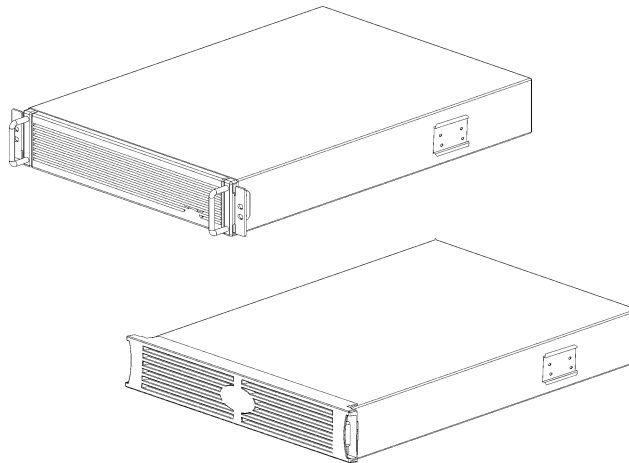


# **APC Step-Down Transformer**

**Models: AP9621, SYTF2,  
SYTF2J, SYTF3, and SYTF3J**

## **User's Manual**

**English**



**APC**  
[www.apc.com](http://www.apc.com)



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## APC Contact Numbers and Support

Visit the APC Web site for contact numbers and support at <http://www.apc.com/support>.

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## CHAPTER 1: SAFETY AND GENERAL INFORMATION

### Save These Instructions




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This Safety section contains important instructions that must be followed during installation and maintenance of APC equipment.

### Conventions Used in this Manual


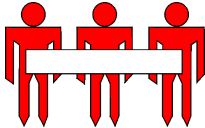

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The following symbols are used throughout this manual. Carefully read all information boxes and abide by the instructions.

	The WARNING sign denotes a serious hazard. It calls attention to a procedure, practice, condition, or the like, which, if not correctly performed or adhered to, could result in injury to personnel.
	The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of all or part of the product.
	The NOTE sign denotes important information. It calls attention to a procedure, practice, condition, or the like, which is essential to highlight.

### Handling Safety

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	<p>Be careful. Do not lift heavy loads without assistance.</p> <p>⇒ 32 – 55 kg (70 – 120 lb)</p> 
	<p>This equipment is intended for installation in a temperature-controlled indoor area free of conductive contaminants. Refer to <i>Specifications</i> at the APC web site (<a href="http://www.apc.com/support/">www.apc.com/support/</a>) for the actual temperature range.</p>

## CHAPTER 1: SAFETY AND GENERAL INFORMATION

### De-energizing Safety

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To de-energize this equipment toggle the rear input circuit breaker to the OFF position, and then disconnect the equipment from the AC power outlet.

### Electrical Safety



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- The protective earth conductor carries the leakage current from the load devices (computer equipment). Therefore, the size of the conductor must be at least as large as the wire required by IEC 950. An insulated grounding conductor that is identical in size, insulation material, and thickness to the grounded and ungrounded branch-circuit supply conductors, except that it is green with or without a yellow stripe is to be installed as part of the branch.
- The grounding conductor described above is to be grounded to earth at the service equipment, or if supplied by a separately derived system, at the supply transformer or motor-generator set.
- The attachment-plug receptacles near the unit or subsystem are all to be of a grounding type, and the grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.
- To reduce the risk of fire, connect only to a circuit provided with 30-amp maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA.

### Regulatory Agency Approvals

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Regulatory Agency Symbols				
 LISTED 42C2 E95463	 LR63938 (AP9621, SYTF2, SYTF3 ONLY)			

### Life Support Policy

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As a general policy, American Power Conversion (APC) does not recommend the use of any of its products in life support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. APC does not recommend the use of any of its products in direct patient care. APC will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to APC that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) the liability of American Power Conversion is adequately protected under the circumstances.

Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, infusion pumps, and any other device designated as “critical” by the U.S.F.D.A.

Hospital grade wiring devices and reduced leakage currents that meet medical safety standards may be ordered as options on many APC UPS systems. APC does not claim that units with these modifications are certified or listed as such by APC or any other organization, therefore these units do not meet the requirements for use in direct patient care.

### Limited Warranty

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American Power Conversion (APC) warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase, except in India where the period is one year for battery module(s). Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. To obtain service under warranty you must obtain a returned material authorization (RMA) number from customer support. 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. 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. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.

