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Experion PKS Quick Builder User's Guide

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About this guide

This guide describes how to use Quick Builder to configure system items, such as controllers (other than Process Controllers), points, Flex Stations, and printers.

Revision history

Revision	Date	Description
A	February 2015	Initial release of document.

ABOUT THIS GUIDE

Getting started with Quick Builder

In Configuration Studio, you use Quick Builder to create and modify a configuration database, which defines how system items, such as controllers, points and Flex Stations are set up. (For details about configuring Console Stations, see the *Server and Client Configuration Guide*.)

When you are satisfied with your configuration, you *download* it—or selected parts of it—to the server database.

If necessary, you can *upload* (also called *backbuild*) parts of the server database into Quick Builder, make the necessary changes, and then download the changes to your server database.

You can also use a standalone Quick Builder database (a database connected to an SQL server rather than an Experion server) to configure your system. This creates a Quick Builder *project*: a standalone configuration database that can be downloaded to the Experion server at a later time.

Related topics

"Starting Quick Builder" on page 12

"Layout of the main window" on page 14

"Basic Quick Builder tasks" on page 20

"Working with projects" on page 31

Starting Quick Builder

When starting Quick Builder, you can connect to either a Quick Builder database on an Experion Server, or to a standalone database on an SQL (non-Experion) server. When working in the *standalone* database, you can create Quick Builder *projects*, that can later be downloaded to the Quick Builder database on an Experion server.

Prerequisites

To create a Quick Builder project you must have a minimum of SQL Server Express installed.

To start Quick Builder

- 1 Choose **Start > All Programs > Honeywell Experion PKS > Configuration Studio**. Configuration Studio appears, displaying the **Connect** dialog box.
- 2 Depending on the environment you want to work in, use one of the following connection options:

Option	Description
To work in the Quick Builder database on your local Experion Server.	On the Local Targets tab, select the system or server you would like to connect to.
To work in the Quick Builder database on a remote Experion Server.	 On the Other Targets tab, select either Experion PKS System or Experion PKS Server from the Target type list.
	2. Select the system or server you would like to connect to from the Target name list.
To work in a standalone Quick Builder database on an SQL Server.	 On the Other Targets tab, select Quick Builder Database from the Target type list.
	2. Select the SQL server you would like to connect to from the Target name list.
	3. To open an existing project:
	a. Select the Open Existing Project option
	 Click Search Location to list the databases existing on that server.
	 Select the database you would like to connect to from the list provided.
	4. To create a new project:
	a. Select the Create Project option
	b. Type a name for the new project in the Project Name field.

3 Click Connect.

If you chose to connect to a Quick Builder database on an Experion server, the **Login to Server** dialog box appears. Enter your credentials and click **OK**, then skip to **step 6**.

If you chose to connect to, or create, a Quick Builder project on an SQL server, the **Enable Components** dialog box appears.

- In the System/Licence Details tab, enter your system details in the System Number and Authorization Code fields.
- In the **Enable Components** tab, the check boxes indicate the components that are enabled by default for your system licence, and the number of each item that has been created for each component. Use the check boxes to enable and disable components as required, then click **OK**.
- 6 In the **SCADA Control** list, click any of the available options, such as **Build Channels**. Quick Builder appears.

Attention

Your Quick Builder access privileges are the same as for Configuration Studio.

Layout of the main window

The following figure shows the layout of the Quick Builder window.

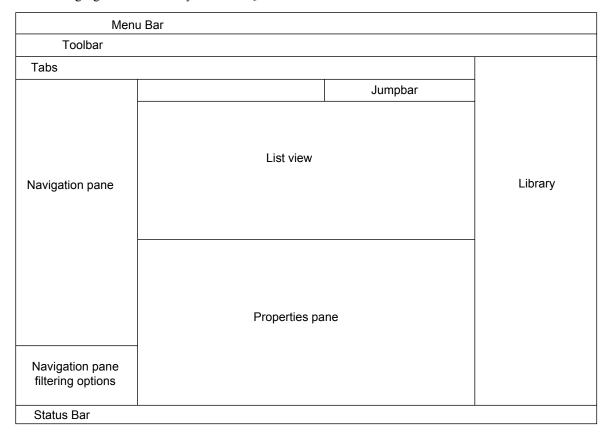


Figure 1: Quick Builder window layout

Related topics

- "Navigation pane" on page 14
- "Navigation pane filters" on page 15
- "Managing deleted items" on page 15
- "List View" on page 16
- "Customizing the List View" on page 16
- "Properties pane" on page 17
- "Library pane" on page 17
- "Toolbar" on page 17
- "The Jumpbar" on page 18
- "Status Bar" on page 19
- "Shortcut menus" on page 19

Navigation pane

A navigation pane on the left-hand side of the Quick Builder window contains items that can be created and configured in Quick Builder. The items can be filtered into three different views – Asset view, Controller Network view, and an All Items view.

The following table lists the views that you can choose in the navigation pane, and the contents of those views.

Category	Items and descriptions	
All items	Displays a tree containing all item types supported by Quick Builder:	
	Channels (interfaces that enable servers to communicate with controllers)	
	Controllers (field devices such as PLCs, loop controllers, and so on)	
	• Points	
	• Stations (the Operator interfaces)	
	Quick Builder configures only Flex Stations, the standard type of Station. (For details about configuring Console Stations, see the topic titled "Configuring a Console Station" in the Server and Client Configuration Guide.)	
	• Printers	
	• Meters	
	• Servers	
	• Equipment	
	• Recycle bin, which is a holding area for items that have been deleted from their parent category but have not yet been <i>permanently</i> deleted and therefore can be recovered if needed.	
	Unassigned items	
SCADA Controllers	Lists channels and controllers defined for this server. Selecting a controller displays a list of the points assigned to that controller in the List view.	
Assets Lists assets that have been downloaded from the server. Selecting an asset di the items associated with that asset in the List view.		
	Tip Adding, editing, duplicating, and renaming operations are not permitted in the Asset view.	
Electronic Flow Meters	Lists Electronic Flow Meters that have been defined for this server. Selecting a meter displays a list of the items associated with that meter in the List view.	

Navigation pane filters

At the bottom of the navigation pane are four options that enable you to filter your view of the items in your Quick Builder database to only those that meet the filter criteria.

To filter items in the navigation pane

- 1. From the Quick Builder main window, click on one of the following options:
 - All items, to display all items within your Quick Builder database
 - Assets, to view the list of assets downloaded from the server
 - SCADA Controllers, to view the list of channels and controllers assigned to this server
 - Electronic Flow Meters, to view the list of electronic flow meters assigned to this server

Managing deleted items

The **Recycle Bin** is a holding area within the **Navigation pane**, where items you have deleted from other groups are 'marked for deletion', rather than being actually deleted.

To undelete an item and return it to its original group, right-click the item and choose **Undelete** from the shortcut menu.

Note the following points:

- Deleted items will be permanently deleted if you select the Automatically Download Deletions option
 when you download a project (and the download is successful).
- You should not permanently delete items that you have previously downloaded to the server—if you attempt to do this a warning message appears. (If you choose to delete items that have been downloaded, the project and the server database will lose synchronization—although the item will no longer exist in the project, it will still be defined in the server database.)
- Quick Builder allocates an item number to each item. Items in the **Recycle Bin** retain their numbers until you permanently delete them. This has no significance unless you reach an item number limit for your license. For example, if your license allows 40 Stations, and you have already created 40 Stations (including deleted ones), you cannot add any more until you delete/download those that have been deleted and are still being held in the **Recycle Bin**.

List View

When you select a group of items in the Navigation pane, such as *Printers*, *Stations*, or *Points*, a list of the items that have been created within that group is displayed in List View. If no items appear in the List View, it means that none have yet been created.

You can use List View to edit, delete, and sort items.

Item type	Description	
Points	Standard points.	
Servers	Servers, which use the databases created by Quick Builder.	
Controllers	Controllers, the field devices such as PLCs, loop controllers, and so on.	
Channels	Channels, the interfaces that enable servers to communicate with controllers.	
Stations	Stations, the operator interfaces	
	 Attention Quick Builder configures only Flex Stations, the standard type of Station. (For details about configuring Console Stations, see the topic titled "Configuring a Console Station" in the Server and Client Configuration Guide.) 	
Printers	Printers.	
Recycle Bin	A holding area for deleted items, which works in the same manner as the Windows' Recycle Bin.	
Trends/Groups	Station displays to which you can add points.	
Networks	The interface that enables servers and point servers to communicate with channels and controllers.	

Customizing the List View

By default, the **List View** contains columns displaying an item's major properties, such as its name and description. You can, however, customize the **List View** to show other properties by adding, removing, or reordering columns. You can also sort columns to be either ascending or descending, and the view will reorder accordingly.

To customize the List View

- Choose View > Columns.
 The Columns dialog box appears.
- 2 Select the names of the columns you wish to display from the **Details** list.



Tip

You can use the options in the Select fields from list to filter the columns shown in the list.

- 3 Use the **Move Up** and **Move Down** buttons to change the order of how the columns will appear.
- 4 Click **OK** to close the dialog and refresh the List View.

Properties pane

You use the **Property Pane** to view and edit the properties of the item(s) selected in the List View.

Because an item has so many properties, they are grouped by tab. For example, if you wanted to see the display-related properties of a selected point, you would click the **Display** tab.

The **Property Pane** is *modeless*, which means that the selected item(s) change as soon as you select another item, or perform an action such as downloading.

The **Property Pane** also changes as follows when you select several items:

- Any property whose value is not identical for all selected items is grayed out. For example, if you select two status points, **Point ID** will be grayed out because every point has a unique ID.
- If the items are of different types, such accumulator and status points, the **Property Pane** only displays tabs and properties that are shared by all selected items.

If you edit a property when several items are selected, you make that same change to every selected item. For example, if you select a number of accumulator and status points, you can change the **PV Source Address** or the **PV Scan Period** because both properties are common to both point types.

Library pane

The Library pane on the right hand side of the Quick Builder window contains templates that can be used to create instances of items in Quick Builder. The templates are organized into categories to identify their types:

- Channels
- Controllers
- Points
- Servers
- Printers
- Stations
- · and so on

When creating and importing templates, you can create custom categories that will then appear in the Library pane. These might include industry areas, such as Oil and Gas, or Coal Seam Gas.

Toolbar

The toolbar provides speedy access to commonly used commands.

Button	Description
Q	Search . Searches the Quick Builder database for items such as points.
₹.	Change configuration target . Allows you to change to another server, system, or Quick Builder database.

Button	Description
	Save. Saves the project.
	Add. Adds one or more items to the project.
×	Delete. Moves the selected items to the Recycle Bin.
+	Undo. Undoes the previous action.
	Copy. Copies the selected items to the clipboard.
Ğ	Paste. Pastes the clipboard's contents into the display.
Y	Custom Filter. Opens the Custom Filter dialog box, which you use to filter out (hide) items that are of no immediate interest.
æ	Import. Opens the Select file to Import dialog box, which you use to locate and select the file you want to import.
2	Export . Opens the Export dialog box, which you use to export files from the current Quick Builder database.
<u>±</u>	Download . Downloads all or some of the project to the server database.
<u></u>	Upload. Uploads configuration data from the server into a project.

The Jumpbar

You use the **Jumpbar** to quickly select an item in the **List View**. (Note that you will not be able to locate and select an item if it has been filtered out.)

To find items:

- 1. Click anywhere in the **Jumpbar**.
- 2. Type the name of the item you are searching for and press **Enter**. Quick Builder finds the first matching item.

You can use one or more wildcards (*) to find items whose full names you do not know, for example *ana*, which will return items containing the text *ana* in its name.

To select an item:

- 1. Click the **Jumpbar**.
- 2. Type the item's name and press **Enter**.

To move between items, select the item from the **Jumpbar list** and press **Enter**. The **Jumpbar** remembers the last 20 items you specified.

Status Bar

The **Status Bar** displays a short description of the selected property (or its valid values if the current value is incorrect). The right hand side of the Status bar also displays the name of the connected server, the name of the current user, and the current security level.

Shortcut menus

If you right-click an item type icon (in List View), a shortcut menu appears that provides speedy access to commonly used commands.

In the List View, you can highlight multiple items before opening the shortcut menu.

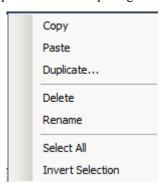


Figure 2: List View Shortcut menu

Basic Quick Builder tasks

This section outlines the basic tasks you can perform with Quick Builder.

Related topics

- "Specifying the components to configure" on page 20
- "Adding items" on page 20
- "Deleting and restoring deleted items" on page 21
- "Modifying items" on page 21
- "Filtering items" on page 22
- "Searching for items" on page 23
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- "Uploading an item's definition from the server" on page 29
- "Managing and using add-ins" on page 30

Specifying the components to configure

When you first start a new Quick Builder project, or when you add new component types (such as devices, points, and servers) to a project, you first need to specify them in the component manager so that you can configure them.

To specify the components to configure

- 1 From the Quick Builder menu, choose **Tools** > **Component Manager**.
 - The Component Manager dialog appears.
 - The dialog contains a list of components, such as devices, points, and servers. It also contains a list of non-Experion components.
- 2 Scroll through list of components and select the check box next to the items in your project you want to enable or disable.
- 3 Click OK.
 - A summary appears of the components being added (or removed).
- 4 Click OK.
 - Quick Builder adds the components to the project.

Adding items

To create new items

- 1 Use one of the following options to create a new item:
 - Click

 .
 - From the menu bar, click **Edit > Add item**.

- Right-click on an item in the **All items** view and click **Add item**.
- From the relevant section within the Library, drag and drop the template for the required item into the List View.

The **Add Items** dialog box appears.

- 2 Type the number if items you want to create in the **Number of items** field. If you choose to create more than one item, extra fields appear where you can define the suffix applied to each item name. The variable used can be numbers of letters.
- 3 From the **Item Family** list, select the applicable family. If you used a template or a right-click menu option to invoke this dialog, this field will default to the template type or the item you had selected at the time.
- 4 From the **Item Type** list, select the item type.
- 5 In the **Name** text box, type in the name for this item, or you can accept the default provided. A summary of the details you have provided is displayed.
- 6 Click **OK** to add the item(s) to the list. The new items appear in the **List View**.
- 7 Use the properties tabs to configure the item.

Deleting and restoring deleted items

Deleting an item moves it to the **Recycle Bin**, which means that you can restore it, or *undelete* it, if needed.

To delete one or more items

- 1 Select the item(s) you want to delete in either the Navigation pane or the List view.
- 2 Click × (or press Delete).

You can also delete items by:

- Clicking **File** > **Delete** on the menu bar
- Right-clicking on an item and then clicking **Delete**.

The deleted items are moved to the **Recycle Bin**.

3 To permanently delete items from the system, select the item in the **Recycle Bin** and repeat any of the previously listed delete options.

To restore one or more items

- 1 From the **Recycle Bin**, select the item(s) you want to restore.
- 2 Click File > Restore from the menu bar, or right-click on an item and then click Restore The restored items return to their original locations.

Related topics

"Managing meters and meter templates" on page 165

Modifying items

There are two ways to modify items in Quick Builder:

- Modify one or more properties of one item
- · Modify common properties of multiple items

To modify properties of one item

1 From the **Navigation Pane** or the **List View**, select the item you would like to modify. The properties pages for the selected item are displayed.

- 2 Modify the properties as required.
- 3 Download the modified item to the server.

To modify common properties of multiple items

1 From the **List View**, select the items you want to modify.



Tip

To select multiple items, hold down the Shift key and click the mouse button to select sequential items, or the Control key and the mouse button to select non-sequential items.

The Properties pages are selected for the selected items. The common properties, that can be changed for all items, are shown with editable fields. Non-common properties are not editable.

- 2 Modify the properties as required.
- 3 Download the modified items to the server.

Filtering items

It is often easier to manage items if you filter the List View to contain only the items you want to work with.

You can filter items according to item sub-type, such as analog points, or rotary Stations. For example, if the **List View** shows all points but you only want to see analog points, select *Analog Point* from the Filter Selector.

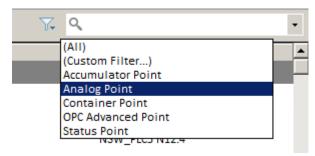


Figure 3: Filter Selector

To filter items in the List View

- 1 From the **Navigation Pane**, select an item, such as an asset, an equipment, or a channel, for which you would like to view items.
- 2 Click the Filter button to display the filter options. Options are:
 - All Items
 - Custom filter opens the **Custom Filter** dialog where you can build custom filters based on a combination of conditions including property names, conditions, and values.
 - A list of options relevant to the item you have selected in the Navigation Pane. For example, if you selected Points, the configured point types would be listed (Analog Point, Accumulator Point, container Point, and so on).
- 3 Select the filter you want to use.

The text in the **List View** header changes to show the filter that has been applied, for example, **Points** (**Status**), and the **List View** contents update to show only items that match the filter criteria.

To create a custom filter

- 1 From the **Navigation Pane**, select an item, such as an asset, an equipment, or a channel, for which you would like to view items.
- 2 Click the Filter button and click Custom Filter. The Custom Filter dialog appears.

- 3 Select the item types that should be part of this filter.
- 4 Use the controls provided to build your filter conditions. The available variables are:
 - Property name, for example, Scripts, Item Name, Tag.
 - Condition, for example, Begins with, Contains, Equals
 - Value

The list to the left of each condition statement enables you to specify AND or OR when creating multiple conditions



Tip

Click Save Filter to save a custom filter for future use, or click Load Filter to load a previously saved custom filter.

Click **OK** to run the filter.

The text in the **List View** header changes to show the filter that has been applied, for example, **Points** (**Status**), and the **List View** contents update to show only items that match the filter criteria.

Searching for items

You can use the Search function to search for a *keyword* included in the name of those items in the List view.

To search for an item using the keyword search

 In Quick Builder type a keyword, or some characters, you would like to search for within the items listed in the List View.



Tip

The Search function also supports wild card searching, such as ? and *. For example, a search string of **SVR? CH01** will return items with the fourth character in the item's name being any alphanumeric, while a search string of **SVR2CH*** will return all items with names starting with *SVR2CH*.

Selecting items

You have the option of selecting items in List View to edit or delete properties. Selected items are shown in reverse color.



Attention

If you select more than one item, the Property Pane only displays tabs and properties that are shared by every selected item. If the selected items have different values for a particular property, that property is grayed-out without any value. If you edit a shared property, you make that change to all selected items.

To select	Do this
One item	Click it (or the selection box to its left).
All items of a particular type (points, controllers and so on)	 Select one item of the required type. Choose Edit > Select All.
A contiguous group of items	 Click the first item you want to select. Press and hold down the SHIFT key, and then click the last item you want to select. Alternatively, you can drag across the items to select them. (You need to start dragging to the right of the Source Address column.) If you want to clear one or more selected items, press and hold down the CTRL key and then click each item you want to clear.

To select	Do this
Several non-contiguous	Click the first item that you want to select.
items	2. Press and hold down the CTRL key, and then click each remaining item you want to select.
	If you want to clear one or more selected items, press and hold down the CTRL key and then click each item you want to clear.
An item by name	Use the Jumpbar.

Renaming items

You can change an item's name—point ID in the case of a point—provided you have not downloaded it to the server.

Note the following considerations:

- The item name of an entity is automatically generated based on the renamed point ID (tag name).
- An item has been downloaded if there is a date in the **Last Downloaded** property on the **Main** tab.
- If you need to rename items that have been downloaded, see the procedure below titled "To rename downloaded item(s)." The procedure involves deleting the items from both the project and server database, and then recreating them with their new names.

To rename one or more items

- 1 Highlight the items you want to rename.
- 2 Right-click and choose **Rename** from the shortcut menu.

The **Rename** dialog box opens.

- 3 If you selected:
 - One item, type the new name in the text box.
 - Several items, use the **Format** options to rename them in a systematic manner.

To rename downloaded item(s)

- 1 Copy the items you want to rename to Excel.
- 2 In Quick Builder, delete the items you want to rename so that they are moved to the Recycle Bin.
- 3 Download the project. (Make sure that the **Automatically Download Deletions** option is selected.)

 If the download is successful, the items are deleted from the server database as well as from the project.
- 4 In Excel:
 - a Clear the entries in the **DateDownloaded** column.
 - **b** Change the **ItemName** entries to the new names.
- 5 Copy the modified Excel contents and paste it into the Quick Builder project.

This re-adds the items, with their new names, to the project.

- 6 Save the project.
- 7 Download the project.

If the download is successful, the items are re-added to the server database.

Renaming example

This example shows how to rename 10 accumulator points, giving them the prefix PLC7ACC, and a numeric suffix between 01 and 10.

1. Type **PLC7ACC** in **Prefix**.

- 2. Click numeric with a and type 2 in character field width.
- 3. Type 1 in Start and 1 in Step.

Duplicating items

An item can be duplicated from either the Navigation Pane or the List View.

To duplicate an item

- 1 From the Navigation Pane or the List View, select the item you want to duplicate.
- 2 Click the Duplicate icon in the toolbar, or choose Edit > Duplicate Items from the menu. The Duplicate dialog box opens.
- 3 Type the number of duplicates in **Number of duplicates**.
- 4 If you are creating only one duplicate, specify the name for the duplicate in the Name field.
- 5 If you choose to create more than one duplicate, provide a name for the duplicates in the **Prefix** field and define a Suffix variable in the fields provided. You can use with numbers or letters for the suffix of each duplicate.

The **Summary** section details the changes about to be made by the Duplicate process.

6 Click **OK** to create the duplicates.

The new items are added to the **Navigation Pane** or **List View**.

Copying and pasting items

You can copy selected items to the clipboard, where their details are stored in tab-delimited text format. You then paste the details back into the project or into another program, such as Microsoft Excel.

You can also paste item details from another program into a project, providing the data has the correct format.

To copy one or more items to the clipboard

- 1 Select the items in either the Navigation Pane or the List View.
- 2 Use one of these options to copy the items:
 - Click in the toolbar
 - On the Edit menu, click Copy
 - Press Ctrl+C
 - Right-click the selected items, and then click Copy

The selected items are copied to the clipboard.

To paste one or more items from the clipboard

- Use one of these options to paste the items into another Quick Builder project, or into an Excel spreadsheet:
 - Click in the toolbar
 - On the **Edit** menu, click **Paste**
 - · Press Ctrl+V
 - · Right-click the target position for the copied items, and then click Paste

If a pasted item already exists in the project, Quick Builder updates that item.

Pasting items from a spreadsheet

You can paste items from a Microsoft Excel spreadsheet, providing the data has the correct format.



Tip

When you paste an equipment item from Excel, it and any other equipment based on the same equipment template will have the template reapplied using the most recent values stored in the equipment's custom parameters.

To determine the correct format, copy a single item from the project and paste it into a spreadsheet—the following figure shows the result for a typical point.

The first row is a heading row, which contains the property names (ItemName, Class and so on). Each of the following rows contains the definition for a single item.

If (as in the case of the following figure), you paste a point that has user-defined parameters, the spreadsheet will contain a second part. This also has a heading row, and each of the following rows contains the definition for a single parameter for one of the points listed in the first part of the spreadsheet.

	Α	В	С	D	E	F	G
1	ltemName	Class	DownloadedNa	Tag	DateModifi	DateDownl	TagDele
2	POIANA1	AnalogPoint		FALSE	#######################################		FALSE
3							
4	ParentItemName	Class	ParamName	LinkType	HistoryFas	HistorySta	HistoryE
5	POIANA1	FlexibleParameters	UserDefined1	Variable	FALSE	FALSE	FALSE

Figure 4: Point with user-defined parameters

These rules apply when pasting items from another application:

- The heading row(s) are required.
- If the spreadsheet contains two parts, there must be a blank row between the two parts.
- You must define (at least) the ItemName and Class properties for each item. For user-defined parameters, you must define (at least) the ParentItemName and Class properties. (You can define any remaining properties after you have pasted the items into Quick Builder.)

To paste items from a spreadsheet

- Use any one of these options to paste the items into a Quick Builder project:
 - Click in the toolbar
 - Select Edit > Paste from the menu bar
 - While holding down the **Ctrl** key, press the **V** key
 - Right-click on the target position for the copied items and click Copy

The items are pasted from the clipboard into the project.

Dragging and dropping items

You can select one or more items from the list view and drag them to another location in the tree view.

Before using the drag and drop feature, consider the following:

- If you drag and drop from one location to another, all items and assigned points below the selected item will be moved and all associated *location* and *full name* properties updated.
- All references and scope of responsibility (SOR) assignments will be updated to reflect the changes.
- If you drag and drop points within an Alarm Group, selected points will be moved (not copied).
- If you drag and drop points from the System Components tree to a location in an Alarm Group, selected points will be assigned (not moved) to the selected location or group.

To drag and drop an item

- 1 In Quick Builder, highlight one or more items to be moved (or copied).
- 2 Drag and drop highlighted items to desired location.

Importing items from a definition file

You can import the following items:

- Points from either a *point definition file* (which has a .pnt extension) or another project file.
- Controllers, channels, Flex Stations, and printers from a hardware definition file (which has a .hdw extension).
- Quick Builder Equipment Template files (which have an .eqt.xm1 or a .typ.xm1 extension).
- Electronic Flow Measurement (EFM) configurations from a EFM download formats (which have an .efmsvr.xm1 extension).

These files are the files created during an upload or download between the server and Quick Builder.

• Electronic Flow Measurement (EFM) configurations from a EFM export formats (which have an .efmdb.xm7 extension).

These files are the files created during an export of EFM data from Quick Builder.

Note the following points:

- The import function ignores any points built with Control Builder.
- If an item already exists, it is overwritten with the new values.
- If the point definition file contains specialized point configurations, some data may be lost or hidden.
- When importing EFM meter templates:
 - Experion will first create a backup copy of the meter template before it is overwritten. The name used for the backed up item will be

```
<OrignalItemName>_bk<n>
```

where <n> is the index number used when there are multiple backups of the same item. If the backup name exceeds the character length limit of an item name, the <originalItemName> portion of the name will be truncated.

 After import, any meters that were using the original meter template will use the newly imported meter template.

To import items from a definition file

1 Choose **Tools** > **Import**.

The **Import** dialog box appears.

- **2** Select the file that you want to import.
- 3 Click **OK** to import the selected file data into the current project. You can cancel the import by clicking **Cancel** on the progress bar.

Daguita

The **Results** dialog box appears, listing the resultant download and log files.

Related topics

"Exporting and importing EFM configurations" on page 167

Downloading items

After adding and configuring items, you download all or part of your project to the server database.

Note the following:

- If Electronic Signature Compliance Restriction is enabled, the first time during a session that you download you will be asked for a user name, password, and domain. The user name must be set up as an *integrated account* on the server and must have *engr* or *mngr* security level. (An integrated account is a Windows account that has also been defined as an operator ID. For more details about integrated accounts, see the *Server and Client Configuration Guide*.)
- When an EFM meter is downloaded for the first time, it will be in the disabled state.
 - When an EFM meter is downloaded any subsequent time, it will retain its current state; if disabled, it will remain disabled; if enabled, it will remain enabled.
- When downloading equipment, you need to perform the following additional tasks:
 - Copy all corresponding schematic displays to the *<install folder>\ProgramData\Honeywe11\Experion PKS\C1ient\Abstract* directory,, where *<install folder>* is the location where Experion is installed.
 - Copy the template icon to the <install folder>\ProgramData\Honeywell\Experion PKS\Client \Abstract\Images directory,, where <install folder> is the location where Experion is installed.

To download all or some of your items

- 1 If you want to download:
 - All items, or items you have modified since the last download, go to step 2.
 - Specific items, select those items.
- 2 Click ±.

The **Download** dialog box opens.

- 3 Check that **Server Details** are correct. If they aren't, close the dialog box and change the server details as required.
- 4 Specify what you want to download by selecting the appropriate **Scope** option.
- 5 If you want to select any specialized options, click **Show Options**, and select the required options.

Option	Description	
Automatically download deletions	If selected, items in the Recycle Bin are deleted from the server database when you download to the server.	
	If the download is successful, the Recycle Bin is emptied.	
Rebuild scan tables	Select this if you want the server to rebuild the scan packets. (Note that the scan packets will only be rebuilt if no error occurs during the point configuration phase of the download operation.)	
	If you are making many changes, you can save time when downloading by clearing the check box. You only need to select the check box when you perform the final download.	
	(Scan tables must be rebuilt when adding new controllers or points, or when changing the scan periods of existing points. The server does not scan at the configured rate until the scan tables are rebuilt.)	
	● Attention	
	For SCADA systems, downloading items from Quick Builder to the server (or when using the pntb1d command) may cause temporary bad values on any controllers that are configured to report by exception. This is because the scanning system loads the new scanning strategy. If this occurs, values will return to normal after 1–2 seconds.	
	If you want to prevent the rebuilding of the new scan strategy, clear the Rebuild Scan Tables check box when downloading from Quick Builder, or use the -ns switch in pntbld . Be aware that scanning of any new or changed points will not occur until the new scanning strategy is loaded.	

Option	Description	
Download All Fields	Downloads all parameter values, including default values, associated with the downloaded items.	
Ignore Attachments	Prevents point attachments being downloaded. Attachments include algorithms.	
Skip Items in Error	Prevents an item definition being downloaded if it contains any errors.	
Check points off scan	Sets each point's Scanning Enabled property to <i>off scan</i> , regardless of its setting in your project. This is useful when you are developing points, and don't want them to be scanned immediately after download.	
Force Hardware building	Forces downloading of Flex Stations, channels and controllers even if there are errors.	
	Note that if this is used for a:	
	Station, it will be rebuilt even if it is currently connected	
	Channel, the controllers and points attached to the channel may lose their reference to the channel	
	Controller, the points attached to the controller may lose their reference to the controller	
Don't overwrite existing files	Prevents existing download-related files being overwritten. (Each time you perform a download, various files are created as part of the download process.)	
Deletions only	Deletes the selected point(s) in the server database. (They remain in the project.)	
Other flags	Allows you to specify specialized <i>pntb1d</i> and <i>hdwb1d</i> command-line parameters. (For details, see the <i>Hardware and Point Build Reference</i> .)	

6 Check your selections in the **Summary** list, and then click **OK**.



Tip

When downloading equipment points, it is very important that all related files are included in the download. If the .TYP and .EQT template files are not present in the list of files to be downloaded for the point, do not proceed with the download as the equipment will not function correctly without these files. Check that these files are present in the Quick Builder database for this point's Equipment Template before attempting the download again.

7 If Electronic Signature Compliance Restriction is enabled, the **QB User Sign-On** dialog box opens. Type a **User Name**, **Password**, and **Domain**, and then click **OK**.

Downloading starts and, when finished, the **Results** dialog box opens, listing the resultant download and log files.

You can terminate the download by clicking Cancel on the progress bar.

Uploading an item's definition from the server

If you need to make changes to items that have already been downloaded to the server database, you can *upload* (also called *backbuild*) their definitions from the server into the current project. You can then make the necessary changes to the items and download the new definitions to the server.

Note the following points:

- If you upload any specialized point configurations, some data may be lost or hidden in Quick Builder.
- For user-defined parameters, the state of the **Never download initial value to the server** control resides in the user-defined parameters on the point, and will be included in the upload.
- When you upload an equipment item, that and any other equipment based on the same template will have the template re-applied using the most recent values stored in the equipment's custom parameters.

To upload item definitions from the server database

1 Click 1.

The **Upload** dialog box opens.

- 2 Check that Server Details are correct. If they aren't, close the dialog box and change them on the Server Details tab for the server.
- 3 Select the appropriate **Scope** option.

The following options are available for uploading data from a specified server to Quick Builder.

Option	Description
All items in Project	Uploads all items from the server, including hardware and point configuration data, as well as the history collection rates and offsets.
Selected Items Only	Uploads only the history collection rates and offsets configured on the server. This upload populates the History Options tab on the Servers properties page.
All Hardware on Server	Uploads only hardware configuration data. This option includes EFM configurations.
All Points on Server	Uploads only point configuration data.

- 4 (Optional. Not applicable for EFM.) If you want to use any specialized **bckbld** or **hdwbckbld** command-line parameters, click **Show Options** and type them in **Other Flags**. (For details about the parameters, see the topics on hdwbld and hdwbckbld in the *Hardware and Point Build Reference*.)
- 5 Check your selections in the **Summary** list, and then click **OK**. You can terminate the upload by pressing the ESC key.

Managing and using add-ins

An add-in is an optional software component, such as a wizard, that performs a specialized task.

Quick Builder is supplied with several add-ins. However, you can add other add-ins at any time by simply copying them to Quick Builder's *Addins* folder. The next time you start Quick Builder, the new add-ins are automatically activated so that you can use them as required.

Note the following points:

- To use an add-in, choose it from the **Tools** menu. (If it is grayed-out, activate it.)
- You can speed up Quick Builder by deactivating any add-ins that you don't require during the current session.

To activate or deactivate add-ins

- 1 Choose Tools > Add-In Manager.
 The Add-In Manager dialog box opens.
- 2 Select or clear the add-ins as required.
 Following is a table of the supplied add-ins. Deactivated add-ins appear grayed-out in the **Tools** menu.

Add-in	Description
QB Import Del Lines AddIn	Imports a *.pnt or *.hdw file and deletes items from the project's database where there is a <i>DEL [itemname]</i> within the file.
QB Migration Wizard	Migrates old Quick Builder projects to the current format.

Working with projects

A *project* is a Quick Builder database that has been created and configured on a standalone SQL server, as opposed to an Experion server.

Related topics

- "Setting Quick Builder project options" on page 31
- "Creating a new project" on page 31
- "Migrating old Quick Builder projects" on page 32
- "Opening an existing project" on page 33
- "Exporting project data" on page 33
- "About exporting results of Floating Point data to CSV files" on page 34
- "Downloading a project" on page 35
- "Opening files listed in the Results dialog box" on page 37
- "Improving Quick Builder's performance" on page 37

Setting Quick Builder project options

When you use a project to configure your system in a standalone database, rather than in the Quick Builder database on the Experion server, you can specify various Quick Builder options, both general and project-specific.

If you are working in a Quick Builder project or you have migrated databases, it is a good idea to verify that your options are correct. Your options include the server and the enabled components.

