

# System 800xA

## Operations

### Basic Operations

System Version 5.1

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# **System 800xA**

## **Operations Basic Operations**

**System Version 5.1**

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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.

This user manual describes the default settings of an Operator Workplace.

To fulfill the Safety of Machinery Directive 2006/42/EC, ensure that this manual and *System 800xA, Operator Manual, Warnings (2PAA110888\*)* are translated into your local official community language.

The English version of this document shall be used for translation into the local official community language. Contact your local ABB sales representative to obtain the relevant revision.

## 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.

## Feature Pack

The Feature Pack content (including text, tables, and figures) included in this User Manual is distinguished from the existing content using the following two separators:

Feature Pack Functionality \_\_\_\_\_

<Feature Pack Content>

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Feature Pack functionality included in an existing table is indicated using a table footnote (\*):

\*Feature Pack Functionality

Feature Pack functionality in an existing figure is indicated using callouts.

Unless noted, all other information in this User Manual applies to 800xA Systems with or without a Feature Pack installed.

## 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 which could result in *electrical shock*.



Warning icon indicates the presence of a hazard which 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 which 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. Terms that uniquely apply to this User Manual are listed in the following table.

Term/Acronym	Term/Acronym
Alarm	An alarm is an abnormal state of a condition associated with an Aspect Object. Typical conditions are: HighAlarm, HighHighAlarm, Normal, LowAlarm, and LowLowAlarm. An alarm is active as long as the abnormal state of the corresponding condition persists. An alarm is unacknowledged until a user has acknowledged it.
Alarm acknowledgement	A user action to confirm the recognition of an alarm. Acknowledgement changes the state of an alarm from unacknowledged to acknowledge.
Aspect	A representation of a facet of a real world entity, which entity is represented as an Aspect Object. An aspect defines a piece of information, and a set of functions to create, access, and manipulate the information.

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<b>Term/Acronym</b>	<b>Term/Acronym</b>
Aspect category	A specialization of an aspect type. An aspect instance is created from an aspect category.
Aspect view	An aspect can typically present its information in several different ways. These presentations are called aspect views.
Event	An event is a detectable occurrence, which is of significance to an Aspect Object. An event may or may not be associated with a condition. OPC Clients may subscribe to be notified of the occurrence of specified events.
Faceplate	A faceplate is an aspect that provides a graphical representation of a certain aspect object, with presentation of certain properties related to the object, and mechanism for operator interaction.
Workplace	User interactive functions that are combined for a for Operator Workplace, Engineering Workplace and so on. A node that runs one or several workplace applications
Graphic Display	A graphic display is an aspect that provides a visual presentation. It consists of static graphics representing for example tanks, pipes etc., and graphic elements that present dynamic information. Graphic displays are used to present the state of a process.

Term/Acronym	Term/Acronym
Graphic aspect	A generic name for all aspects implemented by Process Graphics 2 aspect system. They are configured using Graphics Builder.
<...>	Refers to keyboard navigation. For example, <ENTER> refers to the ENTER key.



## Section 1 System Overview

The System 800xA is used for process monitoring and control. System 800xA contains the functionality needed for efficient control and supervision of your process.

Key functional areas within System 800xA are:

- Operations
- Batch Management
- Manufacturing Management
- Information Management
- Control and I/O
- Engineering
- Asset Optimization
- Device Management & Field bus.

The operator has access to information from all these areas through the Operator Workplace which is the operator interface to all System 800xA functions.

The traditional operator functions like the process graphics, alarm and event lists, trend displays, and history logs are available. In addition to this, System 800xA allows the operator to have direct access to documentation, standard operating procedures, drawings etc. depending on how the process application has been configured.



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## Section 2 Operator Workplace

The Operator Workplace is the environment from which the operator views and controls the plant process.

The Operator Workplace may have a single or a multi-screen setup. In the multi-screen setup, one screen can, for instance, be dedicated to always show alarms and another to always present the trend display.

The Operator Workplace comes in two versions; as a full client or as a remote client. The remote client is used for remote supervision and control using the intranet/internet. The remote client only supports one monitor.

The operator keyboard can be a standard PC keyboard with a mouse.

It can in addition to the normal keys have dedicated hot keys for fast direct actions.

### Open Operator Workplace

Open the Operator Workplace from **Start > All Programs > ABB Industrial IT 800xA > System > Workplace**.

The operator can also open the workplace by using the desktop shortcut.

### Basic Layouts

The Operator Workplace Window is divided into four main parts (see [Figure 1](#)) Application Bar, the Display Bar, the Display Area and the Status Bar.

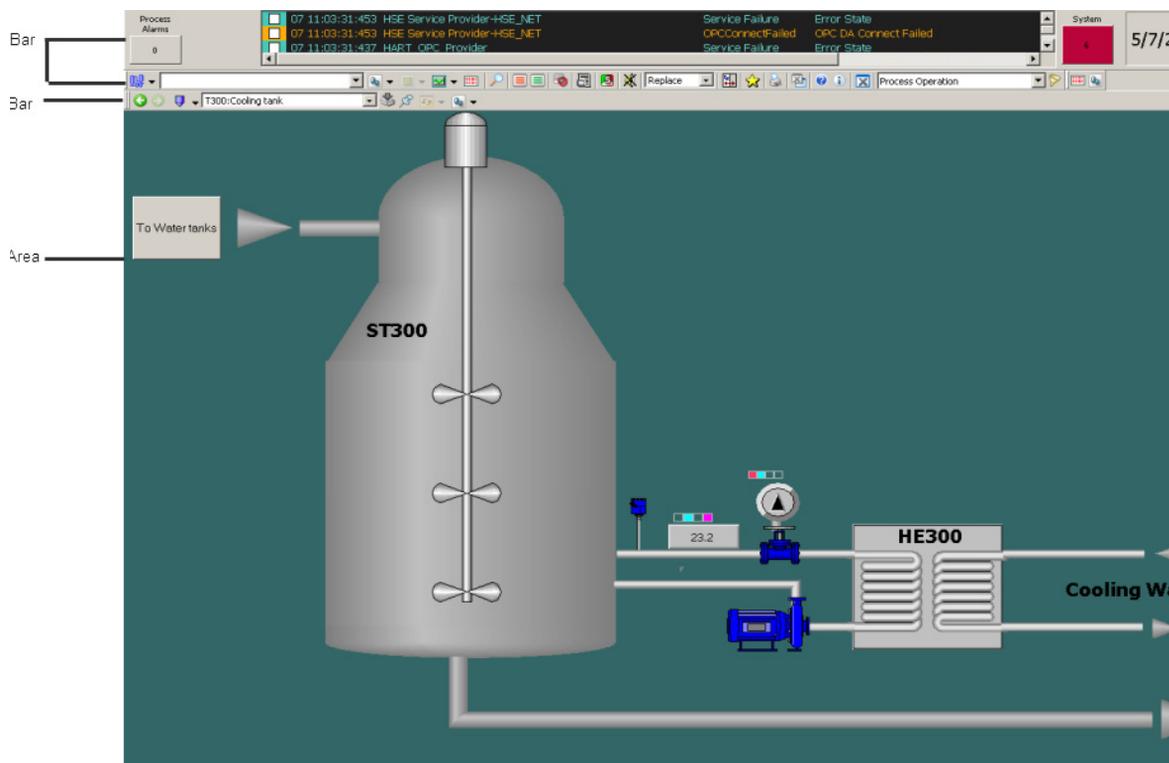


Figure 1. Operator Workplace in Operator Mode

## Pinning

Click the Pinned Tool in the Display Bar, (see [Figure 2](#)) The display area window will be pinned like a note on a billboard, that is, you cannot change the content of the display window by clicking on the Backward or Forward button, or drop a display on the Drop Target tool.

To enable change of display, remove the pinning of the display.

To prevent change of the base display you have to pin it, or press <Shift> when opening an aspect from the context menu, favorites or the aspect browser. This opens the aspect in a new overlap window.

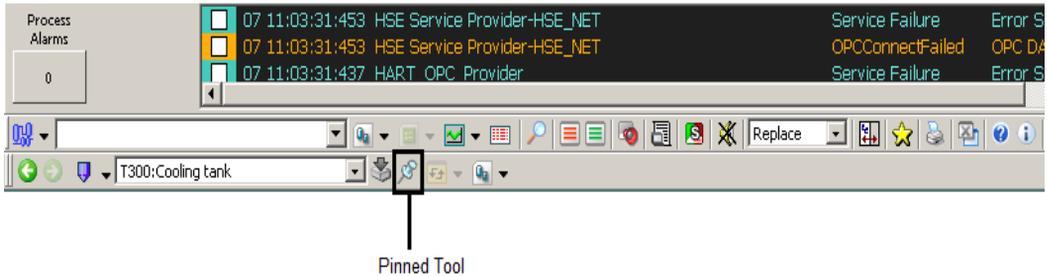


Figure 2. Pinned Tool

## Approval

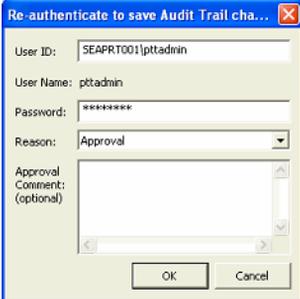
Process critical operations sometimes require an approval (re-authentication) to perform the operation.

The Approval Dialog (see [Figure 3](#)) asks for authentication from the operator and sometimes also for an approval (double- authentication) from another user with the accurate permission.

Enter the User ID (with domain if it differs from the default domain) and the password in the **User ID** area.

Select a reason for approval from the **Reason** drop-down list.

Enter a comment in **Approval Comment** if required.



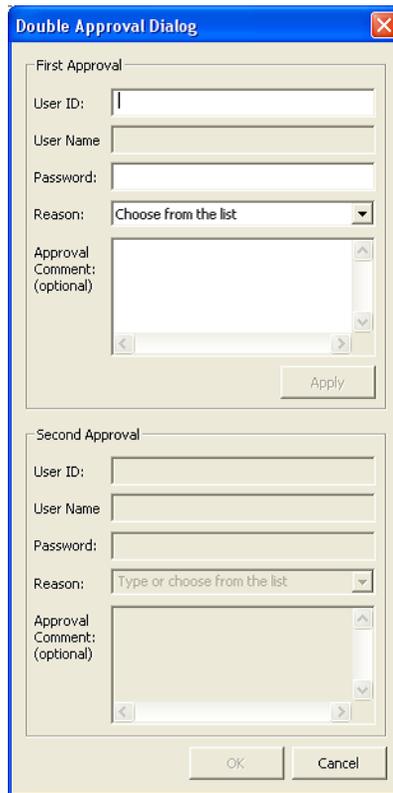
The image shows a Windows-style dialog box titled "Re-authenticate to save Audit Trail cha...". It contains the following fields and controls:

- User ID:** A text box containing "SEAPRT001\pptadmin".
- User Name:** A text box containing "pptadmin".
- Password:** A text box containing "\*\*\*\*\*".
- Reason:** A dropdown menu with "Approval" selected.
- Approval Comment: (optional):** A large text area with a scroll bar, currently empty.
- Buttons:** "OK" and "Cancel" buttons at the bottom.

*Figure 3. Approval Dialog Box*

For double-authentication, the **Second Approval** area is activated (see [Figure 4](#))

In the **Second Approval** area another authenticator (the user having the Approve permission granted on the object) must enter the User ID, password and the reason for approval. If required, enter a comment in the **Approval Comment**.



The image shows a 'Double Approval Dialog' window. It is divided into two main sections: 'First Approval' and 'Second Approval'. Each section contains the following fields: 'User ID', 'User Name', 'Password', 'Reason' (with a dropdown menu), and 'Approval Comment: (optional)' (with a text area). The 'First Approval' section has an 'Apply' button, and the 'Second Approval' section has 'OK' and 'Cancel' buttons. The dialog has a blue title bar with a close button in the top right corner.

