1341

Embedded Node PC

Revision	Description	Date
A	Manual Released	9/06
B	FSB and memory features revised	10/06
C	Name change, correct where applicable with document	4/07

Part Number 144810 (C)

Trademark Information

Xycom and Xycom Automation are trademarks of Xycom Automation, L.L.C.

Xycom Automation, L.L.C. now is referred to as Pro-face through a D.B.A. The Pro-face name and logo will replace the Xycom name and logo on all documents where possible.

Pro-face is a trademark of Digital Electronics Corporation.

Brand or product names are registered trademarks of their respective owners. Windows is a registered trademark of Microsoft Corp. in the United States and other countries.

Copyright Information

This document is copyrighted by Xycom Automation, L.L.C. (Xycom) and shall not be reproduced or copied without expressed written authorization from Xycom Automation, L.L.C.

The information contained within this document is subject to change without notice. Pro-face does not guarantee the accuracy of the information.

United States FCC Part 15, Subpart B, Class A EMI Compliance Statement:

NOTE: This equipment has been tested and found to comply with 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. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

For European Users - 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.

INSTALLATION: Electromagnetic Compatibility WARNING:

The connection of non-shielded equipment interface cables to this equipment will invalidate FCC EMI and European Union EMC compliance and may result in electromagnetic interference and/or susceptibility levels which are in violation of regulations applying to the legal operation of this device. It is the responsibility of the system integrator and/or user to apply the following directions relating to installation and configuration:

All interface cables must include shielded cables. Braid/foil type shields are recommended. Communication cable connectors must be metal, ideally zinc die-cast backshell types, and provide 360-degree protection about the interface wires. The cable shield braid must be terminated directly to the metal connector shell, ground drain wires alone are not adequate.

Protective measures for power and interface cables as described within this manual must be applied. Do not leave cables connected to unused interfaces or disconnected at one end. Changes or modifications to this device not expressly approved by the manufacturer could void the user's authority to operate the equipment.

EMC compliance is, in part, a function of PCB design. Third party add-on AT/XT peripheral PCB assemblies installed within this apparatus may void EMC compliance. FCC/CE compliant PCB assemblies should always be used where possible. PRO-FACE can accept no responsibility for the EMC performance of this apparatus after system integrator/user installation of PCB assemblies not manufactured and/or expressly tested and approved for compliance by PRO-FACE. It is the responsibility of the system integrator/user to ensure that installation and operation of such devices does not void EMC compliance.

Table of Contents

Chapter 1 – Introduction

General Information

The 1341 Embedded Node PC combines a high performance Intel® Celeron® M processor with a fanless design to offer a powerful and compact package for the factory floor and other harsh environments. USB 2.0, Ethernet and 4 Serial ports allow communication with diverse devices with a high transfer rate. Furthermore, the 1341 series can concurrently support three tiers of expansion interfaces: PCI, PCMCIA and mini-PCI. These interfaces are fully integrated within the 1341 and allow an upgrade to their usefulness.

Standard Features

The 1341 comes standard with the following features:

- CPU board equipped with a high performance Intel® Celeron® M 1.3GHz CPU with 400MHz front system bus and 512KB cache
- AGP Video Controller, 4M of system DRAM, up to 32M
- 10/100 Base T Ethernet
- DDR 266, 512MB SODIMM
- PS/2 Keyboard and Mouse
- Four RS-232 ports
- Audio(in/out/mic)
- Printer Port
- Four USB 2.0 ports
- One half length PCI slot
- Dual externally accessible PCMCIA ports
- VGA Port
- CompactFlash slot
- 9-30 Volt regulated DC input
- Power on/off switch
- Reset button
- Power LED indicator
- HDD active LED indicator (active only with HDD installed)
- Wall or shelf mountable

Optional Features:
- 4GB or 8GB CompactFlash
- Microsoft® Windows XP or Windows 2000 Operating System

