

OMC Pilot

User Manual

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Symbol Definition	
	WARNING: Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	RISK OF ELECTRICAL SHOCK: Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	ESD HAZARD: Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user.

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OMC Pilot User Manual

Section 1 Overview

In the production line, raw materials, equipment, and production procedures (process parameters and raw material parameters) make up various main procedures. A main procedure may contain purely manual operation procedures, complex control procedures with unstable operations, or sequence control operation procedures with imperfect functions, which is prone to misoperation or unnecessary production losses.

The OMC Pilot component (hereinafter referred to as OMC Pilot) uses visual and modular semi-automatic operation procedures to replace the original manual operations or complex procedures. With OMC Pilot, you can compile the operator's on-site operation experience into operation specifications in form of flowcharts, and combine them with the actual on-site operation experience to optimize and improve them, thereby creating an efficient and stable process benefit improvement cycle and improving operation efficiency. At the same time, the management of the process flow is more convenient and quicker.

Section 2 Component Installation and Authorization

When installing OMC, if you select "Intelligent Application Center" as the role for the installation, all of the server and the client components of OMC Pilot will be installed; if you select other roles for the installation, only the client component of OMC Pilot will be installed.

You can also run the installation program of OMC Pilot independently to install the server and client components as needed.

The computer on which the server component is installed must be equipped with a software dongle, and the component authorization instructions are shown in the table below.

Table 2-1 Authorization Instructions

Component Name	Description
Server authorization (OMC Pilot-Server)	Without authorization, it can run normally for 2 hours. After 2 hours, the server will still provide data services to the client and schedule the procedure to execute, but the server will not respond to the client's command request.
Client connection authorization (OMC Pilot-Client)	<ul style="list-style-type: none">Without authorization, only 1 client (or browser) can connect to the server.With authorization, the number of clients (or browsers) that can connect to the server is determined by the authorization, and the optional number of authorizations includes 5, 10, 20, 40, and unlimited.
Main procedure quantity authorization (OMC Pilot-Procedure)	<ul style="list-style-type: none">Without authorization, only 1 main procedure can enter the "active" status.With authorization, the number of main procedures that can enter the "effective" status is determined by the authorization, and the optional number of authorizations includes 10, 20, 50, 100, 200, and unlimited (Unli).

Component Name	Description
Procedure autostart authorization (OMC Pilot-AutoStart)	<ul style="list-style-type: none">● Without authorization, you cannot add an auto-start procedure or modify the configuration condition of the auto-start procedure, but the configured procedure can still start automatically.● With authorization, you can set the configuration condition of the auto-start procedure in the interface, and the component will automatically trigger the procedure to execute when the conditions are met.
Report authorization (OMC Pilot-Report)	<ul style="list-style-type: none">● Without authorization, you cannot search reports.● With authorization, you can search reports in the History node.

Section 3 Workflow

The figure below shows the main workflow in OMC Pilot.

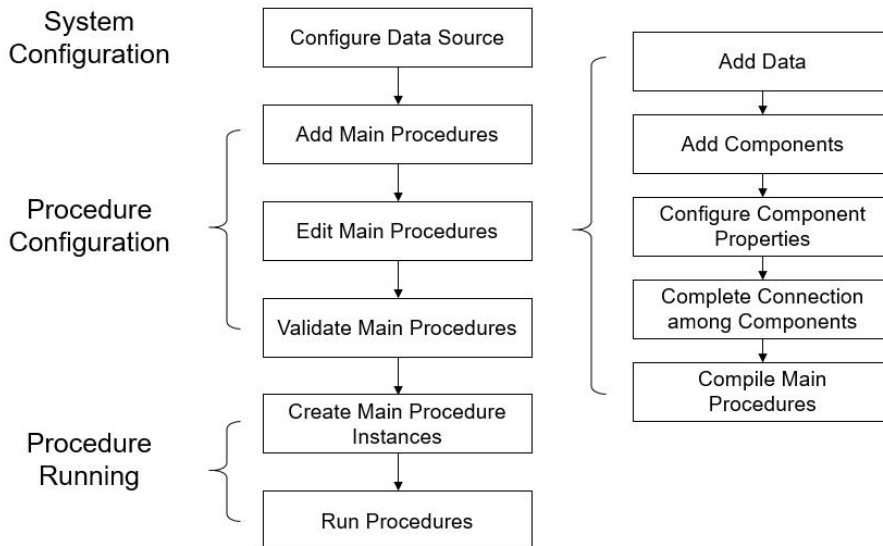


Figure 3-1 Workflow

Section 4 Login



Tip:

You must complete the server settings before using OMC Pilot for the first time. Please refer to *Basic Settings* for details.

You can use any of the following methods to access the main interface of OMC Pilot:

- Click [Start Menu/All Programs/OMC/Intelligent Application Management] to start **Intelligent Application Management**, as shown in Figure 4-1. Click **Pilot** in the main interface, and then click **Open Client** in Pilot Client in the Pilot panel (as shown in Figure 4-2) to start the OMC Pilot client.

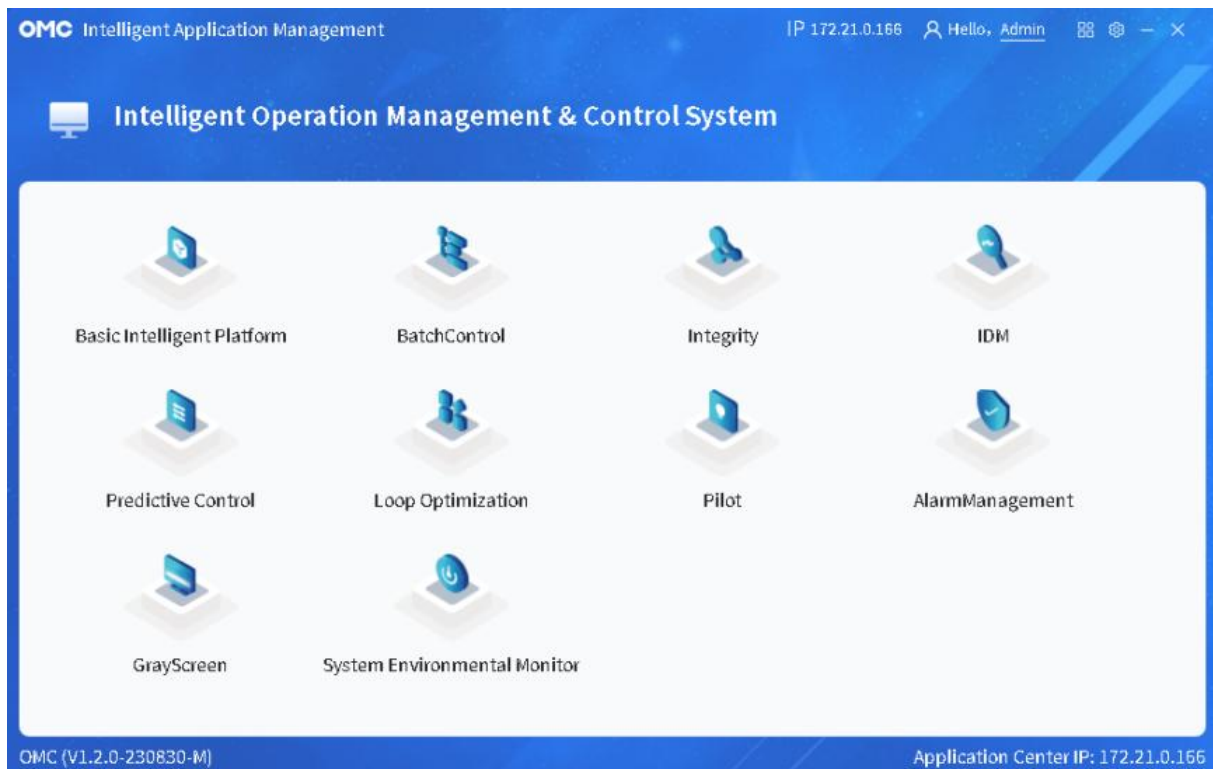


Figure 4-1 Main Interface of OMC Intelligent Application Management

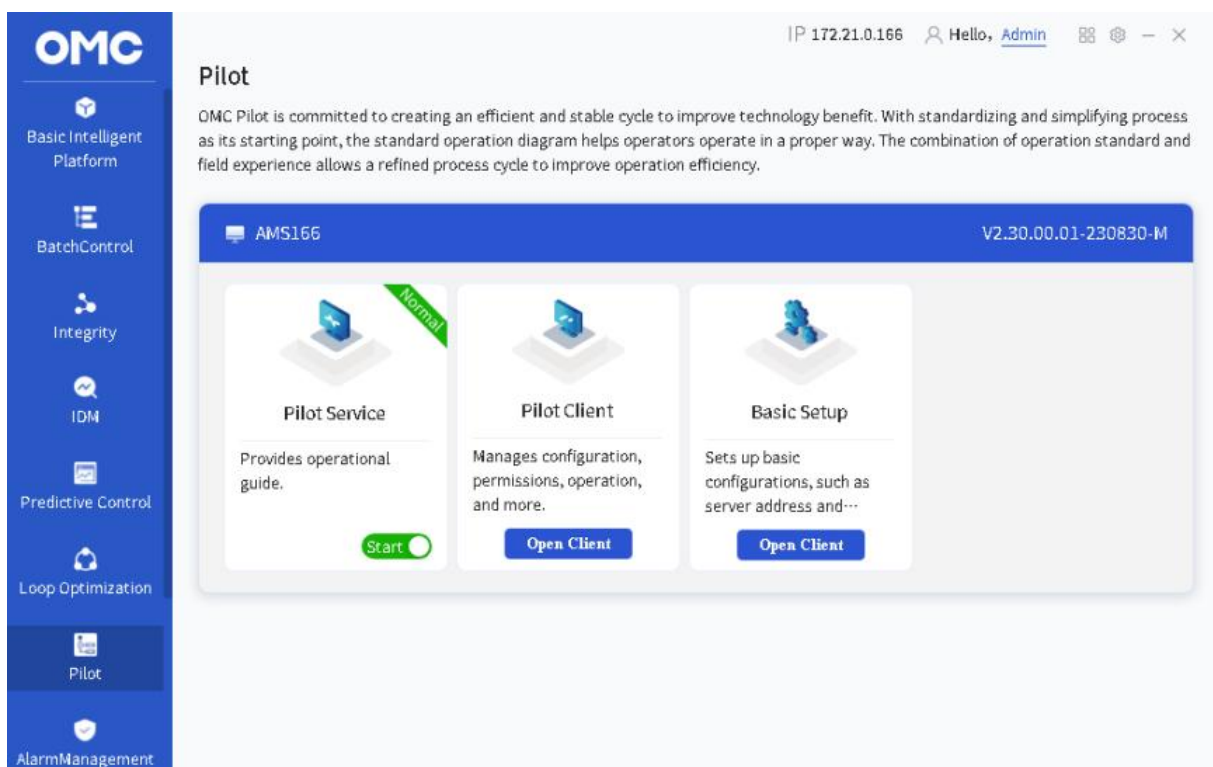



Figure 4-2 OMC Pilot Panel

- After starting OMC High-performanceHMI, click  in the upper left corner and select **Pilot** in the drop-down menu to start the OMC Pilot client, as shown in Figure 4-3.

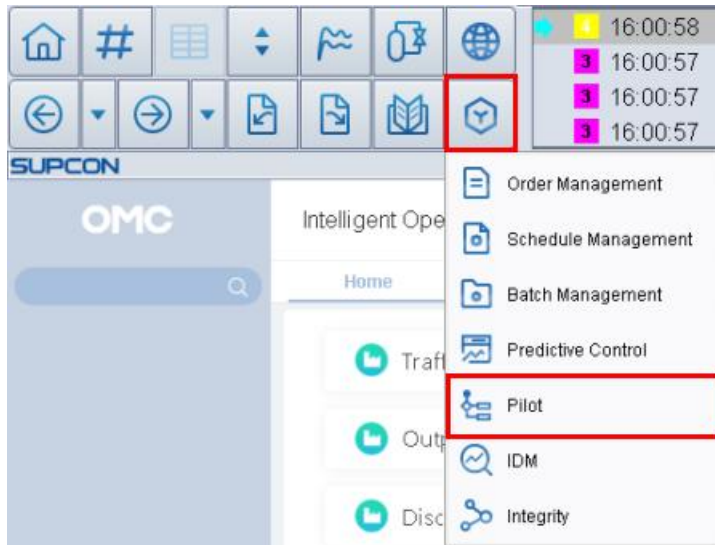



Figure 4-3 Start the OMC Pilot Client via OMC High-performanceHMI

- After starting OMC High-performanceHMI, click  in the upper left corner to enter the OMC web client. In the navigation bar on the left, click **Pilot**. Then the menu list of OMC Pilot will be displayed on the top of the navigation bar, as shown in Figure 4-4.
- Run the Chrome browser, enter `http://[web server IP]:8080` in the address bar, and press **Enter** on the keyboard to log in to the OMC web client. In the navigation bar on the left, click **Pilot**. Then the menu list of OMC Pilot will be displayed on the top of the navigation bar, as shown in Figure 4-4.

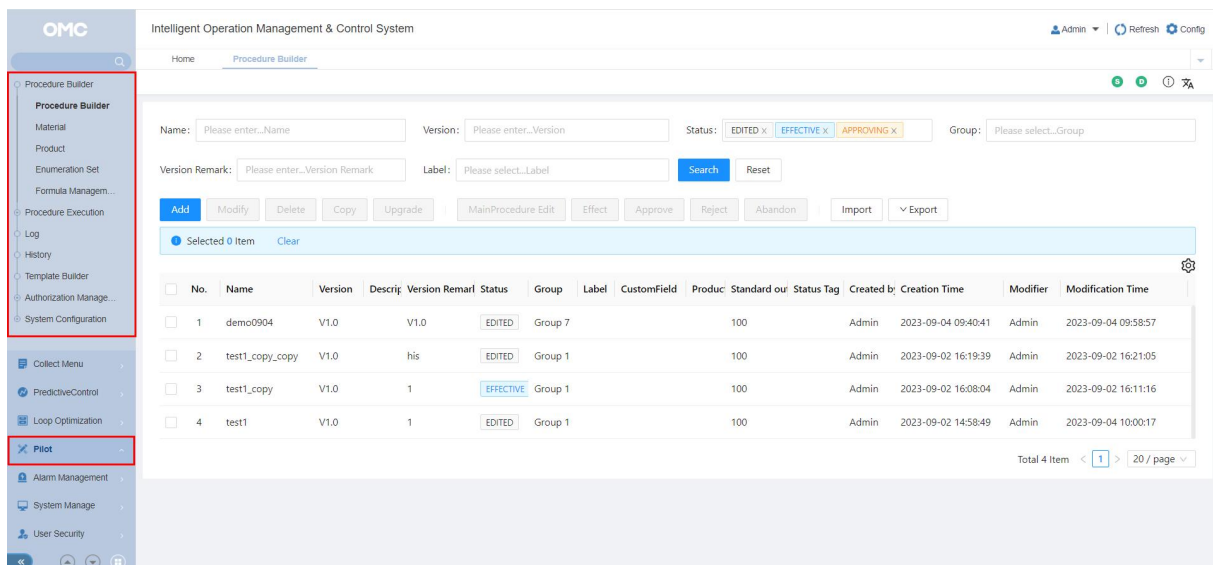


Figure 4-4 Access OMC Pilot via the Web Browser

When logging in for the first time, you are using the account of the super user Admin of OMC High-performanceHMI by default. However, currently this account has not been assigned with permission of any menu, operation, or group of OMC Pilot, which means that users logging in with this account cannot use any functions in OMC Pilot. Therefore, you need to assign permission of menus, operations, and groups to this account first by any of the following methods.

- (Recommended) Assign permission via OMC:
 - 1) Log in to OMC, click **User Security** in the menu on the left, and select **Role Manage** in the menu on the top.
 - 2) In the role navigation tree on the right, click ... behind the role "administrator role" and select **auth settings** to enter the administrator role permission settings page, as shown in Figure 4- 5.
 - 3) Click the **Pilot Permissions** tab above to enter the page for setting the OMC Pilot permission.
 - 4) Click **Menu Permission**, **Group Permission**, and **Operation Permission** below to assign the corresponding permission to the role "administrator role" and click **Save** to save the settings.

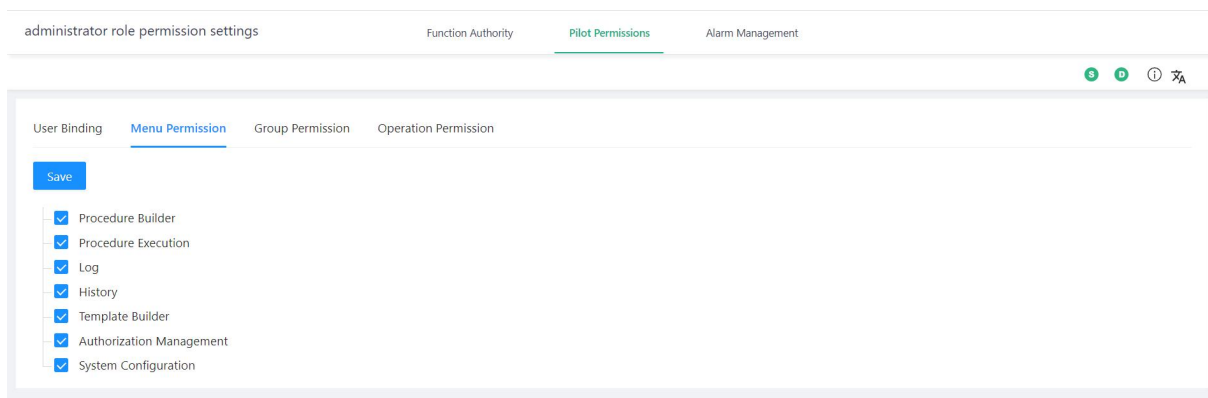


Figure 4- 5 Administrator Role Permission Settings

- Assign permission via OMC Pilot:
 - 1) Start and log in to the OMC Pilot client, click the user name in the upper right corner, and click **Logout** to exit the client logged in with the account Admin.
 - 2) Log in to OMC Pilot with the super user "DirAdmin" of OMC Pilot (the password is "DirAdmin").
 - 3) In the menu list on the left, click **Authorization Management > Role Management** to enter the role management page.
 - 4) In the role navigation tree, click **Administrator Role(ADMIN)**. The users associated with this role and permission assigned to this role will be displayed on the right.
 - 5) Click **Menu Permission**, **Group Permission**, and **Operation Permission** to check the corresponding permission to be assigned to the role Administrator Role(ADMIN) and click **Save** to save the settings.



Tip:

To ensure the security of the account, it is recommended that you assign permission to each role after assigning permission to the super user Admin. For details, refer to *Authorization Management*.

4.1 Change the Login Password

If you want to modify the login password of the OMC Pilot user, it is recommended that the administrator modify the password via OMC.



Attention:

It is not recommended that the users modify their login passwords by themselves. Otherwise, exceptions may occur when they try to log in to the system.

4.2 Main Interface

The figure below shows the main interface after you log in to OMC Pilot.

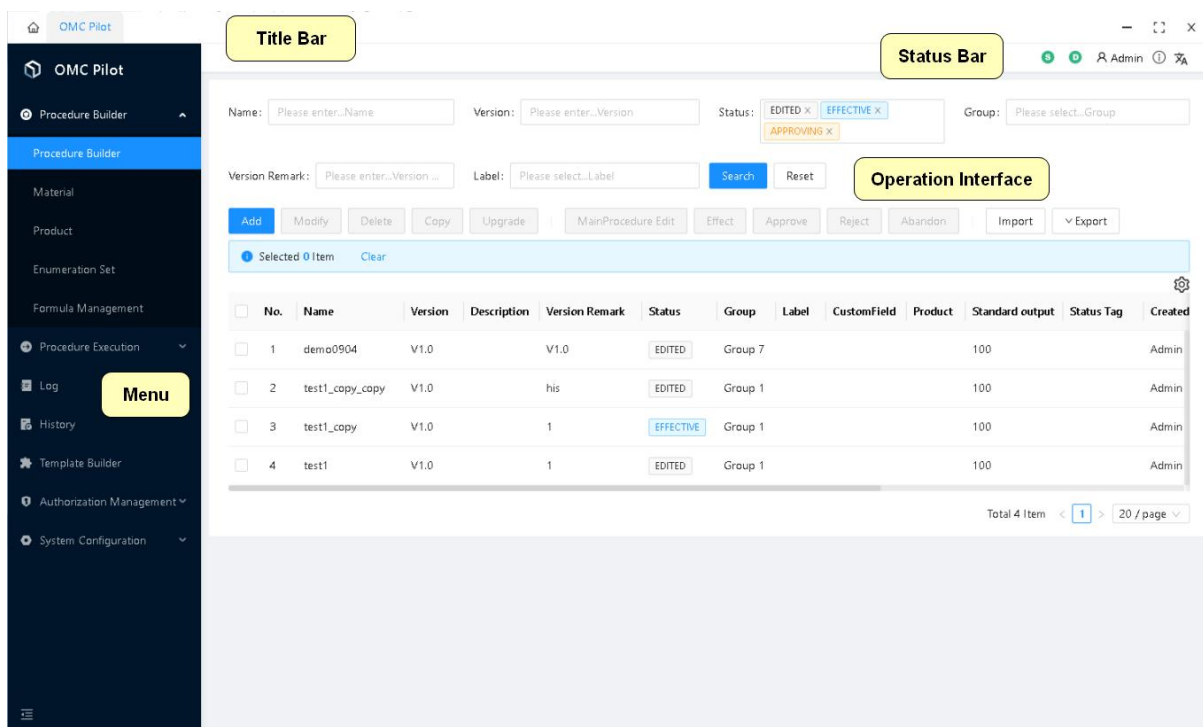


Figure 4-6 Main Interface of OMC Pilot

- Title Bar: It shows the homepage button, component name, and names of the opened main procedures.

- Status Bar: From left to right, you can find the server connection status, dongle license status, current user, component version information (including links for downloading the user manuals), and the language switching button.
- Menu List: It is located on the left side of the interface and displays various menus.
- Operating Interface: It is located on the right side of the interface and displays the operating interface of the function currently selected in the menu list.

Section 5 System Configuration

Before starting the configuration, you need to set the data source in the system configuration. In addition, you can also modify alarm sounds and set the global configuration in the system configuration.

5.1 Configure the Data Source

In the menu list on the left, click **System Configuration > Data Source**, and the data source configuration interface will be displayed in the operating interface on the right, as shown in Figure 5-1. The upper part of the page displays the data source being used, and you can modify the data source information at the lower part.

Figure 5-1 Data Source

- Interaction with the OMC system via the private protocol of OMC High-performanceHMI:
 - 1) Select **OMC High-performanceHMI** as the data source type in "Set data source".
 - 2) In the "Get tags type dropdown" list, select "Tags enumeration", "Tags not enumeration" or "Configuration file".
 - 3) If you choose "Configuration file" as the tag acquisition type, enter the absolute path of the CSV-formatted configuration file in the "File path" textbox to retrieve the enumerated tags from the specified file. The file name supports inputting "*.csv" to retrieve enumerated tags from multiple files.
 - 4) Click **Test Connection**, and a pop-up message "Test Connection Successful" will appear after the successful test.
 - 5) Click **Save** to complete the configuration.


The "Data source in use" area will display the configuration result. By default, the "Server

Address” will be the IP address of the computer where the OMC High-performanceHMI and OMC Pilot servers are located, and the “Server Name” will be “SUPCON.SCRTCore.1”.



Attention:

If OMC High-performanceHMI is used as the data source type, you need to start OMC High-performanceHMI before running the main procedures in OMC Pilot.

- Interaction with other systems via OPC protocol:
 - 1) Select **OPC** as the data source type in “Set data source” and set the “Server Address”.
 - 2) Click . OMC Pilot will automatically detect the OPC server at the target address and the “Service List” dialog box will pop up.
 - 3) Select the OPC server you want to connect to in “Service List” and click **OK**. The “Server Name” and “Server Description” in the related text box will be displayed in their respective text boxes.
 - 4) In the Get tags type dropdown list, select “Tags enumeration” or “Configuration file”.
 - 5) If you choose "Configuration file" as the tag acquisition type, enter the absolute path of the CSV-formatted configuration file in the "File path" textbox to retrieve the enumerated tags from the specified file. The file name supports inputting "*.csv" to retrieve enumerated tags from multiple files.
 - 6) Click **Test Connection**, and a pop-up message “Test Connection Successful” will appear after the successful test. If “Data timeout” or any other prompt appears, select **Force Connect** to force OMC Pilot to connect with the system via the specified data source.
 - 7) Click **Save** to complete the configuration.

The configuration results will be displayed in the "Data source in use" above.

- Interaction with a DCS or PLC system via OMC Platform:
 - 1) Select **OMC Platform** as the data source type in “Set data source”.
 - 2) Set Server Address, Procedure Port, Running Port, and History Port.
 - 3) In the “Get tags type” dropdown list, select "Tags enumeration" or "Configuration file".
 - 4) If you choose "Configuration file" as the tag acquisition type, enter the absolute path of the CSV-formatted configuration file in the "File path" textbox to retrieve the enumerated tags from the specified file. The file name supports inputting "*.csv" to retrieve enumerated tags from multiple files.
 - 5) Click **Test Connection**, and a pop-up message “Test connection succeeds” will appear after the successful test. If data timeout or any other prompt appears, select **Force Connect** to force OMC Pilot to connect with the system via the specified data source.
 - 6) Click **Save** to complete the configuration.

The configuration results will be displayed in the "Data source in use" above.



Tip:

- One OMC Pilot server only supports being configured with one data source type.
- When any main procedure in OMC Pilot is in the “Running” status or in online mode, modifying the data source is not allowed.

- In the “Data source in use” area, click **Disconnect** to disconnect OMC Pilot from the system via the current data source.

5.2 Configure the System Sound

In the menu list on the left side, click **System Configuration > Sound**, and the sound configuration interface will be displayed in the operating interface on the right, as shown in Figure 5-2. Here you can set the prompt sound of the component during the running process of main procedures.

System sound configuration

Confirm:

Alarm:

Error:

Figure 5-2 System Sound Configuration

Click on each configuration item and select a sound effect from the corresponding drop-down list. Click **Submit** to save the configuration. Click **Reset as the default value** to restore all sounds to default settings.

5.3 Global Configuration

5.3.1 Runtime Configuration

The runtime configuration is mainly used to set whether or not various functions are available during the running process of main procedures. You can enable or disable the corresponding

functions as per your specific requirements.

Steps

In the menu list on the left, click **System Configuration > Global Configuration**. The “Runtime” configuration area on the right is as shown in Figure 5-3.

Click **ON** and click **Save** in the upper right corner to enable the corresponding function. Click **Off** and click **Save** below to disable the corresponding function.

- **Multi Instance:** Whether to allow creating multiple instances with the same main procedure name and the same procedure version when you create a new main procedure instance. This function can help prevent instances of the same main procedure from being created and executed repeatedly at a specified time.

If you disable this function, when the name and version of the newly added main procedure instance are the same as those of an existing instance in the “Procedure Execution” instance list, creating the new instance will fail and you will be prompted with “Main procedure name is repeated!”.

- **Step Forecast:** Whether to forecast and prompt you with the upcoming procedure steps during the running process of the main procedure instance. This function can help operators prepare in advance.
- **Step Status Change Log:** Whether or not the status changes of each procedure step in the main procedure are recorded during the running process of the main procedure instance.

If this function is enabled, the status changes of each procedure step during the running process of the main procedure instance will be recorded in the system, and you can view the records of step status changes in the “Log” module.

- **Directly Run Main Procedure:** Determines whether to allow running the main procedure in debug mode during the program configuration process (the presence of the “Run” button in the upper right corner of the main procedure edit interface refers to “Procedure Editing Button”). In debug mode, the main procedure can run directly without taking effect.
- **Subscribe Instance Tag before Running:** Specifies whether to first subscribe to the tags used within the instance when running the main procedure instance. If disabled, the main procedure instance will initiate a subscription when the tags are used and cancel the subscription after each tag usage.
- **Enable Check Tag before Run:** Automatically checks the existence of tags in the program and prompts the check result before running the instance. If any tags do not exist, modify the tags of the main procedure in the “Procedure Builder” list (refer to *Configure the Procedure*), then re-create the main procedure instance in the “Program Execution” interface (refer to *Create a Main Procedure*). This function is enabled by default.

The screenshot shows a configuration window with three tabs: 'Runtime' (selected), 'Information Security', and 'Report Form'. Under the 'Runtime' tab, there are six settings, each with a label and two radio buttons labeled 'ON' and 'Off':

- Multi Instance:** The 'ON' radio button is selected.
- Step Forecast:** The 'ON' radio button is selected.
- Step Status Change Log:** The 'Off' radio button is selected.
- Directly Run Main Procedure:** The 'ON' radio button is selected.
- Subscribe Instance Tag Before Running:** The 'Off' radio button is selected.
- enable query work order:** The 'ON' radio button is selected.

Figure 5-3 Runtime Configuration

5.3.2 Information Security Configuration

The system supports enabling or disabling the watermark function. If the watermark function is enabled, the user name of the currently logged-in user will appear as the watermark on the system's main interface, the Procedure/Template Builder interface, the Procedure Execution interface, and the report viewing interface. The watermark will also be included when you print reports.

Steps

In the menu list on the left, click **System Configuration > Global Configuration**, and then click the **Information Security** tab on the right. The configuration area is as shown in Figure 5-4.

Click **ON** and click **Save** in the upper right corner to enable the watermark. Click **Off** and click **Save** in the upper right corner to disable the watermark.

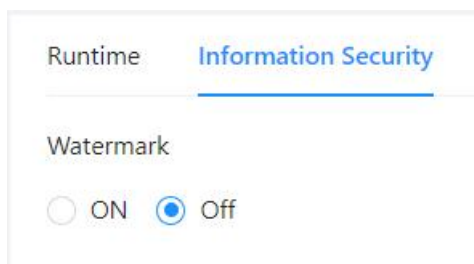


Figure 5-4 Information Security Configuration

5.3.3 Report Form Configuration

The report component is used to call external report pages and functions. If the report component is enabled, when viewing main procedure reports in the “History” module, you will be redirected to the external report pages. If the report component is disabled, OMC Pilot’s own reports will be opened.



Tip:

Before enabling the report component, you need to install OMC Pilot Thirds.

Steps

In the menu list on the left, click **System Configuration > Global Configuration**. The “Report Form” area on the right is as shown in Figure 5-5.

After you click **ON**, the detailed configuration items will be displayed below. Enter the IP address and port number of the report component, report template to be used, report user, and report link type. Then click **Save** in the upper right corner to enable the corresponding report component and its functions.

Click **Off** and click **Save** in the upper right corner to disable the report component’s functions.



Tip:

The “Report User” field MUST be filled in with a user existing in OMC Pilot, but it cannot be the currently logged-in user.

Runtime
Information Security
Report Form

Report Component

☒ ON
☐ Off

* IP Address

127.0.0.1

* Port

18150

* Report template

DirectSOP_Light

* Report User

Please enter...

Report Link type

HTTP

Figure 5- 5 Report Form Configuration

5.3.4 Authentication Server Configuration

The authentication service is used to configure upstream services for performing identity authentication on login operations in OMC Pilot. Currently, it supports domain controller or OMC authentication.



Tip:

After switching to a different upstream authentication service, it is necessary to restart the VxDir.AuthSvr.exe of OMC Pilot.

Steps

1. In the menu list on the left, click **System Configuration > Global Configuration**. Click on the "Authentication Server" tab on the right, and the authentication server configuration is as shown in Figure 5-6.
2. In the "Upstream" dropdown list, select either "None", "Domain", or "OMC".
 - If you choose "Domain", fill in the domain name, LDAP name, select the domain auth type (if "NTLM" is chosen, enter the challenge address), and choose to enable or disable SSL/TLS.
 - If you choose "OMC," provide the IP address and port number of the OMC server.
3. Click on the **Save** button in the upper right corner to apply the relevant configurations.

Runtime Information Security Report Form **Authentication Server**

Upstream(Reboot VxDir.AuthSvr.exe after changed)

Domain ▼

* Domain Name

127.0.0.1

* LDAP Name

ldap://127.0.0.1

Domain Auth Type

NTLM ▼

* Challenge Address

127.0.0.1

SSL/TLS

☐ ON ☒ Off

Figure 5-6 Authentication Server Configuration

5.3.5 Numerical Value Configuration

In the numerical value configuration, you can set the digits of decimal numbers to specify the number of significant digits (the number is limited to 3 to 6). This configuration applies to all floating-point values in the system.

Steps

In the menu list on the left, click **System Configuration > Global Configuration**. Click on the

Numerical value tab on the right, and the numerical value configuration is as shown in Figure 5-7.

In the "Digits of the decimal number", enter an integer between 3 and 6 (including both).

Click on the **Save** button in the upper right corner to save the configuration.

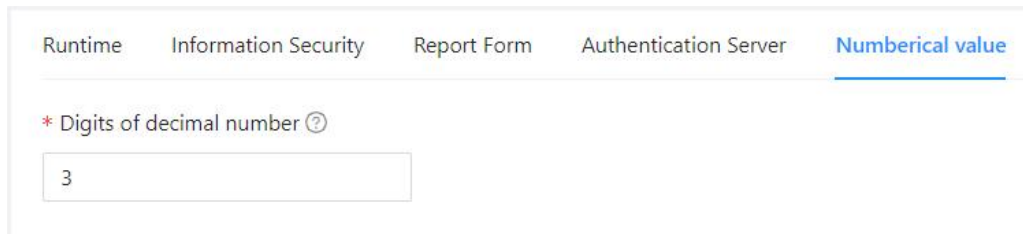


Figure 5-7 Numerical Value Configuration

5.3.6 Other Configuration

Other configuration allows for modifying the display names of custom fields in the Add/Modify Main Procedure, Add/Modify Program Template, and History interfaces.

Steps

In the menu list on the left, click **System Configuration > Global Configuration**. Click on the **Other** tab at the top, and the other configuration is as shown in Figure 5-8.

