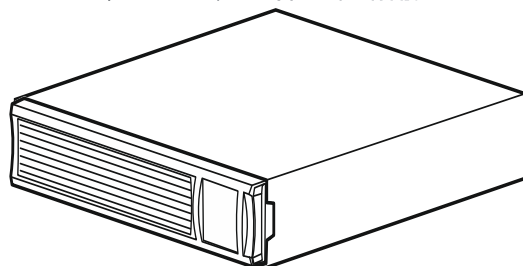**APC**™

by Schneider Electric

Operation Manual

Smart-UPS™ X

Uninterruptible Power Supply
with APC™ SmartConnect Port

**SMX750C / SMX750CNC / SMX750CUS
SMX1000C / SMX1000CNC / SMX1000CUS
SMX1500RM2UC / SMX1500RM2UCNC
SMX1500RM2UCUS / SMX1500RM2UCNCUS**

**120 Vac
Rack-Mount 2U**

Legal Information

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance of the Smart-UPS and batteries.

Read the Safety Guide supplied with the equipment to become familiar with the safety requirements before trying to install or operate the UPS.

Read the user documentation to become familiar with the equipment before trying to install or operate it.

The following special messages may appear throughout this document 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 either 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 a hazardous situation which, if not avoided, **will result in** death or serious injury.

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

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

NOTICE
NOTICE is used to address practices not related to physical injury.

Product Handling Guidelines

<18 kg
<40 lb

18-32 kg
40-70 lb

32-55 kg
70-120 lb

>55 kg
>120 lb

Safety and General Information

Inspect the package contents upon receipt. Notify the carrier and dealer if there is any damage.

Additional safety information can be found in the safety Guide supplied with this unit.

- Adhere to all local and national electrical codes.
- Do not work alone under hazardous conditions.
- All wiring must be performed by a qualified electrician.
- Changes and modifications to this unit not expressly approved by APC by Schneider Electric could void the warranty.
- This equipment is intended for indoor use only.
- Always install peripheral equipment above the UPS in rack-mount configurations.
- The UPS is intended for IT environments. Do not operate this unit in direct sunlight, in contact with fluids, or where there is excessive dust or humidity.
- Be sure the air vents on the UPS are not blocked. Allow adequate space for proper ventilation.
- For a UPS with a factory installed power cord, connect the UPS power cable directly to a wall outlet. Do not use surge protectors or extension cords.
- The equipment is heavy. Always practice safe lifting techniques adequate for the weight of the equipment.

Battery Safety

⚠ **CAUTION**
RISK OF HYDROGEN SULPHIDE GAS AND EXCESSIVE SMOKE
• Replace the battery at least every 5 years or at the end of its service life, whichever is earlier.
• Replace the battery immediately when the UPS indicates battery replacement is necessary.
• Replace batteries with the same number and type of batteries as originally installed in the equipment.
• Replace the battery immediately when the UPS indicates a battery over-temperature condition, or when there is evidence of electrolyte leakage. Power off the UPS, unplug it from the AC input, and disconnect the batteries. Do not operate the UPS until the batteries have been replaced.
• *Replace all battery modules (including the modules in External Battery Packs) which are older than one year, when installing additional battery packs or replacing the battery module(s).
Failure to follow these instructions can result in minor or moderate injury and equipment damage.

*Contact APC by Schneider Electric Worldwide Customer Support to determine the age of the installed battery modules.

- CAUTION: Do not dispose of batteries in a fire. The batteries may explode.
- CAUTION: Do not open or mutilate batteries. Released material is harmful to the skin and eyes and may be toxic.
- CAUTION: Failed batteries can reach temperatures that exceed the burn thresholds for touchable surfaces.
- Batteries typically last for two to five years. Environmental factors impact battery life. Elevated ambient temperatures, poor quality utility power, and frequent short duration discharges will shorten battery life. Batteries should be replaced before end of life.
- APC by Schneider Electric uses Maintenance-Free sealed Lead Acid batteries. Under normal use and handling, there is no contact with the internal components of the battery. Over charging, over heating or other misuse of batteries can result in a discharge of battery electrolyte. Released electrolyte is toxic and may be harmful to the skin and eyes.
- Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and required precautions.
- CAUTION: A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:

- Disconnect the charging source prior to connecting or disconnecting battery terminals.

- Do not wear any metal objects including watches and rings.

- Do not lay tools or metal parts on top of batteries.

- Use tools with insulated handles.

- Wear rubber gloves and boots.

- Determine if battery is either intentionally or inadvertently grounded. Contact with any part of a grounded battery can result in electric shock and burns by high short-circuit current. The risk of such hazards can be reduced if grounds are removed during installation and maintenance by a skilled person.

Deenergizing safety

- The UPS contains internal battery modules and may present a shock hazard even when disconnected from the branch circuit (mains).

- Before installing the UPS or any accessory be sure that the:
  - Input circuit breaker is in **OFF** position.
  - Internal UPS battery modules are removed.
  - External Battery Packs (XBP(s)) is(are) disconnected.

Electrical safety

- Do not handle any metallic connector before power has been disconnected.

- For models with a hardwired input, the connection to the branch circuit (mains) must be performed by a qualified electrician.

- The protective earth conductor for the UPS carries the leakage current from the load devices (computer equipment). An insulated ground conductor is to be installed as part of the branch circuit that supplies the UPS. The conductor must have the same size and insulation material as the grounded and ungrounded branch circuit supply conductors. The conductor will typically be green, with or without a yellow stripe.

- Leakage current for a pluggable, Type A UPS may exceed 3.5 mA when a separate ground terminal is used.

- The UPS input ground conductor must be properly bonded to protective earth at the service panel.

