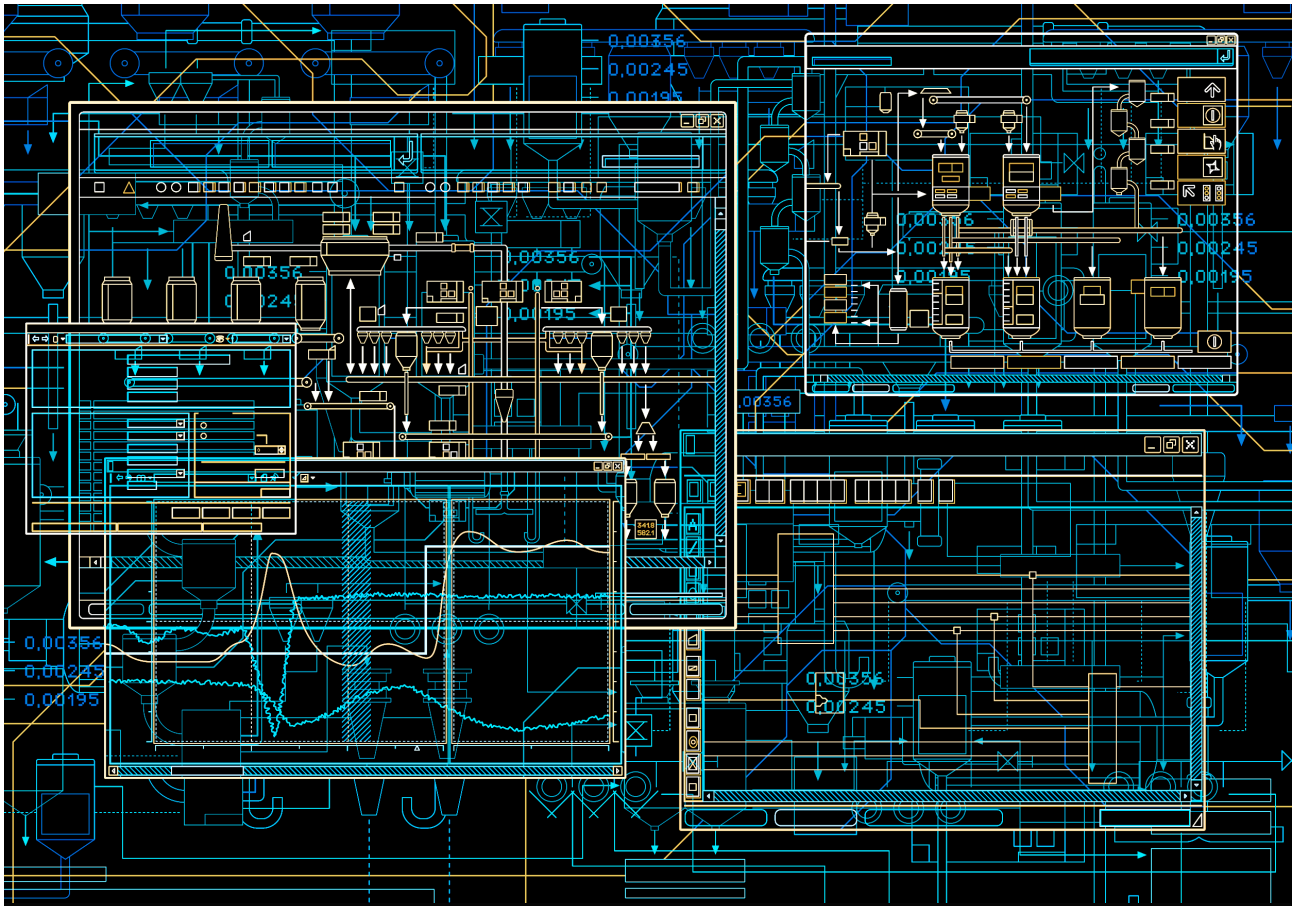

System 800xA

PLC Connect
Operation

System Version 5.1

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System 800xA

PLC Connect
Operation

System Version 5.1

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About This Book

General

This manual describes how to operate PLC Connect functions.

Document Conventions

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

Warning, Caution, Information, and Tip Icons

This publication 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 the *Industrial^{IT} Extended Automation System 800xA, Engineering Concepts instruction (3BDS100972*)*. The listing included in Engineering Concepts includes terms and definitions as they 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***.

Related Documentation

A complete list of all documents applicable to the 800xA Industrial^{IT} Extended Automation System is provided in *Released User Documents (3BUA000263*)*. This document lists applicable Release Notes and User Instructions. It is provided in PDF format and is included on the Release Notes/Documentation media provided with your system. Released User Documents are updated with each release and a new file is provided that contains all user documents applicable for that release with their applicable document number. Whenever a reference to a specific instruction is made, the instruction number is included in the reference.

Section 1 Introduction

Welcome to PLC Connect

PLC Connect is a connectivity option to Industrial IT 800xA that makes it possible to connect and integrate any type of remote or local installed PLC, RTU or other type of device. The information from the connected unit can be treated in the same way as information from other 800xA System connectivities.

Release Information

Read the Release Notes for information concerning the specific release of PLC Connect.

Section 2 Process Graphics

Introduction

Process graphics are used to show a representation of a process, including current states, such as whether a pump is on or off, and process values, such as the temperature in a tank. Via the graphics, it is possible to interact with and control the actual process; for example, open or close a valve.

Warning Levels

The warning levels are shown in Table 1:

If there is more than one warning for a signal, the top priority warning level will be displayed. The same is valid when a summarized warning level is shown for the signals in a process object.

Table 1. Warning Levels

Priority	Appearance	Description
1 (Top)		Communication error, that is, communication is down between PLC Connect and a connected PLC or OPC server.
2		The signal status of the value is uncertain. The reason can be, for example: • Value has not yet been updated from its source. • Value has moved outside its configured range.

Table 1. Warning Levels (Continued)

Priority	Appearance	Description
3		The signal is control disabled.
4 (Lowest)		The signal value is forced, that is, it is locked locally in PLC Connect.
5		No warning exists. (Invisible)

Configuration of PLC Connect Graphic Elements

This section includes a few examples to illustrate the usage of different PLC Connect Graphic Elements and Controls.

Creating Graphic Element Aspects

1. Select an object type in the **Object Type Structure**. See Figure 1.
2. Right-click and select **New Aspect** from the context menu.
3. Select **Graphic Element PG2** aspect category**.**
4. Enter a name for the graphic element and click **Create**.

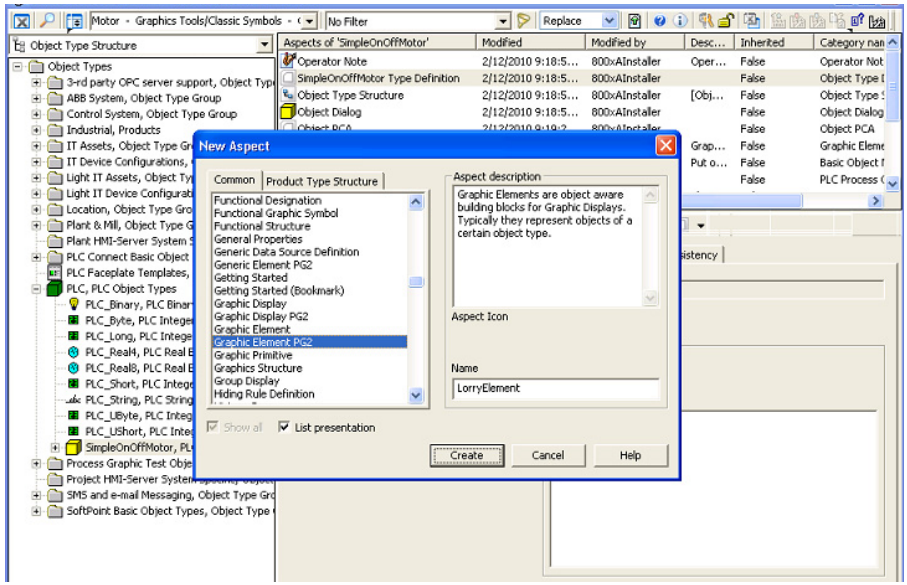


Figure 1. Create Graphic Element Aspect

Editing a Graphic Element in Graphics Builder

Execute the following steps to add a symbol factory symbol to the graphic aspect.

1. In the **Object Type Structure**, select the *SimpleOnOffMotor* object.
2. Select the newly created graphic element *LorryElement* as shown in Creating Graphic Element Aspects.
3. Right-click this aspect and select **Edit** from the context menu. This opens the Graphics Builder.
4. Drag and drop the **Symbol Factory Symbol (Toolboxes > Special)** into the edit panel of the Graphics Builder.
5. Right-click the symbol and select **Edit** from the context menu. See Figure 2.

