



FlexPAC™

Portable Add-In Computer

Document Revision 1.0



About this Product

The FlexPAC Portable Add-In Computer is sold by Kontron America's Mobile Rugged Division (formerly Dolch Computer Systems.)

About This Manual

This document provides information about the FlexPAC Portable Add-In Computer. No warranty of suitability, purpose, or fitness is implied. While every attempt has been made to ensure that the information in this document is accurate, the information contained within is supplied "as-is" and can change without notice.

Trademarks

FlexPAC is a trademark of Kontron America's Mobile Rugged Division. All other product names are trademarks or registered trademarks of their respective holders.

Copyright Notice

Copyright © 2006 Kontron America Mobile Rugged Division.

All rights reserved. No part of this manual may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), without the written permission of Kontron America Mobile Rugged Division.

Standards

Kontron America is certified to ISO 9001:2000 & AS9100:2004 standards.

Technical Support

If you are unable to obtain proper use of your FlexPAC, contact Kontron America Mobile Rugged Division for technical support. To ensure the most efficient technical support, be prepared to operate your system while discussing the problem with a technical support representative. Kontron America Mobile Rugged Division products can be serviced at any of our worldwide Certified Repair Centers. Contact Kontron America Mobile Rugged Division technical support for the locations. Technical support lines are available as follows:

You can contact technical support, Monday through Friday, 7:30 am to 5:00 pm, Pacific Standard Time (excluding holidays).

Kontron America Mobile Rugged Division	
Toll Free	1.800.995.7579
Telephone	1.510.661.2220
Fax	1.510.490.2360
E-mail	support@kontronmrd.com

If you have technical questions or need assistance in identifying or solving a problem, the technical support department can assist you with your problems and provide you with the technical information you require. To ensure the most efficient technical support, please be prepared to operate your system while discussing the problem with a technical support representative.

When you call technical support please have the following information ready:

- Serial number of your system
- Model name of your system
- Type and version of your operating system
- Type and version of your software program
- Peripheral devices connected to your system
- What messages, if any, are on the screen

Customer Support

The Kontron America Mobile Rugged Division customer service department will provide assistance for most of your non-technical needs. To obtain upgrade quotations, purchase replacement or spare parts, extended warranties and RMA status, you e-mail us at support@us.kontron.com or visit www.kontron.com.

Return Instructions

If you need to ship your unit back to Kontron for service or repair, please contact technical support for a Return Material Authorization (RMA) number. Have your serial number available and the reason for the return when requesting a RMA number. Kontron products can also be serviced at our worldwide Certified Repair Centers. Contact Kontron technical support for the locations.

You can also request a RMA number by visiting our Web site at www.kontron.com.

Please contact Kontron America Mobile Rugged Division customer service prior to shipping any unit back to Kontron America Mobile Rugged Division for service. Should it be confirmed by service that it is necessary to return your unit back to Kontron America Mobile Rugged Division for servicing, please pack your unit in the original shipping container. If the original shipping container is no longer available, the unit must be securely packed to prevent damage during shipment. You must obtain a RMA number from customer service prior to shipment. The serial number of your unit and the RMA number must accompany the returned unit.

Limited Warranty

Kontron America Mobile Rugged Division warrants this product against any defects in material or workmanship, providing the serial number appears on the product and it is originally configured by the factory.

Terms of the Limited Warranty is as follows:

1. **Labor Charges:** For a period of two (2) years from the date of original purchase, there will be no labor charges for repairing the defective product. For confirmation of warranty and registration of product, please complete the Warranty Registration Card for your FlexPAC and return it to Kontron America Mobile Rugged Division.
2. **Charges for Replacement Parts:** For a period of two (2) years from the date of purchase, Kontron America Mobile Rugged Division will supply, at no charge, new or rebuilt replacement parts for any defective parts. If failure of the product has resulted from accident, abuse or misapplication Kontron America Mobile Rugged Division shall have no responsibility under this Limited Warranty.

Purchaser's Exclusive Remedies During the warranty period, your exclusive remedy for a defective product is the repair or replacement, at Kontron America Mobile Rugged Division's option, of the defective part.

KONTRON AMERICA MOBILE RUGGED DIVISION'S LIABILITY TO YOU, THE ORIGINAL PURCHASER, FOR ANY CLAIM, LOSS, DAMAGE OR EXPENSES OF ANY KIND,

(INCLUDING ATTORNEY'S FEES), RESULTING FROM OR IN CONNECTION WITH, GOODS OR ANY DEFECT, REPAIR, REPLACEMENT, NEGLIGENCE OR ANY OTHER CAUSE WHATSOEVER, REGARDLESS OF FORM OR ACTION, SHALL IN NO EVENT EXCEED THE ACTUAL CASH AMOUNT RECEIVED BY KONTRON FOR SAID DEFECTIVE PART.

Limitations of Liability

Neither Kontron America Mobile Rugged Division nor anyone else who has been involved in the creation, production or delivery of this Product shall be liable for any direct, indirect, consequential or incidental damages, (including without limitation damages for loss of business profits, business interruption, loss of business information, and the like), arising out of the use of, or inability to use this Product even if Kontron has been advised of the possibility of liability for consequential or incidental damages, the above limitations may not apply to you.

Disclaimer of Other Warranties

THE ABOVE ARE THE ONLY WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose, that are made by Kontron America Mobile Rugged Division on this Kontron product. No oral or written information or advice given by Kontron America Mobile Rugged Division, its resellers, distributors, agents or employees shall create a warranty or in any way increase the scope of this limited warranty, and you may not rely on any such information or advice.

Peripherals and Modifications

Kontron America Mobile Rugged Division cannot and does not make any warranties, express or implied, with respect to unauthorized modifications to goods or configurations of goods which differ from those specified by Kontron America Mobile Rugged Division. No warranty is provided and we assume no liability for damage from assembly, abuse, negligence, accident, loss or transit.

This is a complete statement of our warranty and it cannot be varied or modified, supplemented or construed by trade, usage, practice, parties, custom or sample and cannot in any way be modified.

Extended Warranty

Kontron America Mobile Rugged Division also provides extended service contracts. For more information about extended service contracts, contact our Customer Service department at 1.800.995.7579 or e-mail us at support@kontronmrd.com

FCC Warning

This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. This equipment has been tested and found to be within the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your expense.

EN 55022 Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To meet FCC requirements, shielded cables are required to connect the device to another Class A certified device.

Manual Part Number

85-1002-0121 Rev C

TABLE OF CONTENTS

GETTING STARTED	1.1
Component Identification	1.1
Options and Accessories	1.1
Unpacking	1.2
Supplied Accessories.	1.2
Features of the FlexPAC.	1.3
Removing the Keyboard	1.8
Keyboard	1.9
Keyboard Keys	1.13
Cursor Control Keys	1.14
Keyboard Touchpad	1.15
I/O Connections	1.16
Parallel Port	1.18
Serial Ports	1.18
USB Ports	1.18
Ethernet Connector	1.19
External Monitor Port	1.19
External Mouse	1.19
Powering On the FlexPAC	1.20
Bypassing the Memory Test	1.20
Adjusting the Display Viewing Angle	1.22
Nylon Carrying Case	1.22
Audio Function	1.23
Volume Control Adjustments.	1.23
 SYSTEM DESCRIPTION	 2.1
Features	2.1
USB 2.0 Driver	2.2
Drivers Installation	2.2
Intel Chipset Software Installation Utility	2.2
Intel Application Accelerator	2.3
Windows NT 4.0 Drivers	2.4
Installing Windows NT 4.0 VGA Drivers	2.4
Installing Windows NT 4.0 PCI Ethernet Drivers	2.5
SigmaTel AC97 Audio Drivers for Windows NT 4.0	2.6
Windows 2000/XP Drivers	2.7
Installing Windows 2000/XP VGA Drivers	2.7
Installing Windows 2000/XP Intel Pro LAN Drivers	2.8
Installing SigmaTel AC97 Audio Drivers for Windows 2000/XP	2.9
 CONFIGURATION.	 3.1
The BIOS Setup.	3.1
Starting Setup	

Entering Setup	3.2
Using Setup.	3.2
Getting Help	3.3
In Case of Problems	3.3
Main Menu	3.4
Standard CMOS Setup	3.6
Date	3.7
Time	3.7
Primary/Secondary Master and Slave	3.8
Drive A/Drive B	3.8
Video	3.9
Halt On	3.9
Advanced BIOS Features Setup	3.10
Virus Warning	3.11
CPU L1 and L2 Cache.	3.12
Quick Power-On Self Test (POST)	3.12
First/Second/Third Boot Device	3.12
Boot Other Device	3.12
Swap Floppy Drive	3.12
Boot Up Floppy Seek	3.13
Boot Up NumLock Status	3.13
Gate A20 Option	3.13
Typematic Rate Setting	3.13
Typematic Rate (Characters Per Second)	3.13
Typematic Delay (Msec)	3.13
Security Option	3.14
APIC Mode	3.14
MPS Version Control for OS	3.14
OS Select for DRAM > 64MB	3.14
Report No FDD for Win 95	3.14
Small Logo (EPA) Show	3.14
Advanced Chipset Features Setup	3.15
DRAM Timing Selectable	3.15
CAS Latency Timer	3.16
Active to Precharge Delay.	3.16
DRAM RAS# to CAS# Delay	3.16
DRAM R AS# Precharge	3.16
DRAM Data Integrity Mode.	3.16
Memory Frequency For	3.16
System BIOS Cacheable	3.17
Video BIOS Cacheable	3.17
Memory Hole at 15MB - 16MB	3.17
Delayed Transaction	3.17
AGP Aperture Size (MB)	3.17

Delay Prior to Thermal	3.17
ICH2 ISA Enable	3.17
Integrated Peripherals	3.18
On Chip Primary/Secondary PCI IDE.	3.18
IDE Primary & Secondary Master/Slave PIO	3.19
IDE Primary & Secondary Master/Slave UDMA	3.19
USB Controller	3.19
USB Keyboard Support	3.19
AC97 Audio	3.19
Initial Display First	3.20
IDE HDD Block Mode	3.20
On Board FDC Controller	3.20
On Board Serial/Parallel Port.	3.20
UART Mode Select	3.21
UR2 Duplex Mode	3.21
Parallel Port Mode	3.21
Power-On After Power Fail	3.21
Midi Port Address	3.21
Midi Port IRQ	3.21
Power Management Setup.	3.22
ACPI Function.	3.22
Power Management	3.23
Video Off Method	3.23
Video Off in Suspend	3.23
Suspend Type	3.23
Modem Use IRQ	3.24
Suspend Mode	3.24
HDD Power Down	3.24
Power On By Ring	3.24
Wake Up By PCI Card.	3.24
Resume By Alarm	3.24
Date of Month Alarm	3.24
Time (HH:MM:SS) Alarm.	3.25
Reload Global Timer Events	3.25
PnP/PCI Configuration	3.26
Frequency/Voltage Control	3.27
CPU Clock Ratio	3.27
Auto Detect PCI Clock	3.27
Spread Spectrum.	3.27
PnP OS Install	3.28
Reset Configuration Data	3.28
Resources Controlled By	3.28
IRQ Resources	3.28
DMA Resources	3.28

PCI/VGA Palette Snoop	3.28
Supervisor or User Password Setting	3.29
Load Fail-Safe Defaults	3.30
Load Setup Defaults	3.30
Save and Exit Setup	3.30
Exit Without Saving	3.30
DISPLAY AND DRIVES	4.1
The Flat-Panel Display (TFT)	4.1
Display Specifications	4.2
Connecting a CRT Monitor	4.2
Removable Hard Disk Drive Option	4.3
Removing/Installing the Optional Removable HDD	4.3
Floppy Disk Drive	4.5
How to Use the CD-ROM.	4.6
Loading and Removing a CD-ROM Disk.	4.6
The CD-ROM Status LED	4.9
Manual Ejection of the CD-ROM Disk	4.9
EXPANDING THE FLEXPAC	5.1
Before You Begin	5.1
Opening Up the FlexPAC	5.2
Removing the Outer Casing	5.2
Add-In Card Expansion	5.4
Card Retaining Foam Blocks	5.4
Add-In Card Installation	5.4
Optional PCMCIA Cards	5.10
MAINTENANCE & TROUBLESHOOTING	6.1
Handling the FlexPAC and It's Components	6.1
Safety Summary	6.2
Connectors and Cables	6.3
Flat-Panel Display	6.3
Cleaning the FlexPAC.	6.4
Cleaning the Flat-Panel Display	6.4
Cleaning the Fan Filters	6.5
Troubleshooting the FlexPAC	6.7
Typical Startup Sequence	6.7
Installation Problems	6.8
Conflicting Device Drivers	6.9
General Hardware Problems	6.10
BIOS Beep Codes and Messages	6.11
POST Test Codes	6.12
POST Beep Codes	6.14

Error Messages	6.14
Warning Messages	6.15
Troubleshooting Guide	6.17
System Fails to Power Up	6.17
System Fails to Boot From the Hard Drive	6.18
Add-In Card Fails to Work Properly	6.18
Software Application Program is Not Working	6.19
CD-ROM Fails to Work Properly	6.20
Floppy Disk Drive Fails to Work Properly.	6.20
Flat-Panel Fails to Display	6.22
Printer Fails to Work	6.22
Mouse Fails to Work	6.23
Battery Failure	6.23
.	
APPENDIX	A.1
External Ethernet Connector.	A.2
External VGA CRT Connector	A.3
I/O Port Address Map	A.4
Interrupt Request Lines (IRQ)	A.5
Technical Specifications.	A.6
Flat-Panel Display Specifications	A.7
Environmental Specifications	A.8
Standard Power Supply	A.8
Output Per Rail	A.9
Flat-Panel Display Characteristics	A.10



1 Getting Started

GETTING STARTED

Component Identification

The high powered FlexPAC (Flexible Portable Add-In Computer) is a space efficient system with substantial expansion capabilities in a convenient, all-in-one package. Versatile and rugged, this portable computer can be used in harsh conditions and industrial environments. And, it offers an almost infinite number of configurations, depending on the user's needs. The FlexPAC supports a wide range of applications and is fully compatible with hardware devices and software products designed for IBM PC/AT personal computers. This chapter will give you an overview of the components and features designed into the FlexPAC. It will help you get started and provide information and procedures for operating your new system.

Options and Accessories

Hard Disk Drive • Upgrade to 80GB EIDE Hard Disk Drive
Removable Hard Disk Drive • 2.5 inch, up to 40GB
CD-RW • Upgrade to CD-RW with SW
PCMCIA/CardBus • Two Type II or One Type III slot configurations
Memory • Upgrade to 2GB
Travel Case • Heavy Duty Transit Case with wheels/collapsible pull handle
Extended Warranty • 3 years Parts and Labor (25 to 36 months)

Unpacking

Your system comes securely packaged in a sturdy cardboard shipping carton. Upon receiving your computer, open the carton and carefully remove the contents.

As you unpack your unit, be sure to inspect it for any shipping damage. Also check the packing material to ensure that you have found all of the proper cables and accessories. Check your items against the original order to make sure that all of the items have arrived.

If any items or supplied accessories are missing or you have received a damaged unit or device, call Kontron Customer Service at 1.800.995.7579 or go to Kontron.com to contact technical support. If the damages are the result of shipper mishandling, you need to file a claim against the carrier who delivered your unit. In this case, save all of the shipping material and paperwork and immediately contact the shipping firm for information on how to file a claim. NOTE: Save the shipping materials and the reusable shipping carton, in the event you want to ship or store the computer in the future.

Supplied Accessories

The following basic items should accompany your FlexPAC. Since some Kontron computers are built to individual specifications and needs, the listed accessories and items may vary.

