3115T R4

15” Thin Line Industrial Flat Panel PC

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Revision	*Description*	*Date*
A	Manual Released	4/02
B	Panel Cutout Dimensions Revised	8/03
C	Motherboard Updates	8/03
D	Updated to R3	4/04
E	Added TIR caution	6/04
F	Updated to R4 (IDE cable upgrade)	10/04

Part Number 141876 (F)

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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. XYCOM AUTOMATION 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 XYCOM AUTOMATION. It is the responsibility of the system integrator/user to ensure that installation and operation of such devices does not void EMC compliance.

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Chapter 1 – Product Information

General Information

The 3115T R4 15" LCD TFT Panel PC, takes advantage of a modern flat-panel display, POS-370N CPU board, drive spaces and a power supply for minimum size. It is an IBM PC/AT® compatible computer specially designed to meet the applications for industrial environments.

Standard Features

The 3115T R4 comes standard with the following features:

- POS-370N CPU board equipped with a high performance socket 370 Celeron® or Pentium® III CPU (up to 1.26 GHz) with 100 MHz front system bus and 256 KB cache
- 10/100Mbps Ethernet
- LCD/CRT interface
- 15” flat panel TFT XGA (1024 x 768) LCD
- 100-240 VAC, 50-60 Hz power supply
- Dynapro® analog resistive touch screen
- Internal 20GB hard disk drive
- 1.44 MB floppy disk drive
- Slim line CD-ROM drive

Disk Drive Bays

The 3115T R4 supports the following disk drive bays:

- one 2.5" HDD
- one slim FDD
- one slim CD-ROM

LCD Display

The 3115T R4 has user mode on screen display (OSD) adjustment controls. Table 1–1 identifies other important features of the 3115T R4 LCD display.

Table 1–1. 3115T LCD Display Specifications

Display Model	**NEC**
Display Type	15" TFT color
Resolution	1024x768
Maximum colors	24 bits
Brightness	200 cd/m^2
LCD MTBF	50,000 hrs
Backlight MTBF	25,000 hrs
Supply Voltage	3.3V

Dynapro® Touch Screen

Table 1–2 identifies important specifications of the 3115T R4 Dynapro Touch Screen.

Table 1–2. 3115T Dynapro® Touch Screen Specifications

Touch Screen Model	**Description**
Screen Type	Eight wire analog resistive touch screen
Resolution	Continuous
Light Transmission	Typical value 75%
Surface Hardness	4H (Test condition: ASTM D3363-92A)
Support Driver	Supports DOS and Windows 95/98/NT/2000/XP PROFESSIONAL

Power Supply

The following table outlines the power supply voltage ratings for the 3115T R4.

Table 1–3. Power Supply Voltage Ratings

Input Voltage 100 to 240 VAC		
Voltage	Rated Load	Maximum Output
+5V	10A	16A
+12V	2.5A	6A
–12V	0.1A	0.3A

150 W maximum continuous load

POS-370N CPU Board

The POS-370N socket 370 Celeron® or Pentium® III Processor Multimedia POS Control SBC provides the following features:

- CPU: Celeron or Pentium III (up to 1.26 GHz) Processor
- RAM: 2x DIMM sockets up to 1GB SDRAM.
- Bus: PCI bus expansion to support.
- Chipset: SIS630ST, support 66/100/133 MHz CPU/DRAM clock
- LCD/CRT Controller: On chip SIS3003D
- 10/100Mbps Ethernet Controller: Intel 82559 standard Dual Auto-sensing interface to 10MBps or 100MBps networks
- RJ45 connector for 10BASE-T and 100BASE-TX
- Full duplex capability, full software driver support.
- On CHIP AC97 support SIS 7018
- Four high speed Serial ports: three RS-232C, one RS-232C or RS-422/485 Port
- Parallel Ports: Two SPP/EPP/ECP Parallel Ports
- Enhanced IDE Interface: (DMA 66) 40-pin Header for 3.5” HDD
- PCI Bus Expansion to support PCI bus signal
- IrDA port: Support First Infrared (FIR) and Amplitude Shift Keyed IR (ASKIR) interface.
- Five USB ports: Support dual USB ports for future expansion.
- Watchdog timer: Can be set by 1 min. (minimal) or above period.
- Keyboard connector
- Mouse: PS/2 Mouse Port on-board.
- Power Consumption: +5V/6.5A

Environmental and Compliance Specifications

Table 1-4 lists the environmental and compliance specifications for the 3115T R4.

Table 1–4. 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	20% to 80% RH, non-condensing
Non-operating	20% to 80% 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	0.006” peak to peak displacement 1.0g maximum acceleration
Non-operating	0.015” peak to peak displacement 2.5g maximum acceleration
Altitude[2]	
Operating	Sea level to 10,000 ft. (3,000 m)
Non-operating	Sea level to 40,000 ft. (12,000 m)
Agency Approvals	UL 60950 (Recognized) cUL CSA C22.2, No. 950 (Recognized)
Regulatory Compliance	FCC 47 CFR, Part 15, Class A CE EMI EN55022, Class A Immunity EN61000-6-2 Safety EN60950 Harmonics EN61000-3-2, Class A Flicker EN61000-3-3

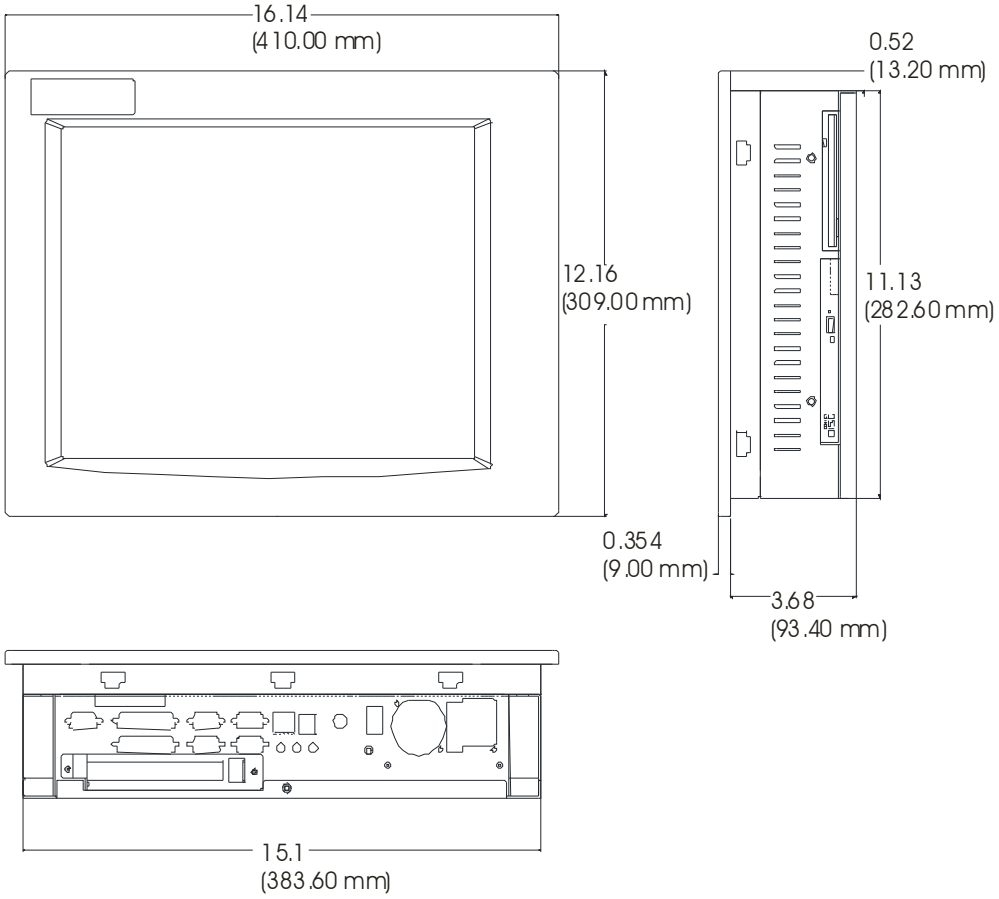
[1] These values are with solid state hard drives and not rotating media drives.

[2] Consistent with internal component specifications.

Mechanical Dimensions

Front Panel: 16.14” (410 mm) x 12.16” (309 mm) x 0.354” (9 mm) (WxHxD)

Cabinet: 15.1” (383.6 mm) x 11.13” (282.6 mm) x 3.68” (93.4 mm) (WxHxD)



Note: All dimensions in inches (mm)

Figure 1–1. Unit Dimensions

Chapter 2 — Installation

System Setup

The 3115T R4 Industrial Flat Panel PC is provided as a complete configured system for your operation. The following sections of this chapter will help with installation and maintenance.

Back Panel

The diagram below shows the back panel of the 3115T R4. For maintenance, installation or upgrade, first remove the back cover by unfastening seven screws as shown in the diagram below.

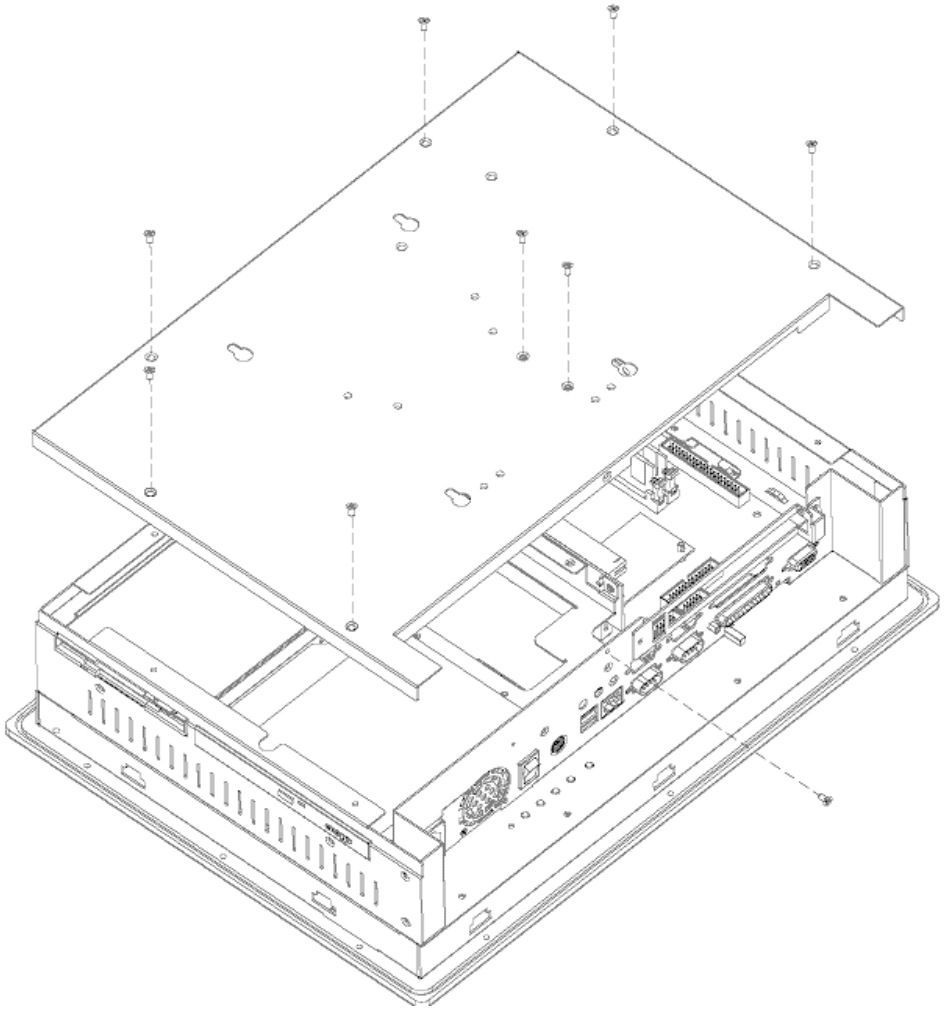


Figure 2–1. System Back Panel

Caution

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

I/O Panel

The figure below shows the I/O panel of the 3115T R4.

