

PI Alarms and PIArmView

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Agenda

- PI Alarm Subsystem Overview
 - PI Alarms
 - PI Alarm Groups
- PIAAlarmView
 - View and Acknowledgement
 - History

PI Alarm Subsystem

Generate and manage alarms for PI points.

- Supplement, not replace.
- Inputs from multiple locations or systems
- *Management* types of alarms
- Various types of alarms
- Alarm Hierarchy
- History

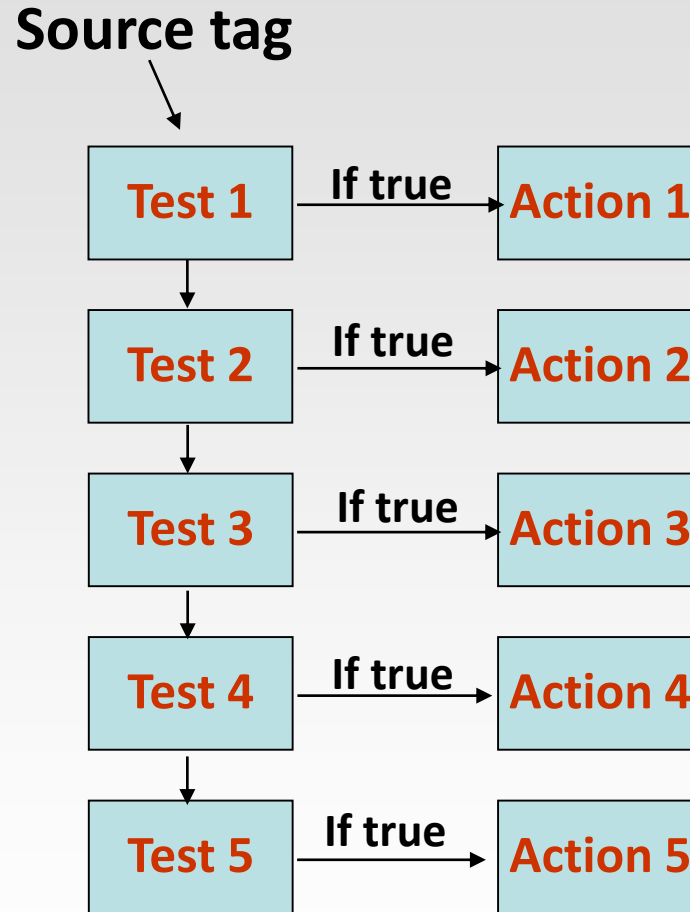
PI Alarm Subsystem Features

- Alarm Priorities
- Acknowledgement status
- Alarm Deadband
- Alarm Delay

Configuring Alarm Tags

- Source Tag
- Tests
 - Five alarm state tests available
 - Test Function Examples:
 - GT(10), IsUnAck('tagname'), EQ (12) + 14m
- Actions
 - Condition
 - Priority