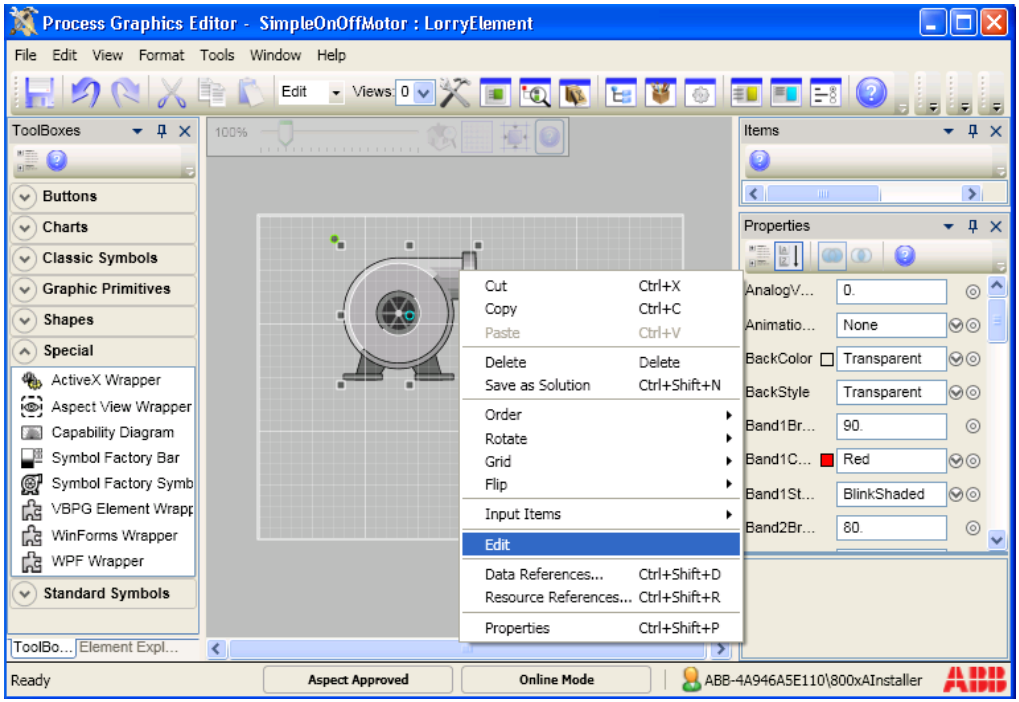


Figure 2. Editing a Symbol Factory Symbol

This displays the **Symbol factory properties** dialog as shown in Figure 3.

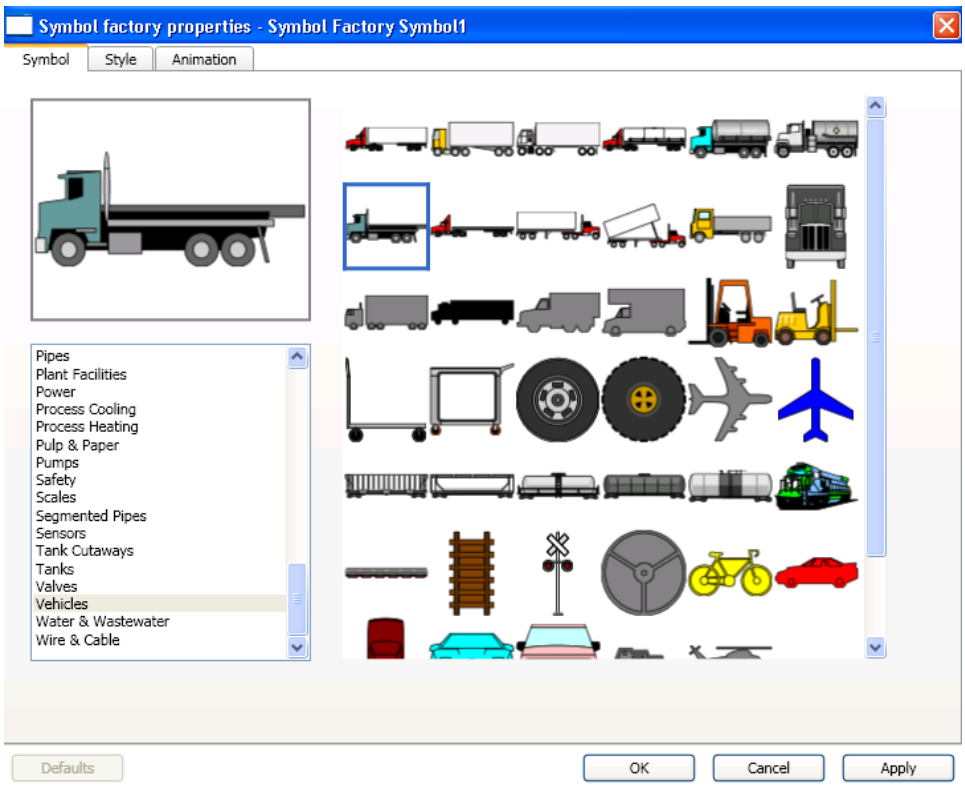


Figure 3. Symbol Factory Properties

6. Select the required symbol. Click **Apply** and then click **OK** to save the changes.
7. In the **Properties** window of this symbol, click corresponding to the **Visible** property to open the **Expression Editor**.
8. Write the following expression to connect the **Visible** property to the binary process signal. This expression is used to display the symbol only if the signal value is *True*.

```
if Motor_ON:Value then
   True
else
   False
```

For more information on using the Expression Editor, refer to *Industrial^{IT} 800xA, Engineering, Process Graphics User Guide (3BSE049230*).*

9. Click **OK** to save the expression.

Adding the Error Indicator

The ErrorIndicator is used to indicate the quality of subscribed data, when it reaches the limits defined by the OPC. If the ErrorIndicator has any property configured to a dynamic expression value, the runtime mode displays the actual representation. The **DataQuality** property of the ErrorIndicator controls the quality of subscribed data.

Drag and drop the **Error Indicator** (**Toolboxes > Graphic Primitives**) into the edit panel of the Graphics Builder.

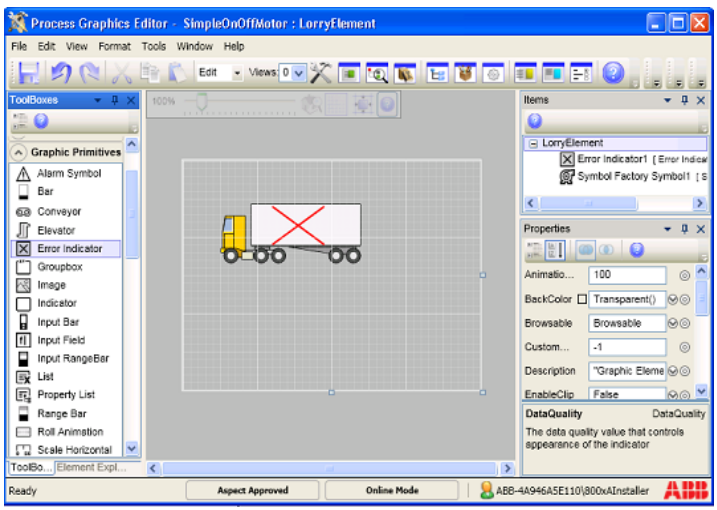


Figure 4. Adding an Error Indicator to the graphic element

10. Write the following expression to connect the **DataQuality** property to the binary process signal. This expression is used to display the data quality based on the signal value.

```
if Motor_ON:LowLimit < 10 then
  Bad
else
  Good
```

For more information on using the Expression Editor, refer to *Industrial^{IT} 800xA, Engineering, Process Graphics User Guide (3BSE049230*).*

11. Click **OK** to save the expression.

Creating a Tank Element

The primitives required for building a tank are available in **Toolboxes > Shapes**. This includes the following primitives:

- **TankBody** - This is used as the body of tank object.
- **TankBottom** - This is used as the bottom of tank object.
- **TankCone** - This is used as the top of tank object.
- **TankNeck** - This is used as the bottom of tank object.
- **TankTop** - This is used as the top of tank object.

Execute the following steps to create a tank element.

1. Open the Graphics Builder. For more information on editing a graphic aspect, refer to Editing a Graphic Element in Graphics Builder on page 13.
2. Drag and drop **Tank Body**, **Tank Top**, and **Tank Bottom** primitives (**Toolbox > Shapes**) into the edit panel.
3. Move and resize the primitives as shown in Figure 5.
4. Press SHIFT and click **Tank Body**, **Tank Top**, and **Tank Bottom** to select the primitives.
5. Select **Format > Group** to group the primitives.

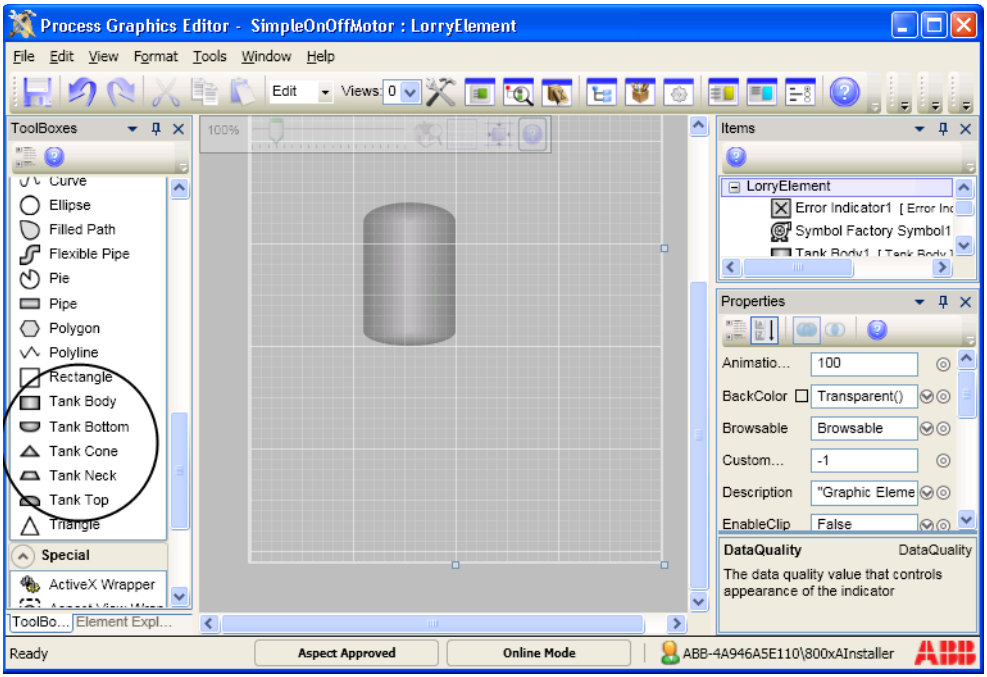


Figure 5. PLC Subelements Tank Element

Use the handles as shown in Figure 6 to resize the tank elements if required. In the **Properties** window, the user can also modify the **Height** and **Width** properties to resize the shapes.

