



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 output voltage (208-200 V) to a lower output voltage (120-100 V) 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.

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

 <p>220/260 lb (113/118 kg)</p>	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.

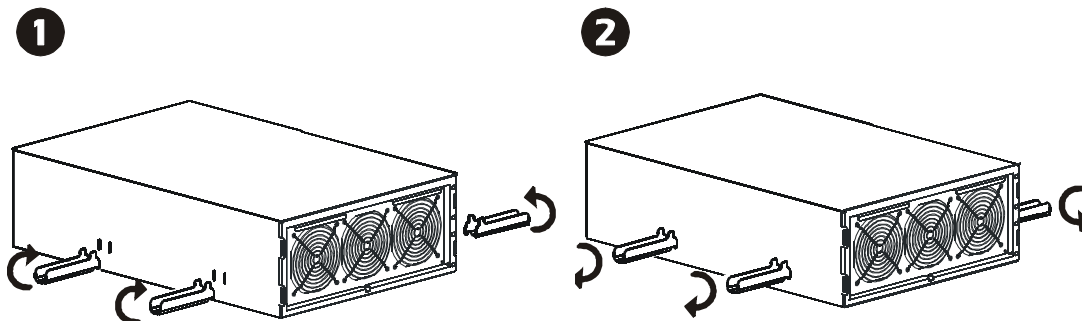
Model	APTF10KW01	APTF10KT01	APTF10KJ01	APTF20KW01
Nominal Input Voltage- Single Phase	200-240, 208, 240 Vac	208, 240 Vac	200 Vac	200-240, 208, 240 Vac
Nominal Input Voltage- Two Phase	380-415, 480 Vac	480 Vac	400 Vac	380-415, 480 Vac
Input Voltage Range	170-480 Vac			
Input Current Rating- Single Phase	48 A			80 A
Input Current Rating- Two Phase	24 A			40 A
Input Connection	Hardwire (6 AWG)			Hardwire (3 AWG)
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)	Hardwire (6 AWG), PDU: (2) L14-30, (2) L5-20	Hardwire (6 AWG), PDU: (2) L14-30, (2) L5-20	Hardwire (3 AWG)
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](http://www.apc.com) for further information.

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

## 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:

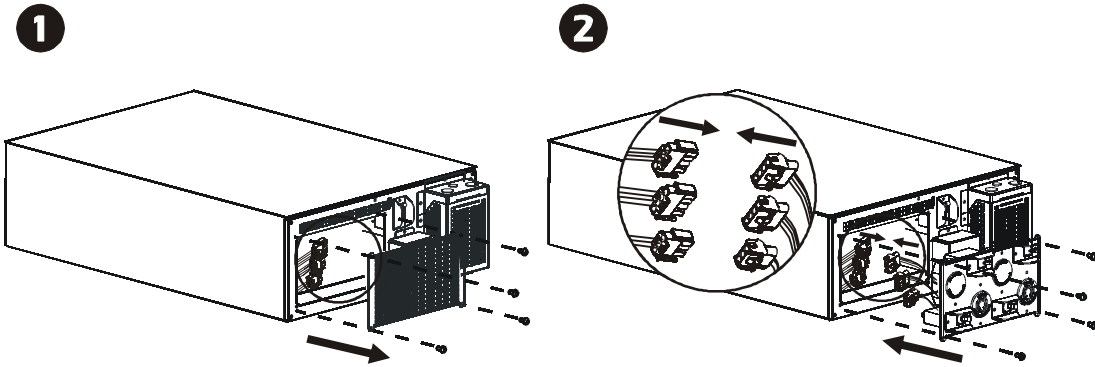
- All electrical configurations must be performed by a qualified electrician.
- Adhere to all local and national electrical codes.

