



I Feel the Need, the Need for Speed — AutoCAD Electrical Automation

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Class summary

We are going to take dive into the Spreadsheet to PLC I/O Utility and show you how to manipulate it to automate the creation of all of your schematic drawings, not just the PLC drawings!



Key learning objectives

At the end of this class, you will be able to:

- Create the drawings and modules needed for schematic drawings
- Create the wdi files needed for different drawing styles
- Modify the demopl.c.xls for use with all drawings
- Run the PLC I/O Utility for all drawings in the set
- Create a drawing that places a symbol on the entire drawing

Why did we do this?



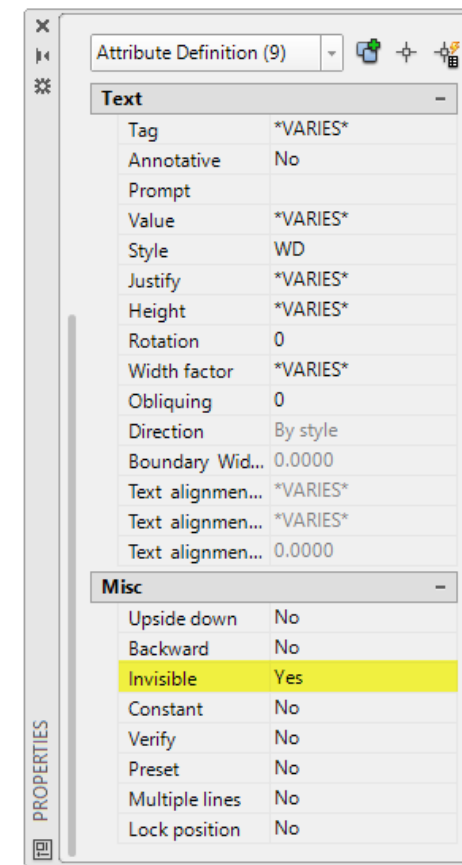
Create Blank Drawings and Modules

- Modify PLC drawing
- Change all Attributes to Invisible

[~][Top][2D Wireframe]



■.TERMDESC_ ■.TAGA_ ■.TERM_



■.DESCA_ ■.DESCB_ ■.DESCC_ ■.DESCD_ ■.DESCE_

Create Blank Drawings and Modules

- Add New Modules

New Module

| | |
|--|---------------------|
| Manufacturer: Autodesk | Series: Custom |
| Series Type: Special | Code: BLANK16 |
| Description: 16-point blank module | Module Type: |
| Base Addressing: Prompt | Rating: |
| Terminals: 16 | Addressable Points: |
| AutoCAD Block to insert: <input type="text"/> Browse... | |
| Autolisp file to run at module insertion time: <input type="text"/> Browse... | |
| Spreadsheet to PLC I/O Utility Insertion Position: Right/Bottom | |
| Module Box Dimensions... Module Prompts... | |
| OK Cancel Help | |

New Module

| | |
|--|---------------------|
| Manufacturer: Autodesk | Series: Custom |
| Series Type: Special | Code: BLANK44 |
| Description: 44-point blank module | Module Type: |
| Base Addressing: Prompt | Rating: |
| Terminals: 44 | Addressable Points: |
| AutoCAD Block to insert: <input type="text"/> Browse... | |
| Autolisp file to run at module insertion time: <input type="text"/> Browse... | |
| Spreadsheet to PLC I/O Utility Insertion Position: Right/Bottom | |
| Module Box Dimensions... Module Prompts... | |
| OK Cancel Help | |

Module Box Dimensions

Module Box Dimensions

☒ Set English Dimensions
☐ Set Metric Dimensions

| | |
|---------------------------|---------------------------|
| Top: 0 | Bottom: 0 |
| Line Properties: ERASE | Line Properties: ERASE |
| Left: 0 | Right: 0 |
| Line Properties: ERASE | Line Properties: ERASE |
| Split Top: 0 | Split Bottom: 0 |
| Line Properties: ERASE | Line Properties: ERASE |

