M6-850 / M6-860 / M6-880

CHARACTERISTICS

Microprocessor	M6-850 i486 DX2 @ 50 MHz M6-860 i486 DX2 @ 66 MHz M6-880 Pentium @ 60 MHz The processor is installed on the CPU board which in turn is installed in a dedicated motherboard slot.
Coprocessor	On the M6-850 and M6-860 PCs, the original processor can be replaced by the P24T OverDrive processor
System clock	M6-850 25 MHz M6-860 33 MHz M6-880 33 MHz
Architecture	32-bit EISA

Memory	**M6-850 and M6-860 i486 systems**
	On-board, from 8 MB to 64 MB.
	Four sockets are available.
	These *Single Density* SIMMs can be installed:
	EXM 30-004 4 MB: One 4 MB 1 MBx36 SIMM
	EXM 30-016 16 MB: 1 16 MB 4 MBx36 SIMM
	
	M6-880 Pentium systems
	On-board, from 16 to 128 MB.
	Four sockets are available, divided into banks 0 and 1. SIMMs must be installed in pairs, and each pair must have the same SIMMs
	These *Single Density* SIMMs can be installed:
	EXM 30-004 4 MB: 1 4 MB 1 MBx36 SIMM
	                 Two kits are required.
	EXM 30-016 16 MB: 1 16 MB 4 MBx36 SIMM
	                 Two kits are required.
	These *Double Density* SIMMs can be installed:
	EXM 26-716 16 MB: 2 8 MB 2x1MBx36 SIMMs
	EXM 30-032 32 MB: 1 32 MB 2x4MBx36 SIMM
	                 Two kits are required.
	The above SIMMs have parity checking.
	Install the SIMMs starting always from bank 0.

Secondary Level Cache	The CPU board comes with 256 KB of secondary level cache
Memory access	70 ns
Floppy Disks	1.2 MB Panasonic JU 475-4/5 1.44 MB Sony MPF420-1 1.44 MB MITSUMI D359T3 1.44 MB Y-E Data YD-702B-6037B **Continues -->**

MOTHERBOARD

BA2081

BA2075

CPU BOARD

UC2001 for   M6-850
                M6-860

UC2002 for   M6-880

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BIOS

The ROM BIOS is a Flash EPROM. The BIOS code is supplied on diskettes and must be copied into Flash EPROM.

For M6-850 and M6-860
Last level:
Rev. Ver. 1.2 Rev. 2.3

For M6-880
Last level:
Ver. 1.2 Rev.1.2

POWER SUPPLY

300 W ASTEC SA300 - 3400

110 V or 220 V

Hard Disks	CONNER CP30200 210 MB SCSI SEAGATE ST3283N 210 MB SCSI CONNER CP30540 525 MB SCSI DIGITAL DSP3105 1 GB SCSI IBM 0662S12 1 GB SCSI SEAGATE ST31200N 1 GB SCSI
Streaming Tapes	**Streaming tapes:** WANGTEK 5525 ES 320/525 MB SCSI WANGTEK 5150 ES 150/250 MB SCSI **DAT** Hewlett Packard HP35470A 1.3 / 2 GB SCSI
Slots	7 expansion slots: - Five EISA - Two EISA / VESA
Video controller	**1570 SX Rev. A** VGA-compatible board installed in motherboard slot 1 (**GO2021**)
FDU controller	Integrated on the motherboard
SCSI HDU controller	Integrated on the motherboard - **Adaptec AIC-7770 (Arrow)** chip
Mouse	PS/2- and AT-compatible GRD 26-027 high resolution, 3-button mouse
Keyboard	101-key compact keyboard ANK 28-101 102-key compact keyboard ANK 27-102

FRONT BAYS FOR MAGNETIC AND OPTICAL PERIPHERALS

To host the magnetic and opticl peripherals available, these systems are equipped with six 5.25"
half-height bays and two 3.5" bays.
These bays can be used as follows:

BAY 1 (5.25")	Always hosts the first SCSI HDU in which the operating system is installed.
BAY 2 (5.25")	Can only host SCSI HDUs.
BAY 3 (5.25")	Can only host SCSI HDUs.
BAY 4 (5.25)	Can only host SCSI HDUs.
BAY 5 (5.25)	Can host SCSI CD-ROMs, Streaming Tapes or HDUs
BAY 6 (5.25)	Can host a second 5.25" floppy disk drive
BAY 1 (3.5")	First 1.44 MB FDU
BAY 2 (3.5")	Optional SCSI DAT

