InfoMaker and SmartPlant Instrumentation

Overview

SmartPlant Instrumentation offers a host of sophisticated features for easy design, control and management of instrumentation data - including pre-defined forms and reports for modules such as the Instrument Index, Specifications, and Wiring.

However, the forms and reports supplied with SmartPlant Instrumentation may not be exactly what you need in order to present your information, for example, you might want to emphasize particular fields or data, insert a graphic other than the default, or use a different color, and so forth. InfoMaker customizes SmartPlant Instrumentation forms and reports so that the final document looks the way you want it.

When you install SmartPlant Instrumentation, an interface to InfoMaker is automatically set up enabling the user to easily switch between the two programs. This feature ensures almost immediate visual results when experimenting with different techniques both between the two programs, and within InfoMaker itself.

The variety of enhancements that InfoMaker offers require the user to constantly turn to the manual and experiment to see what works best.

The aim of this document is to get you started and show you by a few select examples how InfoMaker can be best utilized with SmartPlant Instrumentation.

 **Caution**

- You must have working knowledge of the SmartPlant Instrumentation database table structure to be able to customize reports. For further information, please refer to the SmartPlant Instrumentation Data Dictionary, which is available upon request.

- The current version of SmartPlant Instrumentation supports InfoMaker 8.0. The latest InfoMaker service pack is available from the Sybase Web site (accessible via the InfoMaker **Help** menu). Note that if you use a later version of InfoMaker to customize your reports, you will no longer be able to use those reports in SmartPlant Instrumentation.

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

Installing InfoMaker for Use with SmartPlant Instrumentation

Install InfoMaker according to the instructions given in the InfoMaker manual. After you complete the installation, you will be able to define InfoMaker as your default report generator, and launch it from SmartPlant Instrumentation.

➢ To define InfoMaker as the default report generator in SmartPlant Instrumentation

1. Start SmartPlant Instrumentation.
2. On the **File** menu, click **Preferences**.
3. In the **Preferences** dialog box, in the left pane, click **Export**.
4. From the **Report generator** list, select InfoMaker.
5. Beside the **Path** box, click **Browse** to navigate to the location of the file Im80.exe on your computer, and click **OK**.

Starting InfoMaker

This procedure describes how to start InfoMaker as a report generator during your SmartPlant Instrumentation session. In InfoMaker, you can select tables, create and select reports, define the SmartPlant Instrumentation database profile, and so forth. See the InfoMaker manual for complete information on InfoMaker functions.

➢ To start InfoMaker from SmartPlant Instrumentation as a report generator

1. From any SmartPlant Instrumentation window, on the **File** menu, click **Export**.

Opening a PSR File from an InfoMaker Library

Although it is possible to open a .psr file for editing in InfoMaker from Windows Explorer, recommended practice calls for opening it from within an InfoMaker library and report.

Note

- In InfoMaker, reports are objects that you use to retrieve, present, and manipulate data from a relational database or other data source. SmartPlant Instrumentation .psr files are included in this grouping.

Use the procedures that follow for the following:

- Creating an InfoMaker library and report for editing .psr files
- Opening .psr files from InfoMaker

➢ To create an InfoMaker library and report for editing .psr files

1. Do one of the following to start InfoMaker:

   a) On the Windows Start menu, point to **Programs**, navigate to the appropriate folder, and click **InfoMaker**.

   b) Start InfoMaker from SmartPlant Instrumentation.

2. On the **File** menu, click **New**, and then do the following to create a library:

   a) In the **New** dialog box, on the **Library** tab, select **Library** and click **OK**.

   b) In the **Specify New Library** dialog box, click ... to navigate to the appropriate folder, type the name of the new library and click **Save**.

   c) Click **Finish**.

