



Sierra™ SAS/SATA 6G Protocol Test System

**Complete Protocol Test
in a Single Package!**



CAPTURE, DISPLAY, AND ANALYSIS OF BOTH SAS AND SATA

Key Features

- SAS & SATA at Data Rates to 6G
- Fully Integrated, Multifunctional System
 - Analyzer
 - Exerciser
 - Error Injector
 - Compliance Test
- Fast Lock Time
- Intelligent Triggering
- Hardware Filtering
- Raw Bit Recording
- Error Detection
- Transparent Post Processing
- Memory Segmentation
- SAS & SATA Decoding
- Logical & Chronological Traffic Displays
- Statistical Reporting
- Expansion Port
- Cascading
- External Triggering
- Trace Memory up to 16 GB
- GbE/USB 2.0 Host Interface

The Sierra Protocol Test System is the 6th generation in the leading line of SAS/SATA protocol test solutions from LeCroy, the leading manufacturer of protocol test systems. Designed for the current evolution of both SAS (SAS2) and SATA (6G), the new Sierra product family sets new standards for performance while incorporating a complete range of features in a single, economical system.

Leveraging LeCroy's extensive expertise in high-speed serial data analysis, the Sierra provides the most accurate capture, display and analysis of both SAS and SATA data traffic at data rates up to 6 Gb/s. The Sierra product family includes the capability for protocol analysis, traffic generation, host and/or device emulation, and error injection, all within one system. The platform supports all features, and customers can configure specific features or add features later to match their requirements and budget.

The Sierra product family offers a choice of two different chassis, each of which supports the full range of test and analysis capabilities, including comprehensive protocol analysis, host and device emulation, error injection and compliance test. The Sierra M6-2 is a compact, portable, and economical package that supports up to two ports. The Sierra M6-4 provides expansion capabilities up to four ports. Both units can be cascaded by linking up to eight separate enclosures together to provide time synchronized data capture and analysis across as many as 32 ports.

With the flexibility to adapt to a user's current and future needs, the Sierra System brings a new standard for performance, capability and flexibility to SAS/SATA protocol test systems.

The Only Complete Protocol Test System for up to 6G

The Sierra SAS/SATA Protocol Test System combines creative industrial styling and a performance-enhancing native PHY with expert software features that minimize debug and development time. The Sierra platform integrates the best of the STX and CATC Trace software suites and adds additional capabilities at both the hardware and software levels.

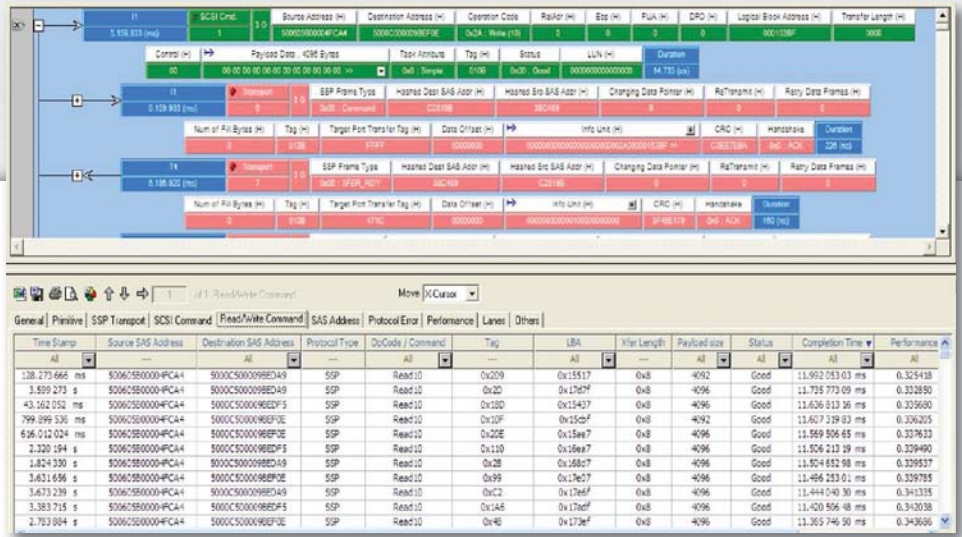
Detailed Protocol Specific Support

Sierra's analysis and design suites are developed specifically for use with the SAS and SATA protocols, and provide extensive protocol decoding, expert error analysis, and complete user support when decoding and viewing the recorded traffic. This extensive protocol support, combined with the different traffic views, advanced triggering, data filtering, traffic generation, and error injection capability, allows

engineers to rapidly become familiar with SAS- and SATA-specific issues, and quickly understand new issues the first time they encounter them. Every engineer becomes a protocol expert with the support of Sierra's detailed expert analysis.

