



User Manual

English

APC Isolation and Step-Down Transformers

10/20 kVA

Introduction

The APC 10 kVA and 20 kVA isolation transformers are used as filters, isolating the UPS and connected equipment from any outside utility line fluctuations or interference.

The APC 10 kVA step-down transformers are used to convert a higher input voltage to a lower output voltage which might be more fitting for certain environments or system configurations.

The isolation and step-down transformers can be installed in either tower or rack-mount configurations.

Note: Illustrations in this document may vary from your actual configuration.

Unpacking

Read the Safety Guide before installation.

Inspect the transformer upon receipt. Notify the carrier and dealer if there is damage.

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

Check the package contents:

- Transformer
- Four front bezels
- Four handles
- Rail kit
- Literature kit containing:
 - Product documentation
 - User Manuals CD
 - Safety information
 - Warranty information
- Label stickers
- Rack-mounting brackets
- Rail-aligning brackets
- Top cover
- Mounting stabilizers
- Hardware
- Communication cable

Environmental Specifications

This unit is designed for indoor use only. Do not operate the unit where there is excessive dust.

Temperature	32° to 104° F (0° to 40° C)
Humidity	0 to 95% relative humidity, non-condensing

 220/260 lb (113/118 kg)	The unit is heavy. Select a location sturdy enough to handle the weight.
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Electrical Specifications

Attention: Adhere to all local and national electrical codes.

Model	APTF10KW01	APTF10KT01	APTF10KJ01	APTF20KW01
Nominal Input Voltage- Single Phase	220-240, 200, 208, 240 Vac	208, 240 Vac	200 Vac	220-240, 200, 208, 240 Vac
Nominal Input Voltage- Two Phase	380-415, 480 Vac	480 Vac	400 Vac	380-415, 480 Vac
Input Voltage Range	170-480 Vac			
Single Phase Input Current Rating (Branch Circuit Breaker)	48 A (60 A)			80 A (100 A)
Two Phase Input Current Rating (Branch Circuit Breaker)	24 A (30 A)			40 A (50 A)
Input Connection***	Hardwire 6 AWG (13.3 mm ²)			Hardwire 3 AWG (26.7 mm ²)
Line Frequency	45-65 Hz			
Efficiency	94%	94%	92 %	96%
Nominal Output Voltage	220-240, 240, 200, 208, 120, 100 Vac	240, 208, 120 Vac	200, 100 Vac	220-240, 240, 200, 208, 120, 100 Vac
Output Receptacles***	Hardwire* (6 AWG) (13.3 mm ²)	Hardwire* 6 AWG (13.3 mm ²) PDU: (2) L14-30, (2) L5-20	Hardwire* 6 AWG (13.3 mm ²) PDU: (2) L14-30, (2) L5-20	Hardwire 3 AWG (26.7 mm ²)
Maximum Output Power**	10 kVA 10 kW	10 kVA 10 kW	10 kVA 10 kW	20 kVA 20 kW

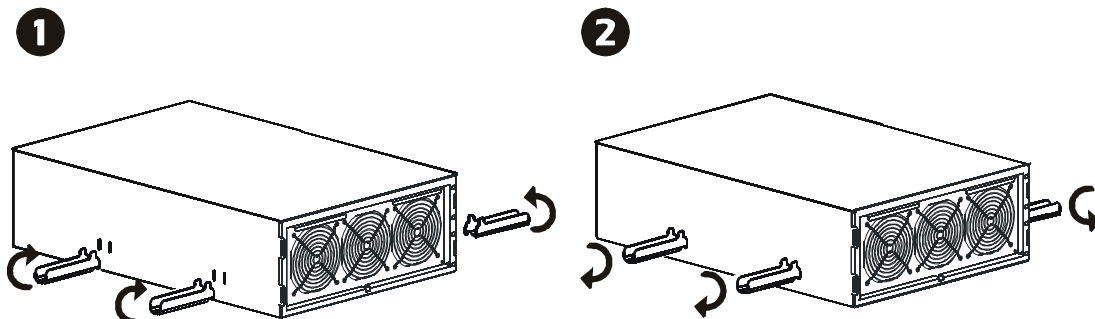
* Optional PDU panels are available for 10 kVA units. See www.apc.com for more information.

