## **NetShelter WX Low-profile Cabinet** Installation and Customization Manual

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### **Table of Contents**

Product Overview	5
Important Safety Instructions — SAVE THESE	
INSTRUCTIONS	6
Safety Information for the 6U Cabinet	
Safety Labels on the Cabinet	
Component Identification	9
Hardware Bag	
Tools (Not Provided)	
Procedure Overview	
Configuration Options	12
Front and Rear Panels	
Mounting Bracket	
Side Panels	
Cable Access	13
Open Brush Strips for Cable Access	
Equipment Installation	. 15
Identify One (1) U-space	
Install a Cage Nut	
Remove a Cage Nut	
Install Equipment on the Mounting Flanges	
UPS Installation	
Server Installation	18
Other Compatible Equipment	19
Additional Options for Cable Management	19
Universal Accessory Bracket	20
Additional Options (not included)	20
NetBotz Camera Pod 165 (NBPD0165)	20
NetBotz Door Switch Sensor (NBES0303)	21
Cabinet Installation	22
Mount the Cabinet to a Wall	23
Floor Mount	26
Ground the Cabinet	27
Connect the Fan Module to Power	27
Maintenance and Support	28
Replace the Fan Module	28
Replace the Air Filter	28
Additional Options: EcoStruxure Asset Advisor	29
Specifications	30
Five-year Factory Warranty	31
Terms of Warranty	31
Non-transferable Warranty	31
Exclusions	31
Warranty Claims	32
Radio Frequency Interference	33

### **Product Overview**

The APC by Schneider Electric NetShelter™ WX Low-profile cabinet provides storage for industry-standard (EIA/ECA-310) 482 mm (19 in) rack-mount hardware, including voice, data, and networking equipment

Model	Mounting Width	Mounting Depth	Mounting Height	External Width*	External Depth	External Height
AR106V (cabinet with 115 V fan module)	— 6U†	762 mm (30 in)	482 mm (19 in)	351.75 mm (13.85 in)	978.2 mm (38.5 in)	649.5 mm (25.6 in)
AR106VI (cabinet with 230 V fan module)						

†One U= 44 mm (1.75 in) \*Includes16.75 mm (0.65 in) mounting bracket

This unit has the following features:

- Black, perforated front panel with air filter for ventilation. •
- Rear panel with fan module for ventilation. •
- Large side panels for access to equipment. •
- Locks on all panels. ٠
- Fixed front and rear mounting flanges with square cage nut holes. •

# Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety 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 message 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 with this symbol to avoid possible injury or death.

### 

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

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

### **A**WARNING

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

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

### 

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

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

### NOTICE

**NOTICE** is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

### **Please Note**

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by APC by Schneider Electric for any consequences arising out of the use of this material.

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.

### Safety Information for the 6U Cabinet

### **A A DANGER**

#### HAZARD OF ELECTRIC SHOCK

- Power supplied to the cabinet must be a dedicated branch circuit connected to the building Common Bonding Network (CBN).
- The cabinet must be connected to the building CBN.

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

### **A**WARNING

#### HEAVY EQUIPMENT HAZARD

- Installation must be performed by qualified personnel.
- Use at least two (2) people or a material lift to move the cabinet.

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

### NOTICE

#### RISK OF EQUIPMENT DAMAGE

Ensure your fan module is connected to a power source appropriate for its voltage. Check the *Specifications, page 30*.

Failure to follow these instructions can result in equipment damage.

### Safety Labels on the Cabinet

### Weight Rating



The weight rating label shown above can be found on the cabinet, and serves to communicate the following information:

**Section 1**: Weight capacity. The cabinet can be mounted on a wall or casters loaded with up to 113 kg (250 lb) of equipment.

Section **2**: Generic Tip Hazard.

#### **Falling Equipment Hazard**

### 

UNSECURED EQUIPMENT FALLING HAZARD



- Enclosure wall mount requires reinstallation of all four (4) T30 bolts.
- Enclosure is designed to support loads only with all four (4) mounting bolts installed.

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

The mounting bracket is secured to the cabinet with four (4) T30 screws, which are removed in the process of mounting the cabinet to a wall. The screws must be re-installed regardless of whether the cabinet is loaded with equipment. See *Mount the Cabinet to a Wall, page 23* for details.

