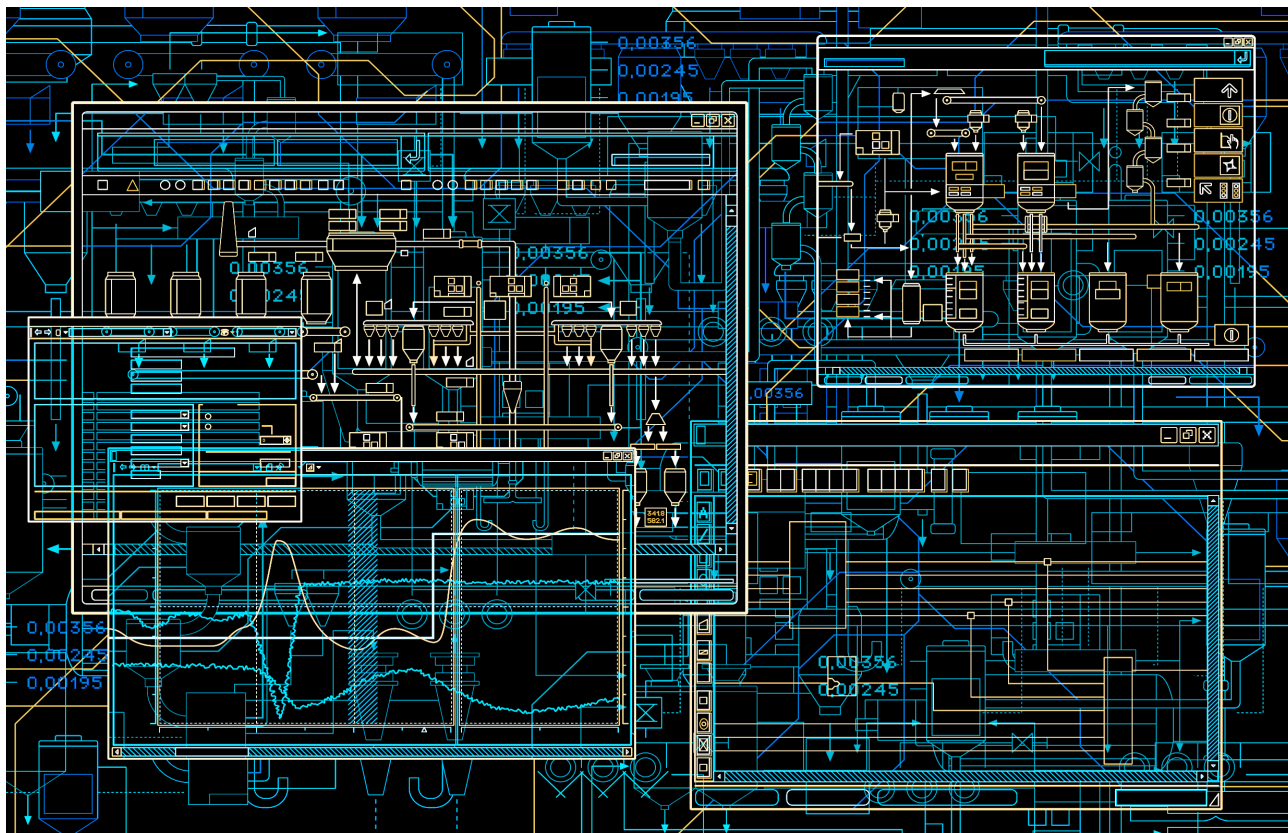




800xA for Symphony Plus Harmony

Configuration

System Version 6.0

Power and productivity
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800xA for Symphony Plus Harmony

Configuration

System Version 6.0

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Release: October 2015
Document number: 3BUA000157-600 A

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About This User Manual

General



Any security measures described in this user manual, for example, for user access, password security, network security, firewalls, virus protection, etc., represent possible steps that a user of an 800xA System may want to consider based on a risk assessment for a particular application and installation. This risk assessment, as well as the proper implementation, configuration, installation, operation, administration, and maintenance of all relevant security related equipment, software, and procedures, are the responsibility of the user of the 800xA System.

800xA for Symphony Plus Harmony software allows connection to and control of the Harmony system via the 800xA Systems Operator Workplace. This user manual describes the configurations related to 800xA for Symphony Plus Harmony functions.

User Manual Conventions

Microsoft Windows conventions are normally used for the standard presentation of material when entering text, key sequences, prompts, messages, menu items, screen elements, etc.

Warning, Caution, Information, and Tip Icons

This user manual includes Warning, Caution, and Information where appropriate to point out safety related or other important information. It also includes Tip to point

out useful hints to the reader. The corresponding symbols should be interpreted as follows:



Electrical warning icon indicates the presence of a hazard that could result in *electrical shock*.



Warning icon indicates the presence of a hazard that could result in *personal injury*.



Caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard that could result in *corruption of software or damage to equipment/property*.



Information icon alerts the reader to pertinent facts and conditions.



Tip icon indicates advice on, for example, how to design your project or how to use a certain function

Although Warning hazards are related to personal injury, and Caution hazards are associated with equipment or property damage, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, fully comply with all Warning and Caution notices.

Terminology

A complete and comprehensive list of Terms is included in *System 800xA System Guide Functional Description (3BSE038018*)*. The listing includes terms and definitions that apply to the 800xA System where the usage is different from commonly accepted industry standard definitions and definitions given in standard dictionaries such as Webster's Dictionary of Computer Terms.

Released User Manuals and Release Notes

A complete list of all User Manuals and Release Notes applicable to System 800xA is provided in *System 800xA Released User Documents (3BUA000263*)*.

System 800xA Released User Documents (3BUA000263)* is updated each time a document is updated or a new document is released. It is in pdf format and is provided in the following ways:

- Included on the documentation media provided with the system and published to ABB SolutionsBank when released as part of a major or minor release, Service Pack, Feature Pack, or System Revision.
- Published to ABB SolutionsBank when a User Manual or Release Note is updated in between any of the release cycles listed in the first bullet.



A product bulletin is published each time *System 800xA Released User Documents (3BUA000263*)* is updated and published to ABB SolutionsBank.

Intended User

This user manual is intended for use by personnel responsible for configuring 800xA for Symphony Plus Harmony to operate within the 800xA System. This user manual assumes the configuration engineer or technician is familiar with Windows operating systems, Microsoft® Internet Explorer, and the installed control system.

Section 1 Introduction

Overview

800xA for Symphony Plus Harmony communicates with the control systems through a Cnet-to-computer interface (IET800, PNI800).

800xA for Symphony Plus Harmony is a distributed process management and control system. Using a series of integrated Harmony control units, the system allows monitoring and control of process variables such as flow rate, temperature, and pressure according to a control configuration that the engineer or technician defines. A Harmony control unit is a controller and its I/O devices connected for communication on control network (Cnet).

800xA for Symphony Plus Harmony operates in a Windows environment on personal computer hardware. Using interactive process graphics, the operator can monitor and control all Analog loops and Digital devices interfaced to the network through Harmony control units.

800xA for Symphony Plus Harmony provides maintenance personnel with the capability to globally monitor the operating status of any system component on the network, and to diagnose component failures from any workstation.

800xA for Symphony Plus Harmony also provides the Harmony Executive Service. It is an 800xA service that controls underlying 800xA for Symphony Plus Harmony services.

Changes to Configuration in 800xA for Symphony Plus Harmony

The following configuration related changes have been made to 800xA for Symphony Plus Harmony in the 6.0 release:

- The SQL Server based ConfigServer Database that contained 800xA for Harmony Configuration data has been eliminated in the 6.0 release. The tag configuration data is now stored in the Aspect Directory.
- The Harmony Synchronizer Aspect, Tag Importer Exporter, and Import Export Configuration utility have been eliminated. A new Harmony Uploader Aspect has been added to allow Harmony tag configuration data to be imported to and exported from the Aspect Directory.
- A new TagConfig Aspect that supports Aspect Directory based tag configuration has been added. The new TagConfig Aspect also provides support for 800xA Engineering Environments and Versioning.
- The System Definition object type located under the Harmony OPC Server Network object has been eliminated. It has been replaced with a new INFI 90 System Definition object in the Library Structure and a new ServerConfig aspect on the Harmony OPC Server Network object.
- Remote Motor Control Block (RMCB) Text configuration has been removed from the Harmony Server TagConfig Aspect. RMCB Text configuration is now provided by a new NLS Text Set on the new INFI 90 System Definition object in the Library Structure.
- The Harmony Bulk Configuration Manager has been eliminated. The 800xA Bulk Data Manager can now be used to make bulk changes to 800xA for Symphony Plus Harmony TagConfig Aspects.
- The 800xA for Harmony Backup/Restore utility has been eliminated. 800xA for Symphony Plus Harmony tag configuration data can now be backed up and restored through the standard 800xA Aspect Directory backup/restore.
- The Harmony Server Monitor object and TagMonitor Aspects are no longer needed and have been eliminated.

Harmony Objects

800xA for Symphony Plus Harmony tag objects are configured from the TagConfig Aspect. This section describes the common aspect views of the Harmony objects. Refer to [Section 2, Harmony Objects](#) for more information on the object Harmony.

Connectivity Server

Connectivity server software is installed on selected nodes in the Harmony system. The connectivity server must be configured on each one of these nodes to be available to the system. [Section 3, Connectivity Server](#) describes the configuration of the Harmony connectivity server.

Tags

A Harmony tag is configured for each process point that is to be monitored by the Harmony connectivity server. A tag is required to perform control actions from a workstation running 800xA for Symphony Plus Harmony software. [Section 4, Harmony Tags](#) describes the configuration of the different Harmony tag types.

Uploader

The Uploader allows Harmony tag object configurations to be imported to or exported from the Aspect Directory. [Section 5, Uploader](#) describes the use of the Uploader.

SOE Reporting

SOE Reports allow monitoring of critical Digital points where the sequence of state changes for points or groups of points must be exactly known. [Section 6, SOE Reporting](#) describes the configuration of SOE Reports.

Alarm and Event System

The 800xA for Symphony Plus Harmony system provides services to define event conditions. [Section 8, Alarm and Event System](#) describes the alarm and event system.

Configuration Tools

[Section 9, Configuration Tools](#) describes the Bulk Data Manager and Environment Support.

Aspects and Settings

Harmony aspects are described in this section as well as certain settings. [Section 10, Additional Harmony Settings](#) describes the different aspects.

NLS Support

800xA for Symphony Plus Harmony supports any locale. To configure a different locale, refer to [Section 11, NLS Support](#).

Advanced Harmony Control System Monitoring

[Section 12, Advanced Harmony Control System Monitoring](#) describes the configuration of this optional Asset Monitor based feature.

Batch Support

[Section 13, Harmony Batch Support](#) describes details on 800xA for Symphony Plus Harmony Batch Management.

Signal Structure

A tag contains all information required to find a point in the process control configuration (function block) and to establish communication between it and Harmony. [Appendix A, Signal Structure](#) lists the Harmony tags with their signal structures.

Quality Definition

The purpose of this appendix is to describe the tag.property qualities in 800xA for Symphony Plus Harmony. [Appendix B, Quality Definition](#) lists the Harmony tag property qualities with definitions.

OCS Colors

[Appendix C, OCS Colors](#) lists the defaults colors used in faceplate and graphical elements.

Section 2 Harmony Objects

Introduction

Harmony tag objects are configured from the TagConfig Aspect in the Control Structure inside the Workplace. This section describes the common aspect views of the Harmony objects.

TagConfig Aspect View

All TagConfig Aspect views have the same general appearance and behavior. The aspect views are divided into three common areas of Tabs, Body, and Footer.

Tabs

The tabs associated with the Aspect view depend on the type of object that is selected for Harmony. Harmony data that is common to multiple object types is presented in the same way to help make Harmony tasks easier and to improve efficiency. The General tab is included for every object type.

Body

The body area contains all of the configurable properties of any selected tab.

Footer

The footer area contains controls to apply or cancel changes.

Table 1. TagConfig Buttons

Buttons	Description
Apply Changes	Apply the configuration changes that have been made.
Cancel Changes	Cancel any configuration changes that have been made.

Configuration Actions

Configuration actions for the Harmony system are done through the TagConfig Aspect views.

Creating Harmony Server Objects

The Harmony OPC Server Network Uploader Aspect will automatically create the 800xA for Symphony Plus Harmony Server Objects and Event Concentrator Objects during an import operation if they do not already exist.

The Harmony Server and Event Concentrator objects can also be created manually as per the steps mentioned below:

1. Open the **Control Structure** and the Root, **Domain**.
2. Select the **Harmony OPC Server Network** Object where the new Harmony Tag Object is to be created.
3. Right-click on the **Harmony OPC Server Network** Object and select **New Object**.
4. Select **List Presentation** and then select either **INFI 90 Harm Server** or **INFI 90 Event Concentrator**.
5. Enter a name and select **Create** and then select the **TagConfig** Aspect to configure the server Object.
6. Select **Apply** to save the tag configuration changes.

7. Repeat [Step 2](#) to [Step 6](#) for each Harmony Server and Event Concentrator Objects to be created.



Copy-Paste of Harmony Objects is not allowed within a Harmony OPC Server Network Object. A message box is displayed informing the user that an Object with the same name already exists, followed by a transaction canceled message box an Object Paste error code message box. Click **OK** to dismiss these message boxes.

The Tag Objects can be added to the system using the Uploader, or by manually creating them. To create a Harmony Object Tag, refer to [Creating a New Harmony Object Tag](#).

Creating a New Harmony Object Tag

1. Open the **Control Structure** and then open the Root, **Domain**.
2. Select the **Harmony OPC Server Network** Object where the new Harmony Tag Object is to be created.
3. Navigate to the **Harmony Controller Hierarchy Object** (For example: Loop1->Node16-> Module5) where the tag is to be added. Right-click on the

INFI 90 Module object and select **New Object** as shown in [Figure 1](#).

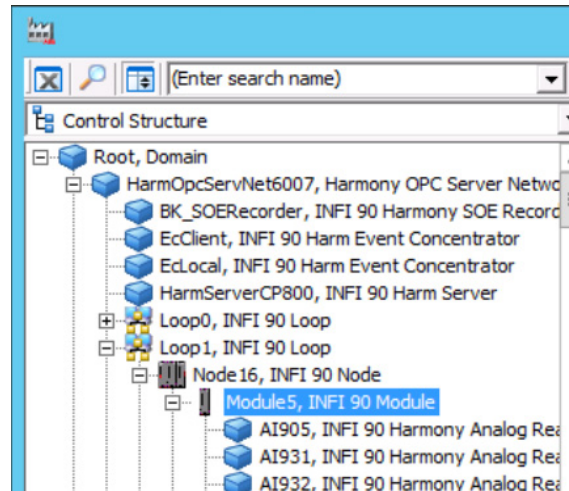


Figure 1. Control Structure



If the necessary Harmony Controller Hierarchy Objects do not exist, they can be created as well. To create the Objects, refer to [Creating a Harmony Controller Hierarchy Object](#).

4. Select **List Presentation** and then select the Harmony tag type to create.
5. Enter a name and select **Create**.
6. Select the **TagConfig** Aspect for the new Object to configure the Block Address and other Tag attribute changes.
7. Select **Apply** to save the Tag configuration changes.

Repeat [Step 2](#) to [Step 7](#) to create each Harmony Tag Object.

Creating a Harmony Controller Hierarchy Object

1. Select the Object under which the **Harmony Controller Hierarchy Object** will be created (*Harmony OPC Server Network Object, INFI90 Loop, or INFI90 Node*).

2. Right-click and select **New Object**.
3. Select the desired Harmony Controller Hierarchy Object Type (*INF190 Loop, Node or Module*).
4. Enter the name using the format "Loopx", "Nodex", or "Modulex" where *x* is the Harmony Loop, Node or Module number.
5. Select **Create**.

Modifying a Harmony Object Tag

1. Open the Control Structure.
2. Open the Root, Domain.
3. Open the Harmony OPC Server Network Object.
4. Navigate to the tag in the Harmony Control Structure hierarchy.
5. Select **TagConfig** in the list of Aspects.



While the TagConfig aspect can be opened and edited in multiple windows or locations at the same time, only the information in the last window or location that was saved will actually be saved. It is recommended that the TagConfig aspect only be opened, edited, and saved in one window or location at a time to avoid confusion.

6. Make any attribute changes.
7. Click **Apply** to save the changes.

Deleting a Harmony Object Tag

1. Open the Control Structure.
2. Open the Root, Domain.
3. Open the Harmony OPC Server Network Object.
4. Navigate to the tag in the Harmony Control Structure hierarchy.
5. Right-click on the Harmony Tag and then select **Delete**.

Renaming a Harmony Object Tag

1. Navigate to the Harmony Tag and then select the Tag to edit.
2. Select the Name Aspect.
3. Edit the name field and select **Apply**.



The Harmony Tag description can also be modified from the Name Aspect.



Data from renamed object tags may not be displayed by the Harmony Block Details, Harmony Module Details, Harmony Operating Parameters, and Harmony Diagnostics type aspects. Restart the Operator Workplace (clears an internally cached name) to view the data.

Moving a Tag Between Connectivity Servers

1. Navigate to the Harmony Tag to be moved in the Harmony Control Structure hierarchy.
2. Right-click on the Object and then select **Cut**.
3. Navigate to the Loop, Node, Module location under the Harmony OPC Server Network Object for the destination Harmony Server tag object. The Loop, Node and the Module Objects will need to be created, if they do not exist.
4. Right-click on the Module object and then select **Paste**.
5. If **Enable On-line Change Notifications** is disabled for the Harmony OPC Server Network Objects, then the Harmony Servers will need to be restarted to reflect the changes.

Modifying the Symphony System Definition

1. Navigate to the desired Harmony OPC Server Network Object and then Select the **ServerConfig** Aspect.
2. Select the **NLS Text Sets** pick-list to change the **INFI 90 System Definition** Object to be used for this Harmony OPC Server Network. Refer to [Section 7, System Definition](#) for more information.

Online Change Notifications

Select the **Enable Online Change Notifications** on the **ServerConfig** Aspect to automatically propagate online Tag configuration changes to the running Harmony Servers in this Harmony OPC Server Network.

If **Enable Online Change Notifications** is not selected, the Harmony Servers will need to be restarted to load any Tag configuration changes, additions and deletions that are made.



Changes to the Harmony Server and Event Concentrator Tags are not propagated online and require a restart of the server to process the changes, regardless of choosing the **Enable Online Change Notifications** setting.



ABB does not recommend making bulk configuration changes online. When bulk changes are made, it is recommended that online change notifications are disabled. Each system may exhibit different update performance. ABB recommends disabling online changes if more than 100 tags are being added, updated or removed.

To make bulk configuration changes offline (data synchronization disabled):

1. Disable the **Enable Online Change Notifications** option.
2. Use Bulk Data Manager or the Uploader to make all Object changes.
3. One at a time, manually restart each Connectivity Server or use the Harmony Executive Service as follows:
 - a. De-select the **Enabled** option on the Configuration tab of the Harmony Executive Service located in the Service Structure as shown in [Figure 2](#).
 - b. Click **Apply** and wait for the current status to change to **Undefined**.

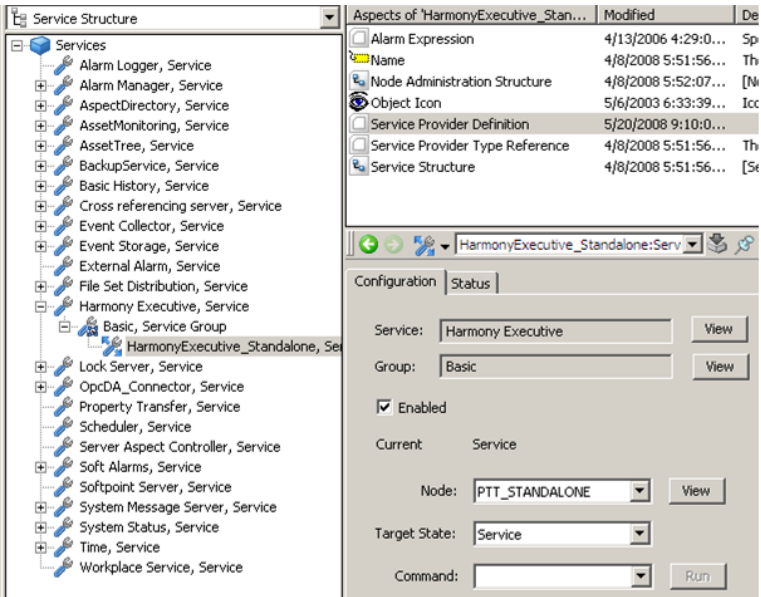


Figure 2. An Example of Harmony Executive Service

- c. Select the **Enabled** option, click **Apply**, and wait for the current status to change to **Service**.



The server will lose communication while it is being restarted.

Modifying the Connectivity Server Nodes

Use the **ServerConfig** Aspect’s **Primary Host** and **Backup Host** pick-lists to select the primary and backup Harmony Connectivity Server nodes for this Harmony OPC Server Network Object.

Common Object Properties

All Harmony objects have some common object properties. These common properties identify the object and relate the objects to each other in the object hierarchy. The common properties are configured in the general tab of the object view.

General Tab

The General tab contains the following sections ([Table 2](#)).

Table 2. General Tab Fields

Field ¹	Description
Identification - Information that identifies the object to the user throughout the Harmony system.	
Type	Selected during object creation. The type field cannot be changed. The behavior and the properties of an object are mainly dependent on the object type.
Name	Used to identify an object at the user interface level. Internally the name is linked with a unique ID. References to objects are stored by using the unique ID only. If the name of an object that another object references is changed, the reference will stay the same. At the browser level the most recent name will be used to present an object. Object names must be unique. The field accepts from up to 32 characters. The Name field can only be changed in the Name Aspect.
Description	Defines more detailed information about an Object. The Description is displayed in several views (faceplates). The field accepts up to 64 characters. The Description field can only be changed in the Name Aspect.
User Text	Allows user supplied text to be associated with the object.
User Index ²	Provides a method to index objects using some other indexing scheme.

NOTES:

- 1. Refer to [Naming Conventions and Guidelines](#) on page 30 for a description of the legal character set for names.
- 2. This field is currently used by Operate IT conversion tools to map the original object in Operate IT to a new object in Harmony.

Naming Conventions and Guidelines

The following sections define naming conventions and guidelines for objects and properties. These guidelines mainly describe character length restrictions and list supported characters. The restrictions apply to object names and property names only. The usable character set for other text strings do not have these restrictions.

Text Length

The lengths specified in [Table 3](#) for the different properties are the maximum number that can be handled by the system. This does not imply that the maximum number of characters will always be shown in every display or application. The character space in some applications is limited, and in some cases, field widths are user adjustable. When a string is truncated in a display, the whole string is usually shown in the form of a tool tip.

Table 3. Text Lengths

Entity	Maximum Characters	Descriptions
Object Name	32	Identifies the object in the system. The period (.) separator between object name and property name is not considered part of the name.
Property Name	32	Identifies a property inside of an object. When the property name consists of multiple parts (signal name/selector) separated by a slash (/), the separator is considered part of the property name.
Description	64	A description of the purpose of the object that is displayed in specific views such as in faceplates.

Character Sets

Three groups of characters for object names and property names are used.

Legal Character Set

Supported legal character sets are listed in [Table 4](#).

Table 4. Legal Character Set

Characters	ASCII Value
0 to 9	048 to 057
A to Z	065 to 090
a to z	097 to 122

Since Harmony is most often used with other systems, these other systems have their own legal character set. The legal characters are actually a combination of all the restrictions of Harmony and the connected system.

Illegal Character Set

Harmony and commonly used applications, such as Microsoft Excel, support the illegal character set listed in [Table 5](#). These characters, however, must not be used in names.

Table 5. Illegal Character Set

Character	ASCII Value	Reserved Use
" (quotation)	034	—
# (pound)	035	—
% (percent)	037	Wildcard for database search.
& (and)	038	Wildcard for database search.
' (apostrophe)	039	—
((parentheses open)	040	For arrays.
) (parentheses close)	041	For arrays.
* (asterisk)	042	Wildcard for one or more character.

Table 5. *Illegal Character Set (Continued)*

Character	ASCII Value	Reserved Use
, (comma)	044	—
. (period)	046	Separator tag.property.
/ (slash)	047	Separator property hierarchy levels.
: (colon)	058	Subscription suffix.
; (semicolon)	059	—
? (question mark)	063	Wildcard for one character.
[(bracket open)	091	For DBL layer.
\ (backslash)	092	Delimiter
] (bracket close)	093	For DBL layer.
{ (curly bracket open)	123	Graphic string delimiter.
} (curly bracket close)	125	Graphic string delimiter.
—	127	—
—	00 through 31	—

Illegal First and Last Characters

Table 6 lists the characters that cannot be used for the first or last character in a name.

Table 6. *Illegal First and Last Characters*

Characters	ASCII Value
Space ¹	032
! (exclamation point)	033
+ (plus sign)	043
- (negative sign)	045

Table 6. Illegal First and Last Characters (Continued)

Characters	ASCII Value
_ (underscore)	095

NOTE: 1. A space is **legal** when used as a **first** character, but a space is **illegal** when used as a **last** character. The remaining characters (!, +, -, _) are **illegal** when used as first **OR** last characters.

Characters that are classified as not allowed can be addressed with an escape sequence. Characters not supported by an application but supported by Harmony can be addressed using an escape sequence. The escape sequence is:

\nn

where: nn Hexadecimal number.

Section 3 Connectivity Server

Introduction

The connectivity server is hosted by a Harmony system node. The Server object is configured and assigned to the host node that has the Harmony Server software installed. This section describes the configuration of the Harmony Server object.

Harmony Server Object

The Harmony Server object contains information related to the connectivity server. A Harmony Server object has to be configured for every node that is to host a Harmony Server. [Table 7](#) describes the Server object properties.

Table 7. Harmony Server Object Properties

Properties	Description
General	Common object properties.
Server	Server properties similar to other Server objects. Refer to Server Tab on page 35 for additional information.
Harmony	Refer to Harmony Tab on page 36 for more information.

Server Tab

The Server tab is used to configure Alarms for Redundancy, Licensing and Internal Errors. Redundancy State is no longer configured in the Server Tab. Harmony Connectivity configuration is configured in the **ServerConfig** Aspect on the Harmony OPC Server Network Object.

Harmony Tab

The Harmony tab is used to configure specific information related to the Harmony control system (Figure 3). The fields in this view are described in the following paragraphs.

General | Server | Harmony

Options

☒ Filter Bad Quality Alarms

☒ Filter Max-Time Exception Reports

☐ Filter Local/Remote I/O Errors

☐ Module Time-stamping

☒ Scanner is an InfiNet Scanner

☐ Global Alarm Acknowledgement

☒ Enhanced Tuning Events

Time Synchronization

☒ Enable Time Synchronization

Accuracy

3 - Low Accuracy Battery

Master Update Period:

900

Seconds

Message Wait Period:

1200

Seconds

☐ Run RTDS in DIS Mode (add 60-day offset for DIS Consoles)

☐ Enable automatic DST adjustment for SEM Module

Communication Errors

Normal

Active

Comment:

0 -

0 -

Signal:

15 -

15 -

Priority:

16 - inform

5 - CRITICAL

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Advanced Options

☒ Harmony Namespace Support

☐ Turn Off Persistence for Export Tags on Bulk Update

Cancel

Apply

Figure 3. Harmony Tab

Options

Following are the options available under Harmony Tab:

Filter Bad Quality Alarms

Filters bad quality alarms caused by hardware failure.

Filter Max-Time Exception Reports

Filters exception reports when the maximum reporting time expires.

Filter Local/Remote I/O Errors

Filters Local and Remote I/O alarms caused by missing hardware I/O points.

Module Time Stamping

When enabled, the timestamp in an exception report is received and processed. Time recorded in the event log for an event and in the alarm summary for an alarm is displayed to the millisecond. When disabled (default), the timestamp in an exception report is not used. The time recorded in the event log for an event and in the alarm summary for an alarm is the time the exception report was read and is displayed to the second.



1. The **Module Timestamping** option is not available when the **Scanner is an INFI-NET® Scanner** option is unchecked.
2. It is recommended that the module timestamping option be enabled for each Connectivity Server in a pair.

Scanner is an INFI-NET Scanner

Identifies the type of control network as Cnet (INFI-NET).

Global Alarm Acknowledgment

The global alarm acknowledgment function allows Harmony to send and receive global alarm acknowledgment messages to or from other nodes on the control network. Refer to [Global Alarm Acknowledgement Configuration](#) for more information.

Enhanced Tuning Events

Specifies that Tuning operations performed using the Blocks Details utility will be logged to the historical event log in an enhanced format. The enhanced format provides additional information on the item that was changed, how it was changed, and the user making the change.

Time Synchronization

Enable Time Synchronization

Determines whether or not the Server receives and sends the time synchronization on the network. When enabled, the Server is in time synchronization with the control network.

Accuracy

Time synchronization accuracy of the Server is valid when the Server is in time synchronization mode. The options are:

- Low accuracy (lowest accuracy); priority 0.
- Low accuracy battery backed; priority 3.
- High accuracy battery backed; priority 6.
- IIOIS20 node; priority 9.
- IIOIS20 SCSI; priority 10.
- PIMS SCSI; priority 11.
- Satellite clock system (highest accuracy); priority 12.

These accuracy settings are only used when negotiating for time mastership with other nodes in the underlying Harmony control network.

Master Update Period

Master update period is the frequency that Harmony Server synchronizes time with the underlying Harmony control network. This property is used only when Time Synchronization is enabled. The permissible values are 120 to 3540 seconds.

Message Wait Period

Message wait period is the Period that Harmony Server waits before attempting to assume time mastership on the control network. This property is used only when Time Synchronization is enabled. The permissible values are between 180 and 3660 seconds. Additionally, the configured value must greater than the Master Update Period.

Run RTDS in OIS Mode

Run RTDS in OIS Mode allows the connectivity server to time sync properly with an OIS component. This setting should only be set if both OIS nodes and Harmony are being time synchronized on the same loop.

Enable automatic DST adjustment for SEM Module

Enabling this option will cause the Harmony Server to adjust the **INFI 90** network time when a Daylight Savings Time adjustment is made by Windows on the Harmony Server node.

Communication Errors

Allows the user to configure the Alarm Comment text and Alarm Priority for Harmony Server Communication Error events.

Advanced Options

Harmony Namespace Support

Harmony namespace support allows the Harmony Server to process requests for non tag information, such as block detail and module detail status information. This setting should be enabled on the connectivity server in order for the Block Details and Module Details applications to function properly.

Turn Off Persistence for Export Tags on Bulk Update

Turn Off Persistence for Export Tags on Bulk Update specifies the Harmony Server to not persist values written to export type tags in bulk mode to the persistent database. This facilitates faster and more efficient bulk data exporting.

Global Alarm Acknowledgement Configuration

The global alarm acknowledgment function allows acknowledged alarms on one node to be automatically seen by other nodes on the same INFI-NET loop. Alarms acknowledged on one node can be broadcasted to the other independent nodes through the INFI-NET loop. Each node can be configured to send or receive alarm acknowledgments. This function is available for Harmony systems only.

Sending Global Alarm Acknowledgement Messages to the Loop

Enable Tag Acknowledgment Broadcast

To broadcast an alarm acknowledgement for a specific Harmony tag:

- Select the Tag Acknowledgment Broadcast Enable check box on the Harmony Tab of the tag.

Selecting the checkbox enables the connectivity server to broadcast the alarm acknowledgement for this tag on the communication highway.

Enable Acknowledgment Transmission

Configure the module status tag for each node to which the connectivity server transmits the alarm acknowledgment messages. For each module status tag, on the Module tab, select the Enable Alarm Acknowledgment Transmission check box to have the connectivity server transmit any recently acknowledged alarms. Broadcasts will only be sent to a node when the corresponding module status tag is configured and has alarm acknowledgment transmission enabled.

Receiving Global Alarm Acknowledgement from the Loop

Configure the Harmony Server tag to enable receiving global alarm acknowledgment messages from other nodes on the loop.

On the Harmony tab, select the Global Alarm Acknowledgement check box to enable the connectivity server to process the Global Alarm Acknowledgement messages received through the INFI-NET loop.

The connectivity server applies the alarm acknowledgement to the harmony tag that has the same Harmony address as the broadcast tag.

Section 4 Harmony Tags

Introduction

This section describes the configuration of Harmony tags. A tag is required to access Harmony data and to perform control actions from a workstation. The tags can be configured from any system node.

The system must have a Harmony connectivity server installed. Once configured, Harmony tag data can be used in Harmony functions such as process displays, reports, event pages, alarming, etc.

Online Tag Configuration

Harmony allows online tag configuration. Tags can be added, deleted, changed, and updated to the system.

The Enable Online Change Notifications option in the **ServerConfig** Aspect on the Harmony OPC Server Network Object where the Tag is located will specify whether or not the Tag configuration changes are processed online. For more information, go to [Online Change Notifications](#) on page 27

Tag Types

A tag represents either an Analog or Digital exception reporting block or a Station, Device Driver, or control block in a Harmony controller. Define a tag for each process variable that Harmony is to monitor and for each process device available

for control. Also, a tag can represent a system controller or communications interface.



Harmony Tag objects should be added to the Functional Structure with the **Insert Object Operation** or by selecting the **Import Functional Structure Assignments** option when Importing tags with the Uploader.

A tag contains all information required to find a point in the process control configuration (function block) and to establish communication between it and Harmony. Not all processor function blocks can be assigned a tag.

Each tag type available in Harmony can provide access to one or more function codes (FC). [Table 8](#) lists and describes the Harmony tag types. Refer to [Appendix A, Signal Structure](#) for the signal structure of all the Harmony tag types.

Table 8. Harmony Tag Types

Type	Support	Function Code ¹	Purpose
Harm Server	Used internally	N/A	Configures specific information related to the Harmony control system.
Analog Export	Used internally	N/A	Export of Analog value to communications interface.
Analog Read	Analog exception report	FC 30	Acquires an Analog exception reported value.
Analog Read	Analog Exception Report with High/Low Alarm Deadband	FC 48	Acquires an Analog exception reported value with alarm deadband.
ASCIIText ²	User defined data export	FC 194	Enables communication between Harmony and a C language or batch program running in a controller. Allows transfer of text strings.

Table 8. Harmony Tag Types (Continued)

Type	Support	Function Code ¹	Purpose
DAANG ²	Data Acquisition Analog	FC 177	Acquires an Analog exception reported value providing enhanced multiple level alarming as well as deviation and rate alarming. It also allows selecting the input source for the function block in a controller and writing a user inserted value to the block.
DADIG	Data Acquisition Digital	FC 211	Acquires a Digital exception reported state providing enhanced alarm management capabilities. It also allows selecting the input source for the function block in a controller and writing a user inserted value to the block.
DD	Device Driver	FC 123	Acquires an exception reported set or reset state for a device. It also allows initiating manual control.
Digital Export	Used internally	N/A	Export of Digital value to communications interface.
Digital Read	Digital exception report	FC 45	Acquires a Digital exception reported state.
Digital Read	Digital Exception Report with Alarm Deadband	FC 67	Acquires a Digital exception reported state with alarm deadband.
Enhanced Analog Input ²	Enhanced Analog exception report	FC 222	Acquires an Enhanced Analog input exception reported value.
Enhanced Analog Output ²	Enhanced Analog exception report	FC 223	Acquires an Enhanced Analog output exception reported value.
Enhanced Digital Input ²	Enhanced Digital exception report	FC 224	Acquires an Enhanced Digital input exception reported value.

Table 8. Harmony Tag Types (Continued)

Type	Support	Function Code ¹	Purpose
Enhanced Digital Output ²	Enhanced Digital exception report	FC 225	Acquires an Enhanced Digital input exception reported value.
ModStat Read	Module Status monitor	N/A	Monitors the status of a designated communications interface (node) or controller.
MSDD Read	Multi State Device Driver	FC 129	Acquires an exception reported status for a three state device. It also allows initiating manual control.
PhaseX Read	Phase execution	FC 218	Provides the execution environment for a Batch 90 program that is interfaced to the Production Management software (Batch Management or BDM).
RCM Read	Remote Control Memory	FC 62	Acquires an exception reported set or reset state of a device. It also allows initiating device control.
RMCB Read	Remote Motor Control block	FC 136	Acquires an exception reported start or stop state of a device. It also allows initiating device control.
RMSC Read	Remote Manual Set Constant	FC 68	Acquires an exception reported constant value and allows changing the value stored in the controller.
SOE Recorder	Multiple digital points of various types	Varies	Configured to define the field point configuration of the SOE device.
SOE Report Read	Sequence of Events Logs	FC 99, SEM blocks: 5000 and 5001	Configured for each SOE Report in Harmony. An SOE Report tag is a function block used for triggering SOE Reports.