Alarm tag - Tests

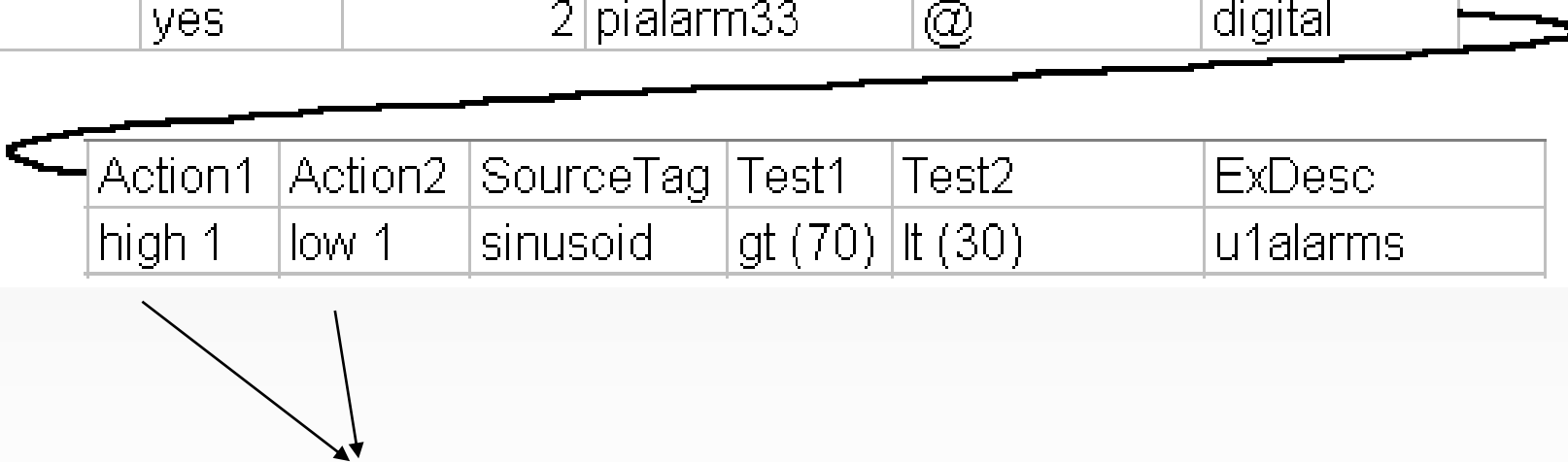


How to Create an Alarm Tag

- Configuration parameters define the alarm
- PI-SMT Tag Configurator can be used to configure a tag.

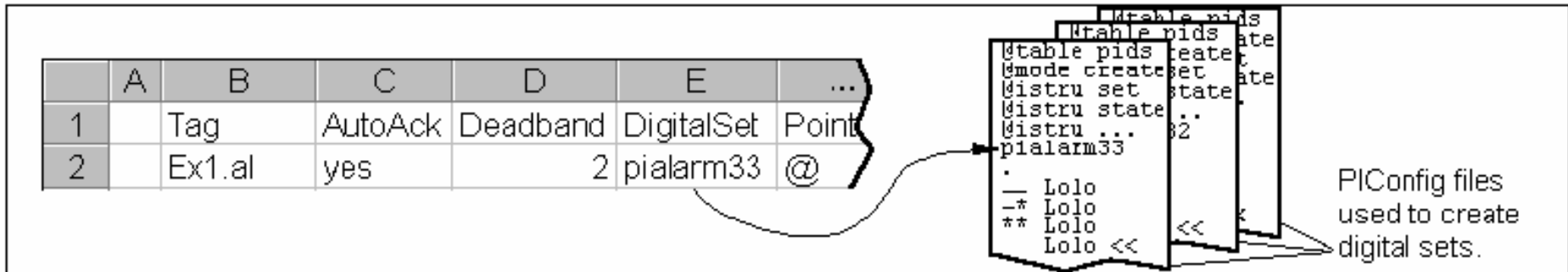
	Tag	AutoAck	Deadband	DigitalSet	PointSource	PointType
x	Ex1.al	yes	2	pialarm33	@	digital

Action1	Action2	SourceTag	Test1	Test2	ExDesc
high 1	low 1	sinusoid	gt (70)	lt (30)	u1alarms

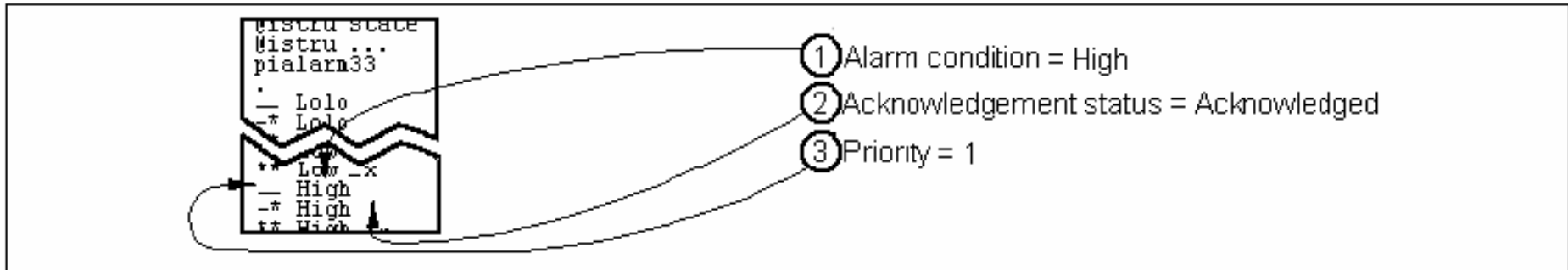


The conditions used in the actionx attributes MUST match the conditions of the digital set.