OK Cancel Help

Create Blank Drawings and Modules

- Create the Terminal Block Settings

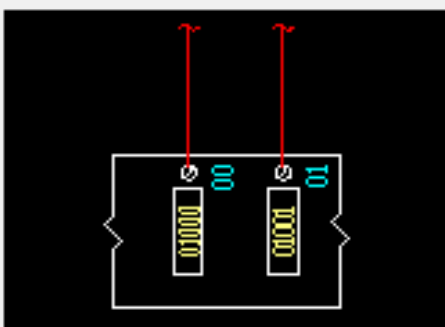
Terminal Block Settings

| | Block File Name | Category | Unique Description | Sample Bitmap File |
|----|-----------------|-------------|---|--------------------|
| 32 | HP1DWAOW | Output | Contact Output (N.O.) Wire Left and Right | HP1DWAOW |
| 33 | HP1WX- | Terminal | Terminal Point Wire Leftx | HP1WX- |
| 34 | HP1-XW | Terminal | Terminal Point Wire Rightx | HP1-XW |
| 35 | HP1-XWC | Output | Contact Output (N.C.) Wire Right | HP1-XWC |
| 36 | HP1DWAWC | Output | Contact Output (N.C.) Wire Left and Right | HP1DWAWC |
| 37 | HP1-XWO | Output | Contact (N.O.) Wire Right | HP1-XWO |
| 38 | HP1D-AWO | Output | Contact Output (N.O.) Wire Right | HP1D-AWO |
| 39 | HP1D-AWC | Output | Contact Output(N.C.) Wire Right 2 | HP1D-AWC |
| 40 | HP1SPACE | Terminal | Blank | HP1SPACE |
| 41 | HP1WA-BLANK | Blank Input | Blank Input | HP1SPACE |

Graphics Style:

☒ 1 ☐ 6
☐ 2 ☐ 7
☐ 3 ☐ 8
☐ 4 ☐ 9
☐ 5

☐ Vertical Module
☒ Horizontal Module



Browse... View DWG View Bitmap

Add Blocks From Module...

OK Cancel Help

Create Blank Drawings and Modules

- Update Terminal Type based on New Terminal Settings

PLC Database File Editor

C:\Users\krystib\documents\acade 2017\aedata\en-us\plc\ACE_PLC.MDB

PLCs

- ABB
- Allen-Bradley
- Autodesk
 - Custom
 - Special
 - BLANK16
 - BLANK38
 - BLANK44
- TELEMECANIQUE

| | Terminal Type | Show | Optional Re-prompt | Break After | Spacing Factor |
|----|---------------|--------|--------------------|--------------------------|----------------|
| 1 | Blank Input | Always | No | <input type="checkbox"/> | |
| 2 | Blank Input | Always | No | <input type="checkbox"/> | |
| 3 | Blank Input | Always | No | <input type="checkbox"/> | |
| 4 | Blank Input | Always | No | <input type="checkbox"/> | |
| 5 | Blank Input | Always | No | <input type="checkbox"/> | |
| 6 | Blank Input | Always | No | <input type="checkbox"/> | |
| 7 | Blank Input | Always | No | <input type="checkbox"/> | |
| 8 | Blank Input | Always | No | <input type="checkbox"/> | |
| 9 | Blank Input | Always | No | <input type="checkbox"/> | |
| 10 | Blank Input | Always | No | <input type="checkbox"/> | |
| 11 | Blank Input | Always | No | <input type="checkbox"/> | |
| 12 | Blank Input | Always | No | <input type="checkbox"/> | |
| 13 | Blank Input | Always | No | <input type="checkbox"/> | |
| 14 | Blank Input | Always | No | <input type="checkbox"/> | |
| 15 | Blank Input | Always | No | <input type="checkbox"/> | |

Attribute Tag

Attribute Value

Table: Autodesk_Custom_Special

New Module...

Module Specifications...

Save Module

Style Box Dimensions...

Settings...

