

Bristol OpenEnterprise Reference Guide

Allen-Bradley Configuration

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1 Allen-Bradley Configuration Tool

The Allen-Bradley Configuration Tool provides the OpenEnterprise System Administrator with an easy method of configuring the Allen-Bradley Remote Device Interface (RDI) within the OpenEnterprise database.

The tool enables the user to add, update or delete Allen-Bradley RDI objects, such as Networks, Devices, Poll Lists, Signals and Alarm conditions. The Allen-Bradley Driver must be added using the Allen-Bradley option on the Device Drivers page of the Database Project Builder wizard, or by using the SQL Client, as described on the Prerequisites page.

1.1 Prerequisites

The Allen-Bradley configuration Tool (abconfig.exe) is installed as part of the OE Server installation, along with the Allen-Bradley RDI.

The file 'ABDef.sql' with default configuration is included with the installation. This file adds the initial Allen-Bradley driver to the ABDriver table, since the driver is not added by the Configuration tool.

The ABDef.sql file populates the dvi_region table with the necessary information for Allen-Bradley signals. In the absence of other SQL import files for prerequisite Allen-Bradley device database population, this file should be included in the initial OE Database build, but if it has not been, the procedure outlined below should be followed.

Access the SQL Client, select the Windows 'Start' button and then select Programs>>OpenEnterprise>>Database>>SQL.

At the SQL Client's command line interface type in the following short command:

```
SQL> include 'ABDef';
```

When started, the Allen-Bradley Configuration Tool logs on to the OE Database as an administrator user.

1.2 Running the Allen-Bradley Config Tool

To run the Allen-Bradley Configuration Tool either select it from the OpenEnterprise shortcuts in the Start menu, or run the executable from a command prompt, e.g.

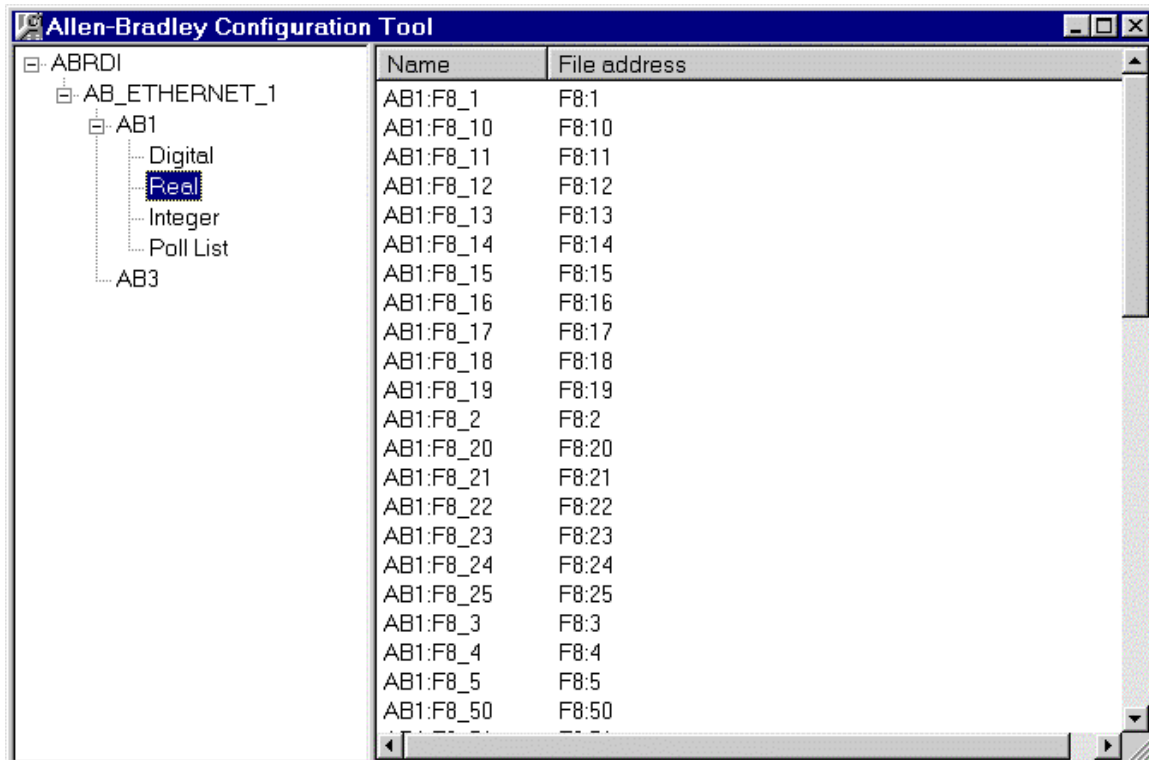
```
C:> abconfig.exe
```

1.2.1.1.1 Command-line options

- /database <service_name> - Use the specified database instead of the default. If this option is not supplied, the configuration tool will attempt to connect to 'rtrdb1' on the local machine by default.
- /trace [<filename>] - Turn on SQL trace. This will write all database transactions to a file. If a filename is not specified, it will look in the OpenEnterprise settings file for a trace filename, and if this is not present it will use default filename 'C:\abconfig.sql'.

2 The Interface

The main window of the Allen-Bradley Config Tool has two panes. On the left is the Tree pane. It displays the objects configured for the Allen-Bradley Remote Device Interface as nodes of a Tree view. Individual objects belonging to the selected node are displayed in more detail in the List view pane on the right. Click the hotspots* on the image below for help on the main features of the interface.



2.1 Tree Pane

The Tree Pane displays Allen-Bradley Remote Device Interface (RDI) configuration as nodes in a tree hierarchy. The nodes consist of: -

- Driver node
- Network nodes
- Device nodes
- Signal nodes

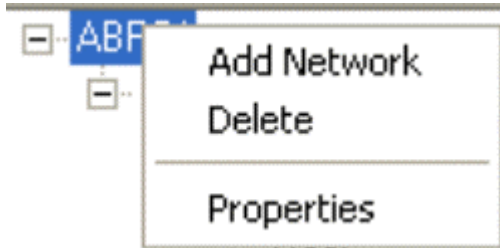
These nodes also give access to context menus, which enable configuration of the Allen-Bradley RDI.

2.1.1 Driver Node

Driver items correspond to entries in the abdriver table. A plus sign to the left of a node indicates the presence of objects under the parent object. Right clicking on the Driver node reveals the Driver node context menu, which makes configuration options available.

2.1.2 Driver Context Menu

The Driver Node context menu enables you to add a new Allen-Bradley Network, delete the Driver, or modify the Driver's settings from it's Properties page.



2.1.2.1 Add Network

This option opens the Add Network General Dialog, which enables you to add a new Allen-Bradley Network object.

2.1.2.2 Delete Driver

Selecting this option will delete the Allen-Bradley Driver. Database integrity restraints will not allow the Driver deletion to succeed, unless all child Network, Device and Signal objects below it are deleted first. The attempted deletion will begin immediately this option is chosen.

2.1.2.3 Driver Properties

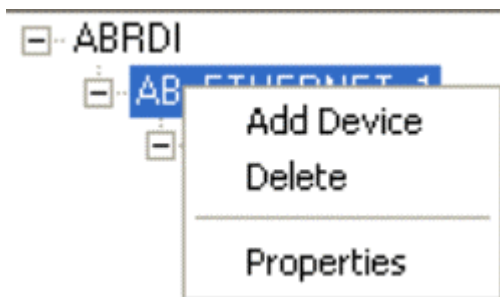
This option displays the Driver General Dialog, which allows you to modify settings for the Allen-Bradley driver.

2.1.3 Network Node

Network nodes correspond to entries in the abnetwork table. A plus sign to the left of a node indicates the presence of objects under the parent object. A right mouse click on the Network node reveals a context menu.

2.1.4 Network Context Menu

The Network Node context menu enables you to add a new Allen-Bradley Device, delete the Network, or modify the Network's settings from it's Properties page.



2.1.4.1 Add Device

This option opens the Add Device General Dialog, which enables you to add a new Allen-Bradley Device object.

2.1.4.2 Delete Network

Selecting this option will delete the Allen-Bradley Network. Database integrity restraints will not allow the Network deletion to succeed, unless all child Device and Signal objects below it are deleted first. The attempted deletion will begin immediately this option is chosen.

2.1.4.3 Network Properties

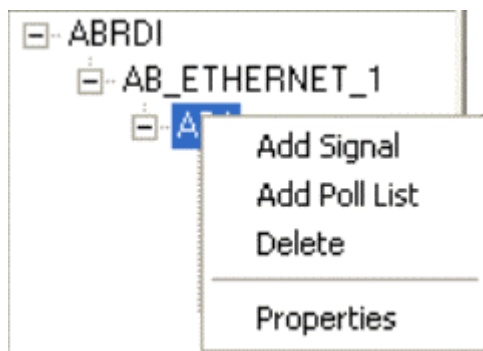
This option displays the Network General Dialog, which allows you to modify settings for the Allen-Bradley Network.

