SmartPlant Instrumentation Explorer
User's Guide

Process, Power & Marine

INTERGRAPH

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Preface

This user's guide describes concepts, procedures, and interface features of the SmartPlant Instrumentation Explorers.

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Working with the SmartPlant Instrumentation Explorer

You use the **SmartPlant Instrumentation Explorer** to access and manage all the entities that exist in SmartPlant Instrumentation. SmartPlant Instrumentation features several views of the **SmartPlant Instrumentation Explorer**. The name of each explorer view reflects the function of that particular explorer view. The following explorer views are provided with SmartPlant Instrumentation:

- **Domain Explorer** — this view of the **SmartPlant Instrumentation Explorer** allows you to create and manage your current domain entities. You can perform almost all the actions that are possible in the SmartPlant Instrumentation modules. For example, you can create new tag numbers, edit their properties, create and edit wiring entities, make wiring connections, generate various data sheets, reports, and so forth. Also, you can copy entities from the **Reference Explorer** and this way create entities based on reference configurations on the fly. The **Domain Explorer** displays instrumentation entities according to hierarchical structure. You can arrange the hierarchical structure of the data according to entity types or according to the physical location of the entities. For more information, see *Working with the Domain Explorer*, page 9.

- **Reference Explorer** — allows you to create and manage all the available wiring reference entities that are created by SmartPlant Instrumentation users and that are provided with the software. Note that wiring reference entities are typical configurations that facilitate rapid creation of various wiring entities in your domain. For more information, see *Working with the Reference Explorer*, page 39.

- **Wiring Explorer** — this view of the **SmartPlant Instrumentation Explorer** is specific to the Wiring module and it can contain wiring entities only. For more information, see *Wiring Explorer*, page 53.

- **Loop Explorer** — this view of the **SmartPlant Instrumentation Explorer** is specific to the Loop Drawings module and it can contain loops, instruments, and blocks. For more information, see *Loop Explorer*, page 47.

- **Hook-Up Explorer** — this view of the **SmartPlant Instrumentation Explorer** is specific to the Hook-Ups module and it can contain hook-ups, hook-up types, and hook-up items. For more information, see *Hook-Up Explorer*, page 45.

- **Document Explorer** — this view of the **SmartPlant Instrumentation Explorer** is specific to the Document Binder module and it can contain documents with document numbers, specification sheets, process data sheets, enhanced reports, and external documents such as Word or Excel files. For more information, see *Document Explorer*, page 41.

Working with the Domain Explorer

Overview

You use the **Domain Explorer** to create and manage your current domain entities. The **Domain Explorer** displays instrumentation entities according to hierarchical structure. You can arrange the hierarchical structure of the data according to the entity types, the physical location of the entities, or the entity sequence within their parent entity.

The **Domain Explorer** enables you to perform almost all the actions that are possible in the SmartPlant Instrumentation modules. For example, you can create new tag numbers, edit their properties, create and edit wiring entities, to open the **Connection** window to make wiring connections, generate various data sheets, reports, and so forth. You can drag entities from the **Reference Explorer** to the **Domain Explorer** and this way create numerous entities based on reference configurations on the fly. Also, you can drag entities from the **Domain Explorer** to the **Reference Explorer** to create reference entities based on existing configurations.

Working with the **Domain Explorer** is another mode of working with SmartPlant Instrumentation, just like working with SmartPlant Instrumentation modules.

You can open the **Domain Explorer** from anywhere in SmartPlant Instrumentation. Press F7 or on the **Tools** menu, click **Domain Explorer**.

💡 **Tip**

- Depending on the access rights that have been granted to you, the **Domain Explorer** allows you to perform actions with SmartPlant Instrumentation entities that belong to all the existing plants in your domain and not just with the entities in the plant that you have currently logged in.

The tree view pane of the **Domain Explorer** shows instrumentation entities organized by folders. SmartPlant Instrumentation defines standard folders in the database. You cannot move or delete these folders, nor can you add new folders. Each folder contains a particular entity type, and the options available on the menus depend on the currently selected entity type.

For a detailed explanation of all the folders and their organization in the **Domain Explorer**, see *The Organization of Entities in the Domain Explorer Tree View*, page 12.

Entity status indicators - the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example **access denied**, **view only**, **an entity that belongs to AsBuilt**, and so forth. For the full list of the entity indicators, see *Entity Indicators*, page 23.

Notes

- You can open several instances of the **Domain Explorer** by pressing F7.

- After exiting SmartPlant Instrumentation, and starting a new session, the software retains the size and position of all the windows that were open in the previous session.

- Some SmartPlant Instrumentation modules have their own **Explorers**. These are just limited views of the **Domain Explorer** and they contain entities specific to their modules. For details, see *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7.

Related Topics
- *Association Rules in the Domain Explorer*, page 17
- *Domain Explorer Common Tasks*, page 10
- *Loop Explorer*, page 47
- *Reference Explorer*, page 50
- *Wiring Explorer*, page 53
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Domain Explorer Common Tasks

The following tasks are used frequently when you work with the **Domain Explorer**.

Create an Entity

This procedure shows how to create an entity in the **Domain Explorer**. For more information, see *Create an Entity in the Domain Explorer*, page 24.

Copy a Reference Entity to the Domain Explorer

This procedure explains how to copy a reference entity the **Domain Explorer**. This way you can create numerous entities based on typical configurations on the fly. For more information, see *Copy a Reference Entity to the Domain Explorer*, page 25.

Edit Entity Properties

This procedure explains how to edit the properties of an entity that you select in the **Domain Explorer**. For more information, see *Edit Entity Properties*, page 26.

Duplicate Entities

This procedure shows how to duplicate an entity in the **Domain Explorer**. For more information, see *Duplicate Entities*, page 26.

Delete an Entity

This procedure shows how to delete the entities that you select in the **Domain Explorer**. For more information, see *Delete Entities*, page 27.

Search for Entities

You use this feature to find entities that you want to work with. You can search for multiple entities in the entire domain, the current highest plant hierarchy level, or the current lowest plant hierarchy level. The term "current" refers to the plant hierarchy level that you selected in the **Open** dialog box when you started SmartPlant Instrumentation. For more information about searching for entities, see *Search for Entities*, page 27.

Find an Entity in the Tree View

This feature enables you to find an entity in the **Domain Explorer** tree view. This feature is especially useful when you want to find an entity in a particular folder that contains numerous entities. You can type an entity name and click **Find** or you can let the software look for the entity as you type the entity name. The feature allows you to set the search delay that determines how long the software waits after the last time you press a key on your keyboard.

For more information, see *Find an Entity in the Domain Explorer Tree View*, page 29.

Filter the Entities in the Tree View Pane

You can filter the display of entities in the tree view of an active **Explorer** window. Note that filter settings take effect only for the user who defined the filter and only for the current **Explorer**. That is, if you define a filter in the **Domain Explorer**, these settings are not applied to the **Wiring Explorer**, **Reference Explorer**, and so forth. For more information, see *Filter the Display of Entities in an Explorer Window*, page 30.

Filter Cables

Allows you to set additional filter definitions for the **Cables** and the **Cross Cables** folders. You can filter cables according to their connections and cables that are connected to a specific Foundation or Profibus segment. For more information, see *Filter Cables in an Explorer Window*, page 32.

Filter Loops

Allows you to set additional filter definitions for the **Loops** folder. You can filter loops according to blocks associated with loop tags. For more information, see *Filter Loops in an Explorer Window*, page 35.

Use My List in the Entities Pane

This procedure explains how to add various entities to the **My List** view of the **Entities** pane. **My List** allows you to create a special view of the **Entities** pane where you can keep entities that belong to various folders in in the tree view. The software retains all the entities in the **My List** view until you remove them from that list. Exiting SmartPlant Instrumentation and starting a new session does not affect the contents of **My List**. For more information, see *Add Entities to My List in the Entities Pane*, page 37.

Display a Browser View in the Entities Pane

This option allows you to display a browser view in the **Entities** pane for an entity type or a folder that you select in the **Domain Explorer** tree view. This way, instead of displaying sub-entities, you can display entity properties of the item you selected in the tree view pane. The software displays the browser view according to the style settings of the selected browser. You can print out the current browser view, however, you cannot edit the entity properties. For more information, see *Display a Browser View in the Entities Pane*, page 37.

Perform Various Actions with an Instrument

This feature allows you to select a tag number and perform various actions. You can effect I/O assignment, associate blocks, create CS tags, create device panels and cables, connect device panels, and so forth. For more information, see *Perform Various Actions with an Instrument*, page 24.

Generate a Specification or a Process Data Sheet for an Instrument

This option allows you to select a tag number and generate a specification and a process data sheet. For more information, see *Generate a Specification or a Process Data Sheet for an Instrument*, page 25.

