Installation and Customization

NetShelter™ CX Enclosures

990-3594C-001

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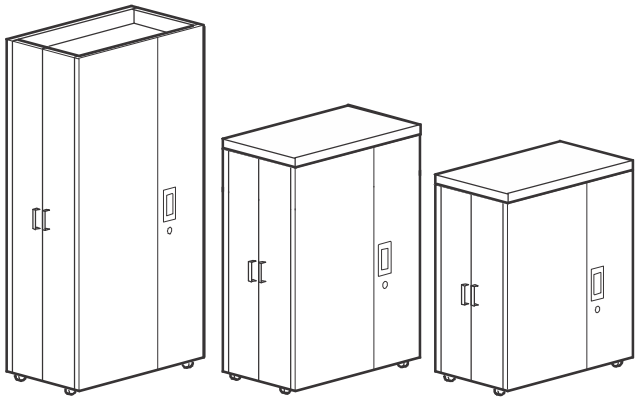

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Table of Contents

General Information 1
- Important Safety Information 1
- About This Manual 1
- Related Documents 1
- User Comments 1

Safety 2
- Important Safety Instructions 2
  - SAVE THESE INSTRUCTIONS 2

Product Overview 3
- Description 3
- NetShelter CX Enclosures 3
- Inventory 4
  - Enclosure components 4
  - Tools required (not provided) 5
- Moving the enclosure 5

Configuration 6
- Blanking panels 6
- Front doors and Side Panels 6
  - Hinges 6

Installation 8
- Installation and Setup 8
  - Level the enclosure 8
  - Rack stabilization options 9
- Fan Module Removal and Installation 10
  - Unlock the fan module 10
  - Lock the fan module 10
  - Open the fan modules 10
  - Remove the fan modules 11
  - Install the fan module 11

Rack PDU 12
AP9567 - NEMA 12
AP9568 - IEC 12
Specifications 12
Electrical 12
Connect the Rack PDU 12
Vertical Mounting Flanges 13
Adjusting the vertical mounting flanges on the side braces 13
Rack Mount Equipment Installation 14
One U-space on the vertical mounting flange 14
Cage nut installation 14
Cage nut removal 14
Equipment Planning Guidelines 15
Internal Enclosure Dimensions 16
Cable Management. 17
Rear cable access port 17
Vertical 0U accessory channels 17
Cable management options for the enclosures 18
Air Circulation 21
Enclosure placement 21
Specifications 22
18, 24, 38U Enclosures. 22
Two-Year Factory Warranty 23
Terms of warranty 23
Non-transferable warranty 23
Exclusions 23
Warranty claims 23

General Information

Important Safety Information

Read the instructions carefully and become familiar with the enclosure before trying to install or maintain it. The following special messages may appear throughout this manual or on the enclosure 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.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

CAUTION

CAUTION (without alert symbol) indicates a potentially hazardous situation which, if not avoided, **can result in** equipment damage.

NOTICE

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

About This Manual

This manual is intended for users of the specified Schneider Electric equipment. It contains important safety warnings and instructions and provides detailed information for proper use of the equipment.

Related Documents

Download technical publications and other technical information or look for updates to your manual at our website at **www.schneider-electric.com**.

User Comments

Contact **www.schneider-electric.com/support**. We welcome your comments about this document.

Safety

Important Safety Instructions

SAVE THESE INSTRUCTIONS

This manual contains important instructions that must be followed during installation, operation, and maintenance of the equipment.

Use caution when moving an empty enclosure on its casters. The enclosure may be unstable when pushed or pulled from the side. Push the enclosure from the front or back when moving it on its casters. For extra stability, load 158 kg (350 lbs) of equipment into the bottom of the enclosure before moving it on its casters.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Follow all local and national codes when installing the Rack PDU.
- Connect the Rack PDU to the UPS, if installed, or to a single-outlet dedicated circuit protected by a circuit breaker or fuse with the same current rating as the Rack PDU.
- Power off the UPS or Mains Supply before connecting the Rack PDU.
- The plug or inlet serves as the disconnect for the Rack PDU. Make sure the utility power outlet for the Rack PDU will be close to the Rack PDU and readily accessible.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

TIP HAZARD

- Stabilize the enclosure before installing the components.
- Do not extend components on sliding rails out from the enclosure until you have installed three or more pieces of similar equipment, or the stabilizer plate or bolt-down brackets are installed.
- Do not extend more than one component from the enclosure at a time.
- Load the heaviest components first, and place them toward the bottom of the enclosure to prevent the enclosure from becoming top-heavy.

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

⚠ CAUTION

WEIGHT AND LEVERAGE HAZARD

- Doors and side panels are heavy. Removal or installation requires two people.
- Fan modules are heavy. Two people are recommended when removing the fan modules from the enclosures.

Failure to follow these instructions can result in injury.

NOTICE

To ensure adequate air movement, place the side of the enclosure no closer than six to eight inches to the wall.

Product Overview

Description

NetShelter CX enclosures are specialized enclosures with integrated cooling, noise dampening, and power distribution for server and network applications in office environments. The enclosures provide storage for industry-standard (EIA-310), 19 in. rack-mount hardware, which includes servers, voice, data, networking, internetworking, and Schneider Electric power protection equipment.

