

IBM SecureWay  
Cryptographic Products



# IBM 4758 PCI Cryptographic Coprocessor Installation Manual



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# IBM 4758 PCI Cryptographic Coprocessor Installation Manual



#### Note

Before using this information and the product it supports, be sure to read the safety information under "Safety Information—Read This First" on page ix and the general information under Appendix A, "Notices and Product Warranty" on page A-1.

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## Safety Information—Read This First

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### General Safety Information

Before installing this product read the Safety Information booklet.

Antes de instalar este producto consulte el manual de Avisos de seguridad.

Prima di installare questo prodotto, leggere l'opuscolo relativo alla sicurezza.

Läs dokumentet med säkerhetsföreskrifter innan du installerar den här produkten.

Před instalací tohoto produktu si přečtěte brožuru s bezpečnostními informacemi.

在安装本产品前，请阅读安全信息小册子。

Перед тем как устанавливать этот продукт, прочтите буклет "Инструкция по технике безопасности".

본 제품을 설치하기 전에 "안전 정보" 자료를 읽으십시오.

在您安裝本產品之前，請先閱讀「安全資訊」手冊。

Ennen kuin asennat tämän tuotteen, lue turvaohjeet sisältävä kirjanen.

この製品を設置する際には、まず「安全について」をお読みください。

Pred namestitvijo tega izdelka preberite Varnostne informacije.

Antes de instalar este produto, leia o folheto de Informações sobre Segurança.

Vor dem Installieren dieses Produkts die Broschüre mit den Sicherheitsinformationen lesen.

Læs hæftet med sikkerhedsforskrifter, før du installerer dette produkt.

Lees voordat u dit produkt gebruikt het boekje met veiligheidsvoorschriften.

Antes de instalar seu produto leia o manual de Informações sobre Segurança.

Avant d'installer ce produit, reportez-vous au manuel Safety Information.

---

## **Lithium Battery Safety**

### **Caution:**

A lithium battery can cause a fire, an explosion, or a severe burn. Do not recharge, disassemble, heat above 100 degrees C (212 degrees F), solder directly to the cell, incinerate, or expose the cell contents to water.

Keep away from children.

Replace only with the part number specified for this IBM product. Use of a different battery may present the risk of fire or explosion. The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.

---

### **Advertencia**

Una batería de litio puede causar incendios, explosiones o quemaduras graves. No recargar, desmontar, calentar por encima de los 100 grados C (212 grados F), soldar directamente sobre la pila, incinerar o poner en contacto con el agua el contenido de la misma.

Mantenga fuera del alcance de los niños.

Sustituir por el número de pieza especificado para este producto de IBM. Usar una pila diferente puede suponer un riesgo de incendio o explosión. El conector de la batería está polarizado. No intente invertir la polaridad.

Deshágase de la batería de acuerdo con las disposiciones municipales.

---

**Attenzione:**

Una batteria al litio potrebbe incendiarsi, esplodere o procurare gravi ustioni. Non ricaricarla, non smontarla e non riscaldarla ad una temperatura superiore ai 100 gradi, non saldarla, non incinendarla e non gettarla in acqua.

Tenerla lontana dalla portata dei bambini.

Sostituirla soltanto con una batteria contrassegnata dal numero parte specifico per questo prodotto IBM; l'utilizzo di un'altra batteria può determinare rischi di incendio o di esplosione. Il connettore della batteria è polarizzato; non tentare di invertire la polarità.

Smaltire la batteria seguendo la normativa in vigore (DPR915/82 e successive disposizioni e disposizioni locali).

---

**WARNING:**

Ett litiumbatteri kan orsaka brand, explosion eller allvarlig brännskada. Det får inte återladdas, tas isär, utsättas för temperaturer över 100°C eller brännas. Löd inte direkt på battericellen och låt inte cellinnehållet komma i kontakt med vatten.

Förvara batteriet oåtkomligt för barn.

