

PC CARD STANDARD

Volume 1
Overview and Glossary

PCMCIA
JEIDA

©1999, PCMCIA/JEIDA
All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, mechanical, electronic, photocopying, recording or otherwise, without prior written permission of PCMCIA and JEIDA. Printed in the United States of America.

PCMCIA (Personal Computer
Memory Card International
Association)
2635 North First Street, Suite 209
San Jose, CA 95134 USA
+1-408-433-2273
+1-408-433-9558 (Fax)
<http://www.pc-card.com>

JEIDA (Japan Electronic Industry
Development Association)
Kikai Shinko Kaikan, 3-5-8, Shibakoen
Minato-ku, Tokyo 105, JAPAN
+81-3-3433-1923
+81-3-3433-6350 (Fax)
<http://www.pc-card.gr.jp>

The PC Card logo and PC Card are trademarks of PCMCIA, registered in the United States. The PC Card logo and PC Card are trademarks of JEIDA, registered in Japan.

Cover Design: Greg Barr

PCMCIA HAS BEEN NOTIFIED BY CERTAIN THIRD PARTIES THAT THE IMPLEMENTATION OF THE STANDARD WILL REQUIRE A LICENSE FROM THOSE THIRD PARTIES TO AVOID INFRINGEMENT OF THEIR RIGHTS. PCMCIA HAS OBTAINED FROM SOME, BUT NOT ALL, OF THOSE PARTIES A GRANT OF IMMUNITY THAT PCMCIA WILL EXTEND TO YOU, CONTINGENT UPON YOUR ENTERING INTO AND DELIVERING TO PCMCIA THE RECIPROCAL GRANT OF IMMUNITY AGREEMENT CONTAINED ELSEWHERE IN THIS STANDARD.

IMPORTANT:

In order to receive the Grant of Immunity, the owner of this Standard must sign and return the enclosed Registration Card to:
PCMCIA
2635 North First Street, Suite 209
San Jose, CA 95134 USA

NEITHER PCMCIA NOR JEIDA MAKES ANY WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE STANDARD, INCLUDING AS TO NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS STANDARD IS PROVIDED TO YOU "AS IS."

OS/2 is a trademark of IBM Corporation.

Intel and Pentium are registered trademarks of Intel Corporation.

MS-DOS, OnNow and Windows NT are trademarks and Microsoft, Windows and Win32 are registered trademarks of Microsoft Corporation.

All other product names are trademarks, registered trademarks, or servicemarks of their respective owners.

Document No. 0299-01-2000

First Printing, February 1999

CONTENTS

| | |
|---|-----------|
| 1. Introduction | 1 |
| 1.1 PC Card Standard Overview | 1 |
| 1.2 History | 2 |
| 1.2.1 History of the PC Card Standard | 2 |
| 1.2.2 PCMCIA Standard Release 1.0/JEIDA 4.0 (June 1990)..... | 3 |
| 1.2.3 PCMCIA Standard Release 2.0/JEIDA 4.1 (September 1991)..... | 3 |
| 1.2.4 PCMCIA Standard Release 2.01 (November 1992)..... | 3 |
| 1.2.5 PCMCIA Standard Release 2.1/JEIDA 4.2 (July 1993)..... | 3 |
| 1.2.6 PC Card Standard February 1995 (Release 5.0)..... | 3 |
| 1.2.6.1 PC Card Standard March 1995 Update..... | 4 |
| 1.2.6.2 PC Card Standard May 1995 Update..... | 4 |
| 1.2.6.3 PC Card Standard November 1995 Update..... | 4 |
| 1.2.6.4 PC Card Standard March 1996 Update..... | 4 |
| 1.2.7 PC Card Standard March 1997 (Release 6.0)..... | 4 |
| 1.2.8 PC Card Standard 6.1 Update (April 1998)..... | 4 |
| 1.2.9 PC Card Standard Release 7.0 (February 1999)..... | 5 |
| 1.3 Uses..... | 6 |
| 1.4 Future Trends | 6 |
| 1.5 The PC Card Standard — A PCMCIA and JEIDA Joint Release..... | 7 |
| 2. Definitions and Terminology | 9 |
| 3. Compatibility | 11 |
| 4. Technical Descriptions | 13 |
| 4.1 Electrical Specification..... | 13 |
| 4.2 Physical Specification..... | 14 |
| 4.3 Metaformat Specification..... | 15 |
| 4.4 Card Services Specification | 16 |
| 4.5 Socket Services Specification..... | 17 |
| 4.6 Media Storage Formats Specification | 18 |
| 4.7 PC Card ATA Specification..... | 19 |
| 4.8 XIP (eXecute In Place) Specification | 20 |
| 4.9 Guidelines | 21 |
| 4.10 Host System Specification..... | 22 |
| 4.11 Specific Extensions | 23 |
| 4.11.1 PCMCIA Specific Extensions | 23 |