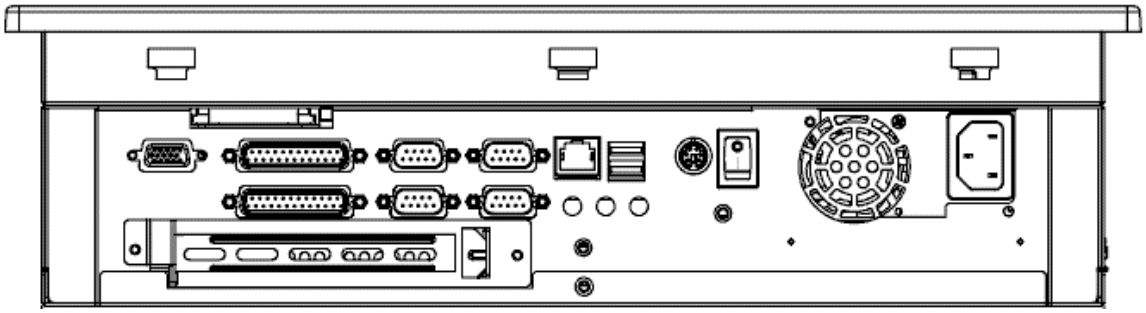


Figure 2–2. I/O Panel

Front and Side Panels

One Floppy Disk Drive and CD-ROM are accessible from the side of the chassis.

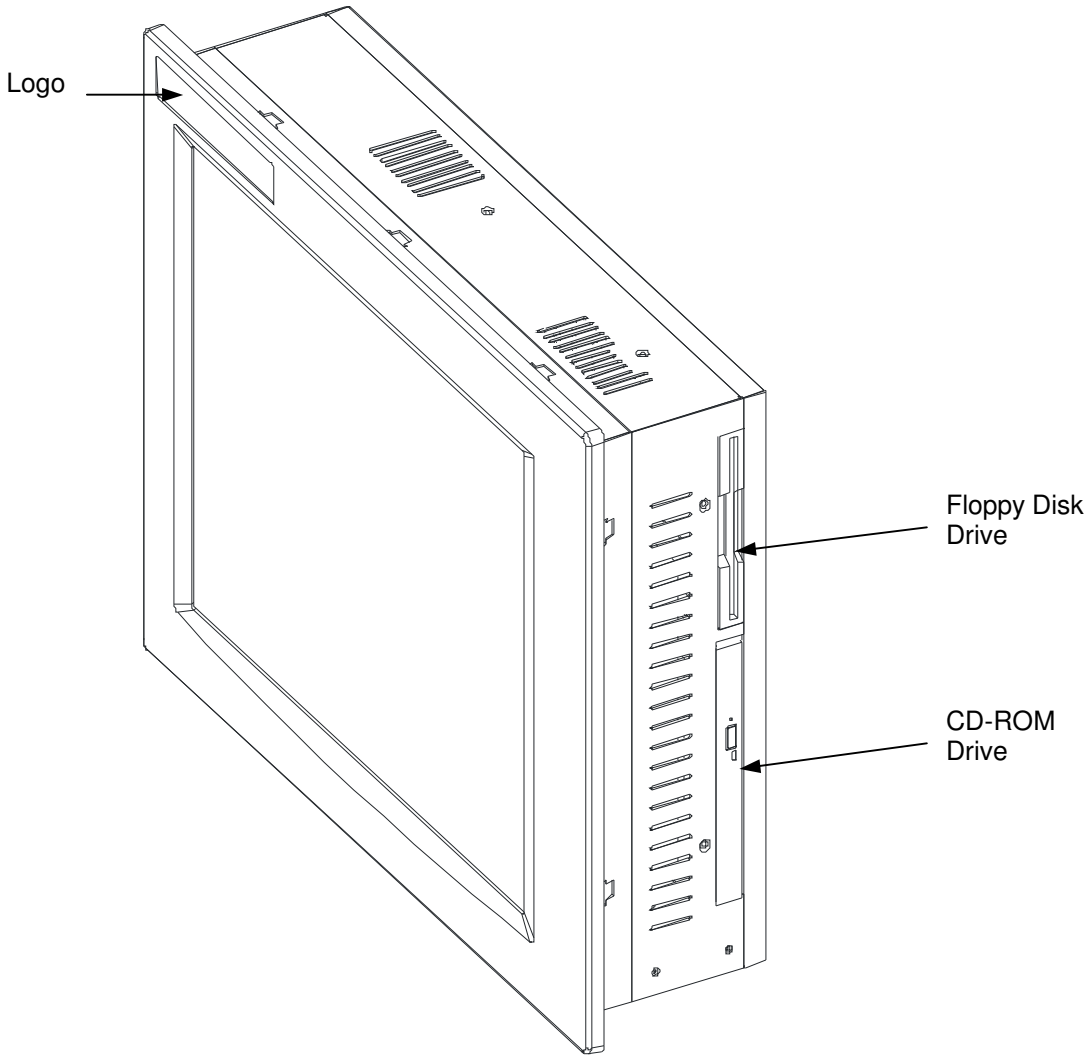


Figure 2–3. Front and Side Panel Views

Hard Disk Drive Installation/Removal

The following instructions tell how to install the hard disk drive (HDD):

1. Fasten the HDD to the HDD bracket.
2. Slide the HDD bracket into place, engaging the tabs. See figure 2–4.
3. Fasten the HDD bracket to the cabinet using two screws. See figure 2–5.

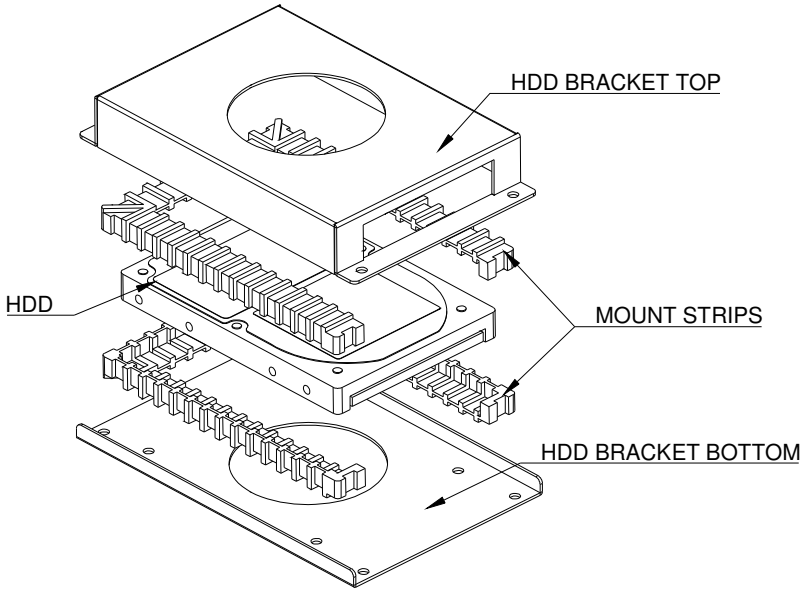


Figure 2–4. HDD and HDD Bracket

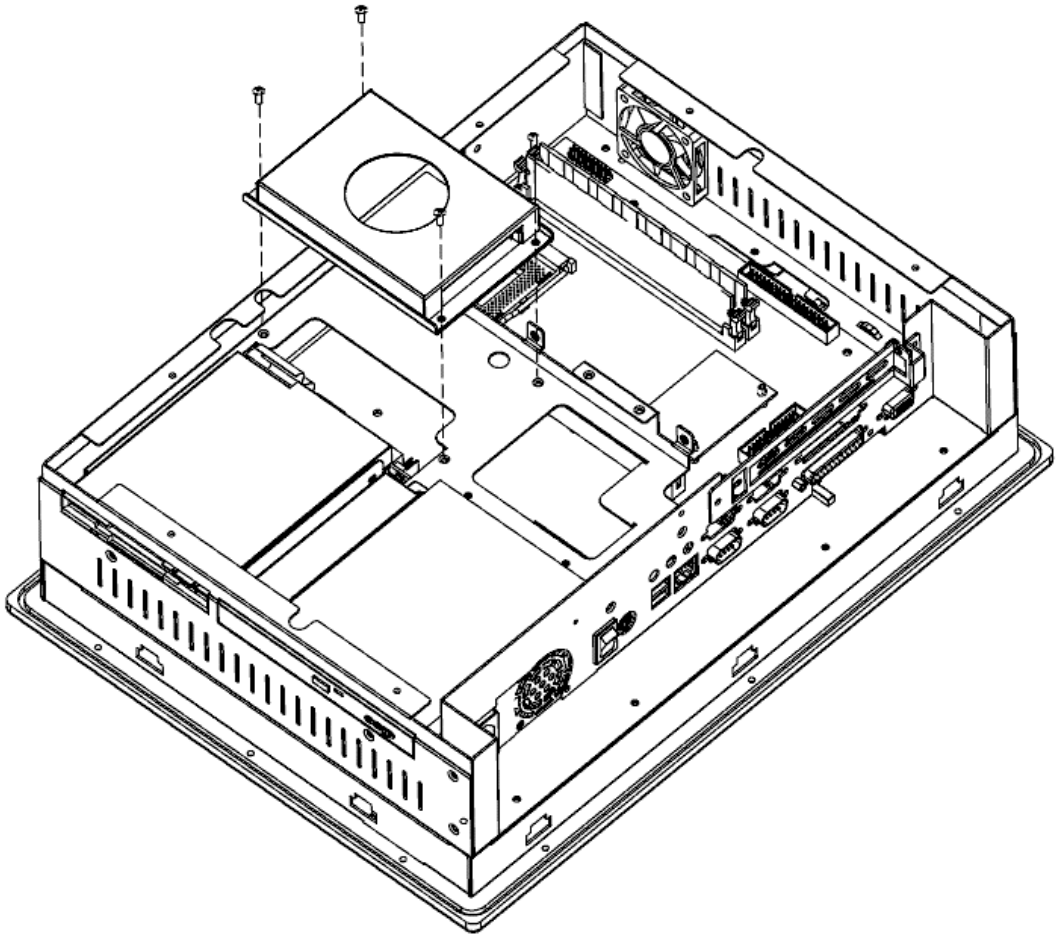


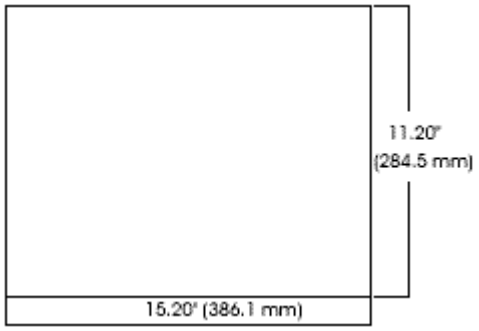
Figure 2–5. Installing HDD

Mounting Options

The 3115T R4 can be mounted to a panel, to the wall, or to an arm. The following sections describe each mounting option for the 3115T R4.

Panel Mounting

The 3115T R4 is designed for panel mounting. Before mounting the 3115T R4 to the panel, check the cut out dimensions as shown in figure 2–6. Then, mount it to the panel using ten supporters, as shown in the figure 2–7 below.



All dimensions in inches (mm)

