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PPC-2015

User Manual

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NATIONAL INSTRUMENTS™

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Consult the FCC Web site at `www.fcc.gov` for more information.

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Changes or modifications not expressly approved by NI could void the user's authority to operate the equipment under the FCC Rules.

Class A

Federal Communications Commission

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Canadian Department of Communications

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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* The CE marking Declaration of Conformity contains important supplementary information and instructions for the user or installer.

Conventions

The following conventions are used in this manual:

»	The » symbol leads you through nested menu items and dialog box options to a final action. The sequence **File»Page Setup»Options** directs you to pull down the **File** menu, select the **Page Setup** item, and select **Options** from the last dialog box.
	This icon denotes a note, which alerts you to important information.
	This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash. When this symbol is marked on a product, refer to the *Safety* section of Appendix A, *Specifications*, for information about precautions to take.
	When symbol is marked on a product, it denotes a warning advising you to take precautions to avoid electrical shock.
	When symbol is marked on a product, it denotes a component that may be hot. Touching this component may result in bodily injury.
bold	Bold text denotes items that you must select or click in the software, such as menu items and dialog box options. Bold text also denotes parameter names.
italic	Italic text denotes variables, emphasis, a cross-reference, or an introduction to a key concept. Italic text also denotes text that is a placeholder for a word or value that you must supply.
`monospace`	Text in this font denotes text or characters that you should enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames, and extensions.
`monospace bold`	Bold text in this font denotes the messages and responses that the computer automatically prints to the screen. This font also emphasizes lines of code that are different from the other examples.

Contents

Chapter 1
General Information

Introduction 1-1
- Sturdy Structure 1-1
- Easy Maintenance 1-1
- Economical 1-1
- User-Friendly HMI 1-1

Chapter 2
System Setup

Important Safety Information 2-1
Setup 2-2
I/O Ports 2-2
- PS/2 Mouse and Keyboard 2-3
- Parallel Port 2-3
- VGA Port 2-4
- Serial COM Ports 2-4
  - COM2 RS232/422/485 Setting (JP4) 2-5
- USB Ports 2-6
- Audio Ports 2-6
- Ethernet Port 2-6
- Adjusting the LCD Brightness 2-6
- System Power On/Off 2-7

Mounting 2-7
- Desktop Bracket Mounting 2-7
- Panel Mounting 2-7
- Rack Mounting 2-7

Chapter 3
Touchscreen

Introduction 3-1
Configuring the Touchscreen 3-1
- PenMount Control Panel 3-1
  - Calibrate 3-1
  - Draw 3-2
  - Option 3-2
  - About 3-3

PenMount Monitor Menu Icon 3-3
PenMount Rotating Functions 3-4
Configuring the Rotate Function 3-4

Chapter 4
Award BIOS Setup

Award BIOS Setup 4-1
CMOS Setup Utility 4-2
Standard CMOS Setup 4-3
Advanced BIOS Features 4-6
Advanced Chipset Features 4-9
Integrated Peripherals 4-11
Power Management Setup 4-14
PnP/PCI Configuration 4-18
PC Health Status 4-19
Frequency/Voltage Control 4-20
Load Optimized Defaults 4-21
Set Password 4-21
Save & Exit Setup 4-22
Exit Without Saving 4-22

Appendix A
Specifications

Appendix B
Pin Assignments

Appendix C
Technical Support and Professional Services

Index

1

General Information

This chapter includes an overview of the PPC-2015.

Introduction

The PPC-2015 series of industrial panel PCs are specially designed to fit in space-limited environments where expansion is restricted. Their solid structure allows systems to operate under harsh industrial conditions.

Sturdy Structure

A solid structure protects the whole system. The front panel is made of sturdy aluminum and strengthened glass. It is shock resistant and complies with NEMA4/IP65. The stainless steel case (SUS304) is rugged and corrosion resistant, so the system operates reliably in even the harshest environments.

Easy Maintenance

Above the motherboard is a lockable door for easy CPU, HDD, SDRAM, and CD-ROM drive maintenance. You can easily set the jumpers without removing a single screw. The lock protects the system from intruders.

Economical

The motherboard features Socket 370 architecture, which supports Pentium III processors up to 1.26 GHz and Celeron processors up to 1.3 GHz. Socket 370 is an economical, powerful, and reliable system that operates faultlessly in industrial environments.

User-Friendly HMI

Systems in this series include a 15 in. high-resolution LCD screen for vivid, bright, and sharp images. The panel PC is perfectly suited for Windows. The touchscreen version allows simple operation, making the panel PC a solid industrial digital controller interface. In addition, the series offers three front panel options with aluminum/stainless/flat-seal for various requirements.

2

System Setup

This chapter explains how to set up the PPC-2015.

Important Safety Information

Before setting up the PPC-2015, read these safety instructions carefully.

Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

Keep this equipment away from excessive humidity.

Place this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.

The openings on the enclosure are for air convection. Protect the equipment from overheating. *Do not cover the openings.*

Make sure the power source voltage is correct before connecting the equipment to the power outlet.

Position the power cord so that it cannot be stepped on. Do not place anything over the power cord.

All cautions and warnings on the equipment should be noted.

If the equipment is not to be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

Never pour any liquid into an opening. This may cause fire or electrical shock.

Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

If one of the following situations arises, have service personnel check the equipment:

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well, or you cannot get it to work according to the user manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

Do not leave this equipment in an environment where the storage temperature may go below –20 °C (–4 °F) or above 60 °C (140 °F). Doing so could damage the equipment. The equipment should be in a controlled environment.

Caution There is a danger of explosion if the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

Setup

The PPC-2015 ships with the operating system installed and is configured for normal use, so no further setup is needed. To use the PPC-2015, connect it to a power source and power it on.

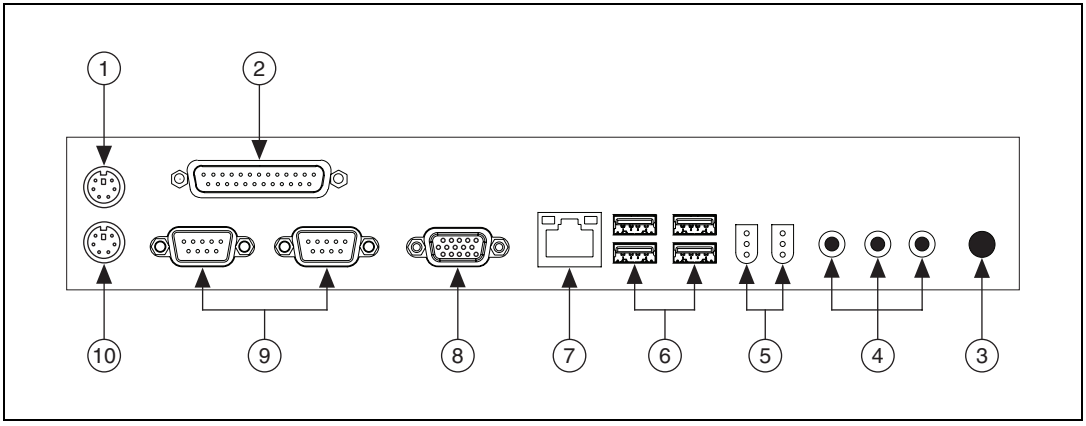
I/O Ports

The PPC-2015 includes the following ports:

- Two PS/2 ports for mouse and keyboard
- One parallel port
- One VGA port
- Two serial COM ports
- Four USB ports
- Two IEEE 1394 ports
- Three audio jacks: microphone in, line out, and line in

- One S-video port
- One Ethernet port

Figure 2-1 shows the I/O port arrangement.



1	PS/2 Mouse	3	S-Video	5	IEEE 1394	7	LAN	9	COM
2	Parallel Port	4	Audio	6	USB	8	VGA	10	PS/2 Keyboard

Figure 2-1. I/O Port Arrangement

PS/2 Mouse and Keyboard

Follow these steps to use a full-size desktop keyboard and PS/2 mouse with your PPC-2015:

1. Power off the PPC-2015.
2. Attach the keyboard adapter to the green PS/2 port.
3. Attach the mouse adapter to the purple PS/2 port.

Parallel Port

The PPC-2015 supports the latest EPP and ECP parallel port protocols for improved performance and versatility with compatible printers or other devices.

Follow these steps to connect the PPC-2015 to a printer or other device:

1. Power off the panel PC and printer or other device.
2. Connect the printer or device cable to the parallel port.
3. If necessary, attach the other end of the cable to the printer or other device and fasten any retaining screws.

4. Power on the printer or other device.
5. Power on the PPC-2015.
6. If necessary, run the PPC-2015 BIOS setup program to configure the parallel port to respond as the printer and software operating environment require.

VGA Port

You can connect an external VGA-compatible device to the system via the external VGA port. The PPC-2015 supports an external CRT monitor in addition to its own LCD display.