** Low voltages will decrease the maximum output power and VA.

***Recommended wire sizes are typical. Actual wire size used must comply with required ampacity and local and national electrical codes.

Handle Installation

Install the four handles, lift the transformer off of the pallet, and move to the mounting location. Note: If rack-mounting, install the handles after the rack-mounting and rail-aligning brackets (see *Rack Installation*).



Electrical Configuration

Attention:

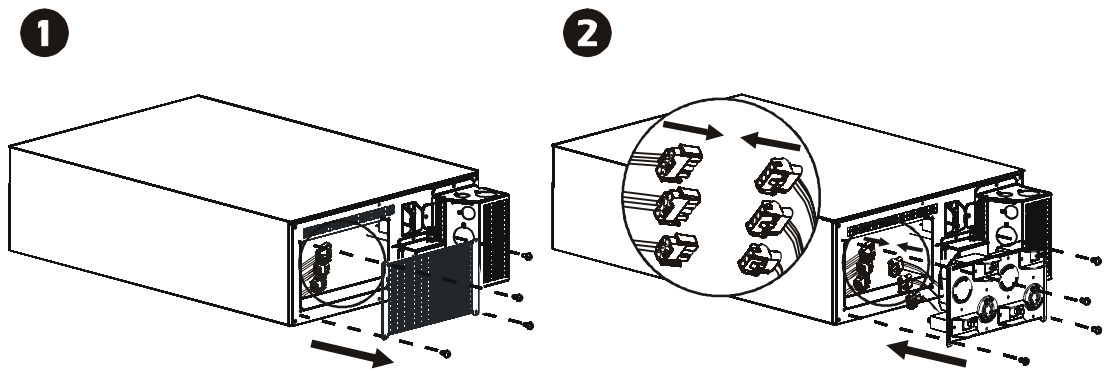
- All electrical configurations must be performed by a qualified electrician.
- Adhere to all local and national electrical codes.

PDU Panel Installation

Warning: The terminal block jumper location must be changed (see *Wire the Transformer*).

Attention: Install the PDU panel before performing any hardwiring.

For optional PDU panel output, install a PDU panel accessory (not included).

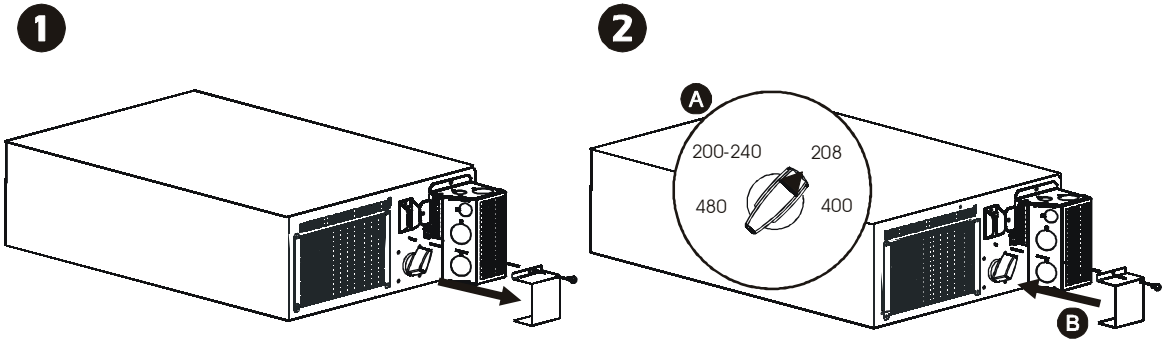


Voltage Switch Selection

Warning: Do not adjust voltage selection switch while input voltage is applied. Load(s) may be damaged.

