DEMAND SERIES

INSTRUCTION MANUAL

VERSION 1.0

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Manufacturer Installed Hardware Log

System Service and Upgrade Log

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1. INTRODUCTION

The Demand[tm] series rugged portable computer is designed to meet your requirements in all respects, with a standard full-power PC operating at the highest industrial standards.

A high strength all-aluminum case constructed with corner rubber bumpers and side impact protection covers are designed to prevent accidental damage caused by impact during transportation.

The Demand[tm] System is quipped with a Pentium[tm] high speed Central Processor Unit (CPU), massive memory pools, versatile accelerated video subsystem, and a brilliance color TFT display. All of those are powered by a 200 Watt power supply (worldwide standard). This power supply is designed exclusively for power-hungry application such as video telecommunications, mobile server applications, multimedia operations and special medical and military applications.

In addition, the Demand[tm] rugged portable computer case is equipped with the most advanced proven vibration resisting Floating-Mount[tm] Drive-Bay Assembly for drive(s). The Compression Cross-Flow Fan Assembly provides cooling for onboard semiconductors. A Fully function detachable keyboard and display unit, with optional Remote Extension Kit allows you to operate the system away from the console. A specially designed Accessory Mounting Rail, which extends around the system, provides for the attachment of various external devices. Additionally, this rail enables the system to be securely mounted and operated on any kind of working surface such as on a sloping surface, under a dash board, in the cabinet, in an equipment rack, or on the wall.

An important feature of the Demand[tm] rugged portable computer is the ability to accommodate any standard industrial components you may wish to add in order to configure it to suit your needs.

1.1. IMPORTANT SAFETY INSTRUCTIONS

- Read all of these instructions.
- Save these instructions for later use.
- Follow all warning and instructions marked on the product.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners.
- Use a damp cloth for cleaning.
- Do not use this product near water.
- Protective cover provides ventilation to ensure reliable operation of the product, and to protect it from overheating. Both protective covers must be removed to expose slots and openings on both sides of the main console. These openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be operated in close proximity to a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
- This product should be operated form the type of power source specified. If you are not sure which type of power source is available, consult your dealer or local power company. This product is equipped with a three-wire grounding type plug, a plug with a third (grounding) pin. For safety reason, this plug can only fit into a grounding type power outlet. If you are unable to insert the plug

into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the safety purpose of the grounding-type plug.

- Do not allow anything to rest on the power cord. Do not locate this product where anyone may walk on the power cord.
- If an extension cord is used with this product, make sure that the total ampere ratings of the products can be safely carried by the extension cord. Do not exceed the extension cord ampere rating. Also, make sure that the wall outlet carries at least a 15 amperes rating.
- Never push objects of any kind into the product through open slots as they may contact dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
- Do not attempt to service this product yourself. Opening or removing covers may expose dangerous voltage points and/or damage the unit. Refer all servicing to service personnel.
- The plug on the power supply cord is used as the main disconnect device. The unit should be installed as close as practicable to an easily accessible socket-outlet.
- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

  1. When the power cord or plug is damaged or frayed.
  2. If liquid has been spilled into the product.
  3. If the product has been exposed to rain or water.
  4. When the operating instructions are followed and the product still not operate normally, adjust only those controls that are described in the operating instructions. Improper adjustment of other controls may result in damage requiring extensive work by a qualified technician to restore the product to normal operation.
  5. If the product has been damaged.
  6. If the product exhibits a distinct change in performance, indicating a need for service.

1.2. SYSTEM OVERVIEW

The Demand[tm] system has been carefully designed to achieved all electrical and mechanical equipment functions within the limits of the environmental specification. The compact case size has been achieved by having chosen optimum hardware placement and interconnection practices which serve to guarantee both electrical and thermal performance of the computer system within the small case size.

The Demand[tm] system is comprised of three (3) major components; Main Console, a detachable Display Unit and a detachable Keyboard Unit. Most of the external housing is comprised of extruded aluminum with a hard anodize finish. All corners are protected by rubber corners having a high durometer (resilient rubber) rating. High grade machine screws are used throughout the case assembly to assure both a high-tech design and a very rugged structure.

The Main Console Unit, with its all-aluminum housing, hi-durometer rubber corner bumpers and high impact protective side cover panels, provides an exterior of maximum strength in a rugged portable computer system. To attain maximum performance, the Main Console is equipped with a full 200W universal Power Supply Unit (AC input), A Floating-Mount™ drive-Bay Assembly to absorb shock and

vibration, a universal system motherboard mounted on a plate equipped with Rear-End Supports and a secondary Cross-Flowing Fan Assembly. Additionally, the Display Unit is equipped with detachable Display Swing Arms and a single cable interface to accommodate those system control functions/indicators and the high grade stereo speaker, all of which are mounted on the Display Unit. This configuration allows the system to be operated in the remote Display/Keyboard operating position and still provides all system controls at your finger tip.

When the detachable Keyboard Unit is in the locking position, it provides the front protection of the system while in storage or during transportation. It gives the entire aluminum housing a sense of touch to a hi-tech feeling. The keyboard locking-arm and stand served as both keyboard coiled cord holder and locking mechanism when in storage position. They also function as adjustable keyboard feet while in operation positions.

The detachable and fully adjustable Display Unit attached to the main console through Display Swing Arm Assembly, allows you to position the operating display at a viewing angle of your preference. This feature also provides a wide choice in operating positions with respect to the placement of the Demand[tm] System.

1.2.1.Main Console

One advantage of the Demand[tm] series Main Console design is that operation of the unit is possible without going through the access at the rear side panel. This allows the system to be both positioned and operated in the horizontal position and still provided full operating functions and I/O access. Four (4) large, high durometer rubber corner bumpers have been placed on all corners of the Main Console to insure maximum protection against shock as well as to provide firm cushioned feet when the unit is placed in any operating position. This means that the unit may be safely positioned on any of the external surfaces. The two (2) side impact protective cover panels protect the installed hardware from damage due to sudden impact and consequent damage while the unit is in storage or during transportation. A specially designed Accessory Mounting Rail, which extends around the system, provides for the attachment of various external devices. Additionally, this rail enables the system to be securely mounted and operated on any kind of working surface such as on a sloping surface, under a dash board, in a cabinet, in an equipment rack, or on the wall.

The Main Console also provides the permanent storage accommodation for the display's swing-arm assembly and the capturing slots for the keyboard locking mechanism while the system is being transport or store.

The Main Console contained the following major components and assemblies;

1.2.1.1.Universal Power Supply

The Power Supply Unit is housed in a metal case which is mounted on the Lower-Rear near the Card-Side (left side) within the Main Console. It is equipped with a PC standard AC power input receptacle and a rocker power switch (ON/OFF). Although it can be accessed from the Card-Side of the console, it is doubtful if such access will be required since this Power Supply Unit has been carefully designed and fabricated to meet the highest industrial standards. This power supply can be operated from the worldwide AC power source intended to delivered power to the most advance computer configurations, such as multiple Pentium[tm] concurrent processing system, Transportable network server, Avionics ground support equipment, Medical diagnostic computers, or any other power hungry applications.

1.2.1.2.Floating-Mount[tm] Drive-Bay Assembly

Floating-Mount[tm] Drive-Bay Assembly is a metal frame structure which mounted to the Lower-Rear panel with screws, and located on the Drive-Side (right side) within the Main Console. It provides the space to accept two (2) 5-1/4" half-high drives and one (1) 3-1/2" x 1" drive. In between the frame and drive(s), a shock and vibration absorbing rubber media is standard with all drive bays. The rubber media provides a proven vibration absorbing mounting environment to improved the dynamic operating stability of the drive itself.

1.2.1.3.Compression Cross-Flow Fan Assembly

A Compression Cross-Flowing Fan Assembly is located at the Drive-Side panel within the Main Console. It provides a large amount of fresh air passing through the intake openings into system to form a positive pressurized regions within the Main Console. The cross flowing air path is also directed to the component surfaces of the three installed full-length card in order to provide maximum cooling to the high power devices mounted on those cards.

1.2.1.4.System Motherboard Mounting Back-Plate

An universal Back-Plate is located inside of the Main Console with multiple mounting-hole patterns and hardware accessories to accommodate varies size system motherboards that are available in the PC industry. The Back-Plate can accommodate configurations up to baby-size-AT size. This system is also equipped with two (2) adjustable motherboard Rear-End Supports to ensure that mounting of motherboard with maximum mechanical integrity. This method imparts maximum rigidity to the motherboard and minimizes mechanical deformation during transportation. The Demand™ series Main Console also provides easy access to the motherboard for any upgrading procedures such as adding system RAM or changing jumper setting. Since the Power Supply Unit and the Floating-Mount™ Drive-Bay Assembly are attached to the Lower-Rear panel, the entire motherboard system will be easily accessible for reconfiguration when both upper and lower rear panels have been removed.

1.2.1.5.I/O Expansion Slots

There is total count of seven (7) I/O expansion slots spaces available in the Main Console to accept three (3) full-length, full-high AT standard size cards and Four (4) half-length, full high ISA/PCI cards. Two of AT full-length slot have enlarged external mounting bracket access cut-outs to accommodate these special cards which may be equipped with larger interface connectors such as standard BNC and/or SMA connectors. A force-air cooling air path is also directed to afford the maximum air flow to the surface of all three (3) full length cards which provides the maximum cooling of high power devices when so equipped. Card Positioning Clips, which may be found in the accessories bag, can be used to slide in the rear panel holding slot to positioning and secure the I/O cards should this be required.

1.2.1.6.Video Card and System Interface

The Demand[tm] series comes with a Video Card design based on the industry's highest performance flat-panel controller. It's capable of driving a TFT flat-panel with resolutions up to 1280 x 1024 and maximum color depths of 16 millions when operated in the 640 x 480 display mode. It provides the most advance VGA flat panel subsystem with simultaneous external monitor display capability as well as a General Purpose I/O pass-through connector for external applications. Both ISA and PCI version of Video Cards are available to meet your particular requirements. The system is configured with a single control cable between the Main Console and the Display Unit interface which connects all system function control and indicators as well as stereo audio output from sound card. If the unit is so equipped, this

cable provides remote operation from the Display/Keyboard when the system is set up to operate in remote mode.

1.2.2.Detachable Display Unit

The detachable Display Unit is an all-metal structure located at the front of the Main Console and attached to the inner walls of the console by means of dual Display Swing Arm Assembly. An 10.4" TFT Active Matrix Color flat panel screen with the resolution of 800 X 600 has been chosen to be the primary flat panel display for the Demand[tm] series computer system. The electrical connection will be found at the rear side of the Display Unit and is connected to the Main Console Display Interface Board via a 50-conductors flat cable assembly. The Display Unit may be manually positioned and set to rest at any desired viewing position with the Main Console remaining in either a horizontal or a vertical operating position. The Display Unit may be detached from the Main Console, with or without the Display Swing-Arm attachment, simply by removing the thumb screw which are located at the ends of the Display Swing-Arm. All major system control and indicators have been positioned on the Display Unit to facilitate system control when the remote display/keyboard operating mode is being used.

1.2.3.Detachable Key Board Unit

The detachable Keyboard Unit is an all-metal structure comprising 101-keys with alternated standard keys layout, together with a coiled cord keyboard cable. A special feature of the keyboard is that it is designed to be attached to the Main Console by means of Multi-Function Keyboard Locking-Arm / Stand movable legs without using any latches or screws. This keyboard is also equipped with the Remote Display Sliding Rail that can hold the Display Unit on the Keyboard while system is in the remote display/keyboard operating position. Two (2) optional accessory mounting slots cut-outs are provided on both side of keyboard for mounting the mounting hardware/adapters provided in the Demand[tm] series of computers. These slots facilitate the orientation of the Keyboard to any desired operating.

1.2.4.Standard Accessories

- 199-0001-xx AC Power Cord with 120V, 60Hz, 3 prong standard plug
- 194-1001-xx Parts and Accessories
- 198-6x00-xx Instruction Manual
- 199-2001-xx Padded soft carrying case

1.3. SYSTEM OPTIONS AND UPGRADE

OPT-01 With 250W Power Supply Unit installed.

OPT-02 With Display Viewing Windows Protective Lens equipped Display Unit.

OPT-03 With 3-1/2" x 2 and 5-1/4" x 1 Drive Bay Assembly.

OPT-04 With 3-1/2" x 4 Drive Bay Assembly.

OPT-05 With Remote Display Extension Kit.

OPT-06 With standard Air Filter Assembly installed.

OPT-07 With 2 MB Video Ram installed.

OPT-09 With 5 Years Extended Maintenance Contract.

OPT-11 With 12VDC Power Converter.

OPT-14 With Leather Carrying Bag.

OPT-16 With 5 micron restricted air Filter Assembly installed.

OPT-20 12.1" 1024 x 768 TFT Panel equipped Display Unit installed.

OPT-21 Over Temperature Warning and Auto Cut-Off supervisory Power Supply option installed.

OPT-26 With Static-Free Cross-Flow Fan Assembly installed.

OPT-100 Custom integration and installations on single Pentium[tm] system.

OPT-200 Custom integration and installations on dual Pentium[tm] system.

1.4. FEATURES AND FUNCTIONS

- Rugged extruded aluminum case
- A precision design featuring high reliability
- Compact transportable packaging
- Optimal flexibility with respect to operating conditions
- A frame structure offering resistance to high impacts
- Unique detachable keyboard and display
- Dual fans providing forced air cooling of all internal components
- A Drive bay provided with shock mount for the drive(s)
- Complete EMI/RFI shielding
- Adaptable to nearly any environment
- A variable power input capable of operation in any country
- Full PC capabilities
- Operable in either vertical or horizontal position
- Upgradable to MIL and/or DO-160C provisioning standards
- Meets or exceeds the highest industry standards

1.5. SERVICE AND SUPPORT

C.E.S. Group and its authorized dealers stand behind the Demand[tm] system you have purchased. Depending on how you purchase agreement, and how you use your equipment, the best source of support may be (a) your Demand[tm] dealer, (b) your own organization or (c) the C.E.S. Group. The C.E.S. Group standard warranty policy is included in this manual. Please read it carefully and retain it for future reference.

1.5.1.Assistance From Your Organization

If your organization has many Demand[tm] system, the best source of assistance may be within your own company. Many companies designate central support personnel to help when you have any problems with your Demand[tm] system or other hardware. These support personnel, in turn, can call upon the special resources within C.E.S. when necessary.

1.5.2.Assistance From Your Local Dealer

If you purchased your Demand[tm] system from an Demand[tm] dealer or large-system vendor, your dealer is the quite possibly the best source of assistance. Your salesperson is familiar with your needs, your equipment, configuration, and software and can usually provide the information you

need. Your dealer can also access special support resources and programs within C.E.S. relative to the Demand[tm] system. Contact your dealer for details on available support options.

1.5.3.Help From Demand[tm] Customer Support Center

If your organization's support personnel, or your dealer are unable to answer your question, Demand[tm] has a Customer Support Center available to answer questions on topics such as how to mount drives or detach the keyboard. It is available from 9:00AM until 5:00PM (pacific time) on Monday, Tuesday, Wednesday and Friday, and 9:00AM until 12:00PM on Thursday. Call (800) 845-8520

1.5.4.Assistance From Demand[tm] Hardware Support Center

Because mechanical parts do wear and electronics devices do occasionally need service, high-quality, professional hardware support is provided through Demand[tm] Computer System Dealer Centers and the world-wide network of Demand[tm] Sales and Service Offices.

To have C.E.S. Group service you Demand[tm] system, you must make arrangements to have it serviced in the country of purchase.

Please call the Demand[tm] Hardware Support Center for a RMA number. The RMA number must be issue before any returned good can be accepted.

1.5.5.Repackaging Guidelines for Returning Your System

- Prepare your system as outlined in Section 3 of this manual.
- Include the Instruction Manual for History Log update.
- Include the completed copy of the Service Information Form. Note on the form which items were returned.
- Use the original shipping container and packing materials if possible.
- Affix the completed copy of the Service Information Form on the shipping container with the RMA number and Return Address in clear view.

If you have already disposed of your Demand[tm] system packaging material and are unable to locate another package, the packing material can be ordered from Demand[tm] Hardware Support Center, ask for part number 199-6100-00, The correct packaging material (box and inserts) will be sent to you for a nominal charge.

1.5.6.Service Information Form

Use the Service Information Form (found at the beginning section of this manual) when requesting service from the Demand[tm] Hardware Support Center or a service-authorized Demand[tm] Dealer. This form must be shipped with your equipment. Service cannot begin until we have received this information. Please call (800) 845-8520 to locate the authorized service center nearest you.

1.6. SPECIFICATIONS

1.6.1.Demand[tm] System Model 9002 Specifications

Case Material	6061-T6 Aluminum Alloy
Case Finish	Hard Anodize per MIL-A-8625D
Operating Voltage	95 - 240 VAC, 45 - 440 Hz
Operating Current	3.5 Amps Max. (STD) 4.5 Amps Max. (OPT-01)
Power Supply	200 Watts (STD) 250 Watts (OPT-01)
Inner Cooling	Dual Fans, Forced Air Cross-Flow
Drive Bay	3 1/2" x 1, 5 1/4" x 2 (STD) 3 1/2" x 2, 5 1/4" x 1 (OPT-03) 3 1/2" x 4 (OPT-04)
Expansion Slot	AT full-length x 3 (x 5 on OPT-04) AT/PCI 3/4 Length x 1 AT/PCI Haft Length x 3
Video Card	PCI or ISA accelerated VGA with 1024 x 768 External SVGA Port Simultaneously display
Video RAM	1MB (STD) 2 MB (OPT-07)
Display (Internal)	TFT Active Matrix Color Screen Viewing Angle > 70° 10.4" 800 x 600 pixel (STD) 12.1" 1024 x 768 pixel (OPT-20)
Keyboard	Detachable 101-keys
Temperature	Operating: 0° to 50° C Storage: -10° to 55° C
Relative Humidity	Operating: 5% to 96% Storage: 10% to 85%
Shock (all axis)	Operating: 3 G's Storage: 30 G's
Vibration (all axis)	Operating: 1 G's @ 10 - 2000 Hz Storage: 10 G's @ 10 - 2000 Hz
Altitude	Operating: 25,000 ft Storage: 40,000 ft
Safety	UL, CSA compliance
Net Weight	26 lbs (11.8 Kgs)
Carrying Case	Nylon, Padded Soft Interior

1.6.2. Power Supply Specification

Operating Voltage	95 - 260 VAC
Operating Current	1.5 Amps Typical, 3.5 Amps Max. (STD) 2.0 Amps Typical, 4.5 Amps Max. (OPT-01)
Operating Frequency	47- 440 Hz
Efficiency	65% Minimum at Full Load
DC Outputs (STD)	+5VDC @ 20 Amps +12VDC @ 7.3 Amps -5VDC @ 0.3 Amps -12VDC @ 0.3 Amps
DC Outputs (OPT-01)	+5VDC @ 25 Amps +12VDC @ 9.5 Amps -5VDC @ 0.5 Amps -12VDC @ 0.5 Amps
Ripple and Noise	1% Max. at Full Load
Output Hold Time	10 mS Typical On All Outputs
Output Overshoot	10% Max.
Power Good Signal	1.0 S Typical
Over-Temp. Setting	55^{o} +/- 5^{o} C internal air (OPT-21 only)
Over-Temp Warning	65 dB min. audible alarm (OPT-21 only)
Input Protection	Dual Fuse and Inrush Current Limiter used on both LINE and NEUTRAL Line Inputs.
Outputs Protection	6.2 - 7.0 VDC at 5VDC Output 14.5 - 17 VDC at 12VDC Output 30 - 45 Amps at +5VDC Output 16 - 22 Amps at +12VDC Output 1.0 Amps Max. at -5 / -12 VDC Outputs Short Circuit Detect On All Outputs 10% temperature rise above Over-Temp setting (OPT-21 only)
Exhaust air Volume	17 CFM Minimum
Temperature	Storage: -20° to 85° C Operating: 10° to 50° C
Relative Humidity	Storage: 20% to 85% Operating: 10% to 98%
Shock (all axis)	Storage: 30 G's Operating: 3 G's
Vibration (all axis)	Storage: 10 G's @ 10 - 2000 Hz Operating: 1 G's @ 10 - 2000 Hz
Altitude	Storage: 40,000 ft Operating: 25,000 ft
EMI/RFI	FCC Class 'B' compliance
Safety	UL, CSA compliance
Case Material	Anti-corrosion Finished Steel

1.6.3. TFT Display Specification (STD)

Display Base Model	SHARP, LQ10DS05
Display Size	10.4" (26 cm) Diagonal
Active Area	8.31" (211.2 mm) x 6.23" (158.4 mm)
Pixel Format	800 (H) x 600 (V) in RGB dots
Pixel Pitch	0.0104" (0.264 mm) x 0.0104" (0.264 mm)
Pixel Configuration	R.G.B. Vertical Stripe
Surface Treatment	Anti-glare and Hard-coating 2H Haze Value = 25 +/- 5%
Lamp Operating Current	3.8 mA Typical
Lamp Power Consumption	2.1 W Typical
Lamp Life Time	> 10000 Hrs
Viewing Angle	35^o Min. Left 35^o Min. Right 10^o Min. Top 30^o Min. Bottom
Chromaticity of White	0.313 +/- 0.05 (X), 0.329 (Y) +/- 0.05
Luminance of White	90 cd/m^2 Typical
White Uniformity	1.45 Max.
Storage Temperature	-25 to +60 ^oC
Operating Temperature	Storage: -25 to +60 ^oC Operating: 0 to +50 ^oC
Relative Humidity	10% to 95%, Noncondensing
Shock (all axis)	490 m/s^2 Storage
Vibration (all axis)	10 - 500 Hz Storage

1.6.4.TFT Display Specification (OPT-20)

Display Base Model	SHARP, LQ12X02
Display Size	12.1" (31 cm) Diagonal
Active Area	9.68" (245.8 mm) x 7.26" (184.3 mm)
Pixel Format	1024 (H) x 768 (V) in RGB dots
Pixel Pitch	0.0094" (0.24 mm) x 0.0094" (0.24 mm)
Pixel Configuration	R.G.B. Vertical Stripe
Surface Treatment	Anti-glare and Hard-coating 2H Haze Value = 25 +/- 5%
Lamp Operating Current	6.0 mA Max.
Lamp Power Consumption	3.5 W Typical
Lamp Life Time	> 10000 Hrs
Viewing Angle	45^o Min. Left 45^o Min. Right 10^o Min. Top 30^o Min. Bottom
Chromaticity of White	0.313 +/- 0.05 (X), 0.329 (Y) +/- 0.05
Luminance of White	70 cd/m^2 Typical
White Uniformity	1.45 Max.
Storage Temperature	-25 to +60 ^oC
Operating Temperature	Storage: -25 to +60 ^oC Operating: 0 to +50 ^oC
Relative Humidity	10% to 95%, Noncondensing
Shock (all axis)	490 m/s^2 Storage
Vibration (all axis)	10 - 500 Hz Storage

Physical Dimensions

System in Storage	11.25” (H) x 17.1” (W) x 9.25” (D) without carrying bag 12.0” (H) x 18.5” (W) x 11.0” (D) with carrying bag
System in Operating	11.25” (H) x 17.1” (W) x 18.5” (D) in normal vertical position 16.5” (H) x 17.1” (W) x 20.5” (D) in normal horizontal position 9.5” (H) x 17.1” (W) x 23.0” (D) in keyboard top display position
Display Unit	9.75” (H) x 13.55” (W) x 1.15” (D)
Keyboard Unit	1.25” (H) x 16.75” (W) x 9.8” (D)

1.7. SYSTEM CONNECTOR

1.7.1.Display Interface 50 Pin IDC Connector (except OPT-20)

Pin	Signal	Pin	Signal
1	VDDSAFE (+5V/1.5A)	26	P10 (G0)
2	+12VSAFE (12V/2A)	27	P11 (G1)
3	VEESAFE (+/-35V Max./50mA)	28	P12 (G2)
4	VEEADJ	29	P13 (G3)
5	ENABLE BACKLITE	30	P14 (G4)
6	+12VDC	31	P15 (G5)
7	+12VDC	32	GND
8	DATA ENABLE	33	P16
9	GND	34	P17
10	HSYNC	35	P18 (R0)
11	VSYNC	36	P19 (R1)
12	GND	37	P20 (R2)
13	CLOCK	38	P21 (R3)
14	GND	39	P22 (R4)
15	P0	40	P23 (R5)
16	P1	41	GND
17	P2 (B0)	42	TURBO LED
18	P3 (B1)	43	HDD LED
19	P4 (B2)	44	TURBO SW
20	P5 (B3)	45	TURBO SW RETURN
21	P6 (B4)	46	RESET SW
22	P7 (B5)	47	RESET SW RETURN
23	GND	48	SPKR COMMON
24	P8	49	SPKR (R) +
25	P9	50	SPKR (L) +

1.7.2.Keyboard, DIN 5 Pin

Pin	Signal
1	CLOCK
2	DATA
3	
4	GND
5	+5 VDC

1.7.3.Video Card External Connector

1.7.3.1.External VGA Monitor Connector

Pin	Signal
1	RED VIDEO
2	GREEN VIDEO
3	BLUE VIDEO
4	
5	GND
6	GND (RED RTN)
7	GND (GRN RTN)
8	GND (BLU RTN)
9	
10	GND (SYNC RTN)
11	
12	
13	HOR-SYNC
14	VER-SYNC
15	

2. SETUP AND OPERATING

2.1. UNPACKING AND CHECKING (FIG 2-1)

The Demand[tm] series computer is packed in a single box. This paragraph describes the procedure to unpack the computer.

