Specifications Module

Overview

The Specifications module provides the means to efficiently generate detailed specification documents. This is helpful for engineering and ordering procedures and provides a useful permanent record for checking installed instruments.

The Specifications module also incorporates data from the Instrument Index, Process Data, and Calculation modules into generated documents.

Note

- If you work with multiple cases for an instrument tag in the Process Data and Calculation modules, the software displays data from the governing case in specifications that you create.

Starting the Specifications Module

Use this procedure to start the Specifications module.

Caution

- Before starting this module, check with the Domain Administrator that you have been granted appropriate access rights for the tasks you will carry out.

➢ **To start the Specifications module**

- Do one of the following:

    - On the main toolbar, click .

    - On the **Modules** menu, click **Specifications**.

Note

- You can also open a specification from an Instrument Index Standard Browser view by highlighting the required instrument tag and clicking on the main toolbar. This option will work only if a specification for the selected tag has already been generated and if, in the **Preferences** dialog box, under **Browser view options**, you have set the **Open specification sheet** setting to Always or Ask User.

Principles of Generating Specifications

SmartPlant Instrumentation generates a specification based on a pre-defined specification form that you select, with which component data is associated. Each form consists of one or more specification pages.

When you first create a specification for an entity, you have to specify the form number to create the association. On subsequent occasions, you only need to specify the entity number to display the specification.

You can generate two types of specifications:

- **Single-entity specification**: — a document with details about a single entity.

- **Multi-tag specification**: — a document with details about two or more instruments. A multi-tag specification includes pages with fields that are identical for all of the tag numbers, and pages with fields that differ from tag to tag. A multi-tag specification is only available when the entity type is instrument.

Each standard specification is made up of a number of sections. For example: general data, process data, construction data, purchase data, a note field, and a specification header - the title block.

Notes

- The **General Data** section of the specification includes details that were entered in the Instrument Index module.

- **Process Conditions** are derived from the Process Data module (if available) along with calculation results from the Calculation module (if available).

- If you defined multiple cases for a given tag, the specification displays the process data from the governing case.

- You cannot generate specifications for virtual tags.

All of the fields can be edited to your specific requirements using the built-in editing tools.

Specifications: An Overview

An specification may be generated for a single item (instrument tag) or for multi-tag specifications. Multi-tag specifications are frequently required because instruments of the same type have many identical parameters.

Single-tag specification — A single-tag specification is a document with details about a single instrument.

Multi-tag specification — A multi-tag specification contains a group of items that you can add, one by one, to the same sheet. The first column displays the tag number. The other columns display pertinent tag data as predefined for the current sheet type.

In a multi-tag specification, the **Tag Number** field and other specification fields, depending on the current sheet type, can show the words SEE LIST instead of data. The data can be then viewed in an additional tab — **Multi-Tag List**.

You can customize the way tag numbers are displayed. The remaining fields contain common data for all the instruments in the multi-tag list.

A Typical Specification

	1	Tag Number		108-FE –2212			
	2	Service		FUEL OIL RETURN FROM FURNACE			
	3	Line Number		FO-3005-3" -4-TD			
GENERAL	4	Line Size	Line Sched.				
	5	Line I.D.					
	6						
	7	Fluid	State	FUEL OIL	Liquid		
	8	Flow Max.	Flow Min.	4.6 m³/h	1.8 m³/h @ flow		
	9	Flow Operating		4.0 m³/h @			
	1	Pressure Max.	Oper.	17 bar–	6 bar-g		
	1	Temperature Max.	Oper.	250 °C	218 °C		
	1	Spec. Gravity at	Oper.		0.93		
PROCESS	1	Molecular Weight					
CONDITIONS	1	Viscosity at Operating Conditions		18.887 cP			
	1	Quality	Superheat				
	1	Supercomp. Factor					
	1	Base Press.	Base Temp				
	2	Type		1/4 of Circle w/Flange Tapping			
	2	Material		316 SS			
	2	Thickness		6.5 mm			
ORIFICE	2	Bore Diameter		d= 19.52			
PLATE	2	Beta Ratio		0.2528			
	2	Drain or Vent Hole		2.3 mm			
	2	Flow Full Scale		4.0 m³/h			
	2	Differential Pressure @ Fullscale					
	3						
	3	Size		3"			
	3	Rating		300#			
	3	Type					
	3	Facing		C.S.			
ORIFICE	3	Flange Material					
FLANGES	3	Gasket Material					
	3	Taps Type					
	3	Taps Size		1/2" NPT			
	3	Taps Orientation		HORIZONTAL			
	4						
	4	Manufacturer					
	4	Model					
PURCHASE	4	Purchase Order Number		108-FE-00019-012			
	4	Price	Item Number				
	4	Serial Number					

Notes: Refer to Drawing No. 108-12-106261

					INSTRUMENT Orifice Plate		
0	E.	3/12/94	As Made			Sheet of	
No.	By	Date	Revision		Code: 11	Dwg. No.: SPC-108-FE -2212	Rev.: 0

Tag Case Specifications

A tag-case specification is a specification assigned to a particular process data case of an instrument tag. You can create an individual specification for each case of an instrument tag, including the governing case. Each tag-case spec has its own revisions. Tag-case specifications do not have to share the same document number (as for other specifications).

You create tag-case specifications in the same way that you create specifications for other entities. Since all tag-case specifications share the same tag number, creation of a tag-case specification involves an additional step, that is selecting the desired tag case. After you specify a tag number for creating a new spec, the software automatically detects whether this tag number has multiple cases and prompts you to select one of those cases.

Since all tag-case specifications for a given instrument share the same spec form, after creating the first specification for a particular case, you need to use the same spec form for all subsequent tag-case specifications that you create for the instrument.

Searching for Existing Entities and Spec Forms

This procedure explains how to find and open a specification when you do not know the exact entity number or form number. When searching for a entity that is already associated with a specification, the form number of that specification is entered automatically.

➢ **To search for an existing entity and form**

1. On the **Actions** menu, click **Open Entity Specification**.

2. In the **Open Entity Specification** dialog box, with the mouse pointer in the **Entity number** field, perform the following steps:

   a) Click **Find** to open the **Find Entities** dialog box.

   b) Type or select from the fields in the upper part of the dialog box the parameters for the properties that you want to find.

   c) Click **Find** to display a list of entities according to the parameters that you have selected.

   d) Select the required entity from the retrieved list.

   e) Click **OK** to accept your choice and return to the **Open Entity Specification** dialog box.

3. With the mouse pointer in the **Form number** field, perform the following steps:

   a) Click **Find** to open the **Select Specification Form** dialog box.

   b) Select the required form and click **OK**.

Managing Specification Pages

Specification Pages: An Overview

Specification pages are the primary templates for specifications. (Forms, comprised of pages, are the immediate templates for specifications.)

SmartPlant Instrumentation provides default library specification pages. You can either associate pages into forms without modification, or customize pages to fit your specific requirements.

Note

- You are not able to create an entirely new specification page in SmartPlant Instrumentation.

Working with the Page Editor

The **Page Editor** allows you to edit specification pages that you use to categorize data within a specification form. For example, a specification form can contain a thermowell specification page, a control valve specification page, and a large note page.

In the **Page Editor**, you can perform the following editing activities:

- Setting the Tab Order of the Fields on a Page

- Modifying Position and Size of Page Objects

- Editing the Headers in a Page

- Changing the Page Process Function

- Adding Database Fields (Columns) to a Page

- Deleting Page Columns

- Duplicating Page Columns

- Displaying Invisible Columns

- Defining Columns with Computed Values

- Creating a Large Note Page

Using the Edit Columns and Headers Toolbar

The following procedure describes how to display the **Edit Columns and Headers** floating toolbar in the **Page Editor**. The **Edit Columns and Headers** floating toolbar options enables you to modify the specification page field layout without having to use a third-party interface such as InfoMaker.

Using the **Edit Columns and Headers** toolbar options, you can do the following:

- Display page column names

- Modify position and size of page objects

- Delete selected page columns

- Duplicate page columns

- Duplicate page lines

- Add and modify page lines

- Display invisible columns

- Add database fields (columns) to a page

- Format page column values

- Define columns with computed values

- Add graphics to a page

➢ **To display the Edit Columns and Headers floating toolbar**

1. Use one of the following options to open the required page in the **Page Editor**:

   - Open the page from SmartPlant Instrumentation.

   - Open the page from an external .psr file.

2. Do one of the following to open the **Select Specification Page** dialog box:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Open Page**.

3. In the **Select Specification Page** dialog box, select a page from the data window and click **OK**.

4. Do one of the following to display the **Edit Columns and Headers** floating toolbar:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Edit Columns and Headers**.

5. Use the toolbar options to edit the page columns as required.

Opening Specification Pages

Use this procedure to open a specification page in the **Page Editor**.

➢ **To open a page from the database in the Page Editor**

1. Start the Specifications module.

2. Do one of the following:

   - On the toolbar, click 📝

   - On the **Edit** menu, click **Page Editor**.

3. In the **Page Editor**, do one of the following:

   - On the **Page Editor** toolbar, click 📊.

   - On the **Actions** menu, click **Open Page**.

📝 **Note**

   - In the **Select Specification Page** dialog box, selected **Custom** check boxes indicate pages that you have customized.

4. In the **Select Specification Page** dialog box, select the required page.

💡 **Tip**

   - If required, click **Properties** to change the name and description of the page you want to open.

5. Click **OK** to confirm your selection and open the page in the **Page Editor**.

Opening Pages from an External File

Use this procedure to open a specification page from an external .psr file in the **Page Editor**.

Caution

- When editing SmartPlant Instrumentation specification pages in InfoMaker, do not add items to drop-down lists, as this is liable to corrupt your database.

➢ **To open a page from an external .psr file in the Page Editor**

1. Start the Specifications module and do one of the following:

   - On the toolbar, click

   - On the **Edit** menu, click **Page Editor**.

2. In the **Page Editor**, do one of the following:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Open File**.

3. In the **Open File** dialog box, navigate to the required folder and select the required .psr file.

4. Click **OK** to open the page in the **Page Editor**.

Saving a Page to the Database

Use this procedure to save a page to the SmartPlant Instrumentation database.

➢ **To save a page to the database**

1. In the **Page Editor**, to save a page that you opened from the SmartPlant Instrumentation database under the current name, on the **Actions** menu, click **Save**.

 Note

- After you save a library page that you changed, it is termed a custom page.

2. To save a page that you opened from the SmartPlant Instrumentation database under a new name, or to save an external page to the SmartPlant Instrumentation database, do the following:

   a) On the **Actions** menu, click **Save as New Page**.

   b) In the **Save as New Page** dialog box, click **New**.

   c) In a dialog box that opens, type a unique name and an optional description.

   d) Click **OK**.

Saving a Page as an External File

You can save a page as an external file so that it can be used with a third-party application such as InfoMaker.

➢ **To save a page as an external file**

1. In the **Page Editor**, with the page open, do one of the following:

    *   Click .

    *   On the **Actions** menu, click **Save as File**.

2. In the **Save As** dialog box, navigate to the required folder and type a file name. You can save the page as an external .psr (PowerSoft Report) file or as a .wmf (Windows METAFILE) graphic.

3. Click **OK** to save the file.

Deleting Pages

Use this procedure to delete existing specification pages.

Caution

- If you delete a custom page, you will not be able to restore it. Only non-custom pages can be restored. It is therefore recommended that you save the source spec form as an .isf file.

➢ **To delete a page**

1. Start the Specifications module and do one of the following:

   - On the toolbar, click .

   - On the **Edit** menu, click **Page Editor**.

2. On the **Actions** menu, click **Delete Page**.

3. In the **Select Specification Page** dialog box, select the page you want to delete and click **OK**.

Creating a Large Note Page

Use this procedure to create a large note page in SmartPlant Instrumentation on the basis of any existing page.

Note

- Creating a large note page by starting with a page that contains column values can be time-consuming. On a data page, you will have to delete all the column values one by one. Therefore, we recommend that you use the default page **Large Note** in the specification forms. The default large note page does not contain any data apart from the title block. Also, if needed, you can create a large note page in InfoMaker, and then open the page from appropriate external .psr file in the **Page Editor**.

➢ **To create a new large note page in SmartPlant Instrumentation**

1. Open the page from SmartPlant Instrumentation.

   Note

   - We recommend that you use a page with the **General** process function. You need to perform a separate procedure to change the page process function to **General**. For details, see Changing the Page Process Function.

2. With the **Page Editor** open, do one of the following:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Regenerate Page**.

3. In the left section of the **Select Tables, Views, and Columns** dialog box, select the check box for the add_spec9 table.

4. In the cell adjacent to the add_spec9 table cell, click **Columns** to display the spec_note_large database column in the **Column Name** data window.

5. Click **OK**.

   Note

   - After clicking **OK**, the software automatically regenerates the page that you opened in the **Page Editor**. For details, see Regenerating Pages.

6. In the **Page Editor**, do one of the following to display the **Edit Columns and Headers** floating toolbar:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Edit Columns and Headers**.

   Caution

   - Before adding the spec_note_large column to the current page, make sure that the page does not contain any other columns apart from the title block. If the page is not empty, you must delete **all** of the columns.

7. On the **Edit Columns and Headers** floating toolbar, click .

8. In the **Column List** pop-up window, select spec_note_large.

9. Drag the spec_note_large column value from the **Column List** pop-up window and drop it anywhere on the currently open page.

10. Click to close the **Column List** pop-up window.

11. For your convenience, if needed, resize the spec_note_large column as follows:

    a) Point to the spec_note_large field border so that the cursor changes to a double-headed arrow.

    b) Resize the spec_note_large field by dragging the field borders to either side so that the field occupies the entire page area, apart from the title block.

    Note

    - When printing a form that with a large note page the software resizes the spec_note_large column automatically so that the spec_note_large column occupies the entire area of the printed specifications. Therefore, you do not have to resize the spec_note_large column exactly.

12. Do one of the following:

    - On the **Page Editor** toolbar, click .

    - On the **Actions** menu, click **Edit Columns and Headers**.

13. Save the large note page as required.

Working with Large Note Pages

A large note page is a page that consists of a text area and a title block. A large note can appear on a separate page. To create a large note on a separate page, you must use only the spec_note_large database column of the add_spec9 table.

When creating or modifying a specification form, you can add a large note page to display large note text in the appropriate specifications. SmartPlant Instrumentation provides a default page, **Large Note**, which you can add to the required specification forms. The default large note page does not contain any data apart from the title block. When adding a new page to a designated specification form, you can use either the default **Large Note** page or create a new large note page on the basis of any existing page.

In a print preview for a specification that contains a large note, the software displays a large note on a separate page in which you can scroll up and down to view the note text. When printing a specification with a large note page, the software automatically counts the total number of sheets and divides the large note page into separate sheets, depending on the note text length.

Notes

- If required, you can use the spec_note_large database column on a data page. By default, a data page in SmartPlant Instrumentation is the first page in a specification form and contains various column values.

Changing the Page Process Function

You can change the current page process function, if required. In this way you can use the same page for instrument tags with different process function types. You cannot change the process function of a page that is already associated with tags. In this case you are prompted to save the page under a different name.

When changing the page process function, the software automatically performs the following:

- Checks and eliminates duplicate column names in the current page.

- Updates the definition of database fields included in the current page according to their current definition in the database.

- Updates the columns available to you in the **Column List** pop-up window.

 Notes

- Changing the page process function may prompt a warning, preceded by SQL statement error messages. These messages inform you that the page for which you are changing the process function contains undefined field values (for example, specification custom fields). The fields that caused the SQL error will not be available in the page after the process function change takes effect.

- Fields specific to the initial process function may be deleted in specifications based on the new process function.

➢ **To change the page process function**

1. In the **Page Editor**, open the page for which you want to change the process function.

2. On the **Actions** menu, click **Change Process Function**.

3. In the **Select Process Function** dialog box, select the required process function and click **OK**.

4. In the **Select Tables, Views, and Columns** dialog box, select a check box for each table or view from which you want to change the display of columns in the **Column List** dialog box.

5. Under **Show Columns**, click **Show** for each required table or view.

6. Under **Select columns**, select all or specific columns that you want to display in the **Column List** pop-up window.

7. Click **OK**.

Setting the Tab Order of the Fields on a Page

You can set the sequence in which you move the cursor in the page you are editing. In other words, you can determine where the cursor will move when pressing **Tab**.

➢ **To set the order of the fields on a page**

1. Click ▣ to start the **Page Editor**.

2. Click ▣ to open a specification page.

3. Select a page from the list and click **OK**.

4. On the **Actions** menu, click **Tab Order**. The tab numbers are displayed in **red** on the page.

5. Set the field order by typing in sequence numbers (20, 30, 40, and so forth) in the fields that you want to sequence. Assigning a zero (0) to a field means that it will not be editable (read-only). Note that some fields are read-only by default and cannot be accessed for editing even if you assign a tab sequence to them

6. When done, go to the **Actions** menu and clear **Tab Order**.

▣ **Note**

- If you add a field in InfoMaker, that field will have a tab order of 0 (zero) in the SmartPlant Instrumentation specification page, which means that this field will not be accessible for editing.

Switching to the Default Tab Order

You can switch from the tab order in the page you are currently editing to the default tab order. The default order is an ascending order of tab numbers in intervals of ten starting with 10 (for example, 10, 20, 30,...).

Caution

- Selecting this option will overwrite the tab order in the currently open page with the default tab order, and you will not be able to revert to the original tab order once you click .

➢ **To switch to the default tab order**

1. With the specification page open for editing, on the **Actions** menu, click **Tab Order**. The tab numbers are displayed on the page according to the current tab order.

2. On the **Actions** menu, click **Default Tab Order**. The tab numbering changes to the default tab order.

3. When done, go to the **Actions** menu and clear **Tab Order**.

Retrieving Custom Pages as PSR Files

Use this procedure to retrieve one or more custom pages from the database as .psr files. In the target folder that you specify, the software saves each page as a separate .psr file with the name PAGE[PAGE ID NUMBER].PSR.

Use this procedure for the following:

- To back up pages before editing them in the **Page Editor**.

- To share pages with users outside of a given SmartPlant Instrumentation network.

➢ **To retrieve custom pages as .psr files**

1. With the **Specifications Module** window open, on the **Actions** menu, click **Retrieve Custom Pages as PSR Files**.

2. Select one or more custom pages.

3. Under **Target folder**, accept the displayed path, or click **Browse** do specify a folder in which the software will save the selected custom pages as .psr files.

 Note

- The path is displayed in the **Target folder** box is the path that has been set for the **PSR folder** option on the **Specifications > General** page of the **Preferences** dialog box.

4. Click **OK**.

Regenerating Pages

This procedure enables you to correct discrepancies that can occur on a page, and to influence the display of various custom tables and fields in the **Column List** pop-up window. When you implement this procedure, SmartPlant Instrumentation automatically performs the following tasks:

- Checks and eliminates duplicate database fields (columns) on the current page.

- Updates the definition of database fields included in the current page according to their current definition in the database.

- In the **Column List** pop-up window, ensures updated display of process data custom fields and custom table **Name** fields.

During the course of this procedure, you also have the option of influencing the display of additional fields in the **Column List** pop-up window.

➢ **To regenerate a page**

1. Do one of the following:

   - Open a page from SmartPlant Instrumentation.

   - Open a page from an external .psr file.

2. In the **Page Editor**, on the **Actions** menu, click **Regenerate Page**.

3. In the **Select Tables, Views, and Columns** dialog box, under **Select tables and views**, select a check for each table or view from which you want to display additional columns in the **Column List** pop-up window.

4. Under **Show Columns**, click **Show** for each required table or view.

5. Under **Select columns**, select all or specific columns that you want to display in the **Column List** pop-up window.

6. Click **OK**.

Listing Pages and Forms

SmartPlant Instrumentation specifications are based on forms, which in turn are based on pages. Use these procedures for the following:

- Displaying a list of forms that include the current page

- Displaying a list of pages included in the current form

➢ **To display a list of forms that include the current page**

1. Open the page of interest in the **Page Editor**.

2. On the **Actions** menu, click **List**.

 Note

- To change the properties of a form, open it in the **Form Editor**.

➢ **To display a list of pages included in the current form**

1. Open the form of interest in the **Form Editor**.

2. On the **Actions** menu, click **List**.

 Notes

- To change the properties of a page, open it in the **Page Editor**.

- To print a Specification Forms and Pages report, on the **Reports** menu, click **Spec Pages per Form**.

