



MasterSwitch™

# Thank You !

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Thank you for selecting the MasterSwitch™ network-manageable power distribution unit (PDU). The MasterSwitch™ has been designed for many years of reliable, maintenance-free service in combination with your American Power Conversion (APC) Uninterruptible Power Source (UPS). APC is dedicated to the development of high-performance electrical power conversion and control products and we hope that you will find this product a valuable, convenient addition to your computing system.

**Please read this manual!** It provides important safety, installation, and operating instructions that will help you get the most from your MasterSwitch™.

**Save this manual!** It includes instructions for obtaining factory service should the proper operation of the MasterSwitch™ come into question.

## Radio Frequency Interference

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**WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### FCC Statement

**NOTE:** 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 and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### Canadian Department of Communications Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

# Contents

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1. Introduction .....	2
2. Package Contents .....	3
3. On-line Documentation .....	4
4. Installation .....	4
Desktop Installation .....	4
Rack Mount Installation .....	5
5. Status Indicators .....	6
6. Initial Setup .....	6
7. Operation Check .....	7
8. Troubleshooting .....	7
9. Service .....	7
10. Specifications .....	8

# 1. Introduction

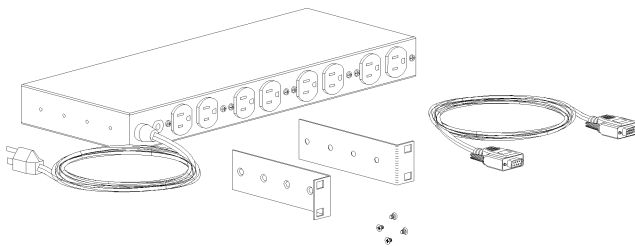
The MasterSwitch™ is a network-manageable, intelligent power distribution unit (PDU) designed to provide control of power for up to eight 120-VAC electrical devices.

The MasterSwitch™ allows you to:

- Individually control each of eight outlets using a web browser, an SNMP browser or a terminal program.
- Remotely and individually reboot hung servers.
- Remove power to non-essential loads.
- Sequentially apply power to equipment plugged into the MasterSwitch™.

As shown in Figure 1, the MasterSwitch™:

- Has a 15-foot, attached input-line cord.
- Has eight 120-VAC, 15-Amp power receptacles (4 x NEMA 5-15).
- Has a 15-Amp circuit breaker.



**Figure 1: MasterSwitch™ with Rack-Mounting Brackets and Configuration Cable**

As shown in Figure 2, the MasterSwitch™ also features:

- A 9-pin configuration port for connecting the MasterSwitch™ to a terminal (or terminal emulator) during the setup procedures (Section 4). This connection is made using the 9-pin cable (APC PN 940-0103) that comes with the MasterSwitch™.
- An 8-pin RJ45 jack for connecting the MasterSwitch™ to a 10Base-T Local Area Network (LAN).
- Two LEDs (Link and Status) for monitoring the network connection.
- Eight LEDs (one for each receptacle) to report power on (lit) or off (not lit) conditions of the MasterSwitch™ power outlets.
- A reset button that reinitializes the MasterSwitch™ without affecting its outlet power (warm reboot).

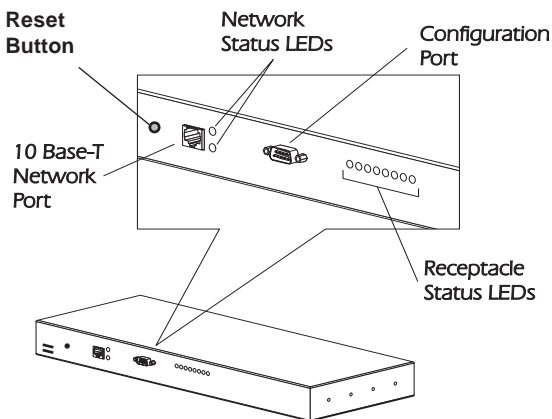


Figure 2: MasterSwitch™ Front Panel

## 2. Package Contents

In addition to this installation guide, the MasterSwitch™ also comes with the following items:

- Two rack-mounting brackets.
- Four screws for attaching the rack-mounting brackets to the MasterSwitch™.
- One 9-pin male-to-9-pin female cable (APC PN 940-0103) for connecting a terminal (or terminal-emulator) to the MasterSwitch™ for configuration.
- One diskette which contains a pdf-formatted copy of the *MasterSwitch™ - User's Guide* (pduguide.pdf), as well as a copy of the MasterSwitch-management information base (MasterSwitch-MIB) that provides the object identifiers (OIDs) needed to use an SNMP browser to monitor and control the MasterSwitch™.
- One copy of the warranty card.

