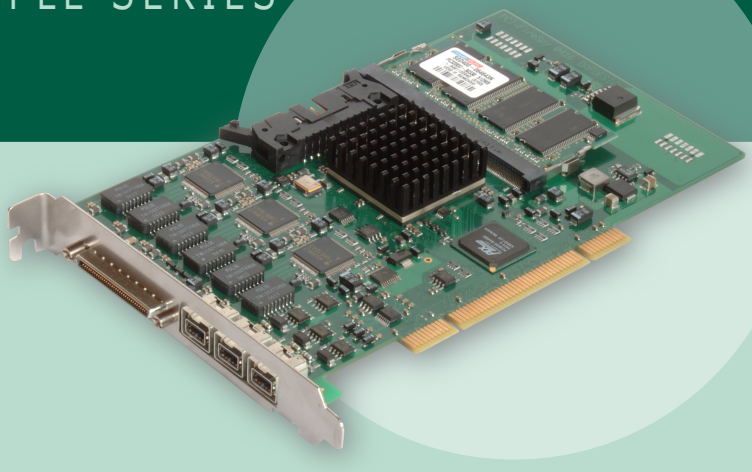
dap TECHNOLOGY

GEN2 TRIPLE SERIES

FIRESPY 385x



0 : 3x bilingual, 6x transformer coupled via high density connector

1E : same as above with mechanical support arm for HDC

2 : 6x LEMO, transformer coupled

1394SM MIL1394

PRODUCT OVERVIEW:

The Triple Series PCI hosted **FireSpy3850**, **3851E** and **3852** provides three FireSpy bus analyzer engines in one compact package. Designed to meet the requirements of AS5643-based triple-redundant bus architectures, all the **FireSpy385x** products allow to be connected to three separate IEEE-1394 buses while connecting to three synchronized analysis engines. Based on our 2nd generation hardware platform, the FireSpy385x products contain 1GB internal memory and a powerful processor to provide the resources needed to service all three buses. The 32-bit PCI 2.1 host interface allows communication with the FireSpy to be much faster than similar products with USB 2.0 or Ethernet interfaces.

The **FireSpy3850** brings out six active transformer coupled ports, two from each bus analyzer engine, through a single high-density (VHDCI) connector to six IEEE-1394 Beta 9-pin cables. Additionally, it has three, one from each bus analyzer, IEEE-1394 bilingual 9-pin connectors.

The **FireSpy3851E** is the same as the 3850 except it provides mechanical support to help stabilize the VHDCI connection.

The **FireSpy3852** brings out six active transformer coupled ports, two from each bus analyzer, to 6 LEMO connectors.

The AS5643/1 active transformer coupled ports can only operate at S400 and S800 Beta mode data rates, while the bilingual ports can operate in S100, S200 and S400 legacy mode and S400 and S800 Beta mode.

The F**ireSpy385x** products utilize the same FireDiagnostics Suite™ software as all other FireSpy bus analyzers. However, all three bus analyzer engines are presented in a single GUI. FireDiagnostics Suite™ software supports Windows™ Operating Systems. Additionally, the FireDiagnostics Suite API allows you to build your own control software using C/C++ or LabVIEW™.

The seamless integration of the AS5643 protocol makes the FireSpy385x products the preferred tool for many Aerospace & Defense development, testing and product qualification tasks. DapTechnology has made considerable efforts to fully support the SAE AS5643/Mil1394 protocol in all major functional areas of the FireSpy385x and continuously updates the analyzer functionality according to implementation requirements and ongoing standardization efforts.**Key Features** include:

- IEEE 1394-1995, 1394a-2000 and 1394b-2008
- 100, 200, 400, 400b and 800b transfer rates
- PCI 2.1 compliant
- On-board 400 MHz RISC processor and programmable logic
- 1024 MByte internal memory
- GUI and API for Windows™ Operating Systems
- Optional Bus Power (on bilingual ports)
- Powerful software provides:
  - Monitor
  - Recorder
  - Commander
  - Scriptor
  - Generator
  - Filter and Trigger
  - Support for AS5643, IEC61883, AV/C, SBP2, IP1394 and IIDC protocols
- Internal SelfTest
- C/C++ API with wrappers for LabVIEW™

A COMPLETE SOLUTION:

The **FireDiagnostics Suite** is the most comprehensive collection of 1394 analysis, simulation and interface tools for a wide range of applications. Apart from well established and hardware assisted analyzer tools like Monitor, Recorder, Generator, Commander and Scriptor, the suite also offers a set of software tools designed to integrate the FireSpy products in a wide variety of testing applications, as well as extend customization of its functionality beyond the baseline feature set provided by DapTechnology.