Byt endast till batteri med angivet artikelnummer för den här IBM-produkten. Användning av annat batteri kan medföra brand- eller explosionsrisk. Batterianslutningen är polariserad. Försök inte växla polaritet.

Följ lokala föreskrifter vid kassering av batteriet.

---

## VAROVÁNÍ

Lithiová baterie může způsobit požár, výbuch nebo prudké hoření. Zákaz nabíjení, rozebírání, zahřívání nad 100 °C, pájení přímo na článek, spalování nebo vystavení obsahu článku vodě. Chraňte před dětmi. Zaměňte pouze součástkou se stejným objednacím číslem IBM. Použití jiné baterie přináší riziko vzniku požáru nebo výbuchu. Baterie je pólována; neotočte polaritu. Baterii zlikvidujte podle místních předpisů.

---

### 小心！

锂电池可能引起火警，爆炸或严重的烧伤。不要给它再充电，不要拆卸它，不要将它加热到摄氏 100 度（华氏 212 度）以上，不要直接焊接电芯，焚化它或者将电芯内含物暴露在水中。

不要让小孩接近它。

只可用为此 IBM 产品指定的部件号来代替它，不同电池的使用可能有火警或爆炸的危险。电池连接器是被极化的，不要试图倒置它的极性。

根据当地的规定来处理该电池。

---

### **ОСТОРОЖНО:**

Чтобы избежать пожара, взрыва или сильного ожога, литиевую батарею нельзя разряжать, разбирать, нагревать свыше 100°C, сжигать, допускать соприкосновения с водой.

Нельзя ничего припаивать к батарее.

Храните батарею в недоступном для детей месте.

Заменить ее можно только указанным для этого продукта IBM изделием. Использование другой батареи может вызвать пожар или взрыв.

Выводы батареи имеют разную полярность.

Не перепутайте полярность.

Уничтожение батареи необходимо производить согласно регламенту, принятому в вашей стране.

---



## 2. 안전 레이블

다음을 점검하십시오.

- 모든 안전 레이블이 이 섹션에 있는 그림에 나타나 있는대로 제 위치에 있어야 합니다.
- 각 안전 레이블이 이 섹션에 있는 그림에 나타나 있는 것과 일치해야 합니다.

## 3. 접지

랙이 제대로 접지되어 있는지 점검하십시오.  
본서의 "접지 요구사항"을 참조하십시오.

## 4. 입력 전원 볼티지

고객의 주 전원 공급 패널이 3172의 전원 요구사항을 제공하고 있는지 점검하십시오. 요구사항은 라인 주파수 50 혹은 60Hz와 200에서 240 볼트의 볼티지 범위를 갖는 ac 전원입니다.(테이블 상단 피쳐는 110V임)

### 위험

쇼크 위험을 피하기 위해서 전기적 문제가 있는 동안에는 케이블을 연결 또는 연결해제 하거나 설치, 유지보수 혹은 재구성 작업을 하지 마십시오.

### 위험

본 제품의 전원 케이블을 AC 전원에 연결하기 전에 전원 소켓이 제대로 접지되었는지 그리고 알맞은 볼티지로 되어 있는지를 확인하십시오.

---

## 注意：

鋰電池可能會引起火災、爆炸或造成嚴重的燃燒。切勿對鋰電池進行以下動作：再充電、拆卸、置於攝氏 100 度 (華氏 212 度) 高溫以上、直接對電池元件進行焊接、焚毀或使電池內的元件沾到水。

請置於孩童無法取得之處。

只可更換 IBM 產品所指定的電池，使用不同廠牌的電池可能有造成火災或爆炸的危險；電池接頭有正負極之分，切勿任意變換使用。

請依照本地的垃圾處置條規來處理鋰電池。

---

### **Varoitus:**

Litiumpariston väärä käsittely voi aiheuttaa tulipalo- tai räjähdysvaaran tai palovammoja. Älä lataa paristoa uudelleen, äläkä pura paristoa osiin. Älä kuumenna paristoa yli 100 °C:n lämpötilaan tai hävitä sitä polttamalla. Estä paristoa joutumasta kosketuksiin veden kanssa.