The figures below show the internal and external components on the front and back panels of the unit to help you locate features relevant to installation.
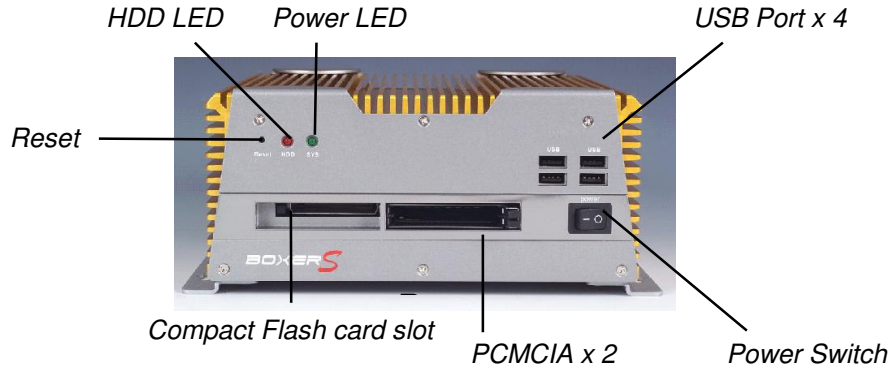
Front Side

HDD LED   Power LED   USB Port x 4

Reset

Compact Flash card slot   PCMCIA x 2   Power Switch

Figure 1-1. Front Side

Rear Side

Audio   4 Serial   Ethernet
Ports

VGA

Power Inlet

Printer Port

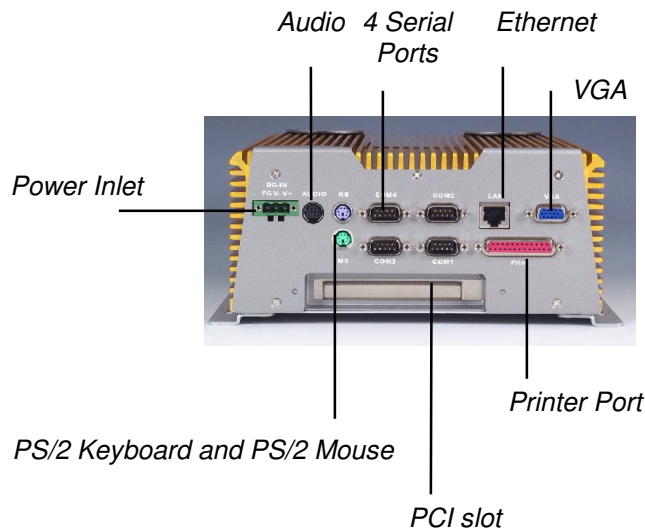PS/2 Keyboard and PS/2 Mouse

PCI slot

Figure 1-2. Rear Side

Caution

Before any installation or un-installation, please take precautions to prevent damage to the components due to static electricity.

Unpacking the System

When you remove the system from its shipping container, verify that you have the parts listed below. Save the box and inner wrapping in the event you need to reship the unit.

- 1341 Unit
- Documentation kit, which includes:
  - o Documentation and Support Library CD-ROM
  - o Mounting hardware
  - o Operating System Recovery Media or retail operating system (CD-ROM) (only with units purchased with an operating system).

Quick Startup

This section gives you the steps to get the system up and running without explaining the capabilities and options.

Warning

Remove power from the unit and disconnect the power cord before making any adjustments to the inside or outside of the computer.

To prepare the system for use, perform the following steps.

1. Attach optional keyboard to the keyboard port, and optional mouse to the mouse port.

2. Attach DC power cable from AC Adapter. Attach the power cord from the power receptacle to a properly grounded 100-240 VAC, 50-60 Hz outlet.

3. Turn on power to the unit (via an outlet power switch if applicable). The system will boot up into the operating system.

4. Install application software via the CompactFlash, or the network.

Chapter 2 — Installation

Installation Overview

The rugged design of the 1341 unit allows it to be installed in most industrial environments. The system is generally placed in a NEMA 4/4X/12 enclosure to protect against contaminants such as dust, and moisture. Metal enclosures also help minimize the effects of electromagnetic radiation that nearby equipment can generate.

Read the following sections carefully to be sure that you are complying with all the safety requirements.

1. Select a NEMA rated enclosure and place the unit in a position to allow easy access to the system ports.

2. Be sure to account for the unit's depth when choosing the depth of the enclosure.

3. The 1341 unit can be mounted in a vertical or horizontal position.

4. Attach DC power cable from AC Adapter to the power receptacle on the 1341 and the other end to a properly grounded 100-240 VAC, 50-60 Hz outlet.