Figure 2–6. Panel Cutout Dimensions

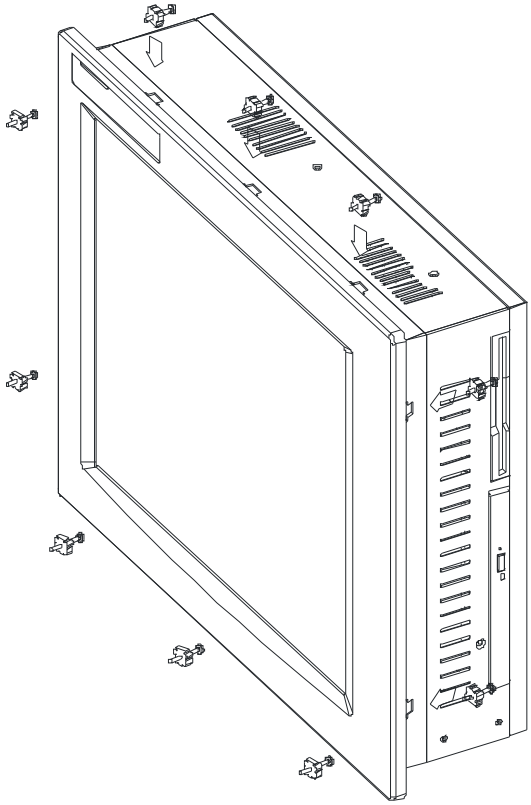
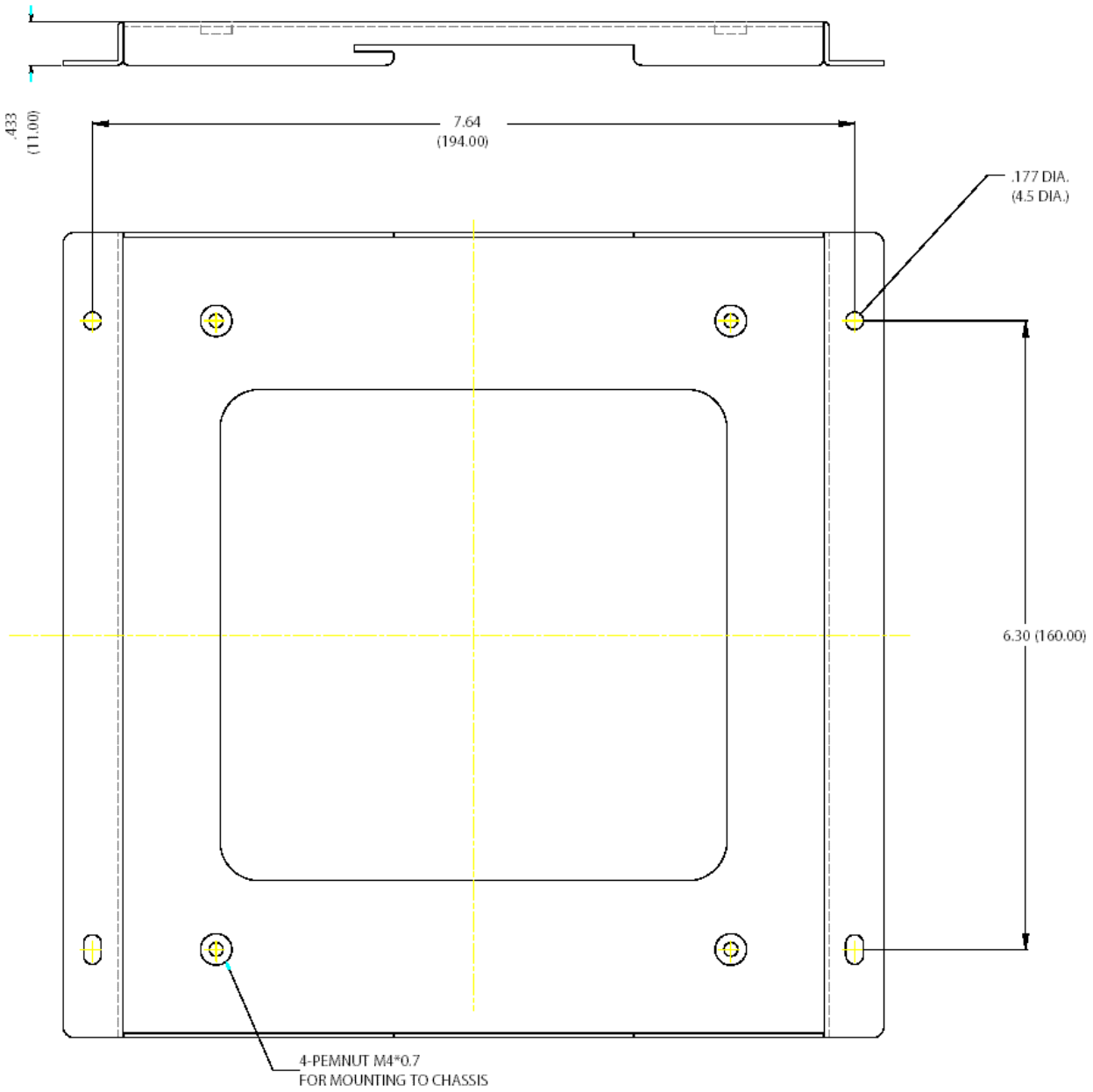


Figure 2–7. Panel Mounting

Wall Mounting

The 3115T R4 is suitable for wall mount using the included brackets and hardware. See figure 2–8 for wall mounting dimensions. See figure 2–9 for a wall-mounting diagram.



All dimensions are in inches (mm).

Figure 2–8. Wall Mount Dimensions

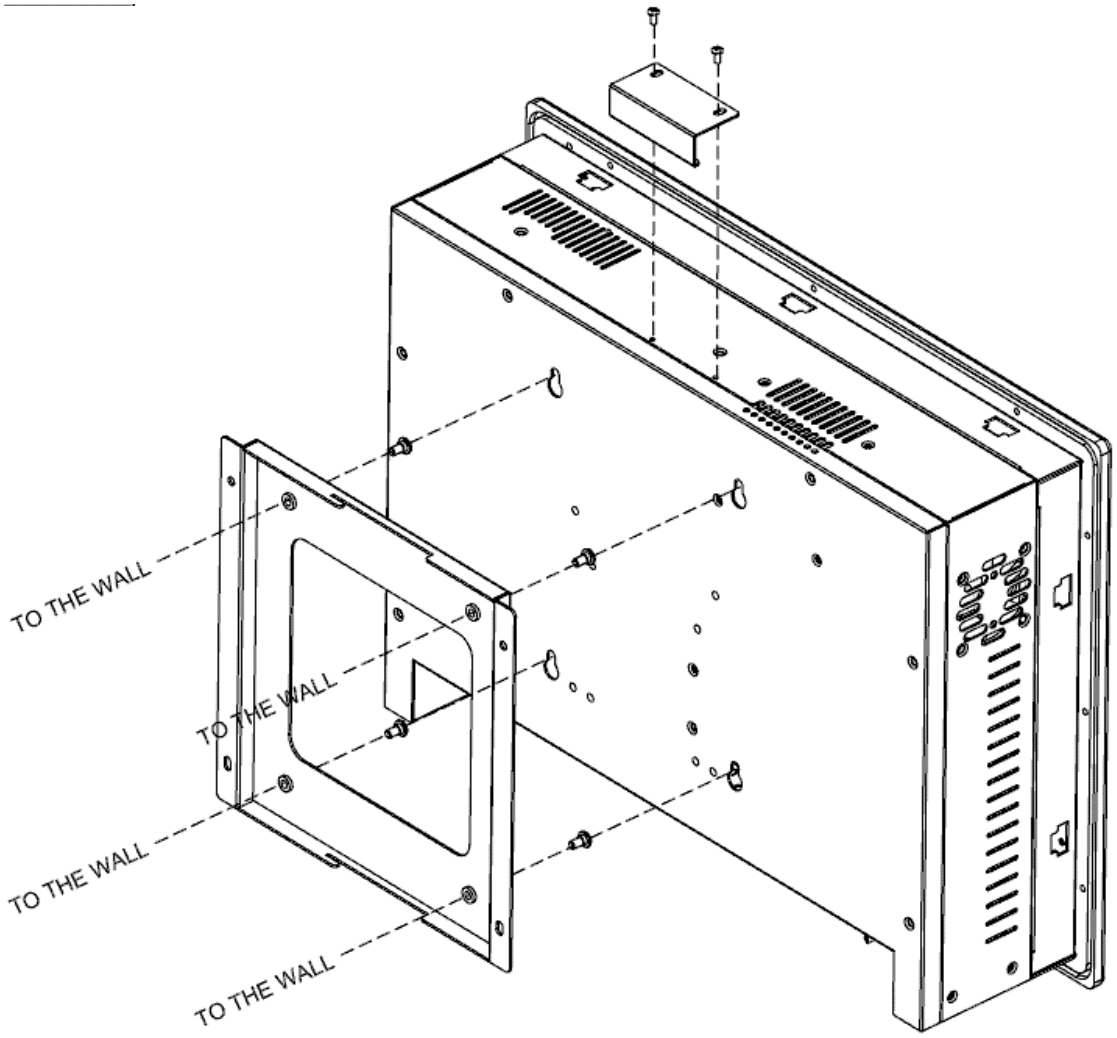
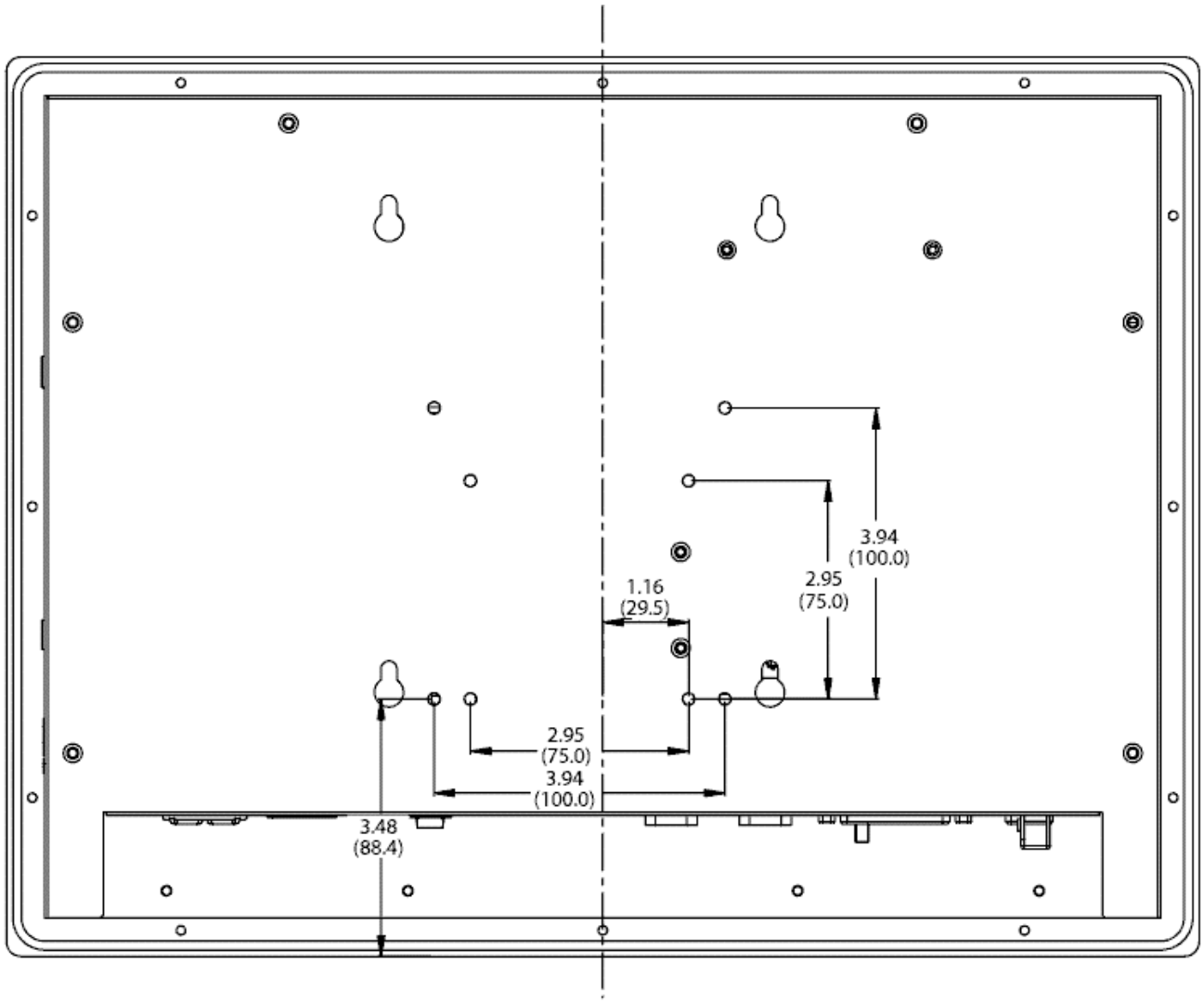


Figure 2–9. Wall Mounting

Arm Mounting

The 3115T R4 also accommodates 75/100 mm interface pads for arm mounting. Figure 2–10 gives the dimensions for arm mounting.



All dimensions in inches (mm)

Figure 2–10. Arm Mounting Dimensions

Chapter 3 – POS-370 Control Board and Award BIOS Setup

POS-370N Multimedia POS Control Board

Product Overview

The 3115T R4 is equipped with a POS-370N Socket 370 Pentium III® (FC-PGA) with Multimedia and a 10/100Mbps Ethernet embedded board. It is equipped with a high-performance Celeron 1.2 GHz or Pentium III (FC-PGA) 1.26 GHz processor and advanced high performance multi-mode I/O.

This board has a built-in IDE Interface CompactFlashDisk™ Flash Disk for embedded application. The CompactFlashDisk™ Flash Disk is 100% compatible as a hard disk drive, allowing users to run any DOS command without need of extra software utility programs.

Two advanced high-performance LPC super I/O chips, the ITE (IT8705F) and NS (NS87366), are used in the POS-370N board. The on-chip UARTs are compatible with the NS16C550. The parallel port and FDD interface are compatible with IBM PC/AT architecture.

POS-370N uses the advanced SIS, SIS630ST Chipset, which is 100% PCI compatible chipset with PCI 2.1 standard. In addition, this board provides two 168-pin sockets for its on-board DRAM. The DIMM module is a 3.3V SDRAM and accommodates up to 512MB for each module.

