intel®

PCL2NIA
Hardware Installation Guide

Order Number: 462305-002

Above	i860	int$_e$lBOS	MAPNET	RMX/80
ACE51	Δ	Intel Certified	MCS®	RUPI
ACE96	i	Intelevision	Megachassis	Seamless
ACE186	i®	int$_e$ligent Identifier	MICROMAINFRAME	SLD
ACE196	I²ICE	int$_e$ligent Programming	MULTI CHANNEL	SugarCube
ACE960	ICE	Intellec®	MULTIMODULE	Tech Direct
Action Media	iCEL	Intellink	MultiSERVER	ToolTALK
BITBUS	ICEVIEW	iOSP	ONCE	UPI
COMMputer	iCS	iPAT	OpenNET	Visual Edge
CREDIT	iDBP	iPDS	OTP	VLSiCEL
Data Pipeline	iDIS	iPSC®	PRO750	ZapCode
DVI	iLBX	iRMK	PROMPT	376
ETOX	iMDDX	iRMX®	Promware	386
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Genius	Inboard	iSBX	QueX	4-SITE
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i586	Intel®	iSXM	Quick-Pulse	586
i686	int$_e$l®	Library Manager	Programming	686
i750	Intel386		Ripplemode	

Rev.	Revision History	Date
-001	Original Issue	7/88
-002	Software upgrade and name change	9/90

Introduction 1

Introduction

This manual explains how to install the PCL2 Network Interface Adapter (PCL2NIA) in the PC system and how to connect the PC system to the network once the PCL2NIA has been installed.

Hardware Overview

The PCL2 Network Interface Adapter (PCL2NIA) provides an Ethernet/IEEE 802.3 connection to a PC system. The PCL2NIA measures 4.15 inches high by 13.32 inches long and attaches to the PC via one of the full size expansion slots. The PCL2NIA is an Intel 80186 microprocessor based design and includes the following major components:

- 80186 microprocessor

- 82586 communications controller

- 16KB EPROM with power-up diagnostics

- 256KB of on-board RAM with an 8KB window to the PC system

- Ethernet serial interface

- 15-pin Ethernet D connector

This chapter contains tool and hardware requirements for installation and a space to record the part number and the serial number of the PCL2NIA. This chapter can then be referenced for these numbers should a problem arise with the PCL2NIA. All figures and installation instructions apply to the IBM PC AT XT and compatible computer systems.

NOTE

This manual does not cover installation or maintenance of the Ethernet network cable or its connection to the transceiver (or Intellink™). It is assumed that an Ethernet cable has been installed and tested prior to connecting the PC system.

Tools Required

In order to install the PCL2NIA, a medium-sized flat-blade screwdriver is needed. The following tools are optional, but they make the installation task easier.

- A 1/4-inch hex nut driver for removing and replacing the cover mounting screws.

- A 3/16-inch hex nut driver for removing and replacing the card slot cover plate screws.

Hardware Required

To install a PCL2NIA in the PC system, the following hardware is required (see Figure 1-1):

- The PCL2NIA

- A plastic card support (supplied but may not be needed in some PC systems)

- Ethernet cable connector adapter plate (supplied)

- Two slip-on screw clips (with captured screws)

Safety Precautions

The following safety precautions apply at all times during the installation process.

WARNING

Do not spill any liquid on or in the system unit. Any liquid spilled on or in the computer may damage the unit, and may also endanger personnel working with the equipment.

FCC Information

This equipment generates, uses, and radiates radio frequency energy and must be installed and used according to the manufacturer's instruction manual. Improper installation may interfere with radio or T.V. communications.

To provide reasonable protection against such interference, this product has been designed and tested to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC rules.

However, there is no guarantee that interference will not occur when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

The user may attempt to correct interference by one or more of the following measures:

* Reorient the receiving antenna.

* Relocate the computer with respect to the receiver.

* Move the computer away from the receiver.

* Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions. In addition, the following booklet prepared by the Federal Communications Commission may be helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

WARNING

An unshielded plug or cable may cause radio frequency interference. This peripheral device is designed for use with a properly shielded interface cable. The cable must be properly attached to this peripheral equipment.

Preface

This manual describes how to install the PCL2 Network Interface Adapter (PCL2NIA) into an IBM PC AT and PC XT or 100% compatible computer system. Users of this manual should be familiar with Local Area Networks (LANs).

The instructions in this manual assume that the Ethernet network cable has been installed and that the IBM PC system being connected to the network is currently using the DOS operating system, version 3.1 or later.

Manual Organization

The following paragraphs briefly describe the contents of each chapter.

Chapter 1. Introduction

This chapter introduces the PCL2NIA and describes basic installation information.

Chapter 2. Configuration

This chapter describes how to configure the PCL2NIA.

Chapter 3. Hardware Installation

This chapter describes how to install the PCL2NIA into a PC system. This chapter also describes how to connect the PC system to a network transceiver.

Conventions Used in this Manual

The following conventions apply throughout this manual:

- The IBM PC AT and PC XT are referred to as the PC system.
- PC-DOS or MS-DOS is referred to as DOS.
- The PCL2 Network Interface Adapter is referred to as the PCL2NIA.

The following conventions are used in this manual to document notes, cautions, and warnings.

NOTE

A note emphasizes comments with special significance.

CAUTION

A CAUTION gives instructions necessary to avoid damage to equipment or loss of stored information.

WARNING

A WARNING gives instructions necessary for personal safety.

Related Literature

While this manual is a self-contained document describing the hardware installation of the PCL2NIA, several other Intel documents contain information helpful in using the network.

- *PCL2NIA Hardware Reference Manual*, order number 450772. This manual describes the hardware design and user interface for the PCL2NIA.

- *PCL2 Software Developer's Manual*, order number 462311. This manual describes how to program and use the networking software.

- *OpenNET™ PCL2 for DOS Installation Guide*, order number 462308. This manual describes how to configure and use the networking software on the PCL2NIA.

- *PCL2 LAN Controller User's Guide*, order number 460665. This manual describes how to configure and use the MS-NET 1.01 networking software on the PCL2NIA.

Warnings and Cautions

This section lists the warnings and cautions found in this manual.

WARNING

An unshielded plug or cable may cause radio frequency interference. This peripheral device is designed for use with a properly shielded interface cable. The cable must be properly attached to this peripheral equipment.

WARNING

Hazardous voltages are present in the internal power supply of the system unit. Turn off the power to the unit, and unplug the power cord prior to installation or inspection.

WARNING

Do not spill any liquid on or in the system unit. Any liquid spilled on or in the computer may damage the unit, and may also endanger personnel working with the equipment.

CAUTION

The PCL2NIA can be damaged by static electricity. To prevent damage to the PCL2NIA, hold the board (still in the anti-static bag) in one hand, and momentarily touch a metal part of the PC system unit (such as a back panel screw) with the other hand.

CAUTION

Turn the power to the PC system off before attaching the PC system to the transceiver.

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Chapter 2. Configuration

Chapter 3. Hardware Installation

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Figure 1-1. Required Hardware

WARNING

Hazardous voltages are present in the internal power supply of the
system unit. Turn off the power to the unit, and unplug the power
cord prior to installation or inspection.

Abbreviated Installation Instructions

For a quick reference, the following is a brief set of hardware installation instructions for the experienced user who is familiar with PCL2NIA installation. Users not familiar with PCL2 installation should refer to Chapters 2 and 3 for installation instructions.