Editing Specification Page Graphics

Using the Edit Columns and Headers Toolbar

The following procedure describes how to display the **Edit Columns and Headers** floating toolbar in the **Page Editor**. This toolbar options enables you to modify the specification page field layout without having to use a third-party interface such as InfoMaker. Using the toolbar options, you can do the following:

- Display page column names

- Modify position and size of page objects

- Delete selected page columns

- Duplicate page columns

- Duplicate page lines

- Add and modify page lines

- Display invisible columns

- Add database fields (columns) to a page

- Format page column values

- Define columns with computed values

- Add graphics to a page

➢ **To display the Edit Columns and Headers floating toolbar**

1. Use one of the following options to open the required page in the **Page Editor**:

    - Open the page from SmartPlant Instrumentation.

    - Open the page from an external .psr file.

2. Do one of the following to open the **Select Specification Page** dialog box:

    - On the **Page Editor** toolbar, click .

    - On the **Actions** menu, click **Open Page**.

3. In the **Select Specification Page** dialog box, select a page from the data window and click **OK**.

4. Do one of the following to display the **Edit Columns and Headers** floating toolbar:

    - On the **Page Editor** toolbar, click .

    - On the **Actions** menu, click **Edit Columns and Headers**.

5. Use the toolbar options to edit the page columns as required.

Modifying Position and Size of Page Objects

This procedure explains how to modify the position and size of the following page objects:

- Database fields (columns)

- Text fields

- Computed fields

- Graphic elements

There are three different methods of modifying the position and size of these page objects, all of which start with the following steps:

1. In the **Page Editor**, open the page that you want to edit, and on the **Actions** menu, click **Edit Columns and Headers**.

2. In the **Page Editor** work area, click the object that you want to modify.

From this point, you can perform any of the following procedures:

- Modifying position and size using the keyboard arrows

- Modifying position and size using the mouse

- Setting precise position and size from a pop-up window

➢ **To modify position and size using the keyboard arrows**

1. Using the keyboard arrows, move the page object until the upper left corner is correctly placed.

2. To make the object narrower, press Shift + Left Arrow.

3. To make the object wider, press Shift + Right Arrow.

4. To make the object shorter, press Shift + Up Arrow.

5. To make the object taller, press Shirt + Down Arrow.

🖐 Caution

- For Save as Excel compatibility, fine-tune the position of page objects as described below under To set precise position and size from a pop-up window. For more information, see Guidelines for Customizing Pages for Save as Excel.

➢ **To modify position and size using the mouse**

1. To move the object, do the following:

    a) Move the cursor to the center of the object.

     Note

    • The cursor pointer changes to cross-hairs.

    b) Drag the object to its new location.

2. To resize the object, do the following:

    a) Move the cursor to an object edge or corner that you want to move.

     Note

    • The cursor pointer changes to a double-headed resize arrow.

    b) Drag the edge or corner to its new location.

     Caution

    • For Save as Excel compatibility, fine-tune the position of page objects as described in the following paragraph. For more information, see Guidelines for Customizing Pages for Save as Excel.

➢ **To set precise position and size from a pop-up window**

1. On the **Edit Columns and Headers** toolbar, click .

2. In the **Column Position** pop-up window, do the following to change the PowerBuilder unit coordinates of the upper left corner of the object:

    a) Beside **X**, enter the new x-value.

    b) Beside **Y**, enter the new y-value.

3. In the **Width** and **Height** data fields, enter the new values.

Adding a Line to a Specification Page

Use this procedure to add a graphic line to a specification page.

➢ **To add a line to a specification page**

1. In the **Page Editor**, open the page that you want to edit, and display the **Edit Columns and Headers** toolbar.

2. On the **Edit Columns and Headers** toolbar, click ⊞.

3. In the **Page Editor** work area, do one of the following:

   - For a horizontal line, click the location of the left end of the line that you want to create.

   - To prepare for a vertical line, click to the left of the location.

4. In the **Line** dialog box that opens, under **Line ID**, do one of the following:

   - Accept the default line ID.

   - Type a different unique line ID.

5. Do one of the following:

   - Accept the displayed line end coordinates.

   - Enter your own coordinates.

6. To change the line color, under **Line color**, select the color that you need.

7. To change the line style — the options are Solid, Dash, Dotted, and so forth — under **Line style**, select the option that you need.

8. To change the line thickness — from one to five PowerBuilder units — under **Line thickness**, type the new value or use the spinners.

   Note

   - The software displays small white dots at the ends of the line that you just created.

9. To fine-tune the line location, orientation, and length, see Moving Specification Page Lines.

10. To change other line properties, see Changing Specification Page Line Properties.

Moving Specification Page Lines

Use these procedures to move specification page lines within a page or to change their length. You will find this useful for existing lines, for lines that you duplicate, and for lines that you create. There are three different methods of moving lines, all of which start with the following steps:

1. In the **Page Editor**, open the page that you want to edit, and on the **Actions** menu, click **Edit Columns and Headers**.

2. In the **Page Editor** work area, click the line that you want to move.

   Notes

   - The software displays small white dots at the ends of the line that you select.

   - The first procedure below is written for a horizontal line. To move a vertical or diagonal line, make the appropriate changes.

From this point, you can perform any of the following procedures:

- Moving the line using keyboard arrows
- Moving the line using the mouse
- Setting the line coordinates from a dialog box

➤ **To move the selected line using the keyboard arrows**

1. Using the keyboard arrows, move the line until the placement of the right end of the line is as you need.

2. To make the line shorter, on the keyboard, press Shift + Left Arrow.

3. To make the line longer, press Shift + Right Arrow.

4. To change the line from the horizontal, press Shift + appropriate arrow.

➤ **To modify the selected line using the mouse**

1. To change the position of one end of the line, while leaving the other end anchored, do the following:

   a) Move the cursor over the end that you want to move until the cursor changes to cross hairs.

   b) Drag the line end to its new location.

2. To move the line from one location to another, without changing orientation or length, drag the line from the middle.

➢ **To change the position of the selected line from a dialog box**

1. Double-click the selected line to open the **Line** dialog box.

2. To change the PowerBuilder unit coordinates of one line end, beside **BeginX** and **BeginY**, type the new coordinates or use the spinners.

3. To change the coordinates of the other line end, beside **EndX** and **EndY**, type the new coordinates or use the spinners.

4. Click **OK**.

Changing Specification Page Line Properties

Use this procedure to change the color, style, and thickness properties of lines in specification pages.

➢ **To change specification page line properties**

1. In the **Page Editor**, open the page that you want to edit, and display the **Edit Columns and Headers** toolbar.

2. In the **Page Editor** work area, click the line for which you want to change properties.

Note

- The software displays small white dots at the ends of the line that you select.

3. Double-click the selected line to open the **Line** dialog box.

4. To change the line color, under **Line color**, select the color that you need.

5. To change the line style — the options are Solid, Dash, Dotted, and so forth — under **Line style**, select the option that you need.

6. To change the line thickness — from one to five PowerBuilder units — under **Line thickness**, type the new value or use the spinners.

Duplicating Specification Page Lines

This procedure enables you to duplicate a graphic line on a specification page. This offers an alternative to editing the page in InfoMaker.

➢ **To duplicate a page line**

1. In the **Page Editor**, open the page that you want to edit, and display the **Edit Columns and Headers** toolbar.

2. In the **Page Editor** work area, click the line that you want to duplicate.

    Note

    - The software displays small white dots at the ends of the line that you select.

3. On the **Edit Columns and Headers** toolbar, click .

    Note

    - The software displays the duplicated column a bit lower and towards the right of the original line.

4. Select the duplicate line, and drag it to the location that you need.

5. To fine-tune the location of the duplicate line, see Moving Specification Page Lines.

6. To modify the properties of the duplicate line, see Changing Specification Page Line Properties.

Adding Graphics to a Specification Page

Use this procedure to add graphic images to your specification pages.

Notes

- The graphic files that you include in your pages must be in .bmp format.

- If you save this page as an external file, make sure to include associated graphic files.

- If you save a specification in Excel format, graphic elements that you inserted into a page that underlies the active form are not transferred. For more information, see Saving Specifications in Excel Format.

- You can include a graphic logo on the form level by using custom title blocks. For more information, see Specification Title Blocks Customization. To enable export into Excel format, use this method, and not the procedure that follows.

➢ **To add graphics to a specification page**

1. Do one of the following:

   - Open a page from SmartPlant Instrumentation.

   - Open a page from an external .psr file.

2. On the **Actions** menu, click **Edit Columns and Headers**.

3. On **Edit Columns and Headers** toolbar, click .

4. Do one of the following:

   - Click a free area of the page.

   - Click where you want to insert the graphic.

5. In the **Picture** dialog box that opens, under **Picture ID**, do one of the following:

   - Accept the default picture ID.

   - Type a different unique picture ID.

6. Under **File name**, do one of the following:

   - Type the path and name of the .bmp file that you want to use for the picture.

   - Click and navigate to the file that you want to insert.

7. Click **OK**.

8. To move the graphic within the page, click on the graphic and do one of the following:

    - Use the keyboard arrows.

    - Drag the graphic using the cursor.

9. To resize the selected graphic, do the following:

    a) Move the cursor to the edge or to the corner that you want to resize, until a two-headed arrow appears.

    b) Drag the corner or the edge of the graphic to its new location.

10. To delete the selected graphic, on the **Edit Headers and Columns** toolbar, click ✕.

    Note

    - In certain configurations, it is difficult to delete a graphic embedded among the elements of a page.

11. When you are satisfied with the appearance of the graphic, do the following:

    a) On the **Actions** menu, click **Edit Headers and Columns** to close this toolbar.

    b) Do one of the following on the **Actions** menu:

        - To save the page under the current name, click **Save**.

        - Save the page under a different name.

        - Save the page as an external file.

Customizing Specification Pages

Guidelines for Customizing Pages for Save as Excel

In general, specifications based on SmartPlant Instrumentation library pages export accurately to Excel. When you customize pages in the **Page Editor**, use these guidelines for compatibility with Excel. After you create forms and specifications based on such pages, you can then save these specifications accurately in Excel format.

The guidelines for customizing pages in the for Save as Excel are as follows:

Graphic Limitations of the Excel Environment

The **Page Editor** allows you freedom in designing specification pages, with few limitations on the layout of database fields, computed fields, text fields, and lines. But when designing pages for Excel compatibility, it is important to keep in mind that an Excel worksheet is basically a grid of cells. Although a standalone Excel spreadsheet supports random placement of text, value, and line objects, Save as Excel works best if you imagine an Excel grid underlying your page. The topics below concretize this principle.

Grid and Lines

Although you will probably be using the mouse to create and place lines, you must fine-tune the grid by referring to the **Line Position** pop-up window for each line object. Verify the following:

- All lines are either exactly vertical lines or exactly horizontal.

- For every vertical line, BeginX = EndX.

- For every horizontal line, BeginY = EndY.

- Left/right external border lines share common BeginY (top) and EndY (bottom) values.

- Top/bottom external border lines share common BeginX (left end) and EndY (right end) values.

- When one line ends by running into another, make sure that they share an X value or a Y value. This prevents overshooting and undershooting.

- Create as much of the grid as possible before creating text and value objects.

- Although there is no requirement for every line to run the entire length or width of the page, imagine an Excel grid underlying your page. For example, if you inserted a vertical line near the top of the page at X = 500 PBU (PowerBuilder units), if your mouse placement of a vertical line near the bottom of the page ended up at X = 505, make the X values consistent for both lines.

- Similarly, if you inserted a horizontal line towards the left of the page at Y = 700 PBU, if your mouse placement of a horizontal line towards the right of the page ended up at Y = 705, make the Y values consistent for both lines.

Text and Value Fields

After you set the major lines of the page grid, you can insert database fields, computed fields, text fields, and lines.

Left-aligning fields to lines

During the process of export from SmartPlant Instrumentation to Excel, the software associates each field with a vertical line to the left of the field. To ensure accurate display, the BeginX value of a field should equal the X values of the line to its left.

 Note

- For more flexibility regarding this limitation, edit a page in InfoMaker (see Guidelines for Customizing PSR Files for Save as Excel).

Adjacent fields

- To prevent text cut-off, leave at least 5 PBUs between adjacent fields. (The requirement to left-align fields to lines also applies to fields to the right of other fields.)

- For multiple fields between horizontal lines, set constant BeginY and EndY values for all of the fields. The BeginY value should be several PBUs greater than the Y values of the line above, and the End2 value should be several PBUs less than the Y values of the line below.

Displaying Page Column Names

Use this procedure to display the names of the columns that a particular page contains.

➢ **To view the page column names**

1. Open the required page in the **Page Editor** and display the **Edit Columns and Headers** floating toolbar.

2. Click ⬜ to display in the **Field Selection** area all the column names which are used in the currently open page.

3. Click ⬜ again to clear the displayed column names.

Editing the Headers in a Page

You can modify the text that appears in the field headers. You can change the text itself, change the font characteristics: bold or not bold, Italic, rotated (determine angle), text box size, text alignment, text color, and background color.

➢ To edit the headers in a page

1. Start the Specifications module.

2. On the toolbar, click to start the **Page Editor**.

3. Click to open a specification page.

4. Select a page from the list and click **OK**.

5. Open the **Edit Columns and Headers** toolbar by doing one of the following:

   - Click .

   - On the **Actions** menu, click **Edit Columns and Headers**.

6. Double-click the required header to open the **Edit Text** dialog box.

7. Perform editing actions as described in the following table:

Dialog box element	Action
Name text box	Edit the header text.
Alignment option buttons	Align the text string to the left, center or right side of the text box
Background color	Select **Transparent** the current Windows background, or clear to select a background color from the list.
Text color list	Select the required color.
Font style	Select **Bold** and **Italic** as required.
Rotate list	Select an angle to rotate the text.

8. Click **OK**.

Displaying Invisible Columns

This option enables you to display page columns which are usually invisible (fields with status Invisible). These columns are either pre-defined (in ready-made pages) or customized by a SmartPlant Instrumentation user (using InfoMaker, for example). In SmartPlant Instrumentation, you can view and modify these columns using a PowerSoft format editor such as InfoMaker.

➢ **To display invisible columns**

1. Open the page that you require in the **Page Editor** and display the **Edit Columns and Headers** floating toolbar.

2. On the **Edit Columns and Headers** toolbar, click to display the invisible columns of the current page.

   - If several columns are positioned at the same spot (on top of the other), you will only see the top column. You can see the columns underneath the top column simply by moving the columns aside.

Defining Columns with Computed Values

This option allows you to define and modify an InfoMaker eligible expression for a column in the current form. Such an expression is referred to as a 'computed value'. The field containing such an expression is referred to as a 'computed field'.

You can enter any of the following data types which **must** comply with the conventions used in InfoMaker.

Data Type	Example
Number	2210
String of characters	'AA' or AA"
Field name	cmpnt_name
Function	upper(cmpnt_name)
Conditional expression	if (pd_fluid_phase = 'S','Steam','Water')

See your InfoMaker User Guide for additional information about the data types you can use as valid expressions for this option.

➢ **To define a computed value for a field**

1. Open the required page in the **Page Editor** and display the **Edit Columns and Headers** floating toolbar.

2. With the **Edit Columns and Headers** toolbar displayed, in the **Page Editor**, click the column where you want to define a computed field.

3. Do one of the following to open the **Computed Field** dialog box:

   - On the **Edit Columns and Headers** toolbar, click 🖩 and then click the required field in the **Page Editor**.

   - Select a field and then double-click it (see Duplicating Page Columns to learn how to duplicate columns on an open page).

   📝 **Note**

   - When selecting a column in the current page, the **Computed Field** dialog box shows the current computed value of that column.

4. In the **Name** data field, type one of the following:

   - A new field name to add a column in that name to the current page

   - A column name which already exists in the current page or leave the current value (if you selected a field in the current page).

5. In the **Expression** data window, type a value, function, or any other appropriate expression.

6. Click **Verify** to verify that the expression you entered is a valid InfoMaker expression.

7. Click **OK**.

Note

- The data you entered in the **Computed Field** dialog box is automatically verified. If you made changes to a field in the currently opened form, the software displays the computed field results on the current page.

Displaying Revision Changes for Specification Sheet Properties

When you create a new revision for a specification sheet, you can show the revision number next to properties for which the values were changed at the last revision. To do this, you add a computed field for the property for which you want to indicate the change.

➢ **To display revision changes for specification sheet properties**

1. Open the page that you require in the **Page Editor** and display the **Edit Columns and Headers** floating toolbar.

2. On the **Edit Columns and Headers** toolbar, click and click the page at the position where you want to place the computed field.

3. In the **Computed Field** dialog box, type a name for the computed field.

4. In the **Expression** box, type the following expression:

   f_changevalue(cmpnt_id,rev_id,dwg_id,"<field name>")

   For example, to show changes for the maximum pressure, the expression is written as follows:

   f_changevalue(cmpnt_id,rev_id,dwg_id,"pd_press_max")

5. Click **Verify** to verify that the expression you entered is a valid InfoMaker expression.

6. Click **OK**.

7. To show the change, do the following:

   a) Modify an existing value of a property for which you added a computed field to display changes for the last revision.

   b) Close the specification sheet and re-open it the following day.

   c) Add a revision to the specification sheet and refresh the display.

 Notes

- You can also add the computed field to the specification sheet using InfoMaker. For details, see Adding User-Defined Fields to PSR Files.

- The indication appears only after the day advances on your computer's clock.

- The indication appears only for existing values that were changed at the last revision. If you enter a new value for a property that previously did not have a value, no change is indicated.

Formatting Page Column Values

Use this procedure to format page column values. To differentiate among various fields, you can use one or more of the following options:

- Left, center or right alignment

- Bold and Italic font styles

- Variable font size

- Combinations of text and background colors

Note

- The format that you set for the page field name is used by SmartPlant Instrumentation to display field values in the specifications based on this page.

➢ **To format page column values**

1. Open the required page in the **Page Editor** and display the **Edit Columns and Headers** floating toolbar.

2. On the **Edit Columns and Headers** toolbar, click to view the field names.

3. Double-click the required name to open the **Edit Column** dialog box.

4. Under **Alignment**, accept the default Left, or select Center or Right.

5. Under **Font style**, select **Bold** and **Italic** as necessary.

6. Under **Font size**, enter a font size between 3 and 24.

7. To set a background for the text, do one of the following:

    - Under **Background color**, select a color from the list.

    - To display the text on the current Windows® background, select **Transparent**.

8. Click **OK**.

Using Custom Tables in Specifications

This procedure allows you to use custom tables in a specification.

Prerequisites

- In the Administration module, the Domain Administrator must enable the use of custom tables and define the custom table names. Afterwards, the **Custom Tables** menu command becomes available on the **Tables** menu of the Instrument index module.

  For example, if the Domain Administrator creates the tables TABLE_1, TABLE_2, and TABLE_3, in the Instrument index module, these tables appear as sub-menu commands on the **Custom Tables** menu. Each sub-menu command opens a supporting table where you can make appropriate definitions. The Domain Administrator can create up to 16 custom tables.

- In the Instrument Index module, you have to open the **Tag Number Properties** dialog box for a tag that you create and then, using the supporting table options accessible from the **Custom Tables** tab, create custom table fields and assign these fields to the tag.

➢ **To use custom tables in a specification**

1. In the Specifications module, in the **Page Editor**, open the page upon which the source tag number specification is based.

2. Do one of the following:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Regenerate Page**.

3. Do one of the following to open the floating toolbar **Edit Columns and Headers**:

   - On the **Page Editor** toolbar, click .

   - On the **Actions** menu, click **Edit Columns and Headers**.

4. On the **Edit Columns and Headers** floating toolbar, click .

5. In the **Column List** pop-up window, scroll down to the column UDT_SUPPORT_ID1.

    💡 **Tip**

    - In the **Column List** pop-up window, the software does not display the user-defined names of the custom tables. Only the internal names of all custom tables are displayed. The incrementing number of a UDT_SUPPORT_ID column corresponds to the number of the custom table that the Domain Administrator has created. For example, if the Domain Administrator only creates the eighth custom table, you need to select the column UDT_SUPPORT_ID8 to be able to use its values in a specification.

6. Drag and drop the appropriate UDT_SUPPORT_ID columns anywhere on the currently open page.

7. Click ⊞ to close the **Column List** pop-up window.

8. On the **Page Editor** toolbar, click 📝 to exit the editing mode.

9. On the **Actions** menu, click **Tab Order** to display the order of the tabs and then click **Default Tab Order** to apply an ascending order of tab numbers in intervals of ten starting with 10 (for example, 10, 20, 30,...).