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### Copyright and Trademark Information

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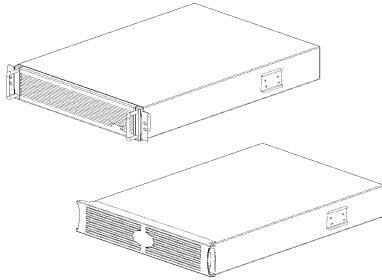
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## **CHAPTER 1: SAFETY AND GENERAL INFORMATION**



### About Your Step-Down Transformer



**Figure 1: Step-Down Transformer**

This Step-Down Transformer is designed for use with a UPS that provides a higher output voltage (200 or 208 VAC).

It converts the output to a lower voltage (100 or 120 VAC); a common voltage level used by many computers and accessories.

The Step-Down Transformer may also be used as a stand-alone device.

**Table 1: System Configurations and Model Numbers**

	Complete System—End Item SKU	Available Power VA	Nominal Input Voltage VAC	Nominal Output Voltage VAC	Frequency Hz	Power Distribution
<b>North America and 208V (Ø-Ø-G)</b>	AP9621	4500* 5000**	208	120	60	Input: 3-ft cord with L6-30P or hardwired.  Output: (2) 15-amp circuits with (4) 5-20R T-slots and (2) 15-amp circuits with (2) 5-20R T-slots, or hardwired.
	SYTF2	4500* 5000**	208	120	60	Input: 2-foot cord with L6-30P.  Output: (4) 20-amp circuits with (4) L5-20R.
	SYTF3	4500	208	120	60	Input: 3-foot cord with L6-30P or hardwired.  Output: (2) 15-amp circuits with (4) 5-20R T-slots and (2) 15-amp circuits with (2) 5-20R T-slots.
<b>Japan and 200 V (Ø-Ø-G)</b>	SYTF2J	3500	200	100	50 or 60	Input: 2-foot cord with L6-30P.  Output: (4) 2-amp circuits with (4) L5-20R.
	SYTF3J	3500	200	100	50 or 60	Input: 3-foot cord with L6-30P or hardwired.  Output: (2) 15-amp circuits with (4) 5-20R T-slots and (2) 15-amp circuits with (2) 5-20R T-slots.

\* Power cord connected units have an available power of 4500 VA with a L6-30 plug.

\*\* Units with an available power of 5000 VA must be hardwired.

## CHAPTER 2: BASICS

### Product Overview

#### Front View Component Identification

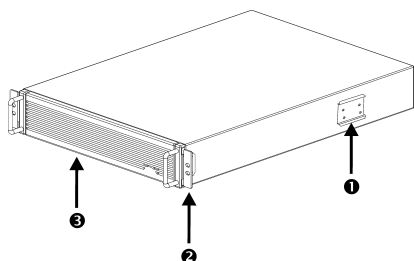


Figure 2: AP9621 / Front View and Side View

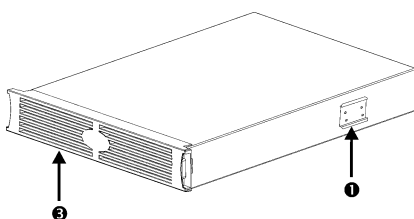


Figure 3: SYTF2 / SYTF2J / SYTF3 / SYTF3J Front and Side View

**Rail Cleats 1:** Two cleats (one on each side) of the Step-Down Transformer engage with the rack mounting rails to secure in the equipment rack (see Figures 2 and 3).

**Mounting Flanges 2:** Two mounting flanges (Figure 2) secure the Step-Down Transformer in the rack.

**Front Bezel 3:** A bezel (see Figures 2 and 3) covers the front of this Step-Down Transformer. The bezel is removed during the installation for the SYTF2, SYTF2J, SYTF3 and SYTF3J models.

**Fans 4:** Two fans (see Figure 4) on the front of the Step-Down Transformer circulate airflow and cool the unit. The redundant fan will not operate unless the internal temperature of the unit becomes 100 °C or failure of the main cooling fan.