5. Turn on power to the system. The system will boot up the installed operating system.

Additional aspects to take into account when mounting your 1341:

- Consider locations of accessories such as AC power outlets and lighting (interior lighting and windows) for installation and maintenance convenience

- Prevent condensation by installing a thermostat-controlled heater or air conditioner

- To allow for maximum cooling, avoid obstructing the airflow

- Place any fans or blowers close to the heat generating devices. If using a fan, make sure that outside air is not brought into the enclosure unless a fabric or other reliable filter is used. This filtration prevents conductive particles and other harmful contaminants from entering the enclosure.

- Do not select a location near equipment that generates excessive electromagnetic interference (EMI) or radio frequency interface (RFI). Examples of these types of equipment are: high power welding machines; induction heating equipment; and large motor starters.

- Place incoming power line devices (such as isolation or constant voltage transformers, local power disconnects, and surge suppressers) away from the system. The proper location of incoming line devices keeps power wire runs as short as possible and minimizes electrical noise transmitted to the unit.

- Make sure the location does not exceed the unit's shock, vibration, and temperature specifications

144810(C)

- Install the unit in the rack or panel in such a way as to ensure that it does not cause a hazard from uneven mechanical loading

- Incorporate a readily-accessible disconnect device in the fixed wiring on permanently connected equipment

- Avoid circuit overloading of the supply circuit

Mechanical Dimensions
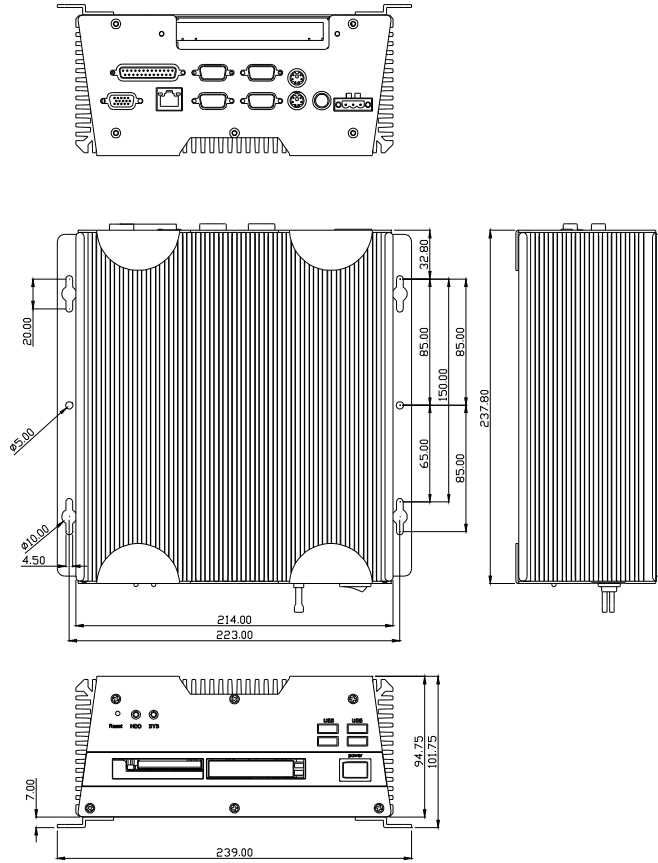
Note: All dimensions in mm

Figure 2-1. Unit Dimensions

Mounting Options

Wall Mounting

The 1341 is suitable for wall mount using the included brackets and hardware.

Secure the bracket to the unit with the 4 screws as shown below.
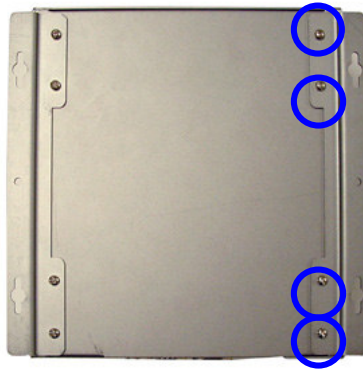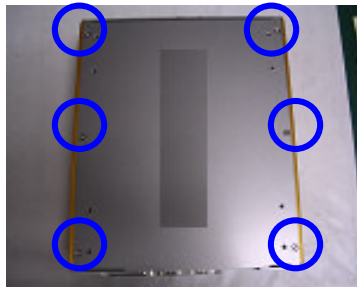

Figure 2-2. Wall Mounting

PCI Card Installation

Step 1: Unfasten the two screws on the rear panel.

