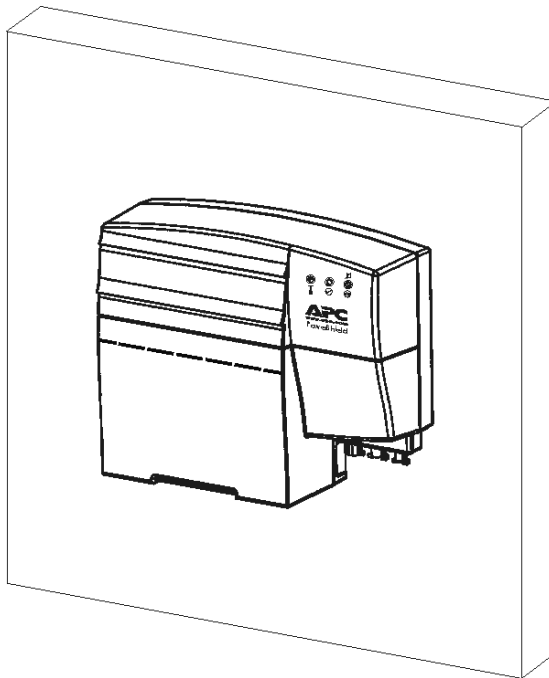




# Broadband PowerShield®

CP27U Models

## User Manual





# Chapter 1: General Information

The PowerShield® provides a power source for broadband telephony, Fiber-to-the-Home/Premise (FTTH/P), and other direct current (DC) equipment/applications.

## Safety

This manual contains important instructions that should be followed during installation and maintenance of the APC equipment and batteries. It is intended for APC customers that set up, install, relocate, or maintain APC equipment.

**Changes and modifications to this unit not expressly approved by APC could void the warranty. Failure to observe this warning may result in serious injury, death, or damage to the equipment.**

## Electrical Warnings

Do not work alone under hazardous conditions.

Servicing the PowerShield may require the removal of protective covers, as well as connected utility power. Use extreme caution during these procedures.

Check that the power cord(s), plug(s), and sockets are in good condition.

Replacement of fuses or other parts must be with identical types and ratings. Substitution of nonidentical parts may cause safety and fire hazards.

## Battery Warning

Danger of explosion if the battery is incorrectly connected or replaced. Use only APC replacement batteries.

## Unpacking

Inspect the unit upon receipt. Notify the shipping carrier or product supplier if there is damage.

The packaging is recyclable; save it for reuse or dispose of it properly.

Check the package contents. The package contains the enclosure, the battery (to be installed), one power cord, and the product documentation.

## Specifications

### General

| Model Number | Input                       | Output                          | Maximum Signal Voltage | Maximum Signal Current | Battery Type                                                           |
|--------------|-----------------------------|---------------------------------|------------------------|------------------------|------------------------------------------------------------------------|
| CP27U13      | 100-240 V<br>50/60 Hz 1.0 A | 27 W<br>13 VDC<br>12VDC nominal | 30 V                   | 5 mA                   | 12 V, 7.2 AHr<br>Spill-Proof,<br>Maintenance Free,<br>Sealed Lead Acid |

### Environmental

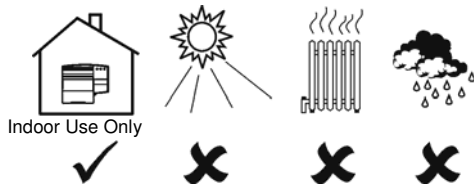
|                             |                                                                                                                        |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature       | -4° F to 122° F (-20° C to 50° C)                                                                                      |
| Operating Humidity          | 5 to 95% noncondensing within enclosure                                                                                |
| Maximum Operating Elevation | 10,000 ft (3,000 m)                                                                                                    |
| Maximum Storage Elevation   | 50,000 ft (15,000 m)                                                                                                   |
| Storage Temperature         | -4° F to 122° F (-20° C to 50° C)<br>Battery lifetime is reduced with prolonged storage in high temperatures (>25° C). |

### Physical

| Height x Width x Depth             |                                        |
|------------------------------------|----------------------------------------|
| PowerShield                        | 7.5 x 9.5 x 3 in (19 x 24 x 7.6 cm)    |
| PowerShield carton                 | 13.5 x 13.5 x 4.5 in (34 x 34 x 11 cm) |
| Weight                             |                                        |
| PowerShield                        | 7.15 lbs (3.25 kg)                     |
| PowerShield with package materials | 9 lbs (4 kg)                           |

