SUPCON

# OMC System Software

# High-performanceHMI

# Operator Guide

# User Manual

# IM41S52-E

ZHEJIANG SUPCON TECHNOLOGY CO., LTD.

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# Operator Guide

**Tip:**

**Please refer to *Real-time Supervision Software User Manual* for specific operation introductions.**

# Section 1 Start Supervision

## 1.1 Responsibilities of Operator

- Monitor the running of DCS to prevent potential dangers.
- Intervene in the system operation at any time to ensure s safety and normal production.
- Modify system authorized operation parameters.
- Alarming treatment: There will be sound prompt in technical index alarming, and the alarming information will be displayed in alarm bar and process alarm table. After the alarm is accounted for, turn off alarm sound by silence button and confirm the alarm.
- Discover abnormal events and inform system maintainers to address.

## 1.2 Steps for Supervision Software Startup

1. Double click the shortcut icon of VFLaunch or select **Start > OMC > VFLaunch** in the start menu, and the dialog box for operation domain configuration selection will pop up, as shown in Figure1-1.

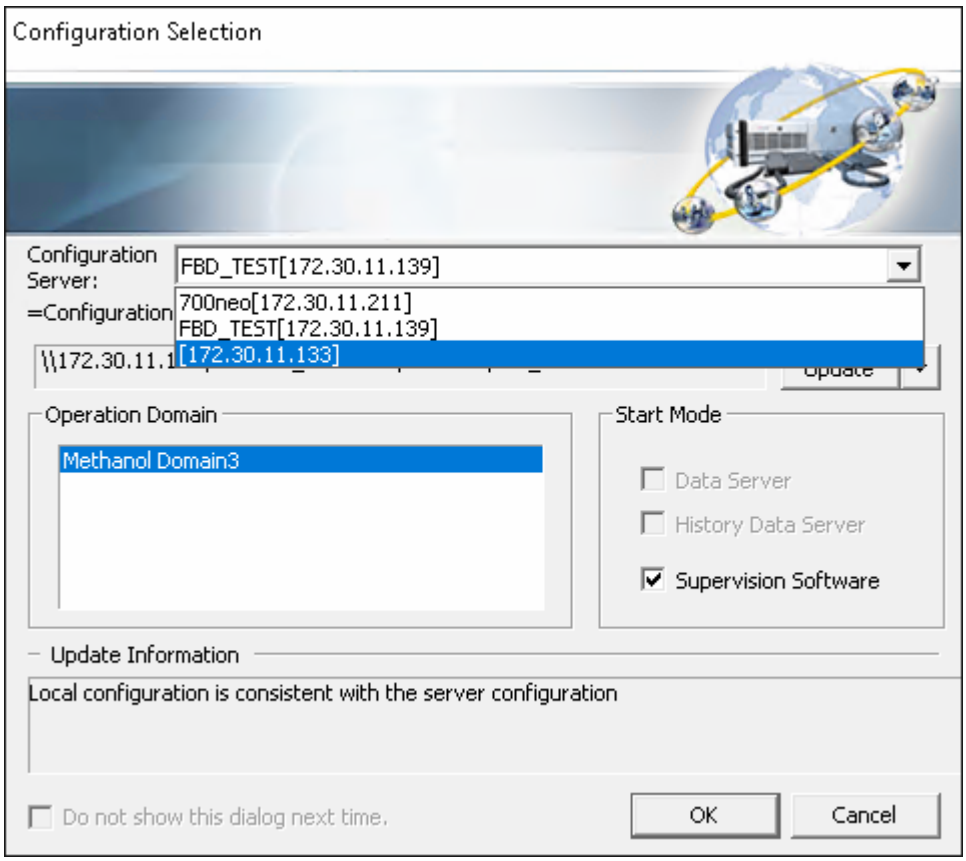



***Figure1-1 Configuration Selection dialog box***

2. Select the operation domain to login. Current operator station (engineer station) can only login the domain (set in system structure configuration software) it belongs to.

3. Select supervision start mode. Three start modes are as follows:

   - Data Server: current node will provide history data query service to operation domain as data server after startup.
   - History Data Server: current node will serve as history data server to collect history trend data after startup.
   - Supervision Software: the operator station (engineer station) will start up real-time supervision software if user selects this mode, otherwise it won't.

**Tip:**

**At least one startup mode should be selected to start up supervision.**

**The startup mode of server is the same as that in configuration.**

4. Configuration version check: If inconsistency of between local configuration and that in the configuration server is found, a prompt asking for configuration synchronization will pop up. Click "Yes" to synchronize the configuration. Furthermore, the Update button can also be used for configuration synchronization.

**Tip:**

**"Update" means to update modified configuration files, which is more efficient. "Update All" means to update all configuration files, which is more reliable.**

5. The dialog box will not be displayed during next startup if user selects "Don't show configuration selection dialog box next time". To display it again, click the icon on toolbar and select "System Information" in the pull-down list, the dialog box of system information will pop up, and click the button "Options".

   Then the dialog box of "High-performanceHMI Global Options" will pop up. Cancel the selected option "Not display configuration selection dialog box when starting supervision software".

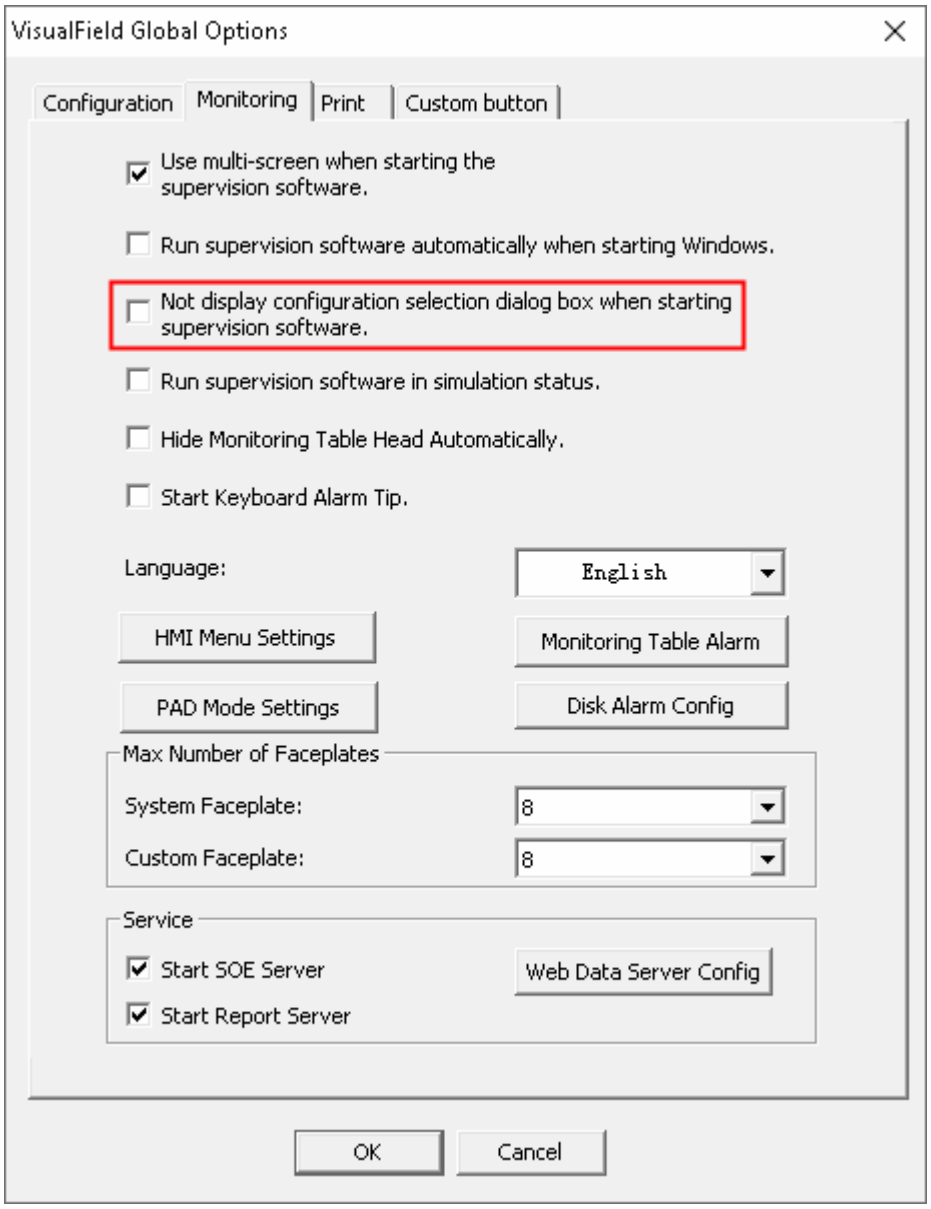


***Figure 1-2 High-performanceHMI Global Options***

6. Login supervision after confirmation. The default user here is “Observer” in all cases, and there’s no operation team by default.

7. Switch operation authority: Users can switch operation team and user by selecting “Login” in the pull-down menu. The user login dialog box is shown in Figure 1-3.

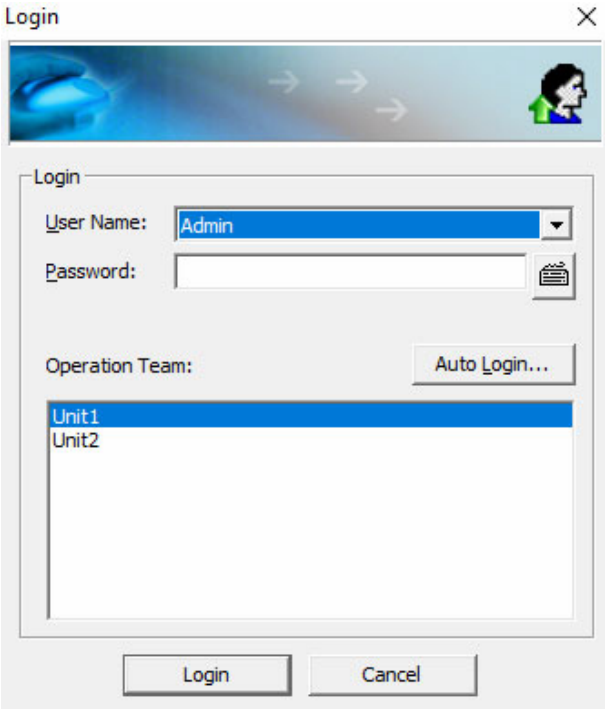



***Figure 1-3 Dialog box “Login”***

Open the “Auto Login Settings” dialog box by clicking the button “Auto Login (L)”, as shown in Figure 1-4.

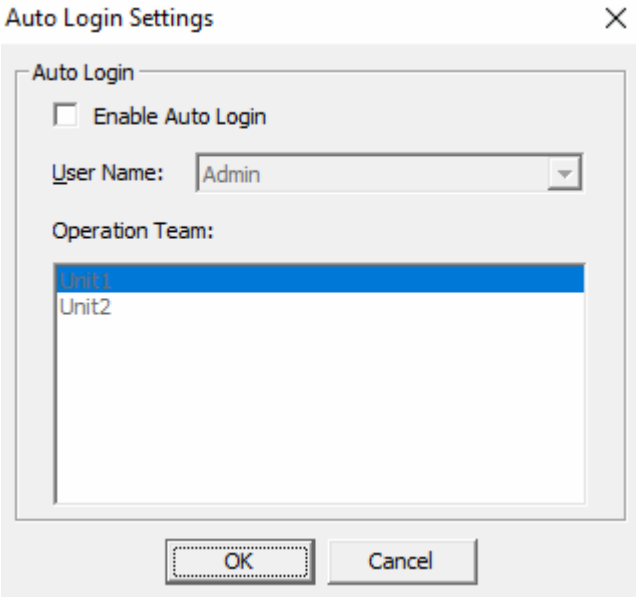



***Figure 1-4 Dialog box “Auto Login Settings”***

Select “Enable Auto Login” and choose the user and operation group, a dialog box of “Input Confirm Password” will pop up after clicking “OK”, as shown in Figure 1-5.

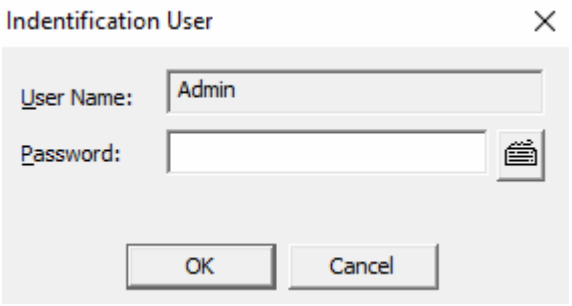



***Figure 1-5 Input box of auto-login password***

Users can login automatically in next supervision software startup after correctly inputting the password corresponding with selected user.

## 1.3 Basic Introductions to Supervision Window

Supervision window includes three parts, which are supervision header, supervision window and alarm bar.

### 1.3.1 Supervision Header

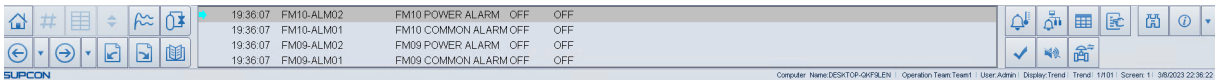



***Figure 1-6 Supervision header overview***

Supervision header includes two parts: toolbar and status bar.

#### Toolbar

Main operation functions of HMI console are listed in toolbar. The interface is shown in Figure 1-7.

***Figure 1-7 HMI console toolbar***

The functions of toolbar icons are shown in Table 1-1.

***Table 1-1 Toolbar function list of HMI console***

| Icon | Button name | Function instructions |
|---|---|---|
| | Home page | Supervision window displays supervision home page after clicking |

| Icon | Button name | Function instructions |
|---|---|---|
| | Overview | Supervision window displays system overview window after clicking |
| | Data viewer | Supervision window displays data viewer window after clicking |
| | Tuning Group | Supervision window displays tuning group window after clicking |
| | Trend | Supervision window displays trend window after clicking |
| | Graphics | Supervision window displays graphics window after clicking |
| | Backward | Display interface of last operation |
| | Forward | Relative to Back (Forward is available only after implementing Back) |
| | Previous Page | Turn the page forward (if some type window has several pages, users can view previous pages by clicking on this button) |
| | Next Page | Turn to next page (if some type window has several pages, users can turn to next page by clicking on this button) |
| | Page Turning | Right click on this button to list all windows in the pull-down menu (system overview window, data view window, tuning group window, trend window, graphics window)<br>After selecting certain type of window (for example graphics), left click the mouse button to list all windows of the type. |
| | Find Tag | Pop up tag selector by clicking the button |
| | Pull-down menu | List the included menu command after clicking, mainly including: system status, operation log, SOE log, history alarm, popup alarm, alarm panel, report browsing, soft-keyboard, system information, printing window, auto-pager, combo window, user list, user logon and exiting system. |
| | Login | Pop up dialog box of user login after clicking |
| | Alarm Acknowledge | Acknowledge the selected alarm after clicking. |
| | Alarm Silence | Mute the selected alarm after clicking. |
| | Device State | Display the state information of devices. |

### Status bar

It displays the status information of HMI system, right part of status bar is shown in Figure 1-8.

***Figure 1-8 Right part of status bar***

Information displayed in status bar includes: current operation domain, current operation team, current user, current window, current window type, current page, current time, etc.

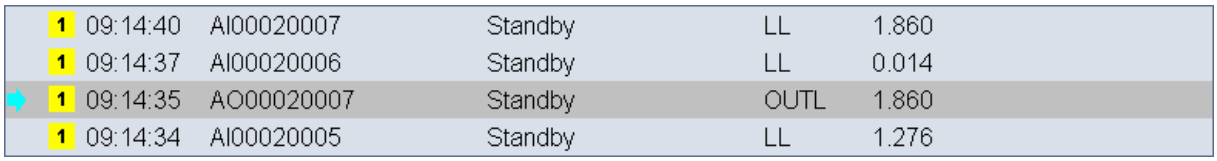
### 1.3.2 Supervision Window

The display area can display system home page, system overview, data viewer, tuning group,

trend, graphics, report, system status according to different pages.

### 1.3.3 Alarm List

The alarm list is shown in Figure 1-9, which includes some functions related to alarm in supervision.



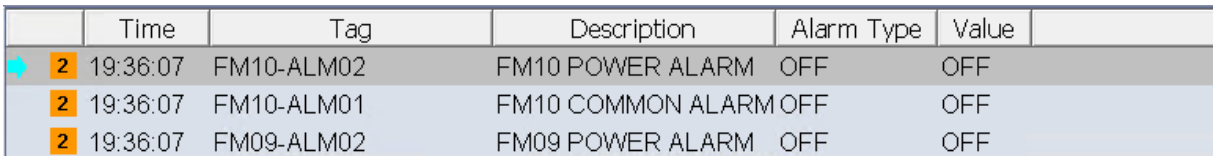
| | | | | | |
|---|---|---|---|---|---|
| 1 | 09:14:40 | AI00020007 | Standby | LL | 1.860 |
| 1 | 09:14:37 | AI00020006 | Standby | LL | 0.014 |
| 1 | 09:14:35 | AO00020007 | Standby | OUTL | 1.860 |
| 1 | 09:14:34 | AI00020005 | Standby | LL | 1.276 |

***Figure 1-9 Alarm List***

In alarm list, the displayed alarm information contains alarm parameter time, alarm tag, tag description, alarm type and tag real-time value. Through the right-click menu of alarm list, the following operation can be conducted:

- Adjust the display of alarm list

  Through “Display List Header” command in the right-click menu, the table header will be displayed in the alarm list as shown below. Through the width of various lists in table header, the display width of various types’ information can be adjusted in the alarm list.



| | Time | Tag | Description | Alarm Type | Value |
|---|---|---|---|---|---|
| 2 | 19:36:07 | FM10-ALM02 | FM10 POWER ALARM | OFF | OFF |
| 2 | 19:36:07 | FM10-ALM01 | FM10 COMMON ALARM | OFF | OFF |
| 2 | 19:36:07 | FM09-ALM02 | FM09 POWER ALARM | OFF | OFF |

***Figure 1-11 Alarm List with List Header***

Through “Display Settings” command in the right-click menu, the dialog box of “Display Settings” will be popped up as shown below. Select “Display Data”. The time will be displayed in “Time” list of alarm list according to the form of “Data + Hour + Minute + Second”. In addition, the settings of color and fonts are basically as same as windows operation system, no more details here.

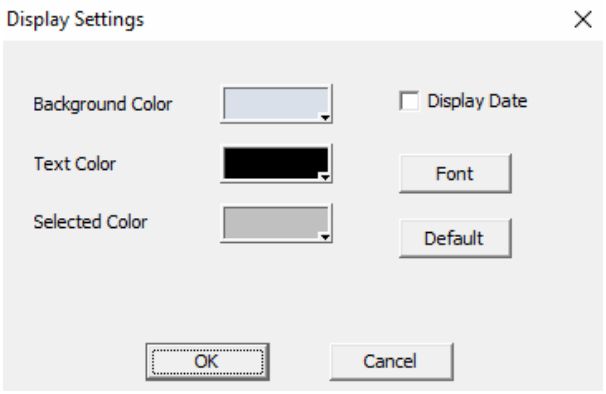



***Figure 1-12 "Display Settings" dialog box***

- Alarm Acknowledge

  Through "OK" command in the right-click menu, alarm acknowledge can be conducted for the selected alarm.

  In addition, click button in the monitoring table header, alarm acknowledge can be conducted for the selected alarm as well.

- Pop up the relative window

  Through the commands like "Pop up Panel", "Pop up Trend" and "View History Alarm" in the right-click menu, other monitoring window of the tag can be viewed.

