

ATMworks 750

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Installation and Service

Part Number: EK-DGLTA-IN. A01

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This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference; in which case, measures taken to correct the interference are at the user's expense.

**CAUTION**

This equipment is in the 1st Class category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial and/or industrial areas. Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused in radios and TV receivers, etc. Read the instructions for correct handling.

# ATMworks 750

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## Installation and Service

Part Number: EK-DGLTA-IN. A01

**November, 1994**

This document describes how to install and verify the operation of the ATMworks™ 750 adapter card in an Alpha AXP system.

**Revision/Update Information:** This is a new manual.

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## Safety

Any warning or caution that appears in this manual is defined as follows:

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<b>Warning</b>	Contains information to prevent personal injury.
<b>Caution</b>	Contains information to prevent damage to equipment.
<b>Vorsicht</b>	Enthält Informationen, die beachtet werden müssen, um den Benutzer vor Schaden zu bewahren.
<b>Achtung</b>	Enthält Informationen, die beachtet werden müssen, um die Geräte vor Schaden zu bewahren.
<b>Danger</b>	Signale les informations destinées à prévenir les accidents corporels.
<b>Attention</b>	Signale les informations destinées à prévenir la détérioration du matériel.
<b>Aviso</b>	Contiene información para evitar daños personales.
<b>Precaución</b>	Contiene información para evitar daños al equipo.

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The cautions you must observe for the hardware described in this manual appear below in English, German, French, and Spanish, along with the pages on which these safety messages appear.

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**CAUTION** 

Static electricity can damage modules and electronic components. Digital recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.  
[Page 2-1, 3-1, 3-6]

**ACHTUNG**

Module und elektronische Komponenten können durch elektrostatische Entladungen beschädigt werden. Benutzen Sie immer eine antistatische Gelenkmanschette und eine geerdete Arbeitsunterlage, wenn Sie am offenen Gerät arbeiten.

**ATTENTION**

Les charges excessives d'électricité statique peuvent endommager les modules et les composants électroniques. Digital conseille l'utilisation d'un bracelet de masse et d'un plan de travail mis à la terre lors de la manipulation des modules.

**PRECAUCIÓN**

La electricidad estática puede dañar los componentes electrónicos y los módulos. Digital recomienda que se utilicen cintas de pasadores y superficies de trabajo conectadas a tierra al trabajar con cualquier módulo.

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**WARNING** 

Some fiber optic equipment can emit laser light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.

[Page 3-1, 3-9]

**VORSICHT**

Schauen Sie niemals direkt in ein Glasfaserkabel oder einen Glasfaseranschluß. Die Laserstrahlen in faser-optischen Geräten können Augenverletzungen verursachen.

**DANGER**

Certains équipements utilisant les fibres optiques peuvent émettre des rayonnement laser dangereux pour les yeux. Ne vous avisez jamais de regarder par l'extrémité d'une fibre optique ou dans l'ouverture d'un connecteur. Considérez toujours que le câble est relié à une source lumineuse.

**AVISO**

Algunos equipos de fibra óptica pueden emitir luz láser que daña los ojos. No se debe mirar en una puerta de conector o fibra óptica. Siempre se debe suponer que el cable está conectado a la luz.

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# Preface

This manual explains how to install the ATMworks™ 750 adapter card in an Alpha AXP system and how to verify its installation and operation.

## Intended Audience

This manual is for the user who has some technical background installing system hardware.

## Document Structure

This manual is structured as follows:

- Chapter 1 provides an overview of ATM technology and a description of the ATMworks 750 adapter card components.
- Chapter 2 describes the procedure for unpacking and checking the contents of the shipping package.
- Chapter 3 describes the procedure for installing the ATMworks 750 adapter card into a desktop or desktside system unit.
- Chapter 4 contains information for testing and verifying the installation of the ATMworks 750 adapter card.

## Conventions

The following conventions are used in this document:

<i>Special type</i>	Indicates a literal example of system output.
<b>bold typeface</b>	Indicates a word or phrase is being emphasized to the reader.
<i>lowercase-italics</i>	Used in command syntax or examples to indicate variables for which either the user or the system supplies a value.

The postage-paid Reader's Comments form on the last page of this manual requests your evaluation of this manual to assist us in preparing future documentation.