Serial COM Ports

The PPC-2015 includes two serial COM ports for serial devices such as an external modem or mouse. Follow these steps to connect a serial device:

1. Power off the PPC-2015 and peripheral devices.
2. Attach the serial device cable to the PPC-2015 serial port. If necessary, attach the other end of the cable to the serial device and fasten any retaining screws.
3. Power on the peripheral devices.
4. Power on the PPC-2015.
5. Refer to the serial device manuals to configure your operating environment to recognize the device.
6. Run the PPC-2015 BIOS setup program to set the I/O address and IRQ.
7. Configure the jumper settings to change the COM port modes as described in *COM2 RS232/422/485 Setting (JP4)*.

COM2 RS232/422/485 Setting (JP4)

Use jumper JP4 to configure COM2 to operate in RS232, RS422, or RS485 mode. Figure 2-2 shows the jumper setting for each mode.

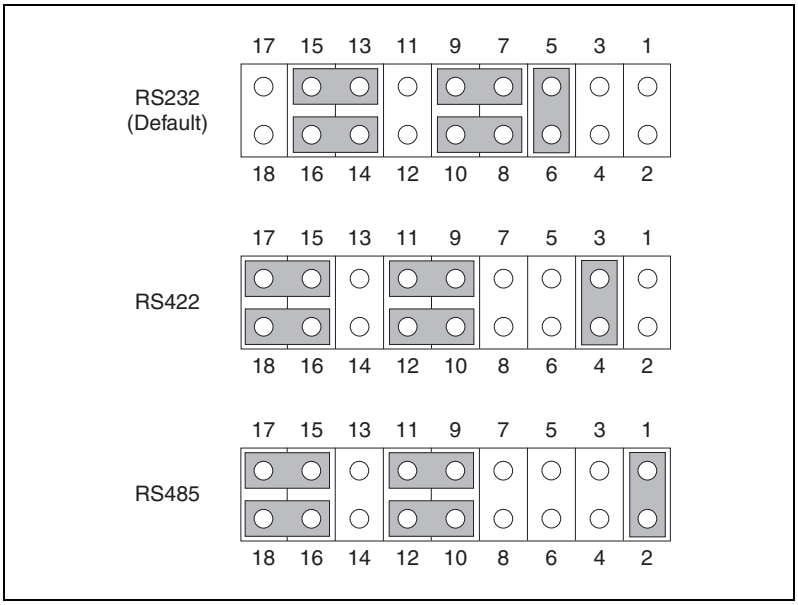


Figure 2-2. COM2 RS232/422/485 Settings (JP4)

The COM1 and COM2 IRQ and address ranges are fixed. However, you can disable the port or change these parameters later in the system BIOS setup.

Figure 2-3 shows the PPC-2015 serial port pin 9 default settings.

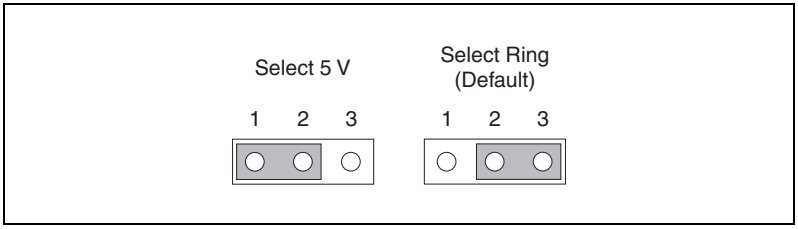


Figure 2-3. COM1/COM2 Pin 9 Setting (JP5)

USB Ports

You can connect an external USB device to the PPC-2015 via the USB ports, which support hot plug-in connection. Follow these steps to connect a USB device:

1. Connect the USB device to the PPC-2015.
2. Install the device driver before using the device.

Audio Ports

The audio interface includes three jacks: microphone in, line out, and line in. Their functions are:

- **Microphone in**—Use an external microphone to record voice and sound.
- **Line out**—Output audio to external devices such as speakers or earphones. The built-in speaker is not disabled when external audio devices are connected to the line out jack.
- **Line in**—Input audio from an external CD player or radio.

Follow these steps to connect audio devices:

1. Connect the audio device to the PPC-2015.
2. Install the device driver before using the device.

Ethernet Port

Follow these steps to install Ethernet on the PPC-2015:

1. Connect an Ethernet cable to the PPC-2015.
2. Power on the PPC-2015.
3. Check the hardware network status before installing the Ethernet driver.
4. Run the Ethernet driver to connect to the network.

Adjusting the LCD Brightness

Use the brightness control keys on the front panel to adjust the LCD display panel brightness.

To increase or decrease the brightness, press the OSD key. If you reach the maximum setting, the LED stops blinking.

System Power On/Off

The PPC-2015 includes two system on/off options: front panel system on/off (the default setting) and rear cover system on/off.

Mounting

Desktop Bracket Mounting

Attach the included left and right desktop brackets to the bottom of the PPC-2015 using the appropriate four screws included in the accessory box.

Panel Mounting

Follow these steps to mount the PPC-2015 in a panel:

1. Insert the PPC-2015 in the panel opening. (Refer to Appendix A, *Specifications*, for cutout dimensions.)
2. The accessory kit includes four mounting brackets, eight keyhole slot screws, and four large screws. Install two keyhole slot screws and one large screw into each bracket. Install the brackets to four of the keyhole slots on the PPC-2015. Tighten the large screws so they push against the mounting panel.
3. Tighten the screws to secure the PPC-2015 to the panel.

Rack Mounting

You can mount the PPC-2015 to a 19 in. rack with an optional mounting bracket.

3

Touchscreen

This chapter explains how to install and configure the PPC-2015 touchscreen.

Introduction

The PPC-2015 touchscreen uses advanced 8-wire resistive technology, providing more accurate sensing capacity than other technologies. The touchscreen is specially designed for tough industrial environments.

Configuring the Touchscreen

When you install the touchscreen, the PPC-2015 automatically finds the new touchscreen controller board on rebooting. The touchscreen is connected, but not calibrated. Follow these steps to start calibration:

1. After installation and rebooting, click the PenMount Monitor **pm** icon in the menu bar.
2. When the PenMount Control Panel appears, click **Calibrate**.

PenMount Control Panel

The PenMount Control Panel functions are Calibrate, Draw, Multiple Monitors, Option, and About.

Calibrate

The Calibrate function includes two ways to calibrate your touchscreen. Standard calibration adjusts most touchscreens. Advanced calibration adjusts aging touchscreens.

Standard Calibration	When you click this button, arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After you touch the fifth red square, calibration is complete. To skip, press <Esc>.

Advanced Calibration	Advanced calibration uses 4, 9, 16, or 25 points to effectively calibrate the linearity of aged touchscreens. Click this button and touch the red squares in sequence with a stylus. To skip, press <Esc>.

Note The older the touchscreen, the more advanced calibration points you need for accurate calibration. Use a stylus during advanced calibration for greater accuracy.

Plot Calibration Data	When you select this function, a touch panel linearity comparison graph appears after you finish advanced calibration. The blue lines show linearity before calibration, and black lines show linearity after calibration.

Draw

The Draw function tests the touchscreen operation. The display shows touch location. Click **Draw** to start. When you touch the screen with your finger or a stylus, the drawing screen registers touch activity such as left, right, up, down, pen up, and pen down.

Click **Clear Screen** to clear the drawing.

Option

This function supports two modes, Operation Mode and Beep Sound Mode, which allow configuration for specific touchscreen applications, such as point-of-sales (POS) terminals.

Operation Mode	Use this option to enable or disable the mouse's ability to drag onscreen icons. This is useful for configuring POS terminals. Stream Mode—In this mode, the mouse functions normally and drags icons. Point Mode—In this mode, the mouse has only a click function, and dragging is disabled.

Beep Sound Mode	Enable Beep Sound—This option turns the beep function on and off. Beep on Pen Down—In this mode, the beep occurs when the pen goes down. Beep on Pen Up—In this mode, the beep occurs when the pen goes up. Beep on Both—In this mode, the beep occurs when the pen goes down and up. Beep Frequency—This option modifies the sound frequency. Beep Duration—This option modifies the sound duration.

About

The About panel displays information about the PenMount controller and driver version.

PenMount Monitor Menu Icon

The PenMount Monitor icon (**pm**) appears in the Windows menu bar when you turn on PenMount Monitor in PenMount Utilities.

PenMount Monitor has the following functions:

Control Panel	Brings up the PenMount Control Panel screen.
Beep	Turns the beep on or off.
Right Button	When you select this function, a mouse icon appears in the lower-right corner of the screen. Click this icon to switch between right and left button functions.
Exit	Exits the PenMount Monitor function.

PenMount Rotating Functions

The PenMount driver for Windows supports several display rotation software packages, such as:

- Portrait Pivot screen rotation software
- The ATI display driver rotate function
- The nVidia display driver rotate function
- The SMI display driver rotate function
- The Intel 845G/GE display driver rotate function

Configuring the Rotate Function

Follow these steps to configure the rotate function:

1. Install the rotation software package.
2. Choose the rotate function in the software. The calibration screen appears automatically. Touch the point, and rotation is mapped.