- If provided, connect the ground cable between the external battery pack(s) and the UPS.

- If the UPS input power is supplied by a separately derived system, the ground conductor must be properly bonded at the supply transformer or motor generator set.

General information

- The UPS display interface will recognize as many as 5 external battery packs connected to the UPS. **NOTE: For each XLBP added, the charging time will increase.**

- The model and serial numbers are located on a small, rear panel label. For some models, an additional label is located on the chassis under the front bezel.

- Recycle the packaging materials or save them for reuse.

FCC Warning

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 the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Radio frequency warning

WARNING: This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

Product Description

The APC by Schneider Electric Smart-UPS™ is a high performance uninterruptible power supply (UPS). The UPS provides protection for electronic equipment from utility power blackouts, brownouts, sags, and surges, small utility power fluctuations and large disturbances. The UPS also provides battery backup power for connected equipment until utility power returns to specified levels or the batteries are fully discharged.

This user manual is available on the APC by Schneider Electric Web site, www.apc.com.

Product Overview

Front Panel Features

❶ **Battery**
❷ **Battery connector**
❸ **Display interface**
❹ **Bezel**
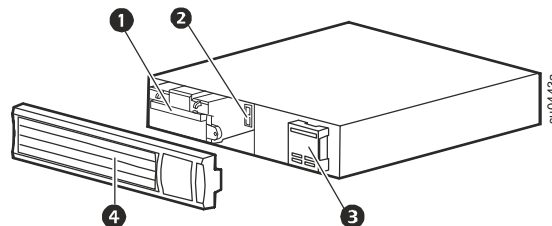
Rear Panel Features

❶ **SmartSlot (except NC models)**

❷ **External battery pack connector**

❸ **Outlets**

❹ **EPO connector**

❺ **USB port -** Use this port to connect to a computer for monitoring or gracefully shutting down the UPS using PowerChute software. Refer to "Connect and Install Management software" on page 9.

❻ **Serial port -** Use this serial port for monitoring the UPS.
Refer to "Connect and Install Management software" on page 9.

❼ **Chassis ground screw**

❽ **UPS input**

❾ **Circuit breaker**

❿ **SmartConnect Ethernet port (Features vary with terms of use.)**
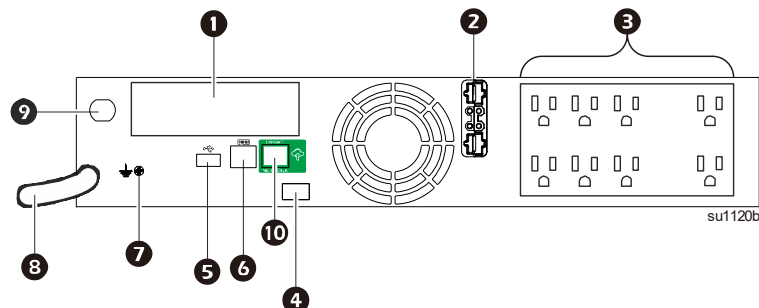
Specifications

For additional specifications, refer to the APC by Schneider Electric Web site at www.apc.com.

| Temperature	Operating	0° to 40° C (32° to 104° F)
	Storage	-15° to 45° C (5° to 113° F) Charge UPS battery every six months
Maximum Elevation	Operating	3,000 m (10,000 ft)
	Storage	15,000 m (50,000 ft)
Humidity	0% to 95% relative humidity, non-condensing	

Installation

UPS
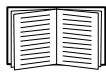
For UPS installation information, refer to the Smart-UPS X 750-1500 VA Installation Guide that is included with the UPS. The guide is also available from the APC by Schneider Electric Web site at www.apc.com.

External Battery Pack
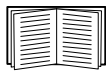
For installation information, refer to the SMX48RMBP2U external battery pack Installation Guide that is included with the external battery pack (XLBP). The guide is also available from the APC by Schneider Electric Web site at www.apc.com.

Battery Replacement

Always recycle used batteries.
For information on recycling a used battery, refer to the Battery Disposal Information sheet included with the replacement battery.

Battery life is highly dependent on temperature and use. To identify when to replace batteries, Smart-UPS have a predictive battery replacement date indicator in the "About" menu and automatic (and configurable) self-tests.

Proactively replace batteries to maintain the highest availability. To ensure protection and high performance, use only genuine APC Replacement Battery Cartridges (RBC™). The APC RBC contains instructions for battery replacement and disposal. To order a replacement battery go to the APC by Schneider Electric Web site, www.apc.com.

UPS Model	Replacement Battery	Battery Module
SMX750C, SMX750CNC, SMX1000C, SMX1000CNC	APCRBC116	Lead acid, 1 module, 48Vdc
SMX750CUS, SMX1000CUS	APCRBC116US	
SMX1500RM2UC, SMX1500RM2UCNC	APCRBC115	
SMX1500RM2UCUS, SMX1500RM2UCNCUS	APCRBC115US	

Operation

Connect to Equipment and Utilities

⚠ CAUTION
RISK OF ELECTRIC SHOCK
• Adhere to all local and national electrical codes.
• Wiring should be performed by qualified electrician.
• Always connect the UPS to a grounded outlet.
Failure to follow these instructions can result in minor or moderate injury.

NOTE: The UPS will charge to 90% capacity in the first three hours of normal operation. **Do not expect full battery runtime capability during this initial charge period.**

1. Connect equipment to the outlets in the rear of the UPS. Some models are equipped with controlled outlet groups. Refer to the "Configuration" on page 11 for further instructions on the use of controlled outlet groups.

