

DIAView

Alarm

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Outline

- Alarm overview
- Use of alarm window
- Alarm management tool
- Alarm configuration settings
- Right-click function of alarm group

Purpose

In this chapter, you will learn...

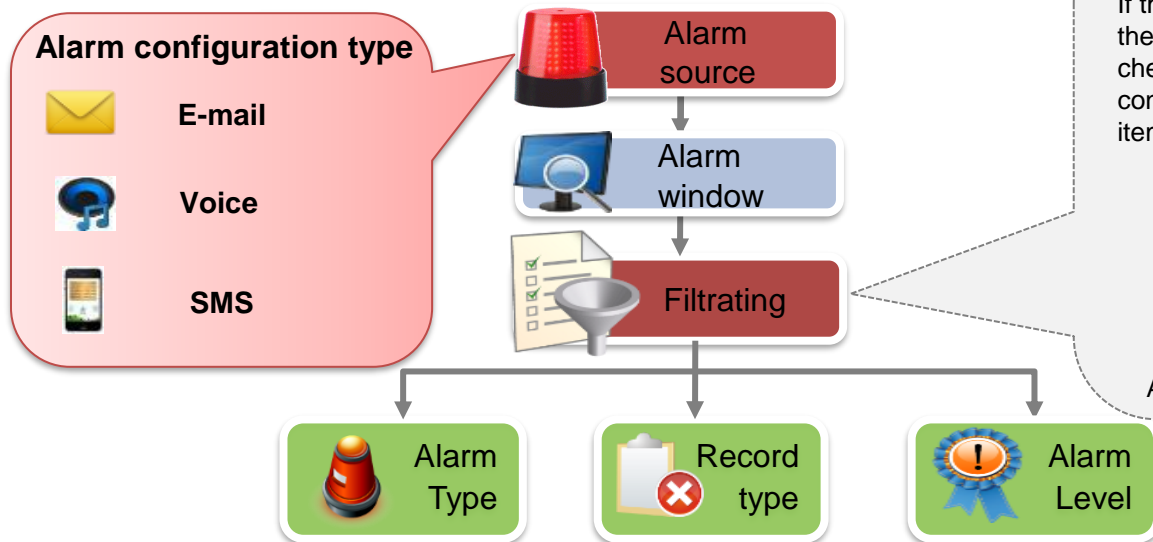
- ... The basic operation and management of the alarm
- ... The function of the alarm group

Outline

- Alarm overview
- Use of alarm window
- Alarm management tool
- Alarm configuration settings
- Right-click function of alarm group

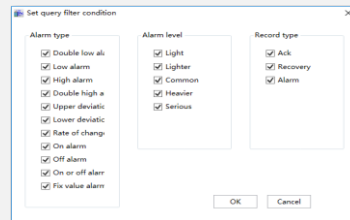
➤ DIAView Alarm function

- The alarm is a reminder when the system-related variable data exceeds the warning value, in order to achieve the early warning of danger in the production process and the prevention of equipment failure.
- The alarm plays an irreplaceable role in the safety of the system in the industrial automation control system.



Alarm window filtering function:

If the user wants to view the alarm record with the highest alarm level, you only need to check the serious option on the filter configuration page, and uncheck the other items.



Alarm window filtering configuration page

➤ Reliable Alarm Management Tool :

- The alarm window records **alarm name, variable path, triggering time, response time, recovery time, record type, type of alarm and alarm level alarm data**, and can undertake filtering, filtering, grouping of the data query, display Settings, save, print and export data to report or Excel, etc.

History Alarm Real Time Alarm

Ack Select All

Alarm name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level
AlarmVariable4	Var.Variable4	8/9/2017 9:39:53 AM		8/9/2017 9:41:44 AM	Recovery	LowAlarm	Serious
2 AlarmVariable2	Var.Variable2	8/9/2017 9:41:34 AM			Alarm	DoubleHighAlarm	Common
3 AlarmVariable11	Var.Variable11	8/9/2017 9:39:17 AM		8/9/2017 9:40:38 AM	Recovery	OutAlarm	Tighter
AlarmVariable	Var.Variable	8/9/2017 9:39:27 AM	8/9/2017 9:40:38 AM		Ack	UpperDeviationAlarm	Light
5 AlarmVariable1	Var.Variable1	8/9/2017 9:39:41 AM			Alarm	LowDeviationAlarm	Lighter
6 AlarmVariable10	Var.Variable10	8/9/2017 9:39:18 AM			Alarm	OffAlarm	Light

Alarm windows

Set query filter condition

Alarm Type

Alarm Level

Record Type

Alarm Group Filter

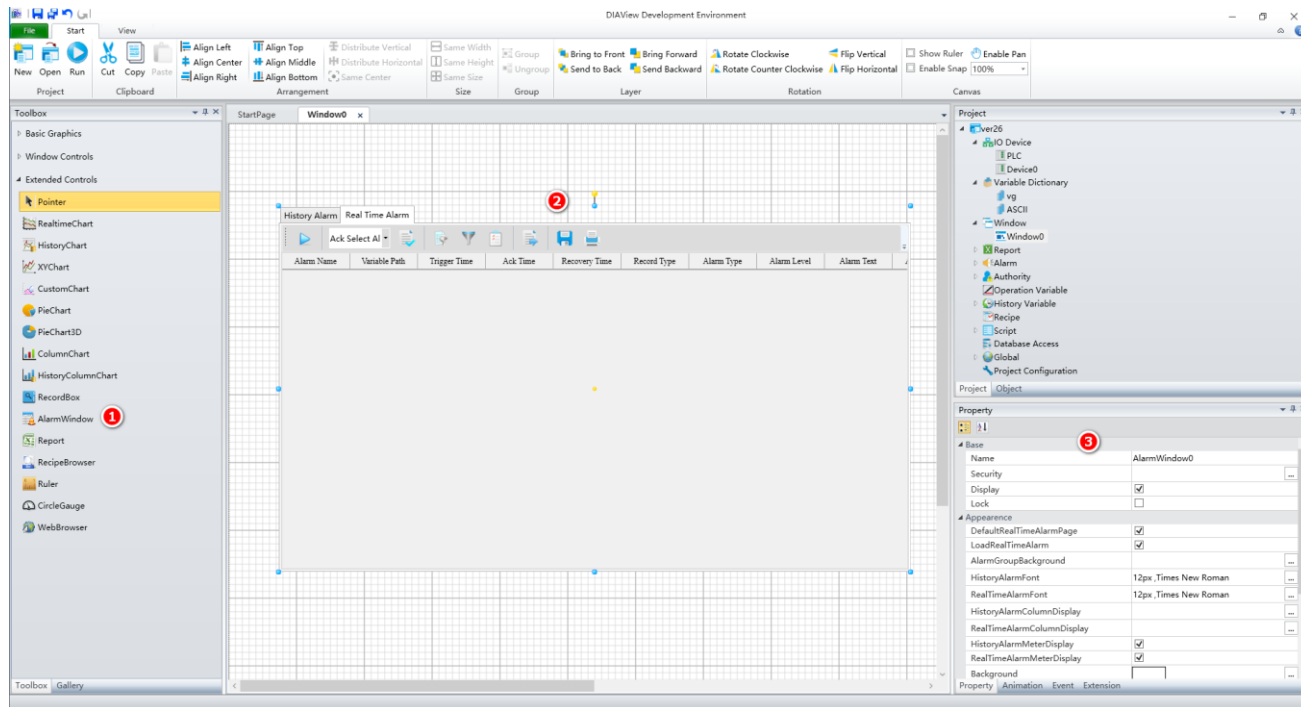
Query filtering

Alarm groups filtering

- Alarm overview
- **Use of alarm window**
- Alarm management tool
- Alarm configuration settings
- Right-click function of alarm group

