PI-6584V

**All-In-One Pentium
CPU card with on-board
VGA/Flat Panel LCD interface
and
Flash/SRAM disk**

Copy Right Notice

Acknowledgment

Products mentioned in this manual are mentioned for identification purpose only. Products manes appearing in this manual may or may not be registered trademarks or copyright of their respective companies

Printed Aug. 2000

Table Of Contents

1. Introductions

1.1 Description

Welcome to the PI-6584V Pentium™ with VGA/LCD interface Single Board Computer. The PI-6584V board is an ISA form factor board, which comes equipped with high performance Pentium P54C,P55C(MMX),AMD K5,K6,K6-2/3,Cyrix 6x86/L CPUs and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

This board built-in 1.7MB Flash disk and one extended disk socket that can accept SRAM/Flash device or DiskOnChip™(DOC) Flash Disk for embedded application. User can use any DOS command without any extra software utility. The DOC currently is available from 2MB to 128MB.

An advanced high performance super AT I/O chip (Built-in M1543) is used in the PI-6584V board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and PCI bus Ultra DMA-33/66 Enhance IDE interface are compatible with IBM PC/AT and XT architecture's.

In addition, the PI-6584V provides one 168-pin DIMM sockets for its on-board SDRAM. The RAM module accepts 1MB, 2MB, 4MB, 8MB, 16MB, 32MB,and 64MB. So the total on-board memory can be configured from 2MB to 512MB.

PI-6584V uses the advanced C&T 69000 VGA/Flat panel LCD chipset that is high performance flat panel/CRT HiQVideo accelerator with integrated 2MB display memory.

1.2 Feature

- Fully IBM PC/AT Compatible
- Multi-CPU Capability Pentium P54C,P55C(MMX),AMD K5,K6,K6-2/3,Cyrix 6x86/L/MX
- Socket-7 ZIF CPU socket
- Support CPU Voltage +3.5V to 1.30V
- Award PnP Flash ROM BIOS
- On-board 512KB L2 Cache Memory
- Support One 168-pin DIMM socket up to 0.5GB
- On-board CRT/LCD Flat Panel VGA Controller with 2MB SDRAM display memory
- On-Board 1.7M Byte Flash Disk(SSD) and One 32-pin RAM/Flash ROM Sockets
- Provide one M-Systems DiskOnChip Socket
- Provide Green PC power management function
- Support PS/2 mouse connector
- 16 level timeout intervals watchdog timer from 1-160 seconds
- Provide CMOS RAM data distroy jumper
- Built-in Floppy Disk Driver Controller.
- On-board PCI bus Ultra DMA-33/66 Enhance IDE Hard Disk Driver Controller
- Two 16550 Compatible RS-232C Serial Ports.
- One SPP/ECP/EPP Bi-directional Parallel Port.
- Two USB Port Supported.
- Hardware monitoring function supported
- Support Front Panel KBD Input Connector.
- Support External Power Input Connector(P8)
- ISA BUS High Drive
- 16-bit PC/104 Piggyback connector
- Half Size ISA-BUS(PC/AT) interface

1.3 Specifications :

■ **Support Processor systems of**:

Intel - Pentium P54C/P55C(MMX) (350Mhz or Up)
AMD - K6/K6-2/K6-3 (550MHz or up)
IDT - 150/350Mhz or Up
Cyrix - 6x86MX,MXII...(Support Linear Address Mode)

■ **Data bus** : 64 bit

■ **CPU Bus Ratio** : from 2.0x to 6.0x

■ **Host Bus** : 100MHz (Jumper selectable)

■ **System Clock Speed** : 66.6/68.5/75.0/83.3/95.3/100 MHz(Jumper selectable)

■ **Bus interface** : ISA (PC/AT) Bus (ISA BUS High Drive)

■ **Chipsets** :

System : ALI-M1541/M1543
I/O : Built-in the M1543
VGA : C&T69000

■ **CPU Voltage** : +3.5V to 1.30V (Jumper selectable)

■ **System BIOS** : AWARD PnP BIOS with VGA BIOS in a single FLASH ROM

(Year 2000 Compliant BIOS)

■ **L2 Cache Memory**:

. On-board 512B of secondary synchronous burst-mode cache

■ **System Memory** :

. Support One 168-pin DIMM socket up to 0.5GB
. Supports 1M/2M/4M/8M/16M/32M/64MxN SDRAM
. Support PC-100 SDRAM modules when running at 100MHz CPU bus speed
and use PC-66/PC-100 modules when running at 66MHz CPU bus speed.

■ **Plug and Play** :

. Dual interrupt and DMA signal steering with plug and play control
. Microsoft Windows 95/98/NT/win2000 and plug and play BIOS compliant

■ **Display** :

. C&T69000 HiQVideo Accelerator with integrated memory
. Panel support TFT, DSTN, EL, Mono LCD
. PCI Bus with Burst Mode Capability
. 64bit Graphics Engine
. System-to-Screen and Screen-to-Screen BitBLT
. Support non-interlaced CRT monitor with resolutions
up to 1280x1024x8bpp

. True-color and Hi-color display capability with flat panel
. 2MB integrated High performance SDRAM memory on chip
. Display Modes supported 640x480 to 1280x1024

■ **SSD (Solid State Disk)** :

. SRAM/Flash Disk Controller
. Compatible with JEDEC Standard
. Support one 32-pin Sockets For SRAM/Flash Disk
. Each Socket is supported up to 512KB
. Solder On Board 1.7M Bytes Flash Disk(Option)
. Support SSD DOS level FORMAT
. Provide one M-Systems DiskOnChip Sockets

■ **Universal Serial Bus (USB) interface** :

. Two USB Port
. USB v1.1 and Intel Universal HCI v1.0 compatible
. Eighteen levels(doubl words) of data Fifes

■ **Floppy Disk Drive Interface**:

. Supports Up to two Floppy Disk Drives,5.25"(360KB or 1.2MB);
and/or 3.5"(720KB or 1.44MB/2.88MB)

■ **IDE Hard Disk Drive Interface**:

. PCI Local Bus IDE Interface
. Support Ultra-DMA/33/66 Mode
. Transfer up to Mode 4 Timing(66Mbytes/sec)
. Supports PIO Modes up to Mode 4 Timings, and Multiword DMA Mode 0,1,2
with Independent Timing of up to 2 Drives
. Buffer for each channel (Total:32DWORDS)
. Support ATAPI compliant devices.
. Support tri-state IDE Signals for Swap Bay

■ **Serial Ports**:

. Two 16550 Compatible RS-232C Serial Ports.
. Supported +5V(1A) Power Output or Ring Signal input by
COM Port pin-9.(Jumper Selectable)

■ **Printer Port**.

. One SPP/ECP/EPP Bi-directional Parallel Port.

■ **Watchdog timer** :

. Software programmable Watchdog timer
. 16 level timeout intervals range from 1 to 160 sec(+/-10%)

■ **Real-time clock/calendar** :

. Lithium battery with 10-year data retention

- **CPU Health monitoring** : Provides CPU over TEMP alarm
- **PC/104 Connector**:
  . 16-bit PC/104 connector for expansion modules.
- **Power Supply Voltage** : +5V, +/-12V
- **Power Consumption** : +5VDC/15A(max), +12V/200mA(max),-12V/200mA(max)
  (Power requirement will Vary with CPU type)
- **Operating Temperature**: 32 to 140F(0 to 60C).
  (A Heat Sink With Cooling Fan is Needed on CPU)
- **Storage Temperature**: -4 to 248F(-20 to 120C)
- **Dimensions**: 184.79mm(L) x 123.19mm(W) (Half size)
- **Board Type**: Dual/Side SMT, 8-Layer P.C.B

1.4 What You Have

In addition to this *User's Manual*, the PI-6584V package includes the following items:
- PI-6584V Pentium with VGA Single Board Computer
- RS-232/Printer Cable
- FDD/HDD Cable
- 6-pin Mini-Din to 5-pin Din Keyboard Adapter Cable

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

1.5 Installation

This chapter describes how to install the PI-6584V. At first, the layout of PI-6584V is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the PI-6584V's configuration, such as CPU type selection, system clock setting, and watchdog timer, are also included.