### 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).

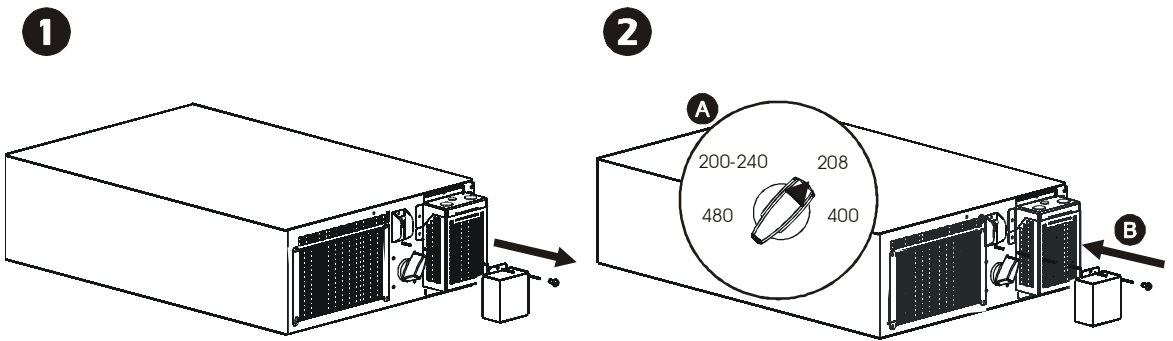


### Voltage Switch Selection

**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.

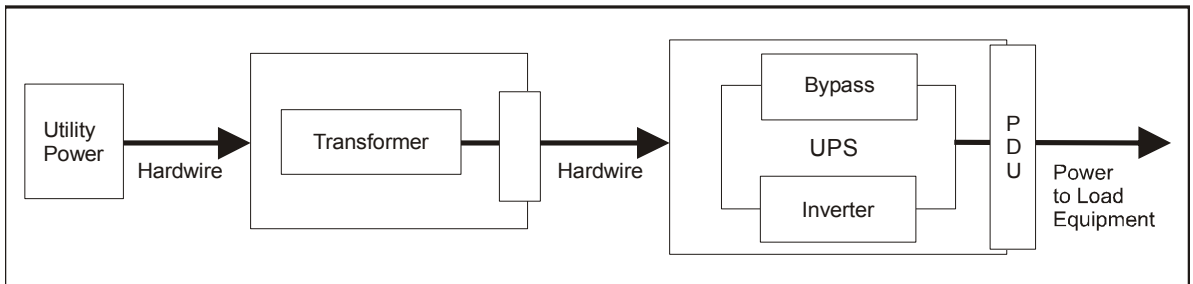
Utility Voltage	Input Voltage Selector Switch Position	Output Voltage
220-240	200-240	220-240
208	208	240/208/120
240	200-240	240/208/120
200	200-240	200/100
380-415	400	220-240
400 (Japan)	480	200/100
480	480	240/208/120



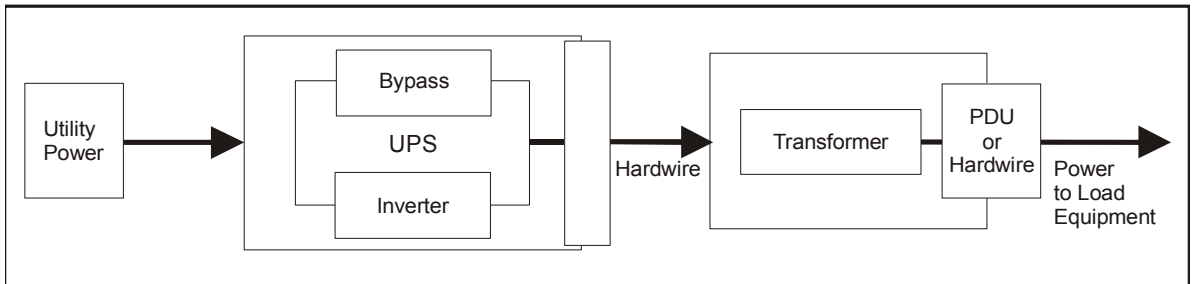
## Hardwiring

**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):**



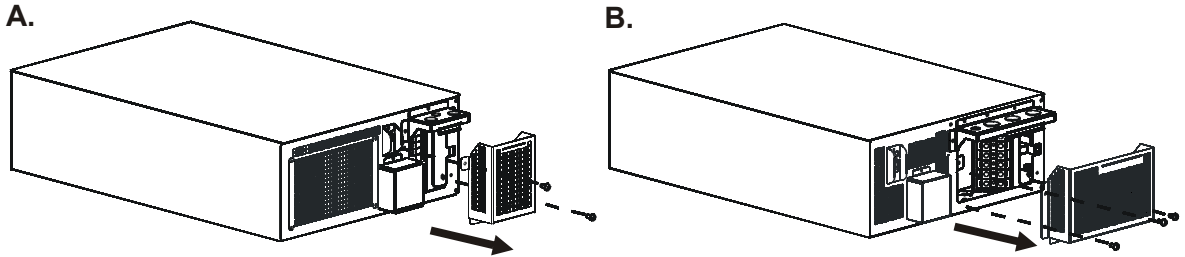
## Wire the Transformer

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

Note: The circuit breaker values for 10 kVA units are: single phase- 60 A, two phase- 30 A. The circuit breaker values for the 20 kVA units are: single phase- 100 A, two phase- 50 A.

