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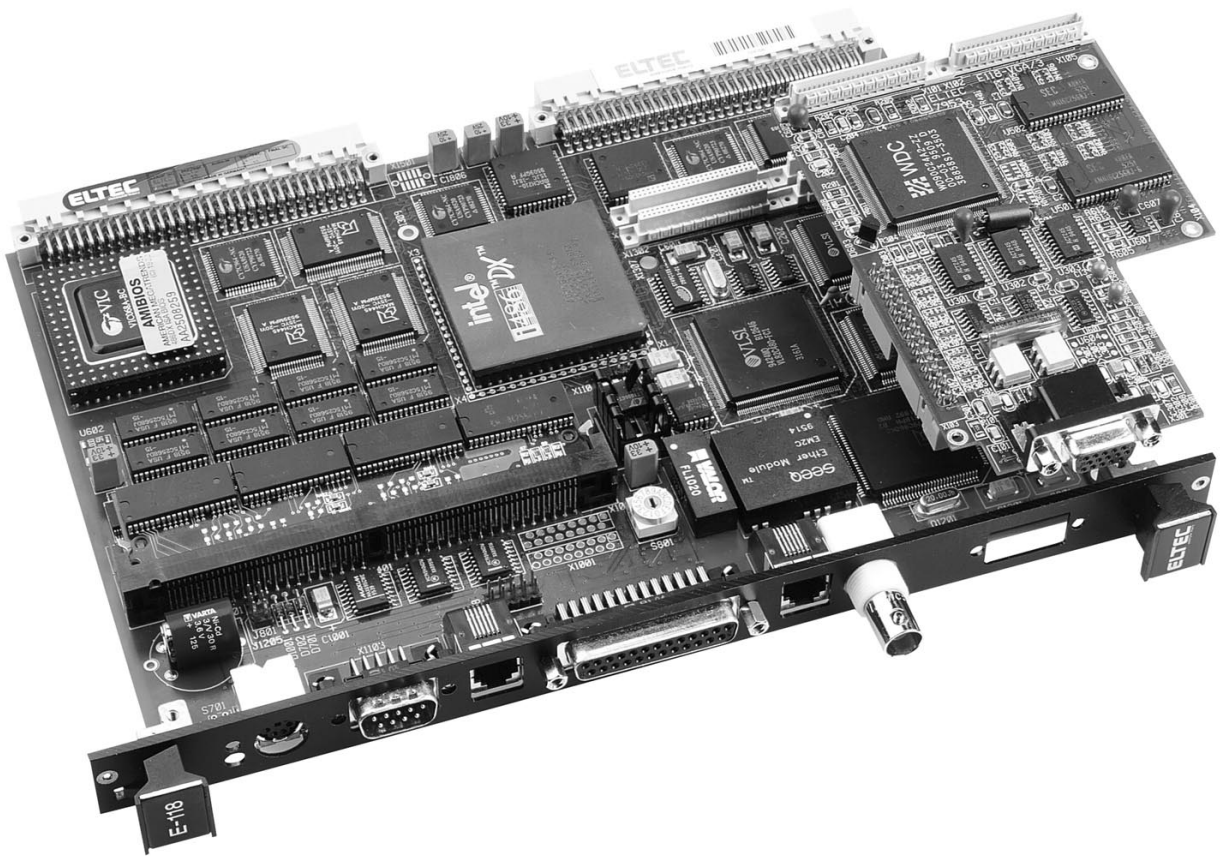
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## Main Features

