

# VSX Instrument Maintenance

Market Leading Low-Cost Mixed Signal and Analog Test Solutions  
Course # 0251e



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
- Functional Blocks of the VSX
- Major Components of the VSX
- Theory of Operation
- Execution of Verification, Calibration, and Checker Programs
- Execution of FRU Exchange for Preventative Maintenance and Troubleshooting

## Course Length

- Self-paced – 2 hours typical depending on skill level

## Prerequisites

- Three months test program experience
- Completion of the ASLx Maintenance training #0275

## 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 - Functional Blocks of the VSX

In this module the student learns the role of each of the functional blocks of the VSX instrument in creating and measuring high voltage signals. On completion of this module the student will be able to:

- Describe the system as containing the power supply, instrument card, cables and pogo assembly
- Describe how the instrument is controlled by the test system computer
- Describe how the device interface hardware is connected to the instrument
- Describe the Primary and Dependent instrument configuration

### 5 - 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

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## Course Modules (cont.)

### 6 - 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

### 7 - Execution of Verification, Calibration, and Checker Programs

Ensuring the instrument is functioning properly is done by running a series of programs to calibrate, verify, and check the status of the instrument. On completion of this module the student will be able to:

- State the correct loadboard and chicklet requirements
- Execute the calibration, verification, and checker programs
- Data log the results of the Calibration, Verification, and Checker programs
- Interpret pass and fail results
- Set up the hardware configuration table used by the maintenance programs

### 8 - Execution of FRU Exchange for Preventative Maintenance and Troubleshooting

Failures may occur when executing the Calibration, Verification, and Checker programs. In the event of a failure, it is necessary to understand which components can be changed to diagnose the problem. Also, during preventative maintenance, it may be necessary to inspect or replace components of the instrument. On completion of this module the student will be able to:

- State the procedure to replace the power supply
- State the procedure to replace the instrument card
- State the procedure to correctly connect cables used by the VSX

- Explain the importance of using the correct cable types
- State the correct cable routing
- Replace cables

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

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