Specifications

- CPU: Supports Celeron or Pentium III (FC-PGA) processor. Supports 133MHz FSB.
- Expansion Bus: PCI bus, expansion to support PCI bus signal
- DMA channels: 7
- Interrupt levels: 15
- Chipset: SIS630ST 66/100/133MHz CPU/DRAM Clock
- RAM: Two 168-pin DIMM sockets support SDRAM RAM module, up to 1GB.
- AGP VGA Controller: On chip SIS300 3D (Share memory up to 64MB RAM)
- 10/100Mbps Ethernet Controller: Intel 82559, Auto-sensing interface to 10Mbps, 100Mbps Network (RJ 45)

- Ultra DMA/66 (Enhanced PCI IDE Interface): The Ultra DMA/66 IDE can handle data transfer up to 66MB/second and is compatible with existing ATA-2 IDE specifications.
- Three 16C550 RS-232C Ports (one used by the touch screen)
- One RS-232 or RS-422/485 Port (RS-485 features auto-direction control--no extra direction control is needed).
- Two EPP/ECP parallel ports, one floppy port (three ports total external to the 3115T)
- Floppy disk drive
- Four high-speed Serial ports: NS16C550 compatible UARTs (three ports total external to the 3115T, one used for the touch screen).
- Bi-directional parallel port
- IrDA port: Support First Infrared (FIR) and Amplitude Shift. Keyed IR(ASKIR) interface internal to the 3115T.
- Two USB 1.1 ports
- Watchdog timer: Can be set to 1 minute (minimal) or above period. Reset is generated when CPU does not periodically trigger the timer. Your program uses hex 440 to control the watchdog and generate a system reset.
- CompactFlash Disk™: The Flash Disk provides 100% compatibility with IDE hard disk.
- Sound Blaster compatible audio chipset
- Wake-Up Function: Supports Wake-On-Lan and Wake-On-Ring.
- Mouse & Keyboard Connector: PS/2 Mouse Port Expansion Keyboard. (Requires Y-adapter for both, external to the 3115T).
- Operating Humidity: 5 ~ 95 %, non-condensing

.

POS-370N CPU Board Layout

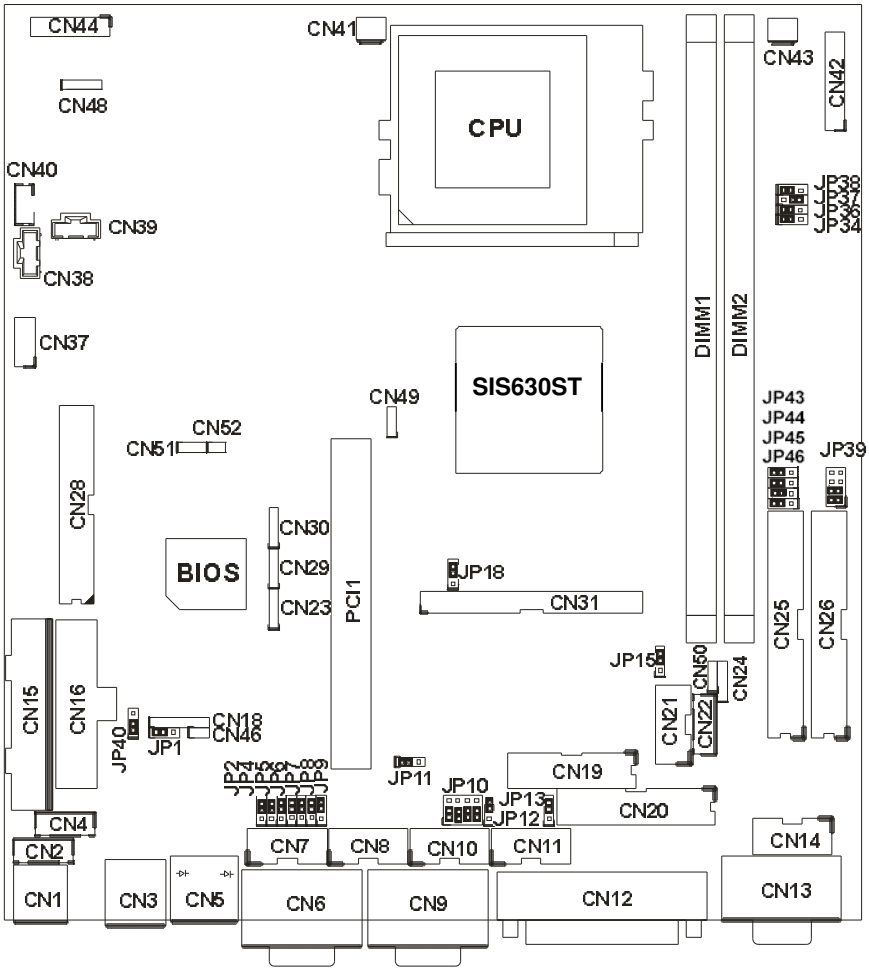


Figure 3–1. POS-370N Board Layout

Caution

Some components on POS-370N are very sensitive to static discharges. To protect it from unintended damage, be sure to follow these precautions:

1. Ground yourself to remove any static charge before touching your POS-370N. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
2. Handle your POS-370N by its edges. Don't touch IC chips, leads or circuitry if not necessary.
3. Do not plug any connector or jumper while the power is on.
4. Do not put your POS-370N unprotected on a flat surface, as the board has components on both sides.

Jumper Settings

Setting the CPU of POS-370N

JP34,36,37,38: CPU & DRAM FREQUENCY SETTING (H/W)

Table 3–1. Settings for JP 34, 36, 37, and 38

CPU/DRAM	JP34	JP36	JP37	JP38
66/66	2-3	2-3	2-3	1-2
100/100	1-2	1-2	2-3	1-2
133/133	1-2	1-2	1-2	2-3

JP39: CPU MULTIPLIER SETTING (AUTO)
Normally the CPU from Intel has fixed multipliers. In this case POS-370N will automatically follow the CPU's fixed multiplier settings no matter the JP39 jumper setting.

Table 3–2. Settings for JP39

Ratio	1-2	3-4	5-6	7-8
3.0 x	ON	OFF	OFF	OFF
3.5 x	ON	OFF	ON	OFF
4.0 x	OFF	ON	OFF	OFF
4.5 x	OFF	ON	ON	OFF
5.0 x	ON	ON	OFF	OFF
5.5x	ON	ON	ON	OFF
6.0x	OFF	OFF	OFF	ON
6.5x	OFF	OFF	ON	ON
7x	ON	OFF	OFF	ON
7.5x	OFF	OFF	ON	ON
8x	OFF	ON	OFF	ON

CompactFlashDisk™ Flash Disk Setting

The CompactFlashDisk™ is 100% compatible to IDE hard disk. It is easy and reliable "plug and play" technology. The CompactFlashDisk™ is available from 8MB to 128MB.

JP12: CompactFlashDisk™ IDE Master & Slave Setting

Pin No.	Description
Open	Slave
Short	Master

Clear CMOS Setup

If you forget the CMOS password, you can clear or reset it by closing the JP18. After JP18 (1-2) is closed, turn on the power for about 3 seconds then turn it off and open the JP18 (1-2). After reboot, enter BIOS (DEL) and select "Load Optimized Defaults". Then select "Save and Exit". Now the password has been cleared from your CMOS.

JP18: Clear CMOS Setup

Pin No.	Description
2-3	Normal Operation
1-2	Clear CMOS Setup

LCD Panel Power Setup

JP15: LCD Power Setting

JP15	Description
2-3	+3.3V
1-2*	+5V

* Set to +5V is **NOT** standard

COM2 RS-232/422/485 Selection

JP10, JP11: COM2 Mode Selection

JP10	JP11	Description
1-2,4-5,7-8,10-11	1-2	RS232
2-3,5-6,8-9,11-12	2-3	RS422
2-3,5-6,8-9,11-12	2-3	RS485

COM Port RI and Voltage Selection

JP2, JP4: Set pin 9 of COM1 as signal RI or voltage source

JP2	Description
2-3	COM1 RI Pin Use RI
1-2	COM1 RI Pin Use Voltage

JP4	Description
2-3	COM1 RI Pin Use Voltage +12V
1-2	COM1 RI Pin Use Voltage +5V

* If JP2 Uses (2-3) Don't care JP4

JP7, JP6: Set pin 9 of COM2 as signal RI or voltage source

JP7	Description
2-3	COM2 RI Pin Use RI
1-2	COM2 RI Pin Use Voltage

JP6	Description
2-3	COM2 RI Pin Use Voltage +12V
1-2	COM2 RI Pin Use Voltage +5V

* If JP7 Uses (2-3) Don't care JP6

JP13, JP5: Set pin 9 of COM3 as signal RI or voltage source

JP13	Description
2-3	COM3 RI Pin Use RI
1-2	COM3RI Pin Use Voltage

JP5	Description
2-3	COM3 RI Pin Use Voltage +12V
1-2	COM3RI Pin Use Voltage +5V

* If JP13 Uses (2-3) Don't care JP5

JP9,JP8: Set pin 9 of COM4 as signal RI or voltage source

JP9	Description
2-3	COM4 RI Pin Use RI
1-2	COM4RI Pin Use Voltage

JP8	Description
2-3	COM4 RI Pin Use Voltage +12V
1-2	COM4RI Pin Use Voltage +5V

* If JP9 Uses (2-3) Don't care JP8

IR Power Selection

JP1: Select the operating voltage for IR (infrared)

JP1	Descripiton
1-2	VCC
2-3	5V Standby

USB Power Selection

JP40: Select the operating voltage for USB

JP40	Description
1-2	VCC
2-3	5V Standby

Parallel Port

This port is usually connected to a printer. The POS-370N includes an on-board parallel port, accessed through a 25-pin D-type female connector CN12 and 26-pin flat-cable connector CN20.

LPT1: Parallel Port Connector (CN12)

Table 3–3. LPT1 Pinout

Pin No.	Description	Pin No.	Description
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND		

LPT2: Parallel Port Connector (CN20)

Table 3–4. LPT2 Pinout

Pin No.	Description	Pin No.	Description
1	STROBE#	14	GND
2	AUTO FORM FEED #	15	DATA 6
3	DATA 0	16	GND
4	ERROR#	17	DATA 7
5	DATA 1	18	GND
6	INITIALIZE	19	ACKNOWLEDGE
7	DATA 2	20	GND
8	PRINTER SELECT LN#	21	BUSY
9	DATA 3	22	GND
10	GND	23	PAPER EMPTY
11	DATA 4	24	GND
12	GND	25	PRINTER SELECT
13	DATA 5	26	NC

Serial Ports

The POS-370N offers four high-speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports (COM1/COM2/COM3/COM4).

COM1: Serial Port 2x5 pin header Connector (CN7)

Table 3–5. COM1 Pinout (CN7)

Pin No.	Description	Pin No.	Description
1	DCD	6	CTX
2	DSR	7	DTR
3	RXD	8	RI
4	RTS	9	GND
5	TXD	10	NC

COM1: Serial Port DB-9 Male Connector (CN6)

Table 3–6. COM1 Pinout (CN6)

Pin No.	Description
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

COM2: Serial Port 2x5 pin header Connector (CN10)

* COM2 supports three modes: RS232, RS422, RS485 (For 2x5 pin header Connector).

Table 3–7. COM2 Pinout (CN10)

Pin No.	RS232 Mode	RS422 Mode	RS485 Mode
1	DCD	TXD-	RTX-
2	DSR	RX-	NC
3	RXD	TXD+	RTX+
4	RTS	RX+	NC
5	TXD	NC	NC
6	CTX	NC	NC
7	DTR	NC	NC
8	RI	Voltage	Voltage
9	GND	NC	NC
10	NC	NC	NC

COM2: Serial Port DB-9 Male Connector (CN9)

* COM2 supports three modes: RS232, RS422, RS485 (For DB-9 Connector).

Table 3–8. COM2 Pinout (CN9)

Pin No.	RS232 Mode	RS422 Mode	RS485 Mode
1	DCD	TXD-	RTX-
2	RXD	TXD+	RTX+
3	TXD	NC	NC
4	DTR	NC	NC
5	GND	NC	NC
6	DSR	RX-	NC
7	RTS	RX+	NC
8	CTX	NC	NC
9	RI	Voltage	Voltage

COM3: Serial Port 2x5 pin header Connector (CN11)

Table 3–9. COM3 Pinout (CN11)

Pin No.	Description	Pin No.	Description
1	DCD	6	CTX
2	DSR	7	DTR
3	RXD	8	RI
4	RTS	9	GND
5	TXD	10	NC

COM4: Serial Port 2x5 pin header Connector (CN8)

Table 3–10. COM4 Pinout (CN8)

Pin No.	Description	Pin No.	Description
1	DCD	6	CTX
2	DSR	7	DTR
3	RXD	8	RI
4	RTS	9	GND
5	TXD	10	NC

Keyboard/Mouse Connector

The POS-370N provides one external keyboard and mouse connector. A Y-adapter is required to use both.

