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Make it simple

Circuit design manual

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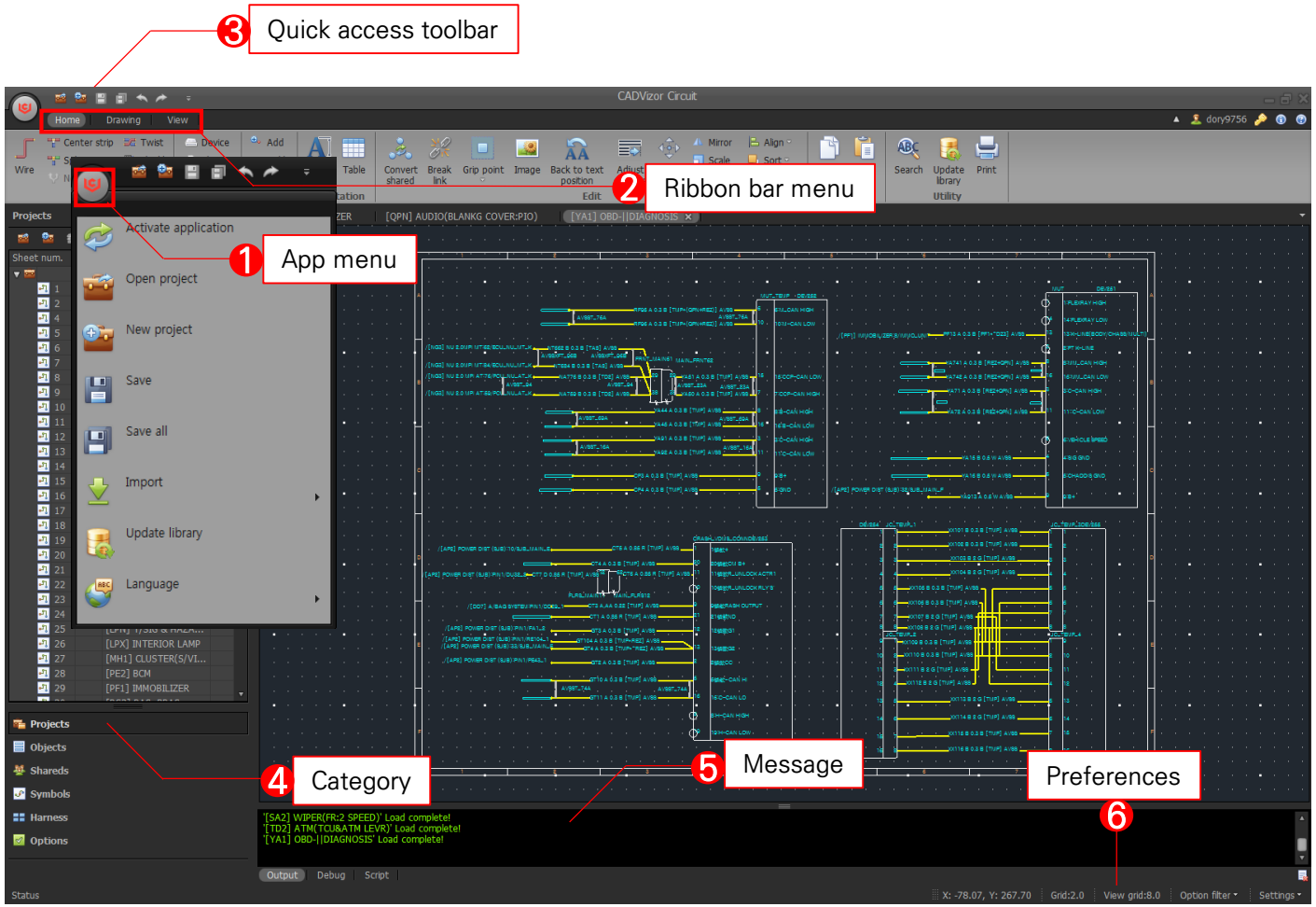
Project & Diagram creation

1. Screen layout
2. Project creation
3. Diagram creation
4. Object list
5. Enter harness code
6. Enter option code

1. Screen layout

Screen	Description
	▣ Screen layout ① App menu Active application, **Open project**, **New project**, Save, Save All, Import, Update library, Language ② Ribbon bar menu ▪ **Home:** Circuit creation and placement of the most frequently used functions ▪ Drawing: Place geometry and style settings ▪ View: Place camera and UI controls ③ Quick access tool bar By adding frequently used functions to the Quick access toolbar, widely use diagram window ④ Category Project List, Circuit object list, Shared circuit list, Symbol list, Harness code list, Option code list ⑤ Message Error, warning message ⑥ Preferences Additional information related to drawings

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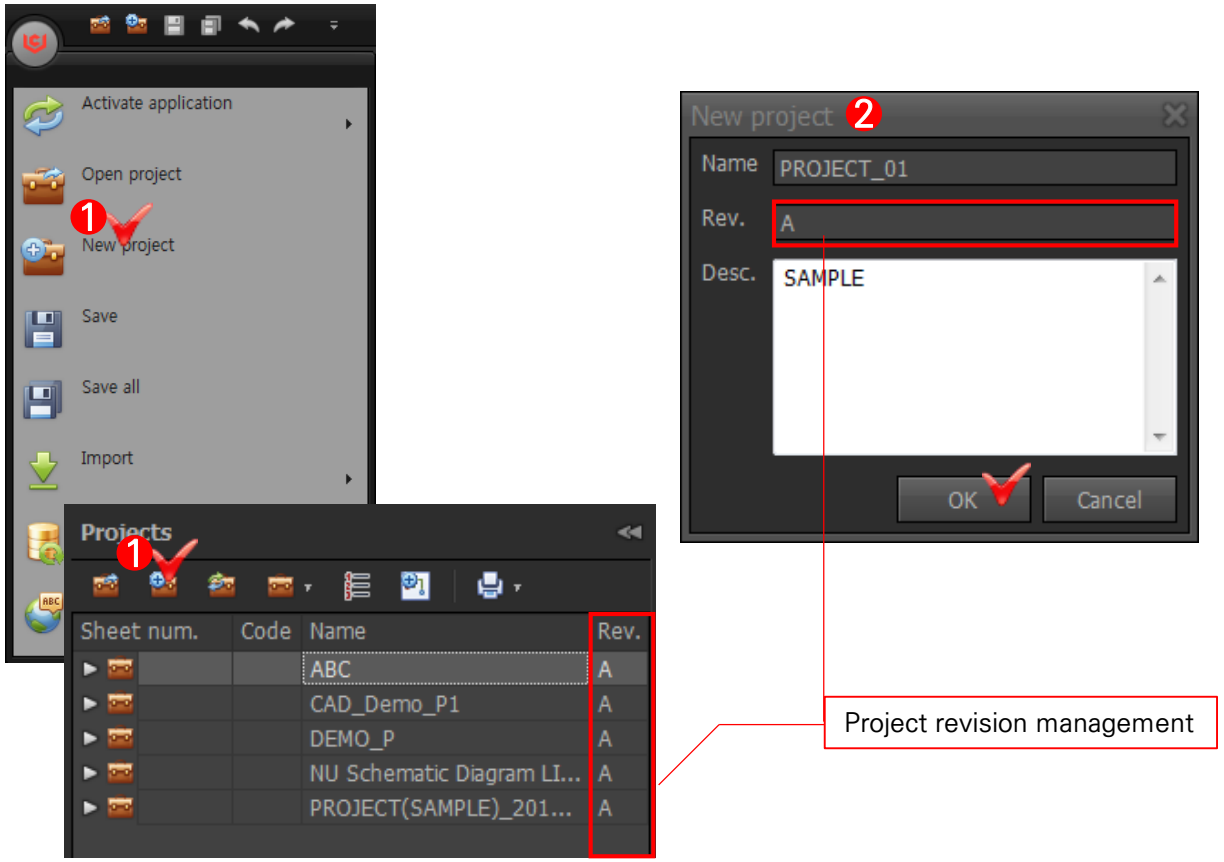
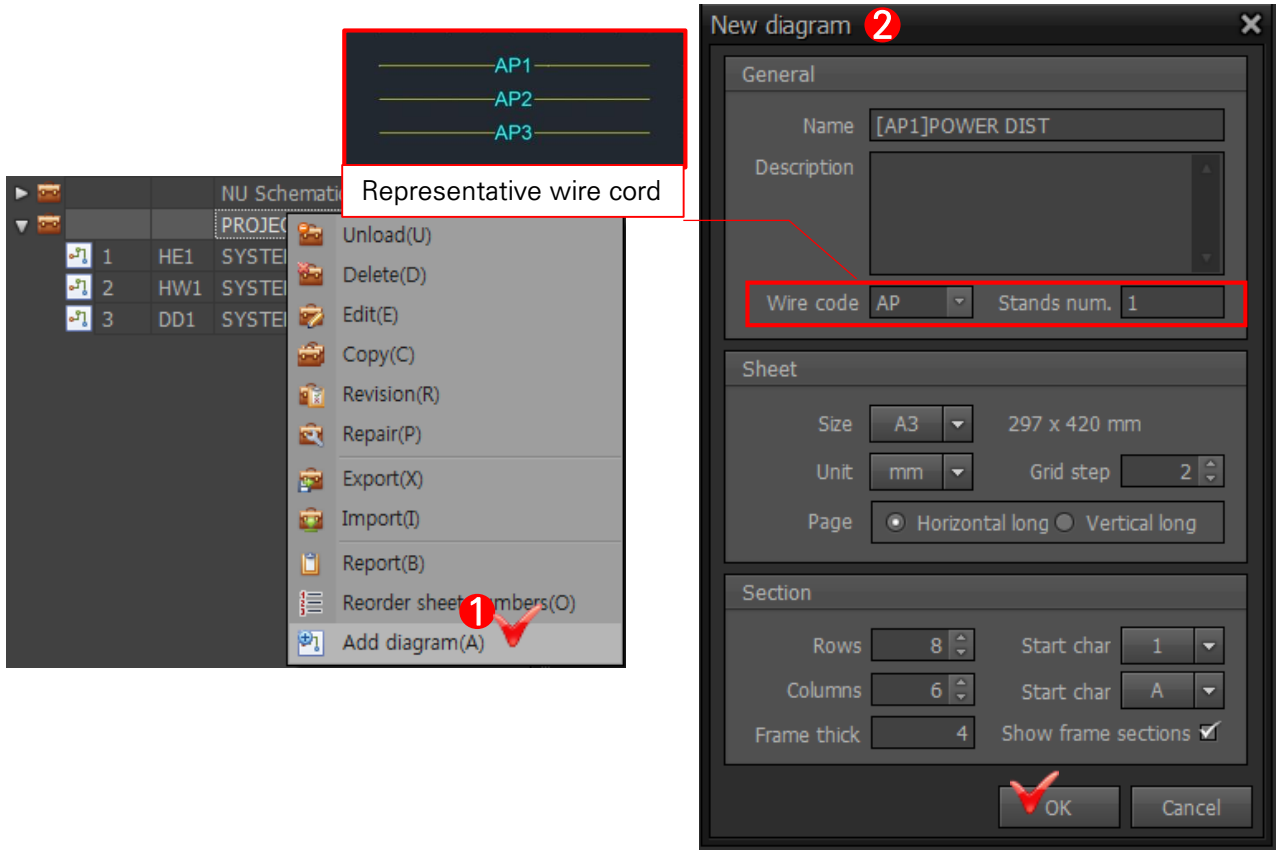
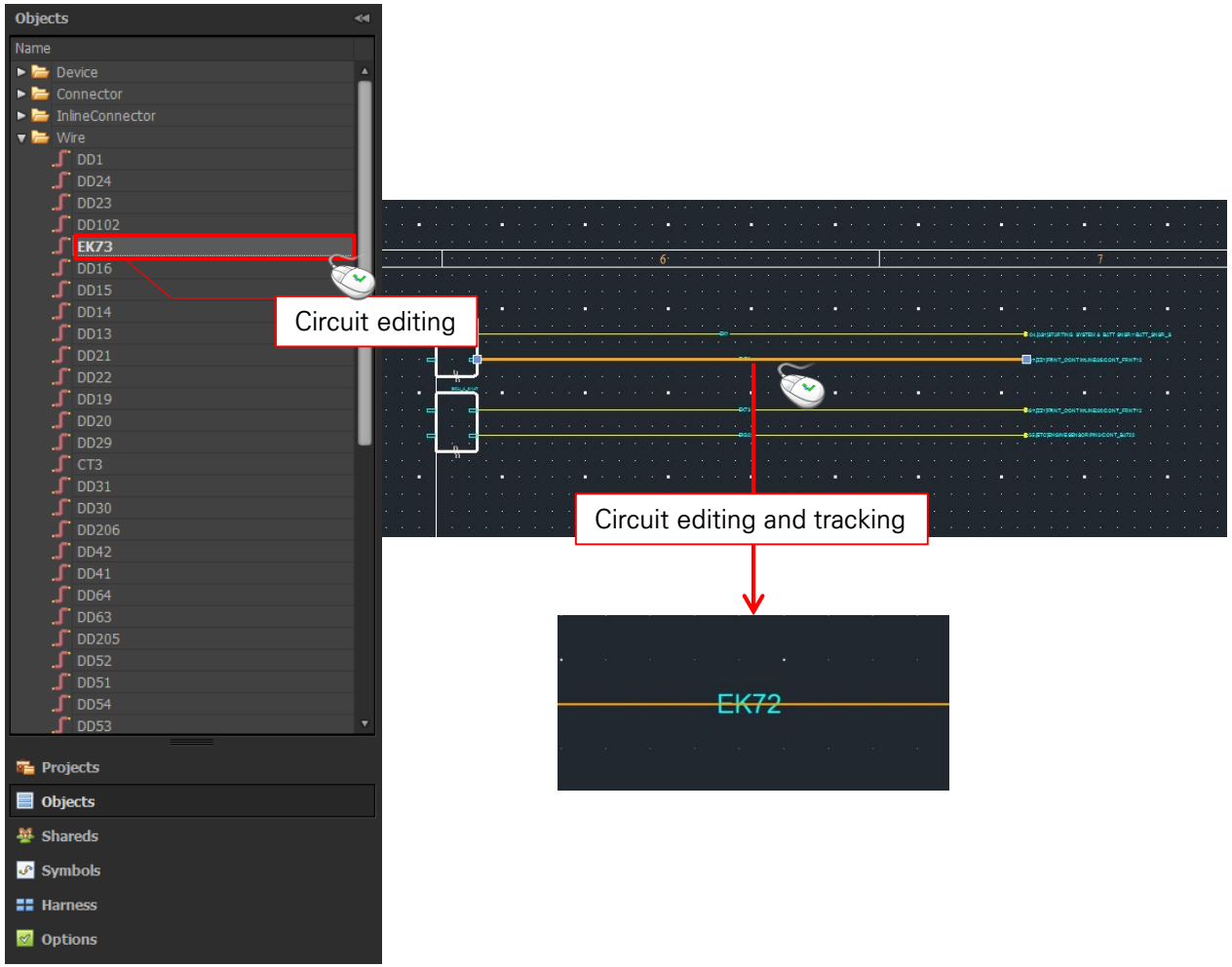
2. Project creation

Screen	Description
	▣ Project creation ① New project : Click **New project** button ② Name: Enter project name **Rev:** Project revision management ▪ Project name does not allow duplicates – Name: PROJECT_01, Rev: A(O) – Name: PROJECT_01, Rev: A(X) ▪ Use revision to duplicate project name – Name: PROJECT_01, Rev: A(O) – **Name: PROJECT_01, Rev: B(O)** Description: Project history, additional information

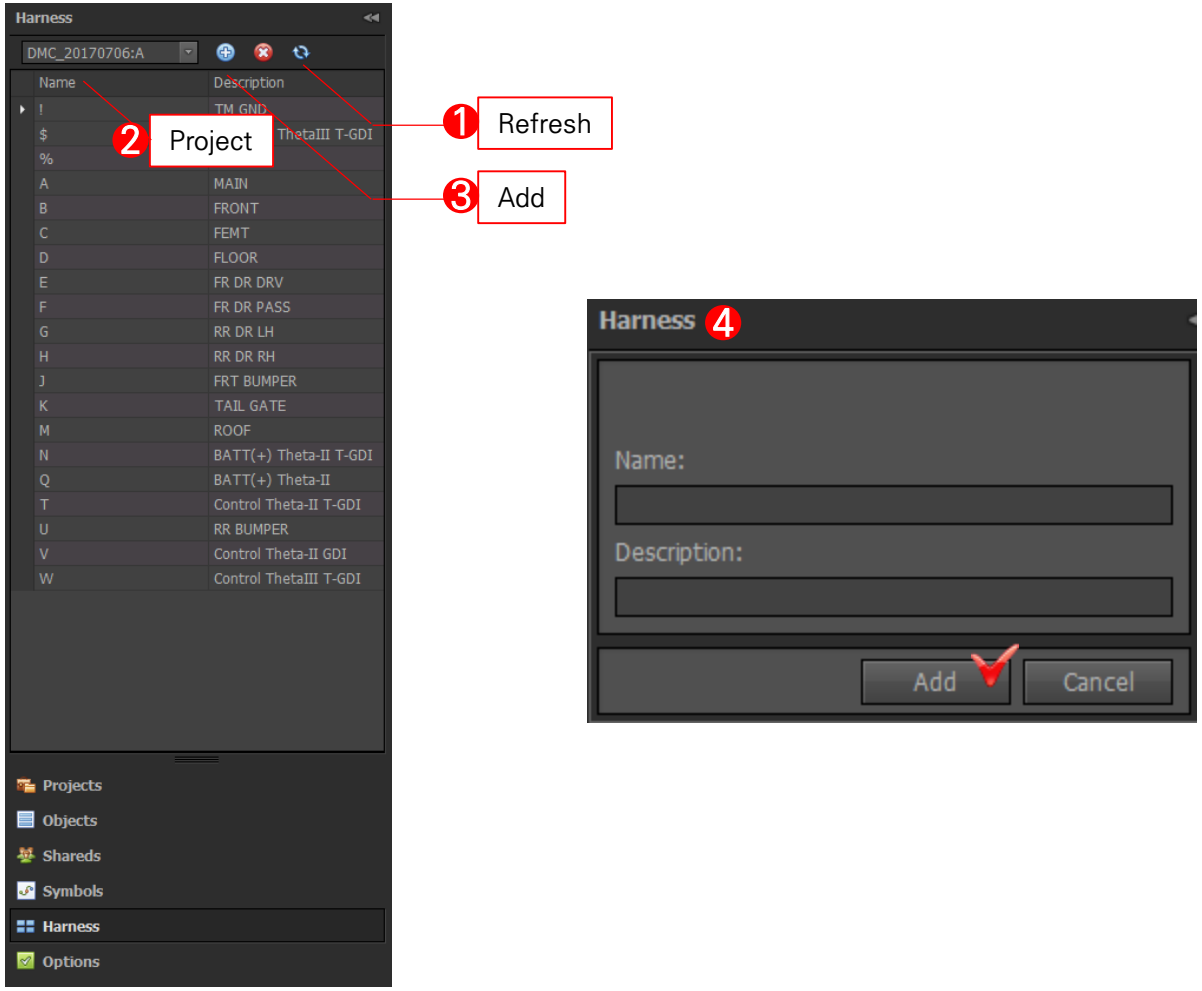
3. Diagram creation

Screen	Description
	▣ Diagram creation ① After selecting a project, click mouse RMB, click **Add diagram** button. ② Name: Enter the name of the diagram **Wire code:** Using a representative circuit name, when wire is created, it is automatically assigned from representative name 1. ▪ **Decrease wire name editing operations** – If the wire name is AP: AP01, AP02, AP03… – If no wire name exists: Wire01, Wire02, Wirre03… Sheet: Drawing settings Section: Template area settings

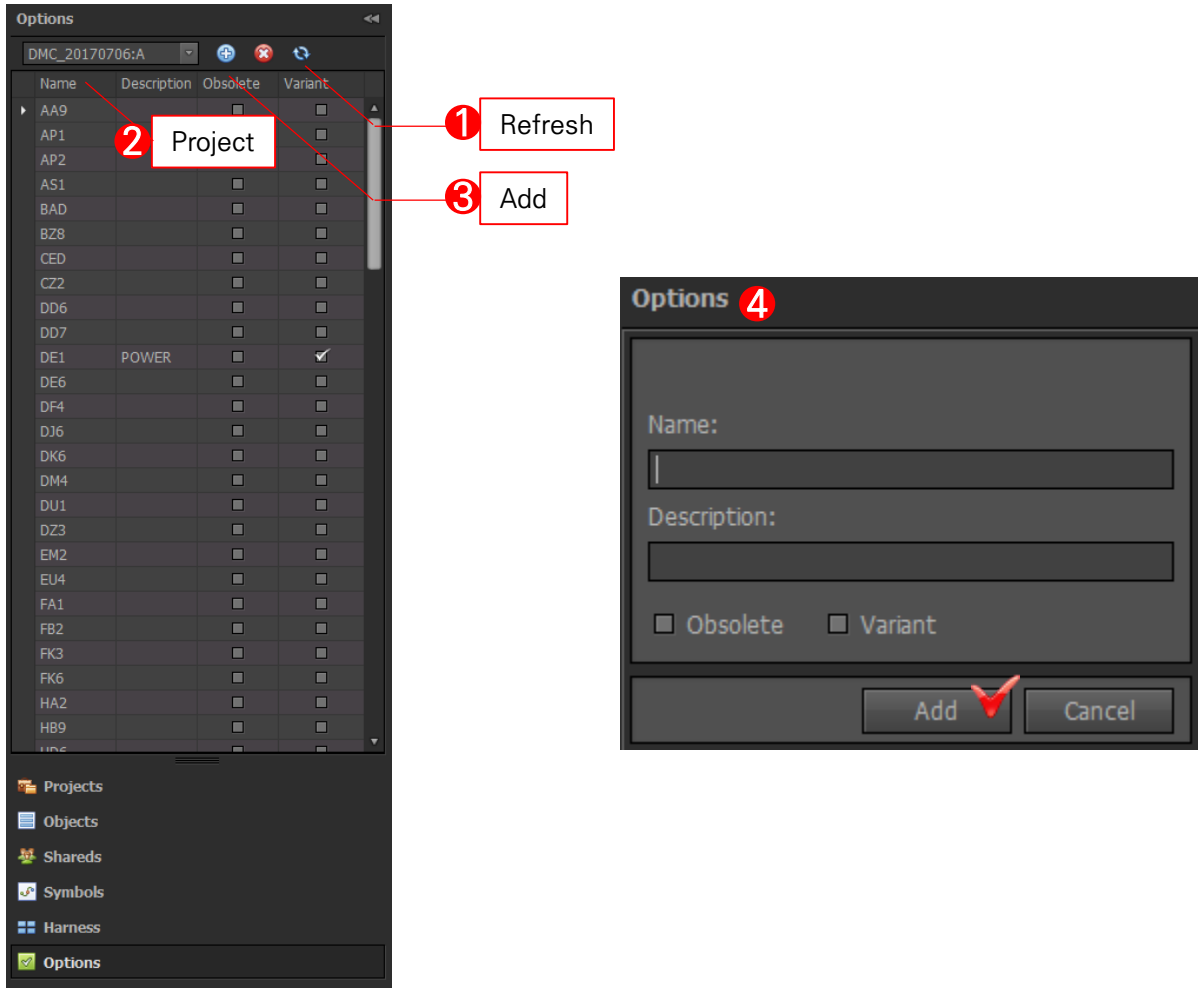
4. Object list

Screen	Description
	▣ Object list ▪ When the circuit is clicked, the diagram circuit is tracked. ▪ Double-click circuit tree, edit circuit name – **Circuit tree editing :** Move up key(↑), Move down key(↓), Enter Key Change with diagram circuit ▪ Click circuit diagrams, track circuit list ▪ **To search for names:** 'Ctrl + F' Key

5. Enter harness code

Screen	Description
	▣ Enter harness code ① Click **Refresh** button: Updating project data ② Select **Project** ③ Click **Add** button ④ Name: Insert harness cord Description: Additional information