Before opening the carton, inspect for evidence of rough handling that may have already caused damage to the contents. Please contact the carrier immediately, If there is visible damage.

1. Place the carton on the smooth floor or bench, right side up.
2. Slit the tape that seal the carton's top flaps, and spread them open. Avoid using any sharp object when opening the box.
3. As shown in FIG 2-1, lift the accessories container straight up, off the top foam pad, and set it aside.
4. Lift the top foam pad straight up, off of the computer, and set it aside.
5. The computer weighs 30 lb. (14 kg) or more, so lift it carefully by grabbing on the handle and gently lifting it straight up. Place it on a convenient working area where all sides of the computer are accessible.

NOTE:
Exceeding 35 G's of shock can permanently damage the disk drives inside the computer unit. Bumping the computer or dropping it on a hard surface can easily subject the drives to more than 35 G's shock.
If you are going to install internal options in the computer, you will need plenty of clear space on the desk or workbench around it.

6. Lift the bottom foam pad straight up, remove and save the soft padded carrying case.
7. Inside of the accessories container includes a hardware package and instruction manual. The hardware package should have all parts required for installation and the AC power cord.
8. Save all the packing material with the shipping box for future use.
9. The AC power inlet and the I/O expansion card slot access are located at the left side, behind the side impact protective cover of the computer. The Disk Drives and the fresh air inlet are located at the right side, behind the side impact protective cover of the computer. The keyboard is attached at the front of the computer, locking onto the Main Console with the bottom facing outward.

NOTE:
The Side Impact Protective Cover on both sides of the computer must be removed before operations. The ventilation slots and openings shall not be blocked or covered by any object which may caused the system overheat and unreliable operation.

2.2. DETACH AND ATTACH KEYBOARD FROM MAIN CONSOLE (FIG 2-2)

The Demand[tm] system Keyboard Unit is equipped with a multi-function Keyboard Locking-Arm/Stand assembly as shown in FIG 2-2. It serves as a locking mechanism, a keyboard's coiled cord storage, and an adjustable stand when the keyboard is in the operating position.

2.2.1.To Detach the Keyboard Unit from the Main Console

1. Place the computer in front of you with the multi-function keyboard locking-arm/stand assembly facing you. This enables you to access the keyboard easily. (as shown in FIG 2-2.)

NOTE:
The locking mechanism of the Keyboard Unit is designed to withstand an excessive shock and G's force during shipment. It may required extra effort to rotate the Locking-Arm out to the unlock position. Using both hands is highly recommended.

2. Using your fingers on both hands, grab and hold the ends of the rubber jacket on both side of the legs. Pull and rotate both legs 90^{o} outward simultaneously, until you feel the keyboard is out of the locking position.
3. Gently pull Keyboard out and downward to disengage the top latching tab from the Main Console.

NOTE:
The Keyboard Unit might slide down or tip over while the latching tab on both ends is disengage from the Main Console. Be sure that you have enough clearance and working space left at the front of the computer while you are detaching the Keyboard Unit.

4. The keyboard's coiled cord is stored in front of the locking-arm assembly. See FIG 2-7. To remove the coiled cord, rotate the locking-arm totally inward to the locking position, slide the keyboard's DIN connector until the connector is freely removed from the storage area, then pull the coiled cord outward, off the locking-arm assembly.
5. To set the operating angle of the keys surface to the most comfortable operating angle, rotate the keyboard's Locking-Arm/Stand.

2.2.2.To Attach the Keyboard Unit back to the Main Console

1. Unplug the keyboard's DIN connector from the Card-Side of the Main Console's keyboard port.
2. Rotate the keyboard's Locking-Arm/Stand fully inward to the locking position. The keyboard's coiled cord storage area is located at the front.
3. Place the keyboard's DIN connector in the storage area by sliding the connector from the center to the end, then set the rest of remaining body of the coiled cord back in to the storage area.
4. Rotate the keyboard's Locking-Arm/Stand fully outward to the unlocking position. The storage area should be closed and secure the cord within the locking-arm.

NOTE:
The Display Unit must be rested in its full inward position, remain inside the Main Console with the cloth cover on, before the Keyboard Unit can be attached to the Main Console.

5. Place the Keyboard into the Main Console from the front side at an angle. Moving upward until the keyboard's top latching tab is engaged with the front edge of the console's top panel, and the body of the keyboard is align in width to both side of the Main Console. Swing the Keyboard inward, until it is fully flush with the front edge of the Main Console.
6. Push the Keyboard's Locking-Arm/Stand fully inward to its locking position.

2.3. DETACH AND ATTACH SIDE IMPACT PROTECTIVE COVER FROM MAIN CONSOLE (FIG 2-3)

The Side Impact Protective Cover is attached to both sides of the Main Console, and secured by a coin operable thumb screw. Both covers are exactly the same and may be interchangeable. The only difference is the cover's tab retaining holes on both sides of Main Console are upside down.

NOTE:
The Side Impact Protective Cover on both sides of the computer must be removed before operations. The ventilation slots and openings shall not be blocked or covered by any object which may caused the system overheat and unreliable operation.

2.3.1.To Detach the Side Impact Protective Cover from the Main Console

1. Using a coin or a size #3 slot screw driver to release the thumb screw by turning it counter-clockwise as shown in FIG 2-3.
2. The Protective Cover swings out from the Main Console upon removal of the thumb screw. If its appears to be difficult to remove, inserting a small object i.e. the thread body of the thumb screw or a pencil, into the screw hole of the Protective Cover to help it swing open in the direction shown in FIG 2-3.

2.3.2.To Attach the Side Impact Protective Cover from the Main Console

NOTE:
All cables, interface connectors, removable disks media, tapes, must be removed before attaching the protective covers on the Main Console.

1. Align the Protective Cover with the thumb screw side up, and position the latching tab on the bottom of the Protective Cover into the slot cut-out on the Drive-Side (right) bottom panel of the Main Console as shown in FIG 2-3.
2. Swing the Protective Cover into the flush position with the side panel.
3. Secure the thumb screw by a coin or a size #3 slot screw driver.
4. Repeat the above steps on the Card-Side (left) with the 2nd Protective Cover placed up side down position.

2.4. MAIN CONSOLE, DRIVES SIDE ACCESS (FIG 2-4)

The Drive-Side is located at the right side of the Main Console. Above the drives area, there is a the fresh air inlet opening for the secondary Compression Cross Flowing Fan assembly which is permanently installed inside the Main Console.

NOTE:
The following paragraphs are based on a typical configuration system layout with all the possible options available for the Demand[tm] system. The actual system configuration received may vary, due to the configuration requested from the dealer.

2.4.1.Drive Bay Subsystem and Assembly

The Drive Bay Subsystem contains a Floating Mount[tm] Drive Bay assembly which provides a shock and vibration proved environments for your permanent mounted and/or removable drives.

The standard version Drive Bay contains the space for one (1) 3-1/2" x 1" size drive and two (2) 5-1/4" half-high size drives. All drives are external accessable and two (2) 5-1/4" to 3-1/2" drive conversion kits also provided as standard accessory for installation of an 3-1/2" drive into the 5-1/4" drive bays.

OPT-03 version Drive Bay contains the space for two (2) 3-1/2" x 1" size drives and one (1) 5-1/4" half-high size drive with one of the 3-1/2" x 1" drive bay is hedden.

OPT-04 version Drive Bay contains the space for four (4) 3-1/2" x 1" size drives with one of the 3-1/2" x 1" drive bay is hedden.

2.4.1.1.Floppy Drive 3-1/2"

This drive is available in the basic configuration, labeled as A: drive within the system. Typically, it's installed at the 3-1/2" drive bay with position #1 of the Demand[tm] system drive bay. See FIG 2-4. It can be read write to both 720KB (Single Size, Double Density) and 1.44MB (Double Size, High Density) formatted diskette. It is the only bootable drive in a typical system in case of the hard drive (C:) failure. It also widely being used by the industry for standard software setup and installation.

NOTE:
The diskette used in this drive for data storage must be formatted.
To format a diskette, insert a blank disk in to the drive, and follow the instructions which can be found in the Operating System manual i.e. MS-DOS, OS/2. Diskette Formatting section.

To access the drive, inserting a diskette into the slot opening at the front of the drive with the diskette label side facing you, or facing up when the Main Console is in the horizontal operating position. The LED indicator at the front of the drive will turn ON as you access the drive.

To remove the diskette, depress the EJECT button inward from the front of the drive.

This drive is used for;

- Boot the system from A:
- Install software

- Transfer data to other systems
- Backup data and archive files
- Duplication of data

Floppy diskettes are fragile and should be handled with care. Some handling tips as follow:

- Avoid physical damage
- Don't bend diskettes
- Do not touch the media surface
- Avoid extreme heat and cold
- Don't leave diskettes in the sun
- Avoid magnetic and electrical fields
- Store diskettes vertically

2.4.1.2.Dual Floppy (3-1/2" and 5-1/4") Combo Drive

This drive contains two (2) sectional drive assemblies; they are one (1) 3-1/2" drive and one (1) 5-1/4" drive. Typically, installed at the 5-1/4" drive bay position #2 of the Demand[tm] system standard drive bay (not available on OPT-04). See FIG 2-4. It provides the access of all floppy diskette media that's available since 1980's. The 5-1/4" drive section can be read write for both 360KB (Single Size, Double Density) and 1.2MB (Single Size, High Density) formatted diskette, the 3-1/2" drive section can be read write to both 720KB (Single Size, Double Density) and 1.44MB (Single Size, High Density) formatted diskette. In the typical system configuration. the 3-1/2" drive section should be used as system drive A: and the 5-1/4" drive section as drive B:.

NOTE:
The diskette used in this drive for data storage must be formatted.
To format a diskette, insert a blank disk into the drive, and follow the instructions which can be found in the Operating System manual i.e. MS-DOS, OS/2. Diskette formatting section.

To access the drive, inserting a diskette in to the slot opening at the front of the drive section with the diskette label side facing you, or facing up when the Main Console is in the horizontal operating position. The LED indicator at the front of the drive section will turn ON as you access the drive.

To remove the diskette, depress the EJECT button inward from the front of the drive.

You may use this drive to;

- Boot the system from A:
- Install software on both drives per diskette media type
- Transfer data across media or to other systems
- Backup data and archive files
- Duplication of data

Floppy diskettes are fragile and should be handled with care. Some handling tips as follow:

- Avoid physical damage
- Don't bend diskettes
- Do not touch the media surface
- Avoid extreme heat and cold

- Don't leave diskettes in the sun
- Avoid magnetic and electrical fields
- Store diskettes vertically

2.4.1.3.Permanent mounted Hard Drive (Fixed Disk)

This drive is permanently installed in the Demand[tm] system which is not visible from the exterior. It has no removable media and can not be removed by the user. Typically used as a primary system data storage because of the lager data storage room and fast access speed. This drive will also become your primary operating system's boot drive labeled C:.

The Hard Drive comes difference in size, and the mounting position of this drive may be varied based on the space and usage of the equipped drive bay.

In a typical configuration, this drive should be installed at the position #2 of the Demand's standard drive bay with or without the 5-1/4" to 3-1/2" drive conversion kit, or installed at the hidden drive bay position at OPT-03 and/or OPT-04, if so equipped.

Position #1 of the standard drive bay will be occupied if the hard drive is 3-1/2" x 1" and the Combo Drive is specified.

NOTE:
You must enter the correct drive specifications into the Fixed disk Type fields of your System CMOS Setup & Diagnostic, partition, and format the drive before it can be recognized and used by your system. Refer to your companion System Motherboard User's Manual to access the CMOS Setup & Diagnostic and refer to your Operating System manual to partition/format the hard drive.

The H.D.D. LED indicator on the Demand[tm] Display Unit will come ON as you access this drive.

2.4.1.4.Removable Hard Drive (Fixed Disk)

A Removable Hard Drive Adapter Kit will be installed as optional equipment. It combines a 5-1/4" half high device with a removable tray or drive-carrier. Normally, the hard drive is 3-1/2" in size mounted onto the removable drive-carrier, which allow for attachment and detachment from your system easily.

It may be installed at any 5-1/4" half-high opened space of the Demand's drive bay (not available on OPT-04).

NOTE:
Do not attach or detach the Removable Hard Drive with power on. That may cause permanent damage to your hard drive.

The H.D.D. LED indicator on the Demand[tm] Display Unit will come ON as you access this drive.

The Removable Hard Drive Adapter Kit comes with a key for the locking mechanism which is located in between the adapter and drive-carrier. It may also be a power switch for the drive in some models.

To detach the drive-carrier from adapter:

1. Turn OFF system power.
2. Unlock the drive-carrier with the provided key.
3. Grab the handle at the front of the drive-carrier, and gently pull it out from the adapter.
4. Remove the key and keep in a safe place.

To attach the drive-carrier to adapter:

1. Turn OFF system power.
2. Unlock the drive-carrier with the provided key.
3. Grab the handle at the front of the drive-carrier, and gently slide it into the adapter until it is fully engaged.
4. Lock the drive-carrier with the provided key.

This option is extremely useful when:

- System or data files are required for the highest security and protection.
- Operating system or tasks constantly changing.
- System has multiple operators, or has different system configurations.

2.4.1.5.CD-ROM Drive

This is a typical 5-1/4" half high size drive, and can only be installed at any 5-1/4" half-high opened space of the Demand's drive bay (not available on OPT-04). This is a read only device, and the media may be a Audio Compact Disc, or a CD that contains PC's data and/or programs. The storage capacity on this media is found to be the largest in today's PC systems.

This drive normally installs with a CD-ROM driver and a Sound Card that allows you to access all functions and features of the drive. The Demand[tm] system has the In-Display Speaker interface cable with an available Headphone plug for sound card's audio output. A LED indicator light is provided at the front of the drive. It will come ON when it is accessed.

You may listen to the your audio CD program from the front of the drive by inserting a Stereo Headphone plug into the Ear-phone socket, and obtain the desired loudness through the volume adjustment at the front, if so equipped.

Depending on the type of the CD-ROM that is installed, different media handling methods may be used as follows;

1. Caddy-load CD-ROM Drive

This drive requires a CD Caddy as a media carrier to hold the CD while loading media into the drive. It offers the most protection on the CD and is highly recommended.

- Do not touch the non-printed surface on the CD
- Open the caddy cover, place the CD into the Caddy with printed label side up, and close the cover.
- Insert the caddy (with CD) into the drive open slot. Push it in until the caddy drops to its operating position.
- To remove the caddy, depress the Eject button at the front of the drive, or through software, if installed. In some models, the Eject function require system power to operate. To remove the caddy without system power simply insert a small needle or a straightened paper clip into the Emergency Eject Hole, (typically, it can be found at

the front of the drive) and push in firmly. Caddy should be released from the locking mechanism.

2. Non-Caddy, Tray Loading CD-ROM Drive

This drive is normally equipped with a motorized tray that slides in and out of the drive. The CD media can be loaded directly on to the tray without any CD caddy.

- Eject the loading Tray by depressing the Eject button at the front of the drive. This function require the system power to be ON.
- Place the CD on the tray with printed label side up.
- Push the tray front end inward or depress the Eject button again to retract the tray in to the drive.
- The tray can also be ejected by software if installed. To remove the tray without system power, simply insert a small needle or a straightened paper clip into the Emergency Eject Hole, (typically, it can be found at the front of the drive) push in firmly. The tray should be released from the locking mechanism.

NOTE:
The CD-ROM equipped with a Tray loading mechanism may only be operated while the system is in horizontal operating position. See FIG 2-18 and FIG 2-19.

3. Non-caddy Direct Loading CD-ROM Drive

This drive has no loading tray and no CD caddy is required to load the CD into the drive.

- To load the CD media into the drive, hold the edge of the CD with printed label side face up (system operated in horizontal operating position FIG 2-18) or the label side face to the front (system operated in vertical operating position FIG 2-16), then insert the CD in to the open slot at the front of the drive, until the CD drops to the operating position automatically.
- Eject the CD by depressing the Eject button at the front of the drive, or by software if installed. To remove the CD without system power, simply insert a small needle or a straightened paper clip into the Emergency Eject Hole, (typically, it can be found at the front of the drive) push in firmly. The CD should be released from the locking mechanism.

2.4.1.6.Rewitable CD-ROM Drive

This is a typical 5-1/4" half high size drive and can only be installed at any 5-1/4" half-high opened space of the Demand's drive bay (not available on OPT-04). It provides all the functions and features of a typical CD-ROM drive. In addition, it can be used as a read/write drive on a special media (cartridges).

Two (2) kinds of the rewritable CD-ROM drive are available for Demand[tm] system. They are the WORM (Write One Read Many) drive and the Rewritable drive.

To access this drive use the same procedure as above, and special media (cartridges) are required as specified on the drive's User Manual.

2.4.1.7.Tape Backup Drive

The Tape Drive comes with 3-1/2" x 1" to 5-1/4" half high in size, depending on the model and capacity of choice. The actual mounting position of this drive in the Demand[tm] drive bay may vary. A cartridge is always required as storage media.

There is some advantage for this drive to be available in the system. It is a low-cost solution for large system's data backups, and/or exchange data with other systems.

Please referred to the drive's User manual for operation.

2.4.1.8.Other Removable Media Drives

The following listed optional drives are compatible and available for the Demand[tm] system.

- Floptical Disk Drive
- SyQuest Removable cartridge Drives.
- IOMEGA Removable ZIP Drives.
- IOMEGA Removable JAZ Drives.

2.4.2.Compression Air Inlet

Above the drive bay assembly, the ventilation slots and openings are the fresh air inlet of the Compression Cross Flowing Fan Assembly. It should not be blocked or covered by any object which may cause the system to overheat and unreliable operation.

2.5. MAIN CONSOLE, CARDS SIDE ACCESS

See Fig 2-5

The Card-Side is at the left side of the Main Console where all the I/O expansion interface connectors and the power supply access is located.

NOTE:
The following paragraphs are based on basic Demand[tm] system configuration. The actual system configuration received may vary due to the configuration requested from your dealer.

2.5.1.Keyboard Connector

The Keyboard Connector is located on the Card-Side of the Main Console which is next to the System Power Switch (see FIG 2-5). It is a rounded, 5 circuit, DIN connector receptacle with the keying slot facing to the rear of the console.

The keyboard coiled-cord is permanently attached to the Keyboard Unit (see Par 2.2).

First., remove the coiled-cord from the keyboard Locking-Arm as shown in FIG 2-7.

Second, align the keyboard DIN connector keying slot to the receptacle (the arrow mark on the connector should face to the rear of the console) and gently plug into the Main Console. Adjust the keyboard operating position as needed by re-positioning the Locking-Arm/Stand of the keyboard.

2.5.2.External SVGA Monitor Connector

Uses a 15 pin female miniature D-SUB connector (as shown in FIG 2-5) for connecting a external CRT color monitor to the Demand[tm] system as a Simultaneously display function.

The external monitor is software controlled, and can be displayed at 1024 x 768 resolution with 256 colors. Please refer to the corresponding manual section for more details.

2.5.3.External SCSI Panel (GPIO) Connector

The Demand[tm] system Video Card provides the general purpose I/O signals at the external 50 pin mini SCSI connector (as shown in FIG 2-5) to control external devices. Please refer to the corresponding manual section for more detail.

2.5.4.Serial Ports Connector

Two (2) PC standard RS-232C serial communication ports are provided in the typical Demand[tm] system. There is one (1) D-SUB 9 pins male and one (1) D-SUB 25 pins male connector. (as shown in FIG 2-5.)

The COM Ports are used for all external devices with the RS-232C communication protocol i.e. Mouse, Serial Printer, Modem, Scanner. To install these devices. please refer to manufactures corresponding manual section for more detail.