To verify your server

- 1 In Quick Builder click the server icon in the Navigation pane.
- 2 On the Main tab, check that the server type matches the version of Experion that you have installed.

To verify your enabled components

- 1 Choose Tools > Component Manager.
 - The list shows which components are enabled, as well as the number of items that have been created for each component.
- 2 Select or clear the check box opposite each component you want to enable/disable.
- 3 Click OK.

Related topics

"Creating a new project" on page 31

Creating a new project

When you create a new project you should specify which *components* are needed in the project. (Components include item types, such as points and controllers, as well as algorithms.) See the topic titled "Setting Quick Builder project options" for more information.



Tip

You can substantially improve Quick Builder's performance by only enabling the components you want to use in the project. (You can enable more components later if necessary.)

Projects are created while connected to a standalone SQL server and can be downloaded to an Experion server at a later time.

Prerequisites

- If Quick Builder is installed on Windows Server 2008, Windows 7, or Windows Vista, you must be logged on with a Windows account that belongs to the *Honeywe11 Station Users* Windows group.
- To be able to create a project, you must have a version of SQL Server installed. A minimum of SQL Server Express is required.

To create a new project

- 1 Click **Connect** to open the **Connect** dialog.
- 2 Click the Other Targets tab.
- 3 Choose QuickBuilder Database from the Target list.
- 4 Select the Create New Project option and type a name for the new project in the Name field.
- 5 Click Connect.
 - The Create New Project dialog box opens.
- 6 Accept any defaults, and click Save.
- 7 When the Enable Components dialog box opens, select the required server type/release number from Server.
- 8 Then enable either:
 - · Specific components.
 - Licensed components by specifying your license.
 - All components installed on your computer by clicking **OK**.

Saving and closing projects

While working on a project, click Save at any time to save the project.



Tip

As soon as you move from one item (such as a field or a tab) to another item in Quick Builder, any changes made on the previous item are automatically saved.

When closing a project, Quick Builder saves information about the project's setup, including the current views and filters. The next time you open the project, this setup is restored.

Related topics

"Setting Quick Builder project options" on page 31

Migrating old Quick Builder projects

The Quick Builder Project Migration wizard, which is supplied with Quick Builder, guides you through migrating old Quick Builder projects to the current format. When you start Quick Builder, the system will prompt you to perform a migration if:

- The target server contains a Microsoft Access Quick Builder database and no instance of an equivalent initialized SQL Quick Builder database
- The target server contains an initialized Quick Builder SQL database, but it has not been matched with the current client

Note that if you try to open a project that was created with components that are not installed on your current system, you will receive a message that will tell you which components are missing and ask you to either cancel the procedure or convert the project.

If you click **Convert**, the information contained in the missing component will be deleted.

Prerequisites

Before migrating a R3xx/R4xx system to R430 you need to minimize the project because all components are enabled in old Quick Builder projects, and migrating them in this state may impact performance. To minimize the a project before migrating to R430:

- 1. Open the old version of Quick Builder
- 2. Select Tools > Component Manager > Minimize Project.

You are now ready to migrate your Quick Builder project to R430.

To migrate an old project

- 1 When prompted, click **Next** to start the migration wizard.
- 2 Select the project you want to migrate, and click Next.
- 3 Select to either overwrite the current project or create a new project.
- 4 Review the table supplied which lists items in the old database that will be migrated, then click Next.
 Where any items cannot be mapped to the same item in the new database, they are listed in the Unresolved properties page.
- Map any unresolved properties, and then click Next.Any unresolved properties that are not mapped to a new property are not migrated.
 - When the migration is complete, the **Migration Results** page is displayed, listing all the migrated items.
- 6 Click **Finish** to close the migration wizard.

Opening an existing project

You can open projects on the current server to which you are connected, or projects on another server.



Attention

You can only work with one project at a time—if you open another project or create a new one, Quick Builder closes the currently open project.

To open an existing project on another server, or a standalone project

- 1 From Quick Builder, click **Connect** to open the **Connect** dialog.
- 2 Click the **Other Targets** tab.
- 3 Select QuickBuilder Database from the Target type list.
- 4 Select the SQL server from the Location list.
- 5 Select the Open Existing Project option and click Search Location to display a list of projects on that server.
- 6 Select the project you want to open, and click Connect. Quick Builder opens, with the selected project loaded.

Exporting project data

You can export project data to external files. The export files contain point, hardware, or model definition information in a format that the server database can use. You can export:

- Point definitions to a *point definition file* (with a .pnt extension).
- Hardware definitions to a hardware definition file (with a . hdw extension).
- Electronic Flow Measurement (EFM) definitions to an *EFM export format file* (with an .efmdb.xm7 extension).

To export project data

- 1 Choose File > Export.
 - The **Export** dialog box opens.
- 2 Specify the folder in which the exported file(s) are to be created in the Folder for File(s) field.
- 3 Type the base name for the exported files in the Base Name for File(s) field.
- 4 Select the file type from the **Export File Type** list.
- 5 Specify what you want to export by selecting the appropriate **Scope** option. Options are:
 - All items relevant to file type
 - Selected items only
- 6 Click **Show Options** to display the available options and select the options you wish to use for this export.

Option	Description
Export All Fields	Exports every property of an exported item.
Ignore Deleted Items	Prevents items in the Recycle Bin being exported.
Ignore Attachments	Prevents point attachments being exported. Attachments include algorithms.
Skip Items in Error	Skips an item if its definition contains any errors.
Abort if format not found	Abort the export if the export file format specified is not found.
Overwrite format extensions	Creates an export file without the file format extension. For example, to export a point with a base file name of <i>QBDB</i> without this option enabled, the exported file name would be <i>QBDB</i> . pnt. However, if the option was enabled, the exported file name would be <i>QBDB</i> and would not have the file format extension of .pnt.
Don't overwrite existing file s	Prevents you from overwriting an existing export file with the same name.
Create Single File Only	Creates a single file, instead of multiple files.

7 Check your selections in the **Summary** list, and then click **Export**.

The **Results** dialog box opens, listing the download and log files



Tip

You can terminate the export at any time by clicking Cancel on the progress bar.

Related topics

- "Modifying a controller or channel after download" on page 87
- "Exporting and importing EFM configurations" on page 167

About exporting results of Floating Point data to CSV files

When exporting Floating Point data types to CSV files, values are rounded to the following significant digits:

Data type	Number of significant digits
Single/Real/Float	6
Double	15

For example for a Real type calculation, 1.236589563251 * 60 = 74.19537379506 will be exported to CSV as 74.1954.

The rounding occurs because Experion stores values in binary format, whereas CSV files store values as text strings. The export to CSV process converts the binary format to text strings and rounds values to either 6 or 15 digits, depending on the data type.

Examples

The following table shows how Single/Real/Float and Double values are rounded when exported to CVS files.

Value	Single/Real/Float	Double
12.345678901234567890	12.3457	12.3456789012346
1234.5678901234567890	1234.57	1234.56789012346
123456.78901234567890	123457	123456.789012346
1234567890.1234567890	1.23457e+09	1234567890.12346

Related topics

"Configuring CALC data types" on page 159

Downloading a project

After adding and configuring items, you download all or part of your project to the server database.

Note that if Electronic Signature Compliance Restriction is enabled, you must be logged on with an *integrated account* with a *security level* of *engr* or *mngr*. (An integrated account is a Windows account that has also been defined as an operator ID on the server. For more details about integrated accounts, see the *Server and Client Configuration Guide*.)

To download all or part of a project

- 1 If you want to download:
 - a The whole project, or items you have modified since the last download, go to step 2.
 - **b** Specific items, select those items.
- 2 Click ±.

The **Download** dialog box opens.

- 3 Check that Server Details in the table are correct. If they aren't, close the dialog box and change the server details as required.
- 4 Specify what you want to download by selecting the appropriate **Scope** option. Options are:
 - All items in selected server
 - Selected items (default)
 - · Items changed since last download
- 5 If you want to select any specialized options, click **Edit Options**, and select the required options.

Option	Description
Automatically Download	Downloads items in the Recycle Bin so that they are deleted from the server database.
Deletions	If the download is successful, the Recycle Bin is emptied.

Option	Description
Rebuild Scan Tables	Select this if you want the server to rebuild the scan packets. (Note that the scan packets will only be rebuilt if no error occurs during the point configuration phase of the download operation.)
	If you are making many changes, you can save time when downloading by clearing the check box. You only need to select the check box when you perform the final download.
	(Scan tables must be rebuilt when adding new controllers or points, or when changing the scan periods of existing points. The server does not scan at the configured rate until the scan tables are rebuilt.)
	 Attention For SCADA systems, downloading items from Quick Builder to the server (or when using the pntbld command) may cause temporary bad values on any controllers that are configured to report by exception. This is because the scanning system loads the new scanning strategy. If this occurs, values will return to normal after 1–2 seconds.
	If you want to prevent the rebuilding of the new scan strategy, clear the Rebuild Scan Tables check box when downloading from Quick Builder, or use the -ns switch in pntb1d . Be aware that scanning of any new or changed points will not occur until the new scanning strategy is loaded.
Download All Fields	Downloads all parameter values, including default values, associated with the downloaded items.
Ignore Attachments	Prevents point attachments being downloaded. Attachments include algorithms.
Skip Items in Error	Prevents an item definition being downloaded if it contains any errors.
Check points off scan	Sets each point's Scanning Enabled property to <i>off scan</i> , regardless of its setting in your project. This is useful when you are developing points, and don't want them to be scanned immediately after download.
Force Hardware building	Forces downloading of Flex Stations, channels, and controllers even if there are errors.
	Note that if this is used for a:
	Station, it will be rebuilt even if it is currently connected
	Channel, the controllers and points attached to the channel may lose their reference to the channel
	Controller, the points attached to the controller may lose their reference to the controller
Don't overwrite existing files	Prevents existing download-related files being overwritten. (Each time you perform a download, various files are created as part of the download process.)
Deletions only	Deletes the selected point(s) in the server database. (They remain in the project.)
Other flags	Allows you to specify specialized <i>pntb1d</i> and <i>hdwb1d</i> command-line parameters. (For details, see the <i>Hardware and Point Build Reference</i> .)

- 6 Click **OK** to close the **Download Options** dialog.
- 7 Check your selections in the **Summary** list, and then click **OK**.
- 8 If Electronic Signature Compliance Restriction is enabled and you are not logged on with an integrated account, the Quick Builder User Sign-On dialog box opens. Type a **User Name**, **Password**, and **Domain** and click **OK**.

Downloading starts and, when finished, the **Results** dialog box opens, listing the resultant download and log files.



Tip

You can terminate the download at any time by clicking Cancel on the progress bar.

Opening files listed in the Results dialog box

The **Results** dialog box lists every file created by Quick Builder when importing, downloading, or exporting project details. In addition to the point and hardware definition files (*.pnt and *.hdw), the list includes the following log files (*. 10g).

Log file	Description		
Event	Lists events incurred for all tools within Configuration Studio.		
Upload	List errors that occur when connecting to the server.		
Download			
Import	List any errors that occur when import/export items contain invalid configurations.		
Export			
Migration	List any errors that occur when migrating database into Quick Builder.		

You can view any file by double-clicking it.

Improving Quick Builder's performance

You can substantially improve the performance of Quick Builder by disabling any components that are not required in the project (You can enable more components later if necessary.)

To disable unused components

- 1 Choose Tools > Component Manager.
 - The **Component Manager** dialog box appears, listing which components are enabled, as well as the number of items that have been created for each component.
- 2 Disable any components that are not required in the project, and click **OK**.

Building Equipment Templates

You can use Equipment Templates to quickly and easily build equipment, such as wells, pumps, generators, and all the associated items that make up that equipment. These items typically include points and controllers.

Equipment Templates are stored in the **Library**, within Quick Builder. Two sample templates (a Well template and a Well Field template) are provided with Experion, and you can use these templates to create new templates.

If you modify an Equipment Template and import the updated template into Quick Builder, those changes will be applied to all equipment that has been built using that template. If you delete a template from the library, you will receive a warning dialog stating that any equipment based on that template will also be deleted.

This section outlines how to work with Equipment Templates in Quick Builder.

Related topics

- "About Equipment Template inheritance" on page 40
- "Creating Equipment Templates" on page 41
- "Importing or exporting templates" on page 42
- "Modifying Equipment Templates" on page 43
- "Deleting equipment templates" on page 44

About Equipment Template inheritance

When creating templates based on existing templates the properties of the *base* template are inherited, and can impact other templates and equipment items that have been based on that template. Inheritance rules define how those changes are managed in Quick Builder.

Configuration values from the base template will be assumed by any derived template unless they are overridden by values in the derived template.

For example:

Pre-condition	User Action	Result
Equipment item EQMNT1 is created based on equipment template TEMP1.	The user updates TEMP 1 and imports it into Quick Builder.	Quick Builder cascades the template changes to EQMNT1.
Equipment item EQMNT2 is created based on equipment template TEMP2, which in turn was created using equipment template TEMP1 as its base.	The user updates TEMP1 and imports it into Quick Builder.	Quick Builder recalculates the derived template TEMP2 as a result of the change to TEMP1 based on the inheritance rules. Changes are then applied to the existing equipment EQMNT2.
Equipment template TEMP3 is already in the Quick Builder library, and was created using equipment template TEMP2 as its base.	The user updates TEMP2 and imports it to Quick Builder.	Quick Builder recalculates the derived template TEMP3 as a result of the change to TEMP2 based on the inheritance rules.

Creating Equipment Templates

Every Equipment item is based on an Equipment Template. You can create an Equipment Template either by:

- Using an existing template as the base for a new template, therefore inheriting the properties of the existing, or base, template
- Modifying an existing template and saving it with a new name

Creating an Equipment Template using another template as its base

- 1 From Configuration Explorer, under **Equipment**, click **Build Templates**. **Equipment Template Builder** opens.
- 2 In the Name field, type a unique name for the new template.
- 3 In the **Equipment Type** field, specify the high level type of this equipment. For example, *Well*. There can be different types of specific well at a plant (such as pumping, free flowing), but they would all belong to the one general type of *Well*.
- 4 In the **Icon** field, click the button to navigate to a graphic for an icon to use to represent this equipment template in Quick Builder.
- 5 In the **Inherit template from base**, type the name of any existing template you wish to use as a basis for this new template.
 - The new template will inherit properties from the existing template.
- 6 In the Categories field, type a name for the category in which you want to list this template in Quick Builder.
- 7 In the **Show in Library** field, select whether you want to show this new template in the Quick Builder library. The default value is **True**.
- 8 In the **Label** field, type the text that you would like to use as the label for this template in the Quick Builder library.
- 9 In the **Tool Tip** field, type the text that would want to appear as a tool tip when you hover over this template in the Quick Builder library.
- 10 In the **Description** field, type a short description to provide information for other people who might use the template.
- 11 Proceed with working through the other items in the **Equipment Template Navigation** pane to finish configuring the template, and then download it to the server for use in Quick Builder.

Creating an Equipment Template by modifying an existing template

- 1 From Configuration Explorer, under **Equipment**, click **Build Templates**.
 - Equipment Template Builder opens.
- 2 Click the **Open** icon and select a template from your template list.
 - The template is loaded into the Equipment Template Builder.
- 3 In the Name field, type a unique name for the new template.
- 4 Proceed with modifying properties on each of the pages for this template.
- 5 Select File > Save As and type the name for the new template in the field provided.
- 6 Click **OK** to save the new template, and then download it to the server for use in Quick Builder.

Importing or exporting templates

After creating or updating a template in the Template Builder, you need to import it into the Template Library in Quick Builder.

To make changes to an existing template in the Template Builder, you need to export it from Quick Builder.

To import a template into the Template Library

- From the Toolbar, click the Import icon.
 The Select File to Import dialog appears.
- 2 Locate and select the template you want to import.
- 3 Click OK.

If any items will be updated when this template is imported, a dialog appears listing them.

4 Click **OK** to proceed with the template import.

If the template already exists in the library, it is overwritten by the imported template.

Any items impacted by this template are automatically updated with the template changes.

To export a template to the Template Builder

- 1 From the Toolbar, click the **Export** icon.
 - The **Export** dialog appears.
- 2 Click the **Browse** button to navigate to the template folder and click **OK**.
- **3** From the list provided, select one or more templates to be exported. The list contains all templates stored in the Library.
- 4 Click Export.

The template(s) are exported to the defined template folder.

Modifying Equipment Templates

Every Equipment item is based on an Equipment Template. One of the major advantages of this defined relationship and hierarchy it contains is that you can update a large number of Equipment items by simply modifying the template on which they were based.

To modify an Equipment Template

- 1 From Configuration Explorer, under **Equipment**, click **Build Templates**. **Equipment Template Builder** opens.
- 2 Click the **Open** icon and select a template from your template list. The template is loaded into the Equipment Template Builder.
- 3 Work through the property pages and modify properties as required.
- 4 Select File > Save to save this new version of the template.



Tip

If you want to keep the original version of the template intact, you can save the modified version as a new template by selecting File > Save As...

5 Click **OK** to save the template, and then download it to the server for use in Quick Builder. If there is Equipment that will be impacted by the changes to this Equipment Template, a dialog appears listing the Equipment items that will be updated with the template changes. Click **OK** to proceed and the Equipment items are automatically updated.

Deleting equipment templates

Deleting equipment templates can have an impact on equipment that has been created based on that template, and on templates that have inherited data from the template on which they were based. Make sure that you understand the relationship between the equipment and templates in your system before deleting any templates.

To delete an equipment template

- 1 From the **Template Library**, select the template to be deleted.
- Right-click on the equipment template and click Delete.A message appears asking for confirmation that you want to delete the template.
- 3 Click Yes to proceed.

The system deletes the template, and all content associated with the template, including:

- Other templates, associated equipment, any contained sub-equipment and associated items such as controllers and points.
- Inheritance links to any templates based on this template (the name of the deleted template is removed from the **Base Template** field in the template properties).
- Any entries in the Template Library for this template.



Tip

If the template cannot be deleted because it is needed for some equipment or derived templates to continue functioning, a message is displayed identifying the items in question and the template is not deleted.

Configuring Equipment Templates

Similar to Quick Builder, the Equipment Template Builder provides property pages where you can configure the properties of your Equipment Templates.

After configuring an Equipment Template and importing it into Quick Builder it can be used to create equipment. To modify an Equipment Template or use it as the basis for a new Equipment Template, you will need to export the template from Quick Builder into the Equipment Template Builder, where you can modify the properties as required.

Details are provided in this section for each of the configuration tabs in Equipment Template Builder, and they are grouped into the following categories in the navigation pane:

- Equipment Template
 - Building Equipment, which lists the configuration options required to build equipment based on this template, specifically:

Equipment properties

Associated items

Point references

Relationships

 Viewing Equipment, which lists the configuration options required to define how equipment based on this template will be viewed in Station, specifically:

Default view categories

Schematics, trends, and links

Display elements

Banner

Tabular detail view

• Equipment Type, which allows you to configure information for equipment referencing this equipment type, specifically summary view and filter information.

Related topics

"Template properties" on page 46

"Building Equipment" on page 47

"Viewing equipment" on page 52

"Equipment Type" on page 62

Template properties

The Template Properties tab defines the template's basic properties. This is the first tab displayed after creating or opening a template, or when you select **Equipment Template** in the navigation pane.

Property	Description		
General properties	General properties		
Name	A unique identifier for this template. It is recommended that you use a prefix, or namespace, to the template name, for example, <code>Honeywell.OpApps.pipeline</code> , where <code>Honeywell.OpApps</code> is the prefix. The prefix will prevent this template from overwriting other pipeline templates.		
Base Template	The template on which this template is based. A new template inherits properties from a base template, reducing configuration effort.		
Template Version	Template version is used when the Experion server finds multiple copies of the template. For example, in a Distributed Server Architecture. In this case, the template with the highest version number is used.		
Quick Builder Library pro	perties		
Categories	The category in which this template will be listed in the Quick Builder Library.		
Show in Library	Indicates whether this template should be visible in the Quick Builder Library. Default value is true .		
Label	The text that will appear in the Quick Builder Library to identify this template. This text can be internationalized.		
Tool Tip	Text for the tool tip that appears when you hover over this template in the Library.		
Description	A short description of the template.		

Building Equipment

The tabs within this section of the Equipment Template Builder contain the configuration options for equipment that will be built based on this template. As well as the standard configuration properties for this template, other configuration options include:

- Equipment properties, which are created as parameters on any equipment built using this template as a base
- · Associated items, which are automatically generated when building equipment based on this template
- Point references, which allow the parameters of another point to be referenced through an alias configured on an equipment item
- Relationships, which allow you to define a relationship between different pieces of equipment. Relationships, amongst other things, enable alarm aggregation between equipment.

Equipment properties

The Equipment Properties tab defines the equipment properties for the template. This tab is displayed when you select Building Equipment from the Equipment Template Builder navigation tree.

Equipment Properties are created as parameters on the Equipment, not the containing points that make up the Equipment. Each Equipment Template includes a section describing the properties for the Equipment. The Equipment Property may reference another point parameter. The following table details the contents of the Equipment Properties tab.

Property	Description		
Advanced properties	Advanced properties		
Label	The text that will appear in Quick Builder to identify the equipment property. This text can be internationalized.		
Category	When viewing the equipment in Quick Builder, properties are grouped by this category.		
Units	The units of measure for this equipment parameter (optional).		
Unique	Indicates whether the value for this equipment parameter should be unique across all instances of this parameter in Quick Builder. Valid values are true and false , and the default value is true .		
Optional	Indicates whether this equipment parameter will be optional (or mandatory) when creating equipment based on this template. Valid values are true and false , and the default value is true .		
	When you create equipment based on this template, if this property is set to false a value must be assigned to the parameter before the equipment can be created.		
Read only	Indicates whether the default value for this equipment parameter will be ready only in Quick Builder. Valid values are true and false , and the default value is true .		
Auto increment	Indicates whether the default value for this equipment parameter will be automatically incremented for each item created in a bulk-build operation in Quick Builder. Valid values are true and false, and the default value is false.		
Constant Value	Indicates whether this equipment parameter will be built as a <i>constant</i> on the server. Valid values are true and false , and the default value is false .		
Download Flags	Lists any point build flags to be used when downloading this equipment parameter to the server (optional).		
General properties			
Name	The name of the equipment parameter.		

Property	Description			
Туре	The data type for this equipment parameter. Valid values are:			
	• int2 – 2-byte integer			
	• int4 – 4-byte integer			
	real – Floating point number			
	dble – Double precision number			
	• char – Character String			
	Enumeration – Integer value referencing an enumeration string			
Default value	The default value for this equipment parameter.			
	The default value may reference another equipment property within the template by using the following syntax: [%parameter:specifier%], where: parameter is a reference to an equipment property, and specifier is an optional .NET numeric format specifier to use when converting a referenced numeric property value into a string.			
	For example: "d4" an integer number may resolve to a four character string padded with zeros: <pre><pre>ceros: <pre>ceros: <pr< td=""></pr<></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>			
History Parameter Options				
Fast	Fast history stores snapshots of point parameter values at short regular intervals called fast history intervals. You can choose from up to 8 collection rates. The initial default base rate of 5 seconds can be changed when you first set up your system, and you can add up to 3 more fast history collection rates to the default fast history groups of 5, 10, 15, 20, and 30 seconds.			
	● Attention			
	If the configured base rate for fast history collection is a value other than 1000 or 5000 milliseconds, you can only collect history at that one rate. For example, if your fast history collection rate was 3 seconds before you migrated to the current release of Experion, this is the rate that all points assigned to fast history collection will use. If you want to be able to assign points to different fast history collection rates, please contact Honeywell technical support staff.			
Fast PHD Collection	Use this option to specify PHD collection for fast history.			
	• Default = PHD collects history for this point according to the PHD collection rule.			
	• Override = PHD overrides the PHD collection rule and collects history for the point at this history assignment rate.			
	• Disable = PHD does not collect history at this history assignment rate.			
	It is possible to assign Override to multiple history assignments for the same point. However, PHD will collect history assignment at only one rate. To determine the collection of history to the PHD server, see the topic titled "PHD collection rule."			
Standard	Standard history stores snapshots and averages of point parameter values at regular intervals called standard history intervals. You can choose from up to 8 standard history collection rates for snapshots. The initial default choices are: 1, 2, 5, 10, 30, 60 minutes. Standard history averages are based on the default base rate of 1 minute. You can choose from 4 collection rates for averages: 6 minutes, 1 hour, 8 hours and 24 hours.			
Standard PHD Collection	Use this option to specify PHD collection for standard history.			
	• Default = PHD collects history for this point according to the PHD collection rule.			
	• Override = PHD overrides the PHD collection rule and collects history for the point at this history assignment rate.			
	• Disable = PHD does not collect history at this history assignment rate.			
	It is possible to assign Override to multiple history assignments for the same point. However, PHD will collect history assignment at only one rate. To determine the collection of history to the PHD server, see the topic titled "PHD collection rule."			

Property	Description		
Extended	Extended history stores the following snapshots of point parameter values:		
	1-hour snapshots		
	8-hour snapshots		
	• 24-hour snapshots		
Extended PHD Collection	Use this option to specify PHD collection for extended history.		
	Default = PHD collects history for this point according to the PHD collection rule.		
	• Override = PHD overrides the PHD collection rule and collects history for the point at this history assignment rate.		
	• Disable = PHD does not collect history at this history assignment rate.		
	It is possible to assign Override to multiple history assignments for the same point. However, PHD will collect history assignment at only one rate. To determine the collection of history to the PHD server, see the topic titled "PHD collection rule."		
Exception	Whereas standard, fast, and extended history collect and store point parameter values periodically, exception history collects point parameter values but only stores them if the value of that point parameter has changed since it was last stored. The default collection rates for exception history are:		
	• 5, 10, 15, 30, and 60 seconds		
	• 5, 10, 15, 30, and 60 minutes		
	• 2, 4, 6, 8, 12, and 24 hours		
	Note that exception history only supports string values when values are collected in real-time, but supports both numeric values and string values when values are stored by history backfill by the DNP3 interface.		
Exception PHD Collection	Use this option to specify PHD collection for exception history.		
	Default = PHD collects history for this point according to the PHD collection rule.		
	Override = PHD overrides the PHD collection rule and collects history for the point at this history assignment rate.		
	• Disable = PHD does not collect history at this history assignment rate.		
	It is possible to assign Override to multiple history assignments for the same point. However, PHD will collect history assignment at only one rate. To determine the collection of history to the PHD server, see the topic titled "PHD collection rule."		
Validation Rules properties			
RangeMin	The value entered here will be used by Quick Builder as the minimum value accepted for this equipment parameter.		
	Only valid for Type values of Int2, Int4, real, dble.		
RangeMax	The value entered here will be used by Quick Builder as the maximum value accepted for this equipment parameter.		
	Only valid for Type values of Int2, Int4, real, dble.		
Length	The value entered here will be used by Quick Builder as the maximum length for this equipment parameter.		
	Only valid for Type values of char .		
	ı		

Property	Description
Enumeration Name	The name entered here will be used by Quick Builder to display a list of the Enumerated values from which the Engineer can select one for this equipment parameter.
	This list will contain existing Enumerations, plus the option to select: None , <new></new> , or <edit></edit> .
	To create a new Enumeration, the Engineer would select <new></new> from this list.
	To edit an existing Enumeration, the Engineer would select <edit></edit> from this list to open and modify an existing Enumeration.
	Only valid for Type values of Enumeration .

Associated items

The Associated Items tab lists the items to be automatically generated when building equipment based on this template. This can include items such as controllers and points. These items are created in Quick Builder and then copied into this table for inclusion in templates. Existing items can also be duplicated and modified as required.

Select the **Auto generate Point Reference** check box to automatically generate point references for each of the associated items in the table.

Use the **Display** list to filter the associated items in the table.

The following table lists the details shown in the List View for each associated item.

Property	Description	
Name	The name of the unique rule used by Quick Builder to generate the associated item.	
Class	The type of item, for example, EnronModbusController, or AnalogPoint.	
Point Reference Name	The name of the corresponding point reference, if one exists.	
Item Description	A description of the associated item. The description often appears in Station displays. 132 characters maximum, including spaces. For example, Flow meter 1 for pipe segment [%SegmentNumber: d2%].	

Other (advanced) properties for the associated items will be dependent on the type of item being created, but can also reference Equipment property values previously defined. The following figure provides an example of these properties and possible values.

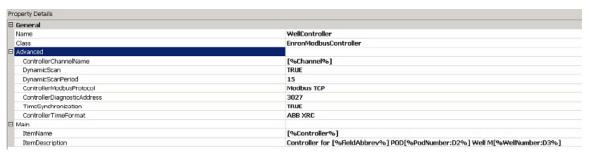


Figure 5: Property details

Point references

Point References allow parameters of another point to be referenced through an alias configured on an Equipment item. Alarms can be aggregated from the referenced point to the Equipment. The referenced point may be any point in the system including associated items created as part of the equipment.

Property	Description
Name	The name of the unique rule used by Quick Builder to generate the point reference. This name is also used as the alias name.
Value	The name of the point being referenced. This can reference Equipment property values previously defined. For example, well[%well:D3%]_Ana002.
Associated Item Name	The Associated Item to which this point reference refers. (Optional).
Alarm Aggregation	Indicates whether alarms on the referenced point should be aggregated to the equipment. Valid values are true and false .

Relationships

The Relationships tab allows you to define a relationship between this Equipment and Related Equipment. A *relationship* allows you to:

- Aggregate alarms between related Equipment
- Visualize related Equipment in the Tabular Detail of the Equipment
- Reference the Related Equipment from a point reference on the Equipment

The first table on the Relationships tab lists the defined relationships. Click on the plus + icon to add a new relationship.

The Relationship properties table lists the attributes for the selected relationship.

Property	Description		
Attributes properties			
Collection	Indicates whether this relationship can be a one-to-many relationship. Valid values are True , False . The default value is True .		
Default values	Default values to be used for the related equipment in this relationship. Where the Collection property is set to True , more than one default can be specified separated by a semicolon.		
	If the Read only property has been set to True , you must also provide a value for the Default value .		
Read only	Indicates whether the related equipment defined by this relationship can be edited in Quick Builder. Valid values are True , False . If set to True , you must also define Default Values so that the Relationship can be automatically generated by Quick Builder.		
Valid Equipment types	Lists the valid equipment types for any related equipment. Values entered here will populate a list of valid equipment in the Equipment Type drop down list in Quick Builder. Where multiple values are provided, separate them with a semicolon.		
General properties			
Alarm Aggregation	Indicates whether alarms will be aggregated between this equipment and its related equipment. Valid values are: No Alarm Aggregation, To related equipment, From related equipment. The default value is No Alarm Aggregation.		
Equipment Parameter	Creates an parameter on the Equipment that you can use to reference from the related Equipment.		
Name	The name of this relationship.		
Role from Related Equipment	The name of the role (relationship) from the related equipment. (Optional, although one of either Role to or Role from must be specified).		
Role to Related Equipment	The name of the role (relationship) to the related equipment. (Optional, although one of either Role to or Role from must be specified)		

Viewing equipment

The tabs within this section of the Equipment Template Builder contain the configuration options to define how equipment based on this template will be displayed in Station. The configuration options provided include:

- Default View, Schematics, trends, and links, which allow you to configure, and to define:
 - The category of view that will be displayed as the default for this equipment.
 - Schematics and trends for this equipment
 - Links to related displays
- Display elements, which defines the way information is displayed on summary and detail displays.
- Banner, which allows you to specify that a banner will be present on an equipment display, and also to configure the contents of that banner.
- Tabular detail view, which is where you can define the layout and contents of the tables on the Equipment detail display for equipment based on this template.

Default View, Schematics, trends, and links

This tab defines the views for this Equipment Template. This tab is displayed when you select **Viewing Equipment** from the Equipment Template Builder navigation tree.

Use the **Default View Category** to select the default view for this equipment. Valid values are **Detail**, **Trend**, or **Schematic**.

Use the **Show** list to filter the table to show either schematics, trends, or links that have been defined for this equipment.

The Schematics, Trends, and Links table lists the views that have been created for this equipment. Use the + and – buttons to add or delete items from the table as required, and the arrows to define the order of the views as they will be displayed on the Equipment Detail display. Use the **Check** button to identify the default view or link for this category.

Property	Description		
Name	The name of the unique rule used by Quick Builder to generate the view.		
Label	This is the link text on the Equipment Detail display for this view.		
Description	This is the tooltip shown on the Equipment Detail display for this view.		
Security Level	The security level required to be able to access this view.		
URL	The full or partial URL address that references this view.		

Table 1: Properties table

Display elements

Display Elements are used in the Equipment Summary and tabular view of the Equipment Detail to display data associated with equipment created from the template.

The following table lists the different display element types and indicates which can be used in a Table Layout, a Card Layout, and a Banner.

Display Element	Table Layout	Card Layout	Banner
Alphanumeric	Yes	No	No
Checkbox	Yes	No	No
Combobox	Yes	No	No

Display Element	Table Layout	Card Layout	Banner
Link	Yes	Yes	No
Dualindicator	Yes	No	No
Mini trend	No	No	Yes
Sparkline trend	No	Yes	No
Image	No	No	Yes
ControllerStatus	Yes	No	No
ControllerEnable	Yes	No	No
Alarmcount	No	No	Yes
Bannervalue	No	No	Yes
Title	No	No	Yes
Alarmicon	Yes	Yes	No

The table at the top of this section lists the Display Elements that have been configured for this equipment. Click the plus + icon to add a new row to the table, and use the following tables to configure the display element.

The following tables list the parameters to be defined for each display element.

