



IBM 7563

Installation, Operation, and Hardware Maintenance



IBM 7563

Installation, Operation, and Hardware Maintenance

Important:

Before using this information and the product it supports, read the general information in Appendix D, "Notices."

Be sure to read the information in "Safety Information" on page D-8, and if you are going to handle electronic components, you must also read "Handling Electrostatic-Discharge-Sensitive Devices" on page D-13.

First Edition (November 1999)

Publications are not stocked at the address below. Requests for copies of this publication and for technical information about IBM products should be made to your IBM Authorized Dealer or your IBM Marketing Representative.

A *Reader's Comments* form was printed at the back of this book. If it has been removed, you can address comments to:

International Business Machines Corporation
Embedded Systems Development
Department AXW
1798 N.W. 40th Street
Boca Raton, Florida 33431
U.S.A.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1999. All rights reserved.**

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Contents

About This Book	xi
Related Publications	xi

Part 1. 7563 Passive Backplane System Information

Chapter 1. Overview of the 7563 Passive Backplane System	1-1
General Layout of Components	1-2
Specifications	1-4
Power Supply	1-4
Heat Output	1-4
Environment	1-4
Agency and Standards Compliance	1-5
Chapter 2. Installing Your System Unit	2-1
Before You Begin	2-1
Task 1. Unpack Your System Unit	2-1
Task 2. Check the Voltage Setting	2-2
200-Watt Power Supply	2-2
330-Watt Power Supply	2-2
Task 3. Install the Feet on the System Unit	2-3
Task 4. Install Internal Options	2-3
Task 5. Connect the Cables	2-4
Task 6. Perform Check-Out Procedure	2-4
Task 7. Run the Configuration/Setup Utility Program	2-5
Task 8. Finish the Installation	2-5
Chapter 3. Installing Options	3-1
Switching Off Power and Disconnecting Cables	3-1
Removing the Cover	3-2
Installing Memory	3-3
Installing Memory in Bank 0	3-4
Installing Memory in Bank 1	3-5
Installing Adapters	3-6
Installing an Internal Hard Drive	3-7
Chapter 4. Operating and Configuring Your System Unit	4-1
Operator Information	4-1
Starting Up Your System	4-1
Installing Application Programs	4-2
Security Features	4-2
Startup-Sequence Control	4-3
Keyboardless Operation Mode	4-3
Configuration Information	4-4
Using the Configuration/Setup Utility Program	4-5
Device Drivers	4-22
Interrupt and DMA Assignments	4-22
Jumpers and Switches	4-23
Memory-Retention Battery	4-24
Serial Port	4-24

Parallel Port	4-26
Universal Serial Bus	4-28
Watchdog Timer and Thermal Monitor	4-28
SVGA Video	4-29
System Programs	4-30
Chapter 5. Solving Problems	5-1
Diagnostic Tools	5-1
Testing the System Unit	5-2
Starting the Computer	5-2
Starting the Diskette-Based Diagnostic Program	5-3
Troubleshooting Charts	5-4
Error Messages	5-9
POST Messages	5-10

Part 2. SBC Technical Information

Chapter 6. IBM 586VE Single-Board Computer	6-1
SBC Component Layout	6-2
Memory Subsystem	6-2
Video Graphics Subsystem	6-3
Indicators	6-3
I/O Connectors	6-5
Miscellaneous Connectors	6-10
Configuration Switches	6-12

Part 3. Hardware Maintenance Information

Chapter 7. Service Information	7-1
Configuration/Setup Utility Program	7-1
Downloading System Support Programs and BIOS Updates	7-2
Vital Product Data	7-2
Flash (BIOS/VPD) Update Procedure	7-2
Diagnostic and Test Tools	7-3
Power-On Self-Test (POST)	7-3
Error Messages	7-4
QAPLus/PRO Diagnostic Program	7-5
General Checkout	7-11
Keyboard	7-12
USB Ports	7-13
Printer	7-15
Power Supply	7-16
Backplane Power-Supply Connections	7-17
Display	7-18
Symptom-to-FRU Index	7-19
Beep Symptoms	7-20
No Beeps	7-21
Numeric Error Codes	7-22
Diagnostic Error Messages	7-26
Miscellaneous Symptoms	7-31
Hard Disk Drive Boot Error	7-33
Undetermined Problem	7-33

Removal and Replacement Procedures	7-34
Removing Power and Disconnecting Cables	7-34
Removing the System Unit Cover	7-35
Removing and Replacing Adapters	7-36
Removing and Replacing a Drive in the Drive Cage	7-37
Removing and Replacing a CD-ROM Drive	7-38
Removing and Replacing a Hard Drive in the 5.25-Inch Bay	7-39
Removing and Replacing the Power Supply	7-40
Removing and Replacing the Front Fan	7-41
Removing and Replacing the Rear Fan	7-42
Removing and Replacing an LED Assembly	7-43
Removing and Replacing the Reset or On/Off Switch	7-43
Removing and Replacing the SBC	7-44
Replacing the Processor	7-47
Replacing Memory in Bank 0	7-50
Replacing Memory in Bank 1	7-51
Replacing the Backup Battery	7-52
Removing and Replacing the Backplane	7-53
Chapter 8. Parts Catalog	8-1
IBM SBC, Backplane, Drives, and Power Supply	8-2
Covers and Chassis	8-4
Cables and Fans	8-6
Mouse	8-8
Keyboards	8-8
Power Cords	8-8

