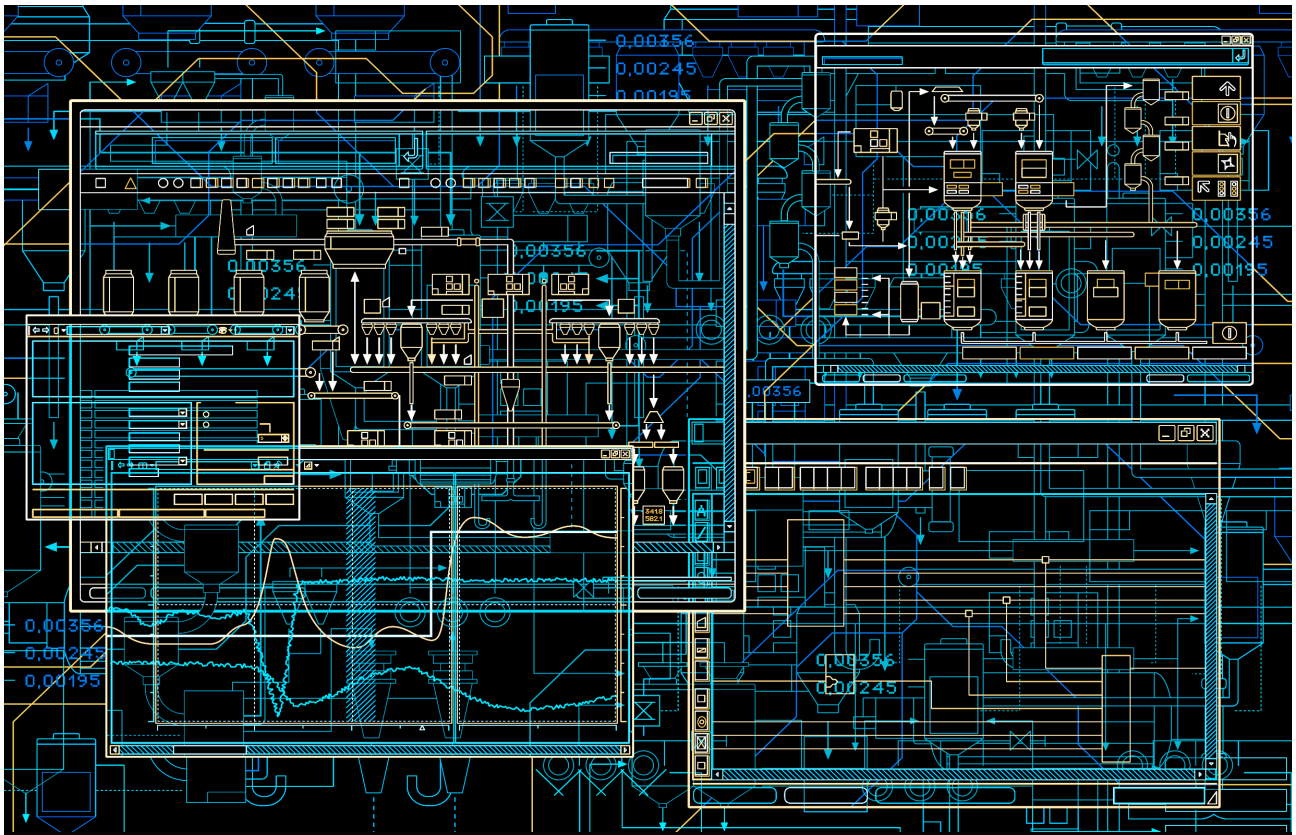

800xA for Safeguard

Configuration

System Version 6.0

Power and productivity
for a better world™

800xA for Safeguard

Configuration

System Version 6.0

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Release: October 2015
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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.

The 800xA for Safeguard enables the connection of 800xA Operator Workplace to a MasterBus 300 control network with Safeguard Controllers.

The information in this user manual is intended for:

- The Engineer that sets up the safety system functionality (including defining displays, configuring control parameters etc.)
- The System Administrator that sets up the safety system configuration

It is recommended to have a basic understanding of distributed automated process control, the hardware and software functionality of the 800xA system.

The user should login as an Application Engineer or System Engineer (on the workplaces) to use the functions of 800xA for Safeguard.

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>

_____

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	Description
MB300	MasterBus 300 - the control network communication protocol that is used by the AC 400 controllers
Safeguard	Safeguard 400 Series, ABB's safety controller based on the AC400 Series. Also refers to the previous model, Safeguard 3000.
SCS	Safety Control System / Safety Control Station, the dual safety system configuration of SG 3000 / Safeguard 400 Series consisting of two equally configured safety controllers.
SC	Safety Controller, refers to one of the nodes in a SCS.
SCA	The safety controller with the lowest node number in a SCS.
SCB	The safety controller with the highest node number in a SCS.

Term/Acronym	Description
ESD system	Emergency Shut-Down system.
PSD system	Process Shut-Down system.

Released User Manuals and Release Notes

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

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

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

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

Section 1 Introduction

Product Overview

The Operator Workplace is used for process monitoring and control. It has a generic design and can be used for different process control systems.

The 800xA for Safeguard is a software product that enables you to connect an Operator Workplace to Safeguard Controllers in a MasterBus 300 network.

Product Scope

The 800xA for Safeguard is built on 800xA for Advant Master which is integrated in the Operator Workplace. This provides the following features:

- Support for single and dual Safeguard controllers.
- Handling of dual controllers as one object in the operator's workplace.
- Execution of operator commands in both controllers.
- Status and diagnostic display for both single and dual controllers.
- Faceplates, object displays and alarm/event handling consistent with AC400 Controllers.

The supported Safeguard functions and functional units are:

- FI (Fire Input), loop monitored digital inputs.
- FD (Fire Detector), for addressable detectors.
- GI (Gas Input), loop monitored analog inputs.
- Fireguard central, control and monitoring.
- AutroSafe central, control and monitoring.

- C&E shutdown level.
- Safeguard system status and control.

What you can do with 800xA for Safeguard

This list is an example of the engineering you can do with 800xA for Safeguard.

- Configure the connection of the workplace to Safeguard controllers on MasterBus 300 control network.
- Setup the workplace for handling the process data defined in the Safeguard controller's database. You do not need to define the database again, it is uploaded from the controllers over the network.
- Setup the event handling for the process events that are reported from the Safeguard controllers.
- Collect and present System status for the Safeguard controllers.
- Apply filter to suppress display of events arising from a specified controller.

Prerequisites and Requirements

The general hardware and software requirements for the Operator Workplace product are described in the instruction *System 800xA Installation and Upgrade Getting Started (2PAA111708*).*

Section 2 Configuration

Before You Start

Ensure to have access to one of the following:

- The database instances from the Function Chart Builder.
- The Operator Workplace Connectivity Server connected to the Safeguard 400 controllers through the MasterBus 300 control network.

For more information on the Operator Workplace, refer to *System 800xA Operations Operator Workplace Configuration (3BSE030322*)*.

Libraries and Object Types

800xA for Safeguard defines a set of object types. An object type is a predefined aspect object defined in the **Object Type Structure**.

Object types in 800xA for Safeguard (for example, SG 400 Dual System, MB300 FI, and MB300 GI) represent the data base element types in the AC 400 series controller.

During upload from controllers, the **Uploader** aspect creates instances of the controller objects with the respective object types in **Control Structure**.

The Safeguard object types are included in libraries in the 800xA system version 6.0 and later versions. The Base Library *SafeguardObjectTypes* defines all Safeguard object types including the graphics independent aspects. The extension library *SafeguardObjectTypesPG2Ext* defines all process graphics aspects in the object types.

The extension libraries *SGObjectTypesPG2Ext* in the Advant Master object types define all Safeguard specific PG2 graphics.

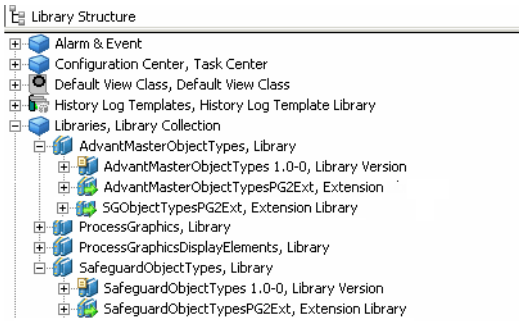


Figure 1. 800xA for Safeguard Libraries in the Library Structure

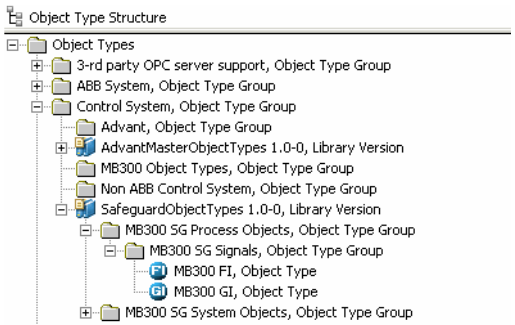


Figure 2. Base Library SafeguardObjectTypes in the Object Type Structure

A library is in one of the following states, *Open*, *Closed* or *Released*.