Table 8. Harmony Tag Types (Continued)

Type	Support	Function Code ¹	Purpose
Station Read	M/A Station - basic M/A Station - cascade M/A Station - ratio Control Station	FC 21 FC 22 FC 23 FC 80	Monitors the exception reported variables from a control station. It also allows changing the control output, set point (SP), or ratio index.
Text Read	Text Selector	FC 151	Acquires an exception reported Text Selector message. The message, generated by the controller, contains a message number that corresponds to a text string defined in Harmony. It also contains a color and blink option.
System Definition	N/A	N/A	This Tag type is no longer used and information it defined is now contained in INFI 90 System Definition Object in the Aspect directory and the ServerConfig Aspect on the Harmony OPC Server Network Object.

NOTES:

1. Refer to the **Function Code Application Manual (2VAA000844*)** for more information and for descriptions of FC specifications.
2. Not supported by Plant Loop.

Harmony Tag Objects

The Harmony tag objects define Harmony connectivity server tags. [Table 9](#) describes the Harmony tag object properties.

Table 9. Harmony Tag Object Properties

Properties	Description
General	Common object properties.

Table 9. Harmony Tag Object Properties (Continued)

Properties	Description
Harmony	Refer to Harmony Tab on page 46 for more information.
Tag specific	Each type of tag object has unique properties. Refer to the appropriate tab for more information.

Event Point Configuration

Each tag in the Harmony system that generates events has configurable event points. The event point configuration permits the assignment of priorities and alarm texts to be associated with the event point. The event point configuration also determines if the event is an alarm or if it needs acknowledgement. When the complement input signal is enabled, the zero state of the signal represents the active state of the event point.

Harmony Tab

The Harmony tab is configured for every Harmony tag object ([Figure 4](#)). This tab determines system information that identifies the tag in the Harmony system and the actions that can be performed on the tag in the control system.

To configure the Harmony tab:

1. Configure the bad quality event point. Refer to [Event Point Configuration](#) on page 46 for more information.
2. In the **Inhibit** area, select a **tag.property** for automatic alarm inhibiting. This property is used to inhibit alarm indications for a selected tag. Alarm inhibiting is based on the current value of the inhibit tag. The Tag Property should be blank to disable automatic alarm inhibiting.

Harmony

Bad Quality

Normal **Active**

Comment: 0 -

Signal: 15 -

Priority: 16 - inform

☒ Enable ☒ Alarm Event ☒ Acknowledge Required ☐ Complement Input Signal

Inhibit

Tag Property: Value: 0

Address

Loop Node Module Block

23 110 2 40

Options

☒ Tag Acknowledgment Broadcast Enabled

Figure 4. Harmony Tab

- Enter the address of the function block that contains the FC that the tag is to monitor. The fields are:

Loop	The communication highway for the Harmony system. Valid entries are 0 to 250.
Node	An interconnection point on the data highway. Valid entries are 1 to 250.
Module	A device in the Harmony control system. Valid entries are 1 to 31.
Block	Location of a specific FC in the controller. Valid entries are one to 9,998 for the BRC-100/BRC-200, IMMFP11, and IMMFP12 controllers and 31,998 for the HAC controller.



The loop, node, module, and block settings must be unique within a system.

- In the options area enable or disable tag acknowledgment broadcast enabled. This determines whether or not an alarm acknowledgment is transmitted to other nodes on the loop.

Analog Tab

The Analog tag accesses information provided by an Analog exception report FC (refer to [Table 8](#)). The Analog exception report FC allows an Analog value to be sent on the communication highway if the value changes outside a configured deadband. This function also generates an alarm if the high or low limit values are reached. The Analog tab of the Analog tag object configures the Analog exception report FC that is to be monitored by the Harmony connectivity server ([Figure 5](#)).

Analog

Low Alarm

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

High Alarm

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Alarm Limits

Low:

0

High:

0

Initial Process Values

Low

High

Signal:

0

100

Engineering Units:

0 -

Format:

2

Width:

Digits:

Figure 5. Analog Tab

To configure the Analog tab:

1. Configure the low alarm and the high alarm event points for the Analog tag. Refer to [Event Point Configuration](#) on page 46 for more information.

2. Set the alarm limits for the tag. The alarm limits trigger the high and the low alarm event points when the value goes outside the respective limit.
3. Set the high and low range values of the process value.
4. A controller reports the index number that associates an engineering unit of measurement with this tag. A list of valid fixed and user defined engineering units can be viewed in the **NLS Engineering Unit Aspect** under the **INF190 System Definition Object**.
5. Set the display format using the width (number of characters) and digits (number of decimal digits) controls. The syntax of this field is:

Number of characters X 10 + number of decimal digits



The values set in [Step 2](#) through [Step 4](#) are configurable for initial value purposes only. They will be overwritten by values reported from the function block after startup.

Analog Export Tab

The Analog Export tag provides the ability to export an exception report value to the Harmony system through the Cnet-to-computer interface. The Analog Export tab of the Analog Export tag object is similar to the Analog tab ([Figure 5](#)). Refer to [Analog Tab](#) on page 48 for more information.

Enhanced Analog Input/Output Tab

The Enhanced Analog input tag accesses information provided by an Analog in/channel FC (refer to [Table 8](#) for the FC numbers). The exception reporting Analog in/channel FC provides addressing, startup, runtime, override, and failure mode specifications for an individual or redundant pair of Analog input channels on a Harmony I/O block. An Enhanced Analog input tag is configured for each Analog in/channel FC that is to be monitored by a Harmony connectivity server.

The Enhanced Analog output tag accesses information provided by an Analog out/channel FC (refer to [Table 8](#) for the FC numbers). The exception reporting Analog out/channel FC provides addressing, startup, runtime, and failure mode specifications for an individual or redundant pair of Analog output channels on a

Harmony I/O block. An Enhanced Analog output tag is configured for each Analog out/channel FC that is to be monitored by a Harmony connectivity server.

The Enhanced Analog tab of the Enhanced Analog tag object is similar to the Analog tab (Figure 5). Refer to Analog Tab on page 48 for more information.

ASCII Tab

The ASCII Text string tag interfaces with a user defined data export FC (refer to Table 8). The user defined data export FC outputs user data through an exception report. The ASCII tab of the ASCII Text string tag object configures a user defined data export FC that is to be monitored by a Harmony connectivity server (Figure 6).

ASCII

Alarm Status

Normal

Active

Comment:

0 -

0 -

Signal:

15 -

15 -

Priority:

16 - inform

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Control Options

Maximum Text Width:

80

☒ Operator Control Enable

Figure 6. ASCII Tab

To configure the ASCII tab:

1. Configure the alarm status event point for the tag. Refer to Event Point Configuration on page 46 for more information.
2. Set the maximum text width. If this string length is less than the actual length of the exception reported text string, truncation will occur. This is considered to be remote truncation since the communications interface unit of Harmony uses the value to determine the maximum length of the text string it will accept. The permissible values are 0 to 80.

3. The Operator Control Enable option determines whether or not operator control of the text string export block in the controller is permitted. When enabled, control can be performed by using the keyboard. The results of the operator actions can be seen on the screen. When disabled, Harmony provides information but does not allow control.

Data Acquisition Analog Tab

The Data Acquisition Analog (DAANG) tag interfaces with a user defined DAANG FC (refer to [Table 8](#)). The DAANG FC provides a number of unique data selection, conditioning and monitoring functions. These include support for enhanced alarm management capabilities at the module level of a Harmony system. The DAANG tab of the DAANG tag object configures the DAANG FC that is to be monitored by the Harmony connectivity server ([Figure 7](#)).

The screenshot shows the DAANG tab configuration window. At the top, there are tabs for 'General', 'Harmony', and 'DAANG'. The 'DAANG' tab is selected. The window is divided into several sections:

- Low Alarm:** Contains two columns, 'Normal' and 'Active'. Each column has fields for 'Comment', 'Signal', and 'Priority'. Below these are checkboxes for 'Enable', 'Alarm Event', 'Acknowledge Required', and a checkbox for 'Complement Input Signal'.
- High Alarm:** Similar to the Low Alarm section, with 'Normal' and 'Active' columns for 'Comment', 'Signal', and 'Priority', and the same set of checkboxes.
- Alarm Limits:** Contains 'Low' and 'High' input fields.
- Initial Process Values:** Contains 'Low' and 'High' input fields, 'Engineering Units' dropdown, and 'Format' (Width and Digits) controls.

At the bottom right, there are 'Cancel' and 'Apply' buttons.

Figure 7. DAANG Tab

To configure the DAANG tab:

1. Configure the low alarm and the high alarm event points. Refer to [Event Point Configuration](#) on page 46 for more information.
2. Set the alarm limits for the tag. The alarm limits trigger the high and the low alarm event points when the value goes outside the respective limit.
3. Set the high and low range values of the process value.
4. Select a configured engineering unit descriptor from the pick list. The controller reports the index number that associates an engineering unit of measurement with this tag. A list of valid fixed and user defined engineering units can be viewed in the **NLS Engineering Unit Aspect** under the **INFI90 System Definition Object**.
5. Set the display format using the width (number of characters) and digits (number of decimal digits) controls. The syntax of this field is:
Number of characters X 10 + number of decimal digits



The values set in [Step 2](#) through [Step 4](#) are configurable for initial value purposes only. They will be overwritten by values reported from the function block after startup.

6. Scroll down through the page and configure rest of the event points for the DAANG tag. Refer to [Event Point Configuration](#) on page 46 for more information.

Device Driver Tab

The Device Driver tag accesses information provided by a Device Driver FC (refer to [Table 8](#)). The Device Driver FC interfaces the control system to a field device. It provides control and accepts feedback from its assigned control device. The control output status represents the status of the device determined from the feedback inputs as good, bad, or waiting. The Device Driver tab of the Device Driver tag object configures the Device Driver FC that is to be monitored by the Harmony

connectivity server (Figure 8).

The screenshot shows the 'Device Driver' configuration window. It contains four main sections, each with 'Normal' and 'Active' columns for configuration.

- Output State:**
 - Comment: 0 -
 - Signal: 13 - STOP
 - Priority: 16 - inform
 - Enable: ☒ Alarm Event: ☒ Acknowledge Required: ☒ Complement Input Signal: ☐
- State Change:**
 - Comment: 0 -
 - Signal: 15 -
 - Priority: 16 - inform
 - Enable: ☐ Alarm Event: ☐ Acknowledge Required: ☒ Complement Input Signal: ☐
- First Feedback States:**
 - Signal: 15 -
 - Complement Input Signal: ☐
- Second Feedback States:**
 - Signal: 15 -
 - Complement Input Signal: ☐

Figure 8. Device Driver Tab

To configure the Device Driver tab:

1. Configure the output state and the state change event points. Refer to [Event Point Configuration](#) on page 46 for more information.
2. Set the normal and the active signal text for the first feedback state by selecting one from the pick list.
3. If reverse logic is to be used for this tag (zero is active) enable complement input signal.
4. Repeat [Step 2](#) through [Step 3](#) for the second feedback state.

Digital Tab

The Digital tag accesses information provided by a Digital exception report FC (refer to [Table 8](#)). The Digital exception report FC exception reports the output state of the block. Exception reports are activated by a report enable signal from the module bus. The maximum number of exception reports allowed depends on the controller configuration. The Digital tab of the Digital tag object configures the Digital FC that is to be monitored by the Harmony connectivity server ([Figure 9](#)).

Digital

Output State

Normal

Active

Comment:

0 -

0 -

Signal:

4 - NO

5 - YES

Priority:

16 - inform

1 - DIRE

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

State Change

Normal

Active

Comment:

0 -

0 -

Signal:

15 -

15 -

Priority:

16 - inform

16 - inform

☐ Enable

☐ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Figure 9. Digital Tab

To configure a Digital tag, configure the output state and the state change event points. Refer to [Event Point Configuration](#) on page 46 for more information.

Digital Export Tab

The Digital Export tag provides that ability to export an exception report value to the Harmony system through the Cnet-to-computer interface. The Digital Export tab of the Digital Export tag object is similar to the Digital tab ([Figure 9](#)). Refer to [Digital Tab](#) on page 54 for more information.

Enhanced Digital Input/Output Tab

The Enhanced Digital input tag accesses information provided by a Digital in/channel FC (refer to [Table 8](#)). The exception reporting Digital in/channel FC provides addressing, startup, runtime, Harmony sequence of events (SOE), and failure mode specifications for an individual or redundant pair of Digital input channels on a Harmony I/O block. The Enhanced Digital input tag is configured for each Digital in/channel FC that is to be monitored by the Harmony connectivity server.

The Enhanced Digital output tag accesses information provided by a Digital out/channel FC (refer to [Table 8](#) for the FC numbers). The exception reporting Digital out/channel FC provides addressing, startup, runtime, and failure mode specifications for an individual or redundant pair of Digital output channels on a Harmony I/O block. The Enhanced Digital output tag is configured for each Digital out/channel FC that is to be monitored by the Harmony connectivity server.

The Enhanced Digital tab of the Enhanced Digital Input/Output tag object is similar to the Digital tab ([Figure 9](#)). Refer to [Digital Tab](#) on page 54 for more information.

Data Acquisition Digital Tab

The Data Acquisition Digital (DADIG) tag accesses information provided by a DADIG FC (refer to [Table 8](#)). The DADIG FC provides a means to accomplish a number of unique data acquisition, alarm detection and management functions related to boolean logic signals implemented in Harmony systems. The DADIG tag is configured for each DADIG FC that is to be monitored by the Harmony connectivity server.

The DADIG tab of the DADIG tag object is similar to the Digital tab ([Figure 9](#)). Refer to [Digital Tab](#) on page 54 for more information.

Module Status

The Module Status tag accesses information provided by a Module Status FC (refer to [Table 8](#)). Module Status tags can be configured for every process controller and process node, gateway, bridge, and computer interface in the Harmony control system. The Module Status tab of the Module Status tag object configures the

Module Status FC that is to be monitored by a Harmony connectivity server (Figure 10).

Module Status

Communication Errors

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Module Errors

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Module Offline

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

Figure 10. Module Status Tab

To configure the Module Status tab:

1. Configure all the event points on the tab. Refer to [Event Point Configuration](#) on page 46 for more information.
2. If the module is a Cnet-to-computer interface, perform [Step 3](#). If not, the configuration is complete.
3. The Enable Alarm Acknowledgment Transmission check box determines if alarm acknowledgment transmissions are transmitted to this module on the loop. Select the desired operation:



Do not select **Enable Alarm Acknowledgment Transmission** to the Module Status objects that are defined as Harmony Servers in the database.

- Checked = enable alarm acknowledgment transmissions.

- Cleared = disable alarm acknowledgment transmissions.

Multi State Device Driver Tab

The Multi State Device Driver (MSDD) tag accesses information provided by a MSDD FC (refer to [Table 8](#)). The MSDD FC provides a means of controlling field equipment (variable speed motor) or control schemes that have more than one control mode. The MSDD block provides four state controls with feedback. Two control inputs or an operator input selects one of four output masks for control action. The MSDD tab of the MSDD tag object configures the MSDD FC that is to be monitored by the Harmony connectivity server ([Figure 11](#)).

MSDD

Output State	
Normal	Active
Comment: 0 -	0 -
Signal: 15 -	15 -
Priority: 16 - inform	16 - inform
☒ Enable	☒ Alarm Event
☒ Acknowledge Required	☐ Complement Input Signal

State Change	
Normal	Active
Comment: 0 -	0 -
Signal: 15 -	15 -
Priority: 16 - inform	16 - inform
☐ Enable	☐ Alarm Event
☒ Acknowledge Required	☐ Complement Input Signal

First Feedback States	
Normal	Active
Signal: 15 -	15 -
☐ Complement Input Signal	

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Figure 11. MSDD Tab

To configure the MSDD tab:

1. Configure the output state and the state change event points. Refer to [Event Point Configuration](#) on page 46 for more information.
2. Set the normal and the active signal texts for the first feedback state by selecting one from the pick list.

3. If reverse logic is to be used for this tag (zero is active) enable complement input signal.
4. Repeat [Step 2](#) through [Step 3](#) for the remaining feedback states.
5. Configure the logic state descriptor zero through three by selecting a logic descriptor from the pick list.

PhaseX Tab

The PhaseX tag accesses information provided by a phase execution FC (refer to [Table 8](#)). The phase execution FC provides the execution environment for a Batch 90 program that is interfaced to Batch Management or BDM software. A Batch 90 program is comprised of all the phases that can be run on a specific class of equipment. Recipes define the order in which the Batch 90 phases are executed (the procedure) and the specific formulation values such as target flow rates, temperatures and times. The PhaseX tab of the PhaseX tag object configures the phase execution FC that is to be monitored by the Harmony connectivity server ([Figure 12](#)).

To configure the PhaseX tab:

1. Configure the system fault, user defined fault, and the user defined message event points. Refer to [Event Point Configuration](#) on page 46 for more information.
2. When handshaking is enabled the block uses fast reporting max. time value (in seconds) for exception reports until a confirmation is received by the block. If handshaking is disabled the block uses slow reporting max. time value (in seconds) to report new values.
3. Set the fast reporting max. time. The fast reporting max. time is the time value used to monitor exception reports when handshaking is enabled.

Set the slow reporting max. time. The slow reporting max. time is the time value used to monitor exception reports when handshaking is disabled.

PhaseX

System Fault

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

User Defined Fault

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

User Defined Message

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

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Figure 12. PhaseX Tab

Refer to the *System 800xA Batch Management Configuration (3BUA000146*) instruction* for the procedures to configure 800xA for Symphony Plus Harmony for use with Batch Management.

Remote Control Memory Tab

The RCM tag accesses information provided by a RCM FC (refer to [Table 8](#)). The RCM FC is a set/reset flip flop memory accessible by Harmony. The RCM tab of the RCM tag object configures the RCM FC that is to be monitored by the Harmony connectivity server ([Figure 13](#)).

To configure the RCM tab:

1. Configure the output state and the state change event points. Refer to [Event Point Configuration](#) on page 46 for more information.

RCM

Output State

Normal

Active

Comment:

0 -

Signal:

13 - STOP

Priority:

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

State Change

Normal

Active

Comment:

0 -

Signal:

15 -

Priority:

16 - inform

☐ Enable

☐ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

First Feedback States

Normal

Active

Signal

15 -

☐ Complement Input Signal

Figure 13. RCM Tab

- 2. Use the pick lists to select the normal and the active signal texts for the first feedback state.
- 3. If reverse logic is to be used for this tag (zero is active) enable complement input signal.

Remote Motor Control Block Tab

The RMCB tag accesses information provided by a remote motor control FC (refer to [Table 8](#)). The remote motor control FC has two basic functions. First, it performs the logic necessary to control a Digital output. Second, it communicates the result of that logic to Harmony. The RMCB tab of the RMCB tag object configures the remote motor control FC that is to be monitored by the Harmony connectivity server ([Figure 14](#)).

RMCB

Output State	
Normal	Active
Comment: 0 -	0 -
Signal: 15 -	15 -
Priority: 16 - inform	16 - inform
☒ Enable ☒ Alarm Event ☒ Acknowledge Required ☐ Complement Input Signal	

State Change	
Normal	Active
Comment: 0 -	0 -
Signal: 15 -	15 -
Priority: 16 - inform	16 - inform
☐ Enable ☐ Alarm Event ☒ Acknowledge Required ☐ Complement Input Signal	

First Feedback States	
Normal	Active
Signal: 15 -	15 -
☐ Complement Input Signal	

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Figure 14. RMCB Tab

To configure the RMCB tab:

1. Configure the output state and the state change event points. Refer to [Event Point Configuration](#) on page 46 for more information.
2. Use the pick lists to select the normal and the active signal texts for the first feedback state.
3. If reverse logic is to be used for this tag (zero is active), enable complement input signal.
4. Repeat [Step 2](#) through [Step 3](#) for the second feedback state.
5. Use the pick lists to select the normal and the active signal texts for the first permissive state.
6. If reverse logic is to be used for this tag (zero is active) enable complement input signal.
7. Repeat [Step 5](#) through [Step 6](#) for the second permissive state.

8. Use the pick list to select a text set index. The RMCB text sets are now defined in **NLS Harmony RMCB Text** Aspects on the **INFI 90 System Definition** Objects under Library Structure -> Symphony System Definitions. For more information, refer [System Definition](#).

Remote Manual Set Constant Tab

The Remote Manual Set Constant (RMSC) tag accesses information provided by a RMSC FC (refer to [Table 8](#)). The RMSC FC allows the value of a constant to be entered to the control scheme through Harmony. When the function block receives this command, an exception report is generated to notify the operator or computer that the value has changed. High and low limits can be set to guard against unreasonable values. The RMSC tab of the RMSC tag object configures the RMSC FC that is to be monitored by the Harmony connectivity server ([Figure 15](#)).

Figure 15. RMSC Tab

To configure the RMSC tab:

1. Set the high and the low range for the process variable. These are the maximum and minimum values allowed for the RMSC tag.
2. Use the pick list to select a configured engineering unit descriptor. The controller reports the index number that associates an engineering unit of measurement with this tag. A list of valid fixed and user defined engineering units can be viewed in the **NLS Engineering Unit Aspect** under the **INFI90 System Definition Object**.
3. Set the display format using the width (number of characters) and digits (number of decimal digits) controls. The syntax of this field is:
Number of characters X 10 + number of decimal digits



The values set in [Step 1](#) and [Step 2](#) are configurable for initial value purposes only. They will be overwritten by values reported from the function block after startup.

Station Tab

The Station tag accesses information provided by a Station FC (refer to [Table 8](#)). There are three types of Stations, each controllable through a control station and Harmony. The types include basic, cascade, and ratio Stations. The Station tab of the Station tag object configures the Station FC that is to be monitored by the Harmony connectivity server ([Figure 16](#)).

Station

Low Alarm

	Normal	Active
Comment:	0 -	0 -
Signal:	15 -	15 -
Priority:	16 - inform	16 - inform

☒ Enable
 ☒ Alarm Event
 ☒ Acknowledge Required
 ☐ Complement Input Signal

High Alarm

	Normal	Active
Comment:	0 -	0 -
Signal:	15 -	15 -
Priority:	16 - inform	16 - inform

☒ Enable
 ☒ Alarm Event
 ☒ Acknowledge Required
 ☐ Complement Input Signal

Alarm Limits

Low: High:

Initial Process Values

	Low	High
Signal:	0	100
Engineering Units:	0 -	Format: 2 Width: 2 Digits: 2

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Figure 16. Station Tab

Basic

A basic Station generates a SP and provides manual/automatic transfers, control output adjustments in manual control mode, and SP adjustments in automatic control mode.

Cascade

A cascade Station provides the same functions as a basic Station plus an additional mode that allows the SP to be controlled by external input signal.

Ratio

A ratio Station provides the same functions as a basic Station, but differs from the cascade Station in its method of SP generation when in the ratio mode. A wild variable multiplied by a ratio adjustment factor (ratio index) determines the SP output when in ratio mode. The initial ratio index value is calculated by the Station to maintain the current SP output value when the Station is placed into the ratio mode. When in the ratio mode, the ratio index value is displayed in place of the SP value and can be adjusted (ramped up or down) by the operator to obtain the desired SP output.

Station control allows changing the mode, SP, ratio index and control output of a control Station by manipulating a control Station element. The control output value during startup is configurable.

To configure the Station tab:

1. Configure the low alarm and the high alarm event points. Refer to [Event Point Configuration](#) on page 46 for more information.
2. Set the alarm limits for the tag. The alarm limits trigger the high and the low alarm event points when the value goes outside the respective limit.
3. Set the high and low signal initial process values.
4. Use the pick list to select a configured engineering unit descriptor. The controller reports the index number that associates an engineering unit of measurement with this tag. A list of valid fixed and user defined engineering units can be viewed in the **NLS Engineering Unit Aspect** under the **INFI90 System Definition Object**.

5. Set the display format using the width (number of characters) and digits (number of decimal digits) controls. The syntax of this field is:
Number of characters X 10 + number of decimal digits
 6. Configure the low deviation and the high deviation event points. Refer to [Event Point Configuration](#) on page 46 for more information.
 7. Set the high and low signal control output values.
 8. Use the pick list to select a configured engineering unit descriptor. The controller reports the index number that associates an engineering unit of measurement with this tag. A list of valid fixed and user defined engineering units can be viewed in the **NLS Engineering Unit Aspect** under the **INF190 System Definition Object**.
 9. Set the display format using the width (number of characters) and digits (number of decimal digits) controls. The syntax of this field is:
Number of characters X 10 + number of decimal digits
-  The values set in [Step 2](#) through [Step 4](#) and [Step 6](#) through [Step 8](#) are configurable for initial value purposes only. They will be overwritten by values reported from the function block after startup.
10. Repeat [Step 7](#) through [Step 9](#) for the deviation limit and the SP.
 11. Select a tune block by clicking the increment or decrement arrows beside the field. The tuning block is the function block to appear in the Block Details portion of a tuning display (normally a PID block). A valid entry is 1 to 31,998 and is for the block address of the function block providing the Station block input or any function block in the controller. This allows the tuning display to be requested without any further input.

Text Selector

The Text Selector tag defines text strings that can be associated with status reported for DD, MSDD, and RMCB tags. These text strings can describe the good, bad, and waiting condition being reported by a Device Driver or MSDD function block and the good, alarm, and waiting condition being reported by a remote motor control function block. The conditions are exception reported by a PCU module.

In the module, a Text Selector function block (FC 151) must be defined in the control configuration to reference a DD, MSDD, and RMCB function block. The Text Selector function block can also be configured as a standalone Text Selector.

Each Text Selector message defined in the Configuration Server has a message number. The Text Selector function block in the controller selects one of these messages by its number. The function block exception reports a message number and also a color and blink parameter. A Text Selector tag must be configured in Harmony to receive this information.

To configure a Text Selector tag, configure the Harmony tab to monitor the desired Text Selector function block (FC 151) in the Harmony control system configuration.

The text selector strings are defined in the **NLS Text Selector Text Aspects** under the **INFI 90 System Definition Objects** in the Library Structure.

Section 5 Uploader

Introduction

The Uploader is an Aspect of a Harmony OPC Server Network Object. The Uploader allows the Tag object configurations to be imported to and exported from the Aspect Directory in a *.mdb* format. The Harmony configuration data for import can be generated by offline Harmony engineering tools or exported from other 800xA for Symphony Plus Harmony systems.



ABB does not recommend making bulk configuration changes online. When bulk changes are made, it is recommended that online change notifications are disabled. Refer to [Online Change Notifications](#) for details on disabling online changes. Each system may exhibit different update performance. ABB recommends disabling online changes if more than 100 Tags are being added, updated or removed.

To access the Uploader, open **Plant Explorer**, select **Control Structure** and then select the **Harmony OPC Server Network Object**.

Settings Tab

Figure 17 shows the Uploader Aspect Settings tab.

Settings

Import Functional Structure Options

☐ Import Functional Structure Assignments

☒ Merge Area/Unit/Equipment/Security-Group Assignments (default)

☐ Replace Area/Unit/Equipment/Security-Group Assignments

Import Inactive Alarm Comment and Priority Value Options

☒ Use BAD/COM0 and BAD/PRI0 to initialize all other COM0 and PRI0 values (default)

☐ Use <atom>/COM1 and <atom>/PRI1 to initialize <atom>/COM0 and <atom>/PRI0

☐ Use system defaults to initialize COM0 and PRI0 values

Note: Options above are only applicable to new objects.

Import State Change Signal Text Options

☒ Use system defaults to initialize StateChange/SIG0 and StateChange/SIG1 (default)

☐ Use OUT/SIG0 and OUT/SIG1 values to initialize StateChange/SIG0 and StateChange/SIG1

Note: Options above are only applicable to new objects.

Figure 17. Uploader Aspect Settings Tab

The **Import Functional Structure Assignments Options** specify if Harmony Tag Objects will be inserted into the Functional Structure based on the Area/Unit/Equipment/Security Group assignments. Options provided are to merge with existing assignments or Replace existing assignments.

The **Import Inactive Alarm Comment and Priority Value Options** specify how the Alarm Comment and Priority Value tag properties will be initialized on a new Tag import.

The **Import State Change Signal Text Options** specify how the State Change Signal Text Tag properties will be initialized on a new Tag import.

Import Tab

Figure 18 shows the Uploader Aspect Import Tab.

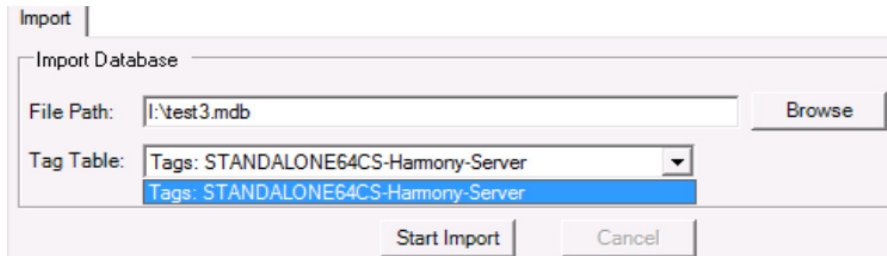
The screenshot shows a dialog box titled 'Import'. It has a tab labeled 'Import'. Below the title bar, there is a section labeled 'Import Database'. Inside this section, there is a 'File Path' field with the text 'I:\test3.mdb' and a 'Browse' button to its right. Below the 'File Path' field, there is a 'Tag Table' field with a dropdown menu. The dropdown menu is open, showing two options: 'Tags: STANDALONE64CS-Hamony-Server' (which is highlighted in blue) and 'Tags: STANDALONE64CS-Hamony-Server'. At the bottom of the dialog box, there are two buttons: 'Start Import' and 'Cancel'.

Figure 18. Uploader Aspect Importer Tab

To import Tags, follow the steps mentioned below:

1. Use the **Browse** button to navigate to and select **.mdb** file to import from the File Path.
2. Use the pick list to select the table containing the Tag configurations to import.
3. Select **Start Import**.



During an import, the status is displayed in the form of a progress bar and a list of import log files.

Export Tab

Figure 19 shows the Uploader Aspect Export Tab.

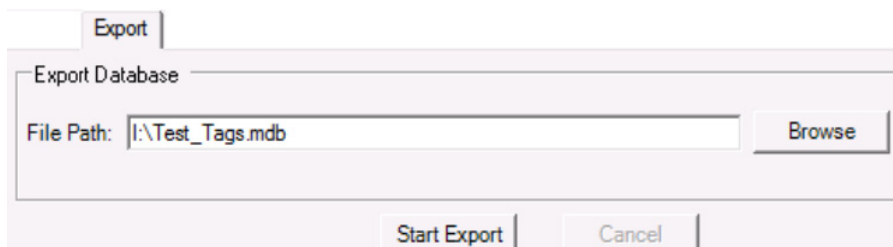
The screenshot shows a dialog box titled 'Export'. It has a tab labeled 'Export'. Below the title bar, there is a section labeled 'Export Database'. Inside this section, there is a 'File Path' field with the text 'I:\Test_Tags.mdb' and a 'Browse' button to its right. At the bottom of the dialog box, there are two buttons: 'Start Export' and 'Cancel'.

Figure 19. Uploader Aspect Export Tab

To export Tags, follow the steps mentioned below:

1. Use the **Browse** button to navigate to and specify the location and name of the *.mdb* file to export to the File Path.
2. Select **Start Export**.



During an export, the status is displayed in the form of a progress bar and a list of export log files.



There is no provision to selectively import or export Tags. All data in an *mdb* file will be imported using the import functionality. Likewise, all nodes in the Control Structure will be exported using the export functionality. In addition, the NLS Text Definitions under **Library Structure->Symphony System Definition Objects** will be exported.

Section 6 SOE Reporting

Introduction

This section describes the operation and configuration of SOE Reports. The hardware and software configurations for both distributed SOE Reports and Rochester SOE Reports are explained.

Description

Harmony SOE reporting is intended for use by plant personnel to closely monitor critical Digital points where the sequence of state changes for points or groups of points must be known in the most exacting ways possible. SOE reporting lists all Digital state transitions in time order and with one millisecond resolution.

The SOE log data can originate in an ABB Distributed SOE system (DSOE) or in a Rochester Instrument Systems SOE Recorder (Rochester SER). The SOE reporting system can interface with a SOE (IMSEM01) module containing fixed blocks 5000 and 5001 or with a Harmony bridge controller (BRC-100 or BRC-200) or a multifunction processor (MFP) containing FC 99 (SOE log) blocks.

In both cases, SOE trigger tags can be configured for the blocks to monitor SOE trigger points in the control system. The SOE reporting system then collects SOE Reports whenever the trigger points indicate the presence of SOE data.

Specific Features

The following are features of SOE reporting on Harmony:

- One millisecond resolution on change of state timestamps.
- Each controller/SER recorder pair in a Rochester SOE architecture can have multiple FC 99 SOE Report types.

- Build SOE Reports from the data that it has gathered through communications with hAPI, using preconfigured report formats.
- Five types of SOE Reports/triggering:

Standard

In a standard log, any SOE point state change will result in a timestamped SOE Report for this point. This SOE log will be stored in the controller (FC 99) or in the IMSEM01 module (DSOE) for the length of time specified within the corresponding block (the aging time). This log must be read in by the SOE reporting system before the aging time expires.

Summary

A summary log contains a report of all timestamped SER points which are not in normal state (inactive, deleted from scan, or in SOE alarm). This report can be demanded by changing the RCM block output of the corresponding IMSEM01 block 5001 or FC 99 in the controller (the summary trigger point) from zero to one.

Pre-fault

SER point state changes are stored by a designated quantity or time period (50 events prior to trigger; 10 minutes prior to trigger). They are then reported, in ascending time order, when the pre-fault trigger is changed from zero to one by the operator (Rochester SOE reporting only).

Post-fault

SER point state changes are reported only after the post-fault trigger is changed from zero to one by the user. The points will continue to be reported until the postfault trigger reverts back to zero. The SOE system must remove these reports from the SOE or DSOE system before its aging time expires (Rochester SOE reporting only).

Snapshot

Snapshot reports will have points listed in ascending numerical order, but only after the snapshot trigger is changed from zero to one by the user. Snapshot points can be

designated in groups such as those which are normal, those which are deleted from scan, etc. (Rochester SOE reporting only).



1. DSOE reporting supports only two SOE log types, standard (through IMSEM01 block 5000) and summary (through IMSEM01 block 5001).
2. Snapshot reports are not available on all Rochester SOE reporters. Consult the documentation of the Rochester SER hardware in this case.
3. If SOE reporting is running on a pair of Connectivity servers, SOE Reports will be identically collected on both Servers. Refer to [SOE Reporting and Redundancy](#) on page 74 for more information.

Trigger Tag Monitoring

Trigger points enable SOE Masters (SEM) and multifunction processors (MFP) to notify the SOE system that SOE data is available for collection.

For each active SOE log report, the collection of SOE data is governed by using the SOE Report tag to monitor the trigger output values of blocks 5000 and 5001 of a SEM module in a DSOE system, or a FC 99 block in an MFP module for a Rochester SOE system.

The SOE data collection by the Harmony connectivity server system is started automatically when or shortly after the trigger tag goes into a trigger state. When an SOE Report is triggered, SOE events are read in from the SOE function block. When an SOE log is completed, it will be stored in an internal queue and the REPORTREAD property is set to one to trigger the report system. Upon resetting of the REPORTREAD property to zero or the time duration exceeding the defined cache time, the report will be removed from the head of the queue.

SOE Reports Collection

When REPORTREAD property is triggered for a configured SOE Report object, the report formats the SOE event log data into a predefined SOE Report, and resets the REPORTREAD property to zero. The report system makes the SOE data available for the user to view.

SOE Reporting and Redundancy

The SOE redundancy is handled by the redundant configuration of the connectivity server that hosts the SOE Report objects.

