

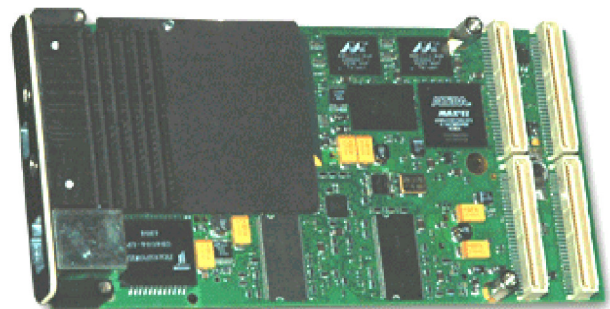
876x

MPC7447A/7448 PrPMC with 3 Gigabit Ethernet Ports

The 876x is a PrPMC/XMC mezzanine card, based on the Freescale MPC7447A or MPC7448 processor and is designed to provide the highest level of performance and integration available today. The MPC7447A and MPC7448 are software compatible with the MPC7xx family of processors from Freescale Semiconductor.

The MPC7447A and 7448 high-performance embedded e600 cores are low power PowerPC processors ideal for defense, industrial automation and medical imaging applications.

The 876x can be used on CompactPCI, VME or proprietary carriers in embedded systems in highly integrated applications such as leading edge computing, embedded network control and signal processing.



Description

The 876x is powered by a Motorola PowerPC MPC7447A or a MPC7448. These processors feature a high-frequency super scalar PowerPC core capable of issuing four instructions per clock cycle into 11 independent execution units: four integer units, one double precision floating point unit, four AltiVec units, load/ store and branch processing units. The e600 core provides 2310 Dhrystone 2.1MIPS @ 1GHz and is planned to scale beyond 2GHz and also to support multiprocessing requirements. The MPC7447A also integrates two 32KB L1 caches and a 512KB L2-ECC cache. Thermal management is provided by a temperature sensing diode embedded in the processor that dynamically adjusts the processor speed to prevent overheating.

The 876x combines a Marvell Discovery III MV64460 System Controller with the PowerPC processor. This combination results in major enhancements to data streaming on the MPX bus as well as reduced read latency and improvements to cache coherency.

The MV64460 adds 2 Mbytes of high speed SRAM, two XOR DMA (useful for RAID, iSCSI) and four IDMA engines. Additionally the 876x implements up to 512Mbytes of on-board DDR-ECC memory and can be equipped with a SODIMM site with up to 2GB.

The 876x integrates many communication functions including three Gigabit Ethernet channels and two multi-purpose serial controllers.

A 64-bit PCI or PCI-X controller allows the 876x to be used in several PMC or PrPMC configurations in compliance with PCI 2.2 or PCI-X and is configurable to Monarch or non-Monarch mode.

876x Features

Processor Unit

e600 core running at 1 GHz with :
L1 caches : 32KB Inst. and 32KB Data with parity
512KB of L2 integrated cache
256 or 512MB SDRAM-DDR333 with ECC
Optional backside SODIMM site
64-128 MB soldered MirrorFlash
2 MB of high speed SRAM
32KB SPI EEPROM
2KB I2C EPROM
PPC Real Time clock and four 32 bit-timers
Calendar clock with lithium cell or supercap backup
Temperature sensor and monitoring

I/O Subsystem

Highly integrated Marvell Discovery III system controller
Three Ethernet 10/100/1000TX ports with :
support for Jumbo frames
virtual Cable tester, implemented in the Ethernet transceivers, providing a remote identification of potential cable malfunctions as excessive pair skew, cable opens, impedance mismatch
One of these Ethernet ports is routed to front RJ45 and two on rear Pn4 connector
Dual front panel multi-purpose serial interfaces

Software

Engineering kit for debug: JTAG/COP and RS232 console
Dual PMC/XMC VME64 carrier with VME2eSST capabilities: IC-PMC-VMEa.
cPCI 3U carrier
The 876x can be used with many major RTOS and Linux.