3. On the **File** menu, click **New** and do the following to define a report:

   a) In the **New** dialog box, on the **Object** tab, select **Freeform** and click **OK**.

   b) In the **Freeform Report Generator** dialog box, select **External** and click **Next**.

   c) In the **Define Result Set** dialog box, under **Name**, type a name for the result description, and click **Next**.

   d) In the **Select Color and Border Settings** dialog box, click **Next**.

   e) In the **Ready to Create Freeform** dialog box, click **Finish**.

   f) If the **Database Profiles** dialog box opens, see Creating a SmartPlant Instrumentation Database Profile.

4. In the **Report** window, do the following to save the report that you just defined:

   a) On the **File** menu, click **Save**.

   b) In the **Save Report** dialog box, under **Reports**, type a name for the report.

   c) Make sure that under **Libraries** the correct library is selected and then click **OK**.

Tip

- To organize your display of .psr files in InfoMaker, create various reports within various libraries.

5. In the **Report** window, on the **File** menu, click **Open File**.
6. In the **Select a File Name** dialog box, navigate to the .psr file that you want to open, and click **Open**.

Tip

- To edit the .psr file without reference to the SmartPlant Instrumentation database, click on the toolbar.

➢ To open a .psr file from an existing InfoMaker library and report

1. Do one of the following to start InfoMaker:
   a) On the Windows Start menu, point to **Programs**, navigate to the appropriate folder, and click **InfoMaker**.
   b) Satrt InfoMaker from SmartPlant Instrumentation.
2. On the **File** menu, click **Open**, and in the **Open** dialog box, do the following:
   a) Under **Library**, select the appropriate library.
   b) Under **Object Type**, select **Reports**.
   c) In the second data window, select the appropriate report.
   d) Click **OK**.
3. On the **File** menu, click **Open File**.
4. In the **Select a File Name** dialog box, navigate to the .psr file that you want to open, and click **Open**.

Tip

- To edit the .psr file without reference to the SmartPlant Instrumentation database, click on the toolbar.

Editing SmartPlant Instrumentation Pages in InfoMaker

Overview

The SmartPlant Instrumentation user may not be totally satisfied with the default library pages within a given SmartPlant Instrumentation form. Although you can edit pages within SmartPlant Instrumentation, you can also edit pages in InfoMaker. After you import the edited pages back into SmartPlant Instrumentation and create new forms based on the edited pages, you can change existing specifications to the new form.

➢ To edit an SmartPlant Instrumentation page 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. Edit the page according to InfoMaker help.
4. On the **File** menu, click **Save as File**.

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.

Formatting Page Fields in InfoMaker for Save as 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 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

Note

- This procedure affects SmartPlant Instrumentation specifications based on the regenerated forms, and the files that you save in Excel format.

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 in 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 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:

a) Copy the X2 value of the right-most line to the Clipboard.

b) Erase all lines to the right of the left-most line.

c) 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**.

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 P**osition** 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**.

Customizing Title Blocks

Requirements for Customized Report Title Blocks

You can customize a title block for reports in InfoMaker. In either application, the custom title block has to meet several standard requirements. The title block has to be compatible with the report it is associated with. Therefore, make sure that the customization process accurately fits the SmartPlant Instrumentation customizing conventions as specified in the following topic.

The following list outlines mandatory and optional InfoMaker requirements:

- **Report type** — When creating a new report set the report type to be **External** (mandatory).
- **Report style** — Set the report style to be **Tabular** (mandatory).
- **Field prompt** — When prompted to set the required fields for a title block, type any text in the appropriate field. There is no significance to inserting any particular field name as long as something is typed (mandatory).
- **Group** — The title block customization has to be performed in the **Detail** group (mandatory).
- **Layer** — Make sure that you create the title block in the **Band** layer (the default - mandatory).
- **Design** — The frame of the title block consists of four lines. Make sure that each line has its own unique name typed in small caps as follows:

Upper side	L_width
Lower side	ln_down
Left side	ln_left
Right side	ln_right

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.

- **Field type** — select any field type other than **Column** (mandatory).
- **Revisions** — Make sure that you have a number 1 revision field. For instance, a title block with solely a revision no. 2, would not apply.