2. Connect the SmartConnect Ethernet port ⌂ to your nearest network switch using the cable provided.

3. Connect the UPS input to AC power.
   NOTE: Once power is connected the display will be active.

4. Press the MAIN POWER BUTTON ⏻ on the UPS display to turn on the UPS output.
   NOTE: The On-line LED ∿ will light green when the output is on.

5. When the UPS is powered on for the first time the Display interface screen displays the Setup Wizard and asks a number of basic set-up questions. They can be answered simply by using the UP/DOWN arrow ⌃ ⌄ and ENTER ↵ BUTTONS on the display.

6. Log onto www.smartconnect.apc.com or scan the QR code to launch the registration process. The website includes instructions to setup your online account, activate your warranty and begin monitoring your UPS remotely. Features vary with terms of use.

su0968n

Basic Connectors

⊔	**Serial port:** Connect to a computer to use PowerChute™ software.
⎓	**USB port:** Connect to a computer to use PowerChute™ software. **NOTE:** Serial and USB communication can not be used simultaneously.
	External Battery Pack connector: Connect external battery packs to provide extended runtime during power outages. The UPS can support up to five external battery packs.
⊕	**Ground Screw:** The UPS features a ground screw for connecting the ground lead on surge suppression devices such as a telephone and network line protectors. When connecting a ground cable, disconnect the UPS from utility power.
	SmartConnect Ethernet Port: SmartConnect Ethernet port allows you to monitor the health and status of your UPS from any device connected to the Internet. Log onto www.smartconnect.apc.com or scan the QR code to launch the registration process. The website includes instructions to setup your online account, activate your warranty and begin monitoring your UPS remotely.

Display Panel

Overview

❶ **Online LED**

❷ POWER ON/OFF **button**

❸ **On Battery LED**

❹ **Error Detected LED**

❺ **Replace Battery LED**

❻ **Multi-lingual display screen**

❼ UP/DOWN **arrow buttons**

❽ ENTER **button**

❾ ESCAPE **button**

su0343a
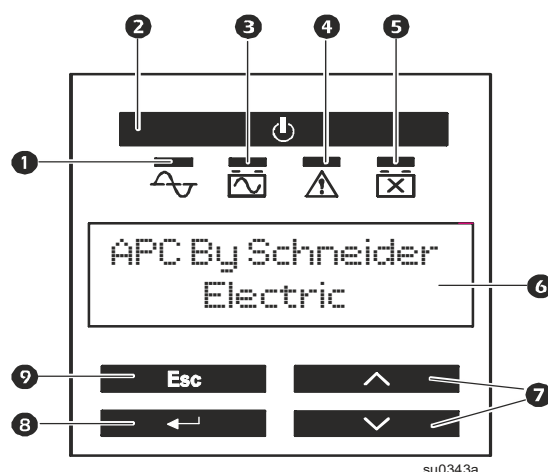
Display interface operation

Use the UP/DOWN arrow buttons to scroll through the main menu options. Press ENTER to view the submenus under each main menu option. Press ESCAPE to exit a submenu and return to a MAIN menu.

Standard menus

The Standard menus are the most commonly used menus. The following is a list of some items displayed in this menu mode. Visit apc.com for additional details.

Menu	General Functions
Status	**View UPS information:** • Operating Mode • Efficiency • Load Power • Load VA • Battery Charge state • Estimated Runtime • External Battery Packs, when external battery packs are installed. • Battery Temp • Input • Output • SmartConnect • Probe 1, Probe 2, when NMC and sensor probes are installed
Configuration	**Configures UPS settings:** • Language • Green Mode • Local Power Quality: Good, Fair, Poor • Menu Type: Standard or Advanced • Audible Alarm • Display (Auto Dim, Auto Off, Always On) • Reset to Factory Default • SmartConnect Control • Install FW?
Test & Diags	**Performs UPS tests and diagnostic functions:** • UPS Self Test • UPS Alarms Test • Calibration Test
About	**View UPS information:** • UPS Model • UPS Part No. • UPS Serial No. • UPS Manufacture Date • Battery Part No. • XBP Battery (if installed) • Battery Install Date • Replace Battery by • Running UPS FW • Available UPS FW • UPS MAC • UPS IP Address • UPS Product Key • SmartSlot Card (if installed)

Advanced menus

The Advanced menus provide additional options for the UPS and are available only if the display interface is configured to use the Advanced menus.