Done

Done / Insert

Help


Custom wdio Lisp and DCL Files

- wdio.lsp – Added multiple lines of code for New drawings
- wdio.dcl – Updated code to accommodate 12 Ladders per drawing

Spreadsheet to PLC I/O Utility Setup

Ladder

Origin: X: Y:

Orientation: 
☐ Vertical ☒ Horizontal

Reference numbers:

Width:

Distance between:

Ladders per drawing:

Rungs per ladder:

Rung spacing:

Rung count skip for I/O start:

Suppression: ☐ Rungs ☐ Side bus rails ☐ Do not erase unused, blank rungs

Signal arrow style:

Module

PLC graphical style:

Input offset from neutral:

Output offset from hot bus:

Maximum I/O per ladder:

I/O point spacing:

Scale: ☐ 1.0 ☐ 16 ☐ 25.4 ☐ 0.039

☒ Apply this scale to module outline only

In-Line Devices

First input device from hot bus:

First output device from neutral bus:

Spacing between multiple devices:

Drawing template:

Create WDI files

- AU2016 – MTR.wdi
- AU2016 – SCH.wdi
- AU2016 – 1769-IO.wdi
- AU2016 – 1756-IO.wdi
- AU2016 – OPSTA.wdi
- AU2016 – PANEL.wdi
- AU2016 – BLANK.wdi

Spreadsheet to PLC I/O Utility Setup

Ladder

Origin: X: Y:

Orientation: ☒ Vertical ☐ Horizontal

Reference numbers:

Width:

Distance between:

Ladders per drawing:

Rungs per ladder:

Rung spacing:

Rung count skip for I/O start:

Suppression: ☒ Rungs ☒ Side bus rails ☐ Do not erase unused, blank rungs

Signal arrow style:

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PLC graphical style:

Input offset from neutral:

Output offset from hot bus:

Maximum I/O per ladder:

I/O point spacing:

Scale: ☒ 1.0 ☐ 16 ☐ 25.4 ☐ 0.039

☒ Apply this scale to module outline only

In-Line Devices

First input device from hot bus:

First output device from neutral bus:

Spacing between multiple devices:

Drawing template:

C:\Users\krystib\appdata\local\autodesk\autocad electrical 2017\r21.0\enu\template\

Create WDI files

- Updated Spreadsheet/Table Columns

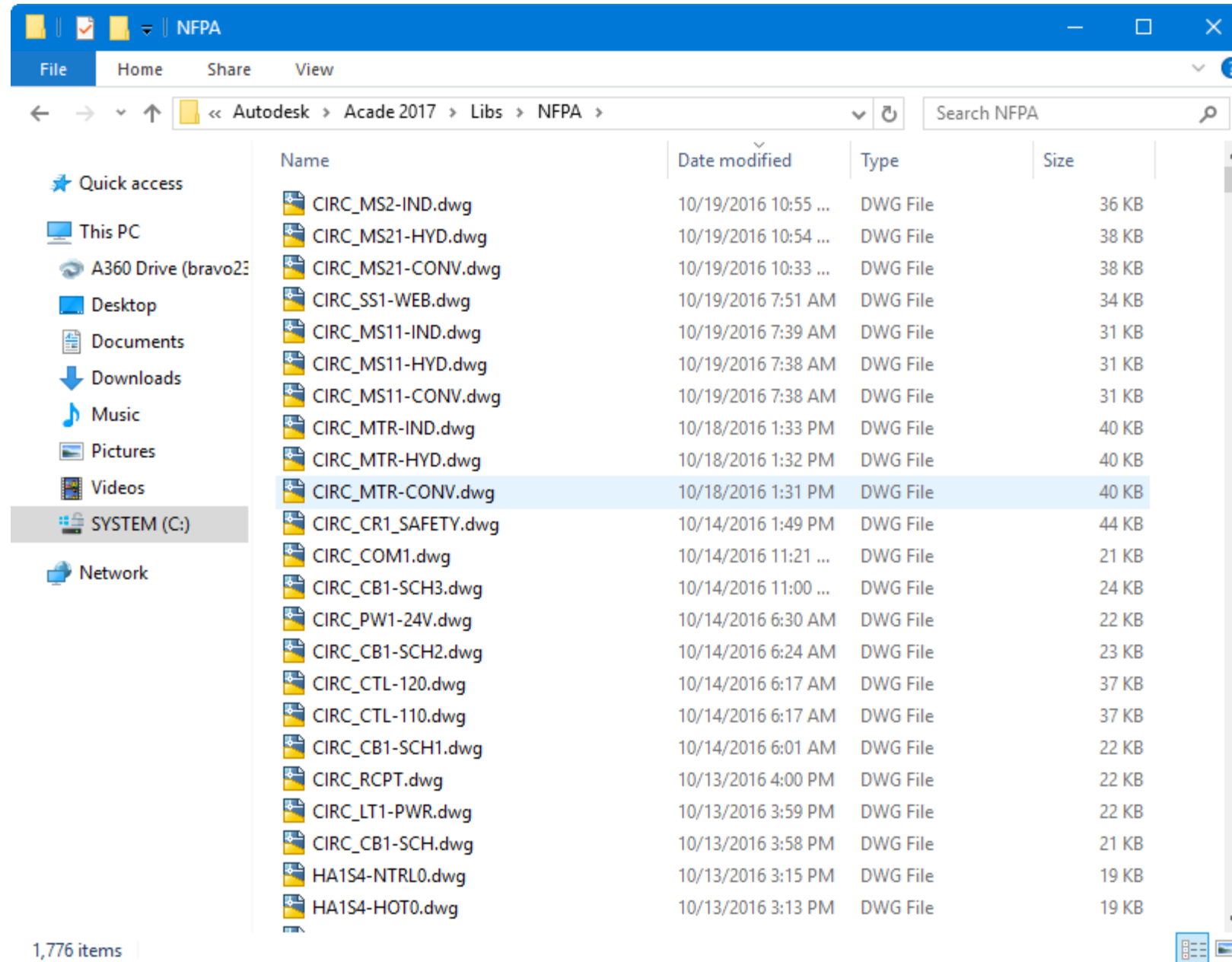
The image displays three overlapping screenshots of the 'Spreadsheet to PLC I/O Drawing Generator' software interface, illustrating the process of assigning spreadsheet columns to device categories.