Distributed SOE Architecture

The INSEM01 module is the center of the DSOE module architecture (Figure 20).

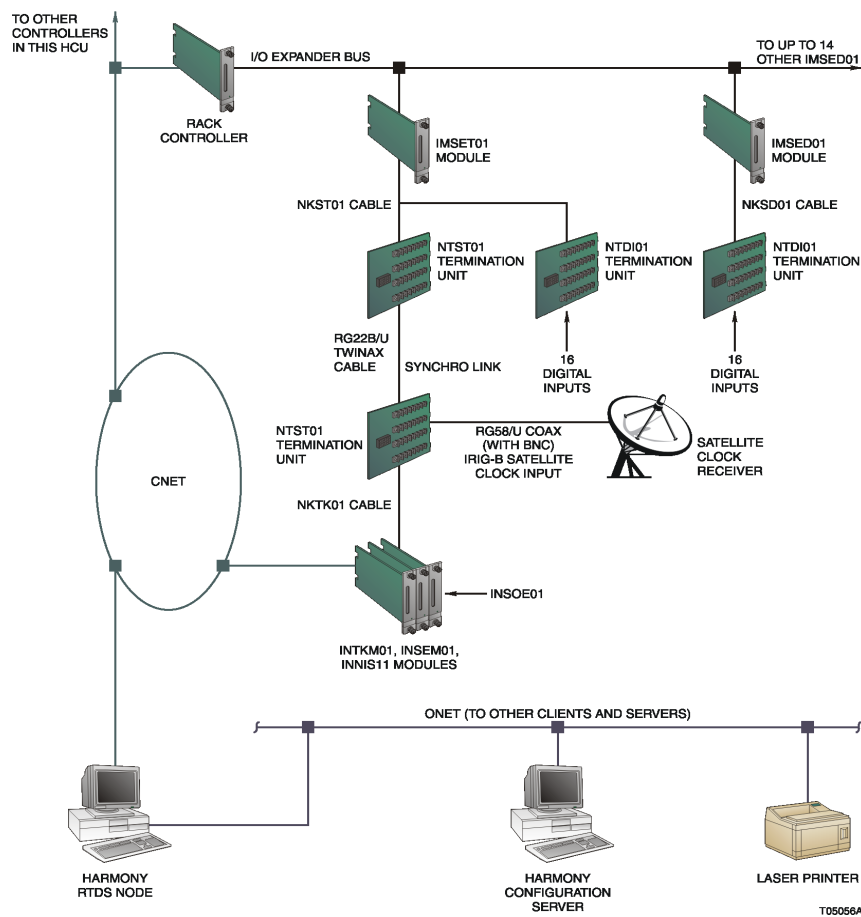


Figure 20. Distributed SOE Reporting System Architecture

If Harmony is using DSOE reporting, it must interface to this module through fixed blocks 5000 and 5001. Block 5000 is a standard SOE trigger, which sends standard SOE data from the DSOE system to the Harmony Server. Block 5001 is the summary SOE trigger, which sends summary SOE data. For more information on how to set up DSOE hardware, consult the ***Distributed Sequence of Events (2VAA000844*)*** instruction.

Rochester SOE Architecture

Harmony interfaces to a controller which uses FC 99 to communicate with one Rochester SER communication interface unit. This Rochester communication interface unit then passes SOE data it has collected from one or more event capture units to the controller, where they are passed to Harmony. [Figure 21](#) outlines the Rochester SOE hardware architecture.

Distributed SOE Reporting Hardware

The following hardware must be used within the Harmony system to connect the distributed SOE system and the Harmony Server.

- One or more multifunction processors (firmware revision F.0 or later) or BRC-100/BRC-200 modules are needed for use as a controller for the SET/SED pair.
- One or more INSOE01 SOE Server nodes.
- Access to at least one network printer to send SOE Reports to.
- An optional IRIG-B satellite clock receiver can be connected to the termination unit of the INTKM01 timekeeper module.

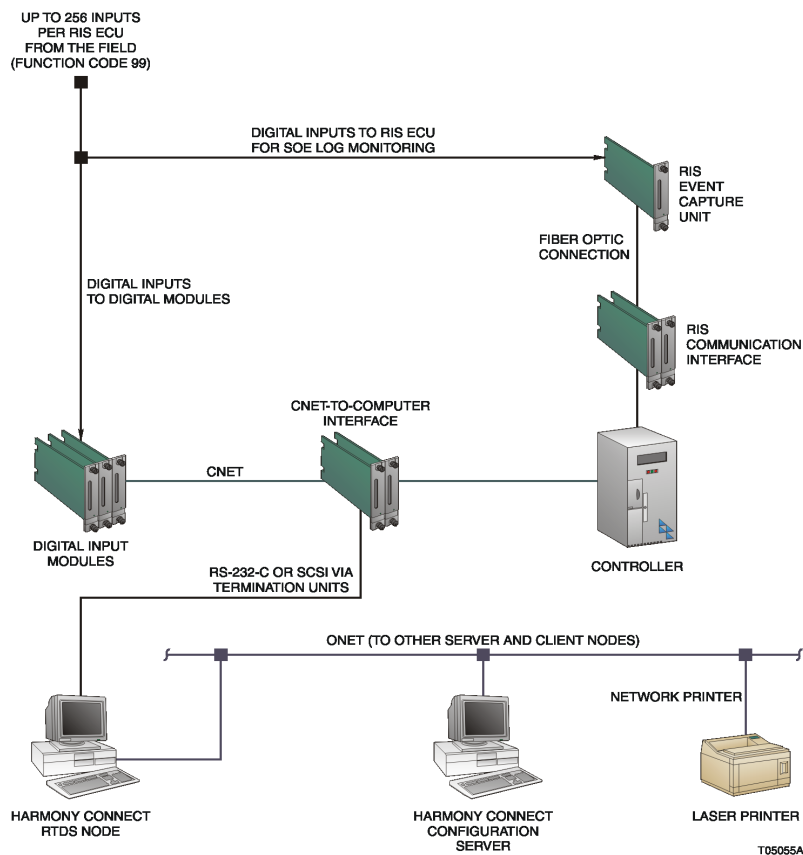


Figure 21. Rochester (FC 99) SOE Reporting System Architecture



The Digital outputs of a distributed SOE system are accessible both as SOE Reports and as Digital outputs to the loop through FC 242 (DSOE Digital event interface). However, the Digital outputs provided by FC 242 must point to Digital exception reports (FC 45) in order to be accessible to the rest of the control system and to Harmony.



In order for the distributed SOE system to function properly, the function blocks in both the SOE module, as well as the module which serves as the SET/SED controller must be properly configured with SOE FCs. For more information concerning these particular FCs, refer to the *Function Code Application Manual* ((2VAA000844*)).

Rochester SOE Reporting Hardware

The following hardware must be used within the Harmony system to connect the Rochester SOE system and the Harmony Server:

- A Rochester reporter consisting of one (or more) Rochester event capture units (ECU) and an Rochester SOE communication interface unit with one fiber optic communications board per event capture unit. The communication interface unit also needs a special ABB communications board, manufactured by Rochester Instrument Systems.
- One or more multifunction processors (firmware revision F.0 or later) or BRC-100/BRC-200 modules to contain FC 99 for the Rochester reporter.
- Access to at least one network printer for sending SOE Reports to.
- CRT terminal (VT100, WYSE50 or terminal emulation program/window) is needed for issuing ISM-1 commands to the Rochester communication interface unit if configuration of the Rochester SER system is required.
- Required termination units and cables to connect each of the modules. Refer to the product instructions for wiring diagrams.



The points collected by the Rochester system are only available to the system in the form of SOE Reports. If these points are needed in the process control system as Digital points, then these points must be physically wired into Digital input modules as well as the Rochester reporter. Include these points in calculations when determining the number of I/O modules required.

External Interfaces and Function Blocks

The SOE reporting system requires the following interfaces:

- Each SOE log trigger tag must be specified as an SOE Report tag within the Harmony tag database, with its loop, node, module and block being the same as that of the corresponding fixed output blocks 5000 and 5001 within the SEM module or the corresponding FC 99 output block within a controller.
- SEM fixed output blocks 5000 and 5001 interface with the distributed SOE system to input millisecond timestamp distributed SOE events. Block 5000 is used for collecting standard SOE events. Block 5001 is used for collecting summary SOE events upon command by using a point display or an SOE Report faceplate to set this SOE Report tag to one. These SEM blocks are not configurable.
- A Rochester SOE system requires that each controller have at least one FC 99 trigger block to accept SOE Reports from the Rochester equipment or Digital input modules.
- FC 99 uses communications protocol necessary to interface with a special ABB communications board (manufactured by Rochester Instrument Systems) within the Rochester communication interface unit. This protocol is built into the firmware of the controller itself.
- Digital tags must be configured in the tag database for all input field points used by the SOE system.

SOE Objects

The SOE Reports are configured with SOE recorder and SOE Report objects. Digital points are assigned to the SOE recorders. The recorders are then assigned to the SOE Report objects.

The SOE Report object is configured for each SOE Report that is to be done by Harmony. An SOE Report tag is used for triggering SOE Reports. Each SOE Report object has an SOE recorder associated to it.

The report object is triggered by the REPORTREAD property. The Harmony report system will create the report from the data collected from the connectivity server.

SOE Recorder Tab

The SOE recorder tab of the SOE recorder object defines the field point configuration of the SOE device ([Figure 22](#)). One SOE recorder is related to each SOE Report object. The recorder contains all the Digital points that are assigned to the SOE device. The following paragraphs describe the fields in the SOE recorder view and the configuration of SOE recorders.

Index	SOE Point Name
1	DIG_SEM01
2	DAD-04273
3	DAD-04277
4	DAD-04669
5	DAD-05069
6	DAD-08027
7	DAD-08058

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Figure 22. SOE Recorder Tab

Index and SOE Point Name

The Index column identifies the current index number for each SOE Point Name digital Tag. Each index number must correspond to the equivalent SOE Point Number in the SOE hardware.

Change (Create) SOE Map

This button when clicked, brings up a display containing the valid digital Tag names available for an assignment. In the case of a newly created SOE Recorder Object, the button is labeled **Create SOE Map**.

SOE Digital Point Associations

Figure 23 displays the assignment of SOE points and their indices:

The screenshot shows a software window titled "SOE Recorder" with a "General" tab. It contains two main panels. The left panel, "Available SOE I/O Points", has a table with columns "Sel" and "SOE Point Name". It lists 12 points with checkboxes. The right panel, "Current SOE I/O Points:", has a table with columns "Sel", "Index", and "SOE Point Name". It lists 9 points with checkboxes. Between the panels are ">>" and "<<" buttons. At the bottom right is a "Change SOE Map" button.

Sel	SOE Point Name
☐	D0114002145-1
☐	D0114002145-2
☐	D0114002154-2
☐	D0114002609-1
☐	D0114002614-2
☐	D0114002706-1
☐	D0114002706-2
☐	D0114002712
☐	D0114002718
☐	D0114002732-1
☐	D0114002733

Sel	Index	SOE Point Name
☐	1	DIG_SEM01
☐	2	D0114002107-2
☐	3	D0114002137-1
☐	4	D0114002148-2
☐	5	D0114002150-1
☐	6	D0114002636-1
☐	7	D0114002639
☐	8	D0114002692
☐	9	D0114002706

Figure 23. SOE Point Names and Indices

To assign the available points to SOE Points, select the check boxes for the desired points in the **Available SOE I/O Points** window, and then select the >> button.

The indices can be changed by selecting the index and changing its value.

Once the new indices have been assigned, select the **Validate Indexes** button.



The valid index range is **1 to 1,500**. Any value entered outside this range will be ignored and the index reverts to its previously assigned value.

All index numbers must be unique in the SOE Recorder. If non-unique numbers are found, a message box will display indicating this.

Once all SOE Point index numbers have been validated, the **Cancel** and **Apply** buttons are enabled, and the changes may be applied.

To remove I/O points from the Current SOE I/O Points list:

- a. Click **Change SOE Map**, select the check boxes for the points to remove in the **Current SOE I/O Points** window, and then select the << button.
- b. Select **Validate Indexes**, and then click **Apply** to save the changes.

SOE Report Tab

The SOE Report tab of the SOE Report object configures an SOE Report (Figure 24). The following paragraphs describe the fields in the SOE Report view and how to configure them.

SOE Report

Output State

Normal

Active

Comment:

0 -

15 -

16 - inform

Signal:

15 -

15 -

16 - inform

Priority:

16 - inform

16 - inform

☒ Enable

☒ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

State Change

Normal

Active

Comment:

0 -

15 -

16 - inform

Signal:

15 -

15 -

16 - inform

Priority:

16 - inform

16 - inform

☐ Enable

☐ Alarm Event

☒ Acknowledge Required

☐ Complement Input Signal

First Feedback State

Normal

Active

Signal

15 -

15 -

☐ Complement Input Signal

SOE Report

Recorder:

BK_SOERecorder

☒ Active

Wait Time:

30

Report Type:

Standard

☒ IMSEM01 Module

Cache Time:

600

Figure 24. SOE Report Tab

Recorder

The recorder field shows the SOE recorder that is associated with the SOE Report object.

Report Type

This is the SOE Report type. There are five available report types. They are described in [Specific Features](#) on page 71 in this section.

If the INSMEM01 check box is enabled, only the snapshot and summary report types are available.

Wait Time

The wait time applies only to SOE Reports of type standard and post-fault. This is the time difference between when the state of the trigger tag changes from zero to one (when the SOE system in the control system begins filling its internal buffer with new SOE Reports) and when the SOE reporting system begins collecting these reports from the control system.



The wait time must be much less than the aging time configured in the SOE system in the control system for this trigger point. Otherwise, valuable SOE data may be aged out of the internal buffer of the SOE system and be lost before it is collected by Harmony.

Active

The **Active** check box indicates whether an SOE Report is active and being monitored and collected by the SOE system, or if the report is inactive. To configure the SOE Report object:

1. Configure the output state and the state change event points. Refer to [Section 4, Harmony Tags](#) for more information.
2. Use the pick list to select the normal and the active signal text for the first feedback state.
3. If reverse logic is to be used for this tag (zero is active) enable complement input signal.
4. Select an SOE recorder to use for the report. Use the pick list to select an **SOE Recorder** to use for the report.
5. Enable or disable the **IMSEM01 Module** option, and then select the Report type.
6. Click on the **Active** box to toggle this report from inactive to active, or from active to inactive.
7. Set a wait time. The default is 30 seconds.

- 8. Set the cache time to that of the cache time defined in the module. The cache time is the time the SOE information is retained in the cache. All data will be deleted once the cache time has expired.

SOE Reports



The 800xA InformIT Application Scheduler and DataDirect must be installed and configured before configuring and generating Harmony SOE Reports. For more details, refer to the *System 800xA 6.0 Getting Started (2PAA111708*)*.

Reports are defined in the Scheduling Structure. There should be one Job Description for each SOEReport object in the system. First, a job object must be created to set up and configure an SOE report. This object is created in the Scheduling Structure, under **Schedules** and **Jobs > Job Descriptions** (see [Figure 25](#), Configuration of SOE Report Job). This contains the Scheduling Definition aspect.

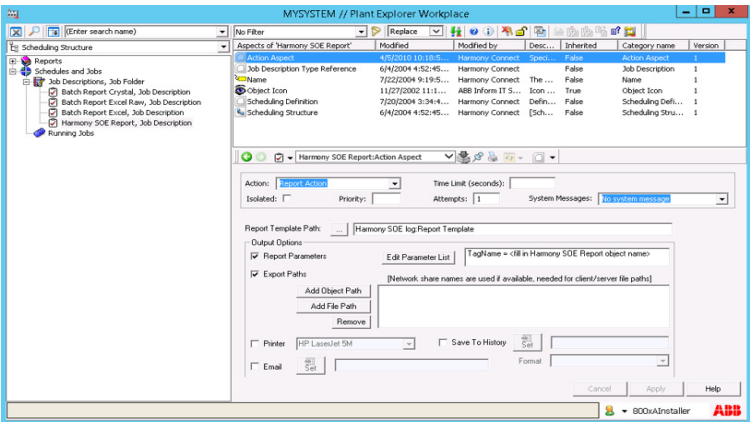


Figure 25. Configuration of SOE Report Job

The Scheduling Definition needs to be configured as an *Expression Schedule*. The report can then be triggered by the value of an object property. For SOE reports, this is the REPORTREAD property of an SOEReport object. To configure:

1. Select the **Scheduling Definition** aspect.
2. Then, select the **Schedule field** and select **Expression Schedule** from the drop down list.
3. Enter the **expression** that is the path to the appropriate SOEReport object REPORTREAD property to initiate the report.
4. Select **Start when TRUE** from the Scheduling Mode to initiate the report only when the expression evaluates to TRUE, [Figure 26](#).

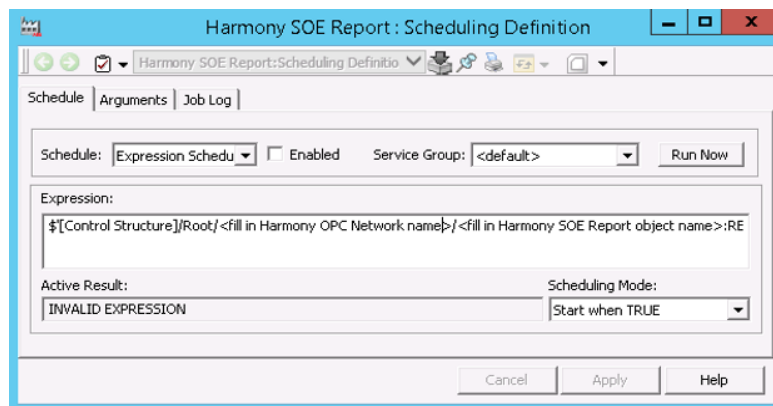


Figure 26. SOE Report: Scheduling Definition

5. Assign the **Service Group** to an appropriate group selected from the drop down list. Reports may be run on a specific node according to your particular system configuration.

The Enabled field must be set in order for reports to be triggered. Reports can also be triggered manually using the Run Now button, but will only be valid if SOE data is available as indicated in the SOEReport object faceplate.

The Report Action aspect must also be configured to define the input object for the report and how the report will be retained and optionally printed or archived using the 800xA Information Manager.

For long-term archival of completed reports, the system must include the 800xA Information Manager that is configured to archive report data.



Refer to the *System 800xA Information Management Configuration (3BUF001092*)* instruction for procedures on how to configure this.

Before reports can be historized, you must configure a Report Log using an appropriate log access name for each report type. The report log access name will then be used to identify the log to send archived reports to.

6. Select the **Action Aspect** ([Figure 25](#)) to configure the report action parameters. Select Report Action from the Action drop down list. If desired, a timeout value may be specified, but in most situations the default values for the Time Limit, Isolated, Priority, Attempts and System Messages should be used.

7. Next, select the **report template** to be used. To export a report, click the **Report Template Path** button and select the **Harmony SOE log** template. The location of this template is shown in Figure 27, Harmony SOE Log Template Location.

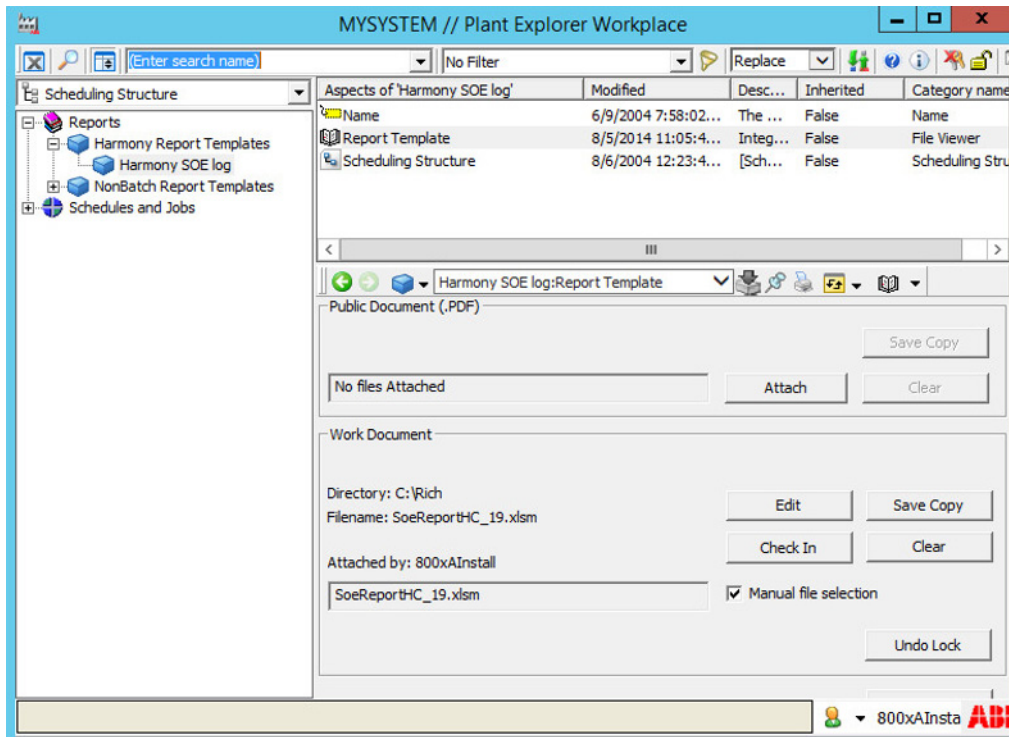


Figure 27. Harmony SOE Log Template Location

8. There is only one Report Parameter to configure, the SOEReport object. Click **Add Parameter** and enter '**TagName**' in the Name field and the SOEReport object name in the Value field.
9. Double click the **existing entry**, 'TagName= ', to change these values for your system.

- 10. Reports are saved on the local system by exporting. Select the **Export Paths** option.
- 11. Then select **Add Object Path** to save the reports in the Aspect system. These will be retained under **Reports> folder Name** (in this example, SoeReport Folder). These may then be later reviewed and/or printed by any clients on the system that have Microsoft Excel installed locally.
- 12. If required, output reports can also be saved to a local file folder. Select **Add File Path** to configure the output folder and file name.

The print area is predefined in the Excel spreadsheet. This can be modified and saved in the template if required. This definition is used when the printer option is selected and configured in the Action Aspect, [Figure 28](#).

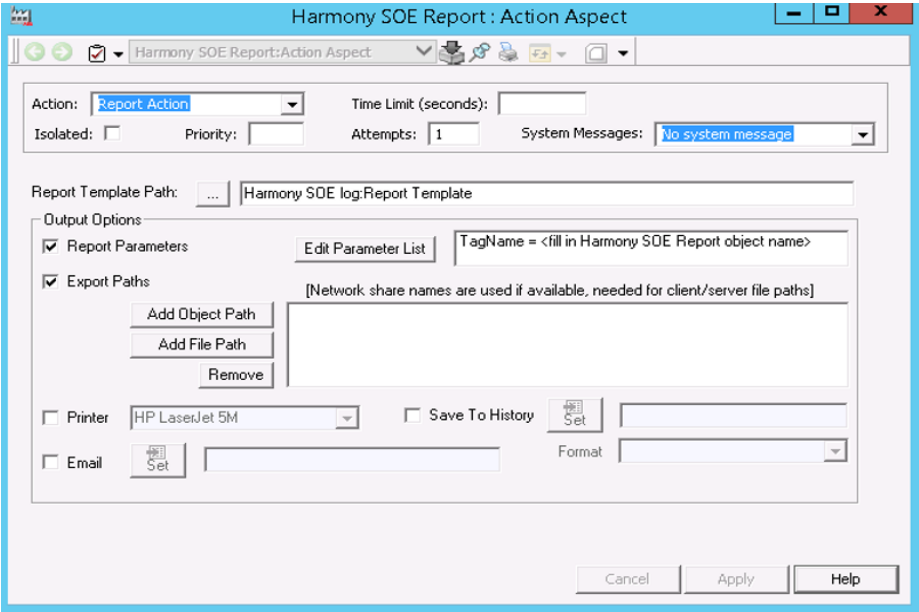


Figure 28. SOE Report: Action Aspect

13. To save the completed report in a long-term archive, select **Save to History** and select the appropriate report **log name** from the drop down list. Select **.xls format** to save in the correct format.



Refer to the *System 800xA Information Management Data Access and Reports (3BUF001094*)* instruction for procedures on how to configure this. Refer to the same instruction for more information on the scheduler and reports.

Configuring the Rochester SER

A Rochester SOE architecture may require custom configuration to suit specific needs. Configure Rochester reporters using Rochester ISM-1 commands. These are outlined in the *Rochester Integrated System Monitor* instruction. To use ISM-1 commands, a CRT terminal (VT100 or WYSE50) is required. Complete installation instructions of the ISM-1 system are provided in the *Rochester Installation* instruction.

SOE Reports of report type pre-fault and post-fault, which are available only with FC 99, require that the Rochester communication interface unit be specially configured, to enable it to send pre-fault and post-fault SOE events to Harmony. Each of these report types need a Boolean trigger equation to determine if and when pre-fault or post-fault trigger situations exist. Also, Rochester SER Digital points must be specifically designated as pre-fault points and post-fault points in order to show up in SOE Reports of these particular types.

Rochester ISM-1 Commands to Configure Pre-fault SOE Reports

For pre-fault SOE Reports, use the ISM-1 command **pretrig** to configure the pre-trigger equation. For example, the pre-trigger can be tripped by Rochester point five going into alarm (a zero to one logic state transition) simply by entering:

```
pretrig 5
```

Then, to designate Rochester SER Digital points to be pre-fault points, use the ISM-1 command:

```
prepoints s <pointnumbers>
```

For example, to pre-fault designate Rochester SER Digital points 21 to 30 inclusive, plus 48, enter:

```
prepoints s 21-30 48
```

The Rochester SER is now ready to report pre-fault reports. In this example, points 21 through 30, plus point 48, are the only Digital points that would show up in the SER pre-fault SOE Reports.

To remove the pre-fault designation on points 16 through 20, enter:

```
prepoints r 16-20
```

Rochester ISM-1 Commands to Configure Post-Fault SOE Reports

For post-fault SOE Reports, use the ISM-1 command **posttrig** to configure the post-trigger equation. For example, the post-trigger can be tripped by Rochester point three going into alarm (zero to one logic state transition) simply by entering:

```
posttrig 3
```

Then, to designate Rochester SER Digital points to be post-fault points, use the ISM-1 command:

```
postpoints s <pointnumbers>
```

For example, to post-fault designate Rochester SER Digital points one to 10 inclusive, plus 16, enter:

```
postpoints s 1-10 16
```

The Rochester SER is now ready to report post-fault reports. In this example, points one through 10, plus point 16 are the only Digital points that would show up in the SER post-fault SOE Reports.

To remove the pre-fault designation on points six through ten, enter:

```
postpoints r 6-10
```

Other Rochester ISM-1 Commands

Examples of other useful ISM-1 commands which would be helpful in monitoring and troubleshooting Rochester SER are shown in [Table 10](#).

Table 10. Other Rochester ISM-1 Commands

Command	Description
csum	Contact summary report.
date	Set Rochester SER date and time.
dfs	Delete Rochester SER Digital point from scan.
hist	Display a history of all changes of state stored in Rochester SER buffer.
port	Set serial port communications protocol.
psum	Point summary report.
rhis	Display recent history of changes of state.
status	Display diagnostic status of ISM-1 system. For a complete list of all ISM-1 commands, refer to the <i>Rochester Integrated System Monitor</i> instruction.

Section 7 System Definition

Introduction

This section describes the configuration of the Symphony System Definition Object NLS aspects.

Symphony System Definition Objects

Text configuration data for Harmony Tag Objects is maintained in NLS Aspects on the Symphony System Definition Objects located in the Library structure. Multiple Symphony System Definitions Objects can be created. However, only one can be assigned to a specific Harmony OPC Server Network Object.

The following NLS aspects are provided:

- NLS Alarm Priority Text
- NLS Engineering Unit Descriptors
- NLS Event Comments
- NLS Harmony PhaseX Fault Codes
- NLS Harmony PhaseX Substitutable Text
- NLS Harmony RMCB Text
- NLS Harmony Substitutable Text
- NLS Logic State Descriptors
- NLS OPC Quality Text
- NLS Symphony Substitutable Text
- NLS Text Selector Text

NLS Alarm Priority Text

An alarm priority can be represented by text. There are 17 alarm priorities. Each priority can be assigned different priority text including both active and normal state events. The alarm priorities are shown in [Table 11](#).



Only the default alarm priorities are available. No others can be added.

Table 11. Alarm Priorities

Priority	Descriptor	Priority	Descriptor
0	Priority Error!	9	WARNING
1	DIRE	10	warning
2	dire	11	ADVISE
3	CRUCIAL	12	advise
4	crucial	13	NOTIFY
5	CRITICAL	14	notify
6	critical	15	INFORM
7	ALERT	16	inform
8	alert	—	—

NLS Engineering Unit Descriptors

Engineering unit descriptors (EUD) relate to Analog signals in the control system. They describe the unit of measurement (DEG F, GPM, AMPS, LB/HR) for the Analog signal.

A list of common engineering units is provided. Theoretically, an unlimited number of engineering unit descriptors can be defined in the database; although, zero through 15 are fixed.

Table 12 lists the fixed engineering unit descriptors and their index numbers.

Table 12. Engineering Unit Descriptors

Index	Descriptor	Index	Descriptor
0	(Blank)	8	GPM
1	(Blank)	9	CFS
2	%	10	CFM
3	DEG F	11	LB/HR
4	DEG C	12	GAL
5	PSIA	13	AMPS
6	PSIG	14	IN HG
7	IN H2O	15	KLB/HR

For Harmony control systems, the actual reporting of engineering unit descriptors is done by the controller. The controller sends an EUD index number along with the process value to identify the unit associated with the value. This index number is then cross referenced with the database list of descriptors. Since the controller reports the EUD index number, all devices on a common communication network should use the same EUD list.



When adding the EUDs, the Resource ID must follow the format of the other Resource IDs, and the index number must be unique.

NLS Event Comments

An event comment is associated with an event point. An event comment can be assigned to every event point of a tag. Each tag type has different possible event points depending on the tag type.

All event comments have an assigned index number. The index number allows using a single comment with several event points. In this way, a comment does not have to be redefined for each tag. Enter an event comment index number for each alarm condition of a tag during its configuration to associate a comment with a condition.



To successfully import a database into Composer, be sure to modify any negative comment indices assigned by Harmony. Composer does not support comment indices less than zero.

NLS Harmony PhaseX Fault Codes

This is an error code returned by the PhaseX FC. It describes what went wrong with a particular phase.



Refer to the *System 800xA Batch Management Configuration (3BUA000146*) instruction* for the procedures to configure 800xA for Symphony Plus Harmony for use with Batch Management.

NLS Harmony PhaseX Substitutable Text

Harmony PhaseX Substitutable Text defines Harmony PhaseX related text strings with default values that can be substituted by the user.

NLS Harmony RMCB Text

Remote Motor Control Block (RMCB) Text defines text sets that contain text strings for remote motor control Function Blocks. The Function Block can report any of ten different text strings that identify its current operation. These error codes are reported to identify the condition that caused a bad start of a device. An RMCB tag must be configured for Harmony to receive an exception report.

Remote Motor Control Block Text Tab

Remote Motor Control Block (RMCB) Text defines text sets that contain text strings for remote motor control Function Blocks. The Function Block can report any of ten different text strings that identify its current operation. These error codes are reported to identify the condition that caused a bad start of a device. An RMCB tag must be configured for Harmony to receive an exception report.

Error codes and statuses reported include:

- No error.
- Stopped.
- Interlock one.
- Interlock two.

- Interlock three.
- Interlock four.
- Feedback one = 0.
- Feedback two = 0.
- Feedback one = 1.
- Feedback two = 1.



The interlock codes indicate not set or logic zero conditions for each of four interlocks.

Each error code text set has an assigned number. Up to 100 sets can be defined numbered zero to 99. A text set field for an RMCB tag selects which text set is to be used for the tag. The specific text string that displays depends on the error code returned in an exception report from the RMCB block.

NLS Harmony Substitutable Text

Harmony Substitutable Text defines Harmony tag related text strings with default values that can be substituted by the user.

NLS Logic State Descriptors

Logic state descriptors (LSD) describe logic states for Digital signals. These descriptors show the current logic state (on or off, zero or one, run or stop, or closed or open) of a device. A descriptor follows a tag throughout all Harmony functions after being defined for a tag.

A list of common logic state descriptors is provided. Theoretically, an unlimited number of logic state descriptors can be defined in the database; although, zero through 15 are fixed. [Table 13](#) lists the fixed logic state descriptors and their index numbers.

Table 13. Logic State Descriptors

Index	Descriptor	Index	Descriptor
0	ZERO	8	LOW
1	ONE	9	HIGH
2	ON	10	EMPTY
3	OFF	11	FULL
4	NO	12	RUN
5	YES	13	STOP
6	CLOSED	14	TRIP
7	OPEN	15	(Blank)

NLS OPC Quality Text

The OPC Quality Text configures the OPC quality state indicators and the Harmony increasing and decreasing indicators. A quality indicator is shown in displays to indicate the quality of the tag and property providing values. The increasing and decreasing indicators are used to indicate that a value is increasing, decreasing, or remaining constant. The tab shows the current indicator and the default character.



Changes to the quality text require a node restart to take affect.

NLS Symphony Substitutable Text

NLS Symphony Substitutable Text defines the system related text strings with default values that can be substituted by the user.

NLS Text Selector Text

Each text message has a unique index number assigned to it. The message can be a maximum of 80 characters long. Although there are no predefined messages, message 0 is always blank to allow displays to show no message.

Configuring NLS Text Aspects

General Tab

The NLS aspects allow users to add, modify and delete NLS resource strings for a specified Locale. Additional locales can be added or removed. The default Locale is US English.

General | XML Data |

Edit NLS Resources

Resources: ☐ Keep GUIDs at copy/move

Resource Id	English (United States)
NLSID_Harmony_EUD_16	
NLSID_Common_EUD_1	
NLSID_Harmony_EUD_0	
NLSID_Harmony_EUD_1	
NLSID_Harmony_EUD_10	LB/HR

Resource Id: NLSID_Harmony_EUD_16

Locale:

Text:

Description:

Figure 29. General Tab



The NLS Aspects support the modifying of Resource ID names, but this should not be done for the existing Resource IDs (default). The Harmony system expects default sets of Resource IDs provided in the NLS Aspects.

In some cases, the full set of supported NLS Resources are provided by default and there is no need to add NLS Resources. In other cases (such as Engineering Unit Descriptors), additional NLS Resources can be added.

Adding a NLS Resource ID

1. Click **Add**. The New Resource window appears as shown in [Figure 30](#).

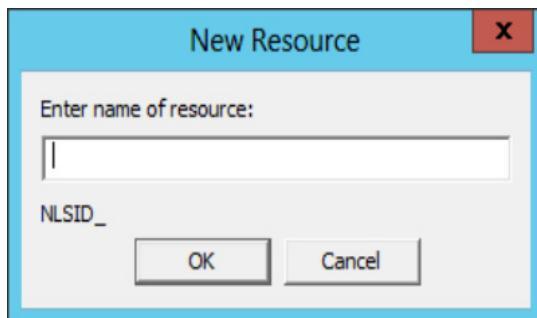


Figure 30. New Resource Window

2. Enter the Resource ID name, and then select OK.



The Resource ID name must follow the format of the other Resource IDs, and its index must be unique.

Modifying NLS Text

1. Select the text string to modify. The current resource text and description will be displayed.
2. Select the text and description fields and update them and then click **Apply**.

Adding a Locale

1. Select **Add Locale** and then select the language to add.
2. Select **Add** to add the language as a new column in the NLS Aspect view.

Removing a Locale

1. Select **Remove Locale** and then select the language to remove.
2. Select **Remove** to remove the language from the NLS Aspect view.

XML Data Tab

NLS Aspects support extracting and loading of the NLS resource text strings in a *.xml* format.

Extraction

1. Select **Extract** to launch the **Select File to Extract** window.
2. Navigate to the desired file location and enter a file name and then select **Save**.

Load

1. Select **Load** to launch the **Select File to Load** window.
2. Navigate to the desired file location and select the file to load and then select **Open**.
3. Click **Apply**..