- Single slot EUROCOM board, software compatible to IBM's AT standard
- Intel486 DX CPU running at 33, 66 or 100 MHz
- Pentium Overdrive chip may be used (Pentium with '486 Interface).
- 4 to 32 MB multiported DRAM, (CPU, VMEbus, Network)
- 256 kByte second level cache
- Flash EPROM for BIOS including network boot
- Windows accelerated, high resolution, local bus based SuperVGA-Graphics
- up to 1024 x 768 x 256 non-interlaced
- directly connectable to CRT and flat panels.
- On-board Ethernet controller
- All standard AT peripherals on board
- SCSI/SCSI-2 based 8 bit harddisk interface
- onboard 16 kByte Parameter SRAM with battery backup
- Complete VMEbus interface based on the VIC chip.
- High-speed 32 bit VMEbus interface connected to the local i486 bus.
- Two VMEbus master address windows; 512 MB extended window and 64 kB real (DOS) window
- Read modify write cycles can be used in master and slave mode.
- Software-selectable hardware byte-swapping.
- full VMEbus interrupt support
- Multiple operating systems available

## General Description

EUROCOM 118 is a powerful and flexible Intel486DX based single board computer with VMEbus interface and basic I/O functions on board.

An easy-to-use coupling software package to connect the EUROCOM 118 under DOS and Windows with 68k-based boards under OS 9 is available to get the best of both worlds together.

## Technical Details

### CPU

The CPU is an Intel 486DX microprocessor running at 33 to 100 MHz. This processor offers high performance for DOS, Windows, Unix and Lynx applications. It is 100 % binary compatible with the Intel386 CPU. A RISC integer core, floating point hardware, a memory management unit and an 8 or 16 kB cache memory is integrated in the 486 chip. A high system throughput is guaranteed by 106 MB/s burst bus at 33 MHz.

Intel's Pentium Overdrive Chip (Pentium with '486 Interface) may be used also.

### Cache

For highest system performance a 256 KB second level cache with two-bank interleave is provided. The cache controller is designed with a look-aside, write-back architecture for increased write performance as well as read performance.

### DRAM

The multi-ported DRAM is accessible from the CPU, the VMEbus slave interface and from local devices like DMA controller and LAN.

The DRAM is standard located on a SIMM. This gives the user a flexible and cost-effective memory solution.

### Flash EPROM

On-board is an erasable and programmable basic Flash EPROM. It contains the AMI BIOS, the VGA BIOS, the Net-Boot BIOS, and basic initialisation and configuration routines for the VMEbus interface.

### Parameter SRAM

An on-board 16 kByte battery backedup SRAM is able to process parameters even in power fail situations.

### Network Interface

The network interface is realised with an AM79C960 PCnet-ISA single chip Ethernet controller with 10Base2 (Cheapernet) or 10BaseT (twisted-pair) networks.

