






**OMC System Software**  
**High-performanceHMI**  
**Config Explorer**  
**User Manual**  
**IM41S55-E**

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

# Table of Contents

<b>Config Explorer</b> .....	<b>1</b>
<b>Section 1 Overview</b> .....	<b>1</b>
1.1 Function Features .....	1
1.2 Technical Specification .....	2
1.3 Configuration Procedure.....	4
<b>Section 2 Launch the Software</b> .....	<b>1</b>
2.1 Open the Project .....	1
2.2 Introduction to Interface.....	3
2.2.1 Introduction to Menu Bar/ Toolbar .....	4
2.2.2 Right-click Menu.....	5
<b>Section 3 User Service</b> .....	<b>12</b>
<b>Section 4 Manage Function Block Library and Program Template Library</b> .....	<b>13</b>
4.1 Manage System Function Block .....	13
4.1.1 Create New System Function Block Library .....	13
4.1.2 Create New Symbol and Panel .....	15
4.1.3 Create New Symbol and Panel of I/O Tag .....	16
4.1.4 Apply Custom Symbol and Panel .....	16
4.2 Manage Global Function Block.....	17
4.2.1 Technical Index.....	18
4.2.2 Structure Illustration.....	18
4.2.3 Configuration Procedure .....	19
4.2.4 Create Global Function Block Folder.....	19
4.2.5 Create Global Function Block.....	20
4.2.6 Configure Properties of Global Function Block.....	21
4.2.7 Import/Export Industry Library .....	26
4.2.8 Other Operations of Global Function Block Folder .....	27
4.2.9 Other Operations of Global Function Block .....	28
4.3 Manage Phase Class Function Block .....	29
4.4 Manage Program Template Library .....	29
4.4.1 Configuration Procedure .....	29
4.4.2 Manage Program Template Library .....	30
4.4.3 Manage Program Template .....	32
4.4.4 Manage CSV Program Files.....	35
4.4.5 Generate custom programs in batches .....	38

<b>Section 5 Control Configuration .....</b>	<b>39</b>
5.1 Manage Control Configuration's Status .....	39
5.1.1 Open from Configuration Server.....	39
5.1.2 Save to Configuration Server .....	41
5.1.3 View Control Station in Read-only Mode .....	42
5.2 Start up Hardware Configuration Software .....	43
5.3 Start Tag Configuration Software .....	44
5.4 Manage Custom Program .....	45
5.4.1 Build New Custom Program .....	45
5.4.2 Program Operation.....	46
5.4.3 Compile Single Custom Program .....	49
5.4.4 Generate Custom Programs in a Batch.....	49
5.4.5 Parameters for Batch Export/ Import of Station Programs.....	50
5.4.6 Program Scheduling.....	53
5.4.7 View Contents to be Downloaded .....	54
5.4.8 Print Custom Program.....	55
5.5 Manage Custom Function Block.....	56
5.5.1 Build New Custom Function Block .....	56
5.5.2 Custom Function Block Configuration .....	57
5.5.3 Compile Custom Function Blocks of Single Control Station .....	59
5.5.4 View the Referenced Global Function Block .....	60
5.6 View FF List.....	60
5.7 Cross-System Station Communication .....	61
5.7.1 Configure Sending Station.....	62
5.7.2 Configure Receiving Station .....	63
5.8 Modify Alarm Priorities in Batches .....	64
5.9 Backup Single Control Station Configuration.....	65
5.10 Load History Configuration of Single Control Station.....	66
5.11 Upload Parameter.....	67
5.12 Configuration Download .....	68
5.12.1 Online Download .....	68
5.12.2 Offline Download .....	70
5.12.3 Notes for Download.....	70
5.13 Online and Debug.....	71
5.13.1 Online.....	71
5.13.2 Stop/start Custom Program .....	72
5.13.3 Phase Load View .....	73
5.14 Simulation.....	73

5.14.1 Instruction of Software Dog .....	73
5.14.2 Instruction to Simulation Status and Notes for Application .....	74
5.14.3 Examples of Simulation Application .....	75
5.15 Open IDM Server .....	80
<b>Section 6 TCS-900 System Configuration .....</b>	<b>81</b>
<b>Section 7 HMI Configuration .....</b>	<b>84</b>
7.1 Manage Monitor Configuration Status .....	84
7.1.1 Open from Configuration Server .....	84
7.1.2 Save to Configuration Server .....	84
7.2 Start HMI Config Software .....	85
7.3 Configuration Publish .....	86
7.3.1 Operational Steps .....	87
<b>Section 8 Other Operations .....</b>	<b>90</b>
8.1 Global Tag Find .....	90
8.1.1 Illustration for Content and Scope .....	90
8.1.2 Find Download logs .....	90
8.1.3 Illustration of the Results of Find .....	91
8.2 Refresh .....	91
8.3 View Configuration and Download Log .....	91
8.3.1 View Configuration Log .....	91
8.3.2 View Download Log .....	93
8.4 Common Settings .....	94
8.5 Notes .....	96
<b>Section 9 Revision .....</b>	<b>97</b>

# Config Explorer

## Section 1 Overview

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As the work platform of system configuration, VFExplorer is associated with VFIOBuilder, VFTAGBuilder, VFFBDBuilder and VFHMICfg, and supports functions of offline download, online download, online configuration, offline configuration, parallel configuration, configuration publish, single control station configuration backup and load, simulation, etc.

VFExplorer is applied in engineer station, connecting both configuration server and each control station. After building the system structure in VFSysBuilder, configuration of hardware, tag, control scheme, custom function block and HMI can be done in VFExplorer, and online download and online publish of configuration are available too.

### 1.1 Function Features

The main functions of the software include:

1. **Parallel Configuration:** the control configuration takes a single control station as a unit, and each engineer is responsible for the configuration of one or more control stations. When the control part is connected with configuration server, several engineers can configure the same project in different engineer stations simultaneously. For monitoring configuration, parallel configuration can be done in unit of single operation domain (or single file when the objects are resources files such as graphics or schedule).
2. **Online Download:** check the control configuration in unit of single control station to make sure it can pass compilation and find out the part which should be downloaded by comparing with the configuration in control station, then download online. The memory of each configuration in control station is fixed and independent from each other, thus can be edited and compiled separately while configuring, and the minimum unit to download is a hardware module, a tag or a custom program.
3. **Offline Download:** when the version of configuration in control station is different from that in engineer station, online download will not be allowed, and offline download can be used, which will skip over the configuration comparison if the field devices are safe, to completely download the correct configuration of engineer station directly.
4. **Online Configuration:** the real-time value (including parameters of function block and tag, hardware configuration data) in controller can be modified directly when it is connected with controller.
5. Control Configuration and HMI:
  - Start up VFIOBuilder to configure hardware of control station.
  - Start up VFTAGBuilder to configure tag of control station.

- Build or delete custom program, adjust the execution sequence of custom program by modifying the running cycle and phase.
  - Build or delete custom function block, start up VFSTModule to configure.
  - Start up VFHMICfg to configure monitoring in operation domain.
6. **Single Control Station Configuration Backup and Load of Historical Single Control Station Configuration:** make a backup of single control station configuration and load the backup of historical configuration easily.
  7. **Configuration Publish:** opt for the operation domain and publish updated configuration to it. Operation node obtains updated configuration from configuration server.
  8. **Online or Start up/Stop Custom Program:** connect with custom programs to view running status, running time, inactive/ active status of input/ output, etc of all custom programs; stop/ start up any program.
  9. **Phase Load:** view the phase load and running time of current controller.
  10. **Global Tag Search:** search and accurately locate tags and domain variables in all control domains and operation domains of current project.
  11. **Control Station Read-only:** when the control station is locked by some engineer stations, engineers with configuration authority can view the configuration in normal or online debug status, but can not configure or write value.
  12. **Download Log:** view latest 500 download log of selected controller.
  13. **Page Footer Settings:** set the template of page footer in printing of custom program.
  14. **Status View:** select a node in project configuration tree in the working area, then the information of selected node would be showed in property bar on the right.
  15. **Simulation:** debug configuration without real controller.

## 1.2 Technical Specification

### The minimum unit of parallel configuration:

- Single control station for control configuration.
- Single operation domain for HMI configuration
- Single file for resources such as graphics or schedule.

### The minimum unit of block compilation and download:

- One (or a redundant couple) module for hardware configuration.
- One tag for tag configuration.
- One program for custom program.
- One parameter for the initial value of function blocks parameter.
- All function blocks in the control station for custom function block.
- The configuration of the whole module for Profibus master communication module.

- The configuration of the whole module for serial communication module.

**Control scheme**

- At most 200 custom programs in single station.
- Space, \, /, and single quote mark, double quote mark, comma and colon in English status are not allowed in custom program name; name can not be repeated and is in at most 64 English characters; descriptions can use any character and are in at most 256 English characters. Both name and descriptions can be modified.
- At most 16 English characters are in custom function block name, which must start with letter and consist of English letter, number and underline. No repeated name (can't have the same name with system function block), no modification are allowed and try to use the least characters to express the meaning of function block; at most 64 English characters or 32 Chinese characters are in descriptions and modification is available; the length of parameter name is at most 8 characters.
- Custom function blocks that have been used can't be deleted, and the modification of pin, parameter name and memory shift is not allowed.

**Search and locate tag in whole project, check renamed tag in whole project.**



### 1.3 Configuration Procedure

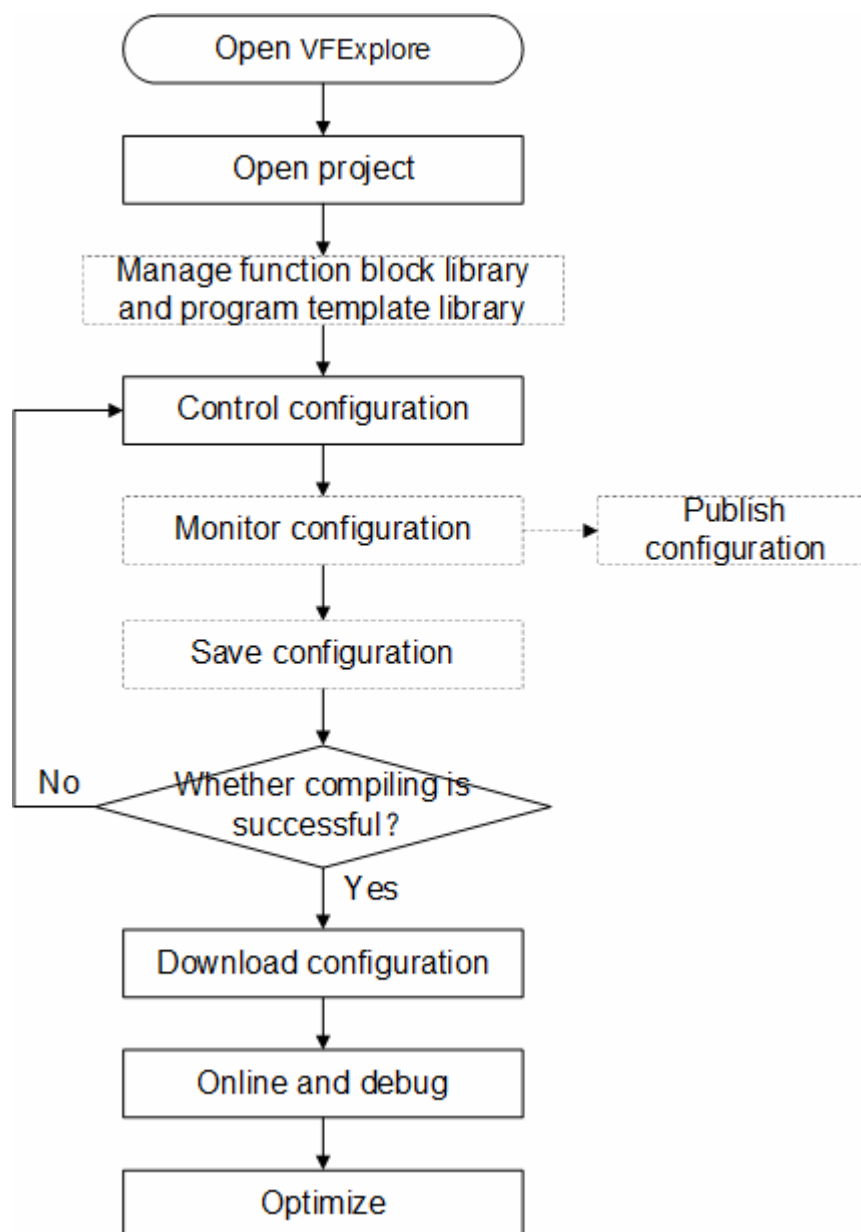


Figure 1-1 Configuration management flowchart

## Section 2 Launch the Software

Before starting VFExplorer, please make sure that the project has been created and the system structure configuration has been completed. VFExplorer does not support new projects, but only supports opening the system structure configuration software to create and set the default project.

**Tip:**

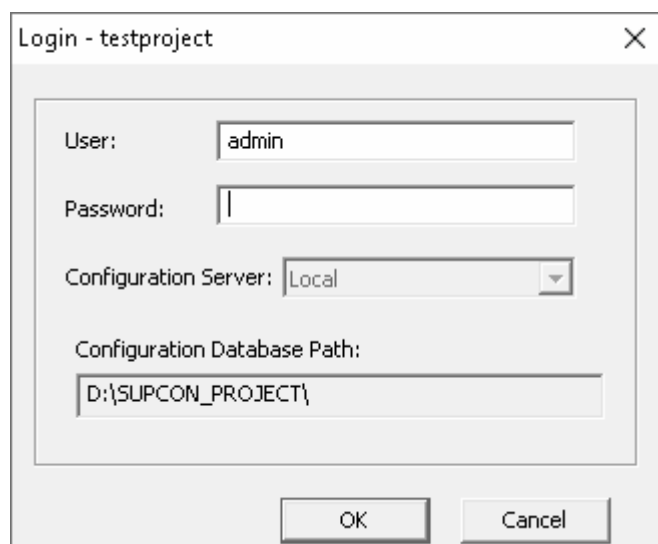
For the detailed operation of system structure configuration software to create and set default project, please refer to *VFSysBuilder User Manual*.

### 2.1 Open the Project

The configuration management software cannot create a new project, it can only connect to the configuration server, and copy the project created by the system structure configuration software and set as the default on the server to the local configuration directory on the engineering station.

The specific operations to connect to the configuration server and open the project are as follows:

Start the configuration management software, and the login window will pop up automatically, as shown in the figure below. (Click the "Open Project" button on the toolbar, and the login window will pop up)



**Figure 2-1 Login**

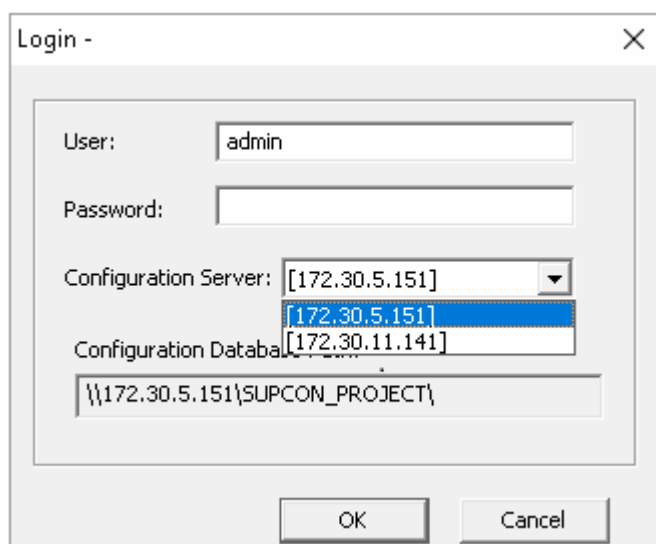
Among them:

- The project to be opened is the project that is set as the default project in the system structure configuration software (for the operation of setting the default project, please

refer to the *VFSysBuilder User Manual*), and the name of the project is displayed on the title bar of the dialog box.

- The user is an engineer added in the system structure configuration software (when an engineer has logged in to the configuration management software, the last logged in user name will be displayed in the user name); if the entered user name does not match the password, it will be prompted to log in failure.
- The configuration database path is the configuration database path set when the High-performanceHMI software is installed or the path configured in initial settings. For details, refer to *OMC High-performanceHMI Initialization Guide*.

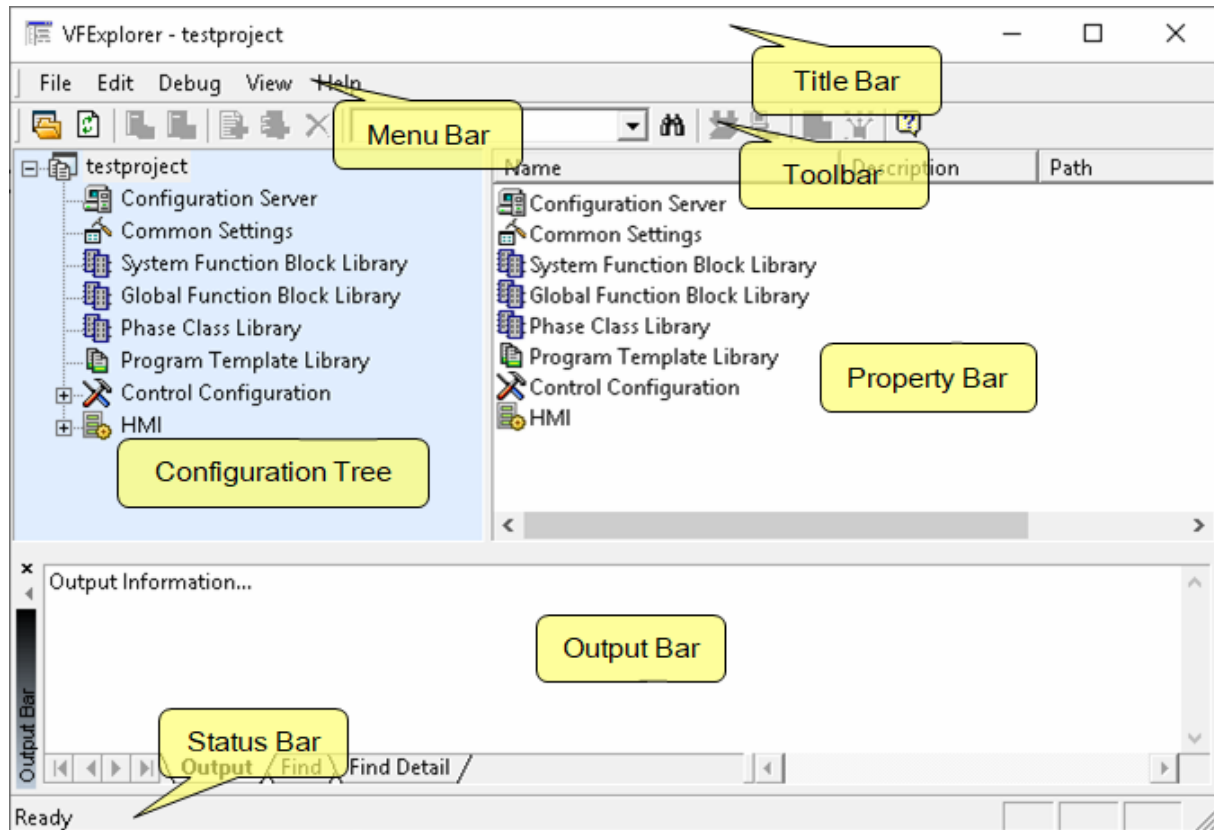
Note: When the multi-item switching function is selected, the login interface is different, as shown in the figure below. In the configuration server option, you can select the configuration server of the remote node. The login method is the same as that of the local operation node.



**Figure 2-2 Login**

## 2.2 Introduction to Interface

After successfully logging in to the configuration management software, the main interface shown in the figure below will be displayed.



**Figure 2-3 Interface of VFExplorer**

The configuration management software interface mainly includes the following parts:

- Title Bar---displays the name of the software and project.
- Menu Bar---includes menus of File, Edit, Debug, View, Help, etc, and each menu contains several sub-menu items.
- Toolbar---lists frequently used menu function in the form of icon, in order to make it easy to use. Click the menu **View/Toolbar** to decide whether to show the bar or not.
- Configuration Tree--tree diagram used to display configuration information.

The function block library/program template library, control configuration, and monitoring configuration can be managed in the configuration tree.













The control configuration contains all control domains, and each control domain contains several control stations (the number in front of the control station name indicates the address of the corresponding controller). The monitoring configuration includes all operating domains.


- Property Bar--displays the basic property of the current selected content.

- Output Bar---displays output information such as configuration check of control station. Click **View/Output Bar** to decide whether to show the bar or not.
- Status Bar---displays current operation information and some prompt information. Click **View/Status Bar** to decide whether to show the bar or not.

## 2.2.1 Introduction to Menu Bar/ Toolbar

**Table 2-1 Menu and function instructions**

Menu	Sub-menu	Icon	Function
File (E)	Open Project (Ctrl+O)		Connect to configuration server and open project
	Close Project		Close project
	Refresh (F5)		Refresh project
	Exit		Exit
Edit (E)	Open from Configuration Server (Ctrl+D)		Open the configuration from configuration server and lock the control station to configure
	Save to Configuration Server (Ctrl+S)		Save the configuration to configuration server and unlock it
	Save to Configuration Server (Locked)		Save the configuration to configuration server and keep locked
	View		View configuration information of control station not locked by local station
	Import control domain configuration		When project contains JX-300SP/ECS-100 direct domain or gateway domain, users can import JX-300XP/ECS-100 system configuration in .sck file format by this menu.
	New control domain configuration		When project contains JX-300SP/ECS-100 direct domain or gateway domain, users can create JX-300XP/ECS-100 system configuration by this menu.
	Save As		Make a backup (locked by local station) of the current control station configuration
	Load History Version		Load the backup configuration (locked by local station) of the current control station
	Compile		Compile current control station configuration
	Download Online (F7)		Download configuration of the control station after comparing with controller configuration
	Download Offline		Download without comparing configuration of controller, download all
	Upload Parameter		Upload current parameter to configuration
	New Custom Program (Ctrl+N)		Build a new custom program
	New Custom Function Block		Build a new custom function block
	Custom Program Scheduling		Adjust the execution sequence of program
	Open VFHMICfg		Open VFHMICfg to configure operation domain
	Publish Configuration		Publish updated information of configuration to operation domain
	Delete		Delete custom program or function block
	Find (Ctrl+F)		Find tags in the whole project
Debug (D)	Online (Ctrl+L)		Connect current custom program to controller
	Start up Custom Program		Start up selected custom program

Menu	Sub-menu	Icon	Function
	Stop Custom Program		Stop the selected custom program
	Phase Load		Connect controller to display phase execution time and load
	Simulation		Start up or close simulation controller
View(V)	Download Log		View download log of selected controller
	Load History Version Log		View load log of historical configuration of selected controller
	Toolbar		Show or hide Toolbar
	Status Bar		Show or hide Status Bar
	Output Bar		Show or hide Output Bar
Help (H)	About (A)		Display program information, version and copyright

Toolbar lists frequently used menu function in the form of icons shown in the table above, in order to make it easy to use.

## 2.2.2 Right-click Menu

Right click in VFExplorer and the right-click menu pops up, and the menus are different according to different selected nodes, as shown in Table 2-2.

**Table 2-2 Functions of right-click menu**

Selected Node	Menu Item	Function	Enable or Not
Right-Click Menu in Work Area			
Control Station	Open from Configuration Server	Open control configuration from configuration server and lock the controller for configuration	Enable only when selected node is controller with configuration authority and unlocked
	Save to Configuration Server	Save control station configuration to configuration server and unlock it	Enable only when selected node is controller with configuration authority and locked by local station
	Save to Configuration Server (Locked)	Save control station configuration to configuration server and keep locked	Enable only when selected node is controller with configuration authority and locked by local station
	View	Open control configuration from configuration server in read-only mode	Enable only when selected node is controller with configuration authority and unlocked
	Simulation (only when software key of corresponding authority is connected)	Start up or close simulation controller	Enable only when selected node is controller with configuration authority and locked by local station
	Save As	Make a backup (locked by local station) of the current control station configuration	Enable only when the selected node is controller with configuration authority and locked by local station
	Load History Version	Load the backup configuration (locked by local station) of the current control station	Enable only when the selected node is controller with configuration authority and locked by local station

Selected Node	Menu Item	Function	Enable or Not
	Compile	Compile configuration of current controller	Enable only when selected node is controller with configuration authority and locked by local station
	Download Online	Download configuration after comparing with controller configuration	Enable only when selected node is controller with configuration authority and locked by local station
	Synchronize Function Block Library	Synchronize function block library from function block library to the control station function block library.	Enable only when selected node is controller with configuration authority and locked by local station
	Modify Alarm Priority in Batch	Modify alarm priority of control station tags in batch.	Enable only when selected node is controller with configuration authority and locked by local station
	Print Custom Program	By this command, the custom program in the control station can be printed to one PDF file in batch.	Enable only when selected node is controller with configuration authority and locked by local station
System Function Block Library	New	Build a new system sub-function block library.	Enable only when selected node is system function block library
	Import	Import existed system function block library.	Enable only when selected node is system function block library
	Export	Export current system function block library.	Enable only when selected node is system function block library
System Sub-function Block Library	New	Build a new system function block.	Enable only when selected node is system sub-function block.
	Delete	Delete specified system function block.	Enable only when selected node is system sub-function block.
	Import Function Block	Import specified system function block.	Enable only when selected node is system sub-function block.
System Function Block	Open From Configuration Server	Open system function block from configuration server and lock the global function block for configuration.	Enable only when selected node is system function block not locked locally.
	Save to Configuration Server	Save system function block to configuration server and unlock it.	Enable only when selected node is system function block locked locally.
	Save to Configuration Server (Locked)	Save system function block to configuration server and keep locked.	Enable only when selected node is system function block locked locally.
	View	Open system function block from configuration server in read-only mode, vie the system function block.	Enable only when selected node is system function block locked locally.
	New Panel	Build a new panel of system function block.	Enable only when selected node is system function block locked locally.
	New Symbol	Build a new symbol of system function block.	Enable only when selected node is system function block locked locally.
	Delete	Delete the panel of system function block.	Enable only when selected node is system function block locked locally.
	Undo Delete	Undo delete the panel of system function block.	Enable only when selected node is system function block locked locally, and after deleting.
	Import Panel	Import the panel of system function block.	Enable only when selected node is system function block locked locally.
	Import Symbol	Import the symbol of system function block.	Enable only when selected node is system function block locked locally.

Selected Node	Menu Item	Function	Enable or Not
	Export Function	Export selected system function block.	Enable only when selected node is system function block locked locally.
	New Password	Create a new password for system function block.	Enable only when selected node is system function block locked locally.
Global Function Block Library	New Function Block Library	Build a new global function block folder	Enable only when selected node is global function block library
Global Function Block Folder	New	Build a new global function block	Enable only when selected node is global function block folder
	Delete	Delete selected new global function block	Enable only when there is no global function block under the folder, otherwise, a prompt of deleting all function blocks first will pop up.
	Import Function Block	Import selected new global function block	Enable only when selected node is global function block folder
	Export Function Block Library	Export selected global function block folder Export the selected global function block folder	Enabled when the selected node is the global function block folder, disabled in other situations
	Update	Upgrade the system function blocks called from all global function blocks in the selected global function block library to the current High-performanceHMI version	Enabled when the selected node is the global function block folder, disabled in other situations
	Properties	Modify the description of global function block folder.	Enable only when selected node is global function block folder. other conditions are prohibited.
Global Function Block	Open From Configuration Server	Open global function block from configuration server and lock the global function block for configuration	Enable only when selected node is unlocked global function block, other conditions are prohibited.
	Save to Configuration Server	Save global function block to configuration server and unlock it	Enable only when selected node is global function block and locked by local station, , other conditions are prohibited.
	Save to Configuration Server (Locked)	Save global function block to configuration server and keep locked	Enable only when selected node is global function block and locked by local station, , other conditions are prohibited.
	View	Open global function block from configuration server in read-only mode	Enable only when selected node is unlocked global function block, , other conditions are prohibited.
	New Panel	Build a new panel of global function block	Enable only when selected node is global function block and locked by local station, , other conditions are prohibited.
	New Symbol	Build a new symbol of global function block	Enable only when selected node is global function block and locked by local station, , other conditions are prohibited.
	Delete	Delete the panel of global function block	Enable only when selected node is global function block and locked by local station, , other conditions are prohibited.
	Undo Delete	Undo delete the panel of global function block	Enable only when selected node is global function block and locked by local station, and it has been deleted before, , other conditions are prohibited.
	Import Panel	Import the panel of global function block	Enable only when selected node is global function block and locked by local station, other conditions are prohibited.