1.6 P.C.B layout

1.7   P.C.B dimension

PI-6584V

119.38
5.83

28.69

102.35
98.43

150.61
100.97

186.81
123.19

183.63   25.40

69.04

31.75

26.15

12.70
17.25
3.81
19.80

28.88

106.16

Unit : mm
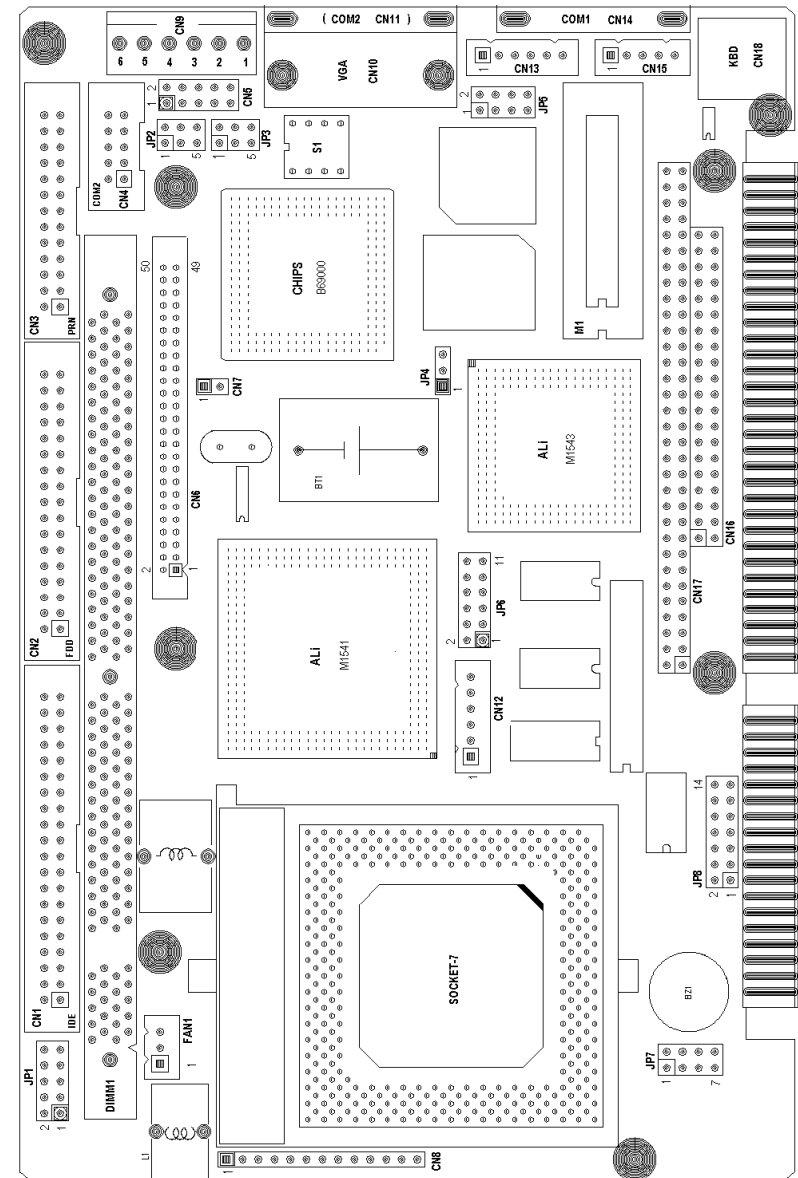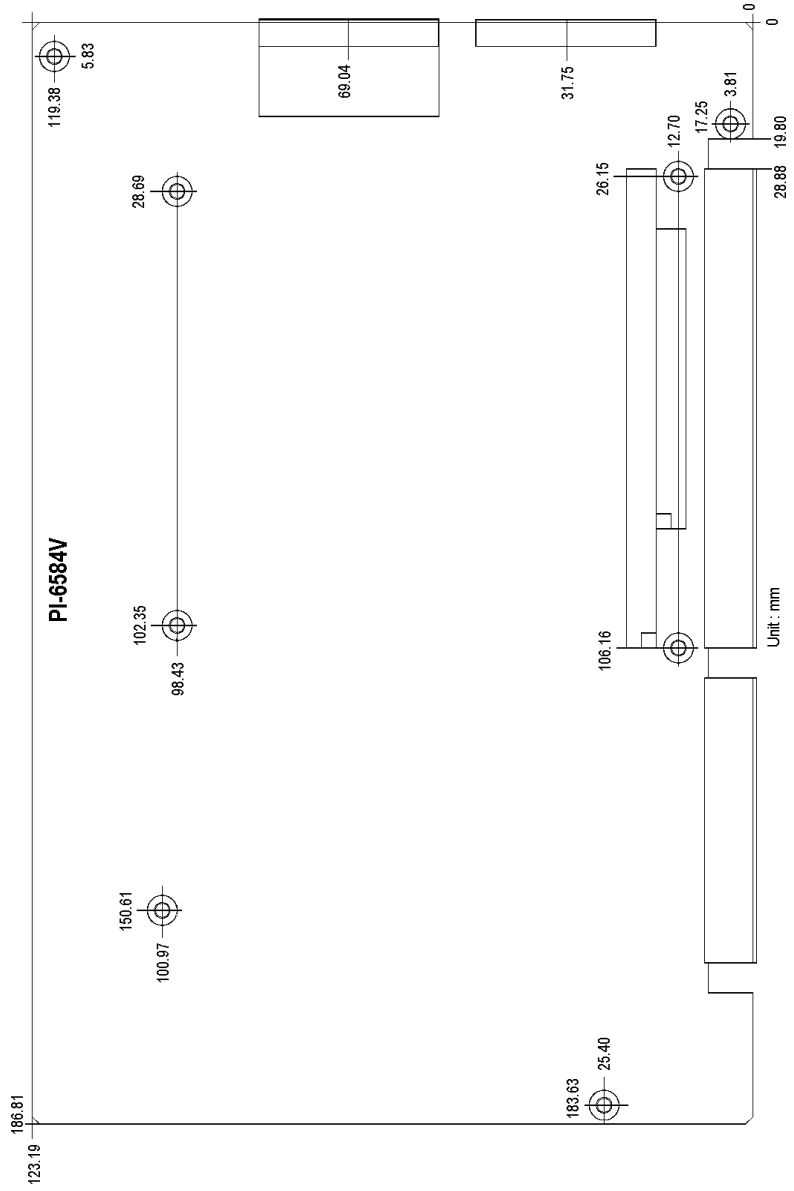
2. Installation

2.1 Memory Installation : DIMM1

The PI-6584V supports one 168-pin DIMM socket for a maximum memory of 512MB SDRAM. Use SDRAM modules with PC100 specification when running 100MHz CPU bus speed with 66MHz CPU bus speed. SDRAM modules with PC66 or PC100 specification can be used. You have to install the Pentium processor before installing the memory modules.