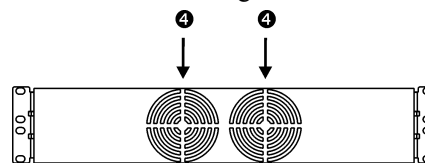


Figure 4: SYTF2 / SYTF2J / SYTF3 / SYTF3J

#### Rear View Component Identification

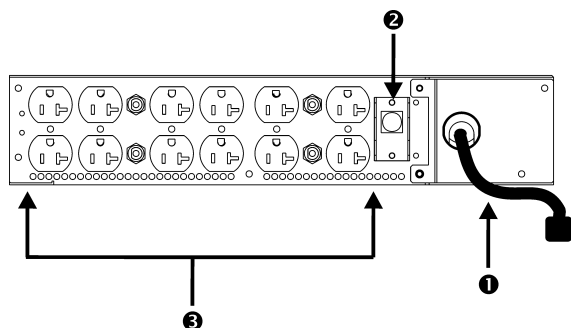


Figure 5: AP9621 / SYTF2 / SYTF2J Rear View

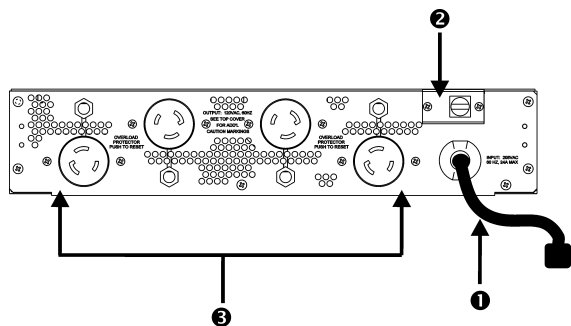


Figure 6: SYTF3 / SYTF3J Rear View

**Input Wiring 1:** Provides access to wiring terminal blocks for hard wiring the input (see Figure 5). An input power cord plugs into an outlet receptacle for cord connected installations (see Figure 6).

**Input Circuit Breaker 2:** The input circuit breaker (see Figures 5 and 6) protects the product and load equipment from extreme overloads.

**Power Distribution Unit (PDU) 3:** Plug load equipment into the appropriate PDU receptacle (see Figures 5 and 6).

### Unpacking

The Step-Down Transformer is packaged in a robust shipping carton. Carefully remove the package contents. The packaging is recyclable; save it for reuse or dispose of it properly.

#### Inspection

Inspect the equipment upon receipt. APC has designed robust packaging for your product. However, accidents and damage may occur during shipment. Notify the carrier and dealer if there is damage or missing equipment.

#### Contents

Check the packaging contents. The shipping package contains the Step-Down Transformer, mounting rails, and mounting hardware. Your package may contain a Bezel Kit. If the bezel is not already installed, snap it on to the UPS as instructed below.

### Installing the Step-Down Transformer

This section provides information on the steps required to install and connect the Step-Down Transformer.

#### Installing in a Two-Post Rack

Follow the instructions contained in the *AP9621/SYTF Series 2 Post Rack-Mount Installation* sheet (990-7137) to mount the rails and Step-Down Transformer in your NetShelter or 19 in (46.5 cm) rack.

#### Installing in a Four-Post Rack

Follow the instructions contained in the *Addendum SU Rack-Mount Rails 2U-5U* sheet (990-7034D) to mount the rails in your NetShelter or 19 in (46.5 cm) rack.

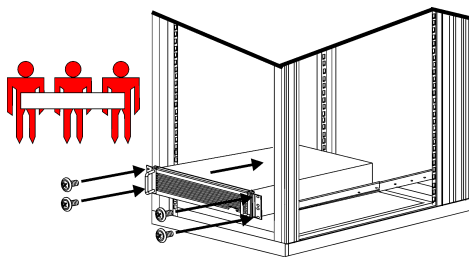


Figure 7: AP9621

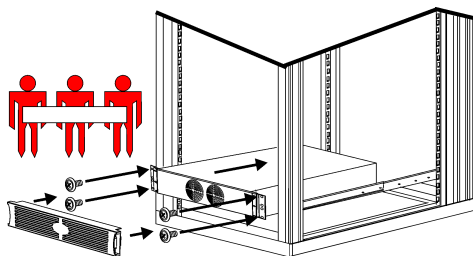
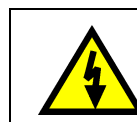


Figure 8: SYTF2 / SYTF2J /  
SYTF3 / SYTF3J

1. Install the mounting rails using the instructions contained in the Rail Kit.
2. Slide the Step-Down Transformer frame into the rack.