The default settings of these two ports are;

9 pins male port set to COM1, 3F8h address, IRQ4
25 pins male port set to COM2, 2F8h address, IRQ3

The COM ports can be disabled, or settings changed by re-arranging the jumper block on the System Motherboard, the Multi-I/O Card, or the Advance CMOS BIOS setting if so equipped.

2.5.5. Parallel (Printer) Port Connector

One (1) PC standard Parallel (Printer) port with a D-SUB 25 pins female connector is available on a typical Demand[tm] system.

The Parallel port is used to operate all external devices which are equipped with the PC standard parallel port interface i.e. Printer, Plotter, Scanner, and all devices with the parallel to SCSI adapter. To install such devices, please refer to manufacture corresponding manual section for more details.

The default setting of the Parallel port is LPT1, 378h address, IRQ7

The Parallel port can be disabled, or settings changed by re-arranging the jumper block on the System Motherboard, the Multi-I/O Card, or the Advance CMOS BIOS setting as so equipped.

2.5.6.PS/2 Mouse Connector

One (1) PS/2 standard Mouse port (as shown in FIG 2-5) with the proper software driver installed will allow the operation of the PS/2 standard Mouse and ability to set both COM ports free for other usage.

The default setting of the PS/2 Mouse port is IRQ12

2.5.7.In-Display Speaker Plug

The stereo headphone plug (as shown in FIG 2-5) provides the connection between the sound card (if installed) and the Stereo Speaker System (remoted Headphone Jack on OPT-20) inside the Display Unit. This connector maybe unplugged and replaced with a pair of external speakers as desired. The maximum rating of the In-Display Speakers are 2W at 4 ohms. Please check the sound card specifications and installation section for more details.

2.5.8.AC Power Socket and System Power ON/OFF Switch

The Demand[tm] system Power Supply is designed to accept the worldwide AC power source from 100VAC to 240VAC at 50Hz to 400Hz. The AC Power Socket provides an easy connection to the AC power outlet via power cord. The System Power ON/OFF Switch controls the system On and OFF status.

The Power Cord has a three-prong plug for the three-hole GROUNDED power source outlet. It is standard in the U.S.. An interchange adapter maybe required for other country.

To connect the Power Cord to the AC Power Socket.

1. Depress the Power ON/OFF Switch's "0" end to toggle the switch to the OFF position (see FIG 2-5).
2. Check the line voltage. It should be within the range of 100VAC and 240VAC and grounded properly.
3. Plug the female end of the power cord into the AC Power Socket. (as shown in FIG 2-5)
4. Plug the three-prong plug into the wall power outlet (interchange adapter may required in some countries).
5. System is now ready to power up.

NOTE:
Make sure the power switch is in OFF position before connecting or disconnecting the power cord to the system

To turn the system power ON and OFF.

- Depress the Power ON/OFF Switch's "0" end to toggle the system to the OFF position.
- Depress the Power ON/OFF Switch's "1" end to toggle the system to the ON position.

NOTE: The Power Switch "0" and "1" marking may be varied as it equipped.

2.6. THE KEYBOARD UNIT (FIG 2-6)

The detachable Demand[tm] system keyboard with its all aluminum structure, will become a part of the rugged surface of the system when it attached to the front of the Console. It also incorporates the following features;

- Rugged structure for environmental adaptability.
- Multi-Functions Keyboard Locking-Arm/Stand to served as a locking mechanism, coiled-cord storage, and adjustable feet while in operation.
- Hi-durometer rubber corners for positive grip on working surfaces.
- Remote Display Sliding Rail for Display Unit attachment.
- Accessory Mounting Slot on both sides.

2.6.1.Detach Keyboard From Console

To detach the keyboard from the main console (see par 2.2), hold both legs which appear on the lower part of the front of the computer, and swing outward about 90°, and the keyboard will be released from the main console. Carefully remove the keyboard from the main console unit.

2.6.2.Connecting Keyboard to System

The keyboard comes with a DIN plug on the end of coiled cord. The keyboard receptacle is located on the left side of the Main Console Unit. To connect the keyboard, line up the notch at the DIN plug with that of the receptacle, and firmly push the plug into place (see par 2.5.1).

2.6.3.Keyboard Keys Function

The keyboard is the primary device used to input/interact with the computer. Most keys on the keyboard have a delayed repeat function. That is, when a key is held down longer than about 3/4 second, its character or function repeats until the key is released. Only [Ctrl], [Shift], [Alt], [Num Lock], [Scroll Lock], [Caps Lock], and [Ins] keys don't repeat.

Keys can divided and grouped into 5 areas:

1. **The Function Keys**
   An application program can assign various capabilities to the function keys, which are labeled: [F1] through [F12]. These keys are application-dependent. Whenever an application program is in use, be sure to refer to its manual for the listing of keys and their specific functions.

2. **The Character Keys**
   These keys are used to produce letters (A..Z, a..z), numbers (0..9), blank character (Spacebar), and symbols (!@#$..), and are arranged much like those on a typewriter keyboard.

3. **The Control Keys**
   The function of some of these keys may vary depending on the application software used. These keys are referred to as application-dependent. Please refer to the specific application program's manual for more information. The Control Key Functions as follows:
   - **[Enter] Key:** This key (also referd to RETURN key), is primarily used to enter command words and responses to prompts.
   - **[Esc] Key:** The ESCAPE key is frequently used to cancel a request and/or to exit from a program.
   - **[Shift] Key:** There are two SHIFT keys on the keyboard. The SHIFT key is used to change lower case letters to capitals, or vice-versa. It can also be used together with the Character Symbol Key to obtain the needed symbol.
   - **[Back Space] Key:** This key moves the cursor one character to the left, deleting one character for each space as it moves to the left. Before pressing [Enter], the [Back Space] key can be used to delete any incorrect command or word.
   - **[Tab] Key:** This key moves the cursor to the next preset tab stop.
   - **[Sys Req] Key:** The SYSTEM REQUEST key is application dependent.
   - **[Ctrl] Key:** The CONTROL key is application-dependent. It is always used in conjunction with one or two other keys. When this key and another key are pressed simultaneously, a designated instruction is conveyed to the computer. [Ctrl] is usually employed as a preconditioning key, held down while a character is struck.
   - **[Alt] key:** The ALTERNATE key is application-dependent. It is always used in conjunction with one or two other keys. When the [Alt] key and another key are pressed simultaneously, a designated instruction is conveyed to the computer. [Alt] is usually employed as a preconditioning key, held down while a character is struck.
   - **[Caps Lock] key:** This key allows the character keys to be locked into the upper-case mode; it only affects the characters A through Z. When the LED indicator on this key is on, the computer normally uses all upper case mode. This key is also a toggle key. Press the key a second time to reverse the mode.

- **[Num Lock] key:** Pressing this key once activates the numeric key pad, located on the right side of the keyboard (number 0 - 9, as well the decimal point key). Pressing the [Num Lock] key again changes the function of the numeric key pad. You can also use the [Shift] key to temporarily reverse the state of the numeric key pad. An LED indicator on the [Num Lock] key lights to show that it is engaged.
- **[Scroll Lock/Break] key:** This key is application-dependent. This key is commonly use with the [Ctrl] key to cause a program break. In some application programs, it is a toggle key used to cause the cursor control keys to scan over the text rather than controlling cursor movement.
- **[Prt Sc/*] key:** The PRINTSCREEN key is used in two ways: [Ctrl]+[Prt Sc] prints all data as it is entered into the computer, character by character, and all that appears on the screen. To terminate printing, press the [Ctrl]+[Prt Sc] keys again. [Shift]+[Prt Sc] prints the contents of one entire screen. With many application programs, the [Prt Sc/*] key, when struck alone, enters an asterisk (*), duplicating the [Shift]+[8] key.

4. **The Cursor/Numeric Keys**

   The functions of some of these keys may vary depending on the application program in use. With some programs, the [Num Lock] key can be pressed to type the numbers shown (instead of moving the cursor). To restore cursor control, press the [Num Lock] key again, or press the [Shift] key for temporary restoration of cursor control. It should be noted that all Cursor/Numeric Keys are application-dependent. Refer to the specific application program or software manual for more information on the use of these keys.

   - **Numeric keys (key pad 0 - 9):** The numeric keypad is used to enter numeric data or to control cursor movement. Numeric data can be entered when the [Num Lock] key is activated (the LED is on). When the [Num Lock] key is inactivated (LED is off), the cursor will move in the direction of the arrows denoted on the corresponding keys.
   - **[Home] key:** This key moves the cursor from any location in a file to the first character on the line, screen, or file, depending on the application program in use.
   - **[End] key:** This key moves the cursor from any location in a file to the last character on the line, screen, or file depending on the application program in use.
   - **[PgUp/9] and [PgDn/3] keys:** These key allow you to scan the contents of a data file by scrolling up or down one screen at a time. To use them, the [Num Lock] key must be deactivated. These keys are application-dependent.
   - **[+] and [-] keys:** These application-dependent key typically operate the same, whether or not [Num Lock] is active. Most programs use them to generate the characters, some also use them to initiate their mathematical functions.
   - **[Ins] key:** The INSERT key toggles between the insert mode and the replace mode. It is application-dependent.
   - **[Del] key:** The DELETE key deletes the character the cursor is positioned on. Any character string to its right is shifted left to close the space.

5. **The cursor control key**

   The functions of these keys may vary depending on the application program in use. They are used to manipulate the cursor around the screen. It should be noted that all

cursor keys are application dependent. Refer to the specific application program or software manual for more information on the use of these keys.

The multiple key functions are defined by the specific application program being used. The following multiple key procedures are frequently used during operation on the computer.

- [Ctrl]+[Alt]+[Del] performs a system soft reboot/reset.
- [Ctrl]+[Scroll Lock/Break] suspends an operation that is in progress.
- [Ctrl]+[Num Lock] suspends processing until another key is pressed. This allows the interruption of a file as it scrolls across the screen.
- [Ctrl]+[Alt]+[+] will change the system to high speed mode. All cache memory will be enable.
- [Ctrl]+[Alt]+[-] will change the system to low speed mode. All cache memory will be disable.

2.6.4.Keyboard LED Indicators

NUM LOCK This LED turns ON when the Cursor/Numeric Keys are only accepting the numeric entries. Use the [Num Lock] key to toggle this function.

CAPS LOCK This LED turns ON when all the alphabet keys are in their upper-case entries. Use the [Caps Lock] key to toggle this function.

SCROLL LOCK This LED turns ON when all the scroll lock function is active. Use the [Scroll Lock] key to toggle this function.

2.6.5.Keyboard Operating Position

The Demand[tm] Keyboard may be setup for many different operating positions by adjusting the Locking-Arm/Stand feet, or using the Accessory Mounting Slots.

1. Push the Locking-Arm/Stand into the locking position. The keyboard will set flat on the working surface.
2. Adjust the Locking-Arm/Stand to the desired position. The keyboard will set at an angle to the working surface.
3. Push the Locking-Arm/Stand into the locking position, using the optional mounting bracket and/or sliding mechanism (hardware) attached to the Accessory Mounting Slot found on both sides of the keyboard.

2.7. THE DISPLAY UNIT (FIG 2-10)

The detachable Demand[tm] Display Unit is an all aluminum structure, attached to the Main Console by two (2) Display Swing-Arm Assembly which allows for adjusting the Display Unit to any desired operating position. It also comes with a Remote Display Standing Slot located at the bottom, that allows it to slide into the keyboard's Remote Display Sliding Rail while in remote display/keyboard operation.

The electrical connections are found at the rear side of the Display Unit. connected to the Main Console Display Interface Board via an 50 conductor flat cable assembly.

The Demand[tm] system is equipped with a 10.4" (12.1" on OPT-20) TFT Active Matrix Color flat panel screen with the display resolution up to 800 x 600 (1024 x 768 on OPT-20), in maximum color depth of 16 million, and all major system control and function indicators.

The display features and functions are as follows:

- 10.4" TFT LCD display panel (12.1" TFT LCD on OPT-20)
- Back-light LED indicators with dead-front viewing window (not available on OPT-20)
- Turbo Switch
- Reset Switch
- Contrast Adjustment (not available on OPT-20)
- Brightness Adjustment (not available on OPT-20)
- Dual 2W, 4 Ohms Speakers (remote Headphone Jack on OPT-20)
- Detachable Swing Arm assembly
- Remote Display Standing Slot

2.7.1.Display Controls and Indicators

2.7.1.1.Power LED

The Power LED indicator is located at the top position behind the Viewing Window. It will be illuminated as "POWER" in green color if the system is powered (green LED lamp will be used on OPT-20).

2.7.1.2.Turbo LED

The Turbo LED indicator is located at the middle position behind the Viewing Window. It will be illuminated as "TURBO" in yellow color if the system is operating in high speed mode (yellow LED lamp will be used on OPT-20).

2.7.1.3.HDD LED

The HDD LED indicator is located at the bottom position behind the Viewing Window. It will be illuminated as "H.D.D" in red color if the system hard drive (fix disk) is accessed (red LED lamp will be used on OPT-20).

2.7.1.4.Turbo Switch

The Turbo Switch is a push ON, push OFF toggle switch. It is used to toggle the system speed from high (turbo mode) to low (none turbo mode) or vise versa.

NOTE:
The Turbo Switch function may NOT be available in some systems. Using the [Ctrl]+[Atl]+[+/-] to select the system speed as described in par 2.6.3.

2.7.1.5.Reset Switch

Depressing this switch will cause the system to reboot. It is identical to turning OFF and ON the system power.

2.7.1.6.Contrast Adjustment

This is a adjustment for your display contrast ratio between foreground and background. Adjust this knob up and down to add/subtract the contrast as desired.

NOTE: The Contrast Adjustment will have NO effect on the TFT LCD flat panel system.

2.7.1.7.Brightness Adjustment (180-100 Display Unit only)

This is a adjustment for display back lighting brightness. The back lighting will be turn OFF at the minimum position. Adjust this knob up and down to increase/decrease the brightness as desired.

2.7.2.In Display 2W + 2W loudspeaker (180-100 Display Unit only)

In Display Speaker provides the convenient audio playback for the sound card (if equipped) without the need of a external speaker system. A stereo headphone plug is provided at the Card-Side of the Main Console for the sound card's speaker output port connection (see par 2.4).

2.7.3.Display Viewing Position Adjustment (FIG 2-11)

The Demand[tm] Display Unit allows for setting the display to the most comfortable viewing angle with no distracting reflections off the screen.

Swing the Display Unit out of the Main Console by holding the top portion of the display, pull it out towards you and downward, then swing up. Adjust the Display Unit to an angle where it's easy to view information on the screen. The swing arms on both sides are adjustable and so designed to hold the Display Unit in the chosen position.

For horizontal operation. Set the system Main Console horizontally so the Display Unit will be facing up. Follow same procedural to pull the Display Unit out as you were pulling out the Display Unit vertically. Flip the Display Unit counter-clockwise to the most suitable position. The swing arms on both sides are adjustable and so designed to hold the Display Unit in the chose position.

2.8. DETACH DISPLAY UNIT FROM MAIN CONSOLE

You only need to detach the Display Unit from the Main Console if you intend to use the Display Unit remotely.

NOTE:
The Display Interface Cable must be disconnected before the Display Unit can be removed from the Main Console.

2.8.1.Disconnect/Connect the Display Interface Cable (FIG 2-12 & FIG 2-13)

The Display Interface Cable is connected between the Main Console and the Display Unit. In most cases, only the display connecting point needs to be disconnected for remote display operation.

To disconnect the Display Interface Cable;

1. Adjust the Display Unit position (as shown in FIG 2-12 & FIG 2-13) to access the Display Connector from the rear side.

2. Pull both latch tabs on the Display Connector outward to eject the Display Interface Cable from the connector.

To re-connect the Display Interface Cable;

1. Adjust the Display Unit to the position that the display connector is accessible.
2. Place both latch tabs on the connector outward to accept the header insertion.
3. Plug the Display Interface Cable header into the connector and align with pin #1 arrow mark, then press in firmly.

2.8.2.The Display Swing-Arm Assembly (FIG 2-14)

The Display Swing-Arm Assembly contains an opposite symmetrical swing arm body, two (2) thumb screws, two (2) curve washers, four (4) wave washers and four (4) rubber spacers.

Two (2) Swing-Arm Assemblies are used to support the Display Unit.

2.8.2.1.To disassemble the Swing-Arm Assembly

Insert a coin into the thumb screw slot, and turn it counter-clockwise, hold onto the arm body until the arm is detach from the mounting subject.

The last rubber washer (at the far side from the thumb screw) is designed to hold all the hardware parts in place while disassembled. DO NOT pull the thumb screw totally out of the assembly. You may reassemble the parts without attaching the swing arm back to the same mounting subject as it was before. That will keep you from loosing the parts and/or the assemble order when you try to reassemble them.

2.8.2.2.To reassemble the Swing-Arm Assembly

1. Arrange all parts with the swing arm in order. (as shown in FIG 2-14)
2. Place the assembly with the thumb screw thread into the larger center taped hole from the mounting subject, and start by turning the thumb screw clockwise. Check and verify the small tabs on both wave washers are engaged with the outer small holes of the swing arm and the mounting subject.
3. Insert a coin into the thumb screw slot and turn it clockwise until the curved washer has created enough pressure to hold the Display Unit in place.

NOTE:
It is important to follow the exact Swing-Arm assemble order (as shown in FIG 2-14) otherwise the Swing-Arm Assembly may not perform correctly after reassembly.

2.8.3.Detach Display Unit Only

The Display Unit will be removed and the Swing-Arms assembly will remain attached to the Main Console.

1. Disconnect the Display Interface Cable from the Display Unit (see par.2.8.1).
2. Release both Display Thumb Screws on the display side. (as shown in FIG 2-15)

3. Gently remove the Display Unit from the Swing Arm. You may reinstall the thumb screw with its washers back to the Display Unit where it has originally been removed as a save place to keep those parts from being lost.

2.8.4.Detach Display Unit with Swing-Arm Attached

The Display Unit will be removed, and the Swing-Arms assembly remains attached to the Display Unit.

1. Disconnect the Display Interface Cable from the Display Unit (see par.2.8.1).
2. Release both Display Thumb Screws from the console's side. (as shown in FIG 2-15)
3. Gently remove the Display Unit and the Swing Arm off the console. You may reinstall the thumb screw with its washers back to the Main Console where it was originally been removed as a save place to keep those parts from being lost.

2.9. DEMAND™ SYSTEM OPERATING POSITIONS

Demand™ system can be operated at varying operating positions.

2.9.1.Quick Access Operating Position (FIG 2-16)

To setup the system in Quick Access Operating Position;

1. Detach both protective covers and the Keyboard Unit from the Main Console, then set the Main Console to its up right position.
2. Connect the keyboard coiled cord and all necessary peripheral connections to the Main Console.
3. Connect the power cord, Insert the removable media into drive as needed, and then power up the system..

2.9.2..Normal Operating, Vertical Position (FIG 2-17)

To setup the system in Normal Operating, Vertical Position;

1. Detach both protective covers and the Keyboard Unit from the Main Console, and set the Main Console to their up right positions.
2. Connect the keyboard coiled cord and all necessary peripheral connections to the Main Console.
3. Flip and lift the Display Unit to the best viewing position.
4. Adjust the keyboard Locking-Arm/Stand to the desired operating angle.
5. Connect the power cord, Insert the removable media into drive as needed, and power up the system..

2.9.3.Normal Operating, Horizontal Position (FIG 2-18)

Use this position only if the tray loading removable media drive is installed, or other installed devices that operate reliably at the horizontal position.

To setup the system in Normal Operating, Horizontal Position;

1. Detach both protective covers and the Keyboard Unit from the Main Console, and set the back side of the Main Console on the working surface.
2. Connect the keyboard coiled cord and all necessary peripheral connections to the Main Console.
3. Flip and lift the Display Unit to the desired position and the best viewing angle.
4. Adjust the keyboard Locking-Arm/Stand to the desired operating angle.
5. Connect the power cord, Insert the removable media into drive as needed, and power up the system..

2.9.4. Normal Operating, Horizontal Position with Keyboard-Top Display (FIG 2-19)

If you have no room for the system to operate in vertical or horizontal position, or you have limited access head room for the display to swing up, even you just want to operate the system with the display attach to the keyboard, or for some other reasons. You may setup the Demand^{tm} system to operate at the Normal Operating, horizontal position with Keyboard-Top Display.

1. Detach both protective covers and the Keyboard Unit from the Main Console, and set the back side of the Main Console on the working surface.
2. Connect the keyboard coiled cord and all necessary peripheral connections to the Main Console.
3. Disconnect the Display Interface Cable from the Display Unit. (see par.2.8.1)
4. Release both Display Thumb Screws on the display side. (as shown in FIG 2-15)
5. Gently remove the Display Unit from the Swing Arm. You may reinstall the thumb screw with its washers back to the Display Unit where it was originally removed as a save storage place.
6. Slide the display's Remote Display Standing Slot (see FIG 2-10) into the keyboard's Remote Display Sliding Rail (see FIG 2-6).
7. Reconnect the Display Interface Cable onto the Display Connector from the rear side of the Display Unit (see par.2.8.1).
8. Adjust the keyboard's Locking-Arm/Stand to the desire operating angle.
9. Connect the power cord, insert the removable media into drive as needed, and power up the system.

2.9.5.Other Operating Positions

You can take a good use of the existing Accessory Mounting Slots around the Demand^{tm} system, and/or the Swing-Arm and thumb screws on the Display Unit to mount and operate the system at any desired positions with the Remote Keyboard/Display Extension Kit.

You can mount the Main Console, Keyboard Unit and/or the Display Unit to any surface i.e. desk top, dashboard, on the wall, under the table, on a equipment rack, on a sliding rail, in a cabinet... anywhere as you can think of.

2.9.5.1.Remote Keyboard/Display Extension Kit (FIG 2-20)

Using the Remote Keyboard/Display Extension Kit (OPT-05), the Keyboard Unit can be operated remote from the Display Unit. Please refer to the corresponding manual for more details.

The optional Remote Keyboard/Display Extension Kit includes:

1. Signal Repeater with up to 12 ft of the Display Interface Cable
2. 12 ft keyboard extension cable
3. 12 ft 9-pins Serial Port extension cable
4. Instruction manual

3. SHUTDOWN / RELOCATING DEMAND[TM] SYSTEM

3.1. SYSTEM SHUTDOWN PROCEDURE

It is important to remember that all information contained in the computer RAM (Random Access Memory) will be lost when the power is off. This includes any information stored on a virtual disk (VDISK or RAMDISK). You should always copy everything you need to save to the fixed disk or on a removable media from the virtual disk before leaving your workstation. Only the clock-calendar and configuration RAM are powered by battery and maintained when system is shutdown.