Figure 4. Double Authentication Dialog Box

## Point of Control

A Plant is divided into logical sections that can be operated individually by a set of designated users. In a distributed system, multiple users operating from different geographical locations can be responsible for different sections of the plant.

In such situations, to avoid the risk of more than one user operating a section simultaneously, a strict security can be applied.

The Point of Control feature is provided to simplify the process of setting security. Point of Control is a concept that allows dividing the plant into sections.

The Operator having control over a section is called the Responsible User. The Responsible User has security right granted, that other users in the system lack for the same section. A typical scenario is that only the Responsible User will be able to control the process in this section.



The Point of Control feature is not set by default in the system. Refer to *System 800xA, Administration and Security (3BSE037410\*)* for information on configuring this feature.

## Confirmed Write

When running a SIL classified application in an 800xA for AC 800M High Integrity Controller, the **Confirmed Write** dialog box appears. This is to ensure that the required configuration parameter change or process value change is confirmed.

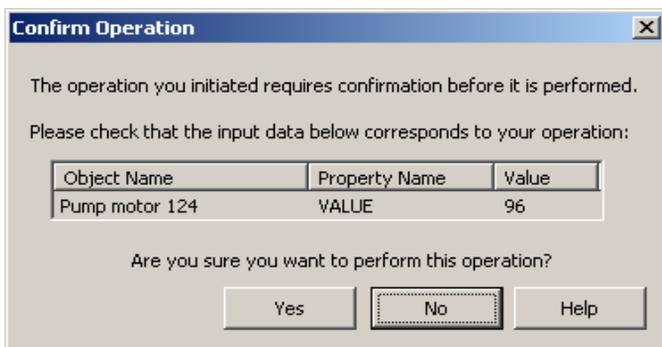


Figure 5. Confirm Operation

This displays the related object name, the name of the accessed property and the value to be set.

Click **Yes** if the data in the dialog box corresponds to the values given in the operation. Otherwise, click **No**.

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## Section 3 Navigation

### Overview

System 800xA offers a vast variety of navigation possibilities. For example, filters, hot keys, aspect links and favorites.

Filters are used for displaying relevant information for you as an operator.

Aspect links are links in the graphic display that is used to navigate forward and backward within the process.

Hot keys are used to gain direct access to process area displays, or to perform an action on an object.

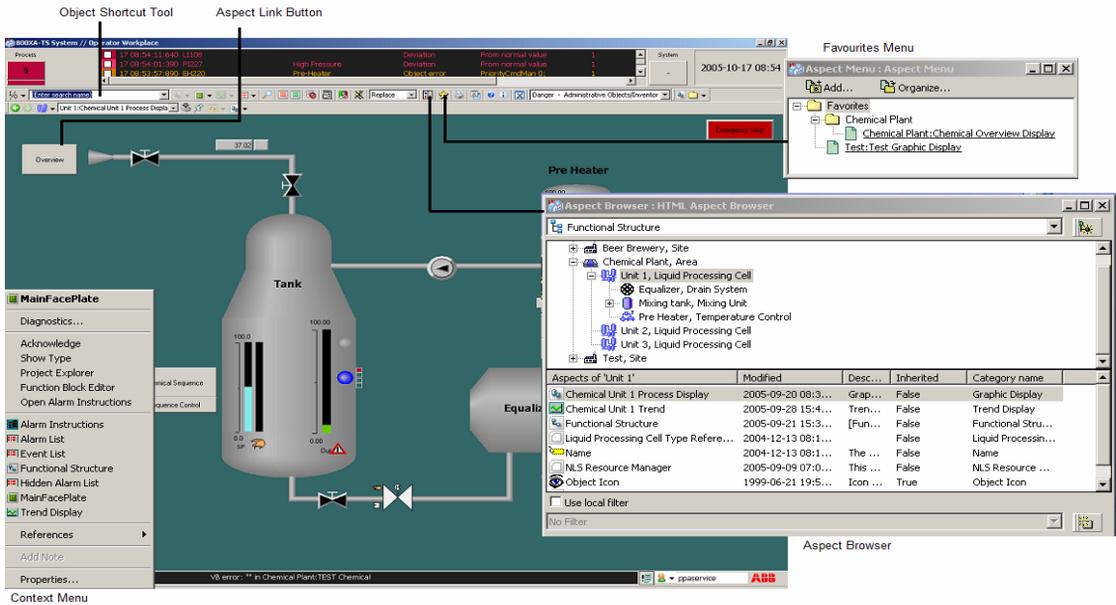


Figure 6. Example of an Operator Workplace

## Display Switching

There are different ways of navigation in the Operator Workplace. (see Figure 7)

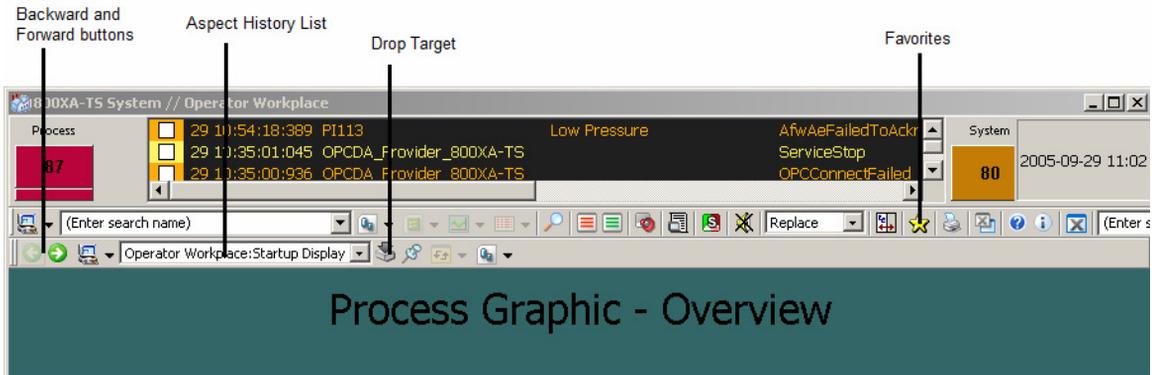


Figure 7. Display Switching

- Back and forward buttons  
Click **Back to Previous Display** to move to the previous display.  
Click **Forward to Next Display** to move to the next display.
- Aspect History List  
The Aspect History list helps the user to retrieve the most recently viewed aspects (the latest displayed on top). The list contains both the object and its aspects.
- Drop Target  
Drag an aspect to the Drop Target Area to view the aspect.
- Favorites  
Favorites help the user to group and organize the most visited aspects for fast navigation.

## Shortcuts

Shortcuts help the user for easy navigation to the most important and/or most frequently used aspects of different aspect objects.

Use shortcuts for one-click access to a specific display. The display is an aspect of an aspect object. The icon representing the shortcut is the aspect object icon.

Figure 8 shows the default shortcuts available in the Operator Workplace.

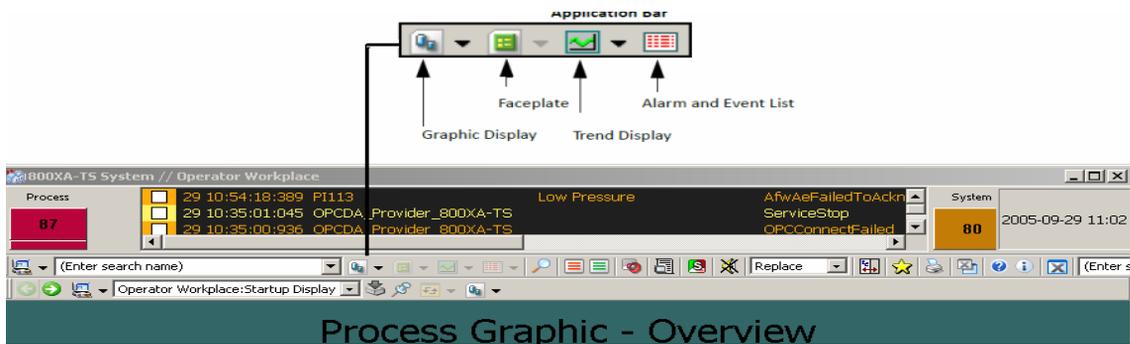


Figure 8. Default Shortcuts



When the pointer is placed on top of a shortcut, the tooltip displays the aspect object name and the aspect.

## Process Object Navigation

Use the following in the Operator Workplace for fast access to objects.

- The **Object Shortcut Tool** enables direct search and navigation to previously visited aspects of different objects.
- The **Aspect Link** in the Graphic Display is a shortcut to another aspect.
- The **Aspect Browser** provides the possibility to search for objects and their aspects by browsing structures.

- The **Context Menu** provides direct access to aspects of an object.

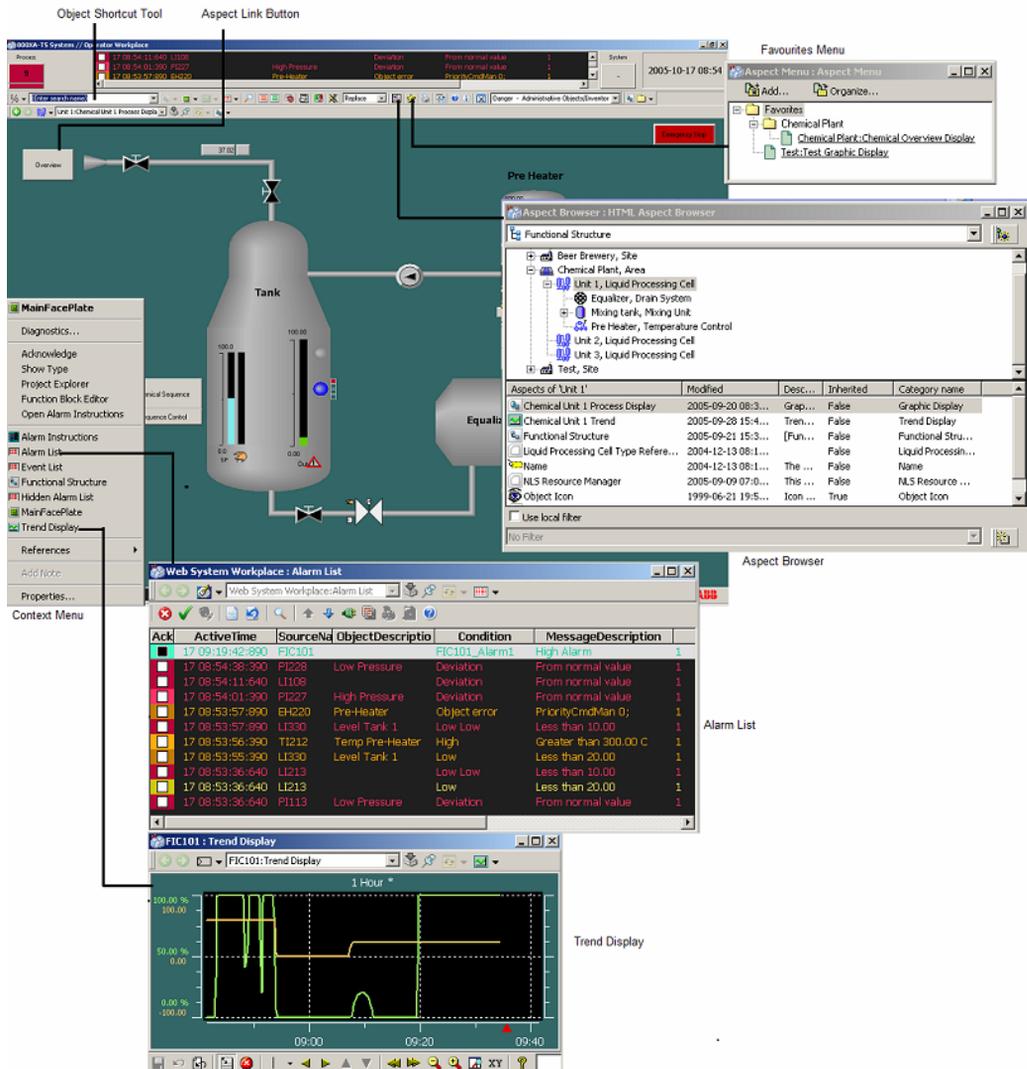


Figure 9. Ways to Navigate



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## Section 4 Process Graphics

Process Graphics are displayed in the display area of the Operator Workplace. The operator can perform the following using Process Graphics:

- Supervise the process.
- Highlight dynamic elements by placing the cursor on them.
- Control the process through faceplates.
- Change display to another Graphic Display or Alarm or Trend Display through Aspect view buttons.
- Open Alarm or Trend Displays using an object context menu.
- Acknowledge alarms through the display bar or context menu.