Pidä paristo poissa lasten ulottuvilta.

Pariston saa vaihtaa vain paristoon, joka on osanumeron perusteella tarkoitettu tähän IBM:n tuotteeseen. Muunlaisen pariston käyttö voi aiheuttaa tulipalo- tai räjähdysvaaran. Älä yritä vaihtaa pariston napaisuutta.

Hävitä paristo ongelmajätteistä säädettyjen lakien ja viranomaisten määräysten mukaisesti.

---

## 注意：

本製品には、リチウム電池が使用されています。

電池の交換方法や取り扱いを誤ると、発熱、発火、破裂のおそれがあります。電池の交換には、本製品指定の電池を使用してください。

電池は幼児の手の届かない所に置いてください。  
万一、幼児が電池を飲み込んだときは、直ちに医師に相談してください。

以下の行為は絶対にしないでください。

- 水にぬらすこと
- 100度C 以上の過熱や焼却
- 分解や充電
- ショート
- 極性を反対に接続すること

電池を廃棄する場合、および保存する場合にはテープなどで絶縁してください。

他の金属や電池と混ざると発火、破裂の原因となります。  
電池は地方自治体の条例、または規則に従って廃棄してください。  
ごみ廃棄場で処分されるごみの中に捨てないでください。

---

## Výstraha

Lítiová batéria môže spôsobiť oheň, exploziu, alebo samovznietenie. Nedobíjajte, nedemontujte, nevystavujte teplotám nad 100°C (212°F), nespájajte priamo na lánku, nespájajte a nevystavujte obsah lánok vode.

Držte mimo dosahu detí.

Nahrádzajte jedine dielmi prípustnými pre váš systém. Použitie iných batérií predstavuje riziko požiaru alebo výbuchu. Konektor batérie je polarizovaný; nepokúšajte sa zmeniť polaritu.

Používajte batériu zodpovedajúcu miestnym pravidlám.

---

**Cuidado:**

Uma bateria de lítio representa um risco de incêndio, explosão ou queimaduras graves. Não a recarregue, não a desmonte nem exponha a temperaturas superiores a 100°C (212°F), não efectue soldaduras directas, não a incinere nem exponha o interior ao contacto com água.

Mantenha-a afastada das crianças.

Quando a substituir, faça-o somente por uma bateria cujo número de referência seja o especificado para este produto IBM. A utilização de uma bateria diferente apresenta o risco de incêndio ou explosão. O terminal da bateria está polarizado. Não tente inverter a polaridade.

Destrua a bateria de acordo com a regulamentação do país.

---

**Achtung:**

Lithiumbatterien sind feuergefährlich, explosiv und können schwere Verbrennungen verursachen. Batterie nicht wiederaufladen, öffnen oder über 100 Grad Celsius erhitzen; die Zelle nicht direkt anlöten, verbrennen oder den Inhalt der Zelle mit Wasser in Berührung bringen.

Batterie nicht in Reichweite von Kindern aufbewahren.

Eine verbrauchte Batterie nur durch eine Batterie mit der für dieses System spezifizierten Teilenummer ersetzen. Andere Batterien können sich entzünden oder explodieren. Der Batterieanschluß hat zwei verschiedene Pole; beim Anschließen die Pole nicht vertauschen.

Batterie gemäß den örtlichen Richtlinien für Sondermüll entsorgen.

---

**Pas på!**

Litiumbatteriet kan forårsage brand og eksplosion og give alvorlige brandsår. Det må ikke genoplades, åbnes, udsættes for mere end 100 grader, brændes eller komme i berøring med vand.

Batteriet skal opbevares utilgængeligt for børn.

