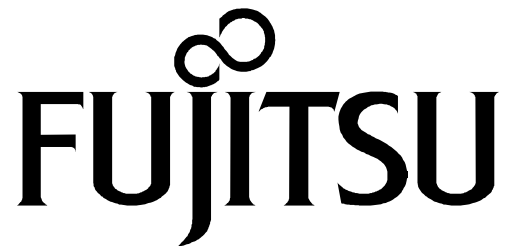


PC Quick Reference Guide

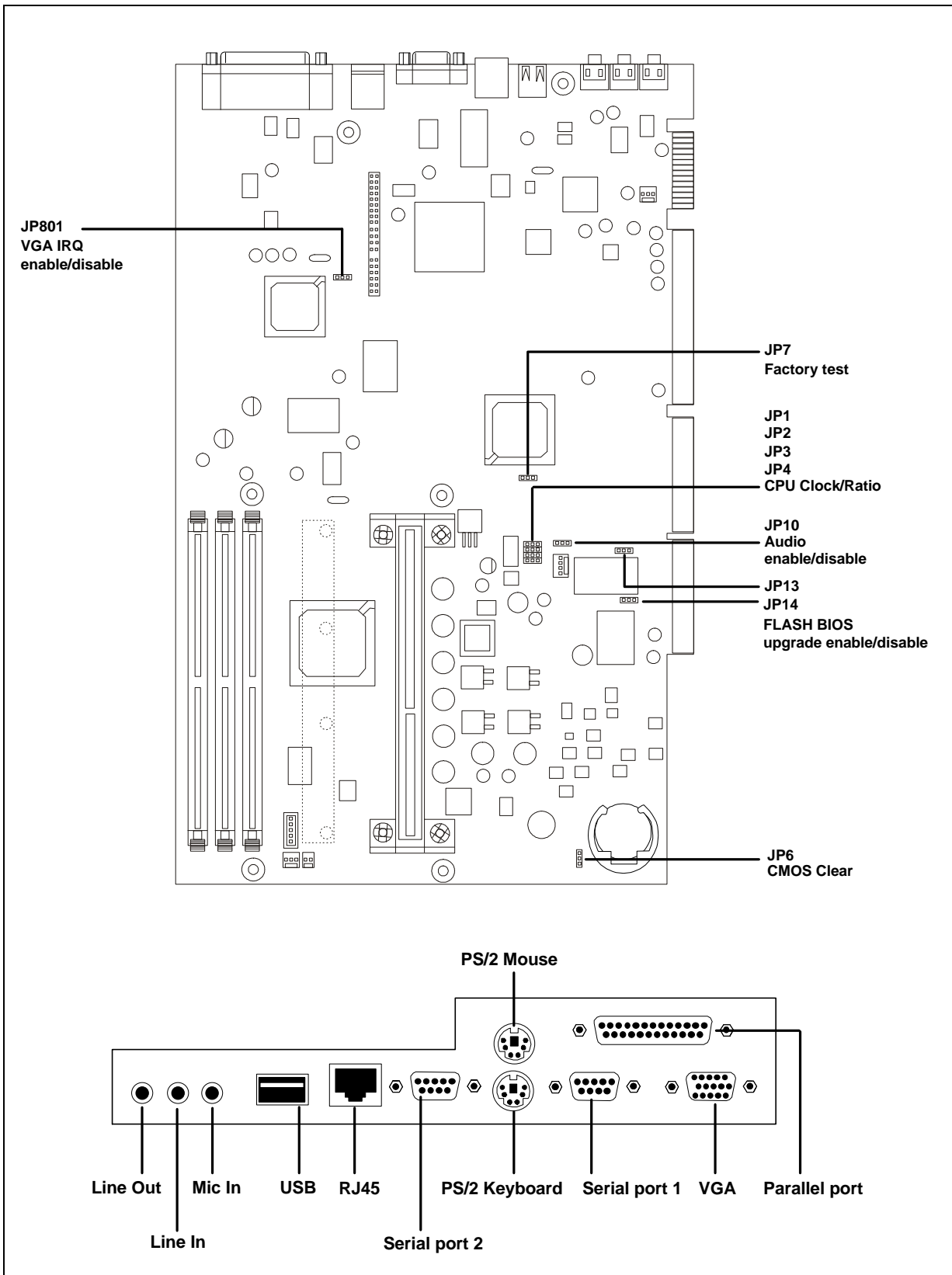
ErgoPro *x365 & x565-series*

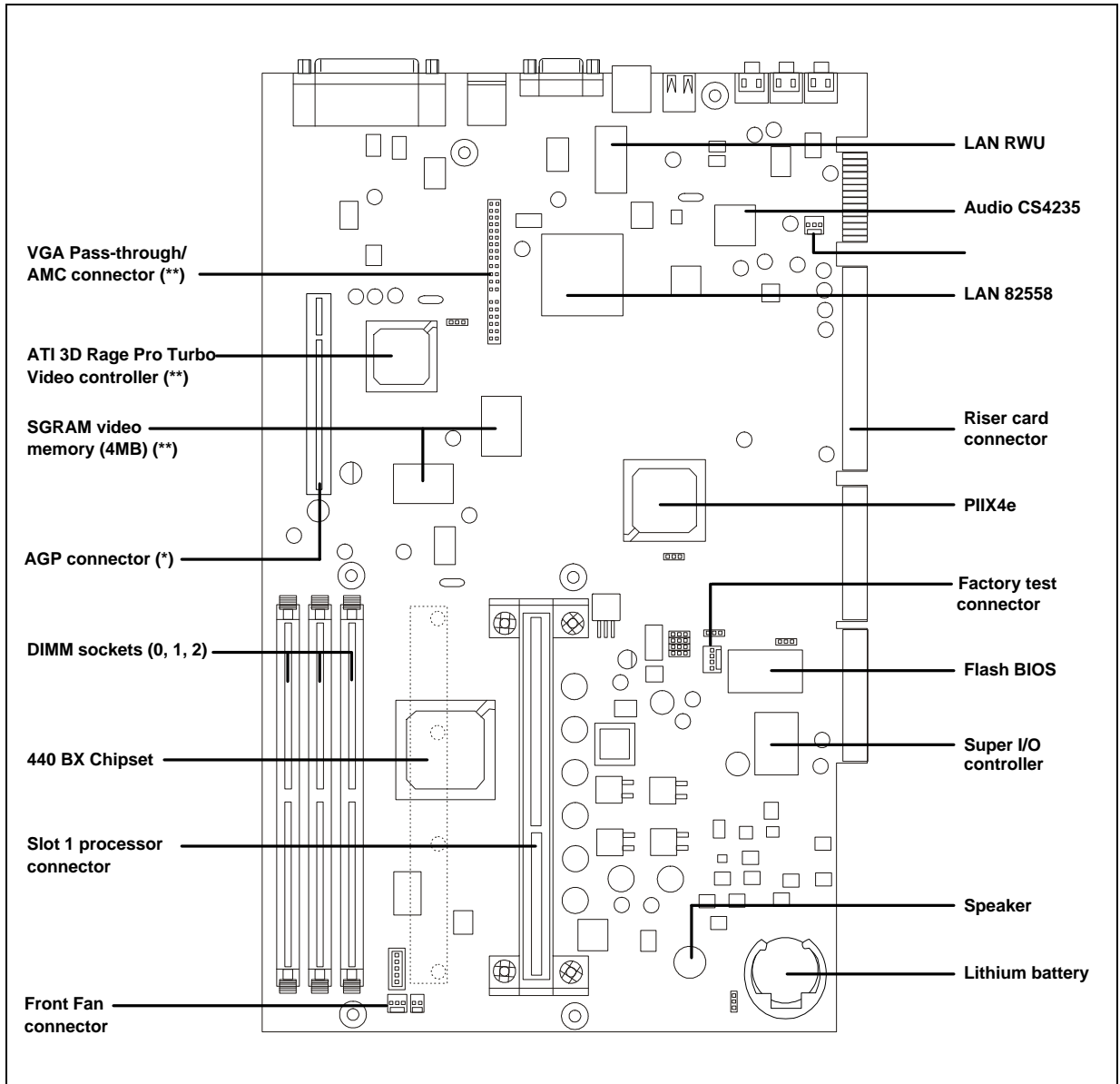
The Fujitsu logo, featuring a stylized infinity symbol above the word "FUJITSU" in a bold, serif font.

FUJITSU

Release 1

System board layout/jumper locations(AC41745 & AC41746)

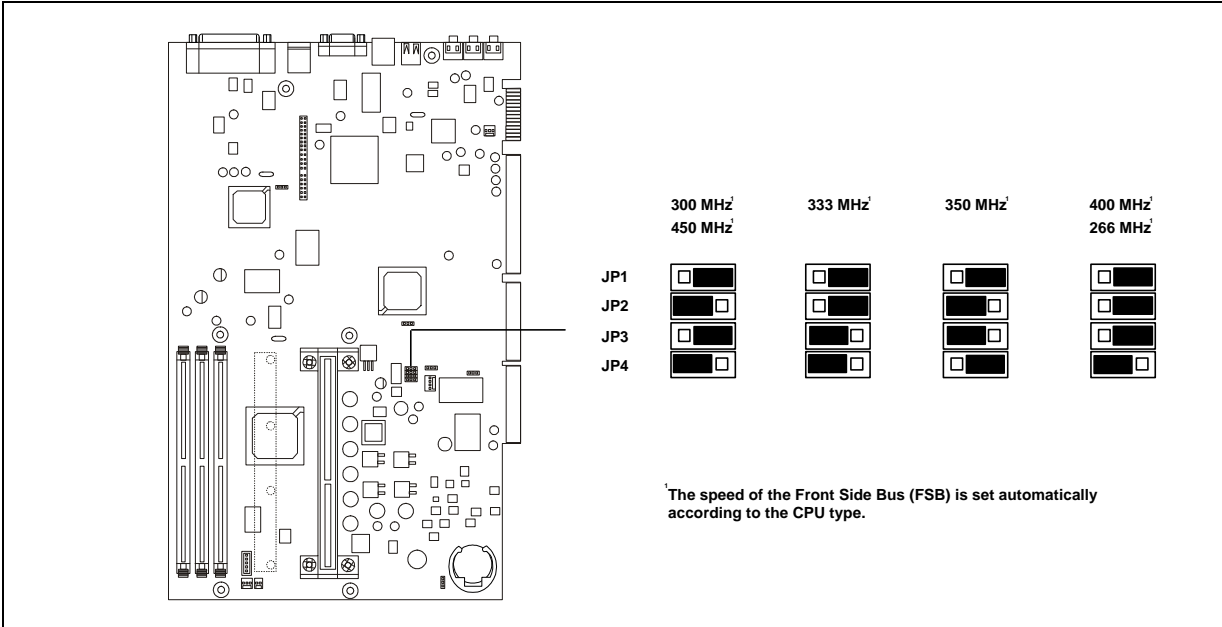




System board jumpers (AC41745/746)