10. On the **Actions** menu, click the **Tab Order** command again to hide the order of the tabs.

11. Save the page.

12. Open the specification based on the page and view the custom table definitions.

    💡 **Tip**

    - You can select a different definition from the drop-down list, provided that in the Instrument Index module you made more than one definition for a custom table. If you select a different definition, the software automatically assigns this definition to the tag number. In the Instrument Index module, you can open the **Tag Number Properties** dialog box to see the updated definition.

Adding Database Fields (Columns) to a Page

Use this procedure to add columns (database fields) to a specification page that you open in the **Page Editor**, by dragging fields displayed in the **Column List** pop-up to the open page. The columns available for addition to a page are of the following types:

- Standard (non-custom) database fields appropriate to the process data type of the open page (displayed by default in the **Column List** pop-up window)

- Process data custom fields (displayed in the **Column List** pop-up window after you regenerate the page)

- Specification custom fields (some displayed by default in the **Column List** pop-up window, with option to select additional fields from the **Select Tables, Views, and Columns** dialog box)

- Standard database fields available for all process functions (displayed in the **Select Tables, Views, and Columns** dialog box, with option to select additional fields for display in the **Column List** pop-up window)

➢ **To add columns to a specification page**

1. Do one of the following:

   - Open a page from SmartPlant Instrumentation.

   - Open a page from an external .psr file.

2. In the **Page Editor**, on the **Actions** menu, click **Regenerate Page**.

3. In the **Select Tables, Views, and Columns** dialog box, under **Select tables and views**, select a check for each table or view from which you want to display additional columns in the **Column List** pop-up window.

   📝 **Note**

   - If you want to add a user-defined view to a spec page, you must first add this view in the **Specification Views** dialog box. For details, see Associating User-Defined Views.

4. Under **Show Columns**, click **Show** for each required table or view.

5. Under **Select columns**, select all or specific columns that you want to display in the **Column List** pop-up window.

6. Click **OK**.

7. On the **Actions** menu, click **Edit Columns and Headers**.

8. On the **Edit Columns and Headers** toolbar, click 📖.

9. Drag fields that you want to add from the **Column List** pop-up to their location on the page.

10. Click ▥ to close the **Column List** pop-up.

11. Do one of the following on the **Actions** menu:

    - To save the page under the current name, click **Save**.

    - To save the page under a different name, click **Save as New Page**.

Associating User-Defined Views

This option enables you to associate a SmartPlant Instrumentation database view that you created in an external application such as InfoMaker. After associating an appropriate database view, you can use the data it contains in specifications. For more information, see Adding Database Fields (Columns) to a Page.

When creating a user-defined database view, you can include in this view any combination of SmartPlant Instrumentation columns, with each column belonging to a different SmartPlant Instrumentation table. Using database views, you can retrieve data from the required tables and display this data in specification documents. For example, a certain instrument is assembled on a line. You use your database view to automatically retrieve data related to that line, for example, line process data, pipe related material, and so forth.

When associating a user-defined view with SmartPlant Instrumentation, the system recognizes the view under the following conditions:

- The view must contain the CMPNT_ID column.

- The CMPNT_ID value must be unique.

- The number of rows in the created view must match the number of rows in the COMPONENT table of SmartPlant Instrumentation. In other words, the appropriate instrument tags must appear in the view.

Caution

- Make backups of all your user-defined views. When upgrading your SmartPlant Instrumentation version, note that in the new SmartPlant Instrumentation version some tables or columns might have been modified. If you have upgraded your database after associating user-defined views, you cannot use the views in which the table records do not match the new table records of the new database. To enable the use of these views, you must run a SQL script to recreate the user-defined views.

➢ **To associate a user-defined view with SmartPlant Instrumentation**

1. Start the Specifications module and then, on the **Actions** menu, click **Specification Views**.

2. In the **Specification Views** dialog box, click **New**.

3. In the new row, type the appropriate view name.

Tip

- The name of the new view must be exactly the same as the name defined in your external application (characters are not case sensitive). The system validates the name and checks whether the view complies with the SmartPlant Instrumentation-specific conditions.

4. Under **Entity Type**, from the list, select the entity type you want to associate with the current view.

Tip

- For a user-defined view, you can select an entity type from a list. For the default views, the entity type is fixed. The displayed entity type indicates that you can only use the current view in a specific entity specification. For example, you can only use the default view cable_type_view in a cable specification.

5. Click **OK**.

Duplicating Page Columns

This procedure enables you to duplicate a page column. This way you need enter data only once for several identical columns in a page.

➢ **To duplicate a page column**

1. In the **Page Editor**, open the page that you want to edit, and display the **Edit Columns and Headers** toolbar.

2. On the **Edit Columns and Headers** toolbar, click ▭ to display the field names.

3. In the **Page Editor** work area, click the column that you want to duplicate.

4. On the **Edit Columns and Headers** toolbar, click 🗗.

Note

- The software displays the duplicated column as superimposed on the original column and skewed downwards to the right.

5. Drag the new column to the location that you need.

Deleting Page Columns

Use this procedure to delete existing columns in a particular page.

➢ **To delete a page column**

1. Open the required page in the **Page Editor** and display the **Edit Columns and Headers** floating toolbar.

2. With the **Edit Columns and Headers** toolbar displayed, in the **Page Editor**, click the column that you want to delete.

3. Click ✕.

Using Custom Fields of Wiring Equipment Entities

Custom fields of wiring equipment entities appear in the table APPARATUS. You can use up to 30 fields in a specification. The custom fields in the APPARATUS table are designated by column names from APPAR_UDF_C01 to APPAR_UDF_C30.

The custom fields that you add in a specification page hold view-only values in an entity specification that you create using this page as a source. Each custom field holds a user-defined property value of a customized wiring equipment category.

After adding custom fields in a spec page, you have to change the column headers in the page so that they match the user-defined property names in the **Wiring Equipment Category Properties** dialog box, which you access for the Wiring module (with the Wiring module main window open, click **Tables > Wiring Equipment > Categories**).

➢ **To use custom fields in a wiring equipment specification page**

1. Create a wiring equipment entity in the **Reference Explorer**.

2. In the Specifications module, restore a form associated with the Wiring Equipment entity type.

3. In the **Page Editor**, open a spec page based on the form that you restored.

4. Regenerate the page, and from the APPARATUS table, add the appropriate APPAR_UDF columns in the page.

5. In the page, name the column headers to match the headers that you defined for wiring equipment properties in the Wiring module. To display a list of headers, you need to open an external .psr file WIRING_EQUIPMENT_UDF.PSR, which is located in the path <SmartPlant Instrumentation home folder>\PSR.

   🔆 **Tip**

   - You can open the file WIRING_EQUIPMENT_UDF.PSR using InfoMaker, or from the Browser module.

Adding Function Block Custom Fields to Fieldbus Specifications

Two specification forms are available for Foundation fieldbus data: Form 73 for flow instruments, and 74 for pressure instruments. Both of these forms contain a fieldbus page that includes data for shipped function blocks. In addition to these function blocks, you can create your own function blocks and add data for them to this page.

Before adding custom function blocks in the specification page, you have to define them in the Instrument Index module. The order in which you define them determines the sequence number that they are mapped to when dragging the columns onto the specification page. The shipped function blocks correspond to sequence numbers 1 to 21. Sequence numbers 22 to 40 are available for custom function block parameters.

➢ **To add custom function block data to a fieldbus specification page**

1. In the Instrument Index module, create a new function block.

2. On the Specifications module toolbar, click .

3. In the **Page Editor**, click .

4. In the **Select Specification Page** dialog box, select Fieldbus Page.

5. In the **Page Editor**, click to display the **Edit Columns and Headers** floating toolbar.

6. On the **Edit Columns and Headers** floating toolbar, click to view the names of the columns on the specification page.

7. On the **Edit Columns and Headers** floating toolbar, click .

8. In the **Column List** pop-up window, select a column starting with the string 'fb' and for which <number> has a value between 22 and 40, for example, fb22_exists. For each custom function block, the following column types are available:

fb<number>_name	Displays the text string used for the function block label as defined in the **Function Blocks** supporting table.
fb<number>_count	Allows you to specify the number of function blocks of the particular type that are used in the instrument if the Multiple check box is selected in the **Function Blocks** supporting table.
fb<number>_ex_time	Allows you to specify the execution time for the function block type if the Execution Time check box is selected in the **Function Blocks** supporting table.
fb<number>_exists	Displays a text box that you can select to indicate that the function block is required for the instrument.

Tip

- The <number> value corresponds to the order in which you add custom function blocks in the **Function Blocks** supporting table, and not their alphabetic sequence.

9. Drag the column value that you selected from the **Column List** pop-up window and drop it in the desired location on the currently open page.

10. Drag other custom function block values onto the page as desired.

11. Click ▥ to close the **Column List** pop-up window.

Specification Forms

Overview

Forms are templates that are required for creating specifications. Forms consist of one or more data pages and a note page. (You might design a form based on more than one page, for example, for a field device that has both electrical and mechanical connections, requiring separate pages for wiring connections and line-related fields.)

SmartPlant Instrumentation is delivered with a library of predefined forms bearing the names of their default pages. Using the **Form Editor**, you change, edit and save forms to fit your own conventions.

 Note

- You also have the option to create multi-tag specifications, with fields that are constant among all the tags displayed on common pages, and fields that vary displayed on a multi-tag list page. You base multi-tag specifications on formats (based on forms), which you create and modify in the **Format Editor**.

The following options are available using the **Form Editor**:

- Creating New Forms

- Adding Pages to Existing Forms

- Sorting Pages within Forms

Creating New Forms

This procedure explains how you can create a new form that contains one or more pages.

➢ **To create a new form**

1. Click to start the **Form Editor**.

2. Click to create a new form.

3. Select the page to start the form with (a form must contain at least one page)

4. After editing the form, click to save the form to the database.

Adding Pages to Existing Forms

A multi-page form binds several pages into an editable entity that can be associated with a tag. By adding pages to a form, you can achieve greater flexibility and accuracy in specifications based on that form.

Use the following procedure to add pages to existing specification forms. You can add several pages to the same form.

Caution

- In general, you should use unique specification custom field (spec_udf) names throughout the pages of a given multi-page form. If you build a form incorporating pages with identical specification custom field names for different fields, the following scenario can occur:

    a) You type **A** for the spec_udf_c13 value on Page 1 of a multi-page specification.

    b) You then type **B** for the spec_udf_c13 field on Page 2 of the specification.

    c) Since the software allows only one form value for spec_udf_c13, it automatically changes the Page 1 spec_udf_c13 value to **B**.

- In a multi-page form, you should use a given specification custom field name on more than one page only for a field that you design for constancy across all of the form pages.

Note

- If you want to use large notes in a form, you need to add a large note page to this form. Since it is possible to scroll the large note page area, you do not need to add more than one large note page to a form. When printing forms containing a large note page, the software divides the page into separate sheets automatically, depending on the note text length. To learn more about large note pages, see Working with Large Note Pages.

➤ **To add pages to existing forms**

1. In the Specifications module, do one of the following to open the **Form Editor**:

    - On the toolbar, click .

    - On the **Edit** menu, click **Form Editor**.

2. In the **Form Editor**, do one of the following:

    *   On the **Form Editor** toolbar, click .

    *   On the **Actions** menu, click **Open Form**.

3. In the **Select Specification Form** dialog box, select the form to which you want to add pages, and click **OK**.

4. In the **Form Editor**, add a page by doing one of the following:

    *   On the **Form Editor** toolbar, click .

    *   On the **Actions** menu, click **Add Page**.

    *   Click the **New** tab.

5. In the **Select Specification Page** dialog box, select the row of the page that you want to add to the form.

 Notes

    *   To edit the page name and description, click **Edit** and type the required modifications.

    *   The process function of the form is determined by the pages in the form. If the process function of all the pages within a form is General, the form process function is also General. If an added page has a different process function, the form process function changes to the new page process function. In that situation adding a new page is available only for pages with General or the same process function as the form.

6. Click **OK**.

7. Sort the pages within the form as required.

8. Do one of the following:

    *   To save the changes that you made, on the **Actions** menu, click **Save**.

    *   To save the form under a new name, on the **Actions** menu, click **Save as New Form**.

Deleting a Page from a Form

You can delete a page from an existing multi-page form. Deletion is specific for the current form and does not exclude the page from the list of pages available as templates for other forms.

➢ **To delete a page from an existing form**

1. Open the **Form Editor**.

2. Do one of the following:

   - Click ▤✗.

   - On the **Actions** menu, click **Delete Page**.

3. Do one of the following:

   - To save the form under the existing name, on the **Actions** menu, click **Save**.

   - To save the form under a new name, on the **Actions** menu, click **Save as New Form**.

Sorting Pages within Forms

You can sort the pages within a specific form. In other words, use this option to change the page numbering (page 1, page 2).

➢ **To sort the pages within a selected form**

1. Open the **Sort Pages** dialog box, click .

2. Select a page and use the move-down, move-up arrows to change the page numbering.

3. Click **OK**.

Defining Fields for a Form Browser

Use this procedure to define fields for a form browser you can add in the Browser module based on the current form. The fields that you select in the **Spec Data Dictionary** become available for inclusion in the browser view (in the **Style settings** section of the **Browser Manager**). You can edit the field names only in the **Spec Data Dictionary**.

Note

- The actions described in this procedure do not affect the on-screen display of specifications based on a form that you edit in the **Spec Data Dictionary**, nor do they influence printed specifications.

➢ To define fields for a form browser

1. In the Specifications module, on the **Edit** menu, click **Spec Data Dictionary**.

2. In the **Select Specification Form** dialog box, select a form and click **OK**.

3. On the toolbar, click .

4. If you want to edit the column headers for the form browser, do one of the following:

    - In the **Field Properties** tab, change individual headers by typing a text string instead of the displayed header.

    - Change column headers in batch mode using another form as a source. To do so, click **Copy From**, and then, select a source form.

    - Apply existing headers of the current form as follows:

        a) In the form or In the **Field Properties** tab, under **Column Header**, move the cursor to the header, and after the cursor changes its shape to , click the header.

        b) In the form, double-click the header to display it in the **Field Properties** tab.

Tips

- If you apply existing headers of the current form, in the form display, the form fields are marked with a background the **cyan** background color. The background color of the currently selected field, for which you are editing the header, changes to **magenta**.

- The ▶ icon in the **Field Properties** tab points to the corresponding column header, which is now available for editing.

5. To define the fields for the form browser, do one of the following:

- To make all of the fields from one or more tables available for the form browser, click the **Tables** tab, and then, under **Browser Fields**, click **All** for the tables that you require.

- To define individual fields, on the **Field Properties** tab, select the appropriate check boxes in the **Browser** column.

6. On the module toolbar, click 💾.

Listing Pages and Forms

SmartPlant Instrumentation specifications are based on forms, which in turn are based on pages. Use these procedures for the following:

- Displaying a list of forms that include the current page

- Displaying a list of pages included in the current form

➢ **To display a list of forms that include the current page**

1. Open the page of interest in the **Page Editor**.

2. On the **Actions** menu, click **List**.

📝 **Note**

- To change the properties of a form, open it in the **Form Editor**.

➢ **To display a list of pages included in the current form**

1. Open the form of interest in the **Form Editor**.

2. On the **Actions** menu, click **List**.

📝 **Notes**

- To change the properties of a page, open it in the **Page Editor**.

- To print a Specification Forms and Pages report, on the **Reports** menu, click **Spec Pages per Form**.

Restoring Library Forms

Use this procedure if you need to perform any of the following activities:

- Activate a library form that is not available in the **Select Specification Form** dialog box. After you restore a form, this form becomes available in the **Select Specification Form** dialog box, and you can associate this form with the entities that belong to the entity type. You must restore all forms whose entity type is not Instrument if you want to create specifications using these forms. For example, to create hook-up specifications, you must restore a form assigned to the entity type Hook-Up.

- Restore a library form after deleting it. You can only restore library forms provided with SmartPlant Instrumentation. You can only restore a library form that was saved as an .isf file.

➢ **To restore a library form**

1. Start the Specifications module and do one of the following:

   - On the toolbar, click ![icon].

   - On the **Edit** menu, click **Form Editor**.

2. On the **Actions** menu, click **Restore Form**.

3. Select the form you want to restore and click **OK**.

![Note icon] **Note**

- If the form with the same name you are restoring already exists, a warning is displayed prompting you to overwrite the existing form or to restore the selected form using another number of your choice. If there are no specifications based on the form you are restoring, you can choose the overwrite option; if a specification already exists for the form, select to restore the form with another number and enter a number in the field.

Regenerating Library Forms

After initialization of a database from a source or after a version upgrade, some form data may not be copied correctly to the target. For this reason, it is recommended that you regenerate the library forms to avoid any problems at a later stage. If you are using the workflow option in the Instrument Specifications Browser, regeneration is **essential** after initialization or upgrade.

➢ **To regenerate library forms**

1. Start the Specifications module and then, on the **Actions** menu, click **Regenerate Library Forms**.

2. In the **Regenerate Library Forms** dialog box, click **Run**.

3. On completion of the process, click **Close**.

Specification Title Block Customization: Common Tasks

A specification title block is a .psr file in which you can combine lines, database fields, and a logo. You incorporate a title block into a form in order to display the relevant information in specifications based on that form. For a multi-page form, the title block is common to every page of the form.

Note

- From Version 7, the System Administrator, when making or modifying domain definitions in the Administration module, can select a title block assignment method. If the selected method is Standard, the software hides all the title block assignment options that are available in the Specifications module.

To incorporate customized title blocks into your specification forms, perform the following procedures:

- Customizing Specification Title Blocks in InfoMaker

- Adding a Title Block to a Form

- Modifying a Customized Specification Title Block

Customizing Specification Title Blocks in InfoMaker

This procedure allows you to customize a title block using Sybase InfoMaker. After performing this procedure, you can insert the customized report layout into SmartPlant Instrumentation so that it becomes a custom title block.

Notes

- For more information about using InfoMaker for SmartPlant Instrumentation, including version compatibility, see SmartPlant Instrumentation and InfoMaker.

- If your System Administrator, when making or modifying domain definitions, selected the Standard custom title block assignment method, you do not have to perform this procedure. Instead, you can use the title block SPECS DEFAULT TB WITH IN UNITS.PSR, that is supplied with SmartPlant Instrumentation. For details, see Opening a New Custom Title Block from SmartPlant Instrumentation.

➢ **To customize a title block using InfoMaker**

1. Start InfoMaker and open a predefined .psr file.

Tip

- You can use the TBSAMPLE.PSR file provided to you as a sample that you modify and save under a new name. Use the TB_MSS.PSR file for the SQL Server platform or the TB_ORA.PSR file for the Oracle platform.

Caution

- When adding other design-related items, such as internal lines, text boxes, and so forth, to the title block, make sure that the names of the new items contain the tb segment. For example, if you want to add a new line, name the line as <Line>_tb_<1>. This is required to distinguish between items that belong to the title block and items that belong to the rest of the report outside the title block.

2. Modify the report layout as required. Note the following:

    - When you edit the logo field, do not change the value logo under **Name**, on the **General** tab of the **Properties** dialog box. This is crucial if you ever save specifications — based on a form that incorporates this title block — in Excel format. (For more information, see Saving Specifications in Excel Format.)

    - All the objects in the report layout, such as lines, text, field, and so forth must be defined as the **Background Layer**. If you are creating a new object, make sure you change it from the default band layer to the **Background Layer**.

    - Objects that appear in the report layout one below another, such as revision lines, must be defined as **Detail Band Layer**.

    - Do not make any SQL changes!

    - Do not include left or right borders since the border of the page will be used for the title block.

    - If you move any report layout items while working on the report layout, make sure you reposition those items exactly in their original locations.

    Tip

    - You cannot insert a new field in the report layout. You can only modify existing ones.

3. Save the report layout under a different name and close InfoMaker.

Adding a Title Block to a Form

Use this procedure to import a specification title block that you created in InfoMaker into a form. You then set the block position and size within the form.

➢ **To add a specification title block to a form**

1. Start the Specifications module and then, on the **Actions** menu, click **Title Block Styles**.

2. In the **Title Block Styles** dialog box, click **New**.

3. In the **Title Block Definition** dialog box, navigate to the required .psr file and click **OK**.

4. Under **Style Name**, type the new title block name.

5. Under **Number of revisions**, accept the displayed number of revision lines.

6. Set the new title block size by using the four-directional arrows.

   🔆 **Tips**

   - The red line outlines the title block border.

   - Under **Units per click**, type a numeric value to set how far the jump will take the red line when clicking on one of the four-directional arrows.