1. Ensure that the default configuration is acceptable. If not, reconfigure the PCL2NIA. Refer to Chapter 2 for details.

2. Remove power from the PC system. (Chapter 3, section titled Disconnecting the System Unit)

3. Record the serial number of the PCL2NIA

    Part Number _____

    Serial Number _____

4. Remove the PC system cover. (Chapter 3, sections titled Removing the System Cover and Preparing a Card Slot for the PCL2NIA)

5. Install the PCL2NIA in the PC system. (Chapter 3, section titled Installing the PCL2NIA)

6. Re-install the PC system cover. (Chapter 3, section titled Replacing the System Cover)

7. Connect the Ethernet transceiver cable to the PCL2NIA. (Chapter 3, section titled Connecting the PC System to the Network)

8. Connect all remaining cables to the PC system.

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Configuration 2

Introduction

This chapter describes the configuration options for the PCL2 Network Interface Adapter (PCL2NIA). Twelve stake pins are available to select four different jumper options.

Configuration Options

The PCL2NIA is factory-set (default) to work in most networking environments. However, it can be reconfigured by placing jumpers in the proper place (see Table 2-1). The available jumper configuration options are:

- I/O Port Address
- Transceiver Connection
- Initial Program Load Source
- Host Interrupt

I/O Port Addresses

This configuration option permits the user to select I/O Port Addresses at either 360H or 3C0H. The default is a jumper between stake pins E2 to E3, which selects I/O port address 0360H.

Optionally, the user can reconfigure the PCL2NIA for an I/O port address of 03C0H by removing the jumper between E2 and E3 and installing the jumper between E1 to E2. See Table 2-1.

Table 2-1. Summary of Jumper Configurations

Option	Default	Description
I/O Port 360H 3C0H	0360	Sets the I/O port location in I/O-mapped memory of the control ports accessible to the PC host. The host uses two 8-bit ports at this location to control the PCL2NIA and to read control information from the PCL2NIA. These are the following settings: E2-E3 *selects addresses 0360H - 0367H E2-E1 selects addresses 03C0H - 03C7H *The default configuration is generally used unless there is a conflict with the I/O-mapped ports of another board.
Interface V1 V2/802.3	V2/802.3	Determines the operation of the transceiver connection. These are the following selections: E5-E6 *selects Ethernet V2/IEEE 802.3 E5-E4 selects Ethernet V1 *The default jumper setting is the IEEE 802.3 standard and is compatible with most transceivers. Some older transceivers (DC-coupled Ethernet V1) will require the alternate setting.
IPL Source Network Local	Local	Selects the source for the PC operating system. The PCL2NIA has the following options: E8-E9 *The PC system will load its operating system from its disk or diskette drive. (Local) E8-E7 The PC system will load its operating system from a file server via the local area network. (Remote)

* indicates the default condition

Configuration

Table 2-1. Summary of Jumper Configurations (continued)

Option	Default	Description
IRQ5/IRQ2	IRQ2	Selects the interrupt request level to IRQ2 use when the PCL2NIA interrupts the host. These have the following options: E11-E12 *selects IRQ2 E11-E10 selects IRQ5

* indicates the default condition

Transceiver Connection

This configuration option permits the user to select either an Ethernet V2/IEEE 802.3 or an Ethernet V1 connection. The default position has a jumper between stake pins E5 to E6, which selects the Ethernet V2/IEEE 802.3 connection.

Optionally, the user can reconfigure the PCL2NIA to be compatible with some older transceivers implementing Ethernet V1 by removing the jumper between E5 and E6 and installing the jumper between E4 to E5.

Initial Program Load Source — Local or Remote

This configuration option permits the user to select the source for the PC operating system to be either local (from the PC system's disk or diskette drive) or remote (via the network). The default position has a jumper between E8 and E9, which selects the local load source.

Optionally, the user can reconfigure the source to load the operating system software via the network by removing the jumper between E8 and E9 and installing the jumper between E7 and E8.

To install the software, refer to the *OpenNET PCL2 for DOS Installation Guide*, order number 462308.

Host Interrupt

This configuration option permits the user to select one of two possible interrupts from the PCL2NIA to the host CPU. The default position has a jumper between E11 to E12, which selects an interrupt level of IRQ2.

Optionally, the user may reconfigure this interrupt level from IRQ2 to IRQ5 by removing the jumper between E11 and E12 and installing the jumper between E10 and E11.

Figure 2-1 illustrates the PCL2NIA jumper setting locations.

I/O Port
E1 -E2 = 3C0
*E3 -E2 = 360

Interface
E4 -E5 = V1
*E6 -E5 = V2/802.3

IPL Source
E7 -E8 = Network
*E9 -E8 = Local

E1   E2   E3

E4   E5   E6

E7   E8   E9

E10   E11   E12

Interrupt
E10 -E11 = IRQ5
*E12 -E11 = IRQ2
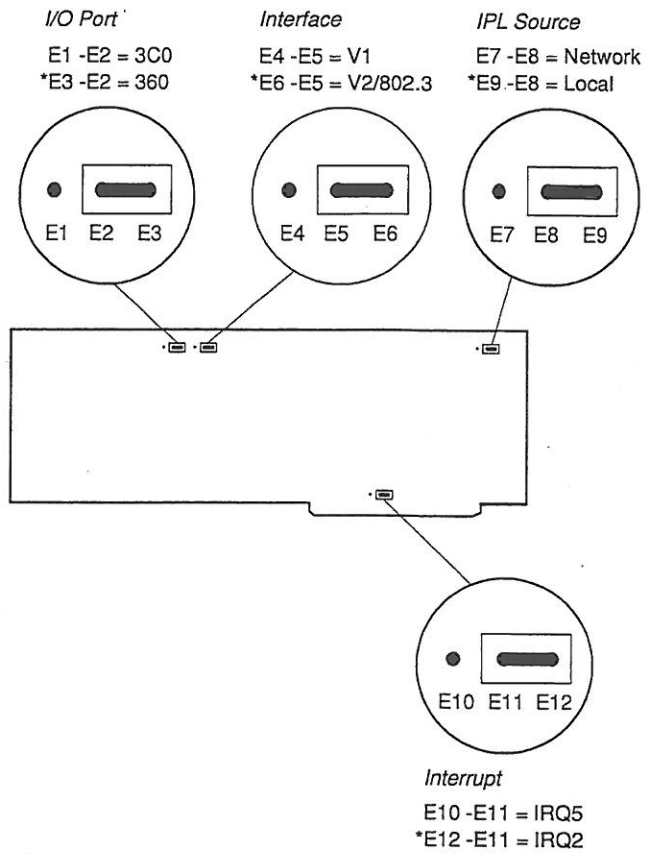
W-2252

Figure 2-1. PCL2NIA Jumper Settings

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Hardware Installation 3

Introduction

This chapter explains how to install the PCL2 Network Interface Adapter (PCL2NIA) in the PC system and how to connect the PC system to the network once the PCL2NIA has been installed. This chapter also contains a space to record the part and serial numbers of the PCL2NIA. This chapter can then be referenced for these numbers should a problem arise with the PCL2NIA. All figures and installation instructions apply to the IBM PC AT XT and compatible computer systems.

NOTE

This manual does not cover installation or maintenance of the Ethernet network cable or its conection to the transceiver (or Intellink™). It is assumed that an Ethernet cable has been installed and tested prior to connecting the PC system.

Tools Required

To install the PCL2NIA, a medium-sized flat-blade screwdriver is needed. The following tools are optional, but they make the installation task easier.