CONSOLE

AREA FOR ELECTRONIC BOARDS
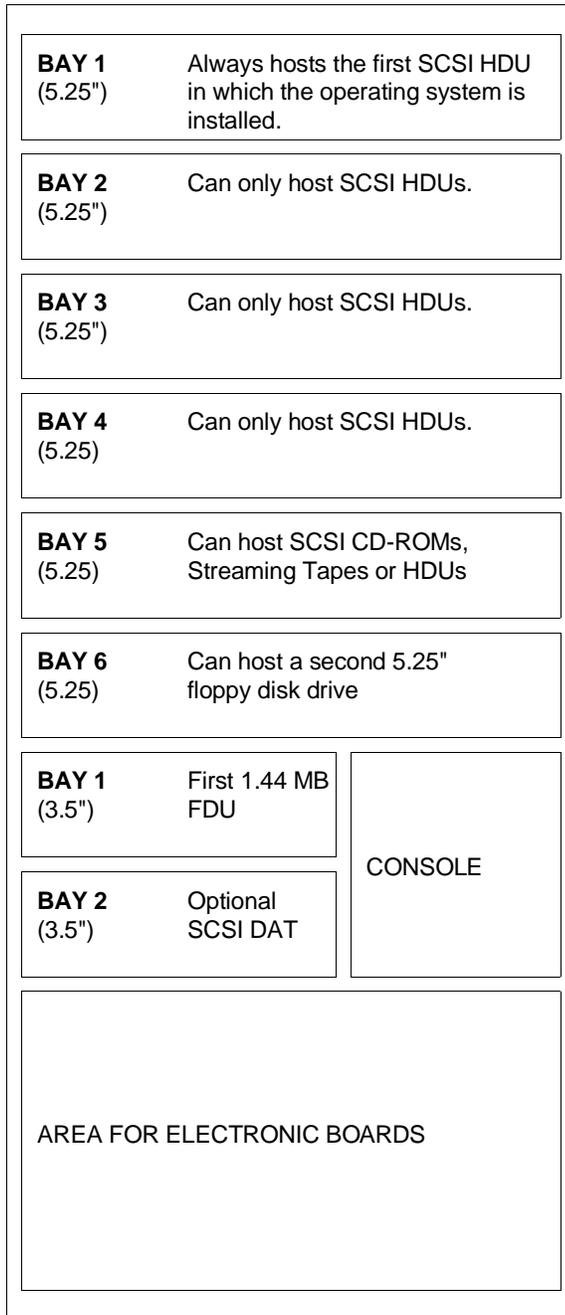
Bay Filling Sequence

The 1st FDU is installed in bay 1 and is a 1.44 MB drive.

The 2nd FDU can be a 1.2 MB drive and is installed in bay 6.

The 1st 5.25" removable SCSI peripheral (STU or CD-ROM) can be installed in either bay 6 (if there is no floppy) or bay 5.

The 2nd SCSI peripheral can be installed in bay 5 or 4.

The 1st HDU is installed in the 5.25" bay 1, the others can be installed in bays 2 to 6 if bays 4, 5 and 6 are free.

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SCSI CHANNEL CONFIGURATION

The general rule to follow for configuring the SCSI channel is that all the devices connected (up to eight, controller included) must have a different identifier (SCSI ID) and that the bus is terminated at its ends only.

- Besides assigning a different address to the peripherals connected to the bus, the SCSI ID determines the priority for each one. On these systems, SCSI ID 0 is the highest priority while SCSI ID 7 is the lowest.
- In these systems, SCSI ID 0 is assigned to the system's first hard disk drive (the HDU in which the operating system is installed). This gives the first HDU highest priority. With a SCSI ID of 7, lowest priority is assigned to the SCSI controller.
- An increasing SCSI ID (from 1 to 6) is assigned to the SCSI peripherals beyond the first HDU, depending on their order of installation. Highest priority is assigned to the HDUs, lowest to the removable peripherals.
- The only exception is the first streaming tape drive in the SCO 3.2 environment, which must be assigned a SCSI ID of 2.