- Power Cord
- Drivers/User Manual CD
- Operating System Software (if purchased)
- Foam Block (add-in card retainer)
- Soft Carrying Case
- Warranty Card

Figure 1.1 Features of the FlexPAC



- 1. Flat-Panel Display
- 2. Power LED
- 3. Hard Disk Drive LED
- 4. Stereo Speakers (2 each)
- 5. Keyboard
- 6. Embedded Touchpad
- 7. Keyboard Adjustment Feet (2 each)
- 8. System Tilt Feet (2 each)
- 9. Cover Grill
- 10. Expansion Slot Openings

Figure 1.2 Features of the FlexPAC



- 11. Keyboard Release Button (2 each)
- 12. I/O Ports/Audio Jacks
- 13. Optional Removable Hard Disk Drive
- 14. Corner Bumpers (4 each)
- 15. Power Switch/Power Receptacle

Figure 1.3 Features of the FlexPAC



- 16. Carrying Handle
- 17. Cover Grill
- 18. Optional PCMCIA CardBus Slots
- 19. CD-ROM or (Optional CD-RW, DVD or DVD-CD-RW)
- 20. Floppy Disk Drive

Features of the FlexPAC

1. **Flat-Panel Display** - FlexPAC has a 14.1 inch XGA 1024 x 768 active matrix, color display.
2. **Power LED** - The green colored LED illuminates when the FlexPAC is powered "On."
3. **Hard Disk Drive LED** - The red colored LED indicates hard disk drive access.
4. **Stereo Speakers** - Two internal speakers located on the front panel, provide stereo sound for the FlexPAC.
5. **Keyboard** - The 104/105-key keyboard, with an embedded touchpad, closes up against the flat-panel display for easy storage and protects the display during transportation.
6. **Embedded Touchpad** - An integrated touchpad eliminates the need for a mouse device.
7. **Keyboard Adjustment Feet** - Use the two adjustment feet to modify the angle of the keyboard.
8. **System Tilt Feet** - Two system tilt feet, located on the bottom of the unit, sets the viewing angle of the FlexPAC.
9. **Fan Filter Cover** - Remove the fan filter cover to access the washable air filter.
10. **Expansion Slot Openings** - The expansion slot openings provide access to the I/O ports on the installed add-in cards. There are four available PCI slots.
11. **Keyboard Release Buttons** - These two buttons release the keyboard from the front of the unit.
12. **I/O Ports/Audio Jacks** - The FlexPAC provides a parallel port, 2 serial ports, 2 USB ports and 3 audio jacks on the rear panel.

13. **Removable Hard Disk Drive** - The FlexPAC can be equipped with an optional removable hard disk drive.
14. **Corner Bumpers** - Four shock absorbing corner bumpers provide added protection during transport of the portable FlexPAC.
15. **Power Switch/Power Receptacle** - The "On/Off" power switch and the power cord receptacle are located on the side panel to the right of the display.
16. **Carrying Handle** - A convenient carrying handle for easy transport and handling is provided on the FlexPAC.
17. **Cover Grill** - Remove the fan filter cover to access the washable air filter.
18. **PCMCIA/CardBus Slot** - The FlexPAC can be equipped with an optional PCMCIA/CardBus slot that accepts either two type II or one type III PC cards.
19. **CD-ROM** - The FlexPAC comes standard with a multi-speed super slim CD-ROM or an optional CD-RW.
20. **Floppy Disk Drive** - A 1.44MB, 3.5 inch floppy disk drive is standard on the FlexPAC.

Removing the Keyboard

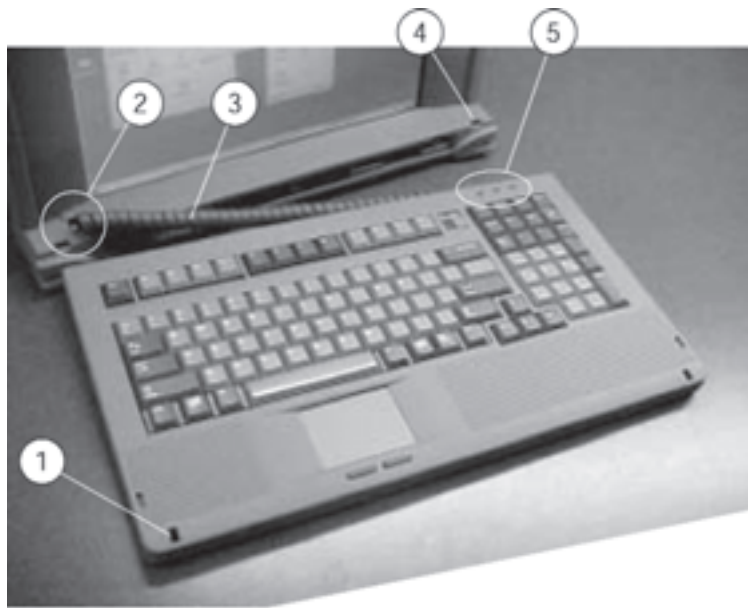
When transporting or not in use, the keyboard closes up neatly against the flat-panel display. Not only is the screen protected, but the keyboard remains with the main unit at all times. It can be easily released from the main unit when ready for use.

1. Place the FlexPAC on a flat, sturdy surface with the carrying handle facing up and the keyboard facing you.
2. Located on the top of the FlexPAC are two keyboard release buttons (see Figure 1.5, Item 6). Press both buttons down simultaneously. This will release the keyboard from the front of the unit.
3. Slightly lift up on the keyboard to remove the mounting tabs (see Figure 1.5, Item 10) out from the mounting slots (see Figure 1.4, Item 4). Place the keyboard in front of the system. You can flip out the adjustment feet, on the bottom of the keyboard, if you wish to modify the angle (see Figure 1.5, Item 9).

NOTE: The FlexPAC is shipped with the keyboard already connected, however, the cable can be disconnected and re-connected when needed. The keyboard cable connector is located on the lower left side of the front panel, below the speaker (see Figure 1.4, Item 2).

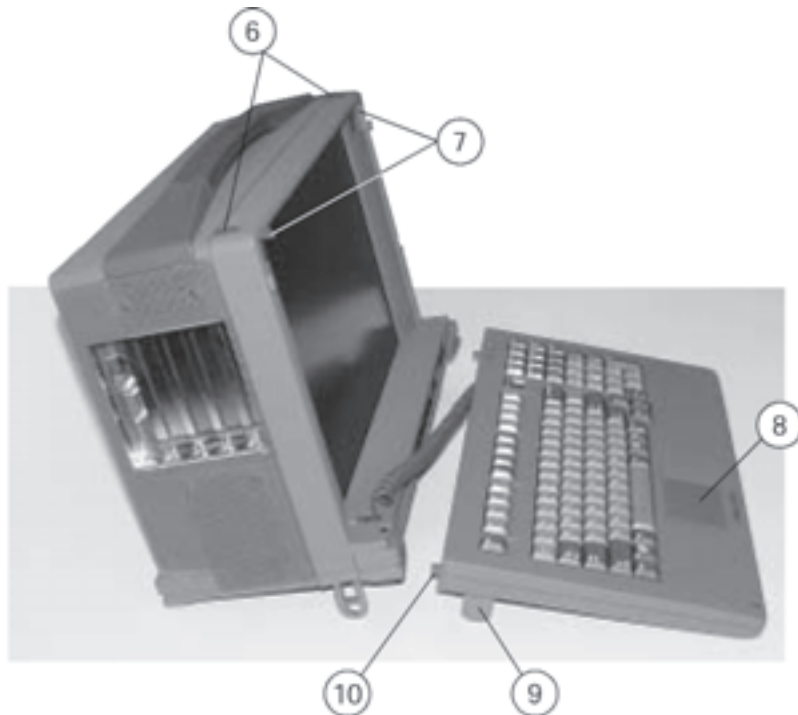
4. **Closing Up the Keyboard** - Before closing the keyboard up against the flat-panel, insert the keyboard cable into the provided storage space (channel) along the back of the keyboard (see Figure 1.6, Item 13). This keeps the keyboard cable out of the way and protects it from becoming pinched. Then, insert the mounting tabs (see Figure 1.5, Item 10) into their mating slots (see Figure 1.4, Item 4) and close the keyboard up against the flat-panel, making certain that the retaining hooks snap securely into place (see Figure 1.5, Item 7).

Figure 1.4 FlexPAC Keyboard



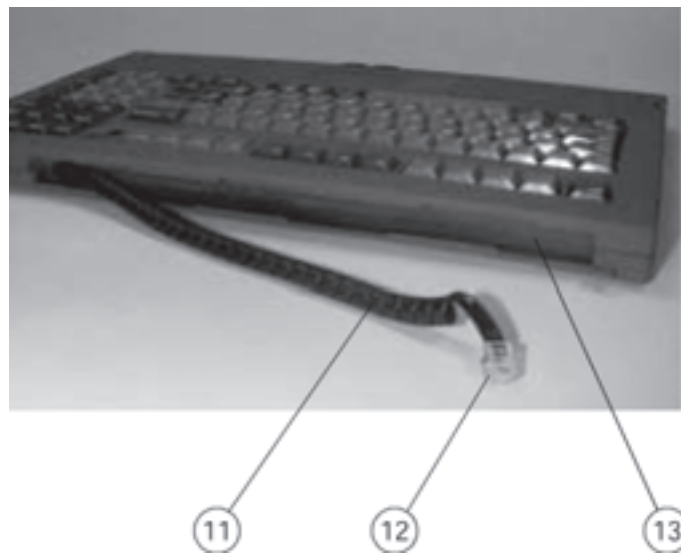
- 1. Keyboard Retaining Slot (2 each)
- 2. Keyboard Cable Connector
- 3. Keyboard Cable
- 4. Keyboard Mounting Slot (2 each)
- 5. Keyboard LED (Num Lock, Caps Lock & Scroll Lock)

Figure 1.5 Keyboard Features



- 6. Keyboard Release Buttons (2 each)
- 7. Keyboard Retaining Hooks (2 each)
- 8. Embedded Touchpad
- 9. Keyboard Adjustment Feet (2 each)
- 10. Keyboard Mounting Tabs (2 each)

Figure 1.6 Keyboard Cable Stowage Channel



- 11. Keyboard Cable
- 12. Modular Keyboard Jack
- 13. Keyboard Cable Stowage Channel

Keyboard

The FlexPAC comes with a full size, AT compatible, 104/105-key keyboard with 12 function keys and dedicated cursor keys (see Figure 1.7). An integrated touchpad is located below the keys with the left and right buttons placed below it. The touchpad is pressure sensitive and works by the touch and movement of your fingertip. Smoothly move your fingertip over the pad in the direction in which you want to move the cursor. Refer to page 1.15 for helpful tips on use of the touchpad.

The adjustment feet on the bottom of the keyboard enable you to adjust the height and angle of the keyboard (see Figure 1.5, Item 9). The keyboard can be tilted in conjunction with the system or it can be placed in a flat position in front of the system.

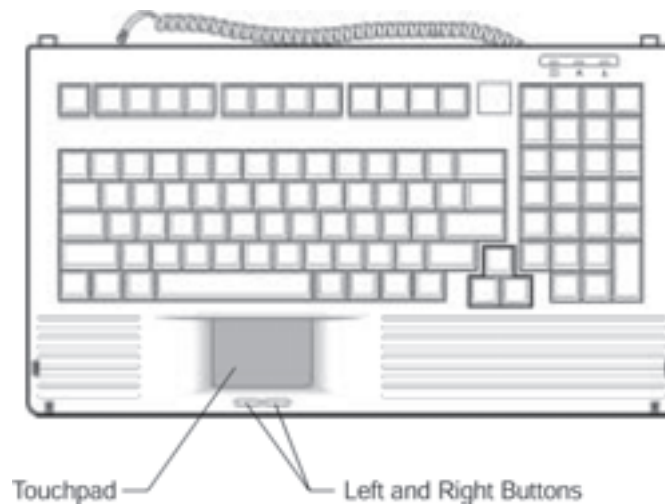


Figure 1.7 FlexPAC Keyboard with Embedded Touchpad

Keyboard Keys

Key	Function
Enter	Moves the cursor to the start of a new line. In most application programs, it also executes a command.
Caps Lock	When this key is engaged, the letter keys produce upper case letters.
Shift	When this key is pressed down along with another key, it produces upper case letters (or the upper case character on the keys). Also performs special functions when used in combination with other keys.
Tab	Moves the cursor horizontally to the next tab stop.
Esc	Cancels or escapes from a command or a function.
F1 - F12	The keys on the top row of the keyboard labeled F1 through F12 are called "function keys." Special commands are defined for each key. Refer to the user's manual to determine the function of each of these keys for a particular application program. The BIOS also uses function keys to set some configuration parameters.
Numeric	These keys function as calculator keys when the "Num Lock" light is on.
Keypad	When the numeric keypad is active, the system disables the alphabet keys doubling as numeric keypad keys.
Num Lock	This key toggles the number pad between acting as numeric keys or editing keys. When the keyboard "Num Lock" indicator is lit, the number pad is active.
Prt Sc Sys Req	Sends the current information, showing on the display, to a connected printer. Pressing this key in conjunction with the <Ctrl> key sends all output to a connected printer. Press this key combination again to stop the function.
Back Space	Deletes characters as it moves the cursor to the left. Use it to correct typing mistakes.
Scroll Lock	In some applications, information will move across the screen differently when this key is engaged. It can change the text scroll up and down feature.

Pause Break	Temporarily halts a running program. To continue using the program again, press any key. Pressing the "Pause" key, in conjunction with the <Ctrl> key, breaks the program.
Ctrl	Works in combination with other keys to provide shortcuts or to modify actions. Refer to the users manual for the application program you are using. To use a <Ctrl > key combination, hold down the <Ctrl> key and the other key simultaneously.
Alt	The keyboard provides two "Alt" keys. The "Alt" key works in conjunction with other keys to perform various commands or functions. Refer to the users manual for the application program you are using. To use an <Alt> key combination, simultaneously hold down the <Alt > key along with the other key.

Cursor Control Keys

Key	Function
Home	Moves the cursor to the first character position on the top line of the screen.
End	Moves the cursor to the last character position on the bottom of the screen.
PgUp	If this key is operable in the application program you are using, it lets you scroll to the previous page.
PgDn	If this key is operable in the application program you are using, it lets you scroll to the next page.
Arrows	The four direction arrow keys control the movement of the cursor on the screen. They do not affect the displayed character keys.
Delete	Deletes the character to the right of the cursor. All remaining characters to the right move one space to the left.
Insert	Places the keyboard into the "insert mode." While in the "insert mode," data entries are made at the current cursor position and all data to the right of the cursor position moves to the right. The keyboard stays in the insert mode until you press the "Insert" key again.

Keyboard Touchpad

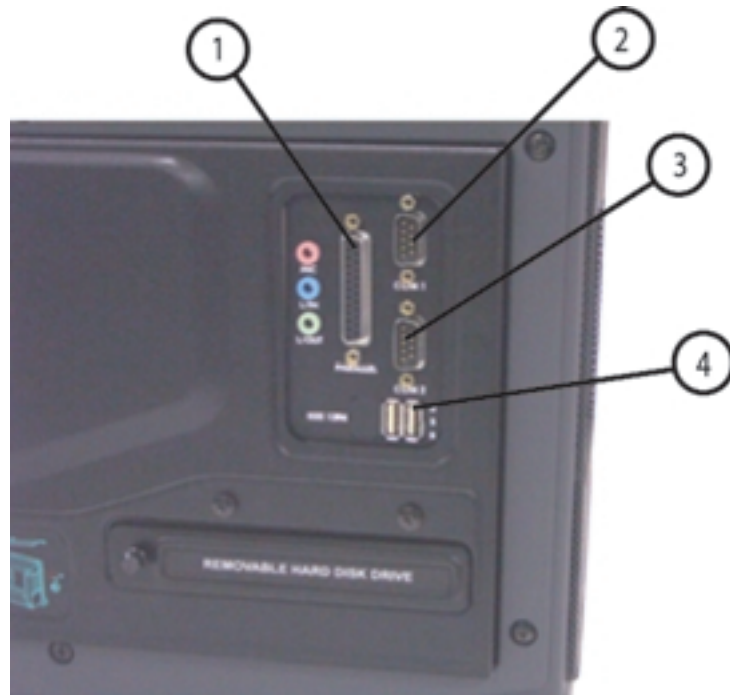
The built-in touchpad is a convenient substitute for a mouse device. Its function is similar to that of a two-button mouse. The left button is equivalent to the left button on a mouse and the right button is equivalent to the right button on a mouse (see Figure 1.7). Listed below are the key features of the integrated touchpad embedded in the keyboard.

- **To move the cursor:** Place your fingertip on the surface of the touchpad and slide it across, in the direction you wish the cursor to go.
- **To click:** Press the touchpad's left or right button or lightly tap on the touchpad.
- **To double click:** Either press the left button twice or lightly tap the touchpad twice in quick succession.
- **There are two ways to drag:**

Move the cursor to the desired location, then press down the left button. While still holding down the left button, move the cursor to the desired location. Then, release the left button.

Move the cursor to the desired location. Quickly tap the touchpad as if you were double clicking however, do not move your finger after the second tap. While maintaining contact with the touchpad, move the pointer (drag your finger) to the desired location. Lift your finger to complete the move.

Figure 1.8 Rear Panel I/O Connections



1. Parallel Port
2. Serial Port (COM2)
3. Serial Port (COM1)
4. USB Ports (2 each)

Figure 1.9 Side Panel Connections



I/O Connections

To expand your computing capabilities, the FlexPAC is equipped with several interface ports and connection receptacles. These connectors support a variety of external peripheral devices. A bi-directional parallel port, two serial ports and two USB ports are located on the rear panel (see Figure 1.8). In the expansion slot opening, on the side panel to the left of the display, is an external monitor port and a 10/100 Base-T ethernet port (see Figure 1.9). The power switch and the AC power cord receptacle are located side-by-side, on the side panel, to the right of the display (see Figure 1.10).

