Nighthawk$_{CT}$ Introduction

Benchtop Portability with ATE Performance
Course # 1100e


Automotive


Consumer


Flat Panel Display


IoT/IoV & Optoelectronics


Industrial & Medical


Wireless/RF


Mobility

Course Description

This eLearning material introduces the student to the Nighthawk$_{CT}$ Connectivity RF instrument. The training will provide the student with an overview of the instrument, the theory of operation, accessing help, and some simple test examples. On completion of the course, the student will be able to describe the components of the Nighthawk$_{CT}$; understand the theory of operation, be able to access the help documentation, add the instrument resources to a program, and be able to 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
- Components of the Nighthawk
- Functional Blocks of the Nighthawk
- Theory of Operation
- Connecting the Device Interface Hardware
- Using the Unison System Help
- Simple Test Examples

Course Length

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

Prerequisites

- Three months test program experience
- Successful completion of the Unison Applications Programming class

Recommended

- C or C++ programming
- Familiarity with Linux Operating System
- English - written and spoken

- **Ultra compact RF instrument (0.18 cu.ft.)**
- **Designed to meet complete range of RF connectivity applications**
- **Easy to install - ~30 minutes**
- **Dual configurations can simultaneously test two different connectivity standards**

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Course Modules

1 - Nighthawk Product Introduction

This module is a foundation for the later modules, providing the student with an overview of the Nighthawk$_{CT}$. On completion of this module the student will be able to:

- State on which system types Nighthawk$_{CT}$ can be installed
- State on which device markets Nighthawk meets the test needs
- List the benefits of the Nighthawk$_{CT}$ instrument
- State over which frequencies the Nighthawk$_{CT}$ can be used
- State the intended use of the Arbitrary Waveform Generator
- Describe the number of available AWG and Digitizer resources

2 - Components of the Nighthawk

Building on the knowledge gained from the introduction, this module describes the components of the Nighthawk$_{CT}$ instrument. On completion of this module the student will be able to:

- Identify each of the major components of the Nighthawk$_{CT}$
- Identify the location of each major component using the Diamond 10 test system as an example

3 - Functional Blocks of the Nighthawk

Using block diagrams of the Nighthawk$_{CT}$ instrument, the student will have each functional component described. On completion of the module the student will be able to:

- List the seven functional blocks within the Nighthawk$_{CT}$
- Identify the purpose of each of the functional blocks
- Be able to state the number of AWG and Digitizer resources
- Be able to describe how the computer and Nighthawk$_{CT}$ instrument communicate
- Identify the output connections of the Nighthawk$_{CT}$ instrument
- Be able to describe how the Nighthawk$_{CT}$ instrument connects to the device interface hardware

4 - Theory of Operation

This module uses the block diagrams previously shown to provide an in-depth description of the Nighthawk$_{CT}$ instrument functionality. On completion of this module the student will be able to:

- Describe the operation of the synthesizer, and the central role it plays in creating the source and capturing the measure data
- Describe how the Nighthawk$_{CT}$ creates an RF source signal
- Describe how the Nighthawk$_{CT}$ receiver captures the device under test response
- Describe the operation of the AWG in creating modulated RF signals and baseband signals
- Describe the operation of the measure receiver, digitizer, and special features of the Nighthawk$_{CT}$
- Describe how the triggers and markers operate with the AWG and Digitizer
- Describe the operation of the low jitter clock
- State the summarized specifications for the RF Source and RF Measure
- Describe how a second Nighthawk$_{CT}$ instrument is connected to the first Nighthawk$_{CT}$

5 - Connecting the Device Interface Hardware

The Nighthawk$_{CT}$ makes use of a modified device under test interface, with which the student must be familiar. This module explains the connections from the instrument to the device interface hardware, and some considerations when designing a new interface. On completion of this module the student will be able to:

- Identify the input and output connections from the instrument to the device under test interface
- Describe how to properly connect the Nighthawk$_{CT}$ cable assembly for best signal propagation
- Identify the location of RF connections on the prototype loadboard
- Identify the location of the connection from the 25-pin D-sub connector on the prototype loadboard
- State the importance of proper connection of cables to the interface hardware
- State the purpose of the Nighthawk$_{CT}$ ready signal

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Course Modules (cont)

6 - 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 Nighthawk$_{CT}$ 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 Nighthawk$_{CT}$ 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 Nighthawk$_{CT}$

7 - Simple Test Examples

Designed to build on the student's existing knowledge of creating a test program in Unison, this module will use simple test examples to show the use of Nighthawk$_{CT}$ in a test program. On completion of this module the student will be able to:

- Add Nighthawk$_{CT}$ resources to a test program using the Package Tool
- Be able to list the preferred order of execution of programming instructions
- Be able to describe the purpose of API statements used to source RF signals
- Be able to describe the purpose of API statements used to create a modulated RF signal
- Be able to describe the purpose of API statements used to measure an RF signal
- Be able to access the help on the Nighthawk$_{CT}$ API statements

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.

Who Should Attend

- Test program development and support engineers

Related Classes

- Unison Applications Programming
- Introduction to Unison eLearning
- Diamond Series Basic Maintenance Course #0920

Course Viewing Requirements

To view the course, you must have:

- Browser supporting HTML5
- Audio-listening capabilities (such as a headset or speakers)
- Connection speed of at least 600 kbps

Course Cost

- Free of charge for all Cohu Semiconductor Tester Customers

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