Section 8 Alarm and Event System

Introduction

The Harmony event system is based on a Client/Server architecture. The Harmony system provides services to define event conditions and client applications. The system provides facilities to distribute the events to interested clients.

This section provides the Harmony control system OPC severity to priority mapping in 800xA. It also provides an overview of the underlying Harmony alarm and event system describing the system structure and the configuration of event client applications.

Alarm Collection Definition

The user can make modifications to the Harmony Alarm and Event subsystem such as priority mapping. Select the following to access the Alarm Collection Definition where priority mapping is located:

**Library Structure > Alarm & Event > Alarm Collections Definition,
Alarm Collections Definition, Alarm Collections Definition > Harmony
AE Server, Alarm Collection Definition**

[Figure 31](#) shows an overview of the default Harmony settings. Modify the settings by selecting the Alarm Priority Mapping link or selecting a Category Group name.

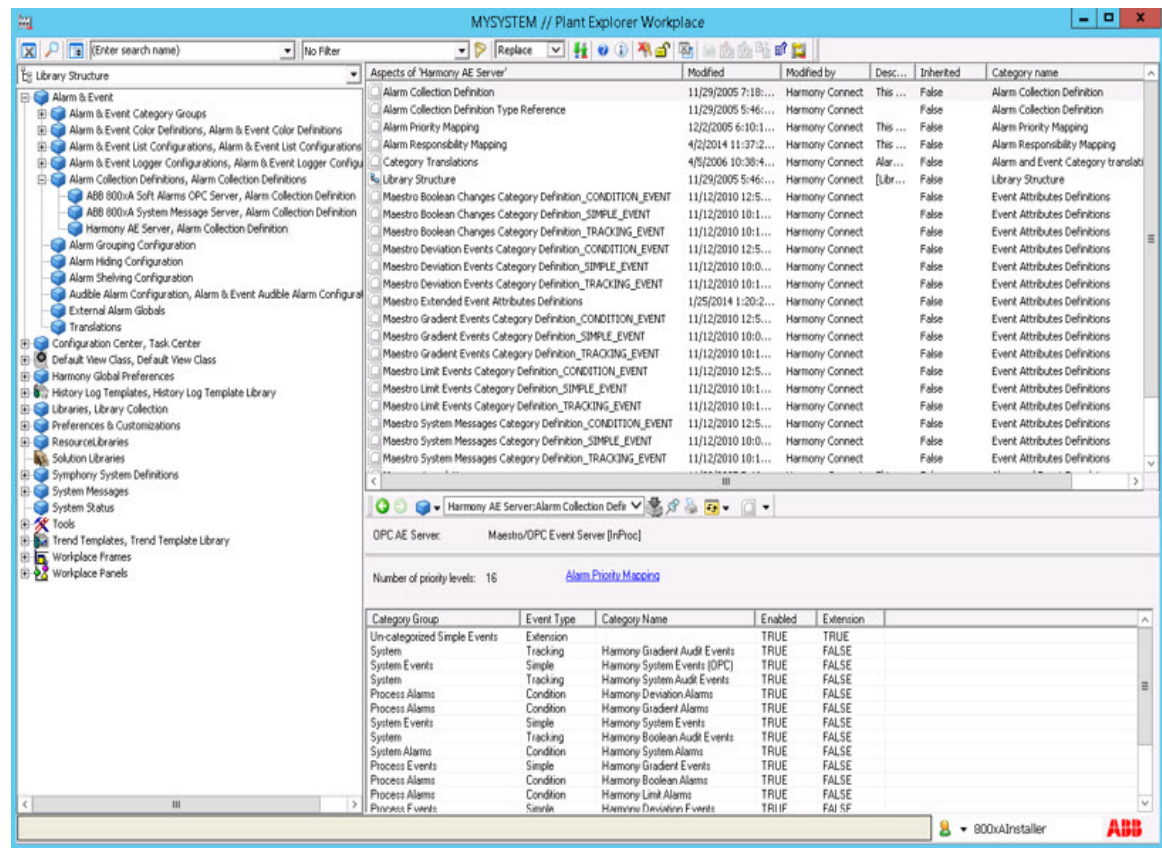


Figure 31. Alarm Collection Definition Overview

Alarm Priority Mapping

Click the Alarm Priority Mapping link and Figure 32 is displayed. This is where Harmony alarm severities are mapped to the 800xA alarm priority levels.

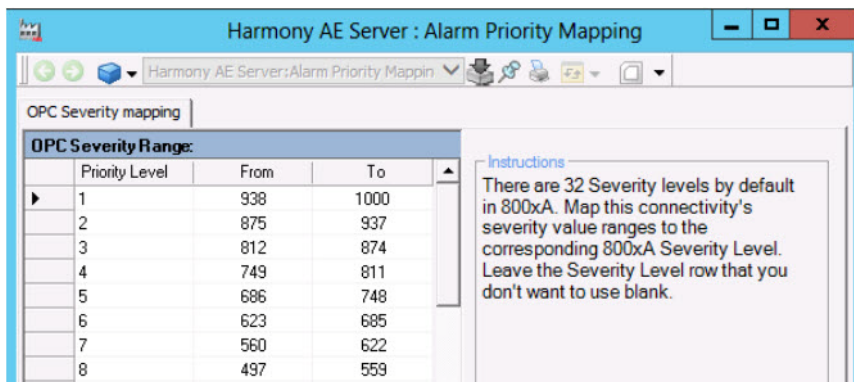


Figure 32. Alarm Priority Mapping

Refer to [Table 14](#) for more information on priority mapping with 800xA.

Table 14. Priority Mapping

Harmony Alarm Priority	800xA Severity	800Xa Priority Level
1	1000	1
2	900	2
3	850	3
4	800	4
5	700	5
6	650	6
7	600	7
8	550	8
9	450	9
10	400	10
11	350	11

Table 14. Priority Mapping (Continued)

Harmony Alarm Priority	800xA Severity	800Xa Priority Level
12	300	12
13	200	13
14	150	14
15	100	15
16	1	16
0	1	16

Event Category Group

Clicking on an event category group results in [Figure 33](#) to be displayed.

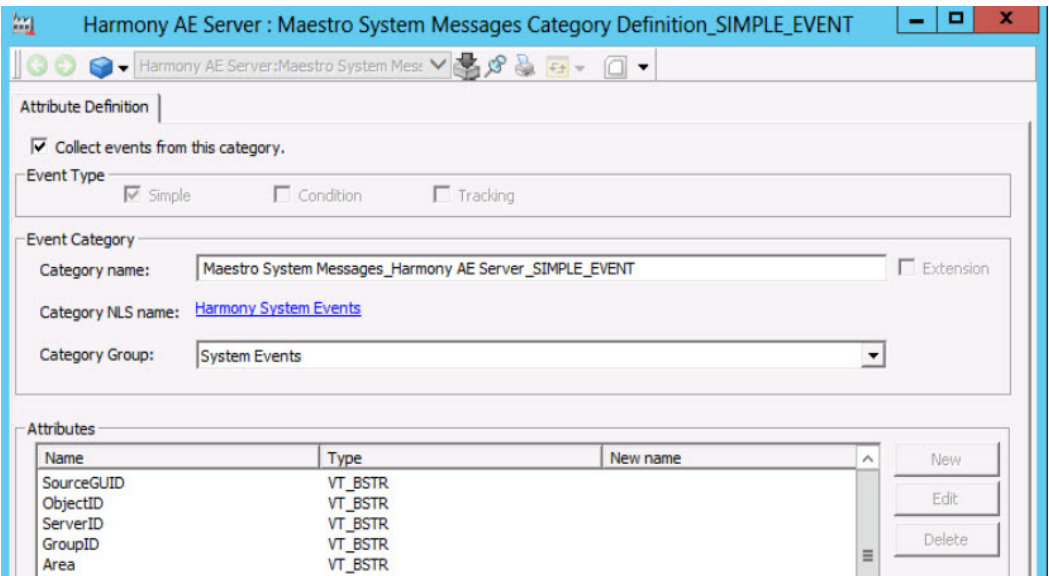


Figure 33. Event Attributes Definition

From the Attribute Definition tab, the user has four different options as follows:

- Disable event collections for the Event Category by deselecting the Collect Events From This Category check box.
- Assign the Event Category to a different Event Category Group.
- Change the NLS name translations for the corresponding Event Attributes.
- Change the NLS translations for the Event Category's name. Refer to [Section 11, NLS Support](#) for more information.



The user should not change the Category Name. The user should only change the Category NLS name.

Class Extended Attribute Support

800xA for Symphony Plus Harmony provides default support for an Extended Attribute named Class. Class can be used to provide a common attribute for filtering when displaying combined 800xA for Symphony Plus Harmony and 800xA AC800M Alarm and Event Displays (*Class is a standard 800xA AC800M event attribute*).

To enable this support, an Event Attribute Object Extension Aspect must be configured containing the Class attribute value for the Harmony Tag Objects for which the events are generated. The Event Attribute Object Extension Aspects can either be configured on the individual Tag Object instances, or they can be placed on a parent node and configured to be inherited by the child Objects in an Object hierarchy. For example if an Area hierarchy is configured in the Functional Structure, the Event Attribute Object Extension Aspects can be configured on the Area Objects and then the Class value defined would be inherited by all Objects in that Area.

To configure the Event Attribute Object Extension Aspect:

1. In the Plant Explorer, select the Object where the Class value is to be defined right-click and select **New Aspect**.
2. Select the **List Presentation** check box, select **Event Attribute Object Extension**, and then click **Create** as shown in [Figure 34](#).

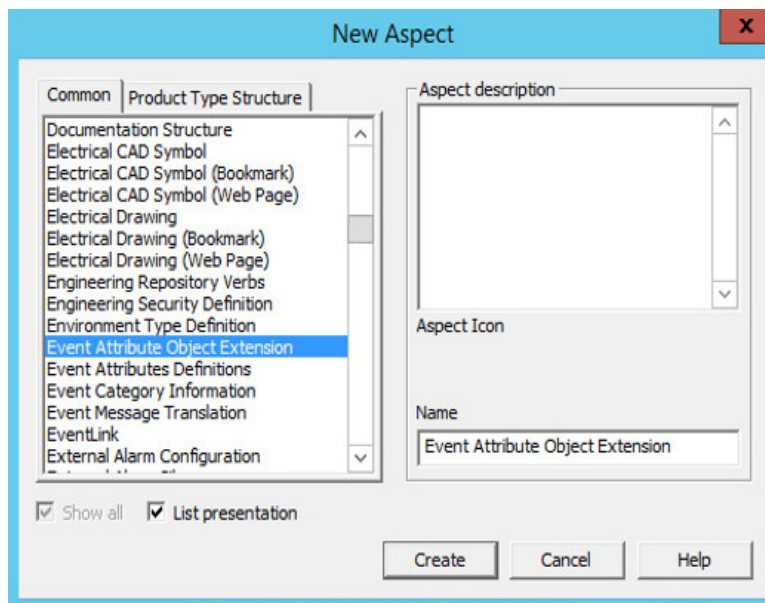
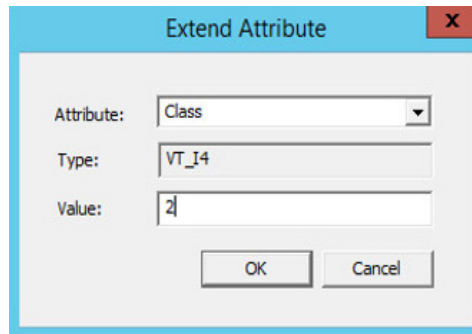


Figure 34. Event Attribute Object Extension

3. Select the newly created **Event Attribute Object Extension** Aspect, select the **Attributes** tab, then click **Add**.

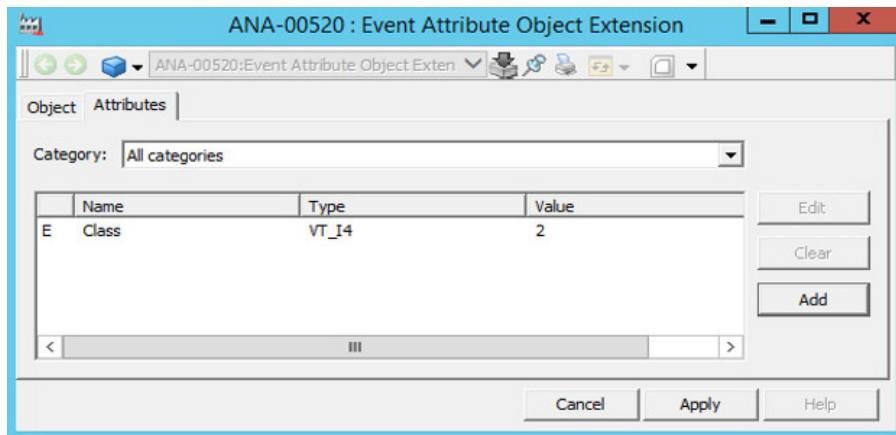
4. In the Attribute pick list, select **Class** as shown in [Figure 35](#).



The 'Extend Attribute' dialog box has a title bar with a close button (X). It contains three input fields: 'Attribute:' with a dropdown menu showing 'Class', 'Type:' with a text box containing 'VT_I4', and 'Value:' with a text box containing '2'. At the bottom are 'OK' and 'Cancel' buttons.

Figure 35. Extended Attribute Selection

5. Specify an integer value for the Class Attribute. This is the value that the Class Event Attribute will contain for events generated for this Object and any descendants of the Object.
6. Click **OK**, and then click **Apply** as shown in [Figure 36](#).



The 'ANA-00520 : Event Attribute Object Extension' dialog box has a title bar with standard window controls. It features a toolbar with icons for undo, redo, save, and other functions. Below the toolbar are tabs for 'Object' and 'Attributes', with 'Attributes' currently selected. A 'Category:' dropdown menu shows 'All categories'. A table displays the attribute data:

	Name	Type	Value
E	Class	VT_I4	2

To the right of the table are 'Edit', 'Clear', and 'Add' buttons. At the bottom are 'Cancel', 'Apply', and 'Help' buttons.

Figure 36. Event Attribute Object Extension Dialog Showing Attributes

System Overview

Events are generated by Servers in the system. Event concentrators collect the events from the Servers and distribute them between the different nodes and make the event stream accessible for client applications. All client applications can be configured to be sensitive to a group of events defined by an event filter and applied to the event stream in the system. [Figure 37](#) is a functional diagram of the Harmony event system.

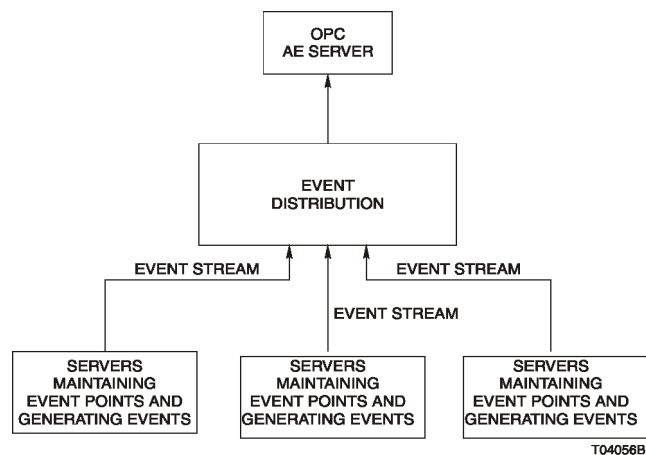


Figure 37. Harmony Event System

The design and implementation of the alarm and event system is closely related to the OPC definitions for alarms and events. For a clearer understanding, this instruction refers to the OPC terms where appropriate indicating similarities and potential differences.

Alarms and Events

An event is the notification of some occurrence that is considered significant. The event can either be related to a specific condition represented by an event point (the transition into high alarm of a tag and the respective return to normal) or non condition related events (an operator action). An event itself has no state and only

indicates states or state changes. An event client can subscribe for notifications of specified events.

An alarm is considered an event that indicates an abnormal condition. It is a specially classified event. The classification is made through an attribute in the Event Structure and supports filtering. Harmony system alarms are process alarms and appear only in Process Alarm & Event Lists within the 800xA System.

Event Point

An event point represents a defined condition in the system. The event point generates events at the occurrence of a state change of the defined condition. It maintains its current state in terms of active or inactive, acknowledged or unacknowledged, inhibited or uninhibited, and enabled or disabled.

Usually an event point exists as part of a tag in a connectivity server. The system also provides the option to maintain transient event points for non tag related events.

Since the event point maintains the various states of a condition, only events generated by an event point (as opposed to non event point related events) can be inhibited or disabled.

The similar entity in the OPC definition is a condition. Consider the event point implementation of Harmony similar to the implementation of the abstract OPC condition model.

Event Distribution System

The event distribution system is responsible for collecting the event streams from all Servers in order to generate an overall event stream. They allow client applications to access all events in the system, even though a client application can only subscribe to a subset of the events defined by a filter. This subset is usually functionally oriented (all events of priority one or all system events) rather than Server oriented.

The event subsystem makes sure that the various Servers comprising the system are transparent to the client applications. The user can focus on functional aspects rather than knowing how tags are distributed within the system.

Event Concentrators

In order to minimize system and network load, event concentrators work in a hierarchical order. Two categories of event concentrators are supported: Local event concentrators and Client event concentrators.

Event concentrators subscribe to the event stream of other Servers and provide interfaces for clients to subscribe to the resulting event stream. The OPC definition calls all of them alarm/event management systems or alarm/event management Servers. The flow of events through the event concentrators is shown in [Figure 38](#).

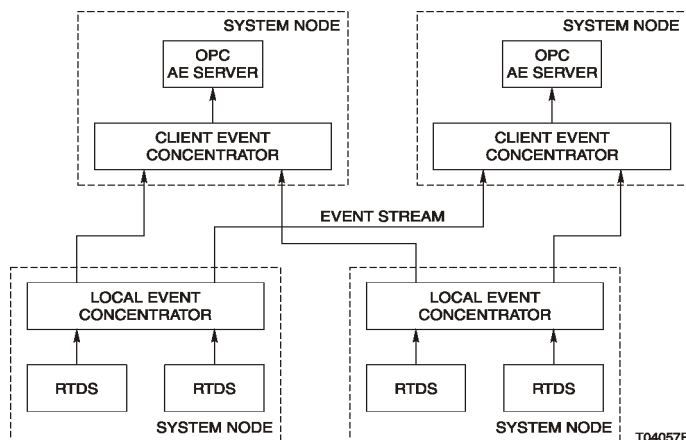


Figure 38. Event Concentrators

Local Event Concentrator

Local event concentrators subscribe to the event streams of all Servers running on the same system node. A local event concentrator needs to be configured for all nodes in the system that host connectivity servers. If not, events generated from the respective Servers will not be accessible for clients. Redundancy is handled automatically by the event concentrators; no special configuration is required.

Client Event Concentrator

Client event concentrators subscribe to the event streams of all local event concentrators in the system that belong to the same Harmony domain as they do. A client event concentrator combines the event stream of all local event concentrators into a complete event stream of the system.

Event Classifications

Events are separated into two classifications: Alarm and Status. Typically alarm events are events that require action to resolve the reason for their generation. An example of an alarm event is a boiler temperature exceeding a limit. Status events do not require action to resolve the reason of their generation. An example of a status event is a motors state changing from on to off. The event is identified as an alarm or a status in the event point configuration.

Event Categories

Event categories can be used to condense the event state of a tag. Multiple event points in a tag can belong to the same event category. Event client applications (event pages and alarm bars) can interpret the event categories and only present the most important events to an operator instead of all events. This lowers the event noise to the operator. Example categories are Boolean, Limit, Deviation, Rate.

Event Point Definition

In Harmony an event point represents a single condition, like the high alarm or high-high alarm of a process tag. Multiple event points of one event source can be closely related. In this case the event points belong to the same event category. This gives client applications the option to detect related events and display them accordingly. The definition of event points is part of the definition of the respective tag.

Event Point Attributes

An event point in Harmony is a specialization of PSigBool. It has all the attributes defined for a Boolean signal. The various attributes can be configuration defined, accessible as properties, and updated in accordance with the state of the condition itself. [Table 15](#) and [Table 16](#) identify the different attributes of an event point and provide descriptions. The configuration column (Config) identifies if the attribute is

defined through configuration. The Property column identifies if the attribute is accessible as an property in case the event point exists as part of a tag instance.

Table 15. Event Point Identification

Attribute	Description	Config	Property
Source	Name of the source of the event point. Every event point instance is related to one source. For an event point defined as part of a tag the source is the tag name.	Yes	Yes ²
EventPointName	Identifies the event point inside the source. The event point name is defined in the class of the tag as the signal name and is not configurable. The signal name in combination with the sender name uniquely identifies the event point: <Source>.<SignalName>.	Class ¹	No

NOTES:

1. The configuration is inherited from the class of the object.
2. Only if the event point is defined as part of the tag.

Table 16. Event Point State

Attribute	Description	Config	Property
SIG	Represents the current state of the event point. The SIG property is updated even though the event point is not enabled.	No	Yes
PRI	Current priority of the event point.	No	Yes
AREF	Associated value. Returns the current value of the property which is associated to the event point (PV for a high alarm).	Class ¹	Yes
UNACKEP	Event point is currently unacknowledged. An event point is set to unacknowledged when it goes into active state and is configured to require acknowledge.	Yes	Yes
SUP	Event generation is currently suppressed by configured condition in the system.	No	Yes
COM	Current event comment. Returns the event comment COM0 or COM1 dependent on the active state of the event point.	No	Yes
ALARM	Event point is in alarm: ALARM = ACT AND ALMEN.	No	Yes

Table 16. Event Point State (Continued)

Attribute	Description	Config	Property
UNACK	Current state of the event point represents an unacknowledged alarm: UNACK = UNACKEP AND ALMEN.	No	Yes

NOTE: The configuration is inherited from the class of the object.

Certain attributes of an event point can be configured if the event point is defined as part of a tag. Two classes of attributes can be distinguished as Behavioral and Informational.

Behavioral Attributes

Behavioral attributes impact the behavior of the event point in terms of its state machine and actions processed upon state change. The behavioral attributes are shown in [Table 17](#).

Table 17. Behavioral Attributes

Attribute	Description	Config	Property
ACKR	Event point requires an acknowledge and will be included in the event page. Only events that have ACKR enabled will be represented in the event status page and event bar.	Yes	Yes
EN	Event point is enabled. If the event point is enabled it will generate events according to state changes of the event point. (An event point can be enabled by configuration action and operator action).	Yes	Yes
DUAL	Event point generates events on transition into active and inactive state. A non dual event point will only generate an event upon transition into active state.	Yes	Yes
COMP	Not implemented	—	—

Informational Attributes

Informational attributes do not impact the behavior of the event point. They serve to qualify events generated by the event point to be interpreted by client applications.

The informational attributes are shown in [Table 18](#).



The list in [Table 18](#) represents a complete set of possible configuration attributes. The actual attributes are dependent on the implementation of the tag type, some of them are defined by default.

Event points that are not part of a tag are defined by the application generating the associated events. The configuration of such event points is up to the application itself.

Table 18. Informational Attributes

Attribute	Description	Config	Property
DESC ¹	Description of the event point. If no description is configured for the specific event point the description of the tag will be used instead.	Yes	Yes
EPSCAT	Category the event point belongs to. Defining event categories supports identification of closely related event points of one source. Event points with the same event category will be considered by a client application as closely related.	No	Yes
SIG0	Defines the logic state descriptor for the zero state of the event point. Usually this attribute is defined through configuration.	Yes	Yes
SIG1	Defines the logic state descriptor for the one state of the event point. Usually this attribute is defined through configuration.	Yes	Yes
PRI0	Priority defined for the inactive state of the event point.	Yes	Yes
PRI1	Priority defined for the active state of the event point.	Yes	Yes
COM0	Event comment for inactive event point.	Yes	Yes
COM1	Event comment for active event point.	Yes	Yes
ALMEN	Event point represents an alarm (abnormal condition).	Yes	Yes

NOTES:

1. Only if the event point is defined as part of the tag.

Event Point State Attributes

Event points have several boolean state attributes.

Acknowledged. An event acknowledgment generates an acknowledge event notification. This notification contains the event point description, the current event point state, and the ID of the operator who made the acknowledgment. Figure 39 describes the event point acknowledgement flow. Harmony supports three different methods for acknowledging an event:

Tag Acknowledgment

All event points existing in the tag instance get acknowledged.

Event Point Acknowledgment

Acknowledge is issued for an individual event point. The current state of the event point is acknowledged.

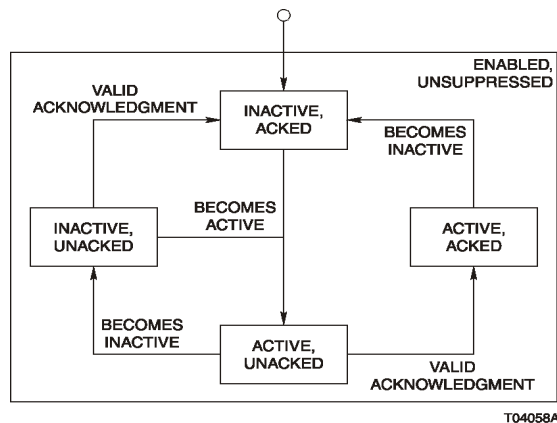


Figure 39. Event Point Acknowledgment Flow

Active. An active event is an event point that is in the condition that defines the event. Events become inactive after the condition that caused the event subsides or returns to normal.

Enabled. Event points can be enabled and disabled. The enable attribute can be configured with a default value. The event point can be enabled and disabled by a client application. A disabled event point will not generate any events.

Suppressed. An event point can be suppressed by defined logic. An event point, which is currently suppressed, will not generate any events. Harmony tags generically support suppressing of event points on tag level. That means all event points of the tag will be suppressed, although certain tag types can support suppressing individual event points as a reaction to other conditions.

Inhibited. An event point can be inhibited by a defined logic. An event point which is currently inhibited will generate events according to its respective event point state changes. These events will be marked as inhibited, giving a client application the option to filter the events.

Harmony tags generically support inhibiting of event points on a tag level. That means all event points of the tag will be inhibited, although certain tag types can support inhibiting individual event points as a reaction to other conditions.

Dual Event Point Behavior

Most of the event points have dual behavior. Dual events generate event notifications for active to inactive and inactive to active state transitions. Refer to [Figure 39](#).

Non Dual Event Point Behavior

Non dual event points have slightly different behavior. Non dual event points only generate event notifications for inactive to active transitions. They automatically go inactive when they receive a valid acknowledgment.

Section 9 Configuration Tools

Bulk Data Management

The 800xA Bulk Data Manager (BDM) can be used to make bulk configuration changes to the 800xA for Symphony Plus Harmony **TagConfig** Aspects.



ABB does not recommend making bulk configuration changes online. When bulk changes are made, it is recommended that online change notifications are disabled. Each system may exhibit different update performance. ABB recommends disabling online changes if more than 100 Tags are being added, updated or removed.

Pre-defined sample BDM templates are provided for each 800xA for Symphony Plus Harmony Tag type that can be used to make bulk Tag configuration changes to Tags of the same type. Users can also make ad-hoc changes to the Harmony **TagConfig** Aspects and create their own BDM templates.

Ad-hoc Bulk Changes

- 1. Select **Bulk Data Manager** from the Advanced Object context menu in the Engineering Workplace. This will launch Microsoft Excel and activate the Bulk Data Manager Excel Add-In as shown in Figure 40 and Figure 41.

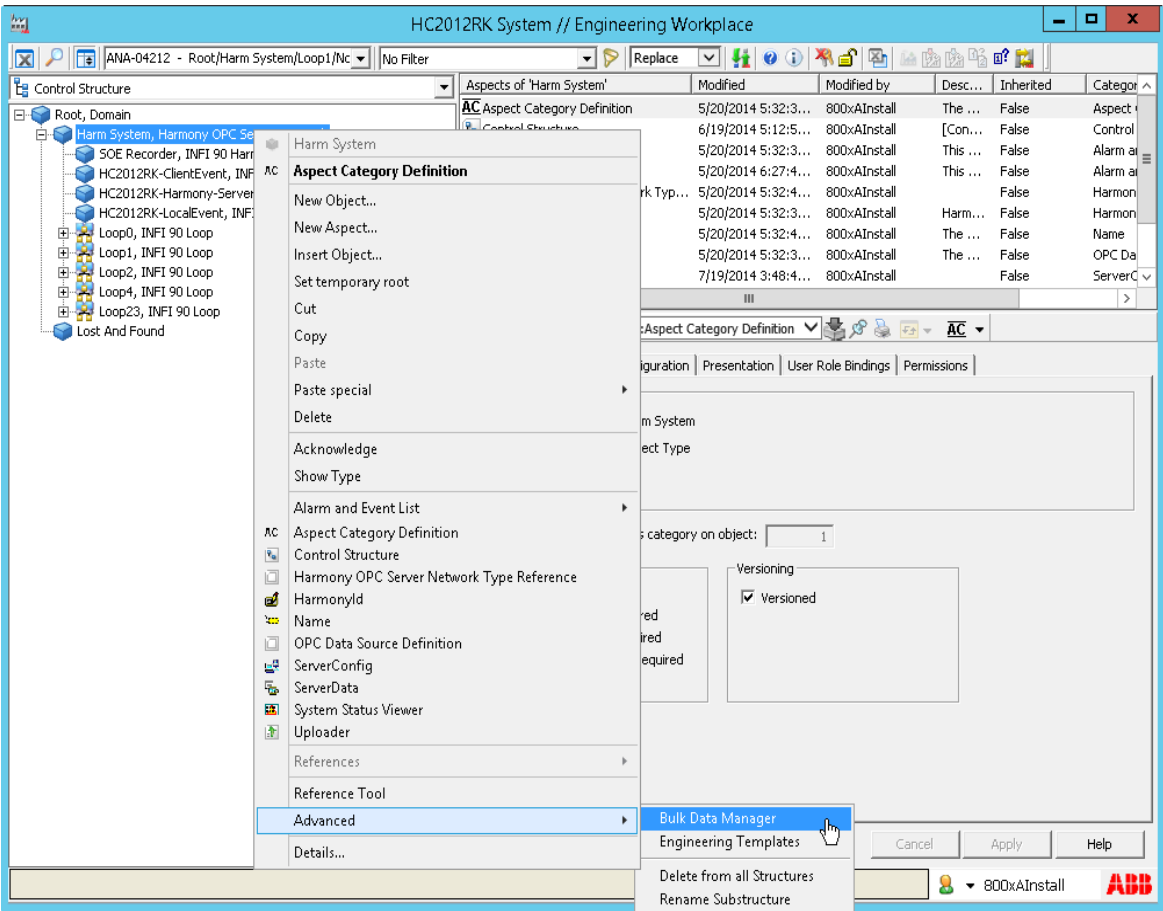


Figure 40. Selecting Bulk Data Manager from the Workplace

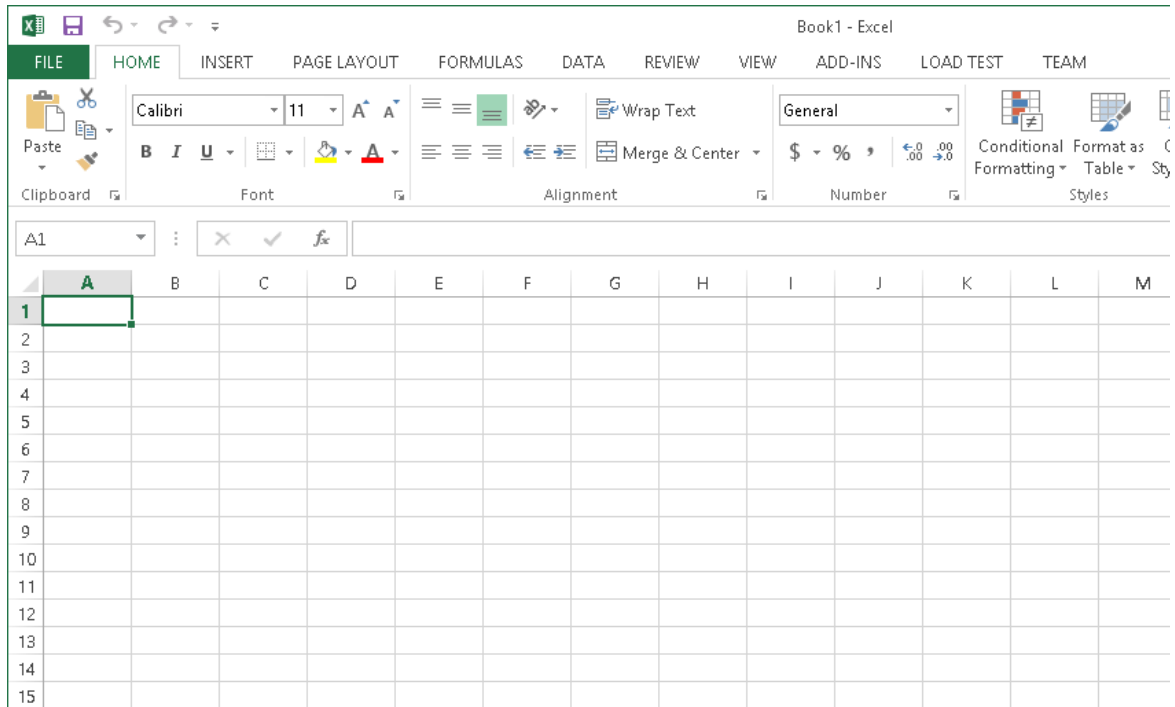


Figure 41. Microsoft Excel

2. From the Engineering Workplace, drag the desired Harmony **TagConfig** Aspect and drop it into cell **A1** of the Excel worksheet named **Sheet1**. This will begin the process of selecting the desired Harmony Tag configuration attributes and formatting the column headers of the Excel worksheet as shown in [Figure 42](#).

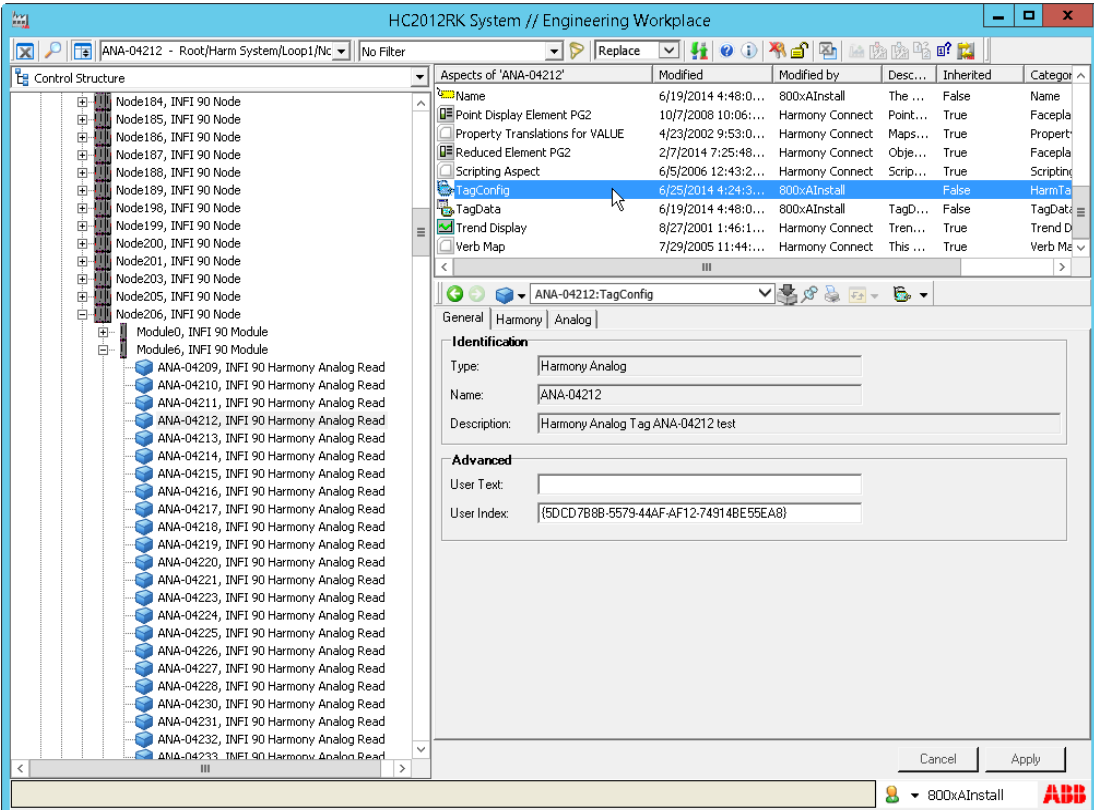


Figure 42. TagConfig Aspect

3. In the Configure Properties dialog, check both the **XSDData** and **XMLData** check boxes and then click **OK** as shown in [Figure 43](#).

