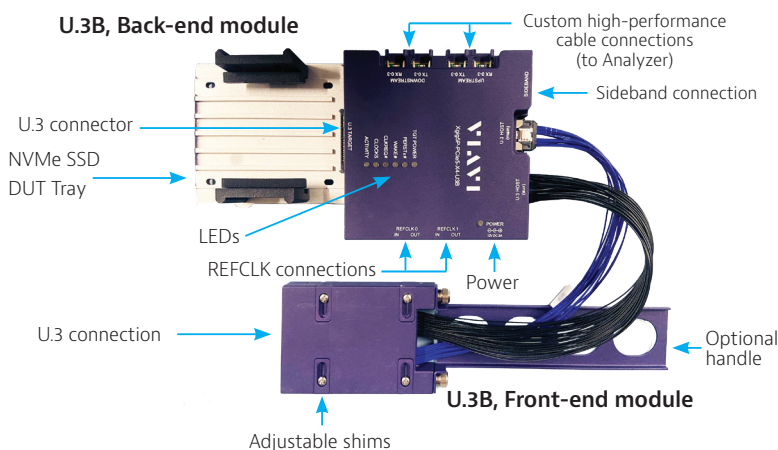# VIAVI
Xgig U.3-Server, 4-Lane Interposer
for PCI Express® 5.0

Provides a tap of communication between a host-system and a U.3 NVMe SSD for input to a VIAVI PCIe® 5.0 Analyzer

VIAVI Solutions Xgig® 4-lane, U.3 Interposer, the Xgig5K-PCIe5-X4-U3B, is an active Interposer optimized for development, debugging and performance tuning of NVMe SSD operation in high-density storage servers. Bidirectional PCIe 5.0 protocol data on 4 lanes is captured at 32GTps for analysis. The Interposer supports either 1 link of 4 lanes, or 2 links of 2 lanes for dual port operation.

This Interposer uses high-speed linear signal redrivers to restore the signal quality of the PCIe data lanes across the interposer between host system and SSD devices-under-test. This design ensures a clean signal is delivered to the Analyzer for reliable protocol capture and analysis.

The photo below shows the Front-end module, which is physically the same size as a 2.5-inch SSD allowing it to be inserted into the drive carrier normally used with the server. Alternatively, a light weight handle can be attached and used for drive insertion. The flex cables allow the Back-end module to lay on top of the server or on the lab bench.

Key Features

- Operates up to 32GTps, PCIe 5.0 data rates
- Downward compatible with PCIe gen-1, gen-2, gen-3 and gen-4, and data rates of 2.5, 5.0, 8.0 and 16GTps
- Supports 1 link of 4 lanes, or 2 links of 2 lanes
- Front-end module plugs into system-under-test
- U.3 NVMe SSD DUT (not supplied) plugs into the Back-end module
- Adjustable tray clamps and quick-release latch allow for snug fit and quick SSD swap
- Data path uses high-speed linear redrivers to ensure good signal capture with minimal tuning effort
- Supplied with custom high-performance cables for Analyzer system attachment
- Supports Analyzer side-band signal triggering and capture via custom cable
- Supplied power brick makes interposer power independent of host system
- LED gives quick indicators of power and status
- Size: Front-end module 100.45 x 69.85 x 15mm
          Back-end module 226.8 x 111.2 x 33.3mm
- Works with VIAVI Xgig 5P8 and 5P16 PCIe 5.0 analysis chassis
- Supported by Xgig tool suite including Trace Control, Expert™ and Serialytics™
- Provides consistent, repeatable capture of link training, negotiation and other data
- Supports error injection for deep system analysis
- Exerciser EP emulation mode supported

U.3B, Back-end module

U.3 connector

NVMe SSD DUT Tray

LEDs

REFCLK connections

Power

Custom high-performance cable connections (to Analyzer)

Sideband connection

U.3 connection

Optional handle

Adjustable shims

U.3B, Front-end module

Application

Working together with the VIAVI PCIe 5.0 Analysis chassis this Interposer enables debug and verification of new NVMe controller ICs, new system implementations, firmware, validation of system BIOS and software, and for manufacturing test quality assurance.

To setup the Interposer for operation, an NVMe SSD is inserted into the Xgig5P-PCIe5-X4-U3B Interposer. The Interposer Front-end module is then inserted into the NVMe bay or drive carrier of a high-density storage server. Adjust tray clamps and shims as needed for best fit. To complete the test setup, custom, high-performance cables are attached connecting the VIAVI PCIe 5.0 Protocol Analysis Platform. Xgig analysis tools are loaded and run on a local or remote Windows PC.