For the rules that govern the dragging of entities in the **Domain Explorer**, see *Association Rules in the Domain Explorer*, page 17.

The Organization of Entities in the Domain Explorer Tree View

The tree view pane of the **Domain Explorer** shows instrumentation entities organized by folders. SmartPlant Instrumentation defines standard folders in the database. You cannot move or delete these folders, nor can you add new folders. Each folder contains a particular entity type, and the options available on the menus depend on the currently selected entity type.

After expanding a plant hierarchy, the following folders are displayed:

Loops

Loops are arranged at the lowest level of the plant hierarchy. You can navigate to a loop by expanding the plant hierarchy. Continue expanding your plant hierarchy to display the **Loops** folder that contains all the existing loops in the current *<unit>*. Loops, in turn, can contain instruments and control system tags. For more information, see *Loop Explorer*, page 47.

Instruments

Tag numbers are arranged at the lowest level of the plant hierarchy in the **Instruments** folder. You can navigate to a tag number by expanding the plant hierarchy. Continue expanding your plant hierarchy to display the **Instruments** folder that contains all the existing tag numbers in the current *<unit>*. Tag numbers can be parent entities of CS tags, specification sheets, process data sheets, and any other documents that are associated with the selected tag number.

Electrical Tags

This folder holds all the tag numbers that have been published to SmartPlant Instrumentation from SmartPlant Electrical. Note that you cannot create any new electrical tags. However, you can right-click a tag and open the tag number properties.

Functional Requirement Tags

This folder holds all the existing functional requirement tag numbers. You can only view the list of existing tags and open the tag number properties for editing. However, you cannot create new tags by right-clicking this folder.

Wiring entities are organized in the the following folders:

Panels by Location

Panels are arranged according to their location and category. In this folder, panels are arranged according to their location. You can perform the following actions:

> Create a new location based on the structure you define in the **Location Manager**.

> Move a panel from one location to another by dragging it to another location.

> Right-click a location and create a new panel and then create the required sub-entities.

> When right-clicking a location or a wiring entity within a location, you can perform various actions that are available on the shortcut menu.

You can create various wiring structures in the **Panels by Location** folder. For an example of one possible wiring structure, see *Panels by Location Hierarchy Example*, page 15.

Panels by Category

In this folder, panels are arranged according to their category. Panels, in turn, contain their child entities, for example terminal strips, racks, wiring equipment, and so forth. There is a lot of flexibility in creating a panel hierarchy. There is no rigid structure like "panel – strip – terminal" that limits your wiring design. You can create various wiring structures, as you require. See *Panels by Category Hierarchy Example*, page 16 to examine a few possible structures.

Cables

This folder holds all the existing cables. You can create various child entities under cables. For an example, see *Cable Hierarchy Example*, page 17.

Cross Cables

This folder holds all the cross wiring cables and wires. You can create new cross cables and cross wires as you require.

Lines, hook-ups, process equipment, and P&IDs, and so forth are organized in separate folders at the top hierarchy level of the tree view. These folders include:

Telecom Equipment

This folder holds all the available telecom equipment cabinets classified by their categories: **PA Cabinets**, **PABX Cabinets**, **Miscellaneous**, **Hubs**, **Amplifiers**, and **Intercoms**. Each folder displays the existing equipment cabinets belonging to that category. You cannot create new cabinets in the **Telecom Equipment** folder. To create a new equipment cabinet, expand the following hierarchy: **Panels by Category > Telecom Panels > Equipment Cabinets**. Then, right-click the **Equipment Cabinets** folder, point to **New** and click the command that you require.

Process Equipment

This folder displays all the existing equipment that your instruments are installed on. Equipment is also categorized according to different types, such as compressors, burners, pumps, and so on. You can right-click this folder and create new process equipment. Then, you can create an instrument by right-clicking an equipment entity.

Lines

This folder holds all the existing lines in your *<plant>*. After right-clicking a line, you can add a new instrument.

Foundation Fieldbus Segments

This folder displays the names of all the Foundation Fieldbus segments. The entities in this folder are view-only.

Hook-Ups

This folder holds all the existing hook-ups and their sub-entities. For details, see *Hook-Up Explorer*, page 45.

P&IDs

This folder displays all the existing P&ID document references. You can right-click a P&ID document reference and create a new instrument, loop, and line.

Controllers
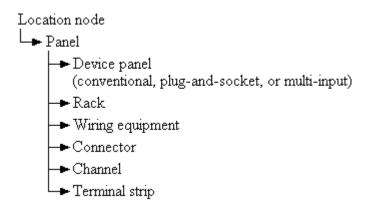
This folder displays all the existing controllers and their sub-entities. You cannot create new controllers in this folder, but you can select a slot and add a terminal strip, an I/O card, or any other wiring equipment entity.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Loop Explorer*, page 47
- *Reference Explorer*, page 50
- *Wiring Explorer*, page 53
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Panels by Location Hierarchy Example
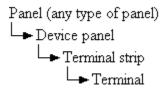
The following is an example of a panel by location hierarchy structure:

```
Location node
  └─► Panel
        ├─► Device panel
        │     (conventional, plug-and-socket, or multi-input)
        ├─► Rack
        ├─► Wiring equipment
        ├─► Connector
        ├─► Channel
        └─► Terminal strip
```
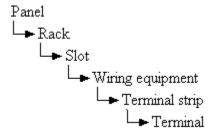
Panels by Category Hierarchy Example

The following examples show a number of different structures that you can create in the **Panels by Category** folder.
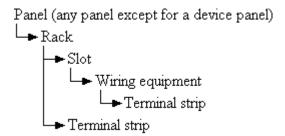
Example 1:
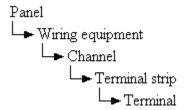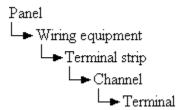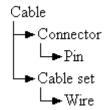
```
Panel (any type of panel)
   └─► Device panel
          └─► Terminal strip
                 └─► Terminal
```

Example 2:

```
Panel
   └─► Rack
          └─► Slot
                 └─► Wiring equipment
                        └─► Terminal strip
                               └─► Terminal
```

Example 3:

```
Panel (any panel except for a device panel)
   └─► Rack
          ├─► Slot
          │      └─► Wiring equipment
          │             └─► Terminal strip
          └─► Terminal strip
```

Example 4:

```
Panel
   └─► Wiring equipment
          └─► Channel
                 └─► Terminal strip
                        └─► Terminal
```

Example 5:

```
Panel
  └─► Wiring equipment
        └─► Terminal strip
              └─► Channel
                    └─► Terminal
```

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Domain Explorer*, page 42
- *Wiring Explorer*, page 53

Cable Hierarchy Example

```
Cable
  ├─► Connector
  │     └─► Pin
  └─► Cable set
        └─► Wire
```

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Domain Explorer*, page 42
- *Wiring Explorer*, page 53

Association Rules in the Domain Explorer

You can move and create associations among entities by dragging them from one parent entity to another in the **Domain Explorer**. The following table summarizes the rules that govern these associations.

Source Entity in the Domain Explorer	Target Folder or Entity in the Domain Explorer	Result	Pre-conditions
Loop	The **Loops** folder in another <unit>	The software moves the loop to the target <unit>.	
Loop	P&ID drawing	The software associates the loop with the target P&ID drawing.	
Instrument	The **Instruments** folder in another <unit>	The software moves the instrument to the target <unit>.	
Instrument	Loop	The software associates the instrument with the target loop.	
Instrument	Line	The software associates the instrument with the target line.	
Instrument	Process equipment	The software associates the instrument with the target process equipment.	
Instrument	P&ID drawing	The software associates the instrument with the target P&ID drawing.	

Source Entity in the Domain Explorer	Target Folder or Entity in the Domain Explorer	Result	Pre-conditions
Functional requirement tag	The **Loops** folder in another \<unit\>	The software moves the functional requirement tag to the target \<unit\>.	
Location	Location	The software moves the location to the target location in the **Panels by Location** folder.	In accordance with the location level structure defined by the Domain Administrator.
Panel (all panel categories)	Location	The software associates the panel with the target location.	
Device panel	Panel (apart from device panel and plug-and-socket junction box)	The software moves the device panel to the target panel.	
Plug-and-Socket junction box	Panel (apart from device panel and plug-and-socket junction box)	The software moves the plug-and-socket junction box to the target panel.	
Rack	Panel (apart from device panel and plug-and-socket junction box)	The software moves the rack to the target panel.	
Wiring equipment entity (e.g., I/O card, fieldbus brick, etc.)	Panel (apart from device panel and plug-and-socket junction box)	The software moves the wiring equipment entity to the target panel.	I/O cards cannot be moved if they function as primary or secondary I/O cards.
Wiring equipment entity (e.g., I/O card, fieldbus brick, etc.)	Rack	The software moves the wiring equipment entity to the target rack.	

