DIAScreen
Software User Manual

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Related Documents

Document Name	Document ID
DIAInstaller User Manual	DIAS-Manual-0005-EN
DIADesigner Manual	DIAS-Manual-0003-EN

Revision History

Version	Issue Date	Revision
1.0	2020/12/08	The first version was published.
1.1.0	2021/09/30	Added Chapter 2 ~ Chapter 30: Added description of DOP series/AX series/IMP series/DXMC series.
1.1.1	2021/12/30	1. Updated Section 2.2.2.1: Update the description of Clipboard. 2. Updated Section 2.2.2.7: Update Select All instructions. 3. Updated Section 24.3: Update the description of macro instructions. 4. Updated Section 28.6: Add descriptions of new functions of the Text Bank. 5. Added Section 29.2.3: Added OPC UA variable setting function.
1.1.2	2022/09/30	1. Updated the overall manual structure in response to software UI adjustments. 2. Update Section 2.1.1: Added description of DIAScreen startup screen. 3. Added Section 2.1.1.1: Added Update Manager.
1.3.0	2022/12/22	Standalone TP series user manual.
1.3.1 1.3.2	2023/07/28	1. Added Custom Confirmation window section. 2. Updated Enhanced Recipe section. 3. Added Font Template section. 4. Added Installment section. 5. Added DIADeigner-AX Tag Automatic Synchronization section. 6. Added User Login Screen section.
1.4.0	2023/12/19	1. Updated Address Setting section. 2. Updated Alarm Setting section. 3. Added Copy Multi-Language Font section. 4. Updated Create Screen Data File section. 5. Updated MODBUS TCP / COM Mapping Table section. 6. Updated MQTT Settings section and added Retain Message and Will Message Function sections. 7. Added Retain Permissions and Password Table Settings after Screen Download section.
1.5.0	2024/10/17	1. Updated Report List section.

Version	Issue Date	Revision
		2. Updated Data Display section. 3. Updated IIoT section. 4. Updated OPC UA section. 5. Added EIP Exchange Table section. 6. Updated MQTT Settings section. 7. Updated Install and Uninstallation section.
1.5.2	2025/02/11	1. Updated Communication section and renamed it to Device Communication. 2. Updated History Buffer section. 3. Updated Sampling section. 4. Updated Setting Up History Buffer Example section. 5. Added File Brower and Picture Viewer sections. 6. Updated OPC UA section. 7. Update MQTT Settings section.
1.6.0	2025/06/06	1. Revised and restricted sections due to software UI updates. 2. Updated Supported Devices section. 3. Updated MQTT Settings section and supported Azure IoT Hub and Aliyun server functions. 4. Added Circular Trend Properties section. 5. Updated Alarm Moving Sign Properties section. 6. Updated Report List function. 7. Updated Configuration section. 8. Added Sample Project section. 9. Updated the instructions for address setting. 10. Updated DOP-300 Series HMI Special Features section.

Table of Contents

DIAScreen Overview

The DIAScreen application is an intuitive visualization software, which can configure the Delta DOP series, TP series, and AX series controller soft-HMIs.

DIAScreen Features

DIAScreen has the following features:

- Tag sharing with the variables of DIADesigner and DIADesigner-AX
- Convenient User Interface, and rich 3D image library
- Smoother display for Meter and other elements
- Enhanced software download speed
- Clear output results
- Various control elements and functions, such as Recipe and Macros
- Support multi-language, such as English, Traditional Chinese and Simplified Chinese
- Provide passwords and permission levels to enhanced security.

Supported Devices

DIAScreen version 1.6.0 supports the following devices.

Type	Product Series
Controller soft-HMI	AX series
Touch type high color HMI	DOP-100 series
IoT type high color HMI	DOP-300 series
Handheld high color HMI	DOP-H Series (Handheld)
Motion Controller	DXMC series
Motion Control development platform	IMP series
Text Panel (TP) HMI	TP series

Note:

- Support AX / IMP series soft-HMI planning functions. Refer to AX series products manual and IMP manual for detail.

- Support DOP-100, DOP-300 and DOP-H series soft-HMI planning functions. Refer to HMI product manual for detail.
- Support DXMC series HMI planning functions. Refer to DXMC-P product manual.
- Supports TP series HMI planning functions. Refer to TP series operation manual.
- To avoid network attacks, the HMI must be connected and run within a firewall to slave devices or upper systems.
- If the environmental equipment uses flow control, it will affect the human-machine operating performance.

Installation

This section introduces how to download, install and uninstall DIAScreen in DIAInstaller.

System Requirements

To install and run DIAScreen, your computer should meet the following minimum hardware and software requirements.

Item	System Requirements
Operating System	Windows 10/11 (32-bit and 64-bit)
CPU	Intel Core i5 M520 2.4 GHz (min.)
Memory	Recommend to use 4 GB or above
Hard Disk Drive	15 GB free for DIAScreen
Monitor	Resolution: 1024 x 768 Pixels, 1920 x 1080 Pixels
Keyboard/Mouse	General keyboard mouse or Windows-compatible device
Printer	Printer that can be driven by Windows system (if you need to print project content)
PC Interface	Ethernet, USB, Serial port (depends on product interface)
Software	Need to install Microsoft .Net Framework 4.6.2 Need to install WinPcap V4.1.3* Need to install NDIS V5.0

***Note**: The upload and download function of the DOP-300 series HMI can transmit data through ZeroIP (zero address network) without network configuration and IP addresses. You must install and use the WinPcap package to realize this ZeroIP technology.

WinPcap download link: winpcap.org/install/bin/WinPcap_4_1_3.exe

Install DIAScreen

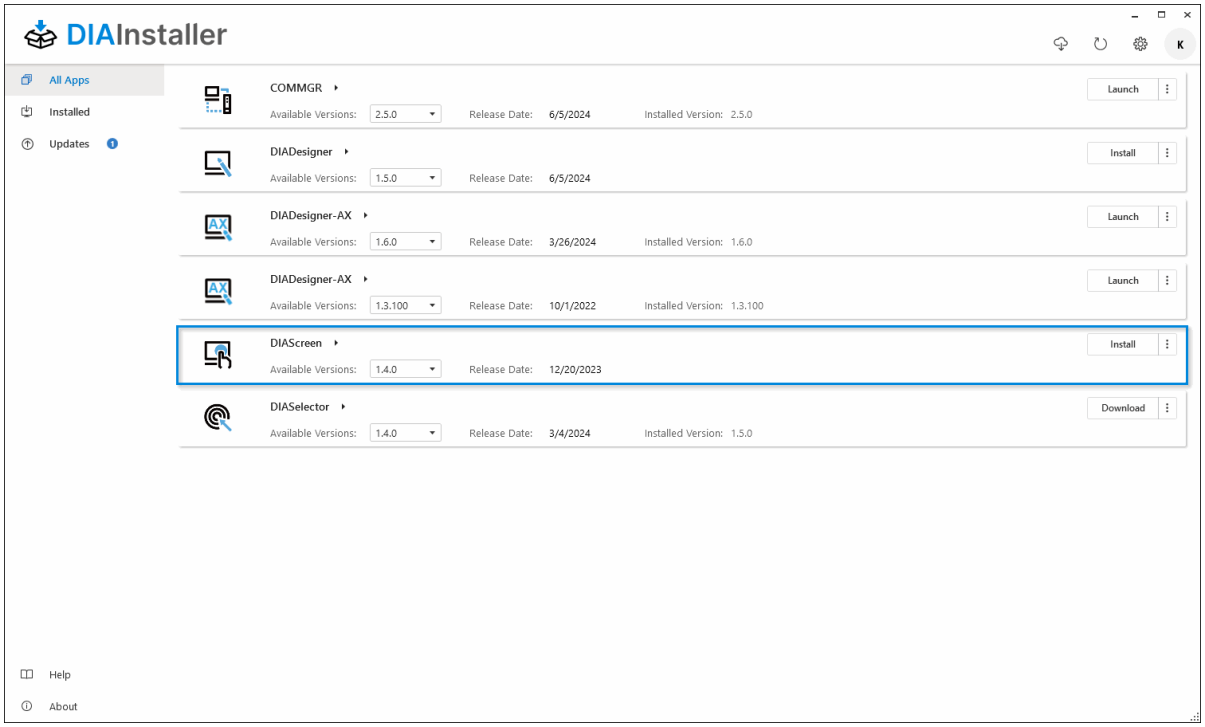
DIAInstaller is used to easily download, install, uninstall, and update all DIAStudio software. You can download DIAInstaller from diastudio.deltaww.com. For more information about DIAInstaller, see *DIAInstaller Download and Installation Manual*.

Prerequisites

- DIAInstaller is installed.

To install DIAScreen

1. Open DIAInstaller.
2. Click  at the upper-right corner to sign in.
3. Go to **All Apps** and find DIAScreen.
4. In **Available Versions**, select a version.
5. Click  and then select **Install**.
6. Select components to install. You can select the full components or customize the components to install.
7. In the **DIAScreen** dialog, follow the on-screen instructions to complete the installation.
8. Open DIAScreen and update the firmware version. For the firmware update method, see Update Manager.



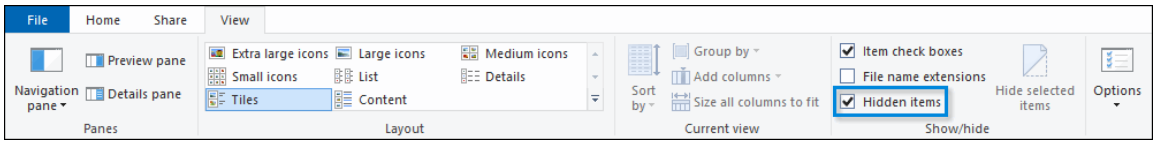
Uninstall DIAScreen

Use the following steps to uninstall DIAScreen in DIAInstaller.

Prerequisites

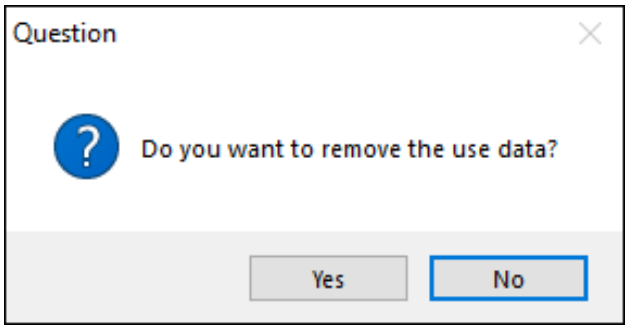
- Back up the picture bank or component library created by users.
  - Picture bank file path: `C:\ProgramData\Delta Industrial Automation\HMI\Common\Pic`
  - Element bank file path: `C:\ProgramData\Delta Industrial Automation\HMI\DIAScreen 1.4\ScrEditApp\Library`

  Note: In the folder, click **View** and select the **Hidden Items** checkbox to view the ProgramData folder.



To uninstall DIAScreen

1. In DIAInstaller, go to **Installed**, and select **Uninstall**.
2. Follow the on-screen instructions to uninstall.
3. A message dialog appears, asking whether to delete the user configuration. Click **No** to keep the user configuration.



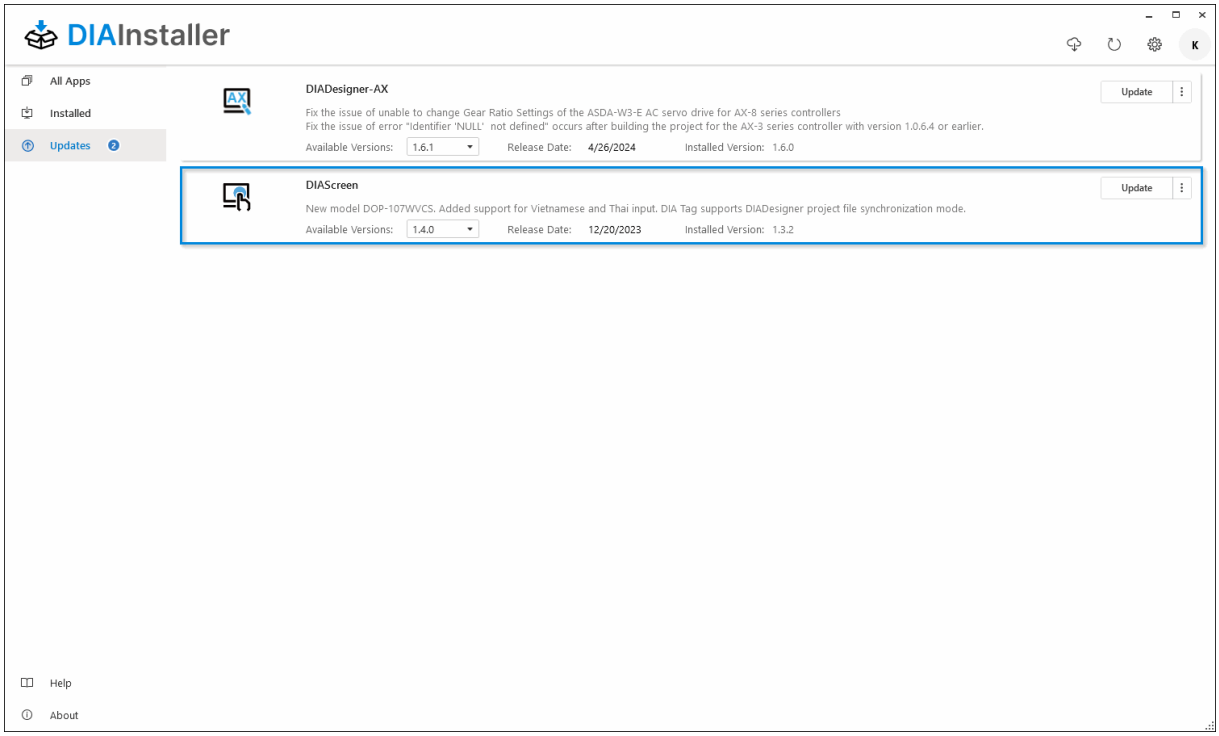
4. After uninstalling and reinstalling DIAScreen, overwrite the picture bank or element bank file to be restored to the above file path.

Update DIAScreen

Use the following steps to update DIAScreen.

To update DIAScreen

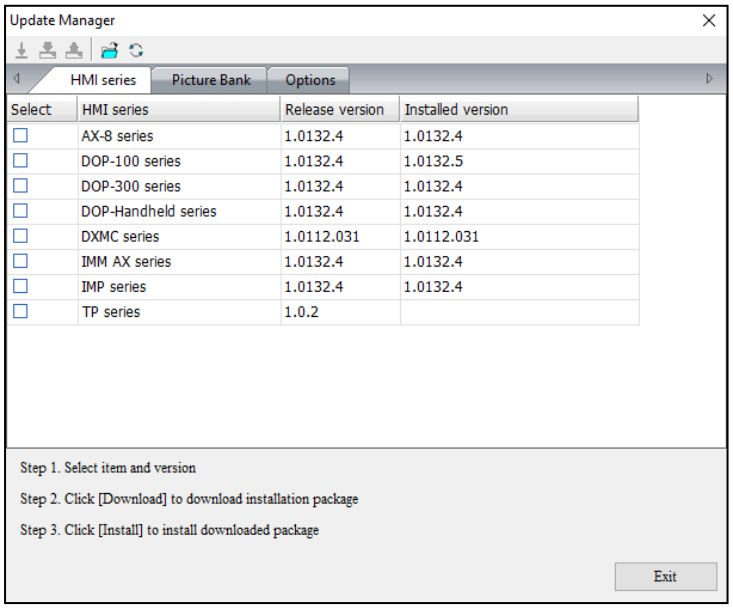
1. In DIAInstaller, go to **Updates**.
2. Find DIAScreen.
3. In **Available Versions**, select a version.
4. Do one of the following:
   - Select **Update** and then follow the on-screen instructions to complete the update.
   - Click ⋮ and select **Download** to download the installation file to the local path, and then select **Show in folder** to find the .exe file to install.



Update Manager

DIAScreen only has built-in firmware files for DOP-100 Series models, and you can **download, install, and update the firmware for each series through Update Manager to edit the HMI screen of other models.**

The following table lists the functions in the **Update Manager** dialog and their descriptions.



Function	Description
	Click to download the firmware or picture bank installation package.
	Click to Install the downloaded firmware or picture bank installation package.
	Click to uninstall the installed firmware or picture bank.
	Click to open the downloads folder.
	Click to check for updates.

Use the following steps to download and install the HMI firmware.

To download and install the HMI firmware

1. On the home page of DIAScreen, click **Update Manager**.
2. In the **Update Manager** dialog, select the desired HMI firmware installation package, and then click  .

   Once the download is complete, a message dialog appears, asking whether to install the installation package. Do one of the following:

   - Click **Yes** to install automatically.
   - Click **No** to install manually, and then click  .

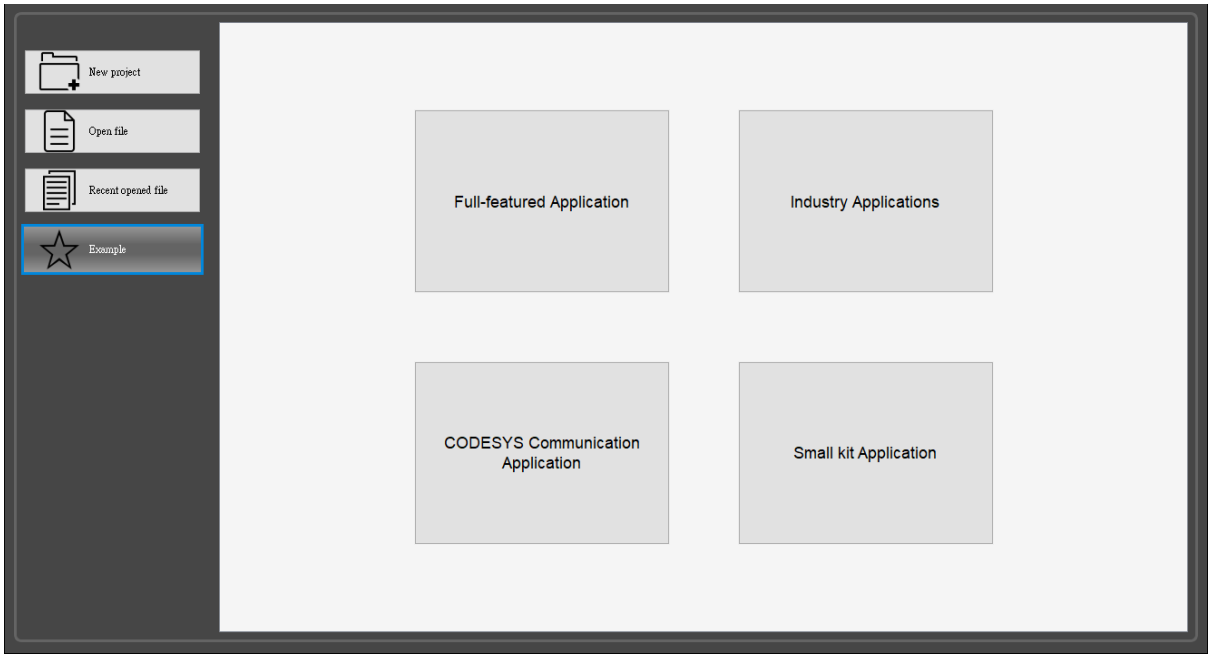
   After the installation is complete, you can view the installed firmware version in **Installed version**.

Getting Started with DIAScreen

Sample Project

To help users quickly set up projects, DIAScreen provides the following four sample projects:

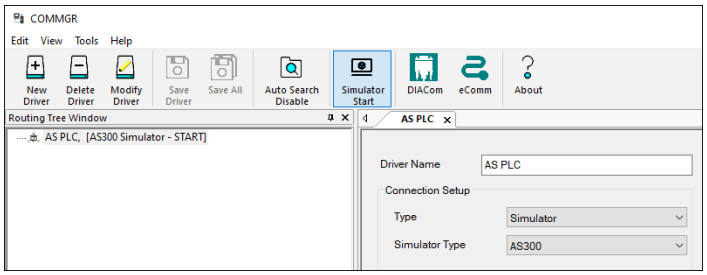
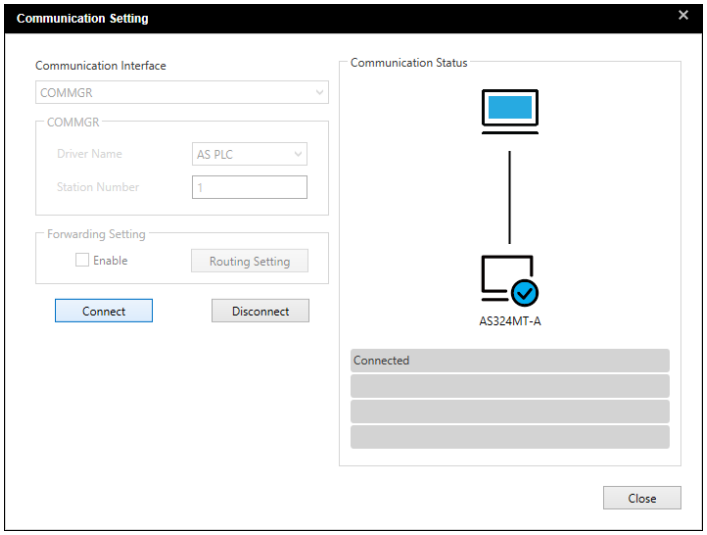
- Full-featured Application
- Industry Applications
- CODESYS Communication Application
- Small kit Application

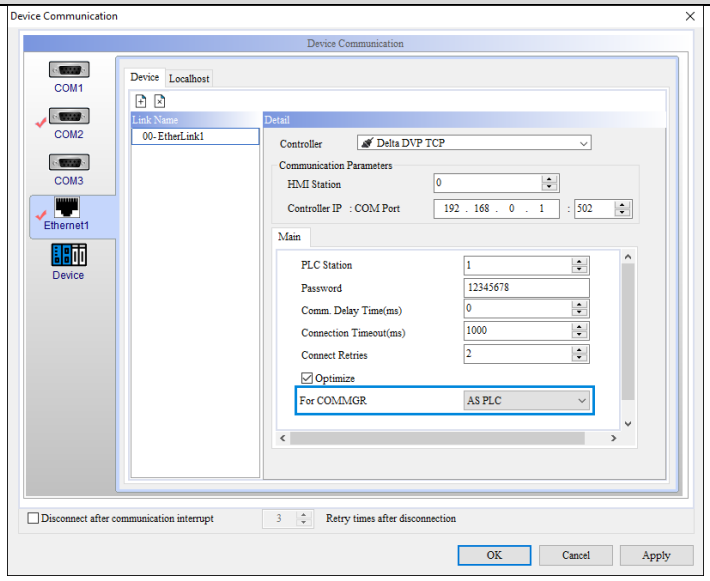


The following table lists the functions demonstrated by each project and how they operate.

- **Full-featured Application**

Project	Description
Alarm Function	Configure **discrete alarms**, trigger alarms through value changes or button clicks on the screen, and display alarm information on the alarm element.
Full_Element_Demo	Configure various elements on the screen, and apply different styles. After loading the project into the HMI, switch between different pages to view the operating effects of each element.

Project	Description
Temperature_Control_ Demo	DOP series HMI connects AS controller to perform temperature control operations. Follow these steps to connect to the simulator. 1. Open sample project in DIAScreen. 2. Open the controller project in DIADesigner. Project Path: `C:\ProgramData\Delta Industrial Automation\HMI\DIAScreen (version) \ScrEditApp\Example\1\ Example3_ Temperature_Control_Demo\Temperature_Control_Demo.diade` 3. Create an AS300 simulator in COMMGR and start it.  4. In DIADesigner, select **AS PLC** Simulator in **Communication Setting**, and click **Connect**.  5. Perform **Project Download** and then perform **Online**. 6. Open the sample project in DIAScreen and go to **General** > **Device Communication**. In **Ethernet1** page of the **Device Communication** dialog, select **AS PLC** in **For COMMGR**.

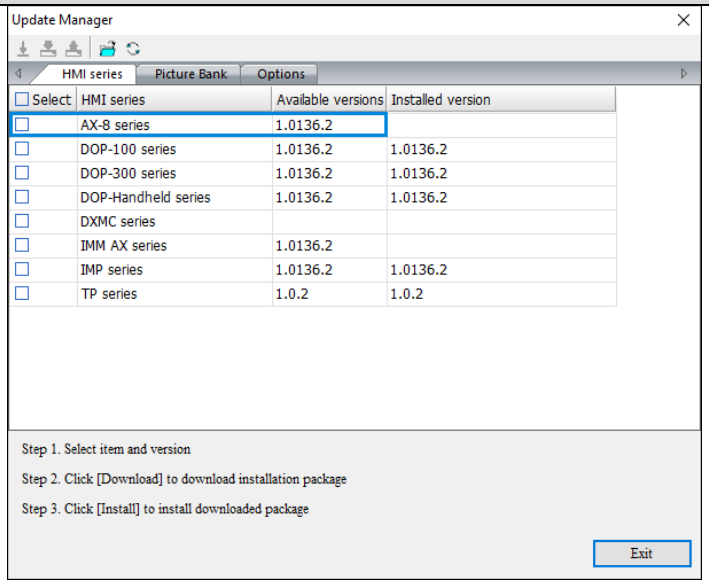
Project	Description
	 7. Perform **Off-line Simulation** in DIAScreen. 8. Perform temperature control operations through HMI simulator.
History Function	Presents historical data of various data types through the **Historical Trend Graph** element, and different styles of historical trend graphs are also configured to facilitate quick understanding of the functions provided by the history buffer.

- **Industry Applications**

Project	Description
Labeling machine	Demonstrates the operating interface used for HMI monitoring equipment status in different industries. You can refer to the page configuration, copy the screen and apply it to their own designed projects.
Extrusion rubber plate machine	
Electrical industry	

- **CODESYS Communication Application**

Project	Description
CODESYS_Data_ Exchange	Demonstrates data exchange between AX-8's Soft-HMI and CODESYS controller. Follow these steps to configure the project. 1. Use **Update Manager** to download and install AX-8 series package in DIAScreen.

Project	Description
	 2. Open sample project in DIAScreen and then download the project directly to the AX-8 device. 3. Open the controller project in DIADesigner-AX, and then download the controller project to the AX-8 device. Project Path: `C:\ProgramData\Delta Industrial Automation\HMI\DIAScreen (version)\ScrEditApp\Example\3 \Example1_CODESYS_Data_Exchange_Demo \CODESYS_Data_Exchange_Demo.project` 4. Open HMIManager on the AX-8 device to monitor the CODESYS controller through the HMI.

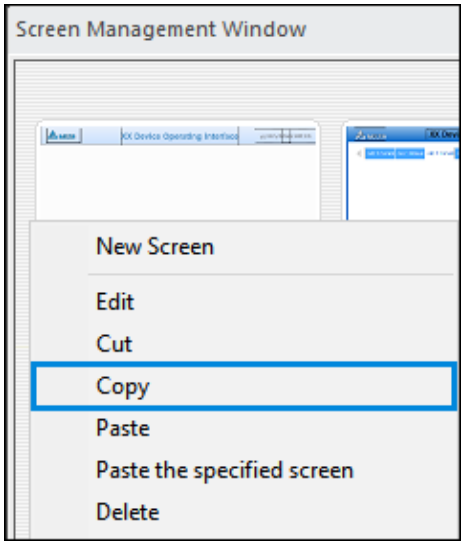
- **Small kit Application**

  This category of projects provides a variety of template styles. You can directly copy the template screens into the development project to achieve rapid project configuration.

  Follow these steps to copy a template.

  To copy a template

  1. Open the sample project. Select the screen in **Screen Management Window** pane. Right-click the selected screen, and select **Copy** (or use the shortcut key Ctrl + C).



2. Open another DIAScreen project and paste the screen directly in **Screen Management Window** pane (or use the shortcut key Ctrl + V) to configure the template screen in the development project.

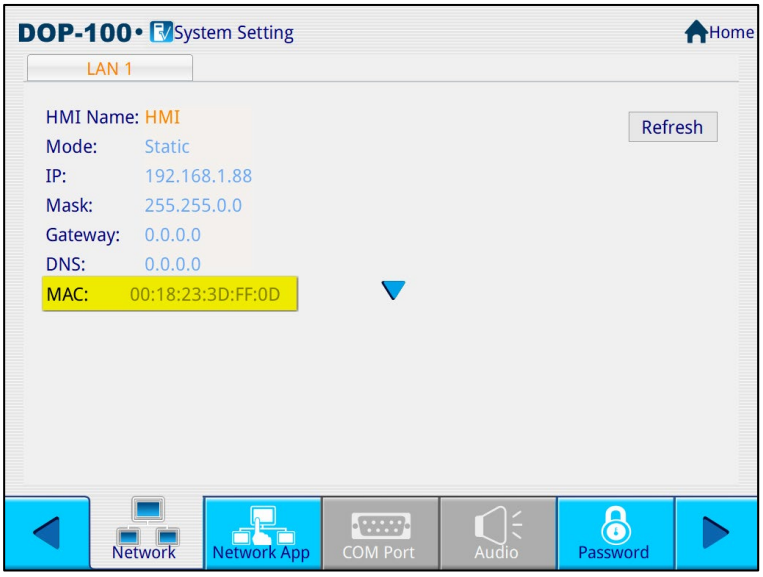
Project	Description
StartUp	This project provides a variety of **Startup interface** template styles.
Template	This project provides a variety of **Operating Interface** template styles.

Create Screen Data File

Create Screen Data File / Create Auto Update Data File

After storing the files compiled by the project in an external storage device (USB or SD card) and insert it into the HMI, you can update the HMI screen through **Screen Data file** and **Auto Update Data File**.

The following table lists the settings in the **Setting** dialog and their descriptions.

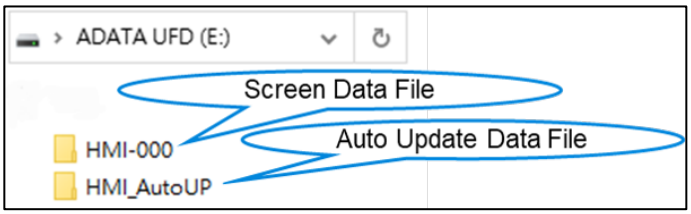
Setting	Description
Enable Protection	Enable password protection. When updating the screen on the HMI, you need to enter this copy password.
Output Folder	Select the folder path to save the download screen executable file.
MAC Settings	Enter the MAC of the HMI to update screen data. In the **Configuration** dialog, click  and enter the MAC code of the HMI to be bound, the file can only perform screen updates on the specified HMI; if the MAC code is not set, the HMI model is not restricted. **Note**: You can obtain the MAC code from **System Menu** > **System Setting** > **Network** on the HMI. 

Follow the steps to create the screen data file and auto update data file.

DIASceen Operation

1. In the main menu, click **Create Screen Data File** > **Create Screen Data File** / **Create Auto Update Data File**.
2. In the **Setting** dialog, make the related settings, and then click **OK**.

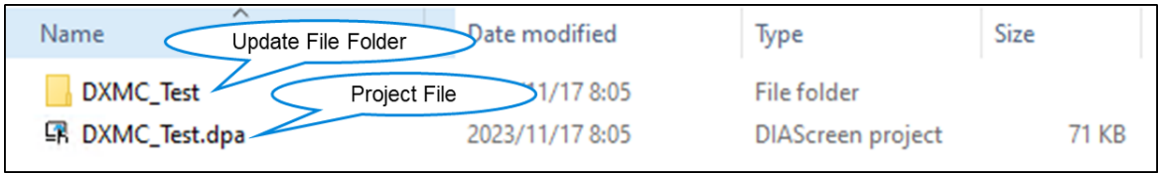
   The Screen Data File / Auto Update File are generated.



Note:

- If there are multiple data files in the HMI-000 folder, the software will number them sequentially from 000, for example, 000, 001, 002 and so on.
- After executing Create Auto Update Data File, the HMI only recognizes the folder name HMI_AutoUP. If you repeatedly execute this function, the contents of this folder will be overwritten.

If the project model is the DXMC series, after creating the project and setting the storage path and compiling, the software will automatically create a folder with the same name as the project under the project path and store the current screen data update file in the folder. You can directly import this update file into **DXMC Model Software-DMARS (DELTA Motion And Robot Software)** to update HMI screen.



HMI Operation

- **Create Screen Data File**

  After inserting the storage device into the HMI, go to **System Setting** > **File Manager** > **File Copy** on the HMI, and copy the screen data file in the storage device to the HMI.

- **Create Auto Update Data File**

  1. Inserting the external storage device into the HMI.

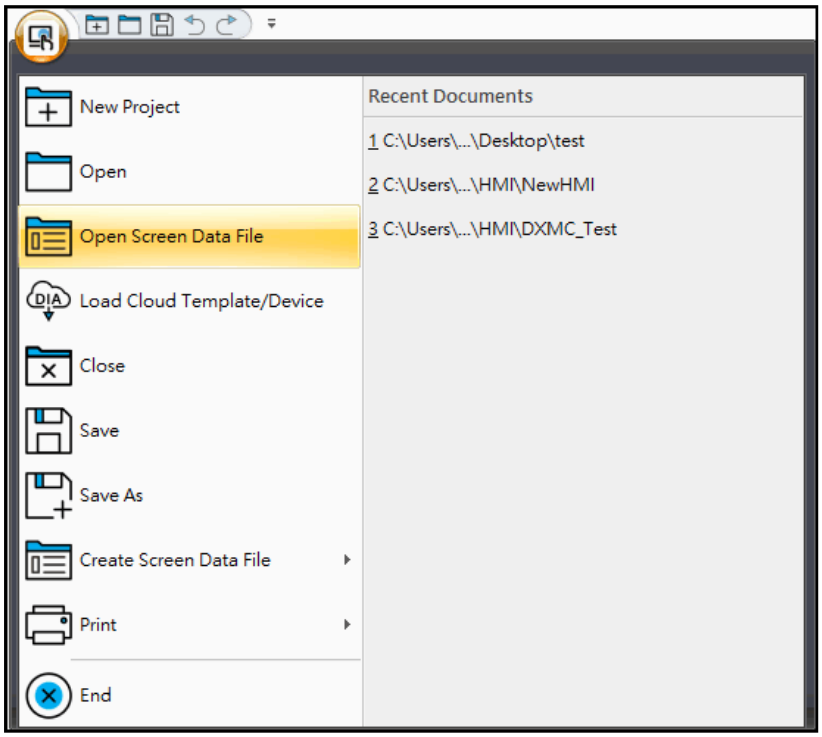
     When the HMI detects an external storage device with an auto update file (HMI_AutoUP), a message displays and ask you whether to execute the auto update.

  2. Click **Yes**, the firmware and screen will be updated automatically.

     Note: If the folder HMI_AutoUP is stored in both USB and SD card, when updating the firmware and screen files, the HMI will first update the USB.

Open Screen Data File

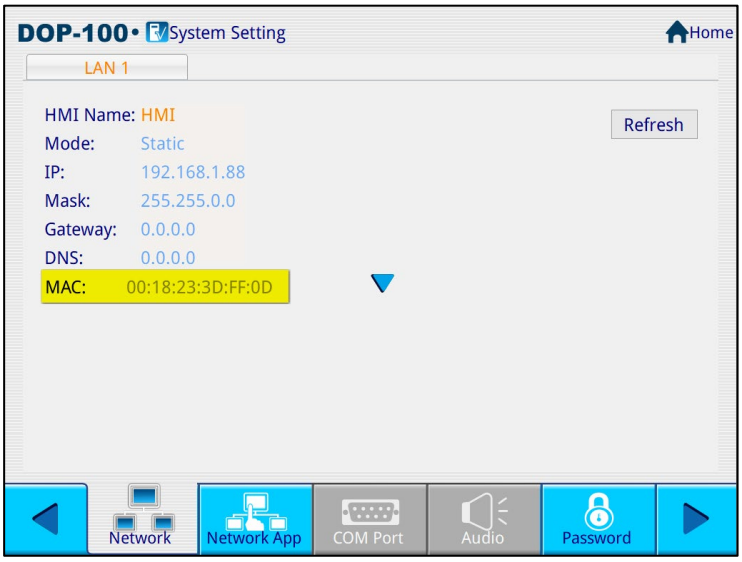
The generated **Screen Data File** / **Auto Update File** can also be edited in the software by **Open Screen Data File** function.



Create Download Screen Executable

You can update the HMI screen or firmware to the HMI through **Screen Download Executable File** without installing the DIAScreen software.

The following table lists the settings in the **Create Download Screen Exe. File** dialog and their descriptions.

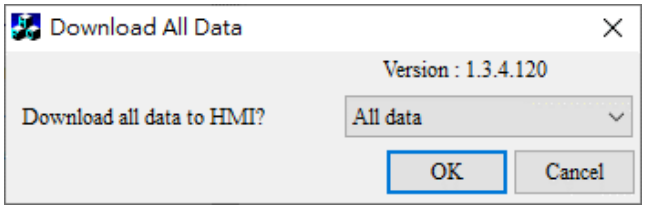
Settings	Description
Executable file name	Set the name of the generated executable file.
Output folder	Select the folder path to save the download screen executable.
MAC settings	Enter the MAC of the HMI to update screen data. In the **Configuration** dialog, click  and enter the MAC code of the HMI to be bound, the file can only perform screen download on the specified HMI; if the MAC code is not set, the HMI model is not restricted. **Note**: You can obtain the MAC code from **System Menu** > **System Setting** > **Network** on the HMI. 

Follow the steps to create download screen executable.

To create download screen executable

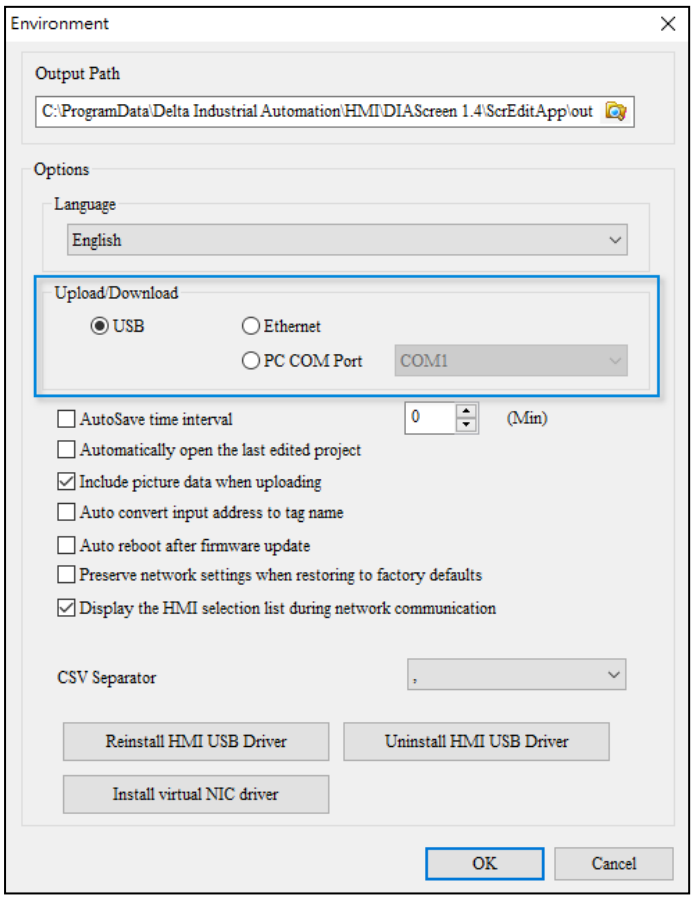
1. In the main menu, click **Create Screen Data File** > **Create Download Screen Executable**.
2. In the **Create Download Screen Exe. File** dialog, make the related settings.

3. In the output folder, execute the executable file (the default file name is DownloadScreen.exe).
4. In the pup-up dialog, do one of the following:



- Selecting **All data** will automatically check the HMI firmware version. If the version matches the version that can be executed by the executable, the firmware update will be executed and the screen data will be downloaded to the HMI.
- Selecting **Only upgrade firmware** will update the HMI firmware update directly.

Note: Before executing **Create Download Screen Executable**, set the HMI screen upload / download mode first. Go to **General** > **Environment** on the toolbar to set.



Create Screen Auto Execution File

You can execute auto operation of the HMI screen on the computer through **Screen Auto Executable** without installing the DIAScreen software.

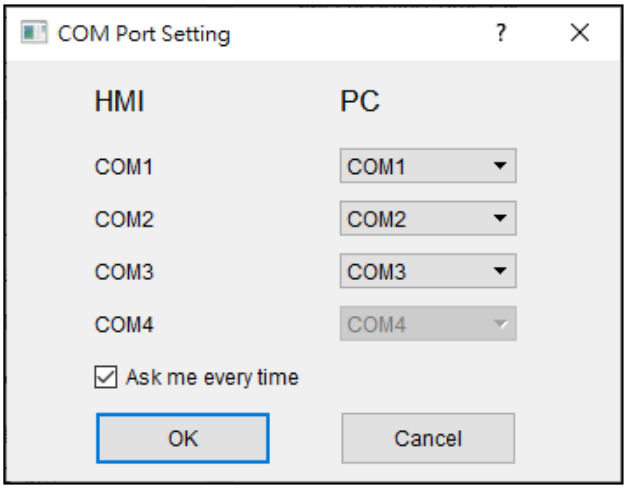
The following table lists the settings in the **Create screen executable file** dialog and their descriptions.

Settings	Description
Executable file name	Set the name of the generated executable file.
Output folder	Select the folder path to save the download screen executable.

Follow the steps to create screen auto executable.

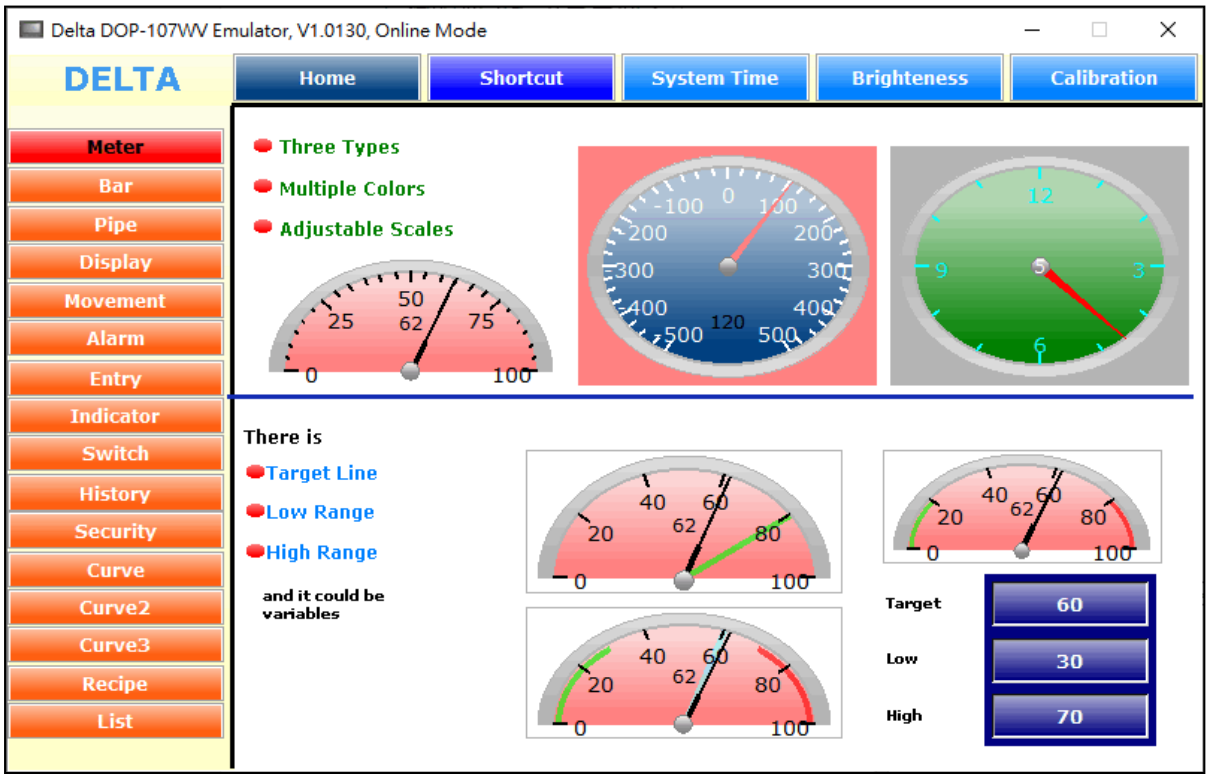
To create screen auto executable

1. In the main menu, click **Create Screen Data File** > **Create Screen Auto Execution File**.
2. In the **Create screen executable file** dialog, make the related settings.
3. In the output folder, execute the executable file (the default file name is HMIEmulator.exe).
4. In the **COM Port Setting** dialog, set the communication port of the executable file.



Note: If communicating via network, you can ignore this dialog. Click **Cancel** to communicate with the IP set in the project.

The execution screen is as follows.



Duplicate

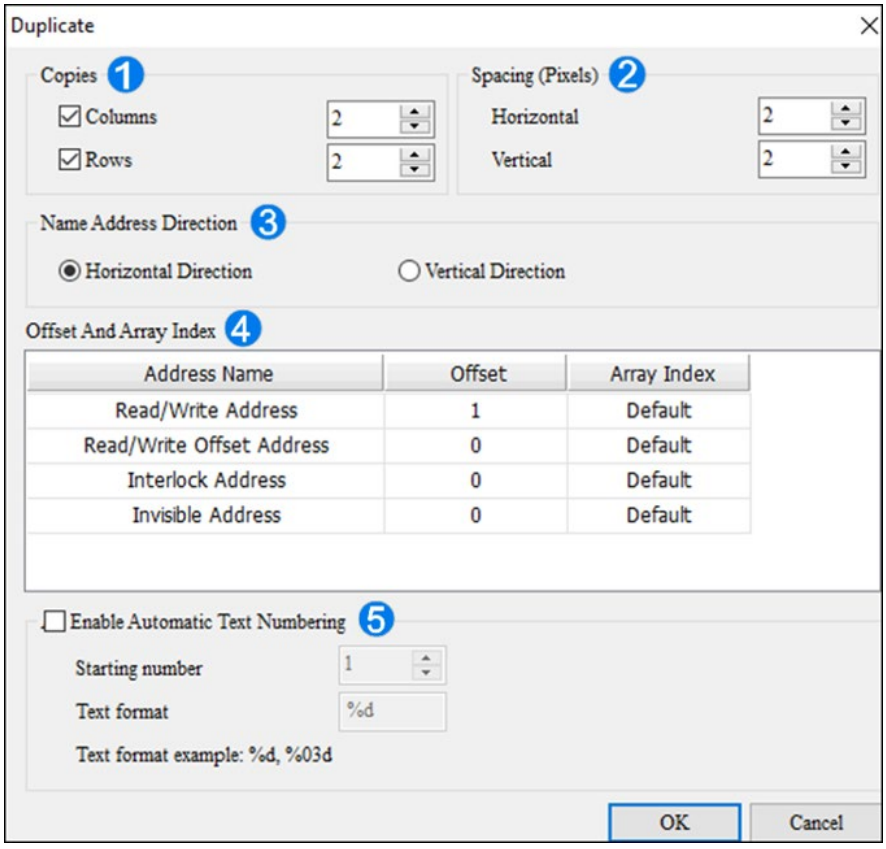
The duplicate feature allows you to perform duplication of an element, and then automatically increments or decrements the address according to your needs.

To duplicate

Do one of the following methods to perform duplication of an element:

- Right-click on the element and select **Duplicate**.
- Select the element and click **General** > **Duplicate** in the menu bar.

The following table lists the settings in the **Duplicate** dialog and their descriptions.



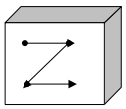
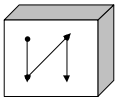
1 Copies

Setting	Description
Columns	Select or enter the number of horizontal (X) and vertical (Y) to get the total number of X*Y elements. You can also select / unselect the checkbox to single-select columns or rows according to your needs.
Rows	

② Spacing (Pixels)

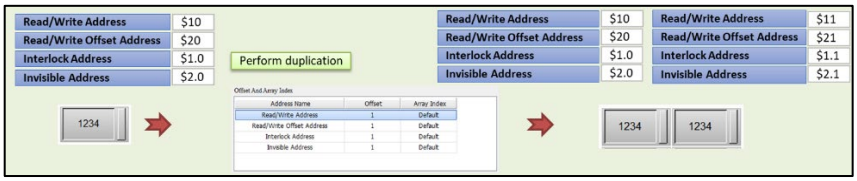
Setting	Description
Horizontal	Select or enter the spacing between each element. Once the duplication is complete, spacing generates automatically according to the settings.
Vertical	

③ Name Address Direction

Setting	Description
Horizontal Direction	Set the duplicate direction of addresses. The duplicated element address increments (positive) or decrements (negative) according to the offset and gets duplicated horizontally or vertically.
Vertical Direction	**Horizontal**  **Vertical** 

④ Offset And Array index

Setting	Description
Offset	Select or enter the amount that addresses increment or decrement automatically. • If elements are set as Word units, the increments or decrements are calculated in Word units. • If elements are set as Bit units, the increments or decrements are calculated in bit units.

Setting	Description
Array Index	Select the array index location. The default value is default. • Select **Default**, and the address is offset in the element unit.  • Select **1–4** for the Tag address. The array indexes are arranged from right to left.  **Note**: You can specify the offset of the array index. Currently available for CODESYS Tag only.

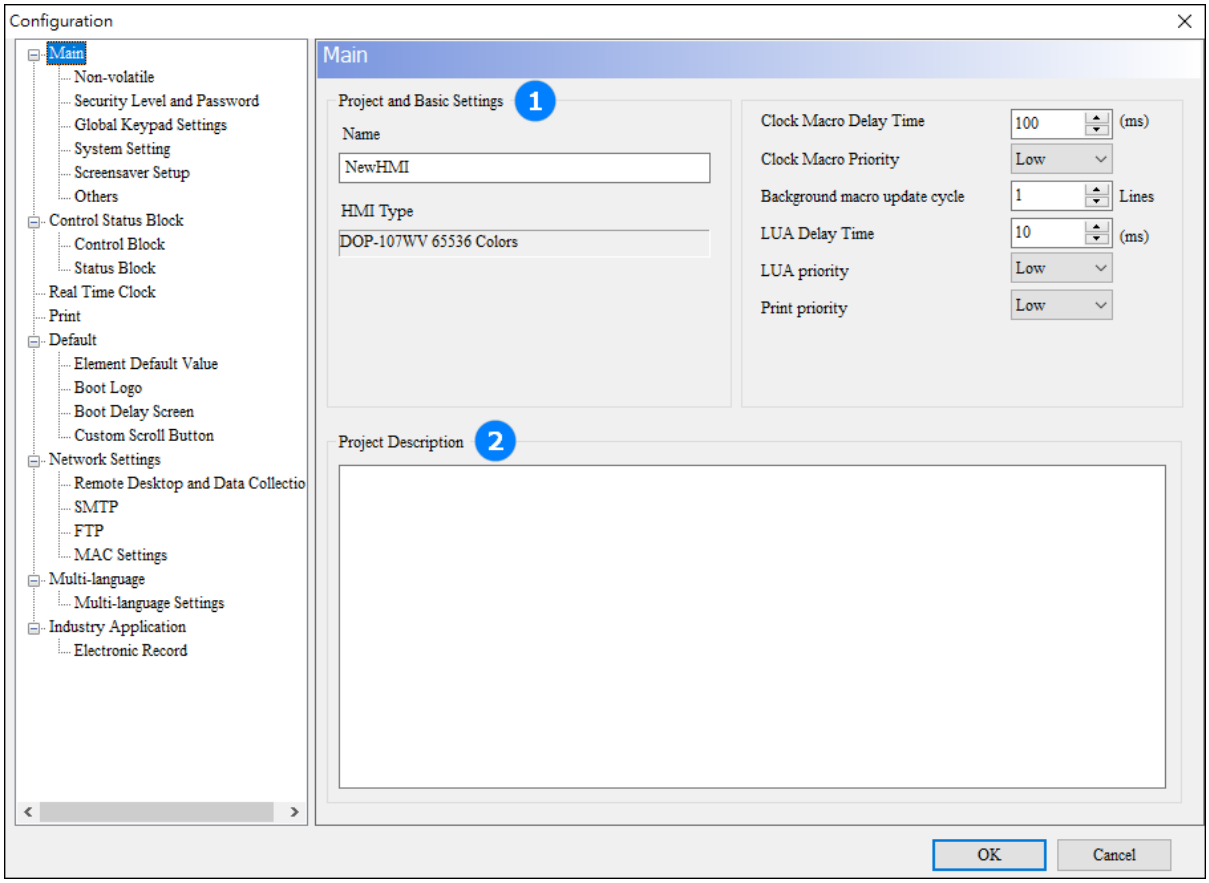
❺ Enable Automatic Text Numbering

Setting	Description
Starting number	Select or enter the starting value of the number displayed on the element.
Text format	Enter the text format of the number displayed on the element.

