

M386/25

CHARACTERISTICS

| | |
|--------------------------------------|--|
| Microprocessor | Intel 80386 |
| Clock | 25 MHz |
| Architecture | XT/AT |
| Memory | 2 MB soldered on system board Possibility of installing on system board 256 Kb x 9 EXM 26-801 and 1M x 9 EXM 26-807 SIMM modules to expand memory to 10 MB Possibility of installing a 4 MB memory board expandable up to 8 MEM 26-806 . This board can be expanded using kit EXM 26-807 |
| Memory access | 80 ns |
| Coprocessor | 1) Intel 80387 2) Weitek 3167 |
| Floppy disk | 1.2 MB 5.25" Panasonic JU 475-3 1.2 MB 5.25" Panasonic JU 475-4 1.2 MB 5.25" Toshiba ND 08 DE 1.44 MB 3.5" Panasonic J-257 1.44 MB 3.5" Sony MP-F17 1.44 MB Mitsubishi MF355C |
| Hard disk | 40 MB Conner CP 3046 - AT Quantum LPS 52 - AT 100 MB Conner CP 30106 - AT Quantum LPS 105 - AT 200 MB Conner CP 3206 - AT |
| Streaming tape | 80 - 120 MB IRWIN 285 |
| AT Expansion slots | 5 Present 5 Available |
| Video adapter | Integrated on System Board - Super VGA 82C452. |
| Hard disk and floppy disk controller | Integrated on system board FDU controller: National DP8473 HDU controller: Logic ports and MSI Buffers implementing an AT interface for intelligent hard disks. |
| Cache controller | 82385 |
| Cache size | 32 KB |
| Mouse | PS/2- and AT-compatible |
| Keyboard | 101/102-key Compact ANK27-101 ANK27-102. |

SYSTEM BOARD

BA247

BA255

BA263

BIOS

ROM L PEQS - U65

ROM H PEQR - U66

Rev. 1.09

POWER SUPPLY

PS14 220 V

Level: 04 MI

PS14 115 V

Level: 04 MI

CONSOLE

IF 638

Level: 01 MI

SYSTEM BOARD

| | LEVEL | D.R.S. CODE | ROM BIOS | INTEGRATED CONTROLLERS / NOTES | |
|-------|------------|-------------|---|--|--|
| BA247 | Lev. Nasc. | 412907 | ROM L PEPY - U65 ROM H PEPX - U66 Rev. 1.04 | 82385 Cache controller 82C206 Non-volatile RAM NVRAM Real Time Clock RTC DMA controller Interrupt controller 8042 Keyboard and mouse controller 82C452 Super VGA video adapter 16C552 Serial port controller Parallel port controller DP8473 Floppy disk controller BCU Bus control unit DPU Data path unit MCU Memory control unit IOU Input output unit | |
| | Lev. 01 MI | | Rev. 1.04 | Solved bootstrap problems after shutdown procedure from UNIX SCO | |
| | Lev. 02 MI | | Rev. 1.04 | Solved: - EMI problems. Quality improvement. - Parity error problem caused randomly by WE* and CAS* signals. | |
| | Lev. 03 MI | | Rev. 1.04 | Solved read problems of Bit 4 port 61 (refresh signal) | |
| | Lev. 04 MI | | Rev. 1.04 | Solved serial port malfunctions | |
| | Lev. 05 MI | | Rev. 1.04 | Solved RTC and FDC oscillator problems | |
| | Lev. 06 MI | | Rev. 1.04 | Solved floppy disk bootstrap lock problem caused by FDC 8473 24 MHz oscillator circuit triggering failure | |
| | Lev. 07 | | ROM L PEQS - U65 ROM H PEQR - U66 Rev. 1.08 | New BIOS Changes for field only | |
| | Lev. 08 | | Rev. 1.08 | Replaced video controller 82C452 with video controller 82C452A. This change is only to be executed in case of field failure. | |
| | Lev. 09 | | ROM L PEQM - U65 ROM H PEQN - U66 Rev. 1.09 | Solved compatibility problems with NEC Multisync video and HGC board (high resolution video controller) | |
| | Lev. 10 | | Rev. 1.09 | WD16C551 Step C (LB9U) component is replaced with WD16C551 Step D (LB9V) component. Changes for field only | |

