7F06-02 FDDI SmartSwitch™ Interface Module User's Guide

CABLETRON
SYSTEMS
The Complete Networking Solution™

Only qualified personnel should perform installation procedures.

NOTICE

FCC NOTICE

Printed on   Recycled Paper

DOC NOTICE

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.

VCCI NOTICE

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CABLETRON SYSTEMS, INC. PROGRAM LICENSE AGREEMENT

IMPORTANT: Before utilizing this product, carefully read this License Agreement.

This document is an agreement between you, the end user, and Cabletron Systems, Inc. ("Cabletron") that sets forth your rights and obligations with respect to the Cabletron software program (the "Program") contained in this package. The Program may be contained in firmware, chips or other media. BY UTILIZING THE ENCLOSED PRODUCT, YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT, WHICH INCLUDES THE LICENSE AND THE LIMITATION OF WARRANTY AND DISCLAIMER OF LIABILITY. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY RETURN THE UNUSED PRODUCT TO THE PLACE OF PURCHASE FOR A FULL REFUND.

CABLETRON SOFTWARE PROGRAM LICENSE

1. <u>LICENSE</u>. You have the right to use only the one (1) copy of the Program provided in this package subject to the terms and conditions of this License Agreement.

    You may not copy, reproduce or transmit any part of the Program except as permitted by the Copyright Act of the United States or as authorized in writing by Cabletron.

2. <u>OTHER RESTRICTIONS</u>. You may not reverse engineer, decompile, or disassemble the Program.

3. <u>APPLICABLE LAW</u>. This License Agreement shall be interpreted and governed under the laws and in the state and federal courts of New Hampshire. You accept the personal jurisdiction and venue of the New Hampshire courts.

EXCLUSION OF WARRANTY AND DISCLAIMER OF LIABILITY

1. <u>EXCLUSION OF WARRANTY</u>.   Except as may be specifically provided by Cabletron in writing, Cabletron makes no warranty, expressed or implied, concerning the Program (including its documentation and media).

    CABLETRON DISCLAIMS ALL WARRANTIES, OTHER THAN THOSE SUPPLIED TO YOU BY CABLETRON IN WRITING, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PROGRAM, THE ACCOMPANYING WRITTEN MATERIALS, AND ANY ACCOMPANYING HARDWARE.

2. <u>NO LIABILITY FOR CONSEQUENTIAL DAMAGES</u>. IN NO EVENT SHALL CABLETRON OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS, PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR RELIANCE DAMAGES, OR OTHER LOSS) ARISING OUT OF THE USE OR INABILITY TO USE THIS CABLETRON PRODUCT, EVEN IF CABLETRON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, OR ON THE DURATION OR LIMITATION OF IMPLIED WARRANTIES, IN SOME INSTANCES THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

UNITED STATES GOVERNMENT RESTRICTED RIGHTS

The enclosed product (a) was developed solely at private expense; (b) contains "restricted computer software" submitted with restricted rights in accordance with Section 52227-19 (a) through (d) of the Commercial Computer Software - Restricted Rights Clause and its successors, and (c) in all respects is proprietary data belonging to Cabletron and/or its suppliers.

For Department of Defense units, the product is licensed with "Restricted Rights" as defined in the DoD Supplement to the Federal Acquisition Regulations, Section 52.227-7013 (c) (1) (ii) and its successors, and use, duplication, disclosure by the Government is subject to restrictions as set forth in subparagraph (c) (1) (ii) of the Rights in Technical Data and Computer Software clause at 252.227-7013. Cabletron Systems, Inc., 35 Industrial Way, Rochester, New Hampshire 03867-0505.

DECLARATION OF CONFORMITY

Application of Council Directive(s):	**89/336/EEC** **73/23/EEC**
Manufacturer's Name:	**Cabletron Systems, Inc.**
Manufacturer's Address:	**35 Industrial Way** **PO Box 5005** **Rochester, NH 03867**
European Representative Name:	**Mr. J. Solari**
European Representative Address:	**Cabletron Systems Limited** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG13 2PZ, England**
Conformance to Directive(s)/Product Standards:	**EC Directive 89/336/EEC** **EC Directive 73/23/EEC** **EN 55022** **EN 50082-1** **EN 60950**
Equipment Type/Environment:	**Networking Equipment, for use in a Commercial or Light Industrial Environment.**

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer	Legal Representative in Europe
Mr. Ronald Fotino	Mr. J. Solari
Full Name	Full Name
Principal Compliance Engineer	Managing Director - E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

CONTENTS

CHAPTER 5   TECHNICAL SPECIFICATIONS

CHAPTER 1

INTRODUCTION

Welcome to Cabletron Systems *7F06-02 FDDI SmartSwitch Interface Module User Guide*. This guide is a simple reference for installing and using the 7F06-02 Module. Before installing this module, you should carefully read through this manual to gain a full understanding of its capabilities.