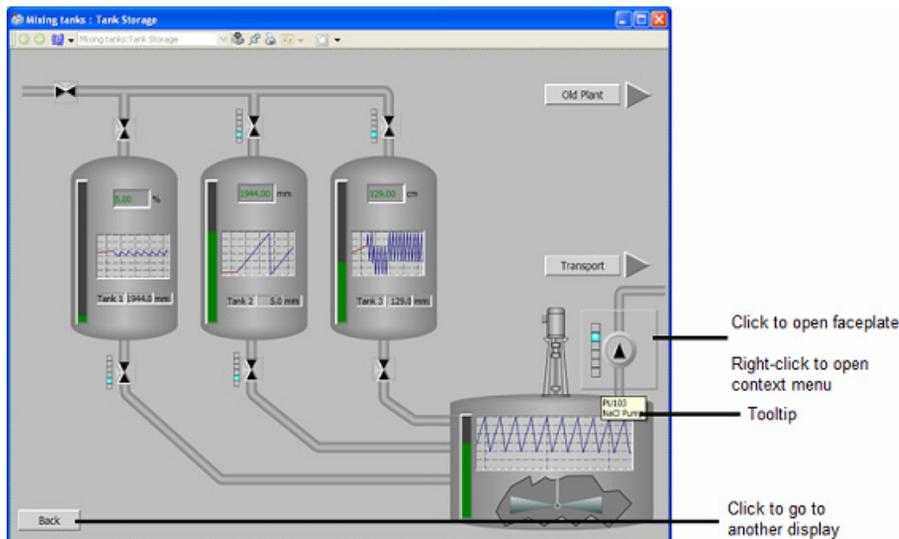


Figure 10. Process Display

## Acknowledge Alarms in a Graphic Aspect

This section describes the procedure to acknowledge alarms in a graphic aspect.

In the System 800xA, alarms are acknowledged by using the alarm list or by using the Alarm Control button available in the faceplate.

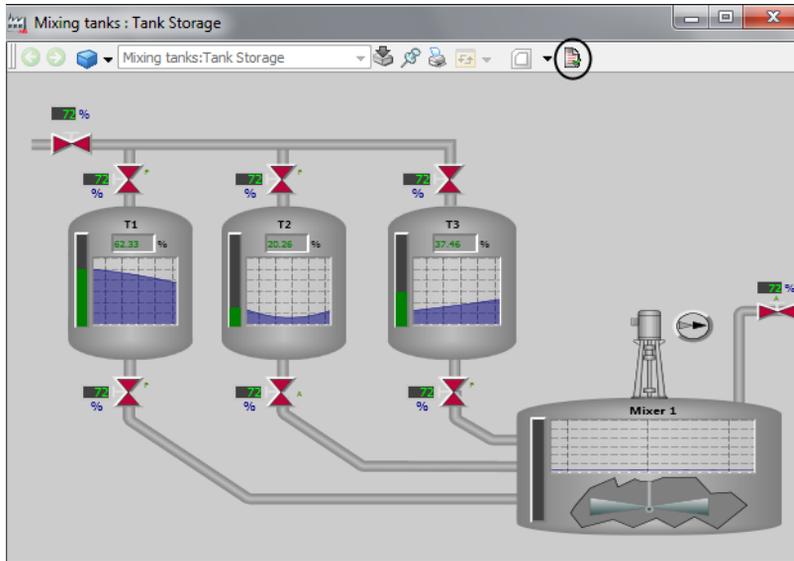
Alarms in a graphic aspect can also be acknowledged using a single command. The command acknowledges alarms for all visible objects in the graphic aspect. Any alarms for the objects through which faceplates can be opened, are acknowledged.



If a graphic display contains only primitive items that are configured to aspect object properties through expressions, then only the alarms for the object where the graphic display is located will be acknowledged.

Following are the two methods to acknowledge alarms in a graphic aspect using a single command:

1. Click  on the display bar of the graphic aspect preview as shown in [Figure 11](#).



*Figure 11. Display bar of a graphic aspect*

2. Right-click the preview area of the graphic aspect and select **Acknowledge All Visible Alarms** from the context menu as shown in (see [Figure 12](#)).

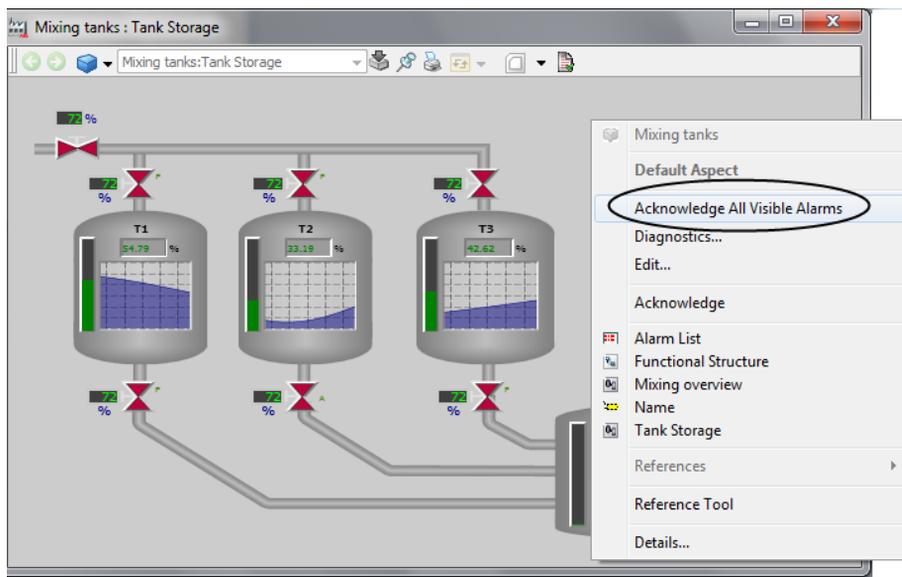


Figure 12. Context menu of a graphic aspect

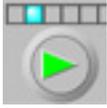
## Symbols

Table 1 shows some symbols that appear in Graphic elements and faceplates.

Table 1. Symbols in Graphic elements

Appearance	Description
	There are Operator Notes for the object.
	Object is run automatically by the system.

Table 1. Symbols in Graphic elements (Continued)

Appearance	Description
	Object is controlled manually.
	Object is interlocked. Interlocks are used to lock out a process object from certain states during a time period. For example, a motor can either run or be stopped. If the motor cannot be run due to repairs, then the motor is interlocked and cannot be started.
	Off The object is turned off
	On The object is turned on.
	Status information box. The Status Information box. Position 1 - Alarm State (Red) A flashing light indicates an unacknowledged alarm. Position 2 - Manual Mode (Aqua) Position 3 - Forced Mode (Yellow) Position 4 - Local/internal Mode (Magenta) Position 5 - Action Mode (Blue) Position 6 - Disabled/inhibited mode (Orange) For example, Position 4 can be used to indicate Local mode for a motor and Internal mode for a regulator.

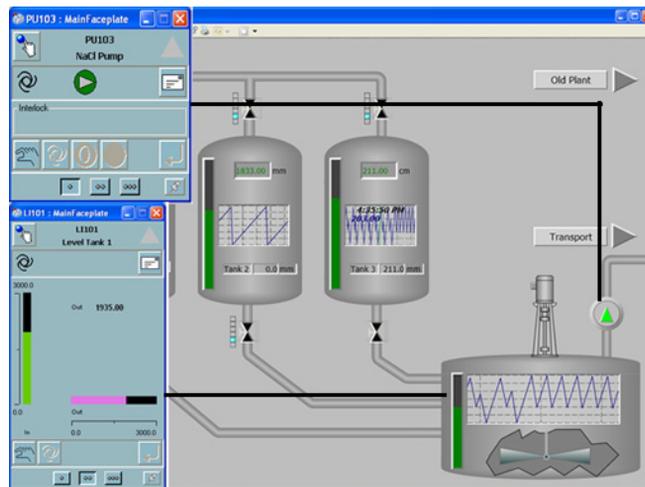


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## Section 5 Faceplates

A Faceplate is a process dialog for supervision and control. The faceplates can be opened in the following ways, refer to (see [Figure 13](#))

- From a process display by a click on the process object (graphic element).
- By entering (or selecting) the object name in the Object Shortcut Tool, see [Figure 8](#).



*Figure 13. . Graphic Display with Faceplates*

A faceplate can have three different views.

- **Reduced View** - This view is optimized to be as small as possible, and covers the most used commands and the most important information on an object.

- **Faceplate View** - This is the default view. It is larger than the reduced faceplate, and contains more information and normal operator commands.
- **Extended View** - This view has two groups of tabs with additional process information and functionality. It is used to display detailed information and is intended for the process engineer or the advanced operator.

The **View Selection Button** (see [Figure 14](#)) is used to toggle between different faceplate views.

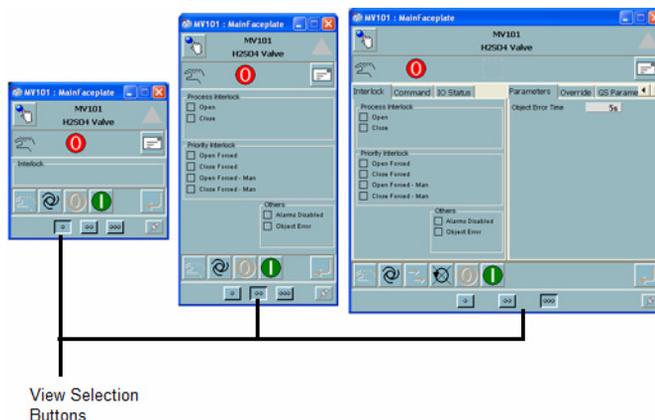


Figure 14. Reduced Faceplate and Faceplate View and Extended Faceplate

## Overview and Interaction

This section describes the different areas in a faceplate.



Faceplates may include some process critical operations which require an approval for the operation. See [Approval](#) for more information

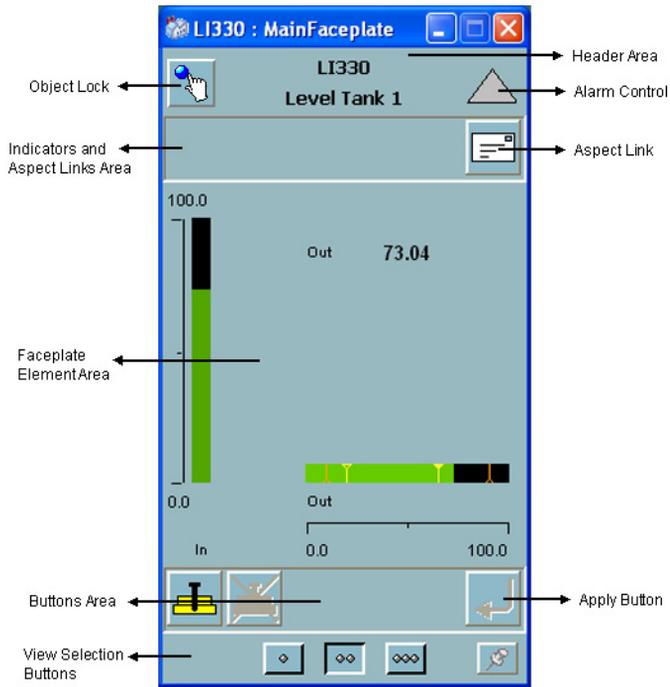


Figure 15. Faceplate Terminology

## Header

The header is included in each Faceplate. It consists of the following parts:

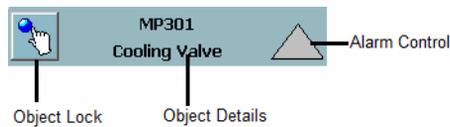


Figure 16. Example of a Header Area

## Object Lock



Object Lock is enabled if the Lock Server function is configured. See *System 800xA, Administration and Security (3BSE037410\*)* for more information.