- A 1/4-inch hex nut driver for removing and replacing the cover mounting screws.

- A 3/16-inch hex nut driver for removing and replacing the card slot cover plate screws.

Hardware Supplied

To install a PCL2NIA in the PC system, the following hardware is required (see Figure 3-1):

- The PCL2NIA
- A plastic card support (supplied but may not be needed in some PC systems).
- Ethernet cable connector adapter plate (supplied).
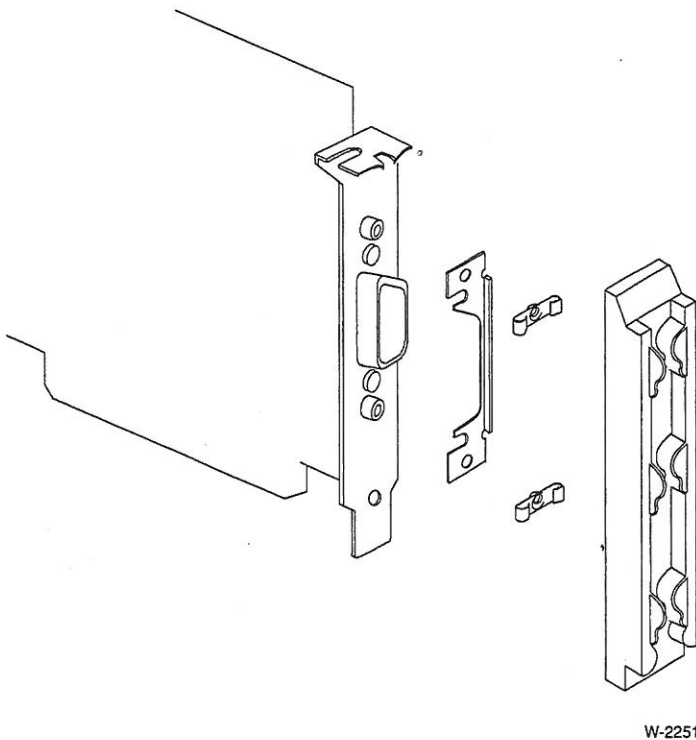- Two slip-on screw clips (with captured screws).

W-2251

Figure 3-1. Required Hardware

Hardware Installation

Safety Precautions

The following safety precautions apply at all times during the installation process.

WARNING

Do not spill any liquid on or in the system unit. Any liquid spilled on or in the computer may damage the unit, and may also endanger personnel working with the equipment.

Hazardous voltages are present in the internal power supply of the system unit. Turn off the power to the unit, and unplug the power cord prior to installation or inspection.

Installing PCL2NIA in the PC

Before installing the PCL2NIA, disconnect the peripheral components from the PC system, disconnect all power cords from the wall to the PC, and remove the cover of the PC system. After the PCL2NIA is installed, replace the cover and reconnect the system parts and power cords. The following sections explain how to accomplish these tasks.

Disconnecting the System Unit

To disconnect the external devices attached to the PC system, perform the following steps while referring to Figure 3-2.

1. Turn the PC power switch off.

2. Turn all external device power switches off.

3. Unplug all power cords from the wall outlet (system unit, printer, monitor, etc.).

4. Disconnect all power and interface cables from the rear of the system unit.
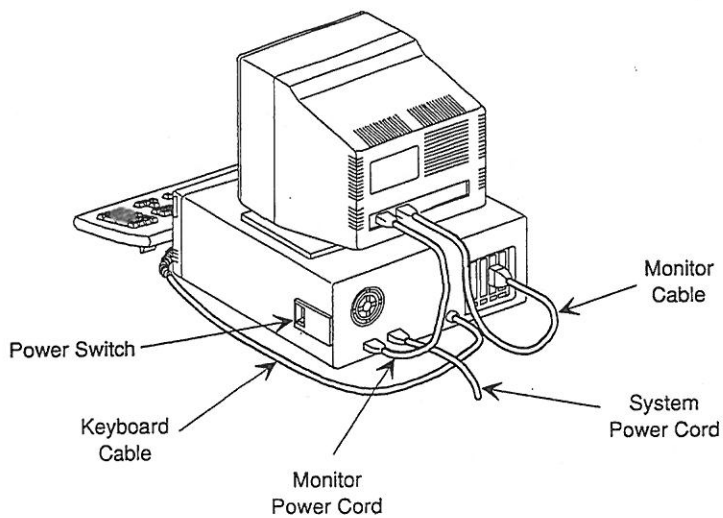
Figure 3-2. Power Switches and Rear Panel Plug Locations

Removing the System Cover

To remove the top cover assembly from the system unit, perform the following steps.

1. For the PC AT only: Ensure that the Key Lock is unlocked (turn the key counter clockwise). Remove the key and place it in a safe place.

2. Move the keyboard, the monitor, and any other external devices away from the system unit so there is room to work.

3. Position the PC unit so that the rear panel is easily accessible.

4. For the PC AT only: Grasp the back panel and remove it from the rear of the unit as shown in Figure 3-3. Note that velcro fastener strips are used to attach the panel to the PC AT.

Cover
Retaining Screws
(5 Places)

Plastic
Fastener
Strips
(4 Places)
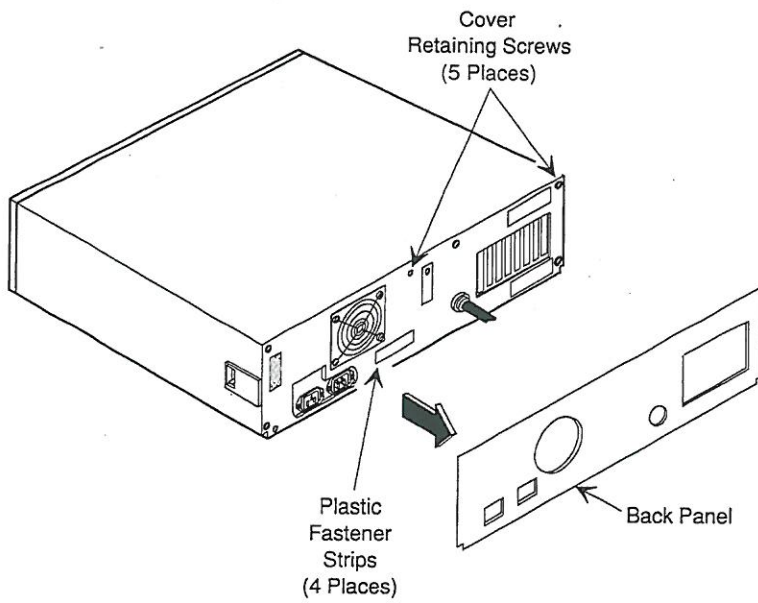
Back Panel

W-2254

Figure 3-3. Removing the PC AT Back Panel

5. Remove the five cover mounting screws located on the rear panel of the system unit (see Figure 3-4). Use either the flat-blade screwdriver or the optional 1/4-inch hex nut driver. Set the screws aside.