The 7F06-02 Module is a two-port FDDI module. This module connects to a network and the 7X00 SmartSwitch™ Control Module in the 7C03, 7C04 or 7C04-R MMAC SmartSwitch via a SmartSwitch bus.

1.1   USING THIS MANUAL

Chapter 1, **Introduction**, discusses the capabilities and special features of Cabletron Systems 7F06-02 Module. This chapter also includes a list of related manuals.

Chapter 2, **Network Requirements**, contains a list of available FPIMs and the network requirements that should be considered before installing the 7F06-02 Module.

Chapter 3, **Installation/Removal**, contains instructions for installing and removing the 7F06-02 in the 7C03 MMAC SmartSwitch, the 7C04 Workgroup SmartSwitch or the 7C04-R Workgroup SmartSwitch.

Chapter 4, **Troubleshooting**, contains instructions for using LANVIEW® (Cabletron Systems built-in diagnostic and status monitoring system).

Chapter 5, **Technical Specifications**, provides detailed information about the physical characteristics of the 7F06-02 Module.

1.2   THE 7F06-02 MODULE

The 7F06-02 Module, shown in Figure 1-1, provides two fiber optic ports via front panel FPIM modules.

1.2.1   Cable Type and FPIMs

The 7F06-02 module has two front panel connectors that interface to the 7X00 SmartSwitch Module through the chassis backplane. The front panel connections are standard Cabletron FPIMs. There are two FPIMs for each channel. These FPIMs allow the use of single mode or multimode fiber cable with MIC or SC type connectors and twisted pair cable, either shielded or unshielded.
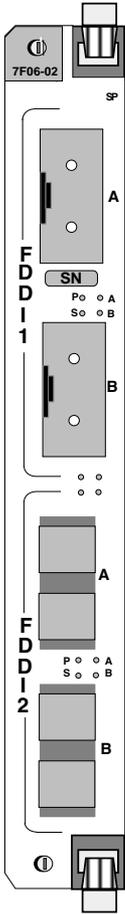
Figure 1-1   7F06-02 Module

1.2.2   7C03 MMAC SmartSwitch, the 7C04 Workgroup SmartSwitch and the 7C04-R Workgroup SmartSwitch

The 7F06-02 Module is designed to be installed in the 7C03 MMAC SmartSwitch, the 7C04 Workgroup SmartSwitch or the 7C04-R Workgroup SmartSwitch.

The modular design of the 7C03 MMAC SmartSwitch allows other modules that support Ethernet, Fast Ethernet, ATM, FDDI, or Token Ring to be used with the 7F06-02 Module. These modules provide the capability to share data without the use of external bridges or routers.

The 7C03 MMAC SmartSwitch is a unique module that can be installed in an MMAC Series chassis. The 7C04 Workgroup SmartSwitch and the 7C04-R Workgroup SmartSwitch are stand-alone chassis that provide the same functions.

1.3   FEATURES

The 7F06-02 Module provides two FDDI ports via front panel FPIMs. The 7F06-02 Module includes the following features:

1.3.1   FPIMs

The front panel connections are standard Cabletron FPIMs. These FPIMs allow the use of single mode or multimode fiber cable with MIC or SC type connectors.

1.3.2   LANVIEW LEDs

The 7F06-02 uses LANVIEW, Cabletron Systems built-in visual diagnostic and status monitoring system. With LANVIEW LEDs, you can quickly identify, at a glance, the status of the device connected to a port on the 7F06-02 Module.

1.3.3   Connectivity

The 7F06-02 Module has one backplane connection and two sets of A/B front panel FPIM connections. The backplane connection provides power to the 7F06-02 Module and a channel for communication with the 7X00 SmartSwitch Control Module. The two front panel FPIMs provide FDDI connections, allowing the use of single mode or multimode fiber cable with MIC or SC type connectors.

