Logix Designer Compare Tool User Manual

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Rockwell Automation

User Manual Original Instructions

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

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About Logix Designer Compare Tool

About Logix Designer Compare Tool

Logix Designer Compare Tool is a tool associated with Studio 5000 Logix Designer®. This tool allows you to compare Logix Designer project files and components and merge project elements from two or three project files. Logix Designer Compare Tool is used by FactoryTalk® AssetCentre to perform comparisons during its Backup and Compare operations. Logix Designer Compare Tool can produce a report that FactoryTalk AssetCentre is able to archive for long-term storage and reporting purposes.

With Logix Designer Compare Tool, you can:

- Select Logix Designer project files (ACD, L5K, or L5X) of version 12 or later and perform project-to-project comparisons on these files.
- Select Logix Designer L5X files exported with single or multiple components of the same type and perform partial comparisons on these components.
- Select entire project files (ACD, L5K, or L5X) and compare them with L5X files of single or multiple components.
- Use command-line parameters to perform operations, such as comparing project files, saving compare result project, and printing compare report.

During the comparison, Logix Designer Compare Tool compares tag properties and tag values, including user-specified tag values. If you do not want certain values to show as a difference in the comparison (for example, production values such as counter accumulators and integrator outputs), the Compare Tool allows you to compare specific tag values. By inputting tag expressions, you can include the only tags you want to compare. For this case, the Compare Tool gives you the ability to turn off tag value comparison, while still allowing for tag property comparison. Tag comparisons also include aliases, but only the alias properties are compared (that is, not the value of the underlying tags). In addition, the Compare Tool provides you with a graphical representation of your ladder logic and allows you to apply a mask for a selective comparison.

For partial comparisons, the exported component may be referenced by other components. For example, the data type of a UDT member is an Add-On Instruction, or a tag's data type is a UDT. If such component is exported, the referenced components are also exported in the same L5X file, and all the exported components in the L5X file are compared. Because Studio 5000 Logix Designer supports the exportation of multiple components with the same component type, the Compare Tool supports single-to-single,

single-to-multiple, and multiple-to-multiple component comparisons. If the component types in the two L5X files are different, you cannot proceed due to unmatched component types.

Logix Designer project files may include Libraries that are created using the Application Code Manager Library Designer plug-in. In addition to the Logix Designer contents, the Compare Tool supports the comparison of Libraries and Instance Data between project files. During the comparison, the Compare Tool first processes the Logix Designer contents, and then the Libraries and Instance Data. The Library Object data includes Library configuration information, Logix Designer components belonging to the Library, and Library Object attributes of the Logix Designer components. The Instance Data includes Instance Libraries and Instance Objects. All the Library Object data and Instance Data are extracted from the Logix Designer contents and processed separately. After the comparison, the compare result of Libraries and Instance Data is shown separately from the Logix Designer contents.

Once the comparison is complete, the Compare Tool generates a report detailing the differences. You can save this report as an XML file for future reference.

Project Compare dialog box

How do I open the Project Compare dialog box?

- On the menu bar, select **File > New > Project Compare**.

  or

- On the toolbar, select (New Project Compare).

Use the **Project Compare** dialog box to compare entire Logix project files, partial L5X files, and entire project files with partial L5X files. Use this dialog box to define whether to include tags or tag properties during compare.

Compare project files

Compare two entire Logix project files, two partial L5X files exported with single or multiple components and Library Object data, and an entire project file with a partial L5X file to view their differences.

Compare project files

1. Open **Project Compare** by using one of these methods:
   - On the menu bar, select **File > New > Project Compare**.
   - On the toolbar, select (New Project Compare).
2. Specify the project files to be compared in these boxes:
   - **Left Content**
   - **Right Content**

   Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network. For entire-project with partial-project compares, select the entire project as the left content.
3. Select or clear these checkboxes as needed:
   - **Include tags**

- **Include tag data values in compare**
- **Include constant tag data values in compare**
- **Filter tags**

  Tip: If **Filter tags** is selected, the **Tag Filter** dialog box opens after you select **Next**. Use the dialog box to configure filter conditions on page 9.

- **Include descriptions in compare**

4. Select **OK** to start the compare.

See also

Settings in the Project Compare dialog box on page 11

About compare results on page 29

Configure filter conditions

Use the **Tag Filter** dialog box to configure filter conditions. Filtered tags are stored as part of the compare project.

To configure filter conditions

1. In **Tag Filter**, select tags from the tag tree or filter tags with expression on page 9.
2. (optional) Select **Include tags that only exist in the right content** to highlight the corresponding tags or compare content in red in the compare result.
3. Select **Next**.
4. In **Tag Filter Summary**, select **Finish** to start the compare process.

Filter tags with expression

Use the **Advanced Setting** dialog box to filter tags with expression.

To filter tags with expression

1. In **Tag Filter**, select **Advanced**.
2. In **Advanced Setting**, enter filter conditions in **Include by Express**, and then select **Add**.

   Tip: To remove the filter condition from the list, select the condition, and then select **Remove**.

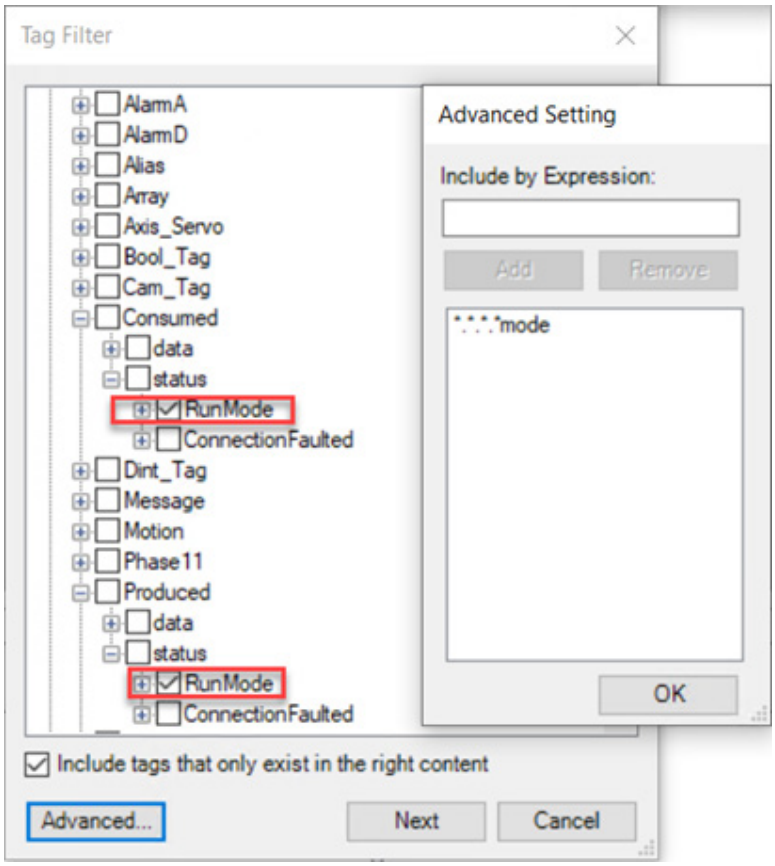
3. Select **OK**.

   All the tags in accordance with the filter conditions configured in **Advanced Settings** are selected in the tag trees.

Valid filter condition

In the **Advanced Setting** dialog box, if the filter condition entered in **Include by Express** is valid, the application adds it to the condition list. The filter condition with * is supported to perform fuzzy filtering of tags.

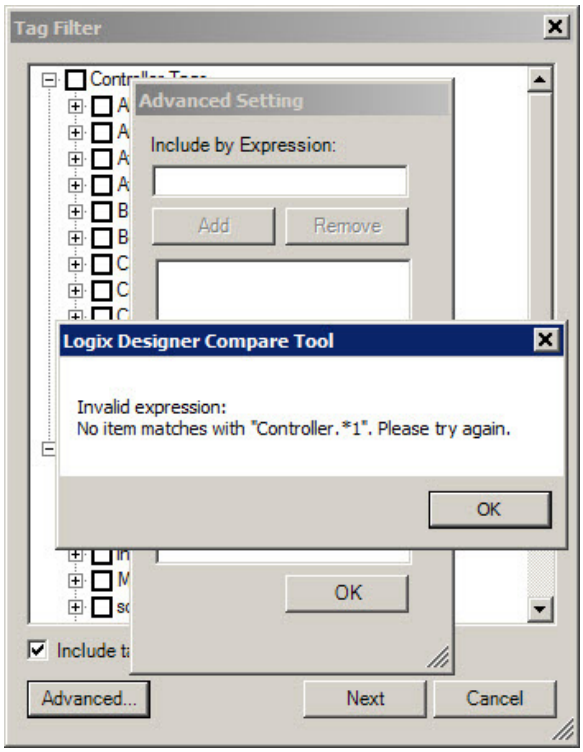
For example, a tag named *RunMode* is in the fourth layer of the tag tree. You can enter ***.*.*.*mode** in **Include by Expression** to include all the tag names with mode in the fourth layer.



Tip:

- "*" can replace an entire tag name or part of the tag name.
- It will take a long time to load a large amount of data for filtering more layers.

If the filter condition is invalid, a dialog box displays indicating the invalid expression.



Settings in the Project Compare dialog box

The **Project Compare** dialog box includes these settings:

Setting	Description
Left Content	Specify the full path of the ACD, L5K, or L5X file that shows on the left side of the compare.
Right Content	Specify the full path of the ACD, L5K, or L5X file that shows on the right side of the compare.
Include all tags	Select this checkbox to include tags and tag properties in the compare.
Include tag data values in compare	Select this checkbox to include tag data values in the compare. Select **Include all tags** to turn on this checkbox.
Include constant tag data values in compare	Select this checkbox to include constant tag data values in the compare. Select **Include all tags** and clear **Include tag data values in compare** to turn on this checkbox.
Filter tags	Select this checkbox to use filter conditions during the compare. Select **Include all tags** to turn on this checkbox.
Include descriptions in compare	Select this checkbox to include descriptions in the compare.

Project Compare With Mask dialog box

How do I open the Project Compare With Mask dialog box?

- On the menu bar, select **File > New > Project Compare With Mask**.

Use the **Project Compare** dialog box to start a compare with mask settings. The masked compare feature allows you to apply an inclusive filter to the compare operation. The formatting and conventions supported by the masked compare operation include:

- Only items that match the Mask string are compared.
- The Mask string is not case-sensitive.
- White space before or after the Mask string is ignored.
- Each Mask string must appear on its own line.
- The asterisk (*) is the only wildcard character.
- Predefined names that can be used within a Mask string are as follows:
  - DataTypes
  - Modules
  - Controller
  - Tasks
  - Tags
  - FaultHandler
  - PowerUpHandler
  - Configurations

Compare project files with mask

Use the **Project Compare With Mask** dialog box to apply an inclusive filter to the compare operation. The supported compares include two entire Logix project files, L5X files exported with single or multiple components and Library Object data, and an entire project file with an L5X file.

To compare project files with mask

1. On the menu bar, select **File > New > Project Compare With Mask**.
2. Specify the project files to be compared in these boxes:
   - **Left Content**
   - **Right Content**

   Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.
3. Select or clear these checkboxes as needed:
   - **Include tags**
   - **Include tag data values in compare**
   - **Include constant tag data values in compare**
   - **Include descriptions in compare**
4. In **Include mask**, enter the masked string values for the compare.
5. Select **OK**.

Settings in the Project Compare With Mask dialog box

The **Project Compare With Mask** dialog box includes these settings:

Setting	Description
Left Content	Specify the full path of the ACD, L5K, or L5X file that shows on the left side of the compare.
Right Content	Specify the full path of the ACD, L5K, or L5X file that shows on the right side of the compare.
Include all tags	Select this checkbox to include tags and tag properties in the compare.
Include tag data values in compare	Select this checkbox to include tag data values in the compare. Select **Include all tags** to turn on this checkbox.

Setting	Description
Include constant tag data values in compare	Select this checkbox to include constant tag data values in the compare. Select **Include all tags** and clear **Include tag data values in compare** to turn on this checkbox.
Include descriptions in compare	Select this checkbox to include descriptions in the compare.
Include mask	Specify the masks to use in the compare.

Masked string value and resulting operations

The masked string values and the resulting operations are as follows:

Masked String Value	Resulting Operation
DataTypes.*	All data types are compared.
DataTypes.TypeName	Only data type TypeName is compared.
Modules.*	All I/O modules are compared.
Modules.ModuleName	Only the module ModuleName is compared.
Controller.*	All controller elements are included.
Controller.Tags.*	All controller scope tags are compared.
Controller.Tasks.*	All controller tasks are compared.
Controller.Tasks.FaultHandler.*	All Faulthandler programs are compared.
Controller.Tasks.FaultHandler.ProgramName.*	All components in ProgramName are compared.
Controller.Tasks.FaultHandler.ProgramName.Tags.*	All tags scoped to ProgramName are compared.
Controller.Tasks.FaultHandler.ProgramName.Tags.TagName	Only the tag TagName is compared.
Controller.Tasks.FaultHandler.ProgramName.RoutineName	Only the routine RoutineName is compared.
Tasks.*	All Tasks are compared.
Tasks.TaskName.*	All items within TaskName are compared.
Tasks.TaskName.ProgramName.*	All items within TaskName.ProgramName are compared.
Tasks.TaskName.ProgramName.Tags.*	All tags within TaskName.ProgramName are compared.
Tasks.TaskName.ProgramName.Tags.Tagname	Only Tagname within TaskName.ProgramName.Tags is compared.
Tasks.TaskName.ProgramName.Routinename	Only RoutineName within Taskname.Programname is compared.
Programs.*	All Programs are compared.
Programs.ProgramName.*	All items within ProgramName are compared.
Programs.ProgramName.RoutineName	Only RoutineName within ProgramName is compared.
Programs.ProgramName.Tags.*	All tags within ProgramName are compared.
Programs.ProgramName.Tags.Tagname	Only Tagname within ProgramName.Tags is compared.
Routines.*	All Routines are compared.
Routines.RoutineName	All items within RoutineName are compared.
Configurations.*	All configuration information is compared.

Logix Definition Compare dialog box

How do I open the Logix Definition Compare dialog box?

- On the menu bar, select **File > New > Logix Definition Compare**.

Use the **Logix Definition Compare** dialog box to compare Logix definitions (Add-On Instructions and User-defined Data Types) included in the project files.

Start a compare of Logix definitions

Use the **Logix Definition Compare** dialog box to compare definitions (Add-On Instructions and User-defined Data Types) included in the Logix Designer project files. The supported compares include two entire Logix

Designer project files, L5X files exported with single or multiple components and Library Object data, and an entire project file with a L5K file.

To start a compare of Logix definitions

1. On the menu bar, select **File > New > Logix Definition Compare**.
2. Specify the project files to be compared in these boxes:
   - **Left Content**
   - **Right Content**

   Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.
3. Select or clear these checkboxes as needed:
   - **Include AOI/UDT backing tags**
   - **Only show definitions that exist in both files**
   - **Include descriptions in compare**
4. Select **OK**.

Settings in the Logix Definition Compare dialog box

The **Logix Definition Compare** dialog box includes these settings:

Setting	Description
Left Content	Specify the full path of the ACD, L5K, or L5X file that shows on the left side of the compare.
Right Content	Specify the full path of the ACD, L5K, or L5X file that shows on the right side of the compare.
Include AOI/UDT backing tags	Select this checkbox to include tags associated with Add-On Instructions and User-defined Data Types in the compare.
Only show definitions that exist in both files	Select this checkbox to show the Add-On Instructions and User-defined Data Type components that are common in both projects.
Include descriptions in compare	Select this checkbox to include descriptions in the compare.

Logix definition only differences

During Logix definition compares, only Logix definition components (Add-On Instructions and User-defined Data Types) are compared.

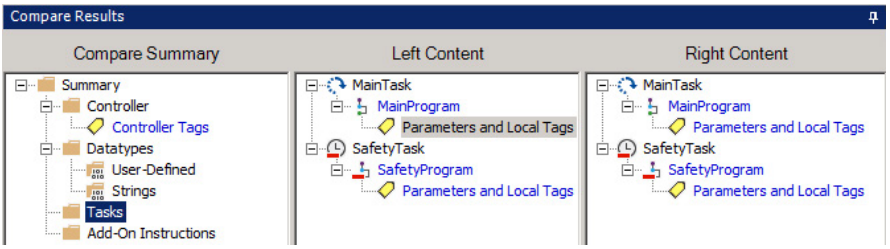
This function provides the **Include AOI/UDT backing tags** and **Only show definitions that exist in both files** options:

- With **Include AOI/UDT backing tags** selected, tags referenced by Add-On Instructions and User-defined Data Types are compared at the same time.
- With **Only show definitions that exist in both files** selected, only components common in left and right projects are compared. Components that exist in either project are not included in the compare.

  Tip: These two options are not supported when merging the compared projects. Tags associated with Add-On Instructions and User-defined Data Types will not be included in the merge and Logix definitions that only exist in one of the projects will be included in the merge.

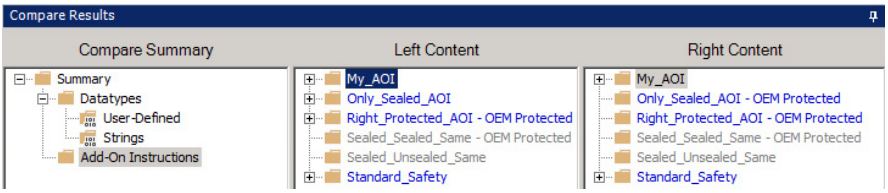
Example

Compare Logix definitions with **Include AOI/UDT backing tags** selected:



Compare Logix definitions with **Only show definitions that exist in both files** cleared:

Compare Logix definitions with **Only show definitions that exist in both files** selected. Components only exit in one project are not compared.



Tracked Component Compare dialog box

How do I open the Tracked Component Compare dialog box?

- On the menu bar, select **File > New > Tracked Component Compare**.

Use the **Tracked Component Compare** dialog box to compare tracked components.

Start a compare of tracked components only

Use the **Tracked Component Compare** dialog box to compare differences only within these exported tracked components.

To start a compare of tracked components only

1. On the menu bar, select **File > New > Tracked Component Compare**.
2. Specify the project files to be compared in these boxes:
   - **Left Content**
   - **Right Content**

   Tip: Enter the full path of the project file or select ... (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.
3. Select **Include descriptions in compare** to include descriptions in compare.
4. Select **OK**.

Settings in the Tracked Component Compare dialog box

The **Tracked Component Compare** dialog box includes these settings:

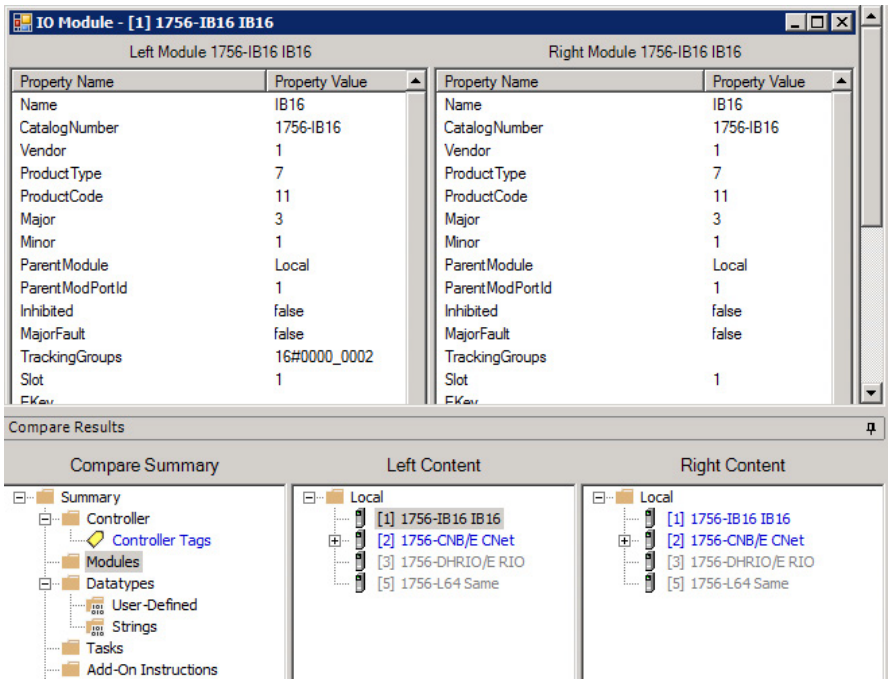
Setting	Description
Left Content	Specify the full path of the ACD, L5K, or L5X file that shows on the left side of the compare.
Right Content	Specify the full path of the ACD, L5K, or L5X file that shows on the right side of the compare.
Include descriptions in compare	Select this checkbox to include descriptions in the compare.

Tracked components only differences

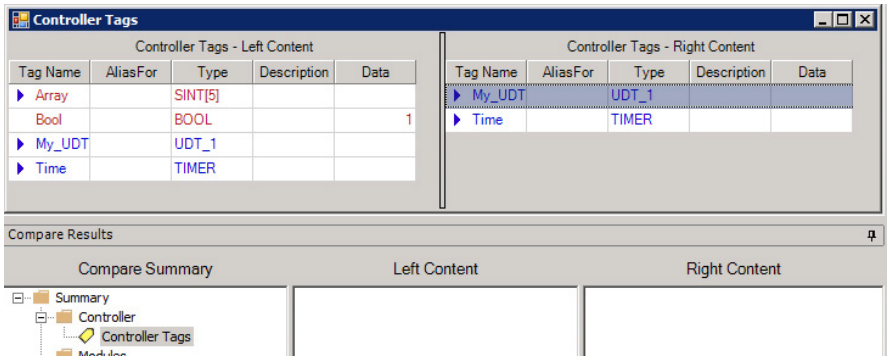
Logix Designer Compare Tool supports the comparison of tracked components by providing an option to compare differences only within these exported components. During the comparison of tracked components only, Logix Designer Compare Tool exports all the tracked components and compare differences between them.

Example

Module comparison



Tag comparison



Generate Report dialog box

How do I open the Generate Report dialog box?

- On the menu bar, select **File > Generate Report**.

After completing a comparison, use the **Generate Report** dialog box to generate a report with customized printing preferences.

Generate a report with customized printing preferences

After completing a comparison, use the **Generate Report** dialog box to generate a report with customized printing preferences.

Tip: To generate PDF reports, make sure that the Microsoft Print to PDF printer is installed and enabled on your computer.

To generate a report with customized printing preferences

1. On the menu bar, select **File** > **Generate Report**.
2. In **Generate Report**, customize the settings on page 17 as needed.
3. Select **Page Setup** to configure printing preferences:
   - **Margins (inches)** - Specifies the white space on the four sides (left, right, top, and bottom) of a page. The input of margins can be integer or decimal.
   - **Orientation** - Specifies the report layout as vertical (Portrait) or horizontal (Landscape).

     Tip: Printing the report in the Landscape orientation helps to avoid display issues, especially when the compared projects include multiple instructions in one rung.
   - **Paper** - Specifies the paper size and source.
4. Select **OK** to save the changes.
5. Select **Print** to generate the report.

Settings in the Generate Report dialog box

The **Generate Report** dialog box includes these settings:

Setting	Description
Report Filter Selection	Displays all the project components with differences. Select components to include them in the compare report.

Setting	Description
Settings	Controls whether the report is printed with all content or the summary of the changed tag names. • **Array - Collapse Tag Structure** Select to exclude the sub-elements of tags from the report. • **Print All Rungs** Select to include all rungs in the report. Otherwise, only the rungs with differences will be included. • **Print SafetyTagMap Difference Only** Select to include only the SafetyTagMap properties with differences in the report.
Page Setup	Opens the **Page Setup** dialog box to set printing preferences for the report page.
Print	Prints the compare report.

Compare master with instance components

In Logix Designer projects, the same routine configuration might be applied to multiple routine instances. The **Compare Master-Instance Components** dialog box allows you to verify whether such routines have the same configuration. With this dialog box, you can choose Logix Designer routines as master components and compare each master component with one or more instance components of the same routine type.

To compare master with instance components

1. On the menu bar, select **File > New > Master-Instance Component Compare**.
2. In **Compare Master-Instance Components**, select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.

   Tip: Only entire project files can be selected. The last 10 projects that have been compared in the **Compare Master-Instance Components** dialog box will appear in the list.
3. Select **Next**.

   A progress bar shows and will disappear once the file is loaded.
4. In **Project file**, select one or more routines.

   Tip: To filter the routines, enter the routine name in the search box, and then select **Find**.
5. Select **Add** or drag the routines to **Selected master components**.

   Tip: To remove a master component from **Selected master components**, select the routine, and then select **Remove** or drag it to **Project file.**
6. Select **Next**.

   Tip: To return to the previous view, select **Previous**. All the selections on the current view will be lost.
7. In **Master components**, select a routine as the master component from the list.
8. In the left pane, select one or multiple routines as instance components.
9. Select **Add** or drag the routines to the right pane.

   Tip: To remove an instance component, select it, and then select **Remove** or drag it to the left pane.

10. (optional) Repeat Step 7 through Step 9 to select the rest master components and corresponding instance components.
11. Select **Compare**.

    Tip: To return to the previous view, select **Previous**. All the selections on the current page will be retained.

    A process bar appears and will disappear once the comparison completes.