Source Entity in the Domain Explorer	Target Folder or Entity in the Domain Explorer	Result	Pre-conditions
Wiring equipment entity (e.g., I/O card, fieldbus brick, etc.)	Terminal strip	The software moves the wiring equipment entity to the target terminal strip.	
Wiring equipment entity (e.g., I/O card, fieldbus brick, etc.)	Slot	The software moves the loop to the target slot.	
Connector	Panel (apart from device panel and plug-and-socket junction box)	The software moves the connector to the target panel.	• Wiring equipment connectors cannot be moved to cables. • Cable connectors can only be moved to other cables. this is possible only if none of the connector pins are associated with wires.
Connector	Rack	The software moves the connector to the target rack.	
Connector	Wiring equipment entity	The software moves the connector to the target wiring equipment entity.	
Connector	Slot	The software moves the connector to the target slot.	
Connector	Cable	The software moves the connector to the target cable.	

Source Entity in the Domain Explorer	Target Folder or Entity in the Domain Explorer	Result	Pre-conditions
Terminal strip	Panel (apart from device panel and plug-and-socket junction box)	The software moves the terminal strip to the target panel.	Terminal strips cannot be moved if • They are used in instrument type profile definition. • They are associated with Auto-Wiring tasks. • They are associated with CS tags. • They are associated with general or local signals.
Terminal strip	Rack	The software moves the terminal strip to the target rack.	
Terminal strip	Wiring equipment entity (e.g., I/O card, fieldbus brick, etc.)	The software moves the terminal strip to the target wiring equipment entity.	
Terminal strip	Slot	The software moves the terminal strip to the target slot.	
Terminal	Terminal strip	The software moves the terminal to the target terminal strip.	
Terminal	Channel	The software moves the terminal to the target channel.	

Source Entity in the Domain Explorer	Target Folder or Entity in the Domain Explorer	Result	Pre-conditions
Channel	Wiring equipment entity (e.g., I/O card, fieldbus brick, etc.)	The software moves the channel to the target wiring equipment entity.	
Channel	Terminal strip	The software moves the channel to the target wiring terminal strip.	
Cable set	Cable	The software moves the cable set to the target cable.	
Cable set	Cross cable	The software moves the cable set to the target cross cable.	
Wire	Cable set	The software moves the wire to the target cable set.	Connected wires cannot be moved.
Line	P&ID drawing	The software associates the line with the target P&ID drawing.	
Hook-Up	Hook-up type	The software associates the hook-up with the target hook-up type.	

Special Conditions

- The software does not allow you to drag entities to incompatible hierarchies. For example, you cannot drag a rack to device panel or a plug-and-socket junction box.

- The software does not allow you to move an entity that contains a sub-entity that cannot be moved. For example, you cannot move a rack if it contains an I/O card that functions as a primary or secondary I/O card for an I/O termination.

- In an Operating owner domain, you cannot move entities that have not been claimed for the current project.

Entity Indicators

The software uses a number of icons to indicate the status of various folders and entities in your domain. The icons appear beside the folders and entities in the tree view of an **Explorer** window.

Icon	Description
⊚	An entity that belongs to the current project.
✓	An entity that belongs to AsBuilt.
▣	A dummy entity - an entity that is displayed in a project but it has not been claimed for any project. A dummy entity is always associated with another entity that has been claimed for a project.
?	An entity that does not belong to the current project or AsBuilt.
⬆🔒	An entity that cannot be deleted, duplicated, and under which no sub-entities can be created. However, you can edit the entity properties and move the entity to another hierarchy level.
🚫	Access denied.
◀	View only.
🔒	An entity that cannot be deleted, duplicated, moved to another hierarchy level, and under which no sub-entities can be created. However, you can edit the entity properties.
✓	An AsBuilt entity that has been claimed for a project.

🖉 **Notes**

- An entity without any indicator denotes an entity that is not supported by the **SmartPlant Instrumentation Explorer**. The software allows you to perform actions with such entities only from the pertinent SmartPlant Instrumentation modules.

- The software does not use entity indicators in the **Reference Explorer**.

Create an Entity in the Domain Explorer

1. Press F7 to open the **Domain Explorer**.

2. In the tree view pane, expand the plant hierarchy to display the folder in which you need to create the new entity.

3. Right-click the folder in which you need to create the new entity.

4. On the shortcut menu, point to **New** and then click the command that you require.

Related Topics
- *Domain Explorer Common Tasks*, page 10

Perform Various Actions with an Instrument

1. Press F7 to open the **Domain Explorer**.

2. In the tree view pane, expand the plant hierarchy to display the **Instruments** folder.

3. Expand the **Instruments** folder and then right-click a tag number.

4. On the shortcut menu, point to **Actions** and then click the command that you require.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Generate a Report for an Instrument

1. Press F7 to open the **Domain Explorer**.

2. In the tree view pane, expand the plant hierarchy to display the **Instruments** folder.

3. Expand the **Instruments** folder and then right-click a tag number.

4. On the shortcut menu, point to **Reports** and then click the command that you require.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Generate a Specification or a Process Data Sheet for an Instrument

1. Press F7 to open the **Domain Explorer**.

2. In the tree view pane, expand the plant hierarchy to display the **Instruments** folder.

3. Expand the **Instruments** folder and then right-click a tag number.

4. On the shortcut menu, point to **Actions** and then click the command that you require.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Copy a Reference Entity to the Domain Explorer

1. Press F7 and then F8 to open the **Domain Explorer** and the **Reference Explorer**.

   💡 **Tip**

   - You can open the **Wiring Explorer** instead of the **Domain Explorer** if you want to see wiring entities only. To open the **Wiring Explorer**, in the Wiring module, on the **View** menu, click **Wiring Explorer**.

2. In the **Reference Explorer**, expand a hierarchy level and select a reference entity.

3. Drag your selection to a destination level in the **Domain Explorer** (or the **Wiring Explorer**). Place both **Explorer** windows side by side on your screen and then drag the required entities from one **Explorer** to the other.

4. In the appropriate properties dialog box, (depending on the reference entity that you are copying), modify the properties of the new entity as you require.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Reference Explorer*, page 50
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Duplicate an Entity

1. Do one of the following

    -   Press F7 to open the **Domain Explorer**.

    -   Press F8 to open the **Reference Explorer**.

2. In the tree view pane, expand the plant hierarchy.

3. Do one of the following:

    -   In the tree view pane, select an entity.

    -   In the **Entities** pane, select one or more entities.

4. Right-click the selected entities and then on the shortcut menu, click **Duplicate**.

5. Modify the properties as you require. For help with individual properties, click the **Help** button on the dialog box.

Related Topics
-   *Domain Explorer Common Tasks*, page 10
-   *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Edit Entity Properties

1. Do one of the following

    -   Press F7 to open the **Domain Explorer**.

    -   Press F8 to open the **Reference Explorer**.

2. In the tree view pane, expand the plant hierarchy.

3. Do one of the following:

    -   In the tree view pane, select an entity.

    -   In the **Entities** pane, select one or more entities.

4. Right-click the selected entities and then on the shortcut menu, click **Properties**.

5. Modify the properties as you require. For help with individual properties, click the **Help** button on the dialog box.

Related Topics
-   *Domain Explorer Common Tasks*, page 10
-   *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Delete Entities

1. Press F7 to open the **Domain Explorer** or F8 to open the **Reference Explorer**.

2. In the tree view pane, expand the plant hierarchy.

3. Do one of the following:

    -   In the tree view pane, select an entity.

    -   In the **Entities** pane, select one or more entities.

4. Right-click the selected entities and then on the shortcut menu, click **Delete**.

Related Topics
-   *Domain Explorer Common Tasks*, page 10
-   *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Search for Entities

1. Do one of the following

    -   Press F7 to open the **Domain Explorer**.

    -   Press F8 to open the **Reference Explorer**.

2. On the toolbar, click ![icon] to open the **Search** dialog box.

3. Select an entity type. Note that the **Entity type** list is a required field and without selecting an entity type, the software cannot proceed with the search.

4. Under **Entity name**, type a name of an entity that you want to find.

    💡 **Tip**

    -   You can use wildcard characters (* or %) to find entities whose names contain part of the text that you type. If you do not know the entity name, leave the asterisk ***** in the this field.

5. Under **Search in**, select a plant hierarchy level on which the software searches for entities:

    -   **Entire domain** - the current domain that you selected in the **Open** dialog box when you started SmartPlant Instrumentation.