Note The rotate function is disabled if you use monitor mapping.

4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Award BIOS Setup

The PPC-2015 includes an Award BIOS chip containing the ROM setup for your system. This chip serves as an interface between the processor and other mainboard components. This chapter explains the setup program information and how to modify the settings according to your system configuration. Some setup items are not explained, because changing them is not recommended.



Note Values for the various setup items that appear on your screen (including default values) may not be the same as the values shown in this chapter. This is because the BIOS is revised and updated from time to time. If in doubt, check for the latest BIOS versions and related information.

CMOS Setup Utility

The CMOS RAM stores a setup program for changing BIOS configuration settings. This program executes when you change the system configuration or backup battery, or when the system detects a configuration error and asks you to run the setup program. At power-on RAM testing, the message **`Press DEL to enter Setup`** appears. When you press <Del>, the CMOS setup utility screen appears as shown in Figure 4-1. Use the arrow keys to select items and press <Enter> to run the selected program.

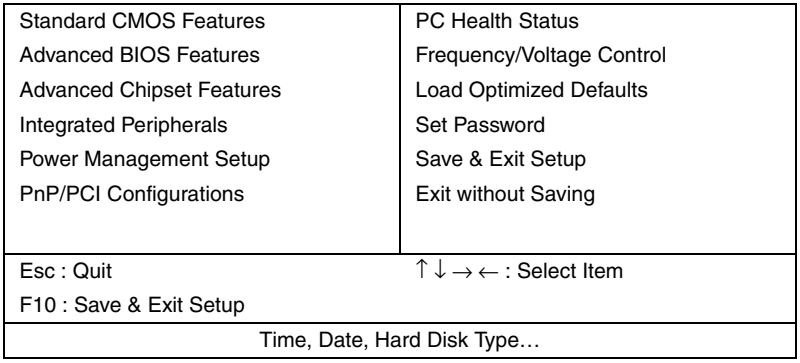


Figure 4-1. CMOS Setup Utility Screen

Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. You need to modify the configuration values of this option only to change your system hardware configuration or when the data stored in the CMOS memory is lost or damaged.

Run the Standard CMOS Setup as follows:

1. Choose **Standard CMOS Setup** from the main menu. A screen with a list of options appears, as shown in Figure 4-2:

Date (mm:dd:yy)	Mon, January 1 2001	Item Help
Time (hh:mm:ss)	12 : 05 : 55	Menu Level
IDE Primary Master	None	
IDE Primary Slave	None	
IDE Secondary Master	None	
IDE Secondary Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	31744K	
Total Memory	32768K	

Figure 4-2. Standard CMOS Setup

2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

   Date (mm:dd:yy)

   The BIOS determines the day of the week from the other date information. This item is for information only. Press the left or right arrow key to move to the desired item (date, month, or year). Press <PgUp> or <PgDn> to increment the setting, or type the desired value in the item.

Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired item. Press the <PgUp> or <PgDn> to increment the setting, or type the desired value in the item.

Primary/Secondary and Master/Slave

This item records the specifications for all non-SCSI hard disk drives in your system, as shown in Figure 4-3. Refer to the drive documentation for information about installing the drives.

IDE HDD Auto-Detection	Press Enter	Item Help
		Menu Level
IDE Primary Master	Auto	
Access mode	Auto	
Capacity	13022 MB	
Cylinder	25232	
Head	16	
Percomp	0	
Landing Zone	25231	
Sector	63	

Figure 4-3. Primary/Secondary and Master/Slave Setup

Drive A/Drive B

Set this item to the type(s) of floppy disk drive(s) installed in your system. The choices are:

- 360 KB, 5.25 in.
- 1.2 MB, 5.25 in.
- 720 KB, 3.5 in.
- 1.44 MB, 3.5 in.
- 2.88 MB, 3.5 in.
- None

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in setup.

Halt On

During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot process.

Base Memory

The base memory, also called conventional memory, is typically 640 KB. The DOS operating system and conventional applications use this memory area.

Extended Memory

Extended memory is memory above the 1 MB boundary. Early IBM PCs could not use memory above 1 MB, but current PCs and their software can use extended memory.

Total Memory

This option shows system memory capacity.

3. Press <Esc> to return to the main menu when you finish configuring all items.

Advanced BIOS Features

Advanced BIOS Features improve your system performance or set up system features according to your preference.

Follow these steps to run the Advanced BIOS Features:

1. Select **Advanced BIOS Features** from the main menu. A screen with a list of options appears, as shown in Figure 4-4.
2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

Virus Warning	Disabled	Item Help
CPU L1 & L2 Cache ECC Checking	Enabled	Menu Label
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
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 (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control for OS		
OS Select For DRAM > 64 MB	Non-OS2	
Report No FDD For Win95		
Small Logo (EPA) Show		

Figure 4-4. Advanced BIOS Features

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the hard drive boot sector or partition table.

If you receive this message, run an antivirus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

Note Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, disable the virus warning.

CPU L1 & L2 Cache ECC Checking

Selecting **Enabled** speeds up memory checking when the external cache contains ECC SRAMs.

Quick Power On Self Test

Select **Enabled** to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. Normally, you should enable quick POST.

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The choices are **Floppy**, **LS/ZIP**, **HDD**, **SCSI**, **CDROM**, and **Disabled**.

Swap Floppy Drive

When enabled, floppy drives A and B exchange without any physical connection and modification on the cables.

Boot Up Floppy Seek

When enabled, the BIOS tests floppy drives to determine whether they have 40 or 80 tracks. Only 360 KB floppy drives have 40 tracks; drives with 270 KB, 1.2 MB, and 1.44 MB capacity have 80 tracks. Because very few modern PCs have 40-track floppy drives, set this item to **Disabled** to save time.

Boot Up NumLock Status

Toggle between **On** or **Off** to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to **Fast**, the system chipset controls Gate A20. When set to **Normal**, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to **Fast** improves system speed, particularly with OS/2 and Windows.

Typematic Rate Setting

When disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. The keystroke repeats at a rate determined by the keyboard controller in your system. When enabled, you can select a typematic rate and typematic delay.

Typematic Rate (Chars/Sec)

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

Typematic Delay (Msec)

This option sets the time interval for displaying the first and second characters. If enabled, the time interval is optional. The choices are **250**, **500**, **750**, and **1000**.

Security Option

If you set a password, select whether the password is required every time the system boots, or only when you enter setup. The choices are **system** and **setup**.

APIC Mode

Use this option to enable or disable Advanced Programmable Interrupt Control (APIC).

MPS Version Control for OS

This option applies only to multiprocessor systems. The PPC-2015 is a single processor system.

OS Select for DRAM > 64 MB

Select **OS2** only if you are running the OS/2 operating system with greater than 64 MB of RAM on your system.

3. Press <Esc> to return to the main menu when you finish configuring all items.

Advanced Chipset Features

Use Advanced Chipset Features to modify chipset buffer values. These buffers control the system options.

Follow these steps to run the Advanced Chipset Features:

1. Select **Advanced Chipset Features** from the main menu. A list of options appears, as shown in Figure 4-5.

DRAM Timing Selectable	By SPD	Item Help
Memory Frequency For	Auto	Menu Level
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Enabled	
Memory Hole at 15 M–16 M	Disabled	
AGP Aperture Size	64 M	
Delayed Transaction	Enabled	
On-Chip VGA Setting		
On-Chip VGA	Enabled	
On-Chip Frame Buffer Size	8 M	
Boot Display	Auto	
TV Standard	Off	

Figure 4-5. Advanced Chipset Features

2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

   DRAM Timing Selectable

   When **By SPD** is selected, DRAM timing is set by Serial Presence Detect (SPD). SPD is on the memory modules. The BIOS reads information coded in SPD during system boot. You can change some timing parameters by switching to **Manual** mode, but **By SPD** is the recommended default mode.

   Memory Frequency For

   National Instruments recommends using the default **Auto** setting.

   System BIOS Cacheable

   Select **Enabled** to allow caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance.

   Video BIOS Cacheable

   Select **Enabled** to allow caching of the video BIOS.

Memory Hole at 15 M–16 M

Certain ISA cards require exclusive access to the 1 MB block of memory, from the 15th to the 16th megabyte, to work properly. This BIOS feature allows you to reserve that 1 MB block of memory for such cards to use.

AGP Aperture Size

Several options are available: 4, 8, 16, 32, 64, 128 or 256 MB. Memory mapped and graphics data structures can reside in a graphics aperture. This area is like a linear buffer. The BIOS automatically reports the starting address of this buffer to the OS. The default setting is 64 MB.

Delayed Transaction

Use this feature to meet the latency of PCI cycles to and from the ISA bus. The ISA bus is much slower than the PCI bus. Thus, PCI cycles to and from the ISA bus take a longer time to complete, thereby slowing down the PCI bus.