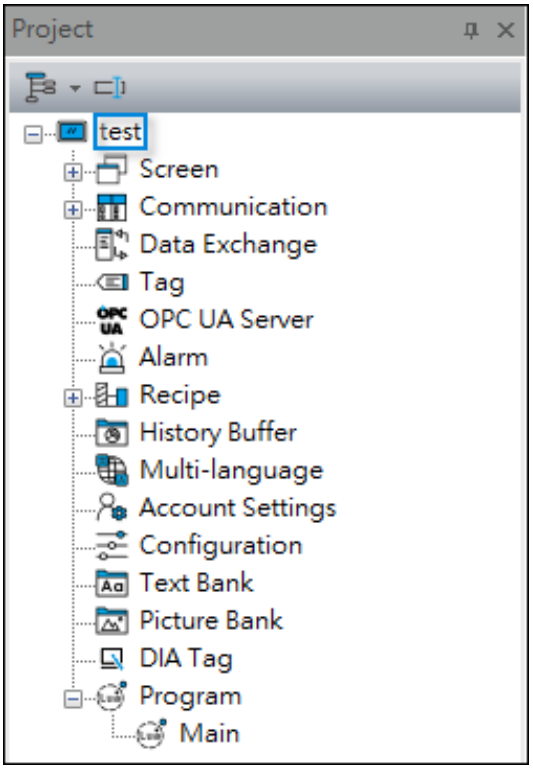
Configuration

Go to **General** > **Configuration** to configure the operation settings for the HMI screen. The functions of each parameter are described as follows.

Main



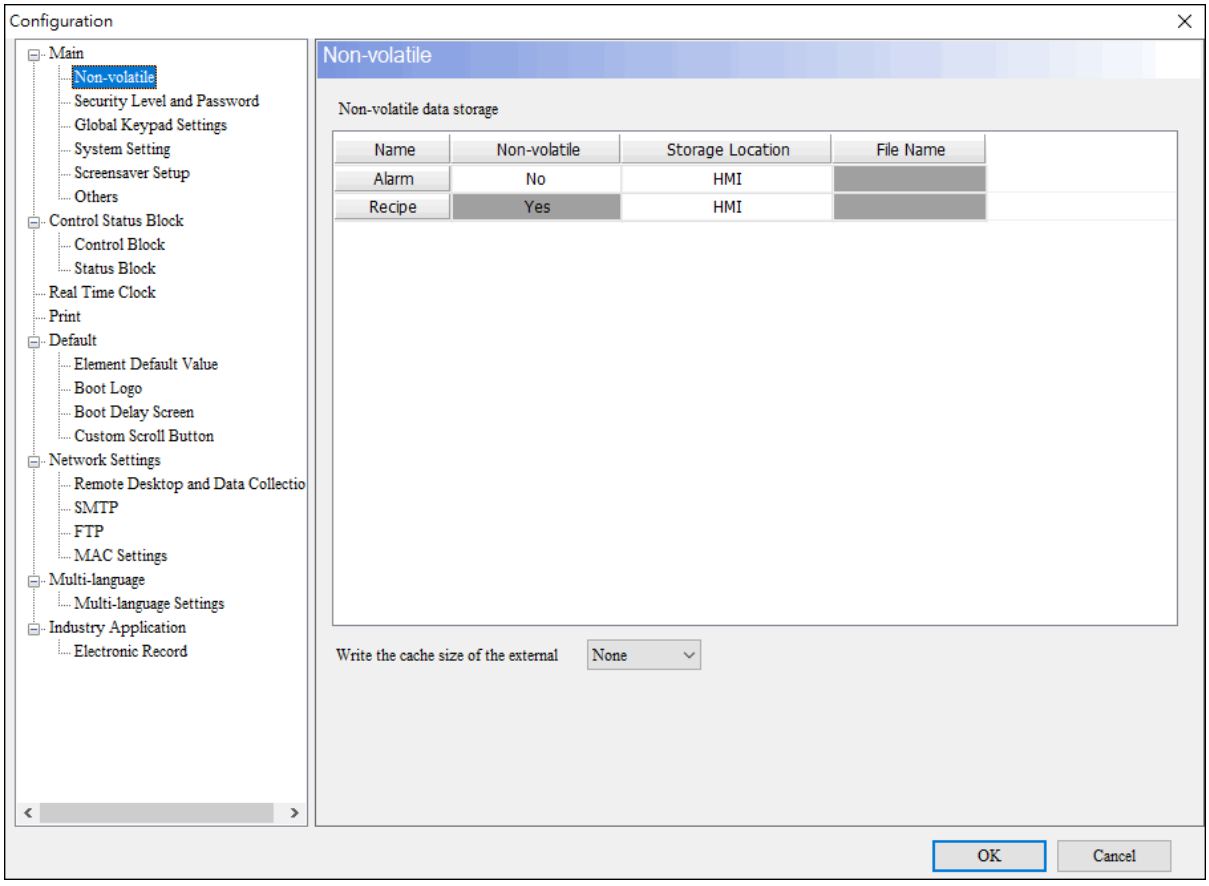
1 Project and Basic Settings

Function	Description
Name	Set the name of project. The project name on the **Project tree will be changed synchronously**. 
HMI Type	Display the currently edited HMI model.
Clock Macro Delay Time	Set the interval time after each execution of Clock and Macro. The range value is 50–65535, and the default value is **100**.
Clock Macro Priority	Set the priority of the Clock macro execution. The higher the priority, the more accurate the **Clock Macro Delay Time**.
Background macro update cycle	Set the number of lines executed per cycle of the background macro. The range value is 1–512, and the default value is **1**.
LUA Delay Time	Set the interval time after each execution of LUA. The range value is 0–10, and the default value is **10**.
LUA priority	Set the priority of LUA execution. The higher the priority, the more accurate the **LUA Delay Time.**
Print priority	Set the priority of print execution.

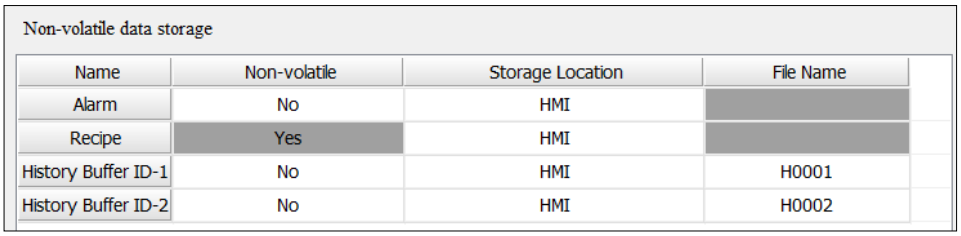
② Project Description

Function	Description
Project Description	Set the purpose of the HMI screen. After running DIAScreen, you can see the description of the project in **Recent opened file**. 

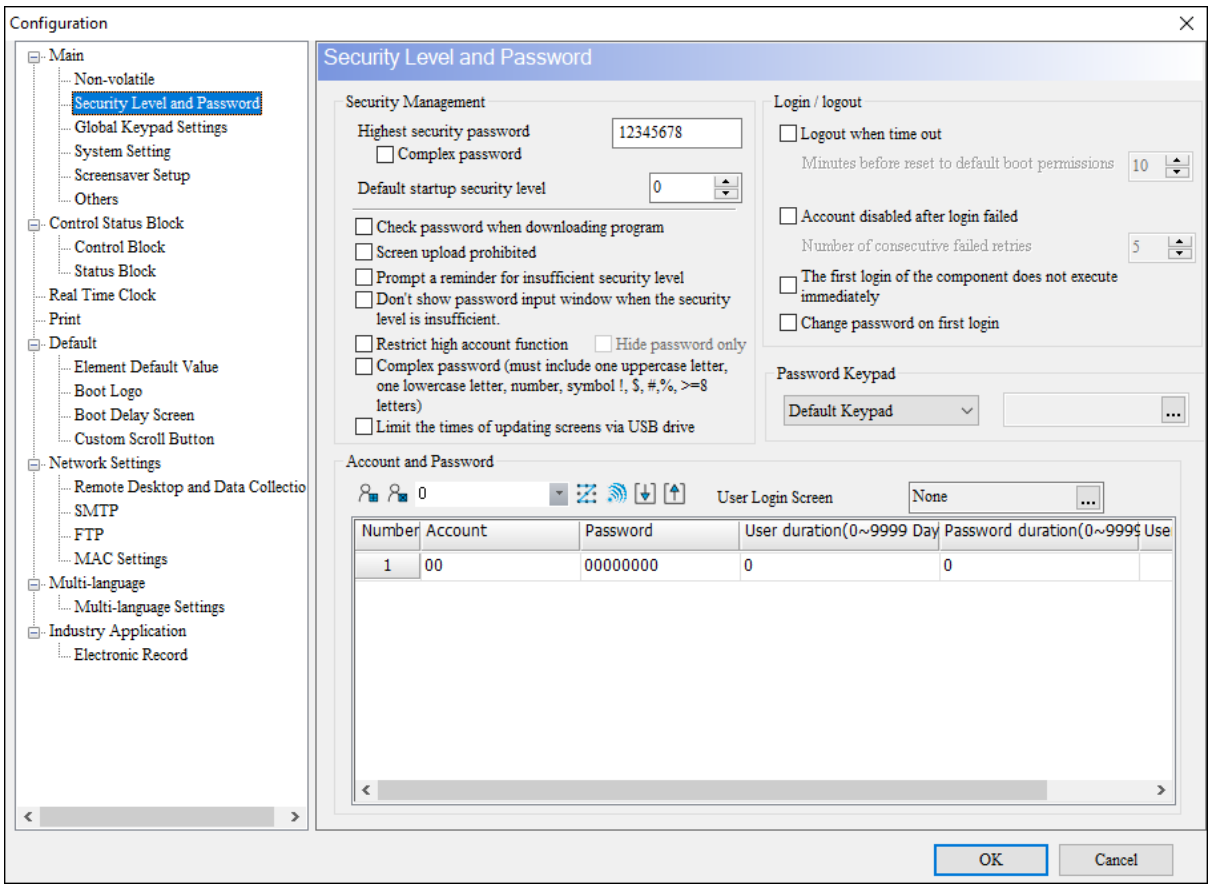
Non-volatile



Function	Description
Non-volatile data storage	Non-volatile data can be stored in **Alarm**, **Recipe**, and **History Buffer**.

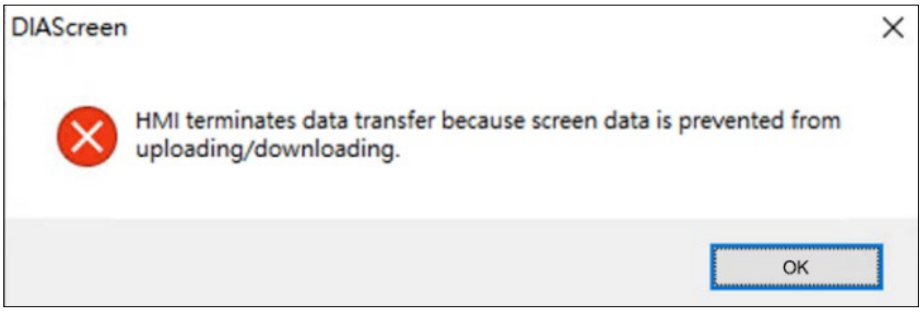
<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td></td><td>Storage location depends on the devices supported by the model. The available options include HMI, USB Disk, USB Disk 2, and SD Card.
The part of historical data will be determined if you have established a History Buffer.
 
</td></tr>
<tr><td>Write the cache size of the external</td><td>Select the external storage devices (USB Disk and SD Card).
The data written by the HMI to the external storage device will be temporarily placed in the cache area. However, this setting value depends on the amount of data in the cache area. If the amount of data does not reach this setting value, the data will not be written to the external storage device. This method can prevent the external storage device from being damaged due to continuous writing.
Assuming that the amount of data to be accessed is less than the capacity of the buffer or there is unexpected power failure, it may result in partial data loss. In order to avoid this situation, you can forcibly trigger the bit5 of the general control flag of the control area at regular intervals to write data to external storage device to ensure the existence of data.</td></tr>
</table>

Security Level and Password



1 Security Management

Function	Description
Highest security password	Set the password with the highest security level of HMI, which means level 10. The default value is **12345678**. • This password is used to control upload screen data and recipes, download screen data and recipes (you need to select the **Check password when downloading program** checkbox), password protection, system formatting, system file encryption and copy file functions (you need to select **Limit the times of updating screens via USB drive checkbox**). • The password text format is Hexadecimal unit from 0 to F. If you select the **Complex password** checkbox, the complex password must set more than (inclusive) 8 characters and contain an uppercase letter, a lowercase letter, a number, and a symbol (!, $, #, %).
Default startup security level	Set the default security level when the HMI is turned on. You can set the level from 0 to 10. **Note**: Level 10 is the highest security level.

Function	Description
Check password when downloading program	If selected, when executing **Download All Data** and **Download Recipe**, the software asks you to enter the highest security password. The screen can be downloaded to the HMI normally only after the password is entered successfully. If the password is failed, a warning message appears to notify you that the password is incorrect and cannot be downloaded. **Note**: You need to download the project to the HMI first and execute **Download All Data** again after selecting this option.
Screen upload prohibited	If selected, when executing **Upload All Data**, a warning message appears to notify you that the data cannot be uploaded. You need to download the project to the HMI first and execute **Upload All Data** again after selecting this option. 
Prompt a reminder for insufficient security level	If selected, if the user security level set in the element is higher than the default boot security level, the element on the HMI displays  that indicates that your current security level is not sufficient.
Don't show password input window when the security level is insufficient	If selected, if your current security level is not sufficient, the password input window does not display.
Restrict high account function	If selected, no operations can be performed on low-level accounts.
Complex password	If selected, all passwords must be set more than (inclusive) 8 characters and contain an uppercase letter, a lowercase letter, a number, and a symbol (!, $, #, %).
Limit the times of updating screens via USB drive	If selected, you can encrypt the screen data files and limit the number of times of copying files. This function is mainly used with the function of file encryption and copying of files.

② Login / logout

Function	Description
Logout when time out	If selected, the system will return to the default boot security level according to the set **Minutes before reset to default boot permission** when the HMI is in idle status.
Account disabled after login failed	If selected, the account will be disabled according to the set **Number of consecutive failed retries** when login fails consecutively.
The first login of the component does not execute immediately	If selected, if the current executed security level is not sufficient, click the element to log in and then click it again to execute the element action.
Change password on first login	If selected, the HMI forces you to change the password after logging in for the first time.

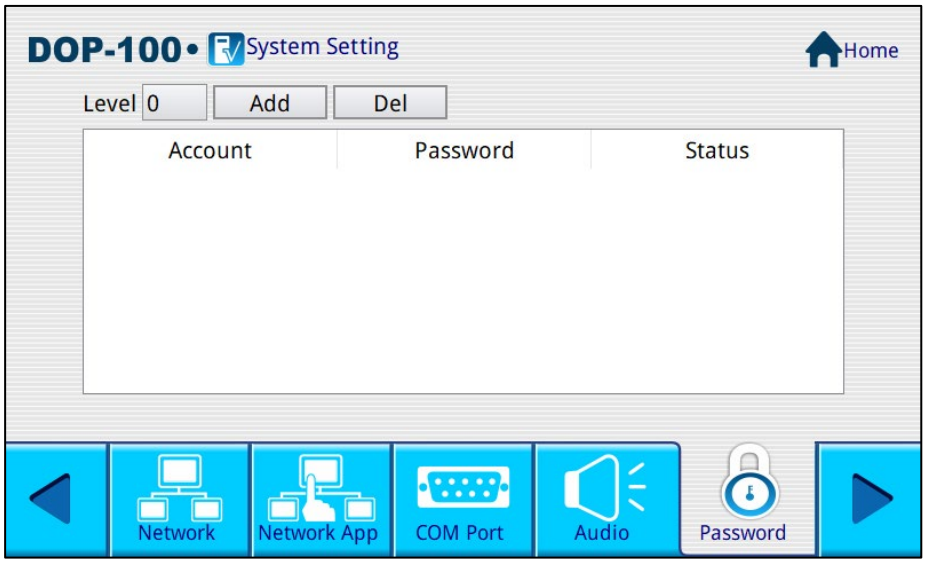
③ Password Keypad

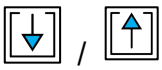
Function	Description
Password Keypad	Select the keypad according to your needs. The default is **Default Keypad**. **Note**: If you select **Simple Keypad**, the **Complex password** setting is not available.

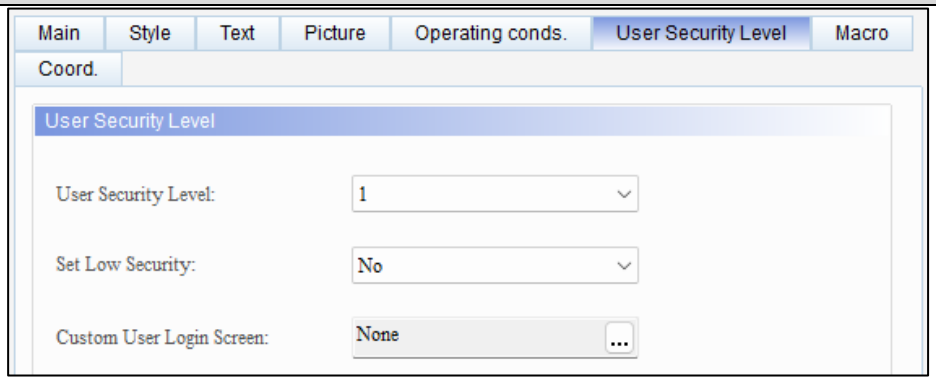
④ Account and Password

Function	Description
Account and Password	Set the security level and the account and password of HMI. The security level is divided into 0–9, each level can add multiple accounts for users to log in at the same time. The following describes the setting rules for the account and password: • Password must not be blank. • Within the same security level, the account names cannot be the same, but the passwords can be the same. The account names of different security levels can be the same. • The length of the account and password is limited to 24 characters and is not case-sensitive. • User description can only be entered in English or numbers.

Function	Description

	• Security levels are divided as follows:
	  ○ Level 0: No protection function, anyone can operate.
	  ○ Level 1–9: You need to enter the corresponding password or a higher security level to operate.
	  ○ Level 10: The highest security password and the protection password after project storage. This password is also the password to be entered when executing **Check password when downloading program** and formatting the system file.
	Note: The account and password support 1,000 records, regardless of level.
	You can use the button element **Password Table** or select **System Menu > System Settings** > **Password** on the HMI to open the account and password table to change the password and account.
	 

Enable RFID login	Click to enable RFID login, you can login your account or add new account and password through external device on the HMI. **Note**: The RFID field in software is read-only. You need to add an RFID code through the HMI and upload all the data before the RFID code can be displayed.
	Click to export the account and password table as a CSV file, which can be imported into software after editing. The exported CSV file is named **accounts.csv** and saved in the storage device. The account and password table can be imported into the HMI through the **Import/Export Account** element.
User Login Screen	Set the login screen for each user level. When the **User Security Level** setting of the element is not 0 and no custom login user screen is specified, the login screen specified here will be displayed.

Function	Description
	

Global Keypad Settings

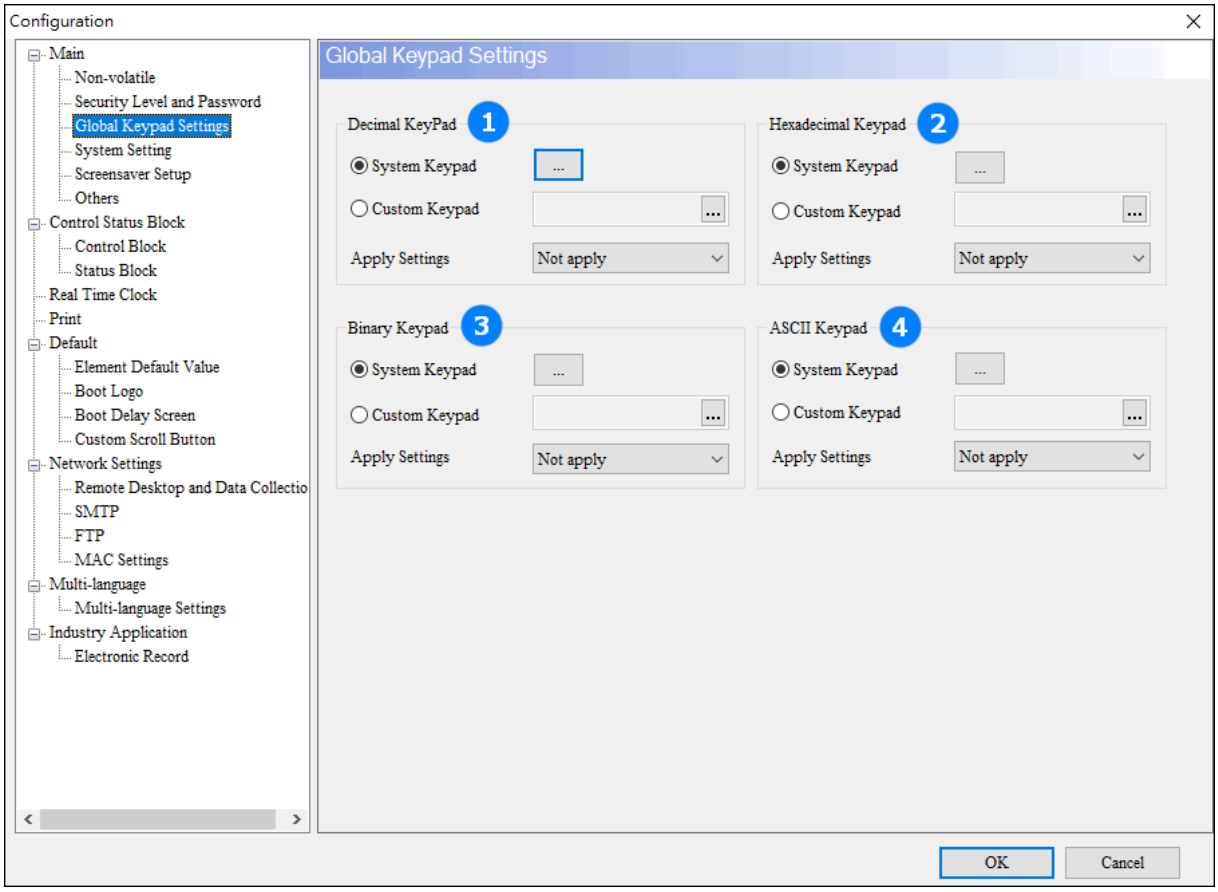
You can set the keypad styles through **Global Keypad Settings** or element property dialog. The keypad types include Decimal, Hexadecimal, Binary and ASCII. **Global Keypad Settings** also provides multiple application methods to update the keypad styles of elements.

Follow the steps to set the global keypad style through element property dialog.

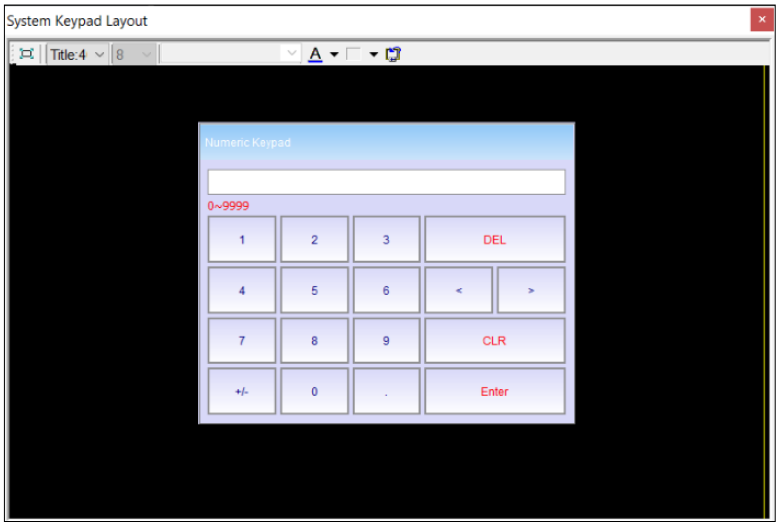
To set the global keypad style through element property dialog

1. Create **Numeric Entry** or **Character Entry** elements on the editing screen, double-click the elements.
2. In the element property dialog, click  in the **Detail** area in the Main tab.
3. In the **System Keypad Layout** dialog, set the keypad style according to your needs. Or you can edit through **General** > **Configuration** > **Global Keypad Settings.**

The following table lists the functions of the **Global Keypad Settings** page with their description.

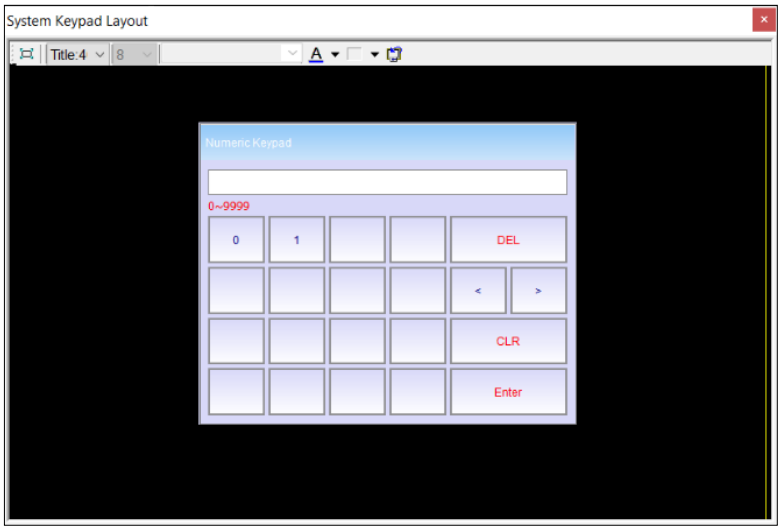


1 Decimal Keypad

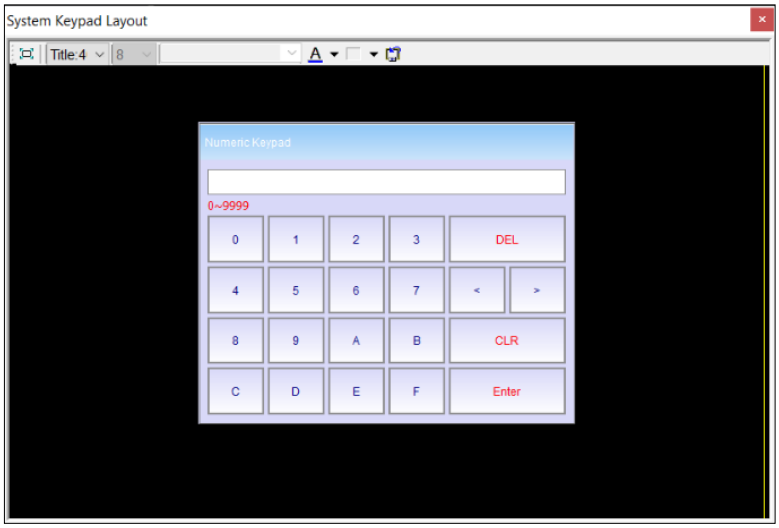
Function	Description
System Keypad	This keypad is applied to the **Numeric Keypad** element when the place value is set to decimal. 
Custom Keypad	Click ... to select the custom screen. Go to **General** > **New Screen** > **Keypad Screen** to customize screen.

Function	Description
Apply Settings	Set the keypad style applied method. • **Not apply**: Maintain the original style of the system keypad. • **Apply to all**: Replace the old keypad style with the new style. • **Apply to new**: Only applies to newly created keypads.

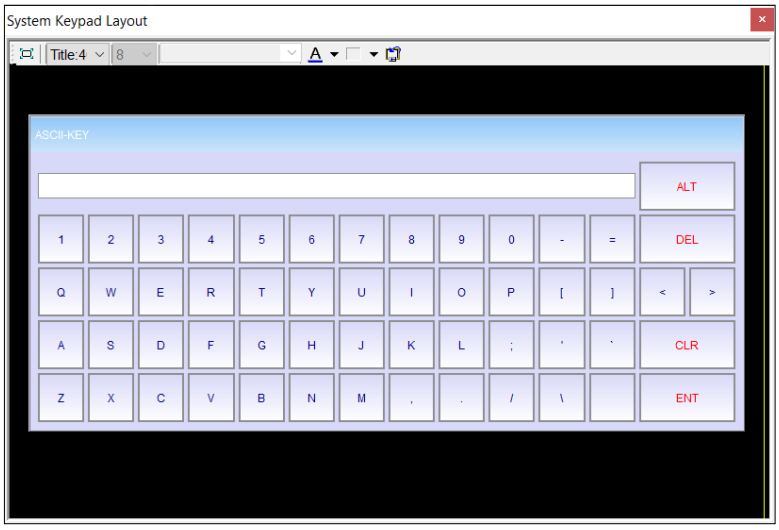
② Binary Keypad

Function	Description
System Keypad	This keypad is applied to the **Numeric Keypad** element when the place value is set to binary. 
Custom Keypad	Click ... to select the custom screen. Go to **General** > **New Screen** > **Keypad Screen** to customize screen.
Apply Settings	Set the keypad style applied method. • **Not apply**: Maintain the original style of the system keypad. • **Apply to all**: Replace the old keypad style with the new style.

③ Hexadecimal Keypad

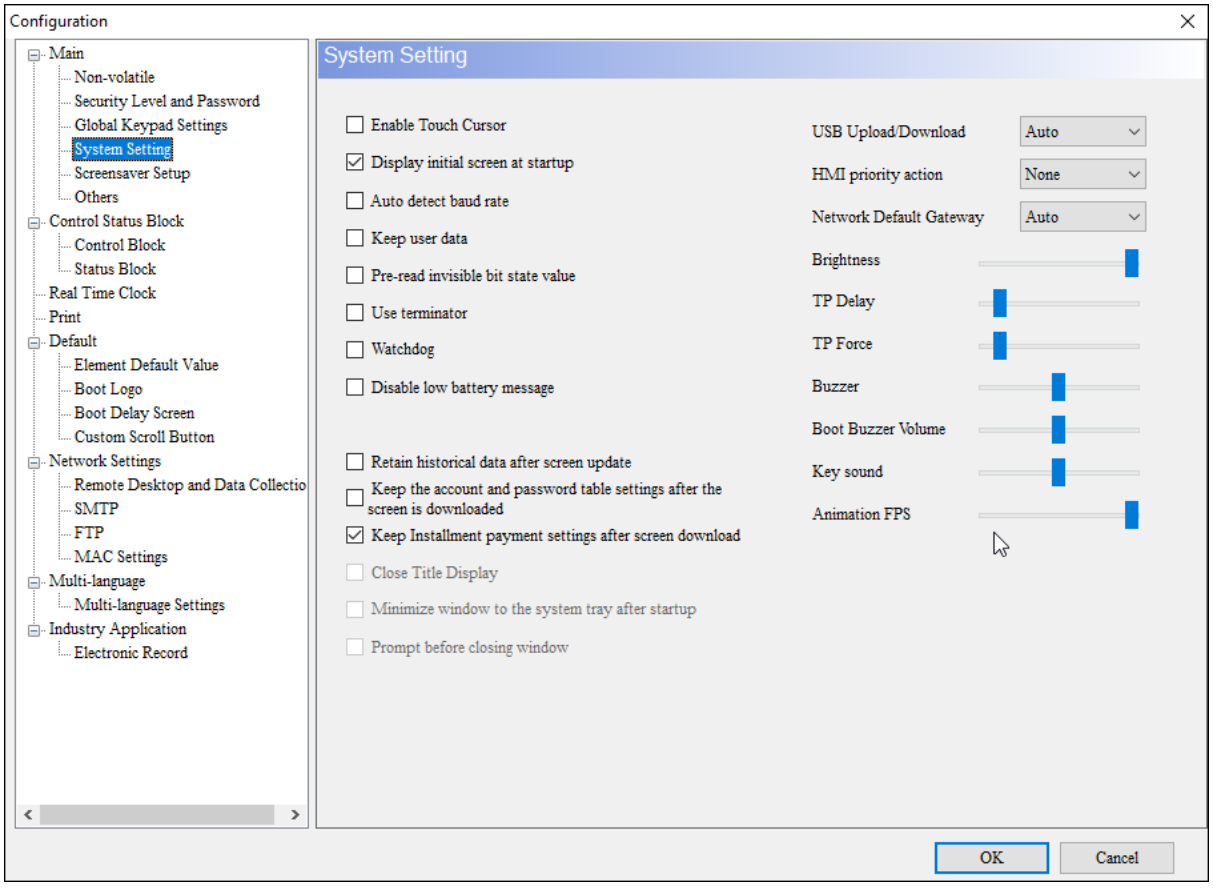
Function	Description
System Keypad	This keypad is applied to the **Numeric Keypad** element when the place value is set to hexadecimal. 
Custom Keypad	Click ... to select the custom screen. Go to **General** > **New Screen** > **Keypad Screen** to customize screen.
Apply Settings	Set the keypad style applied method. • **Not apply**: Maintain the original style of the system keypad. • **Apply to all**: Replace the old keypad style with the new style.

4 ASCII Keypad

Function	Description
System Keypad	This keypad is applied to the **Character Keypad** element when the place value is set to ASCII. 

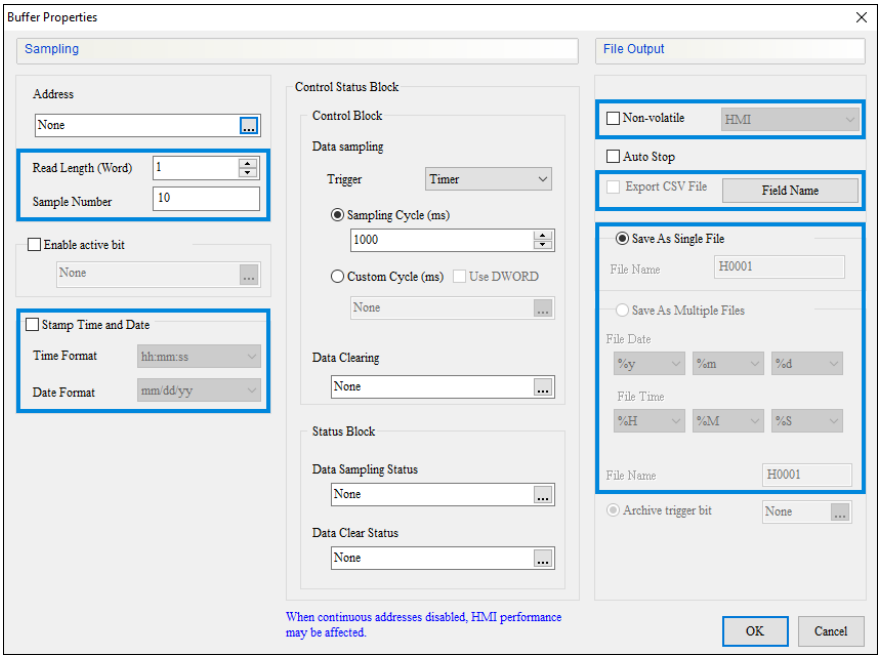
Function	Description
Custom Keypad	Click ... to select the custom screen. Go to **General** > **New Screen** > **Keypad Screen** to customize screen.
Apply Settings	Set the keypad style applied method. • **Not apply**: Maintain the original style of the system keypad. • **Apply to all**: Replace the old keypad style with the new style. • **Apply to new**: Only applies to newly created keypads.

System Setting

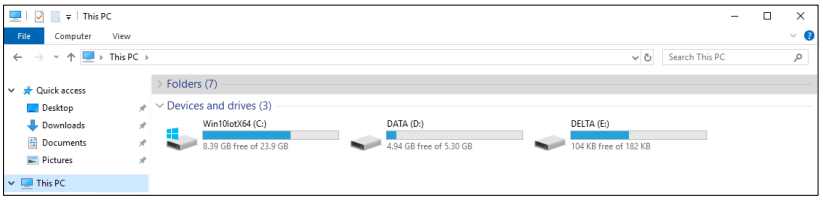
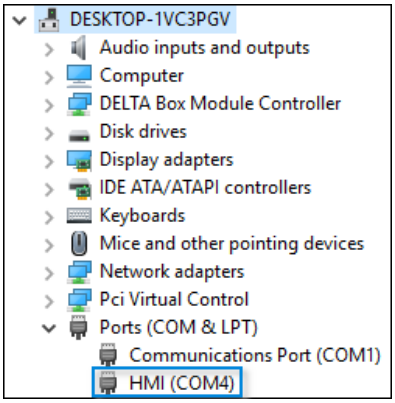


Function	Description
Enable Touch Cursor	If selected, when the HMI screen is pressed, the same mouse icon as the Windows operating system pointer appears. HMI supports wireless mouse with Unifying receiver.

Function	Description
Display initial screen at startup	If selected, the HMI displays the initial screen every time it is powered on. 
Auto detect baud rate	If selected, a message displays on the HMI and asks whether to detect procedure. When the baud rate of the HMI is different from that of the controller, it will be automatically adjusted to the same.
Keep user data	If selected, the files generated through LUA do not delete while downloading the screen. It will only be deleted while formatting or restoring to factory settings.
Pre-read invisible bit state value	If selected, when the invisible address is set to the controller address, switching the screen can avoid the transient state of the element display, but it affects the screen display speed.
Use terminator	If selected, character display/input, historical data display, and historical data CSV storage are applied the end character '\0'.
Watchdog	If selected, the HMI automatically restarts when it crashes.
Disable low battery message	If selected, the HMI does not display the low battery message when it is initializing.

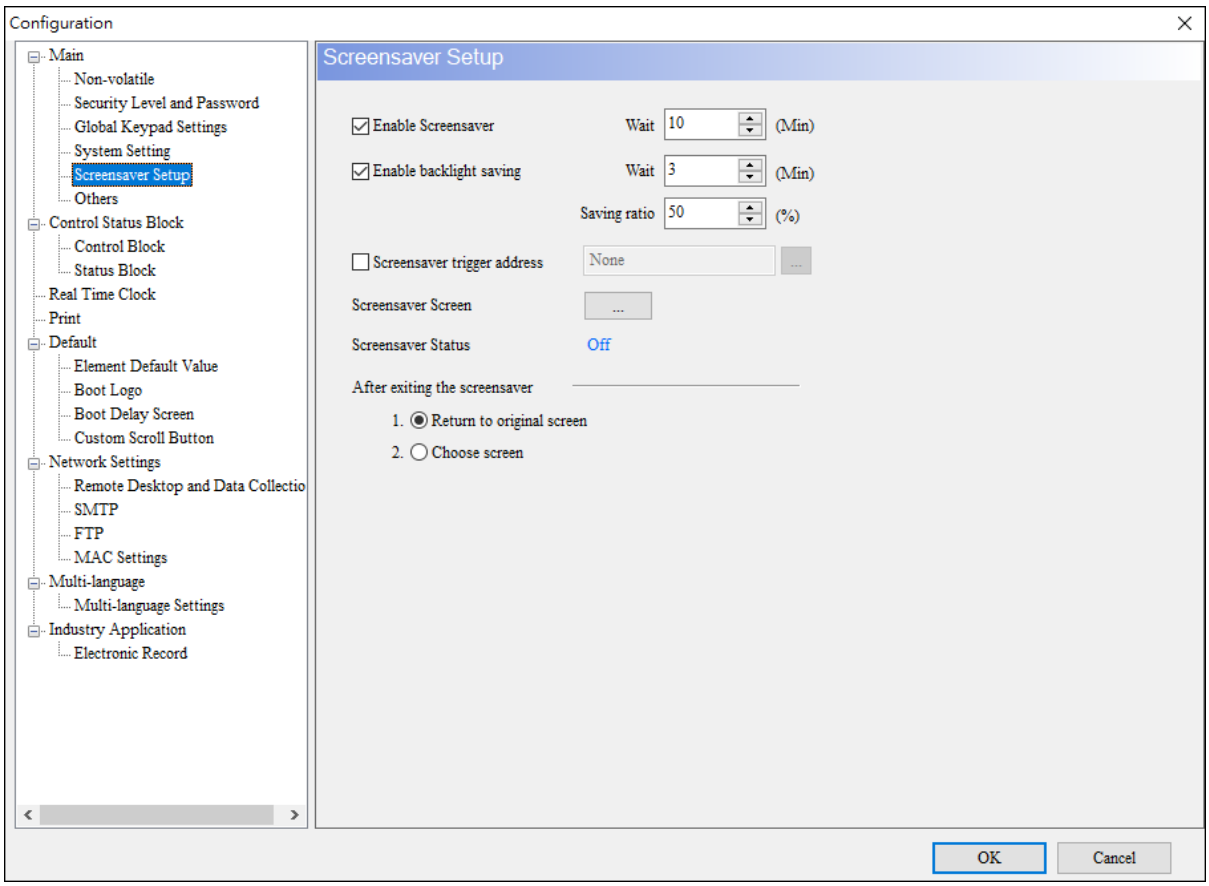
Function	Description
Retain historical data after screen update	If selected, the historical data on the HMI is retained when downloading the screen. In order to retain and continue to use the historical data, the historical data will be compared with the history buffer settings before updating the HMI screen. The following are the comparison principles. • The process of database saving and the export of CSV files are not affected. • Historical elements may still display or behave normally. After changing Read Length, Sample Number, Stamp Time and Date, Non-volatile, Export CSV File (including Field Name), and Save As Single File / Multiple File, the historical data will not be retained even if this setting is selected. 
Keep the account and password table settings after the screen is downloaded	If selected, the settings of the account and password table does not change while downloading the screen.
Keep Installment payment settings after screen download	If selected, the installment data on the HMI is retained while downloading the screen.

Function	Description
Close Title Display	If selected, the HMI screen does not display the title bar.  **Note**: This setting is only available for AX-8 Windows and IMP Series models.
Minimize window to the system tray after startup	If selected, the HMI screen minimizes to the system tray when it starts. **Note**: This setting is only available for AX-8 Windows and IMP Series models.
Prompt before closing window	If selected, a message displays when the HMI screen is closed, informing that the HMI application will be closed. **Note**: This setting is only available for AX-8 Windows and IMP Series models.

Function	Description
USB Upload/Download	Select the USB upload / download mode. • **Auto** ○ If selected, after downloading the project, the HMI maintains the currently set mode to upload and download. ○ The factory default value of other HMIs is Auto (except for B05S100, B05S101, B07S201, and B07S211 models). • **Disk** If selected, after downloading the project, the HMI uses this mode to upload and download (it is USBCommMode = 1.). You can view “DELTA” removable storage device in **The PC**.  • **CDC** If selected, after downloading the project, the HMI uses this mode to upload and download (it is USBCommMode = 2). Right-click the blank space in **The PC** and go to **Content** > **Device Manager.** In the **Device Manager** dialog, check whether there is **HMI device** under **Ports (COM & LPT)**. 
HMI priority action	Select the HMI priority action. • **None**—The HMI does not take any actions first. • **Touch**—The HMI receives the touch action first, and then process the system operation.
Network Default Gateway	Select network default gateway. The options are displayed according to the number of network ports of models. If extra network accessories are attached on the HMI, you can select Wi-Fi or 4G. The default value is **Auto**.

Function	Description
Brightness	Set the brightness of the HMI backlight.
TP Delay	Set the delay time for the HMI to process pressing the move messages. Drag the delay to the right to decrease, the speed becomes faster; drag the delay to the left to increase the speed, and the speed becomes slower.
TP Force	Set the force for pressing the HMI screen. Drag the force to the left to decrease, the HMI screen becomes easier to press; drag the force to the right to increase, and the HMI screen becomes difficult to press.
Buzzer	Set the buzzer volume of the HMI. Drag to the left to increase the volume, and drag to the right to decrease the volume.
Boot Buzzer Volume	Set the boot buzzer volume of the HMI. Drag to the left to increase the volume, and drag to the right to decrease the volume.
Key sound	Set the sound when the HMI is pressed. Drag to the left to increase the volume, and drag to the right to decrease the volume.
Animation FPS	Set the update speed of the animation element setting frequency.

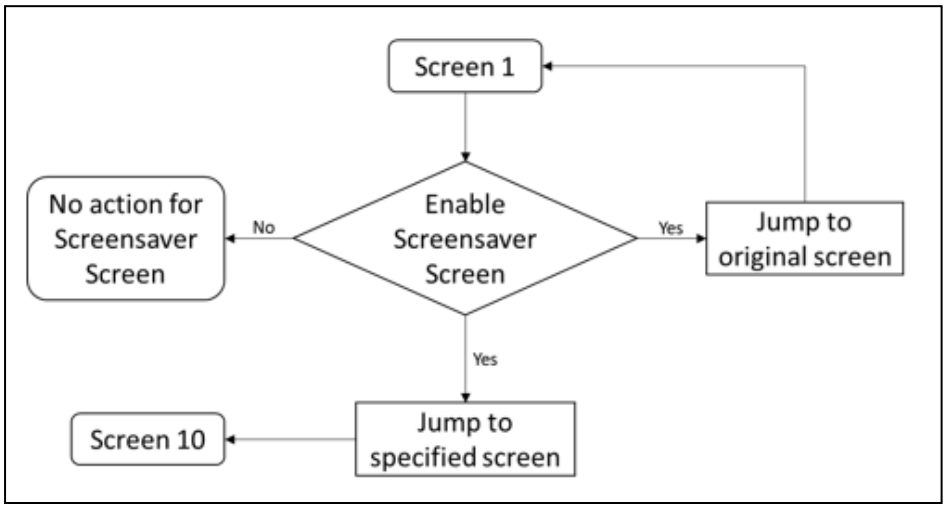
Screensaver Setup



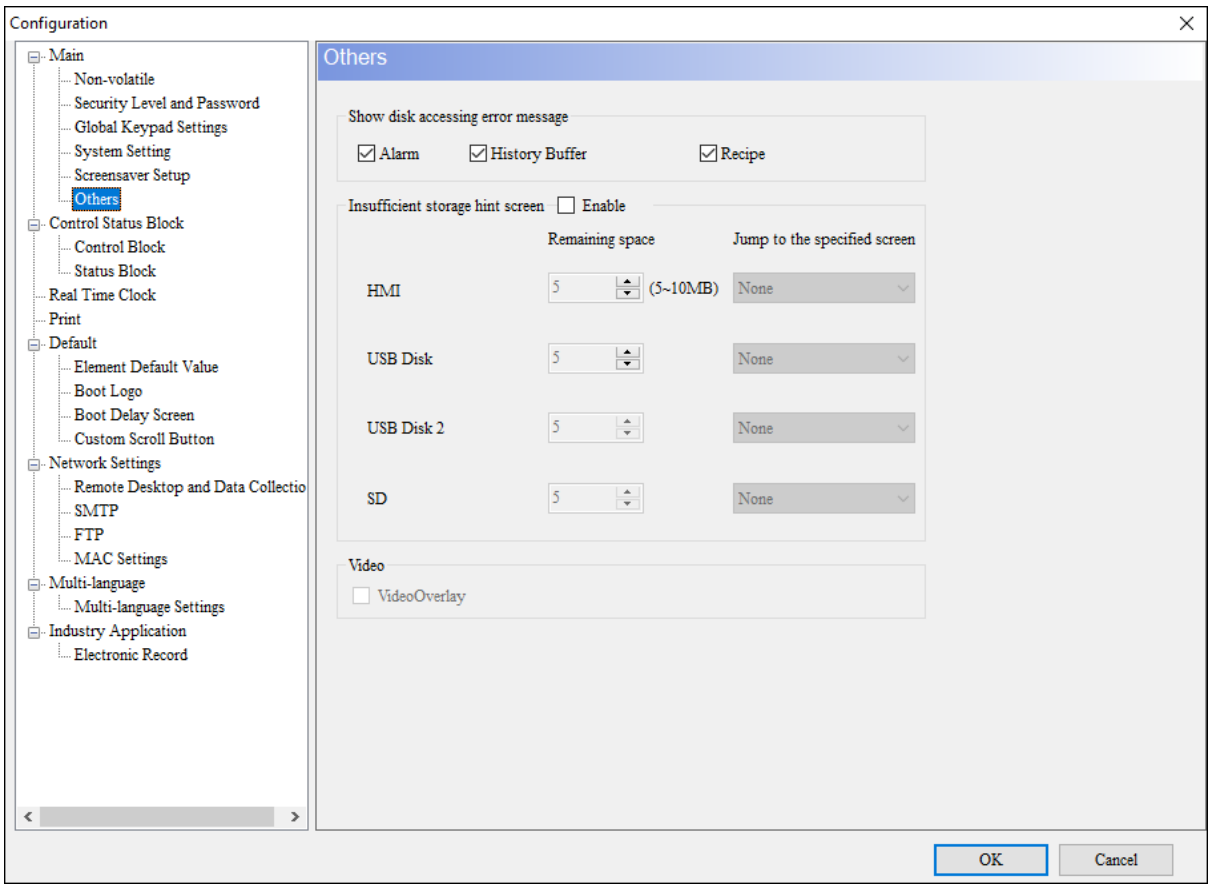
Function	Description
Enable Screensaver	If selected, you can set how long it takes to enter the screen saver screen without pressing the screen. The value range is 1–100, and the default value is **10**. The screen saver can be configured by clicking ... of **Screensaver Screen** or in **General** > **Screen saver Screen**. **Note**: If **Enable Screensaver** is not selected, but the screen saver is configured, the screen saver will not be activated.
Enable backlight saving	If selected, you can set how long it takes to enable the backlight saving function without pressing the screen. • The value range is 1–10, and the default value is **3.** • The saving ratio range is 1–99, and the default value is **50**.
Screensaver trigger address	Set Word trigger address, 0 is to turn off the screen saver, and 1 is to turn on the screen saver.

Function	Description
After exiting the screensaver	• **Return to original screen**: If selected, after the screen saver is over, it jumps to the original screen before starting the screen saver. • **Choose screen**: If selected, you can specify the screen number, so that the designated screen will be displayed after the screen saver ends. **Note**: If you want to use the specified screen, create a screen saver screen first.

The following figure displays the flow chart of the screen saver screen.



Others

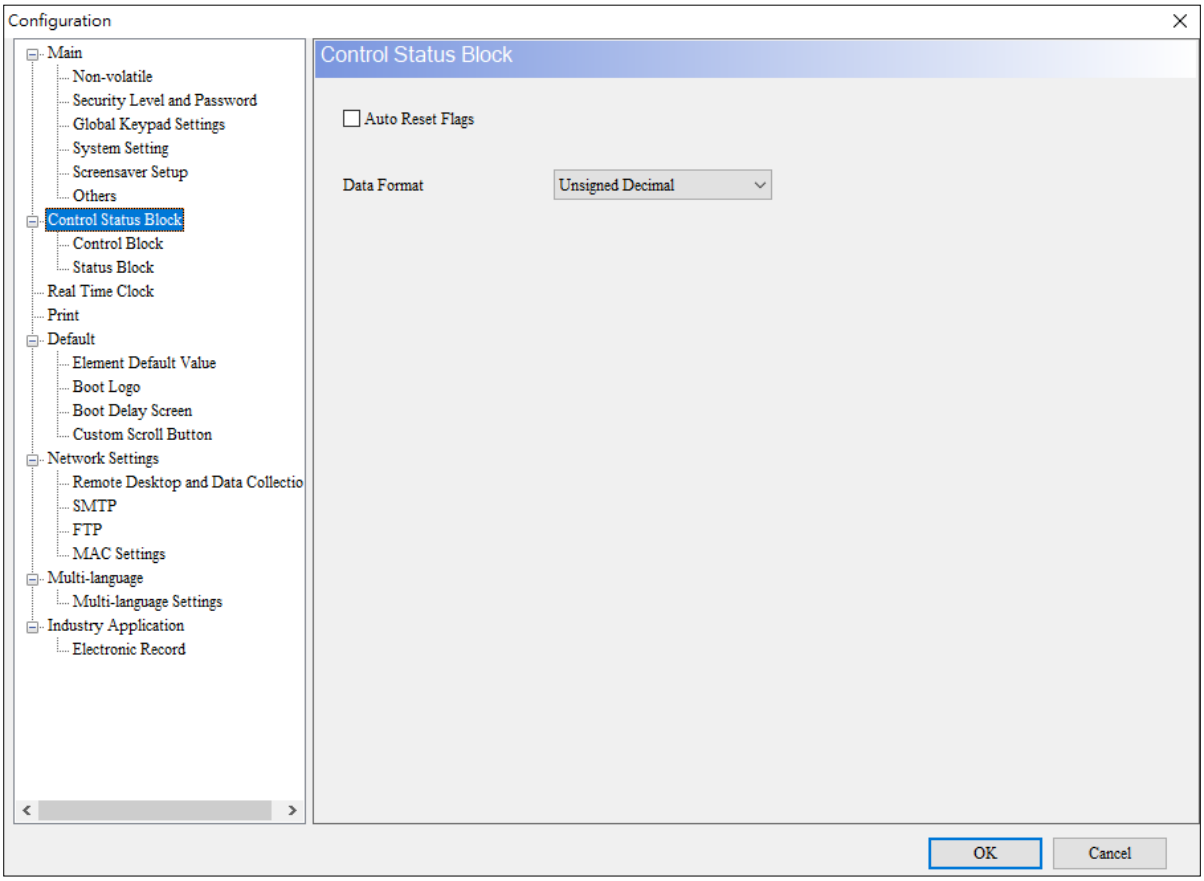


Function	Description
Show disk accessing error message	Since alarms, history buffers and recipes can be set to save data as USB Disk or SD Card, if the external disk access fails, you can decide whether to display the warning message through this setting. The disk access failure means that when the non-volatile data location of history buffer is set to USB Disk, the HMI cannot detect the USB Disk after powering on, and cannot write data. If this option is not selected, when the above situation occurs, no error message appears.
Insufficient storage hint screen	Set how many MB of storage space is left to jump to the specified screen. The storage spaces can be specified to HMI, USB Disk, USB Disk 2, and SD.
Video	If **Video Overlay** is selected, the VGA or Camera element superimposes on the element, and the display can be triggered through the invisible address. This setting enables / disables according to different models.