Cover
Retaining Screws
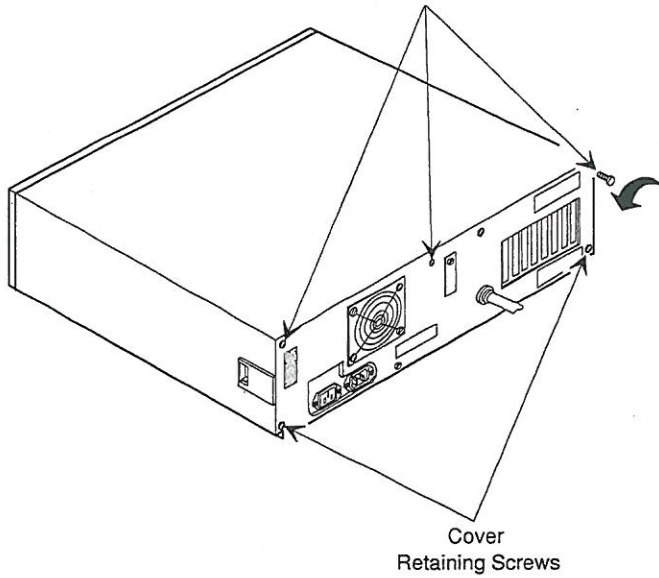
W-2255

Figure 3-4. Removing the Cover Screws

Hardware Installation

6. Turn the PC system around so that the front panel is facing forward; grasp the cover as shown in Figure 3-5. Pull the cover slowly forward until it will go no farther. Then tilt the cover up, as shown in Figure 3-6, and lift it off the PC system.
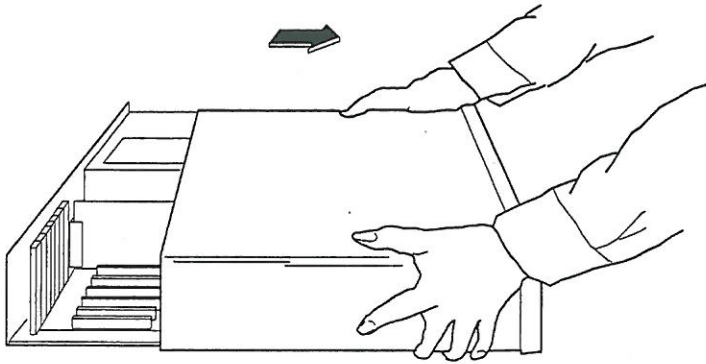
W-2256

Figure 3-5. Pulling the PC Cover Forward
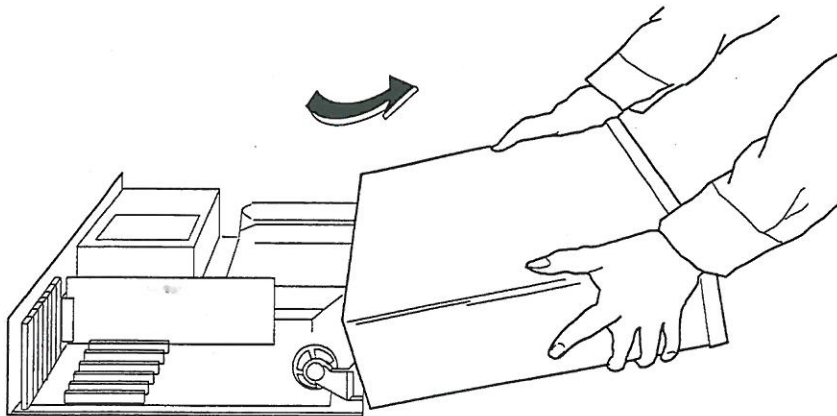
W-2257

Figure 3-6. Removing the PC Cover

Preparing a Card Slot for the PCL2NIA

To prepare an expansion card slot for the PCL2NIA, perform the following steps.

1. Facing the front panel (the side with the disk drives), look at the inside left rear of the system unit to locate eight card slots (see Figure 3-7). Some of the card slots will already have system cards installed. Install the new PCL2NIA in any of the unused slots that will accommodate the length of the PCL2NIA. However, Intel Corporation recommends that the PCL2NIA be installed in a slot as far to the right side of the card cage as possible (closest to the center of the PC) for optimal heat dissipation.
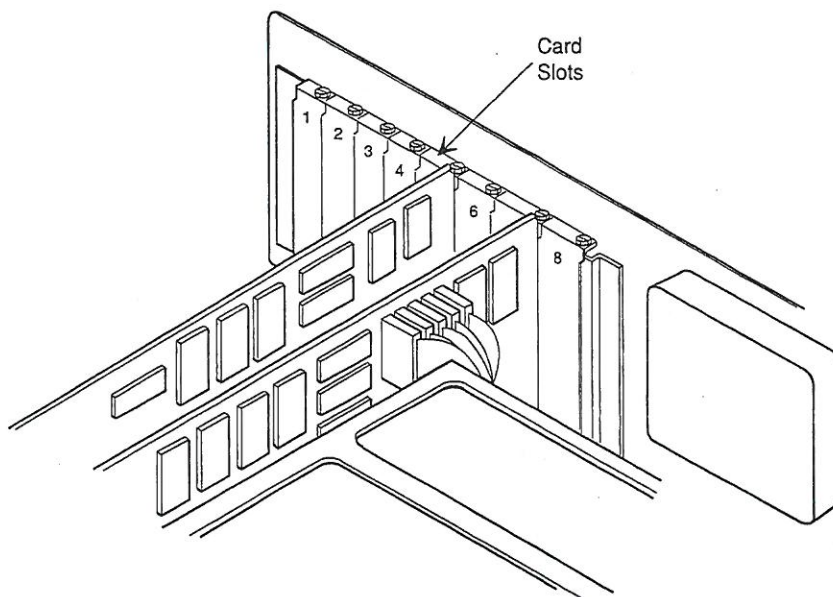
W-2258

Figure 3-7. PC System Card Slots 2

Hardware Installation

2. Use the screwdriver or 3/16-inch hex nut driver to remove the screw that holds the selected expansion slot's cover plate in place (see Figure 3-8). Set the screw aside and remove the cover plate.
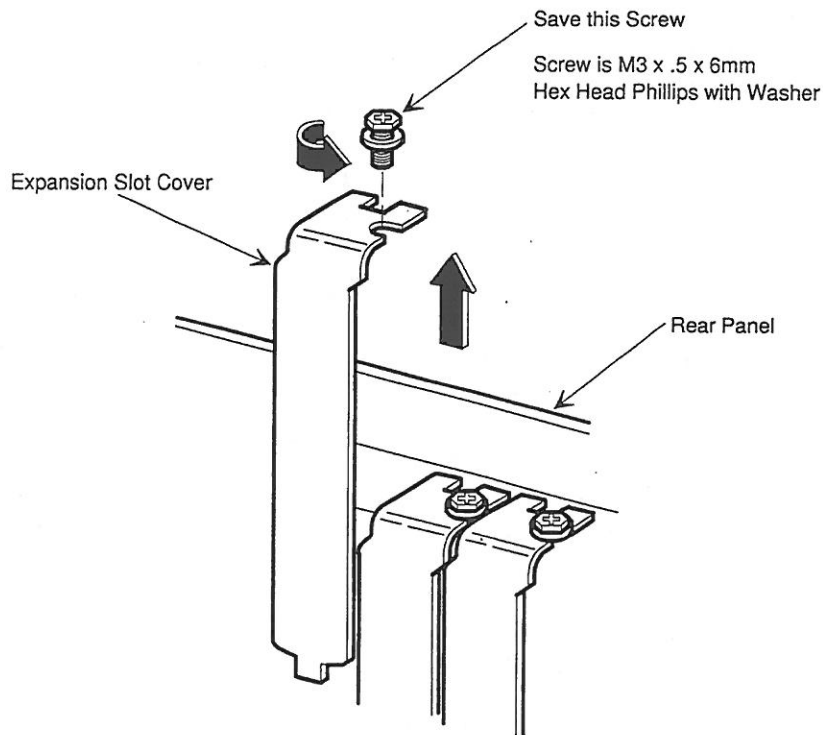
Figure 3-8. Removing the Expansion Slot Cover

3. For the PC, PC XT or compatible systems only: Look at the card slots to see if the plastic card support is present. If one is present, skip this step. If a card support is not present, look at the other card slots to see how the plastic card support fits into the front of the system unit bulkhead. Press the plastic card support into the mounting holes that correspond to the card slot chosen for the PCL2NIA.

