Autodesk AutoCAD Electrical

Target Audience

This course is designed for electrical engineers, designers, and professionals seeking to enhance their skills in creating electrical schematics, control circuit diagrams, and wiring layouts using AutoCAD Electrical.

Course Objective

To equip participants with the skills to efficiently design, modify, and document electrical control systems using AutoCAD Electrical, enabling them to streamline workflows and enhance productivity.

Course Outcome

- Ability to create and modify electrical schematics, panel layouts, and wiring diagrams using AutoCAD Electrical.
- Proficiency in utilizing AutoCAD Electrical tools for automating design tasks, such as generating reports and creating component tags.
- Understanding of project management within AutoCAD Electrical, including organizing drawings and managing project files.
- Capability to apply best practices for error checking, troubleshooting, and optimizing electrical design workflows.

Course Outline: The course comprises **40-hours** of theory and labs and is divided into **13** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Chapter 1. Introduction to AutoCAD Electrical

Introduction
Getting Started with AutoCAD Electrical
AutoCAD Electrical Interface Components

- Start Tab
- Drawing Area
- Command Window
- AutoCorrect the Command Name
- AutoComplete the Command Name
- Internet Search
- Input Search Options
- Application Status Bar
- Navigation Bar

Invoking Commands in AutoCAD Electrical

- Keyboard
- Ribbon
- Application Menu
- Menu Bar
- Toolbar
- Marking Menu
- Shortcut Menu
- Tool Palettes
- File Tabs

Project Manager
Components of AutoCAD Electrical Dialog Boxes
Saving the Work
Auto Save
Creating Backup Files

- Using the Drawing Recovery Manager to Recover Files

Closing a Drawing

Quitting AutoCAD Electrical
Dynamic Input Mode
Creating and Managing Workspaces

- Creating a New Workspace
- Modifying Workspace Settings

WD_M Block
AutoCAD Electrical Help

- Help Menu
- InfoCenter Bar

Save to Web & Mobile

Chapter 2. Working with Projects and Drawings

Introduction

Project Manager

Projects Tab

- Opening a Project
- Creating a New Project
- Working with Drawings
- Configuring the Drawing List Display
- Copying a Project
- Deleting a Project

Location View tab

Chapter 2. Working with Wires

Introduction

Wires

- Inserting Wires into a Drawing
- Inserting Wires at Angles
- Inserting Multiple Bus Wiring
- Trimming a Wire

- Stretching Wires
- Creating Wire Types
- Changing and Converting Wire Types
- Setting Wire Types
- Inserting Wire Numbers
- Copying Wire Numbers
- Deleting Wire Numbers
- Editing Wire Numbers
- Fixing Wire Numbers
- Hiding Wire Numbers
- Unhiding Wire Numbers
- Swapping Wire Numbers
- Finding/Replacing Wire Numbers
- Moving a Wire Number
- Scooting a Wire Number
- Flipping a Wire Number
- Toggling the Wire Number Position
- Repositioning the Wire Number Text with the Attached Leader
- Inserting In-line Wire Markers
- Inserting Wire Color/Gauge Labels in a Drawing
- Inserting the Special Wire Numbering in a Drawing
- Checking Line Entities
- Checking and Repairing Gap Pointers
- Checking/Tracing a Wire

Adding source and destination signal Arrows

- Adding Source Signal Arrows
- Adding Destination Signal Arrows
- Updating Signal Arrows

Chapter 4. Creating Ladders

Ladders

- Inserting a New Ladder

Modifying an Existing Ladder

- Renumbering an Existing Ladder
- Changing the Size of a Ladder
- Repositioning a Ladder
- Changing the Rung Spacing
- Adding Rungs
- Converting Line Reference Numbers
- Renumbering the Ladder Line Reference

Changing the Reference Numbering Style of a Ladder

Inserting X Grid Labels

Inserting X-Y Grid Labels

Chapter 5. Schematic Components

Introduction

Inserting Schematic Components Using Icon Menu

Inserting Components Using Catalog Browser

Annotating and Editing the Symbols

Assigning Catalog Information and Editing the Catalog Database

Creating a Project Specific Catalog Database

Inserting Components from the Equipment List

Inserting Components from the User Defined List

Swapping and Updating Blocks

Chapter 6. Schematic Components

Introduction

Scoot Tool

Move Component Tool

Copying a Component

Aligning Components

Deleting Components

Updating a Schematic Component from a One-line Component

Copying the Catalog Assignment

Copying Installation/Location Code Values

Auditing Drawings

- Electrical Auditing
- Auditing a Drawing

Retagging Drawings

Using Tools for Editing Attributes

- Moving Attributes
- Editing Attributes
- Hiding Attributes
- Unhiding Attributes
- Adding Attributes
- Sqeezing an Attribute/Text
- Stretching an Attribute/Text
- Changing the Attribute Size
- Rotating an Attribute
- Changing the Justification of an Attribute
- Changing an Attribute Layer

