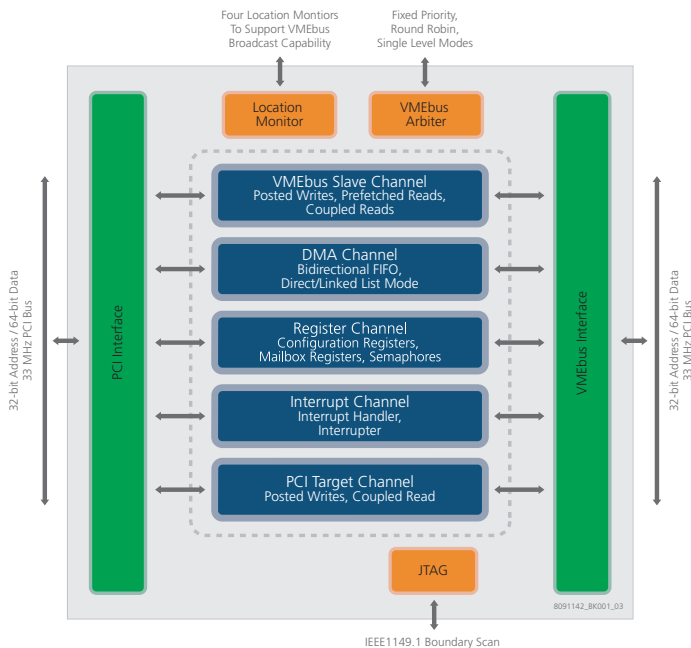# Universe II™ PCI-to-VMEbus Bridge Product Brief

Device Overview

The IDT Universe II is the industry's leading high performance PCI-to-VMEbus interconnect. Universe II is fully compliant with the VME64 bus standard, and is tailored to support the next-generation of advanced PCI processors and peripherals. With a zero wait state implementation for write transactions, and the capability to support prefetch reads and multi-beat transactions, the Universe II provides high performance on the PCI bus.

The Universe II eases development of VMEbus systems by providing direct connection to a local PCI bus. The device is ideally suited for CPU or peripheral boards functioning as both master and slave in the VMEbus system. Bridging is accomplished through a decoupled architecture with independent FIFOs for inbound, outbound, and DMA traffic. With this architecture, throughput is maximized without sacrificing bandwidth on either bus.

Block Diagram

Four Location Monitors To Support VMEbus Broadcast Capability

Fixed Priority, Round Robin, Single Level Modes

Location Monitor

VMEbus Arbiter

VMEbus Slave Channel
Posted Writes, Prefetched Reads, Coupled Reads

DMA Channel
Bidirectional FIFO, Direct/Linked List Mode

Register Channel
Configuration Registers, Mailbox Registers, Semaphores

Interrupt Channel
Interrupt Handler, Interrupter

PCI Target Channel
Posted Writes, Coupled Read

PCI Interface

VMEbus Interface

32-bit Address / 64-bit Data 33 MHz PCI Bus

32-bit Address / 64-bit Data 33 MHz PCI Bus

JTAG

8091142_BK001_03

IEEE1149.1 Boundary Scan

Features

- Industry-proven, high performance 64-bit VMEbus interconnect
- Fully compliant, 32-bit or 64-bit,
- 33 MHz PCI bus interconnect
- Integral FIFOs for write posting to maximize bandwidth utilization
- Programmable DMA controller with Linked-List mode
- Flexible interrupt logic
- Sustained transfer rates up to
- 60-70 MBps
- Extensive suite of VMEbus address and data transfer modes
- Automatic initialization for slave-only applications
- Flexible register set, programmable from both the PCI bus and VMEbus ports
- Full VMEbus system controller
- Support for RMWs, ADOH, PCI LOCK cycles, and semaphores
- Commercial, industrial, and extended temperature variants
- IEEE 1149.1 JTAG
- Available packages:
  - 25mm x 25mm, 361-contact dimpled ceramic BGA (DBGA)
  - 35mm x 35mm, 313-contact plastic BGA (PBGA)

Benefits

- Conserves board space with 25mm x 25mm, 361-contact dimpled ceramic BGA (DBGA)
- Industry proven design
- Reliable customer support with experience in hundreds of customer designs

Typical Applications

The Universe II eases the development of VME Single Board Computers (SBCs) and I/O peripheral boards which target the following market segments:
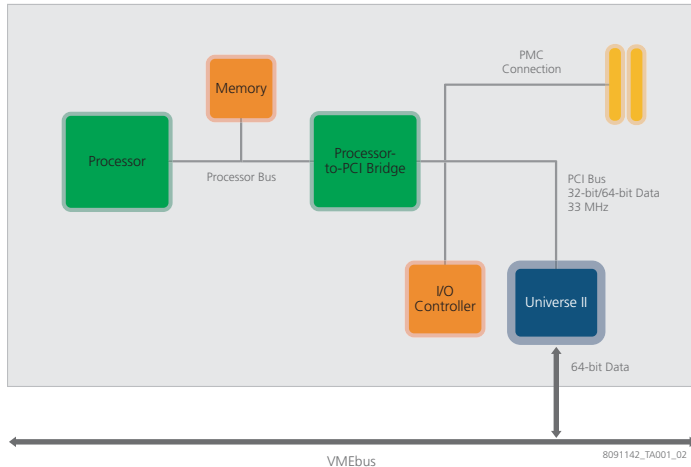
- Telecommunications
- Industrial Automation
- Medical
- Military
- Aerospace

Single Board Computers

The Universe II is widely used on VME-based Single Board Computers (SBC) that employ PCI as their local bus and VME as the backplane bus, as shown in the accompanying diagram. These SBC cards support a variety of applications including telecom, datacom, medical, industrial, and military equipment.

The Universe II high performance architecture seamlessly bridges the PCI and VME busses, and is the VME industry's standard for single board computer interconnect device.

Application Diagram

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