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## Introduction

This chapter describes the ATMworks 750 adapter card for the Alpha AXP systems. The adapter allows the exchange of data between a TURBOchannel host (DEC 3000 series workstation) and an ATM network.

### 1.1 ATM Technology Overview

Asynchronous Transfer Mode (ATM) is a switched network technology based on the transmission of 53-byte fixed length cells. The ATM standard specifies a number of different transmission speeds, providing scalability across moderate to very high-speed applications. For applications such as full-motion video that need a steady, fixed rate of transmission, ATM allows you to reserve a specific number of cells for transmission of this data.

Each physical connection in an ATM LAN is a point-to-point link between switches and/or hosts.

## 1.2 ATMworks 750 Adapter Card

The ATMworks 750 adapter card provides ATM connectivity for Alpha AXP TURBOchannel-based workstations and servers.

The ATMworks 750 adapter card is a single-slot, dual-height option card that includes the following features:

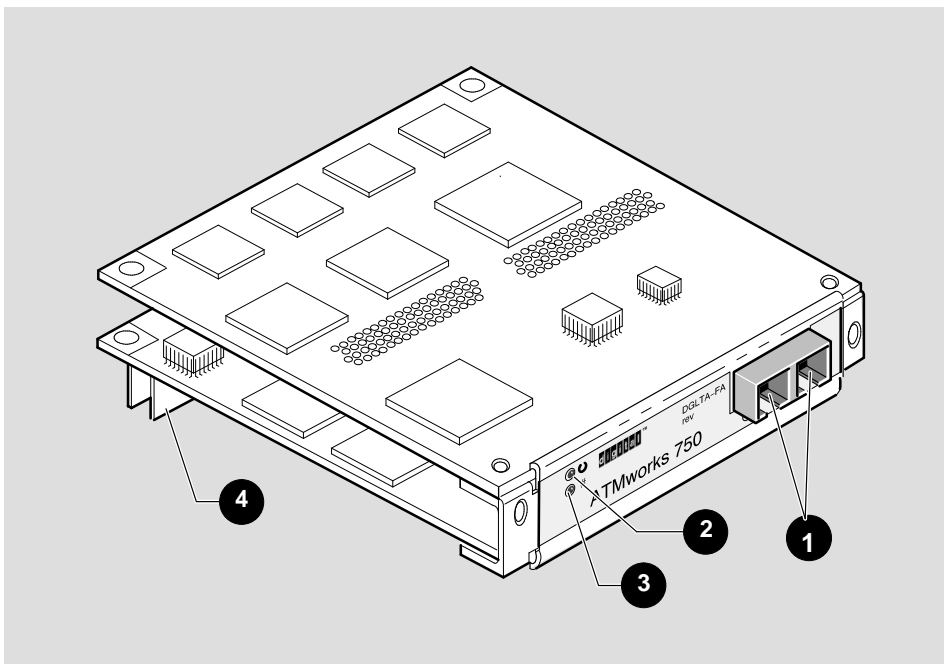
- Uses multimode fiber optic cabling running at 155 Mbps with SONET/SDH framing
- Supports ATM Adaptation Layer 5 (AAL5), designed for class C connection-oriented traffic
- Provides full-duplex operation and implements FLOWmaster™ flow control
- Supports 2048 virtual channels to receive and 2048 virtual channels to transmit
- Provides Constant Bit Rate (CBR) and Available Bit Rate (ABR) quality of service
- Uses packet-based interface to host, eliminating host processing of cells

Consult the operating system documentation about the following features:

- Classical IP over ATM per RFC 1577
- Permanent Virtual Circuits (PVCs)
- Switched Virtual Circuits (SVCs)
- ATM Application Programming Interface (API)
- SNMP agent for network management
- Q.2931 Signalling protocol
- IP encapsulation per RFC 1483
- ATM UNI
- LAN emulation

Figure 1–1 shows the ATMworks 750 adapter card components.

**Figure 1–1 ATMworks 750 Adapter Card**



LKG-9182-941

Item	Control/Connector
1	SC-type transmit and receive connectors
2	MOD LED
3	PHY LED
4	96-pin connector

## 1.3 Hardware Requirements

The ATMworks 750 adapter card can be installed in the following Alpha AXP systems.