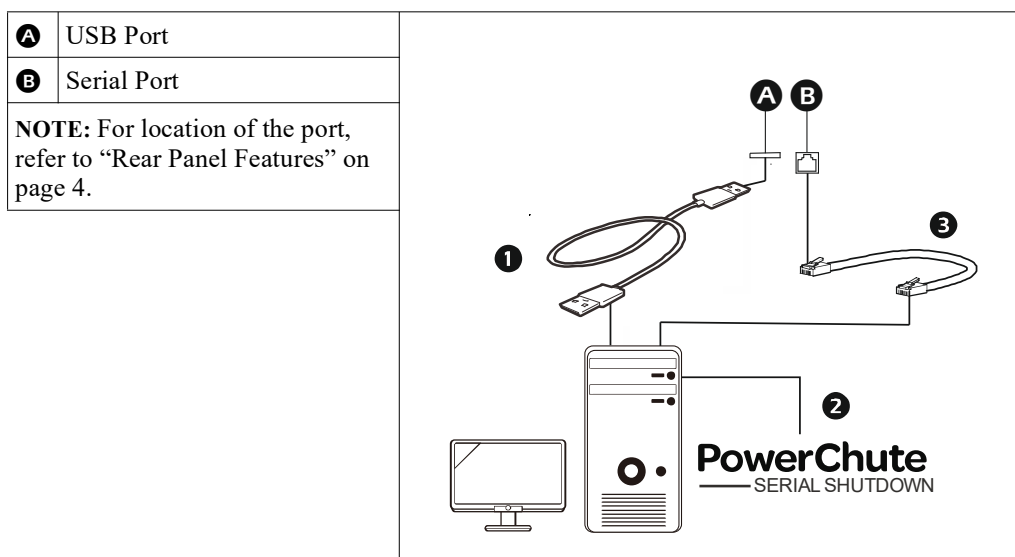| Menu	General Functions
Status	**View detailed UPS information:** • Operating Mode • Efficiency • Load Power • Load VA • Load Amps • Load Energy • Battery Charge State • Estimated Runtime • Battery Voltage • External Battery Packs, when external battery packs are installed. • Battery Temp • Input • Output • Outlet Groups • SmartConnect • Probe 1, Probe 2, when NMC and sensor probes are installed
Control	**Controls the Main and Controlled Outlet Group to turn on, turn off, shutdown, or reboot:** • UPS Control • Outlet Group Control
Configuration	**Configure advanced UPS settings:** • Language • Green Mode • Local Power Quality • Menu Type • Audible Alarm • Display • Sensitivity • Low Transfer • High Transfer • Low Battery Setting • Auto Self Test • Reset Energy Meter • Enter Setup Wizard • Reset to Factory Defaults • Site Wiring Fault • Config Main Group Outlets • Config Group Outlets (if Controlled Outlet is available) • ModBus Settings • SmartConnect Control • UPS IP Address Setting • NMC IP Address Settings (if NMC is available) • Install FW? (only available if a firmware update is available)
Test & Diag	**Perform UPS tests and diagnostics functions:** • UPS Self Test • UPS Alarms Test • Calibration Test
Logs	View the error log for information about UPS detected errors that have occurred.
About	**View UPS information:** • UPS Model • UPS Part No. • UPS Serial No. • UPS Manufacture Date • Battery Part No. • XBP Battery (if installed) • Battery Install Date • Replace Battery by • Running UPS FW • Available UPS FW • UPS MAC • UPS IP Address • UPS Product Key • SmartSlot Card (if installed)

Connect and Install Management software

Smart-UPS is provided with PowerChute UPS Management Software for unattended operating system shutdown, UPS monitoring, UPS control and energy reporting. The following diagram is a representation of a typical server installation.

Ⓐ	USB Port
Ⓑ	Serial Port
NOTE: For location of the port, refer to "Rear Panel Features" on page 4.	

❶	Connect the USB cable from the rear of the UPS to the protected device such as a server.
❷	For a server or other device with an operating system, download and install latest version of the PowerChute Serial Shutdown from https://www.apc.com/pcss. PowerChute Serial Shutdown supports graceful shutdown in the event of an extended power outage. **NOTE:** PowerChute is a 64-bit only application and cannot be installed on a 32-bit operating system.
❸	A built-in Serial port is also available for additional communication options with serial cable. **NOTE:** Serial port and USB port cannot be used at the same time.
Even more communication options are available via the built-in Smartslot. Refer to www.apc.com for more information.	

EcoStruxure™ IT SmartConnect

The Web Portal allows you to remotely view the status of your UPS, receive automatic notifications about UPS events, and firmware updates. The features may vary with terms of use.
Visit https://smartconnect.apc.com to learn more.

By connecting this product to the Internet using the SmartConnect Ethernet port, you are agreeing to the SmartConnect Terms of Use and Data Privacy Notice, as found at smartconnect.apc.com/terms-and-privacy. The Schneider Electric Data Privacy Policy can also be found at https://smartconnect.apc.com/terms-and-privacy.

Log onto smartconnect.apc.com or scan the QR code to begin the registration process. The QR code is located on the rear panel of the UPS. Allow a few minutes for the Ethernet to be established before you can complete the registration process.
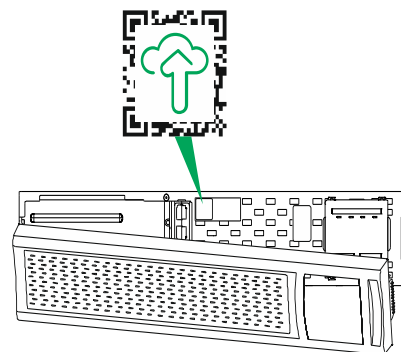
For instructions on how to register your SmartConnect-compatible

UPS, visit https://smartconnect-support.apc.com.

Configuration

UPS Settings

Start up settings

Configure these settings at initial start up, using the display interface or PowerChute™ software.
NOTE: During start up, use the display interface to configure these settings. If nothing is selected, the unit will use the default settings.

Function	Factory Default	Options	Description
Language	English	• English • French* • German* • Spanish* • Italian* • Portuguese*	The language for the display interface. *Language options will vary by model.
Local Power Quality	Good	• Good • Fair • Poor	Select the quality of input utility power. • If Good is selected, the unit will go on **battery** power more often to provide the clean power supply to the connected equipment. • If Poor is selected, the UPS will tolerate more fluctuations in power and will go on battery power less often. If unsure of the local power quality, select Good.
Menu Type	Standard	Standard or Advanced	The Standard menus display a limited set of menus and options. The Advanced menus include all parameters.

General Settings

Configuration settings may be changed at any time using the Display interface or PowerChute™ software. This table provides a brief description of the general settings, for more detailed information on each of these parameters consult application note 80 at www.apc.com.