2.1.5 Device Node

A Device Node corresponds to a Device object in the abdevice table. If the Device node contains signals, a plus sign will exist to the left of it. Selecting the plus sign will display the Signal nodes. A right click on the Device node will display the Device Node context menu.

2.1.6 Device Context Menu

The Device Node context menu enables you to add a new Allen-Bradley Signal or Poll List, delete the Device, or modify the Device's settings from it's Properties page.



2.1.6.1 Add Signal

This option opens the Add Signal Dialog, which enables you to add a new Allen-Bradley Signal object.

2.1.6.2 Add Poll List

This option opens the Add Poll List Dialog, which enables you to add a new Allen-Bradley Signal Poll List.

2.1.6.3 Delete Device

Selecting this option will delete the Allen-Bradley Device. Database integrity restraints will not allow the Device deletion to succeed, unless all child Signal or Poll List objects below it are deleted first. The attempted deletion will begin immediately this option is chosen.

2.1.6.4 Device Properties

This option displays the Device General Dialog, which allows you to modify settings for the Allen-Bradley Network.

2.1.7 Signal Nodes

At the bottom of the tree are the signal type nodes and the poll list node. Depending on the types of signals present in the Device, the possible nodes are: -

- Digital
- Integer
- Real
- Complex
- PollList

These nodes do not have a plus sign to indicate the presence of individual objects under them. Individual signals or poll lists are shown in the list pane when their associated node is selected in the tree. Alarm conditions are displayed on a property page of the associated signal. Signals of each type or a Poll List can be added by accessing the context menu on each of the different Nodes.

2.2 List Pane

The details of the items from the selected tables in the Tree Pane are displayed here. Context menus are available from the objects on display within this pane. The context menu available will depend on the type of object that has been selected. Below is a list of the possible nodes selected from the Tree pane, and the context menus that will be available by selecting the object or objects that appear in the List pane.

Node Selected from Tree Pane	Context Menu Available in List Pane
Driver	Driver Context Menu
Network	Network Context Menu
Device	Device Context Menu
Signal or Poll List Node	Signal Nodes Context Menus

3 Adding Items

The general rule for adding objects is to click on an object in either the Tree View pane or the List pane, and select the 'Add' option if one is available.

The list of items that can be added is as follows: -

- Network
- Device
- Signal
- Poll List
- Alarm Condition

3.1 Networks

The *Add Network* General dialog enables the user to add a new Network object.

The screenshot shows the 'Add Network' dialog box with the following fields and controls:

- Name:** AB_ETHERNET_2
- Driver:** ABRDI
- Description:** (empty text area)
- Connectivity:** Disable
- Statistics frequency:** 0 seconds
- RSLink Driver:**
 - Name:** (empty text area)
 - ID:** 0

Buttons: Add, Cancel

3.1.1 Network Name

The name of the Allen-Bradley Network. The name is arbitrary, but must be unique for each Allen-Bradley Network.

3.1.2 Driver

The name of the parent driver (in this case the Allen-Bradley RDI).

3.1.3 Network Description

An arbitrary string used to describe the network in more detail.

3.1.4 Disable Network

Used to enable or disable the ABRDI network. Off by default (enabled).

3.1.5 Statics Frequency

Specifies the frequency at which the ABRDI updates the RTRDB with statistics.

3.1.6 RSLinx Driver Name

This field identifies the RSLINX driver, which should be configured to run as part of the OpenEnterprise session.

3.1.7 AB Network ID

Arbitrary number between one and fifteen. It represents the AB network interface ID.

3.2 Devices

The *Add Device* General dialog enables the user to add a new Device.

The screenshot shows the 'Add Device' dialog box with the following configuration:

- General:**
 - Name: AB3
 - Network: AB_ETHERNET_1
 - Description: Alle-Bradley device number 3
- Connectivity:**
 - Address: AB LOCAL_3
 - Redundant
 - Backup address: AB LOCAL_4
 - Main indicator: N100:0/0
 - Check period: 0 seconds
 - Disable
- Schedule defaults:**
 - Interval: 15 seconds
 - ID: 3
- Heartbeat:**
 - Address: N100:0/1
 - Rate: 10 seconds

3.2.1 Device Name

Arbitrary, unique name for the device.

3.2.2 Network

The name of the parent network.

3.2.3 Device Description

An arbitrary string used to describe the device in greater detail.

3.2.4 Address

Identifies the AB RSLINX Port ID and station number. This PLC is also known as the 'A' PLC.

3.2.5 Disable Device

Used to enable or disable the ABRDI device. Off by default (enabled).

3.2.6 Device Check Period

Optional sanity check between the OpenEnterprise Database and ABRDI. If set, the OE Database will request a device sanity check for the device if the device has not been heard from as specified by the *CheckPeriod* time.

3.2.7 Redundant

Set to TRUE if this is a redundant PLC. Otherwise set to FALSE.

3.2.8 Backup Address

Identifies the back-up AB RSLINX Port ID and station number. Used for redundant systems only. Same format as deviceaddress. This PLC is also known as the 'B' PLC.

3.2.9 Main Indicator

The address within the PLC used to indicate if the PLC is Master or Standby. Only used for redundant systems. e.g. 'N31:0/0'

3.2.10 Schedule Interval

The default time interval for polling data from this device.

3.2.11 Schedule ID

The ID of the default time schedule for polling data from this device (this alternative way of specifying a schedule interval reflects the way these intervals are managed in the OE Database).

3.2.12 Heartbeat Address

The address within the PLC used by the ABRDI to send heartbeats (e.g. update with value 1) to act as a RDI to PLC heartbeat.

3.2.13 Heartbeat Rate

The rate at which the ABRDI will update the Heartbeat value. Specified in seconds.

3.3 Signals

There are four signal types which can be added. Click on the appropriate signal type to go to it's dialog:-

1. Digital Signals
2. Real Signals
3. Integer Signals
4. Complex Signals

3.3.1 Add Digital Signal General Dialog

The *Add Digital Signal* dialog enables the user to add a new Allen-Bradley Signal to the OpenEnterprise database. If the dialog is displayed from a Device node or object, then it is displayed as a tab on the *Add Signal* dialog, but if it is displayed from a Signal Node or a Signal object, it will be displayed as a single tab.

The screenshot shows the 'Add Signal' dialog box with the 'Digital' tab selected. The fields are as follows: Name (empty), Description (empty), Units text (On: empty, Off: empty), Device (AB1), File address (empty), Display (empty), Plant (ALL), Access (ALL), and Callout (empty). Buttons for 'Add' and 'Cancel' are at the bottom.

3.3.1.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

3.3.1.2 Description

An arbitrary string used to describe the object in greater detail.

3.3.1.3 On Units Text

A string displayed when the signal is on.

3.3.1.4 Off Units Text

A string displayed when the signal is off.

3.3.1.5 Device

The name of the parent device. This is added automatically.

3.3.1.6 File Address

The PLC address. The format varies slightly between signal types. Must be entered by the user.

Digital

An Allen-Bradley digital signal maps to a single 'bit' of data in the PLC. For instance, an example File address for a digital signal is 'B3:0/0'.

Real

An Allen-Bradley real signal maps to a single word (F or N) in the PLC. Examples of File addresses for a real signal are 'F100:0' and 'N101:0'.

Integer

An Allen-Bradley integer signal maps to a single word of integer (N) data in the PLC. An example of File address for an integer signal is 'N101:0'.

Complex

An Allen-Bradley complex signal maps to a single word of integer (N) data in the PLC. An example of File address for a complex signal is 'T101:0'.

3.3.1.7 Display

The filename of the display associated with this signal.

3.3.1.8 Plant Area

The plantarea associated with this signal. A drop-down list is available.

3.3.1.9 Access Area

The accessarea associated with this signal. A drop-down list is available.

3.3.1.10 Callout Area

The calloutarea associated with this signal.

3.3.2 Add Real Signal General Dialog

The *Add Real Signal* dialog enables the user to add a new Allen-Bradley Signal to the OpenEnterprise database. If the dialog is displayed from a Device node or object, then it is displayed as a tab on the *Add Signal* dialog, but if it is displayed from a Signal Node or a Signal object, it will be displayed as a single tab.

The screenshot shows the 'Add Signal' dialog box with the 'Real' tab selected. The dialog contains the following fields and controls:

- Tabbed interface: Digital, Real (selected), Integer, Complex
- Name: Text input field
- Description: Text input field
- Device: Text input field containing 'AB1'
- File address: Text input field
- Units text: Text input field
- Display: Text input field
- Entry limits: Group box containing 'Low' and 'High' labels, each with a text input field containing '0'
- Scaling: Group box containing 'Span' and 'Zero' labels, each with a text input field containing '0'
- Areas: Group box containing 'Plant' and 'Access' labels, each with a dropdown menu set to 'ALL', and a 'Callout' text input field
- Buttons: 'Add' and 'Cancel'

3.3.2.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

3.3.2.2 Description

An arbitrary string used to describe the object in greater detail.