Selected Node	Menu Item	Function	Enable or Not
	Import Symbol	Import the symbol of global function block	Enable only when selected node is global function block and locked by local station, other conditions are prohibited.
	Export Function	Export selected global function block	Enable only when selected node is global function block and locked by local station, other conditions are prohibited.
	Use	View usage information of selected global function block	Enable only when selected node is global function block and locked by local station, other conditions are prohibited.
	Upgrade	Upgrade the referenced system function block in the global function block to the current High-performanceHMI version	Enable only when selected node is global function block and locked by local station, other conditions are prohibited.
	Properties	Set property of global function block	Enable only when selected node is global function block and locked by local station, other conditions are prohibited.
Phase function block library	New Phase Library	Create a new Phase function block folder	It is enabled when the selected node is a Phase function block library, and disabled in other cases
Phase function block folder	New	Create a new Phase function block	Is selected nodes Phase class while the block folder enabled, otherwise prohibiting
	Delete	Delete the specified Phase function block folder	In Phase class is not at the function block folder Phase class when the function block is valid, otherwise prompted, please delete all function blocks in the function block library!
	Import function block	Import the specified Phase function block	Is selected nodes Phase class while the block folder enabled, otherwise prohibiting
	Update	Upgrade the system function blocks called from all Phase function blocks in the selected Phase function block library to the current High-performanceHMI version	Is selected nodes Phase class while the block folder enabled, otherwise prohibiting
	Property	Modify the description of the Phase function block folder.	Is selected nodes Phase class while the block folder enabled, otherwise prohibiting
Phase function block	Open from the configuration server	Open the Phase function block from the configuration server and lock the Phase function block for configuration	It is enabled when the selected node is a Phase function block that is not locked locally , and disabled in other cases
	Save to configuration server	Save the Phase function block to the configuration server and unlock it	It is enabled when the selected node is a Phase function block that has been locked locally , and disabled in other cases
	Save to configuration server and keep locked	Save the Phase function block to the configuration server and keep it locked	It is enabled when the selected node is a Phase function block that has been locked locally , and disabled in other cases
	View	Read-only open the Phase function block from the configuration server to view the Phase function block	It is enabled when the selected node is a Phase function block that is not locked locally , and disabled in other cases
	New panel	New phase function block panel	It is enabled when the selected node is a Phase function block that has been locked locally , and disabled in other cases

Selected Node	Menu Item	Function	Enable or Not
	New icon	Icon of newly created Phase function block	Selected local node-locked Phase class when enabled functional block, other prohibited
	delete	Delete Phase function block	Selected local node-locked Phase class when enabled functional block, other prohibited
	Undelete	Undelete the Phase function block	Selected local node-locked Phase -based functional blocks, and a delete operation is enabled, otherwise prohibiting
	Import panel	Import the faceplate of the Phase function block	Selected local node-locked Phase class when enabled functional block, other prohibited
	Import icon	Import the icon of the Phase function block	Selected local node-locked Phase class when enabled functional block, other prohibited
	Export function block	Export the specified Phase function block	Node is selected Phase -based functional blocks and Phase class is enabled when the local lock function block, other prohibited
	Usage	View the referenced status of the specified Phase function block	Node is selected Phase -based functional blocks and Phase class is enabled when the local lock function block, other prohibited
	Upgrade	Upgrade the system function block called in the selected Phase function block to the current High-performanceHMI version	Node is selected Phase -based functional blocks and Phase class is enabled when the local lock function block, other prohibited
	Property	Modify Phase class function blocks	Node is selected Phase -based functional blocks and Phase class is enabled when the local lock function block, other prohibited
Program template library	Open from the configuration server	Open the program template library from the configuration server and lock the program template library for configuration	It is enabled when the selected node is a program template library that is not locked locally, and disabled in other situations
	Save to configuration server	Save the program template library to the configuration server and unlock it	Enabled when the selected node is a program template library that has been locked locally, disabled in other cases
	Save to configuration server and keep locked	Save the program module library to the configuration server and keep it locked	Enabled when the selected node is a program template library that has been locked locally, disabled in other cases
	View	Read-only open the program template library from the configuration server to view the program template library	It is enabled when the selected node is a program template library that is not locked locally, and disabled in other situations
	New template library	Create a new program template library folder	Enabled when the selected node is "Program Template Library" , disabled in other cases
	Export template	Select the program template library folder and export multiple program templates contained in it as .tex files	Enabled when the selected node is "Program Template Library" , disabled in other cases

Selected Node	Menu Item	Function	Enable or Not
	Create CSV program file	Select the specified program template to export as a .csv file	Enabled when the selected node is "Program Template Library" , disabled in other cases
Program Template	Export	Export the selected program template as a .tex file	It is enabled when the selected node is the specified program template , and disabled in other situations
	Delete	Delete the selected program template	It is enabled when the selected node is the specified program template , and disabled in other situations
	Property	Modify the description information of the program template	It is enabled when the selected node is the specified program template , and disabled in other situations
Custom Program	New	Build a new custom program	Enable only when selected node is custom program whose controller is locked by local station
	Compile	Compile all custom programs of current control station	Enable only when selected node is custom program (the number is larger than 0 ) whose controller is locked by local station
	Schedule	Adjust the running sequence of program	Enable only when selected node is custom program,(the number is larger than 0) whose controller is locked by local station
	Import	Import custom program as CSV.	Enable only when selected node is custom program, whose controller is locked by local station.
Custom Function Block	New	Build a new custom function block	Enable only when selected node is custom function block whose controller is locked by local station
	Compile	Compile custom function block	Enable only when selected node is custom function block (the number is larger than 0) whose controller is locked by local station
Operation Domain	Open from Configuration Server	Open monitoring configuration from configuration server and lock the operation domain for configuration	Enable only when selected node is operation domain with configuration authority and unlocked
	Save to Configuration Server	Save monitoring configuration of the operation domain to configuration server and unlock it	Enable only when selected node is operation domain with configuration authority
	Save to Configuration Server and Keep Locked	Save monitoring configuration of the operation domain to configuration server and keep locked	Enable only when selected node is operation domain with configuration authority and locked by local station
	Edit	Open monitoring configuration software of the operation domain for configuration	Enable only when selected node is operation domain with configuration authority
	Publish Configuration	Publish configuration to current operation domain	Enable only when selected node is operation domain with configuration authority
Right-Click Menu in Property Bar			
Custom Program	Edit	Open selected custom program	Always enable
	Compile	Compile selected custom program (single program)	Always enable

Selected Node	Menu Item	Function	Enable or Not
	Delete	Delete selected custom program	Always enable
	New/ Modify Password	Set or modify the password of custom program	Always enable ("Modify Password" is not available when the custom program has no password; "New Password" is not available when it has password)
	Delete Password	Delete password	Always enable (not available when the custom program has no password)
	Properties	Set program property	Always enable
Custom Function Block	Edit	Open selected custom function block	Always enable
	Delete	Delete selected custom function block	Always enable
	New/ Modify password	Set of modify the password of custom function block	Always enable ("Modify Password" is not available when the custom function block has no password; "New Password" is not available when it has password)
	Delete password	Delete password	Always enable (not available when the custom function block has no password)
	View the usage	View usage information of selected custom function block	Always enable
	Property	Set property of custom function block	Always enable

## Section 3 User Service

Select "Edit > User Service" in the toolbar of the VFExplorer software to bring up the "User Service" dialog box shown in the figure below, where users in the system can be uniformly managed.

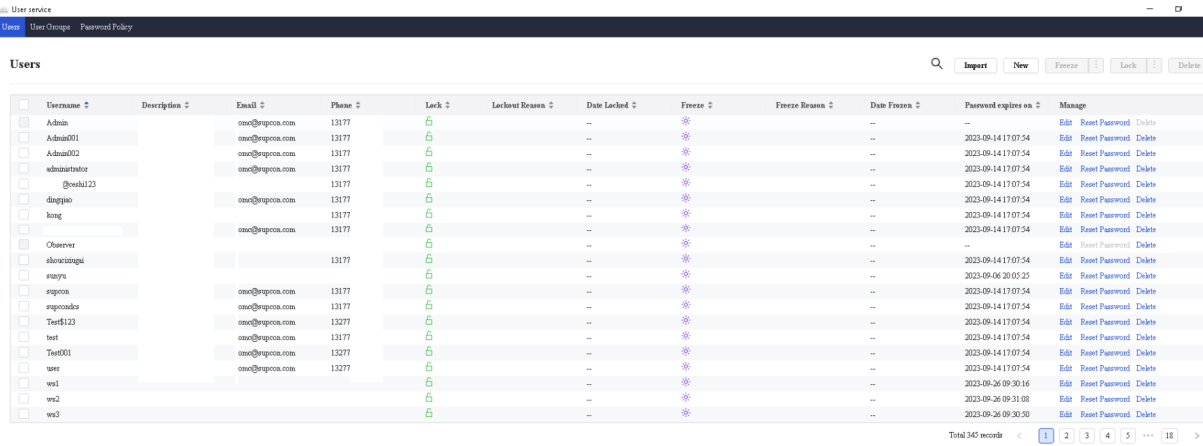


Figure 3-1 Initial interface of user service



Tip:

For the detail of user service, refer to *OMC User Service Operation Guide*.

## Section 4 Manage Function Block Library and Program Template Library

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Through the configuration management software, you can manage the system function block library, the global function block library, the Phase function block library, and the program template library.



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**Tip:**

Before using the global function block library, Phase function block library and export industrial library, please ensure that you have permission of relevant software.

- When creating and exporting global function blocks, the authorization of “VFGlobalFB” is required.
  - When creating a new Phase function block, the authorization of “VFGlobalFB” is required.
  - When exporting industrial library, the authorization of “VFGlobalFB” or “FBDPassView” is required.
- 

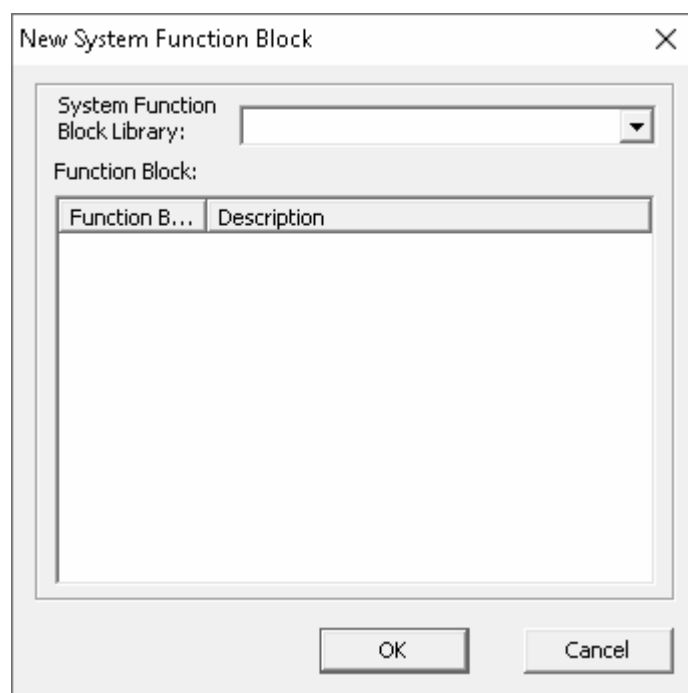
### 4.1 Manage System Function Block

User can create custom function blocks according to the original function blocks in the High-performanceHMI, and create symbol and panel of system function block, custom symbol and panel of I/O tag via system function library.

#### 4.1.1 Create New System Function Block Library

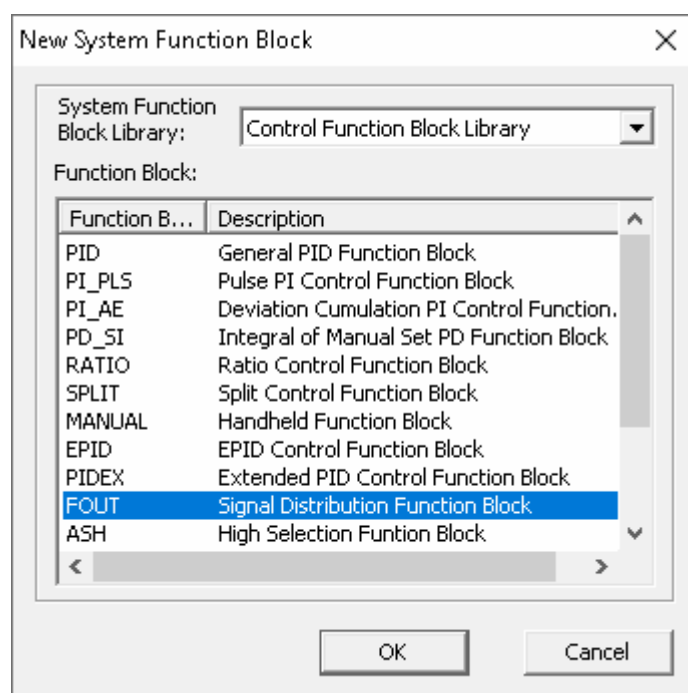
Create new system function block library by following steps:

1. Right-click “System Function Block Library” in project bar and select “New” and the dialog below pops up.




**Figure 4-1 New System Function Block 1**

1. Select a function block library (here takes "Control Function Block Library" as an example) from the drop-down menu of "System Function Block Library", to show all function blocks in the library in "Function Block".



**Figure 4-2 New System Function Block 2**

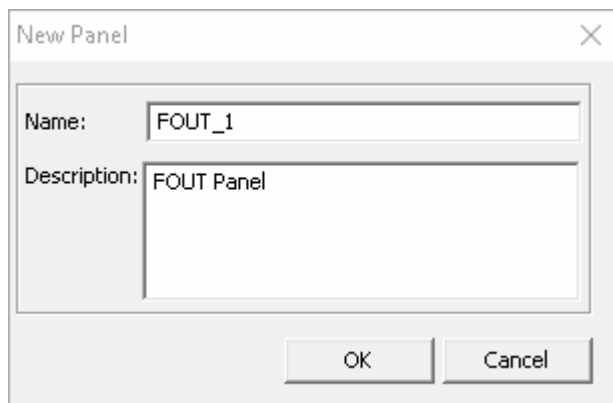
16. Select a function block (take "FOUT" as an example in above) and click "OK".
17. Folder "Control Function Block Library" is added to "System Function Block Library" in project bar, and node  FOUT is added to the folder.

### 4.1.2 Create New Symbol and Panel

User can add system function block to “System Function Block Library”, and customize its symbol and panel. When designing custom program of control project configuration, user can apply the “Default” symbol and panel or create new ones.

#### Create New System Function Block Panel

1. Right-click the new system function block in work area and select “New Panel”.
2. Dialog “New Panel” will pop up as shown below. Input “Name” and “Description” of panel. The panel name cannot be empty or have space, or contain “\.:\*?\`<>|!@#\$\$%^&=,.;[]+-~”.



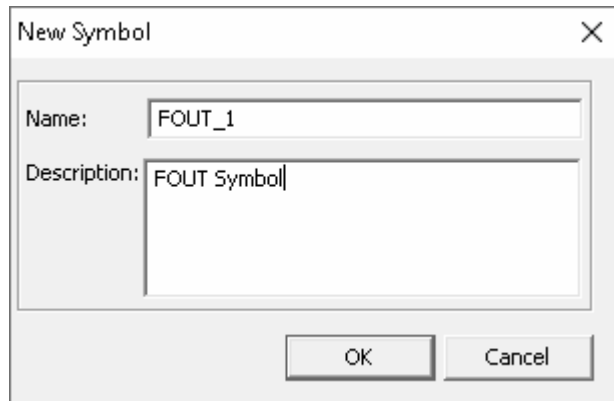
**Figure 4-3 New Panel**

3. Click “OK” to pop up the VFPanel program.
4. Set the panel of system function block in VFPanel program.  
  
Please refer to *Graphics Builder User Manual* for details of VFPanel program.
5. User can set a custom panel as default in system function block:
  - Right-click the custom panel to set it as default. Setting a new default panel will cancel the default property of the old one.
  - User can cancel the default panel function by right-clicking it.
  - Delete the panel after setting it as default, so the fixed panel of system will become default panel of the system function block.
6. Usage of system function block instance default panel:
  - If the system function block tag has no default panel, panel option will be shown as \*, and will be shown as custom panel name later.
  - If the system function block tag has default panel, panel option will be shown as default panel.
7. For both global and system function blocks, despite the change of default panel, the original function block panel option will not be changed.



### Create New System Function Block Symbol

1. Right-click the new system function block in work area and select “New Symbol”.
2. Dialog “New Symbol” will pop up as shown below. Input “Name” and “Description” of panel. The name length cannot exceed 40 characters, it also cannot be empty or have space, or contain “\:\*?\"<>|!@#\$\$%^&=,.;[]+-~”.



**Figure 4-4 New Symbol**

3. Click “OK” to pop up the VFSymbol program.
4. Set the symbol of system function block in VFSymbol program.

Please refer to *Graphics Builder User Manual* for details of VFSymbol program.

#### 4.1.3 Create New Symbol and Panel of I/O Tag

In the VFExplorer, the symbol and panel of tag can be redefined according to actual requirements. The tags supported custom symbol and panel include: AI, AO, DI, DO, AIEX, AOEX, DIEX, DOEX, custom integer, custom analog and custom digital.

By following steps, the symbol and panel of I/O tag can be created.

- 1) Create I/O process function block library. For details, please refer to “4.1.1” AI, AO, DI, DO, AIEX, AOEX, DIEX and DOEX all belong to “I/O Process Function Block Library”. Custom integer, custom analog and custom digital belong to “Custom Variable”.
- 2) Create symbol and panel of I/O tag. For details, please refer to “4.1.2”.

#### 4.1.4 Apply Custom Symbol and Panel

After the symbol and panel are created for the system function blocks, the I/O tags and the customized variables, the configuration can be applied in the subsequent configuration process.

### Pre-configure Task

Before applying custom symbol and panel, the following tasks should be done.

- 1) Select the created symbol or panel in the navigation tree, and select “Save to Configuration Server” in its right click menu.
- 2) In the navigation tree, select the control station required to apply symbol and panel and

select “Synchronize Function Block Library” in right click menu.

### Apply Panel

- Apply the panel of system function block  
During the editing of custom program, double-click the added FBD to pop up its property configuration dialog box, and select the created panel of the FBD in the “Panel”. For details, please refer to the *VFFBDBuilder User Manual*.
- Apply I/O Tag Panel  
Select the control station to be configured, enter the VFTAGBuilder.  
Select a tag and select “Panel” in “Supervision Settings” in the right area. Select the created I/O tag panel in the drop-down list box. For details, please refer to *Tag Builder User Manual*.



---


**Tip:**

If there are tags associated with the deleted custom panel, user need to reconfigure panel for the tag.

---

### Apply Symbol

The created symbol of system FBD and I/O tag can be applied in the graphics by following steps:

- 1) Start the graphics builder software and click the button  in the left graphic object to pop up the Template Manager.
- 2) Select function block library in the left navigation bar and expand to the “Symbol” folder in the pop-up Template Manager.
- 3) The currently created symbol will be displayed in the right area. Double-click the symbol and add it to the graphics.



---

**Tip:**

For details, please refer to *Graphics Builder User Manual*.

---

## 4.2 Manage Global Function Block

During field configuration, the same configuration is often used in multiple user programs. In order to reduce the workload of field configuration and improve engineering efficiency and engineering reusability, frequently used configurations can be extracted as global function blocks. The global function block can be used by any control station and operation station in this project, and its use method is consistent with the system function block and user function block.

### 4.2.1 Technical Index

- The global function block library supports 50 function block sub-libraries, and each sub-library can support up to 250 global function blocks. Global function block sub-libraries do not allow duplicate names. The global function block cannot have the same name as the system function block and the user function block.
- The number of all parameters of global function block is limited to 512.
- The number of aliases is limited to 128.
- The global function block can have multiple panels and support up to 256.
- The global function block can have multiple symbols and support up to 256.
- A single control station can support up to 250 user-defined function block types, including user function block and global function block.
- Support FBD, St, SFC three types of global function block.
- The maximum memory of global function block is 6K.
- The multicast data of global function block is limited to 100 bytes, and the redundant data is limited to 300 bytes.
- The number of global function block panels opened at the same time is 8, which is the same as the limit of the number of system panels.

### 4.2.2 Structure Illustration

Global function block can be used in any control station. There are three layers in the global function block library

- Global function block library
- Global function block folder

The global function block folder can contain multiple global function blocks, which realizes the management of global function blocks.

Support the operation of adding function block, deleting folder and importing function block.

- Global function block

Global function block is composed of parameters, logic, symbols and panels, and supports multiple symbols or panels.

### 4.2.3 Configuration Procedure

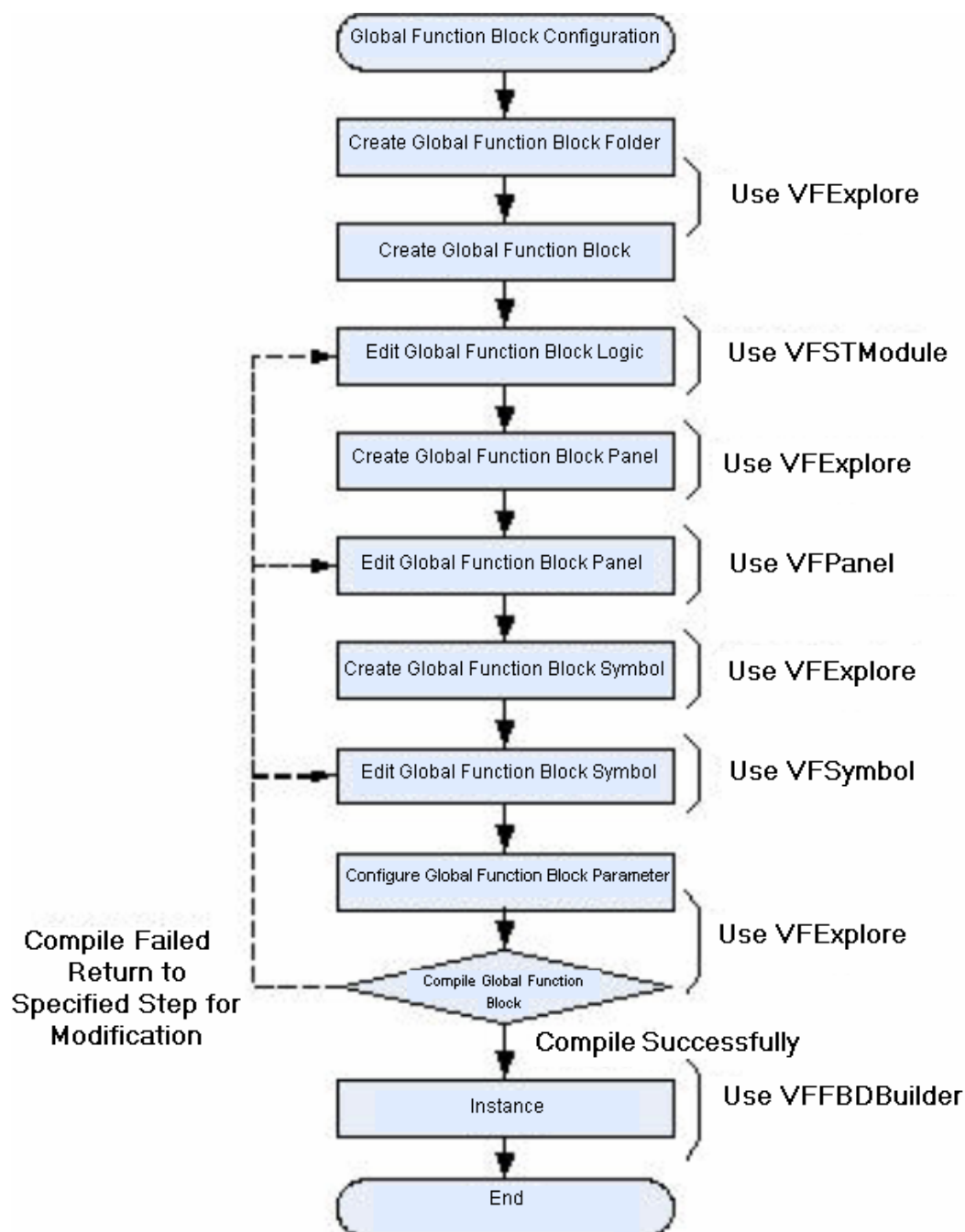
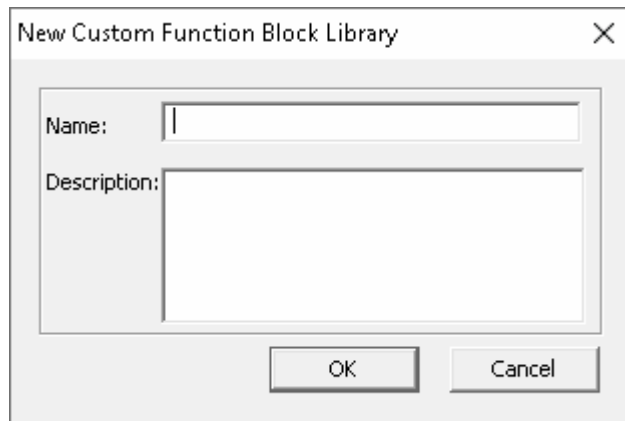


Figure 4-5 Graphics of global function block configuration

### 4.2.4 Create Global Function Block Folder

1. Right-click "Global Function Block Library" and select "New Function Block Library" in right-click menu.
2. Input name and description of the global function block folder in the dialog box shown as Figure 4-6.

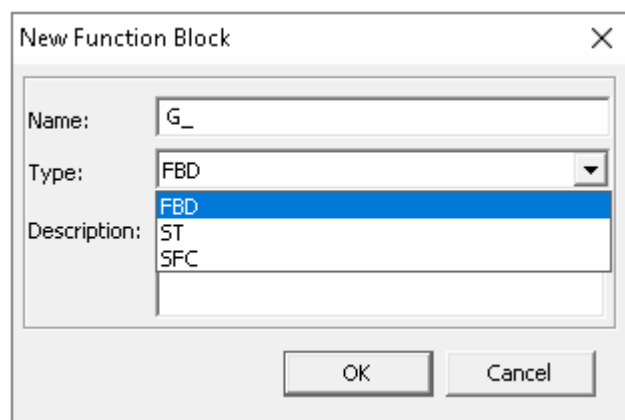


**Figure 4-6 New global function block folder dialog box**

- “Name” contains at most 16 characters of capital letters, numbers, underlines.
- “Description” contains at most 64 characters of capital letters, numbers or underlines.

#### 4.2.5 Create Global Function Block

1. Right-click “Global Function Block Folder” and select “New” in right-click menu.
2. Input name and description of the global function block, and select its type in the dialog box shown as below:



**Figure 4-7 New global function block dialog box**

- “Name” contains at most 16 characters of capital letters, numbers or underlines.
- “Type” can choose “FBD”, “ST” or “SFC”.
- “Description” contains at most 64 Chinese characters of capital letters, numbers or underlines.



**Tip:**

Creating a new global function block can be enabled only with dongle authority, while operations like edit, view and import can be performed without the dongle authority.

## 4.2.6 Configure Properties of Global Function Block



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**Tip:**

Properties of global function block are configured in VFSTModule. Details of VFSTModule see *FBD Builder User Manual*.

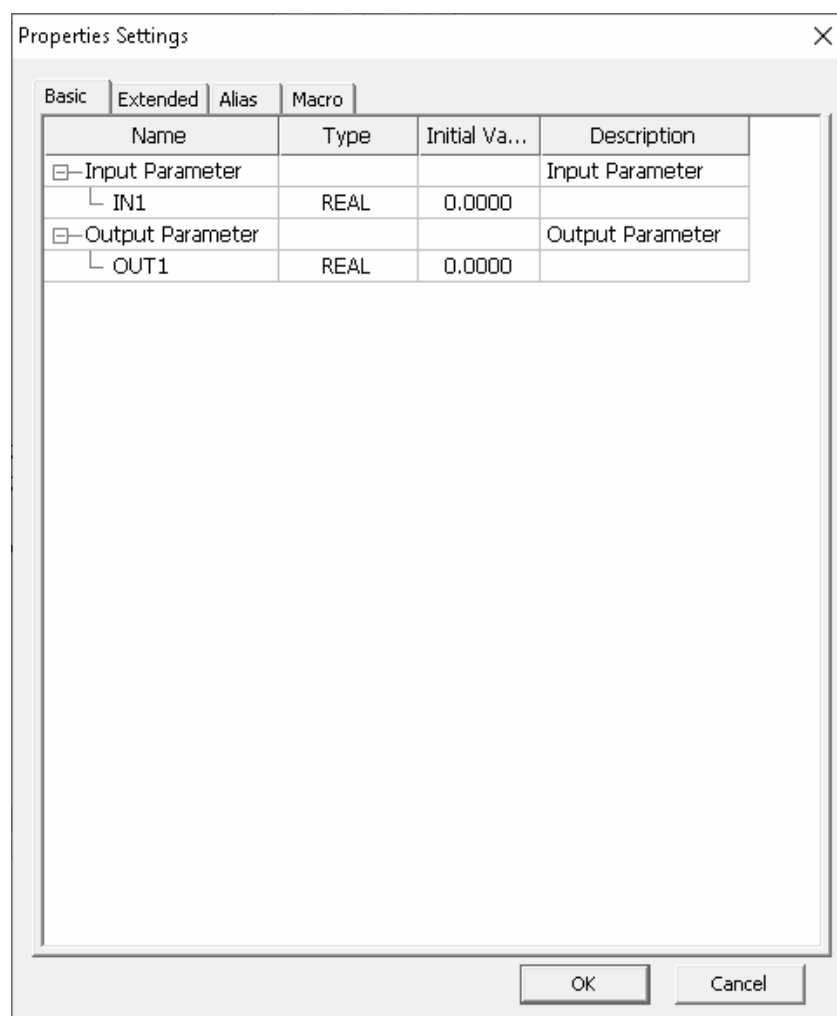
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### Edit Logic of Global Function Block

1. Select “Logic” in the configuration property bar of global function block, and select “Edit” in the right-click menu.
2. VFSTModule pops up.
3. Edit the logic of global function block in VFSTModule.