Termination Rules

The SCSI channel must only be terminated at its ends (first and last device on the bus), while the terminator must be removed from all the peripherals in-between. For the first SCSI channel (internal channel) the primary hard disk installed in bay 1, and the SCSI contoller, must both be terminated.
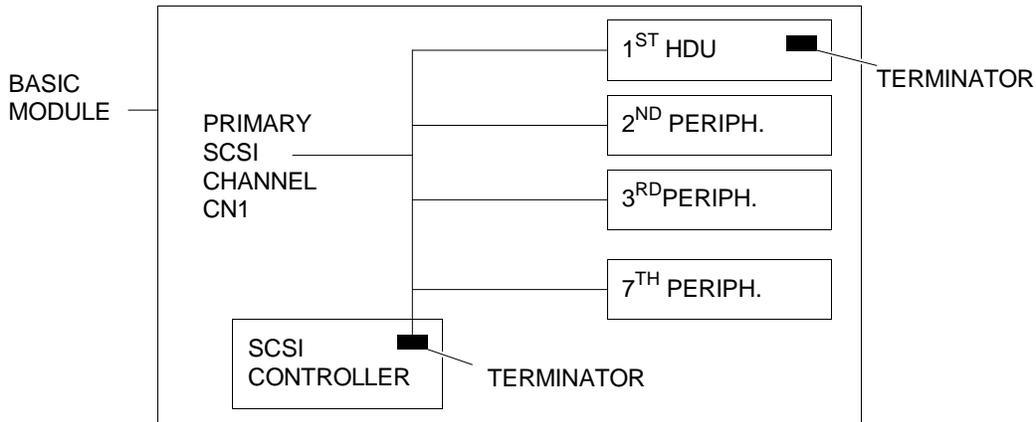
The second SCSI channel is only used for the connection of external peripherals. Also in this case the terminator must be installed on bot the controller and on the last external peripheral connected to the system.
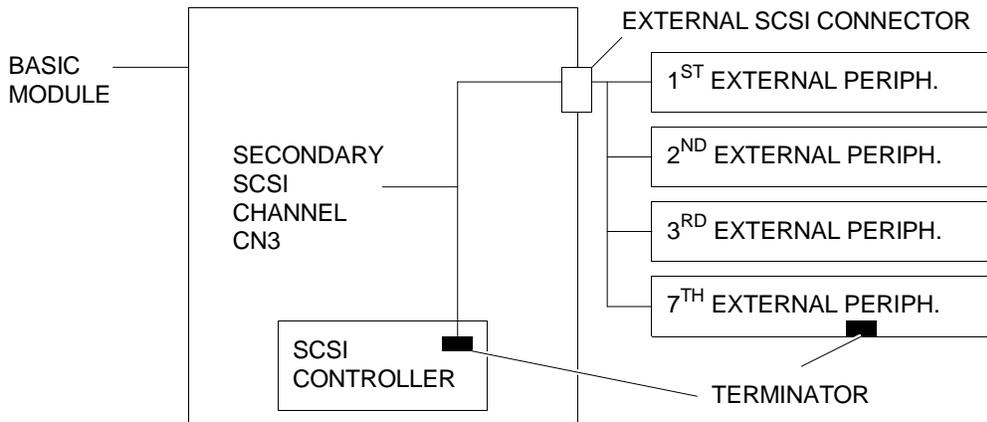
CABLING OF THE PERIPHERALS

The motherboard has three channels on which the peripherals can be connected:
- **CN1** SCSI channel for the connection of internal SCSI peripherals - Allows the connection of up to three SCSI peripherals inside the basic module. If more than three internal SCSI peripherals need to be installed, replace the 4-connector SCSI cable with the 8-connector SCSI cable supplied in the **MEC 6000** kit. This kit also provides the mechanical supports with which the peripherals can be installed.
- **CN2** Floppy disk interface channel - Allows the management of up to 2 floppy interface periph.
- **CN3** External SCSI channel - Used only to connect external SCSI peripherals. Use cable **CBL 5363** to connect the external peripheral. Any other additional external peripheral can be connected in a daisy-chain formation respecting, however, the 6 meter maximum lengh allowed for a SCSI channel

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BAY 1 (5.25")
1ST HDU

TERMINATOR

BAY 2 (5.25")
SCSI PERIPH.

SCSI CABLE
EXTERNAL
CONNECTOR

CABLE
CBL5363

BAY 3 (5.25")
SCSI PERIPH.

INTERNAL SCSI CABLE FOR
THE CONNECTION OF
EXTERNAL SCSI
PERIPHERALS

BAY 4 (5.25")
SCSI PERIPH.

EXTERNAL
SCSI
PERIPH.

BAY 5 (5.25")
SCSI PERIPH.

4-CONNECTOR
SCSI CABLE

TERMIN.