1. Save your work
2. Remove all Removable Data Media from Drives
3. Turn OFF the system power at the Power Switch

3.2. SYSTEM RELOCATE PREPARATION

1. Shutdown system (par. 2.10).
2. Unplug the Power Cord from AC Outlet and AC Power Socket.
3. Disconnect Keyboard Coiled Cord and all peripheral connections.
4. Insert the protection media into drive(s) per recommended manufacture procedure.
5. Attach the Side Impact Protective Covers to both sides of the Console with thumb screws.
6. Restore the Display to the rest position within Demand[tm] Main Console.
7. Restore the keyboard Coiled Cord into the Locking-Arm/Stand.
8. Place the Keyboard onto Demand[tm] Console with key's side facing inward, and then swing the Locking -Arm to lock in place.
9. Place the Demand[tm] System into the Carrying Bag
10. Place all accessories into the front pocket of the Carrying Bag
11. You are on your way

4. HARDWARE AND INSTALLATION

See FIG 4-1

In this section, a description is provided for the basic hardware information that is needed for installation of the Demand[tm] system, and for first time installation.

CAUTION

The Demand[tm] system should be serviced in an electrostatically safe environment including the used of a properly terminated operator's wrist strap. The operator should be careful when discharging any electrostatic charge. It may contain on any cables that is connected to the Demand[tm] system and their electronics devices.
The AC power cord must be removed from the AC power outlet before servicing the Demand[tm] system.

4.1. TO DETACH THE SIDE IMPACT PROTECTIVE COVER PANEL FROM CONSOLE

1. Using a coin or a size #3 slot screw driver to release the thumb screw by turning it counter-clockwise as shown in FIG 2-3.
2. The Protective Cover swings out from the Main Console once the thumb screw is removed. If it appears to be difficult to remove, insert a small object such as the thread body of the thumb screw or a pencil in to the screw hole of the Protective Cover to help it swing to open in the direction shown in FIG 2-3.

4.2. TO ATTACH THE SIDE IMPACT PROTECTIVE COVER PANEL TO CONSOLE

1. Align the Protective Cover with the thumb screw side up, and situate the latching tab on the bottom of the Protective Cover in to the slot cut-out on the Main Console Drive-Side (right) bottom side panel as shown in FIG 2-3.
2. Swing the Protective Cover into the flush position with the side panel.
3. Secure the thumb screw by using a coin or a size #3 slot screw driver.
4. Repeat the above steps on the Card-Side (left) with the 2nd Protective Cover in upside down position.

4.3. TO DETACH THE KEYBOARD UNIT FROM CONSOLE

1. Position the computer in front of you where you can locate the Multi-function Keyboard Locking-Arm and Stand assembly. (as shown in FIG 2-2)
2. Grab and hold onto the ends of the locking-arm rubber jacket with fingers on both hands, pull and rotate both legs outward simultaneously until you feel the Keyboard is out of its locking position.
3. Pull the Keyboard out and downward to disengage the top latching tab from the Main Console.

4.4. THE KEYBOARD'S COILED CORD AND STAND

The keyboard coiled cord is stored in front of the Locking-Arm/Stand assembly. (See FIG 2-7). To remove the coiled cord, rotate the Locking-Arm to its locking position. Slide the keyboard's DIN connector inward until the connector is totally can be removed from the storage area, then pull the coiled cord outward until it is entirely off the Locking-Arm/Stand assembly.

Set the slop of the keys surface to the most comfortable operating angle by rotating the keyboard's Locking-Arm / Stand.

4.5. TO ATTACH THE KEYBOARD UNIT TO CONSOLE

1. Unplug the keyboard's DIN connector from the Card-Side of the Main Console's keyboard port.
2. Rotate the keyboard's Locking-Arm/Stand fully inward to its locking position. Retrieve the keyboard's coiled cord storage area which is located at the front.
3. Place the keyboard's DIN connector into the storage area by sliding the connector from the center towards the end, then the remaining body of the coiled cord into the storage area.
4. Rotate the keyboard's Locking-Arm/Stand fully outward to its unlock position. The storage area should be closed and held the cord within the Locking-Arm.
5. Place the Keyboard into the Main Console at an angle, moving upward until the top latching tab on the Keyboard Unit's engaged with the front edge of the Main Console's top panel, and the width of the keyboard is aligned with the side of the Main Console. Then swing the entire Keyboard inward, until it is flush with the front edge of the Main Console.
6. Push the Keyboard's Locking-Arm/Stand fully inward to the locking position.

4.6. TO DISCONNECT THE DISPLAY INTERFACE CABLE

1. Adjust the Display Unit position as shown in FIG 2-12 & FIG 2-13 to access the Display Connector.
2. Pull both latch tabs on the Display Connector outward to eject the Display Interface Cable from the connector.

4.7. TO RE-CONNECT THE DISPLAY INTERFACE CABLE

1. Adjust the Display Unit to a convenient position.
2. Place the Latch Tabs on the connector facing outward to accept the header insertion.
3. Plug the Display Interface Cable header into the connector with pin #1 arrow mark aligned then press in firmly.

4.8. TO DISASSEMBLE THE SWING-ARM ASSEMBLY

Insert a coin into the thumb screw slot and turn it counter-clockwise, hold on the arm body as you proceed, until the arm is detached from the mounting subject. The last rubber washer (at the far side from the thumb screw) is designed to hold all the hardware parts in place when disassembled.

4.9. To Reassemble the Swing-Arm Assembly

1. Arrange all parts with the swing arm in order. (as shown in FIG 2-14)
2. Locate the thumb screw thread into the larger center taped hole of the mounting subject and start the thread by turning the thumb screw clockwise. Check and verify the small tabs on both wave washers are engaged with the outer small holes of the swing arm and the mounting subject.
3. Insert a coin into the thumb screw slot and turn it clockwise until the curve washer has created enough pressure to hold the Display Unit in place.

4.10. To Detach Display Unit Only From Console

1. Disconnect the Display Interface Cable from the Display Unit
2. Release Thumb Screws on both sides of the display as shown in FIG 2-15.
3. Gently remove the Display Unit off of the Swing Arm.

4.11. To Detach Display Unit with Swing-Arm Attached

1. Disconnect the Display Interface Cable from the Display Unit.
2. Release Thumb Screws on both side of main console as shown in FIG 2-15.
3. Gently remove the Display Unit and the Swing Arm off the console

4.12. To Remove Upper-Rear Panel from Console

1. Remove all six (6) screws as shown in FIG 4-2. Two (2) screws on the top and four (4) screws on the rear.
2. Remove the Upper-Rear Panel straight toward the back of the console.

4.13. To Restore Upper-Rear Panel to Console

1. Slide the Card Positioning Clips (see FIG 4-6) into the existing slots at the desired direction and position.
2. Set the Upper-Rear Panel into the Console from the back side, straight in, until all screw openings are aligned (see FIG 4-2).
3. Secure all six (6) screws with washers around the Upper-Rear Panel as shown in FIG 4-1. Two (2) at the top, four (4) at the rear.

4.14. To Remove Lower-Rear Panel from Console

NOTE: You must remove the Upper-Rear Panel first before removing the Lower-Rear Panel.

1. Unplug the power cord, remove all removable disk media from their drives. Push in all the mechanical eject buttons on drives, if so equipped.
2. Set the Main Console on the workbench with the front side facing down, and the rear side up.
3. Remove All eight (8) screws as shown in FIG 4-3. Two (2) on the bottom and six (6) on the top.

4. The Power Supply and the Drive Bay Assembly are mounted on the inside of the Lower-Rear Panel. Lift the Lower-Rear Panel Assembly straight up with both rear rubber bumpers from the rear side off the console carefully. You may need to disconnect the motherboard's power connectors, the drives interface flat cables, and the compression fan cable, as you proceed.

4.15. THE CARD POSITIONING CLIPS

See FIG 4-6.

Use the Card Positioning Clips to keep the I/O cards in their expansion slots when transported.

1. Check the card length to determine where the clip should be mounted on the rear panel.
2. Check the height (AT or XT standard height) the card type (PCI or ISA), and position the clip as shown in FIG 4-6.
3. Slide the Clip into the opening slot on the rear panel.
4. Visually verify the position by holding the rear panel to match the same height as it was on the console. Re-adjust and re-position the clip if necessary.

4.16. THE POWER SUPPLY

See FIG 4-17 and FIG 4-18

The Power Supply Unit is mounted on the Lower-Rear Panel by four (4) screws as shown in FIG 4-5. It can only be seen when the Lower-Rear Panel is removed.

There are no serviceable parts in the Power Supply.

4.17. THE DRIVE BAY ASSEMBLY

See FIG 4-4 and FIG 4-5

The Drive Bay Assembly is mounted on the Lower-Rear Panel by eight (8) screws as shown in FIG 4-5. It can only be seen when the Lower-Rear Panel is removed. It's designed to hold two (2) 5-1/4" drives and one (1) 3-1/2" drive on STD version, one (1) 5-1/4" drive and two (2) 3-1/2" drives on OPT-03 and four (4) 3-1/2" drives on OPT-04. The bay is equipped with shock absorbing media on both sides of the bay where the drive is mounted on.

4.18. TO MOUNT A DRIVE ON TO THE DRIVE BAY ASSEMBLY

See FIG 4-5

1. Remove the Upper-Rear Panel from the Console.
2. Remove the Lower-Rear Panel from the Console and disconnect all cables.
3. Place the Lower-Rear Panel Assembly (as shown in FIG 4-4) on the workbench. Remove the Drive bay off of the rear panel if necessary.
4. Insert the new drive into the desired bay position the drive's rear end.
5. Visually inspect all the screw hole alignments with the drive mounting screw threads.
6. Install the Drive Mounting Spacer onto the shock absorbing media as shown in FIG 4-5.

7. Tighten the screws to mount the drive onto the bay as specified.
8. Connect the GROUNDED wire between the bay and the drive as equipped.
9. Connect the Power Connector from the Power Supply to the drive. The 'Y' Cable Power connector may be required on OPT-04 installation.

4.19. TO RESTORE LOWER-REAR PANEL TO CONSOLE

NOTE: You must remove the Upper-Rear Panel first before restoring the Lower-Rear Panel.

1. Unplug the power cord, Remove all removable disk media from drives. Push in all the mechanical eject buttons on drives, if equipped.
2. Set the Main Console on the workbench with the front side facing down, and the rear side up.
3. Visually inspect the Lower-Rear Panel Assembly for any bending parts, and all the power connections to the drives from the power supply. The front of the drive bay assembly has two (2) guided tabs (see FIG 4-4) which are required to be engaged with the console body when installed. Adjust these tabs to straight and slightly downward as necessary, otherwise, it may miss the engagement with the console body.
4. Place the Lower-Rear Panel Assembly with the rear rubber bumpers in place where both drive bay and power supply are aligned with the cutouts on the side panels of the console.
5. Connect all necessary cables, motherboard's power connectors, drives interface flat cables, including the compression fan power cable.
6. Gently push the Assembly straight down into the console, adjust the rubber feet and check the clearance of the drives and/or power supply to the side panel as it proceeds.
7. Check all the mounting holes on the rear panel with the console for alignments.
8. Tighten eight (8) screws with washers as shown in FIG 4-3. Two (2) on the bottom and six (6) on the top.

4.20. THE UNIVERSAL MOTHERBOARD BACK PLATE

The Universal Motherboard Back Plate is located on the front of the Main Console behind the Display Unit. It has the universal mounting pattern for the system motherboard, multiple slots for the system motherboard Rear-End Supporter, and Display Interface board mounting space as well.

To remove the Universal Motherboard Back Plate from the Main Console remove all fourteen (14) screws as shown in FIG 4-8.

4.21. THE MOTHERBOARD REAR SUPPORTER

The purpose of the Motherboard Rear-End Supporter, as the name implies, is to provide rear end support of the motherboard if there are no screw mounting pattern at the end.

To mount the Motherboard Rear-End Supporter after System Motherboard is installed;

1. Place the supporter with the catching edge against the end of the motherboard.
2. Locate the supporter onto a slot at the back plate's cutout where the clearance on both mounting screws can be seen.

3. Tighten both screws with the provided washers to secure the supporter onto the back plate as shown in FIG 4-9.

4. Repeat the steps for the other end.

4.22.TO PREPARE THE SYSTEM MOTHERBOARD FOR INSTALLATION

The System Motherboard is the largest printed circuit board assembly in the system. It contains the socket(s) for Microprocessor or CPU (Central Processing Unit), Keyboard Controller and connector, battery backup, system real time clock assembly, system RAMs, ROMs, Cache RAMs, and possibly, the multi-I/O functions i.e. the floppy disk controller, IDE fixed disk controller, both serial and parallel ports, PS/2 mouse port. There are different type of bus structures that may be used on the board such as ISA 8 bit, ISA 16 bit, EISA, VL, or PCI.

Please refer to the corresponding manual for preparation of the System Motherboard installations;

1. Install the CPU (with the provided heat sink and fan if equipped) in the socket as directed. Please set all hardware jumper settings to the correct CPU type, speed, and voltage.

2. Install the desired number of system RAM needs into the SIMM socket with the correct type as shown in the manual, starting from Bank-0 etc. Set the hardware jumper setting as needed.

3. Check all the other hardware jumper setting on the board to ensure the correct setup i.e. enable/disable of the device or port, port address, IRQ.

4.23.THE SYSTEM MOTHERBOARD INSTALLATION

See FIG 4-9

1. Check and verify the System Motherboard is prepared for installation.

2. Place the System Motherboard over the Universal Back Plate from the inside of the Main Console, and align the mounting screw holes that are used to mount the board onto the back plate.

3. Attach the mounting standoffs, with the screws and washers from other side of the back plate on the defended mounting holes as shown in FIG 4-9. Do not tighten the screws at this time.

4. Arrange the Display Interface Board's system control and indicator pig-tail wire bundle to their convenient locations for easy connecting to the headers on the installed motherboard.

5. Place the System Motherboard, and paper flat washers on the top and the hex nuts last.

6. Check the motherboard position, and tighten all screws and nuts from both directions.

7. Place the Motherboard Rear-End Supporter with the catching edge at the end of the motherboard (required for Baby-AT size motherboard or motherboard without mounting holes at the rear-end) .

8. Locate the supporter onto a slot of the back plate's cutout where the clearance on both mounting screws can be seen.

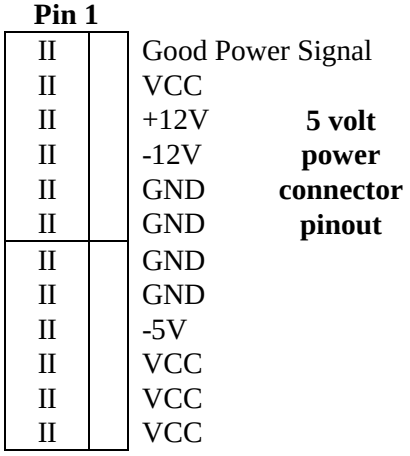
9. Tighten both screws with provided washers to secure the support onto the back plate as shown in FIG 4-9.

10. Repeat the steps at the other end.

11. Connect the System Speaker, Turbo SW, Turbo LED, Reset SW, Reset LED, H.D.D. LED, system control connectors on to the motherboard if so equipped. The H.D.D. LED may be connected to the Hard Disk Controller Card's LED terminal if installed. Please note that the LED's connector installation must be in correct (+) and (-) polarities. See FIG 4-9b.

4.24. CONNECTING THE POWER SUPPLY

The system power supply connectors on the mainboard is for a 5 volt power supply. Incorrect installation of the power supply could result in serious damage to the system board and connected peripherals.



To connect the leads from either voltage power supply, you should first make sure the power supply is unplugged. Most power supplies have two leads. Each lead has six wires, two of which are black.

ORIENT THE CONNECTORS SO THE BLACK WIRES ARE IN THE MIDDLE OF THE 5V POWER SUPPLY.

Align the plastic guide pins on the lead cables to their receptacles on the mainboard. You may need to hold the lead at an angle to line it up. Once you have the guide pins aligned, press the lead connector so that the plastic clips on the lead snap into place and secure the lead to the connector.

4.25. THE BASIC I/O BRACKET AND INSTALLATION

The basic I/O functions i.e. the COM ports, parallel port and the PS/2 mouse port may come with a pre-installed I/O bracket for mounting. You may install the bracket into the empty opened slot as shown in FIG 4-12.

1. Remove the card bracket holding screw on the I/O slot position where the Basic I/O Bracket is to be installed.
2. Place the bracket flat against the I/O Expansion Card Supporter.
3. Insert and tighten the bracket onto the I/O Expansion Card Support with the provided screw.
4. Connect all I/O flat cable connectors on the headers.

4.26.THE EXTENDED I/O BRACKET

The Extended I/O Bracket is designed to hold the basic I/O port away from the I/O slot. It comes with two configurations of choice. There is One (1) for D-Sub 9 pins and D-Sub 25 pins and One (1) for D-Sub 15 pins and D-Sub 25 pins. The bracket is mounted to the side panel of the Main Console and provides the space for port mounting.

4.27.TO INSTALL ADDITIONAL I/O EXPANSION CARDS

To Install Additional I/O Expansion Cards , follow the same procedure the same manner as you installed the Video Card in the previous section. The Demand[tm] system provides a cooling air path on the cards that occupy the first three (3) full-length slots. You may need to remove the Extended I/O bracket. If used, to allow the clearance of the access space while you proceed.

4.28.THE COMPRESSION FAN ASSEMBLY AND AIR-FILTER (STD AND OPT-03)

See FIG 4-14, FIG 4-15, FIG 4-15a

The Compression Fan Assembly is located on the Drive-Side of the Main Console. You only need to access this section if your system has the optional air filter installed (OPT-06).

To remove the Air-Filter (STD) or (OPT-03);

1. Disconnect the Compression Fan Assembly power cable from power supply.
2. Remove all four (4) screws as shown in FIG 4-15.
3. Gently remove the Compression Fan Assembly from the side panel. The Air-Filter is locate between the fan assembly and the side panel.
4. Reverse the procedure for re-install the Compression Fan Assembly and Air-Filter.

4.29.THE COMPRESSION FAN ASSEMBLY AND AIR-FILTER (OPT-04)

See FIG 4-15b.

1. Disconnect the Compression Fan Assembly power cable from power supply.
2. Remove all four (4) Card Support Bracker screws.
3. Remove all four (4) Fan/Filter mounting screws with hex-nuts.
4. Gently remove the Fan from the side panel. The Air-Filter is locate between the compression fan and the side panel.
5. Reverse the procedure for re-install the Compression Fan Assembly and Air-Filter.

5. SYSTEM PART LIST

The following Parts List is for reference only. The actual parts installed in you system may be vary depending on your purchased configuration..

5.1. DEMAND™ SYSTEM SKD (STD) PART LIST

See FIG 5-1.

REF #	PART NUMBER	QTY	DESCRIPTION	MFG
A1	900-0508-06	1	POLYETHYLENE BAGS, 6 MIL, 5" X 8", CLEAR	C110
A2	198-9001-00	1	DOC, LABEL AND TABLE OF CONTENT	C100
A3	196-1021-00	4	3-1/2" DRIVE MOUNTING SPACER	T109
A4	193-1100-00	7	CARD POSITIONING CLIPS	T109
A5	196-4012-00	1	D-SUB CONNECTOR PLATE, 15 & 25 PIN	T109
A6	196-4011-00	1	D-SUB CONNECTOR PLATE, 9 & 25 PIN	T109
A7	JNUT-4-S0	9	JAM NUT, #4-40, HEX, FULL HEIGHT, STEEL, FINISHED	M002
A8	S4T025-SB	12	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
A9	P6T050-SS	12	SCREW, #6-32 X 1/2” PHILLIPS TRUSS-HEAD, STAINLESS	M002
A10	PM3T012-SS	12	SCREW, M3 X 12mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
A11	STMF-037-SS	9	STANDOFFS, #4-40 F-M, LG=3/8", OD=3/16" HEX, STAINLESS	M002
A12	WFL-4-S0	9	WASHER, #4 FLAT, STEEL,FINISHED	M002
A13	WSP-6-SB	12	WASHER, #6 HELICAL SPRING, BLACK	M002
A14	WSP-4-SB	3	WASHER, #4 HELICAL SPRING, BLACK	M002
A15	199-3002-00	1	SCREW DRIVER, HEX KEY, 1/16"	G001
A16	199-3003-00	1	SCREW DRIVER, HEX KEY, 5/64"	G001
A18	196-1011-00	8	5-1/4" DRIVE MOUNTING SPACER	T109
A19	199-5001-00	2	3-1/2" DRIVE ADAPTOR KIT (STD)	C101
A21	S48F025-SB	2	SCREW, #4-40 X 1/4” HEX SOCKET 82d FLAT-HEAD, STEEL, BLACK	M002
A23	WET-4-SB	9	WASHER, #4 EXTERNAL TOOTH, STEEL, BLACK	M002
A24	WFL-4-PP	9	WASHER, #4 FLAT, RED PAPER	M001
M1	195-0501-01C	1	SIDE PANEL, LEFT	T109
M2	195-0401-01B	1	SIDE PANEL, RIGHT	T109
M3	195-0301-01B	1	BOTTOM FRONT PANEL	T109
M4	195-0101-01A	1	BOTTOM REAR PANEL	T109
M5	195-0601-01A	1	TOP REAR PANEL	T109
M6	195-0701-01B	1	TOP FRONT PANEL	T109
M7	195-0201-01B	1	BOTTOM SIDE PANEL, LEFT	T109
M8	195-0202-01B	1	BOTTOM SIDE PANEL, RIGHT	T109
M9	195-0801-01	1	TOP SIDE PANEL, LEFT	T109
M10	195-0802-01	1	TOP SIDE PANEL, RIGHT	T109
M11	195-1001-01A	2	DISPLAY SWING ARM	T109
M12	195-1101-01B	2	SIDE COVER PANEL	T109
M13	195-0901-01	2	MOTHER BOARD REAR SUPPORTER	T109
M14	196-3000-01	1	MOTHER BOARD BACK PLATE	T109
M15	196-2000-00A	1	CARD GUIDE STAND	T109
M16	196-1000-00	1	DRIVE BAY ENCLOSURE	T109
M17	196-4000-00	1	EXPANSION CARD SUPPORTER	T109
M22	196-1010-00	16	DRIVE RUBBER MOUNTING STANDOFFS	T109
M23	196-0010-00A	2	THUMB SCREW, STAINLESS	T109
M24	196-0010-01A	4	THUMB SCREW, ALUMINUM	T109
M25	196-0020-00A	2	DISPLAY SWING ARM MOUNTING PLATE	T109
M26	196-0030-00	8	DISPLAY ARM POSITIONING WASHER	T109
M27	192-0030-00	8	DISPLAY ARM RUBBER SPACER	T109
M28	192-0301-00A	2	RUBBER FEET, FRONT	T109
M29	192-0302-00A	2	RUBBER FEET, FRONT	T109
M30	192-0401-00A	2	RUBBER FEET, REAR	T109
M31	192-0402-00A	2	RUBBER FEET, REAR	T109
M32	192-1001-00A	4	5-1/4" DRIVE SHOCK ABSORBER	T109
M33	192-1002-00A	2	3-1/2" DRIVE SHOCK ABSORBER	T109
M34	192-1003-00A	1	DRIVE BOTTOM SUPPORT	T109