Step 2: Unfasten the three screws on the front panel.

Step 3: Unfasten the six screws on the bottom lid.

Step 4: Remove the screw with your finger (Figure 2-3) and get the PCI card ready to install. You should keep the shield and screw for use later.

Screw

PCI Slot shield
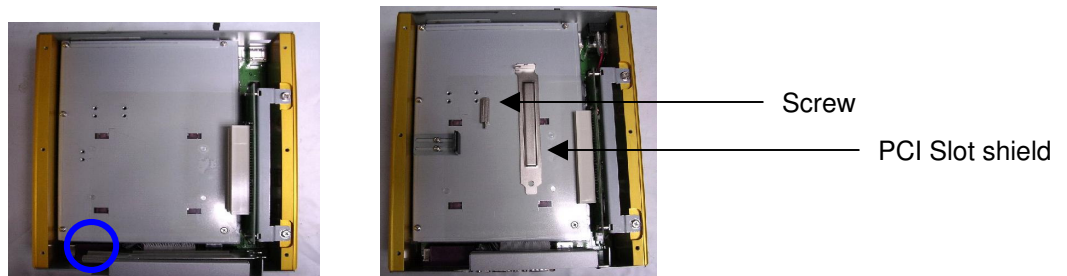
Figure 2-3

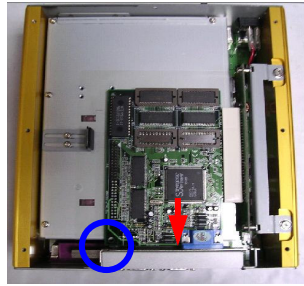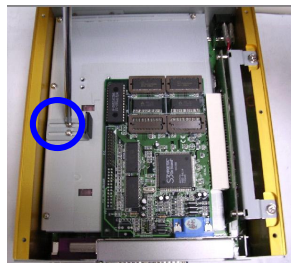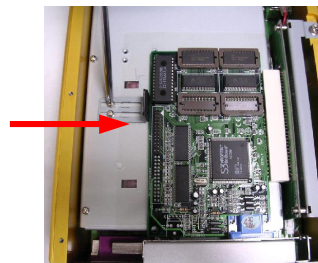Step 5: Insert the PCI card into the PCI slot and reattach the screw.

Step 6: Unfasten the screws (Figure 2-4) and push the bracket to lock the PCI card into position (Figure 2-5).

(Figure 2-4)   (Figure 2-5)

Step 7: Close the bottom lid of the 1341 and fasten six screws on the bottom lid.
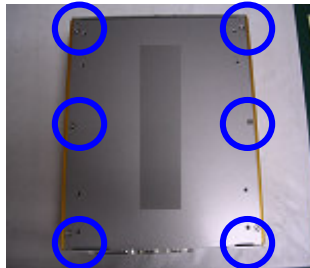
Step 8: Fasten the three screws on the front panel and the two screws on the rear panel.

Jumper Settings

The CPU board has a number of jumpers that allow you to configure your system to suit your application. The table below shows the function of each of the board's jumpers:

Jumper	Function
JP1	ATX Power to AT Function
JP2	Audio Out Selection
JP3	LCD Voltage Selection
JP4	COM4 Ring/+5V/+12V Selection
JP5	COM3 Ring/+5V/+12V Selection
JP6	Clear CMOS

JP6: Clear CMOS Setup

If the CPU board fails to boot due to improper BIOS settings, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the "CMOS Settings Wrong" message display during the boot up process, you may then try to correct the fault by pressing the F1 to enter the CMOS Setup menu. You may then do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults

After you have done one of the above options, save your changes and exit the CMOS Setup menu.