BAY 6 (5.25")
SCSI PERIPH.
or 2ND FDU

8-CONNECTOR
SCSI CABLE

BAY 1 (3.5")
1ST FDU

FLOPPY DISK
CABLE

BAY 2 (3.5")
DAT

CN2

CN1

TERMINATORS

CN3

MOTHERBOARD

MOTHERBOARD

	LEVEL	D.R.S. CODE	NOTES
BA2081	Nasc.	589858 D	System motherboard based on BASE ASSEMBLY **BA2082** integrating the following components: - Connector for a CPU board - EISA expansion connectors - SIMM sockets - CMOS RAM and Real Time Clock - Keyboard and mouse interface - Floppy interface - Serial interface - Parallel interface - AT IDE hard disk interface - BIOS EPROM - SCSI interface
	Lev. 01		New printed circuit Ver. 2X1 to correct the following problems: - Incorporation of wirings - SCSI LED management - Speaker pinout which after this modification can be directly managed without requiring an adapter - EISA terminations This new printed circuit is identified by a data plate located under the SIMM sockets. This data plate has a series of numbers that end with the letter E, which identifies the new printed circuit.
	Lev. 02		The following modifications were made to correct the failure of the hard disk LEDs: - Resistor R721 has been removed. - U4 pin 2 was wired with JP2 pin 2. In alternative, the escape hole of R721 can be wired with JP2 pin 2.
	Lev. 03		Introduction of the floppy disk controller THREE MODE type management. For this reason the component at location U4 is changed from 74LS08 to 74F08.

	LEVEL	D.R.S. CODE	NOTES
BA2075	Nasc.	589848 B	System motherboard based on BASE ASSEMBLY **BA2082.**
	Lev. 01		New printed circuit Ver. 2X1 to correct the following problems: - Incorporation of wirings - SCSI LED management - Speaker pinout which after this modification can be directly managed without requiring an adapter - EISA terminations This new printed circuit is identified by a data plate located under the SIMM sockets. This data plate has a series of numbers that end with the letter E, which identifies the new printed circuit.
	Lev. 02		The following modifications were made to correct the failure of the hard disk LEDs: - Resistor R721 has been removed. - U4 pin 2 was wired with JP2 pin 2. In alternative, the escape hole of R721 can be wired with JP2 pin 2.
	Lev. 03		Introduction of the floppy disk controller THREE MODE type management. For this reason the component at location U4 is changed from 74LS08 to 74F08.

CPU BOARD

	LEVEL	D.R.S. CODE	NOTES
UC2001	Nasc.	589849 C	System CPU board integrating the following components: - i486 DX2 system processor - Secondary level cache memory
	Lev 01		The processor's heat sink securing bracket has been modified. This modification was made to ensure coherence with the UC2002 CPU board.
	Lev. 02		New i486 DX2 @ 50 MHz (code: 4893094L) and i486 DX2 @ 66 MHz (code: 4893093X) processors are used to replace the previous i486 DX2 @ 50 MHz (code: 4863597N) and i486 DX2 @ 66 MHz (code: 4863823V) components.
UC2002	Nasc.	589851 W	System CPU board integrating the following components: - Pentium system processor - Seconary level cache memory
	Lev. 01		The new Pentium step C1 processor replaces the previous Pentium step B1 component. This new processor requires a new bracket to secure the heat sink. The CPU board does not change level.

VGA VIDEO CONTROLLER BOARD

	LEVEL	CODICE D.R.S	NOTES
GO2021	Nasc.	588051 W	1570 SX Rev. A - VGA video controller board to install in the first AT slot of the motherboard.

BIOS

LEVEL	DESCRIPTION
Ver. 1.2 Rev. 2.3	BIOS for the M6-850 and M6-860 Personal Computers. This BIOS version corrects the following problems: - Floppy disk read/write errors during factory testing - PIC errors when using the System Test - With this BIOS version, the Setup program (ALT CTRL ESC) no longer gives the possibility of entering the optional Password After Booting.
Ver. 1.2 Rev.1.2	BIOS for the M6-880 Personal Computer. This BIOS version corrects the following problems: - Floppy disk read/write errors during factory testing - PIC errors when using the System Test - With this BIOS version, the Setup program (ALT CTRL ESC) no longer gives the possibility of entering the optional Password After Booting.

ENHANCED VIDEO DRIVER

DRIVER	NOTES
EVD for the 1570 SX REV. A video controller	

POWER SUPPLY

POWER SUPPLY	LEVEL	DESCRIPTION
ASTEC SA300 - 3400 D.R.S. code: 589850 H	Nasc.	100 V or 220 V with a voltage change jumper on the rear of the unit.
	Lev. 01	This is a fictitious level since it was never produced by the supplier of this power supply unit.
	Lev. 02	New AUTORESTART feature introduced.
	Lev. 03	New printed circuit incorporating the modifications for the Autorestart feature.
	Lev. 04	Electrical circuit optimized to improve its operational margins as far as the following are concerned: - Ripple at +5 V and + 12 V - Protection against voltage drops

USER DISKETTE

LEVEL	COMPATIBILITY
Rel. 1.00 Rel. 1.01	Must be used with BIOS Ver. 1.2 Rel. 1.2 for the Pentium or Ver. 1.2 Rel. 2.3 for the i486 DX2. This version includes the following modifications: - All tests are now linked with the new System Test Library 4.11 which implements the Fast Mode Option for factory purposes. - The parallel port test has been modified. - Three Mode floppy drive supported. - The memory test has been modified. - The mouse test has been modified. - The keyboard test has been modified.