Alphanumeric display element

Property	Description	
Format properties		
Scan State	If true , Station overrides the current color with the system-defined colors to indicate the bound data's NaN quality state. The NaN state color is defined in the station.ini file. Default value is true .	
Bad State	If true , Station overrides the current color with the system-defined color for 'off-scan'. The default color is gray. Default value is false .	
NaN State	If true , Station overrides the current color to indicate a bad value, such as a bad quality, OOS, or a lost value. The bad state color is defined in the station.ini file. Default value is false .	
Presentation Type	The format to use for this display element. Valid values are: Numeric, Hexadecimal, State descriptor, Acronym, Time, Date, Date/Time, Text, Duration. The default value is Numeric	
Numeric Display Format	Only visible if Presentation Type value is Numeric, Hexadecimal.	
Acronym Source	Only visible if Presentation Type value is Acronym.	
Start at Acronym	Only visible if Presentation Type value is Acronym .	
Number of Acronyms	Only visible if Presentation Type value is Acronym .	
Time Format	Only visible if Presentation Type value is Time .	
Include Milliseconds	Only visible if Presentation Type value is Time, Date/Time.	
DateTimeFormat	Only visible if Presentation Type value is Time, Date, Duration.	
Date	Only visible if Presentation Type value is Date, Date/Time.	
Time Format	Only visible if Presentation Type value is Date/Time .	
Duration Format	Only visible if Presentation Type value is Duration .	
Behavior properties		
Enable Faceplate	Indicates whether to invoke a faceplate for the associated point. Default value is false .	

Property	Description
Enable Popup	Indicates whether to invoke a popup for the associated point, where you can specify the point's properties. Default value is false .
Source properties	
Path – Point reference	The name of the point reference to which this object will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV, SP, OP.
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
General Properties	
Name	The name of the unique rule used by Quick Builder to generate this display element.
Label	The label to be associated with this display element. For example, the name of a column in the Equipment Summary, or a text label for the display element in the tabular view of the Equipment Detail display.

Check Box display element

Property	Description
Format properties	
Use Inverse Logic	If true , reverses the standard check box logic, so that it corresponds to the wording of the Label. In standard logic, checked equals '1. For example, labeling a check box 'Open' would require the opposite logic to labeling it 'Close.' Default value is false .
Behavior properties	·
Enable Faceplate	Indicates whether to invoke a faceplate for the associated point. Default value is false.
Enable Popup	Indicates whether to invoke a popup for the associated point, where you can specify the point's properties. Default value is false .
Source properties	
Path – Point reference	The name of the point reference to which this object will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV, SP, OP.
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
General Properties	
Name	The name of the unique rule used by Quick Builder to generate this display element.
Label	The label to be associated with this display element. For example, the name of a column in the Equipment Summary, or a text label for the display element in the tabular view of the Equipment Detail display.

Combo Box display element

Property	Description
Format properties	
Scan State	If true , Station overrides the current color with the system-defined colors to indicate the bound data's NaN quality state. The NaN state color is defined in the station.ini file. Default value is true .

Property	Description
Bad State	If true , Station overrides the current color with the system-defined color for 'off-scan'. The default color is gray. Default value is false .
NaN State	If true , Station overrides the current color to indicate a bad value, such as a bad quality, OOS, or a lost value. The bad state color is defined in the station.ini file. Default value is false .
Presentation Type	The format to use for this display element. Valid values are: State descriptor, Acronym. The default value is State descriptor.
Source	Only visible if Presentation Type value is Acronym .
Behavior properties	
Enable Faceplate	Indicates whether to invoke a faceplate for the associated point. Default value is false.
Enable Popup	Indicates whether to invoke a popup for the associated point, where you can specify the point's properties. Default value is false .
Source properties	·
Path – Point reference	The name of the point reference to which this object will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV, SP, OP.
Presentation Type	The format to use for this display element. The default value is State Descriptor .
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
General Properties	
Name	The name of the unique rule used by Quick Builder to generate this display element.
Label	The label to be associated with this display element. For example, the name of a column in the Equipment Summary, or a text label for the display element in the tabular view of the Equipment Detail display.

Link display element

Property	Description
Behavior Properties	
Enable Faceplate	Indicates whether to invoke a faceplate for the associated point. Default value is false.
Enable Popup	Indicates whether to invoke a popup for the associated point, where you can specify the point's properties. Default value is false .
Source properties	
Path – Point reference	The name of the point reference to which this object will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV, SP, OP.
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
Command properties	
Action	The action to use for this command. Valid values are NavigateInternal, NavigateExternal. The default value is NavigateInternal.
View	The view to display for this object. If the Action is defined as NavigateInterval , the display element MUST link to the name of an Equipment item. The action will cause the Equipment Detail to be displayed. If , the Action is defined as NavigateExternal the view can be any URL address.

Property	Description
General Properties	
Name	The name of the unique rule used by Quick Builder to generate this display element.
Label	The label to be associated with this display element. For example, the name of a column in the Equipment Summary, or a text label for the display element in the tabular view of the Equipment Detail display.

Dual Indicator display element

Property	Description
Arrow Properties	
Format: Scan State	If true , Station overrides the current color with the system-defined colors to indicate the bound data's NaN quality state. The NaN state color is defined in the station.ini file. Default value is true .
Format: Bad State	If true , Station overrides the current color with the system-defined color for 'off-scan'. The default color is gray. Default value is false .
Format: NaN State	If true , Station overrides the current color to indicate a bad value, such as a bad quality, OOS, or a lost value. The bad state color is defined in the station.ini file. Default value is false .
Format: Visible Range High	Configures the upper bound of the indicator. This is a constant value that is a percentage of the actual range and can be greater than 100 and less than zero. Default value is 100 .
Format: Visible Range Low	Configures the lower bound of the indicator. This is a constant value that is a percentage of the actual range and can be greater than 100 and less than zero. Default value is 0 .
Format: Range Origin	Configures the fill starting point of the indicator. This is a constant value that is a percentage of the actual range and can be greater than 100 and less than zero. Default value is 0 .
Behavior Properties	
Enable Faceplate	Indicates whether to invoke a faceplate for the associated point. Default value is false.
Enable Popup	Indicates whether to invoke a popup for the associated point, where you can specify the point's properties. Default value is false .
Source properties	
Path – Point reference	The name of the point reference to which this display element will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV , SP , OP .
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
Include Range	Indicates whether to show range values for this display element. Default value is true .
Bar properties	
Format: Scan State	If true , Station overrides the current color with the system-defined colors to indicate the bound data's NaN quality state. The NaN state color is defined in the station.ini file. Default value is true .
Format: Bad State	If true , Station overrides the current color with the system-defined color for 'off-scan'. The default color is gray. Default value is false .
Format: NaN State	If true , Station overrides the current color to indicate a bad value, such as a bad quality, OOS, or a lost value. The bad state color is defined in the station.ini file. Default value is False .
Format: Visible Range High	Configures the upper bound of the indicator. This is a constant value that is a percentage of the actual range and can be greater than 100 and less than zero. Default value is 100 .

Property	Description
Format: Visible Range Low	Configures the lower bound of the indicator. This is a constant value that is a percentage of the actual range and can be greater than 100 and less than zero. Default value is 0 .
Format: Range Origin	Configures the fill starting point of the indicator. This is a constant value that is a percentage of the actual range and can be greater than 100 and less than zero. Default value is 0 .
Source properties	
Path – Point reference	The name of the point reference to which this object will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV, SP, OP.
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
Include Range	Indicates whether to show range values for this display element. Default value is true .
General Properties	
Name	The name of the unique rule used by Quick Builder to generate this display element.
Label	The label to be associated with this display element. For example, the name of a column in the Equipment Summary, or a text label for the display element in the tabular view of the Equipment Detail display.

Mini trend/Sparkline trend display element

Property	Description
Format Properties	
Start Sample Offset	Sample offset for the right most sample in the trend. The larger the offset, the further back in history the first sample retrieved will be.
Sample Count	The number of samples to be shown for each plot. Default value is 5 samples.
History Interval	The history interval for the retrieved data. Valid values are:
	• 1 minute history (snapshot)
	• 6 minute history (average of H1M)
	• 1 hour history (average of H1M)
	8 hour history (average of H1M)
	• 24 hour history (average of H1M)
	Fast history
	• 1 hour history (snapshot)
	8 hour history (snapshot)
	• 24 hour history (snapshot)
Visible Range Low	If specified, defines the lower point of the trend's Y-axis range.
Visible Range High	If specified, defines the upper point of the trend's Y-axis range.
Auto Scale	If enabled, causes the trend to scale to the range of the plot data automatically. This setting overrides any other range defined.
Plot 1 Source Properties	
Path – Point reference	The name of the point reference to which this display element will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV , SP , OP .
Include Range	If enabled, uses the point range as the visible range on the trend, unless Visible Range or Auto Scale is also configured.

Property	Description
Plot 2 Source Properties	
Path – Point reference	The name of the point reference to which this display element will be linked.
Path – Parameter	The parameter of the point reference to which this object will be linked. Examples of valid vales are PV , SP , OP .
Include Range	If enabled, uses the point range as the visible range on the trend, unless Visible Range or Auto Scale is also configured.

Image display element

Property	Description
Format Properties	
Icon	Indicates the path of an icon to be displayed. Station's search paths are used to locate the icon file on disk.

Controller Status display element

Property	Description
Linka Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.
Source: Path – Parameter	The parameter of the point reference that references the LinkA enabled state. For example LinkAEnabled.
Linkb Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.
Source: Path – Parameter	The parameter of the point reference that references the LinkA enabled state. For example LinkAEnabled.
Aggregate Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.
Source: Path – Parameter	The parameter of the point reference that references the aggregate status for the controller. For example Status .

Controller Enable display element

Property	Description
Linka Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.
Source: Path – Parameter	The parameter of the point reference that references the LinkA enabled state. For example LinkAEnabled.
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only , Operator , Supervisor , Engineer , Manager . The default value is Operator .
Linkb Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.

Property	Description
Source: Path – Parameter	The parameter of the point reference that references the LinkA enabled state. For example LinkAEnabled.
Security Level	The security level required for a user to be able to edit the value of or control this display element. Valid values are Read-Only, Operator, Supervisor, Engineer, Manager. The default value is Operator.
Linkaimpl Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.
Source: Path – Parameter	The parameter of the point reference that references the LinkA enabled state. For example LinkAEnabled.
Linkbimpl Properties	
Source: Path – Point reference	The name of the point reference to which this display element will be linked.
Source: Path – Parameter	The parameter of the point reference that references the LinkA enabled state. For example LinkAEnabled.

Alarm Count display element

Property	Description	
Urgent Count Source Properties		
Path – Parameter	A parameter containing the count of Urgent alarms (typically TotalUrgentAlarms).	
High Count Source Properties		
Path – Parameter	A parameter containing the count of High alarms (typically TotalHighAlarms).	
Low Count Source Properties		
Path – Parameter	A parameter containing the count of Low alarms (typically TotalLowAlarms).	

Banner Value display element

Property	Description
Alphanumeric Properties	See the properties for <i>Alphanumeric display element</i> , earlier in this section.
Bar Properties	See the "Bar" properties for <i>Dual Indicator display element</i> , earlier in this section.
Arrow Properties	See the "Arrow" properties for <i>Dual Indicator display element</i> , earlier in this section.

Title display element

Property	Description
Source Properties	
Path – Parameter	A parameter containing the equipment name (typically <i>Name</i>).

Banner

The Banner tab allows you to enable the banner for an equipment item based on this template, and also to configure the banner's contents. By default, the Banner will contain the equipment icon, the alarm count for the equipment, and a banner description. Four additional display elements can be added to each banner. Use the check box at the top of the Banner tab to enable a banner for equipment based on this template.

Use the **Default Image** field to identify an image to use on the banner for any equipment using this template.

Available and Selected display elements

There are two tables of display elements for use when configuring the banner contents: one for **Available Display Elements** and one for **Selected Display Elements**.

The **Available Display Elements** table lists the display elements you can choose from when configuring the Banner. This list contains the three default elements (icon, alarm count, and banner description), plus any custom display elements that have been configured for this banner. Use the right arrow to move display elements from this table into the **Selected Display Elements** table if you want them to appear in the banner for this equipment.

The **Selected Display Elements** table lists the display elements that have been selected to be included in the Banner for this equipment. If the banner has been enabled, you can modify the width of the display elements by entering a new value in the width column. Use the left arrow to move display elements from this table back to the **Available Display Elements** table if you don't want them to appear in the banner for this equipment.

Use the arrows to the right of the **Selected Display Elements** table to determine the order in which the custom display elements will appear in the banner. The positioning of the default elements cannot be changed.

Tabular detail view

The Tabular Detail view defines the layout of the tables on the detail display, and also the parameters to be included in the tables.

The **Display Element** table lists the tables to be included on the detail display. Use the plus + icon to add a row to the table, then specify the details of the table within the columns provided:

- **Table** the name that will be displayed in the header at the top of the table. This header can be clicked to expand or collapse the table. Two tables: *Kay Parameters* and *A11 Parameters* are created by automatically and are read only in the detail view.
- Label the text that will be shown in the display as the name of the selected table.
- **Column** and **Row** define the physical position of the table on the detail display. For example, 1 and 1 would result in the table being positioned in the first column, first row.
- Expandable
- Expanded Default determines whether the table is expanded by default. Valid values are True, False, with the default being False except for the Key Parameters table which defaults to True.

Selected and available Display Elements

Under the properties table, there are two tables of display elements: one for **Available Display Elements** and one for **Selected Display Elements**.

The **Available Display Elements** table lists the display elements you can choose from when configuring a table. Use the arrow between the tables to move display elements between the two tables.

The **Selected Display Elements** table lists the display elements that have been selected to be included in the selected table. Use the arrows to the right of the Selected Display Elements table to define the order in which the display elements will appear in the table.

Related Equipment

The Relationships table allows you to define the relationships that should be used to display related equipment to the equipment that has been created based on this template.

Use the plus + icon to add a row to the table, then specify the details of the relationship within the columns provided:

- **Relationship** the name of this relationship. If you have previously created one or more *Role to* relationships for this equipment, those relationships will be included in a drop down list for you to choose from. Otherwise, you can type the name of the relationship in this field.
- Role the action the relationship performs, for example, **Contains**.

- **Equipment Type** the equipment type that is relevant for this relationship.
- **Prefix** text that will appear before the *Role* text in the label for this table. For example, if Prefix is equal to **This list**, and Role is equal to **Contains**, the text label for this table will read **This list contains**...
- **suffix** text that will appear after the *Role* text in the label for this table. For example, if Prefix is equal to **This list**, and Role is equal to **contains**, and Suffix is equal to **related equipment** the text label for this table will read **This list contains related equipment**.

Equipment Type

The Equipment Type properties allow you to configure the summary view and filters information for equipment referencing this equipment type. These configuration details can be shared between multiple templates, for example, a pumping well and a free flowing well. Equipment referencing the same equipment type will appear in the same table on the Equipment Summary.

Configuration properties in this section of the Equipment Template Builder are:

- Summary view properties, which define the contents and layout of the information on the Equipment Summary and appear when you click on **Equipment Type** in the navigation pane
- Filter properties, which define the filters that will be available from the Equipment Summary

Summary view

The Summary View properties define the contents and layout of the table on the Equipment Summary for any equipment referencing this equipment type, and also the parameters to be included in the table. The table containing these properties is displayed when you select **Equipment Type** in the navigation pane.

Use the **Equipment Type** list to select an existing Equipment Type, or to create a new one. The Equipment Type is the general type of the equipment, and is used in the Equipment visualization to group equipment into tables of the same Type.

The following table lists the Summary View properties.

Property	Description
Summary Name	The name of the table.
Label	The title for this table as it will appear on the Equipment Summary.
Layout Type	Valid values are Table or Card . The default value is Table .
DefaultSortDisplayElementB inding	Specifies which of the Display Element bindings will be used to sort the table by default. If no value is entered, Name will be used.
Sort Direction	The order of the rows in the table, according to the DefaultSortDisplayElementBinding Field. Valid values are Ascending or Descending . The default value is Ascending .
Initial Page Size	The number of visible rows to be included in the table.
Summary Equipment	If set to true, and only one row exists in the table, a banner will be displayed instead of a table.
	Valid values are True or False . The default value is False .
Expanded	Indicates whether this table is expanded when the display is first invoked. Valid values are True or False . The default value is False .
Version	Version is used when the Experion server finds multiple copies of the equipment type. For example, in a Distributed Server Architecture. In this case, the equipment type with the highest version number is used.

Available and Selected display elements

Under the properties table, there are two tables of display elements: one for **Available Display Elements** and one for **Selected Display Elements**.

The **Available Display Elements** table lists the display elements you can choose from when configuring the Summary view. This list is filtered to only contain display elements relevant to the selected Layout Type. When you select a display element from this list it appears in the **Selected Display Elements** table.

The **Selected Display Elements** table lists the display elements that have been selected to be included in the Summary view for this equipment, as well as the properties that can be configured for each display element:

- Sortable (indicates whether the column can be sorted)
- Units (Engineering unit to be displayed in the column header)
- Visible (indicates whether the column will be visible in the Summary view)
- Width (defines the width of column in characters)
- SortDisplayElementBinding (for equipment shapes with more than one display element part, allows you to select the display element part on which to sort. For example, the DualIndicator allows sorting on either the arrow value or the bar value.



Tip

If the layout type for the Summary view is Layout, only four (4) display elements can be included.

Use the arrows to the right of the **Selected Display Elements** table to determine the order of the columns in the Summary table. (The first display element will be the first column).

Filters

The Filters tab allows you to configure the filters that will be available from the Equipment Summary for any equipment referencing this equipment type. Use the + and x buttons to add and delete filters as required.

The following table lists the properties for each filter.

Property	Description
Filter	The name of the filter.
Label	A label for this filter, which will appear in the Equipment Filter list on the Equipment Summary .
Filter Query	The criteria to be applied to equipment items to determine whether they should be displayed when this filter is applied. For example, Status = Failed.
	For more information about Filter Queries, see "Filter query syntax".
Default Sort Column	The column by which the filtered equipment will be sorted on the Equipment Summary .
Default Sort Direction	The direction by which the filtered equipment will be sorted on the Equipment Summary . Valid values are Ascending or Descending .

Filter query syntax

In an equipment table, each row is a unique piece of equipment. The purpose of the equipment type-specific filters is to constrain the table to only contain equipment that meet certain criteria. This criteria is expressed as a *Filter query*, which follows the standard syntax of an *SQL where Clause*.

Field selection in a Filter Query

In a standard *sql* where *c1ause* the fields in the expression are the names of columns. These columns come from the pool of columns chosen as part of the *sql* se1ect c1ause from the table(s) involved.

Equipment tables are not standard SQL tables, though the concepts are broadly similar. Equipment tables have columns but they are not the basic data element. In equipment tables, columns are best understood to be a composed element. Sometimes a column is mapped to a single data element, other times a column is an aggregate of two or more data elements. These more basic data elements are known as <code>Display Elements</code> and they are defined in the equipment template. Each Display Element is configured to map to a parameter retrievable through the equipment point.

Given that the true data source for an equipment row is really any data that can be obtained from (or through) an equipment point, it makes sense that the *Filter query* can specify fields in a number of ways to access that data. The following are valid field selectors in the query:

- Display Element name
 - This is any display element name defined in the template(s) for this type of equipment.
 - This is the default kind of field name.
 - Technically the filter considers this to be a 'model' name. Though optional, the display element name could be wrapped by the 'model' keyword to be explicit.
 - Examples
 - (GasFlow < 1000.0)
 - (GasFlow < GasFlowSP)
 - (model(GasFlowSP))
- · Parameter name
 - This is any valid parameter name addressable on the equipment point.
 - This is a useful capability to easily access data from the equipment point without having to define a
 Display Element in the template.
 - This is not the default kind of a field name and so it is mandatory to use the 'param' keyword to ensure the name is interpreted correctly.
 - Examples:
 - (param(pod.water level limit) > 500.0)
 - (WaterLevel < param(pod.water level limit))
- Attribute of a Display Element or Parameter.
 - There are three valid data attribute keywords: rangelo, rangehi, and units.
 - There is a fourth valid data attribute but not implemented in R430: ordinal.
 - There are a number of valid alarm attribute keywords: priority, subpriority, inalarm, acked, shelved, suppressed, and disabled.
 - Attribute names are used to wrap field names (either Display Element or Parameter names) so as to select a property other than the principle value.
 - If no field name is supplied then the attribute is assumed to refer to the equipment point (typically useful for the alarm attributes).
 - Examples:
 - (GasFlow < 0.7 * rangehi(GasFlowSP))
 - (WaterLevel < rangehi(param(water.PV)))</p>
 - (priority() >= high)
 - (inalarm() = true)

Casting in a Filter Query

The point of a filter query (as evident already from the examples above) is generally to perform some kind of logical comparison. If the result is true then the row is selected into the table, otherwise it is excluded. The code that executes the filter query expects the types on either side of the comparison to be the same. If this is not the case then the comparison will require some help in the form of 'casting' so that it can work:

- Casting can be used to modify the type of fields, values or expressions and has the following syntax:
 - cast(item as type)
 - item is the field, value or expression
 - type is one of the following type keywords: float, int, datetime, bit, or null

- Examples:
 - (GasFlow < cast(1000 as float))
 - (cast(GasFlow as int) < 1000)

Combining Expressions in a Filter Query

Each logical comparison is an expression in the filter query. The result of that expression is either 'true' or 'false' and determines if the equipment row is included in the table or not. However, one expression may not be enough. Where this is the case, multiple expression may be combined to form more complex filter queries. Expressions are combined using logical operators and brackets where required.

- Valid logical operators are: AND, OR, and NOT
- Examples:
 - (GasFlow < GasFlowSP) AND (WaterLevel > 1000.0)
 - (GasFlow < GasFlowSP) OR NOT(status = 'online')

Building and configuring Equipment

Equipment is the collective term used in Experion to represent a real world piece of equipment at a site, such as a well, pump, or generator. *Equipment Templates* are a quick and easy way to create equipment with a predefined set of associated items such as points and controllers.

This section outlines how to use Quick Builder to build and configure equipment.

Related topics

- "Building equipment" on page 68
- "Modifying equipment properties" on page 69
- "Configuring equipment relationships" on page 72
- "Assigning equipment to a different asset" on page 73
- "Deleting equipment" on page 74

Building equipment

To build new equipment

1 Use one of the following options to build a new piece of equipment:

Option Result From the Quick Builder The new piece of equipment appears in the List View, and the properties tabs enable you **Library, drag and drop an** to complete the configuration of the new equipment. **Equipment Template into** the List View. Click 📴. The **Add Item(s)** dialog box appears. 1. In the **Number of Items** field, type the number of equipment items you would like to create. This field defaults to 1. 2. From the Item Family list, select the applicable family. This field might be prepopulated depending on the context of any selection made prior to clicking the Add Item icon. 3. From the **Item Type** list, select **Equipment**. 4. In the Name text box, type in the name for this equipment, or you can accept the default provided. If you have chosen to create more than one equipment item, extra fields are provided where you can choose to add a prefix and/or suffix to the names generated for the equipment, therefore making them unique. The prefix and suffix values can be alphabetical or numeric. |₹ If the Equipment Template is configured to provide a default template name, this template derived value will override any text that you enter here. 5. Click **OK** to add the equipment to the list.

- 2 Provide values for any properties without a default value that have been defined by the template as 'required'. These are indicated as mandatory fields.
- 3 Use the rest of the properties tabs to configure the equipment. Depending on what has been configured in the template for this equipment, many of the properties may be pre-populated, and a number of associated items will also be automatically generated.
 - If, for some reason, the equipment cannot be created successfully a dialog will be displayed explaining of the error encountered. One example of this might be that the new equipment cannot create an associated item because the item's name clashes with an existing item that is already associated with another equipment item.

Modifying equipment properties

Modifying equipment properties is the same as modifying properties for any other Quick Builder item.

- 1. Select an equipment item from the navigation pane or the List view.
- Use the properties tabs to modify the equipment item. The properties tabs provided are specific to the
 equipment type and can contain tabs including **Details**, **Point References**, **Associated Items**, and **Relationships**.

Quick Builder validates the changes you have made according to the rules for the template used to create this equipment item, and highlights any changes that are invalid.



Tip

Depending on the equipment template's configuration, property changes are propagated to Point References and Associated items. Where a template rule uses an equipment's property value to control an associated item's parameter, that parameter will be overwritten every time the equipment parameter is modified. Usually as a result of the user modifying the equipment value, but also when the equipment item is imported, uploaded or pasted into Quick Builder.

3. When you have finished, you need to download the changes to the Experion server. Depending on the rules contained in the template for associated items, the changes will filter through to any associated items for this equipment item as appropriate.

Related topics

- "Details for an Equipment item" on page 69
- "Point references for an Equipment item" on page 70
- "Associated items for an Equipment item" on page 70
- "Relationships for an Equipment item" on page 70

Details for an Equipment item

The Details properties tab contains parameters that define basic details for the equipment. Anything that is controlled by the Equipment Template will be predefined and cannot be changed.

Property	Description
Name	The name of this equipment item.
Description	A short description of the equipment item.
Associated asset	The asset to which this equipment item is assigned. Select the Browse button to display the Asset Browser , from where you can select an asset.
Template	The Equipment template on which this equipment is based.
Equipment properties	
Template defined properties sp	pecific to equipment built from that template.
Label	The text that will appear in Quick Builder to identify the equipment property.
Name	The name for this equipment item, as defined in the Equipment Template Builder.
Value	The value for this equipment item. If you change this value, it will be validated according to any rules imposed by the Equipment Template.
Units	The units of measure for this equipment parameter (optional).

Point references for an Equipment item

Point References enable a point's parameters to be available as equipment parameters. The Point References tab lists the equipment parameters created for this equipment which you can use to control the points through the equipment.

The referenced point can be any SCADA or CDA point on the same server as the equipment point, whether it has been created automatically as an associated item or was preexisting. Note that each SCADA or CDA point can only be referenced from a single equipment point. For example, a SCADA point referenced by a particular meter equipment point cannot be referenced by another meter equipment point.



Tip

Note that the values on this tab are READONLY. They are defined by the template, and depending on the template configuration may be updated as a consequence of changing the value of equipment parameters in the **Details** tab.

Property	Description
Alias	The name of the equipment parameter to hold the point reference.
Point	The name of the point being referenced.
Alarm Aggregation	Indicates whether any alarms on this point should be aggregated to the equipment. Valid values are True and False .

Associated items for an Equipment item

The Associated Items tab lists the items that have been automatically generated for this equipment item. This can include items such as controllers and points. The following table lists the details shown for each associated item.

Property	Description
ItemName	The name of the associated item.
Class	The type of associated item, for example, Analog Point.
Description	A description of the associated item, for example, Flow meter 1.
Family	A <i>grouping</i> used to categorize the associated items. For example, all Analog, Status and Accumulator points will appear under a Family of <i>Point</i> .

Relationships for an Equipment item

When creating Equipment Templates, you can define relationships to help make working with equipment much more efficient and effective.

A *relationship* between equipment items means that information is shared and can be accessed from any equipment item that is part of that defined relationship. This information can include:

- Alarm details alarms can be aggregated to appear on the equipment detail displays of other equipment items
- Key parameter values from one equipment detail display you can view the real time values for key parameters of related equipment. You can also create scripted calculations enabling you to see things like averages and accumulations across your related equipment.

You can also navigate easily between related equipment by using the navigation aids provided in the header of the equipment detail display for any of the related equipment items.

The Relationships tab contains information about the template defined relationships between this equipment item and other equipment items.

Property	Description
Relationship	A list of the defined relationship types that can be added to this equipment item (defined by the Equipment Template).
Related Equipment	A field where the item name of related equipment can be entered. The list contains equipment already configured in the Quick Builder database for the selected Relationship.
Role "From"	The first equipment in this relationship.
Role "To"	The second equipment in this relationship.
Equipment Parameter	Name of the equipment point's parameter used to store the relationship. The parameter value identifies the Related Equipment.
	For example if you define a <i>Pod</i> relationship with these values:
	• Well name is well001
	• Equipment Parameter is POD
	Related Equipment is Pod001
	You can access the related Pod via Well001 using well001.POD , which will have a value of Pod001 .
Alarm aggregation	Defines whether the alarms should aggregate to or from the related equipment.
Related Equipment	The name of the equipment that you want to be listed as Related Equipment for this equipment item. The drop down list contains equipment contained in the database of the role defined in the Role "To" column. If the equipment you wish to create the relationship is not in the Quick Builder database it will not be listed and you will need to type its name in the field provided.

Configuring equipment relationships

The types of relationships that can be configured for an equipment item are defined in the equipment's template. The **Relationships** tab can be used to configure the equipment items for the selected equipment.

To add equipment to a relationship

- 1 From the List View, select the equipment item for which you want to configure a relationship.
- 2 Select the Relationships tab.
 Listed are the relationship types that have been defined for this equipment.
- For each relationship type, select the equipment you want to include in this relationship from the **Related Equipment** list. The list contains equipment already configured in the Quick Builder database that can be chosen for the selected Relationship.
- 4 To add extra relationships (for those relationship types that allow multiple relationships), use the Add Related Equipment fields provided at the top of the table.
 - a Select the relationship type from the **Relationship** list.
 - b Select the name of the equipment you want to include in this relationship from the Related Equipment list. The list contains equipment already configured in the Quick Builder database that can be chosen for the selected Relationship.
 - Click Add.
 The relationship is added to the table with the other relationships of this type.
- 5 Download your changes to the server to view the relationships in the **Related Equipment** table on the detail display for this equipment item.

Assigning equipment to a different asset

You can move equipment items from one asset to another by using a standard drag and drop action. Associated items for that equipment item will also be updated automatically.

To assign an equipment item to a different asset

- 1 In the navigation pane, select **All Items**.
- 2 Select the **Equipment** node.
- 3 In the **List View**, select the equipment item you want to assign to a different asset.
- 4 On the **Details** tab, click the Browse button next to the **Associated Asset** field to display the **Asset Browser**.
- Select the **Asset** you wish to assign the equipment to, then click **OK**. The equipment is assigned to the new asset.

Deleting equipment

Deleting equipment is the same as deleting any other Quick Builder items, but will also result in any sub-equipment or associated items being deleted.

To delete equipment

- 1 From the **All Items** view in the Navigation pane, select the **Equipment** node. Defined equipment items are displayed in the **List View**.
- 2 Select the equipment item to be deleted.
- 3 Use one of the following methods to delete the equipment:
 - a Press the Delete icon on the Toolbar.
 - **b** From the menu bar, select **Edit** > **Delete**.
 - c Right-click on the equipment item and click **Delete**.

A confirmation dialog box is displayed, stating that the equipment item and any included sub-equipment will be deleted.

4 Click **OK** to proceed.

The equipment item is moved to the **Recycle Bin**.

Building controllers or channels

This section outlines how to use Quick Builder to build and configure controllers and channels.



Tip

When building controllers and channels for use with equipment, or to be referenced by Equipment Templates, do not include underscores or hyphens in the names specified for the controller or channel, and avoid channel names ending in **x**.

Related topics

- "Building controllers and channels" on page 76
- "About generic and user scan task controllers" on page 78
- "Creating a generic controller" on page 79
- "Creating a user scan task controller" on page 81
- "Generic and user scan task controller and channel properties" on page 83
- "Modifying a controller or channel after download" on page 87
- "About scanning" on page 90

Building controllers and channels

To build a new controller

1 Use one of the following options to create a new controller:

Option Result From the Controllers The new controller(s) appears in the List View, and the properties tabs enable you to section within the Library, complete the configuration of the new controller. drag and drop the Controller item into the List View. Click 📴. The **Add Item(s)** dialog box appears. 1. In the **Number of items to Add** text box, type the number of controllers you want to 2. From the **Item Family** list, select the applicable family. 3. From the **Item Type** list, select **Controller**. 4. In the Name text box, type in the name for this controller, or you can accept the default provided. If you have chosen to create multiple controllers, the Multi – Items section is enabled, and you can provide a prefix for all the controllers, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the controllers. When building controllers and channels for use with equipment, or to be referenced by Equipment Templates, do not include underscores or hyphens in the names specified for the controller or channel, and avoid channel names ending in x. 5. Click **OK** to add the controller(s) to the list.

2 Use the properties tabs to configure each controller by first highlighting it in the **List View**.



Tip

Each type of controller supported by Experion has its own help file that includes detailed installation and configuration instructions specific to that controller type.

To access the help file for a specific controller, either:

- Press F1 when you are currently editing the properties of the controller or its associated channel.; or,
- From Configuration Studio, choose **Help** > **Controller Help** > **[controller]**, where **[controller]** is the name of the controller for which you want help.

To build a new channel

1 Use one of the following options to create a new channel:

Option	Result
	The new channel(s) appears in the List View , and the properties tabs enable you to complete the configuration of the new channel.

Option Result

Click 📴.

The **Add Item(s)** dialog box appears.

- In the Number of items to Add text box, type the number of channels you want to add
- 2. From the **Item Family** list, select the applicable family.
- 3. From the **Item Type** list, select **Channel**.
- 4. In the Name text box, type in the name for this channel, or you can accept the default provided. If you have chosen to create multiple channels, the Multi Items section is enabled, and you can provide a prefix for all the channels, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the channels.



diT

When building controllers and channels for use with equipment, or to be referenced by Equipment Templates, do not include underscores or hyphens in the names specified for the controller or channel.

- 5. Click **OK** to add the channel(s) to the list.
- 2 Use the properties tabs to configure each channel by first highlighting it in the **List View**.

About generic and user scan task controllers

There are two specialized types of controller: *generic* and *user scan task*.

Generic controllers

You use a generic controller if you want to configure a device that is supported by the server (that is, the server can access its database) but for which there is no controller-specific Property Page in Quick Builder.

User scan task controllers

A user scan task controller is a 'virtual controller' that treats a *user file* (a server database table) as if it were a controller.

Notes

- A user scan task controller can have a status of disabled or failed. The database point is updated, regardless
 of the status.
- You can use a user scan task controller to interface with an unsupported controller. For details, see the *Application Development Guide*.
- For details about designing an efficient user file, see the *Application Development Guide*.

Creating a generic controller

You can add generic controllers and channels to your project.

To create a generic controller and channel:

- 1 Add a *Generic* channel to the project.
- 2 Configure the channel as appropriate.
- 3 Add a *Generic* controller to the project.
- 4 Configure the controller as appropriate, making sure that you select the generic channel that you have just added.
- 5 Add points as appropriate.

