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# Smart<sup>MMAC</sup> SWITCH

## 7C04 Workgroup SmartSWITCH™ Chassis User's Guide

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## DOC NOTICE

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取扱説明書に従って正しい取り扱いをして下さい。

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# CHAPTER 1

## INTRODUCTION

Welcome to Cabletron Systems *7C04 Workgroup SmartSwitch Chassis User's Guide*. This manual describes the physical characteristics, specifications, and capabilities of the 7C04 Workgroup SmartSwitch Chassis.

### 1.1 USING THIS MANUAL

Chapter 1, **Introduction**, discusses the features of the 7C04 Chassis.

Chapter 2, **Installation**, explains the 7C04 Chassis' power supply module, and how to install that power supply module.

Chapter 3, **Troubleshooting**, explains the LANVIEW<sup>®</sup> LEDs of the 7C04 Chassis' power supply module.

Chapter 4, **Technical Specifications**, explains the location requirements and operating specifications of the 7C04 Chassis.

### 1.2 USING THE SMARTSWITCH MANUAL SET

Each SmartSwitch interface module that can be inserted in the 7C04 Chassis is shipped with a module user's guide. For example, the *7E03-24 Ethernet SmartSwitch Interface Module User's Guide* explains the physical characteristics, specifications, and installation procedures of the 7E03-24 Module.

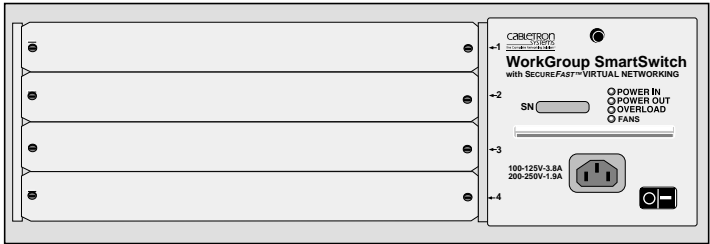
The management module of the 7C04 Chassis is described in the *7X00 SmartSwitch Controller Module User's Guide*. The user's guide explains the 7X00 Module's physical characteristics, installation procedures, and how to locally manage the SmartSwitch interface modules in the chassis.

In addition, any local management information that is specific to a particular SmartSwitch interface module, is described in a module specific local management appendix. For example, the *7E03-24 Ethernet SmartSwitch Interface Module Local Management Appendix* explains information that is specific to local management of the 7E03-24 Module only.

### 1.3 CHASSIS OVERVIEW

The 7C04 Chassis (Figure 1-1) is a rack-mountable, multi-media, switching center. The chassis is a stand-alone device that features a removable power supply. Two fans within the power supply provide system cooling. LANVIEW LEDs on the power supply indicate at-a-glance device status.

The chassis has four module slots. The slots are numbered from top to bottom; the top slot is number one the bottom slot is number four. The 7X00 Module must be inserted in the chassis' top slot (slot one). The other three slots can support nearly any combination of Ethernet, Token Ring, FDDI, and ATM SmartSwitch interface modules<sup>1</sup>.



**Figure 1-1. 7C04 Workgroup SmartSwitch Chassis**

Data from each SmartSwitch interface module (regardless of front panel technology) is relayed along the SmartSwitch Bus on the 7C04 Chassis' backplane to the 7X00 Module. All switching functions are performed by hardware components on the 7X00 Module. No external bridges or routers are required to transfer data from one point to another within the chassis.

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<sup>1</sup> A 7E03-24 Module can not be inserted in the bottom slot (slot four) of a 7C04 Chassis.

### 1.3.1 7X00 SmartSwitch Controller Module

The 7X00 SmartSwitch Controller Module is the only processing and management element in the 7C04 Chassis. The 7X00 Module has no front panel data ports. All data enters and exits the 7X00 Module via the SmartSwitch Bus on the chassis' backplane. The 7X00 Module directs incoming data to its intended destination by using a group of Application Specific Integrated Circuits (ASICs) collectively known as the SmartSwitch Core. All packet switching functions are performed in the module's SmartSwitch Core. The SmartSwitch Core is capable of switching up to 750,000 frames per second. The firmware on a 7X00 Module determines the SmartSwitch Core's operating mode (traditional switch or SecureFast Packet Switch). The module's CPU (an i960 microprocessor<sup>®</sup>) is used to collect management data of the SmartSwitch system (including the status of the chassis' power supply and fans).