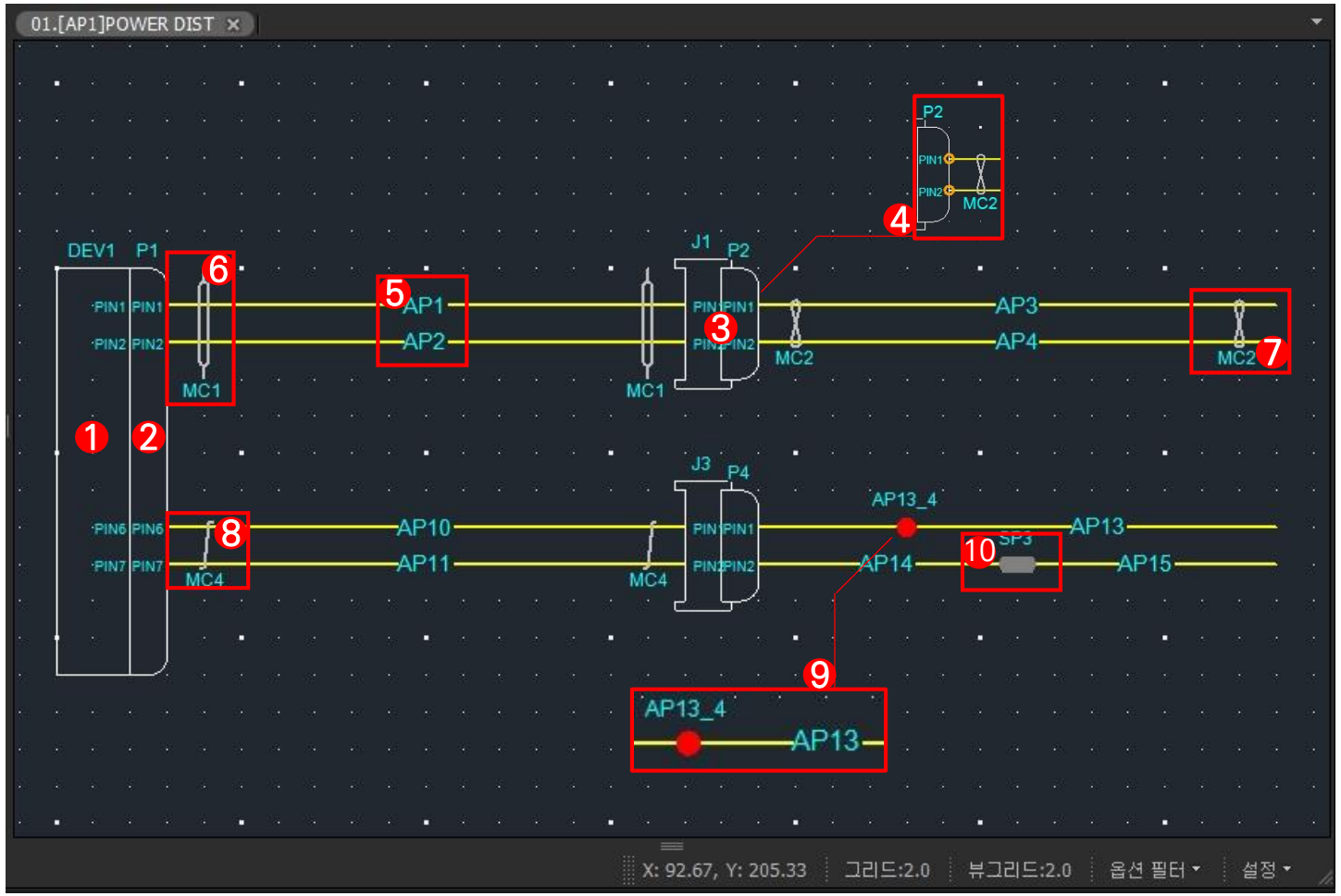
6. Enter option code

Screen	Description
	▣ Enter option code ① Click **Refresh** button: Updating project data ② Select **Project** ③ Click **Add** button ④ Name: Insert option cord Description: Additional information

Circuit object creation

1. Preview circuit objects
2. Device & Connector creation
3. Pin & Plating creation
4. Wire creation
5. Center strip splice creation
6. Split splice creation
7. Multicore creation

1. Preview circuit objects

Screen	Description
	▣ Preview circuit objects ① Device ② Plug connector ③ Inline connector ④ Pin ⑤ Wire ⑥ Shield ⑦ Twist ⑧ Coax ⑨ Center strip splice ⑩ Split splice

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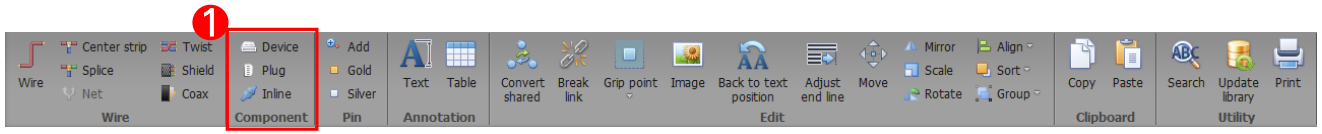
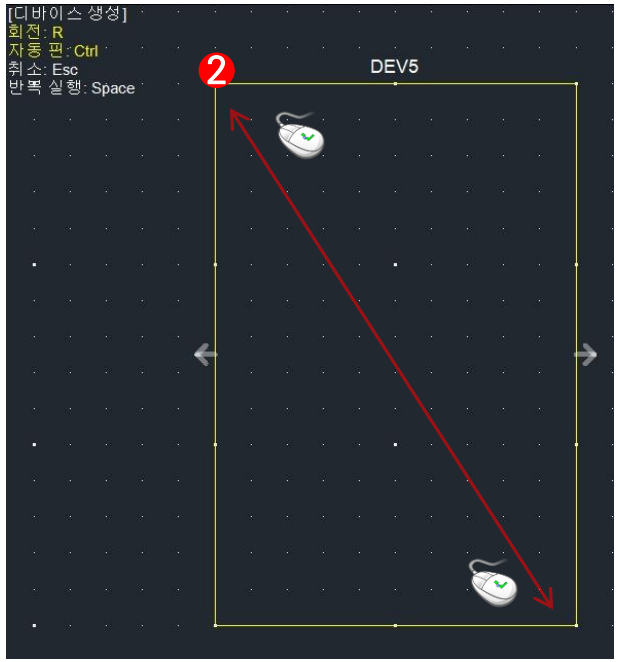
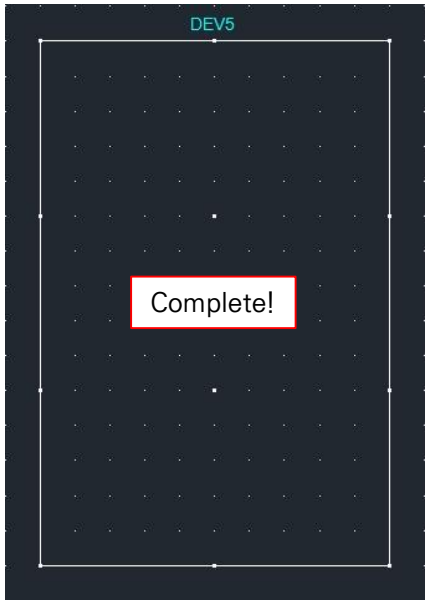
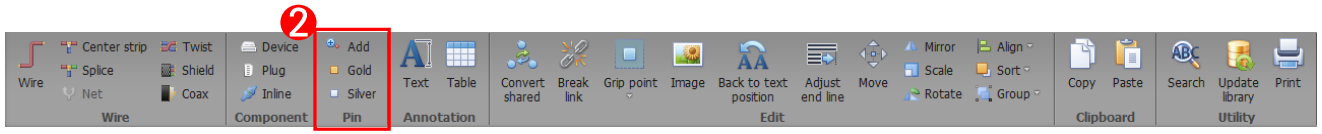
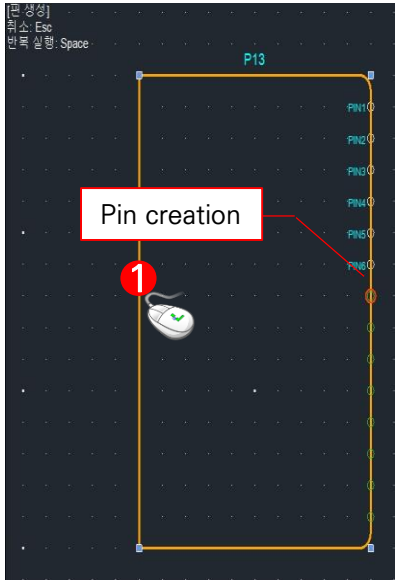
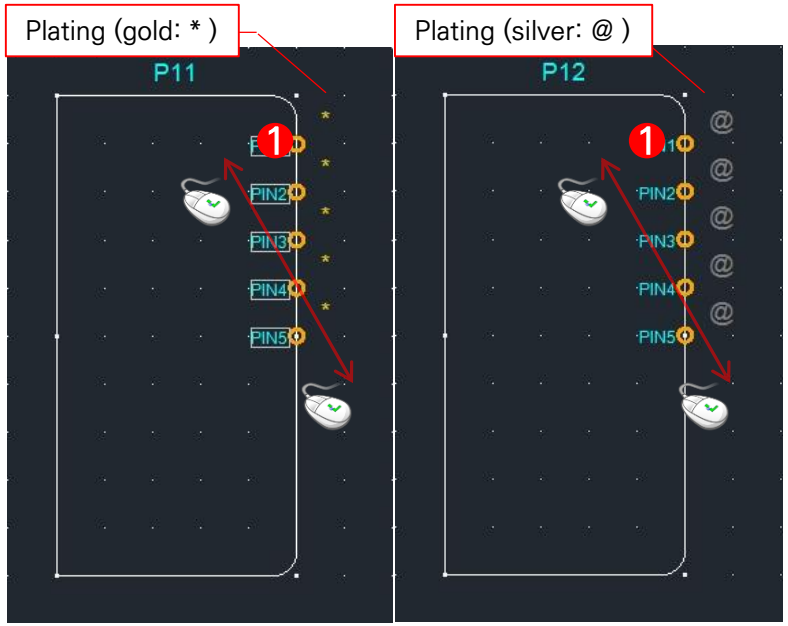
2. Device & Connector creation

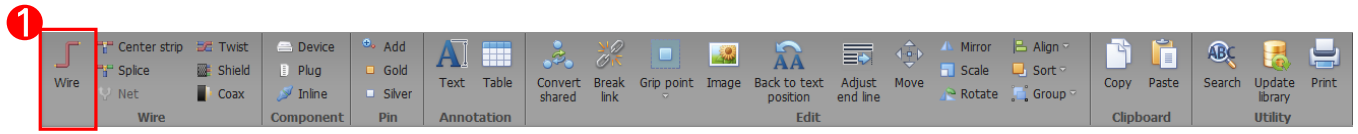
Screen	Description
	▣ Device & Connector creation
	① Click **Device, Plug, Inline** button on the Home tab
	② Mouse drag in diagram
	▪ **Connector direction**: When contacting the device, the direction of the plug connector is automatic
	▪ **Rotation:** Press 'R' Key to rotate 90 degrees
	▪ **Automatic pin generation:** Press 'Ctrl' Key to create a pin automatically
	▪ Cancel: 'Esc' Key
	▪ Repeat: 'Space' Key

3. Pin & Plating creation

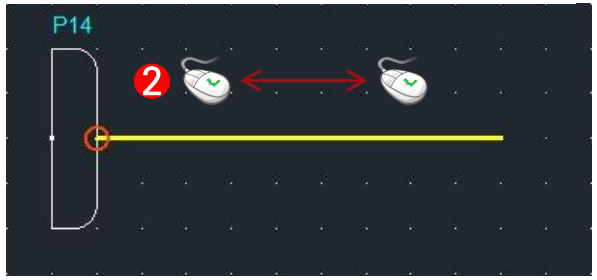
Screen	Description
	▣ Pin & Plating creation
	① Select circuit object ▪ Pin creation: Select device, connector ▪ Plating creation: Select pin
	② Click **Pin, Plating(Gold(*), Silver(@)** button on the Home tab
	▪ **Change pin location:** – Select pin, mouse drag in diagram – Move up key(↑), Move down key(↓), Move left key(←), Move right key(→), Enter Key.
	▪ **Pin multiple selection:** Select pin, 'Shift' key and mouse drag. All of the pins within the mouse region are checked.
	▪ Cancel: 'Esc' Key
	▪ Repeat: 'Space' Key

4. Wire creation

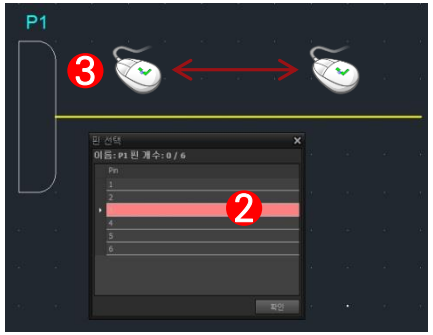
Screen

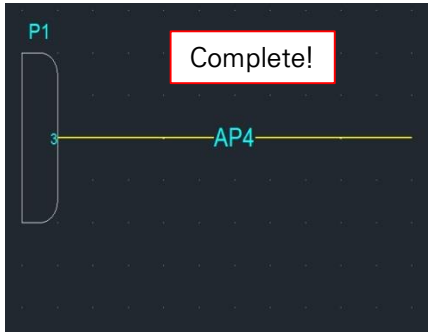


A. Connector without library information



B. Connector with library information





Description

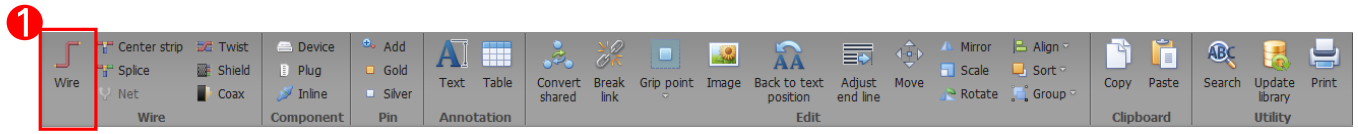
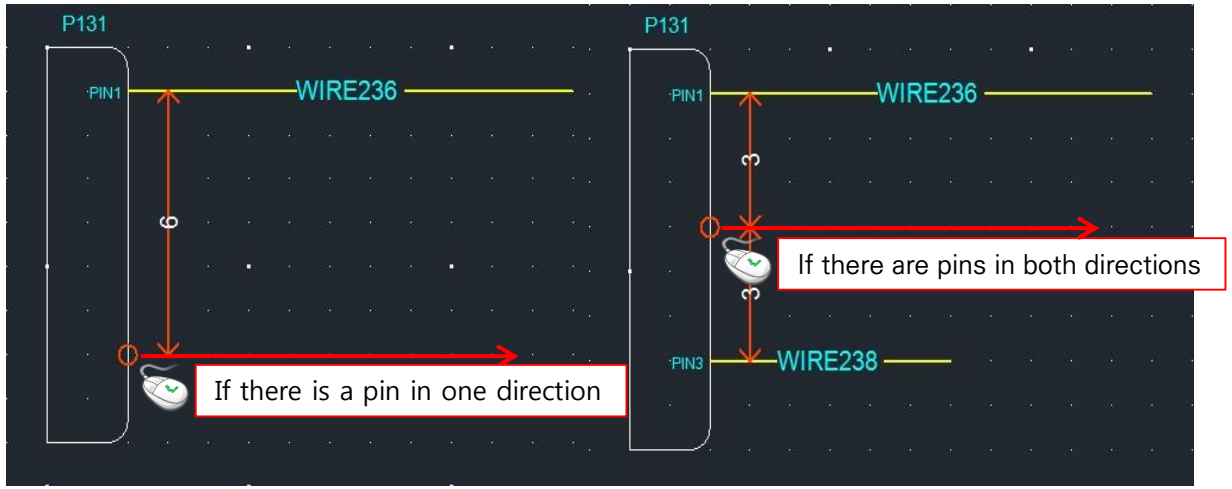
▣ Wire creation

A. When connecting a connector that does not have library information, **create a geometry pin and create a wire at the same time**
① Click **Wire** button on the Home tab
② Mouse drag in diagram

B. When connecting a connector with library information, **create a library pin and create a wire at the same time**
① Click **Wire** button on the Home tab
② **Select library pin**
③ Mouse drag in diagram

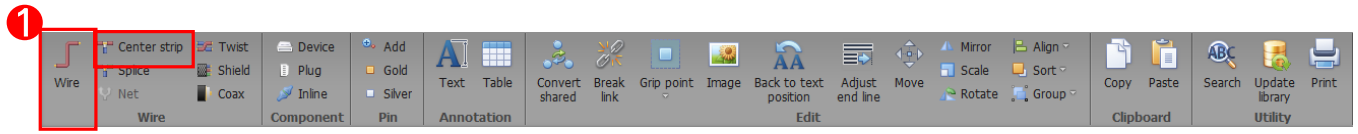
- Cancel: 'Esc' Key
- Repeat: 'Space' Key

4. Wire creation

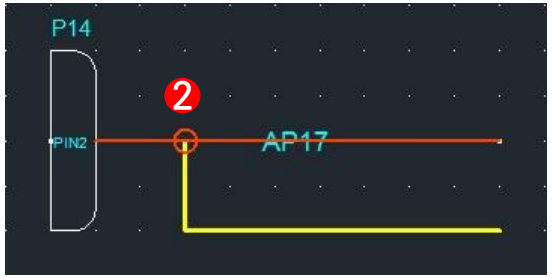
Screen	Description
 	▣ Wire creation ▪ The interval between the pins is expressed as the number of grids so that wires can be generated at regular intervals.

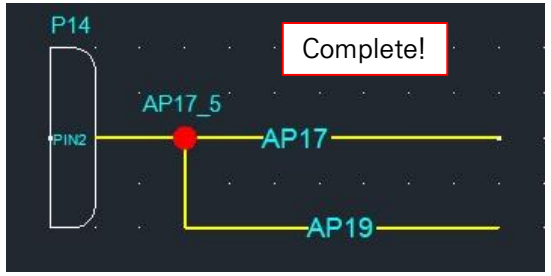
5. Center strip splice creation

Screen	Description



A. Wire and center strip splice





B. center strip splice

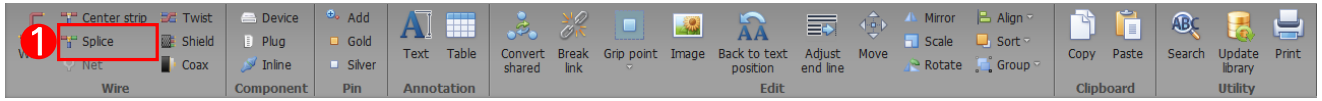
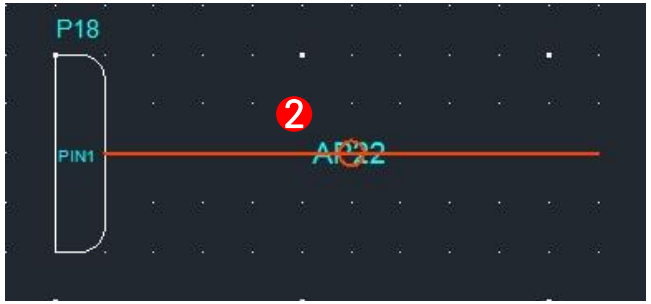
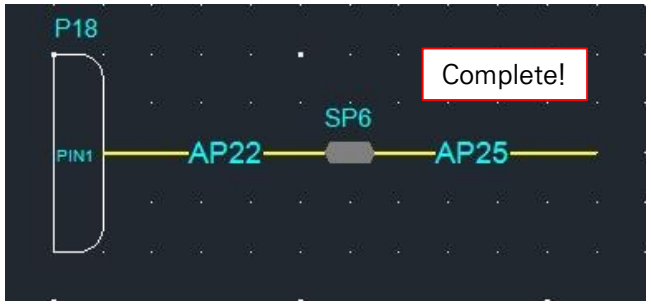
▣ Center strip splice creation

A. Automatically create center strip, when creating wire
① Click **Wire** button on the Home tab
② Create from main wire

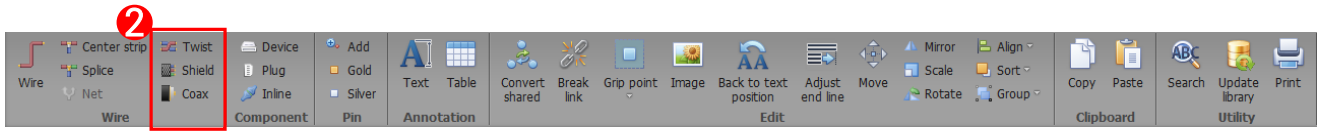
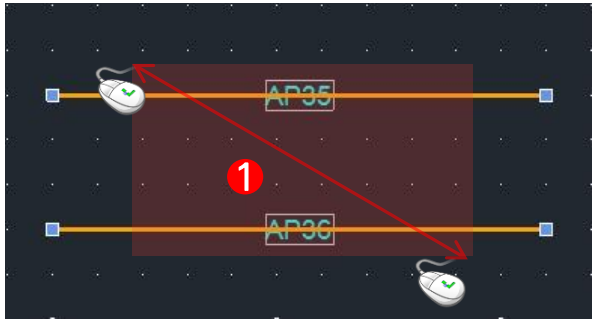
B. Create General Center Strip
① Click **Center strip** button on the Home tab
② Create from main wire

- **Center strip name:** Refer to main wire name.
  ex) When the name of the wire is AP17: AP17_1, AP17_2, AP17_3...
- Cancel: 'Esc' Key
- Repeat: 'Space' Key

6. Split splice creation

Screen	Description
  	▣ Split splice creation ① Click **Center strip** button on the Home tab ② Create from main wire ▪ **Wire cutting:** The wire is connected to a new wire.