Part 4. Appendixes

Appendix A. System Records	A-1
Appendix B. Jumpers, Switches, and Connectors	B-1
Hard Disk Drive Jumper Settings	B-2
Backplane Connectors	B-5
SBC Connectors	B-6
SBC Settings	B-7
Switch Setting Example	B-8
Serial Port Pin Assignments	B-8
Appendix C. Interrupt and DMA Assignments	C-1
Interrupt Request Assignments	C-1
DMA Channel Assignments	C-2
Appendix D. Notices	D-1
Safety Notices (Multi-Lingual Translations)	D-2
Safety Information	D-8
General Safety	D-8
Electrical Safety	D-9
Safety Inspection Guide	D-12
Handling Electrostatic-Discharge-Sensitive Devices	D-13
Grounding Requirements	D-13
Power Cord Notice	D-13
Required Electronic Emission and Connectivity Notices	D-15

Class A Federal Communications Commission Statement	D-15
Industry Canada Compliance Statement	D-15
United Kingdom	D-15
European Union (EU) Electromagnetic Compatibility Directive	D-15
Germany	D-16
Laser Compliance Statement	D-17
German Power Switch Statement	D-17
Trademarks and Service Marks	D-18
Index	X-1

Figures

1-1.	IBM 7563 Passive Backplane System	1-1
1-2.	General Component Layout 1	1-2
1-3.	General Component Layout 2	1-3
4-1.	Configuration/Setup Utility Main Screen	4-7
4-2.	Example System Summary Screen	4-8
4-3.	Example Product Data Pop-Up	4-8
4-4.	Example Devices and I/O Ports Screen	4-9
4-5.	Example Serial Port Setup Screen	4-9
4-6.	Example Parallel Port Setup Screen	4-10
4-7.	Example Video Setup Pop-Up	4-11
4-8.	IDE Drives Setup Pop-Up	4-11
4-9.	Example Hard Disk Drive 0 Pop-Up	4-12
4-10.	Example Date and Time Pop-Up	4-12
4-11.	System Security Pop-Up	4-13
4-12.	Example Secure Hard Disk Drives and Diskette Drives Pop-Up	4-13
4-13.	Power-on Password Pop-Up	4-14
4-14.	Administrator Password Pop-Up	4-14
4-15.	Example Start Options Pop-Up	4-15
4-16.	Advanced Setup Pop-Up	4-17
4-17.	Cache Control Pop-Up	4-17
4-18.	Example ROM Shadowing Pop-Up	4-18
4-19.	ISA Legacy Resources Pop-Up	4-18
4-20.	Example Memory Resources Pop-Up	4-19
4-21.	Example I/O Port Resources Pop-Up	4-19
4-22.	Example DMA Resources Pop-Up	4-20
4-23.	Example Interrupt Resources Pop-Up	4-20
4-24.	Advanced Power Management	4-20
4-25.	Automatic Hardware Power Management	4-21
4-26.	Activity Monitor	4-21
6-1.	SBC Component Layout	6-2
6-2.	Default Switch Settings	6-12
7-1.	AC Power Supply Voltages	7-17
8-1.	IBM SBC, Backplane, Drives, and Power Supply	8-2
8-2.	Covers and Chassis	8-4
8-3.	Cables and Fans	8-6
B-1.	Connectors on the SBC	B-6
B-2.	Configuration Switch Blocks	B-7

Tables

4-1.	Interrupt Request Assignments	4-23
4-2.	DMA Channel Assignments	4-23
6-1.	Serial Port A (RS-232 only)	6-7
6-2.	Serial Port B (RS-232 or RS-422/485)	6-8
6-3.	Configuration Switch Block 2	6-12
6-4.	Configuration Switch Block 1	6-12
6-5.	Processor Clock Multiplier	6-13
6-6.	Processor/Bus Clocking	6-13
6-7.	Processor Voltages	6-14
8-1.	IBM SBC, Backplane, Drives, and Power Supply	8-3
8-2.	Covers and Chassis	8-5
8-3.	Cables and Fans	8-7
8-4.	Mouse	8-8
8-5.	Keyboards	8-8
8-6.	Power Cords	8-9
A-1.	System Unit Identification Numbers	A-1
A-2.	Internal and External Drives	A-1
A-3.	Internal and External Options	A-2
B-1.	PCI-Bus Expansion-Slot Assignments	B-5
B-2.	Switch Settings by Processor	B-7
B-3.	Serial Port Pin Assignments	B-8
C-1.	Interrupt Request Assignments	C-1
C-2.	DMA Channel Assignments	C-2

About This Book

This manual contains user information and service information pertaining to the IBM 7563 Passive Backplane System and the IBM 586VE Single-Board Computer.

Terminology Note

The following terminology is used throughout this book:

- 7563 Passive Backplane System is shortened to ***system unit***.
- IBM 586VE Single-Board Computer is shortened to ***SBC***.

This book is divided into the following parts:

Part 1, 7563 Passive Backplane System Information contains an introduction to the 7563 Passive Backplane System, and tells how to install the computer system, operate it, and solve problems with it at the user level.

Part 2, SBC Technical Information contains a description of the SBC. It provides information about the functions and connectors. It also contains information about installing upgrades to the SBC.

Part 3, Hardware Maintenance Information contains service-oriented information and a parts catalog that assist in recognizing and replacing field-replaceable units (FRUs) that have failed or are questionable.

Part 4, Appendixes contains the special notices, and supplemental information that is generally not required by the user or service person. Much of the information in the appendixes is useful in planning computer system configuration and physical site preparation.

A PDF (portable document file) version of this book is available in softcopy on the IBM Embedded Systems CD that came with the 7563 Passive Backplane System. The latest updates to the book are under *Support Information* on the Web at:

<http://www.clearlake.ibm.com/mfg/bocaraton/Services/IC/>

Related Publications

You should have the following related publications:

- The installation instructions and other documentation for your devices attached to the computer.
- The documentation for your operating system
- The documentation for your application programs
- The readme files describing device-driver installation (see page 2-5 for location of the files)