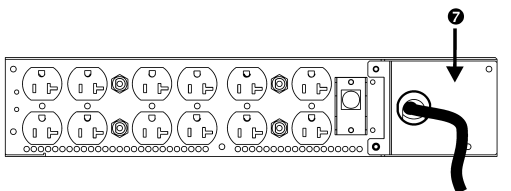
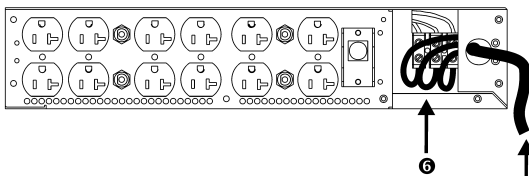
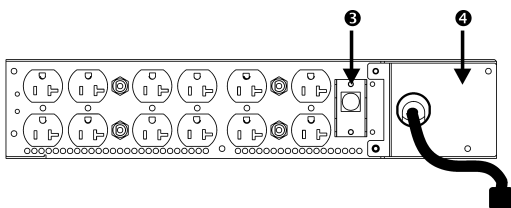
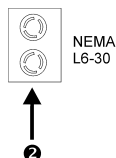
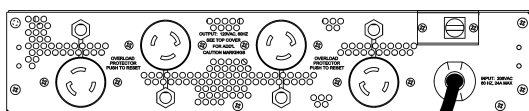
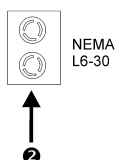
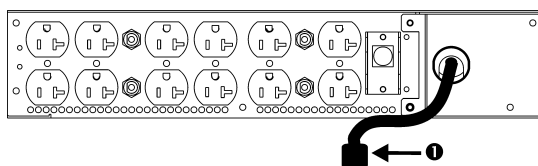


The Step-Down Transformer is heavy. Three people must support the unit.

3. To secure the Step-Down Transformer frame in the rack, screw the four decorative screws through the holes in the ears of the UPS and into the rack-mount rails.
4. If the bezel has not already been attached, align the tabs on the sides of the bezel with the slots on the front of the Step-Down Transformer and gently snap it into place.

## CHAPTER 3: INSTALLATION

### Wiring the Step-Down Transformer



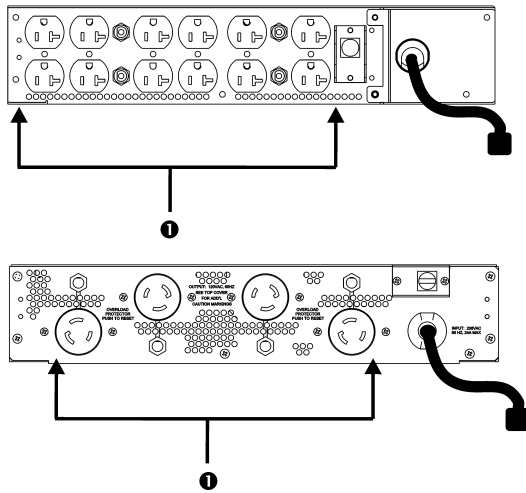
1. For cord connected installations:  
Plug the input power cord **1** into the outlet **2** receptacle.

2. For hardwired installations:

	<ul style="list-style-type: none"> <li>• Verify that all branch circuit (mains) are de-energized, and locked out before installing cables or making connections.</li> <li>• Wiring by a licensed electrician is required.</li> </ul>
	<ul style="list-style-type: none"> <li>• Check national and local codes before wiring.</li> <li>• Use 10-gauge (6 mm<sup>2</sup>) wire.</li> </ul>

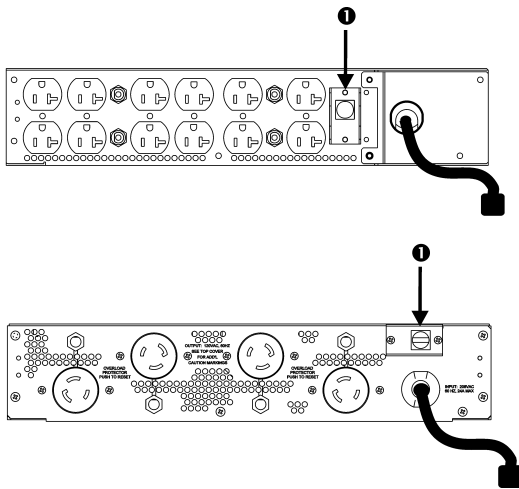
3. Make sure the input circuit breaker **3** is OFF.
  - a. Remove the input-wiring access panel **4**.
  - b. Disconnect the power cord from terminal block **5**.
  - c. Connect the new wires **6** to the terminal block.
  - d. Each terminal is labeled. The Step-Down Transformer requires a 200 or 208 VAC single-phase input from a power source with a minimum branch breaker rating of 30 amps.
  - e. Inspect the connections.
  - f. Attach the new access panel **7** provided in the literature kit.