After installation of the product, libraries are in the *Closed* state and are protected from unintentional modifications. Custom modifications are possible if the library is forced to the *Open* state. Observe that the modifications may be lost in future system upgrades/updates.

For more information on library handling and object types, refer to *System 800xA Configuration (3BDS011222*)*.

Getting Started

The 800xA for Safeguard comprises operator station functions for a single or dual controllers with identical data base content.

Consider the following scenarios to configure a Safeguard 400 system.

1. An existing plant where the controllers are configured and are functional.
2. A new plant where the controllers should be configured.

The Steps for an Existing Plant

1. Setup the parameters for the RTA Board (network and node addresses, time synchronization, Character Conversion).

You can choose No Conversion (English), Swedish or German when configuring the RTA Board.

2. Build the Control Structure (Retrieve the information about the Process and System objects).
3. Modify (if required) the Alarm and Event default settings.
4. Retrieve (synchronize) the TTD logs in the controller and the corresponding log hierarchies above them.

The Steps for the New system

1. Build the Controller Application
   a. Create and configure Process and System objects
   b. Define Log groups (TTD)
   c. Write your AMPL applications
2. Setup the parameters for the RTA Board (network and node addresses, time synchronization).
3. Download the applications to the controllers.
4. Build the Control Structure (Retrieve the information about the Process and system objects).

5. Modify (if required) the Alarm and Event default setting.
6. Configure the TTD logs in the controller and the corresponding log hierarchies above them.

The Engineering of the controllers and the various steps to perform is not described in this book. Please read the corresponding User´s Guides.

On time synchronization and setting up the RTA board refer to *System 800xA Automation System Network Design and Configuration (3BSE034463*).*

Dual Handling

To achieve dual handling of controllers in the operator workplace, a dual Safeguard system has to be specified in the data base element NODE_DESCR on the RTA board. If a dual system is not specified correctly in the NODE_DESCR the Safeguard system will be treated as a single controller. Layout of the database element NODE_DESCR is shown in Section 2, Configuration. An illustration of the dual handling is given in Figure 3.

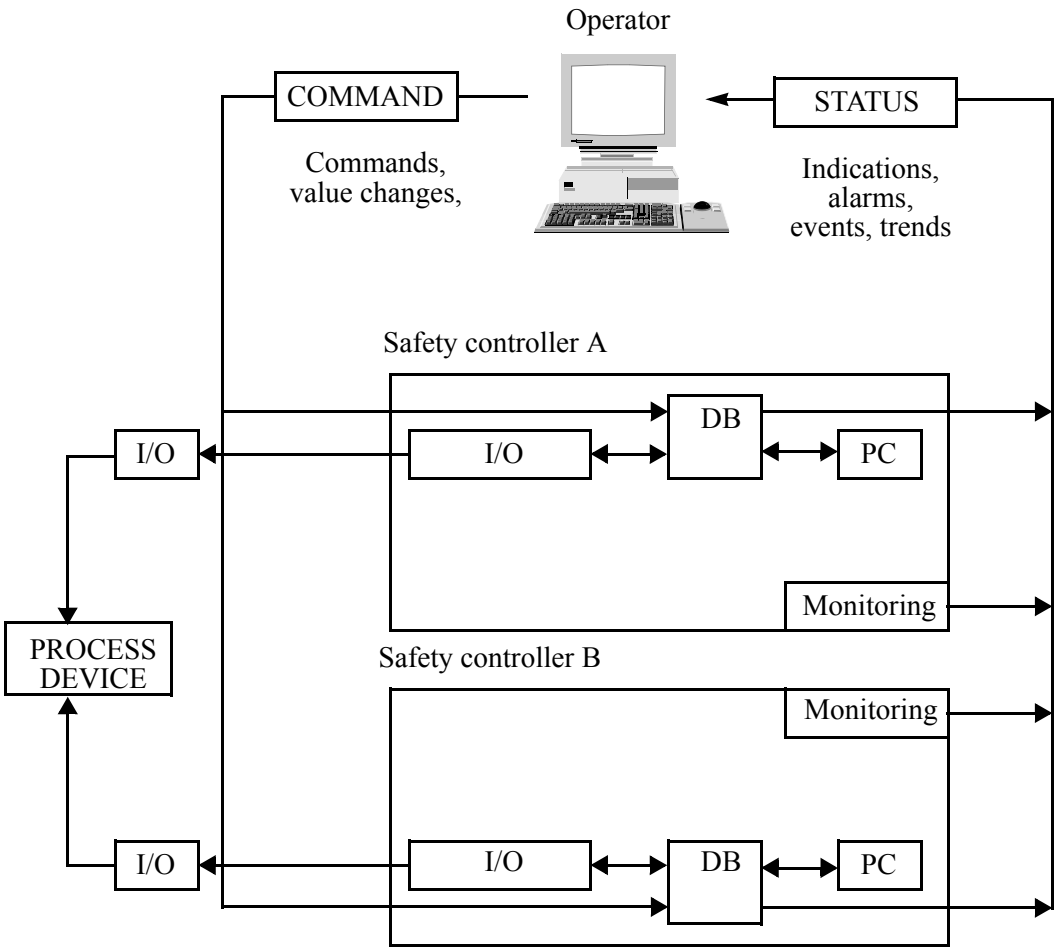


Figure 3. Block Diagram of Dual Handling

Building the Control Structure

The Control Structure is based on the controllers in the MB300 network. To build the structure, do as follows:

- Create an MB 300 Network object at the top level of the Control Structure. It is recommended to use the Configuration Wizard (select 'Add RTA').
- Select the Network object and add Safeguard nodes below. Figure 4 shows the possible node types that can be selected.
- Select character conversion on the RTA Board. This to prevent incorrect naming, for example "[H\G NIV]" instead of "HÖG NIVÅ" in a Swedish system. When changing character conversion, default databases are loaded to the RTA board. All created NODE_DESCR are removed, and modified EVENT databases are overwritten with default parameters. If character conversion is selected after the upload and a new upload is done, object names might change and any configuration (like displays) using this object, will be lost as the object is moved and a new object is created.
- Execute the Upload procedure for each Safeguard system (as described on the next pages) to display the whole structure of I/O boards and Process and System objects.

You can display one Safeguard system at a time or one or a couple of object types at a time. The MB 300 Uploader retrieves the required information from the controllers and creates the corresponding objects and aspects in the Control Structure.

To create a complete Control Structure:

1. Select the Control Structure in Plant Explorer.
2. Select **New Object** from the context menu.

3. Select the Controller type object. Request creation of a new object and select a Controller type, see Figure 4. It is recommended to include the node number in the object name.

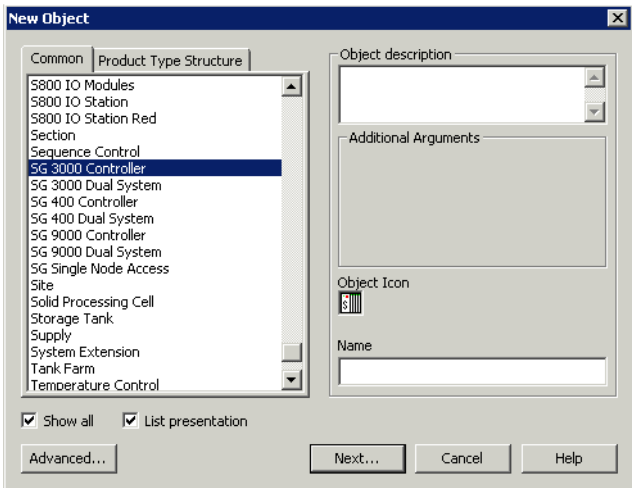


Figure 4. Safeguard Node Objects

The following Safeguard Object Types are available for selection:

- Safeguard 3000 Controller, one branch.
- Safeguard 3000 Dual System, two branches.
- Safeguard 9000 Controller, one branch.
- Safeguard 9000 dual system, two branches.
- Safeguard 400 Controller, one branch.
- Safeguard 400 Dual System, two branches.

For older systems of type EBXMP200, use the Safeguard 9000 object types. See EBXMP200 Node Type on page 36 regarding the EBXMP200 configuration

Do not select Safeguard Single Node Access object. It is created automatically, in dual systems, as a container of the two control branches.

4. On **Next...** the ‘Additional Arguments’ window appears. This depends on the selection of a single system (see Figure 5) or a dual system (see Figure 6) in the previous step.

   The arguments for a single Safeguard are the same as for an AC410 controller. Enter the node number and click on the **Create** button.

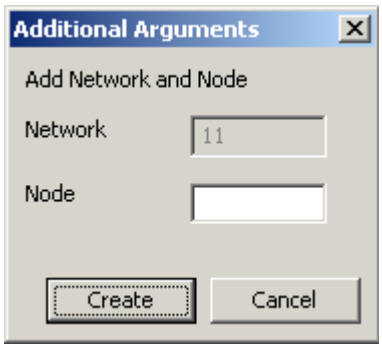


Figure 5. Additional Arguments for Single Safeguard

The arguments for a dual Safeguard system are:

- node numbers for each controller (branch of the system).
- virtual node number in the range 200 - 250. This number is assigned to a virtual Safeguard object that represents the dual Safeguard system in the control structure.
- upload source controller (branch). Side A or B of the Safeguard system can be assigned as default source for upload. The value can be altered later. On the upload function see next section.
- name extension for each branch of a Safeguard system. The extension is added to object names as a suffix in order to identify which branch of a system they belong to.