However, if you enable Delayed Transaction, the chipset's embedded 32-bit posted write buffer supports delayed transaction cycles. This means transactions to and from the ISA bus are buffered, and the PCI bus is free to perform other transactions while the ISA transaction is underway.

Enable this option for better performance and to meet PCI 2.1 specifications. Disable it only if your PCI cards cannot work properly or if you are using a non-PCI 2.1-compliant ISA Card.

On-Chip VGA

National Instruments recommends using the default setting, **Enabled**.

On-Chip Frame Buffer Size

National Instruments recommends using the default setting, **8 MB**.

Boot Display

National Instruments recommends using the default setting, **Auto**.

TV Standard

National Instruments recommends using the default setting, **Off**.

3. Press <Esc> to return to the main menu when you finish configuring all items.

Integrated Peripherals

Use the Integrated Peripherals option to access information inside your system while it is running.

Follow these steps to run the Integrated Peripherals option:

1. Select **Integrated Peripherals** from the main menu. A list of options appears, as shown in Figure 4-6.
2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

On-Chip Primary PCI IDE	Enabled	Item Help
IDE Primary Master PIO	Auto	Menu Level
IDE Primary Slave PIO	Auto	
IDE Primary Master UDMA	Disabled	
IDE Primary Slave UDMA	Disabled	
On-Chip Secondary PCI IDE	Enabled	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
USB Controller	Enabled	
USB 2.0 Controller	Enabled	
USB Keyboard Support	Disabled	
AC97 Audio	Auto	
Init Display First	Onboard	
Outboard LAN1 Control	Enabled	
FWH Flash Control	Enabled	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	Auto	
Onboard Serial Port 2	Auto	
UART Mode Select	Normal	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
80 Conductor Cable Detect	Enabled	

Figure 4-6. Integrated Peripherals

OnChip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support from two IDE channels. Select **Enabled** to activate the first and/or the second IDE interface. Select **Disabled** to deactivate an interface if you install a primary and/or second add-on IDE interface.

IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

The BIOS detects the HDD mode type automatically when you select **Auto**. You must set to a lower mode than **Auto** when your hard disk becomes unstable.

The choices are **Auto**, **Mode 0**, **Mode 1**, **Mode 2**, **Mode 3**, and **Mode 4**.

IDE Primary Master/Slave UDMA and Secondary Master/Slave UDMA

Ultra DMA33/66/100 implementation is possible only if your IDE hard drive and system software support it and the operating environment includes a DMA drive. Select **Auto** to enable BIOS support.

USB Controller

This option enables or disables the USB controller.

USB 2.0 Controller

This option enables or disables the USB 2.0 controller.

USB Keyboard Support

This option enables or disables USB keyboard support.

AC97 Audio

National Instruments recommends using the default setting, **Auto**.

Init Display First

Choose **PCI Slot** if you are using a PCI video card.

Outboard LAN1 Control

This option enables or disables outboard LAN1 control.

FWH Flash Control

This option enables or disables FWH flash control.

IDE HDD Block Mode

This option enables or disables IDE HDD block mode.

Onboard FDC Controller

This option enables or disables the onboard FDC controller.

Onboard Serial Port 1/Port2

Select an address and corresponding interrupt for the first and second serial ports. The choices are **3F8/IRQ4**, **2E8/IRQ3**, **3E8/IRQ4**, **2F8/IRQ3**, **Disabled**, **Auto**.

UART Mode Select

Use this option to select from **Normal** (recommended), **ASVIR**, or **IRDA** modes.

Onboard Parallel Port

Select a logical LPT port name and matching address for the physical parallel (printer) port. The choices are **378H/IRQ7**, **278H/IRQ5**, **3BC/IRQ7**, and **Disabled**.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select **Normal**, **Compatible**, or **SPP** unless you are certain your hardware and software both support one of the other available modes. The choices are **SPP**, **EPP**, **ECP**, and **ECP + EPP**.

80 Conductor Cable Detect

This option enables or disables 80 conductor cable detection.

3. Press <Esc> to return to the main menu when you finish configuring all items.

Power Management Setup

Use Power Management Setup to set the system's power saving functions.

Follow these steps to run the Power Management Setup option:

1. Select **Power Management Setup** from the main menu. A list of options appears, as shown in Figure 4-7.
2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

ACPI Function	Disabled	Item Help
Power Management	Press Enter	Menu Level
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Step Grant	
MODEM Use IRQ	3	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-Off by PWRBTN	Instand-Off	
CPU THRM-Throttling	50.0%	
Wake Up by PCI Card	Press Enter	
Power On by Ring	Enabled	
Resume by Alarm	Disabled	
X Date (of Month) Alarm		
X Time (hh:mm:ss) Alarm		
** Reload Global Timer Events **		
Primary IDE0	Disabled	
Primary IDE1	Disabled	

Figure 4-7. Power Management Setup

ACPI Function

Select **Enabled** only if your computer operating system supports the Advanced Configuration and Power Interface (ACPI) specification. Currently, Windows NT 5.0 supports ACPI.

Power Management

When you select this option, the power management options appear, as shown in Figure 4-8:

Power Management	User Define	Item Help
HDD Power Down	Disable	Menu Level
Doze Mode	Disable	
Suspend Mode	Disable	

Figure 4-8. Power Management Options

- **Power Management**—Use this option to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The following table describes the power management modes:

Max Saving	Maximum power savings. Available only or SL CPUs. The inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select the timeout period in the section for each mode below.
Min Saving	Minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).

- **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.
- **Suspend Mode**—After the selected period of system inactivity, the chipset enters a hardware suspend mode, stopping the CPU clock and possibly causing other system devices to enter power management modes.
- **Doze Mode**—After the selected period of system inactivity, the CPU clock runs at a slower speed while all other devices operate at full speed.

Video Off Method

This item determines how the monitor is blanked. The following table describes the modes:

V/H SYNC + Blank	This option causes the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option writes only blanks to the video buffer.
DPMS Supports	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards for selecting video power management values.

Video Off In Suspend

This determines the manner in which the monitor is blanked. The settings are **Yes** and **No**.

Suspend Type

Select the Suspend Type. The settings are **PWRON Suspend** and **Stop Grant**.

MODEM Use IRQ

This item determines the IRQ the MODEM can use. The choices are **3**, **4**, **5**, **7**, **9**, **10**, **11**, and **NA**.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU are shut off. The settings are **1/2/4/8/12/20/30/40 Min**, **1 Hour**, and **Disabled**.

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. The settings are **1/2/3/4/5/6/7/8/9/10/11/12/13/14/15Min** and **Disabled**.

Soft-Off by PWRBTN

When enabled, turning off the system with the on/off button places the system in a very low power use state, with only enough circuitry

receiving power to detect power button activity or Resume by Ring activity.

CPU THRM-Throttling

Use this option to select the CPU THRM-Throttling rate. The settings are **12.5%**, **25.0%**, **37.5%**, **50.0%**, **62.5%**, **75.0%**, and **87.5%**.

Wake Up by PCI Card

This option enables or disables the system to wake up through a PCI Card peripheral.

Power on by Ring

This option enables/disables the system to power on by the ring signal of a modem.

Resume by Alarm

Use this option to set the date and time when your computer boots up. When **Disabled**, you cannot use this function. When **Enabled**, choose the Date Alarm and Time Alarm:

Date (of month) Alarm	You can choose the month in which the system boots up. Set to 0 to boot every day.
Time (hh:mm:ss) Alarm	You can choose the hour, minute, and second in which the system boots up.



Note If you have change the setting, you must let the system boot up until it launches the operating system before this function will work.

Reload Global Timer Events

Reload Global Timer events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device configured as **Enabled**, even when the system is in a power down mode. The following Reload Global Timer events are available:

- Primary IDE 0
- Primary IDE 1
- Secondary IDE 0

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

3. Press <Esc> to return to the main menu when you finish configuring all items.

PnP/PCI Configuration

Use PnP/PCI Configuration to modify the system power saving functions.

Follow these steps to run the PnP/PCI Configuration:

1. Select **PnP/PCI Configuration** from the main menu. A list of options appears, as shown in Figure 4-9.
2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

Reset Configuration Data	Disabled	Item Help
Resources Controlled By	Auto(ESCD)	Menu Level
XIRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	

Figure 4-9. PnP/PCI Configuration

Normally, leave this item 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 operating system cannot boot.

Resources Controlled By

The Plug and Play Award BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select **Auto**, all the interrupt request (IRQ) and DMA assignment items disappear, as the BIOS automatically assigns them.

XIRQ Resources

Press <Enter>. A list of IRQ resources appears, as shown in Figure 4-10.

IRQ-9 assigned to	PCI/ISA PnP	Item Help Menu Level

Figure 4-10. IRQ Resources

PCI/VGA Palette Snoop

This option allows the BIOS to preview VGA status and modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used an MPEG card.

3. Press <Esc> to return to the main menu when you finish configuring all items.

PC Health Status

This section explains how to access more information about your system, including CPU temperature, fan speed, and voltage. Contact your mainboard supplier for the CPU temperature values.