### **Component Identification**



ltem	Description			
0	Mounting bracket			
0	Removable, lockable side panels			
8	Кеу			
4	Universal accessories bracket			
6	5 Cabinet frame			
6	Removable, lockable rear panel with fan module			
0	Reserved for future use			
8	UPS mounting bracket			
9	Hardware bag			
0	Top and bottom mounting flanges			
0	Removable air filter			
Ð	Removable, lockable front panel			

• Fan module power cord, IEC C-13 to IEC C-14 (AR106VI only)

### Hardware Bag



Cage nuts (24)



M6 plastic cup washers (24)

TORX ® T30/#2 Phillips tool (1)



M6 x 16 Phillips slot screws (24)

Cage nut tool (1)

### **Tools (Not Provided)**

Required



Phillips screw driver

Level

Drill

⊕



Common Bonding Network Jumper Kit

#### Recommended







Nut driver (7 mm)

Stud finder

Material lift

Ladder

### **Procedure Overview**

- 1. Remove the panels as needed. See Configuration Options, page 12
- 2. If needed, install the casters (not included). See *Floor Mount, page 26* under *Cabinet Installation, page 22.*
- 3. Install rack-mountable equipment and additional options (not included). See *Equipment Installation, page 15.*
- 4. If needed, mount the cabinet to a wall. See Cabinet Installation, page 22.
- 5. Ground the cabinet. See Ground the Cabinet, page 27.
- 6. Connect the fan module to power. See *Connect the Fan Module to Power, page* 27.

### **Configuration Options**

Before you install the cabinet, plan the location and arrangement of components within the cabinet based on the available space.

### **Front and Rear Panels**

You can swap the front and rear panels to reverse the direction of the cabinet air flow.



### **Mounting Bracket**

You must remove the front and rear panels to remove or install the mounting bracket. As you remove the screws (①), hold the bracket to prevent it from falling. Save the screws for wall-mounting.



### Side Panels

To remove the side panel closest to the wall, you must first remove the mounting bracket.



### **Cable Access**



- Brush strips, 201 x 44 mm (8 x 2 in). See Open Brush Strips for Cable Access, page 14.
- Knockouts for cables or NEMA 2.5 in conduits and fittings, 74 mm (2.91 in)
- S Knockout for cables or NEMA 1 in conduit and fitting, 34.6 mm (1.36 in)

### **Open Brush Strips for Cable Access**

Use a 7 mm nut driver to remove the nuts, then remove the plate covering the brush strip.



### **Equipment Installation**

**NOTE:** Before installing the equipment, remove any desired knockouts or brush strips (*Cable Access, page 13*) and install the casters if desired (*Floor Mount, page 26*).

For specific information on how to mount equipment in the cabinet, see the installation instructions supplied with the equipment. You can use the provided M6 x 16 Phillips slot screws and cage nuts to mount equipment on the square holes in the mounting flanges.

### Identify One (1) U-space

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.



### **Install a Cage Nut**

If needed, APC by Schneider Electric offers a cage nut hardware kit (AR8100) for use with square holes.

### 

#### FALLING EQUIPMENT HAZARD

Install cage nuts horizontally, with the tabs engaging the left and right sides of the square hole. Do NOT install cage nuts vertically with the tabs engaging the top and bottom of the square hole.

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

- Install the cage nuts on the interior of the vertical mounting flange. Insert the cage nut into the square hole by hooking one (1) ear of the cage nut assembly through the far side of the hole.
- 2. Place the cage nut tool on the other side of the cage nut and pull to snap it into position.

### **Remove a Cage Nut**

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

### **Install Equipment on the Mounting Flanges**

- 1. Review the installation instructions from the equipment manufacturer.
- 2. Turn the cabinet on its side.
- 3. Locate the top and bottom U-space on the mounting flanges. (See *Identify One (1) U-space, page 15.*)
- 4. If you use cage nuts, install the cage nuts on the interior of the mounting flanges (see *Install a Cage Nut, page 15*). Then install the equipment.

**NOTE:** Read *UPS Installation, page 16* before installing a UPS. Read *Server Installation, page 18* before installing a server.

#### **UPS Installation**

If you have an Uninterruptible Power Supply (UPS), it is recommended that you mount the UPS first, in U-space one (1) (closest to the wall and mounting bracket). You can use the included UPS bracket to mount a 2U UPS and fit additional equipment behind the UPS in the rear of the cabinet. Mount the UPS with the battery at the bottom of the cabinet.

### 

#### BATTERY LEAK HAZARD

Mounting a UPS in the wrong orientation can prevent proper ventilation and cause overheating or battery leakage. Mount compatible APC by Schneider Electric UPS models with the display at the top of the cabinet and the battery at the bottom of the cabinet. If you install a third-party UPS in the cabinet, check with the manufacturer to ensure that the UPS can be safely mounted in the vertical orientation required by the cabinet.