Installing the PCL2NIA

To install the PCL2NIA, perform the following steps.

CAUTION

The PCL2NIA can be damaged by static electricity. To prevent damage to the PCL2NIA, hold the board (still in the anti-static bag) in one hand, and momentarily touch a metal part of the PC system unit (such as a back panel screw) with the other hand.

NOTE

The configuration jumpers on the PCL2NIA have been preset at the factory such that the PCL2NIA may be installed in most PC's without conflicting with other (standard) PC boards. The jumper settings will not interfere with the operation of the PC system, but the settings may interfere with the operation of other expansion cards that may have been added to the PC system. Chapter 2 lists the default settings along with other possible settings for the jumpers.

1. Visually inspect the PCL2NIA to make sure all components are seated in their respective sockets. For future reference, record the part number and serial number of the PCL2NIA here. These numbers are located at the top edge of the PCL2NIA.

    Part Number _____

    Serial Number _____

Hold the PCL2NIA by the top edge. Align the PCL2NIA with the card support and the card slot on the main board after guiding the 15-pin transceiver cable connector through the cutout window in the rear of the I/O panel of the PC system. Insert the PCL2NIA in the card guide slots until it reaches the bottom of the expansion slot. Press evenly, but gently, on the PCL2NIA until it is firmly seated in the expansion slot (see Figure 3-9).
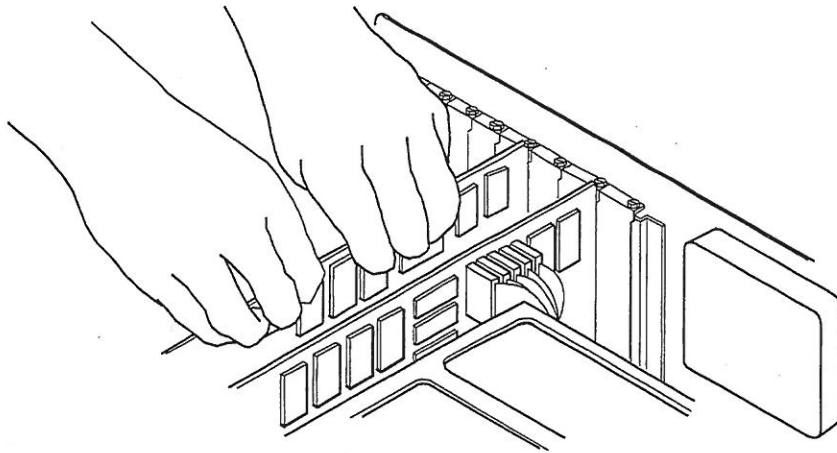
W-2260

Figure 3-9. Installing the PCL2NIA In the PC

2.   The card retaining bracket fits into the space that was occupied by the card slot
     cover. Align the hole in the card retaining bracket on the PCL2NIA with the
     screw-hole in the rear of the PC system and insert the screw from the card slot
     cover (see Figure 3-10). (This is the screw saved in step 1 of the section titled
     Preparing a Card Slot for the PCL2NIA.) Secure the 3/16-inch screw using
     either the flat-blade screwdriver or the 3/16-inch hex nut driver. Make sure this
     screw is installed tightly and the card retaining bracket is installed tightly to the
     PC chassis.   Failure to install the PCL2NIA correctly could limit the
     electrostatic discharge protection of the PCL2NIA and interfere with
     compliance to the FCC radio frequency emission limits.

Screw is M3 x .5 x 8mm
Hex Head Phillips with Washer
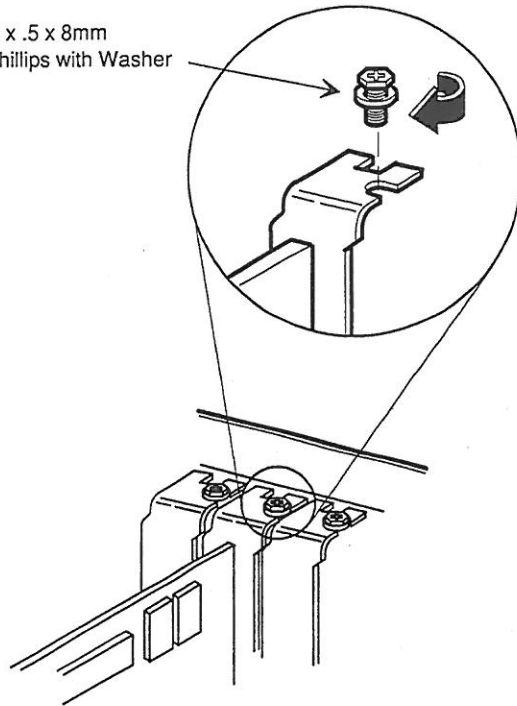
W-2261

Figure 3-10. Securing the PCL2NIA

Replacing the System Cover

To replace the cover to the PC system unit, perform the following steps.

1. Position the cover so that the back of the cover is on the front of the PC system unit and the front of the cover is tilted up (see Figure 3-11).

2. Lower the front of the cover and slide the cover toward the rear of the PC system unit (see Figure 3-12). Be careful not to snag any cables with the screw-mount tabs located under the cover.
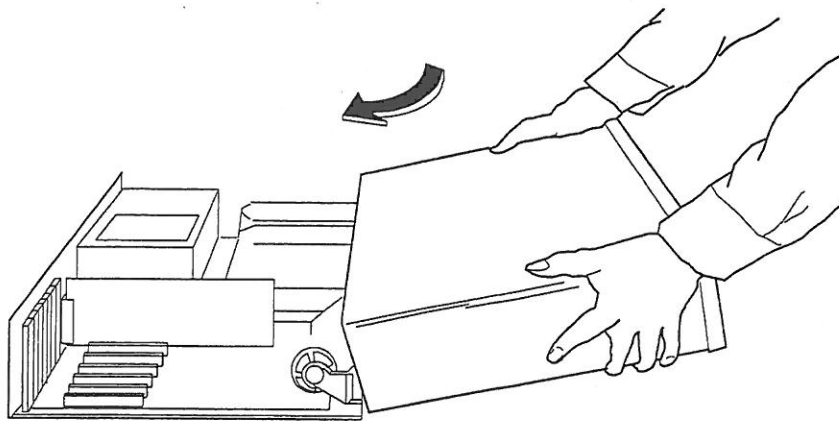
W-2262

Figure 3-11. Positioning the PC Cover
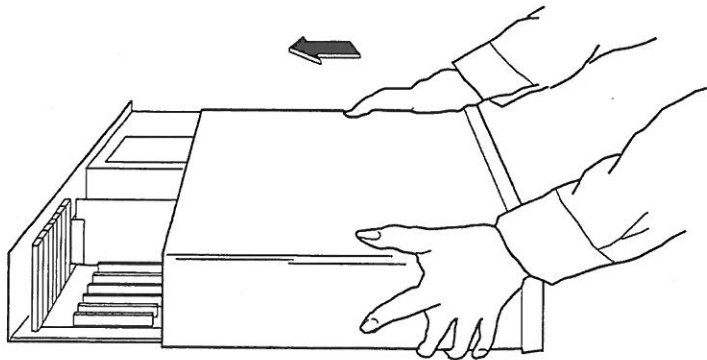
W-2263

Figure 3-12. Replacing the System Cover

3. When the cover is all the way to the rear of the system unit chassis, insert the five 1/4-inch screws into the cover mounting holes on the rear panel. Start the screws by hand to prevent cross-threading. Once the screws have been started, use the screwdriver or 1/4-inch nut driver to tighten them (see Figure 3-13).