Digital state assignment



4. PI uses DigitalSet to determine which alarm set to use. Alarm sets are created in the digital state table.



5. PI matches the three conditions to the corresponding digital state in the digital set pialarm33. The alarm tag will take the value "___ High".

How to Create an Alarm Group

- Configuration parameters define the alarm Group
- PI-SMT Tag Configurator can be used to configure a tag.

tag	ExDesc	PointSource	PointType	Compressing	ExcMax
u1alarms	U1Alarms GroupID	G	Int32	0	0

SMT – Alarm Group Creator

The screenshot shows the 'PI Alarm Groups Creator' application window. The title bar reads 'PI System Management Tools - Active Plug-In: PI Alarm Groups Creator'. The menu bar includes 'File', 'Tools', and 'Help'. The main interface is divided into several sections:

- Left Panel (System Management Plug-In):** A tree view showing a hierarchy of tools. Under 'Points', 'PI Alarm Groups Create' is selected. Other items include 'PI Digital State Editor', 'PI Stale and Bad Tags', and 'PI Totalizer Editor'. Below this are 'Operation' and 'Security' sections, both with expandable icons.
- Groups Panel:** A tree view showing the structure of alarm groups. Under 'localhost', there is a group named 'myGroup1' (highlighted with a blue selection box), which contains sub-groups 'HFAlarms', 'U1Alarms', and 'U2Alarms'.
- Alarm Point Table:** A table with two columns: 'Alarm Point' and 'Descriptor'. It lists three alarm points, each with a red alarm icon.
- Session Record Panel:** A text area showing a log of system events.

Alarm Point	Descriptor
myGroup1.al	Test of Alarm Groups
myGroup2.al	Test of Alarm Groups
myGroup3.al	Test of Alarm Groups

Session Record

```
Host> PI Totalizer Editor has been loaded.  
Host> PI Trust Editor has been loaded.  
Host> PI User and Group Editor has been loaded.  
Host> PI Version has been loaded.  
PI-TotEd> Added totalizer pertot to PI Server localhost
```

PI AlarmView

- Client Tool
- Shows Current Alarms and Alarm History

PI Alarm View client

PIAlarmView

File Edit Options Actions Help

Priority: 01
23

(localhost)
Alarm group for IT Monitor tags

Tagname	AI. State	Time	P	Description
AL:Server7_CPU	HIHI	15-Oct-02 2:27:12 PM	0	
AL:Server7_DiskSpace	LOW	15-Oct-02 3:09:23 PM	1	
AL:Server7_Memory	LOLO	15-Oct-02 3:04:30 PM	2	

Tagname	Server	Descriptor	P	AI. State	Time	Ack'ed
AL:Server7_CPU	localhost			Cleared	15-Oct-02 2:27:12 PM	
AL:Server7_CPU	localhost			Cleared	15-Oct-02 2:55:24 PM	
AL:Server7_CPU	localhost		0	HIHI	15-Oct-02 3:09:23 PM	Auto
AL:Server7_DiskSp	localhost		0	HIHI	15-Oct-02 2:27:12 PM	Auto
AL:Server7_DiskSp	localhost			Cleared	15-Oct-02 2:55:24 PM	
AL:Server7_DiskSp	localhost		1	LOW	15-Oct-02 2:56:30 PM	Auto
AL:Server7_DiskSp	localhost		2	LOLO	15-Oct-02 2:57:00 PM	Auto
AL:Server7_DiskSp	localhost		1	LOW	15-Oct-02 2:58:00 PM	Auto
AL:Server7_DiskSp	localhost			Cleared	15-Oct-02 2:58:30 PM	
AL:Server7_DiskSp	localhost		1	LOW	15-Oct-02 3:02:00 PM	Auto
AL:Server7_DiskSp	localhost		2	LOLO	15-Oct-02 3:02:30 PM	Auto

