Chapter 26

Working with Analog Alarm Objects

Introduction

The Analog Alarm object adds the alarming capability for a floating-point attribute of any object, such as the Present Value of an Analog Input object.

Note: The Input Reference of an Analog Alarm object should refer to an analog attribute type in order to perform as intended. Analog Alarm objects referencing other attribute data types (e.g., Boolean) yield unusual results, though not necessarily unusable results. Neither the VT100 nor Project Builder give an error message when this object is attached to any attribute other than floating point based attributes.

This object detects an alarm based on up to four limits and can be configured to report that alarm. This object sets the Alarm State attribute of the object it is added to.

This chapter describes how to:

- add an Analog Alarm object
- edit an Analog Alarm object
- command an Analog Alarm object
- delete an Analog Alarm object

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Key Concepts

Analog Alarm Object

When the Analog Alarm object's Input attribute value exceeds the defined limits, it causes a change in the Analog Alarm object's present value and the generation of a Status Notification Report (SNR).

For example, with this object you can have a warning issued if the temperature in a room falls below 60°F and an alarm issued if the temperature falls below 50°F.

States

The Analog Alarm object can be in any of the following states:

Normal State

This occurs when the Analog Alarm object is in an acceptable, expected condition, as indicated by the Input attribute value.

Off Normal State

This occurs when the Analog Alarm object transitions into the high and low warning conditions, as indicated by Input attribute value.

Fault State

This occurs when the Analog Alarm object transitions into the high alarm, low alarm, and unreliable conditions, as indicated by the Input attribute value.

SNR

Status Notification Report. A report that is generated by alarm objects and routed via the Message Routing feature to printers and VT100 Terminals.

Attributes

The values of an object's attributes determine how the object operates. The Analog Alarm object attributes described below are listed in the order that they appear on the screen. Entry requirements for these attributes are in Table 26-2.

For additional information about the Analog Alarm object and its attributes, refer to the *Object Dictionary*.

Object Name

Identifies the object on the user interface.

Description

Provides optional information to further describe the object.

Object Type

Indicates the kind of object, such as Schedule, N2 Analog Input, or Analog Alarm.

Object Category

Determines the general classification of an object to help define user access capability and message routing.

Enabled

Indicates if the object is active and executing an operational condition.

Input Reference

Indicates the object and attribute monitored for Changes-of-Value (COVs) and reported in alarm messages. The reliability of the Input Reference is monitored and saved in the Reliability attribute of this alarm object. The last value received from the Input Reference is written to the Input attribute.

High Alarm Limit

Specifies the actual High Alarm Limit. If blank, the limit is not used.

Low Alarm Limit

Specifies the actual Low Alarm Limit. If blank, the limit is not used.

Differential

Indicates the amount the Input decreases or increases. If the Input is in High Alarm (or High Warning), it must decrease by the Differential before the object will return to High Warning (or Normal). If the Input is in Low Alarm (or Low Warning), it must increase by the Differential before the object will return to Low Warning (or Normal). This Differential is provided to prevent nuisance alarms due to a value that is cycling near an alarm (or warning) limit.

High Warning Offset

Indicates the value that is added to the Analog Alarm Reference attribute to determine the actual High Warning Limit. If blank, the offset is not used. Either the High Warning Offset and Low Warning Offset must be defined or both must be blank.

Warning Reference

The value that is added to the High and Low Warning Offsets to create the actual warning limits that the Input is compared against. The Reference is typically a setpoint. In order to disable warning analysis, this attribute must be blank.

Low Warning Offset

Indicates the value that is subtracted from the Analog Alarm Reference variable to determine the actual Low Warning limit. If blank, the offset is not used. Either the High Warning Offset and Low Warning Offset must be defined or both must be blank.

Fault Ack Req (Acknowledgment Required)

Indicates whether a transition into the Fault state creates a Message Requiring Acknowledgment (MRA).

Fault Priority

Provides the priority assigned to the Fault state that gets transmitted to the SNR.

Fault Ack Pend (Acknowledgement Pending)

Indicates whether a Message Requiring Acknowledgment (MRA) concerning a transition into the Fault state is waiting to be acknowledged.