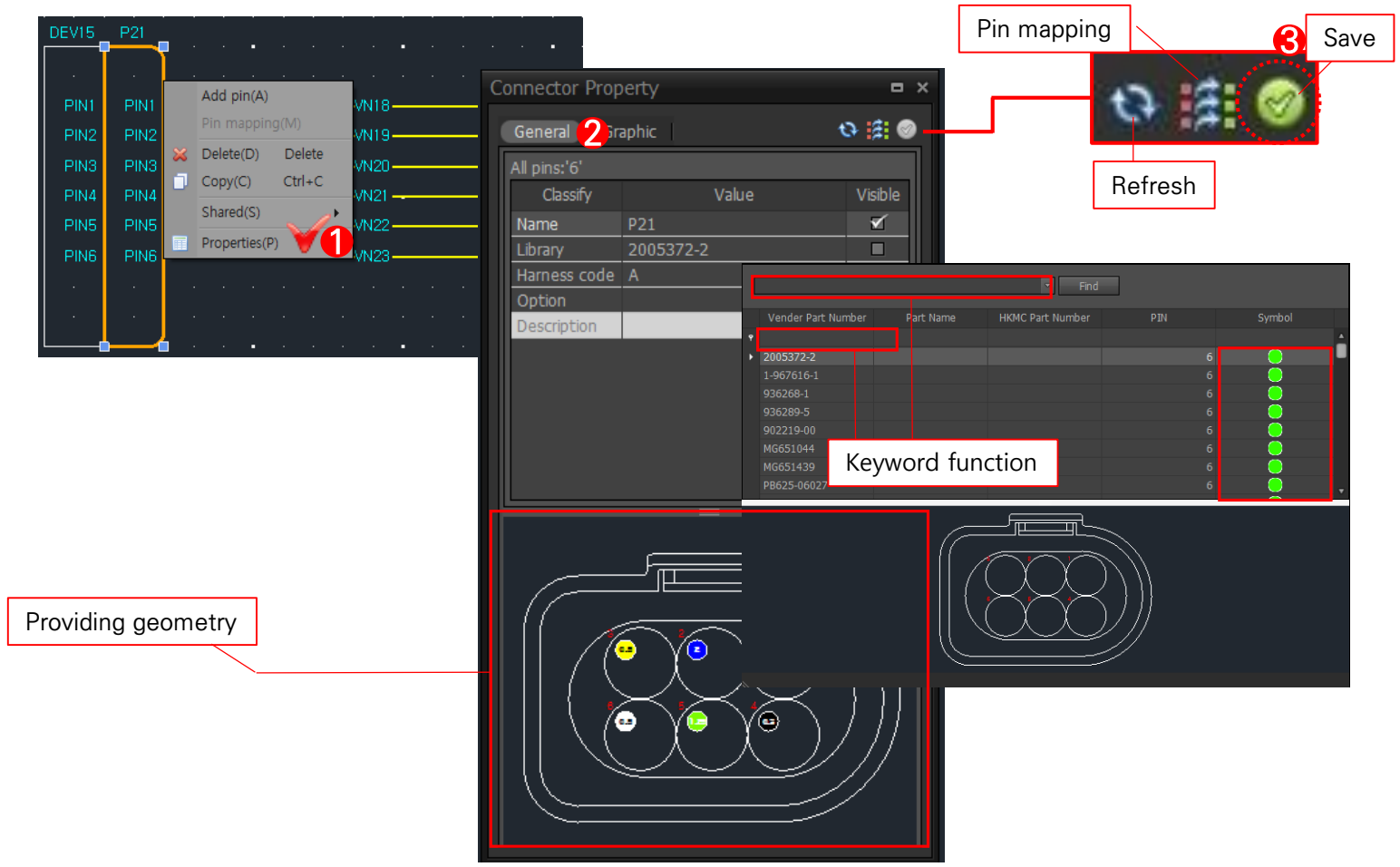
7. Multicore creation

Screen	Description
  	▣ Multicore creation ① Select wire ② Click **Multicore** (Twist, Shield, Coax) button on the Home tab

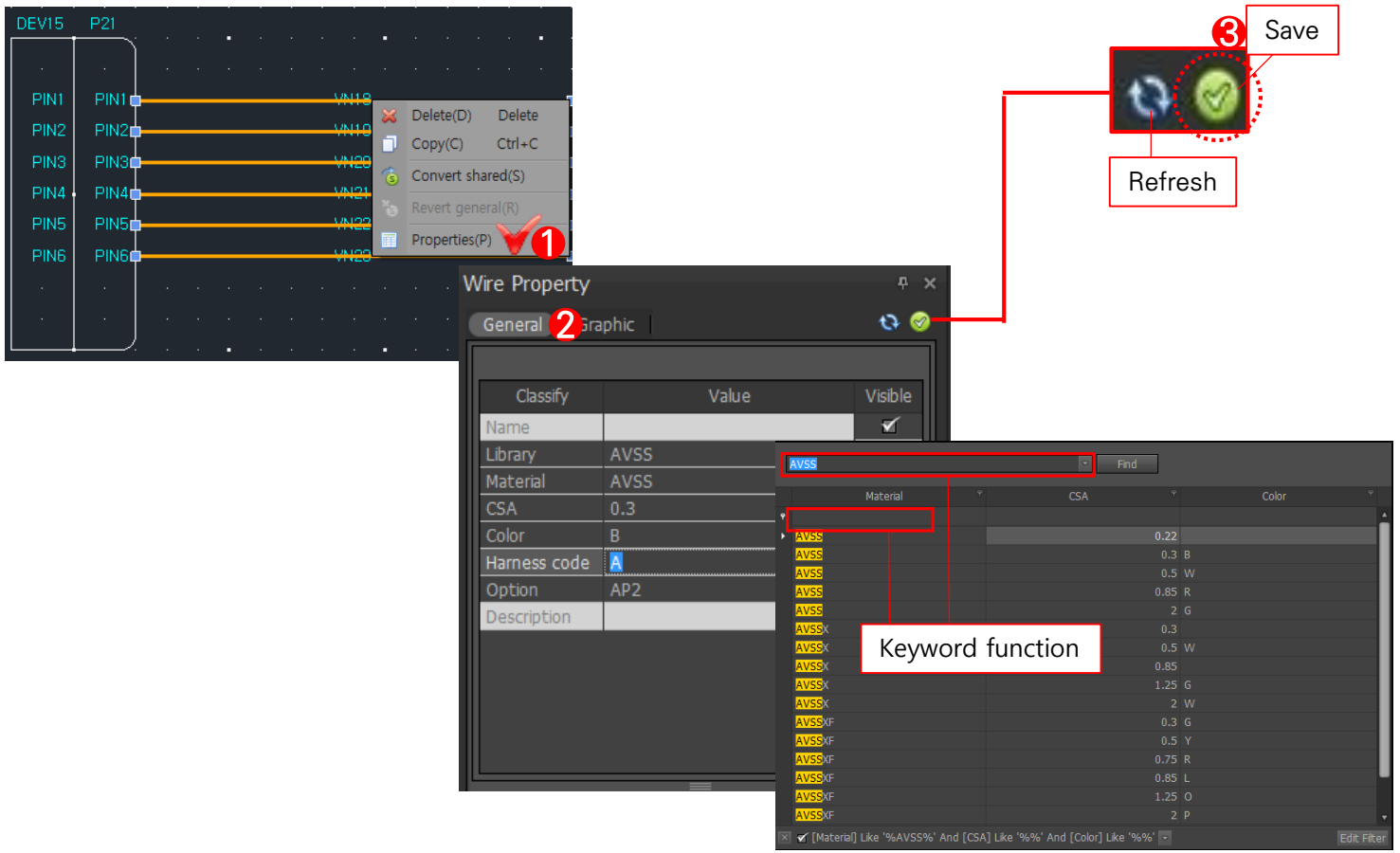
Circuit object properties

1. Connector properties
2. Wire properties

1. Connector properties

Screen	Description
	▣ Connector properties ① After selecting the connector, click mouse RMB, click **Properties** button ② Enter connector property information: Name, Library, Harness code, Option… ▪ **Refresh button:** When there is a data change managed by the project, it is updated with the latest data ▪ **Pin mapping:** Connector pin shape information and library pin connection function **(Library pin connection required)** ▪ **Connector geometry:** Validate design information by visualizing library symbols and wire dimensions and colors – **Condition** : Connector Library Connection: O Pin mapping: O Connector Library Connection: O Wire dimensions, color settings: O ▪ Graphic: Edit Graphic Information ③ Save: Click **Save** button or 'Enter' key

2. Wire properties

Screen	Description
	▣ Wire properties ① After selecting the wire, click mouse RMB, click **Properties** button ② Enter connector wire information: Name, Library, Color, Harness code, Option… ▪ **Refresh button:** When there is a data change managed by the project, it is updated with the latest data ▪ Graphic: Edit Graphic Information ③ Save: Click **Save** button or 'Enter' key

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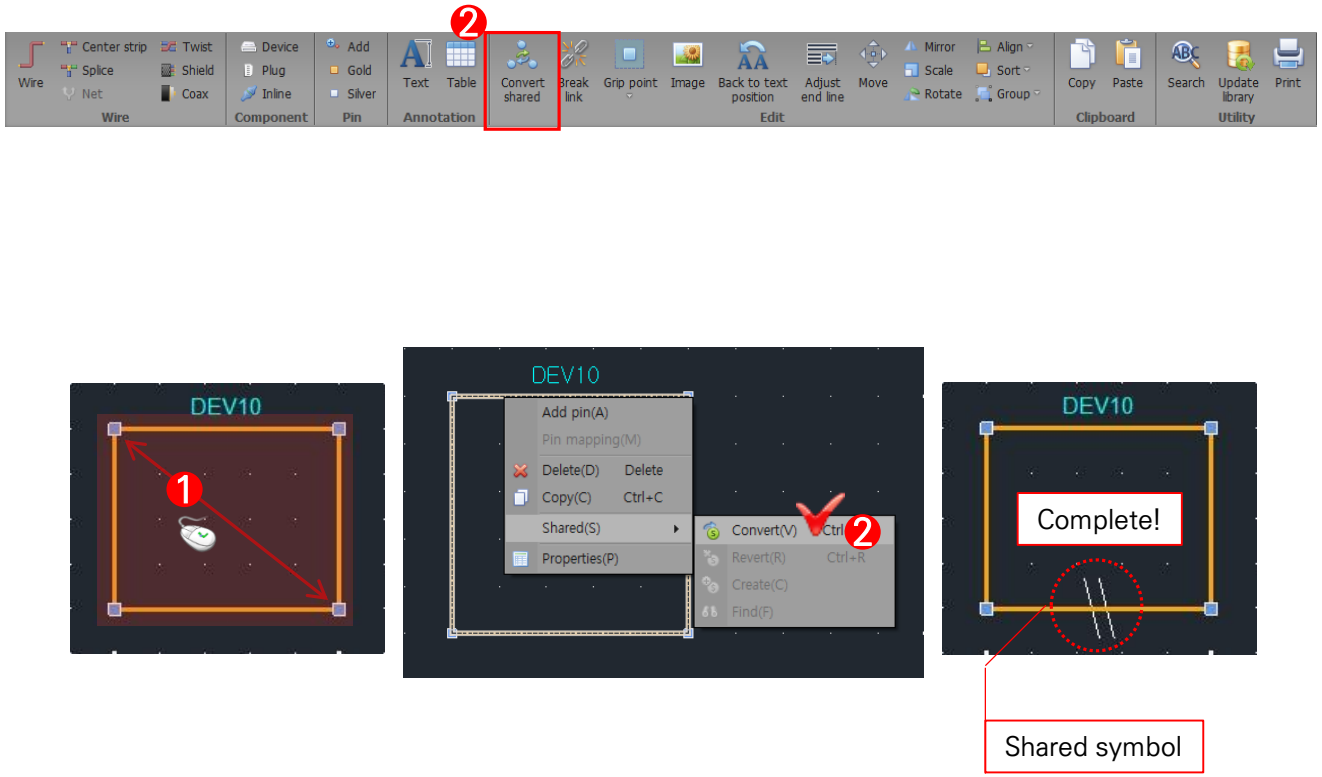
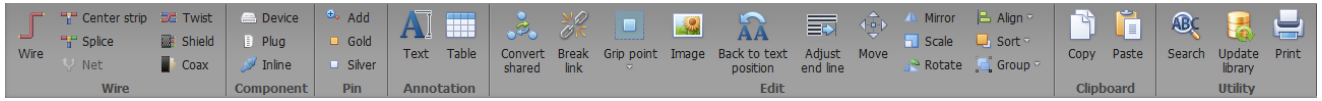
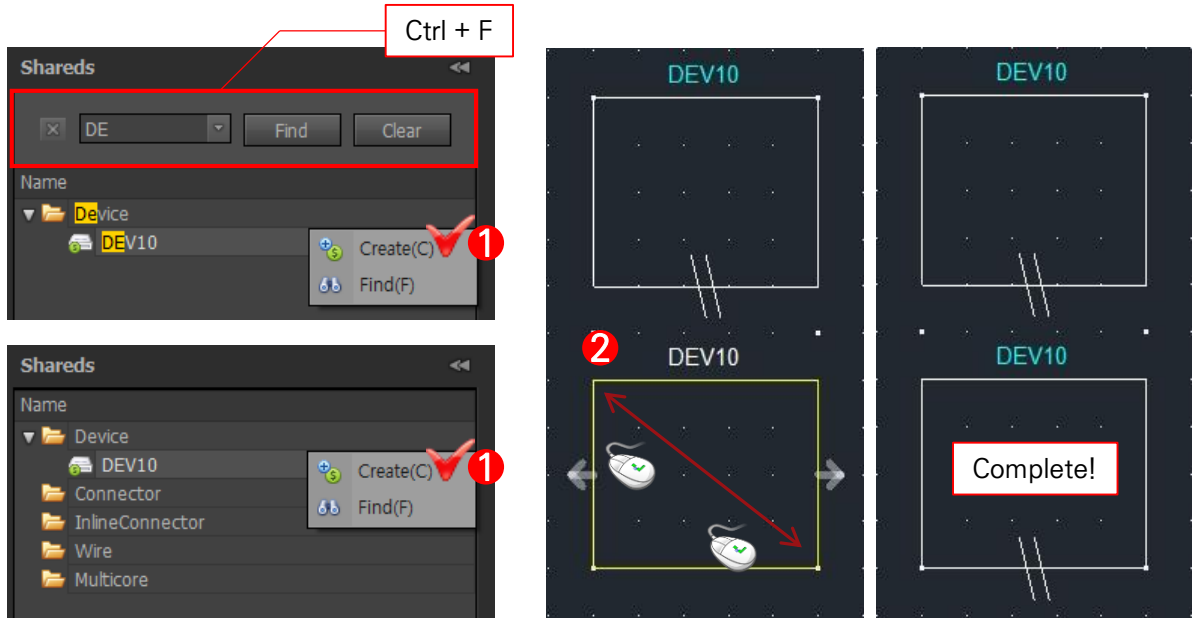
Ⅳ _ Shared circuit object creation

1. Shared device & connector conversion
2. Shared device & connector creation(1)
3. Shared device & connector creation(2)
4. Shared wire conversion
5. Shared wire creation(1)
6. Shared wire creation(2)
7. Shared multicore conversion
8. Shared multicore creation

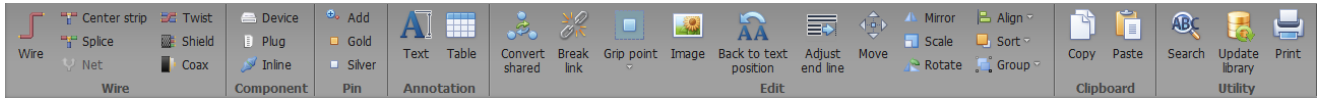
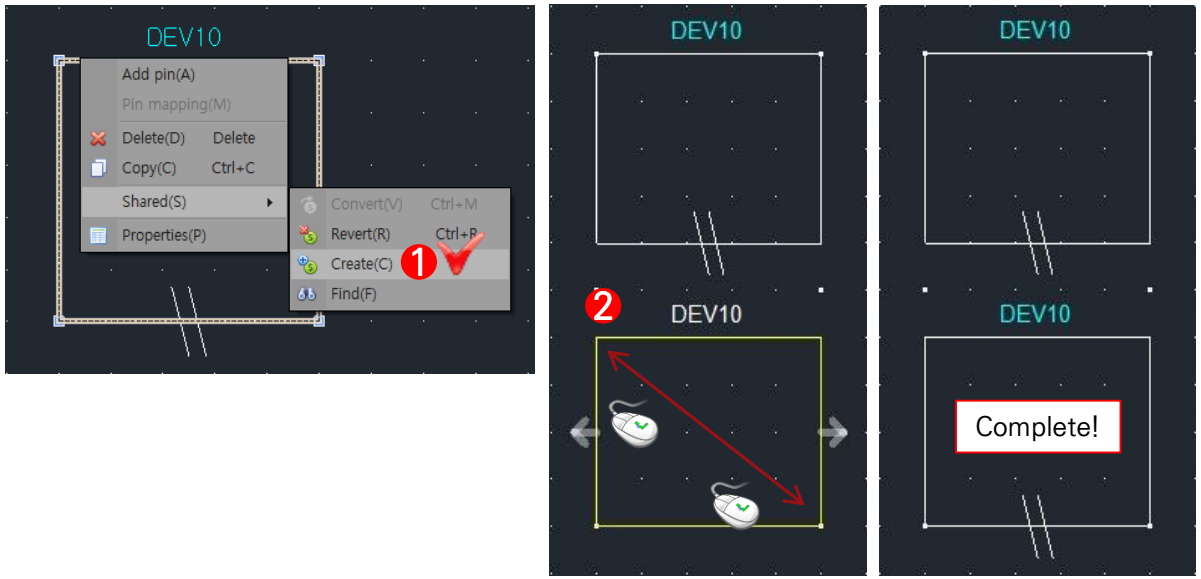
1. Shared device & connector conversion

Screen	Description
	▣ Shared device & connector conversion ① Select Device, Plug, Inline connector ② Convert: ▪ Click **Convert shared** button on the Home tab ▪ After selecting the circuit object, click mouse RMB, click **Shared, Convert** button

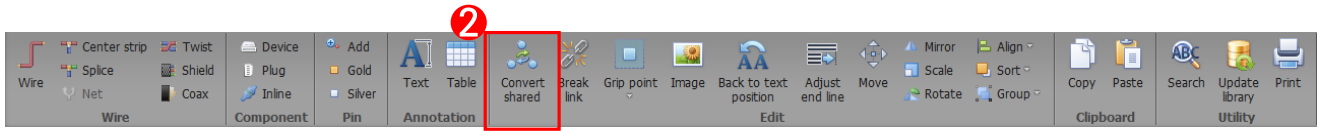
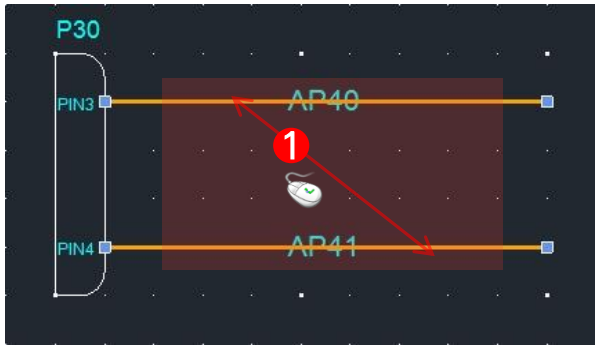
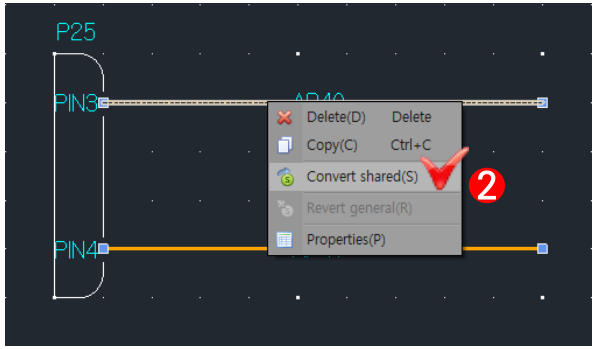
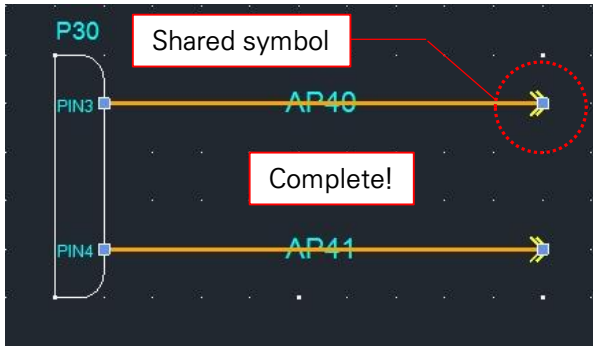
2. Shared devices & connector creation(1)

Screen	Description
	▣ Shared device & connector creation(1)
	① Create: ▪ Double click shared circuit tree. ▪ After selecting shared circuit tree, click mouse RMB, click **Create** button. ② Mouse drag in diagram ▪ **To search for names:** ‘Ctrl + F’ Key

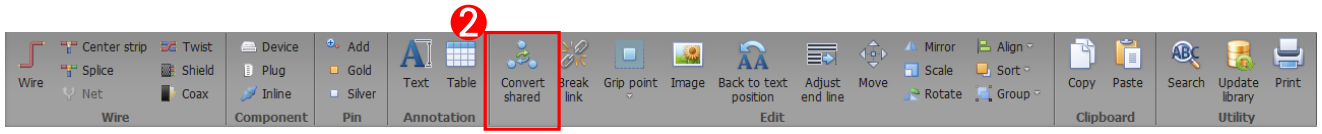
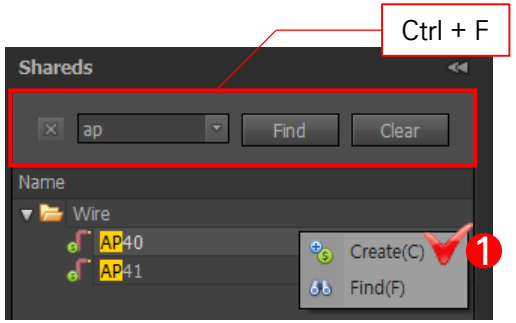
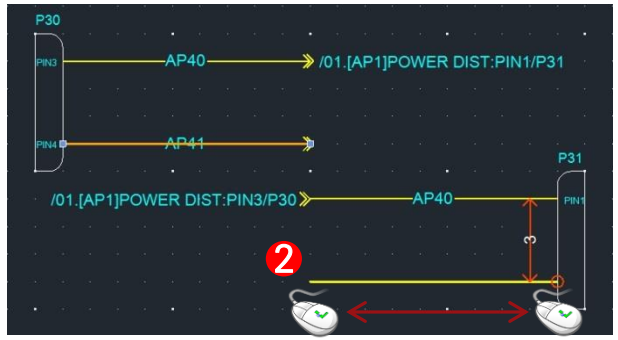
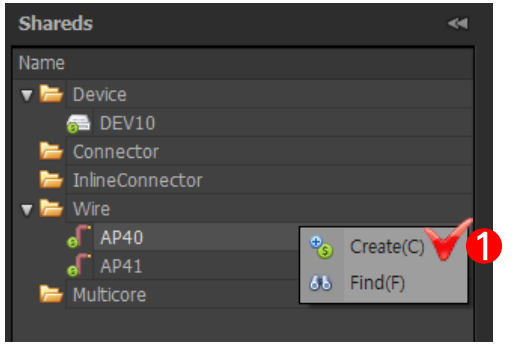
3. Shared devices & connector creation(2)

Screen	Description
 	▣ Shared device & connector creation(2) ① After selecting shared circuit object, click mouse RMB, click **Shared, Create** button. ② Mouse drag in diagram

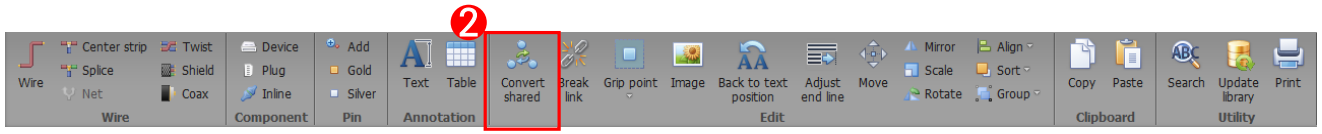
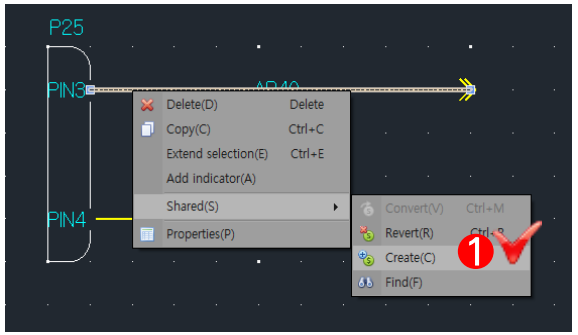
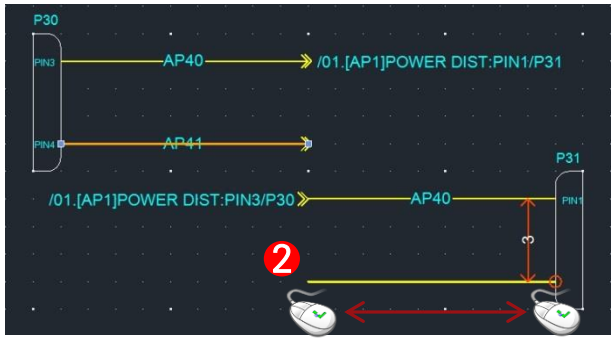
4. Shared wire conversion

Screen	Description
   	▣ Shared wire conversion ① Select wire **(Multiple selection)** ② Convert: ▪ Click **Convert shared** button on the Home tab ▪ After selecting the circuit object, click mouse RMB, click **Shared, Convert** button

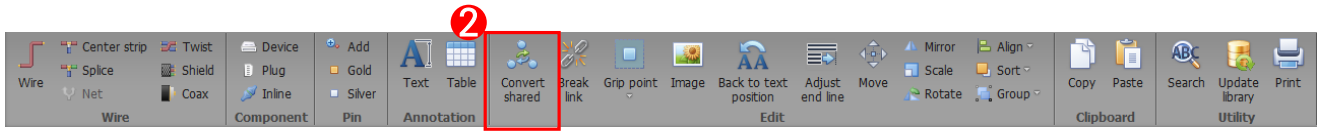
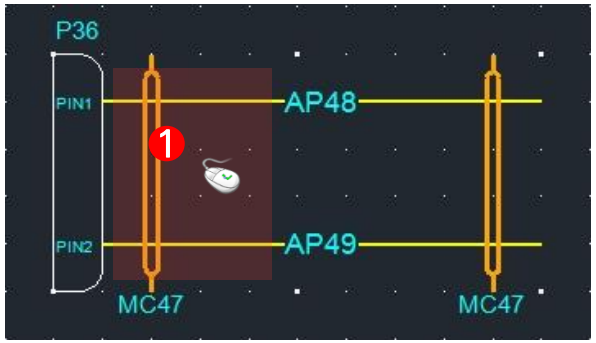
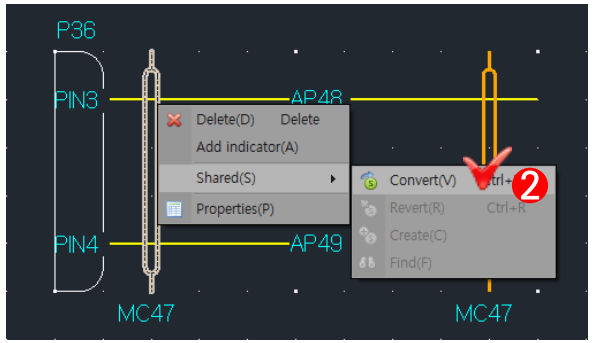
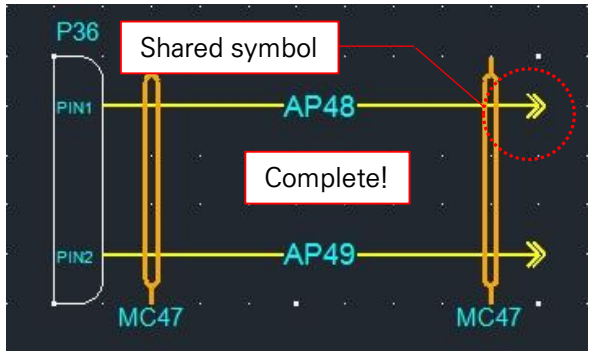
5. Shared wire creation(1)