In the "Custom field name" text box, enter the desired name for the custom fields. After clicking the **Save** button in the upper right corner, the field names will be automatically updated to the configured names in other modules and interfaces that include custom fields.

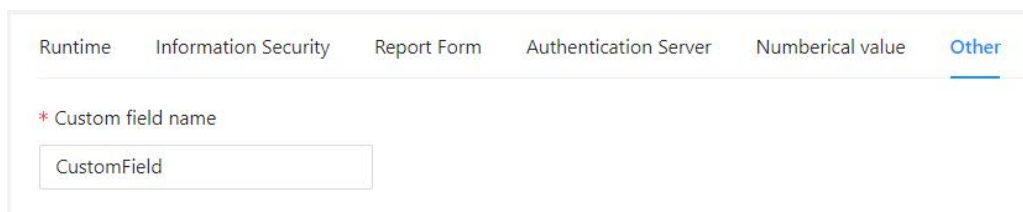


Figure 5-8 Other Configuration

Section 6 Configure the Procedure

In the menu list on the left, click **Procedure Builder > Procedure Builder**, and the Procedure Builder interface will be displayed on the operating interface on the right, as shown in the figure below, where you can manage the main procedures used in production.

The screenshot shows the 'Procedure Builder' interface. At the top, there are search filters for Name, Version, Status (with dropdowns for EDITED, EFFECTIVE, and APPROVING), and Group. Below these are fields for Version Remark and Label, along with Search and Reset buttons. A row of action buttons includes Add, Modify, Delete, Copy, Upgrade, MainProcedure Edit, Effect, Approve, Reject, Abandon, and Import. There is also an 'Export' button with a dropdown arrow. Below the buttons is a selection bar showing 'Selected 0 Item' and a 'Clear' button. The main part of the interface is a table with columns: No., Name, Version, Description, Version Remark, Status, Group, Label, and custom field. The table contains three rows of data. At the bottom right, there is a pagination bar showing 'Total 3 Item', a page number '1' in a blue box, and '20 / page'.

No.	Name	Version	Description	Version Remark	Status	Group	Label	custom field
1	test	V2.0		dd	EDITED	Group 8		
2	test	V1.0		dd	EFFECTIVE	Group 8		
3	CQ_009	V1.0.2.3		V1.0.2.3	EDITED	Group 1		

Figure 6-1 Procedure Builder

In the "Procedure Builder" interface, there are four states for the main procedure: Edited, Effective, Approving and Abandoned. The transition relationships between these states are illustrated in the following diagram.

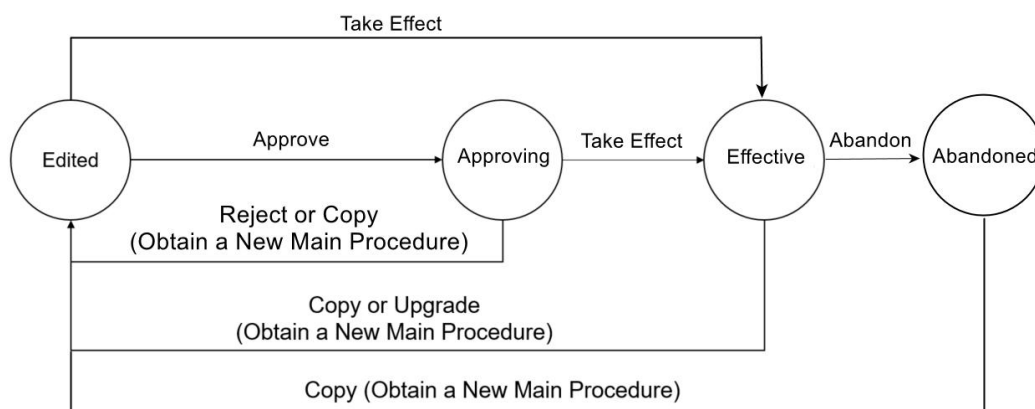


Figure 6-2 Status Transition of the Main Procedure

For details about Version, Version Remark, Description, and other parameters, refer to *Create a Main Procedure*. Buttons at the top of the interface are described as follows:

Table 6-1 Buttons in the Procedure Builder Interface

Button	Description	Remarks
Add	Create a new main procedure. Refer to <i>Create a Main Procedure</i> for details.	-

Button	Description	Remarks
Modify	Select a main procedure and click Modify to open the "Modify" dialog box. You can modify the group, version remark, description, etc. of the main procedure.	<ul style="list-style-type: none"> The name and version of the main procedure cannot be modified. Main procedures in the "Approving", "Effective" or "Abandoned" status cannot be modified.
Delete	Delete the selected main procedure(s) in the list.	Main procedures in the "Approving", "Effective" or "Abandoned" status cannot be deleted.
Copy	Use an existing main procedure as the template to create a new main procedure. The property parameters of the newly created main procedure can be modified.	-
Upgrade	Use an existing main procedure in the "EFFECTIVE" status as the template to upgrade for getting a new main procedure. The property parameters of the newly created main procedure can be modified.	<ul style="list-style-type: none"> The name of the main procedure cannot be modified. During the upgrade, a list will appear displaying other effective versions of the main procedure being upgraded, prompting whether to abandon them. You can select the main procedure versions that need to be abandoned as needed, and click OK to abandon them.
MainProcedure Edit/View	Click to enter the window for editing or viewing detailed information about the selected main procedure. For details, refer to <i>Introduction to the Main Procedure Editing Interface</i> .	<ul style="list-style-type: none"> If the selected main procedure is in the "EDITED" status, the button will be displayed as MainProcedure Edit, and the main procedure can be viewed and edited. If the selected main procedure is in the "APPROVING", "EFFECTIVE", or "ABANDONED" status, the button will be displayed as MainProcedure View, and the main procedure can only be viewed.
Effect	<ul style="list-style-type: none"> For a main procedure in the "EDITED" status with complete and correct information, click Effect when the main procedure is closed to put it into the "EFFECTIVE" status. For a main procedure in the "APPROVING" status, click Effect when the main procedure is closed to put it into the "EFFECTIVE" status. 	Before the main procedure in the "EDITED" status enters the "EFFECTIVE" status, the component will compile the main procedure. A prompt message will appear on the interface if any error occurs during the compilation. Please follow the prompt to fix the error and perform the operation to make the main procedure take effect again.
Approve	For a main procedure in the "EDITED" status with complete and correct information, click Approve when the main procedure is closed to put it into the "APPROVING" status.	Before the main procedure enters the "APPROVING" status, the component will compile the main procedure. A prompt message will appear on the interface if any error occurs during the compilation. Please follow the prompt to fix the error and perform the approving operation again.
Reject	For a main procedure in the "APPROVING" status, click Reject when the main procedure is closed to make it return to the "EDITED" status.	-
Abandon	Click Abandon to invalidate the selected main procedure in the "EFFECTIVE" status.	-

Button	Description	Remarks
Import	<ul style="list-style-type: none"> Click to open the "Import" dialog box. Select the .direct file to be imported, and then fields such as Name, Version, Group, Version Remark, StatusTag (in the Advanced tab page), Description, and other information will be filled in with the corresponding information automatically. You can modify the information as needed, click OK to enter the file encryption password (it is set when the .direct file was exported), and click OK to import the main procedure configuration externally. Click to select the .xlsx file to be imported. The main procedure name, version, group, version remark, description, and other information will be automatically filled in the respective fields. Fill in the mandatory fields in the "Operational process" (ContentCol and CodeCol are optional; the CodeCol is mandatory when Operational code are configured). Configuration can be done in the "Confirmation process" and then various confirmation sheets can be imported. Once the imported SOP information is correctly filled out, click OK. Multiple columns can be separated by commas (","). 	<ul style="list-style-type: none"> The version of OMC Pilot used for importing the configuration file of the main procedure MUST be the same as that used for exporting the configuration file. Otherwise, the configuration file cannot be imported and you will be prompted with "Software versions are inconsistent". The importing function allows you to import an Excel file of SOP forms into OMC Pilot and automatically generate SOP main procedures. SOP importing supports standard operating procedures and various confirmation tables. Enter the required information in the operation process, among which the content column and the code column are optional and the code column is required if you have configured operation codes. Configurations in the confirmation process are supported, after which you can import various confirmation tables. After the SOP information to be imported is filled in correctly, you can click OK to finish the importing. Multiple columns can be split by ",".
Export	<ul style="list-style-type: none"> Select a main procedure, click Export, then select "Direct" and set a file encryption password. This will export the configuration of the main procedure as a .direct format file. Select a main procedure, and click Excel. Based on the actual situation of the main procedure, set the SOP operational codes and confirmation process. This will export the configuration of the main procedure as a .xlsx format file. 	The file encryption password will be used when you import the file.

6.1 Material Management

OMC Pilot provides material management functions to view, add, edit, copy, delete, search, import, and export material information (material name, code, group, unit, batch number, type, package size, etc.).

Steps

1. In the menu list on the left, click **Procedure Builder > Material** to enter the material management module, as shown in Figure 6-3.

Information about materials that have existed in the system will be displayed in the list.

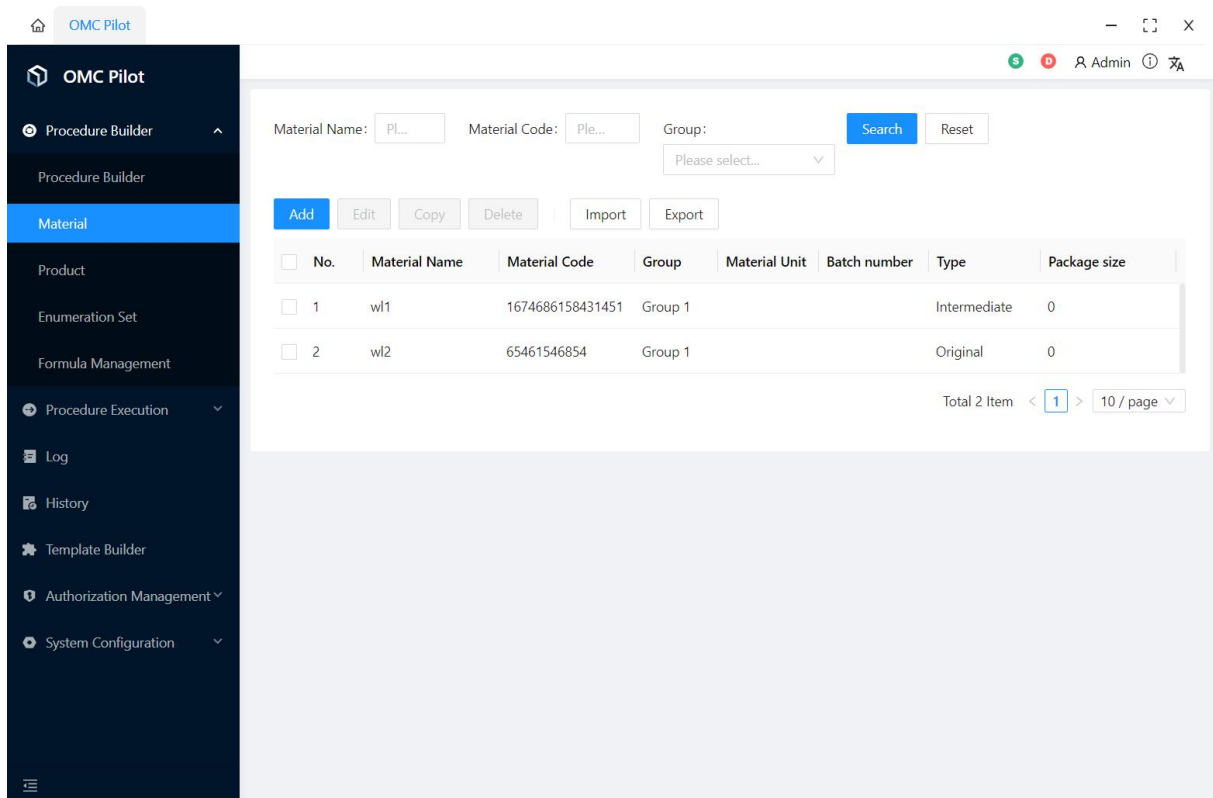


Figure 6-3 Material Management Interface

2. Add material information in one of the following three ways.

- Method 1: Add materials one by one by filling in with their information.

- 1) Click **Add** to open the “Add material” dialog box, as shown in Figure 6-4.
- 2) Fill in the material information, where the fields marked with * are required.
- 3) Click **OK** to complete adding the material information.

The newly added material information will be displayed in the list.

Add material
X

* Name:

* Code:

* Group:

Unit:

Batch number:

* Type:

Package size:

Cancel
OK

Figure 6-4 “Add material” Dialog Box

- Method 2: Add materials one by one by copying existing material information.
 - 1) In the material, select the existing material information to be copied.
 - 2) Click **Copy** to open the “Copy material” dialog box, as shown in Figure 6-5.
 - 3) Modify the material information, where the fields marked with * are required.
 - 4) Click **OK** to complete adding the material information.

The newly added material information will be displayed in the list.

Copy material

X

* Name:

* Code:

* Group:

Unit:

Batch number:

* Type:

Original

▼

Package size:

Cancel

OK

Figure 6-5 “Copy material” Dialog Box

- Method 3: Add materials in a batch by importing a file.
 - 1) Click **Export** to export the existing material information in the system as a CSV file.
 - 2) Open the exported CSV file, clear the existing data, fill in with the material information to be imported, and save the completed file.
 - 3) Click **Import** to open the “Import” dialog box, as shown in Figure 6-6.
 - 4) Click **Please select...** and select the completed material information file.
 - 5) Click **OK** to start validating and uploading the data in the file.

If validating the file failed, follow the system prompts to modify the material information and then execute step 3) to step 5) to import the material information in the file again.

If validating the file succeeded, the material information in the file will be imported into the system and displayed in the list.

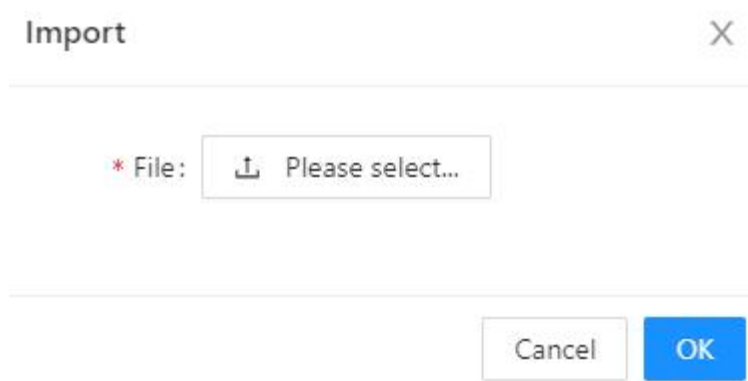


Figure 6-6 “Import” Dialog Box

3. (Optional) After adding material information, you can perform the following operations as needed.
 - Edit material information: Select the material information to be edited and click **Edit** to open the “Edit material” dialog box. After editing the material information, click **OK** to make the modification take effect.
 - Delete material information: Select one or multiple pieces of material information to be deleted. Click **Delete**, and click **OK** in the pop-up dialog box to delete the selected material information.
 - Search material information: Above the material list, set the name, code, and group as search conditions. Click **Filter** to filter the material information that meets the conditions. Click **Reset** to clear all search conditions.
 - Export material information: Click **Export** to export the material information already existing in the system as a CSV file.

6.2 Product Management

OMC Pilot supports the management of products and their corresponding input and output materials, including adding, editing, copying, deleting, searching, importing, exporting and other operations.

Steps

1. In the menu list on the left, click **Procedure Builder > Product** to enter the product management module, as shown in Figure 6-7.

Products already existing in the system will be displayed in the list on the left. After you select a product in the left list, the input and output material information of the product will be displayed in the right list.

The interface includes a search bar with fields for Name, Version, and Code, and buttons for Search and Reset. Below the search bar are buttons for Add, Edit, Copy, Delete, Import, and Export. The main area contains two tables. The first table, 'Product List', has columns: No., Name, Version, Code, Standard outp, and Unit. It lists three products: prod22 (V2.0, Code 19846156156, Unit 100), prod12 (V1.1, Code 51568496415, Unit 100), and prod11 (V1.0, Code 64189498418, Unit 100). The second table, 'Input material', has columns: No., Material Name, Material Code, Identifier, and Feeding amou. It lists two materials: w1 (Material Code 1674686158431451, Identifier BS1693550786790, Feeding amou 0) and w2 (Material Code 65461546854, Identifier BS1693550786791, Feeding amou 0). A pagination bar at the bottom shows 'Total 3 Item' and a page selector for 1 of 10 pages.

Figure 6-7 Product Management Interface

2. Add product information through one of the following three methods:

- Method 1: Add products one by one by filling in the product information.
 - 1) Click on the **"Add"** button to open the "Add product" dialog box, as shown in Figure 6-8.
 - 2) Fill in the product information, where fields marked with an * are mandatory.
 - 3) Click **"OK"** to complete the addition of the product.

The newly added product will be displayed in the left-side list.

The 'Add product' dialog box has a title bar with a close button (X). It contains five input fields, each with a red asterisk indicating it is mandatory: Name, Version, Code, Standard output, and Unit. The 'Standard output' field is pre-filled with the value '100'. At the bottom of the dialog are 'Cancel' and 'OK' buttons.

Figure 6-8 "Add product" Dialog Box

- Method 2: Add products one by one by copying existing product information.
 - 1) In the product list, select the existing product information that needs to copy.
 - 2) Click on the **"Copy"** button to open the "Copy product" dialog box, as shown in Figure 6-9.

- 3) Modify the product information, where fields marked with an * are mandatory.
- 4) Click **"OK"** to complete the addition of the product information.

The newly added product information will be displayed in the list.

Copy product X

* Name: prod22

* Version: V2.0

* Code: 19846156156

* Standard, output: 100

Unit: Please enter...

Cancel OK

Figure 6-9 "Copy product" Dialog Box

- Method 3: Bulk addition by importing a file.
- 1) Click on the **"Export"** button to export the existing product information in the system as an XLSX file.
 - 2) Open the exported XLSX file, fill in the product information to be imported, and save the filled-in file.
 - 3) Click on the **"Import"** button to open the "Import" dialog box, as shown in Figure 6-10.
 - 4) Click on "Please select file" and choose the filled-in product information file.
 - 5) Click **"OK"** to start validating and uploading the data from the file.

If the file validation fails, modify the product information according to the system prompts, then repeat steps 3) to 5) to import the product information from the file.

If the file validation passes, the product information from the file will be imported into the system and displayed in the list.


Import X



* File: Please select...

Cancel OK

Figure 6-10 "Import" Dialog Box

3. Associate the corresponding input and output material information with the newly added product.

- 1) In the list on the left, select the newly added product and click the **Input material** or **Output material** tab on the right to open the corresponding material list.
- 2) Click  to open the "Please select... material" dialog box, as shown in Figure 6- 11.
- 3) Select the input materials or output materials corresponding to the product. You can search for the required material information by name and code above the material list.
- 4) (Optional) In the text boxes under the "Feeding amount" and "Remark" columns corresponding to the material, enter the feed amount and remark information.
- 5) Click **OK** to complete adding the input/output materials.
- 6) For the added input/output materials, you can perform the following operations as needed.

- Edit material information: Select the material to be modified and click  to open the "Edit material" dialog box. Modify the feeding amount and remark and click **OK** to make the modification take effect.
- Delete material: Select the material to be deleted and click  to delete the selected material.

Please select... material ×

Material Name: Material Code: **Search** Reset

<input type="checkbox"/>	No.	Material Name	Material Code	Group	Material Unit	Batch number	Type	Package size	Feeding amou	Remark
<input type="checkbox"/>	1	jyn2	1234567	group1			Intermediate	0	<input type="text" value="Please ..."/>	<input type="text" value="Please enter..."/>
<input type="checkbox"/>	2	jyn1	123456	group1			Original	0	<input type="text" value="Please ..."/>	<input type="text" value="Please enter..."/>

Total 2 Item < 1 > 10 / page

Cancel OK

Figure 6- 11 Material Selection Dialog Box

4. (Optional) After adding product information, you can perform the following operations as needed.

- Edit a product: Select the product data to be edited and click **Edit** to open the "Edit product" dialog box. Modify the product information and click **OK** to make the modification take effect.
- Search products: Above the product list, set the name, version, or code as the search conditions and click **Search** to filter the products that meet the conditions. Click **Reset** to clear all search conditions.
- Delete a product: Select the product data to be deleted, click **Delete**, and click **OK** in the

pop-up dialog box to delete the selected product.

- Export product information: Click the **Export** button to export the existing product information in the system as an XLSX file.

6.3 Enumeration Set Configuration

In the menu list on the left, click **Procedure Builder > Enumeration Set**. The enumeration set configuration interface will be displayed on the right, as shown in Figure 6- 12.

<input type="checkbox"/>	Name	Description	Enumeration
<input type="checkbox"/>	meijuji_1		[3] MJ_1 [4] MJ_2
<input checked="" type="checkbox"/>	Enumset1		[-1] Enumset1 [0] Enumset2 [1] Enumset3
<input type="checkbox"/>	enum		[0] Enum1 [2] Enum2

Figure 6- 12 Enumeration Set

Add a New Enumeration Set

1. Click **Add** to open the “Add Enumeration Set” dialog box, as shown in the figure below. Fill in the name and description of the enumeration set in the pop-up dialog box. The name of the enumeration set cannot be duplicated.
2. In the “Add Enumeration Set” dialog box, click **Add** to add the enumeration data and the corresponding enumeration values to the enumeration set. In an enumeration set, the enumeration name and enumeration value cannot be duplicated.

Add Enumeration Set [X]

* Name:

Desc:

<input checked="" type="checkbox"/> Name	Enumeration Value
<input type="checkbox"/> Enum1	-1
<input type="checkbox"/> Enum2	0
<input checked="" type="checkbox"/> Enum3	1

Figure 6-13 “Add Enumeration Set” Dialog Box

3. After completing the configuration, click **OK**. OMC Pilot will display the new enumeration set in the list shown in Figure 6-12.

Edit/Delete an Enumeration Set

Select the enumeration set you want to operate on in the list shown in Figure 6-12 and click **Edit** or **Delete** to perform the corresponding operation.

Edit/Delete Enumeration Data

Select the enumeration set you want to operate on in the list shown in Figure 6-12 and click **Edit**. In the opened “Modify Enumeration Set” dialog box, you can modify or delete the enumeration data and enumeration values.

Use the Enumeration Data

You can use the enumeration data in the value-writing confirmation message as described below.

1. Click **Procedure Builder > Enumeration Set** to add an enumeration set and the data.

Modify Enumeration Set

* Name:

Desc:

<input type="checkbox"/> Name	Enumeration Value
<input type="checkbox"/> Enum1	<input type="text" value="0"/>
<input type="checkbox"/> Enum2	<input type="text" value="2"/>

Figure 6-14 Example of Adding a New Enumeration Set

- In the procedure configuration interface, add data of the enumeration type in the list of parameters or variables (we take the list of parameters as an example in this case).

Add Parameter

Basic **Advanced**

* Name:

* Param Type:

* Data Type:

* Enum Set:

* Value:

Unit:

Description:

Name	Param Type	Data Type	Value	Unit	Ref Value	Description
SelectKettle	Input	Enum	1[Enum1]		False	

Figure 6-15 Add New Enumeration Data

- In the procedure configuration interface, add the “Confirm Messages” component, set the “Request content” to “Setting” in the “Basic” tab on the right, set the “Target variable parameters” to the data of the enumeration type, and set the upper limit and lower limit of the data in the “Settings” tab.

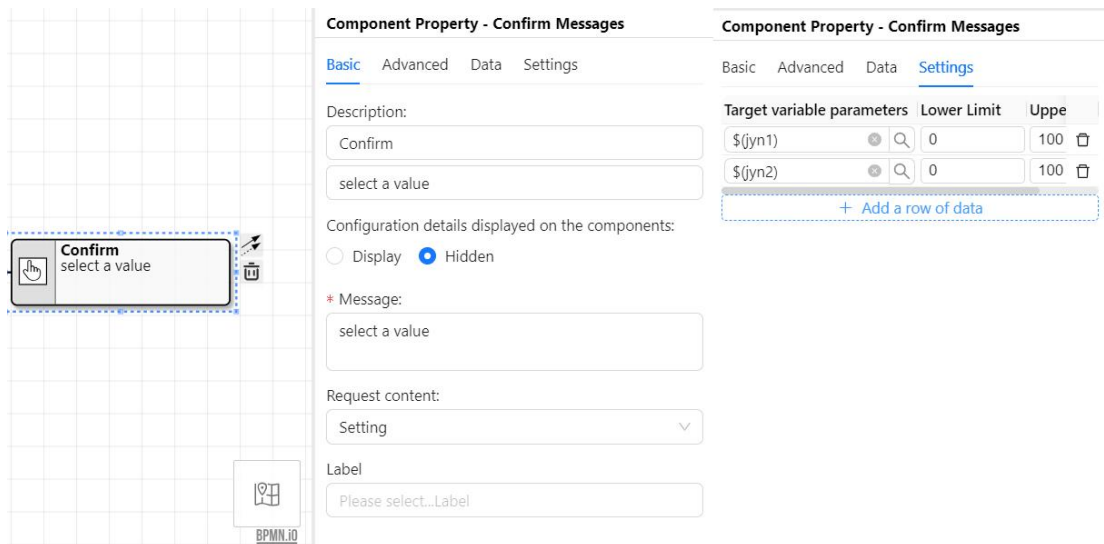


Figure 6-16 Add a Value-writing Confirmation Component

4. Complete the configuration of the main procedure, save and compile the procedure, and add an instance for running the procedure.
5. During the running period of the procedure, you can select the data in the enumeration set as the variable's value in the value-writing confirmation interface.

Confirm - [testmm]

Time: 2023-08-23 16:18:04

ACK:

Message:

select a value

Name	* Value	Unit	Lower Limit	Upper Limit
\$(aaa)	Enumeration e...		0	100

Remarks:

Position

Cancel

Confirm

Figure 6-17 Select an Enumeration Value During the Running Period

6.4 Formula Management

A formula specifies the corresponding relationship between a set of parameters and their assigned values. A formula group can contain multiple formulas, each specifying different assigned values for the parameters. For a main procedure associated with a formula group, when creating an

instance of the main procedure, selecting a specific formula automatically populates the assigned values of parameters with the same name and data type. Formulas enable quick access to commonly used parameter values, facilitate parameter management, and simplify the process of setting parameter values.

Steps

1. In the menu list on the left, click **Procedure Builder > Formula Management**, enter the formula management module, as shown in Figure 6-18.

The existing formula groups in the system will be displayed in the list.

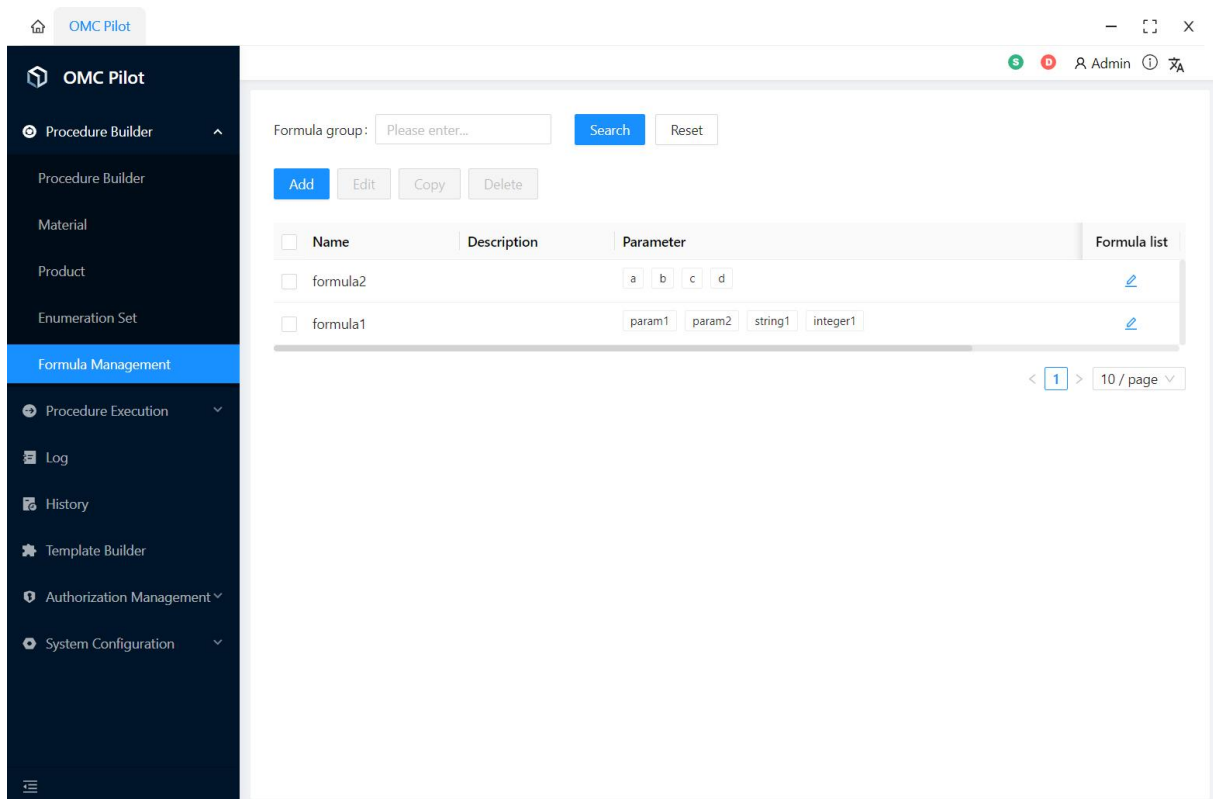



Figure 6-18 Formula Management Module

2. Add a formula group through one of the following two methods.
 - Method 1: Add formula group one by one by filling in the formula group information.
 - 1) Click the **Add** button to open the “Add formula group” dialog box, as shown in Figure 6-19.
 - 2) Fill in the formula group information. The fields marked with an * are mandatory, and the formula group name must be unique.
 - 3) Enter parameter names and select data types. Click **Add a row of data** to add multiple parameters or click  next to a parameter to remove it.

You can also click on the **Import parameter** button to open the “Import parameter” dialog

box (as shown in Figure 6-20) and select the main procedure to import parameters from. If "Import type" is set to "Import", the parameters already added in the "Add formula group" dialog box will not be deleted, and the selected parameters from the main procedure will be added alongside the existing parameters. If the "Import type" is set to "Clear & Import", the parameters already added in the "Add formula group" dialog box will be deleted, and only the selected parameters from the main procedure will be added as parameters.

- 4) Click **OK** in the "Add formula group" dialog box to complete the addition of the formula group.


The newly added formula group will be displayed in the list."

Figure 6-19 Add Formula Group Dialog Box

Figure 6-20 Import Parameter Dialog Box

- Method 2: Add formula group by copying from an existing one.
 - 1) In the formula group list, select the existing formula groups that you want to copy.
 - 2) Click the **Copy** button to open the "Copy formula group" dialog box, as shown in Figure 6-21.
 - 3) Modify the formula group information. The fields marked with an * are mandatory, and the

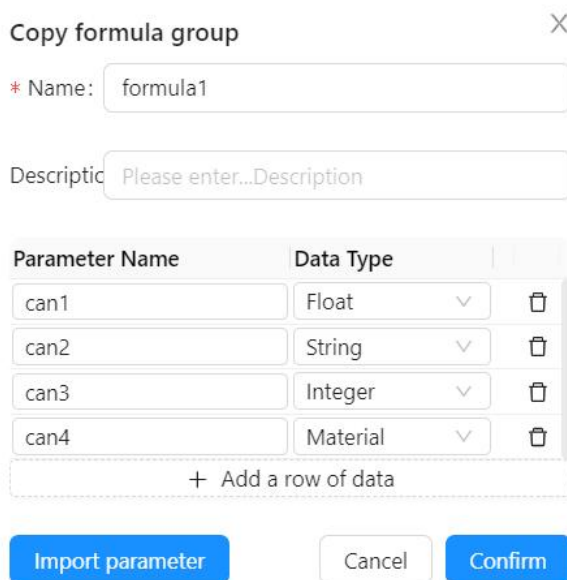
formula group name must be unique.

- 4) Modify the parameters of the original formula group or enter new parameter names and select data types. You can click **Add a row of data** to add multiple parameters or click  next to a parameter to remove it.

You can also click on the **Import parameter** button to open the “Import parameter” dialog box (as shown in Figure 6-20) and select the main procedure to import parameters. If “Import type” is set to “Import”, the parameters already added in the “Copy formula group” dialog box will not be deleted, and the selected parameters from the main procedure will be added alongside the existing parameters. If the “Import type” is set to “Clear & Import”, the parameters already added in the “Copy formula group” dialog box will be deleted, and only the selected parameters from the main procedure will be added as parameters.

- 5) Click **OK** in the “Copy Formula Group” dialog box to complete the addition of the formula group.

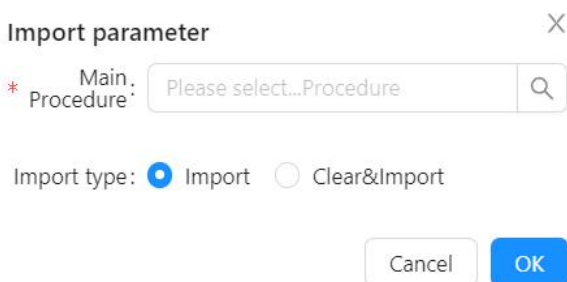
The newly added formula group will be displayed in the list.



The dialog box titled "Copy formula group" has a close button (X) in the top right corner. It contains a text field for "Name:" with the value "formula1". Below it is a text field for "Description:" with the placeholder text "Please enter...Description". A table with two columns, "Parameter Name" and "Data Type", contains four rows of data: "can1" (Float), "can2" (String), "can3" (Integer), and "can4" (Material). Each row has a trash icon to its right. Below the table is a button labeled "+ Add a row of data". At the bottom are three buttons: "Import parameter" (blue), "Cancel" (white), and "Confirm" (blue).