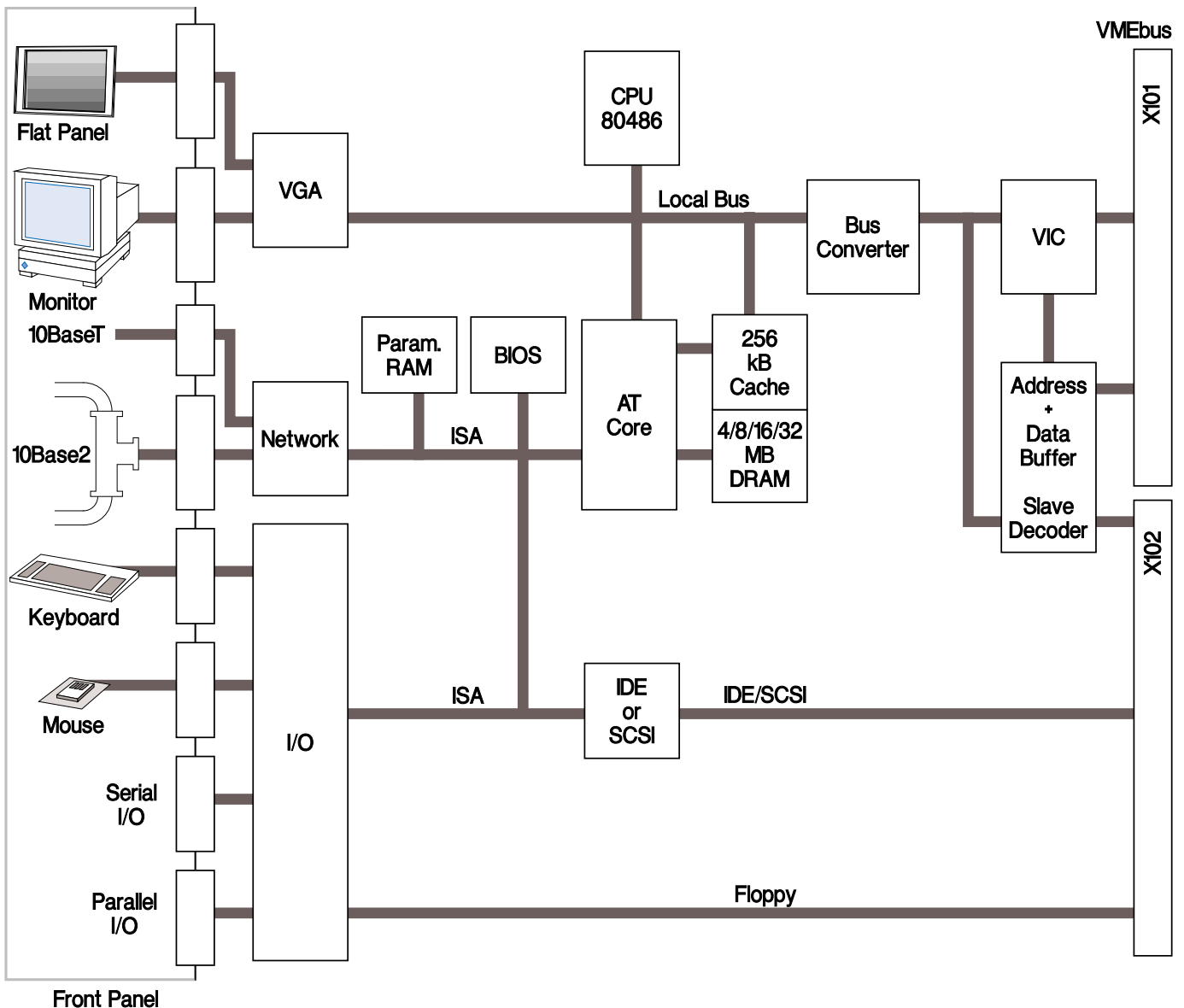
The individual 136 Byte transmit and 128 Byte receive FIFO optimise system overhead, providing sufficient latency during packet transmission and reception, and minimise intervention during normal network error recovery.

The network interface of the EUROCOM 118 is also compatible with the Novell NE2100 and NE1500T Ethernet adapters.

### Graphics

The EUROCOM 118 uses the WD90C24 SuperVGA controller chip. This device is connected to the local i486 bus for high speed data transfer to the 1 MB VGA memory. CRT and all current flat panel technologies like STN, DSTN, TFT, EL Plasma and LCD are supported.

A special power control circuit is implemented to protect flat panel displays.



### Local I/O

EUROCOM 118 supports all standard AT peripherals. All Front Panel Connectors are filtered via special varistors and other components to reduce the electromagnetic emission and absorption. So the Board has a high protection against EMC. This facilitates the user to build equipment that fulfills the CE requirements. A keyboard can be connected to a PS/2 compatible mini DIN connector.

Two serial I/O lines are compatible to COM1 and COM2. COM1 is connected to a standard 9 pin Sub D connector. This serial I/O line can be configured to support either RS 232, RS 422 or RS 485. COM2 is connected to a 6 pin RJ11 jack and is intended for connection of a serial RS 232 mouse.

The parallel printer port (LPT1) is connected to a 25 pin Sub D connector.

The floppy disk, IDE interface and the loudspeaker signals are connected to the user-defined pins on row A and C of the P2 VMEbus connector.