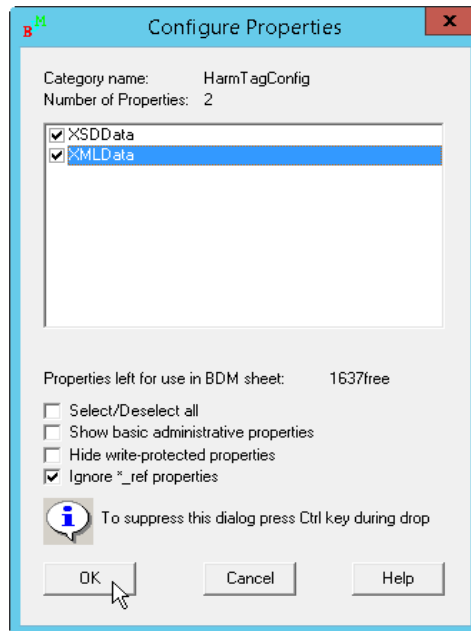


Figure 43. Configure Properties Dialog

4. In the XPATH Generator dialog, select a desired tag configuration attribute and click **Apply**. This will copy the **XPath** field to the next available column header cell in the Excel worksheet as shown in Figure 44 and Figure 45

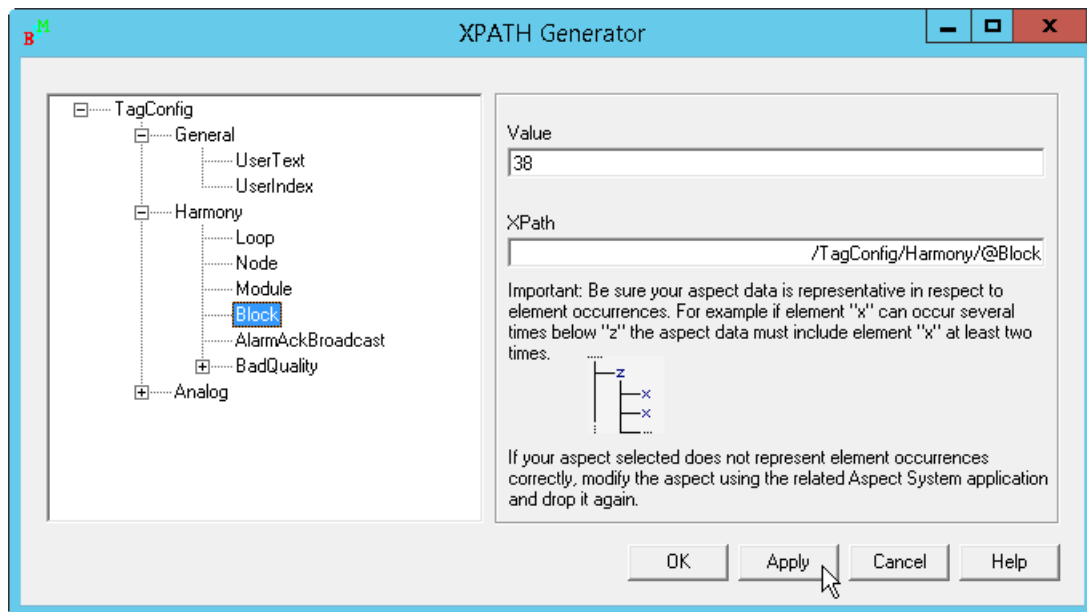


Figure 44. XPATH Generator Dialog

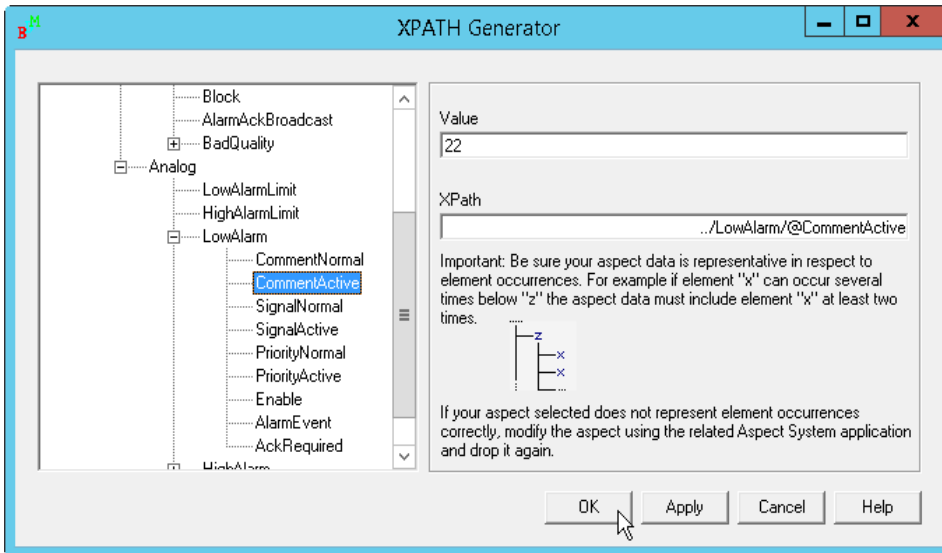


Figure 45. XPATH Generator Dialog - Showing the Copied Path

5. Repeat [Step 4](#) until all the desired Tag configuration attributes have been selected. After selecting the last attribute, click **OK**.

- 6. From the Engineering Workplace, drag the desired Harmony Tag Object and drop it into cell A2 of the Excel worksheet as shown in Figure 46 and Figure 47.

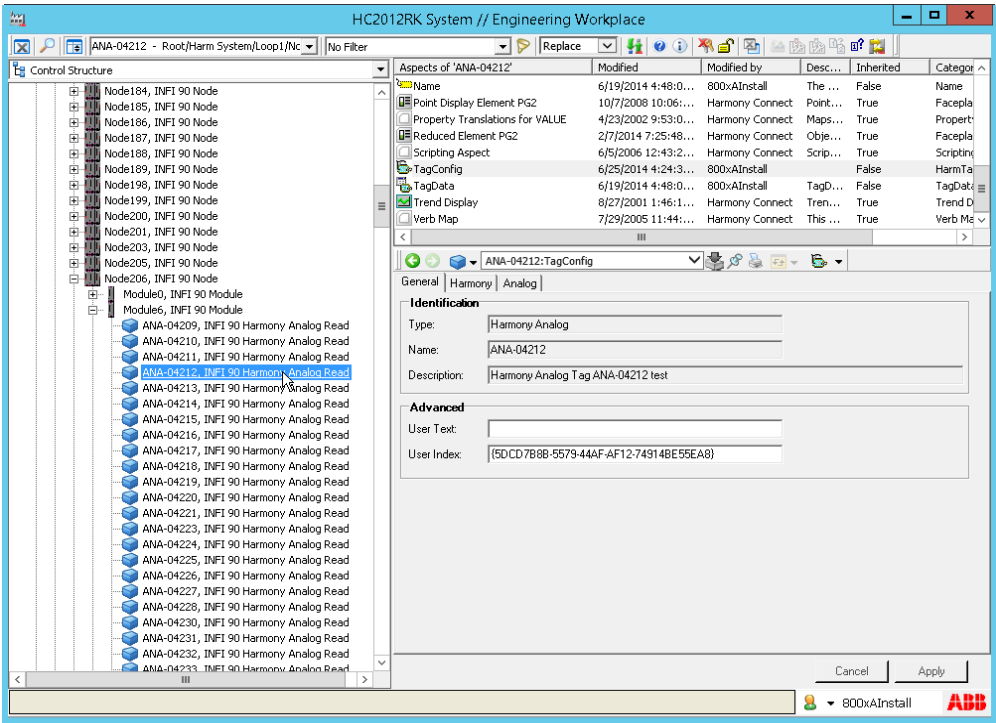


Figure 46. Selecting the Desired Harmony Tag Object

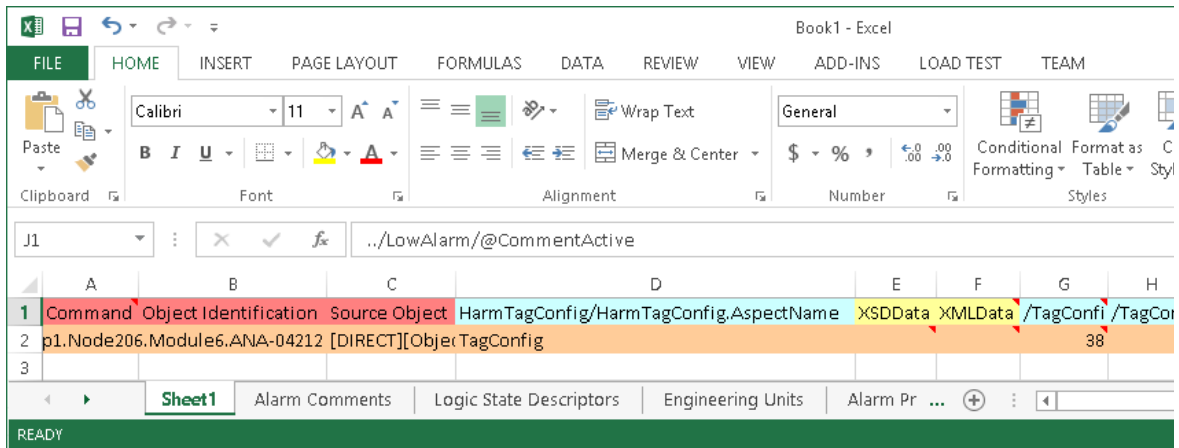


Figure 47. Excel Sheet Showing the Desired Harmony Tag Object

7. Repeat the [Step 6](#) until all the desired Objects have been copied to the Excel worksheet cells. Multiple Objects can be copied at the same time by dragging and dropping entire **INFI 90** Loop, Node or Module Objects.
8. Optionally, add Microsoft Excel's Data Validation rules to cells containing Alarm Comments, Logic State Descriptors, Engineering Units and Alarm Priority text. This will attach drop-down lists to the targeted cells for selecting the desired text.



Only the leading integer value is saved for cells containing Alarm Comments, Logic State Descriptors, Engineering Units and Alarm Priority text. The remainder of the cell text is only displayed to assist users in selecting the correct integer values.

Pre-defined Template Bulk Changes

1. Select Engineering Templates from the Advanced context menu in the Engineering Workplace. This will launch a Windows File Explorer window open to the Engineering Templates folder as shown in [Figure 48](#).

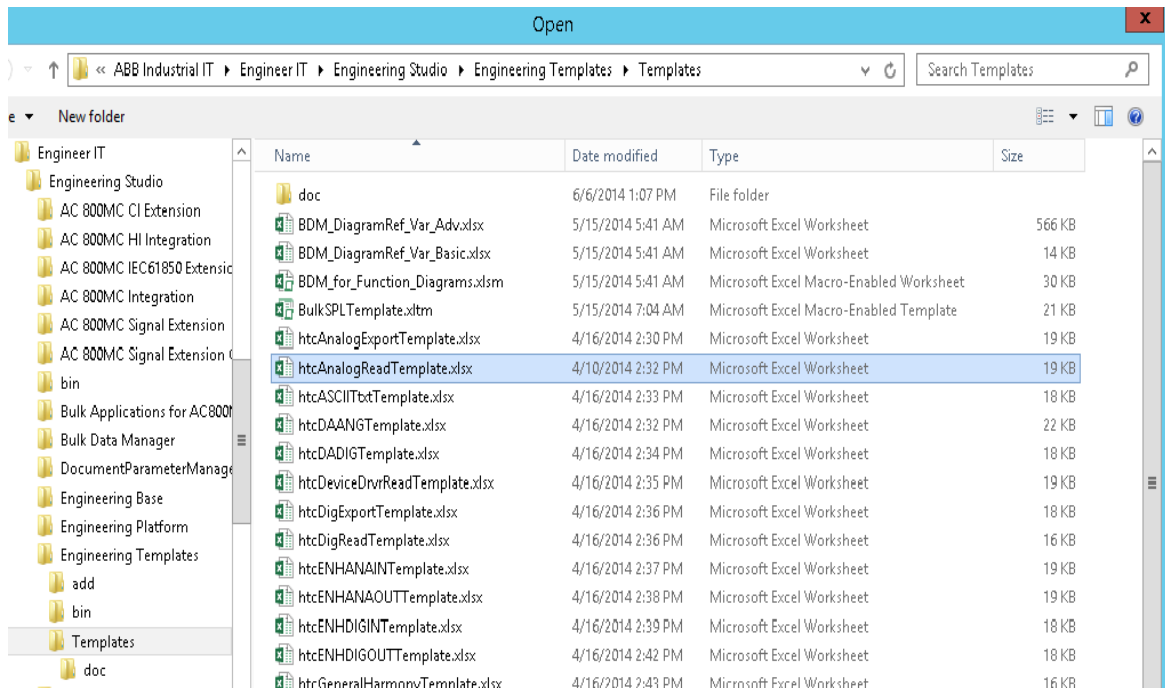


Figure 48. Windows File Explorer Window

2. Select the desired Harmony template file and click **Open**. This will launch Excel, activate the **Bulk Data Manager** Excel Add-In, and load the selected template file as shown in Figure 49.

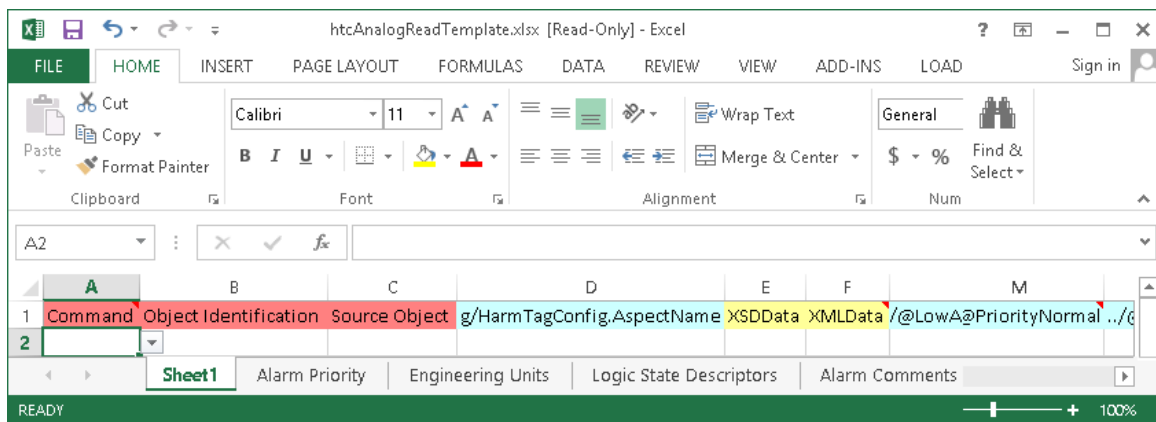


Figure 49. Excel Showing the Template File

3. From the Engineering Workplace, drag the desired Harmony Tag Object and drop it into cell **A2** of the Excel worksheet.
4. Repeat the [Step 3](#) until all desired objects have been copied to the Excel worksheet cells. Multiple Objects can be copied at the same time by dragging and dropping entire **INFI 90** Loop, Node or Module Objects.



Microsoft Excel's Data Validation rules are automatically added to cells containing Alarm Comments, Logic State Descriptors, Engineering Units and Alarm Priority text. Only the leading integer value is saved for these cells. The remainder of the cell text is only displayed to assist users in selecting the correct integer values.

Refer to the *System 800xA Engineering Studio (3BDS011223*)* instruction for more information on using the Bulk Data Manager.

Environment Support

800xA for Symphony Plus Harmony Aspects can be configured in an Engineering Environment and deployed to a Production Environment.



ABB does not recommend making bulk configuration changes online. When bulk changes are made, it is recommended that online change notifications are disabled. Each system may exhibit different update performance. ABB recommends disabling online changes if more than 100 Tags are being added, updated or removed.



A **Refresh Engineering Environment** operation should be performed prior to making and deploying changes from the Engineering Environment. This is to prevent the overwriting of changes that have been made in the Production Environment.

Uploading Harmony Tag Configuration to Engineering Environment

1. Create a new System with the Configuration Wizard and then select the **Environment Setup** from the System Administration menu as shown in

Figure 50.

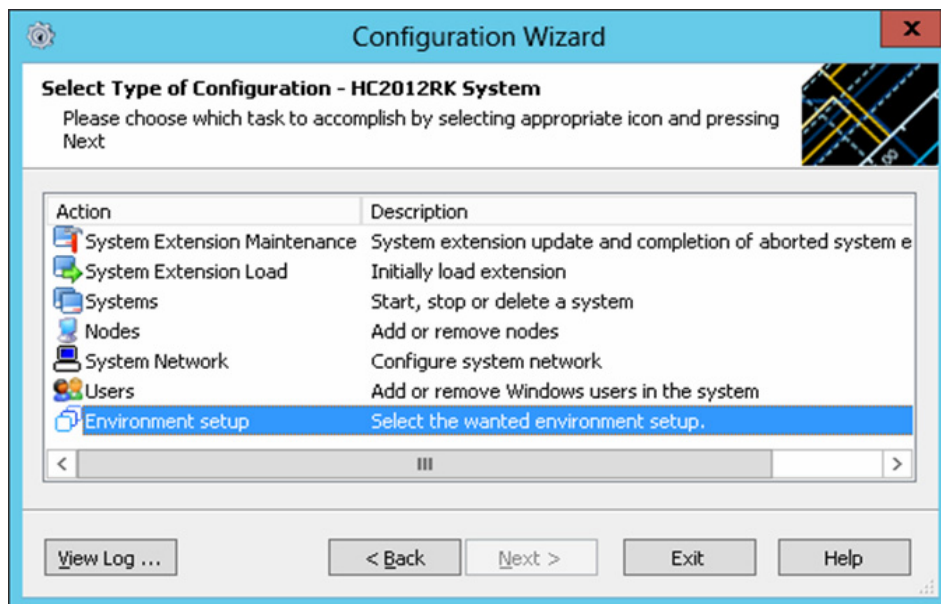


Figure 50. Environment Setup Selection

2. Select **Configure-Deploy support** option and then click **Next** as shown in [Figure 51](#).

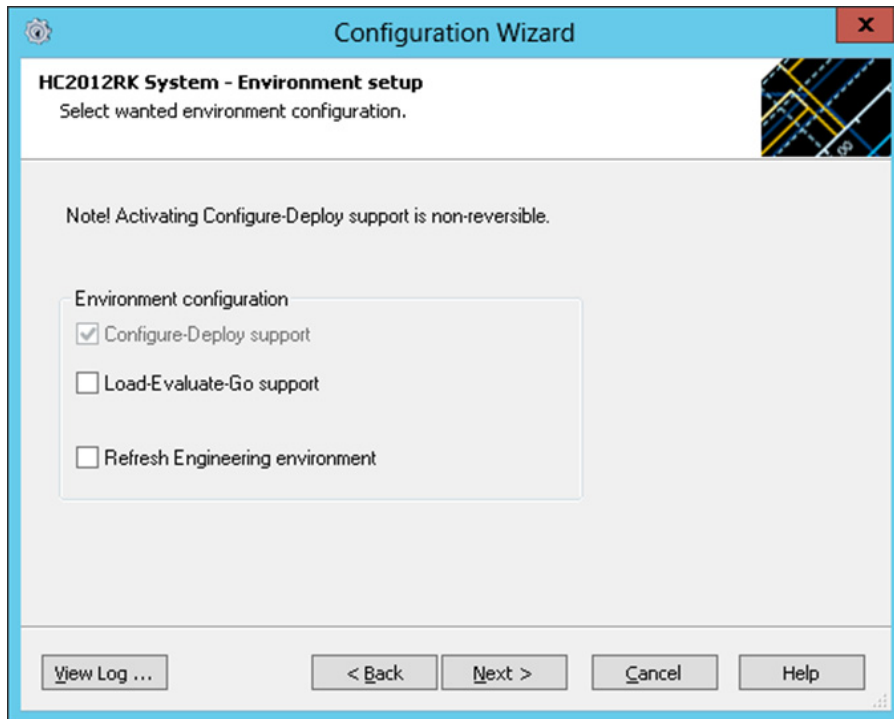


Figure 51. Configure-Deploy Support

3. Load Harmony System Extension using the Configuration Wizard.
4. Open Production Workplace and then create a Harmony OPC Server Network Object in Control Structure as shown in [Figure 52](#).

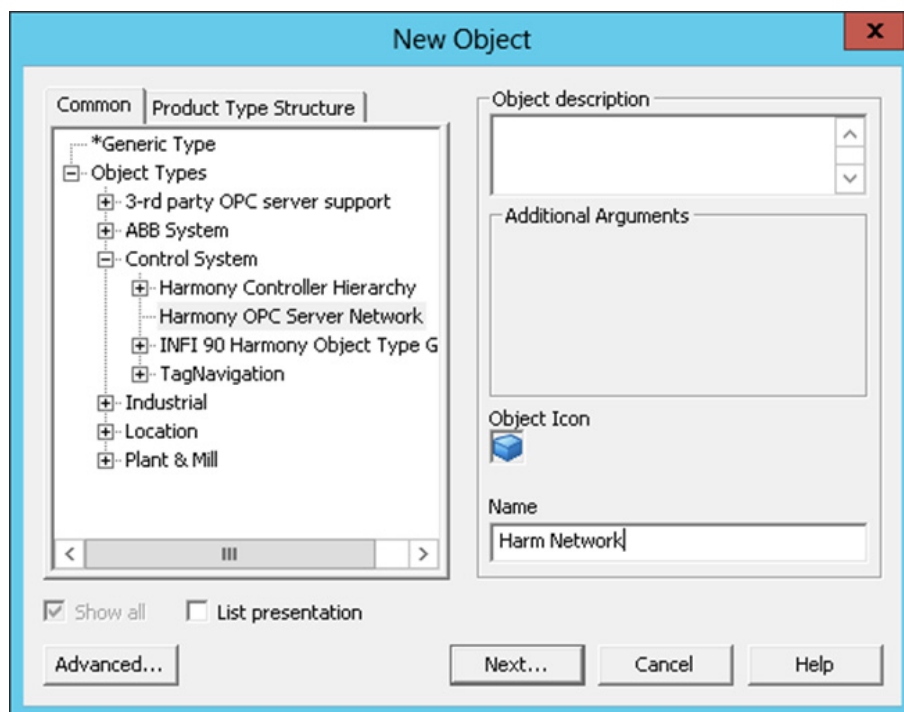


Figure 52. New Object

5. Select **Refresh Engineering environment** option in Configuration Wizard to copy newly created Harmony OPC Server Network object to Engineering environment as shown in [Figure 53](#).

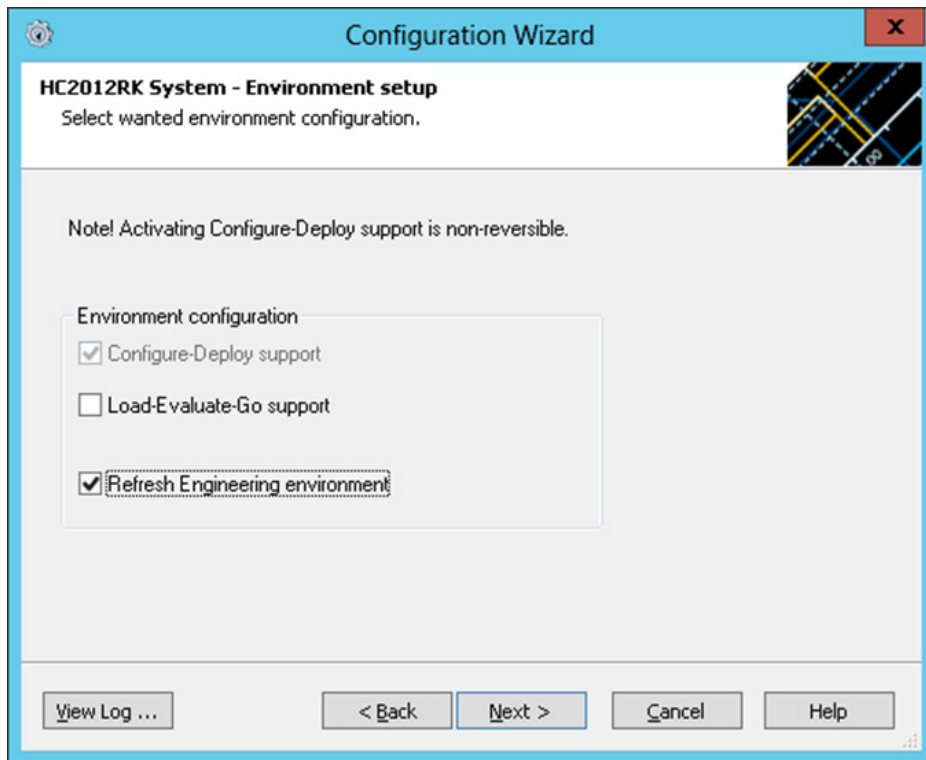


Figure 53. Refresh Engineering Environment Selection Dialog

- Open the Engineering Workplace. [Figure 54](#) shows the Engineering Environment banner and newly enabled toolbar items, including the Launch Deploy tool.

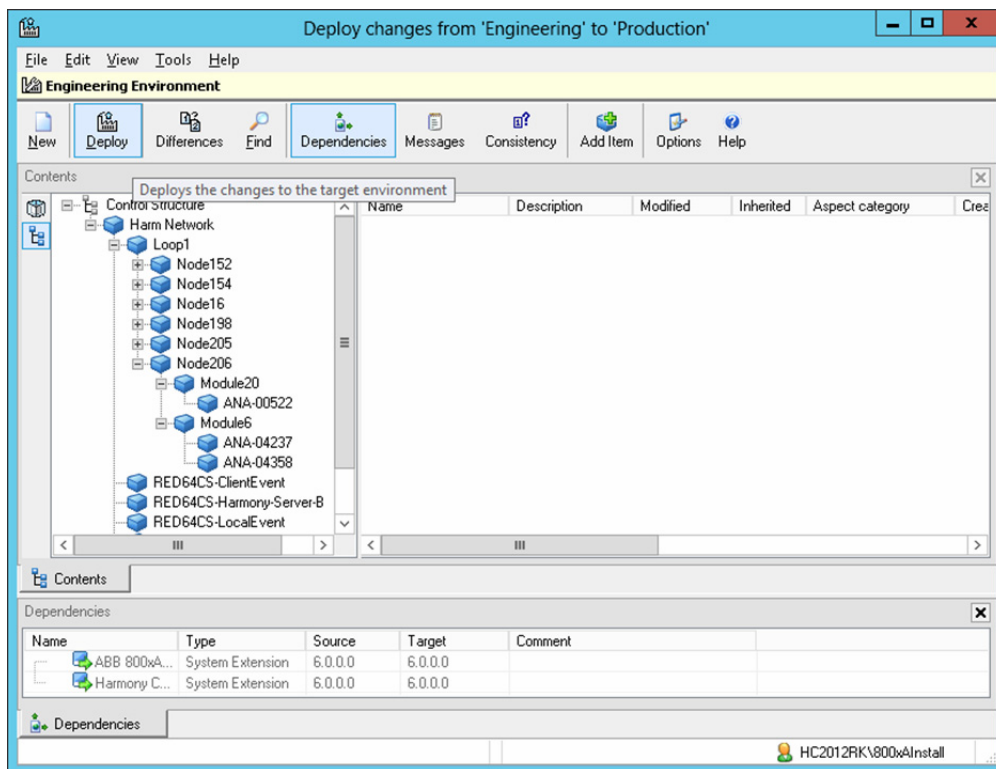


Figure 54. Workplace Displaying Environment Banner

7. Ensure that any newly created or modified **INFI 90** Symphony System Definition Objects are added when selecting Objects to deploy to the Production Environment as shown in [Figure 55](#).

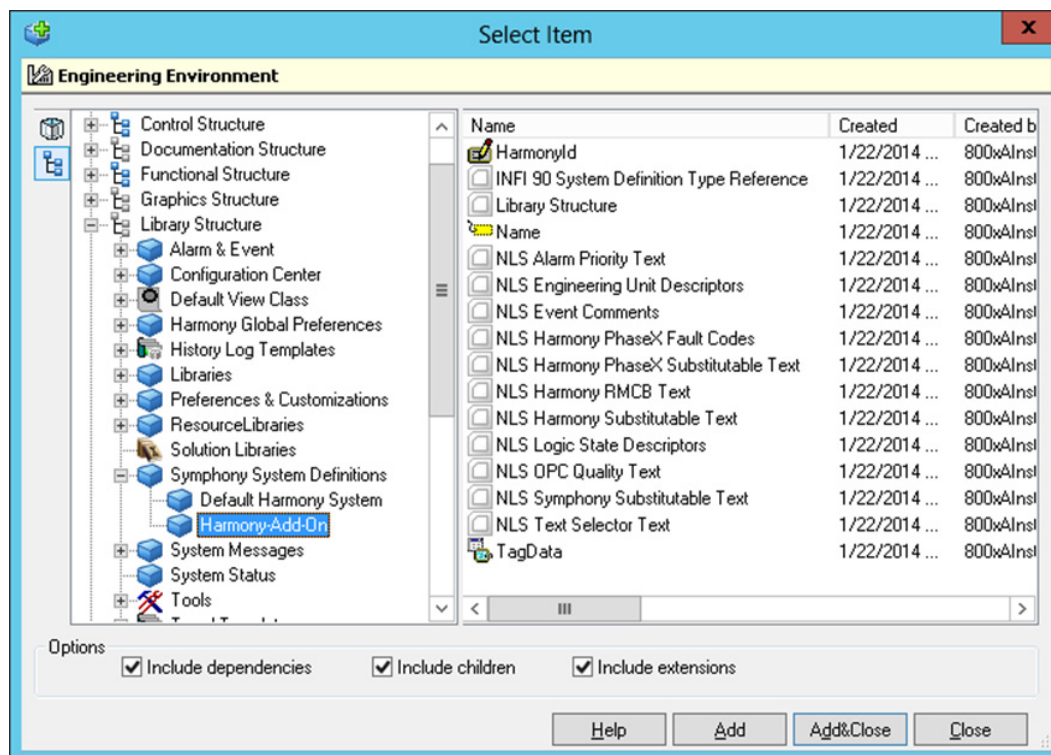


Figure 55. Harmony Add-On

Refer to the *System 800xA Engineering and Production Environments (3BSE045030*)* instruction for more information on Environment Support.

Section 10 Additional Harmony Settings

Introduction

Additional 800xA for Symphony Plus Harmony settings are described in this section.

Security Settings for Operating Parameters

The user security for the Operating Parameters must be implemented as follows:

1. Refer to and perform all steps in the System Domain in the *System 800xA Administration and Security (3BSE037410*) instruction*.
2. From the Administrator Structure, select **Administrative Objects**.
3. Select **Domains > System Domains > Security Definition** aspect.
4. Select the type of permission to edit from the Permission field and select the **Edit** button.

- 5. When setting the OpParms Permission, select the **Allowed** check box as shown in [Figure 56](#).

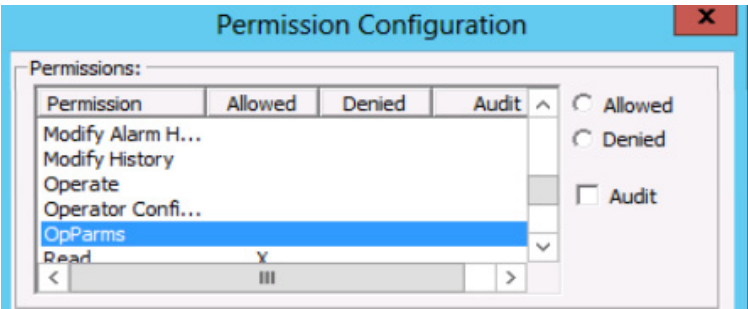


Figure 56. User Security Permission

- 6. Select the **Add** button.
- 7. Add the **IndustrialITOperator** and **IndustrialITApplicationEngineer**.

800xA System Time Synchronization

The majority of time synchronization activity is done by components of the Harmony system. The only nodes that will have time adjustments carried out by the 800xA System are nodes that do not have a Harmony Server. 800xA System Time Service Providers (TSP) should only be configured on Harmony Connectivity Server nodes.

Overview

The active Harmony Server synchronizes time with the control loop. The active Harmony Server also broadcasts that time via TSP to all of the Time Synchronization Daemons (although only the Master Time Synchronization Daemon will process the message).



The Control Loop Time Synch. Master may be configured elsewhere on the network, in which case the time will be read from the control loop by the Harmony Server, and then forwarded to the Time Synch. Daemons.

The Master Time Synchronization Daemon will post the time to all other Time Synchronization Daemons on the network. If necessary, slewing of time will begin at a rate of one second adjustment per minute on nodes that need to have their time adjusted.

The 800xA System Time Server will periodically broadcast the time on the active (in Service state) Time Server to all Client Time Handlers. If a Client Time Handler detects a time difference between the Time Server's time and the local time that is greater than the configured deviation limit, it will attempt to adjust the time on the local node (by doing a step change to the system time).

When a Connectivity Server node is added to the system, a Time Server service provider is automatically added to **Services > Time, Service > Basic, Service Group > Time Basic > <computername> > Service Provider**. The service provider can be configured via the Service Provider Definition aspect. Refer to [Figure 57](#).

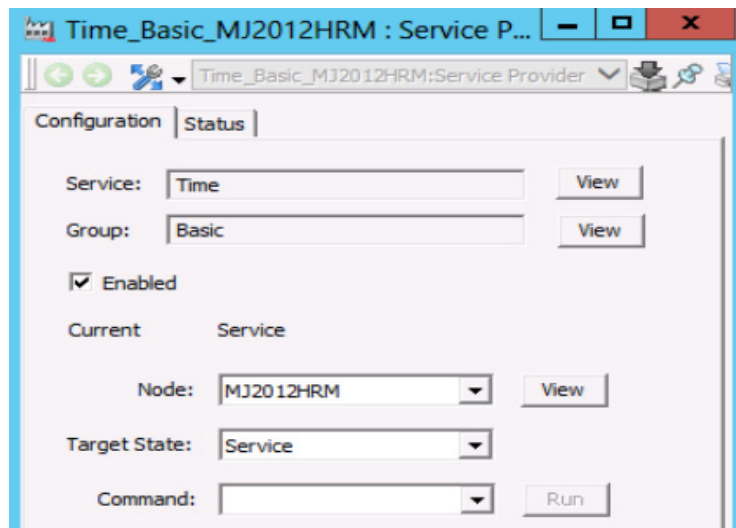


Figure 57. Service Provider Definition

Any service providers added for nodes that do not have Harmony Server installed, must be removed or disabled (otherwise the active Time Server could end up broadcasting a time that is very different from the Time Synchronization Daemon

time). All 800xA System nodes, whether they are client or Server nodes, have a TimeServerHandler aspect in the Node Administration Structure under **Node Administration > All Nodes, Node Group > <computer name>, Node**. Refer to Figure 58.

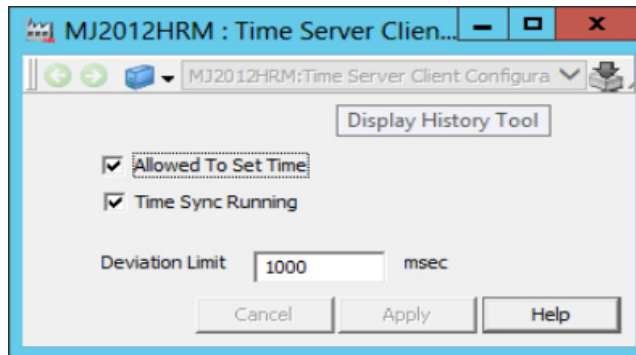


Figure 58. Time Sync Run Option

The Allowed To Set Time option should be unchecked for all nodes, to prevent users from changing the system clock.

