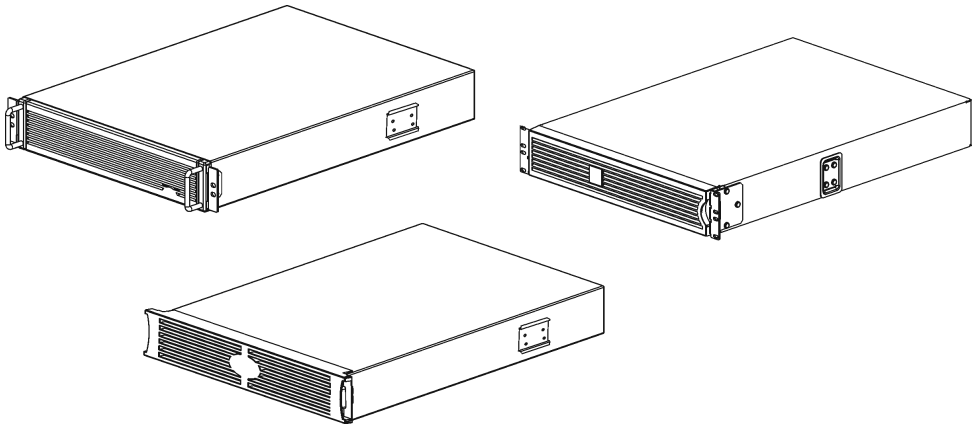
APC Step-Down Transformer

Models: AP9621, SURT005, SURT006, SUTF3, SYTF2, SYTF2J, SYTF3 and SYTF3J

User Manual

English



www.apc.com

990-7820E, 02/2005

TABLE OF CONTENTS

APC Contact Numbers and Support

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

Chapter 1: Safety and General Information 1

Save These Instructions 1
Conventions Used in this Manual 1
Handling Safety 1
De-energizing Safety 2
Electrical Safety 2
Regulatory Agency Approvals 2
Life Support Policy 3
Limited Warranty 3
Copyright and Trademark Information 3

Chapter 2: Basics 5

About Your Step-Down Transformer 5
Product Overview 6
  Front View Component Identification 7
  Rear View Component Identification 7

Chapter 3: Installation 7

Unpacking 8
  Inspection 8
  Contents 8
Installing the Step-Down Transformer 8
  Installing in a Four-Post Rack 8
  Wiring the Step-Down Transformer 9
  Connecting Load Equipment 10
  Turning On the Step-Down Transformer 10
  Using the Step-Down Transformer 11

Chapter 4: Specifications 11

Product Specifications 12

Table of Contents

Save These Instructions

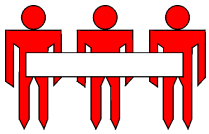
This Safety section contains important instructions that must be followed during installation and maintenance of APC equipment.

Conventions Used in this Manual

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

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

De-energizing Safety



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



- 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

Regulatory Agency Symbols	
UL®	CSA
LISTED 42C2 E95463	**LR63938**

Life Support Policy

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

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.

EXCEPT AS PROVIDED HEREIN, AMERICAN POWER CONVERSION MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL APC BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, APC is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise. This warranty gives you specific legal rights and you may have other rights that vary from state to state.

Copyright and Trademark Information

Entire contents copyright © 2005 by American Power Conversion Corporation. All rights reserved. Reproduction in whole or in part without permission is prohibited.

APC®, Symmetra®, Smart-UPS®, Smart-UPS RT®, NetShelter®, InfraStruXure® and PowerChute® are registered trademarks of American Power Conversion Corporation. All other trademarks are the property of their respective owners

CHAPTER 1: SAFETY AND GENERAL INFORMATION

About Your Step-Down Transformer

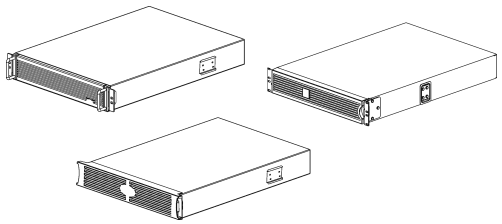


Figure 1: Step-Down Transformer

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
North America and 208V (Ø- Ø -G)	AP9621, SYTF2, SURT005	4500* 5000**	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.
	SYTF3, SUTF3	4500	208	120	60	Input: 2-foot cord with L6-30P. *** Output: (4) 20-amp circuits with (4) L5-20R.
Japan and 200 V (Ø- Ø -G)	SYTF2J, SURT006	3500	200	100	50 or 60	Input: 3-foot cord with L6-30P. ***Output: (2) 15-amp circuits with (4) 5-20R T-slots and (2) 15-amp circuits with (2) 5-20R T-slots.
	SYTF3J	3500	200	100	50 or 60	Input: 2-foot cord with L6-30P. ***Output: (4) 20-amp circuits with (4) L5-20R.