M35	192-1004-00	1	SIDE PANEL PLUG	T109
M37	S61F025-SB	20	SCREW, #6-32 X 1/4” HEX SOCKET 100d FLAT-HEAD, STEEL, BLACK	M002
M38	S8T075-SB	8	SCREW, #8-32 X 3/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M39	S6T025-SB	49	SCREW, #6-32 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M40	S6T037-SB	12	SCREW, #6-32 X 3/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M42	S6T063-SB	2	SCREW, #6-32 X 5/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M43	S6T125-SB	4	SCREW, #6-32 X 1-1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M44	S4T025-SB	11	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M46	PM4T008-SS	2	SCREW, M4 X 8mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M47	PM4T010-SS	2	SCREW, M4 X 10mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M49	PM3T006-SS	7	SCREW, M3 X 6mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M50	WSP-8-SB	12	WASHER, #8 HELICAL SPRING, BLACK	M002
M51	WSP-6-SB	87	WASHER, #6 HELICAL SPRING, BLACK	M002
M52	WSP-4-SB	7	WASHER, #4 HELICAL SPRING, BLACK	M002
M53	WET-4-SB	4	WASHER, #4 EXTERNAL TOOTH, STEEL, BLACK	M002
M54	WFL-6-S0	4	WASHER, #6 FLAT, STEEL, FINISHED	M002
M56	WFL-6-HF	8	WASHER, #6 FLAT, HARD FIBER	M001
M59	WCC-10-SP	4	WASHER, #10, CYLINDRICALLY CURVED, SPRING STEEL	M003
M62	199-2010-00	1	HANDLE ASSEMBLY	C116
M63	199-1010-00	1	NAME PLATE, SYSTEM I.D.	T109
M64	199-9001-00	3	FULL LENGTH CARD GUIDE	C101
M65	199-2020-00	1	COMPRESSION FAN ASSEMBLY	C101
M66	950-302-00A	1	POWER SUPPLY ASSEMBLY	T102
M67	950-2010-00	1	PCB ASSEMBLY, VIDEO INTERFACE	T101
M69	AV5XX	1	VIDEO CARD, PCI	C103
M70	170-100-00	1	KEYBOARD ASSEMBLY (COMPLETED, Kx)	T109
M71	180-100-00	1	DISPLAY ASSEMBLY (COMPLETED, Dx)	C100
M72	191-1110-00	1	CABLE ASSEMBLY, DISPLAY INTERFACE	C101
M73	196-0060-00A	6	BLANK EXPANSION SLOT COVER PLATE	T109
M74	191-1120-00	1	CABLE ASSEMBLY, VIDEO CARD INTERFACE	C101
M80	199-2001-00	1	CARRYING BAG	T109
M81	199-4000-00A	A/R	INNER PACKING MAT'L (FOAM)	T109
M82	199-6000-00A	A/R	SHIPPING CARTON	T109

5.2. DEMAND™ SYSTEM SKD (OPT-03) PART LIST

REF #	PART NUMBER	QTY	DESCRIPTION	MFG
A1	900-0508-06	1	POLYETHYLENE BAGS, 6 MIL, 5" X 8", CLEAR	C110
A2	198-9001-00	1	DOC, LABEL AND TABLE OF CONTENT	C100
A3	196-1021-00	8	3-1/2" DRIVE MOUNTING SPACER	T109
A4	193-1100-00	7	CARD POSITIONING CLIPS	T109
A5	196-4012-00	1	D-SUB CONNECTOR PLATE, 15 & 25 PIN	T109
A6	196-4011-00	1	D-SUB CONNECTOR PLATE, 9 & 25 PIN	T109
A7	JNUT-4-S0	9	JAM NUT, #4-40, HEX, FULL HEIGHT, STEEL, FINISHED	M002
A8	S4T025-SB	12	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
A9	P6T050-SS	12	SCREW, #6-32 X 1/2” PHILLIPS TRUSS-HEAD, STAINLESS	M002
A10	PM3T012-SS	12	SCREW, M3 X 12mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
A11	STMF-037-SS	9	STANDOFFS, #4-40 F-M, LG=3/8", OD=3/16" HEX, STAINLESS	M002
A12	WFL-4-S0	9	WASHER, #4 FLAT, STEEL,FINISHED	M002
A13	WSP-6-SB	12	WASHER, #6 HELICAL SPRING, BLACK	M002
A14	WSP-4-SB	3	WASHER, #4 HELICAL SPRING, BLACK	M002
A15	199-3002-00	1	SCREW DRIVER, HEX KEY, 1/16"	G001
A16	199-3003-00	1	SCREW DRIVER, HEX KEY, 5/64"	G001
A18	196-1011-00	4	5-1/4" DRIVE MOUNTING SPACER	T109
A19	199-5001-00	1	3-1/2" DRIVE ADAPTOR KIT	C101
A21	S48F025-SB	2	SCREW, #4-40 X 1/4” HEX SOCKET 82d FLAT-HEAD, STEEL, BLACK	M002
A23	WET-4-SB	9	WASHER, #4 EXTERNAL TOOTH, STEEL, BLACK	M002
A24	WFL-4-PP	9	WASHER, #4 FLAT, RED PAPER	M001
M1	195-0503-01	1	SIDE PANEL, LEFT	T109
M2	195-0401-01B	1	SIDE PANEL, RIGHT	T109
M3	195-0301-01B	1	BOTTOM FRONT PANEL	T109
M4	195-0101-01A	1	BOTTOM REAR PANEL	T109
M5	195-0601-01A	1	TOP REAR PANEL	T109
M6	195-0701-01B	1	TOP FRONT PANEL	T109
M7	195-0201-01B	1	BOTTOM SIDE PANEL, LEFT	T109
M8	195-0202-01B	1	BOTTOM SIDE PANEL, RIGHT	T109
M9	195-0801-01	1	TOP SIDE PANEL, LEFT	T109
M10	195-0802-01	1	TOP SIDE PANEL, RIGHT	T109
M11	195-1001-01A	2	DISPLAY SWING ARM	T109
M12	195-1101-01B	2	SIDE COVER PANEL	T109
M13	195-0901-01	2	MOTHER BOARD REAR SUPPORTER	T109
M14	196-3000-01	1	MOTHER BOARD BACK PLATE	T109
M15	196-2000-00A	1	CARD GUIDE STAND	T109
M16	196-1101-00	1	DRIVE BAY ENCLOSURE	T109
M17	196-4000-00	1	EXPANSION CARD SUPPORTER	T109
M22	196-1010-00	16	DRIVE RUBBER MOUNTING STANDOFFS	T109
M23	196-0010-00A	2	THUMB SCREW, STAINLESS	T109
M24	196-0010-01A	4	THUMB SCREW, ALUMINUM	T109
M25	196-0020-00A	2	DISPLAY SWING ARM MOUNTING PLATE	T109
M26	196-0030-00	8	DISPLAY ARM POSITIONING WASHER	T109
M27	192-0030-00	8	DISPLAY ARM RUBBER SPACER	T109
M28	192-0301-00A	2	RUBBER FEET, FRONT	T109
M29	192-0302-00A	2	RUBBER FEET, FRONT	T109
M30	192-0401-00A	2	RUBBER FEET, REAR	T109
M31	192-0402-00A	2	RUBBER FEET, REAR	T109
M32	192-1001-00A	4	5-1/4" DRIVE SHOCK ABSORBER	T109
M33	192-1006-00	4	3-1/2" DRIVE SHOCK ABSORBER	T109
M34	192-1007-00	1	DRIVE BOTTOM SUPPORT	T109
M35	192-1004-00	1	SIDE PANEL PLUG	T109
M37	S61F025-SB	20	SCREW, #6-32 X 1/4” HEX SOCKET 100d FLAT-HEAD, STEEL, BLACK	M002
M38	S8T075-SB	8	SCREW, #8-32 X 3/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M39	S6T025-SB	49	SCREW, #6-32 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M40	S6T037-SB	12	SCREW, #6-32 X 3/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M42	S6T063-SB	2	SCREW, #6-32 X 5/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M43	S6T125-SB	4	SCREW, #6-32 X 1-1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002

M44	S4T025-SB	11	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M46	PM4T008-SS	2	SCREW, M4 X 8mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M47	PM4T010-SS	2	SCREW, M4 X 10mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M49	PM3T006-SS	7	SCREW, M3 X 6mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M50	WSP-8-SB	12	WASHER, #8 HELICAL SPRING, BLACK	M002
M51	WSP-6-SB	85	WASHER, #6 HELICAL SPRING, BLACK	M002
M52	WSP-4-SB	7	WASHER, #4 HELICAL SPRING, BLACK	M002
M53	WET-4-SB	4	WASHER, #4 EXTERNAL TOOTH, STEEL, BLACK	M002
M54	WFL-6-S0	4	WASHER, #6 FLAT, STEEL, FINISHED	M002
M56	WFL-6-HF	8	WASHER, #6 FLAT, HARD FIBER	M001
M59	WCC-10-SP	4	WASHER, #10, CYLINDRICALLY CURVED, SPRING STEEL	M003
M62	199-2010-00	1	HANDLE ASSEMBLY	C116
M63	199-1010-00	1	NAME PLATE, SYSTEM I.D.	T109
M64	199-9001-00	3	FULL LENGTH CARD GUIDE	C101
M65	199-2020-00	1	COMPRESSION FAN ASSEMBLY	C101
M66	950-302-00A	1	POWER SUPPLY ASSEMBLY	T102
M67	950-2010-00	1	PCB ASSEMBLY, VIDEO INTERFACE	T101
M69	AV5XX	1	VIDEO CARD, PCI	C103
M70	170-100-00	1	KEYBOARD ASSEMBLY (COMPLETED, Kx)	T109
M71	180-100-00	1	DISPLAY ASSEMBLY (COMPLETED, Dx)	C100
M72	191-1110-00	1	CABLE ASSEMBLY, DISPLAY INTERFACE	C101
M73	196-0060-00A	6	BLANK EXPANSION SLOT COVER PLATE	T109
M74	191-1120-00	1	CABLE ASSEMBLY, VIDEO CARD INTERFACE	C101
M80	199-2001-00	1	CARRYING BAG	T109
M81	199-4000-00A	A/R	INNER PACKING MAT'L (FOAM)	T109
M82	199-6000-00A	A/R	SHIPPING CARTON	T109

5.3. DEMAND™ SYSTEM SKD (OPT-04) PART LIST

REF #	PART NUMBER	QTY	DESCRIPTION	MFG
A1	900-0508-06	1	POLYETHYLENE BAGS, 6 MIL, 5" X 8", CLEAR	C110
A2	198-9001-00	1	DOC, LABEL AND TABLE OF CONTENT	C100
A3	196-1021-00	16	3-1/2" DRIVE MOUNTING SPACER	T109
A4	193-1100-00	7	CARD POSITIONING CLIPS	T109
A5	196-4012-00	1	D-SUB CONNECTOR PLATE, 15 & 25 PIN	T109
A6	196-4011-00	1	D-SUB CONNECTOR PLATE, 9 & 25 PIN	T109
A7	JNUT-4-S0	9	JAM NUT, #4-40, HEX, FULL HEIGHT, STEEL, FINISHED	M002
A8	S4T025-SB	12	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
A9	P6T050-SS	16	SCREW, #6-32 X 1/2” PHILLIPS TRUSS-HEAD, STAINLESS	M002
A10	PM3T012-SS	16	SCREW, M3 X 12mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
A11	STMF-037-SS	9	STANDOFFS, #4-40 F-M, LG=3/8", OD=3/16" HEX, STAINLESS	M002
A12	WFL-4-S0	9	WASHER, #4 FLAT, STEEL,FINISHED	M002
A13	WSP-6-SB	16	WASHER, #6 HELICAL SPRING, BLACK	M002
A14	WSP-4-SB	3	WASHER, #4 HELICAL SPRING, BLACK	M002
A15	199-3002-00	1	SCREW DRIVER, HEX KEY, 1/16"	G001
A16	199-3003-00	1	SCREW DRIVER, HEX KEY, 5/64"	G001
A20	195-1401-00	2	3-1/2" DRIVE BAY COVER	T109
A21	S48F025-SB	2	SCREW, #4-40 X 1/4” HEX SOCKET 82d FLAT-HEAD, STEEL, BLACK	M002
A22	191-1310-00	1	POWER CABLE, 'Y' ASSEMBLY	C101
A23	WET-4-SB	9	WASHER, #4 EXTERNAL TOOTH, STEEL, BLACK	M002
A24	WFL-4-PP	9	WASHER, #4 FLAT, RED PAPER	M001
M1	195-0504-01	1	SIDE PANEL, LEFT	T109
M2	195-0401-01B	1	SIDE PANEL, RIGHT	T109
M3	195-0301-01B	1	BOTTOM FRONT PANEL	T109
M4	195-0101-01A	1	BOTTOM REAR PANEL	T109
M5	195-0601-01A	1	TOP REAR PANEL	T109
M6	195-0701-01B	1	TOP FRONT PANEL	T109
M7	195-0201-01B	1	BOTTOM SIDE PANEL, LEFT	T109
M8	195-0202-01B	1	BOTTOM SIDE PANEL, RIGHT	T109
M9	195-0801-01	1	TOP SIDE PANEL, LEFT	T109
M10	195-0802-01	1	TOP SIDE PANEL, RIGHT	T109
M11	195-1001-01A	2	DISPLAY SWING ARM	T109
M12	195-1101-01B	2	SIDE COVER PANEL	T109
M13	195-0901-01	2	MOTHER BOARD REAR SUPPORTER	T109
M14	196-3000-01	1	MOTHER BOARD BACK PLATE	T109
M15	196-2010-00	1	CARD GUIDE STAND	T109
M16	196-1201-00	1	DRIVE BAY ENCLOSURE	T109
M17	196-4000-00	1	EXPANSION CARD SUPPORTER	T109
M22	196-1010-00	14	DRIVE RUBBER MOUNTING STANDOFFS	T109
M23	196-0010-00A	2	THUMB SCREW, STAINLESS	T109
M24	196-0010-01A	4	THUMB SCREW, ALUMINUM	T109
M25	196-0020-00A	2	DISPLAY SWING ARM MOUNTING PLATE	T109
M26	196-0030-00	8	DISPLAY ARM POSITIONING WASHER	T109
M27	192-0030-00	8	DISPLAY ARM RUBBER SPACER	T109
M28	192-0301-00A	2	RUBBER FEET, FRONT	T109
M29	192-0302-00A	2	RUBBER FEET, FRONT	T109
M30	192-0401-00A	2	RUBBER FEET, REAR	T109
M31	192-0402-00A	2	RUBBER FEET, REAR	T109
M33	192-1006-00	8	3-1/2" DRIVE SHOCK ABSORBER	T109
M34	192-1008-00	1	DRIVE BOTTOM SUPPORT	T109
M35	192-1004-00	1	SIDE PANEL PLUG	T109
M37	S61F025-SB	20	SCREW, #6-32 X 1/4” HEX SOCKET 100d FLAT-HEAD, STEEL, BLACK	M002
M38	S8T075-SB	8	SCREW, #8-32 X 3/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M39	S6T025-SB	49	SCREW, #6-32 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M40	S6T037-SB	12	SCREW, #6-32 X 3/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M42	S6T063-SB	2	SCREW, #6-32 X 5/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M43	S6T125-SB	4	SCREW, #6-32 X 1-1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
M44	S4T025-SB	11	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002

M46	PM4T008-SS	2	SCREW, M4 X 8mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M47	PM4T010-SS	2	SCREW, M4 X 10mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M49	PM3T006-SS	7	SCREW, M3 X 6mm PHILLIPS, TRUSS-HEAD, STAINLESS	M002
M50	WSP-8-SB	12	WASHER, #8 HELICAL SPRING, BLACK	M002
M51	WSP-6-SB	85	WASHER, #6 HELICAL SPRING, BLACK	M002
M52	WSP-4-SB	7	WASHER, #4 HELICAL SPRING, BLACK	M002
M53	WET-4-SB	4	WASHER, #4 EXTERNAL TOOTH, STEEL, BLACK	M002
M54	WFL-6-S0	4	WASHER, #6 FLAT, STEEL, FINISHED	M002
M56	WFL-6-HF	4	WASHER, #6 FLAT, HARD FIBER	M001
M59	WCC-10-SP	4	WASHER, #10, CYLINDRICALLY CURVED, SPRING STEEL	M003
M62	199-2010-00	1	HANDLE ASSEMBLY	C116
M63	199-1010-00	1	NAME PLATE, SYSTEM I.D.	T109
M64	199-9001-00	5	FULL LENGTH CARD GUIDE	C101
M65	199-2021-00	1	COMPRESSION FAN ASSEMBLY	C101
M66	950-302-00A	1	POWER SUPPLY ASSEMBLY	T102
M67	950-2010-00	1	PCB ASSEMBLY, VIDEO INTERFACE	T101
M68	199-2710-00	1	FILTER ASSEMBLY	E002
M69	AV5XX	1	VIDEO CARD, PCI	C103
M70	170-100-00	1	KEYBOARD ASSEMBLY (COMPLETED, Kx)	T109
M71	180-100-00	1	DISPLAY ASSEMBLY (COMPLETED, Dx)	C100
M72	191-1110-00	1	CABLE ASSEMBLY, DISPLAY INTERFACE	C101
M73	196-0060-00A	6	BLANK EXPANSION SLOT COVER PLATE	T109
M74	191-1120-00	1	CABLE ASSEMBLY, VIDEO CARD INTERFACE	C101
M80	199-2001-00	1	CARRYING BAG	T109
M81	199-4000-00A	A/R	INNER PACKING MAT'L (FOAM)	T109
M82	199-6000-00A	A/R	SHIPPING CARTON	T109

5.4. 180-100 DISPLAY UNIT (10.4” TFT) PART LIST

See FIG 5-2.

REF #	PART NUMBER	QTY	DESCRIPTION	MFG
D1	185-0101-01E	1	DISPLAY FRAME, BOTTOM	T109
D2	185-0301-01E	1	DISPLAY FRAME, LEFT	T109
D3	185-0401-01C	1	DISPLAY FRAME, RIGHT	T109
D4	185-0501-01D	1	DISPLAY FRAME, TOP	T109
D5	186-1000-01	1	DISPLAY BACK PLATE	T109
D6	LQ10DS05	1	TFT DISPLAY PANEL	SHARP
D7	186-0300-00A	4	DISPLAY MOUNTING BRACKET	T109
D8	186-0500-00B	1	SCREEN MOUNTING PLATE, LEFT	T109
D9	186-0600-00	1	SCREEN MOUNTING PLATE, RIGHT	T109
D10	183-0100-00	2	DISPLAY TOP CORNER	T109
D11	183-0200-00	2	DISPLAY BOTTOM CORNER	T109
D12	182-0101-01	2	SCREEN SPACER, TOP AND BOTTOM	T109
D13	182-0102-02	2	SCREEN SPACER, LEFT AND RIGHT	T109
D14	183-0300-00	1	DISPLAY WINDOW LENSE	T109
D15	LS380	1	CCFT INVERTER ASSEMBLY	C106
D16	EAS-45P36S	2	SPEAKER, 4 ohm, 2W, 45mm	PANASONIC
D17	S48F025-SB	18	SCREW, #4-40 X 1/4” HEX SOCKET 82d FLAT-HEAD, STEEL, BLACK	M002
D18	S4T025-SB	6	SCREW, #4-40 X 1/4” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
D19	WSP-4-SB	19	WASHER, #4 HELICAL SPRING, BLACK	M002
D20	STMF-025-SS	11	STANDOFFS, #4-40 F-M, LG=1/4", OD=3/16" HEX, STAINLESS	M002
D21	JNUT-4-S0	11	JAM NUT, #4-40, HEX, FULL HEIGHT, STEEL, FINISHED	M002
D22	SP-4010-LN	7	NYLON SPACER, ID=.12", OD=.25", THK=.10"	M002
D23	WFL-4-S0	11	WASHER, #4 FLAT, STEEL, FINISHED	M002
D24	950-2210-00	1	PCB ASSEMBLY, DISPLAY CONTROL	T101
D25	950-2310-00	1	PCB ASSEMBLY, DISPLAY INTERFACE	T101
D26	181-0020-00	1	CABLE ASSEMBLY, CONTROL INTERFACE	C100
D27	181-1000-00A	1	CABLE ASSEMBLY, FLEX, SCREEN INTERFACE	T101
D28	181-0010-00	1	CABLE ASSEMBLY, SPEAKER	C100
D29	181-0030-00	1	CABLE ASSEMBLY, INVERTER INTERFACE	C100
D30	184-2000-00	1	SYSTEM ID NAME PLATE	T109
D31	S4T037-SB	2	SCREW, #4-40 X 3/8” HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
D34	S41F025-SB	31	SCREW, #4-40 X 1/4” HEX SOCKET 100d FLAT-HEAD, STEEL, BLACK	M002

5.5. 170-100 KEYBOARD UNIT PART LIST

See FIG 5-3.