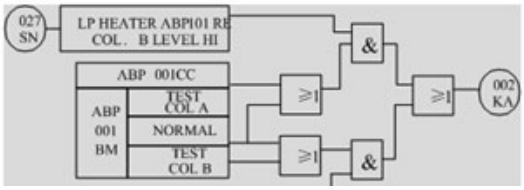
  - Pop up Panel: pop up the panel of this tag.
  - Pop up Trend: pop up the trend window of this tag.
  - View History Alarm: pop up "History Alarm List"
  - Go to Associated Graphics; pop up the associated graphic of this tag.
  - Go to Associated Trend; pop up the associated trend of this tag.
  - Pop up Alarm Procedure: when alarm configured procedure, this command comes to effect and icon will be displayed in the alarm list. Through the right-click command, the alarm procedure will be popped up as shown below.

| AI00020001LLL | | Yellow | Unavailabel in voltage monitoring room | | |
|---|---|---|---|---|---|
| | | | CUBICLE FAULT | | |
| A 0 LKL 001 | Execute | 1 | Location: KIC | Power Supply Column: A | Region: G |
| Valid State | RP, NS/SG, NS/RRA, MCS, RCS, RCD, SI, TT, RT, HOUSE LOADING | | | | |
| Suppress Signal | NOT INHIBITED | | | | |
| Auto Device Action Check | See "Result" | | | | |

Cause:
1. Lose 110V DC.
2. 380V voltage low on 001XU or 002XU

Operation:
1. Check the wiring switch of 110V DC power.
2. Send alarm signal to DCS in master control room.

Logic Diagram:




Result:
Voltage unbalance.

***Figure 1-13 Example of alarm procedure***

# Section 2 Graphics

## 2.1 Windows Switchover

There are four methods to switch window.

### 2.1.1 Switchover between Windows of Different Types

- Click corresponding icon to switch window from one type (e.g., tuning group) to another (e.g., overview); for example, click the overview icon to switch from tuning group to overview window.
- If overview window has been configured as index window, click target information block in the overview window to switch to target window.
- Right-click page turning icon to select target window in the pull-down menu.
- If switchover between different windows has been implemented, users can switch window by using Backward and Forward .

### 2.1.2 Switchover between Windows of the Same Type

- Turn pages between windows of the same type by using previous page icon and next page icon .
- Click page turning icon to select target window in the pull-down menu.
- If switchover between windows of the same type has been implemented, users can switch windows by using Backward and Forward .

### 2.1.3 Windows Switchover in Graphics

Actions of certain objects (including button) can be defines as Open Picture or Pop-up Picture in graphics configuration. Open picture is used to turn pages, and Pop-up pictures used to pop up a graphic, original graphic remains.

As shown in Figure 2-1, button “PLC Status” has been defined to open designated graphics in graphics configuration, then users can turn to page “02_PLC_STATUS” by clicking button “PLC Status” in supervision.

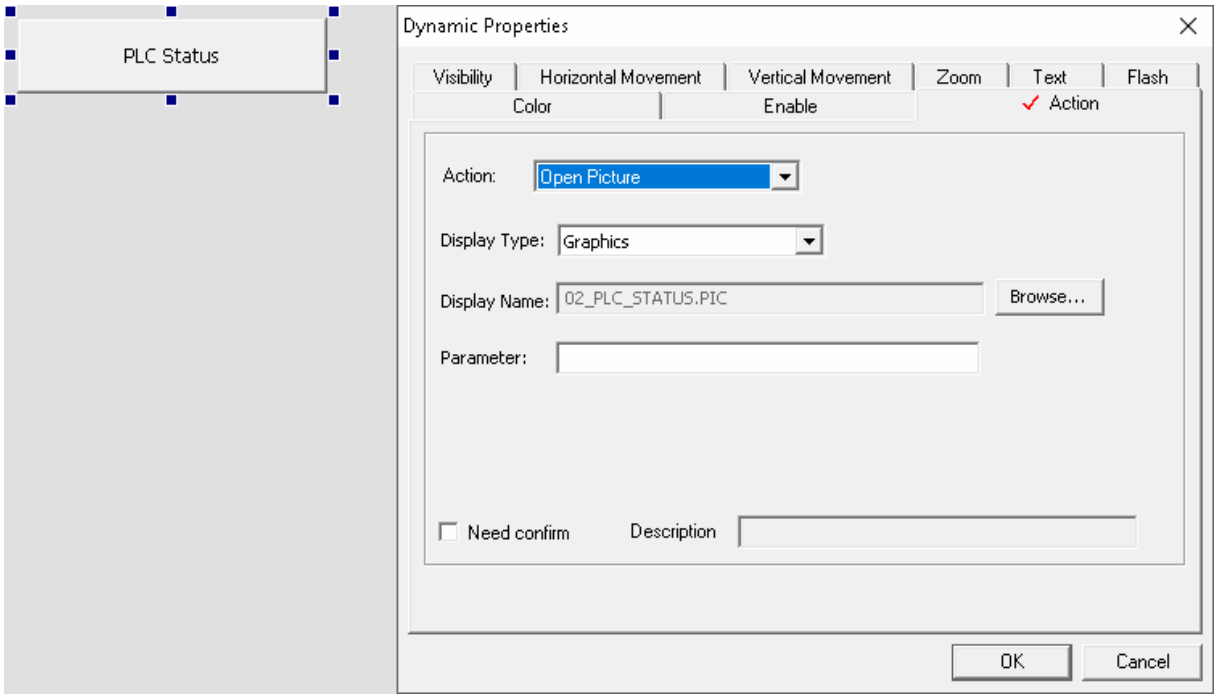



***Figure 2-1 Configuration for window switchover in graphics***

### 2.1.4 Switches Windows with the Keyboard

There are function keys on operator's keyboard corresponding with function icons in real-time supervision window, switchover function can be implemented accordingly by clicking these keys.

If the customized key on operator's keyboard is defined as turning key, Users can use these keys to switch windows.

## 2.2 Dynamic and Static Objects in Graphics

Static objects: Objects whose state will remain unchanged in the graphics, such as tanks and pipelines etc.

Dynamic objects: Objects whose state can change dynamically in graphics, such as real-time parameters for tank level, temperature, pressure, etc.

Operational Objects: Objects that can be operated in graphics, such as valve, motor, etc. the cursor will become when mouse is moved on the operational objects.

### 2.2.1 Acknowledge Alarm

Right click the tag to be acknowledged and select "Alarm Acknowledge", as shown in Figure 2-2.

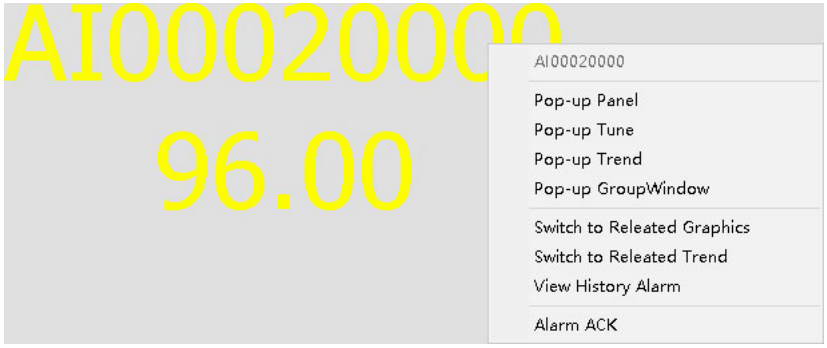



***Figure 2-2 Single tag alarm acknowledgement***

### 2.2.2 Single Trend View

Select the tag whose trend window needs to be viewed, the trend window will pop up shown as Figure 2-3 when selecting “Pop-up Trend” in the right-click menu shown in Figure 2-2.

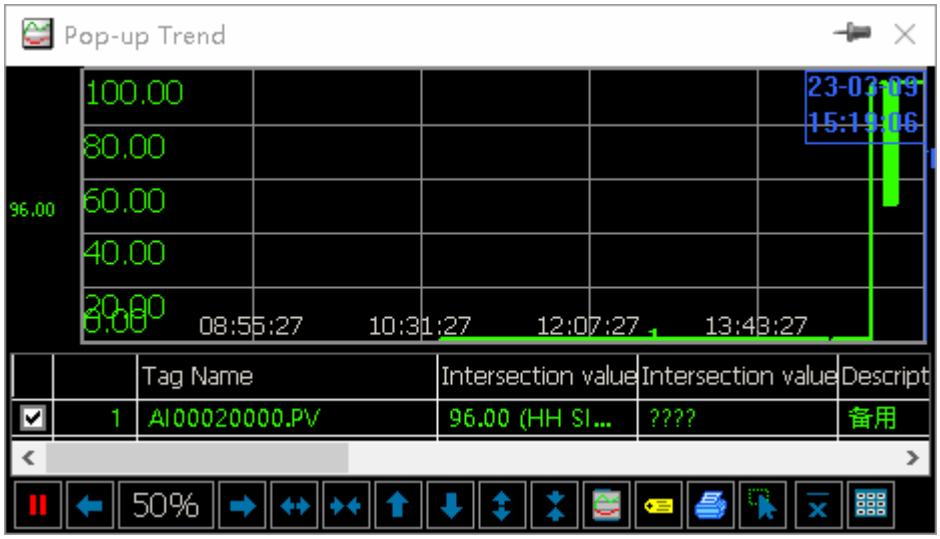



***Figure 2-3 Pop-up Trend***

**Attention:**

**Popup Trend setting has memory function. If it is set in Pop-up Trend (including Add /Delete Tag), the last setting remains after it is closed.**

### 2.2.3 Tuning Trend Window view

Select the tag whose Tuning Trend Window needs to be viewed; the Tuning Trend Window as shown in Figure 2-4 will pop up when selecting “Tuning Trend Window” in the right-click menu shown in Figure 2-2.

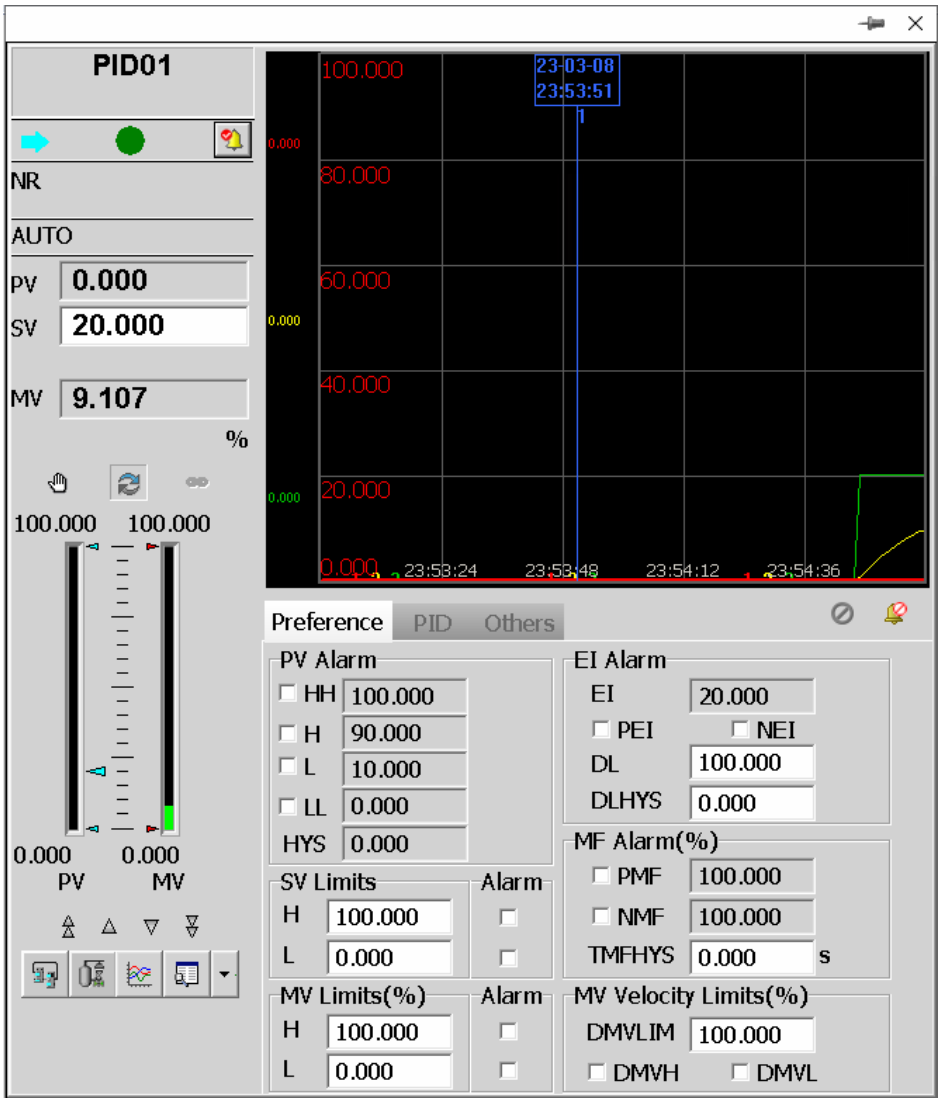



***Figure 2-4 Tuning trend window***

### 2.2.4 Alarm Window View

Select a tag, the alarm window shown as Figure 2-5 will pop up when selecting “View History Alarm” in the right-click menu shown in Figure 2-2.

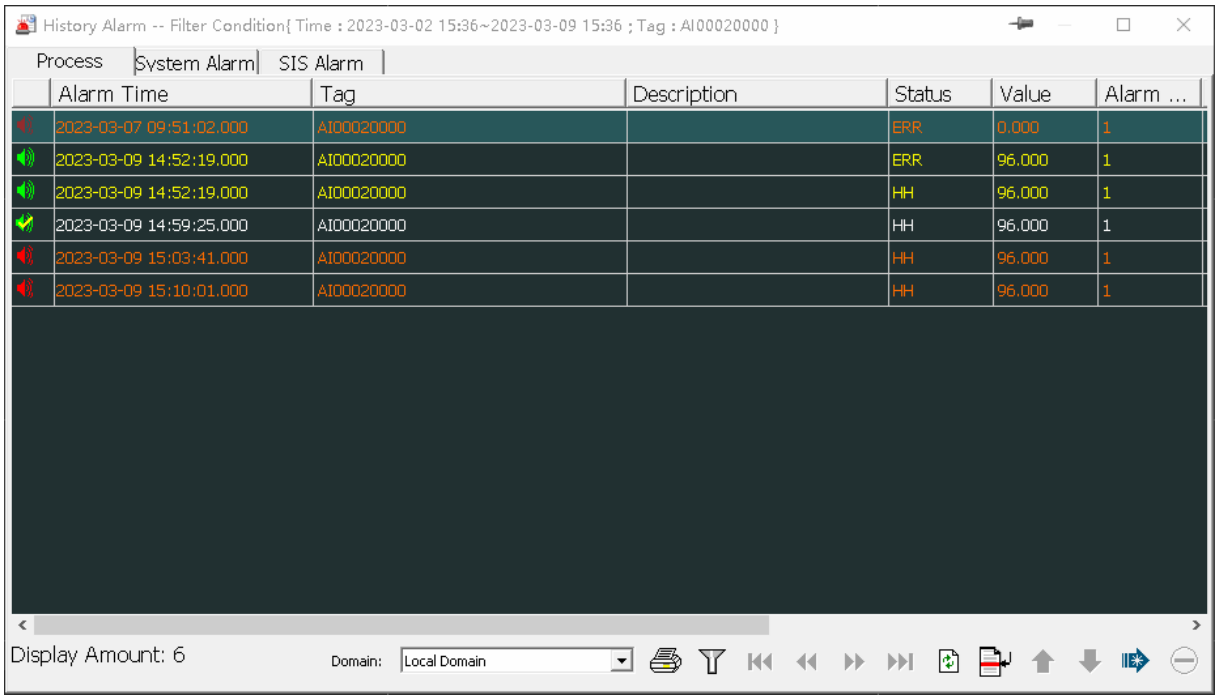



***Figure 2-5 Alarm Viewer window***

### 2.2.5 Assign “Data Link”

If user chooses “Direct Edit” for “Datalink” in graphics configuration after selecting certain “Datalink” in the supervision window, corresponding tag value can be modified directly and confirmed by Enter key (or right-click menu); if user chooses “Device Panel”, by clicking “Datalink” tag, the corresponding panel will pop up, and the tag can be assigned by the panel.

## 2.3 Tuning Parameter

During startup, operation, shutdown of system, operator is usually required to assign system initial parameter, loop set value, control switch, etc. to make sure that manufacturing process accords with techniques specification. Assignments are usually implemented in supervision window by mouse and operator’s keyboard. Assignments are mainly implemented by pop-up instrument panel and tuning window if authority is adequate. Tag (or function block) can also be assigned by setting customized key as evaluation key.

### 2.3.1 Tag query and Assignment

Click the Find tag icon on toolbar, tag finding toolbar will be displayed as shown below.

***Figure 2-6 Toolbar of Finding Tags***

Click . Select the tag to be found in popup tag selector or directly input the tag to be found in text box. Click the button behind to respectively view the instrument panel, the relative graphic, the relative trend diagram and tuning window of the tag.

### 2.3.2 Parameter Settings in Overview Window

Click the information block if it is configured with a tag, corresponding tag will be displayed in the edit box “current tag”, click the button and select panel or trend to set parameters in the pop-up instrument panel or trend window.

### 2.3.3 Parameter Settings in Tuning Group Window

Tuning group window is shown in Figure 2-7. For tags that can be written and read, they can be written when their status is operational.

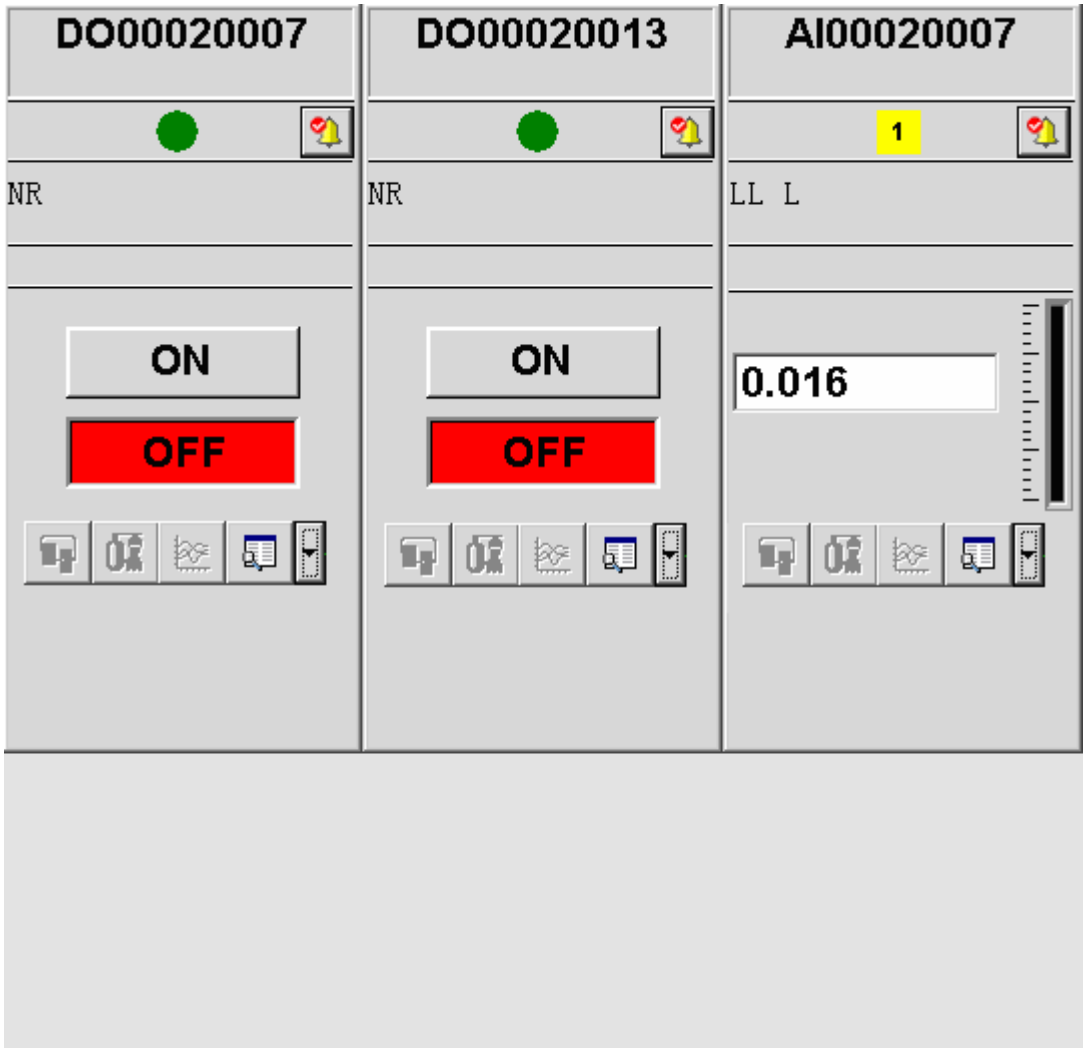



*Figure 2-7 Assignment in tuning group window*

### 2.3.4 Parameter Settings in Tuning Trend Window

Click the icon in panel to pop up tuning trend. The tuning trend of PID function block is shown

in Figure 2-8, and corresponding P, I, D and loop parameters can be set with adequate authority.