- **Report measurement units** — The units of measure of the customized title block must be compatible with the units of measure of the report it is associated with. All the reports were created in inches except for the following, which use PowerBuilder units:
  - All the calculation reports
  - The SmartLoop report
  - The Segment map report
- **Fields** — SmartPlant Instrumentation created an inventory of macros available for the custom title block fields. From this inventory you can select the fields that serve your purposes most. Each field and macro has its unique name (this is the name to insert in the name field when creating the item in InfoMaker) as shown in the tables below.

Notes

- Macros retrieve the data and enter it to the fields. For these macros to function properly, you must insert the macro name accurately according to the macro tables below.
- You can implement custom title blocks that for macros custom_1 through custom_5 display field values without labels, for example, 'DCS-1' instead of 'Panel DCS-1'. To enable this option, make sure that the [Custom] section of the INTOOLS.INI file includes the line '`RemoveFixedTextFromTB=1`'.

The following table includes **Text** type fields only:

Field Name	Field Description
custom_1	Report name
custom_2 – custom_5	Entity names or other data used in reports or drawings For example, in a panel-strip report, custom_2 is used to display the panel name, custom_3 is used to display the strip name, and custom_5 is used to display the domain name. In a Smartloop drawing, custom_2 is used to display the loop service, and custom_3 is used to display the loop number. All values that the software can retrieve for these macros are hard coded. This means that even if you use all of the custom fields, in the title block, fields that do not have any associated hard coded data appear empty.
eproj_name	Project name (Operating owner domain)
project_t	Project header (Operating owner domain)
proj_name	Domain name
proj_num	Project number (Operating owner domain)
city_name	City name
owner_name	<Plant> owner.

Field Name	Field Description
location_name	Location name
plant_hierarchy	Plant hierarchy defined by the Domain Administrator. The default plant hierarchy is Plant\Area\Unit. The Domain Administrator has rights to change the number of plant hierarchy levels and customize the level names.
hierarchy_item_name_x	The name of a specific item in the plant hierarchy, where the segment X defines the plant hierarchy level number. For example, suppose that your plant hierarchy is Plant\Area\Unit, and on the Unit level, you have an item name Crude. To display Crude in the title block, you need to substitude the segment X with the number 3.
plant_name	The name of the item on the highest plant hierarchy level (the default highest level is Plant).
plant_addr1	Address 1 of the highest plant hierarchy level item
plant_addr2	Address 2 of the highest plant hierarchy level item
plant_country	Country of the highest plant hierarchy level item
plant_state	State of the highest plant hierarchy level item
plant_zip	ZIP code of the highest plant hierarchy level item
area_name	The name of the item on the intermediate level of the plant hierarchy (the default intermediate level is Area). If the plant hierarchy has more than three levels, the macro area_name retrieves the name of the lowest intermediate level, that is one level above the lowest level of the plant hierarchy.
unit_name	The name of the item on the lowest level of the plant hierarchy (the default lowest level is Unit).
hierarchy_udf_y_x	A custom field value associated with a specific plant hierarchy item. The segment 'y' retrieves the number of the custom field (the Domain Administrator can define up to twenty custom field values for each plant hierarchy item). The segment 'x' retrieves the number of the level to which the plant hierarchy item belongs. Custom fields associated with a plant hierarchy item are regular text fields and behave as any other custom fields that are available in SmartPlant Instrumentation for specific entities.
hierarchy_udf_y_x_t	The header of a custom field associated with a specific plant hierarchy item. The segments 'y' and 'x' correspond to the segments in the macro hierarchy_udf_y_x. The segment 't' indicated the header.
tb_dwg_name_t	Document number
lastrev	Last revision
rev_no_1 – rev_no_9	Revision number 1 (mandatory field)
rev_udf_cXX_1 – rev_udf_cXX_9	Revision custom fields
create_by_1 – create_by_9	Created by
date_1 – date_9	Date
chk_by_1 – chk_by _9	Checked by

Field Name	Field Description
appr_by_1 – appr_by _9	Approved by
desc_1 – desc_9	Revision description

The following table includes **Computed** type fields only:

Field name	Field description	Expression
C_page_num	Current sheet	Page()
C_page_count	Total sheets	PageCount()
comp_1	Logo name	bitmap (ProfileString (intools.ini", Project", LogoPath", " + projlogo.bmp")

- **Revision custom fields** — you can define your own fields and related macros in addition to those in the inventory of macros (designated for fields) that are supplies with SmartPlant Instrumentation. You can add up to 20 revision custom fields per title block. Inserting the right name in the field name prompt is necessary for the proper function of the field in the title block. The naming convention for the revision custom fields is as specified in the following table:

rev_udf_c01_t	Header
rev_udf_c01_1	Data field
rev_udf_c01_2	Second data field under the same header
rev_udf_c02_t	Header 2 (another UDF)
rev_udf_c02_1	The data in the field (2)

- **Document custom fields** — Using these fields you can have a record of the documents that were related to a certain report. These are fields that you define under the following limitation: each custom field must have only two fields, one for the header and one for the data. This is the naming convention for these fields:

dwg_udf_c01_t	Header
dwg_udf_c01	Data field
dwg_udf_c02_t	Header 2 (another custom field)
dwg_udf_c02	Data field (2)

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.

Queries and Browsers

Defining an InfoMaker Library

Before building a query, you need to define a backup library. The software automatically puts all queries that you save into this library.

➢ To define a backup library

1. With the main **InfoMaker** window open, click  .
2. In the **New** dialog box, click the **Library** tab, if not already active.
3. Double-click the **Library** icon  .
4. In the **Specify New Library** dialog box, type the required path and name of the library (.pbl) file, or click the ellipsis  beside the **Library** box to navigate to the file.
5. Click **Finish**.

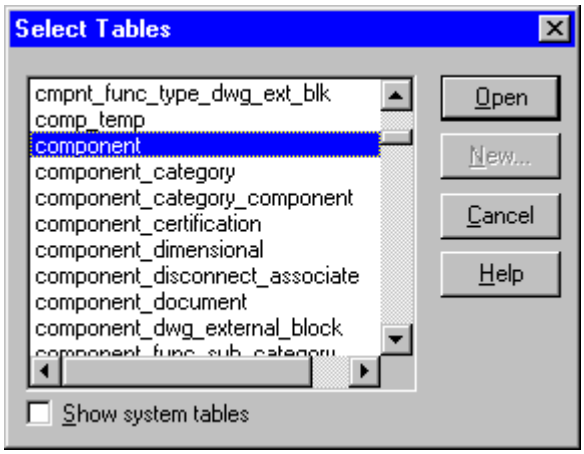
Building a Query

This procedure describes how to build a query, which is necessary for exporting SmartPlant Instrumentation data to an external file that you can use to generate an InfoMaker report. Please refer to the InfoMaker manual for information how to modify your report by adding enhancements such as text color, moving fields, and graphics.

The customized report created in this procedure is limited to only one data source and presentation style with no other adornments. This example uses information from the Instrument Index module to generate a report for the description of a set of tag numbers, including their service and function type.

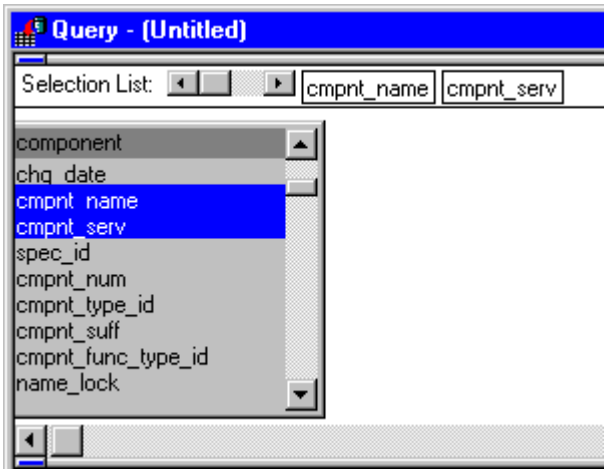
➢ To build a query

1. With the main **InfoMaker** window open, click  .
2. In the **New** dialog box, click the **Database** tab.
3. Double-click the **Query** icon  to open the **Select Tables** dialog box.
4. Select the required tables by clicking with the left mouse button.

