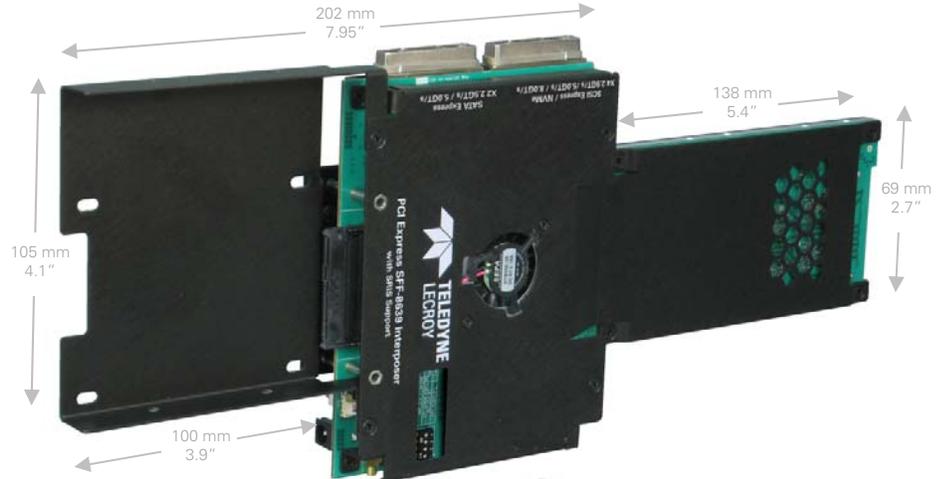# SFF-8639 Single Port Interposers
for PCI Express® 3.0

Key Features

- **Quick and simple set-up**

- **Allows capturing and decoding of all PCI Express traffic between host and device**

- **Decodes PCIe host interfaces such as NVM Express (NVMe), SCSI Express (SOP/PQI), SATA Express (AHCI/PCIe) in addition to native PCI Express protocols**

- **Can be used with both 2.5" and 3" drives**

- **Supports data rates of 2.5 GT/s (Gen1), 5 GT/s (Gen2) and 8 GT/s (Gen3)**

- **Supports x2 SATA Express, x4 NVM Express and x4 SCSI Express**

- **Supports SRIS clocking**

- **Supports CLKREQ# for testing low power L1 substates**

- **Dimensions:**
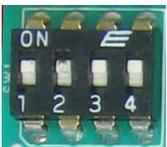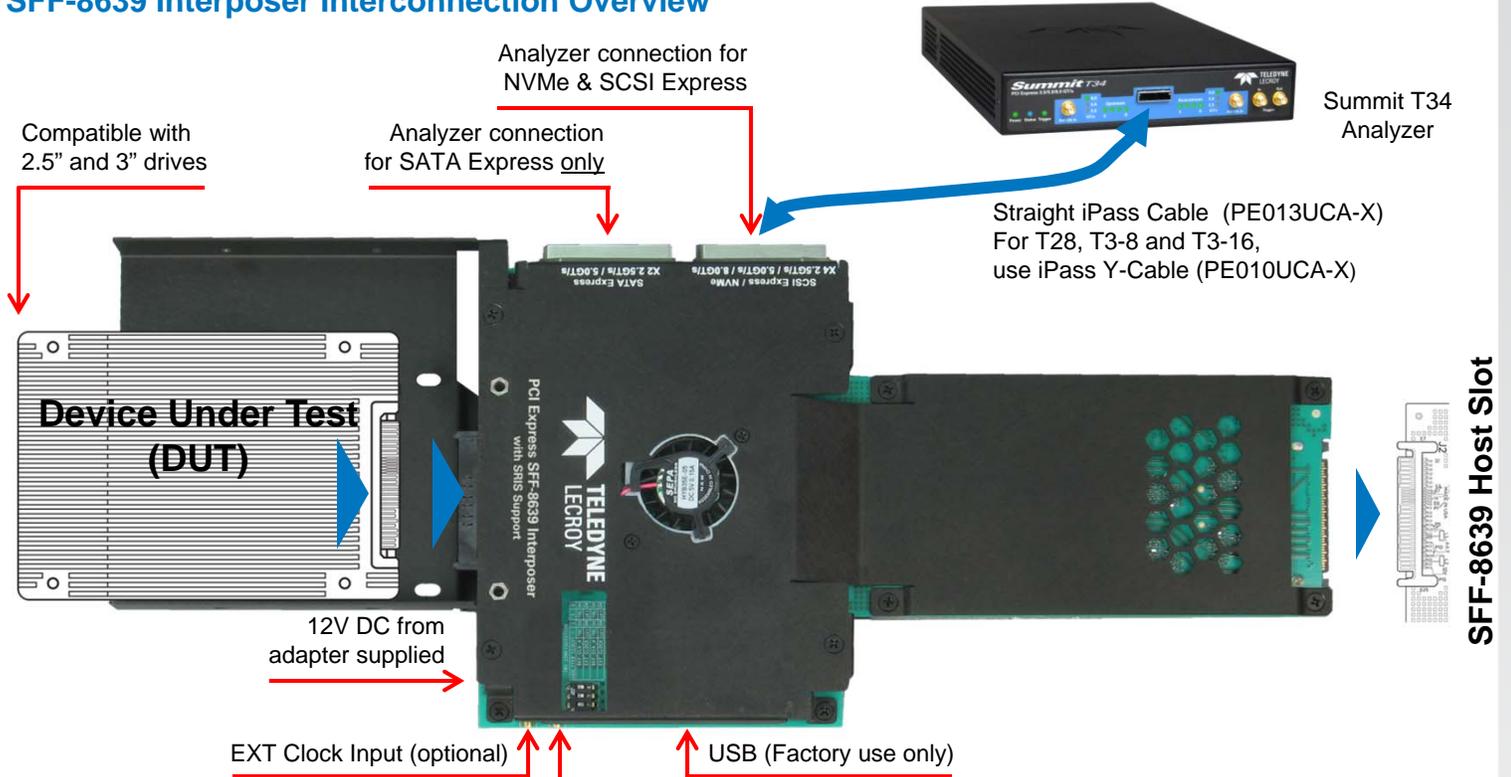 - **340 x 141 mm (13.4" x 5.6")**