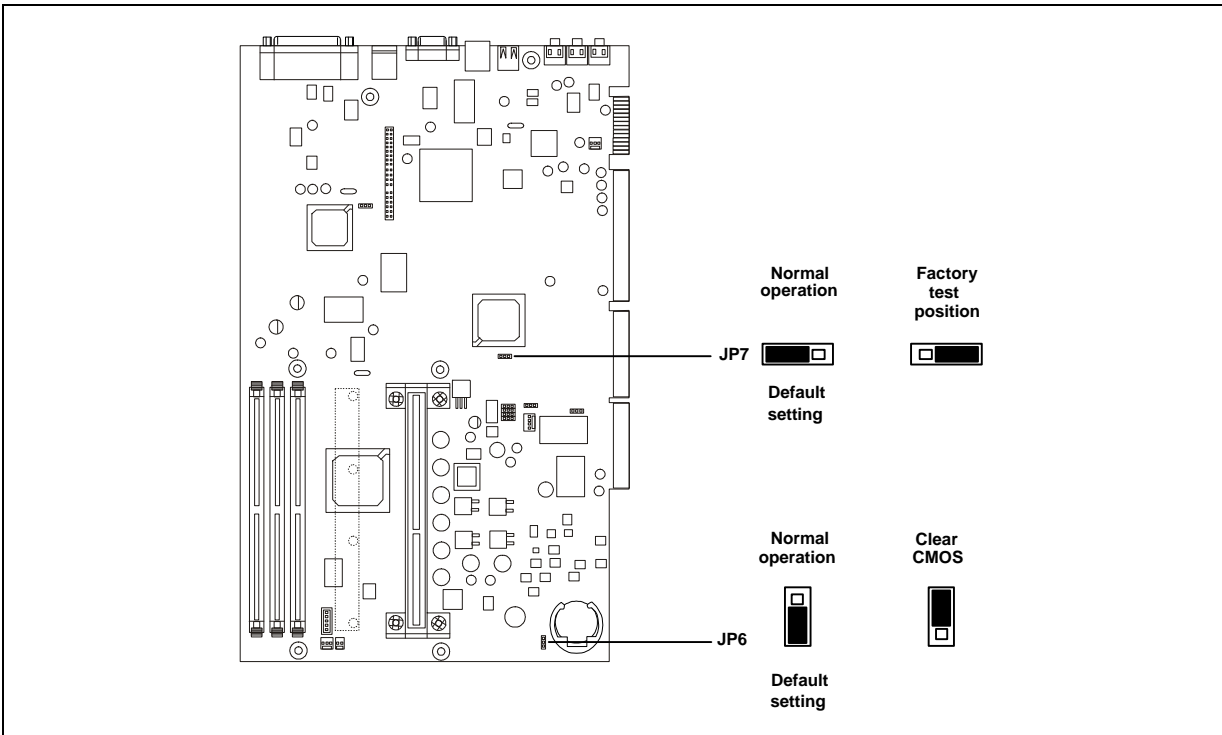
CPU Speed selection (JP1, JP2, JP3, JP4)

To set the right CPU speed, set the jumpers as in the picture



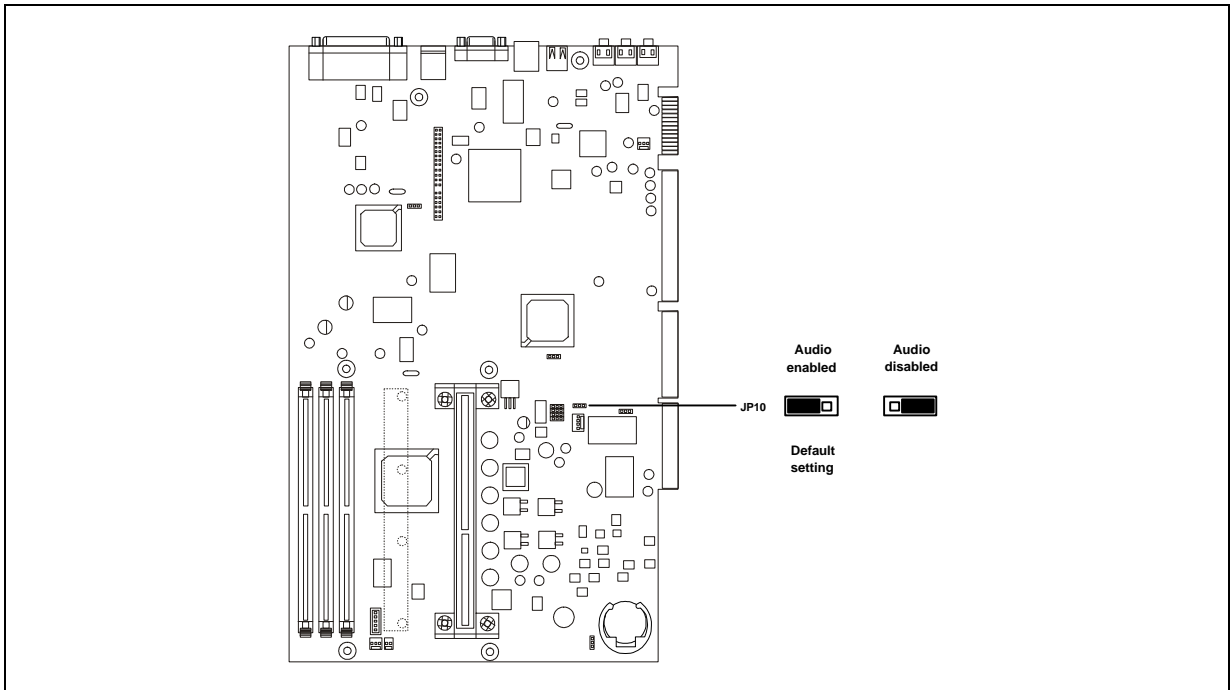
CMOS CLEAR (JP6) and Factory test (JP7)

To clear the CMOS, switch off the power and disconnect the mains cable. Take out the jumper from **normal operation** position and install it in the **clear CMOS** position; keep it there for 10 seconds, then put the jumper back to **normal operation** position and reconnect the mains cable.

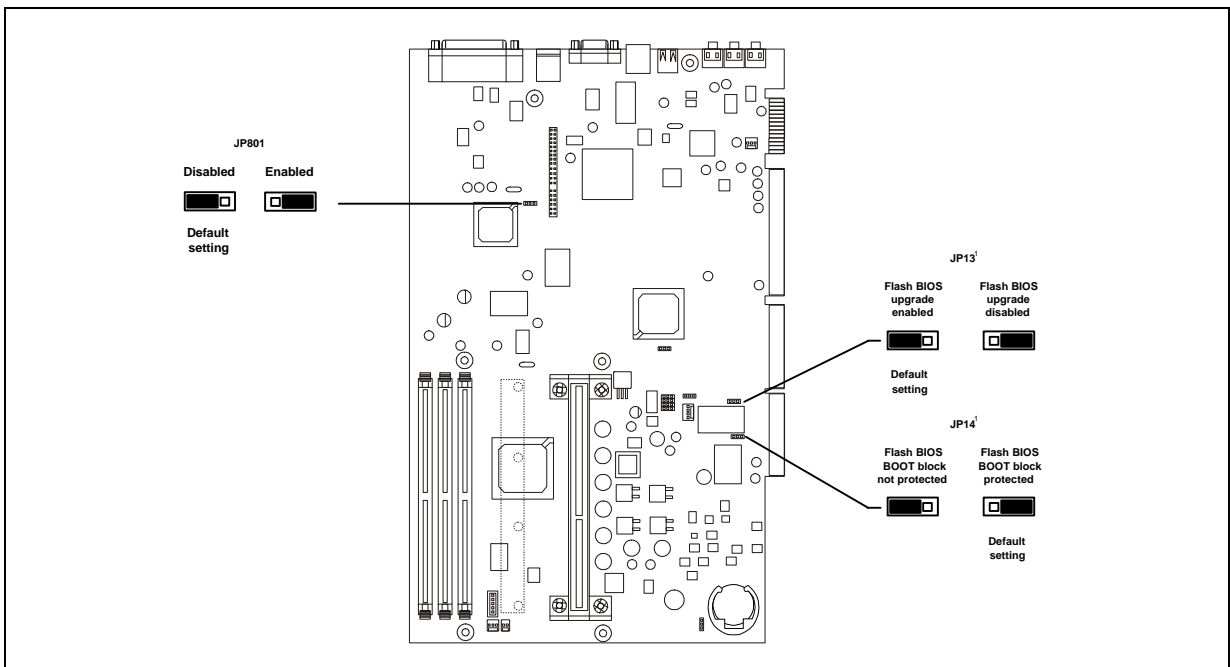


Audio enable/disable (JP10)

Jumper JP10 can be used to disable the on-board audio system.