3.3.2.3 Device

The name of the parent device. This is added automatically.

3.3.2.4 File Address

The PLC address. The format varies slightly between signal types. Must be entered by the user.

Digital

An Allen-Bradley digital signal maps to a single 'bit' of data in the PLC. For instance, an example File address for a digital signal is 'B3:0/0'.

Real

An Allen-Bradley real signal maps to a single word (F or N) in the PLC. Examples of File addresses for a real signal are 'F100:0' and 'N101:0'.

Integer

An Allen-Bradley integer signal maps to a single word of integer (N) data in the PLC. An example of File address for an integer signal is 'N101:0'.

Complex

An Allen-Bradley complex signal maps to a single word of integer (N) data in the PLC. An example of File address for a complex signal is 'T101:0'.

3.3.2.5 Display

The filename of the display associated with this signal.

3.3.2.6 Units Text

A string describing the units used for the value.

3.3.2.7 Low Entry Limit

Low entry limit applied to signal value updates.

3.3.2.8 High Entry Limit

High entry limit applied to signal value updates.

3.3.2.9 Span

The 'm' in $y = mx + c$. Where 'y' is the database value and 'x' is the PLC value. Used to adjust an integer value to a float.

3.3.2.10 Zero

The 'c' in $y = mx + c$. Where 'y' is the database value and 'x' is the PLC value. Used to adjust an integer to a float.

3.3.2.11 Plant Area

The plantarea associated with this signal. A drop-down list is available.

3.3.2.12 Access Area

The accessarea associated with this signal. A drop-down list is available.

3.3.2.13 Callout Area

The calloutarea associated with this signal.

3.3.3 Add Integer Signal General Dialog

The *Add Integer Signal* dialog enables the user to add a new Allen-Bradley Signal to the OpenEnterprise database. If the dialog is displayed from a Device node or object, then it is displayed as a tab on the *Add Signal* dialog, but if it is displayed from a Signal Node or a Signal object, it will be displayed as a single tab.

The screenshot shows the 'Add Signal' dialog box with the 'Integer' tab selected. The dialog contains the following fields and controls:

- Tabbed interface: Digital, Real, **Integer**, Complex
- Name: [Empty text box]
- Description: [Empty text box]
- Units text: [Empty text box]
- Device: [Text box containing 'AB1']
- File address: [Empty text box]
- Display: [Empty text box]
- Entry limits: A group box containing 'Low' [Text box with '0'] and 'High' [Text box with '0']
- Areas: A group box containing 'Plant' [Dropdown menu with 'ALL'], 'Access' [Dropdown menu with 'ALL'], and 'Callout' [Empty text box]
- Buttons: 'Add' and 'Cancel' at the bottom right.

3.3.3.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

3.3.3.2 Description

An arbitrary string used to describe the object in greater detail.

3.3.3.3 Units Text

A string describing the units used for the value.

3.3.3.4 Device

The name of the parent device. This is added automatically.

3.3.3.5 File Address

The PLC address. The format varies slightly between signal types. Must be entered by the user.

Digital

An Allen-Bradley digital signal maps to a single 'bit' of data in the PLC. For instance, an example File address for a digital signal is 'B3:0/0'.

Real

An Allen-Bradley real signal maps to a single word (F or N) in the PLC. Examples of File addresses for a real signal are 'F100:0' and 'N101:0'.

Integer

An Allen-Bradley integer signal maps to a single word of integer (N) data in the PLC. An example of File address for an integer signal is 'N101:0'.

Complex

An Allen-Bradley complex signal maps to a single word of integer (N) data in the PLC. An example of File address for a complex signal is 'T101:0'.

3.3.3.6 Display

The filename of the display associated with this signal.

3.3.3.7 Low Entry Limit

Low entry limit applied to signal value updates.

3.3.3.8 High Entry Limit

High entry limit applied to signal value updates.

3.3.3.9 Plant Area

The plantarea associated with this signal. A drop-down list is available.

3.3.3.10 Access Area

The accessarea associated with this signal. A drop-down list is available.

3.3.3.11 Callout Area

The calloutarea associated with this signal.

3.3.4 Add Complex Signal General Dialog

The *Add Complex Signal* dialog enables the user to add a new Allen-Bradley Signal to the OpenEnterprise database. If the dialog is displayed from a Device node or object, then it is displayed as a tab on the *Add Signal* dialog, but if it is displayed from a Signal Node or a Signal object, it will be displayed as a single tab.

The screenshot shows a software dialog box titled "Add Signal". At the top, there are four tabs: "Digital", "Real", "Integer", and "Complex". Below the tabs are several input fields: "Name" (text box), "Description" (text box), "Device" (text box containing "AB1"), "File address" (text box), and "Display" (text box). Below these is an "Areas" section containing three fields: "Plant" (dropdown menu showing "ALL"), "Access" (dropdown menu showing "ALL"), and "Callout" (text box). At the bottom of the dialog are two buttons: "Add" and "Cancel".

3.3.4.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

3.3.4.2 Description

An arbitrary string used to describe the object in greater detail.

3.3.4.3 Device

The name of the parent device. This is added automatically.

3.3.4.4 File Address

The PLC address. The format varies slightly between signal types. Must be entered by the user.

3.3.4.4.1 Digital

An Allen-Bradley digital signal maps to a single 'bit' of data in the PLC. For instance, an example File address for a digital signal is 'B3:0/0'.

3.3.4.4.2 Real

An Allen-Bradley real signal maps to a single word (F or N) in the PLC. Examples of File addresses for a real signal are 'F100:0' and 'N101:0'.

3.3.4.4.3 Integer

An Allen-Bradley integer signal maps to a single word of integer (N) data in the PLC. An example of File address for an integer signal is 'N101:0'.

3.3.4.4.4 Complex

An Allen-Bradley complex signal maps to a single word of integer (N) data in the PLC. An example of File address for a complex signal is 'T101:0'.

3.3.4.5 Display

The filename of the display associated with this signal.

3.3.4.6 Plant Area

The plantarea associated with this signal. A drop-down list is available.

3.3.4.7 Access Area

The accessarea associated with this signal. A drop-down list is available.

3.3.4.8 Callout Area

The calloutarea associated with this signal.

3.4 Poll Lists

The *Add Poll List* dialog enables the user to add a new Allen-Bradley Poll List to the OpenEnterprise database. The dialog can be displayed from the context menu of a Device node or Poll List object.

The screenshot shows a 'General' tab in the 'Add Poll List' dialog. The 'Name' field is empty, 'Device' is 'AB1', 'Description' is empty, 'File' is empty, 'Accessing' sub-dialog has 'Start' at 0, 'End' at 0, and 'Auto End Address' is unchecked. 'Access area' is set to 'ALL' and 'Schedule ID' is 0. A 'Disable' checkbox is at the bottom right. 'Add' and 'Cancel' buttons are at the bottom.

3.4.1 Name

Arbitrary, unique name for the poll list.

3.4.2 Description

An arbitrary string used to describe the poll list in greater detail.

3.4.3 File

The PLC File. E.g. 'B3' or 'N100'.

3.4.4 Start Address

The first address in the address range to be polled by this poll list.

3.4.5 End Address

The last address in the address range to be polled by this poll list. If a poll list is created with a valid start address but no end address, then the OE Database will attempt to auto-configure the end address based on the configured signals in the OE Database.

3.4.6 Auto End Address

If set to TRUE then the value of the EndAddress will be automatically set to reflect the highest address of any configured signals. If set to FALSE then the setting of the EndAddress will be the responsibility of the system configurer.

3.4.7 Access Area

The accessarea associated with this poll list.

3.4.8 Schedule ID

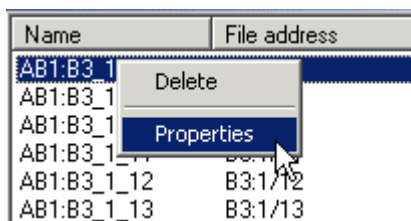
References the DVI_Schedule entry that controls the frequency at which this data is polled from the PLC.

3.4.9 Disable Poll List

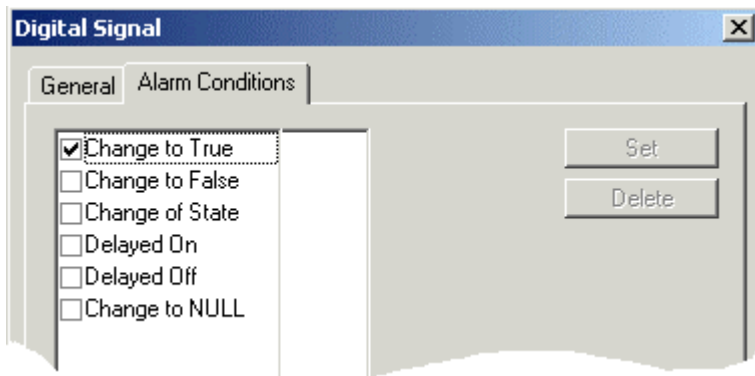
Used to enable or disable the poll list.