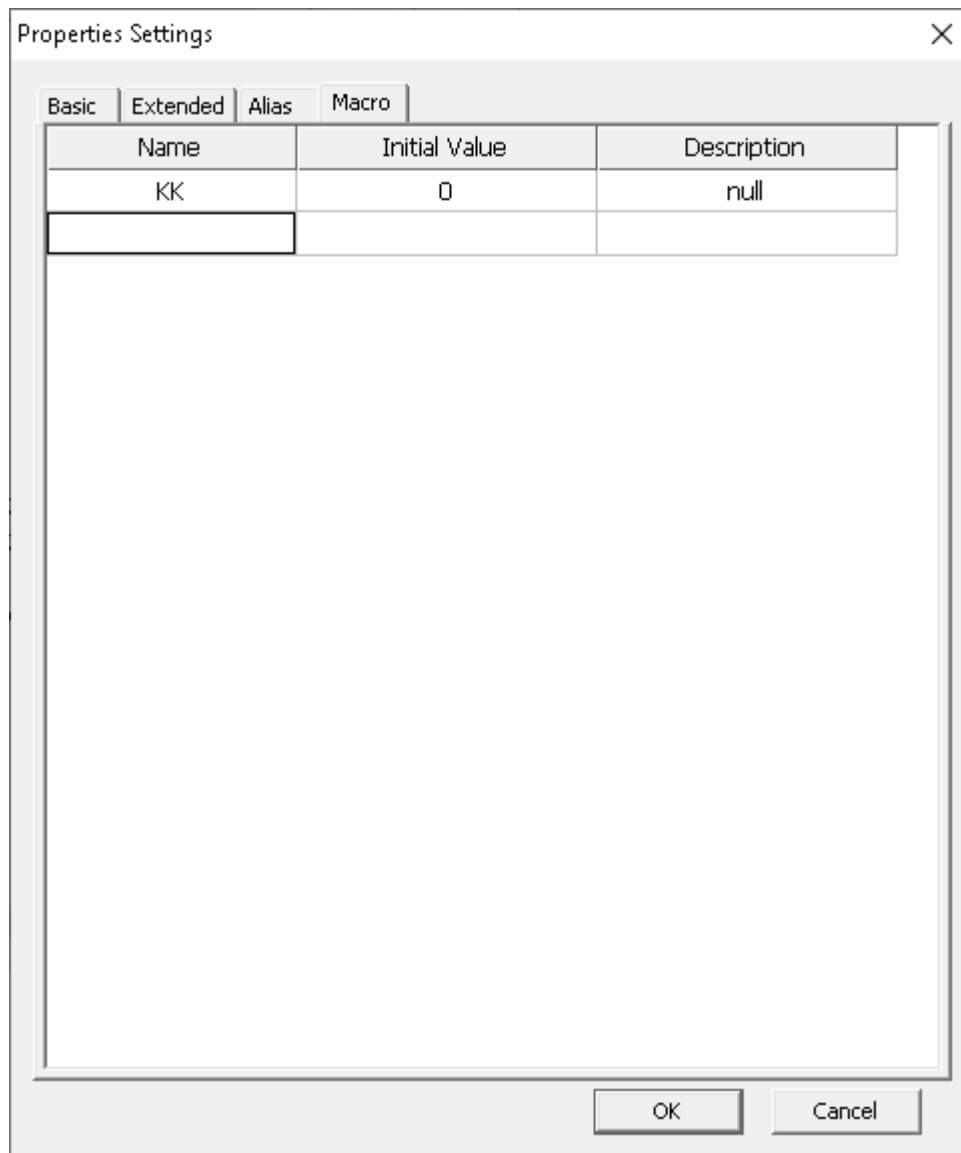
### Edit Parameters of Global Function Block (Optional)

1. Select “Parameter” in the configuration property bar of global function block, and select “Edit” in the right-click menu.
2. Properties Settings dialog box as shown below pops up. Set macro of the global function block in “Macro”, which can contain at most 10 characters of English letters, numbers or underlines, and it only can be started by character.



**Figure 4-8 Global function block properties settings dialog box**

“Basic Parameters”, “Extended Parameters” and “Alias Parameters” can only be clicked to view the parameters but these parameters cannot be modified.



**Figure 4-9 Property settings**

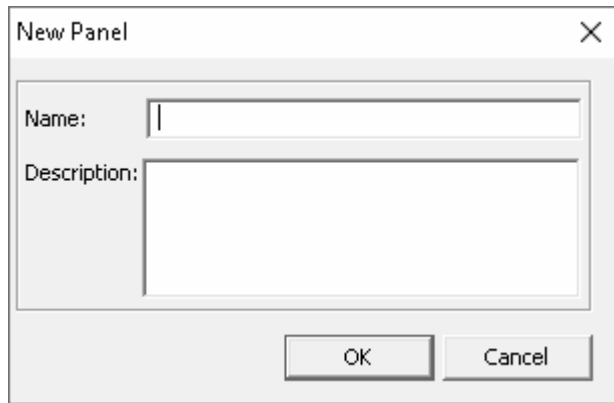
Click “Macro” and set the name, initial value and description of macro for global function block.

Macro can be used in monitoring. Macro of the tag can be selected in the monitoring by DataLink, and the character string set in FBD will be displayed. It is a character string replacement function which can replace the macro name with its value.

#### **Create Panel of Global Function Block (Optional)**

1. Select the specified global function block in work area, and select “New Panel” in the right-click menu.
2. “New Panel” dialog box shown as below pops up, input the “Name” and “Description”. The panel name cannot be empty or contain any blank space and symbols like V:\*?\'<>|!@#\$\$%^&=,.;[]+-~.





**Figure 4-10 New global function block panel dialog box**

3. VFPanel pops up after you click “OK”.
4. Set the global function block panel in VFPanel.

Details of VFPanel see *Graphics Builder User Manual*.

5. Global function block can set a custom panel as default.
  - New global function block has no default panel, it can only be set manually.
  - If a custom panel has been set as default, it can be canceled only by setting new default custom panel.
  - If deleting the panel after setting it as default, the global function block type will have no more default panel.
6. Usage of global function block instance default panel:
  - If global function block tag has no tag, the panel will select empty first.
  - If global function block tag has tag, the panel will select default panel name first.

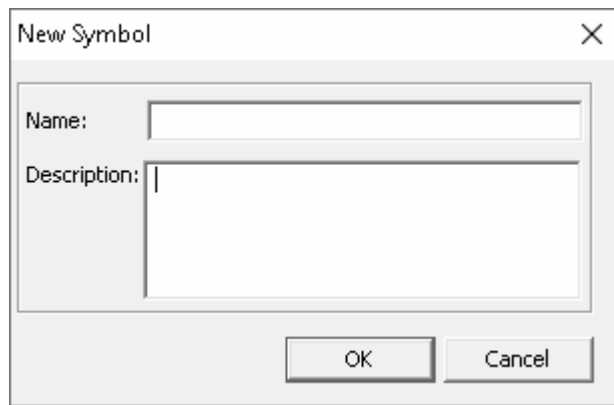


**Tip:**

Text for panel and symbol can be shown in new line by “Enter” key.

### Create Symbol of Global Function Block (Optional)

1. Select the specified global function block in work area, and select “New Symbol” in the right-click menu.
2. “New Symbol” dialog box as shown below pops up, input the “Name” and “Description”. The symbol name can contain at most 40 characters. It cannot be empty or contain any blank space and symbols like V:\*?\"<>|!@#\$%^&=,.;[]+-~.



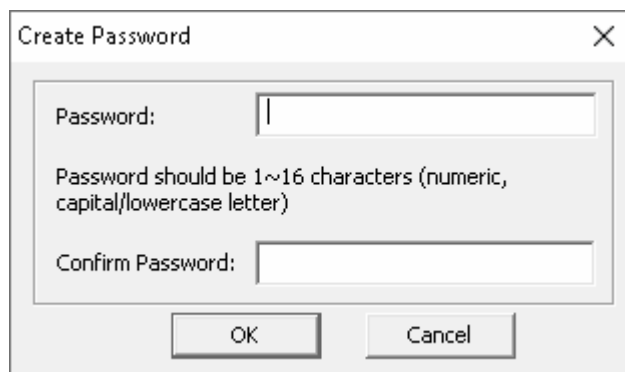
**Figure 4-11 New global function block symbol dialog box**

3. VFSymbol pops up after users click “OK”.
4. Set the global function block symbol in VFSymbol.


Details of VFSymbol see *Graphics Builder User Manual*.

### Create Password for Global Function Block (Optional)

1. Right-click the global function block in work area and select “New Password”.
2. The “Create Password” dialog pops up. Input the password and confirm it, click “OK” to validate it.



**Figure 4-12 Create Password**

3. An icon  will be shown in the function block library in work area.
4. Right-click the global function block after creating password and select “Modify Password” or “Delete Password”.
5. After creating password, it needs to be verified when opening the file of the function block, as shown below.



**Figure 4-13 Verify Password**



**Tip:**

- “Logic” of global function block can set secondary password alone, and then it can only be opened with the secondary password.
- Setting method is similar with the password of global function block.

## 4.2.7 Import/Export Industry Library

In High-performanceHMI, the configured function block library is supported to export as industry library, and the industry library is also supported to import.

### Export Industry Library

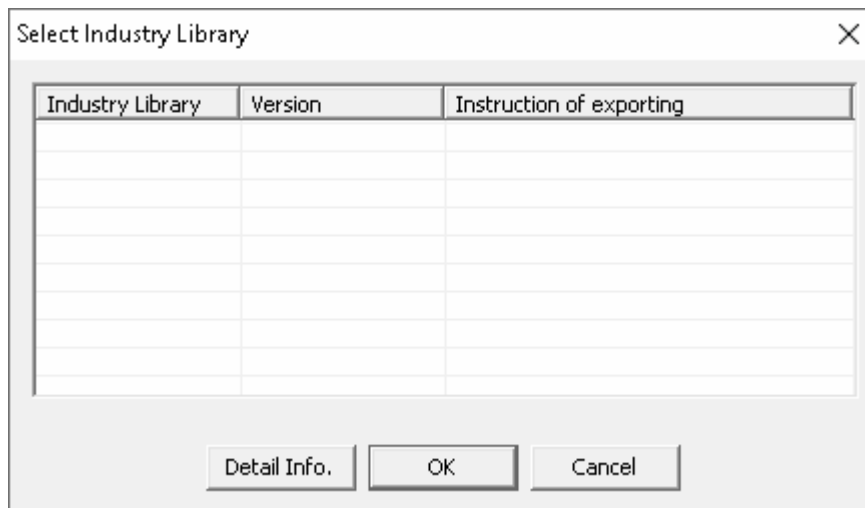
Through the following steps, the configured global function block library can be exported as industry library to reuse the industry library easily.

1. Select the global function block needed be exported in configuration tree and select “Export Function Block Library” in its right menu. “Publish Industry Library” dialog box will pop up.
2. According to the real requirement, configure the basic information of exported industry library, including the Name of Industry Library, Library ID and Version Number.
3. Click “OK” and configure the directory and name in the pop-up dialog box.
4. Click “Save” to export the industry library.

### Import Industry Library


In order to reduce the workload, High-performanceHMI supports to import the installed industry library into the current project. The specific operation steps are as follows:

1. Select “Global Function Block” in configuration tree and select “Input Industry Library” in its right-click menu. “Select Industry Library” dialog box will be popped up as shown below.




**Figure 4-14 “Select Industry Library” Dialog Box**

2. In the list, select industry FBD library needed be imported and click “OK”.

The selected industry library will be imported into the project and added to the node of “Global Function Block Library”, displayed as  icon.



The inputted industry library supports the function of update:

- When the function blocks in industry library are all under “Check Out” status, namely displayed as  icon, the industry library can be updated.
- Select industry library and select “Update” in its right-click menu to execute the update of industry library.

## 4.2.8 Other Operations of Global Function Block Folder

### Delete global function block folder

All global function blocks of the folder should be deleted before deleting the folder.

1. Select the global function block folder in the work area and select “Delete” in the right-click menu.
2. Pop up the confirming dialog box, select “OK”.

### Import global function block



The global function block to be imported must be the block has been exported by VFExplorer before (whose extended name is “.exe”). If the global function block to be imported has a same one existed in the global function block library, it will prompt that “The library already contains a function block named “\*\*”, would you like to replace it?”

1. Select the global function block folder in work area and select “Import Function Block” in the right-click menu.
2. Select global function block in the “Import Function Box” dialog box and click “Open”.

#### 4.2.9 Other Operations of Global Function Block

##### Save to Configuration Server (Locked)

Select the global function block or global function block library in work area and select “Save to Configuration Server” in the right-click menu.

The global function block is shown as  before saved to configuration server, and shown as  after saved to configuration server.

The operation steps of “Save to Configuration Server” is almost the same as “Save to Configuration Server (Locked)”, while the latter will save to configuration server and keep locked, and will be marked by a red tick.

##### Export Function Block

1. Select the global function block in work area and select “Export Function Block” in the right-click menu.
2. Pop up “Export Function Block” dialog box, select specified directory and input block name.
3. Click “Save” to export the specified global function block.

##### View the properties of global function block

Select the global function block in work area and select “Properties” in the right-click menu. Pop up “Properties” dialog box.

##### View the usage of global function block

Method 1 :

- Select the global function block in work area and select “Usage” in right-click menu.
- The usage of the function block is shown in the output area as “Global function block has been used by \*\*\*”, or “Global function block\*\*\* hasn’t been used”.



Method 2:

- Users can view the usage by right-clicking in the custom function block after the synchronization to the control station.
- The usage of the function block is shown in the output area.

##### Delete global function block

Please ensure that the global function block to be deleted is not using by any custom program. If it is being used, list all custom programs.

1. Select the global function block in work area and select “Delete” in the right-click menu.
2. Pop up the confirming dialog box, select “Yes” to delete the specified global function block.

The global function block is shown as  before deleted, and shown as  after deleted.

The operation steps of “Undo Delete” are almost the same as “Delete”.

## 4.3 Manage Phase Class Function Block

The Phase class is the smallest element of the sequence logic to complete the process task. In the sequence control logic, the Phase class constitutes elements such as operation and unit, and is used to perform actions such as valve opening and feeding. The High-performanceHMI complies with the ISA S88.01 standard and the IEC-61131-3 standard. The Phase function blocks written in SFC can be used to implement sequence control logic.

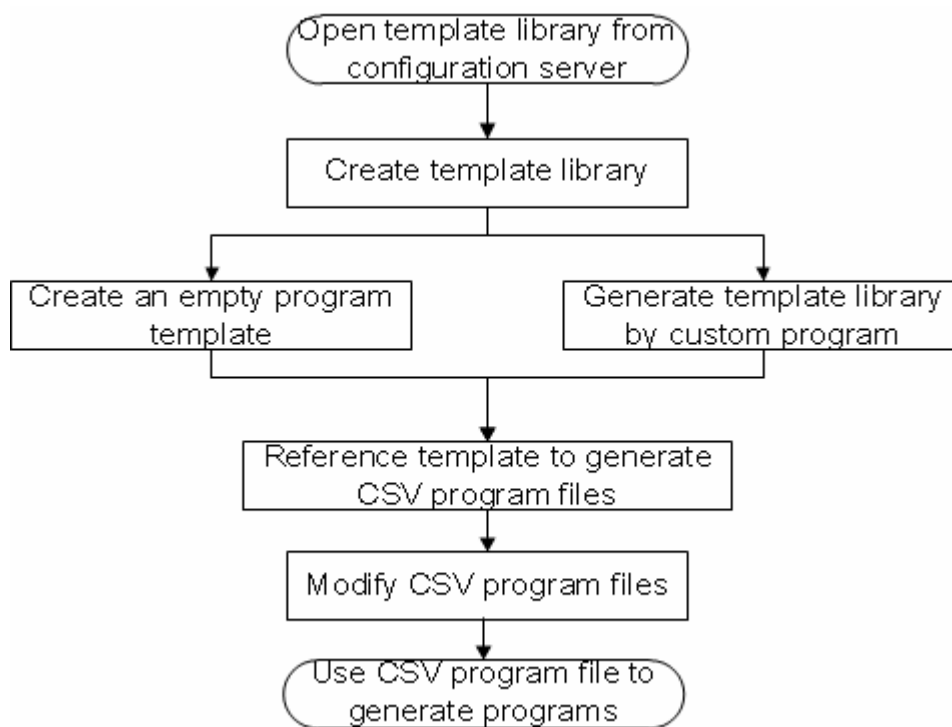
For the detailed configuration and application of Phase function blocks, please refer to the *Phase Function Block User Manual*.

## 4.4 Manage Program Template Library

For common custom programs, they can be configured as a template, and the purpose of simplifying the configuration of the user program can be achieved through the reuse of the template. High-performanceHMI configuration management software supports to create program templates by exporting or creating new ones, exporting program templates as CSV program files, modifying and importing CSV program files.

### 4.4.1 Configuration Procedure

Please manage the program template according to the following flowchart.



**Figure 4-15 Program template library management flow**

As shown in the figure above, program templates are managed hierarchically, where:

- The program template is a user program framework.
- CSV program file is the content file of the program template recorded in the form of CSV file.

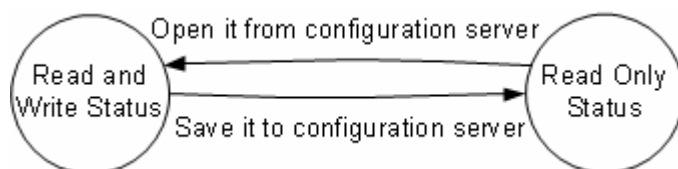
In the process of program template management, export the template content to a CSV program file, and modify the program number and function block parameters by modifying the CSV program file.

#### 4.4.2 Manage Program Template Library

Before managing the program templates, you need to switch the status of the program template library to the editing status.

##### Manage program template library status

In the High-performanceHMI system software, the status of the program template library is switched according to the following figure.



**Figure 4-16 Switching figure of program template library status**

In the switching figure of program template status shown above, the items in the circle are the program template library statuses, and those beside the line segment are the right-click menu commands of the program template library.

- Status

In the read-write status, the program template library can be created and the program templates in the program template library can be managed.

In the read-only status, you can view the templates and template logic in the program module library through the “view” command.

#### Command

Through the “Open Configuration Server”, the program template library in the configuration server is updated to the local, and the program template library can be started to be managed. Generally speaking, you need to execute this command before starting the program template library management.

Through “Save to Configuration Server”, you can save the locally edited program template library to the configuration server.

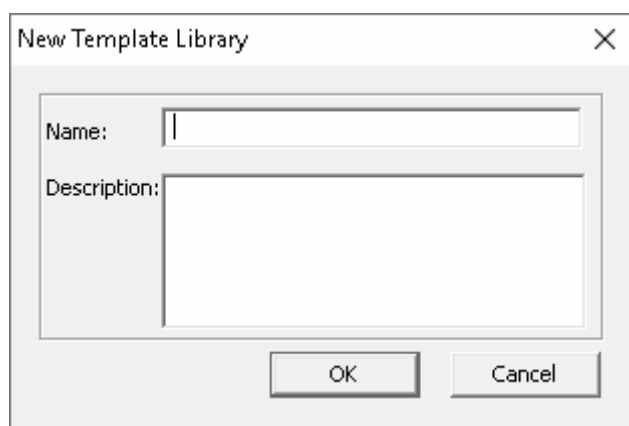
In addition, through “Save to Configuration Server (Locked)”, the status of the program template library can be maintained, and the contents of the currently edited program template library can be saved to the configuration server.

#### Create program template library

The High-performance HMI configuration management software supports the management of program templates according to the program template library, so you need to create the program template library first before managing the program templates. A maximum of 1000 program template libraries can be created in a project.

1. Select “Program Template Library” in the navigation tree of VFExplorer, and select “New Template Library” in its right-click menu, and the dialog box shown in the figure below will pop up.



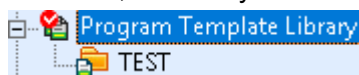


**Figure 4-17** Dialog box of “New Template Library”

2. According to the following table, configure the name and description of the program template library.

Configuration Item	Configuration Illustration
Name	Names of program template library cannot be repetitive. The maximum length is 16 characters and it doesn't support special characters such as \ / : * ? " < >   ! @ # \$ % ^ & = , . ' ; [ ] + - ~ ( ).
Description	The maximum length is 64 characters.

3. Click **OK**, the newly created template library will be displayed in the navigation tree, such as



#### 4.4.3 Manage Program Template

In the High-performanceHMI system software, you can create a specified user program as a program template, or you can create a blank program template and configure its internal logic. In addition, the program template also supports import and export functions.




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**Attention:**

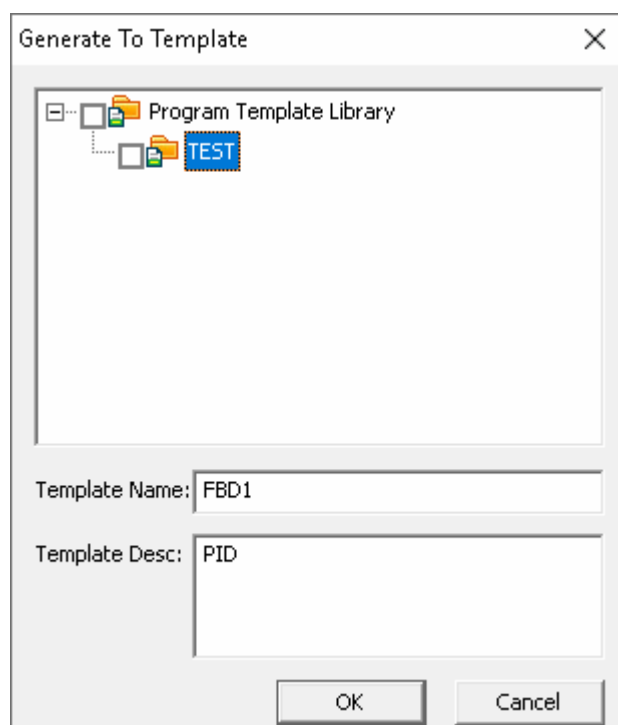
The program template cannot include CR, ITLK\_A, ITLK\_D, ACTION, CALC function blocks.

---

#### Generate program template by custom program

Through the following operations, the custom program can be exported as a program template.

1. Enter the editing interface of the user program to be exported, select the menu command “File> Generate to Template”, the dialog box shown in the figure below pops up.

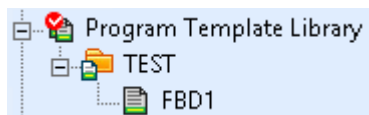


**Figure 4-18 Example of “Generate to Template”**

2. According to the following table, configure the name and description of the program template library.

Configuration Item	Configuration Illustration
Name	Names of program template library cannot be repetitive. The maximum length is 16 characters and it doesn't support special characters such as \ / : * ? " < >   ! @ # \$ % ^ & = , . ' ; [ ] + - ~ ( ).
Description	The maximum length is 64 characters, and the special character “ is not supported.

3. Select the target template library of the template in the “Program Template Library” tree, and input the information of the new template in the “Template Name” and “Template Description”. As shown in the figure above, export the current user program as “FBDT1” and save it to the TEST template library.
4. Click “OK” and the program template will be exported to the specified template library. As shown in the figure below, select “Program Template Library” in the navigation tree of VFExplorer, you can see that the program template “FBDT1” has been saved in the TEST program template library.

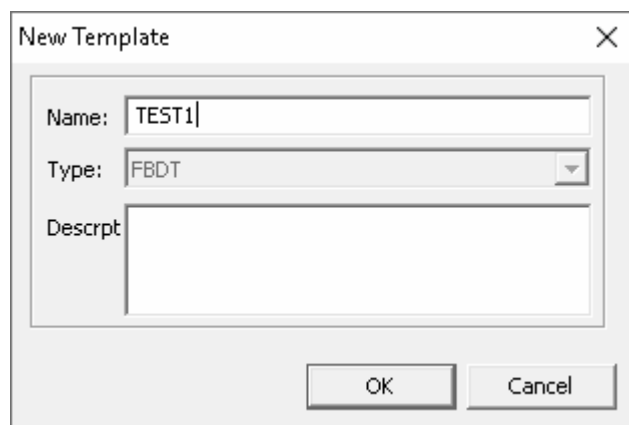


**Figure 4-19 Example of program template export**

### Create the blank program template and configure its logic

Through the following operations, you can create a blank program template.

1. In the navigation tree of the VFExplorer software, select “Program Template Library> Template Library Name”, and select “New” from the right-click menu to pop up the dialog box shown in the figure below.

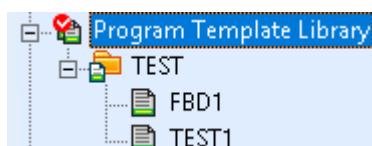


**Figure 4-20 Template example**

2. According to the following table, configure the name and description of the program template library.

Configuration Item	Configuration Illustration
Name	Names of program template library cannot be repetitive. The maximum length is 16 characters and it doesn't support special characters such as \ / : * ? " < >   ! @ # \$ % ^ & = , . ' ; [ ] + - ~ ( ).
Description	The maximum length is 64 characters, and the special character “ is not supported.

3. Click “OK”, the newly created template will be shown in the selected template library, such as



**Figure 4-21 Export template example**

### Import/ export program template

The program template can be exported as a tex file, and the exported tex file can be imported into the specified program template library.

- Export

In the VFExplorer configuration tree, select “Program Template Library> Program Template Library Name> Program Template Name”, and select “Export” in its right-click menu to export the program template file to the specified tex file under the specified path.

- Input

Select “Program Template Library> Program Template Library Name” in the VFExplorer configuration tree, and select “Export” in its right-click menu to import the program template file in tex format to the specified program template library.

It should be noted that the program template in the same project cannot have the same name. If there is a program template with the same name during the import process, it needs to be renamed before importing.

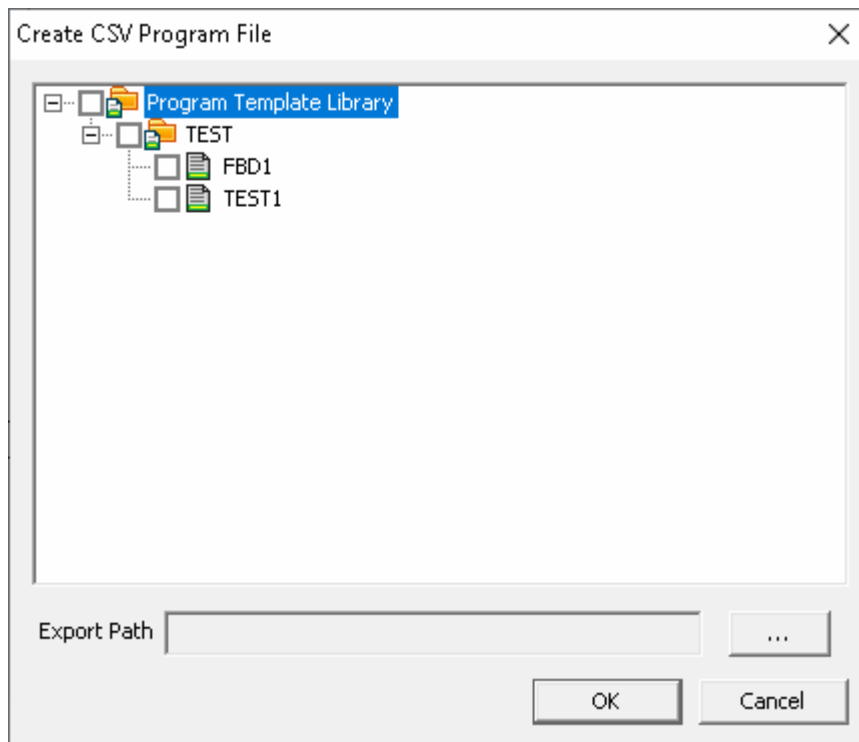
#### 4.4.4 Manage CSV Program Files

The CSV program file is composed of multiple tex program template files in a program template library. VFExplorer supports the creation of CSV program files according to the program template library, and supports the import of modified CSV program files into VFExplorer.

##### **Create CSV Program Files**

Through the following operations, you can create a CSV program file.

1. Select “Program Template Library” in the navigation tree of VFExplorer, and select “Create CSV Program File” in its right-click menu, and the dialog box shown in the figure below will pop up.



**Figure 4-22 Example of “Create CSV Program File”**

2. In the “Program Template Library” navigation tree, select the required template library (such as “TEST”), and click “Output Path” and then “...” to configure the directory and save of the CSV program file.
3. Click “OK” in the pop-up prompt box.
4. After creating the CSV program file, you can search for the CSV program file according to the directory, as shown in the figure below.

Program Name	Program Desc	Cycle	Phase																	
		1	0																	
Template Name	Template UUID	FB InnerName	FB Type	Name	FB Name	FB Desc	Group	TagLevel	Decimal	dFacePalte	Input Tag Input	Output	Output Tc	Param	NarParam	ValAlias	Par			
TEST	b44bdef-61ab-	p0031	PIDEX	TIC10A1	550-F-101		0	0	2 *		NA0004000C	PV		MVSCH SYSCH SVEU MVEU		0.6 800				
		p0032	PIDEX	PIC10A1	550-F-101		0	0	2 *		NA00040001FV	MV	NA000400C	SYSCH SVEU		0.6 MPa				
		p0036	PIDEX	TIC10B1	550-F-101		0	0	2 *		NA0004000C	FV		MVSCH SYSCH SVEU MVEU		0.6 800				
		p0037	PIDEX	PIC15E1	550-F-101		0	0	2 *		TEST.IN11FV	MV	NA000200C	SYSCH SVEU		0.6 MPa				
		p0038	G_1				0	0	2 *					IN1(2,2)		0.00,0.00	ALIAS1(6,			

**Figure 4-23 Examples of CSV program files (part)**

## Modify CSV program file

The CSV program file shown in the figure above mainly contains two parts: program attributes and template attributes. The following table lists the correspondence between the fields in the CSV file and the fields in the FBD program and whether it supports the modification of the fields in the CSV file.

- Template properties, including template name “Template Name”, template UUID “Template UUID”, FBD type “FB TypeName”, FBD function block description “FB Desc”, etc.

CSV field section		Parameter name	Modify	Others
Program property	Program Name	Program name	√	custom program name. It's not allowed to be empty.
	Program Desc	Description	√	Description after import
	Cycle	Period	√	Period after import
	Phase	Phase	√	Phase after import
Template property	Template Name	Template name	×	-
	Template UUID	Template UUID	×	-
	FB Inner Name	FB Inner Name	×	inner markers
	FB Type Name	FB Type Name	×	this cannot be modified
	FB Tag Name	FB Tag Name	√	only for complex function blocks
	FB Desc	FB Description	√	only for complex function blocks
	Tag Group	Tag Group	√	only for complex function blocks
	Tag Level	Tag Level	√	only for complex function blocks
	Decimal Digits	Decimal Digits	√	decimal places displayed after import
	Faceplate	Faceplate	√	only for complex function blocks
	Input Tag	Input Tag	√	tags of input pins
	Input Pin	Input Pin	×	input pins, cannot be modified
	Output Pin	Output Pin	×	output pins, cannot be modified
	Output Tag	Output Tag	√	tags of output pins
	Param Name	Parameter Name	×	As parameters differs with defaults, it exports.
	Param Value	Parameter Value	√	-
	Alias Param	Alias Parameter	×	-
	Alias Tag	Alias Tag	√	-
	Macro Name	Macro Name	×	-
	Macro Value	Macro Value	√	-
	Original Remark	Original Remark	×	remarks in the template
	Remark	Remark	√	remarks after import
	Original Logic Name	Original Logic Name	×	logic name
	Logic Name	Logic Name	√	logic name after import

**Note:**

- When editing CSV files, Input Tag and Input Pin should be corresponded, if Input Pin is empty, Input Tag can be empty, if Input Pin is not empty, please according to the actual condition to fill in.
- Output Tag refers to Output Pin, Alias Tag refers to Alias Param, Macro Value refers to Macro Name, Remark refers to Original Remark, Logic Name refers to Original Logic Name.