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

### NOTICE

#### **RISK OF EQUIPMENT DAMAGE**

- If you intend to re-ship the cabinet with a UPS installed, ensure the UPS bracket will keep the UPS secure while the cabinet is on its side and that the UPS can tolerate the shipping orientation.
- Disconnect the battery before reshipment. Follow all national and international shipping requirements.

#### Failure to follow these instructions can result in equipment damage.





#### **Compatible UPS Models**

Ensure your UPS is compatible with the cabinet. Compatible UPS models must meet all the following requirements:

- The UPS must be rack-mountable.
- The UPS must be qualified to operate in a vertical "tower" orientation.
- The depth of the UPS must be 76.2 cm (30 in) or less.
- If the UPS has lead-acid batteries, the internal battery must not be upsidedown when the UPS is mounted in the cabinet.
- The UPS should be rated 1.5 kVA or lower to maintain a manageable heat load in the cabinet. If the UPS is rated higher than 1.5 kVA, ensure the total equipment load in the cabinet remains at 1.5 kVA or lower.

#### **Ground the UPS**

Follow the grounding guidelines for your UPS model. There are four (4) grounding points available with 7 mm nuts pre-installed.



#### **Server Installation**

Install the server in U-space six (6) (farthest from the wall and mounting bracket) with the server access panel facing outward to allow easy access for maintenance.



### NOTICE

#### **RISK OF EQUIPMENT DAMAGE**

- Check with the manufacturer to ensure that the server can safely operate in the vertical orientation required by the cabinet.
- If you intend to re-pack and ship the cabinet with a server installed, ensure the server bracket will keep the server secure while the cabinet is on its side and that the server can tolerate the shipping orientation (with the server access panel facing the ground).

Failure to follow these instructions can result in equipment damage.

#### **Other Compatible Equipment**

The following equipment is compatible with the Low-profile WX Cabinet by APC by Schneider Electric. Other equipment may work but has not been validated.

Rack Power Distribution Units (PDUs)
Switched PDU, 1U, 15A, 100/120V, (8) 5-15 outlets (AP7900B)
Switched PDU, 1U, 12A/208V, 10A/230V, (8) C13 outlets (AP7920B)
Metered PDU, 1U, 15A, 100/120V, (8) 5-15 outlets (AP7800B)
Metered PDU, 1U, 12A/208V, 10A/230V, (8) C13 outlets (AP7820B)
Basic PDU, 1U, 15A, 120V, (10) 5-15 outlets (AP9562)

**NOTE:** Ensure your PDU is compatible with the system voltage (see *Specifications, page 30*).

**NOTE:** See the installation manual for your NetBotz appliance to determine which NetBotz accessories are compatible.

#### **Additional Options for Cable Management**

The following cable management accessories (not included) are compatible with the Low-profile WX Cabinet.

Accessory	Description	
Horizontal cable manager with brush strip, 1U (AR8429 )	19 in, 1U cable pass- through assists with containing air in the cabinet and providing an aesthetic solution for cable routing.	nsodota
Horizontal cable manager, 1U x 4 in (AR8602A)	Routes cables on the front or back of the 19 in EIA cabinet.	
Data distribution panel, 1U (AR8451)	Holds four (4) data distribution cables, for a total of 24 ports.	
Data distribution panel, 2U (AR8452)	Holds eight (8) data distribution cables, for a total of 48 ports.	

### **Universal Accessory Bracket**

You can install additional sensors or networking equipment on the Universal Accessory bracket.



NOTE: The NetBotz 4–20 mA sensor is shown here as an example.

### **Additional Options (not included)**

The following accessories are available on *www.apc.com*. Installation instructions are provided for each accessory. Check your NetBotz appliance documentation to ensure that any NetBotz accessories are compatible with your appliance.

#### NetBotz Camera Pod 165 (NBPD0165)

The top of the cabinet has four (4) holes that can be used to install a NetBotz Camera Pod 165. Use the pre-installed  $\#6-32 \times 5/16$  in screws and washers.



#### NetBotz Door Switch Sensor (NBES0303)

The cabinet has four (4) locations for NetBotz door switch sensors with matching installation locations on each panel.



### **Cabinet Installation**

### 

#### HEAVY EQUIPMENT HAZARD

- Installation must be performed by qualified personnel.
- Use at least two (2) people to lift the cabinet and follow site-specific requirements for lifting.
- · Follow local and national building codes when installing the cabinet.

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

**NOTE:** The cabinet is intended only for indoor environments. See *Specifications, page 30* for environmental requirements.