Point parameter address syntax for a generic controller

The address syntax for a point parameter in a generic controller is either:

ControllerName Word [Format]

Of

ControllerName Word Bit [Width / MODE]

Part	Description	
ControllerName	The name of the generic controller.	
Word	The data address (in decimal) for the parameter value in the PLC data table. Addresses range from 0001 to 8192.	
Format	For unscaled values:	
	• DBLE = Double precision (64-bit) floating point	
	• INT2 = Short (16-bit) integer	
	• INT4 = Long (32-bit) integer	
	• REAL = Single precision (32-bit) floating point number	
	For scaled values (If the following formats are used, the value is assumed to be an unsigned 16-bit integer and is scaled by the range specified for the point. The following formats specify the raw range of the value in the device.):	
	v100 = 0 to 100	
	u999 = 0 to 999	
	<i>u9999</i> = 0 to 9999	
	s9999 = -9999 to 9999	
	v1023 = 0 to 1023	
Bit	The start bit within the word (for partial integers).	
	You cannot specify <i>Bit</i> and <i>width</i> for analog point parameters that are used as controls.	
Width	The number of bits, including the start bit, which make up the partial integer.	
	The default width is dependent on the type of point and the parameter. For MD point parameters the default is 1-bit; for PV or OP status point parameters the default is the PV or OP width.	
	You cannot specify Bit and width for analog point parameters that are used as controls.	
MODE	Only applicable to the MD parameter. Controls the bit width. If you specify MODE, the mode is 2-bit; if you don't, the mode defaults to 1-bit.	

Example

An analog point PV source: CNTGEN1 003 INT2

Related topics

"Using Address Builder" on page 132

Creating a user scan task controller

To create a user scan task controller and channel:

- 1 Add a *user scan Task* channel to the project.
- 2 Configure the channel as appropriate.
- 3 Add a *user scan Task* controller to the project.
- 4 Configure the controller as appropriate, making sure that you select the user scan task channel that you have just added.
- 5 Add points as appropriate.

Point parameter address syntax for a user scan task controller

The address syntax for a point parameter in a user scan task controller is either:

ControllerName Word [Format]

or

ControllerName Word Bit [Width] [MODE]

Part	Description	
ControllerName	The name of the user scan task.	
Word	The data address (in decimal) for the parameter value in the PLC data table. Addresses range from 0001 to 8192.	
Format	For unscaled values:	
	• DBLE = double precision (64-bit) floating point	
	• <i>INT2</i> = short (16-bit) integer	
	• <i>INT4</i> = long (32-bit) integer	
	• <i>REAL</i> = single precision (32-bit) floating point number	
	For scaled values (If the following formats are used, the value is assumed to be an unsigned 16-bit integer and is scaled by the range specified for the point. The following formats specify the raw range of the value in the device.):	
	v100 = 0 to 100	
	u999 = 0 to 999	
	<i>u9999</i> = 0 to 9999	
	<i>59999</i> = -9999 to 9999	
	v1023 = 0 to 1023	
	If you want to use a user-defined data format, you must define the format on the server. See the section titled "About user-defined data formats" in the <i>Server and Client Configuration Guide</i> for more information.	
Bit	The start bit within the word (for partial integers).	
	You cannot specify Bit and width for analog point parameters that are used as controls.	
Width	The number of bits, including the start bit, which make up the partial integer.	
	The default width is dependent on the type of point and the parameter. For MD point parameters the default is 1-bit; for PV or OP status point parameters the default is the PV or OP width.	
	You cannot specify Bit and width for analog point parameters that are used as controls.	

F	Part	Description	
/		Only applicable to the MD parameter. Controls the bit width. If you specify MODE, the mode is 2-bit; if you don't, the mode defaults to 1-bit.	

Example

An analog point PV source:

RTUUSEO 003 1 INT2

Related topics

"Using Address Builder" on page 132

Generic and user scan task controller and channel properties

This section describes the properties of generic and user scan task controllers and their associated channels.



Tip

Every other type of controller has its own help file. If you are currently editing a controller's or channel's properties, press F1 to open its help file. (Alternatively select it from the Help menu.)

Related topics

- "Main properties for a generic channel" on page 83
- "Main properties for a generic controller" on page 84
- "Main properties of a user scan task channel" on page 85
- "Main properties for a user scan task controller" on page 85

Main properties for a generic channel

The Main tab defines the basic properties for a generic channel.

Property	Description		
Name	The unique name of the channel. A maximum of 10 alphanumeric characters (no spaces or double quotes). Note: In Station displays, underscore characters (_) appear as spaces.		
Description	(Optional) A description of the channel. A maximum of 132 alphanumeric characters, including spaces.		
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.		
Port	The full port description, which includes the port name, baud, and parity. Format:		
	<pre>serial port=PortName baud=BaudRate [parity=odd even none data=n stop=n checksum=ChecksumType duplex=half full connect=nn read=n]</pre>		
Redundant Port	The full redundant port description, which includes the port name, baud, and parity. The redundant port format is the same as that for the port, except for the port name.		
Definition	Format:		
	ChannelType [name=ChannelName marg=nn fail=nn]		
	Where:		
	• Channel Type is the type of channel, for example GEM80.		
	• Channe I Name is the channel name.		
	• marg=nn is the communications marginal alarm limit at which the channel is declared to be marginal. A high priority alarm is generated when this number of errors is reached. To calculate an acceptable limit, multiply the square root of the number of controllers on the channel with the controllers' Marginal Alarm Limit (generally, you specify the same value for all controllers on a particular channel). For example, if there are 9 controllers, and you have set the controllers' Marginal Alarm Limit to 10, the value would be ÷9x10 (that is, 30).		
	• <i>fail=nn</i> is the communications alarm fail limit at which the channel is declared to have failed. An urgent alarm is generated when this number of errors is reached. Set this to double the value of the marginal alarm limit.		

Property	Description	
Item Type	Shows the channel type.	
Last Modified	Shows the date of the most recent modification to this channel's property details.	
Item Number	The unique item number currently assigned to this item. You can change the item number if you need to match your current server database configuration. The number must be between 1 and the maximum number of channels allowed for your system (the maximum is shown on the Sizing tab for the server).	
Last Downloaded	The date on which the item was last downloaded to the server.	

Main properties for a generic controller

The Main tab defines the basic properties for a generic controller.

Property Description		
Name	The unique name of the controller. A maximum of 10 alphanumeric characters (no spaces or double quotes). Note: In Station displays, underscore characters (_) appear as spaces.	
	Some controller types may impose restrictions on the name you give the controller. See the specific controller interface documentation for more information.	
Description	(Optional) A description of the controller. A maximum of 132 alphanumeric characters, including spaces.	
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.	
Channel Name	The name of the channel on which the controller communicates. (You must have already defined the generic channel so that it appears in this list.)	
Definition	Defines the controller type and its communication settings. For detailed information, see the documentation supplied with the controller.	
	The generic syntax is:	
	TypeNo ID=nn [name=ControllerName marg=nn fail=nn]	
	Where:	
	• <i>TypeNo</i> is the number that identifies the type of controller.	
	• <i>ID=nn</i> is the controller ID number.	
	• <i>ControllerName</i> is the of the controller.	
	• marg=nn is the communications marginal alarm marginal at which the controller is declared to be marginal. When this number of errors is reached, a high priority alarm is generated. The default value is 25.	
	• fail=nn is the communications fail alarm limit at which the controller is declared to have failed. When this number of errors is reached, an urgent alarm is generated. Set this to double the marginal alarm limit.	
Item Type	Shows the controller type.	
Last Modified	Shows the date of the most recent modification to this controller's property details.	
Item Number	The unique item number currently assigned to this item. You can change the item number if you need to match your current server database configuration. The number must be between 1 and the maximum number of channels allowed for your system (the maximum is shown on the Sizing tab for the server).	
Last Downloaded	The date on which the item was last downloaded to the server.	

Main properties of a user scan task channel

The Main tab defines the basic properties for a user scan task channel.

Property	Description		
Name	The unique name of the channel. A maximum of 10 alphanumeric characters (no spaces or double quotes). Note: In Station displays, underscore characters (_) appear as spaces.		
Description	(Optional) A description of the channel. A maximum of 132 alphanumeric characters, including spaces.		
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.		
Marginal Alarm Limit	The communications alarm marginal limit at which the channel is declared to be marginal. When this limit is reached, a high priority alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the Server and Client Configuration Guide. To change the priority of the alarm for one channel, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the Server and Client Configuration Guide.		
	A channel barometer monitors the total number of requests and the number of times the controller did not respond or response was incorrect. The barometer increments by two or more, depending on the error, and decrements for each good call.		
	To calculate an acceptable marginal alarm limit, use the formula: Square root of the number of controllers on the channel × Marginal Alarm Limit defined on those controllers (Normally, you specify the same value for all controllers on a channel).		
	For example, if there are 9 controllers on the channel and their Marginal Alarm Limit is set to 25, the value would be 3 (which is the square root of 9) \times 25 = 75.		
Fail Alarm Limit	The communications alarm fail limit at which the channel is declared to have failed. When this barometer limit is reached, an urgent alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the Server and Client Configuration Guide. To change the priority of the alarm for one channel, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the Server and Client Configuration Guide.		
	Set this to double the value specified for the channel Marginal Alarm Limit.		
Item Type	Shows the channel type.		
Last Modified	Shows the date of the most recent modification to this channel's property details.		
Item Number The unique item number currently assigned to this item. You can change the item you need to match your current server database configuration. The number must b between 1 and the maximum number of channels allowed for your system (the maximum on the Sizing tab for the server).			
Last Downloaded	The date on which the item was last downloaded to the server.		

Main properties for a user scan task controller

The Main tab defines the basic properties for a user scan task controller.

Property	Description	
Name	The unique name of the controller. A maximum of <i>10</i> alphanumeric characters (no spaces or double quotes). Note: In Station displays, underscore characters () appear as spaces.	

Property Description			
Description	(Optional) A description of the controller. A maximum of 132 alphanumeric characters, including spaces.		
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.		
Channel Name	The name of the channel on which the controller communicates. (You must have already defined the generic channel so that it appears in this list.)		
Marginal Alarm Limit	The communications alarm marginal limit at which the controller is declared to be marginal. When this limit is reached, a high priority alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the Server and Client Configuration Guide. To change the priority of the alarm for one controller, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the Server and Client Configuration Guide.		
	A controller barometer monitors the total number of requests and the number of times the controller did not respond or response was incorrect. The barometer increments by two or more, depending on the error, and decrements for each good call.		
	The default value is 25.		
Fail Alarm Limit	The communications alarm fail limit at which the controller is declared to have failed. When this barometer limit is reached, an urgent alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the Server and Client Configuration Guide. To change the priority of the alarm for one controller, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the Server and Client Configuration Guide.		
	Set this to double the value specified for the controller Marginal Alarm Limit.		
	The default is 50.		
File Number	The file and record number of the user table that this 'controller' represents.		
Record Number			
LRN Number	The logical resource number of the user scan task to be notified of point control requests.		
	This entry specifies the LRN of a user scan task written with the Application Programming Interface. (For details about writing a user scan task, see the <i>Application Development Guide</i> .)		
Item Type	Shows the controller type.		
Last Modified Shows the date of the most recent modification to this controller's property			
Item Number The unique item number currently assigned to this item. You can change the in you need to match your current server database configuration. The number multiple between 1 and the maximum number of channels allowed for your system (the shown on the Sizing tab for the server).			
Last Downloaded	The date on which the item was last downloaded to the server.		

Modifying a controller or channel after download

Some of the properties of channels and controllers cannot be changed after they have been downloaded to the server database. However, it is possible to delete and then rebuild the channel or controller, effectively changing the properties. The procedure is similar to modifying the controller's item number, described below.

The following procedures describe how to perform likely tasks:

- Modify a controller's Item Number
- Move a controller to another channel (this is typically done to redistribute communications loads between channels)
- Change a channel from a redundant channel to a non-redundant channel



Attention

When you perform these procedures, do them on the current primary server.

The procedures for modifying the controllers involve temporarily moving the points attached to the controller you are modifying to a *temporary* controller—this is necessary to prevent loss of point configuration and history data while you are modifying the controller. For clarity, the controller being modified is called *Original* and the temporary controller is called *Temporary*.



CAUTION

These procedures are laborious and, if not followed carefully, have the potential to delete point configuration and history data.

You should therefore follow these procedures only after you have fully backed up your system.

To modify the controller's item number

- 1 Create a controller called *Temporary* that is of the same type as *Original*.
- 2 Arrange the points by **Source Address** and copy all the points attached to *Original* to the clipboard.
- 3 Paste the points into an Excel worksheet.
- 4 In Excel, globally change *original* to *Temporary*.

 This effectively reassigns the points from *Original* to *Temporary*.
- 5 Copy the contents of the Excel worksheet to the clipboard.
- 6 Paste the points back into Quick Builder.
 - This overwrites the existing point definitions.
- 7 Download *Temporary* and its points.
 - If the download is successful, the points are assigned to *Temporary* in the server database.
- 8 Copy *Original* to an Excel worksheet.
- **9** Move *Original* to the Recycle bin.
- 10 Download the project. (Make sure that the **Automatically Download Deletions** option is selected.) If the download is successful, the *Original* controller is deleted from the server database as well as from the project.
- 11 In Excel:
 - a Change Item Number as required.
 - **b** Clear the contents of the **Date Downloaded** entry.
 - **c** Copy the contents to the clipboard.
- 12 Paste the controller back into Quick Builder.

This recreates *Original*, with its new **Item Number**.

13 Download the project.

- 14 Repeat steps 2 to 6, but this time globally change *Temporary* to *origina1*. This effectively reassigns the points back to *Original*.
- If the download is successful, the points are reassigned to *Original* in the server database.
- **16** Move *Temporary* to the Recycle bin.

15 Download the project.

17 Download the project. (Make sure that the **Automatically Download Deletions** option is selected.)

If the download is successful, the *Temporary* controller is deleted from the server database as well as from the project.

To move the controller to another channel

- 1 If the channel to which you want to move the controller does not already exist, add and configure it now.
- 2 Create a controller called *Temporary* that is of the same type as *Original*.
- 3 Arrange the points by **Source Address** and copy all the points attached to *Original* to the clipboard.
- 4 Paste the points into an Excel worksheet.
- 5 In Excel, globally change *original* to *Temporary*.
 This effectively reassigns the points from *Original* to *Temporary*.
- **6** Copy the contents of the Excel worksheet to the clipboard.
- 7 Paste the points back into Quick Builder. This overwrites the existing point definitions.
- 8 Download *Temporary* and its points.

 If the download is successful, the points are assigned to *Temporary* in the server database.
- **9** Copy *Original* to an Excel worksheet.
- **10** Move *Original* to the Recycle bin.
- 11 Download the project. (Make sure that the **Automatically Download Deletions** option is selected.)

 If the download is successful, the *Original* controller is deleted from the server database as well as from the project.
- 12 In Excel:
 - a Change Channel Name as required.
 - **b** Clear the contents of the **Date Downloaded** entry.
 - c Copy the contents to the clipboard.
- **13** Paste the controller back into Quick Builder. This recreates *Original*, which is now attached to the other channel.
- 14 Download the project.
- **15** Repeat steps 3 to 7, but this time globally change *remporary* to *origina1*. This effectively reassigns the points back to *Original*.
- 16 Download the project.
 - If the download is successful, the points are reassigned to *Original* in the server database.
- 17 Move *Temporary* to the Recycle bin.
- 18 Download the project. (Make sure that the **Automatically Download Deletions** option is selected.)

 If the download is successful, the *Temporary* controller is deleted from the server database as well as from the project.

To change a channel from a redundant channel to a non-redundant channel

1 In Quick Builder, export the channel to a local folder on the computer. See the topic titled "Exporting project data" for more information.

2 Using Notepad, open the . hdw file that was created when you exported the redundant channel. For example, the file is called QBDB.hdw and the contents of the file is as follows:

```
&Item:ModiconChan1
ADD CHN04 TRMSRV PORT=127.0.0.1:3003 CONNECT=200 READ=150
ADD CHN04D TRMSRV PORT=127.0.0.1:3004 CONNECT=200 READ=150
DEF CHN04 NAME=MODICONChan1 MAR=25 FAIL=50
&
```

Where CHNO4D is the redundant connection you want to remove.

3 Edit the line that refers to the redundant link by changing ADD to DEL and removing the remainder of the line.

To continue the example in the previous step:

```
&Item:ModiconChan1
ADD CHN04 TRMSRV PORT=127.0.0.1:3003 CONNECT=200 READ=150
DEL CHN04D
DEF CHN04 NAME=MODICONChan1 MAR=25 FAIL=50
&
```

- 4 Save the .hdw file.
- 5 Open a Command Prompt window and change the directory to the exported folder you specified in step 1.
- 6 Type hdwbld QBDB.hdw, where QBDB is the name of the file you edited.

The non-redundant channel should now exist on the server.

7 After successfully building the channel, return to the Quick Builder project, select the channel and upload the non-redundant channel details from the server.

Related topics

"Exporting project data" on page 33

About scanning

Scanning is the process by which the server reads point parameter values from controllers.

To minimize the load on the system, it is important to plan for and implement an efficient scanning strategy, and to use the appropriate scanning methods. This section describes the various scanning methods.

Related topics

- "Periodic scanning" on page 90
- "Exception scanning" on page 90
- "Demand scanning" on page 91
- "Dynamic scanning" on page 91
- "About scan packets" on page 91

Periodic scanning

Periodic scanning involves reading parameter values at specified time intervals.

With periodic scanning, you select the appropriate scan period, ranging from seconds to minutes, for each input/output parameter. For example, if you assign a scan period of 15 seconds to the PV, the server scans the value in the controller every 15 seconds.

When choosing a scan period, consider the following factors:

- Whether the controller automatically reports changes of state. If so, periodic scanning might not be necessary.
- The rate of change of the value. If a value only changes once an hour, it is inefficient to scan that value every five seconds.
- The rate at which you need to collect history for the point (in the case of the PV parameter). A point requiring one minute snapshots needs a scan period greater than 60 seconds.
- How quickly field changes need to appear in Station displays. Dynamic values on a display are updated from the database at the configured update rate of the Station.
- The number of values that can be scanned from a controller at a particular scan rate. For example, it is unlikely that 2,000 analog values could be scanned from a controller connected to server via a serial line operating at 1200 baud.
- Whether periodic scanning is available—some controllers do not respond to scanning polls and rely on reporting by exception.

You may have to experiment to arrive at optimum scanning periods. For details about using the **lisson** utility to analyze analyzing scanning performance, see the *Server and Client Configuration Guide*.

Exception scanning

Exception scanning is only available if the controller supports reporting of significant events. They are set up and configured to report by exception (initiate the communication).

Significant events can be caused by events such as:

- Changes in a status point
- Significant changes in an analog point
- · Analog alarms

For more information about configuring exception scanning, see the appropriate Controller Reference.

Demand scanning

Demand scanning is a 'one-shot' scan of a point parameter in response to a request. Two main types of demand scanning are used:

- Scan point special
- · Control confirmation

Scan point special

A demand scan of point parameters is referred to as a *scan point special*. A scan point special is performed whenever scanning of a point is disabled and then re-enabled (for example using the **Point Detail** display). Application programs and free format reports can cause a scan point special demand scan of a point. For details, see the *Application Development Guide*.

Control confirmation

A control confirmation demand scan is issued on the source address (if configured) after an OP, SP, MD, or an auxiliary parameter control is issued. This is to confirm that the control took place correctly. If the scanned value does not match the controlled value (within the deviation deadband), a control fail alarm may be generated.

Dynamic scanning

Dynamic scanning involves scanning point parameters in response to a particular request, using a scan method that differs from its usual scan method (if any). The particular request could be to:

- Scan a parameter that is not otherwise scanned, either as a 'once-off' read, or for as long as an operator views the parameter on the display.
- Scan a parameter at an accelerated rate for as long as an operator views the parameter on the display.
- Perform a once-off scan of all parameters on a controller configured for dynamic scanning.
- Perform a time-limited (two-minute) scan of all parameters on a controller configured for dynamic scanning, either at the configured scan period (CSP) or at an accelerated rate.

See the topic titled "About dynamic scanning" in the Server and Client Configuration Guide for more information.

About scan packets

A *scan packet* is the basic unit used by the server to acquire data from a controller. A scan packet represents a single input/output (transaction) with a controller—that is, one scan packet is used every time the server sends a request for data to a controller.

A scan packet can access several addresses within a controller to provide values for several points. Because the number of requests per second is generally a limiting factor, the scanning strategy should attempt to obtain the maximum number of point values in the minimum number of scan packets.

The basic requirements for including points in the same scan packet are:

- The points have the same scan period.
- The point source addresses reference the same controller.
- The number of values acquired does not exceed the scan packet size for the particular controller.
- Some controllers require that the addresses to be scanned are contiguous.

Whenever you change the point configuration, the server re-builds the scan packets in order to re-optimize scanning. For example, the server ensures that:

- If there are multiple references to an address at the same scan rate, there is only one entry in the scan packet.
- If there are multiple references to an address at different scan rates, a single entry is made at the fastest rate.

A separate scan packet is created for database addresses. Database addresses are used to scan information from other point parameters, or from files in the server database.

It is strongly recommended that you follow the instructions for optimizing scan packets—and hence maximizing scanning performance—included in the help for the specific controller.

Building and configuring points

You can use Quick Builder to create the following types of points:

- Accumulator
- Analog
- Container
- OPC Advanced
- Status

This section describes how to create and configure each type of point.

Tabs

The following table lists the Quick Builder tabs, and associated configuration tasks, for each point type.

Point type	Tab	Go to
Accumulator	Main	"Main properties for an accumulator point" on page 97
	Display	"Display-related properties" on page 121
	Alarms	"Alarm properties for an accumulator point" on page 98
	History	"History collection properties" on page 122
	Scripts	"Creating or editing scripts" on page 125
	User Defined	"Configuring user-defined parameters" on page 127
	PV Algo	"Configuring algorithm parameters" on page 120
	Action Algo	"Configuring algorithm parameters" on page 120
Analog	Main	"Main properties for an analog point" on page 100
	Display	"Display-related properties" on page 121
	Alarms	"Alarm properties for an analog point" on page 101
	Control	"Control properties for an analog point" on page 103
	Auxiliary	"Auxiliary properties for an analog point" on page 104
	History	"History collection properties" on page 122
	Scripts	"Creating or editing scripts" on page 125
	User Defined	"Configuring user-defined parameters" on page 127
	Non Scanned Parameters	"Subscribing to non-scanned parameters" on page 124
	PV Algo	"Configuring algorithm parameters" on page 120
	Action Algo	"Configuring algorithm parameters" on page 120
Container	Main	"Container points" on page 106
	Contained Points	"Main properties for a container point" on page 107
OPC advanced	Main	"Main properties for an OPC advanced point" on page 110

Point type	Tab	Go to
	Display	"Display-related properties" on page 121
	Scripts	"Creating or editing scripts" on page 125
	User Defined	"Configuring user-defined parameters" on page 127
	OPC Parameters	"OPC parameters for an OPC advanced point" on page 113
	History	"History collection properties" on page 122
Status	Main	"Main properties for a status point" on page 114
	Display	"Display-related properties" on page 121
	Alarms	"Alarm properties for a status point" on page 116
	Control	"Control properties for a status point" on page 117
	History	"History collection properties" on page 122
	Scripts	"Creating or editing scripts" on page 125
	User Defined	"Configuring user-defined parameters" on page 127
	Non Scanned Parameters	"Subscribing to non-scanned parameters" on page 124
	PV Algo	"Configuring algorithm parameters" on page 120
	Action Algo	"Configuring algorithm parameters" on page 120

Related topics

- "Building points" on page 95
- "Assigning points to an asset" on page 96
- "Accumulator points" on page 97
- "Analog points" on page 100
- "Container points" on page 106
- "OPC advanced points" on page 110
- "Status points" on page 114
- "Configuring algorithm parameters" on page 120
- "Display-related properties" on page 121
- "History collection properties" on page 122
- "Subscribing to non-scanned parameters" on page 124
- "Creating or editing scripts" on page 125
- "Electronic signature related properties" on page 126
- "Configuring user-defined parameters" on page 127
- "Importing/uploading specialized point configurations" on page 130
- "Specifying point parameter addresses" on page 131
- "Using Address Builder" on page 132

Building points

1 Use one of the following options to create a new point:

Option	Result
From the Points section within the Library, drag and drop the relevant Point item into the List View.	The new point appears in the List View , and the properties tabs enable you to complete the configuration of the new point.
Click .	The Add Item(s) dialog box appears.
	1. In the Number of items to Add text box, type the number of points you want to add.
	2. From the Item Family list, select the applicable family.
	3. From the Item Type list, select Point .
	4. In the Name text box, type in the name for this point, or you can accept the default provided. If you have chosen to create multiple points, the Multi – Items section is enabled, and you can provide a prefix for all the points, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the points.
	5. Click OK to add the point(s) to the list

2 Use the properties tabs to configure each point by first highlighting it in the List View.

Assigning points to an asset

- 1 From the main Quick Builder, click on the **Asset view** filter option to display the assets that have been downloaded from the server.
- 2 Click the asset to which you want to assign the point.
 Any items already assigned to this asset are displayed in the List View.
- 3 From the Library, click the Points category to list the point types.
- 4 Select the item for the type of point you want to create. Drag and drop the item into the **List View**. The new point appears in the List View and you can use the Properties tab to complete the configuration of the new point.

The point is automatically assigned to the asset.

Accumulator points

An accumulator point is a standard point type with a fixed data structure that represents total values. For example, an accumulator point can represent the volume of water that has flowed into a tank or through a turbine.

This section contains the configuration information that is specific to accumulator points. Other tabs also appear in the properties pane for the accumulator point, but are generic to all points. They are:

- · Display tab
- · History tab
- Scripts tab
- · User Defined tab
- PV Algo tab
- Action Algo tab

See the related topics for links to more information about each of these tabs.

Related topics

- "Main properties for an accumulator point" on page 97
- "Alarm properties for an accumulator point" on page 98
- "Configuring user-defined parameters" on page 127
- "Configuring algorithm parameters" on page 120
- "Display-related properties" on page 121
- "History collection properties" on page 122
- "Creating or editing scripts" on page 125

Main properties for an accumulator point

The Main tab defines the point's basic properties.

Property	Description
Point ID	The point's name.
	See the topic "Naming rules for points" in the chapter on "Points" in the Server and Client Configuration Guide.
Enterprise Name	An intuitive name given to a point, which can be used as an alternative to the <i>point ID</i> . It must be unique amongst entities with the same parent asset. The enterprise name property is also referred to as the Use Name on the initial Add Items screen.
Description	A description of the point that helps identify it. The description often appears in Station displays. 132 characters maximum, including spaces.
Parent Asset	The asset to which the point belongs.
	Click to select from a list of assets.
	A parent controller can also be configured to enable alarms raised on the point to appear in the System Status display instead of the Alarm Summary. Instead of selecting an asset from the list, enter \$CONTROLLER followed by the last four digits of the controller's item number. For example, for controller <i>RTU000018</i> you would enter \$CONTROLLER0018 . Note that this is only possible for status points, accumulator points, and analog points.
PV Source Address	The controller name/address where the PV is stored.
	Either type the full address, or click to specify the address using Address Builder.

Property	Description
PV Scan Period	The interval, in seconds, at which the server scans the controller for the parameter value. Select 0 (the default) if you do not want scanning.
Dynamic Scanning	When selected, dynamic scanning is enabled for the PV parameter. The default setting for this check box is selected.
Engineering Units	The engineering unit that the PV value represents.
100% Range Value	The highest register value for the PV.
	If you have scaled the PV by specifying a data format, type in the number that represents the highest register value.
	If you haven't used a data format, use the default value, 100%.
Rollover Value	Should be set to the maximum value attained by the 'physical' counting or totalizing mechanism. The default is 4095.
Scale Factor	The value used to convert the counts to engineering units. The default, 1, means that a one-to-one ratio exists between the counts and the engineering units. A value of 10 would mean that one count equals 10 engineering units.
	For example, if your engineering unit is ml/s and 1 count is equivalent to 52.5 ml/s, then the scale factor is 52.5.
Meter Factor	The meter factor is a multiplier used for calibration of the PV value, using the following formula:
	PV(new) = PV(old) + (scale factor x meter factor x raw counts)
	The default value is 1.
PV Algo	The PV algorithm associated with this point. If you select an algorithm, the PV Algo tab appears.
	The default is <i>NONE</i> .
Action Algo	The action algorithm associated with this point. If you select an algorithm, the Action Algo tab appears.
	The default is NONE.
Scanning Enabled	Indicates that scanning is to be enabled as soon as you download the point.
Item Type	Shows the point type.
Last Modified	Shows the date of the most recent modification to this point's property details.
Last Downloaded	The date on which the item was last downloaded to the server.

Related topics

Alarm properties for an accumulator point

The **Alarms** tab specifies the characteristics of up to four alarms that an accumulator point can generate.

[&]quot;Configuring algorithm parameters" on page 120

[&]quot;Using Address Builder" on page 132

Property	Description
Alarm Type	The type of alarm:
	• <i>None</i> . The default
	• <i>PVHigh</i> . An alarm is generated when the PV rises above the value specified in Limit .
	• <i>PVHighHigh</i> . Used in conjunction with a <i>PVHigh</i> alarm to indicate a more serious alarm. The value specified in Limit for the <i>PVHighHigh</i> alarm must be greater than that specified for <i>PVHigh</i> alarm.
	• RateOfChange. An alarm is generated if the rate of change of the PV (in engineering units per second) exceeds the value specified in Limit .
Priority	These two properties specify the alarm's severity, and where it appears in the list of alarms.
Sub Priority	Priority can be: <i>Urgent</i> , <i>High</i> , <i>Low</i> and <i>Journa1</i> (the default). All alarms, except for Journal, appear in the Alarm Summary display. Journal alarms do not appear in Station as alarms, but are written to the event file.
	Sub-priority range from 15 (highest), to 0 (lowest and default).
Limit	The PV value, in engineering units, at which an alarm is generated.
On Delay	On Delay and an Off Delay values can be specified (in seconds) for the following alarms:
Off Delay	• PVHigh
	PVHighHigh
	RateOfChange
Alarm Message Index	The index number of the message associated with alarms for this point.
	For details about creating messages, see the Server and Client Configuration Guide.
Disable Alarming	If selected, disables all alarms for this point.
Journal Only	Handles all alarms for the point as journaled events; alarms do not appear in the alarm summary.

Analog points

An analog point is a standard point type with a fixed data structure that represents continuous values. For example, an analog point can represent pressure in a boiler or temperature in a furnace.

This section contains the configuration information that is specific to analog points. Other tabs also appear in the properties pane for the analog point, but are generic to all points. They are:

- Display tab
- · History tab
- · Scripts tab
- · User Defined tab
- · Non Scanned parameters tab
- Action Algo tab
- PV Algo tab

See the related topics for links to more information about each of these tabs.

Related topics

- "Main properties for an analog point" on page 100
- "Alarm properties for an analog point" on page 101
- "Control properties for an analog point" on page 103
- "Auxiliary properties for an analog point" on page 104
- "About drift deadbands" on page 105
- "Configuring user-defined parameters" on page 127
- "Configuring algorithm parameters" on page 120
- "Display-related properties" on page 121
- "History collection properties" on page 122
- "Creating or editing scripts" on page 125
- "Subscribing to non-scanned parameters" on page 124

Main properties for an analog point

The **Main** tab defines the point's basic properties.

Property	Description
Point ID	The point's name.
	See the topic "Naming rules for points" in the chapter on "Points" in the Server and Client Configuration Guide.
Enterprise Model Item Name	An intuitive name given to a point, which can be used as an alternative to the <i>point ID</i> . It must be unique amongst entities with the same parent asset. The item name property is also referred to as the Use Name on the initial Add Items screen.
Description	A description of the point that helps identify it. The description often appears in Station displays. 132 characters maximum, including spaces.

Property	Description
Parent Asset	The asset to which the point belongs.
	Click to select from a list of assets.
	A parent controller can also be configured to enable alarms raised on the point to appear in the System Status display instead of the Alarm Summary. Instead of selecting an asset from the list, enter "\$CONTROLLER" followed by the last four digits of the controller's item number. For example, for controller RTU000018 you would enter "\$CONTROLLER0018." Note that this is only possible for status, accumulator, and analog points.
PV Source Address	The controller name/address where the PV is stored.
	Either type the full address, or click to specify the address using Address Builder.
	If you select an OPC controller, the Non-Scanned Parameters tab appears.
PV Dynamic Scanning	When selected, dynamic scanning is enabled for the PV parameter. The default setting for this check box is selected.
PV Scan Period	The interval, in seconds, at which the server scans the controller for the parameter value. Select 0 (the default) if you do not want scanning.
Engineering Units	The engineering unit that the PV value represents.
100% Range Value	The highest register value for the PV.
	If you have scaled the PV by specifying a data format, type in the number that represents the highest register value.
	If you haven't used a data format, use the default value, 100%.
0% Range Value	The lowest register value for the PV. If the parameter value has been scaled by specifying a scaling data format, this value equals 0% (the default) of the register range.
Drift Deadband	Specifies the percentage change in a parameter's value that is significant enough to require processing.
	Specifying a drift deadband helps reduce system load. The default is 0.000%.
PV Algo	The PV algorithm associated with this point. If you select an algorithm, the PV Algo tab appears.
	The default is NONE.
Action Algo	The action algorithm associated with this point. If you select an algorithm, the Act Algo tab appears.
	The default is NONE.
Scanning Enabled	Indicates that scanning is to be enabled as soon as you download the point.
Clamp PV	If selected, the PV value is clamped to either 0% (low) or 100% (high) if the value exceeds either low or high limits set for the PV clamp.
	The PV clamp high and low limits are defined in Station using the Point Processing tab of the Alarm & Point Processing display. See the <i>Server and Client Configuration Guide</i> .
Item Type	Shows the point type.
Last Modified	Shows the date of the most recent modification to this point's property details.
Last Downloaded	The date on which the item was last downloaded to the server.

Related topics

Alarm properties for an analog point

The **Alarms** tab specifies the characteristics of up to eight alarms that an analog point can generate.