CN1: Extended Keyboard & PS/2 Mouse 6-pin Mini Din Connector

Pin No.	Description
1	KB DATA
2	MS DATA
3	GND
4	VCC
5	KB CLOCK
6	MS CLOCK

CN4: 5-pin Header Keyboard Connector

Pin No.	Description
1	KB CLOCK
2	KB DATA
3	N/C
4	GND
5	+5V

CN2: PS/2 Mouse 5-pin Header Connector

Pin No.	Description
1	MS DATA
2	N/C
3	GND
4	+5V
5	MS CLOCK

External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN42 connector.

CN42: Multi Panel

Table 3–11. External Switches and Indicators (CN42)

Pin No.	Description	Pin No.	Description
1	SPEAKER	11	POWER-VCC
2	ACPI LED	12	N/C
3	N/C	13	GND
4	+5V	14	KEYLOCK
5	RESET SW	15	GND
6	GND	16	GND
7	IDE LED -	17	N/C
8	IDE LED+	18	ATX POWER CONTROL
9	ATX POWER BUTTON	19	ATX 5VSB
10	GND	20	ATX 5VSB

USB Port Connector

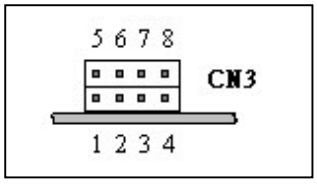
The POS-370N has five built-in USB ports for the future new I/O bus expansion.

CN23, 29, 30: Pin Header USB Connector

Pin No.	Description
1	VCC
2	USBD0-
3	USBD0+
4	GND

CN3: 2 External USB Connectors

Pin No.		Description
1	5	VCC
2	6	USBD0-
3	7	USBD0+
4	8	GND



IrDA Infrared Interface Port

POS-370N built-in IrDA port supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. If you want to use the IrDA port, you have to configure the FIR or ASKIR model in the BIOS's Peripheral Setup's COM2. The normal RS-232 COM2 will be disabled.

CN18: IrDA Connector

Pin No.	Description
1	VCC
2	CIR-TX
3	IR-RX
4	GND
5	IR-TX
6	CIR-RX

* Pin 2, 6 Support CIR

VGA Connector

The built-in 10-pin VGA connector can be connected directly to your monochrome CRT monitor as well as high-resolution color CRT monitor.

CN13: 15-pin Female VGA Connector

Table 3–12. VGA Connector Pinout (CN13)

Pin No.	Description	Pin No.	Description
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DDC DAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDC CLK
8	GND		

CN14: 10-pin Connector

Table 3–13. VGA Connector Pinout (CN14)

Pin No.	Description	Pin No.	Description
1	RED	6	GND
2	SMCLK	7	H-SYNC
3	GREEN	8	GND
4	SMDATA	9	V-SYNC
5	BLUE	10	GND

LAN RJ45 Connector

POS-370N is equipped with an Intel 82559 10/100Mbps Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as follows.

CN5: LAN 1 RJ45 Connector

Table 3–14. LAN RJ45 Connector (CN5)

Pin No.	Description
1	TX+
2	TX-
3	RX+
4	N/C

Pin No.	Description
5	N/C
6	RX-
7	N/C
8	N/C

Fan Connector

The POS-370N provides one CPU cooling fan connector and one-system fan connectors. These connectors can supply 12V/500mA to the cooling fan.

CN41: CPU Fan Connector

Pin No.	Description
1	Fan Sensor
2	+12V
3	GND

CN43: System Fan Connector

Pin No.	Description
1	Fan Sensor
2	+12V
3	GND

LCD Backlight Connector

CN22: LCD Backlight Connector

Pin No.	Description
1	NC
2	ENABKL
3	GND
4	+12V
5	GND

Home Networking Connector (Optional)

CN49: Home Networking Connector

Pin No.	Description
1	HRXP
2	GND
3	HRXN

* Need Transformer Board

Audio Line IN

CN40: Audio CD IN (2.0mm)

Pin No.	Description
1	CD IN_R
2	GND
3	CD IN_L
4	GND

CN38: Audio Video IN (2.54mm)

Pin No.	Description
1	CD IN_R
2	GND
3	GND
4	CD IN_L

CN39: Audio AUX IN (2.54mm)

Pin No.	Description
1	CD IN_R
2	GND
3	GND
4	CD IN_L

Audio Panel

CN44: Audio Panel

Table 3–15. Audio Panel Pinout (CN44)

Pin No.	Description	Pin No.	Description
1	Line Out R	9	Line In R
2	GND	10	Line In L
3	Line Out L	11	GND
4	GND	12	GND
5	Line Out R	13	SPK Out R
6	Line Out L	14	SPK Out L
7	GND	15	MIC In
8	GND	16	GND

Audio SPK Output Connector

CN48: Audio SPK Output Connector

Pin No.	Description
1	SPK-R
2	GND
3	GND
4	SPK-L

Chassis Intrusion Detection Connector

CN51: Chassis Intrusion Detection Input Connector

Pin No.	Description
1	Pull_High
2	CHAS_IN
3	GND

* Need Pin 1 and Pin 2 short → Active

CN52: Chassis Intrusion Detection Output Connector

Pin No.	Description
1	CHAS_OUT
2	5VSB

* Normal → Pin 1 High
* Active → Pin 1 Always Low (If JP41 Pin 2 short to Pin 1)

User Mode OSD Feature

The 3115T R4 has user mode on screen display (OSD) adjustment controls. The following table describes each function of the OSD controls.

Table 3–16. User Mode OSD Feature

Feature	Description
Auto-Adjustment	This feature will automatically adjust the H/V position, frequency, phase, and black level.
Auto Phase	This feature will automatically adjust the sampling.
Brightness	This function will adjust the offset value of ADC. Setting this value too high or too low will decrease the quality of images.
Contrast	This option is used to adjust the contrast level on the screen and will adjust the gain value of ADC. Adjusting this value too high or too low will decrease the quality of images.
DOS/GFX	This option is used to select the VGA input signal in either text or graphic mode. (This option is only available on resolutions of 720/640x400 or 720/640x350). Standard IBM modes 350 and 400 have the same Hsync. and Vsync. Values. The display control circuit cannot differentiate between the Hsync. And Vsync. values automatically, so the user should adjust them manually to match the proper VGA mode .
H. Position	This option is used to adjust horizontal display position of image.
V. Position	This option is used to adjust vertical display position of image.
Language	This option is used to select the language used on the OSD display. The display control circuit can support 2 languages on the OSD display. English is the default language.
Revert	This option is used to reset the original parameters to the factory's OSD data area of the system EEPROM (24c16) device. When the user over-adjusts the OSD data and sees no improvement in the quality, then the user can select this feature and the display control circuit will reload default BIOS setting and re-initialize the system.
Save	This option is used to save the parameters into the EEPROM (24c16) system's user OSD adjustment data area and close the OSD. Whenever the user adjusts any parameters, this option will save the changed data on to the EEPROM (24c16) so that the MPU will use the stored data to initialize the display control circuit system on future re-boots.
Main Menu	Each level of the OSD has an item named Main Menu, which allows the user to exit the current level and return to the main menu.
Exit	Press the EXIT key to exit the OSD menu when you are finished.

Award BIOS Setup

This section describes the Award Setup program built into the ROM BIOS. The setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

Starting Setup

The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

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

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Using Setup

In general, you use the arrow keys to highlight items, press Enter to select, use the PgUp and PgDn keys to change entries, press F1 for help and press Esc to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Table 3–17. Using Setup

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the optimized default CMOS value
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press Esc or the F1 key again.

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the Award BIOS supports an override to the CMOS settings, which resets your system to its defaults.

The best advice is to only alter settings that you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a

seemingly small change to the chipset setup has the potential for causing you to use the override.

Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press Enter to accept and enter the sub-menu.

Standard CMOS Feature	Frequency/Voltage Control
Advanced BIOS Feature	Load Fail-Safe Defaults
Advanced Chipset Feature	Load Optimized Defaults
Integrated Peripherals	Set 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….	

Figure 3–2. CMOS Setup Utility

Note: A brief description of each highlighted selection appears at the bottom of the screen.

The main menu includes the main setup categories listed in table 3–18. Note that some systems may not include all entries.

Main Menu Selections

Table 3–18. Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH: MM: SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press Enter to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press Enter to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press Enter to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press Enter to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
LCD&CRT	Both	Select LCD & CRT Display
Panel	Hardware Setting 800x600 TFT1 800x600 TFT2 1024x768 18bit TFT1 1024x768 18bit TFT2 1024x768 18bit TFT3 1024x768 18bit TFT4 1024x768 24bit TFT	Select Panel Type. Every type is predefined with a special timing. You may try each setting according to your LCD. However, not every kind of LCD will be supported.
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the PgUp or PgDn keys to select the value you want in each item.

Standard CMOS Features

Date:	Mon, Feb 8 1999	Item Help
Time:	16:19:20	
		Menu Level ➢
➢ IDE Primary Master	2557 MB	
➢ IDE Primary Slave	None	Change the day, month, year and century
➢ IDE Secondary Master	None	
➢ IDE Secondary Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
LCD&CRT	Both	
Panel	Hardware Setting	
Halt On	All Errors	
Based Memory	640K	
Extended Memory	64512K	
Total Memory	65536K	

↑↓ ← → Move	F1:General Help
Enter: Select	F5: Previous Values
+/-/PU/PD: Value	F6: Fail-safe defaults
ESC: Exit	F7:Optimized Defaults
	F10:Save

Figure 3–3. Standard CMOS Features

IDE Adapters

The IDE adapters control the hard disk drive. Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3–19 to configure the hard disk.

IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto 2557 MB	Menu Level ➢➢
Access Mode	Auto	
Capacity	xxx MB	To auto-detect the HDD's size, head... on this channel
Cylinder	4956	
Head	16	
Precomp	0	
Landing Zone	4955	
Sector	63	

↑↓ ← → Move	F1:General Help
Enter: Select	F5:Previous Values
+/-/PU/PD: Value	F6:Fail-safe defaults
ESC: Exit	F7:Optimized Defaults
	F10:Save

Figure 3–4. CMOS Setup Utility

Table 3–19. Hard Disk selections

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE!
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	Normal LBA Large Auto	Choose the access mode for this hard disk
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Advanced BIOS Features

Virus Warning	Enabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	Menu Level ➢ Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
CPU L2 Cache ECC Checking	Enabled	
Processor Number Feature	Enabled	
Quick Power On Self Test	Disabled	
First Boot device	Floppy	
Second Boot device	HDD-0	
Third Boot device	Floppy	
Boot other device	Disabled	
Onboard LAN Boot ROM	Disabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up NumLock Status	Off	
Gate A20 Option	Normal	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
Video BIOS Shadow	Enabled	

↑↓ ← → Move	F1:General Help
Enter: Select	F5:Previous Values
+/-/PU/PD: Value	F6:Fail-safe defaults
ESC: Exit	F7:Optimized Defaults
	F10:Save

Figure 3–5. CMOS Setup Utility

Virus Warning

This allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, the BIOS will show a warning message on screen and the alarm will beep.

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

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

CPU L2 Cache ECC Checking

This item allows you to enable/disable CPU L2 Cache ECC checking.

The choice: Enabled, Disabled.

Processor Number Feature

Some of the new generations of socket-370N processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number, use this item to suppress the processor number.

The choice: Enable, Disable.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST. If set to Enable, the BIOS will skip memory check.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected of these items.

The choices: Floppy, LS/ZIP, HDD, SCSI, CDROM, Disabled

Note

If "other" boot option is enabled, the unit will boot from the CompactFlash (if the CF card has boot files loaded).

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Enabled/Disabled.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled.

Typematic Rate (Chars/Sec)

The Typematic rate sets the number of times a second keystroke is repeated when the key is held down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

The Typematic delay sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note

To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press Enter, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD For Win 95

Whether report no FDD for Win 95 or do report FDD for Win 95.

The choice: Yes, No.

Video BIOS Shadow

This item allows the video BIOS to be copied to system memory for faster performance.

The choice: Enable, Disable.