Cover
Retaining Screws
(5 Places)
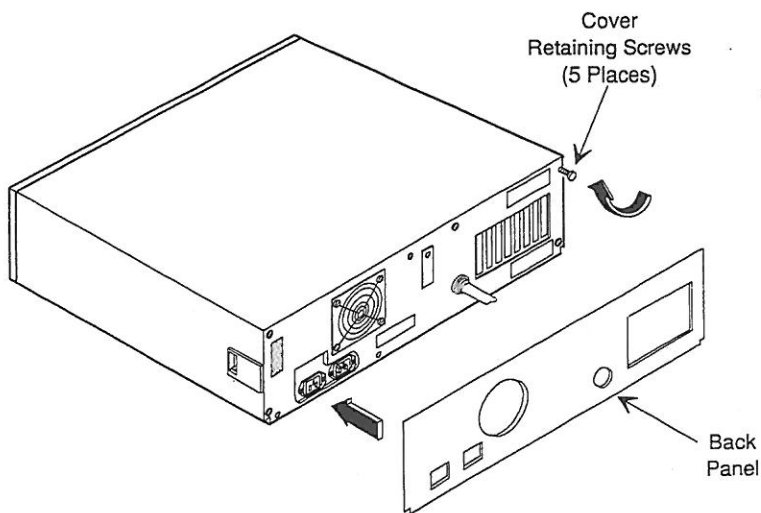
Back
Panel

W-2264

Figure 3-13. Replacing the Cover Screws and the Back Panel

4. For the PC AT only: Position the back panel on the rear of the unit, and press it into place (see Figure 3-13). Reinsert the key in the Key Lock and turn the key clockwise to the locked position if desired.

5. Reconnect the external device cables and reconnect the AC power cord to the PC system unit (see Figure 3-14). Plug the AC power cord into an appropriate power outlet.

The PC system is now ready to be attached to the network. The PC system cannot communicate across the network until it is attached to a network transceiver and the PCL2 software is installed.

Hardware Installation
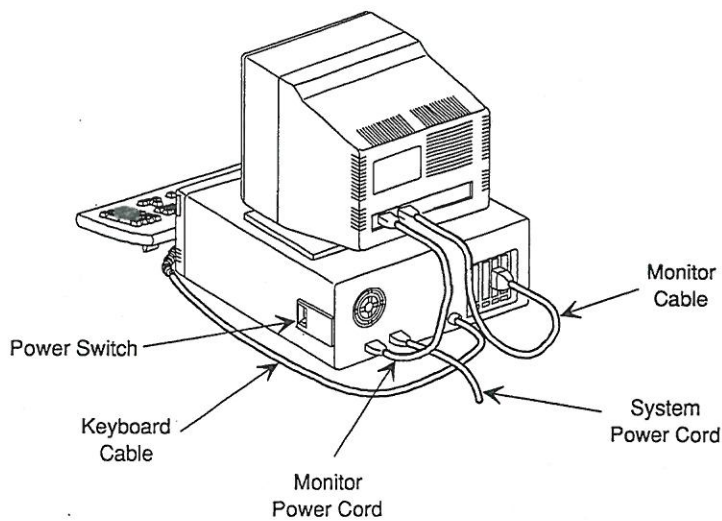
Figure 3-14. Power Switches and Rear Panel Plug Locations

Connecting the PC System to the Network

This section explains how to connect the PC system containing the PCL2NIA to the network cabling system. Before connecting to the network equipment, contact the person in charge of the Local Area Network for permission to proceed.

Typical Network-Connection Equipment

There are two basic methods that are used to provide connection to the network. The first method is to connect the PCL2NIA to a network transceiver (refer to Figure 3-15). Network transceivers commonly used are Ethernet, IEEE 802.3 Type 10base5, and IEEE 802.3 Type 10base2 (Thin Ethernet).

PC System
with PCL2NIA
Installed

Transceiver Cable

Transceiver
(Thin Wire Shown)

Transceiver Cable

PC System
with PCL2NIA
Installed

Transceiver Cable

Transceiver
(Ethernet Shown)

To
other
Systems
with Network
Interface Adaptors

Intellink™
or other
Fan-Out Box
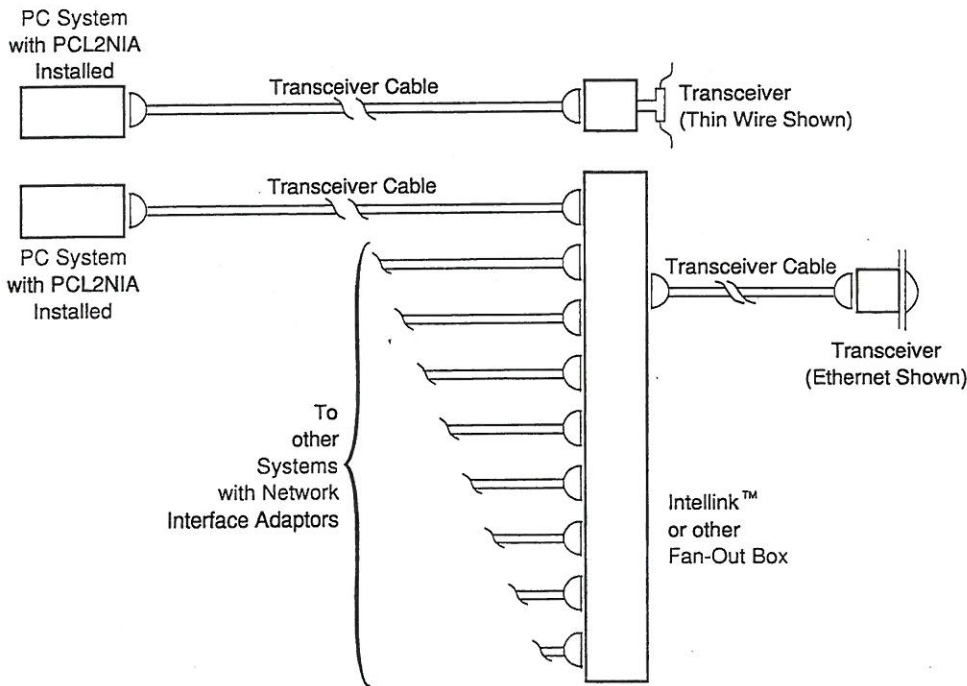
W-2307

Figure 3-15. Simplified Interconnection Diagram

The second method is to connect the PCL2NIA to an Intellink (or similar piece of equipment usually called a "fan-out box"), which allows more than one PCL2NIA to share one network transceiver.

Both methods require the installation of a transceiver cable to the PCL2NIA, which is described in the section titled Connecting the Transceiver Cable to the PCL2NIA. To connect the other end of the transceiver cable to an Intellink, follow the instructions in the section titled Connecting the Transceiver Cable to the Intellink™ also.

