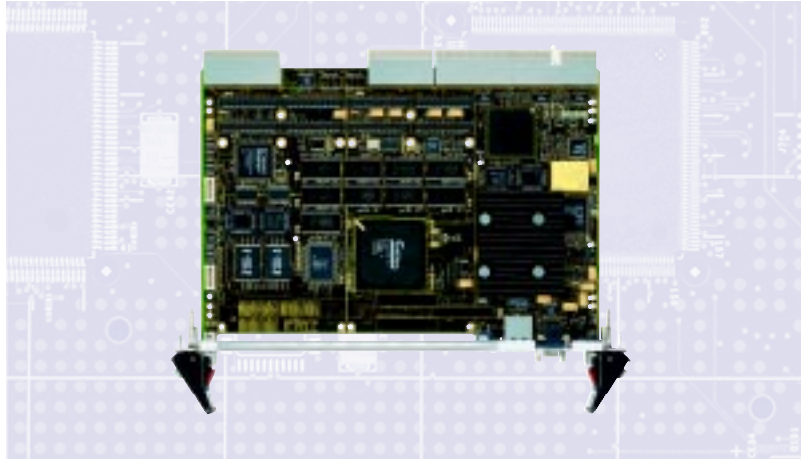# 'Universal-Mode' PowerCore CPCI-690 PowerPC SBC

PowerCore CPCI-690 'Universal Mode' PowerPC Processor-Based Single Board Computer

The PowerCore CPCI-690 single board computer offers 700MHz-plus performance in system- and peripheral-slot operating modes.

■ **Telecommunications**

■ **Datacommunications**

■ **Industrial Control**

■ **Defense & Aerospace**

Features

■ PowerPC 750FX processor—core frequency starting at 700MHz

■ GT-64260 (Discovery) system controller—five decoupled busses for concurrent processor/PCI peripheral device access to main memory

■ Up to 2GBytes high-speed SDRAM main memory

■ Onboard full PICMG 2.16 compliance for CompactPCI Packet-Switching Backplane (cPSB) switch-fabric architecture

■ Force's Sentinel "universal-mode" PCI-to-PCI bridge—enables SBCs to switch between system- and peripheral-slot functionality

■ Dual 64-bit/66MHz PMC slots

■ Three independent Fast Ethernet interfaces

■ Dual serial RS-232 interfaces—front panel or rear-transition board

■ 133MHz front-side-bus host interface

■ Full Hot Swap support for CompactPCI

■ IPMI system management support (PICMG 2.9)

Highlights

The Force PowerCore™ CPCI-690 CompactPCI® (6U) single board computer brings new levels of flexibility and power to embedded telecommunications, data communications and industrial applications. Based on Force's award-winning Sentinel™ "universal" PCI-to-PCI bridge technology, the PowerCore CPCI-690 can function as a high-performance system controller or an intelligent peripheral card without any need for hardware or software reconfiguration when switching between operating modes. This, combined with its advanced PowerPC™ 750FX 700MHz-plus processor and broad array of interfaces, makes the PowerCore CPCI-690 an ideal choice for configuring fast-to-market, highly reliable multicomputing platforms.

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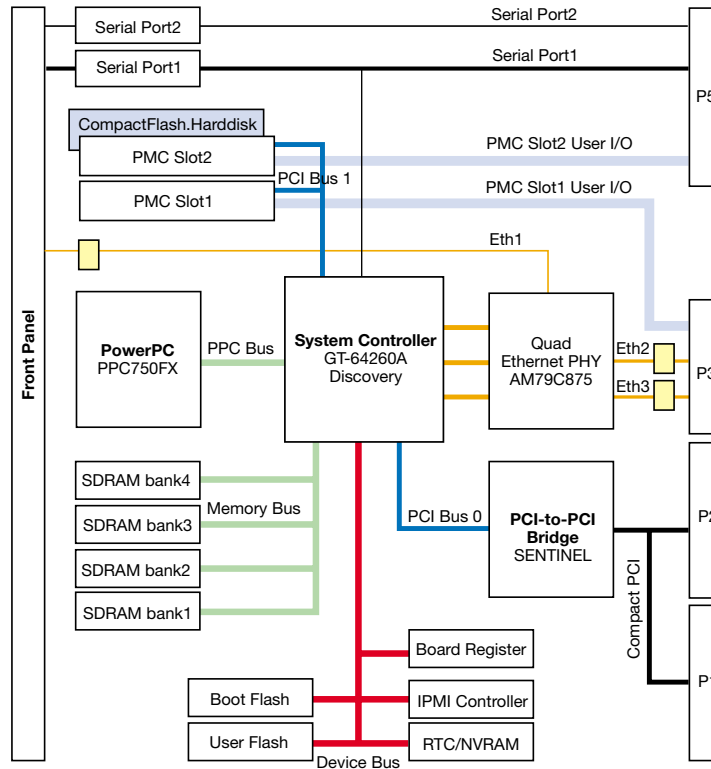
PowerCore CPCI-690 Block Diagram