**Note:** *The 7X00 Module is not hot-swappable. Because the 7X00 Module is the only processing/management module in the 7C04 Chassis, removing the 7X00 Module will sever communications to all SmartSwitch interface modules in the 7C04 Chassis.*

### 1.3.2 SmartSwitch interface modules

SmartSwitch interface modules in a 7C04 Chassis communicate freely with each other via the chassis' SmartSwitch Bus and 7X00 SmartSwitch Controller Module. SmartSwitch interface modules can be installed or removed from the 7C04 Chassis at any time without impacting the rest of the network.



### **1.3.3 Operations**

Data entering through a front panel of a SmartSwitch interface module in the 7C04 Chassis is converted by the module's hardware into a common "canonical" format. Canonical frames are forwarded along the chassis' SmartSwitch Bus to the 7X00 Module in slot one. The configuration of the 7X00 Module (either traditional switch or SecureFast Packet Switch) determines the manner in which frames are filtered or forwarded.

#### **Traditional Switch**

When operating as a traditional switch (a store-and-forward switch using the 802.1d Spanning Tree protocol), the 7X00 Module's SmartSwitch Core searches for the frame's destination address in the module's connection table.

If the frame's destination address is found in the connection table, the frame is forwarded to that specific destination via the chassis' SmartSwitch Bus.

If the frame's destination address is not found in the connection table, the frame is flooded to all of the SmartSwitch interface modules in the chassis via the chassis' SmartSwitch Bus. The frame's destination address is added to the module's connection table.

#### **SecureFast Packet Switch**

When operating as a SecureFast Packet Switch, the 7X00 Module's SmartSwitch Core searches for the frame's destination address-source address (DA-SA) pair and receive port in the module's connection table.

If the frame's entry is found in the connection table, the frame is forwarded to a specific destination via the chassis' SmartSwitch Bus.

If the frame's entry is not found in the connection table, a request is sent to the system's Virtual Network Services (VNS). The VNS checks its virtual routing tables and policy sections. If the frame's information appears in the VNS' virtual routing tables and the VNS' policy section contains an entry that verifies that the frame's source and the frame's destination are a valid combination, then the frame is forwarded to its destination via the chassis' SmartSwitch Bus, and a corresponding entry is written to the receiving module's connection table. Otherwise, the frame is dropped.

## **1.4 SITE GUIDELINES**

When choosing a location for the 7C04 Chassis, the following guidelines must be followed to ensure satisfactory network performance.

- An unrestricted free surface area of 43.2 cm. (17 in.) wide, 34.8 cm. (13.7 in.) deep and 16 cm. (6.3 in.) high must be available for the enclosure.
- If the chassis is to be placed on a shelf, the shelf must be capable of supporting 13.5 kg. (30 pounds) of static weight.
- If the chassis is to be rack mounted, care must be taken to ensure that the rack used will support the chassis and that the rack will remain stable with the chassis inserted. In order to allow proper cooling within the rack, there must be 7.6 cm. (3 in.) of clearance above the unit and 5 cm. (2 in.) of clearance on either side of the chassis in addition to the unrestricted free surface area previously detailed.
- A standard three-prong power receptacle must be located within 21.13 meters (7 feet) of the chassis.
- The temperature of the location surrounding the chassis must be maintained between 5° and 40°C (41° to 104°F). Temperature changes of greater than 10°C (18°F) per hour must not occur.

## 1.5 RELATED MANUALS

The following manuals supplement the procedures and other technical data provided in this manual. The procedures will be referenced where appropriate, but will not be repeated.