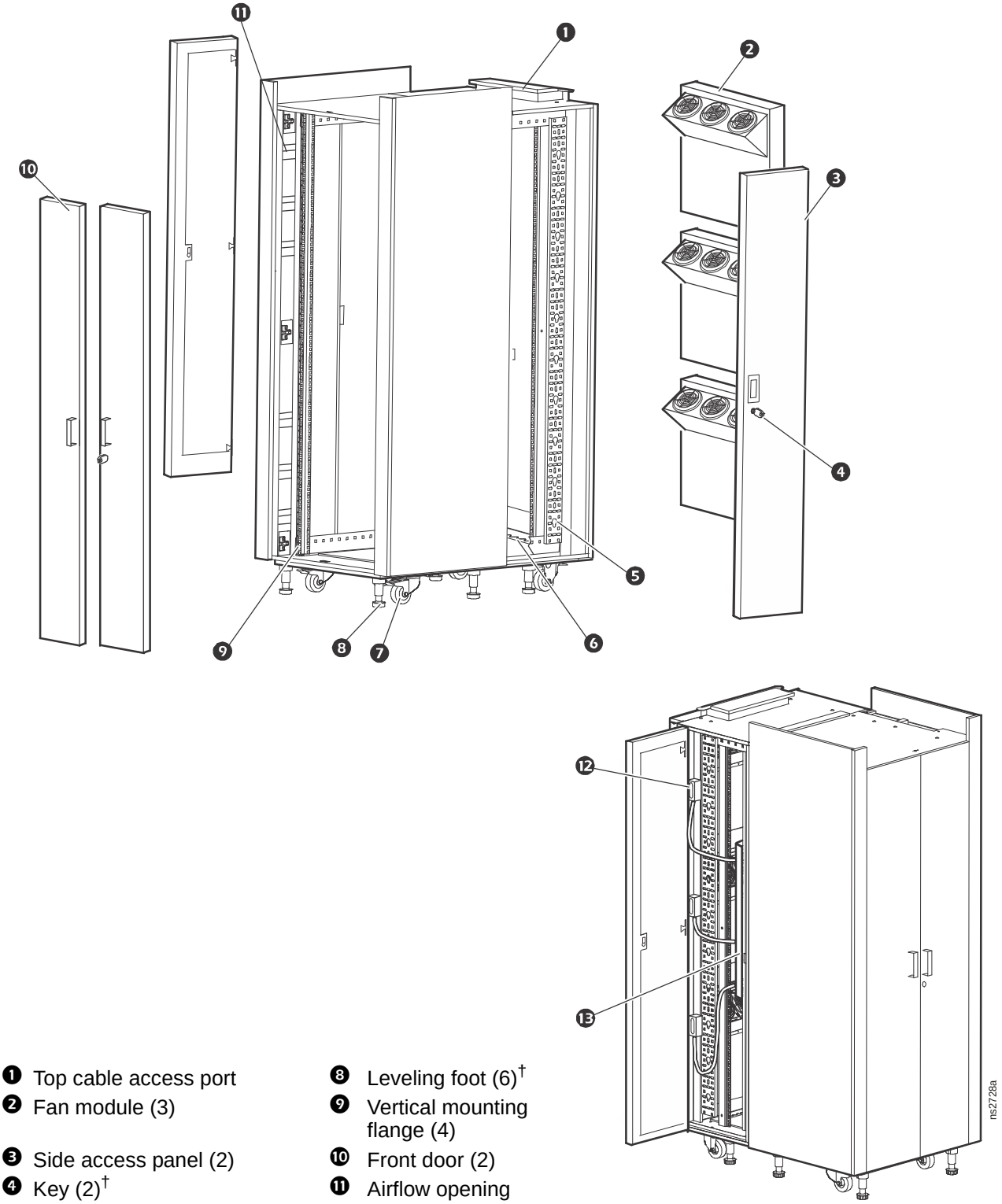
NetShelter CX Enclosures

Model	Voltage and Connector Type	Rack Mounting Height	Rack Mounting Width mm (in.)	Rack Mounting Depth mm (in.)	External Enclosure Height mm (in.)	External Enclosure Width mm (in.)	External Enclosure Depth mm (in.)
AR4018A AR4018X429 AR4018X431 AR4018X432	100-120V NEMA 5-15P	18 U†	482 (19)	880 (34.6)	1015 (40)	750 (29.53)	1130 (44.5)
AR4018IA AR4018IX429 AR4018IX431 AR4018IX432	200-230V IEC-320 C14						
AR4024A AR4024X429 AR4024X431 AR4024X432	100-120V NEMA 5-15P	24 U	482 (19)	880 (34.6)	1275 (50.2)	750 (29.53)	1130 (44.5)
AR4024IA AR4024IX429 AR4024IX431 AR4024IX432	200-230V IEC-320 C14						
AR4038A AR4038X429 AR4038X431 AR4038X432	100-120V NEMA 5-15P	38 U	482 (19)	880 (34.6)	1950 (76.8)	750 (29.53)	1130 (44.5)
AR4038IA AR4038IX429 AR4038IX431 AR4038IX432	200-230V IEC-320 C14						

†One U= 44.45 mm (1.75 in.). See “One U-space on the vertical mounting flange” on page 14.

Inventory

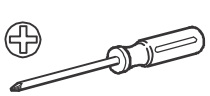
Enclosure components



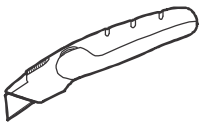
❶ Top cable access port
❷ Fan module (3)
❸ Side access panel (2)
❹ Key (2)†
❺ Vertical OU accessory channel (4)
❻ Bottom cable access port
❼ Caster (4)
❽ Leveling foot (6)†
❾ Vertical mounting flange (4)
❿ Front door (2)
⓫ Airflow opening
⓬ Fan module power supply (3)
⓭ Basic Rack PDU (1)

† The leveling feet, door keys, and rack PDU power cord (not shown) are not installed and can be found packed inside the enclosure.

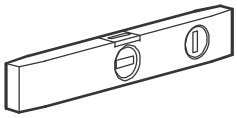
Tools required (not provided)



Phillips screwdriver



Utility knife



Level

Cage nut tool

Moving the enclosure

Casters: The total load on the casters may not exceed 680 kg (1500 lbs) including the weight of the enclosure. See the enclosure “Specifications” on page 22.

The front wheels have 360 degree rotation for maneuverability. Rear wheels have front-to-back motion for stability. Push the enclosure from the front or the back, not the sides. the enclosure may be unstable when pushed from the side. For greater stability, load 159 kg (350 lbs) or more of equipment into the enclosure before moving it on its casters.

⚠ WARNING

TIP HAZARD

- To prevent tipping, push the enclosure from the front or back, not the sides.
- For greater stability, load 159 kg (350 lbs) or more in the bottom of the enclosure before moving.