Object lock gives the required permissions to the user to operate an object.

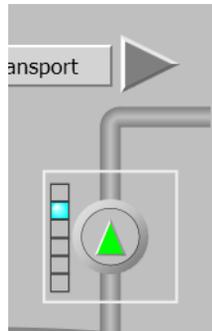
If **Autolock** is enabled the object will be locked when the user opens up the faceplate.

If the object lock function is controlled manually, the user must click **Object Lock** to operate the object.

In some situations, the lock required option may be enabled. All buttons and commands will be grayed out until the user clicks **Object Lock**.

No operation on the object is possible when locked by another user.

The graphic element (in the graphic display) is surrounded by a white frame to indicate that the object is locked, (see [Figure 17](#))



*Figure 17. Example of a Locked Graphical Element*

A tooltip with information on the user and the node from which the object is locked is shown if the mouse pointer is placed on Object Lock in the faceplate.

[Table 2](#) shows the different object lock states and their corresponding indications.

Table 2. Lock States displayed in the Object Lock

Lock status	Button	Icon	Background Color
Unlocked	Raised		Bluegrey
Locked by me	Sunken		White
Locked by [name of the user who locked]	Flat		Yellow

Execute one of the following to release a lock on an object:

1. Click the lock button.
2. Close the faceplate.

**Object Name** displays the primary name of the object. If the object name exceeds the width of the Name area, the object name is prefixed by three dots, "...".

**Object Description** displays the description of the object.

**Alarm Status** indicates the alarm state and allows acknowledging the object alarms from the faceplate by clicking **Alarm Status**.

## Status and Navigation Bar

The left side shows status indication of the current object. Shortcuts to other aspect views of the object are displayed to the right, for example Operator Note.



Figure 18. Example of Status and Navigation Bar Area

## Element Area

The faceplate element area in [Figure 19](#) contains two tab groups with the displayed faceplate elements Interlock and Trim Curve.

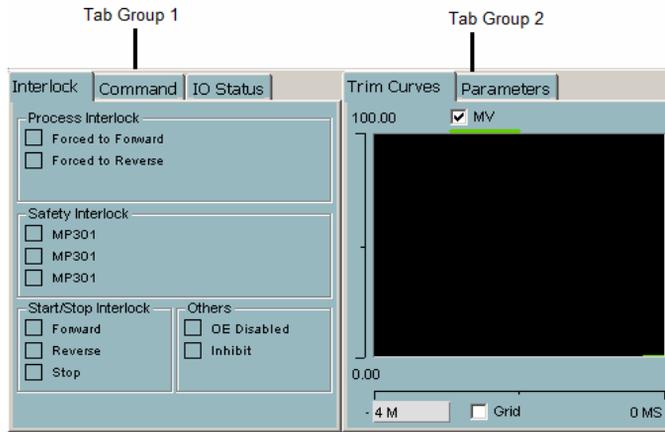


Figure 19. Example of a Faceplate Element Area

The faceplate element area can also contain graphic information as shown [Figure 20](#).

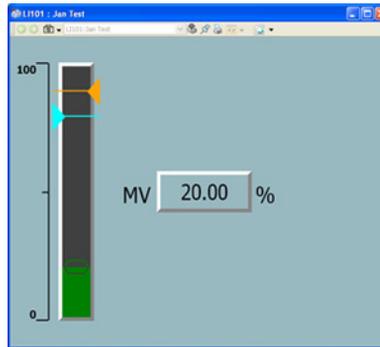


Figure 20. Faceplate Element with Bargraph

- **Bargraph** displays an object property value. You can modify the value by dragging the handle.
- **Numeric presentation** displays the value of an object property.
- **Direct entry window** opens the handle through a click in the bargraph, or in the numeric presentation.

Execute one of the following to modify the data in the direct entry window.

- Manually enter the value in the direct entry window.
- Click the Up and Down arrows in the direct entry window.
- Use the up and down arrow keys on the keyboard.

Click **Apply**, or press <Enter> to save the changes.

## Buttons

Buttons that control properties of the object are shown in the **Button** area. Click buttons to operate the object, for example changing the mode.

When you click a button, the effect on the object can be direct or applied.

Direct mode means that the effect is performed directly when you click the button.

Apply mode means that you need to click the **Apply** button or press <Enter> after performing an operation.

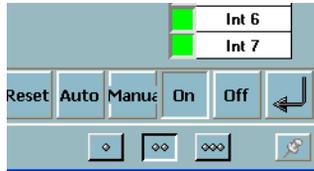


Figure 21. Applied Action Button

## View Selection Buttons

These buttons enable you to select one of the three Faceplate views. If a view does not exist, the button representing that view is disabled.

In [Figure 22](#) the Reduced Faceplate view is active.

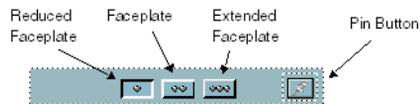


Figure 22. View Selection Buttons

A pinned faceplate will not be replaced when opening a new faceplate. The new faceplate will be opened in a separate window.

---

## Section 6 Alarms and Events

Alarms and events can be viewed and operated from the Operator Workplace through alarm and event lists, alarm summary indication, and so on. The difference between an alarm and event is that an alarm requires an action from an operator (for example, acknowledge).

An alarm list includes the alarms that an operator needs to pay attention, such as unacknowledged or active alarms.

Some alarms may be hidden which means that they will not be included in the standard alarm list. Hidden alarms can still be viewed in the event list. Typically alarms generated as a consequence of another alarm or alarms that are irrelevant for the operator in the current process operation mode may be configured to be hidden.

An alarm list can be configured to include or exclude group alarms. If group alarms are included, all the alarms except the group alarms are listed in the alarm list.

An event list includes the history of both alarms and events. Alarms or events can have different priorities that are indicated by different colors in for example, lists.



The Alarm Management (Alarm Analysis and Alarm Shelving) features are license protected. The description added for these features in this section, are not applicable for all the users

### Feature Pack Functionality

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The Alarm Grouping feature is license protected. The description added for this feature in this section, is not applicable for all the users

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The following pre-configured lists exist to view different types of alarms and events:

- Process alarm list displaying all process alarms except hidden alarms.

- System alarm list displaying all system alarms for the 800xA System.
- Process event list displaying the process event history.
- System event list displaying the system event history.
- Alarm lists on process objects displaying the alarms for the objects.
- Event lists on process objects displaying the event history for the objects.

## Priority Levels

*Table 3. Priority Levels for Process Alarms*

Process Alarms	Priority Level	Description	Example
Critical	1	Requires immediate operator action to not cause human health- or safety problems, plant shut-down or environment upset.	Risk for trip of major equipment (compressors, extruders etc.).
High	2	Requires immediate operator action to prevent the activation of a safety or process critical interlock. The operator action can prevent process shutdown and/or escalation of product problems.	Too high/low temperature, pressure, level etc. that will activate interlocks that lead to process shutdown.

Table 3. Priority Levels for Process Alarms (Continued)

Process Alarms	Priority Level	Description	Example
Medium	3	All alarms where operations have to intervene quickly to prevent process upset or quality loss.	These alarms are important during normal operations but may not disturb the operator during upsets where corrective action is required on critical alarms.
Low	4	All Alarms where no fast intervention is required but where the operator is requested to perform some actions as part of his normal task.	To inform the operator that a valve is switched, a motor is started or stopped, a failing instrument, the evolution of some quality parameters etc.

Table 4. Priority Levels for System Alarms

System Alarms	Priority Level	Description	Example
Critical	1	Requires immediate system maintenance action to not cause System 800xA shut down.	Loss of Aspect Directory, corrupt memory etc.
High	2	Requires immediate system maintenance actions to prevent parts of the System 800xA from stop functioning	Loss of communication, faulty I/O module etc.

Table 4. Priority Levels for System Alarms (Continued)

System Alarms	Priority Level	Description	Example
Medium	3	All system alarms where system maintenance has to intervene quickly to guarantee System 800xA availability, reliability and to prevent system 800xA upsets	Loss of redundancy. Loss of redundant controller unit, redundant communication link, redundant connectivity server. These system alarms are important during normal system runtime but may not disturb the system maintenance during upsets where corrective action is required on fatal problems.
Low	4	All system alarms where no fast intervention is required but where the system maintenance is requested to perform some actions as part of their normal tasks. Also used for informational messages (only exception to the rule is that alarms always require an action to be taken)	Faulty I/O channel or process signal. Example of an informational message is a condition of the plant that the operator should be aware of and take into account in further decisions, although the condition itself does not require any action to be taken.

## Alarm Grouping

This section applies to the System 800xA 5.1 Feature Pack release only.

A group alarm represents the alarm conditions added to a specific Alarm Group. Defining Alarm Groups in the system reduces the number of alarms displayed in the operator Alarm List.

Acknowledging a group alarm also acknowledges the alarm conditions in the group.

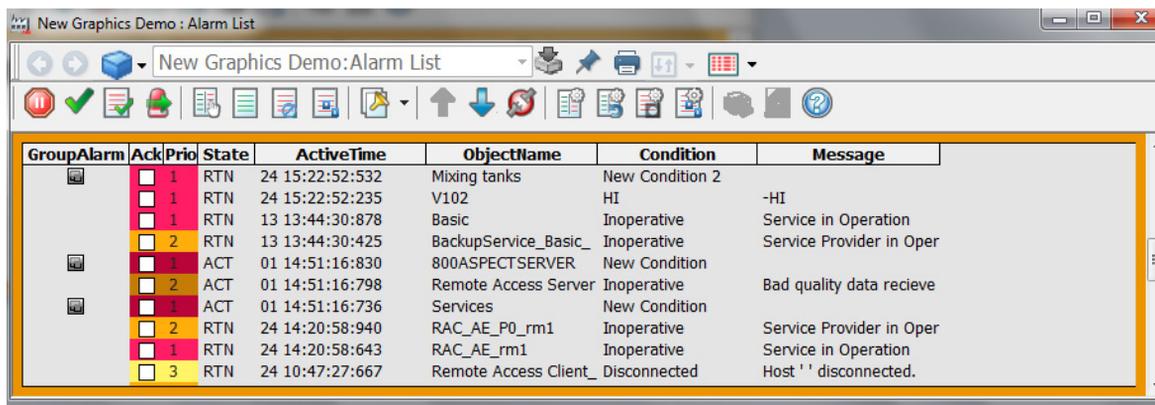
For more information on Alarm Group configuration, refer to *System 800xA, Configuration (3BDS011222\*)* and *System 800xA, Administration and Security (3BSE037410\*)*.

 Shelving a group alarm does not shelve the alarm conditions in the group. Shelving alarm conditions in the group does not shelve the group alarm. The changes in the alarm state of a shelved grouped alarm affects the alarm state of the group alarm.

 The alarm conditions in an Alarm Group can be hidden through hiding rules. The group alarm is hidden if all alarm conditions in the group are hidden. For information on alarm hiding, refer to *System 800xA, Configuration (3BDS011222\*)*.

### Group Alarm Indication

In an alarm list, a group alarm is indicated by  in the GroupAlarm column of the Alarm List. (See [Figure 23](#)).