Parallel Port

The FlexPAC provides a 25-pin, bi-directional parallel port for connecting a parallel printer or another parallel peripheral device. The parallel port is located on the rear panel of the FlexPAC (see Figure 1.8). Before using the parallel port, refer to the documentation provided by the manufacturer of your parallel device for information on the installation.

Serial Ports

The FlexPAC includes two 9-pin serial ports for connecting a serial printer, an external serial mouse or other external serial devices. The serial ports are located on the rear panel (see Figure 1.8). Upon shipment, both serial ports, COM1 and COM2, are fixed for RS-232 use.

USB Ports

The FlexPAC provides two USB (Universal Serial Bus) ports for connecting USB compliant devices. USB devices can be conveniently connected and disconnected while the system is running. Please refer to the device-specific documentation for information on connecting and using USB devices. The USB ports are located on the rear panel below the serial ports (see Figure 1.8).

Ethernet Connector

The FlexPAC 2GHz is equipped with a 10/100 Base-T ethernet network connector and the FlexPAC 3GHz has an additional 10/100/1000 Base-T connector. The RJ45 ethernet input jacks allows you to connect the FlexPAC into an existing network. The ethernet ports are located in the expansion slot opening on the side panel to the left of the display (see Figure 1.17).

External Monitor Port

The FlexPAC has an on board video controller, backed by 16MB of memory, for driving the flat-panel display. The unit includes a 15-pin, high density, sub-D VGA port for connecting an external monitor. It is accessible on the side panel, in the expansion slot opening (see Figure 1.9, Item 6). This analog video monitor port supports either simultaneous (at the same resolution) or independent display operation. It is not necessary to connect an external monitor to the FlexPAC, but by using an external monitor you can achieve higher resolutions than on the internal flat-panel display.

External Mouse

If preferred, a pointing device can be used in place of the embedded touchpad on the standard keyboard included with the FlexPAC. Only a serial or USB type mouse can be used along with the standard keyboard. If using a serial mouse, use one of the 9-pin, RS-232 serial ports to connect it. If using a USB mouse, use one of the USB ports to connect it. Please refer to the pointing device-specific documentation for information on connecting and using the external mouse. The serial and USB ports are located on the rear panel of the FlexPAC (see Figure 1.8).

Powering On the FlexPAC

Before you plug in the power cord or any other equipment for the FlexPAC, take an inventory of each device and make sure you have all the appropriate cables you need. If any cables are missing for the FlexPAC, immediately contact Kontron technical support for a replacement.

The power switch and the power cord receptacle for the FlexPAC are located side-by-side on the side panel to the left of the display (see Figure 1.10). The FlexPAC requires an AC power source for operation.

1. Make sure the power switch is in the “Off” position. Also power “Off” any other external peripheral devices connected to the FlexPAC.
2. Insert the female, 3-pin connector on the power cord into the power receptacle on the side panel, next to the power switch.
3. Plug the other end of the power cord into a grounded 3-prong power outlet or power strip.
4. Push the power switch in the “On” position.
5. Once you have turned the system “On,” it will begin a Power-On Self Test (POST). If you want to review your hardware configuration while the system is running the POST, press the key to enter the BIOS utility. For more information on the BIOS utility, refer to Chapter 3.

Bypassing the Memory Test

When you start up the FlexPAC, the Basic Input/Output System (BIOS) performs the Power-On Self Test (POST) to run a check on things such as the hard drive, the floppy drive, and the system’s memory. If you have a lot of memory installed in your system, this can be a slow process. To bypass the memory test, press the <ESC> key when the following message is displayed:

Press <ESC> to Bypass Memory Test

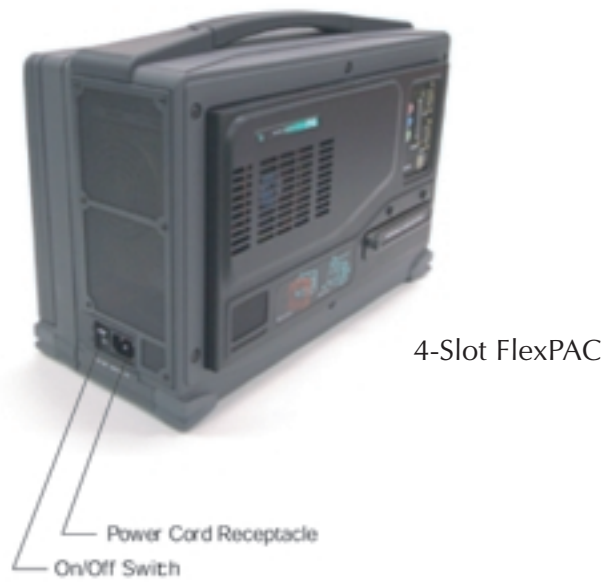


Figure 1.10 Power Switch/Power Cord Receptacle

Adjusting the Display Viewing Angle

You can adjust the display angle of the FlexPAC for your viewing comfort. The FlexPAC has tilt adjustment feet on the bottom of the unit. Flipping these feet out will angle the display upwards.

Nylon Carrying Case

The FlexPAC is designed for travel and mobility. It can withstand the rigorous handling of transport and setup, and can operate in demanding field conditions and changing environments. The durable carrying case included with your system allows you to bring along reports, software, cables and the necessities needed to perform your job while out in the field. The padded carrying case not only provides a side pouch in which to stow your items, it also protects the outer casing. A removable, over-the-shoulder carrying strap is also included with the unit.

Audio Function

The FlexPAC is equipped with an audio function. The audio function includes an integrated audio sound chip, two internal stereo speakers and three audio hook-up jacks (line-in, line-out and microphone). The audio jacks are located on the rear panel, next to the parallel port (see Figure 1.12). The internal stereo speakers are located on each side of the flat-panel display (see Figure 1.1, Item 4).

Volume Control Adjustments

Windows operating systems provide “On-Screen” volume control for making the sound adjustments. If using a different operating system, refer to its user manual for “Volume Control” support.

1. Click once on the “Sound” icon located along the “task-bar” in the lower right-hand corner of the display.
2. An on-screen “Volume Control” box will appear in the lower right-hand corner of the screen, just above the “Sound” icon (see Figure 1.11).
3. To raise or lower the volume: Click on the “Volume Control” bar, and while holding down the mouse button, move the volume control bar upwards or downwards. Push the volume control bar up to raise the sound. Push the volume control bar down to lower the sound.

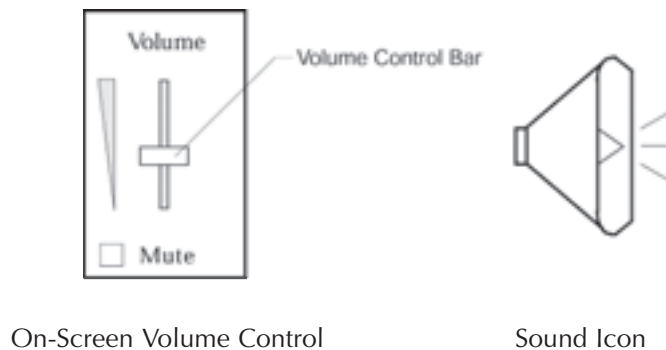


Figure 1.11 On-Screen Volume Control (Windows OS only)

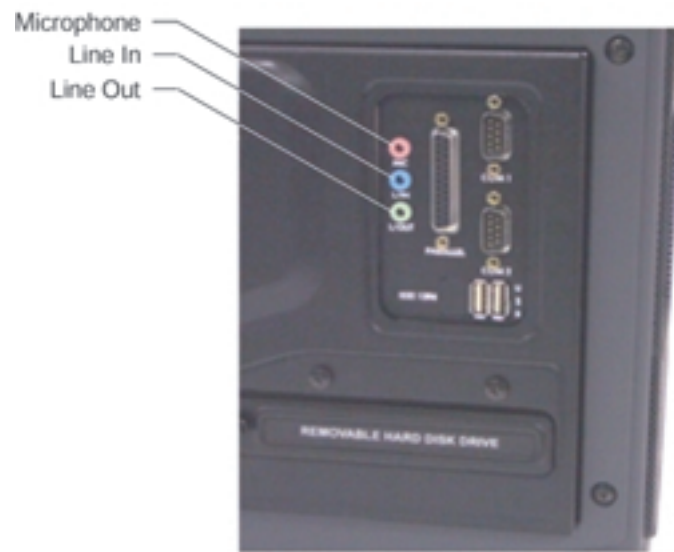


Figure 1.12 External Audio Jacks

2 System Description

SYSTEM DESCRIPTION

The FlexPAC is a high-performance system powered by a Pentium® 4 processor based on the advanced Intel 845 Chipset.

The highly compatible system is fully designed for maximum performance in industrial environments. It can handle large software applications with ease and still retain consistent configuration control.

Features

Specifications	FlexPAC 2GHz	FlexPAC 3GHz
Chipset	Intel 845PE 400MHz or 533MHz	
CPU	2.8GHz Pentium® 4	
Bus Speed	533MHz	
Memory	512MB DDR to 2GB DDR	
Disk Storage	40GB EIDE Minimum Capacity Unformatted	
Optional HDD	Fixed or Removable 2 nd HDD	
Floppy Disk Drive	1.44MB	
Multimedia Drives	CD-ROM or Optional CD-RW, DVD or DVD-CD RW	
Internal Display	14.1-inch XGA TFT, 16MB Video RAM	
Video Memory	M7 graphics controller, 16MB	
Ext Display	Supports Simultaneous External Display 640x480, 800x600, and 1024x768	
I/O Ports	2 Serial Ports (16550 UART Compatible) 1 Enhanced Parallel Port (ECP/EPP Compliant) Two USB 2.0 Ports 1) 10/100GHz BaseT Ethernet RJ45 Port	
Keyboard	AT Compatible, 104/105 Key w/ integrated Touch Style Mouse Pad	
Audio	Intel AC97, ICH2 Controller Line-in, Line-out, and Microphone	
PCMCIA/Card Bus Options	2 Type II or One Type III	
Power Supply	300W, 100-240VAC, 50-60Hz	
FlexPAC (4 Slots)		
Expansion Slot Options	3 PCI & 1 Shared PCI/ISA	
Dimensions	(WxHxD) 15.78x10.18x6.72in (40.08x25.8x17.07cm)	
Weight	18lbs (8.18kg)	
FlexPAC (6 Slots)		
Expansion Slot Options	5 PCI & 1 Shared PCI/ISA	
Dimensions	(WxHxD) 16.00x11.00x9.75in (40.6x27.9x4.7cm)	
Weight	23lbs (10.55kg)	

Driver for USB 2.0

Please use Microsoft Windows Update to download the USB 2.0 driver.

Drivers Installation

The drivers for the FlexPAC are provided on the “Drivers/User Manual” CD included with your system. This section provides driver installation procedures for Windows 2000/XP and Windows NT 4.0 operating systems. Some drivers contain “Readme.txt” files. These files include updates, changes or information relating to the drivers you are about to install. Read the “Readme.txt” files before loading drivers.

Intel Chipset Software Installation Utility

The Intel Chipset Software Utility enables “Plug and Play” INF support for Intel chipset components. Use the following procedures to install the drivers for Windows 2000/XP.

1. Power “On” the FlexPAC. Insert the CD that comes with the CPU card. A screen appears. Click Intel Chipsets and then click Intel 845G Drivers.
2. Click Intel Chipset Software Installation Utility.
3. When the Welcome screen appears, click Next.
4. Click Yes to accept the software license agreement and proceed with installation.
5. In the Readme Information screen, click Next to continue.
6. Setup is complete. Click Finish to restart the computer to allow changes to take effect. When the computer restarts, the system will find devices. Restart your computer when prompted.

Intel Application Accelerator

Use the following installation procedure to install the “Intel Application Accelerator” driver using the Install Shield Wizard under Windows 2000/XP and Windows NT 4.0.

1. Power “On” the FlexPAC. Insert the CD that comes with the CPU card into the CD-ROM.
2. Click the Intel Application Accelerator. The Welcome screen of the Install Shield Wizard for the accelerator appears. Click yes to accept the software license agreement and proceed with installation.
3. Select the folder in which the Setup will install files. Click Next to accept the default folder, or click Browse to choose a different location.
4. Select a Program folder. Click Next to accept the default program folder or enter a folder name you prefer.
5. The Install Shield Wizard has completed the installation. Remove the CD. Click **Finish** to restart the system for changes to take effect.

Windows NT 4.0 Drivers

The following drivers are for Windows NT 4.0 operating systems only. Windows NT 4.0 must be loaded on your system before attempting the installation of these drivers.

Installing Windows NT 4.0 VGA Drivers

Use the following procedure to install the “ATI Mobility Radeon M6” graphics driver in the Windows NT 4.0 environment. It is recommended that you make a backup copy of the “ATI Mobility Radeon M6” VGA drivers for safekeeping.

1. Power “On” the FlexPAC. Insert the supplied “Drivers/User Manual” CD into the CD-ROM.
2. An “Inside this CD” window will appear. Click on the **VGA Card** icon on the left side of the window.
3. Then click on **ATI Mobility Radeon VGA Driver** on the right side of the window.
4. When the “Welcome” window appears, click on **Next** to continue.
5. Click on **Yes** to accept the software license agreement and proceed with the installation process.
6. In the “Select Components” window, click on the **Express Recommended** installation method, then click on **Yes** to start the file copying process.
7. The Setup process is now complete. Remove the CD. Click on **Finish** to restart the system for the changes to take effect.

Installing Windows NT 4.0 PCI Ethernet Drivers

Use the following procedure to install the PCI Ethernet drivers for Windows NT 4.0. If you are not using Windows NT 4.0, do not use this procedure.

1. Before you can install the PCI Ethernet drivers, you must first transfer the Windows NT 4.0 drivers from the supplied "Drivers/User Manual" CD onto a floppy diskette. This installation diskette will be used to load the drivers.
2. Power "On" the FlexPAC. Insert the supplied "Drivers/User Manual" CD into the CD-ROM and insert a formatted floppy diskette into the floppy disk drive.
3. When the initial window comes up, click on **LAN Card**. Then click on **Intel Pro LAN Drivers**.
4. In the "Create Install Disk" window, select the Windows NT 4.0 operating system to begin the transfer. When the transfer is complete, remove both the CD and the floppy diskette. Use the installation diskette you just created to install the Ethernet/LAN drivers.

For Installation of Intel Pro/100 and also repeat process for installation of Intel Pro/1000.

1. In the Windows NT 4.0 environment, click on the **Start** button.
2. Go to the Settings option and select **Control Panel**.
3. Double click on **Network Adapters Add**.
4. Select Have Disk... then insert the installation diskette you just created into the floppy disk drive and click on **Ok**.
5. Click on **Ok Close**, then enter the IP address. Remove the floppy diskette. Close all applications and restart the system for the changes to take effect.

SigmaTel AC97 Audio Drivers for Windows NT 4.0

Use the following installation procedure to install the "SigmaTel AC97 Audio Drivers" in the Windows NT 4.0 environment.

1. Power "On" the FlexPAC. Insert the supplied "Drivers/User Manual" CD into the CD-ROM.
2. An "Inside this CD" window will appear. Click on the **Intel Chipsets** icon on the left side of the window.
3. Click on the **Intel 845 Chipset Family Drivers**.
4. Now click on the SigmaTel AC97 Audio Driver.
5. When the "Welcome" window for the "SigmaTel AC97 Audio Drivers" Setup program appears, click on **Next** to continue.
6. Click on **Yes** to accept the software license agreement and proceed with the installation process.
7. On the next window, select **Install** and click on **Next** to install the "SigmaTel AC97 Audio Drivers."
8. The Setup process is now complete. Remove the CD. Click on **Finish** to restart the system for the changes to take effect.
9. After the system has restarted, a window will appear showing some installation information. When prompted, restart the system to complete the audio driver installation.

Windows 2000/XP Drivers

The following drivers are for Windows 2000/XP operating systems. Windows 2000/XP must be loaded before attempting installation.

Installing Windows 2000/XP VGA Drivers

Use the following procedure to install the “ATI Mobility Radeon” graphics driver in the Windows 2000/XP environment. It is recommended that you make a backup copy of the “ATI Mobility Radeon” VGA drivers for safekeeping.

1. Power “On” the FlexPAC. Insert the CD that comes with the CPU card. On the initial screen, click the VGA Card icon on the left, which brings up a new screen. Click ATI Mobility Radeon M7 Series VGA Driver.
2. When the Welcome screen appears, click Next.
3. Click Yes to accept the software license agreement and proceed with the installation process.
4. Select the Express icon and click Next.
5. The Setup process is complete. Remove the CD. Click **Finish** to restart the system for changes to take effect. Restart your computer when prompted.