The transceiver cable and the rest of the newtork equipment should already be installed, ready for connection to the PCL2NIA. If it is not, contact the person in charge of the Local Area Network for further instructions. Intel sells transceivers, transceiver cables, and Intellink products. Contact the local Intel sales office for more information on these products.

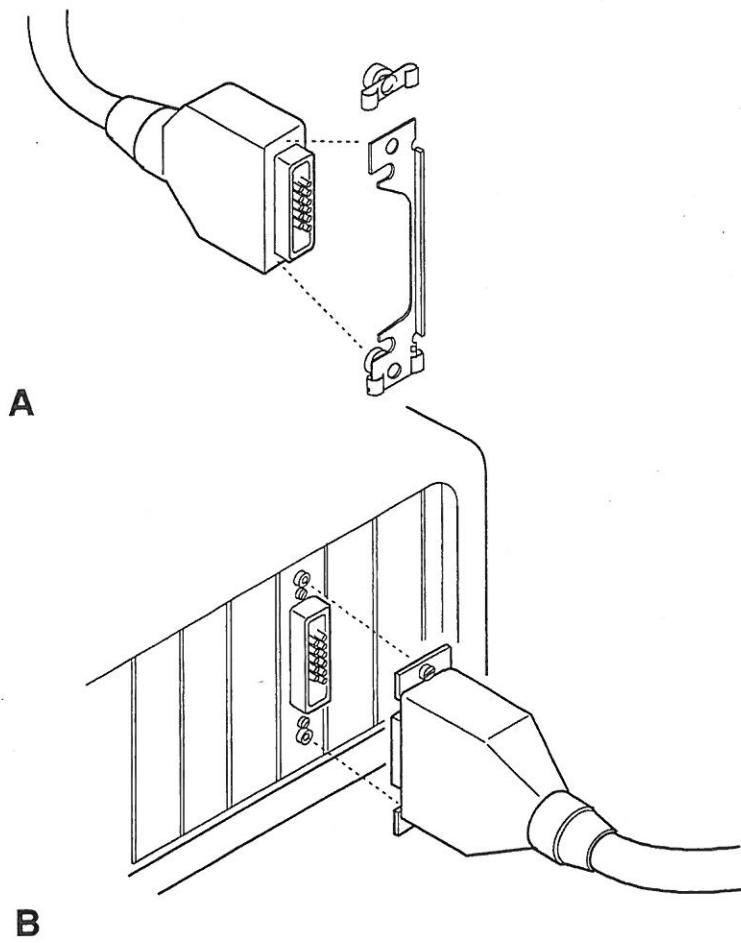## Connecting the Transceiver Cable to the PCL2NIA

CAUTION

Turn the power to the PC system off before attaching the PC system with the PCL2NIA to the transceiver cable and network equipment.

The following items are needed to install the transceiver cable to the PCL2NIA (see Figure 3-16A).

- Transceiver Cable
- Cable connector adapter plate (one provided with PCL2NIA)
- Slip-on screw clips with captured screws (two provided with PCL2NIA)
- Flat-bladed screwdriver

Proceed with the installation by performing the following steps:

1. Slip the supplied screw clips on both ends of the supplied cable connector adapter plate (Figure 3-16 A).

2. Slip the supplied adapter plate on the mating posts of the network transceiver cable and attach the 15-pin male connector to the 15-pin female "D" connector on the PCL2NIA (see Figure 3-16 A).

3. Insert the screws on the cable connector adapter plate into the holes on the card retaining bracket of the PCL2NIA. Tighten the screws (Figure 3-16 B).

4. The other end of the transceiver cable should already be connected to the transceiver unless an Intellink is used (instructions to cable to the Intellink are in the following section). If assistance is needed to connect the transceiver, contact the person in charge of the Local Area Network. The steps used to connect the transceiver cable to a transceiver are similar to those given for the Intellink and the information given in the section titled Connecting the Transceiver Cable to the Intellink™ can be used as a guide, but first make sure permission has been granted to connect to the transceiver.

A

B

W-2266

Figure 3-16. Attaching the Transceiver Cable to the PC System

Connecting the Transceiver Cable to the Intellink™

No special equipment is needed. Install the other end of the transceiver cable to the Intellink by performing the following steps (see Figure 3-17).

1. Slide the hold-down clip of the transceiver cable to the open position as shown in Figure 3-18A.

2. Align the plug and socket, then connect them together, pressing firmly.

3. Slide the hold-down clip to the locked position as shown in Figure 3-18B. This hold-down hardware prevents accidental cable disconnection during operation.
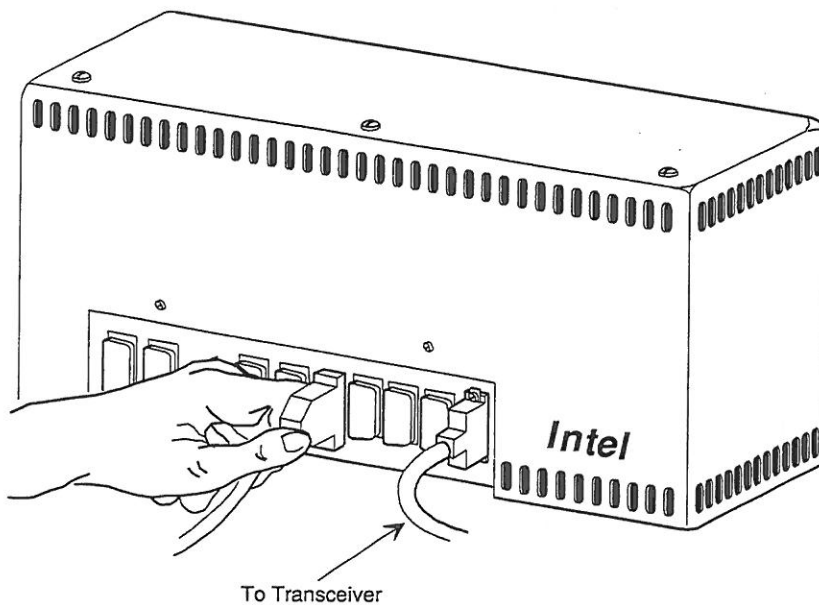
To Transceiver

W-2267

Figure 3-17. Attaching the Transceiver Cable to an Intellink™ Module

Open   Lock

Screw Head   Screw Head
Fully Exposed   Covered by Clip

A. Sliding Clip   B. Sliding Clip
   Open Position   Locked Position
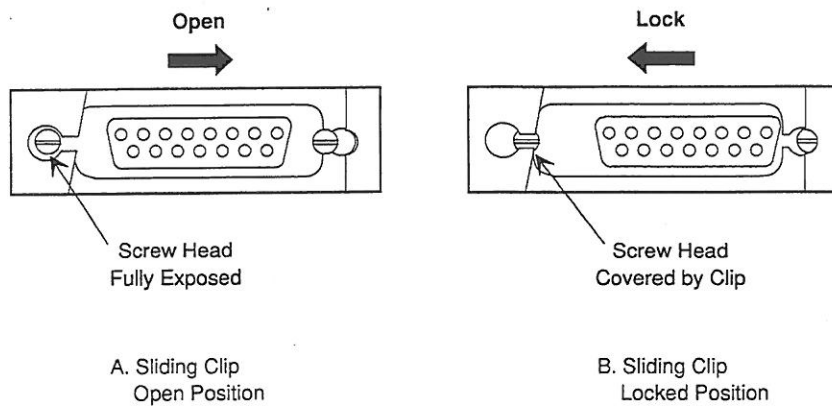
W-2268

Figure 3-18. Securing the Transceiver Cable Hold-down Clips

What To Do Next

The PC system is now ready for PCL2 software installation. Turn power to the system on and prepare the system for PCL2 software installation. If PCL2 software R3.0 for DOS has not been ordered or received, please contact the local Intel Sales representative. Refer to the *OpenNET PCL2 Software For DOS Installation Guide*, order number 462308.