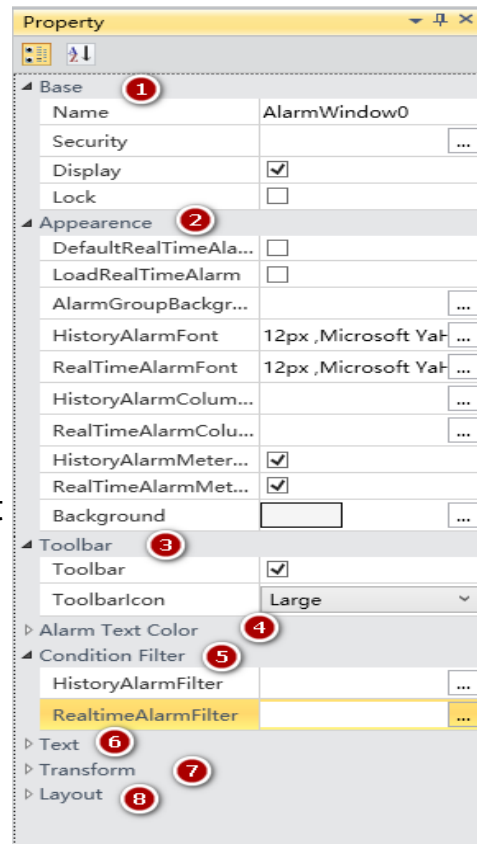
➤ Create a alarm window

- ① Click the tool to set the alarm window
- ② Drag to the desired position on the canvas
- ③ Configure alarm window properties



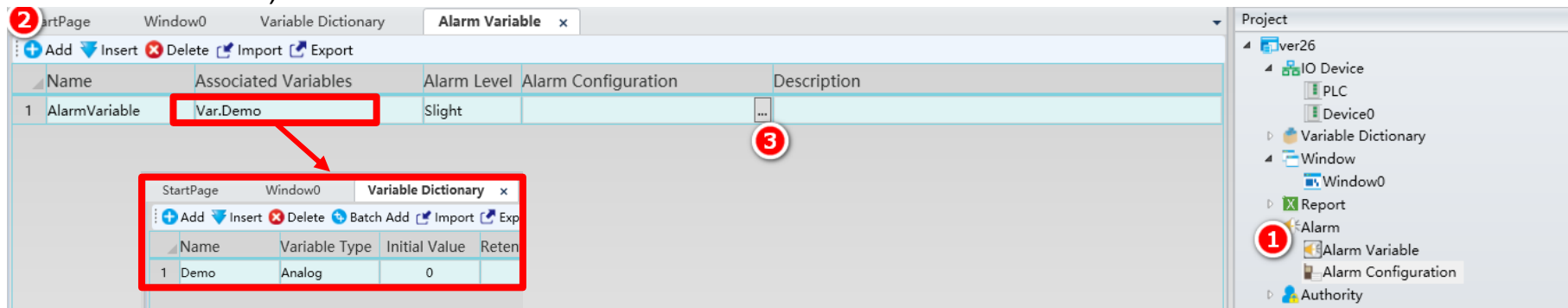
➤ Alarm Properties

- ① **Name:** Basic properties, same as other control graphics
- ② **Appearance:** The appearance of the alarm window includes setting the default display real-time alarm page, loading real-time alarm data, alarm group background color settings, real-time and historical alarm data font format, filtering and filtering real-time and historical alarm groups, whether to display real-time and historical alarm columns and alarms Window background color
- ③ **Toolbar:** The toolbar contains whether to display the toolbar and the toolbar size display
- ④ **Alarm color setting:** the required color can be set according to different types of alarms
- ⑤ **Condition Filter:** real-time and historical alarm data according to type
- ⑥ **Text:** Alarm window prompts text information
- ⑦ **Transform:** Contains the center point of the alarm window control
- ⑧ **Layout:** The size and position of the alarm window in the canvas can be adjusted by numerical value



➤ Create the alarm variable

- ① Select “**Alarm Variable**” Button
- ② Creating alarm variables: click the “**Add**” button in the window to add alarm variables; the system will give a preset name
- ③ **Associate variable:** Click the button in the variable storage cell and select the system variable to associate (only analog value and digital value type variables can be used to set alarms)



The screenshot displays the Delta software interface. The main window is titled "Alarm Variable" and contains a table with columns: Name, Associated Variables, Alarm Level, Alarm Configuration, and Description. A red box highlights the "Associated Variables" cell for the first row, which contains the text "Var.Demo". A red arrow points from this cell to a smaller window titled "Variable Dictionary". This window contains a table with columns: Name, Variable Type, Initial Value, and Reten. The first row of this table is highlighted with a red box and contains the text "Demo", "Analog", and "0". A red circle with the number "1" is placed over the "Alarm Variable" button in the Project tree on the right side of the interface.

Name	Associated Variables	Alarm Level	Alarm Configuration	Description
1 AlarmVariable	Var.Demo	Slight		

Name	Variable Type	Initial Value	Reten
1 Demo	Analog	0	

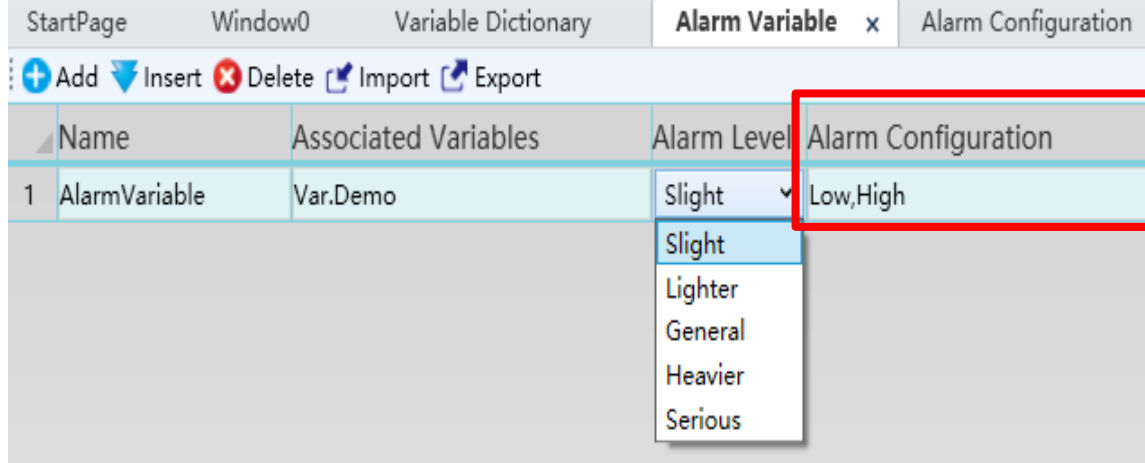
Use of alarm window

➤ Alarm level:

- Click the button and a menu will appear for you to select a level.