## Chapter 2: Installation

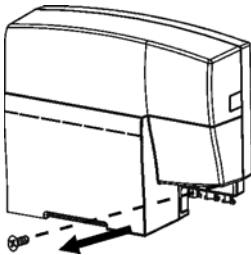
### Enclosure Installation



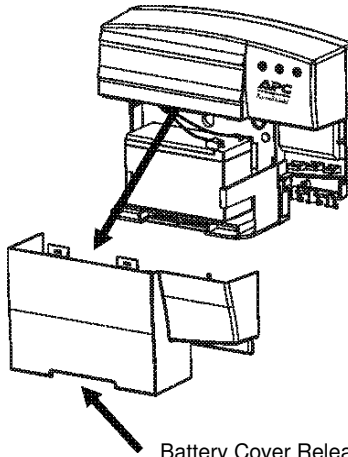
Install the PowerShield in a protected area that is free of excessive dust and has adequate airflow.

Do not operate the PowerShield where the temperature and humidity are outside the specified limits. See *Specifications*.

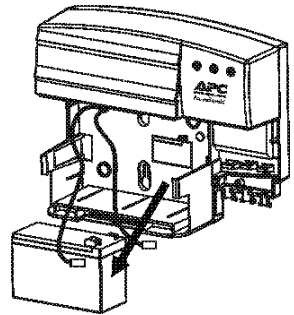
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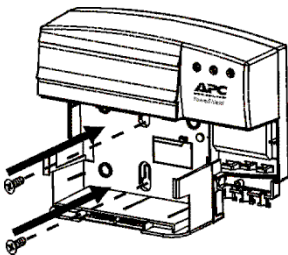
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Battery Cover Release Tabs

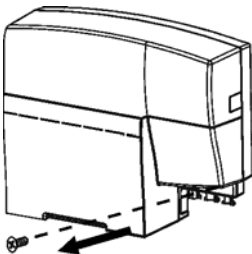
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Use screws that are appropriate for the weight of this unit and the mounting surface material. See *Specifications*.

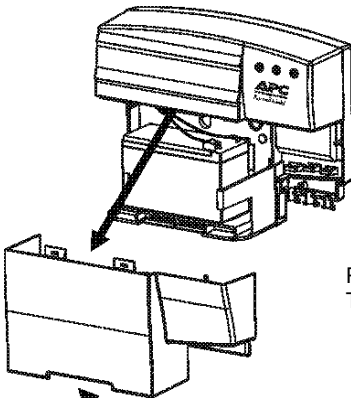


# Battery Installation

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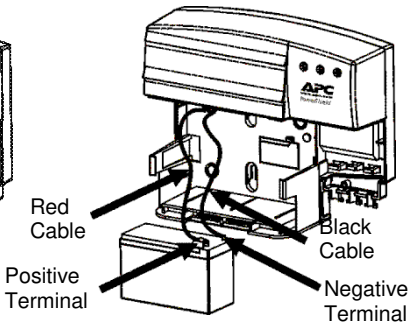


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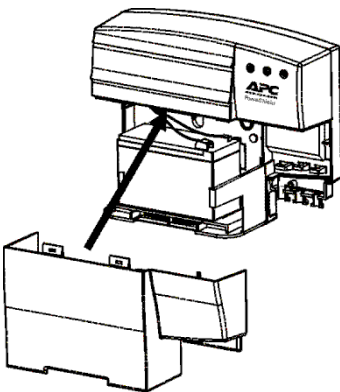


Battery Cover Release Tabs

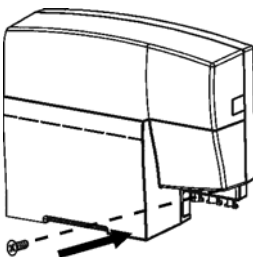
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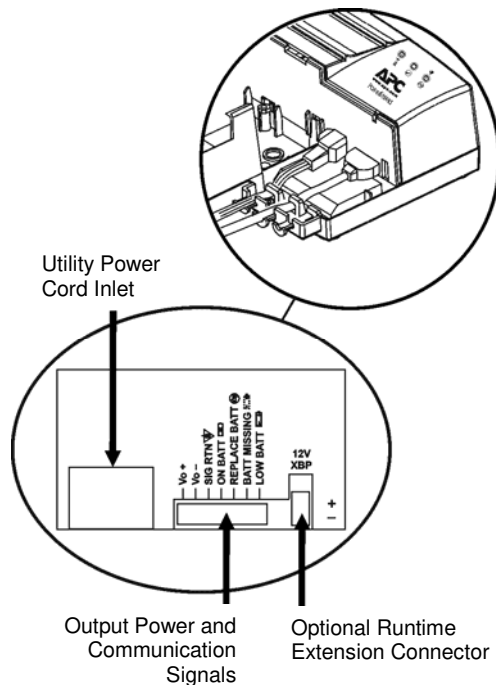


