Fibre Channel
Product Overview

AIT's family of Fibre Channel Solutions are used in applications ranging from analyzers and simulators to verification and validation tools. The product line is built on our field-proven *Simulyzer*™ technology that enables the hardware to perform Fibre Channel data generation and Fibre Channel monitoring on the same physical port.

AIT's Fibre Channel products utilize multiple processors with large onboard RAM. A PowerPC processor runs the driver software onboard, minimizing host CPU interaction. This enables autonomous operation with minimal interaction during time-critical test and simulation applications.

All AIT Fibre Channel products include full-function device driver software for the most popular operating systems, an application interface supporting multiple development environments, including C, C++, and LabVIEW. A comprehensive set of source code examples is included.

DUAL PORT DATA GENERATOR

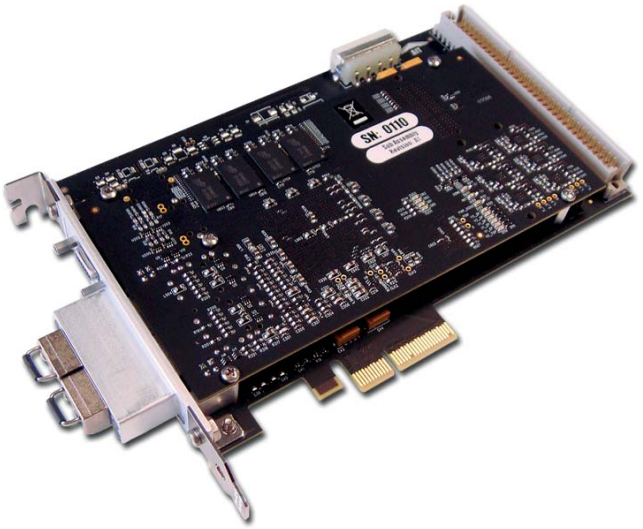
- Generation of Fibre Channel primitives/frames at full line rates
- Simulate Fibre Channel end-devices
- Full error injection on any frame header or payload parameter
- Work simultaneously with dual-port Analyzer

DUAL PORT ANALYZER

- Full chronological monitoring of all Fibre Channel ports to eight nanosecond resolution
- Full error detection
- Work simultaneously with Data Generator
- Complex triggering
- Message filter and selective capture

LIVE DATA CAPTURE

- Live capture of Fibre Channel data in real-time
- Current value monitoring displays Fibre Channel frames in real-time



PCIe-FC4 Simulyzer

A Division of TERADYNE

Avionics Interface Technologies
3703 N. 200th Street
Omaha, NE 68022
Tel: +1 402.763.9644
Fax: +1 402.763.9645

KEY FEATURES

- Supports Point-to-Point, Switched Fabric, and Arbitrated Loop topologies
- Two independent Fibre Channel ports
- Each port supports 1, 2, and 4 Gbps speeds
- Comprehensive decoding of FC-1, FC-2, and Upper Layer Protocol (ULP) frames
- Triggering and Filtering
- Error Injection on any Header or Payload Parameter
- Data Capture to onboard memory or disk file
- Live Capture and Current Value Monitoring
- IRIG-B Time Code Encoder/Decoder for Data Correlation
- In-line Port Configuration for Transparent Analyzer
- Supports multiple ULPs including FC-AE-ASM, FC-AE-RDMA, FC-AE-1553, and FC-AV
- Supports HS-1760E applications, including AS5653, AS5652, and AS5627
- *fcXplorer*™ Windows-based FC Simulator and Analyzer Test Software

PHYSICAL BUS REPLAY

- Electronically reconstruct previously recorded Fibre Channel to an output port

IRIG-B TIME CODE ENCODER/DECODER

- All boards include IRIG-B input for synchronization to a common time source
- IRIG-B encoder with sinusoidal output and freewheeling mode

DATA CORRUPTOR™

- Dynamically change Fibre Channel data in a link
- Emulate a network delay, or introduce jitter in the Fibre Channel link

APPLICATION INTERFACE

The application interface for Fibre Channel is an ANSI C library for the AIT Fibre Channel *Simulyzer*™ boards. The application interface simplifies software development with its intuitive functions.

The application interface supports multiple languages:

- C
- C++
- LabVIEW

multiple operating systems:

- Windows
- Linux
- VxWorks
- LynxOS
- Integrity

and multiple development environments:

- MSVC 6.0
- MSVS 2005/2008 C++
- LabVIEW

Included with the application interface are several C++ programs (delivered as source code) which perform various functions. The Fibre Channel sample programs utilizes the application interface functions. The FCX functions can be used by the application developer to easily program *Simulyzer*™ setup for transmission, reception, monitor, filter, trigger, and status.