**Note:** Please fill out and return the warranty card. This card not only provides us with valuable, welcomed feedback on how we can refine our products to better serve your needs, but it also enables us to notify you about important product updates and changes.

Release notes may also be included to advise you of any information that has become relevant since this installation guide (and the on-line user's guide included on the diskette) were last revised.

## 3. On-line Documentation

The diskette that comes with the MasterSwitch™ includes a copy of the *MasterSwitch™ - User's Guide* in portable data format (pduguide.pdf). This guide can be read using Acrobat Reader, a free application available from Adobe (<http://www.adobe.com>). If you do not have web capabilities, a copy of this guide is available from APC's FTP site ([apccorp.apcc.com](http://apccorp.apcc.com)).

## 4. Installation

The MasterSwitch™, which connects to a 10Base-T Local Area Network (LAN) through the RJ45 jack on the front of the unit, can be used as a freestanding desktop unit or mounted in a NetShelter™ cabinet (or other 19" NEMA rack).

### Desktop Installation

The MasterSwitch™ is equipped with rubber feet for desktop use and can be located wherever space permits:

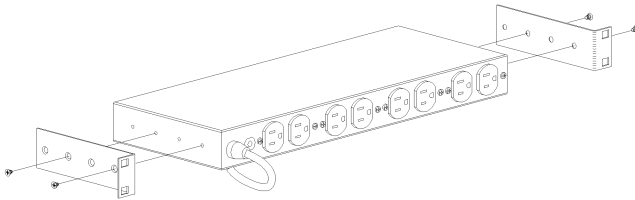
1. Place the MasterSwitch™ in its permanent location. Make sure that this location is within 15 feet (4.6 meters) of a single-phase, 120-VAC, 15-Amp outlet, and that the back of the unit (receptacle side) will be readily accessible.
2. Plug the male end of your network interface cable (not supplied with the MasterSwitch™) into the RJ45 jack on the front of the MasterSwitch™.
3. Plug the MasterSwitch™ power cord into the single-phase, 120-VAC, 15-Amp outlet.
4. Refer to Section 4 for information on setting up the MasterSwitch™.

# Rack Mount Installation

To mount the MasterSwitch™ in a NetShelter™ (or other 19-inch NEMA rack):

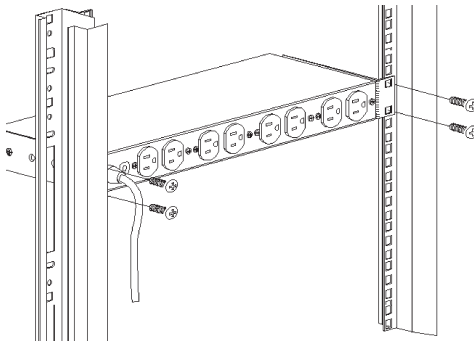
1. Peel the rubber feet from the bottom of the MasterSwitch™.
2. Refer to Figure 3 and use a #2 Phillips-head screwdriver, and two of the supplied screws, to attach each mounting bracket to the MasterSwitch™.

**NOTE:** The mounting brackets can be attached at various positions along the side of the chassis. Choose a position that will not cause the mounted MasterSwitch™, or attached cables, to interfere with closing the cabinet door, or to otherwise protrude from the cabinet. If more than two mounting holes are aligned, choose the pair that are farthest apart.



**Figure 3: Attaching Mounting Brackets**

3. Refer to Figure 4 and use 4 cage nuts and machine screws (not supplied with the MasterSwitch™) to mount the MasterSwitch™ into the NetShelter™ cabinet. If the MasterSwitch™ is being installed in a cabinet other than a NetShelter™, use the hardware that is appropriate for the cabinet.
4. Plug the male end of your network interface cable (not supplied with the MasterSwitch™) into the RJ45 jack on the front of the MasterSwitch™.
5. Plug the MasterSwitch™ power cord into a single-phase 120-VAC, 15-Amp outlet.
6. Refer to Section 4 for information on setting up the MasterSwitch™.



**Figure 4: Mounting in a NetShelter™ Cabinet**

## 5. Status Indicators

The MasterSwitch™ has eight receptacle status LEDs located on the front panel. When a status LED is on, it indicates the related receptacle has power; When a status LED is off, its receptacle does not have power.

The MasterSwitch™ also has two network connection status LEDs, also located on the front panel, that indicate the following states:

LED	State	Indication
Link-TX/RX	Blinking Green	MasterSwitch™ is connected to a working network.
	Off	Network or MasterSwitch™ connection failure.
Status	Solid Green	MasterSwitch™ is ok.
	Blinking Green	Network configuration values have not been defined for the MasterSwitch™.
	Flashing Red (Slow)	Processing bootp.
	Solid Red	Hardware Failure.