GroupAlarm	Ack	Prio	State	ActiveTime	ObjectName	Condition	Message
	<input type="checkbox"/>	1	RTN	24 15:22:52:532	Mixing tanks	New Condition 2	
	<input type="checkbox"/>	1	RTN	24 15:22:52:235	V102	HI	-HI
	<input type="checkbox"/>	1	RTN	13 13:44:30:878	Basic	Inoperative	Service in Operation
	<input type="checkbox"/>	2	RTN	13 13:44:30:425	BackupService_Basic_	Inoperative	Service Provider in Oper
	<input type="checkbox"/>	1	ACT	01 14:51:16:830	800ASPECTSERVER	New Condition	
	<input type="checkbox"/>	2	ACT	01 14:51:16:798	Remote Access Server	Inoperative	Bad quality data recieve
	<input type="checkbox"/>	1	ACT	01 14:51:16:736	Services	New Condition	
	<input type="checkbox"/>	2	RTN	24 14:20:58:940	RAC_AE_P0_rm1	Inoperative	Service Provider in Oper
	<input type="checkbox"/>	1	RTN	24 14:20:58:643	RAC_AE_rm1	Inoperative	Service in Operation
	<input type="checkbox"/>	3	RTN	24 10:47:27:667	Remote Access Client_	Disconnected	Host ' ' disconnected.

Figure 23. Group Alarm Indication

 It is not possible to delete a group alarm using the Delete option in the Alarm and Event List context menu.

To delete a group alarm, delete all alarms belonging to the group. Execute the following steps to delete the alarms:

1. View the alarms using the Show Group option (see [Viewing Alarm Conditions in an Alarm Group](#)).
2. Right-click the required alarm and select Delete from the context menu.

## Viewing Alarm Conditions in an Alarm Group

The user can open an Alarm Group from the Alarm List, to view the alarms included in this group.

Execute one of the following:

1. Click  corresponding to a group alarm in the GroupAlarm column to open an alarm list displaying the alarm conditions within this group alarm.
2. Select the required alarm entries and select Show Group from the context menu.



Show Group is dimmed if the selected alarm entry does not belong to an Alarm Group.

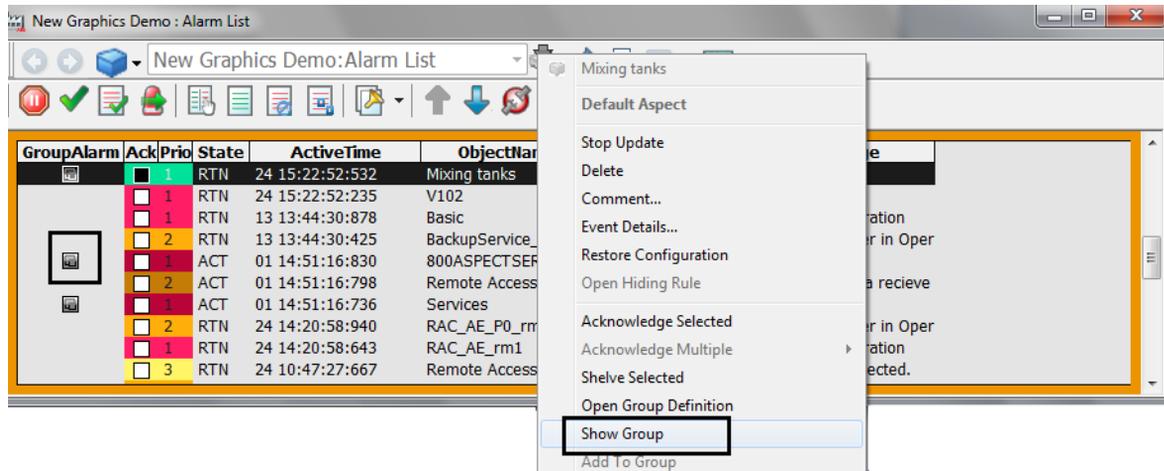
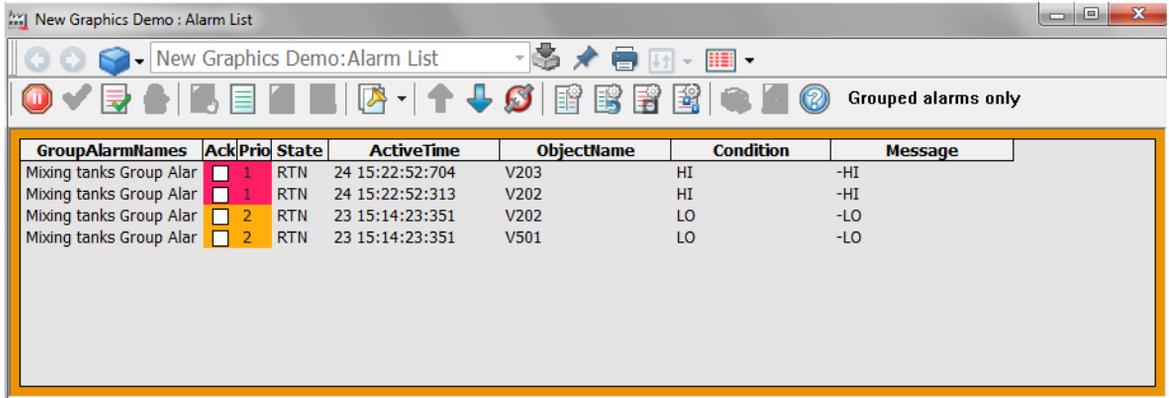


Figure 24. . Group Alarm Icon and Show Group

All the alarms included in the Alarm Group are displayed in an overlap window (see [Figure 25](#)).



GroupAlarmNames	Ack	Prio	State	ActiveTime	ObjectName	Condition	Message
Mixing tanks Group Alar	<input type="checkbox"/>	1	RTN	24 15:22:52:704	V203	HI	-HI
Mixing tanks Group Alar	<input type="checkbox"/>	1	RTN	24 15:22:52:313	V202	HI	-HI
Mixing tanks Group Alar	<input type="checkbox"/>	2	RTN	23 15:14:23:351	V202	LO	-LO
Mixing tanks Group Alar	<input type="checkbox"/>	2	RTN	23 15:14:23:351	V501	LO	-LO

Figure 25. Show Group Overlap

If an alarm condition belongs to several Alarm Groups, the GroupAlarmNames column lists all Alarm Groups separated by comma.

## Viewing the Alarm List without Alarm Grouping

Click  in the Alarm List Toolbar to view the grouped alarms and alarm entries not included in Alarm Groups.

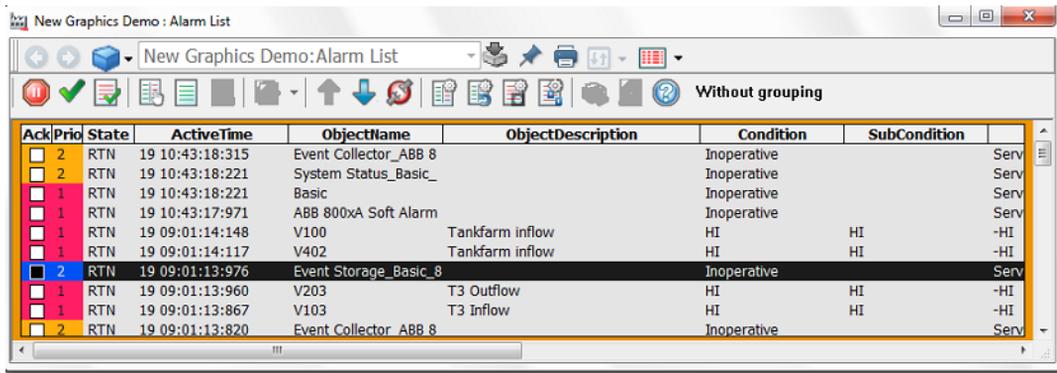


Figure 26. Show List Without Grouping

## Alarm Response Navigation

This section applies to the System 800xA 5.1 Feature Pack release only.

The Alarm Response Navigation feature allows the operator to navigate quickly to different aspects from an object. The following are the features of Alarm Response Navigation:

- Quick navigation to single or multiple aspects using the object context menu or through the Alarm and Event List.
- One time configuration or detailed configuration to enable quick navigation for all types of objects or for an object or object instance respectively.
- For more information on configuring the Alarm Response Navigation, refer to *System 800xA Operator Workplace Configuration (3BSE030322\*)*.

### Navigation

Navigation to the configured aspects can be done through the Alarm and Event List viewer or using the object context menu.



The Alarm Response option is not visible in the context menu if the Alarm Response Navigation feature is not enabled.

The Alarm Response option is visible in the context menu but not enabled, if the configured aspects are not resolved for aspect or object references.

### Navigating through the Alarm and Event List

In the Alarm and Event List, right-click an alarm and event list entry and select Alarm Response from the context menu. The context submenu includes all the aspects corresponding to the object of the alarm and event list entry (see [Figure 27](#)).

For example, to open the trend display of an object, right-click an alarm and event list entry and select **Alarm Response > Trend Display** from the context menu.

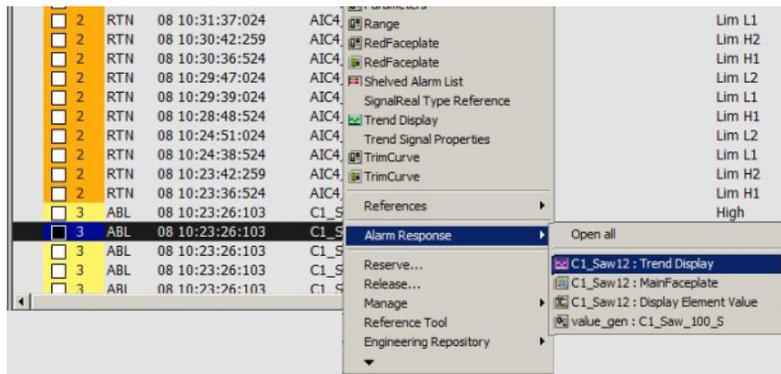


Figure 27. Alarm and Event Context Menu

### Navigating using the Object Context Menu

Right-click an object and select **Alarm Response**. The context submenu includes all the aspects corresponding to the object of the alarm and event list entry (see [Figure 28](#)). In the context menu, select **Alarm Response > Open All** to open all the aspects corresponding to the object.

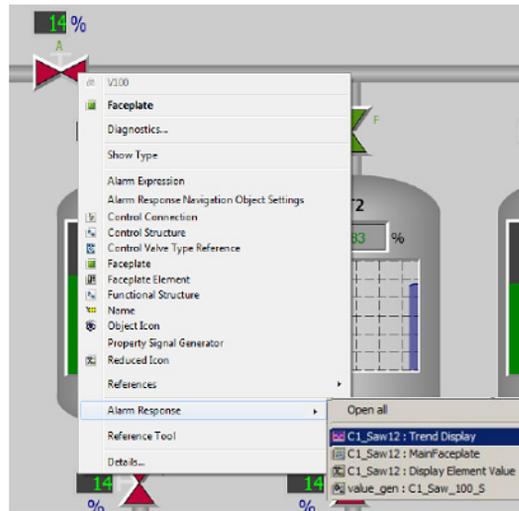


Figure 28. Object Context Menu

## Process Alarms

### Process Alarm List

Execute one of the following to access an Alarm List.

- Click the Process Alarm List button in the Application Bar to see a list of all process alarms.
- Click the  in the Tool Bar to access the Process Alarm List.
- Click the Alarm List shortcut in a faceplate to see a list of alarms for a specific object.
- Click an Alarm Band to see a list of all alarms for a specific process area.
- From an Alarm Line in the Application Bar using the context menu.