* 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 due to input current.

*** Ensure that the pin number for T-slot receptacles is correct.

Product Overview

Front View Component Identification

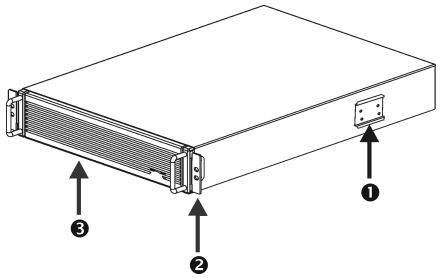


Figure 2: AP9621

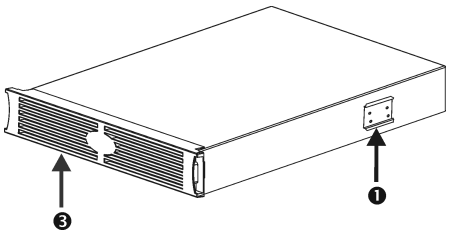


Figure 3: SUTF3 / SYTF2 / SYTF2J / SYTF3 / SYTF3J

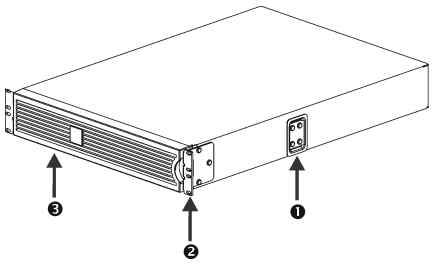


Figure 4: SURT005/ SURT006

Rail Cleats ❶: Two cleats (one on each side) of the Step-Down Transformer engage with the rack mounting rails to secure in the equipment rack.

Mounting Flanges ❷: Two mounting flanges (Figure 2 and 4) secure the Step-Down Transformer in the rack.

Front Bezel ❸: A bezel covers the front of the Step-Down Transformer. The bezel is removed during the installation for the SUTF3, SYTF2, SYTF2J, SYTF3 and SYTF3J models.

Fans ❹: Two fans 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 °F or failure of the main cooling fan.

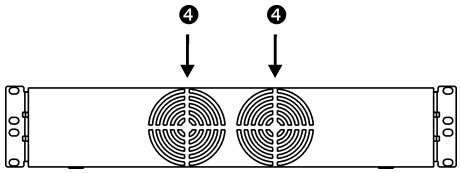


Figure 6: SUTF3 / SYTF2 / SYTF2J / SYTF3 / SYTF3J / SURT005 / SURT006

Rear View Component Identification

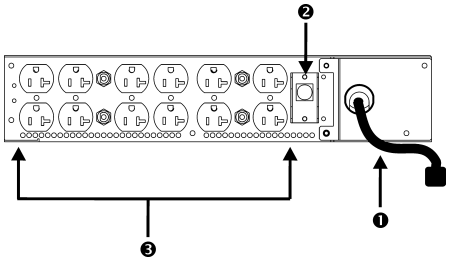


Figure 4: AP9621 / SYTF2 / SYTF2J / SURT005 / SURT006

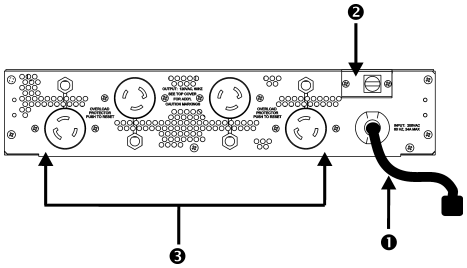


Figure 5: SUTF3 / SYTF3 / SYTF3J

Input Wiring ❶: Provides access to wiring terminal blocks for hard wiring the input (see Figure 6). Provided with an input cord for use in many applications (see Figure 7).

Input Circuit Breaker ❷: The input circuit breaker protects the product and load equipment from extreme overloads.

Power Distribution Unit (PDU) ❸: Power distribution receptacles for connecting load equipment.

CHAPTER 3: INSTALLATION

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 Four-Post Rack

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

*It is recommended that the Step-Down Transformer is installed directly above the UPS in the rack.