Screen	Description
	▣ Shared wire creation(1)
	① Create: ▪ Double click shared circuit tree. ▪ After selecting shared circuit tree, click mouse RMB, click **Create** button.
	② Mouse drag in diagram
	▪ **To search for names:** ‘Ctrl + F’ Key
	

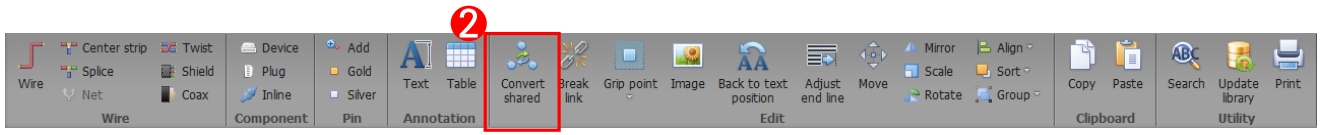
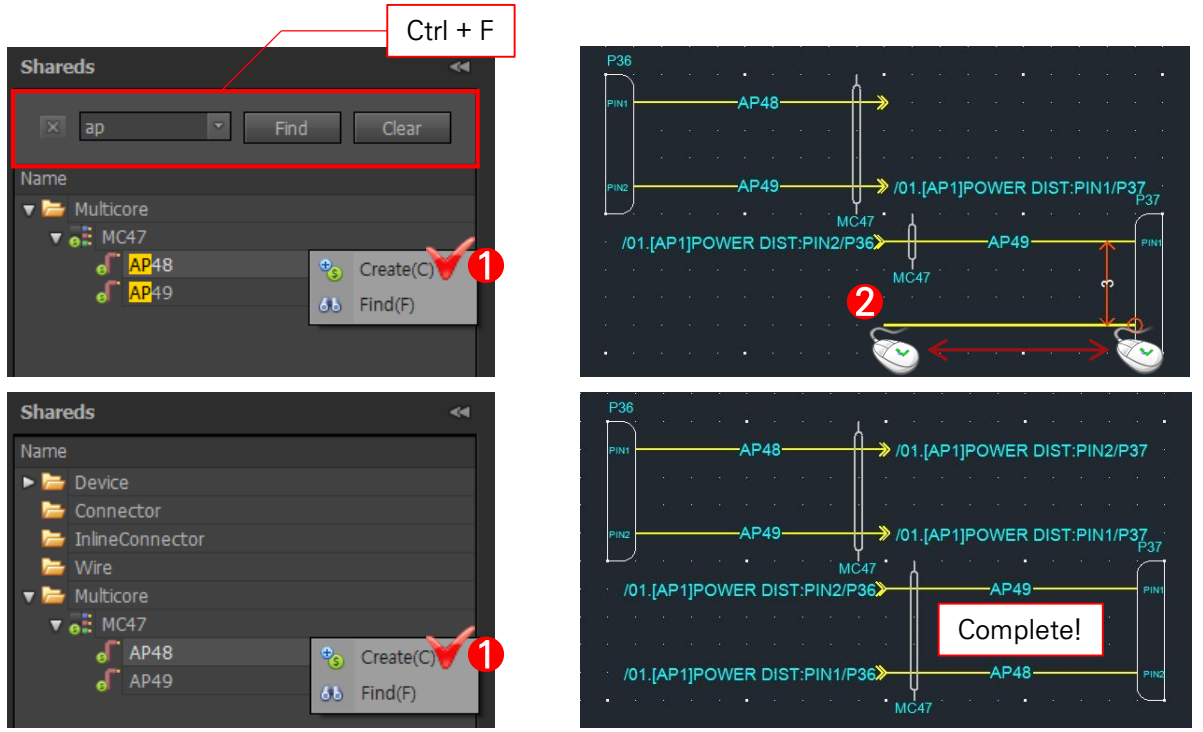
6. Shared wire creation(2)

Screen	Description
	▣ Shared wire creation(2)
	① After selecting shared circuit object, click mouse RMB, click **Shared, Create** button.
	② Mouse drag in diagram
	

7. Shared multicore conversion

Screen	Description
	**▣ Shared multicore conversion**
	① Select multicore (Shield, Twist, Coax…)
	② Convert: ▪ Click **Convert shared** button on the Home tab ▪ After selecting the circuit object, click mouse RMB, click **Shared, Convert** button
	

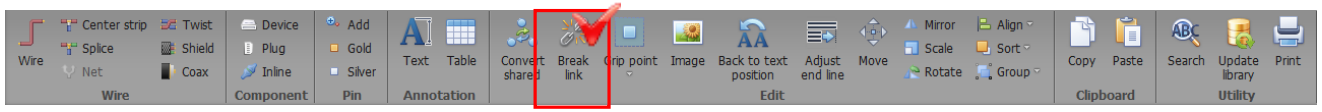
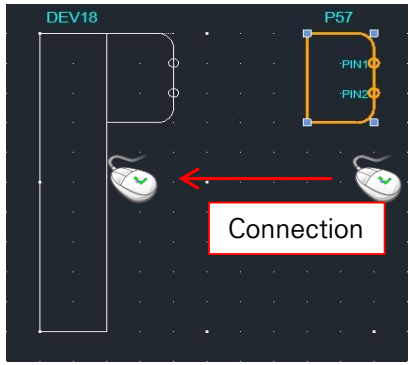
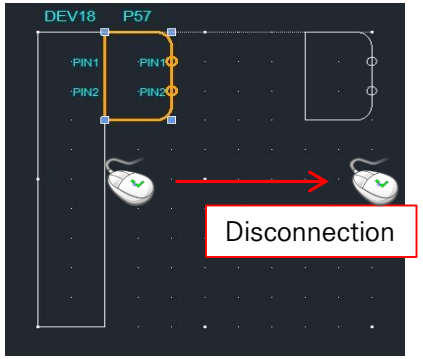
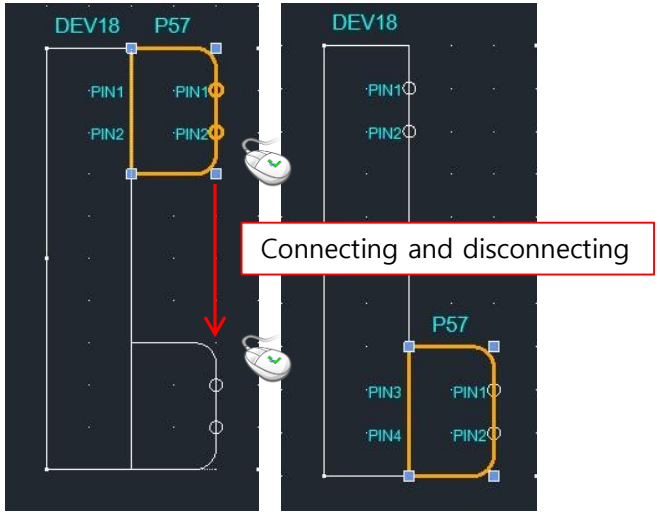
8. Shared multicore creation

Screen	Description
 	▣ Shared multicore creation ① Create: ▪ Double click shared circuit tree. ▪ After selecting shared circuit tree, click mouse RMB, click **Create** button. ② Mouse drag in diagram ▪ **To search for names:** ‘Ctrl + F’ Key

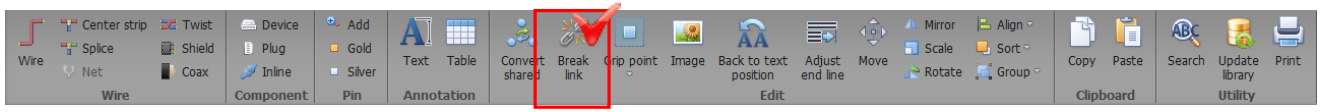
V _ Circuit object control

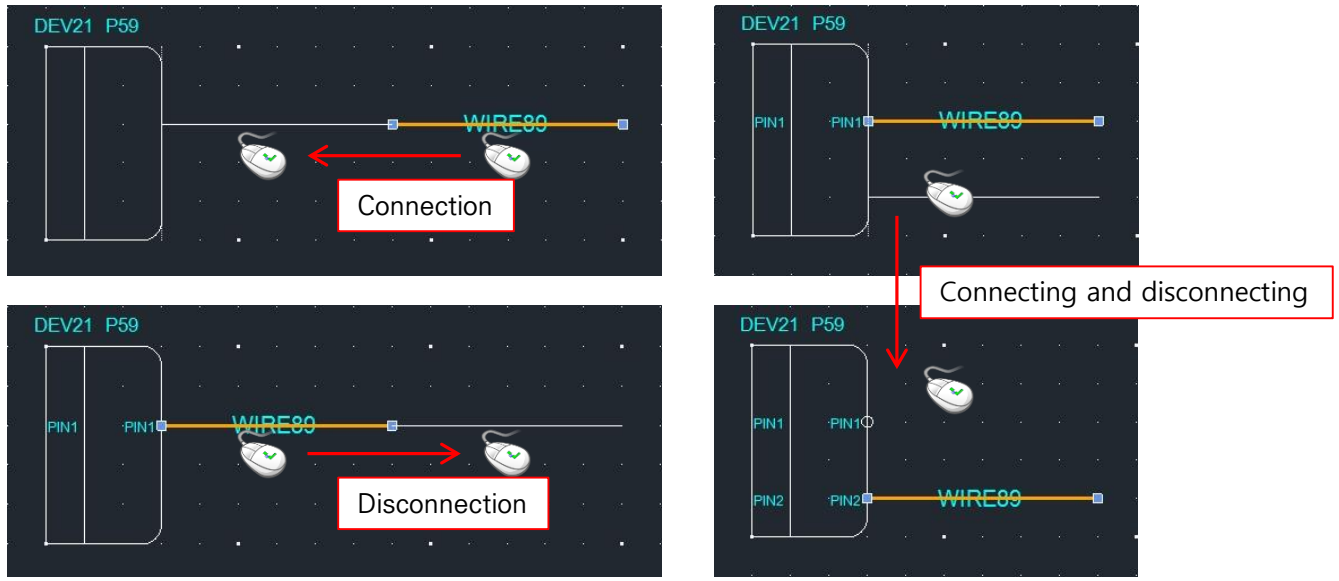
1. Connector & Device connection or disconnection
2. Wire & Connector connection or disconnection
3. Shared wire & connector connection or disconnection
4. Tracking shared wire connection

1. Connector & Device connection or disconnection

Screen	Description
   	▣ Connector & Device connection or disconnection ▪ Connection: After selecting the circuit object, mouse drag in diagram ▪ Disconnection : – After selecting the circuit object, ‘Shift’ + Mouse drag in diagram – After selecting the circuit object, click **Break Link** button

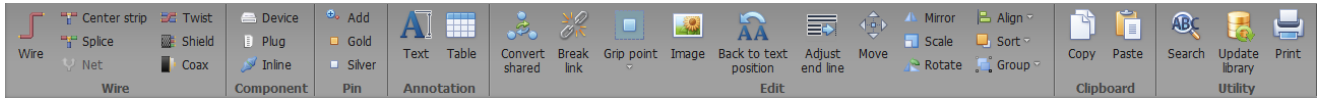
2. Wire & Connector connection or disconnection

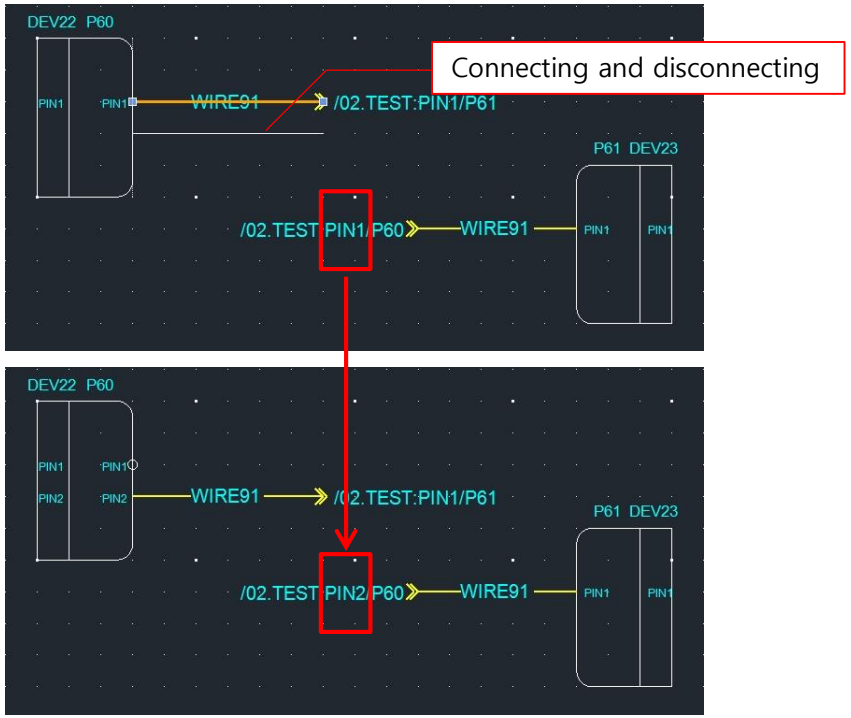
Screen	Description
	▣ Wire & Connector connection or disconnection ▪ Connection: After selecting the circuit object, mouse drag in diagram ▪ Disconnection : – After selecting the circuit object, 'Shift' + Mouse drag in diagram – After selecting the circuit object, click **Break Link** button



3. Shared wire & connector connection or disconnection

Screen	Description

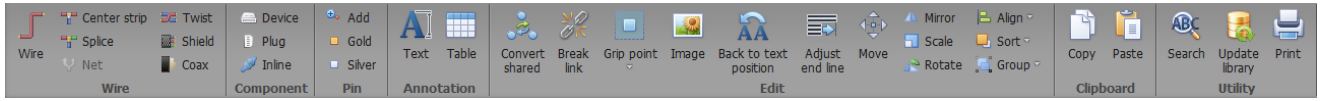
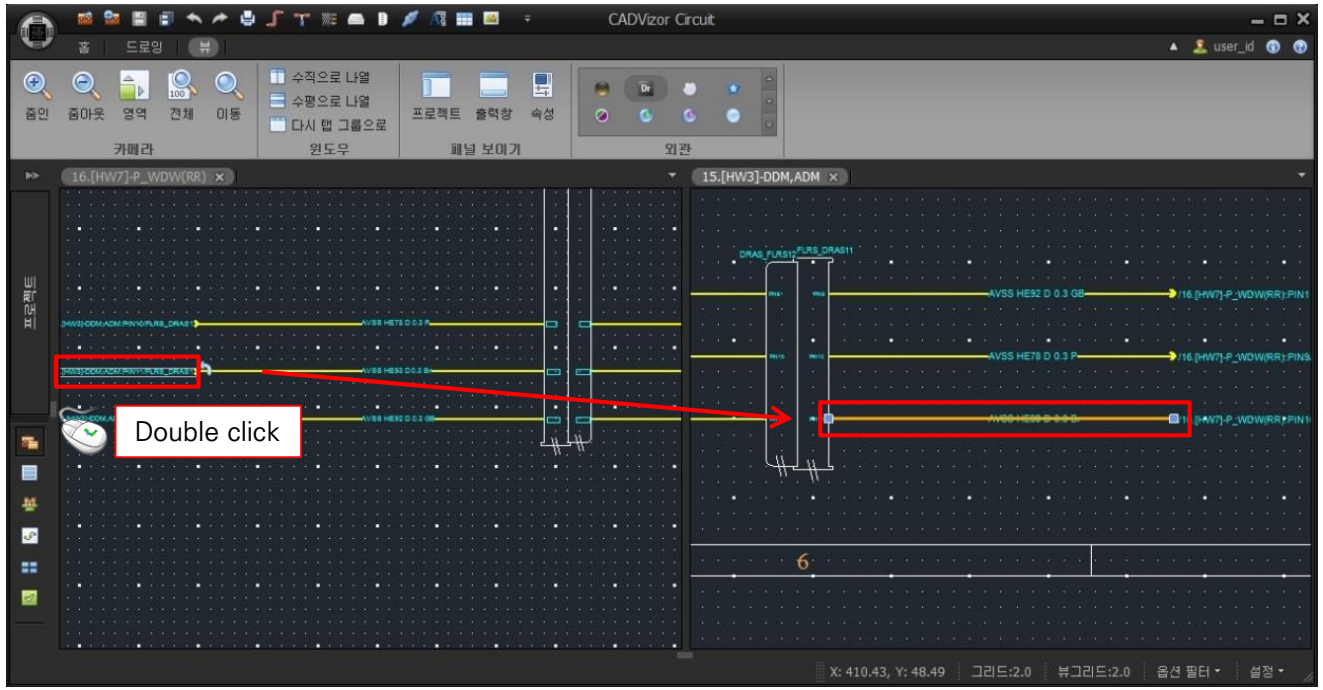




▣ Shared wire & connector connection or disconnection

- Same as normal wire connection and disconnection method
- Automatic update of connection information of real-time wire and pin

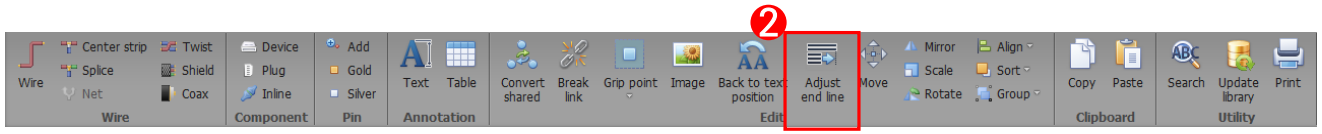
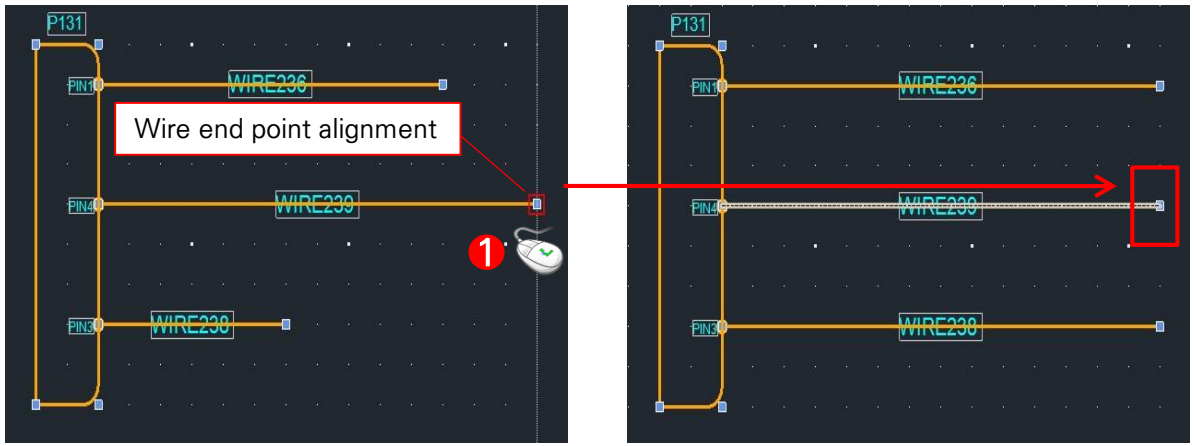
4. Tracking shared wire connection

Screen	Description
 	▣ Tracking shared wire connection ▪ Double click on share wire information to activate the connection information diagram.

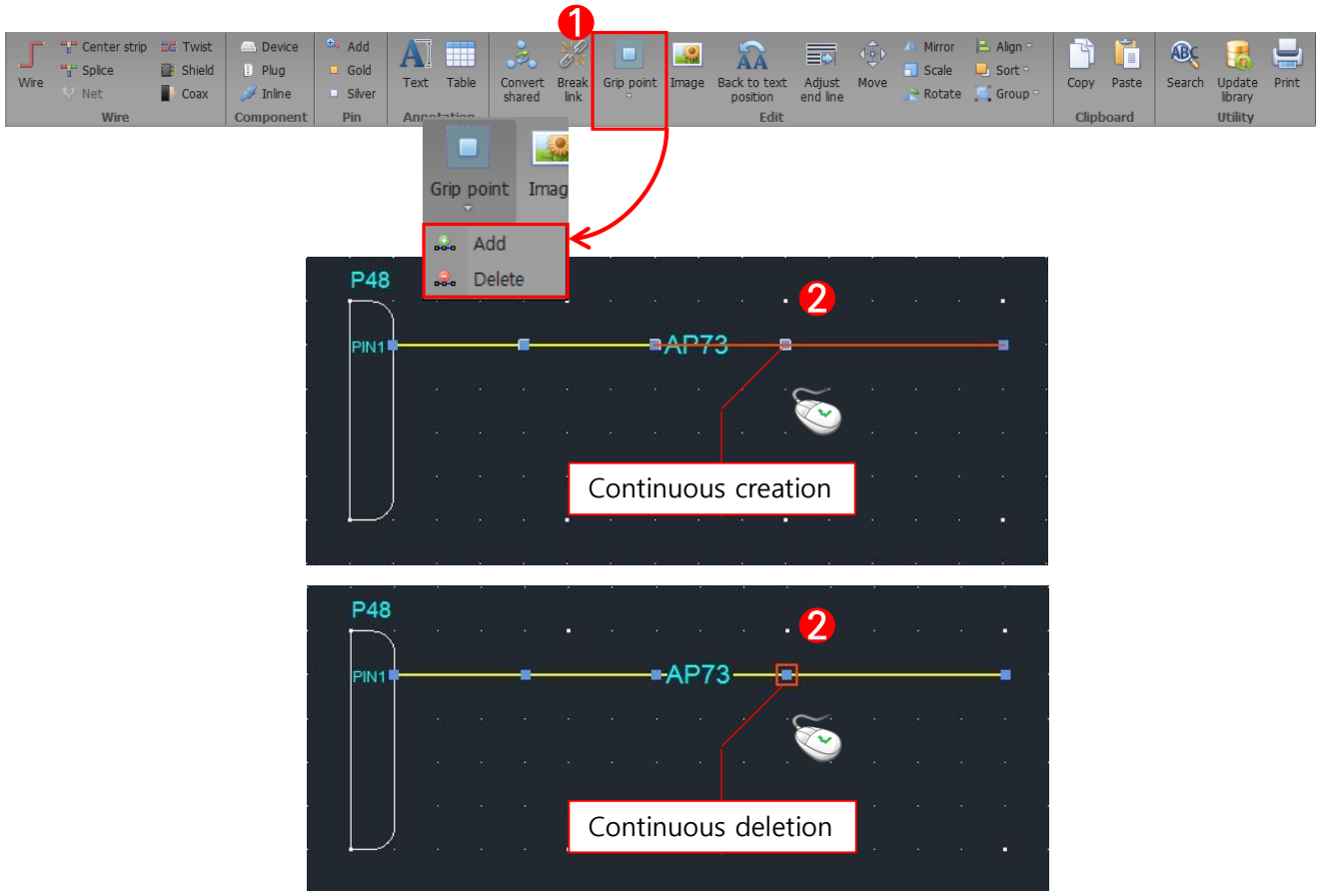
VI _ Utility function

1. Wire end point alignment
2. Add and remove grip points
3. Option filter

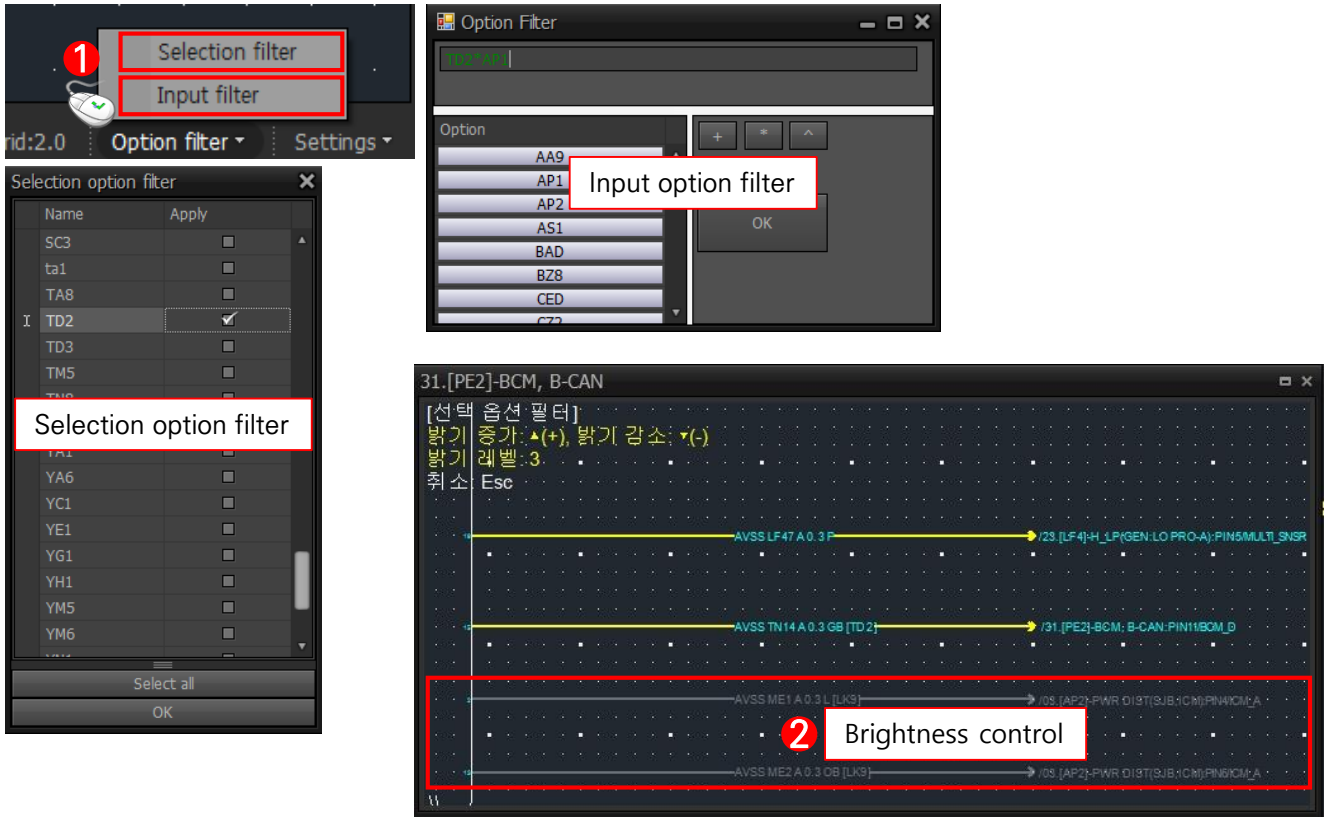
1. Wire end point alignment

Screen	Description
 	▣ Wire end point alignment ① Select multiple wire ② Click **Adjust end line** button on the Home tab