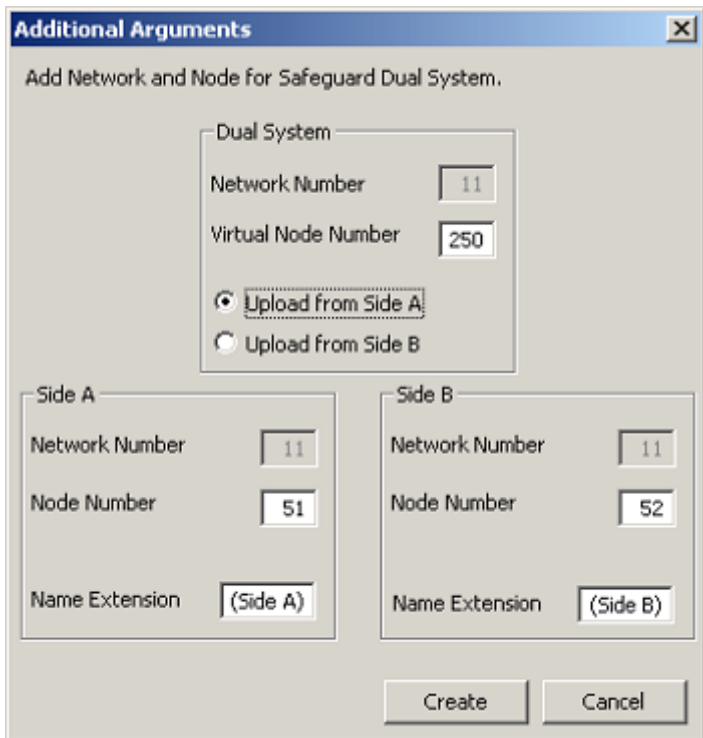


Figure 6. Additional Arguments for Dual Safeguard System

5. Select the node and bring up the MB 300 Uploader aspect to start the upload, see Figure 7.

MB300 Uploader Aspect

MB300 Uploader aspect supports retrieval of data from the controller and automatically builds up a control structure with objects subordinated to the controller object. The user can upload all the available objects or only the objects of one or several object types (e.g. analogue inputs). In the latter case click on the **Add** button (see Figure 7) to select the object types for the upload. After you have made the selection click on **Apply**. For a controller with many objects of certain types it

may be wise to upload at least the most populated object types one by one before proceeding with the others.

The Function Chart Builder (FCB) uploader released with Control Builder A does not function with the FI, GI, and FD function units.

The FD objects should be transferred to Fire Input Normally Closed (FINC) or Fire Input Normally Open (FINO) objects in the source code before translating the source code to FCB. The FINO, FINC, and GISI (Gas Input Calculated) objects having the parameters (306,0) / (305.0) on the IO board will not be uploaded from the FCB in an accurate manner. Update this parameter to an empty value before translating the source code to FCB.

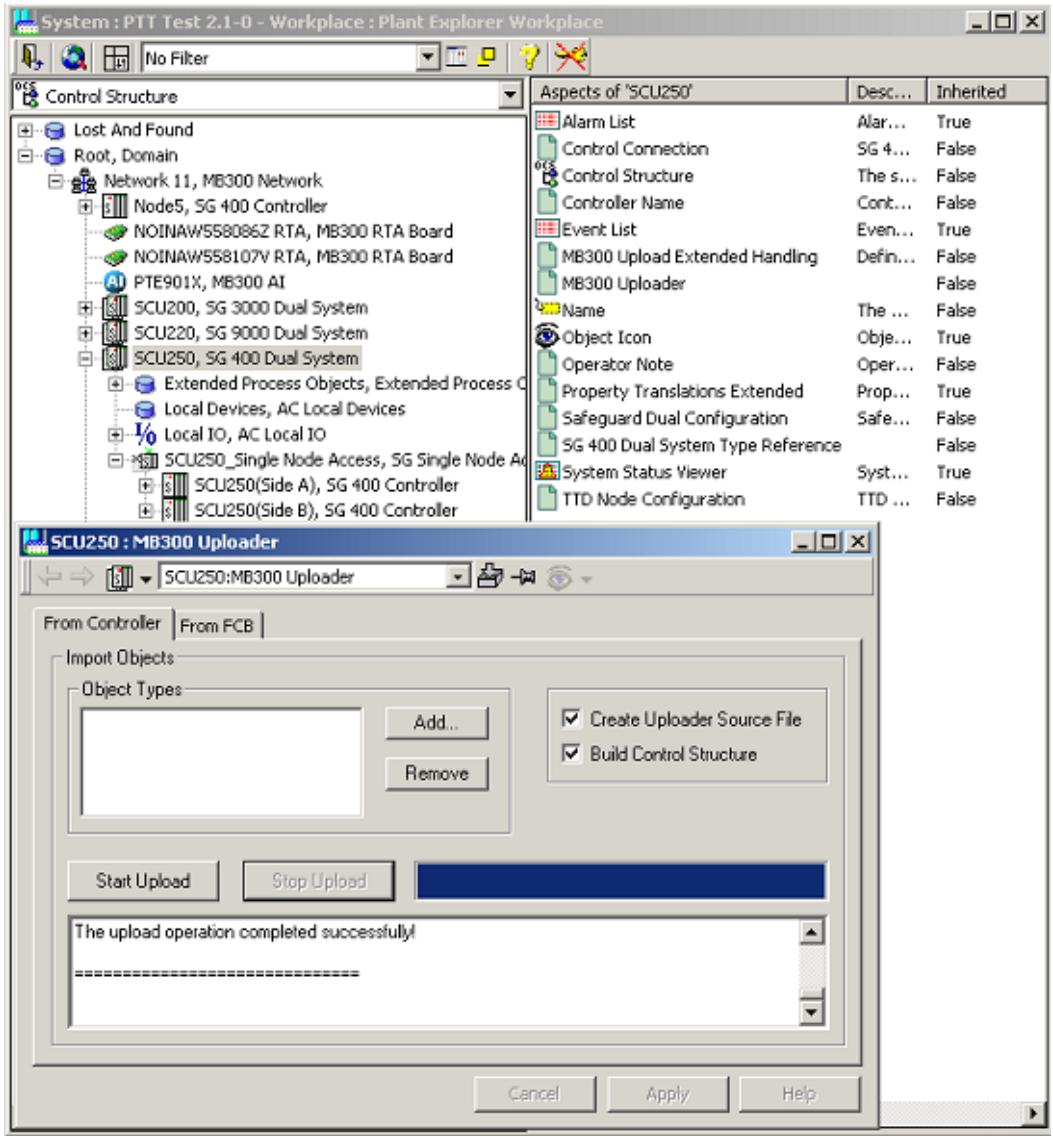


Figure 7. MB300 Uploader Aspect

The MB 300 Uploader aspect has two tabs:

- The **From Controller** tab that contains functions to upload the data directly from the controllers (via the MB 300 network).
- The **From FCB** tab that contains functions to upload the data from a source file. The source file is created with the Function Chart Builder (FCB) engineering tool. For details on this see *800xA for Advant Master Configuration (3BSE030340*)*.

Using the From Controller tab to Upload

Click **Add** or **Remove** to modify the list with object types that you want to include in the Upload. If you leave the list blank, all object types are included (this is default).

Mark the **Create Uploader Source File** and the **Build Control Structure** check boxes. These check boxes should always be marked. They are only used for fault tracing and simulation, and should not be modified. They should only be modified on direct request from the supplier.

Click on **Start Upload** when you are ready for the upload. The upload process will start and run automatically until finished.The window in the lower part of the aspect view displays messages describing the progress, see Figure 7.

Click on **Stop Upload** if you want to interrupt the upload.

Uploading can take some time. When complete, use Plant Explorer to browse the control structure and verify that everything is in place as expected.

The uploading process will create control structures for both branches (Side A and Side B), as well as the virtual Safeguard node when a Safeguard Dual system is being uploaded.

Figure 8 shows an extract of the control structure after an Upload has been performed.