1.4   RELATED MANUALS

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

7X00 SmartSwitch Control Module User's Guide

7F06-02 Local Management Appendix

7C03 MMAC SmartSwitch Installation Guide

7C04 Workgroup SmartSwitch Installation Guide

7C04-R Workgroup SmartSwitch Installation Guide

1.5 GETTING HELP

If you need additional support related to this device, or if you have any questions, comments, or suggestions concerning this manual, contact the Cabletron Systems Global Call Center:

Phone	(603) 332-9400
Internet mail	support@ctron.com
FTP	ctron.com (134.141.197.25)
Login	*anonymous*
Password	*your email address*
BBS	(603) 335-3358
Modem setting	8N1: 8 data bits, No parity, 1 stop bit
For additional information about Cabletron Systems or our products, visit our World Wide Web site: **http://www.cabletron.com/** For technical support, select: **Service and Support.**	

Before calling the Cabletron Systems Global Call Center, have the following information ready:

- Your Cabletron Systems service contract number

- A description of the failure

- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)

- The serial and revision numbers of all involved Cabletron Systems products in the network

- A description of your network environment (layout, cable type, etc.)

- Network load and frame size at the time of trouble (if known)

- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)

- Any previous Return Material Authorization (RMA) numbers

CHAPTER 2

NETWORK REQUIREMENTS

Before installing Cabletron Systems 7F06-02 Module, review the network requirements outlined in this chapter. All requirements included in this chapter should be met to ensure satisfactory performance of the 7F06-02 Module. Failure to do so may result in unsatisfactory network performance.

2.1   FPIM MODULE SPECIFICATIONS

This module uses Fiber Port Interface Modules (FPIM) to provide front panel cable connections. The FPIMs are user-installable. Refer to Section 3.2, Installing FPIMs.

2.1.1   FPIM-00 and FPIM-01

The FPIM-00 and FPIM-01 provide a multimode fiber connection. The FPIM-00 uses a MIC style connector and the FPIM-01 uses an SC type connector. The specifications for both devices are listed in Table 2-1, while the transmitter power parameters are provided in Table 2-2.

Table 2-1   FPIM-00 and FPIM-01 Specifications

Parameter	Typical Value	Worst Case	Worst Case Budget	Typical Budget
Receive Sensitivity	-30.5 dBm	-28.0 dBm	—	—
Peak Input Power	-7.6 dBm	-8.2 dBm	—	—

Table 2-2   Transmitter Power Parameters

Parameter	Typical Value	Worst Case	Worst Case Budget	Typical Budget
50/125 μm fiber	-13.0 dBm	-15.0 dBm	13.0 dB	17.5 dB
62.5/125 μm fiber	-10.0 dBm	-12.0 dBm	16.0 dB	20.5 dB
100/140 μm fiber	-7.0 dBm	-9.0 dBm	19.0 dB	23.5 dB
Error Rate	Better than 10^{-10}			

The link distance is up to 2 kilometers on the multimode fiber optic cable as specified by ANSI MMF-PMD.

2.1.2   FPIM-02 and FPIM-04

The FPIM-02 has an RJ-45 connector supporting an Unshielded Twisted Pair (UTP) connection. The FPIM-04 has an RJ-45 connector supporting a Shielded Twisted Pair (STP) connection. The pinouts for both are listed in Table 2-3.

Table 2-3   FPIM-02 and FPIM-04 Pinouts

Pin Number	Represents	Pin Number	Represents
1	Transmit+	5	NA
2	Transmit-	6	NA
3	NA	7	Receive+
4	NA	8	Receive-

The link distance is up to 100 meters on unshielded twisted pair cable as specified by ANSI TP-PMD.

2.1.3   FPIM-05 and FPIM-07

The FPIM-05 and FPIM-07 provide a single-mode fiber connection. The FPIM-05 uses a MIC style connector and the FPIM-07 uses an SC type connector. The specifications for both devices are listed in Table 2-4.