ISA CONFIGURATION and SYSTEM CONFIGURATION

LEVEL	COMPATIBILITY
Rel. 1.01	ISA Configuration - Contains the configuration files for ISA boards System Configuration - Contains the programs to configure the systems
Rel. 1.02	Must be used with BIOS Ver. 1.2 Rel. 1.2 for the Pentium or Ver. 1.2 Rel. 2.3 for the i486 DX2 This version includes the following modifications: - Three Mode Floppy Drive supported - The !OLIF2A1.CFG file has been added for the ISA AT OAK1570 video controllers - The !ADP7770.CGF file has been modified to correct configuration problems.

SYSTEM TEST

LEVEL	COMPATIBILITY
Lev. 1.00	
Lev. 1.02	Must be used with BIOS Ver. 1.2 Rel. 1.2 for the Pentium or Ver. 1.2 Rel. 2.3 for the i486 DX2. This version includes the following modifications: - All tests are now linked with the new System Test Library 4.11 which implements the Fast Mode Option for factory purposes. - The serial port test has been modified. The RTS to RI subtest has been added. - The parallel port test has been modified. - Three Mode floppy drive supported. - The memory test has been modified. - The mouse test has been modified. - The keyboard test has been modified.

NOTES ON COMPATIBLITY

BOARD OR HW/SW DEVICE	DESCRIPTION
SCSI Cable	To favor active termination on the Allodyne disk array, SCSI cable code 589355C is replaced by SCSI cable (code 589374F).

SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	NOTES
IBM DISK Operating System, DOS 3.3X, 4.XX, 5.XX and later	Up to seven SCSI HDUs can only be managed from release 5.XX onward.
Olivetti OS/2, dalla Versione 1.3 upd 2, 20.0 IBM Operating System/2 standard edition, Ver. 1.1, 1.2, 1.3 and later IBM Operating System/2 Extended Edition, Ver. 1.1, 1.3 and later OS/2 Presentation Manager Standard and extended edition SCO OSF/Motif presentation manager IBM AIX 1.1 SCO UNIX System V/386 3.2 Ver. 2 per MCA IBM OS/2 LAN Server and Requestor Olinet LAN Manager 1.1, 2.0 Novell Netware 386, Novell advanced netware Windows 3.0 and later IBM PC LAN Program	

HARDWARE COMPATIBILITY

MODEM	I/O INTERFACE PRODUCTS
Hayes Smartmodem 1200P Hayes Smartmodem 2400P IBM PS/2 300/1200 Internal Modem/A (6450349)	FUTURE DOMAIN HOST ADAPTER (MCS-350) IBM PS/2 Dual Async Adapter/A (6450347)
EXPANSION MEMORIES	**MOUSE**
IBM PS/2 80386 2-6 MB Exp. Memory Option IBM PS/2 80386 2-8 MB Exp. Memory Option Olivetti Memory Expansion board MEM 26-503 Profit System Elite 16/2	IBM PS/2 Mouse (6450350) Microsoft Serial Mouse MSC PC Mouse PS/2 Olivetti New Advanced Mouse (GRD 25-025)
DISPLAYS	**NETWORKING AND LAN PRODUCTS**
IBM PS/2 Monochrome Display 8503 IBM PS/2 Color Display 8512 IBM PS/2 Color Display 8513 IBM PS/2 Color Display 8514	IBM PC Network IBM PC Network (Baseband Adapter) IBM Token Ring Network Novell Advanced netware Ver. 2.12 3COM Network (Ethernet) 10NET Network
GRAPHICS PRODUCTS	**OTHER PRODUCTS**
IBM PS/2 Display Adapter 8514/A MATROX PG2 - 1281 HI-RES Graphics Controller	SOFTWARE SECURITY Parallel Port Block