Det må kun udskiftes med et litiumbatteri, der har det partnummer, der er angivet til dette IBM-produkt. Bruges en anden batteritype, kan det medføre eksplosion eller brand. Batteripolen er polariseret. Forsøg ikke at bytte om på polerne.

Batteriet skal kasseres i henhold til de lokale bestemmelser. Spørg kommunens tekniske forvaltning (miljøafdelingen).

---

**Waarschuwing:**

De lithiumbatterij is brand- en explosiegevaarlijk en kan ernstige verbrandingen veroorzaken. Laad de batterij niet opnieuw op, demonteer hem niet, stel hem niet bloot aan temperaturen hoger dan 100 graden Celsius (212 graden Fahrenheit), soldeer niet direct op de cel, verbrand hem niet en stel de inhoud van de cel niet bloot aan water.

Buiten bereik van kinderen houden.

Vervang de batterij alleen door een batterij met het onderdeelnummer dat voor dit IBM-product is gespecificeerd. Gebruik van een andere batterij kan brand of explosie van de batterij tot gevolg hebben. De batterij-aansluiting maakt gebruik van polen. Verwissel de polen niet.

Lever de batterij in bij een inzamelpunt voor klein chemisch afval.

---

**Cuidado:**

Uma bateria de lítio apresenta risco de incêndio, explosão ou queimaduras graves. Não recarregue, desmonte, nem exponha a bateria a temperaturas superiores a 100 graus C (212 F), não a solde diretamente na célula, não a incinere nem exponha o conteúdo da célula à água.

Mantenha fora do alcance de crianças.

Substitua apenas pelo número de peça especificado para este produto IBM. O uso de uma bateria diferente pode apresentar risco de incêndio ou explosão. O conector da bateria é polarizado; não tente inverter a polaridade.

Destrua a bateria de acordo com a regulamentação local.

---

**Attention**

Prenez garde aux risques d'incendie, d'explosion ou de brûlures graves liés à l'utilisation d'une pile au lithium. Ne rechargez pas la pile et ne la démontez pas. Ne l'exposez pas à une température supérieure à 100 °C, ne la soudez pas, ne la faites pas brûler et n'en exposez pas le contenu à l'eau.

Gardez la pile hors de portée des enfants.

Si vous la remplacez, commandez une pile de rechange de même référence. Toute autre pile risquerait de prendre feu ou d'exploser. Le connecteur de la pile est polarisé. N'essayez pas d'inverser la polarité.

Ne mettez pas la pile à la poubelle. Pour le recyclage ou la mise au rebut, reportez-vous à la réglementation en vigueur.

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## About This Manual

The *IBM 4758 PCI Cryptographic Coprocessor Installation Manual* is written for personnel installing the IBM 4758 PCI Cryptographic Coprocessor hardware.

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## How This Manual Is Organized

This manual is organized as follows:

- Chapter 1, "Introduction," describes the shipping, handling, and operating requirements of the PCI Cryptographic Coprocessor.
- Chapter 2, "Installing the Coprocessor," describes the way to install the PCI Cryptographic Coprocessor.
- Chapter 3, "Replacing Coprocessor Batteries," describes the way to replace the batteries on the PCI Cryptographic Coprocessor.
- Appendix A, "Notices and Product Warranty," contains notices for various countries and information about the product warranty extended by IBM.

A list of abbreviations, a glossary, and an index completes the manual.

---

## Where to Find More Information

The following publications provide additional information about the PCI Cryptographic Coprocessor. Visit the product web site at <http://www.ibm.com/security/cryptocards> to learn about the online availability of these publications. From the web site, you can download, view, and print publications available in the Adobe Acrobat\*\* format (PDF).

For help in obtaining printed copies of IBM publications, contact your IBM representative, or contact the IBM Branch Office, or the authorized dealer, serving your area.