Before the transformer is connected to utility power, select the voltage required for the specific configuration by setting the voltage selection switch, located on the rear panel. See graphics that follow.

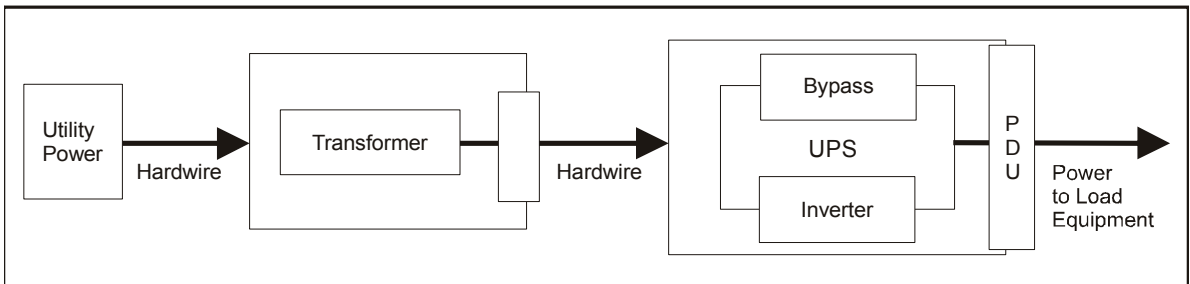
Utility Voltage	Input Voltage Selector Switch Position	Output Voltage
220-240	200-240	220-240
208	208	240/208/120
240	200-240	240/208/120
200	200-240	200/100
380-415	400	220-240
400 (Japan)	480	200/100
480	480	240/208/120



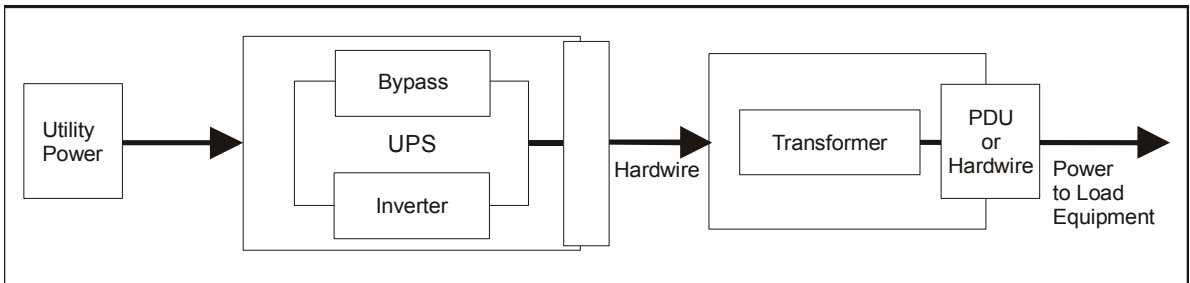
Hardwiring

Attention: If mounting in a rack, mount before hardwiring (see *Rack Installation*).

Input Isolation Transformer (10/20 kVA hardwired units only):



Output Isolation/Step-Down Transformer (10 kVA hardwired/PDU units only):



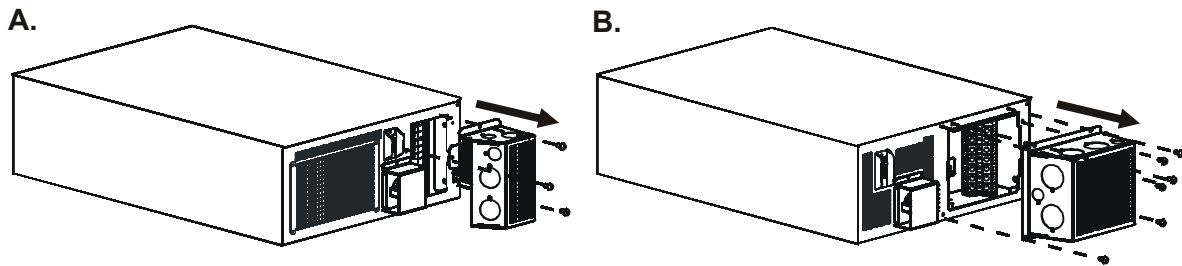
Wire the Transformer

1. *For input wiring only*, install a utility circuit breaker in accordance with local electrical codes.