Innovative, Flexible, and Compact System Design

The Sierra platform is designed for convenience and functionality. The compact and portable Sierra M6-2 provides an economical choice when a one- or two-port system is sufficient. The larger Sierra M6-4 chassis supports up to four ports and provides all data bus ports, controls and connectors on the front panel, making it ideal for a lab workbench or rack-mount environment.



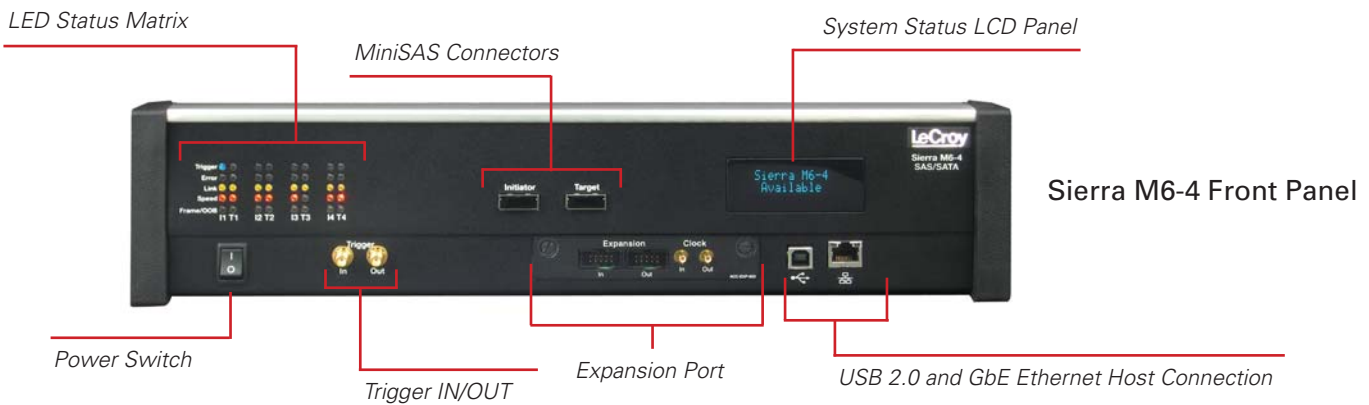
Sierra's intuitive trace displays include both graphical and tabular formats.

Both systems include protective bumpers to guard against damage in busy environments, and to provide a convenient means for stacking multiple systems.

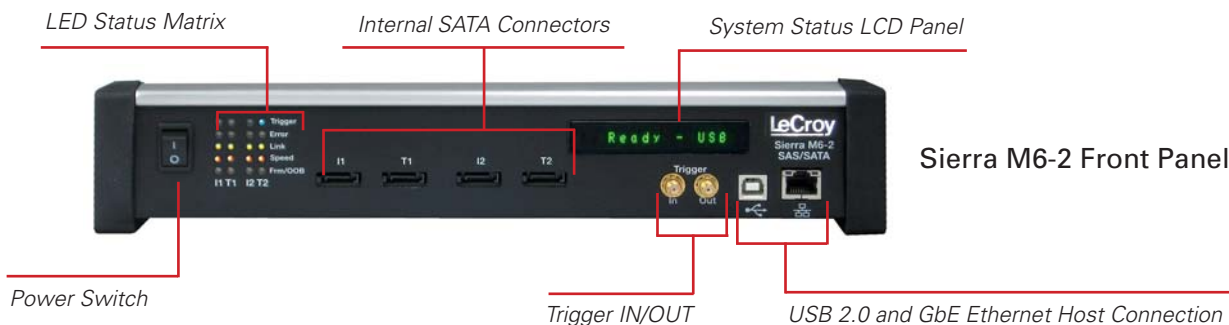
The Sierra's array of status indicators includes information on negotiated link speed, protocol error detection, link detection, and whether OOB or protocol frames are currently being

sent over the link. The LCD screen reports which user is currently connected to the Sierra system, the system IP address and system status. Host connectivity to the Sierra includes support for both USB 2.0 and Gigabit Ethernet.