Table 2-4   FPIM-05 and FPIM-07 Specifications

Parameter	Typical	Minimum	Maximum
Transmitter Peak Wave Length	1300 nm	1270 nm	1330 nm
Spectral Width	60 nm	-	100 nm
Rise Time	3.0 nsec	2.7 nsec	5.0 nsec
Fall Time	2.5 nsec	2.2 nsec	5.0 nsec
Duty Cycle	50.1%	49.6%	50.7%
Bit Error Rate	Better than 10^{-10}		

The link distance is up to 40 kilometers (max) and 25 kilometers (typical) on single-mode, fiber-optic cable as specified by ANSI SMF-PMD.

CHAPTER 3

INSTALLATION/REMOVAL

This chapter contains instructions for unpacking and installing the 7F06-2 Module in the:

*   7C03 MMAC SmartSwitch

*   7C04 Workgroup SmartSwitch

*   7C04-R Workgroup SmartSwitch

Also included in the chapter are instructions for installing the front panel FPIMs.

3.1   UNPACKING THE 7F06-02 MODULE

Unpack the 7F06-02 Module by using the following steps:

Before unpacking the 7F06-02 module, attach the antistatic wrist strap included with the SmartSwitch or SmartSwitch module by following the instructions printed on the package.

1. Carefully remove the module from the shipping box. (Save the box and packing materials in the event the module must be reshipped.)

2. Remove the module from the plastic bag. Observe all precautions to prevent damage from Electrostatic Discharge (ESD).

3. Carefully examine the module and check for damage. If damage exists, DO NOT install the module; contact Cabletron Systems Global Call Center.

3.2   INSTALLING FPIMS

⚠️ *Before installing the 7F06-02 module, attach the antistatic wrist strap included with the SmartSwitch or SmartSwitch module by following the instructions printed on the package.*

The 7F06-02 module is shipped without FPIMs. To install an FPIM, follow the procedure below:

1. Remove the module if it is installed in the 7C03 MMAC SmartSwitch chassis by reversing the procedure in Section 3.3.

2. Remove the blank front cover over the FPIM slot.

3. Install the FPIM as shown in Figure 3-1. Ensure that the rear connector is seated firmly before tightening the two mounting screws.
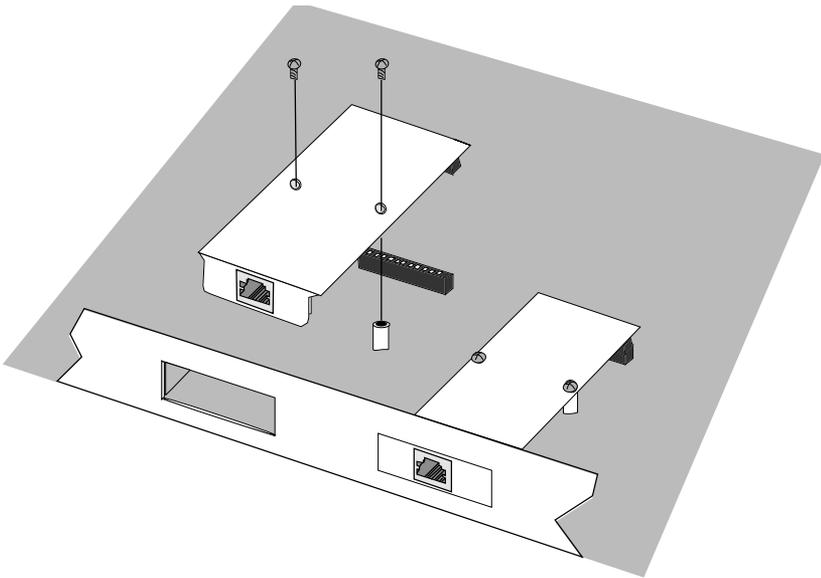
Figure 3-1   Installing an FPIM

3.3   INSTALLING/REMOVING THE 7F06-02 MODULE

The following procedure details the installation and removal procedure
for the 7F06-02 module.

3.3.1   Installing in the 7C03 SmartSwitch

The 7F06-02 Module is installed in the 7C03 MMAC SmartSwitch
using the following steps and referring to Figure 3-2.

*Note: The left-most slot in the 7C03 MMAC SmartSwitch is reserved for
the 7X00 SmartSwitch Module.*

*Note: Before installing the 7F06-02 module, attach the antistatic wrist
strap included with the SmartSwitch or SmartSwitch module by
following the instructions printed on the package.*

1.   As a precaution, power down the MMAC 8 before beginning the
installation or removal of any modules. At the very minimum, the
7C03 must be pulled to disconnect it from the power source. Damage
to modules may result if this procedure is not followed.