See also

Master-instance compare results window on page 57

Verify an online project

The Project Verification function allows Logix Designer Compare Tool to detect if a ControlLogix 5580, GuardLogix 5580, CompactLogix 5380, CompactLogix 5480, or Compact GuardLogix 5380 controller running version 34 and later firmware has been exploited using a vulnerability. For more details, see Knowledgebase Document ID: PN1586 - Logix Designer Application May Allow Unauthorized Controller Code Injection.

This function requires Studio 5000 Logix Designer version 34.00.00 or later and FactoryTalk Linx version 6.30.00 or later.

To verify an online project

1. On the menu bar, select **File > New > Project Verification**.
2. In **Who Active**, select a controller node.

   Tip: The controller node must be applicable to Studio 5000 Logix Designer version 34.00.00 and later.
3. Select **OK**.

   Tip: You cannot cancel this operation before getting the verification result from Logix service.
4. In **Compare Results**, view the device information and the compare results:
   - **Device Info**

     Displays the online name, path, and other basic information for the device. For emulated controllers, compare report only displays the online name and path.
   - **Compare Results**

     Displays the verification results as **Same** or **Difference** indicating whether the online project content matches that in the controller.
5. (optional) Do one of these actions as needed:
   - To print the report, select **Print**.
   - To set the printing preferences for the report, select **Page Setup**.
   - To close the dialog box, select .

Save the customized settings

Use the **Save Selected** option to save your customized settings after closing the application.

To save the customized settings

1. In Logix Designer Compare Tool, customize the supported settings as needed.
2. On the menu bar, select **Options** > **Save Selected**.

Tip: To restore the default settings after closing the application, clear the Save Selected option.

Supported settings for the Save Selected function

The Save Selected function supports customizing the window size and the settings in this table.

Location	Setting
Generate Report dialog box	Array - Collapse Tag Structure
	Print All Rungs
	Print SafetyTagMap Difference Only
Page Setup dialog box	Margins
	Orientation
	Paper Size/Source
Compare dialog boxes	Include tag data values in compare
	Include constant tag data values in compare
	Filter tags
	Include descriptions in compare
	Include AOI/UDT backing bags
	Only show definitions that exist in both files
	Project files drop-down list
Options menu	Save Selected
	Find Results Toolbar
	Compare Tags
	Compare Tag Data
	Compare Constant Tag Data
	Compare Descriptions
	Performance
	Show Main Operand Descriptions
	Show Additional Ladder Context
	Show Additional Context
	Print Detailed Library Information
	RsLogix Language

Supported command-line compare operations

Logix Designer Compare Tool allows you to use command-line parameters to perform these operations without interacting with the user interface:

- Start the Compare Tool application
- Start a compare
- Save the compare file
- Save the compare report
- Open a compare file

Compare project files

Use command-line parameters to compare project files without interacting with the user interface.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

To start a compare with command lines

1. Open the **Windows Command Prompt** window.
2. Use commands to specify the compare parameters, each of which is separated by space.
   a. Specify the use of the Compare Tool.

      `RSLCompare`

   b. Specify the path and file name of the left content.

      For example,
      `"C:\Users\Public\Documents\Project_base.ACD"`

   c. Specify the path and file name of the right content.

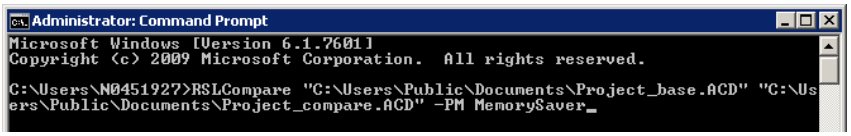
      For example,
      `"C:\Users\Public\Documents\Project_compare.ACD"`

   d. (optional) Define the performance mode as **Fastest Compare** that shortens comparing time with a potential of running out of memory or **Memory Saver** that saves memory occupation with a potential of increasing comparing time.

      - For the **Fastest Compare** mode: `-PM FastestCompare`
      - For the **Memory Saver** mode: `-PM MemorySaver`

        Tip: If you don't use this parameter, the performance mode will be the one set on the menu bar through **Options > Performance**.

   This is an example of the complete command lines with the **Memory Saver** mode.



3. Press **Enter**. Wait until the comparing progress is done.

Save the compare file

Use command-line parameters to save the compare file without interacting with the user interface.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

To save the compare file with command lines

1. Open the **Windows Command Prompt** window.
2. Use commands to specify the saving parameters, each of which is separated by space.

a. Specify the use of the Compare Tool.

```
RSLCompare
```

b. Specify the path and file name of the left content.

For example,
`"C:\Users\Public\Documents\Project_base.ACD"`

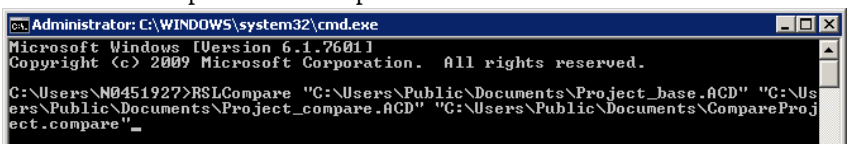
c. Specify the path and file name of the right content.

For example,
`"C:\Users\Public\Documents\Project_compare.ACD"`

d. Specify the path and name of the compare file.

For example,
`"C:\Users\Public\Documents\CompareProject.compare"`

This is an example of the complete command lines.



3. Press **Enter**.

It might take a short time to save the compare file in the specified folder.

Save the compare report

Use command-line parameters to save the PDF report of a compare file without interacting with the user interface.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

Prerequisites

- Make sure that the Microsoft Print to PDF printer is installed and enabled on your computer.

To save the compare report with command lines

1. Open the **Windows Command Prompt** window.
2. Use commands to specify the saving parameters, each of which is separated by space.

a. Specify the use of the Compare Tool.

```
RSLCompare
```

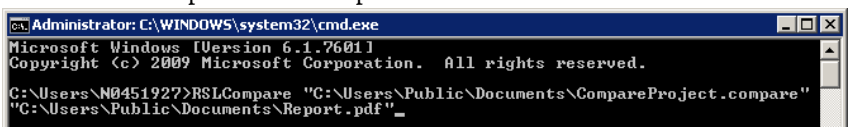
b. Specify the path and name of the compare file whose report that you want to save.

For example,
`"C:\Users\Public\Documents\CompareProject.compare"`

c. Specify the path and name of the report file.

For example, `"C:\Users\Public\Documents\Report.pdf"`

This is an example of the complete command lines.



3. Press **Enter**.

   It might take a short time to save the report file in the specified folder.

Open a compare file

Use command-line parameters to open a compare file without interacting with the user interface.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

To open a compare file with command lines

1. Open the **Windows Command Prompt** window.
2. Use commands to specify the parameters, each of which is separated by space.

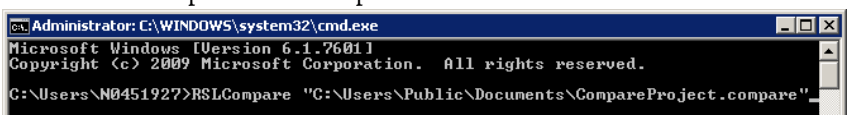
a. Specify the use of the Compare Tool.

   `RSLCompare`

b. Specify the path and name of the compare file that you want to open.

   For example,
   `"C:\Users\Public\Documents\CompareProject.compare"`

This is an example of the complete command lines.



3. Press **Enter**.

Start the Compare Tool application

Use command-line parameters to start Logix Designer Compare Tool.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

To start the Compare Tool application with command lines

1. Open the **Windows Command Prompt** window.
2. Enter **RSLCompare**, and then press **Enter**.

Set preferences with the Parser.config file

Use the **Parser.config** file to change compare settings such as global excludes.

To set preferences with the Parser.config file

1. Locate the **Parser.config** file in one of these locations:

- For the 32-bit operating system, go to C:\Program Files\Rockwell Software\Logix Designer Tools\Logix Designer Compare Tool.
- For the 64-bit operating system, go to C:\Program Files (x86)\Rockwell Software\Logix Designer Tools\Logix Designer Compare Tool.

2. Open the **Parser.config** file with Notepad, edit the content as needed, and then save your changes.

Elements in the Parser.config file

The **Parser.config** file includes the following elements. To set the global excludes, refer to the **ExcludedMembers** and **ExcludedTypes** elements.

Element	Description
Config	The root element of the XML document. It contains all other elements and attributes in the document.
Options	Available attributes are: • **TagProperties** - Specifies whether to compare the tag properties. Default: On • **ModuleInputOutputData** - Specifies whether to compare the module input and output data. Default: On • **ModuleForceData** - Specifies whether to compare the module force data. Default: On • **TagForceData**- Specifies whether to compare the tag force data. Default: On • **ForceDataEndResult** - Specifies whether to compare the force result. Default: Off **Tip**: Force result is one group of force data. It contains three groups: force mask, force data, and force result. Logix Designer Compare Tool compares and shows the differences for force data based on the three groups. Force data is exported in different data formats depending on the Logix Designer versions. For partial compares, only force data of the same format can be compared. When comparing force data with different formats, a dialog box opens, which allows you to cancel the compare or continue to compare with force data excluded.

ExcludedMembers	Defines members of structures such as Logix predefined structures or user-defined data types that will not be compared by Logix Designer Compare Tool. You do not need to list hidden members in this section because they are not compared by default. Available elements include:
	• **DataType** element - Contains the data type information. Available attributes and elements are:
	  • **DataType** attribute: Specifies the data type name.
	  • **Members** element: Contains the nested **Member** element.
	  • **Member** element: Contains the member of structures. The member name is specified in the **Name** attribute.

Element	Description
ExcludedTypes	Defines data types that will not be compared by Logix Designer Compare Tool. Available elements include: • **DataType** element - Contains the data type information. The type name is specified in the **Name** attribute.
MaxSupportedTagMembers	Defines the maximum number of tag members that Logix Designer Compare Tool supports. The unit is 10 tag members. For example, if the value is 5000, the maximum supported number of tag members is 50000. Default: 5000 **Tip**: A smaller number allows larger projects to be compared, but more items are skipped. If an item is skipped, it can be manually compared afterwards. While this approach may be acceptable for manual compares, this might cause issues when working with FactoryTalk AssetCentre.
PrintOptions	Defines the print options for the report generated with command lines. Available attributes include: • **Landscape** attribute - Defines the layout for the report as Landscape (True) or Portrait (False). Default: False

Example of the Parser.config file

This is an example of the Parser.config file:

```
<?xml version="1.0" encoding="UTF-8"?>
<Config>
  <L5kMajorRev>2</L5kMajorRev>
  <L5kMinorRev>3</L5kMinorRev>
  <Options TagProperties="On" ModuleInputOutputData="On"
  ModuleForceData="On" TagForceData="On"
  ForceDataEndResult="Off"/>
  <ExcludedMembers>
    <DataType DataType="ALARM">
      <Members>
        <Member Name="EnableIn"/>
        <Member Name="In"/>
        <Member Name="EnableOut"/>
        <Member Name="Status"/>
      </Members>
    </DataType>
    <DataType DataType="COUNTER">
      <Members>
        <Member Name="ACC"/>
      </Members>
    </DataType>
    <DataType DataType="TIMER">
      <Members>
        <Member Name="ACC"/>
      </Members>
    </DataType>
```

```
    </ExcludedMembers>
    <ExcludedTypes>
      <DataType Name="ALARM_DIGITAL"/>
      <DataType Name="DINT"/>
    </ExcludedTypes>
    <MaxSupportedTagMembers>5000</MaxSupportedTagMembers>
    <PrintOptions Landscape="False"/>
  </Config>
```

Compare Tool menu bar

The Logix Designer Compare Tool menu bar contains these menu items:

Menu	Option	Shortcut	Description
File	New > Project Compare	Ctrl + N	Opens the **Project Compare** dialog box to compare two projects.
	New > Project Compare With Mask	None	Opens the **Project Compare With Mask** dialog box to compare two projects with mask strings applied.
	New > Logix Definition Compare	None	Opens the **Logix Definition Compare** dialog box to compare Logix Definitions.
	New > Tracked Component Compare	None	Opens the **Tracked Component Compare** dialog box to compare tracked components only.
	New > Master-Instance Component Compare	None	Opens the **Compare Master-Instance Components** dialog box to choose Logix Designer routine components as a master and compare each master component with one or multiple instance components of the same routine type.
	New > Project Merge	Ctrl + E	Opens the **Project Merge** dialog box to merge two or three projects.
	New > Logix Definition Merge	None	Opens the **Logix Definition Merge** dialog box to merge Logix definitions from two or three project files.
	New > Project Verification	None	Opens the **Who Active** dialog box to select a controller node for online project content verification.
	Open	Ctrl + O	Opens the **Open** dialog box to open a previously saved compare report.
	Close	None	Closes the active compare report and clears the **Results** window.
	Save As	Ctrl + S	Opens the **Save As** dialog box to save the current compare project.
	Merge	Ctrl + M	Opens the **Logix Designer Merge Tool** window to merge the two projects. **Tip**: The **Merge** item is available only when the entire-project compare is completed.
	Generate Report	Ctrl + G	Opens the **Generate Report** dialog box to customize the report content and set the printing preferences.
	Repeat	Ctrl + R	Repeats the comparison currently shown in the **Results** window. **Tip**: This option requires the original project files that created the compare to be present.
	Exit	None	Exits the Logix Designer Compare Tool application.
Edit	Next Difference	None	Switches focus to the next difference.
	Previous Difference	None	Switches focus to the previous difference.
	Find	Ctrl + F	Opens the **Find** dialog box to specify the text you would like to search for in this report.
Options	Compare Results Toolbar	None	Shows the **Compare Results** window.
	Save Selected	None	Saves the customized settings.
	Find Results Toolbar	None	Shows the **Find Results** window.
	Compare Tags	None	Includes tags and tag properties in the compare.
	Compare Tag Data	None	Includes tag data values in the compare.

Menu	Option	Shortcut	Description
	Compare Constant Tag Data	None	Includes constant tag data values in the compare.
	Compare Descriptions	None	Includes descriptions in the compare. **Tip**: For project files of version 32.00 or later, encrypted Add-On Instructions and routines are compared based on the generated LogicHash or DescriptionHash value differences or both. For encrypted Add-On Instructions or routines, use this option to include the DescriptionHash value in the compare.
	Performance > Fastest Compare	None	Defines the mode to perform compare operations as shortening comparing time with a potential of running out of memory.
	Performance > Memory Saver	None	Defines the mode to perform compare operations as saving memory occupation with a potential of increasing comparing time.
	Show Main Operand Descriptions	None	Shows main operand descriptions in ladder routines.
	Show Additional Ladder Context	None	Shows all rungs in ladder routines for context purposes.
	Show Additional Context	None	Shows tree nodes with no differences for context purposes.
	Print Detailed Library Information	None	Includes detailed Library Object data differences in the report to be printed.
	RSLogix Language	None	Shows the languages of the installed Logix Designer applications.
	Documentation Languages	None	Shows the project documentation languages.
Window	Close	None	Closes the active window
	Close All	None	Closes all open windows.
	Next	None	Switches focus to the next window.
	Previous	None	Switches focus to the previous window.
	Cascade	None	Arranges the open windows so that they overlap.
	Tile Horizontally	None	Arranges the open windows as horizontal, non-overlapping tiles.
	Tile Vertically	None	Arranges the open windows as vertical, non-overlapping tiles.
Help	Index	None	Opens the online help.
	Release Notes	None	Opens the release notes.
	About Logix Designer Compare Tool	None	Opens the **About Logix Designer Compare Tool** dialog box to view the program, version, and copyright information.

Compare Tool toolbar

The toolbar contains shortcuts to several commonly used functions in Logix Designer Compare Tool. In most cases, the toolbar button is a graphical representation of a command that is also available from the Logix Designer Compare Tool menu bar.

The Logix Designer Compare Tool toolbar includes these buttons:

Toolbar Button	Menu Command	Shortcut	Description
	File > New > Project Compare	Ctrl + N	Opens the **Project Compare** dialog box to compare two projects.
	File > New > Project Merge	Ctrl + E	Opens the **Project Merge** dialog box to merge two projects.
	File > Merge	Ctrl + M	Opens the **Logix Designer Merge Tool** window to merge the two projects. **Tip**: The **Merge** item is available only when the entire-project compare is completed.

Toolbar Button	Menu Command	Shortcut	Description
	File > Open	Ctrl + O	Opens the **Open** dialog box to open a previously saved compare report.
	File > Save As	Ctrl + S	Opens the **Save As** dialog box to save the current compare project.
	File > Generate Report	Ctrl + G	Opens the **Generate Report** dialog box to print the active report.
	File > Repeat	Ctrl + R	Repeats the comparison currently shown in the **Results** window.
	Edit > Previous Difference	None	Switches focus to the previous difference.
	Edit > Next Difference	None	Switches focus to the next difference.
		None	Switches focus to the previous ladder difference.
		None	Switches focus to the next ladder difference.

Logix Designer Compare Tool results window

Logix Designer Compare Tool results window

After completing a comparison, Logix Designer Compare Tool generates and populates the Compare Summary, Left Content, and Right Content windows.

The Compare Report is a formatted file, which shows the differences between the two project files you selected for comparison. The beginning of the report consists of a report summary section, with links to the more detailed sections in the body of the report. Throughout these sections, the differences between the two files you compared are shown side by side, so that you can quickly see the variations between them.

You can search for specific pieces of information in this file and navigate between the various items within it, but you cannot edit its content.

About compare results

Information in **Compare Summary**, **Left Content**, and **Right Content** is color-coded:

- **Red** - Indicates items that exist in one project file but not the other.
- **Blue** - Indicates items that are common between the two project files, but have a difference. For example, you might have a ladder routine that exists in both project files, but with a rung that does not match, or a tag that exists, but contains different data. Double-clicking these items brings up more detailed compare information.
- **Black** - Indicates common items that contain child elements.
- **Gray** - Indicates common items in which no differences were found. These are for context only; no further details can be shown.

Compare Summary Pane

The Compare Summary is an overview of detected differences, which consists of a tree that identifies the top level of the difference detected.

For example, if the Left and Right contents have no I/O differences, the Compare Summary would not show an I/O branch on the tree. Only items that have differences are listed in the Compare Summary tree.

Tip: If you open a .compare file, the differences of CustomProperties can be shown but you cannot view the details. This is because CustomProperties detail information is removed and does not exist in the .compare file. You can compare the original projects to get more detailed information.
In such cases, if you want to print a PDF report, the detail information of CustomProperties cannot be shown.

Left Content Pane

Shows information specific to the project file selected as the left content.

Right Content Pane

Shows information specific to the project file selected as the right content.

Supported compare types

Logix Designer Compare Tool supports these compare types:

Entire project with entire project compares

Compare entire Logix Designer project files (ACD, L5K, or L5X).

- Add-On Instructions on page 31
- Alarm Manager on page 33
- Configuration on page 34
- Datatypes on page 35
- Logical Organizer on page 37
- Module on page 38
- Parameter Connections on page 39
- Program on page 39
- Quick Watch on page 40
- Routine (Equipment Sequence, Function Block Diagram, Ladder Logic, Sequential Function Chart, and Structured Text)
- Tag on page 41
- Task on page 43

Partial-project with partial-project and entire-project with partial-project compares

Compare L5X project files exported with single or multiple components of the same type, or compare single or multiple components of the partial project (L5X) files with those of the entire project files (ACD or L5X).

- Add-On Instructions on page 31
- Datatypes on page 35
- Module on page 38
- Program on page 39
- Routine (Equipment Sequence, Function Block Diagram, Ladder Logic, Sequential Function Chart, and Structured Text)
- Rung on page 40
- Tag on page 41

Logix Designer project files can be protected by FactoryTalk Security, license, or source key protection. For project files of version 32.00 or later, encrypted Add-On Instructions and routines are compared based on the generated

LogicHash or DescriptionHash value differences or both. The encrypted Add-On Instructions and routines are shown as Content Protection and marked as Protected in the compare details pane, and are shown in blue to indicate that hash value differences are found. If descriptions are included in the compare, the DescriptionHash value differences are also compared.

Tip: Examples in this section introduce the compare function by using specific project files. The graphics may vary from your own compare results. Unless otherwise noted, entire-project compares are shown as examples.

Add-On Instructions differences

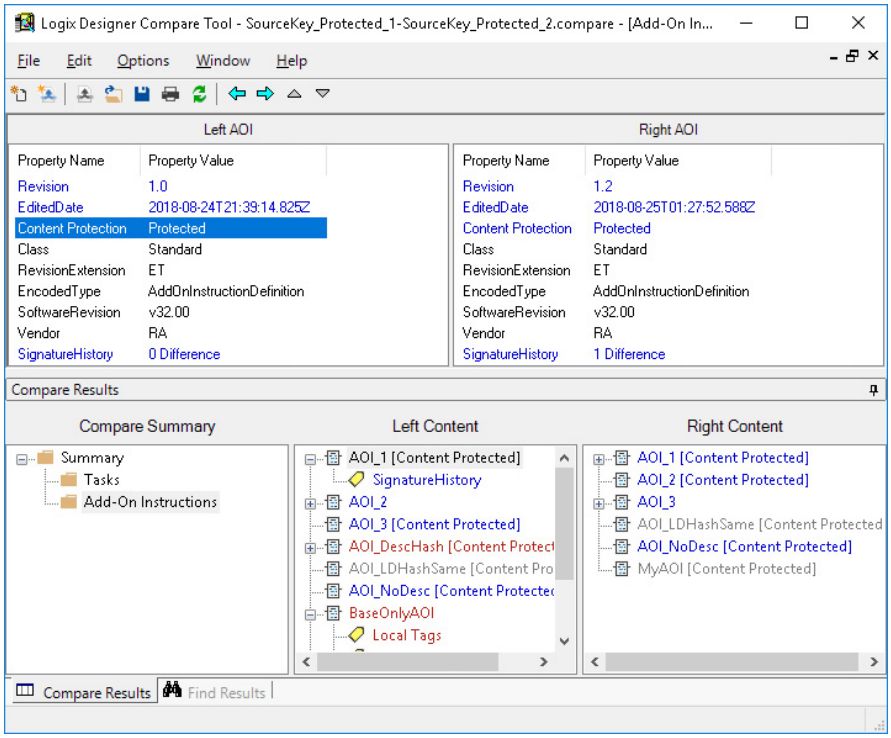
For signed Add-On Instructions, the Compare Tool application supports the comparisons of entire Add-On Instructions, including parameters, Local Tags, and routines. Although signed Add-On Instructions can be compared, they are marked as Content Protected in the compare result.

Tip: Unlike signed Add-On Instructions in unlocked projects, signed Add-On Instructions in locked projects will not be compared with details.

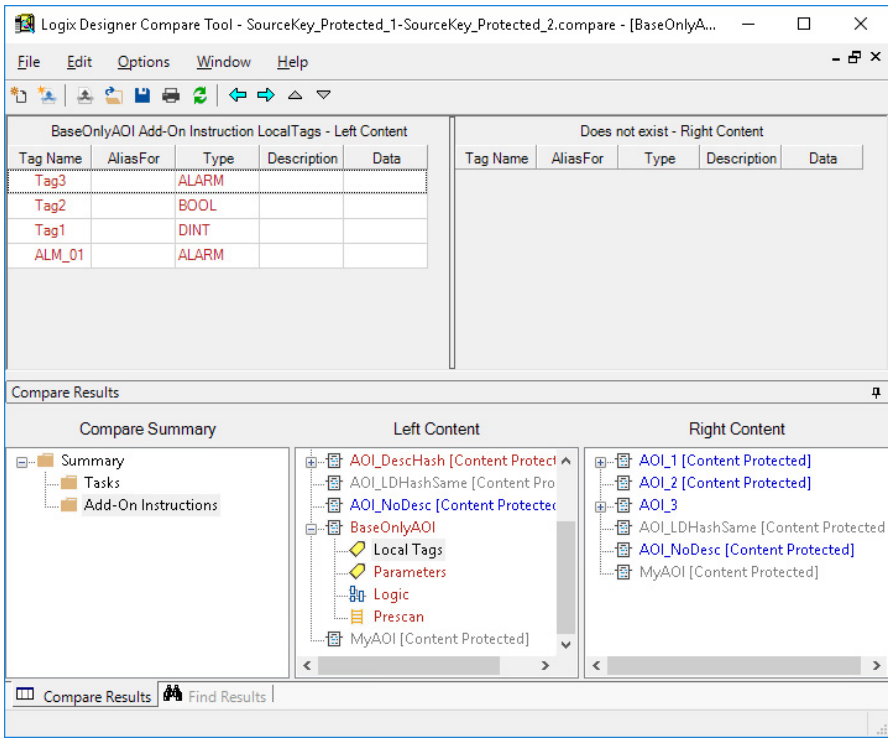
This is a comparison example of encrypted Add-On Instructions from Logix Designer project files version 32.00 with source key protection. The upper panes show the LogicHash or DescriptionHash value differences of AOI_1. The LogicHash or DescriptionHash value differences are shown as Content Protection with the Protected value in blue.

For encrypted Add-On Instructions with EncryptionConfig and EncodedSourceKey attributes, the Compare Tool application will ignore the differences of hash values generated by those attributes.

Select the **Add-On Instruction** folder. Add-On Instructions are shown the same as they are within the Logix Designer application. In the **Compare Results** field, double-click **AOI_1** in **Left Content** to open its details.