| | LEVEL | D.R.S. CODE | ROM BIOS | INTEGRATED CONTROLLERS / NOTES |
|-------|--------------------------|-------------|---|--|
| BA255 | Lev. Nasc. Lev. 01 MI | | Rev. 1.04 Rev. 1.04 | Solved floppy disk bootstrap lock problem caused by FDC 8473 24 MHz oscillator circuit triggering failure |
| | Lev. 02 MI | | ROM L PEQS - U65 ROM H PEQR - U66 Rev. 1.08 | New BIOS for video performance improvement, introduced Quantum hard disk and removed password bugs. |
| | Lev. 03 MI | | Rev. 1.08 | Replaced video controller 82C452 with video controller 82C452A. This modification to be made only in case of field failure |
| | Lev. 04 MI | | ROM L PEQM - U65 ROM H PEQN - U66 Rev. 1.09 | Solved compatibility problems with NEC Multisync video and MATROX board (high resolution video controller) |
| | Lev. 05 MI | | Rev. 1.09 | WD16C551 Step C component is replaced with WD16C551 Step D component. Field only modification. |
| BA263 | Lev. Nasc. | | Rev. 1.08 | New P.C.B. for cutting and trimming recovery |
| | Lev. 01 MI | | Rev. 1.08 | Replaced video controller 82C452 with video controller 82C452A. |
| | Lev. 02 MI | | ROM L PEQM - U65 ROM H PEQN - U66 Rev. 1.09 | Solved compatibility problems with NEC Multisync video and MATROX board (high resolution video controller) |
| | Lev. 03 MI | | Rev. 1.09 | Introduced 16C551 component mask D to replace 16C551 component mask C, no longer produced |
| | Lev. 04 MI | | Rev. 1.09 | 80386DX-25 step D0 CPU replaced with 80386DX-25 step E CPU |

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USER DISKETTE/SYSTEM TEST/DRIVER

| LEVEL | COMPATIBILITY |
|--|--|
| User Diskette Ver. 1.01 User Diskette Ver. 1.02 upd 1 | BIOS 1.04 BIOS 1.04 |
| EVD driver Ver. 4.0 Rev. 1.3 | Added a Windows driver |
| EVD Ver. 5.0 | Added DAM mode support (1024 x 768 x 256) for Windows 3.0, AutoCAD 386 Ver. 10.0 and AutoCAD 386 Ver. 11.0 |
| System Test 1.05 System Test 1.06 | BIOS 1.08 BIOS 1.08. New System Test version that allows tests to be executed both in stand alone mode and under manager file control |

CONSOLE

| | LEVEL | D.R.S. CODE | COMPATIBILITY |
|-------|------------|-------------|--|
| IF638 | Nasc. | 497314 P | Compatible with BIOS 1.04 |
| | Lev. 01 MI | | Changes that solve the loudspeaker sound problem still audible with volume control potentiometer at MIN position |

PAL

| CODE | FUN. | FUNCTION | NAME | LOC. | VIRGIN FUN. |
|---------|------|------------|----------|------|-------------|
| 977000D | GL9A | DMA Decode | PAL16L8D | U70 | PLCC20 |
| 977013K | GL9Z | MCU PATCH | PAL20L8 | U125 | DIL24 |

COMPATIBILITY

| DEVICE BOARD | COMPATIBILITY |
|-----------------------------------|---|
| Serial port component WD16C552 | This component can be replaced by WD16C551 component which is pin to pin compatible |
| BIOS 1.08 | Video performance improvement, introduced Quantum hard disk and removed password bags |
| EVD 4.0 Rel. 1.3 | New Windows driver added |
| 82C206 component on BA263 | TEXAS component 82C206 is available in alternative to the C&T one in use. They are compatible and do not change the level of the system board on which they are used. |