2.   Remove the blank panel covering the slot in which the module will be
installed. All other slots must remain covered to ensure proper airflow
and cooling.

3.   Install the module by sliding it into slots as shown in Figure 3-2.
Ensure that the printed circuit board (PCB) is between the card guides,
slides in straight, and engages the backplane connectors properly.

4.   Using a slotted screwdriver, tighten the top and bottom screws.

Card
Guides
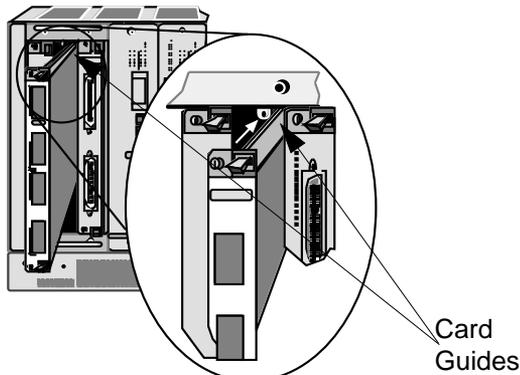
**Figure 3-2   Installing the 7F06-02 Module in the
7C03 MMAC SmartSwitch**

3.3.2   Removing from the 7C03 SmartSwitch

The 7F06-02 Module inserted in the 7C03 MMAC SmartSwitch can be removed upon proper removal of power. Follow the steps below and refer to Figure 3-3 to remove the module.

Note: *Before removing the 7F06-02 module, attach the antistatic wrist strap included with the SmartSwitch or SmartSwitch module by following the instructions printed on the package.*

1. As a precaution, power down the MMAC 8 before beginning the installation or removal of any modules. At the very minimum, the 7C03 must be pulled to disconnect it from the power source. Damage to modules may result if this procedure is not followed.

2. Use a slotted screwdriver to loosen the two screws that secure the module to the chassis.

3. Locate the two ejector tabs on the module (to the right of the screws on the top and bottom of the module).

4. Simultaneously press down on the bottom ejector tab and up on the top ejector tab until the module ejects from the backplane.

5. Grasp both ejector tabs and carefully slide the module out of the chassis.
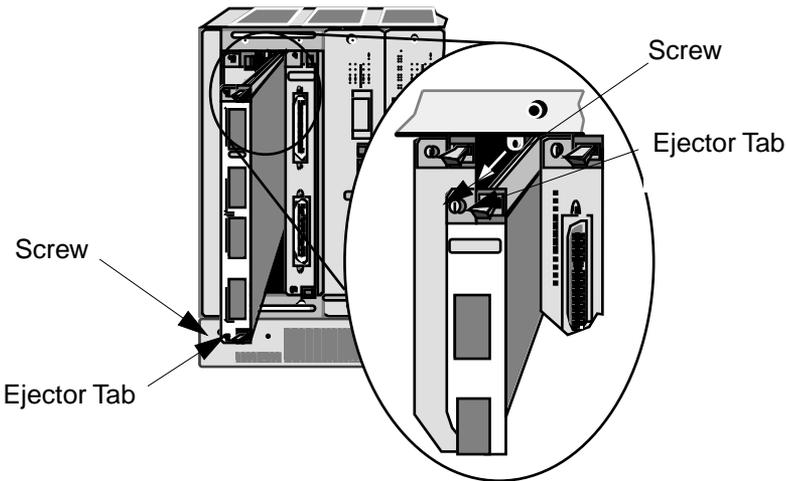
Figure 3-3   Removing the 7F06-02 Module from the 7C03 MMAC SmartSwitch

3.3.3   Installing in the 7C04 or 7C04-R Workgroup SmartSwitch

The 7F06-02 Module is installed in the 7C04 or 7C04-R Workgroup SmartSwitch using the following steps and referring to Figures 3-4 and 3-5.

Notes: *The top slot in the 7C04 Workgroup SmartSwitch is reserved for the 7X00 SmartSwitch Module.*

   The bottom slot in the 7C04-R Workgroup SmartSwitch is reserved for the 7X00 SmartSwitch Module.

   Therefore, before installing the 7F06-02 module, attach the wrist strap included with the SmartSwitch or SmartSwitch module by following the instructions printed on the package.