Teledyne LeCroy's SFF-8639 single-port interposer cards provide quick and simple means for protocol analysis of Solid State Drives (SSDs) based on PCI Express (PCIe®) protocols. The SFF-8639 Interposer cards, used with a Summit Protocol Analyzer, enable PCIe bus traffic between a host backplane and SSD device to be monitored, captured, and recorded for protocol analysis. The SFF-8639 single port interposer supports PCIe host interfaces such as NVM Express (NVMe), SCSI Express (SOP/PQI), SATA Express (AHCI/PCIe) and native PCI Express protocols at data rates from 2.5 GT/s up to 8 GT/s. Now it is possible to monitor and analyze multiple PCIe storage host interfaces with a single set of tools.

The SFF-8639 interposers provide connectivity and monitoring capability for the recently announced SFF-8639 connector targeted at enterprise storage devices. This SFF-8639 connector provides flexible drive connectivity for NVM Express, SCSI Express, SATA Express, SAS, SATA, and native PCIe 3.0 host interface devices in a serviceable and hot-pluggable drive bay sometimes referred to as "Express Bay". The SFF-8639 single port interposers can be used with 2-1/2" or 3" sized drives. To use these interposers, the drive is inserted into a drive tray on the interposer that supports a mechanical and electrical connection to a SFF-8639 connector. The interposer taps all PCIe protocol traffic between the host and the storage device and records it on the PCIe protocol analyzer, where protocol issues and performance metrics can be further analyzed and debugged.

Teledyne LeCroy was the first company to introduce a PCI Express protocol analyzer with NVM Express decoding functionality. Since that time Teledyne LeCroy has added decoding for SCSI Express (SOP/PQI) and SATA Express (AHCI/PCIe). Integrating all three PCIe SSD technologies into a single protocol analyzer gives developers versatile tools that can show essential details regarding proper data transmission and bus performance. These tools have been at the center of much of the PCIe SSD interoperability testing that has occurred over the last few years.

SFF-8639 Interposer Interconnection Overview

Analyzer connection for
NVMe & SCSI Express

Summit T34
Analyzer

Compatible with
2.5" and 3" drives

Analyzer connection
for SATA Express <u>only</u>

Straight iPass Cable (PE013UCA-X)
For T28, T3-8 and T3-16,
use iPass Y-Cable (PE010UCA-X)

**Device Under Test
(DUT)**

SATA Express
X2 2.5GT/s / 5.0GT/s

SCSI Express / NVMe
X4 2.5GT/s / 5.0GT/s / 8.0GT/s

PCI Express SFF-8639 Interposer
with SRIS Support

SFF-8639 Host Slot

12V DC from
adapter supplied

EXT Clock Input (optional)

USB (Factory use only)

SW1: Clock Select		
Analyzer Clock	1	2
REF_CLK_A	ON	ON
EXT CLOCK	OFF	ON

*Note: The SATA Express analyzer port is
labeled for 2.5 GT/s and 5 GT/s but also
supports 8 GT/s.*

System Compatibility	
Summit T3-16	✓
Summit T3-8	✓
Summit T34	✓
Summit T28	✓
Summit T24	✓

Connecting the SFF-8639 Interposers

1. Set the DIP switches to the desired clock selection.
   Note: "REF_CLK_A" should be the default setting unless you are using an external clock reference source.
2. Install the SFF-8639 device under test (DUT) into the connector on the interposer as shown (will fit 2.5" or 3" drives).
3. Connect the Summit T34 Analyzer (or other compatible Teledyne LeCroy analyzer) to the interposer using the system iPass cable.
   Note: On the Interposer side the iPass cable should be connected to the "**x2 2.5GT/s / 5.0GT/s**" port for SATA Express only. For all other applications, connect to the "**x4 2.5GT/s / 5.0GT/s / 8.0GT/s**" port (as shown in the diagram above).
4. Connect the analyzer to a host machine using the USB port on the front panel of the Summit analyzer.
5. If not already done, install the PCIe Protocol Suite software on the host machine.
6. Connect 12V DC using the AC adapter supplied with the interposer. (Make sure that the AC adapter is powered on).
7. Power on the analyzer.
8. Power on the host machine.
9. Launch the Teledyne LeCroy software application to monitor, record and view PCI Express traffic passing through the SFF-8639 Interposer.
10. Install the Interposer into the host system connector.

Ordering Information

Product Description	Product Code
SFF-8639 Single Port-S Interposer for NVMe x4, SCSI Express x4, SATA Express x2--supports SRIS	PE091UIA-X

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