Installing Windows 2000/XP Intel Pro LAN 100 Drivers

Use the following procedure to install Intel PRO LAN 100 drivers for Windows 2000/XP.

1. Power "On" the FlexPAC. Insert the CD that comes with the CPU card.
A new screen appears. Click the LAN Card icon on the left to make the LAN drivers selection. Click Intel PRO LAN Drivers.
2. Click Install Now.
3. Click Restart Now to enable new settings to take effect.

SigmaTel AC97 Audio Drivers for Windows 2000/XP

Use the following installation procedure to install the “SigmaTel AC97 Audio Drivers” in the Windows 2000/XP environments.

1. Power “On” the FlexPAC. Insert the CD that comes with the CPU card. A new screen appears. Click Intel Chipsets, then Intel 845G Chipset Drivers.
2. Click the **SigmaTel AC97 Audio Driver**.
3. When the “Welcome” window for the “SigmaTel AC97 Audio Drivers” Setup program appears, click **Next**.
4. Click Finish to restart the computer and to allow changes to take effect.

3

Configuration

CONFIGURATION

The BIOS Setup

This chapter discusses the “Award Software Setup” utility program built into the BIOS ROM. The “Setup” utility program allows users to modify the basic system configurations and settings. The information is then stored in battery-backed RAM so that it retains the “Setup” information when the power is turned “Off.”

The Award BIOS installed in your computer system’s ROM is a custom version of an industry standard BIOS. This means that it supports Intel Pentium® processors in a standard IBM-AT® compatible input/output system. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

The Award BIOS has been customized by adding important, but non-standard, features such as virus and password protection, as well as special support for the detailed fine-tuning of the chipset controlling the entire system. This chapter is intended to guide you through the process of configuring your system using the “Setup” utility.

Starting Setup

The Award BIOS provides a “Setup” utility for specifying the system configurations and settings. The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in CMOS and begins the process of checking out the system and configuring it. When the BIOS has finished its checking routine, it will seek an operating system on one of the disks, then launch it and turn control over to that operating system. If you don’t enter the “Setup” utility immediately after start-up, the POST (Power-On Self Test) will continue with its test routines, preventing you from entering the “Setup” utility.

Entering Setup

While the BIOS is in control, the “Setup” utility can be activated in one of two ways:

1. By *pressing* the key immediately after switching the system “On.”
2. By *pressing* the key when the following message appears briefly at the bottom of the screen during the POST.

If the message disappears before you respond and you still wish to enter “Setup,” you can restart the system by simultaneously *pressing* the <Ctrl> <Alt> and keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to do the following:

1. *Press* the <F1> key to continue
2. *Press* the key to enter Setup

Using Setup

Use the arrow keys to highlight one of the displayed options, press <Enter> to select it, use the Page Up <PgUp> and Page Down <PgDn> keys to scroll through the entries, *press* <F1> for help and *press* <Esc> to quit. The following table provides additional details about how to navigate in the “Setup” utility by use of the keyboard.

Up Arrow	Scroll up to the previous item
Down Arrow	Scroll down to the next item
Left Arrow	Move to the item on the left
Right Arrow	Move to the item on the right
Esc Key	Main Menu: Quit and not save changes to CMOS Status Page Setup & Option Page Setup menu's: Exit current page and return to “Main” menu

PgUp	Key Scroll upwards to highlight an option
PgDn	Key Scroll downwards to highlight an option
+Key	Increase the numeric value of
-Key	Decrease the numeric value of
F1 Key	General help (<i>Status Page Setup & Option Page Setup menu's only</i>)
(Shift) F2 Key	Change the color from a total of 16 colors. <F2> to select color forwards, Shift <F2> to select color backwards.
F3 Key	Calendar (Status Page Setup menu only)
F4 Key	Reserved
F5 Key	Restore previous CMOS values (<i>Option Page Setup menu only</i>)
F6 Key	Load the default CMOS value from BIOS default table. (<i>Option Page Setup menu only</i>)
F7 Key	Load the default
F8 Key	Reserved
F9 Key	Reserved
F10 Key	Save all the CMOS changes (<i>Main menu only</i>)

Getting Help

Press the <F1> key to display a small “Help” screen that describes the appropriate keys to use and the possible selections for the highlighted option. To exit the “Help” screen, press the <Esc> key or the <F1> key.

In Case of Problems

If, after making and saving system changes in “Setup,” you discover that your computer is no longer able to boot, the Award BIOS supports an override to the CMOS settings. This override resets your system to its default settings. Only alter the settings which you thoroughly understand. It is strongly recommended that you avoid making any changes to the default settings. These default settings have been carefully chosen to provide the absolute maximum performance and reliability. Even a seemingly small change to the “Chipset Setup” has the potential for causing you to use the override.

Main Menu

When you enter the Award BIOS CMOS Setup utility, the “Main” menu will appear on the screen. Use the following “Main” menu to select from several “Setup” categories and two exit choices. Use the arrow keys to select among the categories and *press* <Enter> to accept and enter the sub-menus.

ROM PCI/ISA BIOS CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	FREQUENCY/VOLTAGE CONTROL
ADVANCED BIOS FEATURES	LOAD FAIL-SAVE DEFAULTS
ADVANCED CHIPSET FEATURES	LOAD OPTIMIZED DEFAULTS
INTEGRATED PERIPHERALS	SET SUPERVISOR PASSWORD
POWER MANAGEMENT SETUP	SET USER PASSWORD
PnP/PCI CONFIGURATIONS	SAVE & EXIT SETUP
PC HEALTH STATUS	EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	▲ ▼ ► ◀ : Select Item (Shift)F2 : Change Color
Time, Date, Hard Disk Type	

NOTE: The section directly below the “Setup” categories, on the “Main” menu, displays the control keys for the menu. The other section, at the bottom of the screen, displays a brief description of the current highlighted selection on the menu.

- **Standard CMOS Setup** - This “Setup” screen contains the basic hardware configurations needed to set up a working system.
- **Advanced BIOS Features** - This “Setup” screen contains options to improve your system and set up the special enhanced features.
- **Advanced Chipset Features** - This “Setup” screen sets all the featured functions of the chipset.
- **Integrated Peripherals** - This “Setup” screen sets all the options of the IDE hard drive and programmed input/output features.
- **Power Management Setup** - This “Setup” screen configures the power saving functions.
- **PnP/PCI Configurations** - This “Setup” screen configures the settings for the PnP/PCI bus system.
- **PC Health Status** - This “Setup” screen configures the parameters which determines the health status of the PC.
- **Frequency/Voltage Control** - This “Setup” screen configures the processor settings.
- **Load Fail-Safe Defaults** - The BIOS defaults have been set by the manufacturer and represent settings which provide minimum requirements for the system to operate.
- **Load Optimized Defaults** - The chipset defaults are settings which provide for maximum system performance.
- **Set Supervisor Password** - This option is used to set the password which protects the system and the “Setup” utility.
- **Set User Password** - This option sets the password that will be used exclusively for the system only.
- **Save & Exit Setup** - Saves CMOS value changes to CMOS and exits “Setup.”
- **Exit Without Saving** - Abandons all the CMOS changes and exits “Setup.”

Standard CMOS Setup

The “Standard CMOS Setup” menu allows you to record the basic hardware configurations in your computer system, set the system clock and set any error handling options. Since the system board is already installed in a working system, there should be no need to select this category. You should only select this category if you want to change your system hardware configurations, the on board battery fails or if the settings stored in the CMOS memory gets lost or damaged.

STANDARD CMOS SETUP AWARD SOFTWARE, INC.		
Date (mm:dd:yy) : Tue Mar 26 2001 Time (hh:mm:ss) : 00 : 00 : 00 IDE Primary Master : Auto Detect IDE Primary Slave : Auto Detect IDE Secondary Master : Auto Detect IDE Secondary Slave : Auto Detect Drive A : 1.44M, 3.5 in. Drive B : None Video : EGA/VGA Halt On : All Errors Base Memory : 640K Extended Memory : Auto Detect Total Memory : Auto Detect		Item Help
		Menu Help
		Change the day, month year and century

The “control keys” for this menu are listed at the bottom of the menu. If you need help in any option field, you can *press* the <F1> key. It will display relevant information to help you with the selected option. The memory display in the lower right-hand side of the menu is *read-only*. It will adjust automatically according to when the memory changes. Each item on this menu will be explained on the following pages.

Date

The date format is <day>, <month> <date> <year>. To set the date, highlight the “Date” option and use the PageUp/PageDown or the +/- keys to set the current date.

Day:	Sun to Sat
Month:	1 to 12
Date:	1 to 31
Year :	1994 to 2079

Time

The time format is <hour> <minute> <second>. The time is based on the 24-hour military-time clock. For example: 1 p.m. is 13:00:00. To set the time, highlight the “Time” option and use the PageUp/PageDown keys or the +/- keys to set the current time.

Hour:	00 to 23
Minute:	00 to 59
Second:	00 to 59

Primary/Secondary Master and Slave

The on board PCI IDE connectors provide *Primary* and *Secondary* channels for connecting up to four IDE hard disk drives or other IDE devices. Each channel can support up to two hard disk drives; the first is the “Master” and the second is the “Slave.”

Press <Enter> to configure the hard disk drive. The options include Auto, Manual and None. Select “Manual” to manually define the drive information. You will be asked to enter the following items.

CYLS:	Number of cylinders
HEAD:	Number of read/write heads
PRECOMP:	Write pre-compensation
LANDZ:	Landing zone
SECTOR:	Number of sectors per track
MODE:	Auto Normal HDD < 528MB Large For MS-DOS only LBA HDD > 528MB (and supports Logical Block Addressing)

Drive A/Drive B

Drive A and Drive B are categories that identify the type(s) of floppy disk drive(s) installed in the FlexPAC.

Video

The video category selects the type of video display card installed in your system.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array, for EGA, VGA, SEGA, SVGA or PGA monitor adapters
---------	--

Halt On

This category determines whether the computer will halt if an error is detected during power up.

All Errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
No Errors	The system boot will not be halted for any errors that may be detected.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all other errors.

Advanced BIOS Features Setup

The “Advanced BIOS Features Setup” menu allows you to configure and improve your system for basic operation. It allows you to set up some special features according to your preference. You have the opportunity to select the system’s default speed, boot-up sequence, keyboard operation, shadowing and security features.

ROM PCI/ISA BIOS ADVANCED BIOS FEATURES SETUP AWARD SOFTWARE, INC.		
Virus Warning : Disabled CPU IL1 and L2 Cache : Enabled Hyper-Threading Technology : Enabled ** Quick Power-On Self Test : Enabled First Boot Device : Floppy Second Boot Device : HDD-0 Third Boot Device : CD-ROM Boot Other Device : Enabled Swap Floppy Drive : Disabled Boot Up Floppy Seek : Enabled Boot Up NumLock Status : On Gate A20 Option : Fast Typematic Rate Setting : Disabled Typematic Rate (char/sec) : 6 Typematic Delay (Msec) : 250 Security Option : Setup APIC Mode : Enabled MPS Version Control for OS : 1.4 OS Select for DRAM > 64MB : Non-OS2 Report No FDD for WIN 95 : No Small Logo (EPA) Show : Enabled ** For 3GHz FlexPAC Only		ITEM HELP Menu Level Allows you to choose the VIRUS warning feature for the IDE Hard Disk Boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep.

Virus Warning

This option protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message (such as the one below.) If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

! WARNING !

Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.

Enabled	Activates automatically when the system boots. When the system boots, it causes a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

NOTE: Many disk diagnostic programs, which attempt to access the boot sector table, can cause the above virus warning. If you are running this type of program, it is recommended that you disable the "Virus Warning" feature beforehand.

CPU L1 and L2 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPU's from the 486-type on up contain internal cache memory and most modern PC's have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These two options allow you to either enable (speed up memory access) or disable the cache function.

Quick Power-On Self Test (POST)

This option speeds up the POST after you power up the system. If it is set to enabled (*Default*), the BIOS will shorten or skip some of the check items during POST.

Hyper-Threading Technology

This option activates hyper-threading technology feature.

First/Second/Third Boot Device

When enabled, this option determines which drive to search for first for the operating system such as DOS.

Floppy	LS-120/Zip	HDD-0
SCSI	CD-ROM	HDD-1
HDD-2	HDD-3	LAN

Boot Other Device

This option allows the system to search for an operating system from devices other than the ones selected in the "First/Second/Third Boot Device" option.

Swap Floppy Drive

This option allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps the floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A.

Boot Up Floppy Seek

This option determines whether the BIOS checks for a floppy drive while booting up. If it does not detect one (either due to improper configuration or its absence), it will flash an error message.

Boot Up NumLock Status

This option allows you to activate the NumLock function after you power up the system.

Gate A20 Option

This option determines how gate A20 is handled. Gate A20 is a device used to address memory above 1MB. Initially, Gate A20 was handled through a pin on the keyboard. Today, while keyboards still provide this support, it is more common and much faster, for the system chipset to provide support for Gate A20.

Typematic Rate Setting

When this option is disabled, holding down a key on your keyboard will generate only one key stroke at a time. When enabled, you can set the next two listed typematic control options.

Typematic Rate (Characters Per Second)

When this option is enabled, the system registers repeated keystroke speeds. You can select the speed range from 6 to 30 characters per second.

Typematic Delay (Msec)

When the “Typematic Rate” option has been enabled, this option will allow you to set the time interval for displaying the first and second characters.

Security Option

This option allows you to limit access to the “System” and to “Setup” utility. When you select the “System” option, the system prompts for the “User Password” every time you boot up. When you select the “Setup” option, the system boots up and prompts for the “Supervisor Password” only when the “Setup” utility is called up.

APIC Mode

This option determines the APIC (Advanced Programmable Interrupt Controller) mode.

MPS Version Control for OS

This option specifies the MPS (Multi-Processor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expansion.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when running an OS/2 program. OS/2 depends on certain BIOS calls to access memory.

Report No FDD for Win 95

If you are using Windows 95/98 without a floppy disk drive, select enabled to release IRQ6. Its required to pass the Windows 95/98 SCT test. You should also disable the FDC Controller option in the “Integrated Peripherals” Setup category, when there is no floppy drive in the system. When disabled, the BIOS will not report the missing floppy drive to Windows 95/98.

Small Logo (EPA) Show

The EPA logo appears on the right side of the monitor screen when the system is booted up.

Advanced Chipset Features Setup

The following section describes how to configure your system based on specific features of the installed chipset. The chipset manages bus speeds and access to the system memory resources, such as Dynamic Random Access Memory (DRAM) and external cache. It is strongly recommended that you avoid making any changes to the chipset default settings. These default settings have been carefully chosen to provide the absolute maximum performance and reliability. The only time you might consider making any changes is if data is being lost while using your system.

ROM PCI/ISA BIOS ADVANCED CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.			
	2GHz FlexPAC	3GHz FlexPAC	ITEM HELP
DRAM Timing S electable	: By SPD	: By SPD	Menu Level
CAS Latency Time	: 3	: 2.7	
Active to Precharge Delay	: 6	: 7	
SDRAM RAS # to CAS # Delay	: 3	: 3	
SDRAM RAS # Precharge	: 3	: 3	
DRAM Data Integrity Mode	: Non-E CC		
Memory Frequency For	: Auto	: Auto	
System BIOS Cacheable	: Enabled	: Enabled	
Video BIOS Cacheable	: Enabled	: Enabled	
Memory Hole at 15MB-16MB	: Disabled		
Delayed Transaction	: Enabled	: Enabled	
Power Supply Type	: ATX		
Delay Prior to Thermal	: 16 Min	: 16 Min	
ICH2 ISA Enable	: Enabled	: Enabled	
AGP Graphics Aperture Size	: 64MB	: 64MB	

DRAM Timing Selectable

This option refers to the method by which the DRAM timing is selected.

CAS Latency Timer

This option selects the CAS latency time in HCLKs of 2/2 or 3/3. The system board designer has set the values for this option, depending on the DRAM installed. Do not change the values of this option unless you change the specifications of the installed DRAM or the installed CPU.

Active to Precharge Delay

This option selects the setting for the Active Precharge Delay.

DRAM RAS# to CAS# Delay

This option allows you to insert a delay between the RAS (Row Address Strobe) and the CAS (Column Address Strobe) signals. This delay occurs when the SDRAM is written to, read from or refreshed. Reducing the delay improves the performance of the SDRAM.

DRAM RAS# Precharge

This option sets the number of cycles required for the RAS (Row Address Strobe) to accumulate its charge before the DRAM refreshes.

DRAM Data Integrity Mode

This BIOS setting is used to configure the RAM's data integrity mode. ECC (Error Checking and Correction) should only be used if you are using 72-bit ECC RAM. This will enable the system to detect and correct single-bit errors. It will also detect double-bit errors, though it will not correct them. This option provides increased data integrity and system stability at the expense of a little speed.

