Chapter 5  Alarm and Event

In this chapter, you will:

- Know the functions of an alarm and event window
- Know how to set up an alarm and event window
- Understand the alarm and event window operations when the system is running

Section 1  Introduction

Function of an Alarm and Event Window

The use of a system to monitor events, raise alarms and record them is imperative to ensure secure production because "KingView" offers a comprehensive event and alarm system.

Alarm: when the values of some of the tags in the system exceed the user-defined limit, the system generates an automatic warning which shows which tag has exceeded its limit, and notifies the operators.

Event: actions or modifications that users make to the system, such as modifying tag values, user log in or log out, site startup or exit

The KingView Event and Alarm system includes tag alarm events, operational events, user login events and workstation events. Users can record and review the alarm system and the running state of the workstation at all times. Alarms and events can be shown in a real-time window according to the filter conditions set by the user in the alarm window.

How KingView processes alarm and events: when an alarm or event happens, KingView saves the messages in a buffer memory, only the latest alarms and events are saved they are saved in queue format in the first layer. When the buffer is full or a record time is up, the system will save the alarm and event messages in a log, which may be text files, open databases or printed

In order to classify each event and alarm you can separate them into different alarm groups and designate them to different alarm windows when needed.
Section 2  Create Alarm and Event Windows

How to Define an Alarm Group

Kingview can deal with tag alarm events according to their group using alarm group names. An alarm window can display, record and confirm alarm events by groups.

1. In the “project catalog show zone” on the left side of project browser select “alarm group” from the “database” drop down menu, in the “catalog content show zone” double clicks on the “enter alarm group” icon, and the “Define Alarm Group” dialogue box will appear as shown:

![Alarm group definition dialogue box](image)

2. Double click on the “Modify” button to rename “RootNode” to “ChemicalFactory” thereby taking chemical factory as example.

3. Select “ChemicalFactory” alarm group, and then click the “add” button to name the new subgroup: “ReactionWorkshop”.

4. Click “confirm” button to close the dialogue box and finish setting up the alarm group as figure 5-2 shows:
Note: 1. Division of the alarm group and the alarm group name can be decided by the user depending on their actual circumstance.

2. You can modify but cannot delete name of Root Node.

3. If an alarm group includes a sub-node, the system will prompt you and tell you that this alarm group has a sub-node when deleting the alarm group, if you confirm that this alarm group will be deleted, the sub-node of this alarm group will also be deleted.

Setting the Alarm Properties of a Tag

1. Select the tag “Raw_Oil_Depth” in the tagname dictionary, double-click this tag, then click on the “Alarm definition” tag in the “Tags Definition” dialogue box, the popup box should appear as shown below:
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Set the dialogue box as follows:
Alarm group name: “ReactionWorkshop”
Low: 10
High: 90
PRI: 100

Then system will trigger an alarm when the “raw oil liquid depth” drops below 10 or exceeds 90, the alarm message will be displayed in “ReactionWorkshop” alarm group.

If “Rate of change” is selected:
Change rate of the alarm: 20 pct (as figure 5-4 shows)
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Figure 5-4 Definition window of alarm property, two

Note: priority level is between 1-999, 999 is the highest.

The system will trigger an alarm when the change in the tag exceeds 20% in one second compared to the previous second. The alarm message will be displayed in the “ReactionWorkshop” alarm group. Data

If “Deviation Alarm” is selected:

Target value: 100

Minor Dev: 5

Major Dev: 10 (as figure 5-5 shows)

The system is normal when the value of the tag is larger than 95 and less than 105, the alarm message will be displayed in the “Reaction Workshop” alarm group. The system will trigger a small deviation alarm when the tag value is greater than 90 and less than 95 or greater than 105 and less than 110. The system will trigger a large deviation alarm when the value of the tag is greater than 110 or less than 90, the alarm message will be displayed in the “ReactionWorkshop” alarm group.
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Figure 5-5 Definition window of alarm property, three

Setting the Alarm Window

The Alarm window can be used to show alarm and event information detected by the “KingView” system, there are two types of alarm windows: the real-time alarm window and the historical alarm window. The real-time alarm window only shows real-time alarm and event information, i.e. the most recent alarm/event only and once the alarm has been dealt with and the situation rectified, the information will disappear. However, the historical window contains all alarm and event information and can be used to query any alarm or event.