Control Status Block

The **Control Status Block** is used to execute or monitor the system operation and status. Select any of functions according to your needs, for example, in **Control Block**, you only need to select the **Screen No.** and **Recipe Number**, the **control status block** automatically configures the addresses continuously and only enables the **Goto Screen** and **Recipe Group Control** functions.

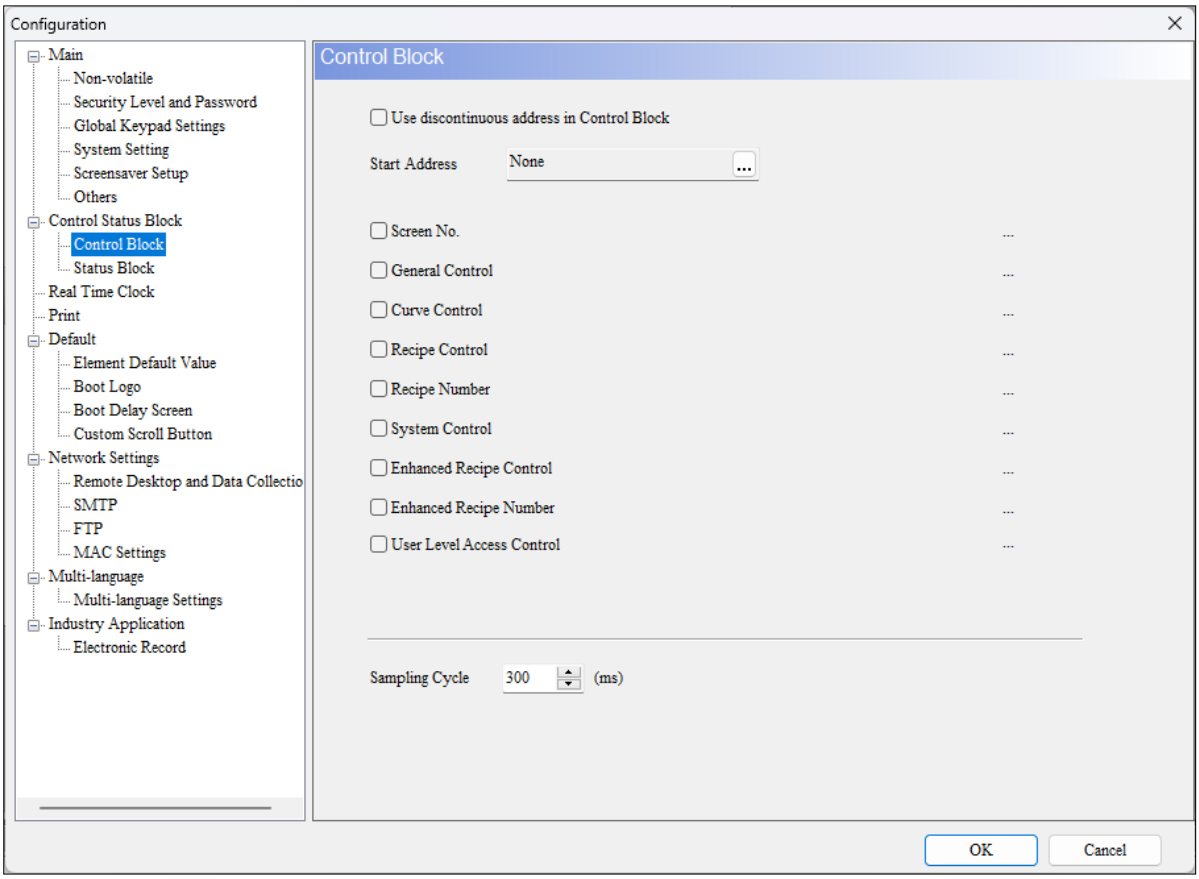
If an additional function is selected, such as **General Control**, the memory addresses are arranged continuously from top to bottom.



Function	Description
Auto Reset Flags	If selected, the HMI automatically resets the flags. To reactivate some functions in the **Control Block**, first turn the corresponding flags OFF, and then turn it ON again.
Data Format	Set the **Data Format** of the control status block. The default value is **Unsigned Decimal**.

Control Block

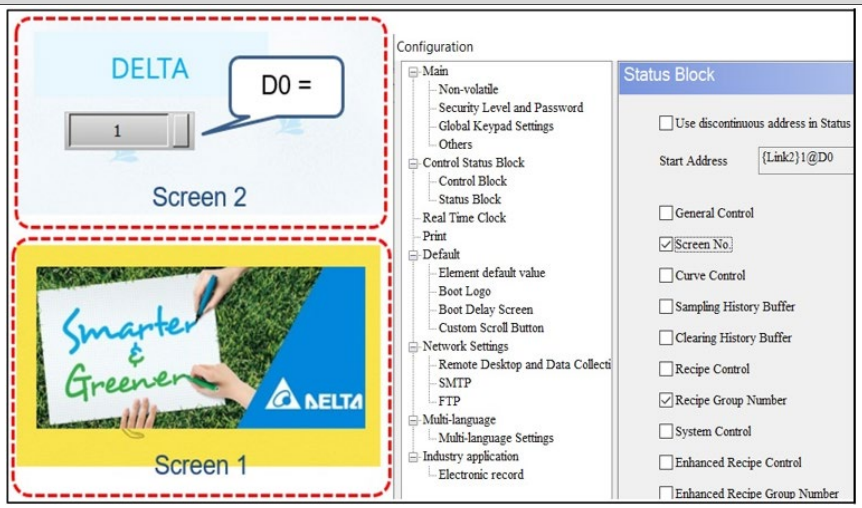
The **Control Block** is used to control the actions of the HMI, such as Goto screen, curve, recipe control, and user level.



Function	Description
Use discontinuous address in Control Block	If selected, the settings in the Control Block are available, and you can define the register addresses in the controller or the HMI internal memory.
Sampling Cycle	Set the interval time between the sampling actions. The value range is 100–1000, and the default value is **300**.

The following table lists the flags of screen no. register with its description.

Screen No. Register	
b0~b15 – Screen No.	• Write the specified screen number into this register, and the HMI switches to the specified screen. • If a **Numeric Entry** element is set to D0 and the input value is 1, the HMI switches to the first screen.

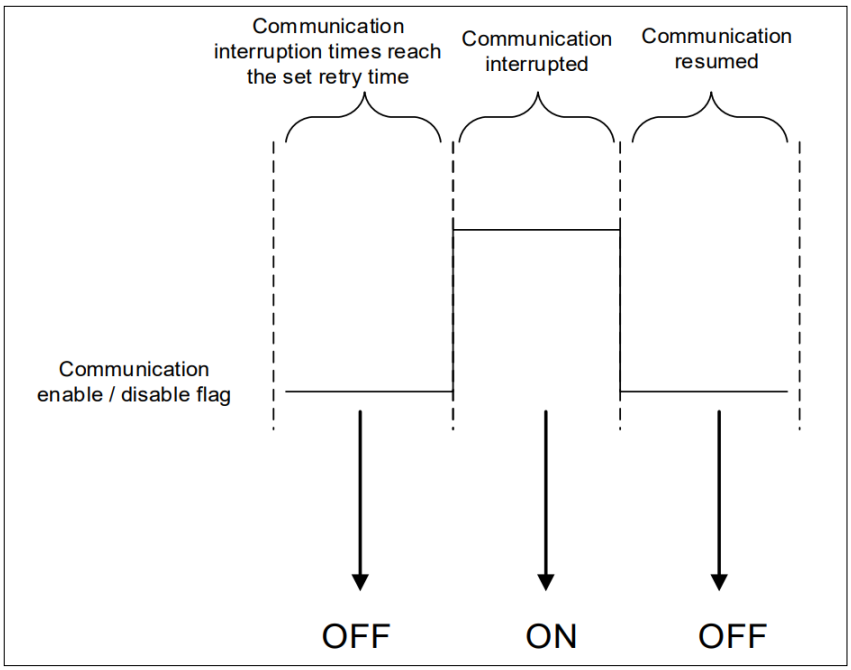
Screen No. Register	
	

The following table lists the flags of general control register with their description.

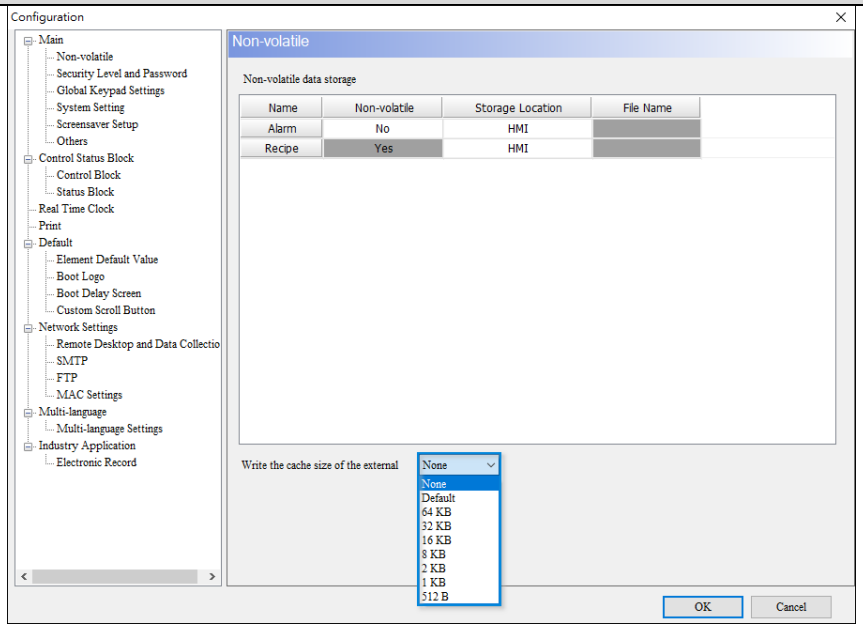
General Control Register

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(10)				(9)				(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)

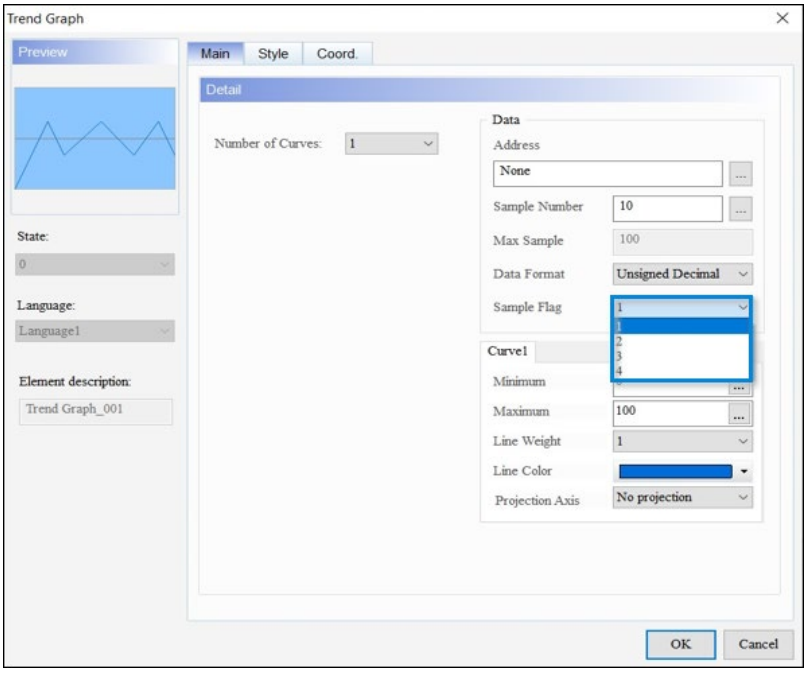
(1) b0 Communication enable / disable flag
(2) b1 Backlight enable / disable flag
(3) b2 Buzzer enable / disable flag
(4) b3 Alarm buffer clear flag
(5) b4 Alarm counter clear flag
(6) b5 External storage device cache write flag
(7) b6 Remote control lock
(8) b7 Reserved
(9) b8~b11 Set User Security Level
(10) b12~b15 Reserved

General Control Register	
b0 – Communication enable / disable flag	Enable / disable the HMI communication. • To use this flag, click **General** > **Communication Settings, and** then select **Disconnect after communication interrupt checkbox** and set the **Retry times after disconnection.** • When the HMI communicates with the controller, the HMI automatically stops the communication with the controller and turns the flag ON after the number of interruption times reaches the set retry times without the communication error message (this does not affect the communication between the HMI and other controllers). You can restore the communication by turning the flag OFF.  **Note**: • This flag is only for restoring the communication when it is automatically stopped. It is not possible to directly stop the communication between the HMI and any controller by turning the flag ON. • The **Auto Reset Flags** function is not applicable to this flag.
b1 – Backlight enable / disable flag	Enable / disable the HMI backlight. • Set to ON, the HMI backlight is enabled. • Set to OFF, the HMI backlight is disabled. **Note**: The **Auto Reset Flags** function is not applicable to this flag.

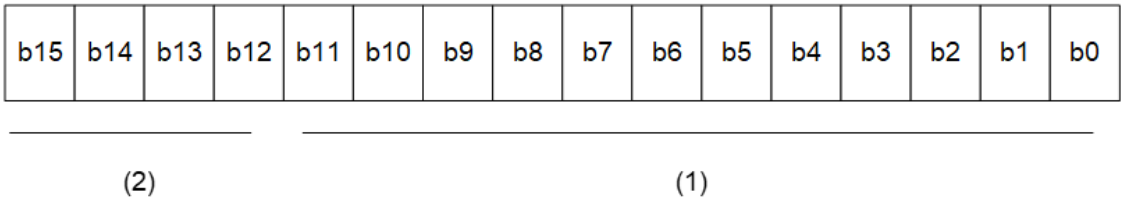
General Control Register	
b2 – Buzzer enable / disable flag	Enable / disable the HMI buzzer. • Set to ON, the HMI buzzer is enabled. • Set to OFF, the HMI buzzer is disabled. **Note**: The **Auto Reset Flags** function is not applicable to this flag.
b3 – Alarm buffer clear flag	Clear the alarm buffer data of the HMI. Set to ON to clear the data in the alarm buffer. To reactivate this function, turn the flag OFF and then ON again.
b4 – Alarm counter clear flag	Clear the alarm frequency table data of the HMI. Set to ON to clear the data in the alarm frequency table. To reactivate this function, turn the flag OFF and then ON again.
b5 – External storage device cache write flag	Update the HMI cache data into an external storage device (USB Disk or SD Card) in real time. • If the alarm buffer, history buffer, or recipe function is activated, and the non-volatile storage location is set to USB Disk or SD, when the flag is set to ON, the HMI updates the data temporarily stored in the cache into an external storage device in real time. To reactivate this function, turn the flag OFF and then ON again. • The data written into USB or SD Card by the HMI is temporarily stored in the cache first. Before the cache data size reaches the set limit (as shown in the following figure), the data is not written into an external storage device. This is to prevent the external storage device from being damaged by frequent overwriting. However, if the data volume accessed is less than the buffer capacity or the power is cut off unexpectedly, part of the data may be lost. To keep the data, turn ON the flag in a cyclic pattern to write the data into the external storage device.

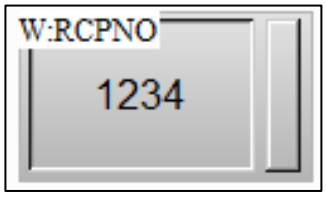
<table>
<tr><th colspan="2">General Control Register</th></tr>
<tr><td></td><td> 
</td></tr>
<tr><td>b6 – Remote control lock</td><td>Control whether the eRemote can be operated.
Set to ON, eRemote can only be monitored and cannot be operated.
Set to OFF, eRemote can be operated normally.
Note: The Auto Reset Flags function is not applicable to this flag.</td></tr>
<tr><td>b8~b11 – Set User Level</td><td>You can set the current user level of the HMI. The HMI internal security levels are divided as follows:
Security level 0–7: Controlled by Bit 8, Bit 9, and Bit 10 flags. Level 0 is the lowest security level
Highest security level: Controlled by Bit 11 flag.
The following table lists the setting method or the security level.
<table>
<tr><th rowspan="2">Security Level</th><th colspan="3">Flag Control</th></tr>
<tr><th>Bit 10</th><th>Bit 9</th><th>Bit 8</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>2</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>3</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>5</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>6</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>7</td><td>1</td><td>1</td><td>1</td></tr>
</table>
Note: If enable Advanced Level Access Control, the user level control here will be invalid.</td></tr>
</table>

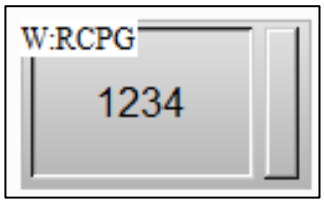
The following table lists the flags of curve control register with their description.

<table>
<tr><th colspan="2">Curve Control Register</th></tr>
<tr><td colspan="2">
<table>
<tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>b11</td><td>b10</td><td>b9</td><td>b8</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr>
<tr><td colspan="4">(4)</td><td colspan="4">(3)</td><td colspan="4">(2)</td><td colspan="4">(1)</td></tr>
</table>
(1) b0~b3 Curve sampling flags 1~4
(2) b4~b7 Reserved
(3) b8~b11 Curve clear flags 1~
(4) b12~15 Reserved
</td></tr>
<tr><td>b0~b3 – Curve sampling flags (1~4)</td><td>Control the curve drawing action.
The curves include the Trend Graph and X-Y Chart.
If the flag is set to ON, the corresponding curve element samples and draws the curve. To reactivate this function, turn the flag OFF and then ON again.
The sampling flag 1 of the Trend Graph element corresponds to the curve clear flag 1; the sampling flag 2 of the Trend Graph element corresponds to the curve clear flag 2, and so forth. 
</td></tr>
<tr><td>b8~b11 – Curve clear flags (1~4)</td><td>Control the curve clear action.
If the flag is set to ON, the corresponding curve element clears the curve. To reactivate this function, turn the flag OFF and then ON again.</td></tr>
</table>

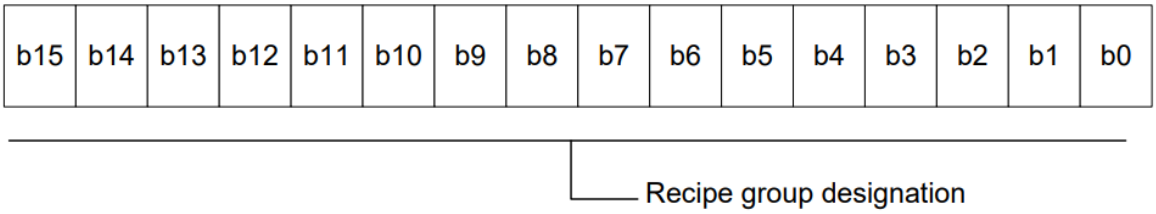
The following table lists the flags of recipe control register with their description.

<table>
<tr><th colspan="2">Recipe Control Register</th></tr>
<tr><td colspan="2">


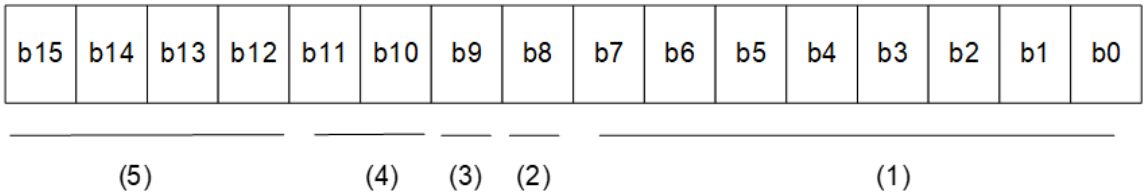
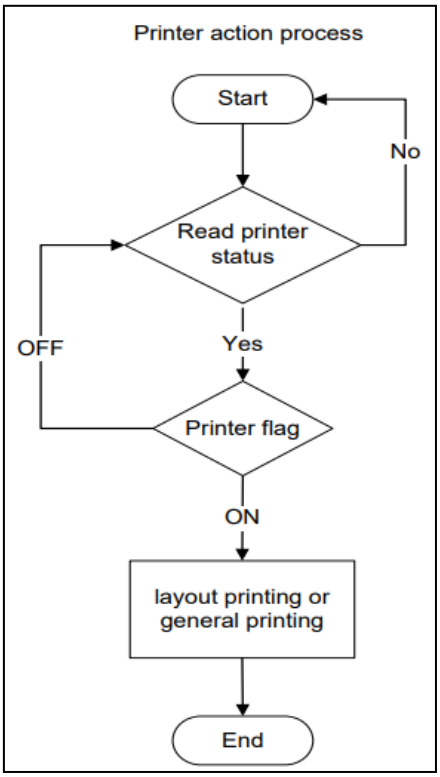
(1) b0 Recipe number change flag
(2) b1 Recipe read flag (PLC → HMI)
(3) b2 Recipe write flag (HMI → PLC)
(4) b3 Recipe group change flag
(5) b4~b7 Reserved
(6) b8~b15 Specify Recipe group number
</td></tr>
<tr><td>b0 –
Recipe number change flag</td><td>Change the HMI recipe number. This is applicable to 16-Bit recipes. You must write the recipe number to be changed into the recipe number control register, and then trigger the recipe number change flag.
Do one of the following to call or change the recipe number:
• Use the HMI internal register RCPNO.
 
• Use this recipe number change flag.
When the recipe number change flag is turned ON, the recipe number is changed according to the value defined in the recipe number control register, and the number of RCPNO internal register is changed automatically. To reactivate the function, turn the flag OFF and then ON again.</td></tr>
<tr><td>b1 –
Recipe read flag (PLC → HMI)</td><td>When the recipe read flag is turned ON, the HMI reads the controller recipe data and writes the data into the designated recipe data register. To reactivate the function, turn the flag OFF and then ON again.</td></tr>
<tr><td>b2 –
Recipe write flag (HMI → PLC)</td><td>When the recipe write flag is turned ON, the HMI writes the designated recipe data into the controller register. To reactivate the function, turn the flag OFF and then ON again.</td></tr>
<tr><td>b3 –
Recipe group change flag</td><td>Change the HMI recipe group number. This is applicable to 32-Bit recipes.
Do one of the following to call and change the recipe group:</td></tr>
</table>

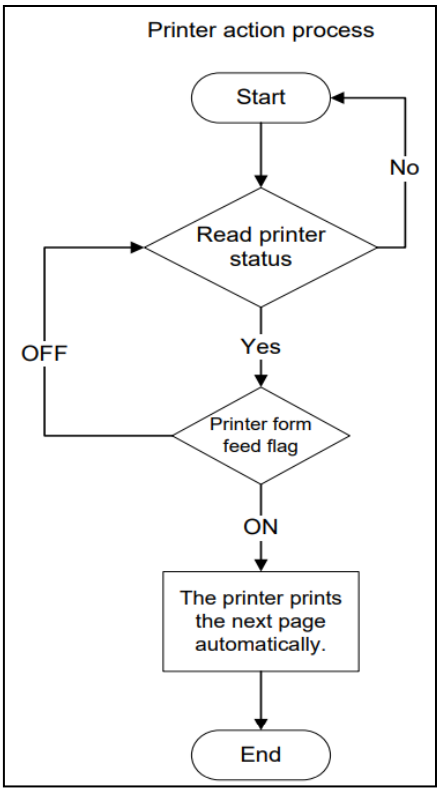
Recipe Control Register	
	• Use the HMI internal register **RCPG.**  • Use the recipe group change flag. When the recipe group change flag is turned ON, the recipe group is changed according to the value defined in the recipe group change bits (b8~b15), and the number of the **RCPG** internal register is changed automatically. To reactivate the function, turn the flag OFF and then ON again.
b8~b15 – Designate recipe group to be changed	Designate the recipe group to be changed with the high byte (Bits 8~15) from the recipe control register. By activating the recipe group change flag, the HMI changes the number of the RCPG internal register, it is changing the recipe group.

The following table lists the flags of recipe number register with their description.

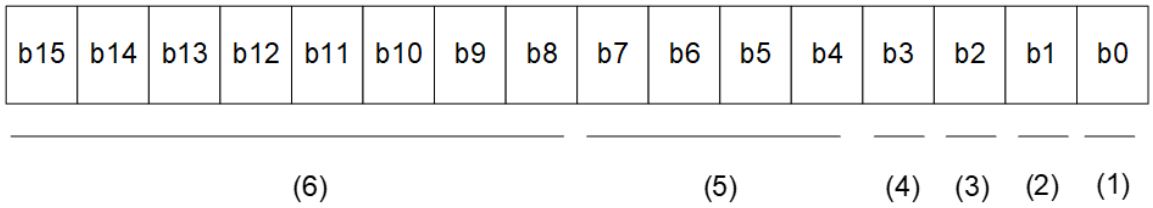
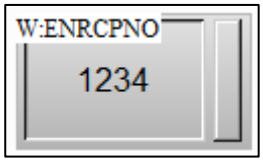
Recipe Number Register	
	
b0~b15 – Recipe designation	Designate the group number of the recipe group to be changed through the recipe number register. By activating the recipe group change flag, the HMI automatically changes the number of the RCPG internal register, it is changing the recipe group.

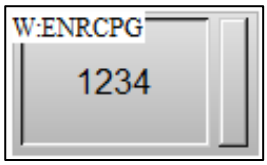
The following table lists the flags of system control register with their description.

System Control Register
 (1) b0~b7 Multi-language setting values (2) b8 Printer flag (3) b9 Printer form feed flags (4) b10~b11 Retrieve Ethernet address (5) b12 Wi-Fi retrieve network address (6) b13~b15 Reserved
b0~b7 – Multi-language setting values	Change the **multi-language setting values** to switch languages. You can set the multi-languages in **Multi-language setting page of Configuration** dialog. **Note**: Supports adding up to maximum 32 languages.
b8 – Printer flag	Set the printing mode, which is divided into general printing and screen layout printing. • Set to ON, the printer runs according to the set mode. • Set to OFF, the printer is idled.  **Note**: Only one mode is enabled at a time. The screen layout printing is prioritized.

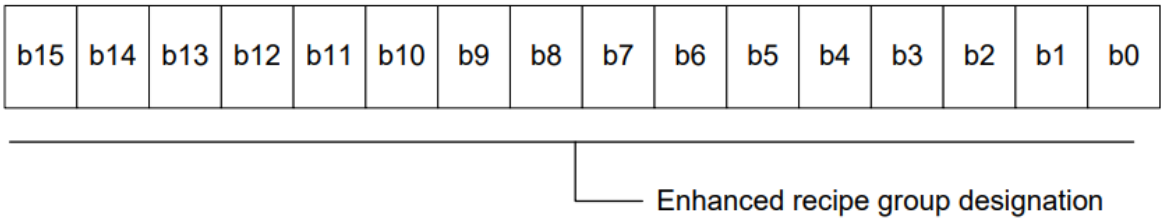
System Control Register	
b9 – Printer form feed flag	• Set to ON, the printer ejects the paper and flips the paper. • Set to OFF, the printer is idled. 
b10~b12 – Retrieve network address	When the HMI fails to obtain the IP address assigned by the DHCP server, trigger this bit to retrieve the IP address. • b10 is for obtaining the IP address with LAN1 • b11 is for obtaining the IP address with LAN2. • b12 is for obtaining the IP address with Wi-Fi.

The following table lists the flags of enhanced recipe control register with their description.

Enhanced Recipe Control Register	
 (1) b0 Enhanced Recipe number change flag (2) b1 Enhanced Recipe read flag (PLC → HMI) (3) b2 Enhanced Recipe write flag (HMI → PLC) (4) b3 Enhanced Recipe group change flag (5) b4~b7 Reserved (6) b8~b15 Specify group number of Enhanced Recipe	
b0 – Enhanced Recipe number change flag	Change HMI recipe group. This is applicable to enhanced recipes. Do one of the following to call or change the enhanced recipe number: • Use the HMI internal register **ENRCPNO**.  • Use enhanced recipe group change flag. When the enhanced recipe group change flag is turned ON, the enhanced recipe group is changed according to the number defined in the enhanced recipe group control register, and the number in the internal register ENRCPNO is changed automatically. To reactivate the function, turn the flag OFF and then ON again.
b1 – Enhanced Recipe read flag (PLC → HMI)	When the enhanced recipe read flag is turned ON, the HMI reads the controller enhanced recipe data and writes it into the designated enhanced recipe data register. To reactivate the function, turn the flag OFF and then ON again.
b2 – Enhanced Recipe write flag (HMI → PLC)	When the enhanced recipe write flag is turned ON, the HMI writes the designated enhanced recipe data into the controller register. To reactivate the function, turn the flag OFF and then ON again.
b3 – Enhanced Recipe group number change flag	Change the HMI recipe group number. This is applicable to enhanced recipes. Do one of the following to call or change the enhanced recipe group number:

Enhanced Recipe Control Register	
	• Use the HMI internal register ENRCPG.  • Use enhanced recipe group number change flag. When the enhanced recipe group number change flag is turned ON, the enhanced recipe group number is changed according to the value defined in the enhanced recipe group number bits (b8~b15), and the number in the internal register ENRCPG is changed automatically. To reactivate the function, turn the flag OFF and then ON again.
b8~b15 – Designate enhanced recipe group number to be changed	Designate the enhanced recipe group number to be changed with the high byte (Bits 8~15) from the enhanced recipe control register. By activating the enhanced recipe group number change flag, the HMI changes the number in the internal register ENRCPG, it is changing the enhanced recipe group.

The following table lists the enhanced recipe control register with their description.

Enhanced Recipe Control Register	
	
b0~b15 – Enhanced Recipe designation	Designate the enhanced recipe group number to be changed from the enhanced recipe group control register. By activating the enhanced recipe group change flag, the HMI changes the number in the internal register ENRCPNO, it is changing the enhanced recipe group.

The following table lists the advanced level access control register with their description.

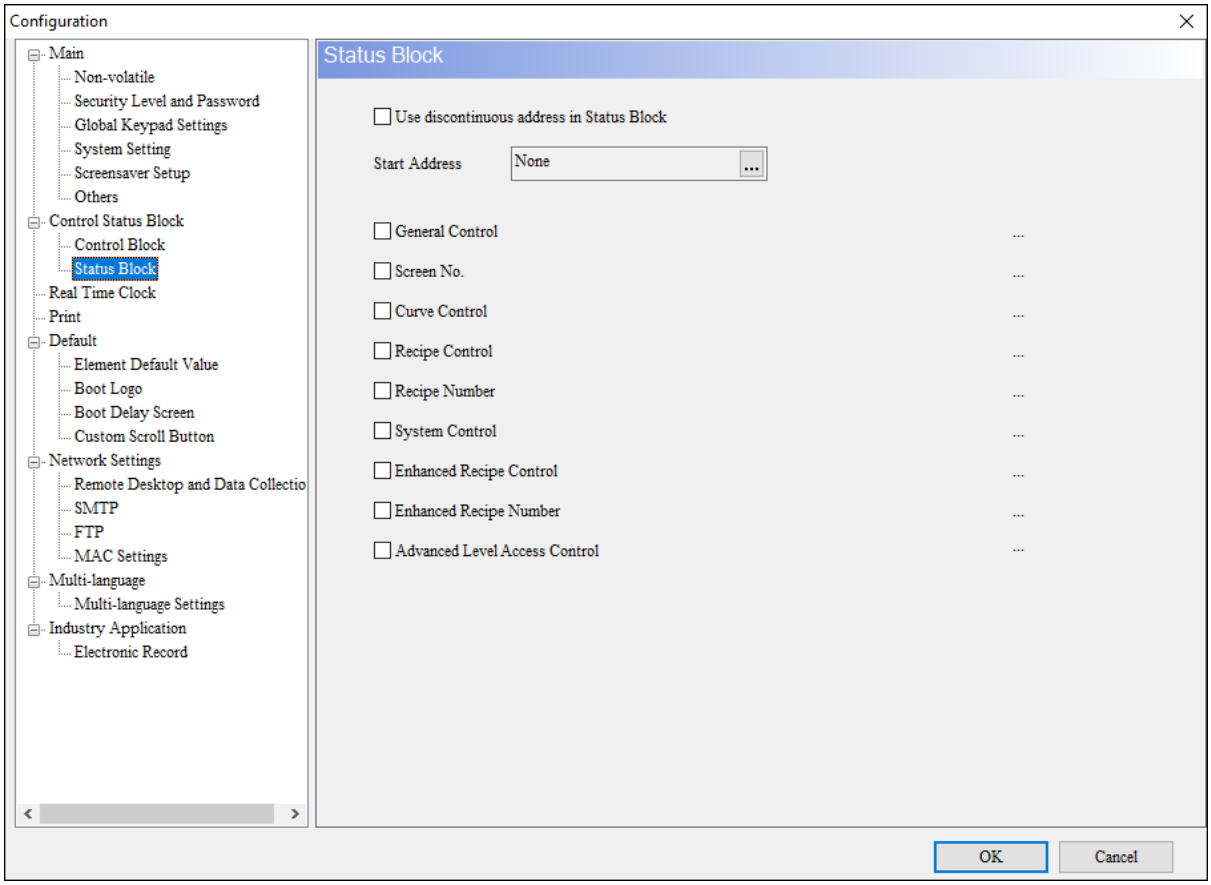
<table>
<tr><th colspan="2">Advanced Level Access Control</th></tr>
<tr><td>b0~b3–
Set User Level</td><td>Change the user level of the current HMI by triggering the Bit 0, Bit 1, Bit 2 and Bit 3 flags.
The following table lists how to set security levels.
<table>
<tr><th rowspan="2">Security Level</th><th colspan="4">Flag Control</th></tr>
<tr><th>Bit 3</th><th>Bit 2</th><th>Bit 1</th><th>Bit 0</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>2</td><td>0</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>3</td><td>0</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td>0</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>5</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>6</td><td>0</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>7</td><td>0</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>8</td><td>1</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>9</td><td>1</td><td>0</td><td>0</td><td>1</td></tr>
</table></td></tr>
<tr><td>b15
Set User Highest Level</td><td>Highest security level control.</td></tr>
</table>

Note: If **Advanced Level Access Control** is enabled, user level of **General Control** becomes invalid.

Status Block

The **Status Block** is used to monitor the present HMI status, such as current screen number, curves, recipe control, and user level.

Note: If the **Control Block** is not set, the **Status Block** cannot monitor the status. Moreover, the addresses of the **Control Block** and **Status Block** cannot be the same.



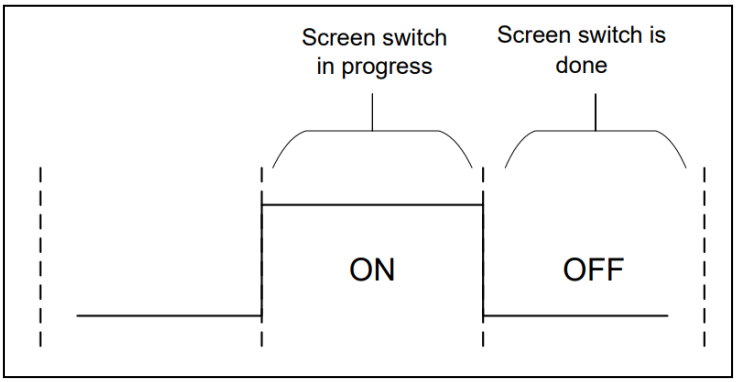
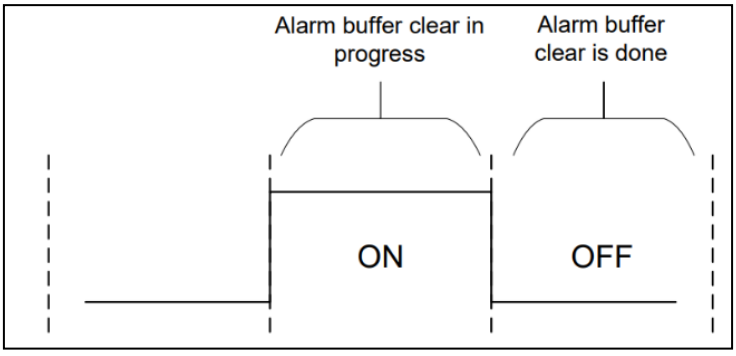
Function	Description
Use discontinuous address in Status Block	If selected, the settings in the Status Block are available, and you can define the register addresses in the controller or the HMI internal memory.

The following table lists the flags of general control status register with their description.

General Control Status Register

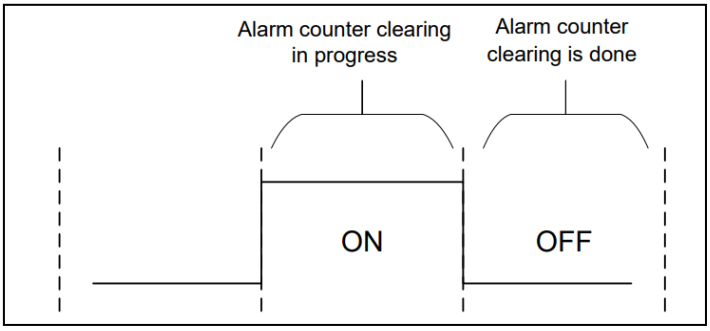
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(9)				(8)				(7)	(6)	(5)	(4)	(3)	(2)		(1)

(1) b0 Screen switch flag
(2) b1~b2 Reserved
(3) b3 Alarm buffer clear flag
(4) b4 Alarm counter clear flag

<table>
<tr><th colspan="2">General Control Status Register</th></tr>
<tr><td colspan="2">(5) b5 External storage device cache write flag
(6) b6 Remote control lock flag
(7) b7 Reserved
(8) b8~b11 Set user level
(9) b12~b15 Reserved</td></tr>
<tr><td>b0 –
Screen switch flag</td><td>• When the screen is switching, the flag is turned ON,
• When the screen switching is completed, the flag is turned OFF.
 
</td></tr>
<tr><td>b3 –
Alarm buffer clear flag</td><td>• When the HMI is clearing the alarm buffer, the flag is turned ON.
• When the alarm buffer clearing is completed, the flag is turned OFF.
 
</td></tr>
</table>

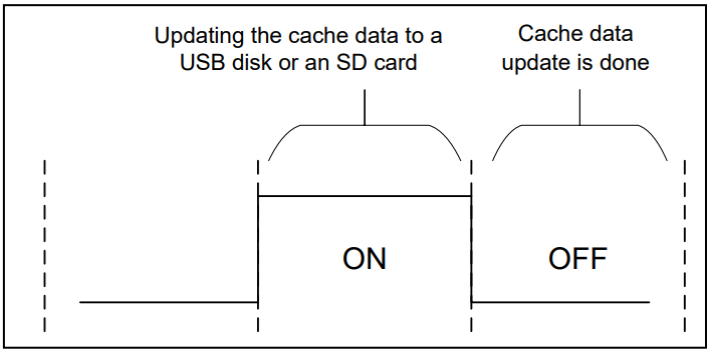
<table>
<tr><th colspan="2">General Control Status Register</th></tr>
<tr><td>b4 – Alarm counter clear flag</td><td>

When the HMI is clearing the alarm counter, the flag is turned ON.
When the alarm counter clearing is completed, the flag is turned OFF.



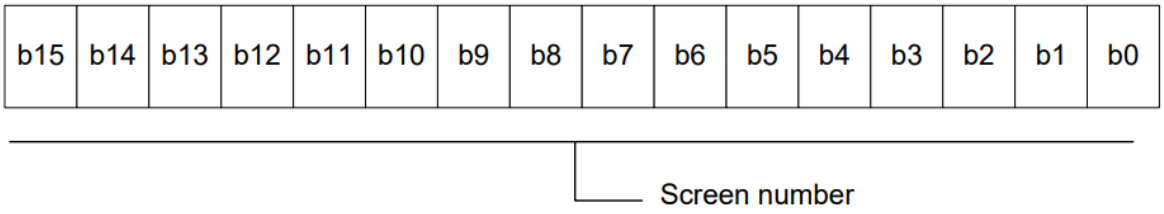
</td></tr>
<tr><td>b5 – External storage device cache write flag</td><td>

When the HMI is updating the cache data into the USB or SD card, the flag is turned ON.
When data updating is completed, the flag is turned OFF.

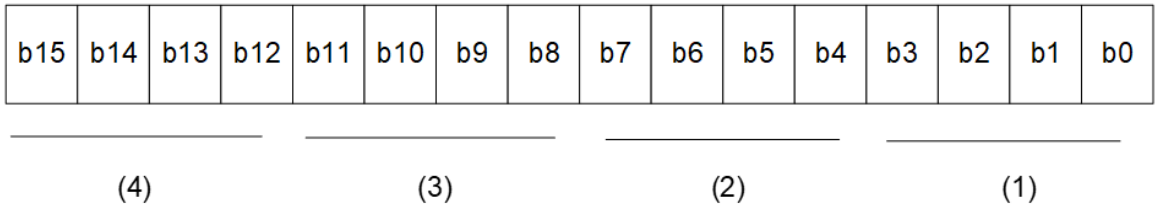


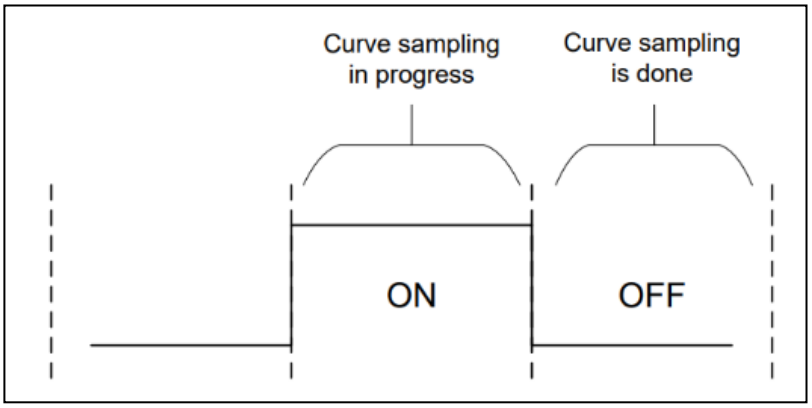
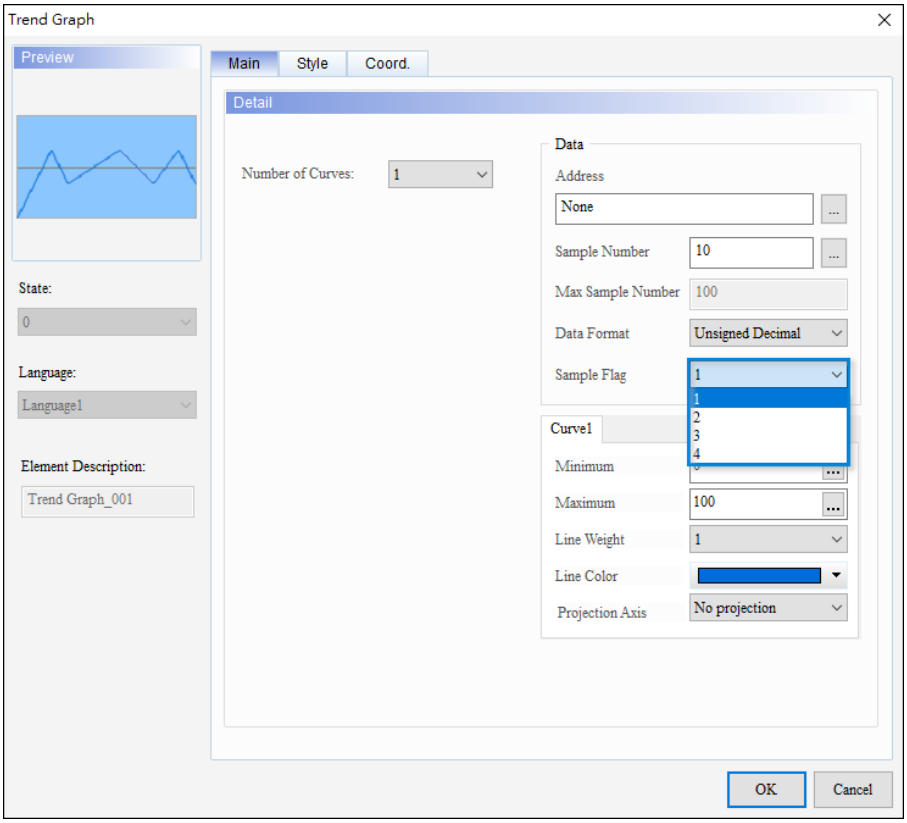
</td></tr>
<tr><td>b8~b11 – Set user level</td><td>
Reads the current user level operated by the HMI. The following table lists the bit state corresponding to the user level operated by the HMI.
<table>
<tr><th rowspan="2">Security Level</th><th colspan="4">Flag Control</th></tr>
<tr><th>Bit 11</th><th>Bit 10</th><th>Bit 9</th><th>Bit 8</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>2</td><td>0</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>3</td><td>0</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td>0</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>5</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>6</td><td>0</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>7</td><td>0</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Highest security level</td><td>1</td><td>0</td><td>0</td><td>0</td></tr>
</table>
Note: If Advanced Level Access Control is enabled, the user level here will be invalid.
</td></tr>
</table>

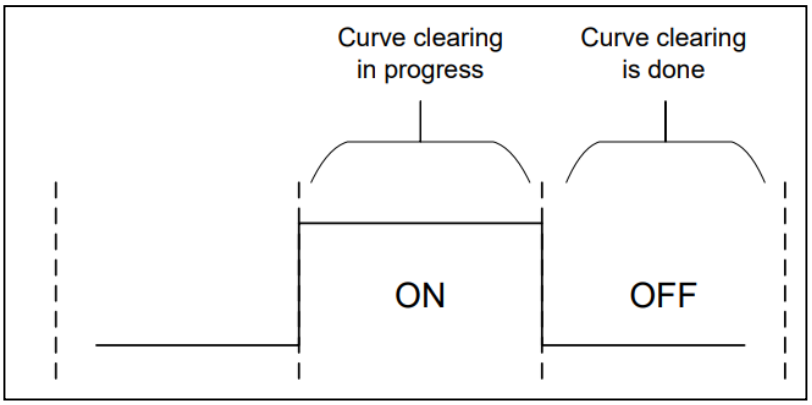
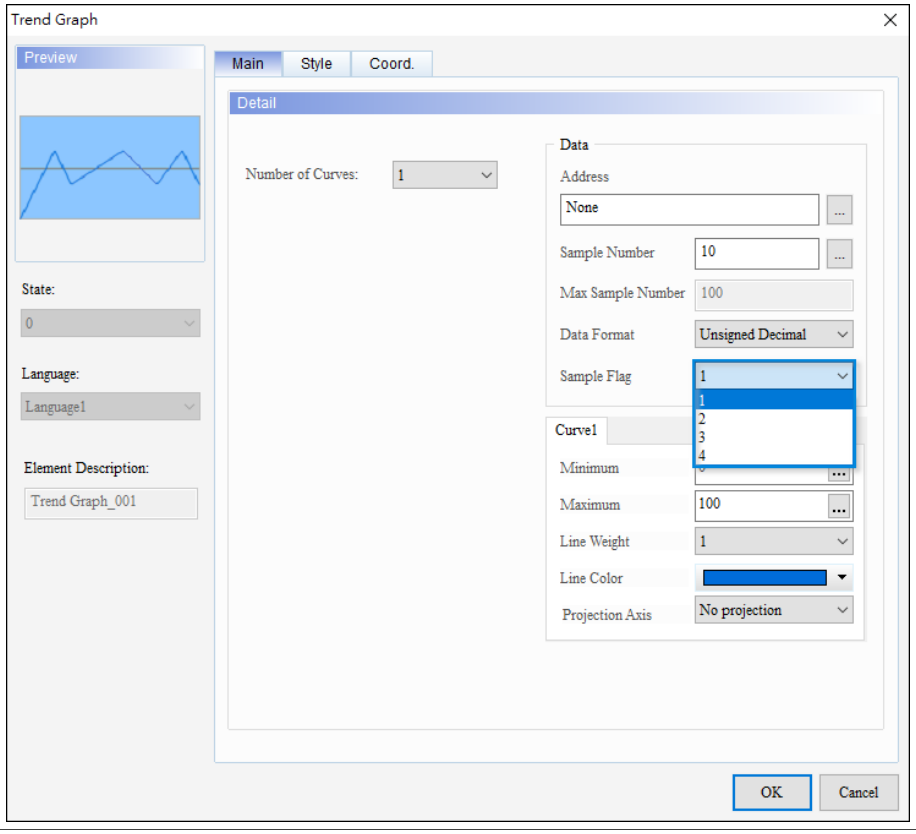
The following table lists the flags of screen No. status register with their description.

Screen No. Status Register	
	
b0~b15 – Screen No. status	Check the last opened screen number with this status register.

The following table lists the flags of the curve control status register with their description.

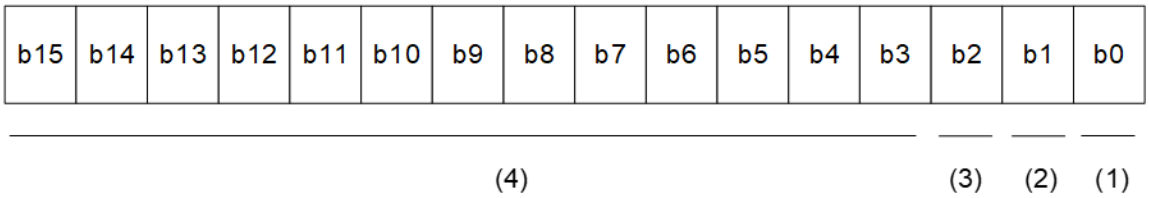
Curve Control Status Register

(1) b0~b3 Curve sampling status flags 1~4 (b0 refers to flag 1, and so forth) (2) b4~b7 Reserved (3) b8~b11 Curve clear status flags 1~4 (b8 refers to flag 1, and so forth) (4) b12~b15 Reserved

Curve Control Status Register	
b0~b3 – Curve sampling status flags (1~4)	When the **Trend Graph** or **X-Y Chart** elements sample the data, the HMI turns the corresponding curve sampling status flag ON. When the sampling is completed, the curve sampling status flag is turned OFF.  The sampling flag 1 of the **Trend Graph** element corresponds to the curve sampling status flag 1; the sampling flag 2 of the **Trend Graph** element corresponds to the curve sampling status flag 2, and so forth. 

Curve Control Status Register	
b8~b11 – Curve clear status flags (1~4)	When the **Trend Graph** or **X-Y Chart** elements clear the data, the HMI turns the corresponding curve clear status flag ON. When the clearing is completed, the curve clear status flag is turned OFF.  The clear flag 1 of the **Trend Graph** element corresponds to the curve clear status flag 1; the clear flag 2 of the **Trend Graph** element corresponds to the curve clear flag 2, and so forth. 

The following table lists the flags of recipe control status register with their description.