2.2 CPU installation

■ **CPU Core Voltage Setting : JP1**

1-2	3-4	5-6	7-8	9-10	Vcc2	1-2	3-4	5-6	7-8	9-10	Vcc2
1	1	1	1	0	2.10V	0	1	1	1	1	1.30V
1	1	1	0	1	2.20V	0	1	1	1	0	1.35V
1	1	1	0	0	2.30V	0	1	1	0	1	1.40V
1	1	0	1	1	2.40V	0	1	1	0	0	1.45V
1	1	0	1	0	2.50V	0	1	0	1	1	1.50V
1	1	0	0	1	2.60V	0	1	0	1	0	1.55V
1	1	0	0	0	2.70V	0	1	0	0	1	1.60V
1	0	1	1	1	2.80V	0	1	0	0	0	1.65V
1	0	1	1	0	2.90V	0	0	1	1	1	1.70V
1	0	1	0	1	3.00V	0	0	1	1	0	1.75V
1	0	1	0	0	3.10V	0	0	1	0	1	1.80V
1	0	0	1	1	3.20V	0	0	1	0	0	1.85V
1	0	0	1	0	3.30V	0	0	0	1	1	1.90V
1	0	0	0	1	3.40V	0	0	0	1	0	1.95V
1	0	0	0	0	3.50V	0	0	0	0	1	2.00V
						0	0	0	0	0	2.05V

0 = SHORT , 1 = OPEN

■ **CPU I/O Voltage : JP7**

For Single Voltage CPU : Intel P54C, Cyrix 6x86, AMD K5

JP 7			
1-2	3-4	5-6	7-8
Short	Short	Open	Open

(CPU Core Voltage(JP1) must be set to 3.3V)

For Dual Voltage CPU : Intel P55C, Cyrix 6x86L/MX, AMD K6/K6-2/3

JP 7			
1-2	3-4	5-6	7-8
Open	Open	Short	Short

(Default)

(CPU Core Voltage(JP1) dependent CPU Type)

Note: .Intel P54C Setting is for Single Voltage CPU(3.3V Only)
.Intel P54C : Core and I/O Volt = 3.3V
.Intel P55C : Core volt = 2.8V, I/O volt = 3.3V
.Cyrix 6x86 -Pxx+(M1) : Core & I/O volt = 3.3V(016) or 3.5V(028)
.Cyrix 6x86L-Pxx+(M2) : Core volt = 2.8V , I/O volt = 3.3V
.AMD K5-PRxx : core & I/O volt = 3.5V
.AMD K6/166/200 : core Volt = 2.9V , & I/O volt = 3.3V
.AMD K6/233/266 : core Volt = 3.2V , & I/O volt = 3.3V
.AMD K6-2/266/300/450/500 : core Volt = 2.2V , & I/O volt = 3.3V
.AMD K6-3/450   : core Volt = 2.4V , & I/O volt = 3.3V
.You must ensure that your CPU Card is configured for the proper processor voltage level.

Example:
For Single Voltage CPU : Pentium-13 (Intel-P54C)
JP7   pin 1-2, 3-4 = short
JP7   pin 5-6 , 7-8 = Open
JP1   pin 3-4 , 5-6 , 9-10 = Short
JP1   pin 1-2,7-8 = Open

For Dual Voltage CPU : Pentium-233(Intel-P55C)
    (CPU V/core = 2.8V and I/O Voltage = 3.3V)
        JP7   pin 1-2,3-4 = Open
        JP7   pin 5-6,7-8 = Short
        JP1   pin 3-4 = Short
        JP1   pin 1-2,5-6,7-8,9-10 = Open

For Dual Voltage CPU : AMD-450(MMX)
    (CPU V/core = 2.2V and I/O Voltage = 3.3V)
        JP7   pin 1-2,3-4 = Open
        JP7   pin 5-6,7-8 = Short
        JP1   pin 7-8 = Short
        JP1   pin 1-2,3-4,5-6,9-10 = Open

■ **CPU Internal frequency BUS/Core Ratio Selector : JP8 pin[7,8,9,10,11,12]**

JP8			
7-8	*9-10*	*11-12*	*Bus/Core Ratio*
ON	ON	OFF	2.5x
OFF	ON	OFF	3.0x
ON	OFF	OFF	2.0x / 6.0x
OFF	OFF	OFF	3.5x
ON	ON	ON	4.5x
OFF	ON	ON	5.0x
ON	OFF	ON	4.0x
OFF	OFF	ON	5.5x

          * ON = Short,   OFF = Open

■ **CPU External Clock Speed Selector : JP8 pin[1,2,3,4,5,6]**

		JP8		
Frequency	PCI BUS	1-2	3-4	5-6
66.8MHz	33.4MHz	OFF	ON	ON
68.5MHz	34.2MHz	ON	OFF	ON
75MHz	30MHz	ON	ON	OFF
83.3MHz	33.3MHz	OFF	ON	OFF
95.2MHz	33.7MHz	ON	OFF	OFF
100.0MHz	33.3MHz	OFF	OFF	OFF

■ **CPU Linear/Interleave Burst : JP8 pin[13,14]**

    OFF   - Interleave Burst (For Intel/AMD or Other) - **Default**
    ON   - Linear Burst (For Cyrix L/MX)

3. Jumpers on the PI-6584V

3.1 LCD VGA BIOS select: S1

S1				
SW1	SW2	SW3	SW4	Panel Type
ON	ON	ON	ON	1024x768 Dual scan STN color
ON	ON	ON	OFF	1280x1024 TFT color
ON	ON	OFF	ON	640x480 Dual scan STN color
ON	ON	OFF	OFF	800x600 Dual scan STN color
ON	OFF	ON	ON	640x480 12bit TFT color
ON	OFF	ON	OFF	640x480 18bit TFT color
ON	OFF	OFF	ON	1024x768 TFT color
ON	OFF	OFF	OFF	800x600 TFT color

(All modes can be run in simultaneous display with CRT)

3.2 Flat Panel SHF_CLK setting : JP2 pin[1,3,5]

Pin No.	Signal Name	
1-3	SHF_CLK inverted	(For EL Panel)
3-5	Normal	**(Default)**

3.3 Flat panel power select : JP2 pin[2,4,6]

(The power is output from CN6 pin[32,34])

Pin No.	Signal Name	
2-4	DC +3V	
4-6	DC +5V	(Default)

3.4 VGA Suspend : CN7

ON =VGA Suspend

OFF =Normal

4. Pin assignments of connectors

4.1 External Power Input Connector : CN9

When using an AT compatible power supply, plug the power supply connector
P8 into the CN9. Make sure the power supply connector are connected in the

CN9	
Pin No	Signal Name
1	NC
2	+5V DC
3	+12V DC
4	-12V DC
5,6	Ground

4.2 USB(Universal Serial Bus) Connector : CN5

CN 5		
Signal Name	Port-0	Port-1
+5V	pin-1	pin-2
+USB	pin-3	pin-4
-USB	pin-5	pin-6
Ground	pin-7	pin-8
Ground	pin-9	pin-10

4.3 Hardware Reset Switch Connector : CN8 pin[1,2]

4.4 Key Lock Connector : CN8 pin[3,4,5,6,7]

CN 8	
Pin No	Signal Name
3	LED Power
4	NC
5,7	GND
6	KEY LOCK

4.5 PC/104 ISA Bus Connector : CN16/CN17

4.6 CPU FAN Power Connector : FAN1

FAN 1	
Pin No.	Signal Name
1	GND
2	+12V DC
3	Rotation

4.7 Floppy Diskette Connector : CN2

4.8 IDE HDD Driver Connector : CN1

4.9 IDE HDD LED Connector : CN8 pin[8,9]

CN8   pin 8 = VCC
pin 9 = HDD Active

4.10 PS/2 Mouse Connector : CN13

Pin No.	Signal Name
1	MS_Data
2	NC
3	GND
4	+5V/DC
5	MS_CLK
6	NC

4.11 Keyboard Connector : CN18

Pin No.	Signal Name
1	KB_Data
2	NC
3	GND
4	+5V/DC
5	KB_CLK
6	NC

4.12 Extend Keyboard Connector : CN15

Pin No.	Signal Name
1	KBD Clock
2	KBD Data
3	NC
4	GND
5	+5V DC

4.13 Ext. Speaker Connector : CN8 pin[10,11,12,13]

Pin No.	Signal Name
10	+5V DC
11,12	GND
13	Speaker Out

4.14 COM Serial Port Connector : CN14,CN4

The On-Board serial ports of CPU card are a DB-9pin(CN14) and a 10 pin-header(CN4)