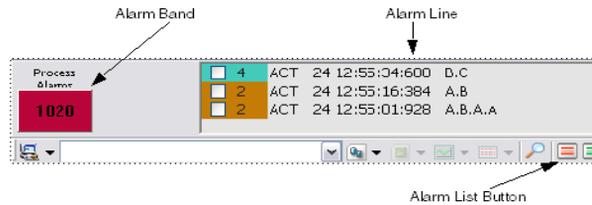


Figure 29. Accessing the Process Alarm List

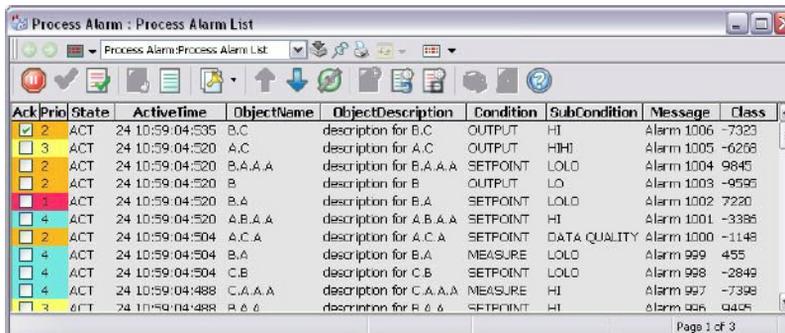


Figure 30. Process Alarm List with default Columns

### Columns

Following are the different columns in the Process Alarm List:

- **AckState** - shows if the alarm is acknowledged or not.
- **AckTime** - acknowledge time.
- **ActiveTime** - shows the time when the alarm was generated.

Feature Pack Functionality

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For group alarms, the **ActiveTime** is updated if the state of the group alarm changes from inactive to active, or if the state is changed from acknowledged to unacknowledged, or if the priority is changed to a higher priority.

---

- **Actor** - shows who acknowledged the alarm.
- **AlarmState** - shows the state of an alarm.
  - MBL = Manually blocked, also known as Disabled
  - ABL = Automatically blocked, also known as AutoDisabled or BlockedRepetitive
  - HID = Hidden
  - ACT = Active
  - RTN = Inactive (Return-to-normal)
- **AutoDisabled** - specifies whether the alarm has been auto disabled or not (True/False), or blank if is not supported.
- **Category** - grouping of alarms.
- **Class** - classification of the process area.
- **Comment** - shows comments added to the alarm.
- **Condition** - name of the condition, for example Limit exceeded.
- **CurrentValue** - value of the signal related to the alarm condition.
- **EnableState** - shows if the alarm is disabled or not.
- **EventTime** - the time when the alarm transitioned into the state.

Feature Pack Functionality

---

- **GroupAlarm** - indicates if the alarm is a group alarm.
- **GroupAlarmIds** - shows the Alarm Groups in which the alarm condition is included, in the format <GUID>:<GUID>.

- **GroupAlarmNames** - shows the Alarm Group names in which the alarm condition is included.



For GroupAlarmIds and GroupAlarmNames, the presentation of an array in the corresponding columns of the Alarm or Event details dialog is a comma separated list of entries.

- 
- **Hidden** - shows if the alarm is hidden or not.
  - **HidingMaskCondition** - shows the hiding mask condition if the alarm is hidden.
  - **HidingMaskName** - shows the hiding mask name if the alarm is hidden.
  - **HidingRuleCondition** - shows the hiding rule condition if the alarm is hidden.
  - **Message** - short description of the alarm.
  - **ObjectDescription** - description of the concerned function/component.
  - **ObjectName** - the concerned function/component name, node name or both.
  - **PriorityLevel** - priority level of the alarm message with 1 being the most important, (1=Critical, 2=High, 3=Medium, 4=Low)
  - **Quality** - quality associated with the alarm.
  - **Severity** - shows OPC severity.
  - **Shelved** - indicates if the alarm is shelved.
  - **ShelvingMode** - shows the type of mode used to shelve the alarm (normal/one-shot).
  - **ShelvingReason** - shows the reason for which the alarm was shelved.
  - **ShelvingTime** - shows the time at which the alarm was shelved.
  - **ShelfExpireTime** - shows the time at which the alarm will no longer be shelved.
  - **SourceName** - name of the object.
  - **SubCondition** - shows which subcondition is active.

### Context Menu

Right-click on an alarm to bring up the context menu to operate the alarm line, alarm list, or access any aspect object in an alarm.

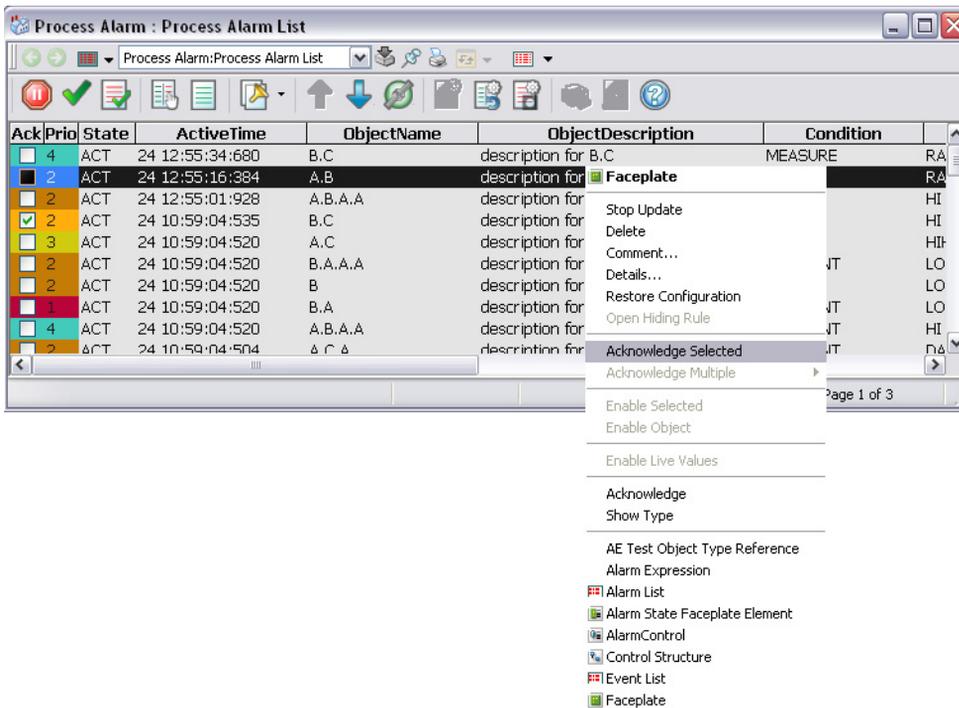


Figure 31. Context Menu for a Process Alarm

### Errors

A frame around the alarm list indicates that the data is uncertain or bad.

### Acknowledge

Acknowledge alarms for an object in the following ways:

- Select the **Ack State** check box for the alarm in the list.

- Right-click an alarm line and select **Acknowledge** (all alarms for that object will be acknowledged) or **Acknowledge Selected** (only the selected object will be acknowledged) from the context menu.
- Select one or several alarms in the alarm list and click .
- Click the alarm status button in a faceplate.
- Use <Ctrl + Shift + Q> (all active alarms will be acknowledged).
- In a graphic display:
  - Click  from the display bar (or)
  - Right-click the graphic display and select **Acknowledge All Visible Alarms** from the context menu.

## Silence Audible Alarm and External Alarm

To silence an audible alarm, click the Silence Audible Alarm button on the Application Bar.

To silence an external alarm, click the External Alarm Silence button on the Application Bar.

This is a one shot type action that silences the current audible/external alarm. If a new audible/external alarm then occurs, that alarm must be silenced again.



Silencing an audible or an external alarm does not mean that the alarm is acknowledged.

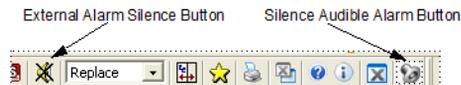


Figure 32. Silence in the Application Bar

## Alarm Band

The Alarm Band provides a link to an Alarm List. The number within the band represents the number of unacknowledged alarms.

The color of the band represents the highest priority alarm present.

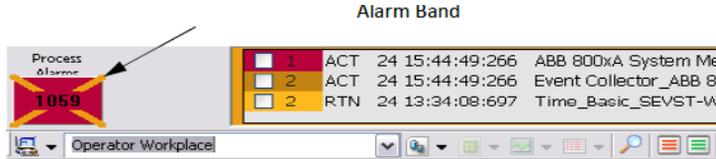


Figure 33. Alarm Band

A red cross over the Alarm Band indicates that the alarm band does not have contact with any server.

An orange cross indicates that some server providing alarms are not accessible; the data can also be uncertain or bad.

If the Alarm Band looks like Figure 33, the alarm band is partially connected to a server. In this case it is still possible to for example make acknowledge.

### Hidden Process Alarms

The Alarm Band can indicate if there are any hidden alarms. Hidden alarms are often secondary alarms.

In Figure 34 the alarm band to the left indicates that there are 23 unacknowledged alarms, 26 acknowledged alarms and 6 hidden alarms. The alarm band indication differs based on the configuration done.

The alarm band to right has 23 unacknowledged alarms, 26 acknowledged alarms and 0 hidden alarms.

The lower area of the alarm band (white by default) indicates the presence of hidden alarms. To open the alarm list with the hidden alarms, click this area.

The hidden alarm list uses the same configuration as the alarm list, except that it overrides the hidden filter to show only hidden alarms.

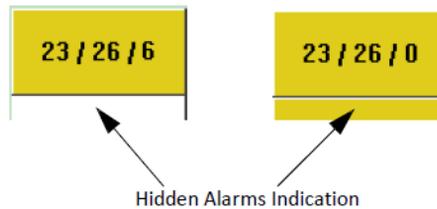


Figure 34. Hidden Alarms

### Shelved Process Alarms

The upper area of the alarm band (black by default) indicates the presence of shelved. To open the alarm list with the shelved alarms, click this area. See [Figure 35](#).

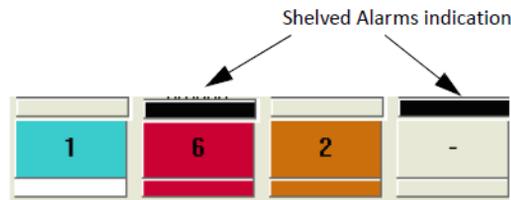


Figure 35. Shelved Alarms

The shelved alarm list uses the same configuration as the alarm list, except that it overrides the shelved filter to show only shelved alarms.

## Alarm Sequence Bar

The Alarm Sequence Bar is a status display in which the defined number of alarms is displayed horizontally. New alarms are introduced from the right.



Figure 36. Alarm Sequence Bar

### Context Menu

Right-click an alarm in the alarm sequence bar to bring up the context menu where you can perform some actions on the alarm. For example, to acknowledge an alarm, select Acknowledge from the context menu.

### Errors

A red cross over the Alarm Sequence Bar window indicates that the alarm sequence bar is not connected to all redundant service providers. An orange cross indicates that the redundant server is down and the sequence bar is trying to connect to the other server. It can also be partial connected, that is the sequence bar is connected to some redundant service provider.

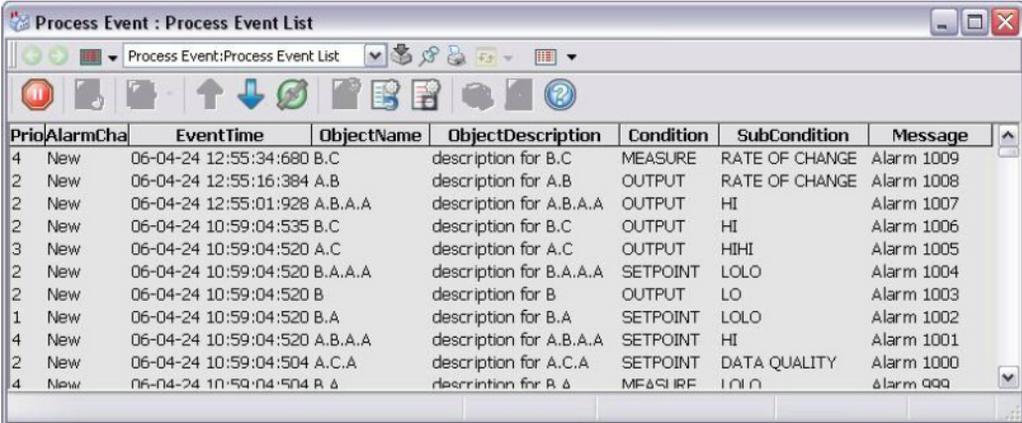
## System Alarms

System Alarms are alarms generated from the 800xA System, such as network problems, hardware errors or server errors. These alarms must be resolved by the system administrator.