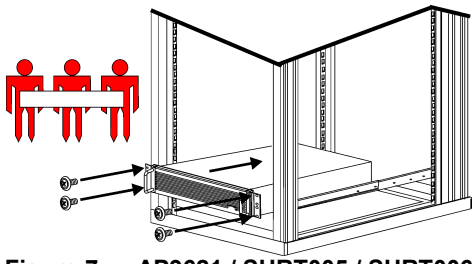


Figure 7: AP9621 / SURT005 / SURT006

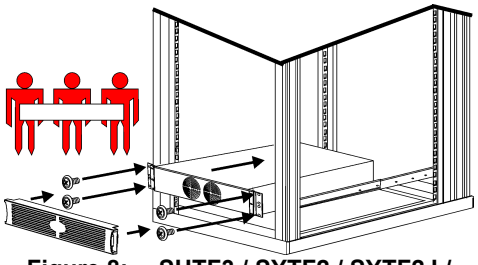


Figure 8: SUTF3 / SYTF2 / SYTF2J / SYTF3 / SYTF3J

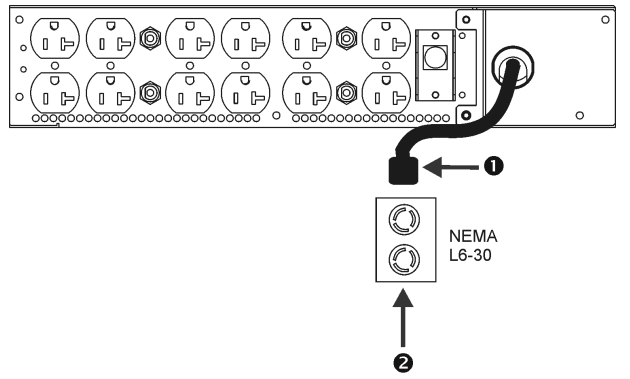
1. Install the mounting rails using the instructions contained in the Rail Kit.
2. Slide the Step-Down Transformer frame into the rack.

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

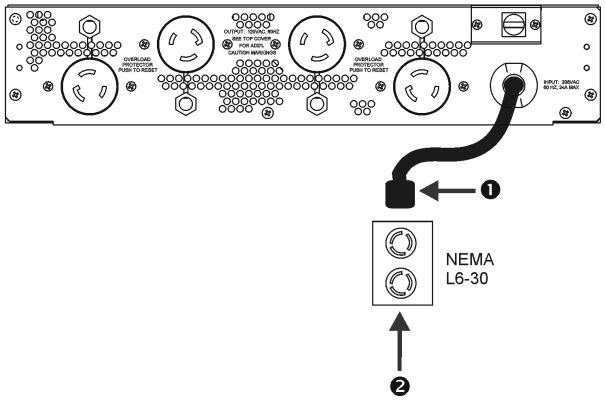
3. To secure the Step-Down Transformer frame in the rack, screw the four decorative screws through the holes in the ears of the UPS and into the screw clips.
4. If the bezel has not already been attached, align the tabs on the sides of the bezel with the slots on the front of the Step-Down Transformer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

	Install the bezel with the rear fins facing down.