Parameter Name	Data Type
can1	Float
can2	String
can3	Integer
can4	Material


Figure 6-21 Copy Formula Group Dialog Box

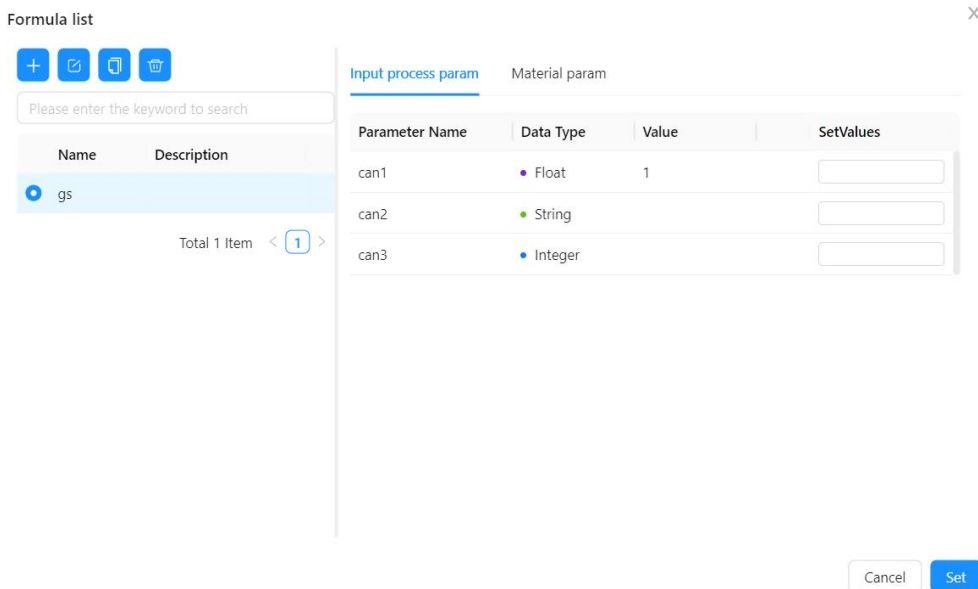


The dialog box titled "Import parameter" has a close button (X) in the top right corner. It contains a text field for "Main Procedure:" with the placeholder text "Please select...Procedure" and a search icon (magnifying glass) to its right. Below this is a section for "Import type:" with two radio buttons: "Import" (selected) and "Clear&Import". At the bottom are two buttons: "Cancel" (white) and "OK" (blue).

Figure 6-22 Import Parameter Dialog Box


3. Add formulas to a formula group.

- 1) In the formula group list, click  in the “Formula list” column corresponding to the formula group where you want to add a formula. This will open the “Formula list” dialog box, as shown in Figure 6-23.



Parameter Name	Data Type	Value	SetValues
can1	Float	1	<input type="text"/>
can2	String		<input type="text"/>
can3	Integer		<input type="text"/>

Figure 6-23 Formula List Dialog Box

- 2) Click  at the top of the left panel to open the “Add formula” dialog box, as shown in Figure 6-24.
- 3) Enter the formula name (mandatory) and description. Click **OK** to complete the addition of the formula.

The newly added formula will be displayed in the left-side list.

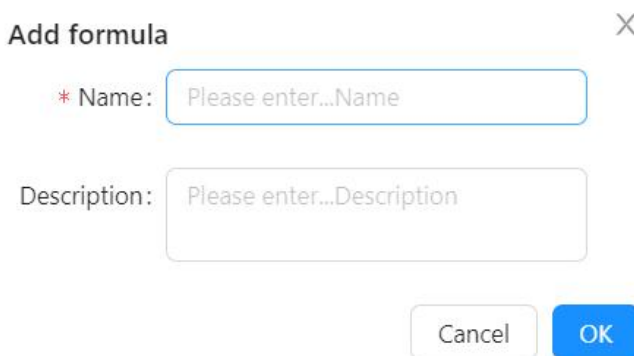


Figure 6-24 Add Formula Dialog Box

- 4) In the “SetValues” text box for each parameter on the right-hand side, enter the desired value for the parameter. Click **Set** in the bottom-right corner to apply the setting. The set

values will be displayed in the "Value" column, as shown in Figure 6-25.

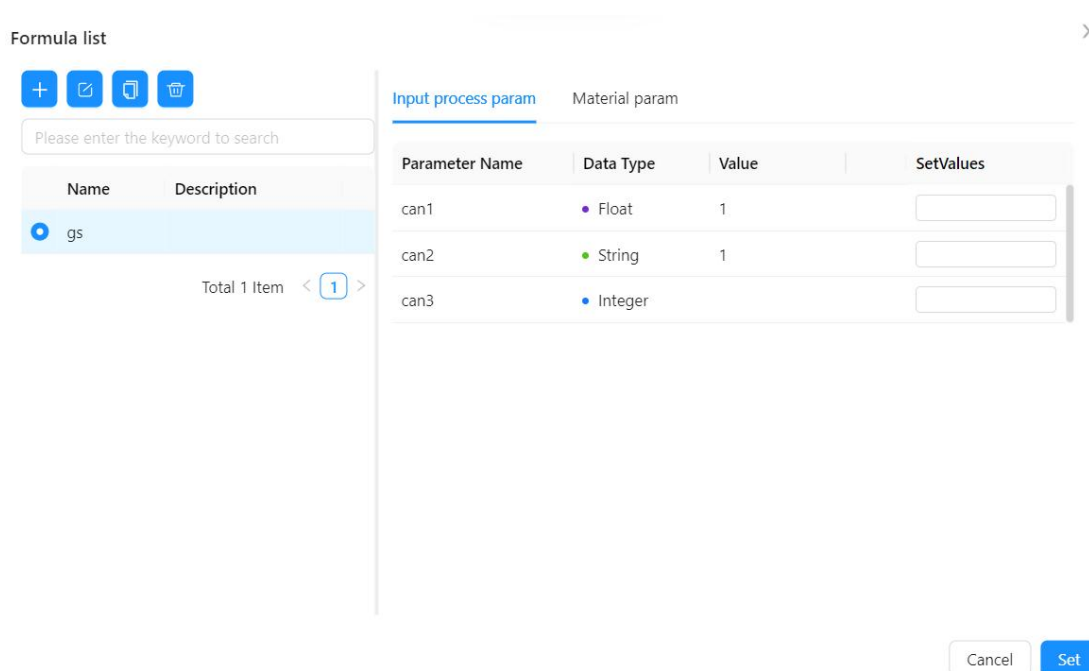






Figure 6-25 The Added Formulas and the Set Parameter Values

5) (Optional) The following operations can be performed on added formulas as needed:

- Edit formula: In the left formula list, select the formula to be edited, click  above to open the "Modify formula information" dialog box, and modify the formula description. Click **OK** to save the changes.
- Copy formula: In the left formula list, select the formula to be copied, click  above to open the "Copy formula" dialog box. Modify the formula name (must be unique) and description, click **OK** to generate a new formula which will be displayed in the list.
- Delete formula: In the left formula list, select the formula to be deleted, click  above, and in the confirmation dialog box, click **Confirm** to remove the selected formula from the formula group.
- Search formula: In the "Please enter the keyword to search" area above the formula list, enter the keyword of formula name, and the formula list below will instantly display the formulas that include the keyword in their names.
- Modify set value of formula parameters: In the right parameter area, enter a new set value in the text box under the "SetValues" column for the corresponding parameter. Click **Set** button in the bottom right corner to modify the setting value of the parameter.

6) After adding formulas to the formula group, click  in the upper right corner of the "Formula list" to close the dialog box directly.

4. (Optional) After completing the addition of formula groups, the following operations can be

performed as needed:

- Edit formula group: Check the formula group to be edited. Click **Edit** to open the "Edit formula group" dialog box. Modify the formula group information and parameters, then click **Confirm** to apply the changes.
- Delete formula group: Check one or more formula groups to be deleted. Click **Delete**, and in the popup dialog box, click **OK** to delete the selected formula groups.
- Search formula group: Set the formula group name as the search condition above the formula group list. Click **Search** to filter out the formula groups that meet the condition. Click **Reset** to clear the search criteria.

6.5 Create a Main Procedure

1. In the Procedure Builder interface, click **Add** to open the "Add" dialog box, as shown in the figure below.

Figure 6-26 Create a Main Procedure



2. Click the **Basic** tab to configure the basic parameters of the main procedure as described below.

- Name: Name of the main procedure, which is configured when you create a new main procedure and cannot be edited twice. The name and version of the main procedure cannot be duplicated simultaneously. The name must start with a letter, can contain letters, digits, and underscores, and can contain no more than 32 characters.
- Version: Version information of the main procedure, which is configured when you create a new main procedure and cannot be edited twice. The name and version of the main procedure cannot be duplicated simultaneously. The version can contain letters, digits,

and decimal points and no more than 32 characters.

- **Group:** Group that the main procedure belongs to. When creating a new main procedure, you can select an existing group.
- **Version Remark:** Remark information for the main procedure version, which can contain no more than 64 characters.
- **Remark:** Description information for the main procedure, which can contain no more than 64 characters.
- **Custom field:** Other information of custom main procedure is up to 64 characters. The name of this parameter can be modified in "Global Configuration", please refer to *Other Configuration* for more details.

3. Click the **Advanced** tab to configure the advanced parameters of the main procedure as described below.

- **Product:** Click  to open the "Please select... product" dialog box. Select a product that has been added to the system. Click **Material detail** in the "Operation" column to view the product material details of each product. For details about product management, refer to *Product Management*.
- **Max output:** Enter a value between 0 and 999999999.
- **Min output:** Enter a value between and 999999999. The value cannot be greater than the Max output.
- **Standard output:** Enter a value between 0 and 999999999, which cannot be greater than the Max output and cannot be less than the Min output.
- **Unit:** Enter the corresponding unit of the output.
- **StatusTag:** Click  to select a control system tag as the status tag, which allows you to know the current running status of the procedure by the real-time value of the status tag during the running period. The status tag value corresponds to the running status of the procedure as described in the *Running Status Description*.
- **Label:** Click to select a label from the dropdown list as a label for the characteristics and functions of this main procedure.



Tip:

- You should set the read&write attribute of the status tag to read-write.
 - Main procedures that need to run simultaneously cannot be associated with the same status tag.
-

4. After completing the configuration, click **OK**.

6.6 Introduction to the Main Procedure Editing Interface

Once you have created a new main procedure, click **MainProcedure Edit** to open the window for editing main procedure details, as shown below. One main procedure can only be opened by one

user at a time. If someone else has already opened the main procedure, you will be prompted with information about the user using it when trying to open the main procedure.

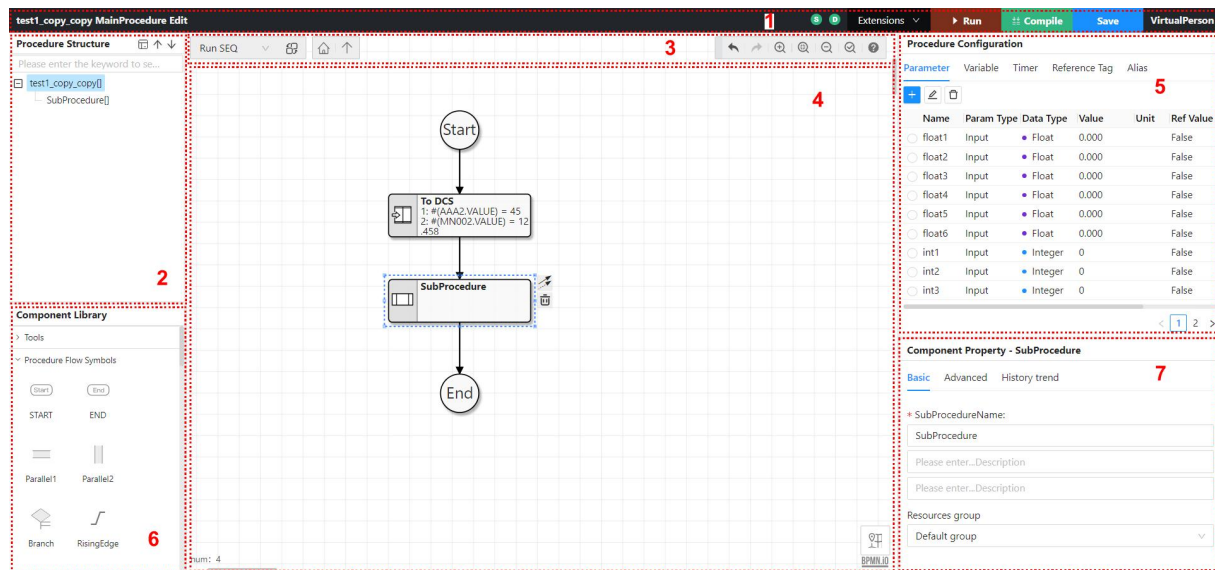





Figure 6- 27 Window for Editing Main Procedure Details

As shown above, the main procedure editing interface is divided into seven sections:

1. Title Bar: It is located at the top of the interface. For descriptions of the buttons to the right of the title bar, refer to *Procedure Editing Button*.
2. Navigation tree: It is located at the upper left side of the interface and is used to display the procedure structure tree, with the main procedure being the root node.

When you add a SubProcedure component via the component library, the corresponding subprocedure node will be added here. When you select the main procedure or a subprocedure, the procedure editing area will display the interface for editing the procedure. Buttons at the top of the procedure tree are described as follows:

- Save as a template: Click  to save the current main procedure and save it as a template configuration. Refer to *Configure the Template* for details.
 - Reorder: Select a subprocedure node and click  or  to reorder the display of the subprocedure nodes in the structure tree. The display order will not affect the execution order of the subprocedures.
3. Navigation bar: It is used to adjust the display scale in the editing area. For the description of each button, refer to *Navigation Bar Button*.
 4. Procedure editing area: The procedure editing area consists of the canvas and components added to the canvas. Refer to *Component Introduction* for a description of the components that can be used, and refer to *Configure Main Procedure Logic* for a detailed description of the procedure rules.
 5. Data list: It displays the data used by the selected node in the navigation tree. Refer to *Data*

List for more details.






6. Component library: It displays the available components. Refer to *Component Introduction* for more details.

After clicking the component, move the cursor to the canvas. A dotted line frame of the component will appear under the cursor. Click the left mouse button to add it.

7. Component property: Once you have selected a component, you can configure the component property here. Refer to *Component Introduction* for more details.

6.6.1 Procedure Editing Button

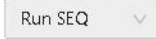











Table 6-2 Buttons in the Title Bar

Button Icon or Name	Description
 Service Status	Hover the cursor over the icon to view the service status, data source type, and data source status.
 Dongle Status	Hover the cursor over the icon to view the dongle status and authority information.
Extensions	Click on this icon, and a drop-down menu appears, which includes FailMonitor, Resource, Print, Batch replacement, and MainProcedure Props.
FailMonitor	Click to open the configuration interface of the FailMonitor, where you can configure the determination condition of the exception handling status. Refer to <i>Configure FailMonitor</i> for more information.
Resource	Click to open the Resource panel, which allows you to view all resources of the current main procedure, including variables, parameters, timers, reference tags, alias information, and so on. Click  in the upper-right corner to switch the parameter display format between the tile view and the tree view.
Print	Select a node in the navigation tree and click this button to open the print preview page of the main procedure or the current subprocedure. The default paper size is A4. You can modify the paper orientation and print the previewed content.
Batch Replacement	Quickly replace the names of tags bound with aliases or parameter names in the current main procedure. In Alias tag or Parameter list, select the alias whose bound tag name needs to be replaced or the parameter whose name needs to be replaced. In the left text box above the list, enter the content to be replaced in the existing tag name and parameter name (case sensitive; it will be marked with a red strike through in the "Content" column). In the right text box after "replace with", enter the content after replacement (it will be marked in red in the "Preview" column). Click OK to complete the replacement.
MainProcedure Props	Set the server scheduling period, electronic signature process and case sensitive. <ul style="list-style-type: none"> ● Schedule: From the drop-down list, select the server scheduling period, which can be set to 250ms, 500ms, 1000ms, 2000ms, or 3000ms. The server scheduling period affects the running speed of the main procedure instance. The shorter the period is, the faster the main procedure instance runs. It is not recommended to modify this period at will. ● Electronic Sign: Whether to enable the electronic signature process for step skipping operations during the execution of the main procedure instance. If not configured, it means not enabled. If you need to enable it, click  and select the electronic signature process to be enabled in the pop-up electronic signature dialog box (only the 1-level electronic signature is supported). ● Formula Group: Specifies the formula group associated with this main procedure. When creating an instance of the main procedure, selecting a specific formula from this formula group automatically populates the setting values of parameters in the formula into corresponding parameters with the same name and data type. If not configured, it means there is no association with a formula group. To associate a formula group, click  and select the desired formula group from the popup "Formula group list" dialog. You can also add new formula groups or edit formulas within this dialog.

Button Icon or Name	Description
Run	This button is used to directly run the main procedure currently being edited during the editing process, without waiting for the main procedure to take effect before running. This button will only appear if the debug mode is enabled in the global configuration. Please refer to <i>Runtime Configuration</i> for more details. When you click this button, the system will save and compile the main procedure first, and then open the "Debug Task" window. The process of creating a debug task is the same as creating a main procedure instance. Please refer to <i>Add an Instance</i> for more details. The operation of the debug task running interface is the same as the main procedure instance running interface. Please refer to <i>Procedure Running Interface</i> and <i>Running Status and Operation Commands</i> for more details.
Compile	Check the syntax of the logic for the entire main procedure. Refer to <i>Compile</i> for more information.
Save	Save modifications to the main procedure.

6.6.2 Navigation Bar Button









Table 6-3 Buttons in the Navigation Bar

Button Icon	Name	Description
	Procedure status sequence view	The procedure sequence logic includes the Run SEQ (Running Sequence), Stop SEQ (Stopping Sequence), Pause SEQ (Pausing Sequence), and Resume SEQ (Resuming Sequence). Click and select a procedure status view from the drop-down list to switch to that status view for adding or modifying the procedure logic. When you switch the status during the running period, OMC Pilot will execute the procedure in the corresponding sequence view.
	Status transition diagram	Click to display the status transition diagram. When you hover your cursor over a certain status block, status blocks not associated with it will be blurred. Blue status blocks are associated with the sequence view, and you can click them to go to the corresponding sequence view for viewing.
	View Main Procedure	Click to display the main procedure in this area.
	View Parent Procedure	Click to display the parent procedure.
	Undo	Undo the previous operation.
	Redo	Redo the previous operation.
	Zoom in	Enlarge the display scaling size.
	100% display	Restore the display scaling size to 100%.
	Zoom out	Reduce the display scaling size.
	Overview	Click to display the whole procedure.
	Help	View shortcut tips. Refer to Table 6-5 for keyboard shortcut descriptions.
	Open minimap	Quickly move and view the sequence view.

6.6.3 Buttons and Shortcuts in the Procedure Editing Area

When multiple components are selected, alignment buttons will appear at the top of the canvas. The table below shows the description of each button. (Baseline object: When you hold down the **Ctrl** key for selecting multiple components, the first component being selected is the baseline object; when you hold down the **Shift** key and draw a frame for selecting multiple components, the component in the upper left corner is the baseline object.)

Table 6-4 Alignment Buttons

Button Icon	Name	Description
	Align left	Take the left border of the baseline object as the baseline and align multiple objects with the baseline.
	Align center	Take the vertical center line of the baseline object as the baseline and align the vertical centers of multiple objects with the baseline.
	Align right	Take the right border of the baseline object as the baseline and align multiple objects with the baseline.
	Align top	Take the top border of the baseline object as the baseline and align multiple objects with the baseline.
	Align middle	Take the horizontal center line of the baseline object as the baseline and align the horizontal center lines of multiple objects with the baseline.
	Align bottom	Take the bottom border of the baseline object as the baseline and align multiple objects with the baseline.
	Vertical distribution	Arrange multiple objects at equal intervals vertically (the horizontal positions of these objects remain unchanged).
	Horizontal distribution	Arrange multiple objects at equal intervals horizontally (the vertical positions of these objects remain unchanged).

You can use keyboard shortcuts when editing procedure units in the canvas, as shown in the table below.

Table 6-5 List of Keyboard Shortcuts


Shortcut	Effect
Hold down the Shift key	Activate the lasso tool. Then hold down the left mouse button and drag to place the components that need to be selected in a dashed frame to simultaneously select multiple components whose distribution is relatively concentrated.
Hold down the Ctrl key and the left mouse button	Select multiple components.
Hold down the left mouse button and drag	Activate the hand tool to move the canvas.
Hold down the space key and move the mouse	
Press the H key	
Press the C key	Activate the connection tool.
Hold down the Ctrl key and roll the mouse wheel (or press +/-)	Enlarge or reduce the display scaling size of the canvas.
Ctrl+0	Cancel zooming and restore the display scaling size to 100%.
Ctrl+A	Select all components.
Ctrl+Z	Undo the previous operation.

Shortcut	Effect
Ctrl+Shift+Z	Redo the previous operation.
Ctrl+C	Copy the component currently selected in the canvas.
Ctrl+V	Paste the copied component at the mouse position.
Arrow keys	Move the selected component in the canvas.
Delete or Backspace	Delete the components selected in the canvas.

6.6.4 Data List

The data categories that can be used in procedures include tags, variables, parameters, timers, and aliases. The data list in the upper right area shown in Figure 6-27 allows you to add different categories of data to the current procedure node. For detailed descriptions of data categories, refer to Table 6-6. Among them, the variables and parameters added to the main procedure node are called global variables and global parameters, respectively, which can be referenced by components in subprocedures. Data added in each subprocedure can only be referenced by components in the current subprocedure.




Basic Operations on the Data List

- Add data: In the data list in the upper right area shown in Figure 6-27, select a data tab (**Parameter**, **Variable**, **Timer** or **Alias**), and click . In the pop-up dialog box, enter the data name, select a data type, and fill in the data description.
- Configuration requirements:
 - The name of the data or timer must start with a letter, can contain letters, digits, or underscores, and can be no more than 32 characters.
 - You cannot modify the data type twice.
 - The length of the data description cannot exceed 64 characters.
 - For the data of type “Parameter”, you can set “Param Type” to “Input” or “Output” in the Basic tab, and select the resource group from the “Resources group” drop-down list and configure whether to enable “LineScale” and whether the input parameter is a reference value in the Advanced tab.



Tip:

- “Resources group” is used to control the access and operation permission to the parameters. “LineScale” is used to control whether SetValues of parameters will vary in multiples with the ratio of the plan output to the standard output.
- For the procedure flow components “SubProcedure”, “Custom Template”, and “RefMainProcedure”, parameters whose “Defer” is set to “True” can receive values passed from parameters or variables of the same data type in the parent procedure. For details, refer to *Procedure Flow*.
- For parameters whose data type is “Material”, “Defer” is “False” by default and cannot be modified.

- Add a timer: Click the **Timer** tab, click , and enter the timer name and description in the pop-up dialog box.
- Edit data: Select data in the data list and click on  to modify the name, description and default value of the data in the pop-up dialog box.
- Delete data: Select data in the data list, click , and click **OK** in the pop-up dialog box to delete the data, or click **Cancel** to abandon the deleting operation.



Tip:

Data that has been referenced by components can be deleted. You MUST be cautious when performing deleting operations. If you delete data by mistake, error prompts will appear in the compilation result after you compile the main procedure. Please click Location to go to the relevant subprocedure and add the data again.

Data Function and Format

After you use data in the properties of a component, different categories of data will be displayed in different data formats. The table below shows the functions and display formats of various categories of data.


Table 6-6 List of Data Formats and Functions

Data Category	Data Format	Data Description
Tag (Reference tag)	\$(Tag name.Subproperty) For example: \$(TAG01.PV)	<ul style="list-style-type: none"> ● It is from the data source configured in "System Configuration" and is used to read and write DCS tag data. ● Tags used when you configure component properties will be displayed on the "Reference Tag" page of the data list. ● Operation period: Running period: There are different data synchronization rules in different operation modes. For descriptions of operation modes, refer to <i>Create a Main Procedure Instance</i>.
Global variable	\$(Variable name) For example: \$(GVAR1)	<ul style="list-style-type: none"> ● Global variables: Variables of the main procedure used for data exchange within the main procedure and among subprocedures and can be used by all subprocedures. ● Local variables: Variables of the subprocedure used for data exchange within the subprocedure. ● Default value: The initial value of variables of type integer and float is 0, and that of variables of type string is empty by default. ● Running period: You can modify values in the "Resources Operation" window when the main procedure is in Offline mode.
Variable (Local variable)	\$(Variable name) For example: \$(VAR1)	
Global parameter	\$(Parameter name) For example: \$(GPARA1)	<ul style="list-style-type: none"> ● Global parameters: Parameters of the main procedure used for data exchange within the main procedure and among subprocedures and can be

Data Category	Data Format	Data Description
Parameter (Local parameter)	\$(parameter name) For example: \$(PARA1)	<p>used by all subprocedures.</p> <ul style="list-style-type: none"> Local parameters: Parameters of the subprocedure used for data exchange within the subprocedure. Default value: Initial value set when you add the parameter. Running period: You can modify values in the "Resources Operation" window.
Timer data	\$(Timer data) For example: \$(TM01)	<p>Timer data is used to accumulate the elapsed time. You need to add timer data if there are timers or clocks in the procedure.</p> <p>Default value: Integer data in second. It is 00:00:00 by default. The system will time according to settings during the running period.</p>
Alias data	@(Name of the alias) For example: @(Alias)	<p>Alias data is mainly used in combination with templates. For details, refer to Configure the Template. Here is a brief introduction to the process:</p> <ul style="list-style-type: none"> Configuration period: In a main procedure, set the data used by the component as alias data, save the main procedure as a template, and make the template take effect. After using the template in the "Custom Template" component, add the alias data to the data list of the procedure and specify the specific tag corresponding to the data. Running period: The alias will be replaced with the corresponding tag and the actual value of the tag will be used for procedure operations.

Rules for Writing Values







When setting initial values of the data and setting constants for judgment expressions in the components during the configuration period, or writing values to data during the running period, please follow rules below:

- Integer: You can enter only digits and plus or minus signs, and the value should contain no more than 9 digits.
- Float: You can enter only digits, plus or minus signs, and decimal points, and the value should contain no more than 12 digits.
- String: It should contain no more than 80 characters.
- Enumeration: Select the enumeration set when adding parameters. You can set the optional values available during the running period in **Procedure Builder > Enumeration Set**. For the example of how to use the enumeration set, refer to *Enumeration Set Configuration*.
- Material: The material parameters contain a set of parameters representing the material properties, including Code, Name, Batch, Equipment, ExpectedWeight, ActualWeight, Packages, and SkipCheck (the value of "SkipCheck" is carried over from the order data issued by VxMES and is used to mark whether to ignore the Scan Check steps). After setting "Data Type" to "Material", you can click  after "Value" to set the default value of each parameter.

6.6.5 Component Introduction

The component library contains tools to assist with drawing and five main categories of components: procedure flow components, input/output components, message components, timer/clock components, and auxiliary components. You can use the following drawing tools when editing your procedures. For descriptions of other components, refer to *Configure Main Procedure Logic*.

Table 6-7 Tool

Component Name	Component Icon	Function Description
Hand tool		After you click on it, the cursor changes to  . You can hold down the left mouse button to drag the canvas.
Lasso tool		After you click on it, the cursor changes to  . You can hold down the left mouse button and drag to draw a dashed frame for simultaneously selecting multiple components whose distribution is relatively concentrated.
Connect tool		After you click on it, you can click two components successively to draw a line with an arrow between the two components, which indicates the process sequence of the procedure. The connections from "AND", "OR", "Timers", and "Procedure Flow Symbols" elements to other elements can be configured with default values in the "Component Properties - Branch" on the right side.
Delete tool		It will be displayed on the right of the component you select. Click it to delete the selected component.

6.7 Configure FailMonitor

FailMonitor is used to configure the conditions for determining the exception handling status. OMC Pilot supports up to 10 pieces of FailMonitor.

Steps

In the main procedure editing interface, select **Extensions > FailMonitor** to the right of the title to enter the configuration interface as shown below, where you can configure conditions for exception monitoring.

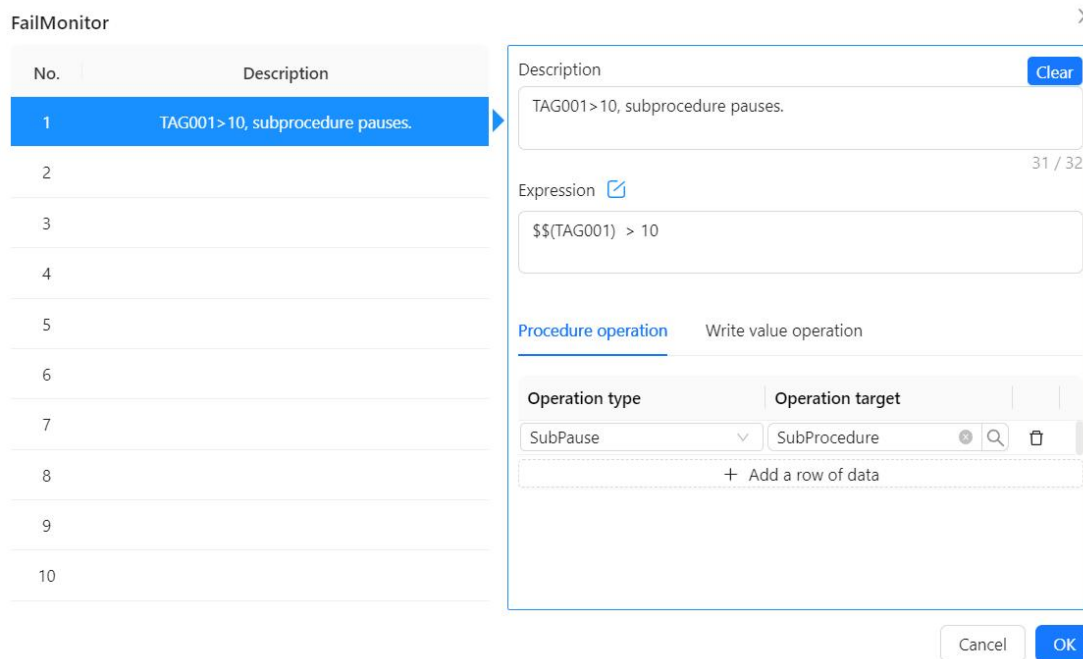



Figure 6-28 FailMonitor Configuration Interface

Select a FailMonitor condition on the left and configure parameters in the right interface as described below:

- 1) Description: Configure the description of the exception message.
- 2) Expression: Configure the exception condition for the message. Click  to configure the expression as the exception determination condition in the pop-up dialog box. The expression can contain mathematical constants, arithmetic, and common mathematical functions. Click **Tag** or **Resources** to select the DCS tag or data in the main procedure. Click **Procedure** to select a subprocedure from the main procedure and set subprogram status condition. Click **CHECK** when the expression is completed and click **OK** when there are no errors.
- 3) Configure the operation to be performed when the exception expression is true. For procedure operations, select the operation type and operation target. For write value operations, select the target name and target value, and set the lower limit, upper limit, and error (When selecting "Prefab" as the target value, it will be replaced with specific values such as batch number, description, program name, etc. during runtime).

Effects

As shown in Figure 6-28, create an exception message and set the condition to determine the existence of the exception to "The value of the variable TAG001 is greater than 10.". The expression is `$(TAG001) > 10` and the operation to be performed when the condition is met is "Pause the subprocedure SubProcedure_2".

During the running period of the procedure, before each scheduling period is executed, the

procedure will check whether exception items configured in FailMonitor exist in turn. When an exception item is detected, the configured operation will be executed and an alarm message will pop up. In this example, when the determination expression is true, the subprocedure SubProcedure_2 will be paused and an alarm message will pop up, as shown in the figure below.

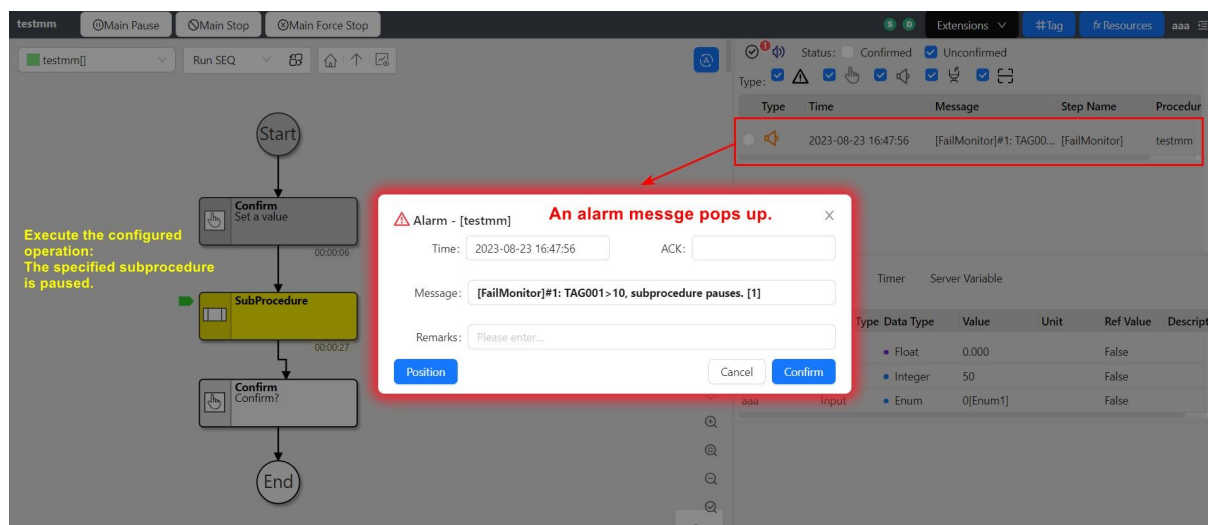


Figure 6- 29 FailMonitor Monitoring Effects (in Debugging Mode)

Exception Dismissing

When FailMonitor detects that the exception is dismissed, the procedure will continue running.

For example, in the interface shown in Figure 6-29, if the value of TAG001 is greater than 10, it will trigger the exception handling operation of FailMonitor. At this point, if you change the value of TAG001 to one not greater than 10 in the “Resources” list in the upper right corner of the interface, FailMonitor will detect that the exception disappears. Then click the **Resume** button in the subprocedure to continue executing the subsequent procedure logic.