Advanced Chipset Features

Advanced Chipset Features

Advanced DRAM Control 1	Press Enter	Item Help
Advanced DRAM Control 2	Press Enter	
System BIOS Cacheable	Disabled	Menu Level ➢
Video BIOS Cacheable	Disabled	
Memory Hole At 15M-16M	Enabled	
AGP Aperture Size	64MB	
Graphic Window WR Combin	Enabled	
Concurrent function (MEM)	Enabled	
Concurrent function (PCI)	Enabled	
CPU Pipeline Control	Enabled	
PCI Delay Transaction	Enabled	
Power-supply Type	AT	
Memory Parity Check	Enabled	

↑↓ ← → Move	F1:General Help
Enter: Select	F5:Previous Values
+/-/PU/PD: Value	F6:Fail-safe defaults
ESC: Exit	F7:Optimized Defaults
	F10:Save

Figure 3–6. CMOS Setup Utility

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

Advanced DRAM Control 1/2 Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Table 3–20. Advanced DRAM Control ½ Settings

Setting	Description
Auto Configuration	This item will automatically configure the chipset timing. Select 'Manual' to enter a specific timing value. The choice: Manual, Auto, 100MHZ, 133MHZ.
SDRAM RAS Active Time	This item defines SDRAM ACT to PRE command period. The choice: 6T, 7T, 5T, 4T.
SDRAM RAS Pre-charge Time	This item defines SDRAM PRE to ACT command period. The choice: 3T, 2T, 4T, Reserved.
RAS to CAS Delay	This item defines SDRAM ACT to Read/Write command period. The choice: 3T, 2T, 4T, Reserved.
DRAM Background Command	This item is lead-off time control for DRAM background command. When 'Delay 1T' is selected, background commands are issued one clock after the memory address (MA) command has been issued. When 'Normal' is selected, background commands and MA are issued at the same time. The choice: Delay 1T, Normal.
LD-Off DRAM RD/WR Cycles	The item is lead-off time control for DRAM Read/Write Cycles. When 'Delay 1T' is selected, the memory read/write command is issued one clock pulse after the memory address (MA) is issued. When 'Normal' is selected, the read/write command and MA are issued at the same time. The choice: Delay 1T, Normal.
Write Recovery Time	This item defines the Data-in to PRE command period. The choice: 1T, 2T
VCM REF To ACT/REF Delay	This item defines VCM REF to REF/ACT command period. The choice: 10T, 9T.
VCM ACCT To ACT/REF Delay	This item defines VCM ACT to ACT/REF command period. The choice: 10T, 9T, 8T, Reserved.
Early CKE Delay 1T Cntrl	When this item is enabled, CKE is driven out from flip-flop. It is used when system operates under low frequency and CKE delay adjustment method defined in the 'Early CKE Delay Adjust' setting, which cannot meet the setup time and hold time requirements. The choice: Normal, Delay 1T.
Early CKE Delay Adjust	This item controls the timing for CKE. Various delay options are provided to ensure that CKE can meet the SDRAM setup time and hold time specification when CKE is driven out. The choice: 1ns, 2ns, 3ns, 4ns, 5ns, 6ns, 7ns, 8ns.
Mem Command Output Time	This item is to control the timing to drive memory command onto memory bus. The choice: Normal, Delay 1T.
SDRAM/VCM CAS Latency	When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The choice: 2, 3, SPD
SDRCLK Control	This item controls the phase of SDRCLK that lags behind SDCLK. The choice: Enabled, Disabled.

Setting	Description
SDWCLK Control CS#/CKE	This item controls the phase of SDWCLK used for chip set select signals pin that lags ahead SDCLK. The choice: Enabled, Disabled.
SDWCLK Control MA/SRAS	This item controls the phase of SDWCLK used for MA/ SRAS signals that lags ahead SDCLK. The choice: +5.0ns~-2.5ns (Default 0.0ns)
SDWCLK Control DQM/MD	This item controls the phase of SDWCLK used for DQM/MD signals that lags ahead SDCLK. The choice: +5.0ns~-2.5ns (Default 0.0ns)
EGMRCLK Control	This item controls the phase of EGMRCLK that lags behind SDCLK. The choice: -1.0ns~+6.5ns (Default 0.0ns)
EGMWCLK Control	This item controls the phase of EGMWCLK that lags ahead SDCLK. The choice: +5.0ns~-2.5ns (Default 0.0ns)

System BIOS Cacheable

Selecting 'Enabled' allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video RAM Cacheable

Selecting 'Enabled' allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Memory Hole at 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The choice: Enabled, Disabled.

AGP Aperture Size

This item allows you to select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The choice: 4M, 8M, 16M, 32M, 64M, 128M, 256M.

Graphic Window WR Combin

Use this item to enable or disable CPU support for WR Combin.

The choice: Enable, Disable

Concurrent Function (MEM)

This item allows you to set the CPU & PCI Masters Concurrently Access Memory Function. Selecting 'Enabled' allows CPU access memory cycles and PCI masters access memory cycles to be concurrently issued onto host bus and PCI bus, respectively. The memory access cycles will be rearranged by SIS630 to write to memory sequentially.

The choice: Enabled, Disabled

Concurrent Function (PCI)

This item allows you to set the CPU & PCI Masters Concurrently Access PCI Bus Function. Selecting 'Enabled' allows CPU access PCI bus cycle and PCI masters access memory cycles to be concurrently issued onto host bus and PCI bus, respectively.

The choice: Enabled, Disabled.

CPU Pipeline Control

When this item is enabled, only one pending cycle is allowed at one time.

When this item is disabled, there might be more than two pending cycles at one time depends on the CPU behavior.

The choice: Enabled, Disabled.

PCI Delay Transaction

If the chipset has an embedded 32-bit write buffer to support delay transaction cycles, you can enable this item to provide compliance with PCI Ver.2.1 specifications. We recommend that you leave this item at the default value.

The choice: Enable, Disable.

Power-Supply Type

This item controls the power-supply type to AT or ATX.

The choice: AT, ATX.

Memory Parity Check

Enabled this item to test the boot-up memory.

The choice: Enabled, Disabled.

Integrated Peripherals

Integrated Peripherals

SIS 630 OnChip IDE Device	Press Enter	Item Help _____ _____ Menu Level ➢ If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support
SIS 630 OnChip PCI Device	Press Enter	
Super I/O Device	Press Enter	
USB Controller	Enabled	
USB Keyboard Support	Enabled	
Init Display First	PCI Slot	
IDE HDD Block Mode	Enabled	
System Share Memory	8MB	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Figure 3–7. CMOS Setup Utility

SIS 630 OnChip IDE Device

Internal PCI/IDE

This chipset contains an internal PCI IDE interface with support for two IDE channels.

The choice: Primary, Secondary, Both.

IDE Primary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In ‘Auto’ mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

Primary Master/Slave UltraDMA

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

The choice: Auto, Disabled.

IDE Burst Mode

Selecting 'Enabled' reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to 'Disabled'. This field does not appear when the Internal PCI/IDE field, above, is 'Disabled'.

The choice: Enabled, Disabled.

SIS 630 OnChip PCI Device

SIS-7018 AC97 AUDIO

Select 'Enabled' to support AC97 Audio.

The choice: Enabled, Disabled.

Onboard FDC Controller

Select 'Enabled' if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select 'Disabled' in this field.

The choice: Enabled, Disabled.

Onboard Serial Port 1/ Port 2/Port 3/Port 4

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows you to select UART mode.

The choice: Enabled, Disabled.

UR4 Duplex Mode

This item allows you to select the IR half/full duplex function.

The choice: Half, Full.

Onboard Parallel Port 1/Port 2

This item allows you to determine access onboard parallel port controller with which I/O address.

The choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, 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 choice: SPP, EPP, ECP, ECP+EPP.

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode.

The choice: 3, 1.

USB Controller

Select 'Enabled' if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

Choices are: Enabled, Disabled.

USB Keyboard Support

Select 'Enabled' if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

Choices are: Enabled, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select 'Enabled' for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

Init Display First

This item allows you to decide to active which bus first (PCI Slot or AGP first).

The choice: PCI Slot, AGP.

System Share Memory Size

This item defines the System Share Memory Size for video.

The choice:2MB, 4MB, 16MB, 32MB, 64MB, 2+2MB, 4+4MB, 8+8MB,16+16MB,32+32MB.

Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Power Management Setup

ACPI function	Enabled	Item Help
ACPI Suspend Type	S3 (STR)	_____
Video Off Option	Susp,Stby -> Off	_____
Video Off Method	V/H SYNC_Blank	Menu Level ➢
Switch Function	Break/Wake	
Hot Key Function As	Power Off	
HDD Off After	Disable	
Power Button Override	Instant Off	
KB Power On Password	Disable	
PM Wake Up Events	Press Enter	
Power Up by Alarm	Press Enter	

↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
F5: Previous Values F6:Fail-safe defaults F7:Optimized Defaults

Figure 3–8. CMOS Setup Utility

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

ACPI Suspend Type

This item allows you to S1 (Power ON Suspend)/S3 (Suspend To RAM) the Advanced Configuration and Power Management (ACPI).

The choice: S1 (POS), S3 (STR).

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always on	Monitor will remain on during power saving modes.
Suspend→Off	Monitor blanked when the systems enters the Suspend mode.
Susp.Stby→ Off	Monitor blanked when the system enters either Suspend or Standby modes
All Modes	Monitor blanked when the system enters any power saving mode.

Video Off Method

This determines the manner in which the monitor is blanked.

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

Switch Function

You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period..

The choice: Break/Wake, Disabled.

Hot Key Function As

Select 'Enabled' if your system has a hot key for soft power off.

The choice: Enabled, Disabled.

HDD Off After

By default, this item is disabled, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or 'Suspend'. This means that you can elect to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.

Power Button Over Ride

You could press the power button for more than four seconds forces the system to enter the Soft-Off state when the system has "hung."

The choice: Soft-Off, Delay 4 Sec.

PM Wake Up Events

IRQ [3-7,9-15], NMI

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are On and Off.

When set to 'On', activity will neither prevent the system from going into a power management mode nor awaken it.

IRQ [3-7, 9-15], NMI

IRQ 8 Break Suspend: You can 'Enable' or 'Disable' monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

Ring/PCIPME Power Up Control

When you select 'Enabled', a signal from ring/PCIPME returns the system to Full On state.

The choice: Enabled, Disabled.

KB Power On Password

This item can be used to prompt the used for a password when the system power is resumed by keyboard action.

The choice: Disable, Enable.

Power Up by Alarm

When you select 'Enabled', the following fields appear. They let you set the alarm that returns the system to Full On state.

Date (of Month) Alarm lets you select a day from 1 to 31. Time Alarm lets you select a time for the alarm in hours, minutes, and seconds.

The choice: Enabled, Disabled.

PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system that allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

PnP/PCI Configurations

		Item Help
Reset Configuration Data	Disabled	----------
		Menu Level ➢
Resources Controlled By	Auto (ESCD)	
➢ IRQ Resources	Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5: Previous Values F6: Fail-safe defaults F7:Optimized Defaults		

Figure 3–9. CMOS Setup Utility

Reset Configuration Data

Normally, you leave this field 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.

The choice: Enabled, Disabled.

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “➢”).

The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The choice: Legacy ISA and PCI/ISA PnP.

PCI/VGA Palette Snoop

Leave this field set to 'Disabled'.

Choices are Enabled, Disabled.

PC Health Status

This section helps you to get more information about your system including CPU temperature, FAN speed and voltages. It is recommended that you contact with your motherboard supplier to get proper value about your setting of the CPU temperature.

PC Health Status

Voltage 0	1.65V	Item Help
Voltage 1	2.49V	----------
Voltage 2	3.37V	Menu Level ➢
Voltage 3	4.97V	
Voltage 4	11.96V	
Voltage 5	3.29V	
Voltage 6	-11.45V	
Voltage 7	4.65V	
Voltage Battery	2.91V	
Temperature1	- 55□	
Temperature2	40□	
Temperature3	79□	
FAN 1 Speed	4153 RPM	
FAN 2 Speed	0 RPM	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1:General Help F5: Previous Values F6: Fail-safe defaults F7:Optimized Defaults

Figure 3–10. CMOS Setup Utility

Voltage 0/1/2/3/4/5/

The chipset reserves 6 inputs for monitoring working voltages from various sources in the system. These voltages may include CPU voltage, power pins of the ATX power (+/-12V, +/-5V, 3.3V...) and others.

Temperature 1/2

The chipset reserves two inputs for monitoring temperatures that are typically the CPU and system temperatures.

Fan 1/2 Speed

The chipset reserves two inputs for monitoring FAN speeds in the system. Usually, one FAN is applied to cool down the CPU and the other one is applied by different purpose.

Frequency/Voltage Control

Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Disabled	Item Help
Spread Spectrum	Disabled	----------
CPU HOST/SDRAM/PCI Clock	Default	Menu Level ➢
CPU Clock Ratio	By H/W	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults

Figure 3–11. CMOS Setup Utility

Auto Detect DIMM/PCI CLK

This item allows you to enable/disable auto detect DIMM/PCI Clock.

The choice: Enabled, Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

The choice: Enabled, Disabled.

CPU Host/DRAM/PCI Clock

This item allows you to select CPU/PCI frequency.

The choice: Default, 66/66/33MHz, 133/133/33MHz, 100/100/33MHz.

CPU Clock Ratio

This item allows you to select CPU clock ratio.

The choice: By H/W 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8.