Recipe Control Status Register	

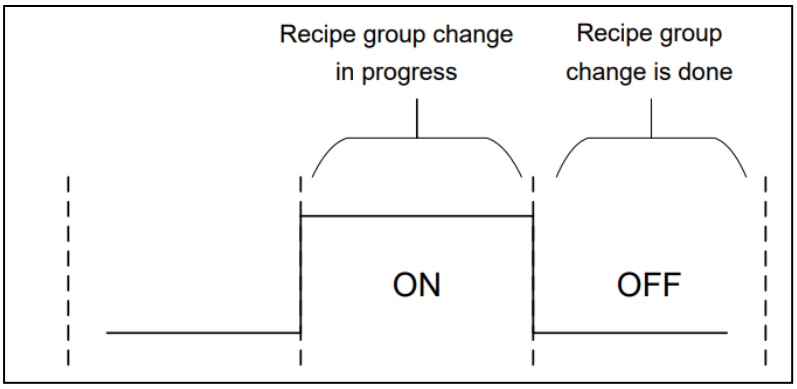
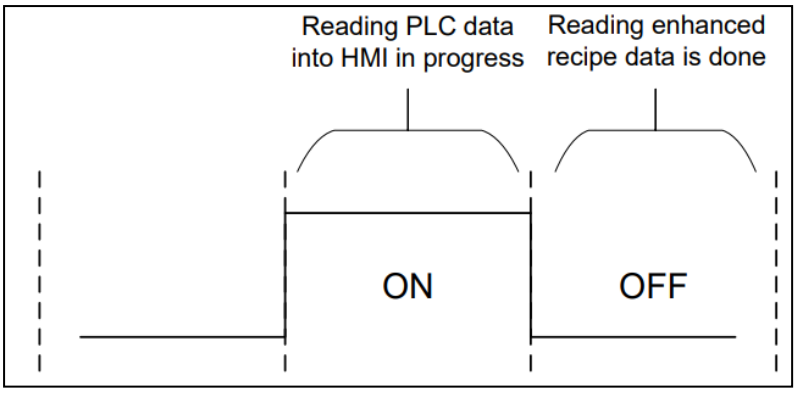


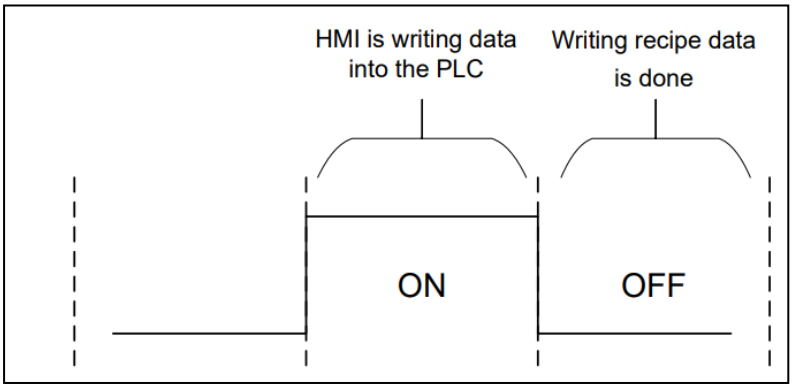
(1) b0 Recipe change status flag

(2) b1 Recipe read status flag (PLC → HMI)

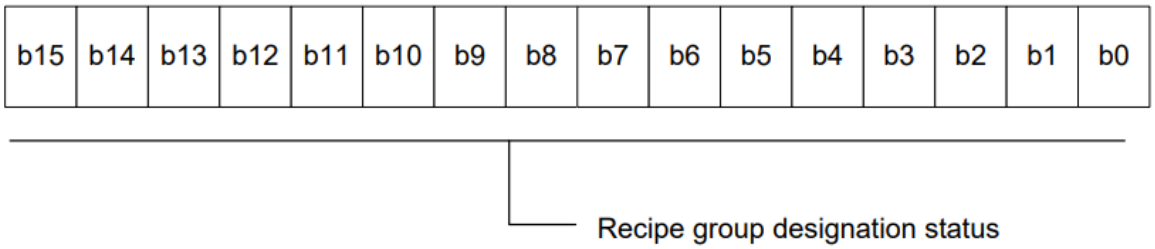
(3) b2 Recipe write status flag (HMI → PLC)

(4) b3~b15 Reserved

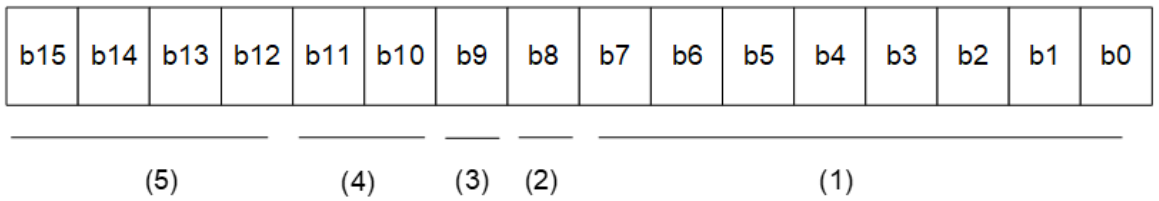
b0 – Recipe change status flag	When the control recipe group in the **control block** is changed, the recipe group change status flag is turned ON; when the HMI changes the recipe group and completes updating the RCPNO number, the recipe group change status flag is turned OFF. 
b1 – Recipe read status flag	When the HMI reads back one set of recipe data from the control block, the recipe read status flag is turned ON; when the HMI completes reading and saving the recipe from the control block, the recipe read status flag is turned OFF. 

Recipe Control Status Register	
b2 – Recipe write status flag	When the HMI sends one set of designated recipe data to the control block, the recipe write status flag is turned ON; when the HMI completes writing the recipe into the control block, the recipe write status flag is turned OFF. 

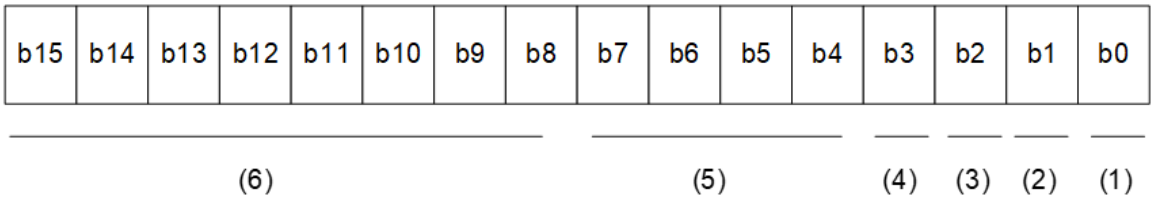
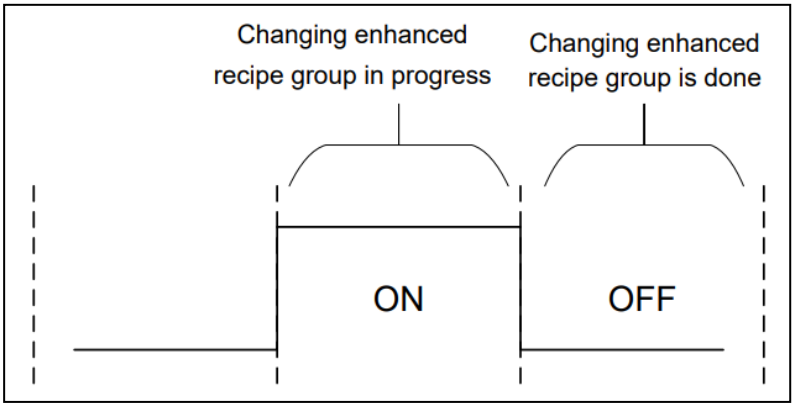
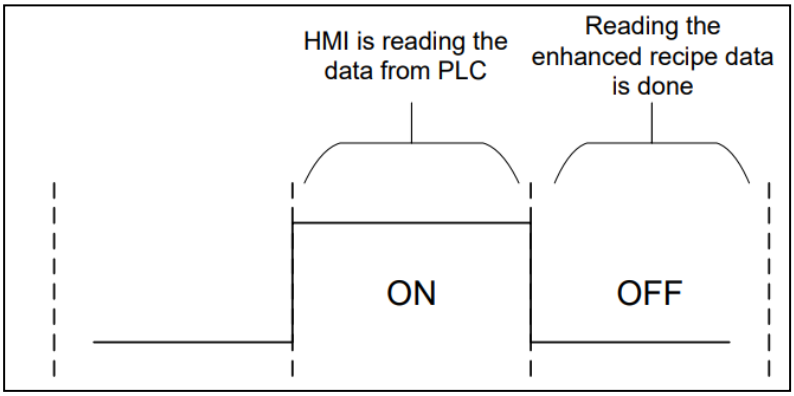
The following table lists the flags of recipe control status register with their description.

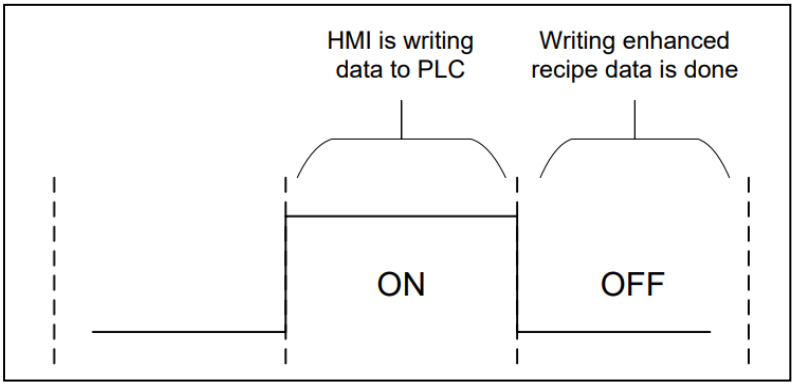
Recipe Control Status Register	
	
b0~b15 – Recipe number designation status	• Whether you change the value of the recipe designation register RCPNO by the control block or HMI, the recipe group control status register updates its value so that the control block finds the current recipe number from this register. • This recipe designation flag must work with the recipe change flag.

The following table lists the flags of system control status register with their description.

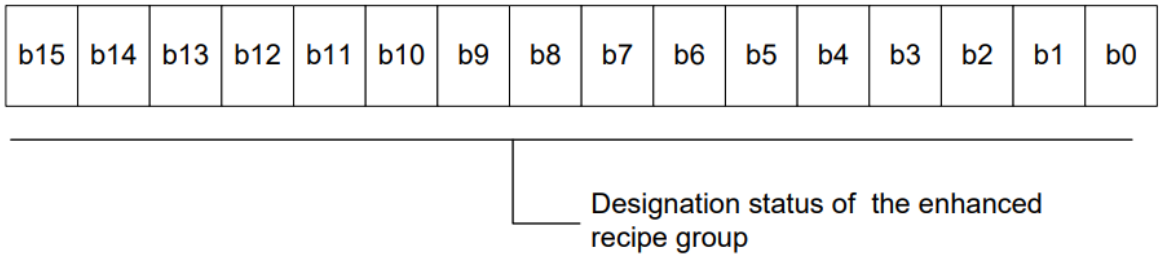
System Control Status Register	
 (1) b0~b7 Multi-language status value (2) b8 Printer status flag (3) b9 Printer form feed status flag (4) b10~b11 Retrieve Ethernet address status (5) b12 Wi-Fi retrieve network address status (6) b13~b15 Reserved	
b0~b7 – Multi-language status value	Display the corresponding status value of the language in use.
b8 – Printer status flag	• Set to ON, the printer is printing the display screen or the edited screen of the HMI. • Set to OFF, the printer is idled.
b9 – Printer form feed status flag	• Set to ON, the printer is ejecting the paper and flipping the paper automatically. • Set to OFF, the printer is idled.
b10~b12 – Retrieve network address status value	Displays the status value of IP retrieve. When the Control Block is triggered to retrieve the network address, the status value is 1, and the status value is toggled to 0 after the address is obtained. • b10 is the LAN1 status. • b11 is the LAN2 status. • b12 is the Wi-Fi status.

The following table lists the flags of enhanced recipe control status register with their description.

Enhanced Recipe Control Status Register	
 (1) b0 Enhanced Recipe change status flag (2) b1 Enhanced passive read status flag (PLC → HMI) (3) b2 Enhanced Recipe write status flag (HMI → PLC) (4) b3 Enhanced Recipe group change status flag (5) b4~b7 Reserved (6) b8~b15 Designate the enhanced recipe group number to be changed.	
b0 – Enhanced Recipe change status flag	When the control-enhanced recipe group in the **control block** is changed, the recipe group change status flag is turned ON; when the HMI group is changed and the **RCPNO** number is updated, the recipe group change status flag is turned OFF. 
b1 – Enhanced Recipe read status flag	When the HMI reads one set of recipe data from the **control block**, the enhanced recipe read status flag is turned ON; when the reading and saving of the enhanced recipe via the **control block** is completed, the enhanced recipe read status flag is turned OFF. 

Enhanced Recipe Control Status Register	
b2 – Enhanced Recipe write status flag	When the HMI sends one set of designated enhanced recipe data to the **control block**, the recipe write status flag is turned ON; after the enhanced recipe is written into the **control block**, the enhanced recipe write status flag is turned OFF. 

The following table lists the flags of enhanced recipe control status register with their description.

Enhanced Recipe Control Status Register	
	
b0~b15 – Enhanced Recipe designation status	• Whether you change the value of the enhanced recipe group designation register ENRCPNO by the **control block** or HMI, the enhanced recipe group status register updates its value so that the **control block** finds the recipe group number from this register. • The enhanced recipe designation status flag must work with the enhanced recipe group change status flag.

The following table lists the advanced level access control with their description.

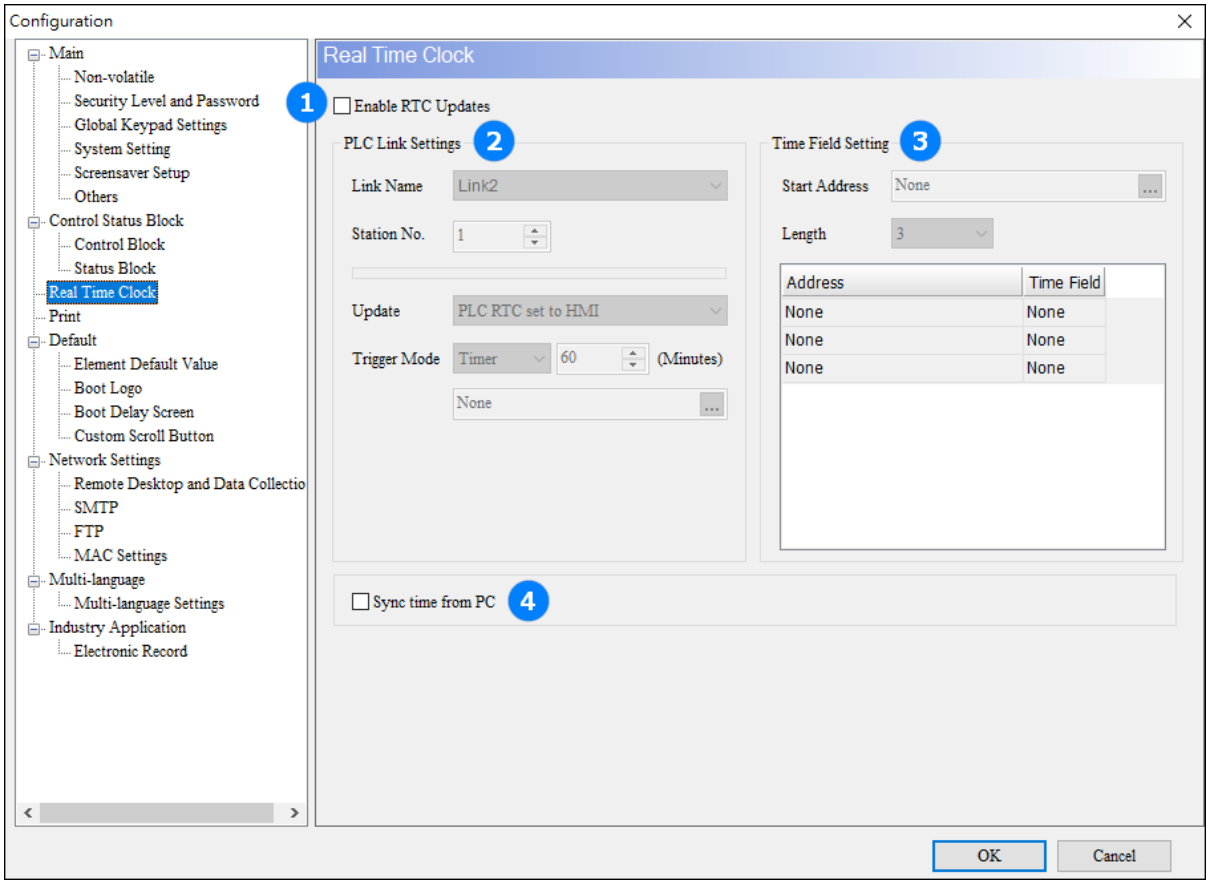
<table>
<tr><th colspan="2">Advanced Level Access Control</th></tr>
<tr><td>b0~b3–
Set User Level</td><td>Use Bit 0, Bit 1, Bit 2 and Bit 3 to read the current user authority level of the HMI.
The following table lists how to set security levels.
<table>
<tr><th rowspan="2">Security Level</th><th colspan="4">Flag Control</th></tr>
<tr><th>Bit 3</th><th>Bit 2</th><th>Bit 1</th><th>Bit 0</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>2</td><td>0</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>3</td><td>0</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td>0</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>5</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>6</td><td>0</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>7</td><td>0</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>8</td><td>1</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>9</td><td>1</td><td>0</td><td>0</td><td>1</td></tr>
</table></td></tr>
<tr><td>b15
Set User Highest Level</td><td>Highest authority level access.</td></tr>
</table>

Note: If **Advanced Level Access** is enabled, user level of **General Control** becomes invalid.

Real Time Clock

Controller has a built-in real-time clock (RTC), allowing you to synchronize the HMI RTC time to the controller or the controller RTC time to the HMI. Some controllers do not have a built-in real-time clock, so this function cannot be used in operations related to time setting, for example, turn on and off the machine regularly every day, manage the access control, and so on.

Note: Some old Delta controller models (ES / SS / EC) do not support real time clock update.



1 Enable RTC Updates

Function	Description
Enable RTC Updates	Select to enable real-time clock update. **Note**: If the Delta controller is selected, the **Time Field Setting** area is disabled, and the address will be set to the special registers D1319 ~ D1313 of the real time clock of Delta controller.

2 PLC Link Settings

Function	Description
Link Name	Select the **link name, even** if the selected controller is COM1, COM2, COM3 or Ethernet. The default is **Link2**.
Station No.	Set the **station number** of the controller for which you want to update the time. If the selected controller does not support station number setting, this setting is not available.

Function	Description
Update	Select the RTC update mode. The default is **PLC RTC time set to HMI**.
Trigger Mode	Select the RTC trigger mode. The default is **Timer**. • If **Timer** is selected, you can set how often to perform automatic update. The range is 1 ~ 1440 minutes, and the default value is **60** minutes. • If **Bit On** is selected, when the Bit is ON, it triggers to update the settings. • If **Bit Off** is selected, when the Bit is OFF, it triggers to update the settings. **Note**: If **Bit On** or **Bit Off** is selected, the trigger address must be set. The trigger address can be the internal memory or the register address of the controller.

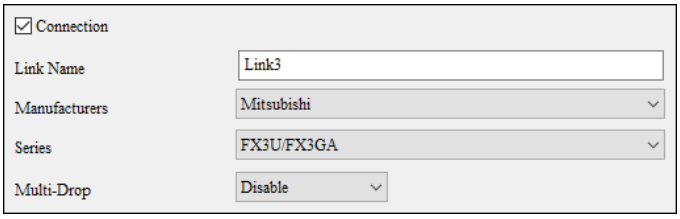
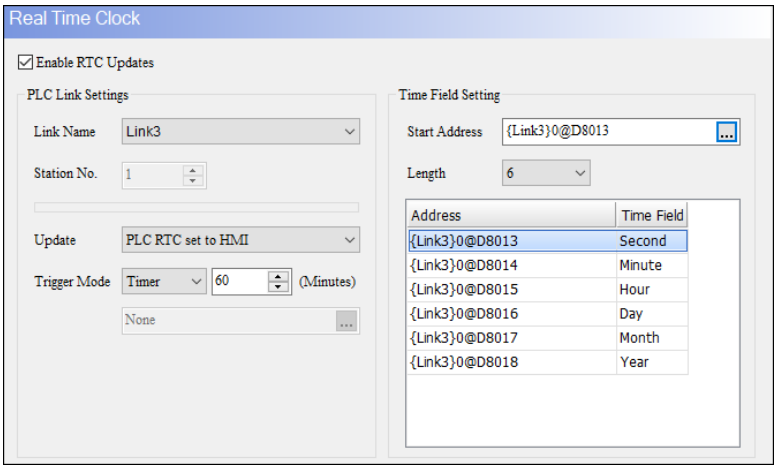
❸ Time Field Setting

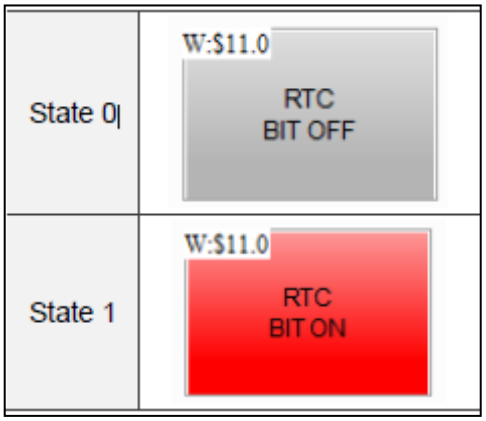
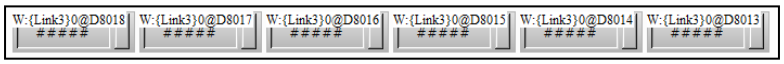
Function	Description
Start Address	Set the register address of the controller for RTC time synchronization. **Note**: If Delta controller is selected, setting the **Start Address** is not required.
Length	Select the **length** according to the number of time field to synchronize. The value range is 1–7, and the default value is **3**. **Note**: If Delta controller is selected, setting **Length** is not required.

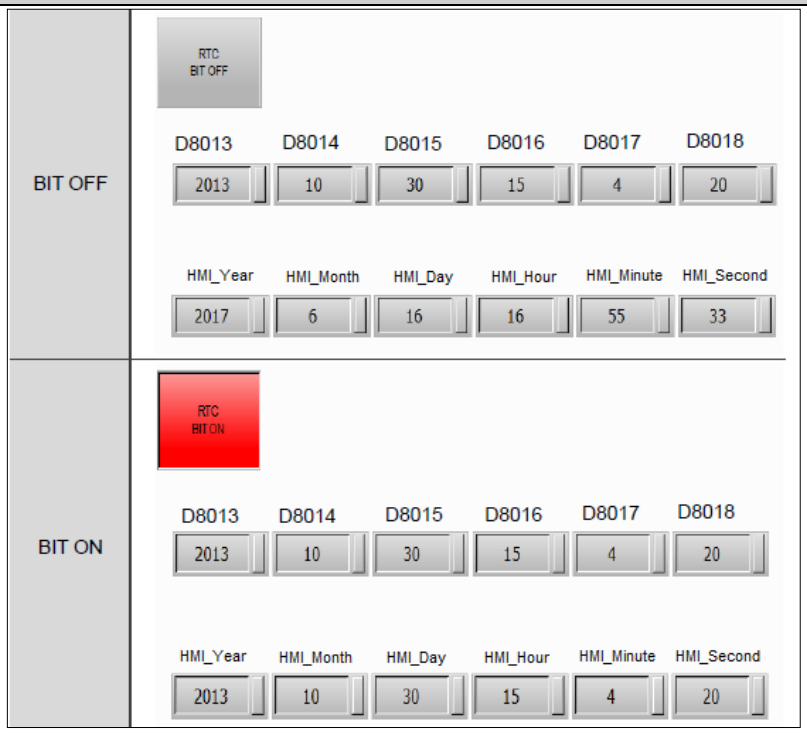
❹ Sync time from PC

Function	Description
Sync time from PC	If selected, after downloading the project, the HMI time synchronizes with the PC.

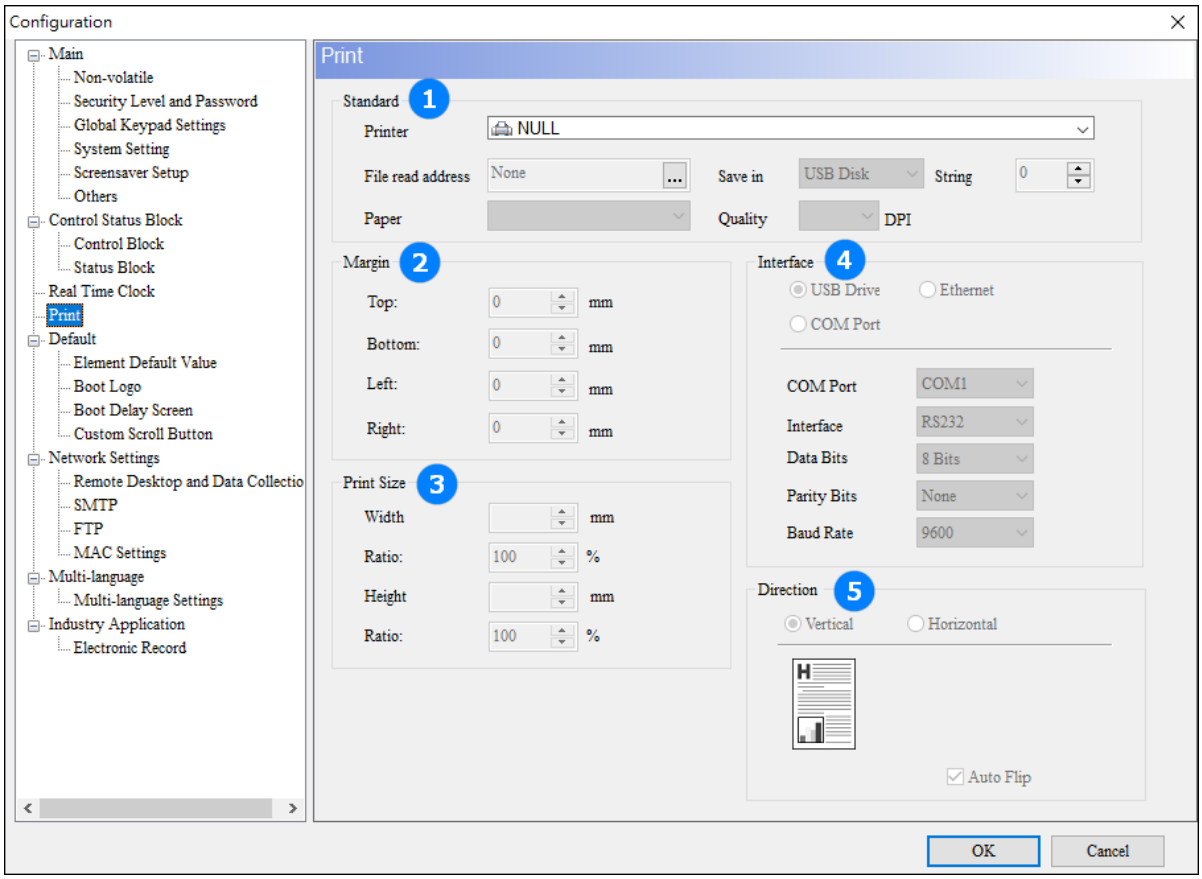
The following table lists the setting steps with examples.

Setting Step	Example
Real Time Clock Update	1. On the toolbar, go to **General** > **Device Communication,** and then configure the communication setting in the **Device Communication** dialog.  2. On the toolbar, go to **General** > **Configuration**. 3. In the **Real Time Clock** setting page, select **Enable RTC Updates** checkbox. 4. In the **PLC Link Settings** area, select **Link3** (Mitsubishi – FX3U / FX3GA) for **Link Name**. 5. Select **PLC RTC time set to HMI** for **Update**. 6. Select **Bit On** for **Trigger Mode**. Click ... to set the trigger address to **$11.0**. 7. In the **Time Field Setting** area, set **{Link3}1@D8013** for the start address and **6 for Length**. 8. In the address list, select **Second** for the Time Field corresponding to {Link3}1@D8013. Select **Minute** for the Time Field corresponding to {Link3}1@D8014. Select **Hour** for the Time Field corresponding to {Link3}1@D8015. Select **Day** for the Time Field corresponding to {Link3}1@D8016. Select **Month** for the Time Field corresponding to {Link3}1@D8017. Select **Year** for the Time Field corresponding to {Link3}1@D8018.  9. Click **OK**.

Setting Step	Example
Create button to trigger the real time clock	1. Create a **Maintained Button** element and set its **Write Address** to **$11.0**. 2. Edit the **State 0** text as **RTC BIT OFF**, **State 1** text as **RTC BIT ON.** 3. Set the **Foreground Color** as red, representing the state is triggered ON. 
Create Numeric Entry element	1. Create 6 **Numeric Entry** elements, and set their addresses as **{Link3}1@D8013 ~ {Link3}1@D8018** in order.  2. Create 6 more **Numeric Entry** elements, and set their **Internal parameter** as **TIME_YEAR**, **TIME_MONTH**, **TIME_DAY**, **TIME_HOUR**, **TIME_MINUTE**, **TIME_SECOND** in order. 
Result	After completing the creation of all elements, compile and download to the HMI. When the RTC **Maintained Button** (BITON) is triggered, the system will set the RTC time of the controller to the HMI. The HMI internal parameter TIME_YEAR, TIME_MONTH, TIME_DAY, TIME_HOUR, TIME_MINUTE, TIME_SECOND will be synchronized with the RTC of the controller.

Setting Step	Example
	

Print



❶ Standard

Function	Description
Printer	DOP-100 series models support Honeywell, HP, EPSON, ZEBRA, GoDEX, Micro Printer, PDF Writer, and ePrinter printers.
Paper	The paper size varies depending on the selected printer. The available options include A4, LETTER, CUSTOM, and so on.
Quality	Set the resolution of the printer. 72 and 203 DPI can be selected according to the selected printers.

❷ Margin

Function	Description
Top / Bottom / Left / Right	Set the margins of the paper as the reserved area during printing, which means that it is displayed as blank and not printed. The value range is 0–550, and the default value is **0**.

❸ Print Size

Function	Description
Width / Height	Set the width and height. This setting is available when **Paper** is set as CUSTOM.
Ratio	Set the ratio of the width and height. The value range is 10–400, and the default value is **100**.

❹ Interface

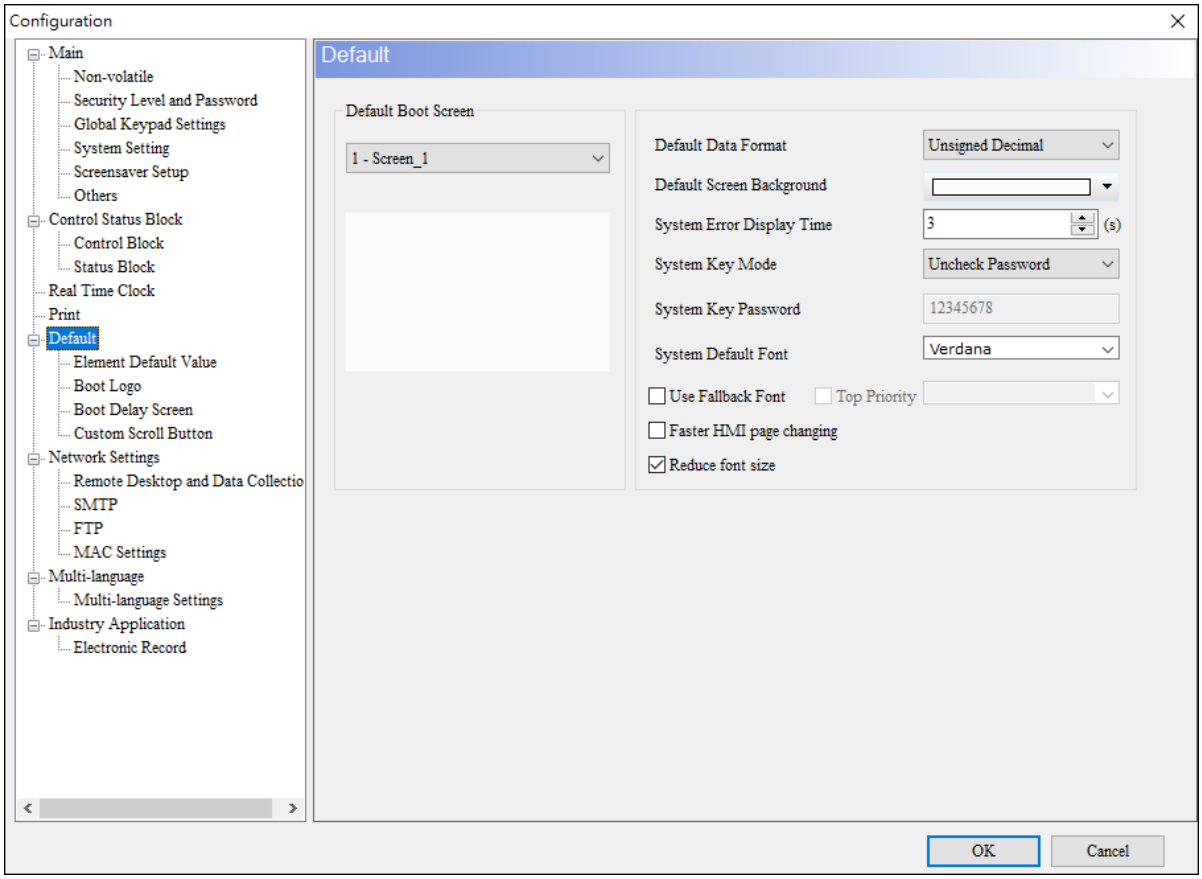
Function	Description
Interface	USB, Ethernet, and COM Port can be selected according to the selected printer. If you choose ePrinter to print, you need to fill in the IP address and printer port (the default value is **85**) of the PC you are using.

❺ Direction

Function	Description
Direction	Set the printing **direction** as vertical or horizontal.

Function	Description
Auto Flip	The printer provides an automatic paper ejection function, helping you to flip the paper to print. • If selected, the printer will automatically flip the paper and continue printing after the paper printing is completed. • If not selected, the printer will forcibly eject the paper after the paper printing is completed and you need to flip the paper manually.

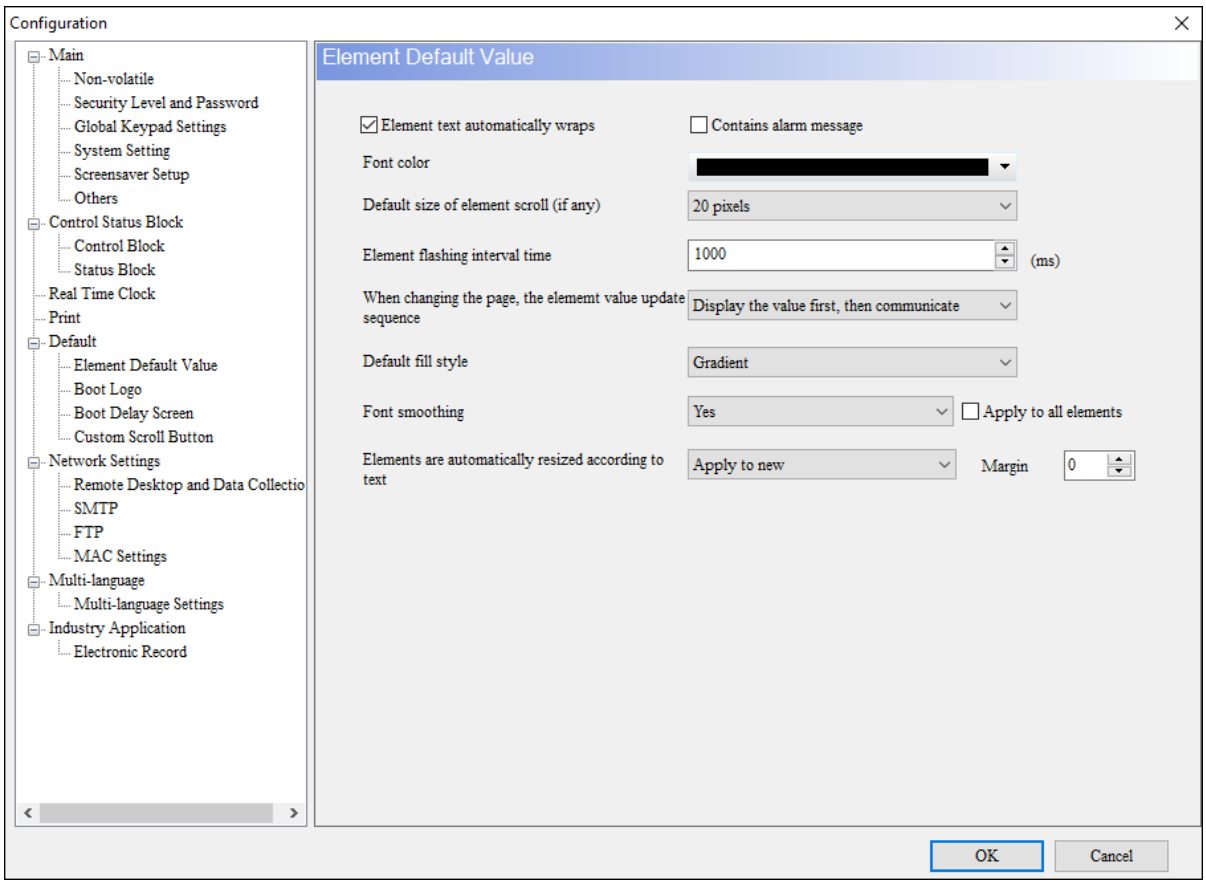
Default



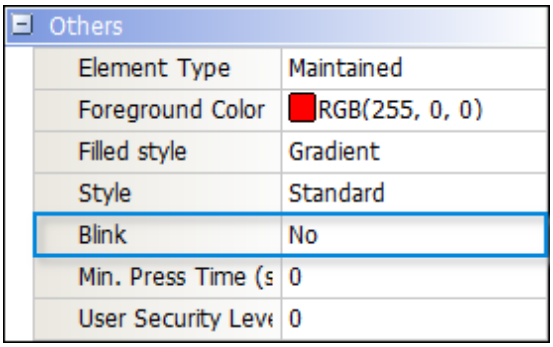
Function	Description
Default Boot Screen	Set the initial screen when the HMI is turned on. You can choose another screen to set as the initial screen. The default is **1-Screen_1**.
Default Data Format	Set the **default data format** when creating an element. The default is **Unsigned Decimal**.
Default Screen Background	Set the default background color when editing the screen on the HMI. The default is  .

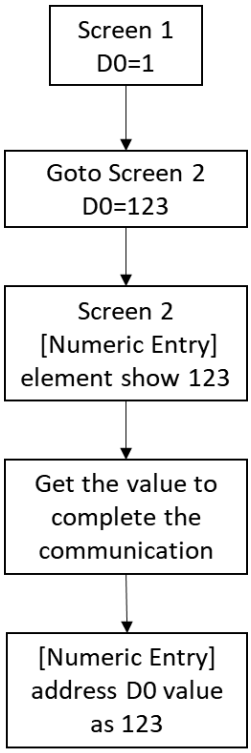
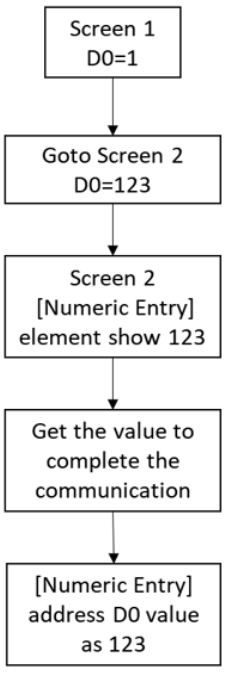
<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>System Error Display Time</td><td>Set the time the message stays when an error message appears. The value range is 0–5, and the default value is 3.
Note: When it is set to 0, if there is any error in the system, no message appears on the HMI.</td></tr>
<tr><td>System Key Mode</td><td>Set the response the HMI should have when pressing the system key. The available options include Disabled, Enable the password check, and Uncheck Password. The default is Uncheck Password.
<table>
<tr><td>Disabled</td><td>If selected, pressing the system key cannot enter the system screen of the HMI.</td></tr>
<tr><td>Enable password check</td><td>If selected, after pressing the system key, the HMI asks you to enter the system key password.</td></tr>
<tr><td>Uncheck Password</td><td>If selected, after pressing the system key, you can enter the system screen of the HMI without entering the system key password.</td></tr>
</table></td></tr>
<tr><td>System Key Password</td><td>Set the system key password. This is the password that the HMI asks you to enter when the System Key Mode is set to Enable Password Check. The default value is 12345678.</td></tr>
<tr><td>System Default Font</td><td>Set the system default font. The default is Verdana.</td></tr>
<tr><td>Use Fallback Font</td><td>Currently, the DOP-100 series is to download the existing fonts to display on the HMI. When the operating system lacks fonts set in the elements, it makes the HMI unable to display the text normally after downloading, so the firmware loads a set of default fonts.
If Use Fallback Font is selected, when the firmware default fonts fail, the software enables the backup font.
If Top Priority is selected, the priority of the backup fonts of the software will be higher than the default fonts of the firmware.</td></tr>
<tr><td>Faster HMI page changing</td><td>If selected, when there are a lot of graphics and static text on the screen, the display speed can be speeded up when switching pages.</td></tr>
<tr><td>Reduce font size</td><td>If selected, when the project is downloaded to the HMI, only the fonts used in the project will be downloaded.</td></tr>
</table>

Element Default Value

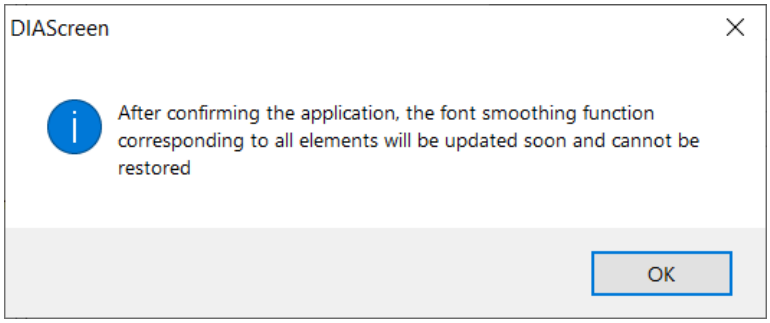


Function	Description
Element text automatically wraps	• If selected, the element text automatically wraps as long as it encounters the boundaries.  • If not selected, when the text encounters the boundaries, the text does not wrap, but it gets extended. 
Font color	Set the **font color**. The default is  .
Default size of element scroll (if any)	Set the default size of the element scroll. The value range is 20–60 pixels, and the default value is **20 pixels**. **Note**: This setting is applied to the elements with scrolls, such as historical data and alarm tables.

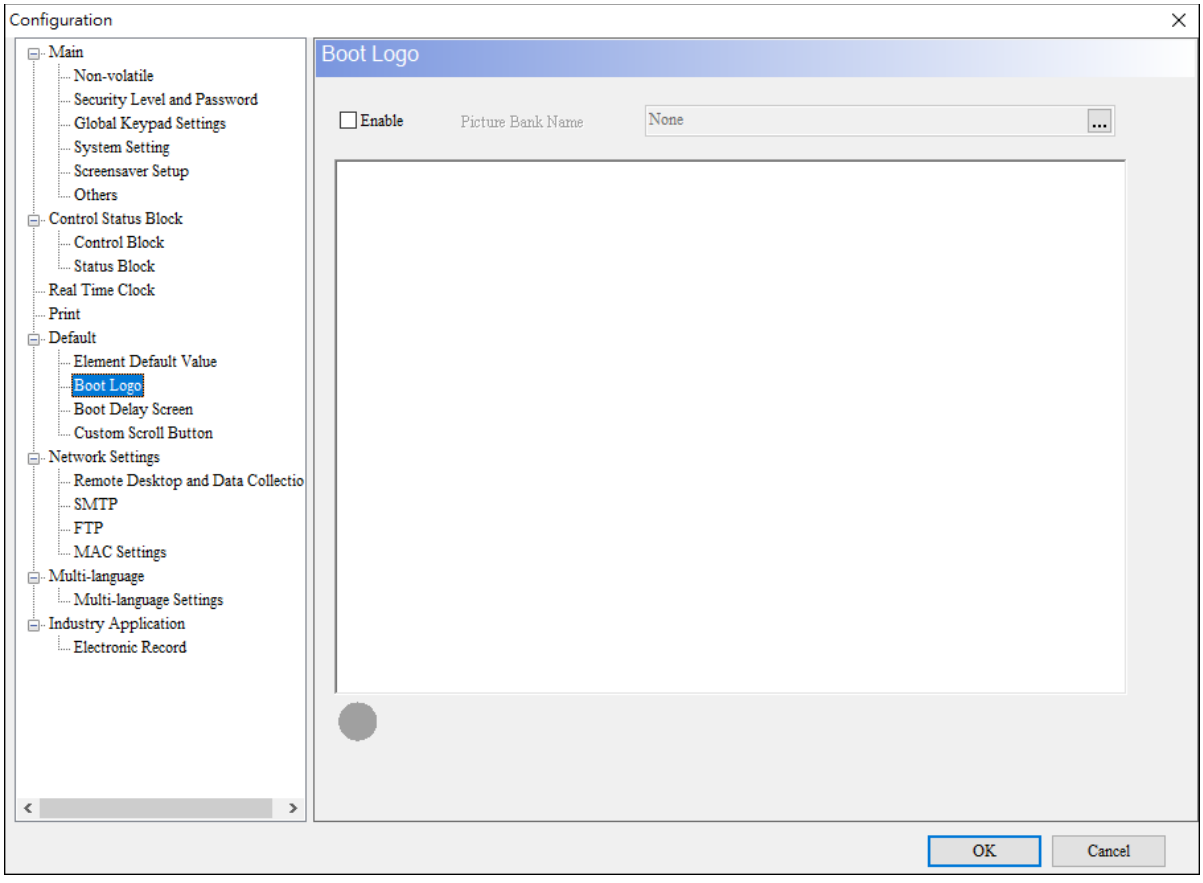
Function	Description
Element flashing interval time	Set the interval time for element flashing. The range value is 500–5000, and the default value is **1000**. **Note**: This setting is available only when the **Blink** property of the element is set to **Yes**. 

When changing the page, the element value update sequence	Set the update order of the element value when the HMI changes the page. The default is **Communicate first, then display the value**. • **Display the value first, then communicate**: The value is read normally after switching the screen and is not affected by the communication.  • **Communication first, then display the value**: The value display of the **Numeric Entry** elements pauses due to the switching of the screen. 

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td></td><td>The following table lists the elements that currently support this feature.
<table>
<tr><td rowspan="5">Button element</td><td>Set to ON</td></tr>
<tr><td>Set to Off</td></tr>
<tr><td>Momentary</td></tr>
<tr><td>Maintained</td></tr>
<tr><td>Set value</td></tr>
<tr><td>Meter element</td><td>Meter(1) ~ (4)</td></tr>
<tr><td>Pipe Diagram element</td><td>Pipe Diagram (1), Pipe Diagram (2)</td></tr>
<tr><td rowspan="3">Indicator element</td><td>Multistate Indicator</td></tr>
<tr><td>Range Indicator</td></tr>
<tr><td>Simple Indicator</td></tr>
<tr><td rowspan="4">Data Display element</td><td>Numerical Display</td></tr>
<tr><td>Character Display</td></tr>
<tr><td>General Message display</td></tr>
<tr><td>Moving Sign</td></tr>
<tr><td rowspan="2">Graphic Display element</td><td>State Graphic</td></tr>
<tr><td>Animated Graphic</td></tr>
<tr><td rowspan="3">Input element</td><td>Numeric Entry</td></tr>
<tr><td>Character Entry</td></tr>
<tr><td>Barcode Input</td></tr>
<tr><td>Curve element</td><td>Curve Input</td></tr>
<tr><td>Analog element</td><td>Slider</td></tr>
</table></td></tr>
<tr><td>Default fill style</td><td>Set the default filled style of the HMI. The default is Gradient.
The settings of this page are global. After Filled Style is set, the filled style of the elements created later will be based on the setting here.</td></tr>
</table>

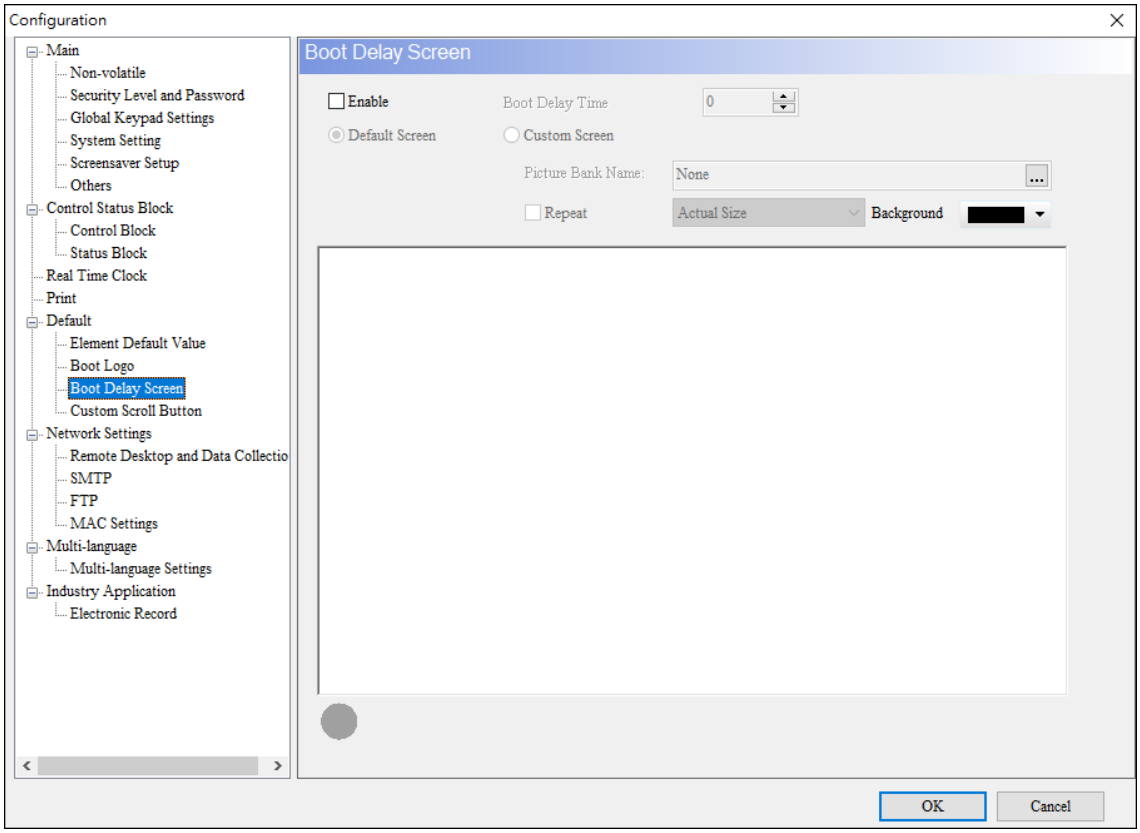
Function	Description
Font smoothing	Set whether the text font of the HMI is smooth. If set to **Yes,** the text is rendered anti-aliased. If **Apply to all elements is** selected, it will be applied to all elements and pops up a message. Otherwise, it will be applied to the **Static Text** elements. 
Elements are automatically resized according to text	• **Don't Apply**: All elements are not automatically resized. • **Apply to all**: All elements in the project are automatically resized. • **Apply to new**: The added elements are automatically resized.

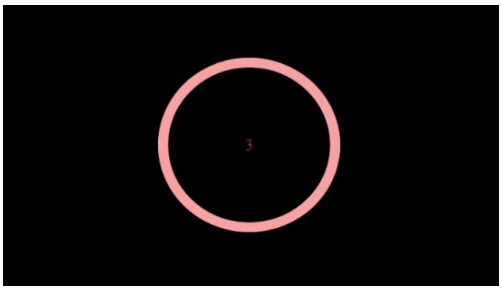
Boot Logo



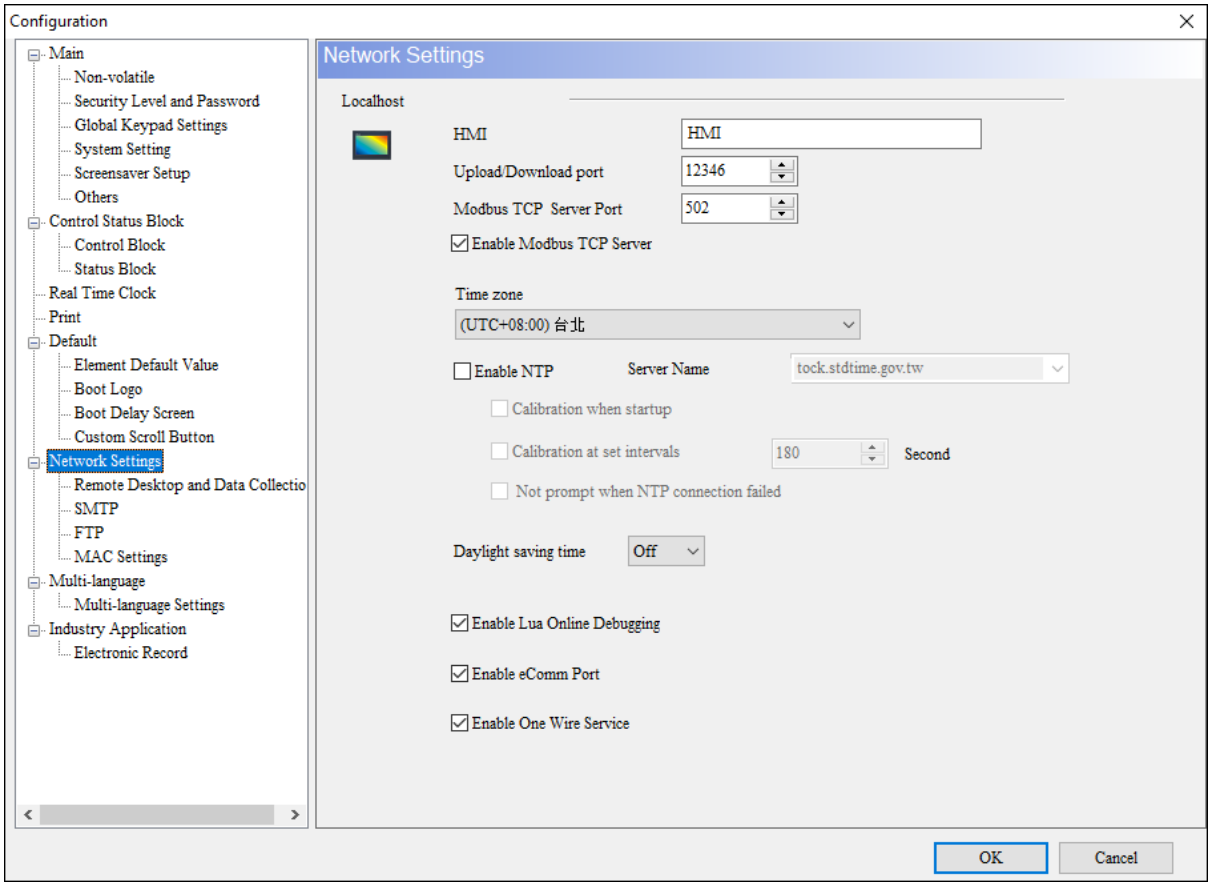
Function	Description
Enable	If selected, you can choose the boot screen from the picture bank. You can also: • Go to **Project** > **Download the Boot Screen** to replace the HMI boot screen. • Go to **Project** > **Download Screen** to download the boot screen. When a GIF file is selected, the gray circle at the bottom left corner displays as  , you can preview the GIF action on the software. **Note**: • To use files not in the picture bank, import the picture to the picture bank first. • After downloading the boot screen, power on the HMI again. • Supported image file formats are BMP, JPG, GIF, ICO, and PNG. • Only the boot screen after conversion by the software less than 3 Mbytes can be imported.