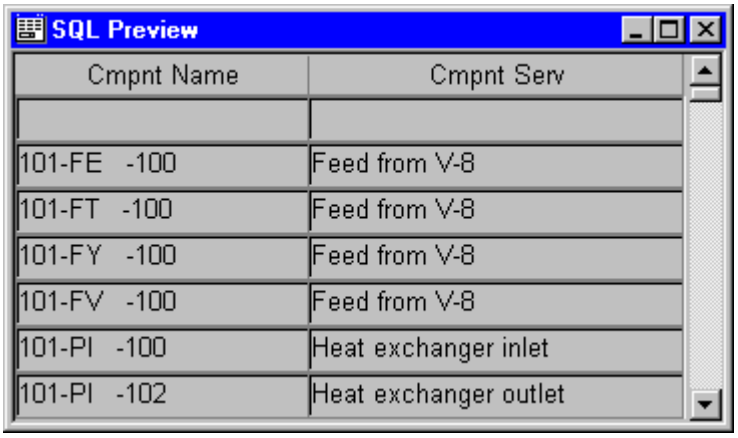


5. When finished, click **Open** to display the **Query** window.
6. On the **View** menu, click **Table Layout**.

7. Select the required columns as shown in the following example.



8. Click  to view the available data as shown.



9. Click the close box to close the **Preview** window and return to the **Query** window.

10. If you want to select additional tables, click  to reopen the **Select Tables** dialog box.

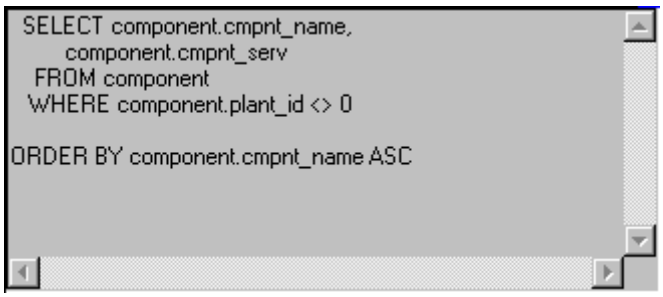
11. Perform additional steps as required. These can include the following:

    - Using the **Join** function to rebuild links manually between table rows.
    - Defining a sort sequence for the retrieved data.
    - Using a **Where** condition to filter the retrieved data.

Note

- Full details of these procedures are beyond the scope of this topic. For further information, please refer to the InfoMaker 7.0 documentation.

12. To view details of your query, click the **Syntax** tab. The following screen shot shows an example of a query.



13. When finished, save your query by doing one of the following:

    - Click .
    - On the **File** menu, click **Save Query**.

14. In the **Queries** box, type a name for your query.

Notes

- Your query name must not include any spaces.
- The software saves the query in the backup library you defined. For details, see Defining an InfoMaker Library.

Adding User-Defined Fields to PSR Files

When working with reports, you sometimes need to use extra fields in addition to those currently available to you. A number of user-defined fields (entitled **Udf C01, Udf C02**, and so forth.) are appended by default to every .psr file you import.

The first step in making the user-defined fields appear in a report is opening the report using a report generator, such as InfoMaker or MicroStation, and adding the appropriate user-defined fields to that report.

After saving a report as a .psr file, you can retrieve your user-defined field values and include them in the header of the required report.

➢ To add user-defined fields to a PSR file (using InfoMaker)

1. Start InfoMaker.
2. Build a query for generating a report (for details, see Building a Query).
3. With the main report window open, on the **Objects** menu, click **Computed Field**.
4. In the **Computed Object** dialog box, make the required definitions for the user-defined field (for example, alignment, positioning, color, style).
5. Under the **Expression** section, type the following:

   profstring(<SmartPlant Instrumentation home folder>\INTOOLS.INI", External Report", <custom field name>","")
6. Repeat step 5 to add as many user-defined fields as required
7. Save the current report as a .psr file.
8. With any main module window open, from the **File** menu, click **Import PSR**.
9. In the **PSR File Viewer** window, click  to open the **PSR List** window.
10. Scroll to the right side of the window to view the user-defined columns and in the columns **Udf C0** to **Udf C10**, type the required data (for example, revisions).