*Cabletron Systems SmartSwitch Interface Module User's Guides (module specific).*

*Cabletron Systems SmartSwitch Interface Module Local Management Appendices (module specific).*

*Cabletron Systems 7X00 SmartSwitch Controller Module User's Guide*

## 1.6 GETTING HELP

If you need additional support with the 7C04 Chassis, or if you have any questions, comments or suggestions concerning this manual, contact Cabletron Systems Technical Support:

By phone:	(603) 332-9400
By fax:	(603) 337-3075
By World Wide Web:	<a href="http://www.cabletron.com">http://www.cabletron.com</a>
By CompuServe®:	GO CTRON from any ! prompt
By Internet mail:	<a href="mailto:support@ctron.com">support@ctron.com</a>
By BBS:	(603) 335-3358
By mail:	Cabletron Systems, Inc. P.O. Box 5005 Rochester, NH 03886-5005

## **CHAPTER 2**

### **INSTALLATION**

The 7C04 Chassis can be used as a stand-alone chassis or rack mounted in a standard 19-inch equipment rack provided there is sufficient space surrounding the chassis for cooling. This chapter provides detailed information for unpacking and setting up the chassis, as well as installing and removing the chassis' power supply module. You will not need any special tools or equipment; however, the Site Guidelines detailed in Chapter 1 must be followed.

#### **2.1 UNPACKING THE 7C04 CHASSIS**

Unpack the 7C04 Chassis by using the following steps:

1. Carefully remove the chassis from the shipping box. (Save the shipping box and packing materials in the event the chassis must be reshipped.)
2. Slide the two foam end caps off the chassis, and remove the plastic bag. Set the chassis aside.
3. Remove the accessory package and verify that it contains two mounting brackets.
4. Examine the chassis (and brackets) and check for damage. If damage exists, contact Cabletron Systems Technical Support.

## **2.2 INSTALLING THE 7C04 CHASSIS IN AN EQUIPMENT RACK**

The following section details the process of attaching mounting brackets to the 7C04 Chassis, and installing the chassis in a standard 19-inch equipment rack.

If you are not installing the chassis in an equipment rack, skip to Section 2.3.

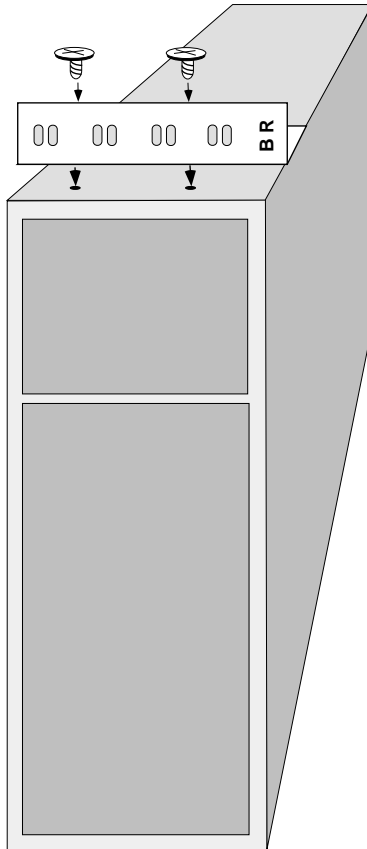
### **2.2.1 Attaching Mounting Brackets**

An accessory package containing two mounting brackets is shipped with each 7C04 Chassis. The bracket that attaches to the left side of the chassis contains the letters “BL” on the bottom front of the bracket. The bracket that attaches to the right side of the chassis contains the letters “BR” on the bottom front of the bracket.

To attach mounting brackets to the chassis, use the following steps and refer to Figure 2-1:

1. Stand the chassis on its left side with the front of the chassis facing you.
2. Use a phillips-head screwdriver to remove the two screws closest to the front of the chassis. Set the screws aside.
3. Align the two round holes of the right mounting bracket with the holes (from which you removed the screws) on the right side of the chassis.
4. Insert the screws that you removed in step 2 into the holes on the bracket and chassis. Tighten the screws until the mounting bracket is securely attached to the chassis.
5. Stand the chassis on its right side with the front facing you.
6. Use a phillips-head screwdriver to remove the two screws closest to the front of the chassis. Set the screws aside.

7. Align the two round holes of the left mounting bracket with the holes (from which you removed the screws) on the left side of the chassis.
8. Insert the screws that you removed in step 6 into the holes on the bracket and chassis. Tighten the screws until the mounting bracket is securely attached to the chassis.