Memory Frequency for 2GHz FlexPAC

This option sets the frequency of the installed DRAM memory. The settings are Auto, PC100 and PC133.

Memory Frequency for 3GHz FlexPAC

This option sets the frequency of the installed DDR memory. The settings are Auto, DDR 266 and DDR333.

System BIOS Cacheable

When enabled, this option activates caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable

When enabled, this option activates caching of the video BIOS ROM at C0000h to F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Memory Hole at 15MB - 16MB (for 2GHz FlexPAC Only)

In order to improve performance, certain space in memory can be reserved for ISA cards. This option allows you to reserve 15MB to 16MB memory address space to ISA add-in cards. This makes memory from 15MB and up unavailable to the system. Add-in cards can only access memory up to 16MB.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delayed transaction cycles. Select enabled to support compliance with PCI specification, version 2.1.

Power Supply Type (for 2GHz FlexPAC Only)

This field sets the power supply type that is in your system. By default, the setting is set to ATX.

AGP Aperture Size (MB)

The option sets the aperture size of the graphics memory address space. The aperture is a portion of the PCI memory address range dedicated for the graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The available settings are 4M, 8M, 16M, 32M, 64M, 128M and 256M.

Delay Prior to Thermal

This option activates the CPU thermal function after the system boots for the set number of minutes.

ICH2 ISA Enable

This option activates the ICH2 function.

Integrated Peripherals

This “Setup” screen allows you to determine your hard disk configuration and other integrated peripherals.

ROM PCI/ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.		
On-Chip Primary PCI IDE	: Enabled	HELP ITEM
On-Chip Secondary PCI IDE	: Enabled	Menu Level
IDE Primary Master PIO	: Auto	
IDE Primary Slave PIO	: Auto	
IDE Secondary Master PIO	: Auto	
IDE Secondary Slave PIO	: Auto	
IDE Primary Master UDMA	: Auto	
IDE Primary Slave UDMA	: Auto	
IDE Secondary Master UDMA	: Auto	
IDE Secondary Slave UDMA	: Auto	
USB Controller 1.1	: Enabled	
USB Controller 2.0	: Enabled **	
USB Keyboard Support	: Disabled	
AC97 Audio	: Auto	
Init Display First	: AGP	
ICH4 LAN	: Enabled **	
IDE HDD Block Mode	: Enabled	
On Board FDC Controller	: Enabled	
On Board Serial Port 1	: 3F8/IR Q4	
On Board Serial Port 2	: 2F8/IR Q3	
UART Mode Select	: Normal	
UR 2 Duplex Mode	: Half	
On Board Parallel Port	: 378/IR Q7	
Parallel Port Mode	: S PP	
ECP Mode Use DMA	: 3	
PWR -On After PWR -Fail	: Off	
Midi Port Address	: 330 *	
Midi Port IRQ	: 10 *	
* For 2GHz FlexPAC Only		
** For 3GHz FlexPAC Only		

On Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select enabled to activate each channel separately.

IDE Primary & Secondary Master/Slave PIO

The IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship which is determined by the cabling configuration used to attach them to the controller. Since the system supports two IDE controllers, the primary and the secondary, you have the ability to install up to four separate hard disk drives.

These options allow your system to work faster. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, Programmed Input/Output (PIO) allows the BIOS to communicate with the controller and the CPU directly. This method is simple, fast and more efficient.

Your system supports five modes, numbered from 0 to 4, which primarily differ in timing. When "Auto" is selected, the BIOS will use the best available mode.

IDE Primary & Secondary Master/Slave UDMA

This option allows your system to improve disk I/O throughput to 33MB/sec with the Ultra DMA feature.

USB Controller 1.1

This option activates the USB 1.1 controller.

USB Controller 2.0

This option activates the USB 2.0 controller. (Only on the 3GHz FlexPAC)

USB Keyboard Support

Select "Enabled" if your system contains an Universal Serial Bus (USB) controller and you are using an USB keyboard.

AC97 Audio

This option activates the AC97 (I CH2) audio function.

Initial Display First

This option allows the system to first initialize the AGP card on chip or the display on the PCI slot.

NOTE: If the “On Board” option is selected, both the internal and external display will be lost.

IDE HDD Block Mode

This option allows the hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

Power On Function

This option determines the way you power “On” the system from the system “Off” state.

On Board FDC Controller

Select “Enabled” if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or if your system does not have a floppy disk drive, select “Disabled.” This option allows you to select the on board FDD port.

On Board Serial/Parallel Port

These options allow you to select the on board serial and parallel ports and their addresses.

Serial Port 1:	3F8/IRQ4
Serial Port 2:	2F8/IRQ3
Parallel Port:	378h/IRQ7

UART Mode Select

This option determines the UART2 mode in your computer. The settings are normal, IrDA and ASKIR.

UR2 Duplex Mode

This option allows you to select between the Half Duplex or the Full Duplex mode.

Parallel Port Mode

This option allows you to determine the parallel port mode function.

SPP:	Standard Printer Port
EPP:	Enhanced Parallel Port
ECP:	Extended Capabilities Port

Power-On After Power Fail

This option sets the system power status, whether on or off, when the power returns from a power failure situation.

Power Management Setup

The “Power Management Setup” allows you to save energy while effectively using your system. It will shut down the hard disk and turn “Off” the video display after a period of inactivity.

ROM PCI/ISA BIOS POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.		
Power-Supply Type : ATX **	ITEM HELP	
ACPI Function : Enabled	Menu Level	
ACPI Suspend Type : S1 (POS) *		
Power Management : User Define		
Video Off Method : V/H Sync+Blank		
Video Off In Suspend : Yes		
Suspend Type : Stop Grant		
Modem Use IRQ : N/A		
Suspend Mode : Disabled		
HDD Power Down : Disabled		
Soft-Off By PWR-BTTN : Instant-Off		
CPU THRM-Throttling : 75% **		
Wake Up By PCI Card : Disabled		
Power-On By Ring : Disabled		
Resume By Alarm : Disabled		
Date (of Month) Alarm : 0		
Time (hh:mm:ss) : 0		
~ Reload Global Timer Events ~		
Primary IDE 1 : Enabled		
Primary IDE 0 : Enabled		
Secondary IDE 0 : Enabled		
Secondary IDE 1 : Enabled		
FDD, COM, LPT Port : Enabled		
PCI, PIRQ [A-D] # : Enabled		
* For 2GHz FlexPAC Only		
** For 3GHz FlexPAC Only		

ACPI Function

This option activates the ACPI (Advance Configuration and Power Interface) support on the system card.

Power Supply Type (for 3GHz FlexPAC Only)

This field sets the power supply type that is in your system. By default, the setting is set to ATX.

Power Management

The Power Management option allows you to select the type (or degree) of power saving management modes. There are four selections for power management, three of which have fixed mode settings. In order to enable the CPU overheat protection feature, the “Power Management” option should not be set to disabled.

Disable	No Power Management
Min Power Saving	Minimum Power Management
Max Power Saving	Maximum Power Management
User Defined	Each of the ranges are from 1 minute to 1 hour. Except for “HDD Power Down” which ranges from 1 minute to 15 minutes.

Video Off Method

The “Video Off Method” determines how the monitor is blanked. There are three options to choose from.

V/H SYNC+Blank	Will blank the screen and turn “Off” vertical and horizontal scanning.
Blank Screen	Only writes blanks to the video buffer.
DPMS	The BIOS controls the video display card if it supports the DPMS feature.

Video Off in Suspend

This option activates the “Video Off in Suspend” mode.

Suspend Type

This option determines the “Suspend Type” setting.

Modem Use IRQ

This option names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Suspend Mode

When enabled, and after the set time of system inactivity, all devices except the CPU is shut “Off.”

HDD Power Down

When enabled, and after the set time of system inactivity, the hard disk drive is powered down while all other devices remain active.

Soft-Off by PWRBTN

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

CPU THRM-Throttling (for 3GHz FlexPAC Only)

When the system enters *Doze* mode, the CPU clock runs only part of the time. You may select the percent of that the clock runs.

Power On By Ring

This option enables or disables the power-on function of the system through the modem connected to the serial port or LAN.

Wake Up By PCI Card

This option activates the wake up function through a PCI card.

Resume By Alarm

This option enables or disables the resumption of the system operation. It allows the system to be turned “On” automatically through the timer set in the BIOS to make it a more scheduled type system. When enabled, the user is allowed to set the Date and Time.

Date of Month Alarm

This option sets the “Date of Month Alarm” function.

Time (HH:MM:SS) Alarm

This option sets the “Time Alarm” function.

Reload Global Timer Events

The HDD, FDD, COM, LPT ports and the PCI PIRQ are I/O events which can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

Primary IDE 0	: Enabled
Primary IDE 1	: Enabled
Secondary IDE 0	: Enabled
Secondary IDE 1	: Enabled
FDD, COM, LPT Port	: Enabled
PCI PIRQ # [A-D]	: Enabled

PnP/PCI Configuration

This “Setup” screen contains the options for configuring the Personal Computer Interconnect (PCI) bus system. The PCI system allows I/O devices to operate at speeds almost the same as the CPU speed when the CPU is communicating with it’s own special components. All PCI bus systems on the computer use the INT#, thus all installed PCI cards must be set to this value.

WARNING: This section describes some very technical information and it is strongly recommended that only experienced users make any changes to these default settings.

ROM PCI/ISA BIOS PnP/PCI CONFIGURATION SETUP AWARD SOFTWARE, INC.		
PnP OS Install : No Reset Configuration Data : Disabled Resources Controlled By : Auto (ESCD) IRQ Resources : Press Enter DMA Resources : Press Enter PCI/VGA Palette Snoop : Disabled		ITEM HELP
		Menu Level
		Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot

Frequency/Voltage Control

This section shows the user how to configure the processor frequency.

Auto Detect PCI Clk	Disabled	ITEM HELP
Spread Spectrum	Disabled	Menu Level

Auto Detect PCI Clk

This field enables or disables the auto detection of the PCI Clock.

Spread Spectrum

This field sets the value of the spread spectrum. The default setting is Disabled. This field is for the CE testing use only.

PnP OS Install

Enable the “PnP OS Install” option if it is supported by the installed operating system.

Reset Configuration Data

This option allows you to determine whether to reset the configuration data or not.

Resources Controlled By

The PnP BIOS can automatically configure all the boot and compatible devices with the use of a PnP operating system such as Windows 98.

IRQ Resources

This option determines the IRQ resources.

DMA Resources

This option determines the DMA resources.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show the colors properly. This option allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this option is enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When this option is disabled, a PCI/VGA can not work with a MPEG ISA/VESA card.

Supervisor or User Password Setting

You can set either the “Supervisor” or the “User” password, or both.

Supervisor Password:	Sets a password that will be used to protect the system and the “Setup” utility.
User Password:	Sets a password that will be used exclusively on the system.

To Specify a Password: Select the password option you want, then press <Enter>. The following message will appear at the center of the screen to assist you in creating a password:

ENTER PASSWORD:

Type the password (up to eight characters in length) and press <Enter>. This password will now clear any previously entered passwords from CMOS memory. You will be asked to confirm the password. Retype the password and press <Enter>. You can also press <Esc> to abort the selection and not enter a password. After setting a password, the screen automatically returns to the main screen.

To Disable a Password: Press <Enter> when you are prompted to enter the password. A message (as shown below) will confirm that the password has been disabled and the system will reboot. You can now enter “Setup” freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter “Setup.” This prevents an unauthorized person from changing any part of your system configuration. You can request a password prompt every time your system is rebooted. This would prevent unauthorized use of your computer at all times.

Load Fail-Safe Defaults

This option, located on the “Main Setup” screen, allows you to load the troubleshooting default values that are permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high performance features. After selecting “Load BIOS Default,” a prompt will appear asking if you want to load the BIOS default values to CMOS RAM. Enter “Y” (for yes) or enter “N” (for no).

Load Setup Defaults

This option allows you to load the CMOS default values into the system’s configuration. These default settings are optimal and enable all the high performance features. To load the Setup BIOS default values to CMOS RAM, enter “Y” (for yes) or enter “N” (for no).

Save and Exit Setup

This option lets you determine whether to accept the modifications you have just made, or not. If you type “Y” (for yes), you will quit the “Setup” utility and save all changes into CMOS memory. If you type “N” (for no), you will return to the “Setup” utility.

Exit Without Saving

Select this option to exit the “Setup” utility without saving the modifications you have just made in this session. Type “Y” (for yes) to quit the “Setup” utility without saving to CMOS memory. Type “N” (for no) and you will return to the “Setup” utility.

4 Display & Drives

DISPLAY AND DRIVES

This chapter contains the following sections:

- Flat-Panel Display
- Optional Removable Hard Disk Drive
- Floppy Disk Drive
- CD-ROM Drive

This chapter contains display specifications, information about the flat-panel display and connecting an external CRT monitor. The removable hard disk drive option, the floppy disk drive and the CD-ROM are also covered in this chapter.

The Flat-Panel Display (TFT)

Your FlexPAC portable computer includes a large 14.1 inch, high resolution (XGA) Active Matrix Liquid Crystal Display (AML CD). Kontron uses only high performance active matrix color panels for its displays. Since the FlexPAC includes on board video, a video controller card is not necessary.

The AM LCD display provides high visual acuity, as well as excellent contrast, over a wide range of ambient lighting. AML CD displays use less power than the vacuum-fluorescent, cathode-ray-tube (CRT) and plasma displays. The display has a cold cathode fluorescent backlight, giving bright but evenly distributed lightening across the entire screen area.

Display Specifications

	FlexPAC 2GHz	FlexPAC 3GHz
Video Input:	XGA	XGA
Screen Size:	14.1 inches	14.1 inches
Resolution:	1024 x 768	1024 x 768
Brightness:	150 nits	150 nits
Response:	30ms	30ms
Contrast Ratio:	200:1	200:1
Viewing Angle:	90	90
Video RAM:	16MB	32MB

Connecting a CRT Monitor

The FlexPAC has an external VGA port for a CRT monitor . The connector is like any standard, 15-pin high density , Sub-D VGA connector. Simply attach your CRT monitor's cable into this port . No additional cables a rerequired. The external monitor port is located in the expansion slot opening on the side panel, to the left of the display.

Once the CRT monitor is connected to your FlexPAC, you must install the correct display drivers in order for your CRT monitor to operate properly . A set of VGA drivers a nd the installation files are provided on the "Drivers /User Manual" CD included with the FlexPAC. The VGA drivers are installed according to the operating system you are running. The VGA driver installation procedures are provided in Chapter 2.

Removable Hard Disk Drive Option

The FlexPAC can be equipped with an optional removable hard disk drive. The installation slot for the removable drive is located on the rear panel of the FlexPAC. This feature allows the user to change hard disk drives when multiple operating systems are needed, while out in the field. Or multiple users can each have their own removable hard disk drive, loaded with their personnel files or applications. Additional removable 2.5 inch hard disk drives with cartridges are available. Contact Kontron customer service for assistance.

WARNING: The power must be “Off” and the system cord unplugged when removing or installing the removable hard disk drive. The removable hard disk drive is not “hot swappable.”

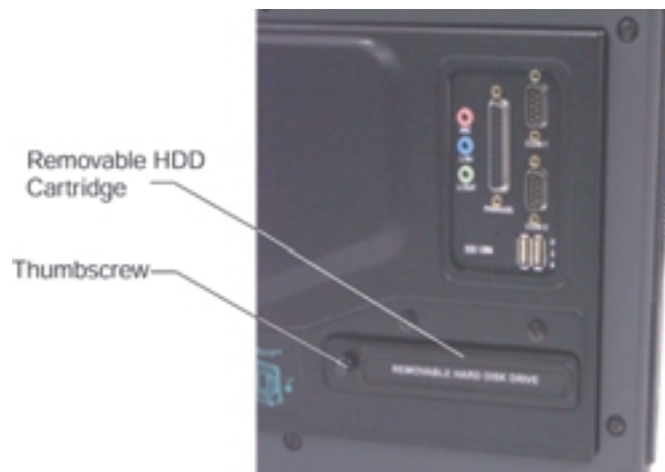
Removing/Installing the Optional Removable HDD

Use the following procedure to install the optional removable hard disk drive.

1. Turn “Off” the power switch to the FlexPAC. Disconnect the power cord.
Turn the system around so the rear panel is facing towards you.
2. Use your fingers to loosen the thumbscrew securing the removable hard disk drive (see Figure 4.1). The thumbscrew is not removable.
3. Use the thumbscrew to carefully pull the removable hard disk drive cartridge straight out from the FlexPAC.
4. **To replace the removable hard disk drive:** Carefully insert the removable hard disk drive cartridge back into the slot on the rear panel.
Push the cartridge in firmly, until it seats with the connector.
5. Using your fingers, tighten down the thumbscrew (do not over-tighten).