Follow these steps to run the PC Health Status:

1. Select **PC Health Status** from the main menu. A list of options appears, as shown in Figure 4-11.
2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

CPU Warning Temperature	Disabled	Item Help
Current System Temp		Menu Level
Current CPU1 Temperature		
Current CPU Fan Speed		
Vcore		
VTT		
+3.3 V		
+5 V		
+12 V		
–12 V		
–5 V		
VBAT(V)		
5VSB(V)		
Shutdown Temperature	Disabled	

Figure 4-11. PC Health Status

CPU Warning Temperature

National Instruments recommends using the default setting, **Disabled**, for this option. However, you can choose from several warning temperatures.

Shutdown Temperature

National Instruments recommends using the default setting, **Disabled**, for this option. However, you can choose from several system shutdown temperatures.

Frequency/Voltage Control

Follow these steps to run the Frequency/Voltage Control:

1. Select **Frequency/Voltage Control** from the main menu. A list of options appears, as shown in Figure 4-12.
2. Use the arrow keys to move between options. Modify the selected options using <PgUp>, <PgDn>, <+>, and <–>.

Auto Detect PCI Clk	Enabled	Item Help
Spread Spectrum	Enabled	Menu Level

Figure 4-12. Frequency/Voltage Control

Auto Detect PCI CLK

To reduce the occurrence of electromagnetic interference (EMI), the BIOS detects the presence or absence of components in DIMM and PCI slots and turns off system clock generator pulses against empty slots.

Spread Spectrum

When the system clock generator pulses, the extreme pulse values generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI. In some cases, problems with timing-critical devices, such as a clock-sensitive SCSI device, may outweigh this benefit.

Load Optimized Defaults

When you press <Enter> on this item, you see a confirmation dialog box with a message similar to:

```
Load Optimized Defaults (Y/N) ? N
```

Y is for yes, and **N** is for no.

Pressing <Y> loads the BIOS default values for optimal system operation performance.

Set Password

Follow these steps to set your system password:

1. Select **Change Password** in the main menu and press <Enter>. The following message appears:

   ```
   Enter Password :
   ```

2. The first time you run this option, enter a password of up to eight characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears, prompting you to confirm the password:

   ```
   Confirm Password :
   ```

4. Enter the same password to confirm it and press <Enter>.
5. Select **Save & Exit Setup** to save the password.
6. To delete a previously entered password, select **Supervisor Password** and press <Enter>. The system deletes the previously entered password.

7. Select **Save & Exit Setup** to save the option you just configured. Otherwise, the old password is still in the system the next time you turn your system on.
8. Press <Enter> to exit to the main menu.

Note If you forget or lose your password, the only way to access the system is to clear the CMOS RAM. If you clear the CMOS RAM, all setup information is lost, and you must run the BIOS setup program again.

Save & Exit Setup

Use the Save & Exit Setup option to save your modifications in the CMOS memory.

When you highlight this option on the main menu, the following message appears:

```
Save to CMOS and Exit (Y/N) ? Y
```

Press <Enter> to save the configuration changes.

Exit Without Saving

Use the Exit Without Saving option to exit the setup utility without saving your modifications.

When you highlight this option on the main menu, the following message appears:

```
Quit Without Saving (Y/N) ? N
```

You can change the prompt to **Y** and press <Enter> to exit this option.

A

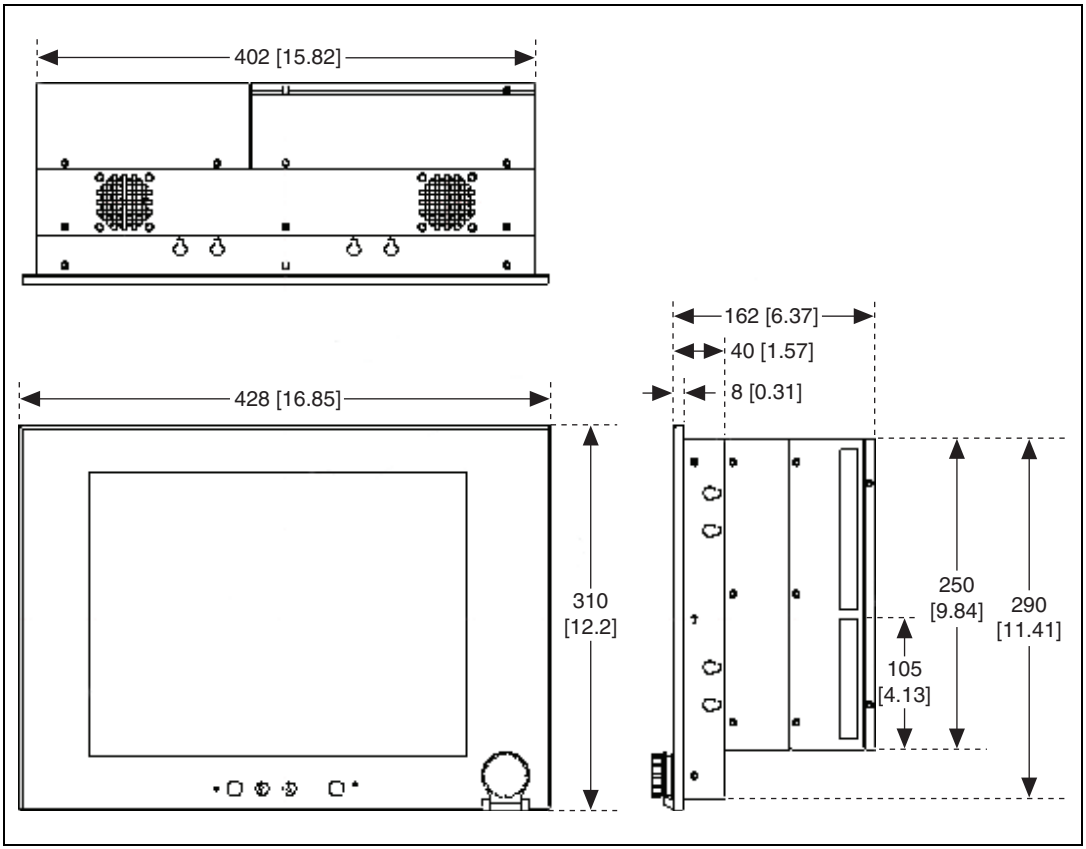
Specifications

This appendix lists the PPC-2015 specifications.

Physical

Weight	13 kg (28 lb)
Disk drive housing	Supports one 3.5 in. HDD, one slim size CD-ROM/DVD, and one FDD drive
Chassis	Aluminum front frame complies with NEMA4/IP65; SUS304 stainless steel back case
Cutout dimensions	406 × 294 mm (15.98 × 11.57 in.)

Dimensions



System

CPU .....Socket 478 Pentium 4 up to 2.8 GHz: Celeron up to 2.5 GHz

BIOS .....Award 4 MB Flash BIOS, supports Plug & Play, APCI

Chipset .....Intel 845GV/ICH4

Second-level cache .....On-die 256 or 512 KB

RAM .....Two 184-pin DDR DIMM sockets, up to 2 GB DDR SDRAM

PCI bus master IDE interface..... Supports two connectors. Each connector has one channel and supports two IDE devices. Each channel supports PIO modes 0 to 4, DMA modes 0 to 2, and Ultra DMA 33 simultaneously. The secondary connector is designated for the CD-ROM drive. BIOS supports IDE CD-ROM boot.

Parallel port ..... One parallel port, supports SPP/EPP/ECP parallel mode. BIOS configurable to LPT1, LPT2, LPT3 or disabled.

Serial ports ..... Two serial ports with one RS232 port (COM1) and one RS232/422/485 port (COM2). Both ports are compatible with 16C550 UARTs.

Universal serial bus (USB) port..... Supports up to four USB 2.0 ports

PCI bus expansion slots ..... Two expansion slots for two PCI cards

Watchdog timer..... 62-level, interval 1 to 62 s. Automatically generates system reset or IRQ11 when the system stops due to a program error or EMI. Jumperless selection and software enabled/disabled.

AGP SVGA/Flat Panel Interface

Chipset ..... Intel 845GV chipset with integrated Intel Extreme Graphics 2 for 2D/3D video accelerator

Display memory..... 8 MB shared main memory

Display type ..... Simultaneously supports CRT and flat panel displays (TFT)

Display resolution.....Supports noninterlaced AUO and LCD displays up to 1024 × 768 @ 262,000 colors

PCI Bus Ethernet Interface

Chipset.....Intel RC82540Em local bus

Ethernet interface.....Fully complies with IEEE 802.3u 100Base-T and 10 Base-T specifications. Includes software drivers and boot ROM.

100/10Base-T autosensing capability.

