Heaven's Light is Our Guide

Rajshahi University of Engineering and Technology

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Electrical Services Design

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Lab Report 1:
Different types of commands in AutoCAD Electrical

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Different types of commands in AutoCAD Electrical

Introduction

AutoCAD Electrical offers various commands for creating and modifying electrical drawings, enhancing productivity and ensuring design quality. It automates repetitive tasks, supports collaboration, and includes a comprehensive library of reusable electrical symbols and components. These features streamline the design process and maintain consistency across projects.

Different types of commands & options in AutoCAD Electrical

Key commands in AutoCAD Electrical include drawing tools, editing tools, layer management, symbol insertion, wire numbering, and schematic creation. These commands are essential for efficient and accurate electrical design. Here are some commonly used commands & options:

1. Line command (L)

Description The Line command is used to draw straight lines, commonly for outlining electrical components and symbols.

Usage & Example To draw a horizontal line of 10 units, type "L" and press Enter. Specify the start point, enter "10" for the length, and click to set the end point.

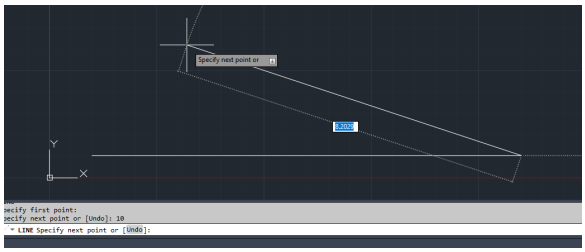

Figure 1: Line command in AutoCAD Electrical

Significance The Line command is essential for creating the basic geometry of electrical drawings, such as wires and cables.

2. Polyline command (PL)

Description The Polyline command draws connected line segments and arcs as a single object, useful for complex shapes.

Usage & Example Type "PL" and press Enter. Click to specify points for the polyline segments. Press Enter to complete.

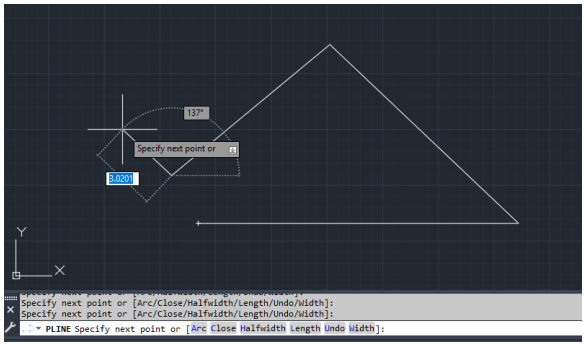

Figure 2: Polyline command in AutoCAD Electrical

Significance The Polyline command is essential for creating complex shapes in electrical drawings, allowing continuous lines with multiple segments to be edited as a single object.

3. Circle command (C)

Description Draws circles, commonly used for round components.

Usage & Example Type "C", press Enter, specify center, or drag to desired position, press Enter.

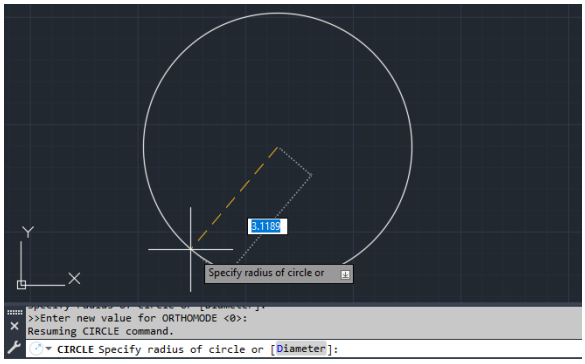

Figure 3: Circle command in AutoCAD Electrical

Significance Essential for creating round shapes and symbols.

4. Arc command (A)

Description Draws arcs, useful for curved lines.

Usage & Example Type "A", press Enter, specify start, center, and end points.