REF #	PART NUMBER	QTY	DESCRIPTION	MFG
K1	175-0101-01A	1	BOTTOM PANEL	T109
K2	950-4010-00	1	KEYBOARD SUB ASS’Y	T102
K3	175-0301-01D	1	BASE JOINT PANEL	T109
K4	175-0501-01D	1	SWING ARM	T109
K5	175-0201-01E	1	TOP PANEL	T109
K6	175-0601-01A	1	SCREEN HOLDER	T109
K7	950-4012-00	1	KEYBOARD CORD ASS’Y	T102
K8	175-0401-01C	1	SIDE PANEL, LEFT	T109
K9	175-0402-01C	1	SIDE PANEL, RIGHT	T109
K10	175-0802-01	1	SWING JOINT, RIGHT	T109
K11	175-0801-01	1	SWING JOINT, LEFT	T109
K12	175-0702-01	1	SWING SUPPORT, RIGHT	T109
K13	175-0701-01	1	SWING SUPPORT, LEFT	T109
K14	172-0102-00A	1	RUBBER CONNER, FRONT RIGHT	T109
K15	172-0101-00A	1	RUBBER CONNER, FRONT LEFT	T109
K16	172-0302-00	2	RUBBER FEET, SWING RIGHT	T109
K17	172-0301-00	2	RUBBER FEET, SWING LEFT	T109
K18	172-0202-00B	1	RUBBER CONNER, REAR RIGHT	T109
K19	172-0201-00B	1	RUBBER CONNER, REAR LEFT	T109

K20	S61F025-SB	4	SCREW, #6-32 X 1/4" HEX SOCKET 100d FLAT-HEAD, STEEL, BLACK	M002
K21	S48F025-SB	32	SCREW, #4-40 X 1/4" HEX SOCKET 82d FLAT-HEAD, STEEL, BLACK	M002
K22	S8T075-SB	2	SCREW, #8-32 X 3/4" HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
K23	WSP-4-SB	6	WASHER, #4 HELICAL SPRING, BLACK	M002
K24	P4P025-SS	1	SCREW, #4-40 X 1/4" PHILLIPS PAN-HEAD, STAINLESS	M002
K25	S4T025-SB	4	SCREW, #4-40 X 1/4" HEX SOCKET TRUSS-HEAD, STEEL, BLACK	M002
K26	ST-4E-ST	1	WASHER, #4 EXTERNAL TOOTH	M002

5.6. DEMAND™ SYSTEM BASIC CONFIGURATION PART LIST

REF #	PART NUMBER	QTY	DESCRIPTION	MFG
***	DEMAND-SKD	1	DEMAND SERIES SKD (Ax,Mx)	C100
B2	198-6000-01	1	INSTRUCTION MANUAL	C100
B3	199-0001-00	1	AC POWER CORD, 120V, 6' LENGTH	E003

6. PIA-460 Series CPU Card

This chapter gives you the information for PIA-460. It also outlines the System specification.

6.1. OVERVIEW

Thank you for purchasing our PIA-460 Half-sized Pentium CPU Card with VGA, fully PC / AT compatible. The PIA-460 provides faster processing speed, greater expandability and can handle more task than before. This manual is designed to assist you how to install and set up the system. It contents five chapters. The user can apply this manual for configuration according to the following chapters:

6.2. SYSTEM SPECIFICATION

- **CPU**
  Intel, AME, Cyrix.
  54c/55c/6x86.
  321 pin PGA socket.
  75/90/100/120/133/166/200mhz clock generator.
  2.5V/2.75V, 3.3V/3.52V voltage regulator.

- **MEMORY**
  Up to 128MB, EDO/FPM DRAM.
  Two 72 pin SIMM socket on board.

- **CACHE**
  L1 Cache (depended on CPU type).
  L2 Cache on board 256K, up to 512k.

- **REAL-TIME CLOCK / CALENDAR**
  CMOS data back up from BIOS setting or BIOS default.
  Dallas DS 12887 Real Time Clock.
  Guaranty battery 10 years.

- **BIOS**
  Award, Flash BIOS for plug & play function.
  Easy update 128KB flash EEPROM.
  Support Green Function.
  Support S/IO Setup.

- **KEYBOARD CONNCETOR**
  PC/AT type mini DIN connector.
  Support PC/AT, PS/2 Keyboard or PS/2 Mouse by jumper selection.
  5 pin External keyboard connector.

- **BUS SUPPORT**
  External ISA BUS.
  Internal PCI Bus, for VGA & IDE.
  PC-104 BUS.

- **DISPLAY**
  Support SVGA for CRT & Panel.
  Support 32 bits PCI Local, Bus.
  VGA BIOS combines in 128KB flash ROM together with system BIOS.
  Support 15pin connector 1024 x 768 (256 colors) resolution on SVGA Monitor.
  Support 1 MB Video memory.

	Support 41 pin connector 640 x 480 resolutions on LCD Panel. Panel support mono, color STN, TFT, EL. SVGA & Panel Display simultaneously.
• **WATCHDOG**	I/O port 2443H to open watchdog. I/O port 043 H to close watchdog. Time-out timing select 0 / 2 / 4 / 6 / 8 / 10 / 12 / 14 / 16 / 20 / 22 / 24 / 26 / 28 / 30 sec +/- 25%/
• **IDE INTERFACE**	One IDE port, Support up to four Enhanced IDE devices; optional.
• **FLOPPY DISK DRIVER INTERFACE**	Support up to two Floppy Disk Drivers, 3.5” and 5.25” (360K / 720K / 1.2M / 1.44M /2.88M).
• **SERIAL PORT**	Two high speed 16550 Compatible UARTs with Send / Receive 16 Byte FIFOs. MIDI Compatible. Programmable Bank Rate Generator.
• **PARALLEL PORT**	SPP, ECP, EPP Function. Bi-direction parallel port.
• **GREEN FUNCTION**	Software support by BIOS setup. Hardware support by switch control.
• **LED INDICATOR**	System power. Hard Disk access. Turbo and green function mode.
• **PD-104 BUS EXPANSION & SPEED**	ISA 8MHz PC-104 8MHz PCI Bus 33MHz
• **DMA CONTROLLER**	82C37 x 2
• **DMA CHANNELS**	7
• **INERRUPT CONTROLLERS**	82C59 x 2
• **INERRUPT LEVELS**	15
• **OPERATING TEMPERATURE**	0 to 60°C.
• **SYSTEM POWER REQUIREMENT**	DC Voltage: +5V, minimum +4.75V, maximum 5.25V. DC Ampere: 7A.
• **BOARD DIMENSION**	185mm x 122mm.
• **BOARD NET WEIGHT**	250 g.

6.3. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Avoid your system from static electric on all occasions.

2. Stay safe from the electric shock. Don't touch any components of this card when the card is no. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

7. HARDWARE CONFIGURATIN

Helpful information details you the jumper & connector settings, and components locations.

Sections include:

- Jumper & connector Quick Reference Table
- Components' Locations
- Configuration and Jumper settings
- Connector Pin Assignments

7.1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

CPU Type & CPU Clock Selection	JP2,JP3 JP4,JP6
CPU Voltage Selection	JP5
RS232/422/485 (COM2) Selection	JP7
Reset Connector	JP8
AT Keyboard / PS / 2 Mouse Selection	JP9,JP10
COM1 Connector	COM1
COM2 Connector	COM2
Keyboard Connector	DIN
External Keyboard Connector	EXKB
Floppy Disk Drive Connector	FDD
Hard Disk Drive LED Connector	HDD1,HDD2
Hard Disk Drive Connector	HDL
Power LED & KeyLock Connector	KBL
LCD Panel Connector	LCD
VGA CRT Connector	VGA
Power Connector	PWR
Printer Connector	PRT
External Speaker Connector	SPK
Turbo LED Connector	TBL
Memory Installing	SIMM1, SIMM2

7.2. COMPONENT LOCATIONS

PIS-460 Connector, Jumper and Component locations. See FIG 7-1

7.3. HOW TO SET JUMPERS

You can configure your board by setting jumpers. A jumper consists of two or three metal pins with a plastic base mounted on the card, and a small plastic "cap" (with a metal contact inside) to connect the pins. So you can set up your hardware configuration by " open" or "close" the pins.

The jumper can be combined into sets which called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks.

7.3.1.1.JUMPERS AND CAPS

Jumper has three pins, for examples, labeled PIN1, PIN2, and PIN3.
You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & Pin3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams look and what they represent.

7.4. CPU TYPE & CPU CLOCK SELECTION

JP2, JP3: Bus Frequency Ratio Selection
JP4: CPU Type Selection
JP6: CPU Clock Selection
The jumper settings are as follow:

7.4.1.Intel 75/150, Cyrix P-120+, CPU type & Clock Jumper Setting

CPU TPYE	CPU CLOCK	Jumper setting (pin closed) JP2	JP3	JP4	JP6
Intel Pentium 75Mhz	50MHz	Open	Open	Open	3-5 4-6
Intel Pentium 150Mhz	50MHz	Open	Closed	Open	3-5 4-6
Cyrix 6x86/ P-120+	50mhz	Open	Open	Closed	3-5 4-6

7.4.2.Intel 90/120, Cyrix P-150+, CPU type & clock Jumper Setting

CPU TYPE	CPU CLOCK	Jumper setting (pin closed) JP2	JP3	JP4	JP6
Intel Pentium 90Mhz	60Mhz	Open	Open	Open	1-3 4-6
Intel Pentium 120Mhz	60Mhz	Closed	Open	Open	1-3 4-6
Cyrix 6x86/ P-150+	60Mhz	Open	Open	Closed	1-3 4-6

7.4.3.Intel 100/133/166 CPU type & clock Jumper Setting

CPU TPYE	CPU CLOCK	Jumper setting (pin closed) JP2	JP3	JP4	JP6
Intel Pentium 100Mhz	66Mhz	Open	Open	Open	2-4 3-5
Intel Pentium 133Mhz	66Mhz	Closed	Open	Open	2-4 3-5
Intel Pentium 166 Mhz	66Mhz	Closed	Closed	Open	2-4 3-5

7.4.4.Intel 200, Cyrix P-166+ CPU type & clock Jumper Setting

CPU TPYE	CPU CLOCK	Jumper setting (pin closed) JP2	JP3	JP4	JP6
Intel Pentium 200Mhz	66MHz	Open	Closed	Open	2-4 3-5
Cyrix 6x86/ P-166+	66MHz	Open	Open	Open	2-4 3-5

7.5. CPU VOLTAGE SELECTION

JP5: CPU Voltage Selection.
The end-user can select the CPU voltage by adjusting the jumpers. The jumper settings are as follow:

CPU Voltage	Jumper Setting (Pin Closed)
3.3V	1-2
3.52V	3-4
2.5V	5-6
2.75V	7-8

7.6. RS232/422/485 (COM2) SELECTION

JP: RS-232/422-485 Selection
COM1 is fixed for RS-232 function only.

COM2 is selectable for RS422, 485 function
The jumper settings are as follow:

COM 2 FUNCTION	RS-232	RS-422	RS-485
Jumper setting (pin closed)	1-2	1-3 5-6 7-8 9-10 11-12 17-18 19-20 21-22 23-24	1-3 4-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20 21-22 23-24

***Manufactory default --- RS-232.

7.7. RESET CONNECTOR

JP8: Reset Connector
The pin assignments are as following:

PIN	ASSIGNMENT
1	Reset
2	Ground

7.8. AT KEYBOARD / PS2 MOUSE SELECTION

JP9, JP10: AT Keyboard / PS2 Mouse Selection
The jumper setting are as follow:

KEYBOARD TYPE	JUMPER SETTING (pin closed)	
	JP9	JP10
AT KEYBOARD	2-3	2-3
PS/2 MOUSE	1-2	1-2

7.9. COM1 CONNECTOR

COM1: COM1 Connector, DB9 male connector
The COM1 Connector assignments are as follow:

PIN	ASSIGNMENT
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

7.10.COM2 CONNECTOR

The COM2 Connector
The COM2 Connector assignments are as follow:

PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX-	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

7.11.KEYBOARD CONNECTOR

DIN: Keyboard Connector
The keyboard connector can support PC/AT Keyboard.
The pin assignments for keyboard are as follow:

PIN	ASSIGNMENT
1	KBDATA
2	KC
3	GND
4	VDD
5	KBCLK
6	NC

7.12.EXTERNAL KEYBOARD CONNECTOR

EXKB: External Keyboard Connector
The pin assignments are as follow:

PIN	ASSIGNMENT
1	KBCLK

2	KBDATA
3	NC
4	GND
5	VCC

7.13.FLOPPY DISK DRIVE CONNCTOR

FDD: Floppy Disk Drive Connector
You can use a 34-pin daisy-chain cable to connect a two-FDDs. On one end of this cable is a 34-pin flat cable to attach the FDD on the board, the other side is to attach two FDDS.
The pin assignments are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	RPM
3	GND	4	NC
5	GND	6	RATE0
7	GND	8	INDEX
9	GND	10	MTR0
11	GND	12	DRV1
13	GND	14	DRV0
15	GND	16	MTR1
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	WDATA
23	GND	24	WGATE
25	GND	26	TRK0
27	GND	28	WRPRT
29	GND	30	RDATA
31	GND	32	SEL
33	GND	34	DSKCHG

7.14.HARD DISK DRIVE CONNECTOR

HDD1: Hard Disk Drive Connector
The PIA-460 possess two HDD connectors, HDD1 and HDD2. The pin assignments are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	IDERST	21	IDEDEQ0
2	GND	22	GND
3	IDED7	23	IDEIOW
4	IDED8	24	GND
5	IDED6	25	IDEIOR
6	IDED9	26	GND
7	IDED5	27	IDERDY
8	IDED10	28	PULL HI
9	IDED4	29	IDEACK0
10	IDED11	30	GND
11	IDED3	31	IRQ14
12	IDED12	32	IOCS16
13	IDED2	33	IDEA1
14	IDED13	34	GND

15	IDED1	35	IDEA0
16	IDED14	36	IDEA2
17	IDED0	37	IDECS1P
18	IDED15	38	IDECS3P
19	GND	39	IDELEDP
20	N.C.	40	GND

HDD2: Hard Disk Drive Connector
The pin assignments are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	IDERST	21	IDEDEQ1
2	GND	22	GND
3	IDED7	23	IDEIOW
4	IDED8	24	GND
5	IDED6	25	IDEIOR
6	IDED9	26	GND
7	IDED5	27	IDERDY
8	IDED10	28	PULL HI
9	IDED4	29	IDEACK1
10	IDED11	30	GND
11	IDED3	31	IDESIRQ
12	IDED12	32	IOCS16
13	IDED2	33	IDEA1
14	IDED13	34	GND
15	IDED1	35	IDEA0
16	IDED14	36	IDEA2
17	IDED0	37	IDECS1S
18	IDED15	38	IDECS3S
19	GND	39	IDELEDS
20	N.C.	40	GND

7.15.HARD DISK DRIVE LED CONNECTOR

HDL: Hard Disk Driver LED Connector
The pin assignments are as follow:

PIN	ASSIGNMENT
1	HDD Active Signal
2	Vcc

7.16.POWER LED & KEYLOCK CONNCETOR

KBL: Power LCD & Keylock Connector
The pin assignments are as follow:

PIN	ASSIGNMENT
1	Power LED
2	NC
3	Ground
4	Keyboard Lock

5	Ground

7.17.LCD PANEL CONNECTOR

LCD: LCD Panel Connector
The connector LCD is a 41-pin, dual-in-line header used for Flat Panel displays.
The pin assignments are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	P20	2	GND
3	P16	4	VCC
5	P21	6	P0
7	P17	8	P8
9	P22	10	P1
11	P18	12	P9
13	P23	14	P2
15	P19	16	P10
17	VCC	18	P3
19	FLM	20	P11
21	MDE	22	P4
23	LP	24	P12
25	SHFCLK	26	P5
27	3.3V	28	P13
29	3.3V	30	P6
31	ENABKL	32	P14
33	LCDVDD	34	P7
35	ENVEE	36	P15
37	GND	38	+12V
39	GND	40	+12V
41	NC		

7.18.VGA CRT CONNCETOR

VGA: VGA CRT Connector
The pin assignments are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RED	9	NC
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	NC
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	NC
8	GND		

7.19.POWER CONNCTOR

PWR: Power Connector
The pin assignments are as follow:

PIN	ASSIGNMENT
1	NC
2	+5V
3	+12V
4	-12V
5	GND
6	GND

7.20.PRINTER CONNECTOR

PRT: Printer Connector
As to link the Printer to the card, you need a cable to connect both DB25 connector and parallel port. The pin assignments are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AUTFE
2	P0	15	ERROR
3	P1	16	INIT
4	P2	17	SLCTIN
5	P3	18	GND
6	P4	19	GND
7	P5	20	GND
8	P6	21	GND
9	P7	22	GND
10	ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

7.21.EXTERNAL SPEAKER CONNECTOR

SPK: External Speaker Connector
The pin assignments are as follow:

PIN	ASSIGNMENT
1	VCC
2	Ground
3	NC
4	Speaker Signal

7.22.TURBO LED

TBL: Turbo LED Connector
The pin assignments are as follow:

PIN	ASSIGNMENT
1	Vcc
2	Turbo Signal

7.23.MEMORY INSTALLING

The PIA-460 PCI local bus Embedded Computer will support 4 DRAM banks, bank 0 and bank 3 in two pcs 72 pin SIMM sockets on board.

Note: SIMM 1, 2 for single & double Bank DRAM module (72pin x 36bit x 2)

DRAM BANK CONFIGURATION

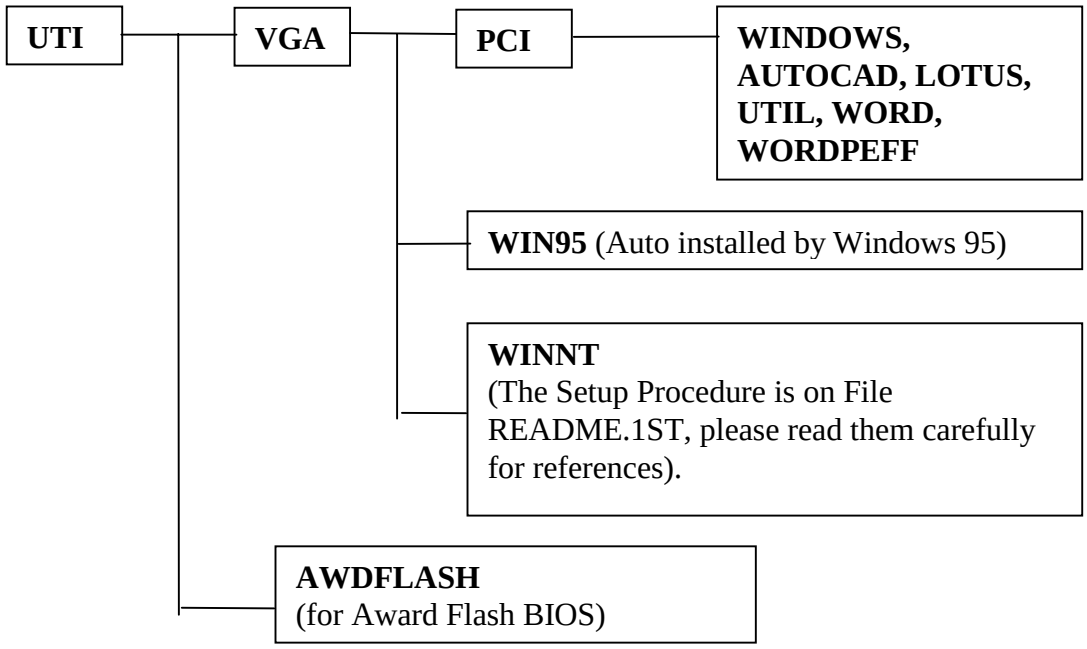
SIMM 1 BANK 0,1	SIMM 2 BANK 2,3	TOTAL MEMORY
1M		1M
1M	1M	2M
2M		2M
1M	2M	3M
2M	2M	4M
4M		4M
1M	4M	5M
2M	4M	6M
4M	4M	8M
8M		8M
2M	8M	10M
4M	8M	12M
8M	8M	16M
4M	16M	20M
8M	16M	24M
16M	16M	32M
32M		32M
4M	32M	36M
8M	32M	40M
16M	32M	48M
32M	32M	64M
32M	64M	96M
64M	64M	128M

8. SOFTWARE CONFIGURATION

8.1. VGA CONFIGURATION

The VGA interface for PIA-460 Pentium CPU Card can support a great range of displays, such as SVGA, STN, TFT, EL.....etc. You can display CRT and LCD Panel simultaneously on this board, but make sure the modes for both CRT and LCD Panel must be the same. If not, only the CRT can be displayed.

This card encloses with one Utility Disk; it contains two files: VGA.EXE and AWDFLASH.EXE and AWDFLASH.EXE. The directions are as follow



Before you change any setup for VGA and system BIOS, you have to install your utility disk first, then the file will self-decompress and create sub-directory on your hard driver.

8.2. HOW TO INSTALL VGA DRIVER FOR PCI

Change prompt path to C:\UTIL\VGA\PCI and key-in setup. For example,

C:\>
C:\CD\UTIL\VGA\PCI>
C:\CD\UTIL\VGA\PCI\SETUP

Press <Enter>, then the screen will display following tables:

DISPLAY DRIVER SETUP PROGRAM -Version 2.10- (C) Copywriter 1992, 1995, Chips and Technologies, Inc.
DECOMPILATION OR DISASSEMBLY PROHIBITED CHIPS 655XX - PCI Display Drivers Version 3.2.1 <<< Press any key to continue >>>

Follow the display messages to install VGA driver for PCI

Select any Application Driver to Install
Windows Version 3.1 AutoCAD Release 12 Lotus / Symphony VESA Driver Version 1.2 Word Version 5.0 Word Version 5.5 WordPerfect Version 5.0 WordPerfect Version 5.1 Utility Programs
↑↓ = Move cursor Up / Down, ENTER| = Enter selection, ESC = exit to DOS

If you select “Windows Version 3.1”, the table below will appear on screen.

Windows Version 3.1	
All Resolutions	
↑↓ = Move cursor Up/Down ESC = Exit to Main Menu	Enter = Toggle selection END = Start to install

Press <Enter>; the “All Resolutions” will be selected, then press <End>; the table will change as follow.

Windows Version 3.1
* All Resolutions selected

Enter the [Drive: Path] for installation
[C : \WINDOWS]

Please key-in the PATH name for installation. When you have completed all the installations as required, press any key to return to the Main Menu. If you want to exit just press ESC, the message below will appear.

Do you really want to exit (Y/N) ?

Select the answer as you require.

8.3. FLASH BIOS UPDATE

You can use the AWDFLASH.EXE to update your VGA and system BIOS. Change path to

C:\UTIL\AWDFLASH>AWDFLASH

Enter the FILENAME.BIN (2A5KFP69.BIN); the screen will display the table below.

FLASH MEMORY WRITER v5.0 Copyright (C) 1993, Award Software, Inc.,
For ALI-1521/1523-2A5KF69 DATE: 01/15/96 Flash Type - File Name to Program : FILENAME.BIN
Error Message : Do You Want To Save BIOS (Y/N)

If you want to save up the original BIOS, enter “Y” and press <Enter> then key-in the FILENAME.BIN. If you choose “N”, the following table will appear on screen.

FLASH MEMORY WRITER v5.0 Copyright (C) 1993, Award Software, Inc.,
For ALI-1521/1523-2A5KFP69 DATE: 01/15/96 Flash Type - File Name to Program : FILENAME.BIN
Error Message: Are You Sure To Program (Y/N)

Enter the FILENAME.BIN and select “Y” , and the BIOS will being renewed. Notice, when you are refreshing you BIOS, do not turn off or reset the system, or you will damage the BIOS. After you have completed all the programming, the message will inform you “Programming Flash Memory - 1FFFF ok”. Please power off or reset the system. Then the Flash BIOS is implemented.