2. Add and remove grip points

Screen	Description
	▣ Add and remove grip points ① Click **Grip point** button on the Home tab ② Add: Create a grip point at the wire position point you want to add. (Continuous creation) Delete: Delete the grip point at the wire position point you want to delete. (Continuous deletion)

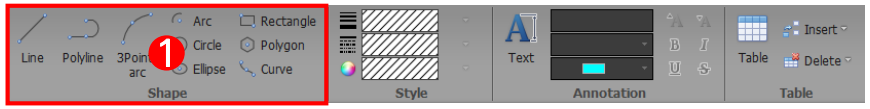
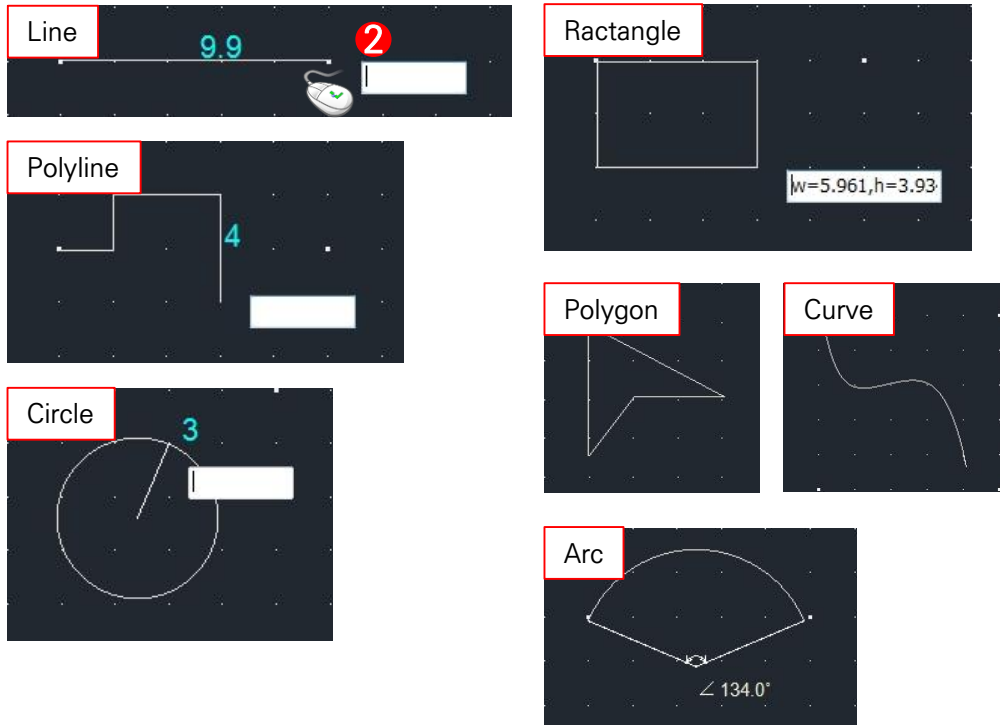
3. Option filter

Screen	Description
	▣ Option filter ① In the Preferences window at the bottom right, **select Option filter** ▪ Selection option filter: Show options and standard circuit ▪ Input option filter: Show only circuits passed through an option expression ② Increase brightness: ▲(+), Decrease brightness: ▼(−) ▪ Cancel: ‘Esc’ Key

VII _ Graphic object creation

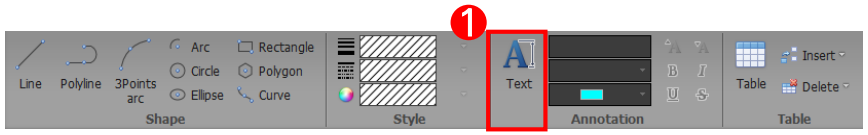
1. Generic object creation
2. Insert text
3. Insert table
4. Insert image

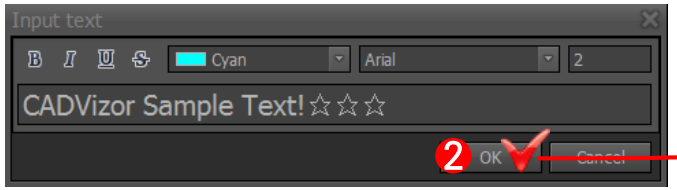
1. Generic object creation

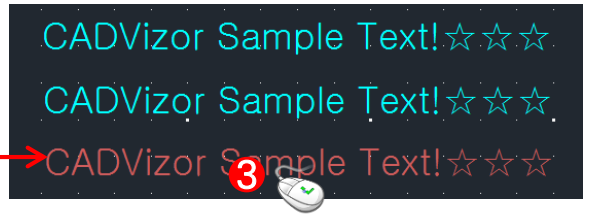
Screen	Description
 	▣ Generic object creation ① Click **Geometry** button on the Home tab ② Mouse drag in diagram, enter numerical values ▪ Cancel: ‘Esc’ Key ▪ Repeat: ‘Space’ Key

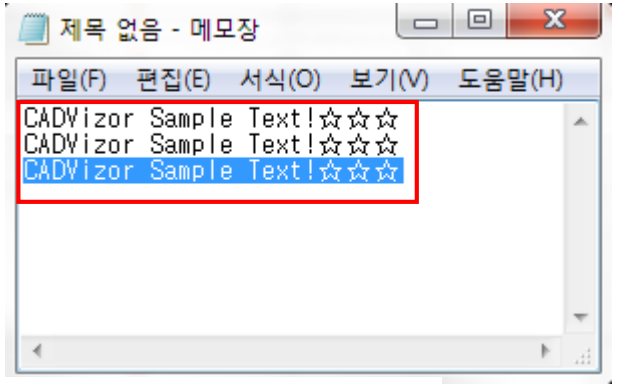
2. Insert text

Screen	Description

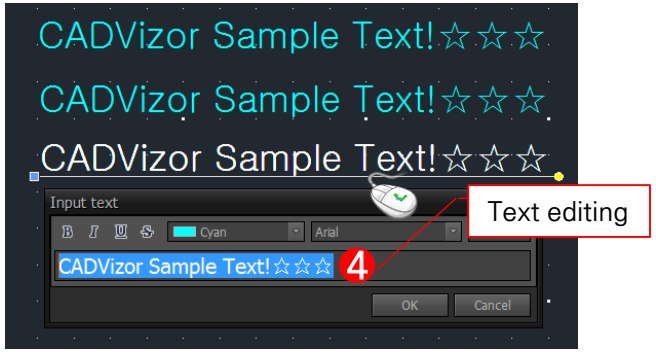








▪ Clipboard copy / paste function
('Ctrl + C' Key / 'Ctrl + V' Key)



▣ Insert text

① Click **Text** button on the Home tab

② Enter text and font settings

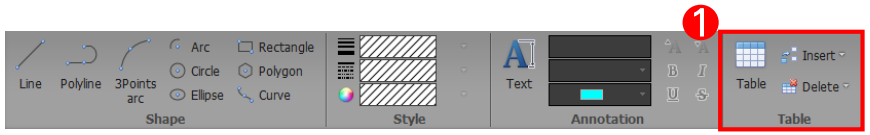
③ Create text at the mouse position point

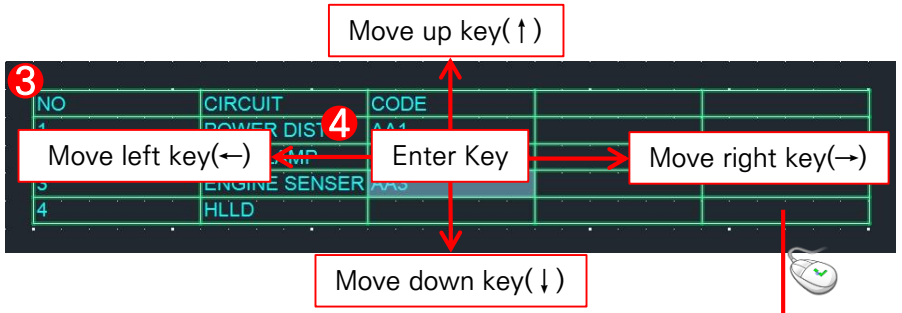
④ When editing text, double-click the mouse

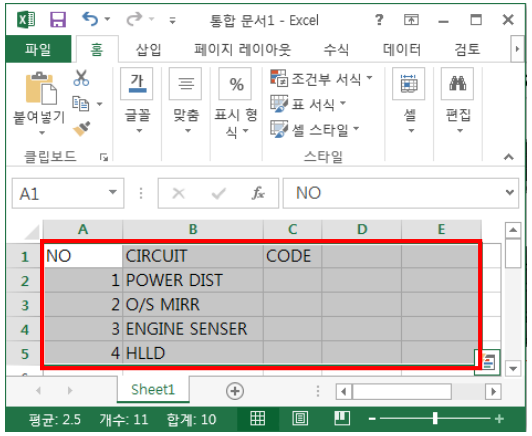
▪ **Clipboard copy / paste function**
'Ctrl + C' Key / 'Ctrl + V' Key

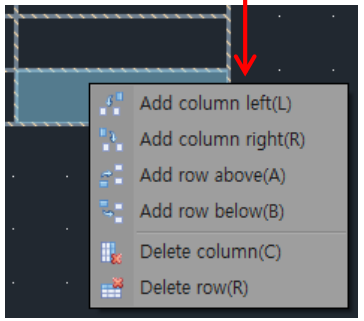
3. Insert table

Screen









▪ Clipboard copy / paste function
('Ctrl + C' Key / 'Ctrl + V' Key)

Description

▣ Insert table

① Click **Table** button on the Home tab

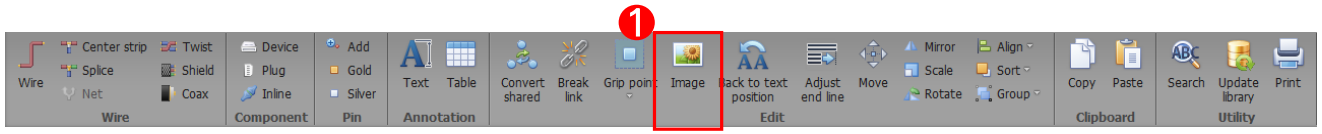
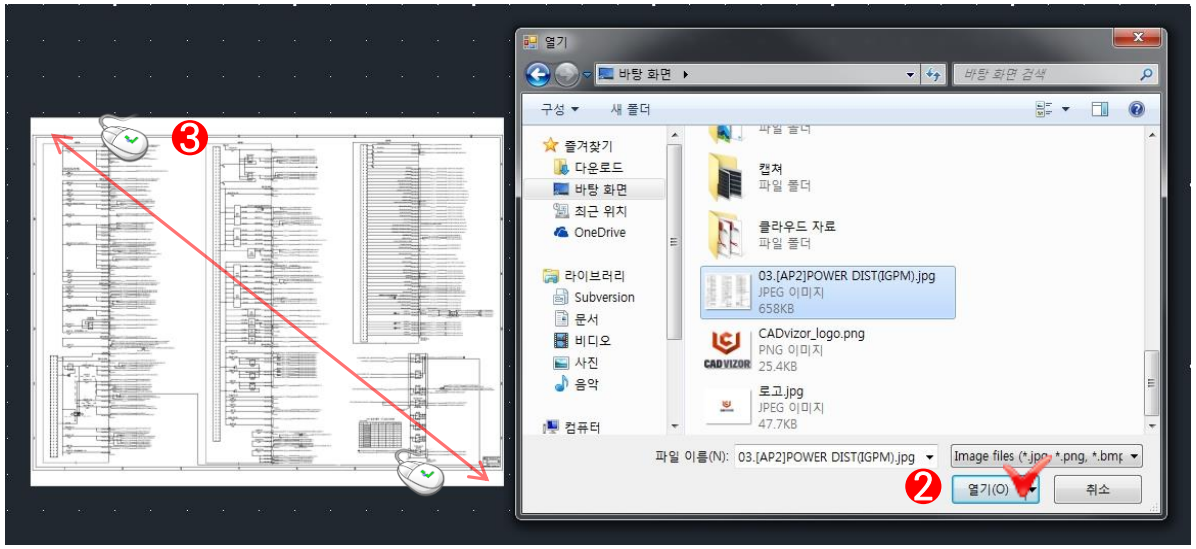
② Enter number of rows and columns

③ Mouse drag in diagram

④ When editing text, Click the mouse
- Move up key(↑), Move down key(↓), Move left key(←), Move right key(→), Enter Key.

▪ **Clipboard copy / paste function**
'Ctrl + C' Key / 'Ctrl + V' Key

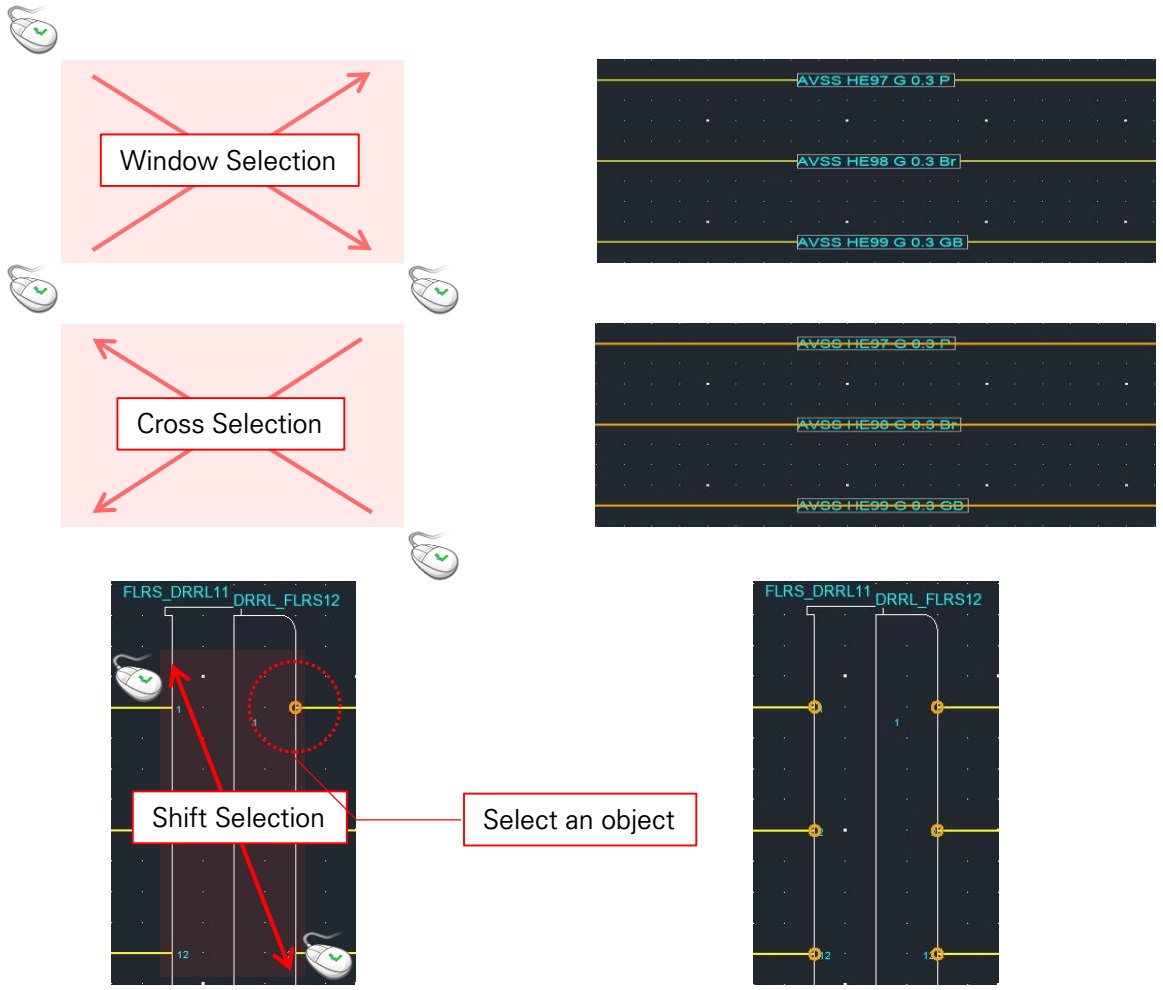
4. Insert image

Screen	Description
 	▣ Insert image ① Click **Image** button on the Home tab ② Open image file ③ Mouse drag in diagram ▪ **Clipboard copy / paste function** ‘Ctrl + C’ Key / ‘Ctrl + V’ Key

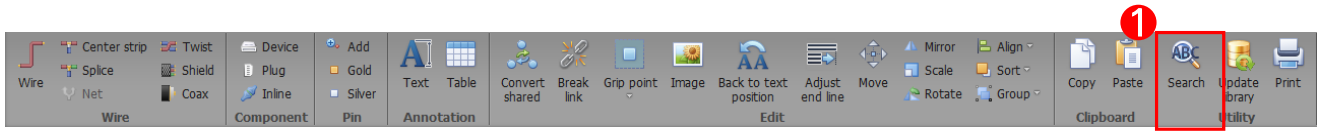
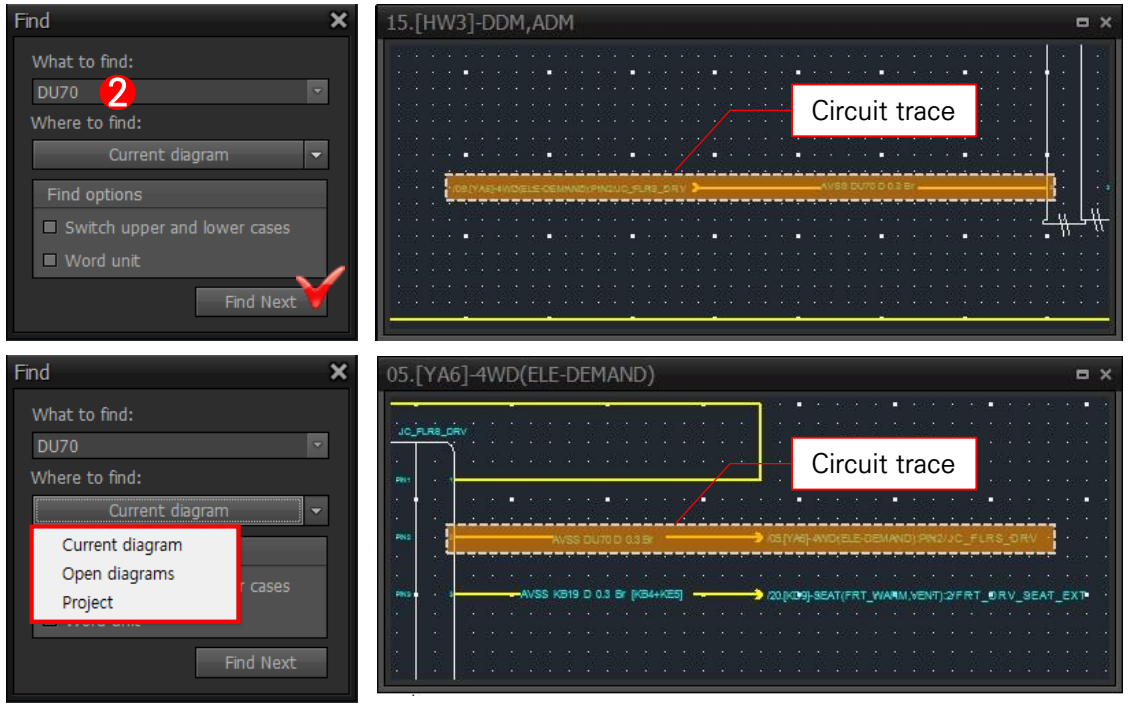
VIII _ Editing graphic objects

1. Object selection
2. Find circuit
3. Mirror, scale, rotation, align, arrangement
4. Group grouping, release
5. Copy and paste objects
6. Paste clipboard
7. Edit object style
8. Edit text style

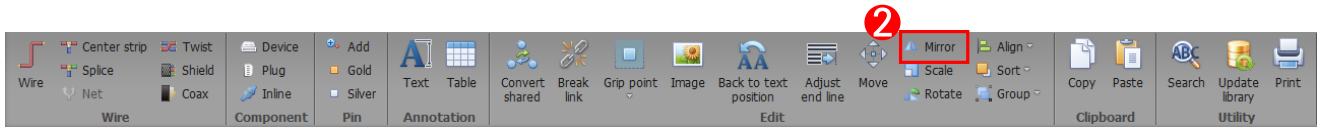
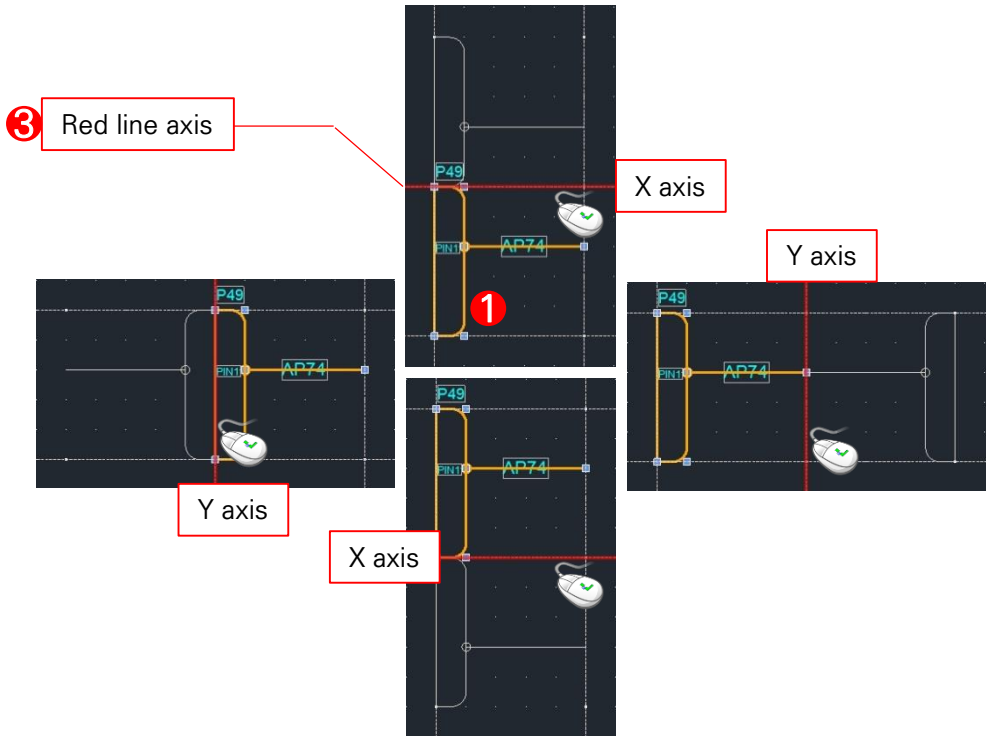
1. Object selection

Screen	Description
	▣ Object selection ▪ Window Selection: Select objects contained within mouse rectangle area **(Right direction)** ▪ Cross Selection: Select objects that are contained within the mouse rectangle area and intersecting objects **(Left direction)** ▪ Shift Selection: **Select an object**, press and hold the **'Shift' key while dragging the mouse**, the same circuit object is selected.