➤ Alarm configuration:

- Click the button in the alarm configuration storage cell and the alarm configuration window will appear; the system will perform related configurations according to the variable type



The screenshot shows the 'Alarm Variable' window with the following table:

	Name	Associated Variables	Alarm Level	Alarm Configuration
1	AlarmVariable	Var.Demo	Slight	Low,High

A dropdown menu is open for the 'Slight' alarm level, showing the following options:

- Slight
- Lighter
- General
- Heavier
- Serious

➤ Alarm Configuration:

① Common Alarm:

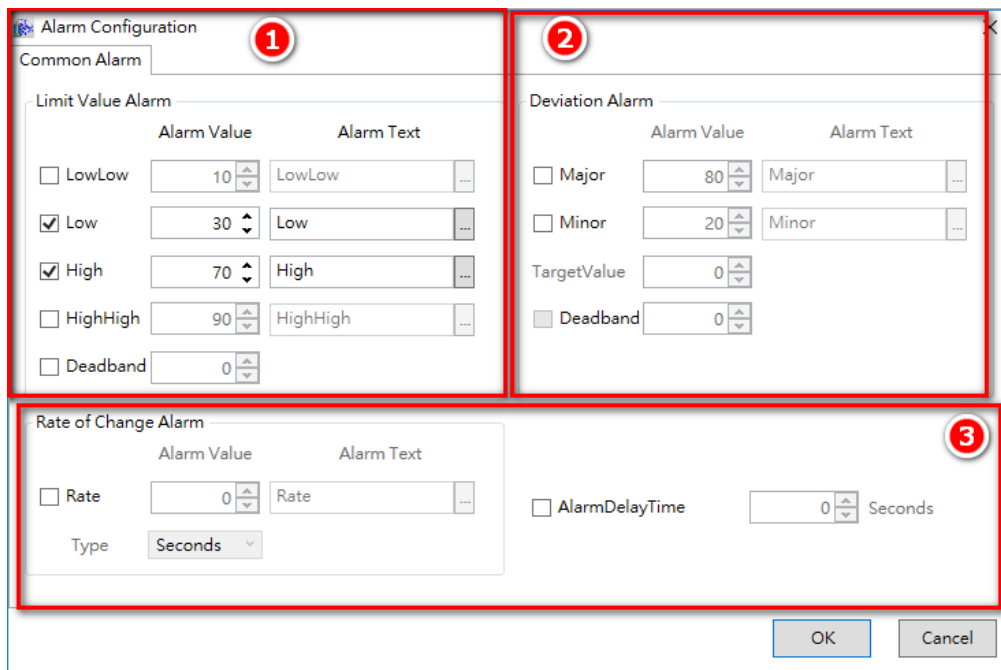
The alarm generated when the value of the analog value exceeds the value of the alarm threshold set.

② Deviation alarms:

This is the alarm that occurs when the ratio of the analog value to the deviation target value fluctuation exceeds the changing range set.

③ Rate of change alarm:

This is the alarm that occurs when the change rate of the analog value exceeds the value set for a period, which means that the alarm that will occur when the variable value changes too quickly.



The screenshot shows the 'Alarm Configuration' window with three main sections:

- Section 1: Common Alarm** (highlighted with a red box and number 1)

	Alarm Value	Alarm Text
<input type="checkbox"/> LowLow	10	LowLow
<input checked="" type="checkbox"/> Low	30	Low
<input checked="" type="checkbox"/> High	70	High
<input type="checkbox"/> HighHigh	90	HighHigh
<input type="checkbox"/> Deadband	0	
- Section 2: Deviation Alarm** (highlighted with a red box and number 2)

	Alarm Value	Alarm Text
<input type="checkbox"/> Major	80	Major
<input type="checkbox"/> Minor	20	Minor
TargetValue	0	
<input type="checkbox"/> Deadband	0	
- Section 3: Rate of Change Alarm** (highlighted with a red box and number 3)

	Alarm Value	Alarm Text
<input type="checkbox"/> Rate	0	Rate
Type	Seconds	

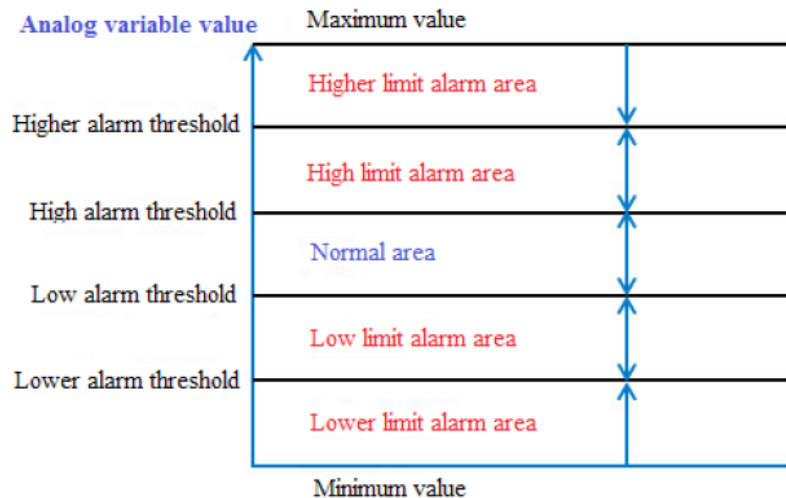
☐ AlarmDelayTime 0 Seconds

At the bottom right are 'OK' and 'Cancel' buttons.

For the calculation method of the rate of change, refer to the user manual 11.3

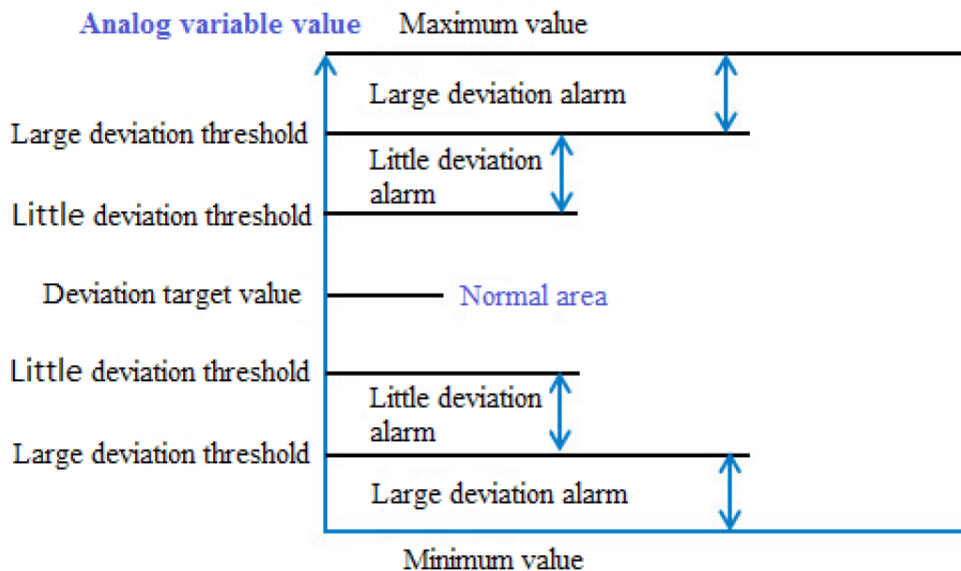
➤ Overage alarm:

- There are 4 alarm thresholds for over-limit alarms: **extremely low, low, high, extremely high**.
- The alarm threshold value should be set between the maximum value and minimum value of the variable.
- Its alarm threshold and principles are as shown in the figure below:



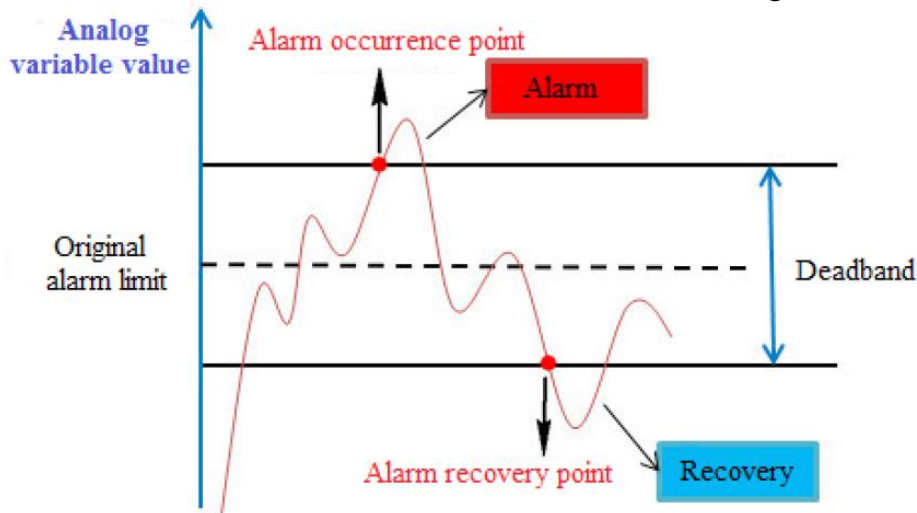
➤ Deviation alarms:

- Deviation alarms are divided into two types: **Large deviation** and **Little deviation**.
- When the fluctuating value exceeds the Large/Little deviation range, Large deviation alarms and Little deviation alarms will occur respectively. Also, only one deviation alarm will occur for each variable.



➤ Dead band:

- The effect of the dead band is to prevent unrealistic alarms from being generated when the variable value changes frequently between the original maximum and minimum alarm threshold by adding a threshold value for the maximum and minimum limit of the alarm, changing the original alarm threshold from a single line to an alarm threshold band.
- The principles of the alarm dead band are as shown in the figure below:



Use of alarm window

➤ Example of alarm configuration :

- ① We set the value controlled by alarm configuration between 30 and 70.
- ② So when the value is 25, it shows the low alarm, and when the value go up to 80, it recovers from the low alarm status. But it's over 70, so go into the high alarm status.
- ③ Finally, when the value go back to 50, it clears all the alarm.

①

25.00

History Alarm

Real Time Alarm

A toolbar containing several icons: a list icon, a play/pause icon, a dropdown menu labeled 'Ack Select All', a list icon, a funnel icon, a calendar icon, a right-pointing arrow icon, a save icon, and a print icon.

Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level
Alarm AlarmVariable	Var Demo	4/23/2019 9:42:11 AM			Alarm	Low Alarm	Slight

②

80.00

History Alarm

Real Time Alarm

A toolbar containing several icons: a list icon, a play/pause icon, a dropdown menu labeled 'Ack Select All', a list icon, a funnel icon, a calendar icon, a right-pointing arrow icon, a save icon, and a print icon.

Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level
Alarm AlarmVariable	Var Demo	4/23/2019 9:46:18 AM			Alarm	High Alarm	Slight
Alarm AlarmVariable	Var Demo	4/23/2019 9:42:11 AM		4/23/2019 9:46:18 AM	Recovery	Low Alarm	Slight

③

50.00

History Alarm

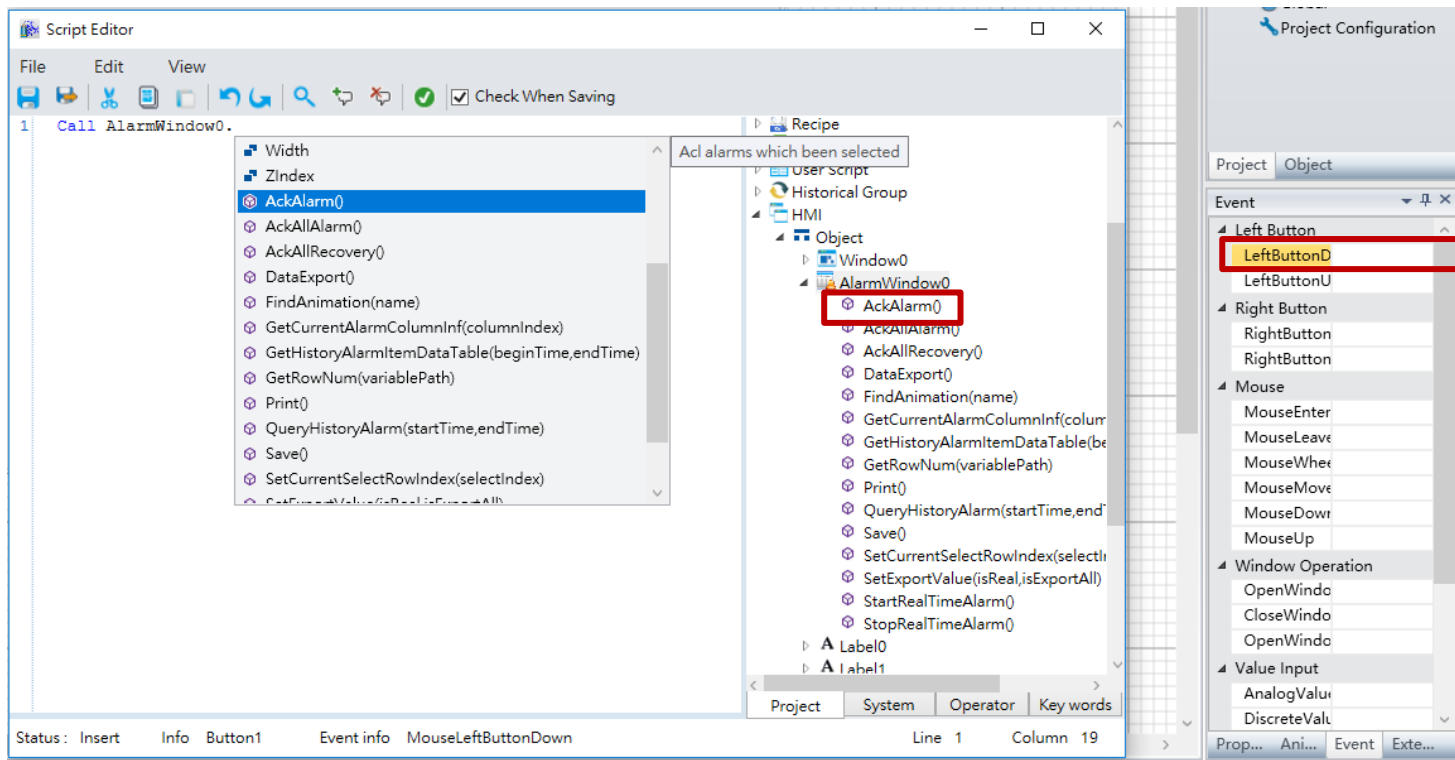
Real Time Alarm

A toolbar containing several icons: a list icon, a play/pause icon, a dropdown menu labeled 'Ack Select All', a list icon, a funnel icon, a calendar icon, a right-pointing arrow icon, a save icon, and a print icon.

Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level
Alarm AlarmVariable	Var Demo	4/23/2019 9:46:18 AM		4/23/2019 9:47:21 AM	Recovery	High Alarm	Slight
Alarm AlarmVariable	Var Demo	4/23/2019 9:42:11 AM		4/23/2019 9:46:18 AM	Recovery	Low Alarm	Slight

➤ Script example of Ack an alarm button :

① Configure the response alarm script by pressing the left button



The screenshot displays the Script Editor and Project Configuration windows. In the Script Editor, the script `Call AlarmWindow0.` is shown. The `AckAlarm()` function is selected in the function list. The Project Configuration window shows the `Left Button` event, with the `LeftButtonD` object selected. The `AckAlarm()` function is also highlighted in the `AlarmWindow0` object list.

Script Editor:

```
1 Call AlarmWindow0.
```

Project Configuration:

- Project: Object
- Event:
 - Left Button
 - LeftButtonD
 - Right Button
 - RightButton
 - Mouse
 - MouseEnter
 - MouseLeave
 - MouseWheel
 - MouseMove
 - MouseDown
 - MouseUp
 - Window Operation
 - OpenWindow
 - CloseWindow
 - OpenWindow
 - Value Input
 - AnalogValue
 - DiscreteValue

Script Editor Function List:

- Width
- ZIndex
- AckAlarm()
- AckAllAlarm()
- AckAllRecovery()
- DataExport()
- FindAnimation(name)
- GetCurrentAlarmColumnInf(columnIndex)
- GetHistoryAlarmItemDataTable(beginTime,endTime)
- GetRowNum(variablePath)
- Print()
- QueryHistoryAlarm(startTime,endTime)
- Save()
- SetCurrentSelectRowIndex(selectIndex)
- SetExportValue(isReal,isExportAll)
- StartRealTimeAlarm()
- StopRealTimeAlarm()

Project Configuration Object List:

- Window0
 - AlarmWindow0
 - AckAlarm()
 - AckAllAlarm()
 - AckAllRecovery()
 - DataExport()
 - FindAnimation(name)
 - GetCurrentAlarmColumnInf(columnIndex)
 - GetHistoryAlarmItemDataTable(beginTime,endTime)
 - GetRowNum(variablePath)
 - Print()
 - QueryHistoryAlarm(startTime,endTime)
 - Save()
 - SetCurrentSelectRowIndex(selectIndex)
 - SetExportValue(isReal,isExportAll)
 - StartRealTimeAlarm()
 - StopRealTimeAlarm()

Status Bar: Status: Insert Info Button1 Event info MouseLeftButtonDown Line 1 Column 19

➤ Script example of Ack an alarm button :

② Trigger an alarm during operation

History Alarm

Real Time Alarm

<

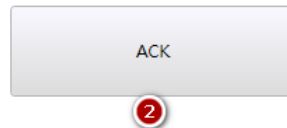
➤ Script example of Ack an alarm button :

③ Project in run time

① Select the alarm item

② Click the configured response button

History Alarm		Real Time Alarm							
Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level	Alarm Text	
Alarm.low	Var.Variable	7/2/2020 11:18:C	1/1/0001 12:00:C	7/2/2020 11:18:C	Recovery	Low Alarm	Slight	Low	
Alarm.low	Var.Variable	7/2/2020 11:18:C	1/1/0001 12:00:C	7/2/2020 11:18:C	Recovery	Low Alarm	Slight	Low	
Alarm.high	Var.Variable	7/2/2020 11:17:5	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	High Alarm	Heavier	High	
Alarm.low	Var.Variable	7/2/2020 11:17:5	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	Low Alarm	Slight	Low	
Alarm.high	Var.Variable	7/2/2020 11:17:5	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	High Alarm	Heavier	High	
Alarm.low	Var.Variable	7/2/2020 11:17:5	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	Low Alarm	Slight	Low	
Alarm.low	Var.Variable	7/2/2020 11:17:5	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	Low Alarm	Slight	Low	
Alarm.high	Var.Variable	7/2/2020 11:17:5	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	High Alarm	Heavier	High	
Alarm.low	Var.Variable	7/2/2020 11:17:4	1/1/0001 12:00:C	7/2/2020 11:17:5	Recovery	Low Alarm	Slight	Low	
Alarm.high	Var.Variable	7/2/2020 11:17:4	1/1/0001 12:00:C	7/2/2020 11:17:4	Recovery	High Alarm	Heavier	High	
Alarm.high1	Var.Variable1	7/2/2020 11:17:4	1/1/0001 12:00:C	1/1/0001 12:00:C	Alarm	LowLowAlarm	Heavier	LowLow	
Alarm.low	Var.Variable	7/2/2020 11:17:4	1/1/0001 12:00:C	7/2/2020 11:17:4	Recovery	Low Alarm	Slight	Low	



➤ **Script example of Ack an alarm button :**

④ The color of the responded alarm ACK

History Alarm

Real Time Alarm

- Alarm overview
- Use of alarm window
- **Alarm management tool**
- Alarm configuration settings
- Right-click function of alarm group

➤ Alarm management tool operation:

- Edit actions such as adding, inserting, deleting, importing and exporting alarms
- Filter variables by variable group, variable type, variable name
- Alarm setting according to variable type

StartPage Alarm Variable x

+ Add Insert Delete Import Export

Alarm editing window

Name	Associated Variables	Alarm Level	Alarm Configuration	Description
1 AlarmVariable	Var.Variable	Slight	LowLow	
2 AlarmVariable1	Var.Variable1	Lighter	Rate	
3 AlarmVariable2	Var.Variable2	General	Major	
4 AlarmVariable3	Var.Variable3	Heavier	OFF	
5 AlarmVariable4	Var.Variable4	Serious	ON	
6 AlarmVariable5	Var.Variable5	Serious	FromOnToOff,FromOffToOn	

+ Add Alt+A
 Insert Alt+I
 Delete Del
 Save Ctrl+S
 Copy Ctrl+C
 Cut Ctrl+X
 Paste Ctrl+V
 Import Ctrl+I
 Export Ctrl+E

Alarm Configuration

Common Alarm

Analog setting window

Limit Value Alarm

	Alarm Value	Alarm Text
<input type="checkbox"/> LowLow	10	LowLow
<input type="checkbox"/> Low	30	Low
<input type="checkbox"/> High	70	High
<input type="checkbox"/> HighHigh	90	HighHigh
<input type="checkbox"/> Deadband	0	

Deviation Alarm

	Alarm Value	Alarm Text
<input checked="" type="checkbox"/> Major	80	Major
<input type="checkbox"/> Minor	20	Minor
TargetValue	0	
<input type="checkbox"/> Deadband	0	

Rate of Change Alarm

	Alarm Value	Alarm Text
<input type="checkbox"/> Rate	0	Rate
Type	Second	

☐ AlarmDelayTime 0 Second

OK Cancel

➤ Alarm management tool operation:

- Edit actions such as adding, inserting, deleting, importing and exporting alarms
- Filter variables by variable group, variable type, variable name
- Alarm setting according to variable type

Variable Browser

Add Group Edit

Variable Dictionary

TypeFilter: ☒ Analog ☒ Digital A String

Name	Type	Initial Val	Minimum	Maximum	Description
Variable	Analog	0	0	10000	
Variable1	Analog	0	0	10000	
Variable2	Analog	0	0	10000	
Variable3	Digital	False	N/A	N/A	
Variable4	Digital	False	N/A	N/A	
Variable5	Digital	False	N/A	N/A	

Variable Browser

Alarm Cor

Switch setting window

☐ OFF ☐ ON ☒ Displacement

Alarm Text

FromOnToOff FromOnToOff ...