    -   **Current highest plant hierarchy level** - the highest plant hierarchy level that you selected in the **Open** dialog box, for example, your current plant.

    -   **Current lowest plant hierarchy level** - the lowest plant hierarchy level that you selected in the **Open** dialog box, for example, your current unit.

6. In the **Entity properties** data window, if needed, specify entity properties so that the software looks for entities with those properties only. Click **Add** to append a new row if you want to specify more than one property.

- **Property** - select an existing property from the list.

- **Operator** - select an operator from the list to determine how the selected property will relate to the expression you type in the **Value** field.

- **Value** - type an appropriate value to determine how the selected property will be specified.

- **Logic** - select a logic operator (AND or OR) to determine how the next expression will relate to the current one. Leave this field empty if this is the last expression you are defining.

7. Click **Search Now**.

8. In the **Results** data window, select the entities that you want to work with and click **Add to My List**.

📝 **Notes**

- After the software finds the entities that you were looking for and lists them in the **Results** data window, you can search for more entities without losing your current results. Select another entity type and click **Search Now**. The software adds the newly found entities to the previously found results.

- To start a new search and clear the **Search results** data window.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Find an Entity in the Tree View of an Explorer Window

1. Do one of the following

   - Press F7 to open the **Domain Explorer**.

   - Press F8 to open the **Reference Explorer**.

2. In the tree view pane, expand the tree view hierarchy and navigate to a folder.

3. Right-click the folder that you require and then on the shortcut menu, click **Find Entity**.

4. On the **Find Entity** dialog box, select **Match case** if you want the software to find entities whose names match the capitalization of the entity name you entered.

5. Select **Find whole name only** if you want the software to search for occurrences that are whole names and not part of a larger entity name.

6. Do one of the following:

   - Under **Entity**, type a name and click **Find**.

   - Select **As typed** and then under **Entity** type a name. The software looks for the entity as you type. You can set the search delay to determine how long the software will wait after the last time you press a key on your keyboard.

7. Click **Close**.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Search for Entities*, page 27
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Filter the Display of Entities in an Explorer Window

1. In an **Explorer** window, select a hierarchy level or a folder containing the entities that you want to filter and do one of the following:

   - Right-click the folder, and then click **Filter**.

   - On the **Explorer** window toolbar, click .

2. To filter according to an entity name in the folder or at the hierarchy level that you selected in the **Explorer** tree view, under **Entity name**, type a valid name or part of a name. You can use wildcard characters to specify partial strings: asterisk (*) or percent (%) for multiple characters and underscore (_) for single characters.

   Tip

   - Note that the value that you enter in this box overrides all other filter criteria in this dialog box.

3. Type a filter name.

4. Select an entity type appropriate for the folder that you selected. You must select an entity type to be able to perform the filter operation.

5. Select one of the following:

   - **Selected node definition** - to filter the child entities that belong to a folder or the entities at any hierarchy level that you selected in the **Explorer** tree view.

   - **Global definition** - to define a filter for the entire tree view of the active **Explorer**. The software applies this definition to the entity type you selected. Note that if you defined a filter definition for a specific folder, the filter for the folder override the settings for the global filter definition.

6. In the **Filter definition** group box, define the criteria that you use to filter the entities displayed:

- **Property** - select a property to use for filtering the entities.

- **Operator** - select the required comparison operator to determine how the header selected under **Property** will relate to the expression you select for **Value**.

- **Value** - select or type a required value for the item you selected under **Property**. The available values depend on the specific property that you select.

- **Logic** - You use this option when you specify more than one filter condition. The option allows you to select the required logical operator (And or Or) to determine how the next filter expression will relate to the current expression. When you have a mixture of logical operators for several conditions, the software performs the expressions on the conditions in order, for example:
  (A and B) or C
  (A or B) and C

7. Click **Verify** to check the validity of the current filtering condition.

8. Click **OK**.

Note

- Clicking **Advanced** allows you to define a special filter for the **Cables**, **Cross Cables**, and **Loops** folders. For details, see *Filter Cables in an Explorer Window*, page 32 and *Filter Loops in an Explorer Window*, page 35.

- To reset the filter, click **Reset**.

- To clear the filter, right-click a hierarchy node and then on the shortcut menu, click **Clear Filter**.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Filter Cables in an Explorer Window*, page 32
- *Filter Loops in an Explorer Window*, page 35
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Filter Cables in an Explorer Window

1. In an **Explorer** window, select the **Cables** or the **Cross Cables** folder and do one of the following:

   - Right-click the folder, and then click **Filter**.

   - On the **Explorer** window toolbar, click .

2. To filter according to an entity name in the folder that you selected, under **Entity name**, type a valid name or part of a name. You can use wildcard characters to specify partial strings: asterisk (*) or percent (%) for multiple characters and underscore (_) for single characters.

   Tip

   - Note that the value that you enter in this box overrides all other filter criteria in this dialog box.

3. Type a filter name.

4. Select one of the following:

   - **Selected node definition** - to filter the child entities that belong to a folder or the entities at any hierarchy level that you selected in the **Explorer** tree view.

   - **Global definition** - to define a filter for the entire tree view of the active **Explorer**. The software applies this definition to the entity type you selected. Note that if you defined a filter definition for a specific folder, the filter for the folder overrides the settings for the global filter definition.

5. In the **Filter definition** group box, define the criteria that you use to filter the entities displayed:

- **Property** - select a property to use for filtering the entities.

- **Operator** - select the required comparison operator to determine how the header selected under **Property** will relate to the expression you select for **Value**.

- **Value** - select or type a required value for the item you selected under **Property**. The available values depend on the specific property that you select.

- **Logic** - You use this option when you specify more than one filter condition. The option allows you to select the required logical operator (And or Or) to determine how the next filter expression will relate to the current expression. When you have a mixture of logical operators for several conditions, the software performs the expressions on the conditions in order, for example:
  (A and B) or C
  (A or B) and C

6. Click **Verify** to check the validity of the current filtering condition.

7. Click **Advanced** to define a filter for the **Cables** folder.

8. In the **Advanced Filter Definition (Cables)** dialog box, do one of the following:

- Clear the **Look for connections** check box if you do not want to include any of the connection criteria in the filter condition. Selecting this option disables the check boxes in this group box and in the **Connected to** group box.

- Select the **Look for connections** check box to include and select connection criteria in the filter condition.

9. To select a connection criterion, in the **Connection** group box, click the following:

- **No connections on either end** - Includes the cables that are not connected to anything on both ends.

- **At least one wire connected on one end only** - Includes the cables that contain at least one wire that is only connected on one of its ends.

- **At least one wire connected to both ends** - Includes the cables that contain at least one wire that is connected on its both ends.

10. In the **Connected to** group box, select one or more check boxes to define a filter according to the type of panel that is connected to the cable. This selection defines connection criteria for cables that have at least one wire connected to one or both ends.

   - **Junction boxes** - Include all the cables that are connected to junction boxes.

   - **Marshaling racks** - Include all the cables that are connected to marshaling racks.

   - **Cabinets** - Include all the cables that are connected to cabinets.

   - **Device panels** - Include all the cables that are connected to device panel.

   - **DCS panels** - Include all the cables that are connected to DCS panel.

   - **PLC panels** - Include all the cables that are connected to DCS panel.

11. In the **Cable associations** group box, select an appropriate Foundation Fieldbus or Profibus segment if you want to include cables that are associated with a specific Fieldbus segment.

12. Select the **Display telecom cables** only if you want to filter the **Cables** folder so that it displays telecom cables only.

13. Click **OK** in the **Advanced Filter Definition (Cables)** dialog box.

14. Click **OK** in the **Filter Definition** dialog box.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Filter Loops in an Explorer Window*, page 35
- *Filter the Display of Entities in an Explorer Window*, page 30
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Filter Loops in an Explorer Window

1. In an **Explorer** window, select the **Loops** folder and do one of the following:

   - Right-click the folder, and then click **Filter**.

   - On the **Explorer** window toolbar, click .

2. To filter according to an entity name in the **Loops** folder, under **Entity name**, type a valid name or part of a name. You can use wildcard characters to specify partial strings: asterisk (*) or percent (%) for multiple characters and underscore (_) for single characters.

   💡 **Tip**

   - The value that you enter in this box overrides all other filter criteria in this dialog box.

3. Type a filter name.

4. Do one of the following:

   - Select **Selected node definition** to filter the child entities that belong to a folder or the entities at any hierarchy level that you selected in the **Explorer** tree view.

   - Select **Global definition** to define a filter for the entire tree view of the active **Explorer**. The software applies this definition to the entity type you selected. If you defined a filter definition for a specific folder, the filter for the folder overrides the settings for the global filter definition.