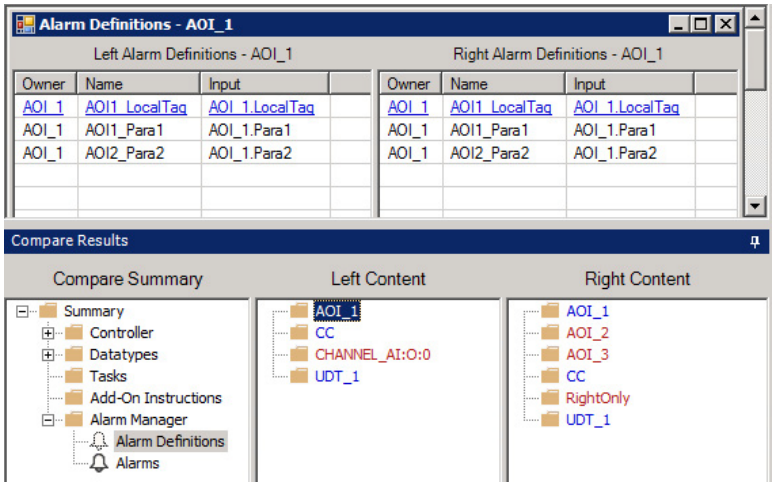
Double-click AOI_1's sub-elements, such as **Local Tags**, to open their details.



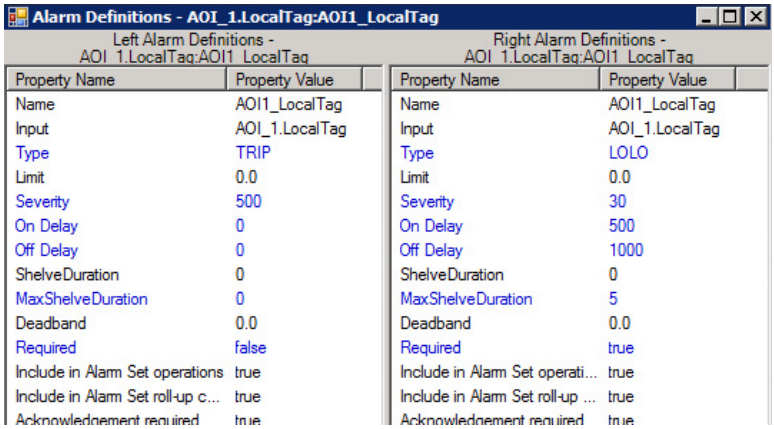
Alarm Manager differences

Alarm Manager contains Alarm Definitions and Alarms.

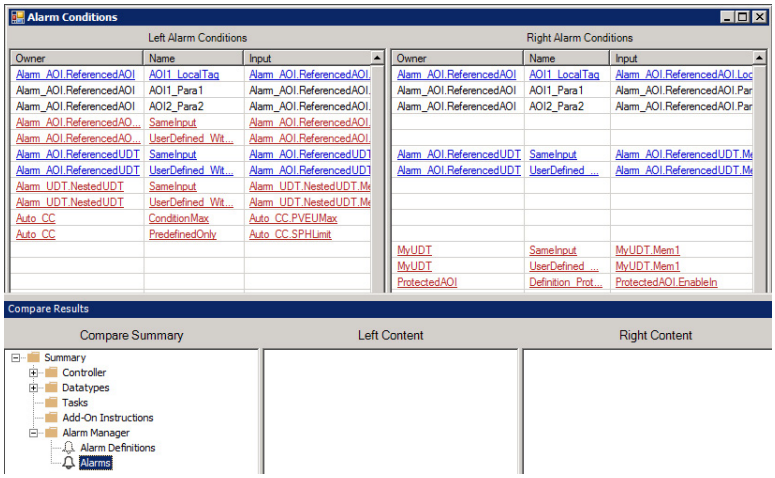
This is an example of Alarm Definitions compare. Double-click AOT_1 to view the differences of Alarm Definitions that associate with AOI.



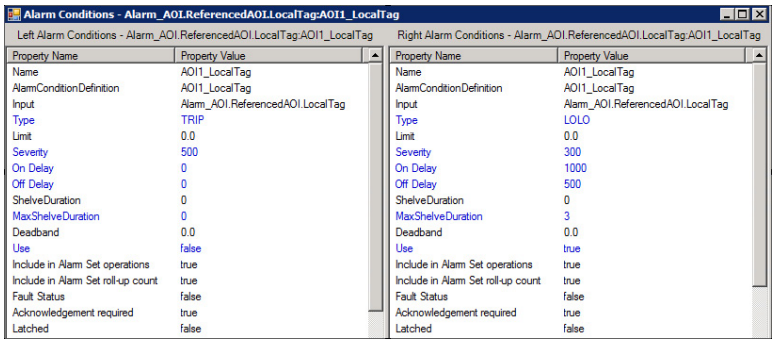
Click the alarm definition to view the detailed differences.



This is an example of Alarms compare. Double-click **Alarms** to view the Alarms differences.



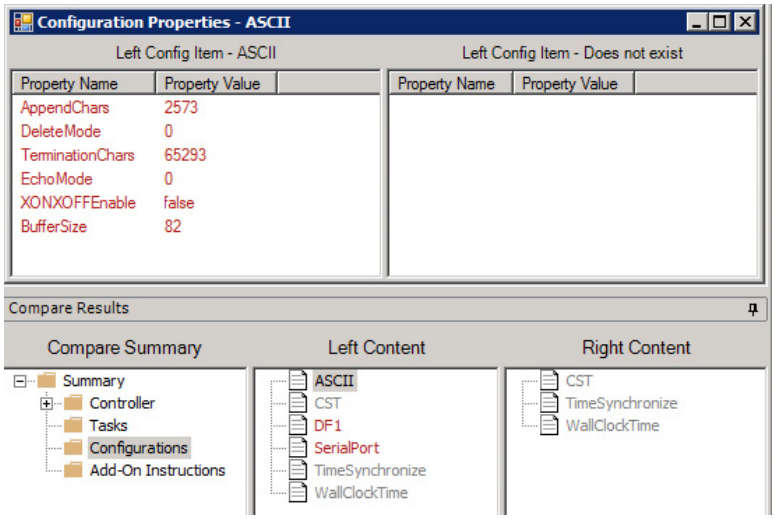
Click an alarm to view the detailed differences.



Configuration differences

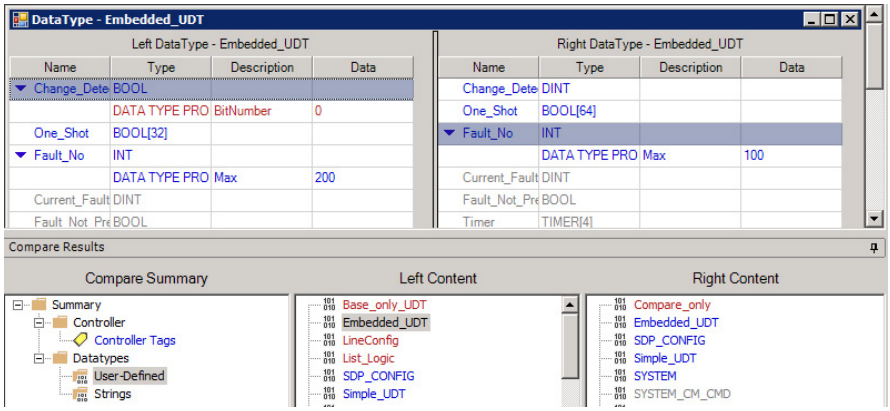
Any differences found in configuration items are identified in the summary tree. Selecting the summary tree shows the specific configuration items in which differences were found.

In this example, **ASCII**, **DF1**, and **SerialPort** were found in the left content only. Double-clicking **ASCII** brings up a detailed report:



Datatypes differences

Select the Datatypes folder to show the User-Defined and Strings folders. This example shows the differences of user-defined data types between the two projects.



Equipment Sequence differences

Equipment Sequence is a program introduced by Logix Designer to support its sequencing in Logix controllers (also known as SILC) functionality. Equipment Sequence differences are shown in tabular form like Sequential Function Chart. Top-level items are as follows:

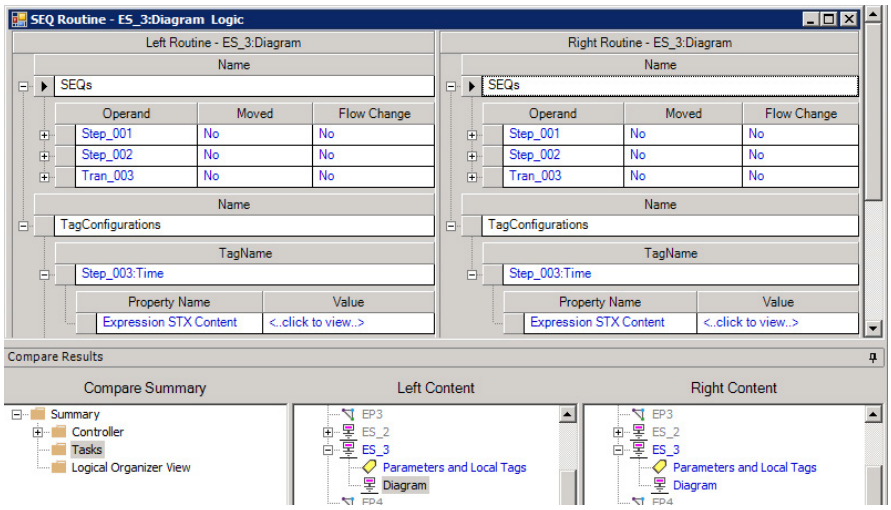
- Steps
- Transitions
- TagConfigurations

The Equipment Sequence program contains a routine called Diagram with Sequence as its type. The SEQ (sequencing) routine uses steps and transitions. The SEQ routine also has a new section defined in L5X called TagConfigurations.

SEQ routine differences are shown in two tables:

- One shows the differences on steps and transitions.
- The other shows the differences on TagConfigurations.

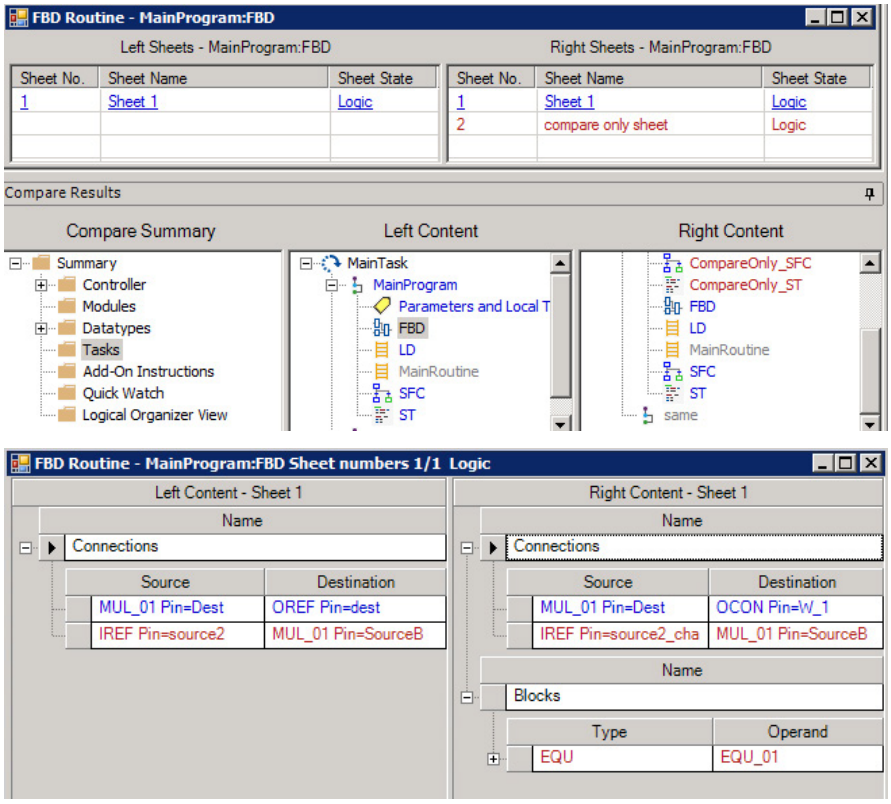
  Click **<..click to view..>** to see the expression content details in a new window.



Function Block Diagram differences

Function Block Diagram compare operations are performed at the sheet level. When a difference is detected between sheets, the results are shown in a column format. In the following example, the project in Right Sheets has a "compare only sheet", which does not exist in the Left Sheets project.

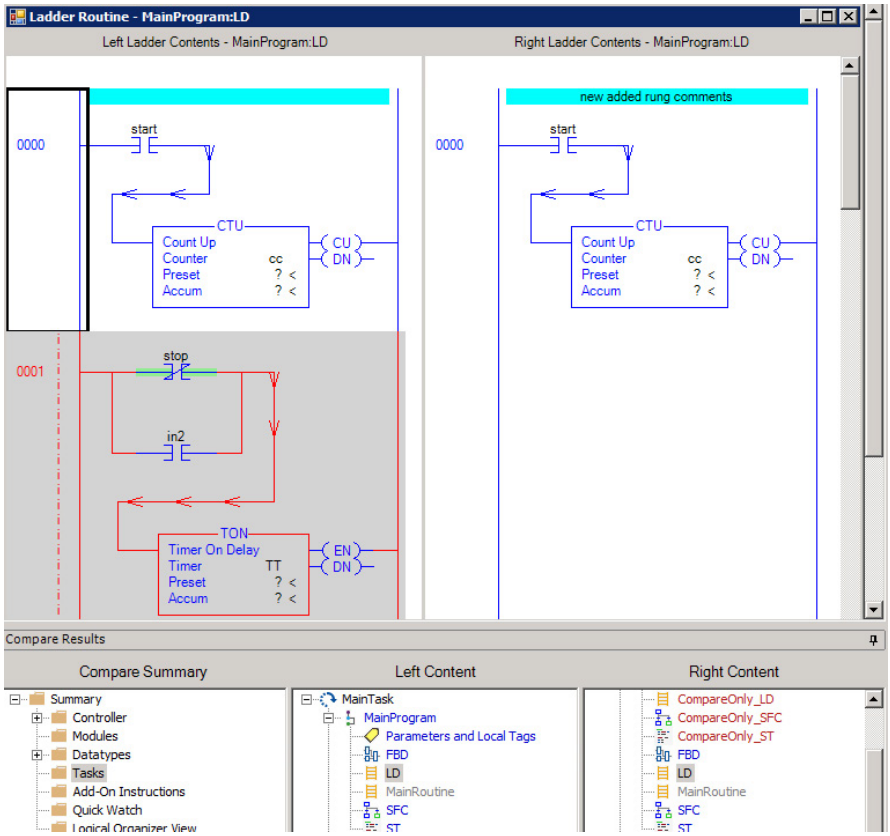
The Compare Tool does not align sheets by sheet number; sheets are aligned by content. Within the sheet, the compare will identify differences between the Left and Right projects.



Ladder Logic differences

Ladder Logic routines are shown in graphical form.

Gray rungs indicate differences between the compared routines; red rungs identify items that are unique to that project. If the comparison detects a modified rung, the elements of the differing rungs may be further highlighted in blue. This typically occurs when the rung's structure is the same, but some elements are different.



Designations in Ladder Logic compares

This table shows the designations in the Ladder Logic routine compare.

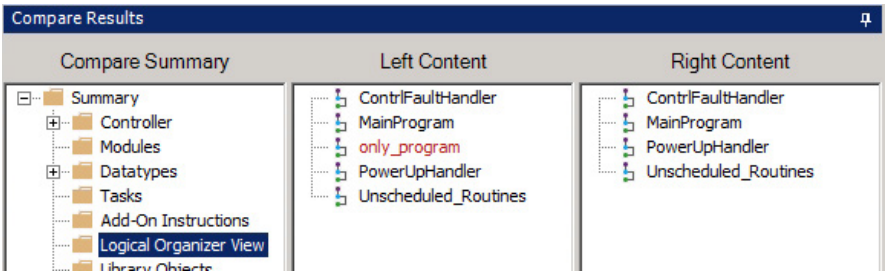
Designation	Meaning
d	Delete
D	Delete or pending delete rung
e	Pending replace rung
i	Insert or insert with a replace
I	Insert
md	Modify or comment changed
mv	Move
r	Pending replace N (Normal) or pending replace IR (Insert with a replace)
R	Replace

Logical Organizer differences

This folder is only shown if logical organization differences exist between the two projects.

Select **Logical Organizer View** to show the detailed organization tree. The

organization trees are shown the same as they are within the Logix Designer application.

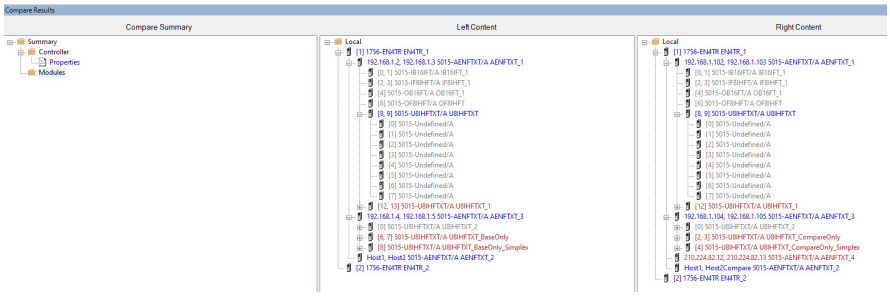


Modules differences

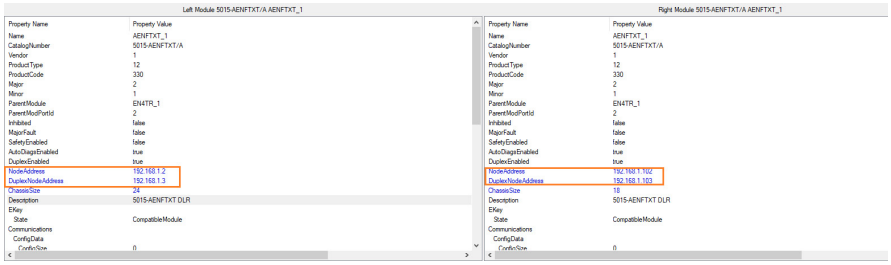
The Compare Tool application compares the I/O configuration hierarchy and the properties of modules. Duplex-enabled modules are supported.

Example

For the entire-project compare, the **Modules** folder appears only when differences exist. Select **Modules** to view the I/O Module tree, which is shown as the same way in the Logix Designer application.



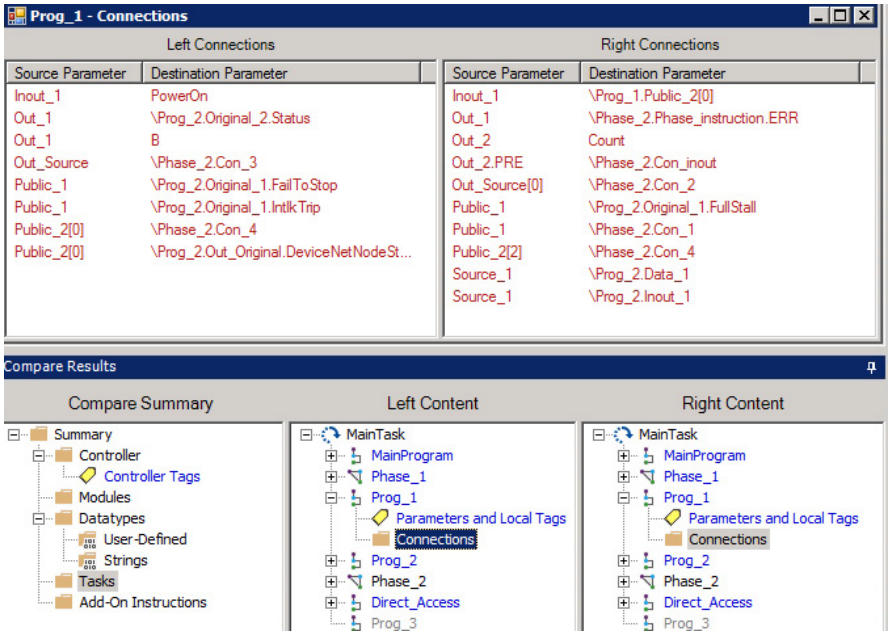
Double-click a module in **Left Content** or **Right Content** to view details.



Parameter Connections differences

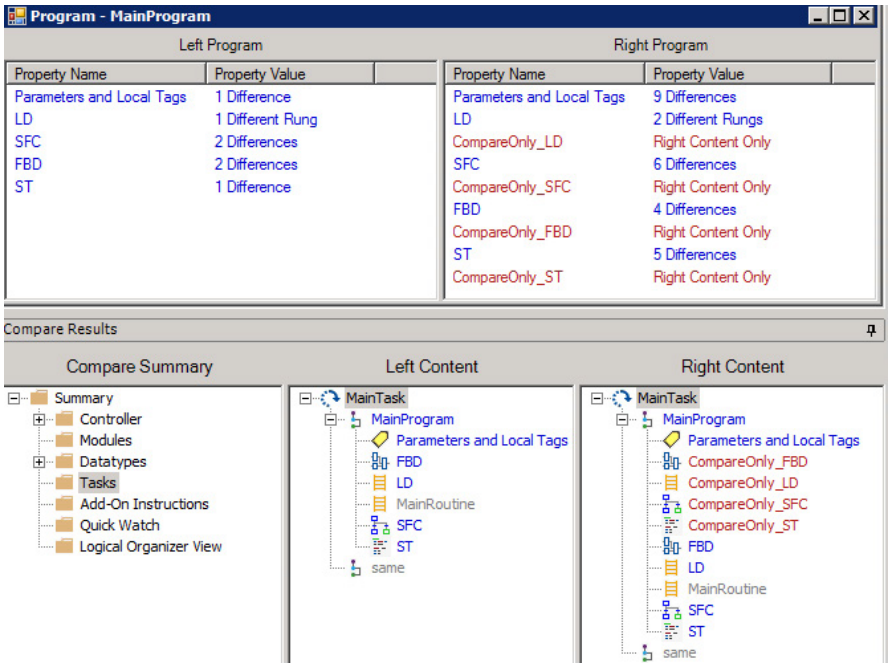
This folder is shown if program parameter differences exist between the two projects.

Select the Tasks folder to show the MainTask tree. In this example, differences exist for *Connections* of *Prog_1* between the two projects. Double-click the Connections folder to open the details.



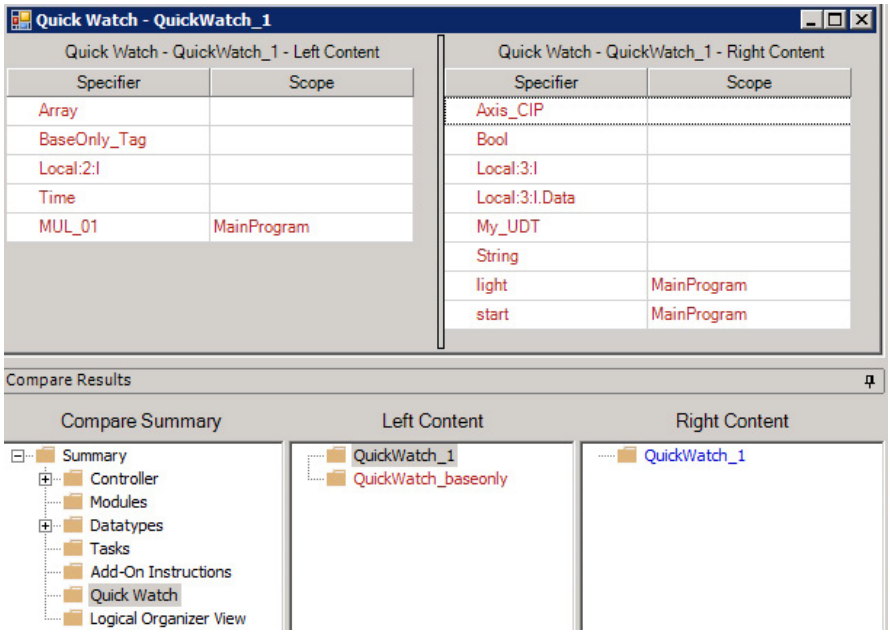
Program differences

This is the example of Program differences. Double-click **MainProgram** to view the summary of the differences.



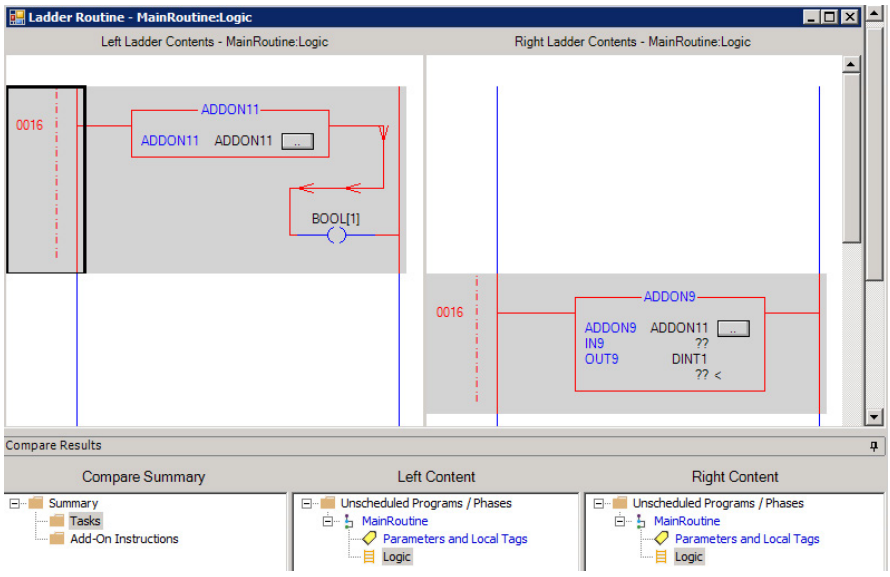
Quick Watch differences

This is an example of quick watch differences. Double-click **QuickWatch_1** to view the details.