Off Normal Ack Req (Acknowledgement Required)

Indicates whether a Message Requiring Acknowledgment (MRA) concerning a transition into the Off Normal state must be acknowledged.

Event Enable

Determines if the object sends reports (SNRs), if this value is True.

Dialout Required

Forces a dial out to a destination device (if True), when this object goes into an alarm or warning state.

Delay Time

Indicates the amount of time, following a change to the Analog Alarm reference value, that an Input must get within the warning or alarm limits before the object reports the warning. After this time, the input value is reevaluated. If it is still outside of the limit, a report is generated. If the Delay Time is changed, any current timer is canceled and reset to the new Delay Time.

Off Normal Priority

Indicates the priority assigned to the Off Normal state that gets transmitted to the SNR.

Normal Ack Req (Acknowledgement Required)

Indicates whether an MRA concerning a transition into the Normal state must be acknowledged.

Normal Priority

Indicates the priority assigned to the Normal state that gets transmitted to the SNR.

Alarm Message Text

Provides text associated with the SNR that a user can add for further information when an alarm or warning occurs.

Procedure Overview

Table 26-1: Working with Analog Alarm Objects

To Do This	Follow These Steps:
Add an Analog Alarm Object	Browse to and highlight the container or object where the Analog Alarm object is to be added. Press the F3 (Add) key. Highlight Analog Alarm and press Enter. Fill in the fields using Table 26-2. Press the F3 (Save) key. Check the User Assistance area of the screen to verify if the save was successful or if there were errors. Press any key to continue. Press the F4 (Cancel) key to return to the container hierarchy.
Edit an Analog Alarm Object	Browse to and highlight an Analog Alarm object. Press Enter to open the object. Press the F3 (Edit) key. Edit the fields using Table 26-2. Press the F3 (Save) key. Check the User Assistance area of the screen to verify if the save was successful or if there were errors. Press any key to continue. Press the F4 (Cancel) key to return to the container hierarchy.
Command an Analog Alarm Object	Browse to and highlight an Analog Alarm object. Press the F2 (Command) key. Use the Spacebar and the Backspace key to cycle through the list until the desired command appears. Press Enter.
Delete an Analog Alarm Object	Browse to and highlight an Analog Alarm object. Press Enter to open the object. Press the Delete key. Press the Tab key to confirm the deletion.

Detailed Procedures

Adding an Analog Alarm Object

To add an Analog Alarm object:

1. Browse to and highlight the container or object where the Analog Alarm object is to be added.
2. Press the F3 (Add) key. The Add Object list appears.
3. Highlight Analog Alarm and press Enter. The first of two Analog Alarm attribute screens appears (Figure 26-1).

Note: Use the [and] keys to page to other screens.

```
SER      N30P497                        Device Offline      13 Dec 2000 09:12:17

N30P497: ADMIN                                          Wed 13 Dec 2000 10:56 CST
================================================================================
     N30P497.N2.Analog Alarm
--------------------------------------------------------------------------------
Object
 Object Name            [redacted]
 Description
 Object Type            Analog Alarm
 Object Category        HVAC
 Enabled                True
Engineering Values
 Input Reference
 High Alarm Limit                        High Warning Offset
 Low Alarm Limit                         Warning Reference            0.00
 Differential                  0.00      Low Warning Offset
Alarm Setup                             Alarm State
 Fault Ack Req          False            Event Enable          True
 Fault Priority         Serious          Dialout Required      False
 Off-Normal Ack Req     False            Delay Time                    0 second

F1-Ack  F3-Save F4-Cancel []-Page
Enter an alphanumeric string
```

Figure 26-1: Analog Alarm Attribute Screen (1 of 2)

