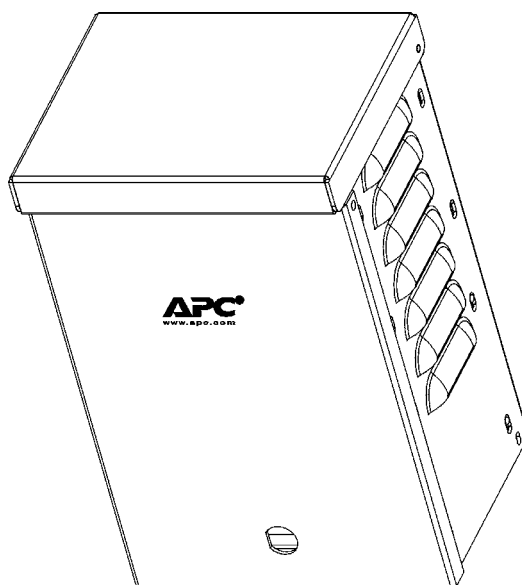


APC[®] **BroadBand CTFLP Series**
www.apc.com

Uninterruptible Power Supply

User's Manual



Chapter 1 General Information

The CTFLP Series provides an uninterruptible power source for broadband cable operations. The enclosure is designed for mounting on either a pole or wall.

Safety

This Safety Guide contains important instructions that should be followed during installation and maintenance of the APC equipment and batteries. It is intended for APC customers who setup, install, relocate, or maintain APC equipment. **Changes and modifications to this unit not expressly approved by APC could void the warranty.**

Failure to observe these warnings may result in serious injury, death or damage to the equipment.

Electrical Warnings

Do not work alone under hazardous conditions.

Do not handle any metallic connector before the power has been disconnected.

Servicing this equipment may require working with protective covers removed and utility power connected. Use extreme caution during these procedures.

High current through conductive materials could cause severe burns.

When grounding cannot be verified, disconnect the equipment from the utility power outlet before installing or connecting to other equipment. Reconnect the power cord only after all connections are made.

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.

Overhead Warnings

Never stand underneath anything while it is hoisted. Always wear a hard hat.

Lifting Warnings

Transformer modules are heavy. Use proper lifting techniques and equipment to avoid injury.

Specifications

Environmental Specifications

Operating Temperature	-40° F to 158° F (-40° C to 70° C)
Humidity	5% to 95% noncondensing within enclosure

Physical Specifications

Characteristic	Specification
Height X Width X Depth	11.4" X 8.5" X 7.1" (29 cm X 22 cm X 18 cm)
Weight	36 lbs (16 kg)

Electrical Specifications

Input Characteristic	Input Specification
Input Voltage	120 VAC Nominal 220 VAC Nominal
Input Current	15 A Max
Input Frequency	60 Hz \pm 1 Hz
Output Characteristic	Output Specification
Output Voltage	60 VAC \pm 3%
Output Current	15 A
Output Frequency	60 Hz \pm 1%
Output Regulation <i>Normal</i> <i>Standby</i>	\pm 3% \pm 5%
Output Protection	20 A Circuit Breaker (optional)
Transfer Time	<20 milliseconds

Chapter 2 Installation and Maintenance

Only trained service personnel should install and maintain the Power Supply.

Prior to installing the Power Supply utility line voltage must be routed to the enclosure. Local, state, federal and/or National Electric Code (NEC) regulations regarding location, permits and electrical wiring must be adhered to.

Do not operate the Power Supply where the temperature and humidity are outside the specified limits. See *Specifications* in this manual.

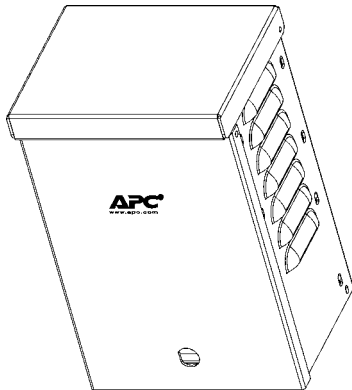
Unpacking

Inspect the unit upon receipt. Notify the carrier if there is damage.