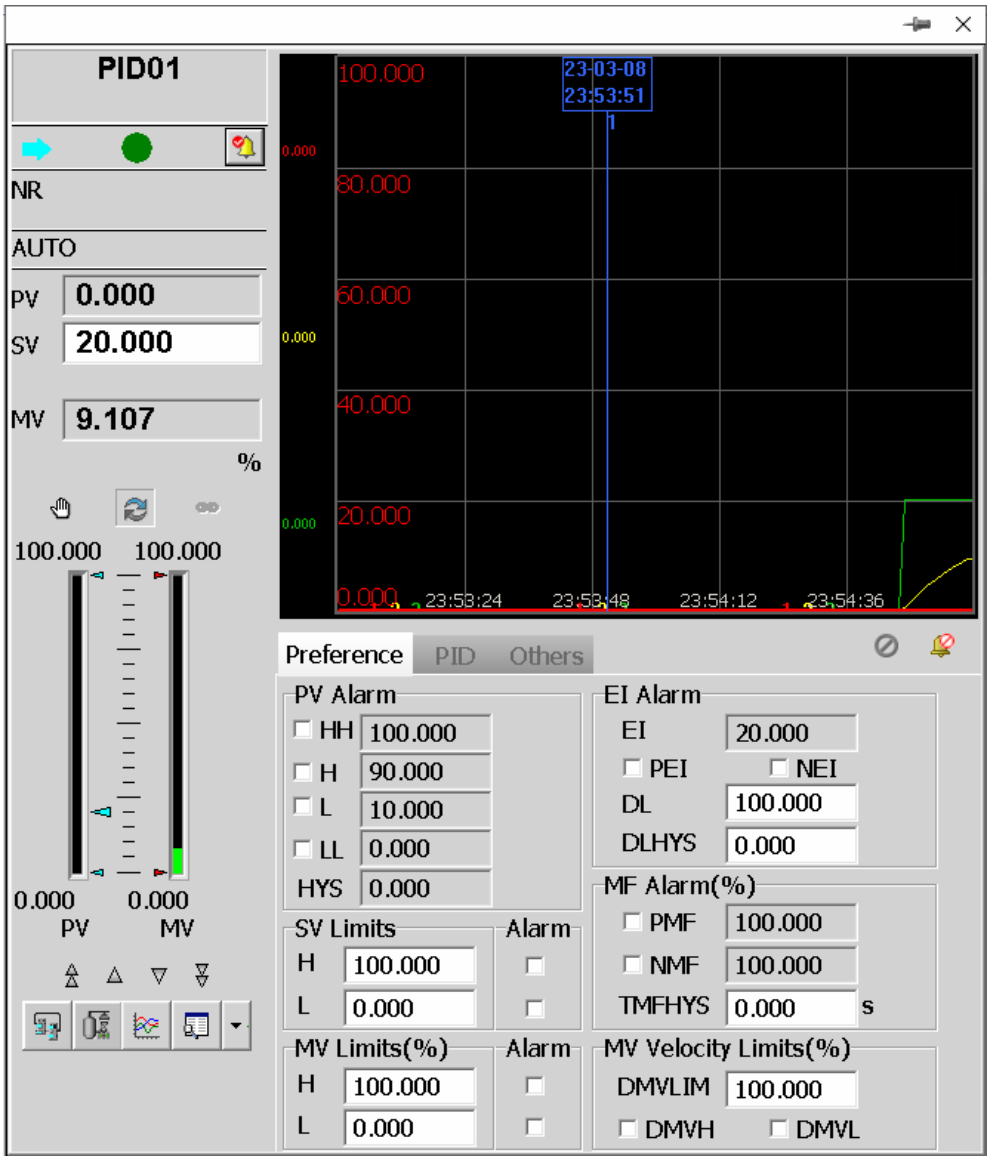



***Figure 2-8 Tuning Trend Window***

### 2.3.5 Assignment by Operator's Keyboard

Blank keys on operator's keyboard can be defined as assignment keys. Designated tag can be assigned by clicking assignment keys after supervision window is started.

### 2.3.6 Value Settings of Action in Graphics

In graphics, users can set the Action of the object as "Fast Increase/Decrease", as shown below, and click the object in the Supervision to set values for corresponding tag according to the configuration here.

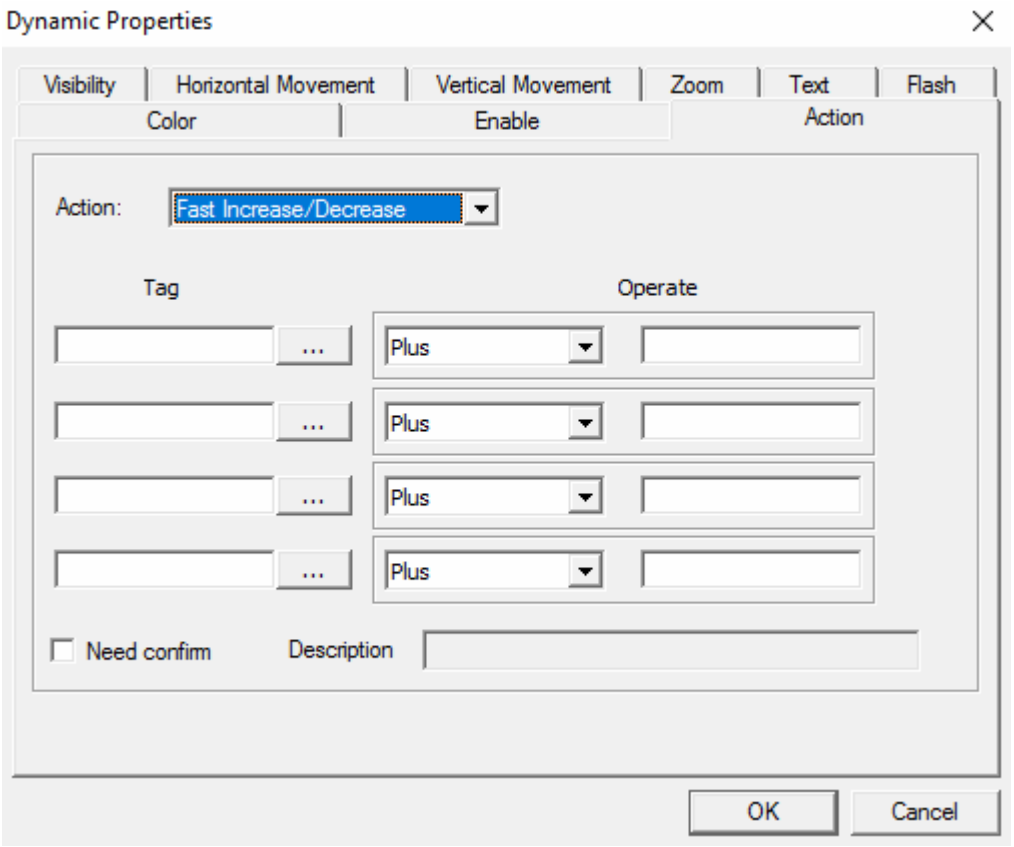



***Figure 2-9 Action settings of the object***

### 2.3.7 Confirmation of Important Tags

Important tag is defined as the tags under the tag that has been selected for “Need Confirm” in security setting node of system structure configuration software. Important tags should be confirmed when changing their value by instrument panel in supervision, for example, when the value of the tag is changed by the button on the monitoring panel, the confirmation dialog box will pop up, as shown in Figure 2-10.

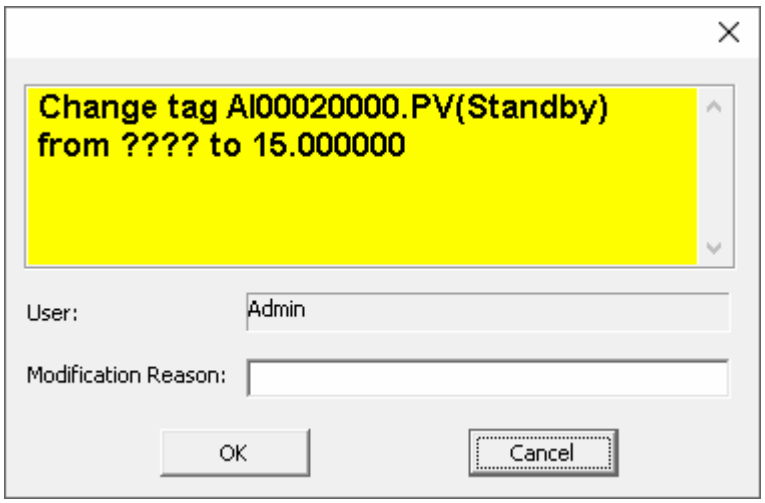



***Figure 2-10 Extend Confirmation***

Input the reason for operation, and users can change value after clicking “OK”.

Parameters listed in Table 2-1 must be confirmed when their values are changed by instrument panel in supervision no matter whether they are important tags or not.

***Table 2-1 Instruction of parameter confirmed***

| Function Block Name | Parameters Need to be Confirmed |
|---|---|
| INTERGRALX / DIO-01V / DIO-11M / DIO-11V / DIO-21M / DIO-21V | SWOOS / SWAM / AOF |
| DSET / DSET_EP / FXY / FXYEX / INTERGRAL / PVI / PVIEX / ASH / ASL / LEPID / PATCON / ACCUM_PI / ACCUM_SOE / PVDI / DI-2M / DI-2V / INTERLOCK / DSET_DI_EP / ISEL8 / SS8 / THRSEL / TWOSE / STP / MOTOR_FM / MOTOR_PT | SWOOS / AOF |
| EPID | SWOOS / SWSV / AOF / SWPN |
| FOUT | SWOOS / AOF / SWPN1 / SWPN2 / SWPN3 / SWPN4 / SWPN5 / SWPN6 / SWPN7 / SWPN8 |
| MANUAL | EMMAN / SWOOS / SWAM / AOF / SWFIX |
| MANUAL_EP | SWOOS / AM / MAN / AUTO / AOF |
| PD_SI / PI_AE / PI_PLS / PID / PIDTP / PIDEX | SWOOS / SWAM / SWSV / AOF / SWPN |
| PIDEP | SWOOS/AOF/SWPN |
| RATIO/DGAP/PFC | SWOOS/SWAM/SWSV/AOF |
| SPLIT | SWOOS / SWAM / SWSV / AOF / SWPN1 / SWPN2 |
| AI / DI | SWAM / SWOOS / SWSIM / AOF |
| AO / DO | SWAM / SWTR / SWOOS / AOF |
| BALANCE | SWTR1 / SWTR2 / SWOOS / AOF |
| MOTOR / VALVE | SWOOS / SWAM / AOF / SWFIX |
| THRSELX / TWOSELX | SWOOS / AOF / MODE |
| BALANCE8 | SWOOS / AOF / SWMODE / SWSV / SW21 / SW22 / SW41 / SW23 / SW24 / SW42 / SW8 |
| PID_TUN / SMITH / FLC | SWOOS / SWAM / SWSV / AOF / SWPN |

## 2.4 Acknowledge Alarm

### 2.4.1 Alarm Acknowledgement in Alarm List

In alarm list as shown below, through “Acknowledge” command in the right-click menu, the selected alarm can be acknowledged.

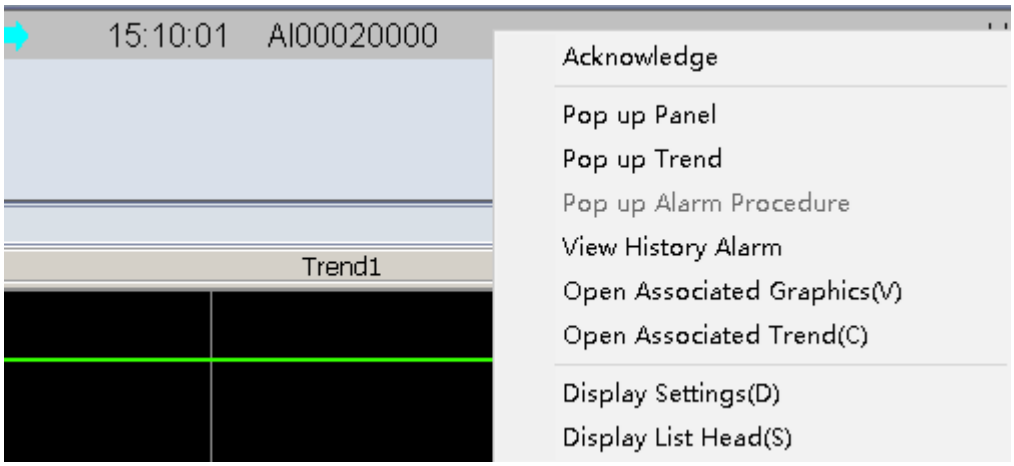



***Figure 2-11 Alarm acknowledgement button in alarm bar***

### 2.4.2 Acknowledge Alarm in Process Alarm List

Select an alarm in process alarm list and click button to acknowledge the alarm. Click button to acknowledge current alarm screen.

### 2.4.3 Acknowledge Alarm on Instrument Panel

Click the button on instrument panel, all alarms produced by this tag will be confirmed (displayed on instrument panel).

### 2.4.4 Acknowledge Alarm in System Alarm List

Select an alarm in system alarm list and click button to acknowledge the alarm. Click button to acknowledge all the alarms in current table.

### 2.4.5 Acknowledge Alarm in Graphics

Please refer to 2.2.1.

## 2.5 Trouble Shooting

Problem1: device can’t be operated.

Disposal prompt: please make sure the adequate operation authority, normal network and normal field device.

Problem2: data display ??????

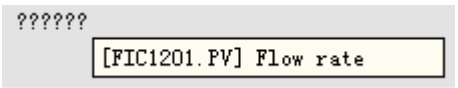



***Figure 2-12 Data display ??????***

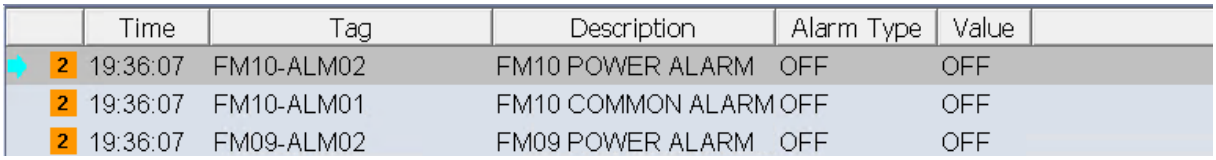
Disposal prompt: move the mouse to the tag, observe the tag description after the tag (This tag should be set to display prompts in graphics configuration). If the tag description is normal, it

indicates the controller communication is abnormal. Then it is suggested to check whether the tag has been downloaded to the controller, or whether the controller is normal (whether other tag data is normal). If tag description indicates that the tag doesn’t exist (data displays #####), then it is suggested to check whether the tag name in graphics is consistent with the tag name in control station configuration.

# Section 3 Alarm

## 3.1 Alarm List

The current alarm is displayed in alarm list according to the rules of alarm sequence configured in system structure configuration as shown below.



| | Time | Tag | Description | Alarm Type | Value |
|---|---|---|---|---|---|
| 2 | 19:36:07 | FM10-ALM02 | FM10 POWER ALARM | OFF | OFF |
| 2 | 19:36:07 | FM10-ALM01 | FM10 COMMON ALARM | OFF | OFF |
| 2 | 19:36:07 | FM09-ALM02 | FM09 POWER ALARM | OFF | OFF |

***Figure 3-1 Alarm List***

Right-click one of the buttons, and the right-click menu as shown in Figure 3-2 will pop up.

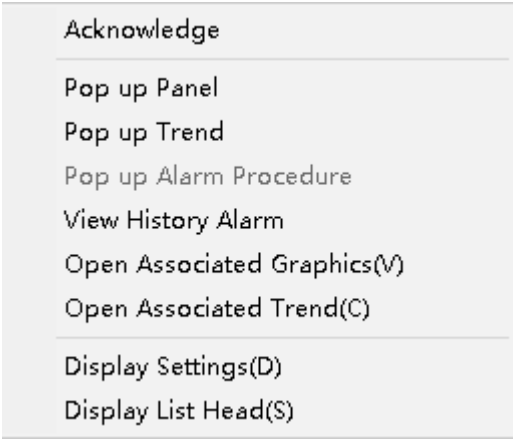



***Figure 3-2 Right-click menu of alarm button***

- Acknowledge: acknowledge this alarm.
- Pop-up Panel: Pop up tuning panel of the tag.
- Pop-up Trend: Pop up trend window of the tag.
- View History Alarm: Pop up history alarm list.
- Go to Associated Graphics: Open graphics related to the tag (it should be configured in supervision configuration software. Please refer to relevant introductions of tag associated graphics configuration in *Supervision Configuration Software Manual* for configuration method).
- Go to Associated Trend: Open trend window related to the tag (it should be configured in supervision configuration software, and please refer to relevant introductions of tag associated trend display configuration in *HMI Config Software User Manual* for configuration method).

- Display Settings is used to set the display property of alarm list, including background color, text color and selection color.
- Display List Header is used to set whether the table header will be displayed in alarm list.

## 3.2 Process Alarm List

**Attention:**

1. **Latching alarm (eliminated without acknowledgement) of process alarm displays in the bottom of process alarm list in green (even if the alarm flash is set, latching alarm will not flash), and the alarm disappears after acknowledgement (not shown in the list).**
2. **Enable latching alarm**

Click icon to pop up process alarm list shown in Figure 3-3. It displays all (process) alarms visible for current operation team, and the alarms are arranged in weighted priority.

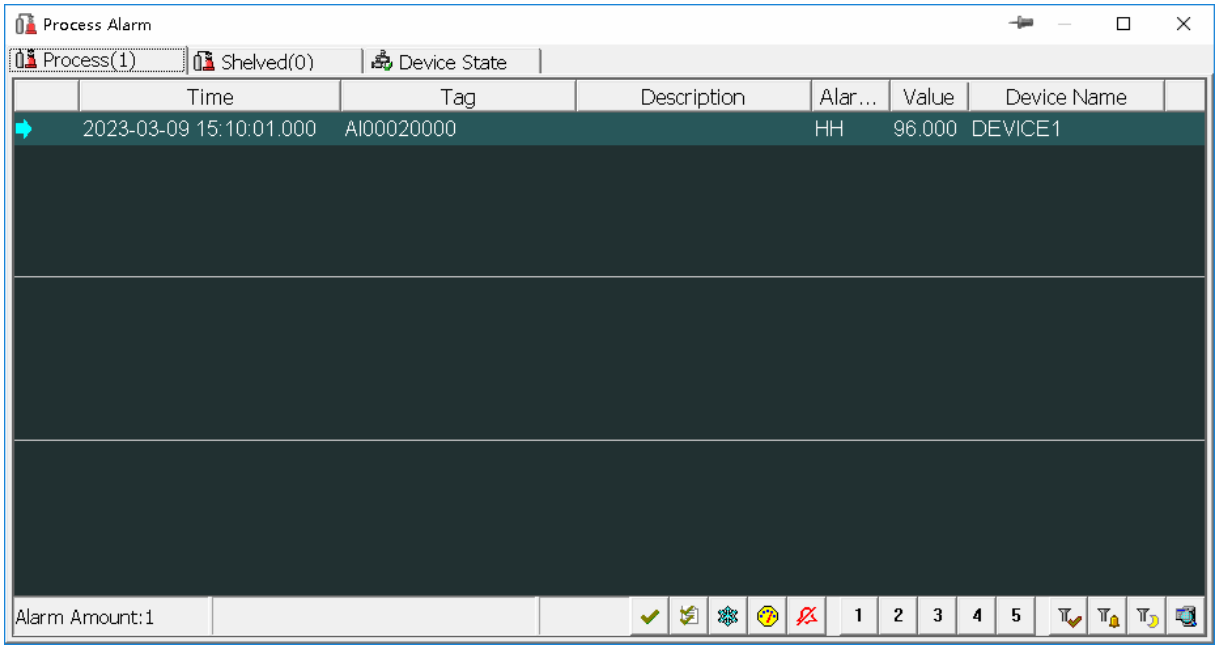



***Figure 3-3 Process alarm list***

- Acknowledge Selected Alarm: Select an alarm, click the button to acknowledge the alarm.
- Acknowledge Current List: Click the button to acknowledge all alarms displayed in process alarm list (If filtered then only filtered alarms can be acknowledged).
- Freeze: freeze process alarm list. Click the button and it will be in concave status,

thus the process alarm list is frozen. In frozen status, displayed alarms will no longer be updated; alarm won't blink; new alarm won't be displayed in the list.