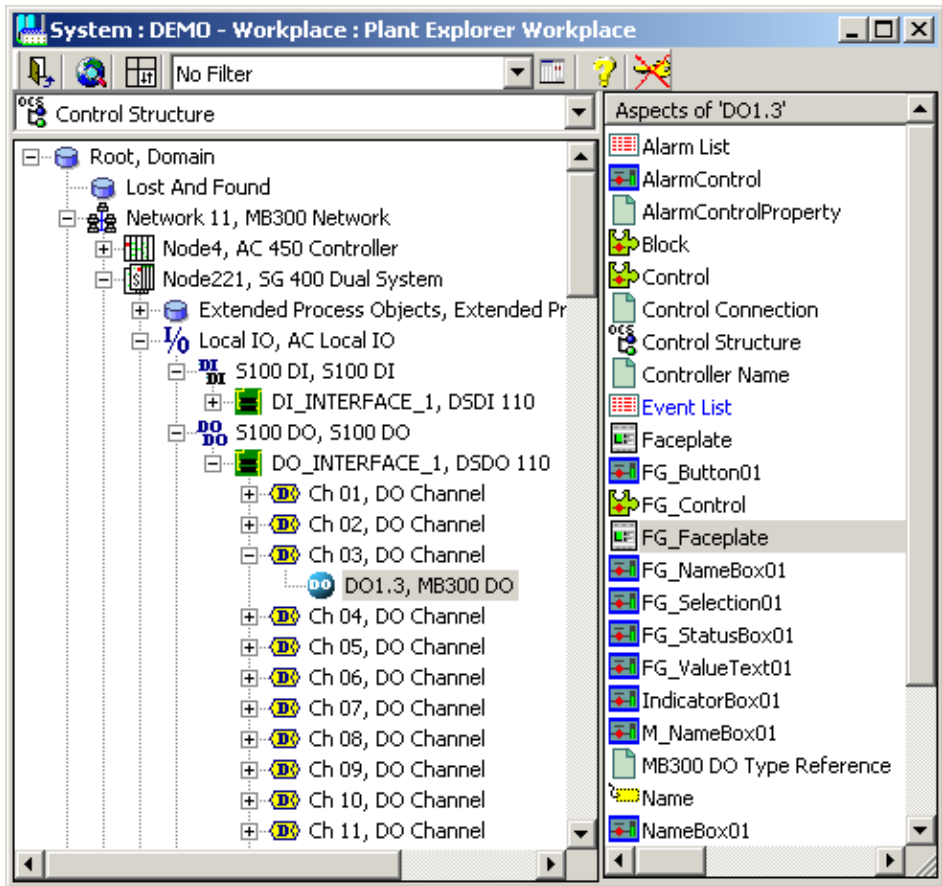


Figure 8. Board and Channel Objects in a Control Structure after an Upload

Changing Settings of a Dual System

The following arguments for a Dual Safeguard system can be changed after a system has been configured:

- Virtual node number,
- Node numbers of each branch (side A or B),
- Uploader source. The branch which serves as a source for the MB300 Uploader.

To view the current settings select the main view of the Safeguard Dual Configuration aspect. To change the settings you have to select the configuration view as shown on Figure 9.

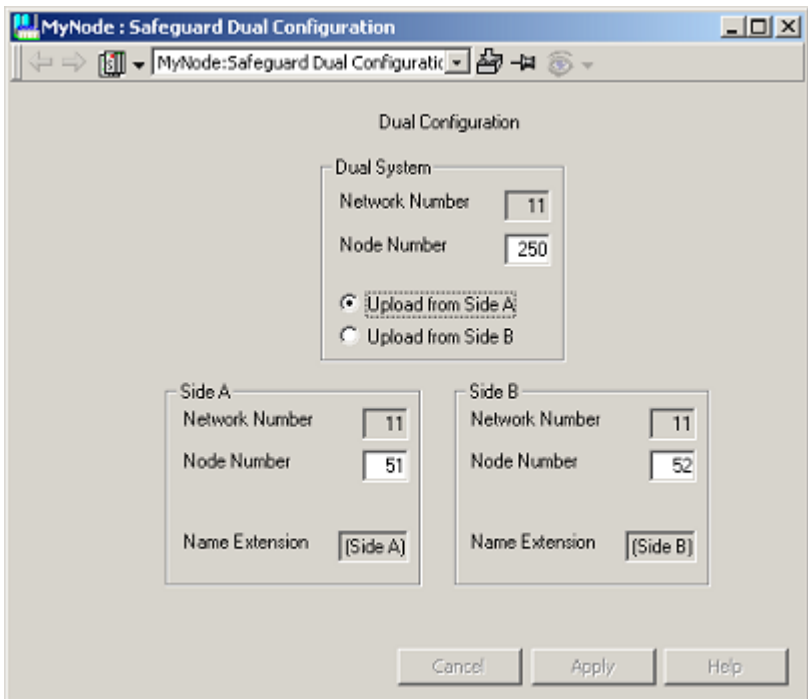


Figure 9. Dual Configuration Aspect

The name extension is entered when a Safeguard object is initially created. It can not be altered later. Empty string is not allowed as name extension.

When a node number is changed you have to reconfigure the NODE_DESCR database element (see Section 2, Configuration). This must be done in both connectivity servers in a redundant pair. A new upload must be performed as well.

Defining Event Treatments using RTA Board Configuration

You define the Event treatment by configuring data base elements on the RTA Board. After setting up the database on the RTA Board, you shall save the database configuration. For details on RTA Board Control aspects refer to *800xA for Advant Master Configuration (3BSE030340*)*.

See Appendix A, Event Handling for configuration of Safeguard specific Event data base elements.

For each branch of a dual Safeguard system, a database element of type NODE_DESCR has to be created. This element holds set-up parameters for dual handling associated with a Safeguard system. It consists of three groups of parameters:

- Controller's name, description, network and node number.
- Parameters for dual treatment.
- Test parameters for enabling single node operation.
- Signal filtering.
- Support for EBXMP200 node types.

Start an on-line session towards the RTA board and create a pair of NODE_DESCR instances for each dual system that is being configured. For details see the next section.

Whenever a change is made to a NODE_DESCR database element, a **backup and restart of the RTA Board is required**. Otherwise the changes made will not be implemented. The exception is Signal filtering configuration.

DB Element NODE_DESCR

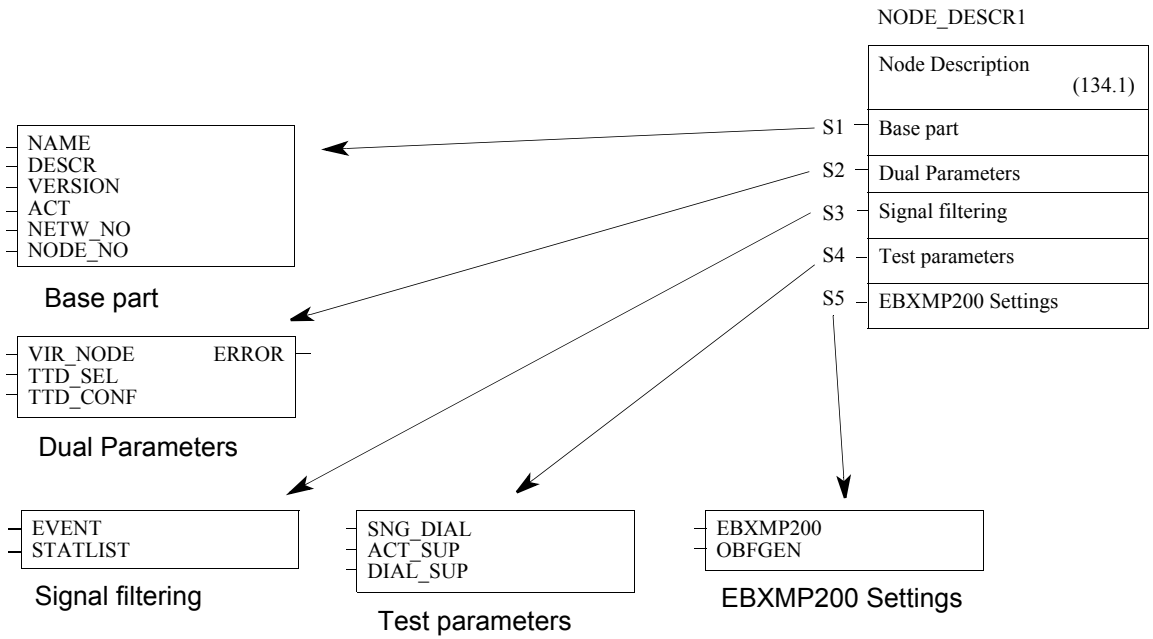


Figure 10. NODE_DESCR Element, Overview

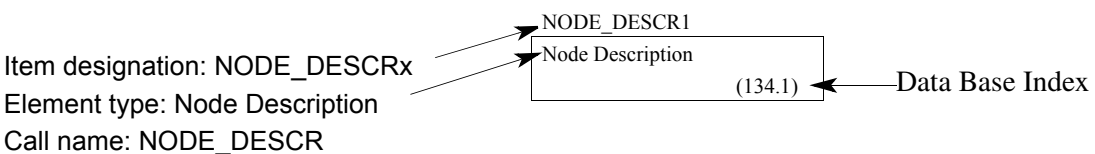


Figure 11. NODE_DESCR Header

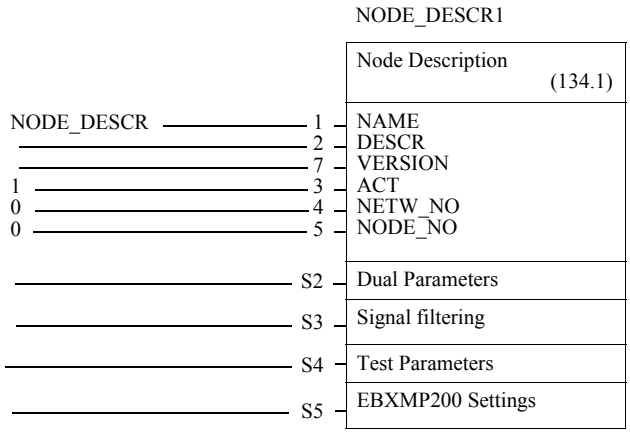


Figure 12. NODE_DESCR Element, Base Part

Table 1. NODE_DESCR element, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	User	NODE_ DESCRx	-	Controller (node) **NAME**	Max. 12 characters
2	DESCR	User	-	-	Controller (node) **DESCR**iption.	Max. 20 characters
3	VERSION	User	-	-	Controller (node) **VERSION** designation.	Max. 12 characters
4	ACT	User	1	-	The function is ACTive or disabled.	1=Active