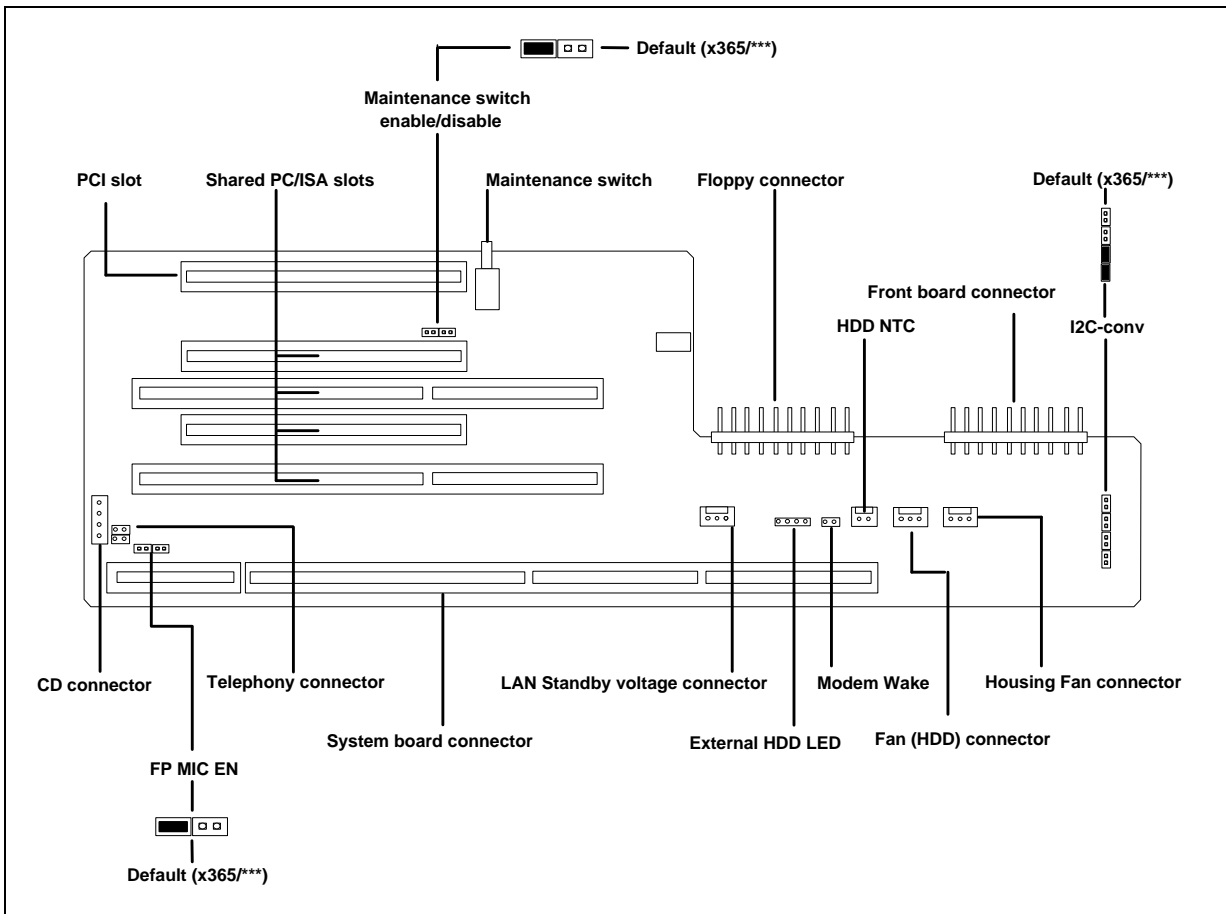


Flash BIOS upgrade enable/disable (JP13¹ & JP14¹) VGA IRQ enable/disable JP801

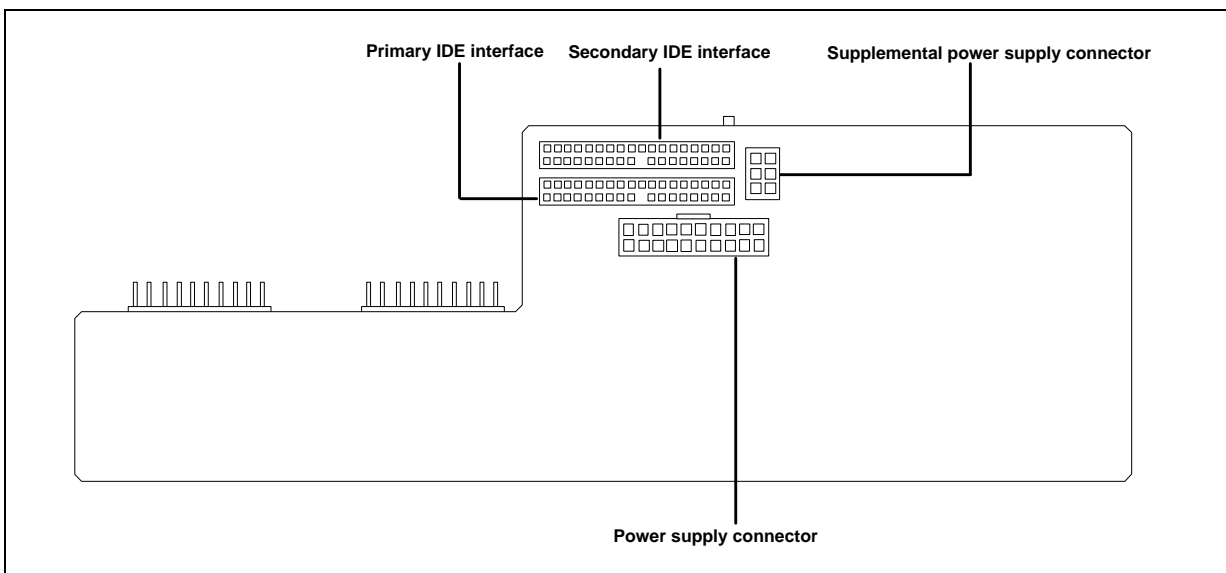


¹ Depending on the system board version level, either one of the jumpers blocks JP13 or JP14 may not be installed

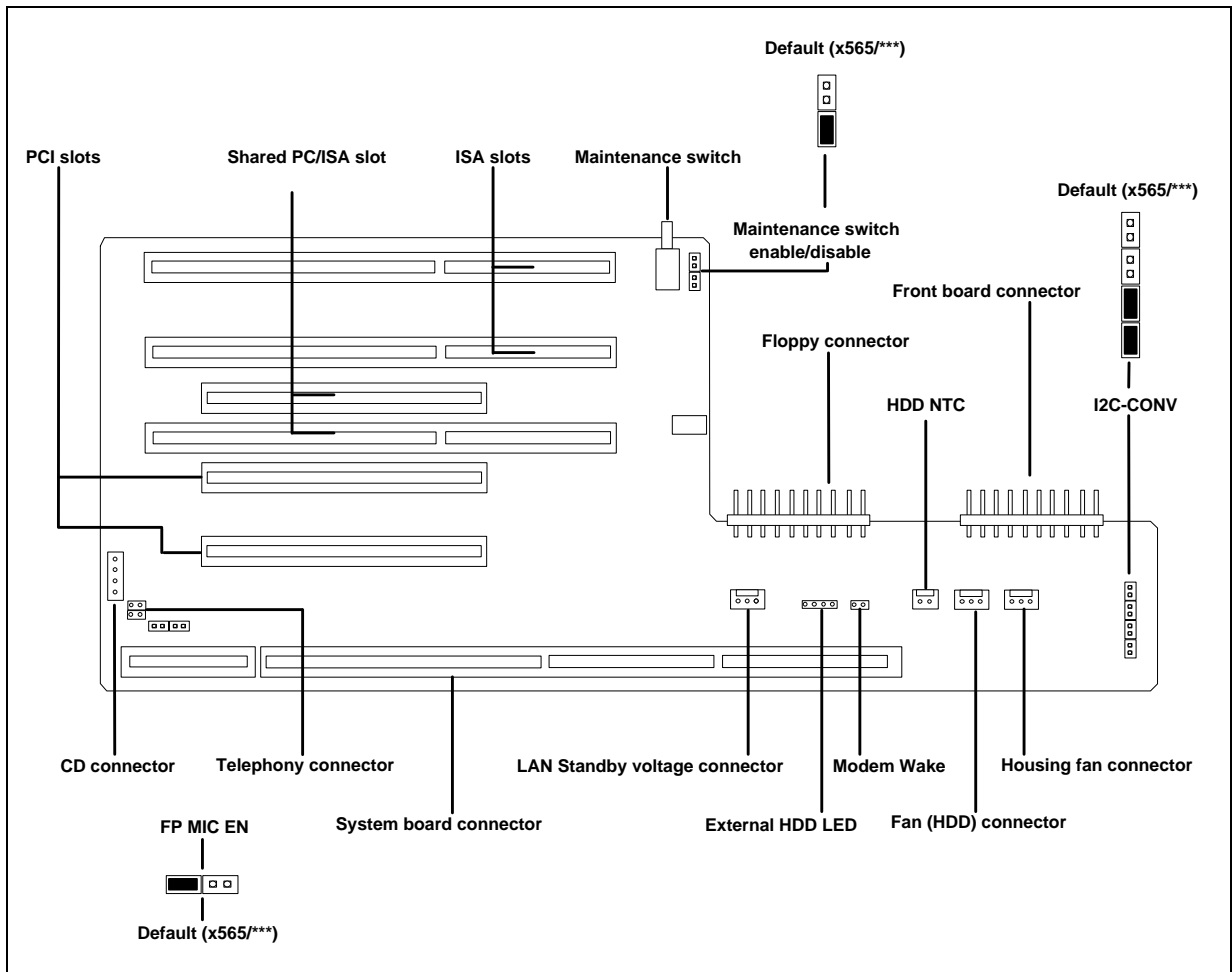
3-slot PCI/ISA back plane AC41748 ("front view")