5. In the **Filter definition** group box, define the criteria that you use to filter the entities displayed:

   - **Property** — select a property to use for filtering the entities.

   - **Operator**— select the required comparison operator to determine how the header selected under **Property** will relate to the expression you select for **Value**.

   - **Value**— select or type a required value for the item you selected under **Property**. The available values depend on the specific property that you select.

   - **Logic**— You use this option when you specify more than one filter condition. The option allows you to select the required logical operator (And or Or) to determine how the next filter expression will relate to the current expression. When you have a mixture of logical operators for several conditions, the software performs the expressions on the conditions in order, for example:
     (A and B) or C
     (A or B) and C

6. Click **Verify** to check the validity of the current filtering condition.

7. Click **Advanced** to define a filter for loops according to loop blocks.

8. In the dialog box that opens, if needed, under **Display level for blocks**, click one of the following to filter the blocks displayed in the data windows:

   - **Highest plant hierarchy level** — Displays blocks on the highest level of the plant hierarchy defined by the Domain Administrator. The default level is Plant.

   - **Lowest plant hierarchy level** — Displays blocks on the lowest level of the plant hierarchy defined by the Domain Administrator. The default level is Unit.

9. To filter the loops according to blocks, do one of the following:

   - Under **Blocks associated with tags**, select one or more blocks that are associated with loop tags. After you select these blocks, in the current explorer window, the software only displays loops whose blocks are assigned to tags using the block-tag assignment method.

   - Under **Blocks associated with instrument type**, select one or more blocks that are associated with the instrument type of the loop tags. After you select these blocks, in the current explorer window, the software only displays loops whose blocks are assigned to tags using the block-instrument type assignment method.

   💡 **Tip**

   - The **Domain Explorer** does not include blocks. Blocks only appear in the **Loop Explorer**, which you can open in the Loop Drawings module. In the **Loop Explorer**, blocks associated with tags using the block-tag assignment method are marked with the icon 🟥 (in red). Blocks associated with tags using the block-instrument type assignment method are marked with the icon 🟩 (in green).

10. Click **OK** in the **Advanced Filter Definition (Loops)** dialog box.

11. Click **OK** in the **Filter Definition** dialog box.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Filter Cables in an Explorer Window*, page 32
- *Filter the Display of Entities in an Explorer Window*, page 30
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Display a Browser View in the Entities Pane

1. Do one of the following

   - In the tree view pane of the **Domain Explorer**, expand the plant hierarchy and then select a folder or an entity.

   - In the tree view pane of the **Reference Explorer**, select a folder or an entity.

2. Right-click the selected folder or entity and then on the shortcut menu, click **Show Browser**.

3. From the **Browser view** list, select a Browser view that exists in the Browser module.

   Important

   - If there are no Browser views on this list or if the browser view you need is not on the list, close the **Show Browser** dialog box and switch to the Browser module. In the Browser Manager, open the style settings of the browser view that you need. Select the **Enable in explorer windows** check box and then click **Save**. Open the **Show Browser** dialog box again and select the browser view that you need.

   Related Topics
   - *Domain Explorer Common Tasks*, page 10
   - *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Add Entities to My List in the Entities Pane

   - Press F7 to open the **Domain Explorer** and do one of the following:

     - In the **Domain Explorer** tree view, right-click an entity and then on the shortcut menu, click **Add to My List**.

     - In the **Entities** pane, click **My List** and then drag an entity from the tree view to **My List**.

   Notes

   - To remove an entity from **My List**, right-click it and then click **Remove from My List**.

   - To clear the **My List** view of all the entities, right-click an entity and then click **Remove All**.

Working with the Reference Explorer

Overview

The **Reference Explorer** allows you to create and manage all the available wiring reference entities that are created by SmartPlant Instrumentation users and that are provided with the software. Note that wiring reference entities are typical configurations that facilitate rapid creation of various wiring entities in your domain.

The **Reference Explorer** displays a graphical representation of the relationships that exist among the predefined wiring equipment, panels, terminal strips, and terminals as well as cables, cable sets, and wires.

You can create predefined configurations of various wiring equipment, panels, terminal strips, as well as cables, cable sets, and wires. You can use predefined configurations as reference entities and copy them to the **Domain Explorer** or **Wiring Explorer**. For more information about using reference wiring entities, see *Copy a Reference Entity to the Domain Explorer*, page 25.

You can open the **Reference Explorer** from anywhere in SmartPlant Instrumentation. Press F8 or on the **Tools** menu, click **Reference Explorer**.

The tree view pane of the **Reference Explorer** shows reference entities organized by folders. SmartPlant Instrumentation defines standard folders in the database. You cannot move or delete these folders, nor can you add new folders. Each folder contains a particular entity type, and the options available on the shortcut menus depend on the currently selected entity type.

Entity status indicators - the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example **access denied**, **view only**, **an entity that belongs to AsBuilt**, and so forth. For the full list of the entity indicators, see *Entity Indicators*, page 23.

Notes

- You can create several instances of the **Reference Explorer** by pressing F8.

- After exiting SmartPlant Instrumentation, and starting a new session, the software retains the size and position of all the windows that were open in the previous session.

Related Topics
- *Copy a Reference Entity to the Domain Explorer*, page 25
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Create a Reference Entity

1. Press F8 to open the **Reference Explorer**.

2. Double-click a folder to display the other existing folders or entities.

   💡 **Tip**

   - If a folder does not contain sub-folders, right-click the main folder.

3. Right-click a sub-folder and then on the shortcut menu, point to **New** and click a menu command.

   Related Topics
   - *Domain Explorer Common Tasks*, page 10
   - *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Copy a Reference Entity to the Domain Explorer

1. Press F7 and then F8 to open the **Domain Explorer** and the **Reference Explorer**.

   💡 **Tip**

   - You can open the **Wiring Explorer** instead of the **Domain Explorer** if you want to see wiring entities only. To open the **Wiring Explorer**, in the Wiring module, on the **View** menu, click **Wiring Explorer**.

2. In the **Reference Explorer**, expand a hierarchy level and select a reference entity.

3. Drag your selection to a destination level in the **Domain Explorer** (or the **Wiring Explorer**). Place both **Explorer** windows side by side on your screen and then drag the required entities from one **Explorer** to the other.

4. In the appropriate properties dialog box, (depending on the reference entity that you are copying), modify the properties of the new entity as you require.

   Related Topics
   - *Domain Explorer Common Tasks*, page 10
   - *Reference Explorer*, page 50
   - *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Windows and Dialog Boxes

Document Explorer

The **Document Explorer** is available from the Document Binder module and enables you to select documents for adding to a General Document Binder package. The **Document Explorer** employs an expandable/collapsible hierarchy that allows you to navigate to various documents and select them for use. For a detailed explanation of the tree view and **Entities** panes, see *Domain Explorer*, page 42.

Display Rules of the Document Entities

The software displays documents in the tree view pane. There are two hierarchies that contain documents: **Document by Type** and **Document by Entity**. These contain any document that you create or that the software generates automatically with a document number. To add a document to a General Document Binder package, you drag it from one of these hierarchies to the **Document Binder** tree view under the **Documents** folder.

Document by Document Type

This folder contains all available documents in the domain organized according to their document type. If one or more documents of a particular type exist, you can expand the folder for that document type to display the available documents.

Document by Entity Type

This folder contains documents organized according to the entity type they are associated with, for example, loop, panel strip, cable, instrument, line, and so forth. Documents appear in this hierarchy when you create a document number for a report which the Domain Administrator specifies the revision management as **Per Entity** in the **Report Management** dialog box.

Notes

- Specification sheets appear in sub-folders according to the entities for which they are created.

- Process data reports are organized in separate sub-folders for lies and instruments.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Domain Explorer

You use the **Domain Explorer** to create and manage your current domain entities. The **Domain Explorer** displays instrumentation entities according to hierarchical structure. You can arrange the hierarchical structure of the data according to the entity types, the physical location of the entities, or the entity sequence within their parent entity.

The **Domain Explorer** enables you to perform almost all the actions that are possible in the SmartPlant Instrumentation modules. For example, you can create new tag numbers, edit their properties, create and edit wiring entities, open the **Connection** window to make wiring connections, generate various data sheets, reports, and so forth. Also, you can copy entities from the **Reference Explorer** and this way create entities based on reference configurations on the fly.

Working with the **Domain Explorer** is another mode of working with SmartPlant Instrumentation, just like working with SmartPlant Instrumentation modules.

You can open the **Domain Explorer** from anywhere in SmartPlant Instrumentation. Press F7 or on the **Tools** menu, click **Domain Explorer**.

💡 Tip

- Depending on the access rights that have been granted to you, the **Domain Explorer** allows you to perform actions with SmartPlant Instrumentation entities that belong to all the existing plants in your domain and not just with the entities in the plant that you have currently logged in.