3.5 Alarm Conditions

An alarm condition can only be added once the Signal to which it applies exists. To add an alarm condition to a signal, select the signal from the List view and click on the 'Properties' option, as shown in the example below.



Then select the 'Alarm Conditions' tab:-

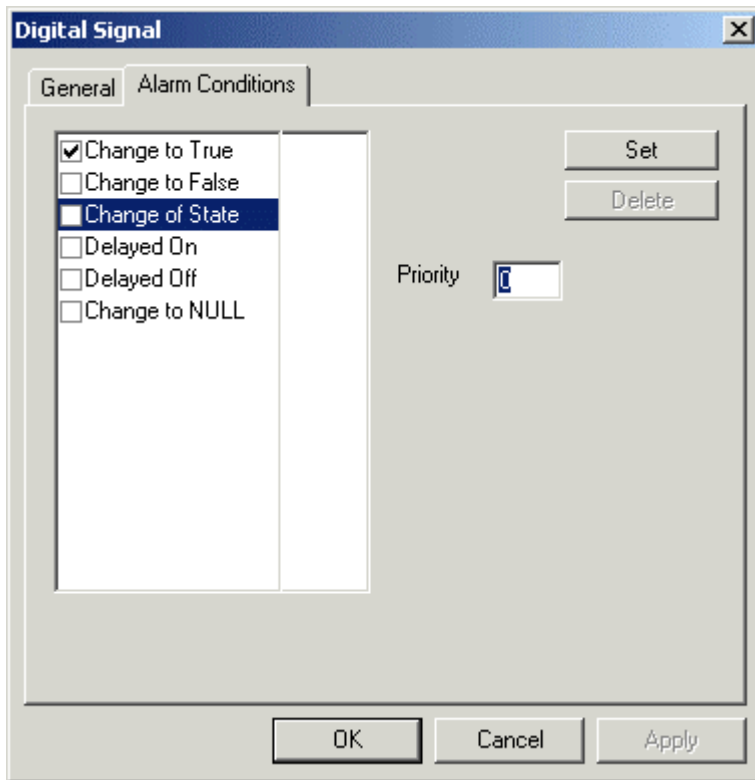


There are three types of Signals which can be configured to have Alarm Conditions: -

- Digital
- RealAnalog
- Integer

3.5.1 Digital Alarm Conditions Dialog

The **[Set]** button in the dialog below is enabled, but there is no check next to the alarm condition, indicating that the new alarm condition has not yet added to the OE database.



3.5.1.1 Alarm Condition Tick List

This list displays the alarm conditions available for the signal type. A check next to an alarm condition indicates that the alarm condition is already configured or will be added for the selected signal when the **[Set]** button is clicked.

3.5.1.2 Set Button

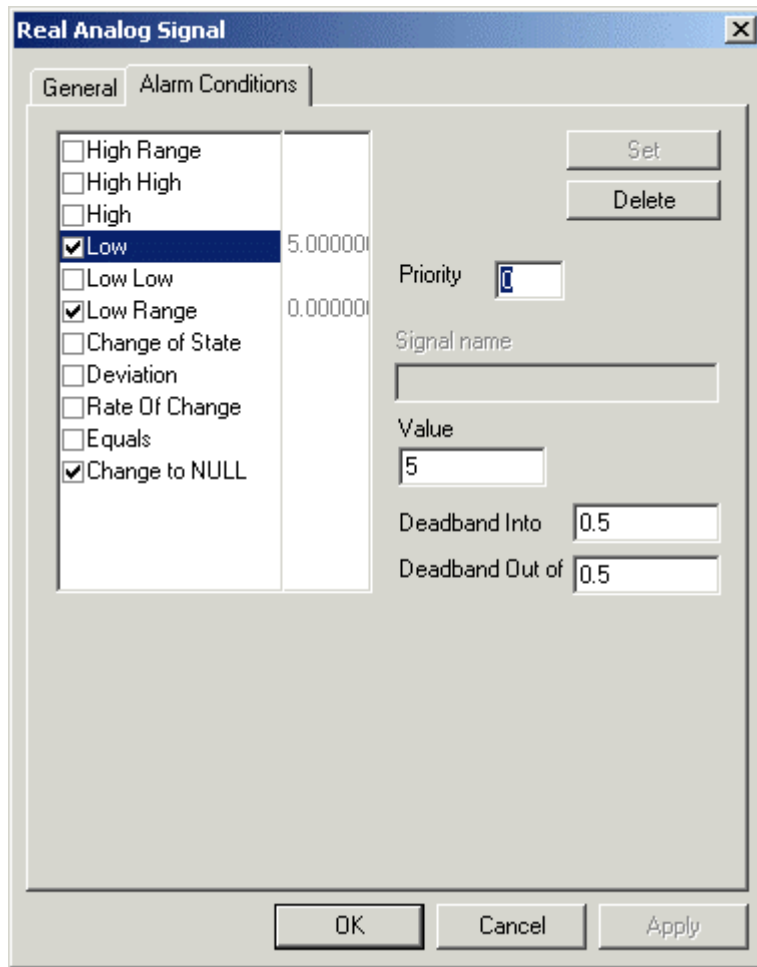
This button only becomes enabled when the user has filled in the necessary information on the dialog, which varies according to which type of signal and alarm condition is selected. When this button is enabled and clicked the selected alarm condition will added to the OE database and the alarm condition will be checked on the dialog to indicate this .

3.5.1.3 Condition Details

This section is populated with the condition details. This includes the alarm priority for the condition and various other values, depending on the signal type.

3.5.2 Real Alarm Conditions Dialog

The **[Set]** button is disabled in the example dialog below, indicating that the selected alarm condition has already been configured.



3.5.2.1 Alarm Condition Tick List

This list displays the alarm conditions available for the signal type. A check next to an alarm condition indicates that the alarm condition is already configured or will be added for the selected signal when the **[Set]** button is clicked.

3.5.2.2 Set Button

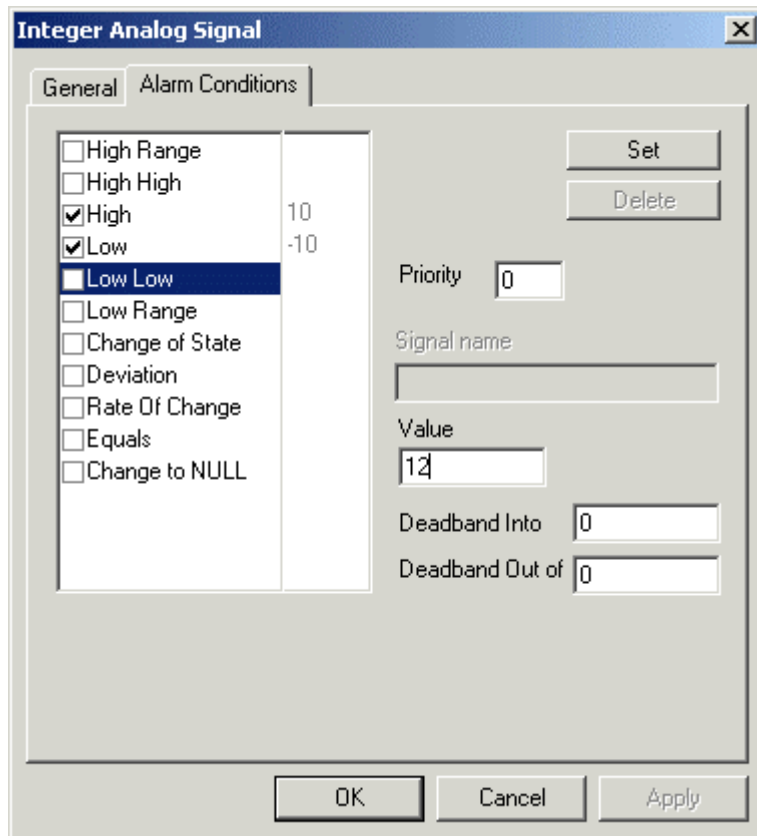
This button only becomes enabled when the user has filled in the necessary information on the dialog, which varies according to which type of signal and alarm condition is selected. When this button is enabled and clicked the selected alarm condition will be added to the OE database and the alarm condition will be checked on the dialog to indicate this .

3.5.2.3 Condition Details

This section is populated with the condition details. This includes the alarm priority for the condition and various other values, depending on the signal type.

3.5.3 Integer Alarm Conditions Dialog

The **[Set]** button in the dialog below is enabled, but there is no check next to the alarm condition, indicating that the new alarm condition has not yet been added to the OE database.



3.5.3.1 Alarm Condition Tick List

This list displays the alarm conditions available for the signal type. A check next to an alarm condition indicates that the alarm condition is already configured or will be added for the selected signal when the **[Set]** button is clicked.

