the vertical mounting flange. Save the screws for adjustment and reinstallation in the new position.





### 

#### STABILITY HAZARD

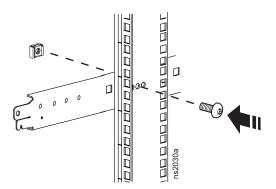
When adjusting vertical mounting flanges, ensure that no equipment is installed on the vertical mounting flanges.

Failure to follow these instructions can result in injury or equipment damage.

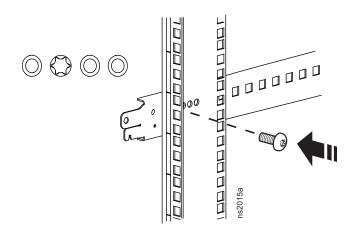
### NOTICE

• Vertical mounting flange attachment positions are in 10 mm (0.4 in.) increments.

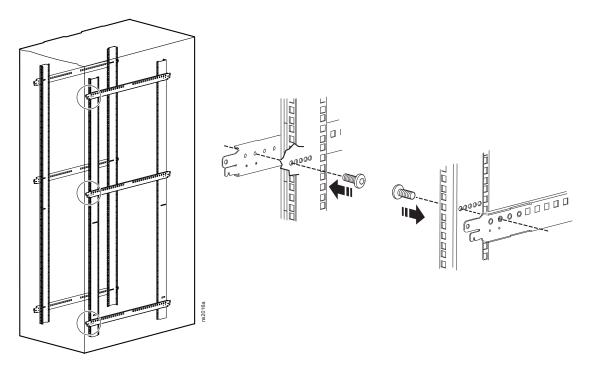
• If the vertical mounting flanges are adjusted from their factory mounting position more than 60 mm (2.4 in.), the vertical mounting flanges attach to the cabinet side brace using cage nuts and fasteners.



2. Move the mounting flange to the desired location and reinstall the T30 fastener at the top, middle and bottom to secure the vertical mounting flange.



3. Perform the vertical mounting flange adjustment to the opposite side of the cabinet. Ensure that the same mounting position is used at the top, middle and bottom. Torque to 28 - 30 in-lb (3.2 - 3.4 N-m).



NOTICE	
Verify that all Vertical Mounting Flanges are properly aligned before installing er in place.	quipment

# **Installing Equipment**

### **WARNING**

#### TIP HAZARD

This cabinet is easily tipped. Follow the precautions below during and after equipment installation. • Make sure you have secured the cabinet to the floor before installing equipment.

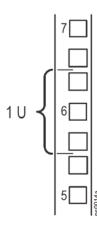
• Install the heaviest equipment first toward the bottom of the cabinet to prevent the cabinet from becoming top-heavy.

 Do not extend equipment on sliding rails until you have installed 158 kg (350 lbs) of equipment into the bottom of the cabinet for stability or until you have installed the bolt-down brackets. Do not extend more than one piece of equipment on sliding rails at a time.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

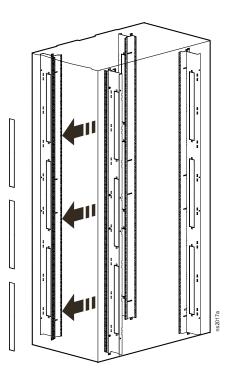
To install rack-mount equipment in the cabinet:

- 1. Review the equipment manufacturer's installation instructions.
- 2. Locate the top and bottom U-space on the vertical mounting rails. Every third hole on the mounting rail is numbered to indicate the middle of a U-space.
- 3. Install the cage nuts on the interior of the vertical mounting rail; then install the equipment. (To remove a cage nut, squeeze the sides to release it from the square hole.)



### **Vertical Mounting Flange Cutouts**

NetShelter SV 800 mm (31.5 in.) wide cabinets have removable vertical mounting flange cutouts along the sides. When removed, side airflow is increased. Other airflow and cable management options exist. Please visit the website (www.apc.com) for other options and more information.