The PI-Alarm View window

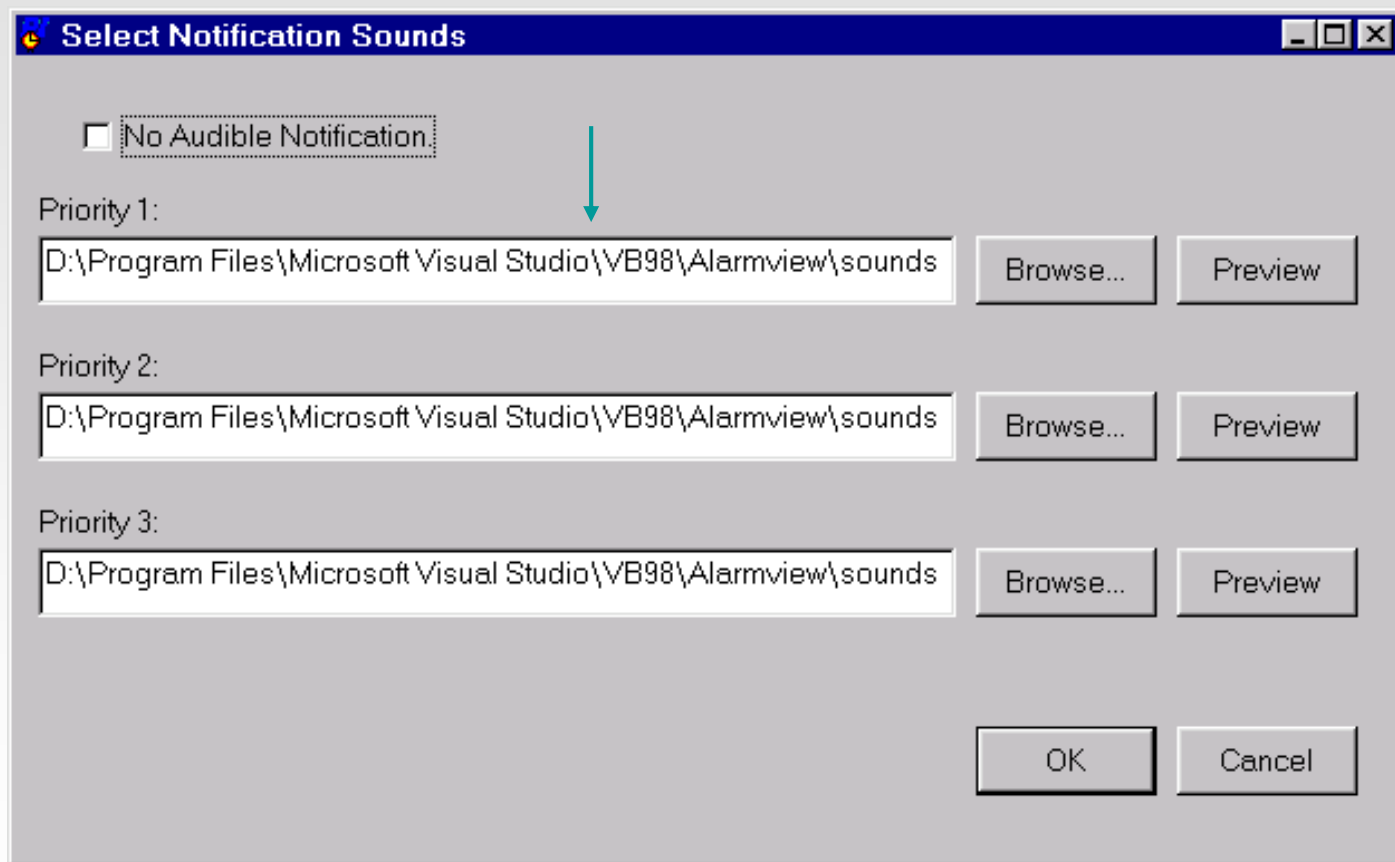
Color coding for priority levels:

Priority	Color	Notes
1	Cyan	Lowest priority
2	Yellow	
3	Red	Highest priority
0	Purple	Auto acknowledge alarms