JP6	Description
1-2	Normal
2-3	Clear CMOS

Chapter 3 – Award BIOS Setup

System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time

2. You have changed the hardware attached to your system

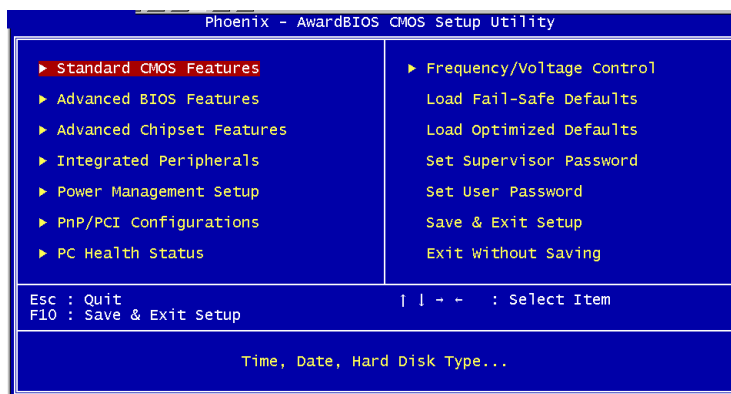3. The CMOS memory has lost power and the configuration information has been erased.

The 1341 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

```
           Phoenix - AwardBIOS CMOS Setup Utility
 ┌──────────────────────────────────────────────────────────────┐
 │ ▶ Standard CMOS Features        ▶ Frequency/Voltage Control    │
 │ ▶ Advanced BIOS Features           Load Fail-Safe 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                      ↑ ↓ → ←   : Select Item        │
 │ F10 : Save & Exit Setup                                        │
 │                                                                │
 │            Time, Date, Hard Disk Type...                       │
 └──────────────────────────────────────────────────────────────┘
```

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse, etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Chapter 4 – Driver Installation

The 1341 comes with the Pro-face Documentation and Support Library CD that contains all drivers and utilities that meet your needs. Pro-face recommends connecting a parallel port or USB CD-ROM drive to the 1341 to install drivers or connecting the host computer to the 1341.

Follow the sequence below to install the drivers:

Step 1 – Install INF Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

USB 2.0 Drivers are available for download using Windows Update for both Windows XP and Windows 2000. For additional information regarding USB 2.0 support in Windows XP and Windows 2000, please visit www.microsoft.com/hwdev/usb/.

Please refer to the driver install instructions included in the 1341 Readme.txt file for detailed installation information.

Windows® 2000 Reinstallation

If you need to reinstall the Windows® 2000 operating system, refer to the *Pro-face/Xycom Workstation Recovery Media Software Installation Instructions for Microsoft® Windows® 2000* (shipped with systems preinstalled with Windows 2000). This document is devoted to the reinstallation of your Windows 2000 operating system and drivers, utilizing the Recovery Media provided with your Pro-face/Xycom industrial computer. If you want to install a new operating system or reinstall a current operating system, refer to the operating system's manual for directions.

Note

This procedure assumes that the computer hard disk drive has been completely corrupted or replaced.

Warning

This procedure will destroy data that may exist on the hard disk drive.

Windows® XP Reinstallation

If you need to reinstall the Windows® XP operating system, refer to the *Pro-face/Xycom Workstation Software Installation Instructions For Microsoft Windows XP* (shipped with systems preinstalled with Windows XP). This document is devoted to the reinstallation of your Windows XP operating system and drivers, utilizing the XP CD provided with your Pro-face/Xycom industrial computer. If you want to install a new operating system or reinstall a current operating system, refer to the Windows XP Professional CD-ROM (shipped with systems preinstalled with Windows XP Professional).

Note

This procedure assumes that the computer hard disk drive has been completely corrupted or replaced.

Warning

This procedure will destroy data that may exist on the hard disk drive.