The main features of the **Domain Explorer** are:

Toolbar

The toolbar contains the following options:

Search - Click 🔍 to open the **Search** dialog box where you can find entities that you want to work with.

Refresh - Click 🔄 to update the **Domain Explorer** display. This feature is useful where multiple users are working on the same set of data.

Filter - Click 🔻 to filter the **Domain Explorer** display.

Views - Click ▦ ▾ to toggle through each view of the entities in the list view pane, or click the arrow and select the desired view.

Find - Click 🔍 to open the **Find Entity** dialog box where you can find an entity in a particular folder that contains numerous entities.

Print - Click 🖨 to print out the browser view that you selected for the current hierarchy node. Note that this button becomes available only after selecting the **Show Browser** command.

Tree View Pane

The tree view pane of the **Domain Explorer** shows instrumentation entities organized by folders. SmartPlant Instrumentation defines standard folders in the database. You cannot move or delete these folders, nor can you add new folders. Each folder contains a particular entity type, and the options available on the menus depend on the currently selected entity type.

Expand or collapse the hierarchy by clicking the **+** and **-** icons respectively or by double-clicking a folder. Expand a folder to display the entities. If you cannot expand a folder, that folder is empty. To perform an action, right-click a folder or an entity and then click a command. Also, to move an entity to another parent entity, drag that entity to another folder or a parent entity as you require.

After you double-click the top level of your plant hierarchy, the tree view shows the **Domain Explorer** folders and the next level of the plant hierarchy. The following is a brief description of the entity arrangement in the folders:

- Loops and tag numbers are arranged at the lowest level of the plant hierarchy. You can navigate to a loop or a tag number by expanding the plant hierarchy. Continue expanding your plant hierarchy to display the **Loops** and **Instruments** folders that contain your loop and tag numbers. The **Instruments** folder contains all the existing tag numbers in the current *<unit>*. Tag numbers can be parent entities of CS tags, specification sheets, process data sheets, and any other documents that are associated with the selected tag number. Also, there are several other folders that contain view-only information.

- Panels are arranged by their locations and categories. Therefore, you can access a panel and its sub-entities by expanding the **Panels by Location** or **Panels by Category** folder. Panels, in turn, contain other wiring entities such as racks, wiring equipment, terminal strips, and so forth.

- Cables and their sub-entities are arranged in a separate folder. There is also a separate folder for cross cables.

- Process equipment and lines are arranged in separate folders. Right-clicking the **Process Equipment** folder allows you to create a new process equipment entity. Right-clicking the **Lines** folder allows you to create a new line.

- Hook-ups are arranged in a folder at top level of the tree view. You can expand the **Hook-Ups** folder to access all the existing hook-ups and their sub-entities. Right-clicking the **Hook-Ups** folder allows you to create a new hook-up.

- There are several other folders at the top level of the tree view. These folders hold P&IDs, Telecom panels, Foundation Fieldbus segments, and controllers. Note that some of these folders only display the existing entities and do not allow you to create new ones.

For a detailed explanation of all the folders in the **Domain Explorer**, see *The Organization of Entities in the Domain Explorer Tree View,* page 12.

Entity status indicators - the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example **access denied**, **view only**, **an entity that belongs to AsBuilt**, and so forth. For the full list of the entity indicators, see *Entity Indicators*, page 23.

Entities Pane

The **Entities** pane (list view) pane of the **Domain Explorer** displays the individual entities that comprise the hierarchy of the entity or the folder that you selected in the tree view. You can choose one of the following three ways to display the entities in this pane:

- **List** - displays the individual entities that comprise the hierarchy of the entity or the folder that you selected in the tree view.

- **My List** - allows you to create a special view of the **Entities** pane where you can keep entities that belong to various folders in the tree view. The software retains all the entities in the **My List** view until you remove them from that list. The list count displays the number of entities displayed in the **List** pane.

- **Show Browser** - allows you to display a browser view in the **Entities** pane for an entity type or a folder that you select in the **Domain Explorer** tree view. This way, instead of displaying sub-entities, you can display entity properties of the item you selected in the tree view pane. The software allows you to print out the current browser view, however, you cannot edit the entity properties.

- **List count** - displays the number of individual entities that comprise the hierarchy of the entity or the folder that you selected in the tree view.

Notes

- You can open several instances of the **Domain Explorer** by pressing F7.

- After exiting SmartPlant Instrumentation, and starting a new session, the software retains the size and position of all the windows that were open in the previous session.

- Some SmartPlant Instrumentation modules have their own **Explorers**. These are just limited views of the **Domain Explorer** and they contain entities specific to their modules. For details, see *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7.

Hook-Up Explorer

The **Hook-Up Explorer** enables you to navigate to a hook-up type, hook-up, hook-up item, or instrument in a graphical way resembling the Windows Explorer.   You can expand or collapse the levels to view the existing entities. The **Hook-Up Explorer** shows you at a glance the graphical representation of the relationships that exist among the hook-up types, hook-ups, and hook-up items, instruments, and sub-entities associated with instruments. The **Hook-Up Explorer** is only available from the Hook-Ups module.

The **Hook-Up Explorer** employs an expandable/collapsible hierarchy that allows you to navigate to relevant entities and select them for use. To perform an action, right-click a folder or an entity and then click a command. Note that the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example a view-only entity, a claimed entity, an entity that belongs to AsBuilt, and so forth. For the full list of the entity indicators, see *Entity Indicators* on page 23. For a detailed explanation of the tree view and **Entities** panes, see *Domain Explorer*, page 42.

Display Rules of Entities in the Tree View

The software arranges the entities based on the relationship among them. In the **Hook-Up Explorer** tree view, the display rules follow a rigid structure. For details, see *The Hook-Up Explorer Hierarchy*, page 47.

Level 1

Hook-Up Types

This is the highest level in the **Hook-Up Explorer** hierarchy. At this level, the software displays all the hook-ups types that exist in the current domain. Hook-up types are shown as .
Hook-up types contain hook-ups for instruments sharing similar features, for example, Control, Measure, Flow, and so forth. For each hook-up type, on the shortcut menu, you can click **New** to add hook-ups. Also, you can assign hook-up items and instruments to hook-ups. To assign a tag number, on the shortcut menu, click **Actions**>**Hook-Up Tag Numbers**. To assign a hook-up item, on the shortcut menu, click **Actions**>**Hook-Up Items**.

Level 2

Hook-Ups

Hook-ups (shown as) appear under hook-up types. At this level, you can move hook-ups from one hook-up type to another, assign instrument tags and hook-up items. To assign a tag number, on the shortcut menu, click **Actions**>**Hook-Up Tag Numbers**. To assign a hook-up item, on the shortcut menu, click **Actions**>**Hook-Up Items**.

Level 3

Hook-Up Items

Hook-up items (shown as) appear under hook-ups. Hook-up items do not contain sub-entities. To assign hook-up items to hook-ups, use a shortcut menu command available at the level of hook-ups or hook-up types.

Instruments

Instruments (shown as) appear under hook-ups. Instruments can contain document assigned to tag specs, process data, or calculation sheets. Also, instruments can contain control system tags. You create documents and control system tags in the appropriate modules of SmartPlant Instrumentation. To assign tag numbers to hook-ups, use a shortcut menu command available at the level of hook-ups or hook-up types.
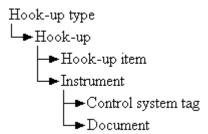
Level 4

Control System Tag

Control system tags (shown as) appear under instruments at the lowest level of the **Hook-Up Explorer** hierarchy. It is possible to assign control system tags to instruments when performing I/O assignment.

Documents

Documents (shown as) appear under instruments at the lowest level of the **Hook-Up Explorer** hierarchy. You define documents when creating specs, process data sheets, or calculation sheets. You can modify or delete document data in the module pertaining to the document displayed. For example, if you delete an instrument specification from the Specifications module, the software automatically removes the document from the **Hook-Up Explorer**. Use the shortcut menu command to open documents. The software opens the document in the module in which the document was created.

The Hook-Up Explorer Hierarchy

```
Hook-up type
  └─►Hook-up
        ├─►Hook-up item
        └─►Instrument
              ├─►Control system tag
              └─►Document
```

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Hook-Up Explorer*, page 45

Loop Explorer

The **Loop Explorer** enables you to navigate to a loop number, tag number, or block in a graphical way resembling the Windows Explorer.   You can expand or collapse the levels to view the existing loop numbers, tag numbers, and blocks. The **Loop Explorer** shows you at a glance the graphical representation of the relationships that exist among the loops, instruments, and blocks. The **Loop Explorer** is only available from the Loop Drawings module.