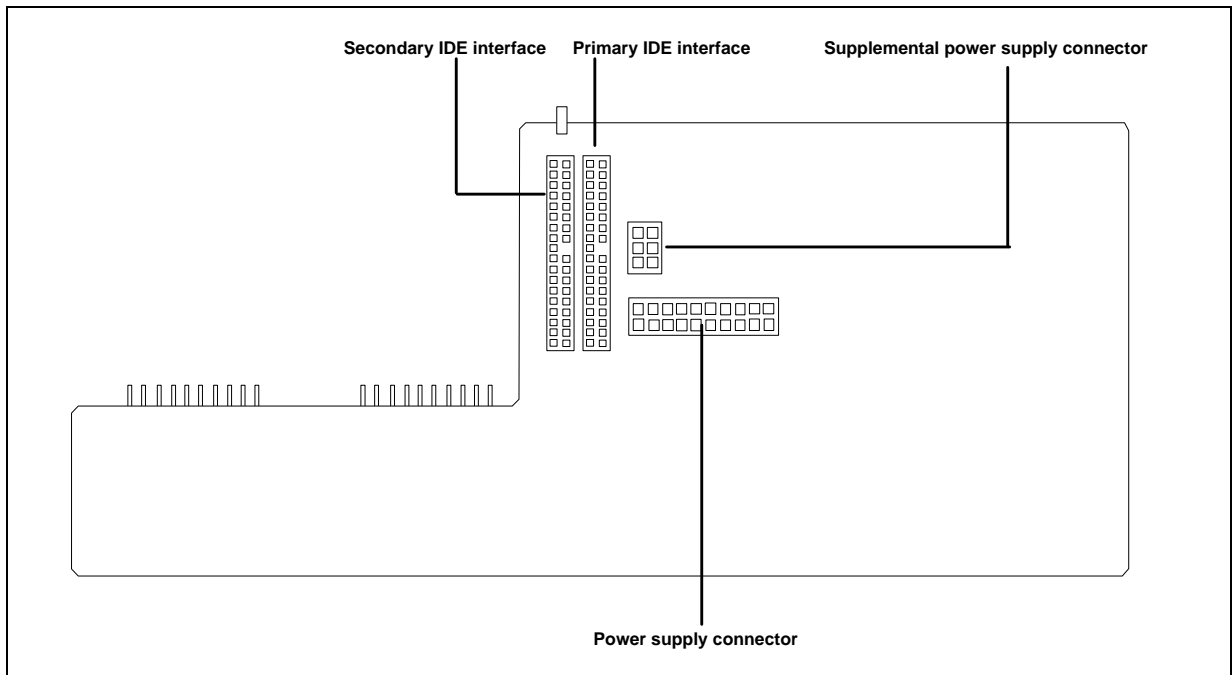
3-slot PCI/ISA back plane AC41748 ("back view")



5-slot PCI/ISA back plane AC41747 ("front view")



5-slot PCI/ISA back plane AC41747 ("back view")



Processor related information

Processor related information				
Used on	x365/266	x365/300 x564/300	x365/300 x564/300	x365/333 x564/333
Fujitsu code	PL060621 (active heatsink) PL060630 (passive heatsink)	PL060622 (active heatsink)	PL060631 (passive heatsink)	PL060623 (active heatsink) PL060627 (passive heatsink)
Heatsink	Active ¹ (with fan) and passive (no fan) heatsinks used. Heatsink attached to the processor's SECC package			
Processor & speed	Intel ® Pentium II™			
	266 MHz SECC package	300 MHz SECC package		333 MHz SECC package
Technology	0.35 and 0.25	0.35	0.25	0.25
MMX support	Yes			
External clock (Front Side Bus)	66.7 MHz			
Clock multiplier	4	4.5		5
System clock	33 MHz (PCI), 8.25 MHz (ISA)			
Operating voltage	PSU/regulator is automatically adjusted to the right voltage level by the VID pins of the processor			
	2.80 V (0.35 technology) 2.00 V (0.25 technology)	2.80 V	2.00 V	2.00 V
Maximum power consumption of the processor chip (total)	38.2 W (0.35 technology) 19.5 W (0.25 technology)	43.0 W	21.7 W	23.7 W
1st level cache	Built-in to the Pentium II processor: 16 kB, non blocking for code 16 kB, non blocking for data			
2nd level cache	512 kB, ECC			
	133 MHz	150 MHz		166.5 MHz
Co-processor	Floating Point Unit built-in to the Pentium II processor			
Overdrive	Not available			

¹ System boards do have two code labels, one for spare part use (AC code label), the other for factory inventory use (AF code label). Active heatsinks must be used with system boards labelled AF33136 or AF33137 when using processors with a 66 MHz front side bus (266 MHz to 333 MHz). System boards labelled AF33139 and AF33142, and all other boards used as spare parts (AC41745 and AC41746), can be used with processors with an active or passive heatsink.

Processor related information			
Used on	x365/350 x564/350	x365/400 x565/400	x365/450 x565/450
Fujitsu code	PL060624 (includes heatsink)	PL060625 (includes heatsink)	PL060632 (includes heatsink)
Heatsink	Passive (no fan), attached to the processor's SECC package with two clips		
Processor & speed	Intel ® Pentium II™		
	350 MHz SECC package	400 MHz SECC package	450 MHz SECC package
Technology	0.25		
MMX support	Yes		
External clock (Front Side Bus)	100 MHz		
Clock multiplier	3.5	4	4.5
System clock	33 MHz (PCI), 8.25 MHz (ISA)		
Operating voltage	PSU/regulator is automatically adjusted to the right voltage level by the VID pins of the processor		
	2.00 V		
Maximum power consumption of the processor chip (total)	21.5 W	24.3 W	27.1 W
1st level cache	Built-in to the Pentium II processor: 16 kB, non blocking for code 16 kB, non blocking for data		
2nd level cache	512 kB, ECC		
	175 MHz	200 MHz	225 MHz
Co-processor	Floating Point Unit built-in to the Pentium II processor		
Overdrive	Not available		

General information of x365 and x565-series

General	x365/***, x565/***	x365/***, x565/***
“Socket” type	242 pin Single Edge Contact (SEC) Cartridge, slot 1	
System board	AC41745 (AF33136, AF33139) ¹	AC41746 (AF33137, AF33142) ¹
Used on (structure)	E2, G2	E3, G3
Form factor	13.6" * 9.0" NLX	
BIOS ID	Not available	
Audio	On the system board. Based on Chrystal 4235 PnP chip (ISA)	
Floppy drive interface	On the system board (connector on the riser board), PC82077AA compatible	
Floppy drive(s)	One 3.5" floppy drive (1.44 MB), BIOS support for two drives (A and B): 720kB and 1.44MB (3.5"), 360kB and 1.2MB (5.25")	
Graphics	On the system board. Based on ATI 3D Rage Pro Turbo AGP chip, with feature and ATI AMC (2.0) connectors.	Optional AGP card, based on ATI 3D Rage IIC AGP chip, with feature and ATI AMC (2.0) connectors.
	No AGP slot on the system board	1 * AGP slot on the system board
IDE interface	On the system board, PCI bus enhanced IDE interface with two connectors (connectors on the riser board), supporting Ultra DMA/33, PIO 4 and DMA 2 mode IDE hard disks and ATAPI devices	
IDE hard disks	3.2 GB, 4.3 GB (std perf.) and 6.4 GB (Ultra DMA/33) All disks support SMART	
SCSI interface	Not available	Optional Adaptec 2940UW PCI adapter
SCSI hard disks	Not available	Optional 4.5 GB and 9.1 GB Ultra Wide
LAN	On the system board fast ethernet PCI controller based on Intel 82558 chip	No on-board LAN
Parallel port	On the system board, one bi-directional parallel port with 25-pin female connector (supported modes SPP, ECP and EPP)	
Serial ports	On the system board, two 16C550 compatible serial ports with two 9- pin male connectors (16-bytes FIFO)	
USB	On the system board, two USB connectors, one in the front panel and another one in the rear panel	

¹ System boards have two code labels, one for spare part purposes (AC code label) and another for factory inventory (AF code label).

Architecture & Configuration of x365 and x565-series

	x365/**	x565/**
Chip set	Intel 440BX	
Memory banks	3, with SDRAM support	
SIMM modules per bank	Not available	
DIMM modules per bank	1	
BIOS	512 kB (4 Mb) Boot Block Flash RAM, Fujitsu/Phoenix platform with PnP (1.0A), ACPI (1.0) and PCI (2.1) support	
Keyboard controller	Built-in FDC37C675	
Theft prevention, AntiTheft	No	
Power Management	APM rev. 1.2 compliant (Windows 95), ACPI 1.0 compliant (Windows 98)	
Desktop Management	DMI 2.0 SMBIOS 2.1	
Architecture / Expansion slots	1 * PCI (32 bit) 2 * PCI/ISA (32 bit / 16 bit)	2 * PCI (32 bit) 1 * PCI/ISA (32 bit / 16 bit) 2 * ISA (16-bit)
Mass memory bays	1 * 3.5" floppy drive 1 * 3.5" hard disk, 1 * 5.25" bay	1 * 3.5" floppy drive 2 * 3.5" hard disks, 2 * 5.25" bays
HD silencer	For the first 3.5" hard drive	
Power supply	145 W, 110/240 V, 48 Hz to 63 Hz	200 W, 110/240 V, 48 Hz to 63 Hz
	The power connector for the monitor is not controlled by the power switch of the power supply	
Fans	Two temperature controlled fans, one in front panel (air in to the housing), another one in the PSU (air out from the PSU/housing). Option for the third fan inside the HD silencer.	
Dimensions		
Width	430 mm	440 mm
Height	110 mm	155 mm
Depth	451 mm	454 mm
Weight	15 kg (approx.)	20 kg (approx.)