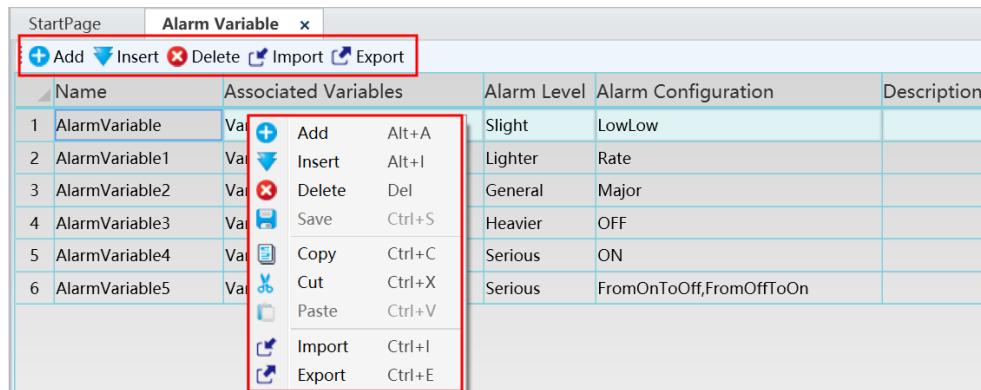
FromOffToOn FromOffToOn ...

OK Cancel

➤ Basic operation and attributes of alarm variables

- Basic operation of variables

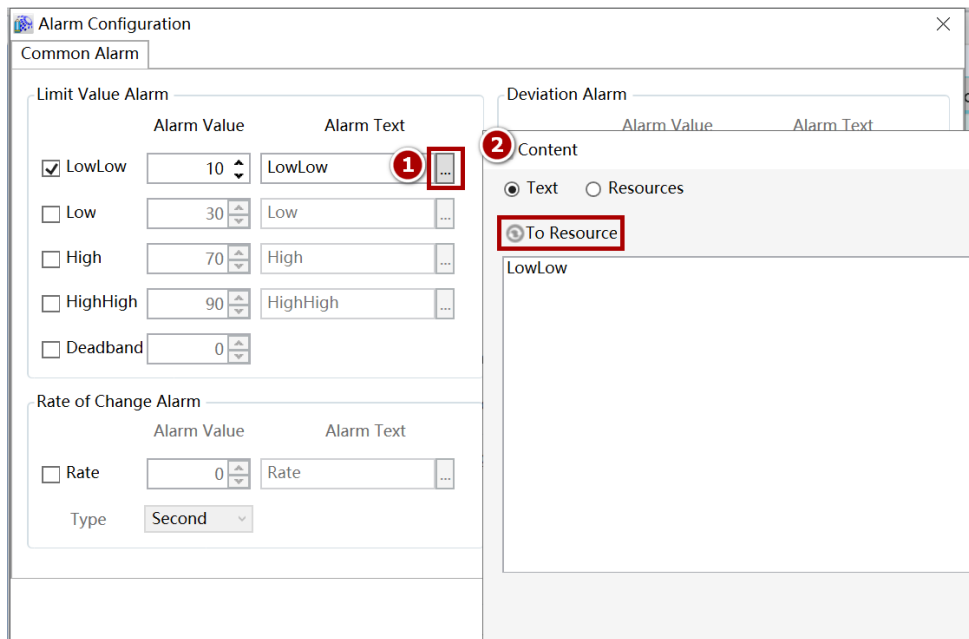
Add	Add an alarm variable, the newly added variable is displayed in the variable list in the variable editing area
Insert	Insert a variable, the newly inserted variable is displayed above the inserted variable
Delete	Delete a variable
Import	Import external variable configuration files to improve the efficiency of variable configuration
Export	Variable configuration information can be exported as an excel file, supporting xls and xlsx formats
Copy	Copy variables
Cut	Shear variable
Paste	Paste variables



✗Refer to the section "11.3 Alarm Variables" in user manual.

➤ Multilingual function of alarm setting

- ① Click the expansion button to the right of the selected alarm settings. (The switch alarm setting can refer to this process)
- ② In the "Content" window, click the "To Resource" button to select and set multilingual content in the window, and convert the alarm text into multilingual resources.



The screenshot displays the "Alarm Configuration" window with the "Common Alarm" tab selected. The "Limit Value Alarm" section is active, showing a table with columns "Alarm Value" and "Alarm Text". The "LowLow" setting is selected, and its "Alarm Text" field is highlighted with a red box and a red circle labeled "1". To the right, the "Content" window is open, showing the "Text" and "Resources" radio buttons. The "To Resource" button is highlighted with a red box and a red circle labeled "2". Below the "To Resource" button, the text "LowLow" is visible.

	Alarm Value	Alarm Text
<input checked="" type="checkbox"/> LowLow	10	LowLow
<input type="checkbox"/> Low	30	Low
<input type="checkbox"/> High	70	High
<input type="checkbox"/> HighHigh	90	HighHigh
<input type="checkbox"/> Deadband	0	

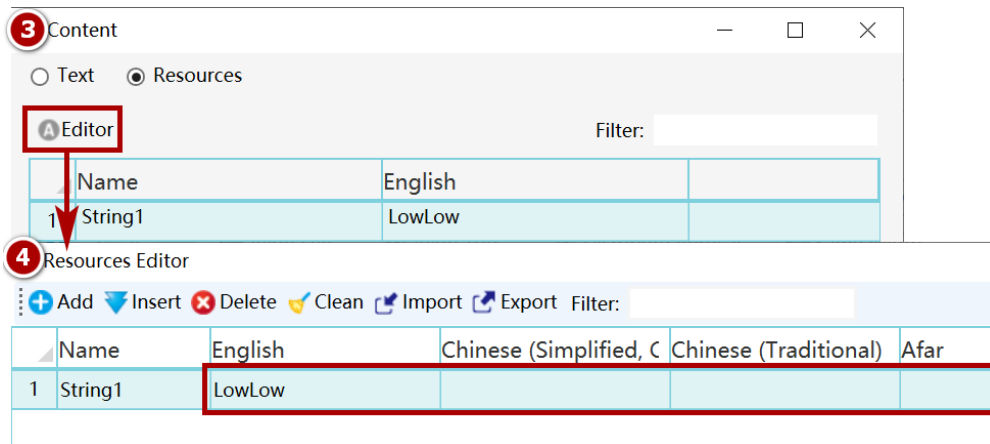
Rate of Change Alarm

	Alarm Value	Alarm Text
<input type="checkbox"/> Rate	0	Rate

Type: Second

➤ Multilingual function of alarm setting

- ③ Click "Editor" to enter the "Resource Editor" window
- ④ In the "Resource Editor" window, you can edit the added multilingual content directly in the multilingual resource bar. After editing, select the set multilingual resources in the "Content" window and click "OK" to complete the multilingual setting