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 from  $\perp$  -7 to  $\perp$  -8. See **C** for terminal block jumper identification

Note: 100/120/200 V units should be wired  $\perp$  -8; and, 220/230/240 V units should be wired  $\perp$  -7.

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.)

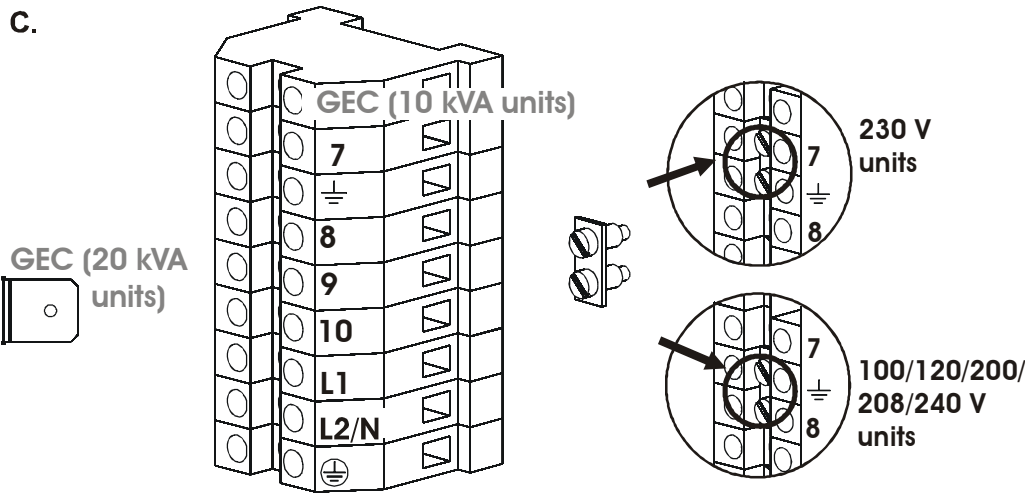
Input Connections	Output Connections (optional)
Wire to L1, L2/N, and $\perp$ .	Wire to 7, 8, 9, 10, and $\perp$ .
Wire to the grounding electrode conductor (GEC) for optional secondary ground.	Wire to the grounding electrode conductor (GEC) for optional secondary ground.

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	<b>200-240 V</b> (60 A for 10 kVA units or 100 A for 20 kVA units)	200/240 V	208 V	100/120 V	100/120 V
	<b>208 V</b> (60 A for 10 kVA units or 100 A for 20 kVA units)	240 V	208 V	120 V	120 V
Two Phase	<b>400 V</b> (30 A for 10 kVA units or 50 A for 20 kVA units)	220/240 V	N/A	N/A	N/A
	<b>480 V</b> (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.

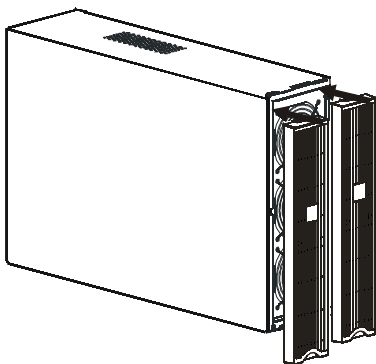
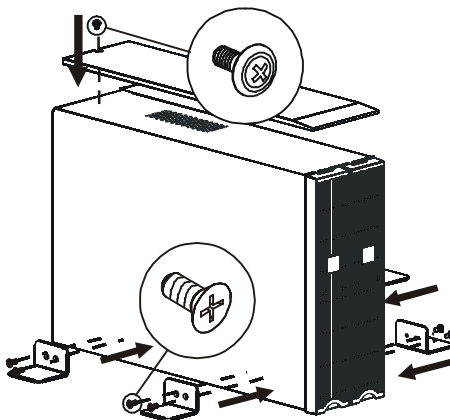
## Installation