Appendix A – I/O Information

A.1 I/O Address Map

Input/output (IO)
- [00000000 - 0000000F] Direct memory access controller
- [00000020 - 00000021] Programmable interrupt controller
- [00000022 - 0000003F] PCI bus
- [00000040 - 00000043] System timer
- [00000044 - 00000047] PCI bus
- [0000004C - 0000006F] PCI bus
- [00000060 - 00000060] PC/AT Enhanced PS/2 Keyboard (101/102-Key)
- [00000061 - 00000061] System speaker
- [00000064 - 00000064] PC/AT Enhanced PS/2 Keyboard (101/102-Key)
- [00000070 - 00000071] System CMOS/real time clock
- [00000072 - 0000007F] PCI bus
- [00000081 - 00000083] Direct memory access controller
- [00000087 - 00000087] Direct memory access controller
- [00000089 - 0000008B] Direct memory access controller
- [0000008F - 00000091] Direct memory access controller
- [00000090 - 00000091] PCI bus
- [00000093 - 0000009F] PCI bus
- [000000A0 - 000000A1] Programmable interrupt controller
- [000000A2 - 000000BF] PCI bus
- [000000C0 - 000000DF] Direct memory access controller
- [000000E0 - 000000EF] PCI bus
- [000000F0 - 000000FF] Numeric data processor
- [00000100 - 00000CF7] PCI bus
- [00000170 - 00000177] Secondary IDE Channel
- [000001F0 - 000001F7] Primary IDE Channel
- [00000274 - 00000277] ISAPNP Read Data Port
- [00000279 - 00000279] ISAPNP Read Data Port
- [000002E8 - 000002EF] Communications Port (COM4)
- [000002F8 - 000002FF] Communications Port (COM2)
- [00000376 - 00000376] Secondary IDE Channel
- [00000378 - 0000037F] Printer Port (LPT1)
- [000003B0 - 000003BB] Intel(R) 82852/82855 GM/GME Graphics Controller
- [000003C0 - 000003DF] Intel(R) 82852/82855 GM/GME Graphics Controller
- [000003E8 - 000003EF] Communications Port (COM3)
- [000003F0 - 000003F5] Standard floppy disk controller
- [000003F6 - 000003F6] Primary IDE Channel
- [000003F7 - 000003F7] Standard floppy disk controller
- [000003F8 - 000003FF] Communications Port (COM1)
- [00000500 - 0000051F] Intel(R) 82801DB/DBM SMBus Controller - 24C3
- [00000778 - 0000077F] Printer Port (LPT1)
- [00000A79 - 00000A79] ISAPNP Read Data Port
- [00000D00 - 0000FFFF] PCI bus
- [0000D000 - 0000D03F] Intel(R) 8255xER PCI Adapter
- [0000E000 - 0000E01F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
- [0000E100 - 0000E11F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
- [0000E200 - 0000E207] Intel(R) 82852/82855 GM/GME Graphics Controller
- [0000E400 - 0000E4FF] Realtek AC'97 Audio
- [0000E500 - 0000E53F] Realtek AC'97 Audio
- [0000F000 - 0000F00F] Intel(R) 82801DB Ultra ATA Storage Controller - 24CB
- [0000FB00 - 0000FBFF] Texas Instruments PCI-1420 CardBus Controller
- [0000FC00 - 0000FCFF] Texas Instruments PCI-1420 CardBus Controller
- [0000FDFC - 0000FDFD] Texas Instruments PCI-1420 CardBus Controller
- [0000FDFE - 0000FDFF] Texas Instruments PCI-1420 CardBus Controller
- [0000FE00 - 0000FEFF] Texas Instruments PCI-1420 CardBus Controller
- [0000FF00 - 0000FFFF] Texas Instruments PCI-1420 CardBus Controller