Wiring the Step-Down Transformer

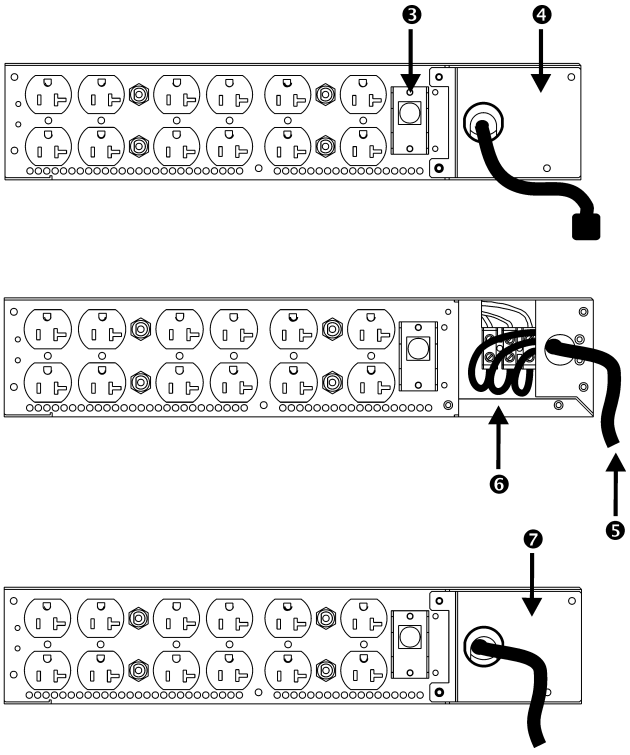


1. For cord connected installations, plug the input power cord ❶ into the outlet ❷.



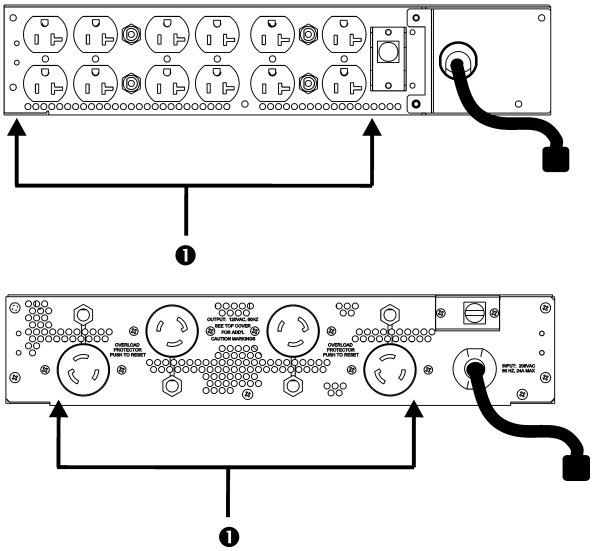
2. For hardwired installations:

	• Verify that all branch circuit (mains) are de-energized and locked out before installing cables or making connections. • Wiring by a licensed electrician is required.
	• Check national and local codes before wiring. • Use 10-gauge (6 mm^2) wire.



3. Make sure the input circuit breaker ❸ is OFF.
   a. Remove the input-wiring access panel ❹.
   b. Disconnect the power cord from terminal block ❺.
   c. Connect the new wires ❻ to the terminal block.
   d. Each terminal is labeled. The Step-Down Transformer requires a 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 ❼ provided in the literature kit.

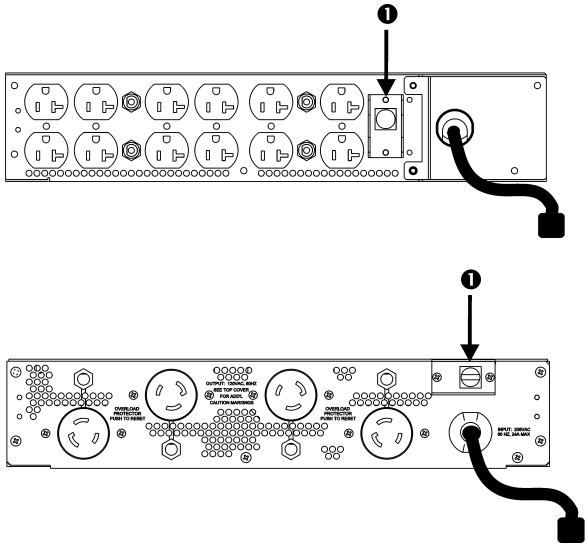
Connecting Load Equipment



Plug all load equipment into PDU ❶ receptacles.

- For AP9621, SYTF2, SYTF2J, SURT005, and SURT006 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 SUTF3, 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, SYTF2J, SURT005, and SURT006 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°F. If 100°F is reached, the redundant fan will turn on.

Using the Step-Down Transformer



- Connect the Step-Down Transformer to a UPS for continuous power during a utility power failure.
- 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.
- For the AP9621, SYTF2, and SURT005 models to output the full 5000 VA, the input must be hardwired to a 5500 VA source.
- 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.
- Operating the Step-Down Transformer above its input voltage range may cause equipment damage.

CHAPTER 4: SPECIFICATIONS

Product Specifications

Electrical Specifications		
	AP9621 / SUTF3 / SYTF2 / SYTF3 / SURT005	**SYTF2J / SYTF3J / SURT006**
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**	
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 Vin = 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 SUTF3 and SYTF3 models.		

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 Shipping	 95 lbs (43kg) 110 lbs (50 kg)
Temperature Operating Storage	 0 to 40° C –25 to 65° C
Humidity, relative Operating and storage	 5 to 95%
Elevation Operating Storage	 0 to +3,000 m (0 to +10,000 ft) 0 to +15,000 m (0 to +50,000 ft)
Agency Approvals	UL 1778 (AP9621, SUTF3, SYTF2, SYTF2J, SYTF3, SYTF3J, SURT005, and SURT006 models) CSA 66 (AP9621, SUTF3, SYTF2, and SYTF3 models)