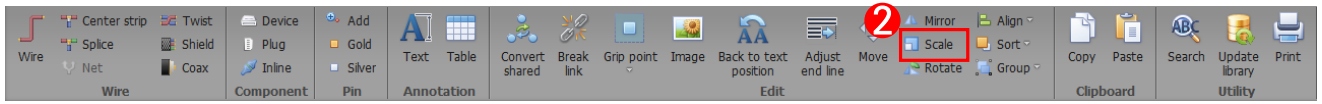
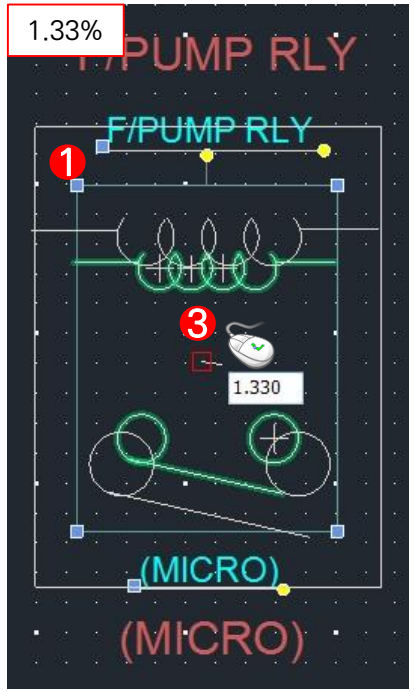
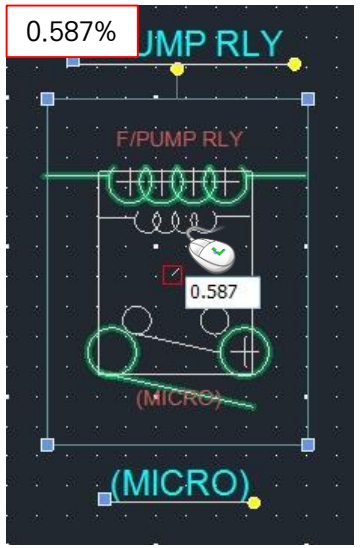
2. Find circuit

Screen	Description
 	▣ Find circuit ① Click **Search** button on the Home tab 'Ctrl + F' Key ② Enter circuit name ▪ Where to find: Current diagram Open diagrams Project ▪ Find options: Switch upper and lower cases Word unit

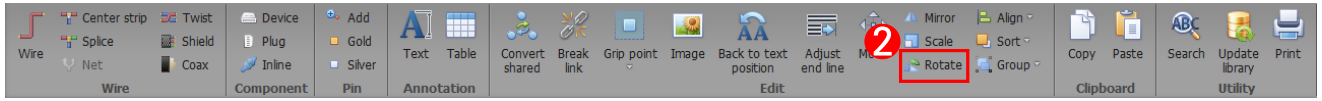
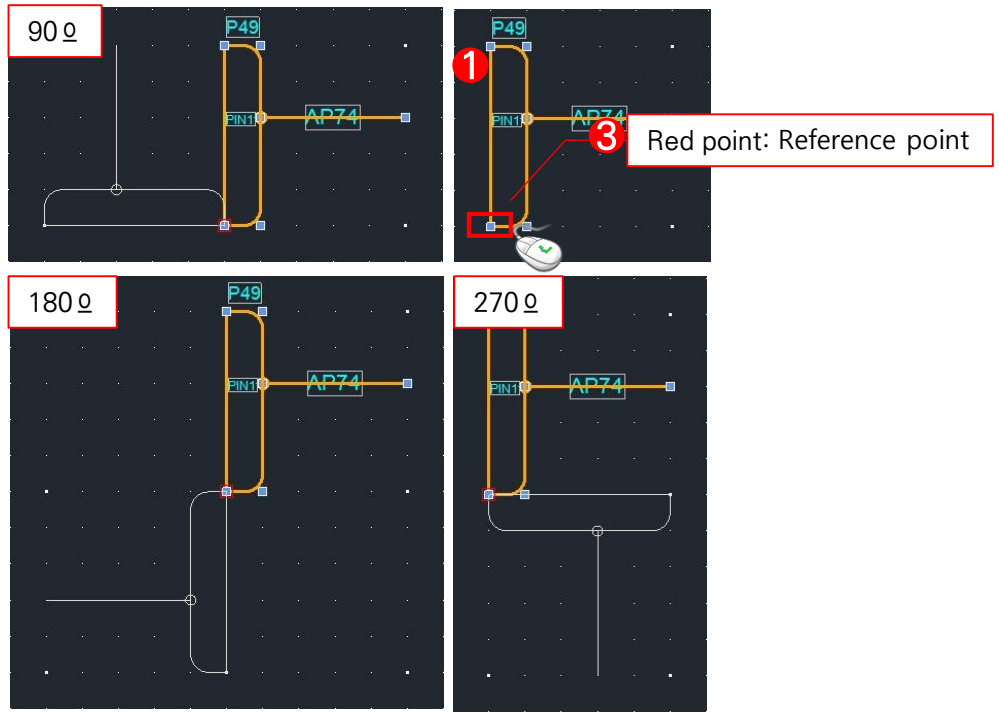
3. Mirror, scale, rotation, align, arrangement

Screen	Description
 	▣ Mirror ① Select circuit object ② Click **Mirror** button on the Home tab ③ Select **red line axis** ▪ Cancel: ‘Esc’ Key

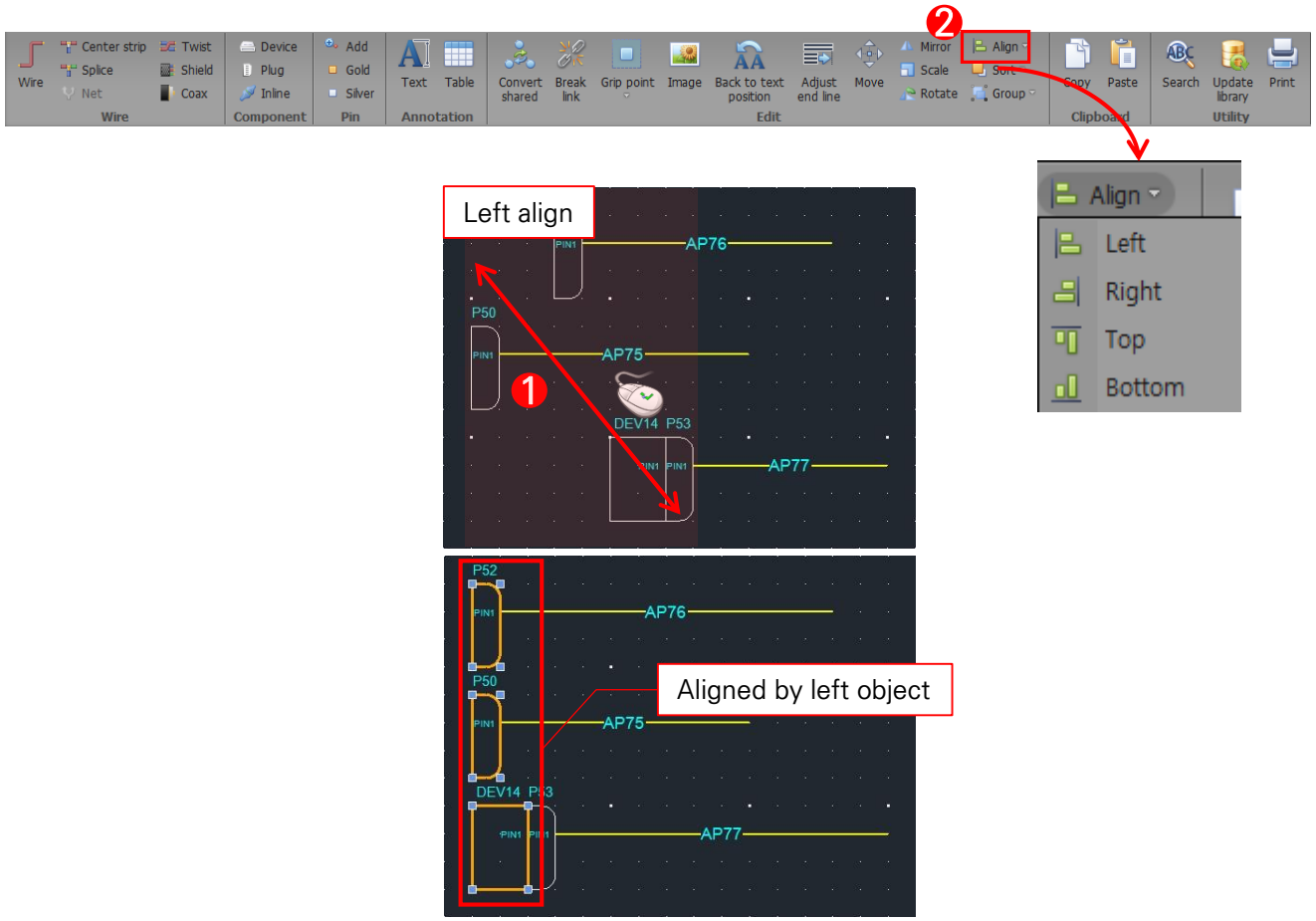
3. Mirror, scale, rotation, align, arrangement

Screen	Description
  	▣ Scale ① Select circuit object ② Click **Scale** button on the Home tab ③ Scale to mouse position point or enter number ▪ Complete: 'Enter' key ▪ Cancel: 'Esc' Key

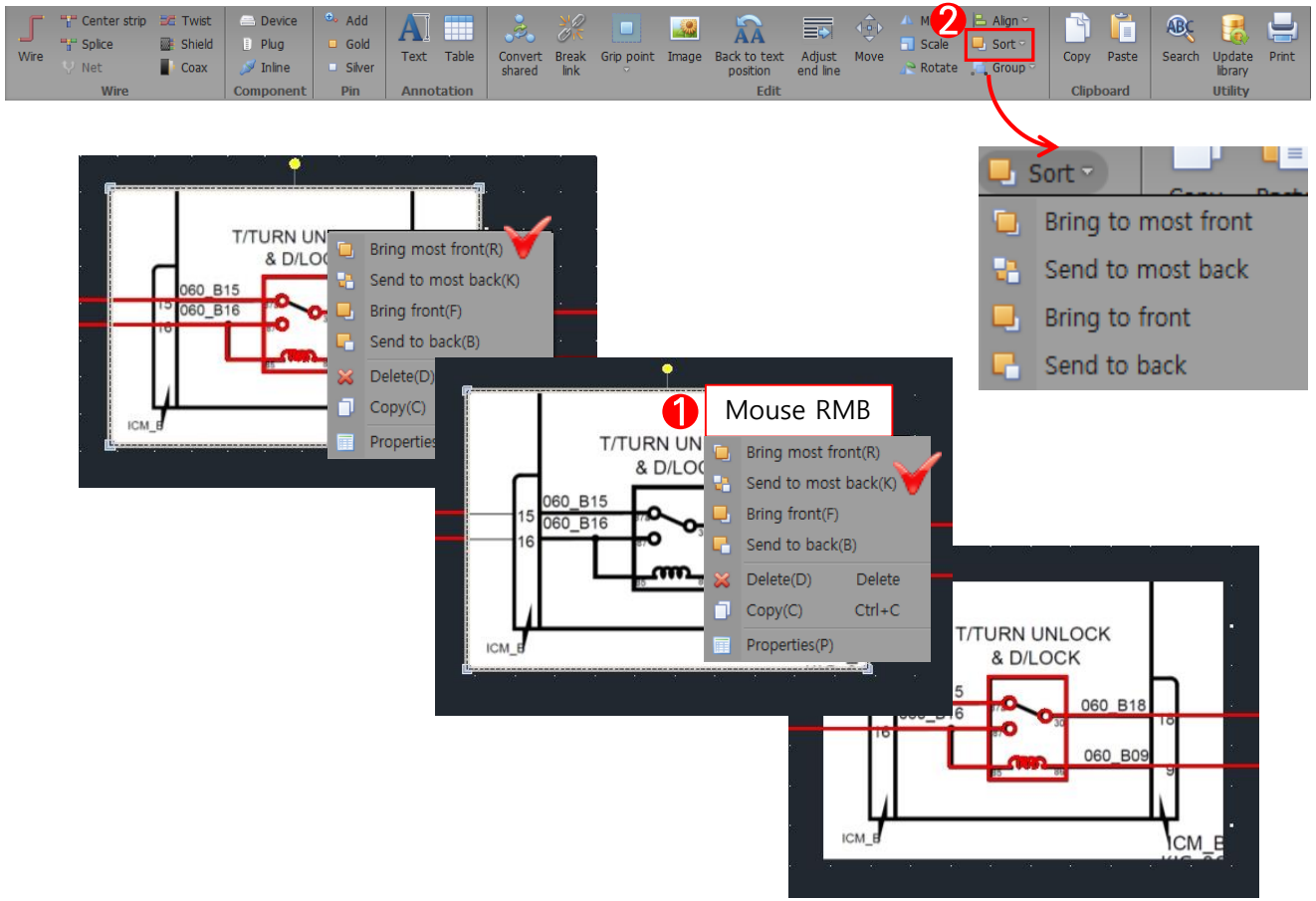
3. Mirror, scale, rotation, align, arrangement

Screen	Description
 	▣ Rotation ① Select circuit object ② Click **Rotate** button on the Home tab ③ Select red point, after rotating with 'R' key, press 'Enter' key. ▪ **Rotation:** Pressing 'R' key rotates CCW direction **90 degrees** ▪ Complete: 'Enter' key ▪ Cancel: 'Esc' Key

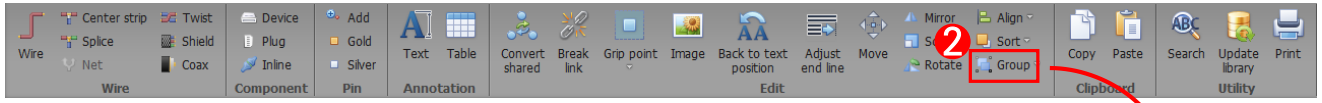
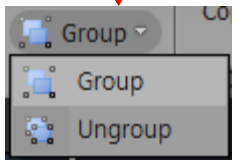
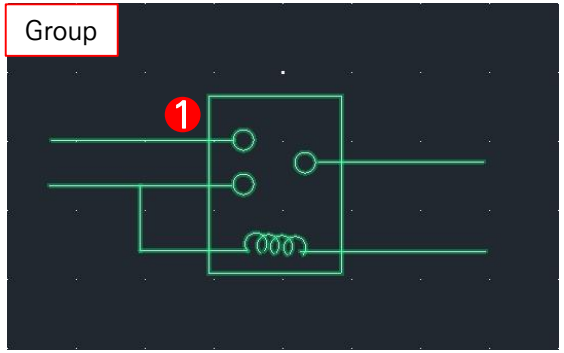
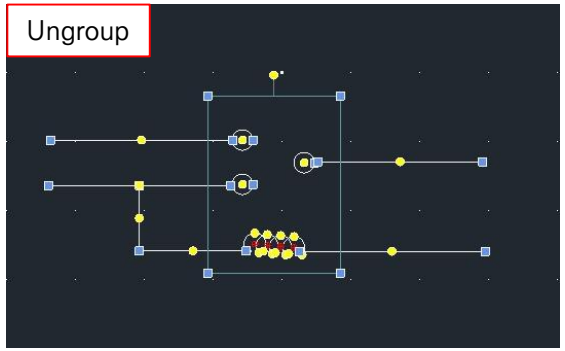
3. Mirror, scale, rotation, align, arrangement

Screen	Description
	▣ Align ① Select circuit object ② Click **Align** button on the Home tab ▪ Left ▪ Right ▪ Top ▪ Bottom

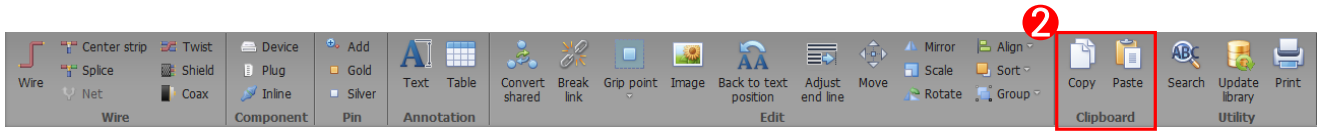
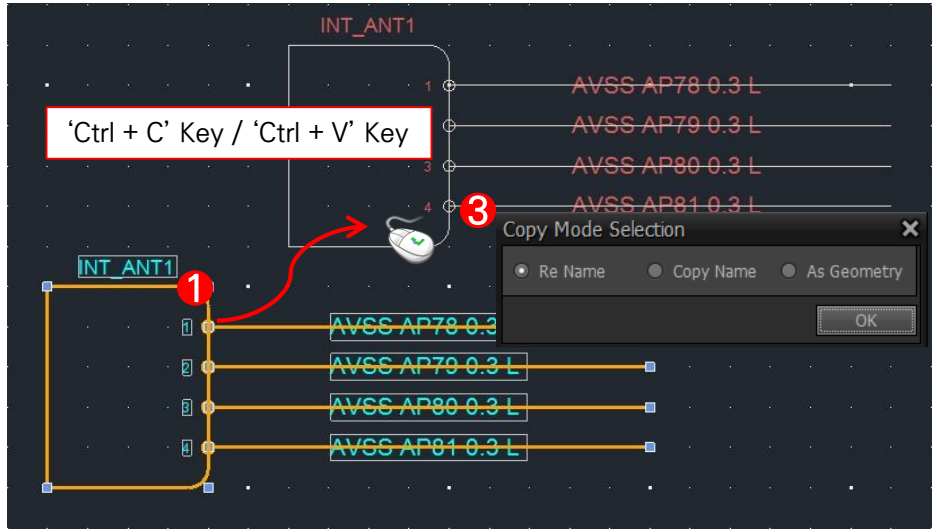
3. Mirror, scale, rotation, align, arrangement

Screen	Description
	▣ Arrangement ① Select circuit object ② Click **Sort** button on the Home tab, click mouse RMB. ▪ Bring most front ▪ Send to most back ▪ Bring front ▪ Send to back ▪ **Drawing with reference to symbols :** Copy the symbol image to the diagram, You can draw easily using images.

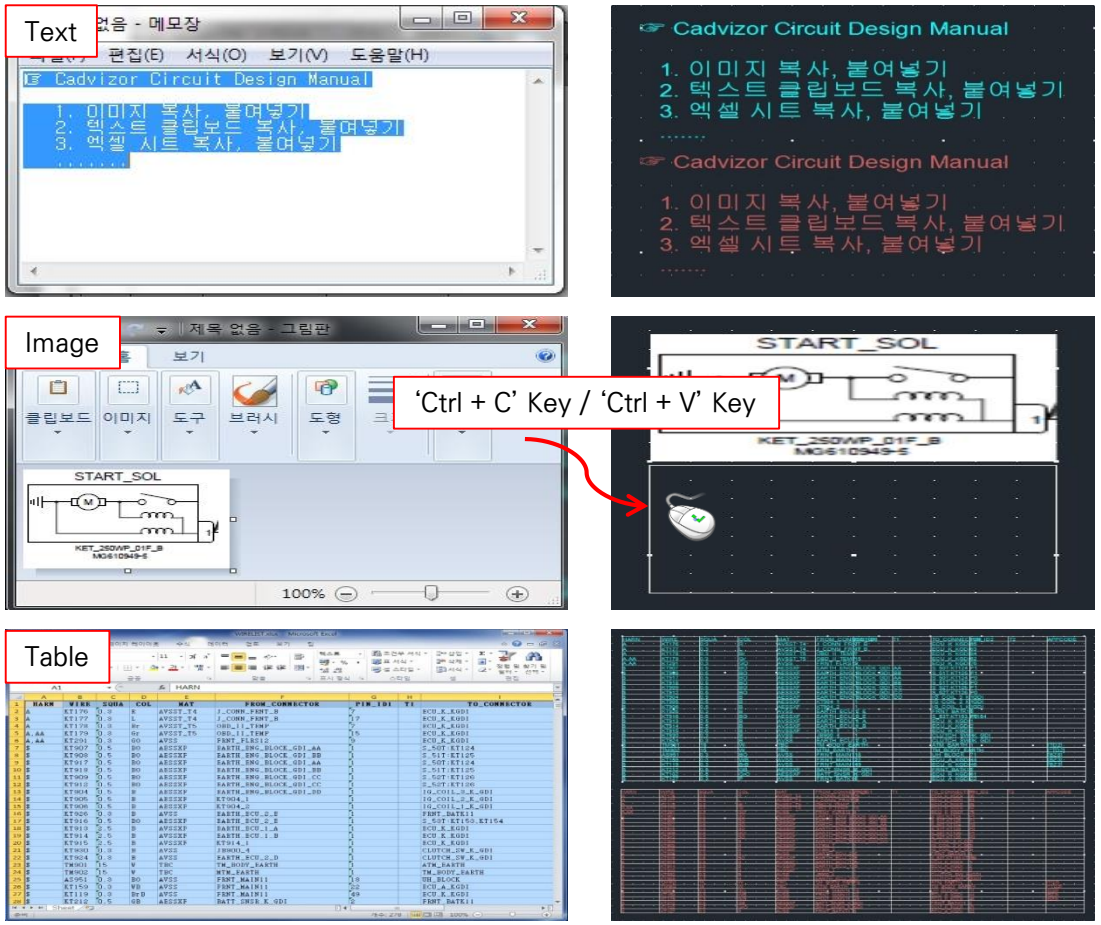
4. Group grouping, release

Screen	Description
   	▣ Group grouping, release ① Select circuit object ② Click **Group** button on the Home tab ▪ Group ▪ Ungroup

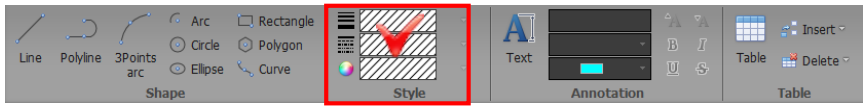
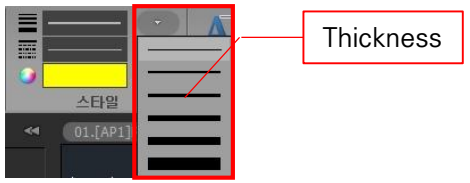
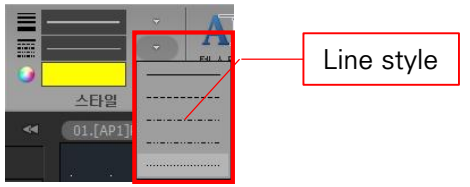
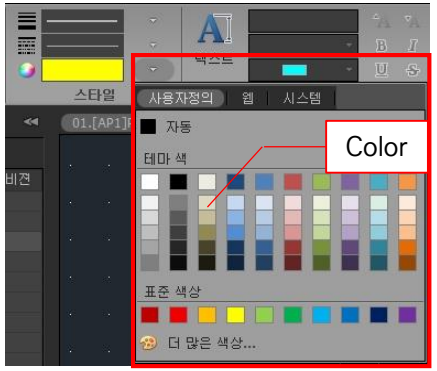
5. Copy and paste objects