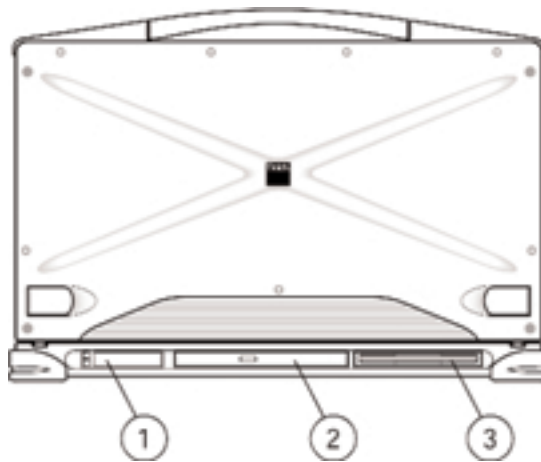
NOTE: If you purchase a spare removable hard disk drive, at a later date, the system will automatically recognize it as the slave. If it needs to be set up as the master, call Kontron technical support for assistance.

Figure 4.1 Removable Hard Disk Drive Option



Floppy Disk Drive

The FlexPAC is equipped with a standard 1.44MB, 3.5-inch floppy disk drive. It can store up to 1.44MB of data. The floppy disk drive is located below the flat-panel display, in the lower right-hand corner of the FlexPAC. It is positioned to the right of the CD-ROM (see Figure 4.2). The keyboard must be moved to the side when inserting or ejecting a floppy diskette.



1. Optional PCMCIA/CardBus Socket
2. CD-ROM Drive/Optional CD-RW
3. Floppy Disk Drive

Figure 4.2 System Peripherals

How to Use the CD-ROM

The following section explains the main features on the CD-ROM, how to load and remove a CD-ROM disk and manually ejecting a CD. The CD-ROM has the following features:

- Eject Button - The rectangular shaped button is used to eject the CD tray out from the CD-ROM.
- Status LED - The status LED illuminates to notify you that the power is “On” and that the system is busy accessing the CD.
- Manual Eject Hole - Use this tiny emergency hole during a mechanical or power failure to manually eject the CD tray out from the CD-ROM.

Loading and Removing a CD-ROM Disk

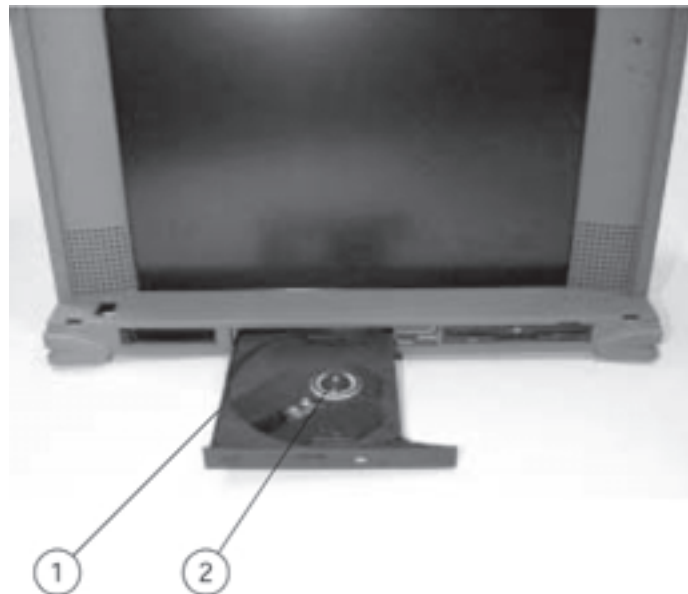
Use the following procedure to load and remove a CD from the CD-ROM. Place the keyboard to the side when operating the CD-ROM. If it is not moved, it can interfere with the ejection of the loading tray.

WARNING: Use care when handling the CD as you can easily scratch the surface and destroy the data. Hold the CD around the outer edge or by the center hub.

1. Push in the “Eject” button located on the front panel of the CD-ROM and the loading tray will eject out (see Figures 4.3 and 4.5, Item 5).
2. Carefully place the CD onto the center hub of the loading tray. Gently press downwards until it snaps securely in place on the spindle (see Figure 4.4). Push the loading tray back into place in the CD-ROM.
3. To remove the CD, push in the “Eject” button and the loading tray will eject back out. Carefully remove the CD from the spindle and push the loading tray back into place. Store the CD in its protective case when not in use.

NOTE: If your FlexPAC is equipped with an optional CD-RW drive, software is supplied to facilitate CD burning.

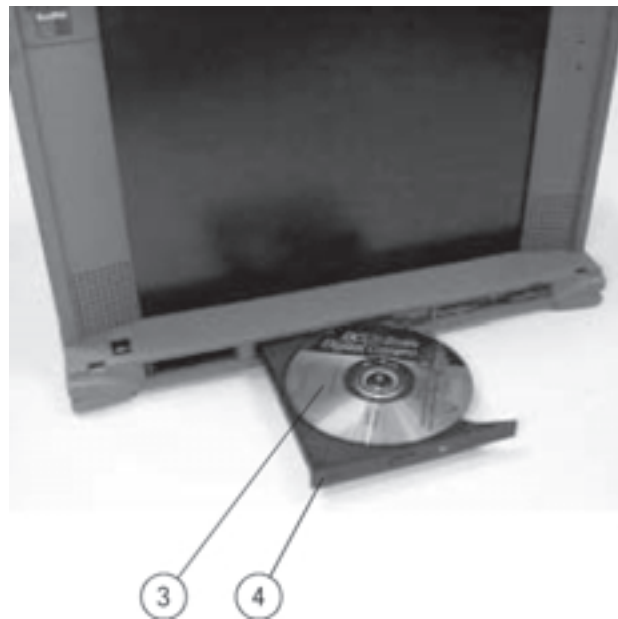
NOTE: Never force a CD into or out of the loading tray.



- 1. Loading Tray
- 2. Spindle

Figure 4.3 CD-ROM Loading Tray

Figure 4.4 Loading a CD



- 3. Inserted CD
- 4. Loading Tray

The CD-ROM Status LED

The LED indicator, on the CD-ROM, lights up continuously during the seek cycle and during the transfer of read data to the host. It flashes while the audio is being played (if applicable). The LED also flashes while the CD-ROM is completing the following tasks.

1. From POR (Power-On Reset) to the end of TOC (Transfer of Contents) read
2. From tray loading to the end of TOC read (when CD is present)
3. From POR until the end of detecting the CD (no CD present)
4. From tray loading until the end of detecting the CD (no CD present)
5. If a CD error occurs, flashing continues until the CD is ejected. If there is a hardware problem, flashing continues until the power is switched "Off."

Manual Ejection of the CD-ROM Disk

The FlexPAC must be powered "On" for normal CD insertion and removal. If you need to eject a CD during a power failure, or some other type of mechanical failure, it can be done manually by hand. First, disconnect the power cord. Then, carefully insert a straightened paper clip or similar thin pointed tool into the emergency "Manual Eject Hole." It is located to the right of the LED on the frontpanel of the CD-ROM drive (see Figure 4.5, Item 7). Push the paper clip inwards until it stops with a click, and the CD-ROM tray will then eject out.

Figure 4.5 CD-ROM Manual Eject Hole



- 5. Eject Button
- 6. Status Indicator LED
- 7. Manual Eject Hole

5

Expanding the FlexPAC

EXPANDING THE FLEXPAC

The FlexPAC portable computer provides the expandability of a desktop system in a convenient all-in-one package. It has four open PCI add-in card slots and an can be equipped with an optional PCMCIA/Cardbus socket. This chapter covers the following sections:

- Opening Up the FlexPAC
- Installation of Add-In Cards
- Installation of PC Cards

Before You Begin

Be sure to read this section before you remove the outer casing of the FlexPAC. The system contains components that can be damaged by electrostatic discharge. Listed below are some general precautions you should take to minimize electrostatic discharge when opening up the FlexPAC.

- Always work in a static-free area.
- Before handling any assemblies, discharge your body by touching a grounded metal object.
- Handle all add-in cards by their edges. Do not touch the components unless absolutely necessary and avoid touching the gold-edged connectors.
- Whenever possible, use electrostatic wrist straps when handling any sensitive components.

Opening Up the FlexPAC

When installing add-in cards into the FlexPAC, the outer casing and the card retention plate must be removed. This section provides precautions and procedures necessary for installing and removing add-in cards. The memory modules are not user accessible. The FlexPAC must be returned to Kontron, or a Kontron approved service center, for a memory upgrade. Contact Kontron technical support for assistance.

WARNING: Disassembling the FlexPAC, other than for add -in card installation, will void the warranty.

Removing the Outer Casing

A 3mm hex driver is needed to remove the outer casing from the FlexPAC.

1. Turn the power switch "Off." Disconnect the power cord and any other external device cables connected to the system.
2. Always close the keyboard up against the main unit when opening up the FlexPAC. This will protect the keyboard and the screen from receiving any damage when removing the outer casing.
3. Place the unit face down on a flat, sturdy surface. The rear panel will be facing upwards.
4. Using a 3mm hex driver, remove the six M4 hex screws securing the rear panel of the unit (see Figures 5.1 & 5.2).
5. Gently slide the outer casing up and away from the main chassis (see Figure 5.1).



Figure 5.1 Rear Panel M4 Hex Screws (6 each)



Figure 5.2 Remove the Outer Casing

Add-In Card Expansion

For added expansion, the FlexPAC provides four PCI slots. The add-in card slots are mounted on a passive backplane which sits at a 90 angle from the system board. Any size card, up to the maximum PCI specified standard can be used (XT or AT height and anywhere from half to full length).

Card Retaining Foam Blocks

Because the FlexPAC is a portable workstation, the add-in cards must be properly installed and securely retained to prevent movement during transport. The units are shipped from the factory with a stationary card retaining foam block attached underneath the card retention plate (see Figure 5.7). It holds the full length system board firmly in place. It will also secure and hold in place any additional full-length add-in cards you may install. An extra foam block is provided to use as needed. It can be used for securing multiple sized cards or as a replacement for the original. Placement of the spare foam block is determined by the need, size and location of the cards.

Add-In Card Installation

The outer casing and the card retention plate must be removed to access the add-in card slots. A 3mmhex driver is needed to remove the outer casing and a small size phillips-head screwdriver is needed for the add-in card installation. Use the following procedure to install an add-in card.

1. Make sure the system is disconnected and powered "Off." Remove the outer casing (see "Removing the Outer Casing"). Place the system back in an upright position with the display facing you.
2. Using a small size phillips-head screwdriver, remove the two upper screws securing the card retention plate (see Figure 5.3) Then, use the phillips-head screwdriver to remove the two screws securing the right side of the card retention plate, above the I/O opening (see Figure 5.4).
3. Carefully lift up the right side (above the I/O opening) of the card retention plate first (see Figure 5.5), and then the left side, disengaging the notched end from the mating slots. Remove the card retention plate from the main unit.

4. Determine the add-in card placement slot. Remove the single screw securing the adjacent I/O slot cover (see Figures 5.6). Lift up and remove the I/O slot cover from the expansion opening, saving the screw for later use (see Figure 5.7).
 5. Guide the add-in card into the expansion slot. Using both hands, press it down evenly into the socket (see Figure 5.8). Make sure the card is firmly seated (see Figure 5.9).
 6. Replace the single screw into the I/O bracket, to secure the add-in card (see Figure 5.9).
 7. If needed, use the extra supplied card retaining foam block to hold multiple sized add-in cards in place. Peel off the tape to expose the adhesive strip. Strategically attach it across the card retention plate, parallel with the other stationary foam block.
- NOTE:** Do not position the self-adhesive foam block over the air vents on the card retention plate (see Figure 5.10). Doing so, will prevent proper airflow which may damage the FlexPAC.
8. Place the card retention plate back into the FlexPAC. First engage the notched ends, on the left side, into their mating slots, then lower the right end of the card retention plate, back into place. Make sure the foam block is correctly aligned across the cards.
 9. Using the phillips-head screwdriver, replace the two screws to secure the right side of the card retention plate. Then replace the two upper screws on the card retention plate (see Figure 5.3).
 10. Place the unit face down on a flat, sturdy surface. The rear panel will be facing upwards. Carefully slide the outer casing back onto the main chassis.
 11. Using the 3mm hex driver, replace the six rear panel screws. Do not over tighten them.



Figure 5. 3 Two Upper Card Retention Plate Screws



Figure 5. 4 Two Card Retention Plate Screws



Figure 5. 5 Lift Up the Card Retention Plate



Figure 5. 6 Expansion Slot Cover - Single Screw Removal



Figure 5.7 Removing an Expansion Slot Cover

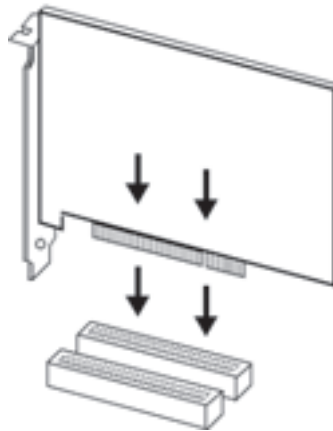


Figure 5.8 Inserting an Add-in Card

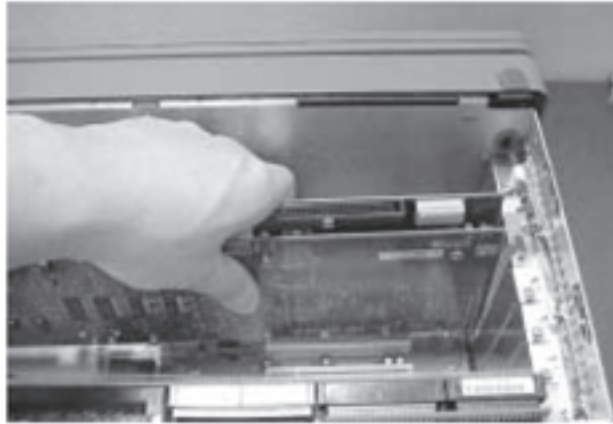


Figure 5.9 Securing the Add-in Card

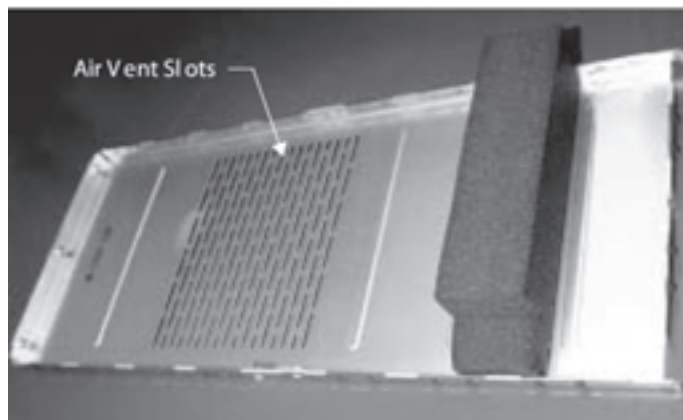


Figure 5.10 Fixed Card Retaining foam block

Optional PCMCIA Cards

The FlexPAC can be fitted with an optional PCMCIA/CardBus socket for added expansion. The PCMCIA/CardBus socket accepts either two type II or one type III PC cards. Since both type II slots are co-located in the same opening, one type III PC card can be inserted instead of two type II PC cards. The type III PC card occupies both slots. The FlexPAC supports “hot insertion.” You can insert the PC card into the socket while the system is powered “On.” The PCMCIA/CardBus socket is located on the front side, in the lower left hand corner, next to the CD-ROM (see Figure 5.8).

1. With the insert marking facing upwards, slide the PC card firmly into the socket until it is in place.
2. To remove the upper PC card: Press the upper eject button.
To remove the lower PC card: Press the lower eject button.

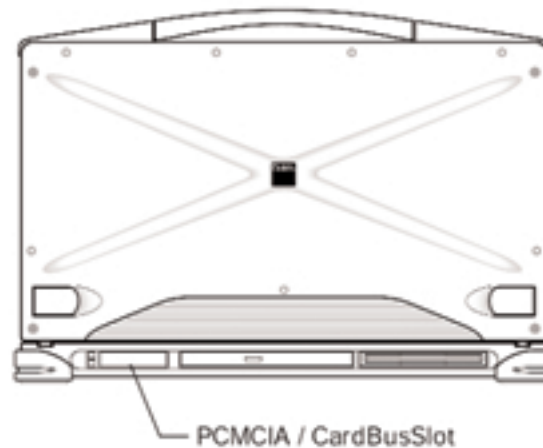


Figure 5.8 Optional PCMCIA Socket

6

Maintenance & Troubleshooting

MAINTENANCE & TROUBLESHOOTING

This chapter covers general maintenance procedures for handling and cleaning your FlexPAC, provides basic troubleshooting for common problems and explains typical error messages reported by the BIOS. This chapter also provides system safety instructions, procedures for cleaning the removable fan filters, customer service assistance and technical support information.