A.2 Memory Address Map

Memory
  [00000000 - 0009FFFF] System board
  [000A0000 - 000BFFFF] Intel(R) 82852/82855 GM/GME Graphics Controller
  [000A0000 - 000BFFFF] PCI bus
  [000CC800 - 000CFFFF] PCI bus
  [000D4000 - 000DFFFF] PCI bus
  [000DE000 - 000DEFFF] Texas Instruments PCI-1420 CardBus Controller
  [000DF000 - 000DFFFF] Texas Instruments PCI-1420 CardBus Controller
  [000F0000 - 000F3FFF] Motherboard resources
  [000F4000 - 000F7FFF] Motherboard resources
  [000F8000 - 000FBFFF] Motherboard resources
  [000FC000 - 000FFFFF] Motherboard resources
  [00100000 - 00FFFFFF] System board
  [0E000000 - FEBFFFFF] PCI bus
  [D8000000 - DFFFFFFF] Intel(R) 82852/82855 GM/GME Graphics Controller
  [E0000000 - E7FFFFFF] Intel(R) 82852/82855 GM/GME Graphics Controller
  [E8000000 - E801FFFF] Intel(R) 8255xER PCI Adapter
  [E8030000 - E8030FFF] Texas Instruments PCI-1420 CardBus Controller
  [E8035000 - E8035FFF] Texas Instruments PCI-1420 CardBus Controller
  [E803A000 - E803AFFF] Intel(R) 8255xER PCI Adapter
  [E8100000 - E817FFFF] Intel(R) 82852/82855 GM/GME Graphics Controller
  [E8180000 - E81FFFFF] Intel(R) 82852/82855 GM/GME Graphics Controller
  [E8200000 - E82003FF] Intel (r) 82801DB/DBM USB Enhanced Host Controller
  [E8201000 - E82011FF] Realtek AC'97 Audio
  [E8202000 - E82020FF] Realtek AC'97 Audio
  [FE600000 - FE7FFFFF] Texas Instruments PCI-1420 CardBus Controller
  [FE800000 - FE9FFFFF] Texas Instruments PCI-1420 CardBus Controller
  [FEBFD000 - FEBFDFFF] Texas Instruments PCI-1420 CardBus Controller
  [FEBFE000 - FEBFEFFF] Texas Instruments PCI-1420 CardBus Controller
  [FEBFFC00 - FEBFFFFF] Intel(R) 82801DB Ultra ATA Storage Controller - 24CB
  [FEC00000 - FEC0FFFF] System board
  [FEE00000 - FEE0FFFF] System board
  [FFB00000 - FFB7FFFF] System board
  [FFB80000 - FFBFFFFF] Intel(r) 82802 Firmware Hub Device
  [FFF00000 - FFFFFFFF] System board

A.3 IRQ Mapping Chart

Interrupt request (IRQ)
- (ISA) 0   System timer
- (ISA) 1   PC/AT Enhanced PS/2 Keyboard (101/102-Key)
- (ISA) 3   Communications Port (COM2)
- (ISA) 4   Communications Port (COM1)
- (ISA) 6   Standard floppy disk controller
- (ISA) 8   System CMOS/real time clock
- (ISA) 10   Communications Port (COM3)
- (ISA) 11   Communications Port (COM4)
- (ISA) 12   Logitech PS/2 Port Mouse
- (ISA) 13   Numeric data processor
- (ISA) 14   Primary IDE Channel
- (ISA) 15   Secondary IDE Channel
- (PCI) 5   Intel (r) 82801DB/DBM USB Enhanced Host Controller
- (PCI) 5   Intel(R) 8255xER PCI Adapter
- (PCI) 5   Intel(R) 82801DB/DBM SMBus Controller - 24C3
- (PCI) 5   Realtek AC'97 Audio
- (PCI) 5   Texas Instruments PCI-1420 CardBus Controller
- (PCI) 9   Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
- (PCI) 9   Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
- (PCI) 9   Intel(R) 82852/82855 GM/GME Graphics Controller
- (PCI) 9   Texas Instruments PCI-1420 CardBus Controller

A.4 DMA Channel Assignments

Direct memory access (DMA)
- 2   Standard floppy disk controller
- 4   Direct memory access controller

Appendix B Technical Specifications

This section contains the hardware and environmental specifications for the 1341.

Hardware Specifications

The following table lists the hardware specifications for the 1341.

Table B - 1. Hardware Specifications

Characteristic	Specification
Mechanical	
Height	3.73" (94.75 mm)
Width	8.43" (214 mm)
Depth	9.36" (237.8 mm)
Weight	12.41 lbs (5.63 kg)
Electrical	
DC	9 – 30 VDC 4.0 A Max 30 W **Nominal
AC*	100-240 VAC 50-60 Hz 0.4 A Max 33 W **Nominal
Mounting	Wallmount
Agency Approvals	UL 60950-1:2003 1st Edition, E231775 cUL CSA C22.2, No. 60950-1-03 1st Ed., E231775

Regulatory Compliance	FCC 47 CFR, Part 15 Subpart B, Class A
	 CE
	   EMI EN55022, Class A
	   IMMUNITY EN61000–6-2
	   SAFETY IEC60950-1
	   HARMONICS EN61000-3-2, Class A
	   FLICKER EN61000-3-3

* Assumes an external AC adapter is used.