Note: The branch circuit breaker values for 10 kVA units are: single phase- 60 A, two phase- 30 A. The branch circuit breaker values for the 20 kVA units are: single phase- 100 A, two phase- 50 A. Branch circuit breakers rated for transformer loads are recommended.

2. Switch the transformer input circuit breaker, and the utility circuit breaker OFF.

3. Remove the access panel, by removing screws. (See **A** for 10 kVA unit and **B** for 20 kVA unit.)



4. Remove circular knockouts.

5. *If installing an optional PDU panel*, move the terminal block jumper based on output voltage. The 100/120/200/240 V units should be wired $\frac{1}{2}$ -8; and, 220-240 V units should be wired $\frac{1}{2}$ -7. See **C** for terminal block jumper identification.

6. Run wires through the knockout holes to the terminal blocks. Wire to the ground block first. (See **C** for terminal block identification and **D** for terminal block connections.)

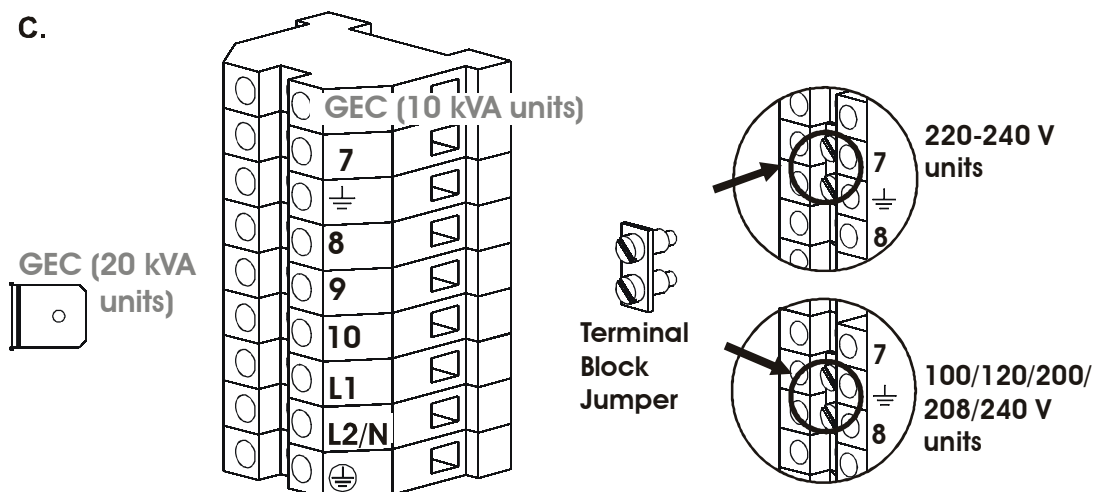
Input Connections	Output Connections (optional)
Wire to L1, L2/N, and $\frac{1}{2}$.	Wire to 7, 8, 9, 10, and $\frac{1}{2}$.
Wire to the grounding electrode conductor (GEC) for optional secondary ground.	Wire to the grounding electrode conductor (GEC) for optional secondary ground.

7. Switch the circuit breakers ON.

8. Check line voltages.

9. Reinstall the access panel.

C.



D.