MOTHERBOARD COMPONENTS AND JUMPERS
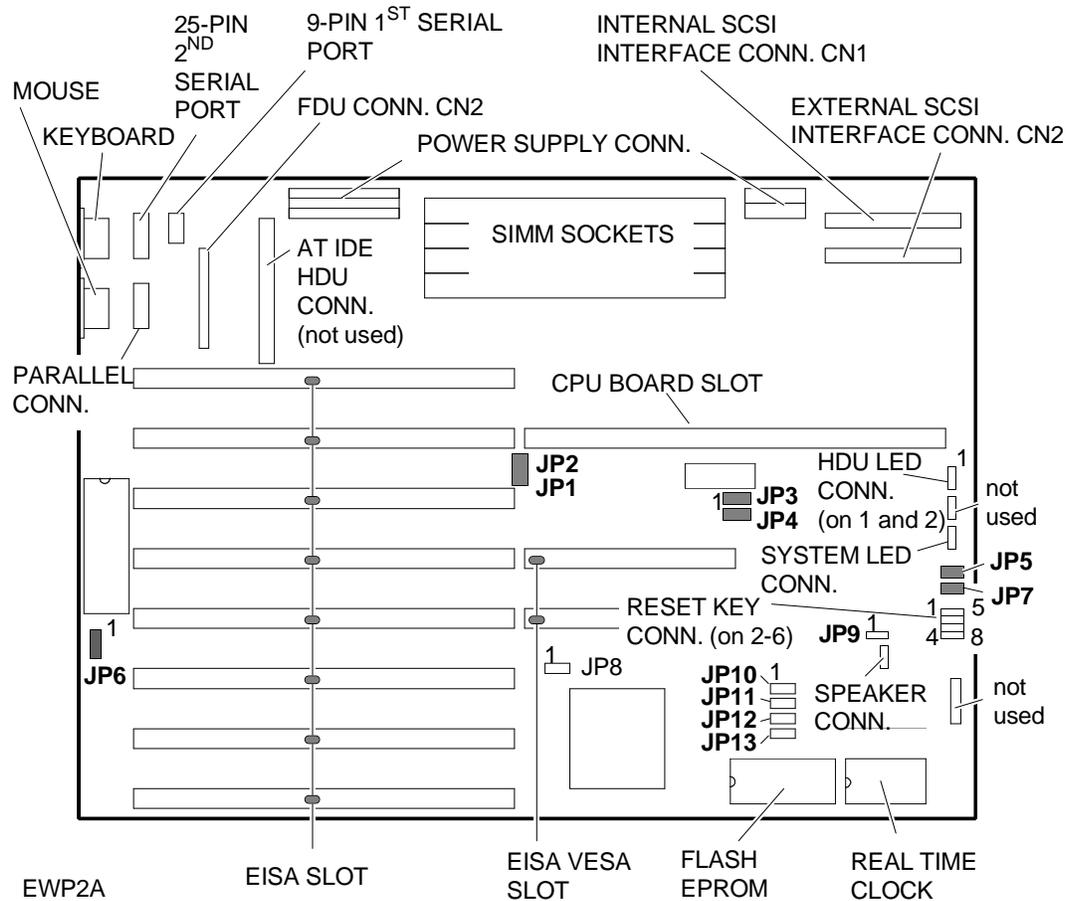
JUMPERS	SETTING	DESCRIPTION
JP1 JP2	OFF - OFF ON - ON	Enables the SCSI channels * Disables the SCSI channels
JP3	On 1 - 2 On 2 - 3	Sets the write speed on the local bus with 0 wait state * Sets the write speed on the local bus with 1 wait state
JP4	On 1 - 2 On 2 - 3	CPU clock selection for VESA local bus <= 33 MHz * CPU clock selection for VESA loca bus = > 33 MHz
JP5	OUT IN	Housing ID4 selection Housing ID3 selection *
JP6	On 1 - 2 On 2 - 3	Enables the passwords and security features that can be set using the SETUP utility * Disables the passwords and security features
JP7	IN OUT	Enables the console reset button * Disables the console reset button
JP8	On 1 - 2 On 2 - 3	Selects IRQ10 for the SCSI controller Selects IRQ11 for the SCSI controller *
JP9	On 1 - 2 On 2 - 3	Enables the on-board speaker * Enables the external speaker
JP10 - JP11 JP12 - JP13	All - On 1 - 2 All - On 2 - 3	Selects the DALLAS RTC * (* = Default) Selects the B.M RTC