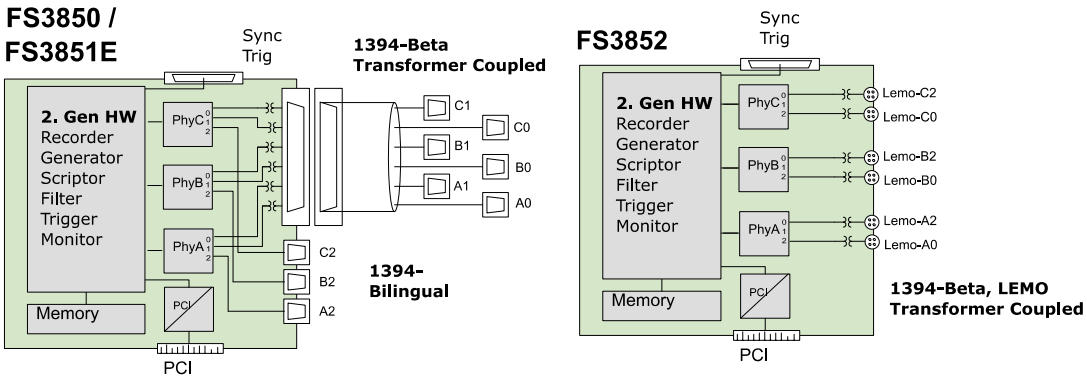
The foundation for all software tools included in the FireDiagnostics Suite is formed by the **Application Programming Interface** (API). With its interfaces for a wide range of development environments like C/C++ and support for the Windows operating system, the application of FireSpy analyzers is extremely flexible. With its feature-rich function library, all hardware assisted analyzer tools like the Recorder and Generator can be controlled as well as more low-level 1394 bus functions.

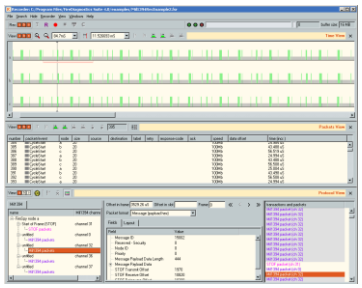
The **Recording Viewer** is a standalone application designed to permit trace (recorded data) analysis offline, i.e. without a connected FireSpy. The same comprehensive set of analysis tasks is available but allows for a much smaller PC footprint than having the entire FireSpy application installed.

The **Signal Monitor** is an easy-to-use Mil1394 sub-system monitor and analysis tool that benefits from the hardware-implemented Mil1394 protocol. A customizable set of status signals can be pulled from the bus and displayed in near real-time on a customizable graphical Control Panel. Alarms can be setup to alert the operator of out-of-range values.

Another cornerstone of the FireSpy products is the unparalleled high-level **protocol support**. Besides the hardware-assisted integration of AS5643 the FireSpys also support software-based analysis capabilities for consumer and industrial control based applications. The different protocols require very different implementation details and are therefore very unique in their implementation. However, some key characteristics can be identified and are listed below:

- Nested protocol header decoding
- Protocol payload separation
- Handshake verification
- Logical grouping of related transactions
- Separate protocol view
- Protocol layer CRC and Parity Check
- Customization of display details

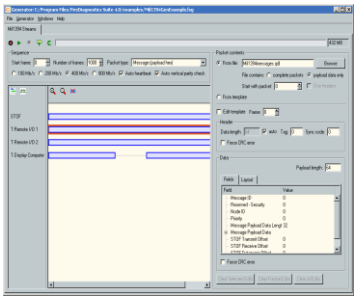




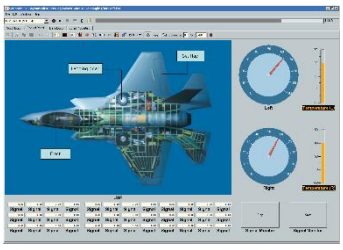
The ***Recorder*** is the main tool for data traffic capturing and analysis. Running all in HW/FW it guarantees precise time measurement, reliable data capture, instantaneous triggering and enough memory for even very complex analysis tasks. It contains several display views, which can all be switched on or off individually.

Time View - timing analysis of events and packets, resolution of 10 ns.
Packet View - chronological packet display with Trigger indicator and error verification
Transaction View - transaction-oriented display, verification of transaction completeness, transaction list or flow-diagram display
Topology View - static bus-topology display at the trace cursor position
Protocol View – high-level protocol analysis, encapsulated protocol verification, handshake verification, etc.

The ***Generator*** is optimized for the generation of isochronous stream data packets offering the most comprehensible feature set for the insertion of errors, streaming of simultaneous channels and payload definitions from stored files.