	Input Voltage	Output Voltage at 60 A (10 kVA units) or 100 A (20 kVA units)			
		Terminal Block Connections			
Type	Switch Position	7, 10	7, 9	8, 10	8, 7
Single Phase	200-240 V (60 A for 10 kVA units or 100 A for 20 kVA units)	200/240 V	208 V	100/120 V	100/120 V
	208 V (60 A for 10 kVA units or 100 A for 20 kVA units)	240 V	208 V	120 V	120 V
Two Phase	400 V (30 A for 10 kVA units or 50 A for 20 kVA units)	220-240 V	N/A	N/A	N/A
	480 V (30 A for 10 kVA units or 50 A for 20 kVA units)	240 V/200 V*	208 V	120 V/100 V*	120 V/100 V*

* Japan applications with 400 V input voltage will output 200 V or 100 V as specified.

Installation

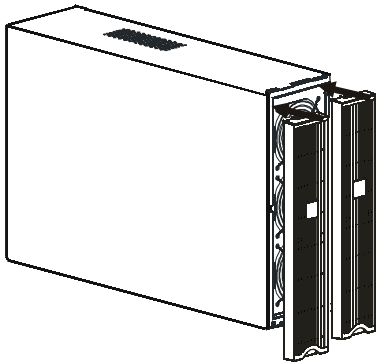
Tower Installation

Attention:

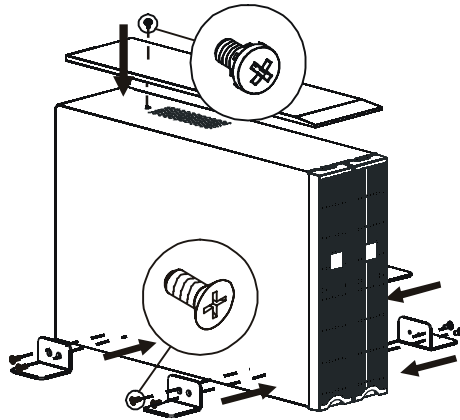
- The transformer must be installed to the **LEFT** of the UPS when facing the **FRONT** of the units.
- If your configuration includes the optional bypass panel, ensure this is installed to the **LEFT** of the transformer when facing the **FRONT** of the units. Refer to the bypass panel documentation for installation instructions.

Stand-Alone Configuration

1

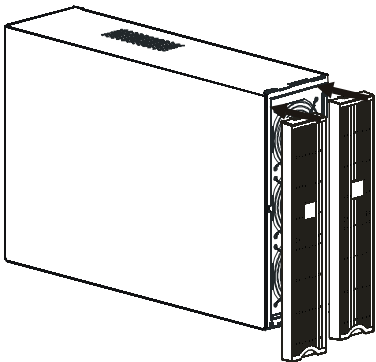


2

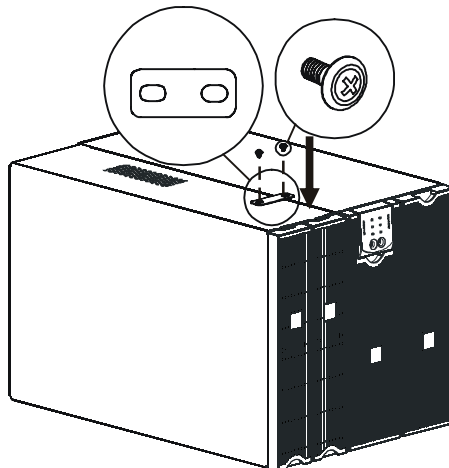


Configuration with Smart-UPS RT

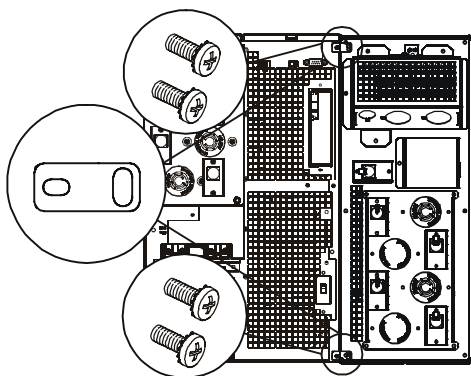
1



2



3



Rack Installation

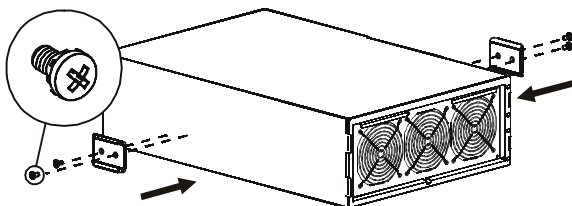
Install the Rails in the Rack

For details on rail installation refer to the instructions in the rail kit.