**Figure 2-1. Attaching the Right Mounting Bracket to the 7C04 Chassis**

## 2.2.2 Mounting the 7C04 Chassis

To mount the 7C04 Chassis in a standard 19-inch equipment rack, (Figure 2-2) use the following steps:

1. Slide the chassis into the equipment rack.
2. Align the holes on the chassis' mounting brackets with the holes on the equipment rack.
3. Insert screws (provided with the equipment rack) into the desired holes of the mounting brackets.
4. Use a screwdriver to tighten each screw until the chassis is secured to the equipment rack.

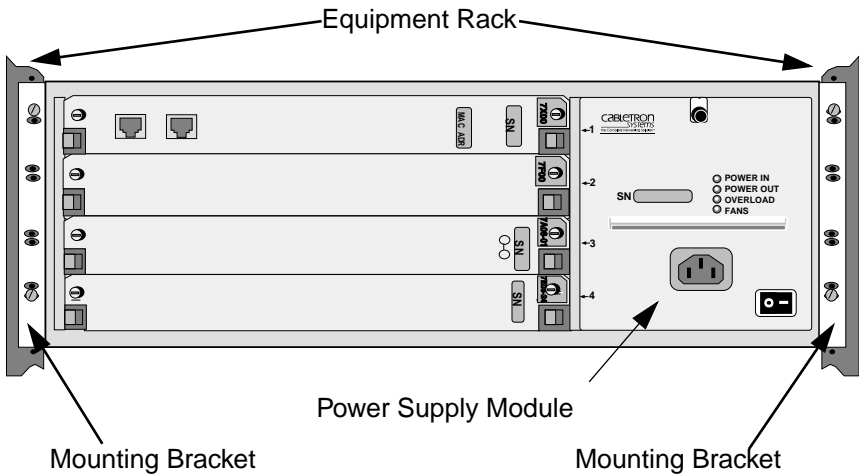


Figure 2-2. A 7C04 Chassis mounted in an equipment rack

## **2.3 THE 7C04 CHASSIS POWER SUPPLY MODULE**

The 7C04 Chassis is equipped with a removable power supply module. The power supply module which is located in the right section of the chassis (Figure 2-2) operates on either 120 volts or 240 volts (AC) and automatically senses input power. The modular nature of the chassis' power supply allows it to be easily removed and/or replaced.

### **2.3.1 Unpacking the Power Supply Module**

Unpack the power supply module by using the following steps:

1. Remove the power supply module from the shipping box.  
(Save the shipping box and packing materials in the event the power supply module must be reshipped.)
2. Slide the two foam end caps off the unit and remove the plastic bag.
3. Examine the power supply module and check for damage. If damage exists, DO NOT install the power supply module; contact Cabletron Systems Technical Support. Otherwise, install the power supply module (see Section 2.3.2).

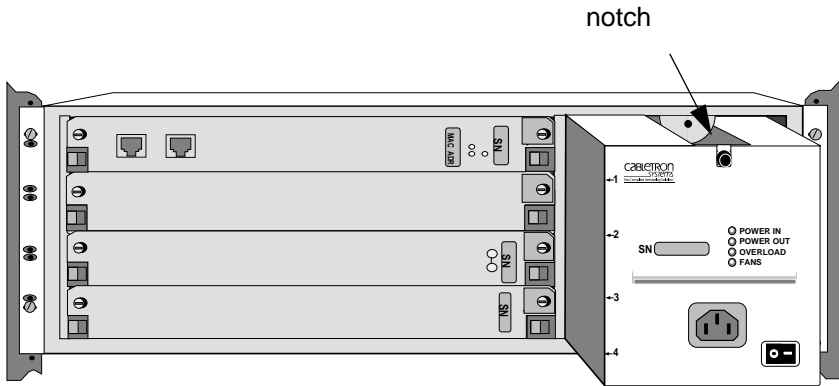
### **2.3.2 Installing the Power Supply Module**

To install a power supply module in the 7C04 Chassis, use the following steps and refer to Figure 2-3.

1. Hold the power supply module by placing one hand on the handle located on the front panel and using the other hand to support the body of the module.
2. Make sure you hold the power supply module in the upright position. A recessed notch running from the front panel to the back of the module is present only on the top of the module.