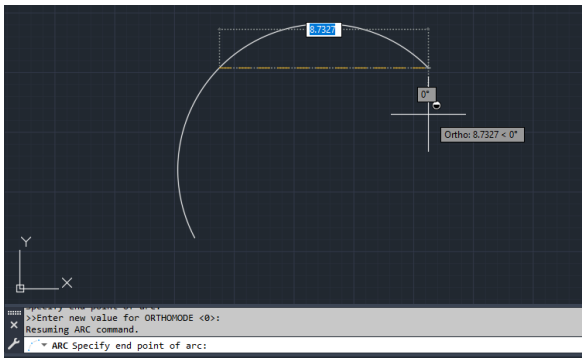

Figure 4: Arc command in AutoCAD Electrical

Significance Essential for creating curved lines and shapes.

5. Move command (M)

Description Moves objects to a new location.

Usage & Example Type "M", press Enter, select object, specify base and destination points.

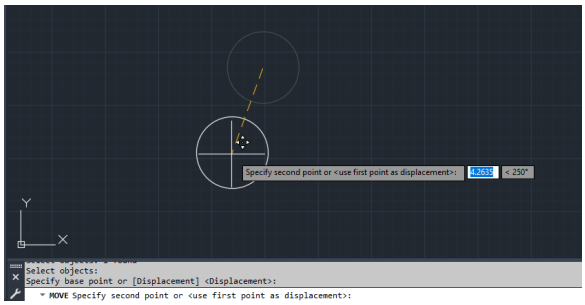

Figure 5: Move command in AutoCAD Electrical

Significance Essential for repositioning objects.

6. Copy command (CO)

Description Creates copies of objects.

Usage & Example Type "CO", press Enter, select object, specify base and destination points.

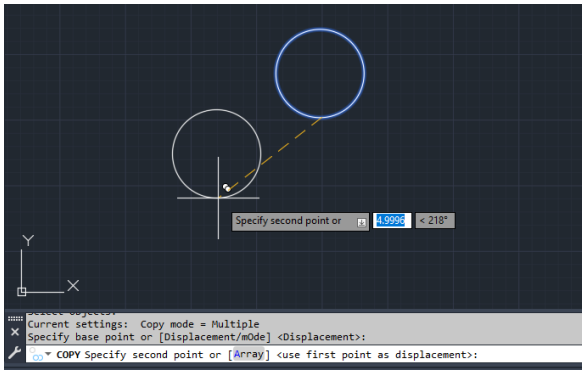

Figure 6: Copy command in AutoCAD Electrical

Significance Essential for duplicating objects.

7. Rotate command (RO)

Description Rotates objects around a base point.

Usage & Example Type "RO", press Enter, select object, specify base point, enter rotation angle.

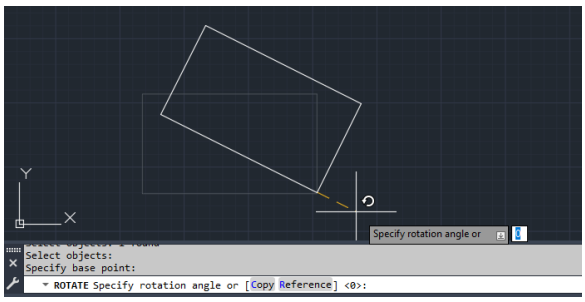

Figure 7: Rotate command in AutoCAD Electrical

Significance Essential for changing object orientation.

8. Mirror command (MI)

Description Creates a mirrored copy of objects across a specified axis.

Usage & Example Type "MI", press Enter, select object, specify mirror line.