*IBM 4758 PCI Cryptographic Coprocessor General Information Manual, GC31-8608*

*IBM 4758 CCA Services Installation and I/O Guide, SC31-8610*

*IBM 4758 CCA Basic Services Reference and Guide, SC31-8609*



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## Chapter 1. Introduction

This chapter details the contents of the Coprocessor Package, and describes the following information:

- Special considerations for handling and storage
- Requirements and specifications

The IBM 4758 PCI Cryptographic Coprocessor uses dedicated hardware to process cryptographic keys, certificates, and bulk data. These cryptographic functions are performed within a tamper-resistant module that is designed to meet the FIPS PUB 140-1 Level 4 specification for detecting attacks through temperature, radiation, voltage, and physical penetration.

You can install the coprocessor—a standard, two-thirds length PCI card—in an RS/6000\* workstation, or in an IBM-compatible computer with a PCI expansion slot available.

---

### Contents of the Coprocessor Package

In addition to this manual, your package includes the following items:

- The IBM 4758 PCI Cryptographic Coprocessor
- The *Caution: Safety Information—Read This First*, SD21-0030 booklet
- A product-support information insert

If any item is missing or damaged, contact your local IBM representative or your IBM Business Partner. OEM customers in the United States should call 1-800-IBMS-OEM (1-800-426-7636).

---

## Special Considerations for Handling and Storage

Each IBM 4758 PCI Cryptographic Coprocessor is shipped from the factory with a certified device key. This electronic key—stored in the card's battery-powered protected memory—digitally signs test messages to confirm that the PCI Cryptographic Coprocessor is genuine and that no tampering has occurred.

**Note:** If any of the secure module's tamper sensors are triggered by tampering or accident, the coprocessor erases all data in the protected memory, destroying the device key. The PCI Cryptographic Coprocessor cannot operate without the device key. To protect the key, follow these guidelines:

**Temperature:** Do not expose the coprocessor to temperatures below –15 degrees C (+5 degrees F) or temperatures above 60 degrees C (140 degrees F).

**Batteries:** Do not remove the coprocessor's batteries. Data in the protected memory is lost when battery power is removed. For information about replacing the batteries without erasing the protected memory, see Chapter 3, "Replacing Coprocessor Batteries."

---

## Requirements and Specifications

### **Hardware:**

A personal computer, workstation, server, communication device or RS/6000 with a PCI (Version 2.1) bus slot available. No additional hardware or cabling is required.

### **Software:**

The coprocessor requires support software—like the CCA Cryptographic Coprocessor Support Program—for both the host machine and for its internal firmware. Operating system support is determined by the support software.

This publication does not discuss the installation of support software. For information about the latest software features available, visit the product web site at <http://www.ibm.com/security/cryptocards>.

### **Power and Environment:**

Power consumption in active mode: 6.3 watts  
Power consumption in energy-saving mode: 6.0 watts  
Power dissipation: 6.3 watts (typical)  
Voltage: +12.0 VDC,  $\pm$  5 percent  
          +5.0 VDC,  $\pm$  5 percent  
Relative Humidity: 8 to 80%  
Temperature:  
    Operating: 10 to 40 degrees C (50 to 104 degrees F)  
    Storage: -15 to 60 degrees C (+5 to 140 degrees F)

### **Physical Dimensions:**

The coprocessor is a two-thirds length PCI card, 4.2 in. by 6.9 in. (106mm by 175mm).



---

## Chapter 2. Installing the Coprocessor

This chapter describes installing the IBM 4758 PCI Cryptographic Coprocessor. Before installing the coprocessor, read the safety information in *Caution: Safety Information—Read This First*, SD21-0030 and read the compliance statements in “Electronic Emissions” on page A-2.

To install the coprocessor into the host computer, follow these steps:

- 1 Locate your computer’s instructions for installing expansion cards. Throughout this procedure, follow the safety instructions in that manual.
- 2 Turn OFF the computer and all attached devices.
- 3 Disconnect all cables, including the power cable.