Table 1. NODE_DESCR element, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
5	NETW_NO	User	0	-	**NETW**ork **N**umber for connected controller	Values: 0 - 99. Redundant network: Specify one of the networks. Changes require backup and restart of the RTA Board.
6	NODE_NO	User	0	-	**NODE N**umber for the controller	Values: 0 - 99

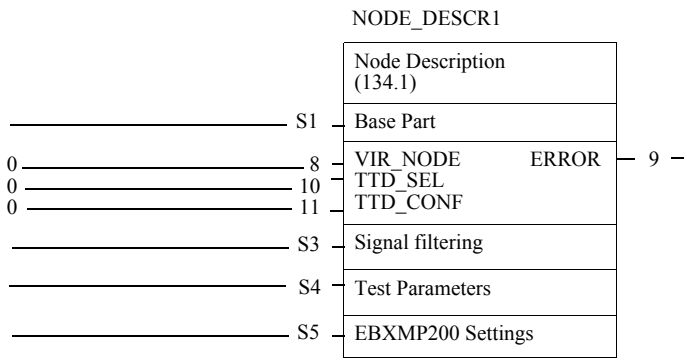


Figure 13. NODE_DESCR Element, Dual Parameters

Table 2. NODE_DESCR element, Dual parameters

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
8	VIR_NODE	User	0	-	**VIR**tual **NODE** number. For a dual system, two instances have to be specified (Side A and B) with the same VIR_NODE value.	Values: 200 -> 250. 0 = the node is not considered part of a dual system
10	TTD_SEL	User	0	-	**TTD SEL**ects data from this node. Can be set to true (1) for one of the branches in a dual system.	If this parameter is set to false for both branches, the first to be accessed will be the log data source as long as it is running.
11	TTD_CONF	User	0	-	**TTD** is possible to **CONF**igure even if the opposite branch is not available.	If this parameter is set to 1, inconsistency in TTD-logs in the both branches may occur. This parameter is automatically reset when both branches are available
9	ERROR	System	-	-	**ERROR** indication. Result of a configuration error.	

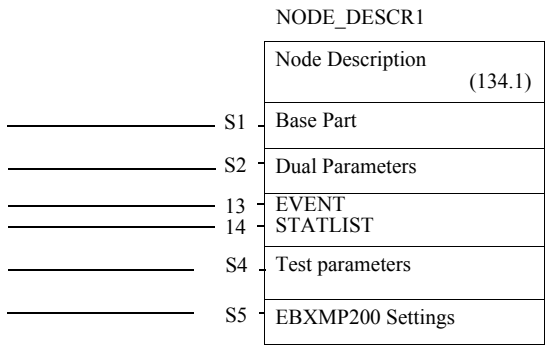


Figure 14. NODE_DESCR Element, Signal Filtering

Table 3. NODE_DESCR element, Signal Filtering

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
13	EVENT	User	0	-	Enables/disables event reporting from the actual controller.	0 =event reporting 1 = no event reporting to the current CS(1).
14	STATLIST	User	0	-	Includes/Excludes the actual controller from status list searches.	0 = node is included. 1 = node is excluded.

(1) Connectivity Server.

Event Filtering

The main purpose of the Event Filtering function is to prevent alarm and event messages from being sent from controllers in one MB300 network to Operator Workplaces in another, across networks which are interlinked via a gateway node. The function can be used for filtering within the same network as well. To filter out event and alarm messages, the NODE_DESCR element properties ACT and EVENT must be set to “1”.

The filter settings are used by a Connectivity Server to determine which controllers it should ignore with respect to alarm and event messages.

If the filter settings are updated with a new controller, this new controller will continue sending alarm and event messages to the Operator Workplaces until it is restarted. This situation is prevented from occurring if the Connectivity Server contains a correct NODE_DESCR data base at the time of the initial start-up, or before any other controllers are connected to the network. To avoid restart of a controller the following procedure must be followed:

- Connect On-Line Builder to one of controllers to be filtered and give commands:
  LOCPSET: CMDS:TP01.CT
  OMVT
- The following menu will appear:
  1) List contents of Master View table.
  2) Remove a node from Master View table.
  3) Remove all nodes from Master View table.
  4) Add a node to Master View table.
  5) Quit.
- Type 1 for 'List...'
- Type 2 and enter the network/node number for the Connectivity Server (RTA).
- Type 1 for 'List...' to verify that the Connectivity Server node now is removed from the table.
- Repeat the above steps for all controllers to be filtered.

The above procedure can not be used for old MasterPiece controllers.

Status List Filtering

Node = 0 as search key for a status list (Quick List aspect) means that all controllers in the system will be searched. However, this signal filtering function offers the opportunity to “filter out” specified nodes from such searches.

For every node not to be included in status list searches, there must be a data base element of the type NODE_DESCR in the Connectivity Server involved and the element properties ACT and STATLIST set to “1”.

The filter settings are used by a Connectivity Server to determine which nodes not to send status list search requests to.

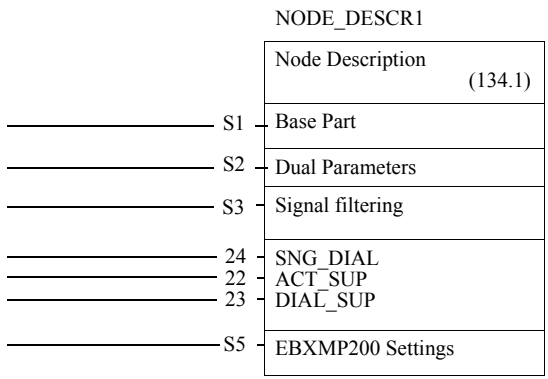


Figure 15. NODE_DESCR Element, Test Parameters

Table 4. NODE_DESCR element, Test Parameters

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
24	SNG_DIAL	User	0	-	Single side Dialog access. Enables/disables dialog access towards objects in the current side of a dual system.	1 = single side access enabled. Should be used for test purposes only.
22	ACT_SUP	User	0	-	Activates suppression of dual handling. Valid for all functions except operator commands.	Applicable only when the Single Side Testability option is installed.
23	DIAL_SUP	User	0	-	Activate suppression of dual handling for operator commands.	If you are not using this option, keep the default values.

Single Side Testability

The Single Side Testability function is an extension to Introduction which allows an operator to temporarily override the dual handling of a Safeguard system and handle the both sides (branches) as single nodes. The function is intended for use in test situations when, for instance, an application upgrade is to be tested in an operating system. Single side handling is initiated when test activities involving Safeguard systems are carried out. All the Operator Workplaces are then turned to Test mode of operation and handles the controllers in dual Safeguard systems as single nodes.

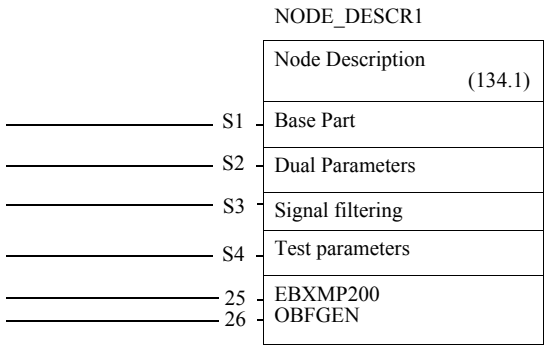


Figure 16. NODE_DESCR Element, EBXMP200 Settings

Table 5. NODE_DESCR element, EBXMP200 parameters

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
25	EBXMP200	User	0	-	Enable support for EBXMP200 node type in the current controller.	
26	OBFGEN	User	0	-	Enable support for OBFGEN database element in the current controller.	GENUSD3 object type is occupied in the system when this property is applied.

EBXMP200 Node Type

EBXMP200 is designation for a customized node type based on MP200 controllers.

This type of nodes is mostly used in the North Sea oil and gas installations.

OBFGEN database

The OBFGEN database element is applicable only in the EBXMP200 controllers. It provides connection between the related PC element OBFI-G and the Operator Workplace. All changes on inputs in OBFI-G are transmitted to the Operator Workplace as events. GENUSD3 object type with its Faceplate aspect is used as graphical interface. Orders issued via Faceplates are transmitted to the related OBFI-G outputs.

Configuration Example

The following example focus on a dual Safeguard system as configuring a single Safeguard system is similar to configuring AC410 controller.

This description of the procedure for configuring a dual Safeguard system assumes the following configuration:

The created network number is **11**, and network name is **netw11**.
The dual Safeguard system name is **System 250**.
Virtual node number for the system is chosen to be **250**.
Node number of the branch A (side A) is **51** and the branch B **52**.
The virtual network number is by default equal to the side A's network number.

As you create a functioning system, write down the values and parameters you have chosen, and use those values where needed.