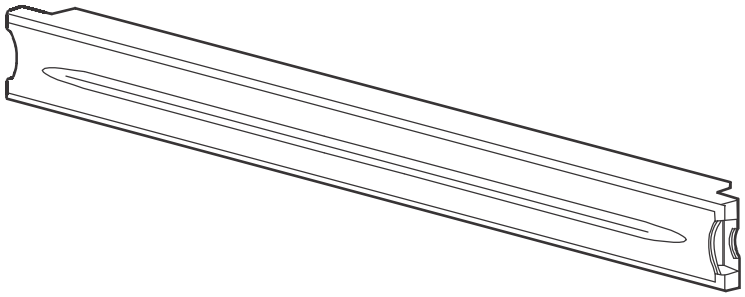
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Configuration

Before installing the enclosure, plan the location and space needed to install equipment, and plan the ergonomics of keyboards and video monitors. Improper airflow could damage installed components.

Blanking panels

Use blanking panels to close up large open spaces in the CX but not to completely seal the rack. The NetShelter CX works best when air can travel not just through the equipment vents, but also above and below any equipment that generates thermal energy.



Schneider Electric offers modular, plastic Airflow Management Blanking Panels that snap into place without tools (AR8136BLK).

Front doors and Side Panels

The front doors and side panels may be opened or removed to access the interior. Locking side panels offer additional security and assist with proper airflow within the enclosure. The locking side panel does not ship locked. To avoid personal injury or damage to the enclosure, one person should support the door or side panel while another person removes the door or side panel from its frame.

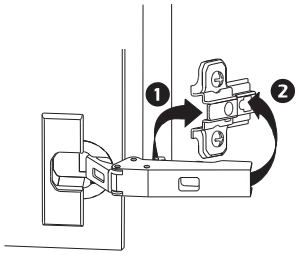
⚠ CAUTION
WEIGHT AND LEVERAGE HAZARD Doors and side panels are heavy. Removal or installation requires two people. **Failure to follow these instructions can result in injury.**

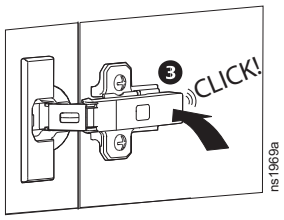
Hinges

Installation

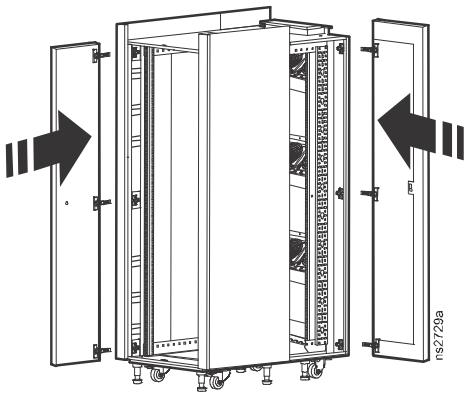
Slide the hinge on the door or side panel into the front of the mounting plate attached to the inside of the enclosure.

Using finger pressure, press the hinge onto the mounting plate. The latch will secure with an audible click.





Three hinges are attached to their mountings in the enclosure to complete door installation. 38 and 24U enclosures have three (3) hinges per door. The 18U enclosures have two (2) hinges per door.

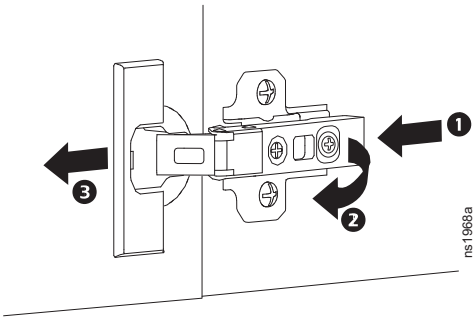


Removal

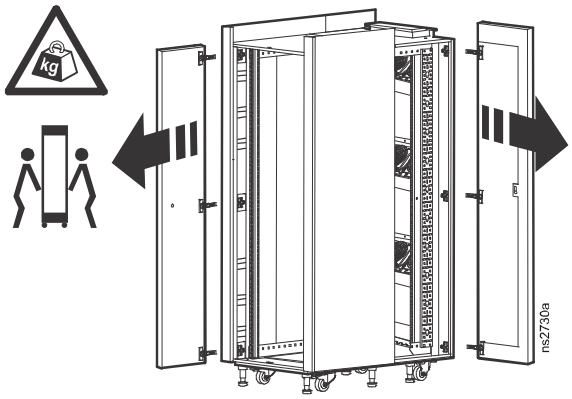
❶ Press on the hidden latch under the side arm.

❷ Lift the hinge arm off the mounting plate

❸ Slide the latch and door away from the mounting plate.



When all hinges are detached from their mountings, the door can be removed.



Installation

Installation and Setup

If equipment mounting rails are adjusted from their standard factory installed positions to a deeper position, such as in a networking application, the leveling feet must be used.

NOTE: The leveling feet are packaged separately and placed in the enclosure. Remove the package containing the leveling feet from the inside of the enclosure. Screw the leveling feet into the bottom of the enclosure.

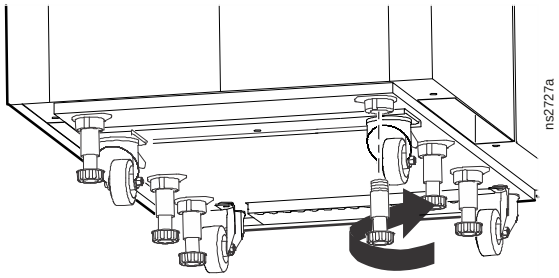
Level the enclosure

Level the enclosure before installing equipment.

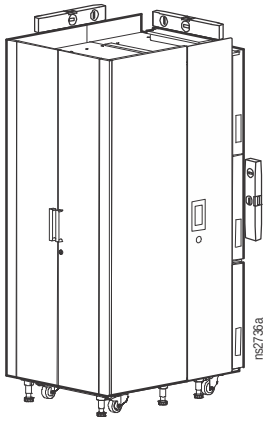
NOTICE
Leveling feet provide a stable base if the floor is uneven, but cannot compensate for a badly sloped surface.

❶ Move the enclosure to a level location.

❷ Turn each leveling foot clockwise to extend the leveling foot until it makes firm contact with the floor.