Both Sierra chassis provide an expansion port (located on the front panel of the Sierra M6-4 and



Sierra M6-4 Front Panel



Sierra M6-2 Front Panel

DEVELOP, TEST, DEBUG AND VALIDATE

on the rear panel of the Sierra M6-2). The expansion port supports cards providing additional capabilities, such as cascading of multiple units, DC power for drives under test, and also provides a simple means for future system enhancements. The expansion card for cascading multiple systems is provided as a standard feature for the Sierra M6-4.

Industry's Most Efficient Lock-time

One of the biggest new features for the Sierra platform is the addition of native PHYs. The native PHYs offer many benefits over implementations found in other 6G test solutions, including better capture performance during speed negotiation and power management phases, and improved response time with our comprehensive design suite. See more, miss less with the most capable PHY in the market.

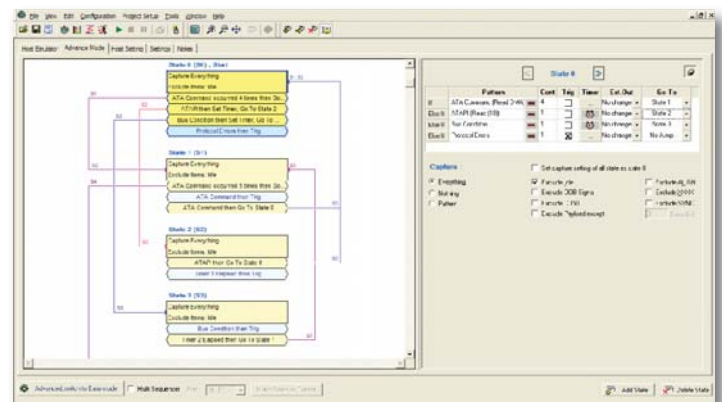
Expert Analysis Software

From the link layer to the application layer, the Sierra analysis suite offers a wide range of traffic views and tools to enable engineers to easily zero-in on areas of interest. For applications at the link layer, the Column and Link Tracker views show the handshaking of primitives and frame composition from SOF to EOF. Data can be viewed in 8b, 10b, and scrambled formats. When working at the frame level, the Text View shows exchanges of frames and accompanying primitives. For viewing commands and frames in a time-ordered fashion, the Spreadsheet View gives the user the flexibility to easily filter out unwanted primitives and frames to easily focus on what is important. The Sierra also features a hierarchical view for the application layer, logically assembling frames and primitives that are related to commands. The protocol-specific hierarchical view allows users to easily view command definitions, completion and status. This capability comes especially handy in environments with outstanding commands, large gaps of traffic between command start and command end, or other complexities such as Time-Domain Multiplexing. The commands can then be drilled-down to view the frame and link layers. All of the views for expert analysis can be used simultaneously and are automatically synchronized and displayed within one

application. When developing or debugging, one size does not fit all. View the traffic in the manner most meaningful for the task.

Pin-point Triggering

From looking for a particular frame, to more complex events such as timing and status between events, Sierra's logical triggering algorithms give the engineer the ability to quickly define root issues to look for during capture. Sierra's powerful trigger capabilities include up to a 24-level state sequencer, 4 independent timers, multiple counters, the ability to pre-filter at each state, and the ability to assign individual triggers to each port pair. Defining fields within frames and/or commands is also easy thanks to protocol-specific awareness. Spend more time engineering and less time looking with the deepest trigger available.

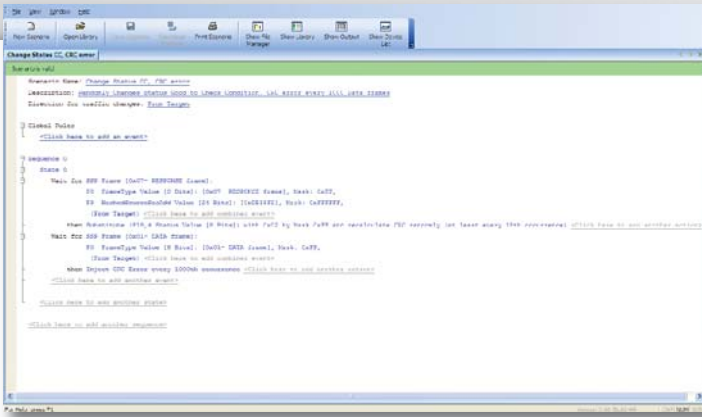


Advanced Triggering.