COMPONENTS AND JUMPERS UC2001 CPU BOARD FOR M6-850 AND M6-860 SYSTEMS

MOTHERBOARD INTERFACE CONNECTOR

EWP3A
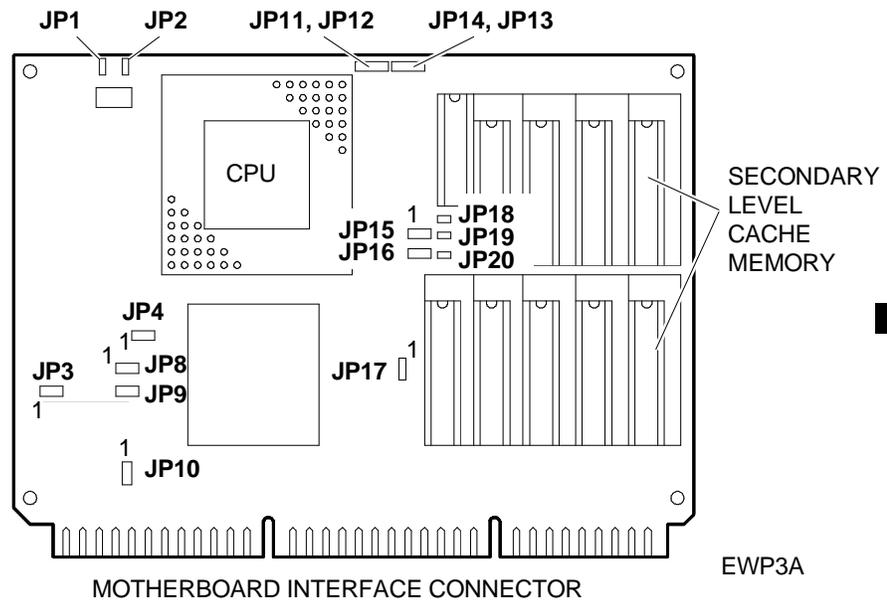
JUMPERS

JUMPERS	POSITION	DESCRIPTION
JP1	OUT IN	25 MHz CPU clock (i486 DX2 @ 50 MHz) 33 MHz CPU clock (i486 DX2 @ 66 MHz) 40 MHz CPU clock 50 MHz CPU clock
JP2	OUT IN	25 MHz CPU clock (i486 DX2 @ 50 MHz) 40 MHz CPU clock 33 MHz CPU clock (i486 DX2 @ 66 MHz) 50 MHz CPU clock
JP3	On 1 - 2 On 2 - 3	Selects LADS for the 33 MHz VESA local bus * Selects LADS for the 50 MHz VESA local bus *
JP4	OUT On 1 - 2 On 2 - 3	i486 DX, i486 DX2 CPU i486 SX CPU i487 SX, ODP486 SX, P24T CPU
JP10	On 1 - 2 On 2 - 3	Disables the local bus Enables the local bus *
JP8	On 1 - 2 On 2 - 3	25 MHz, 33 MHz system clock 40 MHz, 50 MHz system clock
JP9	On 1 - 2 On 2 - 3	25 MHz, 40 MHz system clock 33 MHz, 50 MHz system clock
JP11, JP19	OUT IN	64 KB SRAM cache capacity 128 KB, 256 KB, 1 MB SRAM cache capacity *
JP12, JP20	OUT IN	64 KB, 128 KB SRAM cache capacity 256 KB, 1 MB SRAM cache capacity *
JP13, JP14, JP18	OUT IN	64 KB, 128 KB, 256 KB SRAM cache capacity * 1 MB SRAM cache capacity

JUMPERS	SETTING	DESCRIPTION
JP15, JP16	On 1 - 2 On 2 - 3	Cache memory single bank Cache memory double bank *
JP17	On 1 - 2 On 3 - 4 On 2 - 3	Bus clock <= 33 MHz Bus clock <= 33 MHz Bus clock > 33 MHz *

* = Default setting

COMPONENTS AND JUMPERS ON THE U2002 CPU BOARD FOR THE M6-880 SYSTEM
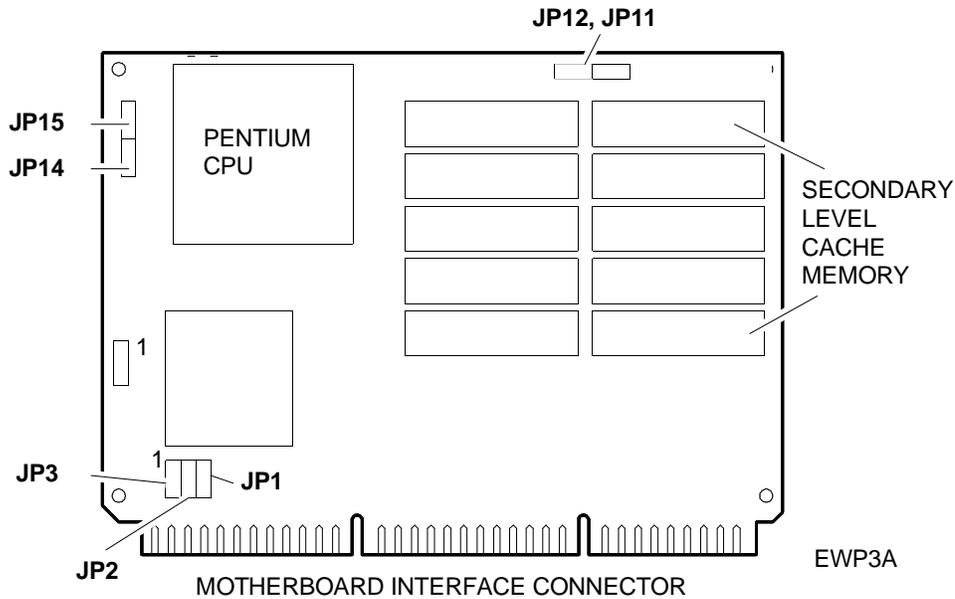
JUMPERS

JP1	JP2	JP3	DESCRIPTION
On 1-2	On 1-2	On 2-3	33 MHz processor clock
On 2-3	On 2-3	On 1-2	40 MHz processor clock
On 1-2	On 2-3	On 1-2	50 MHz processor clock
On 2-3	On 1-2	On 1-2	60 MHz processor clock *
On 1-2	On 1-2	On 1-2	80 MHz processor clock