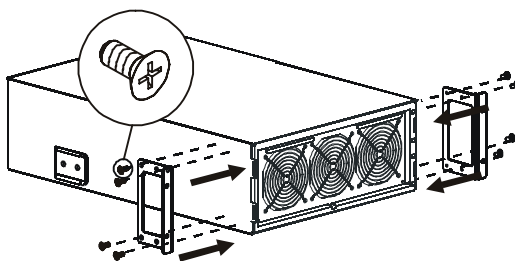
Tower to Rack Conversion

Attention: Due to its weight, the transformer should be installed at the bottom of the rack.

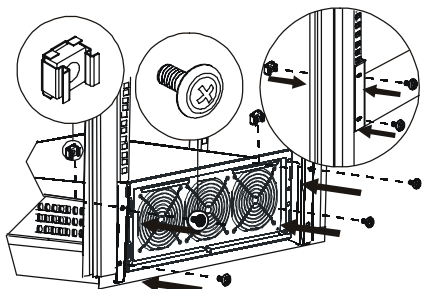
1



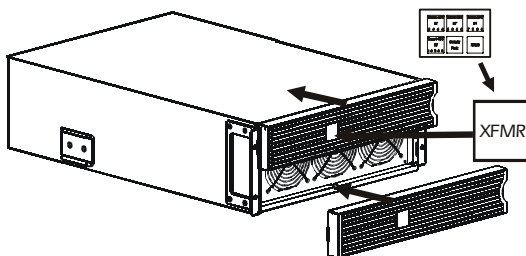
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3

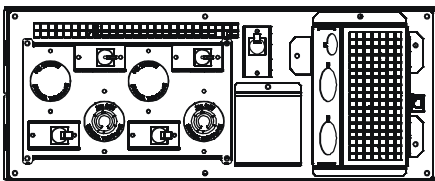


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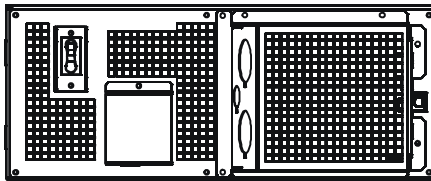


Connecting Equipment and Power to the Transformer

10 kVA Rear Panel:



20 kVA Rear Panel:



Start-Up

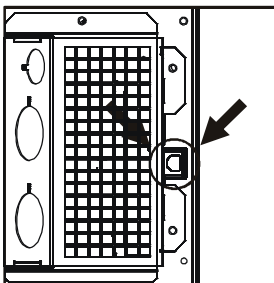
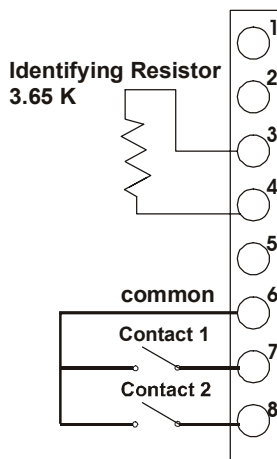
Attention:

- **Wiring must be performed by a qualified electrician.**
- **Adhere to all local and national electrical codes.**

1. Check that all power is turned OFF.
2. *If necessary*, replace the PDU panel (see *PDU Panel Installation*).
3. Select the output voltage by setting the voltage selection switch (see *Voltage Switch Selection*).
4. Hardwire the transformer (see *Hardwiring*).
5. *For PDU panel configurations only*, connect loads to the transformer.
6. Install optional communication cable (see following *Optional Communication Cable*).
7. Check that the input circuit breaker is turned ON.
8. Turn on all connected equipment.