6.8 Configure Main Procedure Logic

After opening the main procedure editing interface, you can create procedure flows using suitable components and connections and configure conditions and data.

6.8.1 Procedure Rules

You can add up to 128 procedure components to each subprocedure. In each procedure, OMC Pilot supports procedure structures such as sequence, parallel, selection, loop, and jumping.

- Sequence structure: OMC Pilot will execute the procedure from the Start step, proceed to the next step in sequence when the conditions are met, and exit the procedure when it reaches the End step.
- Jumping structure: After the current step is executed, the procedure will directly jump to the target step according to where the connection line points and continue from that step.
- Loop structure: After the current step is executed, the procedure will directly jump to the

target step that has already been executed according to where the connection line points and continue from that step, forming a logical loop.

- Parallel structure: It is a structure with parallel branches. When the preliminary conversion conditions are met, all branches under the parallel branch will start to run simultaneously. When all branches are completed, it indicates that the parallel branch finishes running.
- Selection structure: It is a structure that contains alternative branches. Among the alternative branches, the OMC Pilot will execute the procedure along the branch that first meets the conditions and the other branches will not be executed. When multiple alternative branches meet the conditions simultaneously, the leftmost branch in the component property will be executed first.

6.8.2 Procedure Steps

The figure below shows a typical procedure example.

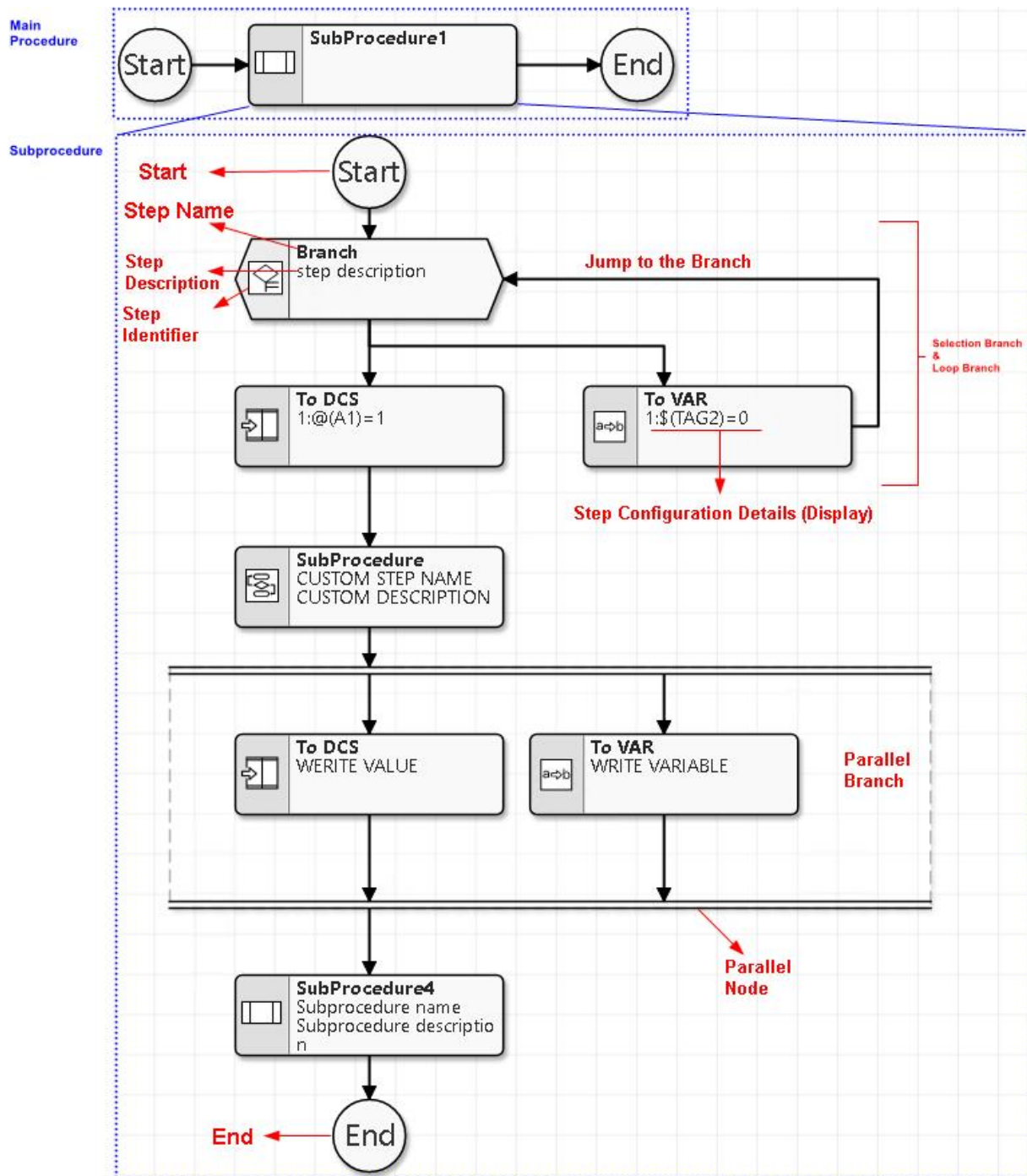





Figure 6-30 A Procedure Example

Take the above figure as an example. You can complete the procedure according to the following steps:

- 1) On the main procedure editing page, add the Start component, SubProcedure component, and End component to the canvas, and edit the name and description of the SubProcedure component. Here the SubProcedure component is named "SubProcedure_1".
- 2) Use one of the following methods to draw a flow arrow between the Start component and

SubProcedure_1.

- Method 1: Click the connection tool  in the component library, and then click the Start component and SubProcedure_1 in sequence.
 - Method 2: Select the Start component. The **connect**  and **delete**  buttons will appear on the right of the component. Click the **connect** button and move the cursor to SubProcedure_1. Then a flow arrow appears between the Start component and SubProcedure_1. Then click SubProcedure_1.
- 3) Refer to the method in step 2) and add a flow arrow between SubProcedure_1 and the End component.
 - 4) Double-click SubProcedure_1 in the main procedure, or select the SubProcedure_1 node in the procedure structure tree to switch to the subprocedure editing page. Add the Start component, End component, and other required components to the canvas, and arrange them according to the running order of the procedure.
 - 5) After selecting the component, configure the property parameters of the component in the lower right area. For the properties of each component, refer to the subsequent descriptions in this section.
- Adjust the component size: After you select the component in the canvas, 8 stretching points will appear around the component. Select a stretching point and drag it to adjust the size of the component.
- 6) Refer to the method in step 2) to complete the connection lines among all components on the subprocedure editing page.
 - 7) If there is any judgment unit in the component, such as Branch (alternative branch), Conditional AND, Conditional OR, Check Timer, and Check Procedure, select the flow arrow led by the component and configure the branch represented by the connection line in "Component Property" area in the lower right area.
 - 8) After completing all procedures, click **Compile** in the upper right corner, and perform operations according to the compilation results. For details, refer to *Compile*.

6.8.3 Common Properties of Components

Except components including Start, End, Parallel Branch, Group, and Text, the following are the common properties of other components:

- Description (the first line): It is the component description information which is the component name by default, displayed in bold in the component icon, and it can contain no more than 32 characters.
- Description (the second line): It is the component description information displayed in the component icon not in bold and it can contain no more than 64 characters.
- Configuration details displayed on the component: Select **Display** to display the configuration details in the component box. Select **Hidden** to not display the detailed settings and only display the component description.

6.8.4 Procedure Flow

The Procedure Flow category includes the following components:



Start  **/End** 

- **Start:** The start step of the procedure which is located at the beginning of the procedure, indicating that the procedure starts running.
- **End:** The end step of the procedure which is located at the end of the procedure, indicating that the procedure stops running.

Each main procedure or subprocedure must and can only contain one start step and one end step.

Parallel Branch

Other components can be placed inside to form a parallel structure for executing operations of multiple procedure units simultaneously. It contains the following two types:

- **Parallel branch 1**  which can contain vertically paralleled branch steps
- **Parallel branch 2**  which can contain horizontally paralleled branch steps

When you use parallel branches, parallel steps in the branch cannot cross each other, as shown in the figure below.

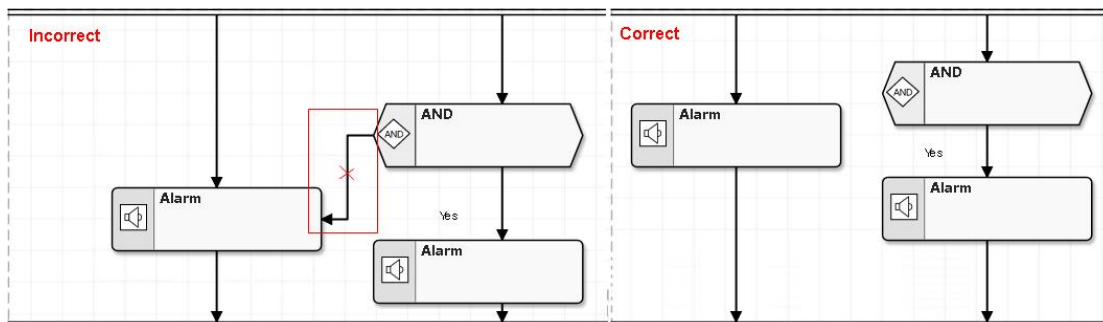



Figure 6-31 Configuration Example of a Parallel Branch

Alternative Branch

It is a step for choosing one branch among multiple ones to create a selection structure. During the running period, when the procedure runs to the alternative branch, it will calculate the judgment condition of each branch, check whether each condition is met, and select the branch whose condition was met first to continue executing the step.

Except common properties, configuration descriptions of other properties are as follows:

- **Branches settings:** Click  to the right of "Branch1" to add a new branch. Up to 20

new branches can be added. Click ✕ beside the branch name to delete the branch.

You can configure five subsequent branches for each alternative branch and configure the description and judgment condition for each branch. As shown in the figure below, the judgment condition consists of one or more expressions (selected data 1 + judgment symbol + selected data 2 or a number). You need to the relationship among the expression judgment results.

- The relationship is “AND”: When all expressions are true, it indicates that the judgment condition of this branch is met.
- The relationship is “OR”: When any expression is true, it indicates that the judgment condition of this branch is met.

Figure 6-32 Judgment Condition Settings of the Branch Component

- Advanced settings: Set the continuous holding time (Continue to maintain) in seconds. The value is between 0 and 9999, and 0 means that this function is disabled. If the function is enabled, the judgment rules are as follows:
 - If the condition of a branch has been met during the continuous holding time, it indicates that the judgment condition of this branch is met.
 - If the condition is not met at some point during the continuous holding time, the continuous holding time of this branch will be recalculated.

The continuous holding time of each branch is calculated independently. The branch whose condition is met first will continue to be executed, and other branches will not be executed.

Rising Edge /Falling Edge

These two components can be used to check whether one or more tags have undergone upward or downward jumping.

- Rising Edge: The value changes from zero to a nonzero value.
- Falling Edge: The value changes from a nonzero value to zero.

Except the common properties, configuration descriptions of other properties are as follows:

Relation:

AND

▼

Name	Description
Please select...	Please enter...



+ Add a row of data

Figure 6-33 Parameter Settings of the Rising Edge/Falling Edge Component

Set the conditional relationship of the jumping step and the data (tags or aliases) that need to be added to the judgment condition.

- AND: When running to this step, the procedure will enter the waiting status and will continue to execute the next step until all selected data has undergone upward jumping (or downward jumping) once.
- OR: When running to this step, the procedure will enter the waiting stats. As long as one of the selected data has undergone upward jumping (or downward jumping), the procedure will continue to execute the next step.

Conditional Branch

- Conditional AND  : It is an alternative branch step with a logical AND. You can set two subsequent branches and up to five judgment expressions (selected data 1 + judgment symbol + selected data 2 or an input constant).
 - When all judgment expressions are true, the procedure will continue to execute the Yes branch.
 - When any judgment expression is false, the procedure will continue to execute the No branch.
- Conditional OR  : It is an alternative branch step with a logical OR. You can set two subsequent branches and up to five judgment expressions (selected data 1 + judgment

symbol + selected data 2 or an input constant).

- When any judgment expression is true, the procedure will continue to execute the Yes branch.
- When all judgment expressions are false, the procedure will continue to execute the No branch.

Subprocedure

The SubProcedure component is used to define a subordinate subprocedure in the current procedure flow, providing a hierarchical structure for the main procedure. The SubProcedure component can be added to a running sequence (Run SEQ) but cannot be added to a stopping (Stop SEQ), pausing (Pause SEQ), or resuming (Resume SEQ) sequence.

After adding the SubProcedure component, edit the component properties in the lower right corner as described below.

- SubProcedureName: It is “SubProcedure” by default. The name must start with a letter, can contain digits, letters, or underscores (_), and can contain no more than 32 characters.
- Description (the first line): It is the component description information that can contain no more than 32 characters. The information set here will be displayed in the procedure structure tree.
- Description (the second line): It is the component description information that can contain no more than 64 characters.
- Resources group: Select a resource group from the drop-down list to restrict access to this component during the running period of the procedure and when viewing historical procedures. For details about resource group management, refer to *Manage Resource Groups*.

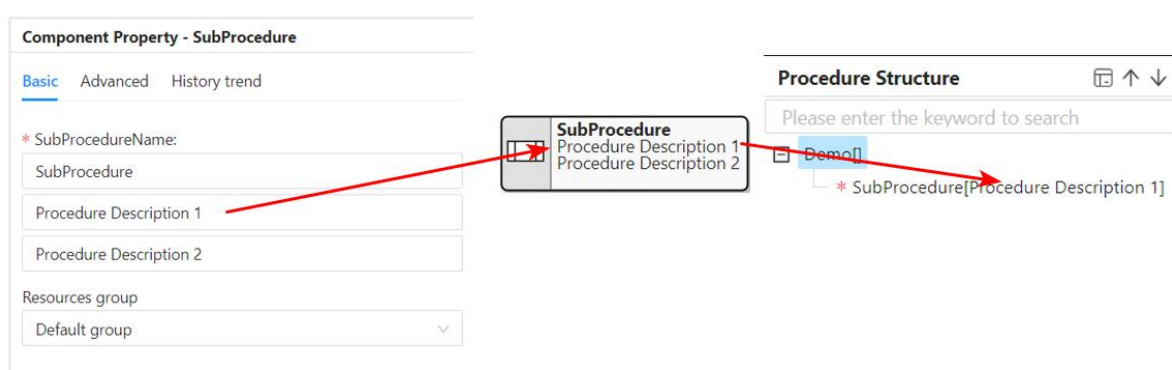




Figure 6-34 Property Configuration and Effect of the SubProcedure Component

- Advanced: If the “SubProcedure” component contains referenced parameters (“Defer” of the parameter is set to “True”), all referenced parameters will be displayed here after the procedure configuration is saved. Click  in the Target Value column, and a list of

parameters and variables will pop up, which displays the parameters and variables in the parent procedure whose data type is the same as that of the referenced parameter. You can select an existing parameter or variable to receive the corresponding parameter value or variable value from the parent procedure, or you can click  to create a new parameter or variable for the parent procedure and select it as the target value.

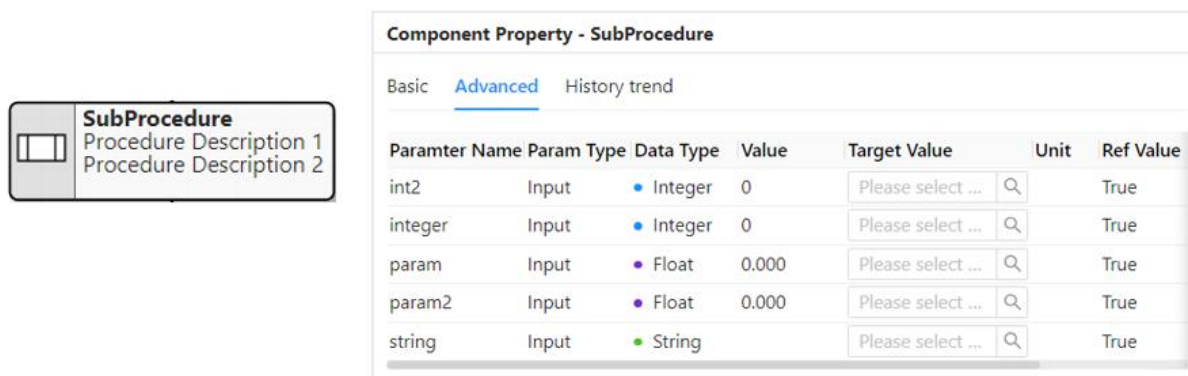



Figure 6-35 Advanced Property Settings of the SubProcedure Component

- History trend settings: Set the sampling period and content to be displayed for the report. The sampling period can be set to a value between 0 and 9999 (0 is the default sampling period, in seconds) and the report will sample data according to the specified period.

Enter the tag description and click  to select a tag to display the selected tag and its value in the report.



Tip:

Before viewing the history trend,

- Make sure that the history trend record server in OMC High-performanceHMI is enabled.
- Add the history trend tags to be displayed in the report on the trend screen.
- Select OMC High-performanceHMI as the data source.

Custom Template


After saving the single-layer procedure as a template, you can reuse the procedure in other procedures with this component. Refer to the descriptions in *Configure the Template* for details.

You can use the “Custom Template” component in a running sequence (Run SEQ) but cannot use it in a stopping (Stop SEQ), pausing (Pause SEQ), or resuming (Resume SEQ) sequence.

Reference to Main Procedure

The RefMainProcedure component is used to refer to a main procedure that has taken effect in the Procedure Builder list (the Status column shows “EFFECTIVE”) as the subprocedure. The RefMainProcedure component can be added to a running sequence (Run SEQ) but cannot be added to a stopping (Stop SEQ), pausing (Pause SEQ), or resuming (Resume SEQ) sequence.

After adding the “RefMainProcedure” component, edit the component properties in the lower right area with the following instructions:

- SubProcedureName: It is “SubProcedure” by default. The name must start with a letter, can contain digits, letters, or underscores (_), and can contain no more than 128 characters.
- Description (the first line): It is the component description information that can contain no more than 128 characters. The information set here will be displayed in the procedure structure tree.
- Description (the second line): It is the component description information that can contain no more than 64 characters.
- Configuration details displayed on the component: Select **Display** to display the configured property details in the component box. Select **Hidden** to not display the detailed property settings and only display the component description.
- Referenced main procedure: Click  to open the “Main procedure Selection” window, select the required main procedure from the list of effective main procedures, and click **OK**.
- Resources group: Select a resource group from the drop-down list to restrict access to this component during the running period of the procedure and when viewing historical procedures. For details about resource group management, refer to *Manage Resource Groups*.

SubProcedure

Component Property - RefMainProcedure

Basic
Advanced
History trend

* SubProcedureName:

Demo0905_copy

Please enter...Description

Please enter...Description

Configuration details displayed on the components:

☐ Display ☒ Hidden

Referenced main procedure:

Demo0905[V2.0]

Resources group

Default group

Main procedure Selection
✕

Name:

Version:



Group:

Selected 0 Item
Clear

No.	Name	Version	Version Remark	Status	Description	Group	Created	Creation Time	Modifier	Modification T
<input type="radio"/>	1	Demo0905	V2.0	V2.0	EFFECTIVE	Group 6	Admin	2023-09-06 11:01:58	Admin	2023-09-06 11:03:37
<input type="radio"/>	2	test1_copy	V1.0	1	EFFECTIVE	Group 1	Admin	2023-09-02 16:08:04	Admin	2023-09-02 16:11:16

Total 2 Item
< 1 >
20 / page

Figure 6-36 Property Configuration and Main Procedure Selection Windows

- Advanced: If the “RefMainProcedure” component contains referenced parameters (“Defer” of the parameter is set to “True”), all referenced parameters will be displayed here after the procedure configuration is saved. Click  in the Target Value column, and a list of parameters and variables will pop up, which displays the parameters and variables in the parent procedure whose data type is the same as that of the referenced parameter. You can select an existing parameter or variable to receive the corresponding parameter value or variable value from the parent procedure, or you can click  to create a new parameter or variable for the parent procedure and select it as the target value.

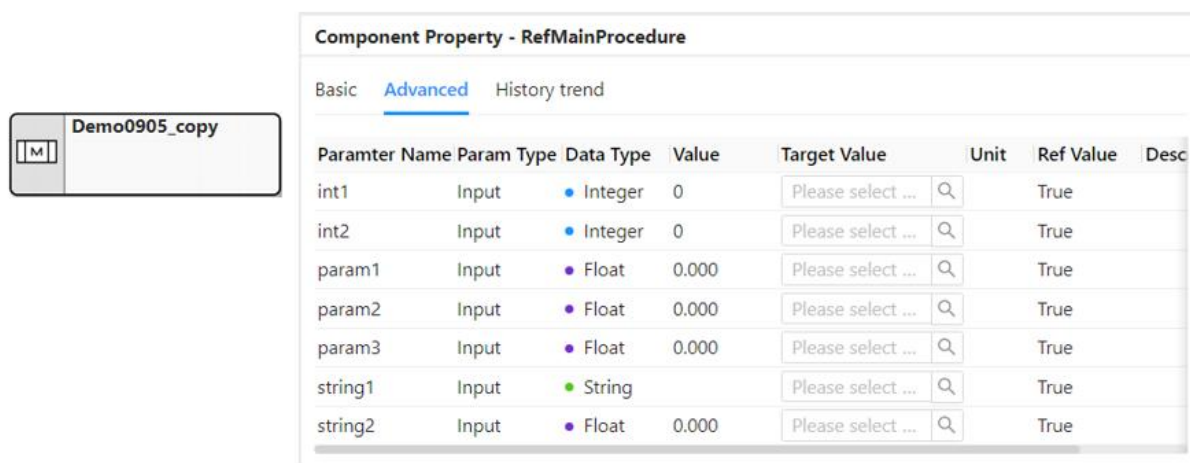



Figure 6- 37 Advanced Property Settings of the RefMainProcedure Component

- History trend settings: Set the sampling period and content to be displayed for the report. The sampling period can be set to a value between 0 and 9999 (0 is the default sampling period, in seconds) and the report will sample data according to the specified period. Enter the tag description and click  to select a tag to display the selected tag and its value in the report.



Tip:

Before viewing the history trend,



- Make sure that the history trend record server in OMC High-performanceHMI is enabled.
- Add the history trend tags to be displayed in the report on the trend screen.
- Select OMC High-performanceHMI as the data source.

Lock Resource





The LockResource component is used to occupy a queue. After a queue is occupied by a procedure, if other procedures try to use the LockResource component to occupy the same queue when running, they will keep waiting for the queue to be released.

After adding the LockResource component, edit the component properties in the lower right area. Except the common properties of components, follow the descriptions of other properties below:

- Description (the first line): The description information of the component, no more than 128 characters.
- Description (the second line): The description information of the component, no more than 64 characters.

- Configuration details displayed on the components: Select **Display** to display the configuration details in the component box. Select **Hidden** to hide the detailed settings and only display the component description.
- Queue settings: Click the button  on the right of "Queue 1" to add new queues, up to 20 queues can be added. Click the button  on the right of the queue name to delete the queue.

Select the queue and configure the description and judgment conditions for each queue.

- Queue name: Click  to select the queue to be occupied from the pop-up queue list and click **OK**. For details about the queue list configuration, refer to *Queue Management*.
- Relationship: "AND": The judgment condition of this branch is met when all expressions are true. "OR": The judgment condition of this branch is met when any expression is true.
- Description: The description information of the queue, no more than 32 characters.
- Expression: Click  in the "Name" column to select the parameter, variable, tag or alias as the judgment conditions. Select the judgment symbol from the drop-down list in the "Relation" column. Click the  in "Value" column to select the parameter, variable, tag or alias as the judgment conditions, or enter a value as the judgment condition. You can add multiple expressions (up to 20) by clicking "Add a row of data", or delete an expression by clicking  after the expression.
- Advanced settings: Auto release is used to set whether to automatically release the occupied queue when the subprocedure finishes running. It is recommended to set it to "Yes". If it is set to "No", the queue will not be automatically released when the subprocedure finishes running but will have to wait for the queue to be released after the entire main procedure finished running.

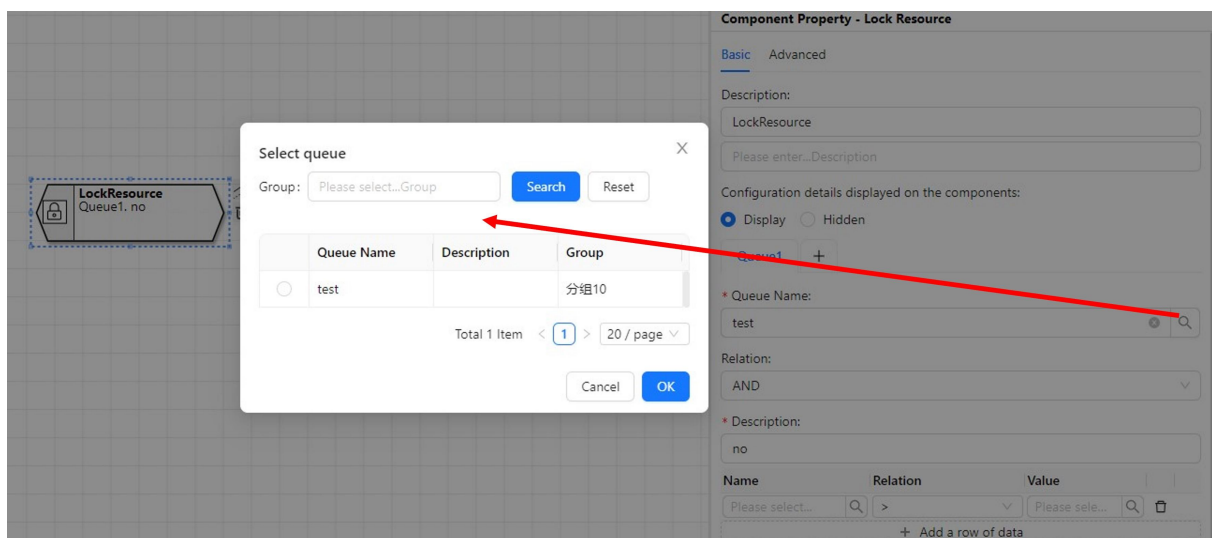



Figure 6-38 Basic Property Settings of the LockResource Component

Unlock Resource

The UnlockResource component is used to release the queue currently being occupied. After a queue is occupied by a procedure, if other procedures try to use the LockResource component to occupy the same queue when running, they will keep waiting for the queue to be released. At this point, the procedure can execute the UnlockResource step to release the queue being occupied and allow other procedures to occupy it.

After adding an UnlockResource component, edit the component properties in the lower right area. Except the common properties of components, follow the descriptions of other properties below.

- Queue name: Click  to select the queue to be released from the pop-up queue list and click **OK**. For details about the queue list configuration, refer to *Queue Management*.

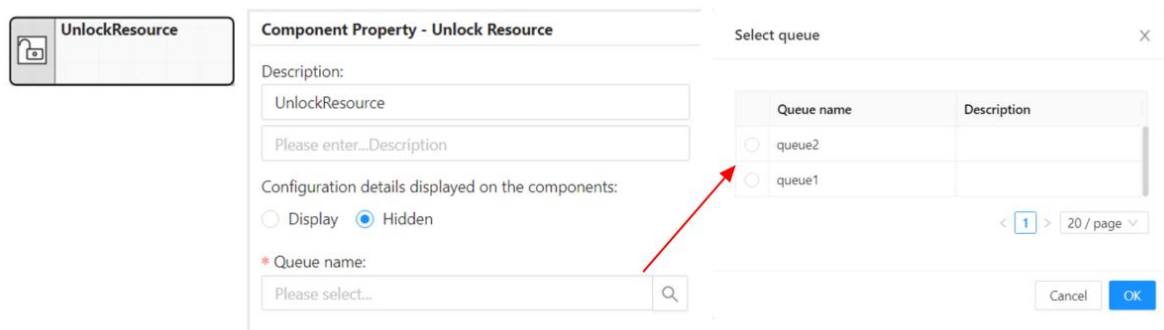











Figure 6-39 Property Settings of the UnlockResource Component









6.8.5 Inputs and Outputs








The table below shows the components included in “Inputs/Outputs”.

Table 6-8 Component List

Component Name	Component Icon	Function Description
----------------	----------------	----------------------

Component Name	Component Icon	Function Description
To DCS		<p>It is a tag operation step. When the procedure executes this procedure unit, it will perform the operation of writing the value to the specified tag.</p> <p>The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> Each "To DCS" component supports writing values to up to 5 tags simultaneously. Click  to select the tag name and target value for the value writing operation and set the upper limit, the lower limit and error. If "Prefab" is selected in the target value, the batch number, description, and procedure name will be replaced with the assigned values during runtime. If the data source changes, click Refresh on the tag selection interface to obtain the tag list again. The data type of the tag name and the target value must be the same. If the data type is "String", you do not need to set the upper limit, the lower limit and the error. Advanced: <ul style="list-style-type: none"> Write values mode: If you select "Only for the first time", the value writing operation will be triggered only when the procedure runs to this "To DCS" step for the first time. When the procedure runs to this step again or skips to this step later, the value writing operation will not be triggered again. If you select "Everytime", the value writing operation will be triggered every time the procedure runs to this "To DCS" step. When writing a value encounters an error: If you select "Throw Error", the system will pop up an error message when an error occurs in values writing. If you select "Retry", the system will repeatedly retry the write operation until it succeeds according to the "Write values mode", or retry it only once, and if it still fails, this step will be skipped to the subsequent procedure steps. If you select "Ignore", the system will ignore the error in values writing and continue to execute the subsequent program steps. Check: When you write a value to a tag, the system will check the value of another tag to determine if the tag writing operation is successful.
To VAR		<p>It is a variable and parameter operation step. When the procedure executes this procedure unit, it will perform the operation of writing the value to the specified variable.</p> <p>The configuration descriptions of other properties except common properties are as follows:</p> <p>Each "To VAR" component supports writing values to up to 5 variables or parameters simultaneously. The configuration steps are as follows:</p> <ol style="list-style-type: none"> In the "Variable Name" column, click  to select the variable or parameter for the value writing operation. In the "Target Value" column, click  to select the target value. At this time, the variable selection list will automatically filter and display variables or parameters of the same data type. If "Prefab" is selected in the target value, the batch number, description, and procedure name will be replaced with the assigned values during runtime.
Calculation		<p>It is a variable and parameter operation step. When the procedure executes this procedure unit, the software will calculate according to the expression and assign the result to the target variable or target parameter.</p> <p>Click the button  on the right of "Value 1" to add new expressions of value calculating, up to 20 expressions can be added. Click the button  on the right of the value name to delete the expression.</p> <p>The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> Target variable parameters: Click  to select the variable or parameter in the pop-up dialog box. Expression: Click the buttons below to edit the expression, which can contain mathematical constants, arithmetic, and common mathematical functions. Click Tag or Resources to select the DCS tag or data in the main procedure. Click CHECK when the expression is completed.

Component Name	Component Icon	Function Description
String Operation		<p>It is a variable and parameter operation step. When the procedure executes this procedure unit, the software will concatenate strings and assign the value to the target variable (string) or the target parameter (string) according to the settings. The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> ● Target variable parameters: Click  to select the variable or parameter in the pop-up dialog box. ● Set the content to be concatenated: Click  to select the string to be concatenated or enter the string.
Request		<p>It is a variable and parameter operation step. When the procedure executes this procedure unit, the software will concatenate the request message, send the request message to the specified URL with the specified method, and receive the response message according to the component property settings. The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> ● URL: Enter the complete target URL (e.g., <code>http://api.apiopen.top/api/sentences/</code>). Currently, only the HTTP protocol is supported. ● Method: Select GET or POST from the drop-down list as the method to call the URL. ● Authorization: Select "<null>" or "Basic" from the drop-down list as the method to authorize. ● Request header: Enter the field name in the "Header field" and click  in "Bind value" to select the parameter or variable. You can add multiple request header fields (up to 20) by clicking "Add a row of data", or delete the header fields by clicking  after the field. ● The "Request" and "Response" pages contain the following configurations: <ul style="list-style-type: none"> ➢ Enter the field name in the "Request field" and "Response field", click  after "Bind value", and select the parameter or variable to be bound from the list of parameters, variables, global parameters, or global variables, or select the parameter or variable to be bound from the list of global parameters or global variables. You can also add, edit, or delete parameters or variables on the Parameter or Variable page. ➢ Click Add a row of data to add multiple request and response fields (up to 20 request fields and 20 response fields can be supported) or click  after a specified field to delete it. ● The "Advanced" page contains the following configurations: <ul style="list-style-type: none"> ➢ Retry count: Set the number of times the system will automatically retry after sending the request failed, which ranges from 0 to 9999999. ➢ When retry error: the system will keep requesting until success, according to the Retry Count setting; Set the operation to be performed when the number of automatic retry times after the request failed to be sent exceeds the threshold set by "Retry count". When it is set to "Continue to Retry", the system will automatically continue to try to resend the request according to the "Retry Count" setting until it succeeds. When it is set to "Throw error", the system will generate a pop-up error message. When it is set to "Ignore", the system will ignore the request operation step and continue to execute the subsequent procedure steps. <p>Click Import in the top upper corner and select a file in .rqt format to import the property settings of the "Request" component externally. Click Export to export the current property settings of the "Request" component as a file in .rqt format.</p>

Component Name	Component Icon	Function Description
FileExport		<p>It is a variable and parameter operation step. When the procedure executes this procedure unit, the software will export parameters or variables to a specified .csv or .xlsx file according to the component property settings. The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> ● Select file format: Select the format of the target file, which can be CSV (.csv) or Excel (.xlsx). ● File Path: Select the path where the target file is located as well as the file name (e.g. C:\Users\Administrator\Desktop\test.xlsx). ● Sheet Name: When "Select file format" is set to "Excel", you need to fill in the sheet name which is used to indicate which sheet the parameters or variables will be exported to. ● The "Data" page contains the following configurations: <ul style="list-style-type: none"> ➢ Click Add a row of data to add a variable or parameter that needs to be exported. ➢ Fill in the column and the row and click  to select a parameter or a variable, which indicates that the value of the specified parameter will be exported to the cell in the specified column and row in the target file (for example, if "Column" is "A", "Row Number" is "1", and "Value" is "\${float_1}", this configuration indicates that the value of the parameter float_1 will be exported to the cell A1 in the target file). ● Click  to delete this row of data.
FileImport		<p>It is a variable and parameter operation step. When the procedure executes this procedure unit, the software will import the values of the specified cells in the uploaded .csv or .xlsx file to the specified parameters or variables. The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> ● Select file format: Select the format of the target file, which can be CSV (.csv) or Excel (.xlsx). ● File Path: Select the path where the target file is located as well as the file name (e.g. C:\Users\Administrator\Desktop\test.xlsx). ● Sheet Name: When "Select file format" is set to "Excel", you need to fill in the sheet name which is used to indicate the parameters or variables of which sheet need to be imported. ● The "Data" page contains the following configurations: <ul style="list-style-type: none"> ➢ Click Add a row of data to add a variable or parameter that needs to be imported. ➢ Fill in the column and the row and click  to select a parameter or a variable, which indicates that the value in the cell in the specified column and row in the target file will be imported to this parameter (for example, if "Column" is "A", "Row Number" is "1", and "Value" is "\${float_1}", this configuration indicates that the value in the cell A1 in the target file will be imported to the parameter float_1). ● Click  to delete this row of data.
ModifyLabel		<p>It is a procedure label operation step. When the procedure executes this procedure unit, the software will modify the labels of the main procedure as configured. The configuration descriptions of other properties except common properties are as follows:</p> <ul style="list-style-type: none"> ● Modify description: Enter the description message of label modification (no more than 32 characters). ● Current label: Select the label to be modified from the drop-down list. ● Target label: Select the target label from the drop-down list. ● The "Advanced" page contains the following configurations: <ul style="list-style-type: none"> ➢ When the current label is not exist: It is used to respond to the condition when assigning a current label that is not included in the main procedure. If you select "Add", the label set in "Target label" on the "Basic" page will be added as the label of the main procedure. If you select "Throw error", when the current label does not exist, the system will give an error message. If you select "Ignore", when the current label does not exist, the system will ignore this step and continue to execute the subsequent program steps.