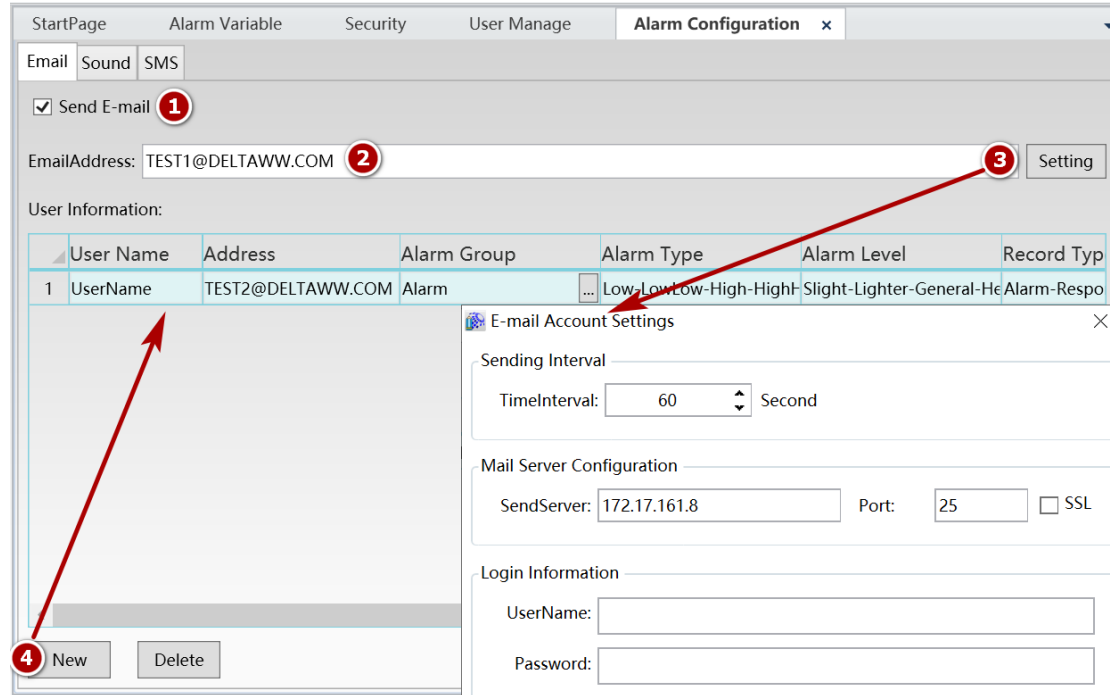


- Alarm overview
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- **Alarm configuration settings**
- Right-click function of alarm group

Alarm configuration settings

➤ Type of Alarm configuration: **1. Email** 2.Sound 3. SMS

- ① Check the "Send E-mail" button to start the function of sending emails.
- ② Fill in the email address of the recipient user.
- ③ Set the relevant information for sending emails.
- ④ Click the "New" button to add user information to receive alarm information.



The screenshot shows the 'Alarm Configuration' window with the 'Email' tab selected. Red circles and arrows highlight the steps described in the list:

- ①: The 'Send E-mail' checkbox is checked.
- ②: The 'EmailAddress' field contains 'TEST1@DELTAWWW.COM'.
- ③: The 'User Information' table shows a user named 'UserName' with address 'TEST2@DELTAWWW.COM'.
- ④: The 'New' button at the bottom left is highlighted.

An inset dialog titled 'E-mail Account Settings' is also shown, containing the following fields:

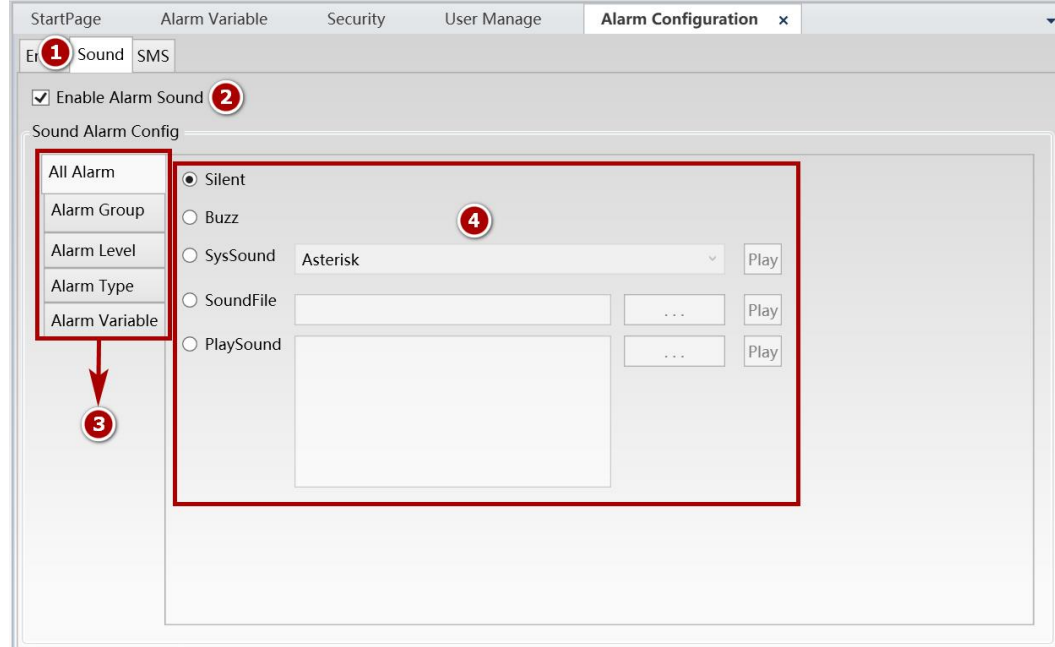
- Sending Interval:** TimeInterval: 60 Second
- Mail Server Configuration:** SendServer: 172.17.161.8, Port: 25, SSL checkbox (unchecked)
- Login Information:** UserName: [empty], Password: [empty]

※Refer to the section "11.5 Alarm configuration settings" in user manual.

Alarm configuration settings

➤ Type of Alarm configuration: 1. Email 2. **Sound** 3. SMS

- ① Select the “Sound” tab to enter the sound configuration interface.
- ② Check the “Enable Alarm Sound” button to activate the sound alarm function.
- ③ Select the alarm content you need.
- ④ Set the various contents of the sound alarm configuration.