3.5.3.2 Set Button

This button only becomes enabled when the user has filled in the necessary information on the dialog, which varies according to which type of signal and alarm condition is selected. When this button is enabled and clicked the selected alarm condition will be added to the OE database and the alarm condition will be checked on the dialog to indicate this .

3.5.3.3 Condition Details

This section is populated with the condition details. This includes the alarm priority for the condition and various other values, depending on the signal type.

4 Modifying Items

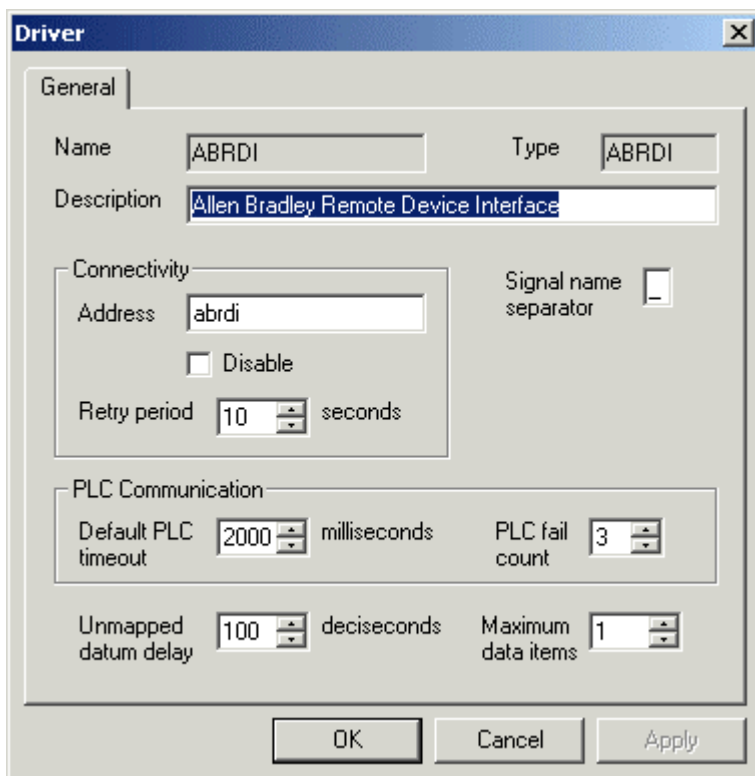
The general rule for modifying objects is to select the object from either the Tree or List pane, then right click and select the *Properties* option. This will display the *Property* page for the object, which can then be modified.

The objects that can be modified in this way are: -

- Driver
- Network
- Device
- Signal
- Alarm Condition
- Poll List

4.1 Driver General Dialog

The *Driver General Page* enables the user to modify settings for the Allen-Bradley RDI driver.



4.1.1 Driver Name

The name of the Driver. It is disabled when in modify mode, and cannot be changed.

4.1.2 Type

The driver type.

4.1.3 Driver Description

An arbitrary string used to describe the driver.

4.1.4 Driver Address

The TCP/IP service name used; offered by the ABRDI.

4.1.5 Driver Disable

Used to enable or disable the ABRDI interface. Off by default (enabled).

4.1.6 Retry Period

The time allocated between connection retries.

4.1.7 Signal Name Separator

The character used with signal names to break the name into base, extension attribute.

4.1.8 Default PLC Timeout

Default timeout value used when communicating with AB PLCs.

4.1.9 PLC Fail Count

The number of consecutive I/O failures to a PLC that will result in the PLC being marked as offline.

4.1.10 Unmapped Datum Delay

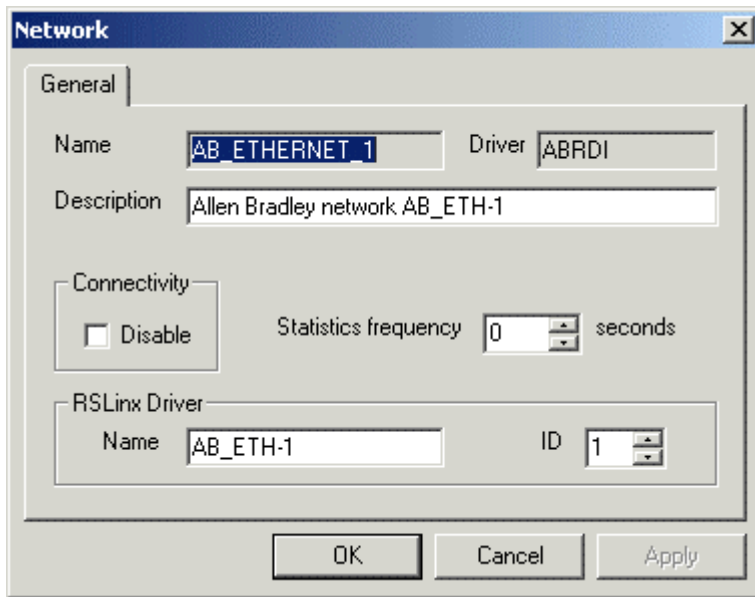
The amount of time after abrdi start-up until all devices are checked for having registered signals that are not being collected by any poll lists.

4.1.11 Maximum Data Items

Maximum number of data items. Range 1 to 500.

4.2 Network General Dialog

The *Network General Page* enables the user to modify settings for Allen-Bradley Network objects.



4.2.1 Network Name

The name of the Allen-Bradley Network. The name is arbitrary, but must be unique for each Allen-Bradley Network.

4.2.2 Driver

The name of the parent driver (in this case the Allen-Bradley RDI).

4.2.3 Network Description

An arbitrary string used to describe the network in more detail.

4.2.4 Disable Network

Used to enable or disable the ABRDI network. Off by default (enabled).

4.2.5 Statics Frequency

Specifies the frequency at which the ABRDI updates the RTRDB with statistics.

4.2.6 RSLinx Driver Name

This field identifies the RSLINX driver, which should be configured to run as part of the OpenEnterprise session.

4.2.7 AB Network ID

Arbitrary number between one and fifteen. It represents the AB network interface ID.

4.3 Device General Dialog

The *Device General Page* enables the user to modify settings for Allen-Bradley Devices.

The screenshot shows a 'Device' configuration window with the following fields and options:

- General:**
 - Name:
 - Network:
 - Description:
- Connectivity:**
 - Address:
 - Redundant
 - Disable
 - Backup address:
 - Main indicator:
 - Check period: seconds
- Schedule defaults:**
 - Interval: seconds
 - ID:
- Heartbeat:**
 - Address:
 - Rate: seconds

Buttons: OK, Cancel, Apply

4.3.1 Device Name

Arbitrary, unique name for the device.

4.3.2 Network

The name of the parent network.

4.3.3 Device Description

An arbitrary string used to describe the device in greater detail.

4.3.4 Address

Identifies the AB RSLINX Port ID and station number. This PLC is also known as the 'A' PLC.

4.3.5 Redundant

Set to TRUE if this is a redundant PLC. Otherwise set to FALSE.

4.3.6 Disable Device

Used to enable or disable the ABRDI device. Off by default (enabled).

4.3.7 Device Check Period

Optional sanity check between the OpenEnterprise Database and ABRDI. If set, the OE Database will request a device sanity check for the device if the device has not been heard from as specified by the *CheckPeriod* time.

4.3.8 Schedule ID

The ID of the default time schedule for polling data from this device (this alternative way of specifying a schedule interval reflects the way these intervals are managed in the OE Database).

4.3.9 Heartbeat Address

The address within the PLC used by the ABRDI to send heartbeats (e.g. update with value 1) to act as a RDI to PLC heartbeat.

4.3.10 Heartbeat Rate

The rate at which the ABRDI will update the Heartbeat value. Specified in seconds.

4.4 Signal Dialogs

The Signal Property pages can be accessed from the context menu on Signal nodes in the Tree pane, or from individual Signals in the List pane. The Signal Property pages available are: -

- Digital
- RealAnalog
- Integer
- Complex

4.4.1 Digital Signal General Dialog

The *Digital Signal General Page* enables the user to modify settings for an Allen-Bradley Digital Signal.

The screenshot shows a 'Digital Signal' configuration window with the following fields and values:

- Name:** AB1:B3_1_0
- Description:** File B3, Word 1, Bit 0
- Units text:** On (empty), Off (empty)
- Device:** AB1
- File address:** B3:1/0
- Display:** (empty)
- Areas:** Plant (ALL), Access (ALL), Callout (empty)

Buttons at the bottom: OK, Cancel, Apply.

4.4.1.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

4.4.1.2 Description

An arbitrary string used to describe the object in greater detail.

4.4.1.3 On Units Text

A string displayed when the signal is on.

4.4.1.4 Off Units Text

A string displayed when the signal is off.

4.4.1.5 Device

The name of the parent device. This is added automatically.

4.4.1.6 File Address

The PLC address. The format varies slightly between signal types. Must be entered by the user.

