VSX Instrument Introduction

Market Leading Low-Cost Mixed Signal and Analog Test Solutions
Course # 0250e

Automotive

Mobility

IoT/IoV & Optoelectronics

Computing & Network

Industrial & Medical

Consumer

Course Description

This eLearning material introduces the student to the VSX high voltage instrument. The training provides an overview of the instrument, the theory of operation, safety and operating procedures, and some simple test examples. On completion of the course, the student will be able to describe the components of the VSX, understand the theory of operation, describe the important safety procedures when using the VSX, understand device under test interface requirements, and describe programming statements used in simple test examples. This is accomplished by a combination of multimedia presentations and interactive software demonstrations.

Course Outline

- Product Introduction
- Safety and Operations Procedures
- Safety Interlocks and Shutdown Mechanisms
- Major Components of the VSX
- Theory of Operation
- Best Practices for Programming the VSX
- Best Practices for Device Under Test Interface Design

Course Length

- Self-paced – 2 hours depending on skill level

Prerequisites

- Three months test program experience
- Successful completion of visualATE 7 Applications training #0200

Recommended

- C or C++ programming
- Familiarity with Unix and Windows Operating Systems
- English - written and spoken

- **Multisite capability resulting in higher throughput**
- **20 instrument slot configuration**
- **Air cooled architecture and instruments**
- **Compact low power technology**

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Course Modules

1 - VSX Product Introduction

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

- Identify the system types on which the VSX can be installed
- State the VSX target device markets
- List the benefits of the VSX instrument
- Describe the summarized specifications of the VSX instrument

2 - Safety and Operational Procedures

This module provides details regarding the safety requirements and operational procedures which should be followed when operating the VSX instrument. The module provides clear statements about the risks of working with high voltage instruments. On completion of the module the student will be able to:

- State the potential hazards of working with high voltage systems
- State the operational precautions of working with high voltage systems
- Acknowledge the importance of observing all regulatory procedures of working on high voltage systems

3 - Safety Interlocks and Shutdown Mechanisms

High voltage instruments require special protection for users. The VSX provides this through interlocks and shutdown mechanisms to ensure the users' safety. This module explains the implementation of these safety features. On completion of this module the student will be able to:

- State the need and importance of interlocks on the test fixture
- Identify the loadboard interlock cover requirements

- State the interlock requirements for test fixture hardware
- Describe the shut down and power up sequences initiated by the safety interlocks

4 - Major Components of the VSX

The VSX instrument has a number of major components which link up the high voltage sub-system. This module explains the component parts, the connections from the instrument to the power supply, and the connections from the instrument to the device under test interface. This module also enables the student to use the location table editor to configure the instrument. On completion of this module the student will be able to:

- Identify the communications interface hardware
- Identify the power source of the VSX instrument
- Identify the cables connecting the power supply to the VSX instrument
- Describe how the instrument is controlled by the test system computer
- Describe how connections are made to the device under test interface hardware
- Use the location table editor to configure the instrument

5 - Theory of Operation

In this module the student learns how the VSX instrument is able to use the power supply and instrument board to generate and measure high voltage signals. On completion of this module the student will be able to:

- Describe how the instrument generates the high voltage output
- Describe the voltage and current ranges of the instrument
- Identify the input and output connections to the device under test interface hardware
- State why special cables and wires are used with the VSX

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Course Modules (cont.)

6 - Best Practices Programming the VSX

Programming a high voltage instrument presents several challenges to ensure proper testing conditions are met. In this module some recommendations are made for programming the VSX. On completion of this module the student will be able to:

- Use macro- and low-level instructions
- Identify the preferred sequence of programming instructions to safely power down the instrument and device under test
- State the considerations when using both low voltage instruments and the VSX
- Describe the undesirable impact of hot switching
- Describe how to avoid exceeding the operational parameters of the VSX instrument

7 - Best Practices for Device Under Test Interface Design

Proper design of high voltage device interface hardware is important to ensure the device is presented with the desired test conditions, and users are isolated from the high voltage signals present during test. On completion of this module the student will be able to:

- Describe the reasons for isolating high voltage signal paths on the device under test interface hardware
- Explain the preferred grounding strategy
- State the recommendations to avoid arcing or tracking between nodes
- Explain the importance of including interlock hardware in the device under test interface design

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.

Related Courses

- visualATE7 Applications Programming course
- ASLx Maintenance
- visualATE DDP Applications Course

Course Viewing Requirements

To view the course, you must have:

- Microsoft® Internet Explorer® 9.0 (or later), Mozilla®, Firefox®, or Chrome®
- Audio-listening capabilities
- Connection speed of at least 600 kbps

Course Cost

- Free of charge for all Cohu Semiconductor Tester Customers