POWER SUPPLY UNIT

| POWER SUPPLY | LEVEL | NOTES |
|-----------------|---------|--|
| PS14 Ver. 220 V | Nasc. | Improved ventilation and electrical noise susceptibility. |
| | Lev. 01 | |
| | Lev. 02 | |
| | Lev. 03 | |
| | Lev. 04 | |
| | Lev. 05 | |
| PS14 Ver. 115 V | Lev. 06 | Renewed power supply drive module. |
| | Nasc. | This version has undergone the same modifications as the 220 V version (up to level 04). |
| | Lev. 01 | |
| | Lev. 02 | |
| | Lev. 03 | |
| | Lev. 04 | |

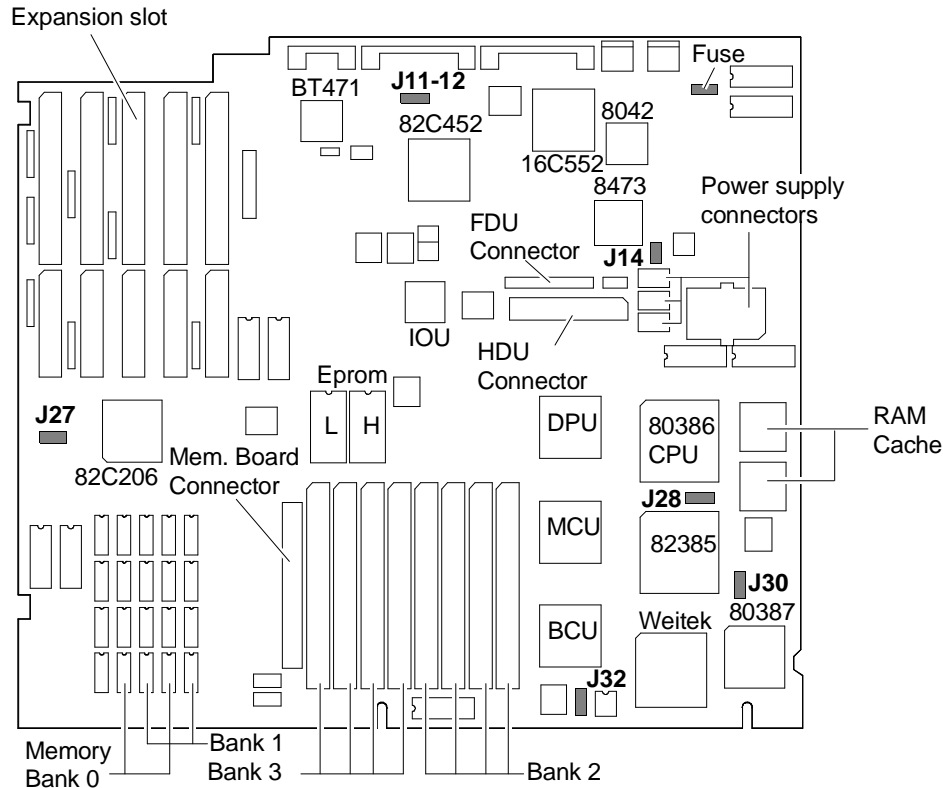
SOFTWARE COMPATIBILITY

| OPERATING SYSTEMS | NOTES |
|---|--|
| IBM DISK Operating System, Ver. 3.30 IBM DISK Operating System, Ver. 4.01 IBM Operating System/2, Ver. 1.10 and 1.20 IBM Operating System/2 Extended Edition, Ver. 1.10 INTERACTIVE 386/ix, Ver. 2.02 Olivetti's Microsoft Disk Operating System, Ver. 3.30a Olivetti's Microsoft Disk Operating System, Ver. 4.01 Olivetti's Microsoft OS/2, Ver. 1.10 and 1.20 SCO UNIX System V/386, Rev. 3.2 SCO XENIX 386, Rev. 2.3 | During installation on hard disk, a formatted DSDD disk is required. PS/2 mouse not recognised PS/2 mouse not recognised |