7. Click **OK**, and in the **Title Block Styles** dialog box, click **Close**.

8. Set the location of the title block in the specification as follows:

   a) On the **Actions** menu, click **Associate Title Block**.

   b) In the **Select Specification Form** dialog box, select the required form and click **OK**.

   c) In the **Associate Title Block** dialog box, select the required title block from the **Style Name** data window.

   d) Under **Choose location**, select **Detail**.

   e) Drag the title block to the required location in the specification page and when done, click **OK**.

Modifying a Customized Specification Title Block

Use this procedure to modify customized title blocks that you imported into the Specifications module.

➢ **To modify a customized title block**

1. Start the Specifications module and then, on the **Actions** menu, click **Title Block Styles**.

2. In the **Title Block Styles** dialog box, select the title block you want to modify and click **Edit**.

3. In the **Title Block Definition** dialog box, modify the title block as described in Adding a Title Block to a Form and click **OK**.

Single-Tag Specifications

Generating New Specifications

This procedure describes how to generate specifications for existing instrument tags, or other SmartPlant Instrumentation entities according to the Principles of Generating Specifications.

Notes

- If you want to generate specifications for entities that are not instrument tags, for example, for loops, hook-ups, panels, and so forth, you must first restore the appropriate library forms.

- If the tag process function is General, the forms that are available to associate with the tag are only those with General process function. However, if the tag process function is not General, both General forms and forms that have the same process function as the tag has are available to associate with the tag.

➢ **To generate a new specification**

1. On the **Actions** menu, click **Open Entity Specification** and.

2. In the **Open Entity Specification** dialog box, from the **Entity type** list, select a desired entity type.

   Tip

   - If the entity type that you select is Cable, Panel, or Wiring Equipment, you can only generate a specification for a reference entity.

3. In the **Entity number** box, enter the exact entity number.

   Tip

   - If you do not remember the entity number, leave the **Entity number** box empty and click **Find**.

4. In the **Form number** box, enter the form number.

   💡 **Tips**

   - If you do not remember the form number, leave the **Form number** box empty and click **Find**. For details on how to search for entities or forms, see Searching for Existing Entities and Spec Forms.

   - If you are creating a specification for a tag case, the value in the **Form number** box might be view-only. If the value is view only, you have already created previously a specification for a different case of the same tag. After creating a spec for a tag case, the software assigns the same spec form to all other cases of the same tag.

5. Click **OK**.

6. In the **New Specification** dialog box, do one of the following:

   - Click **Create new specification** to create a specification for a single entity.

   - Click **Create new multi-tag specification** to create a specification with a SEE LIST. This option is only available when the entity type is instrument.

7. In the **Document number** field, type the appropriate document number (mandatory only for multi-tag specifications).

8. Click **OK** to generate and open the specification.

Modifying Specifications: Common Tasks

You can modify the data in a specification in either a single-tag or multi-tag modes. Click 📇 or 📇 to toggle between the modes.

The following modification options are available:

- Editing a single-tag specification

- Editing a multi-tag specification

- Adding tags to multi-tag specifications

- Moving a tag from a multi-tag to a single-tag specification

- Removing a tag from a multi-tag specification

Editing a Single-Tag Specification

Some fields can be edited by clicking inside the field and typing the required data. Some of the fields require that you select from a list. Other fields, such as Tag Number or Process Conditions get their data from the Instrument Index, Process Data or Calculation modules and thus do not allow a direct editing. However, you can edit the **Process Data** and **Calculation** fields if you have been granted the appropriate access rights to do so.

The Units of Measure (UOM) fields allow you to select from a predefined list of units. After selecting pressure, for example, you are prompted to choose the pressure reading method.

When you select volumetric flow units, you are prompted to select the measurement conditions (at flow or at base).

📝 **Notes**

- At the foot of the specification, you can enter the sheet number and total number of sheets manually. You can leave these fields blank to complete them automatically when you print the sheets.

- When you edit and save an instrument specification that is part of a Specification Binder package in the Document Binder module, you are prompted to define its Document Binder status.

Editing Manufacturers and Models in a Specification

Use this procedure to edit instrument manufacturer and model fields in a specification.

✎ Notes

- To manage the instrument manufacturer supporting table without changing this field in specifications, see Instrument Manufacturer Supporting Table.

- To manage instrument model supporting tables without changing this field in specifications, see Instrument Model Supporting Table.

➢ To edit instrument manufacturers and models in a specification

1. Open the specification that you want to edit, and scroll to display the instrument manufacturer and model.

2. Do one of the following:

   - On the **Actions** menu, click **Instrument Models**.

   - On the module toolbar, click ⬚.

3. To add or change a manufacturer, in the **Instrument Manufacturers** dialog box, under **Manufacturer,** select a manufacturer from the list, or click ⬚ to add a new manufacturer.

4. To change the instrument model, in the data window of the dialog box, select the new model.

5. To add a new model for the current manufacturer, do the following:

   a) In the **Instrument Manufacturers** dialog box, click **New** to add a new data row.

   b) Type the instrument model values in the appropriate fields as follows.

      - **Model** – type the unique and required model name.

      - **Description** – type a description for the model if needed.

      - **Process Function** – from the list, select the required process function.

6. Click **OK**, and then, on the **Actions** menu, click **Save**.

✎ Note

- The software automatically copies the instrument manufacturer and model that you selected in the **Instrument Models** dialog box to the appropriate fields in the current specification.

Generating a Hybrid Case Specification

For a control valve for which you defined multiple cases, you can create a hybrid case from the minimum, normal, and maximum flow coefficient values (Cv/Kv) that you calculated for the various cases. Use this procedure to generate a specification for this tag based on its hybrid case.

Note

- To generate a series of specifications, each based on an individual case, see Generating Specifications for Multiple Process Data Cases.

➢ **To generate a specification for a control valve hybrid case**

1. Make sure that you have a form designed for the control valve hybrid case.

   Note

   - The library form #76 is an example of a form designed for the control valve hybrid case. If this form is not displayed in the **Select Specification Form** dialog box, see Restoring Library Forms.

2. Make sure that you have defined multiple cases for the tag of interest.

3. In the main window of the Calculation module, create or edit the hybrid case of the tag of interest (see Creating a Hybrid Case).

4. Do one of the following in the Specifications module:

   - If the tag of interest is already associated with a hybrid case form, open the specification.

   - If the tag of interest is not yet associated with any form, generate a specification based on a hybrid case form (see Generating New Specifications).

   - To change tag form association, see Changing the Form Assignment of a Specification.

5. To print the hybrid case specification, see Printing the Currently Open Specification.

Generating Specifications for Multiple Process Data Cases

Use this procedure to generate a specification for a case of a multi-case tag.

Note

- Make sure that you generated a specification for the tag of interest based on a standard form, not on a hybrid case form. Regarding hybrid case, see Creating a Hybrid Case.

➢ **To generate a specifications for a tag case**

1. In the Specifications module, click .

2. In the **Open Entity Specification** dialog box, from the **Entity type** list, select Instrument and do one of the following:

    - In the **Entity number** box, enter the exact tag number of the tag that has cases.

    - If you do not remember the entity number, leave the **Entity number** box empty and do the following:

        a) Click **Find**, and then, in the **Find Entities** dialog box, specify search parameters.

        b) Click **Find** to display instruments under **Search results**. Under **Search results**, for multi-case tags, the software displays the names of the cases names in the **Case** column.

            Tip

            - Under **Search parameters**, the **Case** list displays all the available cases defined in the Process Data module. You can select a particular case to narrow your search to a particular tag case.

        c) Click **OK** to return to the **Open Entity Specification** dialog box.

3. In the **Form number** box, enter the form number.

💡 **Tips**

- If the value in the **Form number** box is view only, you have already created previously a specification for a different case of the same tag. After creating a spec for a tag case, the software assigns the same spec form to all other cases of the same tag.

- If you do not remember the form number, leave the **Form number** box empty and click **Find**. For details on how to search for entities or forms, see Searching for Existing Entities and Spec Forms.

4. Click **OK**.

💡 **Tip**

- If you did not click **Find** in the **Open Entity Specification** dialog box, the software opens the **Select Case** dialog box, where you can select the desired case.

5. In the **New Specification** dialog box, do one of the following:

- Click **Create new specification** to create a specification for a single entity.

- Click **Create new multi-tag specification** to create a specification with a SEE LIST. This option is only available when the entity type is instrument, and if you created a multi-tag format based on the specified spec form.

6. In the **Document number** box, type the appropriate document number (mandatory only for multi-tag specifications).

7. Click **OK** to generate and open the specification.

Changing the Form Assignment of a Specification

You can change the form assigned to a specification. The new form must have the same process function as the currently assigned form, or be of general status.

Notes

- SmartPlant Instrumentation does not allow you to change the form assignment of a specification associated with a multi-tag list, unless you first move the item to single-sheet status.

- SmartPlant Instrumentation does not allow you to change the form assignment of an instrument specification assigned to a Specification Binder package, unless you first remove the specification from the Specification Binder package.

- You also have the option of reassigning specification forms in batch mode.

➢ To change the form associated with a specification

1. Find and open the specification whose form you want to change.

2. On the **Actions** menu, click **Change Spec Forms**. The **Select Specification Form** dialog box opens with a list of available forms. These forms fulfill one of the following conditions:

   - They are of the same process function as the current form.

   - Their process function is defined as general.

3. Select the new form for your specification and click **OK**.

4. In the **Specifications** dialog box click **OK** to reopen the specification, associated to its new form.

Changing Form Assignment for a Batch of Specifications

You can change the form assignment for a group of specifications that share a common form. The new form must have the same process function as the currently assigned form, or be of general status.

Notes

- The software does not allow you to change the form assignment of a specification associated with a multi-tag list, unless you first move the item to single-sheet status.

- The software does not allow you to change the form assignment of an instrument specification assigned to a Specification Binder package, unless you first remove the specification from the Specification Binder package.

➢ **To change the forms associated with specifications**

1. Start the Specifications module and then, on the **Actions** menu, click **Change Spec Forms**.

2. Under **Search parameters**, in the **Current form** list, select the form type of the specifications that you want to change.

3. Click **Find**.

   Notes

   - Select **Find typical tags only** to limit your search to specifications of typical tags.

   - Select **Find telecom tags only** to limit your search to specifications of telecom tags.

4. Under **Search results,** select the specifications for which you want to change the form.

5. Under **Change parameters**, from the **New form** box, select the new form type, and click **Apply**.

Notes

- In the **New form** box, the software displays forms of the same process function as the current form or forms of general status.

- Specifications for which forms were successfully changed no longer appear among the search results.

6. Repeat the procedure for other specification forms if required, or click **Close** to return to the main window of the Specifications module.

Notes and Remarks

The Specification module allows you to add notes to your specifications. You can also add user-defined headers for that purpose by placing the cursor on an empty, numbered header and type the required header.

You can add remarks to the **Notes** section at the bottom of the specification. If there is insufficient space to enter all the required text, you can use the **Expanded Notes** sheet to enter additional information, as follows.

➤ **To enter expanded notes**

1. In the specification preview (single-edit mode), do one of the following:

- Click the specification **Notes** tab.

- Click .

- On the **Actions** menu, click **Expand Notes**.

2. Click (or click the **Expand Notes** menu item) again to close the **Expanded Notes** sheet.

Notes

- You can select whether to include or exclude the **Notes** section in the first page from the specification print out.

- For the SQL Server platform, the **Expanded Notes** sheet can accept up to 255 characters; for Oracle and Sybase Adaptive Server Anywhere, you can type up to 2000 characters.

Deleting Specifications

This procedure explains how to delete one or more entity specifications from the Specifications module. The software does not allow you to delete an instrument specification currently assigned to a Specification Binder package or revised in the Document Binder module.

When you delete a specification, the software automatically deletes all the associated revisions as well, whether you saved them to the database, or as files. The software removes revisions that were saved as files form the **Manage Spec Revisions** dialog box, and also from the folders to which they have been saved.

🤚 Caution

- Specification deletion is irreversible. Therefore, you should exercise extreme caution when doing so.

➢ To delete entity specifications

1. Open the Specifications module, and on the **Actions** menu, click **Delete Entity Specifications**.

2. In the **Select Entities** dialog box, find and select the entities whose specifications you want to delete.

   ### 💡 Tips

   - If you created instrument specifications per tag case, you can delete specifications on a per-case basis. For example, if you applied three process data cases to a tag, three records appear in the **Search results** data window. The **Case** column values indicate whether instrument tags have tag process data cases.

   - If the tag number selection includes a master tag, the software prompts whether you want to perform or cancel the deletion of the specifications. You have an option to cancel the deletion because when you delete a master tag, the software dissociates all the other tags from the multi-tag specification to which the master tag belongs.

3. In the **Delete Entity Specifications** dialog box, click **Run**.

   ### 💡 Tip

   - If the software could not delete a specification, the source entity appears in the **Entities skipped during deletion** data window. You can print out the entity list, if needed. These records are not saved after you close the **Delete Entity Specifications** dialog box.

Adding New Tag Numbers

You can add new tag numbers to the current <plant> directly from the Specifications module in order to generate specifications for new tags, without using the Instrument Index module.

➢ **To create a new tag number**

1. In the **Specifications Module** window, type a new tag number in the **Tag Number** field.

2. Click in the **Page Number** field and then click **Find** to open the **Select Specification Form** dialog box.

3. Select the appropriate form and click **OK**.

4. Click **OK** to confirm the addition of the new tag number to the <plant>.

5. If the **Select Instrument Type** dialog box opens, select the appropriate instrument type and click **OK**.

6. In the **Loop Number** dialog box, accept the displayed loop number or type a new one as required and click **OK**.

7. In the **Tag Number Properties** dialog box, on the **General** tab, select the appropriate values from the lists and type the data in the respective fields.

8. To enter power supply properties, see Entering Power Supply Data for Panels and Instrument Tags.

9. Click **OK**.

10. In the **New Specification** dialog box, enter the values as required and click **OK** to display the new specification.

Comparing Current Data with a Saved Specification

Using this option you can compare data in the current specification with a specification that you saved as an .isf file. This option enables you to generate a report that shows the data changes. You can also set fonts and color to select the changes on a computer monitor.

➢ **To compare current data with a saved specification**

1. In the Specifications module, open the specification of the required tag number.

2. On the **Tools** menu, click **Data Comparison Display Options**. Accept current settings for report comparison, or make adjustments.

3. On the **Actions** menu, click **Compare with External**.

4. In the **Select File for Comparison** dialog box, navigate to the required .isf file and click **OK**.

5. In the dialog box that opens, click **Yes** to preview the report, or **No** to print without preview. The report shows the names of the columns that were changed, the **Spec Report Value** (current data), and the **External Spec Value** (external file data). SmartPlant Instrumentation displays your specification on the screen with changed fields emphasized according to your settings in the **Data Comparison Display Options** dialog box.

 Note

- If you clicked **Yes** to preview the report, close the preview window to see the specification with the changes emphasized.

Copying Specification Data

Common Tasks

The automated data copying options are useful when you need to create a number of specifications with similar data. You can use the following entities as sources for the data:

- Form data templates (formerly one type of default form)

- Another specification

- An external specification file

Caution

- When you copy data to a specification, be careful when overwriting existing data. In the **Spec Data Dictionary**, set fields as unavailable for editing in the form data template or in specs based on the current form.

- To prevent all automated overwriting of existing specification data, click **Copy without overwriting existing data** under **Data copying options** of the module preferences.

The following topics explain how to copy data to a specification using automated procedures:

- Protecting Fields from Overwriting When Copying Data

- Creating and Modifying Form Data Templates

- Copying Data to a Form Data Template from a Specification

- Copying Data to a Specification from a Form Data Template

- Copying Data from One Specification to Another

- Importing Data to a Specification from an External File

- Importing Data to Instrument Specifications in Batch Mode

Protecting Fields from Overwriting When Copying Data

Use this procedure to protect fields from overwriting of data when performing any of the following operations:

- Copying data from one specification to another

- Importing data from an external specification to the active specification

- Copying data from the active form data template to the current specification

- Copying data from a specification to a form data template

When you perform any of these operations, the software only applies data copying options to non-protected fields according to the setting in the **Preferences** dialog box (under **Specifications**>**General**>**Data copying options**).

 Caution

- You perform this procedure at the form level. The fields that you protect for a given form apply to any specification based on this form.

➢ **To protect fields from overwriting when copying or importing data**

1. On the module toolbar, click ▤ to open the **Spec Data Dictionary**.

2. In the **Select Specification Form** dialog box, select the form for which you want to create or modify the data filter, and click **OK**.

3. On the toolbar, click 🔁.

4. To protect the fields in the correct form, do one of the following:

   - To protect all of the fields from one or more tables, click the **Tables** tab, and then, under **Template Fields**, click **All** for the tables that you require.

   - To protect individual fields, on the **Field Properties** tab, select the appropriate check boxes in the **Template** column.

5. On the module toolbar, click 🖫.

Creating and Modifying Form Data Templates

Use this procedure to create and modify form data templates, from which you can copy a batch of data to your new or existing specifications. Using a form data template eliminates the need to repeat data entry for similar specifications.

➢ **To create or modify a form data template**

1. On the **Edit** menu, click **Form Data Template Editor**.

2. In the **Select Specification Form** dialog box, select the form for which you want to create or modify a form data template, and click **OK**.

3. In the **Select Default Form** dialog box, do one of the following:

   - If this is the first form data template for a given form, type a name.

   - To add an additional form data template, click **New** and type a name.

   - To modify an existing form data template, select the template from the list.

4. Click **OK** to open the form data template.

5. If the **Select Fluid State** pop-up window opens, select the required fluid state and click **OK**.

6. Do one of the following to enter data in the form template:

   - Enter data manually in the fields that are available for editing.

   - Copy data from an specification based on the same form as your form data template.

7. On the module toolbar, click 🖫.

Deleting a Form Data Template

You can delete a form data template if it is no longer required as a data source for specifications.

Note

- Deletion of a form data template is irreversible.

➢ **To delete a form data template**

1. On the **Actions** menu, click **Delete Form Data Template**.

2. In the **Select Specification Form** dialog box, select the form for which you want to delete a form data template and click **OK**.

3. In the **Select Default Form** dialog box, select the template that you want to delete, and click **OK**.

4. Click **OK** again to confirm the deletion.

Copying Data to a Form Data Template from a Specification

Use this procedure to copy a batch of data to a form data template from a specification. This can be an efficient way of building the template, which can then be used to transfer common data to additional specifications.

✋ Caution

- When you copy data to a form data template, be careful when overwriting existing data. In the **Spec Data Dictionary**, set fields as unavailable for editing in the form data template or in specs based on the current form.

- To prevent all automated overwriting of existing data, click **Copy without overwriting existing data** under **Data copying options** of the module preferences.

➢ To copy data to a form data template from a specification

1. On the **Edit** menu, click **Form Data Template Editor**.

2. In the **Select Specification Form** dialog box, select the form for which you want to create or modify a form data template, and click **OK**.

3. In the **Select Default Form** dialog box, do one of the following:

    - If this is the first form data template for a given form, type a name.

    - To add an additional form data template, click **New** and type a name.

    - To modify an existing form data template, select the template from the list.

4. Click **OK** to open the form data template.

5. If the **Select Fluid State** pop-up window opens, select the required fluid state and click **OK**.

6. On the **Actions** menu, click **Copy From**.

7. In the **Find Tag** dialog box, under **Form number**, select the form for which you are building a form data template, and click **Find**.

8. In the **Search results** data window, select the tag from which you want to copy specification data, and click **OK**.

9. Edit the form data template as necessary.

10. On the module toolbar, click 💾.

Copying Data to a Specification from a Form Data Template

Use this procedure to automate entry of common data to your specification by using a form data template that you created for the form upon which the current specification is based.

🖐 Caution

- When you copy data to a specification, be careful when overwriting existing data. In the **Spec Data Dictionary**, set fields as unavailable for editing in the form data template or in specs based on the current form.

- To prevent all automated overwriting of existing specification data, click **Copy without overwriting existing data** under **Data copying options** of the module preferences.

➢ To copy data to a specification from a form data template

1. Open the specification to which you want to copy data.

2. On the **Actions** menu, click **Copy from Template**.

3. In the **Select Form Data Template** dialog box, select a form data template from the list.

4. Click **OK** to copy the data from the selected form data template to the specification.

5. Edit the specification data as required.

6. On the module toolbar, click 💾.

Copying Data from One Specification to Another

Use this procedure to copy data from one specification to another. You can copy data from a specification in the same <unit> or from another unit in the same <plant>.

