

# Self-Study Materials

## Key



CD



Web



Workbook

## Web-Based and CD Training

Logon to: [www.usa.Siemens.com/LeaningCenter](http://www.usa.Siemens.com/LeaningCenter) for more information or to take a web-based course. To purchase the training CDs, contact your local Siemens Building Technologies office.

To benefit fully from the web and CD training, students should have basic computer skills before beginning the training.

### System Requirements for Web-Based and CD Training

#### Minimum

Windows 98/NT/XP or 2000, Pentium III or higher, 400 MHz clock speed with 256 MB RAM, 8x CD-ROM, color monitor that is capable of displaying thousands of colors at 800 x 600 pixels, 16-bit sound card, Windows Media Player.

#### Recommended

Windows 98/NT/XP or 2000, Pentium IV or higher, 1 GHz clock speed with 512 MB RAM, 16x CD-ROM, color monitor that is capable of displaying thousands of colors at 1,024 x 768 pixels, 16-bit sound card, Windows Media Player.

## APOGEE Insight Basics

This module includes an introduction to the five most commonly-used APOGEE Insight applications.

Topic:	You will learn to:
Graphics	<ul style="list-style-type: none"> <li>Navigate through graphic links.</li> <li>Display informational text and alarm messages from a graphic.</li> <li>Command points from a graphic.</li> <li>Identify types of dynamic information that are displayed on graphic screens.</li> </ul>
Alarm Status	<ul style="list-style-type: none"> <li>Acknowledge point alarms.</li> <li>Add a point memo.</li> <li>View the alarm history of a point.</li> </ul>
Main Menu	<ul style="list-style-type: none"> <li>Start Insight from Windows.</li> <li>Find online documentation and help.</li> <li>Customize the Insight main menu.</li> </ul>
Report Viewer	<ul style="list-style-type: none"> <li>Start the Report Viewer application.</li> <li>Run a report from Insight.</li> <li>Command a point from the Report Viewer.</li> </ul>
Panel Point Log Screen	<ul style="list-style-type: none"> <li>Run a Panel Point Log Report from the Insight main menu.</li> <li>Use a Panel Point Log Report to view point details and status.</li> </ul>

**Participants:** This interactive training module is recommended for building operators who: (1) are new users of Insight and need basic operator skills to control buildings, (2) are upgrading their version of Insight software, (3) need to refresh basic operator skills on Insight, or (4) need to perform operations in a simulated environment. This module is excellent for personnel who are scheduled for an APOGEE Workstation Operations (5-620) class, but want to begin training as soon as possible.

**Price:** See website for cost of web-based training.

Insight version 3.5-3.7 - CD part number 159-426; \$799 (U.S.)

Insight version 3.4 - CD part number 159-422; \$799 (U.S.)

Insight version 3.1 to 3.3 - CD part number 159-421; \$799 (U.S.)





## APOGEE Scheduler



Module One teaches the terms and concepts of the Scheduler application, how to navigate through the application, and how to schedule an event. Module Two explains how to schedule a zone, populate and schedule a replacement day, perform a day shift, override an event schedule, and schedule trend collections and reports.

# Self-Study Materials

### Module One

Topic:	You will learn to:
Applications	<ul style="list-style-type: none"> <li>Define terms associated with the Scheduler application.</li> </ul>
Concepts	<ul style="list-style-type: none"> <li>Setup Zone and Event definitions and replacement days.</li> </ul>
Navigation	<ul style="list-style-type: none"> <li>Navigate through the application.</li> <li>View daily and weekly schedules.</li> <li>View replacement days.</li> </ul>
Events	<ul style="list-style-type: none"> <li>Set the duration and repetition of Events.</li> <li>Use a day span.</li> <li>Select the scheduled date.</li> </ul>

### Module Two

Topic:	You will learn to:
Trend Collections and Reports	<ul style="list-style-type: none"> <li>Schedule trend collections and reports.</li> </ul>
Scheduled Operations	<ul style="list-style-type: none"> <li>Populate and use replacement days.</li> <li>Use day shifts.</li> <li>Override scheduled operations.</li> </ul>
Events and Zones	<ul style="list-style-type: none"> <li>Schedule events and zones.</li> <li>Repeat event and zone schedules.</li> <li>Use the day span and scheduled date features.</li> </ul>

**Participants:** Module One is for APOGEE operators who need to control buildings using the APOGEE Scheduler application. Module Two is for APOGEE operators and administrators who need to control buildings using advanced features of the APOGEE Scheduler application. This module is helpful to building operators who want to refresh their skills with the Event Builder or Scheduler applications.