4.4.1.6.1 Digital

An Allen-Bradley digital signal maps to a single 'bit' of data in the PLC. For instance, an example File address for a digital signal is 'B3:0/0'.

4.4.1.6.2 Real

An Allen-Bradley real signal maps to a single word (F or N) in the PLC. Examples of File addresses for a real signal are 'F100:0' and 'N101:0'.

4.4.1.6.3 Integer

An Allen-Bradley integer signal maps to a single word of integer (N) data in the PLC. An example of File address for an integer signal is 'N101:0'.

4.4.1.6.4 Complex

An Allen-Bradley complex signal maps to a single word of integer (N) data in the PLC. An example of File address for a complex signal is 'T101:0'.

4.4.1.7 Display

The filename of the display associated with this signal.

4.4.1.8 Plant Area

The plantarea associated with this signal. A drop-down list is available.

4.4.1.9 Access Area

The accessarea associated with this signal. A drop-down list is available.

4.4.1.10 Callout Area

The calloutarea associated with this signal.

4.4.2 Real Signal General Dialog

The *Real Analog Signal General Page* enables the user to modify settings for an Allen-Bradley Digital Signal.

The screenshot shows a 'Real Analog Signal' configuration window. It has two tabs: 'General' and 'Alarm Conditions'. The 'General' tab is selected. The 'Name' field contains 'AB1:F8_1'. The 'Description' field is empty. The 'Device' field contains 'AB1'. The 'File address' field contains 'F8:1'. The 'Units text' and 'Display' fields are empty. There are two sections: 'Entry limits' with 'Low' and 'High' both set to '0', and 'Scaling' with 'Span' set to '1' and 'Zero' set to '0'. The 'Areas' section has 'Plant' and 'Access' dropdown menus both set to 'ALL', and an empty 'Callout' field. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

4.4.2.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

4.4.2.2 Description

An arbitrary string used to describe the object in greater detail.

4.4.2.3 Device

The name of the parent device. This is added automatically.

4.4.2.4 Units Text

A string describing the units used for the value.

4.4.2.5 Display

The filename of the display associated with this signal.

4.4.2.6 Low Entry Limit

Low entry limit applied to signal value updates.

4.4.2.7 High Entry Limit

High entry limit applied to signal value updates.

4.4.2.8 Span

The 'm' in $y = mx + c$. Where 'y' is the database value and 'x' is the PLC value. Used to adjust an integer value to a float.

4.4.2.9 Zero

The 'c' in $y = mx + c$. Where 'y' is the database value and 'x' is the PLC value. Used to adjust an integer to a float.

4.4.2.10 Plant Area

The plantarea associated with this signal. A drop-down list is available.

4.4.2.11 Access Area

The accessarea associated with this signal. A drop-down list is available.

4.4.2.12 Callout Area

The calloutarea associated with this signal.

4.4.3 Integer Signal General Dialog

The *Integer Signal General Page* enables the user to modify settings for an Allen-Bradley Digital Signal.

The screenshot shows a configuration window titled "Integer Analog Signal". It has two tabs: "General" and "Alarm Conditions". The "General" tab is selected. The fields are as follows:

- Name: AB1:N30_50
- Description: File N30, Word 50
- Units text: (empty)
- Device: AB1
- File address: N30:50
- Display: (empty)
- Entry limits: Low: 0, High: 0
- Areas: Plant: ALL, Access: ALL, Callout: (empty)

Buttons: OK, Cancel, Apply

4.4.3.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

4.4.3.2 Description

An arbitrary string used to describe the object in greater detail.

4.4.3.3 Device

The name of the parent device. This is added automatically.

4.4.3.4 Units Text

A string describing the units used for the value.

4.4.3.5 Display

The filename of the display associated with this signal.

4.4.3.6 Low Entry Limit

Low entry limit applied to signal value updates.

4.4.3.7 High Entry Limit

High entry limit applied to signal value updates.

4.4.3.8 Span

The 'm' in $y = mx + c$. Where 'y' is the database value and 'x' is the PLC value. Used to adjust an integer value to a float.

4.4.3.9 Zero

The 'c' in $y = mx + c$. Where 'y' is the database value and 'x' is the PLC value. Used to adjust an integer to a float.

4.4.3.10 Plant Area

The plantarea associated with this signal. A drop-down list is available.

4.4.3.11 Access Area

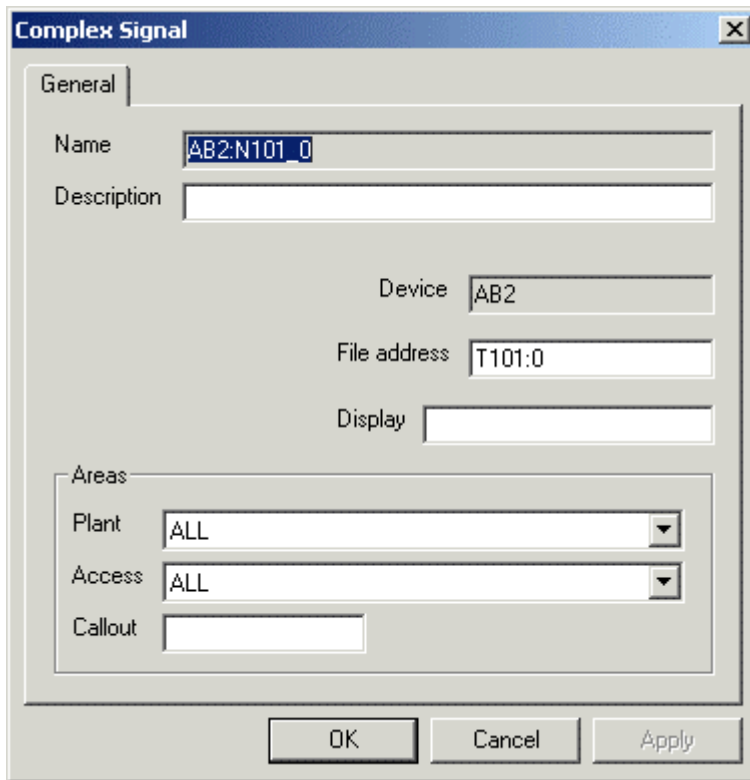
The accessarea associated with this signal. A drop-down list is available.

4.4.3.12 Callout Area

The calloutarea associated with this signal.

4.4.4 Complex Signal General Dialog

The *Complex Signal General Page* enables the user to modify settings for an Allen-Bradley Digital Signal.



4.4.4.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

4.4.4.2 Description

An arbitrary string used to describe the object in greater detail.

4.4.4.3 Device

The name of the parent device. This is added automatically.

4.4.4.4 File Address

The PLC address. The format varies slightly between signal types. Must be entered by the user.

4.4.4.4.1 Digital

An Allen-Bradley digital signal maps to a single 'bit' of data in the PLC. For instance, an example File address for a digital signal is 'B3:0/0'.

4.4.4.4.2 Real

An Allen-Bradley real signal maps to a single word (F or N) in the PLC. Examples of File addresses for a real signal are 'F100:0' and 'N101:0'.

4.4.4.4.3 Integer

An Allen-Bradley integer signal maps to a single word of integer (N) data in the PLC. An example of File address for an integer signal is 'N101:0'.

4.4.4.4.4 Complex

An Allen-Bradley complex signal maps to a single word of integer (N) data in the PLC. An example of File address for a complex signal is 'T101:0'.

4.4.4.5 Display

The filename of the display associated with this signal.

4.4.4.6 Plant Area

The plantarea associated with this signal. A drop-down list is available.

4.4.4.7 Access Area

The accessarea associated with this signal. A drop-down list is available.

4.4.4.8 Callout Area

The calloutarea associated with this signal.

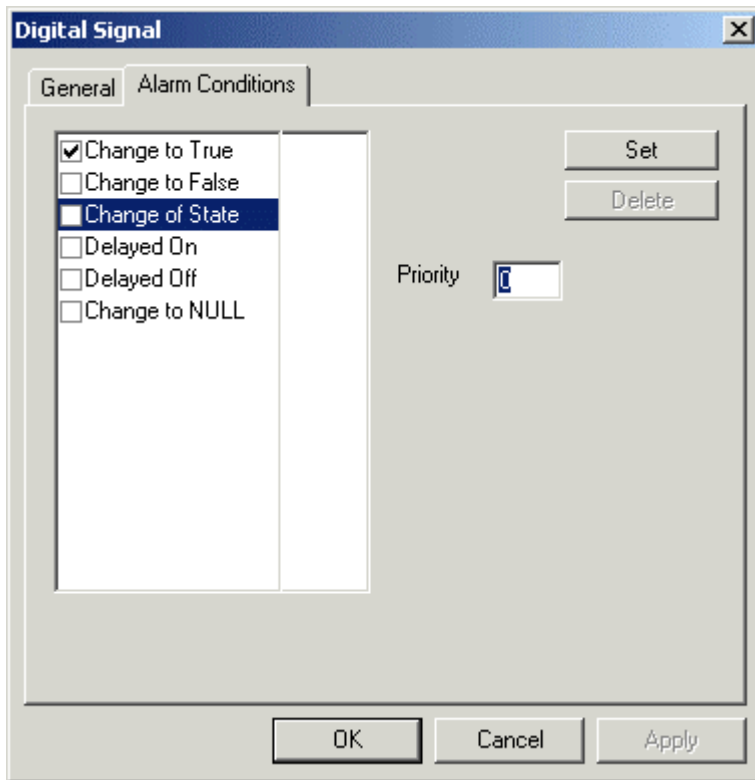
4.5 Signal Alarm Conditions

Alarm Conditions can only be modified on a per signal basis. The individual signal must be selected from the List pane, and then the *Properties* item selected from the context menu. Then on the *Signal Properties* dialog, select the *Alarm Condition* tab. The Alarm Conditions that can be configured are: -

- Digital Alarm Condition
- RealAnalog Alarm Condition
- Integer Alarm Condition

4.5.1 Digital Alarm Conditions

The **[Set]** button in the dialog below is enabled, but there is no check next to the alarm condition, indicating that the new alarm condition has not yet added to the OE database.