 Caution

- When you copy data to a specification, be careful when overwriting existing data. In the **Spec Data Dictionary**, you can define fields that you do not want to overwrite.

- To prevent all automated overwriting of existing specification data, click **Copy without overwriting existing data** under **Data copying options** of the module preferences.

➢ **To copy data from one specification to another**

1. Open the specification to which you want to copy data.

2. On the **Actions** menu, click **Copy from Specification**.

3. In the **Find Tag** dialog box, under **Form number**, select the form upon which your specification is based, and click **Find**.

4. In the **Search results** data window, select the tag from which you want to copy specification data, and click **OK**.

5. Edit the specification data as required.

6. On the module toolbar, click .

Importing Data to a Specification from an External File

Use this procedure to import data from an external specification file (.isf format) to the current specification. If the format of the external specification is .psr, you can use the External Editor supplied with SmartPlant Instrumentation to convert the files to .isf format.

Caution

- When you copy data to a specification, be careful when overwriting existing data. In the **Spec Data Dictionary**, set fields as unavailable for editing in the form data template or in specs based on the current form.

- To prevent all automated overwriting of existing specification data, click **Copy without overwriting existing data** under **Data copying options** of the module preferences.

- Make sure that the external specification is based on the same form as the target specification. If you attempt to copy data from a specification based on a different form, the software displays an appropriate message.

➤ To copy data from an .isf file to a specification

1. In the Specifications module, open a specification.

2. On the **Actions** menu, click **Import Data**.

3. In the **Open File** dialog box, navigate to the location of the required .isf file.

4. Click **Open** to import the data from the source file to the specification.

5. Edit the specification as necessary.

6. Click 💾.

Note

- If the data in the specifications that you are importing includes manufacturers and models that do not appear in the Instrument Manufacturer and Instrument Model supporting tables, the software automatically adds them during the import process.

Importing Data to Instrument Specifications in Batch Mode

You can import data from external files to instrument specifications in batch mode. You need to specify a source file folder and then select the .isf files from which you want to import data. The software imports data to instrument specifications by matching the tag numbers in the source .isf files and target specifications that exist in SmartPlant Instrumentation.

➢ **To import data to instrument specifications in batch mode**

1. In the Specifications module, on the **Actions** menu, click **Import Data**.

2. Beside **Source folder**, click **Browse** to specify the folder where the source .isf files are located.

   ### 🔆 Tip

   - In the **Log file name and path** box, the software displays the default path of the log file IMPORT_ISF.LOG. SmartPlant Instrumentation creates this file after importing data. If you previously imported data, this log file already contains records of the previous import session. If you do not change the log file path for the current import session, the software adds new records of the current import session in the same file. To create a new file IMPORT_ISF.LOG, you can click **Browse** and specify a different log file path.

3. Under **Select source files**, select the desired .isf files.

   ### 🔆 Tip

   - If you select **Ignore form ID in database**, the software imports data into specifications even when in the source and target specifications, the internal ID numbers of the specification form are different.

4. Click **Import**.

Specification Formats

Overview

A specification format is a template for a multi-tag specification, which displays values constant for all the tags on the common pages, and displays values that vary from tag to tag on the **Multi-Tag List** tab folder (SEE-LIST).

You create a specification format from a specification form, and can build an unlimited number of formats based on a single form.

The following topics explain how to create, modify, and delete multi-tag specification formats:

- Creating a Multi-Tag Specification Format

- Modifying a Multi-Tag Specification Format

- Deleting a Multi-Tag Specification Format

Creating a Multi-Tag Specification Format

Specification formats are templates for multi-tag specifications. You create a format based on a specification form, which in turn is based on a specification page. You can build an unlimited number of formats based on a given form, as follows:

- From a specification form, select fields that will vary among the tags. These fields will appear on the **Multi-Tag List** tab folder (SEE-LIST) of specifications based on this form.

- Edit the headers, if necessary, for the SEE-LIST.

- Generate the specification format, fine-tune the order and width of columns, and save the new format.

➢ **To create a multi-tag specification format**

1. On the **Edit** menu, click **Format Editor**.

2. On the **Actions** menu, click **Open Format**.

3. In the **Select Specification Form** dialog box, select the appropriate form and click **OK**.

4. In the **Select Format** dialog box, under **Format Name**, type the name of the new format and click **OK**

   Note

   - If the form that you selected in the **Select Specification Form** dialog box has existing formats, click **New** before typing the new format name.

5. Do the following for each field that you want to appear on the SEE-LIST:

   a) In the field selection area of the form (usually on the right), double-click the field.

   Notes

   - The background color of the active field changes to **magenta**.

   - Fields already added to the **Edit Headers** pop-up window are highlighted in **cyan**.

- The ▶ icon in the left column of the **Edit Headers** pop-up window points to the header input box for the active field. If you are working from a library form, the form header was automatically copied to this field.

   b) To display the original form header in the active row of the **Edit Headers** pop-up window, click the form header (after the cursor changes its shape to ✎).

   c) In the **Edit Headers** pop-up window, edit the header as necessary.

6. On the module toolbar, click 🖻.

7. To change the SEE-LIST column position of a header and its field, do the following in the **Edit Headers** pop-up window:

   a) Highlight the header for which you want to change the column position.

   b) Click **Move Up** or **Move Down** as necessary.

📝 **Note**

- The order of the headers in the **Edit Headers** pop-up window determines the left-to-right column order on the **Multi-Tag List** tab folder.

8. To change the width of columns as they appear in SEE-LISTS, do the following in the **Format** dialog box:

   a) Select **Print preview portrait** or **Print preview landscape** as necessary.

   b) Set the cursor on the border between two headers.

   c) Drag the border to the left or to the right as necessary.

9. Click 🖫 to save the new format.

Modifying a Multi-Tag Specification Format

You can modify an existing specification format so that it fits the needs of your multi-tag specifications. The modification process is similar to creating a new specification format.

Caution

- Changes that you make to a specification format affect multi-tag specifications that are already associated with that format.

➢ To modify an existing multi-tag specification format

1. On the **Edit** menu, click **Format Editor**.

2. On the **Actions** menu, click **Open Format**.

3. In the **Select Specification Form** dialog box, select a form and click **OK**.

4. To edit the format name, in the **Select Format** dialog box, select the format, click **Edit**, and type the new name.

5. Select a format that you want to modify, and click **OK**.

6. To edit headers that currently appear in the **Edit Headers** pop-up window, do the following:

   a) In the field selection area of the form (usually on the right), double-click the field for which you want to edit the header.

Notes

- The background color of the field changes to **magenta**.

- The ▶ icon in the left column of the **Edit Headers** pop-up window points to the **Header** input box for the active field.

- To copy the original form header into the active **Header** input box, click the form header (after the cursor changes its shape to ✎).

   b) In the **Edit Headers** pop-up window, edit the header as necessary.

7. To delete a field and its header from the multi-tag list, do the following:

   a) In the field selection area of the form, double-click the field that you want to delete.

Notes

- The background color of the field changes to **magenta**.

- The ▶ icon in the left column of the **Edit Headers** pop-up window points to the header/field that you are deleting.

b) In the **Edit Headers** pop-up window, click **Remove**.

8. To add a field and header to the multi-tag list, do the following:

a) In the field selection area of the form, double-click the field that you want to add.

Note

- The ▶ icon in the left column of the **Edit Headers** pop-up window points to the header input box for the active field. If you are working from a default form, the form header was automatically copied to this field.

b) To display the original form header in the active row of the **Edit Headers** pop-up window, click the form header (after the cursor changes its shape to ✏).

c) In the **Edit Headers** pop-up window, edit the header as necessary.

9. To change column position of a header and its field, do the following in the **Edit Headers** pop-up window:

a) Highlight the header for which you want to change the column position.

b) Click **Move Up** or **Move Down** as necessary.

Note

- The order of the headers in the **Edit Headers** pop-up window determines the left-to-right column order on the **Multi-Tag List** tab folder.

10. To change the width of columns as they appear in the multi-tag list, do the following in the **Format** dialog box:

a) Select **Print preview portrait** or **Print preview landscape** as necessary.

b) Set the cursor on the border between two headers.

c) Drag the border to the left or to the right as necessary.

11. Click 💾 to regenerate and save the modified format.

Deleting a Multi-Tag Specification Format

This option enables you to delete a multi-tag specification format that is not currently associated with tags in a specification.

➢ **To delete a multi-tag specification format**

1. Start the Specifications module and do one of the following:

   - On the toolbar, click ![ab icon].

   - On the **Edit** menu, click **Format Editor**.

2. On the **Actions** menu, click **Delete Format**.

3. In the **Select Specification Form** dialog box, select a form that is no longer in use and whose format you want to delete.

4. Click **OK**.

5. Click **Yes** to confirm the deletion.

Regenerating Specification Formats

You may encounter problems with opening or printing a multi-tag specification, especially after initialization from a data source or a version upgrade. These problems occur because certain format properties are not applied to a form. To fix them, you can regenerate the specification format.

➢ **To regenerate multi-tag specification formats**

1. Start the Specifications module and then, on the **Actions** menu, click **Regenerate Formats**.

2. In the **Regenerate Formats** dialog box, click **Run**.

3. On completion of the process, click **Close**.

Multi-Tag and Function Requirement Specs

Generating New Specifications

This procedure describes how to generate specifications for existing instrument tags, or other SmartPlant Instrumentation entities according to the Principles of Generating Specifications.

Notes

- If you want to generate specifications for entities that are not instrument tags, for example, for loops, hook-ups, panels, and so forth, you must first restore the appropriate library forms.

- If the tag process function is General, the forms that are available to associate with the tag are only those with General process function. However, if the tag process function is not General, both General forms and forms that have the same process function as the tag has are available to associate with the tag.

➢ **To generate a new specification**

1. On the **Actions** menu, click **Open Entity Specification** and.

2. In the **Open Entity Specification** dialog box, from the **Entity type** list, select a desired entity type.

Tip

- If the entity type that you select is Cable, Panel, or Wiring Equipment, you can only generate a specification for a reference entity.

3. In the **Entity number** box, enter the exact entity number.

Tip

- If you do not remember the entity number, leave the **Entity number** box empty and click **Find**.

4. In the **Form number** box, enter the form number.

   💡 **Tips**

   - If you do not remember the form number, leave the **Form number** box empty and click **Find**. For details on how to search for entities or forms, see Searching for Existing Entities and Spec Forms.

   - If you are creating a specification for a tag case, the value in the **Form number** box might be view-only. If the value is view only, you have already created previously a specification for a different case of the same tag. After creating a spec for a tag case, the software assigns the same spec form to all other cases of the same tag.

5. Click **OK**.

6. In the **New Specification** dialog box, do one of the following:

   - Click **Create new specification** to create a specification for a single entity.

   - Click **Create new multi-tag specification** to create a specification with a SEE LIST. This option is only available when the entity type is instrument.

7. In the **Document number** field, type the appropriate document number (mandatory only for multi-tag specifications).

8. Click **OK** to generate and open the specification.

Generating a Functional Requirement Specification

A functional requirement specification is a specification that consists of the main page with the loop number data, individual pages associated with the loop tags, and the note page, which is created automatically and refers to the loop number only. The form associated with the loop number page is the form that you defined for the loop entity type. The forms associated with the function tag pages can be different, depending on the form number that you associate with each function tag using the current procedure.

This procedure explains how to generate a functional requirement specification. You can use this procedure after defining a functional requirement for a loop using the appropriate options in the Instrument Index module.

➢ **To generate a functional requirement specification**

1. In the **Open Entity Specification** dialog box, from the **Entity type** list, select Loop.

2. Enter a number and the form number, or click **Find** to find the required number or form.

3. After specifying the loop number and the form, in the **Open Entity Specification** dialog box, click **OK**.

4. In the **Functional Requirement Specification** dialog box, enter a new document number to be associated with the new specification.

   🔆 **Tip**

   - Leave the **Document number** box empty if you want to specify the document number manually, after opening the specification. In the specification, you can enter the document number in the title block.

5. Under **Function tags**, for each function tag, from the **Spec Form Number** column, select the compatible form number to be associated with the specification, and then click **OK**.

   Notes

   - You must select forms for all of the function tags because on generating the specification, the software creates individual pages for each tag that is displayed in the **Function tags** data window.

   - After creating a functional requirement specification, it is not possible to change the form number of a tag in the functional requirement specification or the form number of the loop. If you do need to change the form number, you have to delete the entire specification, and then create a new functional requirement specification again.

   - If you make a change in specific pages and then, on the toolbar, click , the software saves the entire specification.

Adding Tags to Multi-Tag Specifications

There are several ways to add tags to an existing multi-tag specification. You have the following options:

- Adding a tag to a closed multi-tag specification

- Adding tags to a multi-tag specification that you open

➢ **To add a tag to a closed multi-tag specification**

1. In the **Specifications Module** window, on the **Actions** menu, click **Open Entity Specification**.

2. Select an instrument tag that is not yet associated with a specification by doing one of the following:

   - In the **Entity number** field, type the instrument tag.

   - Click **Find** to search for the required tag.

3. Select the required form by doing one of the following:

   - In the **Form number** field, type the form number.

   - Click **Find** to search for the required form.

4. Click **OK**.

5. In the **New Specification** dialog box, click **Add tag to existing multi-tag specification**.

6. In the **Document numbers** pane, select the document number of the specification with which you want to associate the additional tag.

   Notes

   - To display the selected specification, click **View**.

   - All the documents in the current <plant> are displayed in the **Document Numbers** data window. You can select a document to add tags to multi-tag specifications associated with different <units> of the same <plant>.

7. Click **OK** to open the specification.

8. On the **Actions** menu, click **Save**.

➢ **To add tags to an open multi-tag specification**

1. Open the multi-tag specification to which you want to add the tags.

2. To display the list of tags already associated with the specification, on the module toolbar, click ⚎.

3. Do one of the following on the **Actions** menu:

   • To add tags that currently are not associated with any specification, click **Add Tag**.

   • To move tags from an existing specification, click **Move from Single**.

4. In the **Add Tag Number** dialog box, do one of the following:

   • To add a single instrument tag, under **Tag number**, type the instrument tag number and click **OK**.

   • To add one or more instrument tags, click **Find** to search for the tags that you want to add to the current specification.

5. In the **Add Tag Number** dialog box, click **OK**.

6. On the module toolbar, click 🖫.

Changing the Master Tag Number Definition

In a multi-tag specification, several instrument tags have one common master page, which is generated according to one of the instrument tags sharing this specification. The master page is associated with a Master Tag which links to the information common to all instrument tags that belong to the multi-tag specification.

You can change the Master definition by simply selecting a different instrument tag to serve as the Master Tag. The Master Tag definition also changes if you delete the current Master Tag, in which case the instrument tag that appears first in the additional tag list (SEE LIST) becomes the Master Tag.

➢ **To change the Master Tag definition**

1. Start the Specifications module and then, on the **Actions** menu, click **Change Master Tags**.

2. In the **Change Master Tag** dialog box, under **Document numbers**, select a document number.

3. Select the tag to be used as the master tag by selecting the **Master** check box next it.

4. Click **Apply** to redefine the new master tag.

Editing a Multi-Tag Specification

A multi-tag specification includes pages with fields that are identical for all of the tags, and pages with fields that differ from tag to tag.

You can edit multi-tag specifications in the following ways:

- In single-edit mode, you edit fields common to all the tags, in the same way that you edit single-tag specifications. In this mode, the **Notes** tab is available.

- In multi-edit mode, you edit the unique fields of the individual tags. In multi-edit mode, you can also add or remove tags if required.

➢ To edit unique tag fields in multi-edit mode

1. Open the required multi-tag specification.

2. On the **Actions** menu, click **Multiple Tags**, or click [icon] to switch to the multi-edit mode.

3. Click on cells where you want to add or modify data.

4. Modify the data as needed.

5. Click [icon] to save your changes.

[icon] Notes

- You can modify process data in a multi-tag specification even for instrument tags that do not yet have process data information.

- In multi-edit mode, you can also edit tags that belong to other <units> of the current <plant>.

Searching for a Specific Tag in a Multi-Tag Specification

Multi-tag specifications can contain several tag numbers. Use this procedure to locate a specific tag within a multi-tag specification.

➢ **To search for a specific tag in a multiple specification**

1. Find and open the required multi-tag specification.

2. Click to switch to the multiple list mode.

3. Sort the list in one of the following ways:

   - Accept the default (sorted by ascending tag number).

   - Double-click the header on any column to set a new ascending sort key. Note that an arrow now indicates the sort key and direction.

   - Double-click a column already marked with an arrow to change the sorting direction.

4. If you have not yet found your specification, click on the module menu, and do one of the following:

   - Type the required tag number.

   - Click **Find** to open a dialog box where you search for the tag.

Moving Tags to Another Multi-Tag List

Use this procedure to move tags from the currently open multi-tag list to a multi-tag list in another specification. You can either create a new multi-tag specification on the fly and move tags from the currently open multi-tag list to the target multi-tag list in another specification, or move tags to the multi-tag list of an existing multi-tag specification.

➢ **To move tags to another multi-tag list**

1. Open a multi-tag instrument specification.

2. In the **Multi-Tag List** tab, select the tags that you want to move to another multi-tag instrument specification.

3. On the **Actions** menu, click **Move to Another Multi-Tag List**.

4. In the dialog box that opens, under **Select target format**, select a format.

   💡 **Tips**

   - The **Select target format** displays all the formats that you can use to create multi-tag specifications. You can select either the format of the currently open specification and then create a new specification, or select a different format.

   - If a format appears without the ⊞ icon, this means that there are no multi-tag specifications assigned to this format, or that this is the format of the current specification. In this case, you can only create a new multi-tag specification, and move the tags from the current multi-tag list to the multi-tag list of the new specification.

   - If you want to move tags to an existing specification, select a format that already has a multi-tag specification (that is, a format that has a ⊞ icon to the left of the format name).

5. Depending on the format that you selected, do one of the following:

   - If you selected the current format or a format that does not have multi-tag specifications, click **Move to new multi-tag instrument specification**, and then, do the following:

     a) from the **Master tag** list, select a tag number which you want to set as the master tag in the new specification.

     b) In the **Document** box, enter a document number to be associated with the new specification.

   - If the selected format is different from the current format, and already has a multi-tag specification, click either **Move to new…** or **Move to existing…**.

Moving a Tag from a Multi-Tag to a Single-Tag Specification

You can transfer an instrument tag from a multi-tag specification to a specification of its own — based on the format of the original sheet. You then have the following options:

- You can leave it as a single-tag specification.

- You can build it into a multi-tag-specification.

You can also **remove** a tag from a multi-tag specification, deleting data for the tag.

➢ **To move a tag from a multi-tag list to a single-tag specification**

1. Open the required multi-tag specification.

2. Click the **Multi-Tag List** tab.

3. Select one or more of the instrument tags, and on the **Actions** menu, click **Move to Single**.

Notes

- The software does not allow you to move a master tag from a multi-tag specification.

- If you selected **Skip individual confirmation** on the **Specifications** tab of the **Preferences** dialog box, a single confirmation will move all the sheets you selected.

4. In the message prompt that opens, click **OK**.

5. Do one of the following:

- Click .

- On the **Actions** menu, click **Save**.

Removing a Tag from a Multi-Tag Specification

This procedure explains how to remove instrument tags from a multiple specification.

Notes

- You cannot remove a master tag unless you redefine it as a standard tag.

- The software does not allow you to remove tags that are currently assigned to a Specification Binder package or that were revised in the Document Binder module.

➢ **To remove a tag from a multi-tag specification**

1. In a multi-tag specification, on the **Multi-Tag List** tab, select the instrument tags that you want to remove from the multi-tag specification.

2. On the **Actions** menu, click **Remove Tag**.

3. In the first **Remove Tag** message box, click **Yes** to confirm the move.

4. In the second **Remove Tag** message box, do one of the following:

   - To delete specification data associated with this tag, click **Yes**.

   - To preserve specification data associated with this tag, click **No**.

5. Click to save the change.

Moving Single-Tag Specifications into a Multi-Tag Specification

Use this procedure to move single-tag specifications into a target specification. The following conditions apply:

- The specifications that you want to move must be based on the same form as the target specification.

- The target specification must be based on a format of the common form.

➢ **To move single-tag specifications into a multi-tag specification**

1. Open the target specification.

2. In the specification, click the **Multi-Tag List** tab.

3. On the **Actions** menu, click **Move from Single**.

4. In the **Add Tag Number** dialog box, do one of the following:

   - In the text box, type the number of the tag that you want to move, and click **OK**.