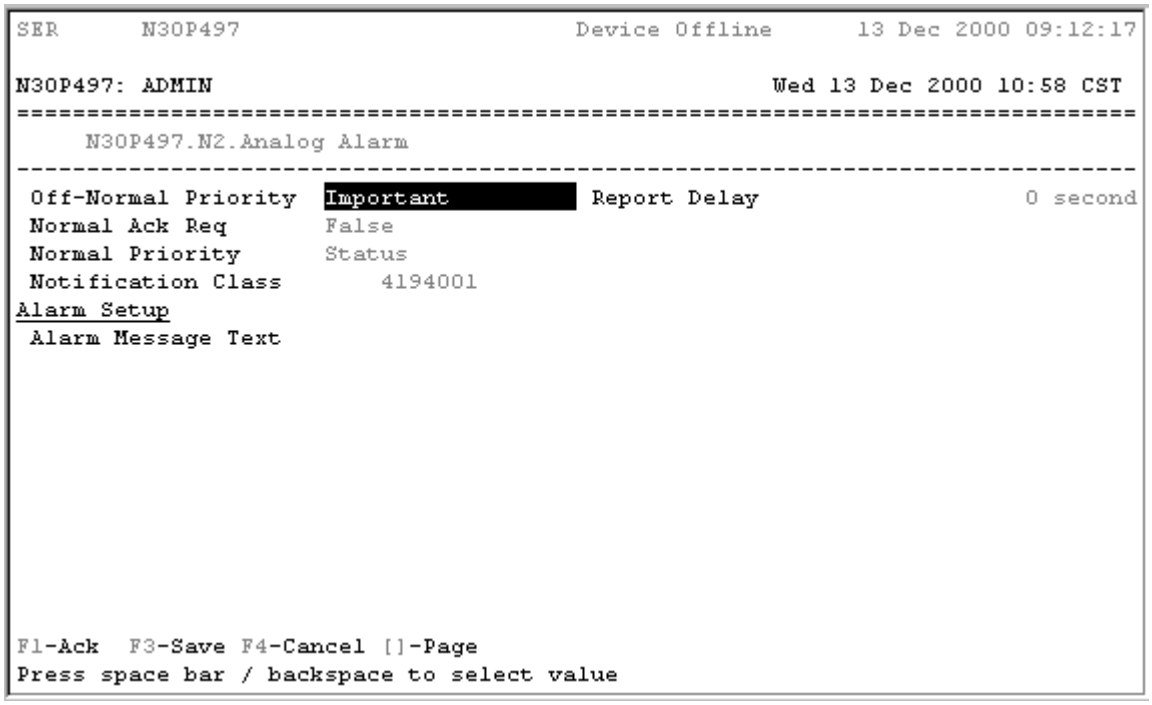

Figure 26-2: Analog Alarm Attribute Screen (2 of 2)

4. Fill in the fields using Table 26-2.

Table 26-2: Attribute Entry Requirements

Screen Area	Attribute	Required	Default	Options/Range
Object	Object Name	No	Blank	Maximum 32 characters Invalid characters: @ . ? * $ # : ' [ ] If not completed, the system assigns a name.
	Description	No	Blank	Maximum 40 characters
	Object Type	Yes	Analog Alarm	The default is preset and cannot be changed.
	Object Category	Yes	HVAC	Use the Spacebar and Backspace key to view and select options: HVAC, Fire, Security, Services, Administrative.
	Enabled	Yes	True	Use the Spacebar and Backspace key to view and select options: True, False.
Engineering Values	Input Reference	Yes	Blank	If this Analog Alarm object is being added to a container, the exact name of the object and attribute to have an alarm must be entered. If this Analog Alarm object is being added to another object, the name of that object appears automatically with its Present Value attribute. Example: `HEATING SP.Present Value.` Present Value is the default attribute that appears.