Boot Delay Screen



Function	Description
Enable	If selected, the **boot delay time** can be set.
Boot Delay Time	Set the **boot delay time** to wait for the controller to start. The value range is 0–255.
Default screen	If the **Boot Delay Time** is set to 3 seconds, and the system default boot delay screen is used, then after downloading to the HMI, the HMI screen appears after counting down from 3 seconds to 0 seconds. 
Custom Screen	Define the boot delay screen, and set the graphic display mode, background color, and whether to repeat.

Network Settings

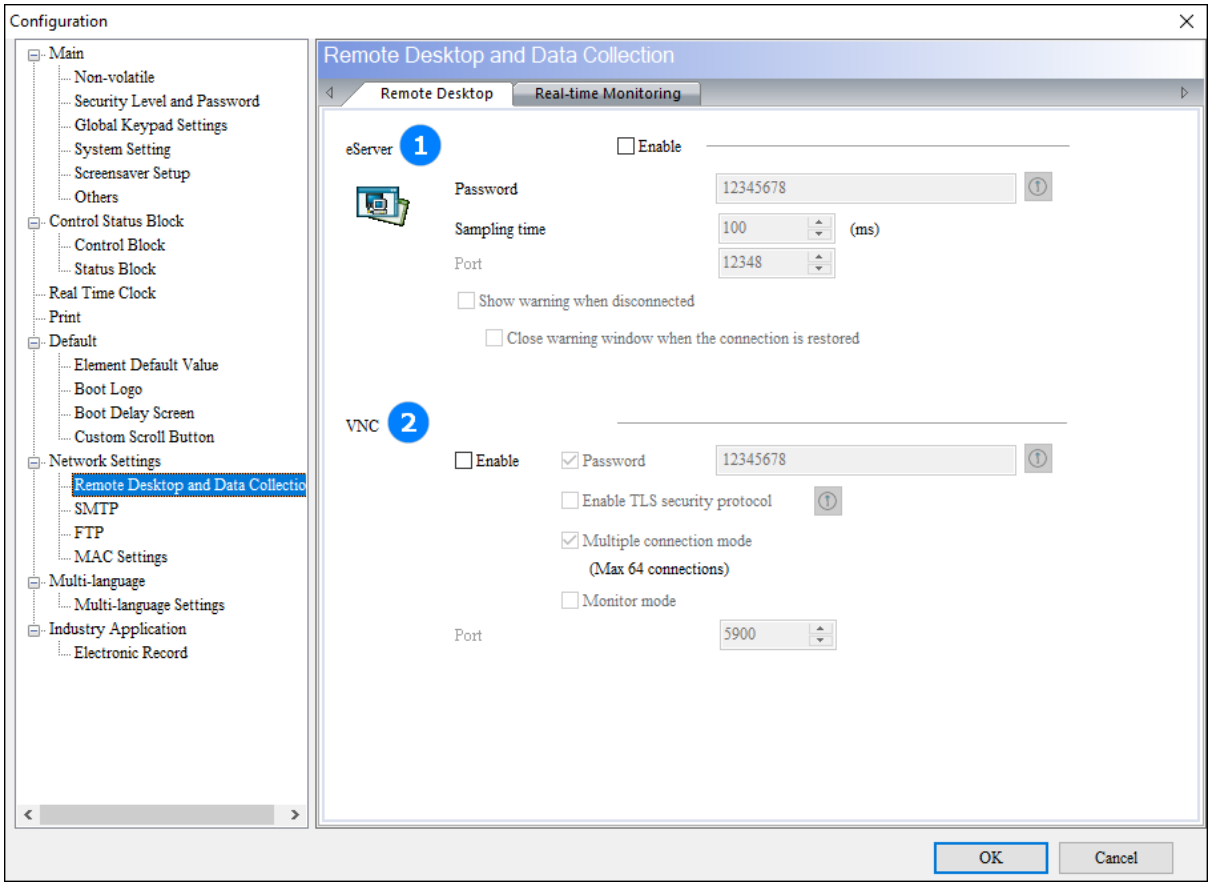


Function	Description
HMI	Set the name of the HMI. When using network remote monitoring or data sampling, use the HMI name to quickly identify which HMI is being monitored or is accessing data.
Upload/Download port	Set the communication port. The default value is **12346** and is in the ON state. **Note**: There are a total of 65536 communication ports. Some specific communication ports are only used by specific programs.
MODBUS TCP Server Port	Set the communication port number. The default value is **502**. **Note**: • This communication port must be the same as that of the MODBUS TCP/IP controller. • If the HMI communicates with the MODBUS application on the PC side, change the communication port here.
Time	Select the time of the HMI to display according to the local time zone.
Enable NTP	If selected, the time of HMI can be calibrated through the network. **Note**: You must first check whether the network of HMI is smooth.
Server Name	Select the server provided in the software, or enter the local NTP server name.
Calibration when startup	If selected, the time of HMI is calibrated when the HMI is turned on.
Calibration at set intervals	If selected, set the number of seconds. The calibration timing is when the HMI is turned on and enters the screen. The value range is 10–99999, and the default value is **180.**
Daylight saving time	Select whether to enable the daylight-saving time. The default is **off**.
Enable Lua Online Debugging	If selected, you can set breakpoints in the **Program** page to perform the **Online debug** function.
Enable eComm Port	If selected, you can enable the HMI forward function to forward data to the terminal device through the HMI, and then establish the forward tunnel through eComm of the COMMGR software.
Enable One Wire Service	If selected, you can open the QIP function and scan the devices connected to the HMI communication port through the COMMGR software.

Remote Desktop and Data Collection

The following table lists the settings in the **Remote Desktop** and **Real-time Monitoring** tabs with their description.

Remote Desktop



1 eServer

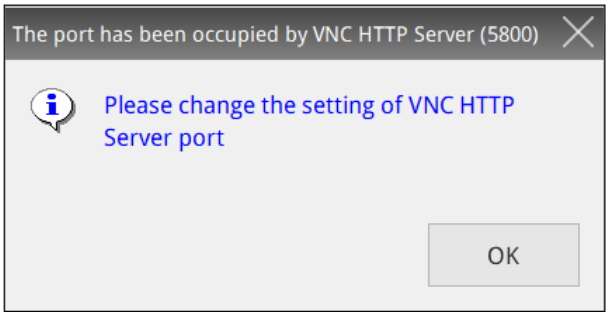
Function	Description
Enable	Select to enable the eServer function.
Password	Set the password to monitor or access data according to your needs. The default value is **12345678**. • To comply with CyberSecurity specifications, the password must be set up to 8 characters and contain an uppercase letter, a lowercase letter, a number, and a symbol (!, $, #, %). • This is the password that must be entered to obtain the HMI project data and execute eServer and eRemote.
Sampling time	Set how often eServer and eRemote take to perform sampling. The range value is 100–5000, and the default value is **100**.

Function	Description
Port	Set the connection ports of eServer and eRemote. The default value is **12348**. **Note**: The upload / download communication ports of the HMI are different from this communication port. The communication ports are different according to different programs.
Show warning when disconnected	This option is available only when **Show warning when disconnected** checkbox is selected. When the HMI is disconnected from the eServer or eRemote, the HMI displays a disconnection warning message.
Close warning window when the connection is restored	This option can only be enabled when **Show warning when disconnected** is checked. • If selected, an error message keeps popping up on the HMI until the connection between the HMI and the eServer or eRemote is restored. • If not selected, an error message only pops up once on the HMI.

② VNC

Virtual Network Computing (VNC) function is an application that can remotely monitor and operate the HMI. This application can transmit keyboard and mouse actions and real-time screens through the network. When operating VNC using web pages, the browser must support JAVA installation, otherwise it cannot be opened.

Function	Description
Enable	If selected, you can remotely monitor to operate the HMI through VNC.
Password	Set the connection password according to your needs. The default value is **12345678**. To comply with CyberSecurity specifications, the password must be set up to 8 characters and contain an uppercase letter, a lowercase letter, a number, and a symbol (!, $, #, %).
Multiple connection mode	Select to allow multiple HMIs to be connected. Up to 64 HMIs can be connected.
Monitor mode	If selected, you can only monitor the HMI when VNC is connecting remotely.
Port	Set the connection port. The default value is **5900**. VNC Viewer provides web page operation mode. In this mode, you only need to enter the IP Address of the HMI into the browser and set the port as 5800 (even if the communication

Function	Description
	port is not set as default value **5900**) to connect, such as http://192.168.123.148:5800. **Note**: • The connection port must be changed to 5902 when using VNC Viewer to connect. • Do not use 5800 when setting the connection port on the software side. If it is set to 5800, after downloading the screen to the HMI, it asks you to change the port. 
Network Use	Select the port to open the VNC function. It applies to the HMI models with two Ethernet ports.

Real-time Monitoring

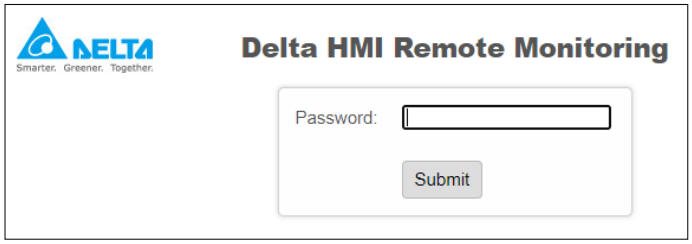
The real-time monitoring function allows you to write the value to the HMI on the web page, or monitor the change of the value by the web page after the HMI writes the value. The data formats supported by the monitoring address include BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating, and Char. You can set the reading length for each data format to decide whether to read Word or Double Word. When the number of reading is 1, the integer number of digits can be set up to 5, which means that the reading is Word; when the number of readings is 2, the integer number of digits can be set up to 10, which means that the reading is Double Word. Address input provides Word and Bit, which can support internal memory address and external controller address.

How to use network real-time monitoring?

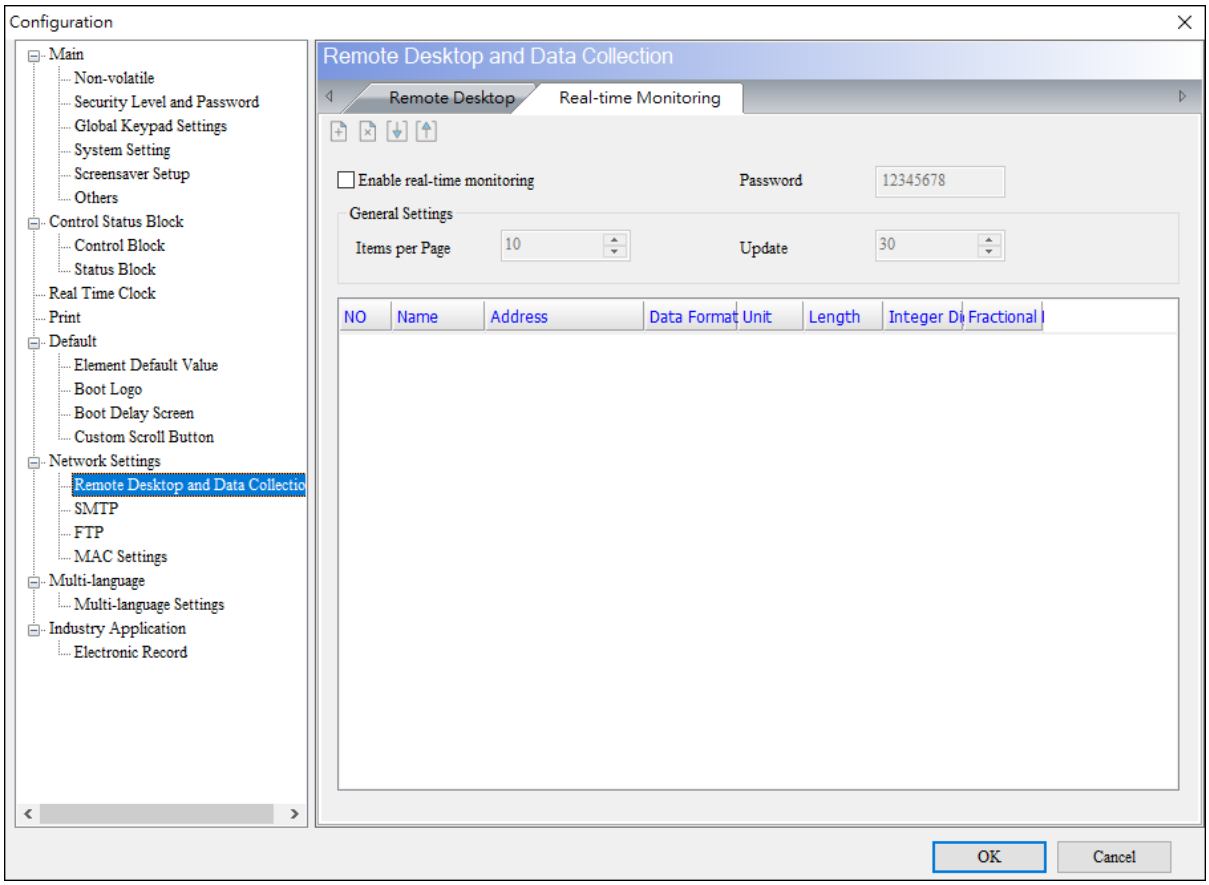
1. In the **Real-time Monitoring** tab, select **Enable real-time monitoring** checkbox and set the address.
2. Enter **http: //[HMI IP]/RemoteMon/** on the browser.

   Note: The two characters R and M must be capital letters.

3. After the connection is successful, the login screen appears. Enter the password of the web application to log in.



The following table lists the settings in the **Real-time Monitoring** tab with their description.



Function	Description
Enable real-time monitoring	If selected, the real-time monitoring settings are available.
	Click to add monitoring address. You can enter the name and address. The name can be entered up to 30 characters.
	Select the items you want to delete, and then click this icon to delete the monitoring address.

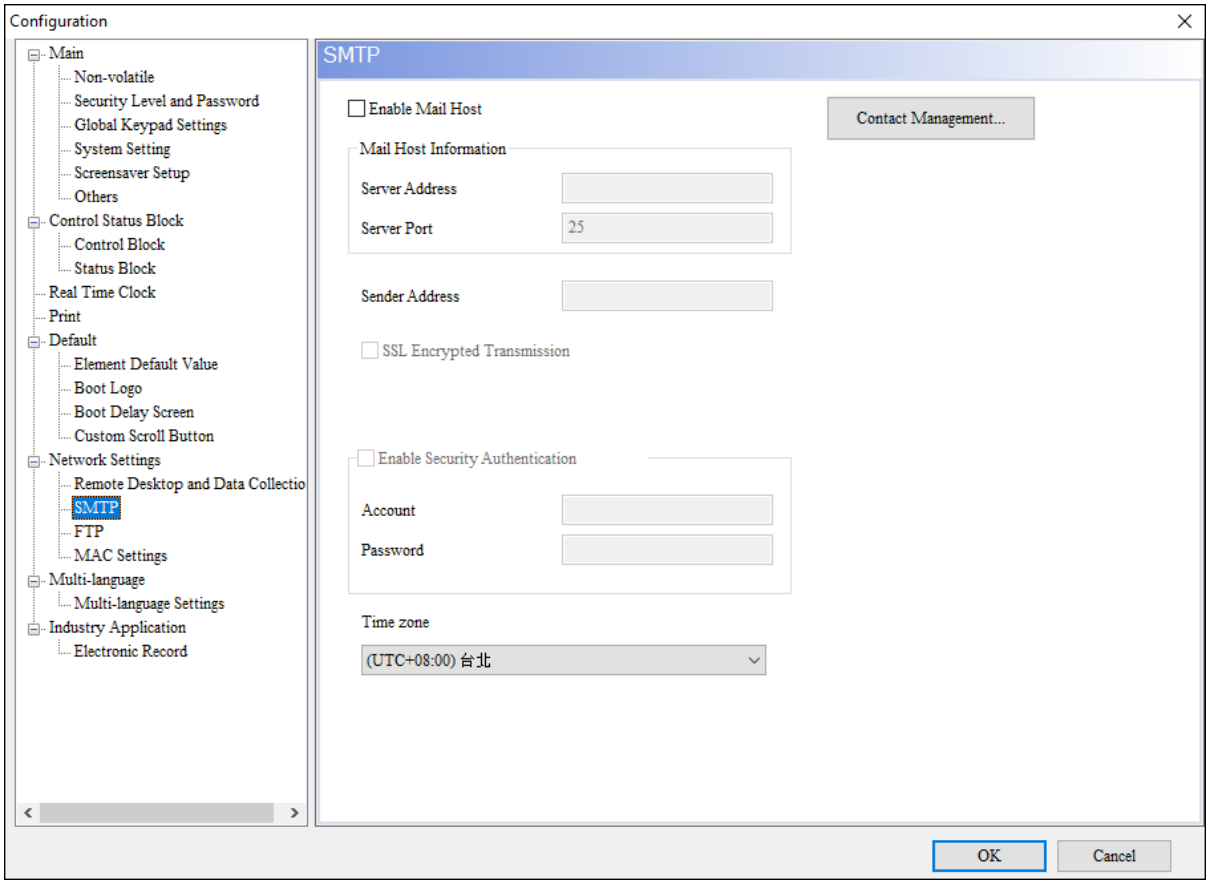
Function	Description
	Click to import a CSV file.
	Click to export the monitoring address content to a CSV file.
Password	Set the password that must be entered when entering the connection address using the web page. The default value is **12345678**. To comply with CyberSecurity specifications, the password must be set up to 8 characters and contain an uppercase letter, a lowercase letter, a number, and a symbol (!, $, #, %).
Items per Page	Set the number of monitoring addresses to be displayed on one page. The value range is 1–20, and the default value is **10.**
Update	Set how often the screen updates after updating the value. The value range is 1–30, and the default value is **30.**

SMTP

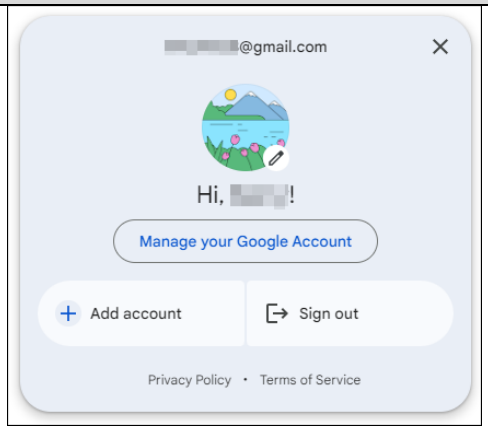
SMTP (**Simple Mail Transfer Protocol**) is used to transmitting email and define the rules for sending email from a source address to a destination address to control how email is relayed. This function allows you to obtain the alarm message when an alarm occurs by receiving the email.

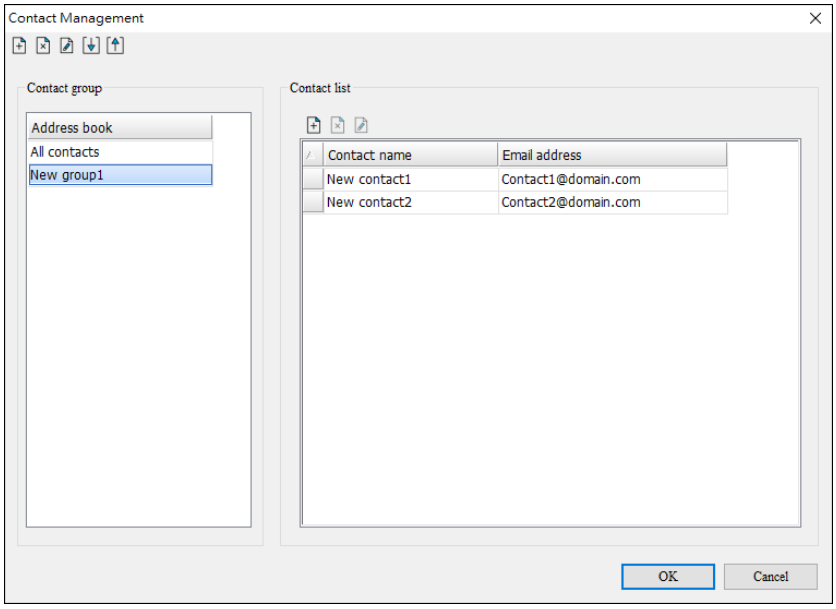
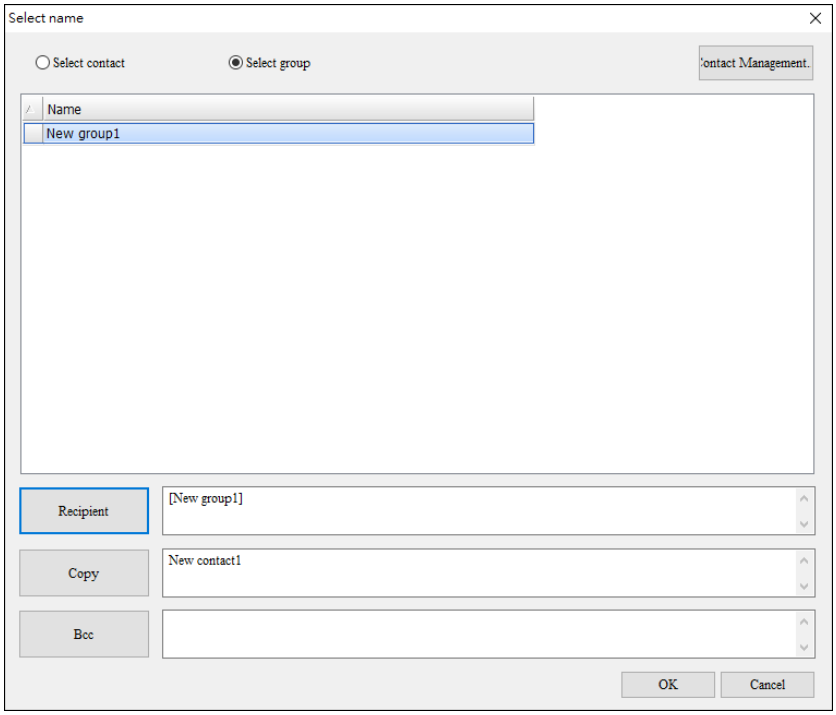
Note: Before using the SMTP function, set up a Mail Server environment or search for a free Mail Server on the Internet.

The following table lists the settings in the **SMTP** setting page with their description.

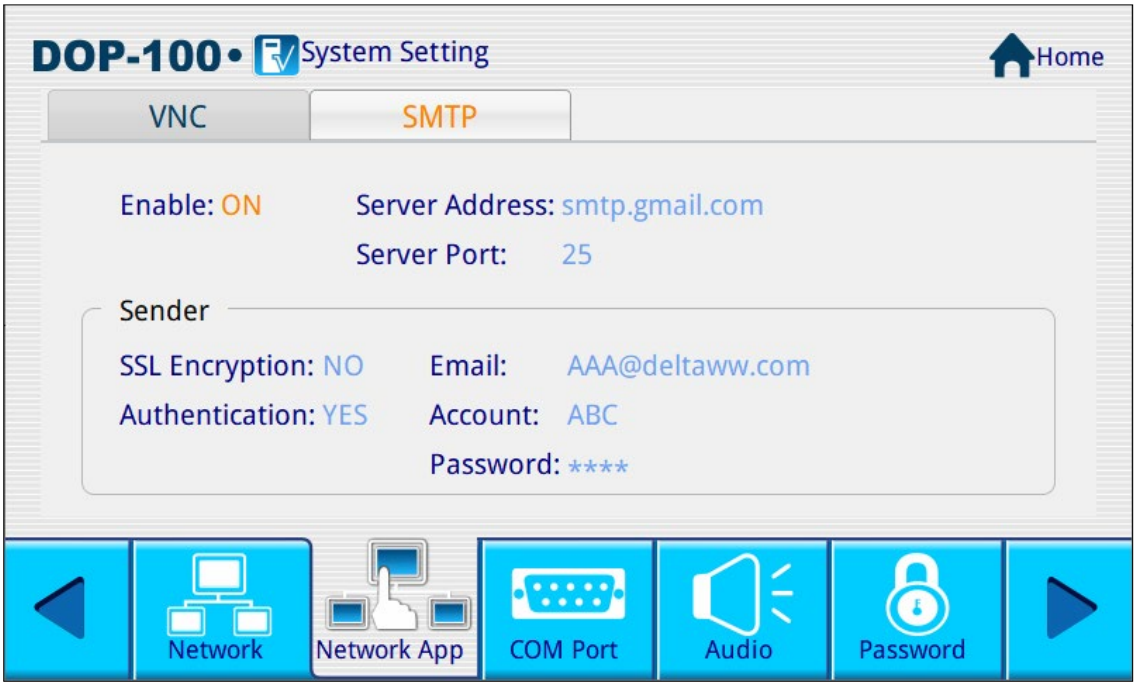


Function	Description
Enable Mail Host	If selected, the mail host settings are available.
Server Address	Set the server address. This IP address is the Mail Server IP created by users. **Note**: Before using the SMTP function, set up a Mail Server environment or search for a free Mail Server on the Internet.
Server Port	Set the server port. This is the general SMTP communication port. The default value is **25**
Sender Address	Set the sender's email address.
SSL Encrypted Transmission	SSL (Secure Socket Layer) is an encryption-based Internet security protocol, which ensures the confidentiality and integrity of communication between two applications, as well as verifying the identity of the server. To use Gmail to send email, do the following: 1. After logging into your Gmail account, click **Manage your Google Account**.

Function	Description
	 2. **On the left navigation panel,** select **Security**. 3. Enable **2-Step Verification** function under **How you sign in to Google**. For the detailed operation method, please see Sign in with app passwords. After the above setting is completed, you can use Gmail to receive alarm emails. **Note**: The e-mail must support SSL function.
Enable Security Authentication	If selected, the account and password can be set. If the SMTP server is set up with an account and password to verify the identity, this option must be selected.
Account	If the security authentication checkbox that requires an account and password is selected when setting up the SMTP Mail Server, first enter the account and password. This account and password are used to check whether the recipient is a legitimate user of the back-end mail system to prevent uncollected emails from occupying the system resources to cause hidden mail security problems. **Note**: • The account and password must be set according to the requirements of the SMTP server. • The account format varies depending on the format of each SMTP Mail Server. You can look up the related rules of MIS.
Password	
Time	Select the local time zone so the time to send the alarm email will be more accurate.
Contact Management	Set the contact address for the mail information of the alarm. Follow the steps to set the contact address and its mail information. 1. In the **Contact list** area, click  to add new contact. 2. On the toolbar, click  to set the group name in the **Group settings** dialog.

Function	Description
	3. In **All contacts** area, choose the contact and click << to add it to the **Group contact**. You can also click >> to remove the contact from the **Group contact**. 4. In the **Contact Management** dialog, choose the group name in the **Address book**, the contact in the group lists in the **Contact list**.  5. Set the mail recipient in the **Mail** field of the **Alarm Settings** page. The contacts or groups can be selected as **Recipient**. 

After the SMTP settings are completed and downloaded to the HMI, go to **System Menu** > **System Setting** > **Network App** > **SMTP** to access the settings. You can also change the SMTP settings on the HMI and then upload the settings to DIAScreen.



FTP

FTP (File transfer protocol) is a standard communication protocol that is used for downloading alarms, historical data, recipes, and operation logs in a USB or SD card through the network to the PC for viewing. You can also upload files from your PC to a USB or SD card.

The following table lists the rules of FTP with their description.

FTP Rule	Description
Supported HMI	Network-based HMI
Network-based HMI	File transfer application
	Windows File Explorer
	DOS Command Line
Connection Limit	Up to 3 FTP Clients can be connected at the same time
	Automatically disconnect when idle for more than 90 seconds

FTP Rule	Description	
Login method	Anonymous login	Adding of directories is not allowed.
		Uploading of files is not allowed.
		Downloading of files is not allowed.
		Deletion of files is not allowed.
		Change of filename is allowed.
	Account login	Adding of directories is allowed.
		Uploading of files is allowed.
		Downloading of files is allowed.
		Deletion of files is allowed.
		Change of filename is allowed.
File transfer rules	Unlimited traffic	
	Support resume	
	Unlimited size of the file to be sent.	
	The maximum length of file name is 260 bytes.	
	Change of filename is allowed.	
	Support Chinese filename.	
	Encryption is not supported.	
	Support active / passive mode connection.	
	When FTP is transferring, you can enter and exit the system menu.	

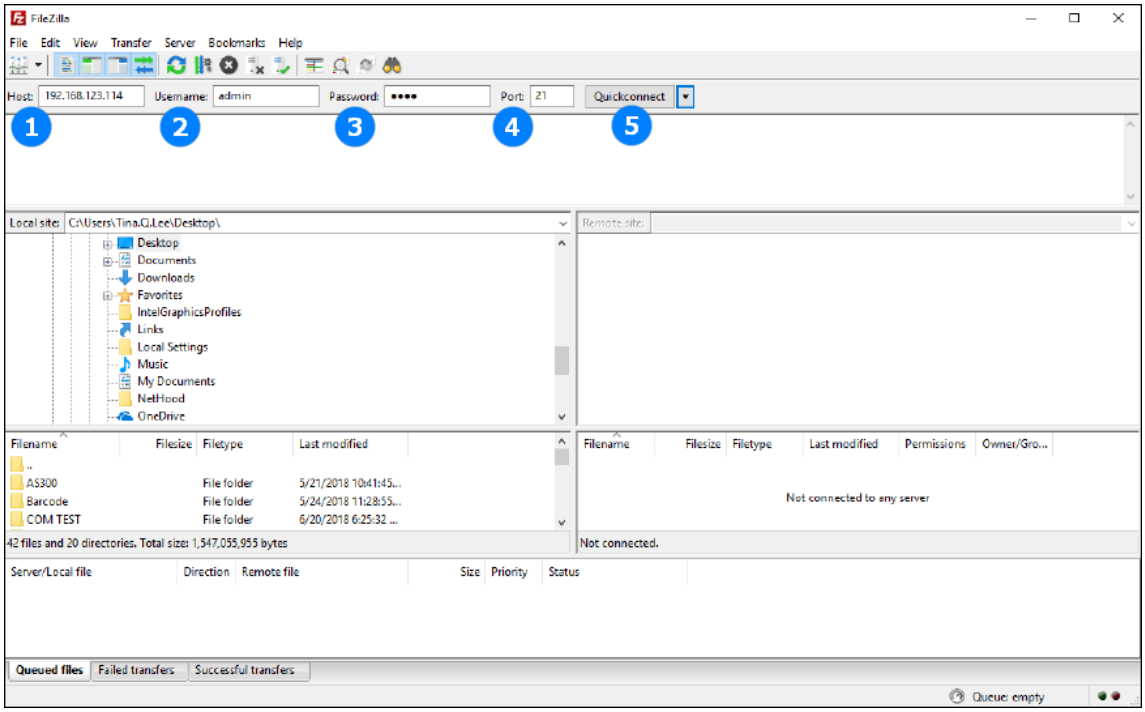
The FTP Server supports connection through file transfer applications, Windows File Explorer, and DOS Command Line.

- **File transfer applications**

  Upload / download files through file transfer applications.

  Note: The FTP Server provided by HMI needs to be used with FTP Client application.

  The following figure is an example using the file transfer application FileZilla, which is free and can be downloaded from filezilla-project.org/download.php.



The following table lists the functions in the FileZilla application with their description.

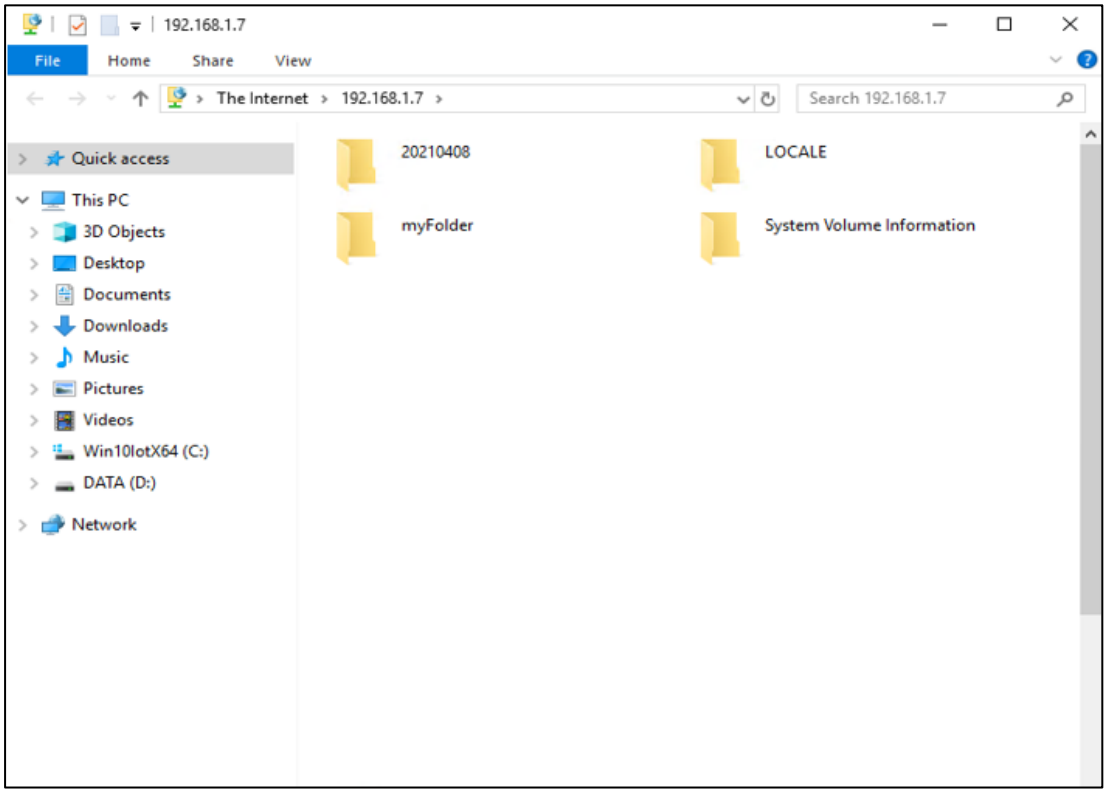
Legend	Function	Description
1	Host	Set the HMI IP address, the example is 192.168.123.114.
2	Username	Set the username as admin.
3	Password	Set the password as 1234.
4	Port	Set the port as 21.
5	Quick connect	Click to quickly connect to the FTP Server. **Note**: Before executing this function, complete the above settings.

- **Windows File Explorer**

  Upload / download files by connecting to the FTP Server through Windows File Explorer.

  1. Open the file manager and enter **ftp://192.168.1.7/** in the input box for the file path.
  2. Enter the account and password to log in to FTP.

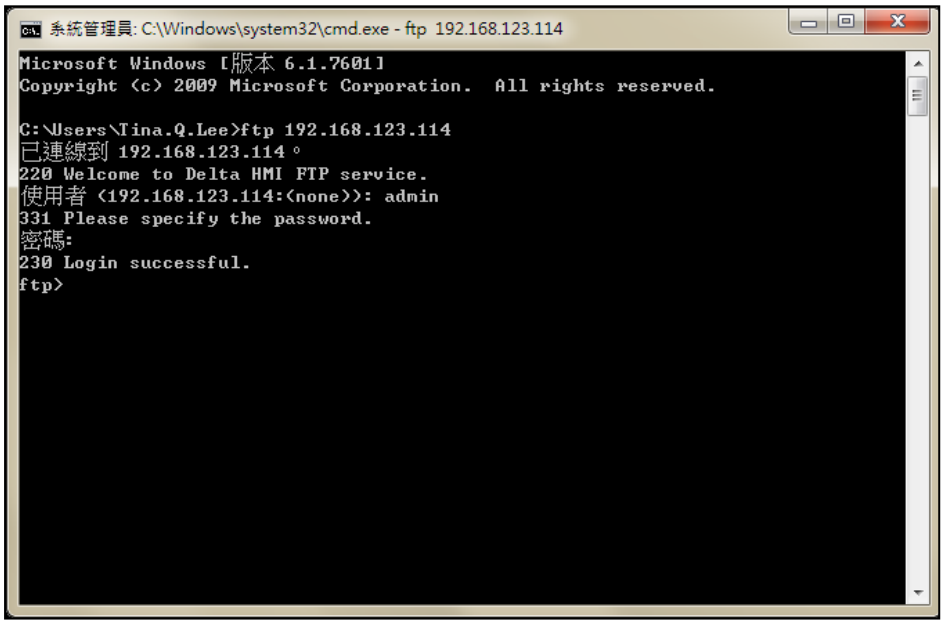
     After logging in, all files in the USB will be displayed.



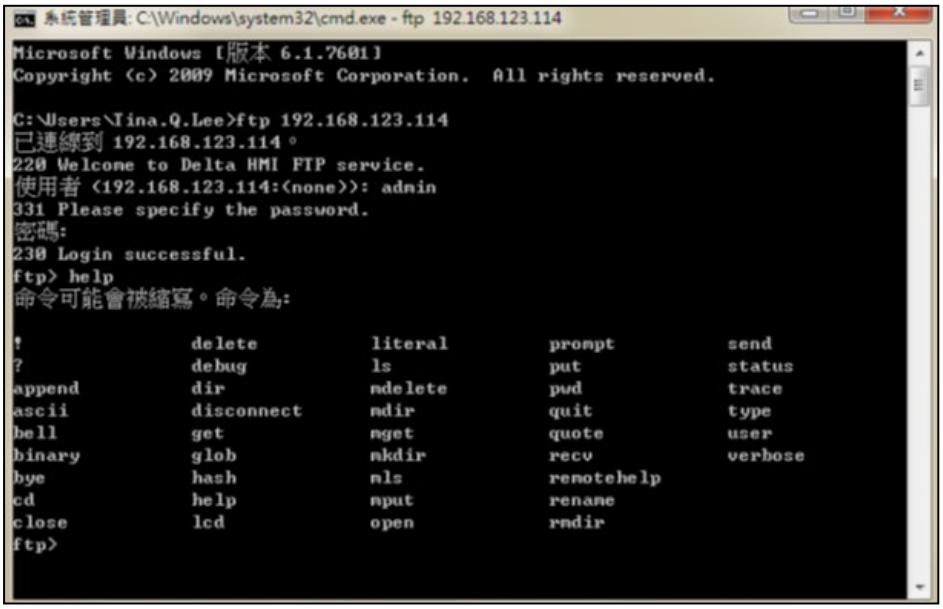
- **DOS Command Line**

  Upload / download the files by connecting to the FTP Server through DOS Command Line.

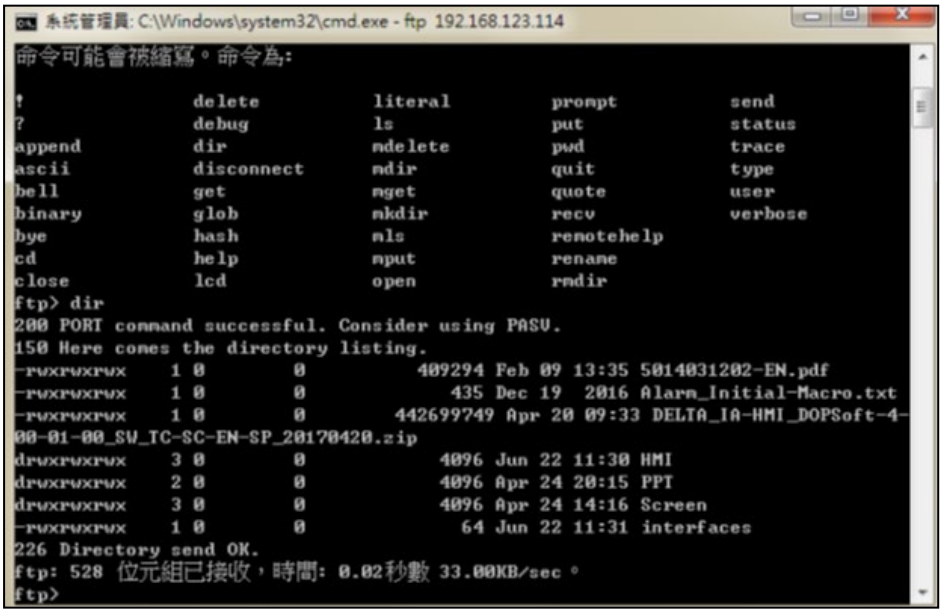
  1. Open the command prompt and enter **ftp 192.168.123.114**.
  2. Enter users account **admin** and password **1234**.



According to the FTP command, use help to view the supported related commands.



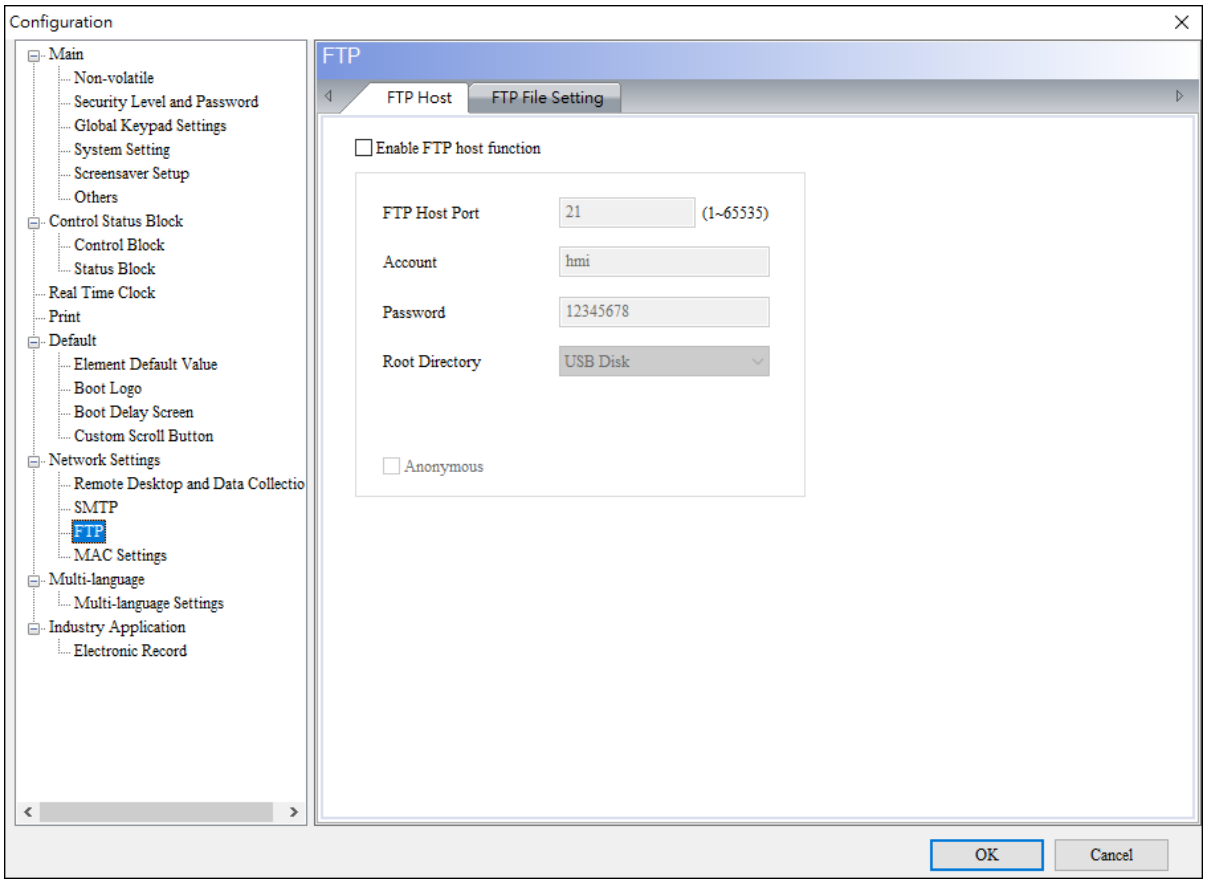
Enter the dir command to list all files currently in the USB.



To download files from a USB or SD Card, use the get command. If you want to upload files from PC to USB or SD Card, use the put command.

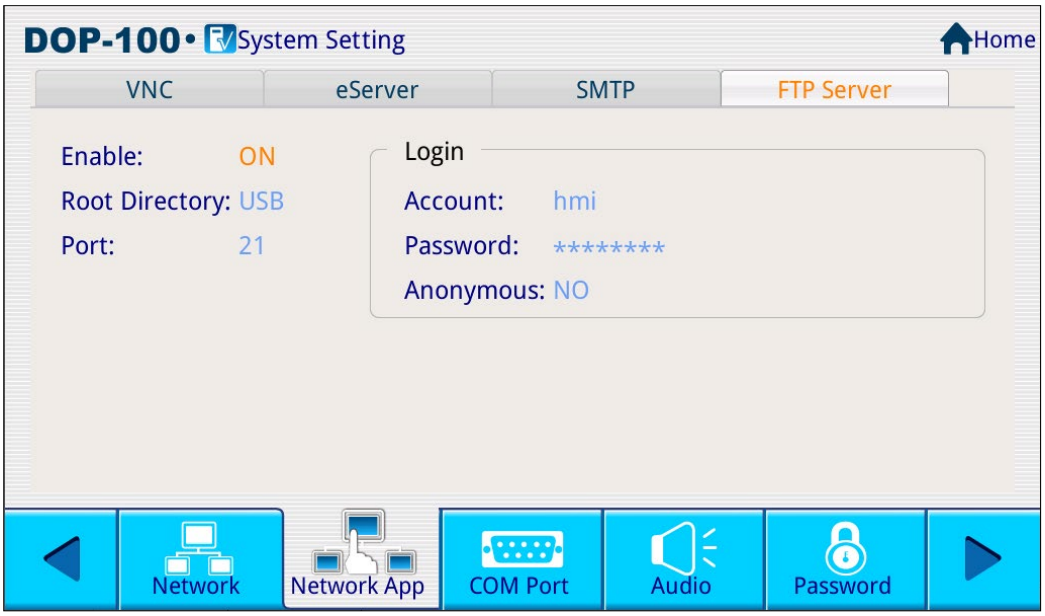
The following table lists the functions of the **FTP Host** tab with their description.

FTP Host



Function	Description
Enable FTP host function	If selected, the FTP settings are available.
FTP Host Port	Set the FTP host port. The default value is **21**.
Account	Set the account name.
Password	Set the password. To comply with CyberSecurity specifications, the password must be set up to 8 characters and contain an uppercase letter, a lowercase letter, a number, and a symbol (!, $, #, %).
Root Directory	Select the storage location of HMI files. The available options include **USB Disk**, USB Disk 2, SD, and HMI. The default is **USB Disk**.
Anonymous	If selected, you can log in to FTP without entering an account and password. **Note**: After using an anonymous connection to log into FTP, you cannot upload / download files, delete files or add new directories.

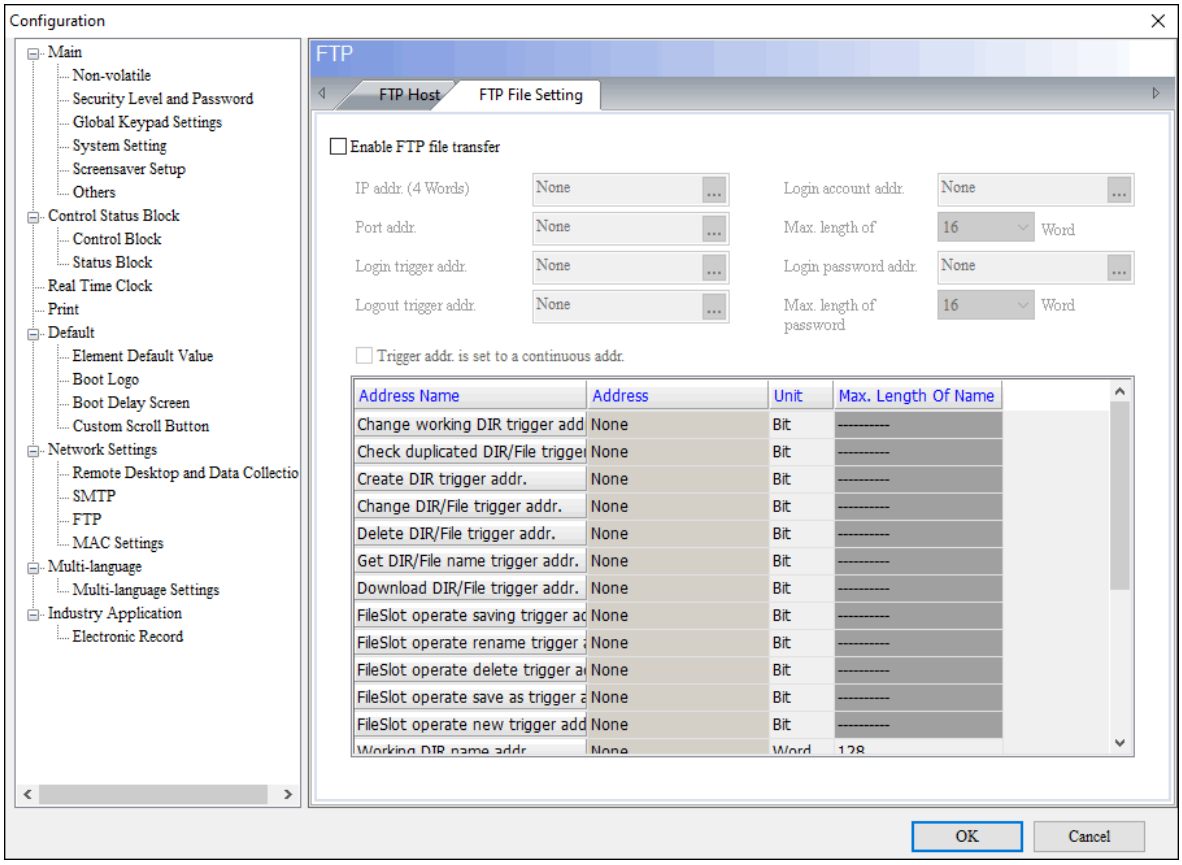
After the FTP settings are completed and loaded into the HMI, go to **System Menu** > **System Setting** > **Network App** > **FTP Server** to access the settings. You can also change the FTP settings on the HMI and then upload the settings to DIAScreen.



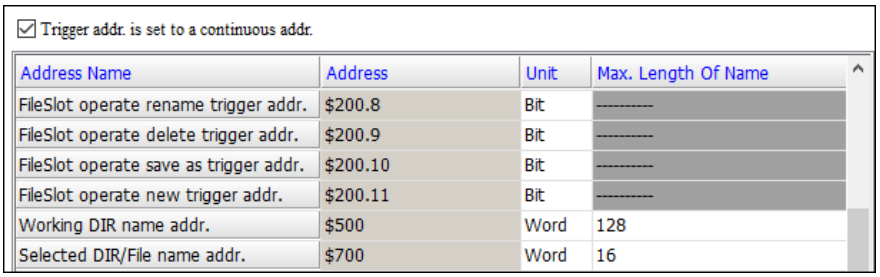
FTP File Setting

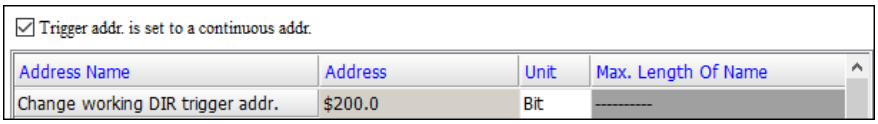
FTP file transfer provides functions such as account login / logout, file upload / download, file deletion, file management / rename, directory (folder) management, etc. File transfer can be carried out through DOP series HMI and FTP Server.

Note: FTP file transfer should be used with the **FTP File List** element.



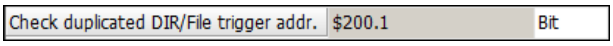
Function	Description	
Enable FTP file transfer function	Check to enable FTP Client function.	
Host Login	IP addr.	Set the FTP Server IP address to which to connect.
	Port addr.	Set the FTP Server connection port to which to connect.
	Login trigger addr.	The input value type is Bit. When this bit is turned On, it will be logged in.
	Logout trigger addr.	The input value type is Bit. When this bit is turned On, the system will log out.
	Login account addr.	Set the starting address of the account. The maximum length supports 16 words.
	Max. length of account	
	Login password addr.	Set the starting address of the password. The maximum length supports 16 words.
	Max. length of password	
Change working DIR / File	Change working DIR trigger addr.	When this bit is On, the working directory is changed and automatically cleared after completion.

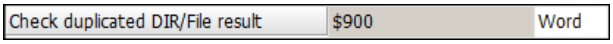
<table>
<tr><th>Function</th><th colspan="2">Description</th></tr>
<tr><td></td><td colspan="2">Example
1. Set the string content of Working DIR name addr. ($500) to /lua.
 

2. Set Change working DIR trigger addr. ($200.0) to On.
 

3. The FTP File List element will be switched to the lua directory. If the directory does not exist, the operating state ($1000) becomes 0x0022.
 