   - Search for the tag that you want to move, and in the **Find Tag** dialog box, click **OK**.

Generating a Specification for a Complex Analyzer

Use this procedure to generate a specification for a complex analyzer.

 Notes

- For an explanation of process analyzers in SmartPlant Instrumentation, see Process Analyzers.

- You can also generate specifications for each stream of a complex analyzer.

- You can also use this procedure to generate a specification for a simple analyzer.

➢ **To generate a specification for a complex analyzer**

1. Make sure that you have a specification form appropriate for an analyzer.

 Note

- The library form #77 is an example of a form designed for an analyzer. If this form is not displayed in the **Select Specification Form** dialog box, see Restoring Library Forms.

2. To generate the specification, see Generating New Specifications.

 Note

- In the **New Specification** dialog box, select **Create new single tag specification**.

Generating a Specification for an Analyzer Stream

To generate a specification for an analyzer stream, you need a special type of multi-tag specification, which functions as follows:

- You generate a multi-tag specification, with the stream tag as the master tag.

- You then add the component tags associated with this stream to the multi-tag specification.

- Fields that relate to the stream are displayed on the common page or pages.

- The fields that vary — the component names and values — are displayed on the multi-tag list tab.

➢ **To generate an analyzer stream specification**

1. Make sure that you have a multi-tag format based on an analyzer stream form.

   Notes

   - The library form #78 is an example of a form designed for an analyzer stream. If this form is not displayed in the **Select Specification Form** dialog box, see Restoring Library Forms.

   - To create a format based on such a form, see Creating a Multi-Tag Specification Format.

2. Based on such a format, generate a multi-tag specification for the stream.

3. Do the following to add component tags belonging to the given stream to the specification that you created.

   a) Click the **Multi-Tag List** tab.

   b) On the **Actions** menu, click **Add Tag**.

   c) In the **Add Tag Number** dialog box, click **Find**.

   d) In the **Find Tag** dialog box, click **Find** to display all of the component tags defined for the current stream.

   e) Do one of the following under **Search results**:

      - To select all of the component tags, select the **Select all** check box.

      - Select the component tags that you want to include.

   f) Click **OK**.

4. On the **Actions** menu, click **Save**.

Changing the Format for a Multi-Tag Specification

If more than one format exists for a single form, you can select between them for a multi-tag specification.

➢ **To change the format for a multi-tag specification**

1. Open the required multi-tag specification.

2. On the **Actions** menu, click **Change Format**.

3. In the **Select Format** dialog box, select the required format from the list (if an alternative is available), and click **OK**.

Customizing the Font Size

This option allows you to modify the font size and the column height used in all multi-tag specifications, pages, and formats.

You can customize:

- The header font size (in pixels)

- The body font size (in pixels)

- The column height (in PowerBuilder units)

Note

- One PBU equals 1/32 of the current system font height (the font used by the Windows system). See your Windows user guide for further information about the system fonts.

➢ **To customize the font size and column height**

1. Start the Specifications module and do one of the following:

   - On the toolbar, click [image].

   - On the **Edit** menu, click **Format Editor**.

2. In the **Format Editor**, on the **Actions** menu, click **Customize Headers and Columns**.

3. In the **Customize Headers and Columns** dialog box, in each of the spin boxes, select the required attribute.

Spin Box	Attribute
Column Font Size	Body font size in pixels.
Column Height	Column height in pixels.
Header Font Size	Header font size in PowerBuilder units (1 PowerBuilder unit is equivalent to 1/32 of the current system font height used in Windows).
Header Height	Header height in PowerBuilder units.

4. Click **OK**.

Note

- The changes you made in the font size will take effect only after you reopen the multi-tag list format you are currently editing.

Title Block in a Multi-Tag Specification

A multi-tag specification does not require any special procedure for associating a title block. The software associates a title block with a multi-tag page through the spec form that it belongs to. That is, when a multi-tag specification form has an associated title block, this title block appears automatically on all pages of the multi-tag specification. When you open a multi-tag specification, the Multi-Tag (SEE LIST) page appears without a title block. However, if you open a print preview or print the specification, the software displays the same title block on all of the spec pages.

Specification Revisions

Common Tasks

You use revisions to keep track of changes in your specifications. You can view, print, and compare previous revisions of specifications with the current versions.

When you install SmartPlant Instrumentation, revision archiving is disabled for specifications. To allow working with revisions, the Domain Administrator must enable this option in the Administration module.

After the Domain Administrator enables you to save the revisions to a specific folder, ensure that the following conditions are met:

- Add the folder path to your environment path parameter (see your Windows Online Help to learn about defining paths in your environment).

- If the revision file is shared by a number of users on a local network connection, the source must be shared appropriately (users should have both read and write access rights to the revision files).

- Use an identical drive mapping to this folder for all of the workstations.

The following topics explain how to create and manage specification revisions:

- Managing Specification Revisions Locally

- Viewing and Printing Specification Revisions

- Comparing Current Specification Data with a Previous Revision

- Converting Specification Revisions to ZIP Files

- Deleting Specification Revisions

Managing Specification Revisions Locally

You use local revisions to keep an up-to-date record of the changes that a specific document has undergone, the persons that made those changes, and the changes date. Use this procedure to add, edit, and delete specification revisions.

Note

- In the Specifications module, you cannot revise instrument specifications that you assigned to a Specification Binder package in the Document Binder module. Therefore, in the **Revisions** dialog box, the **New**, **Edit**, and **Delete** options are disabled for these specifications.

➢ **To manage specification revisions locally**

1. Open the required specification, and do one of the following:

    - Click .

    - On the **Actions** menu, click **Revisions**.

2. In the **Revisions** dialog box, select one of the revision numbering methods (use **P0, P1, P2**... for preliminary revisions or **0, 1, 2** /**A, B, C**, and so forth for normal serial revisions).

    Notes

    - When you first select a revision numbering method, several options are available to you, including preliminary revisions (designated by **P0, P1, P2**…). Once you select one of the other revision methods, you will not be able to return to the preliminary revision method and this option will be disabled.

    - When you add a new line, it is automatically added with the subsequent logical character and current date.

    - Only the last five revisions appear in the **Revisions** dialog box. To view all specification revisions, in the **Specification Module** window, on the **Actions** menu, click **Manage Spec Revisions**.

3. Click **New** to add new revision data or click **Edit** to update the existing revision data.

4. Add or edit the revision data in the appropriate data fields.

Note

- The **By** data field contains the current user's initials by default, if previously defined by the System Administrator in the Administration module. You can also edit this field if required.

5. To delete revisions locally, do the following:

a) Select the revisions that you want to delete.

b) Click **Delete**.

Managing Specification Revisions Globally

Use this procedure to maintain specification revisions in batch mode, using the global revision options.

➢ **To add or upgrade global revisions for specifications**

1. In the main SmartPlant Instrumentation window, on the **Tools** menu, click **Global Revisions**.

2. In the **Settings** tab folder of the **Global Revisions** dialog box, under **Activity**, do one of the following:

   - To add revisions to instrument tags without checking the current revision settings, select Add Revision.

   - To add revisions to instrument tags according to defined criteria, select Upgrade Revision.

3. Enter the required revision information.

4. Click the **Specifications** tab.

5. Select the specifications that you want to revise by doing one of the following:

   - In the data window, select the specifications to which you want to apply the defined revision settings (multiple selection is possible using the **Shift** or **Ctrl** keys).

   - Select the **Select All** check box to select all the specifications.

Note

   - Multi-tag specifications only appear at the end of the list when you select the **Select All** check box. The **Tag Number** field displays the text SEE LIST with the number of the Master Tag in parentheses.

6. Click **Apply** to apply the revision to the selected instrument tags.

Notes

   - If any of the instrument specifications selected for revision is assigned to a Specification Binder package, that specification will not undergo a revision and a message will be displayed. Afterwards, a list of the specifications that were not revised is displayed, and the reason appears in the **Comment** field.

   - You can print the list of specifications for which the revision failed, or save the list to a file by means of the **Print** and **Save As** buttons respectively, which appear on the window after a revision that includes failed items.

Viewing and Printing Specification Revisions

Use this procedure to view and print specifications revisions.

➢ **To view and print specification revisions**

1. On the **Actions** menu, click **Spec Revisions**.

2. To filter the revisions in the data window for a given revision, under **Revision Filter**, type the appropriate revision number and select **Apply**.

3. To search for a revision by tag number or document number, under **Find**, type the appropriate data.

4. In the data window, select the revisions that you want to view, and click **OK**.

Notes

- For an explanation of the options in the **Specification Sheet Preview** window, see Previewing Documents.

- For an explanation of how to print the revisions, see Printing Documents.

Comparing Current Specification Data with a Previous Revision

Using this option you can compare data in the current specification with a specification that was archived as a previous revision. This option enables you to generate a report that shows the data changes. You can also set fonts and color to highlight the changes on a computer monitor.

➢ **To compare the current specification with a previous revision**

1. In the Specifications module, open the specification of the required tag number.

2. On the **Tools** menu, click **Data Comparison Display Options**. Accept current settings for report comparison, or make adjustments.

3. On the **Actions** menu, click **Compare with Revisions**. The **Select Spec Revision** dialog box opens with a list of available revisions for the specification you selected.

4. Select the required revision and click **OK**.

5. In the dialog box that opens, click **Yes** to preview the report, or **No** to print without preview. The report shows the names of the columns that were changed, the **Spec Report Value** (current data), and **Revision Value** (archived data). The software displays your specification on the screen with changed fields emphasized according to your settings in the **Data Comparison Display Options** dialog box.

 Note

- If you clicked **Yes** to preview the report, close the preview window to see the specification with the changes emphasized.

Converting Specification Revisions to ZIP Files

When you save revisions to the database, SmartPlant Instrumentation compresses the data automatically to save space. To further streamline your database, you can also save revisions in folders external to the database. This feature is useful when you have made a large number of revisions, and want to reduce the size of the active and backup databases.

This procedure describes how to remove specification revisions from the database into .zip format files.

📝 **Notes**

- The Domain Administrator sets the default revision storage method in the Administration module. This gives you the option of storing specification revisions directly to .zip files external to the database.

- As detailed below, you can vary this procedure to convert specification revisions back-and-forth among .psr, .zip, and SmartPlant Instrumentation database format.

➢ **To convert specification revisions to .zip format files**

1. Open the Specifications module.

2. On the **Actions** menu, click **Manage Spec Revisions**.

3. To display specifications of one revision only, under **Revision filter**, type the revision number and click **Apply**.

4. Do one of the following:

   - In the data window, select the revisions that you want to convert.

   - To select all of the displayed revisions for conversion, click **Select all**.

5. Under **Convert revisions to**, click **ZIP files**.

📝 **Notes**

- To convert revisions to uncompressed .psr format, click **PSR files**.

- To restore .psr or .zip format files to the database, click **Database**.

6. Click **Convert**.

Deleting Specification Revisions

You can delete specification revisions in several ways. This procedure refers you to two such procedures, and then describes how to delete revisions by tag, by revision.

🗒️ **Note**

- When you delete a specification, the software automatically deletes all the associated revisions as well, whether you saved them to the database, or as files. The software removes revisions that were saved as files form the **Manage Spec Revisions** dialog box, and also from the folders to which they have been saved.

You can delete specification revisions by any of the following methods:

- Locally (from the **Revisions** dialog box)
  Use this procedure to delete any or all of the revisions of an active specification.

- Globally (from the **Global Revisions** dialog box)
  The **Specifications** tab of the **Global Revisions** dialog box displays all specification revisions per <plant> or per <unit>, further filtered according to your settings. Use this procedure to do either of the following

  - Delete the most recent revision for the tags that you select

  - Delete all revisions for the tags that you select

- By Tag, by Revision (from the **Manage Spec Revisions** dialog box)
  By default, this dialog box displays each combination of tag and revision on a separate line. You can filter the display by revision. Use this procedure to do either of the following:

  - Delete specific specification revisions.

  - Delete a given revision for tags that you select.

➤ **To delete specification revision by tag, by revision**

1. From the **Specifications Module** window, on the **Actions** menu, click **Manage Spec Revisions**.

2. To display one revision only, under **Revision filter**, type the revision number and click **Apply**.

3. Do one of the following:

   - Select the specification revisions that you want to delete.

   - To select all of the displayed revisions for deletion, click **Select all**.

4. Click **Delete**.

Viewing Specification Data History

SmartPlant Instrumentation can indicate specification data changes by comparing current data with the data stored in the audit trail repository for the date range that you specify. You can choose any or all of the following modes of emphasis:

- You can set a color to mark changes.

- You can set a shade of gray to emphasize the changed data in printed reports and their previews.

- You can set bold and italic font style for emphasis on the screen and in print.

Note

- History indication is available only if the System Administrator has activated the audit trail functionality. When the audit trail functionality is activated, each time that you save data after making changes, the data is recorded in the audit trail repository.

➢ **To view the specification data history**

1. In the Specifications module, open a specification.

2. On the **Options** menu, click **History Options**.

3. Select the date range for data history comparison, by doing one of the following:

   - In the **From** and **To** data fields, type the appropriate dates.

   - Select the appropriate dates using the spinners.

   Note

   - To set the **To** data field value as today's date, click **Today**.

4. To set a font style to emphasize changes on the screen and in print, do one or both of the following:

   - Select **Bold**.

   - Select **Italic**.

5. To change the color used to display changes on the screen:

    a) Beside the **Highlight color for display** box, click ⌐⌐⌐.

    b) In the **Color** dialog box, choose the color that you require.

    c) Click **OK** to save your new color settings and return to the **History Options** dialog box.

6. To change the shade of gray used to emphasize the changed data in printed reports and their previews:

    a) Beside the **Grayscale for printing** box, click ⌐⌐⌐.

    b) In the **Grayscale** dialog box, slide the bar to the required position.

    c) Click **OK** to save your new grayscale settings and return to the **History Options** dialog box.

7. Click **OK** to save your current history options and close the **History Options** dialog box.

8. On the **Options** menu, click **Mark Changes** to mark changes in the current specification for the dates that you specified in the **History Options** dialog box.

    ☀ **Tip**

    - To refresh the history indication in an open specification, on the **Options** menu**,** clear **Mark Changes** and then select the option again.

    ▤ **Note**

- The software does not mark changes either in a spec note, or in a large note page.

Printing Specifications and Reports

Available Reports

The following reports are available:

- Currently open specification (with option to display and print notes separately)
- All specifications
- Specifications for specified instrument tags
- Specifications for specified forms
- Specifications for specified documents
- Comparison between current specification data and a previous revision
- Comparison between current specification data and a saved version
- Form data templates
- Blank forms, with and without field names
- Specifications for a specified date range.
- Specification page columns according to form
- Specification pages where selected columns appear
- Specification pages per form
- Specifications combined into a single .pdf file
- Specification page DDLB

Printing the Currently Open Specification

This option allows you to print out the currently open specification.

➢ **To print the current specification**

1. Do one of the following:

    *   On the **Actions** menu, click **Print**.

    *   On the module toolbar, click ⬙.

Printing Specification Reports

The steps involved in printing most of the Specifications module reports are similar. The report for specifications according to selected forms is shown here as an example. This option enables you to print out specifications that share the same form.

➢ **To print specifications based on a given form**

1. In the **Specifications Module** window, on the **Actions** menu, point to **Reports,** then point to **By Forms**, and do one of the following:

    *   To print reports from the current <unit> only, click **Current <Unit>**.

    *   To print reports from all <units> of the current <plant>, click **All <Units>**

2. Select the required forms. Press and hold down either the **Ctrl** or **Shift** key to select more than one form.

3. Click **OK**.

4. In the dialog box that opens, click **Yes** to preview your report or **No** to print without previewing.

Notes

*   By default, the software prints specification notes on a separate sheet. You can change this setting from the **Preferences** dialog box.

*   By default the software prompts the user to open a print preview. You can also change this setting in the **Preferences** dialog box.

Specification Report List

The following table shows a description of each Specifications module report that is available for displaying and printing.

Report	Description	Comments
All	Prints all the existing specifications in the database (with the option to specify the current <unit> or all <units>).	When printing in batch mode, you can select the current <unit> or all the <units> in the current <plant>.
Select Tags	Prints specifications according to specified instrument tags.	
By Forms	Prints specifications according to specified forms on which the specifications are based.	You can select the current <unit> or all the <units> in the current <plant>.
By Document Number	Prints specifications according to specified document numbers.	You can select the current <unit> or all the <units> in the current <plant>.
Form Data Templates	Prints a specified form data template.	
Empty Forms	Prints specified forms without data.	You can select with or without column names.
By Date	Prints specifications according to specified date range.	You can select the current <unit> or all the <units> in the current <plant>.
Spec Form Column Report – Per Form	Prints the column names and their respective column headers for the forms.	The column headers will be displayed as they appear in the Spec Data Dictionary. You can select a specified form or all available forms.
Spec Form Column Report - Per Column	Prints the spec forms (names and spec codes) where a selected column (field) name appears.	You can select a specified column name or all available column names.
Spec Form DDLB Report	List of fields that appear as drop-down list boxes in the selected form, with all the possible values for each field.	
Specification Forms According to Process Function	Prints a list of specification forms and instrument types associated with the specified process functions.	You can select one or more process functions.
Spec Pages per Form	Prints a list of pages associated with specified forms.	
Print to PDF	Prints the specifications that you select into a common .pdf file.	

Assigning User-Defined Headers for Spec Form Column Reports

Use this procedure to edit form headers or to assign user-defined headers to the fields in a selected form. The header changes affect the following:

- Spec Form Column Reports

- Form Browser views that you create in the Browser module. For details, see Defining Fields for a Form Browser.

Note

- The actions described in this procedure do not affect the on-screen display of specifications based on a form that you edit in the **Spec Data Dictionary**, nor do they influence printed specifications.

➢ **To assign user-defined headers for Spec Form Column reports**

1. In the Specifications module, on the **Edit** menu, click **Spec Data Dictionary**.

2. In the **Select Specification Form** dialog box, select a form and click **OK**.

3. On the toolbar, click .

4. To edit the column headers for the Spec Form Column reports, do one of the following:

    - In the **Field Properties** tab, change individual headers by typing a text string instead of the displayed header.

    - Change column headers in batch mode using another form as a source. To do so, click **Copy From**, and then, select a source form.

    - Apply existing headers of the current form as follows:

        c) In the form or In the **Field Properties** tab, under **Column Header**, move the cursor to the header, and after the cursor changes its shape to , click the header.

        d) In the form, double-click the header to display it in the **Field Properties** tab.

Tips

- If you apply existing headers of the current form, in the form display, the form fields are marked with a background the **cyan** background color. The background color of the currently selected field, for which you are editing the header, changes to **magenta**.

- The ▶ icon in the **Field Properties** tab points to the corresponding column header, which is now available for editing.

Generating Reports by Date

This option allows you to set a date range and then generate a report of all spec forms that underwent changes within this date range.

➢ **To generate a report by date**

1. Start the Specifications module.

2. On the **Reports** menu, point to **By Date**, and do one of the following:

   - Click **Current <Unit>** to print reports from the current <unit> only.

   - Click **All <Units>** to print reports from all <units> of the current <plant>.

3. Type or select the required date range in the **From** and **To** boxes.

   Tip

   - Click **Today** to display the current date in the **To** box.

4. Click **OK** to save the date range settings.

5. In the dialog box that opens, click **Yes** to preview your report or **No** to print without previewing.

   Notes

- By default, the software prints specification notes on a separate sheet. You can change this setting from the **Preferences** dialog box.

- By default software prompts the user wants to open a print preview. You can also change this setting in the **Preferences** dialog box.

Generating a Report for a Selected Column Name

Use this procedure to generate a Spec Form Column Report for a given database field. This report indicates the following:

- Forms on which the given field appears

- Headers that you assigned to this field in the **Spec Data Dictionary** for the various forms. For details, see Assigning User-Defined Headers to Form Fields.

Note

- For headers that you did not edit in the **Spec Data Dictionary**, this report prints the headers that appear in the pages that the form contains.

➤ **To generate a report for a selected column name**

1. Open the Specifications module.

2. On the **Reports** menu, point to **Spec Form Column Report – Per Column**, and click **Select Column Name**.

3. In the **Select Column Name** dialog box, select the required database field and click **OK**.

Tip

- If the list of database fields is long, start typing the required column name in the **Find** box and the matching row is automatically highlighted as you type.

4. Click **Yes** when prompted to preview printed reports.

5. Click **OK** to close the dialog box and display the report for the selected database field.

Printing Specifications into PDF Files

Use this procedure specifications into a single .pdf file, or to individual .pdf files.