### Tower Installation

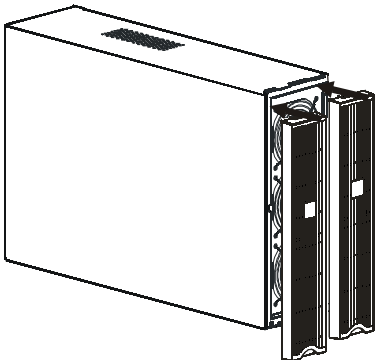
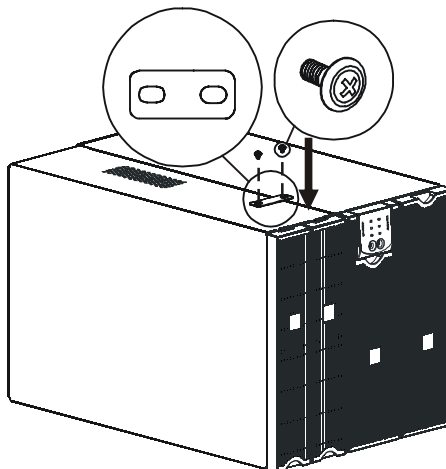
#### Attention:

- 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.

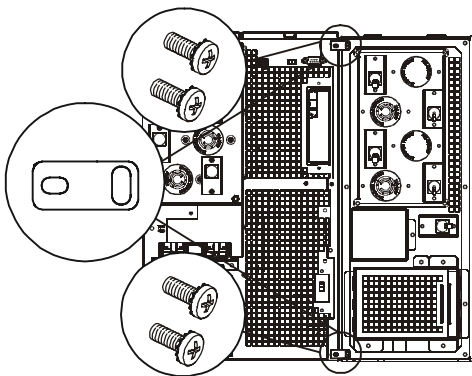
#### Stand-Alone Configuration

**1****2**

#### Configuration with Smart-UPS RT

**1****2**

3



## Rack Installation

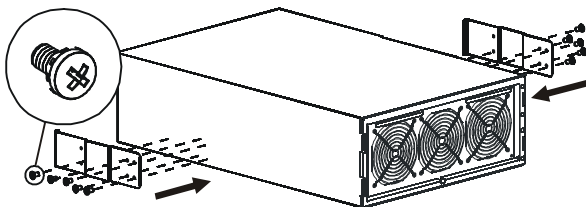
### Install the Rails in the Rack

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

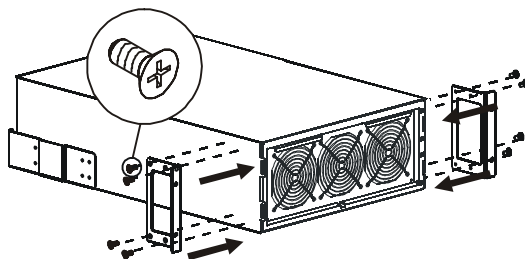
### Tower to Rack Conversion

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

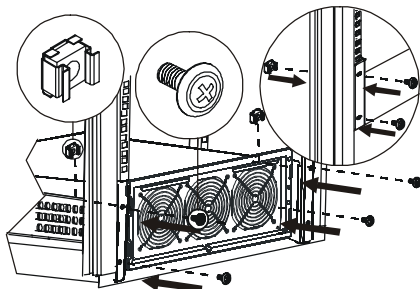
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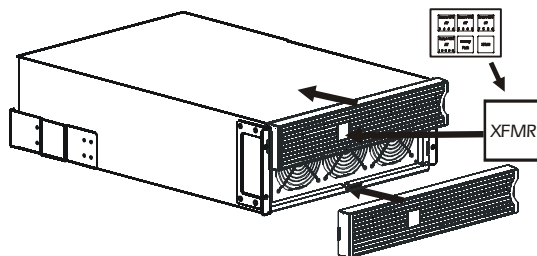
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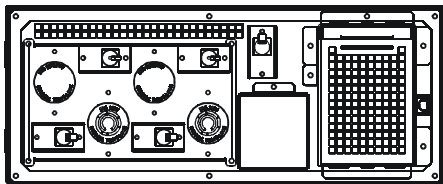


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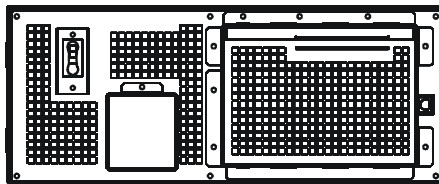