Handling the FlexPAC and Its Components

The FlexPAC portable computer is an extremely rugged system, requiring very little maintenance. But despite the ruggedness of the FlexPAC, any piece of electrical equipment should be handled with care and used accordingly to its specifications.

1. Whenever working on or cleaning your unit, make sure you place the system on a flat sturdy surface.
2. Always power “Off” the system and unplug the power cord before working on or cleaning your unit.
3. The only user accessible compartment is the add-in card bay. Disassembling the FlexPAC, other than that required to install add-in cards, may damage the unit and void the warranty.
4. Always close the keyboard up against the display when transporting the FlexPAC to protect the screen and keyboard.
5. The system board battery must be replaced at the Kontron factory or at a Kontron approved repair center.
6. Do not expose the system unit to liquids.
7. Never transport the FlexPAC with a CD in the CD-ROM.
8. Remove all cables and use the supplied carrying case when transporting the FlexPAC.
9. To ensure proper air flow and prevent over heating, do not block or cover any of the air vents on the FlexPAC.

Safety Summary

Please read these safety instructions before using the FlexPAC. This section contains useful information to help maintain the reliability and performance of your system.

1. Follow all warnings and instructions in this manual.
2. Turn "Off" and disconnect the power cord before connecting a peripheral device. If you add or remove any peripheral devices while the power is "On," you may damage the system or cause injury to yourself.
3. Users are advised to purchase the latest versions of virus protection software and use them regularly.
4. Do not attempt to service the FlexPAC yourself unless you are an authorized Kontron service technician.
5. Do not use an unapproved power source to operate the FlexPAC. Use of an unapproved power source may damage the unit and void the warranty.
6. Make sure the external power source is a grounded 3-prong outlet or power strip.
7. Arrange all cables so they are out of the way of traffic, personnel and equipment.
8. Avoid using extension cords with the FlexPAC. If an extension cord is needed, make sure it is rated for at least 10 amperes.
9. Do not install or use any items with the FlexPAC, except those which are designed for use with it.
10. Observe proper electrical safety precautions when performing system maintenance.
11. Disconnect the power cord if it becomes frayed or damaged. Immediately replace it with a new power cord. Contact Kontron customer service for replacement cables.
12. Replace any peripheral cables with identically rated cables to those included with the original equipment.

Connectors and Cables

Loose and improperly connected cables can be the cause of problems with your computer, external monitor, printer, keyboard, external mouse or other external peripheral devices. A quick check of all the cable connections may easily solve the problem.

- Always hold a cable by the connector when attaching it or removing it from a socket or a plug.
- Never force a connector into a socket or plug.
- Check the orientation of a connector before attaching it to the FlexPAC.
- If the connections do not join together easily, contact Kontron technical support for assistance.

Flat-Panel Display

- Use care when handling and transporting the FlexPAC. The flat-panel display is glass and can crack or break if the unit is dropped.
- Be careful not to scratch or press hard with any object on the display surface. By doing so, you can easily damage the polarizers.
- Do not expose the display to direct sunlight.
- Avoid contact with water or liquids, as it can cause a short and damage the display.
- To protect your display against “burn-in” from over extended periods of use, try using a screen-saver program. Contact your local software dealer for information about screen-saver programs.

Cleaning the FlexPAC

Use the following procedure to clean the FlexPAC.

CAUTION: Before cleaning the FlexPAC, make sure the power is “Off” and the power cord is disconnected, otherwise, you may damage the unit or cause injury to yourself.

- Wipe dust and fingerprints off the outside casing using a cloth slightly moistened with water or a mild ammonia-based cleaning solution.
- After cleaning the FlexPAC, make sure the unit is completely dry before powering the system back “On.”

Cleaning the Flat-Panel Display

Use the following procedure to clean the flat-panel display.

- Wipe the flat-panel display with an absorbent cotton cloth or other soft cloth. Do not use any liquid cleaner on the display.
- Use care when cleaning the flat-panel display. The flat-panel display is glass and can crack or break if the unit is dropped.
- Be careful not to scratch the glass on the flat-panel display. Keep all sharp objects away from the display.

WARNING: Do not let any liquid come in contact with the flat-panel display, as it may cause discoloration or spots.

Cleaning the Fan Filters

The FlexPAC is designed with three independent high performance, forced cooling systems. The first cooling system channels fresh air directly over the CPU heat sink and out through a channeled exhaust outlet. The second system, controlled by an electronic thermostat that regulates the speed of the fan, circulates fresh air through the add-in card bay. The third system circulates fresh air past the drive bay and through the power supply. Additionally, the power supply unit has its own independent fan. Together, these systems provide excellent internal cooling which helps maintain the performance of the unit.

Cooling vents are equipped with detachable fan filters that must be periodically cleaned. The washable fan filters should be cleaned every three to six months in order to maintain the proper airflow throughout the unit. How often you clean them depends on the environment or where the FlexPAC is being used. If it is being used in a factory type environment, the fan filter should be cleaned once every three months. If the environment is relatively clean and free of dust pollutants, then once every six months should be sufficient. You will become more familiar with the cleaning process as time goes on.

The fan filters are easily accessible and can be cleaned at your convenience. They are located behind the removable metal screen covers, on each side of the FlexPAC (see Figure 6.1).

1. Using a 1/16 inch hex driver, remove the hex screws from the metal screen covers. Be careful not to strip the hex screws while removing them.
2. Carefully lift the screen covers out and away from the FlexPAC.
3. Gently pull the foam fan filters out from their placed positions.
4. Using warm water and a mild soap solution, gently wash each foam fan filter by hand. Then, let them air dry.
5. When the filters are completely dry, carefully replace them back into their designated areas.
6. Replace the metal screen covers and insert the hex screws. Using the 1/16 inch hex driver, carefully tighten down each hex screw. Be sure not to over tighten them.



Figure 6.1 Removable Fan Cover Grills

Troubleshooting the FlexPAC

In most cases, problems with personal computers are the result of improper hardware or software configurations, such as conflicting add-in cards or improper jumper settings. Improperly connected cables or loose connections can also cause problems. A quick check of all your cable connections can sometimes eliminate your problem.

When you troubleshoot your system, observe the way your equipment behaves and collect all the pertinent data on the failure (error messages, audible beeps, etc.) You then eliminate the causes of the problem, one by one. This section focuses on some of the most common startup failures. If your system experiences a failure not described in this section, call a representative at Kontron's technical support department for assistance.

Typical Startup Sequence

When you turn "On" your system, the FlexPAC executes a predefined set of activities related to hardware initialization. This set of activities is known as POST (Power-On Self Test). Your system must complete each step listed below before you can consider the system operational.

1. Your system is properly connected into a grounded outlet and is receiving power.
2. The system begins the POST. This test verifies that the system memory, system board, floppy disk drive, hard disk drive and any other peripheral devices are all operational.
3. As the POST test executes, it displays system values (processor type, memory size, etc.) and settings on the screen. Be sure to verify that these values match your actual system configurations.

NOTE: When a system experiences problems during startup, it either halts the sequence, generates a written error message or issues a series of beep codes to indicate that a failure has occurred.

Installation Problems

If your system does not power up correctly after the initial installation of an external device, a PC card, a new software application, etc., the cause may be one or more of several minor problems. Problems that occur the first time you power up are usually installation errors, electrical shorts (i.e. a loose screw inside the system), an add-in card which is not properly seated or an incorrect CMOS hardware configuration.

If the system fails when you first start it, review the installation and configuration process and re-read the applicable sections of this manual. Try to answer the following questions.

Are all power cables connected correctly and are all the power switches turned "On?"

Are all the interface cable connections secure and correct?

Are the values listed in the "BIOS Setup" utility correct?

Are the installed memory modules of the correct type? When running 133MHz bus speed, only SDRAM modules with a PC133 specification can be used in the FlexPAC 2GHz and DDRAM for the FlexPAC 3GHz.

■ If the installation problem can not be solved by the previously mentioned measures, try the steps below.

1. Turn the FlexPAC "Off."
2. Disconnect any external or optional devices from the system unit.
3. Make sure the keyboard is securely connected to the FlexPAC.
4. Make sure the power cord is securely connected to the FlexPAC. Make sure the other end is plugged into a properly grounded power outlet.
5. Make sure there is not a diskette in the floppy disk drive or a CD in the CD-ROM.
6. Turn the FlexPAC back "On."

7. If the system issues a series of beeps before the display device initializes, a fatal error has occurred. Generally, it is a problem associated with the system memory. Refer to the section on “Beep Codes” later in this chapter.
8. Observe the system’s “Startup” sequence. The system should successfully complete each of the steps described in the “Typical Startup Sequence.” If the system does not complete each of the steps, the component activated during that step may be faulty. Call Kontron technical support for help or advice if the “Startup” sequence cannot be entirely executed.
9. If the system issues any error messages during the startup sequence, take the appropriate corrective action described under “Error Messages” in this chapter.
10. If you isolate the problem to a specific device, refer to the user’s manual which came with that device and try to fix the problem yourself.
11. If you are experiencing problems with a particular software program, try re-running that program. If the problem keeps arising, see the program’s documentation for instructions on setting up the program parameters. If your system passes all these steps and is now functioning properly, be sure to turn “Off” your system and re-connect any peripheral devices that you disconnected during your troubleshooting effort. If all these steps have been taken and the problem is still occurring, call Kontron technical support for advice.

Conflicting Device Drivers

Incompatible or conflicting device drivers (that probably run perfectly when other conflicting drivers are not present) are another frequent cause of problems. Isolating this problem requires identifying the offending drivers by removing all the drivers in your system, then re-installing them, one at a time, until you duplicate the problem. Then, if possible, re-configure the problem drivers to work with the rest of the system.

General Hardware Problems

A few general problems and suggested solutions are presented below.

Problem	Solution
The system will not power "On."	Check the power cable and make certain it is connected to proper AC power source.
The system does not display the date and time correctly or at all.	Enter the "Setup Configuration Utility" by pressing during the boot-up sequence and correct the time and date settings.
A: device is not recognized by the system.	Open the "Setup Configuration Utility" and enter the appropriate parameters for the floppy disk drive.
The display screen is dark.	• Make sure the system is powered "On." • Make sure the system is not in the "Suspend" mode.
You hear irregular beep sounds.	Contact technical support.
You can't read anything from the CD-ROM.	• Make sure the CD is properly placed in the CD-ROM tray (label side up). • Make sure you installed a CD into the CD-ROM tray.
You can't operate the printer.	• Check the cable connection to the printer. • Make sure the printer is powered "On." • Confirm that the printer is "On-line." • Make sure the correct printer is selected in "Setting Printers."
You can't save anything to a diskette.	• The diskette is not formatted. • The diskette is write protected or full. • The disk drive is not working. Contact Kontron technical support.

BIOS Beep Codes and Messages

Each time the system is powered “On” or reset, the BIOS executes a Power-On Self Test (POST). This series of tests verifies that the unit is able to perform basic functions related to the system board. It also does a system configuration verification where it compares the defined configuration with the actual installed hardware. Error messages and system beeps from the POST will alert you to any system errors that were found.

If an error is detected during this test, you will see a displayed error message. If the error occurs before the display is initialized, the system will issue a beep or a series of beeps. If the error is fatal (non-correctable), the system halts after reporting the fatal error. If it is a non-fatal (correctable) error, the process continues after reporting the error.

If the BIOS detects any problems, they are communicated through error messages. Errors are reported in one of two ways:

- If the error occurs before the display device initializes, a series of beeps will sound. Beep codes indicate that a fatal error has occurred. A beep code is an error message consisting of speaker tones arranged in distinctive patterns.
- If the error occurs after the display device initializes, the error message is displayed as text. With some displayed error messages a prompt to press <F1> may appear.

Should your system issue any error messages or beep codes before or during POST testing, look up the error message(s) and beep codes listed on the next few pages to determine whether you should try to fix the problem yourself or contact Kontron technical support for assistance.

POST Test Codes

Description	Test Point
Initial L1, L2 Cache, Make Stack and Diagnose CMOS	10H
Turn Off FAST A20 for POST. Reset GDT's 8259s Quickly	11H
Signal Power-On Reset at CMOS	12H
Initialize the Chipset (SDRAM)	13H
Search for ISA Bus VGA Adapter	14H
Reset Counter/Timer 1, Exit RAM	15H
User Register Configuration Through CMOS	16H
Dispatch to 1st 64K RAM Test	18H
Checksum the ROM	19H
Reset PICs (8259s)	1AH
Initialize Video Adapter(s)	1BH
Initialize Video (6845 Regs)	1CH
Initialize Color Adapter	1DH
Initialize Monochrome Adapter	1EH
Test 8237A Page Registers	1FH
Perform Keyboard Self Test	20H
Test and Initialize Keyboard Controller	21H
Check if CMOS RAM is Valid	22H
Test Battery Fail and CMOS X-SUM	23H
Test the DMA Controllers	24H
Initialize 8237A Controller	25H
Initialize Interrupt Vectors Table	26H
RAM Quick Sizing	27H
Protected Mode Entered Safely	28H
RAM Test Completed	29H
Protected Mode, Exit Successful	2AH
Setup Shadow	2BH
Prepare to Initialize Video	2CH
Search for Monochrome Adapter	2DH
Search for Color Adapter, VGA Initialize	2EH
Sign-On Messages Displayed	2FH
Special Initialize of Keyboard Controller	30H
Test if Keyboard Present	31H
Test Keyboard Interrupt	32H

Description	Test Point
Test Keyboard Command Byte	33H
Test, Blank and Count All RAM	34H
Protected Mode Entered Safely (2)	35H
RAM Test Complete	36H
Protected Mode Exit Successful	37H
Update Keyboard, Output Port to Disable Gate A20	38H
Setup Cache Controller	39H
Test if 18.2Hz Periodic Working	3AH
Initialize BIOS Data Area at 40:0	3BH
Initialize the Hardware Interrupt Vector Table	3CH
Search and Initialize the Mouse	3DH
Update NumLock Status	3EH
OEM Initialization of COM and LPT Ports	3FH
OEM Initialization of COM and LPT Ports	40H
Initialize the Floppies	41H
Initialize the Hard Disk	42H
OEM's Initialization of Power Management with USB	43H
Initialize Additional ROMs	44H
Update NumLock Status	45H
Test for Co-Processor Installed	46H
OEM's Initialization of Power Management (check SMI)	47H
OEM Functions Before Boot (PCMCIA, Cardbus)	48H
Dispatch to Operation System Boot	49H
Jump Into Bootstrap Code	4AH
HPM Reboot Call	60H
HPM Initialization Call	61H
HPM Screen Enable Call	62H
HPM End of POST Call	63H
Decompress SBOOT.ROM	64H
Display Logo on Screen	65H
Restore Screen	66H

POST Beep Codes

The FlexPAC will issue a set of beep codes if an error occurs before the display device initializes. Beep codes generally indicate that a fatal error has occurred and the BIOS can not initialize the video screen to display any additional information.

Beeps	Description
•••••—	FaultyDMA Page Registers
••••—•	Faulty RefreshCircuit
••••—	ROMChecksum Incorrect
••••—••	CMOSRAMTestFailed
••••—•—	DMA Controller Faulty
•••—••	Interrupt Controller Failed
• • • — — —	No 8042
••—•••	No Video
••—••—	No RAM

NOTE: • means short beep
— means long beep

Error Messages

During POST (Power-On Self Test), the BIOS sounds a beep code or displays a message when it detects a correctable error. Each error message is accompanied by an explanation or a solution. There are two types of error messages:

- Error messages - Failure in hardware, software or firmware
- Information messages - Require no action

Warning Messages

Clock Not Ticking Correctly

The real time clock is not ticking.

CMOS Checksum Invalid - Run SCU

CMOS RAM information has been corrupted and needs to be re-initialized via the System Configuration Utility (SCU).

Floppy Controller Failed

The floppy controller failed to respond to the reset command. Power down the system and check all of the appropriate connections. If the floppy controller continues to fail, it may need to be replaced.

Floppy Controller Failed

The floppy controller failed to respond to the reset command. Power down the system and check all of the appropriate connections. If the floppy controller continues to fail, it may need to be replaced.

Floppy Information Invalid - Run SCU

The drive parameters stored in the CMOS do not match with the floppy disk drive's parameters detected in the system. Changes may be required in the CMOS Setup.

Hard Disk Controller Error

The hard disk controller failed to respond to the reset command.

Possible solutions:

- (1) Check the drive parameters.
- (2) Power down the system and check all of the appropriate connections. If the problem persists, the hard disk controller or the hard disk may need to be replaced.

Hardware Info Does Not Match Video Card - Run SCU

The video adapter type specified in CMOS RAM doesn't match the installed hardware.