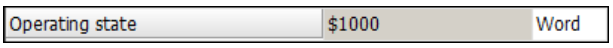
4. Once Change working DIR trigger addr. ($200.0) operation is completed, it will be automatically cleared to Off.</td></tr>
<tr><td rowspan="2">Check duplicate DIR/File</td><td>Check duplicated DIR/File trigger addr.</td><td>When this bit is On, the duplicated directory / file is checked and automatically cleared after completion.</td></tr>
<tr><td colspan="2">Example
1. Set the string content of Change/Create/Check name addr. ($750) to lua.
 

2. Set Check duplicated DIR/File trigger addr. ($200.1) to On.
 

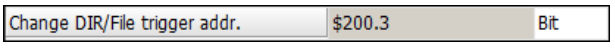
3. If the Lua folder already exists, the content of Check duplicate DIR/File result ($900) becomes 1; otherwise, it becomes 0.
 

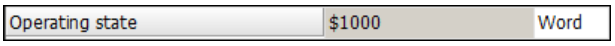
4. Once Check duplicated DIR/File trigger addr. ($200.1) operation is completed, it will be automatically cleared to Off.</td></tr>
<tr><td rowspan="2">Create DIR / Change DIR / Delete DIR / File</td><td>Create DIR trigger addr.</td><td>When this bit is On, a new directory is created and automatically cleared after completion.</td></tr>
<tr><td colspan="2">Example
1. Set the string content of Change/Create/Check name addr. ($750) to TestHMI.
 
</td></tr>
</table>

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td></td><td>
2. Set Create DIR trigger addr. ($200.2) to On.

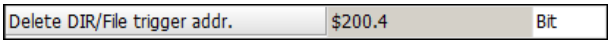

3. Add the TestHMI folder in the FTP Server and update the FTP File List element. If the TestHMI folder already exists, Operating state ($1000) changes to 0x0042.


4. Once Create DIR trigger addr. ($200.2) operation is completed, it will be automatically cleared to Off.
</td></tr>
<tr><td>Change DIR/File trigger addr.</td><td>When this bit is On, the directory / file name is changed and automatically cleared after completion.</td></tr>
<tr><td></td><td>
Example
1. Use the FTP File List element to select the directory TestHMI to be changed.
2. Set the string content of Change/Create/Check name addr. ($750) to ChangeHMI.

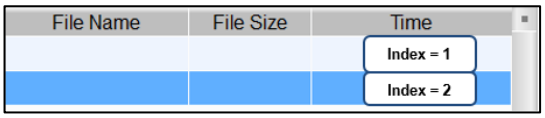

3. Set Change DIR/File trigger addr. ($200.3) to On.


4. Change the name of the TestHMI folder to ChangeHMI, and the HMI updates the FTP File List elements at the same time. If the ChangeHMI folder already exists, the Operating state ($1000) changes to 0x0052.


5. Once Change DIR/File trigger addr. ($200.3) operation is completed, it will be automatically cleared to Off.
Note: This example operates on a directory. You can also use the trigger address to operate on files.
</td></tr>
<tr><td>Delete DIR/File trigger addr.</td><td>When this bit is On, the directory / file name is deleted and automatically cleared after completion.</td></tr>
<tr><td></td><td>
Example
1. Set the string content of Selected DIR/File name addr. ($700) to ChangeHMI.


2. Set Delete DIR/File trigger addr. ($200.4) to On.


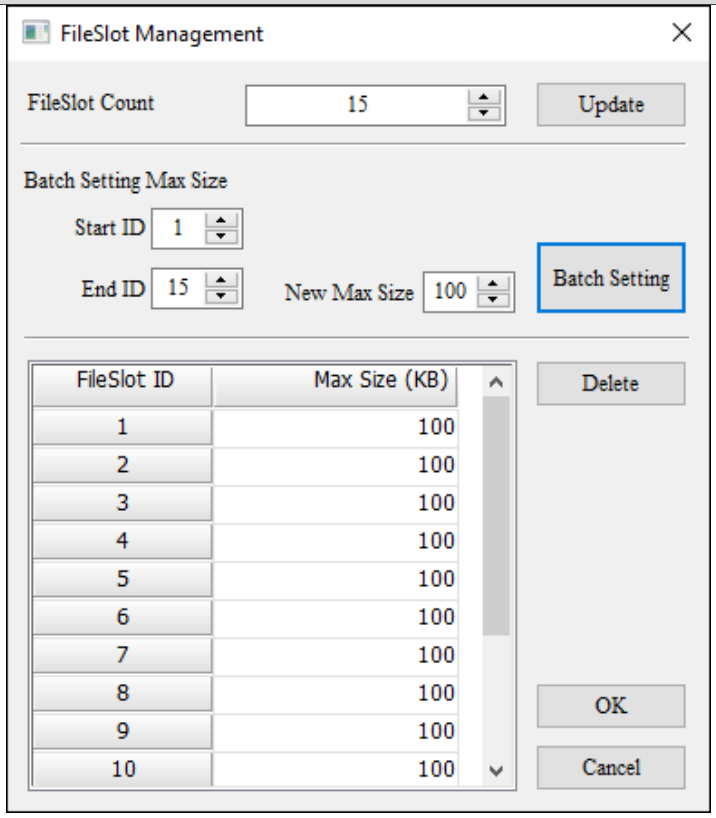
3. Delete the ChangeHMI folder of the FTP Server, and the HMI updates the FTP File List element at the same time.
4. Once Delete DIR/File trigger addr. ($200.4) operation is completed, it will be automatically cleared to Off.
</td></tr>
</table>

<table>
<tr><th>Function</th><th colspan="2">Description</th></tr>
<tr><td></td><td colspan="2">Note: This example operates on a directory. You can also use the trigger address to operate on files.</td></tr>
<tr><td rowspan="2">Get DIR / Filename</td><td>Get DIR/File name trigger addr.</td><td>When this bit is On, the directory / file name is obtained and automatically cleared after completion.</td></tr>
<tr><td colspan="2">Example
The following figure shows the FTP File List.
 

Set Index of DIR/File name addr. ($921) to 2.
Index of DIR/File name addr. | $921 | Word
If the index value is set to 0, the Operating state ($1000) becomes 0x0027.
Operating state | $1000 | Word
Set Get DIR/File name trigger addr. ($200.5) to On.
Get DIR/File name trigger addr. | $200.5 | Bit
Get the folder name with FTP Server index value 2, Get DIR/File name result ($770) content is lua.
Get DIR/File name result | $770 | Word | 16

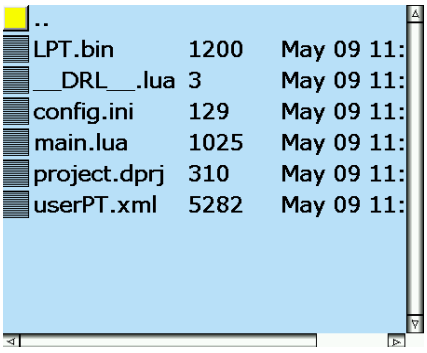
Note:
• This example operates on directory lines. You can also use this trigger address to operate on files.
• The index value is based on the FTP Server. The sorting displayed in the FTP File List of the HMI may not be the same as the sorting of the FTP Server.</td></tr>
<tr><td rowspan="2">Download DIR / File</td><td>Download directory/file trigger address</td><td>When this bit is On, the HMI starts downloading files from the FTP Server and automatically clear them after completion.</td></tr>
<tr><td colspan="2">To use this function, first set up the FileSlot file function. In the menu bar, click Project > Other Settings > FileSlot Management to make related settings.</td></tr>
</table>

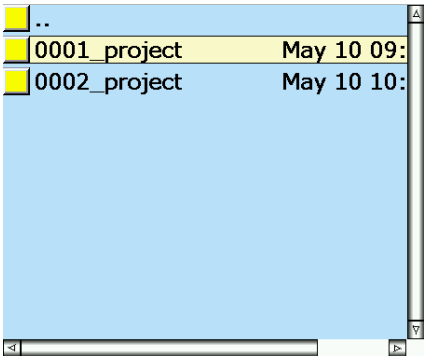
Function	Description



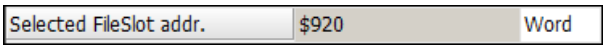
Example

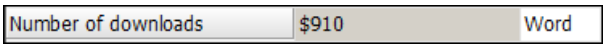
1. If the FTP Server file is stored in /lua/0001_project, switch to the /lua directory and select the 0001_project directory.

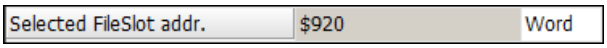


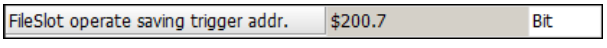


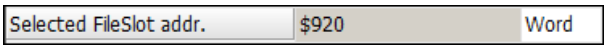
2. Set **Download DIR/File trigger addr.** ($200.6) to On.

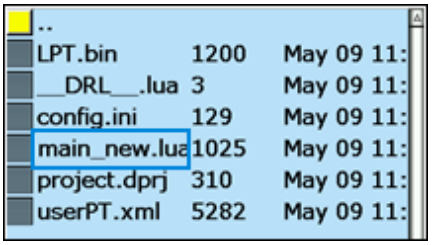
<table>
<tr><th>Function</th><th colspan="2">Description</th></tr>
<tr><td></td><td colspan="2">3. The HMI downloads the file from the FTP Server to the Selected FileSlot addr. ($920). If the directory contains multiple files, the Selected FileSlot addr. ($920) represents the starting FileSlot position.
 

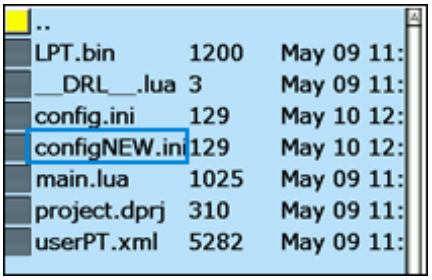
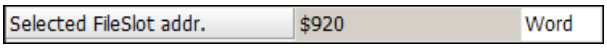
After the action is completed, the Number of downloads ($910) becomes 6.
 

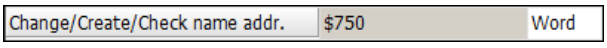
4. After the file download is completed, the file will only be stored in the FileSlot address. To edit the downloaded file, you need to use the Text List element. To read out the file name of a downloaded file, use the FileSlotGetName macro command.
Note:
• This example operates on a directory, you can also use the trigger address to operate on files.
• If the name of the downloaded file is known, the HMI can obtain the location information (ID) of the file stored in FileSlot through the FileSlotGetID macro command.</td></tr>
<tr><td rowspan="4">FileSlot Operations</td><td>FileSlot operate saving trigger addr.</td><td>When this bit is On, the selected FileSlot file will be uploaded to the FTP Server and automatically cleared after completion.</td></tr>
<tr><td colspan="2">To use this function, you need to set up the FileSlot file function and execute the download directory/file function.
Example
1. Set Selected FileSlot addr. ($920) to 4.
 

2. Set FileSlot operate saving trigger addr. ($200.7) to On.
 

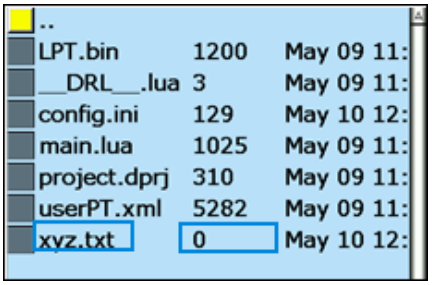
3. The HMI uploads the file (main.lua) with FileSlotID 4 to the FTP Server.</td></tr>
<tr><td>FileSlot operate rename trigger addr.</td><td>When this bit is On, the selected FileSlot file is renamed and uploaded to the FTP Serverm and automatically cleared after completion.</td></tr>
<tr><td colspan="2">To use this function, first set up the FileSlot file function and execute the download directory/file function.
Example
1. Set Selected FileSlot addr. ($920) to 4.
 
</td></tr>
</table>

<table>
<tr><th>Function</th><th colspan="2">Description</th></tr>
<tr><td rowspan="3"></td><td colspan="2">2. Set Change/Create/Check name addr. ($750) to main_new.lua.
Change/Create/Check name addr. | $750 | Word
3. Set FileSlot operate rename trigger addr. ($200.8) to On.
FileSlot operate rename trigger addr. | $200.8 | Bit
4. The HMI changes the name of the main.lua file to main_new.lua, and simultaneously rename the FileSlot and updates the FTP File List.
 
</td></tr>
<tr><td>FileSlot operate delete trigger addr.</td><td>When this bit is On, the selected FileSlot file is deleted from the FTP Server and automatically cleared after completion.</td></tr>
<tr><td colspan="2">To use this function, you need to set up the FileSlot file function and execute the download directory/file function.
Example
1. Set Selected FileSlot addr. ($920) to 1.
Selected FileSlot addr. | $920 | Word
2. Set FileSlot operate delete trigger addr. ($200.9) to On.
FileSlot operate delete trigger addr. | $200.9 | Bit
3. The HMI deletes the file LPT.bin on the FTP Server and updates the FTP File List simultaneously.</td></tr>
<tr><td rowspan="3">FileSlot Operations</td><td>FileSlot operate save as trigger addr.</td><td>When this bit is On, the selected FileSlot file is saved in the FTP Server and automatically cleared after completion.</td></tr>
<tr><td colspan="2">To use this function, set up the FileSlot file function and execute the download directory / file function.
Example
1. Set Selected FileSlot addr. ($920) to 3.
Selected FileSlot addr. | $920 | Word
2. Set string content of the Change/Create/Check name addr. ($750) to configNEW.ini.
Change/Create/Check name addr. | $750 | Word
3. Set FileSlot operate save as trigger addr. ($200.10) to On.
FileSlot operate save as trigger addr. | $200.10 | Bit</td></tr>
</table>

<table>
<tr><th>Function</th><th colspan="2">Description</th></tr>
<tr><td rowspan="3"></td><td colspan="2">4. The HMI adds a new file configNEW.ini on the FTP Server and updates the FTP file list simultaneously.
 
</td></tr>
<tr><td>FileSlot operate new trigger addr.</td><td>When this bit is On, the selected FileSlot file is added to the FTP Server and automatically cleared after completion.</td></tr>
<tr><td colspan="2">To use this function, set up the FileSlot file function first.
Example
1. Set Selected FileSlot addr. ($920) to 10.
 

2. Set Change/Create/Check name addr. ($750) to xyz.txt.
 

3. Set FileSlot operate new trigger addr. ($200.11) to On.
 

4. The HMI adds a file xyz.txt with a file size of 0 on the FTP Server, and updates the FTP File List simultaneously.
 
</td></tr>
<tr><td rowspan="4">Operation directory/name address setting</td><td>Working DIR name addr.</td><td rowspan="2">Set the working directory name and Max. Length Of Name.
Note: It should be used with Change working DIR trigger addr. Refer to the example operation of Change working DIR trigger addr.</td></tr>
<tr><td>Max. Length Of Name</td></tr>
<tr><td>Selected DIR/File name addr.</td><td rowspan="2">Set the directory or file to be deleted and the maximum length.
Note: It should be used with Delete DIR/File trigger addr. Refer to the example operation of Delete DIR/File trigger addr.</td></tr>
<tr><td>Max. Length Of Name</td></tr>
</table>

Function	Description	
	Change/Create/Check name addr.	Set the directory or file to be changed / created / checked and the maximum length. **Note**: It should be used with **Check duplicated DIR/File trigger addr.** or **Create DIR trigger addr.** Refer to the example operations for **Check duplicated DIR/File trigger addr.** or **Create DIR trigger addr.**
	Max. Length Of Name	
	Selected FileSlot addr.	Enter data type as Word and set the selected FileSlot. **Note**: It should be used with **Download DIR/File trigger addr.** Refer to the example operation of **Download DIR/File trigger addr.**
	Index of DIR/File name addr.	Enter data type as Word and set **Index of DIR/File name addr.** **Note**: It should be used with **Get DIR/File name trigger addr.** Refer to the example operation of **Get DIR/File name trigger addr.**
Execution result setting	Operating state	When the actions in the FTP transfer settings are completed, the operating state changes accordingly. If the operation is successful, 0 is displayed; otherwise, an error code is displayed.
	Check duplicated DIR/File result	Returns the result of **Check duplicated DIR/File trigger addr.**
	Number of downloads	Returns the number of downloaded files. **Note**: It should be used with **Download DIR/File trigger addr.**
	Get DIR/File name addr.	Returns the result of **Get DIR/File name trigger addr.**

The following table lists the FTP Client's return values with description.

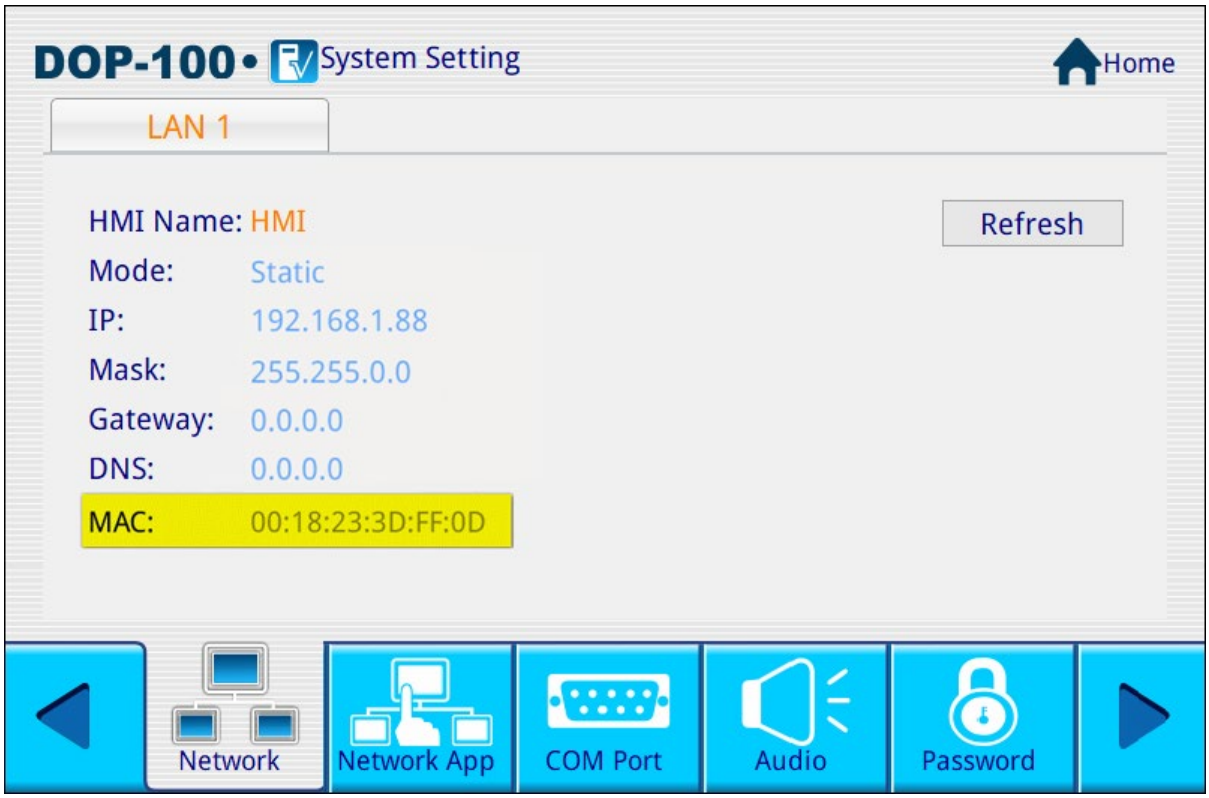
Return Value		Description
Decimal	Hexadecimal	
0	0	Completed successfully
20	32	Login failed

Return Value		Description
Decimal	Hexadecimal	
21	33	Logout failed
22	34	Failed to switch working directory
23	35	Check for duplicate directory / file names failed
24	36	Unable to obtain directory / file information
25	37	Connection abnormality
26	38	Insufficient system memory space
27	39	Failed to query directory / file name
40	64	Failed to create directory / file
41	65	Unable to create file
42	66	Unable to create directory
50	80	Failed to rename directory / file
51	81	File cannot be renamed
52	82	Directory cannot be renamed
60	96	Failed to delete directory / file
61	97	Unable to delete file
62	98	Unable to delete directory
70	112	Fail to download directory / file
71	113	Unable to download file
72	114	Unable to download directory
73	115	FIleSlot Insufficient storage space
80	128	Fail to save FIleSlot
81	129	Unable to save FileSlot
82	130	Unable to save as FileSlot
A1	161	Unable to create FileSlot
A2	162	Unable to rename FileSlot
A3	163	Unable to delete FileSlot
A4	164	Unable to open FileSlot
A5	165	Unable to copy FileSlot
A6	166	Unable to obtain FileSlot ID
A7	167	Unrecognized FileSlot ID
A8	168	Unable to obtain FileSlot name

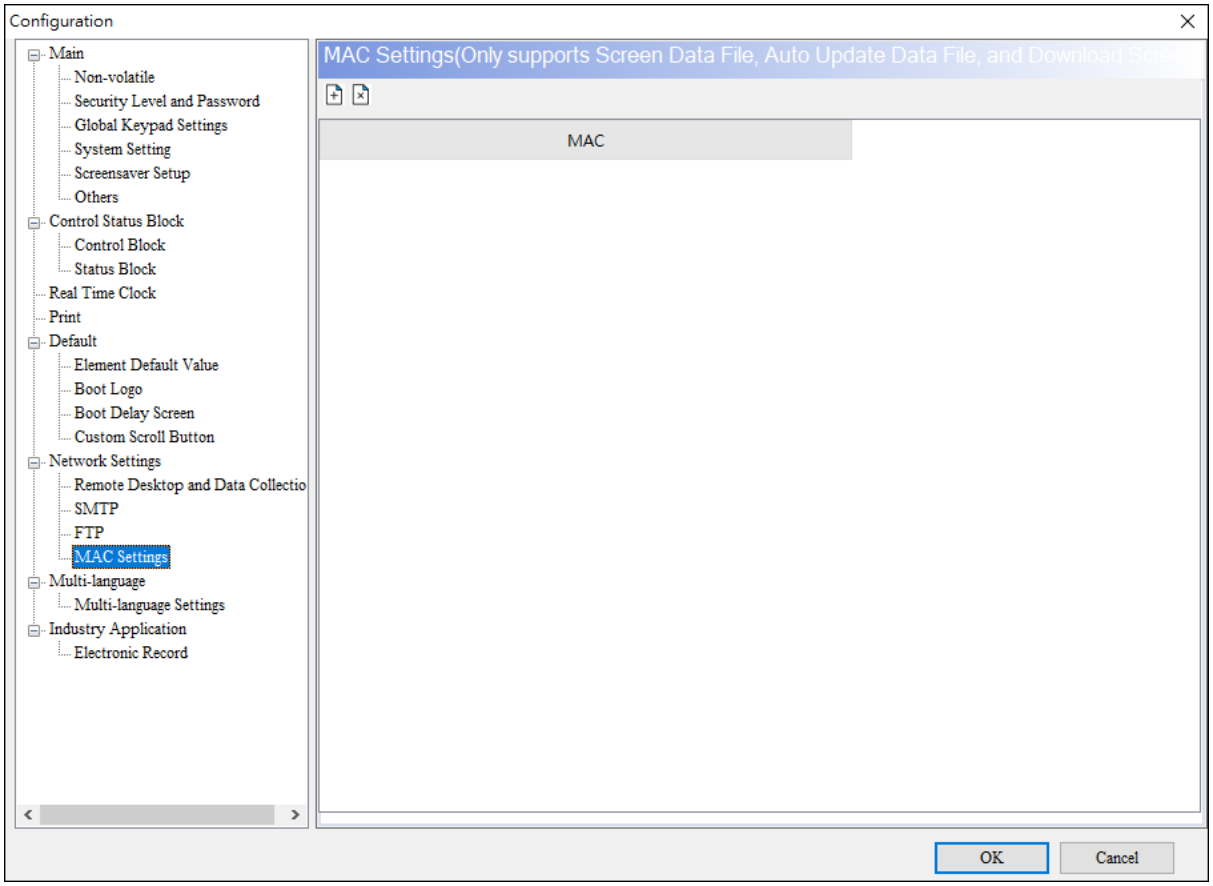
Return Value		Description
Decimal	Hexadecimal	
A9	169	Unable to set FileSlot name
AA	170	Unable to obtain the maximum number of FileSlots allowed
AB	171	Unable to add FileSlot, the maximum number of FileSlots allowed has been exceeded.
AC	172	Unable to obtain FileSlot space limit ed size
AD	173	FileSlot name duplicate

MAC Settings

In the **MAC Settings** page, set the MAC of the HMI to be loaded when creating screen data file, the file only can update the screen on the specified HMI. If the MAC is not set, the HMI model is not restricted. You can obtain the MAC from **System Menu** > **System Setting** > **Network** on the HMI.



The following table lists the functions in the **MAC Settings** page with their description.

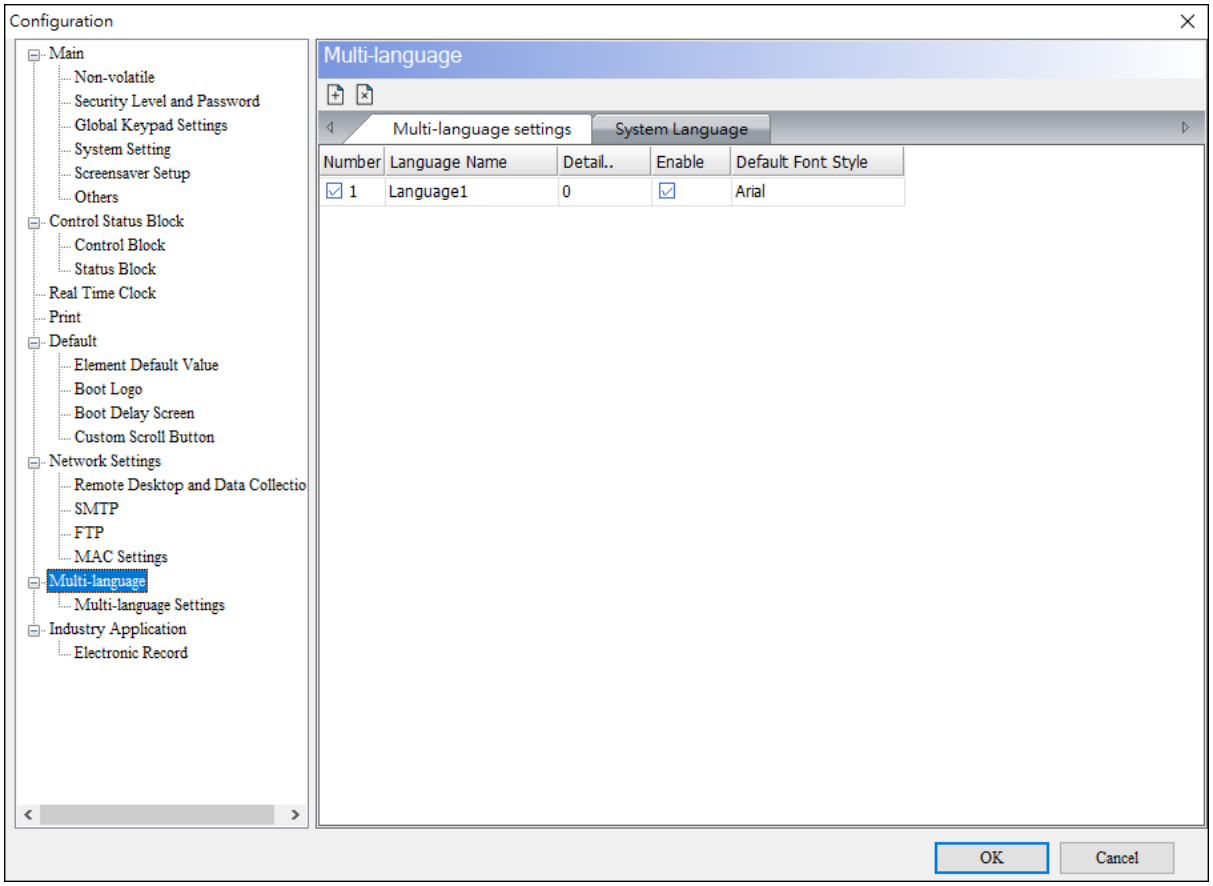


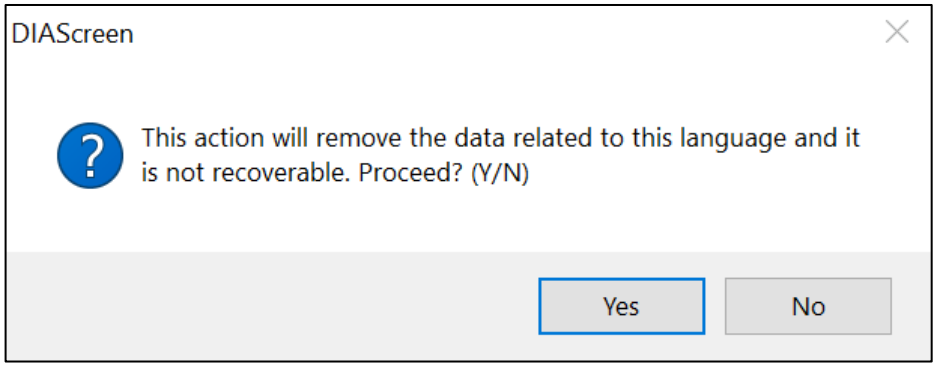
Function	Description
	Click to add the MAC.
	Click to delete the MAC.

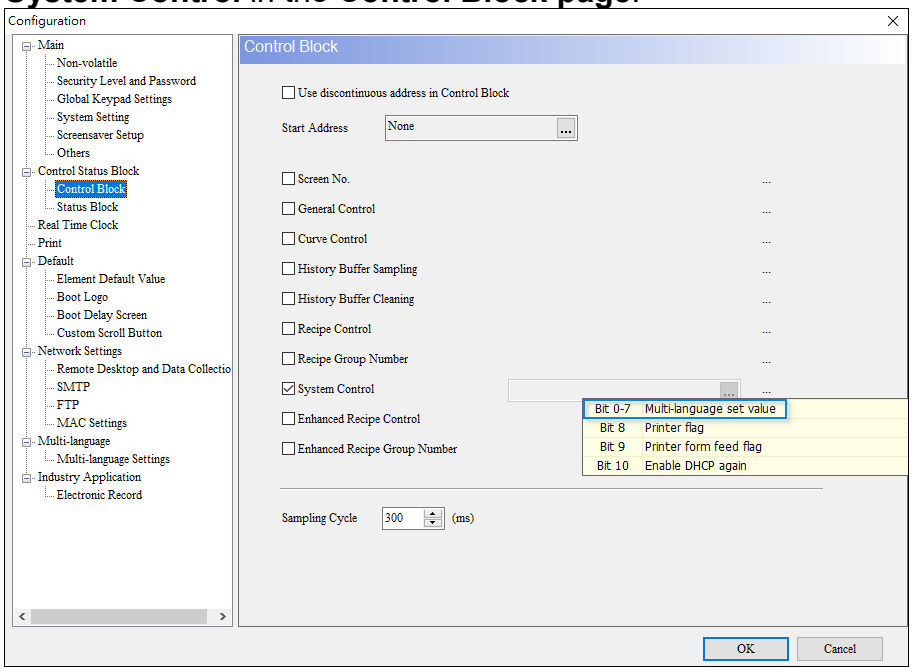
Multi-language

The following table lists the functions in the **Multi-language settings** tab with their description.

Multi-language settings



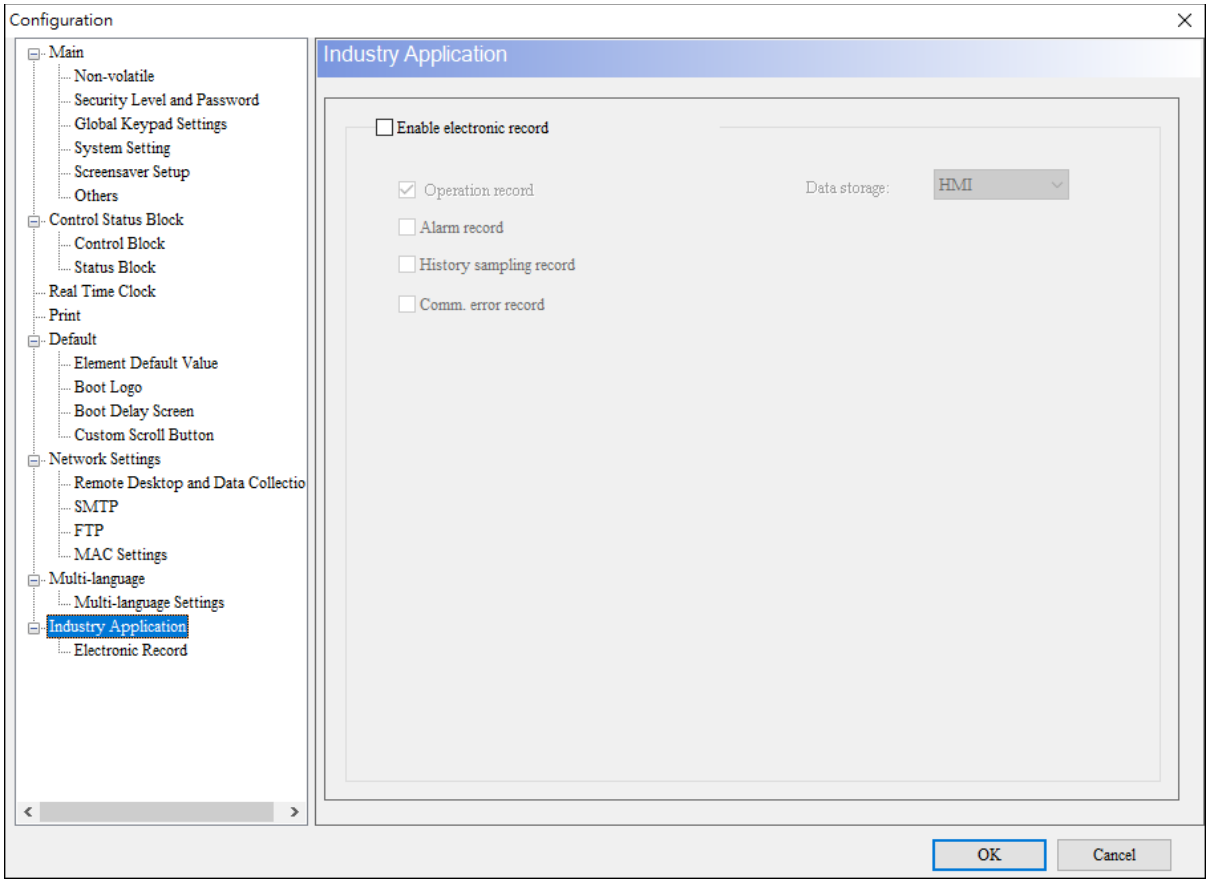
Function	Description
	Click to add a language. It supports adding up to 32 languages.
	Select the item to be deleted and click the icon to delete, a warning message appears and asks whether to proceed. 
Language Name	Set the **language name** according to your needs.

Function	Description
Detail	Detail column switches the language according to its value. To switch the language, you can: • Switch the language to the corresponding settings through the **System Control** in the **Control Block page**.  • Click **General** on the toolbar and select the language to be switched in the **Language** field of the **State/Language** pane.
Enable	The first row is the default language, the **Enable** checkbox cannot be unselected, or a warning message displays, informing that the language cannot be disabled.
Default Font Style	Apply the **font name** and **font size** according to the selected language. • If you only choose to apply the **Font Name** or **Font Size**, the font setting only applies to the newly created elements. • If you choose both **Font Name** and **Font Size to apply**, the font setting applies to the existing and newly created elements. **Note**: The **font name** and **font size** settings are applied to the elements that you can enter the text.

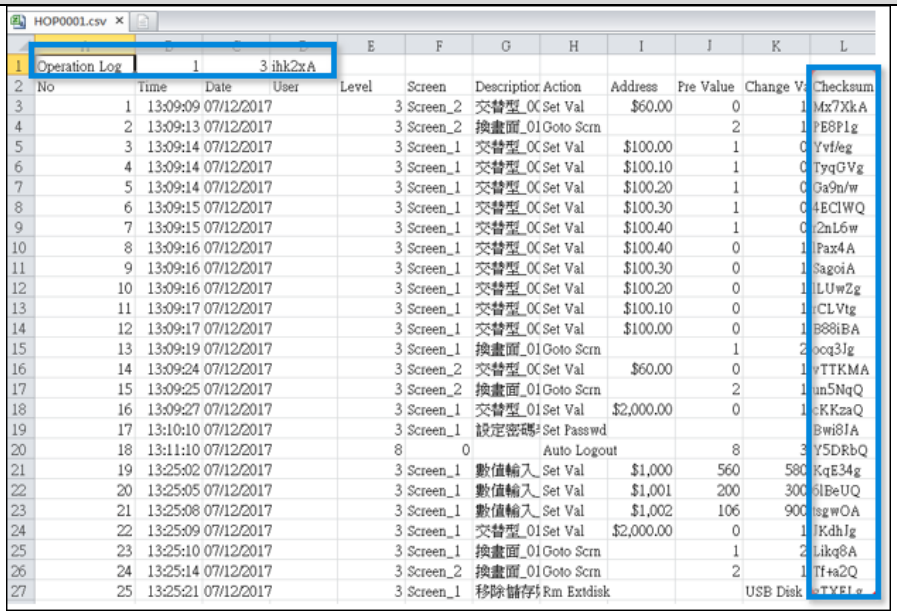
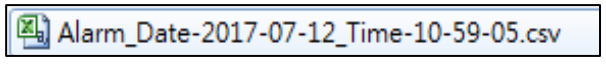
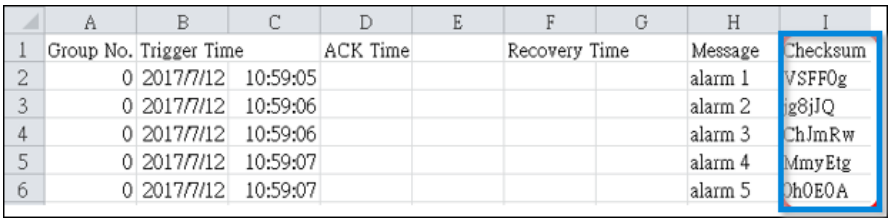
System Language Settings

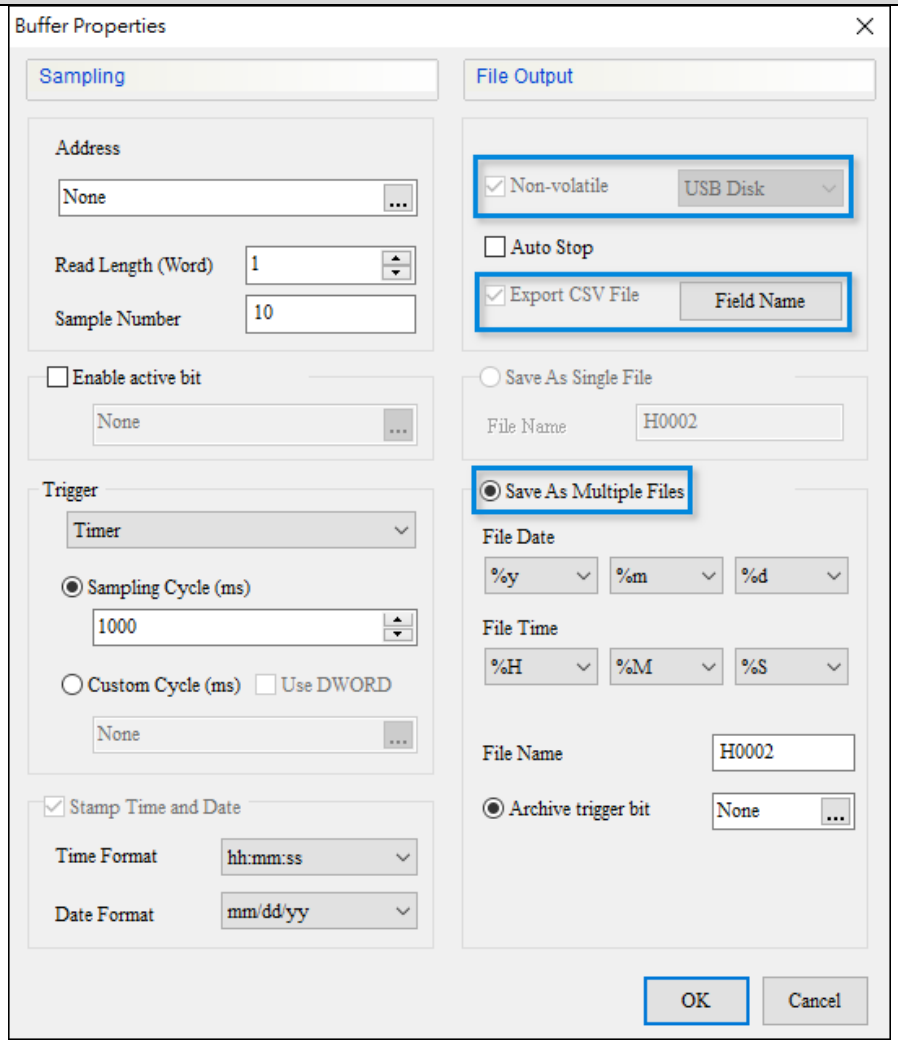
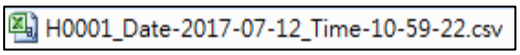
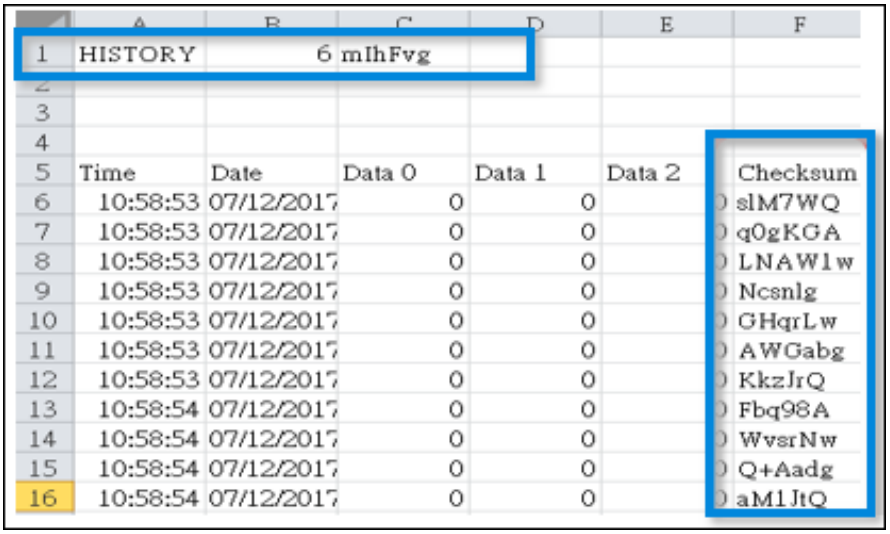
System languages include 6 languages, which can be applied to the system menu of the HMI and the pop-up message when operating the HMI.

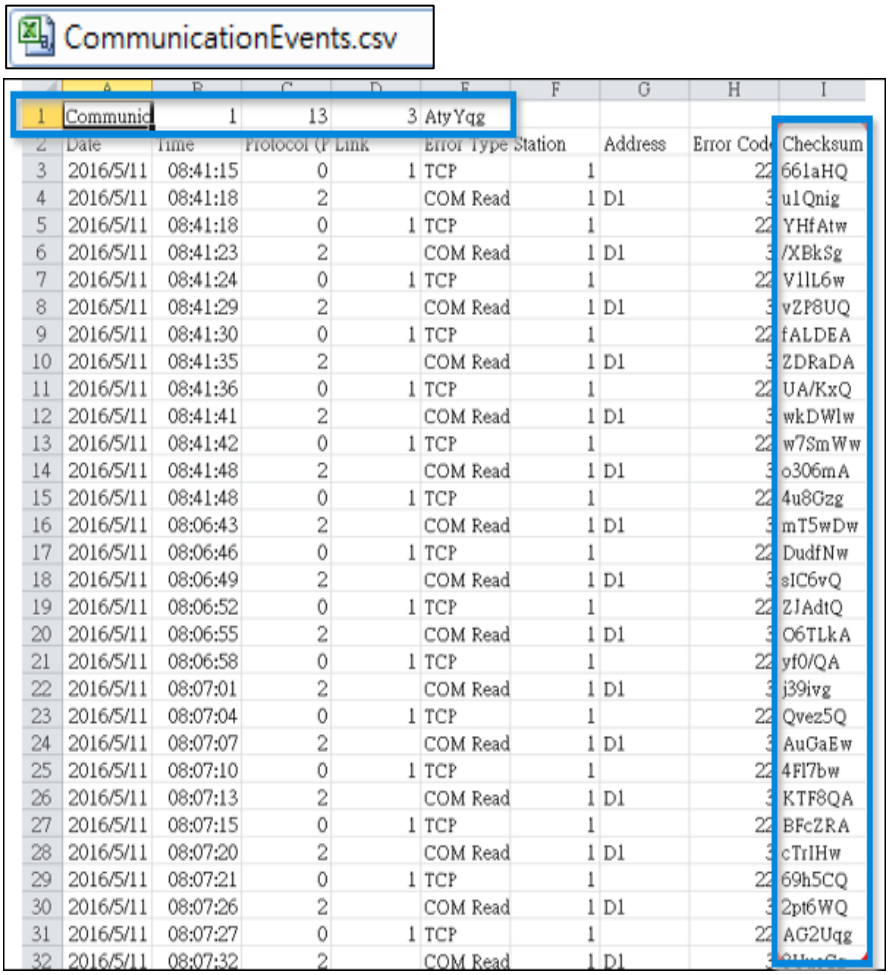
Industry Application



Function	Description
Enable electronic record	If selected, the electronic record settings are available. **Note**: If enabled, **Advanced Level Access Control** of Control and Status Block becomes invalid.
Operation record	The **Operation record** function records all operations of the HMI, including numerical changes and user level. Checksum and Operation Log data will be added to the operation record file.

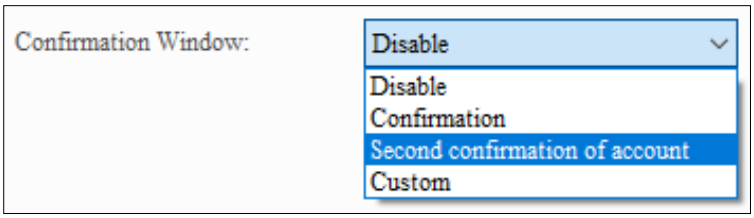
Function	Description
	
Alarm record	If selected, the HMI alarm data will be recorded, and the **Export CSV File** field in the **Alarm Settings** page will be forced to be set to **Yes**. To cope with electronic signatures, the file name of the exported alarm data file will be created according to the year, month, day, hour, minute and second. Checksum data will be added.   **Note**: The timing of generating this file is based on the maximum number of records set by the alarm.
History sampling record	If selected, the HMI historical data will be recorded. In the **Buffer Properties** dialog of the **History Buffer** setting page, • **Non-volatile** will be forced to be set to HMI, SD, USB Disk or USB Disk 2 (based on the setting of **Data storage**), • **Export CSV File** checkbox will be forced to be selected, • The file storage method will also be forced to be set to **Save As Multiple Files**.

Function	Description
	 The historical data of **Save As Multiple Files** will be stored according to year, month, day, hour, minute, and second. Checksum and HISTORY data will be added.  

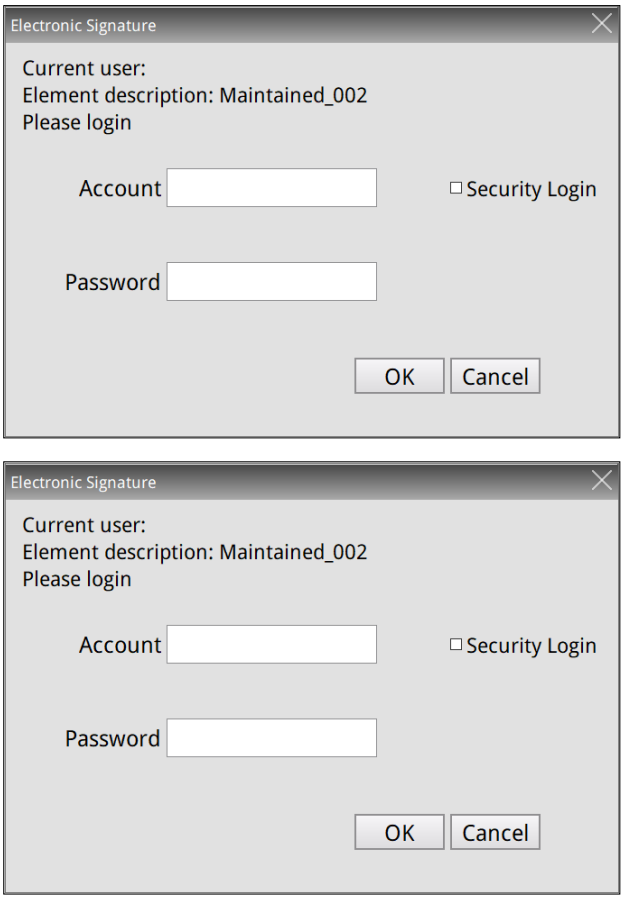
Function	Description
Comm. error record	If selected, the HMI will automatically store the communication error data in the HMI, USB, or SD card, and the storage location is HMI\HMI-000\CommEventLog. Checksum and Communication data will be added to the communication error record file. 
Data storage	Select the storage location of all stored data in electronic records. The available options include HMI, USB Disk, USB Disk 2, and SD. The default value is **HMI**.

The electronic record function mainly ensures that the data are consistent and accurately generated and saved, and can be viewed at any time, which is different from the daily records. Therefore, the generated record data will be added with a checksum mechanism and exported to a CSV file.

Enable the Enable electronic record function will also enable the **Second confirmation of account** function for the **Confirmation Window** in the element dialog.

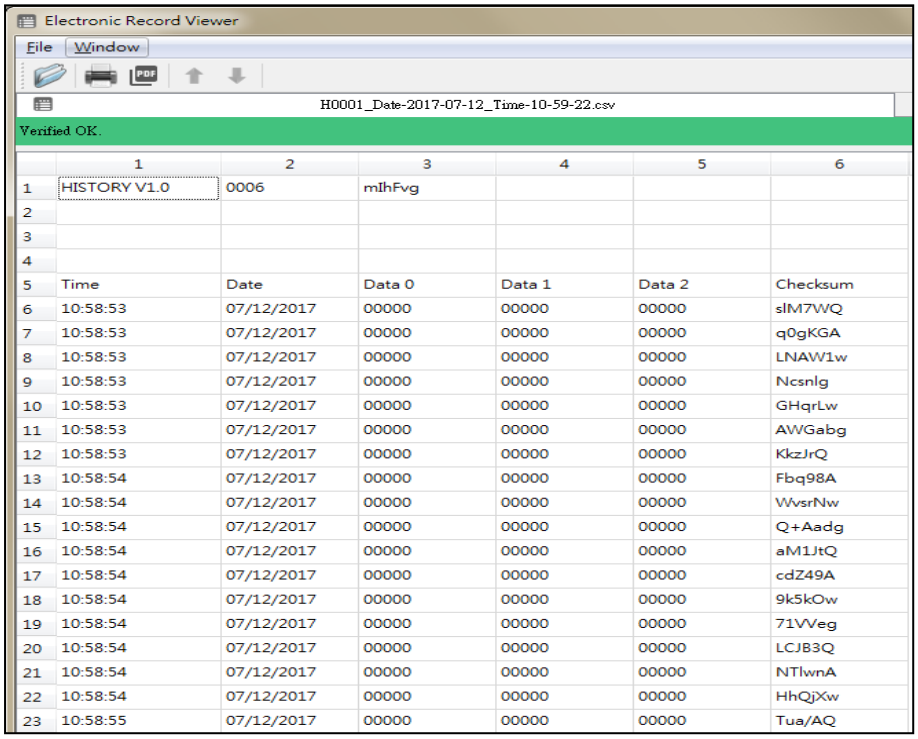


If the account is set to **Second confirmation of account**, you will be asked to enter the password twice.