JUMPERS	SETTING	DESCRIPTION
JP4	On 1-2 On 2-3	Enables the local bus * Disables the local bus
JP11, JP12	OUT IN	256 KB SRAM cache capacity * 1 MB SRAM cache capacity
JP14, JP15	OUT IN	256 KB SRAM cache capacity * 1 MB SRAM cache capacity

* = Default setting

INTERRUPT LEVELS

Name	Function	Name	Function
IRQ0	Timer channel 1	IRQ8	Real time clock
IRQ1	Keyboard	IRQ9	Free
IRQ2	Reserved	IRQ10	Free
IRQ3	Serial port 2	IRQ11	SCSI controller
IRQ4	Serial port 1	IRQ12	Mouse (PS/2-compatible)
IRQ5	Free	IRQ13	Coprocessor
IRQ6	Floppy disk controller	IRQ14	IDE AT HDU controller
IRQ7	Parallel port	IRQ15	Free

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I/O ADDRESS MAP

ADDRESS	FUNCTION	ADDRESS	FUNCTION
000 - 01F	DMA controller 1 (8237)	800 - 8FF	NVRAM address
020 - 027	Interrupt controller 1 (8259)	C80 - C83	EISA product identifier
030 - 037	Interrupt controller 1 (8259)	CBF	NVRAM page address
040 - 047	System timer (8454-1)	4F0	SCSI address, type of memory and CPU, 8 KB or 9 KB SRAM selection, Flash EPROM programming, IRQ12 enable, mode 3 selection for 3.5"diskettes
050 - 057	System timer (8454-1)	1F0 - 1F7	IDE AT HDU data register
060 - 067	Keyboard controller (8742)	278 - 27F	Parallel port 2, LPT2
070 - 07F	Real Time Clock, NMI Mask Interrupt	2F8 - 2FF	Serial port 2, COM 2
080 - 09F	DMA page register (74LS612) Speed Status Register	378 - 37F	Parallel port 1, LPT1
0A0 - 0BF	Interrupt controller 2 (8259)	3B0 - 3BF	Monochrome monitor
0C0 - 0DF	DMA controller 2 (8237)	3C0 - 3CF	EGA, VGA, SVGA video modes
0F0	Clear signal for the integrated math coprocessor	3D0 - 3DF	CGA, VGA, SVGA video modes
0F1	Clear signal for the integrated math coprocessor	3F0 - 3F6	Floppy disk controller
0F8 - 0FF	Integrated math coprocessor	3F7 - 3FF	Serial port 1, COM1

SYSTEM MEMORY MAP

ADDRESS	CAPACITY	FUNCTION
00000000 - 0009FFFF	640 KB	640 KB - system DRAM
000A0000 - 000BFFFF	128 KB	Video controller RAM
000C0000 - 000C7FFF	32 KB	Video controller BIOS
000C8000 - 000CFFFF	32 KB	Reserved for the ROM of optional boards and as an alternative to the SCSI controller BIOS
000D0000 - 000D3FFF	16 KB	SCSI controller BIOS (can also be addressed at C8000 and D8000)
000D4000 - 000D7FFF	16 KB	Reserved for the ROM of optional boards
000D8000 - 000DBFFF	16 KB	Reserved for the ROM of optional boards and as an alternative to the SCSI controller BIOS
000DC000 - 000DFFFF	16 KB	Reserved for the ROM of optional boards
000E0000 - 000E7FFF	32 KB	Extended video BIOS
000E8000 - 000EFFFF	32 KB	Extended system BIOS
000F0000 - 000FFFFF	64 KB	System BIOS
00100000 - 0F9FFFFF	-	System RAM
00FA0000 - 00FFFFFF	384 KB	Reserved to address the memory on optional boards (non-cacheable)
01000000 - 0FFFFFFF		System RAM

DMA CHANNELS

CHANNEL	FUNCTION	CHANNEL	FUNCTION
0	Free	4	Reserved
1	Free	5	Free
2	Floppy disk transfers	6	Free
3	Free	7	Free

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