**Attention:**

**Acknowledgement is not available after frozen process alarm list.**

- Pop-up Panel: Pop up instrument panel of alarm tag. Select one alarm, and then click this button to pop up instrument panel of the alarm tag.
- Alarm Shield: Click it to pop up the alarm shield dialog, as shown below, in which can shield the alarm of a reference domain. Alarm group can be shielded wholly, and shield alarms in sub-region. Alarm group can force shield by shielding tag and manually. The alarms in sub-region will not restore with the alarm group, but shield with the alarm region. After shielding the alarm group, the sub-region can still be shield or restored.

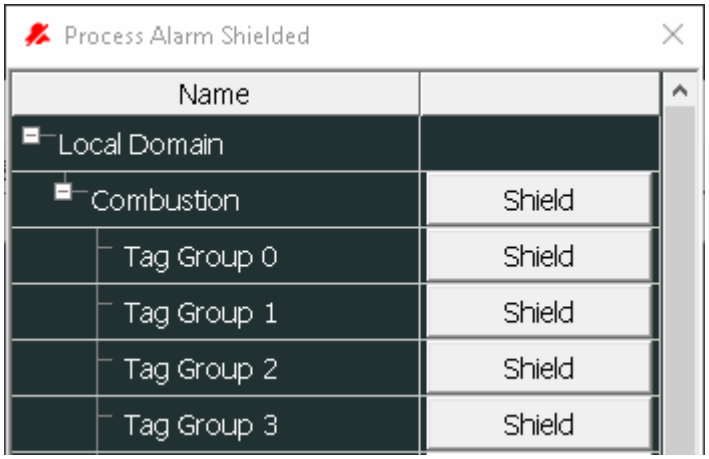



***Figure 3-4 Process alarm shield interface***

**Attention:**

- **System alarm shield can only shield the control station alarm in local project, but not the system alarm in reference domain.**
- **When alarm shield button is, there are currently no shielded alarms. When alarm shield button is, there are currently shielded alarms.**

- Alarm Filter: Click this button to pop up dialog box of alarm filtering condition setting, as shown in Figure 3-5. The alarm filter provides a further filtration based on alarm region, and the filtration conditions including range and type can be modified at any time during operation. Range includes all ranges (all alarms that currently accord with alarm region can be filtered out), tag (all alarms of the tag currently accord with alarm region can be filtered out), priority (all alarms of this priority level currently accord with alarm region can be filtered out, priority level of 0~31 can be chosen). Type includes all types (process alarms of all types), I/O alarm (including alarms of tag's high limit, low limit, etc.), operator station alarm (alarms of high limit and low limit of operator station tag, etc.) and function block alarm. Besides, the background

color of process alarm and alarm flash can be set in the interface.

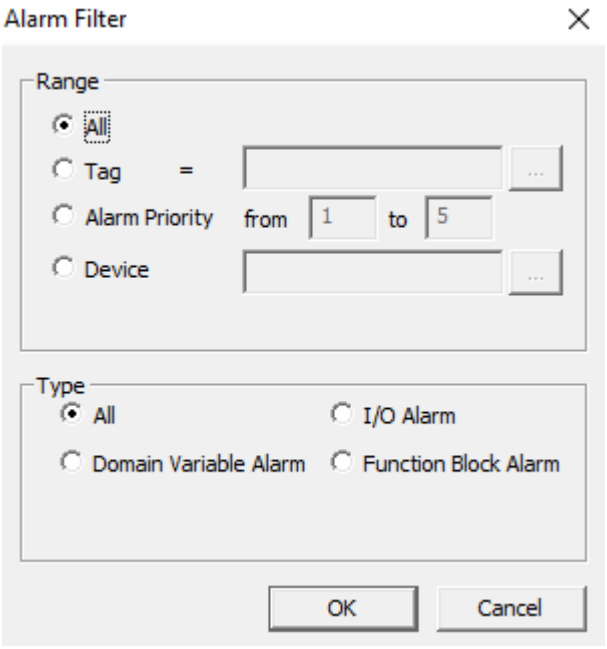



***Figure 3-5 Alarm filter***

- Right-Click mouse in process alarm list to pop up right-click menu as shown Figure 3-6. The functions of acknowledgement a single alarm, acknowledge current list, pop-up panel are same as that of corresponding function buttons. “Refresh” is used to refresh process alarm list in frozen status. Please refer to introductions of right-click menu function items of buttons in 3.1 for functions of other items.

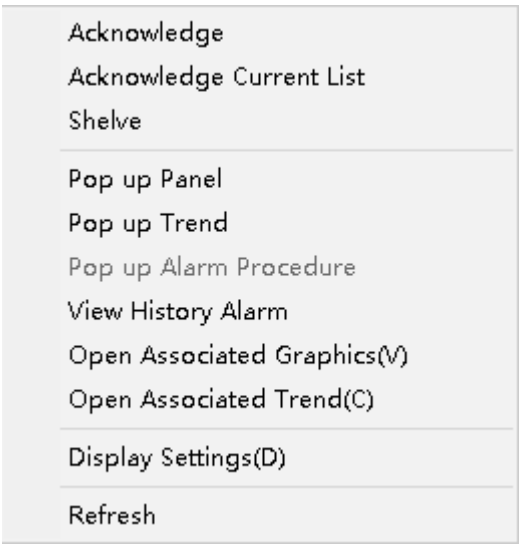



***Figure 3-6 Right-click menu of process alarm list***

**Tip:**

**The icon in the top right corner of process alarm list is used to decide whether to close the pop-up process alarm list during supervision page turning. When the icon is in status, process alarm list won't be closed when turning; when the icon is in status, process alarm list will be closed when turning. appears elsewhere have the same function.**

## 3.3 System Alarm List

**Attention:**

**Latching alarm (eliminated without acknowledgement) of process alarm displays in the bottom of process alarm list in green (even if the alarm flash is set, Latching alarm will not flash), and the alarm disappears after acknowledgement (not shown in the list).**

**Enable latching alarm**

Click icon to pop up system alarm list as shown Figure 3-7.

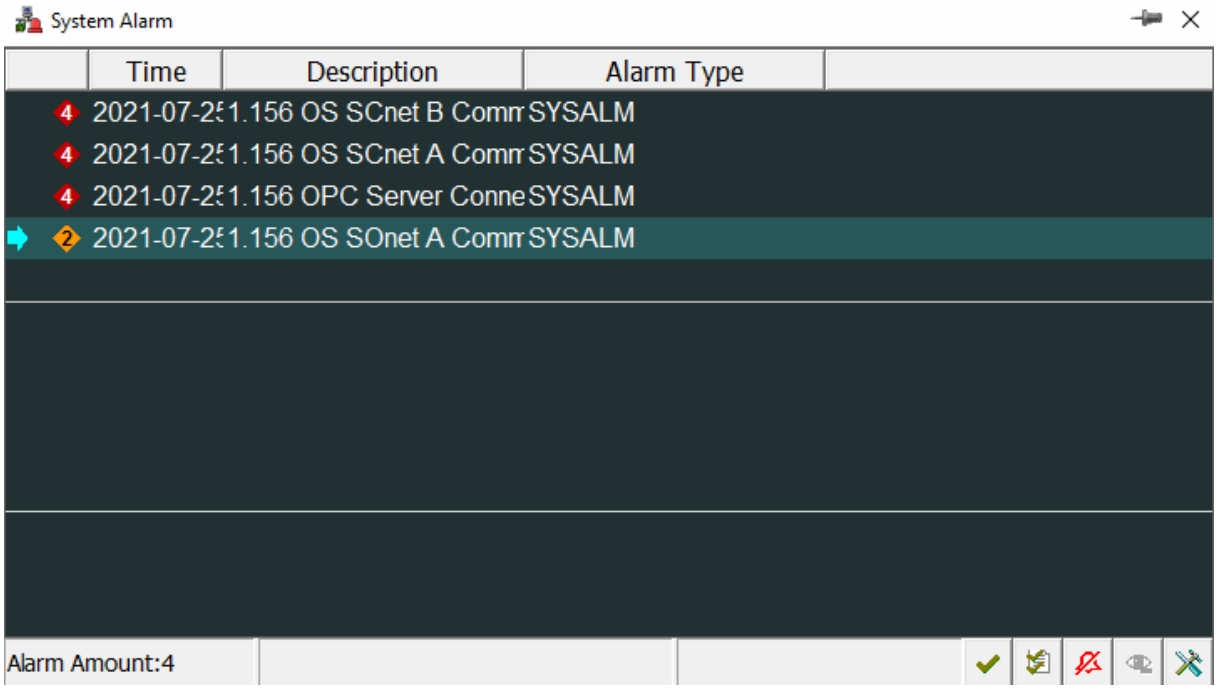



***Figure 3-7 System alarm list***

- Acknowledge Selected Alarm: Acknowledge selected alarm. Select certain alarm and click the button to acknowledge the alarm.
- Acknowledge Current List: Acknowledge alarms in current list. Click the button and

all alarms displayed in system alarm list will be acknowledged.

- Alarm Shield: Click it to pop up the alarm shield dialog, in which can shield the alarm of a reference domain. Please refer to the alarm shield settings for process alarm.
- Alarm Display Settings: Click it to pop up the alarm display dialog, in which can display the alarm of a reference domain.
- Open System Status: Open the system status window.

Right click in the system alarm list, the right-click menu will pop up. The right-click menu contains “Acknowledge single alarm”, “Acknowledge current screen”, “Refresh” and “View history alarm”. “Acknowledge current screen” and the corresponding button have the same function. System alarm list can be refreshed by “Refresh”. History alarm list can be viewed by “View history alarm”.

**Tip:**

**The icon will flash in red when there is system alarm.**

**The specific information of alarm in system alarm list can be viewed in system status.**

## 3.4 History Alarm List

In the dropdown list of real-time monitoring software’s toolbar, select “History Alarm”. The history alarm list will be popped up as shown in Figure 3-8, which displays the history alarm of process alarm, system alarm and FF alarm.

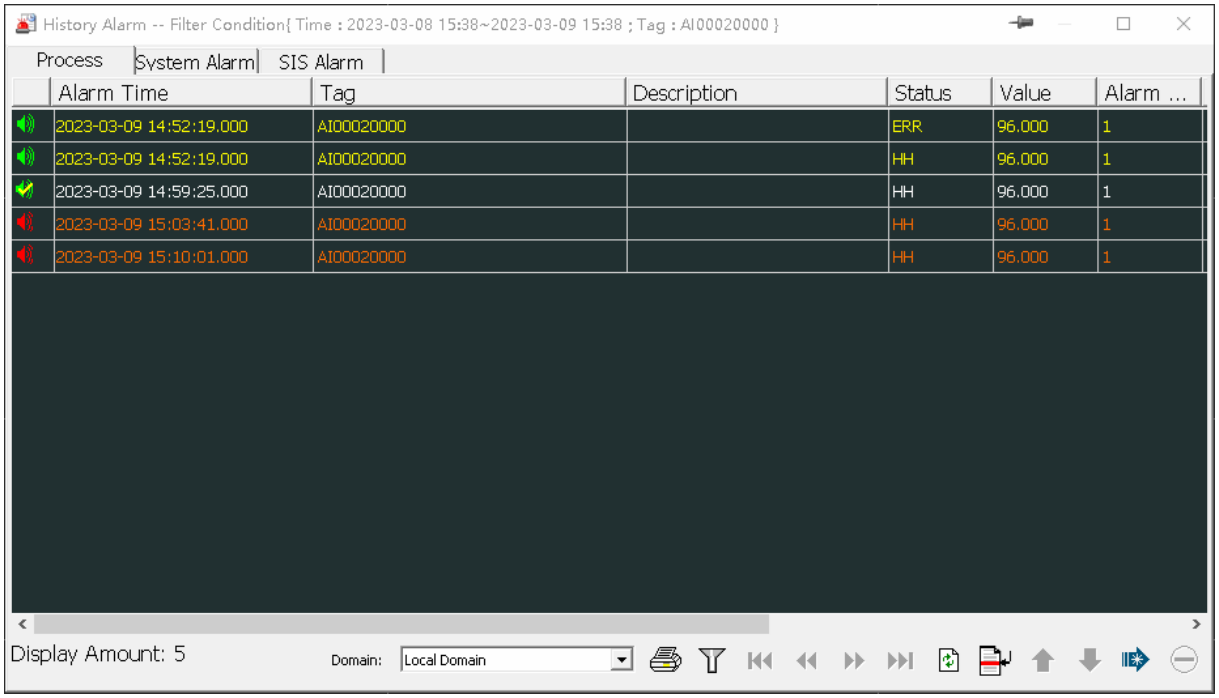


***Figure 3-8 History alarm list***

### 3.4.1 Instructions for Parameters of History Alarm List

- Acknowledged/ eliminated status display item (no mark): It is used to mark the acknowledged and eliminated status of alarms.

  - Not eliminated or unacknowledged:
  - Eliminated but unacknowledged:
  - Not eliminated but acknowledged:
  - Eliminated and acknowledged:

  The statuses of acknowledged/eliminated are also distinguished by color.

  - Not eliminated or unacknowledged: Orange
  - Eliminated but unacknowledged: Yellow
  - Not eliminated but acknowledged: Green
  - Eliminated and acknowledged: White

- Alarm time: Time when the alarm occurred.
- Tag: Name of the alarming tag.
- Tag Description: Descriptions of the tag.
- Status: Describe the alarm type (HH limit alarm, etc.) of the alarming tag.
- Priority: Display priority (0~31) of the alarm.
- ACK Time: Display the time of acknowledging the alarm .
- Eliminate Time: Display the time of eliminating the alarm.
- Alarm Group: Display alarm group that the tag belongs to.

### 3.4.2 Instructions to Buttons in History Alarm List

***Table 3-1 Function button list***

| Function name | Button icon | Descriptions |
|---|---|---|
| Print | | Print the history alarm of current page |
| Filter | | Filter the alarm and view alarm subset that accords with special conditions |
| First Page | | Turn to the first page of filtered alarms |
| Previous page | | Turn to previous page |
| Next page | | Turn to next page |
| Last page | | Turn to the last page of filtered alarms |
| Update | | Refresh current page |
| Locate | | Find alarm record that accords with conditions in current filtration range |

| Function name | Button icon | Descriptions |
|---|---|---|
| Previous One | | Locate forward |
| Next One | | Locate backward |
| Turn to the latest | | Turn to latest (According with current filter conditions except time condition) |
| Stop | | Stop searching |

### Print

It is used to print alarm information on current page. If the printer is correctly configured in **System information/ Option/ Print option/ Printer configuration**, then click function icon to pop up prompt “print page: X, rows printed in each page: M, print or not?”, select “Yes” to print alarm of current page; if the printer is not correctly configured, then printer configuration interface will pop up, click “Yes” after printer is configured. Then the abovementioned prompt will pop up, select “Yes” to print alarms on current page.

**Tip:**
**A4 horizontal printing is the standard, the paper with the width greater than horizontal A4 is preferred.**

### Filter

It is used to filter alarms according to specific conditions (alarm time, tag name, priority range, etc.) so that only alarms in accordance with filtration conditions can be displayed in history alarm list.

Click function button to pop up the dialog box of alarm filter, as shown in Figure 3-9.

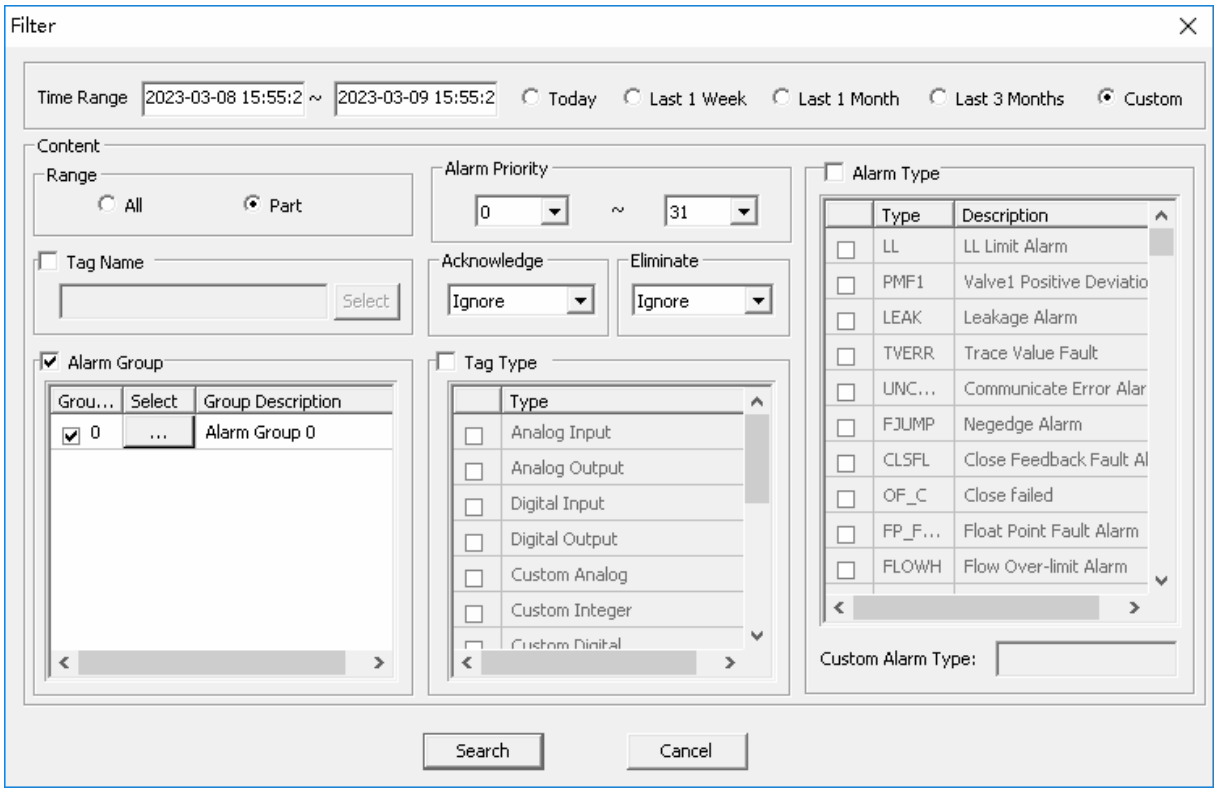



***Figure 3-9 Alarm filter (Process alarm)***

### Filter conditions of alarm

- Time Range (optional): Set the time range for alarm filter, and start time should be earlier than end time. History alarm list will filter and display alarms with alarm time lie in the set range after clicking “Search” button. Prompts will pop up when the alarm time span is too long. The shortcut mode of time setting is also available for users.
  - Today: Time range is from 00:00:00 to 23:59:59 of today.
  - Recent 1 week: Time range is the recent week.
  - Recent 1 month: Time range is the recent month.
  - Recent 3 months: Time range is the recent three months.
  - Custom: Define time range by user.

**Tip:**

**Alarm time range should be between year 1970 and 2038. Considering the alarm filter speed, time span of alarm filter is suggested to be shorter than 3 months.**

- Range: Search all or part of alarm information. When choosing “All”, all alarms that are filtered by time condition will be displayed. When choosing “Part”, alarms can be displayed according to tag name, alarm type, alarm priority, alarm acknowledgement and elimination, alarm group or tag type. All ordinary alarms that are filtered by time condition

(also according with alarm region) will be displayed if none of other alarm conditions is set.