Here follows a step by step tutorial on how to create a dual Safeguard system.

1. Right-click on the already created MB300 network object called **netw11** and select **New Object** from the context menu.
2. From the list of available node objects select **SG400 Dual System** and enter a suitable name in the **Name** field - here the name is **System 250**. Click **Next**.

3. In the Additional Arguments tab (Figure 17) enter the virtual node number **250**, the numbers of both branches (**51** and **52**) as well as the default uploader source (select Side A). Finally click on the **Create** button.

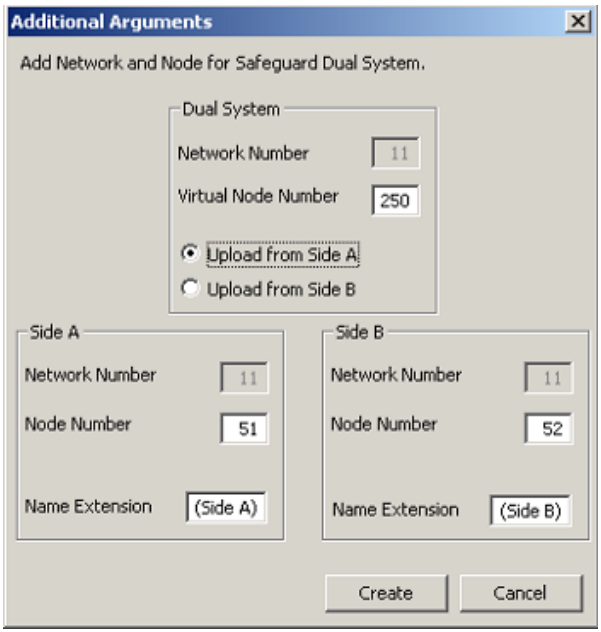


Figure 17. Additional Arguments for Safeguard Dual System

The control structure created as result of step 3 is shown on Figure 18. Note the **SG Single Node Access** object automatically created as a container for the subordinated system branches (side A and B).

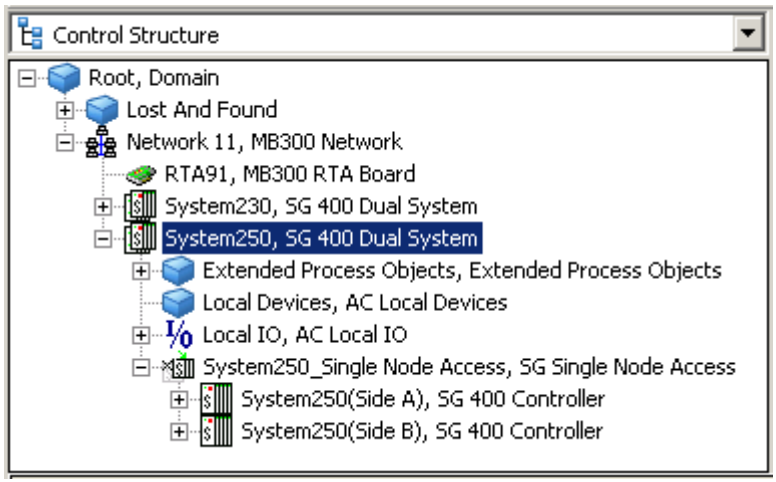


Figure 18. Safeguard Dual System in the Control Structure

4. Select the MB300 Uploader aspect of **System 250** and click **Start Upload**. Await the progress bar until it is finished. Part of the control structure uploaded is shown on Figure 19.

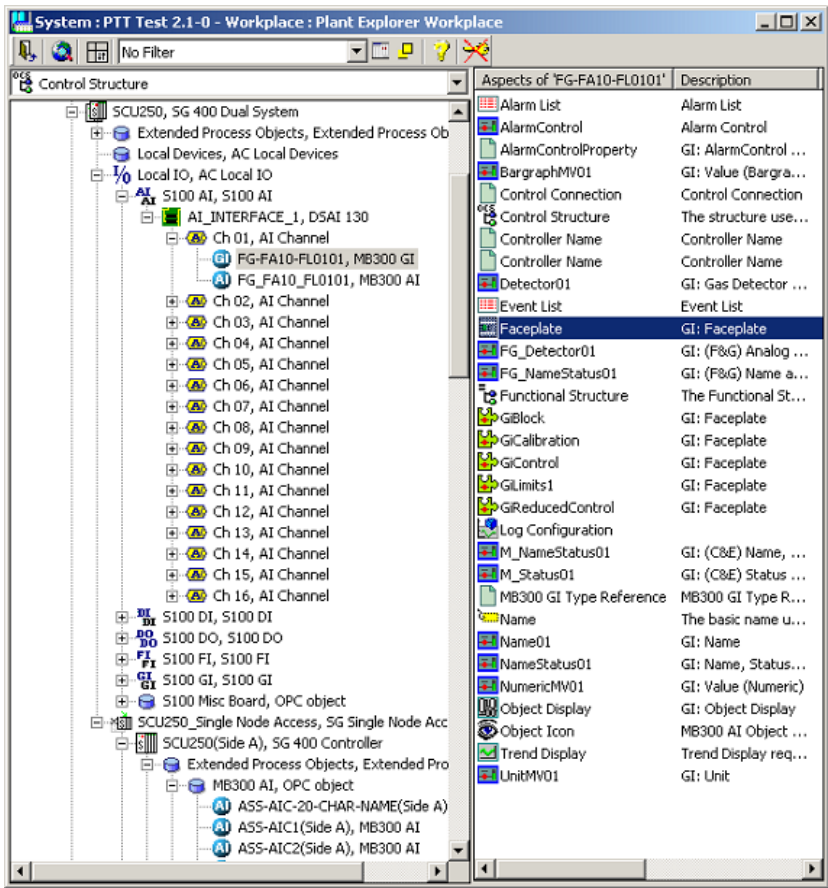
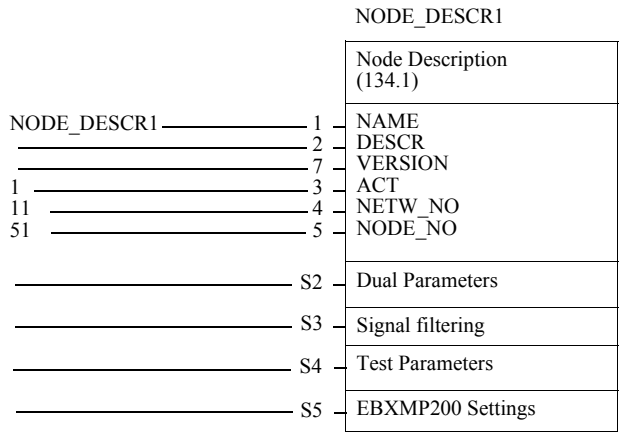
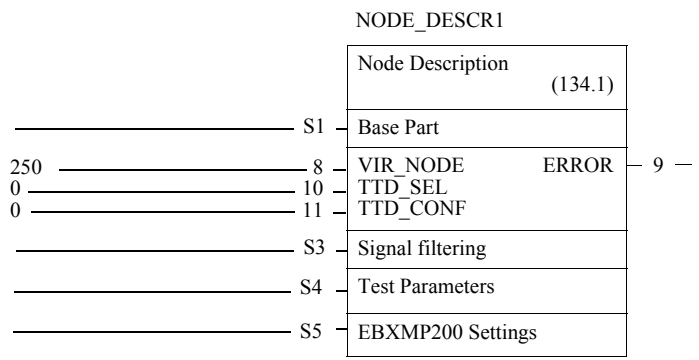


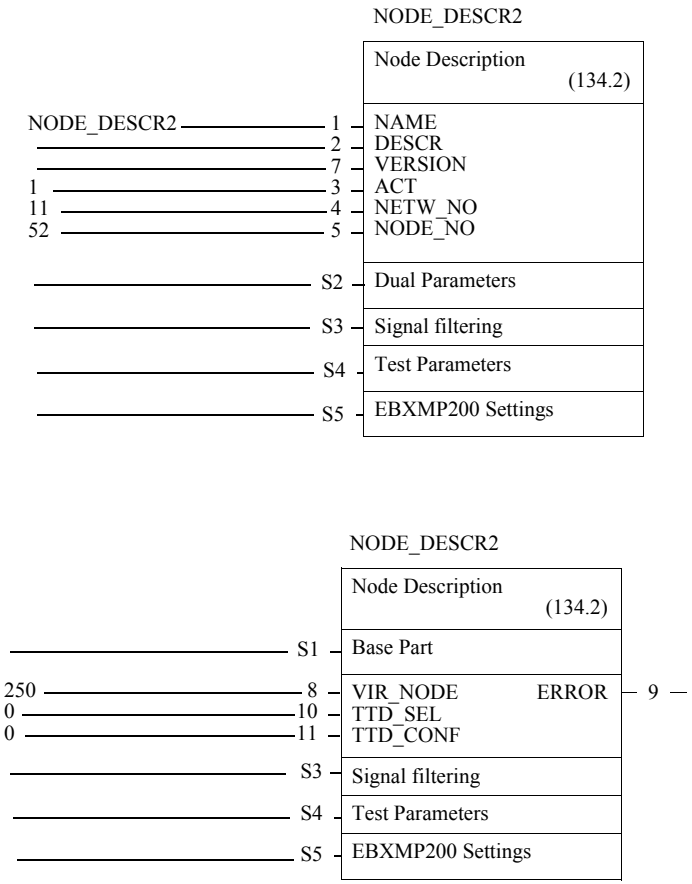
Figure 19. Safeguard Dual System with Uploaded Objects

5. Select **RTA Board Control** aspect of the **System 250** and in the **RTA Board Configuration** tab click on **RTA Board Config** to start an On-line Builder session.