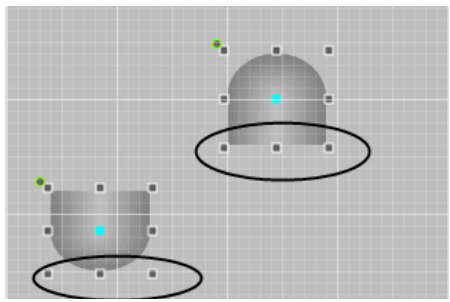


Figure 6. Resizing the tank elements

Adding a Bar to Tank Element

Drag and drop **Bar (Toolboxes > Graphic Primitives)** into the edit panel of the Graphics Builder.

Place the primitive within the tank element as shown in Figure 7.

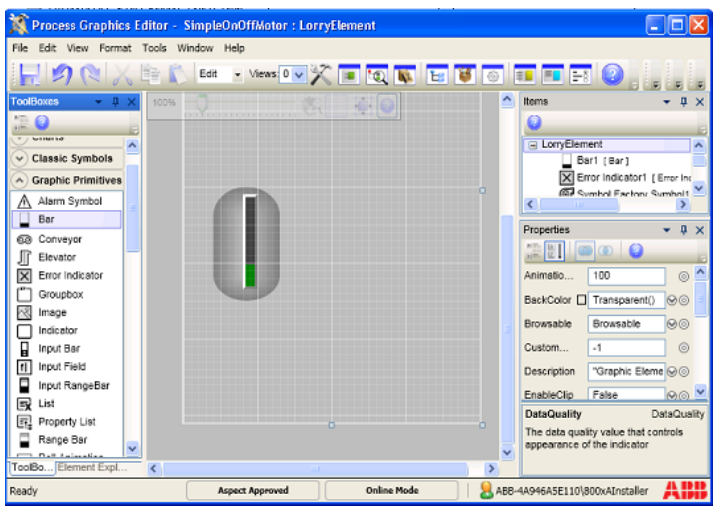


Figure 7. Bar Graph added to Tank Element

Receiving live data to the Tank Element

1. Select the **Bar** primitive.
2. In the **Properties** window, click corresponding to the **BarValue** property. This opens the Expression Editor.
3. Write the following expression.

   ```
   Motor_ON:HighLimit
   ```

   The value of the bar will be based on the value of *HighLimit* property of the signal.

Creating a Valve Element

1. In the **Object Type Structure**, select a **Valve** object type from **Plant&Mill > Valves**.
2. Right-click the object type and select **New Aspect** from the context menu.
3. Select **AlarmStatus** aspect category.
4. Click **Create**. The AlarmStatus aspect is required to propagate the alarm information to the object type.

Do not rename the **AlarmStatus** aspect.

5. Right-click this object type and select **New Aspect**.
6. Select **Graphic Element PG2** aspect category.
7. Enter a name for the graphic element (For example, Valve Element) and click **Create**.
8. Right-click the element and select **Edit** from the context menu. This opens the Graphics Builder.
9. Drag and drop the **Valve** primitive (**Toolboxes > Standard Symbols**) and **Alarm Symbol** primitive (**Toolboxes > Graphic Primitives)** into the edit panel of the Graphics Builder.

10. Drag and drop the **Reduced Icon** primitive (**Toolboxes > Standard Symbols**) into the edit panel of the Graphics Builder.
11. In the **Properties** window, set the **OpNote** property to *True* to display the operator message.

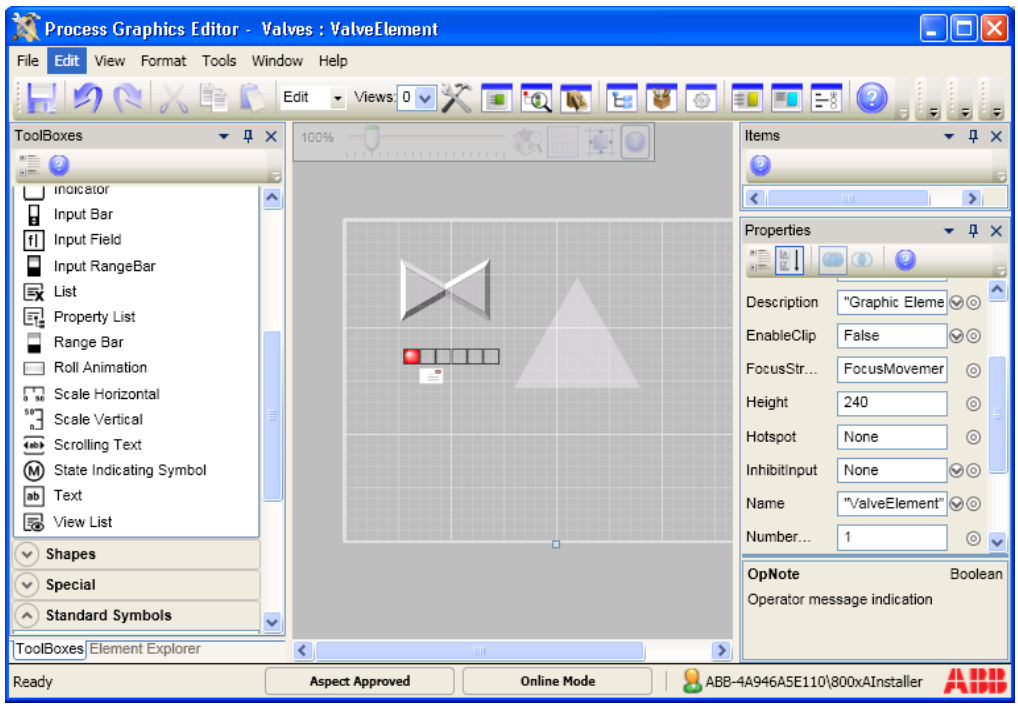


Figure 8. Creating a Valve Element

12. Select the **Valve** primitive.
13. In the **Properties** window, set the **CfgOrientation** to **Vertical** or **Horizontal** to set the direction of the valve.
14. In the **Properties** window, click ⊙ corresponding to the **Open** property. This opens the Expression Editor.

15. Write the following expression to connect the **Open** property to the binary process signal. This expression is used to control the opening and closing of this valve.

```
if Motor_ON:HighLimit > 50 then
  True
else
  False
```

16. Click **OK** to save the expression.
17. Select the **AlarmControl** primitive.
18. In the **Properties** window, click corresponding to the **AlarmState** property. This opens the Expression Editor.
19. Write the following expression to connect the **AlarmState** property to the **AlarmStatus** aspect of the object type.

```
SimpleOnOffMotor:AlarmState
```

For more information on using the Expression Editor, refer to *Industrial^{IT} 800xA, Engineering, Process Graphics User Guide (3BSE049230*).*

20. Click **OK** to save the expression.
21. Select **File > Save** to save the graphic aspect.

Execute the above procedure to configure a motor **(Toolboxes > Classic Symbols)**, a three way valve (**Toolboxes > Classic Symbols**) or any other symbol required.

Adding PLC Connect Graphic Elements to Graphic Displays

1. In the **Functional Structure**, right-click an object and select **New Aspect** from the context menu.
2. Select the **Graphic Display PG2** aspect category.
3. Enter a name for the graphic display (For example, Delivery Overview) and click **Create**.

4. Right-click the graphic display and select **Edit** from the context menu. This opens the Graphics Builder.
5. Select **View > Element Explorer** to open the element explorer.
6. Browse to the required object type and select the PLC Connect Process Object.
7. Double-click the element to add it to the edit panel of the Graphics Builder. See Figure 9.
8. Select **File > Save** to save the graphic aspect.