**Tip:**

**When filter condition is “All” at history alarm client, history alarms of all groups and regions will be displayed (i.e., not limited to alarm region configuration of current operation group), in other situations, the alarm region configuration of current operation group should be considered.**

- Tag Name (optional): When the option of “range” is “part”, tag name can be chosen, select “tag name” to filter tag by name, and “select” button can be clicked to pop up “tag selector”. Select the required tag name and the tag name will be displayed in the input box on the left of “select” button. Browser will filter all alarms with this tag name.
- Alarm Priority: 0~31 alarm priorities for filtration. The value of start priority should be lower than that of end priority, for example, when start priority is 10, end priority should be larger than or equal to 10 and less than or equal to 31. History alarm list will display all alarms whose priorities lie in the set range after clicking “Search”.
- Tag Type (optional): List all tag types. Select one or several tag types and alarms can be filtered accordingly.
- Alarm Type (optional): List all possible alarms of all types of tags. Select one or several alarm types and alarms can be filtered accordingly.
- Acknowledge and Eliminate: Select acknowledged or eliminated status of alarms. It is neglected by default, users can choose from eliminated/ not eliminated and acknowledged/ not acknowledged. Browser will filter alarms accordingly after clicking “Search”.
- Alarm Group (optional): According to alarm groups set in configuration, each alarm group has 32 alarm region at most, click  to pop up dialog box as shown in Figure 3-10, and select alarm areas to be filtered.

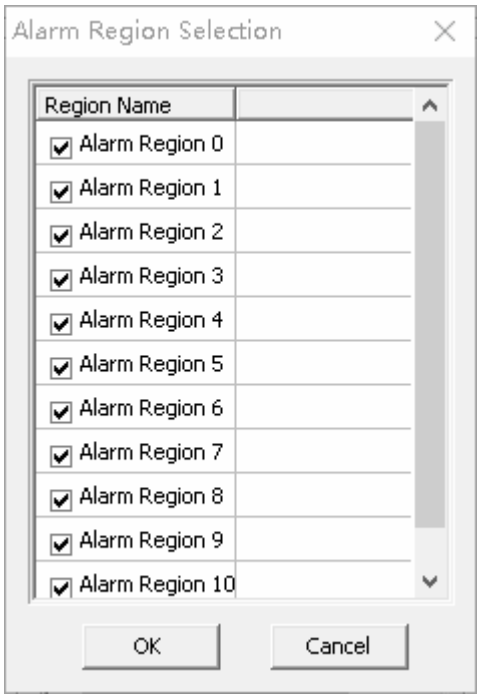



***Figure 3-10 Select box of Alarm region***

**Tip:**

**Alarm groups and alarm regions listed here accord with alarm groups and regions selected in alarm region of current operation group. (History alarm off-line browse can filter all alarm groups and regions)**

Click the “Region Name” list header of alarm group selection box or “Group Number”, “Select” and “Group Description” list header of alarm group in filter setting interface to pop up pull- down menu shown as follows, choose “Select All” and all options in current list will be selected, choose “Clear” and all options will be cancelled.

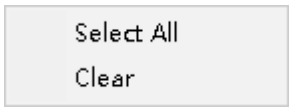



***Figure 3-11 Rapid menu of list***

The only filter condition of system alarm for history alarm is time. Dialog box of filter is shown in Figure 3-12.

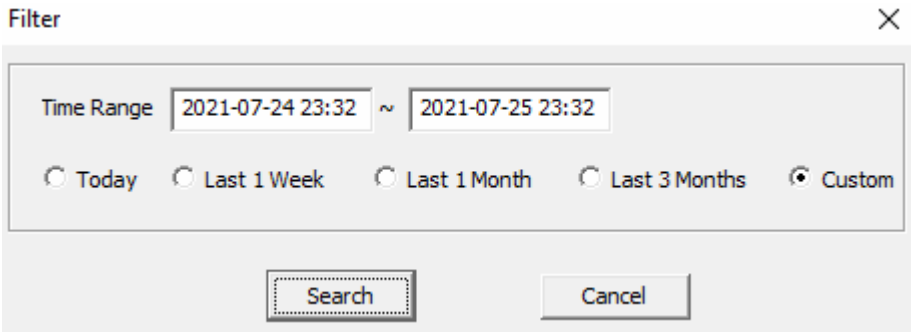



***Figure 3-12 History alarm filter (system alarm)***

### First page/ Last page

Users can click / button to turn to the first or last page of alarm records after history alarm is filtered.

### Previous/ Next page

The history alarm display alarms of limited numbers on each page, the default maximal alarm number that can be displayed in current interface is 50, click / button to view alarm records on previous or next page under current filter condition. The button won't be available if alarm records are inadequate after last operation.

### Locate

History alarm control provides tag location function based on filtration conditions, i.e. find the nearest record (backward) in accordance with location conditions.

If time is a filtration condition, the time range in location is same as time range of filtration; if tag name is a filter condition, the tag name will be the tag in "locate by tag" by default and can't be modified. The direction of location can also be set to locate forward/ backward the next record that accords with filtration conditions.

Click function button to pop up dialog box of location settings as shown in Figure 3-13.

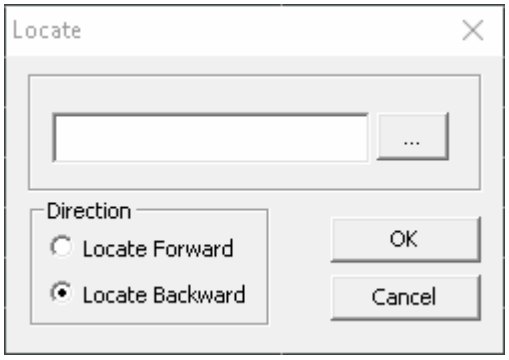



***Figure 3-13 Dialog box "Locate"***

### Previous/ Next one

click function button / to find forward/ backward alarm records that accord with current conditions from current location, which is similar to “locate forward” and “locate backward” in location function.

**Turn to the latest**

Click function button to view the latest record pages in recent three months according to current filtration conditions except time.

**Stop**

Click function button to stop query operation when locating, filtering or turning. The button is only available when query instruction is running.

**Select Operation Domain**

Alias of local domain or reference domain will be shown in the drop-down menu of operation domain. After selecting the specified operation domain, the alarm information of specified operation domain will be shown in the alarm list.

## 3.5 Status Table

Click button and the real-time status list shown in Figure 3-14 will pop up. Status list displays tags that are in force status, OOS status, fault Safety, fault recovery, AOK status, FLICK status, OVERRANGE status. Both real-time and history status can be viewed. Tags of different status are displayed on corresponding pages of status list.

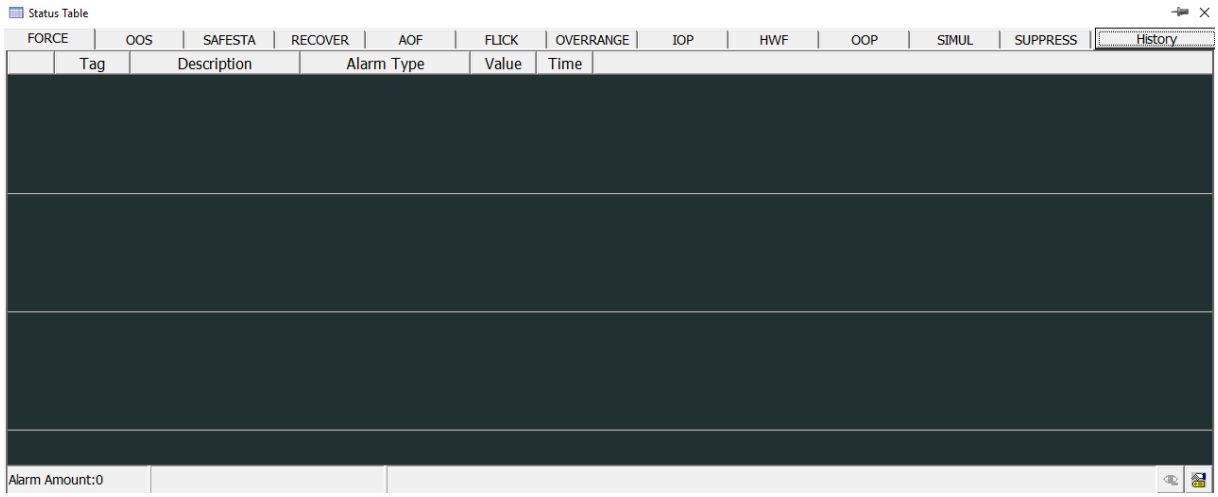



***Figure 3-14 Status list (real-time status)***

The switch button of force, OOS, fault safety, fault recovery, AOF, FLICK, OVERRANGE and SIMULATION, and switch button are the same between real-time and history status.

### 3.5.1 1 Real-time Status

In real-time status, content displayed are as follows:

- Tag: name of tag that in this status.
- Description: descriptions of tag that in this status.
- Status: status appeared.
- Value: value of the tag when this status appears.
- Time: time when this status appears.

In real-time status, right-click certain status record to pop up the right-click menu, and the refresh function is used to read corresponding status again; please refer to corresponding introductions of function items of right-click menu of buttons in 3.1 “Alarm display” for function of other items.

In real-time status, batch operation function is available for force list, OOS list and fault recovery list. Click the button in the bottom right corner of real-time status list to open batch operation window when there are tags in force, OOS or fault recovery status, as shown in Figure 3-15.

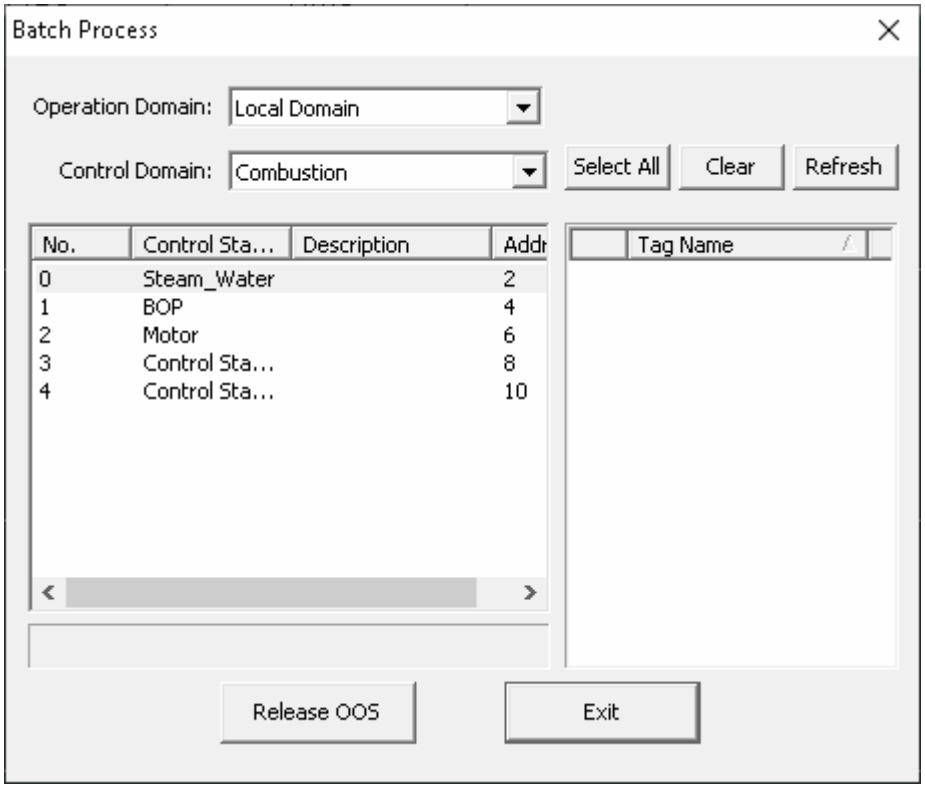



***Figure 3-15 Window “batch operation”***

Select the name of control station for batch operation, all tags that can be operated will be listed in “Tag Name” list on the right, and tags can be released from force status (release from OOS or fault recovery) by clicking “Release Force” button. Operations of select all or select none of tags can be achieved by “Select All” and “Clear” button, or by clicking the “Tag Name” list header and selecting

“Select All” and “Clear” in the pop-up menu shown in Figure 3-16.

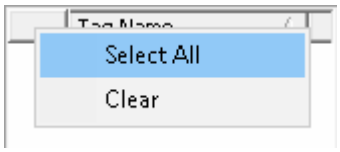



***Figure 3-16 Select all, clear menu***

### 3.5.2 History Status

Click switch button of real-time/history to switch to history status, as shown in Figure 3-17.

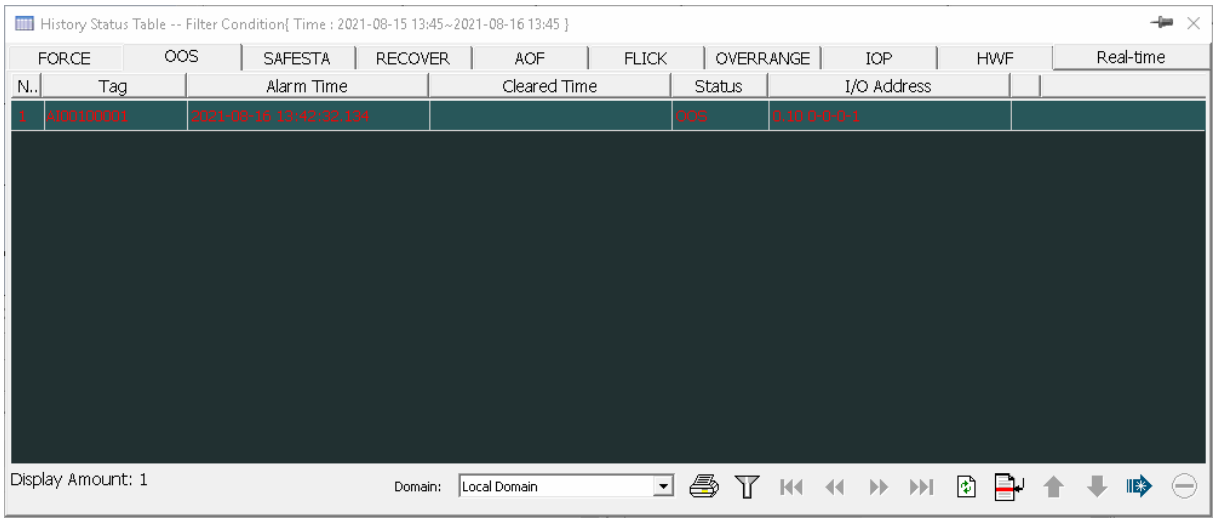



***Figure 3-17 Status list (history status)***

**Tip:**

**The switch between force list, OOS list, fault safety list, fault recovery list, AOF list, FLICK list and OVERRANGE list is still available after switched to history status.**

Contents displayed in history status are as follows:

- ID: serial number of each alarm, which is assigned automatically by system.
- Tag Name: name of tag in this status.
- Alarm Time: time when the status appears.
- Eliminate Time: time when eliminating the status.
- Status: status appeared.
- I/O Address: display the I/O information (module address, channel address, etc.) of tag in this status.

**Tip:**

**When I/O address displays -1- -1- -1- -1, it means that the tag is non-I/O tag.**

## 3.6 Alarm Panel

In the dropdown list of real-time monitoring software's toolbar, select "Alarm Panel". The alarm panel shown in Figure 3-18 will be popped up. Buttons on the panel are associated with graphics, tags or alarm groups according to configuration. If alarm occurs in tag group (DATALINK in graphics) associated with button on alarm panel in supervision, the button will flash to indicate acknowledged or not, and the color will indicate eliminated or not.

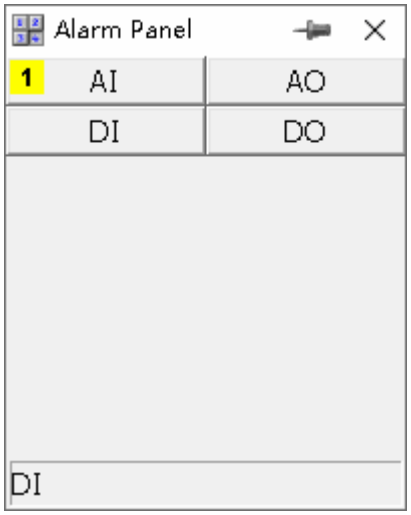



***Figure 3-18 Alarm panel***

**Tip:**

**Alarm panel should be configured in supervision configuration software, please refer to relevant content in Supervision Configuration Software Manual for specific instructions of configuration.**

### 3.6.1 Associate Alarm Panel Buttons with Alarm Regions

When alarm panel buttons are associated with alarm regions, the button will prompt alarm (flash in red) once there's any alarm occurred to tag of this group. Click the button and the alarm list of the alarm region will pop up, as shown in figure below.

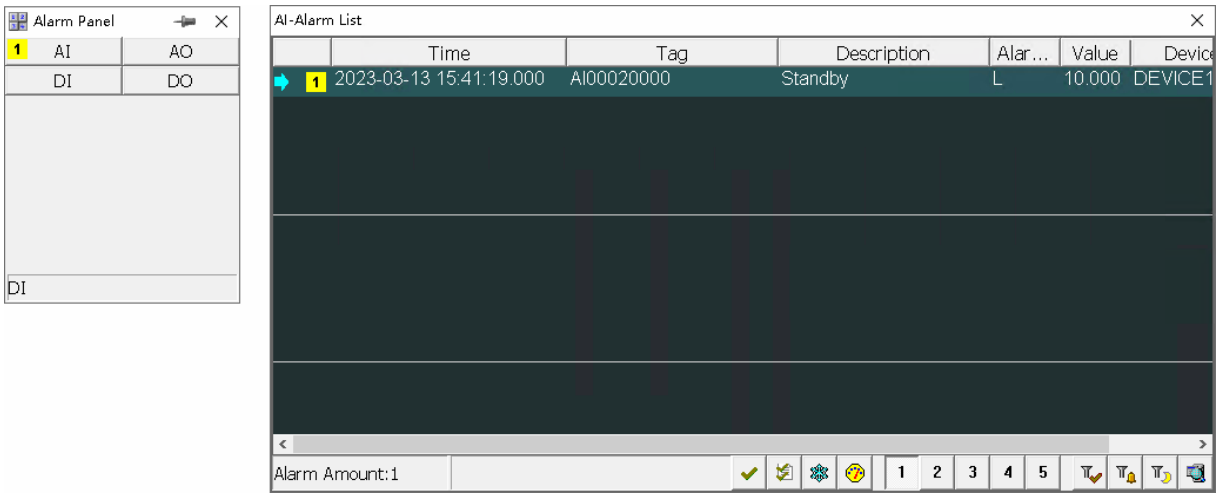



***Figure 3-19 Alarm list of alarm region***

Alarms listed on alarm list of alarm region are alarms occurred to tags in the alarm region. The content of the alarm list includes Acknowledgement, Time, Tag, Description, Status, Value and Priority, which is similar to that of process alarm list. Acknowledge single alarm, acknowledge current screen, freeze, pop up instrument, alarm filter and only display high priority provided by alarm list of alarm region are the same as that of process alarm list. Please refer to corresponding content in 3.2 for usage of function buttons.

### 3.6.2 Associate Alarm Panel Button with Graphics

When buttons on alarm panel are associated with graphics, the name of graphics will be displayed on the panel, and the button will prompt alarm once any tag (DATALINK) in graphics alarms. Click the button and the graphics interface will pop up. Right-click the alarming DATALINK to pop up right-click menu, as shown in Figure 3-20, select “Alarm Acknowledge” and the alarm produced in this tag can be acknowledged.

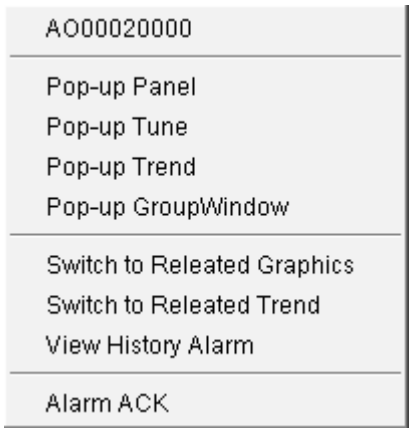



***Figure 3-20 Right-click menu of DATALINK***

### 3.6.3 Associated with Several Tags

When alarm panel buttons are associated with several tags, it means a regroup of alarms. The button will prompt alarm once any tag alarms in the group. Click the button and tag alarm list of the tag group will pop up. Tag alarm list is similar to tag alarm list of alarm region, and button functions

provided by tag alarm list are same as that of alarm list of alarm region. Please refer to relevant content in 3.2for introductions of function buttons.