**CAUTION:**

**Electrical current from power, telephone, and communication cables is hazardous. Disconnect cables before installing, moving, or opening the covers of any computer.**

**To avoid electrical shock, do not connect or disconnect any cables during an electrical storm.**

- 4 Remove the cover from the expansion slots according to the directions provided with your computer.
- 5 Choose a PCI expansion slot able to accommodate a two-thirds length card.
- 6 If the expansion slot has an individual cover, remove the bracket-holding screw and the cover.

**Attention:** Electrostatic discharge (ESD) can damage the card and its components. Wear an ESD wrist-strap while handling and installing the card, or take the following precautions:

- Limit your movements; this helps prevent static electricity building up around you.
- Prevent others from touching the card or other components.
- Before removing the card from the anti-static bag, touch the bag to an unpainted metal surface on your computer and hold it there for at least two seconds.
- Handle the card by its edges only. Do not touch exposed circuitry and components.

7 Remove the PCI Cryptographic Coprocessor from its static-protective bag.

8 Verify that the jumpers on the card are positioned correctly; see Table 2-1 on page 2-3.

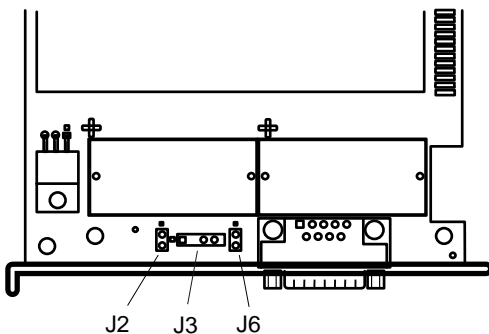


Figure 2-1. Jumpers on the PCI Cryptographic Coprocessor

Table 2-1. Jumpers on the PCI Cryptographic Coprocessor

Jumper	Number of Pins	Name of Jumper	Position When Shipped
J2	2	PCI EPROM write-enable	Shipped with jumper installed
J3	4	Temporary battery connector	Shipped without jumper installed
J6	2	External-tamper-switch connector	Shipped with jumper installed

**Note:** *Shipped with jumper installed* means that the pins are connected.

- 9 Insert the coprocessor into the slot; be sure the card is fully seated.
- 10 If you removed a cover from the expansion slot, replace it.
- 11 Replace the host computer's cover.
- 12 Reconnect the power cable and any other cables you disconnected.
- 13 Turn the computer ON. The PCI Cryptographic Coprocessor runs its power-on self-test (POST).

You have completed the procedure for the physical installation of the PCI Cryptographic Coprocessor. Refer to the support software documentation for information about initializing and using the coprocessor.





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## Chapter 3. Replacing Coprocessor Batteries

This chapter describes the way to replace the batteries on the PCI Cryptographic Coprocessor. Before beginning the procedure, read the following descriptive and cautionary materials.

Two lithium batteries mounted on the PCI Cryptographic Coprocessor supply power to the card's components, including protected memory. Your support software or application software can query the coprocessor to determine whether the batteries need to be replaced.

When shipped from the factory, the protected memory contains a certified device key. If your coprocessor has been initialized by support software, the protected memory contains secret data, including a master cryptographic key, user profiles, and user passwords.

**Attention:** If you remove either of the batteries without first backing up the power with a fresh battery, the data in protected memory can be lost. The Replacement Battery Kit for the IBM 4758 PCI Cryptographic Coprocessor (Feature #1008) provides the battery tray needed to provide backup power while you replace the batteries.

To order the kit, contact your local IBM representative or your IBM Business Partner. OEM customers in the United States should call 1-800-IBMS-OEM (1-800-426-7636).

**CAUTION:**

Before beginning the battery-replacement procedure detailed below, read the general safety information in *Caution: Safety Information—Read This First*, SD21-0030 and the lithium battery safety information under “Lithium Battery Safety” on page xi.

Your Replacement Battery Kit should include:

- Two replacement batteries.
- A battery tray with connecting wires.

To replace the batteries, follow these steps:

- 1 Turn OFF the computer and all attached devices.
- 2 Disconnect all cables, including the power cable.