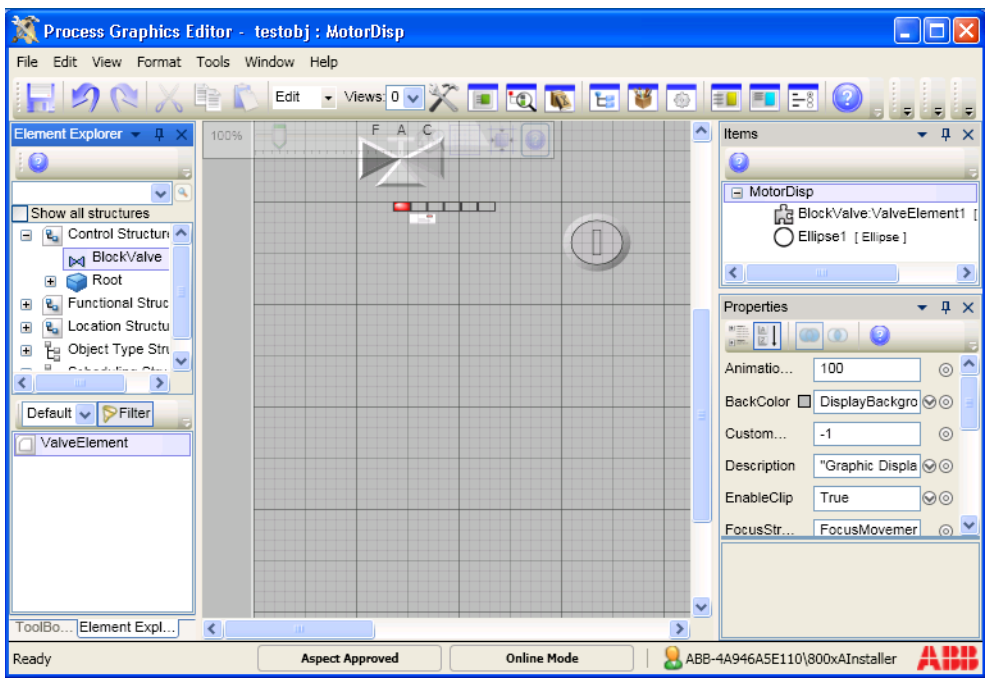


Figure 9. Inserting PLC Connect Element in Graphic Display

Faceplate

Faceplates are used for monitoring and controlling the process. They are invoked by:

- left-clicking on a graphic element placed on a graphic display. See Figure 10.
- selecting Faceplate aspect in the Plant Explorer workplace, right-clicking it and selecting one of the required faceplate view from the context menu. See Figure 11.

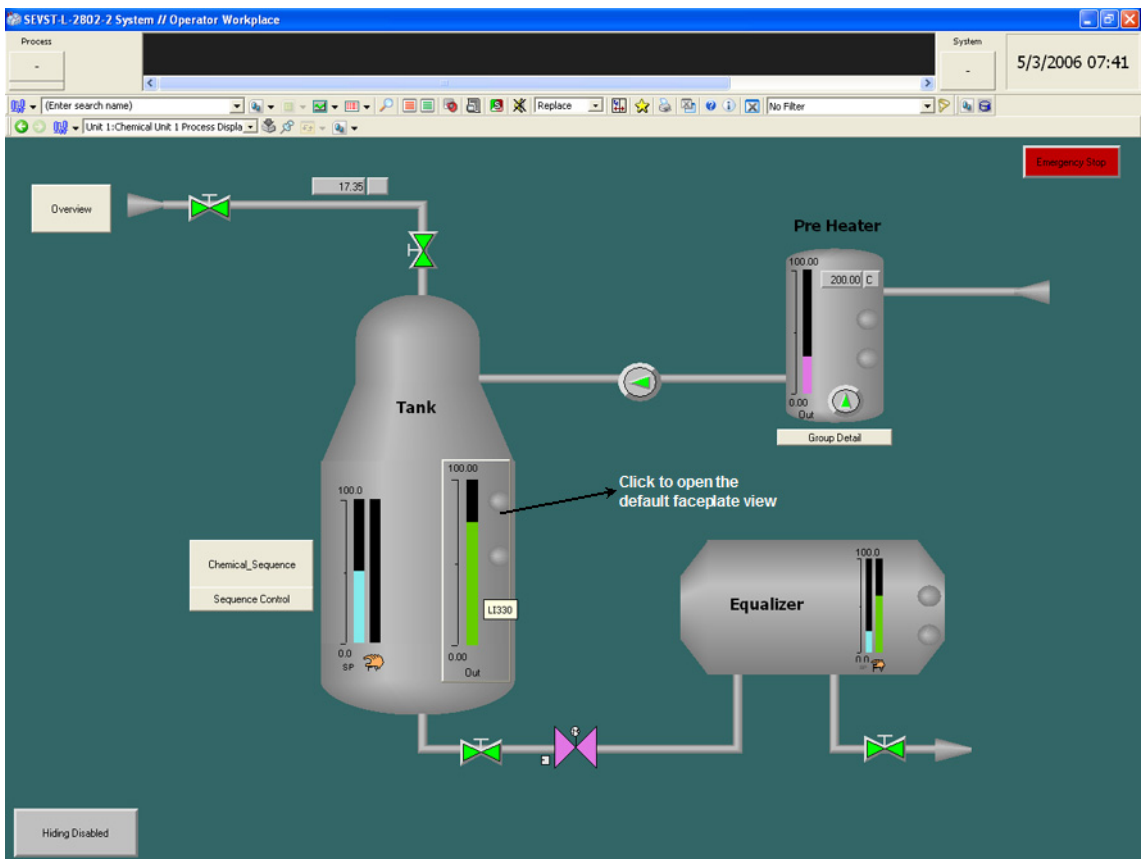


Figure 10. Graphic Display

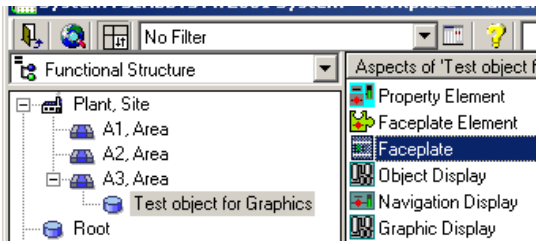


Figure 11. Faceplate aspect available for an object

User Interface

Faceplate appears as shown in the following Figure 12.

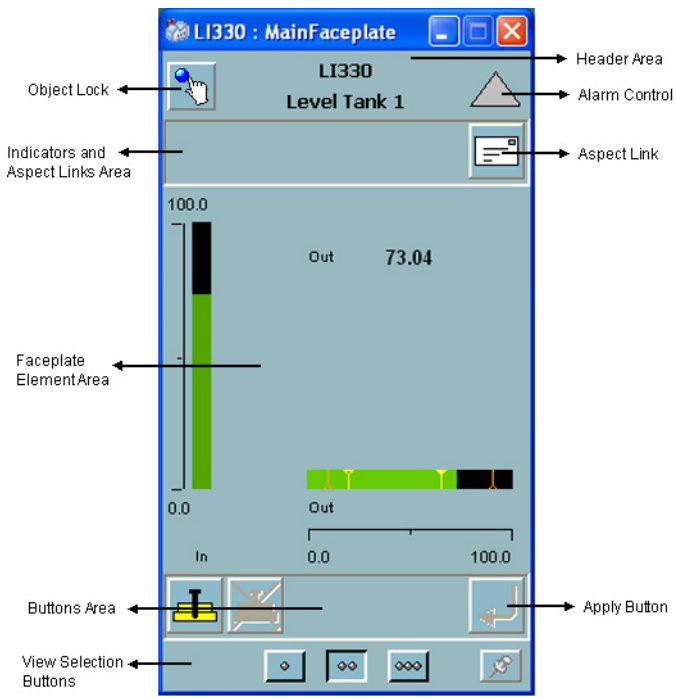


Figure 12. Faceplate view

The visible components of the faceplate interface can be broadly classified into three areas (See Figure 12). These are:

- Header Area
- Element Area
- Button Area

Each of these areas contain several operable elements that configure, modify or display aspects of the faceplate.

For more information on Faceplate see *IndustrialIT 800xA, Engineering, Process Graphics User Guide (3BSE049230-510)*

Header Area

The Header area comprises of:

- Object lock
- Object description
- Alarm control

Object lock

Object Locking is used in environments where several operator workplaces control the same objects. Only one operator can use the Object Lock function to operate the objects. The Lock Control button is optional. The faceplate framework reserves space for it in the header area.

It provides the option to control the function manually or automatically. If Autolock is enabled, the object will be locked after the user opens the faceplate. When the faceplate is closed, the Lock Status will revert to unlocked.

If the Object Lock function is controlled manually, the user locks an object by clicking the **Object Lock** push button (refer Figure 12). If the lock required option is enabled, all buttons and commands will be disabled till the user clicks the Object Lock button.

To switch between Autolock and manual lock, change the *FaceplateAutoLockObject* profile value in the *Graphics Profile Values user profile*.

If the object is locked by another operator, operation is not possible until the lock is released. To release an object lock, the operator owning the lock can manually

unlock it, or the operator can close the faceplate. The object lock may time out after a default time of four minutes. A privileged user can also break the object lock through the context menu of Lock Control.

Object Name and Description

This displays the name and description of the object, for example, LI330 - Level Tank 1(See Figure 12). Object name and object description is optional because of user profile setting.

Alarm Control

The Alarm Control button indicates the alarm state of the object, and allows acknowledgement of alarms. The alarm control is a graphic element aspect. Alarm Control details are displayed in the header area of the faceplate. Alarm button configuration is done using the AlarmControl aspect.

Table 2 shows the most common alarm indicators.

Table 2. Alarm Indicators

Icon	Description
	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.

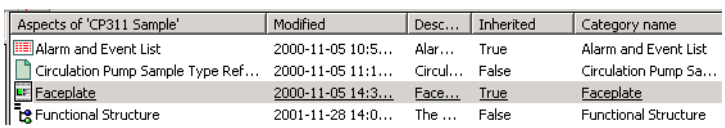
Table 2. Alarm Indicators (Continued)

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.

Configuring the Faceplate

Configuration is done using the *Config view.* Only the user having the privileges of an *Application Engineer* is allowed to configure faceplates.