1. As a precaution, power down the MMAC 8 before beginning the installation or removal of any modules. At the very minimum, the 7C04 or 7C04-R must be pulled to disconnect it from the power source. Damage to modules may result if this procedure is not followed.

2. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow and cooling.

3. Install the module by sliding it into slots as shown in the appropriate figure. Ensure that the printed circuit board (PCB) is between the card guides, slides in straight, and engages the backplane connectors properly.

4. Using a slotted screwdriver, tighten the top and bottom screws.

Screw

Ejector Tab
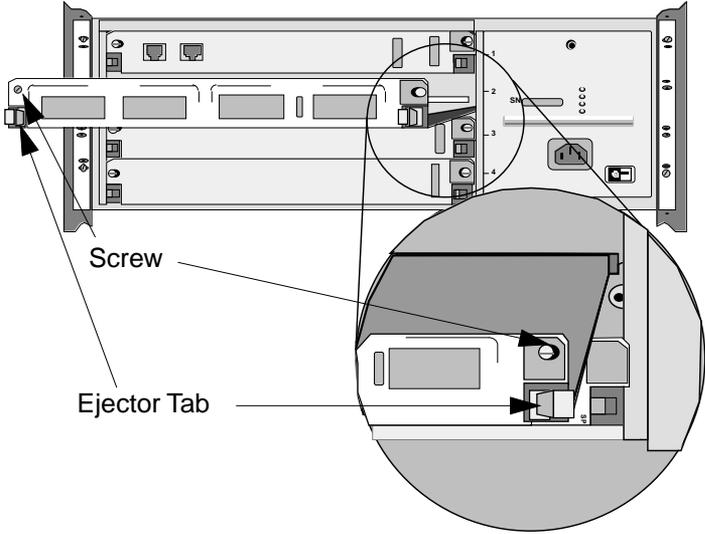
**Figure 3-4   Installing the 7F06-02 Module in the 7C04 Workgroup
SmartSwitch**

Card
Guides
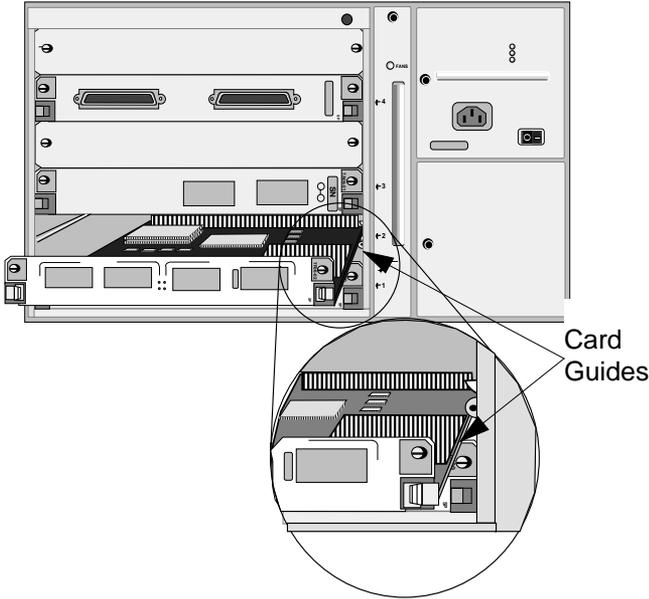
**Figure 3-5   Installing the 7F06-02 Module in the 7C04-R Workgroup
SmartSwitch**

3.3.4   Removing the 7F06-02 from the 7C04 or 7C04-R Workgroup SmartSwitch

The 7F06-02 Module, inserted in the 7C04 or the 7C04-R Workgroup SmartSwitch, can be removed whenever necessary. Follow the steps below and refer to Figures 3-6 or 3-7 to remove the module.

Note: Before removing the 7F06-02 module, attach the antistatic wrist strap included with the SmartSwitch or SmartSwitch module by following the instructions printed on the package.

1. As a precaution, power down the MMAC 8 before beginning the installation or removal of any modules. At the very minimum the 7C04 or 7C04-R must be pulled to disconnect it from the power source. Damage to modules may result if this procedure is not followed.

2. Use a slotted screwdriver to loosen the two screws that secure the module to the chassis.

3. Locate the two ejector tabs on the module (below the screws on the left and right end of the module).

4. Simultaneously press left on the left ejector tab and right on the right ejector tab until the module ejects from the backplane.