Transparent Intelligence

With Sierra's transparent post-processing, searching, and hiding of unwanted traffic, analyzing the captured traffic has never been easier. Combined with protocol-specific awareness, post-processing allows the engineers to easily determine what was captured without having to scroll down and keep notes. From performance statistics, such as command throughput and completion time, to viewing how many times a command, frame, bus event, or primitive occurred, the traffic summary enables the engineer to easily track and find areas of interest. Sierra ZeroTime™ search immediately identifies what was actually captured, eliminating the possibility of searching for traffic

MULTIPLE WAYS TO VIEW YOUR DATA



Error Injection.

The Sierra Trainer is a script-based traffic generator that gives engineers the ability to control what is being sent down to the bit level, including flexibility for changing OOB waveforms, defining IDLE traffic, and transmitting user-defined data patterns for customized testing throughout the design process. Also included is support for SAS

The Sierra System Provides Multiple Ways to View Your Data

The Sierra system provides extensive data display and analysis capability to help rapidly located and identify any protocol issues. The Sierra protocol test suite supports a wide variety of data views, each providing a different perspective that leads to greater understanding of the captured data traffic. Clear identification of data fields and choices of logical or chronological enable the user to sort through issues quickly and identify and solve problems. Tool tips provide handy information on the meaning of different data fields, and the ability to drill down through protocol layers enables the engineer to rapidly locate the source of any problem.

Comprehensive Testing Supports Engineering Productivity

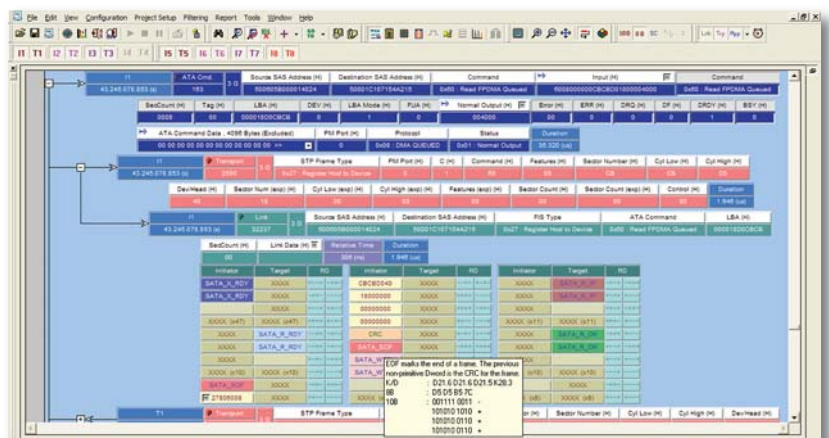
The Sierra product family provides the most comprehensive, intuitive and productive protocol test system available today. With a complete suite of advanced test capabilities, software that is easy to use and understand, and comprehensive feedback on protocol issues, the Sierra is the system of choice for SAS and SATA 6G product development and support.

compliance with our SAS Compliance Test Suite written in conjunction with the UNH-IOL (University of New Hampshire Interoperability Lab).

Sierra includes extensive error injection capability, and supports the InFusion™ software test suite. InFusion provides the ability to monitor live traffic on heavily-loaded data buses at full data rates, and identify and modify traffic patterns “on-the-fly” to introduce programmed error conditions for testing error identification and recovery capabilities in the device under test. Examples include support for changing dwords, disconnecting links, and causing various errors (such as CRC and running disparity) at defined or random intervals. The InFusion test suite is especially useful during the final test and system integration cycles. Gain an edge over the competition with Sierra’s comprehensive design suite.



OOB Waveform View.



Packet View.

Combined View.

Event View.

Spreadsheet View.