Note that if the faceplate is Inherited, changes can be made only in the object type.



Aspects of 'CP311 Sample'	Modified	Desc...	Inherited	Category name
Alarm and Event List	2000-11-05 10:5...	Alar...	True	Alarm and Event List
Circulation Pump Sample Type Ref...	2000-11-05 11:1...	Circul...	False	Circulation Pump Sa...
Faceplate	2000-11-05 14:3...	Face...	True	Faceplate
Functional Structure	2001-11-28 14:0...	The ...	False	Functional Structure

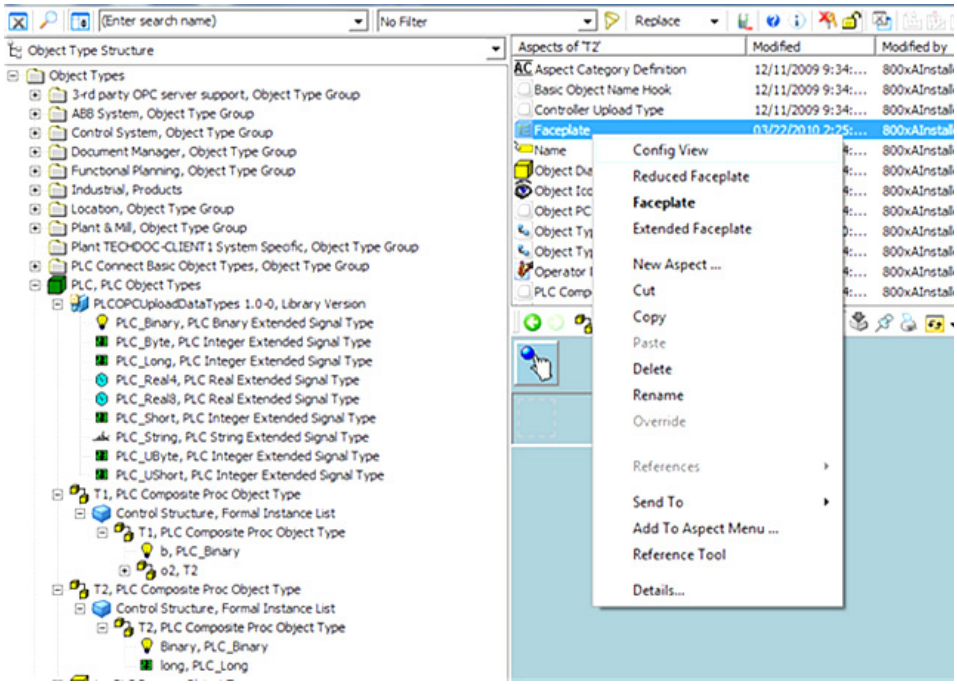


Figure 13. Open Config View

The *Config view* contains the following:

- Layout Configuration of the faceplate geometry.
- Header Configuration of the object lock control and alarm control.
- Indicators Configuration of the Status and Navigation bar.
- Buttons Configuration of the Button area.
- Element Configuration of the faceplate element area.
- Online Help Configuration of the help files.
- Approval or unapproval of faceplates.

Layout Tab

Layout tab contains information on the runtime view that should be displayed and the geometrical layout of the views. The faceplate view is mandatory.

Enable/disable of faceplate views requires a restart of the workplace and Operator Workplace.

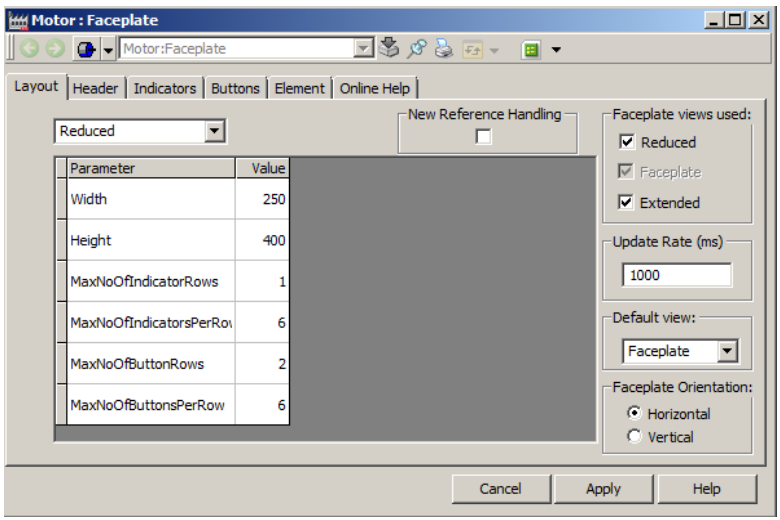


Figure 14. Layout Tab with Default Values

Faceplate view is the default runtime view that is launched when an operator clicks on a graphic element in a graphic display. Once the faceplate is opened this can be changed using the **View selection** buttons.

User can also select the orientation of the faceplate element area.

The default size of the faceplate element aspects are designed using preconfigured values of the faceplate width and height.

Figure 14 shows the configurable parameters in the **Layout** tab.

The update rate for subscribed properties for indicators and buttons are initially set to 1 second. User can configure a new value (in milliseconds) in **Update Rate**.

Header Tab

The settings for Lock button and the Alarm button is configured in the **Header** tab. These configuration settings are also performance related in case of a search required for finding the Alarm Control or Lock Control aspects.

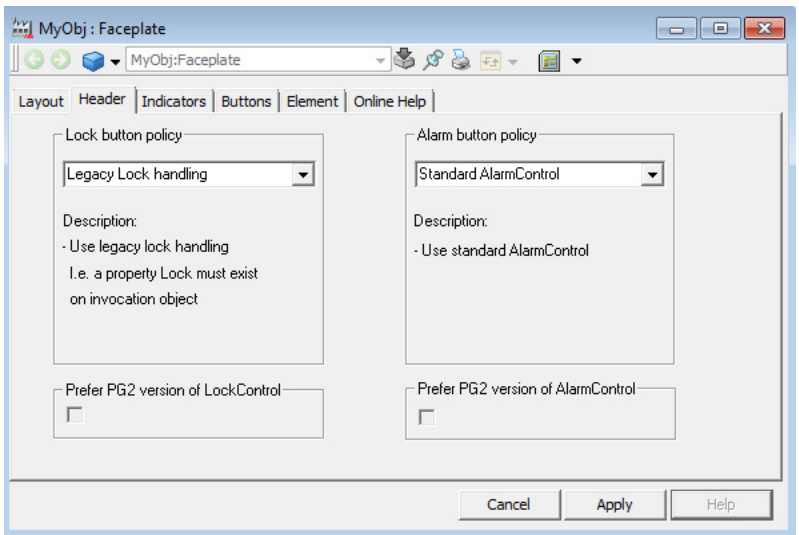


Figure 15. Header Tab

Object Lock Button

The following settings are done in the **Lock button policy** area:

- **Default search order**: Uses the following search order.
  - Override Standard LockControl
  - Legacy lock handling
  - Standard LockControl
  - No Lock button

    This search order is executed sequentially. For example, first the LockControl aspect present on the invocation object is used if it exists. Otherwise, the LOCK property on the invocation object is used if exists, and so on. The **Default search order appears by default in the**
- **Override Standard LockControl**: Uses the LockControl aspect present on invocation object, if it exists.

  Select **Prefer PG2 version of LockControl** to use the PG2 lock control aspect if it exists on the object. This is used only if the object includes both VBPG and PG2 faceplates.
- **Legacy lock handling**: Used if the LOCK property exists on the invocation object.
- **Standard LockControl**: Uses the LockControl aspect in the **Graphics Structure**, below **Graphic Tools VB6-> Special**.
- **No Lock button**: No lock button is used.

Alarm Control Button

The following settings are available in the **Alarm button policy** area:

- **Default search order**: Uses the following search order.
  - Override Standard AlarmControl
  - No Alarm button

This search order is executed sequentially. For example, first the AlarmControl aspect present on the invocation object is used if it exists. Otherwise, the no alarm button is used.

- **Override standard AlarmControl**: Uses the AlarmControl aspect present on the invocation object, if it exists.

  Select **Prefer PG2 version of AlarmControl** to use the PG2 alarm control aspect if it exists on the object. This is used only if the object includes both VBPG and PG2 faceplates.

- **No alarm button**: No alarm button is used.
- **Standard AlarmControl**: Uses the AlarmControl aspect in the **Graphics Structure**, below **Graphic Tools -> Special**.

Indicators Tab

The **Indicators** tab is used to configure the indicators and aspect links to be displayed in the status and navigation area of the faceplate. The user decides the position to display them, depending on the selected view.