Memory configurations

Bank 0	Bank 1	Bank 2	Total Memory
32 MB	-	-	32 MB
32 MB	32 MB	-	64 MB
64 MB	-	-	64 MB
32 MB	32 MB	32 MB	96 MB
32 MB	64 MB	-	96 MB
32 MB	32 MB	64 MB	128 MB
64 MB	64 MB	-	128 MB
128 MB	-	-	128 MB
32 MB	64 MB	64 MB	160 MB
32 MB	128 MB	-	160 MB
32 MB	32 MB	128 MB	192 MB
64 MB	64 MB	64 MB	192 MB
64 MB	128 MB	-	192 MB
32 MB	64 MB	128 MB	224 MB
64 MB	64 MB	128 MB	256 MB
128 MB	128 MB	-	256 MB
32 MB	128 MB	128 MB	288 MB
64 MB	128 MB	128 MB	320 MB
128 MB	128 MB	128 MB	384 MB

DIMM recommendations

DIMM size (MB)	Description	Speed	Voltage	Type	Clock lines	Pins	Module	Kit code
32	4M*64	66 MHz	3.3V	SDRAM	4	168	AF33852E	
64	8M*64	66 MHz	3.3V	SDRAM	4	168	AF33853E	
128	16M*64	66 MHz	3.3V	SDRAM	4	168	AF33854E	
32	4M*64	100 MHz	3.3V	SDRAM	4	168	AF33862E	
64	8M*64	100 MHz	3.3V	SDRAM	4	168	AF33863E	
64 with ECC	8M*72	100 MHz	3.3V	SDRAM	4	168	AF33873E	
128	16M*64	100 MHz	3.3V	SDRAM	4	168	AF33864E	

System memory map

Address range	Size (kB)	Use	Cached
0000000 - 009FBFFF	639	Base memory	Yes
009FC00 - 009FFFF	1	Extended BIOS data area	Yes
00A0000 - 00AFFFF	64	VGA graphics	No
00B0000 - 00B7FFF	32	VGA text (colour mode)	No
00B8000 - 00BFFFF	32	VGA text (mono mode)	No
00C0000 - 00C7FFF	32	VGA BIOS	Yes
00C8000 - 00DBFFF	80	Free	No
00DC000 - 00DFFFF	16	Reserved for system BIOS	No
00E0000 - 00EFFFF	64	Free	No
00F0000 - 00FFFFFF	64	System BIOS	Yes
0100000 - TOM ¹	Max 383 MB		Yes
F7000000 - F7FFFFFF	16 MB	Optional VGA graphics (ATI RAGE IIC AGP)	No
F8000000 - FBFEEFFF	64 MB - 4 kB	On-board Host Processor Bridge	No
FBFFF000 - FBFFFFFF	4 kB	On-board Host Processor Bridge	No
FEAFF000 - FEFFFFFF	4 kB	Optional VGA graphics (ATI RAGE IIC AGP)	No

(1) TOM = Top Of Memory

DMA channels

The system board supports seven ISA-compatible DMA channels by utilising two DMA controller chips which operate in cascade mode as a master-slave pair. The slave uses channels 0 to 3, supporting 8-bit data transfers while the master controller uses channels 4 to 7, supporting 16-bit data transfers. Controllers are 8237A compatible.

The following table lists each DMA channel and its use.

8/16-bit channels	8-bit channels	Use(s)
Master	Slave	
(CTRL1)	(CTRL2)	
	CH 0	Crystal Audio (PnP)
	CH 1	Crystal Audio (PnP)
	CH 2	Diskette drive controller
	CH 3	Printer port (LPT1) in ECP mode (must be manually selected in setup)
CH 4		Cascading slave to master
CH 5		Free
CH 6		Free
CH 7		Free

Interrupt levels

Interrupt	Function
NMI	Parity error
Master (Controller 1)	
IRQ0	System timer
IRQ1	Keyboard controller
IRQ2	Interrupt from slave (IRQ 9)
IRQ3	COM 2 (RS-232C(2))
IRQ4	COM 1 (RS-232C(1))
IRQ5	Crystal PnP audio system CODEC (CS4235)
IRQ6	Floppy disk controller
IRQ7	LPT1 (Printer)
Slave (Controller 2)	
IRQ8	Real-time Clock
IRQ9	Free
IRQ10	Free
IRQ11	USB
IRQ12	PS/2-type mouse device
IRQ13	Math co-processor error
IRQ14	Primary IDE interface (Intel 82371AB/EB)
IRQ15	Secondary IDE interface (Intel 82371AB/EB)

BIOS update

The BIOS code is stored in a 4 Mb (512 kB) boot block Flash RAM soldered on the system board. This allows BIOS updates through software, without the need to replace any hardware components, using the Phlash.exe program.

A bootable DOS floppy is needed for the BIOS update. The floppy must have the following files :

- Phlash.exe
- Platform.bin, and
- M63vxxx.rom, where xxx stands for the BIOS version; for instance, 107 = version 1.07),

To update the BIOS, type

```
plash m63vxxx.rom
```

The update is performed automatically. During update, Phlash.exe displays a progress indicator on the screen. When the update procedure is complete, a status window appears showing whether or not the update was successful.

Force Flash Load

It is unlikely that anything will interrupt the Flash upgrade procedure. However, if an interruption occurs that prevents the upgrade from continuing, it is possible that the BIOS will be left in an unusable state. In this situation, a BIOS recovery procedure called "Force Flash Load" might be able to restore the BIOS code in the Flash RAM.

On x365/** and x565/**, the Force Flash Load operation is automatic; there are no jumpers for this purpose. Force Flash Load is started during the POST when the loader part (normally write-protected by jumper JP14 on the system board) of the system BIOS checks the BIOS modules and tests their condition. If the test finds any critical errors, which might stop the system POST or hang the system during or before loading the operating system, it starts the Force Flash Load procedure.

Note Due to the limited amount of code available in the non-erasable boot block area, no on-screen messages are displayed to direct the flash recovery. To monitor the progress of the Force Flash Load operation, pay attention to the beep codes that the system issues on the speaker during the procedure.

The following beep codes, which are sequences of long and short beeps, inform the user of the progress of the Force Flash Load recovery: Short beeps are indicated with • and long beeps with - .

••••	Content of the Flash RAM is corrupted.
••••	Cannot read the floppy
-	Programming successfully completed

The automatic Force Flash Load procedure starts with the error code •••• ("Content of the Flash RAM is corrupted"). The system sounds this beep code about five seconds after the system unit been switched on.

The first error code is followed by another after a second; this is the error code •••• ("Cannot read the floppy"). This code indicates that a floppy with the proper BIOS files and utilities needs to be inserted in the floppy drive. After this is done, the BIOS recovery is started automatically, which is indicated by the fact that error message the •••• ("Cannot read the floppy") is replaced by a sequence of short beeps (•), with a beep sounded every one or two seconds for the duration of 50 to 70 seconds.

When the Force Flash Load procedure is complete, the system sounds one short and one long beep (•-), after which the floppy disk can be removed from the floppy drive.

To successfully complete the Force Flash operation, the x365/x565 BIOS Force Flash Load floppy with the following BIOS specific files is needed:

- MiniDOS.sys
- Phlash.exe
- Platform.bin, and
- BIOS.rom.

Audio

The on-board (system board) Plug and Play ISA (8-bit) audio interface is controlled by the CRYSTAL CS4235 single chip multimedia audio system controller, that provides compatibility with the Microsoft Windows Sound System, and runs software written to the Sound Blaster and Sound Blaster Pro interfaces. The system board implementation of the CS4235 chip takes advantage of the following CS4235 internal options: FM synthesizer, hardware volume control (buttons in the front panel) and 3D sound technology. The CS4235 is compliant with Microsoft's PC '97 and PC '98 audio requirements.

The maximum audio sample frequency is 44.1kHz, 8/16-bits per channel.

Connectors

External	Internal
Mono microphone input (in the front and back panel)	Stereo CD-ROM audio input
Stereo headphone output for headphones or active speakers (in the front panel)	
Stereo line-in (in the back panel)	
Stereo line-out (in the back panel)	

Resource allocation

Device	IRQ	DMA	I/O
Audio system codec	5	0, 1	0220 - 022F, 0388 - 038B, 0534 - 0537
Audio system control registers	None	None	0120 - 0127

Audio interface can be disabled by jumper J10.

Floppy disk controller

The on-board (system board) floppy disk controller, is build in the SSMC's FDC37C675 Enhanced Super I/O Controller chip. The controller has 765B floppy disk controller core (NEC) and it is software and register compatible with the 82077AA floppy disk controller (Intel). It can handle the following floppy drive types: 360kB, 1.2MB, 720kB, 1.44MB and 2.88MB.

Connectors

External	Internal
None	One 34-pin (with key pin) flat cable connector on the backplane board (ricer board).

Resource allocation

Device	IRQ	DMA	I/O
Floppy disk controller	6	2	03F0 - 03F5, 03F7

Floppy interface can be disabled (Advanced/integrated peripherals menu) and the type of the floppy (Main menu) can be set through the BIOS Setup Utility.

Graphics (on-board)

The on-board AGP bus graphics is controlled by an ATI 3D Rage Pro Turbo AGP chip with 4MB of SGRAM, which is not expandable. The ATI 3D Rage Pro Turbo AGP has a build-in RAMDAC, which can handle pixel frequencies up to 230 MHz.

The ATI 3D Rage Pro Turbo AGP is a 64-bit video engine, which is connected directly to the 32-bit on-board AGP bus, and supports following AGP features: 1X and 2X mode, sideband addressing, AGP texturing (execute mode) and pipelining. With 4 MB of SGRAM, the ATI 3D Rage IIC AGP chip can utilize 64-bit data path between the chip and the graphics memory. The graphics interface is DDC2B compatible. The On-board graphics controller is automatically disabled by the plug and play BIOS when another video board (PCI or ISA) is installed.