🤚 **Caution**

- Before printing specifications into a .pdf file, you must install GNU Ghostscript or Adobe Acrobat Distiller. You then open the **Preferences** dialog box and under the **General** tab, select the appropriate application from the **PDF generator** list.

➢ **To print specifications into a PDF file**

1. In the **Specifications Module** window, on the **Reports** menu, click **Print Specs into PDF Files**.

2. In the **Print Specs into PDF Files** dialog box, one of the following:

   - Click **Print all into one file** and then specify the target file name and path. This allows you to create one .pdf file shared for all specifications.

   - Click **Print into individual files** and then specify the target folder for the software to create an individual .pdf file for each specification.

   💡 **Tip**

   - When creating individual .pdf file names for entity specifications, the software uses the names of the entities as a source. If the entity name includes characters other than alphanumeric characters (that is, \-/(#) and so forth), the software converts them to underscores. The software retains hyphens and spaces.
     For example, if the entity name is 101-FT-100\B, the created .pdf file name is 101-FT-100_B.pdf. If the entity name is 12P#20 TYPE E I/OAS (CUSTOM), the created .pdf file name is 12P_20 TYPE E I_OAS _CUSTOM_.pdf.

3. Click **Find**.

4. In the **Find Entities** dialog box, find entities for which you want to print to specifications to a .pdf file.

   💡 **Tip**

   - In the **Find Entities** dialog box, the software only displays entities for which specifications already exist.

5. Under **Search results**, select entities whose specifications you want to print into one or several .pdf files, and then click **OK**.

6. In the **Print Specs into PDF Files** dialog box, click **OK**.

Save and Import Options

Common Tasks

To edit a specification in an external application such as the External Editor or Sybase InfoMaker, you need to save the specification in a format that the external application supports. You can export specifications individually or in batch mode.

The main exporting options are described in the following topics:

- Saving a Specification in PSR Format — InfoMaker

- Saving an Specification in ISF Format — External Editor

- Saving Specifications in Batch Mode — External Editor and InfoMaker

- Saving Specifications in Excel Format — Microsoft Excel

Note

- For information on installing and sharing External Editor, see External Editor Installation Guide.

Protecting Fields Before Exporting Specs to External Editor

Use this procedure to protect all or specific fields whose values you do not want to be available for editing in External Editor. You use External Editor to view and edit specifications and process data sheets. After you save the spec as an .isf file, and open it in External Editor, the fields that you protected appear as view-only.

Caution

- You perform this procedure at the form level. The fields that you protect for a given form apply to any specification based on this form that you save in .isf format.

➢ To protect data fields before exporting specifications to External Editor

1. On the module toolbar, click ▦ to open the **Spec Data Dictionary**.

2. In the **Select Specification Form** dialog box, select the form for which you want to create or modify form-level protection, and click **OK**.

3. On the toolbar, click 🗗 to open the **Field Properties** tab.

4. Do one of the following:

   - To protect individual fields, on the **Column Headers** tab, under **Editable in IEE**, clear the check boxes for the fields you want to protect.

   - To protect all of the fields belonging to a given database table, click the **Tables** tab, and then, under **Editable in IEE**, click **No**.

5. On the toolbar, click 🖫.

Saving a Specification in ISF Format

Use this procedure to save a document in .isf format for opening in External Editor, which is supplied with SmartPlant Instrumentation. Use External Editor to view and edit specifications and process data sheets. After editing, you can import the changed data back into your specifications.

Note

- For information on installing and sharing External Editor, see External Editor Installation Guide.

➢ **To save a specification as an .isf file**

1. Open the specification that you want to save in .isf format.

2. On the **Actions** menu, click **Export Data**.

3. In the **Save to File** dialog box, navigate to the folder where you want to save the files, enter a file name, and click **Save.**

Saving Specifications in Batch Mode

Use this procedure to save a group of selected specifications. You can choose between two file formats:

- Select .psr format for opening in InfoMaker.

- Select .isf format for opening in External Editor, which is supplied with SmartPlant Instrumentation. Use External Editor to view and edit specifications and process data sheets. After editing, you can import these files back into SmartPlant Instrumentation with the new data.

 Note

- For information on installing and sharing External Editor, see External Editor Installation Guide.

➢ **To save specifications in batch mode**

1. Start the Specifications module and then, on the **Actions** menu, click **Save as Files**.

2. In the **Save as Files** dialog box, under **Select file format**, do one of the following:

    - To save the files in .isf format, select **ISF**.

    - To save the files in .psr format, select **PSR**.

3. Click **Browse**.

4. In the **Select Folder** dialog box, navigate to the required folder, and click **Save**.

5. Click **Find** to open the **Find Tag** dialog box.

6. Select the required tag numbers as follows:

    a) Type or select from the fields in the upper part of the window the parameters for the properties you want to search for.

    b) Click **Find** to display a list of tags according to the parameters you have selected.

    c) Select the required tag numbers from the retrieved list.

    d) Click **OK** to accept your choice.

7. In the **Save as Files** dialog box, click **OK**.

Batch Conversion of Files to ISF Format

This procedure explains how to convert specification files saved in .psr format to the .isf format. The conversion is done using External Editor.

🖼️ **Notes**

- To perform the conversion, you must first install External Editor, supplied with SmartPlant Instrumentation.

- Unlike .psr, the .isf format supports multi-page and multi-tag (SEE LIST) specifications.

➢ **To convert a batch of specification files to .isf format**

1. To start External Editor, on the Windows **Start** menu, point to **Programs**, point to the folder where you installed External Editor, and select **External Editor**.

2. On the **File** menu, click **Batch Conversion**.

3. In the **Source folder** text box, type the path and name of the folder containing your source files, or click ⌐ and navigate to the folder.

4. To set your target folder, do one of the following:

   - Select **Target folder same as source**. The software then displays the folder you chose for the source directory in the **Target folder** text box as well.

   - Clear **Target folder same as source**. Beside the **Target folder** text box, click ⌐ and navigate to the folder.

   In the data window, the software displays the specification files from the target folder that you specified.

5. Do one of the following:

   - In the data window, under the **Select** column, select the check boxes beside the specific files you want to convert to .isf format.

   - Select the **Select all** check box if you want to convert all the files.

Saving a Specification in PSR Format

Use this procedure to save a single specification in .psr format for opening in InfoMaker.

➢ **To save a single specification as a .psr file**

1. Open the specification that you want to save in .psr format.

2. On the **Actions** menu, click **Save As**.

3. Select **Original**, and click **OK**.

4. In the dialog box that opens under **Save as type**, select **Powersoft Report (PSR) format (*.PSR)**, navigate to the folder where you want to save the files, type a file name, and click **Save**.

Saving a Page as an External File

You can save a page as an external file so that it can be used with a third-party application such as InfoMaker.

➢ **To save a page as an external file**

1. In the **Page Editor**, with the page open, do one of the following:

   • Click .

   • On the **Actions** menu, click **Save as File**.

2. In the **Save As** dialog box, navigate to the required folder and type a file name. You can save the page as an external .psr (PowerSoft Report) file or as a .wmf (Windows METAFILE) graphic.

3. Click **OK** to save the file.

Converting File Format of Specifications

This procedure explains how to convert a specification saved in .psr format to the .isf format. The conversion is done using External Editor.

 Notes

- For information on installing and sharing External Editor, see External Editor Installation Guide.

- Unlike .psr, the .isf format supports multi-page and multi-tag (SEE LIST) specifications.

➢ **To convert .psr to .isf**

1. To start External Editor, on the Windows **Start** menu, point to **Programs**, point to the folder where you installed External Editor and click **External Editor**.

2. Open the required .psr source file.

3. On the **File** menu, click **Save As**.

4. In the **Select File** dialog box, accept the default file name or type a new name.

5. Click **Save**.

Save as Excel

Saving Specifications in Excel Format

The following procedures allow you to save specifications in Microsoft Excel format. (We also refer to this process as exporting SmartPlant Instrumentation specifications to Excel.) You can open and edit the exported specifications in Excel without having to use SmartPlant Instrumentation. You can then use any of the Excel functionalities to edit the exported specifications. Make sure that you have access to Excel 2000 or Excel XP.

Cautions

- After you install a new SmartPlant Instrumentation version or service pack, if you previously saved specifications in Excel format, rename the previous result files or move them from the target folder.

- If you previously saved specifications in Excel format, and do not want to overwrite existing result files, you should rename the previous files or move them from the target folder.

- If you previously saved multi-tag specifications in Excel format and then made changes to the format upon which these specifications are based, you should rename the previous result files or move them from the target folder before exporting further specifications based on that format.

- Graphic elements within title blocks like those in SmartPlant Instrumentation library forms are displayed correctly when saved for Excel. SmartPlant Instrumentation does not support export of other graphic elements to Excel.

- By default, specifications sharing a common form are saved in a common Excel file. For example, specifications based on form 11 might be saved in file T_Form11_0.xls.

➢ **To save a single specification in Excel format**

1. Open a specification.

2. On the **Actions** menu, click **Save as Excel**.

➢ **To save a batch of specifications in Excel format**

1. In the main window of the Specifications module, on the **Actions** menu, click **Save as Excel**.

2. In the **Find Tag** dialog box that opens, search for specifications that you want to save in Excel format.

3. In the **Search results** data window, select the tags that you want to save in Excel format, and click **OK**.

Working with Specifications in Excel Format

You can save SmartPlant Instrumentation specifications in Excel format. Use this procedure to open these records (converted specifications) in Excel without having to use SmartPlant Instrumentation. You can then use any of the Excel commands to edit the records as required.

 Caution

- If you are running Excel XP, set macro security to Medium. (To change macro security settings, see Setting Excel Macro Security for Save as Excel.)

➢ **To work with specifications in Excel Format**

1. On the Excel **File** menu, click **Open**, and navigate to the target folder.

 Notes

- By default, the target folder is '<SmartPlant Instrumentation home folder>\Save As Excel\Result Files'.

- By default, specifications sharing a common form are saved in a common Excel file. For example, specifications based on form 11 might be saved in file T_Form11_0.xls.

2. Double-click the required .xls file.

3. Click **Enable macros** when prompted.

 Notes

- The Excel workbook opens displaying the specification with the lowest tag number.

- If the file that you opened contains multi-page specifications, each page is displayed on a separate Excel worksheet.

- The notes are displayed on the Excel **Notes** worksheet.

- If you exported multi-tag specifications, the multi-tag list is displayed on the Excel **See List** worksheet.

- When you modify data saved in Excel format, this does not affect the data in the SmartPlant Instrumentation database.

4. Use Excel commands to edit the files as required.

5. To move efficiently from one specification to another, click one of the icons on the SaveAsExcel toolbar .

- To move to a given record, do the following:

  a) Click .

  b) In the **Save as Excel – Show Record** dialog box, under **Available tags**, select the record that you want to display.

  c) Click **OK**.

- To move to the next record, click .

- To move to the previous record, click .

 Note

- If the toolbar is not visible, on the Excel **View** menu, point to **Toolbars** and click **SaveAsExcel**.

Setting Excel Macro Security for Save as Excel

If you are running Excel XP, macro security is set to High by default. Use this procedure to change the setting to Medium. You need medium macro security in order to navigate among the specifications in your Excel file.

➢ **To set macro security for Save as Excel**

1. On the Excel **Tools** menu, click **Options**.

2. In the **Security** tab folder, click **Macro Security**.

3. In the **Security Level** tab folder, click **Medium**.

4. Click **OK** to close the **Security** dialog box.

5. Click **OK** to close the **Options** dialog box.

Guidelines for Customizing Pages for Save as Excel

In general, specifications based on SmartPlant Instrumentation library pages export accurately to Excel. When you customize pages in the **Page Editor**, use these guidelines for compatibility with Excel. After you create forms and specifications based on such pages, you can then save these specifications accurately in Excel format.

The guidelines for customizing pages in the for Save as Excel are as follows:

Graphic Limitations of the Excel Environment

The **Page Editor** allows you freedom in designing specification pages, with few limitations on the layout of database fields, computed fields, text fields, and lines. But when designing pages for Excel compatibility, it is important to keep in mind that an Excel worksheet is basically a grid of cells. Although a standalone Excel spreadsheet supports random placement of text, value, and line objects, Save as Excel works best if you imagine an Excel grid underlying your page. The topics below concretize this principle.

Grid and Lines

Although you will probably be using the mouse to create and place lines, you must fine-tune the grid by referring to the **Line Position** pop-up window for each line object. Verify the following:

- All lines are either exactly vertical lines or exactly horizontal.

- For every vertical line, BeginX = EndX.

- For every horizontal line, BeginY = EndY.

- Left/right external border lines share common BeginY (top) and EndY (bottom) values.

- Top/bottom external border lines share common BeginX (left end) and EndY (right end) values.

- When one line ends by running into another, make sure that they share an X value or a Y value. This prevents overshooting and undershooting.

- Create as much of the grid as possible before creating text and value objects.

- Although there is no requirement for every line to run the entire length or width of the page, imagine an Excel grid underlying your page. For example, if you inserted a vertical line near the top of the page at X = 500 PBU (PowerBuilder units), if your mouse placement of a vertical line near the bottom of the page ended up at X = 505, make the X values consistent for both lines.

- Similarly, if you inserted a horizontal line towards the left of the page at Y = 700 PBU, if your mouse placement of a horizontal line towards the right of the page ended up at Y = 705, make the Y values consistent for both lines.

Text and Value Fields

After you set the major lines of the page grid, you can insert database fields, computed fields, text fields, and lines.

Left-aligning fields to lines

During the process of export from SmartPlant Instrumentation to Excel, the software associates each field with a vertical line to the left of the field. To ensure accurate display, the BeginX value of a field should equal the X values of the line to its left.

 Note

- For more flexibility regarding this limitation, edit a page in InfoMaker (see Guidelines for Customizing PSR Files for Save as Excel).

Adjacent fields

- To prevent text cut-off, leave at least 5 PBUs between adjacent fields. (The requirement to left-align fields to lines also applies to fields to the right of other fields.)

- For multiple fields between horizontal lines, set constant BeginY and EndY values for all of the fields. The BeginY value should be several PBUs greater than the Y values of the line above, and the End2 value should be several PBUs less than the Y values of the line below.

Guidelines for Customizing PSR Files for Save as Excel

In general, specifications based on SmartPlant Instrumentation library pages export accurately to Excel. When you customize .psr pages in InfoMaker, use these guidelines for compatibility with Excel. After you import such pages into SmartPlant Instrumentation and generate forms and specifications, you can then save these specifications accurately in Excel format.

The guidelines for customizing .psr files for Save as Excel are as follows:

Graphic Limitations of the Excel Environment

InfoMaker allows you great freedom in designing specification pages, with few limitations on the layout of text, value, line, and other objects. But when designing InfoMaker pages for Excel compatibility, it is important to keep in mind that an Excel worksheet is basically a grid of cells. Although a standalone Excel spreadsheet supports random placement of text, value, and line objects, Save as Excel works best if you imagine an Excel grid underlying your InfoMaker page. The topics below concretize this principle.

Grid and Lines

Although you will probably be using the mouse to create and place lines, you must fine-tune the grid by referring to the **Properties** > **Position** tab for each line object. Verify the following:

- All lines are either exactly vertical lines or exactly horizontal.

- For every vertical line, X1 = X2.

- For every horizontal line, Y1 = Y2.

- Left/right external border lines share common Y1 (top) and Y2 (bottom) values.

- Top/bottom external border lines share common X1 (left end) and X2 (right end) values.

- When one line ends by running into another, make sure that they share an X value or a Y value. This prevents overshooting and undershooting.

- Create as much of the grid as possible before creating text and value objects.

- Although there is no requirement for every line to run the entire length or width of the page, imagine an Excel grid underlying your InfoMaker page. For example, if you inserted a vertical line near the top of the page at X = 500 PBU (PowerBuilder Units), if your mouse placement of a vertical line near the bottom of the page ended up at X = 505, make the X values consistent for both lines.

- Similarly, if you inserted a horizontal line towards the left of the page at Y = 700 PBU, if your mouse placement of a horizontal line towards the right of the page ended up at Y = 705, make the Y values consistent for both lines.

Text and Value Fields

After you set the major lines of the page grid, you can insert text and value fields (columns and computed fields), including fields displayed as drop-down lists, checkboxes, or option buttons.

Left-aligning fields to lines

During the process of export from SmartPlant Instrumentation to Excel, the software associates each field with a vertical line to the left of the field. To ensure accurate display, the X1 value of a field should equal the X values of the line to its left. The following lines are acceptable:

- A visible vertical line on the left edge of the field

- A visible vertical line, with X value equal to the X1 value of the field, but on a higher or lower part of the page

- A vertical grid line, with X value equal to the X1 value of the field, and on the **Properties** > **General** tab, the **Visible** check box is cleared. Even for such an invisible line, imagine an Excel grid underlying your InfoMaker page. For example, if you inserted an invisible vertical line in one part of the page at X = 500 PBU, if your field placement at another part of the page ended up at X1 = 505, make the X values consistent for both lines.

 Note

- For each invisible line, make sure that the icon to the right of **Visible** is displayed as . If the icon is displayed as , click it, and in the dialog box that opens, delete the contents of the **Expression** pane, and then click **OK**.

Adjacent fields

- To prevent text cut-off, leave at least 5 PBUs between adjacent fields. (The requirement to left-align fields to lines also applies to fields to the right of other fields.)

- For multiple fields between horizontal lines, set constant Y1 and Y2 values for all of the fields. The Y1 value should be several PBUs greater than the Y values of the line above, and the Y2 value should be several PBUs less than the Y values of the line below.

Save as Excel Troubleshooting

After saving a specification in Excel format, scan the resulting file for display errors. The following list links to some of the possible errors and appropriate solutions:

- The Excel specification is protected

- Cannot save data . . . incorrect syntax

- Grid lines are not correctly converted from SmartPlant Instrumentation to Excel

- Labels and values overlap lines above or below

- The right end of labels and values is displayed cut off

- Displaced labels

- Incomplete display of text in the converted document

- Non-wrapping display of text in the converted document

- Formatting SmartPlant Instrumentation values displayed In Excel

- Unknown function

- The Excel font differs from the SmartPlant Instrumentation font

- Graphics and other embedded objects are not correctly displayed

- Vertical fields are not correctly displayed

- Drop-down lists are not correctly displayed

- Preparing Save as Excel files for Intergraph Support

Notes

- For a more general approach to customizing pages for Save as Excel using Sybase InfoMaker, see Guidelines for Customizing PSR Files for Save as Excel.

- This troubleshooter assumes that you have access to InfoMaker. If you customize pages using the **Page Editor**, see Guidelines for Customizing Pages for Save as Excel.

The Excel specification is protected.

➢ **To remove the protection from an Excel specification**

1. Open the required specification in Excel.

2. On the **Tools** menu, point to **Protection** and click **Unprotect sheet**.

Cannot save data . . . incorrect syntax.

This error message can arise if your specifications are based on pages arranged with the text headers above the column fields, rather than in separate vertical groupings. After editing in InfoMaker, your pages can support specifications that you save in Excel format.

📝 Note

- To avoid this error message, edit in InfoMaker the page upon which the specification is based (for more information, see Editing Page Grid Lines in InfoMaker for Save as Excel). You then import the page back into SmartPlant Instrumentation, regenerate the form and specification and save again in Excel format.

Grid Lines are Not Correctly Converted from SmartPlant Instrumentation to Excel

If your Excel sheet displays various line irregularities, check your original specification for the following problematic elements:

- Use of graphic symbols instead of '-' (minus sign) and '_' (underscore) as indicators of null content.

- Use of double lines instead of single thick lines.

- Imperfect alignment of rows from one column to the next.

- Imperfect meeting of grid lines. Either of the following situations could cause this problem:

  - Undershooting — The lines do not meet.

  - Overshooting — At least one of the lines extends beyond the meeting point. Even a minor overshooting can be problematic.

- Imperfect translation of vertical lines. If a line in the SmartPlant Instrumentation spec page is not absolutely vertical, it is not properly converted to Excel.

📝 Note

- To correct grid line irregularities, edit in InfoMaker the page upon which the specification is based (for more information, see Editing Page Grid Lines in InfoMaker for Save as Excel). You then import the page back into SmartPlant Instrumentation, regenerate the form and specification and save again in Excel format.

