Getting Started with SmartPlant Instrumentation

SmartPlant Instrumentation Overview

SmartPlant® Instrumentation powered by INtools® is a Windows-based program that helps you to design and maintain every stage in the life-cycle of plant engineering systems, from construction, through maintenance and modernization, to de-commissioning.

This guide provides instructional, procedural, and reference material to help you get the most from SmartPlant Instrumentation. Use it to learn the basics and later as a reference to perform specific tasks.

SmartPlant Instrumentation is a straightforward, menu-driven program whose functions and modules are readily accessible from the menu and toolbars.

SmartPlant Instrumentation includes the following components:

- The Administration module, which provides all of the options required to define the administrative and security functions of the software. These options include defining access rights, managing preferences, creating the working environment, assigning managers, tag convention definitions, plant hierarchy item definitions, and so forth.
- The main SmartPlant Instrumentation Modules, which enable you to perform a wide variety of engineering activities.

The following utilities enable the integration of external data into the SmartPlant Instrumentation database:

- The Import Utility provides the means to import data into SmartPlant Instrumentation from the most common database file formats such as Microsoft Access, DBF files, Oracle, SQL Server, Sybase Adaptive Server Anywhere, ASCII delimited files, and other ODBC compatible files.
- The Merger Utility provides the means of merging the data of either two <units> or two <plants> for the purpose of creating one common database for either the two <units> or the two <plants>.

SmartPlant Instrumentation Modules

The following modules are available:

Browser

The Browser module provides you with a wide-angle view of your instrumentation data and allows you to browse through and modify it from within one application. Using the Browser module's powerful user interface, you can open multiple screens presenting you with information you require which can be sorted and filtered to meet your needs.

Instrument Index

Serves as a system-wide data source management tool linked to all of the SmartPlant Instrumentation modules.

Parameters for entire instrument groups can be edited globally and instrument data can be copied to newly created tag numbers. All data can be retrieved, modified, and displayed according to your specific needs.

Specifications

The Specifications module provides the means to efficiently generate detailed specifications that comply with ISA requirements.

SmartPlant Instrumentation is shipped with a library of specification pages, from which you create form templates for single-tag specifications and format templates for multi-tag specifications. You can exchange specification data with contractors and vendors, using the SmartPlant Instrumentation External Editor Utility.

Document Binder

You use the Document Binder module to maintain and control sets of related documents. All documents can be grouped according to a common property, for example, instruments that come from the same vendor. This will enable management of the existing document groups as required.

Wiring

The Wiring module allows you to define and manage the panels, cables, wiring, connections, routing, and I/O of instrumentation in your plant. Foundation Fieldbus is supported. You can add on the Telecom enhancement.

Loop Drawings

Generates schematic SmartLoops, SmartSketch, AutoCAD, or MicroStation drawings based on loop data from the Instrument Index and loop drawing blocks based on the instrument index, wiring, and other selected data.

Hook-Ups (Instrument Installation Details)

Provides the ability to generate installation detail drawings (hook-ups). This module covers various aspects of hook-ups, such as instrument installation, Bill of Material, and material usage.

Process Data

Defines process conditions for all active devices in the system. Process conditions may be modified for individual components, or determined from existing conditions in the line and other associated components.

Calculation

This module contains four sub-modules:

- Flow Meter calculations
- Control Valve calculations
- Relief Valve calculations
- ThermoWell calculations

Note that can each sub-module performs individually in a fully integrated manner with the SmartPlant Instrumentation package. Complex calculations are done in seconds, and can be customized to automatically convert all engineering units to major international standards, such as ISO, DIN, and so forth.

Maintenance

The Maintenance module provides you with all the tools required to plan, carry out, and document the breakdown and preventive maintenance associated with the instruments in your plant.

Calibration

Record your calibration operations to easily monitor your instrument calibration results. You can define parameters such as trip points and alarms. You can also generate detailed reports which provide you with a long-range view of the instruments' behavior.

Construction

Use this module to define contracts for installation activities that are performed by external contractors. Each entity (instrument tag, wiring scheme, and so forth) requires a specific set of activities. The module matches the various activities to each contractor by listing them according to categories (fields of operation). Each activity is defined as an **Index**, which you can assign to specific entities when required.

You can track the status and progress of activities performed by creating index revisions and viewing and printing reports of each revision for a particular index.

Dimensional Data for Piping (DDP)

The Dimensional Data for Piping (DDP) module enables you to store and manage data regarding the physical dimensions of the instruments on the plant. You fine-tune your DDP through the interplay of default and vendor data. You can export DDP data to an external 3-D piping design application, or use module deliverables for piping design.