Top Left Screenshot: The main application window titled 'Spreadsheet to PLC I/O Drawing Generator'. It shows a 'Spreadsheet data' table with columns Co11 through Co111 and rows F1 through F11. Below the table, there is a section 'Assign spreadsheet or table column numbers to data categories below' with dropdown menus for various categories like Module part numbers, Address, Rack numbers, Group numbers, Slot numbers, Remote terminal panel, and Wire numbers. The 'OK' button is highlighted.

Top Right Screenshot: A dialog box titled 'Connected device(s)'. It contains instructions: 'Your spreadsheet data can define up to nine series-connected devices. These are defined on a per input or output point basis. Devices for an input point insert left to right or top to bottom. Output devices insert in reverse order, right to left or bottom to top.' Below this, there is a 'Spreadsheet data' table with columns Co11 through Co114 and rows F1 through F14. The 'OK' button is highlighted.

Bottom Right Screenshot: Another 'Connected device(s)' dialog box, showing a more detailed assignment of spreadsheet columns to device categories. It lists categories for 6th, 7th, 8th, and 9th devices, including Tag, Description, Block, Location, Installation, Manufacturer, Catalog, and Assembly. The 'OK' button is highlighted.

Create Circuit and Symbols



Run PLC I/O Utility

Spreadsheet to PLC I/O Utility

Settings:

C:\Users\krystib\AppData\Roaming\Autodesk\AutoCAD Electrical 2015\R20.0\enu\Support\User\

Ladder Reference Numbering

Start:

Index:

Column to column

☒ Next sequential number

☐ Column to column count:

Drawing to drawing

☐ Next sequential number

☒ Drawing to drawing count:

Module Placement

☒ Always start at top of ladder

☐ Same ladder only if module fits

☐ Fill ladder - allow module splits

☐ Include unused/extra connections

☒ Allow pre-defined breaks

Rungs between:

Drawing File Creation

☒ Use active drawing

Starting file name:

☐ Pause between drawings ☒ Free run

Sheet:

☒ Add new drawings to active project

AutoCAD Electrical Track Classes Up Next

Thursday - 8:30am *GEN21987*

A New Kind of Dewey Decimal for Your Library

Thursday - 1:00pm *GEN21261 (late addition)*

Get Powered Up: How to Implement AutoCAD
Electrical

Be heard! Provide AU session feedback.

- Via the Survey Stations, email or mobile device.
- Give your feedback after each session.
- Give instructors feedback in real-time.
- You get a chance to win great prizes!