6.8.6 Message

Messages include error messages, confirmation messages, alarm messages, and custom scan messages. The error message is automatically generated by the system and does not need to be configured. This section mainly explains how to configure confirmation messages, alarm messages, and custom scan messages.

Confirm Messages



The confirmation message step is used to configure the interactive information or confirmation prompt. During the running period, when the procedure runs to the confirmation message step, the confirmation message will be displayed and a sound prompt will be played. At this point, you need to confirm the message, select data, or enter data before continuing with the next step. For details about how to process the confirmation message, refer to *Message List*.

The configuration descriptions of other properties except common properties are as follows:

- Message: The message content to be confirmed. It can contain no more than 32 characters.
 - Request content: You can select one of the following three confirmation methods.
 - Confirmation only: The message will be displayed as a confirmation prompt box where you only need to confirm the message. No additional settings are required.
 - Selection: The message will be displayed as a selection confirmation box where you need to make a selection when confirming the message.
- Additional configuration: After you set “Request content” to “Selection”, the “Select” tab will appear, and you can configure the options available when confirming the message on this page. Enter the option description, select the associated data, and set the target value of the data. You can set up to 5 options. The figure below shows the settings and effects.

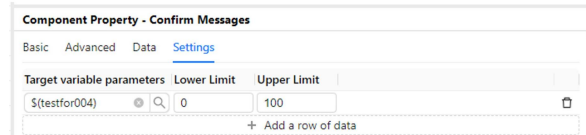
Configuration

Offline Running

Figure 6-40 Example of Making a Selection for Confirmation

- **Setting:** The message will be displayed as a value-writing confirmation box where you need to write a value to the specified data when confirming the message. Additional configuration: After you set “Request content” to “Setting”, the “Settings” tab will appear, and you can configure the target data, upper limit, and lower limit for the value writing operation on this page. The figure below shows the settings and effects.

Configuration



Offline Running

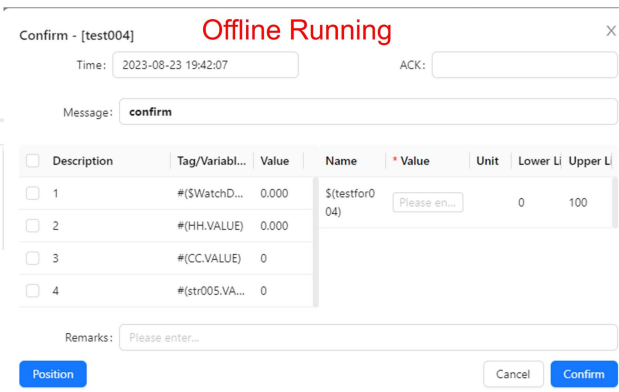




Figure 6-41 Example of Writing a Value for Confirmation



If “Target variable parameters” you set is a parameter of type Enum, a drop-down list will appear after you click the “Value” text box during the running period, and the available options in the drop-down list are enumeration values in the corresponding enumeration set.

- **Advanced:**
 - **Pop-up message:** Whether the message confirmation box automatically pops up when the procedure runs to this message step. If you select “Display”, the message confirmation box will automatically pop up. If you select “Not to display”, you can double-click the message in the message list in the upper right corner to open the message confirmation box.
 - **Sound:** Whether to play the sound prompt when the procedure runs to this message step. You can select **On** or **Off**.
 - **Electronic Sign:** Whether to enable the electronic signature process. If not configured, it indicates that no electronic signature process will be enabled. To enable an electronic signature process, click  to select the electronic signature process to be enabled in the pop-up dialog box.
 - **Resources group:** Select a resource group from the drop-down list to restrict access permission to the component during the running period of the procedure and when viewing historical procedures. For details about resource group management, refer to *Manage Resource Groups*.
- **Data:** Configure tags and variables to be displayed when you confirm the message. Click  and select the variable or tag in the pop-up dialog box. The description cannot exceed 20 characters in length.

Alarm

The alarm message step is used to confirm the alarm message prompt. During the running period, when the procedure runs to the alarm message step, the alarm message will be displayed, a sound prompt will be played, and the procedure will continue running. You can confirm the message content when you are free or as needed.


The configuration descriptions of other properties except common properties are as follows:

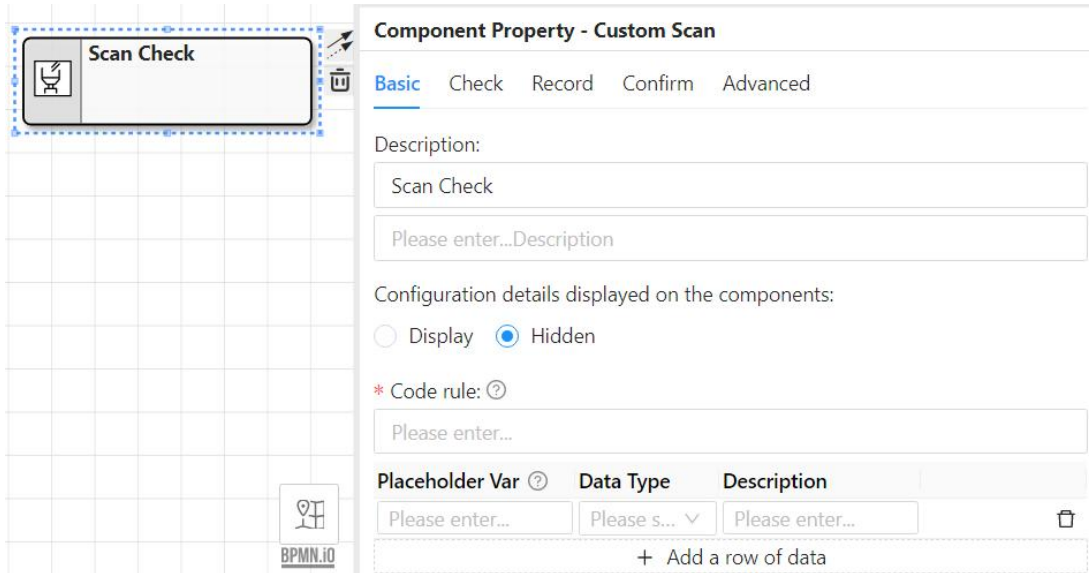
- **Message:** The alarm message content to be confirmed. It can contain no more than 32 characters.
- **Advanced:**
 - **Pop-up message:** Whether the message confirmation box automatically pops up when the procedure runs to this message step. If you select “Display”, the alarm message box will automatically pop up. If you select “Not to display”, you can double-click the message in the message list in the upper right corner to open the alarm message box. For details about how to process the message, refer to *Message List*.
 - **Sound:** Whether to play the sound prompt when the procedure runs to this message step. You can select **On** or **Off**.
 - **Electronic Sign:** Whether to enable the electronic signature process. If not configured, it indicates that no electronic signature process will be enabled. To enable an electronic signature process, click  to select the electronic signature process to be enabled in the pop-up dialog box.
 - **Resources group:** Select a resource group from the drop-down list to restrict access permission to the component during the running period of the procedure and when viewing historical procedures. For details about resource group management, refer to *Manage Resource Groups*.
- **Data:** Configure tags and variables to be displayed when you confirm the alarm. Click  and select the variable or tag in the pop-up dialog box. The description cannot exceed 20 characters in length.

Custom Scan

The custom scan step is used to configure the custom encoding rules, custom checking rules, custom recording rules, custom message confirmation rules, checking message prompt, etc. for scanning the code to check the material feeding. During the running period, when the procedure runs to the custom scan step, the custom scan message will be displayed and a sound prompt will be played. At this point, you need to input material parameters manually or by scanning the code. Only after the material parameters are verified and the message is confirmed, you can continue with subsequent procedure steps. For details about how to process the custom scan message, refer to *Message List*.

The configuration descriptions of other properties except common properties are as follows:

- Basic:
 - Code rule: It is made up of encoding placeholder variables concatenated together and cannot exceed 128 characters in length. Variables starting with an underscore are not allowed. The concatenation rule is: &(placeholder variable 1)&(placeholder variable 2)&(placeholder variable 3)...
 - You can click **Add a row of data** to add multiple encoding placeholder variables. Up to 20 variables can be added. You can also click  after each placeholder variable to delete the placeholder variable.
 - Placeholder Var: Placeholder variables in the encoding rules. Each one can contain up to 64 characters. The placeholder variable "_full_code" can be directly used to represent the full encoding string.
 - Data Type: Select the data type of the encoding placeholder variable from the drop-down list, which can be "Integer", "Float", or "String". When "_full_code" is used as the encoding placeholder variable, the data type must be set to "String".
 - Description: Enter a description of the corresponding encoding placeholder variable, which can contain no more than 64 characters.



Component Property - Custom Scan

Basic Check Record Confirm Advanced

Description:

Scan Check


Please enter...Description

Configuration details displayed on the components:

☐ Display ☒ Hidden



* Code rule: ?


Please enter...

Placeholder Var ?	Data Type	Description
Please enter...	Please s... ▾	Please enter... 

+ Add a row of data

Figure 6-42 Basic Configuration of the “Custom Scan” Message Component

- Check:
 - Placeholder Var: From the drop-down list, select the encoding placeholder variable that has been added on the “Basic” page as the object to be checked.
 - Rule: From the drop-down list, select the checking rule (currently only “==” is supported).
 - Check value: Click  to select a parameter or variable from the parameter list, variable list, global parameter list, or global variable list, whose value will be used as the checking value. You can also create a new parameter or variable by clicking  in the parameter/variable list.

You can click **Add a row of data** to add multiple checking rules. Up to 20 checking rules can be added. You can also click  after each checking rule to delete it.

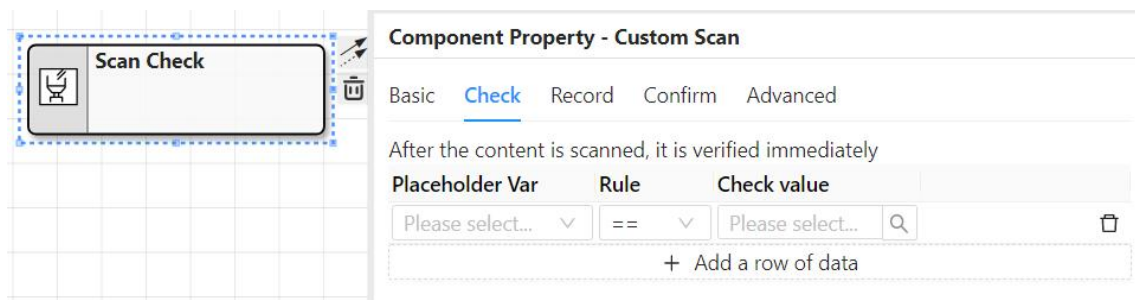





Figure 6-43 Checking Rule Configuration of the “Custom Scan” Message Component

- Record:
 - Core record: Recording rules for recording the material data read by scanning the code into the parameters/variables.
 - Placeholder Var: From the drop-down list, select the encoding placeholder variable that has been added on the “Basic” page as the source of the data.
 - Record variable: Click  to select a parameter or variable from the parameter list, variable list, global parameter list, or global variable list as the target for recording the data (record the data read by scanning the code into the parameter or variable). You can also click  in the parameter/variable list to create a new parameter or variable.
 - Strategy: Select “Append” or “Cover” from the drop-down list as the data recording strategy. “Append” means that numeric data will be added up and string data will be concatenated in sequence after you confirm feeding multiple times. “Cover” means that data obtained after you confirm the feeding will overwrite the previous feeding data.
 - Split: If the recording strategy for the string data is set to “Append”, you can input a custom separator in the “Split” text box. Data obtained after you confirm feeding multiple times will be concatenated in sequence and separated with the separators. You can click **Add a row of data** to add multiple encoding recording rules. Up to 20 rules can be added. You can also click  after each recording rule to delete the rule.

Example: Assume that the encoding recording rule is as follows: The data of the placeholder variable a1 (string type) read by scanning the code is recorded into the variable variable1 (string type), and the initial value of variable1 is “aaa”. The material data read by scanning the code is “bbb”.

If the strategy is “Cover”, the value of variable1 will be overwritten by the data read by scanning the code in turn, and finally its value is “bbb”.

If the strategy is “Append” and the separator is “|”, the value of variable 1 will be the concatenation of the initial data and the data read from scanning the code separated with a separator, i.e., “aaa|bbb”.

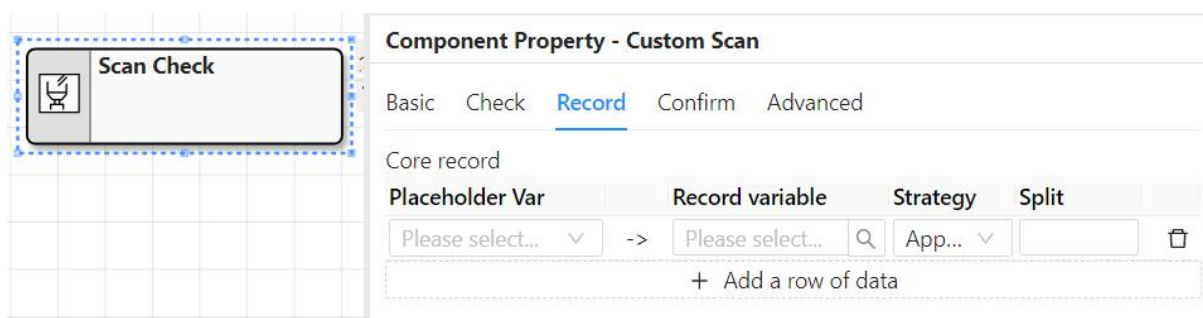







Figure 6-44 Recording Rule Configuration of the “Custom Scan” Message Component

- Confirm:
 - Confirm conditions: The conditions that allow the user to perform the confirmation operation on this custom scan message.
 - Compare value 1: Click  to select a parameter or variable from the parameter list, variable list, global parameter list, or global variable list, whose value will be used as one of the comparison values. You can also create a new parameter or variable by clicking  in the parameter/variable list.
 - Compare value 2: Click  to select a parameter or variable from the parameter list, variable list, global parameter list, or global variable list, whose value will be used as another comparison value. You can also create a new parameter or variable by clicking  in the parameter/variable list.
 - Judgment: Select a comparison relationship from the drop-down list.
 - Force conditions: If it is checked, comparison value 1 and comparison value 2 must meet the “Judgment” condition in order for the user to confirm the custom scan message.

You can click **Add a row of data** to add multiple confirmation rules. Up to 20 rules can be added. You can also click  after each confirmation rule to delete the rule.

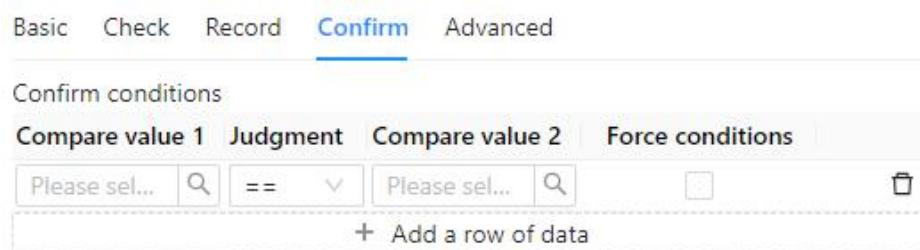



Figure 6-45 Confirmation Rule Configuration of the “Custom Scan” Message Component

- Advanced:
 - Pop-up message: Whether the message confirmation box automatically pops up when the procedure runs to this message step. If you select “Display”, the scan check message box will automatically pop up. If you select “Not to display”, you can double-click the message in the message list in the upper right corner to open the

scan check message box. For details about how to process the message, refer to *Message List*.

- Sound: Whether to play the sound prompt when the procedure runs to this message step. You can select **On** or **Off**.
- Electronic Signature: Whether to enable the electronic signature process. If not configured, it indicates that no electronic signature process will be enabled. To enable an electronic signature process, click  to select the electronic signature process to be enabled in the pop-up dialog box.
- Scan max times: The maximum number of scan records that the system can store, which defaults to 1 and can be set up to $2^{31}-1$. You can click "Manual Input" multiple times to scan codes during runtime after setting. For details, see "Custom Scan Message Operations" in *Message List*.





6.8.7 Timer/Clock

The "Timers/Clocks" category contains the following components:

Timer

The timer is used to determine the execution time of a certain process. After a timer is added to the data list, the initial time of the timer is 00:00:00 by default, and the time of the timer at runtime is subject to the computer where the OMC Pilot data server is located.

The timer components can be divided into two categories:

- Components used to modify the timer status, including the start timer , the stop timer , the pause timer , and the restart timer . When the procedure runs to this procedure step during the running period, the corresponding operation will be performed on the timer. The figure below shows the status transition diagram of the timer.

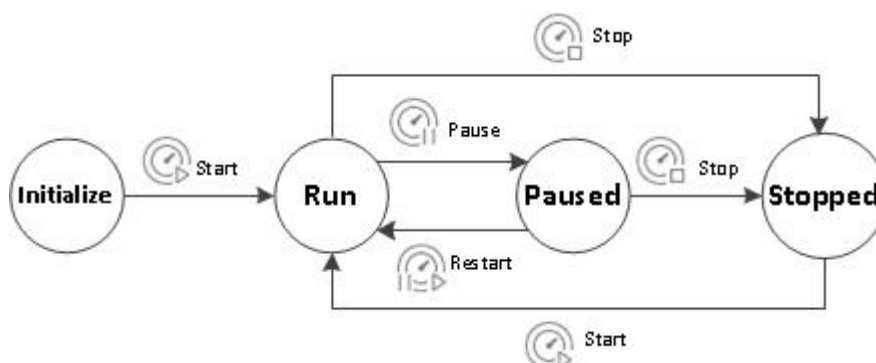




Figure 6-46 Status Transition of the Timer

- Check Timer  : A step of choosing one between two branches according to the timer's time.
 - Configuration period: Select a timer as the target for judgment in the property setting and set the specified time.
 - Running period: When the procedure executes this step, it will judge whether the time of the selected timer is greater than or equal to the specified time. If the conditions are met, the procedure will continue to execute the next step; if not, the procedure will stay at this step until the conditions are met.

Wait

It is a waiting step. When the procedure executes this step, it will wait for the specified time before executing subsequent commands. Except the common properties, you need to set the waiting time.

- If the waiting type is set to “Designated time”, the procedure will continue running after staying at the waiting step for X hours, X minutes, and X seconds. The time range can be set to 0~999 hours, 0~59 minutes, and 0~59 seconds.
- If the waiting type is set to “Integral time”, the procedure will continue running after staying at the waiting step for the specified time. The unit is second, and the time can be set to an integer ranging from 0 to 9999999.
- The waiting type is set to “Variable parameter time”, the procedure will continue running after staying at the waiting step for the specified time. The specified time is the real-time value of the variable or parameter in seconds. Click  to select a variable or parameter of type integer (0~9999999). If the variable exceeds the maximum or minimum value at runtime, the procedure unit will enter the paused status.

The time of the waiting step is subject to the time of the computer where the OMC Pilot data server is located.

Here is an application scenario example. After mixing two substances, you need to make the mixture stand for 10 minutes before starting to stir it. In this case, you can use a waiting step to achieve the effect of “stand for 10 minutes”. You can choose any of the following settings:

- If the waiting type is set to “Designated time”, set the waiting time to 0:10:0.
- If the waiting type is set to “Integral time”, set the waiting time to 600 seconds.
- If the waiting type is set to “Variable parameter time”, specify a parameter whose default value is 600 or a variable whose real-time value is 600.

Clock

It is a timing step, which is similar to the Waiting component. After the procedure runs to the clock step, it will wait until the specified time point before continuing to run. Except the common properties, you need to set the time point to wait.











- If the clock type is set to “Daily”, you can set the trigger time to “X hour X minute X second” in each day. The time range is 0~23 hour, 0~59 minute, and 0~59 second.
- If the clock type is set to “Hour”, you can set the trigger time to “X minute X second” in each hour. The time range is 0~59 minute and 0~59 second.
- If the clock type is set to “Minute”, you can set the trigger time to “X second” in each minute. The time range is 0~59 second.

The time of the clock step is subject to the time of the computer where the OMC Pilot data server is located.

6.8.8 Utility Symbols


The following table shows the components contained in the Utility Symbols category.

Table 6-9 Component List

Component Name	Component Icon	Function Description
Group		Group identification. Enter the description information in the “Component Property” configuration box, which can contain no more than 32 characters.
Text Box		Procedure notes can be added with this component. The configuration descriptions of the properties are as follows: <ul style="list-style-type: none"> ● Description: No more than 1000 characters in length. If you fill in the URL, you can jump directly to the URL page by clicking the URL in the component on the procedure configuration page or running page. ● Font size: Options include 12, 14, 16, 18, 20, and 24. ● Font weight: Options include “Normal” and “Bold”. ● Font color: Click to configure the font color.
Check Procedure		Judge whether the status of a running subprocedure meets the condition, and execute the alternative branch step (select one between two branches) according to the procedure status. That is, if the status meets the condition, the procedure will execute the “Yes” branch; if the status does not meet the condition, the procedure will execute the “No” branch. The configuration descriptions of other properties except the common properties are as follows: <ul style="list-style-type: none"> ● SubProcedure Name: Click  to open the Procedure Selection window and select the subprocedure whose status will be judged. ● Judgment: Options include equal to (==) and not equal to (!=). ● Status: Options include Idle, Running, Pausing, Paused, Resuming, Stopping, Stopped, and Completed.
SubProcedure Pause		Command step of the subprocedure. It is valid only for the running subprocedures. After sending the command, the target procedure will execute the next step, enter the pause sequence, and become paused after completing the sequence. Configuration: Click  , the procedure tree structure except the main procedure pops up, and select the target subprocedure.
SubProcedure Stop		Command step of the subprocedure. It is valid for subprocedures in all statuses except not started or completed. After sending the command, the target procedure will execute the next step, enter the stop sequence, and become stopped after completing the sequence. Configuration: Click  , the procedure tree structure except the main procedure pops up, and select the target subprocedure.
MainPause		Command step of the main procedure, which can be used to pause the current main procedure and all steps running currently.
MainStop		Command step of the main procedure. When the procedure runs to this step, the software will send a request alarm first and stop the current main procedure after the operator confirms the alarm.

6.9 Compile

After completing the procedure creation, you must check the grammar of the logic of the entire main procedure through the Compile function. After checking, the component will pop up the “Compile results” dialog box to display the checking results.

- According to the severity of the problems, the system will list three kinds of prompt information in the “Compile results” dialog box: Tip, Warn, and Error (grammar error). Click the filter button  on the right of “Grade” to filter the required kind(s) of prompt information.
- If there is any grammar error, it will prompt “Procedure Syntax Error” and display the reason(s) for the error(s). At this point, click Location and modify the component properties or connections after jumping to the relevant subprocedure on the editing page.
- If the grammar is correct, even if there are warnings or prompts, it will prompt “Compile is successful” and display the reasons for the warnings or prompts.

After the main procedure is compiled successfully, close the main procedure editing page and return to the procedure list.

Section 7 Configure the Template

Commonly used procedures, data, user-defined component objects, etc. in the main procedure can all be managed through the template configuration function. In the main procedure configuration, you can call the same procedure template when editing the same procedure unit and use the alias to complete the configuration of the main procedure efficiently and quickly.

In the menu list on the left, click **Template Builder**, and the configured procedure templates are displayed on the right, as shown in the figure below.

The screenshot shows the 'Template Builder' interface. At the top, there are input fields for 'Name', 'Version', 'Status' (with buttons for EDITED, EFFECTIVE, and APPROVING), and 'Group'. Below these are fields for 'Version Remark' and 'Label', along with 'Search' and 'Reset' buttons. A row of action buttons includes Add, Modify, Delete, Copy, Upgrade, Template Edit, Effect, Approve, Reject, Abandon, Import, and Export. A status bar indicates 'Selected 0 Item' with a 'Clear' button. Below this is a table with columns: No., Name, Version, Description, Version Remark, Status, Group, Label, CustomField, Status Tag, Created by, Creation Time, Modifier, and Modification Time. The table contains one row for 'template1' with status 'EDITED' and group 'Group 7'. At the bottom right, it shows 'Total 1 Item' and a pagination control for page 1 of 20.

Figure 7-1 “Template Builder” Interface

In the “Template Builder” interface, you can add, modify, delete, copy, upgrade, edit, validate, approve, reject, abandon, import, and export templates. The operation steps are similar to those in the “Procedure Builder” interface. For details, refer to *Configure the Procedure*.

The differences between editing templates and editing main procedures are described as follows:

- 1) Only a single-level procedure can be saved in a template. That is, you cannot use “Custom Template” components, “Subprocedure” components, “RefMainProcedure” components, and subprocedure command components (such as “SubProcedure Pause” components and “SubProcedure Stop” components).
- 2) As there is no multi-level procedure structure in the template, the data you can add and use does not include global variables and global parameters.
- 3) Configuring FailMonitor for templates is not supported in Extensions.


After a single-level procedure is saved as a template, the variables, parameters, and timers used in the procedure remain unchanged. However, the reference tags will be converted to aliases and tag names will be recorded in alias descriptions, as shown in the figure below.

Reference tags on the procedure editing interface					Aliases after the procedure is converted to a template					
Procedure Configuration										
Parameter	Variable	Timer	Reference Tag	Alias	Parameter	Variable	Timer	Reference Tag	Alias	
Tag Name				Type	Name				Data Type	Description
AI00020000.ACKED				<div><div></div>Integer Type</div>	<div><div></div>TAG001</div>				<div><div></div>Integer Type</div>	#(AI00020000.ACKED)
AI00020000.ACTAPRI_				<div><div></div>Integer Type</div>	<div><div></div>TAG002</div>				<div><div></div>Integer Type</div>	#(AI00020000.ACTAPRI_)
AI00020000.ALARM				<div><div></div>Integer Type</div>	<div><div></div>TAG003</div>				<div><div></div>Integer Type</div>	#(AI00020000.ALARM)
AI00020000.DPVPRI				<div><div></div>Integer Type</div>	<div><div></div>TAG004</div>				<div><div></div>Integer Type</div>	#(AI00020000.DPVPRI)
AI00020000.DPV_B				<div><div></div>Integer Type</div>	<div><div></div>TAG005</div>				<div><div></div>Integer Type</div>	#(AI00020000.DPV_B)
AI00020000.ERRSUP				<div><div></div>Integer Type</div>	<div><div></div>TAG006</div>				<div><div></div>Integer Type</div>	#(AI00020000.ERRSUP)

Figure 7-4 “Save As Template” Dialog Box

3. Follow the instructions below to configure the basic parameters of the template.
 - Name: Template name. It is configured when you create a new template and cannot be edited again after setting. The name and version of the template cannot be the same as those of another existing template simultaneously. The name must start with a letter, can contain letters, digits, or underscores (_), and cannot exceed 32 characters in length.
 - Version: Version information of the template. It is configured when you create a new template and cannot be edited again after setting. The name and version of the template cannot be the same as those of another existing template simultaneously. The version can contain letters, digits, or decimal points and cannot exceed 32 characters in length.
 - Group: Template group. When creating a new template, you can select an existing group.
 - Version Remark: Remark information of the template version. It can contain no more than 64 characters.
 - Description: Description information of the template. It can contain no more than 64 characters.
 - Customized field: Additional customized information about the procedure template, no more than 64 characters. The parameter name can be modified in “Global Configuration”, and see *Other Configuration* for details.

4. Click the **Advanced** tab and configure the advanced parameters for templates following the guideline below:

- Click  to select a control system tag as the status tag, which allows you to know the current running status of the procedure during the running period by the real-time value of the status tag. For the relationship between the value of the status tag and the running status of the procedure, refer to *Running Status Description*.
- Select a label from the drop-down list as the label message of the procedure template feature and function.



Tip:


- You should set the read & write attribute of the status tag to read-write.
- Main procedures that need to run simultaneously cannot be associated with the same status tag.

5. After completing the configuration, click **OK**.

The newly saved template will be displayed on the “Template Builder” interface, and the status is “EDITED”. If you need to use the template, make it take effect first.

7.2 Use the Template

Select the running sequence in the procedure editing interface, add the “Custom Template” component, and edit the component properties on the right, as described below:

- SubProcedureName: It is “SubProcedure” by default. It must start with a letter, can contain digits, letters, or underscores (_), and cannot exceed 32 characters in length.
- Description (the first line): The description information of the component. It can contain no more than 128 characters. The information set here will be displayed in the procedure structure tree.
- Description (the second line): The description information of the component. It can contain no more than 64 characters.
- Configuration details displayed on the components: Select **Display** to display the configuration details in the component box. Select **Hidden** to not display the detailed settings and only display the component description.
- Referenced template: Click  to display all templates that have taken effect in the pop-up dialog box. Select the template to be referenced and click **OK**.
- Resources group: Select a resource group from the drop-down list to restrict access to this component during the running period of the procedure and when viewing historical procedures. For details about resource group management, refer to *Manage Resource Groups*.

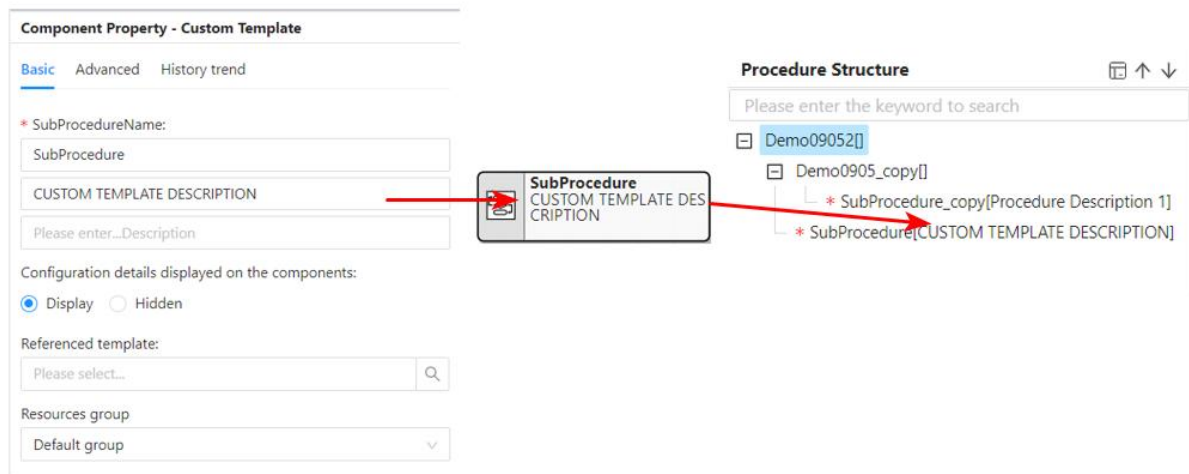




Figure 7-5 “Custom Template” Property Configuration and Effect

- **Advanced:** If the “Custom Template” component and the referenced template contain referenced parameters (“Defer” of the parameter is set to “True”), all referenced parameters will be displayed here after you select the referenced template and click **Save**. Click  in the Target Value column, and a list of parameters and variables will pop up, which displays the parameters and variables in the parent procedure whose data type is the same as that of the referenced parameter. You can select an existing parameter or variable to receive the corresponding parameter value or variable value from the parent procedure, or you can click  to create a new parameter or variable for the parent procedure and select it as the target value.