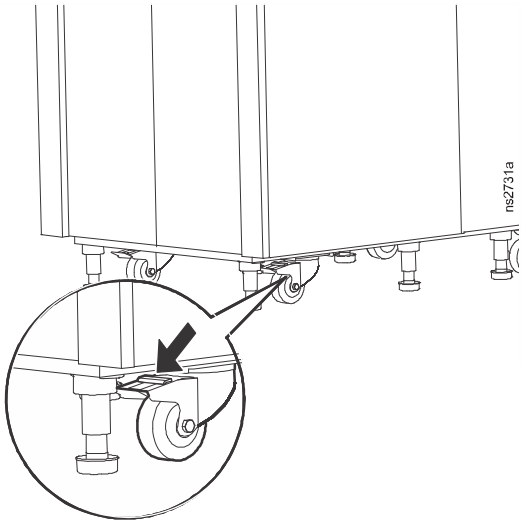


❸ Use one or more levels (not provided) to adjust each foot until the enclosure is level and plumb.



Rack stabilization options

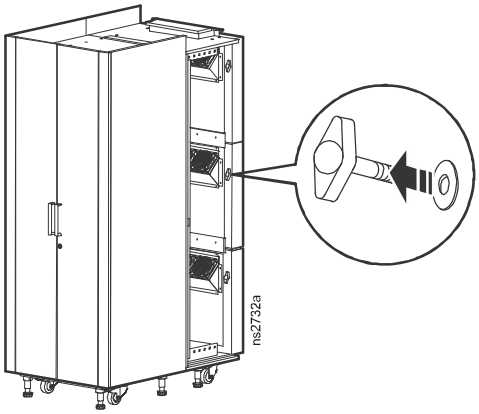
Lock the casters for additional stabilization.



Fan Module Removal and Installation

Unlock the fan module

Open the right hand side access panel.
Unscrew the thumbscrew on the right side of the fan module to unlock the fan module so it can be opened.

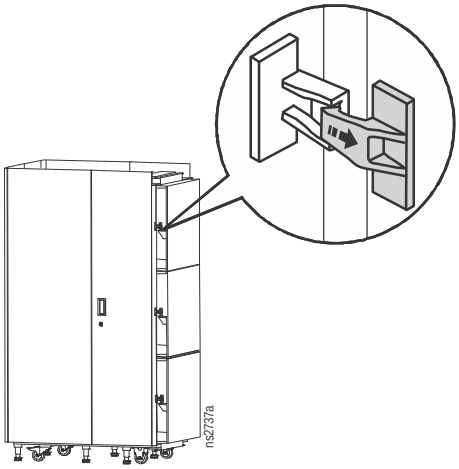


Lock the fan module

Open the right hand side access panel.
Install the thumbscrew on the right side of the fan module to lock the fan module in place.

Open the fan modules

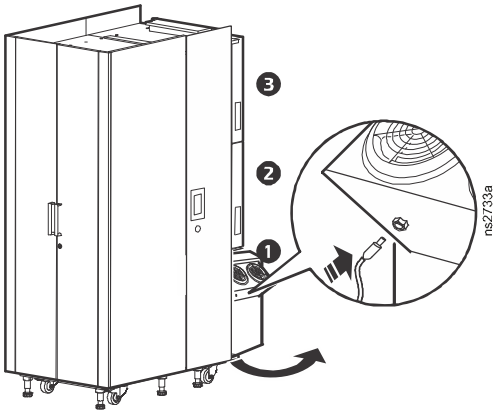
The clips pull apart to release.



The module can then be swung open.

To open all the fan modules, start at the bottom.

1. Swing the fan module out on its hinges.
2. Disconnect the fan module power supply lead from the fan module.
3. Open the bottom module ❶
   Open the center module ❷
   Open the top module ❸



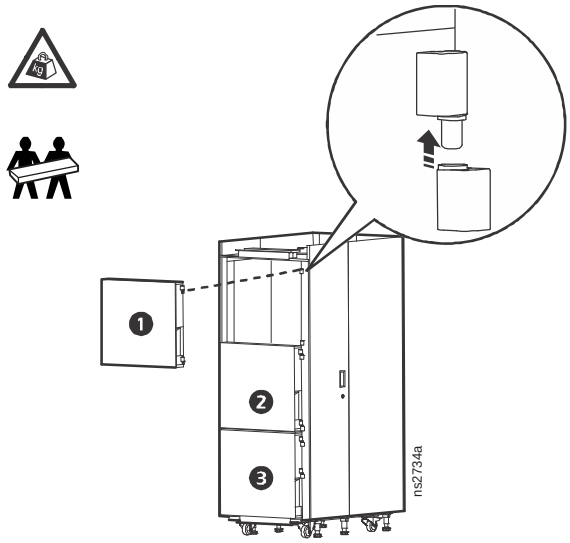
Remove the fan modules

⚠ CAUTION
HEAVY EQUIPMENT HAZARD Fan modules are heavy. Two people are recommended to remove the fan modules from the enclosures. **Failure to follow these instructions can result in injury, or equipment damage.**

Note: Start at the top when removing the fan modules.

Lift the fan module from the hinges attached to the NetShelter CX enclosure.

Remove the top fan module ❶
Remove the center module ❷
Remove the bottom fan module ❸



Install the fan module

Reverse the removal procedure to install the fan module.

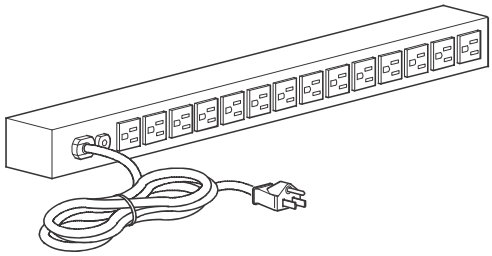
Rack PDU

The NetShelter CX Enclosure is provided with one Basic Rack PDU. The Rack PDU distributes power to devices in the enclosure.

AP9567 - NEMA

Outlets The Rack PDU has fourteen (14) NEMA 5015R outlets.

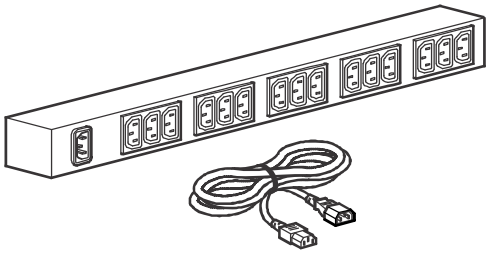
Power cord The 12 foot (3.66 meter) power cord terminates with a NEMA 5-15P plug.