Optional Communication Cable

8 Pin RJ45, Fault/Warning



Communication Cable Signals

Wire Color	Name	Signal Function	For connection to AP9619	For connection to AP9340 or AP9350	Polarity
Green	Common	-	Zone 1 NC* or Zone 2 NC*	User 1 Negative (-) or User 2 Negative (-)	-
White with brown	Contact 1	Fan fail and thermal warning	Zone 1 COM**	User 1 Positive (+)	Opens when event occurs
Brown	Contact 2	Thermal shutdown	Zone 2 COM**	User 2 Positive (+)	Opens when event occurs

* Normally closed

** Common

Troubleshooting

PROBLEM AND/OR POSSIBLE CAUSE	SOLUTION
Contact 1 (Fan Fault/Thermal Warning)	
A fan may be blocked or running slowly.	• Make sure that the fans are not blocked. • Reduce the load if possible. • Contact a service representative immediately. Note: The contact set is designed to open as a warning before the unit enters thermal shutdown. The system may shutdown within one hour if appropriate action is not taken.
The internal temperature of the unit is above the normal range.	
Contact 2 (Input Circuit Breaker Position)	
The input current rating has been exceeded.	• Reduce the load and close the breaker. • If the breaker will not stay closed, contact a service representative. Note: If the breaker is open this contact set will be open.
The internal temperature is above the safe operating range.	

Maintenance and Service

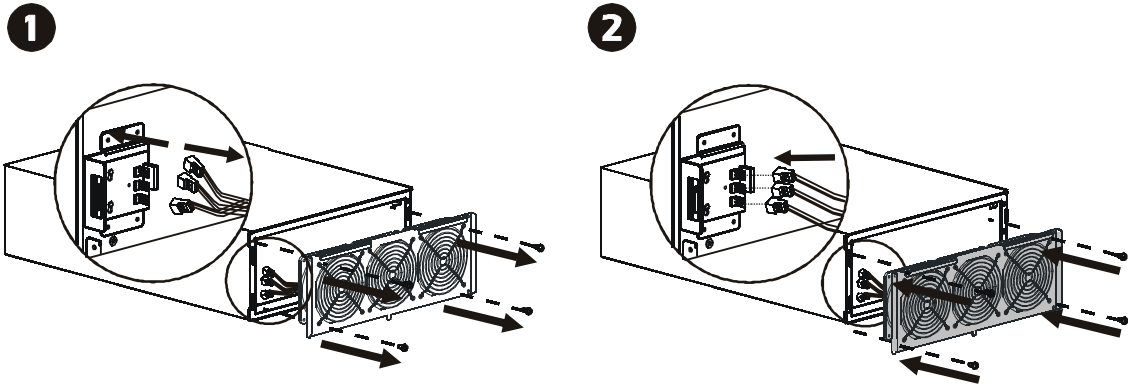
PDU Panel Replacement

See *PDU Panel Installation* instructions.

Fan Panel Replacement

Attention: Handle only the fan panel during replacement. The transformer and other components will continue operating and remain active during fan panel replacement.

Upon fan panel removal, the fans immediately turn off; upon insertion of the new fan panel, the fans immediately have power.



Service

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

1. Contact APC Customer Support through the APC Web site, www.apc.com.
 - Note the model number of the transformer, the serial number located on the back of the unit, and the date purchased. If you call APC Customer Support, a technician will ask you to describe the problem and attempt to solve it over the phone. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).
 - If the transformer is under warranty, repairs are free.
 - Procedures for servicing or returning products may vary internationally. Refer to the APC Web site for country specific instructions.
2. Pack the transformer in its original packaging. If this is not available, refer to the APC Web site for information about obtaining a new set.
 - Pack the transformer properly to avoid damage in transit. Never use Styrofoam beads for packaging. Damage sustained in transit is not covered under warranty.
3. Mark the RMA# on the outside of the package.
4. Return the transformer by insured, prepaid carrier to the address given to you by Customer Support.