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## Connect Equipment and Power

The PowerShield battery charges when it is connected to utility power. The battery charges fully during the first eight hours of normal operation. **Do not** expect full battery run capability during this initial charge period.



1. Connect the PowerShield to the application equipment (example: FTTH/P Optical Network Terminal) via the seven-pin output connector, using the appropriate cable (must be ordered separately). See [www.apc.com](http://www.apc.com) for a list of available output cables.
2. Plug the PowerShield power cord into the utility power cord inlet and then into the wall outlet.

**Do not overload the wall outlet or circuit.**

Cold Start Feature: Upon installation of a charged battery, power will immediately be applied to the unit even when utility power is not present.

**Attention: To disconnect from utility power, remove the plug from the wall outlet.**

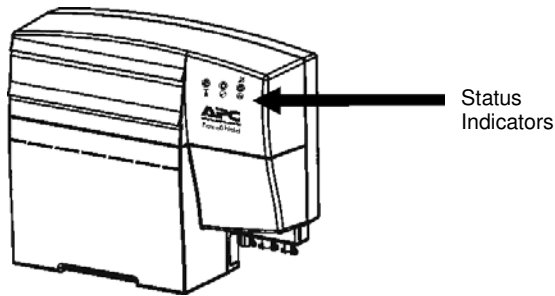
### Optional Runtime Extension

The runtime may be extended by adding the external battery CP20B12BP.

## Chapter 3: Operation

### Status Indicators and Features

#### Front Panel



| Indicator                                                                                                               | Description                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Utility<br>                            | Solid green indicates the unit is on utility power.<br>Solid yellow indicates that utility power is not present and the unit is on battery power.<br>Flashing green LED indicates the unit is fast charging.    |
| Output<br>                             | Green indicates the unit is working properly and DC output power is provided by the battery or the utility power.                                                                                               |
| Replace Battery/<br>Alarm Silence<br> | Red indicates that the battery must be replaced or that the battery is disconnected. See <i>Battery Replacement</i> .<br>Pressing this button will silence the audible alarm. See <i>Alarm Silence Button</i> . |

#### Automatic Self-Test

The unit automatically performs a self-test 31 hours after initial installation. Following this, a battery self-test will occur every 30 days. See *Alarm Silence Button* for manual self-test information.

#### Audible Alarm

| Explanation         | Description                                                                                                                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On Battery          | Four beeps in four seconds will be emitted one time only. This alarm will sound when the utility power is lost and the unit goes on battery power.                                                                               |
| Low Battery Voltage | Every five minutes, four beeps in four seconds will be emitted. This alarm will sound when operating on battery and the battery voltage has dropped below threshold, indicating that less than 20% of available runtime remains. |
| Replace Battery     | Every fifteen minutes, there will be a quarter-second beep when the battery fails the automatic self-test.                                                                                                                       |

## Alarm Silence Button

The audible alarms may be silenced by utilizing the dual function Replace Battery/Alarm Silence LED/button .

| Function                                         | Button Operation<br>(Press and hold for:) | Description                                                                                                                                                                                                          |
|--------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Replace Battery<br>Temporarily<br>Enable/Disable | <4 seconds                                | If the alarm has been silenced, the unit will emit one quick beep.<br>If the alarm has been enabled, two quick beeps will be emitted.                                                                                |
| Replace Battery<br>Permanently<br>Enable/Disable | 8-12 seconds                              | If the alarm has been silenced, the unit will emit one quick beep.<br>If the alarm has been enabled, two quick beeps will be emitted.                                                                                |
| Battery Self-Test<br>Enable/Disable              | 4-8 seconds                               | If the self-test has been enabled, three beeps will be emitted.<br>If the self-test cannot be enabled, a single beep will be emitted.*<br>If the battery self-test has been canceled, the unit will emit four beeps. |

\*A battery self-test cannot be enabled unless the following conditions have been met.