[&]quot;Configuring algorithm parameters" on page 120

[&]quot;Using Address Builder" on page 132

During operation, only the highest priority alarm is displayed. Consequently, if you define more than one alarm, you need to ensure that the priority/sub priority you assign to each alarm reflects its relative importance. For example, you should assign a higher priority to a <code>PVHighHigh</code> alarm than to a <code>PVHigh</code> alarm. (If you want to assign the same priority to alarms, the alarm that appears higher in the list takes precedence. For example, you should define the <code>PVHighHigh</code> alarm above the <code>PVHigh</code> alarm.)

Property	Description
Alarm Type	The type of alarm:
	• DeviationHigh. An alarm is generated when the PV rises above the SP by more than the value specified in Limit .
	 DeviationLow. An alarm is generated when the PV falls below the SP by more than the value specified in Limit. Note that the value must be negative, for example -5. None. The default
	• <i>PVHigh.</i> An alarm is generated when the PV rises above the value specified in Limit .
	• <i>PVHighHigh</i> . Used in conjunction with a <i>PVHigh</i> alarm to indicate a more serious alarm. The value specified in Limit for the <i>PVHighHigh</i> alarm must be greater than that specified for <i>PVHigh</i> alarm.
	• <i>PVLow.</i> An alarm is generated when the PV falls below the value specified in Limit .
	• <i>PVLowLow</i> . Used in conjunction with a <i>PVLow</i> alarm to indicate a more serious alarm. The value specified in Limit for the <i>PVLowLow</i> alarm must be less than that specified for <i>PVLow</i> alarm.
	• RateOfChange. An alarm is generated if the rate of change of the PV (in engineering units per second) exceeds the value specified in Limit .
	• <i>TransmitterHigh</i> . Similar to a PVHigh alarm, it is typically used to indicate a failed transmitter.
	• <i>TransmitterLow.</i> Similar to a PVLow alarm, it is typically used to indicate a failed transmitter.
Priority	These two properties specify the alarm's severity, and where it appears in the list of alarms.
Sub Priority	Priority can be: <i>Urgent</i> , <i>High</i> , <i>Low</i> and <i>Journa1</i> (the default). All alarms, except for Journal, appear in the Alarm Summary display. Journal alarms do not appear in Station as alarms, but are written to the event file.
	Sub-priority range from 15 (highest), to 0 (lowest and default).
Limit	The PV value, in engineering units, at which an alarm is generated.
On Delay	On Delay and an Off Delay values can be specified (in seconds) for the following alarms:
Off Delay	• PVLowLow
	• PVLow
	• PVHigh
	• PVHighHigh
	RateOfChange
	TransmitterHigh
	TransmitterLow
	DeviationHigh
	DeviationLow
	Unreasonable Value
External Change Alarms	If selected, an alarm is raised if the parameter changes without the change being initiated from the server.
Unreasonable Value	Raises an alarm if the PV goes outside the reasonable value range. (The high and low limits for this range are specified in Station.)
Control Fail Alarm	Raises an alarm if the value of a control parameter, such as OP or SP, is not correct. (After issuing a new control value, the server scans the point to check the point's control value is correct.)

Property	Description
Alarm Message Index	The index number of the message associated with alarms for this point.
	For details about creating messages, see the Server and Client Configuration Guide.
Alarm Deadband	Reduces the number of alarms that are generated when the PV value is moving in and out of the alarm limit.
	For example, if you select 1% and an alarm is raised because the PV exceeded a limit, no more alarms are raised unless the PV first drops more than 1% and then rises back above the alarm limit.
Disable Alarming	If selected, disables all alarms for this point.
Journal Only	Handles all alarms for the point as journaled events; alarms do not appear in the alarm summary.

Control properties for an analog point

The **Control** tab defines the point's control-related properties.

Property	Description
Source Address	The address from which the server reads (scans) the associated parameter value. The address can be a controller, a point, or a database file.
	Either type the full address, or click to specify the address using Address Builder.
Dest Address	The address to which the server writes the associated parameter value. The address can be a controller, a point, or a database file.
	Either type the full address, or click to specify the address using Address Builder.
Scan Period	The interval (in seconds) between successive scans of the source address.
Dynamic Scanning	When selected, dynamic scanning is enabled for the parameter. The default setting for this check box is selected.
Reverse Output	Reverses source and destination parameter values. Select it if the device being controlled closes and opens on reverse signals.
Reverse Mode	Reverses the mode parameter value for the MAN state. Do not enable MD reverse on points connected to Bristol Babcock controllers and Bristol Babcock OpenBSI controllers.
Control Confirmation	When this check box is selected and a control action is performed on the point, displays the prompt: Please confirm control request . The operator must press Y to confirm the control action.
	If you configure the point to use electronic signatures, the server writes to the Dest Address only after the correct entry of the password(s).
Low Control Limit	The lowest value that can be set for the associated parameter. The value is clamped at this value.
	For OP , the value is specified as a percentage of the PV output range. The default is 0%.
	For SP , the value is specified in engineering units.
High Control Limit	The highest value that can be set for the associated parameter. The value is clamped at this value.
	For OP , the value is specified as a percentage of the PV output range. The default is 100%.
	For SP , the value is specified in engineering units.
Control Deadband	The percentage deviation from the SP value that constitutes a good control. (The default value is 1.000%.) The value is calculated using the formula:
	(new SP value) +/-(control deadband percentage)
	If the PV value is not within the target range, a PV fail alarm is raised.

Property	Description
Control Timeout	The maximum time (in seconds) allowed, after a change in SP or OP, for the PV value to reach an acceptable value before a control fail alarm is raised. The default is <i>None</i> (no control timeout).
	The server checks the value every 10 seconds during the timeout period.
	You must specify a value other than <i>None</i> to enable the control fail alarm.
Control Level	Only applicable if you use operator-based security.
	The minimum control level (between 0 and 255) required to perform supervisory control on this point. The default is 0.
Normal Mode	The normal mode for this point, to which it is reset to after a command is issued. The modes are:
	AUTO (default). Automatic mode. The controller (or server) controls the output and operators cannot change the output value.
	• MAN. Manual mode. The operator is permitted to change either the SP or OP.
	• <i>CASC</i> . Cascade mode. Only applicable to S9000, TDC, and UDC controllers. Used when the SP comes from the output of another PID loop within the controller. When in CASCade mode, operators cannot change either the SP or OP.
	COMP. Computer mode. Only applicable to a TDC controller. Used when the SP comes from a computer that is performing automatic control. When in COMPuter mode, operators can change either the SP or OP.
Disable mode checking on	If selected, operators can change parameter values regardless of point's mode.
output	If cleared, the server checks the mode before allowing an operator to change a parameter value. (If the mode is set to <i>AUTO</i> , the operator is not allowed to change the OP value.)
	Note that there is no indication to an operator on Station displays that the mode checking is disabled.
Control Inhibit	Inhibits control of the point. Operators can view, but not control, the point.

Related topics

"Configuring algorithm parameters" on page 120

Auxiliary properties for an analog point

The **Auxiliary** tab is exclusive to analog points, and defines up to four auxiliary parameters. You can use these auxiliary parameters to read auxiliary data from a controller (or write auxiliary data to it).

Property	Description
Parameter Name	The name of the auxiliary parameter.
	If the name matches the name of an internal point parameter, the internal parameter's value tracks the value in the controller. If the value of the internal parameter is changed, that value is also written to the auxiliary parameter's destination address. In this way, for example, alarm limits in a controller are kept in synchronization with point alarm limits.
Source Address	The address of the auxiliary parameter. The source can be a controller, point, or database file.
	Either type the full address, or click to specify the address using Address Builder.
Destination	For an SP, OP or MD parameter, type the destination address. The destination can be a controller, point, or database file.
	Either type the full address, or click to specify the address using Address Builder.

[&]quot;Using Address Builder" on page 132

Property	Description
Scan Period	The interval (in seconds) between which the source address is scanned. The default is 0 (no scanning).
Dynamic Scanning	When selected, dynamic scanning is enabled for the parameter. The default setting for this check box is selected.

Related topics

"Configuring algorithm parameters" on page 120

About drift deadbands

Drift deadbands eliminate unnecessary processing of analog point parameters, and therefore reduce system load. When a parameter is scanned, processing is only performed if the value has changed by more than the deadband amount since processing last occurred. The deadband value is expressed as a percentage of the point range.

Related topics

"Configuring algorithm parameters" on page 120

"Using Address Builder" on page 132

[&]quot;Using Address Builder" on page 132

Container points

A *container* point ties together a set of related points so that you can manage them as if they were one point. A container point is, in effect, a user-defined point type that matches your data requirements for a particular device type or scenario.

Container points are specifically designed to be used where you have numerous devices or scenarios of the same type—typical examples include compressors, tanks and security zones.

Container points have the following restrictions:

- All child points must be on the same server as the container point—that is, they cannot be on a remote server.
- Alarms raised on the contained (child) points are not promoted to the container point. This means that a
 container point never goes into alarm.
- You cannot attach an algorithm to a container point.
- You cannot include points from more than one server in the same container point.

This section contains information on how to use Quick Builder to create and configure container points.

Related topics

"Defining the structure of a container point" on page 106

"Creating container points" on page 106

"Main properties for a container point" on page 107

"Using an existing point detail display as the associated display" on page 108

"Creating a point detail display for a container point" on page 108

Defining the structure of a container point



Attention

It is essential that you design the structure of a container point with great care. There is no easy way to change the structure of a container point type after you start adding container points in Quick Builder. Instead, you have to individually change the structure of every container point you have created.

The first step in defining a new type of a container point is to identify its *contained* (child) points. For example, you may use the following points to monitor and control a particular type of compressor:

- An analog point to monitor the pressure
- A status point to control the motor
- An accumulator point to monitor hours run

Having identified the contained points, you can give the container point type an appropriate name and define an *alias* for each contained point. Note that periods (.) are not allowed in alias names for container points; for example, *flow.rate* is not a valid alias name.

Continuing with the compressor example, you could call the container point type *compressType1*, and define the following aliases:

- *Pressure* (to represent the analog point)
- motor (to represent the status point)
- Hours Run (to represent the accumulator point)

Creating container points

There is no mechanism in Quick Builder for creating container point *templates*. Consequently, we recommend the following two-step process when adding container points:

- 1. Create a container point that defines its basic properties, including the aliases for the contained points. (This point becomes, in effect, the *template* for a new type of container point.)
- 2. Create duplicates of the *template* point and then configure each duplicate as necessary.

To create a container point

- 1 Click be to add a container point.
- 2 In the Add Items dialog box, select Point as the item and Container as the point type.
- 3 On the **Main** tab, enter the container point details as required.
- 4 Click the Contained Points tab.
- 5 Add one row for each alias by clicking **Insert Point**.
- 6 Name each alias in accordance with your design.

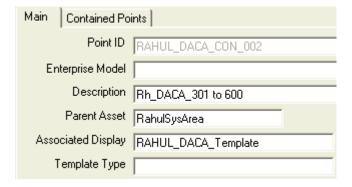


Figure 6: Main tab of a container point

Main Contained Points					
		Alias	Contained Point	Description (read only)	
		C001	Rh_DACA_301		
		C002	Rh_DACA_302		
		C003	Rh_DACA_303		
		C004	Rh_DACA_304		
		C005	Rh_DACA_305		

Figure 7: Contained Points tab of a container point

To create duplicates of the template container point

- Select the container point and then choose Edit > Duplicate Items.
 The Duplicate dialog box opens.
- 2 Create the required number of duplicates.
- 3 Configure the properties of each duplicate as appropriate. This includes specifying the point associated with each alias.

Main properties for a container point

The **Main** tab defines the basic properties of the container point. Because of the nature of a container point, it has relatively few properties.

Property	Description	
Point ID	A unique identifier given to an entity.	
Enterprise Model Item Name	An intuitive name given to a point, which can be used as an alternative to the <i>point ID</i> . It must be unique amongst entities with the same parent asset. The enterprise model property is also referred to as the Use Name on the initial Add Items screen.	
Description	A description of the point that helps identify it. The description often appears in Station displays. 132 characters maximum, including spaces.	
Parent Asset	The asset to which the point belongs.	
Associated Display	The point detail (template) display that is used to show the point information.	
Template Type	The name of the container point type.	
Item Type	Shows the point type.	
Last Modified	Shows the date of the most recent modification to this point's property details.	
Last Downloaded	The date on which the item was last downloaded to the server.	

Reviewing and adding contained points

Use the **Contained Points** tab to view the points associated with a container point. You can also use this tab to add and remove points inside the container point.

Using an existing point detail display as the associated display

If you want to use a point detail display as the associated display for the container point (specified on the point's 6), use the following syntax:

DisplayFileName?Point=PointID

Part	Description	
DisplayName	The filename of the point detail display (without the extension).	
	The container point's ID. For example, if you are configuring a container point called 'Chiller1', you would specify <i>Chiller1</i> .	

Creating a point detail display for a container point

Each type of container point requires its own *point detail* display (also called a *template* display), which you create in HMIWeb Display Builder. (This display is functionally equivalent to a standard point detail displays.)

The following procedure summarizes the special steps required when creating a point detail display for a container point.

To create a point detail display

1 On the HMIWeb Display Builder toolbar, click the arrow to the right of and select **Display from Template**.

The **New Display** dialog box opens.

- 2 Select the *Point Detail* template and click **OK**. A new display, based on the template, appears.
- 3 Add an appropriate object for each parameter you want users to see.
- 4 Open the Properties Window.
- 5 Select each of these objects in turn and, using the following table, specify the parameter's details. (For most objects, use the Data tab; for a chart, use the Details tab.)

Property	Description	
Type of database link ¹	Select Point/Parameter.	
Point	Select CurrentPoint.	
Parameter	The syntax is: Alias.Parameter	
	Where:	
	• Alias is the name you defined for the contained point	
	• <i>Parameter</i> is parameter's name.	
	For example, if you wanted to display the PV of a contained point whose alias is 'HoursRun', you would type: HoursRun.PV	
Data entry allowed 1	Allows users to change the parameter's value.	
	If you allow data entry, select the minimum Security Level required to change the value.	

¹ Not applicable to a chart.

OPC advanced points

An OPC advanced point allows you to create arbitrary point parameter names to reference OPC items. An OPC advanced point also allows you to have more than eight scanned parameters, and can also have user-defined names.

This section contains the configuration information that is specific to OPC advanced points. Other tabs also appear in the properties pane for the OPC advanced point, but are generic to all points. They are:

- Display tab
- Scripts tab
- · User Defined tab
- · History tab

See the related topics for links to more information about each of these tabs.

Related topics

- "Main properties for an OPC advanced point" on page 110
- "Importing OPC advanced point definitions from a spreadsheet" on page 111
- "OPC parameters for an OPC advanced point" on page 113
- "Configuring user-defined parameters" on page 127
- "Display-related properties" on page 121
- "Creating or editing scripts" on page 125
- "History collection properties" on page 122

Main properties for an OPC advanced point

The **Main** tab defines the basic properties of an OPC advanced point. (An OPC advanced point represents a collection of related OPC *items*.) Note the following points:

- Having configured the properties on this tab, you then use the OPC Parameters tab to add the OPC items.
- For an introduction to OPC advanced points, and the Experion OPC Advanced Client, see the *Server and Client Configuration Guide*.
- You may find it easier to simultaneously import all the OPC advanced points from a spreadsheet.

Property	Description
Point ID	The point's name.
	See the topic "Naming rules for points" in the chapter on "Points" in the Server and Client Configuration Guide.
Enterprise Name	An intuitive name given to a point, which can be used as an alternative to the <i>point ID</i> . The enterprise name is used within the full item name of a point, which shows the point's location within the asset hierarchy.
Description	A description of the point that helps identify it. The description often appears in Station displays. 132 characters maximum, including spaces.
Parent Asset	The asset to which the point belongs.
	Note: All the OPC items associated with this point must belong to this area.
Server Alias	The server alias of the OPC Advanced Client to which this point belongs. (The server alias was specified when the OPC Advanced Client was configured in Station.)
Item Type	Shows the point type.
Last Modified	Shows the date of the most recent modification to this point's property details.

Property	Description
Last Downloaded	The date on which the item was last downloaded to the server.

Importing OPC advanced point definitions from a spreadsheet

This section is only applicable if you have the Experion OPC Advanced Client option and want to map OPC items to *OPC advanced points*. (For an introduction to the Experion OPC Advanced Client, see the topic titled "Configuring the Experion OPC Advanced Client" in the *Server and Client Configuration Guide*.)

Instead of individually configuring OPC advanced points in Quick Builder, it may be easier to simultaneously import them from a Microsoft Excel spreadsheet. This is a three-part procedure, which involves:

- 1. Creating a spreadsheet with the required format.
- 2. Populating the spreadsheet.
- 3. Importing the point definitions.

Related topics

"Creating a spreadsheet with the required format" on page 111

"Populating the spreadsheet" on page 111

"Importing the point definitions" on page 113

Creating a spreadsheet with the required format

This procedure creates a spreadsheet with the required format, which contains a sample point and one or more OPC parameters attached to that point.

To create a correctly formatted spreadsheet:

- 1 In Quick Builder, add one OPC advanced point.
- 2 Add at least one OPC parameter to the point.
- 3 Select the point and click is to copy it to the clipboard.
- 4 In Excel, choose File > New.
- 5 Click is to paste the point definition into the spreadsheet.

Populating the spreadsheet

You must populate the spreadsheet columns as specified in the following tables.

The following figure shows a populated spreadsheet. Note how it contains two parts:

- The first part contains the heading row and a separate row for each point.
- The second part (which must be separated from the first part by a blank row) contains the heading row and a separate row for each OPC parameter (OPC item).

Because each point typically has many OPC parameters, the second part contains more rows. For example, if each point has five OPC parameters, there will be five parameter rows for each point row.

	Α	В	С	D	
1	ltemName	Class	DownloadedName	Tag	Date
2	OpcAdvPnt001	OPCPoint		FALSE	
3	OpcAdvPnt002	OPCPoint		FALSE	
4					
5	ParentItemName	Class	ParamName	HistoryFast	Histo
6	OpcAdvPnt001	OPCParameters	PV	TRUE	FAL
7	OpcAdvPnt001	OPCParameters	SP	TRUE	FAL
8	OpcAdvPnt002	OPCParameters	PV	TRUE	FAL
9	OpcAdvPnt002	OPCParameters	SP	TRUE	FAL:

Table 2: Point definitions (first part of the spreadsheet)

Column	Description
ItemName	Corresponds to Point ID on the Main tab in Quick Builder
Class	Must be <i>opcpoint</i> .
DownloadedName	Leave blank.
Tag	Must be FALSE.
DateModified	Leave blank.
DateDownloaded	Leave blank.
TagDeleted	Must be FALSE.
Target	Leave blank.
ItemNumber	Leave blank.
ItemDescription	Corresponds to Description on the Main tab in Quick Builder.
OPCServer	Corresponds to Server Alias on the Main tab in Quick Builder.
InstructionsDisplayNumber	Leave as default.
Scripts	Leave blank.
PositionInTrendSet	Corresponds to Position in Trend Set on the Display tab in Quick Builder.
PositionInGroup	Corresponds to Position in Group on the Display tab in Quick Builder.
PointGroupTemplatePage	Corresponds to Group Faceplate Template Display on the Display tab in Quick Builder.
GroupNumber	Corresponds to Group Number on the Display tab in Quick Builder.
AssociatedDisplayNumber	Corresponds to Associated Display on the Display tab in Quick Builder.
TrendNumber	Corresponds to Trend Number on the Display tab in Quick Builder.
PointDetailPage	Corresponds to Point Detail Display on the Display tab in Quick Builder.
ParentAsset	Corresponds to Parent Asset on the Main tab in Quick Builder.

Table 3: OPC Parameter definitions (second part of the spreadsheet)

Column	Description
ParentItemName	The Point ID of the point to which this item belongs.
Class	Must be OPCParameters.
ParamName	Corresponds to Parameter Name on the OPC Parameters tab in Quick Builder.
HistoryFast	Corresponds to Fast history on the History tab in Quick Builder.

Column	Description
HistoryStandard	Corresponds to Standard history on the History tab in Quick Builder.
HistoryExtended	Corresponds to Extended history on the History tab in Quick Builder.
HistoryException	Corresponds to Exception history on the History tab in Quick Builder.
HistoryFastGating	Leave blank.
HistoryStandardGating	Leave blank.
HistoryExtendedGating	Leave blank.
OPCItem	The name of the OPC item. (Corresponds to OPC Item on the OPC Parameters tab in Quick Builder.)

Importing the point definitions

To import the point definitions:

- 1 In Microsoft Excel, select the rows and copy them to the clipboard.
- 2 In Quick Builder, click is to add the points into the project.

 If a point already exists in the project, Quick Builder updates it in accordance with the spreadsheet's definition.

OPC parameters for an OPC advanced point

This tab defines a parameter for each OPC item you want to add to the selected OPC advanced point.)

To add an OPC item (point parameter)

- 1. Click Insert.
- 2. Type an appropriate name in **Parameter name**.
- 3. Specify the parameter's remaining properties.

Property	Description
Parameter Name	The name of the OPC parameter.
OPC Item	The name of the OPC item that this parameter represents.
Details	Displays all properties and corresponding values of an OPC Parameter.

Status points

A status point is a standard point type with a fixed data structure that represents digital inputs or outputs. For example, a status point can represent the on and off states of a pump.

This section contains the configuration information that is specific to status points. Other tabs also appear in the properties pane for the status point, but are generic to all points. They are:

- Display tab
- · History tab
- · Scripts tab
- · User Defined tab
- · Non Scanned parameters tab
- PV Algo tab
- Action Algo tab

See the related topics for links to more information about each of these tabs.

Related topics

- "Main properties for a status point" on page 114
- "Alarm properties for a status point" on page 116
- "Control properties for a status point" on page 117
- "Configuring the Raise and Lower buttons for OP control" on page 118
- "Configuring user-defined parameters" on page 127
- "Configuring algorithm parameters" on page 120
- "Display-related properties" on page 121
- "History collection properties" on page 122
- "Creating or editing scripts" on page 125
- "Subscribing to non-scanned parameters" on page 124

Main properties for a status point

The **Main** tab defines the point's basic properties.

Property	Description	
Point ID	The point's name.	
	See the topic "Naming rules for points" in the chapter on "Points" in the Server and Client Configuration Guide.	
Enterprise Model Item Name	An intuitive name given to a point, which can be used as an alternative to the <i>point ID</i> . It must be unique amongst entities with the same parent asset. The item name property is also referred to as the Use Name on the initial Add Items screen.	
Description	A description of the point that helps identify it. The description often appears in Station displays. 132 characters maximum, including spaces.	
Parent Asset	The asset to which the point belongs.	
	Click to select from a list of assets.	
	A parent controller can also be configured to enable alarms raised on the point to appear in the System Status display instead of the Alarm Summary. Instead of selecting an asset from the list, enter "\$CONTROLLER" followed by the last four digits of the controller's item number. For example, for controller RTU000018 you would enter "\$CONTROLLER0018." Note that this is only possible for status, accumulator, and analog points.	

Property	Description	
Number of States	The number of discrete input states you want to configure.	
Non-consecutive Bits	Available only when the value in the Number of States list is 4 or 8.	
	When selected, you can address up to three non-consecutive bits as the PV Source Addresses. The number of addresses is controlled by the value in the Number of States list. That is, a 4–state point will have two addresses and an 8–state point will have three addresses.	
	If the bit addresses are consecutive (adjacent), clear this check box and address only the lowest bit required for the PV source address.	
Reverse Bit	For a 2–state point, reverses the parameter (i.e., Bit 0).	
	For a 4-state point, reverses Bit 0 and/or Bit 1 . Select the appropriate check boxes.	
	For an 8-state point, reverses Bit 0 and/or Bit 1 and/or Bit 2 . Select the appropriate check boxes.	
PV Source Address	The controller name/address where the PV is stored.	
	Either type the full address, or click to specify the address using Address Builder.	
	If you select an OPC controller, the Non-Scanned Parameters tab appears.	
	When the Non-consecutive Bits check box is selected, you can address up to three non-consecutive bits as the PV Source Addresses. The number of addresses is controlled by the value in the Number of States list.	
	A 4-state point will have two PV source addresses: Bit 0 Source Address and Bit 1 Source Address .	
	An 8-state point will have three PV source addresses: Bit 0 Source Address, Bit 1 Source Address, and Bit 2 Source Address.	
PV Scan Period	The interval, in seconds, at which the server scans the controller for the parameter value. Select 0 (the default) if you do not want scanning.	
PV Dynamic Scanning	When selected, dynamic scanning is enabled for the PV parameter. The default setting for this check box is selected.	
PV Algo	The PV algorithm associated with this point. If you select an algorithm, the PV Algo tab appears.	
	The default is NONE.	
Action Algo	The action algorithm associated with this point. If you select an algorithm, the Action Algo tab appears.	
	The default is NONE.	
Scanning Enabled	Indicates that scanning is to be enabled as soon as you download the point.	
State Descriptors (State 0 – State 7)	A state descriptor describes the associated state, and can have a maximum of eight characters (no spaces allowed). For example, you might make 'Open' the state descriptor for state 1 and 'Closed' for state 0.	
	For a control (output) point, there must be a unique state descriptor for each valid state. This is also recommended for a monitor (input) point.	
Item Type	Shows the point type.	
Last Modified	The date of the most recent modification to this point's property details.	
Last Downloaded	The date on which the item was last downloaded to the server.	

[&]quot;Configuring algorithm parameters" on page 120

[&]quot;Using Address Builder" on page 132

Alarm properties for a status point

The **Alarms** tab specifies the characteristics of the alarms that a status point can generate.



Attention

If you clear the **Disable Alarming** check box (that is, enable alarming) but do not specify any state alarms, a Journal alarm is raised each time the point changes state.

Property	Description	
Enable	If selected, an alarm is raised when the PV changes to the specified state.	
Priority	These two properties specify the alarm's severity, and where it appears in the list of alarms.	
Sub Priority	Priority can be: <i>Urgent</i> , <i>High</i> , <i>Low</i> and <i>Journa1</i> (the default). All alarms, except for Journal, appear in the Alarm Summary display. Journal alarms do not appear in Station as alarms, but are written to the event file.	
	Sub-priority range from 15 (highest), to 0 (lowest and default).	
On Delay Off Delay	On Delay and an Off Delay values can be specified (in seconds) for each of the eight state alarms.	
External Change Alarms	If selected, an alarm is raised if the parameter changes without the change being initiated from the server.	
Control Fail Alarm	Raises an alarm if the value of a control parameter, such as OP or SP, is not correct. (After issuing a new control value, the server scans the point to check the point's control value is correct.)	
Alarm Message Index	The index number of the message associated with alarms for this point.	
	For details about creating messages, see the Server and Client Configuration Guide.	
Ack Destination Address	Enables the acknowledgement of an alarm to be registered in a controller.	
	The server writes a 1 to this address when the alarm is acknowledged by an operator. Ack Destination Addresses can only be used on status points. The address must be an address within a real (physical) controller (not a database or point reference). The PVSOURCE address also needs to be an address within a real (physical) controller.	
	Note: You must ensure that ladder logic within the controller resets the PV to 0 when the required task has been performed.	
	For example, if you have configured a process to stop when the current point goes into alarm, you could configure your process to restart when the PV of the Ack Destination Address changes to 1—that is, when the operator acknowledges the alarm.	
	Either type the full address, or click to specify the address using Address Builder.	
Fire Point (Alarms at highest	Not applicable to Experion.	
priority)	For systems configured with both Experion and EBI or SymmetrE, Alarm delays (On Delay and Off Delay) do not apply to points configured as Fire Point.	
Re-alarm on state transition	If selected, an alarm is raised whenever the PV changes to another alarm state.	
	For example, if you make states 7 and 8 alarm states, an alarm is raised if the PV changes to state 7 and another alarm is raised if the state then changes to state 8.	
Disable Alarming	If selected, disables all alarms for this point.	
Journal Only	Handles all alarms for the point as journaled events; alarms do not appear in the alarm summary.	

[&]quot;Configuring algorithm parameters" on page 120

[&]quot;Using Address Builder" on page 132

Control properties for a status point

The Control tab defines the point's control-related properties.

Property	Description	
Number of OP States	The number of possible output states for this point. The minimum is 2 (the default), the maximum is 4. Single bit outputs can only have 2 states.	
OP Individual Bits	Available only when the value in the Number of OP States list is 4.	
	When selected, you can address two non-consecutive bits as the OP Source Addresses and two non-consecutive bits as the OP Destination Address.	
Reverse Output	Reverses source and destination parameter values. Select it if the device being controlled closes and opens on reverse signals.	
OP Reverse	Reverses source and destination parameter values. Select it if the device being controlled operates on reverse signals.	
	For a 2-output-state point, reverses the parameter (i.e., Bit 0).	
	For a 4-output-state point, reverses Bit 0 and/or Bit 1 . Select the appropriate check boxes.	
Output (OP)	When the OP Individual Bits check box is selected, you can address two non-consecutive bits as the OP Source Addresses and two non-consecutive bits as the OP Destination Addresses.	
	Source Address:	
	The address(es) from which the server reads (scans) the associated parameter value.	
	Either type the full address, or click to specify the address using Address Builder.	
	Dest Address:	
	The address(es) to which the server writes the associated parameter value.	
	Either type the full address, or click to specify the address using Address Builder.	
Source Address	The address from which the server reads (scans) the associated parameter value. The address can be a controller, a point, or a database file.	
	Either type the full address, or click to specify the address using Address Builder.	
Dest Address	The address to which the server writes the associated parameter value. The address can be a controller, a point, or a database file.	
	Either type the full address, or click to specify the address using Address Builder.	
OP Scan Period	The interval (in seconds) between successive scans of the OP source address(es).	
OP Dynamic Scanning	When selected, dynamic scanning is enabled for the OP parameter. The default setting for this check box is selected.	
MD Reverse	Reverses the mode parameter value for the MAN state. Do not enable MD reverse on points connected to Bristol Babcock controllers and Bristol Babcock OpenBSI controllers.	
Mode (MD)	Source Address:	
	• The address from which the server reads (scans) the associated parameter value. The address can be a controller, a point, or a database file.	
	Either type the full address, or click to specify the address using Address Builder.	
	Dest Address:	
	• The address to which the server writes the associated parameter value. The address can be a controller, a point, or a database file.	
	Either type the full address, or click to specify the address using Address Builder.	
MD Scan Period	The interval (in seconds) between successive scans of the MD source address.	

MD Dynamic Scanning		
	When selected, dynamic scanning is enabled for the MD parameter. Default is selected.	
Pulse Width	The time (in seconds) the OP value is maintained at a non-zero value. The default value, <i>Latched</i> , latches the OP at the non-zero value.	
	For example, if the value is set to 2 seconds and the operator sets the OP to a non-zero state, the OP returns to zero after 2 seconds.	
Control Confirmation	When this check box is selected and a control action is performed on the point, displays the prompt: Please confirm control request . The operator must press Y to confirm the control action.	
	If you configure the point to use electronic signatures, the server writes to the Dest Address only after the correct entry of the password(s).	
Control Timeout	The maximum time (in seconds) allowed, after a change in SP or OP, for the PV value to reach an acceptable value before a control fail alarm is raised. The default is <i>None</i> (no control timeout).	
	The server checks the value every 10 seconds during the timeout period.	
	You must specify a value other than <i>None</i> to enable the control fail alarm.	
Control Level	Only applicable if you use operator-based security.	
	The minimum control level (between 0 and 255) required to perform supervisory control on this point. The default is <i>o</i> .	
Normal Mode	The normal mode for this point, to which it is reset to after a command is issued. The modes are:	
	• <i>AUTO</i> (default). Automatic mode. The controller (or server) controls the output and operators cannot change the output value.	
	• <i>MAN</i> . Manual mode. The operator is permitted to change either the SP or OP.	
	CASC. Cascade mode. Only applicable to S9000, TDC, and UDC controllers. Used when the SP comes from the output of another PID loop within the controller. When in CASCade mode, operators cannot change either the SP or OP.	
	• <i>COMP</i> . Computer mode. Only applicable to a TDC controller. Used when the SP comes from a computer that is performing automatic control. When in COMPuter mode, operators can change either the SP or OP.	
Disable mode checking on	If selected, operators can parameter values regardless of point's mode.	
output	If cleared, the server checks the mode before allowing an operator to change a parameter value. (If the mode is set to <i>AUTO</i> , the operator is not allowed to change the OP value.)	
	Note that there is no indication in the displays that the mode checking is disabled.	
Target Input State Associations	These properties associate the four OP states with the appropriate input (PV) states. (The input states are defined in State Descriptors on the Main tab.)	
	A value of F means 'not used.' You must specify F for OP State 2 and OP State 3 for a single-bit output.	
	You can give operators control of the point using Station's Raise and Lower buttons.	
Control Inhibit	Inhibits control of the point. Operators can view, but not control, the point.	

Related topics

"Configuring algorithm parameters" on page 120

Configuring the Raise and Lower buttons for OP control

To give operators control of a point's OP parameter using Station's ▲ (Raise) and ▼ (Lower) buttons, you must assign the appropriate parameter values to the two buttons.

[&]quot;Using Address Builder" on page 132

For reasons of consistency, you should always assign the active state (such as On or Start) to the **Raise** button and the inactive state (such as Off or Stop) to the **Lower** button.

The following table shows the correspondence between the buttons and the OP states. (Note that if you select **Reverse Output**, you must reverse the associations—that is, you associate **Raise** with the OP state normally associated with **Lower**, and vice versa.)

Button	Single-bit output	Dual-bit output
Raise	OP State 1	OP state 2
Lower	OP State 0	OP State 1

Example

The point is single-bit point for which the value of **State 0** is *closed* and the value of **State 1** is *open*. (These properties are defined on the Main tab.)

To associate the **Raise** button with *open*, and the **Lower** button with *closed*, you set the OP State values as follows:

- OP State 0 to 0
- OP State 1 to 1
- OP State 2 to F
- OP State 3 to F

Configuring algorithm parameters

Algorithms are used in parameter types that change value in accumulator, analog, or status points.