Refresh rates

Maximum defined refresh rates for the graphics chip.

Video controller	Video Memory	Resolutions				
		640*480	800*600	1024*768	1280*1024	1600*1200
On-board graphics based on ATI 3D Rage Pro Turbo	4 MB (SGRAM)	200/24	200/24	150/24	100/24	85/16

200/24 = Refresh rate is 200 Hz and there are 24 Bits per Pixel

Note! The actual refresh rate is directly related to the monitor in use (do not exceed monitor specifications), and may vary between operating systems.

Graphics memory upgrades for the on-board adapter

Graphics memory on the system board	Memory upgrade module	Module code for the upgrade module	kit code for the upgrade module	Total video memory	System boards
4 MB (SGRAM)	N/A ¹	N/A ¹	N/A ¹	4 MB (SGRAM)	

¹ N/A = Not Available, the memory of the on-board graphics controller can not be upgraded

Connectors

External	Internal
One 15-pin (standard) VGA connector at the back panel of the system unit	Video feature connector with AMC extension

Resource allocation

Device	IRQ	DMA	Memory	I/O
ATI 3D Rage Pro Turbo AGP	None	None	000A0000 - 000AFFFF 000B0000 - 000BFFFF	03B0 - 03BB 03C0 - 03DF 9000 - 90FF

IDE interface

There are two enhanced PCI (master mode) bus IDE controllers/interfaces on the system board (built in the Intel PIIX4e (82371EB)) which can handle up to four IDE devices. The 82371EB supports PIO modes 0 to 4, DMA multiword mode 2 timing and Ultra DMA 33 mode, in addition the PIIX4e has an integrated 16 * 32-bit buffer to supports IDE PCI burst transfers. Both the primary and the secondary IDE bus can handle up to 2 hard drives or other IDE devices. The BIOS has support for ATAPI devices and it also supports booting from the CD-ROM.

Connectors

External	Internal
None	Two 40-pin (with key pin) flat cable connectors on the backplane board (ricer board)

Resource allocation

Device	IRQ	DMA	I/O
Primary IDE channel	14	None	01F0 - 01F7 03F6 FCD0 - FCDF
Secondary IDE channel	15	None	0170 - 0177 0376 FCD0 - FCDF

The on-board IDE interface(s) can be Enabled/Disabled from the BIOS SETUP Utility (Advanced/Integrated peripherals menu).

Parallel port communication

There is one multi-mode parallel port build in the FDC37C675 super I/O chip, which supports following modes:

Output only :

Bi-directional (SPP) : IBM PC/XT, PC/AT, and PS/2 compatible bi-directional parallel port.

EPP (Enhanced mode) : Enhanced Parallel Port (EPP 1.9), and is IEEE1284 compliant.

ECP (High speed mode) : Microsoft and Hewlett Packard Extended Capabilities Port, and is IEEE1284 compliant.

The parallel port mode can be set through the BIOS Set-up Utility (Advanced/integrated peripherals menu).

Connectors

External	Internal
One standard 25-pin D-type connector in the back panel of the system housing (on the system board)	None

Resource allocation

Device	IRQ	DMA	I/O
Printer port LPT1 (output only, bi-directional and EPP modes)	7	None	0378 - 037F
Printer port LPT1 (ECP mode)	7	3 (recommended setting)	0378 - 037F 0778 - 077F

The on-board parallel port can be configured to LPT1 (378, IRQ 7 or 5), LPT2 (278, IRQ 7 or 5), LPT3 (3BC, IRQ 7 or 5) and disabled through the BIOS SETUP Utility (Advanced/integrated peripherals menu).

PS/2 type Keyboard & mouse

The controller of the PS/2-type keyboard and mouse is build in the SMSC's FDC37C675 super I/O controller, and provides software compatibility with the 8042A microcontrollers.

Connectors

External	Internal
One 6-pin PS/2 type connector for keyboard	None
One 6-pin PS/2 type connector for mouse	None

Resource allocation

Device	IRQ	DMA	I/O
PS/2 Keyboard	1	None	0060 0064
PS/2 Mouse	12	None	None

Serial port communication

It comprises 2 high speed NS16C550 compatible UARTs with send/receive 16 Byte FIFOs. The UARTs are placed in the FDC37C675.

The maximum transfer speed supported by the BIOS functions is 19200 bps, and by the HW 115 kbps. Instant on-function wakes up the system when the modem generates the Ring Indicator signal.

Connectors

External	Internal
Two standard 9-pin D-type connector (RS-232C) in the back panel of the system housing (on the system board)	None

Resource allocation

Device	IRQ	DMA	I/O
Communication port COM1	4	None	03F8 - 03FF
Communication port COM2	3	None	02F8 - 02FF

The on-board serial ports can be configured to COM1 (3F8, IRQ 4 or 11), COM2 (2F8, IRQ 3 or 10), COM3 (3E8, IRQ 4 or 11), COM4 (2E8, IRQ 3 or 10) or it can be disabled through the BIOS Setup Utility (Advanced/integrated peripherals menu).

Peripheral Component Interconnect (PCI interface)

The PCI bus controller build in the Intel 82443BX chip (440BX AGP set) connects the CPU bus (front side bus) to the PCI bus in asynchronous mode and provides the maximum speed of 33 MHz for the PCI bus. The hardware and the BIOS are compliant to the version 2.1 of the PCI specification (+5 V 33 MHz) and has support for five PCI master devices and PCI to PCI bridge.

Connectors

External	Internal
None	x365/** system units Three 32-bit PCI bus slots (two shared with the ISA slots) x565/** system units Three 32-bit PCI bus slots (one shared with the ISA slot)

Accelerated Graphics Port (AGP interface)

The AGP bus controller build in the Intel 82443BX chip (440BX AGP set) connects the CPU bus (front side bus) to the AGP bus in asynchronous (100 MHz Front side bus, synchronous for 66.7 MHz Front side bus) mode and provides the maximum speed of 66/133 MHz for the AGP bus. The hardware and the BIOS are compliant to the version 1.0 of the AGP specification (+3.3 V 66 MHz).

Connectors

External	Internal
None	System boards with on-board AGP graphics: None, AGP interface is used for the on-board ATI 3D Rage Pro Turbo AGP graphics controller System boards w/o on-board AGP graphics: One AGP slot connector on the system board

USB

On the system board there are two 4-pin USB connectors (ports), one in the front panel and another in the rear panel, for serial transfers at 12 or 1.5 Mbps, controlled by the USB Host Controller (HC) built-in the 82371EB (PIIX4e) chip. The Host Controller includes the root hub with two USB ports and it supports the standard Universal Host Controller Interface (UHCI).

If more than two USB devices are required, an external hub can be connected to either of the on-board USB ports.

Connectors

External	Internal
Two 4-pin USB connectors, one at the back panel of the system unit and another in the front panel.	None

Resource allocation

Device	IRQ	DMA	Memory	I/O
USB	11	None	None	FCE0 - FCFF

USB interface can not be configured through BIOS setup utility.

Ethernet Controller (on-board)

The on-board PCI Fast Ethernet Local Area Network controller is compatible with the Intel EtherExpress PRO/100+ adapter. The controller is build around the Intel 82558 Fast Ethernet PCI bus LAN controller chip with build-in 10/100 BASE Physical Layer interface (PHY), 3 kB transmit and 3 kB receive FIFOs, 32-bit PCI interface and a Magic Packet support (Wake On LAN support).

The Ethernet interface can be connected to a Twisted Pair (TP) cable through an 8-pin RJ45 connector. It is possible to use the module in 10Mbps or 100Mbps Twisted Pair Ethernet LAN by simply connecting the network adapter to a 10BASE-T or 100BASE-T hub port. By default the Fast Ethernet module automatically identifies the speed of the hub port and configures itself to the right speed without any hardware or software changes.

Wake On LAN support is provided by the build-in Magic Packet "filter" of the Intel 82558 chip, for which the plus five (+5 V) volt stand-by voltage is always supplied.

Remote Boot options:

The system BIOS includes LANdesk Service Agent (LSA) and provides Intel Preboot eXecution Environment (PXE). When network boot is enabled (Boot menu), system tries to load the boot image from a remote BOOTP/TFTP server.

Connectors

External	Internal
8 pin RJ45 connector	None

Resource allocation

Device	IRQ	DMA	Memory	I/O
		None	None	

Network interface can not be configured through BIOS setup utility.

LED board

The LED board has three indicators that are located on the front panel, from top to bottom:

- POWER** (Green) Illuminated when the system is switched ON.
- HDD** (Yellow) Illuminated during HDD activity.
- Message waiting** (Red) This LED is not used (not connected)

Power On Self Test (POST)

After the power has been turned on, the system performs a power on self-test to check that all parts are working properly. If the test does not find any faults, BIOS tries to load the operating system.

During the POST Fujitsu logo is shown on the screen until Operating System starts and shows it's own logo. If <ESC> key is pressed while the Fujitsu logo is shown on the screen, the logo screen is changed to the following text screen (basic settings) that is shown on the screen until Operating System starts. The information shown on the screen is updated line by line and the information shown may vary between different hardware configurations and BIOS settings.

```
PhoenixBIOS Version 4.05
Copyright 1985-1998 Phoenix Technologies Ltd., All Rights Reserved.

Fujitsu Desktop BIOS Version 1.07
Copyright FUJITSU LIMITED 1995-1998.

CPU = Pentium(R) II processor 350 MHz
0640K System RAM Passed
0063M Extended RAM Passed
0512K Cache SRAM Passed
System BIOS shadowed
Video BIOS shadowed
Mouse initialized

Press <F2> to enter SETUP
```

The text screen indicates the BIOS version (1.07), type and speed of the CPU, total amount of system (0640 kilo bytes) and extended (0063 mega bytes) memory installed and the size of the cache (0512 kB) in the system. It also indicates if PS/2 type mouse has been found and initialized.