User Assistance

SmartPlant Instrumentation user assistance supplies command information as you perform tasks. You can access different kinds of information any time you are running the software. This information could include reference topics, narrative descriptions or overviews.

SmartPlant Instrumentation offers the following important user assistance features:

Installation Guide

This document provides you with step-by-step procedures for installing SmartPlant Instrumentation on Oracle or Microsoft SQL Server database platforms, or on Sybase Adaptive Server Anywhere. It also contains important configuration information, useful tips, and troubleshooting advice. The Installation Guide is presented in the .pdf file format and can easily be printed out. Adobe Reader, required for the .pdf files, is available from the SmartPlant Instrumentation installation CD or from the Internet.

User Guide

This document provides you with detailed information on each SmartPlant Instrumentation module, along with recommended settings, examples, and useful tips. Also included in the User Guide are documents which deal with the usage of SmartSketch, AutoCAD, and MicroStation CAD interfaces and of InfoMaker and Microsoft Access report generators in SmartPlant Instrumentation.

Tutorial

The tutorial helps novice users acquire the skills necessary to start using SmartPlant Instrumentation, create a minimal setup for your plant, and all the basic instrument engineering activities for each module. You will acquire the fundamental understanding, skills, and practical experience that you need to use the software with confidence. The tutorial is presented in the .pdf file format and can easily be printed out. Adobe Reader, required for the .pdf files, is available from the SmartPlant Instrumentation installation CD or from the Internet.

Online Help

SmartPlant Instrumentation Online Help provides conceptual overviews and procedures to help you to work efficiently with the software, as well as context-sensitive help for all windows and dialog boxes. Each context-sensitive help topic provides accurate reference information for the displayed window or dialog box.

To access context-sensitive help for an open window, do one of the following:

- On the **Help** menu of any SmartPlant Instrumentation module, click **Context Help**.
- On the toolbar, click the **Help** icon.

For information about various conventions used in the Online Guide, see Online Help Text Conventions.

User Interface Features

The user interface provides you with several ways to see command descriptions:

- ToolTips help you find command names. When you pause the pointer on a toolbar icon, a yellow label displays the command name.
- Microhelp messages that appear at the bottom of the window inform you about the command you are going to execute. Pointing to a toolbar icon or selecting a menu option displays a brief message on the status bar.

Technical Support

Intergraph provides extensive technical support all over the world. To find out how to get technical support, click **About SmartPlant Instrumentation** on the **Help** menu and then click the **Tech Support** button.

Online Help Text Conventions

Text Display Conventions

To assist you in recognizing information easily, SmartPlant Instrumentation Online Guide incorporates the following text conventions:

Usage	Style	Example
Module and utility names	Blue	Instrument Index module, Merger Utility.
Interface elements such as menu headings, menu items, dialog box and window titles, and dialog box elements (text fields, check boxes, option buttons, and so forth)	Bold	On the **File** menu, click **Open**. In the **Tag Number** dialog box, from the **Line** list, select a line number.
Window and dialog box titles	Bold	
Values you enter in fields	Blue	From the **Phase** list, select Single phase.
Reference to the title of another section in the documentation	Blue	See Installation Guide, Appendixes, > Appendix B > CAD Settings for SmartPlant Instrumentation.
Reference to another book in the documentation.	Blue	For further details, see the Installation Guide.
Folders and file names.	Small caps.	You can find the SYMBOLEDITOR.EXE file in the …\SMARTPLANT\INSTRUMENTATION\RAD folder.
General emphasis	Bold	In this case, the software propagates only **general** properties.

Special Displays

The following displays are used for features designed to capture your attention, such as warnings, important notes, and useful tips.

Caution

- Indicates a caution to which you should pay attention.

Note

- Important information which supplements the main text.

Tip

- Indicates a tip, pointing out a useful feature which makes life easier for the user.

Keyboard Conventions

Common functions of some keys are described below:

Keys	Example / description
Shortcut keys	Combinations of keys can be used as shortcuts. For example, **Ctrl** + **F1** means hold down the Control key while pressing F1 .
Tab	In windows and dialog boxes, pressing the Tab key activates the next field or command button. To activate the previous item, hold down the **Shift** key while pressing the Tab key.
Enter	In most windows and dialog boxes, pressing this key is equivalent to clicking the **OK** or **Save** command buttons.
Escape	In most windows and dialog boxes, pressing this key is equivalent to clicking the **Cancel** command button.
Home, **End**, **Page Up**, **Page Down**	Use these keys to move between fields in data tables.
Arrow keys	
Numeric keypad	If you have an extended keyboard, you can type numbers with the numeric keypad if you press Num Lock key to turn the **Num Lock** indication on.