When defining the point's properties in Quick Builder, you can select algorithms from the **Action Algo** and **PV Algo** lists provided on the **Main** tab. The **Action Algo** or **PV Algo** tab will then appear, enabling the algorithm's configuration.

Parameter requirements are different for each algorithm. Refer to the specific Action or PV algorithm for parameter requirements and descriptions.

- "Alarm properties for a status point" on page 116
- "Auxiliary properties for an analog point" on page 104
- "Control properties for a status point" on page 117
- "Control properties for an analog point" on page 103
- "Main properties for a status point" on page 114
- "Main properties for an accumulator point" on page 97
- "Main properties for an analog point" on page 100
- "Display-related properties" on page 121
- "History collection properties" on page 122
- "Creating or editing scripts" on page 125
- "Accumulator points" on page 97
- "Configuring user-defined parameters" on page 127
- "About drift deadbands" on page 105
- "Using Address Builder" on page 132
- "Subscribing to non-scanned parameters" on page 124
- "Analog points" on page 100
- "Status points" on page 114

Display-related properties

The **Display** tab defines the point's display-related properties.

Property	Description	
Group Number	The number of the group to which the point is assigned. Each group is identified by a unique ID, which is an integer between 1 and 2000.	
Position in Group	The position of the point in the group, (1 to 8).	
Trend Number	The trend to which this point is assigned. Each trend is identified by a unique ID, which is an integer between 1 and 1000.	
Position in Trend Set	The position of this point in the trend, (1 to 8).	
Trend Parameter	Parameter used to define what values are shown on a trend display, for example, PV.	
Associated Display	The display that is called up when an operator selects the point (or its alarm in the Alarm Summary) and then clicks the Associated Display button on the toolbar.	
Point Detail Display	The point detail display that is used to show detailed point information. If you leave the value as <i>default</i> , the standard detail display for the point type is used.	
Group Faceplate Template Display	The group faceplate template display that is used to display point information when the point is part of a group. If you leave the value as <i>defau1t</i> , the standard faceplate for the point type is used.	

[&]quot;Configuring algorithm parameters" on page 120

[&]quot;Accumulator points" on page 97

[&]quot;Configuring user-defined parameters" on page 127

[&]quot;Analog points" on page 100

[&]quot;OPC advanced points" on page 110

[&]quot;Status points" on page 114

History collection properties

You use the **History** tab to define the history-collection properties for SCADA (and OPC advanced) point parameters.



Attention

The default history collection rates are configured and stored on the server. Before configuring history collection for SCADA point parameters, make sure that you have uploaded the current history collection rates from the server. You can do this by selecting the appropriate server in Quick Builder and choosing the **Upload** > **Selected Items Only** option.

Property	Description
Parameters	Select the type of parameter for which you want to collect history.
Fast	Fast history stores snapshots of point parameter values at short regular intervals called <i>fast history intervals</i> . You can choose from up to eight collection rates. The initial default base rate of 5 seconds can be changed when you first set up your system, and you can add up to 3 more fast history collection rates to the default fast history groups of 5, 10, 15, 20, and 30 seconds.
	Attention If the configured base rate for fast history collection is a value other than 1,000 or 5,000 milliseconds, you can only collect history at that one rate. For example, if your fast history collection rate was 3 seconds before you migrated to the current release of Experion, this is the rate that all points assigned to fast history collection will use. If you want to be able to assign points to different fast history collection rates, contact Honeywell technical support staff.
Standard	Standard history stores snapshots and averages of point parameter values at regular intervals called <i>standard history intervals</i> . You can choose from up to eight standard history collection rates for snapshots. The initial default choices are: 1, 2, 5, 10, 30, and 60 minutes. Standard history averages are based on the default base rate of 1 minute. You can choose from four collection rates for averages: 6 minutes, 1 hour, 8 hours, and 24 hours.
Extended	Extended history stores the following snapshots of point parameter values:
	1-hour snapshots
	8-hour snapshots
	• 24-hour snapshots
Exception	Whereas standard, fast, and extended history collect and store point parameter values periodically, exception history collects point parameter values but only stores them if the value of that point parameter has changed since it was last stored. The default collection rates for exception history are:
	• 5, 10, 15, 30, and 60 seconds
	• 5, 10, 15, 30, and 60 minutes
	• 2, 4, 6, 8, 12, and 24 hours
	Note that exception history only supports string values when values are collected in real-time, but supports both numeric values and string values when values are stored by history backfill by the DNP3 interface.
Collection Rate	For fast, standard, and exception history, choose a rate from the drop-down list. The rates shown here are set on a server-wide basis on Station.
Offset	When collecting standard and exception history for TPS points, you can choose an offset rate from the drop-down list. The rates shown here are set on a server-wide basis on Station.

Property	Description
Backfill Only	If the controller on which the point is built can store history, selecting this option reduces the scanning load on the server. If the option is selected, the server collects all outstanding history each time it scans the point. For example, you can collect fast history but only scan the controller at hourly intervals. The history backfill option is only supported by the DNP3 interface.
	You should select this option if you are collecting history on a point on a dial-up controller.
	Note: If you select this option, do not specify a gating point.
	If selected for exception history, the DNP3 will not collect and store current live point parameter values in exception history. Instead, it will store values in history that come directly from the DNP3 controller event data (that is, class polls).
	Default is unselected.
	Exception history and exception history backfill:
	Allows storage of exact timestamp of events from DNP3 controller
	Stores values only when they change
	• Is good for slow moving values or if you need sub-second accurate timestamps.
	Periodic history and periodic history backfill:
	 When choosing for standard history, will get averages, but note that averages will not be recalculated in backfill scenarios.
	• When choosing for fast history, is good for constantly changing values.
Gate Point Gate Parameter	Use these boxes if you want history collected only when the point parameter value is in a specific state.
State State	Gating is used, for example, to stop history collection when a generator or motor is turned off.
PHD Collection	Use these boxes to specify PHD collection for fast, standard, extended, and exception history.
	• Default = PHD collects history for this point according to the <i>PHD collection rule</i> .
	• Override = PHD overrides the PHD collection rule and collects history for the point at this history assignment rate.
	• Disable = PHD does not collect history at this history assignment rate.
	It is possible to assign Override to multiple history assignments for the same point. However, PHD will collect history assignment at only one rate. To determine the collection of history to the PHD server, see the topic titled "PHD collection rule" in the <i>Hardware and Point Build Reference</i> .

- "Configuring algorithm parameters" on page 120
- "Accumulator points" on page 97
- "Configuring user-defined parameters" on page 127
- "Analog points" on page 100
- "OPC advanced points" on page 110
- "Status points" on page 114

Subscribing to non-scanned parameters

Non-scanned parameters provide a mechanism to group related PLC stored information directly to a SCADA point without overloading the communications. For example, to access configuration properties or maintenance information that is infrequently accessed. The result is a SCADA point structure that more closely reflects what can be quite complex PLC point structures. Data is acquired only when requested by a client, such as when an Operator is calling up a display. When the Operator calls up a different display, Experion no longer acquires the parameter. By contrast, a scanned parameter is constantly acquired, regardless of whether or not any client is using it. Controls can be issued to non-scanned parameters and they can be assigned for history collection.

You can define non-scanned parameters to:

- Group related PLC stored information directly to a SCADA point without increasing the base scanning load.
- Read non-numeric data types from an OPC server.
- Add numeric parameters from an OPC server but all of the scanned parameter fields (e.g., for analog points: PV, SP, OP, MD, A1, A2, A3, and A4) have been used.

You use this tab to subscribe analog points and status points to non-scanned point parameters on an OPC controller.

Note: This tab appears only when the PV Source Address on the point's Main tab contains an OPC controller.

Property	Description
Add	Adds a new parameter to the list.
Delete	Deletes the selected parameter(s) from the list.
Parameter name	The unique name of the parameter.
Channel name	The name of the OPC channel, which is shared by all non-scanned parameters under the same point.
Item name	Click to browse to an OPC Server address space to specify the item.
	You can also type the full address. However, because the address format can be difficult to follow, clicking the ellipsis button is the preferred method.
Copy Parameter	Copies the selected parameter to the Clipboard.
Paste Parameter	Pastes a copy of the parameter from the Clipboard to the list. The new parameter's name is preceded by <i>copy_of_</i> .



Attention

When you use Quick Builder to configure non-scanned parameters that connect to a remote OPC server, your Windows account username and password must also reside on the remote OPC server. In addition, the username must be a member of the Product Administrators group on the remote OPC server.

If your Windows account does not exist or does not have sufficient privileges on the remote OPC server, you will not be able to select parameters from the list of parameters stored on the server.

Username and passwords must match on both machines.

- "Configuring algorithm parameters" on page 120
- "Analog points" on page 100
- "Configuring user-defined parameters" on page 127
- "Status points" on page 114

Creating or editing scripts

You can enhance the functionality of a point by writing scripts that run when, for example, the point goes into alarm.

To write or edit a script for the point, go to the **Scripts** tab, and click **Create New or Edit Existing Server Scripts** to open the Script Editor.

Related topics

- "Configuring algorithm parameters" on page 120
- "Accumulator points" on page 97
- "Configuring user-defined parameters" on page 127
- "Analog points" on page 100
- "OPC advanced points" on page 110
- "Status points" on page 114

Creating scripts

You can extend a point's functionality by writing *server scripts* that, for example, run when the point goes into alarm.

To write or edit a script for a point:

- 1 Select the point and click the **Scripts** tab.
- 2 Click Create New or Edit Existing Server Scripts to open the Script Editor.

Electronic signature related properties

The **Signature** tab defines a point's electronic signature-related properties.

Property	Description	
Electronic Signature Type	The number of electronic signature(s) required to control the point:	
	None. No signature is required.	
	• Single. The signature of an operator with control rights to the point is required.	
	Double. Two signatures are required.	
Reason Set Number	The number of the reason set assigned to the point. (The operator must select the appropriate reason from this set when controlling the point.)	
	For details about configuring a reason set, see the Server and Client Configuration Guide.	
Primary Signature Meaning	Describes the meaning of entering the primary signature, for example: 'Issued,' 'Implemented.' It should be an approved term for your industry/work practices.	
Secondary Signature Meaning	Describes the meaning of entering the secondary signature, for example: 'Confirmed,' 'Authorized.' It should be an approved term for your industry/work practices.	
Secondary Signer Security Level	The minimum security level of the person who enters the second signature.	

Configuring points for electronic signatures

If your server is licensed for *electronic signatures*, you can configure a point so that when an operator attempts to control it, the server requests one (or two) electronic signatures before executing the control.

The following procedure summarizes the main steps involved in configuring points for electronic signatures.

To learn about electronic signatures, see the topic titled "Configuring Electronic Signatures" in the *Server and Client Configuration Guide*.

If you configure points for electronic signature, you are requested for a password when downloading a project to (or uploading from) the server. If this fails, then you are prompted for another user name, password and domain. After successfully logging on to the server, Quick Builder performs background logons for the rest of the session. At the next session, Quick Builder remembers the last correct user name and domain, but requires a password.

To configure points for electronic signatures

- 1 Select the server item and click the **Server Specific Options** tab.
- 2 Select Use Electronic Signatures.
- 3 Add a point that you want to configure for electronic signature.
- 4 Click the **Control** tab and select **Control Confirmation**. The **Signature** tab is added for that point.
- 5 Click the Signature tab and configure point's electronic signature properties.
- **6** Configure the point's other properties as appropriate.
- 7 Repeat steps 3 to 6 for any other points that require electronic signatures.
- 8 When you have finished updating the project, upload it to the server in the normal manner.
- **9** Type your password when prompted.

Configuring user-defined parameters

You can create your own (*user-defined*) parameters for a point, which can then be used to store custom or server scripting data on the server.

A user-defined parameter can be a:

- Variable (For example, you may want store a value produced by a script or entered by an operator.)
- Constant (For example, you may want to record the serial number of the device associated with the point.)
- Word/record in a database (user) file (For example, you may want to store a value produced by a custom application.)
- Parameter of another point (For example, you may want to store the PV of a related point.)
- Custom parameter (This parameter type is reserved for future use.)



Tip

Use the **Copy Parameter** and **Paste Parameter** buttons to make a duplicate of a parameter for the current point, or to copy it to another point or to Excel for modification.

Related topics

- "Adding a variable user-defined parameter" on page 127
- "Adding a constant user-defined parameter" on page 128
- "Adding a database reference user-defined parameter" on page 128
- "Adding a parameter reference user-defined parameter" on page 129
- "Adding a custom user-defined parameter" on page 129
- "Accumulator points" on page 97
- "Configuring algorithm parameters" on page 120
- "Display-related properties" on page 121
- "History collection properties" on page 122
- "Creating or editing scripts" on page 125
- "Analog points" on page 100
- "Subscribing to non-scanned parameters" on page 124
- "OPC advanced points" on page 110
- "Status points" on page 114

Adding a variable user-defined parameter

To add a user-defined parameter - Variable

- 1 Select the point for which you want to define the parameter.
- 2 On the User Defined tab, click Add.

A new unconfigured parameter is added to the list.

- 3 Type the parameter's name in **Parameter name**.
- 4 Select Variable from the Link type list.
- 5 Select the Value type:
 - 16 bit signed integer (INT2)
 - 32 bit signed integer (INT4)
 - 32 bit floating point (REAL)
 - 64 bit floating point (DBLE)

- String
- 6 To specify an initial value for the parameter, enter it in the **Initial value** field.
- 7 To update the initial value that displays in **Initial value** field when uploading points from the server, select the **Update initial value from the server during upload** check box.

This check box is selected automatically and disabled (dimmed) when the **Never download initial value to the server** check box is selected.

8 To prevent the value in the **Initial value** field, including null, from downloading to the server, select the **Never download initial value to the server** check box.

Note that this setting is ignored when you change the **Value type** of an existing parameter.



Attention

To change the default value of this check box for all new user-defined parameters, go to the server's **Server Specific Options** tab and select or clear the **Never download initial UDP value to the server** check box.

See the topic titled "Server specific options" for more information.

Related topics

"Server specific options" on page 176

Adding a constant user-defined parameter

To add a user-defined parameter - Constant

- 1 Select the point for which you want to define the parameter.
- 2 On the User Defined tab, click Add.

A new unconfigured parameter is added to the list.

- **3** Type the parameter's name in **Parameter name**.
- 4 Select Constant from the Link type list.
- 5 Select the Value type:
 - 16 bit signed integer (INT2)
 - 32 bit signed integer (INT4)
 - 32 bit floating point (REAL)
 - 64 bit floating point (DBLE)
 - String
- 6 Type the parameter's value in the Constant value field.

Adding a database reference user-defined parameter

To add a user-defined parameter - Database reference

- 1 Select the point for which you want to define the parameter.
- 2 On the User Defined tab, click Add.

A new unconfigured parameter is added to the list.

- 3 Type the parameter's name in **Parameter name**.
- 4 Select Database reference from the Link type list.
- 5 Select the Value type:
 - 16 bit signed integer (INT2)

- 32 bit signed integer (INT4)
- 32 bit floating point (REAL)
- 64 bit floating point (DBLE)
- String
- · Bit Field
- 6 Type the location of the parameter's value in the server database in the File, Record, and Word fields.
- 7 For **String** value type parameters, type the string's length in the **String Length** field.
- 8 For **Bit Field** value type parameters, Select the starting bit from the **Start Bit** list, and select the number of bits to use from the **Bit Width** list.

Adding a parameter reference user-defined parameter

To add a user-defined parameter – Parameter reference

- 1 Select the point for which you want to define the parameter.
- 2 On the User Defined tab, click Add.
 - A new unconfigured parameter is added to the list.
- 3 Type the parameter's name in **Parameter name**.
- 4 Select Parameter reference from the Link type list.
- 5 Type the point name on which the parameter is based in the **Point name** field.
- 6 Type the parameter name on which the parameter is based in the **Parameter name** field.
- 7 For history parameters, type the sample offset in the **Offset** field.

Adding a custom user-defined parameter

To add a user-defined parameter – Custom

- 1 Select the point for which you want to define the parameter.
- 2 On the User Defined tab, click Add.

A new unconfigured parameter is added to the list.

- 3 Type the parameter's name in **Parameter name**.
- 4 Select Custom from the Link type list.
- 5 Type a value in the Custom Field field.



Attention

This parameter type is reserved for future use.

Importing/uploading specialized point configurations

This topic is only applicable if you have specialized point configurations and want to import or upload them into Quick Builder. (Such configurations are generally achieved by manually editing the point definition file—a process which bypasses Quick Builder.)

The following table describes what Quick Builder does when you import or upload specialized point configurations.

Configuration	Result
Point assigned to more than one group display	Quick Builder only imports one group number, and the assignment details of the other groups are lost.
Separate gating points for each history type on the same parameter	Quick Builder assigns the same gating point to all selected history types, and the assignments of the other gating points are lost.
Gating points for user-defined parameters	Quick Builder does not lose the gating point details. However, you cannot change them because they are not visible on the User Defined tab of the Property Page.

Ì

Attention

To import a point build file into Quick Builder, the "long form" file must be used. Use the *-FD* flag when running *BCKBLD* to generate a long form file if you intend to import the file into Quick Builder. Typical usage would be BCKBLD *-FD*.

Specifying point parameter addresses

You must specify the point parameter addresses in a controller's database so that the server can read from/write to those addresses. The address syntax is specific to controller type.



Attention

If an SP (set point) address references either a database file or a point parameter, you must only specify the SPSOURCE address. (This is because the SPSOURCE and SPDESTIN fields are the same for database and point addresses.)

To learn about the address syntax for:	Go to:
Generic controller	"Point parameter address syntax for a generic controller" on page 79
User scan task controller	"Point parameter address syntax for a user scan task controller" on page 81
Any other controller	"Accessing help for a specific controller"

Using Address Builder

Address Builder makes it easier to specify point parameter addresses if you don't know its syntax.

To specify an address with Address Builder

1 Click to the right of the address box.

The Address Builder dialog box opens.

2 Select the type of address you are defining from **Address Type**.

A box for each part the address syntax appears in the **Details** section.

- 3 Fill in the **Details** boxes and click **OK**. To see the syntax for a particular controller:
 - a Select controller from Address Type.
 - **b** Select the controller from **Controller**.
 - **c** Press F1 to call up the help for that controller.

To see the syntax for a:

- Generic controller, see the topic titled "Point parameter address syntax for a generic controller."
- User scan task controller, see the topic titled "Point parameter address syntax for a user scan task controller."

Configuring the address syntax for a file

• Configure the syntax parts as shown here:

Part	Description	
File	The file identification number to which the address refers.	
Record	The record in the selected file to which the address refers.	
Word	The data word number in the selected record to which the address refers.	
Bit	The bit within the selected word to which the address refers.	
Width	The number of bits to read/write, starting with the specified bit.	
Format	The data format:	
	DBLE. Double precision (64-bit) floating point	
	• INT2. Short (16-bit) integer	
	• INT4. Long (32-bit) integer	
	REAL. Single precision (32-bit) floating point number	
Controller Name	The controller that scans this address.	

Configuring the address syntax for a point

• Configure the syntax parts as shown here:

Part	Description
Point Name	The name of the point being addressed. Select the point from the list of points already added to the project file.
Parameter	The point parameter to which this address applies. Select the parameter from the list.
Controller Name	The controller that scans this address.

Related topics

"Alarm properties for a status point" on page 116

- "Auxiliary properties for an analog point" on page 104
- "Control properties for a status point" on page 117
- "Control properties for an analog point" on page 103
- "Main properties for a status point" on page 114
- "Main properties for an accumulator point" on page 97
- "Main properties for an analog point" on page 100
- "Point parameter address syntax for a generic controller" on page 79
- "Point parameter address syntax for a user scan task controller" on page 81
- "About drift deadbands" on page 105
- "Configuring algorithm parameters" on page 120

Building Electronic Flow Measurement (EFM)

This section outlines how to build and manage *Electronic Flow Measurement* (EFM) components using Quick Builder.

- "Building EFM meters" on page 136
- "Managing EFM meter templates" on page 139
- "Defining EFM CSV data export formats" on page 162
- "Managing EFM schedules" on page 164
- "Managing meters and meter templates" on page 165
- "Uploading EFM configurations from the server" on page 166
- "Exporting and importing EFM configurations" on page 167
- "Collecting and exporting EFM data" on page 168

Building EFM meters

To build a new EFM meter

1 Use one of the following options to create a new meter:

Result
The new meter appears in the List View , and the properties tabs enable you to complete the configuration of the new meter.
p e
The Add Item(s) dialog box appears.
1. In the Number of items to Add text box, type the number of meters you want to add.
2. From the Item Family list, select EFM Meter.
3. From the Item Type list, select EFM Meter.
4. In the Name text box, type in the name for this meter, or you can accept the default provided. If you have chosen to create multiple meters, the Multi – Items section is enabled, and you can provide a prefix for all the meters, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the meters.

2 Use the properties tabs to configure each meter by first highlighting it in the **List View**.

To edit an EFM meter

- 1 Select **EFM Meters** from the Navigation pane.
 - A list of meters appears in the List View, with the first meter selected.
- **2** Select the meter you want to edit.

The meter appears in the List View, and the properties tabs enable you to edit the configuration of the meter.

Related topics

"Managing EFM meter templates" on page 139

Main properties for an EFM meter

The **Main** tab defines the basic properties for a meter.

Property	Description
Tagname	The tag name of the meter. In most cases, the meter number is also used as the tag name. This text box is read-only.
Meter Number	The unique identifier of the meter.
	Third-party flow analysis applications use the meter number to uniquely identify the meter.

Property	Description
Description	(Optional) A description of the meter. A maximum of 132 alphanumeric characters, including spaces.
Meter Template	The template to which this meter is linked. The meter template specifies which logs can be collected and defines data export definitions. Choosing a meter template updates the following read-only fields, which are configured in the meter template:
	• Flow Computer = The name of the flow computer.
	Protocol = The communications protocol used.
	Meter Type = The type of EFM meter used.
	• Run Number = The run number used. A controller or flow computer may be connected to multiple flow meters. Each of these connections is termed as a <i>run</i> and is identified by a run number.
	• Other Descriptions = Any other description about the meter template when it was built.
	If already selected, the controller type determines which meter templates appear in this list.
	Click pto view or edit the meter template.
Controller	The name of the controller to which this meter is attached.
	If already selected, the meter template determines which controllers appear in this list.
Associated Asset	Defines scope of responsibility (SOR) access to the meter. If left blank, the meter will have the same SOR as its associated controller.
	Click to display the Asset Browser so that you can choose an associated asset.
Meter Location	The physical location of this meter.
Item Type	The type of item specified when this meter was created. For example, EFM Meter.
Last Modified	The date and time the meter properties were last modified.
Last Downloaded	The date and time the meter was last downloaded to the server.

Collection and Export properties for an EFM meter

The Collection and Export tab defines the collection logs, export logs, and schedules for a meter.

Property	Description
Collect Data	The types of logs to collect for this meter. The available choices are defined on the meter template.
	Configuration (this log is always collected)
	Configuration Record Log
	Interval Log
	Daily Log
	Ultrasonic Log
	Composition Log
	Gas Quality Log
	Alarm and Event Log
	Attention
	When collecting data from a Spirit IT Flow-X meter, only records from the last 31 days are collected. Records older than 31 days are not collected.
Export Formats	The types of file export formats. Each meter template associated with this meter can define up to three export formats.

Property	Description
Collection and Export	The full collection and export schedule assigned to this meter.
Schedule	A full collection and export schedule is mandatory.
	Select Create new Schedule from the Schedule Type list to create a new schedule.
	Enter the time of day in the At box you want the full collection and export to run.
	Attention
	If your system needs to account for <i>Daylight Savings Time (DST)</i> , you might need to adjust the time of the Daily Log schedule by one hour for affected meters during <i>DST</i> . This is because some meters do not support <i>DST</i> and they will collect the Daily Log one hour earlier or later than required.
	During a system time change when clocks are put back, you might be required to disable EFM collection for that period for some EFM interfaces (for example, Spirit IT Flow-X).
Additional Interval	The additional collection schedule assigned to this meter.
Collection Schedule	An interval collection is optional. Use it to help distribute the load of collection, such that the load on the Collection and Export Schedule is reduced.
	Select Create new Schedule from the list to create a new schedule.
	Enter the time of day in the At box you want the interval collection to run.

Managing EFM meter templates

You can choose to build a new meter template or import and modify the sample EFM meter templates that ship with Experion. The sample EFM meter templates support the following meter types:

- ControlWave Flow Computer
- DPC 3330 Flow Computer
- NuFlo Cameron Scanner 2000, with and without expansion boards
- Spirit IT Flow-X Flow Computer

To import sample EFM meter templates

- In Quick Builder, click File > Import.
 The Select file to import dialog box appears.
- 2 Navigate to <data folder>\Honeywell\Experion PKS\client\user\efm.
 - Where <data folder> is the location where Experion data is stored. For default installations, <data folder> is C:\ProgramData. The C:\ProgramData folder is a system folder, which means that it is only visible if you select the Show hidden files, folders, and drives option button in the Folder Options dialog box. To change this setting in Windows Explorer, click Organize > Folder and search options, and then click the View tab.
- 3 Select the appropriate EFM template for the interface you want (for example, sample_EFM_Items.efmdb.xml for the Enron Modbus template), and then click OK.
 - Quick Builder imports two sample meter templates, and for Enron Modbus only, seven schedules into the project.

The two sample EFM meter templates are titled *sample cam scan* and *sample cam scan expansion Board*. The difference between the two templates is that the **Rollover** value in the Interval Log contains different values for scanners with and without expansion boards.

The seven schedules from the Enron Modbus template appear in "Table 4: Sample Schedules for Enron Modbus".

Schedule name	Period	Retries	Interval between retries
Daily, 1 retry	1 Day	1	30 minutes
Daily, 3 retries	1 Day	3	30 minutes
Daily, 5 retries	1 Day	5	30 minutes
Every 2 hours, 2 retries	2 Hours	2	20 minutes
Hourly, 1 retry	1 Hour	1	10 minutes
Hourly, 2 retries	1 Hour	2	10 minutes
Twice Daily, 3 retries	12 Hours	3	30 minutes

Table 4: Sample Schedules for Enron Modbus

Note that schedules are not created for the Bristol Babcock OpenBSI interface or the Spirit IT Flow-X interface.

- 4 Click OK to dismiss the **Results** dialog box.
- 5 Edit the sample meter templates and schedules as necessary.

To build a new EFM meter template

1 Use one of the following options to create a new meter template:

Option	Result	
From the EFM Meter Template section within the Library, drag and drop the meter template item into the List View.	The new meter template appears in the List View , and the properties tabs enable you to complete the configuration of the new meter template.	
Click 📴.	The Add Item(s) dialog box appears.	
	1. In the Number of items to Add text box, type the number of meters you want to add.	
	2. From the Item Family list, select EFM Meter Template.	
	3. From the Item Type list, select EFM Meter Template.	
	4. In the Name text box, type in the name for this meter template, or you can accept the default provided. If you have chosen to create multiple meter templates, the Multi – Items section is enabled, and you can provide a prefix for all the meter templates, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the meter templates.	
	5. Click OK to add the meter template(s) to the list.	

2 Use the properties tabs to configure each meter template by first highlighting it in the **List View**.

To edit an EFM meter template

• Use one of the following options to edit a meter template:

Option	Result
Select EFM Meter	A list of meter templates appears in the List View , with the first meter template selected.
Template from the Navigation pane.	 Select the meter template you want to edit. The meter template appears in the List View, and the properties tabs enable you to edit the configuration of the meter template.
From the Main tab of an EFM meter, click next to the Meter Template list box.	The Edit EFM Meter Template dialog box appears.
	1. Edit the configuration properties on each of the tabs.
	2. Click Apply to save the changes.
	If the meter template you are changing is used by other meters, a message appears to that effect. Click Continue to save the changes, or click Cancel to cancel your changes.
	3. Click Close to close the Edit EFM Meter Template dialog box.

Related topics

Main properties for an EFM meter template

The **Main** tab defines the basic properties for an EFM meter template, including the enabling of meter logs.

Property	Description
Name	The unique name of the meter template. A maximum of 40 alphanumeric characters (no spaces or double quotes).
	Once downloaded to the server, the meter template name cannot be changed.

[&]quot;Building EFM meters" on page 136

[&]quot;Exporting and importing EFM configurations" on page 167

Property	Description
Device Family	The type of device that meters using this template will connect with.
Protocol	The Protocol box is read-only and updates depending on your selection in the Device Family list.
	If the you change the selection in the Device Family list, any address configurations that might exist on the Configuration Log tab might become invalid.
Flow Computer	The type of flow computer to which the flow meter is connected.
Meter Type	The type of meter the that template is for. Select or type a meter in the box.
Run Number	If the flow computer supports multiple runs, the run number to which the meter is connected. Otherwise, leave this box blank. Each run number must have its own meter template.
	Run number is also known as <i>tube number</i> .
Other Descriptions	The description of the meter template. Maximum of 250 characters.
Enable Interval Log	Select the check box to enable interval log collection. When selected, the Interval Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.
Enable Daily Log	Select the check box to enable daily logging. When selected, the Daily Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.
Enable Alarm and Event Log	Select the check box to enable alarm and event logging. When selected, the Alarm and Event Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.
Enable Configuration Record Log	Select the check box to enable configuration record logging. When selected, the Configuration Record Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.
Enable Ultrasonic Log	Select the check box to enable ultrasonic logging. When selected, the Ultrasonic Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.
Enable Composition Log	Select the check box to enable composition logging. When selected, the Composition Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.

Property	Description
Enable Gas Quality Log	Select the check box to enable gas quality logging. When selected, the Gas Quality Log tab appears.
	See the controller's interface reference guide for the Archive , Type , Number , Register , Pointer , and Rollover values specific to that controller and flow computer.
	The Archive, Type, Number, Register, Pointer, and Rollover options appear depending on the type of device selected in the Device Family list.
Item Type	The type of library item specified when this item was created.
Last Modified	Shows the date of the most recent modification to this meter template.
Last Downloaded	The date on which the item was last downloaded to the server.

Configuration Log properties for an EFM meter template



Attention

EFM configuration log collection requires *dynamic scanning* to be enabled on the meter's controller. If dynamic scanning is not enabled, an alarm will be raised when Experion attempts to collect EFM configuration logs

The **Configuration Log** tab defines the configuration properties for an EFM meter template.

You create the configuration log by adding log entries to the list. Click + Add and × Remove to add or remove log entries.

Property	Description	
Property Name	Lists the name of the property being collected.	
	Select the property name from the list or type in the name. Because the name becomes a parameter on the meter point, the name must adhere to naming conventions. See the topic titled "Naming rules for points" in the <i>Server and Client Configuration Guide</i> .	
	● Attention	
	The ' <i>Date</i> ' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).	
Source	States from where the property value is sourced.	
	Constant = The property is a statically defined value	
	Controller = The property is collected from the controller	
	Parameter = The property is collected from a point parameter	

Property	Description	
Data Type	Applicable only when the Source value is <i>Constant</i> or <i>Controller</i> .	
	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.	
	• CALC= calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.	
	All log types, except the Configuration Log, support the CALC data type.	
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.	
	• <i>UINT2</i> = 16-bit unsigned integer.	
	• <i>UINT4</i> = 32-bit unsigned integer.	
	• <i>INT2</i> = 16-bit signed integer.	
	• INT4 = 32-bit signed integer.	
	• <i>REAL</i> = 32-bit floating point.	
	• DBL E= 64-bit floating point.	
	• <i>TEXT</i> = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.	
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.	
Value or Reference	When the Source value is:	
	• <i>Constant</i> , the static constant value.	
	• <i>Controller</i> , three text boxes appear. The first box defines the controller address location, the second box defines the 0% range value, and the third box defines the 100% range value.	
	• <i>Parameter</i> , the point parameter reference. The format for entry is <i><point>.<parameter></parameter></point></i> , where <i><parameter></parameter></i> can be a standard parameter, a multi-part parameter, or an array parameter.	
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).	
Comments	Optional free text field.	
CFX 5	This column appears only when FLOWCAL CFX v5 Gas is defined as an export format on the meter template's Data Export tab.	
	The CFX data point to which this log entry maps. The Configuration Log can only map to CFX data points that can be included in the Meter Configuration section of the CFX file. Select < <i>No Mapping></i> if the log entry does not map to a CFX data point.	
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.	
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.	
	The CFX data point to which this log entry maps. The Configuration Log can only map to CFX data points that can be included in either the Meter Configuration section, or the User Defined Attributes section, or the User Defined Characteristics section of the CFX file. Select < <i>NO Mapping></i> if the log entry does not map to a CFX data point.	
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.	

Related topics

"Defining enumeration mappings for CFX" on page 154

Interval Log properties for an EFM meter template

The Interval Log tab defines the interval log properties for an EFM meter template.

You create the interval log by adding log entries to the list.



Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

Click • and • to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
Field Name	Lists the name of the field being collected. The field can appear only once in the log.
	You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields.
	Attention The 'pate' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).
Data Type	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC = calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• <i>INT4</i> = 32-bit signed integer.
	• <i>REAL</i> = 32-bit floating point.
	• DBL E= 64-bit floating point.
	• <i>TEXT</i> = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.

Property	Description
CFX 5	This column appears only when FLOWCAL CFX v5 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Interval Log can only map to CFX data points that can be included in the History section of the CFX file. Select < <i>No Mapping></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Interval Log can only map to CFX data points that can be included in the Periodic Flow Data History section of the CFX file. Select < <i>No Mapping></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

Daily Log properties for an EFM meter template

The **Daily Log** tab defines the fields in the daily log properties for an EFM meter template.

You create the daily log by adding log entries to the list.



Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

The order in which the log fields are defined must match the order defined in the physical flow computer. Click and to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
Field Name	Lists the name of the field being collected. The field can appear only once in the log.
	You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields.
	Attention The 'Date' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).