COM1/3 D-TYPE 9-pin Connector : CN14

Pin No.	Signal Name
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI or +5V

DB-pin9 signal RI or +5VDC is selected by JP3 pin[2,4,6]

4.15 COM2/4 10-Pin Header : CN4

CN4			
Pin No.	Signal Name	Pin No.	Signal Name
1	DCD	2	DSR
3	RxD	4	RTS
5	TxD	6	CTS
7	DTR	8	RI or +5V
9	GND	10	NC

* CN4 Ext. by flat-cable to D-TYPE 9-pin Connector,
* DB-pin9 signal RI or +5VDC is selected by JP3 pin[1,3,5]

4.16 COM Serial Port DB-pin 9 Signal Ring or +5VDC Select : JP3

The D-Type Connector pin-9 of COM1/COM2 has two purpose :
    1. Directly connects to "RING" signal of COM1/COM2 port
    2. Connects to +5VDC, If RS422/485 adapter connected to COM1/COM2 port

JP3			
Signal Name	COM 1,3	COM 2,4	
Ring	2-4	1-3	**(Default)**
+5V DC	4-6	3-5	

(DC +5V Fuse/1A(FS4 Protected)

4.17 Printer Port Connector : CN3

4.18 VGA Connector : CN6 , CN10

■ **TFT Flat Panel 50pin Connector : CN6**

CN 6			
Pin No	Signal Name	Pin No	Signal Name
1	GND	2	LP (HSYNC)
3	GND	4	FLM (VSYNC)
5	GND	6	SHF_CLK
7	GND	8	P0
9	P1	10	P2
11	P3	12	P4
13	P5	14	P6
15	P7	16	P8
17	P9	18	P10
19	P11	20	P12
21	P13	22	P14
23	P15	24	P16
25	P17	26	P18
27	P19	28	P20
29	P21	30	P22
31	P23	32	+3V/+5V
33	M	34	+3V/+5V
35	ENAVEE	36	+12V
37	ENABKL	38	+12V
39	P24	40	P25
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33

49	P34	50	P35

■ **VGA CRT Monitor Connector :   CN10**

5. How to use on board Flash/RAM disk

5.1 About solid state disk

The PI-6584 provides solder on-board 1.7MB flash ROM disk(**M0**) and one extended solid state disk sockets (**M1**) which can accept SRAM/FLASH or **DiskOnChip™** that can be R/W under DOS and can be booted from Driver "A","B","C" or "D"

The PI-6584 solid-state disk occupies two system memory sections.

Section 1   :the last 36K bytes at higher memory address for solid-state disk BIOS parameter buffer

Section 2   :SSD bank(16K) at D0000-D3FFFH or CC000-CFFFFH
(8K Flash/RAM disk Bank+8K DiskOnChip)

Support Memory Type :
. **Flash ROM** :
VPP = +12V -INTEL/AMD 28F010(128KB), 28F020(256KB) or equivalent.
= +5V - AMD 29F010(128KB), 29F040(512KB) SST 28CF040, ATM
29C040A or equivalent.
. **SRAM**(Lower Power) :
512KB - SONY Cxk58400-Lp Low Power 512KB SRAM
DALLAS DS1650 512KB Nonvolatile SRAM or equivalent
Note : [1] Access time less than 150ns
[2] SRAM Must be used Low Power Type
[3] VPP +12V Flash memory cannot write on-board
[4] If SRAM is installed and Battery must be used 3.6V/600mA

Example: SONY CXK584000P   -70LL
. Data Retention Current = 24.0uA(LL version)
. On Board Battery : 3.6V/600mA Hour
. CMOS RAM Standby Current : 1.0uA
Power Off SRAM Data Retention Time : 600mA / (1uA + 24uA) = 24000 Hours

The SSD Controller have multi function:
1. On-Board 1.7M Bytes Flash Disk Only(M0)
2. On-board flash disk(M0) with RAM/Flash disk(M1)
3. On-Board Flash Disk(M0) with DiskOnChip (M1)
4. SRAM (M1) Only
5. DiskOnChip(M1) Only
Note: The RAM/Flash Disk and DiskOnChip the driver Name is separate.

5.2 On board Flash disk hardware settings

There is a jumper called "JP6" should be set properly before using Flash/RAM disk.

- JP6 pin 1-2 is used to set the memory address occupied by disk
- JP6 pin 3-4 is used to set base I/O port address
- JP6 pin 5-6 is used to enable or disable Flash/RAM disk controller
- JP6 pin 7-8 is used to set device type inserted on the socket "M1"
- JP6 pin 9-10 is used to set Battery for Backup SRAM(M1) data
- JP6 pin 11-12 is reserved (Normal OPEN)

- **SSD Occupies System Memory Address Select :   JP6 pin[1,2]**
JP6 pin 1-2 :   ON   = D0000h - D3FFFh   (Default)
OFF   = CC000h - CFFFFh
(Total Occupies System Memory 16KBytes Area)

- Base I/O Port Address Select :   JP6 pin[3,4]
ON   = 136h,536h (Default)
OFF   = 236h,636h

- RAM/Flash Disk Enable/Disable :   JP6 pin[5,6]
ON   = Disable (Default)
OFF   = Enable

- DiskOnChip(M1) Enable/Disable :   JP6 pin[7,8]
ON   = Disable (Default)
OFF   = Enable

- Battery backup SRAM(M1) Data Enable/Disable :   JP6 pin[9,10]
ON   = Enable
OFF   = Disable(Default)
(JP6 pin 9,10 must be OFF If SRAM is not installed)

■ **Quick Reference**

JP6			M0 (1.7MB Flash)	M1
5-6	7-8	9-10		
OFF	ON	ON	Enable	SRAM
OFF	OFF	OFF	Enable	DOC
OFF	ON	ON	Not installed	SRAM
ON	OFF	OFF	Disable	DOC

Note: JP6 pin 9-10(SRAM data backup Battery) always OFF If SRAM is not used

5.3 Solid state disk Setup

The solid-state disk SETUP configures the solid-state disk information that is stored in EEPROM. The solid-state disk has a window Setup interface that is recognizable to anyone.

This setup function is available for on-board 1.7MB Flash and extended disk (M1 socket) configuration

As Award BIOS POST executes, the following appears:

..

.WAIT……..

Hit <F10> to Run Advanced Solid state disk SETUP

At this time, Hit <F10> to run Solid-state disk SETUP. A SETUP window shows up on the screen.

.**All-in-one 80586DX CPU Card Flash/RAM Disk SetUp Vx.x**	
Primary disk drive	:A
Secondary disk drive	None
System boot sequence	:Flash disk
COM port for remote Flash PGM	:COM1
Auto detect and boot from Disk A:	:Disabled

PgUp/PgDn:Select   -   Esc:No save   -   F7:Save

Where

■ Primary disk drive

The on board 1.7MB flash disk can emulate disk drive A:,B:,C:,D: or disabled.