Rung differences

This is an example of rung differences during a partial compare. The rungs are exported from Ladder Logic routines.



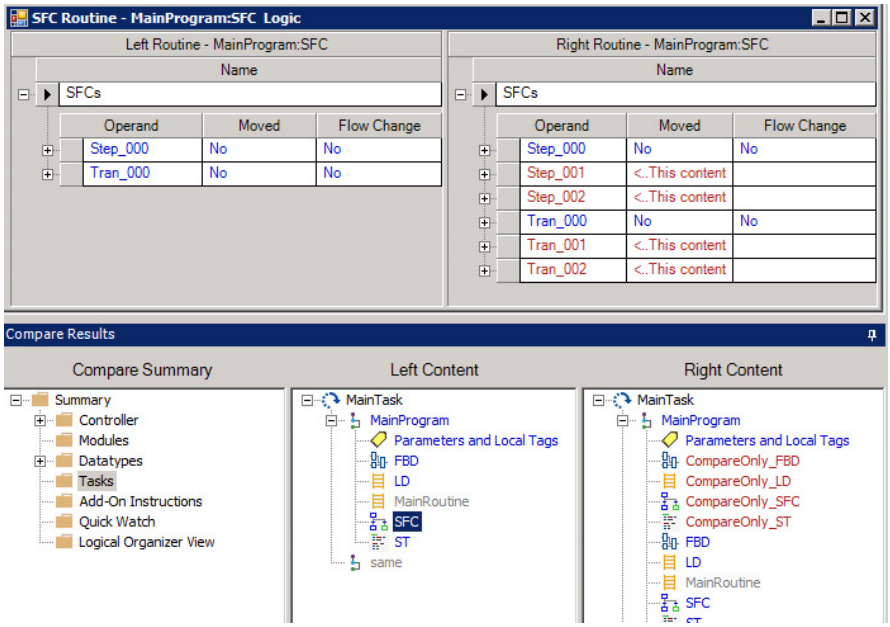
Sequential Function Chart differences

SFC differences are shown in tabular form like Function Block Diagrams. The results table identifies all SFC items that did not match. As with other views, differences in common items are shown in blue; items found in a single project are red. Top-level items are as follows:

- Steps
- Transitions
- Stops

You can see additional details for specific items by expanding an item's tree. Similar items between the Left and Right views may not line up with each other (that is, there is no synchronization between the views).

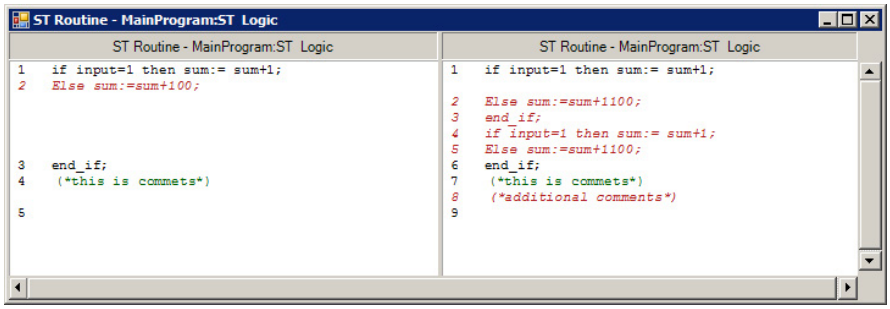
Some SFC items can contain embedded structured text. When structured text is used in SFC, the logic is compared. When differences are found, you will see the name of the structured text property (for example, Preset STX Content) and next to it, the text <click to view>. Clicking the text brings up a structured text compare view like that described in the ST section.



Structured Text differences

Structured Text routines are compared by line. Differences are shown in **red**.

You can include or exclude Structured Text comments and descriptions.

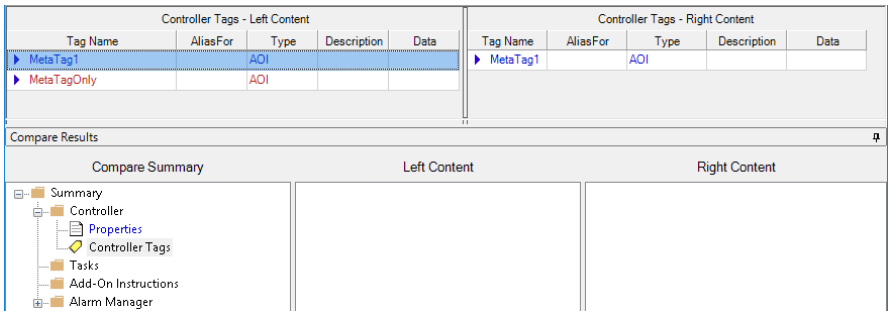


Tag differences

When differences exist, an icon appears under the controller folder in **Compare Summary**. Double-click **Controller Tags** to view tag differences in details.

The Compare Tool application compares the meta data of new tags supported by process controller, like Area and Instruction. Those meta data can be merged with the tags together. In this example, there are some items that are common between the two projects (note the blue text). The left content has a

MetaTagOnly tag that does not exist in the Compare project (note the red text).



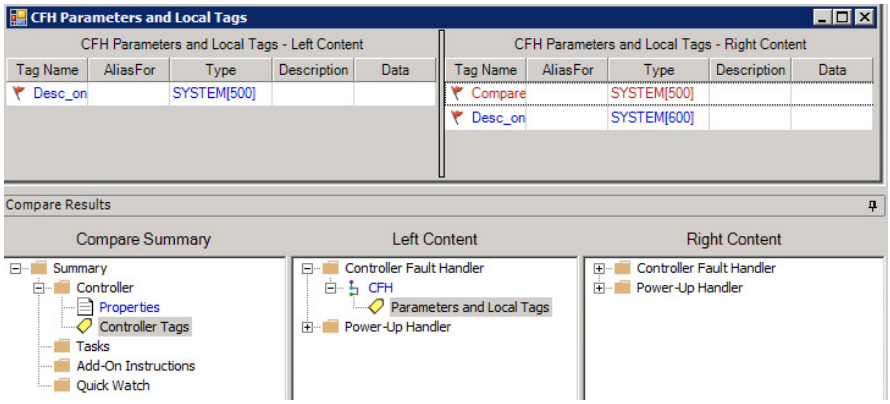
Large tag compare

When the number of tag members is larger than the default maximum amount, Logix Designer Compare Tool will skip the compare of the tag data and mark it with a red flag.

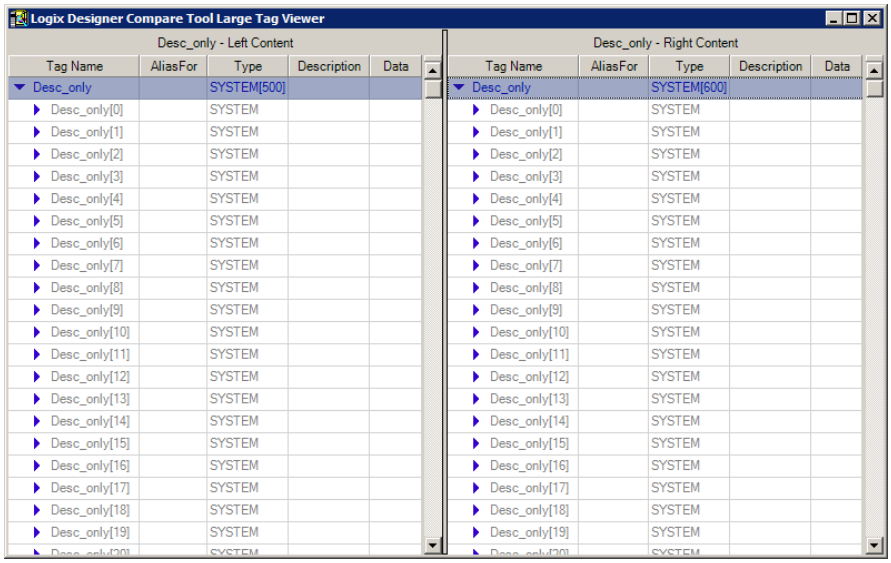
The default value is 1000 with unit 10 tag members. That means the maximum supported number of tag members is 10000.

Tip: If you meet an insufficient memory message during comparing large tag, change the **MaxSupportedTagMembers** value of **Parse.config** to another amount lower than 1000 and try again. For details about Parse.config, refer to *Set Global Exclude*.

In this example, there are multiple large tags in the two projects. The Compare Tool application skips the compare of these tags and marks them with red flags.

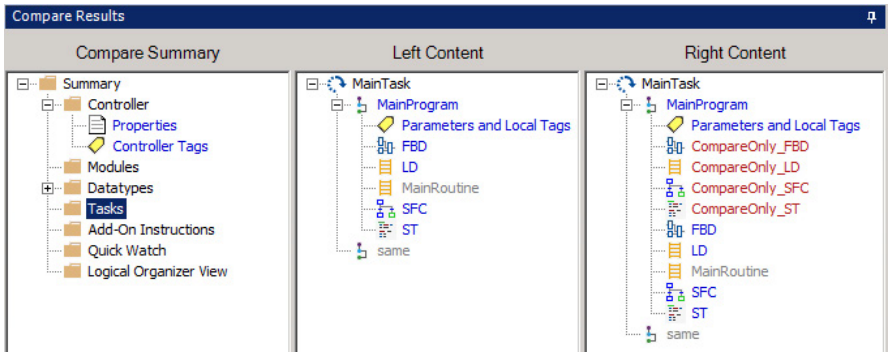


In the tabular view list, after you click the **Tag Name** cell of a tag, Compare Tool will compare the differences and show the results in the Logix Designer Compare Tool Large Tag Viewer window.

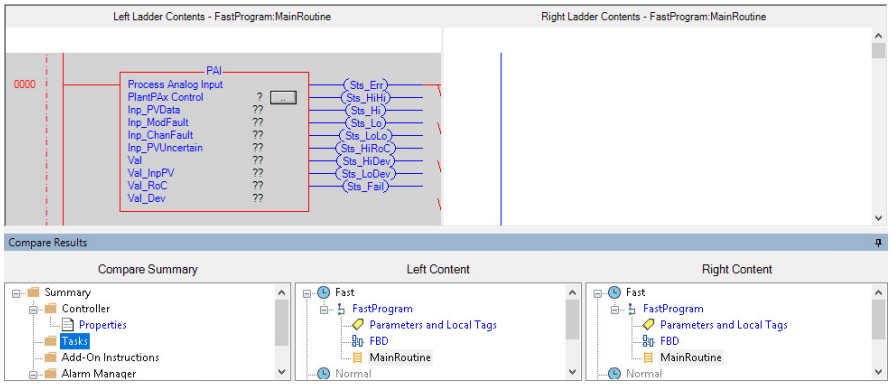


Task differences

Task differences include task properties or differences in a program's structure.



The Compare Tool application supports comparing and displaying the PlantPAx process instructions. In this example, The left content has a PAI instruction that does not exist in the MainRoutine of Compare project (see the red box).



License protected Add-On Instructions and routines comparison

The following table describes the different comparison results of license protected Add-On Instructions and Routines with or without a license.

Projects	License protected components		Compare with a license	Compare without a license
Compact GuardLogix® 5370 Safety Controller, CompactLogix° 5370 Controller, ControlLogix® 5570 Controller, and GuardLogix® 5570 Safety Controller projects	Routine or Add-On Instructions		The license protected routines or Add-On Instructions can be compared.	The comparison of license protected routines or Add-On Instructions will fail.
Compact GuardLogix 5380 Safety Controller, CompactLogix 5380 Controller, CompactLogix 5480 Controller, ControlLogix 5580 Controller, and GuardLogix 5580 Safety Controller projects	Routines	Locked	If the license protected routine only exists in one project, it will be marked as Content Protected in the compare result. If the license protected routines of the same type exist in two projects, they will be treated as the same and will not show in the compare result.	The license protected routines will not be compared.
	Add-On Instructions	Locked	If the license protected Add-On Instructions only exist in one project, it will be marked as Content Protected in the compare result. If the license protected Add-On Instructions exist in two projects, the encrypted attributes will not be compared.	
	Routines or Add-On Instructions	Unlocked	The license protected routines or Add-On Instructions can be compared.	The comparison of license protected routines or Add-On Instructions will fail.

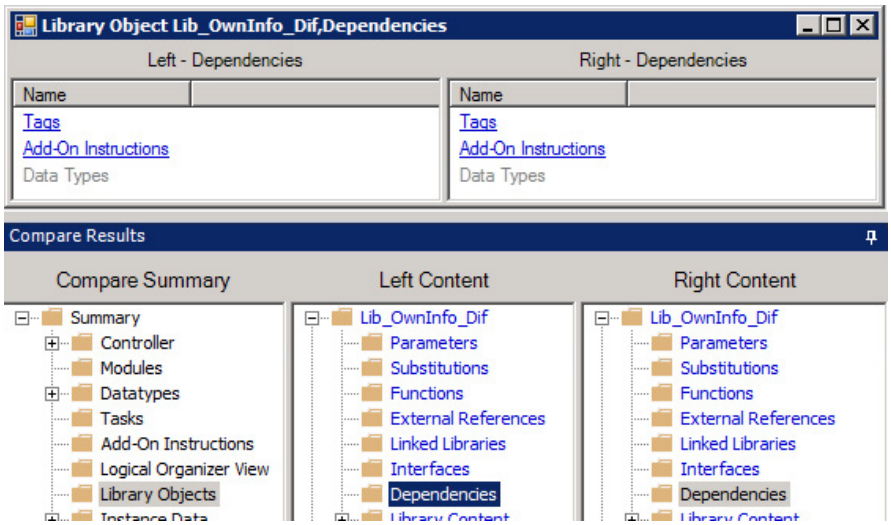
Supported Library compares

During the comparison of project files with Libraries, the following Library Object data and Instance Data are extracted from the Logix Designer contents and compared separately:

- Library configuration information
  - Dependencies on page 44
  - External references on page 45
  - Functions on page 46
  - Interfaces on page 47
  - Linked Libraries on page 47
  - Parameters on page 56
  - Substitutions on page 56
- Logix Designer components belonged to the Library
- Library Object attributes of Logix Designer components
- Instance Data
  - Instance Libraries
  - Instance Objects

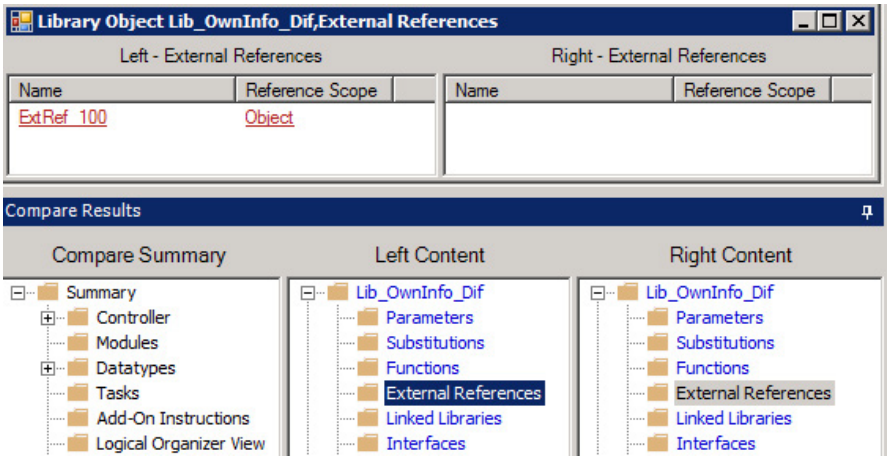
Dependencies differences

The following example shows the Dependencies differences. The compared items of Dependencies include Tags, Add-On Instructions, and Data Types. You can click each item to view its content differences and library links differences.

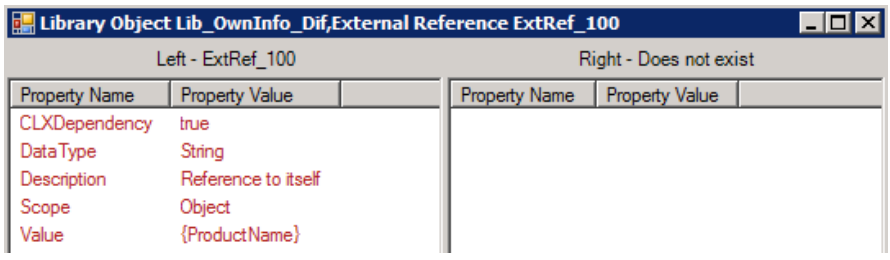


External References differences

This example shows the External References differences.

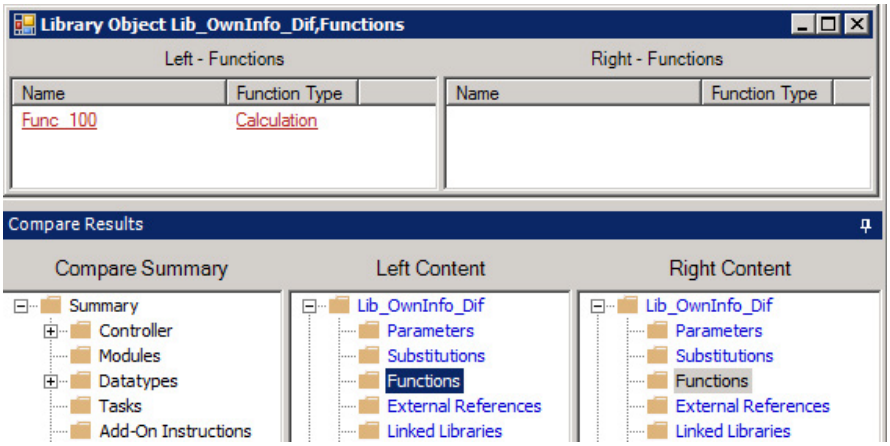


To bring out the detailed report, select **ExtRef100** or **Object**.

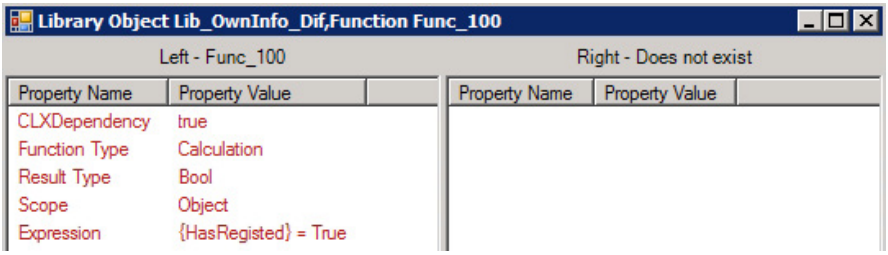


Functions differences

This example shows the Functions differences.



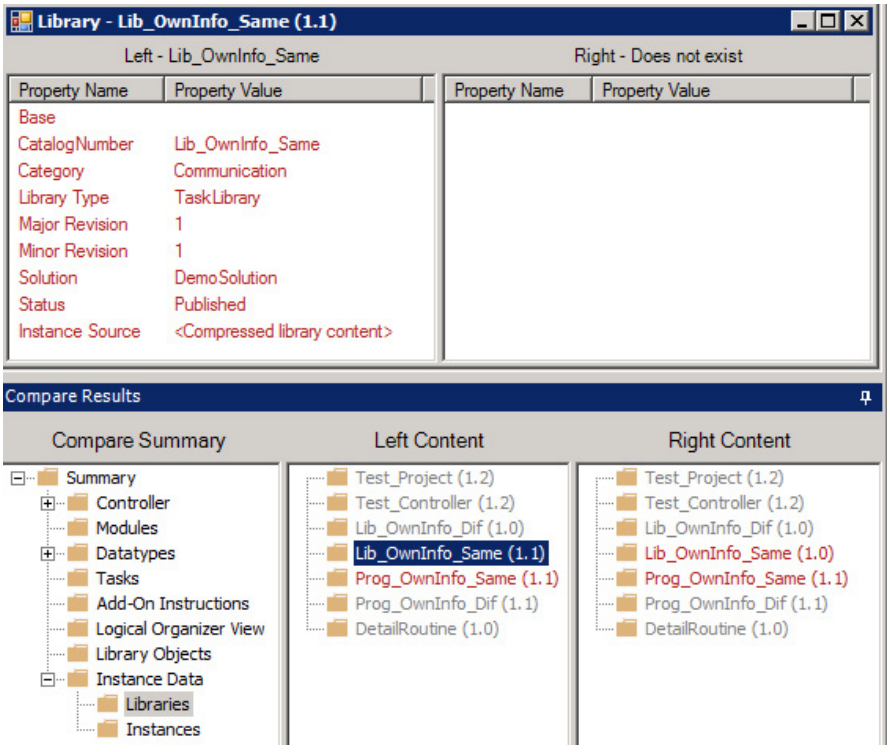
To bring out the detailed report, select **Func 100** or **Calculation**.



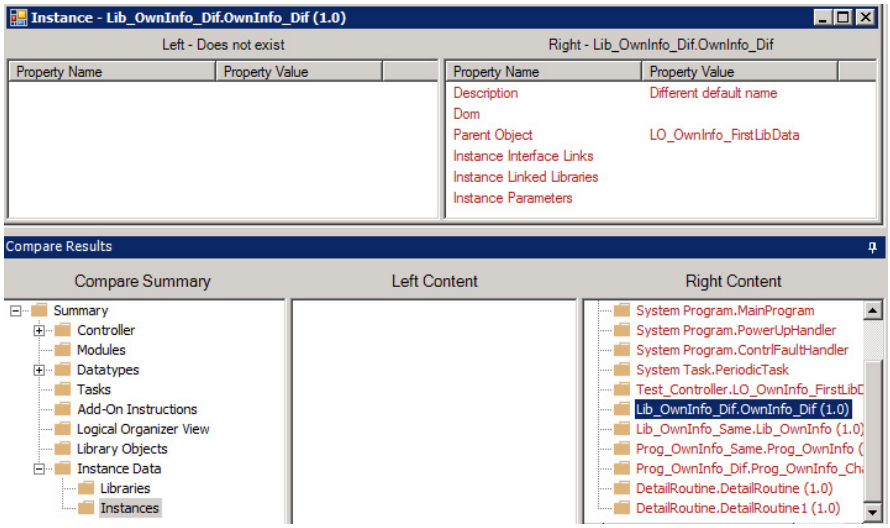
Instance Data differences

During the comparison of project files with Instance Data, the Instance Data is processed, compared, and shown in a separate section. The Instance Data includes Instance Libraries and Instance Objects.

This is an example of the Libraries differences. To see the detailed report, double-click **Lib_OwnInfo_Same**.

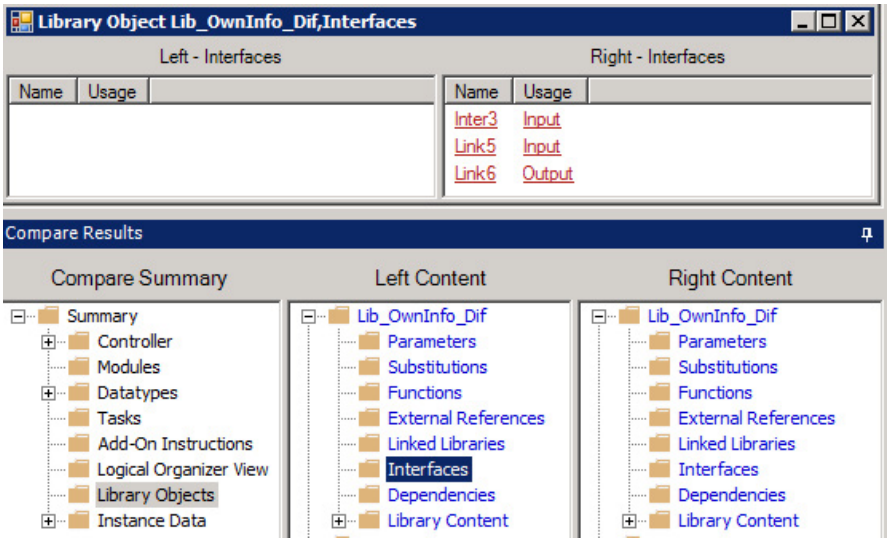


This is an example of the Instance differences. To see the detailed report, double-click **Lib_OwnInfo_Dif.OwnInfo_Dif (1.0)**.

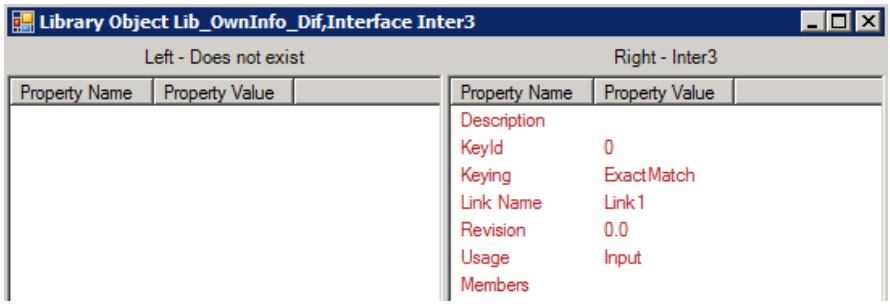


Interfaces differences

This example shows the Interfaces differences.