**Price:** See website for cost of web-based training. CD version (includes modules 1 and 2) 159-423; \$799 (U.S.)

# Self-Study Materials

## APOGEE Field Panel Operations

This module is an operation and maintenance course for the APOGEE Modular Building Controller (MBC). It includes an overview of MBC hardware and includes exercises in maintaining the MBC with terminal emulation software.



Topic:	You will learn to:
Network and Point Databases	<ul style="list-style-type: none"> <li>• Set-up Destinations.</li> <li>• Set-up State Text Tables.</li> <li>• Use point naming conventions.</li> <li>• Define point types.</li> <li>• Address, modify and command points in the MBC.</li> </ul>
Reports	<ul style="list-style-type: none"> <li>• Run the following: Point Log Report, TEC Subpoints Report and Point Monitor.</li> </ul>
Components Interface	<ul style="list-style-type: none"> <li>• Identify the components of a MBC.</li> <li>• Establish a terminal connection.</li> <li>• Log on to a MBC.</li> <li>• Use Accelerator Keys.</li> </ul>
Configuration	<ul style="list-style-type: none"> <li>• Configure a MBC.</li> <li>• Configure and set-up the network.</li> </ul>

**Participants:** This module is recommended for building operators who: (1) communicate with APOGEE MBCs using terminal emulation software, (2) want to practice using terminal emulation software in a simulated environment, or (3) need to refresh their skills with terminal emulation software.

**Price:** See website for cost of web-based training. CD version 159-321; \$199 (U.S.)

## Remote Notification (RENO)

This module addresses all aspects of the RENO feature in APOGEE, from configuring system settings to setting up a point for remote notification.



Topic:	You will learn to:
System Requirements	<ul style="list-style-type: none"> <li>• Identify the requirements for the different remote notification features.</li> </ul>
System Settings	<ul style="list-style-type: none"> <li>• Configure all of the system settings for remote notification.</li> </ul>
Creating Users	<ul style="list-style-type: none"> <li>• Define users and devices.</li> <li>• Create Groups for users and devices.</li> </ul>
Escalation Lists	<ul style="list-style-type: none"> <li>• Create an escalation list.</li> <li>• Add devices and groups to escalation lists.</li> </ul>
Scheduling	<ul style="list-style-type: none"> <li>• Schedule devices, groups and escalation lists.</li> </ul>
Point Setup	<ul style="list-style-type: none"> <li>• Configure a point for remote notification.</li> </ul>
Heartbeat	<ul style="list-style-type: none"> <li>• Setup the heartbeat function.</li> <li>• Add devices to the heartbeat.</li> </ul>

**Participants:** Building personnel who setup, configure or work with the RENO feature.

**Price:** See website for cost of web-based training. CD version 159-430; \$199 (U.S.)



## APOGEE Trending



Module One presents the terms and definitions most commonly used in the APOGEE Trend Definition Editor, and explains how to define trend definitions at the APOGEE workstation. Module Two presents the terms and definitions most commonly used to collect and interpret trend data, and explains how to collect, view and analyze trend data at the APOGEE workstation.

### Module One

Topic:	You will learn to:
Definitions	<ul style="list-style-type: none"> <li>Define Interval and Change-of-Value (COV) Trending.</li> </ul>
Concepts	<ul style="list-style-type: none"> <li>State the purposes of trending.</li> <li>Explain how field panel memory is affected by trending operations.</li> <li>Decide which method of trending should be used based on your objectives.</li> </ul>
Trending	<ul style="list-style-type: none"> <li>Add, delete and modify Point Trend Definitions.</li> </ul>

### Module Two

Topic:	You will learn to:
Collecting Data	<ul style="list-style-type: none"> <li>Setup a Trend Collection Report to retrieve data from the field panel.</li> <li>Perform Trend Collections.</li> </ul>
Viewing Data	<ul style="list-style-type: none"> <li>Build and save a Trend Data Detail Report definition.</li> <li>Save the data from a Trend Data Detail Report to a file.</li> <li>View data from Trend Interval Reports, Trend Sample Reports and Trend Summary Reports.</li> </ul>
Interpreting and Analyzing Data	<ul style="list-style-type: none"> <li>Verify proper system operation.</li> </ul>

**Participants:** Module One is for operators who need to use the APOGEE System to place points into trend. Module Two is for operators who need to use the APOGEE System to view and interpret trend information. These modules are helpful for Building operators who want to refresh their skills with the Trend application.

**Price:** See website for cost of web-based training. CD version (includes modules 1 and 2) 159-425; \$799 (U.S.)

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## APOGEE Reports

This module explains how to use the Report Builder and Report Viewer applications with the Insight software.