[&]quot;Defining enumeration mappings for CFX" on page 154

Property	Description
Data Type	BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC = calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• <i>INT4</i> = 32-bit signed integer.
	• <i>REAL</i> = 32-bit floating point.
	• DBLE= 64-bit floating point.
	• <i>TEXT</i> = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.
CFX 5	This column appears only when FLOWCAL CFX v5 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Daily Log can only map to CFX data points that can be included in the History section of the CFX file. However, if data is being output from the Interval Log, then Daily Log data is not output. Select < <i>No Mapping></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Daily Log can only map to CFX data points that can be included in the Periodic Flow Data History section of the CFX file. However, if data is being output from the Interval Log, then Daily Log data is output to the Alternate Periodic Flow Data History section of the CFX file. Select < <i>No Mapping></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

"Defining enumeration mappings for CFX" on page 154

Alarm and Event properties for an EFM meter template

The **Alarm and Event** tab defines the alarms and events properties for an EFM meter template.

You create the alarm and event log by adding log entries to the list.

Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

Click ♠ and ▶ to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
	Not applicable for Bristol Babcock OpenBSI controllers and Spirit IT Flow Computers.
Field Name	Lists the name of the field being collected. The field can appear only once in the log.
	When you configure an Address field, a Date field, and a Time field, then any change events with an Address/Location that appears in the configuration log will trigger Experion to raise an event in the Experion Event Summary display.
	You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields.
	Attention The 'pate' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).
Data Type	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC = calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• INT4 = 32-bit signed integer.
	• REAL = 32-bit floating point.
	• DBL E= 64-bit floating point.
	• TEXT = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.
	1

Property	Description
CFX 5	This column appears only when FLOWCAL CFX v5 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. Select < <i>No Mapping</i> > if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. Select <i><no mapping=""></no></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

Configuration Record Log properties for an EFM meter template

The Configuration Record Log tab defines the configuration properties for an EFM meter template.

You create the configuration record log by adding log entries to the list.



Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

Click • and • to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.



Attention

It is assumed that there is a single Configuration Record Log record for each Configuration Log record. The collection schedule for the Configuration Record Log must be at the same period as the Configuration Log. For example, if the Configuration Log collects data in daily periods as defined in the full collection schedule, the Configuration Record Log must also collect data in daily periods on the flow computer.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
Field Name	Lists the name of the field being collected. The field can appear only once in the log. You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields. • Attention
	The 'Date' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).

[&]quot;Defining enumeration mappings for CFX" on page 154

Property	Description
Data Type	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC = calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• <i>INT4</i> = 32-bit signed integer.
	• <i>REAL</i> = 32-bit floating point.
	• DBL E= 64-bit floating point.
	• TEXT = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.
CFX 5	This column appears only when FLOWCAL CFX v5 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Configuration Record Log can only map to CFX data points that can be included in the Meter Configuration section of the CFX file. Select < <i>NO Mapping></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Configuration Record Log can only map to CFX data points that can be included in either the Meter Configuration section, or the User Defined Attributes section, or the User Defined Characteristics section of the CFX file. Select < <i>NO Mapping></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

"Defining enumeration mappings for CFX" on page 154

Ultrasonic Log properties for an EFM meter template

The Ultrasonic Log tab defines the ultrasonic properties for an EFM meter template.

You create the ultrasonic log by adding log entries to the list.



Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

Click • and • to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
Field Name	Lists the name of the field being collected. The field can appear only once in the log.
	You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields.
	Attention The 'pate' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).
Data Type	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC = calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• <i>INT4</i> = 32-bit signed integer.
	• <i>REAL</i> = 32-bit floating point.
	• DBL E= 64-bit floating point.
	• <i>TEXT</i> = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.
CFX 5	Not supported by file format.
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Ultrasonic Log can only map to CFX data points that can be included in the Ultrasonic Diagnostic History section of the CFX file. Select <i><no mapping=""></no></i> if the log entry does not map to a CFX data point.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

Related topics

"Defining enumeration mappings for CFX" on page 154

Composition Log properties for an EFM meter template

The **Composition Log** tab defines the composition properties for an EFM meter template.

You create the composition log by adding log entries to the list.



Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

Click • and • to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
Field Name	Lists the name of the field being collected. The field can appear only once in the log.
	You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields.
	Attention The 'Date' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).
Data Type	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC= calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• <i>INT4</i> = 32-bit signed integer.
	• <i>REAL</i> = 32-bit floating point.
	• DBL E= 64-bit floating point.
	• <i>TEXT</i> = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.
CFX 5	Not supported by file format.

Property	Description
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Composition Log can only map to CFX data points that can be included in the GQ Source output file, which is an auxiliary file to the CFX file.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

"Defining enumeration mappings for CFX" on page 154

Gas Quality Log properties for an EFM meter template

The Gas Quality Log tab defines the gas quality properties for an EFM meter template.

You create the gas quality log by adding log entries to the list.



Attention

The definitions you add to this log must match the format of those logs in the physical flow computer, as defined by the flow computer vendor's documentation and/or configuration.

Click + Add and × Remove to add or remove log entries.

Click • and • to move the selected rows up or down the list.

Click Move to: to move the selected row to the line number specified in the text box next to this button.

Property	Description
Offset	Calculates the Bytes Offset the field is at using the data width of previous fields. This facilitates cross checking with the meter device user manual.
Field Name	Lists the name of the field being collected. The field can appear only once in the log. You can enter a field name if it does not appear in the list. However, this will affect mapping to FLOWCAL CFX data export fields.
	 Attention The '<i>Date</i>' type can accept both a date value (for meters that collect date and time as a separate values) as well as a date and time value (for meters that collect date and time as one value).

Property	Description
Data Type	• BYTE = configurable length byte array data format. Can be used for 4-byte and 5-byte Bristol Babcock specific <i>Julian</i> timestamps, and for single BYTE fields.
	• CALC = calculated log field expression to reference other log field property names, delimited by curly braces "{name}." The calculation is similar to that as in PV Algo 20: Advanced Arithmetic. The references are restricted to properties only in the same log definition. You can also use CALC to include constant values in the exported logs. The result of the calculation is always stored as a Double Precision floating point, which can be converted to single precision in exports if required.
	All log types, except the Configuration Log, support the CALC data type.
	See the topics titled "Configuring CALC data types" and "PV Algo 20: Advanced Arithmetic" for more information.
	• <i>UINT2</i> = 16-bit unsigned integer.
	• <i>UINT4</i> = 32-bit unsigned integer.
	• <i>INT2</i> = 16-bit signed integer.
	• <i>INT4</i> = 32-bit signed integer.
	• <i>REAL</i> = 32-bit floating point.
	• DBLE= 64-bit floating point.
	• <i>TEXT</i> = fixed-length ASCII character string. When selected, a Data Type Length field appears for you to specify the string length. This must be a positive integer.
	• <i>VARTEXT</i> = variable length, null terminated, ASCII character string in the log record.
Unit	The units of the chosen property. For example, when the property is a temperature, only temperature-related units appear in the list (for example, <i>degF</i>).
Comments	Optional free text field.
CFX 5	Not supported by file format.
CFX 7	This column appears only when FLOWCAL CFX v7 Gas is defined as an export format on the meter template's Data Export tab.
	The CFX data point to which this log entry maps. The Gas Quality Log can only map to CFX data points that can be included in the GQ Source output file, which is an auxiliary file to the CFX file.
	Some data points require you to define enumeration mappings. See the topic titled "Defining enumeration mappings for CFX" for more information.

"Defining enumeration mappings for CFX" on page 154

Data Export properties for an EFM meter template

The **Data Export** tab defines the export file format(s) for an EFM meter template.

To add a new data export format

- 1. Click + to display the popup menu, and then select an existing data export format or select **Create EFM CSV Export Format** to create a new data export format. You can add up to three data export formats, after which time this button disappears.
- 2. In the Name text box, type in the name for this EFM CSV export format.
- 3. Select the Include Field names in header check box to include a header row in the CSV file.
- 4. In the **Description** text box, type in a description for this EFM CSV export format.
- 5. Click vert to Configuration to expand the list, and then select the check boxes next to the items you want to include in the CSV file.

Use the following tools to help you search and organize items in the list.

- Q Searches for items that match the text you enter in the text box.
- Moves the selected row(s) to the top of the list.
- Moves the selected row(s) to up one row in the list.
- Moves the selected row(s) to down one row in the list.
- ■ Moves the selected row(s) to the end of the list.
- 6. Repeat step 5 for the Interval Log, Daily Log, Ultrasonic Log, Composition Log, Gas Quality Log, Configuration Record Log, and Alarm and Event Log lists.
- 7. Click Create to add the EFM CSV export format to the list.

To remove a data export format

1. Click x next to the data export format to remove it.

To edit a CSV data export format

1. If the data export format can be edited, click boto to edit it.

The Edit EFM CSV Export Format dialog appears.

- 2. In the Name text box, type in the name for this EFM CSV export format.
- 3. Select the **Include Field names in header** check box to include a header row in the CSV file.
- 4. In the **Description** text box, type in a description for this EFM CSV export format.
- 5. Click next to Configuration to expand the list, and then select the check boxes next to the items you want to include in the CSV file.

Use the following tools to help you search and organize items in the list.

- Q Searches for items that match the text you enter in the text box.
- Moves the selected row(s) to the top of the list.
- Moves the selected row(s) to up one row in the list.
- Moves the selected row(s) to down one row in the list.
- Moves the selected row(s) to the end of the list.
- 6. Repeat step 5 for the Interval Log, Daily Log, Ultrasonic Log, Composition Log, Gas Quality Log, Configuration Record Log, and Alarm and Event Log lists.
- 7. Click **Apply** to update the EFM CSV export format.
- 8. Click Close to close the Edit EFM CSV Export Format dialog

Defining enumeration mappings for CFX

Some CFX data points are enumerated types. If the enumerations used by the flow computer differ from those used by CFX format, you need to define enumeration mappings. For example, Meter Tap Type is expressed as one ASCII character with the following enumeration defined:

- F = Flange
- P = Pipe

However, these values might be enumerated differently by the flow computer. For example, *NuFlo Cameron Scanner 2000 MicroEFM Flow Computer controllers* use the following enumeration for *Meter Tap Type*:

- 0 = Flange
- 1 = Corner
- 2 = D and D/2

In this situation, you need to define enumeration mappings so that CFX can interpret these data points correctly. When enumeration mapping is required for a data point, appears in the CFX 5 and/or CFX 7 columns on the Configuration Log tab, the Interval Log tab, the Daily Log tab, and the Alarm and Event Log tab.

Prerequisites

• FLOWCAL CFX v5 Gas and/or FLOWCAL CFX v7 Gas is defined as an export format on the meter template's **Data** Export tab.

To define an enumeration mapping for CFX

1 Click ___, which is located in the CFX 5 and/or CFX 7 columns for the row of the applicable data point. The **Device Definitions for** coata Point dialog appears for the applicable data point. The fields on this dialog change according to the data point being defined. The following example shows the dialog for the Meter Tap Type data point.

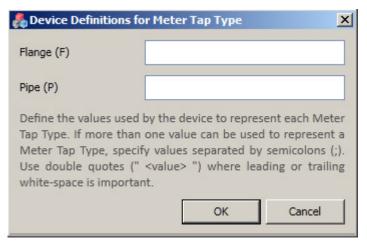


Figure 8: Device Definitions for Meter Tap Type

2 Enter the appropriate values in each field, and then click OK.

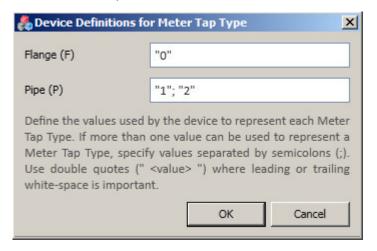


Figure 9: Device Definitions for Meter Tap Type showing completed mappings

3 Repeat as necessary for other data points.

Related topics

- "CFX enumeration mappings" on page 156
- "Configuration Log properties for an EFM meter template" on page 142
- "Interval Log properties for an EFM meter template" on page 144

CFX enumeration mappings

This topic lists CFX data points that, if you are collecting them, might require you to map enumerations. See the topic titled "Defining enumeration mappings for CFX" for more information.

CFX 5 data points

Data point		
BTU Base		
Calculation Method		
Chart or EFM Indicator		
Data Resolution		
Extensions Used		
Factor FWS		
Factors – FA		
Factors – FB		
Factors – FG		
Factors – FPV		
Factors – FR		
Factors – FT		
Factors – FWV		
Factors – Y		
Fitting Type		
Flowing Pressure Correction Enabled		
FPV Method		
Has Default Temperature		
Has RTD		
Hourly Record Span		
Live Input – Analyses		
Live Input – Energy/heating Value		
Live Input – Gravity		
Live Input – Temperature		
Meter Factor/K Factor Curve Type		
Meter Tap Type		
Meter Type		
Pipe Material		
Plate Material		

[&]quot;Daily Log properties for an EFM meter template" on page 145

[&]quot;Alarm and Event properties for an EFM meter template" on page 146

[&]quot;Configuration Record Log properties for an EFM meter template" on page 148

[&]quot;Ultrasonic Log properties for an EFM meter template" on page 149

[&]quot;Composition Log properties for an EFM meter template" on page 151

[&]quot;Gas Quality Log properties for an EFM meter template" on page 152

Data point
Power Source
Pressure Compensated
Sample Type
Static Pressure Tap Location
Static Pressure Type
Temperature Compensated
Unit for Atmospheric Pressure
Unit for Corrected Volume
Unit for Differential Pressure
Unit for Energy
Unit for Extension
Unit for Heating Value
Unit for Liquid Mass
Unit for Mass Heating Value
Unit for Mass K Factor
Unit for Orifice/Cone Diameter
Unit for Orifice/Cone Ref Temperature
Unit for Pipe Diameter
Unit for Pipe Length
Unit for Pipe Ref Temperature
Unit for Pressure Base
Unit for Raw Volume
Unit for Static Pressure
Unit for Temperature
Unit for Temperature Base
Unit for Uncorrected Volume
Unit for Viscosity
Unit for Volume K Factor
Use RTD

CFX 7 data points

Data point		
Alternate Data Span		
Calculation Method		
Chart or EFM Indicator		
Data Resolution		
Data Span		
EFM Heating Value Saturation Condition		
Expansion Factor Method		
Extension Definition		

Data point
Factor FWS in use
Factor FWV in use
Factors – FA
Factors – FB
Factors – FG
Factors – FPV
Factors – FR
Factors – FT
Factors – Y
Fitting Type
Flowing Pressure Correction Enabled
FPV Method
Has Default Temperature
Has RTD
Live Input – Analysis
Live Input – Energy/Heating Value
Live Input – Gravity
Live input – Temperature
Meter Factor Usage
Meter Factor/K Factor Curve Type
Meter Tap Type
Meter Type
Pipe Material
Plate/Cone Material
Power Source
Pressure Compensated
Sample Type
Static Pressure Average
Static Pressure Measurement
Static Pressure Tap Location
Temperature Compensated
Unit for Atmospheric Pressure
Unit for Corrected Volume
Unit for Differential Pressure
Unit for Energy
Unit for Gas Equivalent Energy
Unit for Gas Equivalent Volume
Unit for Gross Standard Volume
Unit for Gross Volume
Unit for Heating Value
Unit for Indicated Volume

Data point		
Unit for Mass		
Unit for Mass Heating Value		
Unit for Mass K Factor		
Unit for Measured Volume		
Unit for Net Standard Volume		
Unit for Observed Density		
Unit for Orifice/Cone Diameter		
Unit for Orifice/Cone Ref Temperature		
Unit for Pipe Diameter		
Unit for Pipe Length		
Unit for Pipe Ref Temperature		
Unit for Pressure Base		
Unit for Raw Volume		
Unit for Static Pressure		
Unit for Temperature		
Unit for Temperature Base		
Unit for Uncorrected Volume		
Unit for Viscosity		
Unit for Volume K Factor		
Use RTD		

"Defining enumeration mappings for CFX" on page 154

Configuring CALC data types

The **Calculated Value Expression Editor** is where you create arithmetic calculated field values of multiple input log properties. The calculation is similar to that as in *PV Algo 20: Advanced Arithmetic*.

You can perform calculations on all meter template logs except for the Configuration Log.

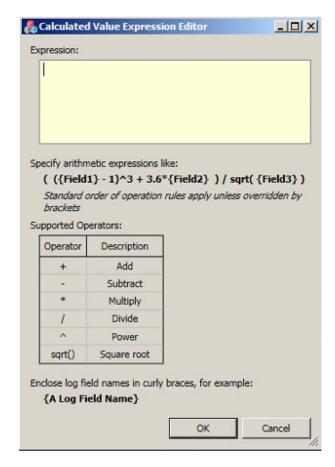


Figure 10: Calculated Value Expression Editor

The calculated log field expression can reference other log field names, delimited by curly braces { }. The referenced log field expression can also include other CALC log field names, provided they appear higher in the list. However, you can reference only those properties in the same log. For example, if you are creating a calculation in the Daily log, you can create an expression with field names in the Daily log; you cannot reference a field name in the Gas Quality log.

To configure a CALC data type

- 1 In the row of an applicable field name in a meter template log, select *CALC* as the **Data Type**. An ellipses appears to the right of *CALC*.
- 2 Click the ellipses

The Calculated Value Expression Editor appears.

3 Type a calculation expression in the **Expression** box. Enclose field names with curly braces ({}}). For example:

```
({Field1} - 1)^3 + 3.6*{Field2} ) / sqrt( {Field3}
```

where Field1, Field2, and Field3 are field names.

Maximum 1,000 characters.

Arithmetic Operators are:

- + (Plus sign) Add
- (Minus sign) Subtract
- *(Asterisk) Multiply

- /(Slash mark) Divide
- \(\lambda \) (Caret) Power
- sqrt() Square root
- 4 Click OK to close the Calculated Value Expression Editor.

Results

The result of the calculation is stored in the field.

If you export CALC data to CSV files, see the topic titled "About exporting results of Floating Point data to CSV files" for more information.

Related topics

"About exporting results of Floating Point data to CSV files" on page 34

Defining EFM CSV data export formats

EFM CSV data export formats are associated with EFM meter templates, which in turn are associated with EFM meters. They contain configuration settings for exporting EFM data from Experion to third-party billing systems for processing.

To define a new EFM CSV data export format

1 Use one of the following options to create a new EFM data export format:

From the EFM Data Export Format section within the Library, drag and drop a data export format item into the List View.		Result			
		The new EFM data export format appears in the List View . Use the Main tab to complete the configuration of the new EFM data export format.			
Click 📴.	The Add Item(s) dialog box appears.				
	1.	In the Number of items to Add text box, type the number of meters you want to add			
	2.	From the Item Family list, select EFM Data Export Format.			
	3.	From the Item Type list, select EFM data export format you want to add.			
	4.	In the Name text box, type in the name for this EFM data export format, or you can accept the default provided. If you have chosen to create multiple EFM data export formats, the Multi – Items section is enabled, and you can provide a prefix for all th EFM data export formats, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the EFM data export formats.			
	5.	Click OK to add the EFM data export format(s) to the list.			
	6.	Use the Main tab to complete the configuration of the new EFM data export format(s).			
From the Data Export tab	Th	e Create EFM CSV Export Format dialog appears.			
of meter template in Quick	1.	In the Name text box, type in the name for this EFM CSV export format.			
Builder, click + to display the popup menu, and then select Create new CSV Export Format.	2.	Select the Include Field names in header check box to include a header row in the CSV file.			
	3.	If required, select the Use tab delimiter (*.tsv) check box to create a TSV file instead of a CSV file.			
	4.	In the Description text box, type in a description for this EFM CSV export format.			
	5.	Click next to Configuration to expand the list, and then select the check boxes next to the items you want to include in the CSV file.			
		Use the following tools to help you search and organize items in the list.			
		• Q Searches for items that match the text you enter in the text box.			
		• Moves the selected row(s) to the top of the list.			
		• Moves the selected row(s) to up one row in the list.			
		• Moves the selected row(s) to down one row in the list.			
		• Moves the selected row(s) to the end of the list.			
	6.	Repeat step 5 for the Interval Log, Daily Log, Alarm and Event Log, Configuration Record Log, Ultrasonic Log, Composition Log, and Gas Quality Log lists.			
	7.	Click Create to add the EFM CSV export format to the list.			

2 Use the properties tab to configure each EFM data export format by first highlighting it in the List View.

To edit an EFM data export format

• Use one of the following options to edit an EFM data export format:

Option	Result
Select EFM Data Export Formats from the Navigation pane.	A list of data export formats appears in the List View , with the first data export format selected.
	 Select the data export format you want to edit. The schedule appears in the List View, and the Main tab enables you to edit the configuration of the data export format.
From the Data Export tab	The Edit EFM CSV Export Format dialog box appears.
of an EFM meter template, click property next to the CSV data export format you want to change.	1. Edit the configuration properties on the dialog box.
	2. Click Apply to save the changes.
	3. Click Close to close the Edit EFM CSV Export Format dialog box.

Managing EFM schedules



Attention

If your system needs to account for *Daylight Savings Time (DST)*, you might need to adjust the time of the **Daily Log** schedule by one hour for affected meters during *DST*. This is because some meters do not support *DST* and they will collect the Daily Log one hour earlier or later than required.

During a system time change when clocks are put back, you might be required to disable EFM collection for that period for some EFM interfaces (for example, Spirit IT Flow-X).

To build a new EFM schedule

1 Use one of the following options to create a new EFM schedule:

Option	Result
From the EFM Schedule section within the Library, drag and drop the EFM schedule item into the List View.	The new EFM schedule appears in the List View , and the properties tab enables you to complete the configuration of the new EFM schedule.
Click .	The Add Item(s) dialog box appears.
	1. In the Number of items to Add text box, type the number of meters you want to add.
	2. From the Item Family list, select EFM schedule.
	3. From the Item Type list, select EFM schedule .
	4. In the Name text box, type in the name for this EFM schedule, or you can accept the default provided. If you have chosen to create multiple EFM schedules, the Multi – Items section is enabled, and you can provide a prefix for all the EFM schedules, or you can accept the default provided. You can also indicate whether to use a sequential number or letter to differentiate between the EFM schedules.
	5. Click OK to add the EFM schedule(s) to the list.
From the Collection and	The Create EFM Schedule dialog appears.
Export tab of an individual meter in Quick Builder, select (Create new Schedule) from the Schedule Type lists.	1. In the Name text box, type in the name for this EFM schedule.
	2. From the Every list, select the period at which the schedule runs.
	3. In the with a maximum of retries text box, type number of times the schedule till try to collect and export data before abandoning the task.
	4. From the Apart list, time to wait between retries.
	5. Click OK to add the EFM schedule to the list.

2 Use the properties tab to configure each meter template by first highlighting it in the List View.

To edit an EFM schedule

• Use one of the following options to edit an EFM schedule:

Option	Result
Select EFM Schedules from the Navigation pane.	A list of EFM schedules appears in the List View, with the first schedule selected.
	 Select the schedule you want to edit. The schedule appears in the List View, and the Main tab enables you to edit the configuration of the schedule.
From the Collection and	The Edit EFM Schedule dialog box appears.
Export tab of an EFM meter, click in next to the	1. Edit the configuration properties on the Main tab.
Schedule Type list box.	2. Click Apply to save the changes.
	3. Click Close to close the Edit EFM Schedule dialog box.

Managing meters and meter templates

Deleting EFM components

Because of the associations between EFM components, keep in mind the following points when deleting meter templates, schedules, and data export formats:

- Meters have direct associations and/or dependencies on meter templates and schedules.
- You cannot delete meter templates and schedules if there are any meters associated with it.
- Meter templates have direct associations and/or dependencies on data export formats. Therefore, meters have indirect associations with data export formats.
- You cannot delete data export formats if there are any meter templates associated with it.

See the topic titled "Deleting and restoring deleted items" for procedures to delete and restore EFM components.

Enabling and disabling meters

You enable or disable an EFM meter using Station. See the topic titled "Disabling or enabling a point or EFM meter" in the *Operator's Guide* for more information.

Related topics

"Deleting and restoring deleted items" on page 21

Uploading EFM configurations from the server

If you need to make changes to Electronic Flow Measurement configurations that have already been downloaded to the server database, you can *upload* their definitions from the server into the current Quick Builder project. You can then make the necessary changes to the items and download the updated definitions to the server.

To upload item definitions from the server database

- 1 Click ±.
 - The Upload dialog box opens.
- 2 Check that Server Details are correct. If they aren't, close the dialog box and change them on the Server Details tab for the server.
- 3 Select the appropriate Scope option.
 The following options are available for uploading data from a specified server to Quick Builder.

Option	Description
All items in Project	Uploads all items from the server, including hardware and point configuration data, as well as the history collection rates and offsets.
Selected Items Only	Uploads only the history collection rates and offsets configured on the server. This upload populates the History Options tab on the Servers properties page.
All Hardware on Server	Uploads only hardware configuration data. This option includes EFM configurations.
All Points on Server	Uploads only point configuration data.

- 4 (Optional. Not applicable for EFM.) If you want to use any specialized **bckbld** or **hdwbckbld** command-line parameters, click **Show Options** and type them in **Other Flags**. (For details about the parameters, see the topics on hdwbld and hdwbckbld in the *Hardware and Point Build Reference*.)
- 5 Check your selections in the **Summary** list, and then click **OK**. You can terminate the upload by pressing the ESC key.

Exporting and importing EFM configurations

You can export and import EFM-related configurations, such as meter templates, data export formats, and schedules, to and from XML files.

When you export data, the *EFM Export Format* for these files is *.efmdb.xm7*. To export EFM configurations, see the topic titled "Exporting project data."

When you import data, you can choose to import either a file previously exported from Quick Builder (.efmdb.xm1) or file previously downloaded or uploaded to or from the server (.efmsvr.xm1). To import EFM configurations, see the topic titled "Importing items from a definition file or another project."

File location for EFM meter templates

EFM meter templates are located at:

<data folder>\Honeywell\Experion PKS\client\user\efm

Where <data folder> is the location where Experion data is stored. For default installations, <data folder> is c:\ProgramData. The c:\ProgramData folder is a system folder, which means that it is only visible if you select the Show hidden files, folders, and drives option button in the Folder Options dialog box. To change this setting in Windows Explorer, click Organize > Folder and search options, and then click the View tab.

Sample templates contain sample EFM meter templates, and for the Enron Modbus sample template, seven schedules. See the topic titled "Managing EFM meter templates" for more information.

Related topics

- "Exporting project data" on page 33
- "Importing items from a definition file" on page 27
- "Managing EFM meter templates" on page 139

Collecting and exporting EFM data

Collection behavior

EFM requests (an EFM request is a single log type from a single meter) are queued to the scanning subsystem every 60 seconds. Requests are queued according to the configured EFM schedules for Interval and Full collection. If a collection fails, and retries are configured, the retries are added to the queue in the next scanning period.

An EFM request is not queued if there is already another request for the same log type for the same meter. For example, a manual scan at the same time as a scheduled scan would result in one request, not two separate requests issued at the same time.

Experion throttles the rate at which EFM requests are issued maintaining a count of the currently outstanding requests on each channel. Only enough requests will be issued to reach a maximum of 60 outstanding requests on each channel. The scanning subsystem then takes only one EFM request per channel per second off the queued requests and sends this for processing to the channel.

Each EFM request includes a hard-coded range that specifies the maximum number of records within that log that will be collected for a single request. This is set for each log type as described in "Table 5: Maximum number of records for each log type". Therefore, a two-hourly collection of Composition log records laid down every four minutes would expect 30 records per collection (120 minutes divided by 4 minutes = 30), which would be processed through a single EFM request.

Log type	Maximum number of records
Alarm and Event (Audit)	100
Composition log	50
Configuration Record log	5
Daily log	5
Gas Quality log	50
Interval log	50
Ultrasonic log	50

Table 5: Maximum number of records for each log type

Each controller will then limit the number of records returned in response to a single request. The response to the request includes how many additional records remain to be collected, so EFM would queue another request on the next 60 second boundary if more records are still to be collected in the meter, for example, when communications had interrupted and some collections had been missed.

EFM data collection is an additional load on top of regular channel traffic. During commissioning, and after significant communications disruptions, the data collection operation will collect all records not yet obtained. Sometimes, this load can be substantial. To avoid overloading the channels:

- Experion will throttle EFM loads on a channel-by-channel basis
- During commissioning when there may be a large number of logs to collect, avoid too many simultaneous EFM collections by staggering the enabling of meters.
- Only one EFM request per meter and log type (Interval logs, Daily logs, Ultrasonic logs, Composition logs, Gas Quality logs, Alarm and Event logs, Configuration logs, and Configuration Record logs) will be serviced at a time. This can include manual scans, periodic interval scans, and periodic full scans. Each additional scan will only be completed after the current outstanding scan is complete, one at a time.

Attention

If your system needs to account for *Daylight Savings Time (DST)*, you might need to adjust the time of the **Daily Log** schedule by one hour for affected meters during *DST*. This is because some meters do not support *DST* and they will collect the Daily Log one hour earlier or later than required.

During a system time change when clocks are put back, you might be required to disable EFM collection for that period for some EFM interfaces (for example, Spirit IT Flow-X).

Export behavior

- EFM data exported from Experion can be stored on the local server or on another node.
- When an export is triggered for a meter (either scheduled or requested manually), Experion will attempt to
 export all data on the meter that was not previously exported successfully. This means that if an export fails,
 the next time an export occurs for the meter, the old data (unsuccessfully exported) as well as the new data
 (not yet exported) will be exported.
- Once Experion has successfully exported EFM data, some cleanup and maintenance tasks are performed.
- If the **Delete after** option on the **EFM configuration settings** display is selected, Experion will delete exported CFX or CSV files (including TSV files, where applicable) that are older than the value specified in the **Days** box. If the **Delete after** option on the **EFM configuration settings** display is not selected, Experion will never automatically delete exported CFX or CSV files (including TSV files). Files in these locations must be deleted manually.
- Experion will export EFM data from a meter within 30 seconds of the following events:
 - A successful data collection.
 - An Export latest collected data or an Export all collected data starting from task request.
- · If the location specified for the exported data falls below a set amount of disk space, an alarm is raised.

Related topics

"About tamper detection of EFM data" on page 169

About tamper detection of EFM data

When EFM data is exported, Experion monitors the data for evidence of tampering. If any evidence is found:

- An urgent alarm is raised.
- Suspect data is not exported.
- The affected meter will continue to collect data. The meter will continue to export non-suspect data, provided the data to export does not contain any suspect records.

You can choose to delete tampered data. However, this operation can cause the permanent loss of EFM data. Contact your Honeywell Technical Assistance Center for further support.

When you delete tampered EFM data, Experion deletes the suspect data from the server. In addition, this operation:

- Creates an archive of the tampered data to a file to allow for forensic analysis by your Honeywell Technical Assistance Center.
- At the meter's next collection schedule, Experion will attempt to recover the data.

Note that the following historic data cannot be recovered:

- Historic configuration data. If configuration data needs to be collected, it can only collect the latest snapshot.
- Historic alarm and event data.

Building servers

This section outlines how to use Quick Builder to build and configure servers.

Related topics

- "Creating a server" on page 172
- "Main properties for a server" on page 173
- "Sizing limits for the server" on page 174
- "Upload and download paths for a server" on page 175
- "Server specific options" on page 176
- "History options for a server" on page 177

Creating a server

To create a server

1 Use one of the following options to create a new server:

Option	Result
From the Servers section within the Library, drag and drop the Server item into the List View.	The new server appears in the List View , and the properties tabs enable you to complete the configuration of the new server.
Click ➡.	The Add Item(s) dialog box appears.
	1. From the Item Family list, select the applicable family.
	2. From the Item Type list, select Server .
	3. In the Name text box, type in the name for this server, or you can accept the default provided.
	4. Click OK to add the server to the list.

2 Use the properties tabs to configure the server.

Main properties for a server

The **Main tab** defines basic server details, including the server name.

Property	Description
Name	The server's unique name. 30 alphanumeric characters maximum.
Server Type	The version of Experion that runs on this server.
Description	A brief description of the server.
Item type	Shows the server type.
Last Modified	Shows the date on which this project was last modified.

Sizing limits for the server

The **Sizing** tab shows the size limits for each type of item. The figures in the **Limit** column are determined by your license, and the figures in the **Maximum** column are basic Experion limits.



Attention

As the server sizing limits displayed on this property page are not read directly from the server, they may not be accurate.

Upload and download paths for a server

The Server Details tab defines the upload and download paths for each server.

Property	Description
Server Name	The server's computer (TCP/IP) name.
	If you are running Quick Builder on the server, set the name to Loca THost.
Upload Path	The folder Quick Builder uses when uploading details into this project.
Download Path	The folder Quick Builder uses when downloading details from this project.
Project last downloaded on	The date on which this project was last downloaded to the server.
Last project upload from server on	The date on which this project was last uploaded from the server.

Server specific options

The **Server Specific Options** tab defines options specific to this server.

Property	Description
Enforce naming rules for points, parameters and areas	If selected (the default), Quick Builder enforces the naming rules. For more information about naming rules, see the <i>Server and Client Configuration Guide</i> .
Allow Point Names to contain only numeric characters	Note: This option is primarily designed to allow you to define new points on legacy systems.
	Allows you to define non-standard point IDs that contain only numbers. (Standard point names must contain at least one letter.)
	Note that points with numeric IDs cannot be used with algorithms.
Allow Point Names to contain full stops	Note: This option is primarily designed to allow you to define new points on legacy systems.
	Allows you to define non-standard point IDs that contain periods (full stops). (Standard point cannot contain any periods.)
	Note that point IDs containing periods cannot be used for container points, or in a DSA system.
Never download initial UDP value to the server	Specifies the default download setting of initial values on user-defined parameters.
	If selected, selects the Never download initial value to the server check box on the point's User Defined tab for all newly created user-defined parameters.
	For use with topologies where a user-defined parameter is linked with a process value in a third party system.

Related topics

[&]quot;Adding a variable user-defined parameter" on page 127

History options for a server

The **History Options** tab displays the history collection rates and offset groups that have been configured on the server and uploaded to Quick Builder.

Building a Flex Station

This topic outlines how to use Quick Builder to build a Flex Station.

Related topics

- "About Station types" on page 180
- "About security types" on page 181
- "Creating a Flex Station" on page 182
- "Main properties for a rotary Station" on page 183
- "Main properties for a static Station" on page 184

About Station types

Experion supports the following Station types, each of which is connected to the server in a particular manner.