    Caution

    - When there is more than one .psr file in the **PSR List** window, you need to open the required report in InfoMaker, and under the WHERE section, type the following: psr_storage.psr_stor_desc='<description name>. This is required when including your user-defined field values in the report header. For details, see Viewing PSR User-Defined Fields.

11. Click **Save** to save your user-defined data to the database.

Saving an InfoMaker Customized Report

When a customized report satisfies your requirements, you can save it in any one of several formats such as .psr (Powersoft report), Excel, text file, and so forth.

➢ **To save a customized report**

1. When you are in the Preview mode, on the **File** menu, click **Save Rows As**.
2. Do the following in the **Save As** dialog box:
   a) Navigate to the folder where you want to save the report.
   b) In the **File name** box, type the name of the file (without an extension).
   c) From the **Save as type** list, select the file format that you require (for example, Powersoft Report).
3. Click **Save** to save your report and return to the Preview mode.

Creating a New Browser for SmartPlant Instrumentation

In addition to the shipped browsers that are available in SmartPlant Instrumentation, you can create custom browsers using InfoMaker. Using InfoMaker to create a custom browser gives you complete flexibility to specify any number of tables, fields, and database views, as you require.

You can create single custom browsers as .psr files or save a group of custom browsers in a .pbl library. Then, in the Browser module, you can import several browsers from a library or import a single .psr file.

Notes

- You must have a connection to the SmartPlant Instrumentation database to be able to select SmartPlant Instrumentation tables and fields.
- The following procedure includes only those steps in InfoMaker that are required for creating a new browser for SmartPlant Instrumentation.

➢ **To create a new browser**

1. On the **File** menu, click **New**.
2. In the **New** dialog box, on the **Library** tab, double-click the library icon and create a.pbl library where you can group newly created browsers.
3. Reopen the **New** dialog box and click the **Object** tab.
4. Select Grid for the report layout and click **OK**.

5. In the **Grid Report Generator** Wizard, select SQL Select, and then complete the Wizard steps.

6. In the **Select Tables** dialog box, select the tables that you require.

7. In the **Select** window, do the following:

   a) Select fields from the tables.

   b) Select a primary key from each table.

8. Click the **Return** icon  to open the **Select Color and Border Settings** dialog box, where you can set the browser colors. After setting the browser colors, click **Next** and then click **Finish** to display the **Report** preview window.

9. In the **Report** preview window, click the **Data Source** icon  to reopen the **Select** window.

10. In the **Select** window, do the following:

    a) On the **Design** menu, click **Convert to Syntax** to convert the selected fields from the graphic mode to the syntax mode.

    b) Remove all the quotation marks (”) from the displayed SQL statement.

    c) In the SELECT command of the displayed SQL statement, add manually the flag_color field preceded by 256 spaces enclosed in single quotes.

    The following example shows how the SQL statement must look after performing Steps 10 and 11:

```
SELECT  component.cmpnt_name,
        component.cmpnt_serv,
        '<256 spaces>'flag_color
        loop.loop_name,
        loop.loop_serv,
        component.cmpnt_id,
        loop.loop_id
FROM    component,
        loop
WHERE   (loop.loop_id=component.loop_id )
        loop
```

 **Note**

- You must add the flag_color field in the SQL statement to be able to use comparison options with the browser you are creating. After you import this browser to SmartPlant Instrumentation as a .psr file, the software cannot compare an imported .psr with an archived report is the flag_color field is missing.