5. Grasp both ejector tabs and carefully slide the module out of the chassis.
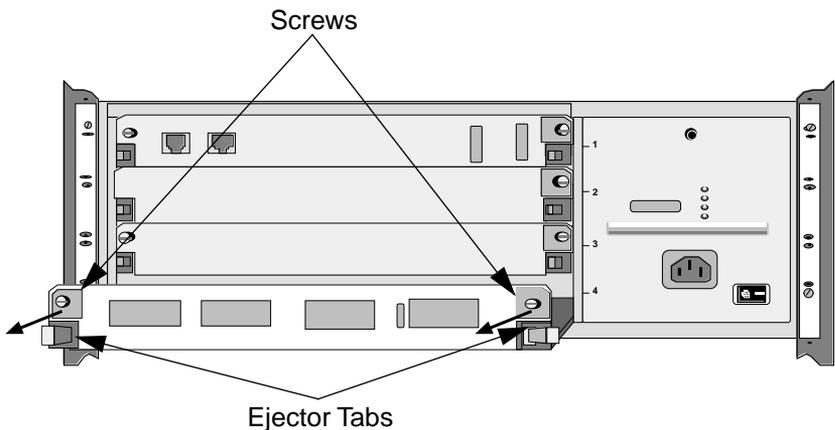
Figure 3-6   Removing the 7F06-02 Module from the 7C04 Workgroup SmartSwitch

Screws

Ejector Tabs
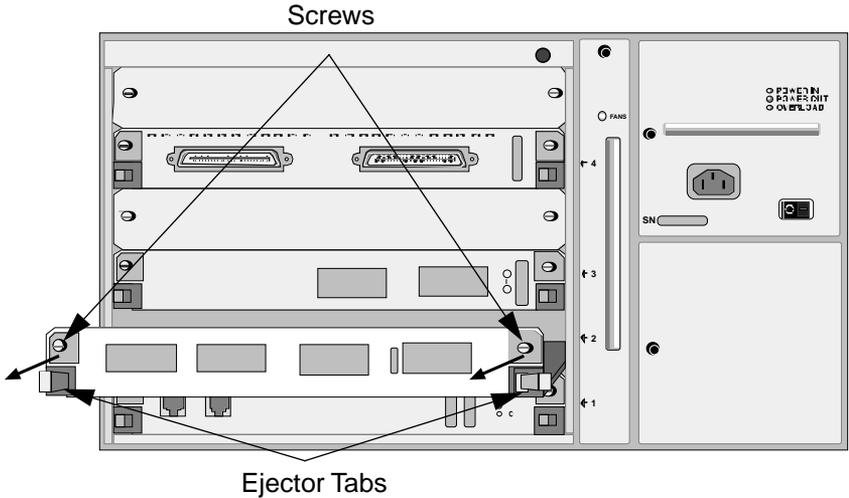
Figure 3-7   Removing the 7F06-02 Module from the 7C04-R Workgroup SmartSwitch

CHAPTER 4
TROUBLESHOOTING

4.1   DIAGNOSTIC AND MONITORING SYSTEM

The 7F06-02 Module uses LANVIEW, Cabletron Systems' built-in visual diagnostic and status monitoring system.

With LANVIEW LEDs the status of each transmit and receive port on the 7F06-02 Module can be determined, at a glance. This section discusses the function and purpose of the LEDs on the 7F06-02 Module.