876x On-Board Firmware

The basic firmware supports the MPC7447A or 7448 (available shortly). The on-board firmware is a comprehensive set of software stored in flash memory. Two version of software are available.

Boot

This module is called by the reset vector when the board is powered up. It initializes the PowerPC and the Discovery III system controller, performs a comprehensive set of Power-on self -tests before using the PCI bridge and application loading.

Bios

This module allows the user to access the specific 876x hardware resources via an easy -to-use API. A set of approximately 60 functions is provided.

Tools

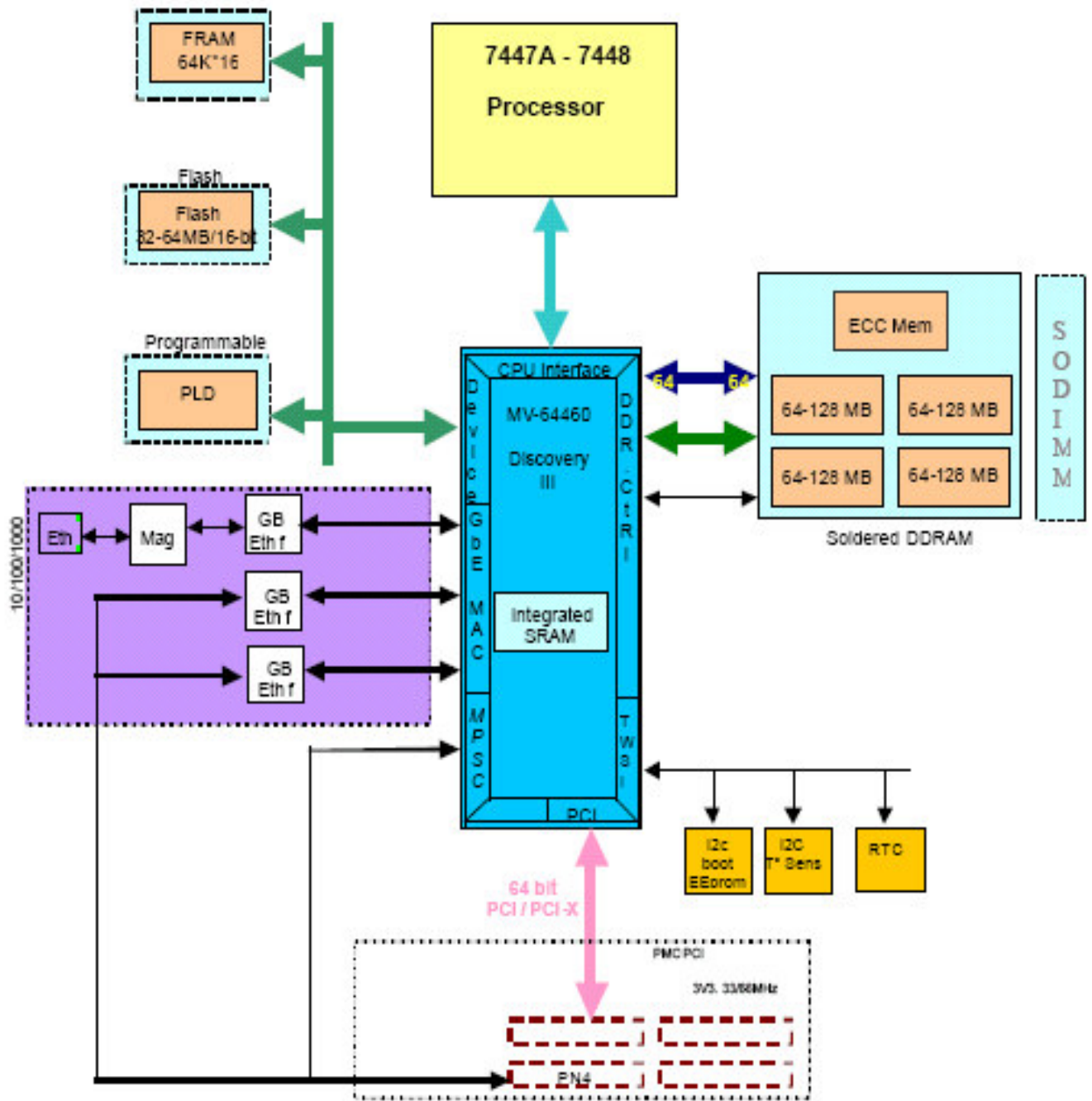
Tools is a firmware monitor which allows loading files from Ethernet via Bootp, running files in RAM or flashing

them. In addition, it allows display or modification of the RAM data and enables the user to perform maintenance tests.