8.4. WATCHDOG TIMER CONFIGURATION

The watchdog timer can reset the system automatically. It is defined at I/O port 0443H. When you want to enable the watchdog timer, please write I/O port 0443H, then the system will reset itself. When you want to disable the function, write I/O port 043H, the system will run the command to stop the Watchdog function.

The PIA-460 watchdog function, you must write your program so when it writes I/O port address 443 for enable watchdog and write I/O port address 043 for disable watchdog. The timer’s intervals have a tolerance of 25% so you should program an instruction that will refresh the timer about every second.

The following program shows you how to program the watch timer in your program.

8.4.1.Watchdog enable program:

```
MOV    AX, 000FH    (chose the values you need; start from0)
MOV    DX,0443H
OUT    DX, AX
```

8.4.2.Watchdog disable program:

```
MOV    AX, 000FH    (this value can be ignored)
MOV    DX,043H
OUT    DX, AX
```

The Watchdog Timer control table is as follow:

Level	Value	Time / sec	Level	Value	Time / sec
1	F	0	9	7	16
2	E	2	10	6	18
3	D	4	11	5	20
4	C	6	12	4	22
5	B	8	13	3	24
6	A	10	14	2	26
7	9	12	15	1	28
8	8	14	16	0	30

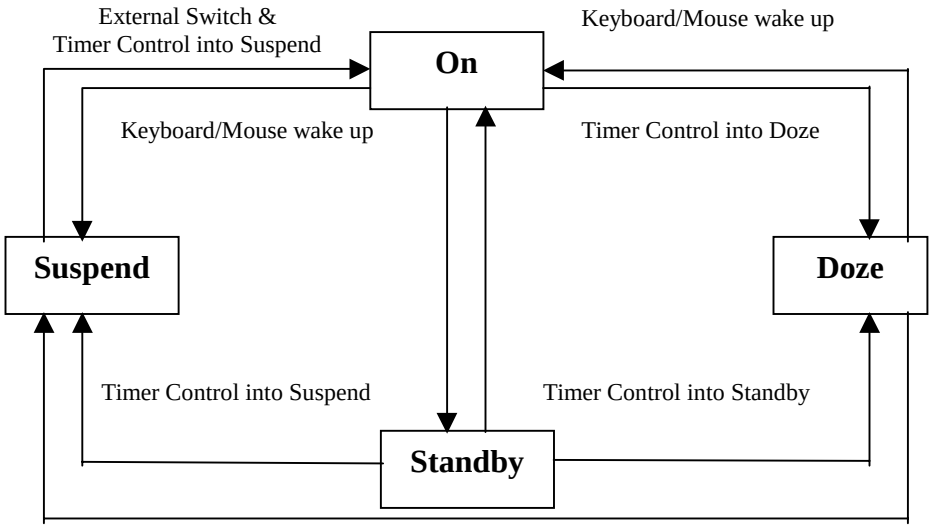
9. GREEN PC FUNCTION

This chapter gives you the concise information for Green PC Function.

Sections Include:

- Power Saving Block Diagram
- CPU Doze Mode
- System STANDBY Mode
- System SUSPEND Mode

9.1. POWER SAVING BLOCK DIAGRAM



9.2. CPU DOZE MODE

1. After out of the timer, CPU clock is slow down to 8MH
2. Sound 1 beep.
3. Flash LED to indicate power saving status.
4. Monitor Activity, according to the setting of Advanced Setup.
5. Any activity occurs, system will exit from Doze mode to On mode.

9.3. SYSTEM STANDBY MODE

1. After out of the timer, CPU clock is slow down to 8MHz.
2. Sound 2 beeps.
3. Flash LED to indicate power saving status.
4. Level 1 cache are disabled.
5. VGA monitor displays blank screen.
6. Fixed disk driver motor will be spin off.
7. Any activity occurs, system will exit from Standby mode to On mode.

9.4. SYSTEM SUSPEND MODE

1. After out of the timer, CPU clock is slow down to 8mhz, if you use Intel, Pentium or Cyrix (SMI) CPU, then CPU clock will be stopped.
2. Sound 3 beeps.
3. Flash LED to indicate power saving status.
4. Level 2 cache are disabled.
5. VGA monitor displays blank screen.
6. Fixed disk driver motor will be spin off.
7. Monitor activity according to the setting of Advanced Setup.
8. When system in Suspend mode, only Keyboard / Mouse / Alarm resume can wakeup system.

10.AWARD BIOS SETUP

This chapter states out how to set up the Award BIOS.

Sections include:

- Introduction
- Entering Setup
- The Standard CMOS Setup
- The BIOS Features Setup
- The Chipset Features Setup
- Power Management Setup
- PNP/PCI Configuration
- Load BIOS defaults
- Integrated Peripherals
- IDE HDD Auto detection
- Save Setup

10.1.OVERVIEW

This chapter will show you the function of a BIOS in managing the features of your systems. The PIA-460 Pentium Embedded Card is equipped with the BIOS for system chipset from Award Software Inc. This page briefly explains the function of a BIOS in managing the special features of you system. The following pages describe how to use the BIOS for system chipset Setup menu.

Your application programs (such as word processing, spreadsheets, and games) rely on an operating system such as DOS or OS/2 to manage such things as keyboard, monitor, disk drives, and memory.

The operating system relies on a BIOS (Basic Input and Output system), a program stored on a ROM (Read-only Memory) chip, to initialize and configure your computer's hardware. As the interface between the hardware and the operating system, the BIOS enables you to make basic change to your system's hardware without having to write a new operating system.

10.2.ENTERING SETUP

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY

As long as this message is present on the screen you may press the<Del> key (the one that shares the decimal point at bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Award SETUP program will appear on the screen:

ROM PCI / ISA BIOS (2A5KFP69)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HADD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift) F2 : Change Color

Time, Date, Hard Disk Type, ...

Setup program initial screen

You may use the cursor up/down keys to highlight the individual menu items. As you highlight each item, a brief description of that item's function appears in the lower window. If you have a color monitor you can use the Shift F2 keys to scroll through the various color combinations available.

10.3.THE STANDARD COMS SETUP MANU

Highlight STANDARD COMS SETUP and press <ENTER> and the screen will display the following table:

ROM PCI / ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy): Mon, Feb 7 1994
Time (hh:mm:ss): 10 : 45 : 38

HARD DISK	TYPE	CYLS	HEAD	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master:	Auto(Mb)	0	0	0	0	0	AUTO
Primary Slave:	Auto(Mb)	0	0	0	0	0	AUTO
Secondary Master:	Auto(Mb)	0	0	0	0	0	AUTO
Secondary Slave:	Auto(Mb)	0	0	0	0	0	AUTO

Driver A : 1.44M, 3.5in
Driver B : None
Video : EGA/VGA
Halt On : All Errors

Base Memory:	640 K
Extended Memory:	7168 K
Other Memory:	384 K
Total Memory:	8192 K

ESC: Quit ↑ ↓ → ← : Select Item PU/PD/+/-: Modify
F1: Help (Shift) F2: Change Color

CMOS setup screen

In the above table the base memory size and the extended memory size are displayed. This is automatically read from your systems, and you do not need to set these parameters. The screen shows a calendar. The week display will depend on the date set in your system clock and the flashing indicating the current date. Since you have not yet set the time and date, the date displayed is probably incorrect. Information on each item is

Date:

<Month>, <Date> and <Year>. Ranges for each value are in the CMOS Setup Screen, and the week-day will skip automatically.

Time:

<Hour>, <Minute>, and <Second>. Use 24 hour clock format, i.e., for PM numbers, add 12 to the hour. For examples, 4:30P.M. You should enter the time as 16:30:00.

Drive C type / Drive D type:

The categories identify the types of hard disk drive C or drive D that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Normal BIOS. Type 1 or Type 45 are predefined. Type User is user-definable.

Primary Master/Primary Slave/Secondary Master/Secondary Slave:

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

Press PgUp / <=> or PgDn / <-> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly of you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be :Type 1:.

If the controller of HDD interface is SCSI, the selection shall be “None”. If the controller of HDD interface is CD-ROM, the selection shall be “None”.

TYPE:

This is the number designation for a drive with certain identification parameters.

CYLS.:

This is the number of cylinders found in the specified drive type.

HEADS:

This is the number of heads found in the specified drive type.

PRECOMP:

WPcom is the read delay circuitry which takes into account the timing differences between the inner and outer edges of the surface of the disk platter. The number designates the starting cylinder of the signal.

LZONE:

Lzone is the landing zone of the heads. This number determines the cylinder location where the heads will normally park when the system is shut down.

SIZE (CAPACITY):

This is the formatted capacity of the drive based on the following formula: (# of heads) X (# of sets) x (512bytes/sects)

DRIVE A AND DRIVE B:

The option are 360KB 5.25in, 1.2KB 5.25in, 720KB 3.5in, 1.44MB 3.5in, 2.88MB 3.5in and None. Not Installed could be used as an option for diskless workstations.

VIEDO:

Options are Monochrome, Color 40, VGA/EGA, Color 80.

HARD DISK ATTRIBUTEDS:

Type	Cylinders	Heads	V-P comp	Lzone	Sect	Capacity
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	30
4	940	8	512	940	17	62
5	940	6	512	940	17	46
6	615	4	65535	615	17	20
7	642	8	256	511	17	30
8	733	5	65535	733	17	30
9	900	15	65535	901	17	112
10	820	3	65535	820	17	20
11	855	5	65535	855	17	35
12	855	7	65535	855	17	49
13	306	8	128	319	17	20
14	733	7	65535	733	17	42
15	000	0	0000	000	00	00
16	612	4	0000	663	17	20
17	977	5	300	977	17	40
18	977	7	65535	977	17	56
19	1024	7	512	1023	17	59
20	733	5	300	732	17	30
21	733	7	300	732	17	42
22	733	5	300	732	17	30
23	306	4	0000	336	17	10
24	977	5	65535	979	17	40
25	1024	9	65535	1023	17	76
26	1024	7	65535	1023	17	71
27	1024	11	65535	1023	17	111
28	1024	15	65535	1023	17	152
29	1024	8	65535	1023	17	68

30	1024	11	65535	1023	17	93
31	918	11	65535	1023	17	83
32	925	9	65535	926	17	69
33	1024	10	65535	1023	17	85
34	1024	12	65535	1023	17	102
35	1024	13	65535	1023	17	110
36	1024	14	65535	1023	17	119
37	1024	2	65535	1023	17	17
38	1024	16	65535	1023	17	136
39	918	15	65535	1023	17	114
40	820	6	65535	820	17	40
41	1024	5	65535	1023	17	42
42	1024	5	65535	1023	26	65
43	809	6	65535	852	17	40
44	809	6	65535	852	26	61
45	776	8	65535	775	33	100
47			AUTO			

Award Hard Disk Type Table

10.4.THE BIOS FEATURES SETUP MENU

Choose the “BIOS FEATURES SETUP” in the main menu, the screen shown as below.

ROM PCI / ISA BIOS (2A5KPF69)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

```
Virus Warning                  : Disabled
CPU Internal Cache             : Enabled
External Cache                 : Enabled
Quick Power On Self Test       : Disabled
Boot Sequence                  : A, C
Swap Floppy Drive              : Disabled
Boot Up Floppy Seek            : Enabled
Boot Up Numlock Status         : On
Boot Up System Speed           : High
Gate A20 Option                : Fast
Memory Parity Check            : Disabled
Typematic Rate Setting         : Disabled
Typematic Rate (Chars/Sec)     : 6
Typematic Delay (Msec)         : 250
Security Option                : Setup
PS/2 mouse function control    : Enabled
PCI/VGA Palette Snoop          : Disable
OS Select For DRAM>64Mb        : Non-OS2

Video BIOS Shadow                       : Enabled
C8000 - CBFFF Shadow                    : Disabled
CC000 - CFFFF Shadow                    : Disabled
D0000 - D3FFF Shadow                    : Disabled
D4000 - D7FFF Shadow                    : Disabled
D8000 - DBFFF Shadow                    : Disabled
DC000 - DFFFF Shadow                    : Disabled

ESC   : Quit          ↑ ↓ → ←    : Select Item
F1    : Help          PU/PD/+/-  : Modify
F5    : Old Values    (Shift) F2 : Color
F6    : Load BIOS Defaults
F7    : Load Setup Defaults
```

BIOS Features Setup

The BIOS FEATURES SETUP allows you find true certain features supported by the chipset and Award BIOS. It also includes support for shadow RAM under which the contents of the ROM BIOS can be copied into memory at boot up, enhancing performance. When you change any of the setting, you may recall the default settings at any time from the main menu.

This is detailed later. To get help on each item, highlight the relevant item and press the F1 key. A Windows will appear on your screen detailing the various options available for each item. A brief introduction of each setting in the BIOS REATURES SETUP program is given below.

CPU INTERNAL CACHE:

This item should always be Enable, if your system is 486CPU. Even if you have installed the external cache. If you have no external cache installed this item should be enabled to allow use of the internal 8K cache in the 486 CPU.

EXTERNAL CACHE:

Enable or disable this function according to whether you want external cache enabled or disabled.

QUICK POWER ON SELF TEST:

You can enable or disable this item to speed up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

BOOT SEQUENCE:

You may define whether the system will look first at drive A: and then at drive C: when booting up, or vice versa.

BOOT UP FLOPPY SEEK:

You may enable / disable this item to define whether the system will look for a floppy disk drive to boot at power-on, or directly to the hard disk drive.

BOOT UP NUMLOCK STATUS:

Use this item to enable / disable the NumLock on your keyboard automatically at power-on.

BOOT UP SYSTEM SPEED:

Select High to configure your system in the turbo speed mode at boot up, select Low to configure your system in normal speed mode. Whichever setting you choose you will still be able to use the turbo switch to toggle between the tow modes during use.

MEMORY PARITY CHECK:

Enable or Disable this item according to whether you wish the system to check the memory parity during boot up or not. If you disable this item even if the BIOS encounters a parity error it will be ignored. We recommend that you always enable the item in order to ensure that the memory is good each time you turn your PC on.

GATE 20A OPTION:

When you set this category as Fast. The A20 signal is controlled by chipset specific method.

TYPEMATIC RATE SETTING:

Enable this item if you wish to be able to configure the characteristics of your keyboard. Typematic refers to the way in which characters are entered repeatedly if a key is held down. For example, if you press and hold down the “A” key, the letter “a” will repeatedly appear on your screen until you release the key. This item is disable by default.

TYPEMATCI RATE (CHARS-SEC):

You can use this item to define the typematic rate delay of your keyboard, i.e. the rate at which characters will be repeated when a key held down.

THPEMATIC DELAY (MSEC):

You can use this item to define the period after which the typematic function become active i.e. how long after you press a key the characters will be repeated.

SECURITY OPTION:

This category allows you to limit access to the system and Setup, or just to Setup. 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.

10.5.CHIPSET FEATURE SETUP

Choose the "CHIPSET FEATURES SETUP" from the main menu, the screen shown as below.

ROM PCI / ISA BIOS (2A5KFP69)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enable	VGA Frame Buffer	: Enabled
AT BUS Clock	: CLK 2/4	Linear Merge	: Enabled
Asysc. SRAM Write WS	: X-3-3-3	Word Merge	: Enabled
Asysc. SRAM Read WS	: X-3-3-3	Byte Merge	: Disabled
EDO Read WS	: X-3-3-3	Fast Back-to-Back	: Disabled
Page Mode Read WS	: X-3-3-3	PCI Write Burst	: Enabled
DRAM Write WS	: X-2-2-2	Turbo Buffer	: Enabled
CPU to DRAM page Mode	: Disabled		
DRAM Refresh Period	: 60 us		
DRAM Posted Write	: Enabled		
DRAM Data Integrity Mode	: Parity		
Support Dynamic W-Back	: Disabled		
Pipelined Function	: Disabled		
16 Bit ISA I/O Command WS	: 2 Wait		
16 Bit ISA Mem Command WS	: 2 Wait		
Local Memory 15-16M	: Enabled		
Passive Release	: Enabled		
ISA Line Buffer	: Enabled		
Delay Transaction	: Enabled		
Primary Frame Buffer	: 2 MB		
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Val	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Chipset Features Setup

By moving cursor to the desired selection and pressing <F1> key, the all options for the desired selection will be displayed for choice. User has to use select the desired option.

AUTO CONFIGURATION FUNCTION:

When this options is Enabled, the BIOS automatically configures cache and clock settings based on detection of the CPU clock speed, you cannot change the other parameters. Set this option to Disabled to manually set DRAM, cache and I/O bus clock operating parameters.

DRAM Mode:

The number of wait states added on reads to DRAM. Fewer wait states improve performance.

AT BUS CLOCK:

Defines the clock value for AT bus. Usually, AT bus clock should be programmed to 8Mhz, e.g. when system clock is 33 Mhz, Choose 4/1 CLKIN. All values derived from CLKIN is called synchronous mode. The 7.159Mhz option is called asyc. mode.

10.6.POWER MANAGEMENT SETUP

Choose “POWER MANAGEMENT SETUP” option on the main menu, a display will be shown on screen as below:

ROM PCI / ISA BIOS (2A5KFP69)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

```
Power Management             : Disabled
PM Control by APM            : YES
MODEM Use IRQ                : NA
Video Off Option             : Susp,Stby->Off
Video Off Method             :DPMS Support

       ** PM Timer**
HDD Power Down               : Disabled
Doze Mode                    : Disabled
Standby Mode                 : Disabled
Suspend Mode                 : Disabled
      ** PM Events**
VGA                          : OFF
DRQ                          : ON
IRQ1 (Keyboard)              : ON
IRQ3 (COM 2)                 : ON
IRQ4 (COM 1)                 : ON
IRQ5 (LPT 2)                 : ON
IRQ6 (Floppy Disk)           : ON
                             : ON
```

```
IRQ6   (Floppy Disk)
IRQ7   (LPT1)                : ON
IRQ8   (RTC Alarm)           : ON
IRQ9   (IRQ Redir)           : OFF
IRQ10  (Reserved)            : ON
IRQ11  (Reserved)            : OFF
IRQ12  (PS/2 Mouse)          : OFF
IRQ13  (Coprocessor)         : ON
IRQ14  (Hard Disk)           : OFF
IRQ15  (Reserved)            : ON
                             : OFF
```

```
ESC   : Quit      ↑ ↓ → ←    : Select Item
F1    : Help      PU/PD/+/-  : Modify
F5    : Old Val   (Shift) F2 : Color
F6    : Load BIOS Defaults
F7    : Load Setup Defaults
```

Power Management Setup

This category determines how much power consumption for system after selecting below items. Default value is

POWER MANAGEMENT:

This item determines how much power consumption for system. When you define it as Max Saving are used all timers MIN value.

PM CONTROL BY APM:

When this item is set to be YES, the system BIOS will wait for APM’s prompt before it enter any PM mode e.g. DOZE, STANDBY or suspend. If APM is installed, & if there is a task running, even the timers is time out, the APM will not prompt the BIOS to put the system into any power saving mode.

DOZE MODE TIMEOUT;

Sets the time interval after inactivity when the system enters Doze mode.
This options as following, from 10 Sec to 2 Hours or Disabled.

STANDBY MODE TIMEOUT:

Sets the time interval after system inactivity when the system enters STANDBY mode. This options as following: From 30 Sec to 2 Hours or Disabled.

SUSPEND MODE TIMER:

Sets the time interval after system inactivity when the system enters SUSPEND mode. This options as following: From 30 Sec to 2 Hours or Disabled.

10.7.PNP/PCI CONFIGURATION

Choose “PNP/PCI CONFIGURATION” from the main menu, a display will be shown on screen as below:

ROM PCI / ISA BIOS (2A5KFP69)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

```
Resources Controlled by          :Manual
Reset Configuration Data         :Disabled

IRQ-3 assigned to                :Legacy ISA
IRQ-4 assigned to                :Legacy ISA
IRQ-5 assigned to                :PCI/ISA Pnp
IRQ-7 assigned to                :Legacy ISA
IRQ-9 assigned to                :PCI/ISA PnP
IRQ-10 assigned to               :PCI/ISA PnP
IRQ-11 assigned to               :PCI/ISA PnP
IRQ-12 assigned to               :PCI/ISA PnP
IRQ-14 assigned to               :Legacy ISA
IRQ-15 assigned to               :Legacy ISA
DMA-0 assigned to                :PCI/ISA PnP
DMA-1 assigned to                :PCI/ISA PnP
DMA-3 assigned to                :PCI/ISA PnP
DMA-5 assigned to                :PCI/ISA PnP
DMA-6 assigned to                :PCI/ISA PnP
DMA-7 assigned to                :PCI/ISA PnP

PCI IDE 2nd Channel              : Disabled
PCI IRQ Actived By               : Level
PCI IDE IRQ Map To               : ISA

ESC   : Quit      ↑ ↓ → ←        : Select Item
F1    : Help      PU/PD/+/-      : Modify
F5    : Old Val   (Shift) F2     : Color
F6    : Load BIOS Defaults
F7    : Load Setup Defaults
```

PNP/PCI CONFIGURATION

You can manually configure the PnP/PCI Device’s IRQ. Highlight the selected item and pressing <F1> key, the all options for the desired selection will be displayed for choice. User has to use select the desired options. Having made all the above setting according to your configuration. Press <Esc> to return to the main menu.

10.8.LOAD BIOS DEFAULTS

AUTO CONFIGURATION WITH BIOS DEFAULTS

“LOAD BIOS DEFAULTS” loads the default BIOS values. When the diagnostic aid of your system becomes unusable, choose this option and the following message appears:

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

To use the BIOS defaults, change the prompt to “Y” and press <Enter>, the CMOS is load automatically when you power on the PIA-460.