If the self-test finds any faults, indication of that is shown one of the following two ways:

- You will hear two short beeps (••) and see a message on the screen.
- You will hear a sequence of long and short beeps immediately after you have started the system.

The following pages describe the steps that you should take if either fault situation should occur.

Two short beeps and a message

The format these messages take is:

Short description ---> Operating system not found

If you see a message that does not have this format, it probably comes from an additional board installed in the system unit. For further information, refer to the documentation of the board .

If the keyboard is concerned, the start-up procedure will continue after a while. Otherwise, you will see this message:

Press <F1> to resume, <F2> to SETUP.

Pressing **F1** allows you to bypass the fault without correcting it. Enter SETUP by pressing **F2** , and check that the configuration parameters are correct.

Should the message persist, check the following list, and contact service.

List of error messages:

Diskette drive [A / B] error

Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

[DMA / IO / IRQ / MEM] Allocation Error-Function #:xx

Execute ISA configuration utility (ICU) and set the proper settings such as DMA channel and so on.

Extended RAM Failed at offset: nnnn

Extended memory not working or not configured properly. Check if the extended memory is attached properly.

Failing Bits: nnnn

The hex number nnnn is a map of the bits at the RAM address (in System, Extended or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit. Check if extended memory is attached properly.

Failure Fixed Disk [0 / 1 / 2 / 3]

Fixed disk is not working or not configured properly. Check to see if fixed disk and flat cable are attached properly. Run Setup to ensure that the fixed-disk type is correctly identified.

[Fixed Disk / Diskette Drive] address conflict

Option card and fixed disk/diskette drive addresses are conflict. Change ISA card address.

Incorrect Drive [A / B] type - run SETUP

Type of floppy drive [A / B]: not correctly identified in Setup. Select proper type of diskette in Setup.

Invalid NVRAM media type

Problem with NVRAM access.

Keyboard controller error

The keyboard controller failed test. You may have to replace keyboard or controller.

Keyboard error

Keyboard not working. Check if keyboard is connected properly.

Operating system not found

Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

Parity Check [1 / 2]

Parity error found in the [system or I/O] bus. BIOS attempts to locate the address and display it on the screen.

Press <F1> to resume, <F2> to Setup

Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change any settings.

Press <F2> to enter SETUP

Optional message displayed during POST. Can be turned off in Setup.

Previous boot incomplete - Default configuration used

Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of wait states, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the wait-state configuration is correct. This error is cleared the next time the system is booted.

PXE-E52:No IP address received from DHCP or BOOTP.**PXE-M0F:Exiting LANDesk (R) Service Agent II**

Preboot Execution Environment (PXE) error. PXE could not get IP address. Prepare the installation server which is Network PC System Design Guidelines Version 1.0b compliant or disable Preboot Execution Environment in Setup.

PXE-T01:File not found**PXE-E3B:TFTP Error - File Not found****PXE-M0F:Exiting LANDesk (R) Service Agent II**

Preboot Execution Environment (PXE) error. PXE could not get boot file name from server. Prepare the installation server which is Network PC System Design Guidelines Version 1.0b compliant or disable Preboot Execution Environment in Setup.

PXE-E61:Media test failure,check cable.**PXE-M0F:Exiting LANDesk (R) Service Agent II**

Preboot Execution Environment (PXE) error. LAN cable is not connected properly. Check if LAN cable is connected properly or disable Preboot Execution Environment in Setup.

Real time clock error

Real-time clock fails BIOS test. May require board repair.

Shadow Ram Failed at offset: nnnn

Shadow RAM failed at offset nnnn of the 64k block at which the error was detected.

Stuck Key

BIOS discovered a stuck key. Check if keyboard is attached properly or if some key is kept pressed.

System battery is dead - Replace and run SETUP

The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

System cache error - Cache disabled

RAM cache failed the BIOS test. BIOS disabled the cache.

System CMOS checksum bad - run SETUP

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Run Setup and reconfigure the system.

System RAM Failed at offset: nnnn

System RAM failed at offset nnnn of in the 64k block at which the error was detected. Check if memory is attached properly.

System time error

The timer test failed. Requires repair of system board.

xxxh [COM / LPT] address conflict

Option card and serial/parallel port address are conflict. Change serial/parallel port address in Setup or change ISA card address.

Sequences of long and short beeps

If you hear a sequence of long and short beeps immediately after you have started the system, the self-test has detected an equipment failure. Turn all units off, check their connections, and try again. If you hear the sequence again, write it down, and call our local service representative.

The following list contains the signal sequences. Short beeps are indicated with •, long beeps with - and space between beeps with _. I/O port 80h message numbers are shown in brackets.

Short beeps

•	1	(B4h and F4h) No errors found during POST, operating system will be loaded.
•••••	1-2-2-3	(16h) BIOS ROM checksum.
•••••	1-3-1-1	(20h) Test DRAM refresh.
•••••	1-3-1-3	(22h) Test 8742 keyboard controller
•••••	1-3-4-1	(2Ch) RAM failure on address line.
•••••	1-3-4-3	(2Eh) RAM failure on data bits of low byte of memory bus.
•••••	1-4-1-1	(30h) RAM failure on data bits of high byte of memory bus.
•••••	2-1-2-3	(46h) Check ROM copyright notice.
•••••	2-2-3-1	(58h) Test for unexpected interrupts.

Long and short beeps

-_••	1-2	(98h) Search for option ROMs, checksum error.
------	-----	---

BIOS check points

During the POST, BIOS executes a range of test routines and before each test is started, BIOS writes the check point information (number) to I/O port 80h. The following list shows the check point number (hex) and a short description what BIOS is doing while this checkpoint is displayed.

Checkpoint	Routine description
02h	Verify real mode
03h	Disable non-maskable interrupt (NMI)
04h	Get processor type
06h	Initialize system hardware
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize processor registers
0Bh	Enable processor cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize power management
11h	Load alternate registers with initial POST values
12h	Restore processor control word during warm boot
13h	Initialize PCI bus mastering devices
14h	Initialize keyboard controller
16h	BIOS ROM checksum
17h	Initialize cache before memory autosize
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset programmable interrupt controller
20h	Test DRAM refresh
22h	Test 8742 keyboard controller
24h	Set ES segment register to 4 GB
26h	Enable A20 line
28h	Autosize DRAM
29h	Initialize POST memory manager
2Ah	Clear 512 kB base RAM
2Ch	RAM failure on address line xxxx*
2Eh	RAM failure on data bits xxxx* of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
30h	RAM failure on data bits xxxx* of high byte of memory bus
32h	Test processor bus-clock frequency
33h	Initialize POST dispatch manager

Checkpoint	Routine description
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Autosize cache
3Ch	Advanced Configuration of chipset registers
3Dh	Load alternate registers with CMOS values
42h	Initialize interrupt vectors
45h	POST device initialization
46h	Check ROM copyright notice
48h	Check video configuration against CMOS RAM data
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	Display QuietBoot screen
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
50h	Display processor type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
58h	Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable processor cache
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize multiprocessor APIC
68h	Enable external and processor caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6BH	Load custom defaults
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization

Checkpoint	Routine description
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports
87h	Configure motherboard configurable devices
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize extended BIOS data area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multiprocessor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up multiprocessor table
98h	Search for option ROMs
99h	Check for SMART Drive
9Ah	Shadow option ROMs
9Ch	Set up power management
9Dh	Initialize security manager
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear IN POST flag
B0h	Check for errors
B2h	POST done - prepare to boot operating system
B4h	One short beep before boot
B5h	Terminate QuietBoot
B6h	Check password
B9h	Prepare boot
BAh	Initialize DMI parameters
BBh	Initialize PnP Option ROMs

