



ETH29-G



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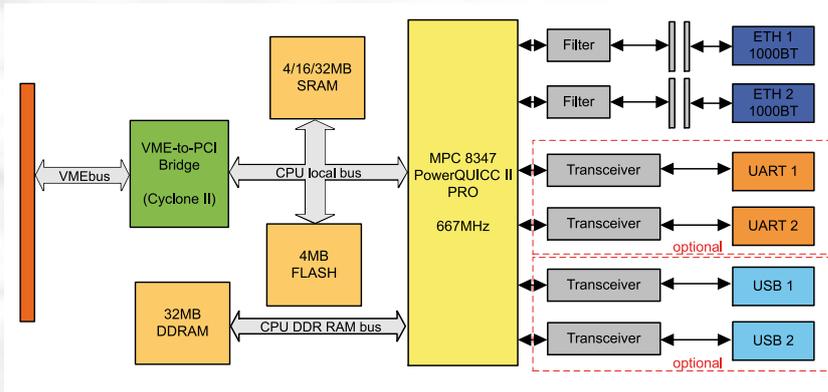
The **ETH29-G** is an intelligent high performance VMEbus Ethernet controller board. It has been designed to support extremely high data transfer rates with a minimum impact on the system load.

The board combines a true 32-bit architecture with a powerful RISC processor to enable the utilization of the Ethernet network's maximum throughput.

The Freescale PowerQUICC II PRO processor handles all of the local network protocols up to Layer 5 and thus enables an effective transfer rate of up to 4 MByte per second with all network protocols using the two onboard 1000BaseT Ethernet ports.

The **ETH29-G** board supports all of today's standard LAN protocols and is prepared for future 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-G**.

Technical Data



Overview and Purpose

The **ETH29-G** is an intelligent VME Ethernet controller board in a 6U single-slot form factor. Its design has been optimized for maximizing the throughput and simultaneously minimizing the overall system load caused by networking traffic. The onboard processor combines the flexibility of a true 32-bit architecture with the power of a real RISC engine. The board provides two GbE interfaces at the front panel, allowing effective data transfer rates of up to 4Mbps with all network protocols, i.e. TCP/IP, DECNet, ISO/OSI, and about 10Mbps at the packet layer (1000BaseT) and others. The **ETH29-G** is compliant with the VMEbus Rev. C1 and ANSI/IEEE STD1014-1987 standards and supports D32/A32 and D16/A24 transfers as well as all standard and extended addressing modes.

CPU and memories

The **ETH29-G** is equipped with a Freescale MPC8347 PowerQUICC II PRO networking processor. The CPU operates at core frequency of 667 MHz. The **ETH29-G** provides either 4 or 16 or 32 MB Dual Ported RAM as well as 32MB DDRAM as processor RAM and a 4MB FLASH EEPROM for the firmware.

VMEbus interface

The VMEbus interface of the **ETH29-G** is realized in a Cyclone II FPGA. The FPGA core is completely owned by N.A.T. and can thus be optimized and adjusted to the exact requirements of customers if needed. The FPGA also includes the VMEbus interrupter module and Mailbox IRQ functionality. The VMEbus interface is VMEbus Rev C1 and ANSI/IEEE STD1014-1987 compliant.

Interfaces (GbE, USB, RS232)

Utilizing the Gigabit Ethernet functionality of the onboard networking processor the **ETH29-G** provides two twisted pair Ethernet interfaces at the front panel. Both the interfaces support auto-negotiation and can perform at speed levels of 10BaseT, 100BaseT and 1000BaseT. As an assembly option the **ETH29-G** can be equipped with either a dual RS232 interface or a dual USB 2.0 interface. While the RS232 interfaces can be used as console or debug port or for setting up ports for serial line protocols the USB option is intended to allow firmware upgrades by USB memory sticks.

Firmware and drivers

The various firmware builds provided for the **ETH29-G** include almost all of today's standard networking protocols including TCP/IP, DECNet, ISO/OSI, Sinec H1 and others. All implementations are based on N.A.T.'s **Universal Protocol Stack Architecture (UPSA)**. UPSA allows simultaneous and independent execution of these protocols in the real time environment of the **Open Kernel 1 (OK1)**, N.A.T.'s own well known real time kernel, optimized for communication demands and field hardened since more than 16 years.

Beside the protocols N.A.T. holds host drivers available for OS-9, vxWorks and Linux environments. The O/S dependencies of these drivers are encapsulated in just a few source files, allowing a quick and easy adaption to other host O/S. Moreover, N.A.T. offers custom specific developments for both firmware and host drivers.

CPU

Freescale PowerQUICC II PRO
MPC8347 @ 667MHz.

Memory

4 or 16 or 32MB Dual Ported RAM
32MB DDRAM
4MB FLASH EEPROM

Network Interface (front panel)

two 10/100/1000BaseT Ethernet ports at front panel

Service Interface (front panel)

two RS232 or two USB 2.0 ports

Indicator LEDs (front panel)

4 green LEDs
2 yellow LEDs
2 red LEDs
for visualization of link and speed status and special firmware events

VMEbus Interface

D32/A32, D16/A24
all std. and ext. addressing modes
VMEbus interrupter
Mailbox IRQs

Standard Compliance

VMEbus Rev.C1
ANSI/IEEE STD1014-1987

Firmware and O/S

TCP/IP, DECNet, ISO/OSI, Sinec H1 and others
N.A.T. Open Kernel 1

Host Drivers

vxWorks, Linux, OS-9,
O/S independent

Compatibility with obsoleted HW

The Eth29-G is software backwards compatible with all revisions of the following obsoleted N.A.T. hardware:

- ETH29
- ETH29-F
- ETH29-FC