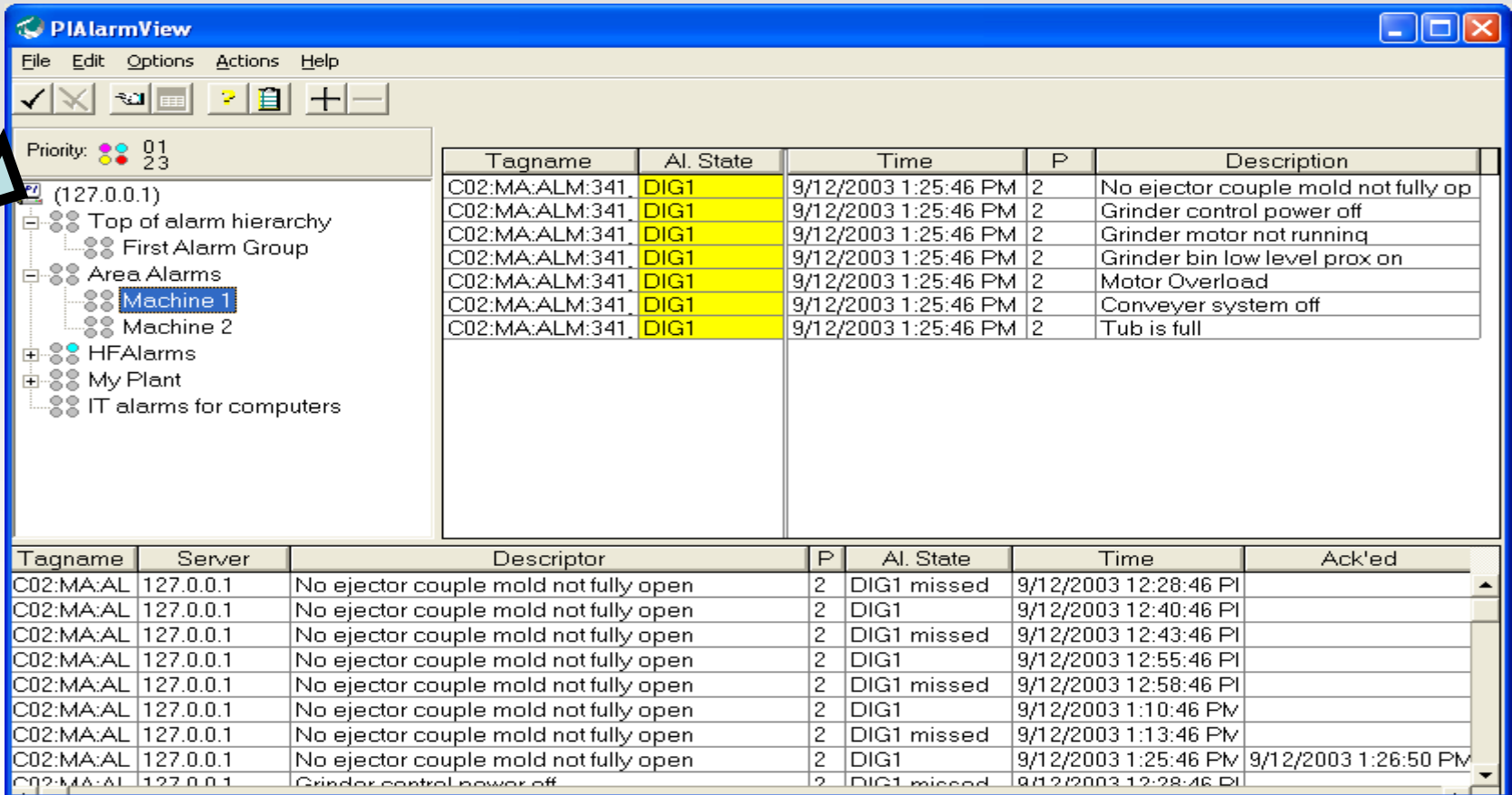
Audible and visible Alarm Notification

Audible notification when a new alarm happens



"Alarm Hierarchy" Pane

Managing the alarm priorities



The screenshot shows the PIArmView application window. On the left is a tree view of the alarm hierarchy. A blue arrow points to the 'Machine 1' node under 'Area Alarms'. The main pane displays a table of active alarms with columns for Tagname, Al. State, Time, P, and Description.