## 3.7 Alarm Silence

Click the button to mute the alarm. In supervision, alarms can be accompanied by alarming sound if alarming sound is configured. If several alarms (all configured with alarming sound) occur at the same time, the sound of alarm with the highest weighted priority (acknowledge>alarm priority>alarm time>alarm error>tag name>alarm type) will ring. When the alarm with highest weighted priority is eliminated, the sound of alarm with highest weighted priority among the rest will ring. At this time, all alarms that already occurred will be silent if click the button “Alarm Silence”. And only when new alarm occurs next moment will the sound of alarm ring again.

**Tip:**

**Only one type of alarm sound can ring at one time. Another (alarm with highest weighted priority among the rest) will ring only when the current alarm is eliminated.**

## 3.8 Operation Guide

Click the button, pop up operation guide list as shown in

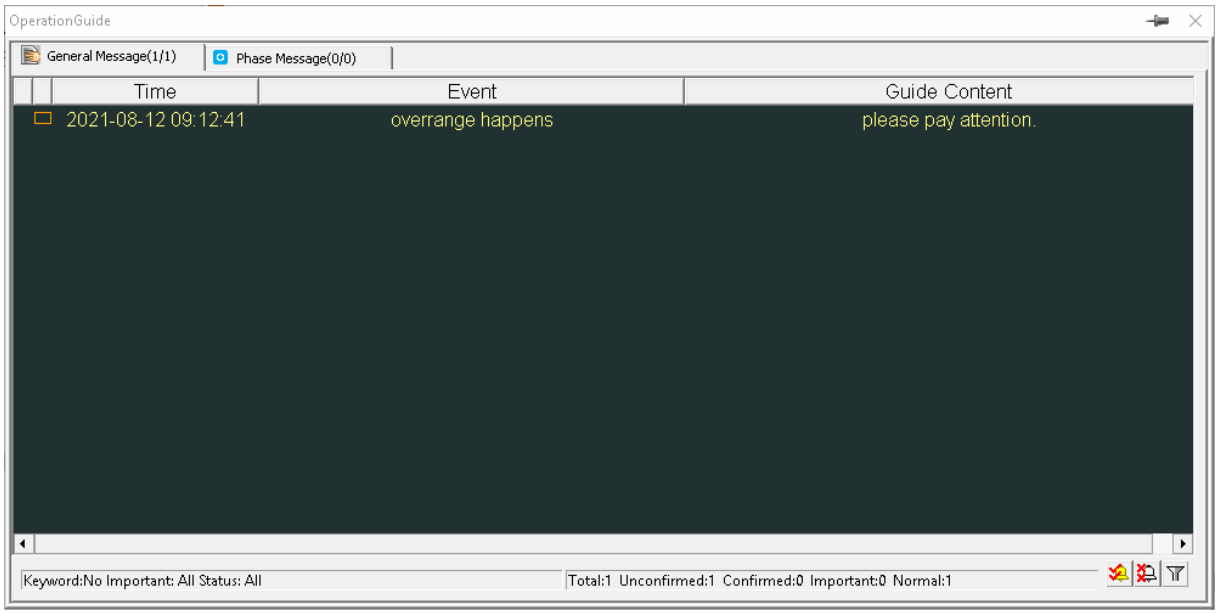



Figure 3-21, and operation guide information occurred will be displayed.

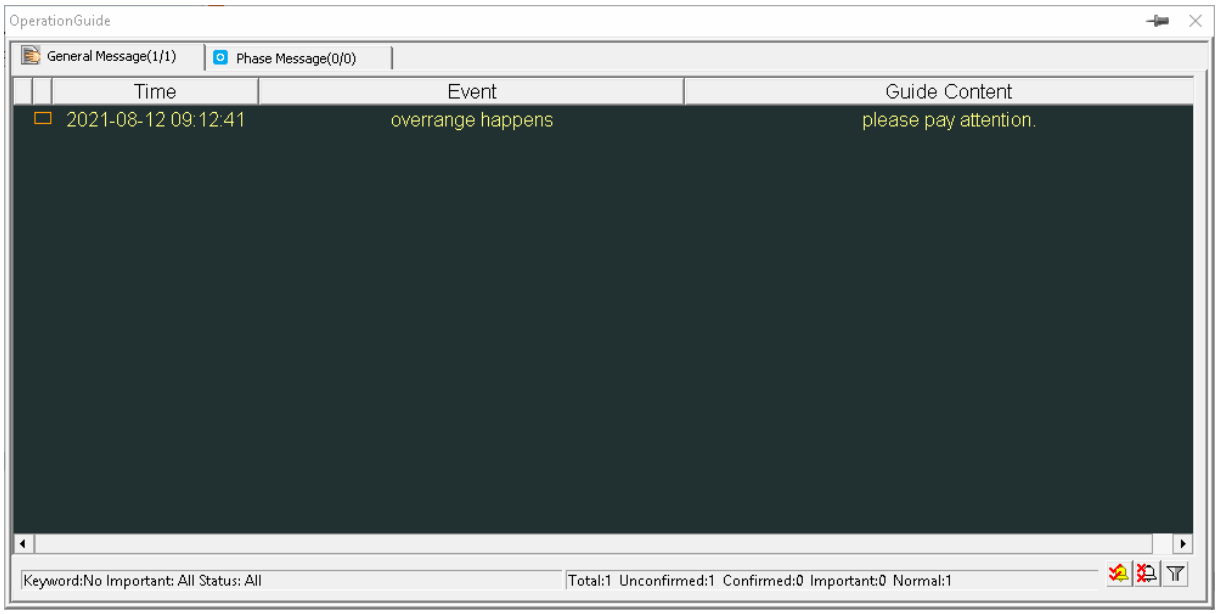



***Figure 3-21 Operation guide***

- : Confirm all the operation guide information currently displayed.
- : Delete all the operation guide information currently displayed that has been confirmed.
- : Filter settings.

Click the button, pop up dialog box of “Filter Settings”, as shown in Figure 3-22.

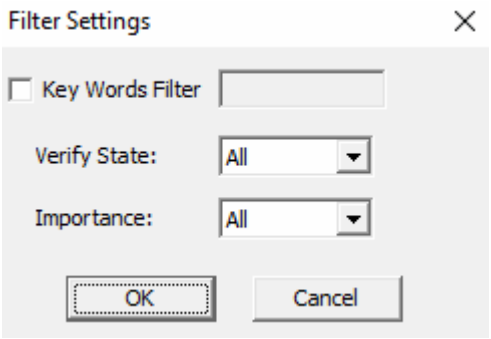



***Figure 3-22 Dialog box of filter settings***

- Key words: Words and sentences in the “event” text can be used as key words (no more than 16 characters). Wildcards are not supported.
- Verify State: ”All, Confirmed, Not Confirmed” three options are included.
- Importance: "All, Normal, Important" three options are included.

The relationship of “Key words” ” Verify State” and “Importance” is logical AND.

- Information displayed in status bar.
- Current filter setting condition.

- The amount of operation guide information in the list currently displayed. Operation guide information filtered is not included if the filter is configured.

**Tips:**

- **When operation guide information occurs, in alarm bar will flash red.**
- **If operation group is switched, operation guide information will be deleted. It will not be restored when it is switched to the original operation group again. A new piece of operation guide information occurs as long as the event trigger condition is still met.**
- **50 pieces of operation guide information can be saved at most. When reaching 50, the earliest confirmed will be deleted. And not a new piece of operation guide information will be displayed if there are no confirmed ones.**
- **Online publish is supported. New operation guide information occurs according to new configuration after online publishing. The original operation guide information still remains and is displayed in the operation guide list.**

## 3.9 Alarm Procedure

High-performanceHMI system provides procedure file to process alarm of tag. Procedure file can define items such as generation reason, operation suggestion and possible result of tag alarm.

Procedure file of alarm can be open in VFLaunch only after importing procedure file by tag alarm in VFHMICfg. Alarm with procedure file will be marked by in VFLaunch.

Procedure file can be open by right-clicking in alarm bar and alarm list, as shown below.

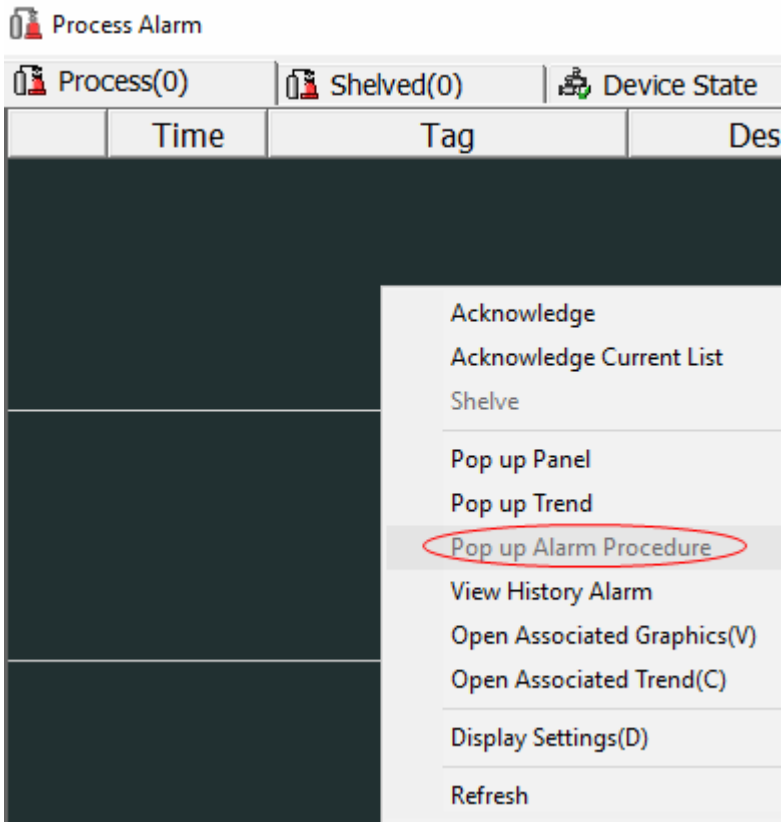



***Figure 3-23 Open alarm procedure in "Process Alarm"***

Select "Pop up Alarm Procedure" to pop up "Alarm Procedure" as shown below.

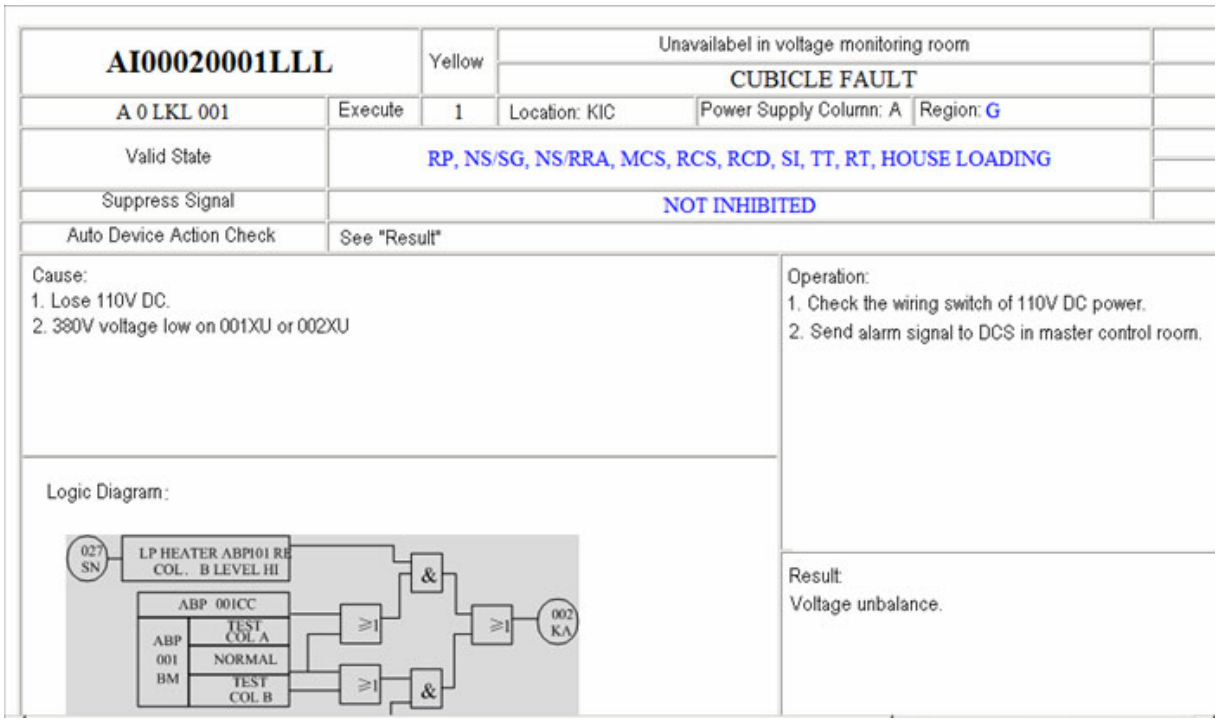



***Figure 3-24 Open alarm procedure in "Process Alarm"***

## 3.10 Shelve Alarm

Operator can shelve alarm temporarily to avoid nuisance via alarm shelve. The shelved alarm will be restored automatically when reaching the shelve time.

Only after configuring alarm shelving conditions in VFHMICfg, user can shelve alarm for tag or tag group in VFLaunch.

Alarm can be shelved by right-clicking in alarm list and alarm bar of VFLaunch, as shown below.

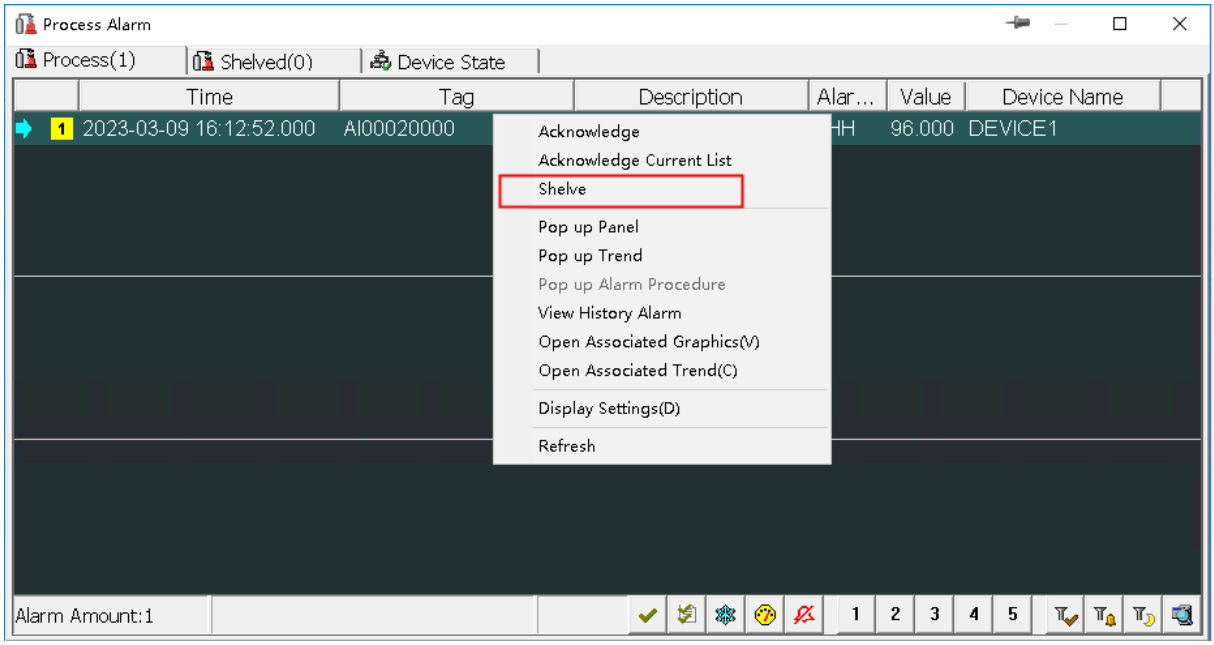



***Figure 3-25 Shelve alarm in "Pop-up Alarm"***

Alarm will be displayed in "Shelve Alarm", as shown below.

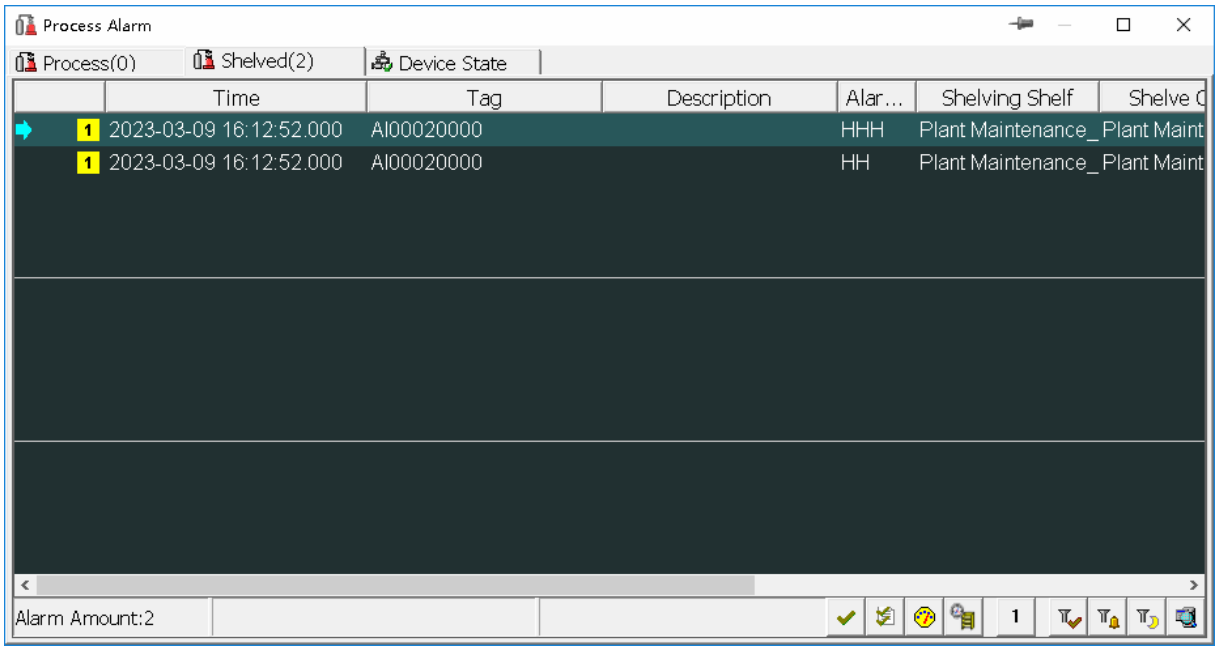



***Figure 3-26 Shelve alarm***

# Section 4 Trend

## 4.1 Functions of Trend Control

The main window will display trend window when clicking trend icon on the toolbar. According to configuration information and techniques operation, trend interface records data with certain time interval, updates history trend interface dynamically and displays data that time axis points to. Trend window with a 1*1 layout is shown as Figure 4-1.