** Nominal Power is measured for a base configuration only. Any additional expansion and/or devices will increase the input power required.

Environmental Specifications

Table B-2 lists the environmental and compliance specifications for the 1341.

Table B-2. Environmental and Compliance Specifications

Temperature		
	Operating	0˚C to 50˚C (32˚F to 122˚F)
	Non-operating	-20˚C to 60˚C (-4˚F to 140˚F)
Humidity		
	Operating	5% to 95% RH, non-condensing @ 40˚C
	Non-operating	5% to 95% RH, non-condensing
Shock[1]		
	Operating	15g peak acceleration, 11 msec duration
	Non-operating	30g peak acceleration, 11 msec duration
Vibration (5-2000 Hz)[1]		
	Operating	0.015" peak to peak displacement
		2.5g maximum acceleration

[1] These values are with solid state hard drives and not rotating media drives.

Appendix C – Watchdog Timer

C.1 Programming

The 1341 utilizes the ITE 8712 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached with which you can develop a customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.
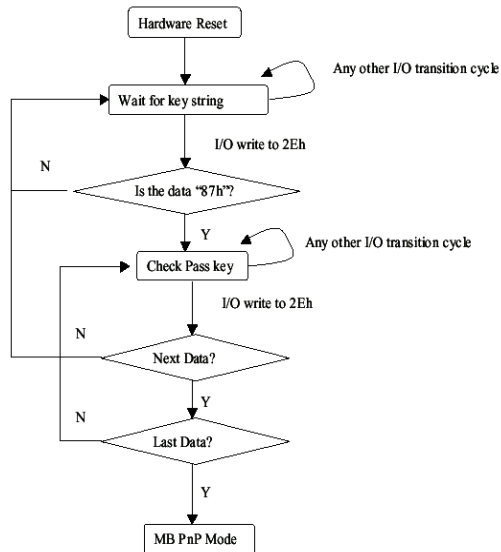
There are three steps to complete the configuration setup:

(1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write opera-tions to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level[Note] for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

B.2 IT8712 Watchdog Timer Initial Program

```
        .MODEL SMALL
        .CODE
Main:

        CALL Enter_Configuration_mode
        CALL Check_Chip
        mov cl, 7
        call Set_Logic_Device
        ;time setting
        mov cl, 10 ; 10 Sec
        dec al
Watch_Dog_Setting:
        ;Timer setting
        mov al, cl
        mov cl, 73h
        call Superio_Set_Reg
        ;Clear by keyboard or mouse interrupt
        mov al, 0f0h
        mov cl, 71h
        call Superio_Set_Reg
        ;unit is second.
        mov al, 0C0H
        mov cl, 72h
        call Superio_Set_Reg
        ; game port enable
        mov cl, 9
        call Set_Logic_Device

        Initial_OK:
        CALL Exit_Configuration_mode
        MOV AH,4Ch
        INT 21h

        Enter_Configuration_Mode PROC NEAR
        MOV SI,WORD PTR CS:[Offset Cfg_Port]

        MOV DX,02Eh
```

```
        MOV CX,04h
        Init_1:
        MOV AL,BYTE PTR CS:[SI]
        OUT DX,AL
        INC SI
        LOOP Init_1
        RET
        Enter_Configuration_Mode ENDP


        Exit_Configuration_Mode PROC NEAR
        MOV AX,0202h
        CALL Write_Configuration_Data
        RET
        Exit_Configuration_Mode ENDP


        Check_Chip PROC NEAR


        MOV AL,20h
        CALL Read_Configuration_Data
        CMP AL,87h
        JNE Not_Initial


        MOV AL,21h
        CALL Read_Configuration_Data
        CMP AL,12h
        JNE Not_Initial


Need_Initial:
        STC
        RET
Not_Initial:
        CLC
        RET
        Check_Chip ENDP
        Read_Configuration_Data PROC NEAR
        MOV DX,WORD PTR CS:[Cfg_Port+04h]
        OUT DX,AL
```

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP


Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP


Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
Set_Logic_Device  proc  near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp


;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h
```

    DW 02Eh,02Fh

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

          .
          .

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Index