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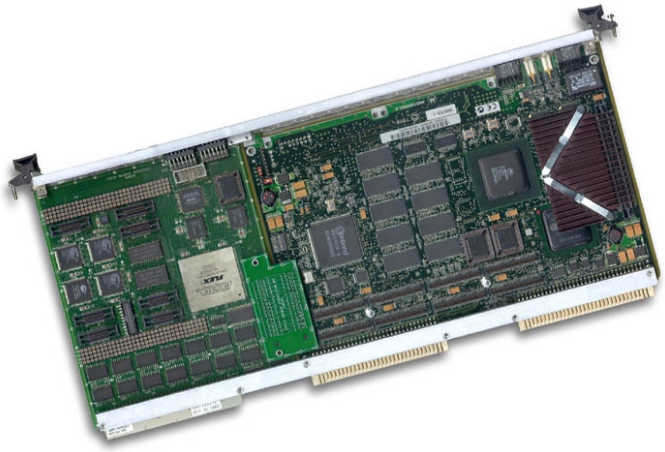
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System 550™

Field Programmable Processor 4

Model FPP523-64



The Field Programmable Processor 4 (FPP4) is the System 550's third-generation real-time programmable processor. It produces over twice the throughput in half the space as the previous generation processor. The FPP4 uses a standard off-the-shelf 350 MHz Power PC 6U VME single board computer (SBC) to achieve its unprecedented performance of over 3 million basic algorithms per second. The use of Motorola COTS SBCs provides a ready upgrade path to emerging technologies. The SBC is connected to the System 550's high-speed processing bus, the MUXbus, via a 3U+ interface module that supports original FPP3 MUXbus mezzanines. In addition, two PCI Mezzanine Cards (PMCs) can be added to the SBC for special applications. Adding FPP4s achieves a linear increase in system performance thanks to the System 550's data flow architecture.

The FPP4 dramatically enhances the System 550's algorithm capabilities. Not only does the FPP4 increase the performance of such basic algorithms as "average over n" and "fifth order EU conversions," it further boosts the performance of large grain algorithms (e.g., signal analysis, secondary PCM decommutation, etc.). For maximum flexibility, you can use, concatenate, or modify algorithms from L-3's extensive libraries to create, simulate, test, and debug algorithms in the C high-level language or in assembler on the System 550's color graphics workstations.

Features

- Processes 16- and 32-bit words directly
- Performs *nth*-order EU conversions and secondary telemetry PCM decommutation for complex multiformat embedded asynchronous and IRIG 1553 streams
- Comes with an OSF/Motif™ graphical user interface that prompts you for setup information and/or to use a text file
- Uses C for developing application-specific algorithms
- Utilizes upgradable COTS high-performance Power PC VME single board computers (SBCs)
- Links multiple standard and/or user-developed algorithms to form a large single algorithm
- Utilizes multiple FPPs to achieve linear (scalable) increases in throughput
- Allows you to augment processing or I/O with a variety of optional MUXbus and PMC mezzanine modules

Field Programmable Processor 4

Specifications for Model FPP523-64

Inputs

MUXbus Data	16- or 32-bit data input; prime (raw), derived, processed data from all input sources
Maximum Parameters	Up to 65,535, dependent on number and type of algorithms per parameter
Input Formats	32-bit binary, 2's complement, 1's complement, sign magnitude, offset binary, 32-bit exponential (IEEE 754-1985 floating point format)
Interrupt	VMEbus and MUXbus
VME Interrupt	Level 1 to 7, 32-bit vector

Processing

Processor	350 MHz 32-bit Power PC 750
Memory:	
EPROM	1 MB socketed, 8 MB surface-mount
Cache	1 MB
NVRAM	8 kB total; 4 kB user
Battery	10-year removable
Main Memory	64 MB SDRAM
Input FIFO	4K words
Output FIFO	4K words
Processor Performance:	
Floating Point (32-bit)	SPECfp95: 10.5
Integer	SPECint95: 15.4
Algorithm Library	Over 150 algorithms included (e.g., *nth*-order polynomial, arithmetic, logical, compression)
Embedded Decommutation	
IRIG 106-96	PCM Class II asynchronous embedded decommutation formats and Chapter 8 MIL-STD-1553 100% acquisition standard
Max. Throughput Rate	3.5 million parameters
Algorithm Performance (nominal):	
1st-Order Polynomial	2.29 M/sec
5th-Order Polynomial	1.94 M/sec
Average Over *n*	3.19 M/sec
In Limits	2.44 M/sec
Bit Mask	2.48 M/sec

I/O Options

Ethernet	1 10/100 Mbps port
RS-232	1 port
PMC Mezzanine	2 modules
MUXbus Mezzanine	1 module
MUXbus	32-bit, 16-bit extended, or 16-bit zero extended integers, or 32-bit floating point for output, display, or further processing

Outputs

Max. Number of Output Parameters per Module	65,535

Functions

Real-Time Derived Processing	Single or linked; serial or in parallel on multiple processors
Alarm Gathering	Routed to MUXbus and/or graphics workstation for display
Data Gathering	Transfer selected real-time MUXbus data to the VMEbus

Program Setup and Control

Keyboard and Mouse	Fill-in-the-blank OSF/Motif™ displays with list-pick selections
ASCII Text File	User-created description
API	Application Programming Interface for remote setup (option)

General Requirements

System 550 Chassis	1 9U slot
Maximum per Chassis	14
Maximum per System	112
Rear Panel	RS-232 (RJ45 and DB25), Ethernet (RJ45): 1 slot
Power	5V @ 5.0 A
Environment	See System 550 chassis data sheet
Dimensions	365mm (9U) x 160mm (Eurocard std.)
Status Display	8 LEDs and 8 character display

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