Topic:	You will learn to:
Report Builder	<ul style="list-style-type: none"> <li>• Navigate through the Report Builder application.</li> <li>• Setup a Report Definition to create a file.</li> <li>• Configure report header information.</li> <li>• Configure a Panel Point Log report for points in operator priority.</li> </ul>
Report Viewer	<ul style="list-style-type: none"> <li>• Use the Object Selector to choose a report to view.</li> <li>• Run reports.</li> <li>• Refresh report data.</li> </ul>

**Participants:** APOGEE operators who need to build and view reports that display system information. This module is helpful for building operators who need to refresh their skills with the Report Builder and Report Viewer applications.

**Price:** See website for cost of web-based training. CD version 159-424; \$99 (U.S.)



## Introduction to Terminal Box TECs

This module explains the basic operation and function of a Terminal Box TEC (Terminal Equipment Controller).

Topic:	You will learn to:
General	<ul style="list-style-type: none"> <li>• State the purpose of TECs.</li> <li>• Describe physical components of TECs.</li> </ul>
Interfacing	<ul style="list-style-type: none"> <li>• Describe how to communicate with a TEC locally using Datamate Base.</li> </ul>
Points	<ul style="list-style-type: none"> <li>• Describe the different types of subpoints.</li> <li>• List the function of selected subpoints.</li> </ul>
Operation	<ul style="list-style-type: none"> <li>• Do basic operations.</li> <li>• Set a minimum and maximum room temperature setpoint.</li> <li>• Trace the generation of the temperature control setpoint.</li> <li>• List the requirements for a TEC to switch between heating and cooling modes.</li> </ul>

**Participants:** Building personnel who communicate directly with TECs using Datamate Base.

**Price:** See website for cost of web-based training. CD version 159-427; \$199 (U.S.)





## Introduction to PPCL Programming

159-326

This module teaches the basic flow and functionality of the Powers Process Control Language (PPCL). It enhances troubleshooting abilities.

Topic:	You will learn to:
Programming Concepts	<ul style="list-style-type: none"> <li>Describe how PPCL is used.</li> <li>Understand the relationship between a PPCL program and Insight.</li> <li>Describe how a PPCL program controls your building.</li> </ul>
Basic PPCL Structure	<ul style="list-style-type: none"> <li>List the benefits of Mode Programming.</li> <li>Identify common PPCL statements and their syntax.</li> <li>Identify Local Variables and Resident Points.</li> </ul>
Navigating Program Editor	<ul style="list-style-type: none"> <li>Use key editing tools.</li> <li>Compile and save programs.</li> <li>Download programs to APOGEE field panels.</li> </ul>
Panel PPCL Reports	<ul style="list-style-type: none"> <li>Create a Panel PPCL Report definition.</li> <li>Generate a Panel PPCL Report.</li> <li>Interpret common report flags to identify program execution.</li> </ul>

**Participants:** Building personnel who need a better understanding of PPCL programming to troubleshoot their system.

**Price:** \$199 (U.S.)

## Self-Study Materials



## Introduction to Distributed Digital Controls

This module explains what Distributed Digital Control (DDC) is and how it works.

After you complete this course you should understand the design principles of DDC systems. The course does not teach you to operate a specific manufacturer's product, but it teaches information that is common to most building controls systems.



Topic:	You will learn to:
Distributed Digital Control (DDC)	<ul style="list-style-type: none"> <li>Define Distributed Digital Control.</li> <li>Explain how DDC operates buildings and its advantages.</li> </ul>
System Operations	<ul style="list-style-type: none"> <li>Describe how databases work together to control a building</li> </ul>
Points	<ul style="list-style-type: none"> <li>Define points and the difference between physical and virtual points.</li> </ul>

**Participants:** This module is for personnel who understand mechanical concepts, but need an overall understanding of how DDC systems function and control equipment in their building.

**Price:** See website for cost of web-based training. CD version 159-420; \$99 (U.S.)

# Self-Study Materials

## Network Basics

This module covers generic networking principles and is not HVAC-specific. It is interactive and provides quizzes as well as a final check for understanding.

Topic:	You will learn to:
Local Area Networks (LANs)	<ul style="list-style-type: none"> <li>Describe the basic LAN components, topologies and models.</li> <li>State the purpose of basic LAN components.</li> </ul>
Generic Networking Principles	<ul style="list-style-type: none"> <li>List the benefits of networking computers.</li> <li>Describe different types of physical networks.</li> <li>Describe how communication occurs over different networks.</li> </ul>
Open Systems Interconnection (OSI) Model	<ul style="list-style-type: none"> <li>List and describe the different layers of the OSI model and their functions.</li> </ul>

**Participants:** This module is for building personnel who want to increase their knowledge of computer networks and for system administrators who interface with information systems personnel about networks.

**Price:** See website for cost of web-based training. CD version 159-411; \$99 (U.S.)

## HVAC Basics

This module teaches the basics of HVAC controls, and heating, cooling and water distribution systems.