Tagname	Al. State	Time	P	Description
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	No ejector couple mold not fully op
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Grinder control power off
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Grinder motor not running
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Grinder bin low level prox on
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Motor Overload
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Conveyer system off
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Tub is full

Tagname	Server	Descriptor	P	Al. State	Time	Ack'ed
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 12:28:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 12:40:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 12:43:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 12:55:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 12:58:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 1:10:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 1:13:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 1:25:46 PM	9/12/2003 1:26:50 PM
C02:MA:AL	127.0.0.1	Grinder control power off	2	DIG1 missed	9/12/2003 12:28:46 PM	

"Current Alarms" Pane

Visualize details about alarm tags

The screenshot shows the PIArmView application window. The title bar reads "PIAlarmView" and includes standard window controls (minimize, maximize, close). Below the title bar is a menu bar with "File", "Edit", "Options", "Actions", and "Help". A toolbar contains icons for checkmark, cancel, print, list, help, and zoom. On the left is a tree view showing the alarm hierarchy: (127.0.0.1) -> Top of alarm hierarchy -> First Alarm Group -> Area Alarms -> Machine 1 -> Machine 2. Other nodes include HFAlarms, My Plant, and IT alarms for computers. The main area displays a table of current alarms:

Tagname	Al. State	Time	P	Description
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	No ejector couple mold not fully op
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Grinder control power off
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Grinder motor not running
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Grinder bin low level prox on
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Motor Overload
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Conveyer system off
C02:MA:ALM:341	DIG1	9/12/2003 1:25:46 PM	2	Tub is full

Below this table is a larger table showing a history of alarms:

Tagname	Server	Descriptor	P	Al. State	Time	Ack'ed
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 12:28:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 12:40:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 12:43:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 12:55:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 12:58:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 1:10:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1 missed	9/12/2003 1:13:46 PM	
C02:MA:AL	127.0.0.1	No ejector couple mold not fully open	2	DIG1	9/12/2003 1:25:46 PM	9/12/2003 1:26:50 PM
C02:MA:AL	127.0.0.1	Grinder control power off	2	DIG1 missed	9/12/2003 12:28:46 PM	

"Current Alarms" Pane (cont)

Viewing the alarm configuration

The screenshot shows the PIArmView application interface. The main window displays a tree view of the alarm hierarchy on the left and a table of active alarms at the bottom. The 'Alarm Server Configuration' dialog box is open, showing the configuration for the selected alarm point 'Ex1.al'.

Alarm Server Configuration Dialog Box:

- Server: 127.0.0.1
- Alarm Point: Ex1.al
- Sourcetag: SINUSOID
- high , priority 1: gt (70)
- low , priority 1: lt (30)
- Close button

Active Alarms Table:

Tagname	Server	Descriptor	Priority	Message	Time
pialm_03	127.0.0.1	Alarm digital states			
pialm_03	127.0.0.1	Alarm digital states			
pialm_03	127.0.0.1	Alarm digital states			
pialm_03	127.0.0.1	Alarm digital states			
pialm_03	127.0.0.1	Alarm digital states			
pialm_03	127.0.0.1	Alarm digital states	2	DIG1 missed	9/12/2003 1:27:16 PM
pialm_03	127.0.0.1	Alarm digital states	2	DIG1	9/12/2003 1:28:46 PM

"Current Alarms" Pane (cont)

Monitoring an alarm

PIAlarmView

File Edit Options Actions Help

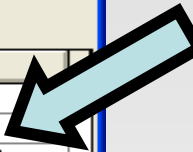
Priority: 01
23

(127.0.0.1)

- Top of alarm hierarchy
 - First Alarm Group
 - Area Alarms
 - Machine 1
 - Machine 2**
 - HFAlarms
 - U1Alarms
 - U2Alarms
- My Plant
 - IT alarms for computers

Tagname	Al. State	Time	P	Description
C02:MA:ALM:332	DIG1	9/12/2003 3:52:46 AM	2	Screw return limit not made
C02:MA:ALM:332	DIG1	9/12/2003 4:13:46 AM	2	Heat switch is off
C02:MA:ALM:341	DIG1	9/12/2003 1:33:16 PM	2	No ejector couple mold not fully op
C02:MA:ALM:341	DIG1	9/12/2003 1:33:16 PM	2	Grinder control power off
C02:MA:ALM:341	DIG1	9/12/2003 1:33:16 PM	2	Grinder motor not running
C02:MA:ALM:341	DIG1	9/12/2003 4:13:46 AM	2	Grinder bin low level prox on
C02:MA:ALM:341	DIG1	9/12/2003 3:52:46 AM	2	Motor Overload
C02:MA:ALM:341	DIG1	9/12/2003 4:13:46 AM	2	Conveyer system off
C02:MA:ALM:341	DIG1	9/12/2003 4:13:46 AM	2	Tab is full
C02:MA:ALM:342	DIG1	9/12/2003 4:13:46 AM	2	Gripper Number 1 sense fault