Figure 4-1 shows the LANVIEW LEDs of the 7F06-02 Module.
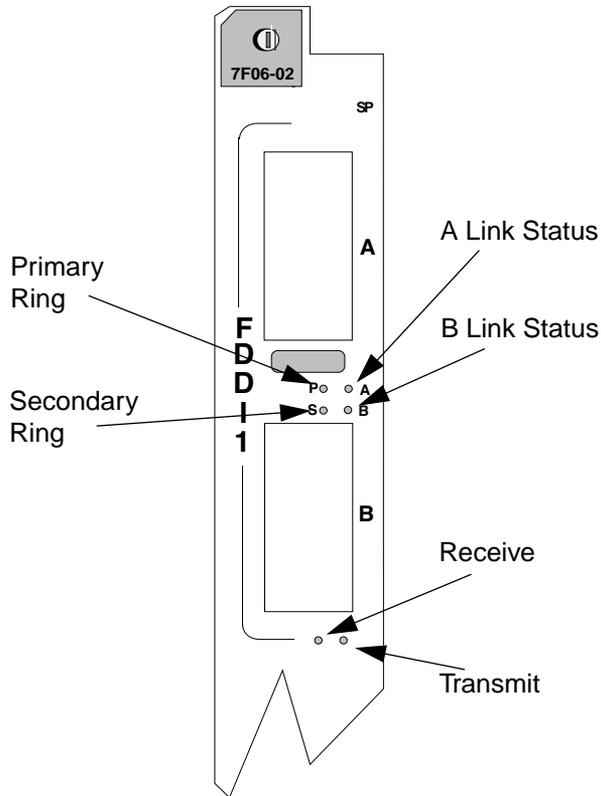
Figure 4-1   LANVIEW LEDs

4.2   PORT RECEIVE LEDS

Table 4-1 indicates the state of the receive port.

Table 4-1   Port Receive LEDs

LED Color	State
Yellow (Flashing)	Data activity (flashing to steady on indicates rate)
Off	No activity, port can be disabled or enabled

4.3   PORT TRANSMIT LEDS

Table 4-2 indicates the state of the transmit port.

Table 4-2   Port Transmit LEDs

LED Color	State
Green (Flashing)	Data activity (flashing to steady on indicates rate)
Off	No activity, port can be disabled or enabled

4.4   A/B LINK LEDS

Table 4-3 indicates the state of the A/B Link LEDs.

Table 4-3   Link LEDs

A	P	S	B	State
Green	N/A	N/A	Green	Ports Enabled & Active
Green	Green	Off	Green	THRU A, MAC on Primary, Secondary Bypasses Board
Green	Green	Yellow	Green	THRU A, MAC on Primary, No MAC on Secondary

Table 4-3   Link LEDs (Continued)

A	P	S	B	State
Green	Off	Green	Green	THRU B, MAC on Secondary, Primary Bypasses Board
Green	Yellow	Green	Green	THRU B, MAC on Secondary, No MAC on Primary
Green	Yellow	Off	Green	THRU, No MAC on Primary, Secondary Bypasses Board
Green	Off	Yellow	Green	THRU, No MAC on Secondary, Primary Bypasses Board
Green	Green	Red	Yellow	WRAP A, MAC on Primary
Green	Yellow	Red	Yellow	WRAP A, No MAC on Primary
Yellow	Green	Red	Green	WRAP B, MAC on Primary
Yellow	Yellow	Red	Green	WRAP B, No MAC on Primary
Green	Green	Red	Green	WRAP AB, MAC on Primary
Green	Off	Off	Green	BYPASS Primary & Secondary
Green	Red	Red	Green	TWISTED A-A, B-B
Yellow	Off	Off	Yellow	PCM did not complete, Not Active
Red	Off	Off	Red	Ports Disabled

CHAPTER 5

TECHNICAL SPECIFICATIONS

This chapter includes the technical specifications for 7F06-02 module. Cabletron Systems reserves the right to change these specifications at any time without notice.

5.1   STANDARDS

IEEE 802.1D

IEEE 802.3i 10BASE-T

5.2   EMI

The EMI requirements of:

*   FCC Part 15 Class A

*   EN 55022 Class A

*   VCCI Class I

5.3   EMC

The EMC requirements of:

*   EN 50082-1

*   IEC 801-2 ESD

*   IEC 801-3 Radiated susceptibility

*   IEC 801-4 EFT

5.4   NETWORK INTERFACES

Two FPIMs

5.5   SAFETY

It is the responsibility of the person who sells the system to which the module will be a part to ensure that the total system meets allowed limits of conducted and radiated emissions.

This equipment meets the safety requirements of:

*   UL 1950

*   CSA C22.2 No. 950

*   EN 60950

*   IEC 950

5.6   SERVICE

MTBF: >200,000 hours

MTTR: <0.5 hour

5.7   PHYSICAL

5.7.1   Dimensions

31.1D x 22.9 H x 3.1 W centimeters

(12.3 D x 9.0 H x 1.2 W inches)

5.7.2   Weight

Unit:1.8 kgs. (4 lbs.)

Shipping:4.5 kgs. (10 lbs.)