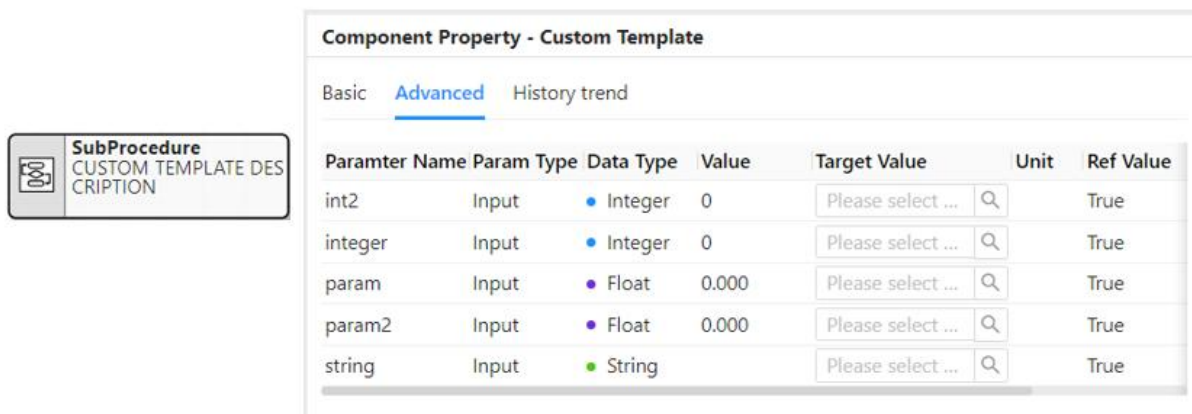



Figure 7-6 Advanced Property Configuration of the “Custom Template” Component

- **History trend settings:** Set the sampling period and content to be displayed for the report. The sampling period can be set to a value between 0 and 9999 (0 is the default sampling period, in seconds) and the report will sample data according to the specified period. Enter the tag description and click  to select a tag to display the selected tag and its value in the report.

**Tip:**

Before viewing the history trend,

- Make sure that the history trend record server in OMC High-performanceHMI is enabled.
 - Add the history trend tags to be displayed in the report on the trend screen.
 - Select OMC High-performanceHMI as the data source.
-

After completing the configuration, you can select the custom template node in the procedure structure tree to view or edit the referenced procedure in the procedure editing area.

7.3 Application Example

When you call the same procedure template multiple times, you may need to set different tags for each component. In this case, you can use aliases to complete these complex operations. This section uses a case to illustrate how to configure templates and aliases.

Scenarios

In the combustion operation of the production process, it is necessary to judge whether the temperature of the bottom, middle, and top burners has reached the target temperature and send out a message for notification. The operator performs the corresponding follow-up operations according to the detected temperature displayed in the message prompt. The procedures used for inspection are basically the same in different positions, but the tags for recording temperature data are different.

Steps

1. Create a new main procedure "Alias_Temp" and add "Start", "End", and "Parallel1" components. Add a "SubProcedure" component to the parallel branch, set the name of the "SubProcedure" component to "Burn_Bottom", and set the description on the first line to "Bottom Burner", as shown in the figure below.

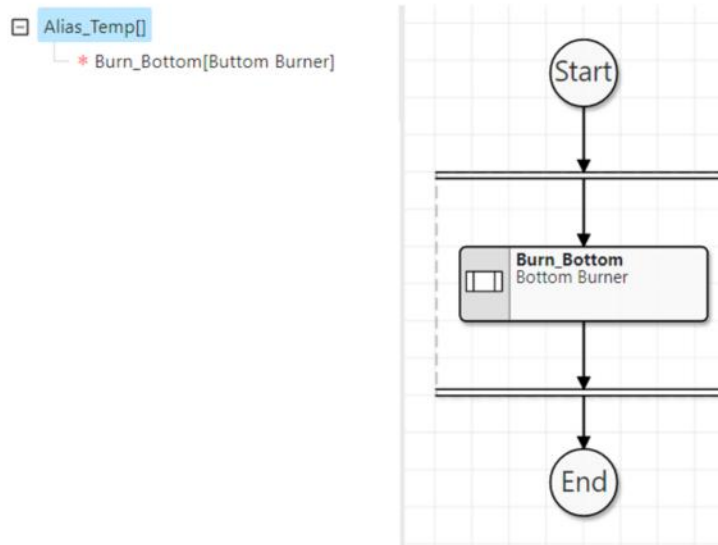


Figure 7-7 Main Procedure for Temperature Judgment (Initial)

2. Select the subprocedure node "Burn_Bottom[Bottom Burner]" in the structure tree to configure the procedure for detection. In the data list, add the alias "Burn_Alias", whose type is String and content is "Bottom"; add the alias "Burn_Temperature", whose type is Float and content is the tag F301, to display the bottom temperature.
3. Select "Burn_Bottom[Bottom Burner]" in the procedure structure tree and save the subprocedure as a template named "Brun_Alias_Temp".
4. In the main interface of OMC Pilot, click **Template Builder**, find the newly created template "Brun_Alias_Temp" on the right, and click **Effect** to change the template status from "EDITED" to "EFFECTIVE".
5. Return to the page of editing the procedure "Alias_Temp", add two "Custom Template" components in the parallel branch, and set the properties as described below:
 - Custom Template Component 1: Set the name to "Burn_Centry", set the description on the first line to "Central Burner", and select "Brun_Alias_Temp" as the referenced template.
 - Custom Template Component 2: Set the name to "Burn_Top", set the description on the first line to "Top Burner", and select "Brun_Alias_Temp" as the referenced template.
6. Complete the connection lines among components in the main procedure, and the figure below shows the effect.

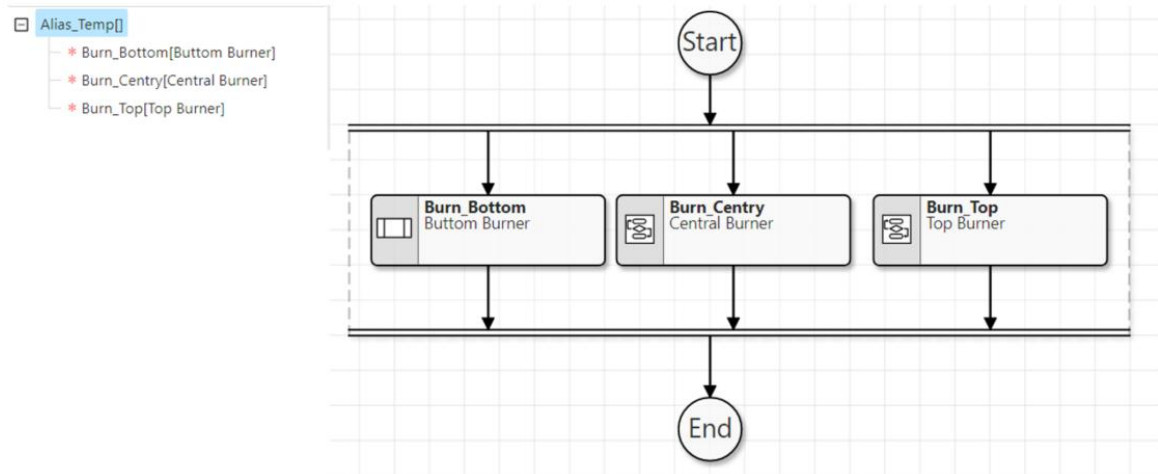


Figure 7-8 Main Procedure for Temperature Judgment (Completed)

7. In the “Burn_Centry[Central Burner]” and “Burn_Top[Top Burner]” nodes, set the actual data associated with the aliases, respectively:

- Burn_Centry[Central Burner] node: In the data list, click the **Alias** tab, set the content of “Burn_Alias” to “Centry”, and set the content of “Burn_Temperature” to the tag F302 to display the central temperature.
- Burn_Top[Top Burner] node: In the data list, click the **Alias** tab, set the content of “Burn_Alias” to “Top”, and set the content of “Burn_Temperature” to the tag F303 to display the top temperature.

Section 8 Run the Procedure

After the main procedure is configured and takes effect, you can create a procedure instance or scheduled task under the “Procedure Execution” node to implement the sequential control strategy.

8.1 Create a Main Procedure Instance

In the menu list on the left, click **Procedure Execution > Procedure Execution**. All procedure instances will be displayed on the right, as shown in the figure below.

No.	Main Procedure	Remark	Description	Status	Group	Label	Model	product	Plan ou...	Version	Version Remark	Status Tag	Created by
1	test0817	test0817_2023081...		PAUSED	Group 7		Offline		100	V1.0	ddd		aaa
2	CQ_010	CQbatch_e4bec10...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
3	CQ_010	CQbatch_68a9e38...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
4	CQ_010	CQbatch_b896e2c...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
5	CQ_010	CQbatch_9d098c8...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
6	CQ_010	CQbatch_6c339b9...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
7	CQ_010	CQbatch_32e058d...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
8	CQ_010	CQbatch_2a3f28f...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
9	CQ_010	CQbatch_f82ae8ff...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
10	CQ_010	CQbatch_c539479...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9
11	CQ_010	CQbatch_a54c0e3...		RUNNING	Group 1		Offline		100	V1.0.2	Automatic running		Test9

Figure 8-1 “Procedure Execution” Interface

8.1.1 Add an Instance

1. In the “Procedure Execution” interface, click **Add** to open the “Add” dialog box, as shown in the figure below.

Procedure Name	Parameter Name	Value	Unit	Data Type	Scalable	SetValues
CQ_010	can1	1.200		Float	True	
CQ_010	can10	st		String	False	
CQ_010	can2	23		Integer	False	
CQ_010	can3	c		String	False	
CQ_010	can4	3[MJ_1]		Enum	False	Enumeration...
CQ_010	can5	1.500		Float	False	
CQ_010	can8	10.990		Float	False	
CQ_010	can9	20		Integer	False	
CQ_010	response			String	False	
CQ_010	userName	aaa		String	False	
CQ_010	z1	3		Integer	False	

Figure 8-2 Create a Main Procedure Instance

2. Follow the instructions below to configure the basic parameters of the main procedure instance.

- Name: Click to select a main procedure that has taken effect.
- Version: It is automatically filled in after you select the main procedure.
- Remark: Enter the description information of the procedure instances, which can contain no more than 64 characters.
- Plan output: Enter a number between 1 and 10,000.
- Standard output: It is automatically filled in after you select the main procedure.
- Mode: Select the operation mode.
 - Offline: It is a simulation operation mode used to debug the structural logic of the procedure to find possible problems or errors in advance. You can manually modify the parameters, variables, and simulation tag data in this mode, but OMC Pilot and the DCS system are not interoperable.
 - Online ReadOnly: It is a normal operation mode in which you can manually modify the parameters. The OMC Pilot obtains the tag data from the DCS system, and the tag value on both sides remains the same.



Tip:

- In the online read-only mode, if there is a “To DCS” step in the OMC Pilot procedure, the procedure will stay at this step when running to this step. At this point, please modify the value of the tag in the DCS system to make it the same as the expected value of the “To DCS” step in OMC Pilot. After the new value of the tag in the DCS

system is synchronized to the OMC Pilot system, the procedure will continue running.

- If the main procedure is associated with the status tag, you need to set the mode of the main procedure to "Online R&W". Otherwise, the status tag will be invalid.
-

- Online R&W: It is a normal operation mode in which you can manually modify the parameters. In this mode, DCS data and OMC Pilot data are interoperable. That is, OMC Pilot obtains the data from the DCS system for use, and the tag data modified in the OMC Pilot procedure step will be synchronized to the DCS system.
- Parameter: Set the initial values used for the data.
 - Defaults: All parameters in the procedure use their default values in the configuration.
 - Last Time: Select the last executed instance of the same main procedure that has taken effect by default, and the data of this instance generated when its execution was completed will be used as the initial value of the current instance.
 - Select History: Select a certain historical instance of the same main procedure that has taken effect, and the runtime data of this historical instance will be used as the initial value of the current instance.

If you select "Last Time" or "Select History", the reference time will be displayed in the lower left corner of each step when the procedure is running, as shown in Figure 8-3. The reference time is the effective time when the step in the latest instance or the selected historical instance was executed successfully for the last time. If there is no record of successful execution, the reference time will not be displayed.

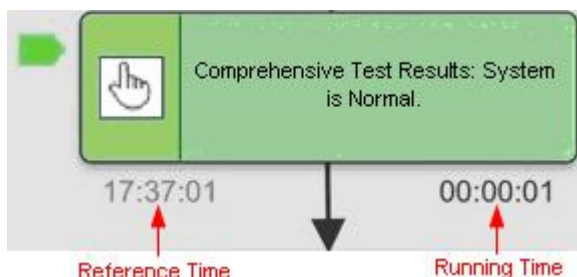



Figure 8-3 Example of the Reference Time and Running Time

- Formula: If the main procedure is associated with predefined formulas, click  to enter the dialog box of "Formula list" and select the formula as required in this instance.
- Customer: Enter the corresponding customer name of the main procedure, which can contain no more than 64 characters.
- Click the **Input process param** or **Material param** tab on the right pane. Each parameter list shows all parameters of the main procedure and its subprocedures by default. In the drop-down list in the upper right corner, you can select the main procedure or a subprocedure to only view the parameters of the selected procedure in the

parameter list. Once you have selected the mode, you can modify the parameters' SetValues. The procedure will run according to SetValues after start-up.

3. After completing the configuration, click **OK**.
4. In the "Procedure Execution" interface, you can filter procedure instances by main procedure name, model, remark, status, group, version remark, or label.

8.1.2 Delete the Instance

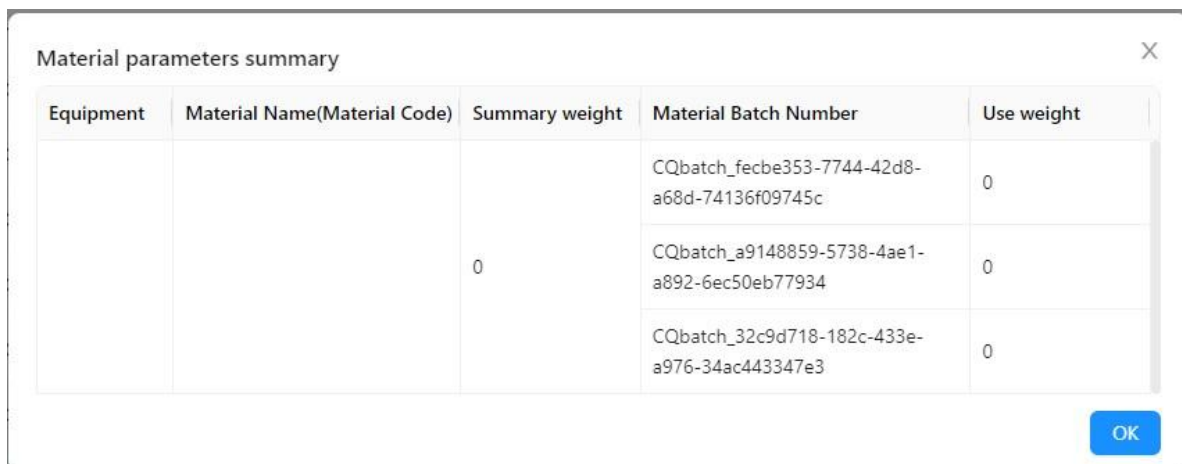
You can only delete instances that are in the "Not Started" status. Check the instances that need to be deleted and click **Delete** to delete the selected instances.

8.1.3 Check Tags

Select an instance and click **Tag Test** above the instance list to check whether the tag in the procedure exists, and the checking result will pop up. If there is any tag that does not exist, please return to the "Procedure Builder" list to modify the tag of the main procedure, then create an instance for the main procedure again in the "Procedure Execution" interface, select the instance, and click **Tag Test** to perform the tag checking again.

8.1.4 View Material Parameters Summary

Check one or more instances, click the "Material parameter summary" button above to open the dialog box. You can view the information of all material parameters used by the selected instances corresponding to the main procedure, including equipment name, material name (material code), summary weight, material batch number and use weight. This section is easy for users to know the usage of the material in the instance operation.



Equipment	Material Name(Material Code)	Summary weight	Material Batch Number	Use weight
		0	CQbatch_fecbe353-7744-42d8-a68d-74136f09745c	0
		0	CQbatch_a9148859-5738-4ae1-a892-6ec50eb77934	0
		0	CQbatch_32c9d718-182c-433e-a976-34ac443347e3	0

Figure 8-4 "Material Parameters Summary" Dialog Box

8.2 Create a Scheduled Task



Tip:

Creating scheduled tasks requires a separate authorization. If not authorized, you can only view the existing scheduled tasks or contact the SUPCON® engineer to enable this function for you.

In the menu list on the left, click **Procedure Execution > Scheduled Task**. The created scheduled tasks will be displayed on the right.

The screenshot shows the 'Scheduled Task' interface. At the top, there is a search bar with the text 'Name: Please enter...' and buttons for 'Filter' and 'Reset'. Below this are buttons for 'Add', 'Edit', 'Delete', 'Valid', and 'Invalid'. The main part of the interface is a table with the following columns: Name, Description, Scheduling Type, Expression/Scheduled Time, Operation Type, Target, Status, and Creator. There are two rows of data in the table. The first row has a checkbox, 'dd2', 'Time Schedule', 'Every week: Thursday 19:50:...', 'Create&Start', 'somketest_copy[V1.0]-Online R&W', 'Invalid' (with a red dot), and 'Admin'. The second row has a checkbox, 'dd1', 'Event Schedule', '7 < 4', 'Create&Start', 'somketest[V1.0]-Online R&W', 'Valid' (with a green dot), and 'Admin'. At the bottom right, there is a pagination control showing '< 1 >' and '20 / page'.

<input type="checkbox"/>	Name	Description	Scheduling Type	Expression/Scheduled Time	Operation Type	Target	Status	Creator
<input type="checkbox"/>	dd2		Time Schedule	Every week: Thursday 19:50:...	Create&Start	somketest_copy[V1.0]-Online R&W	Invalid	Admin
<input type="checkbox"/>	dd1		Event Schedule	7 < 4	Create&Start	somketest[V1.0]-Online R&W	Valid	Admin

Figure 8-5 “Scheduled Task” Interface

8.2.1 Add a New Scheduled Task

1. In the “Scheduled Task” interface, click **Add**. The “Add Scheduled Task” dialog box will pop up, as shown in Figure 8-6.

Add Scheduled Task
✕

* Name:

Description:

Scheduling Type: ☒ Event Schedule ☐ Time Schedule

* Expression:

* Operation Type:

* Target:

Figure 8-6 “Add Scheduled Task” Dialog Box

2. Follow the instructions below to configure the basic parameters of the scheduled task. Items marked with * are required.

- Name: The name cannot be duplicated and can contain no more than 32 characters.
- Description: It can contain no more than 64 characters.
- Scheduling Type: If selecting “Event Schedule”, you must configure “Expression” as one of the conditions to trigger the scheduled task. If selecting “Time Schedule”, you must specify the time of each week or each month when the scheduled task will be triggered, as shown in Figure 8-7.

Configuration Items for “Event Schedule”:

- Expression: Click to edit the expression in the pop-up dialog box. The expression can contain mathematical constants, arithmetic, and common mathematical functions. Click **Tag** to select the DCS tag or data. Click **CHECK** when the expression is completed and click **OK** when there are no errors.

Configuration Items for “Time Schedule”:

- Time Type: Select “Every week” or “Every month” as the cycle period of the scheduled task.
- Date: When “Time Type” is set to “Every week”, you can select one or multiple days from “Monday” to “Sunday”. When “Time Type” is set to “Every month”, you can select one or multiple fixed dates.

- Time: Set the specific time (it can be accurate to seconds) when the scheduled task will be executed.

The figure displays two instances of the 'Add Scheduled Task' dialog box, illustrating the configuration for a 'Time Schedule'.

Left Dialog Box:

- Name: TimeSchedule
- Description: Please enter...
- Scheduling Type: ☐ Event Schedule ☒ Time Schedule
- Time Type: Every week
- Date: Monday x Friday x
- Time: 00:00:00
- Operation Type: Create
- Target: somketest_2_copy[V1.0]-Offline
- Buttons: Cancel, OK


Right Dialog Box:

- Name: TimeSchedule
- Description: Please enter...
- Scheduling Type: ☐ Event Schedule ☒ Time Schedule
- Time Type: Every month
- Date: (Calendar grid showing 10th and 20th selected)
- Time: 00:00:00
- Operation Type: Create
- Target: somketest_2_copy[V1.0]-Offline
- Buttons: Cancel, OK

Figure 8-7 Configure the Scheduled Task by "Time Schedule"

- Operation Type: When the expression is true or the time reaches the specified time, the component will automatically execute the set operations.

Optional operations include:

- Create: After the scheduled task is triggered, OMC Pilot will only create an instance of the specified procedure (target task). The created instance will be displayed in the "Procedure Execution" interface as shown in Figure 8-1 and its status is "Not Started".
- Start: After the scheduled task is triggered, OMC Pilot will directly start the corresponding procedure instance if it has already existed in the system and its status is "Not Started".
- Create&Start: After the scheduled task is triggered, OMC Pilot will create and start an instance of the specified procedure (target task). If an instance of the procedure has already existed in the system but has not been started, it will be started directly.
- Target: Click , and the "Scheduled Task" window similar to Figure 8-2 will pop up, where you can set the target task to be executed after the scheduled task is triggered. For detailed instructions on operations in this window, refer to *Create a Main Procedure Instance*.

3. After completing the configuration, click **OK**.

8.2.2 Edit or Delete the Scheduled Task

Select a scheduled task by checking the checkbox and click **Edit** or **Delete** to perform the corresponding operation.

8.2.3 Enable or Disable the Scheduled Task

When a scheduled task is created successfully, it will be enabled by default. That is, the “Status” column is “Valid” by default.

Check the enabled tasks and click **Invalid** above the task list to disable the enabled scheduled tasks.

Check the disabled tasks and click **Valid** above the task list to enable the disabled scheduled tasks.

8.2.4 Conditions to Trigger a Scheduled Task

When the conditions of the scheduled task are met, OMC Pilot will trigger the scheduled task and automatically create and start a procedure instance.

The following four conditions should be met at the same time to trigger the scheduled task:

- For scheduled tasks whose scheduling type is “Event Schedule”, the calculation result of the expression in the scheduled task is true (that is, the expression is true or the calculation result of the expression is not zero). For scheduled tasks whose scheduling type is “Time Schedule”, the specified time has been reached.
- The target task is in the “EFFECTIVE” status, and there is no instance of the same main procedure in the “Procedure Execution” list.
- The creator of the scheduled task has permission to create and start the main procedure.
- When the mode of the target task is online, the procedure instance passes the tag checking.

8.3 Procedure Running Interface

After creating a new main procedure instance in the **Procedure Execution > Procedure Execution** node in the menu list on the left, you can double-click the instance to open the main procedure instance running interface, as shown in Figure 8-8.

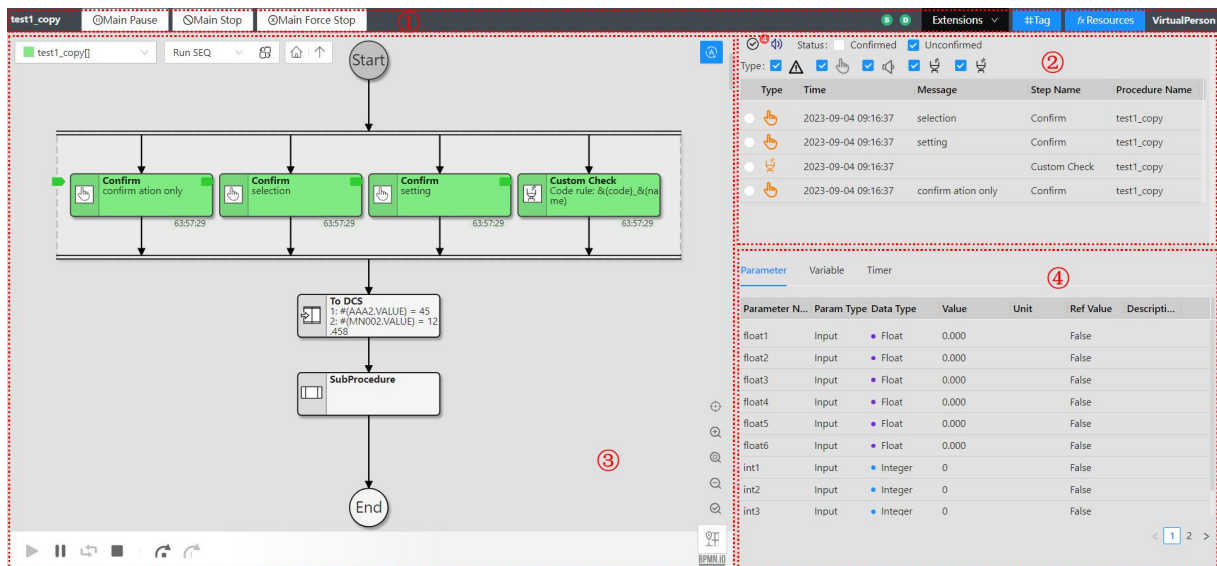




Figure 8-8 Window for Displaying the Detailed Configuration of the Main Procedure

As shown in the figure above, the default layout of the main procedure running interface consists of four parts: ① procedure running buttons, ② message list, ③ the canvas for displaying the running procedure and operation buttons, and ④ data list.

The sections below introduce the functions of each part and related operation buttons.

8.3.1 Procedure Running Buttons


The procedure running buttons are located at the top of the interface. The descriptions of each button are as follows.

- Main procedure command buttons: Click to send the corresponding command to the main procedure to switch the status of the procedure. For details, refer to *Running Status and Operation Commands*.
-  Service Status: Hover the cursor over the icon to view the service status, data source type, and data source status.
-  Dongle Status: Hover the cursor over the icon to view the dongle status and authorization information.
- Click **Extensions** to perform the following operations by expanding the list.
 - FailMonitor: Click to view the judgment conditions of the abnormal status. For details, refer to *Configure FailMonitor*.
 - Layout and display: The main interface consists of a canvas and a message list. Click this button to switch the layout of the main interface and set whether to display the historical reference time required for executing each step.



Tip:



If the default values are used for the main procedure parameters, the setting of the historical reference time will not take effect.

- MainProcedure Props: Click to view the server scheduling period, electronic signature process for skipping a step of the main procedure, and the associated formula group.
- Tag: Click **Tag**, and then the tag list will pop up, where you can view the real-time values or set values of tags.
- Resources: Click to open the “Resources Operation” window to view parameters, variables, timers, and other data of the main procedure and set the values of variables or parameters. Click  in the upper right corner to switch the resource display format between the tile view and the tree view.

8.3.2 Message List

The message list is used to display the messages and alarms generated when the procedure is running. You can filter the messages and alarms by status (confirmed and unconfirmed) or type (message, alarm, error, and custom scan).

Icon and Button Descriptions

- When a message notification appears, select a message and click  to open the message window for viewing and confirmation.
- Confirm: In the “Type” column, the icon is . This prompt will appear when the procedure runs to the confirmation message step, and the running procedure will enter the status of waiting for confirmation. The operator needs to confirm the message before the procedure can continue running, as shown in the figure below.

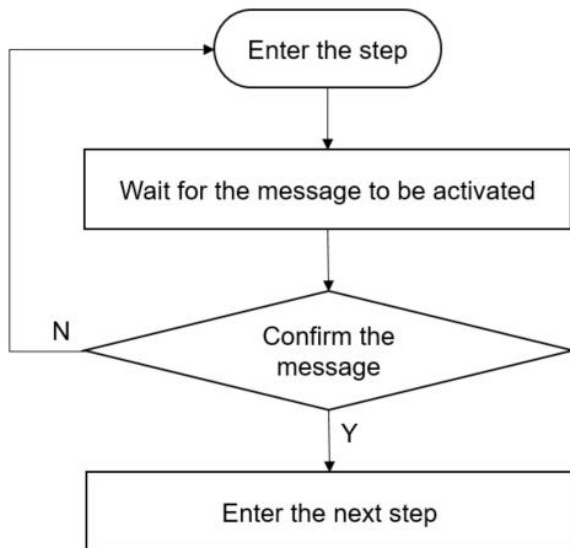







Figure 8-9 Response Flow of Confirmation Messages

- Alarm: In the “Type” column, the icon is . When messages of this type appear, the procedure will continue running, and the operator can check the message when free or as needed.
- Error: In the “Type” column, the icon is . When messages of this type appear, the procedure will enter the PAUSED status. The operator needs to solve the problem, confirm the error message, and then resume the procedure’s operation.
- Custom Scan: In the “Type” column, the icon is . The messages of this type will appear when the procedure runs to the custom scan message steps. The running procedure will wait for the material feeding parameters to be inputted and the feeding amount to be verified. The operator needs to scan the code to input or manually input the material parameters and perform verification before the procedure can continue running.
- If the “Sound” is “On” in the properties of the message or alarm component, a sound prompt will be played when the procedure runs to the message or alarm step. At this time, click  to mute. After the button becomes , click it again to unmute.

If there are messages of multiple types at the same time, the priority of the message sound is: Error > Alarm > Confirmation (the sound for Custom Scan messages is the same as that for Confirm messages by default). For details about how to set the “Sound” property for the message component, refer to *Message*.

Confirmation Message Operations

According to the confirmation message type, the operator needs to perform different operations during the running period.



Attention:

If the message contains multiple parameters to be confirmed, please check all parameters when confirming.

- Confirmation message: If the “Request content” is set to “Confirmation only” during the configuration period, the operation box during the running period is as shown in the figure below. The operator needs to confirm the message and click **Confirm** to make the procedure enter the next activated step. If the operator clicks **Cancel**, the procedure cannot continue running. By clicking **Position**, the operator can locate the message step in the procedure in the canvas.

If you have configured data for the message step during the configuration period, you can view the real-time values of parameters, variables, or tags. After confirming the message, you can view the values of data at that time when the message is confirmed in the message list.

Confirm - [zcx_3]

X

Time: 2022-03-13 18:52:51

ACK:

Message: 11

<input type="checkbox"/>	Desc	Tag/Variable Name	Value
<input type="checkbox"/>	test pass	#{AO00020000.AOF}	0

Remarks: Please enter...

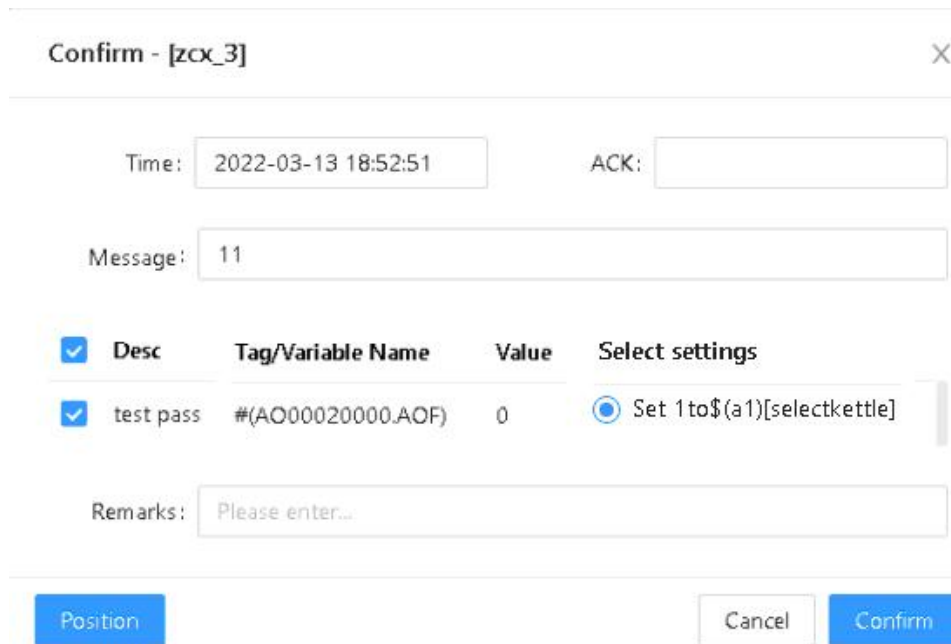
Position

Cancel

Confirm

Figure 8-10 Confirmation Message

- Selection message: If the “Request content” is set to “Selection” during the configuration period, the operation box during the running period is as shown in the figure below. In the selection message, the operator needs to make a selection based on the on-site process and real-time data, and then the procedure can enter the next activated step.



Confirm - [zcx_3] X

Time: 2022-03-13 18:52:51 ACK:

Message: 11

<input checked="" type="checkbox"/>	Desc	Tag/Variable Name	Value	Select settings
<input checked="" type="checkbox"/>	test pass	#(AO00020000.AOF)	0	<input checked="" type="radio"/> Set 1 to \$(a1)[selectkettle]

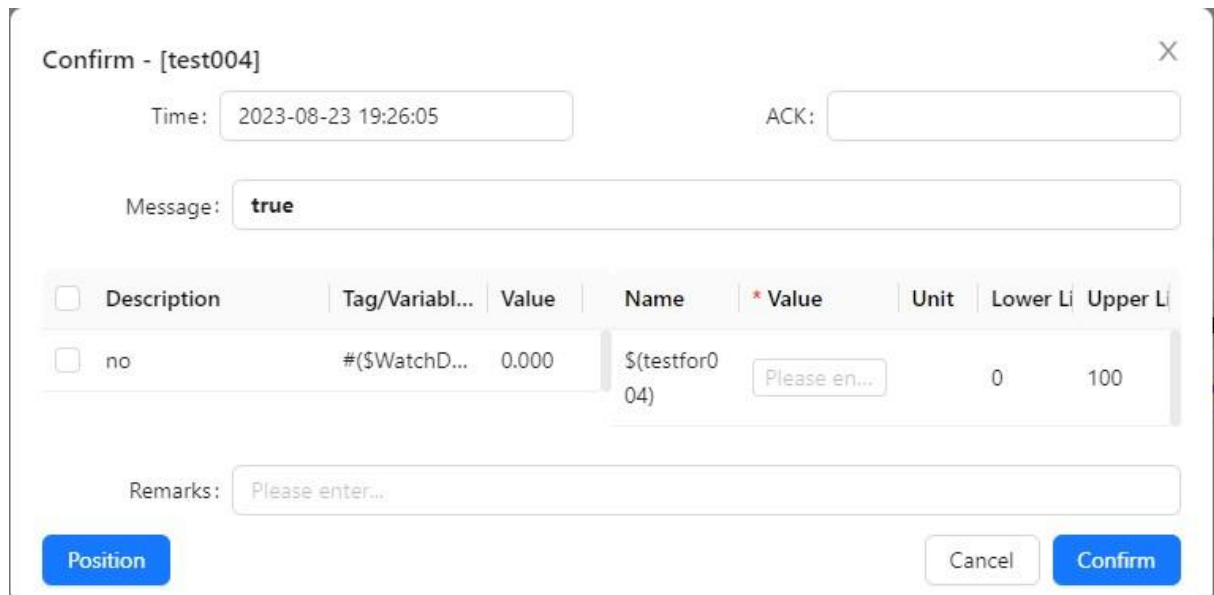
Remarks: Please enter...