PCMCIA Interface

Chipset.....RICOH R5C554

Cardbus controller.....A PC card controller offers a single chip solution as a bridge between the PCI bus and cardbus

Audio

Chipset.....Integrated in Intel 845GV ICH4 south bridge

Audio controller.....AC97 Ver.2.0-compliant interface, multistream, direct sound and direct sound 3D acceleration

Stereo sound.....18-bit full-duplex codec

Audio interface.....Microphone in, line in, line out, and game ports MPU-401

LCD

	12.1 in. TFT LCD	15 in. TFT LCD	15 in. TFT LCD
Max. resolution	800 × 600	1024 × 768	
Colors	262,000		
Dot pitch	0.31 × 0.31	0.29 × 0.29	
Viewing angle	100° (H), 60° (V)	120° (H), 100° (V)	
Luminance	320 cd/m^2	250 cd/m^2	350 cd/m^2
Viewing area	246 × 184.5 mm	304 × 228 mm	
Power consumption	3.3 V @ 0.25 A	3.3 V @ 1 A	

Note There may be several bright or dark pixels on the LCD. This phenomenon is normal in LCD manufacturing.

Touchscreen

Type ..... Analog resistive

Resolution ..... 1024 × 1024

Light transmission ..... 75% (Gouge hardness is greater than 4 H per ASTM D3363-92 for HCC01, HCG10, and HCG12)

Controller ..... RS232 interface

Power consumption ..... +5 V @ 200 mA

Software driver ..... Supports DOS and Windows XP/2000/ NT 4.0/Me/98/3.1

Contact bounce ..... < 10 ms

Operating voltage ..... 5 V (typical)

Sheet resistance ..... 350 ± 22% Ω per square

Linearity ..... < 1.5% full scale linearity error in either direction

Insulation resistance .....> 20 MΩ @ 25 VDC

Test conditions.....4 H hardness, 0.04 in. stylus pen, 350 g load

Point activation .....1 million activations on a single point with a 5/8 in. diameter silicone finger with a 350 g load at 2 Hz

Character activation life: .....> 100,000 characters written within a 20 mm × 20 mm area on the touchscreen

Chemical resistance .....Hard coating is highly resistant to most solvents and chemicals

Visible light transmission .....75% typical (> 74% @ 550 nm test)

Clarity .....Clear finish—25%, antiglare finish—15%

Sensor board .....Chemical strengthened glass with 4 H hardness standard (test condition: ASTM D3363-92A)

Ball drop test.....Able to bear a 225 g steel ball dropped from 660 mm elevation without breaking

Electrical

Power supply .....180 W

Input voltage.....100 VAC to 240 VAC @ 50 to 60 Hz, 2 A

Output voltage .....+5 V @ 15 A, +12 V @ 5 A, –12 V @ 0.5 A

Battery .....3.0 V @ 195 mA lithium battery

Environmental

Operating temperature..... 0 to 50 °C (32 to 122 °F)

Storage temperature ..... –20 to 60 °C (–4 to 140 °F)

Relative humidity..... 10 to 90% @ 40 °C (noncondensing)

Shock..... 30 G peak acceleration (11 ms duration)

Power MTBF..... 100,000 h

Certifications..... CE, CCC, FCC Class A; meets UL, BSMI

Maximum altitude..... 2,000 m

Pollution Degree 2

Indoor use only

Touchscreen

Operating temperature..... –20 to 50 °C, 2 weeks at 50 °C/90% relative humidity

Storage temperature high ..... 70 °C, 240 h at ambient humidity

Storage temperature low ..... –40 °C, continuous at ambient humidity

Accelerated aging..... 100 h at 60 °C/95% relative humidity

Thermal shock..... 25 cycles (one cycle is 30 min dwell alternating from –40 to 85 °C with less than 10 min transfer time

LCD

Operating temperature .....0 to 50 °C

Storage temperature .....–20 to 60 °C

LCD MTBF .....50,000 h

Backlight MTBF.....25,000 h

Safety

This product is designed to meet the requirements of the following standards of safety for information technology equipment:

- IEC 60950-1, EN 60950-1
- UL 60950-1, CSA 60950-1

Note For UL and other safety certifications, refer to the product label or visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 55024, CISPR 24 EMC requirements
- EN 55022, CISPR 22 Emissions; Class A
- EN 55011, CISPR 11 Emissions; Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

Note For EMC compliance, operate this device according to product documentation.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EEC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at `ni.com/environment`. This page contains the environmental regulations and directives with which NI complies, as well as any other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit `ni.com/environment/weee.htm`.

电子信息产品污染控制管理办法 （中国 RoHS）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

Mercury Disposal and Recycling

LCD lamp(s) in this monitor contain mercury. Dispose or recycle according to local, state or federal laws. Consult the Electronic Industries Alliance at `www.eiae.org` for more information. For specific information on lamp disposal, consult `www.lamprecycle.org`.

Cleaning

If you need to clean the unit, use a soft, nonmetallic brush. Make sure that the unit is completely dry and free from contaminants before returning it to service.

B

Pin Assignments

This appendix describes the pin assignments for the PPC-2015 connectors.

ATX Power Connector 1 (CN1)

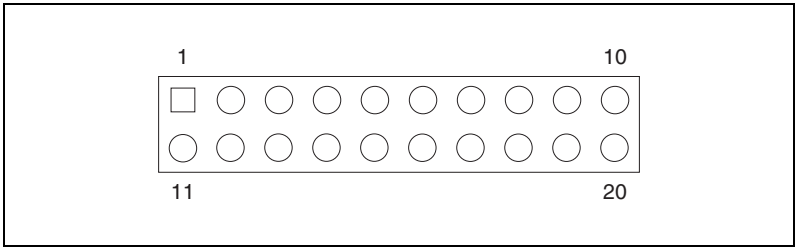


Table B-1. ATX Power Connector 1 (CN1)

Pin	Signal	Pin	Signal
1	3.3 V	11	3.3 V
2	3.3 V	12	–12 V
3	GND	13	GND
4	5 V	14	PS-ON
5	GND	15	GND
6	5 V	16	GND
7	GND	17	GND
8	PW-OK	18	–5 V
9	5 VSB	19	5 V
10	12 V	20	5 V

ATX Power Connector 2 (CN2)

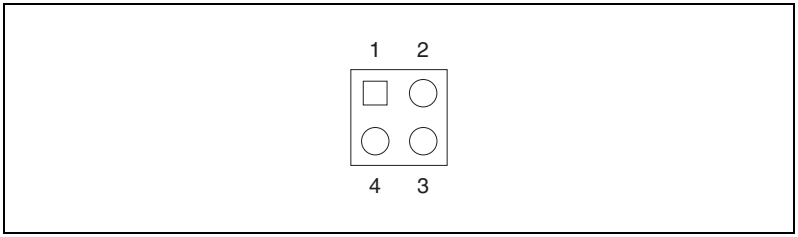


Table B-2. ATX Power Connector 2 (CN2)

Pin	Signal	Pin	Signal
1	GND	3	12 V
2	GND	4	12 V

LVDS Connector 1 (CN4)

Table B-3. LVDS Connector 1 (CN4)

Pin	Signal	Pin	Signal
1	VDD	11	RXIN2+
2	VDD	12	RXIN2–
3	GND	13	GND
4	GND	14	RXIN1+
5	RXIN3+	15	RXIN1–
6	RXIN3–	16	GND
7	GND	17	RXIN0+
8	CLK0+	18	RXIN0–
9	CLK0–	19	DDC_CLK
10	GND	20	DDC_DAT

LVDS Connector 2 (CN6)

Table B-4. LVDS Connector 2 (CN6)

Pin	Signal	Pin	Signal
1	VDD	11	RXIN6+
2	VDD	12	RXIN6–
3	GND	13	GND
4	GND	14	RXIN5+
5	CLK1+	15	RXIN5–
6	CLK1–	16	GND
7	GND	17	RXIN4+
8	RXIN7+	18	RXIN4–
9	RXIN7–	19	CONTRAST
10	GND	20	HPLG_DT

Inverter Power Connector (CN5)

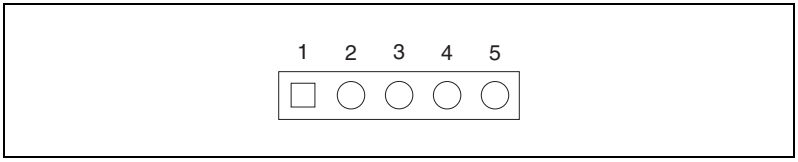


Table B-5. Inverter Power Connector (CN5)

Pin	Signal
1	+12 V
2	GND
3	ENABKL
4	Brightness Adjustment
5	+5 V

FDD Connector (CN9)

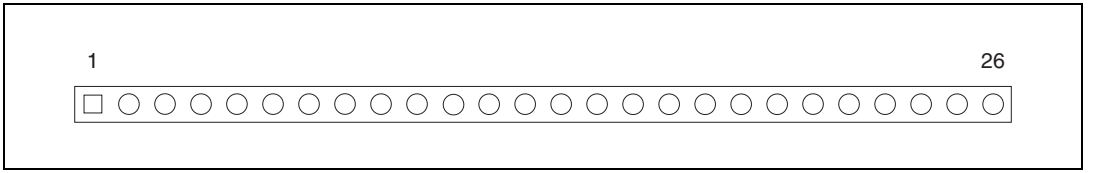


Table B-6. FDD Connector (CN9)