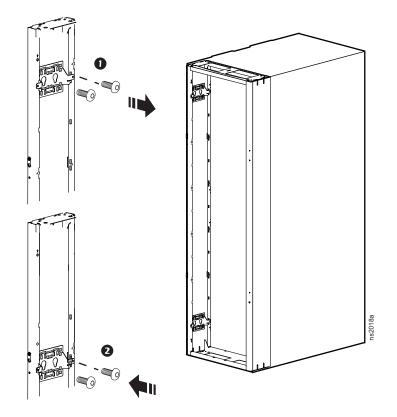
Route, secure, and organize cables using the multiple cable access openings on the cabinet roof, sides, and bottom, the accessory mounting brackets included with the cabinet, plus the variety of cable management accessories available.

# **Adjust Vertical 0 U Accessory Mounting Brackets**

The vertical 0 U accessory mounting brackets (four included) provide toolless mounting capabilities for Schneider Electric Rack Power Distribution Units (PDUs) and cable management. They also provide tie-off locations for cables.

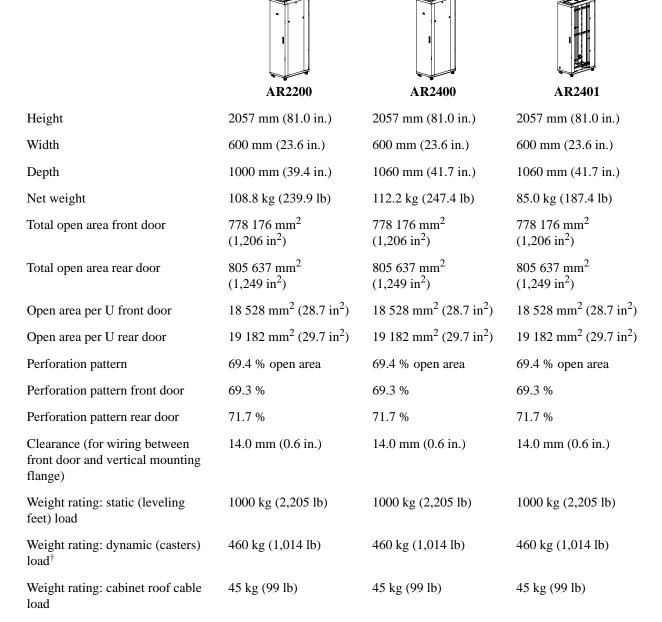
The factory-default position for the vertical 0 U accessory brackets is in the rear of the cabinet. The brackets are positioned for full-height vertical Rack PDUs. The bracket can be moved up or down to accommodate different accessories. Additional brackets are available for purchase as requirements change.

- 1. Use the Torx<sup>®</sup> T30/#2 Phillips wrench (provided) to remove the two T30 screws.
- 2. Move to the desired position, and reinstall the brackets.

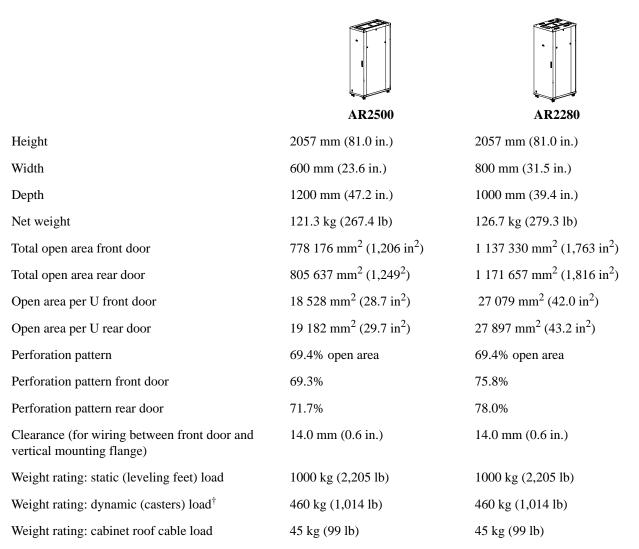


# **Specifications**

# 42 U Cabinets



<sup>†</sup> To move the cabinet on its casters, the equipment load must be evenly distributed, must not exceed 460 kg (1,014 lb) and the equipment must not be installed above the 20 U height.