Time Synchronization

The Harmony Server tags should be configured to allow Time Synchronization in the TagConfig aspect. If a node other than a Harmony Connectivity Server is to act as Time Synchronization Master on the control loop, then the accuracy setting should be set as Low Accuracy Battery on both Servers. If the Harmony Connectivity Server pairs are to act as Time Synchronization master on the control loop, then the accuracy setting should be set at some level higher than Low Accuracy Battery for both nodes. The primary setting must be slightly higher than the redundant. In addition, if the node is to act as the default TSP master, the TSP network priority should be set a number higher than any of the other nodes on the network. If a node other than Harmony Connectivity Servers is to act as the default TSP Time Sync Master, then the Network Priority should be set at 1. The range is 1 to 10, where 10 is the highest priority. All Harmony Connectivity Servers must use the same network segment for Time Sync communication.

On all Harmony Connectivity Servers, use the follow steps to configure the network segment to use and network priority for Time Synchronization:

1. Using the ABB Start Menu, select **ABB Industrial IT 800xA/800xA for OCS/Systems/Harmony/Configuration/Configure Harmony Time Synch**
2. A warning dialog will be displayed that states the previously stored priority was invalid, click on the **OK** button
3. A configuration window will be displayed as shown in [Figure 59](#).
4. Using the Pick List, select a Network Interface
5. Adjust the Network Priority, if necessary
6. Click on the **OK** button

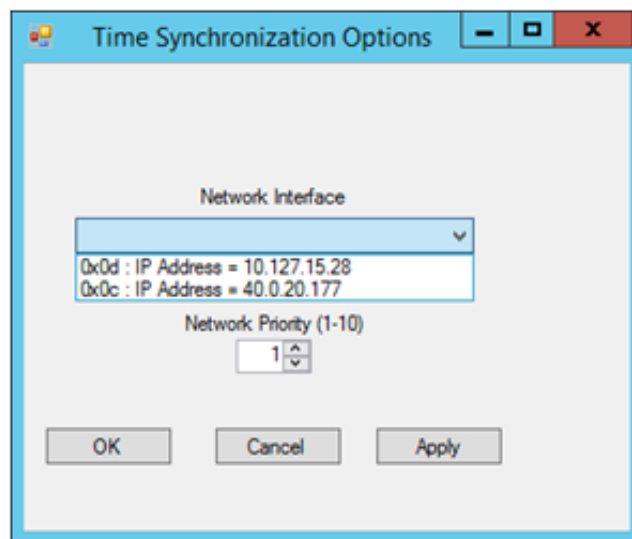
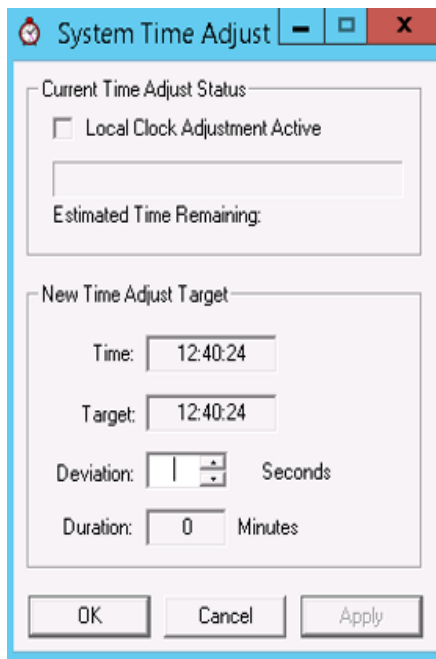


Figure 59. Time Synchronization

Time Adjustment

A Harmony system time adjust window can be launched from the Start menu (Figure 60) which will allow the user to adjust system time to a maximum of plus or minus five minutes. To access Time Synchronization, navigate to the **ABB Start Menu -> ABB Industrial IT 800xA -> 800xA for OCS Systems -> Harmony -> Engineering -> Set Harmony Time**.



TC02713B

Figure 60. Harmony System Time Adjust Window

Current Time Adjust Status

The Current Time Adjust Status section of the window contains an Local Clock Adjustment Active check box which is blank when no time adjust operation is in progress. When it is checked, the estimated time remaining for the clock adjustment is shown.

New Time Adjust Target

The New Time Adjust Target section provides information the user needs to issue a new time adjustment to the system.

The Time field provides the user with the current system time. The Target field provides the user with the target time of the new adjustment operation. These two fields will be updated every half second. The Deviation field will be used to enter a time adjustment, in seconds, into the system. Changing the deviation will result in the target and duration fields being updated to indicate the affect of the proposed change prior to committing it. This field will be limited to plus or minus 300 seconds. The Duration field will provide the approximate length of time, in minutes, needed to complete the new time adjustment operation. It will be based on the current deviation of the fixed time adjustment rate of two seconds of adjustment per minute. This field will be updated every time the user changes the deviation field.

Three buttons are provided at the bottom of the window. Use **Apply** to accept the deviation request in the new deviation field. The application will issue a request to the Master Timesync Daemon to adjust the time to the new settings. The application will then issue a notification to each Harmony Server to indicate the start of a time adjustment. **OK** will perform the functions defined for **Apply**, and will then close the window. These buttons will be dimmed and inactive if the current user does not have database configuration access.

The Estimated Time Remaining field is the time it will take for the local clock to adjust to the requested time change. Each time an adjustment is being done, the Adjust Local Clock Adjustment check box will be selected.



This time adjustment can be initiated from any Harmony Connectivity Server node on the network.

Authentication

To configure a system for reauthentication or double authentication:

1. Go to the Control Structure in the Workplace.
2. From the Harmony OPC Server Network, select a tag to configure.
3. Select the Control Connection aspect.
4. Select the Property Info tab as shown in [Figure 61](#).

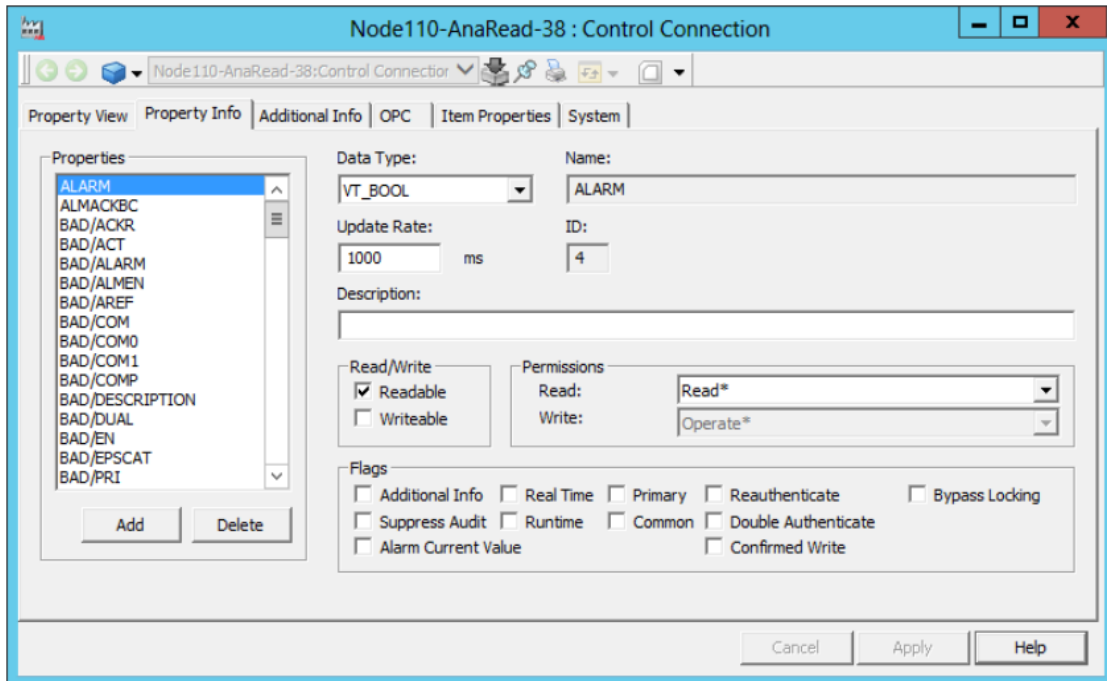


Figure 61. Authentication Configuration

The list of Properties displays the available atoms that can be flagged for reauthentication or double authentication. Only one atom at a time can be selected to configure.

5. Select the atom to configure.
6. Select the desired check box in the Flags portion of the window.

Refer to the *800xA for Symphony Plus Harmony Operation (3BUA000158*) instruction* for more information on how to operate this function.

Hot Keys

Hot Keys are accessed and then configured via the Harmony Operator Workplace as follows:

Workplace Structure > Web System Workplace > Harmony Operator
Workplace > Hot Keys

The Hot Keys Map file viewer aspect for this workplace lists the new Hot Keys of the expanded Harmony Hot Keys aspect, in addition to the existing keys.

Section 11 NLS Support

Introduction

800xA for Symphony Plus Harmony supports any locale. The software must be installed under the English locale and then be localized to execute under any other locale.



Dynamically switching between locales is not supported. Only one locale can be used at a time.

Add New Locale to Desktop

Execute the following to add new locale to desktop:

1. Select **Control Panel > Region and Language Options**.
2. From the Location tab, choose the new locale to be used in the drop-down list box.
3. Click **OK**.
4. The new locale will be available for selection through the task bar. Select the **new locale** and a check mark will appear next to the selected locale.

Add New Locale for Internet Explorer

Open an Internet Explorer window and execute the following:

1. Select **Tools > Internet Options**.
2. Click **Languages**.
3. Click **Set Language Preference**.
4. Select **Add a language**.
5. Select the new locale to be added.

6. Click **Options** and then follow the instructions to download and install the new language (if needed).
7. Click on the desired language, and then click **Move Up** until it is the first language in the list.
8. Close the Internet Explorer window for the new settings to take effect.

Backup of English Directory

Back up the English directory. Copy the following directory:

`<drive>:\Program Files (x86)\ABB Industrial IT\ABBWeb\English`

to:

`<drive>:\Program Files (x86)\ABB Industrial
IT\ABBWeb\English_Backup`

Localize Web Content

All resource strings used by web applications are isolated in XML files contained in the following directory:

`<drive>:\Program Files (x86)\ABB Industrial IT\ABBWeb\English`

Each of these XML files should be opened in an editor such as notepad ([Figure 62](#)) and the strings should be translated to the new locale.

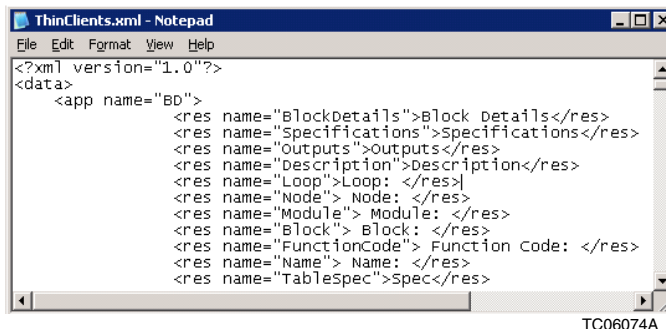


Figure 62. Notepad Editor for String Translation

Translate only the strings within the `<res> </res>` or `<resource> </resource>` tags. Do not modify any text between the `< >` brackets. Once all the strings are changed, open the XML file in Internet Explorer. The XML will be successfully loaded. If by accident some of the `<>` tags have been modified, the Internet Explorer will fail to load the file displaying an appropriate error message. IIS needs to be restarted before the changes take effect for some applications.

Localize Windows Applications

Windows applications use resource DLLs to isolate language specific strings. A third party tool such as VisualStudio or VisualLocalize must be used to translate the resources into different languages.

The following table (Table 19) is a list of windows applications and their corresponding resource DLLs that need to be translated. Make copies of the original versions of these files to a backup directory.

Table 19. Applications and DLLs

Application Path	Resource DLL	Related Feature
\ABB Industrial IT\OperateIT\Base\EbTimeSet.dll	EbTimeSetRes.dll	Time Synchronization Utility.
\ABB Industrial IT\OperateIT\Harmony Add-On\Harm.dll	HarmRes.dll	Harmony Connectivity Server Web Pages.
\ABB Industrial IT\OperateIT\Base\EvCon.dll	EvConRes.dll	Event Concentrator.
\ABB Industrial IT\OperateIT\Base\Server.dll ¹	ServerRes.dll	Harmony Connectivity Server.
\ABB Industrial IT\OperateIT\Base\SymRes.dll ¹	SymRes.dll	Harmony Connectivity Server Web Pages.

NOTE: 1. Can also be found in the \ABB Industrial IT\OperateIT\Harmony Add-On\ folder.

The following table (Table 20) lists resource files that are related to (unsupported) diagnostic applications that can be translated.

Table 20. Applications and DLLs Next

Application Path	Resource DLL	Related Feature
\\ABB Industrial IT\OperateIT\Harmony Add-On\EbModuleStatusRes.dll	EbModuleStatusRes.dll	Modules Status Application.

Localize Faceplates

Resource strings used in faceplates are isolated using the Harmony NLS Resource Manager.

To access this function, select:

Harmony NLS Resource Manager, select: **Object Type Structure > Object Types > Control System, Object Type Group > Harmony OPC Server Network, Object Type.**

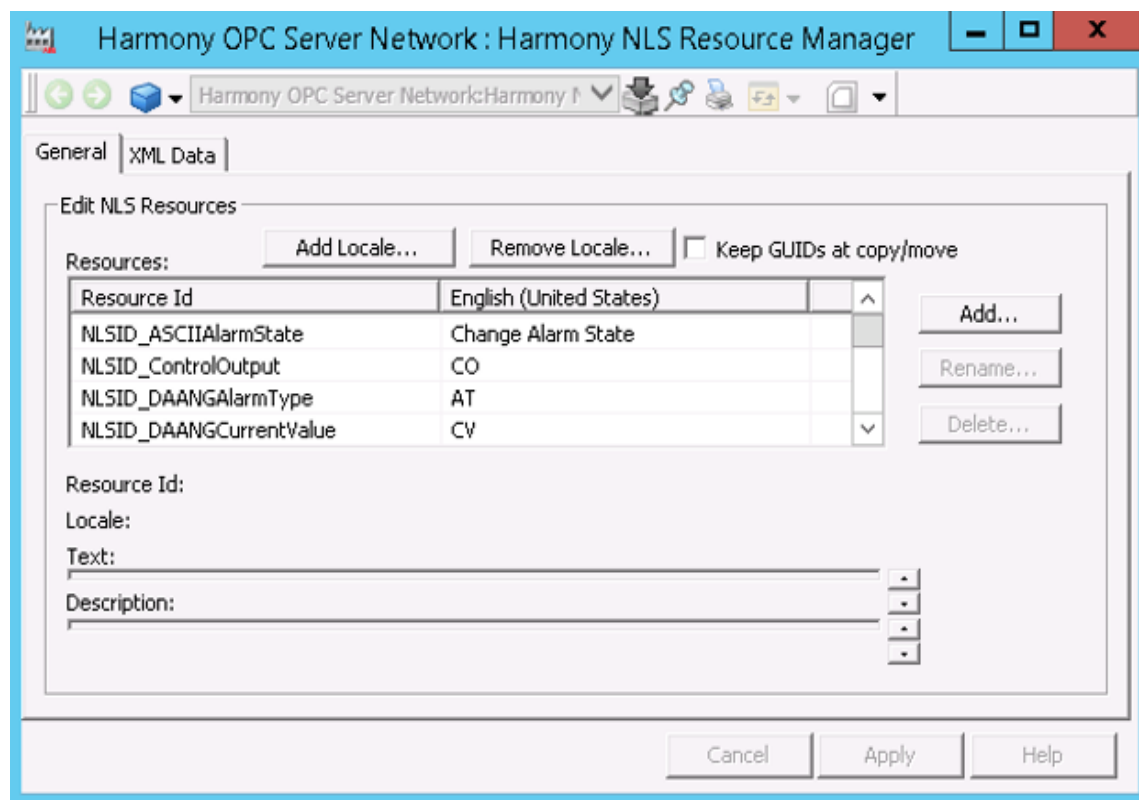


Figure 63. Harmony NLS Object Type Structure Dialog

General Tab

This tab allows for translation of individual resource strings. Use the **Add** button to add a new locale and localize the string in the Translated Text area.

XML Data Tab

This tab is used to export and import resource strings to and from an XML file.

Software Upgrades

When performing software upgrades, some of the files which were localized may be overridden. Back up all files in the following directory:

<Drive>\Program Files (x86)\ABB Industrial IT\ABBWeb\English

Section 12 Advanced Harmony Control System Monitoring

Overview

Advanced Harmony control system monitoring is an aspect on the Harmony ModStat Read Object type.

Execute the following steps to configure Advanced Harmony control system:

1. Add the Harmony Control Equipment Asset Monitor aspect to the Harmony ModStat Read Object type.
2. Open the Object Type Definition aspect on the Harmony ModStat Read Object type and select Copy to all instances in the Aspect Control tab for the newly added Asset Monitor aspect.



Refer to the *System 800xA Asset Optimization Configuration (3BUA000118*) instruction* for more detailed information on configuring asset monitors.

Module Status tag created in the system will have the Harmony Control Equipment Asset Monitor aspect. The aspects configuration is defaulted to the correct configuration for normal operation and is Enabled on the Default AO Server. This configuration does not need to be adjusted unless to disable the asset monitor, inhibit one or more of its conditions, or enable it on a different AO Server.



Refer to the *System 800xA Asset Optimization Configuration (3BUA000118*) instruction* for more detailed information on disabling a single instance of the Asset Monitor or enabling it for a different AO Server.

When new instances of the Harmony Mod Stat Read object with the Harmony Control Equipment Asset Monitor aspect are created, load the configuration for the Asset Monitors to make them operational.

Execute one of the two following procedures:

- Incrementally load the configuration for the Asset Monitor on each instance of the Module Status tag in the Control Structure.
 - Open the Harmony Control Equipment Asset Monitor aspects Config View.
 - On the Asset Monitor tab, click the **Load Configuration to AO Server** button.
 - Click **Continue** on the dialog box that appears. The Status indicator changes to `Loaded`, `current`.
- Load the configuration for multiple or all asset monitors immediately on the Asset Optimization Server aspect in the Control Structure. This aspect is found as follows:

Root > Asset Optimization > AO Server 1 Object

- Select Asset Optimization Server in the Aspect List Area.
- Select the Asset Monitors tab in the Preview Area. Ensure that the Asset Monitor aspects to be loaded are assigned to the target Asset Optimization Server and are enabled.
- Click **Load All AMs** to load the configured Asset Monitor aspects to the Asset Optimization Server.

The Harmony Control Equipment Asset Monitor has several conditions that are summaries of different functional areas of the Harmony modules. Each condition can be independently inhibited if required.

Execute the following to inhibit the conditions for an instance of the Asset Monitor that is on a Module Status tag in the Control Structure:

1. Open the Config View for the Harmony Control Equipment Asset Monitor on one of the Module Status tags.
2. Activate the Asset Parameters tab.
3. To disable the monitoring of the status byte information that is reflected by one of the conditions, uncheck the Inherit Configuration box and change the value of one or more of the Asset Parameters to **On**.
4. Click **Apply** to save changes.



Reload the asset monitor configuration to the AO Server for changes to take effect.

Section 13 Harmony Batch Support

Introduction

Batch processing with 800xA for Symphony Plus Harmony uses the PHASEX function block. Although PHASEX is similar to the traditional batch sequence (BSEQ) function block used to run process control sequences, PHASEX incorporates some important features needed to achieve flexible batch process control. PHASEX differs from the BSEQ function block in its phase by phase interface with the batch management system and other enhancements.

Refer to the *System 800xA Batch Management Configuration (3BUA000146*) instruction* for the procedures to configure 800xA for Symphony Plus Harmony for use with Batch Management.

Appendix A Signal Structure

Introduction

This appendix contains tables that list the properties for the Harmony tag objects and the Harmony Server object.

Harmony Property Types

The following Harmony property types are:

- Bool - Boolean.
- St - String.
- Int - Integer value.
- Unit - Unassigned integer value.
- Date - Date format.
- Real - Real value.

Common Properties

The common Harmony properties appear in all Harmony tag types. [Table 21](#) lists the common properties and includes the data type and a description for each.

Table 21. Common Harmony Properties

Name	Type	Description
ALARM	Bool	Overall alarm status.
BAD/ACKR	Bool	Acknowledge required.
BAD/ACT	Bool	Active.

Table 21. Common Harmony Properties (Continued)

Name	Type	Description
BAD/ALARM	Bool	Alarm state.
BAD/ALMEN	Bool	Alarm event.
BAD/AREF	Bool	Associated value.
BAD/COM	St	Current event comment.
BAD/COM0	St	Normal status comment.
BAD/COM1	St	Active state comment.
BAD/COMP	Bool	Complement input signal.
BAD/DESCRIPTION	St	Signal description.
BAD/DUAL	Bool	Dual acting event.
BAD/EN	Bool	Enable.
BAD/EPSCAT	Int	Sub category of event point (high limit).
BAD/PRI	Int	Current event priority.
BAD/PRI0	St	Normal priority.
BAD/PRI1	St	Active priority.
BAD/SIG	Bool	Boolean value.
BAD/SIG0	St	Inactive state description.
BAD/SIG1	St	Active state description.
BAD/SUP	Bool	Event suppressed by signal.
BAD/UNACK	Bool	Unacknowledged alarm.
BAD/UNACKEP	Bool	Unacknowledged event point (status or alarm).
BLOCK ¹	Int	Harmony block number.
CURRENTEP/UNACK	Bool	Unacknowledged state of the event point currently determining it.

Table 21. Common Harmony Properties (Continued)

Name	Type	Description
DESCRIPTION	St	Description of tag.
DISEST ¹	Bool	Tag is disestablished.
INHB	Bool	Overall inhibit state.
INHBAUTO	Bool	Events are inhibited by an other tag.
INHBMAN	Bool	Manual inhibit status.
INHBTAG	St	Inhibiting tag.property reference.
INHBVAL	Int	Inhibit value.
LAST_PUT_TIME	St	Time of last put.
LOOP	Int	Harmony loop number.
MODULE ¹	Int	Harmony module number.
NAME	St	Object name.
NODE	Int	Harmony node number.
OBJECTID	St	Unique object ID.
PRI	Int	Overall tag alarm priority.
PTINDEX ¹	Int	ICI index where tag is established.
QUALITY	Int	Composite quality.
QUALITY:S	St	Text version of quality.
SERVER	St	Name of Server that the tag is assigned to.
SERVERID	St	UUID of Server that the tag is assigned to.
SPECSRCVD ¹	Bool	Blockware specifications received.
SPECTIMESTAMP ^{1,2}	St	Time of last spec exception from blockware.
SUBSTITUTED ¹	Bool	Tag values have been substituted.
SUSPENDED ¹	Bool	Scanning enabled.

Table 21. Common Harmony Properties (Continued)

Name	Type	Description
TEMPLATEID	St	Object ID of the template used to create this tag.
TYPE	St	Object type name.
TYPEID	St	Object type ID.
UNACK	Bool	Unacknowledged alarm.
USERDATA	Unit	Writable user data field.
USERTEXT	St	User specific text (optional).
XR_COUNT ¹	Int	Number of Real Time Data events.

NOTES:

- 1. Not in the HarmServer tag.
- 2. Not in the HarmAngExport and HarmDigExport

Common Analog Properties

Table 22 through Table 27 list all the properties specific to each of the Analog tag types. Table 22 lists the Common Analog properties. These are also the properties for the Analog tag. The Analog tag has all the properties in Table 22 and Table 22. The RMSC tag is an exception to the Analog tags. The properties listed in Table 27 are the only Analog properties that are available for the tag (the RMSC tag structure is the common Harmony properties and the RMSC properties).

Table 22. Common Analog Properties (HarmAnalog)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
CALIBSTS	Bool	Calibration status.
HIGH/ACKR	Bool	Acknowledge required.
HIGH/ACT	Bool	Active.
HIGH/ALARM	Bool	Alarm state.

Table 22. Common Analog Properties (HarmAnalog) (Continued)

Name	Type	Description
HIGH/ALMEN	Bool	Alarm event.
HIGH/AREF	Real	Associated value.
HIGH/COM	St	Current event comment.
HIGH/COM0	St	Normal status comment.
HIGH/COM1	St	Active state comment.
HIGH/COMP	Bool	Complement input signal.
HIGH/DESCRIPTION	St	Signal description.
HIGH/DUAL	Bool	Dual acting event.
HIGH/EN	Bool	Enable.
HIGH/EPSCAT	Int	Sub category of event point (high limit).
HIGH/PRI	Int	Current event priority.
HIGH/PRI0	St	Normal priority.
HIGH/PRI1	St	Active priority.
HIGH/SIG	Bool	Boolean value.
HIGH/SIG0	St	Inactive state description.
HIGH/SIG1	St	Active state description.
HIGH/SUP	Bool	Event suppressed by signal.
HIGH/UNACK	Bool	Unacknowledged alarm.
HIGH/UNACKEP	Bool	Unacknowledged event point (status or alarm).
HIGHLIM	Real	High alarm limit.
LEVELALM	Bool	Level alarm summary.
LOW/ACKR	Bool	Acknowledge required.
LOW/ACT	Bool	Active.

Table 22. Common Analog Properties (HarmAnalog) (Continued)

Name	Type	Description
LOW/ALARM	Bool	Alarm state.
LOW/ALMEN	Bool	Alarm event.
LOW/AREF	Real	Associated value.
LOW/COM	St	Current event comment.
LOW/COM0	St	Normal status comment.
LOW/COM1	St	Active state comment.
LOW/COMP	Bool	Complement input signal.
LOW/DESCRIPTION	St	Signal description.
LOW/DUAL	Bool	Dual acting event.
LOW/EN	Bool	Enable.
LOW/EPSCAT	Int	Sub category of event point (high limit).
LOW/PRI	Int	Current event priority.
LOW/PRI0	St	Normal priority.
LOW/PRI1	St	Active priority.
LOW/SIG	Bool	Boolean value.
LOW/SIG0	St	Inactive state description.
LOW/SIG1	St	Active state description.
LOW/SUP	Bool	Event suppressed by signal.
LOW/UNACK	Bool	Unacknowledged alarm.
LOW/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LOWLIM	Real	Low alarm limit.
PV/DESCRIPTION	St	Signal description.
PV/FOR	Int	Formatting information.

Table 22. Common Analog Properties (HarmAnalog) (Continued)

Name	Type	Description
PV/HIGH	Real	High range of signal.
PV/LOW	Real	Low range of signal.
PV/PERCENT	Real	Signal (SIG) as a percentage of span.
PV/SIG	Real	Analog value.
PV/SIG:QS	St	Quality string.
PV/SPAN	Real	Difference between low and high ranges.
PV/UNITS	St	Engineering units.

Data Acquisition Analog Properties

The DAANG tag contains all properties listed in [Table 22](#) and [Table 23](#).

Table 23. DAANG Properties (HarmDAANG)

Name	Type	Description
ALMSUP	Bool	Alarm suppressed by block.
ALMTYPE	Int	Alarming type (standard, fixed, or variable).
ALTINSEL	Bool	Alternate input value being used.
AUTO	Bool	Automatic mode.
CNTRREF	Real	Display reference for bidirection dynamic bar.
COMMQUAL	Bool	Communications are bad.
CONSTR	Bool	Tags value is being constrained.
CONSTRPER	Bool	Input constrain enabled.
DEVALM	Bool	Deviation alarm summary.
FORCEXR	Bool	Force the block to issue an exception report.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
HARDFFAULT	Bool	Hardware failure detected by blockware.
HI2/ACKR	Bool	Acknowledge required.
HI2/ACT	Bool	Active.
HI2/ALARM	Bool	Alarm state.
HI2/ALMEN	Bool	Alarm event.
HI2/AREF	Real	Associated value.
HI2/COM	St	Current event comment.
HI2/COM0	St	Normal status comment.
HI2/COM1	St	Active state comment.
HI2/COMP	Bool	Complement input signal.
HI2/DESCRIPTION	St	Signal description.
HI2/DUAL	Bool	Dual acting event.
HI2/EN	Bool	Enable.
HI2/EPSCAT	Int	Sub category of event point (high limit).
HI2/PRI	Int	Current event priority.
HI2/PRI0	St	Normal priority.
HI2/PRI1	St	Active priority.
HI2/SIG	Bool	Boolean value.
HI2/SIG0	St	Inactive state description.
HI2/SIG1	St	Active state description.
HI2/SUP	Bool	Event suppressed by signal.
HI2/UNACK	Bool	Unacknowledged alarm.
HI2/UNACKEP	Bool	Unacknowledged event point (status or alarm).

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
HI3/ACKR	Bool	Acknowledge required.
HI3/ACT	Bool	Active.
HI3/ALARM	Bool	Alarm state.
HI3/ALMEN	Bool	Alarm event.
HI3/AREF	Real	Associated value.
HI3/COM	St	Current event comment.
HI3/COM0	St	Normal status comment.
HI3/COM1	St	Active state comment.
HI3/COMP	Bool	Complement input signal.
HI3/DESCRIPTION	St	Signal description.
HI3/DUAL	Bool	Dual acting event.
HI3/EN	Bool	Enable.
HI3/EPSCAT	Int	Sub category of event point (high limit).
HI3/PRI	Int	Current event priority.
HI3/PRI0	St	Normal priority.
HI3/PRI1	St	Active priority.
HI3/SIG	Bool	Boolean value.
HI3/SIG0	St	Inactive state description.
HI3/SIG1	St	Active state description.
HI3/SUP	Bool	Event suppressed by signal.
HI3/UNACK	Bool	Unacknowledged alarm.
HI3/UNACKEP	Bool	Unacknowledged event point (status or alarm).
HICONSTRLMT	Real	High constraint limit.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
HIGHDEV/ACKR	Bool	Acknowledge required.
HIGHDEV/ACT	Bool	Active.
HIGHDEV/ALARM	Bool	Alarm state.
HIGHDEV/ALMEN	Bool	Alarm event.
HIGHDEV/AREF	Real	Associated value.
HIGHDEV/COM	St	Current event comment.
HIGHDEV/COM0	St	Normal status comment.
HIGHDEV/COM1	St	Active state comment.
HIGHDEV/COMP	Bool	Complement input signal.
HIGHDEV/DESCRIPTION	St	Signal description.
HIGHDEV/DUAL	Bool	Dual acting event.
HIGHDEV/EN	Bool	Enable.
HIGHDEV/EPSCAT	Int	Sub category of event point (high limit).
HIGHDEV/PRI	Int	Current event priority.
HIGHDEV/PRI0	St	Normal priority.
HIGHDEV/PRI1	St	Active priority.
HIGHDEV/SIG	Bool	Boolean value.
HIGHDEV/SIG0	St	Inactive state description.
HIGHDEV/SIG1	St	Active state description
HIGHDEV/SUP	Bool	Event suppressed by signal.
HIGHDEV/UNACK	Bool	Unacknowledged alarm.
HIGHDEV/UNACKEP	Bool	Unacknowledged event point (status or alarm).
HIGHRATE/ACKR	Bool	Acknowledge required.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
HIGHRATE/ACT	Bool	Active.
HIGHRATE/ALARM	Bool	Alarm state.
HIGHRATE/ALMEN	Bool	Alarm event.
HIGHRATE/AREF	Real	Associated value.
HIGHRATE/COM	St	Current event comment.
HIGHRATE/COM0	St	Normal status comment.
HIGHRATE/COM1	St	Active state comment.
HIGHRATE/COMP	Bool	Complement input signal.
HIGHRATE/DESCRIPTION	St	Signal description.
HIGHRATE/DUAL	Bool	Dual acting event.
HIGHRATE/EN	Bool	Enable.
HIGHRATE/EPSCAT	Int	Sub category of event point (high limit).
HIGHRATE/PACK	Bool	Event page wide acknowledge enable.
HIGHRATE/PRI	Int	Current event priority.
HIGHRATE/PRI0	Int	Normal priority.
HIGHRATE/PRI1	Int	Active priority.
HIGHRATE/SIG	Bool	Boolean value.
HIGHRATE/SIG0	St	Inactive state description.
HIGHRATE/SIG1	St	Active state description.
HIGHRATE/SUP	Bool	Event suppressed by signal.
HIGHRATE/UNACK	Bool	Unacknowledged alarm.
HIGHRATE/UNACKEP	Bool	Unacknowledged event point (status or alarm).
HIREF	Real	High reference limit.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
LO2/ACKR	Bool	Acknowledge required.
LO2/ACT	Bool	Active.
LO2/ALARM	Bool	Alarm state.
LO2/ALMEN	Bool	Alarm event.
LO2/AREF	Real	Associated value.
LO2/COM	St	Current event comment.
LO2/COM0	St	Normal status comment.
LO2/COM1	St	Active state comment.
LO2/COMP	Bool	Complement input signal.
LO2/DESCRIPTION	St	Signal description.
LO2/DUAL	Bool	Dual acting event.
LO2/EN	Bool	Enable.
LO2/EPSCAT	Int	Sub category of event point (high limit).
LO2/PRI	Int	Current event priority.
LO2/PRI0	St	Normal priority.
LO2/PRI1	St	Active priority.
LO2/SIG	Bool	Boolean value.
LO2/SIG0	St	Inactive state description.
LO2/SIG1	St	Active state description.
LO2/SUP	Bool	Event suppressed by signal.
LO2/UNACK	Bool	Unacknowledged alarm.
LO2/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LO3/ACKR	Bool	Acknowledge required.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
LO3/ACT	Bool	Active.
LO3/ALARM	Bool	Alarm state.
LO3/ALMEN	Bool	Alarm event.
LO3/AREF	Real	Associated value.
LO3/COM	St	Current event comment.
LO3/COM0	St	Normal status comment.
LO3/COM1	St	Active state comment.
LO3/COMP	Bool	Complement input signal.
LO3/DESCRIPTION	St	Signal description.
LO3/DUAL	Bool	Dual acting event.
LO3/EN	Bool	Enable.
LO3/EPSCAT	Int	Sub category of event point (high limit).
LO3/PRI	Int	Current event priority.
LO3/PRI0	St	Normal priority.
LO3/PRI1	St	Active priority.
LO3/SIG	Bool	Boolean value.
LO3/SIG0	St	Inactive state description.
LO3/SIG1	St	Active state description.
LO3/SUP	Bool	Event suppressed by signal.
LO3/UNACK	Bool	Unacknowledged alarm.
LO3/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LOCONSTRLMT	Real	Low constraint limit.
LOREF	Real	Low reference limit.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
LOWDEV/ACKR	Bool	Acknowledge required.
LOWDEV/ACT	Bool	Active.
LOWDEV/ALARM	Bool	Alarm state.
LOWDEV/ALMEN	Bool	Alarm event.
LOWDEV/AREF	Real	Associated value.
LOWDEV/COM	St	Current event comment.
LOWDEV/COM0	St	Normal status comment.
LOWDEV/COM1	St	Active state comment.
LOWDEV/COMP	Bool	Complement input signal.
LOWDEV/DESCRIPTION	St	Signal description.
LOWDEV/DUAL	Bool	Dual acting event.
LOWDEV/EN	Bool	Enable.
LOWDEV/EPSCAT	Int	Sub category of event point (high limit).
LOWDEV/PRI	Int	Current event priority.
LOWDEV/PRI0	St	Normal priority.
LOWDEV/PRI1	St	Active priority.
LOWDEV/SIG	Bool	Boolean value.
LOWDEV/SIG0	St	Inactive state description.
LOWDEV/SIG1	St	Active state description.
LOWDEV/SUP	Bool	Event suppressed by signal.
LOWDEV/UNACK	Bool	Unacknowledged alarm.
LOWDEV/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LOWRATE/ACKR	Bool	Acknowledge required.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
LOWRATE/ACT	Bool	Active.
LOWRATE/ALARM	Bool	Alarm state.
LOWRATE/ALMEN	Bool	Alarm event.
LOWRATE/AREF	Real	Associated value.
LOWRATE/COM	St	Current event comment.
LOWRATE/COM0	St	Normal status comment.
LOWRATE/COM1	St	Active state comment.
LOWRATE/COMP	Bool	Complement input signal.
LOWRATE/DESCRIPTION	St	Signal description.
LOWRATE/DUAL	Bool	Dual acting event.
LOWRATE/EN	Bool	Enable.
LOWRATE/EPSCAT	Int	Sub category of event point (high limit).
LOWRATE/PRI	Int	Current event priority.
LOWRATE/PRI0	St	Normal priority.
LOWRATE/PRI1	St	Active priority.
LOWRATE/SIG	Bool	Boolean value.
LOWRATE/SIG0	St	Inactive state description.
LOWRATE/SIG1	St	Active state description.
LOWRATE/SUP	Bool	Event suppressed by signal.
LOWRATE/UNACK	Bool	Unacknowledged alarm.
LOWRATE/UNACKEP	Bool	Unacknowledged event point (status or alarm).
MULTLVL	Bool	Multilevel alarming enabled.
NOREPORT	Bool	Scanning disabled by blockware.