**NOTE:** See *Specifications, page 30* for the weight of the cabinet and its maximum weight capacity.

### Mount the Cabinet to a Wall

### 

#### UNSECURED EQUIPMENT FALLING HAZARD

- The mounting bracket must be secured to the wall with at least four (4) fasteners (see step 4).
- The enclosure wall mount requires reinstallation of all four (4) T30 screws (see step 6).
- The enclosure is designed to support loads only with all four (4) T30 screws installed (see step 6).

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

**NOTE:** Install equipment before mounting the cabinet to a wall. See *Equipment Installation, page 15.* 

The holes on the mounting bracket will accommodate up to a 10 mm (3/8 in) bolt. The centers of adjacent holes are 51 mm (2 in) apart, and the centers of the middle holes are 356 mm (14 in) apart. The bracket can be mounted on studs with standard 406 mm (16 in) centers or 610 mm (24 in) centers.

Unless mounting on concrete or cinder block, you must mount the bracket on at least two (2) studs, centered to the best of your ability. Secure the bracket with at least four (4) fasteners. Follow local and national building codes, and ensure your mounting surface and fasteners can support the weight of the loaded cabinet and all attached equipment.



You will need the following items (not provided):

- stud finder (only needed for mounting on studs)
- four (4) drywall screws (only needed for temporary bracket mounting in step 3)
- level
- at least four (4) fasteners and four (4) washers appropriate for your wall type
- · cordless drill and appropriate drill bit
- material lift (recommended)
- 1. Remove the front and rear panels (see Front and Rear Panels, page 12).
- 2. Use two (2) people to remove the mounting bracket. While one person holds the bracket, the other person removes the four (4) T30 screws. Then remove the bracket. Keep the screws.



3. **NOTE:** Skip this step for concrete or cinder block walls. Use a stud finder to locate and mark at least two (2) wall studs. Hold the bracket to the wall so that four (4) fastener holes are aligned with the studs. Ensure the bracket is level and install four (4) drywall screws as shown.



**NOTE:** The drywall screws will hold the bracket in position while you secure the bracket so that it can bear the weight of the cabinet. Do not put any weight on the bracket at this time.

- 4. Drill at least four (4) pilot holes where fastener holes in the bracket align with the wall studs.
- 5. Install the appropriate fastener for your wall-type into each pilot hole. Leave about 13 mm (1/2 in) of each fastener out of the wall. When all four (4) fasteners are in place, tighten them to secure the bracket against the wall.

6. Hang the cabinet by all four (4) tabs on the mounting bracket. It is recommended that you use a material lift or other lifting device to raise the cabinet up to the mounting bracket. Then use at least two (2) people to guide the cabinet onto the bracket.



- 7. Re-install the four (4) T30 screws to secure the cabinet to the mounting bracket.
- 8. Re-attach and lock the front and rear panels. (See *Front and Rear Panels, page 12*).

### **Floor Mount**

### 

#### TIP HAZARD

- The cabinet can be tipped. Exercise caution around a standing cabinet.
- Load a standing cabinet with at least 50 kg (110 lb) of equipment.

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

The cabinet can be set on the floor or mounted on the APC by Schneider Electric caster kit (AR8471, not included).

The bottom of the cabinet has four (4) sets of holes for the casters. The caster kit comes with two (2) swivel casters for the front of the cabinet, and two (2) fixed casters for the rear of the cabinet. Ensure the screws are tight and fully seated. Use your feet to Lock the swivel casters once the cabinet is in place.



**NOTE:** Use your foot to manipulate the locking pad. **NOTE:** Do not install casters on a loaded cabinet.

### **Ground the Cabinet**

### **A A DANGER**

#### HAZARD OF ELECTRIC SHOCK

The cabinet must be connected to the building Common Bonding Network (CBN) using the grounding points at the rear of the cabinet.

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

All four (4) removable panels are connected to the grounding system with preinstalled grounding clips.

Each cabinet should be connected directly to the building CBN using the grounding points at the rear of the cabinet. Grounding hardware is not provided.

- Use a Common Bonding Network Jumper kit (for example, Listed [KDER] Panduit RGCBNJ660PY or equivalent).
- Use the M6 nuts pre-installed on the grounding points to secure the Jumper Kit. Torque the nuts to 6.9 N•m (60 lb-in). (The screws included in the Jumper Kit are not used.)
- Do not ground one cabinet to another cabinet in a cascading style. Ground each cabinet directly to the building CBN.