Topic:	You will learn to:
HVAC Principles	<ul style="list-style-type: none"> <li>Describe the functions of an HVAC system.</li> <li>Explain the relationship between temperature and humidity.</li> <li>Define the dew point.</li> </ul>
HVAC Systems Operation	<ul style="list-style-type: none"> <li>Describe how hot and cold air are transported throughout a building.</li> </ul>
Heating Systems	<ul style="list-style-type: none"> <li>Determine what type of boiler different facilities use.</li> <li>Describe boiler safety issues.</li> <li>List the main components of a boiler.</li> </ul>
Cooling Systems	<ul style="list-style-type: none"> <li>Describe the function/operation of: evaporators, condensers, DX systems, cooling towers (forced, induced and natural draft), and evaporative condensers.</li> <li>Describe the differences between the four types of chillers: centrifugal, reciprocating, screw, and absorption.</li> </ul>
HVAC Water Distribution	<ul style="list-style-type: none"> <li>Describe the operation of: a closed loop system, a Systems open loop system, a primary system, and a secondary system.</li> </ul>

**Participants:** The interactive training module is recommended for personnel who understand mechanical concepts, but who need an overall understanding of how HVAC systems function to maintain a building environment.

**Price:** See website for cost of web-based training. CD version 159-429; \$199 (U.S.)





## Introduction to the Modular Equipment Controller



159-322

This module explains the operation and features of the Modular Equipment Controller (MEC).

**Topic:****You will learn to:**

Physical Layout	<ul style="list-style-type: none"> <li>Identify hardware components.</li> </ul>
Point Number Ranges	<ul style="list-style-type: none"> <li>Describe how the point count of the base MEC can be expanded.</li> </ul>
Power Requirements	<ul style="list-style-type: none"> <li>Describe the power requirements of the MEC.</li> </ul>
Series Options	<ul style="list-style-type: none"> <li>Identify options available with different MEC models.</li> </ul>
Network Architecture	<ul style="list-style-type: none"> <li>Identify the features that the MEC supports on the system architecture.</li> </ul>

**Participants:** Building personnel who need an overview of the MEC.

**Price:** \$99 (U.S.)

# Self-Study Materials



## Introduction to the Modular Building Controller



159-325

This module explains the operation and features of the Modular Building Controller (MBC).

**Topic:****You will learn to:**

Physical Layout	<ul style="list-style-type: none"> <li>Identify hardware components.</li> </ul>
Point Number Ranges	<ul style="list-style-type: none"> <li>Describe how the point count of the base MBC can be expanded.</li> </ul>
Power Requirements	<ul style="list-style-type: none"> <li>Describe the power requirements of the MBC.</li> </ul>
Series Options	<ul style="list-style-type: none"> <li>Identify options available with different MBC models.</li> </ul>
Network Architecture	<ul style="list-style-type: none"> <li>Identify the features that the MBC supports on the system architecture.</li> </ul>

**Participants:** Building personnel who need an overview of the MBC.

**Price:** \$99 (U.S.)

# Self-Study Materials

## Interpreting Sequences of Operation

This module teaches how to interpret sequences of operation, identify key equipment for a sequence, and summarize the impact of setpoint and load changes on an HVAC system. This training uses a simulation to view how sequences of operation affect building equipment.

**Topic:**

Sequences of Operation

**You will learn to:**

- Read and analyze sequences of operation for various systems, including:
  - Steam-to-hot-water heat exchanger with outside air reset.
  - Chiller with a three-way tower bypass valve.
  - 100% outside air handling unit.
  - Constant-air-volume mixed air unit for a single zone.
  - Variable-air-volume mixed air unit with terminal boxes.
  - Constant-air-volume rooftop unit with electric heat and direct expansion cooling.
  - Multi-zone unit.

Equipment

- Select the required equipment for the building system based on the sequence of operation.

Load Changes

- Predict what events will occur when loads change.

**Participants:** Building personnel who need to interpret sequences of operation that were written for their building systems.

**Price:** See website for cost of web-based training. CD version 159-428; \$199 (U.S.)



## Introduction to Open Protocols, BACnet® and LONWORKS® Networks

This module teaches open standards protocols, including BACnet and LONWORKS® networks.

**Topic:**

Open Standards

**You will learn to:**

- State the advantages of Open Standards systems.
- Identify the differences between BACnet and LONWORKS® networks.

BACnet

- Understand how the BACnet standard was developed.
- Describe the system architecture of BACnet.

LonWorks® Networks

- Understand how the LONWORKS® standard was developed.
- Describe the architecture of LONWORKS® networks.

**Participants:** Building operators who need an overview of open standards protocols.

**Price:** See website for cost of web-based training. CD version 159-323; \$99 (U.S.)