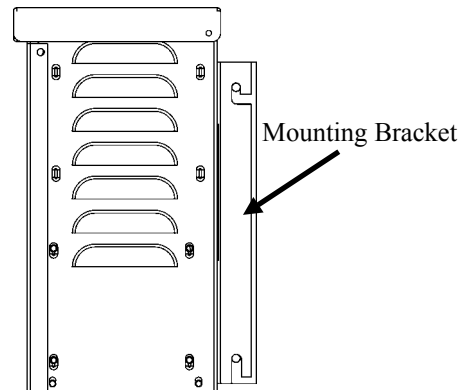
The packaging is recyclable; save it for reuse or dispose of it properly.

Check the package contents. The package contains the power supply and product documentation.

CTFLP Enclosure



Side View Showing Mounting Bracket



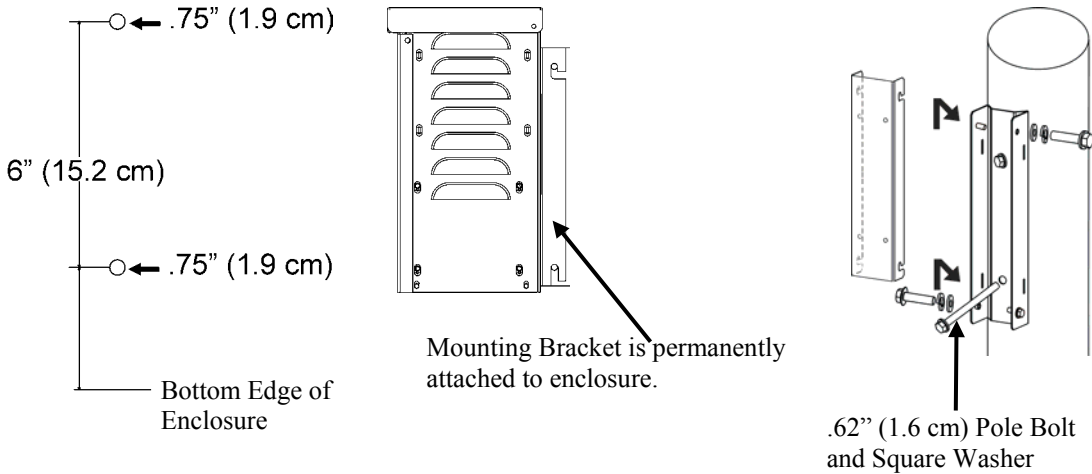
Models Supported

Model Number	Description
CTFLPH120	ENCL, CTFLP 120VAC
CTFLPH220	ENCL, CTFLP 220VAC

CTFLP Enclosure Installation

Loosen (do not remove), the four .25" (.63 cm) nuts on the bracket assembly.

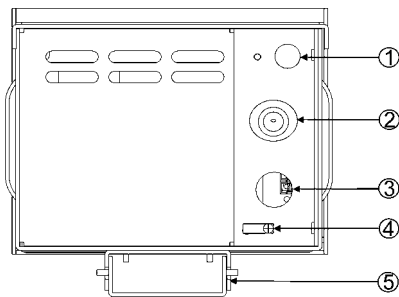
Wall Mount Units: Select fasteners that will accommodate the weight of the unit including the power supply.