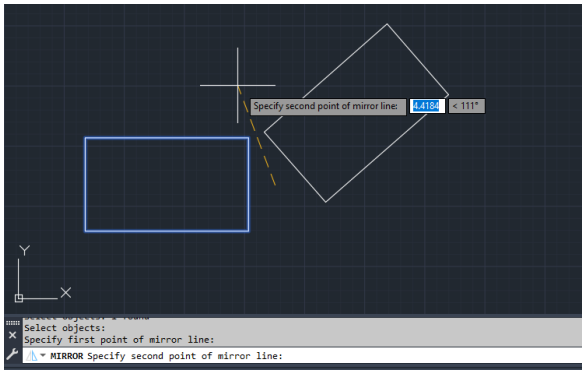

Figure 8: Mirror command in AutoCAD Electrical

Significance Useful for symmetrical designs and duplicating components.

9. Extend command (EX)

Description Extends objects to meet the edges of other objects.

Usage & Example Type "EX", press Enter, select boundary edge, select line to extend.

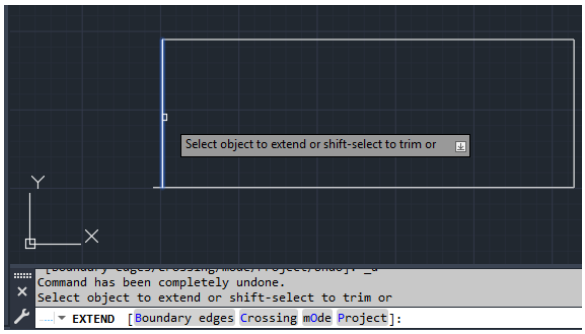

Figure 9: Extend command in AutoCAD Electrical

Significance Useful for connecting lines and shapes.

10. Trim command (TR)

Description Trims objects to meet the edges of other objects.

Usage & Example Type "TR", press Enter, select boundary edge, select line to trim.

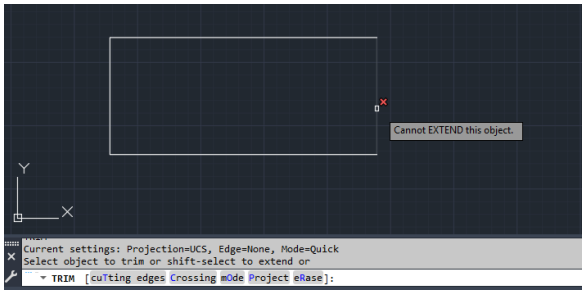

Figure 10: Trim command in AutoCAD Electrical

Significance Useful for removing unwanted parts of lines and shapes.

11. Erase command (E)

Description Deletes objects from the drawing.

Usage & Example Type "E", press Enter, select object, press Enter to confirm.

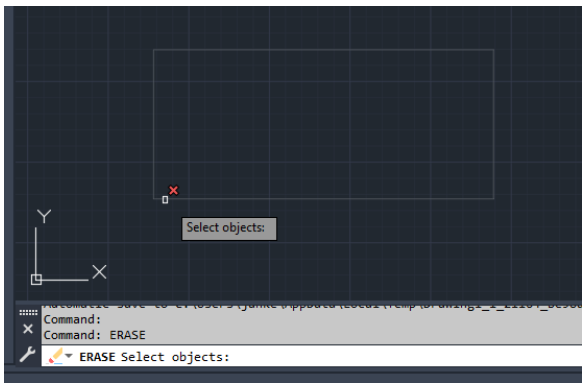

Figure 11: Erase command in AutoCAD Electrical

Significance Useful for removing unwanted components and symbols.

12. Zoom command (Z)

Description Changes the magnification of the drawing view.

Usage & Example Type "Z", press Enter, type "W" for Window, specify corners of the zoom window.

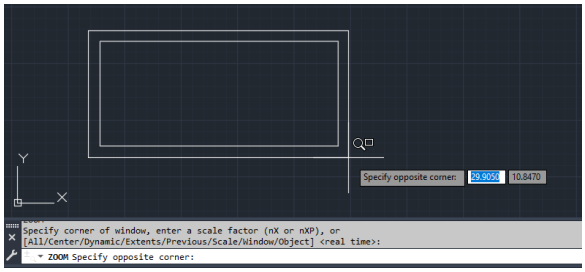

Figure 12: Zoom command in AutoCAD Electrical

Significance Essential for focusing on specific areas of the drawing.