Keyboard Controller Failure

The keyboard failed the self-test command. Check to see if the keyboard is correctly plugged in. If the problem continues, and you have access to another FlexPAC keyboard, try an alternative.

Keyboard Failure

The keyboard failed to respond to the RESET ID command. Check to see if the keyboard is correctly plugged in. If the problem continues, and you have access to another FlexPAC keyboard, try an alternative.

No Bootable Floppy Drive 0 Installed

No bootable floppy drive was detected. Possible solutions:

- (1) Power down the system and check all appropriate connections, cables, etc.
- (2) In configurations where no floppy drive is installed, run the SCU (System Configuration Utility) and make sure the disk drive configuration option is set to "None."
- (3) Replace the disk drive, if necessary.

No Interrupts from Timer 0

The periodic timer interrupt is not occurring.

RAM Parity Error at Location xxxx

A RAM parity error occurred at the specified (hexa-decimal) location.

Troubleshooting Guide

If no errors are reported by the BIOS, but the system still fails to operate properly, use the following guide to troubleshoot your system. The information is provided as typical symptoms and possible solutions.

We recommend removing any PC cards and/or add-in cards from your system during the initial troubleshooting procedures. You may then re-install the cards one at a time and repeat the troubleshooting procedures to try and isolate the problem to a particular card.

See Chapter 5, “Expanding the FlexPAC” for useful information on the installation and removal of the PC cards and add-in cards.

System Fails to Power Up

If the system fails to power up and the power LED indicator does not illuminate, check the following items.

- Is the power cord properly plugged into it's power receptacle and is the other end plugged into a grounded power source?
- Is the FlexPAC plugged into a switched, multiple outlet box? Is the switch on the outlet box turned “On?” Is the power switch turned “On?”
- If applicable, is the external monitor (CRT) turned “On?”
- Is the AC outlet working? Plug a different electrical device into the outlet to make sure it's in working order.

System Fails to Boot From the Hard Drive

If the system fails to boot from the hard drive, check the following items.

- Has the hard drive been formatted?
- Does the LED flash when attempting to read from or write to the hard disk drive?
- Is the hard drive type number configured properly in the “BIOS Setup” utility?
- If you have an IDE hard drive, is the IDE controller enabled through the “BIOS Setup” utility?
- If you have a SCSI disk drive, is the SCSI controller enabled through the “Setup Configuration Utility?”
- Is the keyboard connector firmly attached to the system?

Add-In Card Fails to Work Properly

If an add-in card(s) fails to work properly after installation, check the following items.

- Is the add-in card(s) properly installed and seated in its socket?
- Are the jumpers on the card(s) properly configured? Refer to the manufacturer’s documentation.
- Does the add-in card(s) conflict with memory interrupts, I/O addresses of any other add-in cards or any system components?
- Most conflicts can be isolated by removing the add-in cards one at a time. Turn the power “Off” and remove an add-in card. Then turn the system back “On” to see if the problem was eliminated. Repeat the procedure, as needed, for additional add-in cards.

Software Application Program is Not Working

If you are running several application programs in addition to the operating system, software problems can arise. If the operating system works but an installed application program does not, check the following items.

- Has your software program been properly installed and configured? Make sure you read the entire installation instructions before attempting to install it. You may be instructed to modify some operating start-up files (such as config.sys and autoexec.bat files).
- Is the processor speed compatible with your application software? Refer to the documentation supplied with your application software to determine the speed at which the computer must run.
- Have you made any input errors? If prompted, make sure you enter the correct information about your system when installing your software program.
- If you have just performed a software upgrade, un-install the upgrade to see if the problem goes away. If it does, the problem is with your software upgrade.
- Is there a conflict between a software application and your device drivers.
- Is there an Interrupt conflict between your devices?
- Does your software program require any extra hardware devices?
- Are there any special memory requirements for the software application you are running?
- Are there any version requirements for your specific operating system application?

CD-ROM Fails to Work Properly

If the CD-ROM does not work properly, check the following items.

- Verify that the CD was not loaded upside down. The label faces “up.”
- Make sure the CD has a clean surface. Try another CD that you know works properly.
- In Windows, open “My Computer” and check if Windows recognizes the CD-ROM. If your drive does not appear, verify that the drivers have been properly installed.
- Remove any recently installed hardware or software to see if the new installation is causing a conflict.

Floppy Disk Drive Fails to Work Properly

If the floppy disk drive does not work properly, check the following items.

- Make sure you are using the proper type of diskette and that you are properly orientating the diskette when inserting it into the drive; label side towards the front of the system.
- Has the diskette been formatted? If not, you will see the message: “General Failure reading Drive A: (A)bort, (R)etry, (F)ail.” Press <F> to continue.
- If the floppy disk drive does not read the disk, the most likely cause is a bad floppy disk or loose cables.
- Does the LED flash when attempting to “read from” or “write to” the floppy disk drive? If the LED is constantly illuminated, the data cable is improperly attached.
- Run the “Setup Configuration Utility” to verify that the floppy drive is correctly defined. Refer to Chapter 3 for instructions on running the “Setup Configuration Utility.”

Flat-Panel Fails to Display

If the flat-panel fails to display, check the following items.

- Is the power turned “On?”
- Make sure the power cable is properly connected at both ends. Is it plugged into a proper power source?
- If the display is “On” but flickering or garbled, make sure that the right video driver has been installed.

External CRT Monitor Fails to Display

If you have connected an external CRT monitor to the FlexPAC and it fails to display, check the following items.

- Are the brightness and contrast controls on the monitor turned all the way down?
- Is the monitor cable securely connected into the external monitor port?
- Is the CRT capable of displaying XGA resolutions?

Keyboard Fails to Work Properly

If you have connected a keyboard and it fails to work properly, check the following items.

- If you have connected another keyboard other than the standard keyboard which was supplied with the FlexPAC, make sure that the system board supports that type of keyboard.
- Only one keyboard can be connected at any one time.
- If the keyboard you are using has a fuse, make sure that is intact and in proper working order.

Printer Fails to Work

If you have connected a printer to the FlexPAC and it fails to work, check the following items.

- Is the printer plugged into a grounded power source? Is the power source working? If the printer is plugged into a switched, multiple outlet box is the outlet box turned “On?”
- Is the printer turned “On?” Is the printer on-line?
- Is the printer functional? Run the printer’s internal self-test (if applicable). Refer to the documentation supplied with your printer.
- Are you using the proper interface cable for the printer? Does the interface cable have a secure connection? Are any of the pins on the connector bent?
- Did you select the proper parallel port setting when you configured your printer?
- If you are using a serial printer with MS-DOS, did you use the “Mode” command correctly?
- Is the parallel port on your FlexPAC working properly? Connect another parallel peripheral device to the port to find out. Is the parallel port configured the same way as the printer?
- Is the printer conflicting with an add-in card or PC card? Remove the add-in card(s) and/or the PC card(s) one at a time to isolate any conflicts.
- Check the LPT IRQ selection, is it either IRQ5 or IRQ7?
- If an error message is displayed on the printer, refer to the documentation supplied with your printer.
- Is the printer out of paper? Or is there a paper jam?

Mouse Fails to Work

If you have a mouse or other pointing device connected to the FlexPAC and it fails to work, check the following items.

- Did you install the correct mouse driver on your hard drive?
- Is the cable for the mouse securely connected?
- Are the serial ports enabled? Are the serial port jumpers properly configured?
- Are the serial ports on FlexPAC working properly? Connect another peripheral device to the serial ports to find out.
- When using a PS/2 mouse, the BIOS will display the message “Mouse Initialized” when it is properly connected. If this message did not appear on the screen during POST, check the connection.
- There are four different types of mouse support for a PC-type computer (Bus mouse, Serial mouse, USB mouse and a PS/2 mouse). Make sure the BIOS and the operating system supports the type of mouse you are using.
- The FlexPAC touchpad is a PS/2 device. Only one PS/2 device may be used at a time.

Battery Failure

If the error message “CMOS Battery Failed” appears during the POST test, it indicates that the CMOS battery is no longer functional. Contact Kontron technical support for assistance.

If the “Setup Configuration Utility” loses the system configuration information when the FlexPAC is turned “Off,” the battery may be weak or defective. Contact Kontron technical support for assistance.

NOTE: Danger of explosion if a new battery is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer’s instructions.

A Appendix

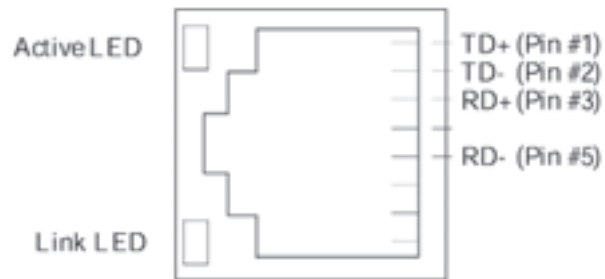
APPENDIX

The Appendix provides information that is not necessary for normal operation of your system unit. The following sections are contained in this appendix:

- External Ethernet Connector
- External VGA CRT Connector
- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Technical Specifications
- Flat-Panel Display Specifications
- Environmental Specifications
- Standard AC to DC Power Supply
- Flat-Panel Display Characteristics

External Ethernet Connector

J25 is the primary internal ethernet connector on the system board. A CPU card with 10/100MBps ethernet capabilities is to be used with this connector and it's corresponding RJ45 input jack. J27 is a secondary internal ethernet connector. The J27 secondary RJ45 connector is used in conjunction with a secondary Ethernet through a MicroPCI Ethernet card. The following figure shows the pin-out assignments for the external RJ45 ethernet jack.



External VGA CRT Connector

J26 is the internal VGA CRT connector on the system board. The pin-outs for the 15-pin external VGA CRT connector are shown below.

Pin	Signal Name
1	Red
2	Green
3	Blue
4	No Connection
5	Ground
6	Ground
7	Ground
8	Ground
9	No Connection
10	Ground
11	No Connection
12	No Connection
13	HSYNC
14	VSYNC
15	No Connection

I/O Port Address Map

Each peripheral device used with your system is assigned a set of I/O port addresses which becomes the identity of the device. There is a total of 1K port address space available. The following table lists the I/O port addresses used on the system board in your FlexPAC.

I/O Address (Hex)	I/O Device
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real-Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2 (LPT2)
2F8h - 2FFh	Serial Port #2 (COM2)
2B0 - 2DF	Graphics Adapter Controller
378h - 3FFh	Parallel Port #1 (LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome and Printer Adapter
3C0 - 3CF	EGA Adapter
3D0 - 3DF	CGA Adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1 (COM1)

Interrupt Request Lines (IRQ)

There is a total of 15 lines available on the system board. Peripheral devices use interrupt request lines to notify the CPU of the required service needed. The following table shows the IRQ lines used by the peripheral devices on the system board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real-Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

TECHNICAL SPECIFICATIONS

Specifications	FlexPAC 2GHz	FlexPAC 3GHz
Chipset	Intel 845PE 400MHz or 533MHz	
CPU	2.8GHz Pentium® 4	
Bus Speed	533MHz	
Memory	512MB DDR to 2GB DDR	
Disk Storage	40GB EIDE Minimum Capacity Unformatted	
Optional HDD	Fixed or Removable 2 nd HDD	
Floppy Disk Drive	1.44MB	
Multimedia Drives	CD-ROM or Optional CD-RW, DVD or DVD-CD RW	
Internal Display	14.1-inch XGA TFT, 16MB Video RAM	
Video Memory	M7 graphics controller, 16MB	
Ext Display	Supports Simultaneous External Display 640x480, 800x600, and 1024x768	
I/O Ports	2 Serial Ports (16550 UART Compatible) 1 Enhanced Parallel Port (ECP/EPP Compliant) Two USB 2.0 Ports 1) 10/100GHz BaseT Ethernet RJ45 Port	
Keyboard	AT Compatible, 104/105 Key w/ integrated Touch Style Mouse Pad	
Audio	Intel AC97, ICH2 Controller Line-in, Line-out, and Microphone	
PCMCIA/Card Bus Options	2 Type II or One Type III	
Power Supply	300W, 100-240VAC, 50-60Hz	
FlexPAC (4 Slots)		
Expansion Slot Options	3 PCI & 1 Shared PCI/ISA	
Dimensions	(WxHxD) 15.78x10.18x6.72in (40.08x25.8x17.07cm)	
Weight	18lbs (8.18kg)	
FlexPAC (6 Slots)		
Expansion Slot Options	5 PCI & 1 Shared PCI/ISA	
Dimensions	(WxHxD) 16.00x11.00x9.75in (40.6x27.9x4.7cm)	
Weight	23lbs (10.55kg)	

Flat-Panel Display Specifications

Display Size:	14.1 inch XGA
Resolution:	1024 x 768
Pixel Pitch:	0.279mm x 0.279mm
Number of Colors:	262,144
Contrast Ratio:	200:1 typical
Brightness:	150 nits typical
Viewing Angle:	90
Supply Voltage:	3.3V
Backlight:	CCFL (single tube)
Response Time:	30ms typical
Power Consumption:	5.0W typical
Resolution Support:	640 x 480 800 x 600 1024 x 768

Environmental Specifications

Shock:

Operating	10g 11ms • sine
Non-Operating	30g 11ms • sine

Transit Drop (48"): 26 drops in transit case or shipping carton per MIL-STD-810E paragraph 516.4, procedure IV

Bench Handling (4"): 4 unprotected drops per MIL-T-28800E paragraphs 3.7.5.3 and 4.5.5.4.3

Vibration:

	(Per IEC 68-2-6)
Operating	3 - 500Hz 0.41g
Non-Operating	3 - 500Hz 1.12g

Temperature:

Operating	0to +45C (testedat50C)
Non-Operating	-40to +70C

Humidity:

Operating	Up to 93% non-condensing
Non-Operating	Up to 93% non-condensing

Altitude:

Operating (1 hr)	-1,000 to +15,000 feet [-305 to +4,572 meters]
Non-Operating (2 hrs)	-1,500 to +40,000 feet [-457 to +12,192 meters]

Standard Power Supply

The FlexPAC has an internal AC to DC linear* switch mode power supply with a maximum rated output of 300 watts. The 300 watt power supply conforms to ATX/ATX-12 version 1.1 design guidelines.

* Universal Input with PFC (Power Factor Correction)

Input Voltage Range Specified: Tested:	100VAC to 240VAC (including tolerances) 90VAC to 264VAC
Input Frequency:	47Hz to 63Hz and 400Hz
Ripple Noise:	120mV max
Regulation:	within $\pm 5\%$
Fuse Rating:	6.3A at 250VAC
DC Output:	300 watts max

NOTE: The power table below represents the maximum operational output capability for the 300 watt power supply. The +5V and +3.3V total output shall not exceed 140 watts maximum.

Output Per Rail

(+3.3V)	(+5V)	(+12V)	(-12V)	(-5V)	(+5Vsb)
20A	28A	14A	1.0	0.5A	2.0A

Flat-Panel Display Characteristics

The display screen in your product may exhibit one or more dots that are always lit (on) or are always dark (off). This dot can look like a tiny pin hole in the screen. If your display does have a nonfunctional dot, it is not usually noticeable when the screen is viewed from a normal distance but may appear if the dots surrounding it are of a contrasting color, for example a white dot on a field of black. This is considered a normal occurrence for Active Matrix-Liquid Crystal Display (AM-LCD) technology and does not signal impending failure of your screen.

Active Matrix Liquid Crystal Displays are highly complex electronic components that are under a constant state of improvement and refinement. The technology that allows these AM-LCDs to be manufactured is very advanced but does not, however, always produce 100% perfect displays. Unfortunately, cost-effective, visually perfect displays are virtually impossible to attain at this point in the technology timeline. Consequently, a balance has to be made between a requirement for “cost-effective, visually perfect” screens and the manufacturer’s actual ability to produce a product of “near perfect” quality at a reasonable price. This has driven the AM-LCD manufacturers to write detailed specification documents defining what the difference is between a screen of acceptable quality and one of unacceptable quality. These documents contain detailed technical analyses and often are intended to help define that balance between perfection and price.

A normal AM-LCD panel may contain between 15 (for VGA) and 30 (for SXGA) non-functional dots on the screen. In VGA resolution, this is less than .0016% of 921,600 dots (subpixels) that make up a screen of 640 pixels horizontal x 480 pixels vertical x 3 subpixels (one subpixel each for red, green and blue). For a SXGA screen, with 30 non-functional subpixels, this would represent .00076% of 3,932,160 subpixels.

To minimize the possibility of ANY non-functional subpixels, Kontron only uses the highest quality display screens from name brand manufacturers. Working closely with these major AM-LCD manufacturers insures the highest quality AM-LCD screens possible. All display screens are tested for conformance to the specifications of their manufacturer and are certified to be within those specifications. Should you have questions pertaining to the exact display screen specifications in your product, please contact Kontron technical support at 1.800.995.7579.