#### 4.4.5 Generate custom programs in batches

The modified CSV file can generate user programs in batches by importing the CSV program file, that is, VFExplorer automatically generates user programs according to the function block configuration in the CSV file.

Select **Control Configuration> Control Station> User Program** in the navigation tree of VFExplorer, and select **Generate Program in Batches** in its right-click menu.

In the pop-up **Open** dialog box, select the CSV program file and click “Open” to create a custom program based on the content of the CSV program file.

When importing the CSV program file, the system will check the CSV program file according to the following table.

Check Item	Content	Error Prompt
CSV data validity	CSV format correct or not	error: filexxxdata format error
Program name	illegal characteristics or not	error: filexxxcustom program not allow "\,/:?*?<> %
Program name	repeated or not	error: filexxxprogram namexxxrepeated
Program description	illegal characteristics or not	error: filexxxcustom program not allow"=[]" and enter
Program period	support fast period or not	error: filexxxnot support fast period
Program period	period times valid or not	error :filexxxinvalid
Logic graphics name	original phase valid or not	error :filexxxin phase invalid
Logic graphics name	illegal characteristics or not	error: filexxxlogical graphics namexxx include illegal characteristics
Logic graphics name	logic graphics repeated or not	error: filexxxlogical graphics namexxxrepeated
Function block tag name	function block tag valid or not	error: filexxxtag name xxxnot exceed 24 characteristics error: filexxxtag name xxxstart with letter or number error: filexxxtag name xxx include illegal characteristics
Function block tag name	tag repeated or not	error: filexxxfunction block tag name xxxrepeated
Function block tag name	tag name repeated or not	error: filexxxfunction block tag name xxxexsiting
Function block description	overlength or not	error: filexxxdescriptionxxxnot over 64 characteristics
Data reference tag name	valid or not	error: filexxxtag name xxxnot over 24 characteristics error: filexxxtag name xxx start with letter or number error: filexxxtag name xxx include illegal characteristics error: filexxxtagxxx not over 8 characteristics error: filexxxtagxxxstart with letter or number error: filexxxtagxxxparameter include illegal characteristics

## Section 5 Control Configuration

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### 5.1 Manage Control Configuration's Status

In the configuration management software, when executing the control configuration, you need to switch the control configuration to the read-write state (that is, after it is opened from the configuration server). After configuring the control configuration, you need to save the configuration to the configuration server to ensure that other sites can obtain the latest configuration.

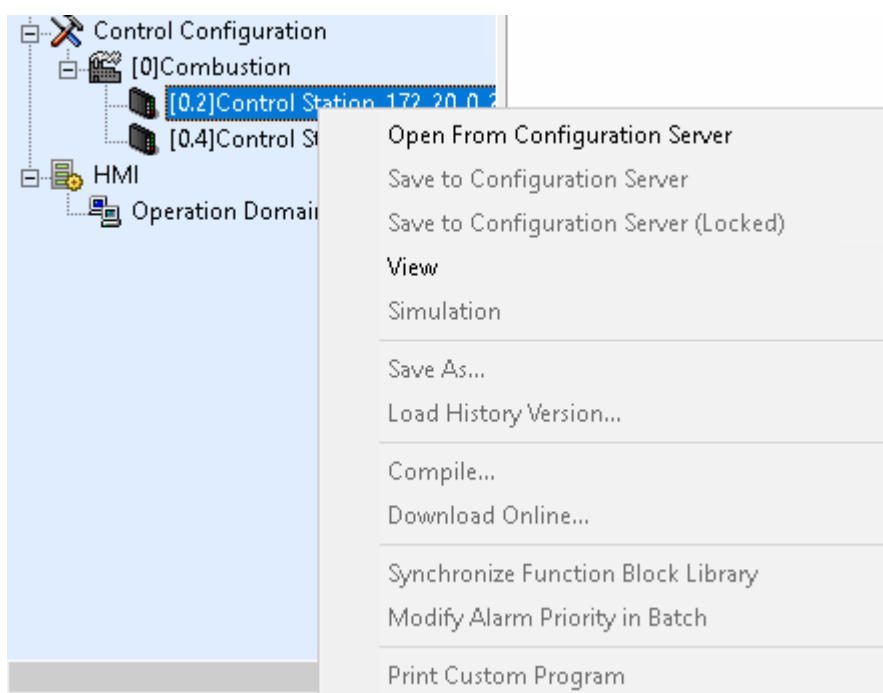
#### 5.1.1 Open from Configuration Server

Engineer should lock certain control station (open from configuration server) before modifying its configuration to prevent the simultaneous configuration of other engineer stations. If certain control station has already been locked by other engineer stations, it will prompt that configuration of the control station is “locked” and can’t be edited.



Specific steps of opening control station configuration from configuration server:

Select certain control station (that is not locked by other engineer stations and whose node status is ) in project configuration tree in work area, and select “Open from Configuration Server” in the right-click menu after right-clicking the node of the control station to open the configuration of the control station and lock it, (if user doesn’t have configuration authority of the control station, the right-click menu will be in grey and can’t be operated). And the node status of the control station will become  after locking, in this case, other engineer stations can’t configure the control station.





**Figure 5-1 Open the configuration of control station**

- When control station is in  status, it means that the control station has been locked by other engineer stations and can't be configured.
- When control station is in  status, it means that the control station has been locked by local.
- The time of opening control configuration from server is decided by the size of specific configuration.

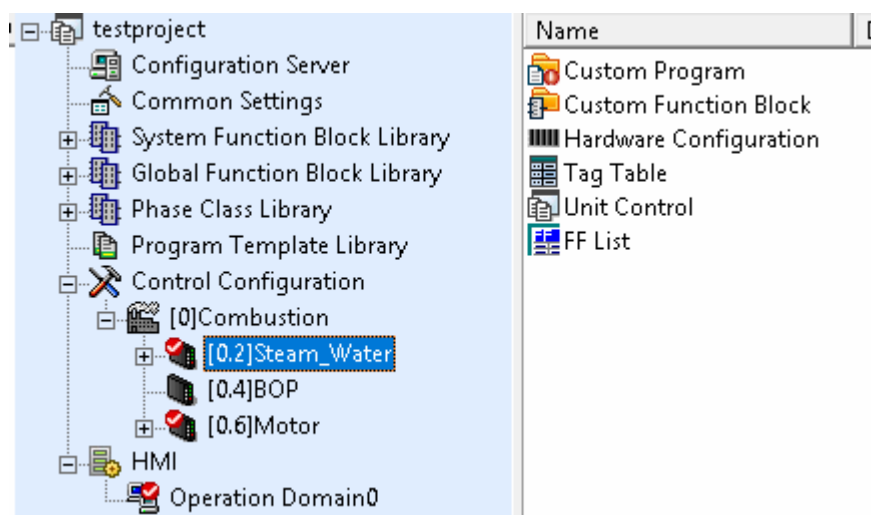


**Attention:**

After opening the configuration of control station from configuration server, it is allowed to close configuration management software without saving it to configuration server, however, in order to guarantee the function of monitoring and the consistency of configuration of each operation node, it is preferable to save configuration to server after configuration.

Select the node of control station to be configured in configuration tree in work area, and the operation of configuration will be available after choosing specific configuration content in configuration property bar on the right.

As shown in Figure 5-2, select “[0.2] Steam\_Water” in “[0] Combustion” (zero in [ ] means domain address, 2 means station address, “Steam\_Water” is the name of control station which can be modified in system structure configuration software, “Combustion” is the name of the control domain which can be modified in system structure configuration software), and double-click configuration object in property bar to open corresponding configuration edit interface.



**Figure 5-2 Configuration of control station**



**Attention:**


As shown in Figure 5-2, the “Unit control” in property bar is unavailable if the High-performanceHMI BatchUnit Software has not been installed. The function is specially for custom project.

### 5.1.2 Save to Configuration Server

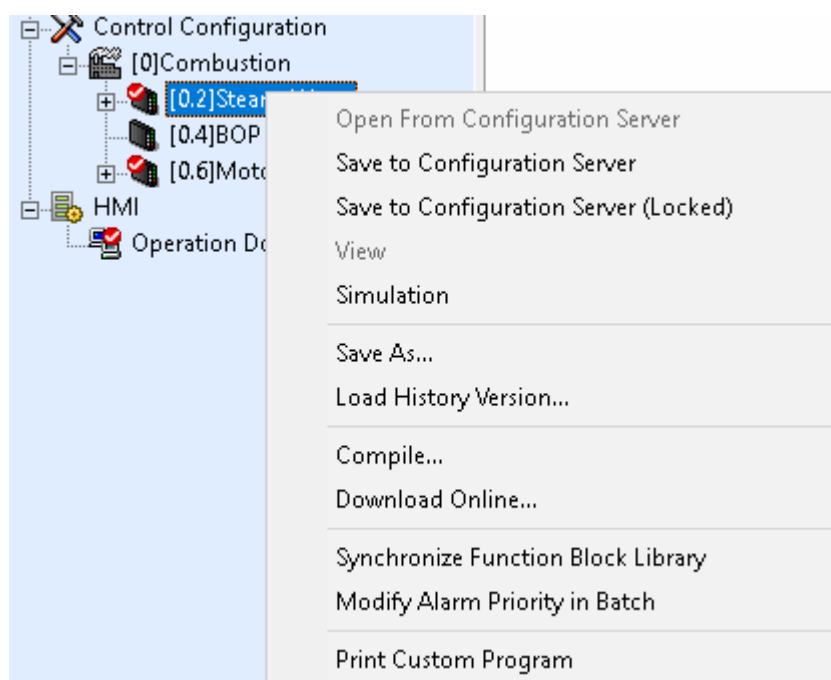
Engineer should save configuration of the control station to server after editing, compiling or downloading, thus each operation node can obtain the latest configuration after publishing configuration.

Two modes of specific operations:


- **Save to Configuration Server**

Right-click control station node which has been configured in project configuration tree of work area (the control station must be locked by current user of local, whose status is ) , select “Save to Configuration Server” in the right-click menu.

It is the same with the operation of “Open from Configuration Server”, if user doesn’t have configuration authority of the control station, the right-click menu will be in grey and can’t be operated, thus only users with the configuration authority can implement the operation.



**Figure 5-3 Save configuration to server and unlock**

Current configuration can be saved to server after implementing the operation, and the status of the control station will become  and be unlocked.

Users can select the operation to release the locking status of control station when configuration of the control station is finished and local needn't to view any information.

- Save to Configuration Server (Locked)

Select control station node which is locked by local in project configuration tree, and select “Save to Configuration Server (Locked)” in the right-click menu as shown in Figure 5-3, Configuration of the control station will be uploaded to configuration server and keep the control station locked by local.

Users can choose the operation when configuration is not finished or local still needs to view configuration information of the control station.



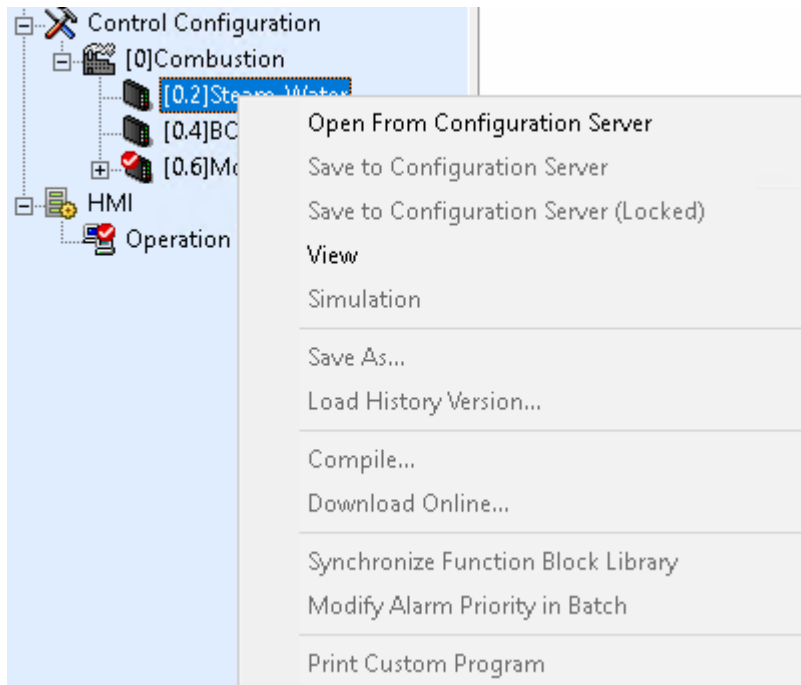
**Attention:**

If custom programs or custom function blocks can't pass the compilation, logic check or tag name conflict check can't pass. It is not allowed to save to configuration server and corresponding prompts will be displayed in the output window.

### 5.1.3 View Control Station in Read-only Mode

When the control station is locked by certain engineer station, other engineer stations can only view the configuration and online debug (the value can't be modified).

Users can use view mode when control station is locked by other engineer stations or users only need to view the configuration without modifying. Select a control station and click menu command of **Edit/ View** or **View** in the right-click menu to open configuration of the control station, and enter the view mode shown as follows.



**Figure 5-4 View control station in read-only mode**

In this case, users can view configuration of the control station and implement online debug, but can't modify configuration and no writing value operation is allowed when debugging.

## 5.2 Start up Hardware Configuration Software

The hardware configuration software is used to implement the configuration of the hardware modules in the system, such as which IO modules and communication modules are included. Through the following steps, you can start the hardware configuration software for engineering-related hardware configuration.

1. In the configuration tree, select the control station that requires hardware configuration.
2. Start the hardware configuration software.

When the controller type is FCU711-S, FCU712-S, FCU713-S, FCU731-S, FCU714-S, GW711-S, double-click "Hardware Configuration" to open the interface of hardware configuration of VFIOBuilder. Please refer to *Hardware Module Builder User Manual* for more details.

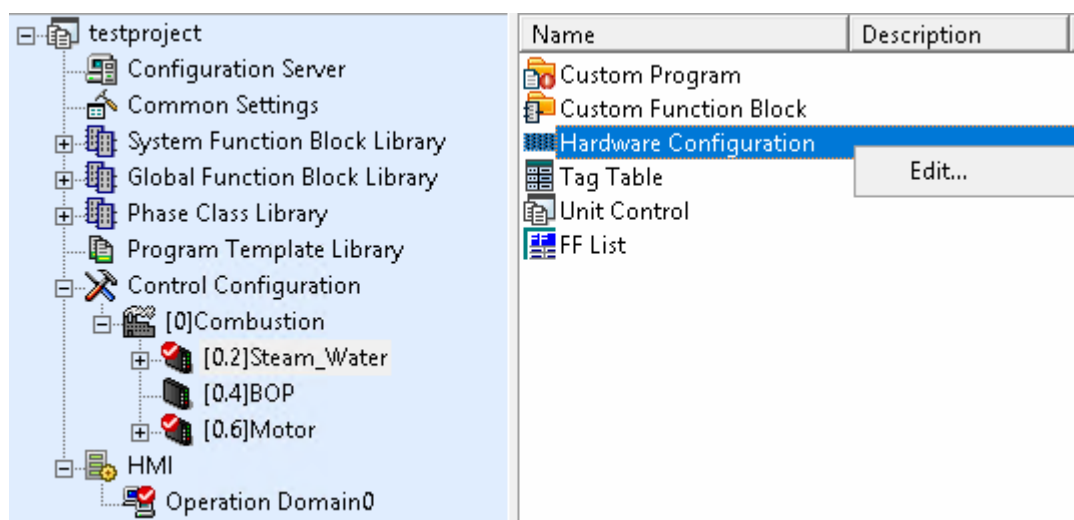


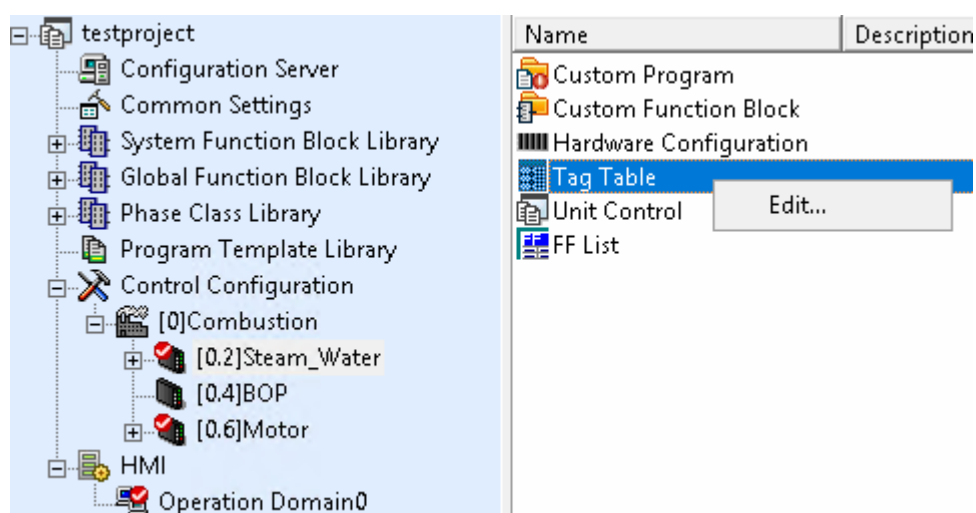
Figure 5-5 Start up hardware configuration

### 5.3 Start Tag Configuration Software

Before starting the control strategy programming, it is necessary to complete the configuration of the hardware channel tag number in the system and the configuration of the software tag number. Through the following operations, you can start the tag configuration software.

1. In the configuration tree, select the control station that needs to be configured with the tag number.
2. Start the tag configuration software.

When the controller type is FCU711-S, FCU712-S, FCU713-S, FCU731-S, FCU714-S, GW711-S, double-click "Tag Table" to open the interface of hardware configuration of VFTAGBuilder. Please refer to *Tag Builder User Manual* for more details.



**Figure 5-6 Start up tag configuration**

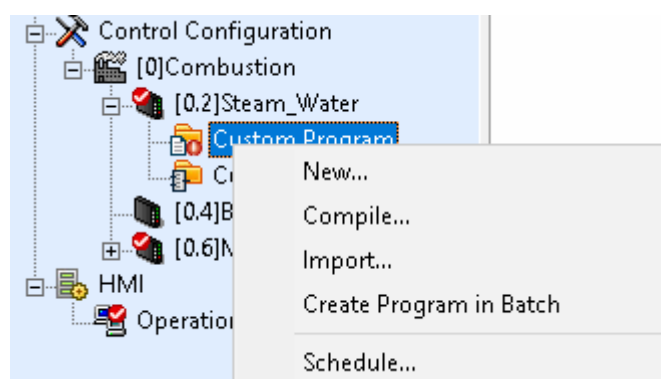
Please refer to *Tag Builder User Manual* for specific operations of tag configuration.

## 5.4 Manage Custom Program

In the High-performanceHMI system, the control strategy is realized through the user program. A custom program may be used to implement a certain process in the production process. This section introduces how to create and edit custom program. Please refer to *VFFBDBuilder User Manual* for details.

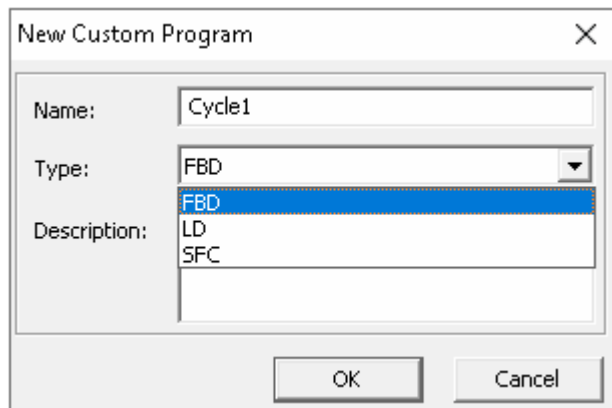
### 5.4.1 Build New Custom Program

1. Select "Custom Program" of corresponding controller in configuration tree, and then select "New" in the right-click menu.



**Figure 5-7 Build new custom program**

2. Window of "New Custom Program" shown as follows pops up.



**Figure 5-8** Dialog box “New Custom Program”

3. Select corresponding program type (FBD, LD or SFC) and click “OK” after inputting name and description to build a new program. The new program will be displayed in property bar area of “Custom Program”.



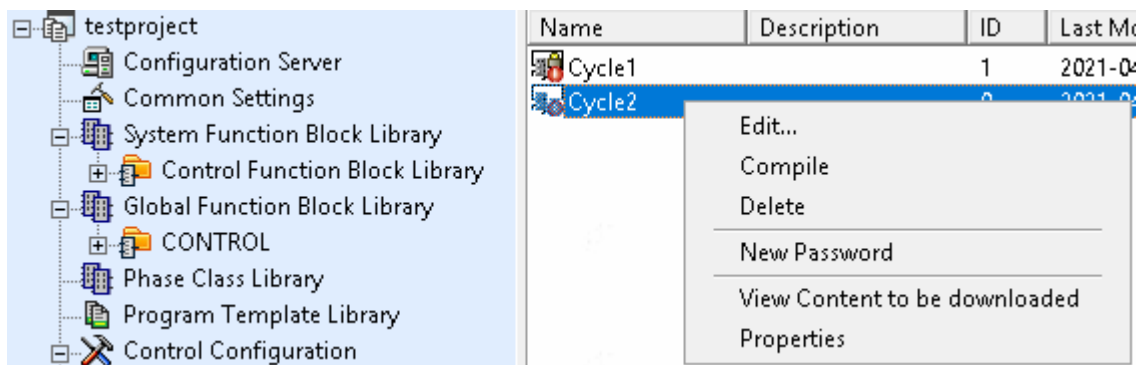
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**Tip:**

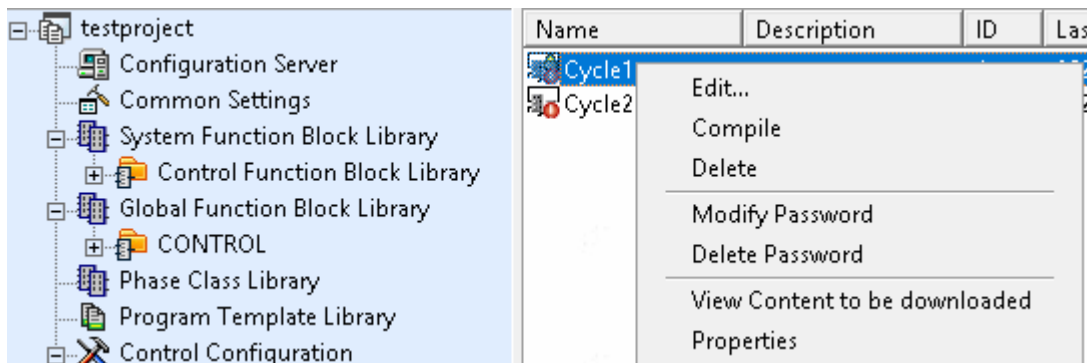
- Program name can contain space, but cannot be space only.
  - Different controllers support different program types. FCU711-S supports FBD and LD programs. Controllers FCU712-S and FCU731-S support FBD, LD, and SFC programs. Controllers FCU713-S and FCU714-S support FBD, LD, SFCEX, and SFC programs. Controller FCU811-S supports FBD and SFC programs.
- 

### 5.4.2 Program Operation

After adding program, right-click the program name and its right-click menu pops up, as shown in Figure 5-9 and Figure 5-10.



**Figure 5-9 Right-click menu of custom program that has no password**



**Figure 5-10 Right-click menu of custom program that has password**



Functions and operations of each option:

- Edit
 

Select “Edit” in the right-click menu (or double-click the program name) to start up programming software.
- Compile
 

Compile selected custom program.
- Delete
 

Select one or several pages to be deleted, select “Delete” in the right-click menu to pop up delete confirmation prompt, and the program will be deleted after clicking “Yes”.
- Build new password
 

Password of visiting custom program can be set for protecting custom program. The icon of program node that has no password is , and the icon will become  after successfully building a password.
- Modify password
 

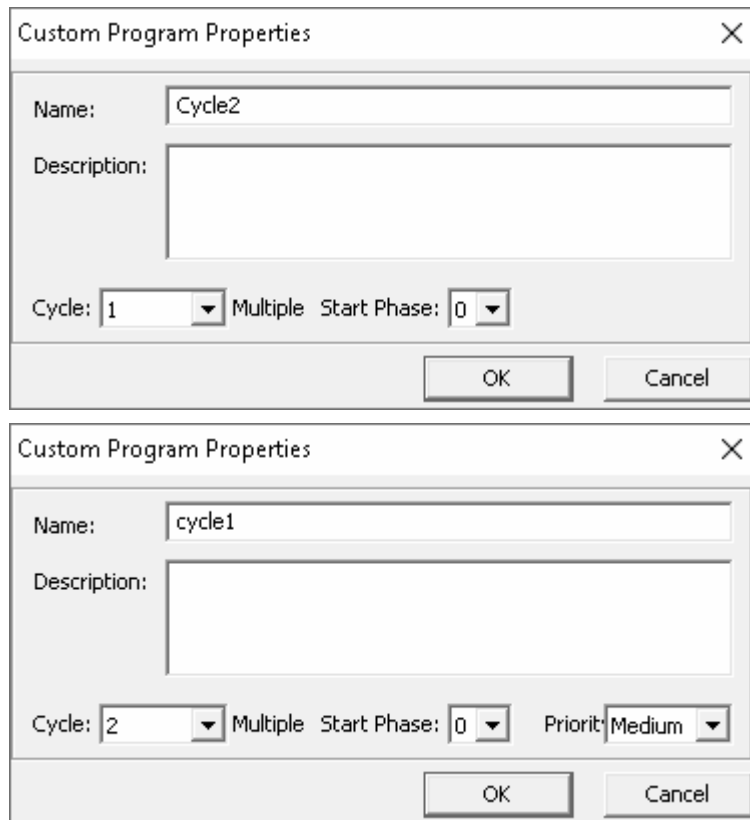
Modify password of program that has a password.
- Delete password



Select the item of “Delete Password” in the right-click menu and input confirmation password to delete visiting password of the program.

- Property

Select “Property” in the right-click menu and window of program property setting as shown in Figure 5-11 pops up.



**Figure 5-11 Program property setting (the above diagram uses controller FCU712-S, and the diagram below uses controller FCU711-S)**

The following table shows basic priority configurations of a project.

Configuration Item	Configuration Description
Name	String form; The length cannot exceed 16 English characters, and can only start with a letter. The name can only consist of English letters, numbers and underscores. It cannot be renamed (or share the same name with the system function block), or be modified.
Description	String form; The length cannot exceed 64 English characters. It can be modified.
Cycle	Different controller types support different cycles. <ul style="list-style-type: none"> <li>When the controller is FCU711-S, FCU712-S, FCU713-S or FCU714-S, the supported cycles are fast cycle, 1x, 2x, 5x and 10x.</li> <li>When the controller is FCU811-S, the supported cycles are fast cycle and 1x.</li> <li>When the cycle is "Fast Cycle", fast scanning the period to open the user program.</li> </ul>
Start Phase	Setting the start phase is to assign the program running load at each phase of the controller. After downloading, each program operates cyclically based on the start phase setting. Different types of controller support different starting phases: <ul style="list-style-type: none"> <li>When controller is FCU711-S, FCU712-S, FCU713-S or FCU714-S, the supported start phase is 0-9.</li> <li>When the controller is FCU811-S, the supported start phase is only 0.</li> </ul>

Configuration Item	Configuration Description
Priority	When the user programs have the same start phase, the controller will open user programs according to the priority. Only the FCU711-S supports this configuration.

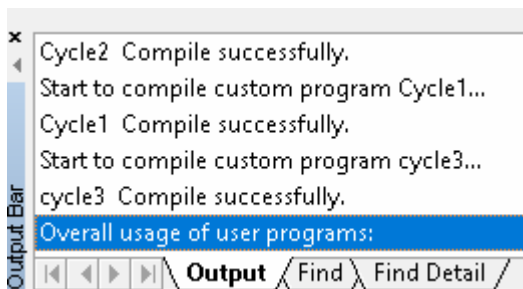
**Attention:**

Several custom programs can be selected to set properties (period, phase and priority).

### 5.4.3 Compile Single Custom Program

Select “Custom Program” of corresponding controller in configuration tree, then select “Compile” in the right-click menu.

All custom programs of the control station can be compiled and the compile information will be displayed in the output window of configuration management software as shown in Figure 5-12.



**Figure 5-12 Information of compiling single custom program**

### 5.4.4 Generate Custom Programs in a Batch

In addition to creating user programs manually, High-performanceHMI supports batch generation of user programs based on program files in csv format and xml format.

- There are two ways to generate program files in csv format
  - CSV files exported from an existing user program, see "Manage CSV Program Files" for details.
  - The built-in program template in High-performanceHMI can be found in "data\FBDTemplate" folder under the installation path; the default path is "C:\OMC\VisualField4\data\FBDTemplate". The csv files end in “loop” correspond to single loop of PID, PIDEX and the program template of cascade loop; the csv files end in “motor” correspond to the program templates of DIO21V, DIO01V, DIO11V, DIO22V, DIO11M, DIO21M, Motor, and Valve.

For detailed instructions, please refer to *VFFBDBuilder User Manual*.

- Program files in xml format

The files in this format are generally generated by the VFSuite. For detailed instructions, please refer to *VFSuite User Manual*.