A	=	Drive A:
B	=	Drive B:
C	=	Drive C:
D	=	Drive D:
Disabled:	=	Disable solid state disk

■ Secondary disk drive

There are two configurations for extended device on the extended socket called M1. The device can be configured into primary or to secondary drive as shown below

None	=	Combine device into on board 1.7MB flash disk
M1	=	Be a secondary disk alone

■ System Boot Up Sequence

The system may boot up from two following sequences as:

CMOS SETUP	=	Boot up according to CMOS Setup sequence
ROM Disk	=	Boot up from solid state disk, if DOS files existed in the Primary disk

■ COM Port for Remote Flash PGM

If you are going to remotely access the 1.7MB Flash disk or extended disk on M1 socket with utility called "RDISK.EXE" . You should select which communication port be connected to communicate with host system.

COM1	=	COM1 port (3F8H) IRQ4
COM2	=	COM2 port (2F8H) IRQ3
Disabled	=	No remote Access required

■ Auto detect and boot from Disk A:

Enabled	=	If system files(IO.SYS, SMDOS.SYS) existed in Floppy disk A:, the system will automatically boot form disk A:.
Disabled	=	Normal boot sequence

■ Selects and save SETUP

PgDn	=	Moves reverse bar down
Esc	=	Quit without saving SETUP
F7	=	Quit and saves current SETUP to EEPROM

5.4 Using on board 1.7MB Flash disk

The on-board 1.7MB flash disk provides you an easy way to build a *mechanical diskless system* without any additional disk devices. You can directly read/write this Flash disk at DOS prompt such as (COPY, DEL, FORMAT, ..etc).

The following procedures show you how to use this Flash disk

1. Setting JP6 properly before turn on system

2. Boot system form normal CMOS setup sequence

3. Format on-board 1.7MB Flash disk at DOS prompt as:
   C:>format   <Flash disk drive name> /S

4. Create "AUOTOEXEC.BAT" file in the flash disk

5. Copy "DISKSWAP.EXE" file into flash disk

6. Modifies "AUTOEXEC.BAT" file to have "DISKSWAP.EXE" at first line

7. Copy your application files into Flash disk by using "COPY" command

8. Reboot system and then modify the Flash/RAM disk setup to set "Boot Sequence" to "ROM Disk" and press F7 to save

9. The system will boot DOS from Flash disk

5.5 How to install Flash or SRAM device on socket M1

■ Jumper setting for extended disk on the socket M1

See jumper settings of chapter 3 before installing device

■ Acceptable device on the socket M1

The extended socket "M1" ca n accept many types of Volatile memory devices, including Flash, SRAM as shown followings

SRAM	:SONY CXK581000/584000 or equivalents
ATMEL Flash	:29C010, 29C040, 29C040A
SST Flash	:29EE010, 28SF040

Note: 1. ATMEL 29Cxxx and SST 29EE101, 28SF040 Flash ROMs are all operated as static RAM device on the solid state disk, but no battery backup required and program cycle are limited to 100,000 to 500,000 times.

2. If SRAM is installed, Jumper JP6 pin 9-10 should be shorted to backup SRAM data

■ Setting drive of extended disk

You have two ways to use extended device on the socket M1

1. Combines into on board 1.7MB Flash disk in primary disk

2. Be a secondary disk alone

■ Format before usage

If device (Flash or SRAM) is first time installed into extended socket (labeled M1) and combined into primary disk. The "FORMAT" process is necessary before usage.

C:> FORMAT <Primary disk name>/S/U

The primary disk size=1.7MB + size of device on the socket M1

If device (Flash or SRAM) is first time installed into extended socket (labeled M1) and set to be secondary disk alone. The "FORMAT" process is necessary before usage.

C:> FORMAT <Secondary disk name>

The primary disk size=1.7MB

Secondary disk size= size of device on the socket M1

5.6   Flash disk installation examples

■   Example 1: Assume to use on board 1.7MB Flash disk and 128KB SRAM on the
        socket M1, and Primary disk is B"

Step 1 :Press "F10" at BIOS POST to run Flash/RAM disk setup

Step 2 :Set "Primary disk drive" to B, and "Secondary disk drive" to None
        (Primary disk drive=on board 1.7MB+128KB SRAM)

All-in-one 80586DX CPU Card Flash/RAM Disk SetUp Vx.x	
Primary disk drive	:B
Secondary disk drive	None
System boot sequence	: CMOS setup
COM port for remote Flash PGM	:COM1
Auto detect and boot from Disk A:	:Disabled

Step 3 :Set "Boot sequence" to CMOS setup

Step 4 :Press "F7" to save setup value and exit

Step 5 :Format B:/S (Primary disk drive) at DOS prompt

        The total capacity of disk B: is 1700KB +128KB=1828KB

Step 6 :Create "Autoexec.bat" file in disk B:, and modify the first line in
        "autoexec.bat" file to have "@ Diskswap.exe" command

Step 7 :Copy "**DISKSWAP.EXE**" file to disk B: from provided utility diskette

Step 8 :reboot your system and press "F10" again and modify "Boot
        sequence" to ROM disk

Note:

The file called "**Diskswap.exe**" in the provided diskette is used to swap the disk drive
name when system boots from ROM/RAM disk

■   Example 2: Assume to use on board 1.7MB Flash disk as disk A: (Primary disk) ,
        and 512KB ATMEL Flash on the socket M1 as Disk B (Secondary disk)

Step 1 :Press "F10" at BIOS POST to run Flash/RAM disk setup

Step 2 :Set "Primary disk drive" to A, and "Secondary disk drive" to M1
        (Primary disk drive=on board 1.7MB)
        (Secondary disk drive=512KB Flash)

All-in-one 80586DX CPU Card Flash/RAM Disk SetUp Vx.x	
Primary disk drive	:A
Secondary disk drive	M1
System boot sequence	:CMOS setup
COM port for remote Flash PGM	:COM1
Auto detect and boot from Disk A:	:Disabled

Step 3 :Set "Boot sequence" to CMOS setup

Step 4 :Press "F7" to save setup value and exit

Step 5 :Format A: and B: at DOS prompt
        C>Format A:/S   (format Primary disk with system files)

        C>format B: (format Secondary disk)

Step 6 :Create "Autoexec.bat" file in disk A:, and modify the first line in
        "autoexec.bat" file to have "@ Diskswap.exe" command

Step 7 :Copy "DISKSWAP.EXE" file to disk A: from provided utility diskette

Step 8 :reboot your system and press "F10" again and modify "Boot
        sequence" to ROM disk

6. How to use DiskOnChip Flash disk

The DiskOnChip™ Flash disk chip is produced by M-Systems. The DiskOnChip™ Flash disk occupies only 8KB system memory address, and can completely emulate a disk in PC system

The PI-6584V card allows the user to install this device on the socket called M1. A jumper called JP6 pin 7-8 is used to enable or disable DiskOnChip™ Flash disk

6.1 Using DiskOnChip only

JP6			M0 (1.7MB Flash)	M1
5-6	7-8	9-10		
ON	OFF	OFF	Disable	DOC

6.2 Using DiskOnChip and on-board 1.7MB Flash disk simultaneously

JP6			M0 (1.7MB Flash)	M1
5-6	7-8	9-10		
OFF	OFF	OFF	Enable	DOC

7. On board Flash/RAM disk BIOS function calls

The on-board Flash/RAM disk BIOS provides you the flexible functions that you can directly access the on-board memory device(s) without using file handler of DOS.