Position Cancel Confirm

Figure 8-11 Selection Message

- Value-writing Message: If the "Request content" is set to "Setting" during the configuration period, the operation box during the running period is as shown in the figure below. In the value-writing message, you need to enter the production-related parameters before executing the next step of production.

Note that the data type of each parameter value you entered should match the set one and the parameter value cannot exceed the upper limit and lower limit.



Confirm - [test004] X

Time: 2023-08-23 19:26:05 ACK:

Message: true

<input type="checkbox"/>	Description	Tag/Variabl...	Value	Name	* Value	Unit	Lower Li	Upper Li
<input type="checkbox"/>	no	#\$WatchD...	0.000	\$(testfor004)	Please en...		0	100

Remarks: Please enter...

Position Cancel Confirm

Figure 8-12 Value-writing Message

Alarm Message Operations

When an alarm message appears, the operation box is as shown in Figure 8- 13. The operation method is the same as that for the “Confirm Message (Confirmation only)”, which means that you can click **Confirm** after confirming the alarm.



Attention:

If the message contains multiple parameters to be confirmed, please check all parameters when confirming.

Description	Tag/Variable ...	Value
no	#(\$WatchDog...	0.000

Figure 8- 13 Alarm Message

Custom Scan Message Operations

When the custom scan message appears, the operation box is as shown in Figure 8- 14. Operators can click **Input** in this operation box, manually enter the scanning information in the pop-up “Enter scan information manually” dialog box, and click **OK**. If the scanning result does not match the target value, you will be prompted with “Verify scan content failed!”. If the scanning result is correct (the scanning result is verified), you will be prompted with “Manual feeding is successful” and return to the “Feed” dialog box.

You can perform code scanning operations multiple times, and click “Scan record” to open the “Scan record” dialog box to view the specific feeding information of each code scanning record, as shown in Figure 8- 14. You can check the records and click “Delete” to delete unnecessary records. The maximum number of code scanning records can be set through the “Maximum number of scanning codes” in the “Advanced” settings of the scan code verification component. For details, please refer to “Custom Scan” in *Message*.

In the “Feed” dialog box, if you have configured the custom confirmation rules (confirm conditions) for the custom scan message step, when the rules are not conformed to, you will be prompted with “The following conditions are not met” when clicking **Confirm**. In this case, check and modify the relevant parameters. After all confirmation rules are conformed to, you can click **Confirm** to finish

processing the custom scan message.

Feed - [test000] ✕

Time: 2023-08-30 19:04:53 ACK:

Target

\$(material): 50

Scan result

feedingamount: 50

Record value

\$(record): 150

Remarks:

Figure 8-14 Custom Scan Message

Scan record ✕

☐ No.\$3 scan record
feedingamount: 50

☐ No.\$2 scan record
feedingamount: 50

☐ No.\$1 scan record
feedingamount: 50

Figure 8-15 "Scan record" Dialog Box

8.3.3 Electronic Signature

If you have configured an electronic signature during the procedure configuration, the dialog box for verifying the electronic signature will pop up when the procedure runs to this step. At the top of

the dialog box, the roles whose signatures need to be verified are displayed in sequence according to the level of the electronic signature. After a user with the corresponding role enters the user name and password below, fills in the remark information, and clicks **Sign**, the electronic signature verification will pass. If the user who tries to submit the signature is not a user associated with the corresponding role, the verification will fail.

As shown in Figure 8- 16, this step has been configured with a Level 3 electronic signature, which requires users with roles “OBSERVER”, “OPERATOR”, and “ENGINEER” to perform operations for verifying their electronic signatures in turn.


Depending on the configuration of the Level 2 signature or Level 3 signature, the roles that can perform verification operations may be the same. In this case, the verification operations must be performed by different users associated with the same role. For example, if the roles that can perform verification operations in the Level 3 signature are set to “OPERATOR > OPERATOR > ADMINISTRATOR”, verification on the first two signatures should be performed by Operator A and Operator B, respectively.

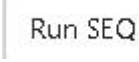
















Figure 8- 16 Electronic Signature Verification

8.3.4 Canvas and Buttons

In the canvas area, OMC Pilot will display the running status of the procedure in the current sequence. The table below shows the meanings and operation commands of each button.





Table 8- 1 List of Icons at Runtime


Button Icon	Button Name	Button Description
 SubProcedure_7	Process view	Click the process view to select the procedure displayed in this view.

Button Icon	Button Name	Button Description
	Procedure status sequence view	The procedure sequence views include the Run SEQ (Running Sequence), Stop SEQ (Stopping Sequence), Pause SEQ (Pausing Sequence), and Resume SEQ (Resuming Sequence). Click and select a procedure status view from the drop-down list to switch to that status view. For descriptions of each status, refer to <i>Running Status Description</i> .
	Status transition diagram	Click to display the status transition diagram. For details, refer to <i>Running Status Description</i> .
	View Main Procedure	Click to display the main procedure in the current view.
	View Parent Procedure	Click to display the parent procedure in the current view.
	Switch operation mode	Switch between the automatic status and the semi-automatic status. For details, refer to <i>Operation Mode</i> .
	Locate running node	Locate the running procedure unit in the current canvas.
	Zoom in	Enlarge the display scaling size.
	100% display	Restore the display scaling size to 100%.
	Zoom out	Reduce the display scaling size.
	Overview	Display the whole procedure.
	Open minimap	Quickly move and view the sequence view.
	Start subprocedure	For details about operation commands of the procedure in the current sequence view, refer to <i>Running Status and Operation Commands</i> .
	Pause subprocedure	
	Resume subprocedure	
	Stop subprocedure	
	Ready to skip	Stop all subprocedures while pausing the execution of the main procedure to prepare for performing a step-skipping operation.
	Skip	Select a step and send the Skip command. The procedure will skip the current step and go to the selected step. For details, refer to <i>Running Status and Operation Commands</i> .

On the canvas, when you select a procedure step (component), icons will appear on the right side of the step. The descriptions are as follows:

Table 8-2 List of Procedure Step Icons

Icon	Icon Name	Icon Description
	Current step	It is displayed on the left side of the procedure component and is used to indicate the currently running procedure step.
	Configuration information	It appears after you select the procedure component. You can click it to view the component properties configured during the configuration period but you cannot modify these component properties.
	Operation information	It appears after you select the procedure component. You can click it to view the procedure running record, including the step name, begin time, end time, running time, current status, etc. Click More to view historical running records.
	Position	It appears after you select the subprocedure component. Click it to display the specific content of the subprocedure on another canvas.

Icon	Icon Name	Icon Description
	Parameter Information	It appears after you select the component. You can click it to view the resources used by the component, including parameter names, data types, and the current values of the parameters. You can also set the setpoint values of the parameters as needed.

8.3.5 Data List

In the lower right area is the data list, which displays data of all parameters, variables, and timers of the current procedure or subprocedure displayed in the canvas on the left area, including name, data type, current value or status, etc.


8.4 Running Status and Operation Commands

At runtime, you can view or switch the running status of the procedure in the canvas and switch between the automatic and semi-automatic modes. If you associate the status tag with the main procedure during configuration, you can also view the running status of the procedure by the tag or the control in the control system.

8.4.1 Running Status Description

You can view the running status of the main procedure by any of the following methods:

1. View the status transition diagram in the canvas of the OMC Pilot component.

Click  in the canvas to open the status transition diagram, as shown in Figure 8-17.

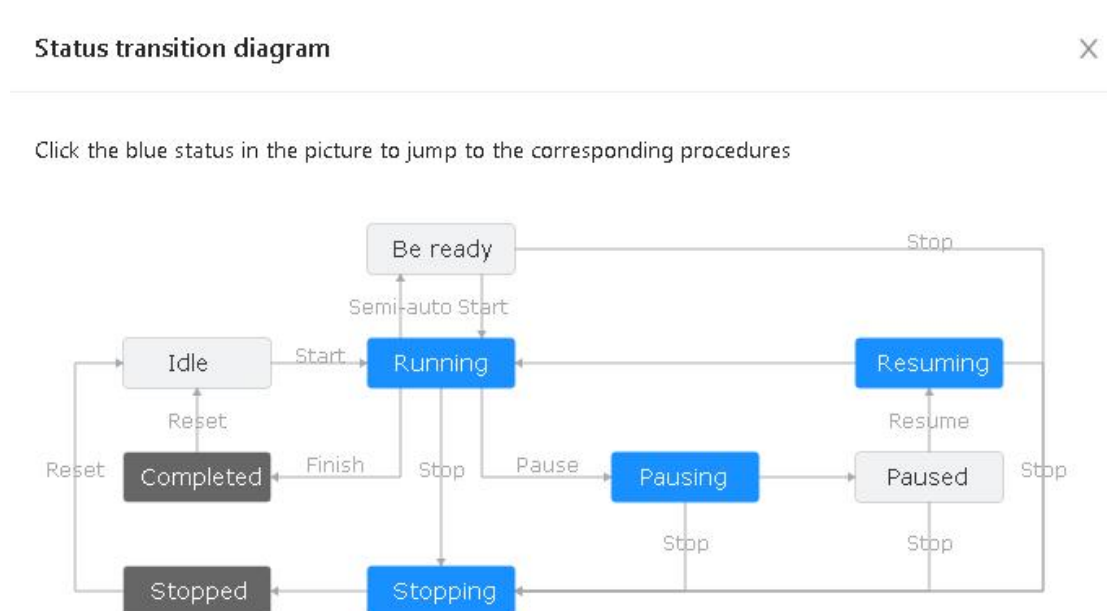











Figure 8-17 Status Transition Diagram

When you move the cursor to a certain status block, the status blocks not associated with it will be blurred. The blue status blocks are associated with the sequence view. After clicking it, you can switch to the corresponding sequence view to check the procedure.

Table 8-3 Procedure Status List

Status	Status Description	Color
IDLE	The status when the procedure is not running, which is an initial and stable status.	White 
RUNNING	Main execution logic, which is a transient status. After the procedure is completed, the status changes to "Completed".	Green 
STANDBY	<p>A stable status. After the procedure in "Running" status and in the semi-automatic operation mode completes one step, it will enter the "Standby" status. In this case:</p> <ul style="list-style-type: none"> ● The procedure will not automatically start up the subsequent steps. ● The procedure's status changes to "Running" when it receives the Start command. ● The procedure's status changes to "Stopping" when it receives the Stop command. ● When the procedure is in Running status, it will automatically start up the current step. <p>Note: The parallel step is regarded as a big step and the procedure's status changes to "Standby" after the parallel step is completed.</p>	Blue Violet 
PAUSING	<p>Logic executed before the procedure is paused, which is a transient status. After the execution of pausing the procedure is completed, the status changes to "Paused".</p> <ol style="list-style-type: none"> 1. In the running sequence, the system sends the Pause command to all steps in the subprocedure. 2. When all steps in the subprocedure are in "Idle", "Completed", "Stopped", or "Paused" status, the procedure will execute the pausing sequence. 3. After the pausing sequence is completed, the procedure's status will change to "Paused" and switch to the running sequence. 	Yellow 
PAUSED	The status after the procedure is paused, which is a stable status.	Yellow 
RESUMING	<p>Logic executed before the procedure is resumed, which is a transient status. After the execution of resuming the procedure is completed, the status changes to "Running".</p> <ol style="list-style-type: none"> 1. The procedure executes the resuming sequence. 2. After the resuming sequence is completed, the procedure will switch to the running sequence and send the Resume command to all steps in the subprocedure. 3. When all steps in the subprocedure are in "Idle", "Completed", "Stopped", or "Running" status, the procedure's status will change to "Running" and execute the running sequence. 	Dark Green 
STOPPING	<p>Logic executed before the procedure is stopped, which is a transient status. After the execution of stopping the procedure is completed, the status changes to "Stopped".</p> <ol style="list-style-type: none"> 1. In the running sequence, the system sends the Stop command to all steps in the subprocedure. 2. When all steps in the subprocedure are in "Idle", "Completed", or "Stopped" status, the procedure will execute the stopping sequence. 3. After the stopping sequence is completed, the procedure's status will change to "Stopped" and switch to the running sequence. 	Dark Yellow 
STOPPED	The status after the procedure is executed, which is a final and stable status.	Dark Yellow 
COMPLETED	The status after the procedure stops running, which is a final and stable status.	Grey 

2. Check the real-time value of the status tag in the control system. The relationship between the running statuses and the tag values is as shown in Table 8-4.

Table 8-4 Relationship between Statuses and Tag Values



Running Status	Value of Status Tag
Not Started	0
Idle	1

Running Status	Value of Status Tag
Running	2
Pausing	3
Paused	4
Resuming	5
Stopping	9
Stopped	10
Completed	13
Standby	20
Forced Stopped	21

3. When OMC Pilot and the OMC High-performanceHMI component are used together, if you want to directly view the running status of the procedure in the OMC High-performanceHMI component, you can use one of the following methods:

- Add the TODOLIST control in the flowchart. For details, refer to *OMC Pilot TODOLIST Control User Manual*.
- Add a "Button" control to the flowchart and set the visual dynamic properties of the control, which will replace the tag value with the corresponding button color (for example, set it to the same display effect as that in the OMC Pilot canvas), so that the operator can quickly identify the current running status of the main procedure. For the relationship between the values of the status tags and the running statuses, refer to Table 8-4.

8.4.2 Operation Mode

The operation modes include automatic mode and semi-automatic mode, which can be switched with the buttons  and  on the interface.

- Automatic mode: The main procedure will run automatically. That is, when the current step is completed, the next step will be executed automatically until the main procedure is completed. When a message to be confirmed pops up, the procedure will continue to execute the next step after the message is confirmed.
- Semi-automatic mode: It is only valid in the RUNNING view. After the procedure completes the current step, it will enter the STANDBY status, and you need to send the Start command for the procedure in the current view to execute the next step.

You can switch the operation mode in any procedure status. This will only affect the operation of the procedure. If you set the automatic/semi-automatic operation mode for a main procedure or a subprocedure, all subprocedures in the main procedure or the subprocedure will be set to the corresponding automatic/semi-automatic mode at the same time.

8.4.3 Main Procedure Commands

The main procedure command buttons are located above the procedure running interface, including:

- Main Start (Start the main procedure): This button is available for a main procedure in the

"Not Started" status. After clicking it, you will make the main procedure start executing the running sequence. After the main procedure starts running, this button will change to "Main Pause".

- **Main Pause (Pause the main procedure):** After clicking this button, you will pause the subprocedures and the main procedure in turn, and the subprocedures and the main procedure will execute their pausing sequences in turn. After the main procedure is paused, this button will change to "Main Resume".
- **Main Resume (Resume the main procedure):** After clicking this button, you will resume the main procedure and subprocedures in turn, and the main procedure and subprocedures will execute their resuming sequences in turn.
- **Main Stop (Stop the main procedure):** After clicking this button, you will stop the subprocedures and main procedure in turn, the subprocedures and main procedure will execute their stopping sequences in turn, and the main procedure's status will change to "STOPPED". After the stop command is executed, the tab will be automatically closed.
- **Main Force-Stop (Force the main procedure to stop):** It is used in special situations or emergencies. With this button, you can stop the execution of the main procedure manually instead of depending on the procedure's automatic operation. After you click this button, the system will stop the subprocedures and main procedure in turn without executing stopping sequences. The main procedure's status will change to "FORCED STOPPED". All subprocedures and steps in this main procedure remain the status quo. After the stop command is executed, the tab will be automatically closed.

In different main procedure statuses, the availability of main procedure command buttons is as shown in the table below.

Table 8-5 Availability of Main Procedure Command Buttons in Different Statuses







Command Main Procedure Status	Start Main Procedure	Stop Main Procedure	Pause Main Procedure	Resume Main Procedure
RUNNING	-	Available	Available	-
PAUSING	-	Available	-	-
PAUSED	-	Available	-	Available
RESUMING	-	Available	-	-
STOPPING	-	-	-	-
STOPPED	-	-	-	-
IDLE	Available	-	-	-
COMPLETED	-	-	-	-

8.4.4 Subprocedure Commands

The subprocedure command buttons are located below the canvas, as shown in the following table. The subprocedure commands are only valid for the procedures in the current canvas area.

Table 8-6 Subprocedure Command List

Button Icon	Button Name	Button Description
-------------	-------------	--------------------

Button Icon	Button Name	Button Description
	Start (Start the subprocedure)	Send the Start command for the procedures in the current view. It is valid in semi-automatic mode.
	Pause (Pause the subprocedure)	For the procedures in the current view, send the Pause command to pause the running procedures in turn. The subprocedures in these procedures will execute the pausing sequences in turn.
	Resume (Resume the subprocedure)	For the procedures in the current view, send the Resume command to resume the paused procedures in turn. The subprocedures in these procedures will execute the resuming sequences in turn.
	Stop (Stop the subprocedure)	For the procedures in the current view, send the Stop command to stop the running procedures in turn. The subprocedures in these procedures will execute the stopping sequences in turn. After completion, the procedures enter the "Stopped" status.
	Ready skip (Ready to skip the step)	Stop all subprocedures while pausing the execution of the main procedure to prepare for performing a step-skipping operation.
	Skip (Skip the step)	Select a step and send the Skip command. The subprocedure will skip the currently running step and go to the target step. For details, refer to the descriptions following this table.

Supplementary Notes on Skipping the Step

When you perform skipping operations, if the currently running step is not a subprocedure step, the skipping operation will automatically stop the step and send the RESET command to the target step. If the currently running step is a subprocedure step, the user will be prompted to manually stop the step to perform the skipping operation.

The restrictions for skipping operations are as follows:

- You can only skip steps within a main procedure or a subprocedure. That is, skipping steps is only allowed in the current canvas area.
- Skipping steps across parallel branches is not allowed. More precisely,
 - If the current step and the parallel branch are at the same level, you cannot skip to a step in the parallel branch.
 - If the current step is in the parallel branch, you can only skip to a step in the parallel branch and cannot skip to one out of the parallel branch.
- If you have configured an electronic signature process in "MainProcedure Props" during the procedure configuration, when skipping a step, you are required to verify your electronic signature before performing step skipping. For details about configuring an electronic signature process for step skipping, refer to *Procedure Editing Button*. For details about electronic signature operations, refer to *Electronic Signature*.

Availability of the Command Buttons

In different procedure statuses, the availability of subprocedure command buttons is as shown in the table below.

Table 8-7 Availability of Subprocedure Command Buttons in Different Statuses

Subprocedure Command Procedure Status	Start	Pause	Resume	Stop	Ready skip	Skip
Idle (IDLE)	---	---	---	---	Available	---
Running (RUNNING)	---	Available	---	Available	Available	---
Pausing (PAUSING)	---	---	---	Available	Available	---
Paused (PAUSED)	---	---	Available	Available	Available	Available after a step is selected
Resuming (RESUMING)	---	---	---	Available	Available	---
Stopping (STOPPING)	---	---	---	---	Available	---
Stopped (STOPPED)	---	---	---	---	Available	---
Completed (COMPLETED)	---	---	---	---	Available	---
Ready (STANDBY)	Available	---	---	Available	Available	Available after a step is selected

8.5 Exception Handling

In the procedure running view, if an exception occurs during the execution of the procedure, such as a system error or an operation error, the system will generate an error message.

At the same time, the step in which the error occurs enters the "Paused" status and all running steps under the subprocedure containing this step are paused. The subprocedure will execute the pausing sequence (Pause SEQ) and enter the "Paused" status after execution.

In this case, open the error message in the message list and perform operations according to the error prompt. The following explains how to deal with three typical exceptions.

Table 8-8 Phenomena and Handling Methods When Exceptions Occur

Exception	Phenomenon When the Exception Occurs	Handling Methods
Web server is abnormal	<ul style="list-style-type: none"> A prompt "Gateway timed out" appears at the top of the interface when you perform any operations. On the configuration page and running details page, a prompt "Disconnected" appears. 	In the dialog box that appears on the procedure details page, click Connect Manually .
Data server is abnormal	<ul style="list-style-type: none"> A prompt "Server unavailable" appears at the top of the interface when you perform any operations. The server status in the upper right corner of the interface is displayed as "Server disconnected" and the dongle status is displayed as unknown. On the configuration page and running details page, a prompt "Disconnected" appears. All running procedures will be forced to enter the "Paused" status and messages not confirmed will be cleared. 	<ol style="list-style-type: none"> In the dialog box that appears on the procedure details page, click Connect Manually. The procedures in the "Paused" status can be resumed by the "Resume" command. After the procedure is resumed and continues running, messages to be confirmed will be generated again.

Exception	Phenomenon When the Exception Occurs	Handling Methods
Data source is disconnected abnormally (OPC or OMC High-performanceHMI)	<ul style="list-style-type: none"> The server status icon in the upper right corner of the interface turned orange and the data source is displayed as "Disconnected" in the details. Obtaining the tag value of the data source server failed. During the configuration, an error message indicating that the tag does not exist appears when you compile the procedure. In online mode, an error message indicating that the tag does not exist appears before you start up the procedure. In online mode, reading values from and writing values to tags on the procedure running interface failed and the real-time values of tags are displayed as Bad. 	<ol style="list-style-type: none"> After handling the exception externally, wait for the connection to restore. If it still prompts that the data source is disconnected, reconnect to the data source in System Configuration > Data Source.

8.6 Order Management

When OMC Pilot is integrated with VxMES (Manufacturing Execution System) for information interaction, the system will directly generate a work order containing all workflows of this batch according to the production order issued by VxMES and send the work order to OMC Pilot. The Order Management module in OMC Pilot contains order information about all workflows of all batches issued by VxMES. In this module, you can send workflows to the "Procedure Execution" list (i.e., create procedure instances linked with the workflows), stop the execution of procedure instances linked with the workflows, search workflows, view material and instance details, and delete workflows. The Order Management module implements the automation of process production procedures, which helps prevent misoperations, improve product quality, and reduce production costs.



Attention

OMC Pilot can only ensure that one process is executed according to the sequence of workflows and is not responsible for the execution sequence of different processes.

Prerequisites:

- You have configured the unique server code (workshop), address of the OMC Pilot server, and user name and password of OMC Pilot in VxMES. It is supported to configure information of multiple OMC Pilot systems for one VxMES.
- You have configured the URL and server code to be sent to VxMES in the VxDir.Publish.xml file under the OMC Pilot installation directory. Configurations include setting the value of the node <url> to the IP address and port number of the destination VxMES and setting the value of the node <servercode> to the workshop represented in OMC Pilot (it should be synchronized with that in VxMES).
- You have restarted the VxDir.Websvr.exe process after modifying the VxDir.Publish.xml file and the configuration has taken effect.

Steps:

1. In the menu list on the left, click **Procedure Execution > Order Management** to enter the Order Management module, as shown in Figure 8- 18.

Begin Time: 2023-01-01 00:00:00 End Time: 2023-09-06 23:59:59 Order Number: Please enter... Process: Please select...

Batch Number: Please enter... Status: Please select... Search Reset

Apply Stop Delete Delete instance Import

No.	Order Number	Process	Workflow S	Batch Number	Product Name	Product Line	Equipment	Main Procedure	Status	Creation Time	Operation
1	CQ_6dde0b1c-fa74-4cb0-a062-80174b76a94e		1	CQbatch_c68fb2cd-1acc-4d44-8917-6214448b8a36				CQ_010[V1.0.2]	COMPLETED	2023-08-17 13:49:07	Material Details Instance Details
2	CQ_d53651ac-4ec0-432a-8b75-1ce1ea0d1b2c		1	CQbatch_7a66193e-0788-42c0-bb48-64b1d6fbaaf9				CQ_009[V1.0.2]	COMPLETED	2023-08-17 13:49:05	Material Details Instance Details
3	CQ_bd51fff5-cc2b-40a2-a5b5-11df8236bf30		1	CQbatch_90c7cb94-712f-4413-9719-e6fc2a114a24				CQ_008[V1.0.2]	COMPLETED	2023-08-17 13:49:04	Material Details Instance Details
4	CQ_33b7829e-f6e4-4bde-b806-a194609b2c2c		1	CQbatch_fd579bd3-3d54-4295-8329-e5e63679b263				CQ_007[V1.0.2]	COMPLETED	2023-08-17 13:49:03	Material Details Instance Details
5	CQ_82b861f7-07d6-4d43-af33-0baace6bbaef		1	CQbatch_8c0471f2-be2c-4285-af5c-2026f1791ced				CQ_006[V1.0.2]	COMPLETED	2023-08-17 13:49:03	Material Details Instance Details
6	CQ_65750067-fa72-427e-b6bf-6d2a14b2849c		1	CQbatch_ed46df00-0a1d-4e18-800a-50a983d8f21a				CQ_005[V1.0.2]	COMPLETED	2023-08-17 13:49:02	Material Details Instance Details
7	CQ_7b44e67e-4c51-4c78-bd49-ab7227daae27		1	CQbatch_19bb3395-93ca-435e-b845-5bb2c55af50c				CQ_004[V1.0.2]	COMPLETED	2023-08-17 13:49:02	Material Details Instance Details
	CO_45ae9c8a-7321-476f-			CObatch_f41e4468-d27d-							Material

Total 3310 Item < 1 2 3 4 5 ... 166 > 20 / page Go to Page

Figure 8- 18 “Order Management” Module

2. Import the order.
 - 1) Click **Import** to open the “Import” dialog box.
 - 2) Click **Please select...** to open the dialog box for selecting the file and select the order file to be imported.
 - 3) Click **OK** to start importing the order.

After the file is verified, the order information will be displayed in the list below.
3. Perform one of the following operations to create procedure instances one by one or in a batch.
 - Create a procedure instance.
 - 1) Check a workflow in an order and click **Perform** to open the “Add” window, as shown in Figure 8- 19.

Add
×

* Name
Please select...Procedure

Input process param
Material param

* Version
Fill comes from the procedure name selection

Procedure Na...	Parameter Name	Value	Unit	Data Type	Scalable	SetValues
There is no data currently.						

Batch number
5503220620A022-ES-09

* Plan output
Please enter...

Standard output
Automatically fill in after selecting the main pr...

Mode
☒ Offline
☐ Online ReadOnly
☐ Online R&W

Parameter
☒ Defaults
☐ Last Time
☐ Select History

Cancel
OK

Figure 8-19 Add a Procedure Instance

- 2) Set basic parameters for the instance. For details about operation steps and parameters, refer to *Add an Instance*. Among the parameters, the material parameters are directly mapped from the workflow to the instance, and the process parameters need to be input manually.
- 3) Click **OK** to finish creating the instance.
After the instance is created, the workflow's status changes to "Not Run". You can view the created instance in the "Procedure Execution" list and its status is "Not Started".
- Create procedure instances in a batch.
- 1) Check multiple workflows and click **Perform** to open the "Batch order" window, as shown in Figure 8-20.

Batch order
×

No.	Product batch number	Process	Serial number	Batch number	Product name	Product line	Main procedure
1	5503220620A022		9	5503220620A022-ES-09		A02	SJ1_ES_006
2			10	5503220620A022-ES-10		A02	SJ1_ES_006

Mode:
☒ Offline
☐ Online ReadOnly
☐ Online R&W

Parameter:
☒ Defaults
☐ Last Time

Cancel
OK

Figure 8-20 "Batch order" Window

- 2) Set "Mode" and "Parameter" and click **OK**.

After the instances are created, the workflows' statuses change to "Not Run". You can view the created instances in the "Procedure Execution" list and their statuses are "Not Started".

4. In the menu list on the left, click **Procedure Execution > Procedure Execution** to enter the Procedure Execution module and start the execution of the created instance. For details, refer to *Procedure Running Interface*.

After the procedure instance starts running, its status will be synchronized to the associated workflow. That is, the status of the procedure instance in the Procedure Execution module is the same as that of the workflow in the order in the Order Management module.

When each procedure in a procedure instance starts and stops, the step statuses (status, start time, and end time), parameters, materials, and other information will be pushed to VxMES at the same time.

5. Perform the following operations to view or manage workflows of orders according to actual needs.
 - View material details: Click **Material detail** in the "Operation" column to open the "Material detail" window and view details of all material parameters in this workflow.
 - View instance running details: Click **Instance detail** in the "Operation" column to open the procedure instance running window. For details, refer to *Procedure Running Interface* and *Running Status and Operation Commands*.
 - Stop the execution of instances: For workflows whose statuses are "Running", you can check one or more and click **Stop** to stop the execution of procedure instances associated with these workflows.
 - Delete workflows: For workflows that are not associated with procedure instances or the associated procedure instances are in the "Not Started" status, you can check one or

more workflows and click **Delete** to delete the selected workflows.

- **Delete instances:** For orders whose associated procedure instances are in the “Not Started” status, you can select one or more orders and click **Delete Instance** to delete procedure instances associated with the selected orders.
- **Search workflows:** Set search conditions such as begin time, end time, order number, process, batch number, status, and equipment above the order list and click **Filter** to filter workflows matching the search conditions.

What to Do Next:

After the execution of a workflow in an order is completed, VxMES will summarize the feedback information received from OMC Pilot, generate a report on this workflow, and send an approval pending task to the corresponding approver. The approver can check and approve the report via the VxMES app.



Attention:

For details about how to submit production orders via VxMES, refer to the corresponding manual of VxMES.

8.7 Queue Management

When you use the LockResource component to occupy a queue when a procedure instance is running, the OMC Pilot system will record and display information about procedure instances and steps locking the same queue. In the Queue Management module of OMC Pilot, you can add or edit queues, adjust the order of procedure steps that are going to occupy the queue according to actual production needs, or force the procedure step occupying the queue currently to release the queue for other steps to occupy.

Steps:

1. In the menu list on the left, click **Procedure Execution > Queue Management** to enter the queue management module.
2. On the right pane, click **Add** to open the “Add” dialog box, as shown in the figure below.

Add [X]

* Queue Name:

Description:

* Group:

Tag Alias	Tag Name
<input type="text" value="Please enter..."/>	<input type="text" value="Please select..."/>
+ Add a row of data	

Import **Export** **Cancel** **Confirm**


Figure 8- 21 Add a Queue

- Enter the queue name and queue description.



Attention:

- The queue name can contain letters, digits, and underscores and cannot exceed 32 characters in length. The queue description cannot exceed 64 characters in length.
- The queue name cannot be modified after setting.

- Enter the tag alias and click  to select the actual tag from the tag list; or click **Import** and select a main procedure or a subprocedure in a main procedure from the procedure list to import the alias information contained in the selected procedure.
- Click **OK** to finish adding the queue.



The created queue will be displayed in the queue list in the Queue Management module, as shown in the figure below.

Queue Name	Description	Number of Steps Waiting	Current Trnstance	Operation
queue2		0		Details
queue		0		Details





< 1 > 20 / page

Figure 8- 22 List of Created Queues

6. For the created queues, you can perform the following operations:

- View details: Click **Details** in the “Operation” column to open the queue details window. You can view information about main procedures, subprocedures, and procedure steps that are occupying the queue and are waiting to occupy the queue in this window, as shown in Figure 8-23.
- Adjust the order of procedure steps that are waiting to occupy the queue: In the queue details window, drag  in the “Operation” column and move up or down to adjust the order of procedure steps. Or you can click  to put the step on the top.
- Force the procedure step to release the queue: For the procedure step that is occupying the queue currently, click **Force unlock** in the “Operation” column to force this procedure step to release the queue it is occupying.
- Edit the queue: Check the queue to be edited and click **Edit** to open the “Edit” dialog box. You can edit the queue description and tag configuration in this dialog box and click **OK** to finish editing.

queue1 ×

Current Or...	Main Procedure	Remark	Version	Subprocedure	SFC Sequence	Step Name	Operation
Current Lock	test2	test2_20230818_001	V1.0	test2	Run Sequence	LockResource	Force Unlock
1	test2	test2_20230818_001	V1.0	test2	Run Sequence	LockResource	 
2	test2	test2_20230818_001	V1.0	test2	Run Sequence	LockResource	 

OK

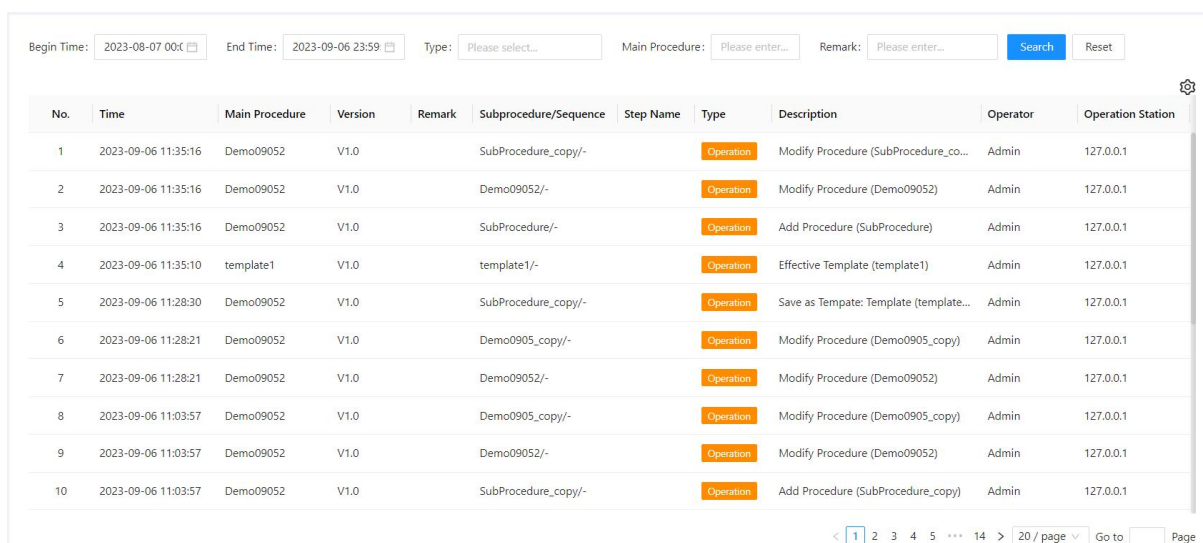
Figure 8-23 Queue Details

Section 9 System Records

The records in the OMC Pilot system include procedure records and history records.