**CAUTION:**

Electrical current from power, telephone, and communication cables is hazardous. Disconnect cables before installing, moving, or opening the covers of any computer.

To avoid electrical shock, do not connect or disconnect any cables during an electrical storm.

- 3 Remove the cover from the expansion slots according to the directions provided with your computer.
- 4 Open the Battery Replacement Kit.

**Attention:** Electrostatic discharge (ESD) can damage the card and its components. Wear an ESD wrist-strap while handling and installing the card, or take the following precautions:

- Limit your movements; this helps prevent static electricity building up around you.
- Prevent others from touching the card or other components.
- Handle the card by its edges only. Do not touch exposed circuitry and components.

- 5 Remove the PCI Cryptographic Coprocessor from the PCI-bus slot in the host computer.
- 6 Insert one of the new batteries into the battery tray provided with the kit, and connect the tray's wires to the J3 connector located near the RS-232 serial port; see Figure 3-1. The connector is polarized to ensure a proper connection.

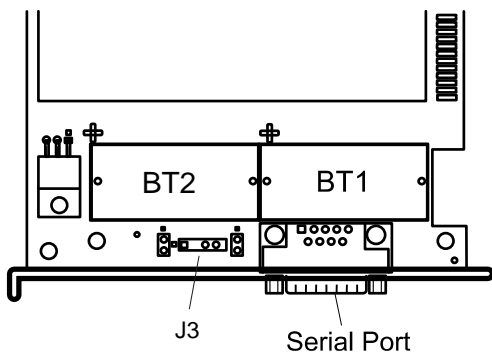


Figure 3-1. J3 Connector and Battery Locations on the PCI Cryptographic Coprocessor

**Attention:** Any loss of power erases data stored in the card's protected memory. To prevent loss, ensure that the battery tray contains a fresh battery and is attached to the J3 connector.

- 7 Replace the battery in the BT1 position with a new battery.
- 8 Replace the battery in the BT2 position with the battery in the battery tray. (The new battery already installed in the BT1 position provides power to the PCI Cryptographic Coprocessor while you perform this step.)
- 9 Remove the battery tray from the J3 connector, and discard it.
- 10 Re-insert the coprocessor into the PCI-bus slot; be sure the card is fully seated.
- 11 Replace the host computer's cover.

**12** Reconnect the power cable and any other cables you disconnected.

**13** Turn the computer ON. The PCI Cryptographic Coprocessor runs its power-on self-test (POST).

You have completed the procedure for replacing the PCI Cryptographic Coprocessor batteries. Recycle or dispose of the old batteries as required by local law.

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## Appendix A. Notices and Product Warranty

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This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

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## Warranty



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**Machine** IBM 4758 PCI Cryptographic Coprocessor

**Warranty Period\*** One Year

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  - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
  - b. secure all programs, data, and funds contained in a Machine,
  - c. inform IBM or your reseller of changes in a Machine's location, and
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## Glossary

This glossary includes some terms and definitions from the *IBM Dictionary of Computing*, New York: McGraw Hill, 1994. This glossary also includes some terms and definitions from:

- The *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies may be purchased from the American National Standards Institute, 11 West 42 Street, New York, New York 10036. Definitions are identified by the symbol (A) following the definition.
- The *Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) following the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.

### A

**Advanced Interactive Executive (AIX) operating system.** IBM's implementation of the UNIX\*\* operating system.

**American National Standard Code for Information Interchange (ASCII).** The standard code, using a coded character set consisting of 7-bit characters (8 bits including parity check), that is used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphic characters. (A)

**American National Standards Institute (ANSI).** An organization consisting of producers, consumers, and general interest groups that establishes the procedures by which accredited organizations create and maintain voluntary industry standards in the United States. (A)

**Application System/400 (AS/400).** A family of products designed to offer solutions for commercial data processing, office, and communications environments, and to provide simple, consistent programmer and end-user interfaces for businesses of all sizes.