13. Layer command (LA)

Description Manages layers in the drawing.

Usage & Example Type "LA", press Enter, click "New Layer" in Layer Properties Manager, enter layer name.

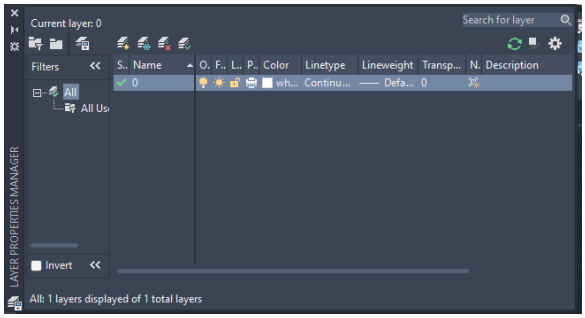

Figure 13: Layer command in AutoCAD Electrical

Significance Organizes the drawing into different categories.

14. Symbol Insert command (X)

Description Inserts predefined electrical symbols.

Usage & Example Type "X", press Enter, select symbol from library, specify insertion point.

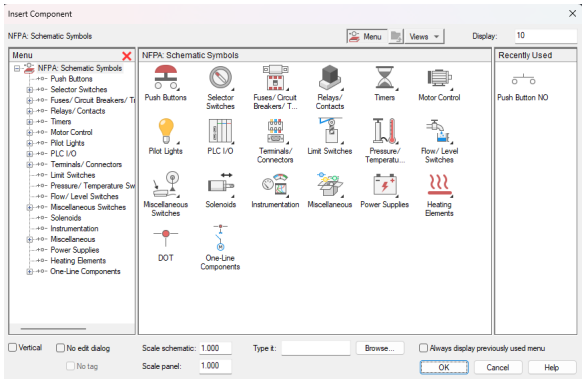

Figure 14: Symbol Insert command in AutoCAD Electrical

Significance Adds standard components to the drawing.

15. Wire Number command (W)

Description Assigns wire numbers to electrical wires.

Usage & Example Type "W", press Enter, select wire, enter wire number.

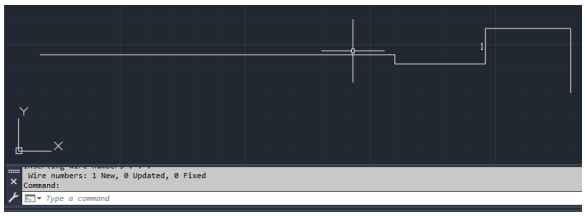

Figure 15: Wire Number command in AutoCAD Electrical

Significance Labels and identifies wires in the drawing.

16. Insert Terminal Strip feature (ITS)

Description Inserts terminal strips into the drawing.

Usage & Example Type "ITS", press Enter, select terminal strip, specify insertion point.

Significance Adds terminal connections accurately.

17. Schematic Tab

Description The Schematic Tab in AutoCAD Electrical provides tools for creating electrical schematics.

Usage & Example Access the Schematic Tab from the ribbon interface. Use the tools within this tab to draw circuit components and connections.

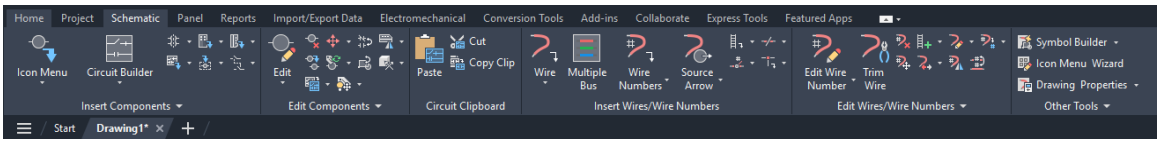

Figure 16: Schematic Tab in AutoCAD Electrical

Significance Facilitates the design of detailed electrical circuits with specialized tools.

