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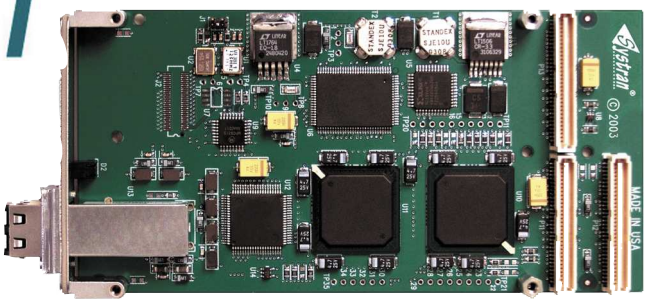
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- **Up to 247 MB/second Sustained Data Rate- The Fastest, Most Efficient Way to Transfer Streaming Data!**
- **64-bit, 66MHz PCI Host Bus Interface and 32-bit Parallel FPDP**
- **Extends Front Panel Data Port (FPDP) Connections Up To 50 km**
- **Three COTS Levels Available**
- **ANSI/VITA 17.1-2003 Standard Protocol**

Introduction

Based on the technology pioneered in the original Simplex Link series, Systran's SL100/SL240 Serial FPDP boards blast data up to a sustained 247 MB per second. You won't find a faster, more efficient, easier-to use data link for your streaming data application:

- Digital Signal Processing (DSP)
- Radar and sonar
- Medical imaging
- Range and telemetry systems
- Video production

SL100/SL240 Serial FPDP boards support up to a 2.5 GHz serial data link which utilizes a highly specialized communications protocol optimized for maximum data throughput. Data transfers occur without the CPU overhead and non-deterministic latencies associated with many layers of complex communication protocols. The SL100/SL240 on-board DMA engine handles single transactions up to 64 MB for maximum data throughput without processor intervention. DMA and register byte/word swapping provide additional system flexibility.

Industry Standard Architecture

Serial FPDP technology (ANSI/VITA 17.1-2003) is the industry standard for high-speed serial communication in today's advanced sensor-to-DSP systems. It's field-tested technology that produces real-world results!

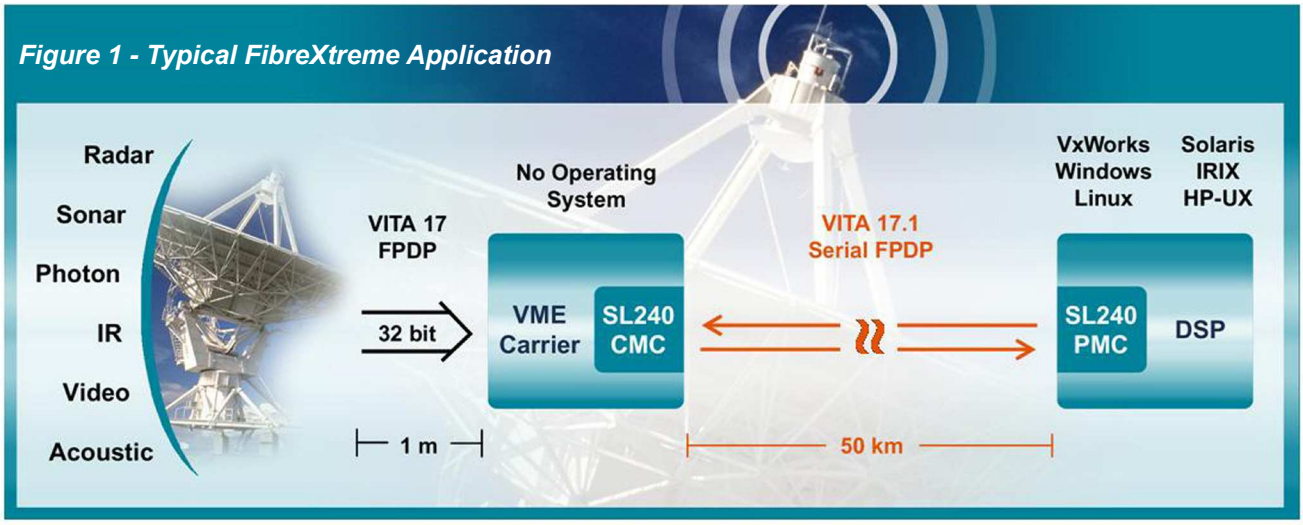
Wide Operating System Support

SL100/SL240 boards offer flexibility in software support with drivers for today's popular operating systems. With support for Windows NT 4.0, Windows 2000 and Windows XP, SGI IRIX, VxWorks, Sun Solaris, HP, and Linux, you can choose the best OS solution for your data streaming application.

