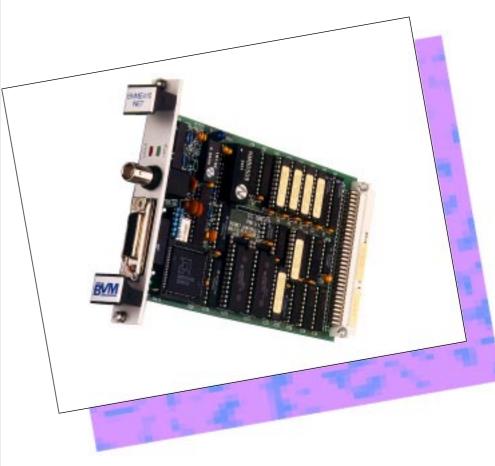# BVME410

Ethernet Controller

- Ethernet Version 2.0 IEEE802.3 compatible

- AMD7990/7992/7996 `LANCE' chip set

- Standard AUI drop cable connector for 10base5 thick wire networks

- BNC Coax connector for Thin wire / CheaperNet 10base2 applications

- Optimised VMEbus access

- Fast (150ns) 16K/64/256Kbytes SRAM shared memory data buffer

- VMEbus Interrupter

- Programmable interrupt ID

- Address pipelining support

- SYSFAIL generation on un-initialised status

- RED/GREEN status LEDs

- Supports RMW cycles

- VMEbus A24:D16 Slave

- Single Eurocard form factor with 3U or 6U front panel

- Fully compatible with VMEbus Rev C.1

- Extensive OS-9 support including:

    ISP - TCP/IP
    OS-9 NFM
    OS-9 NFS
    FieldLink

- PC connection using PCLink software

The BVME410 provides an extremely flexible interface to Ethernet networks. Its built in 'Cheapernet' (10base2) connection via the front panel coax connector makes for a particularly cost effective network connection. Alternatively the front panel AUI connector allows attachment via the conventional drop cable to 'thick wire' (10base5) networks.

The local shared memory architecture provides an uncluttered interface to the VMEbus that makes integration within the system very straightforward. At the same time the simplicity of the interface supports very impressive data transfer performance, outperforming many intelligent controllers but without the system complexity.

Extensive software support is provided for the OS-9 Operating System including NFM, TCP/IP and NFS. BVM's PCLink provides a windowing package into an MSDOS environment.

BVM

VMEbus Operation

The status and interrupt vector registers are accessible in the short I/O address space. The static RAM is accessible in the standard address space.

The on-board 16/64/256Kbytes (options) of static memory are managed by the AM7990 DMA controller to provide a transparent input/output buffer.

Following a reset, on-board sysfail generation turns the status LED to RED. It is cleared by setting the RAM base address register. The control registers are:

    Ethernet (AM7990) registers
    RAM base address register
    Interrupt ID register

Interrupts

The BVME410 produces an interrupt on selectable on-board events corresponding to received data, transmitted data or error conditions.

Ethernet Operation

The AM7990 LANCE (Local Area Network Controller for Ethernet) provides a 48 byte FIFO data buffer and DMA controller. It controls the AM7992 SIA (Serial Interface Adapter).

The AM7992 SIA provides Manchester decoding/encoding and collision detection. It provides serial data to the AUI 'D' Type connector for systems requiring an off-board Ethernet transceiver and drop cable (10base5).

The AM7996 transceiver provides buffers, filters and collision detection to directly drive the Ethernet co-axial cable (thin wire Ethernet or CheaperNet 10base2). This allows low cost 50ohm coax cabling to be used directly between systems. Isolation transformers provide isolation of the Ethernet driver from the control logic.

Ethernet Node Address

The unique 48 bit ethernet node address is held in a serial access 256 bit electrically erasable PROM. This is programmed in the factory to a unique number, the top 18 bits of which identify BVM as the manufacturer.

Data Transfers

The AM7990 LANCE transfers data to and from the dual port SRAM buffer in response to received/transmitted ethernet data. The dual port RAM is directly accessible by the VMEbus. The buffer size can be selected up to 256Kbytes depending upon system loading and the protocol used.

Software Support

OS-9 Network File Manager (NFM)

Provides interconnection between OS-9 systems.

OS-9 Internet Support Package (ISP)

Drivers and utilities are available to allow full networking capabilities with TCP/IP. This allows networking with Unix systems and workstations as well as a number of mainframe systems. The functions available include:-

File Transfer: Files can be moved between network nodes.

Virtual Terminal: A node may be become the terminal for a remote host.

Datagram: A user programme running on a host can send/receive information to/from a user programme without establishing virtual connection.

OS-9 Network File System (NFS)

Provides a unified file structure across a wide range of different types of systems including Unix and MSDOS. NFS requires ISP on the OS-9 system.

PCLink

PCLink is a comprehensive networking package providing a true network between any combination of OS-9, MSDOS or Windows 3.1 systems. It provides full sharing of resources such as printers and disc across the network. Disc format differences are handled on the fly, presenting each system with its native format. PCLink provides an ideal environment for both development use and for target applications.

FieldLink

FieldLink provides a Fieldbus network between any number of OS-9 systems. It has functions such as remote load and execution. It can also be used for inter-networking between different types of transport media allowing bridges and routers to be created.

Specifications

VMEbus Interface
    A24,A16:D16,D8(OE) Slave
    AM6
    Interrupter - RORA
    SYSFAIL drive (option)
    RMW
    I(1-7) Single Level, PAL selectable
    SYSRESET Monitor

On-board Buffer RAM
    16 64 or 256Kbytes Static RAM
    Dual ported on VMEbus
    Access Time - 150ns typically

Ethernet Controller
    AMD 'LANCE' CHIPSET comprising:
    AM7990
    AM7992
    AM7996

Dimensions
    160mm x 100mm 3U Single Slot

Power Requirements
    5 Volts 1.3 amps typical
    +12 Volt 0ma
    +12 Volt supplies AUI connector

LED Indicators
    Active
    SYSFAIL

Front Panel Connections
    15 way 'D' connector for drop cable
    (10base5)
    BNC connector for thin wire coax interface
    (10base2)

Environmental
    0 - 70°C
    5 to 95% non-condensing

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