Wiring

1. Attach conduit to the 1/2 " hole on the bottom of the unit and wire the input line.

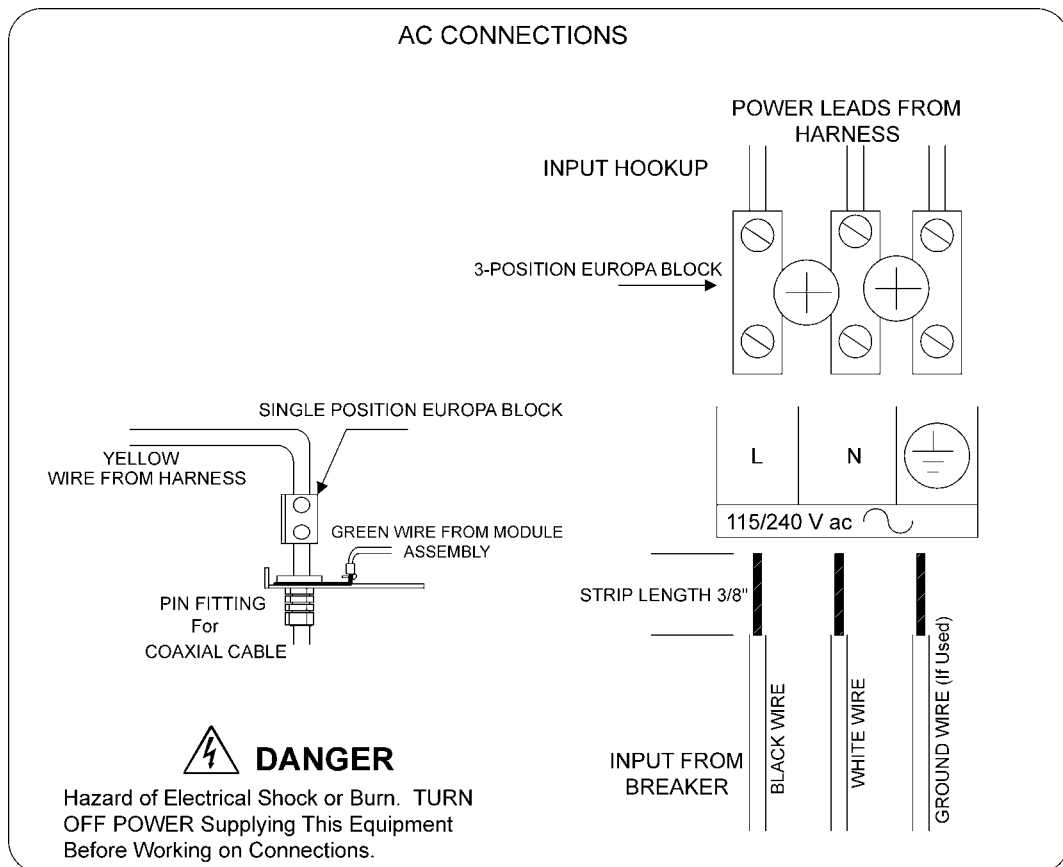
Bottom View



INDEX	ITEM	DESCRIPTION
1	60/90 VAC Indicator Lamp	Lamp is on when normal output is present
2	Output Cable Adapter	Coax adapter for power supply output
3	Conduit entry point	Physical entry point for conduit
4	Ground Wire Lug	Provides connection of chassis to earth ground
5	Pole Bracket	Bracket for mounting the enclosure on a pole or wall