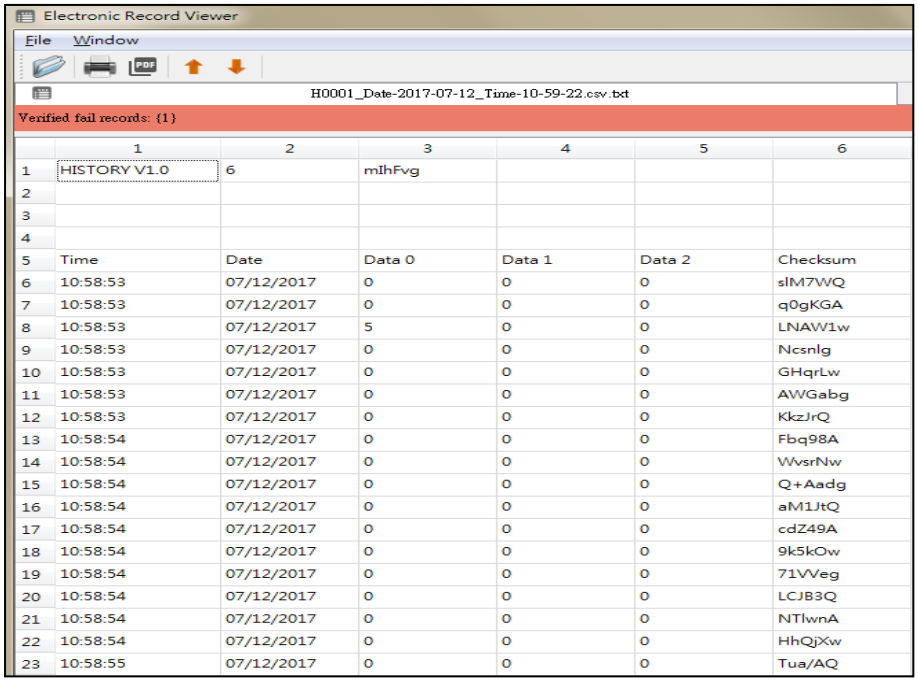
The files generated by the electronic signature can be opened by Excel or the electronic record viewing tool eRecordViewer. The file storage location is `C:\Program Files (x86)\Delta Industrial Automation\DIAStudio\DIAScreen 1.6\Utility\eRecordViewer.`

If the loaded data has not been tampered with, eRecordViewer will prompt “Verified OK”.



	1	2	3	4	5	6
1	HISTORY V1.0	0006	mIhFvg			
2						
3						
4						
5	Time	Date	Data 0	Data 1	Data 2	Checksum
6	10:58:53	07/12/2017	00000	00000	00000	slM7WQ
7	10:58:53	07/12/2017	00000	00000	00000	q0gKGA
8	10:58:53	07/12/2017	00000	00000	00000	LNAW1w
9	10:58:53	07/12/2017	00000	00000	00000	Ncsnlg
10	10:58:53	07/12/2017	00000	00000	00000	GHqrLw
11	10:58:53	07/12/2017	00000	00000	00000	AWGabg
12	10:58:53	07/12/2017	00000	00000	00000	KkzJrQ
13	10:58:54	07/12/2017	00000	00000	00000	Fbq98A
14	10:58:54	07/12/2017	00000	00000	00000	WvsrNw
15	10:58:54	07/12/2017	00000	00000	00000	Q+Aadg
16	10:58:54	07/12/2017	00000	00000	00000	aM1JtQ
17	10:58:54	07/12/2017	00000	00000	00000	cdZ49A
18	10:58:54	07/12/2017	00000	00000	00000	9k5kOw
19	10:58:54	07/12/2017	00000	00000	00000	71VVeg
20	10:58:54	07/12/2017	00000	00000	00000	LCJB3Q
21	10:58:54	07/12/2017	00000	00000	00000	NTlwnA
22	10:58:54	07/12/2017	00000	00000	00000	HhQjXw
23	10:58:55	07/12/2017	00000	00000	00000	Tua/AQ

If the data has been tampered with, for example, eRecordViewer detects that the Checksum of the data in the 8th column of the file does not match, it will display "**Verified fail records: {1}**". The number in the braces is the total number of error data.



	1	2	3	4	5	6
1	HISTORY V1.0	6	mIhFvg			
2						
3						
4						
5	Time	Date	Data 0	Data 1	Data 2	Checksum
6	10:58:53	07/12/2017	0	0	0	slM7WQ
7	10:58:53	07/12/2017	0	0	0	q0gKGA
8	10:58:53	07/12/2017	5	0	0	LNAW1w
9	10:58:53	07/12/2017	0	0	0	Ncsnlg
10	10:58:53	07/12/2017	0	0	0	GHqrLw
11	10:58:53	07/12/2017	0	0	0	AWGabg
12	10:58:53	07/12/2017	0	0	0	KkzJrQ
13	10:58:54	07/12/2017	0	0	0	Fbq98A
14	10:58:54	07/12/2017	0	0	0	WvsrNw
15	10:58:54	07/12/2017	0	0	0	Q+Aadg
16	10:58:54	07/12/2017	0	0	0	aM1JtQ
17	10:58:54	07/12/2017	0	0	0	cdZ49A
18	10:58:54	07/12/2017	0	0	0	9k5kOw
19	10:58:54	07/12/2017	0	0	0	71VVeg
20	10:58:54	07/12/2017	0	0	0	LCJB3Q
21	10:58:54	07/12/2017	0	0	0	NTlwnA
22	10:58:54	07/12/2017	0	0	0	HhQjXw
23	10:58:55	07/12/2017	0	0	0	Tua/AQ

You can also save the electronic records as PDF files through eRecordViewer and print them.

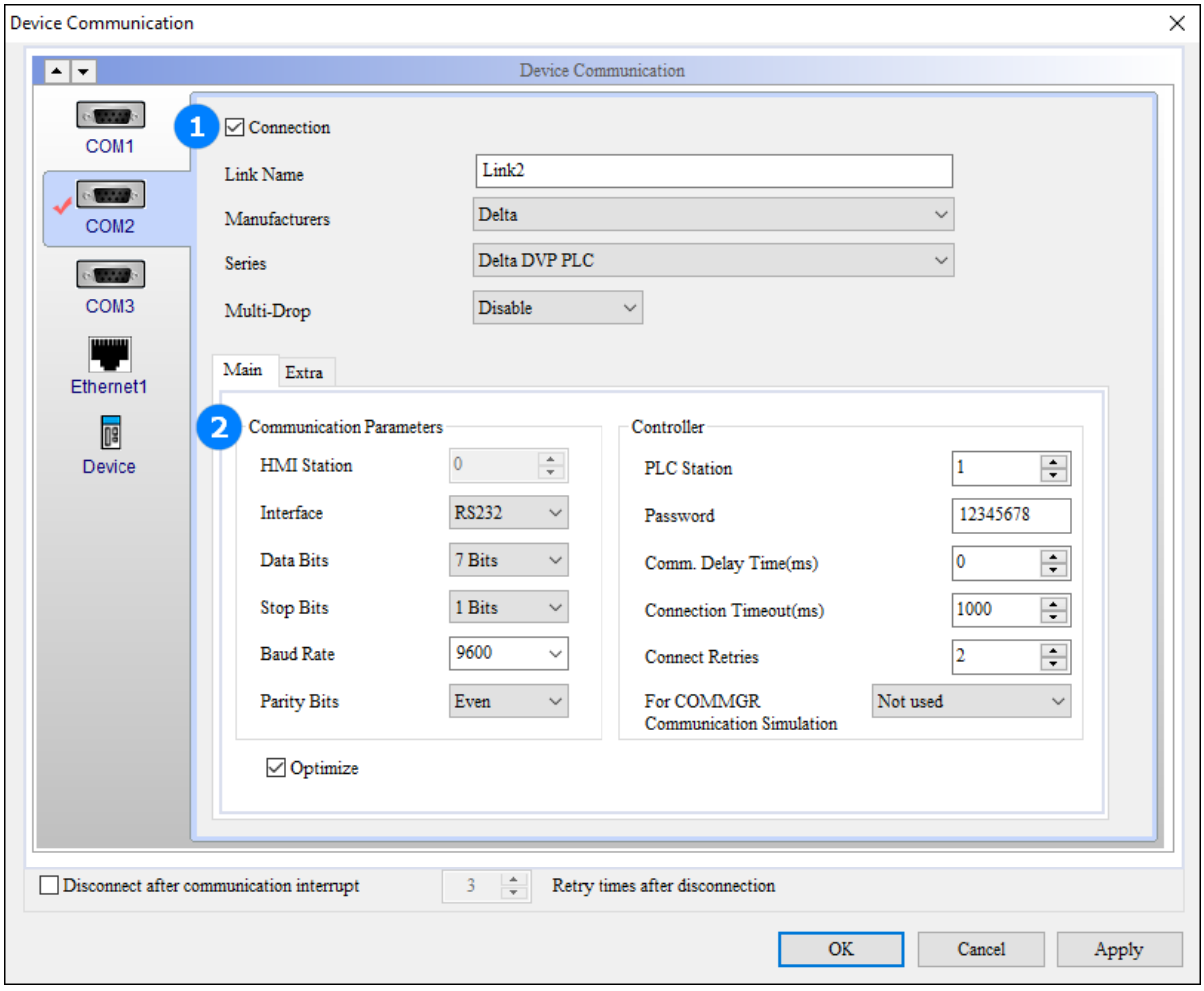
Device Communication

The **Device Communication** function is used for configuring the related setting of communication between the HMI and devices, including COM Port, Ethernet, and other interfaces.

This section describes the parameter settings for each communication interface.

COM Port

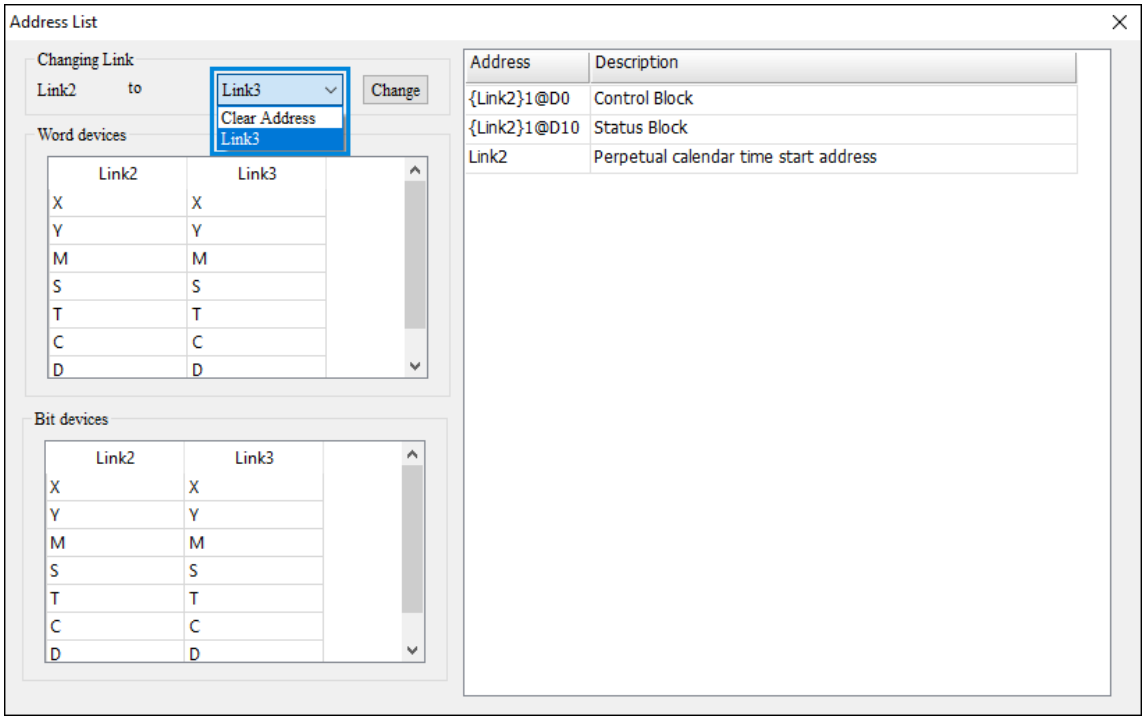
The following table lists the functions in the COM Port setting page with the description.



1 Connection

- The settings of COM Port are only available when **Connection** is selected.

- You can customize the **Link Name** and select the device to connect.
- If **Connection** is unselected, DIAScreen detects whether the current connection is being used. If so, a warning message appears, and the **Address List** dialog displays. In the **Address List** dialog, you can choose to change the address to another connection or **Clear Address**.



② Communication Parameters

Function	Description
HMI Station	Select or enter the HMI station ID. The range value is 1–255 and the default value is **0**.
Interface	Select the communication interface (transmission method). The available options are RS232, RS422, and RS485. For COM1, only RS232 can be selected; for COM2 and COM3, RS232, RS422, and RS485 can be selected.
Data Bits	Select the length of the received data packet.

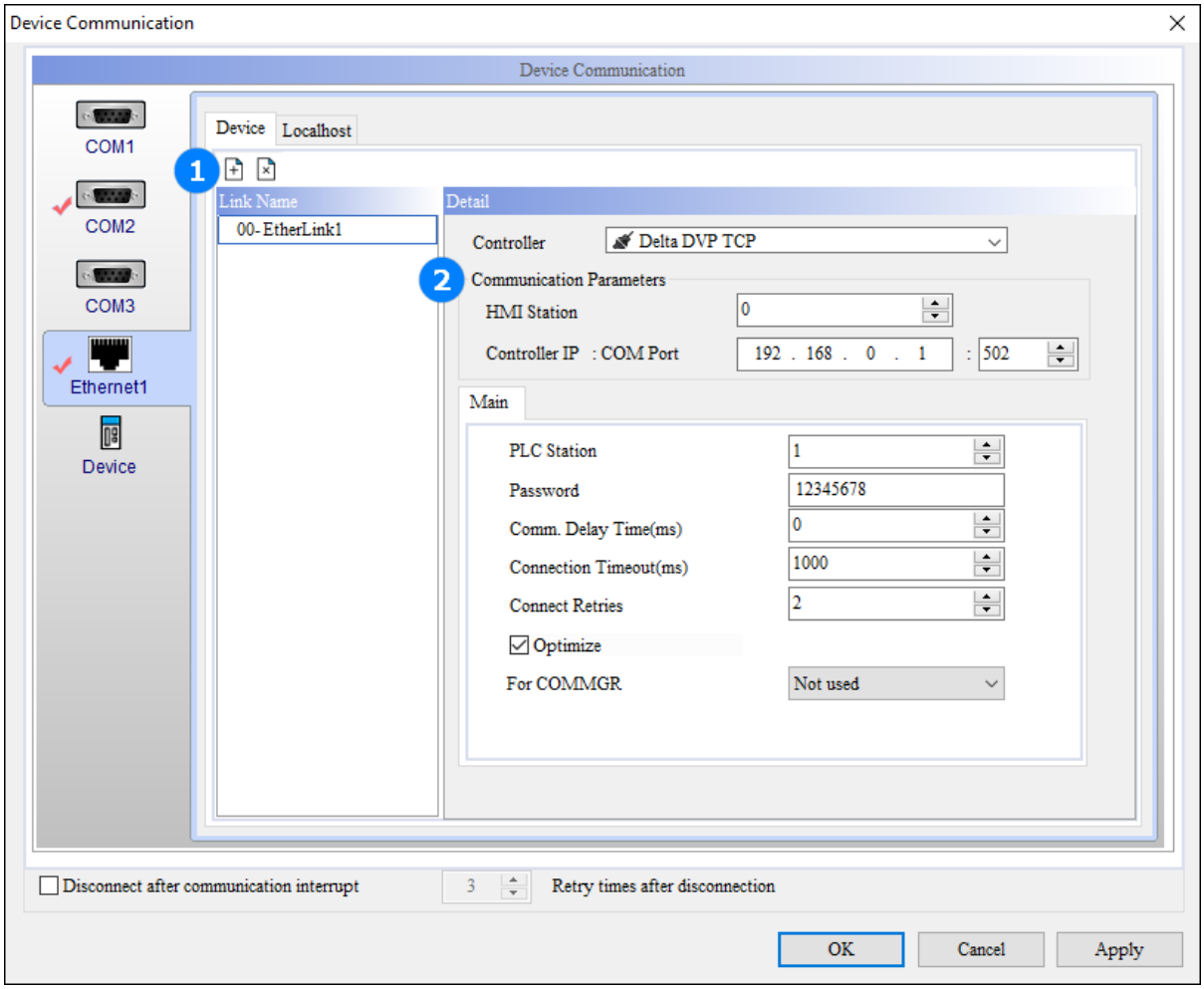
	COM1	COM2	COM3
RS232	V	V	V
RS422	-	V	V
RS485	-	V	V

Function	Description
Stop Bits	Select the stop bits that inform the receiver of the end of the data signal.
Baud Rate	Select the data transmission speed.
Parity Bits	Select the parity bits. It is used to check for errors in the transmitted data. The available options are None, Odd, Even, Mark, and Space.

For other parameter settings, see Common Properties.

Ethernet Port

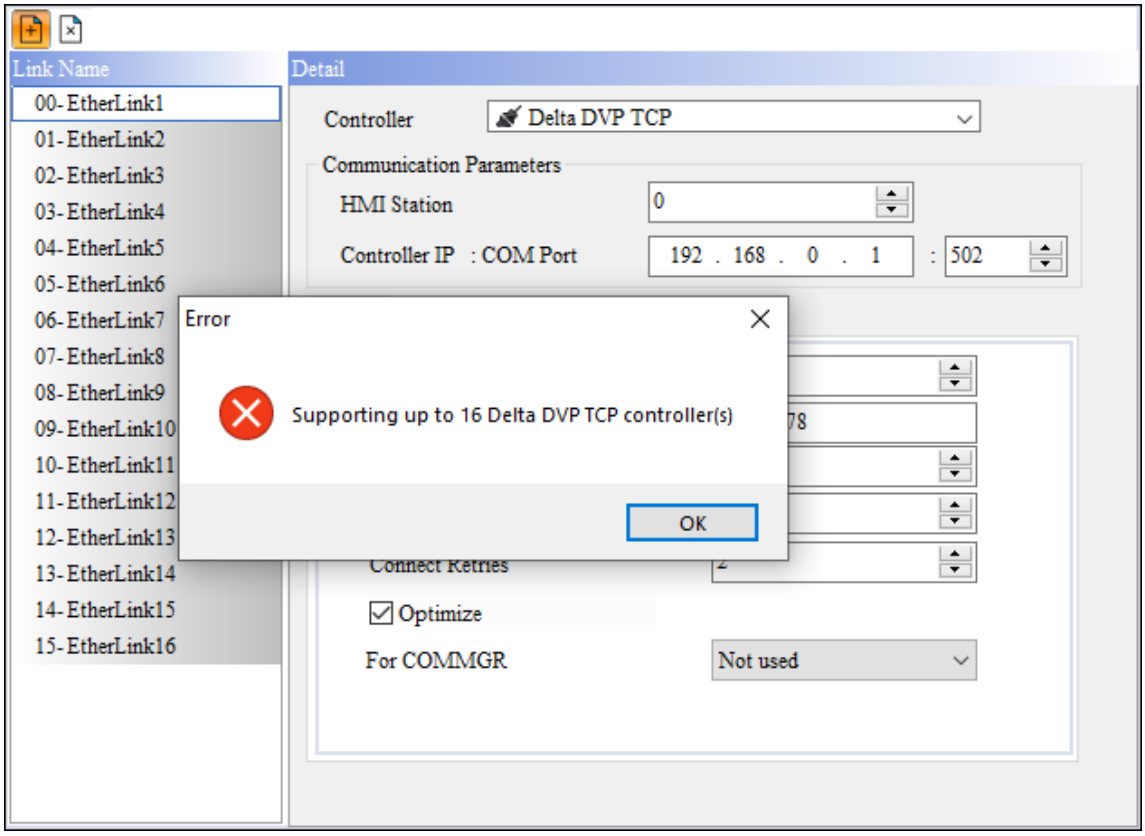
The following table lists the functions in the Ethernet Port setting page with the description.



Device

1 Device

- Click  to add a link device named EtherLink1. The **Link Name** EtherLink1 can be changed according to your need.
- Up to 16 links are supported for each controller, and up to 4 types of controllers are supported for one network port.

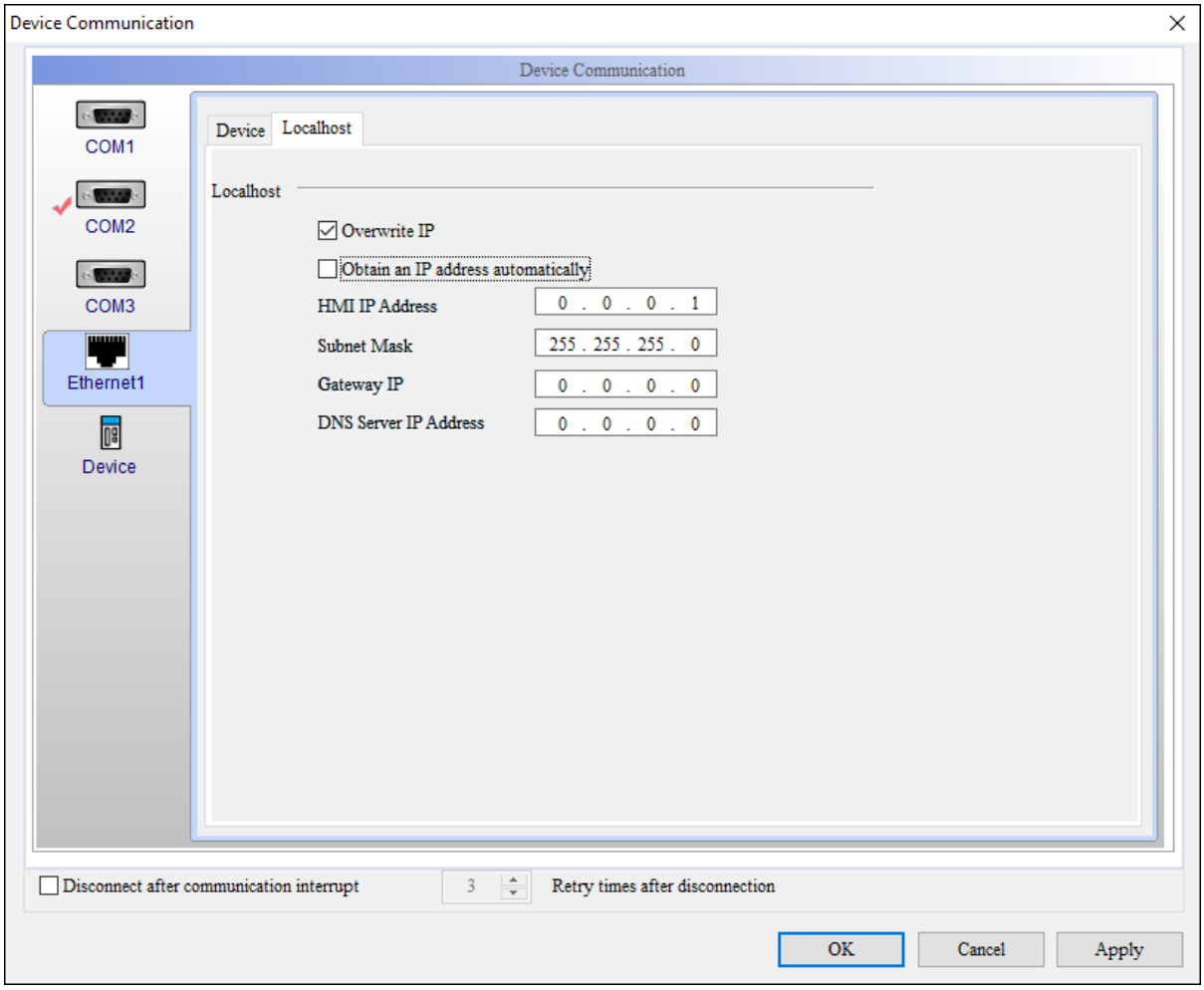


② Communication Parameters

Function	Description
HMI Station	Select or enter the HMI station ID. The range value is 1–255 and the default value is **0**.
Controller IP	Set the IP address of controller. **Note**: The controller IP address must be set in the same network segment as the HMI IP address.
COM Port	Select or enter the communication port. You can also set it corresponding to the controller's port. **Note**: The **COM Port** varies depending on the selected controller.

For the descriptions of the **Main** tab, see Common Properties.

Localhost

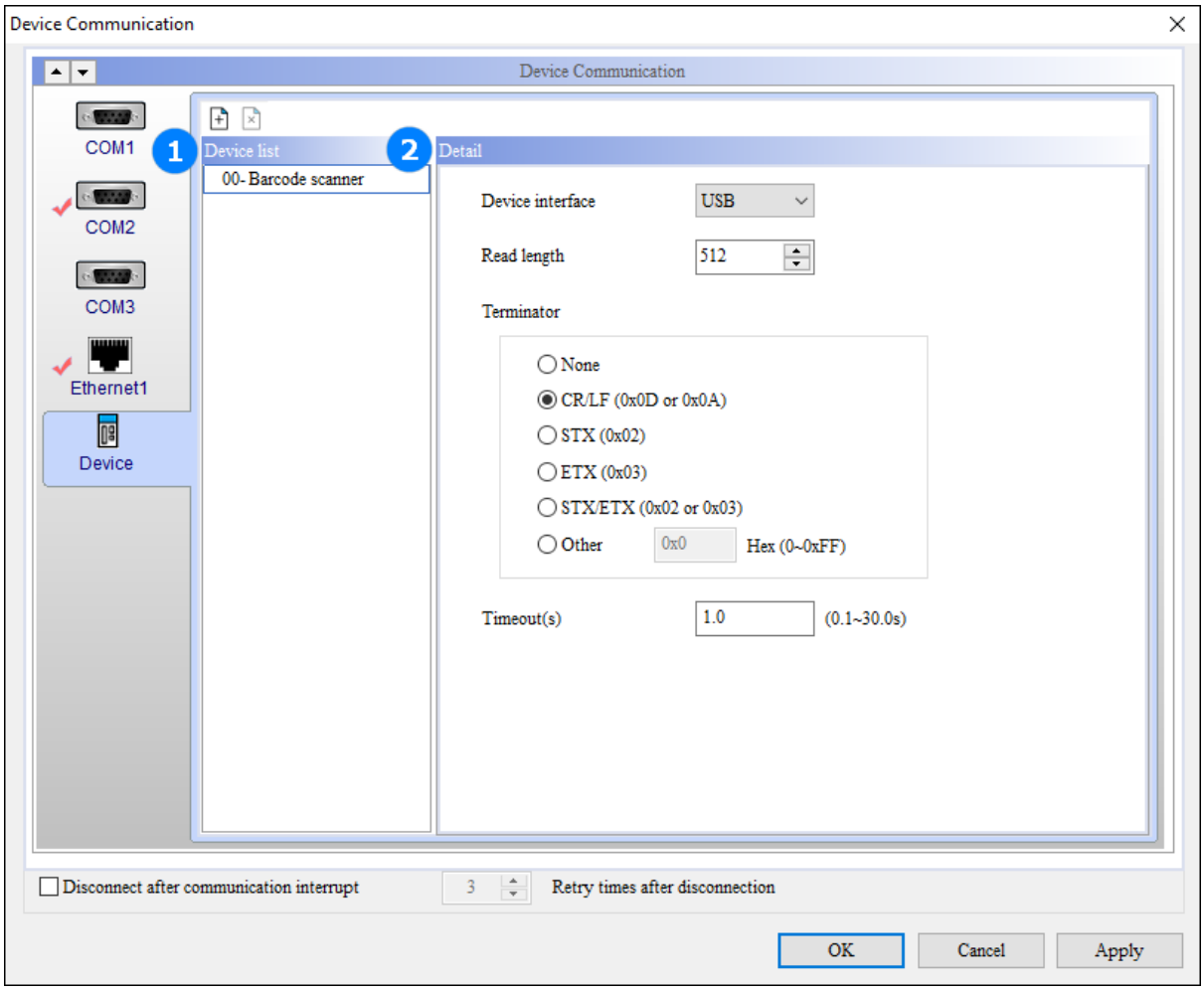


Function	Description
Overwrite IP	• If selected, the network IP address of the HMI is written according to the screen file settings when DIAScreen downloads the project or updates the screen file. • If not selected, the network IP address does not change due to project download and screen file updates. Go to **System Menu** > **System Setting** > **Network** on the HMI to change its IP address.
Obtain an IP address automatically	• This setting is only available when **Overwrite IP** is selected. • If **Obtain an IP address automatically** is selected, the HMI uses the DHCP mode to get the IP address.
HMI IP address	Set the IP address of the HMI. If **Obtain an IP address automatically** is not selected, the fixed IP address can be set. **Note**: The **HMI IP address** must be set in the same network segment as the controller IP address.

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>Subnet Mask</td><td>Set the subnet mask. The subnet mask is used to segment the network and identify the destination address. It has the same format as the IP address, which is represented by four bytes separated by decimal points.
<table>
<tr><th>IP Class</th><th>Network Address</th><th>Subnet Mask</th></tr>
<tr><td>Class A</td><td>1.x.x.x~126.x.x.x</td><td>255.0.0.0</td></tr>
<tr><td>Class B</td><td>128.0.x.x~191.255.x.x</td><td>255.255.0.0</td></tr>
<tr><td>Class C</td><td>192.0.0.x~223.255.255.x</td><td>255.255.255.0</td></tr>
</table>
Subnet Mask must be set when the IP address is set on each computer. For Class C in the table above, the first 3 bytes of the IP address are Network ID. Therefore, the first 3 bytes of the Subnet Mask are all 255. The last byte is the Host ID, which is 0.</td></tr>
</table>

Device

Set the connection parameters between HMI and external devices.



❶ Device list

- A USB device has been added by default and cannot be deleted.
- Click  to add a COM Port device. When all COM Ports are occupied, new devices cannot be added.

Note: The device name is defaulted as Barcode scanner and cannot be changed.

❷ Detail

Function	Description
Device interface	• The default interface is **USB**. • After adding a device, select an unoccupied COM Port.
Communication Parameter	• This setting is only available when using a COM Port device. • This setting is the same as that of COM Port.
Read length	Select or enter the string length (not including the terminator) for reading data. The range value is 10–1024.
Terminator	Choose the terminator. The available options are None (No Terminator), CR/LF, STX, ETX, STX/ETX, and Other. **Note**: **Other** is custom hexadecimal encoding, and the range value is 0X00~0XFF.
Timeout	Enter the time interval between scanning and reading the first character and the terminator. The range value is 0.1–30.0.

Note: For the reading setting of the external devices, see the content of **Internal Parameter** > **Input Device** in the Address Settings.

Common Properties

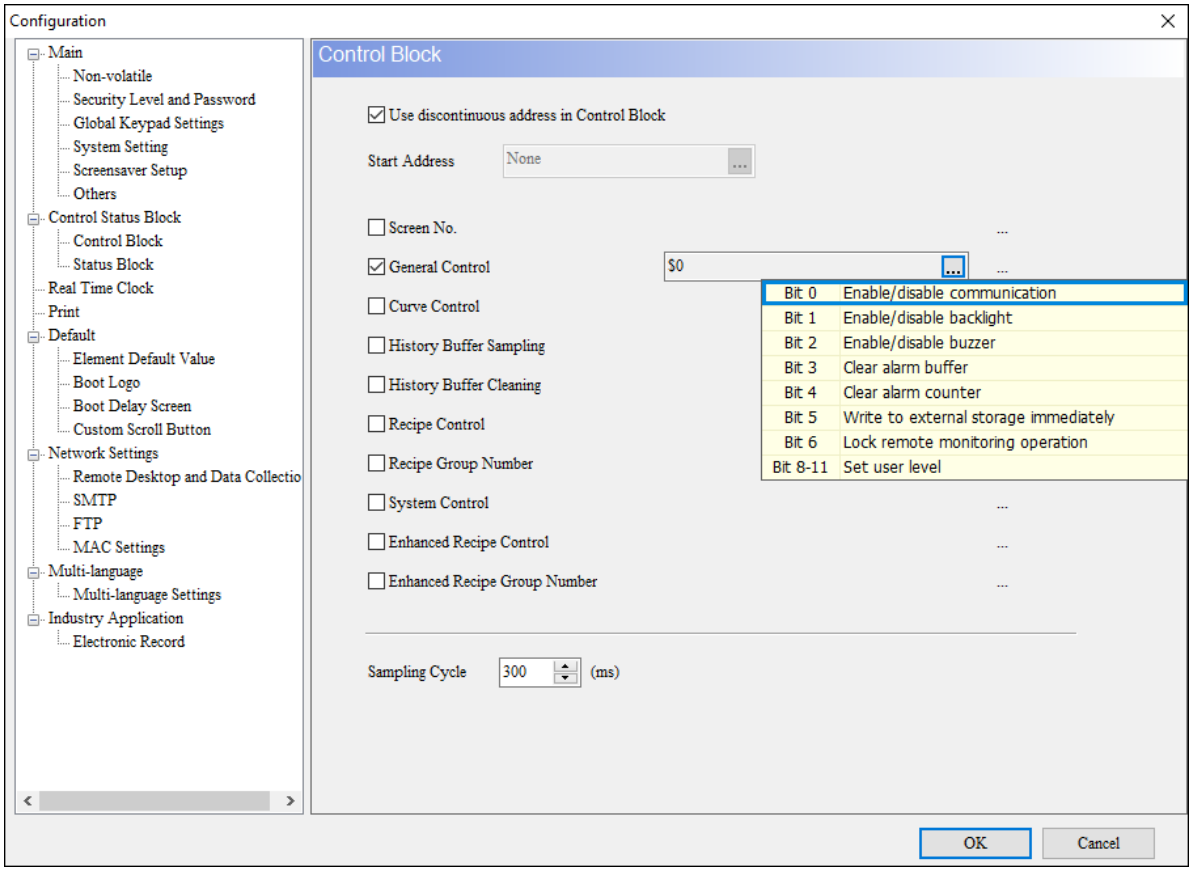
Controller Settings

Function	Description
PLC Station	**PLC Station** is the default station ID generated automatically after selecting the controller and can be changed. The range value is 0–255.
Password	Enter the password. If the set PLC requires a password check, you must set the corresponding password for communication in the software. The default value is **12345678**.

Function	Description
Comm. Delay Time	Select or enter the time interval between each communication. The range value is 0–255 and the default value is **0**.
Connection Timeout	Select or enter the connection timeout that HMI communicates with the device. The range value is 10–2000 and the default value is **1000**.
Connect Retries	Select or enter the retries. If the controller fails to respond to the communication, the HMI sends the communication command again. If reaching the set number of retries, the HMI displays a warning message of abnormal communication. The range value is 0–15 and the default value is **2**.
Optimize	• If selected, the process of reading the address of all elements referring to this link gets optimized to facilitate communication. • If unselected, the speed for reading the elements becomes slow.
For COMMGR Communication Simulation	Select the simulator driver configured in COMMGR to communicate with COMMGR simulator through the **Off-line Simulation** function. **Note**: Download and install COMMGR in DIAInstaller.

Disconnect after communication interrupt

- If **Disconnect after communication interrupt** is selected, **Connect Retries** can be set. When the communication is interrupted and the set **Connect Retries** is reached, the HMI will no longer connect with the controller. The range value of **Connect Retries** is 0–255 and the default value is **3**.
- When the communication between the HMI and controller stops due to reaching the **Connect Retries**, use Bit 0 in the **Control Block** to enable / disable the communication to restore the connection.

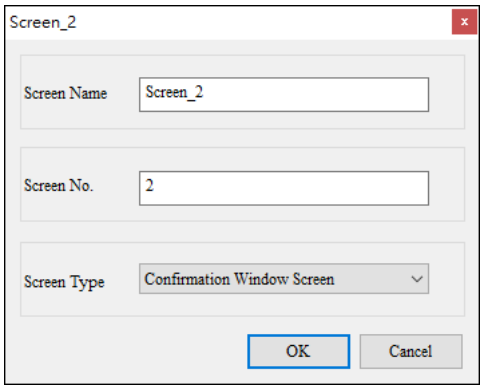

Configuration
Main
Non-volatile
Security Level and Password
Global Keypad Settings
System Setting
Screensaver Setup
Others
Control Status Block
Control Block
Status Block
Real Time Clock
Print
Default
Element Default Value
Boot Logo
Boot Delay Screen
Custom Scroll Button
Network Settings
Remote Desktop and Data Collectio
SMTP
FTP
MAC Settings
Multi-language
Multi-language Settings
Industry Application
Electronic Record
Control Block
Use discontinuous address in Control Block
Start Address
None
Screen No.
General Control
$0
Curve Control
History Buffer Sampling
History Buffer Cleaning
Recipe Control
Recipe Group Number
System Control
Enhanced Recipe Control
Enhanced Recipe Group Number
Sampling Cycle
300
(ms)
Bit 0 Enable/disable communication
Bit 1 Enable/disable backlight
Bit 2 Enable/disable buzzer
Bit 3 Clear alarm buffer
Bit 4 Clear alarm counter
Bit 5 Write to external storage immediately
Bit 6 Lock remote monitoring operation
Bit 8-11 Set user level
OK
Cancel

Custom Confirmation Window Screen

DIAScreen supports the Confirmation Window Screen function. You can customize the confirmation window according to your needs.

Follow the steps to customize the confirmation window.

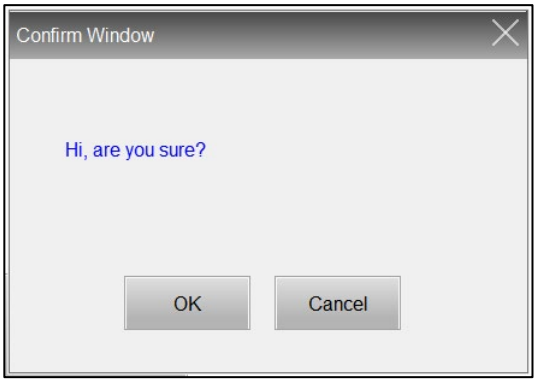
1. Do one of the following:
   - On the toolbar, click **General** > **New Screen** > **Confirmation Window Screen**.
   - Right-click the blank space of the **Screen Management Window** and select **New Screen**, select **Confirmation Window Screen** for **Screen Type**.



   The confirmation window screen is created.

2. Create a **Goto Screen** element and double-click the element.
3. In the property window of the element, select **Custom** for **Confirmation Window** in the **Operating conds.** tab.

   After downloading the screen to the HMI, the custom **Confirm Window** displays when you click the element on the HMI.



User Login Screen

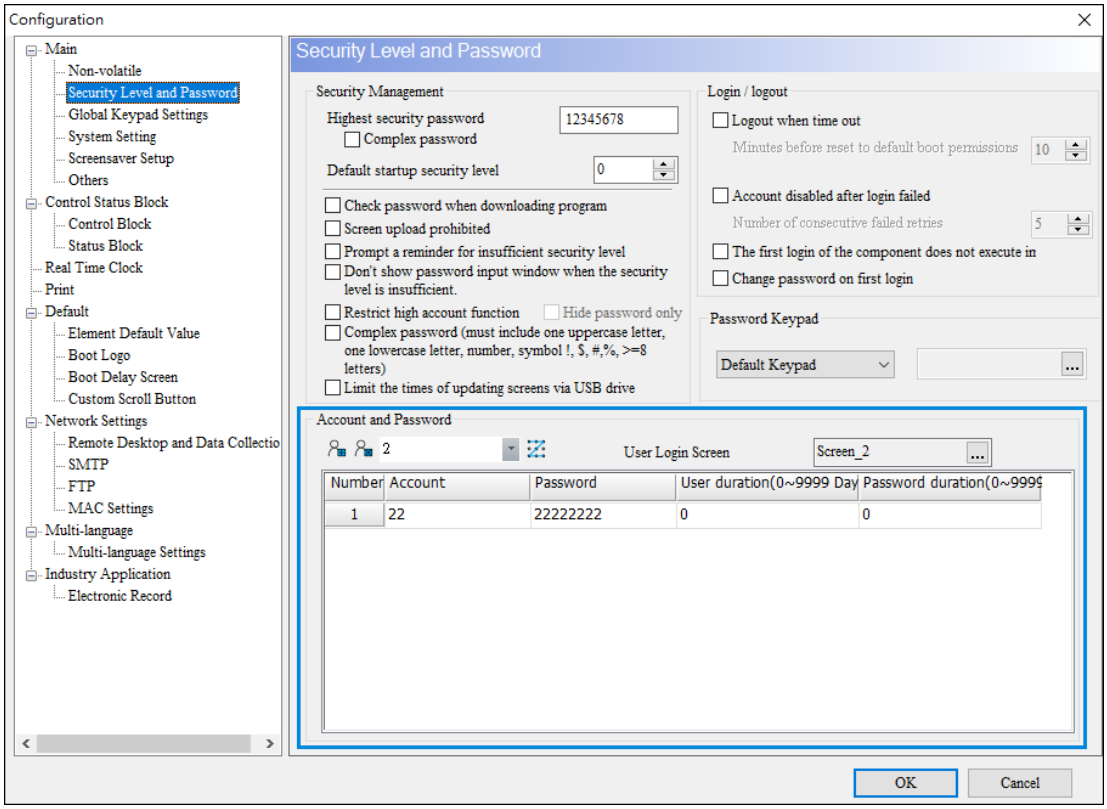
This section describes different types of user login screen which includes **Login/Logout Screen**, **Add/Delete User Account Screen**, and **Change Password Screen**.

Login/Logout Screen

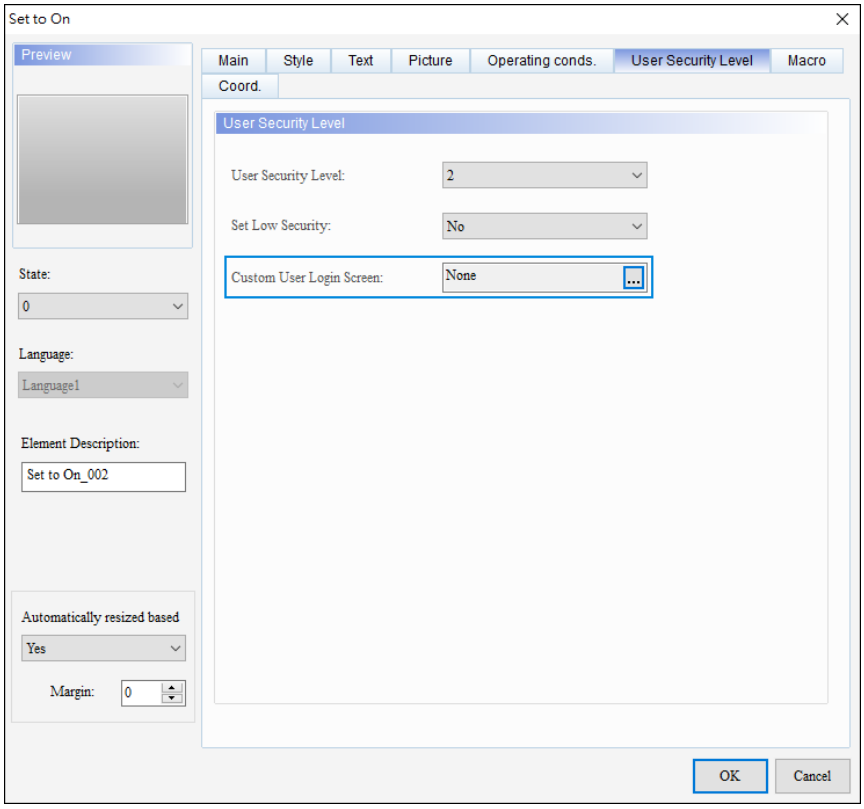
You can use this screen to log in / log out the user account.

To log in / log out the user account

1. Create a Login/Logout Screen. Do one of the following:
   - On the toolbar, click **General** > **New Screen** > **User Login Screen** > **Login/Logout Screen**.
   - Right-click the blank space on the **Screen Management Window** and select **New Screen**, and then select **Login/Logout Screen** for **Screen Type**.
2. Trigger the Login/Logout Screen. You can:
   - Set the **User Security Level** in the **User Security Level** tab of the element property dialog and click  to select the created Login/Logout Screen.
   - In the **Security Level and Password** setting page of the **Configuration** dialog, set the security level and the **Login/Logout Screen** to be triggered by this level.

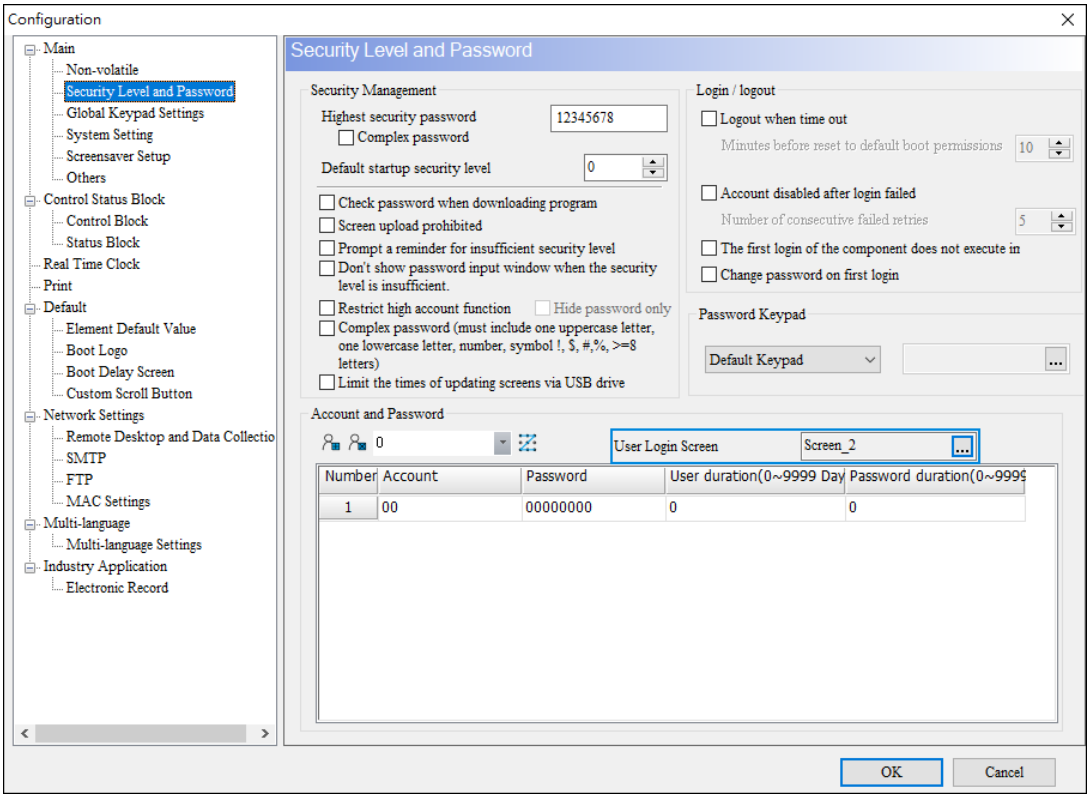


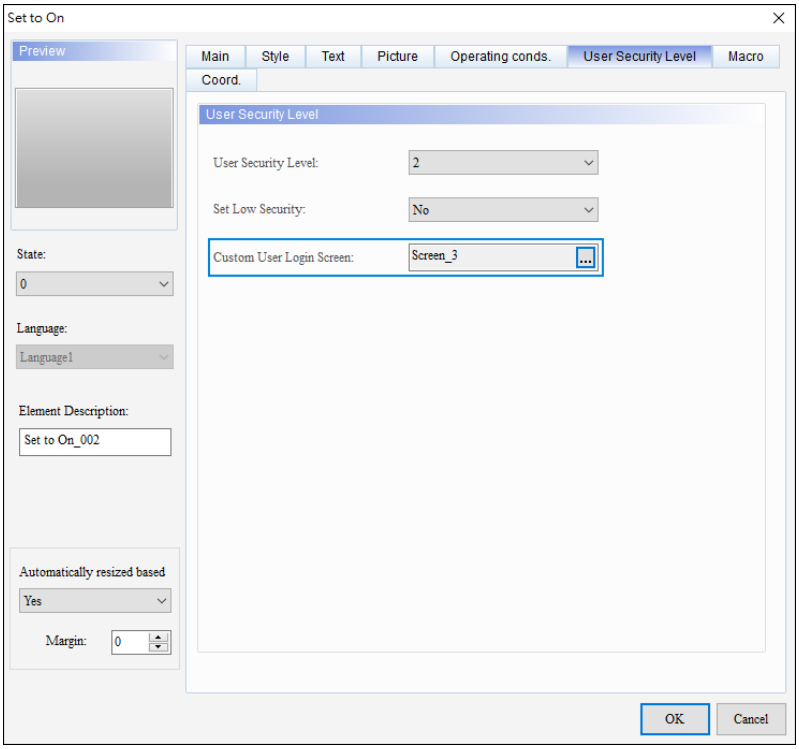
If **User Security Level** of the element is set as 2 and **Custom User Login Screen** is set as None, the **Screen2** login screen is triggered after pressing the element on the HMI.



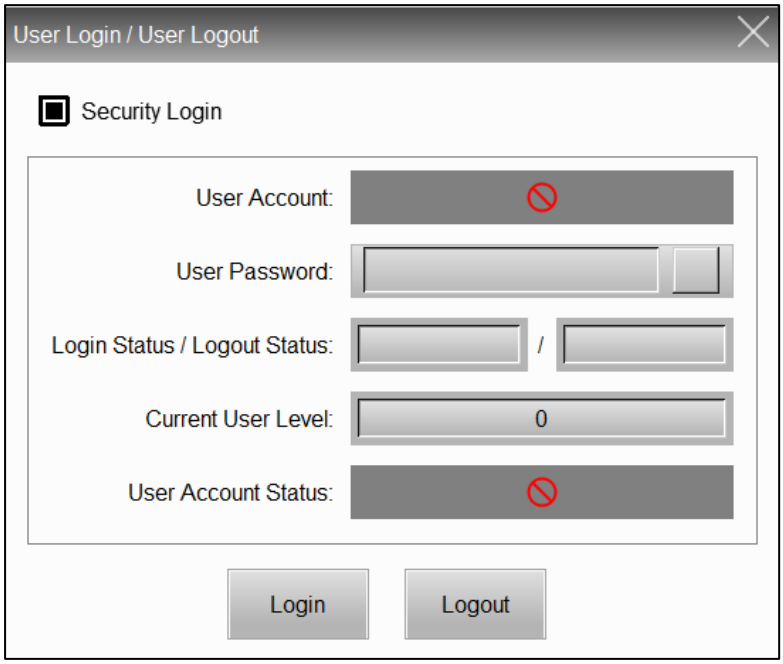
Note:

- The **Configuration** setting is Global setting, and the **Element** setting is Local setting. When different login screens are triggered if they have the same level, the login screen set in the element will take priority.





- Since the highest security does not require an account setup, if the **Security Login** checkbox is selected, the **User Account** and **User Account Status** are disabled and not available for selection.

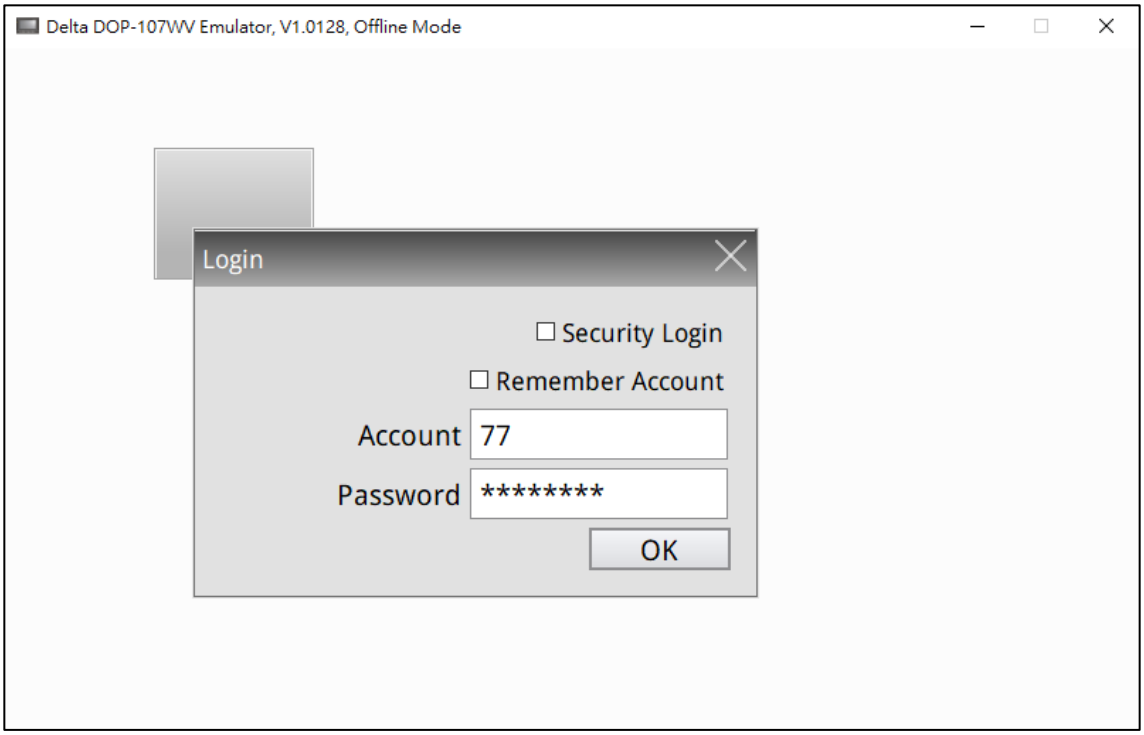


Add/Delete User Account Screen

You can use this screen to quickly add / delete the user account.