### **Connect the Fan Module to Power**



#### **RISK OF EQUIPMENT DAMAGE**

• Ensure your fan module is connected to a power source appropriate for its voltage. Check the *Specifications, page 30*.

NOTICE

• Use only the power cord provided with the fan module.

Failure to follow these instructions can result in equipment damage.

### **Maintenance and Support**

You can purchase replacement fan module panels (0J-0M-89059-XXX), air filters (AR8472), and service options like EcoStruxure Asset Advisor on *www.apc.com*.

Customer support for this product is also available on *www.apc.com* under **Support**.

### **Replace the Fan Module**



### **Replace the Air Filter**

Check the air filter regularly. Replace the air filter when needed to prevent reduced airflow.



### Additional Options: EcoStruxure Asset Advisor

EcoStruxure Asset Advisor is a cloud-based monitoring service that provides the following benefits:

- 24/7 remote monitoring and smart alarms for the provided by Schneider Electric Connected Services Hub
- The ability to resolve issues through an online chat or over the phone call with experts from the Connected Services Hub
- Incident tracking and data analysis to help your equipment run more efficiently
- Access to the EcoStruxure IT mobile application for your smart phone

You can purchase EcoStruxure Asset Advisor offers for individual devices on *www.apc.com*. For example:

Parts Covered	Part Number	Description
1-phase UPS up to 10 kVA	WADV1PEAA	One (1) Year EcoStruxure Asset Advisor Service for your UPS
	WUPG1PEAA-UG-01	Add one (1) Year EcoStruxure Asset Advisor to an existing firmware purchase or service plan

You can find additional service offers on *www.apc.com* or on *www.se.com* under **Services**.

### **Specifications**

	AR106VI 50 Hz	AR106V 60 Hz		
Electrical (fan module)				
Nominal voltage	230 VAC	120 VAC		
Rated input voltage	230 VAC	115 VAC		
Rated input current	1 A	1 A		
Input connection	C13	C13		
Physical				
Dimensions (H x W x D)	Is (H x W x D) 649.5 x 351.75 x 978.2 mm (25.6 x 13.85 x 38.5 in)   NOTE: Width includes 16.75 mm (0.65 in) mounting bracket.			
Maximum equipment depth	762 mm (30 in)			
Cabinet weight (empty)	34 kg (75 lb)	34 kg (75 lb)		
Maximum equipment weight	113 kg (250 lb)			
Ventilation (front panel)	79.6 % open area			
Airflow (fan module)	Airflow (fan module) 6 cubic meters (220 cubic feet) per minute at 0 stat			
Filter ratings	MERV 5, G3			
Environmental				
Temperature (fan module) Operating Storage	-10 C (14 F) – 70 C (158 F) -40 C (-40 F) – 70 C (158 F)			
Compliance				
UL/cUL	UL2416 CAN/CSA 60950–1	UL2416 CAN/CSA 60950–1		
CE	2014/35/EU	_		
PSE	Non-specified product: other furniture with electrical appliances.	Non-specified product: other furniture with electrical appliances.		
EMC compliance				
FCC	_	47 CFR Part 15 Class A		
CE	2014/30/EU	_		

### **Five-year Factory Warranty**

The limited warranty provided by APC by Schneider Electric in this Statement of Limited Factory Warranty applies only to products you purchase for your commercial or industrial use in the ordinary course of your business.

### **Terms of Warranty**

APC by Schneider Electric warrants its products to be free from defects in materials and workmanship for a period of five years from the date of purchase. The obligation of APC by Schneider Electric under this warranty is limited to repairing or replacing, at its sole discretion, any such defective products. 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 *www.apc.com*.

### **Exclusions**

APC by 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, APC by 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, start-up by non-APC by Schneider Electric designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to APC by Schneider Electric recommendations or specifications or in any event if the APC by 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 customer support network through the Support page, *www.apc.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.

### **Radio Frequency Interference**

#### USA-FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. The user will bear sole responsibility for correcting such interference.

#### Canada—ICES

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

#### Taiwan—BSMI

警告使用者: 這是甲類的資訊產品,在居住的 環境中使用時,可能會造成射頻 干擾,在這種情況下,使用者會 被要求採取某些適當的對策。

#### Australia and New Zealand

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

#### **European Union**

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU on the approximation of the laws of the Member States relating to electromagnetic compatibility. APC by Schneider Electric cannot accept responsibility for any failure to satisfy the protection requirements resulting from an unapproved modification of the product.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 32/European Standard EN 55032. The limits for Class A equipment were derived for commercial and industrial environments to provide a reasonable protection against interference with licensed communication equipment.

**Attention:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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