HARDWARE COMPATIBILITY

| MODEMS | I/O INTERFACE PRODUCTS |
|---|--|
| Hayes Smartmodem 1200B Hayes Smartmodem 2400B Telenetics Expressdata 24i (24i-12i) Ven-tel PC Modem Half-Card (PCM-XT) Hayes Smartmodem 1200 | FUTURE DOMAIN HOST ADAPTER (TMC-830) IBM Asynchronous COM. CARD (1502074) IBM PRINTER ADAPTER (1505200) IBM SERIAL/PARALLEL |
| MULTIPOINT | MOUSE |
| Anvil Stallion Intelligent 16 Port Controller Chase MSC Connect/AT8 Intelligent 8 Port Computone System Intelliport 16 Port AT16 Consensus Powerports 8 Port Intelligent Ctr. Digiboard Digichannel COM/xi Intelligent 8 Port Specialix Si Intelligent I/O Controller | IBM PS/2 Mouse (6450350) Logitech Bus Mouse (PF-3F) Microsoft Bus Mouse, Rev. C Microsoft Serial-PS2 Mouse Microsoft Serial Mouse MSC PC Mouse PS/2 Olivetti Bus Mouse (GRD 25-019) Olivetti New Advanced Mouse (GRD 25-025) |
| GRAPHICS PRODUCTS | NETWORK & LAN PRODUCTS |
| AST RESEARCH AST - 3G PLUS AST RESEARCH AST - VGA PLUS ATI EGA WONDER HERCULES GRAPHICS CARD (GB102) HERCULES INCOLOR CARD (GB222) IBM MONO Display/Printer Adapter (1504900) MATROX PG - 1281 ORCHID PRODESIGNER VGA PLUS PARADISE EGA 480 PARADISE VGA PRO CARD QUADRAM QUAD EGA PLUS (QC 8601) TECMAR VGA AD VIDEO - 7 VEGA DELUXE | CARD (6450215) AT&T Starlan Network IBM OS/2 Lan Server/Requester IBM PC Network IBM Token Ring Network MADGE Token-Ring Network MS OS/2 Lan Manager Novell Advanced network Ver.2.15 Novell Netware 386 with ISA Adapter PROTEON Token Ring Network 3COM 3 + Network /Ethernet) 3COM 3 + Open Lan Manager IONET Network |
| DISPLAY UNITS | OTHER PRODUCTS |
| JVC QUAD-SYNC Color (GD-H6116VFW) NEC Multisync Monitor (APC-H431) OLIVETTI HIRES Color (DSM 26-115) PRINCETON RGB Monitor (HX-12) ZENITH RGB/COMPOSITE Monitor (ZVM-135) | OLIVETTI OD-810 WORM (WRM 25-810) PLUS Developement 20MB Hardcard SOFTWARE SECURITY Parallel Port Block WELCH-ALLYN Barcode Reader (HBD-100, R. A) |

SYSTEM BOARD COMPONENTS, JUMPERS



BHC8A

| JUMPER | POSITION | FUNCTION |
|--------|-------------|--|
| J30 | OUT * IN | 25 MHz 80387 math coprocessor operation. 80387 math coprocessor enabled to tune into clock of optional oscillator to install in U124. |
| J32 | OUT * IN | BIOS EPROM enabled. BIOS EPROM disabled. |
| J27 | OUT * IN | Normal operation. Erases CMOS RAM (before installing this jumper, the battery must be disconnected). |
| J11-12 | OUT * IN | Normal operation. Indicates the RS232 threshold level. |
| J14 | IN | This jumper must always be inserted. |
| J28 | OUT * IN | Normal operation. To be able to use a different model of cache controller 82385. |