Setting up an alarm window:
1. Create a new picture called: “Alarm and event”.
2. To type a title for your picture: select \[\text{Text}^\text{T}\] in toolbox, and type: “Alarm and event”.
3. Select \[\text{Window}^\text{A}\] in toolbox and draw an alarm window in your picture, as shown below:
4. Double-click on the “alarm window” and a configuration popup window appears as shown below:

The alarm window has five properties: General property, Column property, Operation property, Condition property, and Color and Font.

General property: The General property allows you to set the window name and the window type (real-time alarm window or historical alarm window). It also shows you the alarm
window’s properties and allows you to adjust the format of the date and time for the window.

(1). Column title: if it is checked, titles of each column will appear at the top of the window in the development and running environments.

(2). Status Bar: if it is checked, the status bar of an alarm window will appear at the bottom of the window in the development and running environments. It displays an alarm number in the current alarm window and other information.

(3). Scroll automatically: if it is checked, when current window cannot display all alarm messages in one screen in the running environment, the alarm window will scroll automatically to display the new alarm.

(4). Horizontal grid: if it is checked, a horizontal grid appears in the message display area of the window in the development and running environment.

(5). Vertical grid: if it is checked, a vertical grid appears in the message display area of the window in the development and running system.

(6). Decimal digit: define the decimal digits of the data displayed in an alarm window.

(7). Position of a new alarm: define a position where a new alarm or event appears. **Forefront** means that a new alarm appears in the topmost line of an alarm window and past alarms move down a row accordingly. **Lattermost** means that a new alarm will be shown in the bottommost row.

**Note: The alarm window must be given a name, otherwise it will not be shown when the system is running.**

**Column property:** The column property dialogue box appears as shown below:
From here you can decide which columns you want in your window for example whether the alarm date and time should be shown or whether the alarm tag name is shown etc; you can select the corresponding columns to display information according to actual circumstances of the project.

**Operation property**: The operation property dialogue box appears as shown below:
This can be used to set the operator’s access level. Click the “security zone” button, and then the “select secure zone” dialogue box will popup. You may then select the zones you want to make secure, only when a users login allows them access to the secure area can they carry out operation in the area of the alarm window, such as double clicking the left key, operating the tool bar, confirming the alarm.

**Condition property:** The Condition property dialogue box appears as shown below:

![Condition property dialogue box](image)

Here you can set the alarm and event type, the PRI and the alarm group.

PRI: 999
Alarm group: “ReactionWorkshop”

After setting the alarm spot information the following conditions will be shown in this alarm window:

a. PRI set is higher than 999 in the tag alarm property;

b. The alarm group name is set as “ReactionWorkshop” in the tag alarm properties dialog box;

If a system is in stand-alone mode, you do not need to select this option. If the system is in network mode, alarm messages from all the nodes are saved in the alarm server. You can configure the network and display all the alarm servers from the local node in the list. You can specify the alarm server whose alarm messages will be displayed in the alarm window.

**Alarm source site:** if system is in the stand-alone mode with a local default, you do not need to select this option. If system is in the network mode, configure the network to display all IO server names under the current alarm server in the list. You can specify the IO servers whose
alarm messages will be displayed in the alarm window. You can select several IO servers.

**Color and Font:** The color and font properties box appears as shown below:

![Figure 5-11 Color and font](image)

Using this property user can develop a color code to signify the different types of alarm/events or differentiate the importance levels of each alarm/event. The color code used is left completely to the discretion of the user.

5. Set color and font, click “save all” in the “file” menu to save user’s setting.

6. Click “switch to VIEW” in the “file” menu to enter the running system. The Picture in the running system is unlikely to be the one you were just using. To open the one you were just using go to “open” in the “picture” menu and the “alarm and event” picture will appear as shown.
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Figure 5-12 Alarm state when running

**Operation of the Alarm Window**

User can monitor and control the alarm information through the toolbox on the top of the alarm window when the system running as shown:

Figure 5-13 Operation toolbox of alarm information

- **Alarm confirm**: confirms the alarm currently shown but it is not confirmed in the alarm window.
- **Alarm window pause/resume to scroll**: If an alarm window continuously scrolls to display alarms, you can click the button to pause and look over messages in detail, clicking it again resumes scrolling. Pausing does not affect alarm generation because all alarms that cannot be shown when paused will be displayed once scrolling is resumed.
- **Alter alarm type**: click this button; select the alarm type to be shown in the current alarm window. From now on the alarm window will only show alarms according to what you selected, but the creation of other alarms will not be affected.
- **Alter event type**: Click this button and an Event Type dialogue box appears. All event types available are listed in this dialogue box. Select them and click confirms to close the dialog box. Only the event information from the event types currently selected will be displayed.
- **Alter PRI**: Click this button and a Priority dialogue box will popup. Configure the priority settings and click “confirm” to close the dialogue box. Only the alarm and event
information relating to the priorities currently selected will be displayed.