7.1   Function Call Entry:INT 83H

Entry:	AH=1	;Get Device type and size	
	DL=Device No.		
	=0 "M1" socket		
Exit:	AH =Device Type	=10H	SRAM
		=20H EPROM	
		=CxH SST Flash ROM	
		=DxH ATMEL Flash ROM	
	CX =size (KB)		

Entry:	AH=2	;Read Sectors From Memory
	DL=Device No.	;device
	CX=Sector No.	
	AL=Sectors	
Exit:	ES:BX= Destination buffer pointer	

Entry:	AH =3	;Writes One Sector to memory
		;device
	DL =Device No.	;(0,1,2)
	CX=Sector No.	;(0,1,2,……)
	AL=Sectors.	;(1,2,……..)
Exit:	ES:BX= Source buffer pointer	
	Carry =1	; data writing error
	Carry =0	;completed

7.2   Example written with C language:

```c
#include "io.h"
#include "stdlib.h"
#include "conio.h"
#include "dos.h"
char sector_buffer[512];
main()
{
clrscr();
  if (check_funcall()==-1)              /* Check existence of Function call Entry */
    {
        printf ("Flash/RAM disk Function call not existed \n\r ");
        exit(0);
    }
  printf ("Flash/RAM disk Function call ready..\n\r ");
  read_devsec(2,0,1,sector_buffer);
  write_devsec(2,0,1,sector_buffer);
}


/*************************************************/
/*      Function Calls of Flash/RAM disk    */
/*************************************************/
int check_funcall()
/*   Check existence of Flash/RAM disk function call entry */

{
unsigned far *Int83_Ptr=0x0000020c; /* Points to INT 83H vector */
unsigned far *idptr;
idptr=MK_FP(*(Int83_Ptr),0);          /* Get Function call Parameter */
  if (*(idptr)!=0x5678)                /* Check Function call ID code */
```

```
      return(-1);                    /* Function call entry not existed */
  else
      return(1);                     /* Function call entry available */
}
read_devsec(int device_no,int sector_no,int sectors,char *buffer_ptr)
/* Directly read sectors from Flash/RAM disk function call entry
  where
  Entry  int device_no :device No. (0.....)
         int sector_no :start sector No. (0....)
         int sectors    :sectors be read    (1....)
         int buffer_ptr :data buffer pointer
  Exit    Datas in buffer_ptr                      */

{
  union REGS xr;
  struct SREGS sr;

  xr.h.ah=2;                          /* Function call no in AH */
  xr.h.dl=device_no&0xff;             /* Device No. in DL */
  xr.x.cx=sector_no;                  /* Sector No. in CX */
  xr.h.al=sectors;                    /* Sectors in AL */
  xr.x.bx=FP_OFF(buffer_ptr);         /* Offset of Buffer pointer in BX */
  sr.es=FP_SEG(buffer_ptr);           /* Segment of Buffer pointer in ES */
  int86x(0x83,&xr,&xr,&sr);           /* Call function */


}


write_devsec(int device_no,int sector_no,int sectors,char *buffer_ptr)

/* Directly write sectors of device through function call entry

  where
```

```
  Entry   int device_no :device No. (0.....)
          int sector_no :start sector No. (0....)
          int sectors    :sectors be written    (1....)
          int buffer_ptr :data buffer pointer
  Exit      None             */

{
  union REGS xr;
  struct SREGS sr;
  xr.h.ah=3;                          /* Function call no in AH */
  xr.h.dl=device_no&0xff;             /* Device No. in DL */
  xr.x.cx=sector_no;                  /* Sector No. in CX */
  xr.h.al=sectors;                    /* Sectors in AL */
  xr.x.bx=FP_OFF(buffer_ptr);         /* Offset of Buffer pointer in BX */
  sr.es=FP_SEG(buffer_ptr);           /* Segment of Buffer pointer in ES */
  int86x(0x83,&xr,&xr,&sr);           /* Call function */
}      End
```

8. How to use watch dog timer

The PI-6584V is equipped with a watch-dog timer that resets the system if processing comes to a standstill, Typically caused by electromagnetic interference (EMI) or software bugs. This feature ensures continued operation in industrial stand-alone and unmanned applications. The watchdog timer is a circuit that should be refreshed periodically. If it is not refreshed within a certain time, the watchdog timer will automatically reset the system, generate interrupts or MNI. This prevents a system from hanging indefinitely.

The watchdog timer can be programmed in 16 level form 1 to 160 seconds. The "RESET" signal will be generated from watchdog timer, when timer out reaches. It is defined at I/O port 443h; when you want to Enable/Disable the watchdog timer write data to I/O port 443h. When you want to refresh watchdog timer Read I/O port from 443h.
(One fixed I/O port (443H) is used to control on-board watch dog timer)

8.1 Watch dog timer settings

■ Watch Dog Active Type Setting : JP5 pin[1,2,3,4]

JP 5		
ACT Type	1-2	3-4
RESET	ON	OFF
NMI	OFF	ON
Disable	OFF	OFF

(Default)

* ON = SHORT, OFF = OPEN

■ Watch dog timer time base settings

There are two time bases for watchdog timer 1 sec or 10 sec by setting jumper JP5 pin [5-6,7-8]

Time Base	JP 5
1 sec	5-6
10 sec	7-8

(Default

8.2 The Watchdog timer table

■ **Time Base = 1 sec**   (JP5 pin[5,6] = SHORT, pin[7,8] = OPEN)

Value	Time/sec	Value	Time/sec
0	Disable	17h	9 sec
1Fh	1 sec	16h	10 sec
1Eh	2 sec	15h	11 sec
1Dh	3 sec	14h	12 sec
1Ch	4sec	13h	13 sec
1Bh	5 sec	12h	14 sec
1Ah	6 sec	11h	15 sec
19h	7sec	10h	16 sec
18h	8sec		

■ **Time Base = 10 sec**   (JP5 pin[5,6] = OPEN, pin[7,8] = SHORT)

Value	Time/sec	Value	Time/sec
0	Disable	17h	9 sec
1Fh	10 sec	16h	100 sec
1Eh	20 sec	15h	110 sec
1Dh	30 sec	14h	120 sec
1Ch	40 sec	13h	130 sec
1Bh	50 sec	12h	140 sec
1Ah	60 sec	11h	150 sec
19h	70 sec	10h	160 sec
18h	80 sec		

Example 1 :   Time Base = 1 sec (JP5 pin[3,4] = SHORT, pin[5,6] = OPEN)

```
mov     dx,443h          ; Load Watch dog I/O port Addr.
mov     al,11h           ; Set to 15 sec
out     dx,al            ; Write to Control REG.
...
...
in      al,dx            ; Clear(Refresh) watch dog timer. repeat
...
...
mov     al,0             ; Disable Watch dog
out     dx,al            ; Write to Control REG.
```

Example 2 :   Time Base = 10 sec (JP5 pin[5,6] = SHORT, pin[3,4] = OPEN)

```
mov     dx,443h          ; Load Watch dog I/O port Addr.
mov     al,16h           ; Set to 100 sec
out     dx,al            ; Write to Control REG.
...
...
in      al,dx            ; Clear(Refresh) watch dog timer. repeat
...
...
mov     al,0             ; Disable Watch dog
out     dx,al            ; Write to Control REG.
```

9. VGA driver installation

This chapter provides information on how to install VGA drivers that come in the floppy diskette with your PI-6584V card. Please note that there must be relevant software installed in your system before you could proceed to install the VGA drivers.