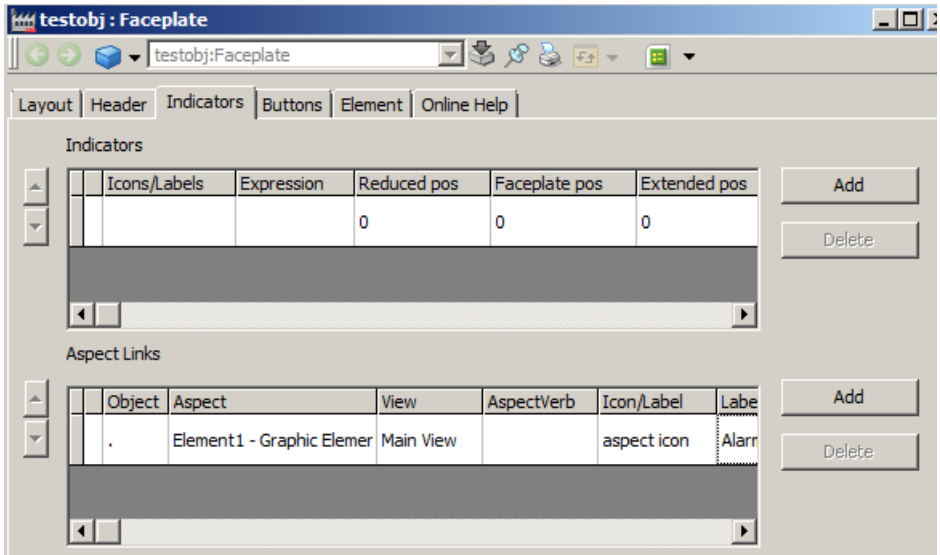


Figure 16. Indicators Tab

Configuring Indicators

Table 3 displays the configurable parameters in the **Indicators** tab that affect the Status and Navigation area in the faceplate.

Table 3. Indicators

Parameter	Description
Icons/Labels	The list of Icons/Labels that represent the result of object properties that are subscribed and specified as expressions.
Expression	A calculation returning an integer value. The result must be in the range from 0 to number of Icon/Labels configured - 1.

Table 3. Indicators (Continued)

Parameter	Description
Reduced pos	Specifies the position of the indicator in the Reduced view. Position starts from 1 and is counted from left to right with increasing numbers. 0 = Not used by this view. The exact position of the indicator depends on *No. of indicators per row*, and *No. of indicator rows*
Faceplate pos	The position within the faceplate view.
Extended pos	The position within the extended view.

Click **Icons/Labels** field, and the **Labels** dialog box appears (refer Figure 17). Add the number of icons or labels to be used for each indicator. The values in **Index** is numbered as 0, 1, 2 to N-1.

Click the column at the extreme left to select an entire indicator row. The user can delete the selected row or order the rows using the spin buttons.

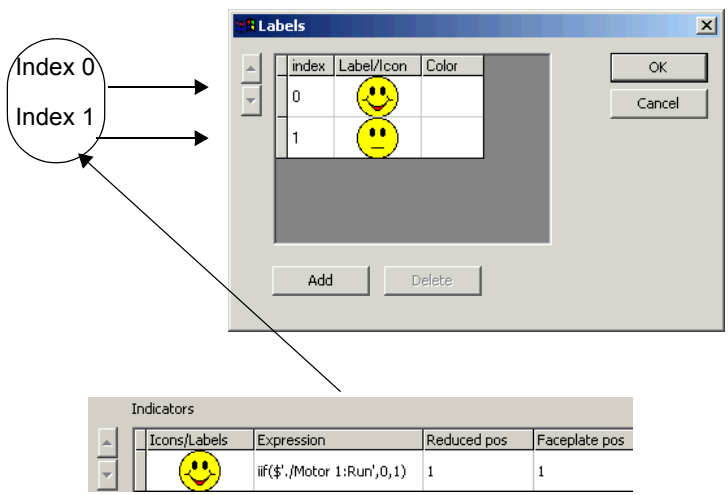


Figure 17. Configuration of Icons/Labels

Indicators are positioned to the left in the **Status** and **Navigation** area.

For example, to configure the first icon/label to be displayed if the value of a property *LIMIT* is below 50, and the second icon/label to be displayed if the value of the same property is above 50, set the expression for the indicator as:

```
iif($'.:Control Connection:LIMIT' < 50,0,1)
```

Figure 18 displays an indicator if the expression for the indicator is wrongly set, or the expression or expression value causes an error condition.

Figure 18. Faceplate with Indicator during an Error Condition

Configuring Aspect Links

Table 4 displays the configurable parameters for the aspect links. Aspect links are positioned to the right in the **Status** and **Navigation** area. An aspect link is a button used as a shortcut to call up any type of aspect as an overlap window.

Table 4. Aspect Links

Parameter	Description
Object	The object of the aspect to be displayed.
Aspect	The aspect to be displayed as an overlap window.
View	View for the selected aspect. If a view is selected, the link cannot have a verb.
AspectVerb	Verb connected to the aspect. If a verb is selected the link can have no view.
Icon/Label	Label, icon or aspect icon to be displayed on the aspect link.
Label color	The text color used for the label.

Table 4. Aspect Links (Continued)

Parameter	Description
Reduced pos	The position within the Reduced view. Refer Table 3 for more information.
Faceplate pos	The position within the faceplate view.
Extended pos	The position within the extended view.
FontSize	The size of the text.

Select Object Dialog window appears on clicking the **Object** column. Select the required object from this screen and click **OK**. If the faceplate is configured in the **Object Type Structure**, user should select only the objects belonging to the same object type.

Click **Icon/Label** column, the **Add Label or Icon** screen appears. Select **Use aspect icon** to get the aspect icon as a graphical representation of the button, or select an icon or specify a label to be displayed.

Refer to *Industrial^{IT} 800xA, Operations, Operator Workplace Configuration (3BSE030322*)* for more information on Global Verbs.

Buttons Tab

The *Buttons* tab allows the user to configure the buttons to be used in the Buttons area of the faceplate. The behavior of the buttons is specified by the **Action** column and the default value is *SystemDefault*.

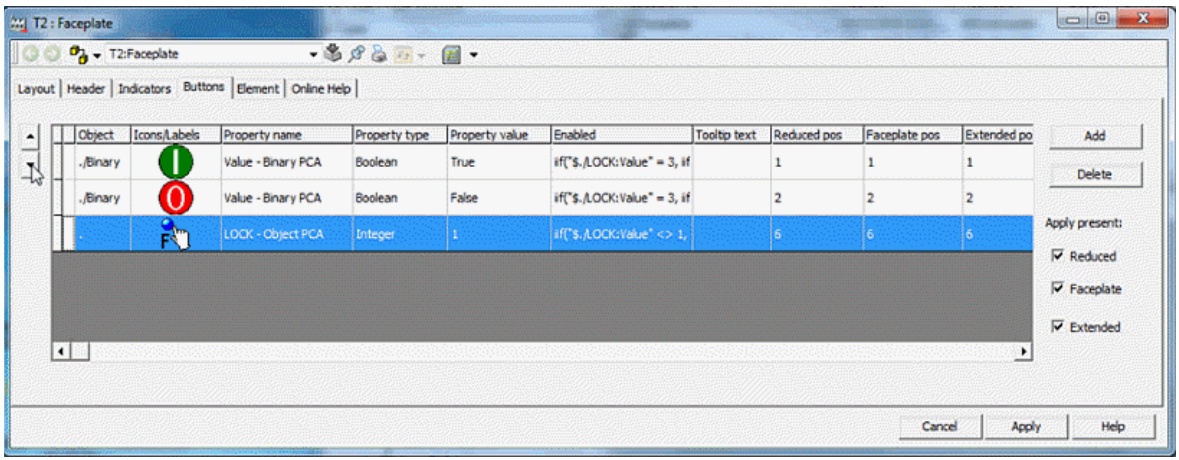


Figure 19. Buttons Tab

Table 5 displays the configurable parameters for the Button area.

Table 5. Buttons

Parameter	Description
Object	The object of the property to be used, for example, binary.
Icon/Labels	Label or icon to be used as caption for example, (stop.icon)
Property name	The object property to which the value should be written when the button is clicked, for example, Value - Binary PCA
Property type	The data type of the selected object property (ReadOnly). This field gets populated depending on the Property Name selected.
Property value	The value to be written to the property while clicking the button, for example, True.
Enabled	An expression specifying whether the button is enabled, dimmed or invisible. No expression means that the button is always enabled. [0 = dimmed, 1 = enabled, 2 = invisible]. For example, `iif("$./LOCK:Value" = 3, if("$./Binary:Value:Value,True,False),False)`
Tooltip text	Tooltip to be displayed for the button.
Reduced pos	The position within the Reduced view. Refer to Table 3 for more information.
Faceplate pos	The position within the faceplate view.
Extended pos	The position within the extended view.
Action	Sets direct or applied action for the button.

More than one button can have the same position. In this case, only one of the overlapping buttons should be visible (that is, only one button can have the expression value of 1 or 0).

Select **Reduced**, **Faceplate**, or **Extended** in **Apply present**, to activate the Apply button for the different views.

The **Apply** button is always located to the right of the button area and cannot be repositioned.

Elements Tab

The elements tab is used to configure the faceplate element area. Aspects can be put directly, or can be organized in tab groups.

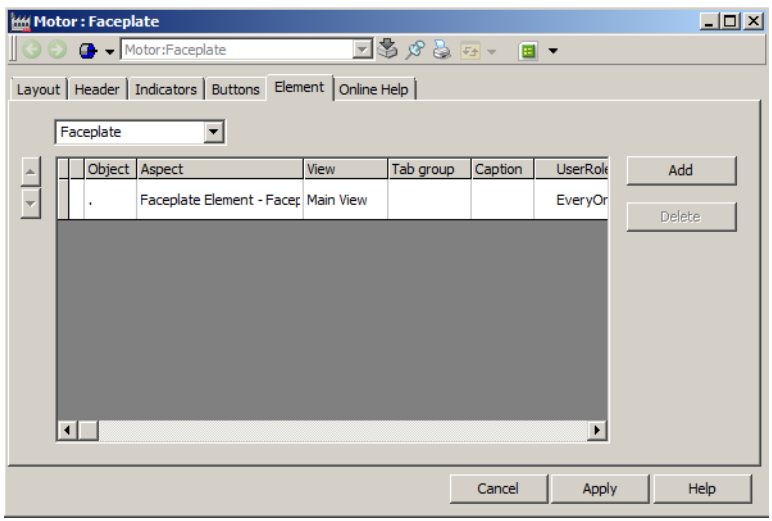


Figure 20. Elements Tab

Faceplate Element aspects are designed to be used here, but any aspect type can be used. A faceplate element aspect has a default size to fit within the faceplate view.