To view the detailed report, select **Link3**.

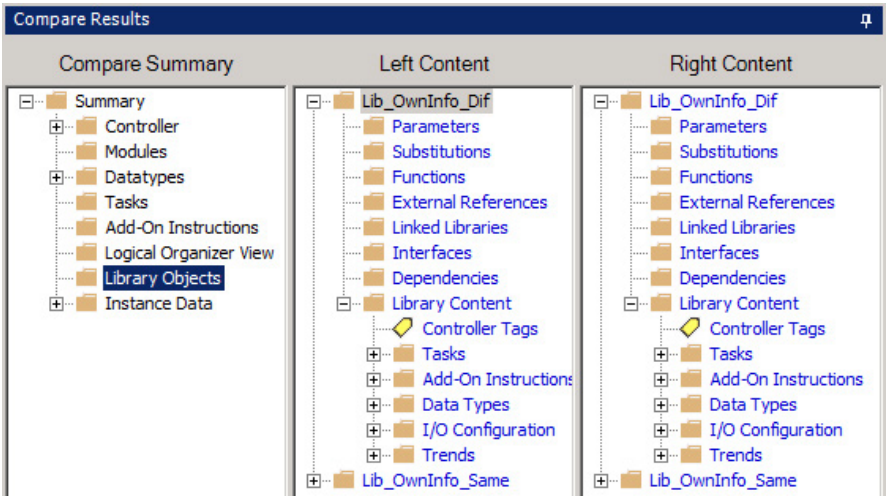


Libraries differences

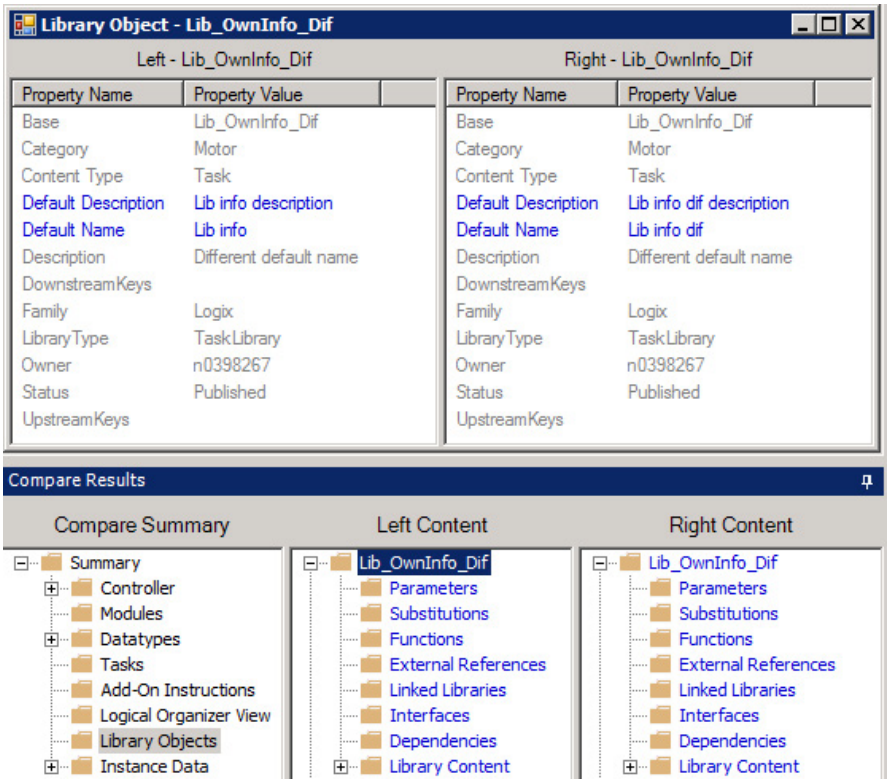
During comparison, the Library Objects data is extracted, compared, and shown separately. The comparison result of the Library Objects data is included in the **Library Objects** folder.

Click **Library Objects** to view the differences of libraries between the two projects.

In this example, Library Content includes the Logix Designer components belonged to the Library. You can compare the Logix Designer component differences and view the Library Object attributes of each component.



This example shows the differences of the Lib_OwnInfo_Dif Library. Double-click **Lib_OwnInfo_Dif** folder to view the detailed report.



Library Object attribute differences of Logix Designer components

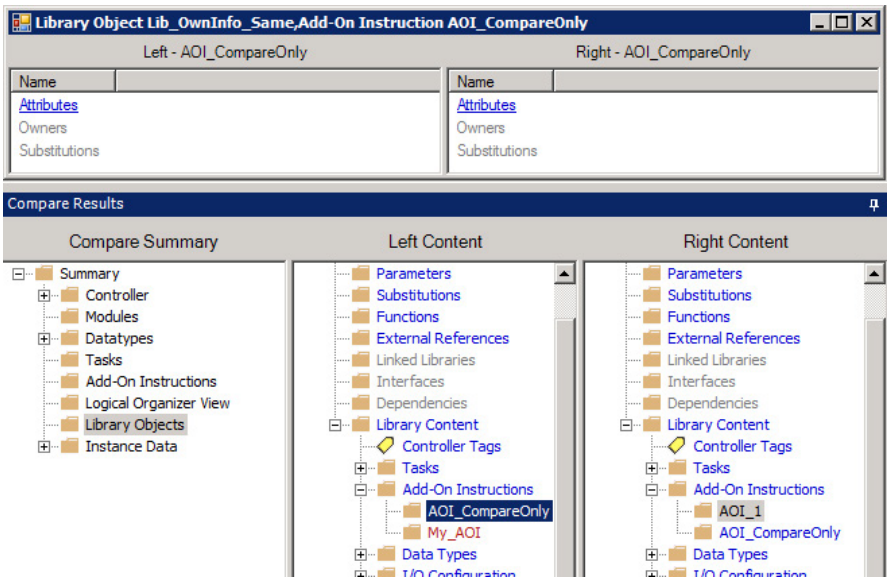
During the Library Object data comparison, these Library Object attributes of the Logix Designer components are compared:

- Add-On Instructions on page 49
- Data Types on page 49
- Function Block Diagram on page 50
- I/O Configuration on page 50
- Ladder Logic on page 51

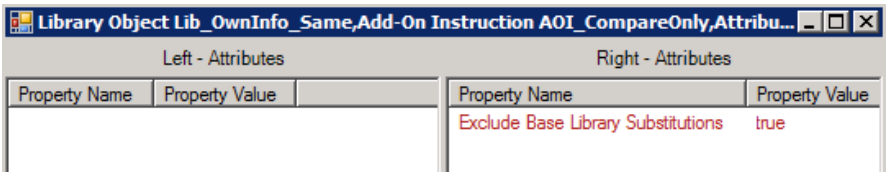
- Program on page 52
- Sequential Function Chart on page 52
- Structured Text on page 53
- Tag on page 54
- Task on page 54
- Trend on page 55

Library Object attribute differences: Add-On Instructions

This is an example of Library Object attribute differences of Add-On Instructions.

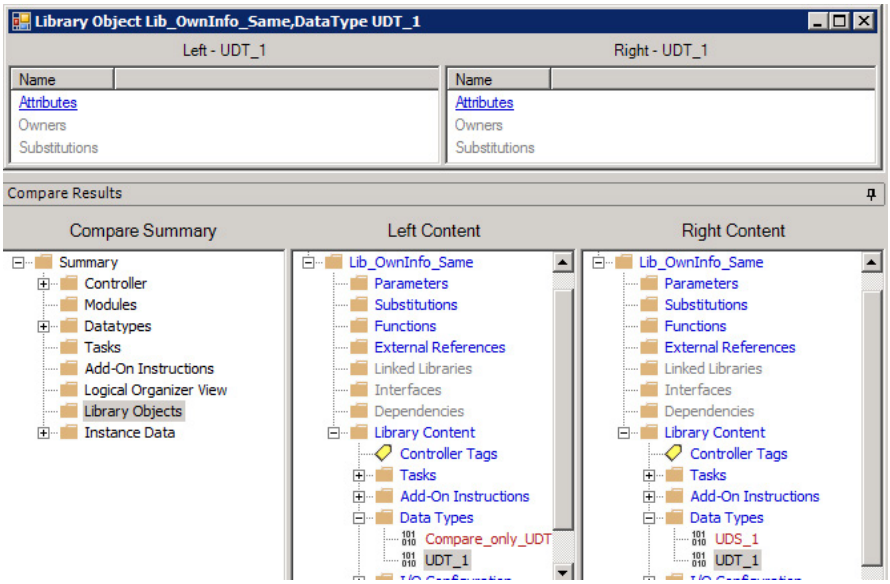


To see the detailed attribute report, select **Attributes**.

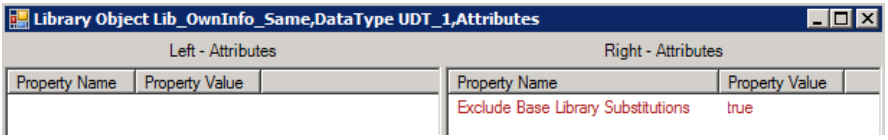


Library Object attribute differences: Data Types

Expand the **Data Types** folder to view the Data Types attribute differences.

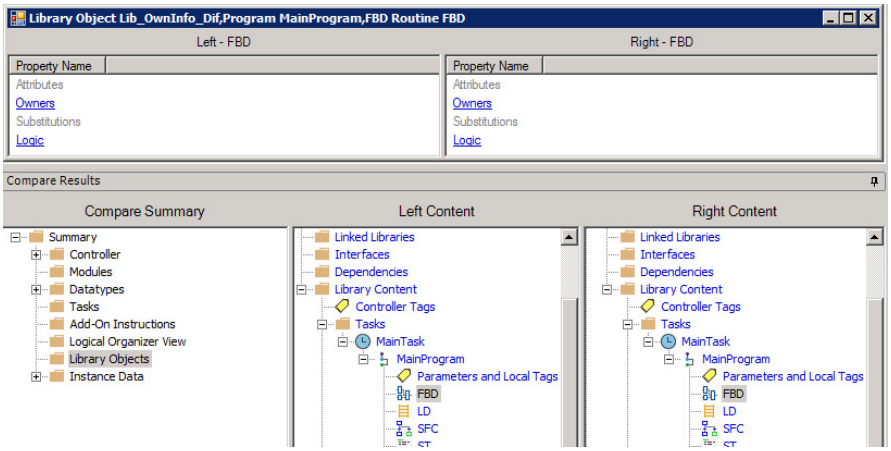


Double-click **UDT_1**, and then click **Attributes** to view the detailed report.

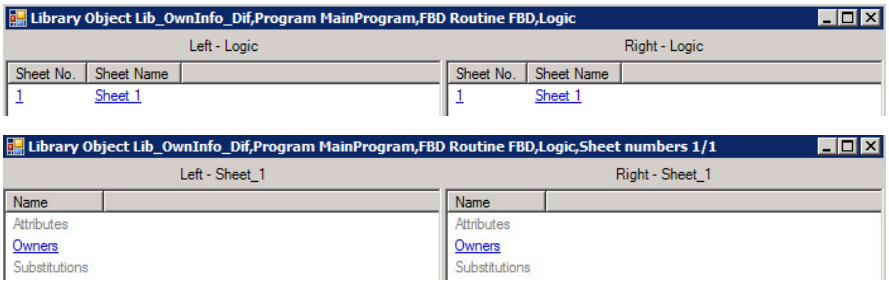


Library Object attribute differences: Function Block Diagram

This is an example of Library Object attribute differences of Function Block Diagram.

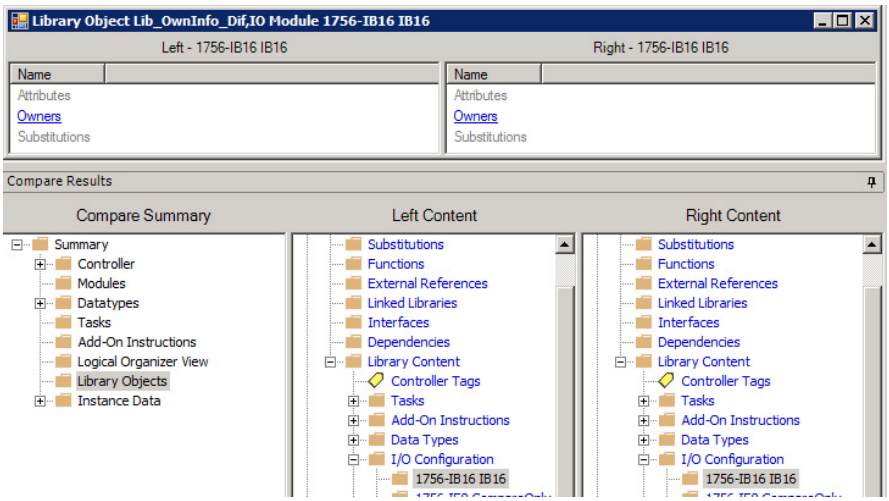


Double-click **FBD**, and then click **Logic** to view the detailed report. You might drill in multiple levels before the attribute you want to view is shown.



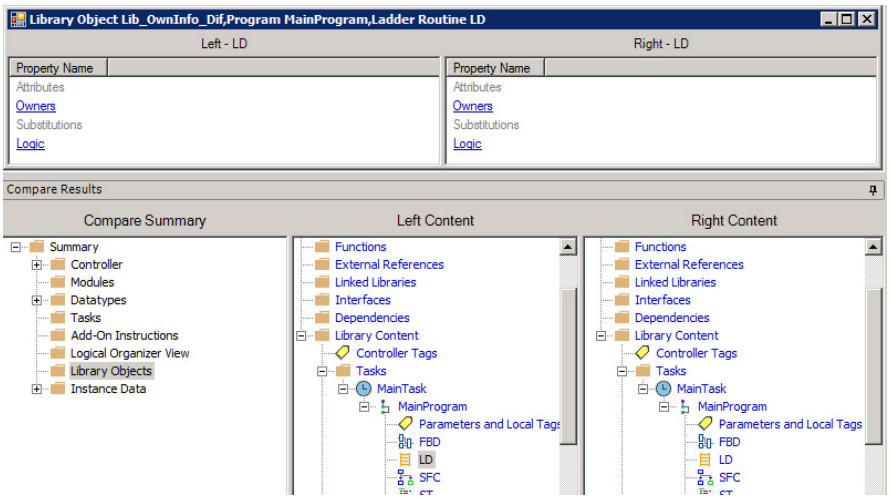
Library Object attribute differences: I/O Configuration

This example shows the Library Object attribute differences of I/O Configuration. Expand the **I/O Configuration** folder, and then double-click **1756-IB16IB16** to view the different items. You can click each item to view the detailed report.

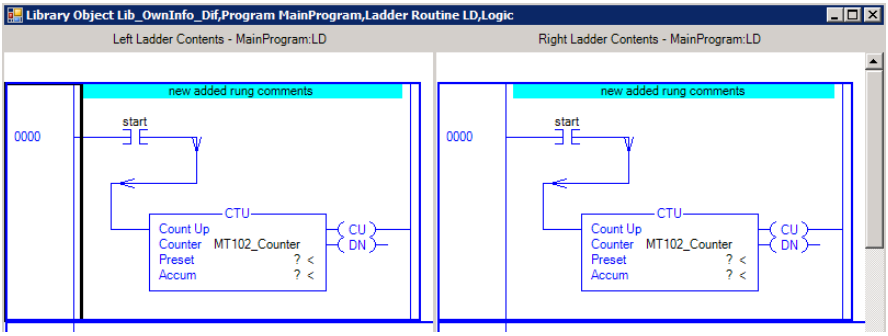


Library Object attribute differences: Ladder Logic

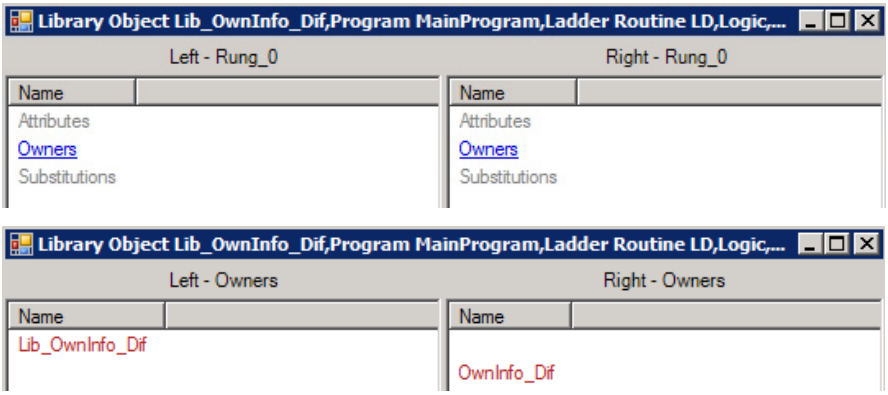
This example shows the Library Object attribute differences of Ladder Logic.



Double-click **LD**, and then click **Owners** or **Logic** to view the detailed report. This example shows the rung attribute differences by clicking **Logic**.

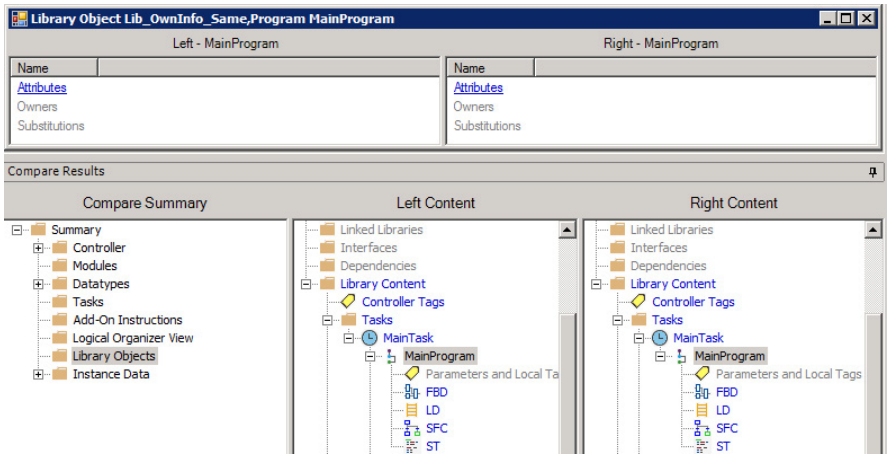


Click either rung to view the Library Object attribute differences. Click **Owners** to show the detailed report.

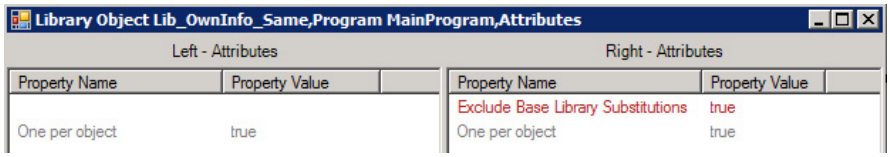


Library Object attribute differences: Program

This example shows the Library Object attribute differences of Program. Double-click **MainProgram** to view the summary of Library Object attribute differences.

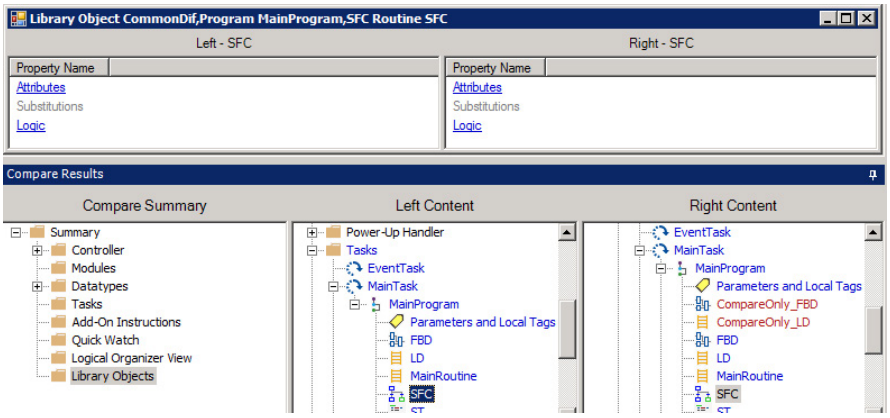


Click **Attributes** to bring out the detailed report.

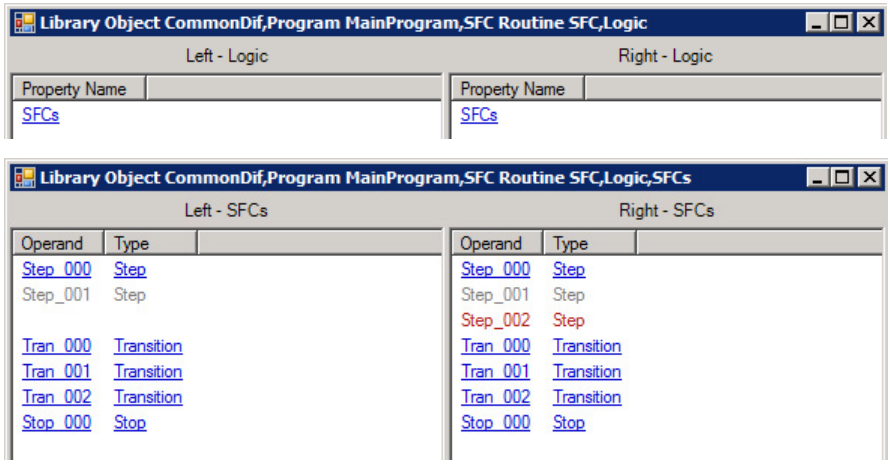


Library Object attribute differences: Sequential Function Chart

This example shows the Library Object attribute differences of Sequential Function Chart. Click **Attributes** or **Logic** to view the Library Object attribute differences.

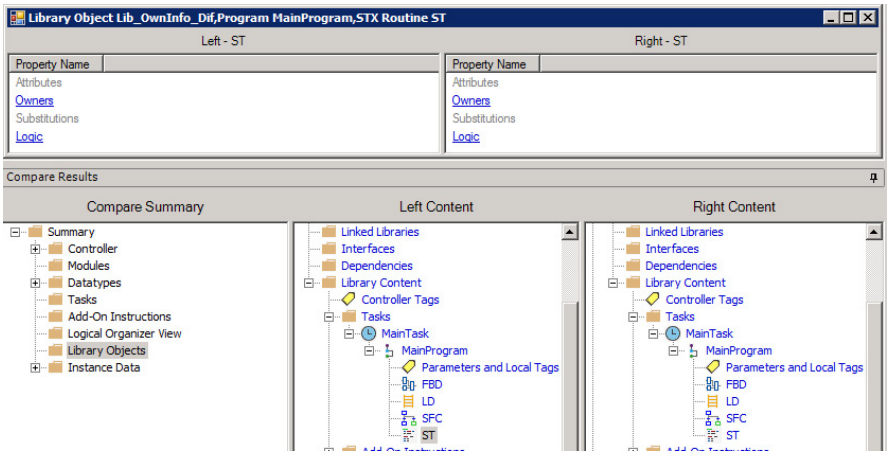


Click **Logic** to view the attribute differences of SFC's Steps, Transitions, and Stops items. Click each item to drill in until the attribute is shown.

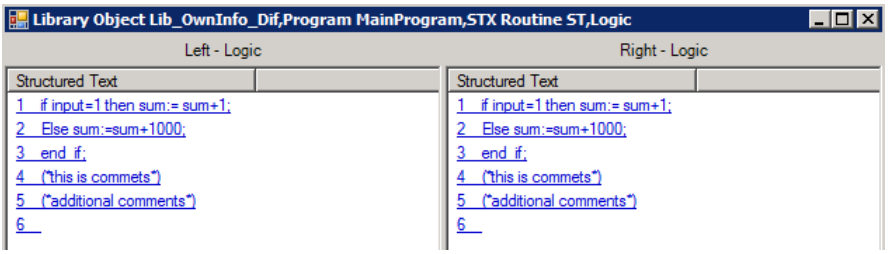


Library Object attribute differences: Structured Text

This example shows the Library Object attribute differences of Structured Text.

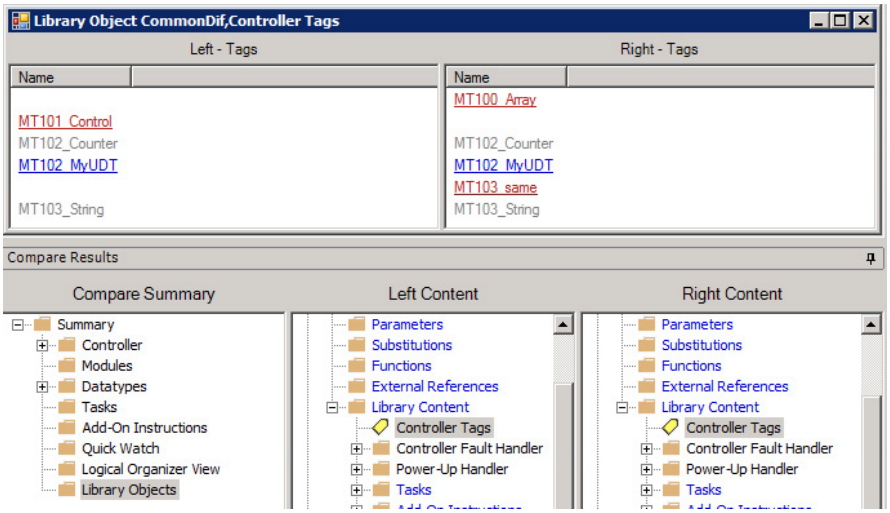


To view the detailed attribute differences for each line in the Structured Text, click **Logic**, and then drill in each line until the attribute is shown.