CONTENTS

| | |
|--|-----------|
| 4.11.1.1 Auto-Indexing Mass Storage (AIMS)..... | 23 |
| 4.11.1.2 15 Position Shielded Latching I/O Connector..... | 23 |
| 4.11.1.3 Modem I/O Connector for Open Systems..... | 23 |
| 4.11.1.4 Recommended Extensions..... | 23 |
| 4.11.2 JEIDA Specific Extensions..... | 23 |
| 4.11.2.1 Small Block FLASH Format..... | 23 |
| 4.11.2.2 Still Image, Sound and Related Information Format for PC Card Digital Still Camera (DSC) 68-Pin Standards..... | 23 |
| 4.11.2.3 DRAM Card Specifications..... | 23 |
| 5. Glossary..... | 25 |

1. INTRODUCTION

This Overview describes the Personal Computer Memory Card International Association (PCMCIA) and the Japan Electronic Industry Development Association (JEIDA) PC Card™ Standard which is the result of countless hours of effort by the members of JEIDA and PCMCIA. PCMCIA and JEIDA are grateful for and acknowledge the dedicated efforts of the PCMCIA and JEIDA staff and volunteer members in the creation and production of this Standard.

1.1 PC Card Standard Overview

The Personal Computer Memory Card International Association has an international membership comprising hundreds of member companies from all disciplines: computer manufacturers, semiconductor companies, peripheral vendors, software developers, and more. The Japan Electronic Industry Development Association was established in 1958 as a non-profit organization interested in contributing to Japan's economic prosperity by stimulating development in the electronics industry. PCMCIA and JEIDA have developed a standard for a credit card-sized adapter, called a 'PC Card' that does for notebook and other portable computers what the AT bus did for desktop PCs — provide universal, non-proprietary expansion capability.

The *Physical Specification* defines a 68-pin interface between the peripheral card and the PC Card 'socket' into which it gets inserted. It also defines two standard form factors, full-size and Small PC Cards, each in three thicknesses, called Type I, Type II and Type III. Type I, the smallest form factor, often used for memory cards, measures 3.3 mm in thickness. Type II, available for those peripherals requiring taller components such as LAN cards and modems, measures 5 mm thick. Type III is the tallest form factor and measures 10.5 mm thick. Type III PC Cards can support small rotating disks and other tall components. Smaller size cards can always fit into larger sockets but the reverse is not true.

The *Electrical Specification* defines three basic classes of PC Cards: 16-bit PC Cards, 32-bit CardBus PC Cards, and Custom Interface PC Cards. Defined are characteristics of each interface including power, signaling, configuration, and timing requirements. Also, the *PC Card Host System Specification* describes host-side power management and a thermal ratings system.

In addition to specifying electrical and physical requirements, the *PC Card Standard* has also defined a software architecture to provide "plug and play" capability across the widest possible range of products. The *Socket Services Specification* defines a BIOS level interface that masks the hardware implementation from card vendors' drivers. It identifies how many sockets are in the host and when a card is inserted or removed from a socket. It prevents the card driver from having to talk directly to a specific chip. The *Card Services Specification* defines an Application Programming Interface that interfaces to Socket Services and automatically provides management of system resources, such as interrupt assignments and memory windows, for cards as they become active in the system. Also, the *Metaformat Specification* defines the structure and contents of card description information called the Card Information Structure.

The *PC Card Standard* also includes three application specific specifications. The *Media Storage Formats Specification* defines how data are to be formatted on some PC Card storage devices. The *PC Card ATA Specification* defines the operation of mass storage devices using the ANSI ATA Interface for Disk Drives in the PC Card environment. The *XIP Specification* defines a method to directly execute applications from ROM without loading the image into RAM. Also included is a set of *Guidelines* intended to assist developers with implementation examples along with further explanations of the *PC Card Standard*.

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.