SCSI Interface with NCR 53C406A may be used instead of IDE based interfaces.

The on-board real time clock and the CMOS RAM are battery backed.

### VMEbus Interface

The VMEbus interface is designed around the powerful, industry standard VMEbus Interface Controller (VIC68) gate array.

All functions of the VMEbus interface are fully software programmable to allow a maximum flexibility in VME-bus system design.

The EUROCOM 118 master/slave VMEbus interface allows shared memory accesses between the local CPU and external VMEbus devices. The external base address is software adjustable in standard and extended VMEbus address space. The bus interface supports unaligned data transfer modes (8, 16 and 32 bit) and read-modify-write operations.

Two windows for VMEbus master accesses give optimised performance for standard DOS applications using the real address mode and for Windows, Unix and Lynx applications using the extended addressing mode.

To handle the different byte ordering schemes of the CPU and the VMEbus a byte swapping hardware can be enabled by software.

The EUROCOM 118 can generate and receive interrupts on all seven VMEbus IRQ lines.

### Software Details

The basic firmware is stored in an on board 256 KB Flash EPROM (FEPRM) containing the following modules:

- Standard PC BIOS (AMI) with basic functions, e.g. for keyboard, timer, disk/harddisk controller, serial and parallel interface, basics for video display, power on self test and setup.
- VGA BIOS with standard IBM VGA compatible BIOS calls, extended and VESA BIOS calls, containing functions for e.g. setting video modes, character and pixel handling, write read palette registers and also power on self test.
- Net Boot software (Boot PROM) and Internet Address.
- Software for the VMEbus interface with self test, setup and initialisation (standard and user-defined setup) including VIC programming (similar to RMON), setting the real/protected mode window for VMEbus access, and interrupt handling.

The EUROCOM 118 is a full IBM compatible single board PC, so all PC operating systems (DOS/Windows, OS/2, LynxOS, SCO Unix, Windows NT, etc.) and also all standard PC software (e.g., Microsoft/Borland C, Windows applications, etc.) is usable.

As a multitasking real time system, OS-9 meets the requirements for complex control tasks. On the other hand, the Intel world opens the door to a large number of efficient and low cost software products for software development, evaluation and display of data.

To get the best of both worlds together, a powerful and easy to use coupling software package is available to connect the EUROCOM 118 under DOS and Windows with 680x0 boards (68k boards) under OS-9. This software package consists of two main parts, one on the OS-9 side and one on the DOS/Windows side. The OS-9 software provides access to the PC re-

sources, such as keyboard, monitor, graphics, printers, serial interface, disk drives and hard disks.

There is no terminal necessary for the 68k board. Under DOS the terminal is switched from DOS to OS-9 by a hotkey. Under Windows up to 15 OS-9 windows with a VT100 emulation running and a OS 9 shell can be started.

The 68k board can use the disk drive/harddisk in several ways:

On the harddisk the OS-9 system may have an own partition, but several OS-9 files can also be contained in one normal PC file which looks to OS-9 like a OS-9 file system. Original OS-9 disks can be read/written/formatted, also with universal format. These mechanisms are based on the OS-9 manager 'rbf'. The most connective mechanism of mass storage management is based on the separate OS-9 file manager 'dosman', which allows to access DOS file structures under OS-9. Not only the logical PC drives A:, B:, C:, etc. can be reached, but also virtual drives like the file server of a PC network and RAM disks. So DOS files can be read and written from both sides (OS 9 and DOS) allowing, for instance, software development under DOS/Windows, switching by hotkey or activating another window to OS-9, compiling there and switching back to DOS/Windows.