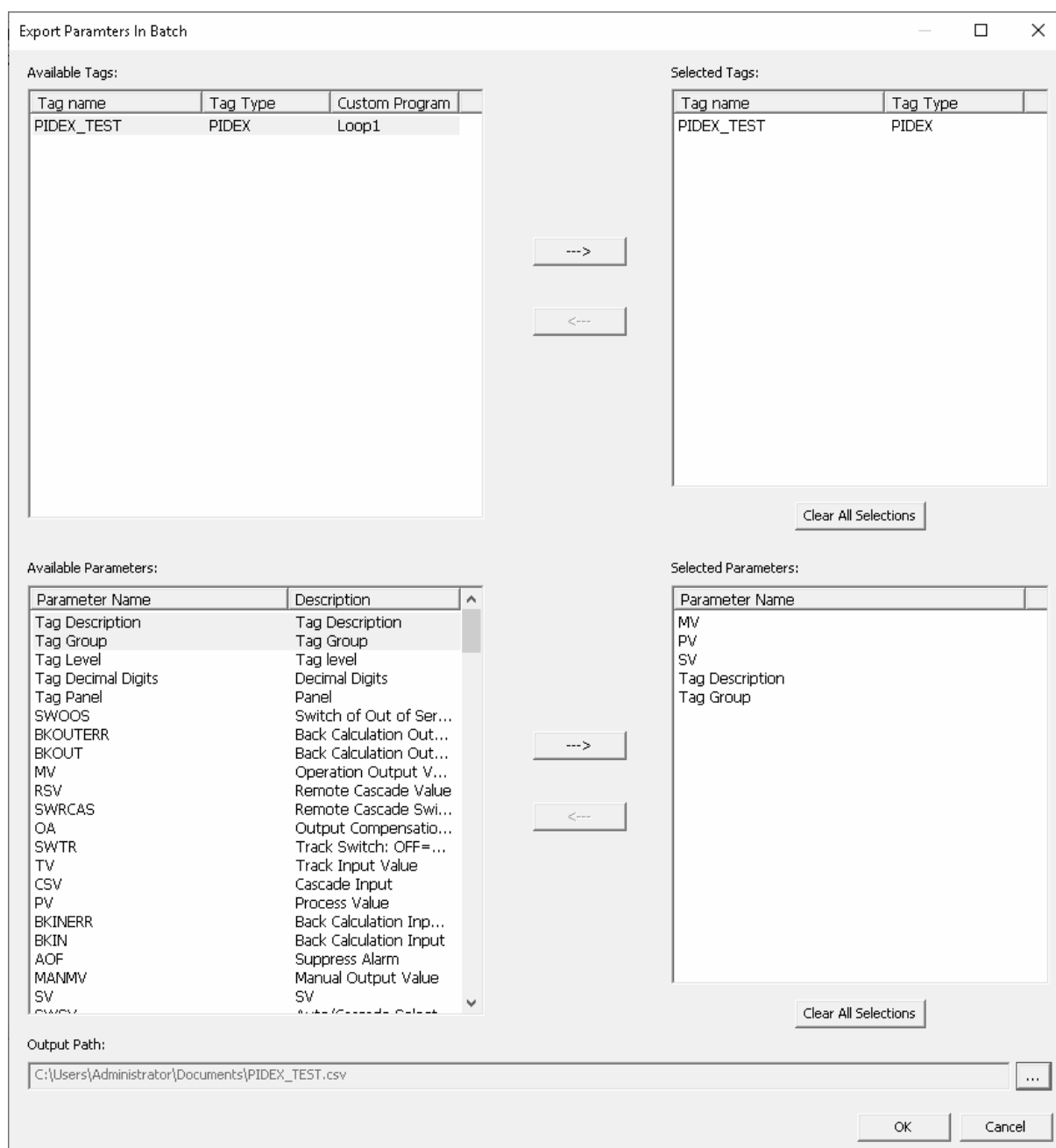
#### 5.4.5 Parameters for Batch Export/ Import of Station Programs

The function block tag contained in the user programs in the control station support exporting the specified tag fields. After exporting to a CSV file, you can modify the tag attributes and its fields, and then import the modified CSV file to the control station. Then the workload of manual configuration will be reduced.

##### Batch Export Parameters

- 1) Start operation command

Select "Custom Program" in the navigation tree of the control station, and select "Export Parameters in Batch" in the right-click menu to pop up the dialog box shown in the figure below.



**Figure 4-14 Batch Export Parameter Example**

2) Select the tag and its parameters to export

After selecting the tag, the parameter list will show all the parameters of the current tag type. Then select the parameters to be exported and add them to the selected parameter list.

After that, all the parameters of the selected tag will be exported. If the parameter does not exist in the tag, the cell corresponding to the parameter in the exported CSV file will be empty. If the selected alarm is not enabled, the cell is 0.

3) Select the export path.

4) Click "OK" to export.



**Tip:**

A control station supports exporting up to 256 parameters, and the exported parameters do not support built-in parameters, temporary parameters and alias parameters.

## View and modify the exported file

As shown in the figure below, the generated file of the batch exported parameters contains the tag name of the function block tag, the function block type, the program it belongs to, and the alarm enabling status. If the global function block tag g\_fbd, PVHH alarm is not enabled, the corresponding cell is empty.

A	B	C	D	E	F	G	H	I	J	K	L	M
Tag Name	Tag Type	Program Nam	Tag Description	Tag Group	Tag Level	Tag Decimal Digits	Tag Panel	MV	TV	ENALM-PVHH	ENALM-PVHHPRI	ENALM-PVLL
g1111	G_FBD1	FBD5		0	0	2 *						
g_fbd2	G_FBD2	FBD5		0	0	2 *						
pid1	PID	FBD1		0	0	2 *		0	0	0	0	1
pid2	PID	FBD1		0	0	2 *		0	0	0	0	1
pid3	PID	FBD2		0	0	2 *		0	0	0	0	1
pid4	PID	FBD3		0	0	2 *		0	0	0	0	1
pidex1	PIDEX	FBD4		0	0	2 *		0	0	0	0	1
pidex2	PIDEX	FBD5		0	0	2 *		4	0	0	0	1
ratio1	RATIO	FBD1		0	0	2 *		0	0	0	0	1
ratio2	RATIO	FBD2		0	0	2 *		0	0	0	0	1
ratio3	RATIO	FBD2		0	0	2 *		0	0	0	0	1
ratio4	RATIO	FBD3		0	0	2 *		0	0	0	0	1
ssfsdf	BALANCE	FBD4		0	0	2 *						

**Figure 4-15 Example of generated file for batch export parameters**

When modifying the generated file, the following rules should be followed:

- Columns from A to C are function block name, function block type, and program to which the function block belongs, respectively, and they cannot be modified.
- Columns from D to H respectively are the configurable attributes of the function block, which support modification, and the modification result should conform to the attribute rules of function block.
- Columns on the right of I is the function block parameter, which supports modification, and the modification result should conform to the optional range of the function block parameter. In addition, the value of the corresponding cell of the alarm enablement item (i.e. ENALM-\*\*) is 0 indicates no enable; 1 indicates alarm enable. The value of the corresponding cell of the alarm rank item (i.e. ENALM-\*\*-PRI) is the alarm priority vale, which should be configured based on the number of alarm priorities in the system builder.

## Import program parameters to user programs

After exporting and modifying the program parameters, you can import the CSV file to the user program.

1) Start operation command

Select "User Program" in the control station navigation tree and select " Import Parameters in Batch" in the right-click menu.

2) Select the import file

Select the CSV file in the pop-up dialog box and click "OK".

3) Confirm the modification

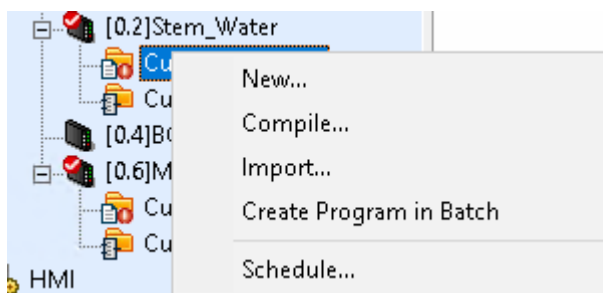
The program compares the difference between the program parameters in the import file and the current configuration parameters, and pops up the difference and the error.

After confirming, the program parameters in the CSV file are imported.

### 5.4.6 Program Scheduling

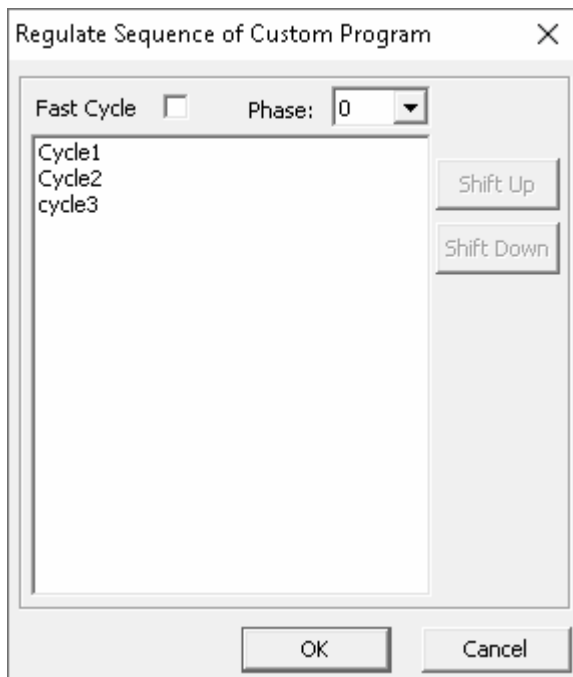
Program scheduling is used to set execution sequence of programs with the same phase.

Select "Custom Program" and choose "Scheduling" in the right-click menu shown as follows.



**Figure 5-13 Enter program scheduling**

Window of adjusting execution sequence of programs with certain phase of the control station pops up as shown below.



**Figure 5-14 Adjust the execution sequence of program**

When selecting certain phase, program lists which corresponded to the phase will be displayed. Select a program and click “Shift Up” or “Shift Down” button to adjust execution sequence. When moved to the top, it means that the program will be operated first in programs of the phase, and when moved to the bottom, it means the opposite.

When selecting rapid period, the window list will only display all rapid period programs of the control station.



**Attention:**

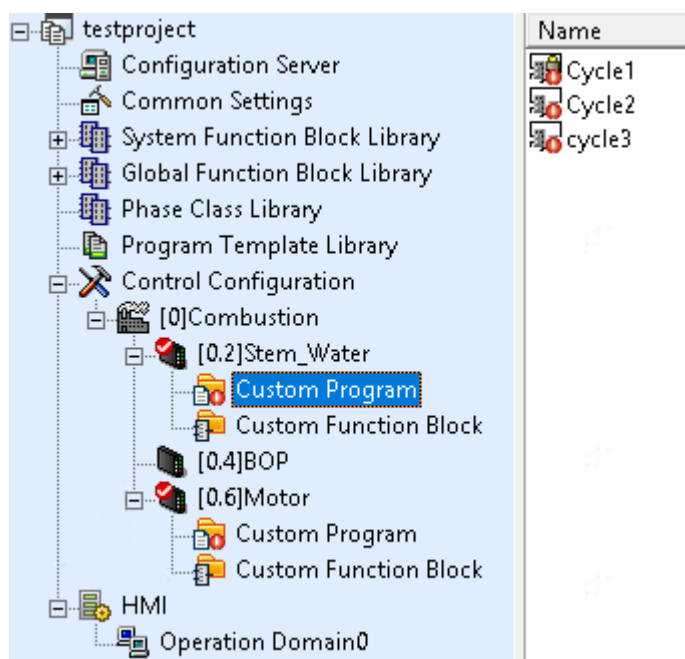
- All programs of the control station are executed in cycle according to phase sequence, and programs of the same start phase are executed in set sequence; rapid period programs are executed independently.
- When execution sequence of several custom programs of certain phase has been adjusted, execution sequence of the custom programs of other phases will update automatically.
- Generally, programs of the same phase will execute in sequence of scheduling, however, when the load of certain phase is too high during the controller running, it will stop programs in priority from low to high.

### 5.4.7 View Contents to be Downloaded


To make sure downloading custom program correctly, VFExplorer supports difference view for custom program, and add mark to custom program with difference.

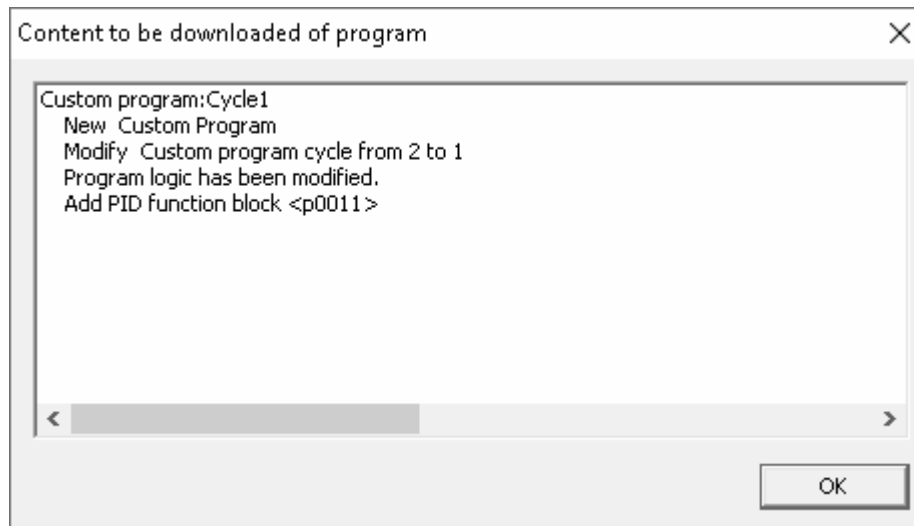
If there is difference between current configuration of custom program and that download by

controller, a red exclamation mark will be added to the custom program, as shown below.



**Figure 5-15 Mark custom program with difference**

User can right click custom program with  and select “View Content to be Downloaded” before download, to pop up the dialog shown below.



**Figure 5-16 Program Contents to be Downloaded**

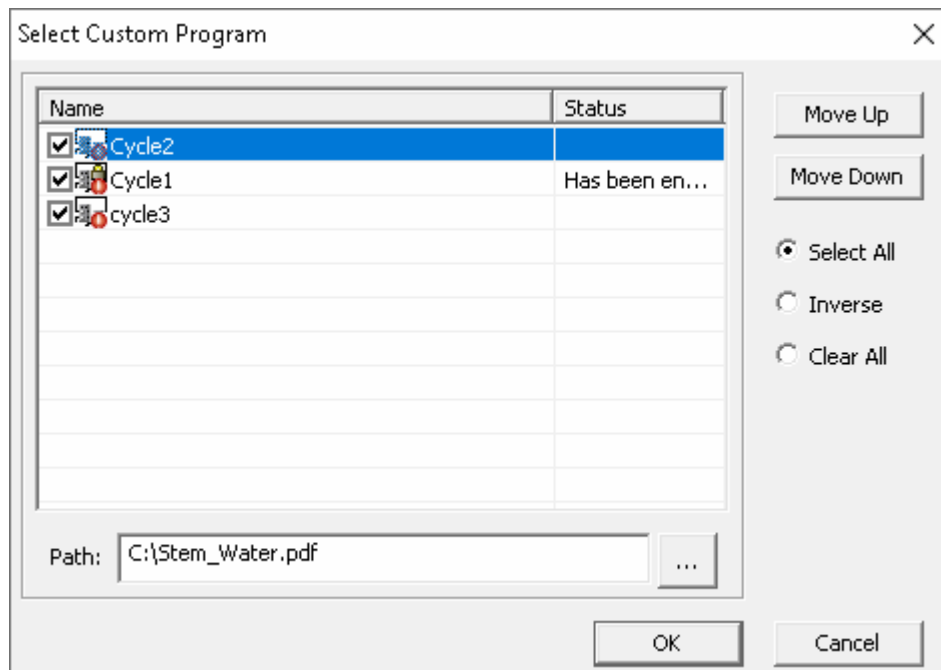
The difference between local configuration of custom program and controller configuration will be shown in the dialog.

#### 5.4.8 Print Custom Program

By following steps, multiple custom programs in the control station can be printed to one PDF file in batch.



1. Select one opened control station in the configuration tree and select “Print Custom Program” in its right menu, the dialog shown as below pops up.



**Figure 5-17 Select Custom Program**

2. Select the programs to be printed in the program list and set the directory and name of the PDF file in the “Directory”.
3. Click “OK” to print the selected programs to the specified PDF file.



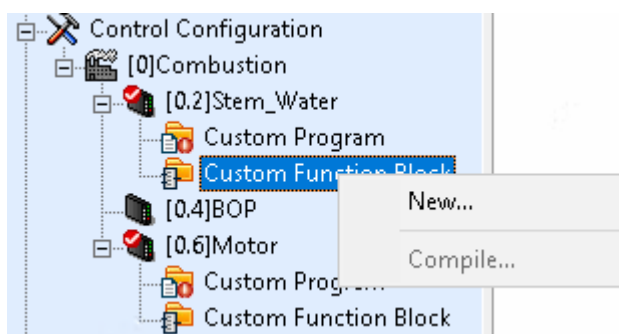
**Tip:**

When the custom program is set with password, the “status” will display “Encryption”. The encryption program can be printed only after decrypted.

## 5.5 Manage Custom Function Block

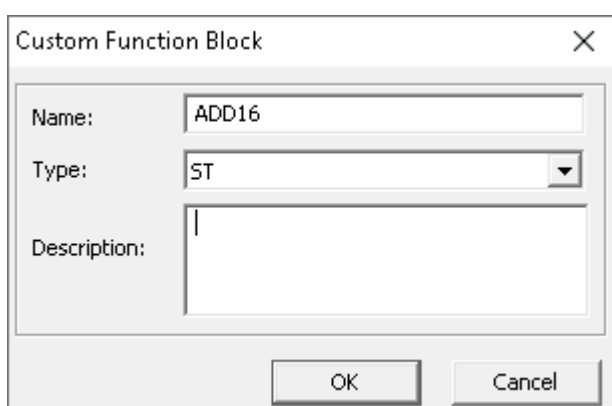
### 5.5.1 Build New Custom Function Block

Select “Custom Function Block” of corresponding control station in configuration tree, then select “New” in the right-click menu.



**Figure 5-18 Build new custom function block**

The window of “custom Function Block” pops up and input legal name and descriptions, a new function block can be built after clicking “Yes”.



**Figure 5-19 Dialog box “Custom Function Block”**

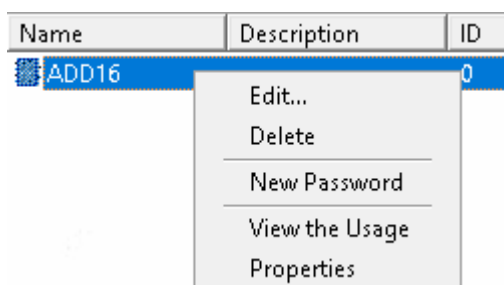


**Tip:**

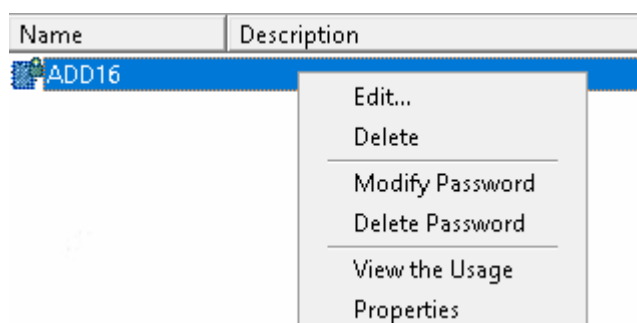
Custom Function Block includes two types, ST or SFC. User can select corresponding type.

## 5.5.2 Custom Function Block Configuration

Custom function block can be configured after successfully built. Right click the program name of custom function block and the right-click menu pops up.



**Figure 5-20 Right-click menu of custom function block that has no password**



**Figure 5-21 Right-click menu of custom function block that has a password**

- **Edit**  
Click “Edit” to enter interface of function block editing and edit function block. The interface can also be opened by double-clicking the program name in configuration property bar, please refer to *FBD Builder User Manual* for specific editing methods of custom function block.
- **Delete**  
Select “Delete” to delete selected custom function block, and the delete confirmation prompt pops up before deleting.



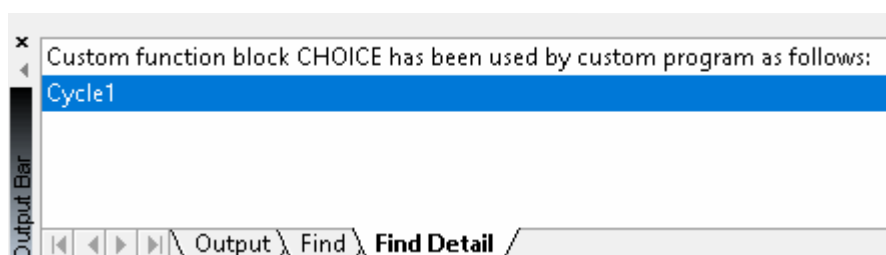
**Attention:**

**Custom function block can't be deleted when it has been invoked by program.**

- **New/ Modify/ Delete Password**  
It is the same with custom program. In order to protect the existed function block logic, you can encrypt the custom function block and set the password for it. The operation is the same as the custom program.

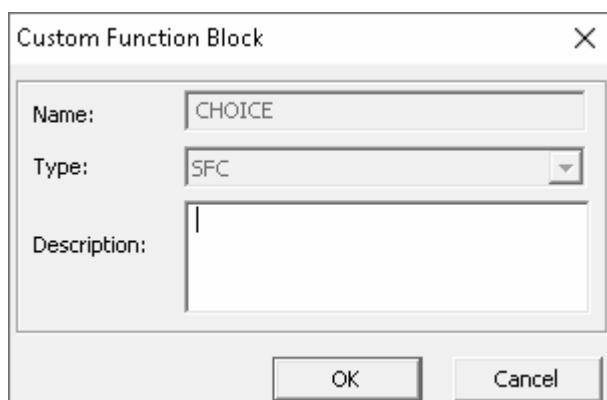
By the same token, you can also modify or delete the password after the custom function block is encrypted. The operation is the same as the custom program.

- **View the Usage**  
Select “View the Usage” to view whether the selected function block is used in custom program in output bar, for example, when custom function block CHOICE is used by Cycle1, the following prompt appears in the message output bar.



**Figure 5-22 Custom function block used condition in the information bar**

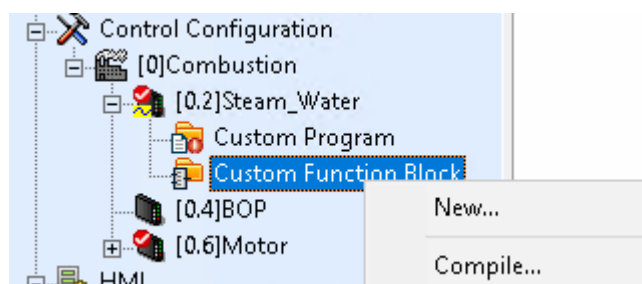
- **Property**  
Select menu command of “Property” to pop up window of custom function block property where program descriptions can be set.



**Figure 5-23** Set function block property

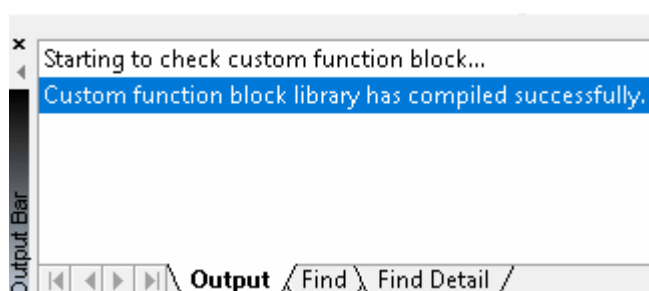
### 5.5.3 Compile Custom Function Blocks of Single Control Station

Right-click “Custom Function Block” of corresponding control station in configuration tree, and select “Compile” in the right-click menu.



**Figure 5-24** Compile custom function blocks of single control station

All custom function blocks of the control station can be compiled and the compile information will be displayed in the output window of configuration management software as shown in Figure 5-25.



**Figure 5-25** Information of compiling custom function blocks

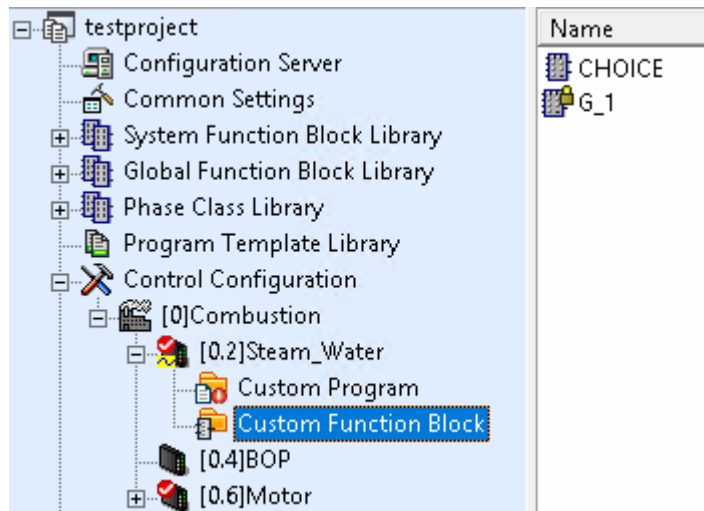


#### Attention:

Custom function blocks can be invoked in FBD programming software only when all custom function blocks of single station pass the compilation.

### 5.5.4 View the Referenced Global Function Block

The global function block used in custom function block will be displayed in the configuration property bar of custom function block. In the Figure 5-26, "G\_ST" is the global function block used by custom program.



**Figure 5-26 Configuration property list of custom function block**

---

**Tip:**



After configuring the custom function block in A controller, export the custom function block and custom program, and then import them to new control station. Open the custom program applying the custom program, updating prompt pops up, and user can update it successfully.

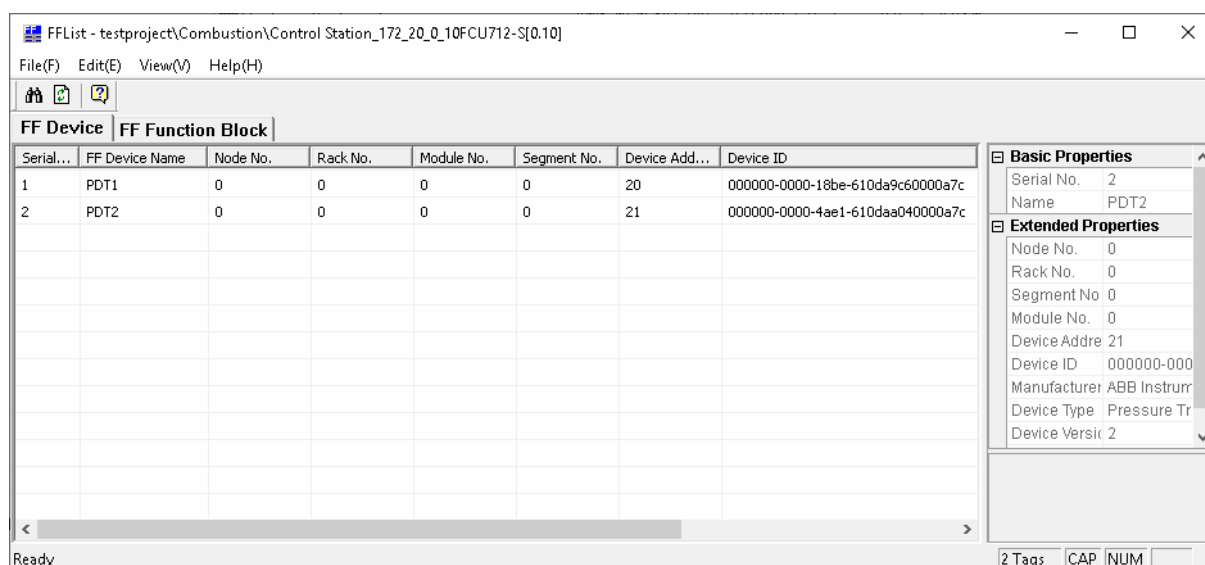
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## 5.6 View FF List

In VFExplorer, you can view the information of the configured FF instrument and FF function block in the control station, and support the allocation and de-allocation of the function block.

Through the following operations, you can view the FF list and manage the FF function block through the FF list.

1. In the configuration tree, select the control station to be viewed.
2. In the configuration area, select "FF List", the dialog box shown in the figure below pops up.



**Figure 5-27 FF list example**

In the FF list interface shown in the figure above, you can view FF device information and manage FF function blocks.

a) View FF device information

On the "FF Meter" tab, the currently configured FF device is displayed. The information of FF device includes FF device name, node number, rack number, module number and other information.

b) View FF function block

On the "FF Function Blocks" tab, the currently configured FF function blocks are displayed. The information of FF function block includes function block name, page name, function block type, whether to allocate FF tag and other information.

c) Assign FF tag for FF function block

In the FF function block list, after selecting the FF function block, you can use the right-click menu command "Assign FF tag" and select the FF tag associated with the function block in the pop-up dialog box.

d) Remove the allocated FF tag for the FF function block

In the FF function block list, after selecting the FF function block, you can use the right-click menu command "Assign FF tag" and select the FF tag associated with the function block in the pop-up dialog box.