AP9568 - IEC

Outlets The Rack PDU has fifteen (15) IEC-320-C13 outlets.

Power cord The 6.5 foot (1.98 meter) power cord terminates with a IEC-320-C14 plug.



Specifications

Electrical	AP9567	AP9568
Input connector	NEMA 5-15P	IEC-320-C14 inlet
Output connectors	(14) NEMA 5-15R outlets	(15) IEC-320-C13 outlets
Nominal input voltage	100-120 VAC	120-240 VAC
Acceptable input voltage	± 10% of nominal voltage	
Input frequency	50/60 Hz	

Connect the Rack PDU

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Follow all local and national codes when installing the Rack PDU.
- Never use extension cords with the Rack PDU.
- Connect the Rack PDU to the UPS, if installed, or to a single-outlet dedicated circuit protected by a circuit breaker or fuse with the same current rating as the Rack PDU.
- Power off the UPS or Mains Supply before connecting the Rack PDU.
- The plug or inlet serves as the disconnect for the Rack PDU. Make sure the utility power outlet for the Rack PDU will be close to the Rack PDU and readily accessible.

Failure to follow these instructions will result in death or serious injury.

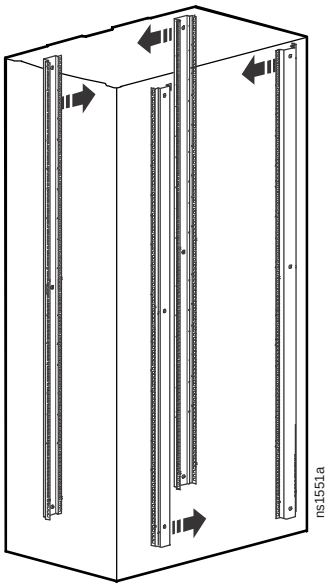
Connect the Rack PDU to the UPS when a UPS is installed in the enclosure or connect it to the nearest local Mains supply point.

Vertical Mounting Flanges

Vertical mounting flanges come factory-installed on the enclosure in the proper position for use with rack-mountable equipment having a depth of 800 mm (31.5 in.). The front mounting flanges are adjustable towards the rear of the enclosure to accommodate different rails or equipment with other depths. The rear mounting flanges are adjustable towards the front. The flanges can be adjusted to be as close as 120 mm (4.7 in.) or as far as 880 mm (34.6 in.) apart in 40 mm (1.5 in.) increments.

NOTE: If the front accessory channel is removed from the enclosure, the front rails can be adjusted forward 8 cm (3.14 in.).

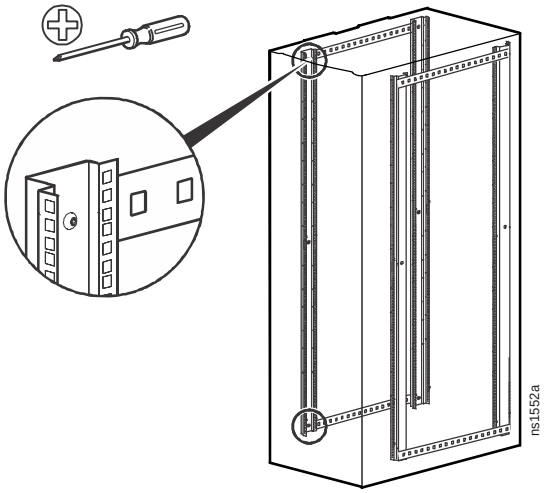
A common application for the enclosure is to move the flanges to a depth of 476 mm (18.75 in.) to accommodate networking and telecommunications equipment.



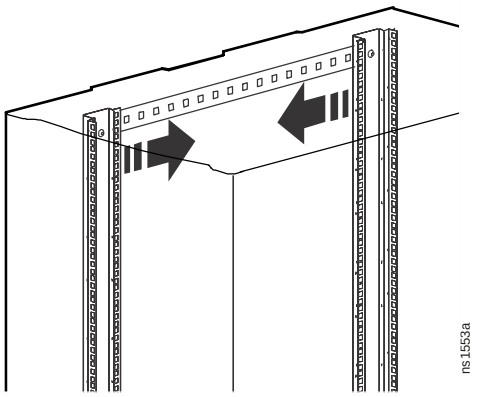
Adjusting the vertical mounting flanges on the side braces

Perform this procedure without any equipment installed on the mounting flanges.

1. Use a Phillips screwdriver (not provided) to remove the screws in the vertical mounting flange.



2. Move the pre-installed caged nuts to the desired location, then reposition the vertical mounting flange to this position and install the screws.

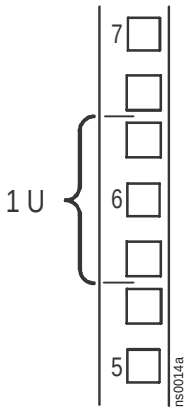


Rack Mount Equipment Installation

This section provides information on how to install rack-mount equipment in the enclosure. The manufacturer's instructions included with the equipment provide more detailed information.

One U-space on the vertical mounting flange

To install rack-mount equipment, locate the top and bottom of a U-space on the mounting flanges. Every third hole on the mounting flanges of a NetShelter enclosure is numbered to indicate the middle of a U-space. A U-space consists of one of these numbered holes and one hole directly above and below it, as shown.



Cage nut installation

Schneider Electric offers a cage nut hardware kit (AR8100) for use with square holes.

⚠ CAUTION

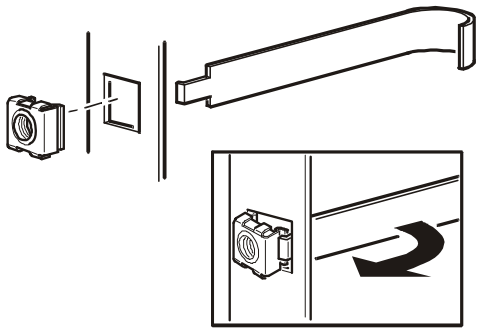
HAZARD OF FALLING EQUIPMENT

Never install cage nuts vertically with the ears engaging the top and bottom of the square hole. This will result in insecure mounting for rack-mounted equipment.