1. Battery has been charged for at least 31 hours.
2. The unit has been on utility power for more than 12 hours.
3. Temperature is between 0 and 50°C.

## Output Power and Communication Signals

The PowerShield communication signals are isolated from its internal circuitry via by open collector opto-coupled transistors. The connection labeled “Signal Return” is a common return point for all communication signals. In the typical application, the attached equipment digital ground connects to Signal Return, and pull-up resistors turn the open collector signals into logic levels.

|                                                                                                   |                                                                                                                                      |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| —Vo +                                                                                             | +Voltage output                                                                                                                      |
| —Vo –                                                                                             | Voltage output                                                                                                                       |
| —SIG RTN       | Signal return.                                                                                                                       |
| —ON BATT       | Low when operating from utility line. Open when operating from battery.                                                              |
| —REPLACE BATT  | Low when battery is charged. Open when battery fails the Self-Test.                                                                  |
| —BATT MISSING  | Low when battery is present. Open when battery is missing.                                                                           |
| —LOW BATT      | Low when battery is near full charge capacity. Open when operating from a battery with less than 20% of available runtime remaining. |

# Chapter 4: Maintenance, Service, Contact Information, and Warranty

## Battery Replacement

This unit has an easy to replace battery. Battery replacement can be performed while the unit and connected equipment are operating.

During a self-test, battery removal and replacement are not recommended. For self-test disabling, see *Alarm Silence Button*.

Replace the used battery with APC replacement battery RBC2. See your dealer or refer to the APC Web site, [www.apc.com](http://www.apc.com), for information on replacement batteries.

For battery replacement, see *Battery Installation*.



**Once the battery is disconnected, the connected equipment is not protected from power outages.**



**Be sure to deliver used batteries to a recycling facility found on the *Used Battery Return Facilities* list included with RBC2.**

## Service

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

1. Contact APC Customer Support through the APC web site at [www.apc.com](http://www.apc.com).
  - a) Note the product model number, the serial number, and the date of purchase.
  - b) Call APC Customer Support and a technician will attempt to solve it over the phone. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).
  - c) If the product is under warranty, repairs are free. If not, there is a repair charge.
  - d) Service procedures and returns may vary internationally. Refer to the APC web site for country specific instructions.
2. Pack the unit properly to avoid damage in transit. Never use Styrofoam beads for packaging. Damage sustained in transit is not covered under warranty.
3. Before shipping, always disconnect all battery modules.
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.

## Limited Factory Warranty

Schneider Electric IT Corporation (SEIT), warrants its products to be free from defects in materials and workmanship for a period of two (2) years from the date of purchase. The SEIT obligation under this warranty is limited to repairing or replacing, at its sole discretion, any such defective products. Repair or replacement of a defective product or parts thereof does not extend the original warranty period.

This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase. Products may be registered online at [warranty.apc.com](http://warranty.apc.com).

SEIT 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 or any third person misuse, negligence, improper installation, testing, operation or use of the product contrary to SEIT recommendations or specifications. Further, SEIT shall not be liable for defects resulting from: 1) unauthorized attempts to repair or modify the product, 2) incorrect or inadequate electrical voltage or connection, 3) inappropriate on site operation conditions, 4) Acts of God, 5) exposure to the elements, or 6) theft. In no event shall SEIT have any liability under this warranty for any product where the serial number has been altered, defaced, or removed.

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To obtain service under warranty you must obtain a Returned Material Authorization (RMA) number from customer support. Customers with warranty claims issues may access the SEIT worldwide customer support network through the APC web site: [www.apc.com](http://www.apc.com). Select your country from the country selection drop down menu. Open the Support tab at the top of the web page to obtain information for customer support in your region. Products must be returned with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase.

## **APC™ by Schneider Electric Worldwide Customer Support**

Customer support for this or any other APC™ by Schneider Electric product is available at no charge in any of the following ways:

- Visit the APC by Schneider Electric web site, [www.apc.com](http://www.apc.com) to access documents in the APC Knowledge Base and to submit customer support requests.
  - **www.apc.com** (Corporate Headquarters)  
Connect to localized APC by Schneider Electric web site for specific countries, each of which provides customer support information.
  - **www.apc.com/support/**  
Global support searching APC 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 distributor from whom you purchased your APC by Schneider Electric product.

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