### Connecting Load Equipment



1. Plug all load equipment into PDU ❶ receptacles.
  - For AP9621, SYTF2, and SYTF2J models, the receptacles are divided into 4 groups; each group is protected by a 15-amp circuit breaker. A colored label identifies each circuit and its circuit breaker.
  - For SYTF3 and SYTF3J models, the output is divided into 4 groups. Each group is protected by a 20-amp circuit breaker that contains one (1) receptacle.
  - When connecting the equipment, distribute the loads evenly on the four output circuits.

### Turning On the Step-Down Transformer




1. Turn on the Step-Down Transformer by switching the rear panel input circuit breaker ❶ to the ON position. For AP9621, SYTF2, and SYTF2J models, a colored label identifies each circuit and its circuit breaker.
2. Turn on all connected equipment.



Depending on your required output power, one of the fans may not be turning because the internal temperature of the Step-Down Transformer is less than 100°C. If 100°C is reached, the redundant fan will turn on .

## CHAPTER 3: INSTALLATION

### *Using the Step-Down Transformer*

	<ul style="list-style-type: none"><li>• Connect the Step-Down Transformer to a UPS for continuous power during a utility power failure.</li><li>• The transformer has an efficiency of 90%. This requires 5500 VA for a 5000 VA load, 5000 VA for a 4500 VA load, and 3900 VA for a 3500 VA load. Be careful not to overload your branch circuit or UPS.</li><li>• For the AP9621 and SYTF2 models to output the full 5000 VA, the input must be hardwired to a 5500 VA source.</li><li>• Operating the Step-Down Transformer below its specified input voltage range may cause it to overload and shut down to prevent it from over-heating. When connecting directly to a branch circuit, ensure that the line voltage is within specification. When connecting to a UPS, ensure that the line voltage into the UPS is within specification before transferring to bypass.</li><li>• Operating the Step-Down Transformer above its input voltage range may cause equipment damage.</li></ul>
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## Step-Down Transformer Specifications

Electrical Specifications		
	AP9621 / SYTF2 / SYTF3	SYTF2J / SYTF3J
Nominal Input Voltage (VAC)	208	200
Input Voltage Range (VAC)	185 to 230*	180 to 220
Maximum Input Current (amps)		
Line cord Installation (L6-30)	24	22
Hardwire Installation	26**	22**
Line Frequency (Hz)	60	50 or 60
Efficiency	90 to 95%	
Nominal Output Voltage (VAC)	120	100
Maximum Output Power (VA)		
Line cord Installation (L6-30)	4500*	3500
Hardwire Installation	5000*	3500

\* For continuous operation below  $V_{in} = 205$  VAC, the output load must be reduced to limit the maximum input current to the amount specified in the table above. Continuous operation above the maximum specified input current may cause the unit to overheat and shutdown. Please contact APC for additional information.

\*\* Not available on SYTF3 and SYTF3J models.

## CHAPTER 4: SPECIFICATIONS

Other Specifications	
Dimensions (H x W x D) (Overall)	3.5 in x 19 in x 26 in (with bezel) (8.9 cm x 48.3 cm x 66 cm)
Weight	
Net	95 lbs (43kg)
Shipping	110 lbs (50 kg)
Temperature	
Operating	0 to 40°C
Storage	–25 to 65° C
Humidity, relative	
Operating and storage	5 to 95%
Elevation	
Operating	0 to +3,000 m (0 to +10,000 ft)
Storage	0 to +15,000 m (0 to +50,000 ft)
Agency Approvals	UL 1778 (AP9621, SYTF2, SYTF2J, SYTF3 and SYTF3J models) CSA 66 (AP9621, SYTF2, and SYTF3 models)