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

1. Install cage nuts on the interior of the vertical mounting flange. Install cage nuts horizontally, with the ears engaging the sides of the square hole. Insert the cage nut into the square hole by hooking one ear of the cage nut assembly through the far side of the hole.

2. Place the cage nut tool (not provided) on the other side of the cage nut and pull to snap it into position.



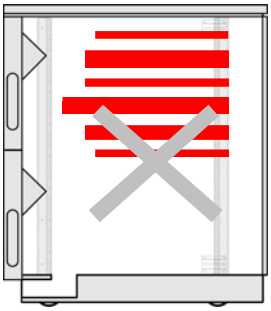
Cage nut removal

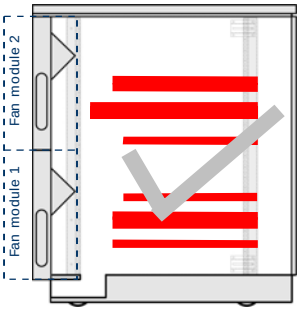
1. Remove any attached screw.
2. Grasp the cage nut and squeeze the sides to release it from the square hole.

Equipment Planning Guidelines

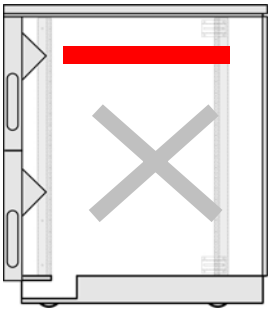
Please note the following guidelines for proper installation and operation of hardware in a NetShelter CX Enclosure.

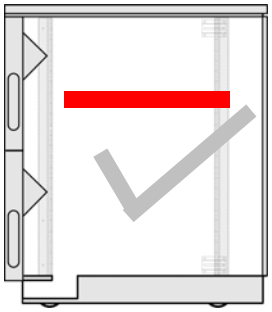
Avoid clustering hot-running equipment such as servers, dense redundant arrays of independent disks (RAID), and large voice-over-internet-protocol (VOIP) switches in one part of the enclosure. Distribute the thermal load evenly up and down the enclosure such that each fan module supports an equal amount of the thermal load.





Each fan module has a triangular metal section which protrudes slightly into the enclosure. This does not create an issue for installation of most equipment, but to allow for ample cabling space to the rear of the enclosure, deep servers should be installed in the enclosure space above and below these triangular metal protrusions.



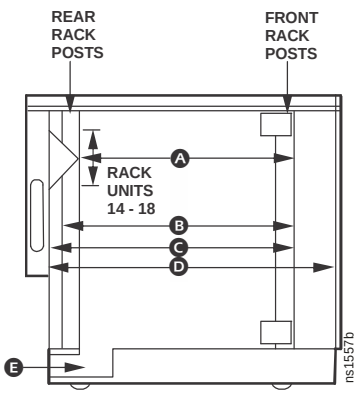


Internal Enclosure Dimensions

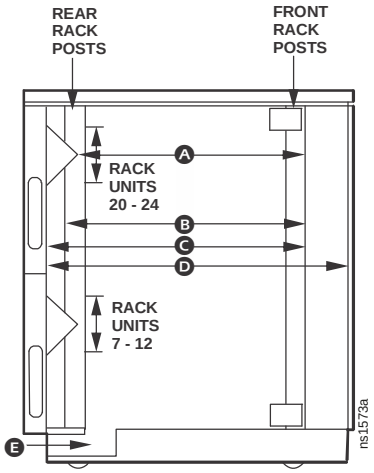
The fan module creates a triangular protrusion which reduces the internal depth of the enclosure at that point.

The depth of your equipment should be considered to ensure room for cables and for adequate air circulation. Deep servers should be moved above or below the protrusions.

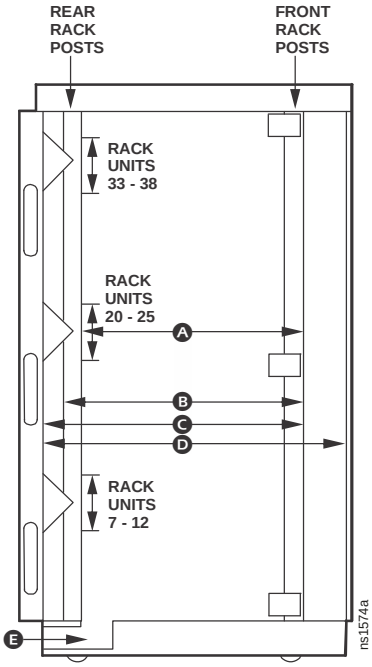
18U



24U



38U



Dimension key

a. 840 mm (33.10 in.)
b. 800 mm (31.5 in.)
c. 934 mm (36.77 in.)
d. 1001 mm (39.41 in.)
e. Indicates soundproofed cable entry/exit pathway.

Cable Management

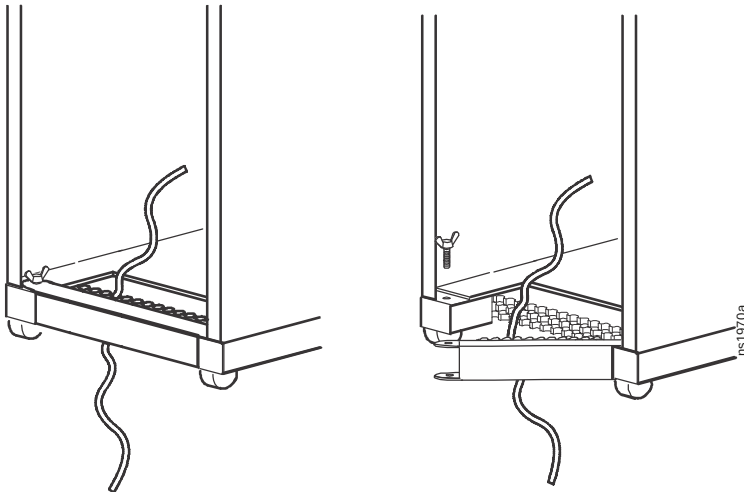
The NetShelter CX enclosure has a cable access opening (cable port) at the rear of the enclosure. The 38U enclosure has an additional cable port at the top for cabling from above. Four vertical 0U accessory channels are factory installed in the enclosures.