The photo on the right shows an example application, while the corresponding block diagram below indicates the signal data paths and connections.

When operating in Analyzer mode, the Device Under Test (DUT) data is captured or tapped from both the upstream and downstream data paths as inputs to the Analyzer. When operating in Jammer mode, or Analyzer/Jammer mode, data flows through the Analyzer and is resynchronized (retimed) for transmission. When operating in Analyzer/Exerciser mode, data flows through the Interposer to the DUT.

VIAVI offers a variety of Interposer types for different PCIe system applications, including 4-, 8- and 16-lane CEM, M.2, U.2, EDSFF, Slimline, Flying-lead and others.
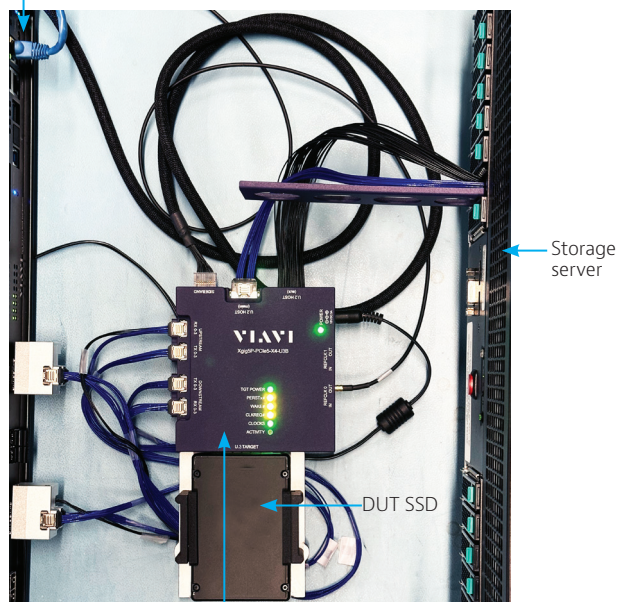
VIAVI Xgig5P-PCIe5-X16 Analysis Platform

Storage server

DUT SSD

VIAVI Xgig5P-PCIe5-X4-U3B Interposer

Kit Contents

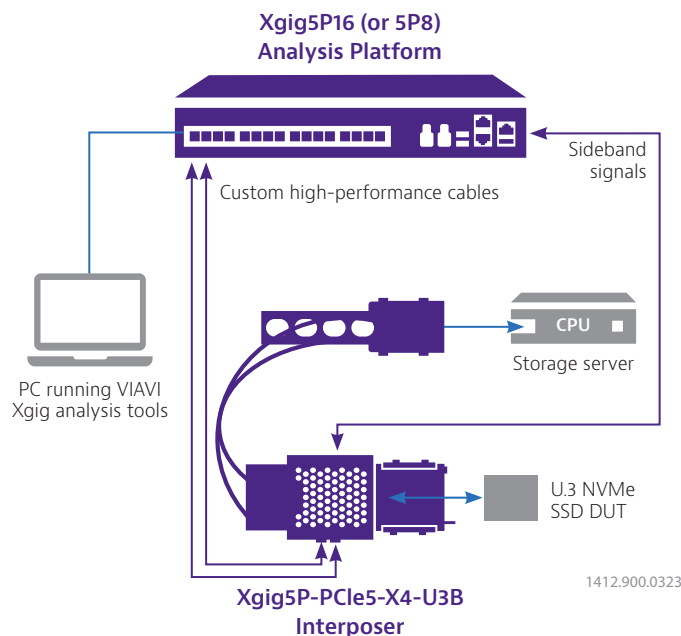| Item	Description	Qty
1	Xgig5P-PCIe5-X4-U3B, U.3 NVMe SSD-to-Server, 4-lane interposer for PCIe 5.0	1
2	Custom high-performance data cables	2
3	Y-splitter cable	2
4	Sideband cable (to analyzer)	1
5	Coax cable for optional clock	2
6	Hardware kit (includes handle and screws)	1
7	Power brick, 120/220 input, 12V/3A output	1
8	Quick Start Guide	1

Ordering Information

Part Number	Description
Xgig5P-PCIe5-X4-U3B	Xgig U.3-to-Server, 4-lane, 32GTps Interposer for PCIe 5.0
XGIG-INTPSR-A-Hx (x=1,2,3,4)	1-year extended hardware warranty

Xgig5P16 (or 5P8) Analysis Platform

Sideband signals

Custom high-performance cables

CPU

Storage server

PC running VIAVI Xgig analysis tools

U.3 NVMe SSD DUT

1412.900.0323

Xgig5P-PCIe5-X4-U3B Interposer

VIAVI Solutions

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