3. Align the notch on the top of the power supply module with the semi-circular tab in the top center of the power supply module cavity of the chassis.



**Figure 2-3. Installing the power supply module into a 7C04 Chassis**

4. Slide the power supply module into the chassis until the power supply module connects to the chassis' backplane and the module's front panel is flush with the front of the chassis.

**Warning:** Do not force the power supply module into place. If you encounter significant resistance before the front panel is flush with the front of the chassis, remove the power supply module and reinsert.

5. Tighten (turn clockwise) the knurled knob on the power supply module's front panel.

### 2.3.3 Powering up the Power Supply Module

**Note:** *Prior to powering up the power supply module, we recommend that you install the 7X00 Module and SmartSwitch interface modules into the chassis. Refer to the applicable module's user's guide for installation instructions.*

To power up the chassis' power supply module, refer to Figure 2-4 and proceed as follows:

1. Plug a power cord into the power receptacle located on the front panel of the installed power supply module.
2. Plug the power cord into an electrical outlet.
3. Locate the power switch on the lower portion of the power supply module's front panel.  
The power switch has two settings: O for off, - for on.
4. Press the power switch to the on (-) position.
5. Make sure that the POWER IN LED is green. The power supply module's LEDs are detailed in Chapter 3, Troubleshooting.
6. Make sure that the power supply's fans are operating correctly (FANS LED will be green).
7. Make sure the PWR LEDs on the 7X00 Module is green.

The modules in the chassis are now ready to process data.

If you experience any problems during the installation of the power supply module, contact Cabletron Systems Technical Support for assistance.

### 2.3.4 Removing the Power Supply Module

To remove the power supply module from the chassis, refer to Figure 2-4 and proceed as follows:

1. Press the power supply's power switch to the off position (O).
2. Unplug the power cord from the power supply and from the electrical outlet.
3. Locate the knurled knob at the top center of the power supply module.
4. Loosen the knurled knob by turning it counterclockwise.
5. Grasp the handle located on the front panel of the power supply and pull the power supply out of the chassis.

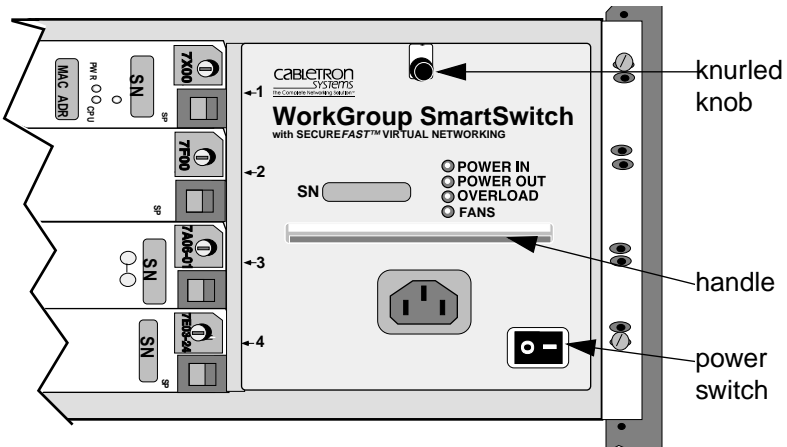


Figure 2-4. Power Supply Module

# CHAPTER 3

## TROUBLESHOOTING

The front panel of the power supply module of the 7C04 Chassis (Figure 3-1) contains four LANVIEW LEDs to assist you in troubleshooting the power supply. The color of each LED and the course of action to pursue are detailed in Table 3-1 through Table 3-4.

**Note:** For information on the LEDs of the individual SmartSwitch interface modules, refer to each module's user's guide.