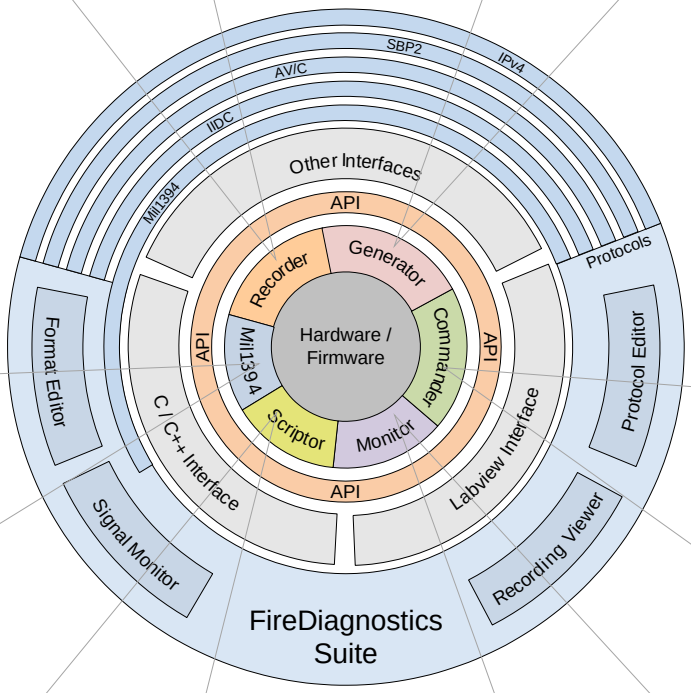
The ***Stream Generator*** includes a powerful graphical editor to specify slots with stream sequences to be sent for up to 63 channels. Each sequence consists of one or more stream packets with selectable data sources that can be fixed or from file. For each sequence one can select various options such as speed, packet size and header fields, including erroneous values. The overall sequence size is customizable in multiples of Cycle Periods. All Generator slots can be run in a looped-mode continuous transmission. Both the ***Stream Generator*** and the ***Scriptor*** can run in parallel for advanced isochronous and asynchronous combination testing.

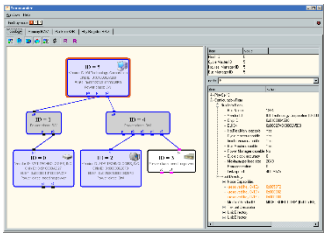


The ***AS5643*** protocol HW level support for the FireSpy is an essential component for supporting AS5643. Key features include:

Generation - STOF and stream generation, 1µs resolution
Verification / Calculation - Timing, Vertical Parity Check, Heartbeat
Monitoring - asynchronous stream payload field extraction

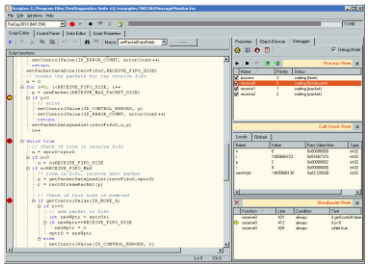
AS5643





The ***Commander*** can be used to control the FireSpy functionality on a basic 1394 protocol level:

Topology - live display of the current bus topology, Configuration ROM Explorer
Memory Read/Write - R/W/L to memory locations of remote nodes,
Packet S/R - RX/TX of all packets, unformatted and erroneous packets.
PHY Register - R/W of PHY registers of the local and R of the remote nodes.

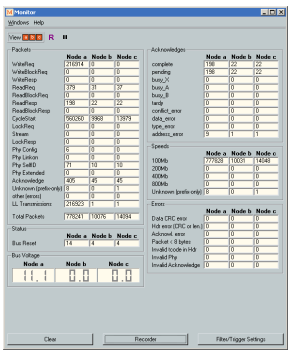


The ***Scriptor*** permits the definition of C-like scripts to control almost anything on the FireSpy, including sending and receiving packets. It is the preferred tool for the generation of individual asynchronous packets, asynchronous sequences and the simulation of entire handshakes.

Script editor - C-like script editor/compiler with automatic code block generation, integrated Debugger and floating-point data type support
Data editor - defines data elements that can be used by the script, i.e. generation data
Control Panel - display of values using different types of meters (gauge, LCD, thermometer, etc.).

The ***Monitor*** gives a quick indication of activities on the bus under test. The displayed data is updated in real time.