2. Refer to the diagram below for wiring details.

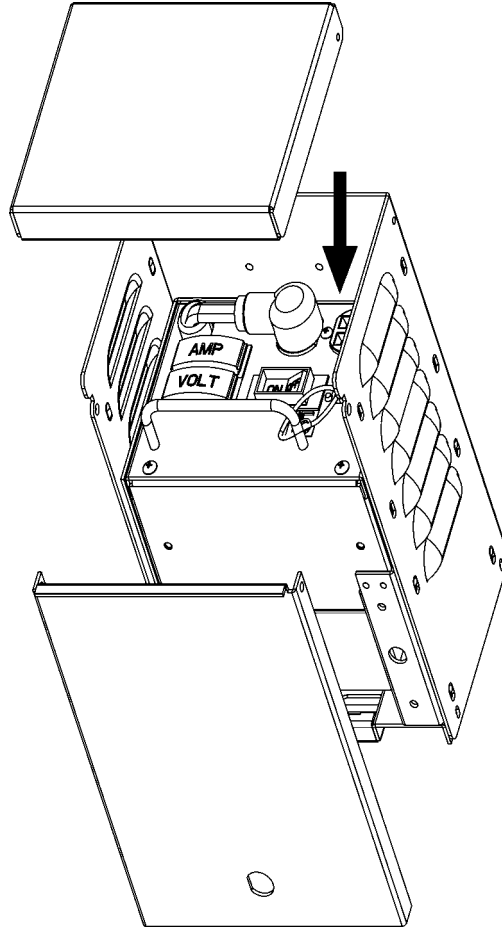
- Connect the black and white wires from the incoming utility line.
- Route the power feed COAX to the bottom of the enclosure and attach to the COAX cable adapter using a pin connector.
- Attach the stinger lug to the pin connector center pin.
- Attach suitable solid copper ground wire to the enclosure ground lug and ground in accordance with local codes.
- Check for voltages between each connector pin and ground using a multimeter. Presence of voltage indicates an improper ground. If voltage is present ensure the ground contact is secure.
- Reinstall the front door of the enclosure. Squeeze the edges of the enclosure to place the pins in position.

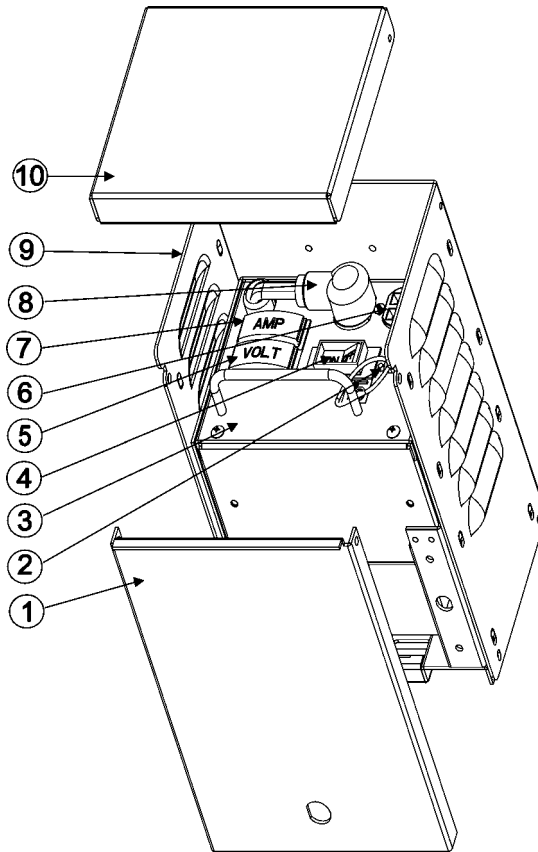


Installing the FLM Power Supply

Ensure the CTFLP module circuit breaker is OFF.

1. Unlock and open the front enclosure door.
To remove the front door from the enclosure, squeeze the edges of the enclosure together. This will allow the pins at the top of the door to slip out of the side enclosure panels.
2. The top door of the enclosure is hinged on the back edge.
3. Lower the FLM module into the enclosure so that the guide pins on the FLM and the enclosure engage.
4. Push the module until a light “snap” is felt as the contacts lock into place.
5. Pull lightly on the module. If properly seated the module will not easily disengage.
6. Turn the utility power ON.
7. Turn the module breaker switch ON.
8. The green Indicator lamp should be ON.
9. Using a voltmeter, verify utility voltage at the coax connection.