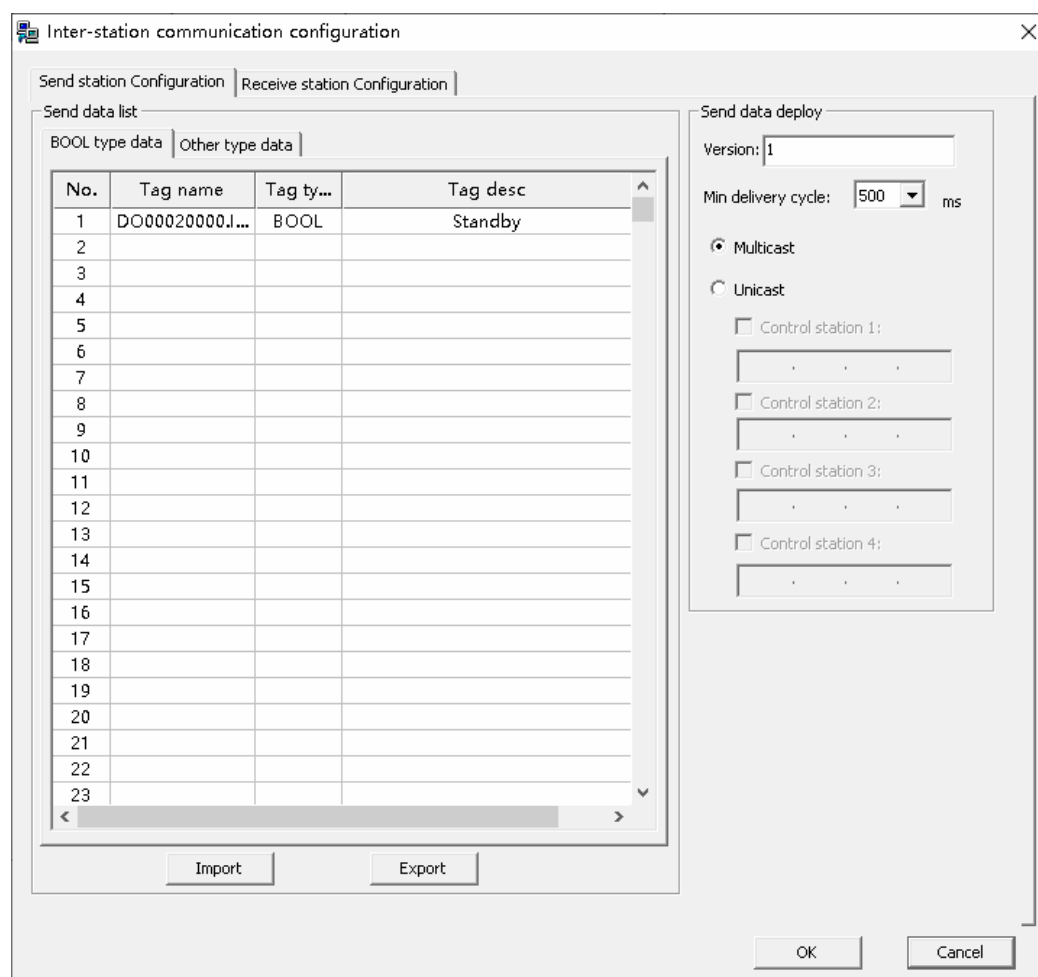
## 5.7 Cross-System Station Communication

When using the FCU714-S, the control station can communicate with other TCS-900, GCS or OMC control stations.

### 5.7.1 Configure Sending Station

A control station in unicast mode can send regular inter-station data to a maximum of 4 control stations; while in multicast mode, it can send data to all control stations. This section mainly describes the configuration methods of the sending station in regular inter-station communication.

- 1) In the configuration tree of VFExplorer, select a control station to view.
- 2) In the configuration area, select "Cross-system station communication" to open the "Inter-station communication configuration" dialog box.
- 3) In the "Send data list" combo box, configure the data to be sent.
  - a) Select the "BOOL type data" or "Other type data" tab and double-click on a row.
  - b) A tag selection dialog box will pop up. Select the variables to be sent to other control stations from the variable list.
  - c) Click "OK" to return to the "Inter-station communication configuration" dialog box as shown in the figure below.



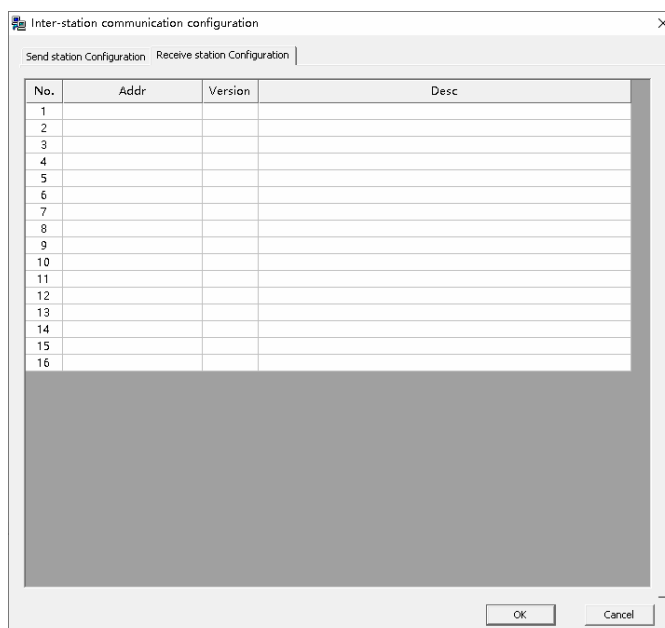
**Figure 5-28 "Inter-station communication configuration" dialog box (after adding send data)**

- 4) Configure other settings in the "Send data deploy" combo box.
  - Version: Used to configure the version of the sending station. The version of the sending station must match the version of the receiving station. Values range from 1 to 65535.
  - Min delivery cycle: Used to configure the shortest sending time for regular inter-station data.
  - Select the method of sending data
    - ◆ "Multicast": the variables in the "Send data list" will be sent to all control stations.
    - ◆ "Unicast": "Control station 1" to "Control station 4" will be editable. Check the target control stations for receiving data and enter their IP addresses.
- 5) Click "OK" to save the current configuration.

### 5.7.2 Configure Receiving Station

A control station can receive regular inter-station data from up to 16 control stations. As a receiving station, a control station can receive a maximum of 1,024 BOOL variables and 120 mixed-type variables from each sending station.

- 1) In the configuration tree of VFExplorer, select the control station to view.
- 2) In the configuration area, select "Cross-system station communication" to open the "Inter-station communication configuration" dialog box.
- 3) On the "Receive Station Configuration" tab, configure the source station information that the receiving station can receive.



**Figure 5-29 Inter-station communication configuration - Receive station configuration dialog box**



- Enter the source control station address in the "Addr" column. The format is "172.20/21.Domain Address.Station Address," where the domain address is an integer ranging from 0 to 59, and the station address is an even number ranging from 2 to 126.
  - Enter the version of the source control station in the "Version" text box. This version must match the version configured on the sending station. Values range from 1 to 65535.
- 4) Click "OK" to save the current configuration.

## 5.8 Modify Alarm Priorities in Batches

After locking the control station (open from configuration server), user can modify alarm priorities in batches.



### Attention:

Please close the tag configuration software and function block diagram programming software before modifying alarm priorities in batches.

Modify alarm priorities of control station by steps below:

1. Select the control station in configuration tree, right-click and select "Modify Alarm Priority in Batches", and the "Alarm Priority" dialog below pops up.

Alarm Priority

Alarm Levels Tree

Tag Name	Alarm T...	Tag Description	Alarm Priority
A100020000	ERR	Standby	[0].log
A100020000	HHH	Standby	[0].log
A100020000	HH	Standby	[0].log
A100020000	H	Standby	[0].log
A100020000	L	Standby	[0].log
A100020000	LL	Standby	[0].log
A100020000	LLL	Standby	[0].log
A100020000	DPV	Standby	[0].log
A100020001	ERR	Standby	[0].log
A100020001	HHH	Standby	[0].log
A100020001	HH	Standby	[0].log
A100020001	H	Standby	[0].log
A100020001	L	Standby	[0].log
A100020001	LL	Standby	[0].log
A100020001	LLL	Standby	[0].log
A100020001	DPV	Standby	[0].log
A100020002	ERR	Standby	[0].log

Selected Tag List

Number: 207 / 207

Tag Name Filter:

Tag Description Filter:

Alarm Type Filter:

Alarm Priority Filter:

Tag Type Filter:  Clear Filter



Tag Name	Alarm T...	Tag Description	Alarm Priority
A100020002	HHH	Standby	[1].low
A100020002	HH	Standby	[1].low
A100020002	H	Standby	[1].low
A100020002	L	Standby	[1].low
A100020002	LL	Standby	[1].low
A100020002	LLL	Standby	[1].low
A100020002	DPV	Standby	[1].low
A100020003	ERR	Standby	[1].low
A100020003	HHH	Standby	[1].low
A100020003	HH	Standby	[1].low
A100020003	H	Standby	[1].low
A100020003	L	Standby	[1].low
A100020003	LL	Standby	[1].low
A100020003	LLL	Standby	[1].low
A100020003	DPV	Standby	[1].low
A100020004	ERR	Standby	[1].low
A100020004	HHH	Standby	[1].low
A100020004	HH	Standby	[1].low
A100020004	H	Standby	[1].low
A100020004	L	Standby	[1].low
A100020004	LL	Standby	[1].low
A100020004	LLL	Standby	[1].low
A100020004	DPV	Standby	[1].low
A100020005	ERR	Standby	[1].low
A100020005	HHH	Standby	[1].low
A100020005	HH	Standby	[1].low
A100020005	H	Standby	[1].low
A100020005	L	Standby	[1].low
A100020005	LL	Standby	[1].low

Selectable Tag List

OK Cancel

Figure 5-30 Alarm Priority

Only enabled tag alarm can be shown in "Selected Tag List" and "Selectable Tag List".

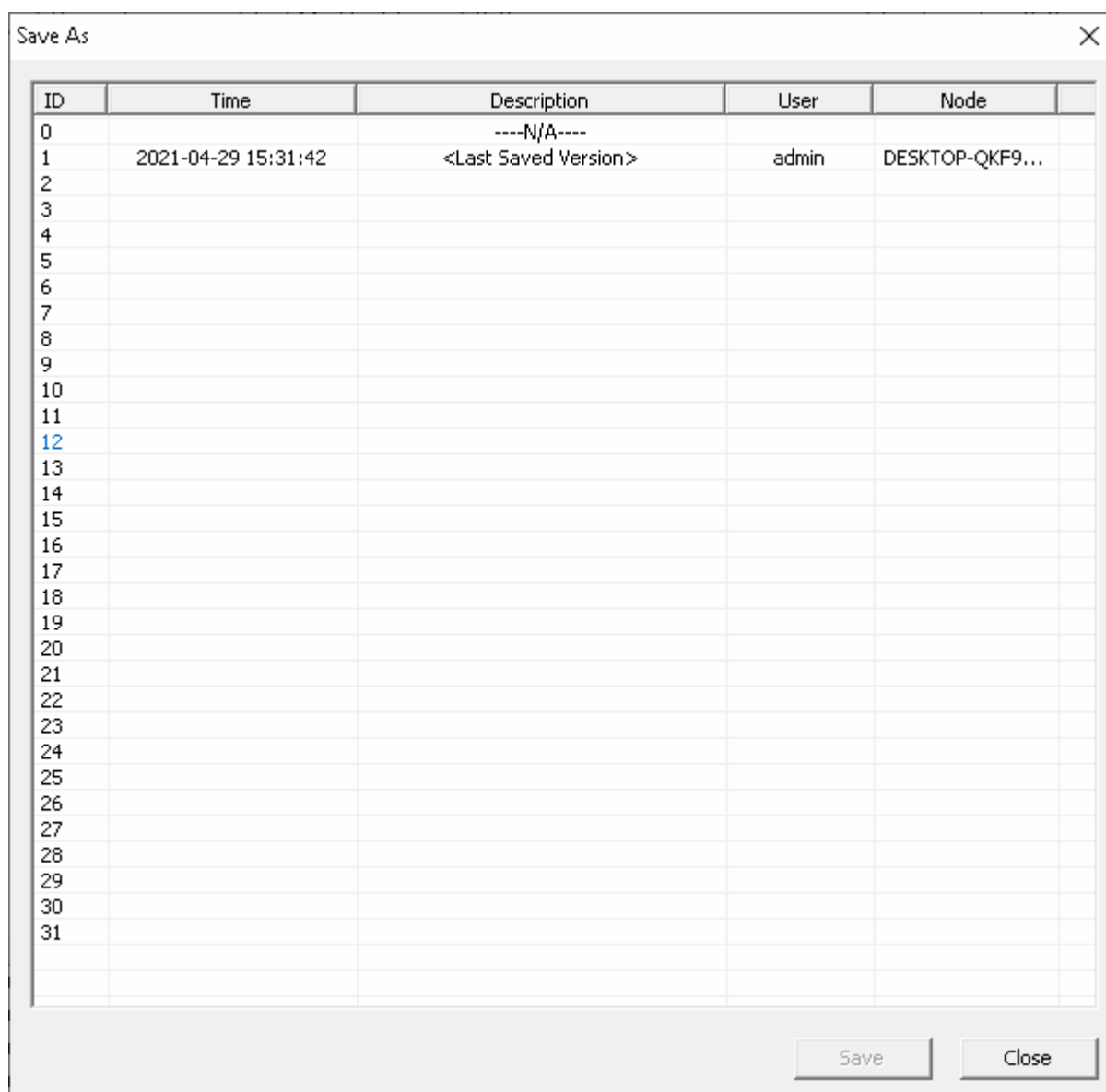
2. Select one alarm priority in “Alarm priorities Tree” to show all alarm tags in the selected level in “Selected Tag List”.
3. Select one or several tag alarms in “Selectable Tag List” to add to the level, and click  or .
4. Repeat steps 2 and 3 to complete all modifications for alarm priority, and click “OK” to complete modification in batch for alarm priority.

## 5.9 Backup Single Control Station Configuration

By making a backup of single control station configuration before modification and loading the backup of historical configuration, user can restore configuration easily when modifying configuration by mistake.

Click “Save as...” in the right-click menu shown in Figure 5-3 pop up a dialog box of “Save as” and the configurations of last saved and latest downloaded have been made a backup respectively by software shown in Figure 5-31. User can select one of other 3~31 items to save configuration (the “Save” at the button can be operated at present). Click “Save”, and “Version Description Information” dialog box pops up. Input corresponding description information, click “OK”, and the configuration would be saved. After saving successfully, the corresponding prompt pops up.

The items of configuration backup in dialog box of “Save as” can’t be deleted, but can be covered. (The items of latest saved configuration and latest downloaded configuration saved by software can’t be deleted or covered.)



**Figure 5-31 Single control station configuration saving**

## 5.10 Load History Configuration of Single Control Station

The function of loading the backups of single control station configuration (mention in chapter 5.9) is available.

Click “Load History Version” in right-clicked menu shown in Figure 5-3, and a dialog box of “Load History Version” pops up and click “Load” to Load History Configuration.



### Attention:

Loading history configuration of single control station will cause offline publish of all nodes in current operation domain.

## 5.11 Upload Parameter

VFExplorer supports to upload parameters in controller, including all running parameters and function blocks in controller.

### Operation Steps

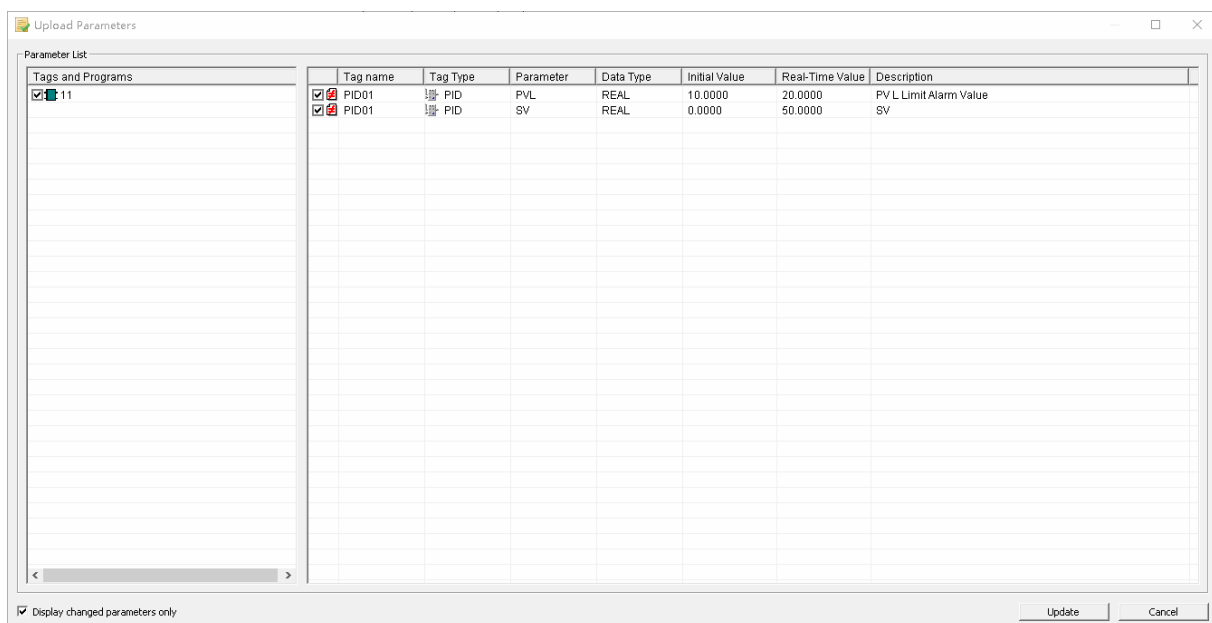


#### Attention:

Download configuration before uploading parameter.

Parameter can be uploaded by following steps:

1. Select “Edit/ Upload Parameter” to pop up the Uploaded Parameters window as shown below.



**Figure 5-32 Example of uploading parameter in control station**

2. After checking the tag in the parameter list to upload, click “Update” to refresh local configuration based on the latest uploaded parameters.

### Notes

- If the current configuration is inconsistent with the controller configuration, a prompt of “Configuration Inconsistent” pops up and uploading is disabled.
- If controller doesn’t exist, a prompt of “Cannot Connect Controller” will pop up and uploading is disabled.
- If controller models FCU711 and FCU712 are mismatching, a prompt of “Controller Models Mismatch” pops up and uploading is disabled.

- Parameter cannot be uploaded between simulation controller and actual control configuration.

If computer A runs FCU711 simulation controller, and computer B runs the same FCU711 configuration, when computer B uploads parameter, a prompt of “Controller models mismatch” pops up.

## 5.12 Configuration Download



### Attention:

Only control stations that are locked by local can implement “configuration download”.

### 5.12.1 Online Download

“Online Download” will check the control configuration of single control station, then find out configuration information which should be downloaded by comparing with current configuration in the controller.

Operation method for online download:

Select control station and choose the menu command of **Edit/ Online Download** or select “Download Online” in the right-click menu.

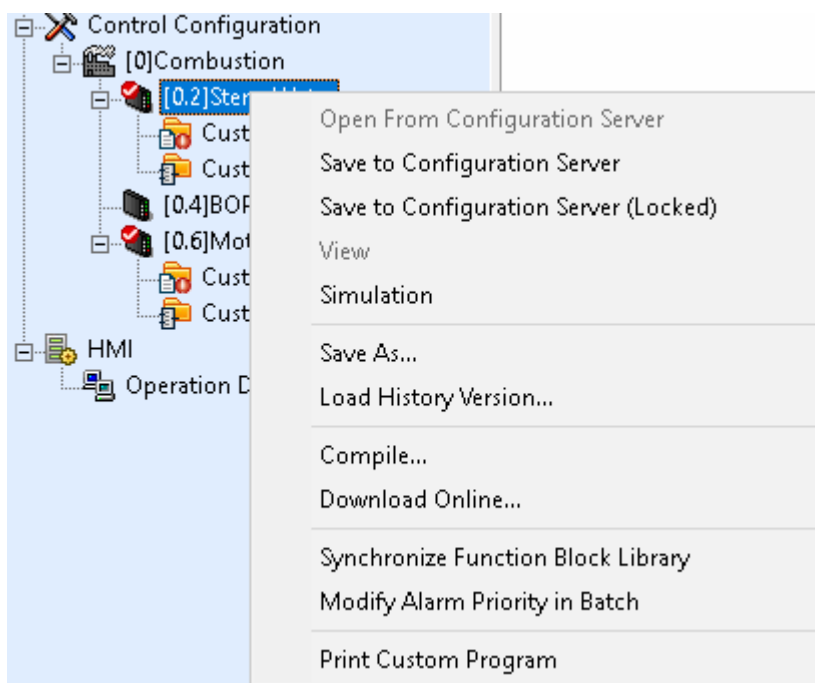
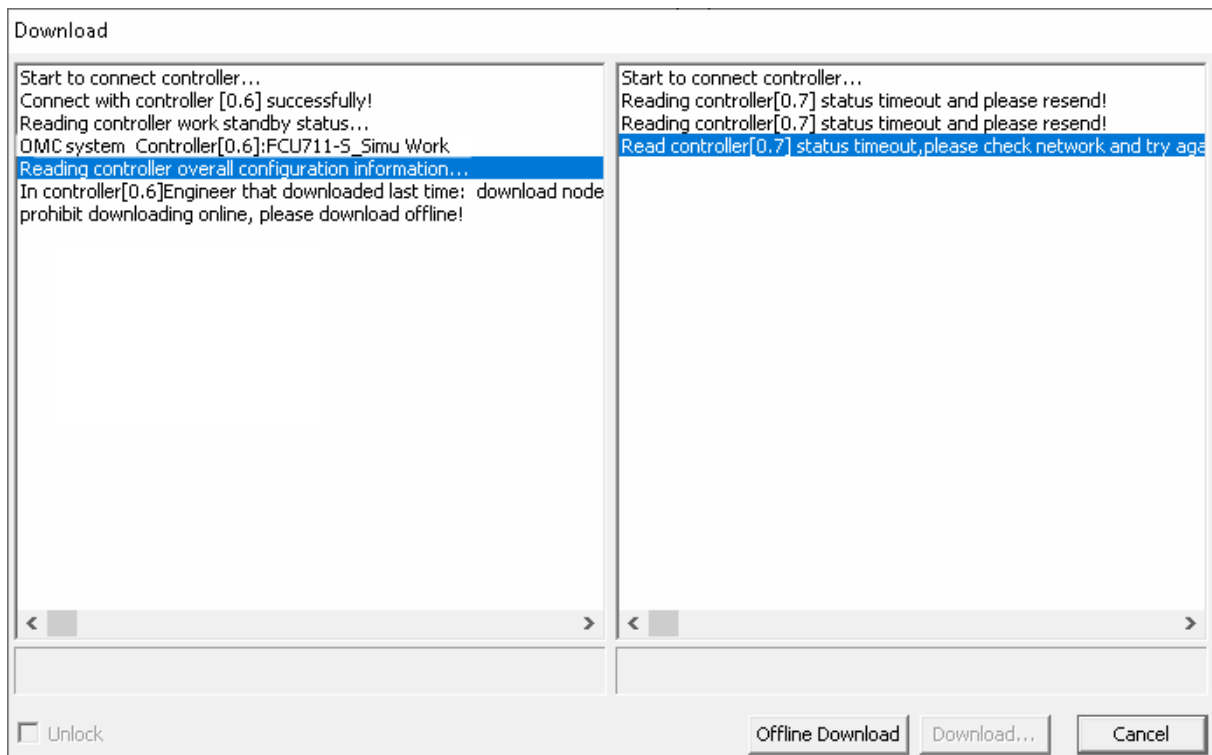


Figure 5-33 Operate “Online Download”

When implementing “Online Download”, controller status and total configuration information will be read after successfully connecting to controller. If the version is inconsistent with the one downloaded last time, then online download will be unavailable, and offline download is the only

choice, shown as Figure 5-34.



**Figure 5-34 Prompt of offline download**

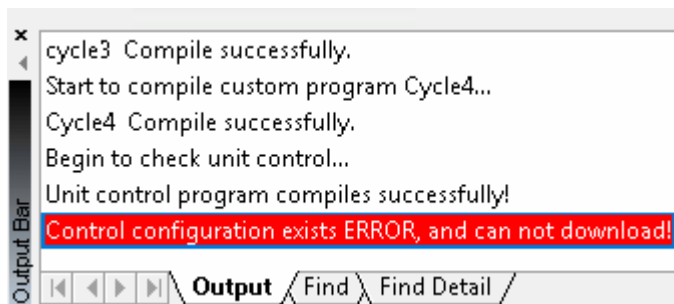
It will prompt “Read controller [X.Y] status overtime, please check the network and try later!” when failed to connect with controller, in this case, users should find reasons of failure and select “Online Download” again after removing all the problems.

There is an option of “Unlock” in the download window, select it and users can save the control station configuration to configuration server and unlock it after downloading; do not select it then the configuration will keep locked after saving to configuration server.

After passing the consistency check of configuration version, configurations of the whole controller will be compiled, and if all control configurations pass the compile, they will be compared to configuration of each part in controller, and specific information list of configurations to be downloaded will be checked and listed as shown in the figure below.

After confirm the download information, click “Download” to download the configuration. After downloading, click “OK” to exit the download window.

Download is unavailable when partial configurations can't pass the compile. For example, if tag configuration or FBD program can't pass the compilation, it will prompt in the output window that there are errors in control configuration and download is not allowed. The error information of compile is displayed in the output box in white with red background. Double-click the error message to open the corresponding software interface to locate the error.



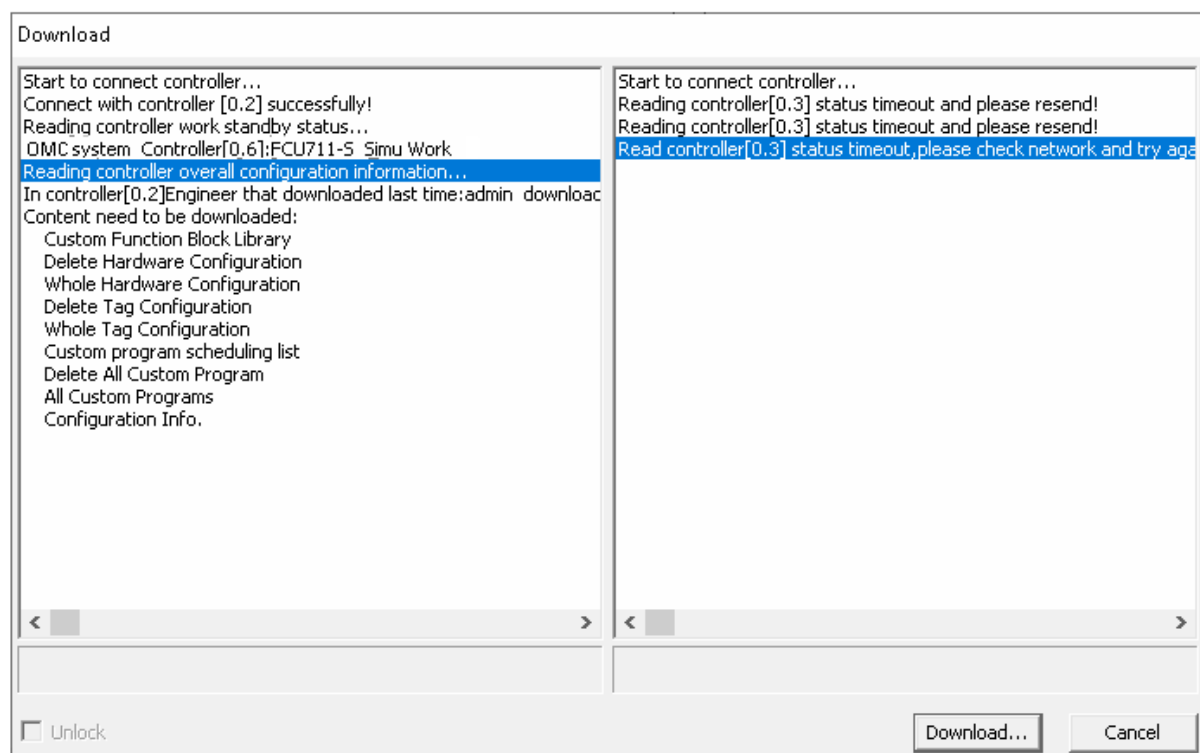
**Figure 5-35 Error prompt**

Press ESC to exit compilation during compile. Compilation program will stop after compiling current custom function block or custom program.

### 5.12.2 Offline Download

Offline download is used to download correct configuration directly from engineer station without comparing to configuration in control station.

Select a controller and choose “Download Offline” in “Edit” to finish the operation.



**Figure 5-36 Offline download**

Click “Download” to download the configuration. Other process is the same with online download.

### 5.12.3 Notes for Download

- Install the dongle properly before download.
- Subprograms (FBD program, LD program, tag configuration, hardware configuration,

users function block and monitoring configuration software) of relevant configurations of the controller needn't be closed before "Download", however, "Save" is needed.


- "Download" can be operated only when all configurations have passed the compilation, and the output window will display corresponding prompt when partial configurations didn't pass the compilation. In this case, users should open corresponding configuration software to check errors, and make sure that no error is left and then continue to compile and download.
- If there are redundant controllers, it will download to two redundant controllers by default and users don't need to select controller. Communication information will be judged and prompted automatically, and download configurations by communication channels which own the condition.
- If the initial values of parameters of user program are modified, it will only download parameters that are modified.
- If partial configuration (exclude configuration of COM741-S/COM721-S) is failed to download (set 200ms communication timeout, download overtime or error auto retry 50 times, total 10s, if error still exist, download fails), it's considered failed to download whole configuration, and goes to process for failure.
- For redundancy controllers, if the one downloaded successfully but the other failed, they guarantee to update configuration and download successfully.
- It's not allowed to download when controller status is abnormal, such as configuration backup, downloading, etc.
- If it cannot connect with controller, please check whether the controller's address is same with the configuration or not; then check the network communication status and whether the controller can be obtained according to the IP address ping.

## 5.13 Online and Debug

In VFExplorer, users can debug custom programs, such as online debug, start certain custom program and stop certain custom program.

### 5.13.1 Online

The running status and active/inactive status of input and output of all custom programs can be viewed by connecting with the controller after downloading.

Select "Custom Program" in configuration tree and click  button in the toolbar or **Debug/Online**.

Information of running status of all custom programs will be displayed in the main window of configuration property bar on the right after successfully connecting with the controller.