**Table 1: Network Connection (10Base-T) Status Indicators**

## 6. Initial Setup

Before the MasterSwitch™ can operate over the network it needs to have certain address values defined. These values can be set (configured) by a BOOTP server (the MasterSwitch™ comes with BOOTP enabled) or by using a terminal (or terminal emulator) connected to the 9-pin configuration port on the front panel of the MasterSwitch™.

**NOTE:** Refer to the *MasterSwitch™ - User's Guide* for information on the initial configuration of the MasterSwitch™. A copy of this guide, in portable data format is provided on the diskette that came with the MasterSwitch™.

In addition, if you want to use SNMP to configure and control the MasterSwitch™, you will need to load and compile APC's MasterSwitch-MIB at any network management station (NMS) you will use for SNMP control of the MasterSwitch™.

**NOTE:** The MasterSwitch-MIB is provided on the diskette that came with the MasterSwitch™. See the documentation for the NMS you want to use this MIB for instructions on loading and compiling MIBs.



## 7. Operation Check

After the MasterSwitch™ is installed and set up:

1. Confirm that the network connection status (Link and Status) LEDs are on (lit).
2. Confirm that all eight of the receptacle status LEDs are on (lit).

## 8. Troubleshooting

Problem	Possible Cause	Solution
No power from any receptacle.	Blown MasterSwitch™ circuit breaker or no input power.	Reset circuit breaker, or correct input power problem.
Network connection LEDs do not come on.	Connection to network is faulty.	Make sure network cable is securely connected to the MasterSwitch™ and network.
Circuit breaker continuously or frequently trips.	Amps drawn by load equipment exceeds 15-amp maximum.	Limit load equipment to those devices which together draw less than 15 amps.

**Table 2: Troubleshooting**

## 9. Service

If the MasterSwitch™ requires service:

1. Check the MasterSwitch™ using the troubleshooting chart in section 6 before calling for service.
2. Note the model number of the MasterSwitch™, the serial number, and the date purchased. See the back cover of this manual for the correct telephone number and call customer service. A technician will ask you to describe the problem and help solve it over the phone, if possible, or will give you an RMA#. If customer service is not available in your area, call the dealer that sold the MasterSwitch™. If it is under warranty, repairs are free. If not, there will be a charge for repair.
3. It is important to pack the MasterSwitch™ properly to avoid damage in transit. If possible, use the original packing materials. Damage sustained in transit is not covered under warranty.
4. Include a letter with your name, RMA#, address, copy of the sales receipt, description of the trouble, your daytime phone number, and a check (if necessary).
5. Mark the RMA# on the outside of the package. The factory cannot accept any package without this marking.
6. Return the MasterSwitch™ by insured, prepaid carrier to the address given by the technician.

# 10. Specifications

<b>Electrical</b>	
Input: Nominal input voltage: Acceptable input voltage: Nominal input frequency: Overcurrent protection: Input connector:	120 VAC 100 - 140 VAC 50/60 Hz 15 A resettable circuit breaker 15 foot (4.5 m) attached NEMA 5-15 line cord
Output: Output connectors:	8 NEMA 5-15 receptacles
Maximum total current draw:	15 A
<b>Physical</b>	
Size (H x W x D): (without mounting brackets) (with mounting brackets)	2.125 x 17 x 6.5 inches (5.4 x 43.2 x 16.5cm) 1.875 x 19 x 6.5 inches (4.8 x 48.3 x 16.5cm)
Weight:	6.5 lb. (3.0 kg)
Shipping weight:	10.0 lb. (4.5 kg)
<b>Environmental</b>	
Operating elevation (storage):	0 to 3,000 m (0 to 15,000 m)
Operating temperature (storage):	0 to 40 °C (0 to 45 °C)
<b>Approvals</b>	
EMC verification:	
Electromagnetic immunity:	

**Table 3: MasterSwitch™ Specifications**

# *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. 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 APC or an APC service center. Products must be returned to APC or an APC service center 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 which 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, EXPRESS 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.

# *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, and infusion pumps as well as any other devices designated as critical by the U.S. FDA.

Hospital grade wiring devices and leakage current may be ordered as options on many APC UPS systems. APC does not claim that units with this modification are certified or listed as Hospital Grade by APC or any other organization. Therefore these units do not meet the requirements for use in direct patient care.



## AMERICAN POWER CONVERSION

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1-800-800-4272

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Germany: 0130 818907

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