Setting	Factory Default	Options	Description
High Transfer point	127 Vac	127 Vac - 136 Vac	To avoid unnecessary battery usage, set the transfer point higher if the utility voltage is chronically high and the connected equipment is known to work under this condition. The POWER QUALITY setting will automatically change this setting. **NOTE:** Use the Advanced Menus to configure this setting.
Low Transfer point	106 Vac	97 Vac - 106 Vac	Set the transfer point lower if the utility voltage is chronically low and the connected equipment can tolerate this condition. This setting may also be adjusted using the power quality setting. **NOTE:** Use the Advanced Menus to configure this setting.
Transfer Sensitivity	Normal	• Normal • Reduced • Low	Select the level of sensitivity to power events that the UPS will tolerate. • High: The UPS will go on battery power more often to provide the cleanest power supply to the connected equipment. • Low: The UPS will tolerate more fluctuations in power and will go on battery power less often. If the connected load is sensitive to power disturbances, set the sensitivity to High.
Date of Last Battery Replacement	Date set at factory. Reset this date when the battery module is replaced.		
Audible Alarm	On	• On • Off	The UPS will mute all audible alarms if this is set to **Off** or when the display buttons are pressed.
Auto Self Test	On start-up and every 14 days since the last test	• Never • Start-up only • Frequency of test (every 7 to 14 days)	The interval at which the UPS will execute a self-test.
Reset to Factory Default	No	• Yes • No	Restores the UPS factory default settings.
Site Wiring Fault	Enable	• Enable • Disable • Can Ack	Sets the Site Wiring Fault detection to Enable, Disable or User Can Acknowledge
Output voltage	120 V	• 120 Vac	Only supports 120 Vac
Green Mode	Enable	• Enable • Disable	This will enable or disable Green mode function. Green Mode conserves energy while the UPS is operating on line.
SmartConnect Control	Enable	• Enable • Disable	This will permit remote configuration changes.
Low Battery Alert	150 sec	Set the value in seconds	The UPS will emit an audible alarm when the remaining runtime has reached this level.

Setting	Factory Default	Options	Description
Install FW?	Don't Install	• Next off (Updates the UPS Firmware next time that the UPS is turned off) • Now (Updates the UPS firmware immediately without interrupting operations) • Don't Install	Firmware update: this only appears when new firmware is available in the flash memory of the UPS and is ready to be installed

Controllable Outlet Groups

Overview

The Main Outlet Group and the Controlled Outlet Group (refer "Model specific controllable outlet groups" on page 14) can be configured to independently turn off, turn on, shut down, and reboot connected equipment.

The Main and Controlled Outlet Groups can be configured to do the following:

- Turn off: Disconnect power to connected equipment immediately and restart only with a manual command
- Turn on: Supply power to connected equipment immediately
- Shutdown: Disconnect power in sequence, and automatically supply power in sequence when utility power becomes available
- Reboot: Shut down and restart

In addition, the Main Outlet Group and the Controlled Outlet Group can be configured to do the following:

- Turn on or off in a specified sequence
- Automatically turn off or shut down when various conditions occur

NOTE: If the Main and Controlled Outlet Groups are not configured, all the outlets on the unit will still provide battery back-up power.

NOTE: The Main Outlet Group functions as a master switch. It will turn on first when power is applied, and shut off last when there is a power outage and battery run-time has been exhausted.

The Main Outlet Group must be turned on for the Controlled Outlet Group to turn on.

Model specific controllable outlet groups

❶ Controllable Outlet Group(s)   ❷ Main Outlet Group

750 VA

1000 VA

1500 VA
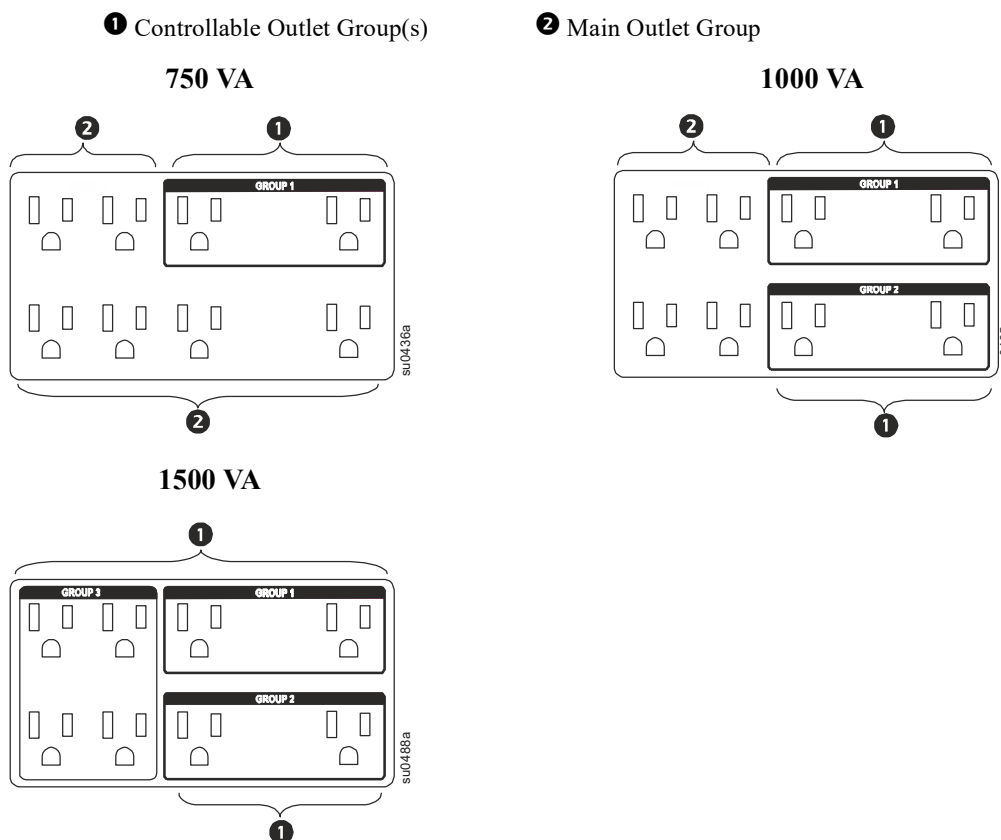
Using the Controllable Outlet Groups and Main Outlet Group

NOTE: Main Outlet Group function as a master switch. They turn on first when power is applied, shut off last when there is a power outage and battery runtime has been exhausted.The Main Outlet Group must be turned on for the Controllable Outlet Groups to turn on.