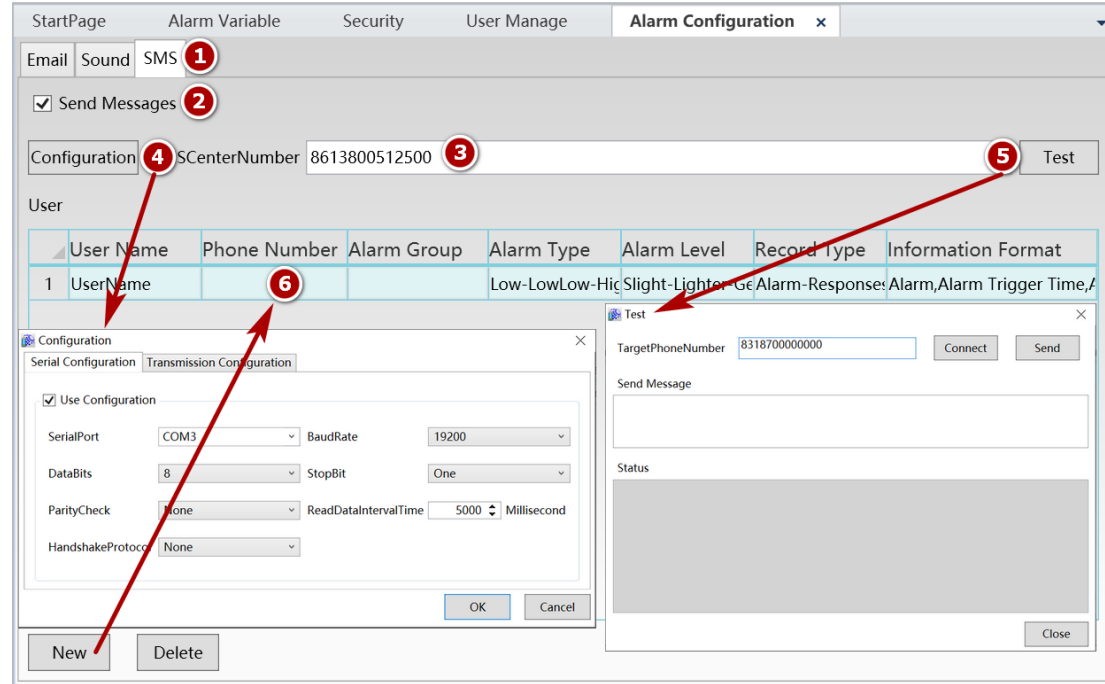
The screenshot displays the 'Alarm Configuration' window with the 'Sound' tab selected. The interface includes a sidebar with a tree view containing 'All Alarm', 'Alarm Group', 'Alarm Level', 'Alarm Type', and 'Alarm Variable'. A red box highlights this sidebar, with a red arrow pointing to the 'All Alarm' item, labeled with a red circle containing the number 3. The main area shows the 'Sound Alarm Config' section. At the top, there is a checkbox for 'Enable Alarm Sound' which is checked, labeled with a red circle containing the number 2. Below this, the 'Sound Alarm Config' section is highlighted with a red box and labeled with a red circle containing the number 4. It contains several options: 'Silent' (selected), 'Buzz', 'SysSound' (with a dropdown menu showing 'Asterisk'), 'SoundFile' (with a text input field and a 'Play' button), and 'PlaySound' (with a large text area and a 'Play' button). A red circle with the number 4 is placed over the 'SysSound' dropdown menu.

※Refer to the section "11.5 Alarm configuration settings" in user manual.

Alarm configuration settings

➤ Type of Alarm configuration: 1. Email 2. Sound 3. **SMS**

- ① Select the "SMS" tab to enter the mobile phone SMS configuration interface.
- ② Check the "Send Messages" button to start sending SMS.
- ③ Fill in the SMS center number.
- ④ Click on the "Configuration" button to set the information about sending SMS.
- ⑤ Click the "Test" button to test the current connection status.
- ⑥ Click the "New" button to add user information to receive alarm information.



The screenshot shows the 'Alarm Configuration' window with the 'SMS' tab selected. The interface includes a 'Send Messages' checkbox, a 'Configuration' button, a 'Test' button, and a table for adding users. A 'Configuration' dialog box is open, showing serial port settings. A 'Test' dialog box is also visible, showing a target phone number and a 'Send' button.

Numbered callouts in the image:

- 1: SMS tab
- 2: Send Messages checkbox
- 3: SCenterNumber input field
- 4: Configuration button
- 5: Test button
- 6: New button

User Name	Phone Number	Alarm Group	Alarm Type	Alarm Level	Record Type	Information Format
1	UserName		Low-LowLow-Hic	Slight-Lighter	Alarm-Response	Alarm, Alarm Trigger Time, /

Configuration Dialog Box:

Serial Configuration | Transmission Configuration

☒ Use Configuration

SerialPort: COM3 | BaudRate: 19200

DataBits: 8 | StopBit: One

ParityCheck: None | ReadDataIntervalTime: 5000 Millisecond

HandshakeProtocol: None

Buttons: OK, Cancel

Test Dialog Box:

TargetPhoneNumber: 831870000000

Buttons: Connect, Send

Status: [Empty text area]

Buttons: Close

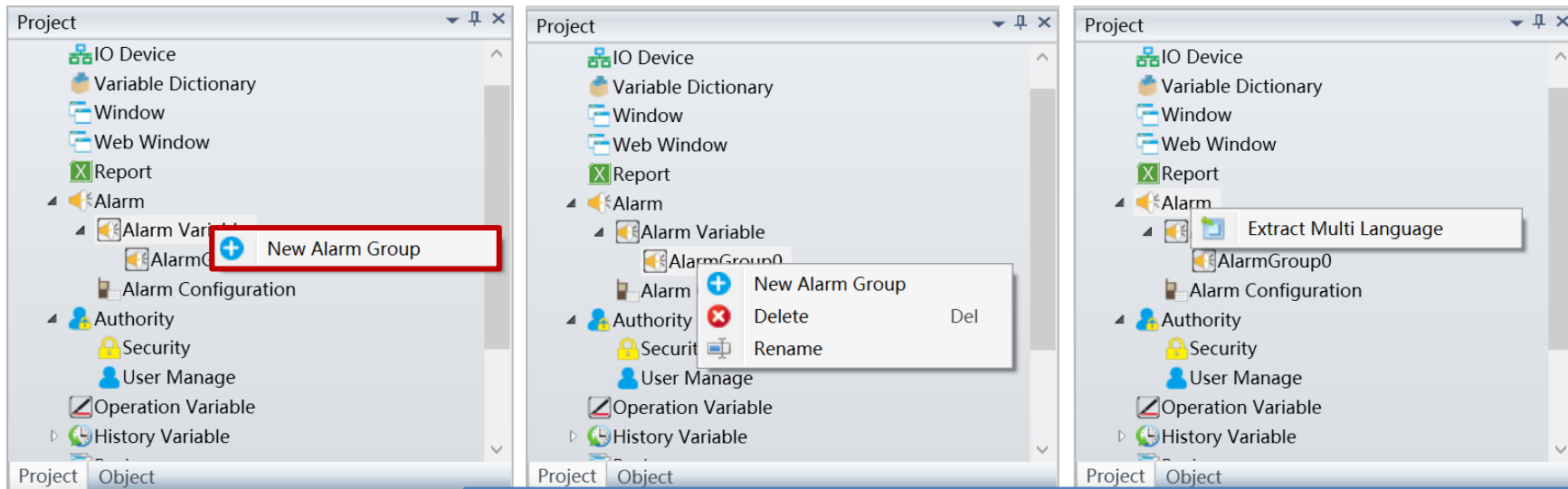
✘Refer to the section "11.5 Alarm configuration settings" in user manual.

- Alarm overview
- Use of alarm window
- Alarm management tool
- Alarm configuration settings
- Right-click function of alarm group

Right-click function of alarm group

➤ Right-click function of alarm group

- The alarm group can realize the classified management of the alarms and classify the related alarms in the same alarm group, which is convenient for the system to manage and operate the alarm groups in a unified manner.
- The alarm variables in the DIAView configuration software generally belong to an alarm group. The alarm group is first established, and then the alarm variables are created in the alarm group.



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