Table 23. DAANG Properties (HarmDAANG) (Continued)

Name	Type	Description
NXTHILMT	Real	Next higher alarm limit.
NXTLOLMT	Real	Next lower alarm limit.
OUTRANGE	Bool	Value is out of range.
PERINSEL	Bool	User is permitted to select input value.
QUALOVR	Bool	Quality is overridden by blockware.
RATEALM	Bool	Rate alarm summary.
REALM	Bool	Periodic realarming enabled.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
SRC	Int	Composite mode (AUTO and ALTINSEL).
USERVAL	Real	Manually entered value.
VARALM	Bool	Variable alarming enabled.

Enhanced Analog Input/Output Properties

The Enhanced Analog in tag contains all the properties listed in [Table 22](#) and [Table 24](#). The Enhanced Analog out tag contains all the properties listed in [Table 22](#), and [Table 25](#).

Table 24. Enhanced Analog In Properties (HarmEnhAnaIn)

Name	Type	Description
AUTO	Bool	Override enable.
CONFERR	Int	Configuration error.

Table 24. Enhanced Analog In Properties (HarmEnhAnaIn) (Continued)

Name	Type	Description
CURRLEN	Int	Current message length.
EUCHG	Real	Engineering units significant change.
EXTRANGE	Int	External range.
INPTYPE	Int	Input type.
LABEL	St	Channel label.
ORIGLEN	Int	Original message length.
OVRENB	Bool	Override enabled.
OVRVAL	Real	Override value.
PROPQUAL	Int	Propagated quality.
RANGE	Int	Range: 00=OK, 01=open, 10=short, 11=overdrive.
RDBKSTS	Int	Read back status.
REFSTS	Int	Reference status.
SEIMODE	Int	Status error inhibit mode.
SIM	Bool	Simulation enable.
SIMBLK	Int	Simulation value block number.
SUSPERR	Int	Suspect error.
TRUNC	Bool	True if message was truncated remotely.

Table 25. Enhanced Analog Out Properties (HarmEnhAnaOut)

Name	Type	Description
AUTO	Bool	Override enable.
CONFERR	Int	Configuration error.
CURRLEN	Int	Current message length.

Table 25. Enhanced Analog Out Properties (HarmEnhAnaOut) (Continued)

Name	Type	Description
EUCHG	Real	Engineering units significant change.
EXTRANGE	Int	External range.
LABEL	St	Channel label.
ORIGLEN	Int	Original message length.
OVRENBL	Bool	Override enabled.
OVRVAL	Real	Override value.
PROPQUAL	Int	Propagated quality.
RANGE	Int	Range: 00=OK, 01=open, 10=short, 11=overdrive.
RDBKSTS	Int	Read back status.
REFSTS	Int	Reference status.
SEIMODE	Int	Status error inhibit mode.
SIM	Bool	Simulation enable.
SIMBLK	Int	Simulation value block number.
SUSPERR	Int	Suspect error.
TRUNC	Bool	True if message was truncated remotely.

Station Properties

The Station tag contains all the properties listed in [Table 22](#) and [Table 26](#).

Table 26. Station Properties (HarmStation)

Name	Type	Description
AUTO	Bool	Station mode.
BYPASS	Bool	Control output is bypassed.

Table 26. Station Properties (HarmStation) (Continued)

Name	Type	Description
CMPTRSTS	Bool	Computer signal is OK.
CO/DESCRIPTION	St	Signal description.
CO/FOR	Int	Formatting information.
CO/HIGH	Real	High range of signal.
CO/LOW	Real	Low range of signal.
CO/PERCENT	Real	Signal (SIG) as a percentage of span.
CO/SIG	Real	Analog value.
CO/SIG:QS	St	Quality string.
CO/SPAN	Real	Difference between low and high ranges.
CO/UNITS	St	Engineering units.
DEVALM	Bool	Deviation alarm summary.
DEVLIM/DESCRIPTION	St	Signal description.
DEVLIM/FOR	Int	Formatting information.
DEVLIM/HIGH	Real	High range of signal.
DEVLIM/LOW	Real	Low range of signal.
DEVLIM/PERCENT	Real	Signal (SIG) as a percentage of span.
DEVLIM/SIG	Real	Analog value.
DEVLIM/SPAN	Real	Difference between low and high ranges.
DEVLIM/UNITS	St	Engineering units.
HIGHDEV/ACKR	Bool	Acknowledge required.
HIGHDEV/ACT	Bool	Active.
HIGHDEV/ALARM	Bool	Alarm state.
HIGHDEV/ALMEN	Bool	Alarm event.

Table 26. Station Properties (HarmStation) (Continued)

Name	Type	Description
HIGHDEV/AREF	Real	Associated value.
HIGHDEV/COM	St	Current event comment.
HIGHDEV/COM0	St	Normal status comment.
HIGHDEV/COM1	St	Active state comment.
HIGHDEV/COMP	Bool	Complement input signal.
HIGHDEV/DESCRIPTION	St	Signal description.
HIGHDEV/DUAL	Bool	Dual acting event.
HIGHDEV/EN	Bool	Enable.
HIGHDEV/EPSCAT	Int	Sub category of event point (high limit).
HIGHDEV/PRI	Int	Current event priority
HIGHDEV/PRI0	St	Normal priority.
HIGHDEV/PRI1	St	Active priority.
HIGHDEV/SIG	Bool	Boolean value.
HIGHDEV/SIG0	St	Inactive state description
HIGHDEV/SIG1	St	Active state description.
HIGHDEV/SUP	Bool	Event suppressed by signal.
HIGHDEV/UNACK	Bool	Unacknowledged alarm.
HIGHDEV/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LOWDEV/ACKR	Bool	Acknowledge required.
LOWDEV/ACT	Bool	Active.
LOWDEV/ALARM	Bool	Alarm state.
LOWDEV/ALMEN	Bool	Alarm event.
LOWDEV/AREF	Real	Associated value.

Table 26. Station Properties (HarmStation) (Continued)

Name	Type	Description
LOWDEV/COM	St	Current event comment.
LOWDEV/COM0	St	Normal status comment.
LOWDEV/COM1	St	Active state comment.
LOWDEV/COMP	Bool	Complement input signal.
LOWDEV/DESCRIPTION	St	Signal description.
LOWDEV/DUAL	Bool	Dual acting event.
LOWDEV/EN	Bool	Enable.
LOWDEV/EPSCAT	Int	Sub category of event point (high limit).
LOWDEV/PRI	Int	Current event priority.
LOWDEV/PRI0	St	Normal priority.
LOWDEV/PRI1	St	Active priority.
LOWDEV/SIG	Bool	Boolean value.
LOWDEV/SIG0	St	Inactive state description.
LOWDEV/SIG1	St	Active state description.
LOWDEV/SUP	Bool	Event suppressed by signal.
LOWDEV/UNACK	Bool	Unacknowledged alarm.
LOWDEV/UNACKEP	Bool	Unacknowledged event point (status or alarm).
MODELOCK	Bool	Module has mode locked.
OUTSTS	Bool	Hand held Station has failed.
OUTTRACKING	Bool	Output is tracking an input value.
RATIO	Real	Ratio index.
RATIO:QS	St	Quality string.
REDTAG/ACT	Bool	Red tagging is active.

Table 26. Station Properties (HarmStation) (Continued)

Name	Type	Description
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
SP/DESCRIPTION	St	Signal description.
SP/FOR	Int	Formatting information.
SP/HIGH	Real	High range of signal.
SP/LOW	Real	Low range of signal.
SP/PERCENT	Real	Signal (SIG) as a percentage of span.
SP/SIG	Real	Analog value.
SP/SIG:QS	St	Quality string.
SP/SPAN	Real	Difference between low and high ranges.
SP/UNITS	St	Engineering units.
SPTRACKING	Bool	SP tracking enabled.
STNLVL	Bool	Station is under computer control.
STNMODE	Bool	Cascade or ratio mode selected.
STNTYPE	UInt	Station type.
STNTYPE:S	St	Text version of quality.
TUNEBLK	Int	Block number of feedback's tuning block.

Remote Manual Set Constant Properties

The RMSC tag contains all the properties listed in [Table 22](#) and [Table 27](#).

Table 27. RMSC Properties (HarmRMSC)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
OPHILM	Real	High limit value.
OPLOLM	Real	Low limit value.
PV/DESCRIPTION	St	Signal description.
PV/FOR	Int	Formatting information.
PV/HIGH	Real	High range of signal.
PV/LOW	Real	Low range of signal.
PV/PERCENT	Real	Signal (SIG) as a percentage of span.
PV/SIG	Real	Analog value.
PV/SIG:QS	St	Quality string.
PV/SPAN	Real	Difference between low and high ranges.
PV/UNITS	St	Engineering units.
TRACKING	Bool	Value is tracking an input value.

Common Digital Properties

[Table 28](#) through [Table 35](#) list all the specific properties to each of the Digital tag types. [Table 28](#) lists the Common Digital properties. These are also the properties

for the Digital tag. The Digital tag has all the properties in [Table 22](#) and [Table 28](#).

Table 28. Common Digital Properties (HarmDigital)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
OUT/ACKR	Bool	Acknowledge required.
OUT/ACT	Bool	Active.
OUT/ALARM	Bool	Alarm state.
OUT/ALMEN	Bool	Alarm event.
OUT/AREF	Bool	Associated value.
OUT/COM	St	Current event comment.
OUT/COM0	St	Normal status comment.
OUT/COM1	St	Active state comment.
OUT/COMP	Bool	Complement input signal.
OUT/DESCRIPTION	St	Signal description.
OUT/DUAL	Bool	Dual acting event.
OUT/EN	Bool	Enable.
OUT/EPSCAT	Int	Sub category of event point (high limit).
OUT/PRI	Int	Current event priority.
OUT/PRI0	St	Normal priority.
OUT/PRI1	St	Active priority.
OUT/SIG	Bool	Boolean value.
OUT/SIG0	St	Inactive state description.
OUT/SIG1	St	Active state description.
OUT/SUP	Bool	Event suppressed by signal.
OUT/UNACK	Bool	Unacknowledged alarm.

Table 28. Common Digital Properties (HarmDigital) (Continued)

Name	Type	Description
OUT/UNACKEP	Bool	Unacknowledged event point (status or alarm).
STATECHANGE/ACKR	Bool	Acknowledge required.
STATECHANGE/ACT	Bool	Active.
STATECHANGE/ALARM	Bool	Alarm state.
STATECHANGE/ALMEN	Bool	Alarm event.
STATECHANGE/AREF	Bool	Associated value.
STATECHANGE/COM	St	Current event comment.
STATECHANGE/COM0	St	Normal status comment.
STATECHANGE/COM1	St	Active state comment.
STATECHANGE/COMP	Bool	Complement input signal.
STATECHANGE/DESCRIPTION	St	Signal description.
STATECHANGE/DUAL	Bool	Dual acting event.
STATECHANGE/EN	Bool	Enable.
STATECHANGE/EPSCAT	Int	Sub category of event point (high limit).
STATECHANGE/PRI	Int	Current event priority.
STATECHANGE/PRI0	St	Normal priority.
STATECHANGE/PRI1	St	Active priority.
STATECHANGE/SIG	Bool	Boolean value.
STATECHANGE/SIG0	St	Inactive state description
STATECHANGE/SIG1	St	Active state description.
STATECHANGE/SUP	Bool	Event suppressed by signal
STATECHANGE/UNACK	Bool	Unacknowledged alarm.
STATECHANGE/UNACKEP	Bool	Unacknowledged event point (status or alarm).

Data Acquisition Digital Properties

The DADIG tag contains all properties listed in [Table 22](#), [Table 28](#), and [Table 29](#).

Table 29. DADIG Properties (HarmDADIG)

Name	Type	Description
ALMSUP	Bool	Alarms suppressed by blockware.
ALTINSEL	Bool	Alternate input value being used.
AUTO	Bool	Automatic mode.
FORCEXR	Bool	Force the block to issue an exception report.
LATCHED	Bool	Output state is latched.
NOREPORT	Bool	Scanning disabled by blockware.
OUTRANGE	Bool	Value is out of range.
PERINSEL	Bool	User is permitted to select input value.
QUALOVR	Bool	Quality is overridden by blockware.
REALM	Bool	Periodic realarming enabled.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
SRC	Int	Composite mode (AUTO and ALTINSEL).
SRC:S	St	Composite mode string.
USERTYPE	Int	User type code.

Device Driver Properties

The Device Driver tag contains all the properties listed in [Table 22](#), [Table 28](#), and [Table 30](#).

Table 30. Device Driver Properties (HarmDD)

Name	Type	Description
AUTO	Bool	Automatic mode.
FB1/COMP	Bool	Complement input signal.
FB1/DESCRIPTION	St	Signal description.
FB1/SIG	Bool	Boolean value.
FB1/SIG0	St	Inactive state description.
FB1/SIG1	St	Active state description.
FB2/COMP	Bool	Complement input signal.
FB2/DESCRIPTION	St	Signal description.
FB2/SIG	Bool	Boolean value.
FB2/SIG0	St	Inactive state description.
FB2/SIG1	St	Active state description.
FBSTS	Bool	Current feedback status.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
REMOTE	Bool	Remote mode.
STATUS_OVR	Bool	Status overridden.
USERTYPE	Int	User type code (0 to 255).

Enhanced Digital Input/Output Properties

The Enhanced Digital in tag contains all the properties listed in [Table 22](#), [Table 28](#), and [Table 31](#). The Enhanced Digital out tag contains all the properties listed in [Table 22](#), [Table 28](#), and [Table 32](#).

Table 31. Enhanced Digital In Properties (HarmEnhDigitalIn)

Name	Type	Description
AUTO	Bool	Override enable.
CONFERR	Int	Configuration error.
CURRLN	Int	Current message length.
LABEL	St	Channel label.
ORIGLEN	Int	Original message length.
OVRENBL	Bool	Override enable.
OVRVAL	Int	Override value.
PROPQUAL	Int	Propagated quality.
RANGE	Int	Range: 00=OK, 01=open, 10=short, 11=overdrive.
RDBKSTS	Int	Read back status.
SEIMODE	Int	Status error inhibit mode.
SIM	Bool	Simulation enable.
SIMBLK	Int	Simulation value block number.
SUSPERR	Int	Suspect error.
TRUNC	Bool	True if message was truncated remotely.

Table 32. Enhanced Digital Out Properties (HarmEnhDigitalOut)

Name	Type	Description
AUTO	Bool	Override enable.
CONFERR	Int	Configuration error.
CURRLLEN	Int	Current message length.
LABEL	St	Channel label.
ORIGLEN	Int	Original message length.
OVRENBL	Bool	Override enable.
OVRVAL	Int	Override value.
PROPQUAL	Int	Propagated quality
RANGE	Int	Range: 00=OK, 01=open, 10=short, 11=overdrive.
RDBKSTS	Int	Read back status.
SEIMODE	Int	Status error inhibit mode.
SIM	Bool	Simulation enable.
SIMBLK	Int	Simulation value block number.
SUSPERR	Int	Suspect error.
TRUNC	Bool	True if message was truncated remotely.

Multi State Device Driver Properties

The MSDD tag contains all the properties listed in [Table 22](#), [Table 28](#), and [Table 33](#).

Table 33. MSDD Properties (HarmMSDD)

Name	Type	Description
AUTO	Bool	Automatic mode.
CNTRL_OVR	Bool	Control is overridden.

Table 33. MSDD Properties (HarmMSDD) (Continued)

Name	Type	Description
FB1/COMP	Bool	Complement input signal.
FB1/DESCRIPTION	St	Signal description.
FB1/SIG	Bool	Boolean value.
FB1/SIG0	St	Inactive state description.
FB1/SIG1	St	Active state description.
FB2/COMP	Bool	Complement input signal.
FB2/DESCRIPTION	St	Signal description.
FB2/SIG	Bool	Boolean value.
FB2/SIG0	St	Inactive state description.
FB2/SIG1	St	Active state description.
FB3/COMP	Bool	Complement input signal.
FB3/DESCRIPTION	St	Signal description.
FB3/SIG	Bool	Boolean value.
FB3/SIG0	St	Inactive state description.
FB3/SIG1	St	Active state description.
FB4/COMP	Bool	Complement input signal.
FB4/DESCRIPTION	St	Signal description.
FB4/SIG	Bool	Boolean value.
FB4/SIG0	St	Inactive state description
FB4/SIG1	St	Active state description.
LASTGOOD	Int	Last good state.
LASTGOOD:S	St	Text version of last good state.
LS0	St	State 0 logic state description.

Table 33. MSDD Properties (HarmMSDD) (Continued)

Name	Type	Description
LS1	St	State 1 logic state description.
LS2	St	State 2 logic state description.
LS3	St	State 3 logic state description.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
SP	Int	Requested state.
STATUS_OVR	Bool	Status overridden.
USERTYPE	Int	User type code (0 to 255).

Remote Control Memory Properties

The RCM tag contains all the properties listed in [Table 22](#), [Table 28](#), and [Table 34](#).

Table 34. RCM Properties (HarmRCM)

Name	Type	Description
FB1/COMP	Bool	Complement input signal.
FB1/DESCRIPTION	St	Signal description.
FB1/SIG	Bool	Boolean value.
FB1/SIG0	St	Inactive state description.
FB1/SIG1	St	Active state description.
OUTOVR	Bool	State is overridden.
REDTAG/ACT	Bool	Red tagging is active.

Table 34. RCM Properties (HarmRCM) (Continued)

Name	Type	Description
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
RESCMD	Bool	Reset Command received.
RESIN	Bool	Logic reset input received.
SETCMD	Bool	Set Command received.
SETIN	Bool	Logic Set input received.
SETPER	Bool	Set permissive.
USERTYPE	Int	User type code (0 to 255).

Remote Motor Control Block Properties

The RMCB tag contains all the properties listed in [Table 22](#), [Table 28](#), and [Table 35](#).

Table 35. RMCB Properties (HarmRMCB)

Name	Type	Description
ERRCODE	Int	Status of RMCB startup string (0-9).
ERRCODE:S	St	Status of RMCB startup string.
FAULT	Bool	Interlock/feedback lost when running.
FB1/COMP	Bool	Complement input signal.
FB1/DESCRIPTION	St	Signal description.
FB1/SIG	Bool	Boolean value.
FB1/SIG0	St	Inactive state description.
FB1/SIG1	St	Active state description.

Table 35. RMCB Properties (HarmRMCB) (Continued)

Name	Type	Description
FB2/COMP	Bool	Complement input signal.
FB2/DESCRIPTION	St	Signal description.
FB2/SIG	Bool	Boolean value.
FB2/SIG0	St	Inactive state description.
FB2/SIG1	St	Active state description.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
STARTPM1/COMP	Bool	Complement input signal.
STARTPM1/DESCRIPTION	St	Signal description.
STARTPM1/SIG	Bool	Boolean value.
STARTPM1/SIG0	St	Inactive state description.
STARTPM1/SIG1	St	Active state description.
STARTPM2/COMP	Bool	Complement input signal.
STARTPM2/DESCRIPTION	St	Signal description.
STARTPM2/SIG	Bool	Boolean value.
STARTPM2/SIG0	St	Inactive state description.
STARTPM2/SIG1	St	Active state description.
STATECHANGE/ACKR	Bool	Acknowledge required.
TXTSET	Int	RMCB Text message set.
USERTYPE	Int	User type code (0 to 255).

Analog Export and Digital Export Properties

The Analog and Digital Export tags are used by Harmony to broadcast exception reports to the Cnet. The Analog Export tag contains all the properties listed in [Table 22](#) and [Table 36](#). The Digital Export tag contains all the properties listed in [Table 22](#) and [Table 37](#).

Table 36. Analog Export Properties (*HarmAngExport*)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
HIGH/ACKR	Bool	Acknowledge required.
HIGH/ACT	Bool	Active.
HIGH/ALARM	Bool	Alarm state.
HIGH/ALMEN	Bool	Alarm event.
HIGH/AREF	Real	Associated value.
HIGH/COM	St	Current event comment.
HIGH/COM0	St	Normal status comment.
HIGH/COM1	St	Active state comment.
HIGH/COMP	Bool	Complement input signal.
HIGH/DESCRIPTION	St	Signal description.
HIGH/DUAL	Bool	Dual acting event.
HIGH/EN	Bool	Enable.
HIGH/EPSCAT	Int	Sub category of event point (high limit).
HIGH/PRI	Int	Current event priority.
HIGH/PRI0	St	Normal priority.
HIGH/PRI1	St	Active priority.
HIGH/SIG	Bool	Boolean value.

Table 36. Analog Export Properties (HarmAngExport) (Continued)

Name	Type	Description
HIGH/SIG0	St	Inactive state description.
HIGH/SIG1	St	Active state description.
HIGH/SUP	Bool	Event suppressed by signal.
HIGH/UNACK	Bool	Unacknowledged alarm.
HIGH/UNACKEP	Bool	Unacknowledged event point (status or alarm).
HIGHLIM	Real	High alarm limit.
ICI_INDEX	Int	ICI Index to be used for exporting this tag.
LOW/ACKR	Bool	Acknowledge required.
LOW/ACT	Bool	Active.
LOW/ALARM	Bool	Alarm state.
LOW/ALMEN	Bool	Alarm event.
LOW/AREF	Real	Associated value.
LOW/COM	St	Current event comment.
LOW/COM0	St	Normal status comment.
LOW/COM1	St	Active state comment.
LOW/COMP	Bool	Complement input signal.
LOW/DESCRIP-TION	St	Signal description.
LOW/DUAL	Bool	Dual acting event.
LOW/EN	Bool	Enable.
LOW/EPSCAT	Int	Sub category of event point (high limit).
LOW/PRI	Int	Current event priority.
LOW/PRI0	St	Normal priority.
LOW/PRI1	St	Active priority.

Table 36. Analog Export Properties (HarmAngExport) (Continued)

Name	Type	Description
LOW/SIG	Bool	Boolean value.
LOW/SIG0	St	Inactive state description.
LOW/SIG1	St	Active state description.
LOW/SUP	Bool	Event suppressed by signal.
LOW/UNACK	Bool	Unacknowledged alarm.
LOW/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LOWLIM	Real	Low alarm limit.
PV/DESCRIP-TION	St	Signal description.
PV/FOR	Int	Formatting information.
PV/HIGH	Real	High range of signal.
PV/LOW	Real	Low range of signal.
PV/PERCENT	Real	Signal (SIG) as a percentage of span.
PV/SIG	Real	Analog value.
PV/SIG:QS	St	Quality string.
PV/SPAN	Real	Difference between low and high ranges.
PV/UNITS	St	Engineering units.

Table 37. Digital Export Properties (HarmDigExport)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
ICI_INDEX	Int	ICI Index to be used for exporting this tag.
OUT/ACKR	Bool	Acknowledge required.
OUT/ACT	Bool	Active.

Table 37. Digital Export Properties (HarmDigExport) (Continued)

Name	Type	Description
OUT/ALARM	Bool	Alarm state.
OUT/ALMEN	Bool	Alarm event.
OUT/AREF	Bool	Associated value.
OUT/COM	St	Current event comment.
OUT/COM0	St	Normal status comment.
OUT/COM1	St	Active state comment.
OUT/COMP	Bool	Complement input signal.
OUT/DESCRIPTION	St	Signal description.
OUT/DUAL	Bool	Dual acting event.
OUT/EN	Bool	Enable.
OUT/EPSCAT	Int	Sub category of event point (high limit).
OUT/PRI	Int	Current event priority.
OUT/PRI0	St	Normal priority.
OUT/PRI1	St	Active priority.
OUT/SIG	Bool	Boolean value.
OUT/SIG0	St	Inactive state description.
OUT/SIG1	St	Active state description.
OUT/SUP	Bool	Event suppressed by signal.
OUT/UNACK	Bool	Unacknowledged alarm.
OUT/UNACKEP	Bool	Unacknowledged event point (status or alarm).
STATECHANGE/ACKR	Bool	Acknowledge required.
STATECHANGE/ACT	Bool	Active.
STATECHANGE/ALARM	Bool	Alarm state.

Table 37. Digital Export Properties (HarmDigExport) (Continued)

Name	Type	Description
STATECHANGE/ALMEN	Bool	Alarm event.
STATECHANGE/AREF	Bool	Associated value.
STATECHANGE/COM	St	Current event comment.
STATECHANGE/COM0	St	Normal status comment.
STATECHANGE/COM1	St	Active state comment.
STATECHANGE/COMP	Bool	Complement input signal.
STATECHANGE/DESCRIPTION	St	Signal description.
STATECHANGE/DUAL	Bool	Dual acting event.
STATECHANGE/EN	Bool	Enable.
STATECHANGE/EPSCAT	Int	Sub category of event point (high limit).
STATECHANGE/PRI	Int	Current event priority.
STATECHANGE/PRI0	St	Normal priority.
STATECHANGE/PRI1	St	Active priority.
STATECHANGE/SIG	Bool	Boolean value.
STATECHANGE/SIG0	St	Inactive state description.
STATECHANGE/SIG1	St	Active state description.
STATECHANGE/SUP	Bool	Event suppressed by signal.
STATECHANGE/UNACK	Bool	Unacknowledged alarm.
STATECHANGE/UNACKEP	Bool	Unacknowledged event point (status or alarm).

Text Properties

The Text tags are the ASCII and the Text Selector tag. The properties for the ASCII tag are provided in [Table 22](#) and [Table 38](#). The properties for the Text Selector tag

are provided in [Table 22](#) and [Table 39](#).

Table 38. ASCII Properties (HarmASCII)

Name	Type	Description
ALM/ACKR	Bool	Acknowledge required.
ALM/ACT	Bool	Active.
ALM/ALARM	Bool	Alarm state.
ALM/ALMEN	Bool	Alarm event.
ALM/AREF	Bool	Associated value.
ALM/COM	St	Current event comment.
ALM/COM0	St	Normal status comment.
ALM/COM1	St	Active state comment.
ALM/COMP	Bool	Complement input signal.
ALM/DESCRIPTION	St	Signal description.
ALM/DUAL	Bool	Dual acting event.
ALM/EN	Bool	Enable.
ALM/EPSCAT	Int	Sub category of event point (high limit).
ALM/PRI	Int	Current event priority.
ALM/PRI0	St	Normal priority.
ALM/PRI1	St	Active priority.
ALM/SIG	Bool	Boolean value.
ALM/SIG0	St	Inactive state description.
ALM/SIG1	St	Active state description.
ALM/SUP	Bool	Event suppressed by signal.
ALM/UNACK	Bool	Unacknowledged alarm.
ALM/UNACKEP	Bool	Unacknowledged event point (status or alarm).

Table 38. ASCII Properties (HarmASCII) (Continued)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
ALMSUP	Bool	Alarm suppressed by blockware.
AUTO	Bool	Automatic mode.
BLKLEN	Int	Maximum length of data string from blockware.
CNTRLPER	Bool	Operator control enabled.
LEN	Int	Maximum length of data strings.
LOCTRUNC	Bool	Local truncation occurred.
MODELOCK	Bool	Blockware will not accept a mode change.
NAK	Bool	Blockware has rejected data.
ORIGLEN	Int	Length of data originally sent.
PDT_ECHO	Bool	Blockware has echoed data.
QUALOVR	Bool	Blockware is overriding the quality status.
RCV_LEN	Int	Length of data finally received.
REALM	Bool	Periodically realarm.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
SEQ_NUM	Int	UDXR sequence number.
SET_Prio	Int	Alarm priority of last control action.
SIG	St	Text signal (data string).
STR_LOCK	Bool	Blockware will not accept data.
TRUNC	Bool	Remote truncation occurred.

Table 39. Text Properties (*HarmText*)

Name	Type	Description
ALMACKBC	Bool	Broadcast alarm acknowledge events.
BLINK	Bool	Displayed text should be blinking.
COLOR	Int	Color to display text.
MSG	Int	Current text.
MSG:S	St	Current text string.

Module Status Properties

The Module Status tag contains all the properties listed in [Table 22](#) and [Table 40](#).

Table 40. Module Status Properties (*HarmModuleStatus*)

Name	Type	Description
ALARM:N	Int	Numeric alarm status.
ALMACKBC	Bool	Broadcast alarm acknowledge events.
BACKUP_STS	Bool	Backup bad or memory filled.
HEX_BYTES	St	Module Status bytes.
ICI_TYPE	Bool	Module is an ICI type.
LOCIOSTS	Bool	Local I/O status is bad.
MODERR	Bool	Module errors exist.
MODMODE	Int	Module mode.
MODMODE:S	St	Module mode string.
MODREV	Int	Module revision number.
MODTYPE	Int	Description of module type.
MODTYPE:S	St	Module type string.

Table 40. Module Status Properties (HarmModuleStatus) (Continued)

Name	Type	Description
MODVER	Int	Module version number.
NCOMMERR/ACKR	Bool	Acknowledge required.
NCOMMERR/ACT	Bool	Active.
NCOMMERR/ALARM	Bool	Alarm state.
NCOMMERR/ALMEN	Bool	Alarm event.
NCOMMERR/AREF	Bool	Associated value.
NCOMMERR/COM	St	Current event comment.
NCOMMERR/COM0	St	Normal status comment.
NCOMMERR/COM1	St	Active state comment.
NCOMMERR/COMP	Bool	Complement input signal.
NCOMMERR/DESCRIPTION	St	Signal description.
NCOMMERR/DUAL	Bool	Dual acting event.
NCOMMERR/EN	Bool	Enable.
NCOMMERR/EPSCAT	Int	Sub category of event point (high limit).
NCOMMERR/PRI	Int	Current event priority.
NCOMMERR/PRI0	St	Normal priority.
NCOMMERR/PRI1	St	Active priority.
NCOMMERR/SIG	Bool	Boolean value.
NCOMMERR/SIG:TS	Date	Timestamp.
NCOMMERR/SIG0	St	Inactive state description.
NCOMMERR/SIG1	St	Active state description.
NCOMMERR/SUP	Bool	Event suppressed by signal.
NCOMMERR/UNACK	Bool	Unacknowledged alarm.

Table 40. Module Status Properties (HarmModuleStatus) (Continued)

Name	Type	Description
NCOMMERR/UNACKEP	Bool	Unacknowledged event point (status or alarm).
NMODERR/ACKR	Bool	Acknowledge required.
NMODERR/ACT	Bool	Active.
NMODERR/ALARM	Bool	Alarm state.
NMODERR/ALMEN	Bool	Alarm event.
NMODERR/AREF	Bool	Associated value.
NMODERR/COM	St	Current event comment.
NMODERR/COM0	St	Normal status comment.
NMODERR/COM1	St	Active state comment.
NMODERR/COMP	Bool	Complement input signal.
NMODERR/DESCRIPTION	St	Signal description.
NMODERR/DUAL	Bool	Dual acting event.
NMODERR/EN	Bool	Enable.
NMODERR/EPSCAT	Int	Sub category of event point (high limit).
NMODERR/PRI	Int	Current event priority.
NMODERR/PRI0	St	Normal priority.
NMODERR/PRI1	St	Active priority.
NMODERR/SIG	Bool	Boolean value.
NMODERR/SIG0	St	Inactive state description.
NMODERR/SIG1	St	Active state description.
NMODERR/SUP	Bool	Event suppressed by signal.
NMODERR/UNACK	Bool	Unacknowledged alarm.
NMODERR/UNACKEP	Bool	Unacknowledged event point (status or alarm).

Table 40. Module Status Properties (HarmModuleStatus) (Continued)

Name	Type	Description
NODE_TYPE	Int	Node type description.
NOFFLINE/ACKR	Bool	Acknowledge required.
NOFFLINE/ACT	Bool	Active.
NOFFLINE/ALARM	Bool	Alarm state.
NOFFLINE/ALMEN	Bool	Alarm event.
NOFFLINE/AREF	Bool	Associated value.
NOFFLINE/COM	St	Current event comment.
NOFFLINE/COM0	St	Normal status comment.
NOFFLINE/COM1	St	Active state comment.
NOFFLINE/COMP	Bool	Complement input signal.
NOFFLINE/DESCRIPTION	St	Signal description.
NOFFLINE/DUAL	Bool	Dual acting event.
NOFFLINE/EN	Bool	Enable.
NOFFLINE/EPSCAT	Int	Sub category of event point (high limit).
NOFFLINE/PRI	Int	Current event priority.
NOFFLINE/PRI0	St	Normal priority.
NOFFLINE/PRI1	St	Active priority.
NOFFLINE/SIG	Bool	Boolean value.
NOFFLINE/SIG0	St	Inactive state description.
NOFFLINE/SIG1	St	Active state description.
NOFFLINE/SUP	Bool	Event suppressed by signal.
NOFFLINE/UNACK	Bool	Unacknowledged alarm.
NOFFLINE/UNACKEP	Bool	Unacknowledged event point (status or alarm).

Table 40. Module Status Properties (HarmModuleStatus) (Continued)

Name	Type	Description
NSYSERR/ACKR	Bool	Acknowledge required.
NSYSERR/ACT	Bool	Active.
NSYSERR/ALARM	Bool	Alarm state.
NSYSERR/ALMEN	Bool	Alarm event.
NSYSERR/AREF	Bool	Associated value.
NSYSERR/COM	St	Current event comment.
NSYSERR/COM0	St	Normal status comment.
NSYSERR/COM1	St	Active state comment.
NSYSERR/COMP	Bool	Complement input signal.
NSYSERR/DESCRIPTION	St	Signal description.
NSYSERR/DUAL	Bool	Dual acting event.
NSYSERR/EN	Bool	Enable.
NSYSERR/EPSCAT	Int	Sub category of event point (high limit).
NSYSERR/PRI	Int	Current event priority.
NSYSERR/PRI0	St	Normal priority.
NSYSERR/PRI1	St	Active priority.
NSYSERR/SIG	Bool	Boolean value.
NSYSERR/SIG0	St	Inactive state description.
NSYSERR/SIG1	St	Active state description.
NSYSERR/SUP	Bool	Event suppressed by signal.
NSYSERR/UNACK	Bool	Unacknowledged alarm.
NSYSERR/UNACKEP	Bool	Unacknowledged event point (status or alarm).
REMIO_STS	Bool	Remote I/O status is bad.

Table 40. Module Status Properties (HarmModuleStatus) (Continued)

Name	Type	Description
SECONDARY	Bool	Module is secondary of a redundant pair.
SPECSRCVD	Bool	Blockware specifications received.
SPECTIMESTAMP	St	Time of last spec exception from blockware.
STATECHANGE/ACKR	Bool	Acknowledge required.
STATECHANGE/ACT	Bool	Active.
STATECHANGE/ALARM	Bool	Alarm state.
STATECHANGE/ALMEN	Bool	Alarm event.
STATECHANGE/AREF	Bool	Associated value.
STATECHANGE/COM	St	Current event comment.
STATECHANGE/COM0	St	Normal status comment.
STATECHANGE/COM1	St	Active state comment.
STATECHANGE/COMP	Bool	Complement input signal.
STATECHANGE/DESCRIPTION	St	Signal description.
STATECHANGE/DUAL	Bool	Dual acting event.
STATECHANGE/EN	Bool	Enable.
STATECHANGE/EPSCAT	Int	Sub category of event point (high limit).
STATECHANGE/PRI	Int	Current event priority.
STATECHANGE/PRI0	St	Normal priority.
STATECHANGE/PRI1	St	Active priority.
STATECHANGE/SIG	Bool	Boolean value.
STATECHANGE/SIG0	St	Inactive state description.
STATECHANGE/SIG1	St	Active state description.
STATECHANGE/SUP	Bool	Event suppressed by signal.