Mouse Conventions

The left mouse button is the one referred to, unless otherwise stated.

To	Do this
Point	Position the pointer on an item.
Click	Point to an item, then quickly press and release the mouse button.
Double-click	Point to an item, then quickly press and release the mouse button twice.
Drag	Point to an item. When holding down the mouse button on the item, move the item to a new location. When the pointer is at the desired location, release the mouse button.

The appearance of the mouse pointer varies depending on its location:

Pointer symbol	Description
	This pointer is used for most operations; selecting items, the drag-and-drop feature, moving windows, etc.
	The I-beam appears when the pointer is over a text field and shows the text insertion point.
	These pointers appear in the Wiring module when selecting a cable, set or wire respectively to connect to terminals.

General Features

Starting SmartPlant Instrumentation

When starting SmartPlant Instrumentation, a splash screen appears, showing the current version number, followed by the **Login** dialog box, where you select the required database and enter your user name and password. After logging on to SmartPlant Instrumentation, the software displays the **Open** dialog box, where you select the required domain and where the domain type is Operating owner, your project. After this, you navigate to the <unit> you are going to work in. Clicking **OK** in the **Open** dialog box brings you to the SmartPlant Instrumentation environment.

Caution

- Access to SmartPlant Instrumentation modules is available only after the System Administrator has created a domain and the Domain Administrator has set up its resources. See the initialization section appropriate for your database platform (that is, Oracle, SQL Server or Sybase Adaptive Server Anywhere) for details.

Notes

- User names and passwords are not case-sensitive. The software displays the password as asterisks.

- If you purchased SmartPlant Instrumentation with an evaluation license, there is no limit of the number of times that you can log on to SmartPlant Instrumentation before the expiration date of the license, however after that date, you will be denied access to SmartPlant Instrumentation.

Opening a Different Domain

You can move from working in the current domain to a different one.

➢ **To open a different domain**

1. Close all SmartPlant Instrumentation modules that are open.
2. On the **File** menu, click **Open**.
3. In the **Open** dialog box, select a domain  .
4. If the project icon  appears (only when the domain type is Operating owner), double-click the icon to select the project you want to work with (AsBuilt or a project).
5. Navigate to a desired <unit> by double-clicking the <plant>  and <area>  icons to expand the view and display the <units>.
6. Select a <unit> by doing one of the following:
   - Double-click the <unit>  icon.
   - Click the <unit> once to highlight it, then click **OK**.

Displaying AsBuilt and Project Data

If you are working in a domain that is an operating facility (domain type is Operating owner), you can choose a number of different ways of displaying the data in your projects. One useful option is that you can display project and AsBuilt data together for the purposes of data comparison and claiming entities.

➢ To display your project data

1. In the **Open** dialog box, select a domain of type Operating owner.

2. Double-click the appropriate project icon  to select the project you want to work with (AsBuilt or a project).

   - To view AsBuilt data only, select AsBuilt from the list.
   - To view project data, select any project from the list (you can choose afterwards whether to display AsBuilt data with the project data – see steps 4 and 5 for details).

3. Select the <unit> in which you want to work and click **OK**.

   By default, SmartPlant Instrumentation opens with data visible only from the project you selected.

4. To display AsBuilt and project data together, do one of the following:

   - Click  .
   - On the **File** menu, click **AsBuilt Data**.

5. To return to the display of project data only, do one of the following:

   - Click  .
   - On the **File** menu, click **Project Data**.

 **Notes**

- According to the data you select to display, the entities will be formatted according to the settings made in the Administration module.
- If you select to display both project and AsBuilt data, you can edit the project data only.

Changing to a Different <Unit>

You can move from working in the current <unit> to a different one.

➢ **To open another <unit>**

1. Close all SmartPlant Instrumentation modules that are open.
2. On the **File** menu, click **Open**.
3. In the **Open** dialog box, navigate to the required <unit> by double-clicking the <plant>  and <area>  icons to expand the view and display the <units>.
4. Select a <unit> by doing one of the following:
   - Double-click the <unit>  icon.
   - Click the <unit> once to highlight it, then click **OK**.

Opening a Module

From the main window, you can open any SmartPlant Instrumentation module whether or not other modules are already open. Access to a particular module is subject to your having appropriate access rights.

➢ **To open a module**

1. Start SmartPlant Instrumentation.
2. Do one of the following:
   - Click the appropriate toolbar icon for the module you want to open.
   - On the **Modules** menu, click a desired module name.