A variety of other cable management accessories are available. Visit the website at **www.schneider-electric.com** and go to the NetShelter CX product page for a full list of compatible cable management accessories.

Rear cable access port

The cable port is large enough to accommodate approximately 300-400 Cat 5e - Cat 6A ethernet cables and has a removable top cover. The design is such that pre-terminated data distribution panels can be installed effortlessly, with no need for de-termination and re-termination.

Unscrew and remove one of the two thumbscrews to swing open the port door. Unscrew and remove the second thumbscrew to fully remove the cable port door.

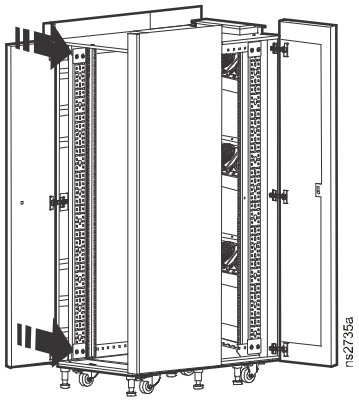


Vertical 0U accessory channels

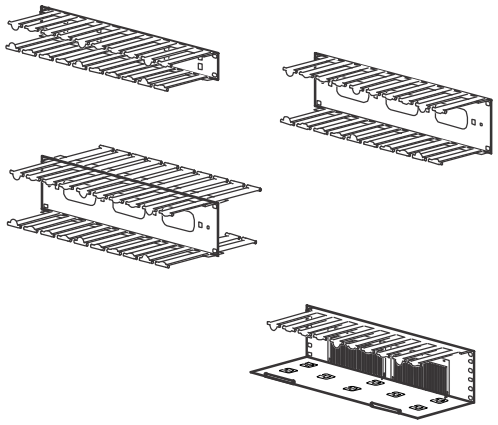
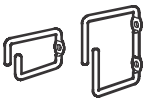
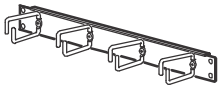
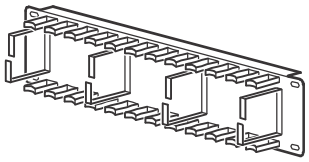
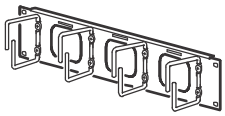
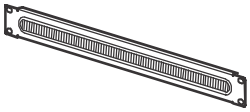
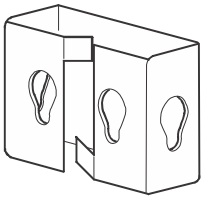
The vertical 0U accessory channels provide toolless mounting capabilities for Schneider Electric Rack Power Distribution Units, Schneider Electric cable containment brackets, and tie-off locations for cables. The standard position for the accessory channels is two located in the front of the enclosure and two in the rear of the enclosure.

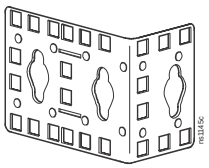
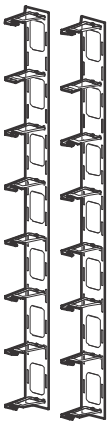
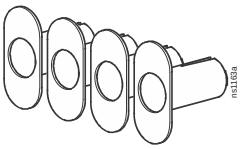
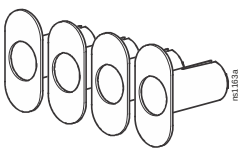
Removal

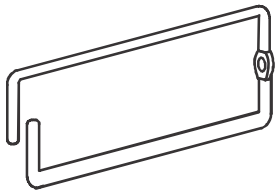
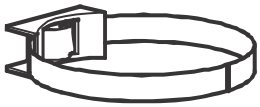
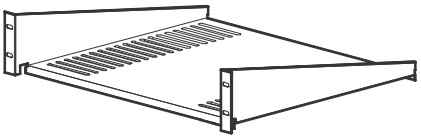
Vertical 0U accessory channels can be removed completely from the enclosure. Loosen the fasteners that attach the vertical 0U accessory to the enclosure.



Cable management options for the enclosures

Product	SKU	Description	Figure
19 in. horizontal cable organizers	AR8602 (1U) AR8600 (2U) AR8601 (2U double sided) AR8603A (2U high density)	Route patch cables horizontally at the front or rear of a 19 in. EIA enclosure.	
Cable management rings	AR8113A	Fastens cables to posts, mounting rails, or braces.	
19 in. horizontal cable organizer	AR8425A (1U) AR8426A (2U)	Routes cables horizontally on the front or back of the 19 in. EIA rack.	
19 in. 2U patch cord organizer	AR8427A	Routes cables horizontally on the front or back of the 19 in. EIA rack.	
19 in. 2U horizontal cable organizer pass-through	AR8428	Routes cables horizontally or front-to-rear.	
19 in. 1U cable pass-through with brush strip	AR8429	Assists with containing air in the enclosure.	
Cable containment brackets	AR7710	Contains cables along the vertical 0U accessory channel and is installed without tools. Quantity of six.	

Product	SKU	Description	Figure
0U accessory mounting bracket	AR7711	The bracket can be mounted in various locations throughout the enclosure for supporting small accessories and equipment.	
Vertical Cable Organizer for NetShelter 0U Channel	AR8442	Eliminates cable stress by organizing cable layout within the rear channels of the enclosure. Takes up 0U of space within the enclosure. Consists of two pieces of equal size that, when connected, span the height of a 42U enclosure. Can be used in any Schneider Electric enclosure.	
Vertical fiber organizer and spools	AR8443A	The vertical fiber organizer and fiber organizer spools provide a method to manage fiber cabling within an enclosure and mount toollessly into the vertical 0U accessory channel of the enclosure. Quantity of two.	
Fiber organizer (spools only)	AR8444	Can be mounted toollessly to the vertical fiber organizer or attached with screws to the mounting rails of 750 mm wide enclosures.	