Defaults Menu

Selecting “Defaults” from the main menu shows you two options, which are described below.

Load Fail-Safe Defaults

When you press Enter on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press Enter on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

Supervisor/User Password Setting

You can set either a supervisor or user password or both. The differences between these three settings are explained below:

SUPERVISOR PASSWORD: Allows a user to enter and change the options of the setup menus.

USER PASSWORD: User can enter but does not have the right to change the options of the setup menus. When you select this function, you will be prompted to create a password.

ENTER PASSWORD: Type the password, up to eight characters in length, and press Enter. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press Enter. You may also press Esc to abort the selection and not enter a password.

To disable a password, just press Enter when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED: When a password has been enabled, it will be required every time you enter Setup. This prevents an unauthorized person from changing your system configuration.

When a password is enabled, you may require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu under Security Option. **If the security option is set to password will be required both at boot and at entry to Setup. If the security option is set to Setup, prompting only occurs when trying to enter Setup.**

Exit Selecting

Save & Exit Setup

Pressing Enter on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing 'Y' stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing Enter on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 4 – Maintenance

The 3115T R4 is designed to withstand the harsh environment of the factory floor. Routine maintenance can help keep your system in good operating condition. Preventive maintenance consists of several basic procedures that will greatly reduce the chance of system malfunction. Schedule preventive maintenance along with the regular equipment maintenance to minimize down time.

General Preventive Maintenance

Here are some preventive measures you can take:

- Clean the monitor screen using a non-residue cleaner such as a mild window cleaning solution or CRT screen cleaner. Take care not to scratch the screen face.
- *Remove dust and dirt from PC components*. If dust builds up on heat sinks and circuitry, an obstruction of heat dissipation could cause the unit to malfunction. If dust reaches the electronic boards, a short circuit could occur.
- *Check the connections to I/O modules,* especially in environments where vibration could loosen the connections. Check to see that all plugs, sockets, terminal strips, and module connections are solid.
- *Remove unnecessary articles, such as drawings or manuals, from the unit.* They can obstruct airflow and create hot spots, which cause the system to malfunction.
- *Do not place noise-generating equipment near the 3115T R4 unit.*

Fuse Replacement

The 3115T R4 unit has no accessible fuse. Return the unit to the factory for fuse replacement.

Recommended Hard Drive Preventive Maintenance

Xycom Automation has recognized that hard drive failures may begin to increase an average of four to five years into the life of most computers used in industrial applications. Therefore, it is our recommendation as a preventive maintenance measure that all hard drives used in these types of applications be replaced before the four to five year time period to avoid any down time related to hard drive failure.

The purpose of this message is to merely bring this to our customer's attention, to offer alternative solutions, and to provide all of our customers with the excellent service they deserve.

Any questions regarding this issue may be directed to our support center at support@xycom.com.

Please note: Xycom recommends frequent backups of your hard drive, especially before beginning preventive maintenance procedures.

Product Repair Program / Returning a Unit to Xycom Automation

Xycom Automation's Product Repair & Customization Department (PR&C) restores equipment to normal operating condition and implements engineering changes that enhance operating specifications. Xycom Automation tests products returned to Xycom with the standard Xycom test diagnostics.

Note

Before sending the unit in for repair, back up the hard drive in case Xycom needs to restore the hard drive to the factory default O/S load.

Follow the steps below to prepare the unit for shipment:

1. Obtain a Return Merchandise Authorization (RMA) number for your unit by calling your nearest Xycom Automation Repair Department or Xycom Automation, Inc. at 734-429-4971.
2. Please have the following information:
   - Company name, shipping and billing address
   - Type of service desired: product repair or product exchange
   - Product model number, part number, quantity, serial number(s), and warranty status
   - Failure mode and failure systems
   - Purchase order number or repair order number
3. Make sure the front panel assembly is properly attached to the unit.
4. Attach failure information to the unit to speed processing.
5. Place the unit securely in its original packaging or an equivalent heavy-duty box.
6. Mark the RMA number on your purchase order and on the outside of the box.
7. Send the unit to the address given when you receive your RMA number.

Chapter 5 – Troubleshooting

Diagnostic Testing

If you suspect that you are having hardware problems with your 3115T R4, you can use the Xycom diagnostic utility to check out the PC's various ports and subsystems. The diagnostic utility is on the Documentation and Support Library CD that was included with the your unit.

The first step is to create a diagnostic diskette. The following steps can be done on any computer with a CD-ROM drive:

1. Create a DOS-bootable diskette
2. Create a temporary folder on the computer hard drive
3. There is a self-extracting zip file on the Documentation and Support Library CD located in:

   DRIVERS\Computer Diagnostics 99290-001\DOS\xydiag

   Run that program and extract the files to the temporary folder you just created.
4. Copy the extracted files onto the DOS-bootable diskette.

When you have created the diskette, insert it into the 3115T R4 unit's floppy drive and re-boot the unit. The menu in Figure 5–2, *Main Menu*, will appear following boot-up. Additional information on the tests is included in the .txt files on the diskette.

Perform the following steps **before** starting the system tests:

1. Place the CPU board jumpers and switches to the factory set positions.
2. Plug the female end of the AC power cable into the side of the unit and the male end into a properly grounded outlet.
3. Connect the serial loopback connector(s) and the printer cable to the appropriate connectors, and connect a PC/AT or PS/2 keyboard. Figure 5–1, *Serial Loopback Connections*, illustrates the wiring necessary for the loopback connection.
4. Default the CMOS setup to the factory settings.

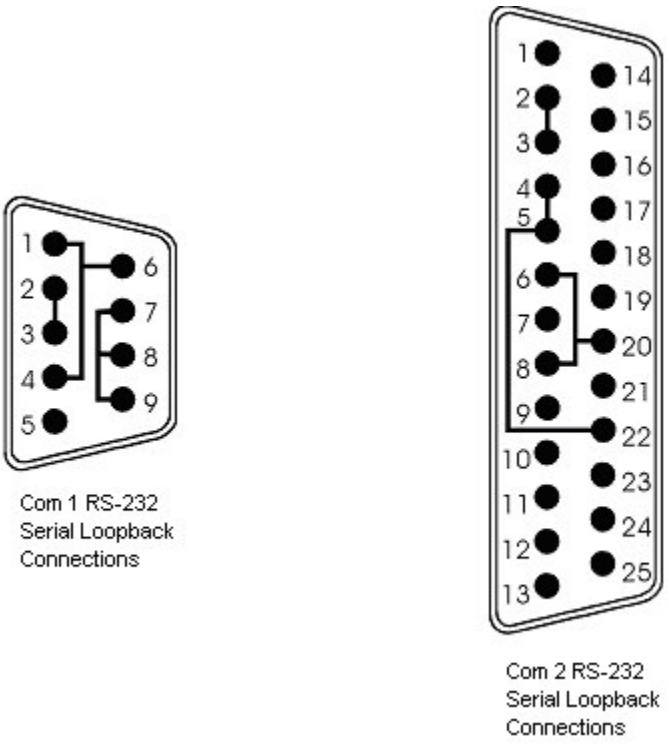


Figure 5–1. Serial Loopback Connections

Running the Tests

To run the test, insert the diagnostics disk into drive A. Turn on the computer (the diagnostics program will boot-up). Figure 5–2 shows the Main Menu.

```
            Copyright 2002, Xycom, Inc. All rights reserved.
          Diagnostic Tests Sequence/Selection Menu (Rel. xx)
1. WILL pause on error                5. Auto-select tests
2. SINGLE PASS test mode              6. Deselect all tests
3. Save setup to file                 7. Quit and exit to DOS
4. Extract setup from a file          8. Return to previous screen

A) RAM Test                           K) Video Interface Test
B) Video RAM Test                     L) Speaker Port Test
C) Extended RAM Test                  M) LPT1: Printer Port Test
D) Real Time Clock Test               N) LPT2: Printer Port Test
E) COM1 Serial Port Test              O) C: Hard Drive Interface Test
F) COM2 Serial Port Test              P) D: Hard Drive Interface Test
G) COM3 Serial Port Test              Q) A: Floppy Drive Interface Test
H) COM4 Serial Port Test              R) B: Floppy Drive Interface Test
I) Math Coprocessor Test              S) Keyboard, Keypad Tests
J) Video Adjustments Test               ≡ = Test Selected

                        [ENTER]=START TESTING
Use the letters to move the cursor and select/deselect, or use the arrow
keys to move, then use the [SPACE] key to select/deselect a test or
function.
```

Figure 5–2. Main Menu

Note

Please read the DIAG.TXT file on the diagnostics disk for detailed information about the tests.

Note

Avoid repeated running of any hard disk diagnostic utility if you use the Solid State (Flash) drive option. The Flash drive has a limited number of writes to each logical sector. Repeated writes from a diagnostic utility will prematurely shorten the life of the drive.

Reinstalling Operating Systems

The 3115T R4 CPU ships with MS-DOS preinstalled. Optionally available, are Windows 98, Windows 2000, Windows NT, and Windows XP Professional operating systems. If you want to install a different operating system, refer to that operating system's manual for directions.

Note

If you need to reinstall the Windows 98, Windows 2000, Windows NT, or Windows XP Professional operating system, you must have an internal CD-ROM drive or an external parallel port CD-ROM drive. Windows NT and Windows XP ship only on CD-ROM.

MS-DOS® Reinstallation

If you need to reinstall MS-DOS, refer to the *Xycom Automation Workstation Recovery Media Software Installation Instructions for Microsoft DOS 6.22* (shipped with systems preinstalled with MS-DOS). This document is devoted to the reinstallation of your MS-DOS operating system and drivers utilizing the Recovery Media provided with your Xycom Automation industrial computer.

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® 98 Reinstallation

If you need to reinstall the Windows 98 operating system, refer to the *Xycom Automation Workstation Recovery Media Software Installation Instructions for Microsoft Windows 98* (shipped with systems preinstalled with Windows 98). This document is devoted to the reinstallation of your Microsoft Windows 98 operating system and drivers utilizing the Recovery Media provided with your Xycom Automation industrial computer.

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® 2000 Reinstallation

If you need to reinstall the Windows 2000 operating system, refer to the *Xycom Recovery for Xycom Automation Windows 2000 Workstation* (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 Xycom Automation industrial computer.

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 NT® Reinstallation

If you need to reinstall the Windows NT operating system, refer to the *Xycom Recovery for Xycom Automation Windows NT Workstation* (shipped with systems preinstalled with Windows NT). This document is devoted to the reinstallation of your Windows NT Workstation 4.0 operating system and drivers utilizing the Recovery Media provided with your Xycom Automation industrial computer.

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 Professional 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.

If you want to install a new operating system or reinstall a current operating system, refer to the operating system's manual for directions.

Installing Drivers

This section describes how to install the drivers associated with the system.

Note

For further assistance, call Xycom Automation technical support at 734–944-0482.

Video Drivers

Video drivers and the expansion utilities are on the Documentation and Support Library CD included with the documentation kit.

Choose the video driver for your operating system from the following directory on the Documentation and Support Library CD:

\DRIVERS\VIDEO\POS370N\SIS\630

Video Expansion

This section deals with the hardware expansion capability of the video controller chip in DOS applications.

Note

It is *not* necessary to read this section if you are a Windows or OS/2® user and do not plan to run DOS applications.

Unlike a CRT monitor, a flat panel display has a fixed horizontal and vertical resolution. There are many DOS video modes whose resolution is less than that of a flat panel display. In order to more efficiently make use of the flat panel display's active area, it is necessary to employ an expansion technique, which stretches the lower resolution information to fill the higher resolution of the display.

For example, DOS defaults to VGA video mode 3+. This is an 80 column, 25-row text only screen whose effective resolution is 640 dots x 400 scan lines. Because of this, the 800 x 600 display of the system will be partially filled by the 640 x 400 resolution of this particular mode. The expansion function uses lower resolutions that will better utilize the display by stretching the information in an attempt to fill the display.

Operating systems such as Microsoft Windows 98 and Windows NT use display drivers to handle the different flat panel displays. Here, expansion is not necessary since there is a specific driver for each resolution display.

Expansion does not add any resolution to the existing information; it simply stretches the information to better fit the display. Text and graphic screens can look somewhat grainy from the process of expansion.

Touch Screen Drivers

If you have a touch screen driver that has been factory installed, you will also receive, pre-loaded and at no extra charge: MS-DOS, Windows 98, Windows 2000, Windows NT, and Windows XP Professional touch screen drivers.

Note

If you ordered a system pre-loaded with an operating system, the touch screen driver was pre-installed.

You must install the corresponding touch screen driver software if you change the operating system. The touch screen drivers are located on the Document and Support Library CD under:

\DRIVERS\TOUCHSREEN\TOUCHKIT

Miscellaneous Drivers

Refer to your operating system and peripheral manuals for information on installing drivers related to these items.