SL100/SL240 Features

- Programmable, bi-directional boards provide more configuration flexibility
- Minimizes implementation cost and enhances throughput by using a simple protocol
- Four media options available— copper and 850nm, 1300nm and 1550nm transceivers
- Efficient use of bandwidth, providing end-to-end throughput of up to 247 MB/s at 2.5 Gbit/sec
- Optional flow control to prevent loss of data at the receiver
- Integrated interrupt controller to report link failure, transaction completion, or buffer space request
- Support for point-to-point and broadcast chaining topologies
- Proven 8B/10B encoding for data transmission
- Memory: 1 MB receive buffer, 2 KB transmit buffer
- 64-bit, 66 MHz PCI host bus interface
- Distances - up to 50 km (SL100), 25 km (SL240)

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Unique Design Characteristics

With support for 2.5 Gbit/sec transmission rates between interconnected subsystems separated by as much as 50 kilometers and low-latency performance to match, SL100/SL240 Serial FPDP technology is ideal for many of today's high-throughput DSP applications like those shown in Figure 1.

SL100/SL240 boards employ hardware-based insertion of data into fixed frames with flow control to keep the data connection open and operating at full speed. There's no need for complex communication protocols that cause data latency and reduce system performance as they establish and arbitrate the connection.

Extending Front Panel Data Port (FPDP)

FPDP (ANSI/VITA 17-1998) was specifically invented to address the high speed connection between the Analog-To-Digital Converter (ADC) of a Sensor Subsystem and the DSP. FPDP is implemented as a parallel connection made via ribbon cable across the VME front panel. It provides the simplicity, bandwidth, and reliability necessary to support these types of DSP systems.

However, FPDP has one major limitation, the ADC must be located within the one meter maximum cable length of FPDP. For many reasons, it is often desirable to locate the ADC as close as possible to the sensing unit, which may be located more than one meter from the DSP system(s). FibreXtreme boards extend the reach of FPDP (50 km for SL100, 25 km for SL240) while retaining its simplicity, bandwidth, and reliability.

The link is implemented on standard 6U VME cards with a sending card at the sensor and a receiving card at the DSP. PCI, Compact PCI and PMC FibreXtreme boards allow data to flow from FPDP directly into the computer backplane and also provides high speed computer to computer connections. In demanding high-throughput applications, even the smallest delay can mean the difference between success and failure.

SL100/SL240 Serial FPDP boards offer the speed, power, flexibility, and reliability to ensure that your application succeeds!

PCI Host Interface

The SL100/SL240 PCI bus interface cards are available in PCI, PMC and CompactPCI form factors. This allows a computer-processor based host to initialize and configure the Serial FPDP interface as a source and/or destination for data. The SL100/SL240 register set and the driver API provide extreme flexibility in data control and topology configuration. The included applications allow for benchmark testing, board configuration and user interface for board status and control.

Custom or Parallel FPDP Interface

The SL100/SL240 Common Mezzanine Card (CMC) provides a direct signaling interface between 32-bit parallel data and the serial FPDP data. FibreXtreme CMC cards can be mounted on a FibreXtreme VME or PCI carrier board or custom embedded interface.

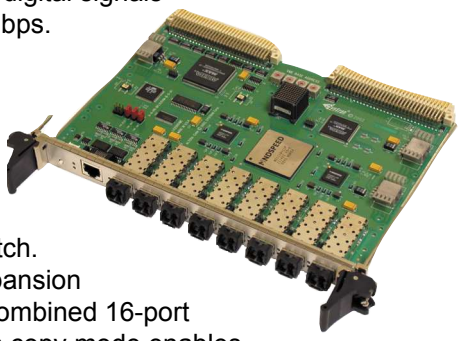
VME and PCI Carrier Boards

The FibreXtreme VME and PCI carrier boards provide an interface between Parallel and Serial FPDP. The carrier board 80-pin Parallel FPDP interface port can be configured as an input or output. Configured as an input, the parallel FPDP signals are routed to the attached FibreXtreme CMC card where the parallel FPDP is converted to serial FPDP. This serial FPDP stream can be received by any of the PCI bus form factor boards or another CMC card.

When the carrier board is configured as an output, the CMC received serial FPDP is converted to Parallel FPDP. The VME and PCI carrier boards supply only power and ground to the CMC card and do not interface with the host backplane.

LinkXchange LXVME2500 Crossbar Switch

Systran's LXVME2500 Crossbar Switch is a managed, non-blocking crosspoint switch implemented on a 6U VME 64X card for digital signals from 65 Mbps to 3.125 Gbps.



