

# High Speed Interconnect Tester

## Features

- **Tests high speed signals at operating data rate (@speed) using Bit Error Rate**
  - **Eight 600Mb/s to 6.5Gb/s and Eight 150Mb/s to 1.6Gb/s LVDS channels**
- **Tests DC signals for continuity**
  - **Eight DC continuity channels**
- **Simple Production Tester**
  - Single button operation
  - Pass/Fail verdict indicated by LED and UI
  - Result details logged to log file
  - Bar code reader support
- **Configurable Engineering Tool**
  - Configurable data rate, amplitude, pre-emphasis, adaptive equalization plus more
- **IEEE-1394b VersaPHY™ backchannel enables multi-tester support**
- **Low cost Connector Saver Modules adapt HSIT to specific technologies**
  - USB 3.0, IEEE-1394, HDMI, PCIe, DisplayPort, SAS/SATA, Camera Link HS, LVDS, etc...
  - Automatically discovers technology and self configures based on CSM

## Overview

The Quantum Parametrics High Speed Interconnect Tester (QP-HSIT) is designed to enable at speed testing of cables, slip-rings, backplanes and other interconnect technologies.

## Channel Support

QP-HSIT supports eight (8) generic DC, low speed (150Mb/s to 1.6Gb/s), and high speed (600Mb/s to 6.5Gb/s) channels. These generic

channels connect to the interconnect under test through technology specific Connector Saver Modules (CSM). The default parameters for each channel are determined by the QP-HSIT application after it discovers which CSM is connected. The user may adjust the parameters through the configuration window.

## DC Tests

When testing signals for DC continuity, a voltage is applied to one end of the cable and the voltage at the far end is measured. Each channel is measured individually to determine if the interconnect is wired correctly.

## Low and High Speed Tests

When testing signals with a transfer rate of 1.5 Gb/s or less, the low speed channels may be used. When testing signals with a transfer rate of 600Mb/s to 6.5 Gb/s the high speed channels may be used. In either case, a PRBS is transmitted into the cable and then received and verified to determine the Bit Error Rate (BER).



*High Speed Interconnect Tester with Connector Saver Module*

Depending on the CSM, any of the 8 low or high speed channels are first driven individually to



verify the signals are wired correctly. Next, all connected signals are tested simultaneously at speed to verify operation.

### Connector Saver Modules

The picture above shows a USB 3.0 Standard A to Micro B Connector Saver Module.

For this USB 3.0 cable the QP-HSIT tests:

- Both SuperSpeed differential pairs (SSRX-, SSRX+, SSTX- and SSRX+) for correct wiring and 5Gb/s operation
- High Speed differential pair (D-, D+) 480Mb/s operation
- Ground, Power, Outer Braid and Ground Drain for correct wiring and continuity

Each Connector Saver Module contains enough information to allow the QP-HSIT to determine if it is connected, identify its type, the maximum number of connections its connectors can support and how many tests have been run on that connector saver module. This information allows the QP-HSIT application to automatically load the correct configuration and initialize the QP-HSIT to run a test with a simple press of the Loaded button.

## Applications

The QP-HSIT is designed to be both a simple production tester and a detailed engineering tool.

### Production Tester

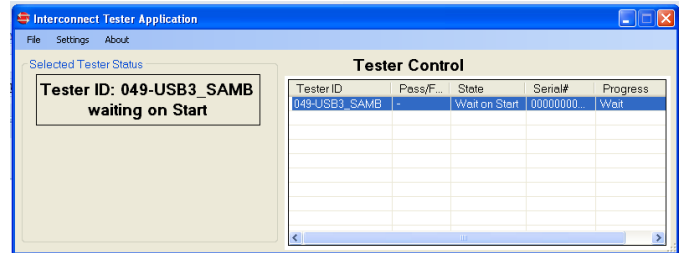
When the QP-HSIT application starts, it prepares the attached QP-HSIT(s) to be ready for immediate testing using the CSM information. Once an interconnect (cable) is attached, the user simply presses the Loaded button. This tells the QP-HSIT application that the cable is loaded and is ready for testing. The

## Product Brief

Testing LED blinks red during testing to indicate a test is in process. When a test completes, the Testing LED turns off and the Pass/Fail LED indicates the verdict (Green is Pass and Red is Fail). Result details for each test are recorded to a log file by the QP-HSIT application for later diagnosis.

### Engineering Tool

The QP-HSIT is more than a production tester, it can also be used to evaluate interconnect details. For the high speed channels transmit parameters such as data rate, amplitude, pre-emphasis may be individually adjusted. The receivers also have adjustable adaptive equalization and DC gain. For the low speed channels the transmit data rate and amplitude are adjustable. Both short and open thresholds are adjustable for the DC channels.



Simple Tester Production User Interface

These controls allow the user to determine design margins and if the interconnects meet the applications specific requirements.

**Quantum Parametrics<sup>1</sup>**

**5055 Corporate Plaza Dr.**

**Colorado Springs, CO 80919 (USA)**

**Phone: (719) 260-1625**

**Fax: (719) 260-1668**

**Email: [sales@quantumparametrics.com](mailto:sales@quantumparametrics.com)**

**Website: [www.quantumparametrics.com](http://www.quantumparametrics.com)**

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