Note

If you ordered a system with Windows pre-loaded, you may have to purchase and install an external parallel port CD-ROM drive, or order your system with a CD-ROM drive pre-installed, to be able to install Windows drivers. The Windows operating system ships only on CD-ROM.

Appendix A – Watchdog Timer

The Watchdog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that cause the system to crash. These conditions may result from an external EMI or a software bug. When the system stops working, hardware on the board will perform hardware reset (cold boot) to bring the system back to a known state.

Three I/O ports control the operation of Watch-Dog Timer.

440 (hex)	Write	Set Watchdog Time period Enable the refresh the Watchdog Timer.
440 (hex)	Write	Disable the Watchdog Timer.

Prior to enable the Watch-Dog Timer, user has to set the time-out period. The resolution of the timer is 1 minute and the range of the timer is from 1 min to 255 min. You need to send the time-out value to the I/O port – 440H, and then enable it by write data from the same I/O port – 440H(value is 01h-ffh). This activates the timer that will eventually time out and reset the CPU board. To ensure that this reset condition won't occur, the Watch-Dog Timer must be periodically refreshed by write the same I/O port 440H(the same value is 01h-ffh). This must be done within the time-out period. (Refer to the example program.) Finally, we have to disable the Watchdog timer by write the I/O port -- 440H (value is 0h). Otherwise, the system could reset unconditionally.

Watchdog Timer Type Setting By RESET

Write port 440: WDT Enable & Time-out Period

PERIOD	Value
1 – 255 min.	01 – FF

Write port 440: WDT Disable

Function	Value
Disable	00

Example assembly program:

```
WDT_PORT  = 440H

;;INITIAL TIMER COUNTER

MOV DX, WDT_PORT
MOV AL, 1  ;;1 minute
OUT DX, AL ;;start counter

W_LOOP:
MOV DX, WDT_PORT
MOV AL, 0
OUT DX, AL  ;;stop counter
MOV DX, WDT_PORT
MOV AL, 1
OUT DX, AL  ;;restart counter

;;ADD YOUR APPLICATION HERE

CMP EXIT_AP, 0
JNE W_LOOP
MOV DX, WDT_PORT
MOV AL, 0
OUT DX, AL
;;EXIT AP
```

Appendix B – Power On Self Test Messages

POST Messages

During the Power On Self Test (POST) if the BIOS detects an error, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

There are two kinds of beep codes in BIOS:

Single long beep followed by three short beeps—This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information.

Repeating long beep—This code indicates that a DRAM error has occurred.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

Table B–1. Error Messages

Error Messages	Cause/Solution
CMOS BATTERY HAS FAILED	CMOS battery is no longer functional. It should be replaced.
CMOS CHECKSUM ERROR	Checksum of CMOS is incorrect. A weak battery may have caused this error; replace if necessary. It may also indicate that CMOS has become corrupt.
DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER	No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk (formatted as a boot device) into Drive A: and press Enter. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached, then reboot the system.
DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP	Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.
DISPLAY SWITCH IS SET INCORRECTLY	The display switch on the motherboard is set to a different setting than indicated in Setup. Determine which setting is correct and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.
DISPLAY TYPE HAS CHANGED SINCE LAST BOOT	Since the last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

Error Messages	**Cause/Solution**
EISA CONFIGURATION CHECKSUM ERROR PLEASE RUN EISA CONFIGURATION UTILITY	The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Verify the card is installed firmly in the slot. When this error appears, the system will boot in ISA mode allowing you to run the EISA Configuration Utility.
EISA CONFIGURATION IS NOT COMPLETE PLEASE RUN EISA CONFIGURATION UTILITY	The slot configuration information stored in the EISA non-volatile memory is incomplete. When this error appears, the system will boot in ISA mode allowing you to run the EISA Configuration Utility.
ERROR ENCOUNTERED INITIALIZING HARD DRIVE	Check that the adapter is installed correctly and all cables are firmly attached. Verify that the correct hard drive type is selected in Setup.
ERROR INITIALIZING HARD DISK CONTROLLER	See the cord is correctly and firmly installed in the bus. Verify the correct hard drive type is selected in Setup. Check jumper settings on the hard drive.
FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT	Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.
INVALID EISA CONFIGURATION PLEASE RUN EISA CONFIGURATION UTILITY	The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. The system will boot in ISA mode allowing you to run the EISA Configuration Utility and correctly program the memory.
KEYBOARD ERROR OR NO KEYBOARD PRESENT	Make sure the keyboard is attached correctly and no keys are being pressed during the boot. If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.
KEYBOARD IS LOCKED OUT - UNLOCK THE KEY	BIOS detected the keyboard is locked. P17 of keyboard controller is pulled low.
MEMORY ADDRESS ERROR AT ...	Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.
MEMORY PARITY ERROR AT ...	Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.
MEMORY SIZE HAS CHANGED SINCE LAST BOOT	Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.
MEMORY VERIFY ERROR AT ...	Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.
OFFENDING ADDRESS NOT FOUND	This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.
OFFENDING SEGMENT	This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.
PRESS A KEY TO REBOOT	This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key to reboot.
PRESS F1 TO DISABLE NMI, F2 TO REBOOT	When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.
RAM PARITY ERROR - CHECKING FOR SEGMENT	Indicates a parity error in Random Access Memory.
SHOULD BE EMPTY BUT EISA BOARD FOUND PLEASE RUN EISA CONFIGURATION UTILITY	A valid board ID was found in a slot that was configured as having no board ID. When this error appears, the system will boot in ISA mode allowing you to run the EISA Configuration Utility.
SHOULD HAVE EISA BOARD BUT NOT FOUND PLEASE RUN EISA CONFIGURATION UTILITY	The board installed is not responding to the ID request, or no board ID has been found in the indicated slot. When this error appears, the system will boot in ISA mode allowing you to run the EISA Configuration Utility.

Error Messages	**Cause/Solution**
SLOT NOT EMPTY	A slot designated as empty by the EISA Configuration Utility actually contains a board. When this error appears, the system will boot in ISA mode allowing you to run the EISA Configuration Utility.
SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...	The present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.
WRONG BOARD IN SLOT PLEASE RUN EISA CONFIGURATION UTILITY	The board ID does not match the ID stored in the EISA non-volatile memory. When this error appears, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.
FLOPPY DISK(S) FAIL (80)	Unable to reset floppy subsystem
FLOPPY DISK(S) FAIL (40)	Floppy type dismatch
HARD DISK(S) FAIL (80)	HDD reset failed
HARD DISK(S) FAIL (40)	HDD controller diagnostics failed
HARD DISK(S) FAIL (20)	HDD initialization error
HARD DISK(S) FAIL (10)	Unable to recalibrate fixed disk
HARD DISK(S) FAIL (08)	Sector Verify failed
MANUFACTURING POST LOOP.	System will repeat POST procedure infinitely while the P15 of keyboard controller is pulled low. This is also used for M/B burn in test.
BIOS ROM CHECKSUM ERROR - SYSTEM HALTED.	The checksum of ROM address F0000H-FFFFFH is bad.
MEMORY TEST FAIL.	BIOS reports the memory test failed if the onboard memory is tested error.

Appendix C – DMA, IRQ and 1st MB Memory

DMA Channel Assignments

Table C–1. DMA Channel Assignments

Channel	Description
0	Available
1	Available
2	Floppy Disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Sound
6	Available
7	Available

IRQ Mapping Chart

Table C–2. IRQ Mapping

IRQ0	System Timer	IRQ8	RTC Clock
IRQ1	Keyboard	IRQ9	USB LAN
IRQ2	Cascade to IRQ Controller	IRQ10	Touchscreen (COM3)
IRQ3	(COM2)	IRQ11	(COM4)
IRQ4	(COM1)	IRQ12	PS/2 Mouse
IRQ5	Sound (LPT2)	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	LPT1	IRQ15	Secondary IDE

Note

All IRQs have been assigned to the listed devices, so if you want to add any additional device interface, you must free the unused IRQ first. For example, if you don't use USB K/B or Mouse, then IRQ10 may be set free.

1st MB Memory Address Map

Table C–3. 1st MB Memory Address Map

Memory Address	Description
00000-9FFFF	System Board extension for ACPI BIOS
A0000-CBFFF	SIS630
F0000-FFFFF	System Board extension for ACPI BIOS
CC000-CFFFF	Unavailable for use by device

I/O Addresses

Table C–4. I/O Addresses

I/O Address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	8254 Timer
060-06F	8042 (Keyboard Controller)
070-07F	Real Time Clock, NMI Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F8-0FF	Math Coprocessor
408-409	Digital Input/Output
170-177 1F0-1F7	Fixed Disk
270-27F	Printer Port (LPT2)
2E8-2EF	Serial Port 4 (COM4)
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
380-38F	SDLC, Bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BB	SIS 630
3C0-3DF	SIS 630
3E8-3EF	Serial Port 3 (COM3)
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1 (COM1)
440	Watch-dog timer

Appendix D – How to Upgrade a New BIOS

Please contact the Xycom Automation Application Engineering Department at 734-944-0482 to obtain the latest BIOS.

BIOS Update Procedure

Notes

A. This procedure will erase any prior data on that floppy, so please proceed accordingly.

B. Typically four files will be transferred, only COMMAND.COM being visible when running a simple directory listing.

C. Please leave the diskette un-write protected for the balance of this procedure.

1. Make a boot disk. Go to the DOS command prompt in MS-DOS or Windows 9x and, with an available floppy disk in "A", type "format A:/s" That will format the floppy and transfer the needed system files to it.
2. Download the BIOS upgrade file and awdflash.exe utility from an ICP web site to a temporary directory on your hard drive, or directly to the floppy formatted in step 1.
3. Copy (BIOS file and awdflash.exe) files to the boot floppy disk.
4. Reboot the system to the DOS command prompt using the boot disk made in the previous steps.
5. At the DOS command prompt, awdflash filename.xxx, (filename.xxx is the file name of the upgraded BIOS file), press Enter.
6. The first prompted option is to save the old BIOS. It is recommended that this option be selected in case it is later decided not to use the new version once it is installed. To save, enter Y. To not save, enter N.

Notes

A. DO NOT save the old BIOS with the same file name as the new BIOS. If the same file name is used, the new BIOS will write over the old BIOS with no prompted warning.

B. If the old BIOS is not saved write down the version number of the old BIOS and store it with your important computer documents. If not saving old BIOS, enter N (for "no") and skip to step 9.

7. Enter a NEW name for the old BIOS file, press Enter.
8. The second prompted option will be whether you want to flash your BIOS. Enter Y for yes, N for no.

Warning

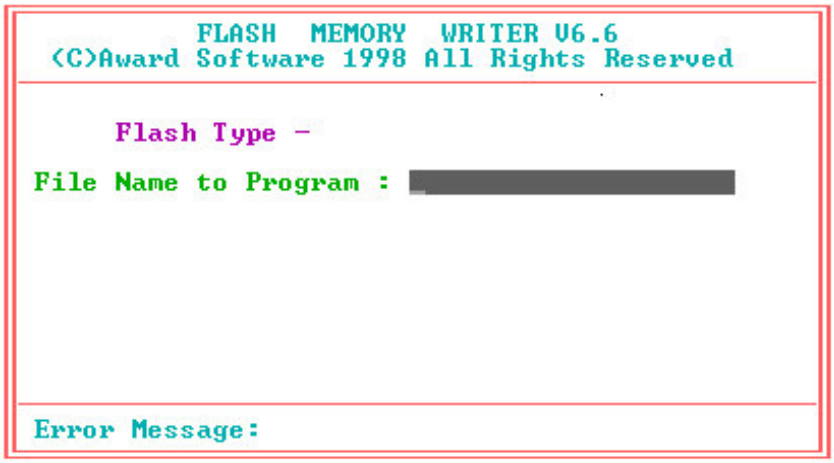
Once the Enter key is pressed, DO NOT touch the keyboard, reset button, or power switch while flashing is in progress. A progress bar on the screen will show the progress of the flashing.

9. When the flashing process is complete, you will be asked to reset or power off the system. Remove the floppy disk from the drive and reset or power off the system.
10. Reboot the system and note that the BIOS version on the initial boot-up screen has changed to the new BIOS version. Your BIOS upgrade is now complete.

Recovering Your Old BIOS

1. Boot the system with the floppy disk that contains the new BIOS. If you do not have the floppy disk, repeat steps 1, 2, and 3 of the BIOS Upgrade Procedure above for the version of the BIOS recovering.
2. Complete steps 4 and 5 (filename.xxx is the name of the recovered BIOS file). Select N for no in step 6, and continue with steps 8, 9, and 10.

Install screen:



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