## Tables

### Connectors assignments

#### 25-pin min-D connector (parallel I/O - LPT1)

| Pin | Signal | Description  |
|-----|--------|--------------|
| 1   | /STB   | Strobe       |
| 2   | PD0    | Data bit 0   |
| 3   | PD1    | Data bit 1   |
| 4   | PD2    | Data bit 2   |
| 5   | PD3    | Data bit 3   |
| 6   | PD4    | Data bit 4   |
| 7   | PD5    | Data bit 5   |
| 8   | PD6    | Data bit 6   |
| 9   | PD7    | Data bit 7   |
| 10  | /ACK   | Acknowledge  |
| 11  | BUSY   | Busy         |
| 12  | PE     | Page End     |
| 13  | SLCT   | Select       |
| 14  | /AFD   | Auto Feed    |
| 15  | /ERR   | Error        |
| 16  | /INIT  | Initial      |
| 17  | SLIN   | Select Input |
| 18  |        |              |
| -   | GND    | Ground       |
| 25  |        |              |

### 6-pin miniature circular (mini-DIN) connector (Keyboard)

| Pin | Signal | Description    |
|-----|--------|----------------|
| 1   | KBDATA | Keyboard data  |
| 2   | nc     | not connected  |
| 3   | GND    | Ground         |
| 4   | +5V    | Supply voltage |
| 5   | KBCLK  | Keyboard clock |
| 6   | nc     | not connected  |

### 9-pin min-D connector (Serial I/O - COM1)

| Pin | Signal | SILC 200            | SILC 300 | SILC 400 |
|-----|--------|---------------------|----------|----------|
| 1   | DCD    | Data Carrier Detect | I(B)     | nc       |
| 2   | RxD    | Receive Data        | R(A)     | nc       |
| 3   | TxD    | Transmit Data       | T(A)     | A        |
| 4   | DTR    | Data Terminal Ready | C(B)     | nc       |
| 5   | GND    | Ground              | T(B)     | nc       |
| 6   | DSR    | Data Set Ready      | nc       | nc       |
| 7   | RTS    | Request to Send     | C(A)     | nc       |
| 8   | CTS    | Clear to Send       | I(A)     | B        |
| 9   | RI     | Ring Indicator      | R(B)     | nc       |

### 6-pin Mouse-Port (Serial I/O - COM2)

| Pin | Signal | Description     |
|-----|--------|-----------------|
| 1   | RTS    | Request To Send |
| 2   | TxD    | Transmit Data   |
| 3   | GND    | Ground          |
| 4   | GND    | Ground          |
| 5   | RxD    | Receive Data    |
| 6   | CTS    | Clear To Send   |

### 96-pin P2 connector

| Pin | Row A    | Row B    | Row C   |
|-----|----------|----------|---------|
| 1   | /RST_IDE | + 5 V    | GND     |
| 2   | DL7      | GND      | DL8     |
| 3   | DL6      | Reserved | DL9     |
| 4   | DL5      | A24      | DL10    |
| 5   | DL4      | A25      | DL11    |
| 6   | DL3      | A26      | DL12    |
| 7   | DL2      | A27      | DL13    |
| 8   | DL1      | A28      | DL14    |
| 9   | DL0      | A29      | DL15    |
| 10  | GND      | A30      | NC      |
| 11  | NC       | A31      | GND     |
| 12  | /IOWL    | GND      | GND     |
| 13  | /IORL    | + 5 V    | GND     |
| 14  | NC       | D16      | BALEL   |
| 15  | NC       | D17      | GND     |
| 16  | IRQ14    | D18      | /IOCS16 |
| 17  | AL1      | D19      | NC      |
| 18  | AL2      | D20      | AL2     |
| 19  | /HCS0    | D21      | /HCS1   |
| 20  | /ACT     | D22      | GND     |
| 21  | NC       | D23      | SOUND   |
| 22  | NC       | GND      | NC      |
| 23  | NC       | D24      | NC      |
| 24  | NC       | D25      | NC      |
| 25  | DENSEL   | D26      | DRATE0  |
| 26  | /INDEX   | D27      | /MTR0   |
| 27  | /DR1     | D28      | /DR0    |
| 28  | /MTR1    | D29      | /DIR    |
| 29  | /STEP    | D30      | /WDATA  |
| 30  | /WGATE   | D31      | /TRK0   |
| 31  | /WP      | GND      | /RDATA  |
| 32  | /HDSSEL  | + 5 V    | /DSKCHG |