***

Service Information A

Services Offered

Intel provides a wide variety of worldwide support, including 24-hour on-site support, Systems Engineering Consulting, Customer Training and Mail-in repair services. Intel will even customize a program to meet your individual needs.

System Engineering Consulting Services

Intel's system engineers have the experience and expertise that can save valuable development time. Their knowledge of Intel boards, systems, software and tools can get your product on the market sooner, boost your productivity, and ensure compatibility with future Intel projects. Contact your local sales office for more information on how you can benefit from Intel's Consulting Services.

Customer Training

Intel provides in-depth training workshops on hardware and software products. Intel routinely conducts workshops on everything from microcontrollers to operating systems at its world-wide training centers. On request, Intel can customize a workshop and present it at your site. Contact your local sales office for more information on how you can benefit from Intel's Customer Training.

Hardware On-site Support

An Intel customer engineer will repair your equipment at your site during normal business hours. An extended coverage of up to 24 hours a day, seven days a week is also available. In addition, Intel offers the option of including several non-Intel products under its on-site support. Contact your local sales office or call Intel's Customer Support for more information about on-site support.

Mail-In Service

Intel's Customer Support Organization provides the following services:

- **Direct Return Authorization (DRA):** Under this service, Intel repairs, tests, and updates the product with all mandatory engineering change orders (ECOs). The product serial number does not change with this procedure. Normal turn-around time for DRA service is 10 to 14 days.

- **Return Replacement Authorization (RRA):** Under this service, Intel replaces the defective product. The RRA service is not offered on all products, is subject to availability, and is available only to customers in a non-serviceable area. Intel tries to ship 90% of replacement products within 48 hours of receiving a defective product.

How To Get Service

Telephone Intel's customer support for hardware on-site support services, software registration or spare parts sales. See "Call This Number" section for Intel's customer support phone number.

If you require repair service, contact customer support for either a Direct Return authorization or a Return Replacement authorization. Depending on the type of repair service you require, Intel will give you an authorization number for shipping your product to Intel. Before calling, please have the following information readily available.

Have This Information Available

Warranty Customers:

- Proof of purchase
- Name and serial number of the product
- Your company name
- Your shipping address
- Contact name and telephone number at your site

Service Contract Customers:

- Service contract number

- Name and serial number of the product

- Your company name

- Your shipping number

- Contact name and telephone number at your site

All Other Customers Requesting Product Service:

- Purchase order number (or billing information)

- Name and serial number of the product

- Your company name

- Your shipping and billing addresses

- Contact name and telephone number at your site

Call This Number

For service and assistance with Intel products, call:

- 1-800-INTEL-4-U (1-800-468-3548) in the United States and Canada.

  You will be asked a series of questions pertaining to the type of service you are requesting. Respond to those questions by pressing or dialing a number on the telephone. Once the requested type of service is determined, a customer service representative will talk with you to help you with your request.

- Your local Intel sales office or distributor for all other areas

- FAX number (602) 869-4244

Package Your Product for Shipment

1. Please write the DRA or RRA authorization number on the packing slip, the purchase order, and other related documents.

2. Before shipping the product, remove all modifications you may have made to the product.

CAUTION

Before returning your board for service, be sure to remove your custom-programmed devices and install the original default devices. Do NOT send your custom devices in with the board; they are not required for board service and their return is not guaranteed.

3. Place boards in antistatic bags and then in appropriate shipping containers. Wrap power supplies and other large items in antistatic material and pack separately from other fragile parts or devices.

4. Protect the product with protective padding, such as flow pack or foam.

5. Write the DRA or RRA authorization number on the outside of the box and label the box "FRAGILE."

NOTE

Damage resulting from improper packaging of return items can result in extra repair charges to you.

Send Your Product To This Address

Return the defective product to Intel Corporation, freight prepaid. Forward your product and all correspondence to:

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Phoenix, AZ 85027
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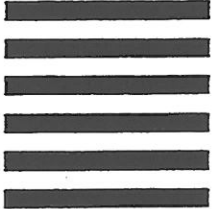(Country)_____Phone_____

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Intel Semicondutores do Brazil LTDA
Av. Paulista, 1159-CJS 404/405
01311 - Sao Paulo - S.P.

CANADA
Intel Semiconductor of Canada, Ltd.
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Burnaby V5G 4L6
British Columbia

Intel Semiconductor of Canada, Ltd.
2650 Queensview Drive
Suite 250
Ottawa K2B 8H6
Ontario

Intel Semiconductor of Canada, Ltd.
190 Attwell Drive
Suite 500
Rexdale M9W 6H8
Ontario

Intel Semiconductor of Canada, Ltd.
620 St. Jean Boulevard
Pointe Claire H9R 3K2
Quebec

CHINA/HONG KONG
Intel PRC Corporation
15/F, Office 1, Citic Bldg.
Jian Guo Men Wai Street
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Intel Semiconductor Ltd.
10/F East Tower
Bond Center
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DENMARK
Intel Denmark A/S
Glentevej 61, 3rd Floor
2400 Copenhagen NV

FINLAND
Intel Finland OY
Ruosilantie 2
00390 Helsinki

FRANCE
Intel Corporation S.A.R.L.
1, Rue Edison-BP 303
78054 St. Quentin-en-Yvelines
Cedex

WEST GERMANY
Intel Semiconductor GmbH
Dornacher Strasse 1
8016 Feldkirchen bei Muenchen

Intel Semiconductor GmbH
Hohenzollern Strasse 5
3000 Hannover 1

Intel Semiconductor GmbH
Abraham Lincoln Strasse 16-18
6200 Wiesbaden

Intel Semiconductor GmbH
Zettachring 10A
7000 Stuttgart 80

INDIA
Intel Asia Electronics, Inc.
4/2, Samrah Plaza
St. Mark's Road
Bangalore 560001

ISRAEL
Intel Semiconductor Ltd.
Atidim Industrial Park-Neve Sharet
P.O. Box 43202
Tel-Aviv 61430

ITALY
Intel Corporation Italia S.p.A.
Milanofiori Palazzo E
20090 Assago
Milano

JAPAN
Intel Japan K.K.
5-6 Tokodai, Tsukuba-shi
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Intel Japan K.K.
Daiichi Mitsugi Bldg.
1-8889 Fuchu-cho
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KOREA
Intel Technology Asia, Ltd.
16th Floor, Life Bldg.
61 Yoido-Dong, Youngdeungpo-Ku
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NETHERLANDS
Intel Semiconductor B.V.
Postbus 84130
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NORWAY
Intel Norway A/S
Hvamveien 4-PO Box 92
2013 Skjetten

SINGAPORE
Intel Singapore Technology, Ltd.
101 Thomson Road #21-05/06
United Square
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SPAIN
Intel Iberia S.A.
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SWEDEN
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Intel Technology Far East Ltd.
8th Floor, No. 205
Bank Tower Bldg.
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