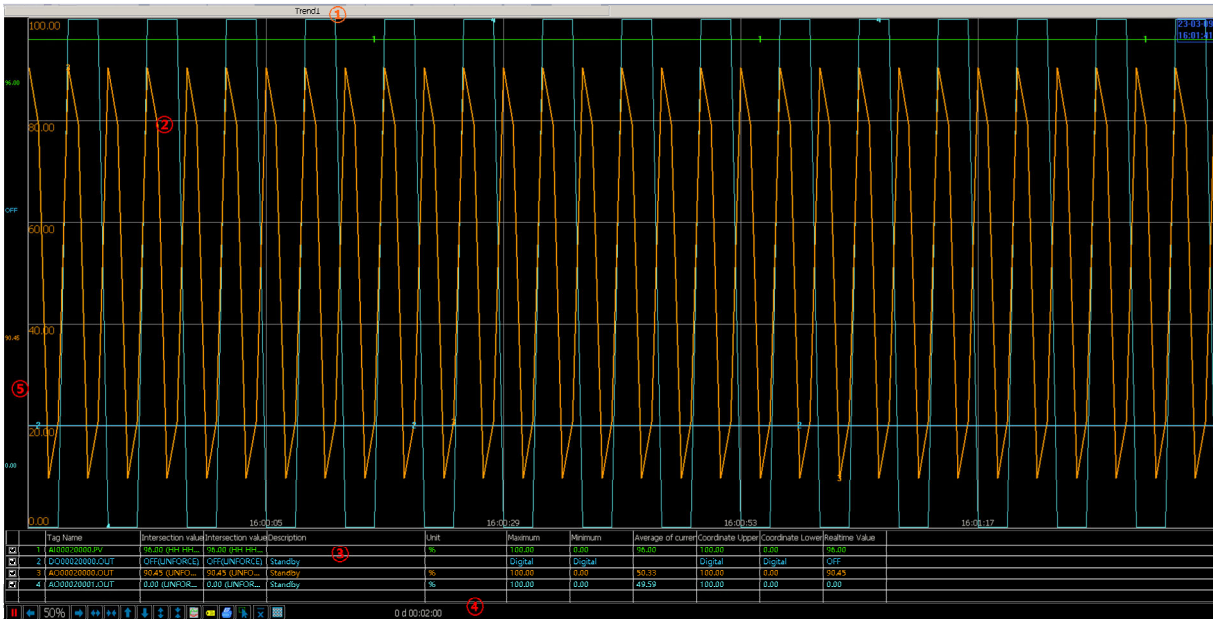



***Figure 4-1 Trend interface***

① Trend name, such as:

“Trend 0” and “Save Trend”

“Free Trend”, “Trend Settings”, “Read Trend” and “Save Trend”.

② Trend Page

Trend page supports two display modes:

Normal mode, trend curve is drawn from the right to the left of the screen, the real-time value of the latest tag is displayed on the rightmost.

Left to right mode, trend is divided at 1/2 of the screen, On the left is the history trend and on the right is the real-time trend. After the curve on the right side fills the screen, the whole window shifts to the left by 1/2 and restarts the trend.

Besides, when “Show trend line tag info” is enabled in the system structure configuration, real-time value, name and unit of the tag are displayed on the vertical line, as shown in the figure above.

③ The tag list shows the tag's name, description, intersection value, unit, limit and so on. And the local tag's name is shown as "Tag name.Fields" and the reference tag's is shown as "Reference domain.Tag name.Fields".

④ Toolbar of trend window, for the detailed description please refer to Operation Toolbar of Trend Window.

⑤ Crossing point domain, it displays the tag real-time value of the crossing point of current cursor and the curves.

### 4.1.1 Extended Trend and Return Interface

If the layout of trend window is multi-view mode, users can extend one of the trend interfaces to occupy the whole window in supervision, making it convenient for users to analyze relevant trend, and the multi-view status can be recovered by return command.

The option menu shown in Figure 4-2 will pop up when click the title of trend page in multi-view trend diagram.

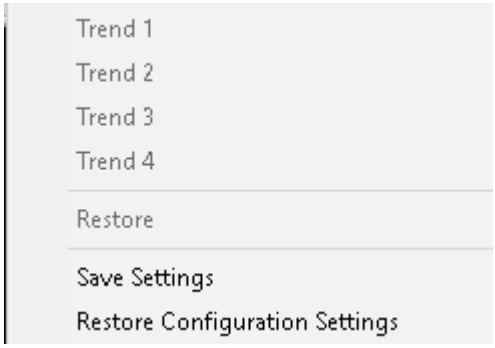



***Figure 4-2 Option menu of page title***

Extend one of the trend diagrams by selecting command option.

In this case, menu item of “Restore” is valid and original interface can be restored by this option.

Operators can set the high and low limit of tag coordinate in displayed trend window, then current settings can be saved by selecting the menu item of “Save Settings”, and window will be displayed in accordance with saved settings when loading the page next time. If “Save Settings” is not selected, it will return to original default settings when loading the trend window next time.

If user needs to return to the original settings after the trend window is modified, user can choose “Restore Configuration Settings” command. Trend window will return to original configuration settings by this command.

## 4.2 Manage State

State refers to common work scene in field, such as startup, running and shut-down, etc.

Operation like switching mode can be performed for state in real-time monitoring after defining contents such as key equipment, tag, state and alarm in VFHMICfg.

After configured state in VFHMICfg, the device state and alarm operation can be viewed in VFLaunch. Click in alarm bar or click page in process alarm list to pop up the device state list below.

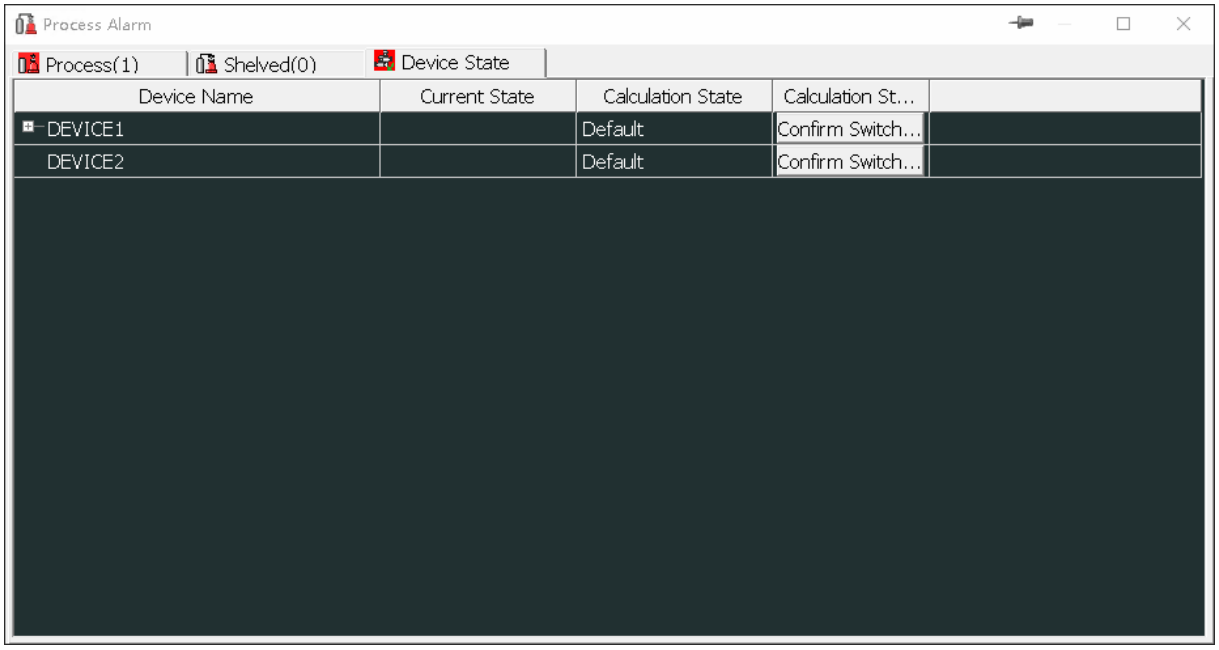



***Figure 4-3 Manage State***

### 4.2.1 Tag Information Bar

Cancel the "√"in front of a tag name in tag information bar, the corresponding curve will not be displayed. The color of letter below selection box represents the color of trend curve of this tag.

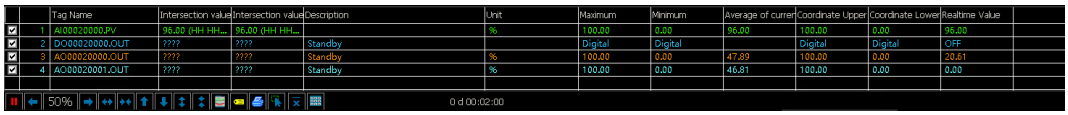



***Figure 4-4 Tag information bar***

Clicking a tag in tag information bar and this tag will be selected as current tag, its information will be shown as below:

- Tag curve in trend is bold.
- Arrow will be shown before information bar, and the text will be bold.
- Color of tag information is same with that in trend.
- Crossing point is in the value of vertical coordinate of the tag curve in trend.

Interface jump function can be achieved by the right-click menu command in tag information bar, which including go to graphics window, go to trend window, pop-up trend and pop-up panel. Tag associated graphics window and tag associated trend display need to be configured for "Go to Graphics" and "Go to Trend Display". Right-click menu is shown as Figure 4-5.

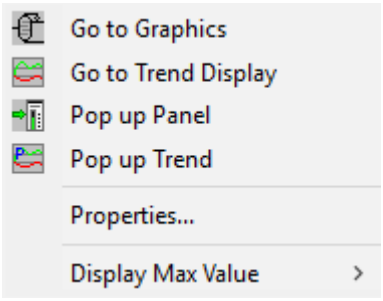



***Figure 4-5 Right-click menu of Jump***

Trend panel or instrument panel corresponding with current tag (or designated tag) will pop up by "Pop-up Trend" and "Pop-up Panel", as shown in the figure below.

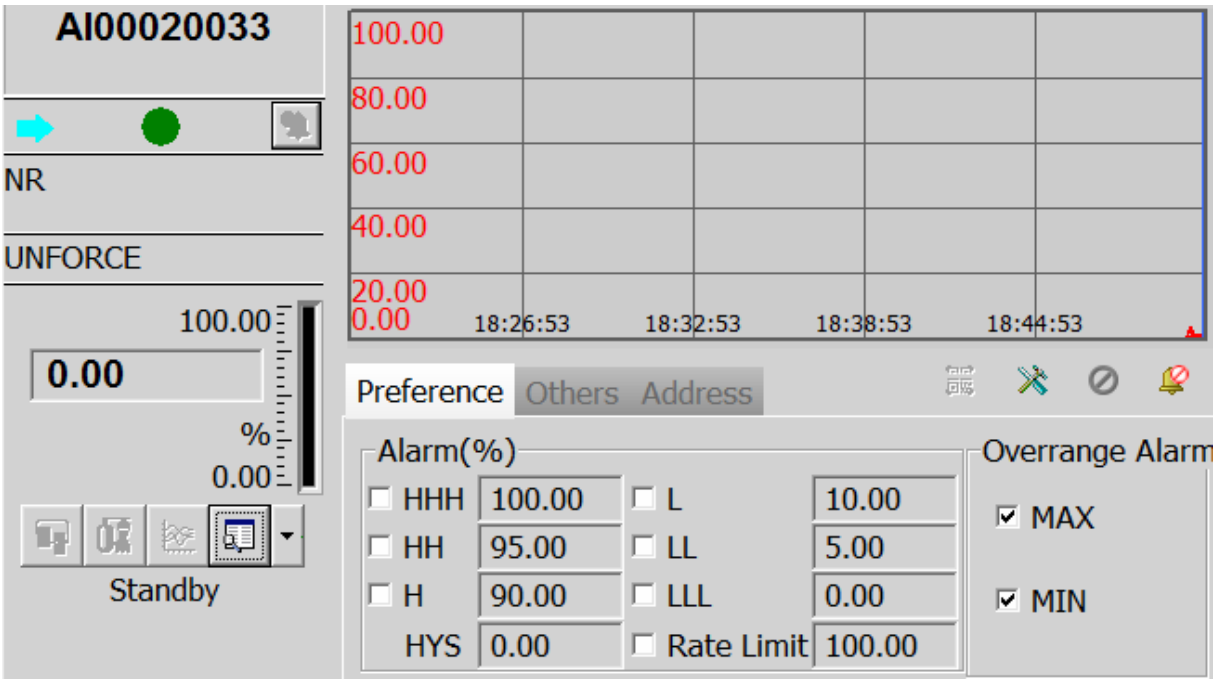



***Figure 4-6 Pop-up trend and panel(left is panel, right is trend)***

The instrument panel of the tag will pop up when double clicking the name of the tag on tag information bar.

Panel shown in Figure 4-7 will pop up when selecting “Properties” in menu shown in Figure 4-5. Then the color, high and low limit of the tag coordinate in the interface can be set.

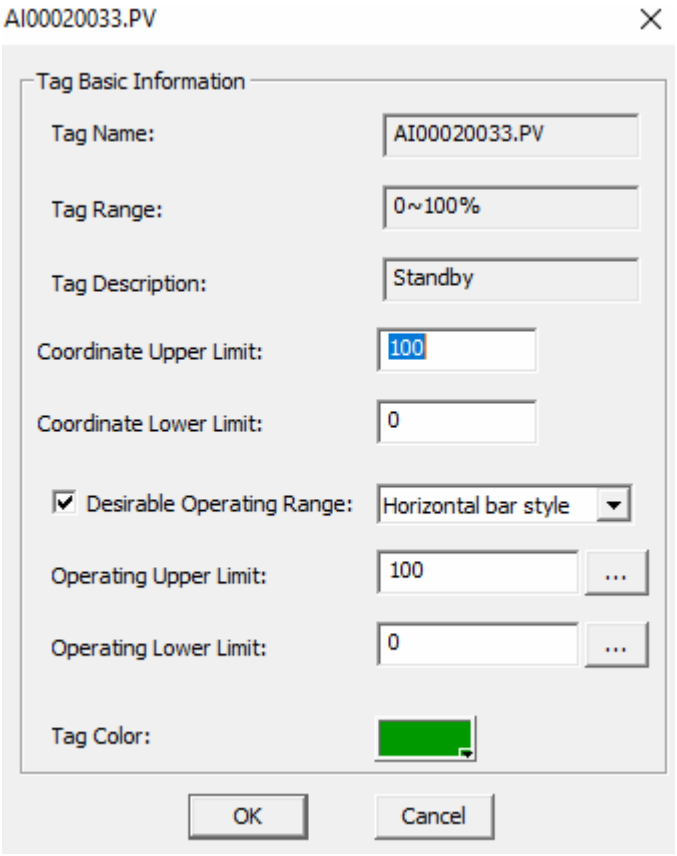



***Figure 4-7 Properties panel of trend tag***

### 4.2.2 Operation Toolbar of Trend Window

The operation toolbar of trend widow is shown in Figure .

***Figure 4-8 Toolbar of trend window***

**Status switch button**

Click this button, the trend window will be in static status and button icon becomes, making it convenient for users to view trend curve, and it will return to real-time status after click it again.

**Left paging/ right paging button**

It is used to display previous or next trend window.

**Paging coefficient**


Click

to pop up menu including three options of 20%, 50% and 100%, which is used to set the percentage of the page that can be turned each time.

### Zoom out and zoom in button

It is used to increase and decrease the data points recorded in interface. The more data points are, the denser the trend curve is.

### Shift up or down all trend lines

It is used to shift the trend lines up or down, each time by 20% .

### Zoom out or zoom in single trend line

Select trend line in trend list and click the control to zoom out or zoom in the selected trend line.

### Shift up or down single trend line

In trend interface, when mouse selecting the curve, you can shift up or down the selected trend line.

### Trend settings button

Click it to pop up the "Trend Settings" dialog box, and trend layouts, time settings, value coordinate settings and curve settings can be configured in the dialog box.

- Trend Layout

  Options including display curve label (label on each curve corresponding with that on tag information bar to distinguish curves in black & white print status), toolbar, value coordinate, time coordinate and tag information, etc. can be set.

  If the "Display Position" is configured as "List", the tag's value will be shown in the format of list at the bottom as shown as figure below.

| | | Tag Name | Description | Point of intersection Valu | Unit | Maximum | Minimum | |
|---|---|---|---|---|---|---|---|---|
| ☑ | A | A000020000.OUT | Standby | 87.619 (OUTH) | % | 100.00 | 0.00 | |
| ☑ | B | A000020001.OUT | Standby | 78.302 (OUTH) | % | 100.00 | 0.00 | |
| ☑ | C | A000020002.OUT | Standby | 67.224 (OUTH) | % | 100.00 | 0.00 | |
| ☑ | D | A000020003.OUT | Standby | 55.075 | % | 100.00 | 0.00 | |
| ☑ | E | A000020004.OUT | Standby | 42.611 | % | 100.00 | 0.00 | |
| ☑ | F | A000020005.OUT | Standby | 30.607 (OUTL) | % | 100.00 | 0.00 | |
| ☑ | G | A000020006.OUT | Standby | 19.808 (OUTL) | % | 100.00 | 0.00 | |
| ☑ | H | A000020007.OUT | Standby | 10.886 (OUTL) | % | 100.00 | 0.00 | |

  At this time, if checked "Display the average in the current page", and the "Average of current page" will be shown as shown as figure below.

| | | Tag Name | Description | Point of intersection Valu | Unit | Maximum | Minimum | Average of current page |
|---|---|---|---|---|---|---|---|---|
| ☑ | A | A000020000.OUT | Standby | 68.577 (OUTH) | % | 100.00 | 0.00 | 40.548 |
| ☑ | B | A000020001.OUT | Standby | 56.515 | % | 100.00 | 0.00 | 39.679 |
| ☑ | C | A000020002.OUT | Standby | 44.048 | % | 100.00 | 0.00 | 39.452 |
| ☑ | D | A000020003.OUT | Standby | 31.951 (OUTL) | % | 100.00 | 0.00 | 39.881 |
| ☑ | E | A000020004.OUT | Standby | 20.976 (OUTL) | % | 100.00 | 0.00 | 40.938 |
| ☑ | F | A000020005.OUT | Standby | 11.805 (OUTL) | % | 100.00 | 0.00 | 42.559 |
| ☑ | G | A000020006.OUT | Standby | 5.010 (OUTL) | % | 100.00 | 0.00 | 44.643 |
| ☑ | H | A000020007.OUT | Standby | 1.011 (OUTL) | % | 100.00 | 0.00 | 47.060 |
| | | | | | | | | |

- Time Settings
  - Start and End Time: it is used to select curve span to be viewed, and start time should be at least 100 seconds earlier than end time in effective displaying range.
  - Time Span: it is used to display the span between set start and end time.
  - Span Settings: it is used to set the time span of trend. Required time can be selected in the pull-down list. The minimum is 2min.
  - Time Interval: time span between two data points after query. The units is: hour: minute; second, and it can't exceed 23:59:59.

    The data points can be counted according to the start time, end time and time interval. The number is displayed in one screen after searching. The range is 100~1200.

    End Time – Start Time = Time Interval * Data Amount
  - Display Position: inside or outside of the curve.
  - Display Interval: time interval displayed on coordinate in supervision. The range is integers between 1 and 5.
  - Table Settings

    The item is only valid when the trend curve is switched to table format.

**Curve Settings:**

It is used to set the high and low limits, value position and decimal places, and to set the color, grid line and grid of trend diagram.

**Tag settings**

Click the button to pop up the trend settings dialog, as shown below.

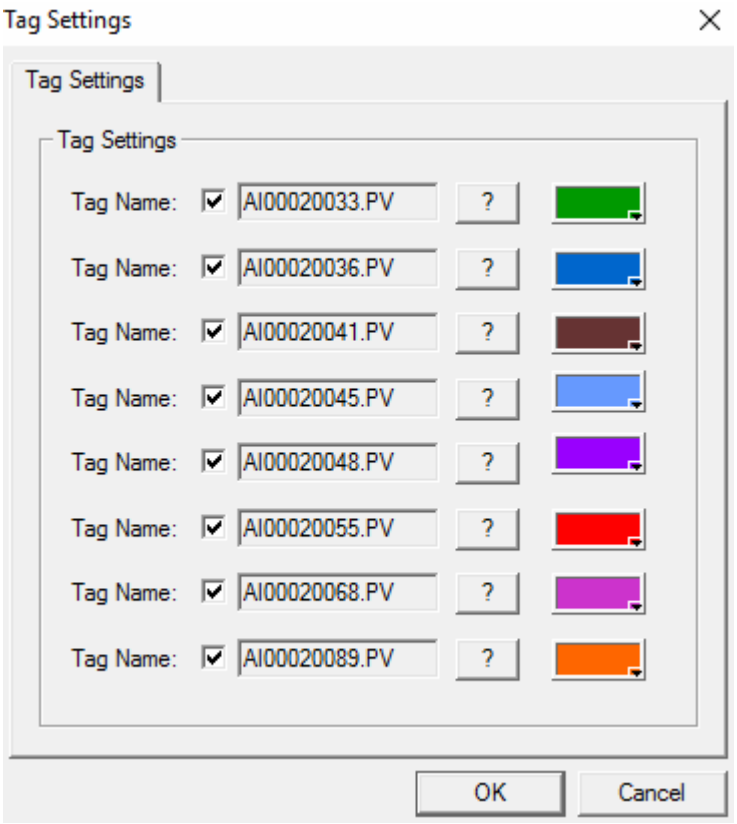



***Figure 4-9 Tag Settings***

User can select the tag and set color in the panel above.