FUSE

2 A, 5 V keyboard and mouse fuse.

I/O ADDRESS MAP

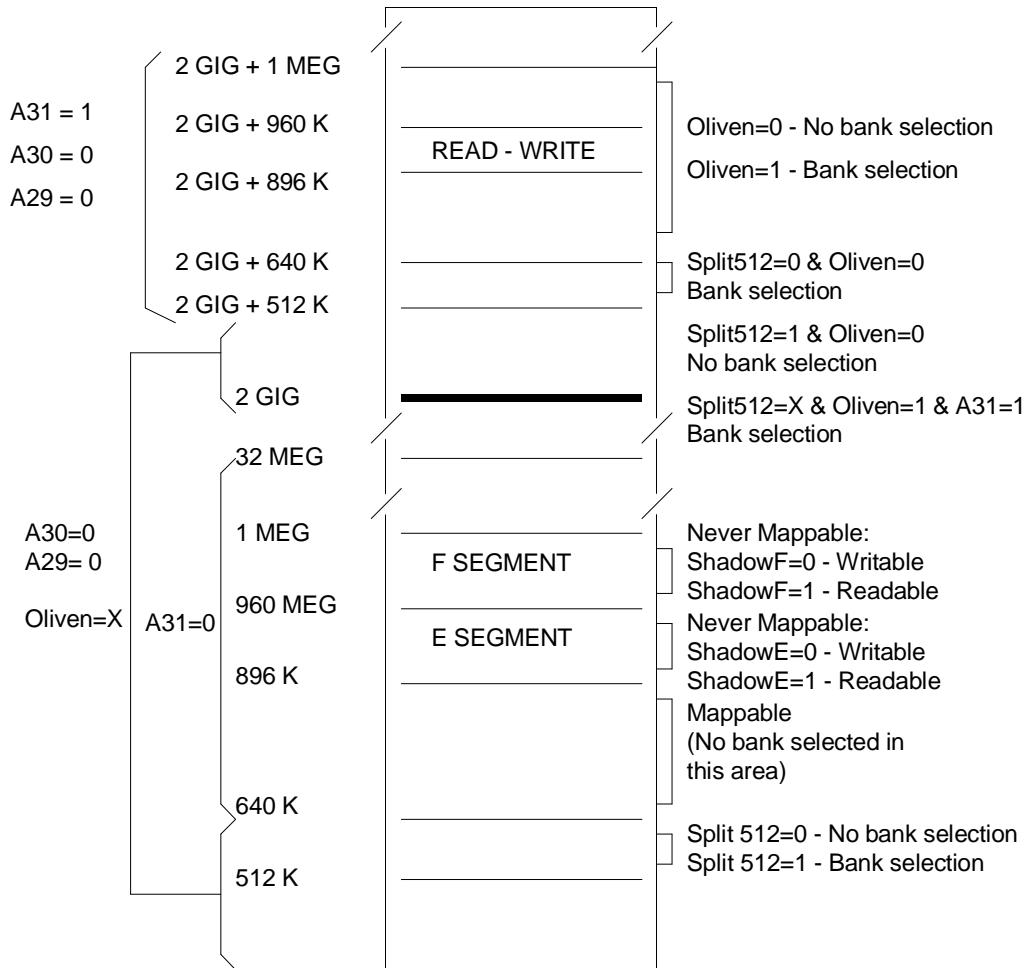
| ADDRESS | FUNCTION | ADDRESS | FUNCTION |
|------------|-------------------------------------|---------------|------------------------------|
| 000-01F h | DMA Controller (all channels) | 2F8-2FF h | Serial Port COM2 (alternate) |
| 020-021F h | Interrupt controller 1 | 378-37B h | Parallel port 1 |
| 040-043 h | Timer | 3B4-3B5 h | Video adapter |
| 60 h | Data Keyboard controller | 3BA h | Video adapter |
| 61 h | System Control Port B | 3C0-3CF h | Video adapter |
| 64 h | Commands Keyboard controller | 3D4-3D5 h | Video adapter |
| 70 - 71 h | Real time clock, NMI Mask, CMOS RAM | 3DA h | Video adapter |
| 080-08F h | DMA page registers | 3F0-3F7 h | Floppy disk controller |
| 0A0-0A1 h | Interrupt controller 2 | 3F8-3FF h | Serial port COM1 |
| 0C0-0DF h | DMA channels 4-7 | 46E8 h | VGA Control Registers |
| 1F0-1F8 h | Hard disk drive | 8000F0-8000FF | Coprocessor |
| 278-27B h | Parallel port 2 (alternate) | - | |