Screen	Description
 	▣ Copy and paste objects ① Select circuit object ② Click **Copy, Paste** button on the Home tab ③ Move object to mouse position point ▪ Re name: Create a unique circuit name automatically ▪ Copy name: Copied with the same circuit name but with different ID values – **Not recommended**: Design rule violation. ▪ As geometry: No model information ▪ **Copy / paste function** 'Ctrl + C' Key / 'Ctrl + V' Key

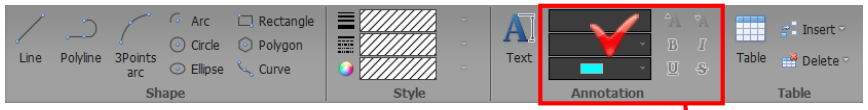
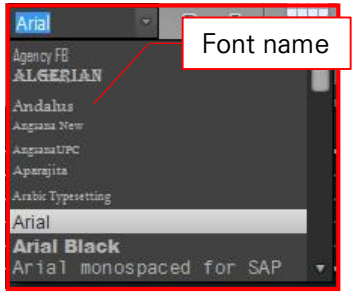
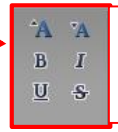
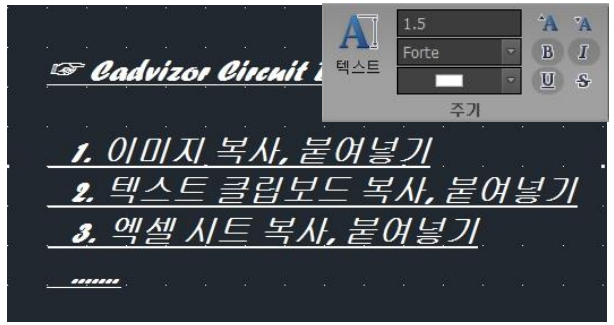
6. Copy and paste clipboard

Screen	Description
	▣ Copy and paste clipboard ▪ After selecting clipboard text, Copy and paste functions ▪ After selecting clipboard image, Copy and paste functions ▪ After selecting clipboard table, Copy and paste functions ▪ **Clipboard copy / paste function** 'Ctrl + C' Key / 'Ctrl + V' Key

7. Edit object style

Screen	Description
    	▣ Edit object style ▪ Thickness ▪ Line style ▪ Color

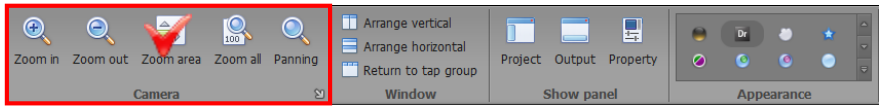
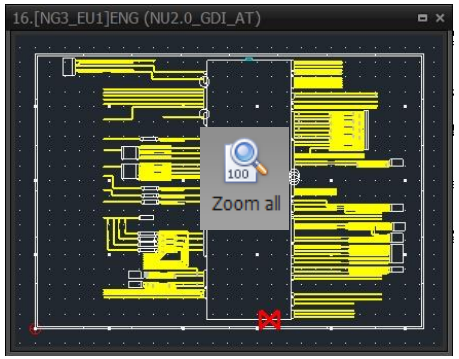
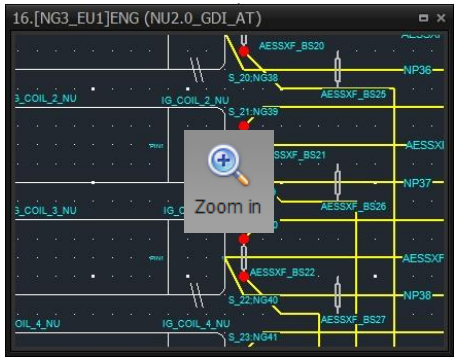
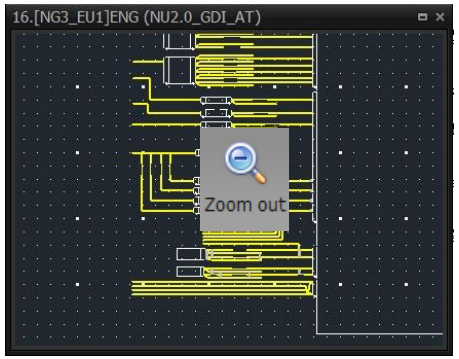
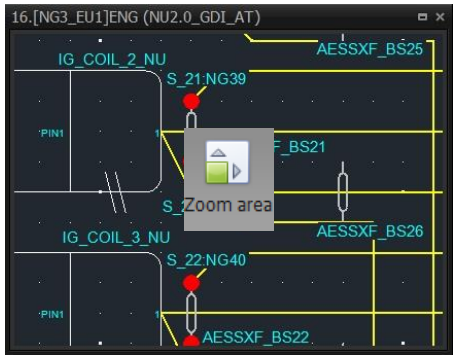
8. Edit text style

Screen	Description
  Font name  Big / small Bold / tilt Underline / penetration  Font color 	▣ Edit text style ▪ Font size ▪ Font name ▪ Font color ▪ Font style Big / small Bold / tilt Underline / penetration

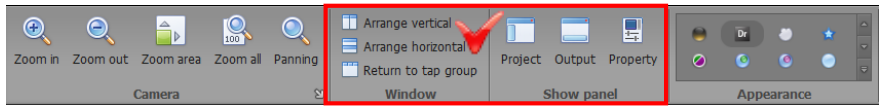
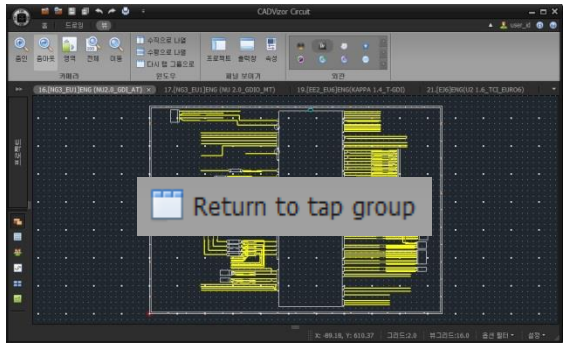
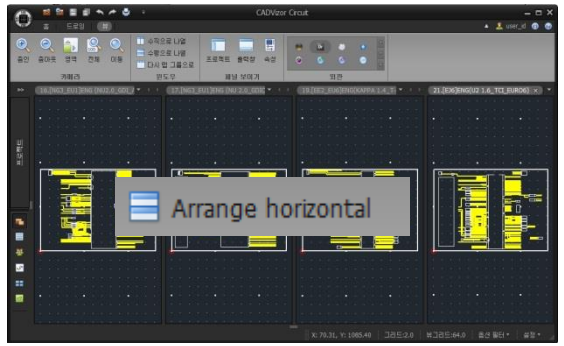
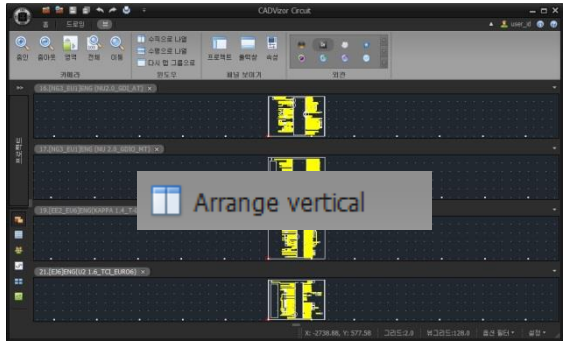
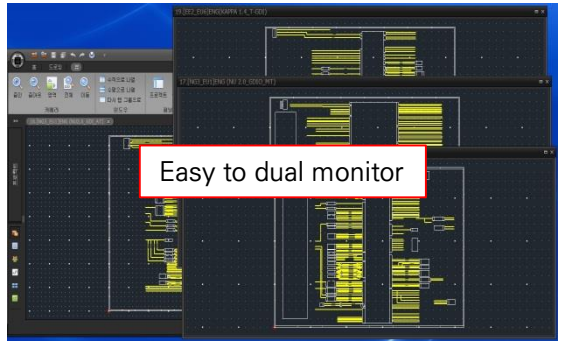
IX _ View control

1. Camera area
2. Window screen settings

1. Camera area

Screen	Description
    	▣ Camera area ▪ Zoom all ▪ Zoom in ▪ Zoom out ▪ Zoom area ▪ Panning

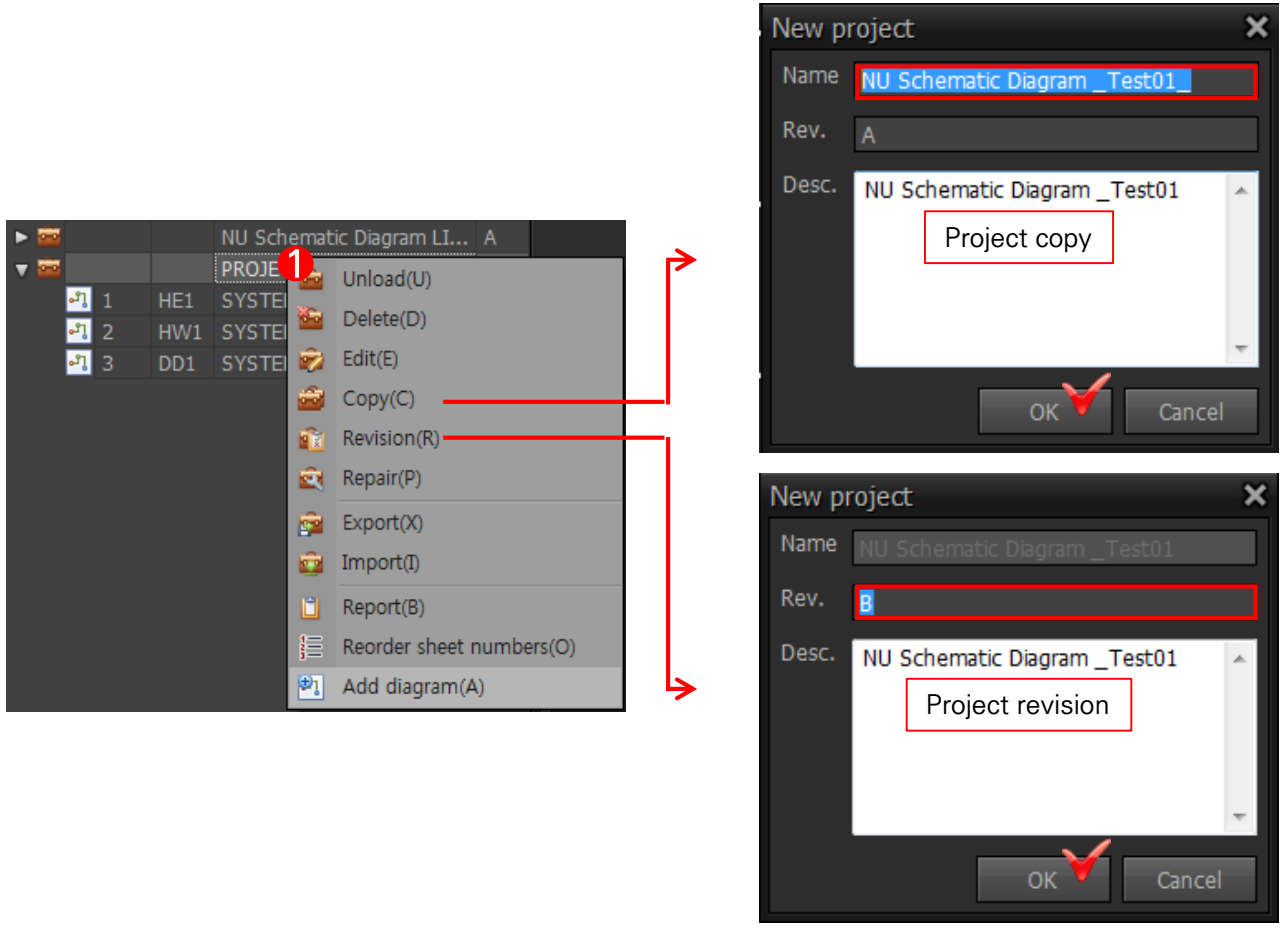
2. Window screen settings

Screen	Description
	▣ Window screen settings
	▪ Return to tab group
	▪ Arrange vertical
	▪ Arrange horizontal
	▪ **Easy to use dual monitor** : When working with design drawings at the same time or when using them as reference drawings

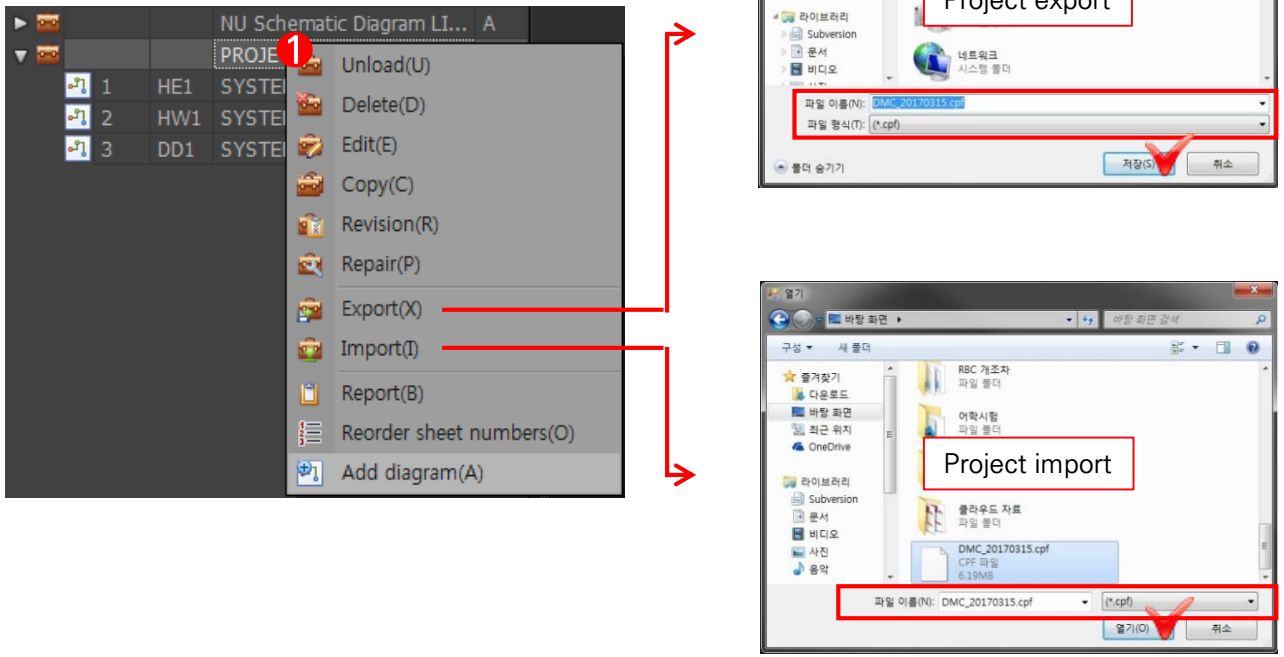
X _ Project management

1. Copy project
2. Export and import project files(.cpf)
3. Save project PDF file, print out

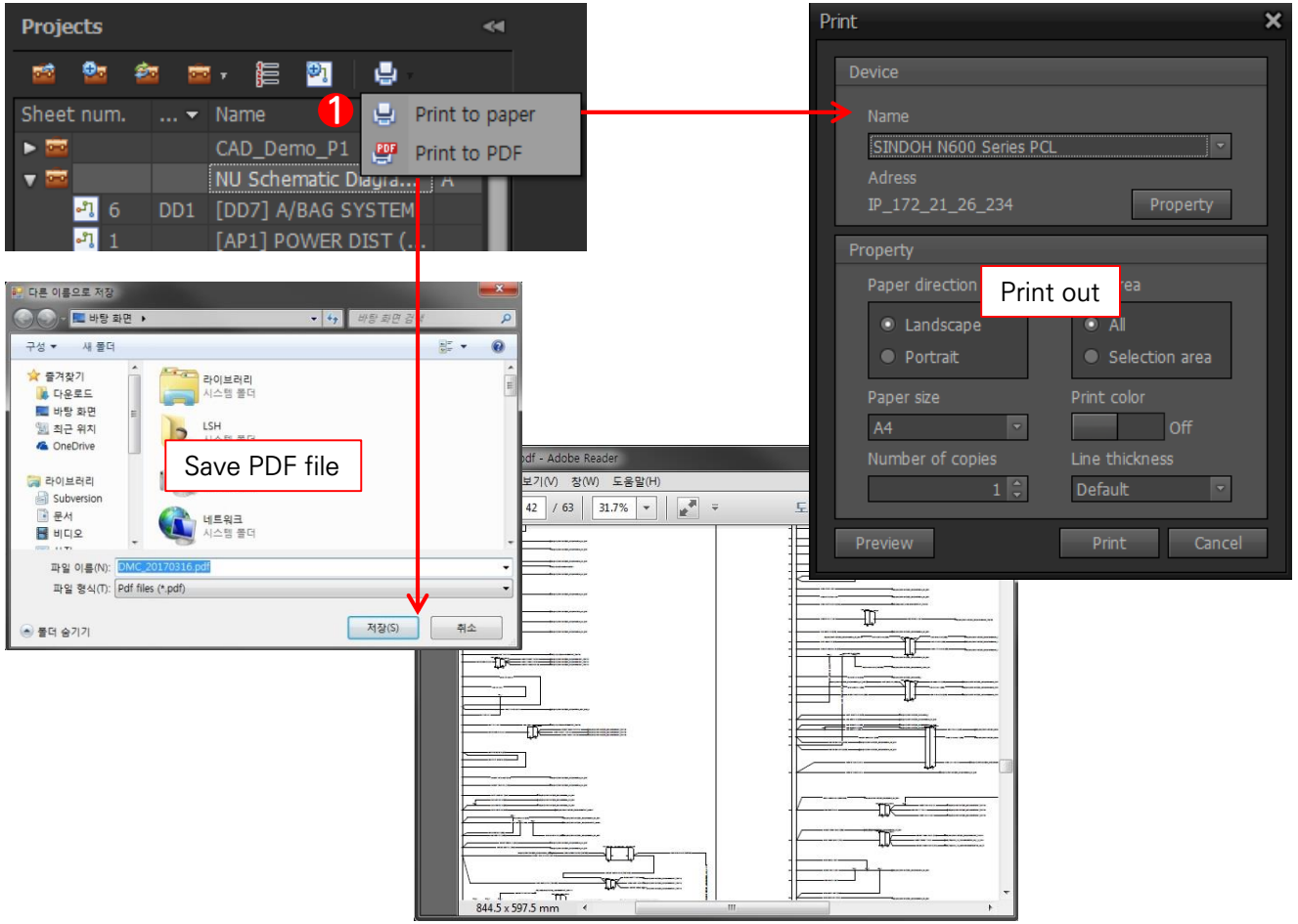
1. Copy project

Screen	Description
	▣ Copy project ① After selecting a project, click mouse RMB, click **Copy, Revision** button. ▪ Copy: **The name can not be duplicated**, and the revision is the same. ▪ Revision: The name is the same, and **the revision can not be duplicated.**

2. Export and import project files(.cpf)

Screen	Description
	▣ Export and import project files(.cpf) ① After selecting a project, click mouse RMB, click **Export, Import** button. ▪ Export: Save the project in a file(.cpf) format ▪ Import: Open a project in a file(.cpf) format

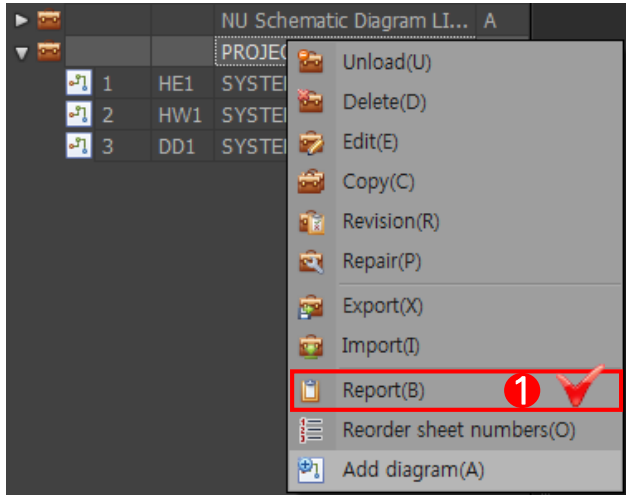
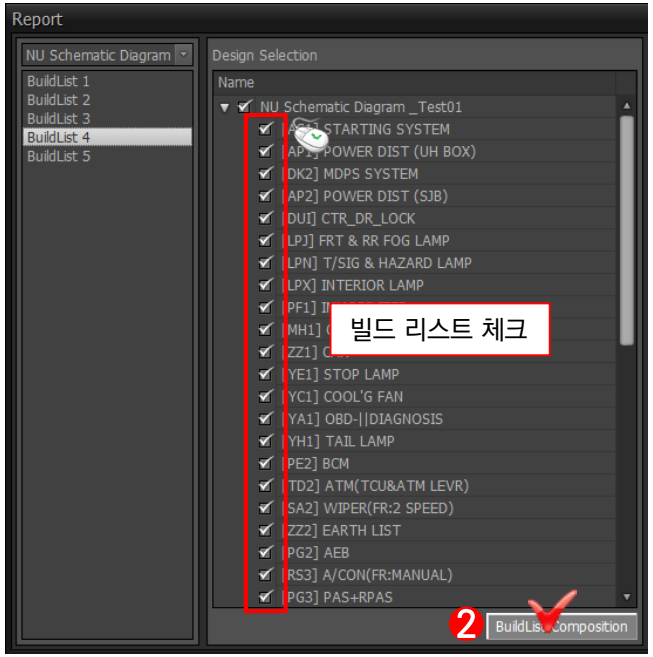
3. Save project PDF file, print out

Screen	Description
	▣ Save project PDF file, print out ① Click the **Print** button in the top right corner of the project ▪ Print to paper: Print the project ▪ Print to PDF: Save and print your project in PDF file format