Click the **Aspect** column to select the aspect to be represented as a tab in the faceplate.

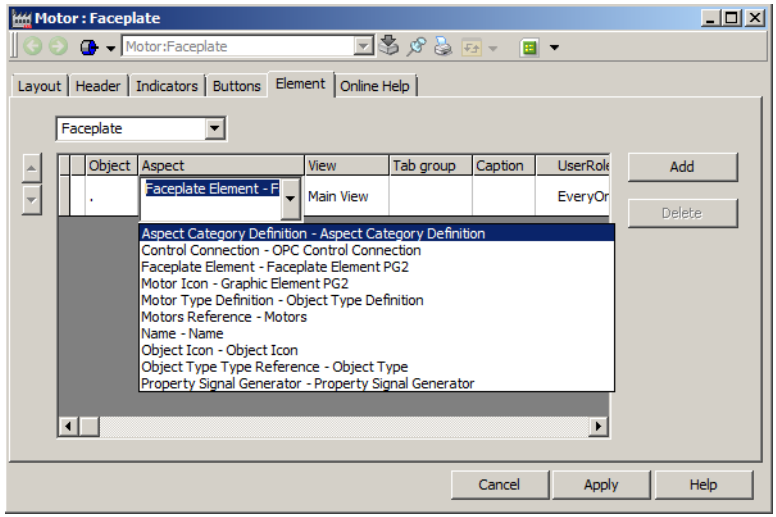


Figure 21. The Aspect Drop Down Menu

Select a view to be displayed, in the **View** column.

Type an identifying string representing the identity of a tab group in the **Tab Group** column. A simple number is suitable because the identification string is not visible to any operator.

For example, enter “1” for the first tab group, enter “2” for the second and so on. The location of the tabs in a group is defined by the order among them and can be ordered using the spin buttons.

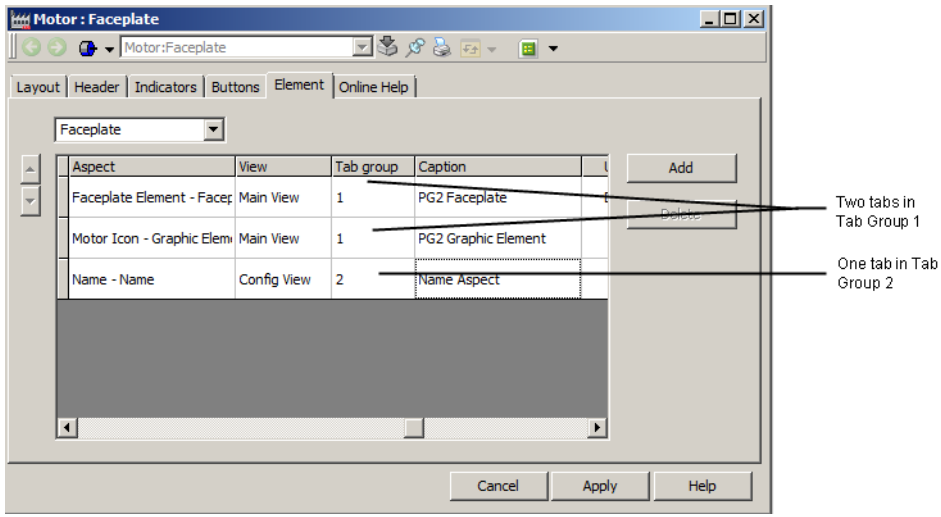


Figure 22. Configuration of Two Tab Groups

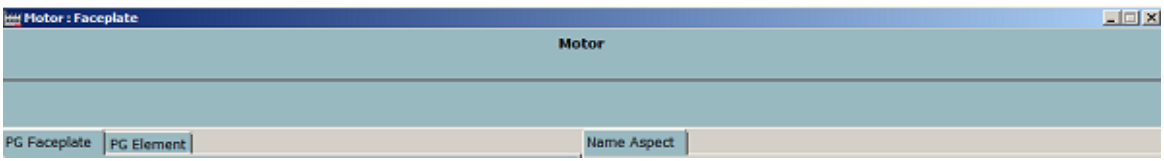


Figure 23. The Two Tabs as Seen in the Faceplate

The following window appears on clicking the **Caption** column. Type name for the tabs and click **OK**.

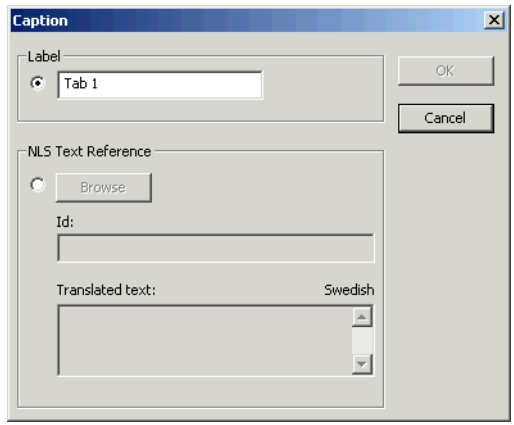


Figure 24. The Caption Dialog Box

User Roles column defines the user group having the privilege to access the tab. Only the users belonging to the defined group can view the tab.

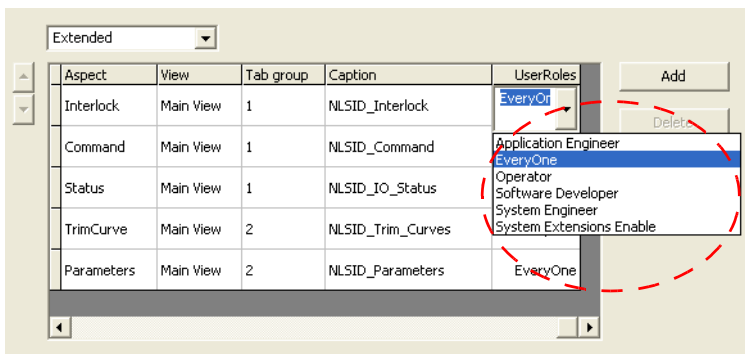


Figure 25. Defining of User Role for Faceplate Tabs

Table 6. The Elements Tab Columns

Parameter	Description
Object	The object of the aspect to be used.
Aspect	The faceplate element aspect (or other aspect) placed in the faceplate element area.
View	Aspect view for the selected aspect.
Tab group	The tab group identity as a string, for example, as a numeric value 0,1, and so on. The group identity is not shown anywhere.
Caption	Name of the tab.
User Roles	User group having access rights for the tab.

Online Help Tab

The Online Help tab defines the help text to be displayed on pressing the **F1** key from the faceplate.

Section 3 Alarm and Event Handling

PLC Connect Specific Alarm and Event Lists

PLC Connect supplies three basic types of alarm and event lists. These lists are filtered lists configured to show a selection of the alarms and events:

- PLC Alarm list
- List of Control Blocked Signals
- List of Forced Signals

For more information on alarm and event handling, refer to the *Industrial IT 800xA - System Extended Operation (3BSE036904*).*

PLC Alarm List

This list shows alarms, including alarms disabled by an operator. Figure 26 shows an example.

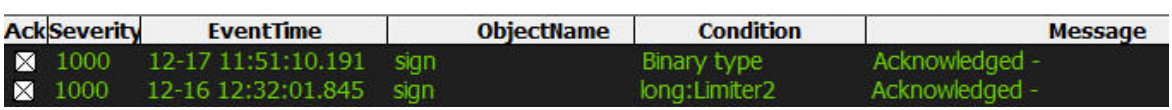


Figure 26. PLC Alarm List

The columns are:

- **Ack**. Shows whether the alarm is acknowledged or not. You can also acknowledge an alarm in this column.
- **Pri**. The priority of the alarm.
- **Event Time**. Time when the alarm was generated. If the alarm is disabled, this column shows the time when the alarm was disabled.
- **Object Name**. The name of the process object and signal.

- **Condition**. Displays the relative name of the signal. For integer and real signals, the name of the limiter that triggered the alarm is appended. If the signal's default condition name is overriddenwith another name then Condition displays the new name instead of relative name.
- **Message Description**. The event text.
- **Auto Dis**. Indicates whether the alarm has been auto disabled or not.
- **Class**. The class of the alarm.

List of Control Blocked Signals

This list shows control blocked signals, see Figure 27 for an example. These are manually controllable signals that are disabled. The values of a control blocked signal can't be changed by an operator.

	Event Time	Object Name
1	10/30 08:13:00	AlaObject2 A5
2	10/30 08:08:14	AlaObject2 A1
3	10/30 08:08:14	AlaObject2 A3
4	10/30 08:07:51	AlaObject1 A2
5	10/30 08:07:47	AlaObject1 A1

Figure 27. List of Control Blocked Signals

The columns are:

- **Event Time**. Time when the control signal was disabled.
- **Object Name**. The name of the process object and signal.