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Screen Area (Cont.)	Attribute	Required	Default	Options/Range
Engineering Values (Cont.)	High Alarm Limit	No	Blank	A float value. Must be greater than the value of (Analog Alarm Reference + High Warning Offset).
	Low Alarm Limit	No	Blank	A float value. Must be less than the value of (Analog Alarm Reference - Low Warning Offset).
	Differential	Yes	0.00	A float value greater than or equal to zero.
	High Warning Offset	No	Blank	A float value greater than or equal to zero. If warnings are defined, define both High Warning Offset and Low Warning Offset or neither.
	Warning Reference			A float value that is added to the High and Low Warning Offsets to create the actual warning limits that the Input is compared against. To disable warning analysis, this attribute must be blank.
	Low Warning Offset	No	Blank	A float value greater than or equal to zero. If warnings are defined, define both High Warning Offset and Low Warning Offset or neither.
Alarm Setup	Fault Ack Req	Yes	False	Use the Spacebar and Backspace key to view and select options: False = Acknowledgement not required. True = Acknowledgement required.
	Fault Priority	Yes	Serious	Use the Spacebar and Backspace key to view and select options: Critical, Serious, Important, Status.
	Off Normal Ack Req	Yes	False	Use the Spacebar and Backspace key to view and select options: False = Acknowledgement not required. True = Acknowledgement required.
Alarm State	Event Enable	Yes	True	Use the Spacebar and Backspace key to view and select options: True = Enables the object to report SNRs. False = Disables SNR reporting feature.
	Dialout Required	Yes	False	Use the Spacebar and Backspace key to view and select options: False = Dialout not required. True = Dialout required.
	Delay Time	Yes	0 seconds	Units = Seconds
	Off Normal Priority	Yes	Important	Use the Spacebar and Backspace key to view and select options: Critical, Serious, Important, Status.

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Screen Area (Cont.)	Attribute	Required	Default	Options/Range
Alarm State (Cont.)	Normal Ack Req	Yes	False	Use the Spacebar and Backspace key to view and select options: False = Acknowledgement not required. True = Acknowledgement required.
	Normal Priority	Yes	Status	Use the Spacebar and Backspace key to view and select options: Critical, Serious, Important, Status.
	Notification Class			Identifies the instance number (Object Identifier [OID]) of the local Notification Class object to which notifications are sent.
	Report Delay			The number of seconds after the input value goes outside of an alarm or warning limit that the object waits before generating a warning or alarm. This applies only to changes from the normal state. After this time, the input value is reevaluated. If it is still outside the limit, a report is generated.
Alarm Setup	Alarm Message Text	Yes	Blank	Up to 56 alphanumeric characters (1 line)

5. Press the F3 (Save) key.
6. Check the User Assistance area of the screen to verify if the save was successful or if there were errors. If errors were detected, correct them and resave the entries. Once the save is successful, continue with Step 7.
7. Press any key to continue.
8. Press the F4 (Cancel) key to return to the container hierarchy.

Editing an Analog Alarm Object

To edit an Analog Alarm object:

1. Browse to and highlight an Analog Alarm object.
2. Press Enter to open the object.

Note: Additional attributes appear. Refer to the *Object Dictionary* for more information.

3. Press the F3 (Edit) key. The Analog Alarm object attribute screen appears.
4. Edit the fields using Table 26-2.
5. Press the F3 (Save) key.
6. Check the User Assistance area of the screen to verify if the save was successful or if there were errors. If errors were detected, correct them and resave the entries. Once the save is successful, continue with Step 7.

7. Press any key to continue.
8. Press the F4 (Cancel) key to return to the container hierarchy.

Commanding an Analog Alarm Object

To command an Analog Alarm object:

1. Browse to and highlight an Analog Alarm object.
2. Press the F2 (Command) key. The Command field appears.
3. Use the Spacebar and the Backspace key to cycle through the list until the desired command appears. The Analog Alarm object supports the commands described in Table 26-3.

Table 26-3: Supported Commands

Command	Description
Cancel Delay Time	Cancels delay timer if active. Canceling the delay time on an Analog Alarm object causes a warning if the value is in this state.
Cancel Report Delay Time	Cancels the report delay timer if active. Canceling the report delay time on an Analog Alarm object causes a warning or alarm if the value is in this state.
Enable	Allows regular alarm analysis.
Disable	Prevents alarm analysis. Forces object to normal condition.

4. Press Enter.

Deleting an Analog Alarm Object

To delete an Analog Alarm object:

1. Browse to and highlight an Analog Alarm object.
2. Press Enter to open the object.
3. Press the Delete key.
4. Press the Tab key to confirm the deletion.