4.5.1.1 Alarm Condition Tick List

This list displays the alarm conditions available for the signal type. A check next to an alarm condition indicates that the alarm condition is already configured or will be added for the selected signal when the **[Set]** button is clicked.

4.5.1.2 Set Button

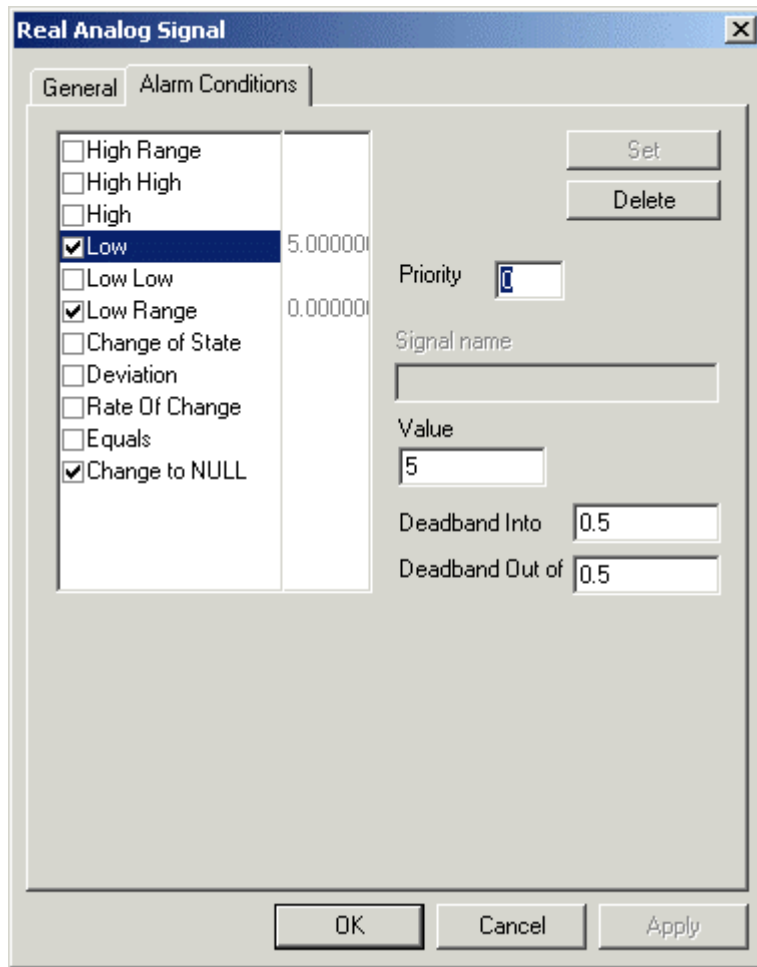
This button only becomes enabled when the user has filled in the necessary information on the dialog, which varies according to which type of signal and alarm condition is selected. When this button is enabled and clicked the selected alarm condition will added to the OE database and the alarm condition will be checked on the dialog to indicate this .

4.5.1.3 Condition Details

This section is populated with the condition details. This includes the alarm priority for the condition and various other values, depending on the signal type.

4.5.2 Real Alarm Conditions

The **[Set]** button is disabled in the example dialog below, indicating that the selected alarm condition has already been configured.



4.5.2.1 Alarm Condition Tick List

This list displays the alarm conditions available for the signal type. A check next to an alarm condition indicates that the alarm condition is already configured or will be added for the selected signal when the **[Set]** button is clicked.

4.5.2.2 Set Button

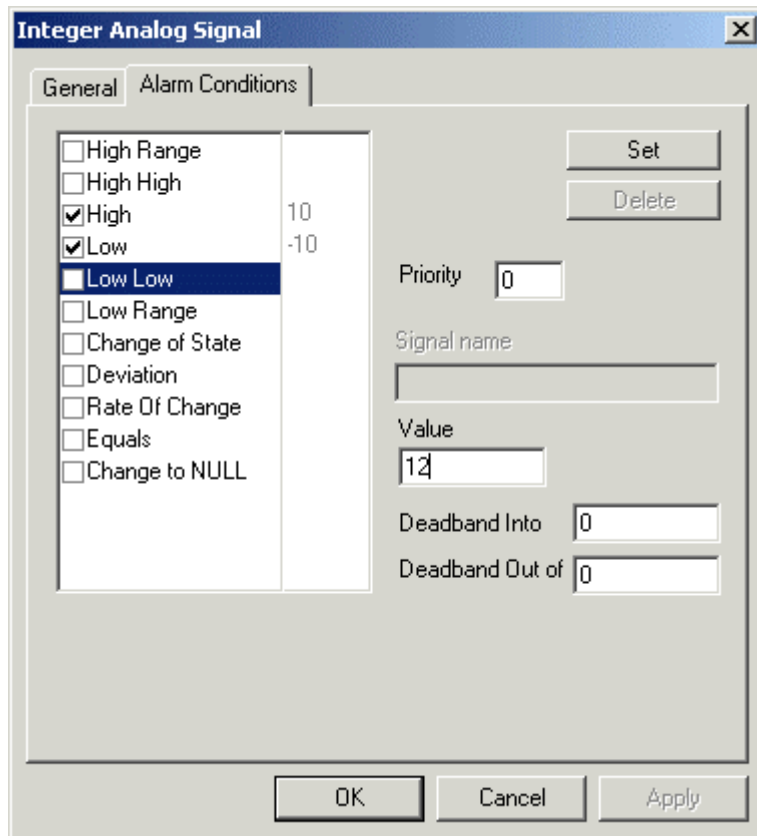
This button only becomes enabled when the user has filled in the necessary information on the dialog, which varies according to which type of signal and alarm condition is selected. When this button is enabled and clicked the selected alarm condition will be added to the OE database and the alarm condition will be checked on the dialog to indicate this .

4.5.2.3 Condition Details

This section is populated with the condition details. This includes the alarm priority for the condition and various other values, depending on the signal type.

4.5.3 Integer Alarm Conditions Dialog

The **[Set]** button in the dialog below is enabled, but there is no check next to the alarm condition, indicating that the new alarm condition has not yet been added to the OE database.



4.5.3.1 Alarm Condition Tick List

This list displays the alarm conditions available for the signal type. A check next to an alarm condition indicates that the alarm condition is already configured or will be added for the selected signal when the **[Set]** button is clicked.

4.5.3.2 Set Button

This button only becomes enabled when the user has filled in the necessary information on the dialog, which varies according to which type of signal and alarm condition is selected. When this button is enabled and clicked the selected alarm condition will be added to the OE database and the alarm condition will be checked on the dialog to indicate this .

4.5.3.3 Condition Details

This section is populated with the condition details. This includes the alarm priority for the condition and various other values, depending on the signal type.

4.6 Poll List

The *Poll List General Page* enables the user to modify settings for an Allen-Bradley Poll List.

The screenshot shows a 'Poll List' dialog box with the following fields and values:

- Name: AB1:B3
- Device: AB1
- Description: File B3 Range 0..2
- File: B3
- Access area: ALL
- Schedule ID: 101
- Addressing Start: 0
- Addressing End: 2
- Addressing Auto End Address:
- Disable:

4.6.1 Name

Arbitrary, unique name for the object. Must be entered by the user. When modifying, this attribute is disabled because it is a primary key.

4.6.2 Description

An arbitrary string used to describe the object in greater detail.

4.6.3 Device

The name of the parent device. This is added automatically.

4.6.4 File

The PLC File. E.g. 'B3' or 'N100'.

4.6.5 Start Address

The first address in the address range to be polled by this poll list.

4.6.6 End Address

The last address in the address range to be polled by this poll list. If a poll list is created with a valid start address but no end address, then the OE Database will attempt to auto-configure the end address based on the configured signals in the OE Database.