Tagname	Server	Descriptor	P	Al. State	Time	Ack'ed
pialm_03	127.0.0.1	Alarm digital states	2	DIG1	9/12/2003 12:30:16 PI	
pialm_03	127.0.0.1	Alarm digital states	2	DIG1 missed	9/12/2003 12:33:16 PI	
pialm_03	127.0.0.1	Alarm digital states	2	DIG1	9/12/2003 12:34:46 PI	
pialm_03	127.0.0.1	Alarm digital states	2	DIG1 missed	9/12/2003 12:36:16 PI	
pialm_03	127.0.0.1	Alarm digital states	2	DIG1	9/12/2003 1:25:46 PM	
pialm_03	127.0.0.1	Alarm digital states	2	DIG1 missed	9/12/2003 1:27:16 PM	
pialm_03	127.0.0.1	Alarm digital states	2	DIG1	9/12/2003 1:28:46 PM	



"AlarmHistory" Pane

PIAlarmView

File Edit Options Actions Help

Priority: 01
23

(127.0.0.1)

- Top of alarm hierarchy
 - First Alarm Group
- Area Alarms
 - Machine 1
 - Machine 2
- HFAlarms
 - U1Alarms
 - U2Alarms
- My Plant

Tagname	Al. State	Time	P	Description
C02:MA:ALM:332	DIG1	9/12/2003 3:52:46 AM	2	Screw return limit not ma
C02:MA:ALM:332	DIG1	9/12/2003 4:13:46 AM	2	Heat switch is off
C02:MA:ALM:341	DIG1	9/12/2003 1:33:16 PM	2	No ejector couple mold
C02:MA:ALM:341	DIG1	9/12/2003 1:33:16 PM	2	Grinder control power of
C02:MA:ALM:341	DIG1	9/12/2003 1:33:16 PM	2	Grinder motor not running
C02:MA:ALM:341	DIG1	9/12/2003 4:13:46 AM	2	Grinder bin low level pro
C02:MA:ALM:341	DIG1	9/12/2003 3:52:46 AM	2	Motor Overload
C02:MA:ALM:341	DIG1	9/12/2003 4:13:46 AM	2	Conveyer system off
C02:MA:ALM:341	DIG1	9/12/2003 4:13:46 AM	2	Tub is full
C02:MA:ALM:342	DIG1	9/12/2003 4:13:46 AM	2	Gripper Number 1 sense

Name	Server	Descriptor	P	Al. State	Time	Ack'ed
C02:MA:AL	127.0.0.1	Grinder motor not running	2	DIG1	9/12/2003 12:33:16 PI	
C02:MA:AL	127.0.0.1	Grinder motor not running	2	DIG1 missed	9/12/2003 12:36:16 PI	
C02:MA:AL	127.0.0.1	Grinder motor not running	2	DIG1	9/12/2003 12:48:16 PI	
C02:MA:AL	127.0.0.1	Grinder motor not running	2	DIG1 missed	9/12/2003 12:51:16 PI	
C02:MA:AL	127.0.0.1	Grinder motor not running	2	DIG1	9/12/2003 1:03:16 PM	
C02:MA:AL	127.0.0.1	Grinder motor not running	2	DIG1 missed	9/12/2003 1:06:16 PM	



"AlarmHistory" Pane (cont)

Query through the history

Query

Alarm Tag Search...

Remove Alarm Tag

\\127.0.0.1\CO2:MA:ALM:341_3

Search Time

From: *-1h

To: *

Contains

Alarm State:

- DIG1
- DIG2

Priority:

- 1
- 0

Search

Cancel

Other Information

- Alarm Documentation on OSIsoft.com
- Contact me at rmelberg@osisoft.com