6. Issue the command **crdb node_descr** - create two instances and fill in properties as shown below.







7. Issue the command **tsess** to close the On-line Builder window.
8. Select **RTA Board Control** aspect and click **RTA Board Backup** to save your configuration.
   Select the tab **RTA Board Control**
   Click **Stop** and wait for a while.
   Click **Start**. Await for a message confirming the RTA Board start-up.

The Safeguard dual system is now configured. Proceed with the next system in the same way.

Creating TTD Logs

Configuration of TTD logs, data collection and presentation of trend data in the Operator Workplace is described in detail in *System 800xA Configuration (3BSDS011222*)*.

For upload of TTD logs and user interfaces specific for AC400 and Safeguard 400 controllers see *System 800xA for Advant Master Configuration (3BSE030340*).*

Safeguard specific check box messages may occur during Trend/TTD configuration. Examples of such a messages are shown on Figure 20 and Figure 21. The messages are displayed when only one branch of a Safeguard system is in operation. The messages must be acknowledged by answering OK.

Object Access in a Single Safeguard Branch

Access to objects in a single branch (side A or B) is not allowed when you try to configure Trend/TTD log in one branch only.

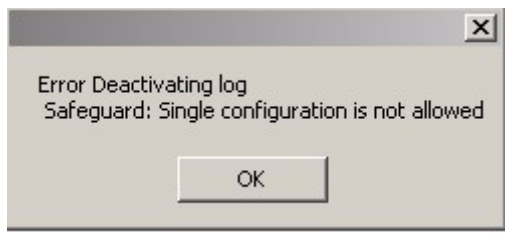


Figure 20. Single Configuration is not Allowed

Config not Allowed when one Node is Unavailable

Configuration of Trend/TTD log is not allowed while only one branch is in operation.

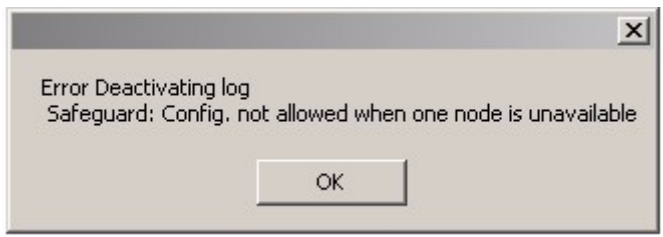


Figure 21. Config not Allowed with only one Branch in Operation.

One side of a dual system can be available for TTD configuration when the single configuration is enabled in the NODE_DESCR database element.

OPC Clients

Introduction supports the OPC Data Access and OPC Alarm and Event Server functionality in Process Portal. Using these OPC interfaces any 3rd party OPC Client may access information on Safeguard objects. Data associated with both virtual and real objects is available.

A subscription towards a Safeguard object via OPC Data Access will behave similarly to subscription towards objects in the AC 400 System Extension with one exception. In a discrepancy situation (unequal status in Side A and B) status data on the virtual object will be returned with a higher frequency than in a normal situation. The frequency will also exceed the specified cycle time requested by the subscriber.

NLS Support

Introduction complies with the Native Language Support (NLS) concept which is integrated in the 800xA System.

Exception:

Name of the ‘MB300 Uploader Extended Handling’ aspect is not treated by NLS and shall not be translated to any language. This exception does not apply to the aspect description.

Appendix A Event Handling

General

This appendix contains a description of alarms and events in the various functional units applicable with the Safeguard system. The description is given under the following headings:

AUDIBLE. Must be 0 for events and 1 for alarms. See *System 800xA Configuration (3BDS011222*)* for configuration of Audible Alarms.

The event texts for all relevant functional units are also collected in the manuals *800xA for Safeguard Graphic Library (3BSE044423*)*, giving the user a convenient quick reference during the application building.

The event handling is controlled by configuration parameters, EVENT-TREAT pointers, in the data base element located in the Safeguard controller.

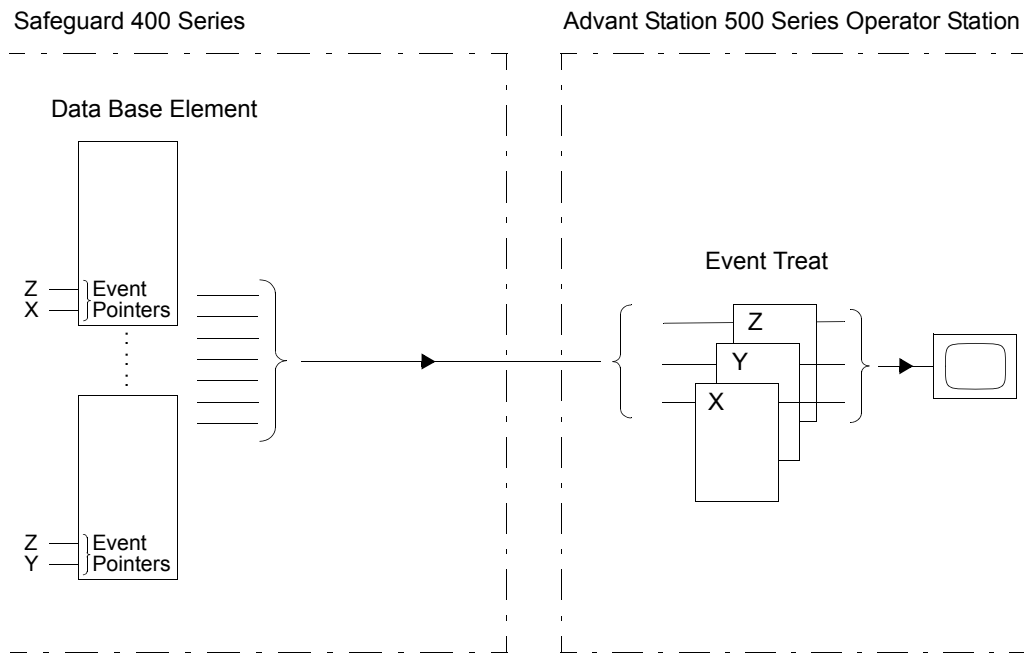


Figure 22. Principle of Event Handling in Fire Input

The Event Treat defines the event handling in the operator station such as audible alarms, text combinations in event and alarm list, colors, different handling for 0 -->1 and 1 -->0 transitions.

How different events from the functional units are treated is given in the following sections.

FI Event Handling

Event Description with Standard Texts

Table 6. Predefined EVENT Elements for FI

Property	Event	
	301	302
AUDIBLE	1	0
ALARM_PRIO	2	2
ALARM_TO_BLK	F	T
ALARM_FROM_BLK	T	T
PERSIST_LIST_BLK	F	T
TEXT_TO_BLK	F	F
TEXT_FROM_BLK	F	F
TEXT_COMB_CODE	5	5

Table 7. Event Texts for FI

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat(1)	Standard text	Line No in Event Treat(2)
Alarm on	AL_TR	Alarm	1	On	1
Alarm off	AL_TR	Alarm	1	Off	2
Manual entry on	AL_TR	Alarm	2	Value Ch.	3
Manual entry off	AL_TR	Alarm	2	Value Ch.	4
Prewarn on (3)	AL_TR	Prewarn	4	On	1

Table 7. Event Texts for FI (Continued)

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat(1)	Standard text	Line No in Event Treat(2)
Prewarn off (3)	AL_TR	Prewarn	4	Off	2
Signal error on	ERR_TR	Sign.Err	1	On	1
Signal error off	ERR_TR	Sign.Err	1	Off	2
Fatal earth fault on	ERR_TR	FtEaFlt	2	On	1
Fatal earth fault off	ERR_TR	FtlEaFlt	2	Off	2
Open circuit on	ERR_TR	Open C	3	On	1
Open circuit off	ERR_TR	Open C	3	Off	2
Short circuit on	ERR_TR	Short C	4	On	1
Short circuit off	ERR_TR	Short C	4	Off	2
Out of range on	ERR_TR	Out of R	5	On	1
Out of range off	ERR_TR	Out of R	5	Off	2
Alarm block on	ERR_TR	Al.Blk	6	On	3
Alarm block off	ERR_TR	Al.Blk	6	Off	4
Print block on	ERR_TR	Pr.Blk	7	On	3
Print block off	ERR_TR	Pr.Blk	7	Off	4
DB update blocked	ERR_TR	Upd.Blk	8	On	3
DB updt. deblocked	ERR_TR	Upd.Blk	8	Off	4
Inhibit on	ERR_TR	Inhibit	9	On	3
Inhibit off	ERR_TR	Inhibit	9	Off	4
Power failure on	ERR_TR	Pow.Fail	10	On	1
Power failure off	ERR_TR	Pow Fail	10	Off	2