4.6.7 Auto End Address

If set to TRUE then the value of the EndAddress will be automatically set to reflect the highest address of any configured signals. If set to FALSE then the setting of the EndAddress will be the responsibility of the system configurer.

4.6.8 Access Area

The accessarea associated with this signal. A drop-down list is available.

4.6.9 Schedule ID

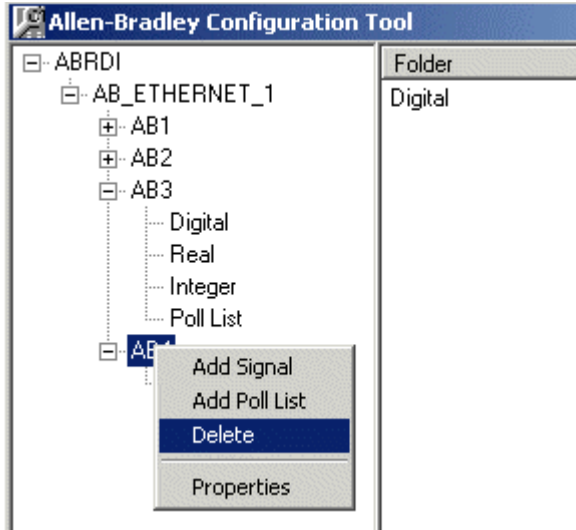
The ID of the default time schedule for polling data from this device (this alternative way of specifying a schedule interval reflects the way these intervals are managed in the OE Database).

4.6.10 Disable Poll List

Used to enable or disable the poll list.

5 Deleting Objects General Rules

To delete an object right click on it and select the 'Delete' option.



The selected object will be deleted without warning. If the deletion fails, a message will be provided indicating the failure.

The most likely reason will be that the object was a parent to other objects, and that a deletion would compromise database integrity.

6 PLC Addressing

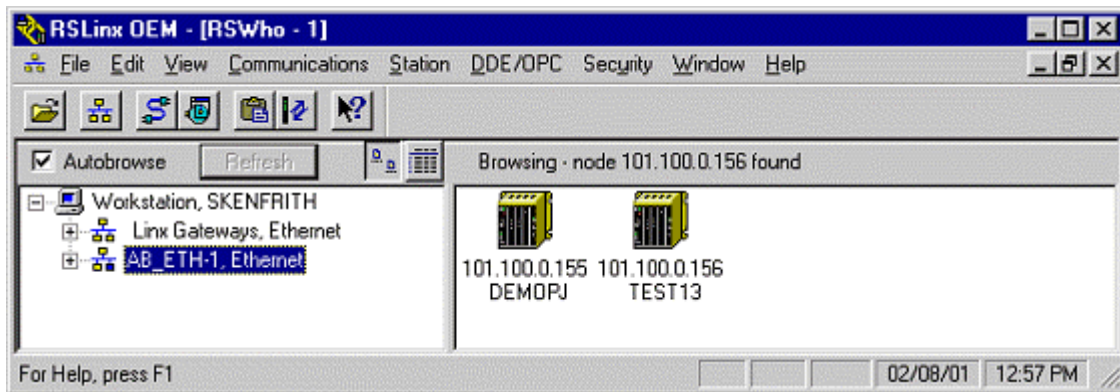
The following uses some examples to demonstrate how to address Allen Bradley PLCs.

6.1.1.1.1 ABNetwork

An ABNetwork entry corresponds to an RSLinx Driver. The mapping is set-up using the ABNetwork.RSLinxDriverName attribute. The following example shows how a configurationured ABNetwork object should be named in order to correspond to the RSLinx Ethernet Driver.

ATTRIBUTE: RSLinxDriverName

VALUE: 'AB_ETH-1'

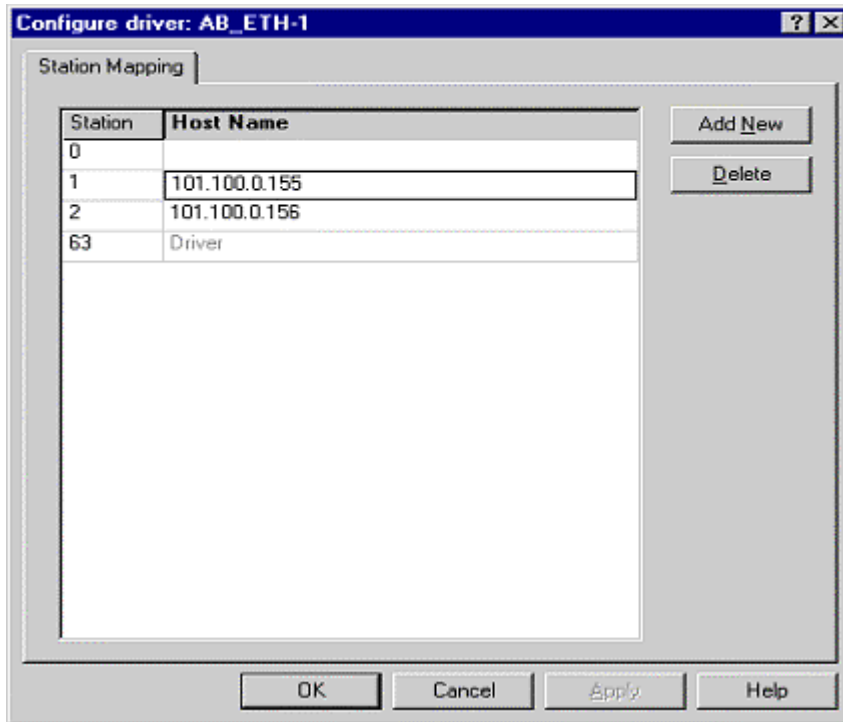


6.1.1.1.2 ABDevice

An ABDevice entry corresponds to an Allen Bradley PLC. The PLC can be standalone or redundant. The mapping is set-up between the ABDevice.DeviceAddress and the appropriate RSLinx Driver Station Mapping. The following example shows how an ABDevice entry maps to the configurationured RSLinx Station 1 (Hostname 101.100.0.155).

ATTRIBUTE: DeviceAddress

VALUE: 'AB:LOCAL,1'



6.1.1.1.3 Signals

OE signals are mapped to PLC file addresses. The file addresses mentioned are correct for PLC5s. All addresses specified are in decimal unless otherwise stated. For example, all Input (I) and Output (O) files use octal addressing.

6.1.1.1.4 ABDigital

FILE TYPE	FILE ADDRESS	COMMENTS
Input - I	I:004/00 I:005/17	Input file, Word 4 octal, bit 0 octal Input file, Word 5 octal, bit 17 octal
Output - O	O:004/00 O:005/17	Output file, Word 4 octal, bit 0 octal Output file, Word 5 octal, bit 17 octal
Binary - B	B3:1/0	File 3, Word 1, bit 0
Integer - N	N7:98/1	File 7, Word 98, bit 1

6.1.1.1.5 ABIntegerAnalog

FILE TYPE	FILE ADDRESS	COMMENTS
Integer - N	N50:5	File 50, word 5
Status - S	S:23	Status file, word 23 (internal time - minutes)

6.1.1.1.6 ABRealAnalog

FILE TYPE	FILE ADDRESS	COMMENTS
Float - F	F8:1	File 8, word 1
Integer - N	N110:25	File 110, word 25.

6.1.1.1.7 ABPollList

FILE TYPE	ADDRESS			COMMENTS
	FILE	START	END	
Input - I	I	4	15	Read Input file, word 4 to word 15 decimal (octal word 17). Note this differs from the octal addressing specified for Input file addresses for signals.
Output - O	O	4	5	Read Output file, word 4 to word 5. Note that the start and end address must be specified in decimal. This differs from the octal addressing specified for Output file addresses for signals.
Binary - B	B3	0	2	Read Binary file B3, word 0 to word 2, length 3 words.
Integer - N	N30	0	10	Read Integer file N30, word 0 to 10, length 11 words.
Float - F	F8	5	55	Read Float file F8, word 5 to 55, length 51 words.
Status - S	S	0	23	Read Status file, word 0 to word 23, length 24 words.

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Allen-Bradley Configuration

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Engineered and supported by:

Remote Automation Solutions,

Bristol Babcock Ltd. Blackpole Road, Worcester, WR3 8YB, UK

Reg office: 2nd Floor, Accurist House, 44 Baker Street, London, W1U 7AL

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VAT Reg No. GB 880 9839 67

Emerson Process Management
Remote Automation Solutions
1100 Buckingham St
Watertown, CT 06795
T 1 (860) 945 2200
F 1 (860) 945 2278
www.EmersonProcess.com/Remote
binfo@EmersonProcess.com

Emerson Process Management
Remote Automation Solutions
Blackpole Road
Worcester, WR3 8YB
T 44 (0) 1905 856848
F 44 (0) 1905 856930
www.EmersonProcess.com/Remote
oedsupport@EmersonProcess.com