1. Connect essential equipment to the Main Outlet Group (The 1500 VA units do not have Main Outlet Group. Connect all essential equipment to the same outlet group.)

2. Connect peripheral equipment to the Controllable Outlet Groups.

   – Nonessential equipment that should shut off quickly in the event of a power outage to conserve battery runtime can be added to a short power off delay

   – If equipment has dependent peripherals that must restart or shut down in a specific order, such as an Ethernet switch that must restart before a connected server, connect the devices to separate groups

   – Equipment that needs to reboot independently from other equipment should be added to a separate group

3. Use the Configuration menus to configure how the Controllable Outlet Groups will react in the event of a power outage.

Customize the controllable outlet groups and the UPS outlets

Use the **Control** menus to change the controllable outlet groups and the UPS outlet settings.

Setting	Factory Default	Options	Description
Name String Outlet Group	Outlet Group 1	Edit these names using an external interface, such as the Network Management Card Web interface.	
UPS Name String	UPS Outlets		
Turn On Delay	0 sec	Set the value in seconds	The amount of time the Main Outlet Group or the Controlled Outlet Group will wait between receiving the command to turn on and the actual startup.
Turn Off Delay	• 0 sec (Main Outlet Group) • 90 sec (Controlled Outlet Groups)	Set the value in seconds	The amount of time the Main Outlet Group or the Controlled Outlet Group will wait between receiving the command to turn off and the actual shut down.
Reboot Duration	8 sec	Set the value in seconds	The amount of time that the Main Outlet Group or the Controlled Outlet Group must remain off before it will restart.
Minimum Return Time	0 sec	Set the value in seconds	The amount of battery runtime that must be available before the Main Outlet Group or the Controlled Outlet Group will turn on.
Load Shed On Battery	Disabled	• Shutdown with Delay • Shutdown immediately • Turn off immediately • Turn off with delay • Disabled	When the unit switches to battery power, the UPS can disconnect power to the Controlled Outlet Group to save runtime. Configure this delay time, use the LOAD SHED TIME WHEN ON BATTERY setting.
Load Shed Time when On Battery	Disabled	Set the value in seconds	The amount of time the outlets will function on battery power before they will turn off.
Load Shed On Runtime	Disabled	• Shutdown with delay • Shutdown immediately • Turn off immediately • Turn off with delay • Disabled	When the battery runtime falls below the specified value, the Controlled Outlet Group will turn off. Configure this time using the LOAD SHED RUNTIME REMAINING setting.
Load Shed On Runtime Remaining	Disabled	Set the value in seconds	When the remaining runtime reaches this level, the Controlled Outlet Group will turn off.
Load Shed on Overload	Disabled	• Disabled • Enabled	In the event of an overload (greater than 100% output power), the Controlled Outlet Group will immediately turn off to conserve power for essential loads. The Controlled Outlet Group will only turn on again with a manual command.

Modbus settings

Setting	Factory Default	Options	Description
Slave ID	1	1- 223	Sets the Modbus slave address of UPS
Ser+USB	Disable	• Enable • Disable	Enables or disables UPS Modbus protocol over serial and USB ports

TCP Settings TCP Protocols	Disable	• Disable • Read-Only • Read-Write	Enables or disables UPS Modbus TCP/IP protocol provided by the embedded SmartConnect port. • **Disable:** Disables UPS Modbus TCP/IP protocol • **Read-Only:** Modbus master over TCP/IP protocol is only allowed to get UPS status. • **Read-Write:** Modbus master over TCP/IP protocol is allowed to get UPS status and control the UPS. The port number of UPS Modbus TCP/IP protocol is fixed at 502.
TCP Settings Master IP Addr	000.000.000.000	A valid IPv4 address	Specifies the IPv4 address of the Modbus master. The *Master IP Addr* when set as 000.000.000.000 will allow connection of external Modbus master with any IP address. When not set as 000.000.000.000, only the Modbus master with the specified IP address is allowed to connect to the UPS. Example: *Master IP Address* is set to 192.168.0.10, only Modbus master with IP address 192.168.0.10 could connect to the UPS.

