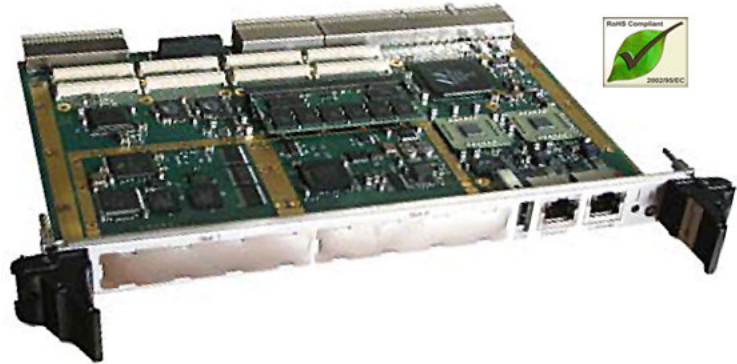


Model 6810 MPC7448 based CompactPCI 2.16 Single Board Computer

The 6810 / 6811 family is a 2.16 CPCI processor board based on the Freescale e600 processor. It is designed to provide the highest level of performance and integration available today.



Description

The 6810 is powered by a single Freescale MPC7447A or MPC7448 PowerPC processor. This processor features a high-frequency superscalar 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 MPC7448 provides 3900 DMIPS @ 1.7 GHz. Owing to the Dynamic Frequency Switching, the core frequency can be changed “on the fly” to reduce the power consumption.

The 6810 runs as a host system controller or a peripheral board with automatic slot detection. The PCI interface runs up to 66MHz in PCI mode and up to 133MHz in PCI-X mode. A second PCI/PCI-X bridge controls two PMC mezzanine cards.

The 6810 implements a Discovery III chipset to fill out the processor. This solution includes major enhancements such as: data streaming on MPX bus, read memory latency and cache coherency improvements. The MV64460 indeed, adds 2 Mbits of high speed burst SRAM, two XOR DMA (useful for RAID, iSCSI) and four IDMA engines.

The 6810 integrates many communication functions: three Giga Ethernet channels, one console port. A USB2 controller provides three high/full speed ports. A quad UART provides four additional asynchronous channels.

With the addition of an optional SATA controller, the **6810** can directly manage several storage devices.

Key features of the Model 6810

Processor Unit: MPC7448

- MPC7448 running at 667 or 1.4 GHz with:
 - L1 caches : 32KB Inst. and 32KB Data with parity
 - 1MB of L2 integrated cache with ECC
 - 512MB , 1 or 2GB of SDRAM-DDR with ECC
 - 64, 128 or 256MB of soldered Mirror Flash
 - Up to 1 GB soldered Nand Flash
 - 256KB (128-bit wide access) of high speed SRAM
 - 128KB or 1MB BSRAM (non-volatile memory)
 - PPC Real Time clock and four 32 bit-timers
 - Calendar clock with supercap backup
 - Temperature sensor and monitoring

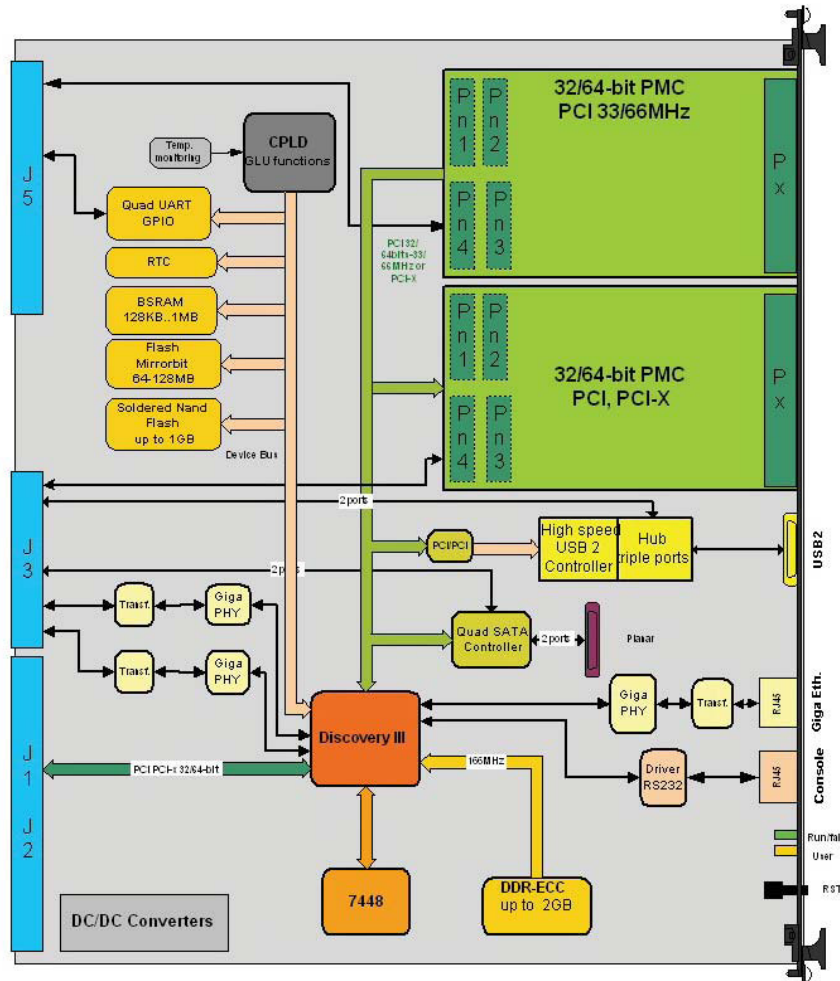
I/O Subsystem:

- 32 or 64-bit CompactPCI bus interface
- Two PMC sites with IO routing toward J3 / J5
- Marvell Discovery™ III system controller :
 - Three Ethernet 10/100/1000TX ports with:
 - support for Jumbo frames
 - Virtual Cable Tester on line
 - two routed on rear J3 and one on the front panel
 - One serial interface front console port
- One USB2 controller with two rear and one front port
- GPIO on J3/5
- A four channels SATA controller with two ports on J3 and two ports available through an on-board planar connector

Accessories:

- 6U Rear Transition Module provides: 2 Giga RJ45, 2 USB2, 4 RS232/RS422 ports, 2 SATA and one on-board high density connector for the PMC IO
- Engineering kit for debug: JTAG/COP, console cable, etc.

Block Diagram



Power Management

With Dynamic Frequency Switching, processor clock speed is regulated dynamically to adjust for thermal information provided by a sensor embedded on the processor die. 6810 can be used with Linux and many major RTOS.

On-board Firmware

The basic firmware takes charge of the Freescale MPC7448 (or MPC7447A) and the Marvell chipset Discovery III initialization. This on-board firmware, based on the open-source UBOOT, is an efficient set of software stored in a secured flash.

UBoot

It 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

Power-on self-tests (PBIT), before jumping into different applications according to the values stored in memory. If the board acts as a Monarch PMC, the software executes an enumeration step, otherwise it waits for the PCI startup sequence from the host. In standalone mode the board directly runs the configured application.

The firmware allows loading files from Ethernet via Bootp, running files in RAM or flashing them. In addition, it allows some monitor functions such as: display or modify the RAM data. To end with, it enables the user to perform maintenance tests.

BIOS

This module allows the user to access the specific 6810 hardware resources via an easy-to-use API. This module is used as a library with VxWorks and as a dynamically loaded library module for Linux.

Board Support Packages

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 services, memory management, PCI management, mapping of memory spaces, serial ports, MAC driver for Gigabit ports.

A BSP is available for VxWorks® and Linux® operating systems. Other RTOS (LynxOS, Integrity, QNX...) can be ported on request. The dual processor model runs LINUX SMP.

Environmental Options (E)

The 6810 family of CompactPCI 2.16 processor boards are available in standard industrial, extended temperature and conduction cooled versions:

	Standard Grade (S)	Extended Temp. (X)	Conduction Cooled (C)
Conformal Coating	Optional	Standard	Standard
Operating Temperature (°C)	0 to 55	-20 to +65	-40 to +100
Rec. Airflow (m/s)	1	1.5	N/A
Operating Relative Humidity non-condensing	5 to 90 %	5 to 95%	5 to 95%
Storage temperature (°C)	-45 to +85	-45 to +85	-45 to +100
Sinusoidal Vibration (20 - 2000 Hz)	2G	2G	5G
Random Vibration (10 - 2000 Hz)	.002g ² /Hz	.002g ² /Hz	.1g ² /Hz
Shock	20G	20G	40G

Order Information

(x indicates the size of memory selected. Please check with sales for options.)

6810-x-E MPC7447a with up to 1 GB memory
6811-x-E MPC7448 with up to 1 GB memory

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