Library Object attribute differences: Tag

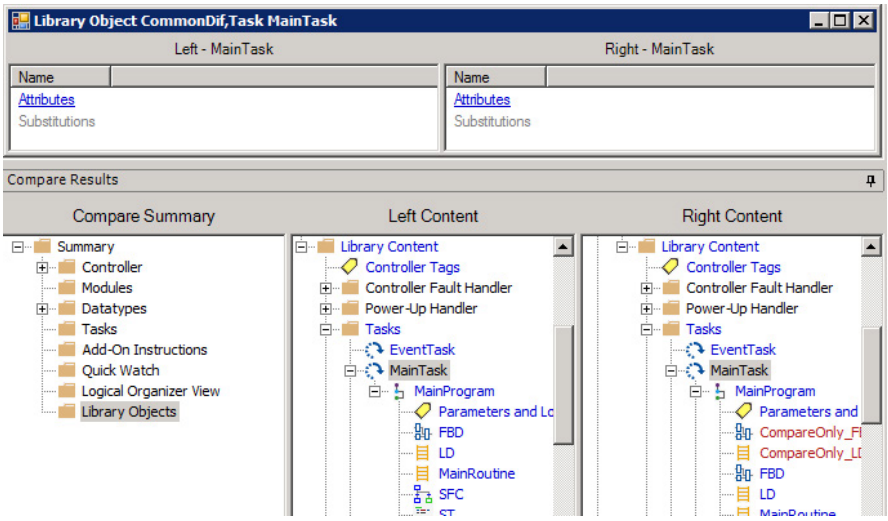
This example shows the Library Object attribute differences of Tag.



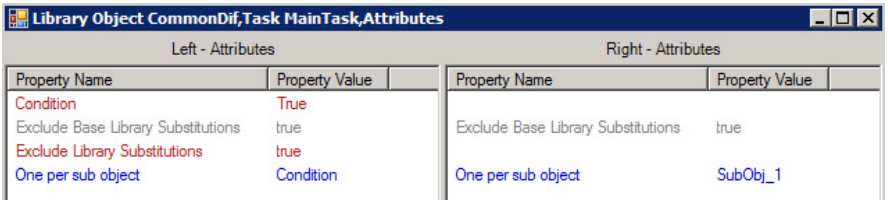
In this example, the MT102_MyUDT tag includes Attributes and Tag Value Expressions. Click either item to view the detailed report.

Library Object attribute differences: Task

This example shows the Library Object attribute differences of Task.

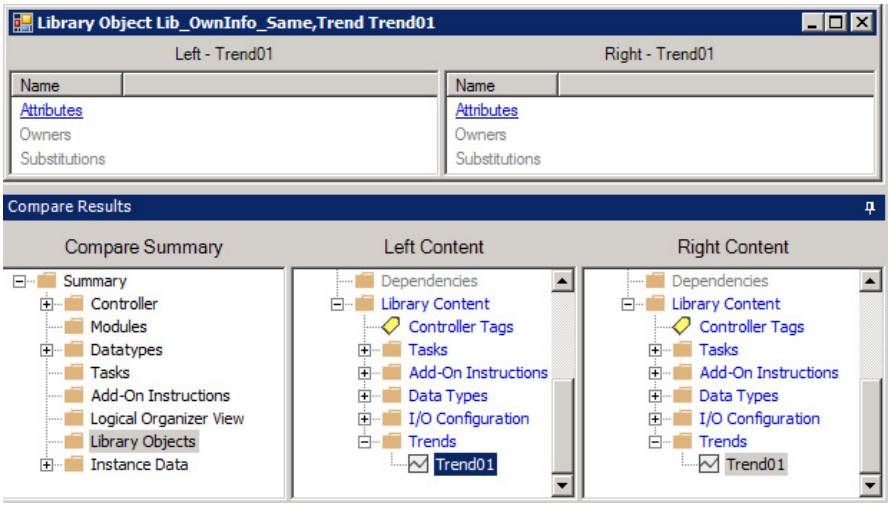


Double-click **MainTask**, and then click **Attributes** to view the detailed report.

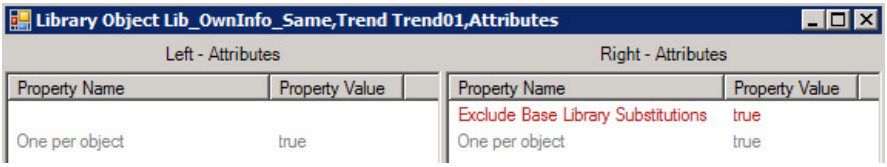


Library Object attribute differences: Trend

This example shows the Library Object attribute differences of Trend.

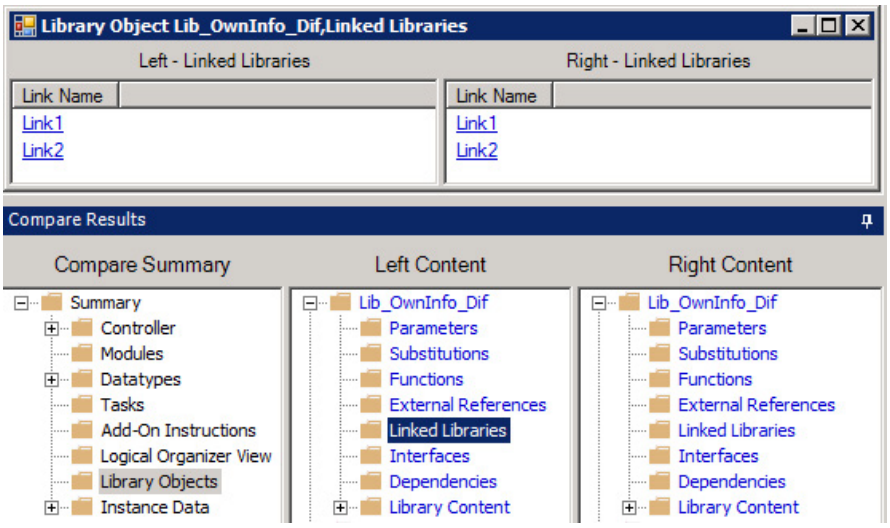


Double-click **Trend01**, and then click **Attributes** to view the detailed report.

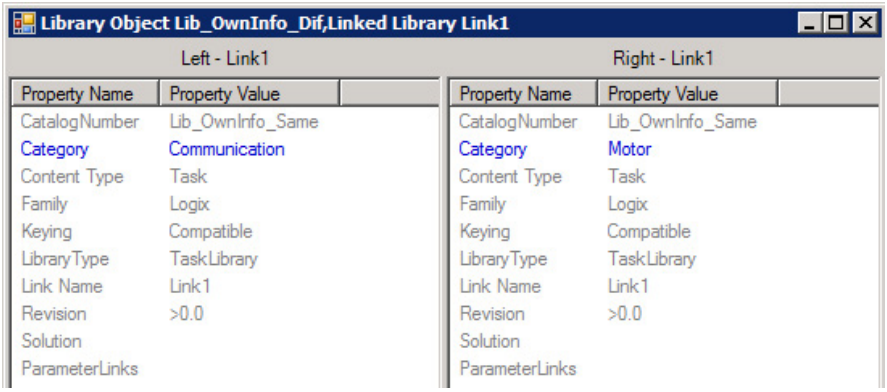


Linked Libraries differences

This example shows the Linked Libraries differences.

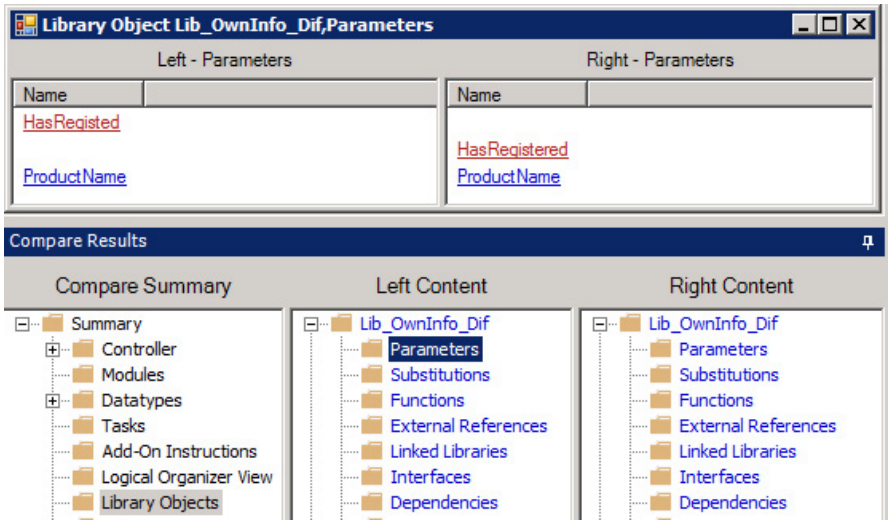


Select **Link1** to bring out the detailed report.

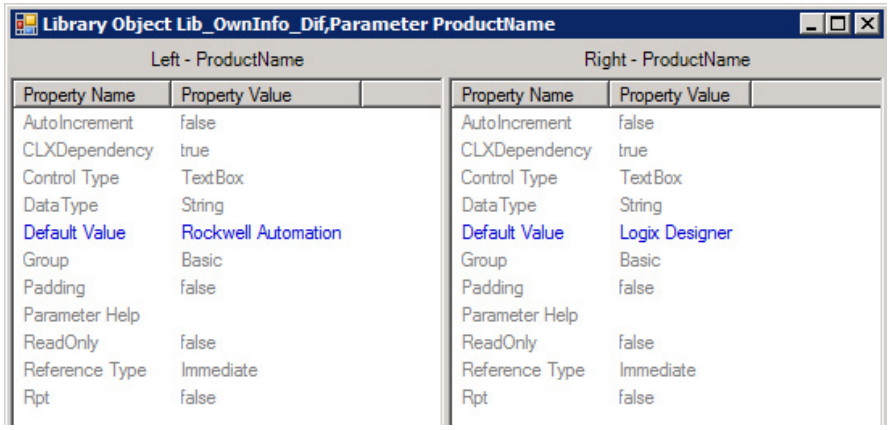


Parameters differences

Double-click **Parameters** to view its differences. Click each item to view the detailed report.

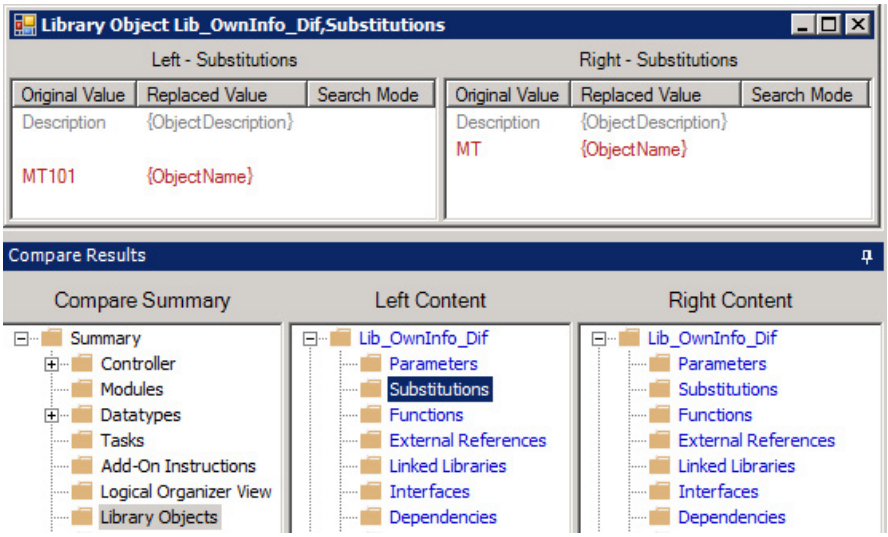


This example shows the detailed report of the "ProductName" item.



Substitutions differences

Double-click **Substitutions** to view the detailed differences.



Master-instance compare results window

Master-instance compare results window

Once the master and instance components comparison completes, the compare results show in a dedicated window, which is different from that of project-to-project comparisons. The master-instance compare results window includes:

- Master-Instance Pairs pane
- Master Component pane
- Instance Component pane
- Detailed difference report

Information shown in the window is color-coded:

- **Red** - Indicates items that exist in one component but not the other.
- **Blue** - Indicates items that are common between the two components, but have a difference.
- **Black** - Indicates common items that contain child elements.
- **Gray** - Indicates common items in which no differences are found.

Master-Instance Pairs pane

The **Master-Instance Pairs** pane lists the master components and corresponding instance components. All the instance components are listed as child items of the master component, and are compared with the master components respectively. On this pane, you can do the following:

- To view the compare summary, click .
- To view the compare result, click an instance component.
- To view the full path and the structural information of a component, point to it.
- To print a compare report of one master component with its corresponding instance components, right-click the master component, and then select **PDF Report**. To print a compare report of all the master and instance components, select **File > Generate Report**.

Master Component pane

The **Master Component** pane shows information specific to the master component once any of its corresponding instance components is selected.

Instance Component pane

The **Instance Component** pane shows information specific to the selected instance component.

Detailed difference report

The report shows the detailed differences between the master and instance components.

About Logix Designer Merge Tool

About Logix Designer Merge Tool

Logix Designer Merge Tool compares two or three Logix Designer projects (ACD, L5K, or L5X) and combines changes from different projects into the output project. You can perform a two-way merge (a merge of two project files) or a three-way merge (a merge of three project files). With the Merge Tool, you can merge project elements like tasks, programs, routines, modules, user-defined data types, parameter connections, tags, Add-On Instructions, trends, and controller properties.

Because Studio 5000 Logix Designer supports the exportation of multiple components with the same component type, the Merge Tool supports single-to-single, single-to-multiple, and multiple-to-multiple component merge. If the component types in the L5X files are different, you cannot proceed due to unmatched component types.

The Merge Tool also allows you to perform two-way or three-way merge with command-line parameters. In the command-line mode, if the projects to be merged have no unresolved items as a result of the default selections, the **Save as** dialog box opens directly for you to save the merge result project.

For project files including Library Objects created with the Application Code Manager Library Designer, the Merge Tool also supports the merge of Library Objects data on the Library level. The merge of Instanced Library Objects is not supported.

Before merging project files, the tool compares the different items of the two or three project files.

- For two-way merge on page 60, the contents are merged from the right project into the left project, which is assumed as the base project.
- For three-way merge on page 61, the contents are merged from the right or center project into the left project. The left project is assumed as the base project, and the center project the original project.

After the comparison completes, a merge result project is constructed automatically. All items only existing in the left or right project are resolved items, which are merged into the result project. All conflict items are unresolved items, which need definite selection.

Project Merge dialog box

How do I open the Project Merge dialog box?

- On the menu bar, select **File > New > Project Merge**.

  or

- On the toolbar, select if you are in the Compare Tool window or select if you are in the Merge Tool window.

Use the **Project Merge** dialog box to merge two or three full Logix Designer project files or partial L5X files.

For partial merge, the Merge Tool only supports single module merges. Force data can be exported with different data formats depending on the Logix Designer versions. In partial merge, only force data of the same format can be merged. When merging force data with different formats, a dialog box opens, which allows you to cancel the merge or continue to merge without force data.

Tip: For both two-way and three-way merges, the project file versions must be version 17 or higher. The version of the left project file must be equal to or higher than the version of the right project file and the center project file (if in three-way merge mode).

With the merge tool, you can:

- Use the breadcrumb navigation bar to locate conflict items during the merge operation.
- Navigate to items marked in different colors to view detailed differences.
- Select the contents on the left, center, or right project to resolve unresolved items.
- Save the result project in the ACD, L5K, or L5X format, which can be opened with the Logix Designer application.

See also

About unresolved items on page 73

Logix Designer Merge Tool results window on page 69

Merge two project files

Use Logix Designer Merge Tool to merge two entire Logix Designer project files or two partial L5X files exported with single or multiple components.

Tip: To merge the two project files you compared, in the **Logix Designer Compare Tool** window, select **File > Merge** or select . If you compared the projects with the **Include tags** checkbox cleared, an error message displays before the merge starts, indicating that the excluded tags will be needed for the merge. Select **OK** to start the merge with all the tags included.

To perform a two-way merge

1. Open **Project Merge** by using one of these methods:
   - On the menu bar, select **File > New > Project Merge**.
   - On the toolbar, select if you are in the Compare Tool window or select if you are in the Merge Tool window.
2. Specify the project files to be merged in these boxes:
   - **Left Content**
   - **Right Content**

Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.

3. Select **OK** to start the two-way merge.
4. (optional) Select to save the merge result project as an ACD, L5K, or L5X file.

   Tip: Before saving a merge project, make sure that all unresolved items are resolved.

Merge three project files

Use Logix Designer Merge Tool to merge three entire Logix Designer project files or three partial L5X files exported with single or multiple components.

To perform a three-way merge

1. Open **Project Merge** by using one of these methods:
   - On the menu bar, select **File > New > Project Merge**.
   - On the toolbar, select if you are in the Compare Tool window or select if you are in the Merge Tool window.
2. In **Project Merge**, select the **Include original content** checkbox.

   Tip: By default, **Include original content** is not selected and the **Original Content** box is not available, which means you can only start a two-way merge.
3. Specify the project files to be merged in these boxes:
   - **Left Content**
   - **Right Content**
   - **Original Content**

   Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.
4. Select **OK** to start the three-way merge.
5. (optional) Select to save the merge result project as an ACD, L5K, or L5X file.

   Tip: Before saving a merge project, make sure that all unresolved items are resolved.

Settings in the Project Merge dialog box

The **Project Merge** dialog box includes these settings:

Setting	Description
Left Content	Specify the full path of the ACD, L5K, or L5X file that shows on the left side of the merge.
Right Content	Specify the full path of the ACD, L5K, or L5X file that shows on the right side of the merge.
Include original content	Select to turn on the **Original Content** box that is used to specify the original content of the merge.
Original Content	Specify the full path of the ACD, L5K, or L5X file as the original content of the merge. Select **Include original content** to turn on this box.

Logix Definition Merge dialog box

How do I open the Logix Definition Merge dialog box?

- On the menu bar, select **File > New > Logix Definition Merge**.

Use the **Logix Definition Merge** dialog box to merge Logix definitions only, which are Add-On Instructions and User-defined Data Types. Alarm definitions associated with Add-On Instructions and User-defined Data Types are also included in the merge operation. Other components are not compared or merged.

Merge two Logix definitions

Use Logix Designer Merge Tool to merge two Logix definitions in the project files.

Tip: To merge the two Logix definitions that you compared, in the Logix Designer Compare Tool window, select **File > Merge** or select .

To merge two Logix definitions

1. On the menu bar, select **File > New > Logix Definition Merge**.
2. Specify the project files to be merged in these boxes:
   - **Left Content**
   - **Right Content**

     Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.
3. Select **OK** to start the merge of two Logix definitions.
4. (optional) Select to save the merge result project as an ACD, L5K, or L5X file.

   Tip: Before saving a merge project, make sure that all unresolved items are resolved.

Merge three Logix definitions

Use Loigx Designer Merge Tool to merge three Logix definitions in the project files.

To merge three Logix definitions

1. On the menu bar, select **File > New > Logix Definition Merge**.
2. In **Project Merge**, select the **Include original content** checkbox.

   Tip: By default, **Include original content** is not selected and the **Original Content** checkbox is not available, which means you can only start a two-way merge.
3. Specify the project files to be merged in these boxes:
   - **Left Content**
   - **Right Content**
   - **Original Content**

     Tip: Enter the full path of the project file or select (Browse) to locate the ACD, L5K, or L5X file on the hard drive or network.
4. Select **OK** to start the merge of three Logix definitions.
5. (optional) Select to save the merge result project as an ACD, L5K, or L5X file.

Tip: Before saving a merge project, make sure that all unresolved items are resolved.

Settings in the Logix Definition Merge dialog box

The **Logix Definition Merge** dialog box includes these settings:

Setting	Description
Left Content	Specify the full path of the ACD, L5K, or L5X file that shows on the left side of the merge.
Right Content	Specify the full path of the ACD, L5K, or L5X file that shows on the right side of the merge.
Include original content	Select to turn on the **Original Content** box that is used to specify the original content of the merge.
Original Content	Specify the full path of the ACD, L5K, or L5X file as the original content of the merge. Select **Include original content** to turn on this box.

Supported command-line merge operations

Use command-line parameters to merge two project files

Logix Designer Merge Tool supports using command-line parameters to merge two or three project files without interacting with the user interface.

Logix Designer Merge Tool supports using command-line parameters to merge two project files.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

To merge two project files with command lines

1. Open the **Windows Command Prompt** window.
2. Enter commands to specify the merge parameters, each of which are separated by a space.

a. Specify the use of the Compare Tool.

```
RSLCompare
```

b. Specify the merge command.

```
-m
```

c. Specify the path and file name of the left project.

For example,
`"C:\Users\Public\Documents\Project_base.ACD"`

d. Specify the path and file name of the right project.

For example,
`"C:\Users\Public\Documents\Project_compare.ACD"`

e. (optional) Specify the use of title name for each project in the Merge Tool window.

Tip: This function is only supported in the command-line mode.

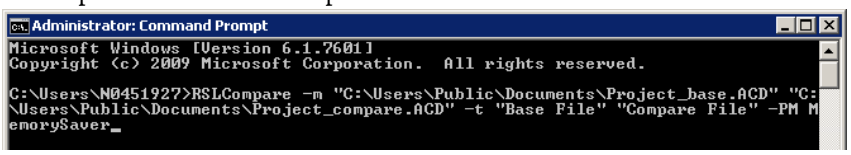
For example, `-t "Base File" "Compare File"`

f. (optional) Define the performance mode for the comparing process as **Fastest Compare** that shortens comparing time with a potential of running out of memory or **Memory Saver** that saves memory occupation with a potential of increasing comparing time.

Tip: This must be the last command-line parameter in the entire command line. If you don't use this parameter, the performance mode will be the one set on the menu bar through **Options > Performance**.

- For the **Fastest Compare** mode: `-PM FastestCompare`
- For the **Memory Saver** mode: `-PM MemorySaver`

This is an example of the complete command lines with the **Memory Saver** performance mode specified.



3. Press **Enter**.

Use command-line parameters to merge three project files

Logix Designer Merge Tool supports using command-line parameters to merge three project files. When specifying the path and file name of the projects to merge or the title names for each project, make sure to do it in the sequential order of left, right, and center projects.

Tip: Command-line parameters are case-insensitive. If a specified value includes a space, you must enclose the value in quotation marks (for example, "value with spaces").

To merge three project files with command lines

1. Open the **Windows Command Prompt** window.
2. Enter commands to specify the merge parameters, each of which are separated by space.

a. Specify the use of the Compare Tool.

```
RSLCompare
```

b. Specify the merge command.

```
-m
```

c. Specify the path and file name of the left project.

For example,
`"C:\Users\Public\Documents\Project_base.ACD"`

d. Specify the path and file name of the right project.

For example,
`"C:\Users\Public\Documents\Project_compare.ACD"`

e. Specify the path and file name of the center project.

For example,
`"C:\Users\Public\Documents\Project_center.ACD"`

f. (optional) Specify the use of title name for each project in the Merge Tool window.

Tip: This function is only supported in the command-line mode.

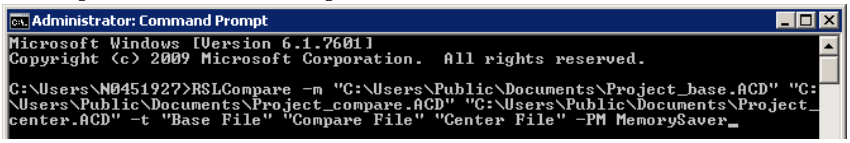
For example, `-t "Base File" "Compare File" "Center File"`

g. (optional) Define the performance mode to use for the comparing process as **Fastest Compare** that shortens comparing time with a potential of running out of memory or **Memory Saver** that saves memory occupation with a potential of increasing comparing time.

Tip: This needs to be the last command-line parameter in the entire command line. If you don't use this parameter, the performance mode will be the one set on the menu bar through **Options > Performance**.