11. Return to the **Report** preview window and do the following:

    a) Set the header font style to MS Sans Serif, 8 point, Bold.

    b) Protect fields that you want to reserve for internal use (do not protect the primary keys) by the protected column attribute to 1 (one).

    c) For each header name, use the following naming convention: `<column name>_t`. For example, `cmpnt_name_t`

    d) For each field name, use the following naming convention: `<column name>`. For example, `cmpnt_name`

    e) Delete the flag_color field, and also delete all the columns that contain primary keys, including (the primary keys remain in the SQL statement).

12. Save the report data in one of the following ways:

    - Without previewing, click **Save As** to save the report in the specially created .pbl library that contains other compatible reports.
    - Save the report as a stand-alone .psr file.

13. If you saved the report in the .pbl library, do the following:

    a) copy the .pbl file to another location, preferably to the SmartPlant Instrumentation home folder, and then change the file extension from .pbl to .pbd.

    b) In the [CUSTOM] section of your INTOOLS.INI file, add the following line (including the full pathname of the .pbd file):

    ```
    LIBRARYLIST=XYZ.pbd
    ```

Utilities

SmartPlant Instrumentation Database Structure

The following discussion is a very broad explanation of the internal structure of the SmartPlant Instrumentation database. It is not meant to be a database primer, but rather an aid for the user to have a better understanding of what tables to select when creating a customized report.

The SmartPlant Instrumentation database structure is:

- **hierarchical** - where tables are followed by columns.

Notes

  - Schemas are at the top of the hierarchical structure, that is, above tables. In the Administration module, with the **Domain Definition** dialog box open, you specify the schema as the login name.

  - The schema name **always** appears prefixed to the table name separated by a period (**.**). If, for example in SmartPlant Instrumentation, you chose WORK_1 as your Login Name (schema name), and in InfoMaker choose CABLE as your Table Name, the full highlighted Table Name, at the top of the table will be WORK_1**.**CABLE

- **relational** - where associations (or links) between tables and columns are defined.

SmartPlant Instrumentation stores information in tables. Tables contain information arranged in lists called columns. Columns include the actual information you need.

For example, if you want to create a customized cable report that includes only the cable's actual description, color, manufacturer, and model, you have to know that these are columns which are associated with their respective tables. The following is a summary for this example.

Full Table Name	Table Description	Column Name	Column Description
work_1.cable	Information stored about the existence of a cable	cable_desc	The cable description
work_1.cable_color	The list of colors available for all cables	cable_color_name	The name of the cable's color
work_1.cable_mfr	The data structure for a list of cable manufacturers	cable_mfr_name	The name of the cable manufacturer
work_1.cable_mfr_mod	The model of the cable	cable_mod_name	The model number / name of the cable

Note

- The SmartPlant Instrumentation Data Dictionary is available upon request, and contains complete information about tables and columns. The summary above is a modified selection of the Data Dictionary.

Upon closer examination of the relationships between tables and columns, you will soon understand the contents of SmartPlant Instrumentation tables and be more knowledgeable when building a customized report.

Creating a SmartPlant Instrumentation Database Profile

InfoMaker automatically creates database profiles for various types of data. However, you may find that your parameter settings do not point to the SmartPlant Instrumentation data source. The following procedure shows you how to enter the proper settings to connect to the SmartPlant Instrumentation database profile.

➢ To create an SmartPlant Instrumentation database profile

1. With the main **InfoMaker** window open, click  .
2. In the **Database Profiles** dialog box, select ODBC.
3. Click **New**.
4. In the **Database Profile Setup** dialog box, on the **Connection** tab, enter the required information.
5. When finished, click **OK** to re-open the **Database Profiles** dialog box, where the current SmartPlant Instrumentation database profile is selected by default.
6. Select the database profile and click **Connect** to make the connection with that profile.

Changing InfoMaker Screen Magnification

To allow precise examination of the file that you are editing, you can increase the screen magnification.

➢ To change InfoMaker screen magnification

1. On the **Design** menu, click **Zoom**.
2. Select 200%, or beside **Custom**, type the magnification that you require.
3. Click **OK**.

 **Note**

- To return to the editing mode, repeat the preceding steps, selecting 100%.