Туре	Description
Rotary Station	Connects the Station to the server via a LAN but without the need for a dedicated connection. This type of connection is recommended for Stations used by management or others who do not use the Station full-time. (If a rotary Station is not used for the idle timeout period, the connection is made free so that it can be used by another rotary Station.)
Static Station	Connects the Station to the server via a LAN with a dedicated (permanent) connection. This is the recommended Station type for operators.

About security types

There are two types of security: *operator-based security* and *Station-based security*. During initial system planning, you must select the security type appropriate to your needs.

If you use operator-based security, each user is assigned an ID and password (as well as an appropriate security level). Each user must log on to Station before being able to use it.

If you use Station-based security, there are no user IDs, only security levels. When users start Station, they are immediately assigned to the *OPER* level. If required, they can change to a higher security level. Users will need to know the password for that level on that Station.

See the Server and Client Configuration Guide for a detailed description of security types.

Creating a Flex Station

To create a Flex Station

1 Use one of the following options to create a new flex station:

Option	Result
From the Stations section within the Library, drag and drop the Station item into the List View.	The new station appears in the List View , and the properties tabs enable you to complete the configuration of the new station.
Click .	The Add Item(s) dialog box appears.
	1. From the Item Family list, select the applicable family.
	2. From the Item Type list, select <i>Stations</i> .
	3. In the Name box, type in the name for this station, or you can accept the default provided.
	4. Click OK to add the station to the list.

2 Use the properties tabs to configure the station.

Main properties for a rotary Station

The **Main** tab defines the basic properties of a rotary Station.

Property	Description
Name	The Station's name.
Description	A description of the Station.
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.
Operator-Based Security	Indicates that you have operator-based security.
Enable Card Image Callup	Not applicable to Experion.
Image Display Time	Not applicable to Experion.
Idle Page	The name/number of the display that Station automatically calls up if there has been no operator activity for the idle timeout period.
Item Type	Shows the Station type as Rotary .
Last Modified	Shows the date/time on which the Station details were last modified.
Item Number	The unique item number assigned by Quick Builder. You can change this if you need to match an existing configuration (if you are uploading a database for example).
Last Downloaded	Shows the date on which the item was last downloaded to the server.

Main properties for a static Station

The **Main** tab defines the basic properties of a static Station.

Property	Description
Name	The Station's name.
Description	A description of the Station.
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.
Update Rate	The rate, in seconds, at which dynamic values from controllers and other devices are updated in the server database.
	Care should be taken when setting this rate to ensure that you are not placing an unnecessary load on your controllers.
	To enable operators to temporarily increase this standard update rate, you can configure a function key to act as a Fast Update key. This key works like the Fast Update key on an IKB/OEP keyboard. When operators press the Fast Update key, the server obtains updates from controllers at the fast update rate described below (instead of the rate specified here) until a new display is called up.
	Note that:
	This update rate does not apply to rotary Stations. You configure update rates for rotary Stations on the Connection tab of the Connection Properties dialog box in Station.
	Custom displays and individual parameter values on custom displays can be configured to update at a different rate to the rate specified here.
Fast Update Rate	The rate, in seconds, at which dynamic values available from the server are updated on Station displays.
	Note that:
	• This update rate does not apply to rotary Stations. You configure update rates for rotary Stations on the Connection tab of the Connection Properties dialog box in Station.
	Custom displays and individual parameter values on custom displays can be configured to update at a different rate to the rate specified here.
Operator-Based Security	Indicates that you want operator-based security.
Enable Card Image Callup	Not applicable to Experion.
Image Display Time	Not applicable to Experion.
Idle Page	The name/number of the display that Station automatically calls up if there has been no operator activity for the idle timeout period.
Item Type	Shows the Station type as Static .
Last Modified	The date/time on which the Station details were last modified.
Item Number	The unique item number assigned by Quick Builder. You can change this if you need to match an existing configuration (if you are uploading a database for example).
Last Downloaded	The date on which the item was last downloaded to the server.

Building a system printer

1 Use one of the following options to create a new system printer:

Option	Result
From the Printers section within the Library, drag and drop the Printer item into the List View.	The new printer appears in the List View .
Click ፟.	The Add Item(s) dialog box appears.
	1. From the Item Family list, select the applicable family.
	2. From the Item Type list, select Printer .
	3. In the Name text box, type in the name for this printer, or you can accept the default provided.
	4. Click OK to add the printer to the list.

2 Use the Main tab to configure the printer.

Main properties for a system printer

The **Main** tab defines the Experion system printer's basic properties.

Property	Description
Name	The printer's name, as defined and configured under Windows.
	If the Windows printer name is more than 30 characters long, or includes a space, you must install a print driver with a suitable name. See the <i>Software Installation User's Guide</i> for more information.
Description	A description of the printer.
Associated asset	The asset that an operator must have access to in order to see system alarms from this system interface. If you leave the associated asset field empty, the system alarms for this system interface will be seen by anyone who has access to the system alarms for the server on which this system interface is configured.
Alarm/Event Printer Language	Only applicable if this is an alarm/event printer. The character set used for printing alarms and events. (But not reports, which are always printed in the Latin character set.)
	If you select:
	• <i>cyri11ic</i> , you must use an Epson LQ-1070 (or later) printer and set its DIP switches to <i>Bu1garia</i> .
	• <i>German</i> , you must use an Epson LQ-1070 (or later) printer and set its DIP switches to <i>Multilingual</i> .
Item type	Shows the printer type.
Last Modified	The date/time on which the printer's details were last modified.
Item Number	The printer's ID.
Last Downloaded	The date on which the item was last downloaded to the server.

Algorithms

This section describes the *algorithms* you can attach to a point. An algorithm is a set of rules that enhances a point's functionality. The algorithm accomplishes this by processing the point data either before or after normal point processing. There are two types of algorithms:

- Action Algorithms—the algorithm is only used when the parameter value changes.
- PV Algorithms—the algorithm is used every time the point parameter is scanned.

Configuring PV algorithms in Quick Builder

The following PV algorithms are available in Quick Builder.

Related topics

"PV Algo 4: General Arithmetic" on page 188

"PV Algo 5: Production" on page 189

"PV Algo 7: Run Hours" on page 189

"PV Algo 10: General Logic" on page 190

"PV Algo 12: Composite Alarm Processing" on page 191

"PV Algo 15: Integration" on page 192

"PV Algo 16: Cyclic Task Request" on page 193

"PV Algo 20: Advanced Arithmetic" on page 193

"PV Algo 21: Advanced Logic" on page 194

"PV Algo 22: Piecewise Linearization" on page 195

"PV Algo 64: Maximum/Minimum" on page 195

"PV Algo 68: Value Transportation" on page 196

PV Algo 4: General Arithmetic

Description

Performs an arithmetic calculation using seven input point parameters and six constants. The result of the calculation is stored in the PV of the point to which this algorithm is attached. This algorithm is used to perform derived calculations based on analog or status points.

The calculation is as follows:

Result =
$$\frac{(F1 + F2 + F3 + F4)}{(F5 + F6)} \times F7$$

Where:

$$Fn = Constant_n \times IP_Point_ID_n.Param_n$$

Remarks

- If $IP_Point_ID_n$ is not specified (left blank), then $Fn = Constant_n$.
- If F5 + F6 = zero, then the divisor is automatically set to 0.000001 to avoid a divide by zero.
- If no division is required, then *constant_5* should be set to 0.0, and *constant_6* should be set to 1.0. *IP_Point_ID_5* and *IP_Point_ID_6* should not be defined.
- The *PVSOURCE* entry for a point to which this algorithm is attached must have **Address Type** set to *controller*. Specify only the controller name; **Location** should be left blank.
- *constant_7* is not user-definable and is always equal to 1.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the Server and Client Configuration Guide for more information.
Constant (F1–F6)	Specify up to six constants. The minimum is one Constant/Input Point pair and a denominator constant (to prevent a divide by zero).
Input Point (F1–F7) Param (F1–F7)	Select points and parameters from the list of points that have already been defined. These point parameters are used to multiply the constant.

PV Algo 5: Production

Description

This algorithm stores the shift, daily, or monthly total of an accumulator point PV to the nominated parameter of the destination point. After the total is stored, the accumulator point PV can optionally be reset to zero.

Remarks

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the Server and Client Configuration Guide for more information.
Destination	The point and parameter ID that is used to store the value at the end of the storage period. This must be an analog parameter.
Storage Period	The time interval between stores to the destination point parameter.
	If you specify either <i>Day</i> or <i>Month</i> , the storage will happen at the commencement of the first shift of that day or month (not at midnight).
Reset PV	Resets the PV value of the accumulator point to which this algorithm is attached after the run hours are stored to the destination point parameter.

PV Algo 7: Run Hours

For an analog point with no PV source address defined, this algorithm accumulates run hours according to a given run indicator status point used as a gate. When the gating point parameter enters the specified state, (say the end of a shift), the run hours are accumulated and sent to the PV parameter of the analog point.

Additionally, shift hours can be totaled and stored as well as the PV of an associated point. This information can be readily accessed by the Free Format report.

To use this algorithm, an analog point must have a scan period no greater than 60 seconds.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.

Property	Description
Gating Source Gate State	The point, parameter, and state of that parameter that causes run hours to be accumulated. Run hours accumulate if the gating source is in this state. Start and stop states might be single-, dual-, or triple-bit.
Shift Hours Destination	The accumulator point and parameter used to store the accumulated run hours for the shift. This point parameter must be defined with a zero drift deadband to ensure point processing on each scan.
Store Shift Total instead of Total Run Hours	Stores a shift total instead of total run hours indicated by the PV. The incremental run hours since the last shift boundary are stored.
Store Reset Timestamp in Descriptor	Writes the timestamp of the reset into the descriptor of the destination point.
Associated Point	The point for which the accumulated PV parameter value, since the last run hours reset, is stored with the run hours (for example, production tonnage).
	The run hours can be reset at any time from the Algorithm Detail display. For details, see the <i>Server and Client Configuration Guide</i> .

PV Algo 10: General Logic

Description

Performs logical combination of up to five single-bit inputs through four logic gates. The single-bit output can be sent either to the output destination of the point for which the algorithm is being defined, or to the PV source address of a database point.

A delay can be applied to the output after a transition to the target delay state. The specified delay can be relative to the current time or it can be absolute compared to the system time (in seconds after midnight).



Attention

The point to which this algorithm is attached must be a single-bit status point with only a controller number defined in the PV source address entry for the point.

Remarks

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Input Points (A to E)	Select the point/parameters, from the list of points that have already been defined, that are
Param	to be used as the inputs. You must specify at least one point.
F1, F2, F3 and F4	Select the logic function that is perform on the specified inputs. The default is OR.
Enable Delay	Select to enable a transition from non-target state to target state to cause the time delay function to be initiated. If the target state is held until the delay time has expired, then the delay output becomes the target state. Note that transition to a non-target state has no effect.
Delay Type	The type of delay, which can be <i>RELATIVE</i> to the current time or <i>ABSOLUTE</i> (seconds after midnight).
Delay Time	The delay period, in seconds, based on the selected Delay Type .
Target State	The target state for the delay function, which can be either 1 (default) or 0.
Output to OP	Send the result of the logic to the OP destination of the point for which the algorithm is defined.

Property	Description
Output to Database	Sends the result of the logic to a database point parameter address. If you select this, you must specify the Database Point .
Database Point	The database point/parameter where the logic result is sent.
Destination Parameter	

PV Algo 12: Composite Alarm Processing



Attention

Composite alarming is only supported for legacy systems. Newer systems should use Alarm Groups instead.

The alarm icon does not support composite alarming.

Composite alarming does not work over DSA or on Console Stations.

Consolidates the alarm conditions of up to 18 'subordinate' points to create a composite alarm for the 'master' point that represents the combined state of its subordinate points. (You attach this algorithm to the master point and attach *Action Algo 11: Composite Alarm* to each subordinate point.)

For example, if one subordinate point is unacknowledged (no longer in alarm) and another is in alarm but acknowledged, the master point will show the combined state, namely: unacknowledged + alarm (even though this state does not exist for any of the subordinate points).

The severity states of composite alarms are (from highest to lowest):

- Alarm and unacknowledged
- Alarm and acknowledged
- · Normal and unacknowledged
- Normal

Note the following points:

- The triggering alarm must be higher than journal priority; however, composite alarming makes no further differentiation between urgent, high, and low alarm priorities.
- The master point must be a dual-bit status point, and you must configure it as follows:
 - PV Source Address only specify the name of the controller (not a full hardware source address)
 - PV Scan Period is set to O (no scanning)
 - Alarming is inhibited
- A subordinate point can be of any type, and you must configure it as follows:
 - Attach action algorithm 11, and use the same block number as used by the master point
 - Enable alarming and define appropriate alarm states
- If you want to consolidate the alarm conditions of up to more than 18 points, you need to create a composite alarm hierarchy.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
	Attention The same block must be used by both the master point and all of its subordinate points.
Master point	The master point.

Property	Description
Subordinate Points (Point 1 to Point 18)	The subordinate points.

Related topics

"Action Algo 11: Composite Alarm" on page 197

PV Algo 15: Integration

Used for integration of rates to obtain both totals and the calculation of predicted totals. The calculations are performed as follows:

```
NewRunningTotal = PointParameterValue x (ScaleFactor)
x (TimeBetweenScans) + OldTotal
PredictedTtotal = NewTotal + (Value x (ScaleFactor)
x TimeRemaining)
```

Period totals can be configured to reset at the end of the period and be output to the defined destinations.

One of the period totals can be optionally stored in the PV of the point for which this algorithm is being defined.

The shift, day, and month totals can be downloaded to other point parameters and can be reset.

Predicted totals are stored in the following algorithm blocks:

Algo 15 - predicted shift

Algo 17 - predicted day

Algo 19 - predicted month

Note the following points:

- The point for which this algorithm is being defined must be an analog point without a database or controller source address and have a scan period no greater than 60 seconds.
- A point parameter that is to contain the result of the time accumulation must be built with a zero drift deadband to ensure point processing at each scan.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Period of total to be stored in PV	The period total to be stored in the PV of the point for which this algorithm is being defined:
	NOT_STORED = nothing is stored in the PV (default)
	SHIFT = new running total for shift is stored in PV
	DAY = new running total for day is stored in PV
	MONTH = new running total for month is stored in PV
Point to be Integrated	The point/parameter value to be integrated.
Scale Factor	The scale factor used to convert rate to units.
Destinations for totals	The points/parameters where the totals for the shift, day, and month are stored.
Reset Shift	Select if you want the shift total to be reset at the end of a shift.
Reset Day	Select if you want the day total to be reset at the end of a day.

[&]quot;Creating a composite alarm hierarchy" on page 205

Property	Description
Reset Month	Select if you want the month total to be reset at the end of the month.

PV Algo 16: Cyclic Task Request

Activates a task (typically a user-written application) on a regular basis while a status or analog point is being scanned.

For example, if you want an application to run automatically while the server is running, attaching this algorithm to a status or analog point causes the server to activate the application as long as the point is being scanned. You can stop the task by disabling scanning for the point.

For details about writing applications, see the Application Development Guide.



Attention

This algorithm can be specified for either a status or analog point that has no database or controller address defined.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Task LRN	The Logical Resource Number of the task that is requested when the point is scanning.
Task Request Rate	The task request rate in seconds. This value must be a multiple of the point scan rate.
Parameter Block	The numerical parameter(s) passed to the task. Note that if Word 1 is set to <i>0</i> , the parameter block is not read and all other parameter values are ignored.
	The format <i>z 'xxxx'</i> is used to represent hexadecimal values.

PV Algo 20: Advanced Arithmetic

Description

Performs arithmetic calculation of multiple input point parameters and constants. The result of the calculation is stored in the PV of the point for which this algorithm is being defined.

Remarks

Property	Description
Equation	The arithmetic expression used by this algorithm for this point.
	Enclose the expression with quotation marks (""). For example:
	"((a+1)*b+c)*d+e"
	where a, b, c, d, and e are point parameters or numeric constants.
	Maximum 1,000 characters.
	Arithmetic Operators are:
	• + (Plus sign) Add
	• - (Minus sign) Subtract
	• *(Asterisk) Multiply
	• /(Slash mark) Divide
	• Λ (Caret) Power
	• sqrt() Square root
	For instances where operator characters are part of a point name, use a backslash to escape the character. For example, "fic-123.pv" can be used if entered as "fic\-123.pv".

PV Algo 21: Advanced Logic

Description

Performs logical combination of multiple single-bit inputs. The result of the calculation is stored in the PV of the point for which this algorithm is being defined. If the result is more than 3 bits, then attach the algorithm to an Analog point.

Remarks

Property	Description
Equation	The logic expression used by this algorithm for this point.
	Enclose the expression with quotation marks (""). For example:
	"(a&b) (c&d)+e"
	where a, b, c, d, and e are point parameters or numeric constants, where floating point values will be truncated to integers.
	Maximum 1,000 characters.
	Logic Operators are:
	• + (Plus sign) Concatenation (shift left)
	• &(Ampersand) And
	• / (Pipe) Or
	• Λ (Caret) Exclusive or (Xor)
	• ~(Tilde) Not
	For instances where operator characters are part of a point name, use a backslash to escape the character. For example, "di-123.pv" can be used if entered as "di\-123.pv".

PV Algo 22: Piecewise Linearization

Linearizes the PV and SP of the point for which the algorithm is being defined using the piecewise linearization of up to six segments in order to produce, for example, true temperature for thermocouple readings. The segments are defined by assigning breakpoints.

The raw value (passed from the point being linearized) is converted to temperature by the use of linear interpolation between (up to) seven coordinates.

Up to five breakpoints along the graph can be defined. If less than five breakpoints are required, the coordinates of the unused breakpoints retain the default values o, o.

The SP is also linearized, both on input (source) and output (destination).



Attention

The point for which this algorithm is defined must be an analog point with either a controller or database source address.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
%	Percentage of range to be reached for the breakpoint to take effect. Must be in the range of 0% to 100%. A percentage of 0% indicates the end of breakpoint data.
(EU)	Coordinate value for the breakpoint percentage. This value must be in the range of the point and, if temperature, can be either Celsius or Fahrenheit by choice of data values.
	You can obtain a negative gradient by defining appropriate values for the EU coordinate. In such a case, EU values decrease as the percentage values increase. Note that to ensure meaningful results, the graph must have either a positive gradient or a negative gradient, not a combination of both.

PV Algo 64: Maximum/Minimum

For an analog point, the maximum and minimum values of the PV and the times at which they occurred are recorded over a period of a shift or a day. These values are stored at the nominated destinations and reset at the beginning of the selected period.

At the beginning of each period, the maximum and minimum values of the previous period are downloaded to the defined destination points.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Shift Min/Max and Day Min/Max	You separately specify the requirements for the two periods: shift and day.
Enable Collection	Select to collect the minimum and maximum values for the associated period.
Current Maximum	Use this to pre-set a current PV maximum value for the point to which this algorithm is attached. This value is compared with the recorded maximum value and a new maximum is set. Pre-setting is useful when uploading the database.

Property	Description
Current Minimum	Use this to pre-set a current PV minimum value for the point to which this algorithm is attached. This value is compared with the recorded minimum value and a new minimum is set. Pre-setting is useful when uploading the database.
Select Reset After Each Shift/Day	Select to reset minimum and maximum point values at the start of the associated period.
Destination for Max Parameter	The point/parameter in which maximum value for the associated period is stored. The point you select must be capable of storing the value, and of being historized. You can use a destination point of the same type as that using the algorithm.
Destination for Min Parameter	The point/parameter in which minimum value is stored for the associated period. The point you select must be capable of storing the value, and of being historized. You can use a destination point of the same type as that using the algorithm.

PV Algo 68: Value Transportation

Used to move a value from the PV of the point, to which the algorithm is attached, to the hardware address defined by the:

- OP destination (for a status point)
- SP destination (for an analog point)

You can attach this algorithm to either an analog or status point. The PV of the point to which you attach the algorithm is sent as follows:

- For a status point, to the OP destination defined for the point
- For an analog point, to the SP destination defined for the point

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Attention

Do not use this algorithm to transfer safety or mission critical information between controllers. To transfer this type of information use a peer to peer method to transfer information directly between controllers.

Note the following points:

- If the algorithm is attached to a status point, the number of input states must match the number of output states. If this isn't the case, the algorithm won't be able to transfer data correctly and the following error will occur: 'Data not convertible'.
- Use the algorithm with care—assigning it to many points may result in a significant load on the server. (As an alternative, you should consider the equivalent Action Algo 68: Value Transportation.)
- Set the drift deadband to a reasonable value so that the algorithm does not execute for inconsequential changes.
- Using this as a PV algorithm degrades system performance. Using OP/SP source for confirmation in conjunction with using this as a PV algorithm severely degrades system performance and is not recommended.
- Do not use control timeouts in conjunction with this algorithm.

Related topics

"Action Algo 68: Value Transportation" on page 198

Configuring action algorithms in Quick Builder

The following action algorithms are available in Quick Builder.

Related topics

- "Action Algo 11: Composite Alarm" on page 197
- "Action Algo 68: Value Transportation" on page 198
- "Action Algo 69: Status Change Task Request" on page 198
- "Action Algo 70: Status Change Report Request" on page 199
- "Action Algo 71: Queued Task Request" on page 199
- "Action Algo 72: Status Value Transportation with Mapping" on page 199
- "Action Algo 74: Status Change USKB LED Request" on page 200
- "Action Algo 75: Status Point Notification" on page 201
- "Action Algo 76: Analog Point Notification" on page 201
- "Action Algo 77: Status Change Display Request" on page 202
- "Action Algo 78: Group Control of Points" on page 202
- "Action Algo 79: Status Change Alarm Group Inhibit" on page 203
- "Action Algo 80: Status Change Alarm Area Inhibit" on page 203
- "Action Algo 92: Queued Task Request" on page 203

Action Algo 11: Composite Alarm



Attention

Composite alarming is only supported for legacy systems. Newer systems should use Alarm Groups instead.

The alarm icon does not support composite alarming.

Composite alarming does not work over DSA or on Console Stations.

Used only in conjunction with PV Algo 12: Composite Alarm Processing to consolidate alarms from a number of points.

Action Algo 11: Composite Alarm is assigned to all of the 'subordinate' points, and PV Algo 12: Composite Alarm Processing is assigned to the 'master' point.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
	Attention The same block must be used by both the master point and all of its subordinate points.
Master Point	The master point for this subordinate point.
Points at Current Level (Point 1 to Point 18)	Lists the current point and all the other subordinate points.

Related topics

"PV Algo 12: Composite Alarm Processing" on page 191

[&]quot;Creating a composite alarm hierarchy" on page 205

Action Algo 68: Value Transportation

Used to move a value from the PV of the point, to which the algorithm is attached, to the hardware address defined by the:

- OP destination (for a status point)
- SP destination (for an analog point)

You can attach this algorithm to either an analog or status point. The PV of the point to which you attach the algorithm is sent as follows:

- For a status point, to the OP destination defined for the point
- For an analog point, to the SP destination defined for the point



Attention

Do not use this algorithm to transfer safety or mission critical information between controllers. To transfer this type of information use a method to transfer information directly between controllers.

Note the following points:

- Set the drift deadband to a reasonable value so that the algorithm does not execute for inconsequential changes.
- Using this as a PV algorithm degrades system performance. Using OP/SP source for confirmation in conjunction with using this as a PV algorithm severely degrades system performance and is not recommended.
- Do not use control timeouts in conjunction with this algorithm.

Related topics

"PV Algo 68: Value Transportation" on page 196

Action Algo 69: Status Change Task Request

Activates a task each time a status point makes a transition from a non-nominated state to the specified state.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
LRN of Task to Request	The Logical Resource Number of the task that is requested when the point changes to the specified state.
	You can specify a system task or a custom task. (See the <i>Application Development Guide</i> for details about writing custom tasks.)
Task Request State	Select the state (0 to 7) that requests the task, or select ALL for all state transitions.
Parameter Block	The numerical parameter(s) passed to the task. Note that Word 1 , Word 2 , or Word 3 must be a non-zero number, otherwise the parameter block is not read and all other parameter values are ignored.

Notes

- The algorithm block can also be configured from the Status Change Task Request Algorithm display. Using the Point Detail display, double-click the Action algorithm number to display the Algorithm configuration.
- This algorithm must be attached to a Status point.

This algorithm does not queue requests to the task.
 The task must call GETREQ to obtain the following information in the parameter block:

Words 1-10

Action Algo 70: Status Change Report Request

Requests the specified report to be produced when the status point changes to the report request state. A single report request is made each time the status point makes the transition from any non-specified state to the specified state.

In order for the report to print, the requested report needs to have a report printer defined as its destination.

To limit the assets from which data is reported, you need to specify the ID of an operator who is assigned to the assets you want to include.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the alglst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Report to Request	The number of the report to request when the specified state is entered by the PV value. To find the number assigned, see the Reports display, which shows the number assigned to each report.
Report Request State	The state (0 to 7) the PV value must enter to trigger the report request.

Action Algo 71: Queued Task Request

This algorithm is deprecated, and is replaced by Action Algo 92: Queued Task Request.

Action Algo 72: Status Value Transportation with Mapping

When attached to a status point, this algorithm transports up to four values to up to four separate points when the status point reaches a specified state.

This is accomplished by masking each state with a bit pattern. Each of the four masks must contain the state (o to z) to be reached, the value to be transported, a target point, and the target point's target parameter.



Attention

Do not use this algorithm to transfer safety or mission critical information between controllers. To transfer this type of information use a method to transfer information directly between controllers.

Note the following points:

- The PV parameter can only be used to enable and disable scanning of a point. In this case the required value should be either:
 - 1 (On Line/In Service)
 - 2 (Off Line/Out of Service)
- Some controller types can also accept a value of 0 (Reset). See the associated Controller Reference.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Transport (states) 7 to 0	Select the check box that represents the status point state that triggers the transportation of a value when the status point changes to this state.
Value	The numeric value you want to send to the destination point parameter when the status point reaches the specified state.
Destination	The point to which the value is transported when the PV of the status point, to which the algorithm is attached, changes. The target point can be a status, analog, or accumulator point.
Param	The point parameter of the destination point that receives the transported value when the status point PV changes.

Action Algo 74: Status Change USKB LED Request



Attention

This algorithm is primarily available to support existing keyboards. If you are configuring a new keyboard, see the *Server and Client Configuration Guide*.

For the defined assignable asset or Station, a change in point status causes the associated LED with a nominated key on a Universal Station keyboard (USKB) to be controlled with the characteristics specified.

For each of the states (0 through 7) of the status point for which this algorithm is defined, you can select an action for a particular LED.



Attention

If the nominated LED is not located on the Universal Station keyboard, the control is ignored.

Every assignable asset has a corresponding number. When you configure this algorithm, you need to know the number of the assignable asset.

To obtain the number for the assignable asset, in the Station Command Zone, type **sys137.dsp** and press ENTER. Then locate the required assignable asset in the list and note its corresponding number.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
LED Action	The action the LED performs when the PV changes to the associated state. Select <i>NO ACTION</i> if you do not want the LED to do anything.
LED No.	The LED that is controlled when the PV changes to the associated state. Must be a number from 0 to 99.
LED Destination	The Station or asset that receives LED control.
Area or Station No.	Select the type of destination from LED Destination , either <i>STATION</i> or <i>AREA</i> , and then type the specific Station/asset number in Area or Station No .

Action Algo 75: Status Point Notification

Only used with a status point. Providing the gating point is in its permit state, the algorithm sends a message to a user-written application when the status of the point changes to a specified state.

The message contains the point number, the old and new PV values, the date and time of the change, and can also include optional parameters.

For information about writing applications, see the *Application Development Guide*. A sample application, \server\user\examples\src\test9.c, shows how to use this algorithm.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Gate Point	The status point, and associated state, that control message generation. Messages are only
Notification Permit Gate State	generated if the point is in the specified state.
LRN Number to be Notified	The Logical Resource Number of the custom task that is notified when the point changes to the specified state(s).
Notify Specified LRN upon Reaching	Select the states for which you want message to be generated.
Optional Algo Data	Optional parameters that are included in the message.

Action Algo 76: Analog Point Notification

Only used with an analog point. Providing the gating point is in its permit state, the algorithm sends a message to a user-written application when:

- The value changes by a specified percentage from the last reported value
- The maximum time between notifications is exceeded

The message contains the point number, the old and new PV values, the date and time of the change, and can also include optional parameters.

For details about writing applications, see the *Application Development Guide*. A sample application, \server \user\examples\src\test9.c, shows how to use this algorithm.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the Server and Client Configuration Guide for more information.
Gate Point Notification Permit Gate State	The status point, and associated state, that control message generation. Messages are only generated if the point is in the specified state.
LRN Number to be Notified	The Logical Resource Number of the custom task that is notified when the point changes as specified.
Significant Change	The percentage change from the last reported value that generates a message.

Property	Description	
Maximum Period	The maximum time, in seconds, between messages.	
	If you only want to generate messages when the value changes by the specified value (that is, disable this option), set the value to 0.	
Optional Algo Data	Optional parameters that are included in the message.	

Action Algo 77: Status Change Display Request

For a status point, causes a display to appear either on a specified Station or all Stations assigned to a specified assignable asset when the status point changes to a specified state. A maximum of six display request states can be nominated.

It is recommended that for a particular state and Station, only one display is requested.

Every assignable asset has a corresponding number. When you configure this algorithm you need to know the number of the required assignable asset.

To obtain the number for the assignable asset, in the Station Command Zone, type **sys137.dsp** and press **ENTER**, locate the required assignable asset in the list, and note its corresponding number.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Target State	The state that triggers the display request.
Display Number	The page number of the requested display.
	Note that you cannot specify named displays.
Display Destination	The Station or asset where the display appears.
Area or Station No.	Select the type of destination from Display Destination , either <i>STATION</i> or <i>AREA</i> , and then type the specific Station/asset number in Area or Station No .

Action Algo 78: Group Control of Points

Controls a group of status or analog points through a group control point. It sends the PV of the point for which the algorithm is defined to the nominated point/parameters in the control list.

You can optionally define a gating point (status) that prevents the PV being sent to the control points if it is in the specified state.

Use this algorithm with care; assigning it to many points may result in a significant load on the server.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the alglst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Gate Point	The status point and PV state (0 to 7) that prevents the value being sent to the point/
Inhibit State	parameters in the Group Control List.
Group Control List	The points/parameters to which the value is sent.

Property	Description
Command priority Residual priority	The command and residual priorities used by the server when changing the point parameters in the Group Control List .
Process	(The controller only executes a command if it's command priority that is greater than or equal to the residual priority of the previous command.)

Action Algo 79: Status Change Alarm Group Inhibit

For a status point, alarm reporting is inhibited for the nominated group of points when the status point PV is in an alarm inhibit state. An example of a use for this algorithm is to inhibit alarm reporting on sensor points if the unit has been shut down.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
Group Points	Either select the point name from the list of points already added to the project, or, to select a server database point defined outside of this project, type in the name, to specify a point to be included in the group list. You can specify up to 19 points.
Alarm Inhibit States	The alarm inhibit states for the status point PV. You can specify up to eight states.

Action Algo 80: Status Change Alarm Area Inhibit

For a status point, alarm reporting is inhibited for the nominated group of assignable assets when the status point PV is in an alarm inhibit state. For example, use this algorithm to inhibit alarm reporting on sensor points if the unit has been shut down.

Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block. See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for
	more information.
Area Codes	The tag name of the asset for which alarming is inhibited.
Alarm Inhibit States	The state(s) that the PV value must enter to inhibit alarming for the point.

Action Algo 92: Queued Task Request

Queues a request to a task when a status point changes to a specified state(s). The point item number, the change in state and up to seven optional parameters are passed to the task.

The algorithm makes a single task request each time the status changes to a specified state. Because requests are queued, the risk of losing a request is reduced.

The requested task uses GETPRM to process the request block. The task request uses a 10-word parameter block defined in the algorithm block, but words 3, 4, and 5 are reserved for use by the algorithm.

Note the following points:

• This algorithm cannot be used in conjunction with *Action Algo 69: Status Change Task Request* to request the same task.

• To request multiple tasks on the same state change(s), configure multiple points on the same controller address. The algorithm can then be configured for each task using the different points that access the same information.

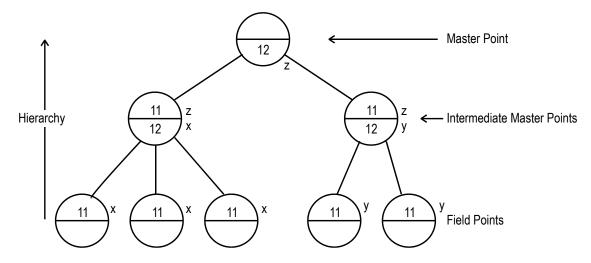
Property	Description
Block No.	The algorithm block used by this algorithm for this point. Each algorithm attached to each point should be assigned a unique block number. Use the algIst utility to find a free block.
	See the topic titled "Algorithm blocks" in the <i>Server and Client Configuration Guide</i> for more information.
LRN of Task to Request	The Logical Resource Number of the task that is requested when the point status changes to the specified state(s).
	You can specify a system task, such as the Server Display program, or a custom task. (See the <i>Application Development Guide</i> for details about writing custom tasks.)
States to Request Task	States (or condition settings) that trigger the task request.
Parameter Block	The numerical parameter(s) passed to the task.
	Words 3, 4, 5, and 13 are used by the algorithm to pass the following values:
	Word $3 = 0$
	Word 4 = Point item number of the status point to which algorithm is attached
	Word 5 = State of the status point to which the algorithm is attached

Creating a composite alarm hierarchy

The following figure shows how create a composite alarm hierarchy for a large number of points using PV Algo 12: Composite Alarm Processing and Action Algo 11: Composite Alarm.

You attach Algo 11 the subordinate (field) points, whose alarms you want to consolidate. You attach both algos 11 and 12 to the intermediate master points, and attach only algo 12 to the top-level master point.

The letters (x, y and z) show how you assign block numbers.



Related topics

"PV Algo 12: Composite Alarm Processing" on page 191

"Action Algo 11: Composite Alarm" on page 197

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