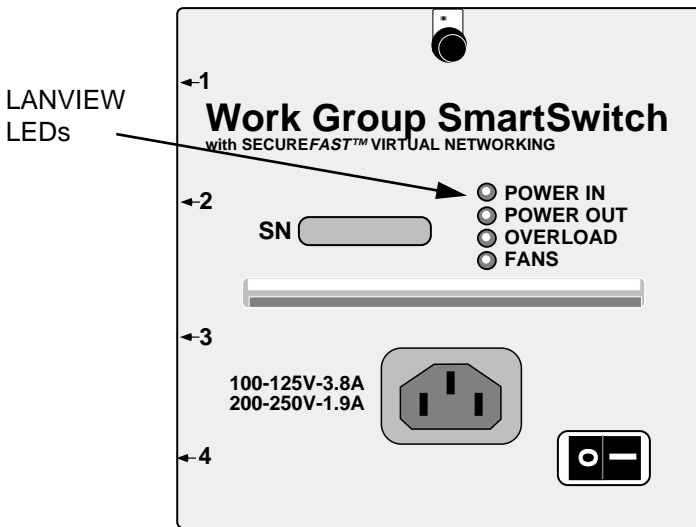


Figure 3-1. Power Supply Module (front panel)

**Table 3-1. POWER IN LED**

<b>LED Color</b>	<b>Indicates</b>	<b>Action</b>
Green	The power supply's input power is acceptable. Normal Operation.	No action necessary.
Red	The power supply's input power is not sufficient.	Inspect the power supply's power outlet, the power cord, and the power cord's connection to the electrical outlet.
Off	The power supply has no input power.	Make sure the power supply's power switch is in the On (-) position. Make sure the power supply's power cord is securely plugged into the power supply and securely plugged into an electrical outlet. Also make sure the electrical outlet is operating properly.

**Table 3-2. POWER OUT LED**

<b>LED Color</b>	<b>Indicates</b>	<b>Action</b>
Green	The power supply's output (DC) power is sufficient. Normal Operation	No action necessary.
Red	The power supply's output power is not sufficient.	Contact Cabletron Technical Support.

**Table 3-3. OVERLOAD LED**

<b>LED Color</b>	<b>Indicates</b>	<b>Action</b>
Green	Normal operation	No action necessary.
Red	The modules within the chassis are attempting to draw an amount of DC power that exceeds the power supply's maximum DC power output.	Contact Cabletron Technical Support.

**Table 3-4. FAN LED**

<b>LED Color</b>	<b>Indicates</b>	<b>Action</b>
Green	Normal operation	No action necessary.
Red	One (or both) of the power supply's fans has failed.	Contact Cabletron Technical Support.

# CHAPTER 4

## TECHNICAL SPECIFICATIONS

This chapter includes the technical specifications for Cabletron Systems 7C04 Chassis. Cabletron Systems reserves the right to change these specifications at any time without notice.

### 4.1 SAFETY

It is the responsibility of the person who sells the chassis to ensure that the total system meets allowed limits of conducted and radiated emissions.

The 7C04 Chassis meets the requirements of:

- UL1950
- CSA C22.2 No. 950
- EN60950
- IEC 950

### 4.2 EMI

The 7C04 Chassis meets the requirements of:

- EN55022 Class A
- FCC Part 15 Class A
- VCCI Class I

### 4.3 IMMUNITY

The 7C04 Chassis meets the requirements of EN50082-1 including:

- IEC 801-2 ESD
- IEC 803-1 radiated immunity
- IEC 801-4 EFT/B.

## 4.4 SERVICE

MTBF:	>200,000 hours
MTTR:	<0.5 hour

## 4.5 POWER

AC Input:	100 - 125 volts, 3.8 amps
	200 - 250 volts, 1.9 amps
	50/60 Hz

DC Output:	5.1 volts
	12 volts

Fusing:	The input of the power supply contains a 250 volt (AC) minimum fuse to protect against internal damage. This fuse is not user servicable.
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## 4.6 PHYSICAL

### 4.6.1 Dimensions

34.8 D x 16.0 H x 43.2 W centimeters  
(13.7 D x 6.3 H x 17.0 W inches)

### 4.6.2 Weight

Unit:	<13.5 kgs. ( <30 lbs.)
Shipping:	<13.5 kgs. ( <30 lbs.)



## **4.7 ENVIRONMENTAL**

Operating Temperature: +5° to +40° C (+41° to +104° F)

Storage Temperature: -30° to +90° C (-22° to +194° F)

Relative Humidity: 5 to 95% (non-condensing)