Pin	Signal	Pin	Signal
1	Vcc (+5 V)	14	Step
2	Index	15	GND
3	Vcc (+5 V)	16	Write data
4	Drive select	17	GND
5	Vcc (+5 V)	18	Write enable
6	Disk change	19	GND
7	NC	20	Track 0
8	NC	21	GND
9	NC	22	Write protect
10	Motor on	23	GND
11	NC	24	Read data
12	Direction	25	GND
13	Density select	26	Side 1 select

Internal Speaker Connector (CN15)

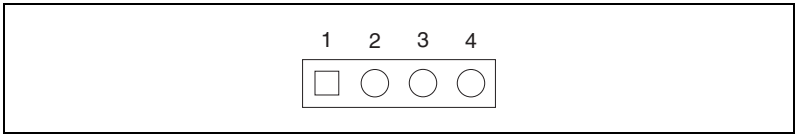


Table B-7. Internal Speaker Connector (CN15)

Pin	Signal
1	Speaker out_R –
2	Speaker out_R +
3	Speaker out_L +
4	Speaker out_L –

IR Connector (CN24)

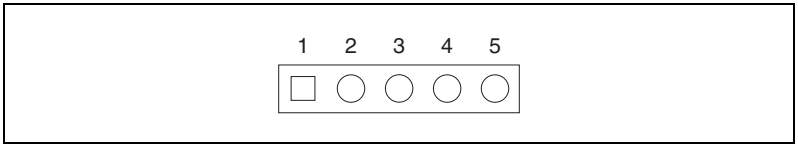


Table B-8. IR Connector (CN24)

Pin	Signal
1	Vcc
2	NC
3	IR_IN
4	GND
5	IR_OUT

Fan Power Connector (FAN1 and FAN2)

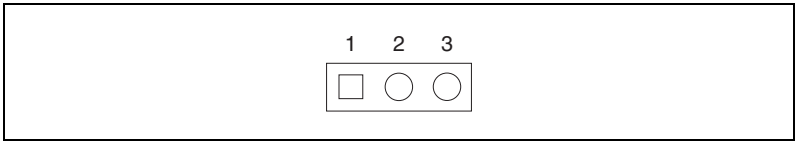


Table B-9. Fan Power Connector (FAN1 and FAN2)

Pin	Signal
1	GND
2	+12 V
3	FAN_DET

C

Technical Support and Professional Services

Visit the following sections of the National Instruments Web site at ni.com for technical support and professional services:

- **Support**—Online technical support resources at ni.com/support include the following:
  - **Self-Help Resources**—For answers and solutions, visit the award-winning National Instruments Web site for software drivers and updates, a searchable KnowledgeBase, product manuals, step-by-step troubleshooting wizards, thousands of example programs, tutorials, application notes, instrument drivers, and so on.
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- **System Integration**—If you have time constraints, limited in-house technical resources, or other project challenges, National Instruments Alliance Partner members can help. To learn more, call your local NI office or visit ni.com/alliance.

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Index

A

About function, 3-3
AC97 Audio, 4-12
ACPI Function, 4-14
Advanced BIOS Features, 4-6, 4-8
  APIC Mode, 4-8
  Boot Up Floppy Seek, 4-7
  Boot Up NumLock Status, 4-7
  CPU L1 & L2 Cache ECC Checking, 4-7
  First/Second/Third/Other Boot Device, 4-7
  Gate A20 Option, 4-7
  MPS Version Control for OS, 4-8
  OS Select for DRAM > 64 MB, 4-8
  Quick Power On Self Test, 4-7
  screen (figure), 4-6
  Security Option, 4-8
  Swap Floppy Drive, 4-7
  Typematic Delay (Msec), 4-8
  Typematic Rate Setting, 4-7
  Virus Warning, 4-6
advanced calibration, 3-2
Advanced Chipset Features, 4-9
  AGP Aperture Size, 4-10
  Boot Display, 4-10
  Delayed Transaction, 4-10
  DRAM Timing Selectable, 4-9
  Memory Frequency For, 4-9
  Memory Hole at 15 M-16 M, 4-10
  On-Chip Frame Buffer Size, 4-10
  On-Chip VGA, 4-10
  screen (figure), 4-9
  System BIOS Cacheable, 4-9
  TV Standard, 4-10
  Video BIOS Cacheable, 4-9
AGP Aperture Size, 4-10
AGP SVGA/flat panel interface specifications, A-3
APIC Mode, 4-8
ATX power connector 1 (CN1) pin assignments, B-1
ATX power connector 2 (CN2) pin assignments, B-2
audio ports, 2-6
audio specifications, A-4
Auto Detect PCI CLK, 4-21
Award BIOS setup, 4-1

B

Base Memory, 4-5
BIOS setup, 4-1
  Advanced BIOS Features, 4-6
  Advanced Chipset Features, 4-9
  Exit Without Saving, 4-22
  Frequency/Voltage Control, 4-20
  Integrated Peripherals, 4-11
  PC Health Status, 4-19
  PnP/PCI Configuration, 4-18
  Power Management Setup, 4-14
  Save & Exit Setup, 4-22
  Set Password, 4-21
  Standard CMOS Setup, 4-3
Boot Display, 4-10
Boot Up Floppy Seek, 4-7
Boot Up NumLock Status, 4-7

C

Calibrate function, 3-1
calibration
  advanced, 3-2
  plot calibration data, 3-2
  standard, 3-1

CE compliance specifications, A-8
cleaning, A-9
CMOS setup utility, 4-2
    screen (figure), 4-2
COM ports, 2-4
COM1/COM2 pin 9 setting, selecting JP5 setting for (figure), 2-5
COM2 RS232/422/485, selecting JP4 setting for (figure), 2-5
conventions used in the manual, *v*
CPU L1 & L2 Cache ECC Checking, 4-7
CPU THRM-Throttling, 4-17
CPU Warning Temperature, 4-20

D

Date (mm:dd:yy), 4-3
Delayed Transaction, 4-10
desktop bracket mounting, 2-7
diagnostic tools (NI resources), C-1
dimensions, A-2
documentation
    conventions used in the manual, *v*
    NI resources, C-1
DRAM Timing Selectable, 4-9
Draw function, 3-2
Drive A, 4-4
Drive B, 4-4
drivers (NI resources), C-1

E

ECP Mode Use DMA, 4-13
electrical specifications, A-6
electromagnetic compatibility specifications, A-8
environmental management, A-9
environmental specifications, A-7
    LCD, A-8
    touchscreen, A-7
Ethernet port, 2-6
examples (NI resources), C-1
Exit Without Saving, 4-22
Extended Memory, 4-5

F

fan power connector (FAN1 and FAN2) pin assignments, B-6
FDD connector (CN9) pin assignments, B-4
First/Second/Third/Other Boot Device, 4-7
Frequency/Voltage Control, 4-20
    Auto Detect PCI CLK, 4-21
    screen (figure), 4-20
    Spread Spectrum, 4-21
FWH Flash Control, 4-12

G

Gate A20 Option, 4-7

H

Halt On, 4-5
HDD Power Down, 4-16
help, technical support, C-1

I

I/O ports, 2-2
    arrangement (figure), 2-3
IDE HDD Block Mode, 4-12
IDE Primary Master/Slave PIO, 4-12
IDE Primary Master/Slave UDMA, 4-12
IDE Secondary Master/Slave PIO, 4-12
Init Display First, 4-12
instrument drivers (NI resources), C-1
Integrated Peripherals, 4-11
    AC97 Audio, 4-12
    ECP Mode Use DMA, 4-13
    FWH Flash Control, 4-12

IDE HDD Block Mode, 4-12
IDE Primary Master/Slave PIO, 4-12
IDE Primary Master/Slave UDMA, 4-12
IDE Secondary Master/Slave PIO, 4-12
Init Display First, 4-12
Onboard FDC Controller, 4-12
Onboard Parallel Port, 4-13
Onboard Serial Port 1/Port 2, 4-13
OnChip Primary/Secondary PCI IDE, 4-11
Outboard LAN1 Control, 4-12
Parallel Port Mode, 4-13
screen (figure), 4-11
Secondary Master/Slave UDMA, 4-12
UART Mode Select, 4-13
USB 2.0 Controller, 4-12
USB Controller, 4-12
USB Keyboard Support, 4-12
internal speaker connector (CN15) pin assignments, B-5
introduction, 1-1
inverter power connector (CN5) pin assignments, B-3
IR connector (CN24) pin assignments, B-5

J

JP4 (figure), 2-5
JP5 (figure), 2-5
jumpers
JP4 (figure), 2-5
JP5 (figure), 2-5

K

keyboard port, 2-3
KnowledgeBase, C-1

L

LCD
brightness, adjusting, 2-6
environmental specifications, A-8
specifications, A-5
Load Optimized Defaults, 4-21
LVDS connector 1 (CN4) pin assignments, B-2
LVDS connector 2 (CN6) pin assignments, B-3