- DEC 3000 Model 300 AXP (mother board must be rev. F or higher)
- DEC 3000 Model 400 AXP
- DEC 3000 Model 500 AXP
- DEC 3000 Model 600 AXP
- DEC 3000 Model 700 AXP
- DEC 3000 Model 800 AXP
- DEC 3000 Model 900 AXP

## 1.4 Power Requirements

Table 1–1 lists the power requirements for the ATMworks 750 adapter card.

**Table 1–1 Power Requirements**

<b>Voltage</b>	<b>Current Amps</b>	<b>Application</b>
+5	2.75	Optics and logic
+12	<0.20	FLASH memory



---

## Unpacking the Adapter

This chapter describes how to unpack and inspect your ATMworks 750 adapter card.

### 2.1 Unpacking and Checking the Contents

The adapter is shipped in one box. The contents of the shipping box appear in Figure 2-1. Remove the contents from the box and be sure to keep all original packing materials.

Check the shipment for damage and missing parts. In case of damage, contact your delivery agent and your Digital sales representative. If parts are missing, contact your Digital sales representative.

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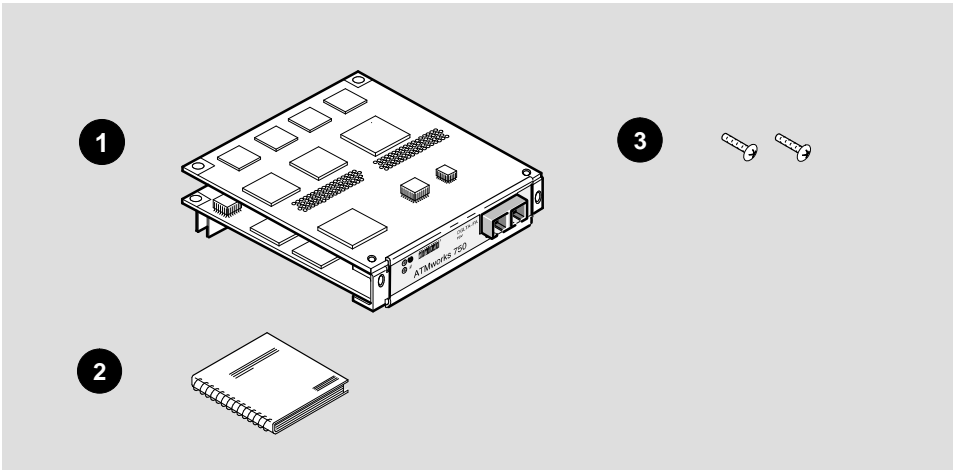
#### Caution

---

Static electricity can damage modules and electronic components. Digital recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.

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Figure 2-1 Contents of Shipping Package



LKG-9183-94I

Item	Part
1	ATMworks 750 adapter card
2	ATMworks 750 Installation and Service manual (this document)
3	Screws

# 3

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## Installing the Adapter

This chapter explains how to install the ATMworks 750 adapter card in an Alpha AXP system.

### 3.1 Required Tools

Installation of the ATMworks adapter card requires the following tools:

1. Phillips-head screwdriver
2. Anti-static grounding strap

### 3.2 Preparing for Installation

Before you begin to install the ATMworks 750 adapter card into the system unit you must perform a system shutdown.

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#### Warning

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To prevent personal injury, follow the system shutdown procedure before attempting to install the adapter. See Section 3.2.1, System Shutdown.

---

For additional information about your specific system, refer to the documentation that shipped with your system unit.

---

#### Caution

---

Static electricity can damage modules and electronic components. Digital recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.

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### **3.2.1 System Shutdown**

To prepare the system for the adapter installation, perform the following steps:

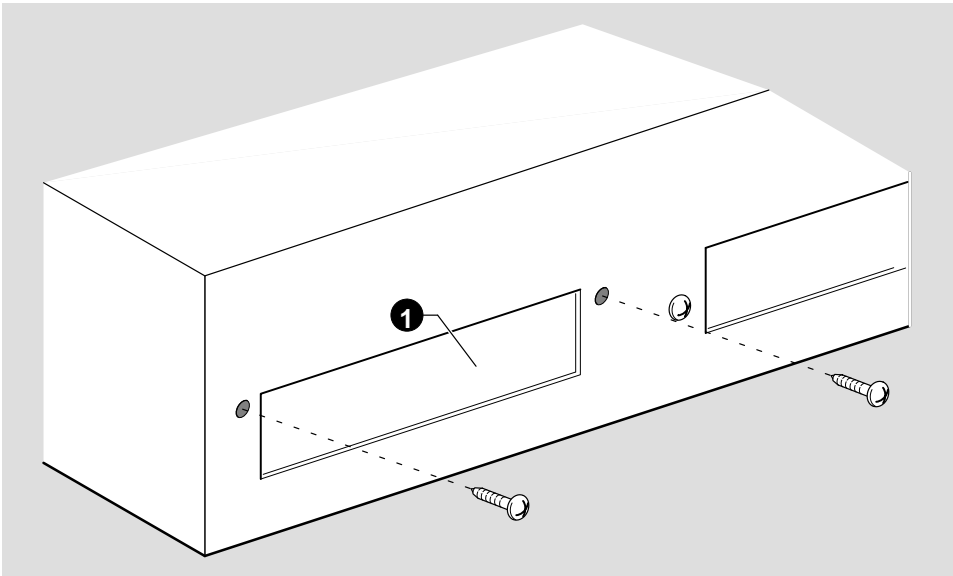
1. Perform a system shutdown.
2. Power down the system unit.
3. Disconnect the cables from the rear of the system unit.

### **3.2.2 Preparing a Desktop System**

To prepare your unit for the adapter installation, perform the following steps:

1. Remove the cover from your unit. Refer to the documentation that shipped with your unit for instructions about how to do this.
2. Refer to the documentation that shipped with your unit to determine which option slot(s) to use.
3. Remove the option slot cover from your system unit (see Figure 3–1). Use a Phillips-head screwdriver to remove the two screws that hold the option slot cover in place. Save the option slot cover and screws.

**Figure 3-1 Removing the Desktop System Option Slot Cover**



LKG-7348-94I

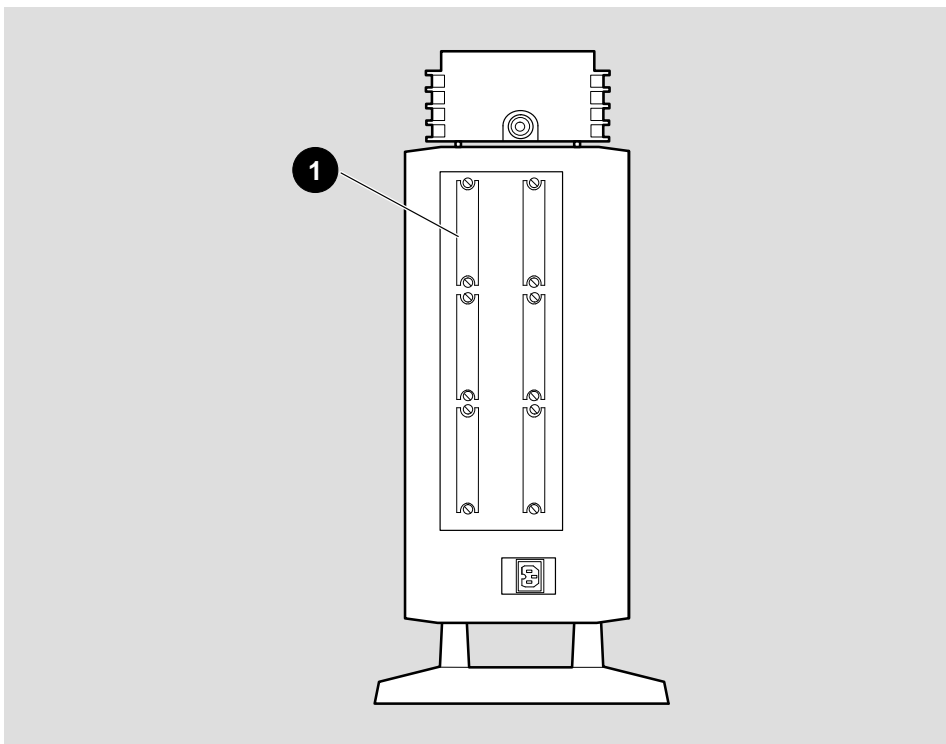
Item	Part
1	Option slot cover

### **3.2.3 Preparing a Deskside System**

To prepare your unit for the adapter installation, perform the following steps:

1. Unlock and remove the top cover and rear bezel from your system unit. Refer to your computer documentation for instructions about how to do this.
2. Refer to the documentation that shipped with your system to determine which option slot(s) to use.
3. Remove the option slot cover from your system unit (see Figure 3–2). Use a Phillips-head screwdriver to remove the two screws that hold the option slot cover in place. Save the option slot cover and screws.

