



# Xgig 5000<sup>®</sup> 12 Gbps SAS Analyzer

The Viavi Solutions Xgig 5000 12 Gbps Analyzer is the leading and the most powerful monitoring and analysis system available for serial attached SCSI (SAS) applications, offering complete visibility into traffic flows with advanced trace and analysis capabilities.

This multi-purpose, multi-protocol tool helps users overcome high-speed serial design challenges and accelerate development of today's storage area networks (SANs) and storage subsystems. This solution supports 12/6/3 Gbps SAS and 6/3 Gbps Serial Advanced Technology Attachment (SATA).

The Viavi Xgig 5000 12 Gbps SAS Analyzer is a versatile, state-of-art solution for monitoring and analyzing live traffic employing a chassis-and-blade hardware architecture. The Xgig 5000 chassis supports the new 12 Gbps blades with dual mini-SAS HD receptacles, allowing bidirectional analysis of single and wide-port SAS links. Double-width blades occupy two slots in a four-slot Xgig 5000 chassis<sup>1</sup> to provide analysis of double-wide links in the same domain for time-synchronous traces, which is especially useful for testing host bus adapters (HBAs) and expanders that support this type of connection. Each port provides 4 GB of RAM to allow for up to 32 GB of tracing capabilities per blade.

## Comprehensive protocol support

In order to assist users in designing leading-edge equipment, the Xgig 5000 12 Gbps Analyzer provides full line rate monitoring and analysis for SAS-3 at 12 Gbps. The analyzer also graphically shows SAS out-of-band (OOB) sequences—low-speed analog signaling patterns used to both reset and set up link properties—so users can quickly identify OOB-based errors. Capturing the timing of every align burst and idle on both sides of OOB links, as well as automatically detecting OOB signaling patterns (COMWAKE, COMRESET, COMINIT, and COMSAS, each denoted by a different color), enables users to verify that both the host and device under test are performing OOB signaling as expected.

## Key Benefits

- Eases troubleshooting with the industry's most powerful trace capabilities and advanced monitoring and analysis tools
- Accelerates development through patented search and filtering capabilities, including DWORD searches within frames
- Enables analysis of large port counts with time-sync groups up to 64 ports
- Automates troubleshooting with advanced scripting and capture capabilities
- Eliminates cabling complexity using native mini-SAS HD connector interfaces

## Key Features

- Protocol-aware analysis at 12/6/3 Gbps for SAS
- Fully integrated, multifunctional blade (analyzer, generator, jammer)
- Full network visibility with 100 percent capture at line rates
- 16 or 32 GB of trace memory per blade
- Trace memory divided per port
- Memory segmentation for capture of multiple traces
- Analyzes SAS-3 traces
- Tunable RX/TX signaling
- Supports passive "analog pass-through" to minimize the analyzer's effect on signal integrity

## Non-intrusive monitoring

Different applications have different signaling sensitivities. For minimal signal impact, the Xgig 5000 12 Gbps Analyzer offers an Analog Pass-through mode that provides a truly passive, high-impedance, low-latency network connection. The analyzer passes every monitored bit through exactly as received, enabling users to see the same signal that the device under test sees. While this capability has always been part of Xgig analyzers, Viavi has refined and improved the Xgig 5000 12 Gbps SAS Analyzer to address the specific characteristics of this protocol at high speeds.

For extended cable lengths, the Xgig 5000 2 Gbps blade already supports both active and optical cables scheduled, which will become available in early 2012. At that time, Viavi will provide a firmware update to enable functionality.

## Multi-function support

The multi-function capability of the Xgig 5000 enables users to leverage a single blade to perform several functions for dramatic capital expense savings. In addition to capturing and analyzing traffic, SAS blades support traffic Jammer and Generation capabilities accessible by toggling software switches<sup>2</sup>. Users can manage these multi-function capabilities effortlessly through the Xgig 5000 12 Gbps Maestro GUI software that allows them to inject (jam) errors into live traffic as well as generate arbitrary SAS (SSP, SMP, and STP) at full line rates with three levels of control so they can perform comprehensive testing and analysis to expose, identify, locate, and resolve network impairments.

## Enhanced analysis capabilities

The Xgig 5000 12 Gbps Analyzer offers a wide array of analysis capabilities, including:

- Industry's most powerful trace capabilities
- Patented search and filtering functionality
- Multi-protocol support
- Large trace buffers
- Memory segmentation to allow multiple trace capture
- Xgig 5000 12 Gbps SAS Expert, providing automatic analysis of more than 1800 metrics and 1200 analysis functions across protocols.

## New 12 Gbps SAS capabilities include:

- Triggering and filtering across all logical ports
- Traffic Summary View supporting OOB signaling, primitives, error event types, frames, connections, and transaction event types, as well as navigation between each counter and associated events in the trace
- Protocol-aware decoding of all new SAS-3 primitives

## Advanced automation

Many design tests and troubleshooting procedures involve complicated, repetitive processes. With both GUI and API options available, users can define scripts from simple commands to complex regression test libraries, enabling automation of the extensive capabilities the Xgig 5000 offers.

## Synchronization and sharing

The ability to cascade up to four Xgig 5000 chassis lets users form synch groups, bringing together up to 64 time-synchronized SAS/SATA ports. Alternatively, using Xgig 5000 port leasing model, reconfiguring the same set of hardware allows up to 32 individual simultaneous users to leverage a single test setup.

## Ordering Information

Part Numbers	
Xgig5k-1208-B	Wide-port (4xlink) 12 Gbps SAS analyzer blade (16GB memory)
Xgig5k-1208-AN	Wide-Port (4xlink) 12 Gbps SAS analyzer software
Xgig5k-S212GS	Generator key 12 Gbps SAS (2 port key)
Xgig5k-S212JS	Jammer key 12 Gbps SAS (2 port key)
Xgig5k-0004	Xgig 5000 four-slot chassis



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