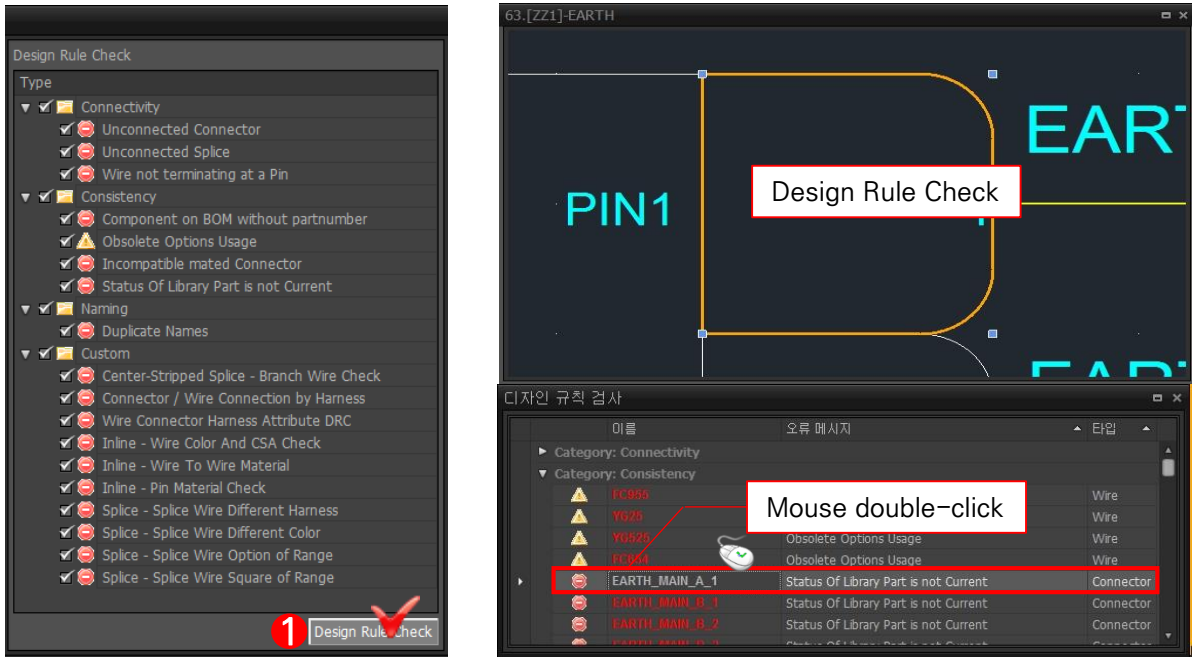
XI _ Report

1. Build list configuration
2. Design Rule Check(DRC)
3. Report

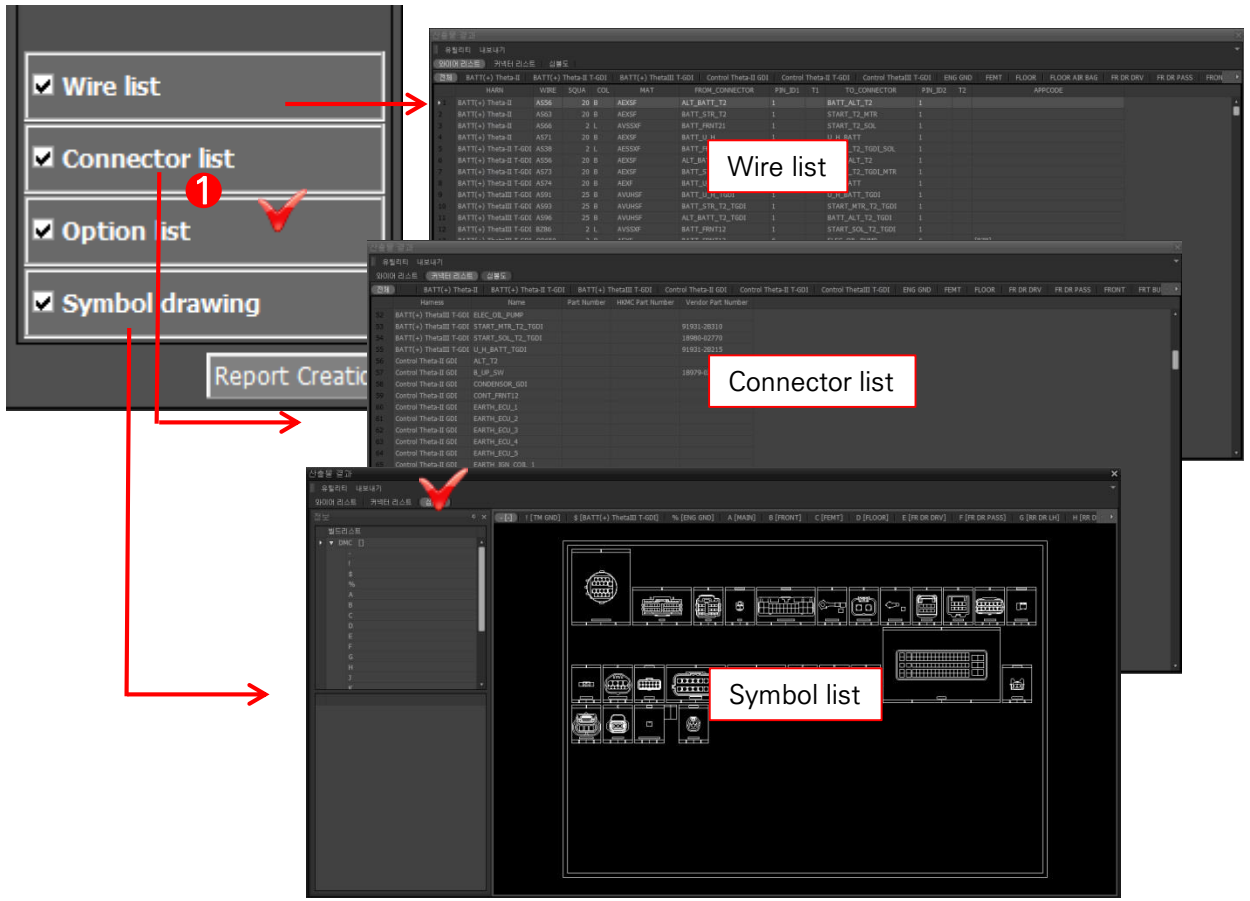
1. Build list configuration

Screen	Description
 	▣ Build list configuration ① After selecting a project, click mouse RMB, click **Report** button. ② Check circuit diagram to output ▪ Build list for outputting specific circuit diagram

2. Design Rule Check(DRC)

Screen	Description
	▣ Design Rule Check(DRC) ① **Design Rule Check(DRC):** Alert and error messages are displayed through the design rule check, and when the mouse is clicked, the drawing is tracked. ▪ **The DRC check is mandatory and is a verification work to improve the quality of drawings.**

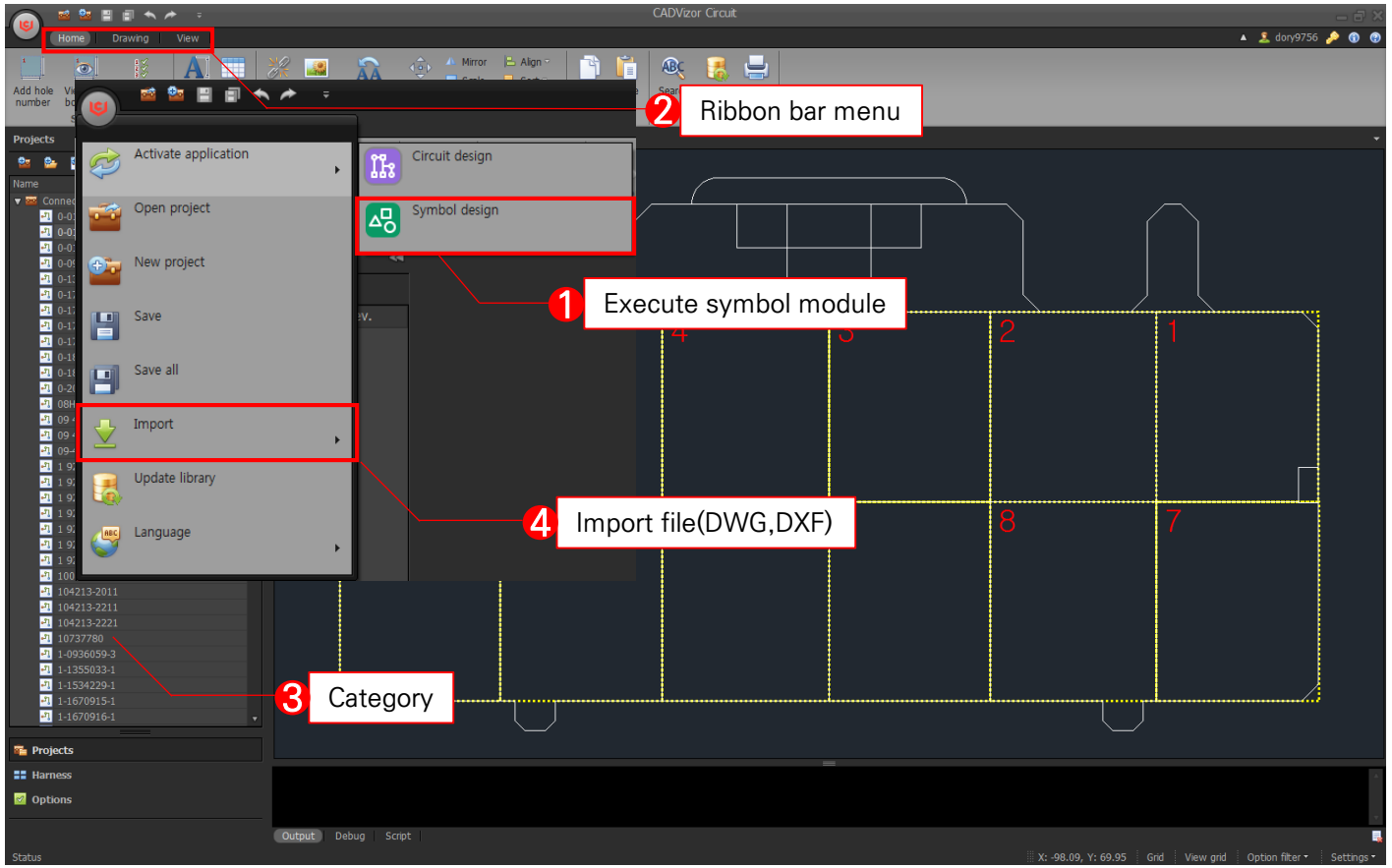
3. Report

Screen	Description
	▣ Report ① Report Creation: After checking only necessary output, it can be generated. Wire list, Connector list, Option list, Symbol list, Etc…

XII _ Symbol module

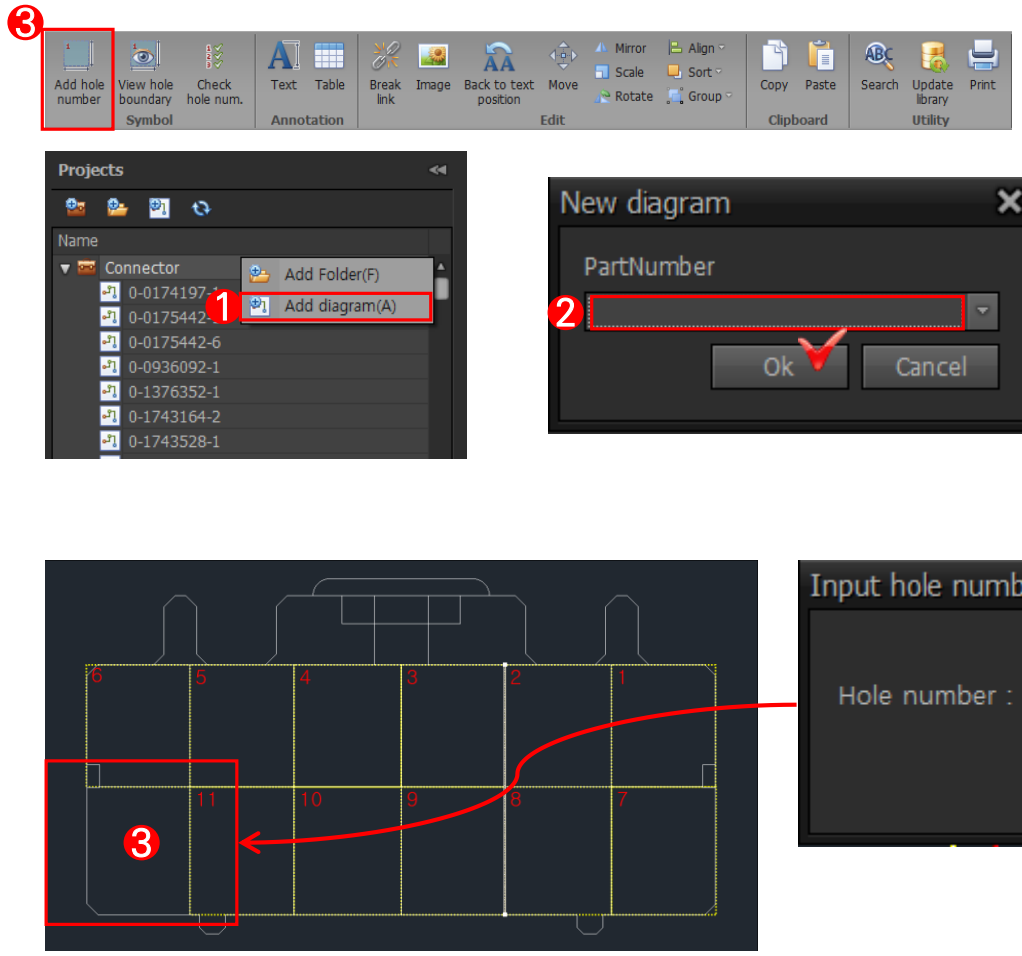
1. Screen layout
2. Connector symbol

1. Screen layout

Screen	Description
	▣ Screen layout ① App menu – Activate application – Symbol design Execute **symbol module** through application change ② Ribbon bar menu ▪ Home: Symbol creation and placement of the most frequently used functions ▪ Drawing: Place geometry and style settings ▪ View: Place camera and UI controls ③ Category ▪ Connector: After searching the library module for the entered part number, create a connector symbol for use in the drawing. **Pin position must be entered correctly.** ▪ Template: Generate templates related to drawing information ▪ Etc: Create a symbol to use as a reference in the drawing. EX) Fuse, Relay, Diode… ④ Import(DWG,DXF) This function allows you to load CAD files of other products.

CADVIZOR

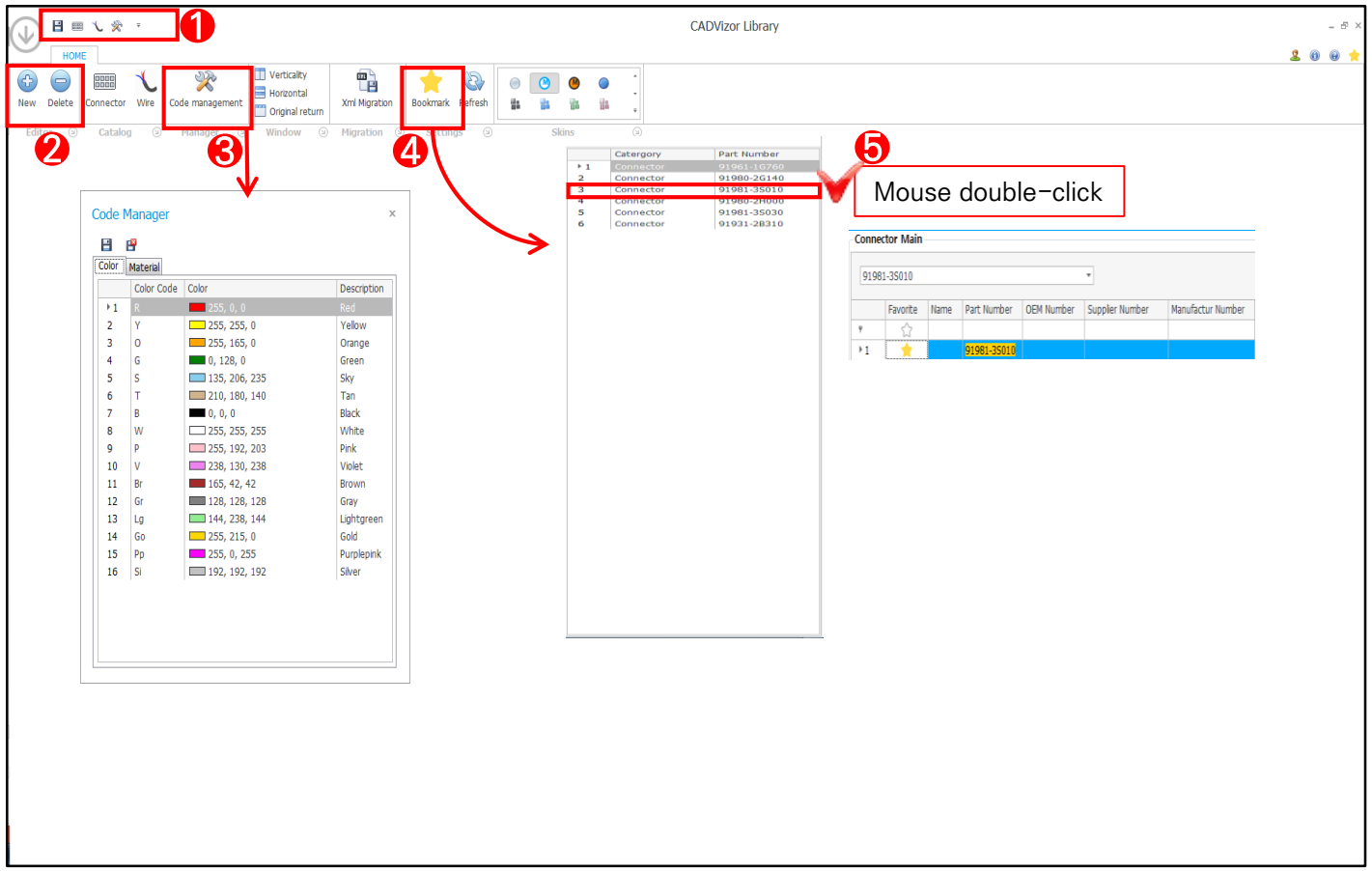
2. Connector symbol

Screen	Description
	▣ Connector symbol ① After selecting a project, click mouse RMB, click **Add diagram** button. ② Search library information ▪ PartNumber: The unique number, you must create in the library module ③ **Add hole number** Generation of unique pin numbers through the number of pins input from the library module. **Pin position must be entered correctly.** ▪ How to draw a connector symbol – Drawing connector symbols through the Drawing menu – App menu – Import(DWG, DXF)

XIII _ Library module

1. Screen layout
2. Connector library
3. Wire library

1. Screen layout

Screen	Description
	▣ Screen layout ① Quick access tool bar By adding frequently used functions to the Quick access toolbar, widely use diagram window ② **Add and delete materials** button ③ Code management: List to be managed publicly Ex) Color code, material… ④ Bookmark ⑤ Find materials in favorite items

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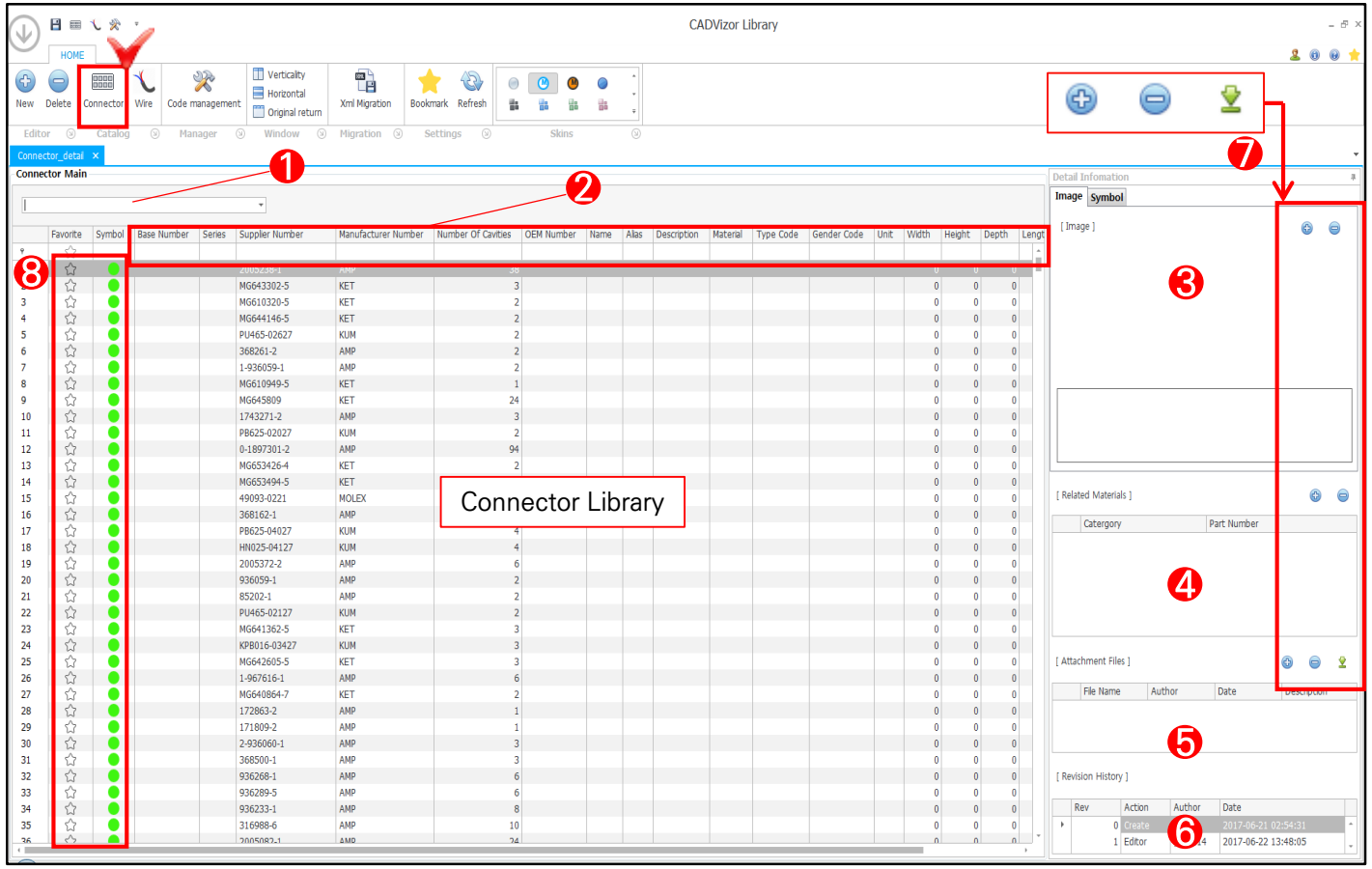
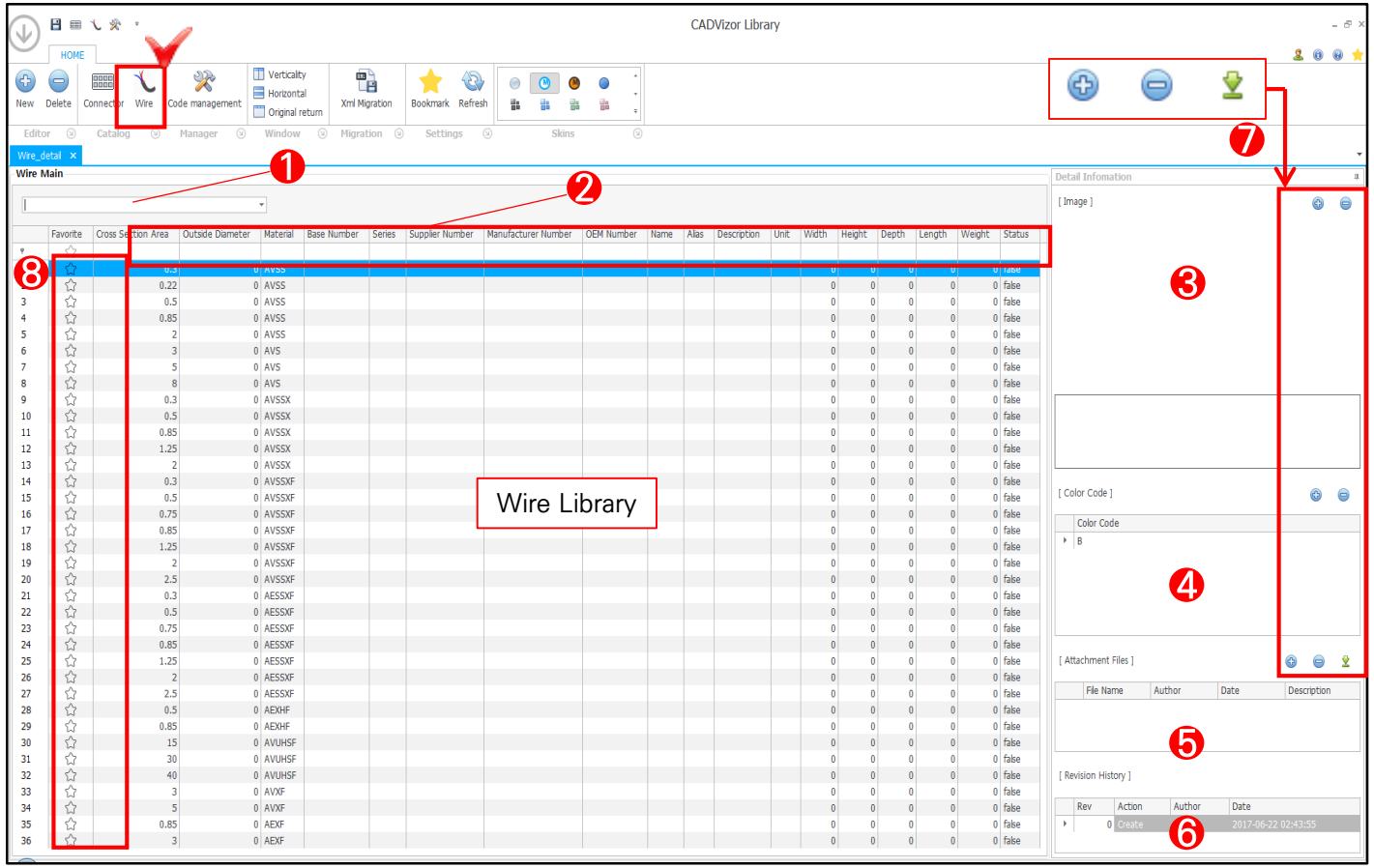
2. Connector library

Screen	Description
	▣ Connector library ① Search all connector libraries ② Search for detailed items by column ③ Image and symbol management ④ Connector material management Ex: Terminal, Seal ··· ⑤ Attached file management ⑥ History management ⑦ Add, delete, download attachments ⑧ Registration of favorites and symbols

3. Wire library

Screen	Description
	▣ Wire library ① Search all wire libraries ② Search for detailed items by column ③ Image management ④ Wire color management ⑤ Attached file management ⑥ History management ⑦ Add, delete, download attachments ⑧ Registration of favorites

Thank you

www.cadvizor.com