- Number of packets of specific types
- Number of packets of specific speeds
- Number of acknowledge packets
- Number of error packets
- Total number of packets
- Number of bus resets
- Bus voltage measurement



MAIN FEATURE SUMMARY:

GENERAL

- IEEE 1394-1995, 1394a-2000 and 1394b-2002 compliant
- Supports 100(L), 200(L), 400(L&B) and 800(B) Mbps transfer rates
- PCI 2.1 compliant
- Optional Bus Power: 2.8 W at 12V (for each bilingual port)
- 992 MByte memory for packet and data storage
- Firmware field upgradeable to enable future expansions
- AUX connector for:
  - Trigger input and output functions
  - Recording external event
- GUI and API for Windows™ Operating Systems

MONITOR

- Displays bus activity:
  - isochronous packets
  - all types of asynchronous packets
  - all types of PHY packets
  - all types of acknowledge packets
  - several types of Errors
- Counts packets according to type, speed, ack and error condition
- Counts number of bus resets
- Measurement of bus power voltages (bilingual ports)

RECORDER

- Time stamping of all packets and status events with 10ns resolution
- Packets hidden by slower connections are visible as 'prefix only' packets
- Extensive packet/event filtering/trigger/search capabilities
  - Packet type
  - Transmission speed
  - Boolean combination of 4 programmable packet sets
  - Data payload patterns
  - Error conditions
  - Various status events
  - Graphical Trigger Sequencer
- Adjustable trigger position within programmable record buffer size
- Cyclic pre-trigger buffer management option
- Different kinds of packet display views, including:
  - Time View, displays all packets on a time line, including the prefix
  - Packet View, displays packets as list plus selected packet options
  - Transaction View, displays transactions as list or flow graph
  - Topology View, graphical topology displays as is during recording
  - Protocol View, displays packets decoded to selected protocol
- Precise time measurements
- Marking of individual packets or packet ranges
- Export format for re-generation of packets by Scriptor or API

GENERATOR

- Simultaneous generation of up to 63 iso streams
  - Graphically programming of stream transmit block
  - Data payload import from file
- Generator and Scriptor run simultaneous for stream and asynchronous packet generation
- Special Mil1394 stream generator package (optional)

SCRIPTOR

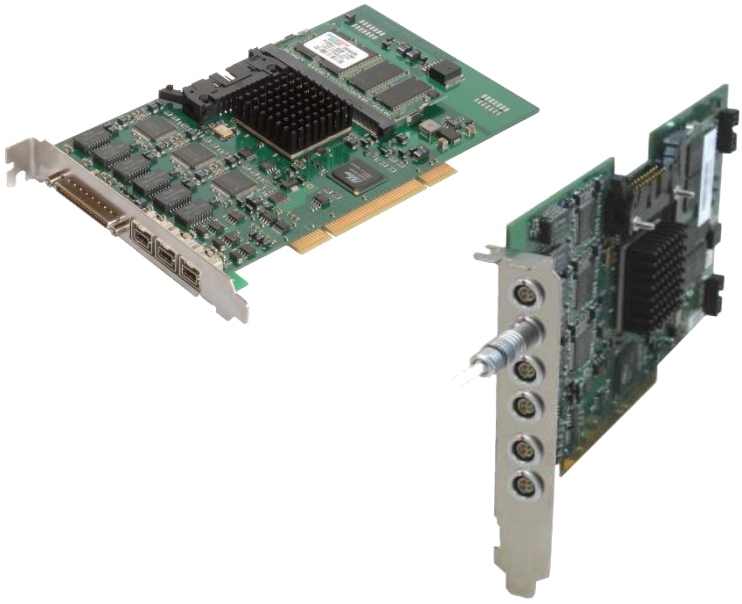
- Script Editor
  - C-like scripting language
  - Function Library
  - Macros to automatically generate blocks of code
  - Syntax coloring
  - Integrated Debugger
  - Floating point data types
- Data Editor
- Control Panel
  - Graphical display elements for data value representation
  - Ethernet-connected Client Panels for remote data monitoring
- Several Sample Scripts

COMMANDER

- Reading and/or writing of local and reading of remote PHY registers
- Reading and/or writing of remote memory locations (incl. CSR register space)
- Possibility to graphically view the current Topologies
- Sending of user definable packets

SPECIFICATION:

Dimensions:	Half Length PCI, 125 mm x 18.9 mm x 209 mm
Weight:	150 g
Operating Range:	0 – 70 C
Power Requirements:	12V, 10 Watt maximum (without providing 1394 bus power)
Compliance:	FCC Class A
Connections:	32bit/33MHz PCI connector, universal keyed (for 3.3V and 5V slots) IEEE 1394 connections: model dependent
Indicators:	-
Switches:	-
Package Content:	FireSpy3850 3x 1394b Cable (Beta9 – Beta9) Adapter Cable (VHDCI – 1394Beta (x6))
Product warranty:	36 months limited warranty
Part Number:	FS385 or FS385AS5643 w. AS5643 SW protocol package
Optional Configuration:	FS3851E – as 3850 but with mechanical support to stabilize VHDCI connectivity FS3852 – transformer coupled ports with LEMO connectors (x6)
SW Add-on modules:	SBP2 protocol software package IIDC protocol software package AV/C protocol software package IP1394 protocol software package AMI-C protocol software package AS5643 protocol software package



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