Regulatory, Warranty, and Contact Information

FCC Compliance Notice

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. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

Regulatory Approvals



EC Declaration of Conformity

Date of Product Declaration **2005**

We, the undersigned, declare under our sole responsibility that the equipment specified below conforms to the following standards and directives:

Harmonized Standards:

EN55022; EN55024; EN60950-1;
EN61000-4-1, -2, -3, -4, -5, -6, -11;
EN61000-3-2, -3-3

Applicable Council Directives:

73/23/EEC; 89/336EEC; 93/68/EEC

Type of Equipment:

Accessory

Model Numbers:

APTF10KW01, APTF20KW01

Importer:

American Power Conversion
Ballybritt Business Park
Galway, Ireland

Place:

Galway, Ireland

Ray S. Ballard Managing Director, Europe

5 Jan 05

Manufacturers:

American Power Conversion
Ballybritt Business Park
Galway, Ireland

American Power Conversion
Breaffy Rd.
Castelbar
Co Mayo, Ireland

American Power Conversion
132 Fairgrounds Rd.
West Kingston, RI 02892 USA

American Power Conversion
1600 Division Rd.
West Warwick, RI 02893 USA

American Power Conversion
40 Catamore Blvd.
East Providence, RI 02914 USA

APC India Pvt, Ltd.
187/3, 188/3, Jigani Industrial Area
Bangalore, 562106
Karnataka
India

American Power Conversion
Lot 3, Block 14, Phase 3
PEZA, Rosario, Cavite
Philippines

American Power Conversion
2nd Street
PEZA, Cavite Economic Zone
Rosario, Cavite
Philippines

American Power Conversion
Lot 10, Block 16, Phase 4
PEZA, Rosario, Cavite
Philippines

APC Brazil LTDA.
Al Xingu, 850
Barueri
Alphaville/Sao Paulo
06455-030
Brazil

APC (Suzhou) UPS Co., Ltd
339 Suhong Zhong Lu
Suzhou Industrial Park
Suzhou Jiangsu 2215021
P. R. China

Two-Year Warranty

The limited warranty provided by American Power Conversion (APC®) in this statement of Limited Factory Warranty applies only to products you purchase for your commercial or industrial use in the ordinary course of your business.

Terms of warranty

APC warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase. The obligation of APC under this warranty is limited to repairing or replacing, at its sole discretion, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence or misapplication or has been altered or modified in any way. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory-remanufactured.

Non-transferable warranty

This warranty extends only to the original purchaser who must have properly registered the product. The product may be registered at the APC Web site, www.apc.com.

Exclusions

APC 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 or testing. Further, APC shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, start-up by non-APC designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to APC recommendations or specifications or in any event if the APC serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

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NO SALESMAN, EMPLOYEE OR AGENT OF APC IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. WARRANTY TERMS MAY BE MODIFIED, IF AT ALL, ONLY IN WRITING SIGNED BY AN APC OFFICER AND LEGAL DEPARTMENT.

Warranty claims

Customers with warranty claims issues may access the APC customer support network through the Support page of the APC Web site, www.apc.com/support. Select your country from the country selection pull-down menu. Open the Support tab at the top of the Web page to obtain contact information for customer support in your region.

APC Worldwide Customer Support

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

- Refer to the APC Web site to access documents in the APC Knowledge Base and to submit customer support requests.
 - **www.apc.com** (Corporate Headquarters)
Connect to localized APC Web sites 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 an APC Customer Support center by telephone or e-mail.
Local, country-specific centers:
go to **www.apc.com/support/contact** for information.

Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support.

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