BSP basic

These BSP products are based on the standard distribution of the OS editor. They control hardware initialization, interrupt handling and generation, hardware clock and timer services, memory management, PCI management, mapping of memory spaces, serial ports, and the MAC driver for Gigabit ports.
BSPs can be provided for VxWorks® and Linux® operating systems. Other RTOS (LynxOS, Integrity and so on) can be ported on request.

Block Diagram: 876x



Order Information

All Extended Grade, Rugged Grade and Conduction Cooled boards below are conformal coated
 S= standard grade (0-+55C), X= ext grade (-20-+65C), R = rugged grade (-40 - +75C), cc = cond cooled (-40 - +75C)

| Part Number | Description | Grade |
|---------------------------------|--|-------------|
| 8760-S | PowerPC e600 "G4" MPC7447a @ 1000MHz - 256MB-ECC on-port - 64MB Mirrorbit Flash 128KB SRAM - 2KB I2C EEPROM - Real Time Clock (RTC) with Backup (Super Cap) - T° monitoring 3*Giga Ethernet ports: 1*10/100/1000BT (FP) + 2*GE-no transformer to (R_Pn4) MPX bus for MPC7447 / Discovery III interconnect. PPMC (monarch & non monarch) PCI 64bits 33/66MHz, PCI-X up to 133MHz. Standard | 0 to +55 °C |
| 8761-S | PowerPC e600 "G4" MPC7447a @ 1000MHz - 512MB-ECC on-port - 64MB Mirrorbit Flash 128KB SRAM - 2KB I2C EEPROM - Real Time Clock (RTC) with Backup (Super Cap) - T° monitoring 3*Giga Ethernet ports: 1*10/100/1000BT (FP) +2*GE-no transformer to (R_Pn4) MPX bus for MPC7447 / Discovery III interconnect. PPMC (monarch & non monarch) PCI 64bits 33/66MHz, PCI-X up to 133MHz. Standard | 0 to +55 °C |
| 876x - 512MB | 876x 512MB-ECC memory upgrade price must be added to base PMC price | |
| | Other models can be equipped with an optional SODIMM 200 pin socket allowing up to 1GB-ECC on the PMC back side. The SODIMM addition enlarges the PMC form factor. | |
| 8762-S | PowerPC e600 "G4" MPC7448 @ >1000MHz(TBC) - 512MB-ECC on-board - 64MB Mirrorbit Flash 128KB SRAM - 2KB I2C EEPROM - Real Time Clock (RTC) with Backup (Super Cap) - T° monitoring 3*Giga Ethernet ports: 1*10/100/1000BT (FB) +2*GE-no transformer to (RB_Pn4) MPX bus for MPC7447 / Discovery III interconnect. PPMC (monarch & non monarch) PCI 64bits 33/66MHz, PCI-X up to 133MHz. | 0 to +55 °C |
| 876x Eng Kit | Engineering kit + User's Manual (H/W & S/W) + Console cable | |
| BSP / VxWorks v5.x / Tornado II | One-time fee, unlimited copies, binary code | |
| BSP / VxWorks v5.x / Tornado II | One-time fee, unlimited copies, source code | |
| BSP / Linux v2.6x | One-time fee, unlimited copies (per project). CD includes the Linux interface to the port, Linux basic drivers in source for a cross development solution (per project). | |
| | IC hot line service below is strongly recommended the first year of product use. | |
| Hot line for H/W, S/W and BSP | One-year optional hot line for H/W, S/W and BSP, incl. unlimited access to ACT technical team for one appointed customer specialist and software releases. | |

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