**Figure 3-2 Removing the Deskside System Option Slot Cover**



LKG-9353-94I

Item	Part
1	Option slot cover

### 3.3 Installing the ATMworks 750 Adapter Card

To install the ATMworks 750 adapter card into your desktop or deskside system unit, perform the following:

1. Attach one end of the antistatic wrist strap to your wrist and the other end to the system unit.

---

**Caution**

---

Static electricity can damage modules and electronic components. Digital recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.

---

2. For desktop systems, hold the adapter by the edges and position it so that it is parallel with the bottom of the system unit (see Figure 3–3, Installing the Adapter in a Desktop System). For deskside systems, hold the adapter by the edges and position it so that it is perpendicular to the bottom of the system unit (see Figure 3–4, Installing the Adapter in a Deskside System).
3. Insert the adapter through the opening in the rear of the system unit with the 96-pin connector facing down, and the SC-type connectors facing the option slot opening in the rear of the system unit.
4. Firmly seat the 96-pin connector into the TURBOchannel bus connector.
5. Fasten the adapter to the unit's circuit card with the two screws supplied in the shipping package.

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**Note**

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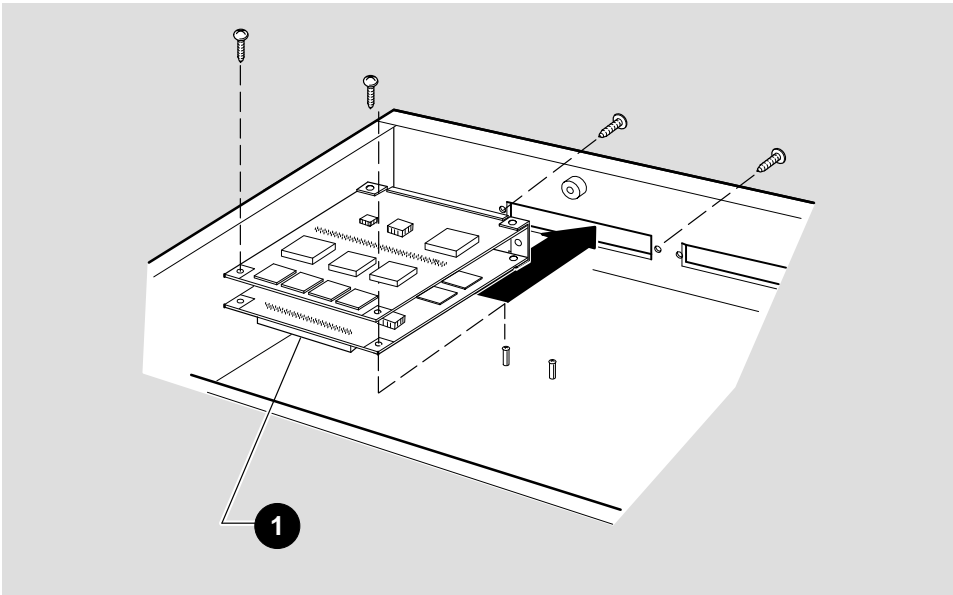
If your unit has two nylon clips on the 96-pin connector, push the adapter onto the nylon pins and make sure the clips snap into place. You do not need to use screws.

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6. Replace the two screws you removed from the option slot cover.
7. Remove the antistatic wrist strap from your wrist and the system unit.
8. Replace the system unit cover.