- For the **Fastest Compare** mode: `-PM FastestCompare`
- For the **Memory Saver** mode: `-PM MemorySaver`

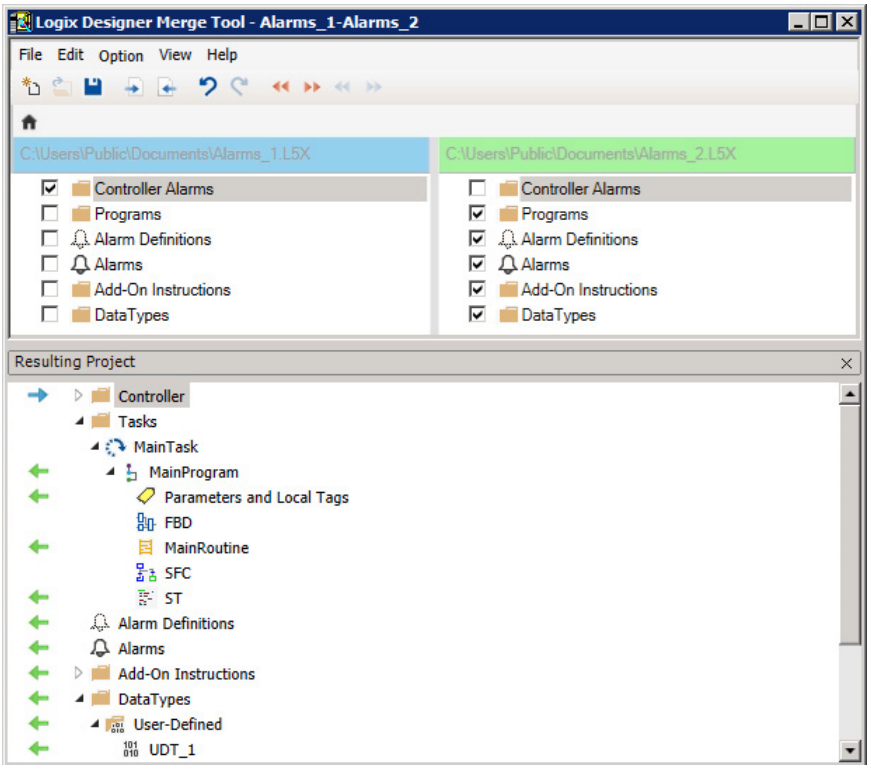
This is an example of the complete command lines with the **Memory Saver** performance mode specified.



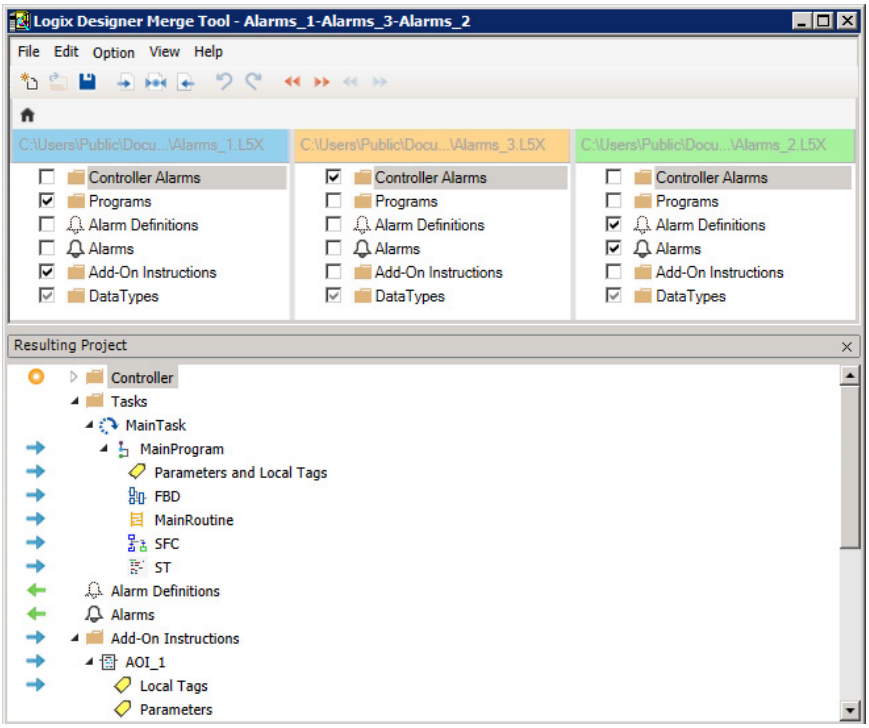
3. Press **Enter**.

Logix Designer Merge Tool windows

This example shows the **Logix Designer Merge Tool** window in a two-way merge mode:



This example shows the **Logix Designer Merge Tool** window in a three-way merge mode:



Operations after the merge

This table shows the operations that you can apply after the merge is done.

To...	Do this...
View detailed differences among the left, right, or center (if in three-way merge mode) projects	Point to an item line, and then select (Expand) or double-click the item line.
Choose an item with differences	In the item line, select the checkbox besides the item to choose. In Structure Text or Function Block Diagram logic line, you can select multiple items. Press **Shift** or **Ctrl** to select the items and press the space key to select or clear multiple selections. **Tip:** The checkboxes in the same line are mutually exclusive. For example, if you select a checkbox of the left project, the checkbox in the same line of the right or center project (if in three-way merge mode) is cleared.
Choose all items with differences of the left project	On the toolbar, select (Take All Left).
Choose all items with differences of the center project (if in three-way merge mode)	On the toolbar, select (Take All Center).
Choose all items with differences of the right project	On the toolbar, select (Take All Right).
View the next section that contains different items	On the toolbar, select (Next Difference Section).
View the previous section that contains different items	On the toolbar, select (Previous Difference Section).
View the next section that contains unresolved items	On the toolbar, select (Next Unresolved Section).
View the previous section that contains unresolved items	On the toolbar, select (Previous Unresolved Section).
Revert changes that you have made	On the toolbar, select (Undo) or (Redo). **Tip:** You can undo or redo up to 100 actions. The changes cannot be reverted if you leave the current merge window.
Go back to other items	On the breadcrumb navigation bar, select (Home) or other items.

Merge Tool menu bar

The Logix Designer Merge Tool menu bar contains these menu items:

Menu	Option	Shortcut	Description
File	New > Project Merge	Ctrl + N	Opens the **Project Merge** dialog box to merge two or three projects.
	New >Logix Definition Merge	None	Opens the **Logix Definition Merge** dialog box to merge Logix definitions from two or three project files.
	Open	Ctrl + O	Opens the merge result project file in the Logix Designer application. **Tip**: This item is enabled after you save the merge result project.
	Close	None	Closes the current merge project and returns to the **Logix Designer Merge Tool** window.
	Close Merge	None	Closes the **Logix Designer Merge Tool** window and returns to the **Logix Designer Compare Tool** window.
	Save	Ctrl + S	Opens the **Save As** dialog box to save the current merge result project.
	Save As	None	Opens the **Save As** dialog box to save the current merge result project with another name or type.
	Exit	None	Closes the Logix Designer Merge Tool window and exits the Logix Designer Compare Tool application.
Edit	Take Left	Ctrl + L	Uses all current items and child items of the left project to the merge result project.
	Take Center	Ctrl + T	Uses all current items and child items of the center project to the merge result project. **Tip**: This option is available only in the three-way merge mode.
	Take Right	Ctrl + R	Uses all current items and child items of the right project to the merge result project.
	Undo	Ctrl + Z	Undoes the previous merge operation.
	Redo	Ctrl + Y	Redoes the merge operation that you undo.
	Previous Difference Section	Shift + F7	Opens the previous section that contains different items.
	Next Difference Section	F7	Opens the next section that contains different items.
	Previous Unresolved Section	Shift + F8	Opens the previous section that contains unresolved items.
	Next Unresolved Section	F8	Opens the next section that contains unresolved items.
Option	Show Hidden Tags	None	Shows hidden tags when you view or merge tag differences. **Tip**: The option only works for Controller tags and Program tags. It does not work for Parameters and Local Tags under AOI.
	Show Main Operand Descriptions	None	Shows main operand descriptions in ladder routines.
	Show Additional Ladder Context	None	Shows all rungs in ladder for context purposes.
	Performance > Fastest Compare	None	Defines the comparison mode as shortening comparing time with a potential of running out of memory.
	Performance > Memory Saver	None	Defines the comparison mode as saving memory occupation with a potential of increasing comparing time.
	Documentation Languages	None	Shows the project documentation languages.
View	Errors	None	Shows the Errors pane that lists errors when you save the merge result project.
	MergeResult	None	Shows the merge result pane that lists the resulting project.
Help	Index	None	Opens the online help.
	Release Notes	None	Opens the release notes.
	About Logix Designer Compare Tool	None	Opens the **About Logix Designer Compare Tool** dialog box to view the program, version, and copyright information.

Merge Tool toolbar

In two-way merge:

In three-way merge:

The toolbar contains shortcuts to several commonly used functions in Logix Designer Merge Tool. The toolbar button is a graphical representation of a command that is also available from the Logix Designer Merge Tool menu bar.

The toolbar includes these buttons:

Toolbar Button	Menu Command	Shortcut	Description
	File > New > Project Merge	Ctrl + N	Opens the **Project Merge** dialog box, from which you can merge two or three projects.
	File > Open	Ctrl + O	Opens the merge result project file in the Logix Designer application. **Tip**: This item is enabled after you save the merge result project.
	File > Save	Ctrl + S	Opens the **Save As** dialog box, from which you can save the current merge project.
	Edit > Take Left	Ctrl + L	Uses all current items and child items of the left project to the merge result project.
	Edit > Take Center	Ctrl + T	Uses all current items and child items of the center project to the merge result project.
	Edit > Take Right	Ctrl + R	Uses all current items and child items of the right project to the merge result project.
	Edit > Undo	Ctrl + Z	Undoes the previous merge operation.
	Edit > Redo	Ctrl + Y	Redoes the merge operation that you undo.
	Edit > Previous Difference Section	Shift + F7	Opens the previous section that contains different items.
	Edit > Next Difference Section	F7	Opens the next section that contains different items.
	Edit > Previous Unresolved Section	Shift + F8	Opens the previous section that contains unresolved items.
	Edit > Next Unresolved Section	F8	Opens the next section that contains unresolved items.

Logix Designer Merge Tool results window

Logix Designer Merge Tool results window

Once Logix Designer Merge Tool completes the comparison, it shows a constructed merge result project automatically. By default, the project contains:

- **Same contents** in the left, right, or center projects.
- **New contents** that only exist in the left or right project. Logix Designer Merge Tool assumes that these contents are added, not deleted. Hence, contents will be selected by default.
- **Collision contents** that exist in two or three of the left, right and center projects (if in three-way merge mode) but the contents are different. You must manually resolve differences in these unresolved items.

Tip: For three-way merges, two of the three items could be the same based on the compare result. In such cases, the same two items are marked as gray, while the other different item is marked as black.

The differences are shown in different colors:

- **Black** - Default color.
- **Blue** - Indicates items that are unresolved or contain unresolved items.
- **Gray** - Indicates items that are the same or cannot be merged in both projects.
- **Red** - Indicates items that are listed under other parent items.

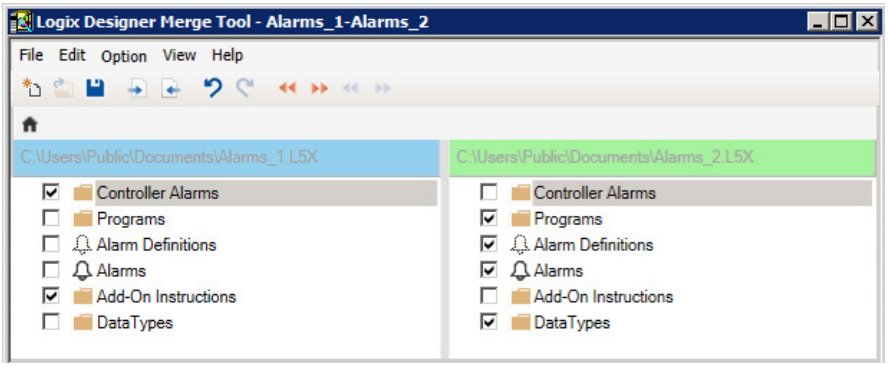
The window includes left, center (if in three-way merge mode), right, and result panes.

About left, center, and right panes

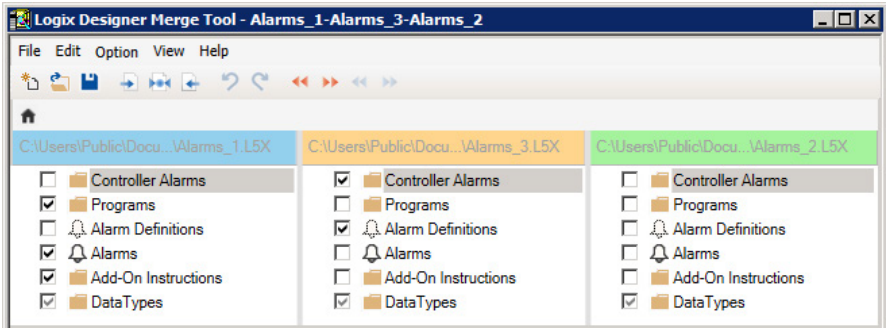
The left, center, and right panes show details of the two (in two-way merge) or three (in three-way merge) Logix Designer projects. You can navigate into items to view the detailed differences or select the desired conflict items.

Example

In two-way merge



In three-way merge



Icons in the left, center, or right pane

This table shows the icons in the left, center, or right pane.

Icon *	Description
	Indicates the item and all its child items will be merged into the result project.
	Indicates the item and all its child items will not be merged into the result project.
	Indicates some of its child items will be merged into the result project.
	Indicates that the item will be merged into the result project and cannot be excluded by clearing this checkbox. However, if the item has a parent item, you can clear the parent item to exclude it.
	Indicates that the item will not be merged into the result project and cannot be included by selecting this checkbox. However, if the item has a parent item, you can select the parent item to include it.

* These icons might look different depending on the Windows theme used on your computer.

Default selection rules

For two-way merges, the default selection rules are as follows:

Rule	Left Project	Right Project
Assume left (changed)	A	
Assume right (changed)		A
Unresolved (conflict)	A	A, changed

Tip: In a two-way merge, the application cannot determine if the content is added or removed between the two files. The merge tool makes the assumption that the content has been added by default.

For three-way merges, the default selection rules are as follows:

Rule	Left Project	Center Project	Right Project
Assume left (no change)	A	A	A
Assume left (changed)	A, changed	A	A
Assume right (changed)	A	A	A, changed
Assume left (changed)	B	A	B
Assume left (deleted)	-, deleted	A	A
Assume right (deleted)	A	A	-, deleted
Assume left (deleted)	-, deleted	A	-, deleted
Assume left (added)	A		
Assume right (added)			A
Assume left (added)	A		A
Unresolved (conflict)	A, changed		A, changed
Unresolved (conflict)	A, changed	A	A, changed
Unresolved (conflict)	-, deleted	A	A, changed
Unresolved (conflict)	A, changed	A	-, deleted

About the result pane

The result pane shows the merge result project information in a hierarchy tree. By default, the result pane contains:

- Items that only exist in the left project.
- Items that only exist in the right project.
- Items with common differences among the three projects (if in three-way merge mode).
- Items with no differences between projects.

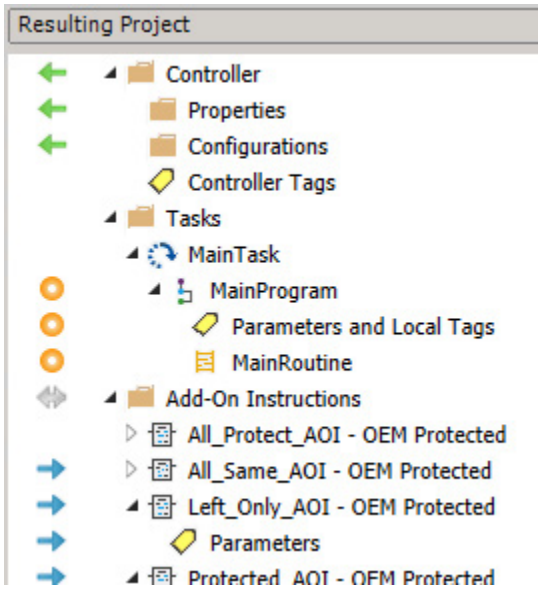
You can double-click the item to view details. You can also undock the merge result pane by clicking and dragging or double-clicking its title bar. To dock the result pane back to the results window, double-click its title bar.

Icons in the result pane

When you resolve the conflict items by selecting items on the left, center, or right project, these icons display:

Icon	Description
	Indicates the items from the left project.
	Indicates the items from the right project.
	Indicates the items from the center project.
	Indicates the items from more than one project.
	Indicates the items removed from the Library.
blank	Indicates no differences found for the current item.

Example



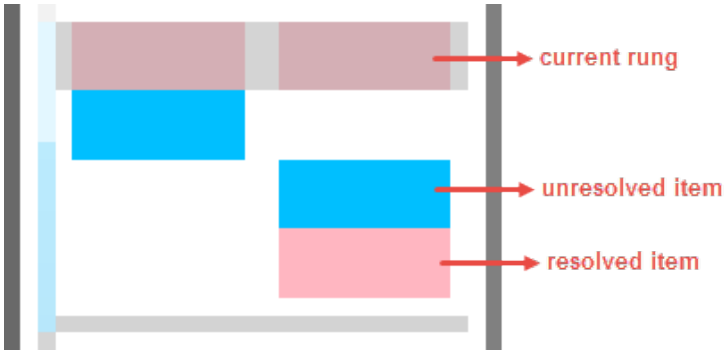
About the navigation map

Logix Designer Merge Tool uses colors to highlight differences on the vertical thumbnail scroll bar. You can quickly navigate by clicking in the navigation map to go to that area in the routine. When you change an item, the color is also updated to reflect the state.

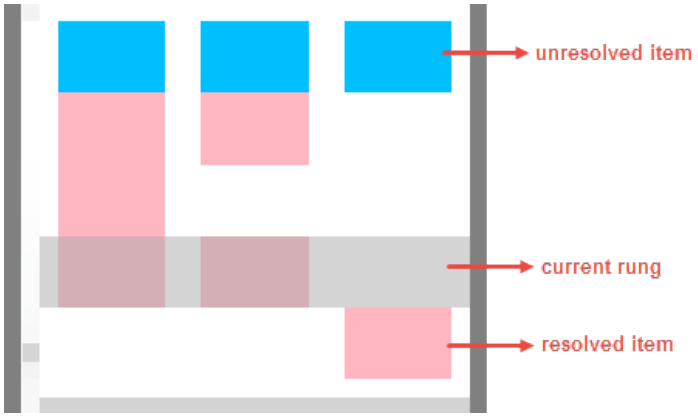
Tip: Navigation map only exists in ladder and Structure Text routines.

Example

In two-way merge



In three-way merge



About unresolved items

In Logix Designer Merge Tool, unresolved items are shown in blue. These items exist in two or three of the left, right, and center projects (if in three-way merge mode) but the contents are different. If an item is unresolved, its parent element is also marked as unresolved.

You must resolve these differences manually. Before saving a merge project, make sure that all unresolved items are resolved.

Tip: While resolving items during a single-to-single component merge:

- If the selections are all from the left pane or from both sides of the pane, the merge result will use the left item's name.
- If the selections are all from the right pane, the merge result will use the right item's name.

Supported merge types

The supported merge types are as follows:

Merge Type	Level
Add-On Instructions	AOI
Alarm Manager	Property
Equipment Sequence	Steps, transitions, and TagConfigurations **Tip:** This only applies when the structures of the whole SEQ (sequencing) routines are the same among the left, right, and center (if in three-way merge mode) projects.
Function Block Diagram	Sheet
Ladder Diagram	Rung
Library	Whole library
Logix definition	Add-On Instructions and DataTypes
Modules	Properties
Sequential Function Chart	Steps, transitions, and actions **Tip:** This only applies when the structures of the whole SFCs are the same among the left, right, and center (if in three-way merge mode) projects.
Structure Text	Line

Tip: These detailed merges are not supported:

- Pending or test edits
  All pending or test edits are removed from the merge result. You cannot perform a detailed merge of any rung if a ladder routine has pending or test edits.
- Quick Watch
  Items of the left project are used in the result project.

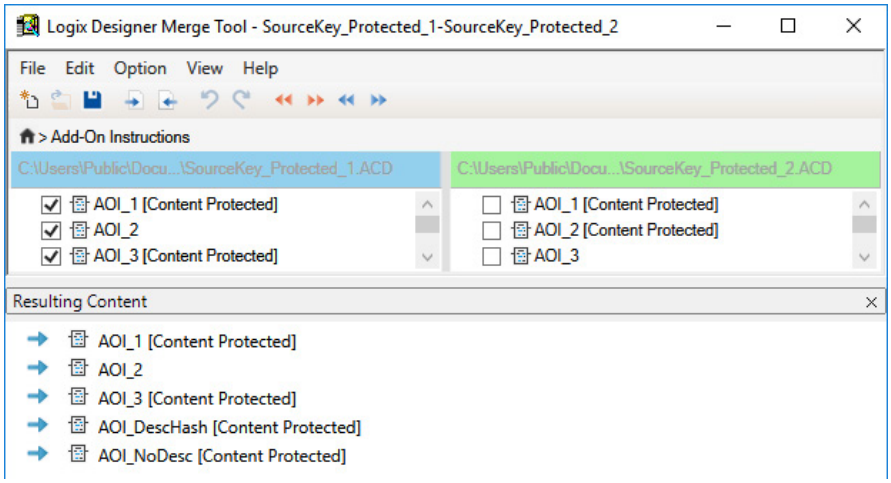
Add-On Instructions merge

Logix Designer Merge Tool supports the AOI level merge of Add-On Instructions. For signed Add-On Instructions, all Local Tags and routines with differences can be shown in merge result tree, but signed Add-On Instructions are marked as Content Protected in the compare result. You can only view the detailed differences of Local Tags and routines, but you cannot merge them.

Logix Designer project files can be protected by FactoryTalk Security, license, or source key protection. For project files of version 32.00 or later, encrypted Add-On Instructions are merged based on the hash value differences. The encrypted Add-On Instructions are shown as Content Protected and marked as Protected in the merge details pane. The LogicHash or DescriptionHash properties are not shown. You can only select the entire Add-On Instructions to merge.

These rules apply to two-way and three-way merges.

This is a merge example of encrypted Add-On Instructions from Logix Designer project files version 32.00 with source protection. You can drill in to view the detailed properties, but you can only merge on the AOI level.



See also

About unresolved items on page 73

Logix Designer Merge Tool results window on page 69

About left, center, and right panes on page 69

About the result pane on page 71

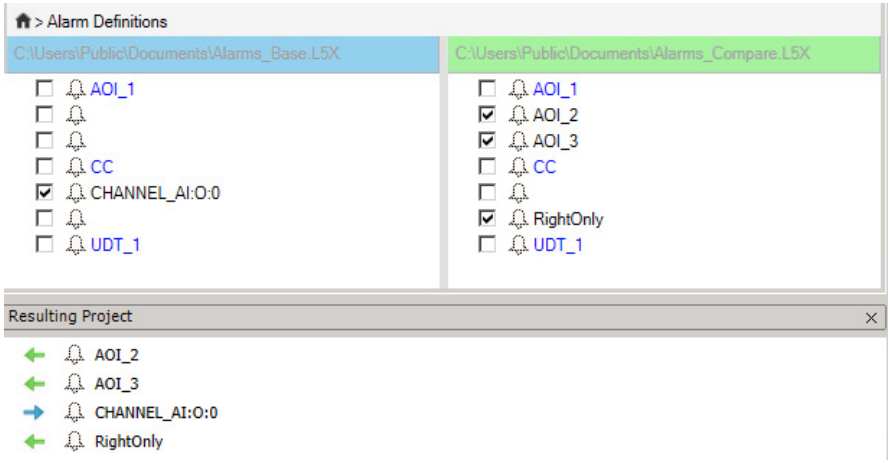
Alarm Manager merge

Logix Designer supports the creation of Alarm Manager, which contains Alarm Definitions and Alarms.

Example

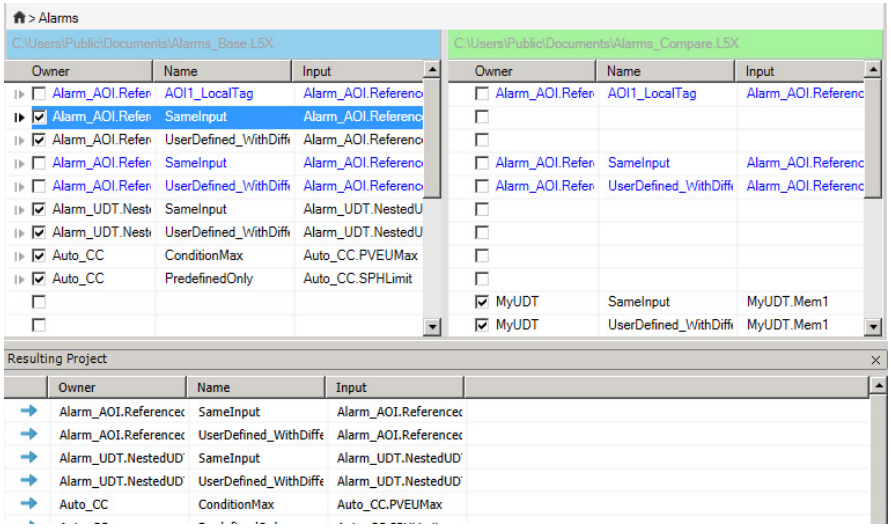
Alarm Definitions merge

Drill in to view the detailed property differences of the definitions.



Alarms merge

Drill in to view the detailed property differences of the alarms.