The **Loop Explorer** employs an expandable/collapsible hierarchy that allows you to navigate to relevant entities and select them for use. To perform an action, right-click a folder or an entity and then click a command. Note that the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example a view-only entity, a claimed entity, an entity that belongs to AsBuilt, and so forth. For the full list of the entity indicators, see *Entity Indicators* on page 23. For a detailed explanation of the tree view and **Entities** panes, see *Domain Explorer*, page 42.

Display Rules of Entities in the Tree View

The software arranges the entities based on the relationship among them. In the **Loop Explorer** tree view, the display rules follow a rigid structure. For details, see *The Loop Explorer Hierarchy,* page 49.

Level 1

Loops

This is the highest level in the **Loop Explorer** hierarchy. This hierarchy level contains all the loop numbers existing at the current highest plant hierarchy level. Loops are shown as .

Loops contain tag numbers, which in turn contain blocks. For each loop, on the shortcut menu, you can click **New** to add instruments. Also, you can assign documents to loops. These documents are associated with drawings that you generate for the loop. Loops can display annotations which refer to the generation method you assigned for that loop, for example, C indicates a CAD method, M indicates a manual method (intended for generation without using SmartPlant Instrumentation options).

Level 2

Instruments

This is a middle level in the **Loop Explorer** hierarchy. This hierarchy level contains all the instrument tag numbers that are associated with the existing loops. Instruments are shown as .

Under instrument tags, you can add blocks using the following block assignment methods:

Block-tag assignment - allows you to assign a block to a tag number manually, using the shortcut menu command **Associate Blocks with Tag Numbers**.

Block-instrument type assignment - allows you to assign a block to the instrument type, and, thus, assign this block to all the tag numbers that belong to this instrument type. To perform this operation, on the **Actions** menu of the **Loop Drawings Module** window, click **Block-Instrument Type Assignment**.

Documents

This is a middle level in the **Loop Explorer** hierarchy. This hierarchy level contains all the documents that are associated with the loop drawings you generated. Documents are shown as .

The software assigns a document number to a loop on loop creation. However, in the **Loop Explorer**, the software only displays a document number after generating a drawing for a loop. You can view and modify document numbers using options of the **Loop Drawing List** dialog box, which you can open using a shortcut menu command.
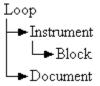
Level 3

Blocks

Blocks are the lowest level in the **Loop Explorer** hierarchy. The displayed blocks are those blocks that you associated with the tag numbers according to the method of association. The block icons that the software displays depend on the block assignment method:

(red icon) - Indicates blocks associated with tag numbers manually (at the instrument level, on the shortcut menu, click **Actions**>**Associate Blocks with Tag Numbers**).

(green icon) - Indicates blocks associated with a specific instrument type to which the tag numbers belong (on the **Actions** menu of the **Loop Drawings Module** window, click **Block-Instrument Type Assignment**).

The Loop Explorer Hierarchy

```
Loop
 ├──► Instrument
 │        └──► Block
 └──► Document
```

Related Topic
- *Domain Explorer Common Tasks*, page 10

Reference Explorer

The **Reference Explorer** allows you to create and manage all the available wiring reference entities that are created by SmartPlant Instrumentation users and that are provided with the software. Note that wiring reference entities are typical configurations that facilitate rapid creation of various wiring entities in your domain.

The **Reference Explorer** displays a graphical representation of the relationships that exist among the predefined wiring equipment, panels, terminal strips, and terminals as well as cables, cable sets, and wires.

You can create predefined configurations of various wiring equipment, panels, terminal strips, as well as cables, cable sets, and wires. You can use predefined configurations as reference entities and copy them to the **Domain Explorer** or **Wiring Explorer**. For more information about using reference wiring entities, see *Copy a Reference Entity to the Domain Explorer*, page 25.

You can open the **Reference Explorer** from anywhere in SmartPlant Instrumentation. Press F8 or on the **Tools** menu, click **Reference Explorer**.

The main features of the **Reference Explorer** are:

Toolbar

The toolbar contains the following options:

Search - Click [icon] to open the **Search** dialog box where you can find entities that you want to work with.

Refresh - Click [icon] to update the **Reference Explorer** display. This feature is useful where multiple users are working on the same set of data.

Filter - Click [icon] to filter the **Reference Explorer** display.

Views - Click [icon] to toggle through each view of the entities in the list view pane, or click the arrow and select the desired view.

Find - Click [icon] to open the **Find Entity** dialog box where you can find an entity in a particular folder that contains numerous entities.

Print - Click [icon] to print out the browser view that you selected for the current hierarchy node. Note that this button becomes available only after selecting the **Show Browser** command.

Tree View Pane

The tree view pane of the **Reference Explorer** shows reference entities organized by folders. SmartPlant Instrumentation defines standard folders in the database. You cannot move or delete these folders, nor can you add new folders. Each folder contains a particular entity type, and the options available on the menus depend on the currently selected entity type.

Expand or collapse the hierarchy by clicking the **+** and **-** icons respectively or by double-clicking a folder.

After double-clicking **Reference Explorer**, which is the top level in the tree view, you can see the **Panels**, **Cables**, and **Wiring Equipment** folders. These folders contain other folders which in turn hold reference entities.

You can navigate to a reference entity by expanding a folder and then double-clicking an entity to display the existing sub-entities. If you cannot expand a folder, that folder is empty.

To perform an action, right-click a folder or an entity and then click a command. Also, to move an entity to another parent entity, drag that entity to another folder or a parent entity as you require.

Entity status indicators - the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example **access denied**, **view only**, **an entity that belongs to AsBuilt**, and so forth. For the full list of the entity indicators, see *Entity Indicators*, page 23.

Entities Pane

The **Entities** pane (list view) pane of the **Reference Explorer** displays the individual entities that comprise the hierarchy of the entity or the folder that you selected in the tree view. You can choose one of the following three ways to display the entities in this pane:

- **List** - displays the individual entities that comprise the hierarchy of the entity or the folder that you selected in the tree view.

- **My List** - allows you to create a special view of the **Entities** pane where you can keep entities that belong to various folders in in the tree view. The software retains all the entities in the **My List** view until you remove them from that list. The list count displays the number of entities displayed in the **List** pane.

- **Show Browser** - allows you to display a browser view in the **Entities** pane for an entity type or a folder that you select in the **Reference Explorer** tree view. This way, instead of displaying sub-entities, you can display entity properties of the item you selected in the tree view pane. The software allows you to print out the current browser view, however, you cannot edit the entity properties.

- **List count** - displays the number of individual entities that comprise the hierarchy of the entity or the folder that you selected in the tree view.

Notes

- You can create several instances of the **Reference Explorer** by pressing F8.

- After exiting SmartPlant Instrumentation, and starting a new session, the software retains the size and position of all the windows that were open in the previous session.

Related Topics
- *Copy a Reference Entity to the Domain Explorer*, page 25
- *Domain Explorer Common Tasks*, page 10
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Wiring Explorer

The **Wiring Explorer** enables you to access and perform various actions with all the wiring entities in your plant.

The **Wiring Explorer** employs an expandable/collapsible hierarchy that allows you to navigate to relevant wiring entities and select them for use. To perform an action, right-click a folder or an entity and then click a command. Note that the software uses various icons beside a folder or entity to indicate the status of a folder or an entity, for example **access denied**, **view only**, **an entity that belongs to AsBuilt**, and so forth. For the full list of the entity indicators, *Entity Indicators*, page 23. For a detailed explanation of the tree view and **Entities** panes, see *Domain Explorer*, page 42.

Wiring Entities in the Tree View

The software arranges wiring entities in the tree view pane based on the relationship among them. There are several folders that contain wiring entities.

Panels

In the **Wiring Explorer**, panels are arranged according to their category just like in the **Domain Explorer**. Panels, in turn, contain their child entities, for example terminal strips, racks, wiring equipment, and so forth. There is a lot of flexibility in creating a panel hierarchy. There is no rigid structure like "panel – strip – terminal" that limits your wiring design. You can create various wiring structures, as you require. See *Panels by Category Hierarchy Example*, page 16 to examine a few possible structures.

Cables

This folder holds all the existing cables. You can create various child entities under cables. For an example, see *Cable Hierarchy Example*, page 17.

Cross Cables

This folder holds all the cross wiring cables and wires.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Domain Explorer*, page 42
- *Working with the SmartPlant Instrumentation Explorer: An Overview*, page 7

Advanced Filter Definition (Cables) Dialog Box

Allows you to set additional filter definitions for the **Cables** and **Cross Cables** folder. You can filter for cables according to their connections and for cables that are connected to a specific Foundation or Profibus segment.

Connection criteria

Allows you to filter the cables according to their connections.