Name	Run Status	Input Closed Sta...	Output Closed S...	Run Time...	Des...	ID	Last Modified Time	Cycle(Spee...	Phase
Cycle1	Running	All Activate	All Activate	0.008		1	2021-04-29 16:44:12	1	0,1,2,3,4,5,6,7,8,9
Cycle2	Running	All Activate	All Activate	0.001		0	2021-04-29 15:41:20	1	0,1,2,3,4,5,6,7,8,9
Cycle4	Running	All Activate	All Activate	0.006		3	2021-04-29 16:21:29	1	0,1,2,3,4,5,6,7,8,9
cycle3	Running	All Activate	All Activate	0.001		2	2021-04-29 15:43:43	1	0,1,2,3,4,5,6,7,8,9

**Figure 5-37 Program information in online mode**

- Running status

If the results is "all active" of "inactive". For content of stop custom program or start custom program, refer to Other Operations.

When the running state of the program is "shielded", there are two possibilities:

3. The running status of a single user program is "shielded", and the logic error in the user program (such as including an infinite loop). At this time, you need to modify the logic of the user program before debugging.
4. The running status of all user programs in the control station is "shielded", which means that the user program in the control station runs beyond the scan cycle of the controller. It is necessary to adjust the phase and cycle attributes of the user program or reduce the user program.

- "Input Closed Status" and "Output Closed Status"

They mean the input and output status of all function blocks in the program, it will display "All Active" when input/output status of all function blocks are active, and "Part Active" when input/output status of at least one function block is inactive.

- "Running Time" is the time of executing the program.

### 5.13.2 Stop/start Custom Program

#### Stop custom program

"Stop custom program" means to stop the program in online mode (all operations are not performed). The operation method is as follows:

Select "Custom Program" in configuration tree and choose one or several programs in configuration property bar on the right, and then click menu command of **Debug/ Stop Custom Program** or select custom program to be stopped and select "Stop" in the right-click menu.

"Run Status" of program is displayed as follows after "Stop Custom Program".

Name	Run Status	Input Closed Sta...
Cycle1	Running	All Activate
Cycle2	Stop	All Activate
Cycle4	Running	All Activate
cycle3	Running	All Activate

**Figure 5-38 Status display after stopping the program**

## Start up Custom Program

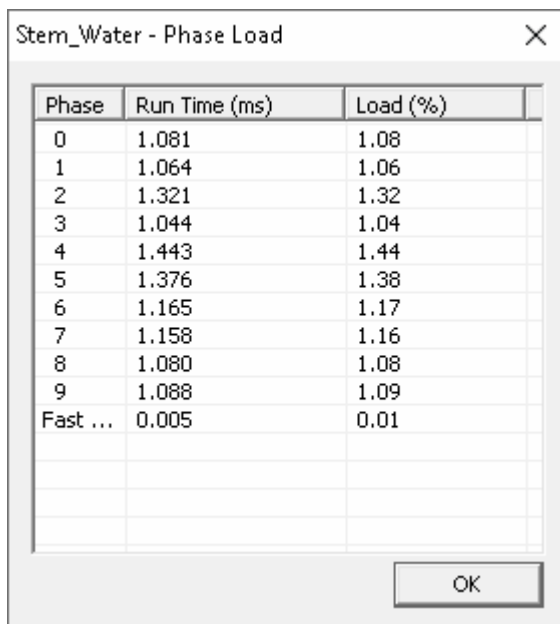
“Start up Custom Program” means to start custom program that has been stopped.

Select one or several custom programs that have been stopped and click menu command **Debug/Start Up Custom Program** or select stopped custom program to be started and click “Start Up” in the right-click menu.

Users can restart stopped program after clicking “Yes”.

### 5.13.3 Phase Load View

Select the menu command **Debug/Phase Load** to pop up the phase load view dialog box as shown in the figure below. You can view the running time and occupied load of each phase on this interface.



Phase	Run Time (ms)	Load (%)
0	1.081	1.08
1	1.064	1.06
2	1.321	1.32
3	1.044	1.04
4	1.443	1.44
5	1.376	1.38
6	1.165	1.17
7	1.158	1.16
8	1.080	1.08
9	1.088	1.09
Fast ...	0.005	0.01

Figure 5-39 Phase load view

## 5.14 Simulation

Users can debug configuration by means of controller simulation software (simulator as for short). Control stations that are in simulation status can be operated in configuration, compilation, download, online debug, etc. Operations such as offline download, online download and online debug in simulation status are operated to simulator.

### 5.14.1 Instruction of Software Dog

After met with one of following conditions, station can run the simulation controller software:

- With a dongle including simulate authority, then simulate controller can be run. And the count of running simulation controller in the same time is decided by the software dog,

memory size and CPU capability.

- The dongle only with engineer authority can only simulate one controller.



**Tip:**

When the dongle is authorized with simulation controller but not the engineer station, only the simulation controller is supported to download.

## 5.14.2 Instruction to Simulation Status and Notes for Application



**Attention:**

- Make sure that the computer has a network card and is connected to the network before using the simulation controller and the IP of the computer is 172.20.\*.\* or 172.21.\*.\*
- When simulating a control station (such as the station 2 in domain 0), it must be ensured that the control station is not connected to the actual controller, otherwise the simulation will not be carried out.

When in simulation status:

- Start up simulator.
- Menu command “Simulation” becomes .
- Icon of control station becomes .
- Sub-software can be opened and with sub-software title of “simulation”.
- Configuration can be modified. If configuration is modified in simulation status, it is also available when switched to non-simulation status, and online download can be operated (but operation of “Save to Configuration Server” is only available after exiting the simulation).
- Simulate first offline download. All output tags are in FORCE status and function block tags in OOS status, and new function block tag will be in OOS status, output tags in FORCE status and input tags in UNFORCE status after modification.
- Simulation running will be ended automatically when clicking command “Simulation” again, and “√” in front of menu item “Simulation” will be eliminated.
- Simulator will be closed and end the simulation status automatically when closing configuration management software.
- Controller icon will still be when closing simulator only. In this case, project is just disconnected with simulator but still in simulation status, which means that it will fail to

connect with simulator when executing operations such as download. If hoping to restart simulator, users should end simulation status first, and configuration which downloaded last time will still be kept in simulator after restarting simulation.

- Data sent from simulator can be read in real-time monitoring windows.
- After modifying configuration in simulation status, the consistency of configuration executed in monitoring and the one in simulator can be achieved by steps as follows: first exit simulation status, and operate “Save to Configuration Server” and then “Configuration Publish”, and execute simulation at last.

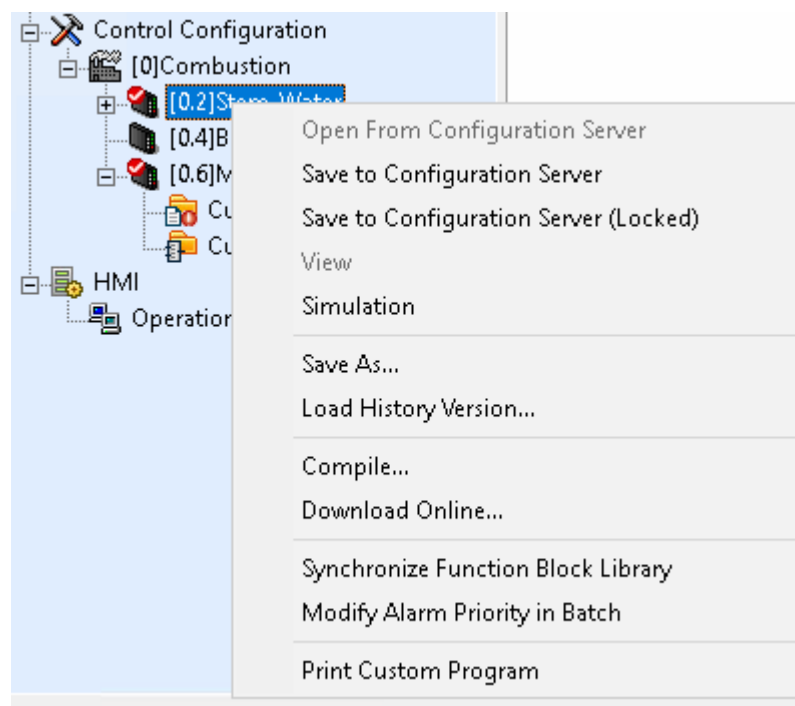


**Attention:**



- Operation of “connect software with controller” is available for simulator.
- Redundancy is not allowed for simulator.
- Simulation of several control stations is available, but the number of simulation control stations is better less than 10 (the simulation number is also limited by the authority of dongle).
- For usage of simulation controller software, refer to *Simulation Controller Software User Manual*.

### 5.14.3 Examples of Simulation Application

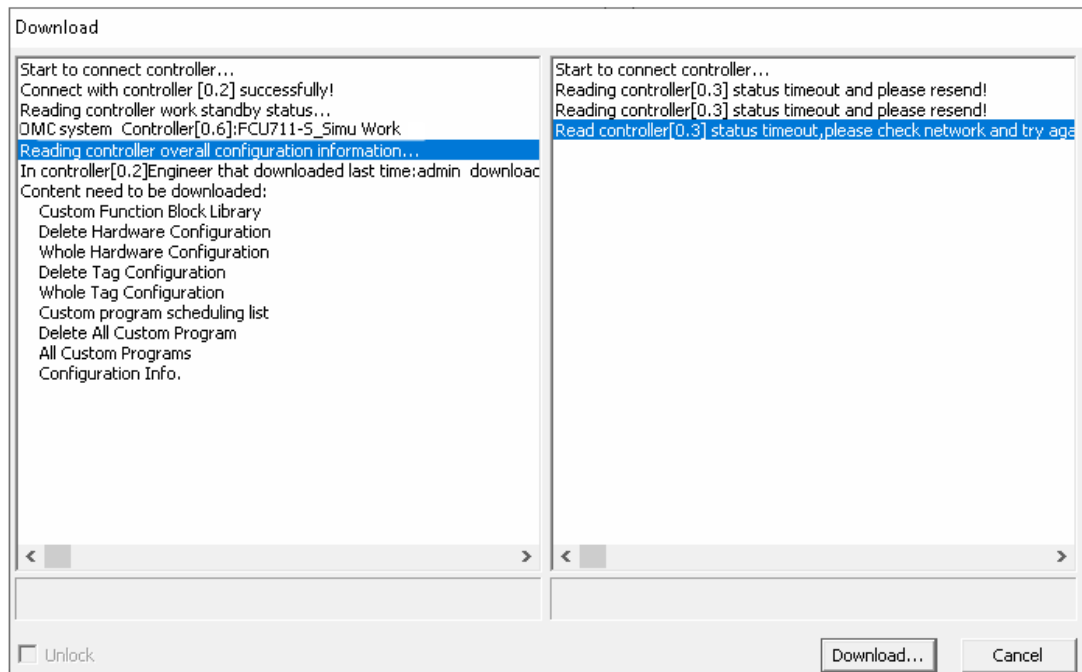
- 1) Select a locked control station “Steam\_Water” and select menu command **Debug/ Simulation** or click **Simulation** in the right-click menu to start simulator.



**Figure 5-40 Start simulator**

After starting the simulator, it will be minimized as icon  in the task bar. The icon of the control station will become .

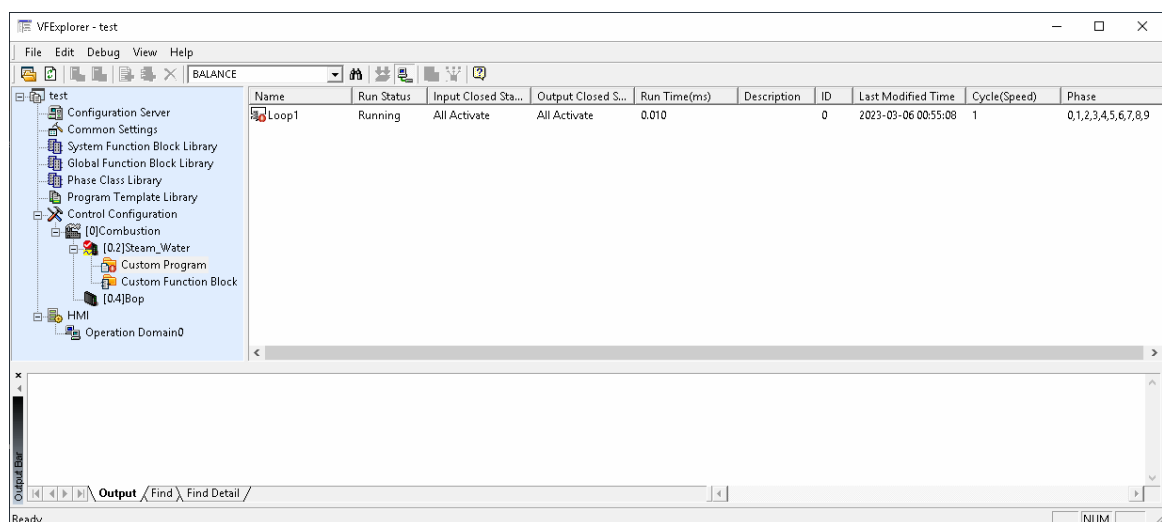
5. Select menu command **Edit / Download Offline** in configuration management software to download configuration. If the configuration has been downloaded and when online download is available, users can select menu command [Edit/ Online Download] or choose “Download Online” in the right-click menu of the control station, popping up dialog box of “Download”. And the operation mode is the same when it is connected with real controller. Offline download interface is shown in Figure 5-41.



**Figure 5-41 Offline download to simulator**

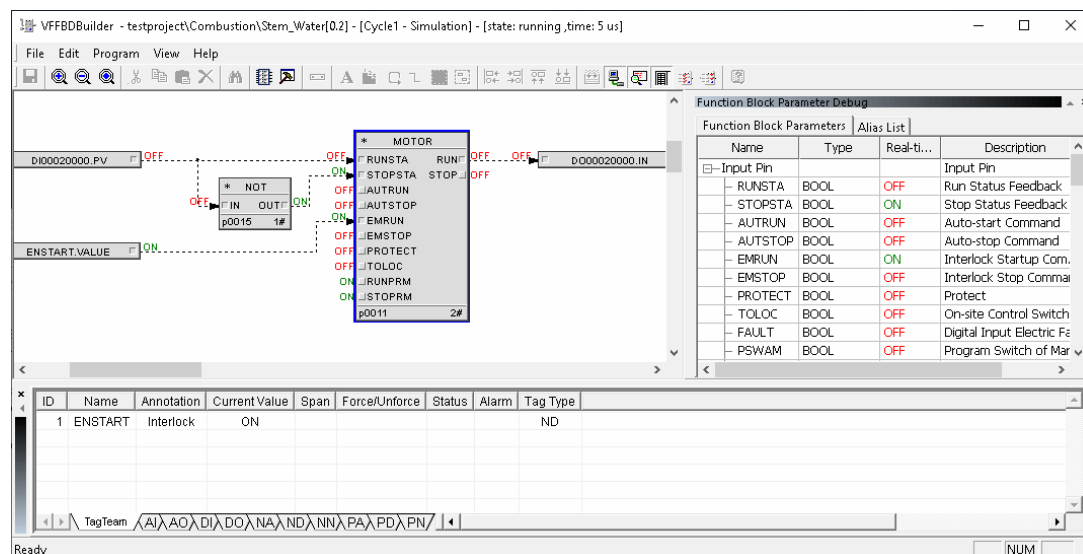
Download to simulator after clicking “Download”.

6. After the download is complete, you can perform a series of debugging operations, such as online viewing, as shown in the figure below.

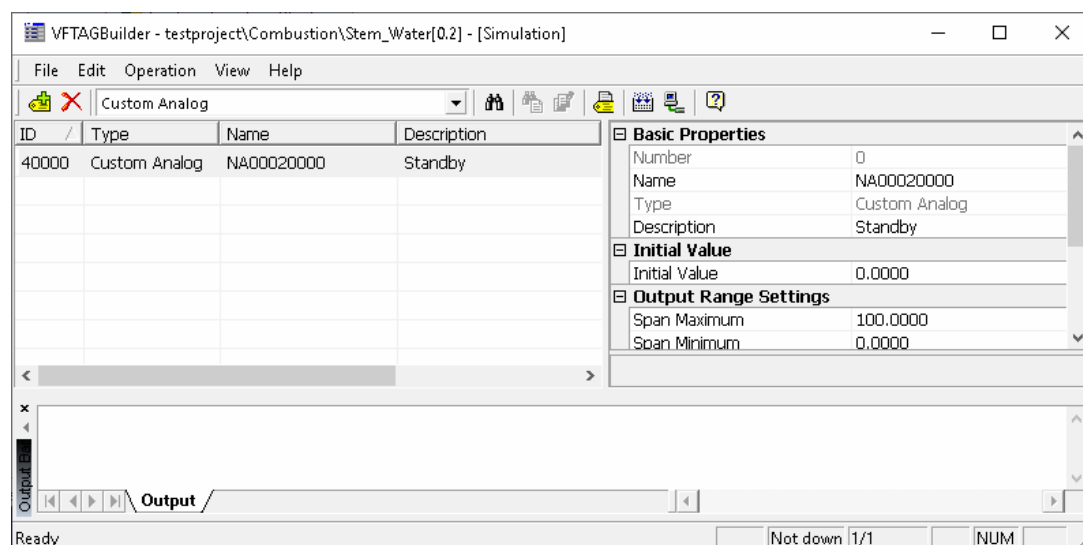


**Figure 5-42 Online view in simulation status**

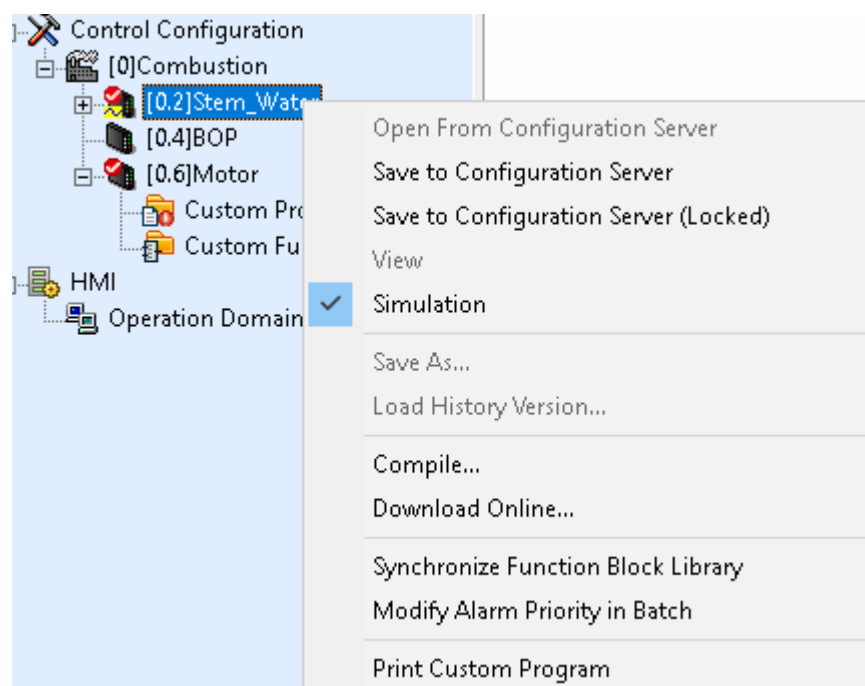
- Open a custom program for online debugging, as shown in Figure 5-43.

**Figure 5-43 Online debug of custom program**

- Start monitoring software for a series of operations.
- Open tag configuration software to add tags.

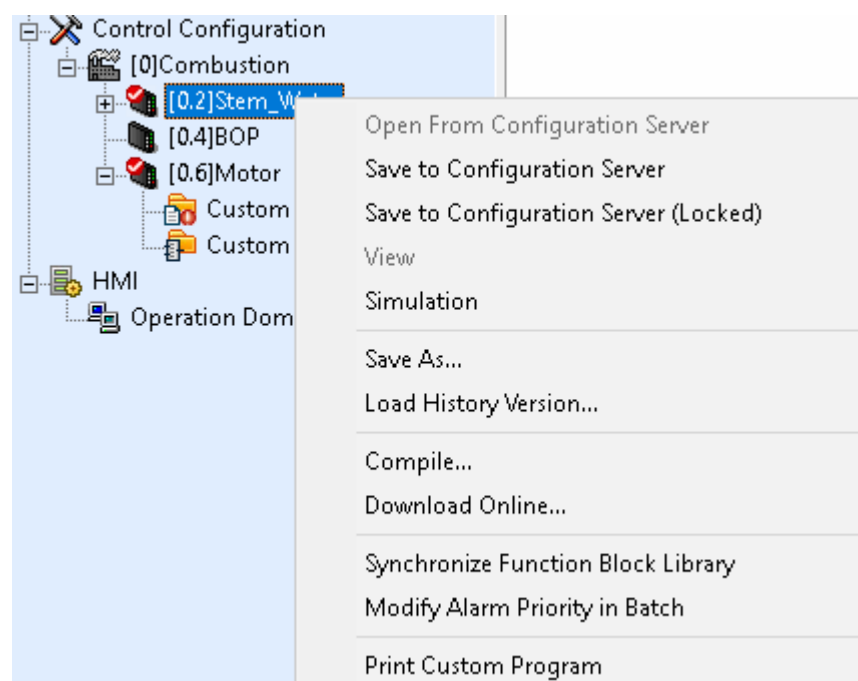
**Figure 5-44 Add a tag in simulation status**

- After adding tags, first exit simulation status for the consistency of monitoring configuration and simulator configuration. Select "Simulation" in the right-click menu of the control station, as shown in Figure 5-45.



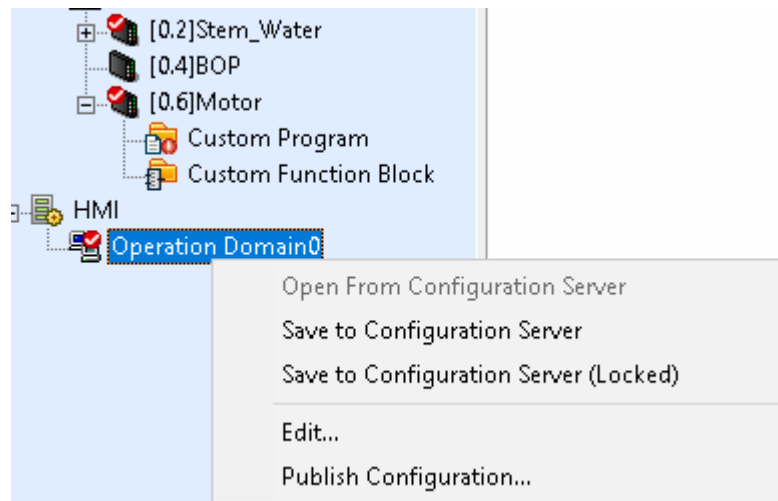
**Figure 5-45 Exit simulation status**

- 5) Select the control station after exiting simulation, and click “Save to Configuration Server (Locked)” in the right-click menu.



**Figure 5-46 Save the configuration to configuration server and keep locked**

- 6) Publish configuration in operation domain. Select an operation domain (MainSteamConV in this example) and choose “Publish...” in the right-click menu, as shown in Figure 5-47.



**Figure 5-47 Configuration publish**

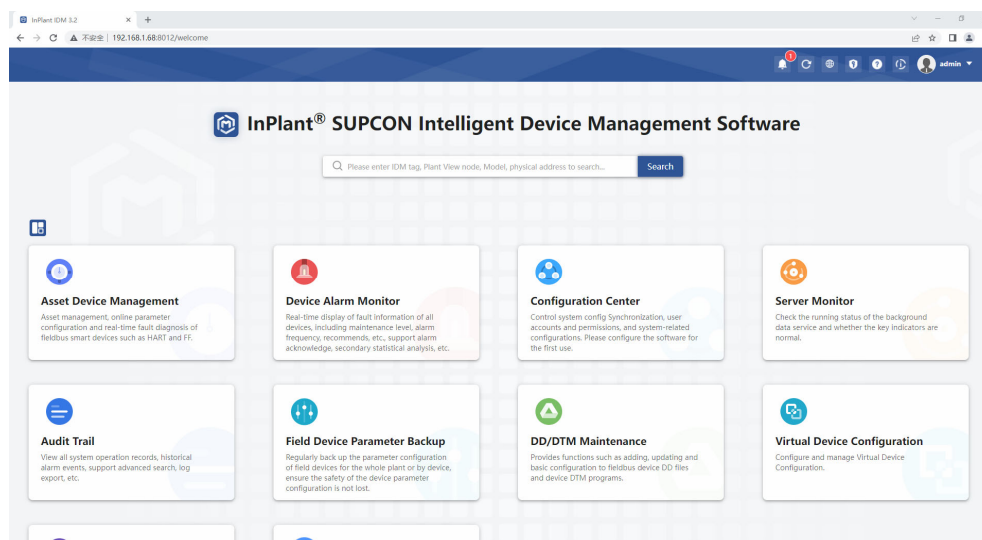
- 7) Configuration in monitoring is refreshed after publication, and it will be in simulation status by selecting “Simulation” in the right-click menu of the control station.
- 8) Operations such as configuration debug can be performed after online download; in this case, configuration in monitoring is consistent with that in simulator.
- 9) Users can select “Simulation” in the right-click menu to end the simulation status or directly close the configuration management software after debugging completely.



## 5.15 Open IDM Server

After you specify the IDM server in VFSysBuilder, you can open IDM server in the control station of the navigation tree.

- 1) Right-click on a control station and select "Open IDM Server".
- 2) The IDM web client is opened.



**Figure 5-48 Open IDM Server**

## Section 6 TCS-900 System Configuration

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When the TCS-900 control station is added to the High-performanceHMI system configuration, VFExplorer provides an interface to open the TCS-900 system software SafeContrix for control station configuration, and also supports downloading the SafeContrix configuration to the configuration server and publishing it to each Site.

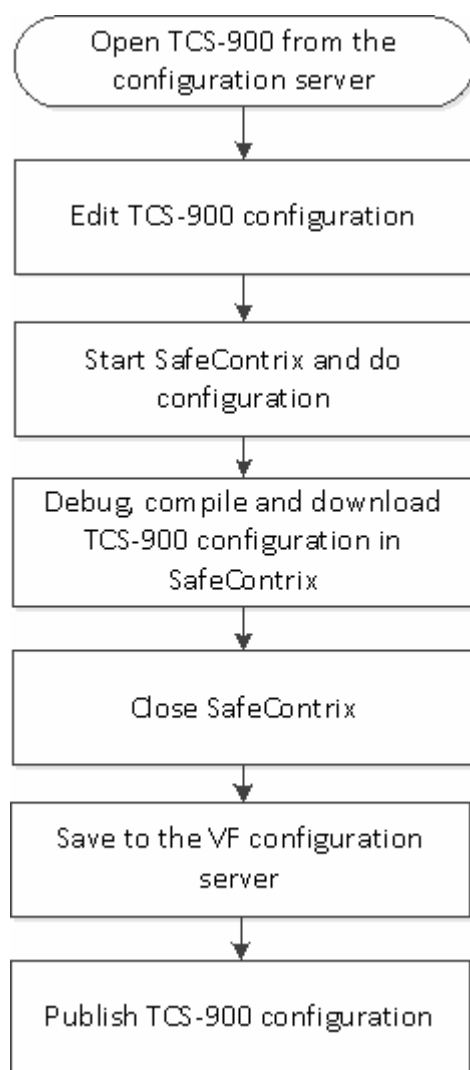


**Attention:**

**After SafeContrix V1.10.05.01-M is installed, the TCS-900 system software SafeContrix can be opened in VFExplorer.**

---

When editing the TCS-900 system configuration in VFExplorer, you need to proceed with the process shown in the following figure.



**Figure 6-1 TCS-900 system configuration**

Up to 4 SafeContrix software processes can be started simultaneously in VFExplorer. When the TCS-900 system is added to the High-performanceHMI configuration, the different operations of the TCS-900 system configuration are executed in the High-performanceHMI and the SafeContrix software respectively. The details are as follows.

**Table 6-1 Software of TCS-900 system configuration**

Operation Item	Software
Configure control station address, project name, controller type and clock synchronization server address	High-performanceHMI <sup>NOTE1</sup>
Configuration unit, user authority, parameter upload, view event record, configuration log	SafeContrix <sup>NOTE2</sup>
Diagnostic data	SISPatch <sup>NOTE3</sup>

Note 1: For how to add TCS-900 control station to High-performanceHMI, refer to *System Builder Software User Manual*.

Note 2: For how to configure the TCS-900 system, refer to *SafeContrix Software User Manual*.

Note 3: To obtain the diagnostic data of the TCS-900 system in the High-performanceHMI, you need to install SISPatch and add the diagnostic controls of the TCS-900 system to the flowchart. For detailed operation instructions, please refer to the *SISPatch User Manual*.

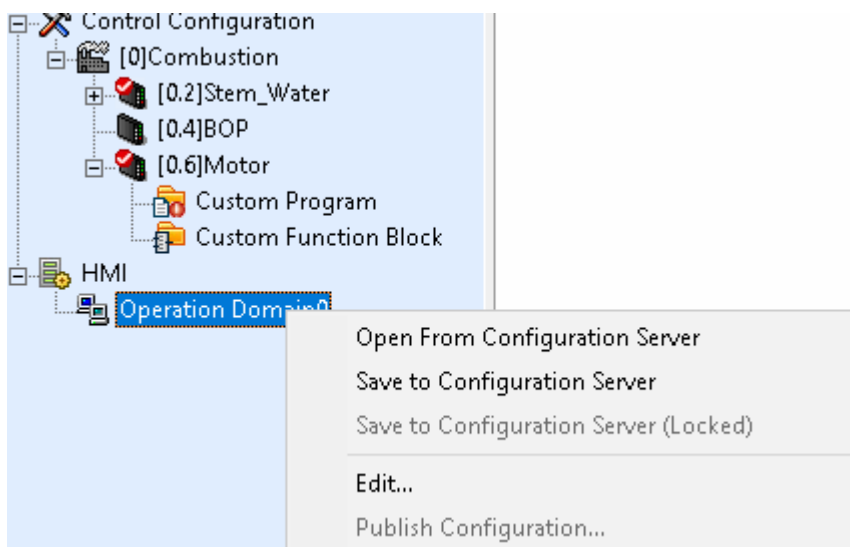
## Section 7 HMI Configuration

### 7.1 Manage Monitor Configuration Status


In the configuration management software, the monitor configuration needs to be switched to the read-write status (that is, after the configuration server is opened) when the monitor configuration is executed. After configuring the monitor configuration, you need to save the configuration to the configuration server to ensure that other stations can obtain the latest configuration.