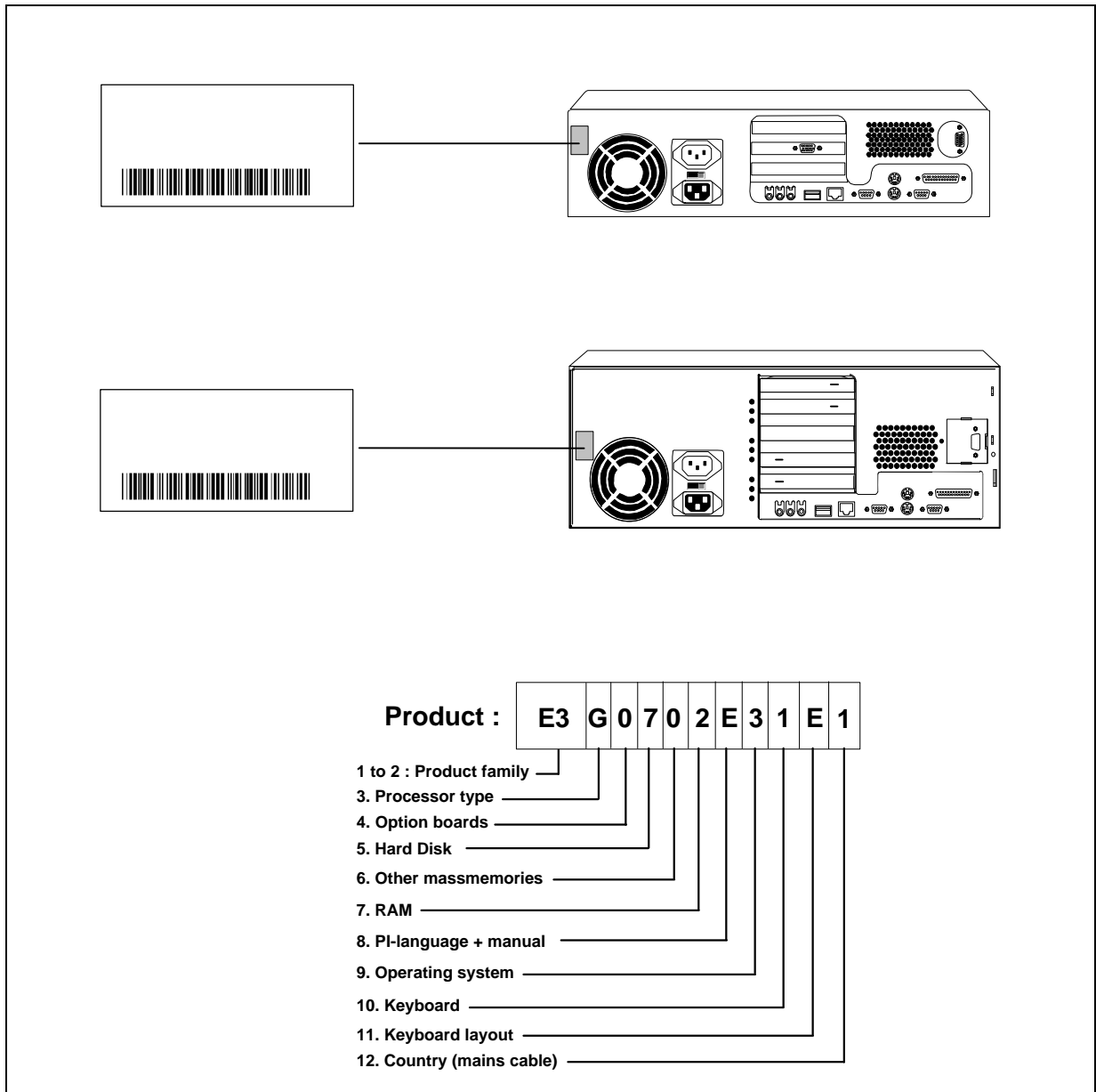
Checkpoint	Routine description
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnP and dual CMOS
C8h	Force check
C9h	Extended checksum
D2h	Unknown interrupt

Checkpoint	BIOS Boot block Routine description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the processor
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set huge segment
E9h	Initialize multiprocessor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize memory type
EDh	Initialize memory size
EEh	Shadow boot block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize run time clock
F2h	Initialize video
F3h	Initialize System Management Mode
F4h	Output one beep before boot
F5h	Boot to mini-DOS
F6h	Clear huge segment
F7h	Boot to full DOS

e365/** and x565/** structure codes

Every unit has an identification label located in the system unit. The picture below shows the location of the identification label on 3-slot and 5-slot housings.

This code can be divided into eleven parts, indicating that way the exact configuration of the machine. The following pages are explaining those codes.



Identification codes

The following code information should be used for product identification only. The information should not be used to build up an ordering code.

1-2. PRODUCT FAMILY

The letter(s) in brackets () is/are for the third digit	System board code
E2(E) x365/266 Pentium II (Audio, LAN, Graphics)	AC41745
E2(F) x365/300 Pentium II (Audio, LAN, Graphics)	AC41745
E2(G) x365/333 Pentium II (Audio, LAN, Graphics)	AC41745
E2(H) x365/350 Pentium II (Audio, LAN, Graphics)	AC41745
E2(J) x365/400 Pentium II (Audio, LAN, Graphics)	AC41745
E2(R) x365/450 Pentium II (Audio, LAN, Graphics)	AC41745
E3(F) x365/300 Pentium II (Audio, no LAN, no Graphics)	AC41746
E3(G) x365/333 Pentium II (Audio, no LAN, no Graphics)	AC41746
E3(H) x365/350 Pentium II (Audio, no LAN, no Graphics)	AC41746
E3(J) x365/400 Pentium II (Audio, no LAN, no Graphics)	AC41746
E3(R) x365/450 Pentium II (Audio, no LAN, no Graphics)	AC41746
G2(F) x565/300 Pentium II (Audio, LAN, Graphics)	AC41745
G2(G) x565/333 Pentium II (Audio, LAN, Graphics)	AC41745
G2(H) x565/350 Pentium II (Audio, LAN, Graphics)	AC41745
G2(J) x565/400 Pentium II (Audio, LAN, Graphics)	AC41745
G2(R) x565/450 Pentium II (Audio, LAN, Graphics)	AC41745
G3(F) x565/300 Pentium II (Audio, no LAN, no Graphics)	AC41746
G3(G) x565/333 Pentium II (Audio, no LAN, no Graphics)	AC41746
G3(H) x565/350 Pentium II (Audio, no LAN, no Graphics)	AC41746
G3(J) x565/400 Pentium II (Audio, no LAN, no Graphics)	AC41746
G3(R) x565/450 Pentium II (Audio, no LAN, no Graphics)	AC41746

3. PROCESSOR & HEATSINK

E	266 MHz Pentium II CPU
F	300 MHz Pentium II CPU
G	333 MHz Pentium II CPU
H	350 MHz Pentium II CPU
J	400 MHz Pentium II CPU
R	450 MHz Pentium II CPU

4. OPTION BOARDS

0	No option board(s)	
2	ATI 3D RAGE IIC AGP	AF31559

5. HARD DRIVE

6	3.2 GB IDE hard drive	AF21232
7	4.3 GB IDE hard drive	AF21233
8	6.4 GB IDE hard drive	AF21234

6. OTHER MASSMEMORIES

0	No other massmemories	
D	24x IDE CD-ROM drive	AF23337

7. RAM

2	1 * 32 MB 66 MHz SDRAM DIMM (non-ECC)	AF33852E
3	1 * 32 MB 100 MHz SDRAM DIMM (non-ECC)	AF33862E
4	1 * 64 MB 66 MHz SDRAM DIMM (non-ECC)	AF33853E
6	1 * 64 MB 100 MHz SDRAM DIMM (non-ECC)	AF33863E

8. PI-LANGUAGE + MANUAL

- E English
- F Danish
- G German
- H Spanish
- J French
- K Dutch
- L Norwegian
- M Finnish
- N Swedish
- P Portuguese
- S Italian

9. OPERATING SYSTEM

- 2 Windows 95
- 3 Windows NT 4.0
- 6 Windows 98

10. KEYBOARD

- 0 No keyboard
- 1 e105

11. KEYBOARD LAYOUT

- 0 No keyboard
- A Hungarian 105
- E English e105
- F Danish e105
- G German e105
- H Spanish e105
- J French e105
- K Dutch e105
- L Norwegian e105
- M Finnish e105
- N Swedish e105
- P Portuguese e105
- S Italian 105
- V Czech 105
- Y Polish 105
- 2 Belgium e105
- 3 USA e105

12 COUNTRY (MAINS CABLE + MOUSE)

- 0 No cable, no mouse
- 1 EU cable, Fujitsu
- 2 EU cable, MikroMikko
- 3 UK cable, Fujitsu
- 5 DK cable, Fujitsu
- 6 CH cable, Fujitsu
- 7 US cable, Fujitsu
- 8 IT cable, Fujitsu
- A AUS cable Fujitsu
- B South Africa

Spare parts

Part No	Description	MTBF	Note
AC41745	System Board with on-board LAN and graphics, w/o AGP connector	100 000	
AC41746	System Board with AGP connector, w/o on-board LAN and graphics	100 000	
AF33852E	32 MB SDRAM DIMM (64-bit, 66 MHz, unbuffered, 4-clock)	100 000	PC66
AF33853E	64 MB SDRAM DIMM (64-bit, 66 MHz, unbuffered, 4-clock)	100 000	PC66
AF33854E	128 MB SDRAM DIMM (64-bit, 66 MHz, unbuffered, 4-clock)	100 000	PC66
AF33862E	32 MB SDRAM DIMM (64-bit, 100 MHz, unbuffered, 4-clock)	100 000	PC100
AF33863E	64 MB SDRAM DIMM (64-bit, 100 MHz, unbuffered, 4-clock)	100 000	PC100
AF33873E	64 MB ECC SDRAM DIMM (72-bit, 100 MHz, unbuffered, 4-clock)	100 000	PC100
AF33864E	128 MB SDRAM DIMM (64-bit, 100 MHz, unbuffered, 4-clock)	100 000	PC100
AF81068	Power Supply 145 W (3-slot, FAN attached)	100 000	
AF81078	Power Supply 200 W (5-slot, FAN attached)	100 000	
PL060621	Intel Pentium II 266 MHz, active ¹ heatsink attached (0.25 and 0.35 technology)	NA	
PL060630	Intel Pentium II 266 MHz, passive ² heatsink attached (0.25 and 0.35 technology)	NA	
PL060622	Intel Pentium II 300 MHz, active ¹ heatsink attached (0.35 technology)	NA	
PL060631	Intel Pentium II 300 MHz, passive ² heatsink attached (0.25 technology)	NA	
PL060623	Intel Pentium II 333 MHz, active ¹ heatsink attached (0.25 technology)	NA	
PL060627	Intel Pentium II 333 MHz, passive ² heatsink attached (0.25 technology)	NA	
PL060624	Intel Pentium II 350 MHz, passive ² heatsink attached (0.25 technology)	NA	
PL060625	Intel Pentium II 400 MHz, passive ² heatsink attached (0.25 technology)	NA	
PL060632	Intel Pentium II 450 MHz, passive ² heatsink attached (0.25 technology)	NA	
AC41748	Backplane, 1*PCI, 2*shared (3-slot)	100 000	
AC41747	Backplane, 2*PCI, 1*shared, 2*ISA (5-slot)	100 000	
AF21232	3.2 GB IDE HD		
AF21233	4.3 GB IDE HD		
AF21234	6.4 GB IDE HD		
AF23337	24x IDE CD-ROM drive		

¹ Active = fan attached to the heatsink

² Passive = no fan attached to the heatsink