



pLinesE-VMEb

High Performance VME64x Communication board

pLinesE-VMEb is a very high performance Communication board designed in accordance with VME64x standard with 2eSST capabilities. This product range brings a COTS solution with a large opening functionalities. It can be used in many embedded communication applications such as the following ones :

- Single board computer
- Low cost embedded CPU application with communication capabilities.
- Communication controller with multi Ethernet Data flow time stamping, traffic shaping, ...

It is an enhanced version of the pLinesE-VMEa.

pLines E8-VMEb



pLines E4-VMEb

Description

pLinesE-VMEb is powered by a MPC8270, being part of the PowerQUICCII processor family. This embedded processor couples a 603e core with a RISC communication processor and three Fast Ethernet controllers.

The board is equipped with three full-duplex 802.3 and Fast Ethernet controllers associated to three PHY 10/100TX interfaces. Each controller implements a local FIFO and DMA channel. Also, this platform provides up to 8 versatile serial communication channels. The communication processor implemented in the PowerQuiccll processes 4 high speed synchronous or asynchronous. On the pLinesE8_VMEb version, an enhanced Quad UART processes 4 additional asynchronous ports with large FIFOs.

This product provides **original and powerful** functions that allows to build a communication redundant system by combining two pLinesE-VMEb boards. These capabilities are ensured by a hardware security bus and watchdog that can isolate communication ports of one system. Isolated ports are in high impedance.

pLinesE-VMEb is also a versatile open platform with a FPGA available for user's developments.

pLinesE-VMEb, based on the Tundra Tsi148 VME bridge, provides a 320MB/s transfer rate across the VMEbus. The backward compatibility protects existing customer investments.

Main features

Processor core

- ▶ PPC603e with FPU 32 bits RISC architecture :
 - 400 or 450MHz
 - 16KB Instruction and 16KB Data L1 Cache
 - MMU and FPU capabilities
 - DMA-channel controllers
- ▶ Up to 64MB of FlashEprom memory.
- ▶ 128MB SDRAM with ECC.
- ▶ 128KB Backup SRAM and Calendar clock.
- ▶ Real Time clock and four 32 bit-timers.

I/O subsystem

- ▶ VME64x 2eSST
- ▶ Three Ethernet 10/100TX auto-sensing ports.
- ▶ Four high performance serial controllers :
 - Asynchronous with high speed capability.
 - Synchronous : HDLC, BSC, transparent modes.
- ▶ Four asynchronous controllers with large FIFO and flow control capabilities (pLinesE8_VMEb only).
- ▶ Software configurable mode for the eight serial ports : V10/11, EIA530A, RS232/422/485, High Z.
- ▶ Redundancy link (RS422)
- ▶ 32 bits 33/66Mhz PMC slot (pLinesE4_VMEb only).
- ▶ On the rear connector :
 - General logical I/O
 - I²C bus at 400kbs
 - PMC I/O routed towards P2
 - Console and JTAG/COP ports
- ▶ Optional CompactFlash

Configurations

- ▶ 8 Serial channels with front connections (pLinesE8-VMEb).
- ▶ 4 serial channels and one PMC slot (pLinesE4-VMEb).

pLinesE-VMEb

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On-board firmware

IC's on-board firmware is a comprehensive set of software stored in flash memory including:

IC_Boot

This module is called by the reset vector when the board is powered up. It initializes the PowerQUICC, the memory controller, performs the Power on tests, before jumping in different applications according to the configuration stored in memory.

IC_Bios

This module allows the user to access the specific hardware resources via an easy-to-use API.

IC_Tools

It is a firmware monitor which allows either to load or execute files in RAM or to flash them. In addition it permits to display or modify the RAM data. To end with, it enables the user to perform maintenance tests. It can also be used to load a program from the server into memory via BOOTP.

IC-BSP basic

These BSPs products are based on the standard distribution of the OS editor. They take in charge hardware initialization, interrupt handling and generation, hardware clock and timer management, memory management, mapping of memory spaces, basic serial and Ethernet communications.

Enhanced Serial Protocols

These Enhanced functions provide more facilities for system integration and optimized drivers with new functions for serial communications (asynchronous with header or asynchronous HDLC, HDLC/SDLC, BSC, Transparent mode, ...), for instance these communication drivers operate without buffer recopy.

Interface Concept provides BSP for VxWorks® and Linux® operating systems. Other RTOS (LynxOS,...) can be implemented on request.

Powerful software debugging tools for application development on pLinesE-VME board are available for OS supported in-house.

Board specifications

Physical dimensions

VME / 6U—one slot (4 TE) compliant

Power requirements

10 W on the 5 VDC only for a full operational version without PMC

EM compatibility

EMC/EMI : 89/336/ECC, EN55022 CIE, EN50082-2

Interface features

PowerPC embedded core

- 560 MIPS and 10 SPEC95 @ 400MHz or 630 MIPS and 11.25 SPEC95 @ 450MHz (*)
- FPU, MMU, 16KB IC & 8KB ID.
- 24 KB SRAM attached to core (*) : 450Mhz set the local PCI bus running at only 50Mhz.

SDRAM

- 128 MB data size 64 bits with ECC checking
- Fast access 10ns (6.1.1.1)

Flash Eprom

- Up to 64 MB of Boot Flash with 16 bits Fast access.
- Compact Flash disk with true IDE mode.

128 KB SuperCap. Backup SRAM

Four Asynchronous/Synchronous Serial ports

- Data rate : Asynchronous up to 3Mb/s, Synchronous up to 10Mb/s.
- TxD, RxD, RTS, CTS, TxClk, TxClkO, RxClk, DTR, DSR, DCD.
- Electrical mode configurable by software V10/11/28, RS232/...
- Customer specific communication's functions can be implemented in the on-board FPGA.

Four Asynchronous Serial ports (pLinesE8_VMEb only)

- Asynchronous data rate up to 921.6Kb/s.
- 64B + 64B FIFOs by channel.
- TxD, RxD, RTS, CTS, DTR, DSR, DCD, Automatic RS485 control.
- Electrical mode configurable by software V10/11/28, RS232/...

Redundant function

- Independent security bus and watchdog.
- Hardware management of the communication transceiver.
- RS422 link available on the front and on P2 connector.

VME interface

- DTB Master : A16, A24, A32, A64 ; D08-D64, SCT, BLT, MBLT, 2eVME, 2eSST.
- DTB Slave : A16, A24, A32, A64 ; D08-D64, SCT, BLT, MBLT, 2eVME, 2eSST, UAT.
- Arbiter : RR/PRI
- Interrupt : handler/generator with IRQ[1..7]
- System controller with auto detect or set by jumper.

Three Ethernet Ports

- 10/100Base TX auto-sensing
- Medium speed and link signaling

PMC interface (pLinesE4 only)

- 32-bit 33 or 66Mhz, PCI version 2.2 compatible.
- 4 independent DMA channels.
- PMC Module single width, IEEE P1386 compliant (150 mm * 75 mm).

Miscellaneous

- Temperature monitoring
- Time of day and calendar
- Eight led user on front panel

Environnement Specifications:

Please consult the pLinesE-VMEb page at www.interfaceconcept.com.

Ordering Information:

Please contact our sales department : tel. +33 (0)2 98 573 030 - email : info@interfaceconcept.com

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