- Alter alarm group: Click this button and an Alarm Group dialogue box will popup. Select an alarm group and click “confirm” to close the dialogue box. Only alarm and event information relating to the alarm group and alarm subgroup currently selected will be displayed.

- Alter station name: Click this button and an Information Source dialogue box will popup. All information sources available are listed in the dialogue box. Select them and click confirms to close the dialogue box. Only alarm and event information relating to the alarm information source currently selected will be displayed.

**Note: The toolbox can only be opened by users login option that agrees with the operation option. (I don’t understand what you are trying to say)**

**How to Make the Alarm Window Popup Automatically**

The “new alarm” tag offered by the system allows you to decide if you want the alarm window to popup automatically whenever an alarm is triggered. To activate this feature follow the steps below.

1. In the “project catalogue show” zone on the left side of the project browser window select “script” and then “event script”. Double-click on the “new” icon in the “catalogue content show” zone and an “event script” editing dialogue box will popup as shown below:

![Event script editing-box](image)

2. Click “confirm” to close the editing dialogue box.

The Alarm window will popup whenever a new alarm is triggered in the system.
Section 3  Alarm and Event Output

Output of an Alarm or Event

Alarm and event information in the system can be sent to not only the alarm window, but also files, databases and printers; this can be configured through the property window as follows:

1. In the “project catalogue show” zone click on “system configuration” and then double-click on “Alarm configuration”, the “Alarm configuration property” dialogue box will appear as shown below:

The alarm configuration properties window has three properties: file configuration, database configuration and print configuration.

(1). File configuration: This property allows you to decide which alarm and events will be recorded in a file as well as the format of the record, the catalogue of the record and the time of the record. It can also be used to decide what alarm information from which alarm group is recorded and so on. The format of the file record is as follows:

For example: file record of a workstation event

[Workstation date: April 28th, 2001] [Workstation time: 14:24:07] [Event type: workstation startup] [Computer name: local]

[Workstation date: April 28th, 2001] [Workstation time: 14:24:07] [Event type: workstation quit] [Computer name: local]
**File Record Time:** In general, there are a lot of alarm record files; this option specifies how long a record is kept for. The measuring unit is an hour and range is from 1 to 24. The system generates a new record file when specified time is up. For example, if the specified time is 8 hours; the system generates a new alarm record file every 8 hours.

**Start Time:** The time at which the system begins to record the alarm file.

**Saved file duration:** This function allows you to define in days how long a file is kept for. Once the requisite number of days is reached the file will be deleted.

**Priority:** This function allows you to define the priority level of the alarms and events. Only alarms and events with priority level higher than the specified level will be recorded.

*Note:* Here “file” refers to the internal file defined by KingView, a file whose suffix name is .al2 will appear under the project path or appointed path, this is the file we use to record alarm and event information.

(2). **Database configuration:** The database configuration property dialogue box appears as shown below:

![Figure 5-16 Database configuration property](image)

This property box allows you to decide which alarm and event records are recorded to the database as well as the format of the record, the choice of data resource and the user password when they log in to the database.

*Note:* For more information about configuring data resource, please refer to the intermediate tutorial.
(3). **Print configuration:** The print configuration property dialogue box appears as shown below:

![Print configuration property](image)

This property allows you to decide which alarm and event will be sent to the printer, the format of the printer, the printer port number and so on. The print output format is as follows:

For example: workstation event print:

<Workstation date: April 28th, 2001> <Workstation time: 14:24:07> <Event type: workstation startup> <Computer name: local>

-------------------------------------------------------------------

<Workstation date: April 28th, 2001> <Workstation time: 14:24:07> <Event type: workstation quit> <Computer name: local>

*Note: It is suggested that the user use a stylus printer when printing, because a stylus printer can control the position of the paper, which is needed for real-time printing.*
Review

1. Perfect your exercise project, the configuration of a corresponding alarm group.
2. Obtain output from an alarm on to the picture.
3. Record alarm information to file.
4. Record alarm information to database.