AIT FIBRE CHANNEL HARDWARE MODEL GUIDE

	MODEL	FORM FACTOR	KEY FEATURES
	XMC-FC4	XMC	• Supports Point-to-Point, Switched Fabric, and Arbitrated Loop Topologies • Two independent Fibre Channel ports, each support up to 4 Gbps • Extended temperature supports -40 to 80° C operation
	PXIe-FC4	PXI Express	• Supports Point-to-Point, Switched Fabric, and Arbitrated Loop Topologies • Two independent Fibre Channel ports, each support up to 4 Gbps
	PCI-FC4	5V PCI	• Supports Point-to-Point, Switched Fabric, and Arbitrated Loop Topologies • Two independent Fibre Channel ports, each support up to 4 Gbps
	PCI-X-FC4	PCI-X	• Supports Point-to-Point, Switched Fabric, and Arbitrated Loop Topologies • Two independent Fibre Channel ports, each support up to 4 Gbps
	PCIe-FC4	PCI Express	• Supports Point-to-Point, Switched Fabric, and Arbitrated Loop Topologies • Two independent Fibre Channel ports, each support up to 4 Gbps

FCXPLORER

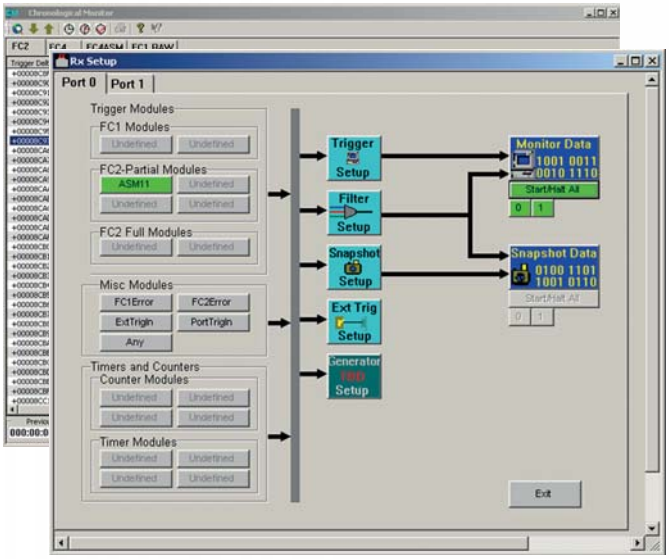
fcXplorer™, AIT's Fibre Channel Simulator and Analyzer Test Software for Windows 2000/XP, provides a "Best-of-Class" intuitive Graphical User Interface (GUI) for AIT's Fibre Channel *Simulyzer*™ interface modules. *fcXplorer*™ helps to troubleshoot, optimize, plan and configure Fibre Channel traffic loading. The intuitive GUI provides the ability to easily setup the Fibre Channel transmit ports and monitoring of the Fibre Channel ports without programming. *fcXplorer*™ supports all of the *Simulyzer*™ board operations including recording, physical replay, triggering, and filter setup. Low and High level protocol analysis features provide capture, filter, time stamp and interpretation of Fibre Channel traffic, and generation of advanced statistics. *fcXplorer*™ can alert engineers to potential performance and configuration problems allowing users to quickly identify and remedy any anomalous network condition.

GENERATOR/SIMULATOR TOOLS

- Graphical interface for definition of transmit data using lists of ordered sets and easy Fibre Channel frame structured-type entry
- Complete control of the transmit link including frame content, (header and payload), timing, sequence, frame gaps, fill words and other legal primitives as well as illegal 40-bit codes
- Error injection on any frame header or payload parameter
- Replay of recorded data with precision timing or corrected protocol timing
- Optional Data Corruptor™ loops back a receive stream (user-defined network delay), and can modify FC1 data (ordered sets and frame delimiters) and insert, modify, delete, or replace one or more frames prior to retransmission

MONITOR/ANALYZER TOOLS

- Powerful combinations of user-defined trigger and filter features enabling capture of only pertinent data
- Over 150 preset triggers defined for several protocols
- Captured data viewable via user-customizable spreadsheet-style display windows
- Graphical decoding of captured frames at the click of a mouse
- "Live Capture" providing real-time display of captured data in a chronological fashion
- Low and High level protocol analysis displays to capture, filter, time stamp, and interpret Fibre Channel traffic
- Accurate time stamping with 10 ns resolution
- Timing tools for frame time stamp comparison
- Display of advanced statistics
- Error detection and reproduction



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3703 N. 200th Street
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Tel: +1 402.763.9644
Fax: +1 402.763.9645
aviftech.com/fc
sales@aviftech.com