UPS IP Address settings

Setting	Factory Default	Options	Description
UPS IP Address Mode	DHCP	• DHCP • Manual	Selects the IP address configuration mode of UPS embedded SmartConnect port: • **DHCP:** UPS will automatically configure its IPv4 address via DHCP protocol. • **Manual:** Manually assigns a static IPv4 address to UPS
IP Address	000.000.000.000	A valid IPv4 address	This is the IPv4 address assigned to the embedded SmartConnect port. When **DHCP** IP address mode is selected, it will display the UPS IPv4 address assigned by DHCP server. When **Manual** IP address mode is selected, you need to manually specify a static IPv4 address.
Subnet Mask	000.000.000.000	A valid IPv4 subnet mask	Assigns the subnet mask of the network where UPS IPv4 address belongs. When **DHCP** IP address mode is selected, it will display the subnet mask assigned by DHCP server. When **Manual** IP address mode is selected, you need to manually specify the subnet mask of the network where the specified static IPv4 address belongs.
Default Gateway	000.000.000.000	A valid IPv4 address	This is the IPv4 address of the host from where the UPS sends data to another network or Internet. When **DHCP** IP address mode is selected, it will display the default gateway assigned by DHCP server. When **Manual** IP address mode is selected, you need to manually specify the IPv4 address of default gateway.
DNS Server 1	000.000.000.000	A valid IPv4 address	The IPv4 address of first domain name server (DNS) the UPS uses to resolve host names to IPv4 addresses. When **DHCP** IP address mode is selected, it will display the IPv4 address of the first DNS server assigned by DHCP server. When **Manual** IP address mode is selected, you need to manually specify the IPv4 address of the first DNS server.
DNS Server 2	000.000.000.000	A valid IPv4 address	The IPv4 address of second domain name server (DNS) the UPS uses to resolve host names to IPv4 addresses *(only when UPS is unable to resolve IP address through first domain name server)*. This setting is optional. When **DHCP** IP address mode is selected, it will display the IPv4 address of the second DNS server assigned by DHCP server. When **Manual** IP address mode is selected, you can manually specify the IPv4 address of the second DNS server or leave it as 000.000.000.000.

Network Management Card

Introduction

The Schneider Electric Network Management Card (NMC) enables essential and secure remote monitoring and management of your UPS. Connecting your Smart-UPS will improve the availability, resiliency and efficiency of your UPS and the IT workloads it supports.

If your UPS model includes a pre-installed NMC (AP9641) refer to the NMC Installation Guide for steps on how to configure the NMC.

To ensure the Network Management Card has the latest firmware which is independently certified to IEC 62443-4-2 standard, NMC includes a 1-year Secure NMC System (SNS) subscription.

For further information including the latest documentation, visit www.apc.com/secure-nmc

Features

The Network Management Card:

- Connects to the network through a 10/100/1000 Base-T Network Port.
- Provides UPS control and self-test scheduling features.
- Provides data and event logs.
- Enables you to set up notifications through event logging, e-mail, Syslog and SNMP traps.
- Provides support for PowerChute[TM] Network Shutdown for unattended graceful shutdown of your physical servers, virtual machines and hyperconverged infrastructure.
- Supports using a Dynamic Host Configuration Protocol (DHCP) or BOOTstrap Protocol (BOOTP) server to provide the network (TCP/IP) values of the NMC.
- Provides the ability to export a user configuration (.ini) file from a configured NMC to one or more unconfigured NMCs without converting the file to a binary file.
- Provides a selection of security protocols for authentication and encryption.
- Communicates with EcoStruxure™ IT Expert or Data Center Expert for enhanced monitoring and management capabilities.
- Provides two USB ports, which support upgrading the UPS firmware from a USB flash drive.
- Supports two universal input/output ports to which you can connect:
  – Temperature probe, AP9335T (supplied).
  – Temperature/humidity sensor, AP9335TH (optional).
  – Relay input/output connector that supports two input contacts and one output relay using the Dry Contact I/O Accessory, AP9810 (optional).

Network Management Card Settings

These settings are available only on units that have a Network Management Card (NMC) and are set in the factory. These settings can only be modified using an external interface, like the NMC web interface.

- NMC IP Address Mode
- NMC IP Address
- NMC Subnet Mask
- NMC Default Gateway

Emergency Power Off

Overview

The Emergency Power Off (EPO) option is a feature that will immediately disconnect all connected equipment from mains power. The UPS will immediately shut down and will not switch to battery power.
Connect each UPS to the EPO switch. If multiple units are to be controlled with an EPO switch, each UPS must be connected separately to the EPO switch.

The UPS must be restarted for power to return to connected equipment. Press the UPS output ON/OFF button on the front panel of the UPS.

| ⚠ **CAUTION** |
|---|
| **RISK OF ELECTRIC SHOCK** |
| • Adhere to all national and local electrical codes. |
| • Wiring must be performed by a qualified electrician. |
| • Always connect the UPS to a grounded outlet. |
| **Failure to follow these instructions can result in minor or moderate injury.** |

Normally open contacts

1. If the EPO switch or relay contacts are normally open, insert the wires from the switch or contacts at pins 1 and 2 of the EPO terminal block. Use 16-28 AWG wire.

2. Secure the wires by tightening the screws.
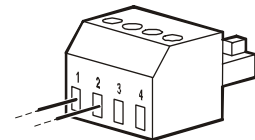
If the contacts are closed, the UPS will turn OFF and power will be removed from the load.

Normally closed contacts

1. If the EPO switch or relay contacts are normally closed, insert the wires from the switch or contacts at pins 2 and 3 of the EPO terminal block. Use 16-28 AWG wire.

2. Insert a wire jumper between pins 1 and 2. Secure the wires by tightening the three screws at positions 1, 2, and 3.
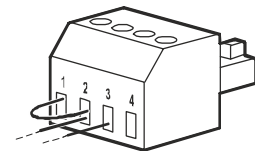
If the contacts are opened, the UPS will turn OFF and power will be removed from the load.

NOTE: Pin 1 is the power source for the EPO circuit, it provides a few milliampere of 24 V power.

If the normally closed (NC) EPO configuration is used, the EPO switch or relay should be rated for dry circuit applications, the rating should be for low voltage and low current applications. This normally implies the contacts are gold-plated.

The EPO interface is a Safety Extra Low Voltage (SELV) circuit. Connect the EPO interface only to other SELV circuits. The EPO interface monitors circuits that have no determined voltage potential. SELV circuits are controlled by a switch or relay properly isolated from utility power. To avoid damage to the UPS, do not connect the EPO interface to any circuit other than a SELV circuit.

Use one of the following cable types to connect the UPS to the EPO switch.