9.1 Installing the drivers for Windows 98

The following section describes the normal display driver installation procedures for Windows 95. Use the following procedures when installing the display drivers for Windows 98

1. Click Start, then Settings, then Control Panel
2. Double click on "Display"
3. Select the "Settings" page, click the "Change Display Type button.
4. Click the "Change" button and press "OK"
5. Click the "Have Disk" button and press "OK"
6. Specify the path to the new driver and press <ENTER>:
7. Example: Insert the drivers disk in the A: floppy disk, and enter a:\win98
8. The "Select Device" dialog box will appear. Select the adapter that corresponds to the one you installed in your machine and click OK.
9. Windows 95 will copy the display drivers to the proper directories on your system
10. Continue choosing "Close" until asked to restart your machine from the "System Settings change" dialog box
11. After the system has restarted, you can go back into Display applet and select alternate screen resolution and color depths

9.2 Installing the drivers for Windows NT 3.5X

The following section describes the VGA driver instillation procedures for Windows NT 3.5X

1. Run Windows NT Setup from Main Group
2. Choose Option from the menu (Alt-O)
3. Select change System Setting (Alt-C)
4. Choose "Other" under the Display section
5. Insert display driver disk in appropriate floppy drive
6. Type the destination as "A:\NT35x"

9.3 Installing the drivers for Windows NT 4.0

Once you are in the Windows NT 4.0 environment, follow the procedures below to install the VGA drivers in the diskette that comes with your CPU card

1. Click the Start button, then go to Settings and click on Control Panel
2. Click on the Display icon to start the Display Properties window
3. Click on the Settings tab, and then click on Display Type
4. In the Change Display window, click on have Disk. Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press ENTER.
5. Select Chips Video Accelerator from Display list provided, then click OK or press ENTER
6. You will then see a warning panel about Third Party Drivers. Click on Yes to finish the installation
7. Once the installation is completed, the system must be shut down and restarted for the new drivers to take effect
8. When the system has restarted, the default graphic mode (usually 640x480x256 color) has been automatically selected. Click the Start button, then go to Setting and click on Control Panel. Click on the Display icon to start the Display Properties window. Click on the Setting tab. A new screen setting can be selected using either of the following methods:

    A. Use the slide-bar in the Desktop Area to select new setting.
    B. Click on List All Modes. From the list provides, select a new setting, then click OK or press ENTER
    C. Click on Test to test the newly selected graphics mode. Follow the instructions given on the screen. A test screen should appear, followed by the Testing Mode window. Click on Yes to continue. Click on Apply to switch to the new graphics mode. Graphics modes are changed dynamically on NT 4.0, so you do not need to shut down and restart for the new screen settings to work

10. CMOS setup

10.1 Main Menu

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

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	PASSWORD SETTING
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PNP/PCI CONFIGURATION	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC: Quit	↑↓→←:Select item
F10:Save & Exit	(Shift) F2:Change Color
Time,Date,Hard disk Type	

■ Standard CMOS Setup

This setup page includes all the items in a standard, AT-compatible BIOS

■ BIOS Features Setup

This setup page includes all the items of Award special enhanced features

■ Chipset Features Setup

This setup page includes all the items of chipset special features.

■ Power Management Setup

This entry only appears if your system supports Power Management, "Green PC", standards PNP / PCI Configuration Setup. This entry appears if your system supports PNP / PCI.

■ Load BIOS Defaults

The BIOS defaults have been set by the manufacturer and represent settings which provide the minimum requirements for your system to operate.

■ Load Setup Defaults

The chipset defaults are settings which provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

■ Password setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup

■ Integrated Peripherals

This section page includes all the items of IDE hard drive and Programmed Input / Output features.".

■ IDE HDD Auto Detection

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters. See also Section 2, "Standard CMOS Setup".

■ Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

■ Exit Without Save

Abandon all CMOS value changes and exit setup.

10.2 Standard CMOS Setup

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

■ Date

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day, from Sun to Sat, determined by the BIOS and is display-only
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec.
year	The year, from 1900 through 2099

■ Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

■ 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 users 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 if 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", you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included 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 you select Type "Auto", BIOS will Auto-Detect the HDD & CD-ROM Drive at the POST stage and showing the IDE for HDD & CD-ROM Drive.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precomp
LANDZONE	landing zone
SECTORS	number of sectors
MODE	mode type

If a hard disk has not been installed select NONE and press <Enter>.

■ Drive A Type / Drive B Type

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

None	No floppy drive installed
360K, 5.25 "	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25"	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5"	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5"	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5"	3-1/2 inch double-sided drive; 2.88 megabyte capacity

■ Video

The category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

■ Halt On

The category determines whether the computer will stop if an error is detected during power up.

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

■ Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

10.3 BIOS Features Setup

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

■ Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

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

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

NOTE: Many disk diagnostic programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Protection beforehand.

■ CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is en able.

Enabled	Enable cache
Disabled	Disable cache

■ Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

■ Boot Sequence

This category determines which drive to search first for the disk operating system (i.e., DOS). Default value is A,C.

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.
CDROM, C, A	System will first search for CDROM drive, then hard disk drive and the next is floppy disk drive.
C, CDROM, A	System will first search for hard disk drive , then CDROM drive, and the next is floppy disk drive.

■ Swap Floppy Drive

This item allows you to determine whether enable the swap floppy drive or not.
The choice: Enabled/Disabled.

■ Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS cannot tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

■ Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

On	Keypad is number keys
Off	Keypad is arrow keys

■ Boot Up System Speed

Selects the default system speed -- the normal operating speed at power up.

High	Set the speed to high
Low	Set the speed to low

■   Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Normal	keyboard
Fast	chipset

■   Typematic Rate Setting

This determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

■   Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

■   Typematic Delay (msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

■   Security Option

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

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

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

■   PCI / VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	When PCI/VGA working with MPEG ISA/VESA VGA Card.
Disabled	When PCI/VGA not working with MPEG ISA/VESA VGA Card.

■ OS Select for DRAM > 64

This item allows you to access the memory that over 64MB in OS/2.

The choice: Non-OS2, OS2.

■ Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

■ C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

10.4 Chipset Features Setup

■ Auto Configuration

This item allows you select pre-determined optimal values for DRAM, cache, timing according to CPU type & system clock.

The Choice: Enabled, Disabled.

Note: When this item is enabled, the pre-defined items will become SHOW-ONLY.

■ AT Bus Clock

You can set the speed of the AT bus in terms of a fraction of the CPU clock speed (PCLK2), or at the fixed speed of 7.16 MHz.

The Choice: 7.16 MHz, CLK2/2, CLK2/3, CLK2/4, CLK2/5, and CLK2/6

DRAM Writes WS

The value in this field depends on write wait state parameters of the installed memory

---

chips (DRAM).

The Choice: X-2-2-2, X-3-3-3.

■ Page Mode Read WS

The value in this field depends on read wait state parameters of the installed memory chips (DRAM).

The Choice: X-4-4-4, X-3-3-3.

■ RAS Precharge Period

This option allows you to determine the number of CPU clocks allocated for the **R**ow **A**ddress **S**trobe to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

The choice: 3T, 4T

■ RAS-To-CAS Delay Time

This setup item allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS).

The Choice: 2T, 3T

■ EDO Read WS

This sets the timing for burst mode reads from EDO RAM. Burst read requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

The Choice: X-2-2-2, X-3-3-3.

■ DRAM Speculative Read

When the 'Speculative Read' is enabled, the controller will issue the read command slightly before it has finished determining the address.

The Choice: Enabled, Disabled.

■ Pipelined Function

When Enabled, the controller signals the CPU for a new memory address before all data transfers for the current cycles are complete, resulting in faster performance

The Choice : Enabled, Disabled

■ DRAM Refresh Period (us)

This sets the number of DRAM allowed be refreshed by chipset.

The Choice :15,30, 60 ,120, 256 (us)

■ DRAM Data Integrity Mode

Select *Parity* or *ECC* (error-correcting code), according to the type of installed DRAM.