'Universal-mode' CompactPCI single board computer solution

- Dual functionality: system slot and/or peripheral slot capabilities

- Based on Force Sentinel "universal-mode" PCI-to-PCI bridge technology

- "Zero" hardware or software impact when switching operating modes

- Ready-made building block for multiprocessor systems

- Single-slot solution—even fully configured

High-performance embedded computing platform

- Optimum computing performance in a single 6U CompactPCI slot

- Built-in buffers in Sentinel allow fast data transfers across the widely deployed 32-bit CompactPCI bus

- Low-power consumption for embedded applications

- OS flexibility—broad Linux and real-time operating system (RTOS) support

Flexible configurations

- Up to two PMC slots

- Up to three onboard independent Fast Ethernet interfaces—one on the front panel, two on the backplane

- Two onboard serial RS-232 interfaces

- IDE device support for CompactFlash or hard disk drive

Enabling power of Force's Sentinel 'universal' PPB

The Force PowerCore CPCI-690 is a powerful and versatile CompactPCI single board computer (SBC) based on Force's revolutionary Sentinel "universal-mode" PCI-to-PCI bridge (PPB). Intelligent Sentinel technology enables the PowerCore CPCI-690 to function as either a system controller (in a CompactPCI system slot) or as an intelligent peripheral card (in a CompactPCI peripheral slot). The Sentinel PPB completely eliminates the need for either hardware or software reconfigurations when the PowerCore CPCI-690 switches operating modes.

By using the Sentinel PPB technology, developers can simplify and accelerate the design of multiprocessor systems based on cost-effective, industry-standard components.

Powerful real-time computing—future-proofed and backward compatible

The PowerCore CPCI-690 brings maximum real-time computing performance in a single slot to both system controller and intelligent peripheral modes. The CPCI-690 is built around the PowerPC 750FX processor with its ultra-high speed and extremely low-power consumption characteristics. The use of the PowerPC 750FX, together with up to 2GBytes high-speed memory and Sentinel's on-chip buffers for elevated system performance, enables the CPCI-690 to address the most demanding applications. The CPCI-690 is also backward compatible with earlier members of the Force PowerPC-based PowerCore family of SBCs.

Developers can take advantage of the CPCI-690's power and performance when running major real-time operating systems (RTOSes) or when deploying applications based on the low-cost, open-source Linux™ operating system. RTOSes supported by the CPCI-690 include VxWorks® and LynxOS™.

Broad expansion and I/O flexibility in a single slot

In addition to its versatility and high performance, the PowerCore CPCI-690 provides developers with broad expansion capabilities and a wide range of interface options. Up to two PMC slots are available for expansion, and one PMC slot can accommodate an IDE interface-compatible PMC module for CompactFlash or hard disk drive storage (PMC must have onboard IDE controller). There are also up to three independent Fast Ethernet interfaces and two serial interfaces for maximum I/O flexibility.

Yet even when fully configured with a complete set of interfaces and its maximum 2GBytes memory, the PowerCore CPCI-690 remains a single-slot solution.

'Universal-Mode' PowerCore CPCI-690 PowerPC SBC

Processor/memory

- PowerPC 750FX processor, starting at 700MHz
- Up to 2GBytes onboard ECC-protected SDRAM
- 512KBytes L2 Cache at full processor speed
- Up to 64MBytes onboard programmable User Flash
- 512KByte Boot Flash

I/O capabilities

- GT-64260 (Discovery) system controller with five decoupled busses for concurrent access of processor, PCI peripheral devices and main memory
- IPMI baseboard management controller (PICMG 2.9)
- Onboard full PICMG 2.16 cPSB compliance
- Dual 64-bit/66MHz PMC slots
- Option for PMC module with CompactFlash or hard disk drive (with onboard IDE controller)
- Up to three Fast Ethernet interfaces
- Two RS-232 serial interfaces—on front panel or rear-transition board

CompactPCI interface

- "Universal" PCI-to-PCI bridge—system slot and peripheral slot—32-bit/33MHz

Other features

- 32KByte NVRAM real-time clock
- Watchdog timer
- Reset and abort switches, status LEDs, Hot Swap LED

Power requirements

- 5V 1.5 A, +3.3V 1.7 A

Operating temperature

0ºC to 55ºC with forced air cooling

Storage temperature

-40ºC to +85ºC

Relative humidity

5% to 95% non-condensing

Board size

Single-slot 6U CompactPCI

160.00mm x 233.35mm

**Universal
PCI-to-PCI Bridge**

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Force Computers is the leading designer and worldwide supplier of standard and custom systems, board-level platforms and services for the embedded market.