Table 7. Event Texts for FI (Continued)

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat(1)	Standard text	Line No in Event Treat(2)
Earth fault on	ERR_TR	EarthFlt	11	On	1
Earth fault off	ERR_TR	EarthFlt	11	Off	2
Auto Inhibit on	ERR_TR	Auto.Inh	12	On	3
Auto Inhibit off	ERR_TR	Auto.Inh	12	Off	4

(1) Line number in indicated EVENT_TREAT element for user-defined property text.
(2) Line number in indicated EVENT_TREAT element for user-defined event text.
(3) Used only by the FD type (variant 5) which is not part of the Safeguard 3000™ product

GI Event Handling

Event Description with Standard Texts

Table 8. Predefined EVENT Elements for GI

Property	Event		
	303	304	305
AUDIBLE	1	1	0
ALARM_PRIO	2	2	2
ALARM_TO_BLK	F	F	T
ALARM_FROM_BLK	T	T	T
PERSIST_LIST_BLK	F	F	T
TEXT_TO_BLK	F	F	F
TEXT_FROM_BLK	F	F	F
TEXT_COMB_CODE	5	5	5

Table 9. Event Texts for GI

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat(1)	Standard text	Line No in Event Treat(2)
Low alarm on	LO_AL_TR	L Alarm	1	On	1
Low alarm off	LO_AL_TR	L Alarm	1	Off	2
Low alarm changed	LO_AL_TR	L Alarm	1	Value Ch	6
Manual entry	LO_AL_TR	ValueLel	3	Value Ch	5

Table 9. Event Texts for GI (Continued)

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat(1)	Standard text	Line No in Event Treat(2)
High alarm on	HI_AL_TR	H Alarm	1	On	1
High alarm off	HI_AL_TR	H Alarm	1	Off	2
High alarm chngd.	HI_AL_TR	H Alarm	1	Value Ch	5
Signal error on	ERR_TR	Sign.Err	1	On	1
Signal error off	ERR_TR	Sign.Err	1	Off	2
Loop fault on	ERR_TR	Loop Err	2	On	1
Loop fault off	ERR_TR	Loop Err	2	Off	2
Alarm block on	ERR_TR	Al.Blk	3	On	3
Alarm block off	ERR_TR	Al.Blk	3	Off	4
Print block on	ERR_TR	Pr.Blk	4	On	3
Print block off	ERR_TR	Pr.Blk	4	Off	4
DB update blocked	ERR_TR	Updt.Blk	5	On	3
DB updt. deblocked	ERR_TR	Updt.Blk	5	Off	4
Inhibit on	ERR_TR	Inhibit	6	On	3
Inhibit off	ERR_TR	Inhibit	6	Off	4
Power failure on(3)	ERR_TR	Pow.Fail	7	On	1
Power failure off (3)	ERR_TR	Pow.Fail	7	Off	2
Calibration error on	ERR_TR	Cal.Err.	8	On	3
Calibration error off	ERR_TR	Cal.Err.	8	Off	4
Maintenance status on(4)	ERR_TR	Maintn.	9	On	1

Table 9. Event Texts for GI (Continued)

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat(1)	Standard text	Line No in Event Treat(2)
Maintenance status off(4)	ERR_TR	Maintn.	9	Off	2
Calibration on 0%	ERR_TR	Cal.	12	0%	6
Calibration on X%	ERR_TR	Cal.	12	X%	5
Start test	ERR_TR	Test	13	On	7
Reset test	ERR_TR	Test	13	Off	8

(1) Line number in indicated EVENT_TREAT element for user-defined property text.
(2) Line number in indicated EVENT_TREAT element for user-defined event text.
(3) Used for catalytic gas inputs.
(4) Used for AI type inputs.

Output Stage Event Handling

Output stage errors are annunciated to the operator as alarms to the operator station alarm list:

- Individual output channel errors are annunciated as OUTPUT ERROR alarm.
- Termination unit isolation errors are annunciated as ISOLATE ERROR alarm.

Two isolation situations are also treated as events:

- The normal operator commands for isolation and reset isolation of all units are event treated as OUTPUT ISOL. ON/OFF, including side /A or /B.
- Forced isolation due to termination unit channel error is event treated as FORCED ISOL. ON/OFF, as additional information to the isolate error alarm.

More detailed information about the error situation is given in the Safeguard system message display.

Operation & Monitoring Event Handling

Event Description with Standard Texts

Table 10. Predefined EVENT Elements for the Safeguard status Object

Property	Event			
	314	315	316	317
AUDIBLE	1	0	1	0
ALARM_PRIO	2	4	2	4
ALARM_TO_BLK	F	T	F	T
ALARM_FROM_BLK	T	T	T	T
PERSIST_LIST_BLK	F	T	F	T
TEXT_TO_BLK	F	F	F	F
TEXT_FROM_BLK	F	F	F	F
TEXT_COMB_CODE	5	5	5	5

Reported Alarms

The alarm handling is treated as single for each Safeguard controller side. The alarm texts are identical in both controller sides, but the reporting side is identified by the addition of /A or /B in the event text section. An alarm is usually accompanied by an additional message.

The alarms defined for Side A are listed below:

Table 11. Reported Alarms from Safeguard System's Side A

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat	Standard text	Line No in Event Treat
IND1_00 on IND1_00 off	IND1_TR IND1_TR	System System	1 1	Alarm /A Normal /A	1 2
IND1_01 on IND1_01 off	IND1_TR IND1_TR	Config Config	2 2	Alarm /A Normal /A	1 2
IND1_02 on IND1_02 off	IND1_TR IND1_TR	I/O I/O	3 3	Alarm /A Normal /A	1 2
IND1_03 on IND1_03 off	IND1_TR IND1_TR	Output Output	4 4	Alarm /A Normal /A	1 2
IND1_04 on IND1_04 off	IND1_TR IND1_TR	Isolate Isolate	5 5	Alarm /A Normal /A	1 2
IND1_05 on IND1_05 off	IND1_TR IND1_TR	Readback Readback	6 6	Alarm /A Normal /A	1 2
IND1_06 on IND1_06 off	IND1_TR IND1_TR	C&E Comm C&E Comm	7 7	Alarm /A Normal /A	1 2
IND1_07 on IND1_07 off	IND1_TR IND1_TR	C&E Int. C&E Int.	8 8	Alarm /A Normal /A	1 2
IND1_09 on IND1_09 off	IND1_TR IND1_TR	Byp.Prew Byp.Prew	10 10	Alarm /A Normal /A	1 2
IND1_10 on IND1_10 off	IND1_TR IND1_TR	Shd.Prew Shd.Prew	11 11	Alarm /A Normal /A	1 2

Reported Events

The event handling is treated as single for each Safeguard system side. The event texts are identical in both controllers, but the reporting side is identified by the addition of /A or /B respectively in the event text section. An event is usually accompanied with an additional message.

The events defined for Side A are listed below:

Table 12. Reported Events from Safeguard System's Side A

Events	Event Treat pointer	Property text		Event text	
		Standard text	Line No in Event Treat	Standard text	Line No in Event Treat
IND2_00 on IND2_00 off	IND2_TR IND2_TR	OutpIsol OutpIsol	1 1	On /A Off /A	1 2
IND2_01 on IND2_01 off	IND2_TR IND2_TR	ForcIsol ForcIsol	2 2	On /A Off /A	1 2
IND2_02 on IND2_02 off	IND2_TR IND2_TR	Byp.Key Byp.Key	3 3	On /A Off /A	1 2

C&E Shutdown Levels Event Handling

ESD level event treatment is normal single event treatment from dual nodes, without reference to controller side and the ESD level states are treated as events:

ESD COMMANDED - The ESD level is activated by operator.

ESD ON - The ESD level is activated.

ESD OFF - The ESD level is reset.

OVERRIDE ON - The ESD level is overridden.

OVERRIDE OFF - ESD level override is removed.

How the different events from User Control ESD levels are treated is given in Table 13 below. This also specifies which event handling is obtained as default and which alternative standard functions are available.

Table 13. Predefined EVENT Objects for ESD-Level

Property	Event	
	318	319
AUDIBLE	0	0
ALARM_PRIO	4	4
ALARM_TO_BLK	T	T
ALARM_FROM_BLK	T	T
PERSIST_LIST_BLK	T	T
TEXT_TO_BLK	F	F
TEXT_FROM_BLK	T	F
TEXT_COMB_CODE	5	5

Reported Events

The events defined are listed below:

Table 14. Predefined EVENT Objects for ESD-Level

Property	Event	
	318	319
AUDIBLE	0	0
ALARM_PRIO	4	4
ALARM_TO_BLK	T	T
ALARM_FROM_BLK	T	T
PERSIST_LIST_BLK	T	T

Table 14. Predefined EVENT Objects for ESD-Level (Continued)

Property	Event	
	318	319
TEXT_TO_BLK	F	F
TEXT_FROM_BLK	T	F
TEXT_COMB_CODE	5	5

Revision History

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

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

Revision Index	Description	Date
-	First version published for 800xA 6.0	September 2014
A	Removed references to VBPG as it is not supported from 6.0 version.	October 2015

Index

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