## Connecting Equipment and Power to the Transformer

### 10 kVA Rear Panel:



### 20 kVA Rear Panel:



## Start-Up

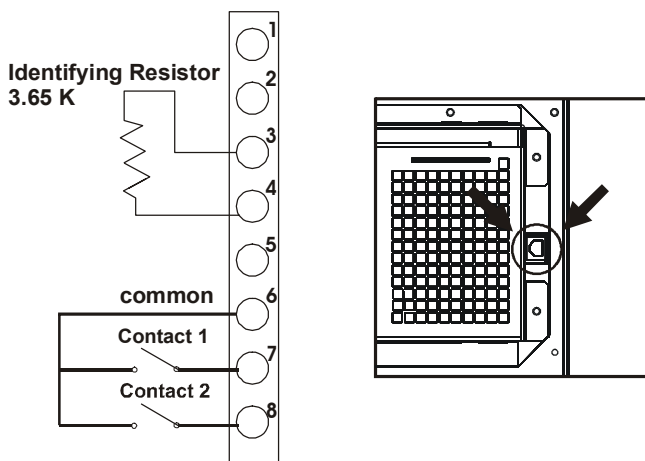
### Attention:

- **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.	<ul style="list-style-type: none"><li>• Make sure that the fans are not blocked.</li><li>• Reduce the load if possible.</li><li>• Contact a service representative immediately.</li></ul> <p>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.</p>
The internal temperature of the unit is above the normal range.	
Contact 2 (Input Circuit Breaker Postion)	
The input current rating has been exceeded.	<ul style="list-style-type: none"><li>• Reduce the load and close the breaker.</li><li>• If the breaker will not stay closed, contact a service representative.</li></ul> <p>Note: If the breaker is open this contact set will be open.</p>
The internal temperature is above the safe operating range.	

## Maintenance and Service

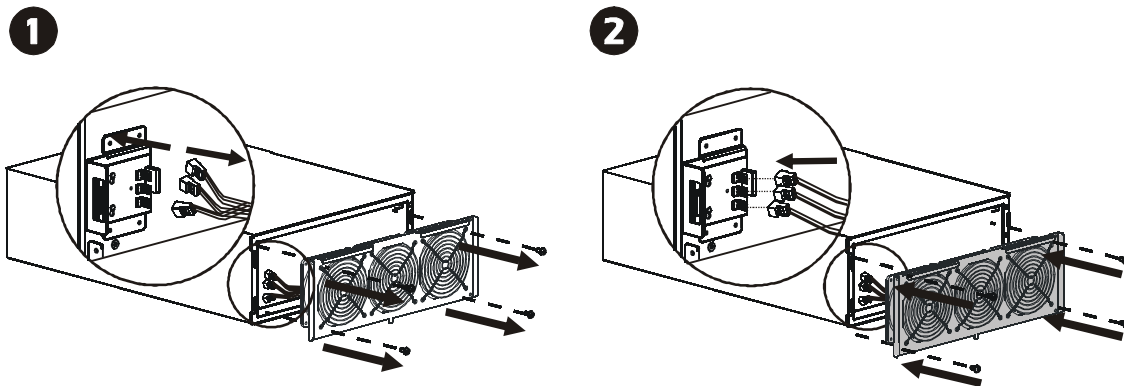
### PDU Panel Replacement

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](http://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:

EN55024; EN50091-1, -2; EN60950-1;  
EN61000-4-1, -2, -3, -4, -5, -6, -11;  
EN61000-3-2, -3-3; EN62040-1-1, -2

Applicable Council Directives:

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

Type of Equipment:

Uninterruptible Power Supply

Model Numbers:

APTF10KW01, APTF20KW01

Importer:

American Power Conversion  
Ballybritt Business Park  
Galway, Ireland

Place:

Ray S. Ballard Managing Director, Europe

Galway, Ireland

5 Jan 05

Manufacturers:

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Suzhou Industrial Park  
Suzhou Jiangau 2215021  
P. R. China

## **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. 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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## **Customer Support**

**In the USA:** Refer to the APC Web site, [www.apc.com/support](http://www.apc.com/support).

**Worldwide:** Refer to the APC Web site, [www.apc.com](http://www.apc.com). Select the appropriate country from the country selection field. Select the *Support* tab at the top of this web page.

After selecting a country, see [www.apc.com/support/contact](http://www.apc.com/support/contact) for e-mail and phone numbers available.

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