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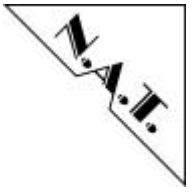

1 Introduction

The Eth29-FC is an intelligent high performance VMEbus Ethernet controller board. It has been designed to support extremely high data transfer rates with a minimum of impact on the system load of the host system.

The board combines a true 32-bit architecture with a powerful RISC processor to enable the utilization of the Ethernet network´s maximum throughput. A Motorola Coldfire processor handles all of the local network protocols up to layer 4 and thus enables an effective transfer rate of up to 3 MByte/sec with all network protocols.

The Eth29-FC board supports all of today´s standard protocols (TCP/IP, DECNet, ISO/OSI protocol) and is prepared for tomorrow´s demands. All of the N.A.T. network protocols are based on N.A.T.´s Universal Protocol Stack Architecture (UPSA) which supports the simultaneous and independent execution of different network protocols on the Eth29-FC board.

The Eth29-FC handles the processor-intensive network protocols onboard. Thus, the system´s main processor is free and the real-time capability of the system is undiminished by even high network traffic. The board´s VMEbus interface achieves extremely short bus cycles through the use of intelligent access modes. Thus, high network data transfer rates are also achieved with standard (D16) CPU boards that provide no support for Block-Transfer or DMA.

The Eth29-FC board is delivered with the multi-tasking kernel OK1 (Open Kernel 1). OK1 supplies all of the operating system resources required by the network software. For a detailed description of the OK1 kernel please refer to the "N.A.T. OK1 Reference Manual".

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1.1 Technical Specifications

Bus Interface:
- VMEbus Rev. C1, ANSI/IEEE STD1014-1987
- D32/A32, D16/A24
- all standard and extended addressing modes
- Block mode data transfers
- VMEbus interrupter and Mailbox IRQs
- Auto Slot ID cycle support

Processor:
- Motorola Coldfire

CPU-Type	**Speed**	
MCF5307FT66B	66 MHz	optional
MCF5307FT90B	90 MHz	optional
MCF5407FT162	162MHz	assembled (standard)

- 3.3 V
- 4 KByte SRAM
- Multiply-Accumulate (MAC) unit and Divide unit
- 8 KByte Unified Cache
- 4-channel DMA controller
- DRAM Controller, supports SDRAM, EDO and page node DRAM
- 2 Universal Synchronous/Asynchronous Receiver/Transmitters (UART)
- Dual 16-Bit General-Purpose Multimode Timers
- I^2C®-Compatible Bus
- System Interface
- System Debug Support
- Clock Multiplied PLL
- 16-bit general-purpose parallel I/O port
- 70 MIPS at 90 MHz (MCF5307)
- 257 MIPS at 162MHz (MCF5407)
- Available at 66 and 90 MHz (MCF5307) or 162MHz (MCF5407)

Memory:
- Communication RAM: 4 MB dual ported RAM
- Processor RAM: 16 MB SDRAM
- 2 MB Flash EEPROM for onboard firmware

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N.A.T. ETH29-FC Technical Specification

Network:
- 32 bit PCI Ethernet controller DEC21143
- Ethernet (AUI) interface
- 10 Mbit Thin-Wire Ethernet (Cheapernet) interface
- 10/100 Mbit twisted pair interface 10 BaseT, 100BaseT

I/O:
- 2 serial Line Interfaces RS232
- Battery back up Real Time clock M48T37 (optional)

Protocols:
- TCP/IP
- DECNet
- ISO/OSI
- OS-9 Net
- simultaneous handling of different protocols onboard

Host Driver Support:
- OS9
- VxWorks

Throughput:
- 4 MByte/sec at the packet layer (100BT)
- up to 2.5 MByte/sec with TCP/IP and 100BT interface