Click  in the tool bar to access the System Alarms.

## Process Events

To access a Process Event List for an object, click  in the Tool Bar.



Prio	AlarmCha	EventTime	ObjectName	ObjectDescription	Condition	SubCondition	Message
4	New	06-04-24 12:55:34:680	B.C	description for B.C	MEASURE	RATE OF CHANGE	Alarm 1009
2	New	06-04-24 12:55:16:384	A.B	description for A.B	OUTPUT	RATE OF CHANGE	Alarm 1008
2	New	06-04-24 12:55:01:928	A.B.A.A	description for A.B.A.A	OUTPUT	HI	Alarm 1007
2	New	06-04-24 10:59:04:535	B.C	description for B.C	OUTPUT	HI	Alarm 1006
3	New	06-04-24 10:59:04:520	A.C	description for A.C	OUTPUT	HIHI	Alarm 1005
2	New	06-04-24 10:59:04:520	B.A.A.A	description for B.A.A.A	SETPOINT	LOLO	Alarm 1004
2	New	06-04-24 10:59:04:520	B	description for B	OUTPUT	LO	Alarm 1003
1	New	06-04-24 10:59:04:520	B.A	description for B.A	SETPOINT	LOLO	Alarm 1002
4	New	06-04-24 10:59:04:520	A.B.A.A	description for A.B.A.A	SETPOINT	HI	Alarm 1001
2	New	06-04-24 10:59:04:504	A.C.A	description for A.C.A	SETPOINT	DATA QUALITY	Alarm 1000
4	New	06-04-24 10:59:04:504	B.A	description for B.A	MEASURE	LOLO	Alarm 999

Figure 37. Process Event List with default Columns

### Columns

The different columns in the Process Event List are described below:

- **AckState** - shows if the alarm that caused the event is acknowledged or not.
- **AckTime** - acknowledge time for the alarm that caused the event.
- **ActiveTime** - shows the time when the alarm that caused the event was generated.
- **Actor** - shows who acknowledged the alarm that caused the event.
- **AlarmChange** - shows the condition of the alarm that caused the event to be generated. For example, the alarm became inactive, alarm was acknowledged, or a comment was added.
- **AlarmState** - shows the state of an event.

MBL = Manually blocked, also known as Disabled

ABL = Automatically blocked, also known as AutoDisabled or BlockedRepetitive

HID = Hidden

ACT = Active

RTN = Inactive (Return-to-normal)

- **AutoDisabled** - specifies whether the alarm that caused the event has been auto disabled or not (True/False), or blank if not supported.
- **Category** - grouping of alarms.
- **Class** - classification of the area that caused the event.
- **Comment** - shows comments added to the event.
- **Condition** - name of the condition.
- **CurrentValue** - value of the signal related to the alarm condition.
- **EnableState** - shows if the alarm that caused the event is disabled or not.
- **EventTime** - shows the most recent change of state of the alarm that caused the event.

#### Feature Pack Functionality

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- **GroupAlarm** - indicates if the alarm is a group alarm.
- **GroupAlarmIds** - shows the Alarm Groups in which the alarm condition is included, in the format <GUID>:<GUID>.
- **GroupAlarmNames** - shows the Alarm Group names in which the alarm condition is included.



For GroupAlarmIds and GroupAlarmNames, the presentation of an array in the corresponding columns of the Alarm or Event details dialog is a comma separated list of entries.

- 
- **Hidden** - shows if the event is hidden or not.

- **HidingMaskCondition** - shows the hiding mask condition if the event is hidden.
- **HidingMaskName** - shows the hiding mask name if the event is hidden.
- **HidingRuleCondition** - shows the hiding rule condition if the event is hidden.
- **Message** - short description of the event.
- **ObjectDescription** - description of the concerned function/component.
- **ObjectName** - the concerned function/component name, node name or both.
- **Priority Level** - priority level of the alarm message that caused the event with 1 being the most important, (1=Critical, 2=High, 3=Medium, 4=Low).
- **Quality** - quality associated with the alarm that caused the event.
- **Severity** - shows OPC severity.
- **Shelved** - indicates if the alarm is shelved.
- **ShelvingMode** - shows the type of mode used to shelve the alarm (normal/one-shot).
- **ShelvingReason** - shows the reason for which the alarm was shelved.
- **ShelvingTime** - shows the time at which the alarm was shelved.
- **ShelfExpireTime** - shows the time at which the alarm will no longer be shelved.
- **SourceName** - name of the object that caused the event.
- **SubCondition** - shows if a subcondition is reached.

### Context Menu

Right-click an event to open the context menu to operate the event line, event list or access any aspect of the object in event state.

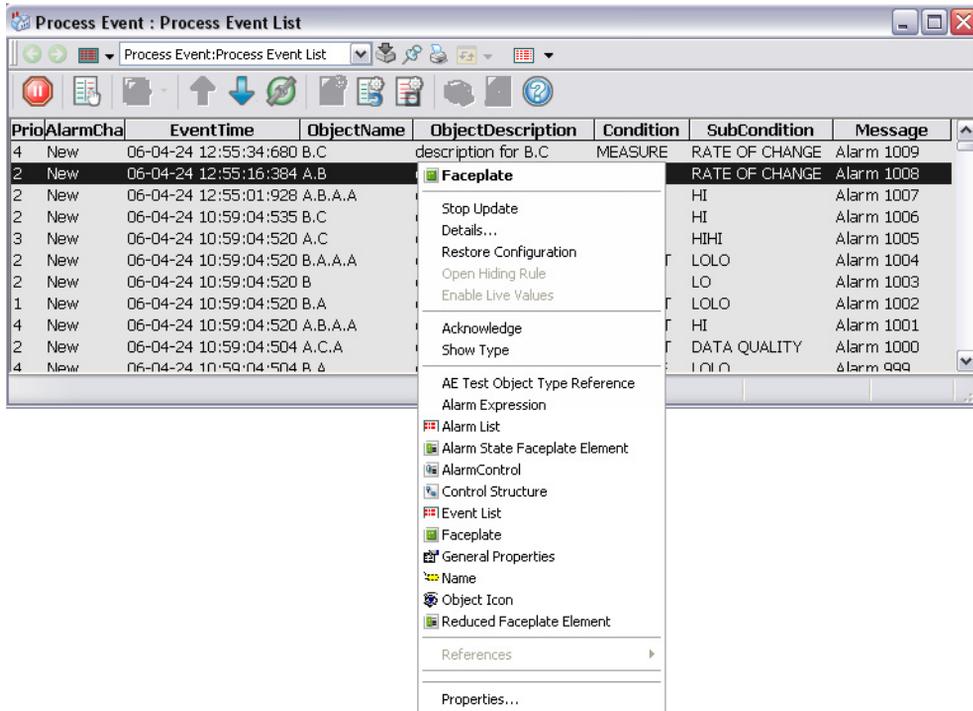


Figure 38. Context Menu for a Process Event

## Working within a Process Event List



When the event servers are disconnected, data between the servers are not replicated.

When the event servers are disconnected, data between the servers are not replicated.

When the event servers are connected, they might not contain the same data, that is, event lists with the same configuration on the different nodes do not contain the same events.

For the event servers to be identical and the event lists to contain the same events, contact your system administrator.

Figure 39 shows the Process Event List tool bar.

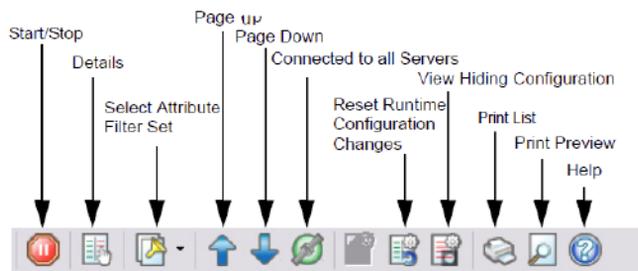


Figure 39. Process Event List Tool Bar

- **Start/Stop** - To start, restart or stop list updates.
- **Details** - To view a detailed information of the selected event.
- **Select attribute filter set** - To remove the current filter. Click the drop-down to select a predefined attribute filter. If a filter is selected, this will be indicated between the toolbar and the event list.
- **Page Up** - To show the previous 500 events.
- **Page Down** - To show the next 500 events will be shown in the list.
- **Connected to all Servers** - To view the System Status Viewer. For more information about the System Status Viewer, refer to *System 800xA, Administration and Security (3BSE037410\*)*.
- **Reset Runtime Configuration Changes** - To restore the initial view of the event list if any changes are done to the event list.
- **View Hiding Configuration** - To view the Hiding Mask Manager. See *System 800xA, Operations, Operator Workplace Configuration (3BSE030322\*)* for more information.
- **Print List** - To print the event list on a default network printer.
- **Print Preview** - To present the event list to be printed, as a preview.

- **Help** - To view the online help.

**Marking and Selecting Rows.** The different methods of selecting rows are:

- Click a row to select, and the respective row is highlighted.
- Press < Ctrl> and click another row to select non sequential rows.
- Press < Shift> to select a sequential group of rows.
- Click and drag to select a sequence of rows.

**Sizing Columns and Rows.** Drag the column header edge and move it right or left to size a column. Drag a row bottom or select all rows and move the bottom edge up or down to size a row.

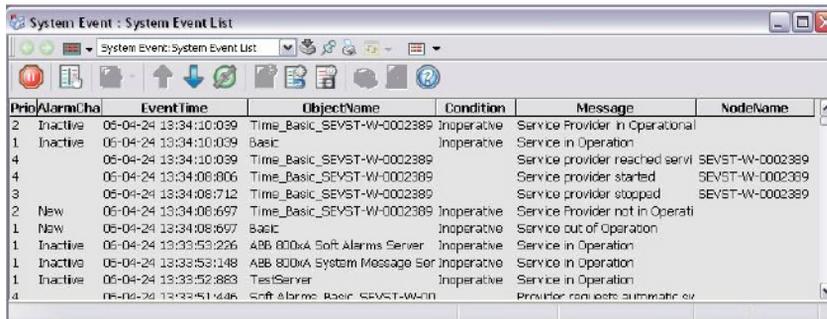
**Sorting Columns.** To sort a column, double-click the column header.

**Moving Columns.** To move a column:

- Click the column header to select the column to be moved. The selected column will be highlighted.
- Drag the column to the required location. A red line marks the position between columns where you can place the column.

## System Events

A System Event List can be accessed from an Event Line in the Application Bar using the context menu or using  in the Tool bar.



Prio	AlarmCha	EventTime	ObjectName	Condition	Message	NodeName
2	Inactive	05-04-24 13:34:10.039	Time_Basic_SEVST-W-0002389	Inoperative	Service Provider in Operational	
1	Inactive	05-04-24 13:34:10.039	Basic	Inoperative	Service in Operation	
4		05-04-24 13:34:10.039	Time_Basic_SEVST-W-0002389		Service provider reached servi	SEVST-W-0002389
4		05-04-24 13:34:06.806	Time_Basic_SEVST-W-0002389		Service provider started	SEVST-W-0002389
3		05-04-24 13:34:06.712	Time_Basic_SEVST-W-0002389		Service provider stoppad	SEVST-W-0002389
2	New	05-04-24 13:34:06.697	Time_Basic_SEVST-W-0002389	Inoperative	Service Provider not in Operati	
1	New	05-04-24 13:34:06.697	Basic	Inoperative	Service out of Operaton	
1	Inactive	05-04-24 13:33:53.226	ABB 800xA Soft Alarms Server	Inoperative	Service in Operation	
1	Inactive	05-04-24 13:33:53.148	ABB 800xA System Message Ser	Inoperative	Service in Operation	
1	Inactive	05-04-24 13:33:52.863	TestServer	Inoperative	Service in Operation	
4		05-04-24 13:33:51.646	Soft Alarms Basic SEVST-W-000		Provider requests automatic cy	

Figure 40. System Event List with default Columns

Refer to [Process Events](#) on page 59 for information on working with the system event lists.