Table 40. Module Status Properties (*HarmModuleStatus*) (Continued)

Name	Type	Description
STATECHANGE/UNACK	Bool	Unacknowledged alarm.
STATECHANGE/UNACKEP	Bool	Unacknowledged event point (status or alarm).
XMIT_ACK	Bool	Global acknowledgements should be sent.
XMIT_SILENCE	Bool	Global alarm silence should be sent.

PhaseX Properties

The PhaseX tag contains all the properties listed in [Table 41](#) and [Table 41](#).

Table 41. PhaseX Properties (*HarmPhaseX*)

Name	Type	Description
ACQ	Bool	Acquired status.
ALMACKBC	Bool	Broadcast alarm acknowledge events.
BATCH	St	Batch ID.
BATCH1	St	—
BATCHMGR	St	—
CAMPAIGN	St	Campaign ID.
COMMAND	Int	Batch command.
DBGSTOP	Bool	Batch program is stopped by debugger.
DEBUG	Real	Debug.
FASTCNTR	Int	Fast event counter.
FASTTM	Real	Fast reporting maxtime.
FLTCODE	Int	Fault code.
FLTCODE:S	St	Fault code string.

Table 41. PhaseX Properties (HarmPhaseX) (Continued)

Name	Type	Description
FLTDATA	Real	Fault data.
HANDSH	Int	Handshaking option.
HOLDDISABLED	Bool	Disable.
LEAD	Bool	Lead PhaseX.
LOT	St	Lot ID
MODE	Int	Indicates that the PhaseX tag is controlled by the batch manager.
PHASE	St	Phase name.
PHASEDATA	St	Recipe data for a phase (phase name & parameters).
PHASENO	Int	Phase number.
PHASENO:S	St	Phase number string.
PRGDESC	St	Program description.
PRGID	Real	Program ID.
PRGID:S	St	Program ID string.
PRGTM	St	Program timestamp.
PROG	Bool	Program status.
RECIPE	St	Recipe ID.
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
SEQDATA	St	Recipe data for a sequence of phases.
SEQMODE	Bool	Sequence mode.

Table 41. PhaseX Properties (HarmPhaseX) (Continued)

Name	Type	Description
SLOWCNTR	Int	Slow event counter.
SLOWCNTRXRP	Int	Slow event counter XRP.
SLOWTM	Real	Slow reporting maxtime.
STATE	Int	State.
STATE:S	St	State string.
STOPDISABLED	Bool	Disable.
SYSFAULT/ACKR	Bool	Acknowledge required.
SYSFAULT/ACT	Bool	Active.
SYSFAULT/ALARM	Bool	Alarm state.
SYSFAULT/ALMEN	Bool	Alarm event.
SYSFAULT/AREF	Bool	Associated value
SYSFAULT/COM	St	Current event comment.
SYSFAULT/COM0	St	Normal status comment.
SYSFAULT/COM1	St	Active state comment.
SYSFAULT/COMP	Bool	Complement input signal.
SYSFAULT/DESCRIPTION	St	Signal description.
SYSFAULT/DUAL	Bool	Dual acting event.
SYSFAULT/EN	Bool	Enable.
SYSFAULT/EPSCAT	Int	Sub category of event point (high limit).
SYSFAULT/PRI	Int	Current event priority.
SYSFAULT/PRI0	Int	Normal priority.
SYSFAULT/PRI1	St	Active priority.
SYSFAULT/SIG	Bool	Boolean value.

Table 41. PhaseX Properties (HarmPhaseX) (Continued)

Name	Type	Description
SYSFAULT/SIG0	St	Inactive state description.
SYSFAULT/SIG1	St	Active state description.
SYSFAULT/SUP	Bool	Event suppressed by signal.
SYSFAULT/UNACK	Bool	Unacknowledged alarm.
SYSFAULT/UNACKEP	Bool	Unacknowledged event point (status or alarm).
USERFAULT/ACKR	Bool	Acknowledge required.
USERFAULT/ACT	Bool	Active.
USERFAULT/ALARM	Bool	Alarm state.
USERFAULT/ALMEN	Bool	Alarm event.
USERFAULT/AREF	Bool	Associated value.
USERFAULT/COM	St	Current event comment.
USERFAULT/COM0	St	Normal status comment.
USERFAULT/COM1	St	Active state comment.
USERFAULT/COMP	Bool	Complement input signal.
USERFAULT/DESCRIPTION	St	Signal description.
USERFAULT/DUAL	Bool	Dual acting event.
USERFAULT/EN	Bool	Enable.
USERFAULT/EPSCAT	Int	Sub category of event point (high limit).
USERFAULT/PRI	Int	Current event priority.
USERFAULT/PRI0	St	Normal priority.
USERFAULT/PRI1	St	Active priority.
USERFAULT/SIG	Bool	Boolean value.
USERFAULT/SIG0	St	Inactive state description.

Table 41. PhaseX Properties (HarmPhaseX) (Continued)

Name	Type	Description
USERFAULT/SIG1	St	Active state description.
USERFAULT/SUP	Bool	Event suppressed by signal.
USERFAULT/UNACK	Bool	Unacknowledged alarm.
USERFAULT/UNACKEP	Bool	Unacknowledged event point (status or alarm).
USERMSG/ACKR	Bool	Acknowledge required.
USERMSG/ACT	Bool	Active.
USERMSG/ALARM	Bool	Alarm state.
USERMSG/ALMEN	Bool	Alarm event.
USERMSG/AREF	Bool	Associated value.
USERMSG/COM	St	Current event comment.
USERMSG/COM0	St	Normal status comment.
USERMSG/COM1	St	Active state comment.
USERMSG/COMP	Bool	Complement input signal.
USERMSG/DESCRIPTION	St	Signal description.
USERMSG/DUAL	Bool	Dual acting event.
USERMSG/EN	Bool	Enable.
USERMSG/EPSCAT	Int	Sub category of event point (high limit).
USERMSG/PRI	Int	Current event priority.
USERMSG/PRI0	St	Normal priority.
USERMSG/PRI1	St	Active priority.
USERMSG/SIG	Bool	Boolean value.
USERMSG/SIG0	St	Inactive state description.
USERMSG/SIG1	St	Active state description.

Table 41. PhaseX Properties (HarmPhaseX) (Continued)

Name	Type	Description
USERMSG/SUP	Bool	Event suppressed by signal.
USERMSG/UNACK	Bool	Unacknowledged alarm.
USERMSG/UNACKEP	Bool	Unacknowledged event point (status or alarm).
XRCONF	Bool	Exception report confirmation is expected.
XRREV	Int	XRE revision.
XRPREV	Int	XRP revision.
XML_COMMAND	Read/ Write	XML command to be processed. This is a replacement for the put to the COMMAND property.
XML_RESPONSE	Read/ Write	Result of processing a put to the XML_COMMAND property. Set before an attempt is made to write to the hardware (put to the COMMAND atom).
XML_STATUS	Read	Result of processing value exception from hardware. Errors cached after write to the hardware (during processing of the XML_COMMAND put) are cached, and reported here.

SOE Report Properties

The SOE Report tag does not share the common Harmony properties. This tag is a special tag to interface Harmony to the Harmony SOE function blocks. The SOE Report tag contains all the properties listed in [Table 42](#).

Table 42. SOE Report Properties (HarmSOEReport)

Name	Type	Description
ACTIVE	Bool	Indicates if report is being actively scanned.
ALMACKBC	Bool	Broadcast alarm acknowledge events.

Table 42. SOE Report Properties (HarmSOEReport) (Continued)

Name	Type	Description
CACHETIME	Real	Time to wait, in seconds, before clearing unread SOEDATA.
FB1/COMP	Bool	Complement input signal.
FB1/DESCRIPTION	St	Signal description.
FB1/SIG	Bool	Boolean value.
FB1/SIG0	St	Inactive state description.
FB1/SIG1	St	Active state description.
OUT/ACKR	Bool	Acknowledge required.
OUT/ACT	Bool	Active.
OUT/ALARM	Bool	Alarm state.
OUT/ALMEN	Bool	Alarm event.
OUT/AREF	Bool	Associated value.
OUT/COM	St	Current event comment.
OUT/COM0	St	Normal status comment.
OUT/COM1	St	Active state comment.
OUT/COMP	Bool	Complement input signal.
OUT/DESCRIPTION	St	Signal description.
OUT/DUAL	Bool	Dual acting event.
OUT/EN	Bool	Enable.
OUT/EPSCAT	Int	Sub category of event point (high limit).
OUT/PRI	Int	Current event priority.
OUT/PRI0	St	Normal priority.
OUT/PRI1	St	Active priority.

Table 42. SOE Report Properties (HarmSOEReport) (Continued)

Name	Type	Description
OUT/SIG	Bool	Boolean value.
OUT/SIG0	St	Inactive state description.
OUT/SIG1	St	Active state description.
OUT/SUP	Bool	Event suppressed by signal.
OUT/UNACK	Bool	Unacknowledged alarm.
OUT/UNACKEP	Bool	Unacknowledged event point (status or alarm).
OUTOVR	Bool	State is overridden.
RECORDER	St	Reference to SOE recorder.
RECORDERID	St	Reference to SOE recorder (UUID).
REDTAG/ACT	Bool	Red tagging is active.
REDTAG/KEY1	St	Red tag key 1.
REDTAG/KEY2	St	Red tag key 2.
REDTAG/KEY3	St	Red tag key 3.
REPORTREAD	Bool	Indicates if SOE Report is being read.
REPORTTYPE	Int	Type of SOE Report to generate.
REPORTTYPE:S	St	Type of SOE Report to generate string.
RESCMD	Bool	Reset command received.
RESIN	Bool	Logic reset input received.
SETCMD	Bool	Set command received.
SETIN	Bool	Logic set input received.
SETPER	Bool	Set permissive.
SOEDATA	St	SOE event data in XML format.
STATECHANGE/ACKR	Bool	Acknowledge required.

Table 42. SOE Report Properties (HarmSOEReport) (Continued)

Name	Type	Description
STATECHANGE/ACT	Bool	Active.
STATECHANGE/ALARM	Bool	Alarm state.
STATECHANGE/ALMEN	Bool	Alarm event.
STATECHANGE/AREF	Bool	Associated value.
STATECHANGE/COM	St	Current event comment.
STATECHANGE/COM0	St	Normal status comment.
STATECHANGE/COM1	St	Active state comment.
STATECHANGE/COMP	Bool	Complement input signal.
STATECHANGE/DESCRIPTION	St	Signal description.
STATECHANGE/DUAL	Bool	Dual acting event.
STATECHANGE/EN	Bool	Enable.
STATECHANGE/EPSCAT	Int	Sub category of event point (high limit).
STATECHANGE/PRI	Int	Current event priority.
STATECHANGE/PRI0	St	Normal priority.
STATECHANGE/PRI1	St	Active priority.
STATECHANGE/SIG	Bool	Boolean value.
STATECHANGE/SIG0	St	Inactive state description.
STATECHANGE/SIG1	St	Active state description.
STATECHANGE/SUP	Bool	Event suppressed by signal.
STATECHANGE/UNACK	Bool	Unacknowledged alarm.
STATECHANGE/UNACKEP	Bool	Unacknowledged event point (status or alarm).
USERTYPE	Int	User type code (0 to 255).
WAITTIME	Real	Time to wait, in seconds, before collecting the report.

Server Properties

The Server object contains all the properties listed in [Table 22](#) and [Table 43](#).

Table 43. Harmony Server Properties (HarmServer)

Name	Type	Description
ACTIVE	Bool	Server is active.
ACTIVE:S	St	Server active state string.
ALARM	Bool	Overall alarm status.
ALARM:N	Int	Numeric alarm status.
ALARM:S	St	Alarm status string.
ANG_XR_CNT	Int	Number of Analog tag XRs received.
ASCII_XR_CNT	Int	Number of ASCII tag XRs received.
COMM_ERR/ACKR	Bool	Acknowledge required.
COMM_ERR/ACT	Bool	Active.
COMM_ERR/ALARM	Bool	Alarm state.
COMM_ERR/ALMEN	Bool	Alarm event.
COMM_ERR/AREF	Bool	Associated value.
COMM_ERR/COM	St	Current event comment.
COMM_ERR/COM0	St	Normal status comment.
COMM_ERR/COM1	St	Active state comment.
COMM_ERR/COMP	Bool	Complement input signal.
COMM_ERR/DESCRIPTION	St	Signal description.
COMM_ERR/DUAL	Bool	Dual acting event.
COMM_ERR/EN	Bool	Enable.
COMM_ERR/EPSCAT	Int	Sub category of event point (high limit).

Table 43. Harmony Server Properties (HarmServer) (Continued)

Name	Type	Description
COMM_ERR/PRI	Int	Current event priority.
COMM_ERR/PRI0	St	Normal priority.
COMM_ERR/PRI1	St	Active priority.
COMM_ERR/SIG	Bool	Boolean value.
COMM_ERR/SIG0	St	Inactive state description.
COMM_ERR/SIG1	St	Active state description.
COMM_ERR/SUP	Bool	Event suppressed by signal.
COMM_ERR/UNACK	Bool	Unacknowledged alarm.
COMM_ERR/UNACKEP	Bool	Unacknowledged event point (status or alarm).
DAANG_XR_CNT	Int	Number of DAANG tag XRs received.
DADIG_XR_CNT	Int	Number of DADIG tag XRs received.
DD_XR_CNT	Int	Number of DD tag XRs received.
DIG_XR_CNT	Int	Number of Digital tag XRs received.
DOMAIN	St	Servers domain.
EAIN_XR_CNT	Int	Number of Enhanced Analog input XRs received.
EAOUT_XR_CNT	Int	Number of Enhanced Analog output XRs received.
EDIN_XR_CNT	Int	Number of Enhanced Digital input XRs received.
EDOUT_XR_CNT	Int	Number of Enhanced Digital output XRs received.
ENHPUTEVENT	Bool	Enable enhanced tuning message.
FILTERBQ	Bool	Filter bad quality alarms caused by hardware failure.
FILTERXR	Bool	Change XR filtering on ICI restart.
GROUPID	St	Redundant Server group ID.
HARM_NS_ENBL	Bool	Enable Harmony namespace support.

Table 43. Harmony Server Properties (HarmServer) (Continued)

Name	Type	Description
HOST	St	Name of host Server is running on.
ICI_MODE	Int	Current mode of Servers ICI.
ICI_REV	St	Revision level of Servers ICI.
ICI_TYPE	Int	Type of Server's ICI.
INFINET	Bool	True if Server is operating on INFI-NET.
INTERNALERROR/ACKR	Bool	Acknowledge required.
INTERNALERROR/ACT	Bool	Active.
INTERNALERROR/ALARM	Bool	Alarm State.
INTERNALERROR/ALEM	Bool	Alarm event.
INTERNALERROR/AREF	Bool	Associated value.
INTERNALERROR/COM	St	Current event comment.
INTERNALERROR/COM0	St	Normal status comment.
INTERNALERROR/COM1	St	Active state comment.
INTERNALERROR/COMP	Bool	Complement input signal.
INTERNALERROR/DESCRIPTION	St	Signal description.
INTERNALERROR/DUAL	Bool	Dual acting event.
INTERNALERROR/EN	Bool	Enable.
INTERNALERROR/EPSCAT	Int	Sub category of event point (high limit).
INTERNALERROR/PACK	Bool	Event page wide acknowledge enable.
INTERNALERROR/PRI	Int	Current event priority.
INTERNALERROR/PRI0	St	Normal priority.
INTERNALERROR/PRI1	St	Active priority.

Table 43. Harmony Server Properties (HarmServer) (Continued)

Name	Type	Description
INTERNALERROR/SIG	Bool	Boolean value.
INTERNALERROR/SIG0	St	Inactive state description.
INTERNALERROR/SIG1	St	Active state description.
INTERNALERROR/SUP	Bool	Event suppressed by signal.
INTERNALERROR/UNACK	Bool	Unacknowledged alarm.
INTERNALERROR/UNACKEP	Bool	Unacknowledged event point (status or alarm).
LOOP_TIME	St	Current INFI-NET loop time.
MAX_TAGS	Int	Maximum number of tags Server licensed to load.
MOD_TSTAMP	Bool	True if module timestamping is enabled.
MSDD_XR_CNT	Int	Number of MSDD tag XRs received.
MSTAT_XR_CNT	Int	Number of Module Status tag XRs received.
NO_BULK_EXPORT_PERSIST	Bool	Disable persistence for export tags on bulk update.
OISMODE	Bool	Run RTDS in OIS mode (Add 60 day offset for OIS consoles).
PERCSYNC	Real	Synchronization progress (Percent).
RCM_XR_CNT	Int	Number of RCM tag XRs received.
RCVGBLACK	Bool	Monitor global acknowledge messages from the loop.
RCVGBLSIL	Bool	Monitor global silence messages from the loop.
REDID	St	ID of redundant Server.
REDSTATE/ACKR	Bool	Acknowledge required.
REDSTATE/ACT	Bool	Active.
REDSTATE/ALARM	Bool	Alarm state.
REDSTATE/ALMEN	Bool	Alarm event.

Table 43. Harmony Server Properties (HarmServer) (Continued)

Name	Type	Description
REDSTATE/AREF	Bool	Associated value.
REDSTATE/COM	St	Current event comment.
REDSTATE/COM0	St	Normal status comment.
REDSTATE/COM1	St	Active state comment.
REDSTATE/COMP	Bool	Complement input signal.
REDSTATE/DESCRIPTION	St	Signal description.
REDSTATE/DUAL	Bool	Dual acting event.
REDSTATE/EN	Bool	Enable.
REDSTATE/EPSCAT	Int	Sub category of event point (high limit).
REDSTATE/PRI	Int	Current event priority.
REDSTATE/PRI0	St	Normal priority.
REDSTATE/PRI1	St	Active priority.
REDSTATE/SIG	Bool	Boolean value.
REDSTATE/SIG0	St	Inactive state description.
REDSTATE/SIG1	St	Active state description.
REDSTATE/SUP	Bool	Event suppressed by signal.
REDSTATE/UNACK	Bool	Unacknowledged alarm.
REDSTATE/UNACKEP	Bool	Unacknowledged event point (status or alarm).
RESTARTS	Int	Number of ICI restarts.
RMCB_XR_CNT	Int	Number of RMCB tag XRs received.
RMSC_XR_CNT	Int	Number of RMSC tag XRs received.
SEM_AUTO_ADJTIME	Bool	Enable SEM wallclock daylight savings time adjustment.

Table 43. Harmony Server Properties (HarmServer) (Continued)

Name	Type	Description
SILENCE	Bool	Indicates that global silence has been received or should be transmitted.
SIMULATE	Bool	Indicates if values are from hardware or are simulated.
STARTUPTIME	St	Server startup time.
STARTUPTIME:TS	Date	Server startup time.
STAT_XR_CNT	Int	Number of Station tag XRs received.
STATS/EVENT_SUBS	Int	Number of open event subscriptions.
STATS/GET_SUBS	Int	Number of open last value subscriptions.
STATS/PUT_SUBS	Int	Number of open put subscriptions.
STATS/PUTS	Int	Number of put requests received.
STATS/STREAM_SUBS	Int	Number of open stream subscriptions.
STATS/TAGS	Int	Number of tags contained in this Server.
STATUS	Int	Server status.
STATUS:S	St	Server status string.
SYS_DESC	St	System (project) description.
SYSTEMID	St	ID of system (project).
TEXT_XR_CNT	Int	Number of text tag XRs received.
TS/ACC	Int	Time sync accuracy of this Server.
TS/ENBL	Bool	True if time synchronizing is enabled.
TS/MSTR	Bool	True if this Server is current time master.
TS/MSTR_ACC	Int	Current time synchronization accuracy.
TS/MSTR_LOOP	Int	Loop address of current time master.
TS/MSTR_NODE	Int	Node address of current time master.

Table 43. Harmony Server Properties (HarmServer) (Continued)

Name	Type	Description
TS/UPDATE	Int	Time synchronization master update period.
TS/WAIT	Int	Time synchronization update period.
UPTIME	Time	Last known up time.

Appendix B Quality Definition

Introduction

The purpose of this appendix is to describe the tag.property qualities in Harmony.

Description

Every property consists of following three pieces of information: a value, a quality, and a timestamp. The quality describes the state of the property that originates anywhere in the process control system.

An application in the process control system (function block in a controller or in Harmony) can evaluate the provided quality information and can apply rules for further processing (use of values with a determined quality, displaying of values with quality, use the quality for filter purposes).

Indicators

Tag quality is indicated with ASCII characters. The quality indicator appears in several functions in the Harmony system (event page, faceplate, reports). [Table 44](#) contains a list of the quality indicators and their descriptions.

Table 44. Quality Indicators

Condition	Character	Quality
Bad quality	X	Nonspecific, device failure, or sensor failure
	.	Configuration error
	?	Not connected
	/	Last known value
	@	Communication failure
	~	Out of Service
Uncertain quality	/	Nonspecific, last usable value, sensor not accurate, engineering units exceeded, or subnormal
Good quality	<blank>	Nonspecific
	&	Local override
Increasing/decreasing	<blank>	Not increasing, not decreasing, not amended, not annotation
	^	Value increasing
	v	Value decreasing
	+	Annotation
	#	Amended
Unknown state	—	Unknown
Unknown state	—	Unknown

OPC Quality Definition

The quality definition is based on the quality defined by OPC. The OPC standard defines property quality as a 16 bit data item. The lower eight bits of quality flags are defined as a combination of three enumerated values: quality status (two bits), substatus (four bits), and limit status (two bits). The higher eight bits are available for vendor specific use (vendor specific status). The OPC quality structure is shown in [Table 45](#).

Table 45. OPC Quality Structure

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Use	VS	VS	VS	VS	VS	VS	VS	VS	Q	Q	S	S	S	S	L	L

- L = limit status.
- S = substatus.
- Q = quality status.
- VS = vendor specific status.

OPC subdivides the quality into the three categories of good, uncertain, and bad. Each category is further subdivided into up to 16 substatuses. The current definition of the OPC quality is described in [OPC Quality Flags](#) on page 226.

Harmony Quality Definition

In contrast to OPC, Harmony provides the quality as a 32 bit word. The 32 bits are composed of the OPC standard (lower 16 bits) and Harmony standard extensions (upper 16 bit). The definition of a 32 bit quality allows using the OPC vendor specific bits by a specific connectivity server type as it is intended by the OPC specification. All quality information inside the process control system is mapped as much as possible to the OPC quality specification.

Process control system specific quality information that cannot be mapped to the OPC quality specification, can be mapped to the Harmony standard extension. These quality bits can only be used in an application that has knowledge of these quality extensions. The structure of the Harmony quality is shown in [Table 46](#). A description of the bits is provided in [Table 47](#).

Table 46. Harmony Quality Structure

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Use	VS	VS	VS	VS	VS	VS	VS	VS	Q	Q	S	S	S	S	L	L
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Use	AMD	INT	NOD	DLS	NLD	ANN	CLC	CER	PRJ	RES	RES	RES	RES	IVI	DVI	UTS

Table 47. Quality Bit Descriptions

Bit	Abbreviation	Description
00 – 01	L	OPC limit status.
02 – 05	S	OPC substatus.
06 – 07	Q	OPC quality status.
08 – 15	VS	OPC vendor specific status.
16	UTS	Harmony uncertain timestamp.
17	DVI	Harmony decreasing value indicator.
18	INI	Harmony increasing value indicator.

Table 47. Quality Bit Descriptions (Continued)

Bit	Abbreviation	Description
19 – 22	RES	Harmony reserved.
23	PRJ	Projected value (historian only).
24	CER	Scaling/conversion error.
25	CLC	Calculated result.

In addition to the OPC quality specification (quality for process properties), Harmony also provides quality on a tag basis. This quality is derived from the quality of the properties. The quality on property and tag basis, have the same structure.

Tag.Property Quality for Process Properties

Process properties change their value, quality, and timestamp dependent on process state. The current process properties consist of value, quality, and timestamp. Quality and timestamp represent the last change of the associated value.

Tag.Property Quality for Computed Properties

Computed properties usually inherit the timestamp from the most recently changed source of the computation. The quality of these properties is usually inherited from the source as well. A common rule is that all needed properties will influence the resulting quality.

An OR needs only one input to be true. If that input has a good quality the result will have a good quality as well. In case of an AND, all inputs need to have a good quality. That means the worst quality will rule the resulting quality. If the result encounters a scaling or conversion error, a CER error can be reported. The result should also have the calculated bit set. This allows an application to discern that the result is from a calculation.

Tag.Property Quality for Configuration Data

All configuration data are part of basic components (SymObject, PSigReal). The quality of these values is always GOOD non_specifc. The associated timestamp is the time of the configuration (property CHTIME). The only exception is when the configuration data is corrupt or not accessible.

Tag.Property Quality for Event Point Related Properties

Most of the event point related properties contain configuration data (refer to [Tag.Property Quality for Configuration Data](#) on page 224). The computed properties have a direct relationship to the generated event. These are the properties ACT (event point active) and UNACKEP (event point not acknowledged).

Every event is generated from an property with quality and timestamp. The computed event point related properties get the quality of the associated process property. The timestamp has a direct relationship to the associated event.

Tag Quality

OPC defines a quality specified on property basis. In addition, Harmony also provides a quality on tag basis. The tag class (SymTag) provides separate properties for the tag related quality. These properties are derived from other properties.

Properties

Quality

This property is part of the SymTag class. It represents the overall quality of the tag. It provides this quality in the same format defined previously for tag property quality. Specifically the value component of this property returns numerically the Harmony quality word and textually the three character quality string. The quality component of this property always returns the quality status GOOD non_specific as it represents the quality of this property, not the tag. The timestamp represents the last change in the value of this property.

Bad

This property is part of the SymTag class. It represents the overall BAD quality of the tag. It provides this quality as a Boolean status signal with an associated event point. The quality component of this property always returns the quality status GOOD non_specific as it represents the quality of this property, not the tag. The timestamp represents the last change in the value of this property.

Suspended

This property is a part of the HarmonyTag class (used for the Harmony functionality substitution and off scan). It provides this quality as a Boolean status signal. The quality component of this property always returns the quality status GOOD non_specific as it represents the quality of this property, not the tag. The timestamp represents the last change in the value of this property.

Harmony Quality Information

The connectivity server provides the quality information shown in [Table 48](#). [Table 49](#) describes the mapping rules.

Table 48. Harmony Quality Information

Quality	Description	Cause
No connection to gateway (control system).	The gateway or all connections to the gateway are not available.	Communication error, component failure.
Connection for the requested tag/tag.property not available.	For the requested property not connection handle available (no actualization).	Configuration of CCO and connectivity server do not match.
Requested property not available.	Requested property not available in the connectivity server.	Application requested for a Property not defined in the class definition.
Configuration change.	Tag affected by configuration change.	Not applicable.

Table 48. Harmony Quality Information (Continued)

Quality	Description	Cause
Decreasing value indicator.	Comparing old received value with current received value.	TRUE: value decreasing to the last received value. FALSE: old value less than or equal to new value.
Increasing value indicator.	Comparing old received value with current received value.	TRUE: value increasing to the last received value. FALSE: old value greater than or equal to new value.

Table 49. Quality Mapping Rules

Connectivity Server Quality	OPC Quality		OPC Substatus
Connection gateway	BAD		Comm_Failure
Connection tag	BAD		Not_Connected
Not permitted request	BAD		Configuration_Error
Configuration not found	BAD		Configuration_Error
Connectivity server quality	Harmony quality status		
Value decreasing	DVI	Decreasing value indicator	
Value increasing	IVI	Increasing value indicator	

OPC Quality Flags

The low eight bits of the quality flags are currently defined in the form of three bit fields: quality, substatus, and limit status. The eight quality bits are arranged as follows: QQSSSSL

Quality Bits

Table 50 describes the values for the quality bits.

Table 50. OPC Quality Bits

QQ	Bit Value	Define	Description
0	00SSSSLL	Bad	Value is not useful for reasons indicated by the substatus.
1	01SSSSLL	Uncertain	Quality of the value is uncertain for reasons indicated by the substatus.
2	10SSSSLL	N/A	Not used by OPC.
3	11SSSSLL	Good	Quality of the value is good.

Substatus Bits

The layout of these bits depends on the value of the quality bits. The substatus bits for bad quality are shown in Table 51. Table 52 shows the substatus bits for uncertain quality. Table 53 shows the substatus bits for good quality.

Table 51. Bad Quality Substatus

SSSS	Bit Value	Define	Description
0	000000LL	Non specific	Value is bad but no specific reason is known.
1	000001LL	Configuration error	Some Server specific problem with the configuration. For example the item is question has been deleted from the configuration.
2	000010LL	Not connected	Input is required to be logically connected to something but is not. This quality may reflect that no value is available at this time, for reasons like the value may have not been provided by the data source.
3	000011LL	Device failure	A device failure has been detected.
4	000100LL	Sensor failure	A sensor failure had been detected (the limit bits can provide additional diagnostic information in some situations.)

Table 51. Bad Quality Substatus (Continued)

SSSS	Bit Value	Define	Description
5	000101LL	Last known value	Communications have failed. However, the last known value is available. Note that the age of the value may be determined from the TIMESTAMP in the OPCITEMSTATE.
6	000110LL	Comm failure	Communications have failed. There is no last known value is available.
7	000111LL	Out of Service	Off scan or otherwise locked. This quality is also used when the active state of the item or the group containing the item is InActive.
8 - 15		N/A	Not used by OPC.

NOTE: Servers that do not support substatus should return 0. An old value can be returned with the quality set to bad (0) and the substatus set to 5. This is for consistency with the fieldbus specification. This is the only case in which a client may assume that a bad value is still usable by the application.

Table 52. Uncertain Quality Substatus

SSSS	Bit Value	Define	Description
0	010000LL	Non specific	No specific reason why the value is uncertain.
1	010001LL	Last usable value	Whatever was writing this value has stopped doing so. The returned value should be regarded as stale. This differs from a bad value with substatus 5 (last known value). That status is associated specifically with a detectable communications error on a fetched value. This error is associated with the failure of some external source to put something into the value within an acceptable period of time. The age of the value can be determined from the TIMESTAMP in OPCITEMSTATE.
2 - 3		N/A	Not used by OPC
4	010100LL	Sensor not accurate	Either the value has pegged at one of the sensor limits (in which case the limit field should be set to 1 or 2), or the sensor is otherwise known to be out of calibration via some form of internal diagnostics (in which case the limit field should be 0).

Table 52. Uncertain Quality Substatus (Continued)

SSSS	Bit Value	Define	Description
5	010101LL	Engineering units exceeded	Returned value is outside the limits defined for this parameter. In this case (per the fieldbus specification) the limits field indicates which limit has been exceeded but does not necessarily imply that the value cannot move farther out of range.
6	010110LL	Subnormal	Value is derived from multiple sources and has less than the required number of good sources.
7 - 15		N/A	Not used by OPC

NOTE: Servers that do not support substatus should return 0.

Limit Bits

The limit bits are valid regardless of the quality and substatus. In some cases, such as sensor failure, it can provide useful diagnostic information. [Table 53](#) provides the descriptions of the limit bits.

Table 53. Limit Bits

LL	Bit Value	Define	Description
0	QQSSSS00	Not limited	Value is free to move up or down.
1	QQSSSS01	Low limited	Value has pegged at some lower limit.
2	QQSSSS10	High limited	Value has pegged at some high limit.
3	QQSSSS11	Constant	Value is a constant and cannot move.

NOTE: Servers that do not support limit should return 0.

OPCHDA Quality

OPCHDA_QUALITY values identify quality values specific to retrieval of historical data. These quality values are described in [Table 54](#).

Table 54. OPCHDA_QUALITY Values

Quality Values	Description
OPC_EXTRADATA	More than one piece of data that may be hidden exists at same timestamp.
OPC_INTERPOLATED	Interpolated data value.
OPC_RAW	Raw data value.
OPC_CALCULATED	Calculated data value.
OPC_BADSOURCE	Interpolated value – source may not be good.
OPC_NOBOUND ¹	No data found to provide upper or lower bound value.
OPC_NODATA	No data collected. Archiving not active (for item or all items).
OPC_DATALOST	Collection started/stopped/lost.
OPC_CONVERSION	Scaling / conversion error.
OPC_ANNOTATION	An annotation exists for this data value.
OPC_ANNOTATION_NODATA	An annotation exists at this timestamp but there is no associated data value.

NOTE:
1. OPC_NOBOUND is intended to be used when bounding values are requested but not available. The Server returns an empty place holder (value NULL, timestamp Server dependent) with a quality of OPC_NOBOUND.

Appendix C OCS Colors

Introduction

The OCS Colors Aspect is located in the Workplace Structure in the Web System Workplace Object. The following table ([Table 55](#)) shows the default settings for the contents. When there are two RGB Values shown for a Color Name this means that it is a flashing color (alternating from the one defined color to the other).

Table 55. OCS Default Faceplate Colors and Descriptions

Color Name	RGB Value	Definition
OCS3Dframe1	198,220,220	First shade of all raised 3D faceplate field frames.
OCS3Dframe2	110,140,140	Second shade of all raised 3D faceplate field frames.
OCSDynamicBarAck Alarm	255,30,102	Color of dynamic bar during acknowledged alarm state.
OCSDynamicBar Limits	255,166,0	Color of dynamic bar high and low limit indicators.
OCSDynamicBar Normal	122,237,109	Color of dynamic bar during normal operation.
OCSDynamicBar UnackAlarm	255,30,102 185,4,58	Color of dynamic bar during unacknowledged alarm state.
OCSDynamicBar UnackNormal	122,237,109 82,165,82	Color of dynamic bar during unacknowledged return-to-normal state.
OCSPointTraceCO	255,255,255	Color of Control Output trace in Point Display trim element, as well as that of control output scale and scale selection button (Station tags only).

Table 55. OCS Default Faceplate Colors and Descriptions (Continued)

Color Name	RGB Value	Definition
OCSPointTracePV	0,255,255	Color of Process Variable trace in Point Display trim element, as well as that of PV scale selection buttons in Station tags.
OCSPointTraceSP	255,0,0	Color of SP trace in Point Display trim element, as well as that of SP scale and scale selection buttons (Station tags).
OCSRedTag	255,0,0	Color that is available for assignment to faceplate elements and graphical elements using the Expression Builder of the 800xA Graphics Builder interface.
OCSStaticText	0,0,0	Color of all static non changing text on all OCS Faceplates.
OCSStationSP DynamicBar	122,237,109	Color of SP Dynamic Bar (Station tags only).
OCSValBorder AckAlarm	255,30,102	Color of Analog value field outline during acknowledged alarm state.
OCSValBorderNormal	81,145,17	Color of Analog value field outline during normal operation.
OCSValBorderUnack Alarm	255,30,102 185,4,58	Color of Analog value field outline during unacknowledged alarm state.
OCSValBorderUnack Normal	81,145,17 38,69,7	Color of Analog value field outline during unacknowledged return-to-normal state.
OCSValEnergizedBg	255,245,51	Background color of Digital logic state descriptor field when current state of current tag is this state; also the outline color of MSDD zero state descriptor when current state is zero.
OCSValQuality	0,0,0	Color of overall tag quality indicator of all faceplates, as well as that of substituted value indicator at lefthand side of all Analog value fields.
OCSValQualityBg	0,196,196	Background color of substituted value indicator subfield at lefthand side of all Analog value fields.
OCSValue	0,0,0	Color of all Analog values, Digital logic state descriptors, text values, etc.

Table 55. OCS Default Faceplate Colors and Descriptions (Continued)

Color Name	RGB Value	Definition
OCSValueBg	0,196,196	Background color of all Analog value fields, Digital logic state descriptor fields (when current state is opposite this state), dynamic text fields, etc.
OCSValueUserSelBg	0,255,0	Background color of Digital logic state descriptor field when user selects this state as step 1 of 2 step selection operation (before Apply button or ENTER key or ESC key is pressed).

Revision History

Introduction

This section provides information on the revision history of this User Manual.



The revision index of this Configuration Manual is not related to the 800xA 6.0 System Revision.

Revision History

The following table lists the revision history of this User Manual.

Revision Index	Description	Date
-	First version published for 800xA 6.0	August 2014
A	Second version published for 800xA 6.0.1	October 2015

Updates in Revision Index A

The following table shows the updates made in this User Manual for 800xA 6.0.1.

Updated Section/Sub-section	Description of Update
Section 9 - Configuration Tools	Added information related to Environment Support.

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3BUA000157-600 A

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