Chapter 7. Connectors, Point-to-Point Wiring Diagrams, and Circuits

Introduction

Inserting Connectors

Editing Connector

Inserting a Connector from the List

Modifying Connectors

- Adding Pins to a Connector
- Deleting a Connector Pin
- Moving a Connector Pin
- Swapping Connector Pins
- Reversing a Connector
- Rotating a Connector
- Stretching a Connector
- Splitting a Connector
- Inserting Splices

Working with Circuits

- Saving Circuits to an Icon Menu
- Inserting Saved Circuits
- Moving Circuits
- Copying Circuits
- Saving Circuits by Using WBlock
- Inserting the WBlocked Circuit

Building a Circuit

- Inserting a Circuit
- Configuring a Circuit

Chapter 8. Panel Layouts

Introduction

The WD_PNLM Block File

Creating Panel Layouts from Schematic List

Annotating and Editing Footprints

Inserting Footprints from the Icon Menu

Inserting Footprints Manually

Inserting Footprints from a User Defined List

Inserting Footprints from an Equipment List

Inserting Footprints from Vendor Menus

Copying a Footprint

Setting the Panel Drawing Configuration

Making the X-Data Visible

Renaming Panel Layers

Adding a Balloon to a Component

Adding Multiple Balloons

Resequencing Item Numbers

Inserting Nameplates

Inserting DIN Rail

Editing the Panel Footprint Lookup Database File

Chapter 9. Schematic and Panel Reports

Introduction

Generating Schematic Reports

- Bill of Material Reports
- Missing Bill of Material Reports
- Symbol List Reports
- Component Reports
- From/To Reports
- Component Wire List Reports
- PLC I/O Address and Descriptions Reports
- PLC I/O Component Connection Reports
- PLC Modules Used So Far Reports
- Terminal Numbers Reports
- Terminal Plan Reports

- Connector Summary Reports
- Connector Detail Reports
- Cable Summary Reports
- Cable From/To Reports
- Wire Label Reports
- Wire Signal and Stand-alone Reference Reports
- Missing Catalog Data

Understanding the Report Generator Dialog Box

- Change Report Format
- Edit Mode
- Put on Drawing
- Save to File
- Print
- Adding Fields Using the User Attributes Tool

Generating Panel Reports

- Bill of Material Report

Generating the Cumulative Report

- Report Name Area
- Format File Name Area
- Add>>, <<Remove, and <<Remove All
- Modify Output
- Selected Reports Area
- Save Report Grouping
- Open Report Grouping
- Drawing Information for Table Output Area

Setting the Format File for Reports

- Generating Component Cross-Reference Report

Chapter 10. PLC Modules

Introduction

Inserting Parametric PLC Modules

Inserting Nonparametric PLC Modules

Editing a PLC module

Inserting Individual PLC I/O Points

Creating and Modifying Parametric PLC Modules

- PLC Module Selection List
- Terminal Grid Area
- Terminal Attributes Area
- New Module

Creating PLC I/O Wiring Diagrams

- Modifying and Saving the New Setting Configuration

Mapping the Spreadsheet Information

Tagging Based on PLC I/O Address

Chapter 11. Terminals

Introduction

Inserting Terminals Symbols

- Annotating and Editing Terminal Symbols

Inserting Terminal from the Schematic List

Inserting Terminals Manually

Inserting Terminals from the Panel List

Adding and Modifying Associations

- Active Association Area
- Select Association Area

Terminal Block Properties

Selecting, Creating, Editing, and Inserting Terminal Strips

- Editing the Terminal Strip
- Defining the Settings of the Terminal Strip Table

Generating the Terminal Strip Table

Editing the Terminal Properties Database Table

Resequencing Terminal Numbers

- First Method
- Second Method

Copying Terminal Block Properties

Editing Jumpers

- The Browse Option
- The Edit Option
- The Show Option

Chapter 12. Settings, Configurations, Templates, and Plotting

Introduction

Setting Project Properties

- Project Settings Tab
- Components Tab
- Wire Numbers Tab
- Cross-References Tab
- Styles Tab
- Drawing Format Tab

Setting Drawing Properties

- Drawing Settings Tab

Understanding Reference Files

- Project Files (.WDP File)
- Project Description Line Files (.WDL File)

- Component Reference Files

Mapping the Title Block

- Method 1 Area
- Method 2 Area

Updating Title Blocks

Creating Templates

Plotting the Project

Project Task List

Chapter 13. Creating Symbols

Introduction

Creating Symbols

Customizing the Icon Menu

- Exporting Data to the Spreadsheet
- Updating Data from the Spreadsheet
- Marking and Verifying Drawings
- Using Project-Wide Utilities
- Markup Import and Markup Assist Features