M

Master/Slave, 4-4
screen (figure), 4-4
Memory Frequency For, 4-9
Memory Hole at 15 M-16 M, 4-10
mercury disposal and recycling specifications, A-9
MODEM Use IRQ, 4-16
mouse port, 2-3
MPS Version Control for OS, 4-8

N

National Instruments support and services, C-1

O

Onboard FDC Controller, 4-12
Onboard Parallel Port, 4-13
Onboard Serial Port 1/Port2, 4-13
On-Chip Frame Buffer Size, 4-10
OnChip Primary/Secondary PCI IDE, 4-11
On-Chip VGA, 4-10
Option function, 3-2
OS Select for DRAM > 64 MB, 4-8
Outboard LAN1 Control, 4-12

P

panel mounting, 2-7
parallel port, 2-3
Parallel Port Mode, 4-13
PC Health Status, 4-19
  CPU Warning Temperature, 4-20
  screen (figure), 4-20
  Shutdown Temperature, 4-20
PCI Bus Ethernet interface specifications, A-4
PCI/VGA Palette Snoop, 4-19
PCMCIA interface specifications, A-4
PenMount Control Panel, 3-1
  About function, 3-3
  Calibrate function, 3-1
  Draw function, 3-2
  Option function, 3-2
PenMount Monitor menu icon, 3-3
PenMount rotating functions, 3-4
  configuring, 3-4
physical specifications, A-1
pin assignments, B-1
  ATX power connector 1 (CN1), B-1
  ATX power connector 2 (CN2), B-2
  fan power connector (FAN1 and FAN2), B-6
  FDD connector (CN9), B-4
  internal speaker connector (CN15), B-5
  inverter power connector (CN5), B-3
  IR connector (CN24), B-5
  LVDS connector 1 (CN4), B-2
  LVDS connector 2 (CN6), B-3
plot calibration data, 3-2
PnP/PCI Configuration, 4-18
  PCI/VGA Palette Snoop, 4-19
  Resources Controlled By, 4-18
  screen (figure), 4-18
  XIRQ Resources, 4-19
Power Management, 4-15
  Doze Mode, 4-15
  HDD Power Down, 4-15
  Power Management, 4-15
  screen (figure), 4-15
  Suspend Mode, 4-15
Power Management Setup, 4-14
  ACPI Function, 4-14
  CPU THRM-Throttling, 4-17
  HDD Power Down, 4-16
  MODEM Use IRQ, 4-16
  Power Management, 4-15
    Doze Mode, 4-15
    HDD Power Down, 4-15
    Power Management, 4-15
    screen (figure), 4-15
    Suspend Mode, 4-15
  Power on by Ring, 4-17
  Reload Global Timer Events, 4-17
  Resume by Alarm, 4-17
  screen (figure), 4-14
  Soft-Off by PWRBTN, 4-16
  Suspend Mode, 4-16
  Suspend Type, 4-16
  Video Off In Suspend, 4-16
  Video Off Method, 4-16
  Wake by PCI Card, 4-17
Power on by Ring, 4-17
powering on/off, 2-7
PPC-2015
  AGP SVGA/flat panel interface specifications, A-3
  audio ports, 2-6
  audio specifications, A-4
  BIOS setup, 4-1
    Advanced BIOS Features, 4-6
    Advanced Chipset Features, 4-9
    Exit Without Saving, 4-22
    Frequency/Voltage Control, 4-20
    Integrated Peripherals, 4-11
    Load Optimized Defaults, 4-21
    PC Health Status, 4-19
    PnP/PCI Configuration, 4-18
    Power Management Setup, 4-14

Save & Exit Setup, 4-22
Set Password, 4-21
Standard CMOS Setup, 4-3
CE compliance specifications, A-8
cleaning specifications, A-9
CMOS setup utility, 4-2
desktop bracket mounting, 2-7
dimensions, A-2
electrical specifications, A-6
electromagnetic compatibility specifications, A-8
environmental management specifications, A-9
environmental specifications, A-7
LCD, A-8
touchscreen, A-7
Ethernet port, 2-6
introduction, 1-1
jumpers
JP4 (figure), 2-5
JP5 (figure), 2-5
LCD
brightness, adjusting, 2-6
specifications, A-5
mercury disposal and recycling specifications, A-9
panel mounting, 2-7
parallel port, 2-3
PCI Bus Ethernet interface specifications, A-4
PCMCIA interface specifications, A-4
PenMount Monitor menu icon, 3-3
PenMount rotating functions, 3-4
configuring, 3-4
physical specifications, A-1
pin assignments, B-1
ATX power connector 1 (CN1), B-1
ATX power connector 2 (CN2), B-2
fan power connector (FAN1 and FAN2), B-6
FDD connector (CN9), B-4
internal speaker connector (CN15), B-5
inverter power connector (CN45), B-3
IR connector (CN24), B-5
LVDS connector 1 (CN4), B-2
LVDS connector 2 (CN6), B-3
PS/2 mouse and keyboard ports, 2-3
rack mounting, 2-7
safety
information, 2-1
specifications, A-8
serial COM ports, 2-4
setup, 2-2
I/O ports, 2-2
specifications, A-1
system power on/off, 2-7
system specifications, A-2
touchscreen, 3-1
configuring, 3-1
introduction, 3-1
PenMount Control Panel, 3-1
touchscreen specifications, A-5
USB ports, 2-6
VGA port, 2-4
Waste Electrical and Electronic Equipment specifications, A-9
Primary/Secondary, 4-4
screen (figure), 4-4
programming examples (NI resources), C-1
PS/2 mouse and keyboard ports, 2-3

Q

Quick Power On Self Test, 4-7

R

rack mounting, 2-7
Reload Global Timer Events, 4-17
Resources Controlled By, 4-18

Resume by Alarm, 4-17
rotating functions, 3-4
    configuring, 3-4
RS232/422/485 setting on COM2, selecting JP4 setting for (figure), 2-5

S

safety
    information, 2-1
    specifications, A-8
Save & Exit Setup, 4-22
Secondary Master/Slave UDMA, 4-12
Security Option, 4-8
serial COM ports, 2-4
Set Password, 4-21
setup, 2-2
Shutdown Temperature, 4-20
Soft-Off by PWRBTN, 4-16
software (NI resources), C-1
specifications, A-1
    AGP SVGA/flat panel interface, A-3
    audio, A-4
    CE compliance, A-8
    cleaning, A-9
    dimensions, A-2
    electrical, A-6
    electromagnetic compatibility, A-8
    environmental, A-7
        LCD, A-8
        touchscreen, A-7
    environmental management, A-9
    LCD, A-5
    mercury disposal and recycling, A-9
    PCI Bus Ethernet interface, A-4
    PCMCIA interface, A-4
    physical, A-1
    safety, A-8
    system, A-2
    touchscreen, A-5
    Waste Electrical and Electronic Equipment compliance, A-9
Spread Spectrum, 4-21
standard calibration, 3-1
Standard CMOS Setup, 4-3
    Base Memory, 4-5
    Date (mm:dd:yy), 4-3
    Drive A, 4-4
    Drive B, 4-4
    Extended Memory, 4-5
    Halt On, 4-5
    Master/Slave, 4-4
    Primary/Secondary, 4-4
    screen (figure), 4-3
    Time (hh:mm:ss), 4-4
    Total Memory, 4-5
    Video, 4-4
support, technical, C-1
Suspend Mode, 4-16
Suspend Type, 4-16
Swap Floppy Drive, 4-7
system
    setup, 2-2
    specifications, A-2
System BIOS Cacheable, 4-9
system power on/off, 2-7

T

technical support, C-1
Time (hh:mm:ss), 4-4
Total Memory, 4-5
touchscreen, 3-1
    configuring, 3-1
    environmental specifications, A-7
    introduction, 3-1
    PenMount Control Panel, 3-1
        About function, 3-3
        Calibrate function, 3-1
        Draw function, 3-2

Option function, 3-2
PenMount Monitor menu icon, 3-3
PenMount rotating functions, 3-4
configuring, 3-4
touchscreen specifications, A-5
training and certification (NI resources), C-1
troubleshooting (NI resources), C-1
TV Standard, 4-10
Typematic Delay (Msec), 4-8
Typematic Rate (Chars/Sec), 4-8
Typematic Rate Setting, 4-7

U

UART Mode Select, 4-13
USB 2.0 Controller, 4-12
USB Controller, 4-12
USB Keyboard Support, 4-12
USB ports, 2-6

V

VGA port, 2-4
Video, 4-4
Video BIOS Cacheable, 4-9
Video Off In Suspend, 4-16
Video Off Method, 4-16
Virus Warning, 4-6

W

Wake by PCI Card, 4-17
Waste Electrical and Electronic Equipment compliance specifications, A-9
Web resources, C-1

X

XIRQ Resources, 4-19

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