See also

[About unresolved items](#) on page 73

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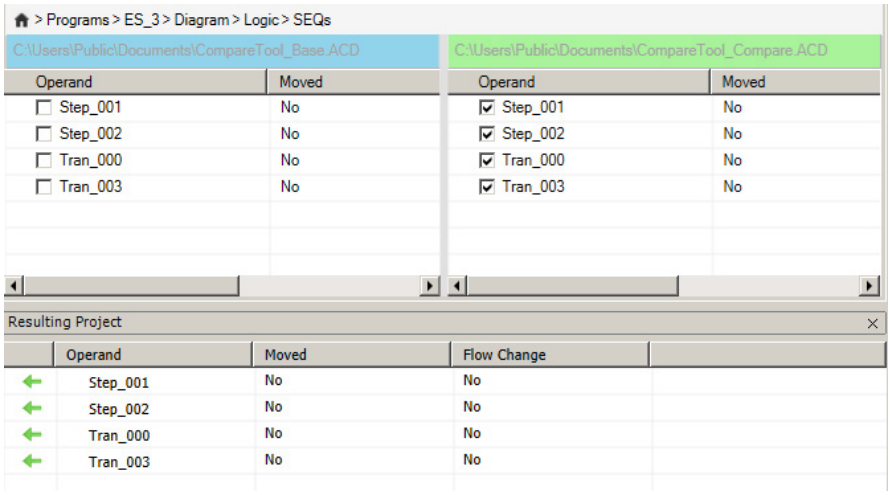
Equipment Sequence merge

You can merge steps, transitions, or TagConfigurations if structures of the whole SEQ (sequencing) routines are the same among the left, right and center (if in three-way merge mode) projects. You can only select the entire left, right, or center routine if structures are different.

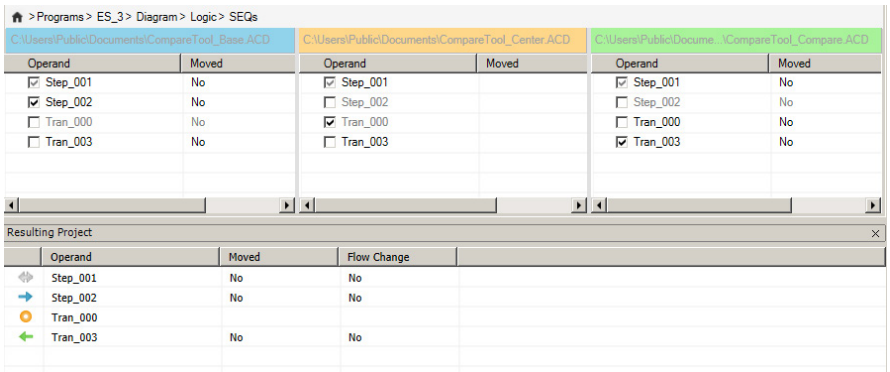
An Equipment Sequence Program always has a SEQ routine called Diagram. So a project-only SEQ routine can only be selected or not selected to be included in the merge. Only SEQ routines that are the same or with common differences can be individually merged.

Example: Supported SEQ routine

In two-way merge

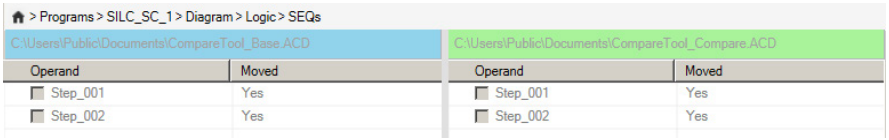


In three-way merge

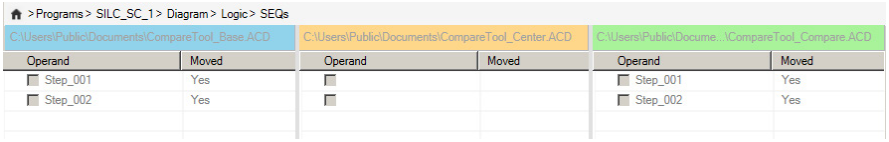


Example: Unsupported SEQ routine

In two-way merge



In three-way merge



See also

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[About the result pane](#) on page 71

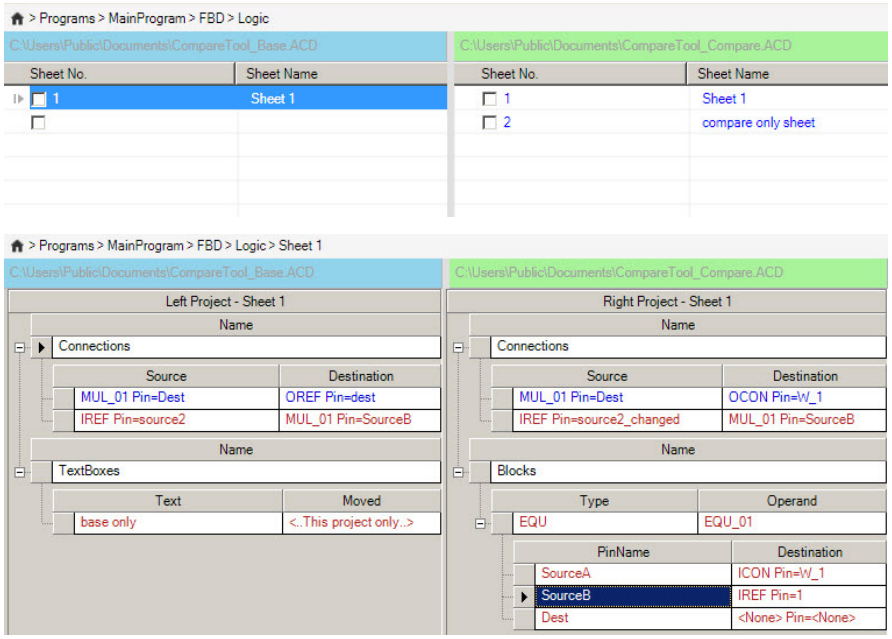
Function Block Diagram merge

Logix Designer Merge Tool supports the sheet level merge of Function Block Diagram routines. Click the expand icon or double-click a line to view details. Editing is not available.

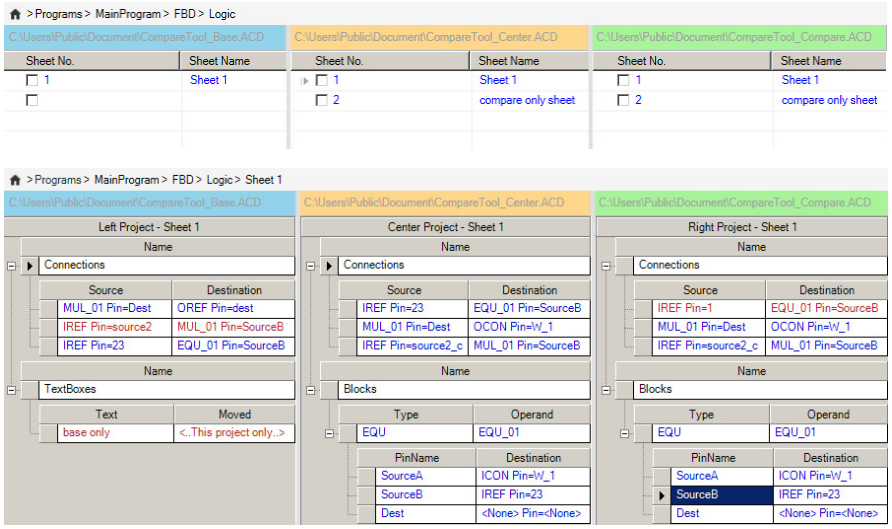
Pending or test edit contents cannot be merged, and all these contents are removed in the final merge result.

Example

In two-way merge



In three-way merge



Ladder merge

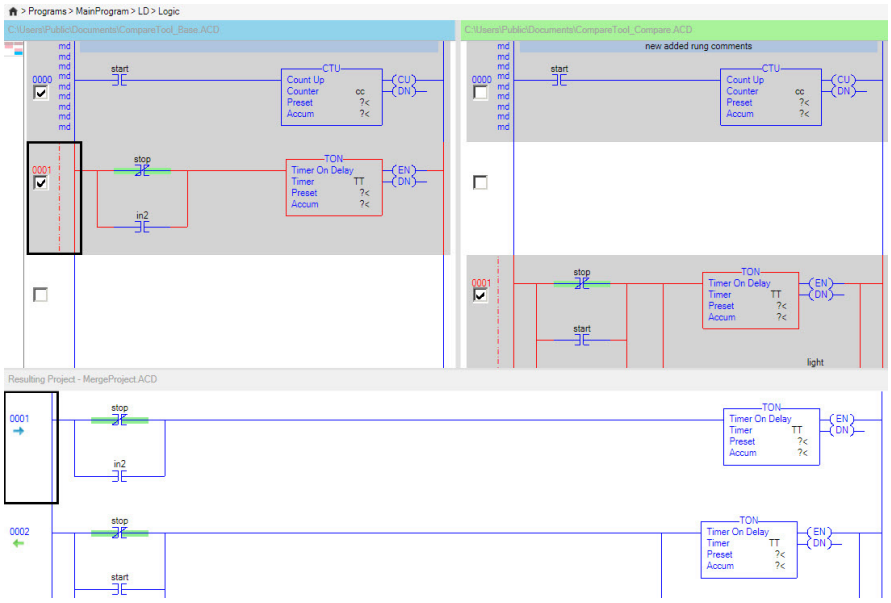
Logix Designer Merge Tool supports the rung level merge of ladder routines. Ladder routine differences are shown in graphical form as follows:

- For rung level merges, all pending or test edit contents are removed in the final merge result.
- If none of the rungs includes pending or test edit contents, you can reorder rungs in the result pane. If all the rungs are only taken from the left, center, or right project, you cannot reorder the rungs in the result pane.

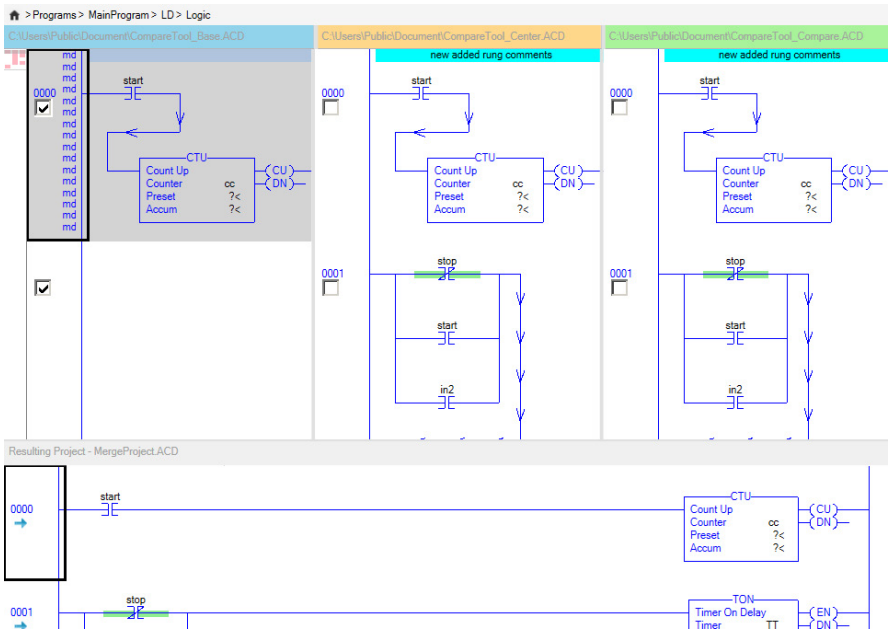
For large projects, you can quickly navigate differences and items by using the navigation map, a vertical thumbnail scroll bar on the left.

Example

In two-way merge



In three-way merge



See also

About the navigation map on page 72

About unresolved items on page 73

Logix Designer Merge Tool results window on page 69

About left, center, and right panes on page 69

About the result pane on page 71

Designations in ladder merge

This table shows the designations in the ladder merge.

Designation	Meaning
d	Delete
D	Delete or pending delete rung
e	Pending replace rung
i	Insert or insert with a replace
I	Insert
md	Modify or comment changed
mv	Move
r	Pending replace N (Normal) or pending replace IR (Insert with a replace)
R	Replace

Library merge

Logix Designer Merge Tool supports the library level merge of Libraries. For Logix Designer project files with Library Object data, the Library merge result is determined by the selection of Libraries and Logix Designer contents. The Library Object data includes Library configuration information, Logix Designer components of the Library, and Library Object attributes of Logix Designer components. The rules for Library Object selection are:

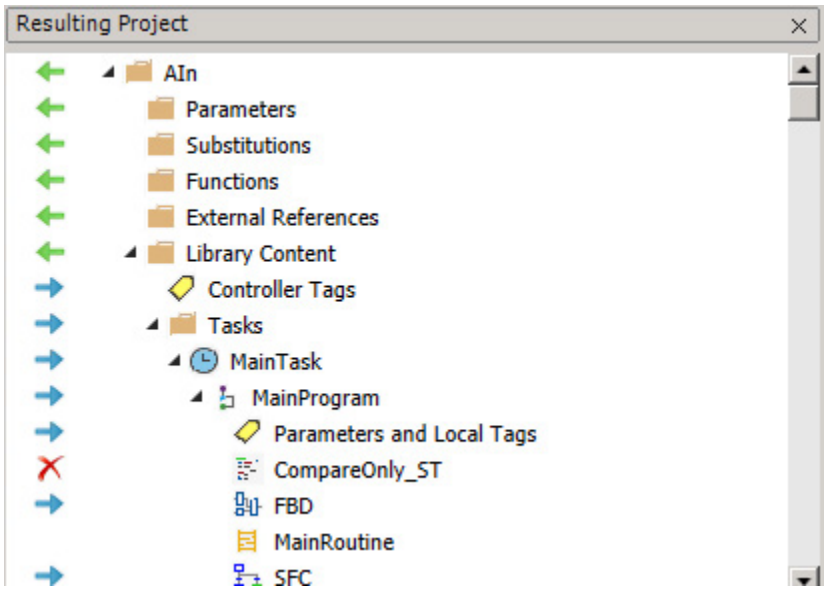
- Library configuration information follows the Library selection.
- Logix Designer components of a Library follow the Logix Designer content selection. If a component is removed from the result project, it is also removed from the Library it belongs to.
- Library attributes of Logix Designer components follow the Library selection.

The merge of Instanced Library Objects is not supported. When merging projects with Instanced Library Objects, you will be notified that the Library Objects will not be shown or included in the merge result. The Instanced Library Objects will also be removed when saving the project file.

In the Library merge result, all the Library-related data is organized in a separate section. The detailed merge of Library configuration information and Logix Designer components of a Library are not supported. You can only click the expand icon or double-click an item to view details.

In the following example, "CompareOnly_ST" exits as a Logix Designer component belonged to the "AIn" Library, and only exists in the right Logix

Designer project. During the merge process, if the left project is selected, the component is removed from the result project. Thus, it is removed from the Library it belongs to. An "X" icon in the result project indicates that it is removed.



See also

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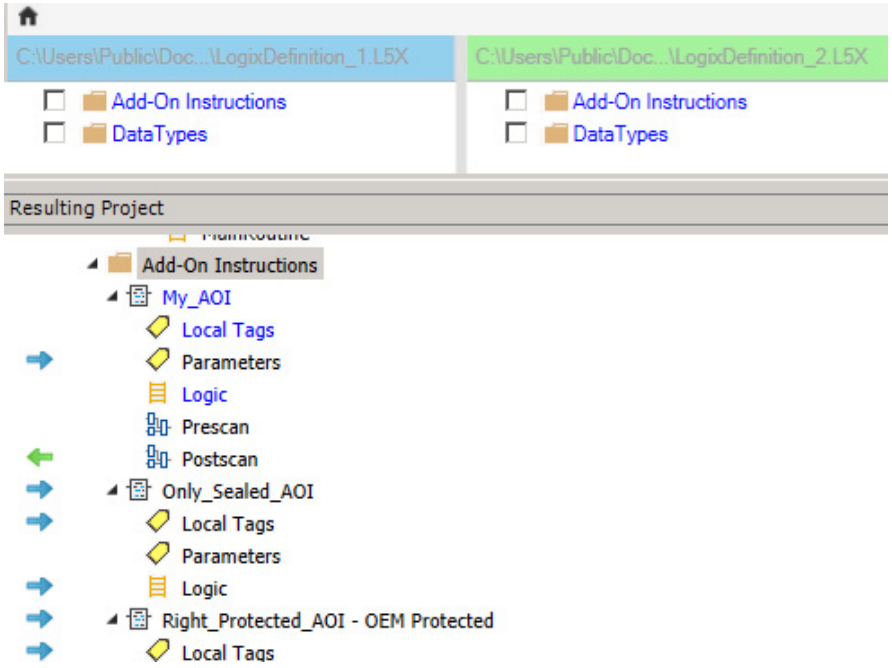
Logix definition merge

Only Logix definition components with differences are shown in the merge window.

Example

Logix definition merge

In the merge result pane, merge type icons only show before Logix definition components.



See also

[About unresolved items](#) on page 73

[Logix Designer Merge Tool results window](#) on page 69

[About left, center, and right panes](#) on page 69

[About the result pane](#) on page 71

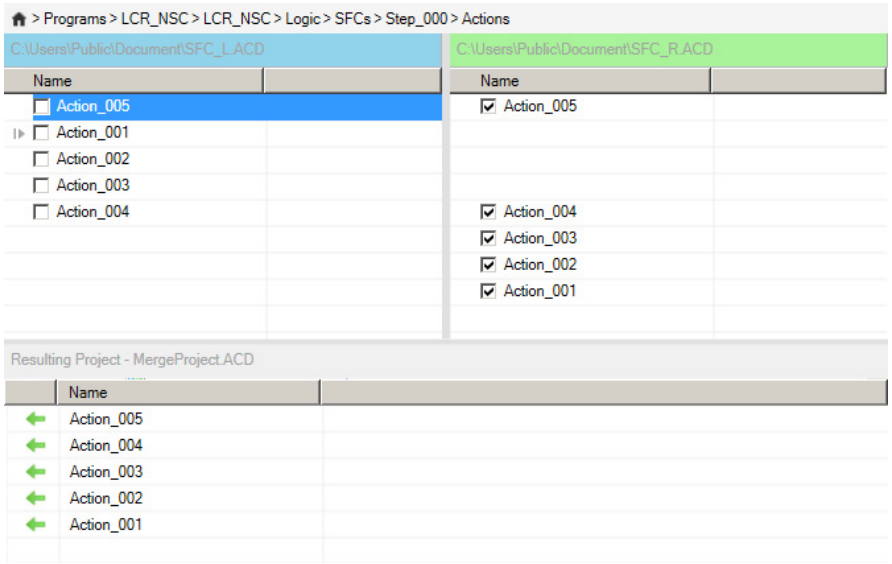
Sequential Function Chart merge

You can merge steps, transitions, or actions if the structures of the whole Sequential Function Charts are the same among the left, right, and center (if in three-way merge mode) projects. You can only select the entire left, right, or center routine if the structures are different.

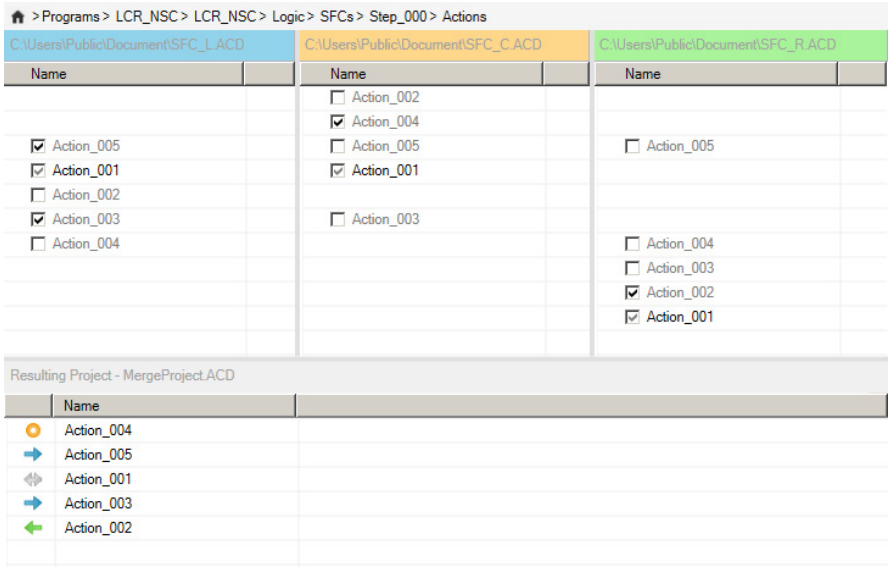
Pending or test edit contents cannot be merged, and all these contents are removed in the final merge result.

Example

In two-way merge

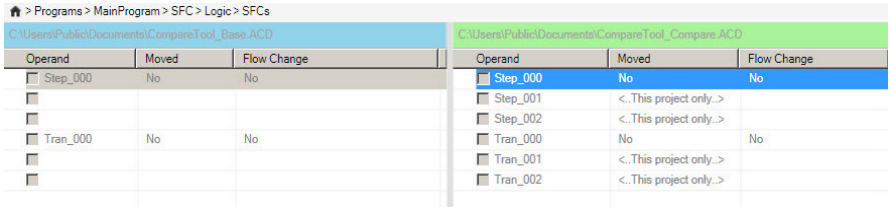


In three-way merge

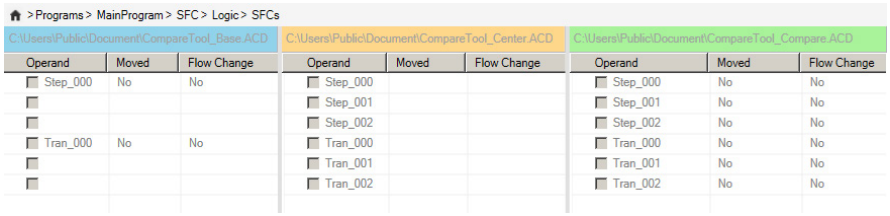


Example: Unsupported SFC

In two-way merge



In three-way merge



See also

[About unresolved items](#) on page 73

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Structure Text merge

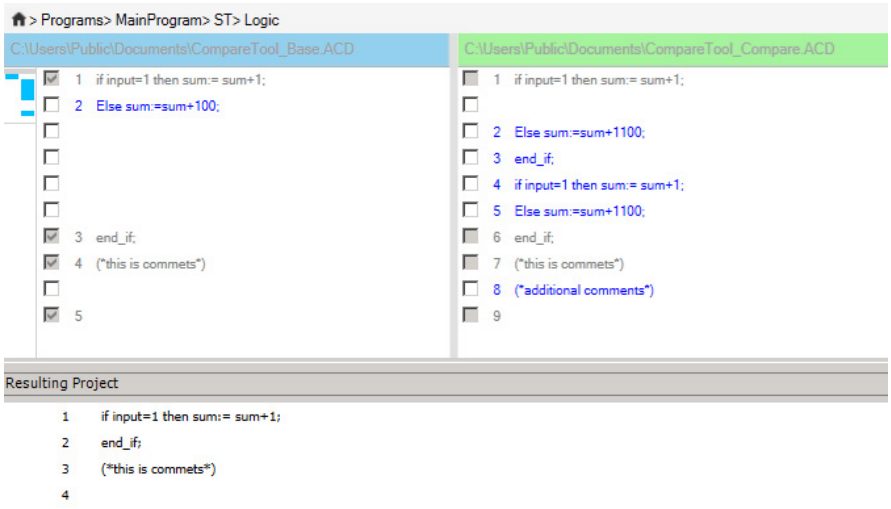
Logix Designer Merge Tool supports the line level merge of Structure Text routines. For large projects, you can quickly navigate differences and items by using the navigation map, a vertical thumbnail scroll bar on the left.

To select multiple lines, press **Shift** or **Ctrl** and select the checkboxes.

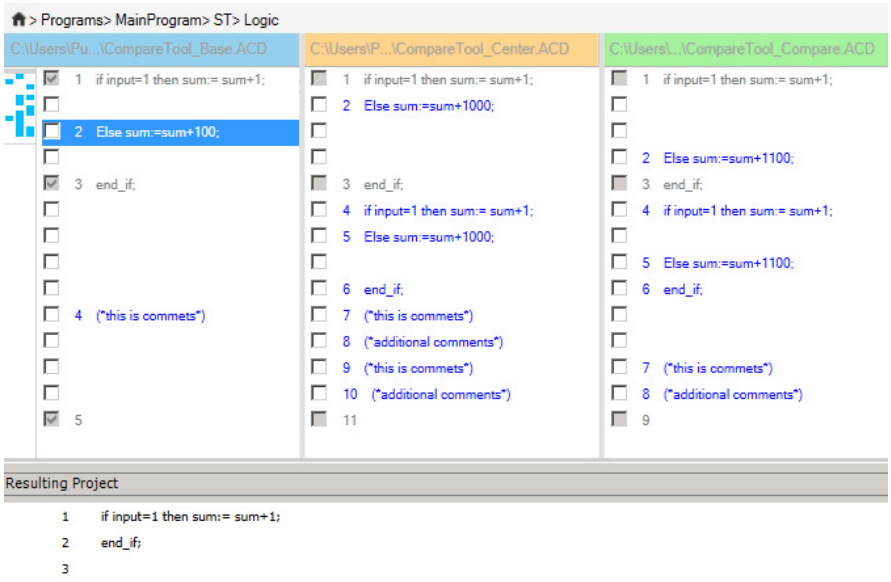
Pending or test edit contents cannot be merged, and all these contents are removed in the final merge result.

Example

In two-way merge



In three-way merge



See also

[About the navigation map](#) on page 72

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[About left, center, and right panes](#) on page 69

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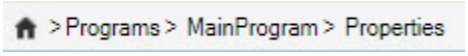
Navigation bar

The breadcrumb navigation bar helps you get back to where you start during the merge operation.

Example



Select the **Programs** or **MainProgram** item to view the conflict child elements that it contains or select (Home) to get back to the root elements.

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- Licenses
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Rockwell Automation support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	rok.auto/pcdc

Documentation feedback

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Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental information on its website at rok.auto/pec.

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