### 34-pin Floppy Interface connector

| Pin | Signal   | Description    |
|-----|----------|----------------|
| 2   | /RWC     |                |
| 4   | /HDL     | Head load      |
| 6   | nc       | Not connected  |
| 8   | /IDX     | Index          |
| 10  | /MON 1   | Motor on 1     |
| 12  | /DS 2    | Drive select 2 |
| 14  | /DS 1    | Drive select 1 |
| 16  | /MON 2   | Motor on 2     |
| 18  | /DIR     | Direction      |
| 20  | /STEP    | Step           |
| 22  | /WD      | Write data     |
| 24  | /WE      | Write enable   |
| 26  | /TR 0    | Track 0        |
| 28  | /WP      | Write protect  |
| 30  | /RDD     | Read data      |
| 32  | /HS      | Head select    |
| 34  | /DCHANGE | Disk change    |

All odd pin connected to ground!

### 4-pin Loudspeaker connector

| Pin | Signal | Description    |
|-----|--------|----------------|
| 1   | +5V    | Supply voltage |
| 2   | GND    | Ground         |
| 3   | GND    | Ground         |
| 4   | SOUND  | Sound          |

### 15-pin VGA connector

| Pin | Signal | Description                      |
|-----|--------|----------------------------------|
| 1   | RED    | Red (analog)                     |
| 2   | GRN    | Green (analog)                   |
| 3   | BLU    | Blue (analog)                    |
| 4   | n.u.   | not used                         |
| 5   | GND    | Ground                           |
| 6   | GND    | Ground                           |
| 7   | GND    | Ground                           |
| 8   | GND    | Ground                           |
| 9   | GND    | Ground                           |
| 10  | GND    | Ground                           |
| 11  | n.u.   |                                  |
| 12  | n.u.   |                                  |
| 13  | HSYNCH | Horizontal Synchronization (TTL) |
| 14  | VSYNCH | Vertical Synchronization (TTL)   |
| 15  | n.u.   |                                  |

### 26-pin VGA Flat Panel connector

| Pin | Signal    | Description   |
|-----|-----------|---|
| 1   | GND       | Ground  |
| 2   | VO        |   |
| 3   | PNVCC     | Supply voltage (+3.3 V or +5 V/max. 0.1 A)              |
| 4   | TPVCC_OUT | TFT panel supply voltage out (-48 V..+48 V/ max. 0.3 A) |
| 5   | TPVCC_IN  | TFT panel supply voltage in (-48 V..+48 V)              |
| 6   | TPD(0)    | Data line   |
| 7   | GND       | Ground  |
| 8   | TPD(2)    | Data line   |
| 9   | TPD(1)    | Data line   |
| 10  | TPD(4)    | Data line   |
| 11  | TPD(3)    | Data line   |
| 12  | TPD(6)    | Data line   |
| 13  | TPD(5)    | Data line   |
| 14  | GND       | Ground  |
| 15  | TPD(7)    | Data line   |
| 16  | TPD(13)   | Data line   |
| 17  | TPD(12)   | Data line   |
| 18  | TPD(15)   | Data line   |
| 19  | TPD(14)   | Data line   |
| 20  | +5V       | Supply voltage +5 V                                     |
| 21  | GND       | Ground  |
| 22  | TPUCLK    | Upper shift clock                                       |
| 23  | TPFP      | Frame pulse   |
| 24  | TPLP      | Latch pulse   |
| 25  | TPEN      | Panel enable  |
| 26  | TPLCLK    | Lower shift clock                                       |







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