Look for connections - Select to include the connection criteria in the filter condition. This activates the check boxes under **Connection** and under **Connected to**. Clear this check box not to include any of the connection criteria in the filter condition. Clearing this check box disables the **Connection** and the **Connected to** check boxes.

Connection - Allows you to define a filter according to the cable connection:

- **No connections on either end** - Includes the cables that are not connected to anything on both ends.

- **At least one wire connected on one end only** - Includes the cables that contain at least one wire that is only connected on one of its ends.

- **At least one wire connected to both ends** - Includes the cables that contain at least one wire that is connected on its both ends.

Connected to - Allows you to define a filter according to the type of panel that is connected to the cable. This selection sets connection criteria for cables that have at least one wire connected to one or both ends.

- **Junction boxes** - Include all the cables that are connected to junction boxes.

- **Marshaling racks** - Include all the cables that are connected to marshaling racks.

- **Cabinets** - Include all the cables that are connected to cabinets.

- **Device panels** - Include all the cables that are connected to device panel.

- **DCS panels** - Include all the cables that are connected to DCS panel.

- **PLC panels** - Include all the cables that are connected to DCS panel.

Cable associations

Allows you to filter the cables according to their associations.

Fieldbus segment - Allows you to filter for cables associated with a specific Foundation Fieldbus or Profibus segment.

Display telecom cables only - Allows you to filter for cables connected to telecom entities.

Advanced Filter Definition (Loops) Dialog Box

Allows you to set additional filter definitions for loop numbers that appear in the **Loops** folder of the current explorer window. You can select one or more blocks and only display those loops that contain the selected blocks as associated sub-entities.

Filter loops according to blocks

Blocks associated with tags — Displays blocks that are associated with loop tags. After you select one or more blocks, in the **Loops** folder of the current explorer window, the software only displays loops whose blocks are associated with the tags using the block-tag assignment method.

Blocks associated with instrument types — Displays blocks that are associated with the instrument type of the loop tags. After you select these blocks, in the **Loops** folder of the current explorer window, the software only displays loops whose blocks are associated with the tags using the block-instrument type assignment method.

🖉 Notes

- If you need, you can select blocks from both data windows, that is, any combination of blocks associated with instrument types and blocks associated with tag numbers.

- The **Domain Explorer** does not include blocks. Blocks only appear in the **Loop Explorer**, which you can open in the Loop Drawings module. In the **Loop Explorer**, blocks associated with tags using the block-tag assignment method are marked with the icon 🟥 (in red). Blocks associated with tags using the block-instrument type assignment method are marked with the icon 🟩 (in green).

Display level for blocks

Highest plant hierarchy level — Displays blocks on the highest level of the plant hierarchy defined by the Domain Administrator. The default level is Plant.

Lowest plant hierarchy level — Displays blocks on the lowest level of the plant hierarchy defined by the Domain Administrator. The default level is Unit.

Related Topics
- *Domain Explorer Common Tasks*, page 10
- *Domain Explorer*, page 42
- *Filter Definition Dialog Box*, page 53

Filter Definition Dialog Box

Allows you to filter the display of entities in the tree view of an active **Explorer** window. Note that filter settings take effect only for the user who defined the filter and only for the current **Explorer**.

You can select a hierarchy level and filter the display of the child entities at the selected level.

Note that the software retains the filter settings for a particular folder until you cancel the filter for that folder.

Filter according to entity name

Allows you to filter entities according to an entity name in the folder or at the hierarchy level that you selected in the **Explorer** tree view.

Entity name - Allows you to type an entity name by which to filter entities in the **Explorer** tree view. You can use the following wildcard characters to specify partial strings: asterisk (*) or percent (%) for multiple characters and underscore (_) for single characters. The value that you enter in this box overrides all other filter criteria in this dialog box.

Filter according to entity type

Allows you to specify a particular entity type by which to activate the filter.

Filter name - Allows you to type a name of the filter you are defining. Note that this is a required field.

Entity type - Allows you to select an entity type appropriate for the folder that you selected. You must select an entity type to be able to perform the filter operation.

- **Selected node definition** - Filters the child entities that belong to a folder or the entities at any hierarchy level that you selected in the **Explorer** tree view.

- **Global definition** - Allows you to define a filter for the entire tree view of the active **Explorer**. The software applies this definition to the entity type you selected. Note that if you defined a filter definition for a specific folder, the filter for the folder override the settings for the global filter definition.

Filter definition - Allows you to define the criteria that you use to filter the entities displayed:

- **Property** - Allows you to select a property to use for filtering the entities.

- **Operator** - Allows you to select the required comparison operator to determine how the header selected under **Property** will relate to the expression you select for **Value**.

- **Value** - Allows you to select or type a required value for the item you selected under **Property**. The available values depend on the specific property that you select.

- **Logic** - You use this option when you specify more than one filter condition. The option allows you to select the required logical operator (And or Or) to determine how the next filter expression will relate to the current expression. When you have a mixture of logical operators for several conditions, the software performs the expressions on the conditions in order, for example:
  (A and B) or C
  (A or B) and C

🖉 **Note**

- To reset the filter, delete the filter definition.

Command Buttons

Add- Adds a new line for specifying a filtering condition.

Delete - Deletes the selected filtering condition.

Verify - Verifies the correctness of the entire filtering expression.

Reset - Allows you to reset the filter definition.

Advanced - Allows you to define a special filter for cables or loops.

Find Entity Dialog Box

Allows you to find an entity in the tree view of the current **Explorer** window. This feature is especially useful when you want to find an entity in a particular folder that contains numerous entities. You can type an entity name and click **Find** or you can let the software look for the entity as you type the entity name.

Entity - Allows you to type a name of an entity that you want to find.

As typed - Makes the software look for an entity as you type its name.

Search delay - Sets the search delay that determines how long the software waits after the last time you press a key on your keyboard.

Match case - Instructs the software to find entities whose names match the capitalization of the entity name you entered.

Find whole name only - Instructs the software to search for occurrences that are whole names and not part of a larger entity name.

Search Dialog Box

Allows you to find entities that you want to work with. You can search for multiple entities in the entire domain, the current highest plant hierarchy level, or the current lowest plant hierarchy level. In SmartPlant Instrumentation, the term "current" refers to the plant hierarchy level that you selected in the **Open** dialog box when you started SmartPlant Instrumentation.

Entity type - Allows you to select an entity type to which the entity belongs. This is a required field.

Entity name - Allows you to type a name of an entity. You can use an wildcard characters * or % to find entities whose names contain part of the text that you type. If you do not know the entity name, leave the asterisk * in the this field.

Search Now - Starts the search.

New Search - Starts a new search and clears the previous results in the **Results** data window.

Search in - Determines the plant hierarchy level on which the software searches for entities:

- **Entire domain** - The current domain that you selected in the **Open** dialog box when you started SmartPlant Instrumentation.

- **Current highest plant hierarchy level** - The highest plant hierarchy item that you selected in the **Open** dialog box, for example, one of your *<plants>*.

- **Current lowest plant hierarchy level** - The lowest plant hierarchy item that you selected in the **Open** dialog box, for example, one of your *<units>*.

Entity properties - Allows you to specify entity properties so that the software looks for entities with the specified properties only.

- **Property** - Allows you to select an existing property from the list.

- **Operator** - Allows you to select a comparison operator from the list to determine how the selected property will relate to the expression you type in the **Value** field.

- **Value** - Allows you to type an appropriate value to determine how the selected property will be specified.

- **Logic** - Allows you to select a logic operator (AND or OR) to determine how the next expression will relate to the current one. Leave this field empty if this is the last expression you are defining.

Add - Appends a new line in the **Entity properties** data window.

Delete - Deletes a selected line in the **Entity properties** data window.

Verify - Verifies the definition you made in the **Entity properties** data window.

Results - Lists the entities that software found.

Select all - Selects all the entities listed in the **Results** data window.

Add to My List - Adds the the selected entities to the **My List** pane in an **Explorer** window.

Go to Entity - In the **Explorer** tree view, selects the entity you highlighted in the Results data window.

Show Browser Dialog Box

Allows you to show a Browser view for an entity type or a folder that you select in the tree view of an **Explorer** window.

Selected folder / Selected entity - Displays the name of the folder or the entity you selected in the tree view.

Browser view - Allows you to select a Browser view that exists in the Browser module.

⬥ Important

- If there are no Browser views on this list or if the browser view you need is not on the list, close the **Show Browser** dialog box and switch to the Browser module. In the Browser Manager, open the style settings of the browser view that you need. Select the **Enable in explorer windows** check box and then click **Save**. Open the **Show Browser** dialog box again and select the browser view that you need.

Related Topics

Index