## B

**bus.** In a processor, a physical facility along which data is transferred.

## C

**card.** (1) An electronic circuit board that is plugged into a slot in a system unit. (2) A plug-in circuit assembly.

**coprocessor.** (1) A supplementary processor that performs operations in conjunction with another processor. (2) A microprocessor on an expansion card that extends the address range of the processor in the host system or adds specialized instructions to handle a particular category of operations; for example, an I/O coprocessor, math coprocessor, or networking coprocessor.

**cryptography.** (1) The transformation of data to conceal its meaning. (2) In computer security, the principles, means and methods used to so transform data.

## D

**Data Encryption Standard (DES).** In computer security, the National Institute of Standards and Technology (NIST) Data Encryption Standard, adopted by the U.S. government as Federal Information Processing Standard (FIPS) Publication 46, which allows only hardware

implementations of the data-encryption algorithm.

**driver.** A program that contains the code needed to attach and use a device.

## E

**electrostatic discharge (ESD).** An undesirable discharge of static electricity that can damage equipment and degrade electrical circuitry.

**erasable programmable read-only memory (EPROM).** A PROM that can be erased by a special process and then reused. (T)

**expansion card.** (1) A circuit board that a user can install in an expansion slot to add memory or special features to a computer. (2) Synonym for *card*.

**expansion slot.** One of several receptacles in a personal computer or RS/6000 machine into which a user can install an expansion card.

## F

**feature.** Part of an IBM product able to be ordered separately.

**Federal Communications Commission (FCC).** A board of commissioners, appointed by the President under the Communications Act of 1934, having the power to regulate all interstate and foreign communications in the United States that are transmitted by wire or radio.

**Federal Information Processing Standard (FIPS).** A standard published by the US National Institute of Science and Technology.

## H

**hertz (Hz).** A unit of frequency equal to one cycle per second.

**Note:** In the United States, line frequency is 60 Hz, or a change in voltage polarity 120 times per second; in Europe, line frequency is 50 Hz, or a change in voltage polarity 100 times per second.

## I

**interface.** (1) A shared boundary between two functional units, defined by functional characteristics, signal characteristics, or other characteristics, as appropriate. The concept includes the specification of the connection of two devices having different functions. (T) (2) Hardware, software, or both, that links systems, programs, and devices.

**International Organization for Standardization (ISO).** An organization of national standards bodies established to promote the development of standards to facilitate the international exchange of goods and services, and to develop cooperation in intellectual, scientific, technological, and economic activity.

## J

**jumper.** A wire that joins two unconnected circuits.

## K

**key.** In computer security, a sequence of symbols used with an algorithm to encipher or decipher data.

## O

**Operating System/2 (OS/2).** An operating system for the IBM Personal System/2 computers.

**Operating System/400 (OS/400).** An operating system for the IBM Application System/400 computers.

## P

**password.** In computer security, a string of characters known to the computer system and a user; the user must specify it to gain full or limited access to a system and to the data stored therein.

**power-on self-test (POST).** A series of diagnostic tests that are run automatically by a device when the power is turned on.

## R

**random access memory (RAM).** A storage device into which data is entered and from which data is retrieved in a non-sequential manner.

**read-only memory (ROM).** Memory in which stored data cannot be modified by the user except under special conditions.

**Rivest-Shamir-Adleman (RSA) algorithm.** A process for public-key cryptography developed by R. Rivest, A. Shamir, and L. Adleman.

**RS-232C.** A standard that defines the specific physical, electronic, and functional characteristics of an interface line that uses a 25-pin connector to connect a workstation to a communication device.

### **RSA algorithm.**

Rivest-Shamir-Adleman encryption algorithm.

## S

**security.** For computers, the protection of data, system operations, and devices from accidental or intentional ruin, damage, or exposure.

## U

**utility program.** A computer program in general support of computer processes. (T)

## Numerics

**4758.** IBM 4758 PCI Cryptographic Coprocessor.



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