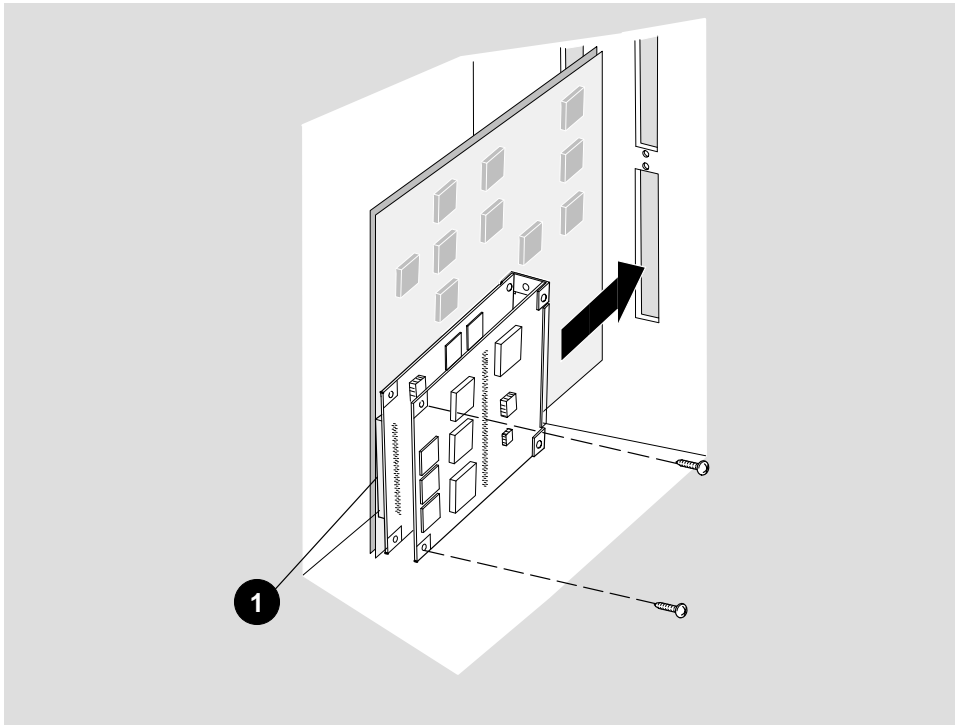
**Figure 3-3 Installing the Adapter into a Desktop System**



LKG-9185-941

Item	Control/Connector
1	96-pin connector

**Figure 3–4 Installing the Adapter into a Deskside System**



LKG-9354-921

Item	Control/Connector
1	96-pin connector

### 3.4 Connecting the Multimode Fiber Optic Media

To attach the SC-type connectors to the ATMworks 750 adapter card, perform the following:

1. Remove the dust caps from the SC-type connectors.

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**Note**

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The bend radius of any fiber optic cable is 2.5 cm (1 in) or greater. To avoid optical power loss, do not touch the fiber ends.

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2. Line up the transmit cable connector with the transmit port and the receive cable connector with the receive port. Insert the SC-type connectors ensuring that the key is correctly positioned (see Figure 3-5).

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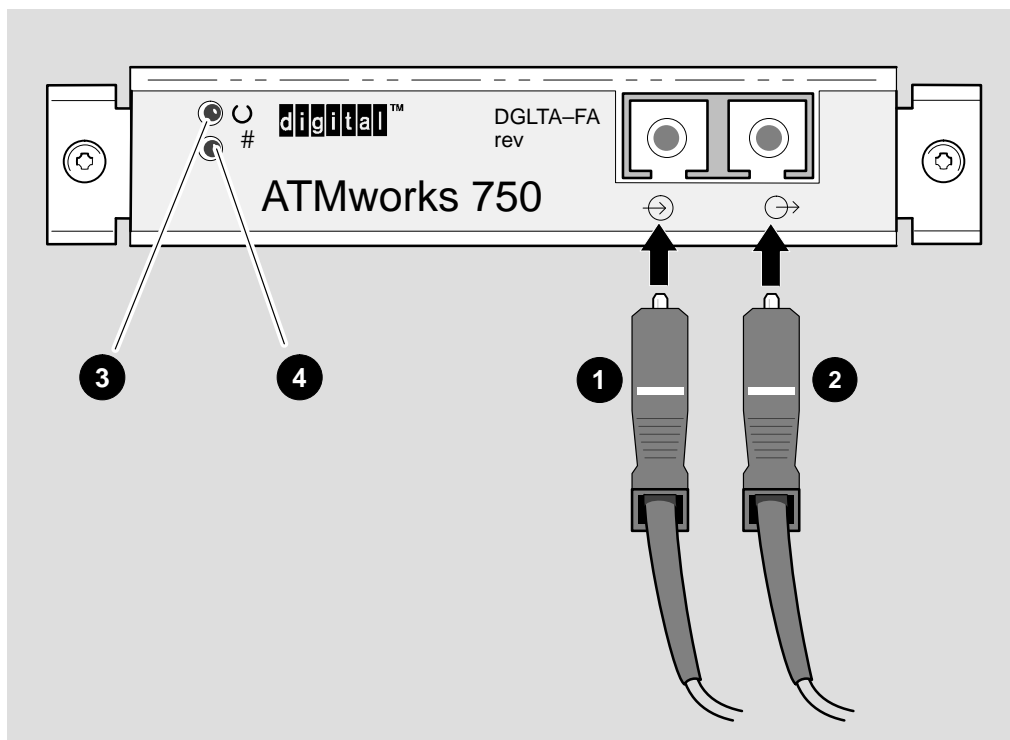
**Warning**