List of Forced Signals

This list shows forced signals, see Figure 28 for an example. Forced signals are signals whose values are temporarily forced to a certain value, that is, the signal values appear to be constant regardless of the actual process values.

The columns are:

- **Event Time**. Time when the signal was forced.
- **Object Name**. The name of the process object and signal.

	Event Time	Object Name	Current Value
1	10/30 10:27:53	~~AlaObject2.A9~~	False
2	10/30 10:27:31	~~AlaObject2.A4~~	False
3	10/21 12:51:47	~~AlaObject1.A2~~	False
4	10/21 12:46:38	~~AlaObject1.A1~~	True

Figure 28. List of Forced Signals

- **Current Value**. The value that the signal is forced to.

Using the Lists

To enable a disabled alarm, enable a control signal, or remove the forcing of a signal value:

1. Right-click the signal row.
2. Select **Enable selected** or **Enable object** from the context menu.

Section 4 Dialed Communication

License information: The dial manager is part of the PLC Connect Dialed communication functionality which requires a separate license to run.

Introduction

This section describes dialed communication:

- Dial Panel on page 50 is used to control the communication with a single remote controller.
- Dial Supervisor on page 52 is used to supervise and control the communication in a whole control network.

What is Dialed Communication?

Remote controllers can be dialed up and communicated with via Comli or Modbus (Serial), that is, live process data and historic information can be collected to a server. For Comli, time marked events can be collected too. Provided are:

- Manually order calls, with and without a time limit.
- Permanent calls.
- Scheduled (cyclic) calls for collection of historic data.

Incoming connections are also supported, where controllers can call up the server in the case of an alarm and so on.

Dial Panel

The Dial Panel aspect, see Figure 29, contains the **basic** functions to initiate, monitor and terminate calls to a remote controller.

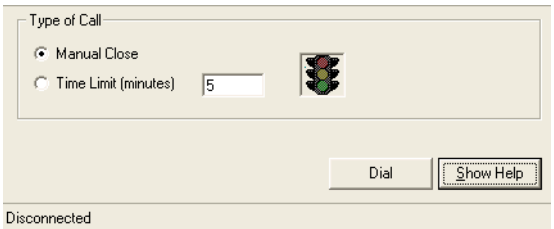


Figure 29. Dial Panel Aspect

To access the aspect:

1. Start a Workplace.
2. Select the Control Structure.
3. Select the dialed controller.
4. Select the Dial Panel aspect. Use it to initiate, monitor and terminate calls.
5. If desired, repeat Step 3 to Step 4 for each other dialed controller.

There can be aspect links to a Dial Panel aspect in process graphic displays. If present, you can also click such a link to access the aspect.

Select the Type of Call

Select the type of call by clicking either:

- Manual Close.
- Time Limit [minutes]. Enter the time limit in minutes in the text box to the right.

Manual Close

Select this type of call to keep the connection open until the call is manually terminated. If an error occurs whereby the connection is terminated, it will remain terminated, that is, the connection will not be automatically re-established.

Time Limit

Select this type of call if the connection is to be terminated automatically after a certain amount of time. The call can also be manually disconnected at any time.

Initiate/Terminate a Call

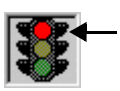
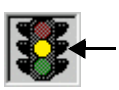
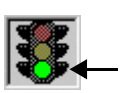
The button in the Dial Panel will be labeled **Dial** when no connection is established, and **Hang up** when a connection is established:

- When you have selected the type of call, click **Dial** to initiate the call.
- Click **Hang up** to terminate the call.

View Call Status

A status indication shows the basic status of a manual call, see Table 7, while the bottom line of the Dial Panel displays status information for both types of calls, for example, initiating, connected, disconnecting, disconnected, and so on.

Table 7. Call Status Indication

Appearance	Description
	The indication is **dimmed** when no connection is established.
	The indication is **red** when a connection has failed.
	The indication is **yellow** when a call is in progress.
	The indication is **green** when a connection to a controller is established.

Dial Supervisor

The Dial Supervisor aspect, see Figure 30, contains functions to initiate, monitor (supervise) and terminate calls to remote controllers in a specific control network.

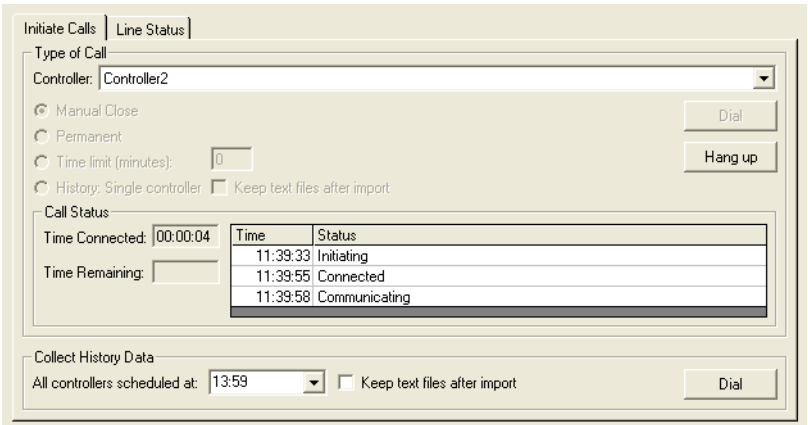


Figure 30. Dial Supervisor Aspect

To access the aspect:

1. Start a Workplace.
2. Select the Control Structure.
3. Select the desired Generic Control Network object.
4. Select the Dial Supervisor aspect. Use it to initiate, monitor and terminate calls.
5. If desired, repeat Step 3 to Step 4 for each other control network.

There can be aspect links to a Dial Supervisor aspect in process graphic displays. If present, you can also click such a link to access the aspect.

Specify a Call

Call to a Specific Controller

Under the Initiate Calls tab, see Figure 30, select a controller from the Controller drop-down list, and then select the type of call by clicking either:

- **Manual Close**. Select this type of call to keep the connection open until the call is manually terminated. If an error occurs whereby the connection is terminated, it will remain terminated, that is, the connection will not be automatically re-established.
- **Permanent**. Select this type of call to keep the connection open permanently. If an error occurs whereby the connection is terminated, attempts will automatically be made to re-establish the connection. These attempts will continue until the connection can be re-established.
- **Time limit**. Select this type of call if the connection is to be terminated automatically after a certain amount of time. The call can also be manually disconnected at any time. Enter the time limit in minutes in the text box to the right.
- **History: Single controller**. Select this type of call to collect historic data from a single controller. The option to keep text files after import is used for troubleshooting purposes only.

Cyclic Call

Cyclic calls are used to automatically collect historic data from a number of controllers at scheduled times. For example, at 3 PM the historic data can be scheduled to be collected from controllers A and B, while at 5 PM it can be scheduled to be collected from controllers C and D. Sometimes this collection can't be done due to errors, for example, if one or more of the controllers scheduled to be called at a certain time are down at the call time. If such an error occurs, you can manually initiate a cyclic call.

In the Collect History Data area, select a scheduled call time from the drop-down list. All controllers scheduled to be called at the selected time will be called when the call is initiated.

The option to keep text files after import is used for troubleshooting purposes only.

Initiate a Call

When you have specified a call, click the relevant **Dial** button under the Initiate calls tab.

Terminate/Disable a Call

Under the Initiate Calls tab, the Call Status area shows call status information when there is an active call to the controller selected from the Controller drop-down list. To terminate that active call, click **Hang up** in the Type of call area.

Under the Line Status tab, see Figure 31, a table with information on each active call is shown. Select a connection by selecting its name in the Line column, and:

- Click **Hang up Cyclic** to terminate a cyclic call, that is, a call for which the Call Type column contains the word cyclic.
- Click **Hang up** to terminate a normal call.
- Click **Disable Line** to disable the line, that is, to avoid using the line for outgoing calls, for example, when a line behaves badly. Lines can also be disabled by the system.
- Click **Enable Line** to enable a disabled line.

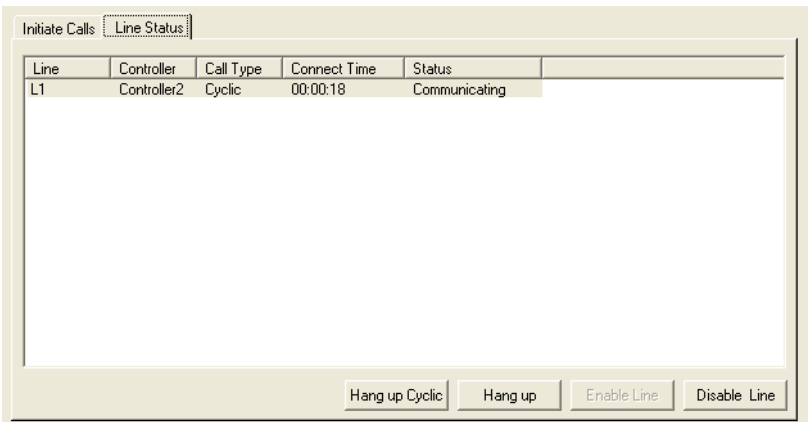


Figure 31. Line Status Tab

View Call Status

Under the Initiate calls tab, the Call Status area shows call status information when there is an active call to the controller selected from the Controller drop-down list.

The Time connected box shows the time the call has been active in hours, minutes and seconds, while the Time remaining box shows the time remaining until the call is terminated.

The table to the right shows how the call is proceeding.

Under the Line status tab a table with information on each active call is shown.

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