- CL2: Class 2 cable for general use.
- CL2P: Plenum cable for use in ducts, plenums, and other spaces used for environmental air.
- CL2R: Riser cable for use in a vertical run in a floor-to-floor shaft.
- CLEX: Limited use cable for use in dwellings and for use in raceways.
- Installation in Canada: Use only CSA certified, type ELC, (extra low voltage control cable).
- Installation in countries other than Canada and USA: Use standard low voltage cable in accordance with national and local regulations.

Troubleshooting

Problem and Possible Cause	Solution
The UPS will not turn on or there is no output	
The unit has not been turned on.	Press the UPS Output ON/OFF BUTTON once to turn on the UPS.
The UPS is not connected to utility power.	Be sure that the power cable is securely connected to the unit and to the utility power supply.
The input circuit breaker has tripped.	Reduce the load to the UPS, disconnect nonessential equipment and reset the circuit breaker.
The unit shows very low or no input utility voltage.	Check the utility power supply to the UPS by plugging in a table lamp. If the light is very dim, check the utility voltage.
The battery connector plug is not securely connected.	Be sure that all battery connections are secure.
UPS has detected an internal fault	Do not attempt to use the UPS. Unplug the UPS and have it serviced immediately.
The UPS is operating on battery, while connected to utility power	
The input circuit breaker has tripped.	Reduce the load to the UPS, disconnect nonessential equipment and reset the circuit breaker.
There is very high, very low, or distorted input line voltage.	Move the UPS to a different outlet on a different circuit. Test the input voltage with the utility voltage display. If acceptable to the connected equipment, reduce the UPS sensitivity.
UPS is emits intermittent beeps	
The UPS is in normal operation.	None. The UPS is helping to protect the connected equipment.
UPS does not provide expected backup time	
The UPS battery is weak due to a recent outage or is near the end of its service life.	Charge the battery. Batteries require recharging after extended outages and wear out faster when put into service often or when operated at elevated temperatures. If the battery is near the end of its service life, consider replacing the battery even if the replace battery indicator is not yet illuminated.
The UPS is overloaded.	Check the UPS load display. Unplug unnecessary equipment, such as printers.
Display interface LEDs flash sequentially	
The UPS has been shut down remotely through software or an optional accessory card.	None. The UPS will restart automatically when utility power is restored.
The Error Detected LED illuminates	
The UPS displays a message and emits a constant beeping sound	
UPS has detected an internal fault.	Do not attempt to use the UPS. Turn the UPS off and have it serviced immediately.
All LEDs are illuminated and the UPS is plugged into a wall outlet	
The UPS has shut down and the battery has discharged from an extended outage.	None. The UPS will return to normal operation when the power is restored and the battery has a sufficient charge.
The Replace Battery LED is illuminated	
The battery has a weak charge.	Allow the battery to recharge for at least four hours. Then, perform a self-test. If the detected problem persists after recharging, replace the battery.
The replacement battery is not properly connected.	Be sure that the battery connector is securely connected.
The UPS displays a site wiring fault message	
Wiring faults detected include missing ground, hot-neutral, polarity reversal, and overloaded neutral circuit.	If the UPS indicates a site wiring fault, have a qualified electrician inspect the building wiring.

Service

If the unit requires service, do not return it to the dealer. Follow these steps:

1. Review the Troubleshooting section of the manual to eliminate common problems.

2. If the problem persists, contact APC by Schneider Electric Customer Support through the Web site, **www.apc.com**.

   a. Note the model number and serial number and the date of purchase. The model and serial numbers are located on the rear panel of the unit and are available through the display interface on select models.

   b. Call APC by Schneider Electric Customer Support and a technician will attempt to solve the problem over the phone. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).

   c. If the unit is under warranty, the repairs are free.

   d. Service procedures and returns may vary internationally. Refer to the APC by Schneider Electric Web site for country specific instructions.

3. Pack the unit in the original packaging whenever possible to avoid damage in transit. Never use foam beads for packaging. Damage sustained in transit is not covered under warranty.

   a. **Always DISCONNECT THE UPS BATTERIES before shipping. The United States Department of Transportation (DOT), and the International Air Transport Association (IATA) regulations require that UPS batteries be disconnected before shipping. The internal batteries may remain in the UPS.**

   b. External Battery Pack products are deenergized when disconnected from the associated UPS product. It is not necessary to disconnect the internal batteries for shipping. Not all units utilize an external battery pack.

4. Write the RMA# provided by Customer Support on the outside of the package.

5. Return the unit by insured, prepaid carrier to the address provided by Customer Support.

Transport the unit

1. Shut down and disconnect all connected equipment.

2. Disconnect the unit from utility power.

3. Disconnect all internal and external batteries (if applicable).

4. Follow the shipping instructions outlined in the *Service* section of this manual.

APC™ by Schneider Electric
Worldwide Customer Support

Access to Customer Support terms may vary by product. Customer support is available in the following ways:

- Visit the APC by Schneider Electric Web site to access documents in the APC by Schneider Electric Knowledge Base and to submit customer support requests.

  – **www.apc.com** (Corporate Headquarters)
  Connect to localized APC by Schneider Electric Web sites for specific countries, each of which provides customer support information.

  – **www.apc.com/support/**
  Global support searching APC by Schneider Electric Knowledge Base and using e-support.

- Contact the APC by Schneider Electric Customer Support Center by telephone or e-mail.

  – Local, country specific centers: go to **www.apc.com/support/contact** for contact information.

  – For information on how to obtain local customer support, contact the APC by Schneider Electric representative or other distributors from whom you purchased your APC by Schneider Electric product.

Select models are ENERGY STAR® qualified.

For more information go to www.apc.com/site/recycle/index.cfm/energy-efficiency/energy-star/