SPECIFICATIONS AND ORDERING INFORMATION

Specifications

	Sierra M6-2	Sierra M6-4
Host Requirements	Windows® XP or Windows® Vista, USB, or Ethernet	Windows® XP or Windows® Vista, USB, or Ethernet
Recording Memory Size	2 GB, 4 GB or 8 GB	4 GB, 8 GB or 16 GB
Data Rates Supported	6 Gb/s, 3 Gb/s, and 1.5 Gb/s	6 Gb/s, 3 Gb/s, and 1.5 Gb/s
No. of Ports Supported	Up to 2 ports	Up to 4 ports
Cascadable	Up to 16 ports	Up to 32 ports
Data Bus Interface	Internal SATA ports	MiniSAS ports
Host Interface	USB 2.0, 10/100/1000baseT Ethernet	USB 2.0, 10/100/1000baseT Ethernet
Front Panel Connectors	Internal SATA bus connectors (up to two ports, each with Host and Device), External Trigger IN/OUT, USB 2.0 & 10/100/1000 Ethernet Host Interface	MiniSAS Initiator (up to 4 ports), MiniSAS Target (up to 4 ports), External Trigger IN/OUT, External Signals Connector, USB 2.0 & 10/100/100 Ethernet Host Interface, Expansion IN/OUT, Clock IN/OUT
Front Panel Indicators	5 LEDs (Trigger, Error, Link, Speed, Frame/OOB) for each of 2 Hosts and 2 Devices; Status LCD	5 LEDs (Trigger, Error, Link, Speed, Frame/OOB) for each of 4 Initiators and 4 Targets; Status LCD; Power
Front Panel Controls	Power ON/OFF	Power ON/OFF
Rear Panel Connectors	AC Power, Expansion Port (Expansion cards are optional)	AC Power
Dimensions	Metal Chassis: 298 x 51 x 305 mm (11.75" x 2.0" x 12.0") With Bumpers: 324 x 62 x 308 mm (12.75" x 2.5" x 12.1")	Metal Chassis: 395 x 89 x 367 mm (15.5" x 3.5" x 14.5") With Bumpers: 418 x 98 x 375 mm (16.5" x 3.8" x 14.75")
Weight	2.45 Kg (5.4 lbs.)	5.9 Kg (13 lbs.)
Power Requirements	90–254 VAC, 47–63 Hz (universal input), 100 W	100–200 VAC, 50–60 Hz, 125 W

Ordering Information

Product Description	Product Code	Product Description	Product Code
Sierra Hardware Platforms		SAS/SATA Error Injector Software	
Sierra M6-4 SAS/SATA Platform 4 GB Memory	SAS-M006-004-X	6G InFusion Software – 4 ports	SAS-J006-004-A
Sierra M6-4 SAS/SATA Platform 8 GB Memory	SAS-M006-804-X	6G InFusion Software – 2 ports	SAS-J006-002-A
Sierra M6-4 SAS/SATA Platform 16 GB Memory	SAS-M006-164-X	6G InFusion Software – 1 port	SAS-J006-001-A
Sierra M6-2 SAS/SATA Platform 2 GB Memory	SAS-M006-002-X	SAS/SATA Emulator Software	
Sierra M6-2 SAS/SATA Platform 4 GB Memory	SAS-M006-402-X	6G Initiator Emulator Software – 4 ports	SAS-ZI06-004-A
Sierra M6-2 SAS/SATA Platform 8 GB Memory	SAS-M006-802-X	6G Initiator Emulator Software – 2 ports	SAS-ZI06-002-A
SAS/SATA Analyzer Software		6G Initiator Emulator Software – 1 port	SAS-ZI06-001-A
6G Protocol Analysis Software – 4 ports	SAS-T006-004-A	6G Target Emulator Software – 4 ports	SAS-ZT06-004-A
6G Protocol Analysis Software – 2 ports	SAS-T006-002-A	6G Target Emulator Software – 2 ports	SAS-ZT06-002-A
6G Protocol Analysis Software – 1 port	SAS-T006-001-A	6G Target Emulator Software – 1 port	SAS-ZT06-001-A
SAS/SATA Trainer Software		6G Emulator Bundle (Initiator & Target) – 2 ports	SAS-ZB06-002-A
6G Trainer Software – 1 port	SAS-ZG06-001-A	6G Emulator Bundle (Initiator & Target) – 1 port	SAS-ZB06-001-A



1-800-5-LeCroy
www.lecroy.com

Local sales offices are located throughout the world.
Visit our website to find the most convenient location.