The Choice: Disabled, ECC, Parity.

■ Memory Hole At 15-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached.

The choice : Enabled, Disabled.

■ Primary Frame Buffer

Select a size for the PCI frame buffer. The size of the buffer should not impinge on local memory.

The choice : Disabled, 2MB 4MB, 8MB, 16MB.

■ VGA Frame Buffer

When Enabled, a fixed VGA frame buffer from A000h to BFFFh and a CPU-to-PCI write buffer are implemented.

The choice: Enabled , Disabled.

■ Data Merge

This field controls the word-merge feature for frame buffer cycles. When Enabled, this controller checks the eight CPU Byte Enable signals to determine if data words read from the PCI bus by the CPU can be merged.

The choice: Enabled , Disabled.

■ Fast Back-To-Back

When this is enabled, the chipset will insert one extra clock to the turn-around of back-to-back DRAM cycles.

The Choice: Enabled, Disabled.

■ Passive Release

When Enabled, CPU to PCI bus accesses is allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM

The Choice : Enabled, Disabled

■ ISA Line Buffer

The PCI to ISA Bridge has an 8-byte bi-directional line buffer for ISA or DMA bus master memory reads from or writes to the PCI bus. When *Enabled,* an ISA or DMA bus master can prefect two double words to the line buffer for a read cycle.

The choice : Enabled, Disabled

■ Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1.

The choice: Enabled, Disabled.

10.5 Power Management Setup

■ Power management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Standby Mode
4. Suspend Mode

The Choice : Enabled, Disabled

■ PM Control by APM

When yes, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

The Choice : Yes, No

■ MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

The choices: 3, 4, 5, 7, 9, 10, 11, NA.

■ Video Off Option

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

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

■ Video Off Method

This determines the manner in which the monitor is blanked.

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

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

■ HDD Power Down

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

The Choice : Enabled, Disabled

■ Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

The Choice : Enabled, Disabled

■ Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

The Choice : Enabled, Disabled

■ Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The Choice : Enabled, Disabled

An event occurring on each device listed below restarts the global time for Standby mode.
■ Primary HDD   The Choice : Enabled, Disabled
■ Floppy Disk   The Choice : Enabled, Disabled
■ Serial Port   The Choice : Enabled, Disabled
■ Keyboard   The Choice : Enabled, Disabled
■ Parallel Port   The Choice : Enabled, Disabled

■   Power Button

This item allows you to select the function of power button.

The choice: Disabled, Green Mode, Power Off.

■   DOCK I/O SMI

This item allows you to enable or disable the function of DOCK I/O SMI.

The choice: Enabled, Disabled.

10.6 PNP/PCI Configuration

■   PNP OS Installed

This item allows you to determine install PnP OS or not.

The choice: Yes, No.

■   Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95.

The choice: Auto, Manual.

■   Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

The choice: Enabled, Disabled .

■   PCI IRQ Activated by

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

The choice: Level, Edge.

■   PCI IDE IRQ Map to

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B,C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in "*Slot x Using INT#*" above.

Selecting "*PCI Auto*" allows the system to automatically determine how your IDE disk system is configured.

10.7 Load BIOS defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optional and disable all high-performance features

10.8 Load SETUP defaults

This option allows you to load the default values to your system configuration .These default settings are optional and enable all high-performance features

10.9 Integrated Peripherals

■ On-Chip Primary IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface

The choice: Enabled, Disabled.

■ IDE Primary Master PIO

This IDE PIO (Programmed Input/Output) field lets you set a PIO mode (0-4) for Primary master IDE device that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode.

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

■ IDE Primary Slave PIO

This IDE PIO (Programmed Input/Output) field lets you set a PIO mode (0-4) for Primary slave IDE device that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode.

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

■ IDE Primary Master UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The Choice: Auto, Mode 0, Mode 1, Mode 2.

■ IDE Primary Master UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The Choice: Auto, Mode 0, Mode 1, Mode 2.

■ IDE HDD Block Mode

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

The Choice: Enabled, Disable.

■ On-Chip USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller.

The choice: Enabled, Disabled.

■ USB Keyboard Support

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

The choice: Enabled, Disabled.

■ Onboard FDC Controller

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

The choice: Enabled, Disabled.

■ Onboard Serial Port 1

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

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

■ Onboard Serial Port 2

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

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

■ Onboard Parallel Port

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

The choice: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.

■ Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field.

The choice: PS/2, EPP1.9, ECP, ECPEPP1.9, SPP, EPP1.7.

10.10 Password Setting

You can set either supervisor or user password, or both of them. The differences between are:

supervisor password : can enter and change the options of the setup menus.

user password   :   just can only enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

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

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

10.11 IDE HDD Auto Detection

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters

10.12 Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

10.13 Exit Without Save

Abandon all CMOS value changes and exit setup.

11. About RDISK.EXE utility

The RDISK.EXE program is a comprehensive driver which can help you to directly access the solid state disk in the remote system with RS-232 or RS-422 serial ports.

When RDISK.EXE be executed, it will be keep resident in host memory and redirects DOS disk I/O to remote system.

After RDISK.EXE executed at DOS prompt. The solid state disk(s) in the remote system are logged into the host system as local disk drive(s) (A:,B:) or (A: and B:),and all DOS commands are available for remote disk(s) such as COPY, DEL, FORMAT, MD....etc

The following procedures show you how to install RDISK.EXE program

1. Enter your host computer **system BIOS SETUP** menu and configure your host Floppy disks to have following configuration
    Floppy disk A: 1.44MB or 1.2MB
    Floppy disk B: 1.44MB or 1.2MB

2. Reboot your host system

3. Connects a RS-232 cable between the HOST and REMOTE systems
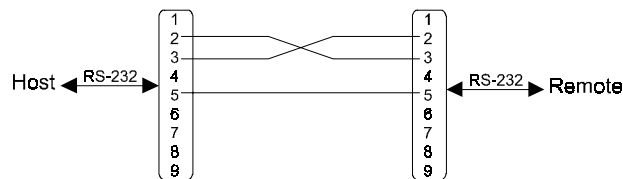
4. Turn-on your remote system

5. Press "F10" key to run ROM/RAM disk SETUP. and

6. Set "Primary ROM/RAM disk " to A:,B:,C:,or D:

7. Enable "COM Port for Remote Flash PGM:" to COM1 or COM2

8. Press "F7" to save SETUP values

9. Type RDISK <Enter> at DOS prompt of host system

10. The following message shows up on the screen

    ```
    ==========   RDISK configurations   =============
    Primary Disk    = A:(local)
    Secondary Disk= No used
    COM port         = COM1
    Baud Rate        = 57600

    ============================================
    Reboot or turn-on remote system
    Type Rdisk /? for Helps
    Press [ESC] to abort
    Connecting (|) _
    ```

11. At this time, the RDISK are attempting link to remote system

12. Reboot your remote system

    "Connecting (-) ...." message will show up after connecting completed

13. RDISK now returns to DOS prompt and remote solid state disk(s) are ready to be accessed

14. Format remote disk(s): (if disk in the remote system is unformatted)
    Type one of the following commands to format remote solid state disk(s) which are installed at first time

    ```
    C>FORMAT [remote disk drive] /T:16/N:32      for 512KB Flash disk
    C>FORMAT [remote disk drive] /T:32/N:32      for 1.0MB Flash disk
    C>FORMAT [remote disk drive] /T:48/N:32      for 1.5MB Flash disk
    ```

15. The disk(s) in the remote are already to be accessed by the host system

16. Type " RDISK /R " at DOS prompt can release this TSR driver from host system

17. Type " RDISK /? " at DOS prompt will show more information about RDISK