Labels and Values Overlap Lines Above or Below

In InfoMaker, make sure that lines that intersect near problematic fields do not overshoot. For more information, see Grid Lines are Not Correctly Converted from SmartPlant Instrumentation to Excel, Imperfect meeting of grid lines. If there is no overshooting, make sure that you set constant Y1 and Y2 values for all of the objects between the lines. The Y1 value should be several PBUs (PowerBuilder units) greater than the Y values of the line above, and the Y2 value should be several PBUs less than the Y values of the line below.

The Right End of Labels and Values is Displayed Cut Off

For accurate export to Excel, fine-tune problematic areas of the page in InfoMaker according to **plumb line** principles: The X positions of vertical lines and X1 and X2 object positions should not be used randomly. For considerations of graphic design and for compatibility with Excel, set close values equal.

Displaced Labels

When you save specifications in Excel format, you may find displaced labels in the categories column — by default at the left of the page — or in the title block. This can be due to lack of coordination between the SmartPlant Instrumentation spec page upon which the specification is based and the row division in the Excel spreadsheet. You have two options to correct the situation:

- In InfoMaker, edit the source page as necessary.

- Change the SmartPlant Instrumentation preferences:

➢ **To add gridlines by changing the SmartPlant Instrumentation preferences**

1. To open the **Preferences** dialog box, on the **File** menu, click **Preferences**.

2. In the tree view pane, to expand the tree, click ⊞ beside Specifications.

3. Click **Custom**.

4. Under **Custom features for the Specifications module**, enter the following:

Parameter		Value
SaveExcelAddLines	**=**	Y

5. Save the specification in Excel format.

Incomplete Display of Text in the Converted Document

After you save a specification in Excel format, cell contents can be improperly displayed due to the width of the Excel columns. This can occur in the following situations:

- If the text string in a cell is longer than the width of the cell, and the cell to the right is empty, the text extends into the adjacent cell.

- If the text string in a cell is longer than the width of the cell, and the cell to the right is not empty, the overlapping text is cut off.

- If the cell is very narrow, no data appears in the cell. By inserting the mouse pointer in the cell, you can view the cell contents in the Formula bar.

➢ **To display more text in an Excel column**

- Do one of the following:

  - Drag the column borders to accommodate the text.

  - In the Excel **Format Cells** dialog box, on the **Alignment** tab folder, select **Wrap text**.

  - Increase the width of this column in the source page in InfoMaker, as necessary.

Non-Wrapping Display of Text in the Converted Document

Page headers and other text that extend over two lines in SmartPlant Instrumentation can appear after Save as Excel on one line that extends past the boundaries of the cell. Use this procedure to solve this problem for fields in a given SmartPlant Instrumentation spec page and for all specifications based on that page.

➢ **To correct non-wrapping display of text**

1. In the **Page Editor**, open the page upon which the specification is based.

2. Open the **Edit Columns and Headers** toolbar by doing one of the following:

   - Click ![icon].

   - On the **Actions** menu, click **Edit Columns and Headers**.

3. Double-click the required header to open the **Edit Text** dialog box.

4. In the text box, select the text that you want to appear on the second line, and cut, using a standard Microsoft shortcut.

5. Click **OK**.

6. On the **Edit Columns and Headers** toolbar, click ![A icon].

7. Double-click below the text that you edited to open the **New Text** dialog box.

8. Click in the **Text** field, and paste, using a standard Microsoft shortcut.

9. Using the formatting controls in the **New Text** dialog box, format the text as needed.

10. Click **OK**.

11. In the **Page Editor**, save the page.

12. Recreate the original form from the page that you edited.

13. Change the form assignment of the specification from the original form to the new form.

14. Save the specification in Excel format.

Formatting SmartPlant Instrumentation Values Displayed in Excel

In general, the values that SmartPlant Instrumentation stores in the database are of greater precision than the values that it displays in process data or specifications. You can determine the precision of the display per unit (for more information, see Setting the Default Units of Measure).

When you save a specification as an Excel file, SmartPlant Instrumentation reformats the display precision for Excel. You can influence the precision of the display of your data in Excel in the following ways:

- You can accept the default global Save as Excel precision of two decimal places.

- You can change the global Save as Excel precision.

- You can edit the pages upon which your specifications are based, in InfoMaker. This way, you can override the global precision for individual fields.

➢ **To set SmartPlant Instrumentation precision for Save as Excel**

1. On the **File** menu, click **Preferences** to open the **Preferences** dialog box.

2. In the tree view pane, to expand the tree, click ⊞ beside Specifications.

3. Under **Specifications**, click **Save as Excel**.

4. Under **Accuracy level**, enter the number of decimal digits that you want to display in the target Excel files.

➢ **To change display precision by editing pages in InfoMaker**

1. In SmartPlant Instrumentation, save the page upon which the specification is based as a .psr file.

2. Edit the file in InfoMaker, formatting the required fields.

3. Import the .psr page file back into SmartPlant Instrumentation.

4. Recreate the original form from the page that you imported.

5. Change the form assignment of the specification from the original form to the new form.

6. Save the specification in Excel format.

Note

- You can also reformat individual fields in the Excel sheet, setting the appropriate number of decimal places. You need to reformat these fields each time after saving this SmartPlant Instrumentation specification in Excel format.

Unknown Function

When you save a specification in Excel format, SmartPlant Instrumentation converts its functions into Excel functions. Where the conversion does not succeed, SmartPlant Instrumentation enters the calculated result into the relevant cell of the Excel spreadsheet, and does not display a formula in the formula bar.

Notes

- This indication is likely to occur if you created your own specification function in InfoMaker.

- Before proceeding, make sure that you understand the purpose of the function in the specification.

➢ **To convert a function manually**

1. Copy the value of the unknown function from the original cell to a temporary cell.

2. Copy the unknown function from the log file to the original cell.

Note

- The log files are located in <SmartPlant Instrumentation home folder>\SaveAsExcel\ResultFiles\. The filenames are created according to the convention LogFileFormXXX_#.txt, where XXX is the form number and # relates to the internal change made to the form.

3. In the original cell, modify the exported function to convert it into an Excel function.

4. Move the mouse pointer outside the cell to display the value of the function.

5. Compare the value displayed in the Excel cell with the value in the source specification. If the values are identical, this is an indication (but not a proof) that you have accurately converted the formula.

6. If you succeed in converting the function, delete the contents of the temporary cell.

Notes

- To avoid overwriting your new function — if you resave the same specification in Excel format — you must rename the corrected Excel file. You can then copy the formula to future Excel versions of this specification.

- If the converted formula does not work, restore the original cell contents from the temporary cell, and then contact Intergraph Support.

The Excel Font Differs from the SmartPlant Instrumentation Font

Regardless of the font of the original specification, SmartPlant Instrumentation selects the Arial font in the Excel target file.

Graphics and Other Embedded Objects Are Not Correctly Displayed

In general, graphic elements within title blocks like those in library forms display as designed when saved for Excel. SmartPlant Instrumentation does not support export of other graphic elements to Excel format.

SmartPlant Instrumentation does not support export of embedded objects — equations for example — to Excel format.

Vertical Fields are Not Correctly Displayed

If a page upon which specifications are based contains vertical fields, it must fulfill one of the following two conditions for correct export to Excel:

- The **X** values of the left-hand vertical grid line must be 0.

- You create an invisible line for which the **X** values are 0.

To create such a line, see Creating an Invisible Vertical Zero Line in the Editing Page Grid Lines in InfoMaker for Save as Excel topic.

If aligning the form to **X** = 0 does not solve the problem, see Preparing Vertical Page Fields in InfoMaker for Save as Excel.

Drop-Down Lists are Not Correctly Displayed

If drop-down lists are not correctly displayed in Excel, see Creating an Invisible Vertical Zero Line in the Editing Page Grid Lines in InfoMaker for Save as Excel topic.

Preparing Save as Excel Files for Intergraph Support

If you encounter problems that you are unable to solve, follow this procedure and then contact Intergraph Support.

➢ **To prepare Save as Excel files for Intergraph Support**

1. To open the **Preferences** dialog box, on the **File** menu, click **Preferences**.

2. In the tree view pane, to expand the tree, click ⊞ beside **Specifications**.

3. Under **Specifications**, click **Save as Excel**.

4. Select **Delete temporary Excel** files, and click **OK**.

5. Save the problematic specifications in Excel format.

6. For each problematic specification, send the following files to Intergraph Support:

   - From the Result Files folder — T_Form*.xls and LogFileForm*.txt

   - From the Data Files folder — Data*.xls and Form*.xls

Formatting Page Fields in InfoMaker for Save as Excel

This procedure affects SmartPlant Instrumentation specifications based on the regenerated forms, and the files that you save in Excel format. In general, the values that SmartPlant Instrumentation stores in the database are of greater precision than the values that it displays in process data sheet or specifications. You can determine the precision of the display per unit.

When you save a specification as an Excel file, SmartPlant Instrumentation reformats the display precision for Excel. You can influence the precision of the display of your data in Excel in the following ways:

- You can accept the default global Save as Excel precision of two decimal places.

- You can change the global Save as Excel precision.

- In InfoMaker, you can edit the SmartPlant Instrumentation pages upon which your specifications are based. The following procedure allows you to override the global precision for individual fields.

➢ **To format fields in InfoMaker**

1. Do one of the following:

   - To save the page currently open in the **Page Editor** in .psr format, see Saving a Page as an External File.

   - To save a batch of pages in .psr format, see Saving Specifications in Batch Mode.

2. Open a given .psr file in InfoMaker.

3. For each field that you want to format, do the following to set the number of decimal places that are displayed in SmartPlant Instrumentation and later in Excel:

   a) Click the field.

   b) In the **Format** tab folder of the **Properties** dialog box, under **Format**, type 0. followed by pound signs (#) to indicate the required number of decimal places. For example:

      - 0. — No decimal places

      - 0.# — 1 decimal place

      - 0.## — 2 decimal places

      - 0.### — 3 decimal places

4. On the **File** menu, click **Save as File**.

5. In the **Select File Name** dialog box, type the required file name.

Editing Displaced Labels in InfoMaker for Save as Excel

When you save a SmartPlant Instrumentation specification in Excel format, you may find displaced labels in the categories column — by default at the left of the page — or in the title block. This can be due to lack of coordination between the SmartPlant Instrumentation page upon which the specification is based and the row division in the Excel spreadsheet. You have two options to assign the displaced label to a row:

- Normalizing label coordinates, which you do by assigning to the displaced label the Y-coordinate of a row that spans the rest of the form.

- Extending an existing horizontal line to pass above or below the displaced label.

Do the following before any of the procedures below:

1. Do one of the following:

   - To save the page currently open in the **Page Editor** in .psr format, see Saving a Page as an External File.

   - To save a batch of pages in .psr format, see Saving Specifications in Batch Mode.

2. Open a given .psr file in InfoMaker.

➢ To normalize label coordinates

1. Right-click the field to the right of the displaced label, and on the shortcut menu, click **Properties**.

2. In the **Position** tab folder, under **Y**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. Right-click on the displaced label, and on the shortcut menu, click **Properties**.

4. In the **Position** tab folder, under **Y**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

Note

- The value of the **Height** field in the **Position** tab folder can also influence the appearance of the text in Excel. You must enter a height value that is in proportion to the font size that you set in the **Font** tab folder.

5. On the **File** menu, click **Save**.

➢ **To extend an existing horizontal line above or below the displaced label**

🖹 **Notes**

- You can effect this option globally by changing a parameter in the SmartPlant Instrumentation **Preferences** dialog box.

- Use this procedure to extend a line that runs through the right-hand and the middle column into the left-hand (categories) column. You can adapt this procedure for other configurations as well.

1. Right-click the left-most line (vertical), and on the shortcut menu click **Properties**.

2. In the **Position** tab folder, under **X1**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. Right-click the horizontal line that you want to extend, and on the shortcut menu, click **Properties**.

4. On the **Position** tab folder, under **X1**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

5. Click in the main window to view your changes.

6. On the **File** menu, click **Save**.

Editing Page Grid Lines in InfoMaker for Save as Excel

SmartPlant Instrumentation can save specifications in Excel format. However, minor imperfections in the line grid of the original form can lead to errors in the conversion process. You can improve the results by editing in InfoMaker the page upon which the problematic specification is based. You then import the page back into SmartPlant Instrumentation, regenerate the form and specification, and resave the specification in Excel format.

Note

- These procedures affect SmartPlant Instrumentation specifications based on the regenerated forms, and the files that you save in Excel format.

Do the following before any of the procedures below:

1. Do one of the following:

   - To save the page currently open in the **Page Editor** in .psr format, see Saving a Page as an External File.

   - To save a batch of pages in .psr format, see Saving Specifications in Batch Mode.

2. Open a given .psr file in InfoMaker.

The following procedures are available:

- Creating an Invisible Vertical Zero Line

- Replacing Double Lines with Thick Single Lines

- Correcting a Line Discontinuity

- Correcting Line Divergence from the Horizontal and from the Vertical

- Correcting Undershooting and Overshooting of Page Grid Lines

- Resolving "Cannot save data ... incorrect syntax."

Creating an Invisible Vertical Zero Line

If a form upon which specifications are based contains vertical fields, it must fulfill one of the following two conditions for correct export to Excel:

- The **X** values of the left-hand vertical grid line must be 0.

- You create an invisible line for which the **X** values are 0.

Modifying a form to fulfill either of these conditions can also improve the display of other features, drop-down lists, for example. Use this procedure to create an invisible vertical line for which the **X** values are 0.

➢ **To create an invisible vertical zero line**

1. On the **Insert** menu, point to **Control**, and click **Line**.

2. On the **General** tab of the **Properties** dialog box, do the following:

   a) Under **Name**, type l_coordinator.

   b) Clear the **Visible** check box.

Note

- Make sure that the icon to the right of **Visible** is displayed as . If the icon is displayed as , click it, and in the dialog box that opens, delete the contents of the **Expression** pane, and then click **OK**.

3. On the **Position** tab, type the following settings:

   a) **X1**: 0.

   b) **Y1**: 0

   c) **X2**: 0

   d) **Y2**: Type a value equal to or greater than the highest **Y2** value on the form.

4. On the **File** menu, click **Save**.

Replacing Double Lines with Thick Single Lines

There are several situations in which a particular choice of line elements within a form yields non-standard Excel spreadsheets following a Save as Excel operation. Use this procedure if your specification is based on a form that contains double lines.

💡 **Tip**

- Magnify the page to help you discover which of the two lines is better-connected to the lines to which it is perpendicular.

➢ **To replace a double line with a thick single line**

1. Click the duplicate line, and then press the Delete key.

2. Right-click the remaining line, and on the shortcut menu click **Properties**.

3. In the **General** tab folder of the **Properties** dialog box, under **Pen Width**, type or use the spinners to set the new width of the line.

4. On the **File** menu, click **Save**.

Correcting a Line Discontinuity

In general, a page is divided into three side-by-side sections — parameter categories, field headers, and field values. For correct translation to Excel, a horizontal row line that spans more than one vertical section must be a continuous line rather than separate lines with imprecise continuity.

This procedure uses the following plan of action:

1. Copy the X2 value of the right-most line to the Clipboard.

2. Erase all lines to the right of the left-most line.

3. Paste the X2 value from the right-most line in the **X2** text box of the left line.

💡 **Tip**

- Magnify the page to help you discover all of the line discontinuities.

➢ **To correct a page line discontinuity**

1. Right-click the right-most line segment, and on the shortcut menu, click **Properties**.

2. In the **Position** tab folder, under **X2**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. For each line segment to the right of the left-most segment, click the line segment, and then press Delete.

4. Right-click the left-most line segment, and on the shortcut menu, click **Properties**.

5. In the **Position** tab folder, under **X2**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

6. On the **File** menu, click **Save**.

Correcting Line Divergence from the Horizontal and from the Vertical

Lines that are not exactly horizontal or lines that are not exactly vertical can be sources of error when you save SmartPlant Instrumentation specifications in Excel format.

 Tips

*   Magnify the page to examine the line divergences.

*   Plan which X and Y values to increase or decrease. In addition to correcting horizontal and vertical divergence, well-planned use of these procedures on the outermost lines of the grid can lessen overshooting and undershooting as well.

➢ **To correct a horizontal divergence**

1. Right-click the divergent line, and on the shortcut menu click **Properties**.

2. In the **Position** tab folder of the **Properties** dialog box, set the value under **X1** equal to the value under **X2**.

3. On the **File** menu, click **Save**.

➤ **To correct a vertical divergence**

1. Right-click the divergent line, and on the shortcut menu click **Properties**.

2. In the **Position** tab folder of the **Properties** dialog box, set the value under **Y1** equal to the value under **Y2**.

3. On the **File** menu, click **Save**.

Correcting Undershooting and Overshooting of Page Grid Lines

Another source of problems in the Save as Excel process is imperfect meeting of the outermost grid lines in the SmartPlant Instrumentation page upon which the specification is based. Either of the following situations could cause this problem:

- Undershooting — The lines do not meet.

- Overshooting — At least one of the lines extends beyond the meeting point.

💡 **Tips**

- Magnify the page to examine the outermost grid lines.

- Consider which lines to edit. Use this procedure only after you finalize the properties of the four outermost lines.

➤ **To correct undershooting or overshooting on the left border**

1. Right-click the top line or on the bottom line, and on the shortcut menu click **Properties**.

2. On the **Position** tab folder, under **X1**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. Right-click the required horizontal line, and on the shortcut menu, click **Properties**.

4. On the **Position** tab folder, under **X1**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

5. On the **File** menu, click **Save**.

➢ **To correct undershooting or overshooting on the right border**

1. Right-click the top line or the bottom line, and on the shortcut menu click **Properties**.

2. In the **Position** tab folder, under **X2**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. Right-click the required horizontal line, and on the shortcut menu, click **Properties**.

4. In the **Position** tab folder, under **X2**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

5. On the **File** menu, click **Save**.

➢ **To correct undershooting or overshooting on the top border**

1. Right-click the left-most line or the right-most line, and on the shortcut menu click **Properties**.

2. In the **Position** tab folder, under **Y1**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. Right-click the required vertical line, and on the shortcut menu, click **Properties**.

4. On the **Position** tab folder, under **Y1**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

5. On the **File** menu, click **Save**.

➢ **To correct undershooting or overshooting on the bottom border**

1. Right-click the left-most line or the right-most line, and on the shortcut menu click **Properties**.

2. In the **Position** tab folder, under **Y2**, copy the value to the Clipboard, using a standard Microsoft shortcut (for example, Ctrl+C).

3. Right-click the required vertical line, and on the shortcut menu, click **Properties**.

4. In the **Position** tab folder, under **Y2**, paste the Clipboard value, using a standard Microsoft shortcut (for example, Ctrl+V).

5. On the **File** menu, click **Save**.

Resolving 'Cannot save data ... incorrect syntax.'

This error message can appear if your specifications are based on pages arranged with the text headers above the database fields, rather than in separate parallel groupings (as in the SmartPlant Instrumentation default pages). You can use a headers-above-fields style, and avoid the error message, by editing the x-coordinates of either the text headers or the column fields to creating microscopic misalignment. This procedure calls for editing the text headers.

➢ **Resolving 'Cannot save data … incorrect syntax error.'**

1. Right-click the required text header, and on the shortcut menu click **Properties**.

2. In the **Position** tab folder, under X, increase the previous value by 0.1.

3. Repeat the above step for every header that is located precisely above its field.

Preparing Vertical Page Fields in InfoMaker for Save as Excel

If the form upon which a specification is based includes vertical fields, there are two crucial factors for accurate export of these fields to Excel. If there are vertical fields that are not displayed correctly in Excel, do the following:

- If the form does not begin at **X** = 0, see Creating an Invisible Vertical Zero Line in the Editing Page Grid Lines in InfoMaker for Save as Excel topic.

- Check problematic vertical fields by the following procedure:

➢ **To trim and center vertical form fields in InfoMaker for Save as Excel**

1. Do one of the following:

    - To save the page currently open in the **Page Editor** in .psr format, see Saving a Page as an External File.

    - To save a batch of pages in .psr format, see Saving Specifications in Batch Mode.

2. Open the .psr file in InfoMaker.

3. Right-click each vertical field in turn, on the shortcut menu click **Properties**, and then do the following:

   Note

    - To verify that a given field diverges from the horizontal, on the **Font** tab, click the icon to the right of the **Escapement** box (or   ). In the dialog box that opens, in the **Expression** field, a value of 900, for example, indicates a vertical field.

    a) On the **General** tab, under **Alignment**, select Center.

    b) If the field is wider than the text, do one of the following to trim the field:

        - On the **Position** tab, under **Width**, change the value to the minimum value needed to display the actual text.

        - In the **Design** view, use the mouse to change the field width.

4. On the **File** menu, click **Save**.