9.1 Procedure Records

In the menu list on the left, click **Log**. The pane on the right is as shown in the figure below. You can search the records by begin time, end time, type, main procedure name, or remark. In a single search, up to 10,000 records can be searched.



The screenshot shows a web interface for viewing procedure records. At the top, there is a search bar with fields for 'Begin Time' (2023-08-07 00:00), 'End Time' (2023-09-06 23:59), 'Type' (Please select...), 'Main Procedure' (Please enter...), and 'Remark' (Please enter...). There are 'Search' and 'Reset' buttons. Below the search bar is a table with 11 columns: No., Time, Main Procedure, Version, Remark, Subprocedure/Sequence, Step Name, Type, Description, Operator, and Operation Station. The table contains 10 rows of records, all with 'Operation' as the type. The bottom of the interface shows a pagination bar with page numbers 1, 2, 3, 4, 5, ..., 14, and a '20 / page' dropdown.

No.	Time	Main Procedure	Version	Remark	Subprocedure/Sequence	Step Name	Type	Description	Operator	Operation Station
1	2023-09-06 11:35:16	Demo09052	V1.0		SubProcedure_copy/-		Operation	Modify Procedure (SubProcedure_co...	Admin	127.0.0.1
2	2023-09-06 11:35:16	Demo09052	V1.0		Demo09052/-		Operation	Modify Procedure (Demo09052)	Admin	127.0.0.1
3	2023-09-06 11:35:16	Demo09052	V1.0		SubProcedure/-		Operation	Add Procedure (SubProcedure)	Admin	127.0.0.1
4	2023-09-06 11:35:10	template1	V1.0		template1/-		Operation	Effective Template (template1)	Admin	127.0.0.1
5	2023-09-06 11:28:30	Demo09052	V1.0		SubProcedure_copy/-		Operation	Save as Tempate: Template (template...	Admin	127.0.0.1
6	2023-09-06 11:28:21	Demo09052	V1.0		Demo0905_copy/-		Operation	Modify Procedure (Demo0905_copy)	Admin	127.0.0.1
7	2023-09-06 11:28:21	Demo09052	V1.0		Demo09052/-		Operation	Modify Procedure (Demo09052)	Admin	127.0.0.1
8	2023-09-06 11:03:57	Demo09052	V1.0		Demo0905_copy/-		Operation	Modify Procedure (Demo0905_copy)	Admin	127.0.0.1
9	2023-09-06 11:03:57	Demo09052	V1.0		Demo09052/-		Operation	Modify Procedure (Demo09052)	Admin	127.0.0.1
10	2023-09-06 11:03:57	Demo09052	V1.0		SubProcedure_copy/-		Operation	Add Procedure (SubProcedure_copy)	Admin	127.0.0.1

Figure 9-1 Procedure Records

There are four types of records:

- Operation: Record the following information.
 - Login or logout.
 - Operations on the buttons on the “Procedure Builder” page: add, delete, modify, copy, upgrade, take effect, approve, reject, abandon, save, import, and export.
 - Operations on the buttons on the “Template Builder” page: add, delete, modify, copy, upgrade, take effect, approve, reject, abandon, save, import, and export.
 - Operations on the “Procedure Execution” page: add or delete main procedure instances and whether to use historical parameters.
 - Operations with commands at runtime, including main procedure and subprocedure commands and operation mode switching.
 - In offline mode, operations of modifying parameters or tags on the procedure running details page.
 - Operations of confirming messages when the procedure runs to the message steps.
 - Operations of switching the data source in the system settings.

- **Message:** Record all message logs, including the logs generated by the messages.
- **Event:** Record the status changes of the procedures and the executed “To DCS” steps at runtime.
- **Signature:** Record all electronic signature verification operations at runtime.

9.2 History Records

In the menu list on the left, click **History**. The pane on the right is as shown in the figure below. You can view all history procedures and filter the records by begin time, end time, main procedure name, version, remark, version remark, mode, or label.

Click **Export** above the list to export the current search results of history records as a file in XLSX format. If no search condition is set, all history records in the system will be exported.



Tip:

- **Up to 10,000 history records can be exported at a time. If the number of history records to be exported exceeds the upper limit, the system will export the first 10,000 history records by default.**
- **The table header name of the column “CustomField” in the history record list can be modified in “Global Configuration”. For details, refer to *Other Configuration*.**

Begin Time:

End Time:

Main Procedure:

Version:

Remark:

Version Remark:

Mode:

Label:

Search

Reset

Export

No.	Main Procedure	Version	Version Remark	Remark	Status Tag	Description	Group	Label	Skip Step Times	CustomField	Mode	Operation
1	CQ_010	V1.0.2		CQbatch_c68fb...					0		Offline	View Report
2	CQ_009	V1.0.2		CQbatch_7a66...					0		Offline	View Report
3	CQ_008	V1.0.2		CQbatch_90c7...					0		Offline	View Report
4	CQ_007	V1.0.2		CQbatch_fd57...					0		Offline	View Report
5	CQ_006	V1.0.2		CQbatch_8c04...					0		Offline	View Report

Total 3324 Item

1

2

3

4

5

...

167


20 / page

Go to

Page

Figure 9- 2 History Records

Double-click a record to enter the procedure details page, which includes a canvas and a summary list of messages.

- **Canvas:** Except for the procedure commands that are not supported here, the functions in the canvas area are the same as those in the procedure display window of the procedure management interface.
- **Message list:** You can view the confirmation messages, alarm messages, custom scan messages, and error messages generated during the execution of the procedure.
- **View electronic signature records:** If an electronic signature process is configured for a confirmation message step, an alarm message step, or a custom scan message step, double-click the message or error prompt in the message list, and then click **View Sign** in the lower right corner of the pop-up message details page to view the verifiers and verification time of signatures at all levels.
- Click **Extensions** to perform the following operations by expanding the list.
 - **FailMonitor:** Click to view the judgment conditions of the abnormal status. For details, refer to *Configure FailMonitor*.
 - **Layout and display:** The main interface consists of a canvas and a message list. Click this button to switch the layout of the main interface.
 - **MainProcedure Props:** Click to view the server scheduling period and electronic signature process for skipping a step of the main procedure and associated formula group.
- **Resource data:** Click **Resources** in the upper right corner to open the “View resources” window to view parameters, variables, and timers. Click  in the upper right corner to switch the parameter display format between the tile view and the tree view.
- **Log:** Click **Log** in the upper right corner to open the “Log record” window to view operation records at runtime, such as writing values to tags, operations performed by persons, confirming messages, and status changes.

Click **View Report** in the "Operation" column to view the history report on the opened page, as shown in Figure 9-3.

Batch test1_copy_copy_20230902_002 ReportTable							
Batch Number	test1_copy_copy_20230902_002			Batch Description			
Procedure Name	test1_copy_copy			Version		V1.0	
Product Name				Begin Time		2023-09-02 16:32:09	
End Time	2023-09-02 16:35:04						
test1_copy_copy - Material param							
Parameter Name	Name	Code	Batch	Equipment	ExpectedWeight	ActualWeight	Packages
material	name1	code1			0	0	
test1_copy_copy - Input Param							
float1		float2		float3		float4	
0.000		0.000		0.000		0.000	
float5		float6		int1		int2	
0.000		0.000		0		0	
int3		int4		int5		str1	
0		0		0			

Figure 9-3 Report

Section 10 Authorization Management

The users, roles, and the association relationships between users and roles in OMC are uniformly created and managed by OMC High-performanceHMI. OMC Pilot periodically obtains and synchronizes the user and role information. **DO NOT** perform operations related to user and role management in the OMC Pilot client, such as adding and deleting users, modifying the user status, adding, deleting, and modifying roles, and adding and deleting users associated with a role. If you need to manage users, roles, and their association relationships, please complete the operations in the OMC High-performanceHMI software. For details, refer to the related manuals of OMC High-performanceHMI.

10.1 View Users

In the menu list on the left side of the main interface, click **Authorization Management > User Management**. The users currently existing in the system are displayed on the right interface, as shown in the following figure.

The screenshot shows the 'User Management' interface. At the top, there are search fields for 'User Name' and 'Display Name', both with placeholder text 'Please enter...'. To the right of these fields are 'Search' and 'Reset' buttons. Below the search fields are four buttons: 'Add' (blue), 'Edit' (light blue), 'Delete' (light blue), and 'Permission List' (light blue). Below these buttons is a table with the following columns: 'No.', 'User Name', 'Display Name', 'User Status', 'Roles', and 'Operation'. The table contains three rows of user data. At the bottom right of the table, it says 'Total 3 Item' followed by a pagination control showing '1' in a blue box with arrows on either side.

No.	User Name	Display Name	User Status	Roles	Operation
1	operator		ENABLED	Operator Role(OPERATOR)	Reset Password
2	admin		ENABLED	Administrator Role(ADMIN), Engineer Role(ENGINEER), Op...	Reset Password
3	aaa		ENABLED	Administrator Role(ADMIN), Engineer Role(ENGINEER), Op...	Reset Password

Total 3 Item < 1 >

Figure 10-1 "User Management" Interface

Search Users

In the "User Name" or "Display Name" search box above the user list, enter a keyword of user names or display names and click **Search** to search for users with the corresponding keyword in their names or display names. Click **Reset** to clear the search condition and display all users.

View the User Permission List

Click **Permission List** above the user list to open the "Permission List" dialog box, as shown in Figure 10-2. In this dialog box, you can view users currently existing in the system, roles assigned to each user, and group permissions assigned to each role.

In the "User Name", "Role Name", or "Group Name" search box above the permission list, enter a keyword of user names, role names, or group names, and click **Search** to search for the

permission information of users whose user name, role name, and group name contain the corresponding keywords. Click **Reset** to clear search conditions and display permission information of all users. Click **Export** in the lower right corner to export the search results as a file in XLSX format. If no search condition is set, all permission information will be exported.

Permission List

User Name:

Role Name:

Group Name:

Search

Reset

No.	User Name	Display Name	Role Name	Group Name
1	aaa		ADMIN	Group 1
2	aaa		ADMIN	Group 2
3	aaa		ADMIN	Group 3
4	aaa		ADMIN	Group 4
5	aaa		ADMIN	Group 5
6	aaa		ADMIN	Group 6
7	aaa		ADMIN	Group 7
8	aaa		ADMIN	Group 8

Total 20 Item

< 1 2 >

10 / page

Cancel

Export

Figure 10- 2 “Permission List” Dialog Box

10.2 Manage Role Permissions

In OMC Pilot, the permissions that a user has are determined by the permissions that the role associated with the user has. When a user is associated with multiple roles, the user has the permissions of all roles. You can assign menu permissions, group permissions, and operation permissions of OMC Pilot to users associated with different roles in OMC Pilot.

Steps

1. Enter the role permission management interface via OMC.
 - 1) Log in to OMC, click **User Security** in the menu on the left, and click **Role Manage** in the menu on the top.
 - 2) In the role navigation tree on the right, click **...** behind the role whose permissions need to be configured and select **auth settings** to enter the role permission settings page.
 - 3) Click the **Pilot Permissions** tab above to enter the page for setting the OMC Pilot permission, as shown in Figure 10-3.

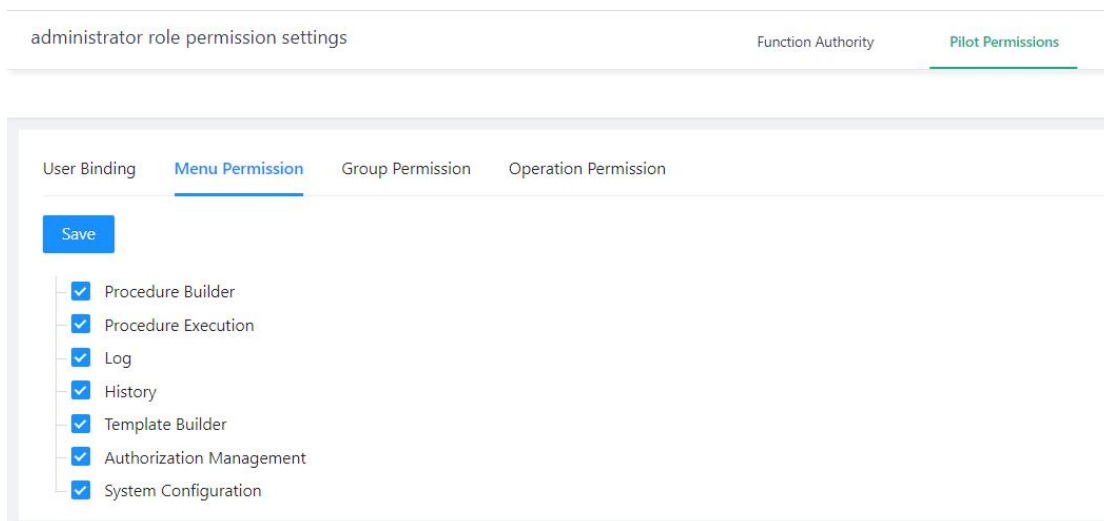


Figure 10-3 Permission Management Page of OMC Pilot in OMC

2. Click different tabs on the right interface to assign menu permissions, group permissions, and operation permissions for the role, respectively.

- **Menu Permission**

The configuration interface of "Menu Permission" is as shown in Figure 10-4. Select the menu items that the role is authorized to operate and click **Save** to assign permissions of accessing menus on the left to the role.

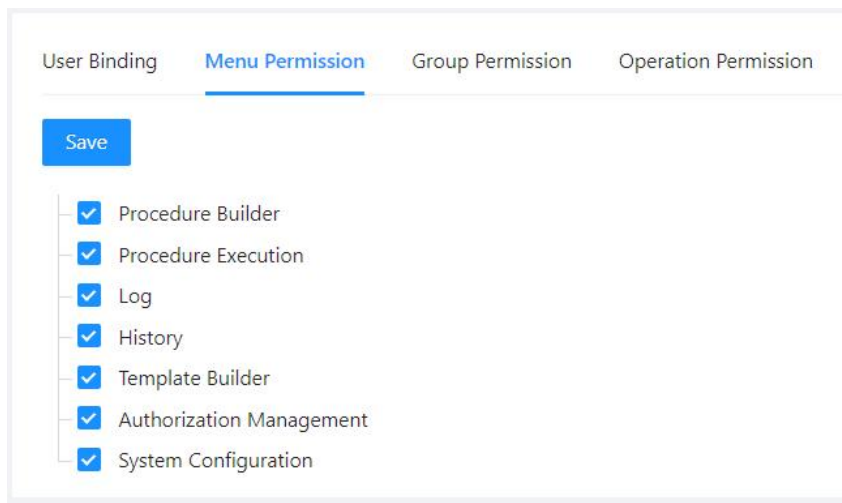


Figure 10-4 Configuration Interface of "Menu Permission"

- **Group Permission**

The configuration interface of "Group Permission" is as shown in Figure 10-5. The software provides 10 procedure groups and 10 resource groups by default. The groups are configured in the "Group Management" menu. For details, refer to *Group Management*.

Click the **Procedure group** tab or the **Resources group** tab, select the groups that the role is authorized to operate, and click **Save** to assign permissions of accessing resources in the corresponding groups to the role.

The screenshot shows the 'Group Permission' configuration interface. At the top, there are four tabs: 'User Binding', 'Menu Permission', 'Group Permission' (which is selected and highlighted with a blue underline), and 'Operation Permission'. Below these tabs is a blue 'Save' button. Under the 'Group Permission' tab, there are two sub-tabs: 'Procedure group' (selected and highlighted with a blue underline) and 'Resources group'. Below the sub-tabs is a list of groups, each with a checked checkbox: Group 10, Group 9, Group 8, Group 7, Group 6, Group 5, Group 4, Group 3, Group 2, and Group 1.

Figure 10- 5 Configuration Interface of "Group Permission"

- **Operation Permission**

The configuration interface of "Operation Permission" is as shown in Figure 10-6. Check the checkbox(es) in the list to set the permissions for the specified operations in all groups that the role is authorized to operate.

User Binding

Menu Permission

Group Permission

Operation Permission

Save

Operation Name	Permission
Procedure Builder	<input checked="" type="checkbox"/>
Procedure/Template-Operate	<input checked="" type="checkbox"/>
Procedure/Template-Edit Parameters	<input checked="" type="checkbox"/>
Procedure/Template-Effect	<input checked="" type="checkbox"/>
Procedure/Template-Approve	<input checked="" type="checkbox"/>
Operation-Formula	<input checked="" type="checkbox"/>
Operation-Product	<input checked="" type="checkbox"/>
Procedure Execution	<input checked="" type="checkbox"/>
Create Instances-Offline	<input checked="" type="checkbox"/>
Create Instances-Online Read-only	<input checked="" type="checkbox"/>
Create Instances-Online R&W	<input checked="" type="checkbox"/>
Command-Start	<input checked="" type="checkbox"/>
Command-Stop	<input checked="" type="checkbox"/>
Command-Pause	<input checked="" type="checkbox"/>
Command-Resume	<input checked="" type="checkbox"/>
Command-Skip	<input checked="" type="checkbox"/>
Command-Force to Stop	<input checked="" type="checkbox"/>

Figure 10- 6 Configuration Interface of "Operation Permission"

There are three types of operation permissions that can be set: procedure builder, procedure execution, and authorization management, as shown in Table 10- 1.

Table 10- 1 Operation Permission List

Operation Permission Category	Operation Permission Subcategory	Operations that Permissions Can be Set for
Procedure Builder	Procedure	View, create, or edit procedure configurations and their parameters, make the procedure configuration take effect, approve the procedure configuration, etc.

Operation Permission Category	Operation Permission Subcategory	Operations that Permissions Can be Set for
	Template	View, create, or edit procedure templates and their parameters, make the procedure template take effect, approve the procedure template, etc.
	Operation-Formula	In the "Formula Management" interface, add, edit, copy, and delete formula groups, edit the formula list, etc.
	Operation-Product	<ul style="list-style-type: none"> In the "Material Management" interface, add, edit, copy, delete, and import material information, etc. In the "Product Management" interface, add, edit, copy, delete, and import product information, add, edit, and delete input and output materials, etc.
Procedure Execution	Create procedures	Set the mode to Offline, Online ReadOnly, or Online R&W when creating a main procedure instance
	Procedure commands	Operation commands for main procedures and subprocedure steps, including starting, pausing, resuming, and stopping procedures, forcing procedure steps to stop, skipping procedure steps, etc.
	Operation-Confirm messages	During the running period of the procedure, operate on the confirmation message steps in the interface
	Operation-Write values	During the running period of the procedure, click Resources in the upper right corner of the interface to open the "Resources Operation" dialog box and write the values of parameters or variables
	Operation-Scheduled tasks	In the "Scheduled Task" interface, add, edit, delete, enable, and disable scheduled tasks, etc.
Authorization Management	Reset passwords	<p>In the "User Management" interface, set new login passwords for users.</p> <p>The password that you reset in the OMC Pilot client for a user will not take effect for the whole OMC system. For details about how to modify the login password for a user, refer to <i>Change the Login Password</i>.</p>

10.3 Group Management

10.3.1 Manage Procedure Groups

Procedure groups are used to control the access permission of users with different roles to the main procedures.

In the menu list on the left side of the main interface, click **Authorization Management > Group Management**, and click the **Procedure group** tab in the right operating interface. 10 default procedure groups in the system will be displayed in the list below.

In this interface, you can add new groups or modify the names of the existing groups. The group name can contain up to 20 characters.

Steps:

- Add a new group: In the right operating interface, click **Add** to open the "Edit" dialog box. Enter a group name and click **OK** to finish adding a new group.
- Modify the group name: Check the checkbox to select a group and click **Edit** to open the "Edit" dialog box. Modify the group name in the pop-up dialog box and click **OK** to finish

modifying the group name.

- Search groups: In the "Name" search box above the group list, enter a keyword of group names and click **Filter** to search for groups with that keyword in their names. Click **Reset** to clear the filtering condition and display all groups.

10.3.2 Manage Resource Groups

Resource groups are used to control the access and operation permission of users with different roles to specified parameters, procedure steps (Subprocedure, RefMainProcedure, and Custom Template), and messages (confirmation and alarm), which help ensure that specified tasks can only be processed by users with specified roles.

In the menu list on the left side of the main interface, click **Authorization Management > Group Management**, and click the **Resources group** tab in the right operating interface. 10 default resource groups in the system will be displayed in the list below.

In this interface, you can add new groups or modify the names of the existing groups. The group name can contain up to 20 characters.

Steps:

- Add a new group: In the right operating interface, click **Add** to open the "Edit" dialog box. Enter a group name and click **OK** to finish adding a new group.
- Modify the group name: Check the checkbox to select a group and click **Edit** to open the "Edit" dialog box. Modify the group name in the pop-up dialog box and click **OK** to finish modifying the group name.
- Search groups: In the "Name" search box above the group list, enter a keyword of group names and click **Filter** to filter groups with that keyword in their names. Click **Reset** to clear the filtering condition and display all groups.

10.4 Configure an Electronic Signature

With the configuration of an electronic signature, you can restrict the operation permission for message confirmation steps. In the menu list on the left, click **Authorization Management > Electronic Sign** to enter the electronic signature configuration page, as shown in Figure 10-7.

Name:

<input type="checkbox"/>	Name	Level	Sign Path	Description
<input type="checkbox"/>	ELEC_SIGN_4	Level 1 signature	OPERATOR	1212
<input type="checkbox"/>	ELEC_SIGN_3	Level 3 signature	ADMIN -> ENGINEER -> OPERATOR	Electronic Signature Level 3
<input type="checkbox"/>	ELEC_SIGN_2	Level 2 signature	OPERATOR -> ENGINEER	Electronic Signature Level 2
<input type="checkbox"/>	ELEC_SIGN_1	Level 1 signature	OPERATOR	Electronic Signature Level 1

Role1	Role2	Role3
-------	-------	-------

Figure 10-7 Electronic Signature Configuration Page

There are three types of electronic signature levels available in the component, i.e., Level 1 signature, Level 2 signature, and Level 3 signature, which respectively require one or multiple users with designated roles to submit their electronic signatures for confirming a message and whose confirmation sequence is "Role 1 → Role 2 → Role 3". Three default electronic signature processes have been configured in the component and they correspond to the three types mentioned above.

Following the steps below, you can customize a process of verifying the electronic signature(s).

- 1) Click **Add** to open the "Add Electronic Sign" dialog box, as shown in Figure 10-8.
- 2) Configure the basic parameters of the electronic signature. Among them, the name can contain letters, digits, and underscores, and must start with a letter. After clicking **OK**, the name and level cannot be edited again.
- 3) Select the verifiers that can submit their electronic signatures. In each type of the electronic signature levels, each signature level supports to be configured with multiple roles. If it is a Level 2 or Level 3 signature, you can select the same role in "Role 1", "Role 2", or "Role 3", but the verifiers who submit their electronic signatures must be different when the procedure is running.
- 4) After completing the configuration, click **OK** to save the settings.

The newly added electronic signature settings are displayed in the list. In the confirmation message component, the alarm message component, and the custom scan message component, you can configure the operation flow for the operators to submit their electronic signatures to confirm the message. For details, refer to *Message*.

Add Electronic Signature [X]

* Name:

* Level:

Description:

* Role1:

* Role2:

* Role3:

[Cancel] [OK]

Figure 10-8 "Add Electronic Sign" Dialog Box

In the "Name" search box above the electronic signature list, enter a keyword of electronic signature names and click **Search** to search for electronic signatures with that keyword in their names. Click **Reset** to clear the filtering condition and display all electronic signatures.

10.5 View Online Users

In the menu list on the left, click **Authorization Management > Online User** to enter the interface displaying online users, as shown in Figure 10-9.

In this interface, you can view the information of users that has logged in to the system now, including their user names, display names, platforms via which they logged in to the system, login time, and login expiration time. Click **Refresh** above the list to refresh the online user list.

Refresh

No.	User Name	Display Name	Platform	LoginTime	ExpiredTime
1	aaa		WEB	2023-08-22 15:13:49	2023-08-22 16:41:59
2	jyn		WEB	2023-08-22 13:36:32	2023-08-22 16:41:48
3	admin		WEB	2023-08-16 22:39:59	2023-08-22 16:41:50

Total 3 Item < 1 >

Figure 10-9 Online User List

Section 11 Appendix

11.1 Basic Settings

After installing the OMC software, start the OMC Intelligent Application Management software under [Start Menu/All Programs/OMC/Intelligent Application Management]. Click **Pilot** in the main interface and then click **Open Client** in Basic Setup in the OMC Pilot panel. Then a window will pop up, as shown in the figure below.

Basic Settings

Data Svr | Web Svr | Client Setup | Monitor softw

Server A

Desc: ServerA

IP1: 127 . 0 . 0 . 1

IP2: 0 . 0 . 0 . 0

IP3: 0 . 0 . 0 . 0

Server B

Desc: ServerB

IP1: 0 . 0 . 0 . 0

IP2: 0 . 0 . 0 . 0

IP3: 0 . 0 . 0 . 0

OK Cancel

Figure 11- 1 Basic Settings

- Data server configuration

It is used to set the description and address(es) of the server. If there is a redundant server, set the IP address(es) of server B.

You can enter up to three IP addresses for the same computer. After setting the server's IP address(es), restart the computer to make the settings take effect.



Attention:

If there is a redundant server, the configuration of the main server and that of the redundant server should be exactly the same. That is, server A only contains the IP

addresses of the main server, and server B only contains those of the redundant server.

- Web server configuration

In the "Basic Settings" interface, click the **Web Svr** (Web Server) tab to configure the IP address(es) of the web service. You can configure up to three IP addresses for the same computer. Currently, when you install the server component, the data server and the web server components will be installed at the same time. Here you can fill in the IP address with that of the data server.

- Client configuration

In the "Basic Settings" interface, click the **Client Setup** tab to configure the IP address of the server that the client connects to.

- Monitoring software configuration

In the "Basic Settings" interface, click the **Monitor software Setup** tab. If you use SCADA as the monitoring software, check **Monitoring software is scada**. If it is not checked, the OMC High-performanceHMI component will be used as the monitoring software by default.

- Service status

In the "Basic Settings" interface, click the **Service Status** tab to view the installation and running status of the daemon service and web service and start, stop, and restart the service. When the daemon service is running, the service of the OMC Pilot component will be restarted automatically if it is stopped unexpectedly. When the web service is running, you can log in to the OMC Pilot component through the client or browser for operations.

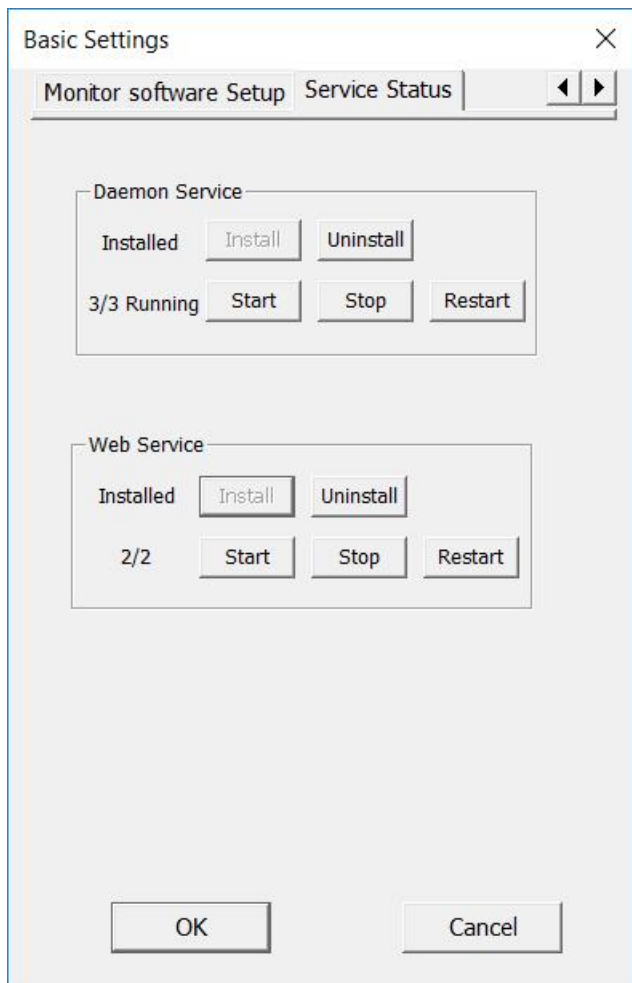


Figure 11- 2 Service Status

11.2 Indicator List

Table 11- 1 Indicator List

Parameter Item		Description
Procedure Configuration	Number of main procedures	≤100
	Number of subprocedures (each main procedure)	≤128
	Number of nesting levels (each main procedure)	≤32
	Number of components (each subprocedure)	≤128
	Number of parameters (each subprocedure)	≤1000
	Number of variables (each subprocedure)	≤1000
	Number of timers (each subprocedure)	≤1000
	Number of templates	≤1000
Procedure Running	Number of main procedures running concurrently	≤100
	Number of OPC data points	≤20000

Section 12 Revision

Table 12-1 Revision List of Each Version

Document Version	Applicable Model	Remarks
V1.0 (20220923)	OMC Pilot V1.90.50.00 and above	The first edition
V1.1 (20230313)	OMC Pilot V2.00.00.00 and above	<ul style="list-style-type: none"> ● Modify the upper limit of the number of client connection authorizations to unlimited ● Update the description of modifying the password and add the operation of entering the new password twice to confirm it ● Delete the section "Runtime Configuration" in the last version of the document and add the section "Global Configuration" ● Add a main procedure status "Approving" and descriptions of related functions ● Add function descriptions of approving and rejecting main procedures and templates in Procedure Builder and Template Builder ● Add the function description of importing SOP tables by the importing function in the "Procedure Builder" interface ● Add function descriptions of the "Material" and "Product" modules ● Add the description of configuring settings in the "Advanced" page when creating a main procedure ● Add function descriptions of "Batch tag replacement" and "MainProcedure Props" in Extensions in the main procedure editing interface ● Add descriptions of the configuration items in the "Advanced" tab when adding parameters in the main procedure editing interface ● Add the description of the field "SkipCheck" in the material parameters ● Add the description of configuring value writing operations in FailMonitor ● Add descriptions of configuring the resource group and history trend for "SubProcedure", "Custom Template", and "RefMainProcedure" components ● Add the description of configuring settings in the "Check" tab of the "To DCS" component ● Add the function and operation description of the Custom Scan component ● Add descriptions of configuring the resource group for the "Confirm Messages", "Alarm", and "Scan Check" components ● Modify the description of configuring the status tag when saving a single-level procedure as a template ● Add descriptions of the plan output, standard output, customer name, and filtering parameters by procedure when adding a main procedure instance ● Add descriptions of supporting searching procedure instances and history execution records of main procedures by version remark in "Procedure Execution" and "History" ● Add descriptions of the "MainProcedure Props" window and the data list area in the procedure running interface ● Add the function description of viewing "MainProcedure Props" when viewing the details of a main procedure on the History page ● Add the descriptions of managing resource groups and allocating resource group permission to roles

Document Version	Applicable Model	Remarks
		<ul style="list-style-type: none"> ● Add the description of supporting allocating the permission of editing parameters in Operate Permission ● Add the description of "Monitor software Setup" in "Basic Settings" ● Update all figures related to the updated function interfaces
V1.2 (20230901)	OMC Pilot V2.30.00.01 and above	<ul style="list-style-type: none"> ● Add configuration descriptions of "Get tags type" in the data source configuration ● Add descriptions of selecting "OMC Platform" as the data source type in the data source configuration ● Add configuration descriptions of "Directly Run Main Procedure", "Subscribe Instance Tag Before Running", and "enable check tag before run" in the "Runtime" configuration ● Add descriptions of the information security configuration ● Add descriptions of the "Authentication Server", "Numerical value", and "Other" configurations in Global Configuration ● Add a new main procedure status "Approving" and update the status transition diagram of the main procedure ● Add descriptions of displaying effective versions and prompting whether to abandon them in a pop-up window when upgrading the main procedure ● Add descriptions of supporting Excel files during main procedure configuration ● Update operation descriptions of adding product information in the product management module ● Add descriptions of supporting entering material feeding amount and remark information when associating materials with products in the product management module ● Add descriptions of supporting exporting the product information as an XLSX file in the product management module ● Add function descriptions of the "Formula Management" module ● Add descriptions of configuring the custom field in the "Basic" tag and configuring a label in the "Advanced" tab when creating a new main procedure and a new template ● Add the function "Batch replacement" in the procedure editing interface, supporting replacing parameter names in a batch ● Add function descriptions of configuring and viewing the formula group in "MainProcedure Props" in the procedure editing interface, procedure running interface, and procedure history interface ● Add descriptions of the button "Run" in the procedure editing interface ● Add descriptions of supporting configuring the default value of the connection line for the "connect tool" component ● Add descriptions of configuring the exception judgment expression and operations to be performed when the expression is true for FailMonitor ● Update property descriptions of the "LockResource" component ● Update function descriptions of the "To DCS", "To VAR", "Calculation", and "Request" components ● Add descriptions of the "ModifyLabel" component ● Delete the "Scan Check" component ● Add descriptions of configuring the property "Scan max times" for the "Custom Scan" component ● Add descriptions of supporting filling in with URL in the "Text" component ● Add descriptions of supporting selecting a formula when

Document Version	Applicable Model	Remarks
		<p>creating a main procedure instance</p> <ul style="list-style-type: none"> ● Add descriptions of adding "Label" as the condition for filtering main procedure instances ● Add function and operation descriptions of viewing the material parameters summary of a main procedure instance ● Add configuration and operation descriptions of supporting scanning code multiple times when confirming the custom scan messages ● Add descriptions of the button Parameter Information in the procedure running interface ● Add the descriptions of supporting importing work orders, deleting instances, and searching work orders by time, order name, process name, batch number, status, and other conditions in the Order Management module ● Add descriptions of supporting configuring the corresponding relationship between tag aliases and actual tags in the queue editing interface ● Update the search conditions in the procedure record module and the history record module ● Add descriptions of supporting exporting search results in the history record module ● Add descriptions of viewing the user permission list ● Update the types and descriptions of "Operation Permission" in the role permission settings ● Add descriptions of supporting configuring multiple types of roles for each level when configuring the electronic signature ● Add function descriptions of viewing online users ● Update figures and descriptions according to the component