10.9.LOAD SETUP DEFAULTS

Auto configuration With Setup Defaults

This Main Menu item uses the default SETUP values. Use this option as a diagnostic aid of your system behaves erratically. Choose this item and the following message appears:

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

To use the SETUP defaults, change the prompt to "Y" and press <Enter>. The CMOS is load automatically from SETUP default values:

10.10.INTEGRATED PERIPHERALS

Choose "INTEGRATED PERIPHERALS" from the main menu, a display will be shown on screen as below:

ROM PCI / ISA BIOS (2A5KFP69)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

```
On-Chip IDE Controller          :Enabled
The 2nd Channel IDE             :Enabled
IDE Primary Master PIO          :Auto
IDE Primary Slave PIO           :Auto
IDE Secondary Master PIO        :Auto
IDE Secondary Slaver PIO        :Auto
IDE Primary Master FIFO         :Disabled
IDE Primary Slave FIFO          :Disabled
IDE Secondary Master FIFO       :Disabled
IDE Secondary Slave FIFO        :Disabled
IDE HDD Block Mode              :Enabled
IDE 32-bit Transfer Mode        :Enabled
Onboard FDC Controller          :Enabled
Onboard UART 1                  :3F8/IRQ 4
UART 1 operation mode           :Standard
Onboard UART 2                  :2F8/IRQ 3
UART 2 operation mode           :Standard

Onboard Parallel Port        : 378/IRQ7
Parallel port Mode           : Normal

ESC   : Quit      ↑ ↓ → ←    : Select Item
F1    : Help      PU/PD/+/-  : Modify
F5    : Old Val   (Shift) F2 : Color
F6    : Load BIOS Defaults
F7    : Load Setup Defaults
```

INTEGRATED PERIPHERALS

By moving cursor to the desired selection and pressing <F1> key, the all options for the desired selection will be displayed for choice. User has to use select the desired option. Having mode all the setting according to your selections. Press <Esc> to return to the Main Menu.

10.11.PASSWORD SETTING

If you want to enable this item you should choose the 'SUPERVISOR PASSWORD" and USER PASSWORD" option from the main menu, the following message will appear at the center of the screen to assist you in creating a password.

```
Enter Password
```

Type the password, up to eight characters, 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 password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Press and key to continue

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

10.12.IDE HDD AUTO DETECTION

Choose the "IDE HDD AUTO DETECTION" option. The screen will be shown as below.

ROM PCI / ISA BIOS (2A5KFP69)
STANDARD CMOS SETUP
AWARD SOFTWARD,INC.

		CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master: (	Mb)	0	0	0	0	0	---------
Primary Slave:							
Secondary Master:							
Secondary Slave:							

Select Secondary Slave Option (N=Skip): N

Option	Size	Cyls	Heads	Precomp	Landzone	Sectors	Mode
1	1278	2477	16	35535	2476	63	Normal

Note: Some Oses (like SCO-UNIX) must use "Normal" for installation
ESC:Skip

IDE HDD AUTO DETECTION Screen

AUTO DETECTION

BIOS setup will display all possible modes that supported by the HDD including NORMAL, LBA, & LARGE.

If HDD does not support LBA mode, no "LBA" option will be shown.

User can select a mode which is appropriated for then.

HDD MODE

The Award BIOS supports 3 HDD mode: Normal, LBA, & LARGE

NORMAL mode:

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, heads & sectors for NORMAL mode are 1024, 16, & 63.

no. Cylinder	(1024)
x no. Head	(16)
x no. Sector	(63)
x no. Per sector	(512)

Total: 528 Mega byte

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (logical Block Addressing) mode:

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, head & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, The IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 Gigabyte which is obtained by the following formula:

no. Cylinder	(1024)
x no. Head	(255)
x no. Sector	(65)
x no. Per sector	(512)

Total: 8.4 Giga byte

LARGE mode:

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The BIOS provides another alternative to support these kinds of HDD.

CYLS	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinder is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT 13h in order to access the right HDD address the right HDD address.

Maximum HDD size:

no. Cylinder	(1024)
x no. Head	(32)
x no. Sector	(63)
x no. Per sector	(512)
Total: 1 Giga byte	

REMARKS:

To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the Award HDD Service Routine (INT 13h). It may be failed to access a HDD with LBA(LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

10.13.HHD LOW LEVEL FORMAT

Choose “INTEGRATED PERIPHERALS” from the main menu, a display will be shown on screen as below:

Hard Disk Low Level Format Utility — NO. CYLS HEAD

---------- SELECT DRIVE ----------
---------- BAD TRACK LIST -------
----------PREFORMAT ----------

Current Select drive is : C
Drive : C CYLINDER : 0 HEAD : 0

	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master :	539	1046	16	65535	1045	63	AUTO
Primary Slave :	0	0	0	0	0	0	AUTO
Secondary :	0	0	0	0	0	0	AUTO
Mater							
Secondary Slave :	0	0	0	0	0	0	AUTO

Up/Down - Select item Enter - Accept ESC - Exit / Abort

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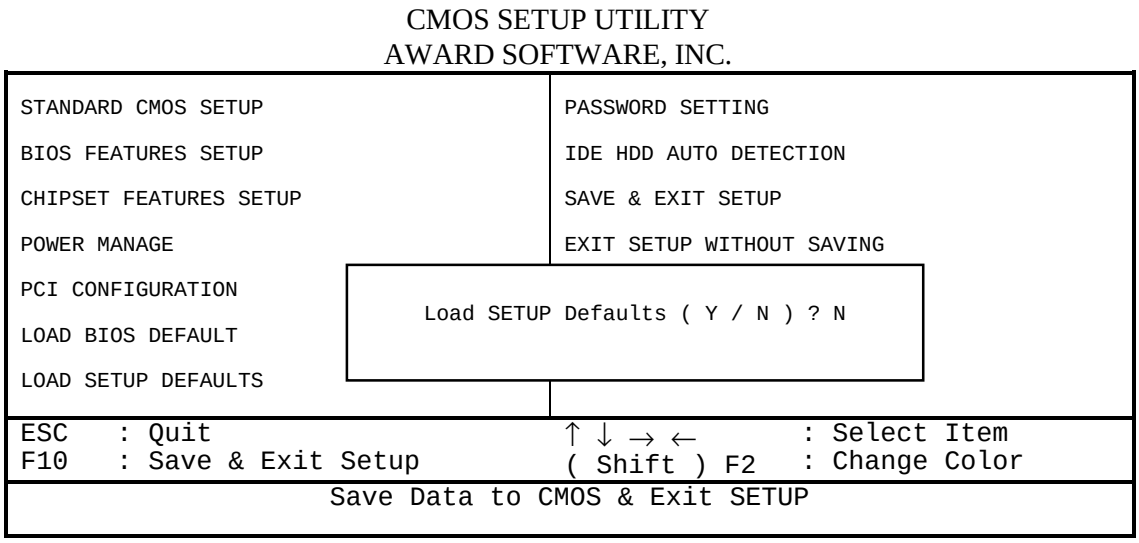
HDD LOW LEVEL FORMAT

By moving cursor to the desired selection and pressing <F1> key, the all options for the desired selection will be displayed for choice. User has to use select the desired option. Having made all the setting according to your see.

10.14.SAVE & EXIT SETUP

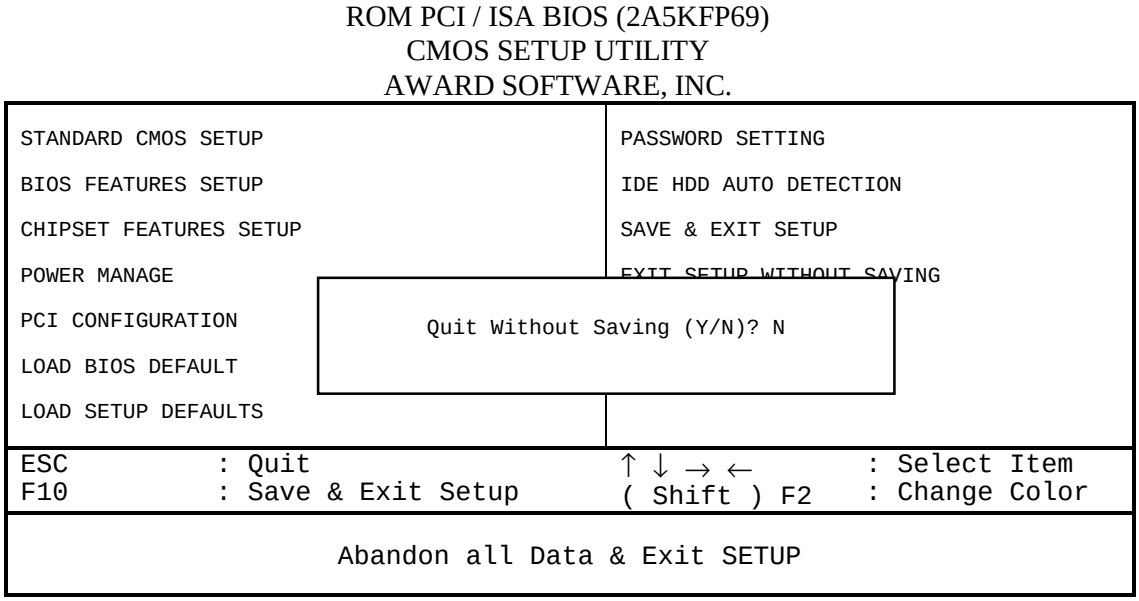
When you have completed adjusting all the settings as required, you must have these setting into the CMOS RAM. Select SAVE & EXIT and press <Enter>, as the display shown on below:

ROM PCI / ISA BIOS (2A5KFP69)



When you confirm that you wish to save the settings your machine will be automatically rebooted and the changes you made will be implemented. You may call up the setup program at any time to adjust any of the individual items by pressing the <Del> key during boot up.

If wish to cancel any changes you have made, select EXIT WITHOUT SAVING and the original setting stored in the CMOS will be retained. The screen will be shown as below:



11.EXPANSION BUS

This appendix indicates you the pin assignments.

Sections include:

- PC-104 Connector Pin Assignment
- ISA BUS Pin Assignment

11.1.CONNECTOR PIN ASSIGNMENT

The PC-104 can support multi-pieces of PC-104 modules. This card has two connectors: one (104AB) consists of 64 pin; the other one (104CD) consists of 40 pin, both of them are dual-in-line headers

The pin assignments for connector 104AB & 104CD are as follow:

104AB				**104CD**			
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	IOCHK	B1	GND	C1	GND	D1	GND
A2	D7	B2	REST	C2	SBHE	D2	MEMCS16
A3	D6	B3	VCC	C3	LA23	D3	IOCS16
A4	D5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	D4	B5	-5V	C5	LA21	D5	IRQ11
A6	D3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	D2	B7	-12V	C7	LA19	D7	IRQ15
A8	D1	B8	OWS	C8	LA18	D8	IRQ14
A9	D0	B9	+12V	C9	LA17	D9	DACK0
A10	IOCHRDY	B10	GND	C10	MEMR	D10	DRQ0
A11	AEN	B11	SMEMW	C11	MEMW	D11	DACK5
A12	A19	B12	SMEMR	C12	D8	D12	DRQ5
A13	A18	B13	IOW	C13	D9	D13	DACK6
A14	A17	B14	IOR	C14	D10	D14	DRQ6
A15	A16	B15	DACK3	C15	D11	D15	DACK7
A16	A15	B16	DRQ3	C16	D12	D16	DRQ7
A17	A14	B17	DACK1	C17	D13	D17	VCC
A18	A13	B18	DRQ1	C18	D14	D18	MASTER
A19	A12	B19	REFRESH	C19	D15	D19	GND
A20	A11	B20	CLK	C20	KEY PIN	D20	GND
A21	A10	B21	IRQ7				
A22	A9	B22	IRQ6				
A23	A8	B23	IRQ5				
A24	A7	B24	IRQ4				
A25	A6	B25	IRQ3				
A26	A5	B26	DACK2				
A27	A4	B27	TC				
A28	A3	B28	BALE				
A29	A2	B29	VCC				
A30	A1	B30	OSC				
A31	A0	B31	GND				
A32	GND	B32	GND				

11.2.ISA BUS PIN ASSIGNMENT

The ISA BUS for this card is called “Gold Fingers:. It is divided into two sets: one consists of 62 pins; the other consists of 36 pins.

The pin assignments are as follow:

B		A		D		C	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	GND	A1	-I/O CH CHK	D1	-MEMCS16	C1	SBHE
B2	RESET	A2	SD07	D2	-I/OCS16	C2	LA23
B3	+5V	A3	SD06	D3	IRQ10	C3	LA22
B4	IRQ9	A4	SD05	D4	IRQ11	C4	LA21
B5	-5V	A5	SD04	D5	IRQ12	C5	LA20
B6	DRQ2	A6	SD03	D6	IRQ15	C6	LA19
B7	-12V	A7	SD02	D7	IRQ14	C7	LA18
B8	OWS	A8	SD01	D8	-DACK0	C8	LA17
B9	+12V	A9	SD00	D9	DRQ0	C9	-MEMR
B10	GND	A10	-I/O CH RDY	D10	-DACK5	C10	-MEMW
B11	-SMEMW	A11	AEN	D11	DRQ5	C11	SD08
B12	-SMEMR	A12	SA19	D12	-DACK6	C12	SD09
B13	-IOW	A13	SA18	D13	DRQ6	C13	SD10
B14	-IOR	A14	SA17	D14	-DACK7	C14	SD11
B15	-DACK3	A15	SA16	D15	DRQ7	C15	SD12
B16	-DRQ3	A16	SA15	D16	+5V	C16	SD13
B17	-DACK1	A17	SA14	D17	-MASTER	C17	SD14
B18	-DRQ1	A18	SA13	D18	GND	C18	SD15
B19	-REFRESH	A19	SA12				
B20	BCLK	A20	SA11				
B21	IRQ7	A21	SA10				
B22	IRQ6	A22	SA09				
B23	IRQ5	A23	SA08				
B24	IRQ4	A24	SA07				
B25	IRQ3	A25	SA06				
B26	-DACK2	A26	SA05				
B27	T/C	A27	SA04				
B28	BALE	A28	SA03				
B29	+5V	A29	SA02				
B30	OSC	A30	SA01				
B31	GND	A31	SA00				

12.THCHNICAL SUMMARY

This section introduce you the maps concisely.

Sections include:

- Block Diagram
- Interrupt Map
- RTC & CMOS RAM Map
- Timer & DMA Channels Map
- I / O & Memory Map

12.1.BLOCK DIAGRAM

SEE FIG 7-2

12.2.INTRRUPT MAP

IRQ	ASSIGNMENT
1	System TIMER interrupt from TIMER-0
2	Keyboard output buffer full
3	Cascade for IRQ 8-15
4	Serial port 2
5	Serial port 1
6	Parallel port 2
7	Floppy Disk adapter
8	parallel port 1
9	RTC clock
10	Available
11	Available
12	Available
13	Math coprocessor
14	Hard Disk adapter
15	Available

12.3.RTC & CMOS RAM MAP

CODE	ASSIGNMENT
00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	Floppy Disk drive type byte
11	Reserve
12	Hard Disk type byte
13	Reserve
14	Equipment byte
15	Base memory low byte
16	Base memory high byte
17	Extension memory low byte
18	Extension memory high byte
30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	Date Century byte
33	Information Flag
34-3F	Reserve
40-7F	Reserved for Chipset Setting Data

12.4.TIMER & DMA CHANNELS MAP

12.4.1.Timer Channel Map:

Timer Channel	Assignment
0	System timer interrupt
1	DRAM Refresh request
2	Speaker tone generator

12.4.2.DMA Channel Map:

DMA Channel	Assignment
0	Available
1	IBM SDLC
2	Floppy Disk adapter
3	Channel-3 Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

12.5.I/O & MEMORY MAP

12.6.MEMORY MAP:

MEMORY MAP	ASSIGNMENT
0000000-009FFFF	System memory used by DOS and application
00A0000-00BFFFF	Display buffer memory for VGA/EGA/CGA/MONOCHROME adapter
00C0000-00DFFFF	Reserved for I/O device BIOS ROM or RAM buffer.
00E0000-00EFFFF	Reserved for PCI device ROM
00F0000-00FFFFF	System BIOS ROM
0100000-BFFFFF	System extension memory

12.6.1.I/O Map

I/O MAP	ASSIGNMENT
000-01F	DMA controller (Master)
020-021	Interrupt controller (Master)
022-023	Chipset controller registers I/O ports
040-05F	Timer control registers
060-06F	Keyboard interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	Math coprocessor
1F0-1F8	Hard Disk controller
278-27F	Parallel port-2
2B0-2DF	Graphics adapter controller
2F8-2FF	Serial port-2
360-36F	Net work ports
378-37F	Parallel port-1
3B0-3BF	Monochrome & Printer adapter
3C0-3CF	EGA adapter
3D0-3DF	CGA adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1

13.TROUBLE SHOOTING

This section outlines the errors may occur when you operate the system, also gives you the suggestions on solving the problems.

Sections include:

- Trouble Shooting for Error Messages
- Trouble Shooting for POST code

13.1.TROUBLE SHOOTING FOR ERROR MESSAGE

The following information inform you the error messages and the trouble shooting. Please adjust your systems according to the messages below. And make sure all the components and connectors are in proper position and firmly attached. If the errors still encountered, please contact with your distributor for maintenance.

POST BEEP:

Currently there are two kind of beep codes in BIOS. The one code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other one code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

CMOS BATTERY FAILURE:

When the CMOS battery is out of work or has run out, the user has to replace the whole unit.

CMOS CHECKSUM ERROR:

This error inform you that the CMOS is corrupted. When the battery runs weak, this situation might happen. Please check the battery and change a new one when necessary.

DISPLAY SWITCH IS SET INCORRECTLY:

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch 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.

DISK BOOT FAILURE:

When you can’t find the boot device, insert a system disk into Drive A and press <Enter>. Make sure both the controller and cables are all in proper positions, also make sure the disk is formatted correct device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR:

When the diskette drive type is different from CMOS, please run setup or configure the drive again.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE:

When you can’t initialize the hard drive. Assure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER:

When this error occurs. Be sure the cord is exactly installed in the bus. Make sure the correct hard drive type is selected in Setup. Also check whether all of the jumpers are set correctly in the hard drive.

FLOPPY DISK CONTROLLER ERROR OR NO CONTROLLER PRESENT:

When you cannot find or initialize the floppy drive controller, please check the controller whether in proper Setup. If there are no floppy drive installed, Ensure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT:

When this situation happens, please check keyboard attachment and no keys 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.

MEMORY ADDRESS ERROR:

When the memory address indicates error, 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:

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to re-configure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory field.

MEMORY VERIFYING ERROR:

It indicates and 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 MISSING:

This message is used in connection with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

REBOOT ERROR:

When this error occurs that requires you to reboot. Press any key and the system will reboot.

SYSTEM HALTED:

Indicates 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.

13.2.TROUBLE SHOOTING FOR POST CODES

When you power on your PC, and the screen display nothing. You have to insert the POST Card for test. The address for ISA POST port is 80h. Make sure the card is in correct slot. The lists below indicate you the error messages. Please follow the instruction to adjust your system. If the error still occurred, please contact with your distributor for maintenance.

C0: Turn off OEM specific cache, shadow...

03: Initialize all the standard devices with default values Standard devices includes:

DMA controller (8237)
Programmable Interrupt Controller (8259)
Programmable Interval Timer (8254)
RTC chip.

05: 1. Keyboard Controller Self0Test.
2. Enable Keyboard Interface.

07: Verfies CMOS's basic R/W functionality.

BE: Program defaults values into chipset according to the MODBINable Chipset Default Table.

C1:Auto-detection of onboard DRAM & Cache.

C5: Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster

08: Test the first 256K DRAM

09: 1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table.
2. OEM specific cache initialization (if needed)

0A: 1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with DUMMY (Spurious) Interrupt Handler.
2. Issue CPUID instruction to identify CPU type.
3. Early Power Management initialization (OEM) specific).

0B: 1. Verify the RTC time is valid or not.
2. Detect bad battery
3. Read CMOS data into BIOS stack area
4. PnP initializations including (PnP BIOS only).
-Assign CSN to PnP ISA card.
-Create resource map from ESCD.
5. Assign I/O & Memory for PCI devices (PCI BIOS only).

0C: Initialization of the BIOS Data Area (40:0N-40:FF).

0D: 1. Program some of the Chipset's value according the Setup. (Early Setup Value Program).
2. Measure CPU speed for display & decide the system clock speed.
3. Video initialization including Monochrome, CGA,EGA/VGA. If no display device found, the speaker will beep.

0E: 1. Initialize the APIC (Multi-Processor BIOS only).
2. Test video RAM (If Monochrome display device found)
3. Show messages including:
-Award Logo, Copyright string, BIOS Date code & Part No.
-OEM specific sign on messages.
Energy Star Loge (Green BIOS only)
-CPU board, type & speed.
-Test system BIOS checksum (Non-Compress Version only).

0F: DMA channel 0 test.

10: DMA channel 1 test

11: DMA page registers test

15: Test 8259 interrupt mask bits for channel 1

16: Test 8259 interrupt mask bits for channel 2

19: Test 8259 functionality

30: Detect Base Memory & Extended Memory Size

31: 1. Test Base Memory from 256K to 640K
2. Test Extended Memory from 1M to the top of memory

32: 1. Display the Award Plug & Play BIOS Extension message (PnP BIOS only)
2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port...according to setup value.

3C: Set flag to allow users to enter CMOS Setup Utility

3D: 1. Initialize Keyboard
2. Install PS2 mouse

3E: Try to turn on Level 2 cache
Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h.

BF: 1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program)
2. If auto-configuration is enabled, programmed the chipset with predefined value in the MODBINable Auto-Table.

41: Initialize floppy disk drive controller

42: Initialize Hard drive controller

43: If it is a PnP BIOS, initialize serial & parallel ports

45: Initialize math coprocessor

4E: If there is any error detected (such as video, kb.....), show all the error messages the screen & wait for user to press <F1> key.

4F: 1. If password is needed, ask for password.
2. Clear the Energy Star Logo (Green BIOS only)

50: Write all CMOS values currently in the BIOS stack area back into the CMOS.

52: 1. Initialize all ISA ROMs.
2. Later PCI initializations (PCI BIOS only)
-assign IRQ to PCI devices
-initialize all PCI ROMs
3. PnP Initializations (PnP BIOS only)
-assign I/O, Memory, IRQ & DMA TO PnP ISA devices.
-initialize all PnP ISA ROMs
4. Program shadows RAM according to Setup settings
5. Program parity according to Setup setting
6. Power Management Initialization
-Enable/Disable global PM
-APM interface initialization

53: 1. If it is NOT a PnP BIOS, initialize serial & parallel ports
2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value

60: Setup Virus Protection (Boot Sector Protection) functionality according to setup setting

61: 1. Try to turn on Level 2 cache
Note: if L2 cache is already turned on in POST 3D, this part will be skipped
2. Set the boot up speed according to Setup setting
3. Last chance for Chipset initialization
4. Last chance for Power Management initialization (Green BIOS only)
5. Show the system configuration table

62: 1. Setup daylight saving according to Setup value
2. Program the NumLock, typematic rate & typematic speed according to Setup setting

63: 1. If there is any changes in the hardware configuration, update the ESCD information (PnP BIOS only)
2. Clear memory that have been used
3. Boot system via INT 19H

FF: System Booting. This means that the BIOS already pass the control right to the operating system.

14.ILLUSTRATIONS