INTERRUPT LEVELS

| LEVEL | NAME | CONTROLLER | FUNCTION |
|--------|-------|------------|---|
| 1 | IRQ0 | 1 | Timer OUT channel 0 |
| 2 | IRQ1 | 1 | Keyboard |
| 3 - 10 | IRQ2 | 1 | Interrupt to Controller 1 from Controller 2 |
| 3 | IRQ8 | 2 | Real time clock |
| 4 | IRQ9 | 2 | Available |
| 5 | IRQ10 | 2 | Available |
| 6 | IRQ11 | 2 | Available |
| 7 | IRQ12 | 2 | Available |
| 8 | IRQ13 | 2 | Coprocessor |
| 9 | IRQ14 | 2 | Hard Disk Controller |
| 10 | IRQ15 | 2 | Available |
| 11 | IRQ3 | 1 | Serial port 2 |
| 12 | IRQ4 | 1 | Serial port 1 |
| 13 | IRQ5 | 1 | Parallel port 2 |
| 14 | IRQ6 | 1 | Floppy disk controller |
| 15 | IRQ7 | 1 | Parallel port 1 |

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SYSTEM MEMORY MAP



COMPATIBLE HARD DISKS

| TYPE | MODEL | CAPACITY | CYL | T | WPC | LZ | SET |
|------|-----------------------|----------|------|----|-----|------|-----|
| 1 | NEC D5146H half size | 40 MB | 615 | 8 | 128 | 664 | 17 |
| 2 | Miniscribe M8425 3,5" | 20 MB | 612 | 4 | 128 | 663 | 17 |
| 3 | Seagate ST277R | 62 MB | 820 | 6 | -1 | 819 | 26 |
| 4 | NEC D5147H | 62 MB | 615 | 8 | 384 | 664 | 26 |
| 5 | NEC D5652 ES | 136 MB | 820 | 10 | -1 | 822 | 34 |
| 6 | Micropolis 1355 ESDI | 135 MB | 1021 | 8 | -1 | 1023 | 34 |
| 7 | Micropolis 1353 ESDI | 67 MB | 1021 | 4 | -1 | 1023 | 34 |
| 8 | NEC D5452 | 68 MB | 823 | 10 | 512 | 822 | 17 |
| 9 | FUJITSU M2227D | 40 MB | 615 | 8 | 512 | 614 | 17 |
| 10 | FUJITSU M2227D RLL | 60 MB | 615 | 8 | 512 | 614 | 26 |
| 11 | ESDI | 304 MB | 814 | 15 | -1 | 1 | 51 |
| 12 | ESDI | 81 MB | 977 | 5 | -1 | 1 | 34 |
| 13 | - | 136 MB | 820 | 10 | -1 | 1 | 34 |
| 14 | CONNER CP3206 | 200 MB | 683 | 16 | -1 | 682 | 38 |
| 15 | RESERVED | | | | | | |
| 16 | CONNER CP3142 | 40 MB | 635 | 4 | -1 | 639 | 33 |
| 17 | CONNER CP346 | 40 MB | 805 | 4 | -1 | 804 | 26 |
| 18 | CONNER CP3106 | 100 MB | 776 | 8 | -1 | 775 | 33 |
| 19 | CONNER CP3206 | 200 MB | 683 | 16 | -1 | 682 | 38 |
| 20 | Quantum LPS105 AT | 100 MB | 776 | 8 | -1 | 775 | 33 |
| 21 | Quantum PD210 AT | 200 MB | 873 | 13 | -1 | 872 | 36 |

Where: CYL: No. of disk cylinders

T: No. of disk heads

WPC: Precompensation cylinder number

LZ: Head parking cylinder number

SET: No. of disk sectors