#### 7.1.1 Open from Configuration Server

Users must lock certain operation domain (Open from Configuration Server) first before modifying its configuration; and the operation is the same with that of opening control station configuration from configuration server.



**Figure 7-1 Open monitor configuration from configuration server**

Node status of the operation domain will become  after locking it, then users can implement “Edit”, “Save to Configuration Server”, etc to the operation domain.

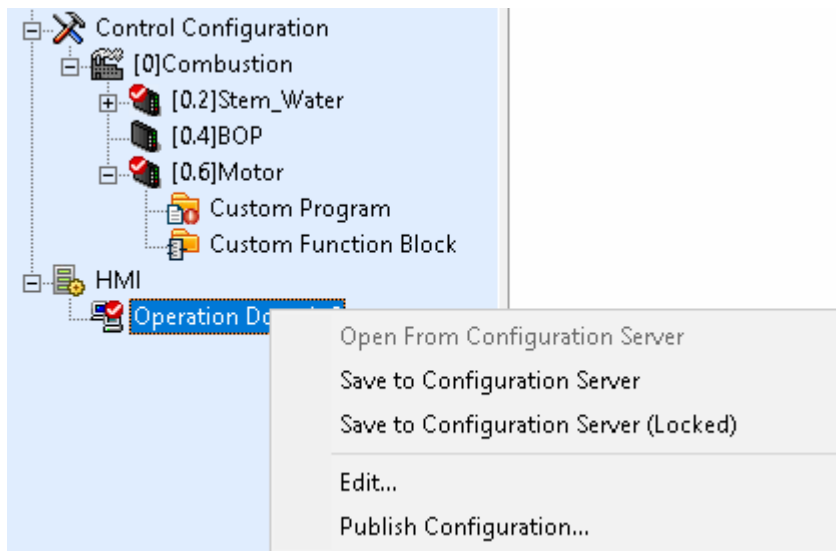
Node status of operation domain that is locked by other engineer station is , in this case, users can view configuration of the operation domain, but not configure it (except resource files that are not locked by other engineers).

#### 7.1.2 Save to Configuration Server

After configuring the operation domain, users should save configuration to configuration server to make sure that each operation node can obtain the latest configuration when publishing configuration.

The operation "Save to Configuration Server" in monitor configuration is similar to control configuration which also has two methods, unlock it when saving to configuration server and keep locked when saving to configuration server, as shown in Figure 7-2

The unlocked operation domain can still be saved to configuration server, and the operation can save locally-locked resource files to configuration server and unlock corresponding resource files.



**Figure 7-2 Save monitor configuration to configuration server**



**Tip:**

- Monitor configuration software should be closed before executing "Save to Configuration Server" command.
- Monitor configuration software needn't be closed when executing "Save to Configuration Server (Locked)" command.

## 7.2 Start HMI Config Software

Users can configure the operation domain after locking it; users can view configuration of the operation domain and edit resource files that are not locked by other engineers by "Edit" when it is locked by other engineer stations.

Select certain operation domain under monitor configuration in work area, and choose "Edit" in the right-click menu to start up monitor configuration software. For detailed operating instructions of the monitor configuration software, please refer to the "*HMI Config Software User Manual*".

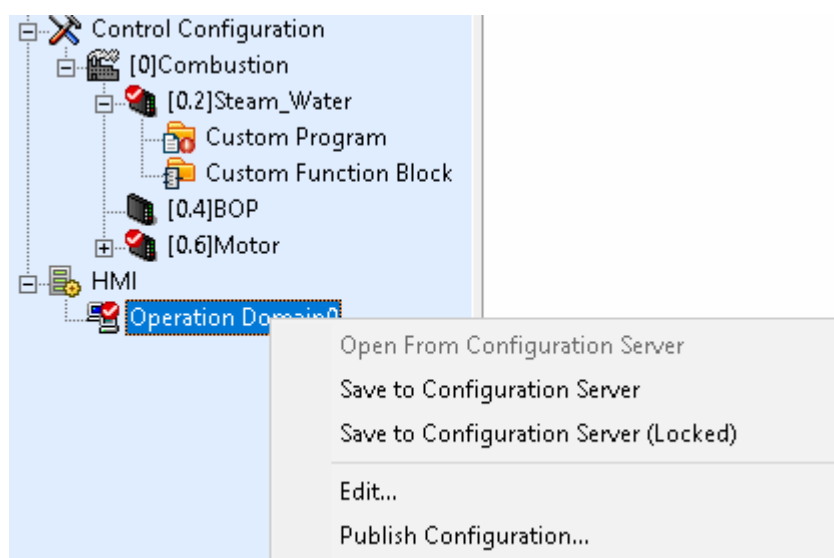


Figure 7-3 Start up monitor configuration by "Edit"



**Attention:**

1. If users directly select "Edit" without operating "Open from Configuration Server", configuration of the operation domain can only be viewed but resource files that are not locked by other engineers can be modified.
2. For operation domains that have been locked, when monitor configuration software is closed, users can restart monitor configuration software by selecting "Edit".
3. If users don't have configuration authority of the operation domain, "Open from Configuration Server" and "Save to Configuration Server" will be in grey and unavailable.

## 7.3 Configuration Publish

After configuration modification, engineer station should publish configuration information to server and each configuration node (to inform the node that a new configuration needs to be updated) so that each operation node can obtain the latest configuration file and information. Engineer may select a certain operation domain to send configuration synchronization message to each server and operation node of the operation domain, and each operation node may obtain the updated configuration from configuration server.



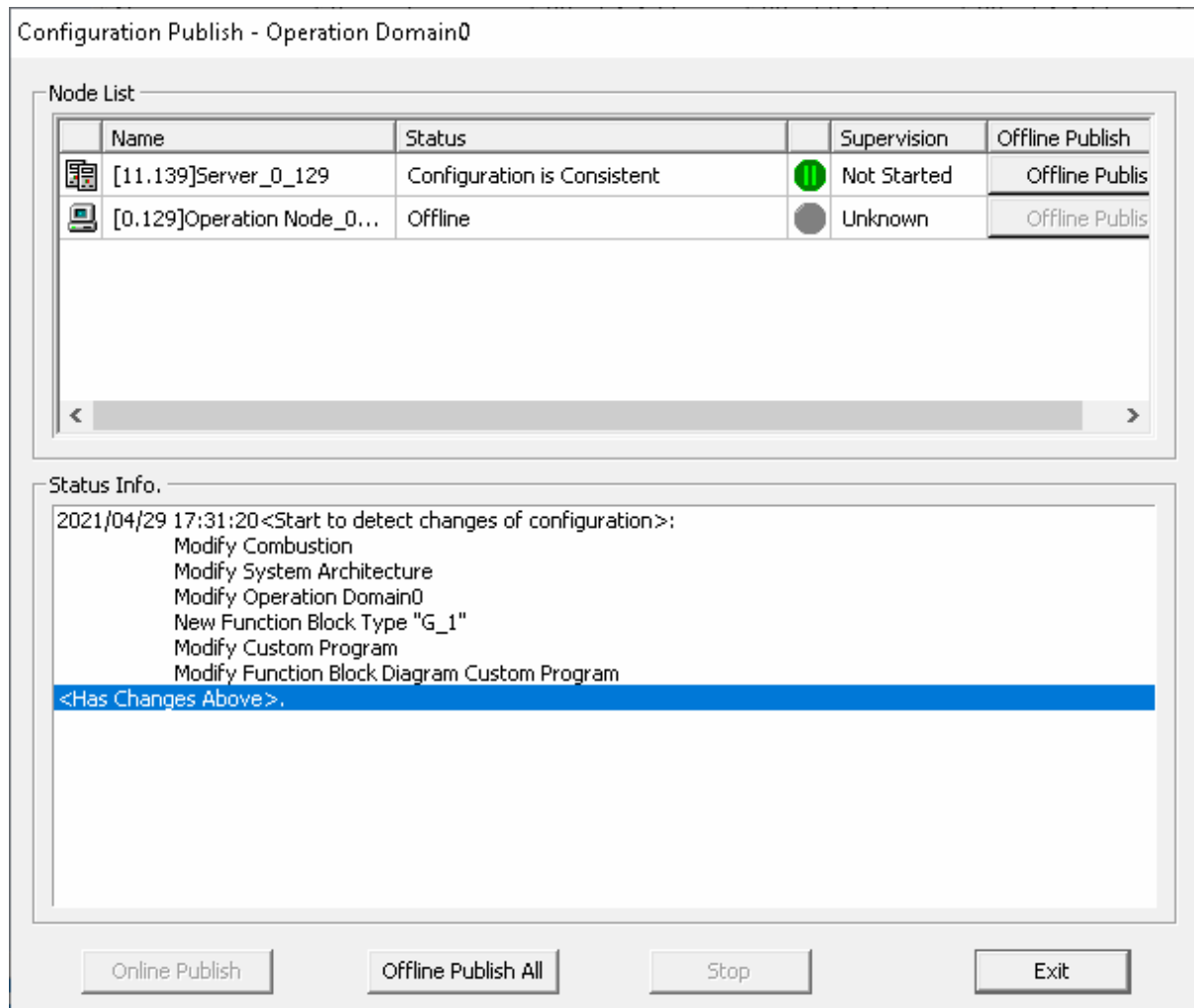
**Tip:**

Only when the logged-in user has the configuration authority of the operating domain, can the configuration release be performed. For the user's operating domain authority configuration, please refer to the *VFSysBuilder User Manual*.

### 7.3.1 Operational Steps

The operation method of configuration public is as follows:

Select a certain operation domain under "HMI", and select "Publish" in the right-click menu of the operation domain, popping up a dialog box of configuration publish shown as follows.



**Figure 7-4 Dialog box "Configuration Publish"**

- Icon's meaning

: Server

: Operation node

- Name








List node address and name of each server and operator station (engineer station).

- Status

Status prompts and corresponding icons displayed during configuration publish.



**Table 7-1 Status prompts and corresponding icon display**

Symbol	Content
	Publishing...
	Stop; starting monitoring; updating configuration; full disk space; busy network; error path configuration of server (server directory configuration of operator station doesn't match with server directory corresponded to current engineer station)
	Inconsistency of configuration, or publish errors
	Start to publish...
	Offline
	Consistent configuration or ready to publish...
	Publish successfully

- Monitor

List the monitor status of each node.

- Offline Publish

It can be applied to any online operation node. Clicking "Offline Publish" of corresponding operator station (engineer station) can only refresh this operator station (engineer station), and all configurations will be refreshed to this operator station (engineer station). Since monitor will be closed before "Publish All", the dialog box that prompts whether to continue will pop up after clicking "Offline Publish". Select "OK" and monitor software will be restarted automatically after refreshing, or select "Cancel" to cancel the publication.

- Online Publish

"Online Publish" button will be available when all modifications can be refreshed online or it is modified in the status of not restarting the monitoring software. Click the button, configuration will be published to online operation nodes that can refresh modified content. After offline publishing, if the modified content is the current monitoring screen, you need to switch the page and then switch back to display the modified content.

- Offline Publish All

It has the same function with "Offline Publish All", which can refresh all operator stations (engineer stations) in the operation domain.

- Stop

Stop the configuration publish. In the publishing process, it is recommended that you try not to terminate the operation. If the termination operation is performed, the next publishing will complete the previous unfinished publishing content.

- Exit

Exit the interface of configuration publish.

---



**Attention:**

- “Offline Publish” is recommended when it is possible; “Publish All” is available only after restarting monitor.
  - If an operation domain references another operation domain, it can share the data (such as tag and graphics) of referenced operation domain only after publishing the referenced operation domain. For example, operation domain 0 of CCR references operation domain OA00254 in project FAR, then operation domain 0 of CCR can share the configuration of OA0025 only after it is published.
  - After the online publish due to configuration modification, the modified part is displayed on the real-time monitor screen only after it appears again. For example, if A alarm exists in the real-time monitor screen, and then users modified the HMI configuration of A alarm and did online publish, only A alarm appears again, can the modification of A alarm would be appeared on the screen.
-

## Section 8 Other Operations

### 8.1 Global Tag Find

Function "Find Global Tag" can find and locate all tags and variables in all control domains and operation domains in current project.

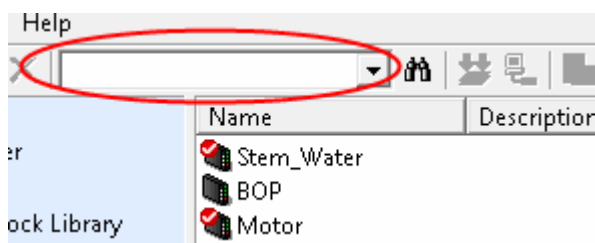
#### 8.1.1 Illustration for Content and Scope

When searching for a global tag, the content and scope of the search are:

- Content: OMC tags.
- Tag name supports " \* " and " ? " Wildcards. " \* " can represent multiple characters, and " ? " represents one character. Wildcards can be used multiple times in a search, such as "A\*1\*", "A?1\*", etc.
- Scope: Including flowcharts (including dynamic data source expressions), flowchart scripts, pop-up flowcharts, background templates, scheduling, point groups, function block alias variables, pop-up alarms, and historical trends.

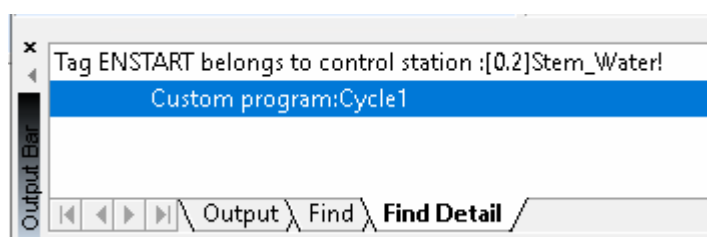
#### 8.1.2 Find Download logs

1. As shown in the figure below, enter the tag name in find bar and click "Find Tag" button to find the current tag entered.



**Figure 8-1 Global tag find**

2. In find detail bar of output window, the specific information of the tag will be displayed.



**Figure 8-2 Output information of global tag find**

### 8.1.3 Illustration of the Results of Find

Detailed information includes which controller the tag belongs to, which custom program it is referenced by and which resource files (graphics, scheduling, etc) it is used in which operation domain, etc. Users can open corresponding software by double-clicking listed information.

- To find the usage of custom program, double-click one of its searched results in output bar:
  - If the custom program has been opened, it will be shown as default size, and the “Find Tag” will be selected.
  - If the program isn’t opened, it will be opened and shown as default size, and the “Find Tag” will be selected.
  - Press F3 to find next tag, select it to view.
- To find the usage of graphics, double-click one of its searched results in output bar:
  - If the graphics has been opened, it will be shown as normal size in current screen and the tag graph object will be selected, and the selected graph object will be shown in edit area.
  - If the graphics isn’t opened, it will be opened and the tag graph object will be selected, and the selected graph object will be shown in edit area.
  - If there are several tags with same name, it locates tag by priorities, from high to low: Datalink> button> text> other.

## 8.2 Refresh

Users can refresh the project without login again. For example, when partial content of project is added or modified by system structure configuration software, or control station or operation domain is locked by other engineers, project information can be refreshed with real-time but without login again.

Select menu command **File/ Refresh** or "Refresh Project" button in the tool bar or use shortcut key of "F5" to refresh the project.

## 8.3 View Configuration and Download Log

High-performanceHMI will save the configuration log and download log automatically.

### 8.3.1 View Configuration Log

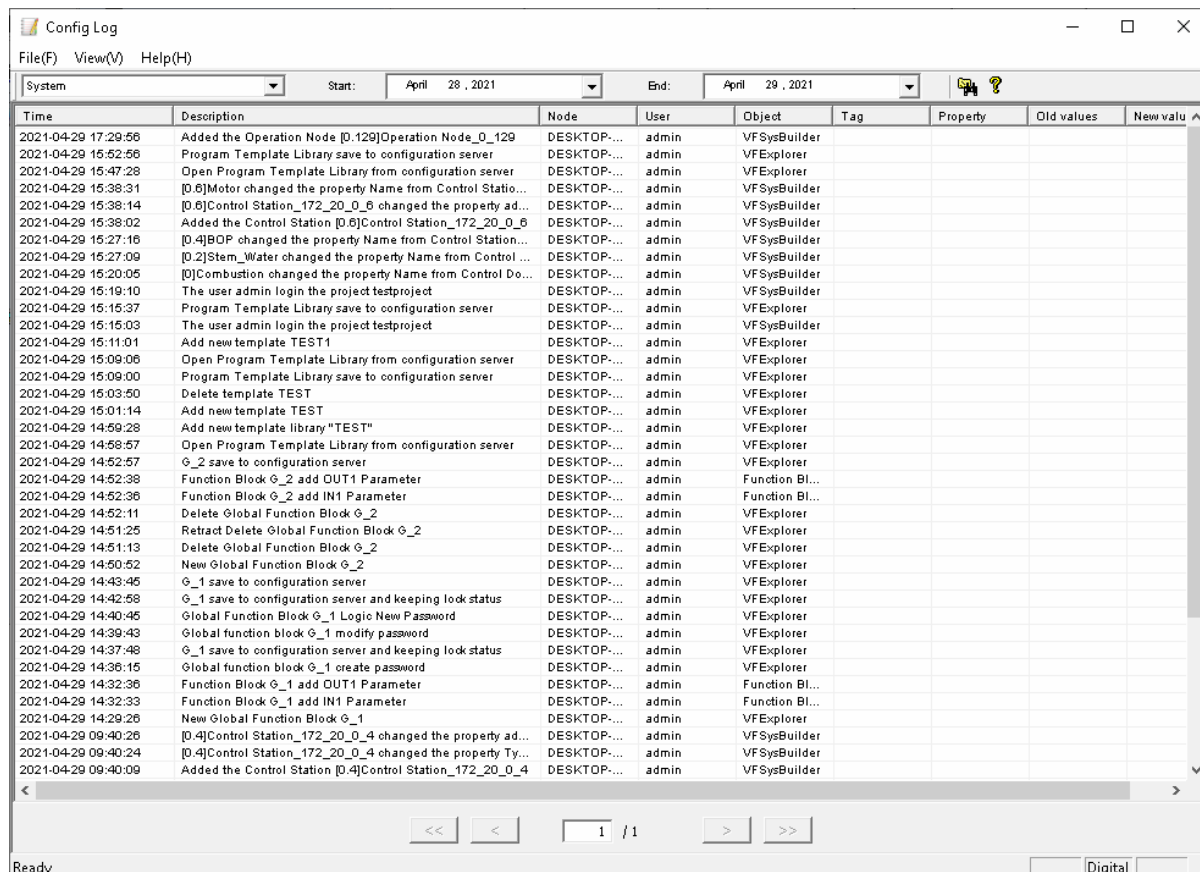
When configuring in the High-performanceHMI software, the configuration log will be saved in the configuration server according to the following specification.

- The maximum of the system configuration logs and general function block logs is 1,000,000.

- The maximum of the control station configuration logs is 1,000,000.

When the logs are over the maximum, the earliest logs will be deleted.

Select “View > Configuration Log” in the menu bar to pop the dialog box shown as figure below.



**Figure 8-3 Configuration Log Example**

Inquire the configuration log by conditions:

- Select System or Control Station in the drop-down list of “Address”.  
Select “System”, and only the system configuration logs will be shown in the table.  
Select Control Station as shown as “Control Station\_172\_20\_0\_2” in above figure, and only the specific control station's logs will be shown in the table.
- Select the “Start Time” and “End Time” to inquire the configuration log in the specific span.

The configuration log can be exported and backed up by following operations:

- While backing up configuration, the configuration log will be backed up at the same time.
- Select the command of “File > Export” to export the configuration log to csv file.
- Back up and offline view configuration logs

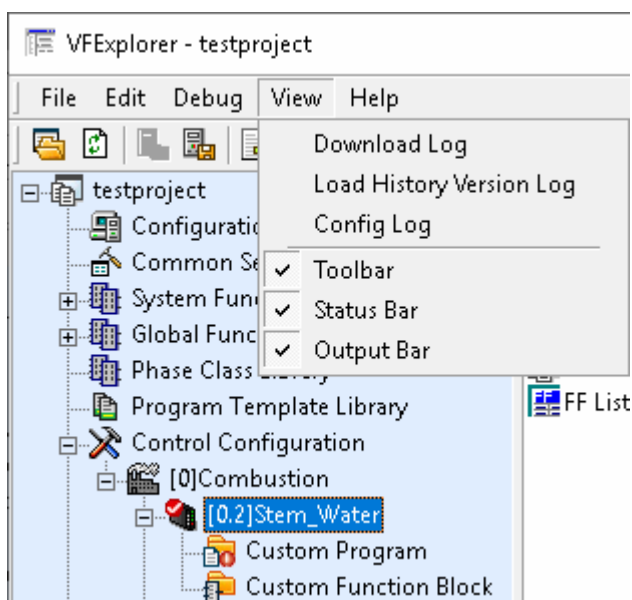
When the number of configuration logs and global function block operation logs stored in the configuration server exceeds a certain limit, the system will delete the earliest

records. To ensure the integrity of the configuration logs, you can manually or automatically back up the configuration logs by selecting "OMC High-performanceHMI Backup Tools > DataBackupTool" from the Start menu. Refer to the *VxBackup User Manual* for backup methods of historical configuration logs.

After completing the backup of historical configuration logs, select "OMC High-performance Backup Tools > Operation Log Browser" from the Start menu. In the dialog box titled "Select data file path of operation records" that appears, choose the project name for which you have backed up historical to view the historical configuration logs.

### 8.3.2 View Download Log

Download log management function is provided by system, making it available for users to access the latest 500 download logs. Select a controller in configuration tree and click menu command **View/ Download Log**.



**Figure 8-4 View download log**

Window of download log is shown in Figure 8-5.

Control Station\_172\_20\_10\_2 - Download Log

ID	Download Start Time	Download End Time	Downloaded ...	Downloaded .. ^
107	2021-04-28 09:23:08	2021-04-28 09:23:23	admin	ES524541
106	2021-04-28 08:54:11	2021-04-28 08:54:26	admin	ES524541
105	2021-04-27 19:30:26	2021-04-27 19:30:40	admin	ES524541
104	2021-04-27 19:21:54	2021-04-27 19:21:59	admin	ES524541
103	2021-04-27 19:15:16	2021-04-27 19:15:31	admin	ES524541
102	2021-04-27 17:23:55	2021-04-27 17:24:10	admin	ES524541
101	2021-04-27 15:49:38	2021-04-27 15:49:53	admin	ES524541
100	2021-04-27 14:46:39	2021-04-27 14:46:54	admin	ES524541
99	2021-04-27 14:33:53	2021-04-27 14:34:08	admin	ES524541
98	2021-04-27 11:21:48	2021-04-27 11:22:03	admin	ES524541
97	2021-04-27 11:02:31	2021-04-27 11:02:46	admin	ES524541
96	2021-04-27 09:23:48	2021-04-27 09:24:03	admin	ES524541
95	2021-04-27 09:05:20	2021-04-27 09:05:24	admin	ES524541
94	2021-04-26 19:49:58	2021-04-26 19:50:12	admin	ES524541
93	2021-04-26 19:33:57	2021-04-26 19:34:01	admin	ES524541
92	2021-04-26 19:32:44	2021-04-26 19:32:58	admin	ES524541
91	2021-04-26 17:02:25	2021-04-26 17:02:29	admin	ES524541
90	2021-04-26 16:57:58	2021-04-26 16:58:02	admin	ES524541
89	2021-04-26 16:31:31	2021-04-26 16:31:36	admin	ES524541
88	2021-04-26 16:26:27	2021-04-26 16:26:32	admin	ES524541
87	2021-04-26 16:19:45	2021-04-26 16:19:50	admin	ES524541
86	2021-04-26 16:10:08	2021-04-26 16:10:18	admin	ES524541
85	2021-04-26 15:38:56	2021-04-26 15:39:12	admin	ES524541
84	2021-04-26 15:33:47	2021-04-26 15:34:01	admin	ES524541
83	2021-04-26 15:20:01	2021-04-26 15:20:16	admin	ES524541
82	2021-04-26 15:11:11	2021-04-26 15:11:24	admin	ES524541
81	2021-04-26 15:09:35	2021-04-26 15:09:41	admin	ES524541
80	2021-04-26 14:56:31	2021-04-26 14:56:43	admin	ES524541
79	2021-04-26 14:17:13	2021-04-26 14:17:26	admin	ES524541
78	2021-04-26 13:36:00	2021-04-26 13:36:15	admin	ES524541
77	2021-04-26 11:25:03	2021-04-26 11:25:15	admin	ES524541
76	2021-04-26 09:37:05	2021-04-26 09:37:17	admin	ES524541

< >

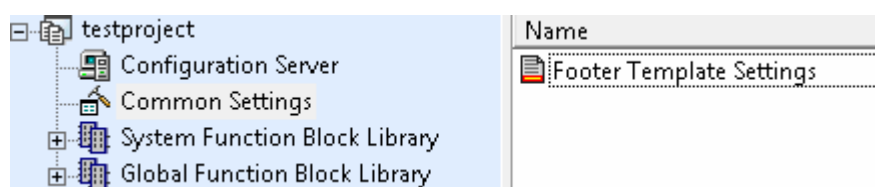
Details Close

**Figure 8-5 Window “Download log”**

Double-click any piece of information (or click “Details” after selecting) to pop up specific download information of the log.

## 8.4 Common Settings

Footer template settings can set all footers of print page (such as custom program). Select “Common Settings” in work area and double-click “Footer Template Settings” in the list area of configuration property to set footers.



**Figure 8-6 Footer template settings**

The window of Footer setting as shown below to set information of print paper pops up.

The 'Footer Settings' dialog box contains a table for setting footer information. The table has columns for 'DESIGNED', 'CHECKED', 'REVIEWED', 'DATE', 'SCALE:~', 'CONT.NO.:', 'VERS.NO.:V1.0', 'REV.:0', 'DISPLINE:Auto', 'STAGE: Detail', 'DWG.NO.:', and 'SHEET: OF:'. The 'OK' and 'Cancel' buttons are on the right.

Footer Settings											
DESIGNED											
CHECKED											
REVIEWED											
DATE		SCALE:~	CONT.NO.:	VERS.NO.:V1.0	REV.:0						
DISPLINE:Auto		STAGE: Detail	DWG.NO.:	SHEET: OF:							

**Figure 8-7 Window "Footer setting"**



**Attention:**

Global footer settings is only effective at local, which can neither be uploaded to server nor checked out from server. It is only applicable to local custom programs (effective to new program after setting). Single program can also be set footers in function block diagram programming software and ladder diagram programming software.



## 8.5 Notes

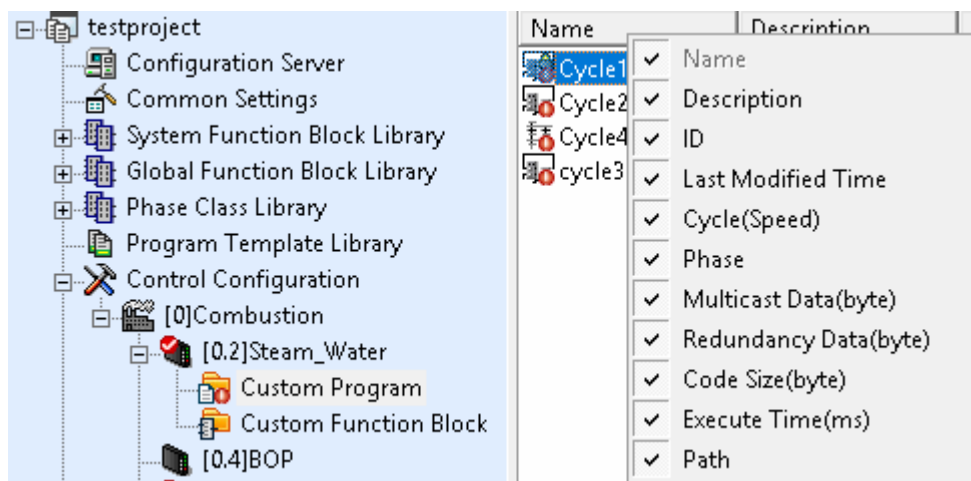
- Project directories of local and configuration server are not allowed to be copied or manually modified during the configuration process.
- To modify the directory of configuration database, refer to *High-performanceHMI Initialization Guide*.



### Attention:

**Configuration database directory should be the IP address of SOnet. If it fails to connect with configuration server, retry after checking the network.**

- The lock of controller is judged by operation node, i.e., for controllers locked on certain engineer station, users can configure these controllers on the engineer station as long as they own the configuration authority of these controllers.
- Please save it to server in time after configuration download, so that the consistency and update of each operation node configuration can be guaranteed when operating “Configuration Publish”.
- Please check whether the software key with sufficient authority is plugged in the computer when some functions such as simulation, online download, offline download is found to be unavailable.
- After selecting the node, users can right-click listed title to select the parameters that are needed to view. For example, select “Custom Program” and right click the list title “Name”, as shown in Figure 8-8.



**Figure 8-8 View Options**

- Before complete compilation or download in control station, it will be checked whether tags and variables are assigned repeatedly. And the check range includes the tags and parameters in VFFBDBuilder VFLDBuilder and the alias tags in custom program (including global function block).

## Section 9 Revision

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*Table 9-1 Retrofit list of the version*

Document Version	Applicable model	Remarks
V1.0 (20230301)	OMC High-performanceHMI V4.70.00.00	First release
V1.1 (20230830)	OMC High-performanceHMI V5.10.00.00-M	Updated screenshots. Added: <ul style="list-style-type: none"><li>● Batch import/export parameters of station program</li><li>● Instruction of selecting download item before downloading configuration</li><li>● User Service configuration</li><li>● Cross-system communication</li></ul>