18. Cross-reference command (XREF)

Description Creates cross-references between drawing parts.

Usage & Example Type "XREF", press Enter, select objects, enter reference details.

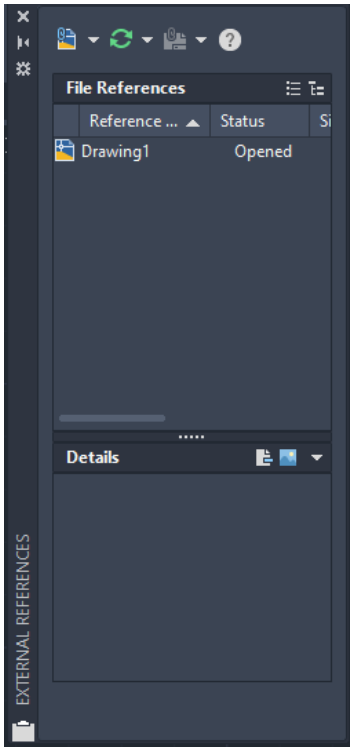

Figure 17: Cross-reference command in AutoCAD Electrical

Significance Links related components for clarity.

19. AutoNumber feature

Description Automatically assigns numbers to components.

Usage & Example Type "AN", press Enter, select components, specify options.

Significance Ensures consistent and accurate numbering.

20. PLC Wiring feature

Description Creates wiring diagrams for PLCs.

Usage & Example Type "PLC", press Enter, draw PLC components and connections.

Significance Essential for designing PLC circuits.

21. Component Tagging feature

Description Assigns tags to electrical components.

Usage & Example Type "CT", press Enter, select component, enter tag details.

Significance Helps in identifying and labeling components.

22. Project Management feature

Description Manages electrical projects, organizing and controlling project files.

Usage & Example Type "PE", press Enter, click "New Project" in Project Manager, enter details.

Significance Essential for organizing and managing project files and settings.

23. Block Editor command (BEDIT)

Description Creates and edits blocks, defining reusable components.

Usage & Example Type "BEDIT", press Enter, draw components in Block Editor, save block.

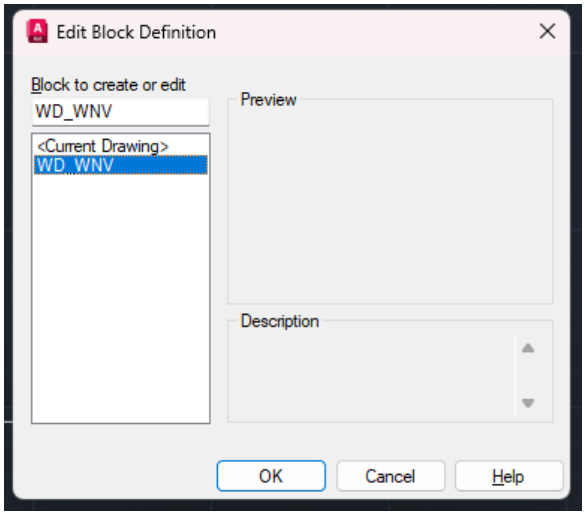

Figure 18: Block Editor command in AutoCAD Electrical

Significance Essential for creating reusable components for consistent use.

Discussion & Conclusion

This report explored essential AutoCAD Electrical commands for creating and modifying electrical drawings. Commands like Line, Polyline, Circle, and Arc are fundamental, while Move, Copy, Rotate, and Mirror aid in editing. Layer and Symbol Insert commands help organize drawings, and Wire Number and Component Tagging enhance clarity. Mastering these commands improves productivity and ensures accurate designs. AutoCAD Electrical's comprehensive tools streamline the design process, improving workflow and project outcomes.