**Print button**

Dialog box of print property setting shown in Figure 4-10 will pop up when clicking this button.

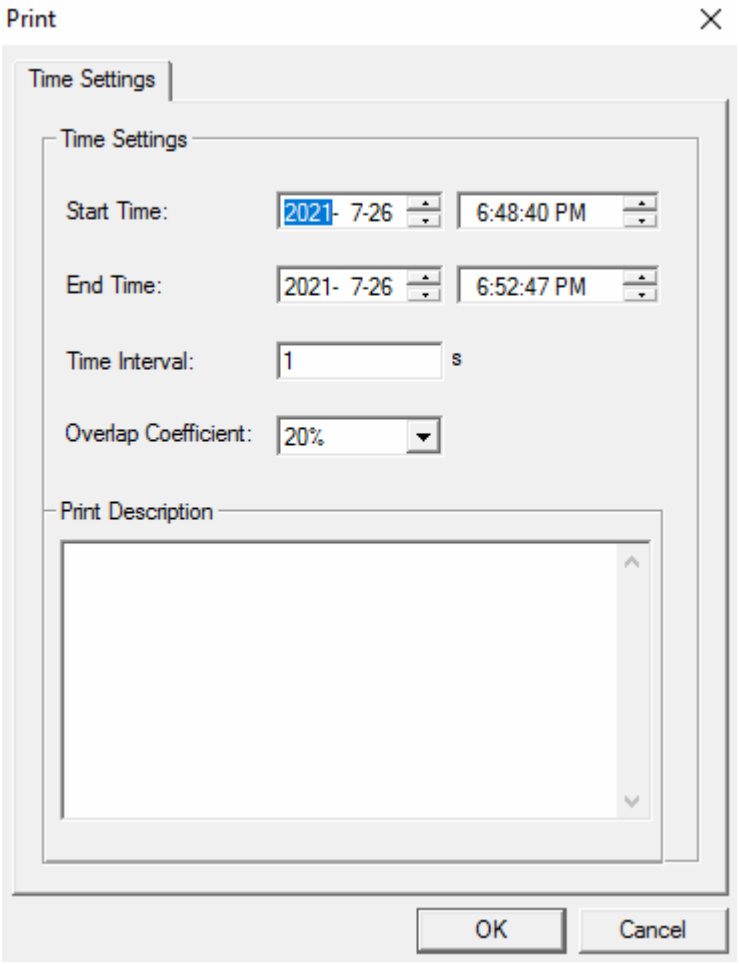



***Figure 4-10 Print property setting***

- Time Settings: it is used to set start and end time, time interval, data number, and other relevant information for items to be printed.
- Tag Settings: it is used to set print color of trend page of tags, whether to print the tag and other relevant information.
- Print Description: it is used fill the description information.

After accomplishing time setting, tag setting and print description shown above, trend curve of designated tag can be printed by clicking “Yes”.

### Amplification by mouse enabled

Click the button to start mouse amplification function, and button icon becomes , and mouse will be in "+" shape when it is in the range of trend interface. Drag the mouse with left button pressed-down, a dashed rectangle box in trend interface will appear, and users will see the trend expanded after releasing the left mouse button. The time range of horizontal axis of trend interface after amplification is between the left and right time point corresponding with left and right edge of the dashed box; vertical axis keeps unchanged.

When mouse amplification function is started up, users can close this function by clicking anyplace

within the trend interface and the button icon returns to .

**Tip:**

- **The minimum span (range of horizontal axis) of trend display is 2 minutes; mouse amplification function will be ineffective if current span is 2 minutes.**
- **The time span of partial trend to be expanded should be longer than or equal to 2 minutes (the range of horizontal axis of dashed box must be longer than or equal to 2 minutes), otherwise the function won't be achieved.**
- **Mouse amplification function will be ineffective if the dashed box exceeds the range of trend interface.**
- **If tag in global function block has non-multicast parameter, select the parameter in trend configuration to show it in monitoring, while the parameter will have no trend data. Therefore, non-multicast of tag is not recommended to use in monitoring.**

## Trend Statistics Value

Click the button to pop up the search interface.

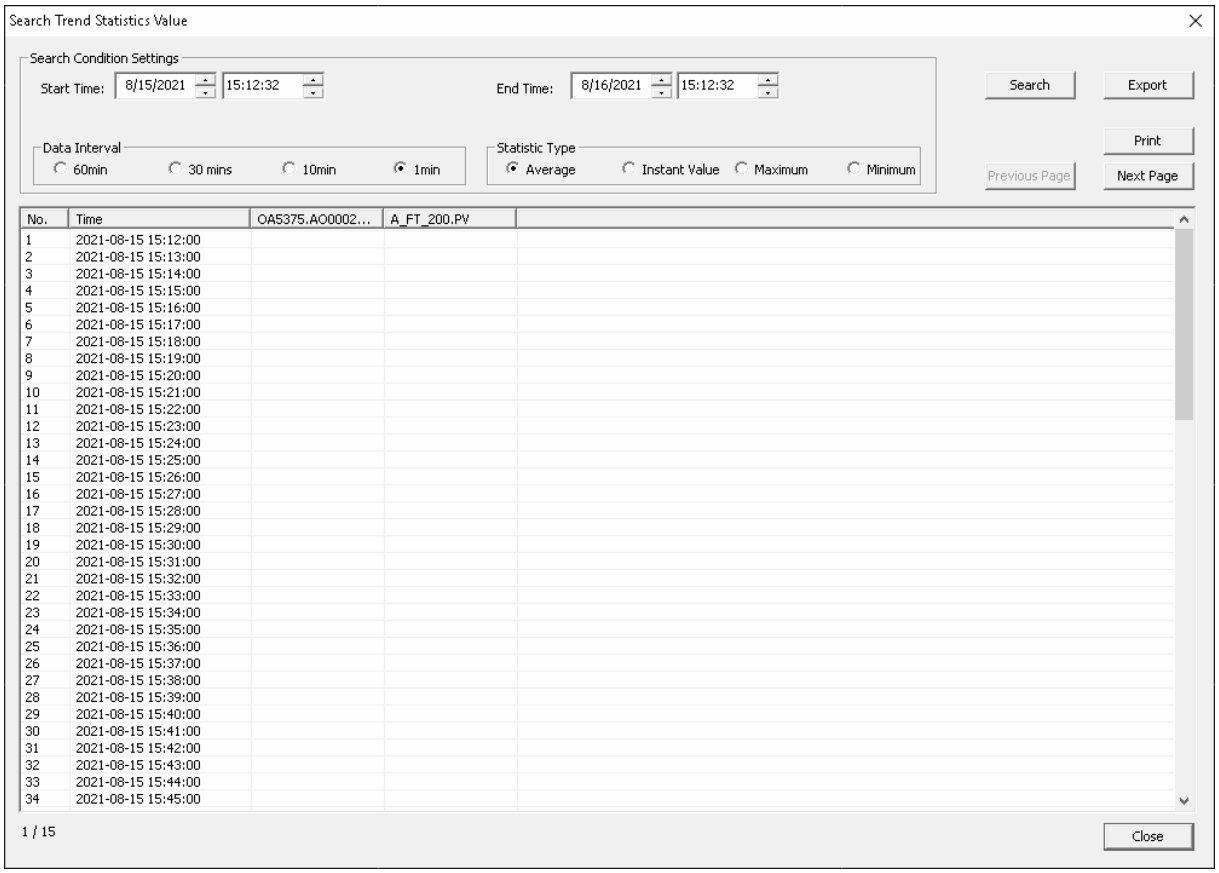



***Figure 4-11 Search interface of trend statistics value***

- Start Time/ End Time: set the period of searching, the minimum unit should be second.
- Data Time Interval: options including 60min, 30min, 10min and 1min. System will search the data according to time interval in the set period.

  As shown in the figure above, searching period is from 2015-4-13 16：52：14 to 2015-5-13 16：52：14, the data time interval is 60min. Get point from the integral time (2015-4-13 16：00：00), and finish at the last integral time (2015-5-13 15：00：00).
- Statistics Type: options including average value, instantaneous value, maximum and minimum. While value with no data will not be counted.

  Click “Search” to show the results. The results can be exported by clicking “Export”.

**Switch to Table Format**

Click this button, the trend in table format will be displayed as shown as figure below.

***Figure 4-12 Trend in Table Format***

## 4.3 Custom Page

The custom page of trend is used to view trend tags that are not configured in trend window, making it convenient to access the trend information of tags.

**Configure custom trend**

Here is an example of “Custom trend group 1>Custom trend 1”, to illustrate the configuration method of custom trend.

1) Select “custom trend group 1>custom trend 1” to pop up the interface as shown in the figure

below.

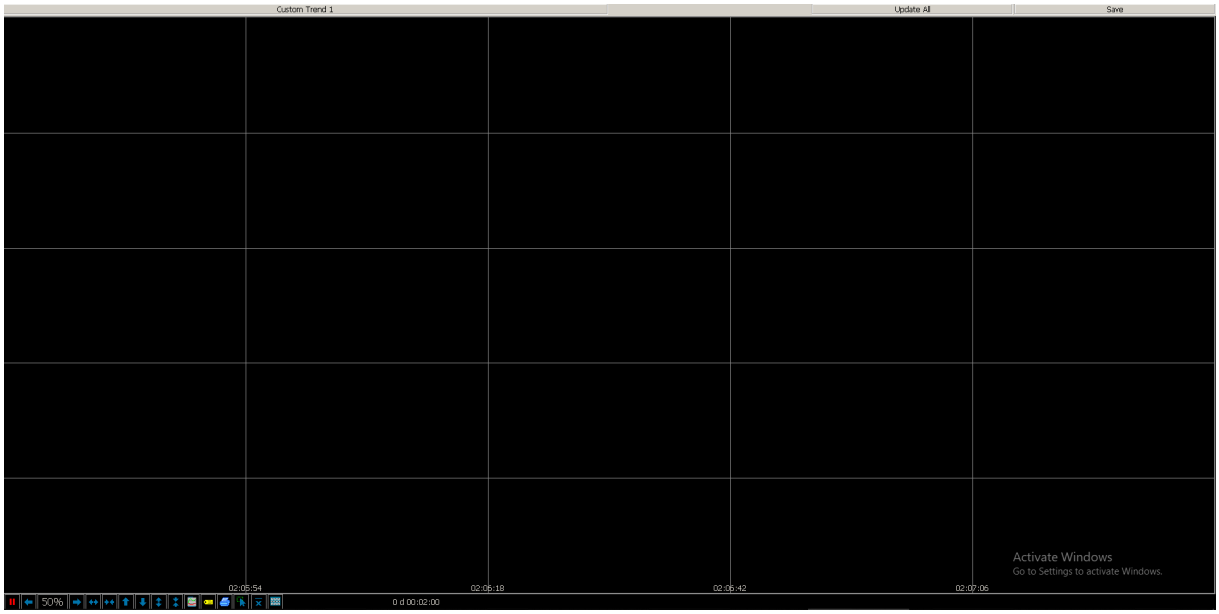



***Figure 3-15 Custom trend 1 displayed in main interface***

2) Configure layout of custom trend

   Click “custom trend 1” and select “Trend layout”. Custom trend of High-performanceHMI supports 4 layouts, 1*1, 1*2, 2*1 and 2*2.

3) Configure tag in custom trend page

   Click the blank region of trend page and select “Tag settings” in the right-click menu, and configure the related tag in custom trend page and the color of the trend curve. The method of configuring tag is similar to the description in “Toolbar of trend interface”.

4) After configuring tag, click “save” to save the trend layout and tag, etc.

   After saving the custom trend page, other operation stations can get the custom trend configured by other stations from the configuration server through “Update all” command. In addition, when custom trend page in monitoring involves project backup and restore, you need to click “Update all” to get the latest custom trend page.

**Query custom trend**

After configuring and saving the custom trend, you can query through the number of the custom trends, the detailed operations are as follows.

1) Click to pop up.

2) Enter “Fn” in query box, n is the number of custom trends. For example, for custom trend 1, enter F1.

3) Click to go to the designated custom trend page, such as custom trend 1.

### Open custom page of trend window

Users can select one trend interface from custom page 0~4 by right-click. Interface shown in Figure 4-13 will pop up when selecting “Custom Page 0”.

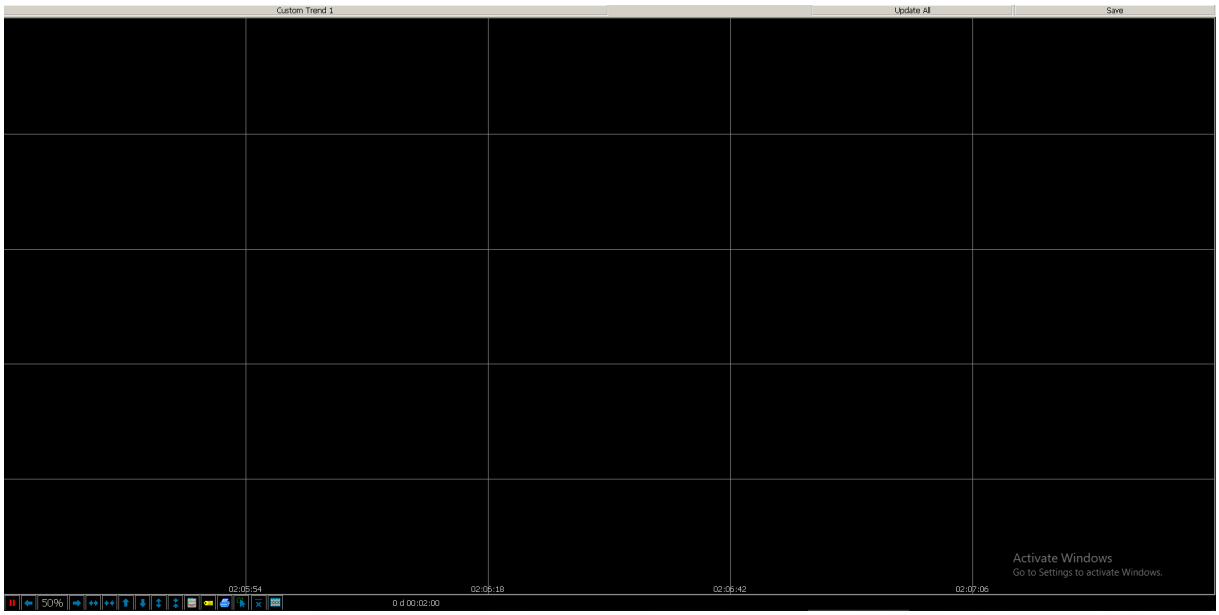



***Figure 4-13 Custom page 0 displayed in main interface***

## 4.4 Right-click Menu

Right-click menu shown as follows will pop up after right-click anyplace within trend interface.

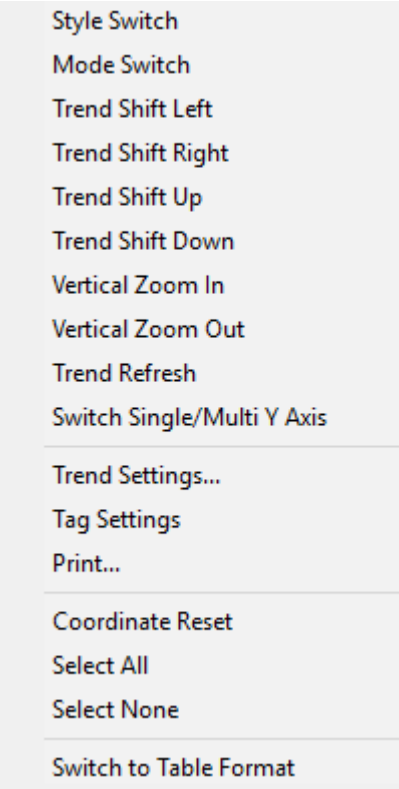



***Figure 4-14 Right-click menu***

- Cursor 1/Cursor 2

  Used to configure whether to display cursor in trend window, and whether to display the crossing point value of the cursor and the curve on both sides of the screen.

  Cursor 1 and cursor 2 can be displayed at the same time, the crossing point value of cursor 1 is displayed on the left side of the screen, right side for cursor 2.

- Style Switch: switch the display mode of trend interface (show/ hide tag information bar).
- Mode Switch: switch between static and running, same as / button.
- Trend Shift Left: move trend interface left, same as button.
- Trend Shift Right: move trend interface right, same as button.
- Trend Shift Up: shift trend interface up.
- Trend Shift Down: shift trend interface down.
- Vertical Zoom In: Broaden the range of vertical axis of trend.
- Vertical Zoom Out: Narrow the range of vertical axis of trend.
- Trend Refresh: display trend curves according to the latest data.
- Switch Single/Multi Y Axis: switch the display mode of Y axis in trend interface.

  Single Y axis means that a trend interface only contains one Y axis, multi Y axis

means assigning independent Y axis for every trend tag and displaying the color of Y axis according to the trend curve color of the tag.

- Trend Settings: same as button.
- Time and Tag Settings: the same as button.
- Print: same as button.
- Coordinate Reset: if the high and low limit of coordinate of certain tag is modified in trend interface, it can return to original coordinate by this function.
- Select All: select all tags to display all trend curves in trend display interface.
- Select None: select no tag and not display any trend curve in trend display interface.
- Switch to Table Trend/Switch to Trend Diagram

  Through selecting this function, the display mode of trend can be switched in table trend and trend diagram.

## 4.5 Trend Query

The query modes of trend include query data whose trend pages are configured and the data whose trend pages are not configured. In order to query history trend, users need to make sure that history data server is connected to process information network.

### 4.5.1 Query Data Whose Trend Page Have Been Configured

The trends of this type of tags can be viewed by turning to the corresponding trend page. For example, if a tag is configured in the page “Trend Window 1”, the trend of this tag can be viewed in trend page “Trend Window 1”, as shown in Figure 4-15.

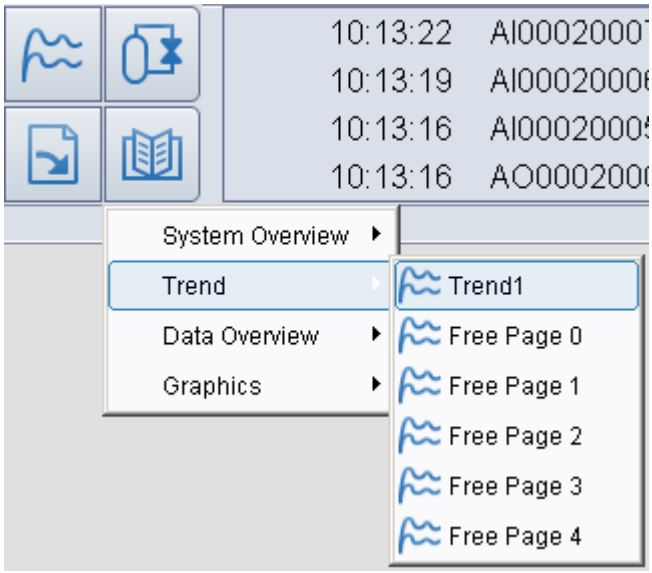



***Figure 4-15 Figure Trend turning***

### 4.5.2 Query Data Whose Trend Page Hasn't Been Configured

This type of tag can be queried by "time and tag settings" button in trend page, please refer to 4.2.2 or by configuring custom page of trend interface, please refer to 4.3.

## 4.6 Trouble Shooting

Problem1: tag graphics window is displayed normally, but there's no real-time trend.

A: check whether the system clock is consistent or there's any abnormity.

Problem2: there is real-time trend, but no history trend.

Please check the following points:

- Whether the tag is history record tag, any whether history data server is equipped.
- Whether the history data server that records this tag is normal.
- Whether the data server is normal.
- Whether the system clock is consistent.
- Whether the process information network is normal.

# Section 5 Revision

***Table 5-1 Retrofit list of the version***

| Document Version | Applied to software version | Remarks |
|---|---|---|
| V1.0 (20230301) | OMC High-performanceHMI V4.70.00.00 | First release |
| V1.1 (20230830) | OMC High-performanceHMI V5.10.00.00-M | Updated screenshots.<br>Modified display effect, menu and toolbar, custom trend page of the trend window, |