---

Fiber optic equipment can emit laser light that can injure your eyes. Always assume the cable is connected to a light source. Never look into an optical fiber or connector port.

---

**Figure 3–5 Connecting the SC-type Connectors**



LKG-9186-941

Item	Control/Connector
1	SC-type receive connector
2	SC-type transmit connector
3	MOD LED
4	PHY LED

# 4

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## Testing and Verifying the Adapter

This chapter explains the power up self-test and how to verify the installation of the ATMworks 750 adapter card. After you install the adapter and power up the system, the self-test will run automatically.

### 4.1 Performing a Self-Test

The adapter performs a self-test upon power up of your Alpha AXP system. The self-test takes approximately 30 seconds to complete. Table 4–1, LED Status lists the possible LED states and their meaning.

**Table 4–1 LED Status**

LED	Status	Meaning	Action
MOD	ON	Self-test is successful.	Go to Section 4.2, Verifying the System Configuration.
	OFF	Self-test is unsuccessful.	Go to Section 4.2.1, Correcting an Adapter Configuration Problem.
PHY	Blinks ON once	TURBOchannel is programmed.	Go to Section 4.2, Verifying the System Configuration.
	Steady ON	Link is available.	Go to Section 4.2.1, Correcting an Adapter Configuration Problem.
	OFF	Link is unavailable.	Go to Section 4.2.1, Correcting an Adapter Configuration Problem.

You can execute the self-test from the system console at any time using the following script.

```
t tcn pst-t
```

where *n* represents the slot number for the adapter.

## 4.2 Verifying the System Configuration

Once the system unit self-test completes, verify that the system configuration recognizes the adapter card by performing the following:

1. Verify that the MOD LED is on. If the MOD LED is off, go to Section 4.2.1, Correcting an Adapter Configuration Problem.
2. Display the adapter information on the console.

```
t tcn cnfg
```

where *n* represents the slot number for the adapter.

The following is an example of a configuration display.

```
DEC    DGLTA-FA  Vn.n  (ATM: 08-00-XX-XX-XX-XX to)
                (ATM: 08-00-XX-XX-XX-XX)
                (Altera Version: Vn.nn)
```

If the system recognizes the adapter, then the configuration is successful. Go to Section 4.3, Booting the System.

The following configuration display example indicates that the system does not recognize the adapter.

```
DEC    DGLTA-FA  Vn.n  (ATM: Invalid ID ROM!)
```

If the configuration display indicates a problem, refer to Section 4.2.1, Correcting an Adapter Configuration Problem.

### 4.2.1 Correcting an Adapter Configuration Problem

Check the MOD LED status. If the MOD LED is off or the configuration display indicates a problem, then perform the following:

1. Turn off the system unit.
2. Verify that the adapter is seated and installed correctly. Refer to Chapter 3, Installing the Adapter.
3. Check the SC-type cable connections.
4. Perform the self-test and system configuration procedures again. Refer to Section 4.1, Performing a Self-test and Section 4.2, Verifying the System Configuration. If the problem persists, check the adapter installation. If the adapter appears to be properly installed, contact your Digital Services representative.

## 4.3 Booting the System

Once you verify the system configuration, boot the operating system. Refer to your operating system documentation for instructions about how to do this.

After booting the operating system, verify that the PHY LED is on, indicating the adapter card is working properly. If the PHY LED is off, a link is not established. This could be due to a software installation fault. Go to Section 4.2.1, Correcting an Adapter Configuration Problem.

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**Note**

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If `BOOT_RESET=ON`, then the MOD LED will turn off during system boot, and on again when the ATM driver initializes the adapter.

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