INDEX	ITEM	DESCRIPTION
1	Front Door	Front door of FLP enclosure
2	Option Plug	Provides an interface for standard APC power supply options
3	FLM Module	Ferroresonant Module- provides output power, 60/90 VAC
4	FLM Circuit Breaker	Provides power to FLM
5	Voltmeter (Option)	Displays output voltage
6	Utility Auxiliary Plug	Provides access to utility power for equipment used by field personnel
7	Ammeter (Option)	Displays output current
8	Line Cord Plug	Provides power to the FLM and an access point for auxiliary power
9	CTFLP Cabinet	Enclosure for the power supply module
10	CTFLP Top Door	Top door of the FLP enclosure

Chapter 3 Operation

Initial Startup and Performance Verification

1. Switch the utility circuit breaker ON.
2. Verify that the FLM is switched ON.
3. Measure the voltage at the Coax connector ensuring that 60VAC or 90VAC are present depending on the power supply installed. The green Indicator lamp on the bottom of the unit should be illuminated.
4. Replace the doors on the enclosure.

Shut Down

1. Switch the FLM OFF.
2. Switch the utility circuit breaker OFF.

Auxiliary Power Supply

1. Set up an auxiliary utility generator and calibrate to $60 \text{ Hz} \pm 1 \text{ Hz}$.
2. Switch the utility circuit breaker OFF.
3. Unplug the utility input cord from the FLM and attach it to the generator extension cord.

For details regarding available options see the APC web site www.apc.com.

Chapter 4 Troubleshooting and Maintenance

Troubleshooting Power Supply Failure

Problem	Possible Cause	Solution
Power Supply Failure	No input voltage detected at connector J1, pins 1 and 2.	Replace the wiring harness
	Input voltage present at connector J1, pins 1 and 2.	Disconnect power from the supply
	No input voltage at the black and white wires input lines.	Replace the Euro block
	Input voltage present at the black and white wires input lines.	Replace the wiring harness.
Reconnect power to the FLM.		
Power Supply Failure	No voltage at the Coax stinger.	Replace the FLM module

Maintenance

Routine Maintenance Schedule

Operation	Interval
Visual Inspection	
External Surfaces	Semiannually
Connectors	Annually
Operator Controls	Annually
Wiring/Cable Assemblies	Annually
Cleaning	
External Surfaces	Annually
External Controls/Receptacles	Annually
Internal Receptacles/Circuit Boards	Annually
Performance Verification	
Refer to <i>Initial Startup and Performance Verification</i> in the manual	Semiannually

Routine Maintenance Procedures

- **Visual Inspection**

- Check external surfaces, connectors, indicators and wiring/cable assemblies for signs of dirt, wear, and damage.

- **Cleaning**

- Brush dust from controls and receptacles using a small paintbrush.
- Wipe surfaces with clean, dry cheesecloth.
- Clean exterior surface with clean cheesecloth moistened with isopropyl alcohol or a general purpose detergent.

NOTE: Do not allow cleaning solution into the interior of the enclosure or into any connectors.

- Clean electrical contacts with approved spray-type contact cleaner.
- Clean internal receptacles and circuit boards with hand controlled, dry-air jet (not more than 15 lb/in²), clean cheesecloth moistened with isopropyl alcohol. Wipe dry with clean, dry cheesecloth.

Replacement Procedures

- **Wiring Harness Replacement**

- Switch the utility circuit breaker OFF.
- Open the top door of the enclosure.
- Switch the FLM OFF.
- Remove the FLM.
- Disconnect the stinger lug from the pin connector, center pin.
- Open the front door of the enclosure.
- Disconnect the stinger lug from the pin connector center pin.
- Disconnect the utility wires and the ground wires.
- Remove the two quick disconnect connectors from the top of the indicator lamp socket.
- Remove the module connector plate by removing the Phillips head screws located on the front and back of the enclosure.
- Slide the module connector plate and harness to the left and out of the harness plate.
- Slide the replacement connector plate and harness onto the harness plate and replace the screws.
- Reattach the ground wires.