<sup>†</sup> To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

### 42 U Cabinets, continued

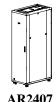


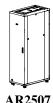


Height 2057 mm (81.0 in.) 2057 mm (81.0 in.) Width 800 mm (31.5 in.) 800 mm (31.5 in.) Depth 1060 mm (41.7 in.) 1200 mm (47.2 in.) 130.5 kg (287.7 lb) 139.5 kg (307.5 lb) Net weight 1 137 330 mm<sup>2</sup> (1,763 in<sup>2</sup>) 1 137 330 mm<sup>2</sup> (1,763 in<sup>2</sup>) Total open area front door 1 171 657 mm<sup>2</sup> (1,816 in<sup>2</sup>) 1 171 657 mm<sup>2</sup> (1,816 in<sup>2</sup>) Total open area rear door  $27\ 079\ \mathrm{mm}^2\ (42.0\ \mathrm{in}^2)$  $27\ 079\ \mathrm{mm}^2\ (42.0\ \mathrm{in}^2)$ Open area per U front door 27 897 mm<sup>2</sup> (43.2 in<sup>2</sup>)  $27 897 \text{ mm}^2 (43.2 \text{ in}^2)$ Open area per U rear door 69.4% open area 69.4% open area Perforation pattern 75.8% Perforation pattern front door 75.8% Perforation pattern rear door 78.0% 78.0% Clearance (for wiring between front door and 14.0 mm (0.6 in.) 14.0 mm (0.6 in.) vertical mounting flange) Weight rating: static (leveling feet) load 1000 kg (2,205 lb) 1000 kg (2,205 lb) Weight rating: dynamic (casters) load<sup>†</sup> 460 kg (1,014 lb) 460 kg (1,014 lb) Weight rating: cabinet roof cable load 45 kg (99 lb) 45 kg (99 lb)

 $^{\dagger}$  To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

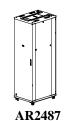
# 48 U Cabinets





	AR2407	AR2507
Height	2324 mm (91.5 in.)	2324 mm (91.5 in.)
Width	600 mm (23.6 in.)	600 mm (23.6 in.)
Depth	1060 mm (41.7 in.)	1200 mm (47.2 in.)
Net weight	123.5 kg (272.3 lb)	131.2 kg (289.2 lb)
Total open area front door	900 609 mm <sup>2</sup> (1,396 in <sup>2</sup> )	900 609 mm <sup>2</sup> (1,396 in <sup>2</sup> )
Total open area rear door	917 858 mm <sup>2</sup> (1,423 in <sup>2</sup> )	917 858 mm <sup>2</sup> (1,423 in <sup>2</sup> )
Open area per U front door	187 63 mm <sup>2</sup> (29.1 in <sup>2</sup> )	187 63 mm <sup>2</sup> (29.1 in <sup>2</sup> )
Open area per U rear door	19 122 mm <sup>2</sup> (29.6 in <sup>2</sup> )	19 122 mm <sup>2</sup> (29.6 in <sup>2</sup> )
Perforation pattern	69.4% open area	69.4% open area
Perforation pattern front door	70.3%	70.3%
Perforation pattern rear door	71.6%	71.6%
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in.)	14.0 mm (0.6 in.)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load <sup><math>\dagger</math></sup>	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)

 $^{\dagger}$  To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.





Height	2324 mm (91.5 in.)	2324 mm (91.5 in.)
Width	800 mm (31.5 in.)	800 mm (31.5 in.)
Depth	1060 mm (41.7 in.)	1200 mm (47.2 in.)
Net weight	143.8 kg (317.0 lb)	152.8 kg (336.9 lb)
Total open area front door	1 316 270 mm <sup>2</sup> (2,040 in <sup>2</sup> )	1 316 270 mm <sup>2</sup> (2,040 in <sup>2</sup> )
Total open area rear door	1 334 498 mm <sup>2</sup> (2,069 in <sup>2</sup> )	1 334 498 mm <sup>2</sup> (2,069 in <sup>2</sup> )
Open area per U front door	27 422 mm <sup>2</sup> (42.5 in <sup>2</sup> )	27 422 mm <sup>2</sup> (42.5 in <sup>2</sup> )
Open area per U rear door	27 802 mm <sup>2</sup> (43.1 in <sup>2</sup> )	27 802 mm <sup>2</sup> (43.1 in <sup>2</sup> )
Perforation pattern	69.4% open area	69.4% open area
Perforation pattern front door	76.9%	76.9%
Perforation pattern rear door	78.0%	78.0%
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in.)	14.0 mm (0.6 in.)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load <sup><math>\dagger</math></sup>	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)

 $^{\dagger}$  To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

### NOTICE

It is prohibited to ship a NetShelter SV cabinet while the unit is loaded with any equipment.

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