Diamond$_X$ HSI2$_X$ eLearning

High Speed Solution for SerDes / LVDS / MIPI / C-Phy Interfaces

Automotive

Consumer

Flat Panel Display

IoT/IoV & Optoelectronics

Industrial & Medical

MCU

Mobility

Course Description

This eLearning material introduces the student to the High-Speed instrument (HSI2$_X$). The training will provide the student with an overview of the instrument, the theory of operation, accessing help, and test programming examples. On completion of the course, the student will be able to describe the components of the HSI2$_X$, understand the theory of operation, recognize good interface design techniques, be able to access the help documentation, add the instrument resources to a program and perform simple debugging tasks, and be able to describe and use programming statements used in test examples. This is accomplished by a combination of multimedia presentations and interactive software demonstrations.

Course Outline

- Product Overview
- Functionality and Theory of Operation
- Interface
- Programming
- Using the Unison System Help

Course Length

- Self-paced – 3-4 hours typical depending on skill level

Prerequisites

- Six months test program experience
- Successful completion of Unison Applications Programming course

Recommended

- Familiarity with Linux Operating Systems
- English - written and spoken

- **SerDes / LVDS / MIPI / C-Phy**
- **32 differential TX channels**
- **24 RX differential channels**
- **12.8 Gb Data Rate, Eye Mask, PRBS**
- **250M TX Vector Memory Jitter Injection**
- **Fast TX-only Tx16**

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Course Modules

1 - HSI2$_X$ Product Overview

This module is a foundation for the later modules, providing the student with an overview of the HSI2$_X$. On completion of this module the student will be able to:

- Identify target markets of the HSI2$_X$
- State on which system the HSI2$_X$ can be installed
- Recognize the instrument's features and benefits
- Summarize the Specifications of the HSI2$_X$

2 - HSI2$_X$ Functionality and Theory of Operation

This module provides an in-depth description of the HSI2$_X$ instrument functionality. Included in this module are functional block diagrams and illustrations meant to assist in understanding the operation of the instrument. On completion of this module the student will be able to:

- List the major features of the instrument
- Describe the components of a transmit and receive lane
- Distinguish between the transmit (TX) and receiver (RX) channels of the instrument
- Describe the TX channel grouping, fan-out and triggering features
- Recognize the RX BERT compare memory feature
- List the feature licensing of the instrument
- Describe the digital TX programming mode

3 - HSI2$_X$ Interface

DUT loadboard design is critical for ensuring proper testing of multi-gigabit digital interface devices. During this module the student will learn about the instrument's high-speed interface and general design guidelines for loadboard design and manufacturing. On completion of this module the student will be able to:

- Identify challenges in loadboard design for multi-gigabit interface testing
- Identify TX / RX HSI2$_X$ design considerations
- Recognize design implications of TX skew grouping and fan-out mapping
- List general loadboard design elements

4 - HSI2$_X$ Programming

Designed to build on the student's existing knowledge of creating a Test Program in Unison, this section of the course consists of multiple modules and introduces the student to an PRBS23 Loop back Test example. This example will be completed by the student in multiple stages using interactive software demonstrations to reinforce the programming concepts introduced. Throughout this section the student is encouraged to access the help system to develop familiarity with the programming statements, including the use of Unison's 'Guided Programming' feature. On completion of this module the student will be able to:

- Add HSI2$_X$ resources to an Adapter Board Object using the Unison Package Tool
- Recognize the SERDES programming model and use various Unison SERDES APIs
- Recognize the Digital TX programming model and supported TX DIGITAL APIs
- Recognize the features and benefits of the Unison Graphical Debug Tool (GDT)
- Complete a PRBS23 Loop back Program

5 - Using the Unison System Help

Unison provides an extensive help system. In this module the student will become familiar with the structure of the help system, and how to navigate to those areas where HSI2$_X$ information can be found. On completion of this module the student will be able to:

- Launch the help system from the Operator Tool
- Navigate to the ATMP$_X$ instrument manuals
- Create a PDF of the Unison help documents
- Navigate to the application programming instructions (API) documentation
- Be able to determine which APIs apply to the HSI2$_X$

At the end of each module the student will be required to pass a test, achieving a score of 75% or more. The student is encouraged to take notes throughout the course, and repeat, or pause the presentation as needed.

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Who Should Attend

- Test program development engineers

Related Classes

- Unison Introduction course or Applications Programming course

Course Viewing Requirements

To view the course, you must have:
- Microsoft® Edge, Mozilla®, Firefox®, or Chrome®
- Audio-listening capabilities
- Connection speed of at least 600 kbps

Course Cost

- Free of charge to all Diamondx and DxV Cohu customers