- Replace the quick disconnects on the indicator lamp socket.
 - Reconnect the utility wires and the stinger lug.
 - Close the front door of the enclosure.
 - Reinstall the FLM. Ensure the module is seated properly. Refer to *Installing the FLM* in this manual.
 - Switch the FLM and the utility circuit breakers ON.
 - Complete Performance Verification (refer to *Initial Startup and Performance Verification* in this manual).
 - Replace the top door of the enclosure.
- **Indicator Lamp Replacement**
 - Gently pry the lens off the indicator lamp using the tip of a screwdriver.

NOTE: Place a hand over the lens as it is loosened to ensure that the lens is not lost during the procedure.

- Remove the spent lamp and replace it with a new one.
 - Snap the lens back into place.
- **Euro Block Replacement**
 - Switch the utility circuit breaker OFF.
 - Remove the doors to the enclosure.
 - Remove the FLM.
 - Disconnect (and tag), the wiring harness and utility wires from the Euro block.
 - Remove the screws that secure the Euro block in the enclosure, and lift out the Euro block.
 - Insert the new Euro block and secure it in the enclosure.
 - Reconnect the wiring harness to the Euro block.
 - Reinstall the FLM.
 - Replace the doors on the enclosure.
 - Switch the utility circuit breaker ON.
 - Complete Performance Verification (refer to *Initial Startup and Performance Verification* in this manual).

Chapter 5 Service, Contact and Warranty Information

Service

APC makes every effort to ensure parts and equipment arrive in working condition. Occasionally, it may be necessary to return parts or equipment that are not in working condition.

If the UPS requires service do not return it to the dealer. Instead, follow these steps:

1. Contact APC Customer Service through the APC web site, www.apc.com/support.
 - Note the product model number, the serial number, and the date purchased. If you call APC Customer Service, a technician will ask you to describe the problem and try to solve it over the phone. If this is not possible the technician will issue a Returned Material Authorization Number (RMA#).
 - If the product is under warranty, repairs are free. If not, there is a repair charge.
 - Procedures for servicing or returning products may vary internationally. Refer to the APC web site. Select the appropriate country from the country selection field. Select Support from the tab at the top of the web page.
2. Pack the product in its original packaging. If the original packing is not available, refer to the APC web site for information on obtaining appropriate packing materials.
 - 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. Mark the RMA# on the outside of the package.
4. Return the unit by insured, prepaid carrier to the address given to you by Customer Service.

How to Contact APC

In the USA ...	Outside the USA ...
Refer to the APC web site, www.apc.com/support .	Refer to the APC web site, www.apc.com . Select the appropriate country from the country selection field. Select <i>Support</i> from the tab at the top of the web page.

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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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.

Regulatory Approval



2003 <small>Date of publication</small>		CE Declaration of Conformity	
We, the undersigned, declare under our sole responsibility that the equipment specified below conforms to the following standards and directives:			
Standards to Which Conformity Declared:	EN 6100-3-2, 3-3, 4-2, 4-3, 4-4, 4-5, 4-6, 4-11, EN 60950, EN 55022, IEC 60950		
Application of Council Directives:	73/23/EEC, 89/336/EEC		
Type of Equipment:	Power Supply		
Model Numbers:	CTFLP		
Manufacturer's Name and Address:	American Power Conversion 132 Fairgrounds Road West Kingston, Rhode Island, 02892, USA -or- American Power Conversion 1600 Division Highway West Warwick, RI 02893, USA -or- American Power Conversion (A. P. C.) b. v. Ballybritt Business Park Galway, Ireland		
Importer's Name and Address:	American Power Conversion (A. P. C.) b. v. Ballybritt Business Park Galway, Ireland		
Place:	N. Billerica, MA U.S.A.	Richard J. Everett, Sr. Regulatory Compliance Engineer	5 Jan 02
Place:	Galway, Ireland	Ray S. Ballard, Managing Director, Europe	5 Jan 02

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