The protocol or structure of data routed through the switch is transparent to the LXVME2500 and is unaltered by its passage through the switch. An optional daughter expansion board is available for a combined 16-port total. The switch's built-in copy mode enables a system designer to take single high-bandwidth data inputs and replicate them to multiple digital signal processors or analysis computers without signal degradation or additional data latency. The bi-directional communication capability found in SI100/SL240 boards can also be used to playback previously recorded data for additional processing and analysis.

Serial FPDP Protocol Analyzer

The Serial FPDP Protocol Analyzer allows users to monitor Serial FPDP data rates at 1.0625 Gbps and 2.5 Gbps, thus providing inherent flexibility for various applications. The unit provides two-channel analysis with independent filtering logic, trace control processors, and 640 MB of trace memory per channel. Data filters can be set based on frame type, source and destination of frame activity, and payload size. Data filtering is performed in real-time and is fully configurable, allowing the user to limit the amount of data being captured.



Intelligent trace control processors are capable of multilevel triggering, filtering, and performance monitoring. The Serial FPDP Protocol Analyzer can be configured for more than one hundred trace levels. The unit can search full-sized trace for frames, primitives, or errors in just seconds. Post-filtering capabilities allow the user to continue to add filters to further refine captured data.

Serial FPDP Resources Online

Detailed information on the Serial FPDP protocol can be found at www.serialfpdp.com. The website provides an informative online presentation of the technology, along with links to other supporting materials. The site also showcases companies that produce Serial FPDP-compliant products or perform integration services for systems incorporating Serial FPDP technology.

SL100/SL240 Specifications

Form Factor	Data Rate		Media				Bus Support			Environmental			OS Support						
	1.0625 GHz, 105 MBps	2.5 GHz, 247 MBps	850nm	1300nm	1550nm	Copper	3.3 V, 33 MHz	5 V, 33 MHz	3.3 V, 66 MHz	Standard COTS	Rugged COTS 1	Rugged COTS 2	IRIX 6.5x	Linux 2.4	Solaris 7/8/9	VxWorks 5.3.1/5.4/5.5	HP-UX 11.0-11.1	Windows NT4.0	Windows 2000/XP
PMC	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√			√
PCI	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CPCI	√	√	√	√	√	√	√	√	√	√	√	√				√			√
CMC*	√	√	√	√	√	√	N/A	N/A	N/A	√	√	√	-	-	-	-	-	-	-

** CMC must be used with FibreXtreme VME or PCI carrier boards or user-designed custom interface*

FibreXtreme®

Rugged COTS products for harsh environments

The opportunities for high-bandwidth, streaming data links are not limited to commercial computing applications. Many mission-critical, operational systems that are routinely exposed to extreme environmental conditions can also benefit from the sustained, flexible communication connection provided by our SL100/SL240 Series.



To meet a variety of these operational requirements, SL100/SL240 Serial FPDP boards are available in three COTS configurations designed to withstand conditions such as extreme mechanical shock, vibration, humidity and temperatures. Such rugged environments might include:

- Radar/ sonar
- Navigation
- High-speed data acquisition
- Range and telemetry
- Target recognition
- Medical diagnostics

SYSTRAN'S COTS

FibreXtreme SL100/SL240 Environmental Specifications

Parameter	Standard COTS	Rugged COTS 1	Rugged COTS 2
Temperature, Operating	0ºC to +50ºC	-10ºC to +70ºC	-40ºC to +85ºC
Temperature, Storage	-40ºC to +85ºC	-40ºC to +85ºC	-40ºC to +85ºC
Humidity, Operating	10% to 85% NC	0% to 95% NC	0% to 95% NC
Humidity, Storage	0% to 90% NC	0% to 95% NC	0% to 95% NC
Vibration, Sine	Not Applicable	Sine 10 g peak10 Hz to 2k Hz	Sine 10 g peak10 Hz to 2k Hz
Vibration, Random	Not Applicable	Random .04 g^2/Hz 10 Hz to 1k Hz -6dB/octave 1kHz to 2kHz	Random .1 g^2/Hz 10 Hz to 1k Hz -6dB/octave 1kHz to 2kHz
Shock	Not Applicable	20 g peak ½ sine wave 11 ms duration	30 g peak ½ sine wave 11 ms duration
Altitude, Operating	8,000 ft@32ºC	25,000 ft steady@32ºC Rapid decompression to 40,000 ft	25,000 ft steady@32ºC Rapid decompression to 40,000 ft
Altitude, Storage	25,000 ft	25,000 ft	25,000 ft
Conformal Coating	None	Acrylic HumiSeal 1B31	Acrylic HumiSeal 1B31

For more information on our FibreXtreme products, go online at www.fibrextreme.com.

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