

PowerRACE I/O Processors

PowerRACE-3



The PowerRACE-3 is the first member of the PowerRACE family of high-performance fabric-enabled I/O processors equipped with FPGA co-processors, which perform FFTs, pulse compression, and image processing with up to 10 to 15 times performance advantage over PowerPCs. Boasting bigger memories than its predecessors and faster 440GX PowerPC processors, the PowerRACE-3 is a powerful streaming I/O platform suitable for camera interfaces, serial and parallel links, network protocols, data recording systems, and custom protocol implementations.

While the PowerRACE-3 provides the horse-power to sustain 250+ MB/sec throughput over each of its two PMC sites, Tekmicro's front-end/back-end PMC design delivers the simplicity, reliability, and versatility of reusable core logic to the PowerRACE-3 across Tekmicro's entire line of I/O modules (see sidebar). This unique design enables protocol interfaces (front-ends) to change while relying on a small set of standard back-end interfaces, such as PCI and XMC, to talk to the PowerRACE carrier. Tekmicro's long list of front-end interfaces includes FPDP, HOTLink, LVDS, TAXI, and many more.

To give its customers the edge in controlling development costs and product lead times, Tekmicro provides bundled software aimed at rapid technology insertion with low integration risk and a seamless migration path. All PowerRACE models use the same tekX API, which provides a consistent interface across multiple platforms. Using tekX, applications can ramp up quickly, and can survive any number of technology upgrades with minimal software efforts.

While Tekmicro's I/O modules and carriers support a multitude of applications right off the shelf, for maximum adaptability to real-world applications, Tekmicro's hardware and software building blocks also support customization with a minimum of fuss. So whether using standard product, enhancing an existing product, or developing a custom solution, Tekmicro's expertise in I/O, switch fabrics, and FPGAs can reduce time to market, mitigate risk, and control costs.

The first platform to combine high density FPGAs, PowerPCs, PMCs, and onboard switched fabric interconnect.

From the company that delivered the first RACE++ product, first PowerPC-based PMC carrier and first bundled client-server I/O solution for RACE++.

Supported I/O

Fibre Channel
 - JBOD/RAID with FAT32
 - Point to Point
 - 1.062 and 2.125 Gbps

ANSI/VITA 17.1 Serial FPDP
 - 1.0 and 2.5 Gbps

Gigabit Ethernet

TAXI, HOTLink, and HOTLink II

FPDP, FPDP II*

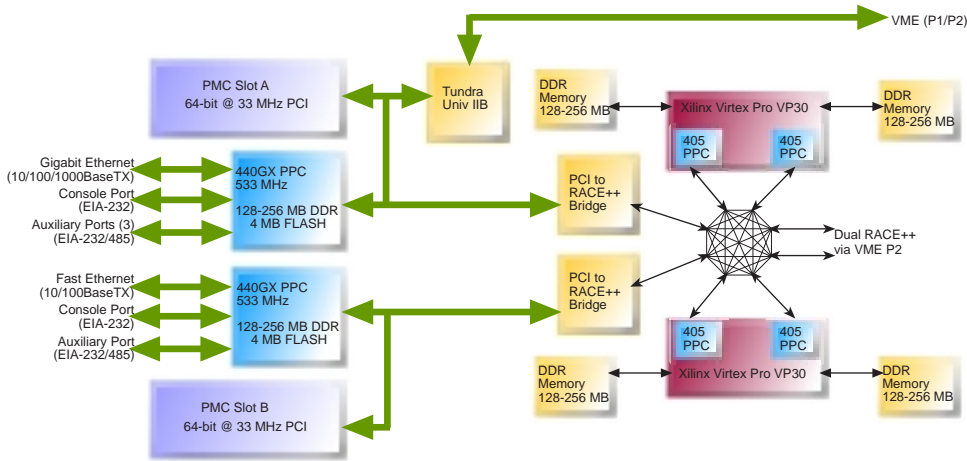
Parallel ECL, PECL, EIA-485, LVDS*

Channel Link

Camera Link*

* - In Development

PowerRACE-3



I/O Connectors:

- P1/P2: VMEbus
- P2: Dual RACE++ ports
- J1 (Front Panel): CPU A EIA-232 Console Port
- J2-4 (Front Panel): CPU A EIA-232/485 Auxiliary Ports
- J5 (Front Panel): CPU B EIA-232 Console Port
- J6 (Front Panel): CPU B EIA-232/485 Auxiliary Port
- J7 (Front panel): 10/100BaseTX Fast Ethernet
- J8 (Front panel): 10/100/1000BaseTX Gigabit Ethernet

Specifications:

VMEbus Interface	ANSI/VITA 1-1994 (R2002) VME and ANSI/VITA 1.1-1997 VME64x compatible Supports data transfer modes including A64:D64 MBLT Supports Slot 1 system controller functions
RACEway Interface	ANSI/VITA 5.1-1999 Dual RACEway compatible Mercury TC-RWI-FS-1 (11/08/00) RACE++ compatible Transfers performed at 267 MB/s burst throughput tekX support available for MCOS 4.x and 5.x, MCOE 6.x
Processor (2)	533 MHz 440GX PowerPC 128 or 256 MB SDRAM (64-bit, 2.0 GB/s bandwidth) 4 MB FLASH 64-bit 33-50 MHz PCI interface
FPGA (2)	Xilinx Virtex Pro VP30 with two 405 PPC's Reconfigurable FPGA for application-specific functions
Buffer Memory (4)	128-256 MB DDR, 240 MB/s sustained throughput
Bulk FLASH	64-128 MB
Built-In I/O	EIA-232 console port for each CPU EIA-232/485 auxiliary port for each CPU IEEE 802.3 Gigabit Ethernet for CPU A IEEE 802.3 Fast Ethernet for CPU B
Modular I/O	Two IEEE 1386.1-2001 PMC slots 64-bit 33-50 MHz, 3.3V signaling level 250+ MB/s sustained throughput per PMC slot
Operating System	VxWorks 5.5 (BSP available)
Mechanical	6U x 160mm x 4HP (standard VMEbus, single slot)
Power Requirements	+5V \pm 5%, 5A typical, 8A maximum \pm 12V \pm 10%, 50 mA Power requirements do not include power used by PMC Modules
Operating Temperature	0° to +55°C (Commercial) -40° to +70°C (Rugged Level 2)
Storage Temperature	-40° to +85°C (Commercial) -55° to +85°C (Rugged Level 2)
Cooling Airflow	15 CFM at sea level (estimated)
Ruggedization	Available commercial grade or Rugged Level 2. See Tekmicro Ruggedization Data Sheet for definition of environmental performance specifications.
Warranty	One year limited hardware warranty

Features

FPGA processors:

FPGA cores increase processing throughput, reduce board count, and maximize overall system performance

Dedicated CPU per PMC slot:

Local 533 MHz processor available for I/O protocol processing, supports high throughput I/O without host processor overhead

MCOE compatible tekX API:

Supports widest range of I/O solutions for RACE++ with a common API and modular hardware/software architecture

Onboard RACE++ fabric:

Easily supports any required system architecture with a single hardware model

Technical Support:

Knowledgeable, accessible, and friendly technical and applications support that assures customer success

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