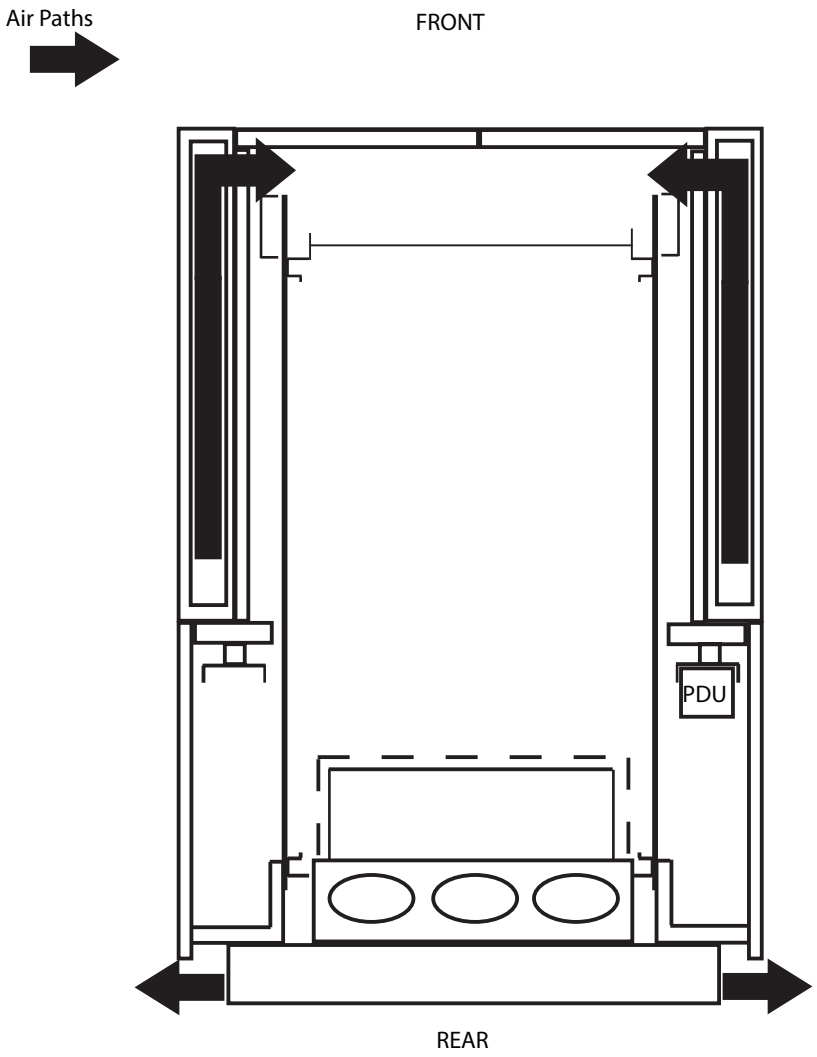
Product	SKU	Description	Figure
1U cable ring	AR7707	Fastens cables to posts, for use with 750 mm enclosure networking applications.	
Toolless Hook-and-Loop Cable Managers	AR8621	A toolless mount hook-and-loop cable fastener for organizing data cable bundles. Various mounting positions are available on the back panel of a vertical cable organizer. Quantity of ten.	
Fixed-shelf (50 lb)	AR8105BLK	Cantilever fixed shelf to enable the mounting of a monitor or other equipment into the rack environment or to allow cable pass-through from the front to rear of the enclosure.	

Air Circulation

Enclosure placement

When placing the NetShelter CX in an open office environment:

- The rear of the unit can be pushed fully against a wall. Six to eight inches of clearance should be left on either side of the unit.
- Do not place the enclosure unit in direct sunlight or in a small non-air conditioned space.
- Place the enclosure close to ventilation or cool air ingress points in the room.



Specifications

18, 24, 38U Enclosures

	Measurements		
Item	**18U**	**24U**	**38U**
Height	1015 mm (41 in.)	1275 mm (50.2 in.)	1950 mm (77 in.)
Width	750 mm (29.53 in.)	750 mm (29.53 in.)	750 mm (29.53 in.)
Depth	1130 mm (44.5 in.)	1130 mm (44.5 in.)	1130 mm (44.5 in.)
Net weight enclosure	131 kg (288.81 lb)	154.5 kg (339.5 lb)	202.5 kg (446.44 lb)
Net weight packaged	157.5 kg (347.2 lb)	182 kg (401.24 lb)	230 kg (507.1 lb)
Clearance (for wiring between front door and vertical rail)	60.96 mm (2.40 in.)	60.96 mm (2.40 in.)	60.96 mm (2.40 in.)
Maximum equipment Weight: Static load (4 casters + 6 leveling feet)	830 kg (1826 lb)	805 kg (1771 lb)	780 kg (1716 lb)
Maximum recommended thermal load	1.2 kW (4,100 BTU/hr)	2.4 kW (8,200 BTU/hr)	3.6 kW (12,300 BTU/hr)
Power consumption	39 watts	68 watts	101 watts
Noise reduction †	Up to 18.5 dB	Up to 18.5 dB	Up to 18.5 dB

† 18.5 dB equates to perceived drop in noise of 98.5%. The NetShelter CX generates 48.5 dB of noise during normal operation. This is below standard office ambient noise levels of approximately 50 dB.

Two-Year Factory Warranty

This warranty applies only to the products you purchase for your use in accordance with this manual.

Terms of warranty

Schneider Electric warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase. Schneider Electric will repair or replace defective products covered by this warranty. This warranty does not apply to equipment that has been damaged by accident, negligence or misapplication or has been altered or modified in any way. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory-remanufactured.

Non-transferable warranty

This warranty extends only to the original purchaser who must have properly registered the product. The product may be registered at the Schneider Electric website, **www.schneider-electric.com**.

Exclusions

Schneider Electric shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by end user's or any third person's misuse, negligence, improper installation or testing. Further, Schneider Electric shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, exposure to the elements, Acts of God, fire, theft, or installation contrary to Schneider Electric recommendations or specifications or in any event if the Schneider Electric serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

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Warranty claims

Customers with warranty claims issues may access the Schneider Electric customer support network through the Support page of the Schneider Electric website, **www.schneider-electric.com/support**. Select your country from the country selection pull-down menu at the top of the web page. Select the Support tab to obtain contact information for customer support in your region.

Worldwide Customer Support

Customer support for this product is available at **www.schneider-electric.com**.

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