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## Section 7 Trends

A Trend Display can present run-time data and historical data.

When a Trend Display aspect is selected for an object, all available data can be viewed through the trend. It is also possible to select a time range in the trend to view the data.

A Trend Display can contain multiple Trend Traces and is possible to trend any numerical property. The user can also insert new traces for comparison with the existing ones.

There are four different layouts for the trend display:

- The Main View, which is the standard layout ([Figure 41](#)).
- The Top View, that is, the Main View with the Trend Table on top ([Figure 42](#)).
- The Left View, that is, the layout where the Trend Table and Trend Tool Bar are replaced with an Item Area to the left, a Top Tool Bar and a Bottom Tool Bar ([Figure 43](#)).
- The Right View, that is, with the Item Area to the right, a Top Tool Bar and a Bottom Tool Bar ([Figure 44](#)).

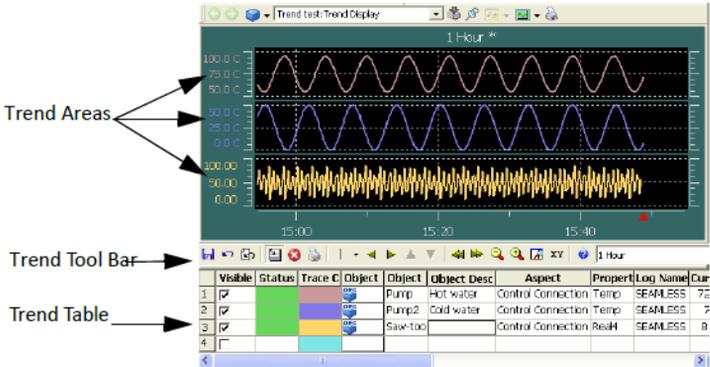


Figure 41. Trend Display Main View

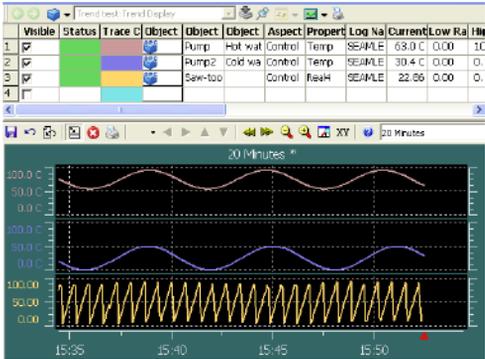


Figure 42. Trend Display Top View

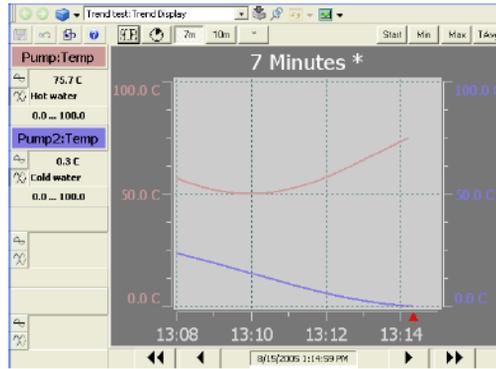


Figure 43. Trend Display Left View

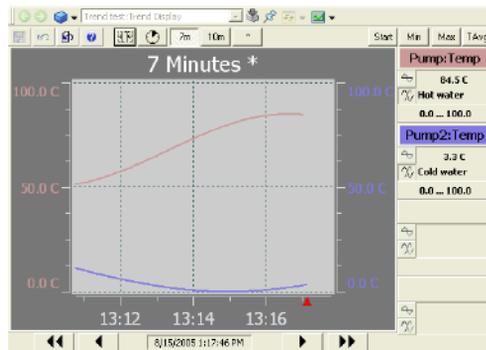


Figure 44. Trend Display Right View

## Trend Tool Bar

Figure 45 shows the Trend Tool bar.

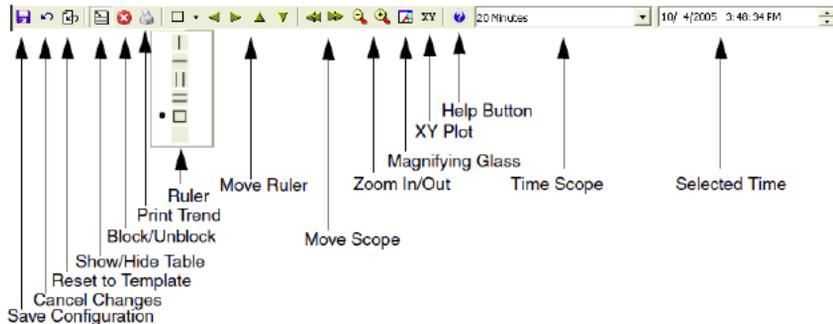


Figure 45. . Trend Tool Bar

- **Save Configuration**  - To save the configuration if any changes are done to the trend.
- **Cancel Changes**  - To cancel the unsaved changes in the Trend Display view. Note that not all changes can be cancelled.
- **Reset to Template**  - To reset all applicable data in the Trend Display configuration to the data available in the Trend Template.
- **Show/Hide Table**  - To show or hide the Trend Table. Click the button to show the table.
- When the table is hidden, it is replaced by a small table, showing trace colors and logged object in the format object: property, log name.
- **Block/Unblock**  - To start or stop updating the graphical view. The following operator actions also cause the graphical view to be blocked:
  - moving scope in any direction
  - zooming
  - changing in the **Selected Time** area in the Trend Tool Bar.

- **Print Trend**  - To print the trend display and the contents of the Trend Table.
- **Select Ruler**  - To select a ruler. This can be vertical, vertical size, horizontal, horizontal size and area size. Using rulers, the user can, for example zoom in n a time interval and read the time and value for a specific time in the trace.
- **Move Ruler**  - To move the rulers.
- **Move Scope**  - To pan the graphical view in the selected direction. The buttons move the scope by 25% of the current time scope.
- **Zoom in/out**  - To zoom in *or* zoom out around the center point of the scope. Zooming out increases the scop by 50%. Zooming in decreases the scope by one-third.
- **Magnifying Glass**  - To toggle the magnifying glass mode. This sets a default start and end time for the magnifying glass. The magnifying glass shows a dynamic view of the specified time scope.

To resize the magnifying glass area, position the pointer at the edge of the grey area and move the pointer. To move the magnifying glass area, place the pointer at the center of the grey area and drag it to the required location.

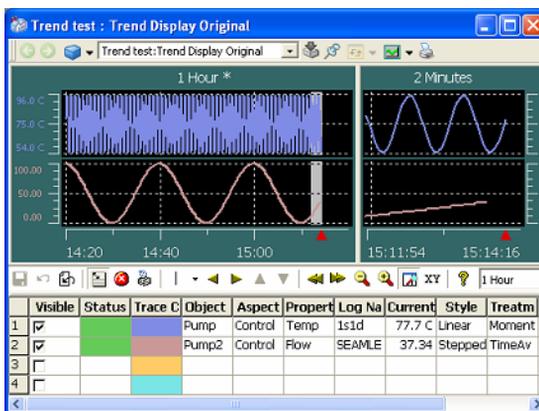
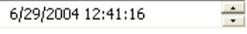


Figure 46. Magnifying Glass Area

- **XY Plot**  - Two traces can be drawn in an XY Plot. One trace must be placed on the left axis and one trace on the right axis. The left axis corresponds to the Y-axis and the right axis corresponds to the X-axis (bottom axis).
- **Help Button**  - To view the online help.
- **Time Scope**  - To select or enter a Time Scope for the Trend Display from the drop-down list. The default value is retrieved from the Trend Template. The units available are year, month, day, hour, minute and second in any combination. If a new scope is entered, it is added to the list of available scopes.
- **Selected Time**  - To navigate forward and backward in time by specifying the date and time of the center point in the Trend Area. To change time, click the field to be changed and execute one of the following:
  - use the keyboard up/down arrows.
  - use the up/down arrows to the right in the field.
  - write a value from keyboard.

---

## Appendix A Alarm Indicators

Table 5 shows the most common alarm indicators.

*Table 5. Alarm Indicators*

Icon	Description
	Alarm can be acknowledged.
	Alarm is active and acknowledged.
	Alarm is active, but not acknowledged.
	Indicates illegal alarm configuration.
	Alarm is automatically disabled by the system.
	Alarm disabled by a user.

Table 5. Alarm Indicators (Continued)

Icon	Description
	Alarm is idle, that is there are no alarms
	Alarm is neither active, nor acknowledged.
	Hidden Alarm A white rectangle covering an alarm symbol, shows that there are hidden alarms for the object.
	Shelved Alarm A white circle appearing to the right of the alarm symbol shows that there are shelved alarms for the object.

Table 6 shows examples of symbols available in faceplates and as indicators in Graphics elements.

Table 6. Other Symbols

Icon	Description
	Apply
	Disable. Something in the object is disabled.
	Down

Table 6. Other Symbols (Continued)

Icon	Description
	Forward
	High
	Increase
	Internal. Internal set point is used instead of an external set point.
	Left
	Low
	Object is controlled manually.
	Object set is to be run automatically by the system.
	Operator Note.

Table 6. Other Symbols (Continued)

Icon	Description
	Object is interlocked. Interlocks are used to lock out a process object from certain states during a time period. For example, a motor can either run or be stopped. If the motor cannot be run due to repairs, then the motor is interlocked and cannot be started.
	Pause
	Reverse
	Right
	Start
	Stop
	Status is uncertain. This symbol on top of a graphic element shows that controller communication status is uncertain.
	Status is bad. This symbol on top of a graphic element shows that controller communication status is bad.

Table 6. Other Symbols (Continued)

Icon	Description
	Value is forced by a user.
	Unforce
	Undo
	Up

Feature Pack Functionality

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Table 7 shows the graphic elements that are used for AC 800M Status Monitoring.

Table 7. AC 800M Status Monitoring Graphic Elements

Icon	Description
	Hardware Units Status is Good
	Hardware Unit Status is Warning
	Hardware Unit Status is Error

Table 8 shows the Asset Tree Severity Indicator Icons. See System 800xA, Asset Optimization, Operation (3BUA000150\*) for information on AO Asset Condition Reporting.

Table 8. Asset Tree Severity Indicator Icons

Icon	Severity	Description
	None	None. No Asset Reporter or Asset Monitor associated with the asset. Asset Monitor is disabled or has never been downloaded, or asset Monitor has never run for this object.
	Blank	Normal. No maintenance required.

Table 8. Asset Tree Severity Indicator Icons (Continued)

Icon	Severity	Description
	Low 1 to 100	Maintenance. Maintenance required soon to avoid functional restrictions, e.g. caused by a nearly exhausted wear reserve or operational conditions
	Low 101 to 250	Maintenance. Maintenance required now to avoid functional restrictions, e.g. caused by a nearly exhausted wear reserve or operational conditions.
	Medium 251 to 500	Out of specification. Asset is operating outside specified limits, caused by internal problems or process characteristics.
	High 501 to 750	Function check. Asset functionality might be temporarily restricted, due to ongoing work on the asset. For example, as local operation, maintenance, simulation, or a function check
	Critical 7501 to 1000	Failure. Asset functionality lost due to malfunction in the asset itself or its peripherals.

Table 9 shows the Quality Indicator Overlay Icons.

Table 9. Quality Indicator Overlay Icons

Icon	Description
None	Good quality.

Table 9. Quality Indicator Overlay Icons (Continued)

Icon	Description
	Uncertain quality.
	Bad quality.

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