To add / delete the user account

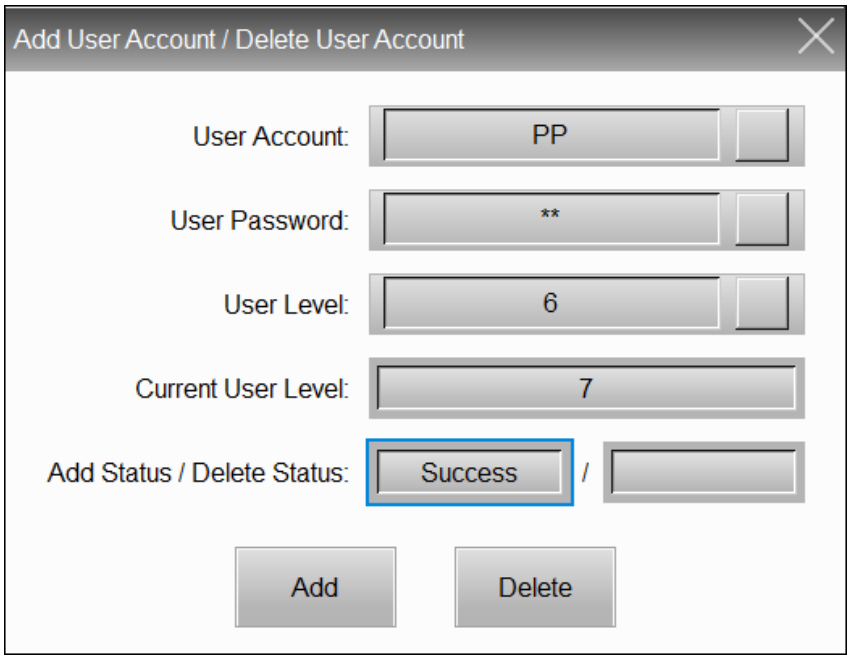
1. Create an Add/Delete User Account Screen. Do one of the following:
   - On the toolbar, click **General** > **New Screen** > **User Login Screen** > **Add/Delete User Account Screen**.
   - Right-click the blank space on the **Screen Management Window** and select **New Screen**, and then select **Login/Logout Screen** for **Screen Type**.
2. Create a **Goto Screen** element on the screen.
3. In the element property dialog, set **Add/Delete User Account Screen** for **Goto Screen** in the **Main** tab.
4. After downloading the screen to the HMI, press the **Goto Screen** element on the HMI, and then log in the security level account.



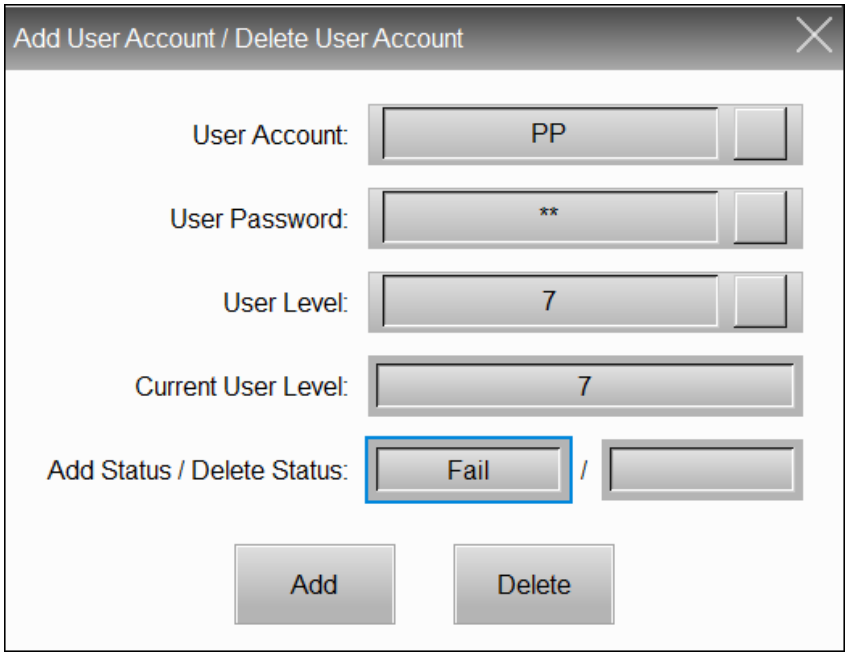
5. Enter the **User Account**, **User Password**, and **User Level**, and then you can:

- Press **Add** to add the account.

  The user account is successfully added.



Note: Only the accounts below the login level can be added. If accounts of the same level are added, the **Add Status** displays **Fail**.



- Press **Delete** to delete the account.

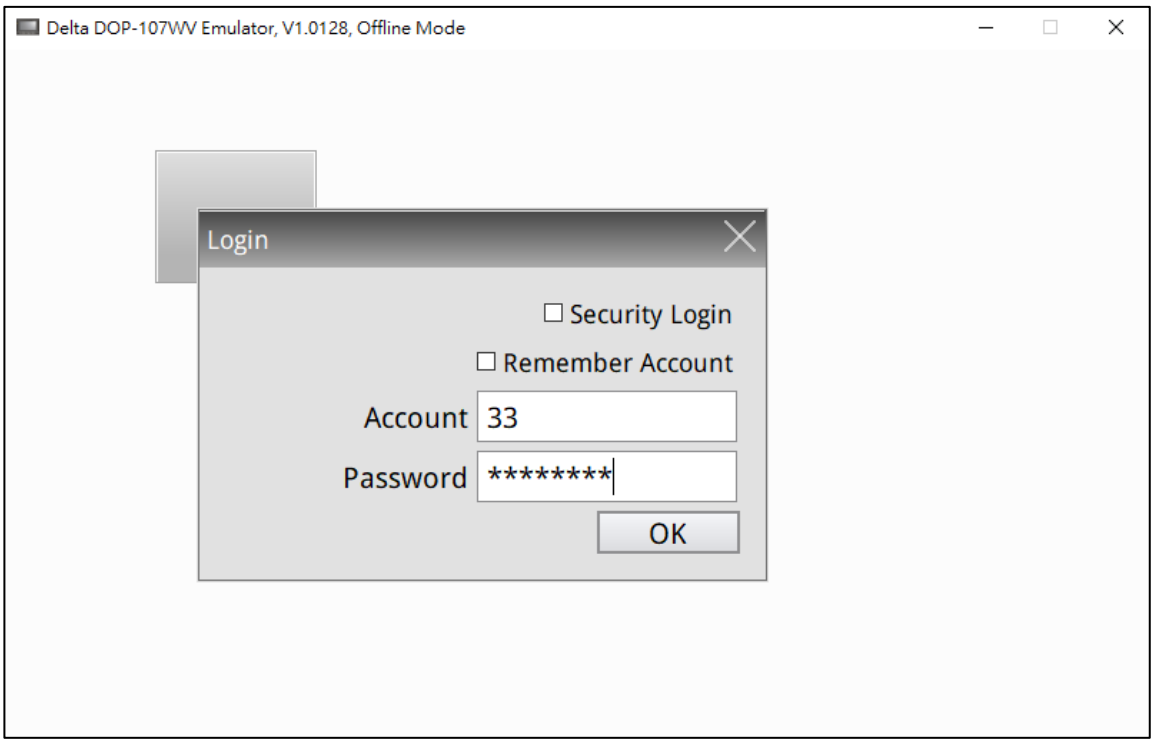
  The user account is successfully deleted.

Change Password Screen

You can use this screen to change the user password.

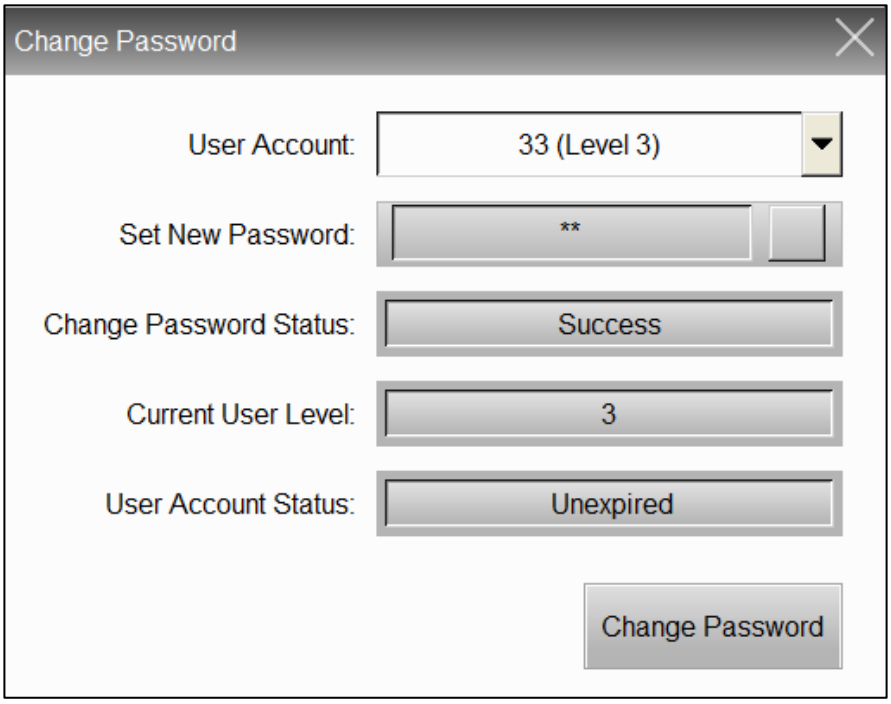
To change the user password

1. Create a Change Password Screen. Do one of the following:
   - On the toolbar, click **General** > **New Screen** > **User Login Screen** > **Change Password Screen**.
   - Right-click the blank space on the **Screen Management Window** and select **New Screen**, and the select **Change Password Screen** for **Screen Type**.
2. Create a **Goto Screen** element on the screen.
3. In the element property dialog, set **Add/Delete User Account Screen** for **Goto Screen** in the **Main** tab.
4. After dowloading the screen to the HMI, press the **Goto Screen** element on the HMI, and then log in the security level account.



5. Select the **User Account** and enter the new password, and then press **Change Password**.

   Note: Only the passwords for accounts below or equal to the login level can be changed.

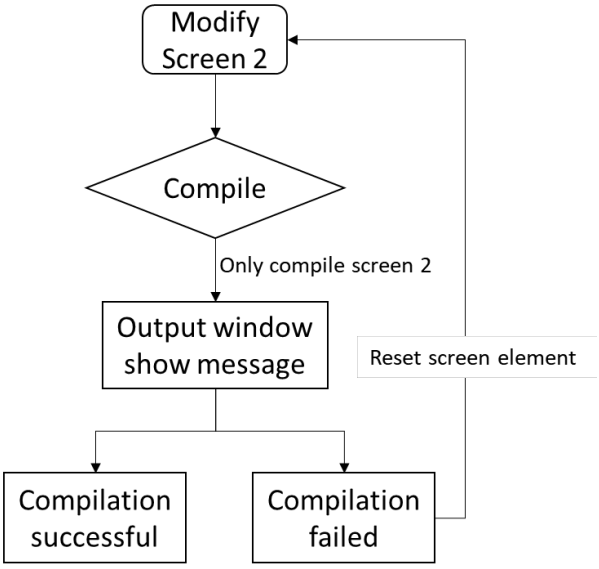

Change Password
User Account:
33 (Level 3)
Set New Password:
**
Change Password Status:
Success
Current User Level:
3
User Account Status:
Unexpired
Change Password

Compile

DIAScreen provides the compiling function for convenient operation and use.

Compile

If only one screen among several screens is edited, you can use the **Compile** function to compile only that screen to save compilation time.



How to use the **Compile** function?

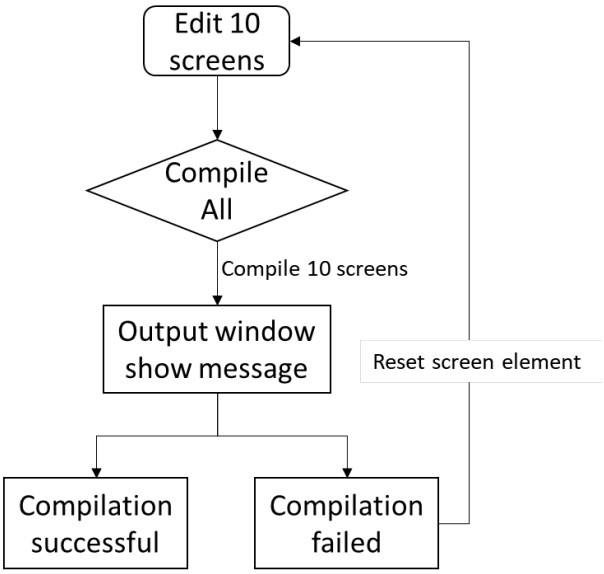
- Click **Project** > **Compile** on the menu bar.

Or

- Press **Ctrl + F7**.

Compile All

Use the **Compile All** function to compile all screens. If an error occurs during compilation, an error messages will be displayed in the **Output** pane to remind users. Click the message to link to the element with the error.



Download All Data

Use the **Download All Data** function to download the screen data and recipe to the HMI.

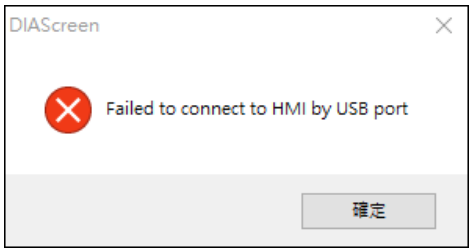
How to use the **Download All Data** function?

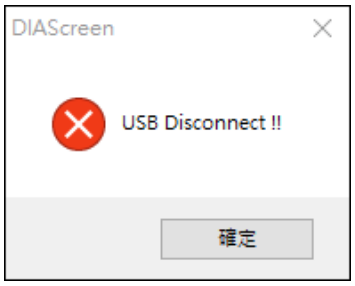
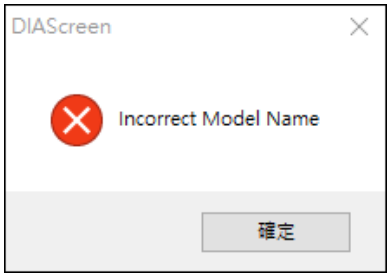
- Click **Project** > **Download All** on the menu bar.

Or

- Press **Ctrl + F8**.

When downloading all data, the software will detect the connection between the HMI and the computer. If the transmission interface between the HMI and the computer is not turned on, an error message will appear. The following table lists the check items with their description.

Check Item	Description
USB Tunnel	USB is turned on incorrectly. 

Check Item	Description
	During the download process, the transmission line is unplugged, or the communication is interrupted. 
Model Setting	The HMI model is set incorrectly. 

Note: Perform the DIAScreen uploading and downloading on an authorized HMI.

Download Screen

The **Download Screen** function downloads only screen data. Refer to Download All Data for the download method.

How to use the **Download Screen** function?

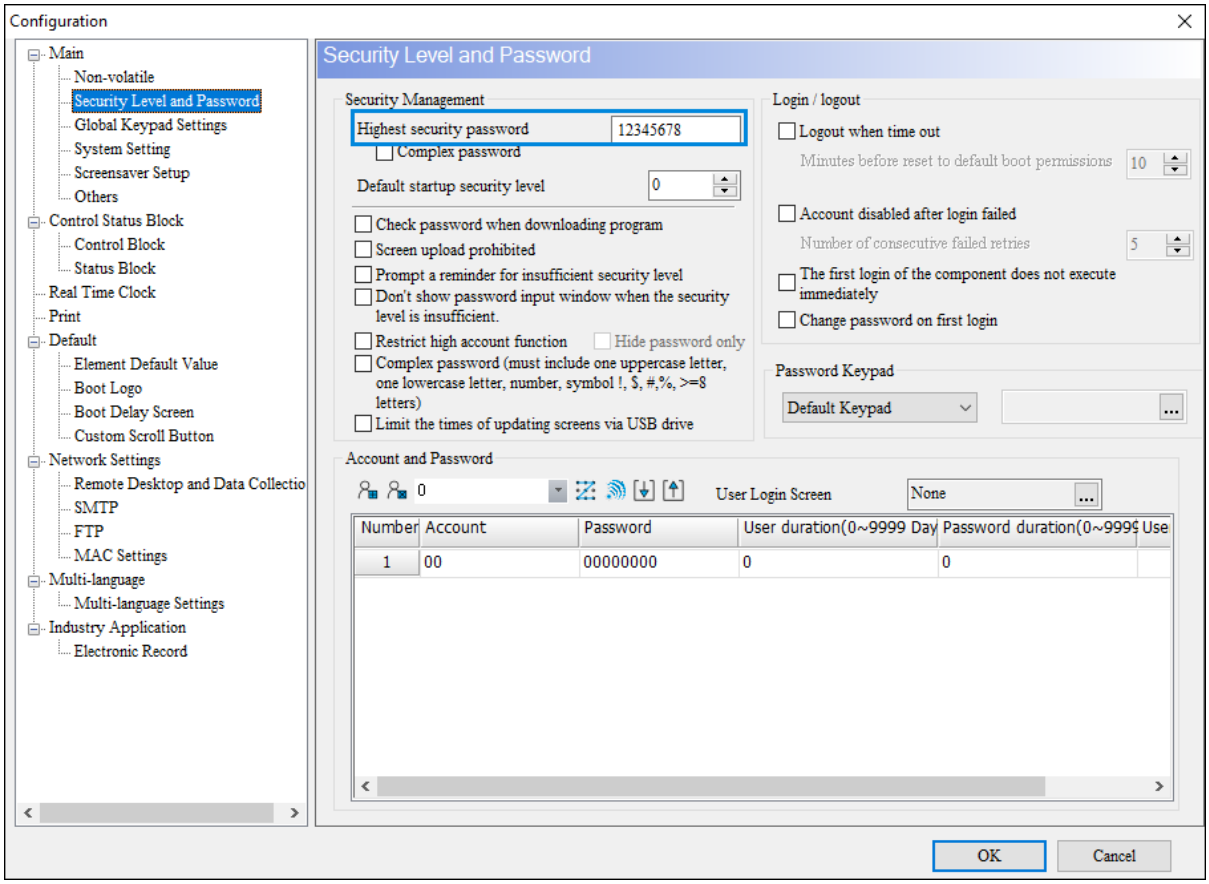
- Click **Project** > **Download All** on the menu bar.

Or

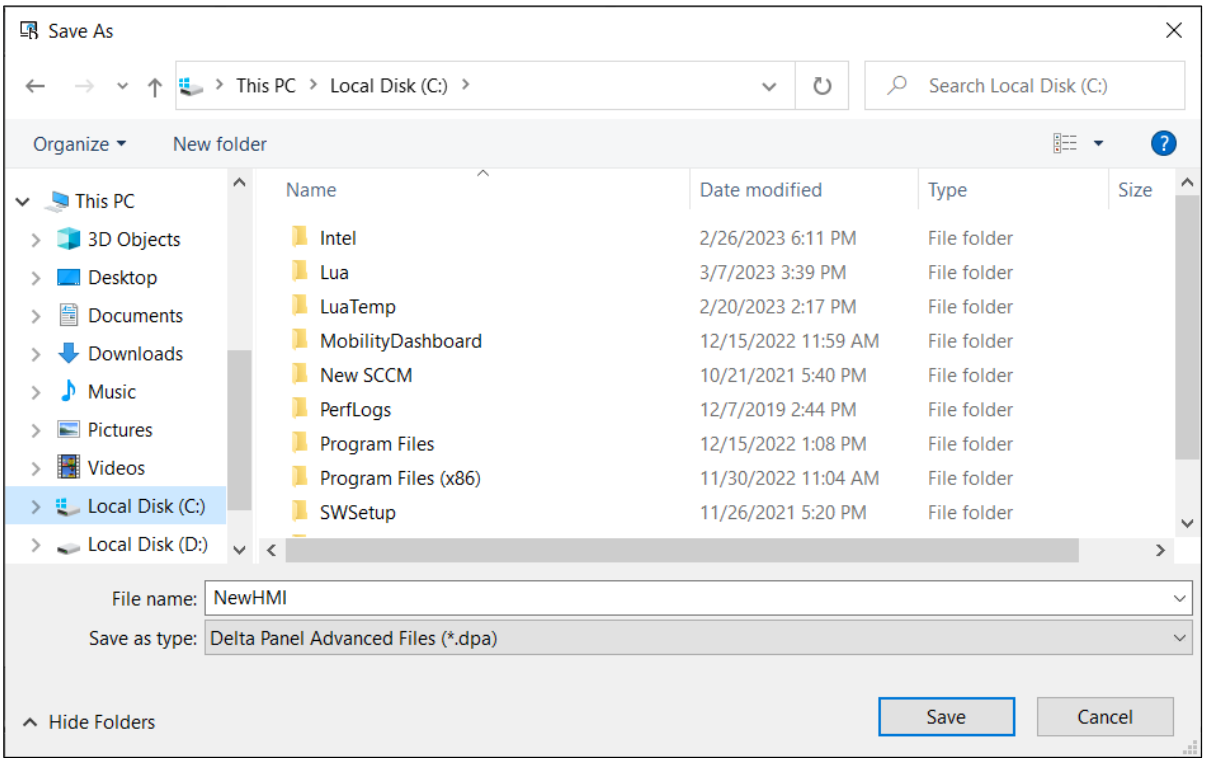
- Press **Ctrl + F9**.

Upload All Data

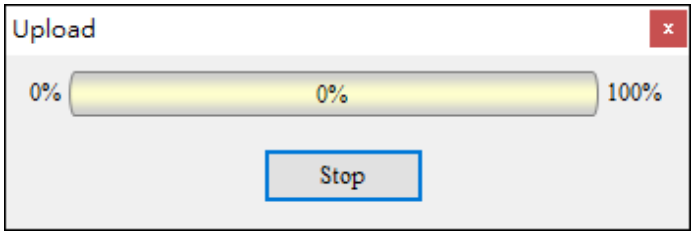
When uploading all data, the software asks you to enter a password. The password entered here is the system default password **12345678**. To set a password, go to **General** > **Configuration** > **Security Level and Password**.



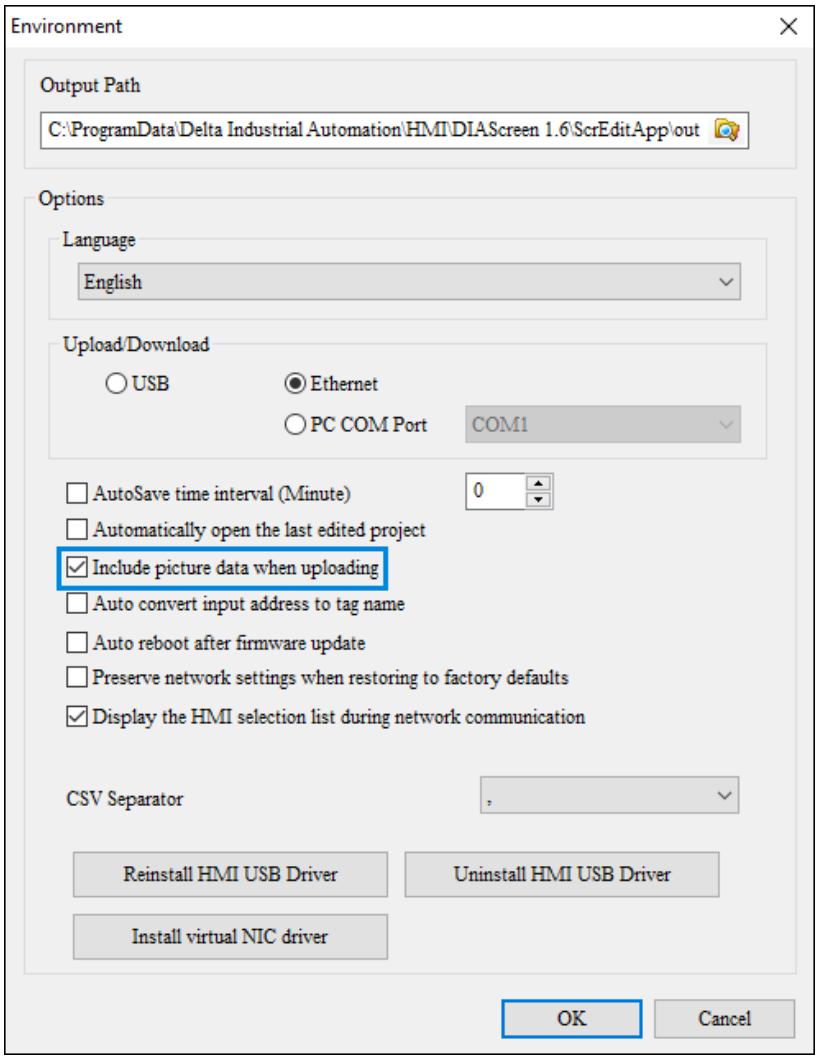
After entering the password, save the screen file to upload.



After saving the file, the screen data starts to upload. You can click **Stop** to stop uploading the screen data.

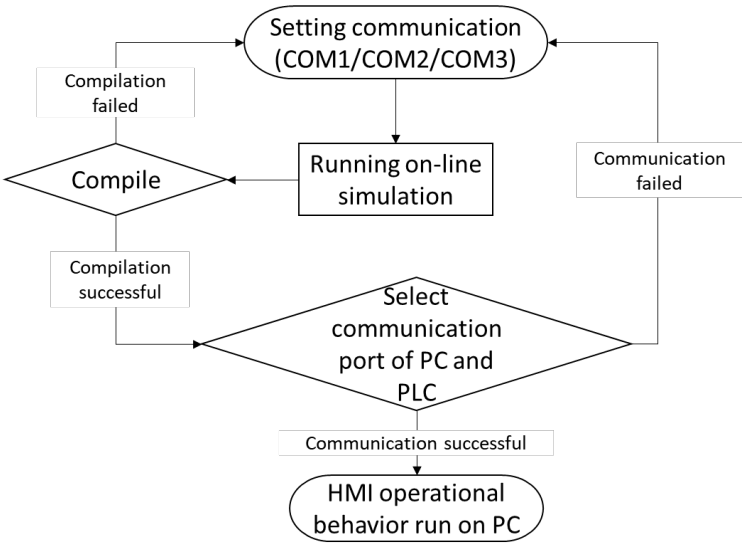


Besides uploading screen data, you can also go to **General** > **Environment** to set whether to include picture data.



On-line Simulation

Use the **On-line Simulation** function to simulate the computer as an HMI and communicate with the controller through the computer's COM port. If the communication is normal, the computer can be used as an HMI for actual operation.



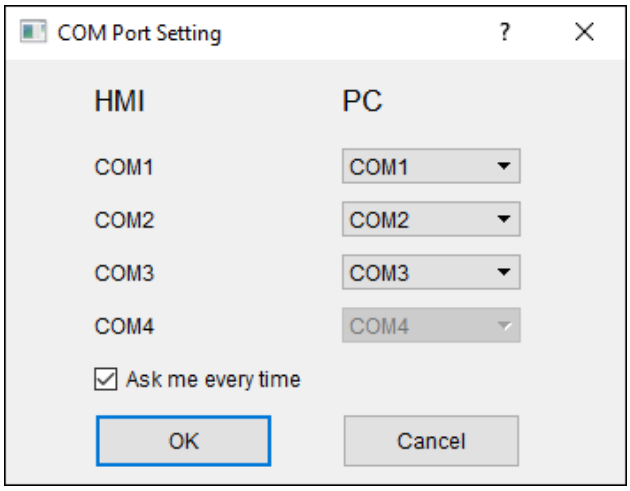
How to use the **On-line Simulation** function?

- Click **Project** > **On-line Simulation**.

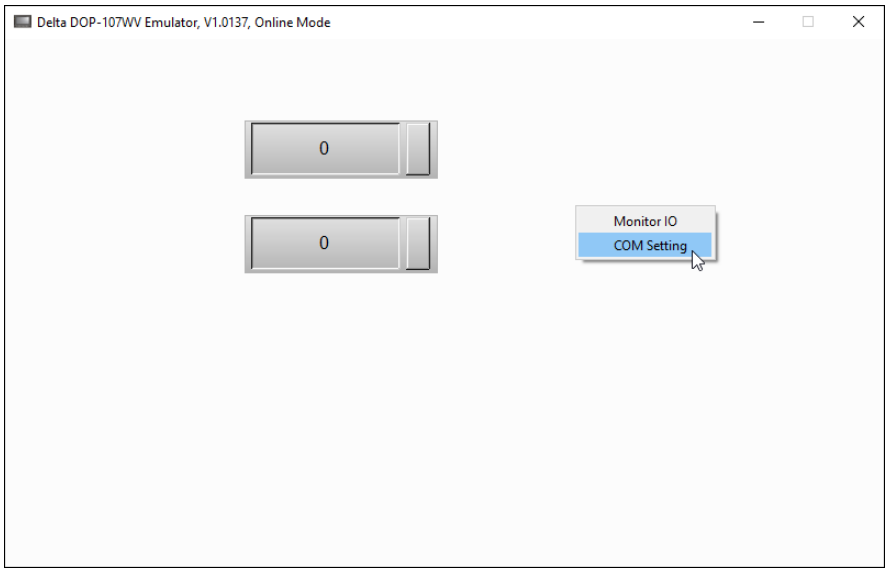
Or

- Press **Ctrl + F4**。

When performing an online simulation, the software will first compile and check whether the screen for errors. Then set the COM port number of the compute. The HMI will communicate with the controller if the setting is correct.

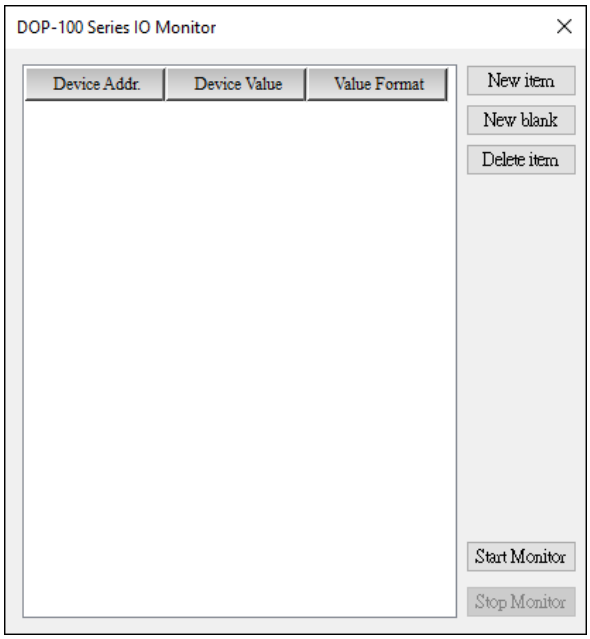


In the **COM Port Setting** dialog, if the **Ask me every time** checkbox is selected, this dialog displays every time you perform an online simulation. If unselected, the dialog will not display. You can right-click the blank space on the online mode screen and select **COM Setting** to open this dialog again.



Online simulation also provides a monitoring function. Right-click the blank space on the screen and select **Monitor IO**. After setting the monitoring address, you can monitor the content value of the IO device.

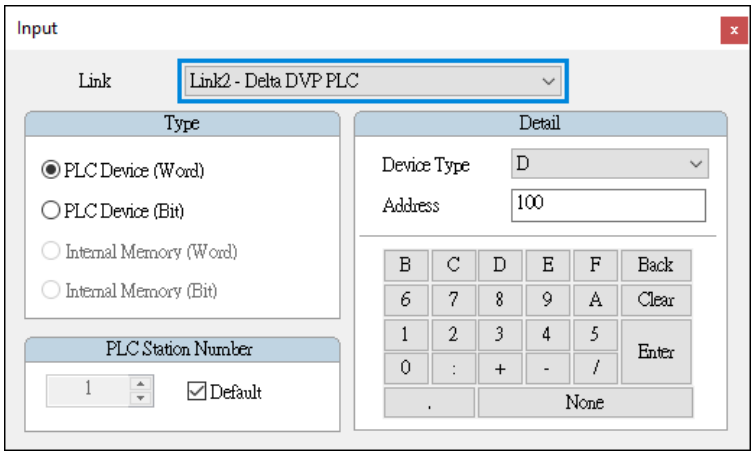
The following table lists the setting in the **IO Monitor** dialog with their description.



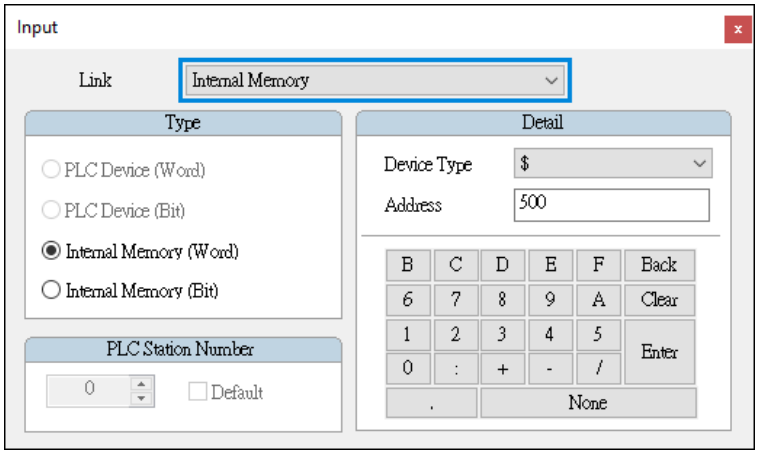
Setting	Description
New item	Click to add the address to monitor in the **Input** dialog.
New blank	Click to add a new item row, and you can directly enter the monitor address in the **Device Addr.** field.
Delete item	Click to delete the selected monitor address.
Start Monitor	Click to start monitoring the device.
Stop Monitor	Click to stop monitoring the device.
Device Addr.	Set the internal memory or controller register address.
Device Value	Enter the content value of the internal address or controller register. You can also change the content value of the device in real-time. **Note**: The Length setting is not required if you are using a Delta controller.
Value Format	Select the value format.

The following describes the operation example of **Monitor IO**.

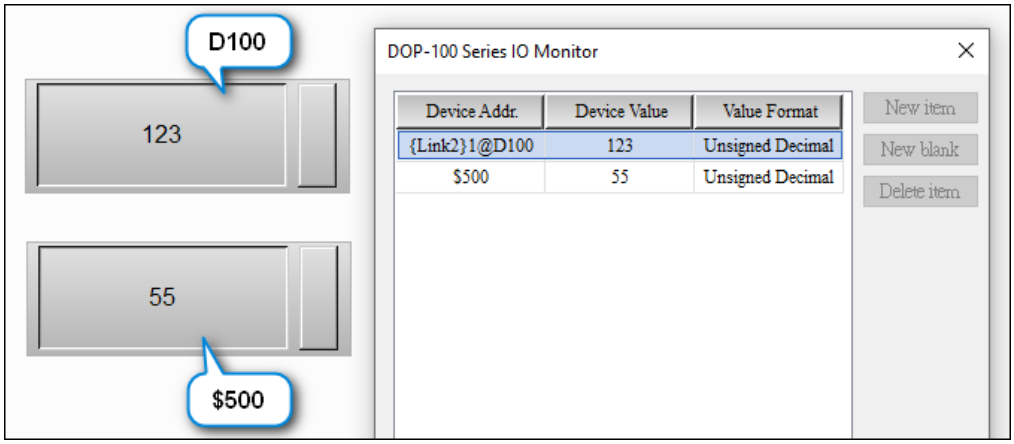
1. Create 2 **Numeric Entry** elements on the screen, and then set the **Write Address** to **$500** and **{Link2}2@D100** respectively.
2. Click **Project** > **On-line Simulation** on the menu bar.
3. On the online simulation screen, right-click the bank space and select **Monitor IO**.
4. Click **New Item** to add a monitor address in the **IO Monitor** dialog.
5. Set the monitor address to **{Link2}2@D100** in the **Input** dialog.



6. Repeat steps 1~2 to set another monitor address to **$500**.



7. Click **Start Monitor** to start monitoring the values of **{Link2}2@D100** and **$500** in the **Device Value** field. You can also manually change device values.



Off-line Simulation

Use the **Off-line Simulation** function to check whether the edited screen, the read and write memory address, and the Marco are correct. No communication with the controller is required.

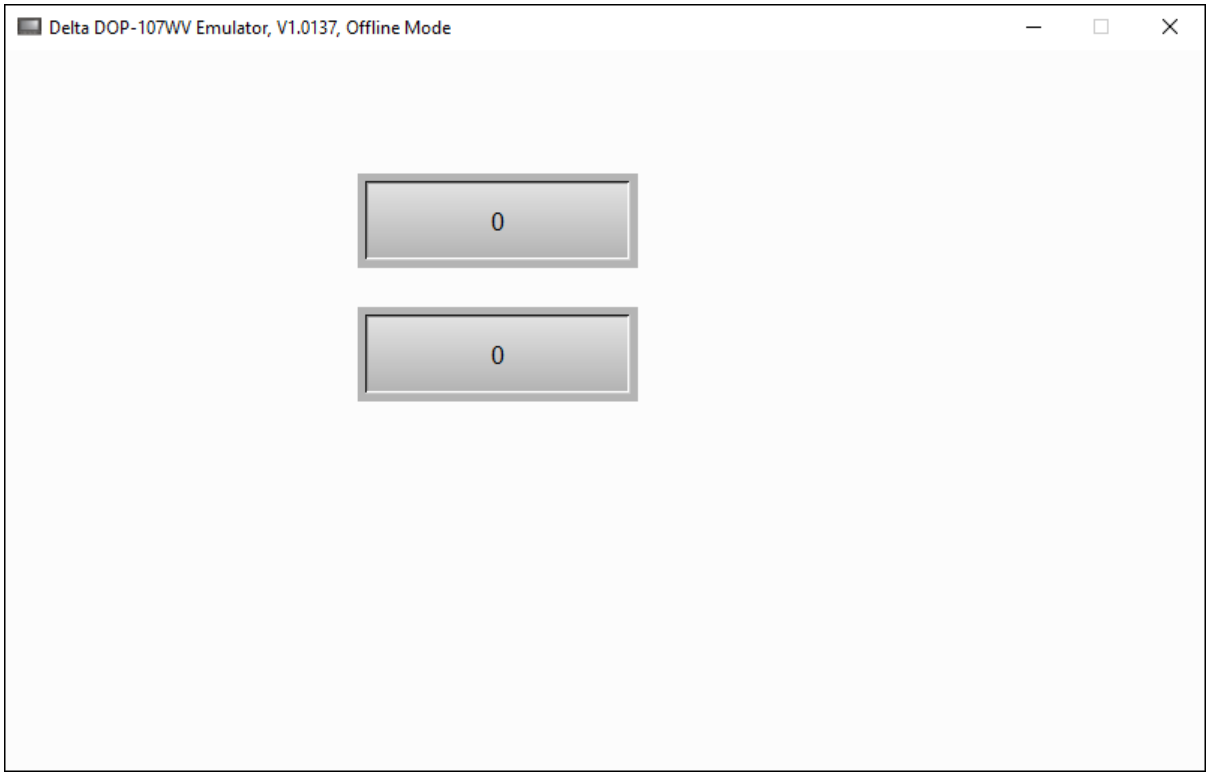
How to use the **Off-line Simulation** function?

- Click **Project** > **On-line Simulation**.

Or

- Press **Ctrl + F5**.

When performing an offline simulation, the software will first compile the screen and then enter the offline mode screen.


Delta DOP-107WV Emulator, V1.0137, Offline Mode
0
0

Language Management

Language Management provides **Import / Export Multi-language Text** and **Copy Multi-language Text functions, allowing you to** quickly edit multi-language text in the project with multiple languages and states.

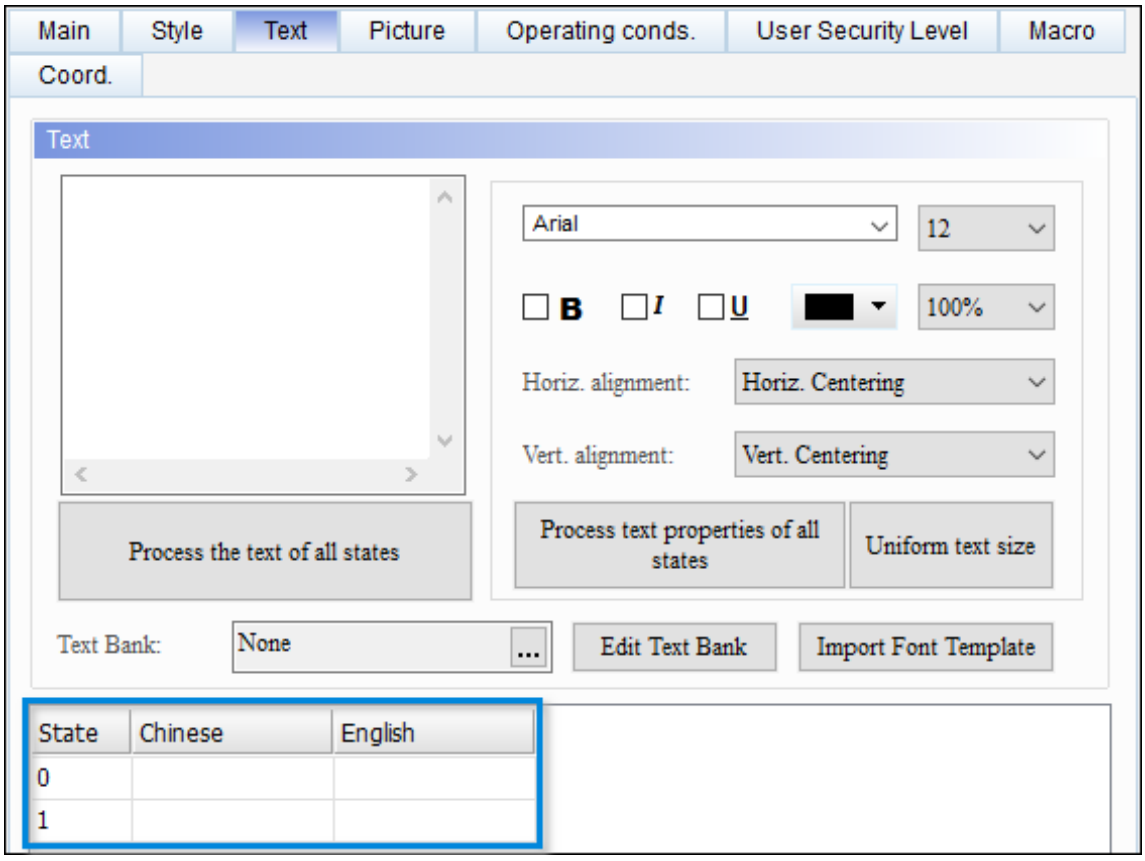
Multi-language Configuration

Follow these steps to configure multi-language.

To configure multi-language

1. In the **Project** pane, double-click **Multi-language**.
2. In the **Multi-language** setting page, click  to add a language.
3. Configure languages according to your needs.

   In the **Text** tab in the property dialog of the element, you can view the language configuration of each state.



Export Multi-language Text

With the **Export Multi-language Text** function, you can export the element that multiple-language can be configured in the project as a file and edit.

Follow these steps to export multi-language text.

To export multi-language text

1. Create an element on the screen and configure its multi-language.
2. Click **Project** > **Language Management** > **Export Multi-language Text** on the toolbar.

   The multi-language content of all elements in the current project is exported as a file.

	F	G	H
1	English	繁中	简中
2	Manual	手動	手动
3	28	40	16
4	Arial	Arial	Arial
5	Auto Range	自動量程	自动量程
6	28	16	16
7	Arial	Arial	Arial
8	Time to heat	加熱時間	加热时间
9	28	16	16
10	Arial	Arial	Arial
11	Time to cool	冷卻時間	冷却时间
12	28	16	16
13	Arial	Arial	Arial
14	Auto	自動	自动
15	28	16	16
16	Arial	Arial	Arial
17	Multistate_015	Multistate_015	Multistate_015

Export Multi-language Text (excluding element font settings)

With the **Export Multi-language Text (excluding element font settings)** function, the file size can be reduced when exporting / importing multiple-language text. The exported file only contains element description and multi-language content.

Follow these steps to export multi-language text excluding element font settings.

To export multi-language text excluding element font settings

1. Create an element on the screen and configure its multi-language.
2. Click **Project** > **Language Management** > **Export Multi-language Text (excluding element font settings)** on the toolbar.

   The multi-language content (excluding font settings) for all elements in the current project is exported.

	F	G	H
1	English	繁中	简中
2	Manual	手動	手动
3	Auto Range	自動量程	自动量程
4	Time to heat	加熱時間	加热时间
5	Time to cool	冷卻時間	冷却时间
6	Auto	自動	自动
7	Multistate_015	Multistate_015	Multistate_015

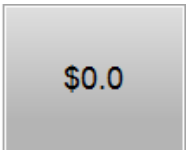
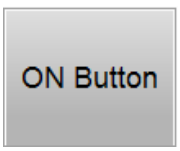
Import Multi-language Text

After importing the multi-language text file, check whether the edited data has been imported completely.

To import multi-language text file

- Click **Project** > **Language Management** > **Import Multi-language Text** on the toolbar.

The following table lists the state before import and after import.

State	Chinese	English
Before Import		
After Import		

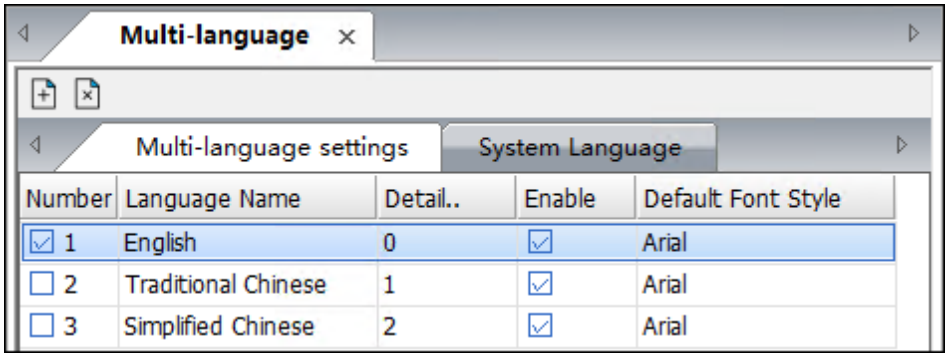
Copy Multi-Language Font

The **Copy Multi-Language Font** function helps you quickly apply the font settings of the existing language to the imported language.

Follow these steps to copy multi-language font.

To copy multi-language font

1. In the **Project** pane, double-click **Multi-language**.
2. In the **Multi-language** setting page, click  to add a language.



3. Edit the screen in the first language and click **Project** > **Language Management** > **Export Multi-language Text** on the toolbar to export the language settings as an Excel file.
4. Edit the text content of each language in the Excel file and save,
5. Click **Project** > **Language Management** > **Import Multi-language Text** on the toolbar to update the edited content to the project.
6. Click **Project** > **Language Management** > **Copy Multi-Language Font** on the toolbar.
7. In the **Copy Language Font Setting** dialog, select the **Source Language** and **Target Language**, and then click **OK**.

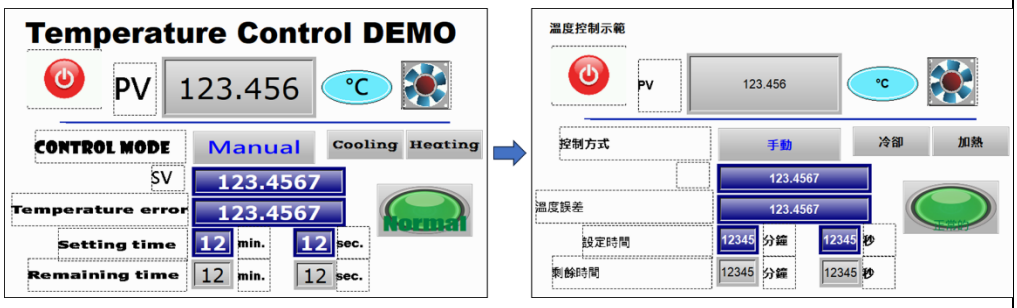
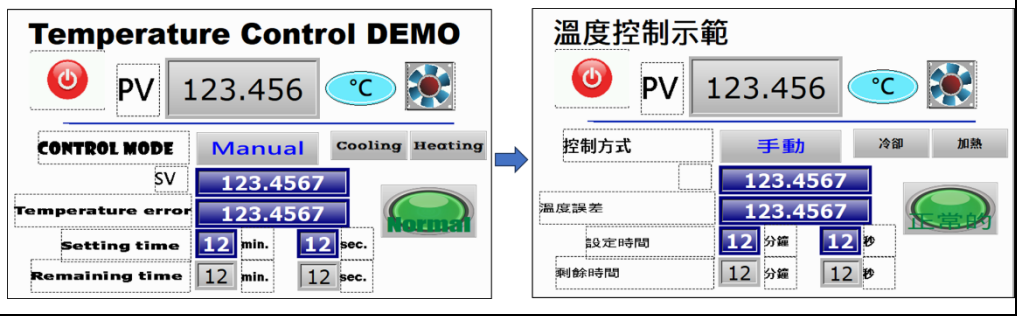
   The font settings of the source language are applied to the target language.

Note:

- If there is only one language in the project, the **Copy Multi-Language Font** function is not available.

- If a text bank is applied in the element, the font settings will not be applied to the element after executing the **Copy Multi-Language Font** function.

The following table lists the execution result.

State	Result
Before Execution	
After Execution	

Font Template

DIAScreen provides a wide range of fonts. To save users' time in selecting fonts, DIAScreen provides font templates to help users to customize frequently used font settings that improve the efficiency of screen design.

Follow the steps to set the font templates.

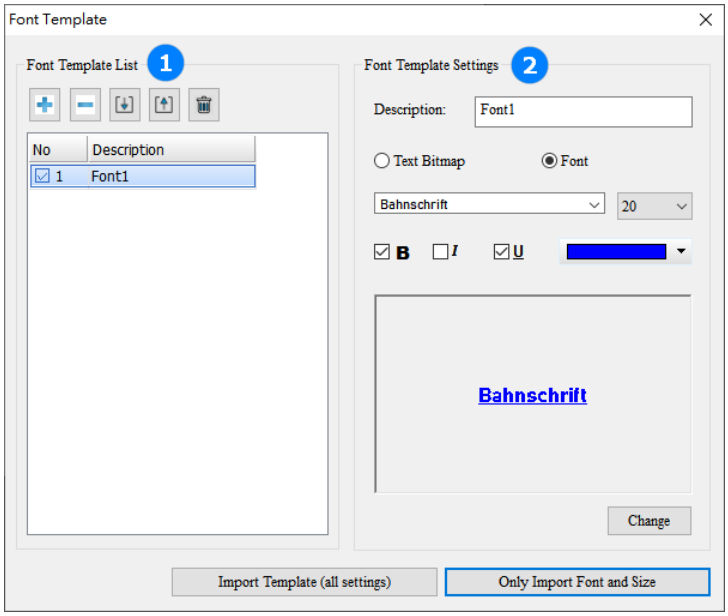
To set the font templates

1. On the toolbar, click **General** > **Font** > **Import font template**  .
2. In the **Font Template** dialog, click  to add a new font template in **Font Template List**, and set the font, size, style, and color in **Font Template Settings**.
3. Click **Change** to save the font template.
4. Create an element and double-click it.
5. In the property dialog of the element, click **Import Font Template** in the **Text** tab.
6. In the **Font Template** dialog, select the desired font template, and then click **Import Template (all settings)** or **Only Import Font and Size** according to your needs.

   The font settings are imported to the text of the selected status.

Note: Font template settings are stored in the computer with DIAScreen installed. The same set of font template settings can be used when opening different projects on the same computer.

The following table lists the settings in the **Font Template** dialog and their descriptions.



1 Font Template List

Setting	Description
	Click to add the font template. You can configure up to 100 templates.
	Select the template and click this icon to delete.
	Click to import the font template.
	Click to export the template as a .xlsx file. The following displays the format content of the font template. A1: Description, B1: UseBMPText, C1: FontName, D1: FontSize, E1: Blod, F1: Italic, G1: Underline, H1: FontColor A2: 字型1, B2: 1, C2: Kristen ITC, D2: 24, E2: 1, F2: 1, G2: 1, H2: RGB(255, 0, 0) A3: FontA, B3: 0, C3: Arial Black, D3: 22, E3: 0, F3: 1, G3: 0, H3: RGB(0, 128, 255) A4: 字型B, B4: 0, C4: Wide Latin, D4: 28, E4: 1, F4: 0, G4: 0, H4: RGB(0, 255, 64) A5: Template_Test, B5: 0, C5: 微軟正黑體, D5: 20, E5: 1, F5: 1, G5: 1, H5: RGB(255, 0, 255)
	Click to clear all font templates.

2 Font Template Settings

Setting	Description
Description	Set the description of the font template.
Text Bitmap / Font	Choose to display a text in bitmap or font.
Font setting	Set the font, size, style, and color of a text.
Preview	Preview the effect of font template settings.

MODBUS TCP/COM Mapping Table

Delta HMI can be used as a Modbus Slave for external Modbus Server devices to transmit data. Modbus communication supports TCP/IP and Serial Port connections. You can configure the HMI address to the corresponding Modbus address through **Modbus TCP/COM mapping table** function.

How to open **Modbus TCP/COM mapping table**?

- On the toolbar, click **Project** > **Other Settings** > **Modbus TCP/COM mapping table.**

The following table lists the Modbus range limitation of TCP/IP and COM connection.

Connection	Data Type	Maximum Length	Modbus Range
TCP/IP	Coils	65536	00001(0x0000) ~ 65536(0xFFFF)
	Registers	65536	00001(0x0000) ~ 65536(0xFFFF)
COM	Coils	2048	00001(0x0000) ~ 02048(0x07FF)
	Registers	20000	40001(0xA410) ~ 60000(0xEA5F)

The following describes the setting methods of Modbus Slave (TCP/IP) and Modbus Slave (COM).

- **Modbus Slave (TCP/IP)**

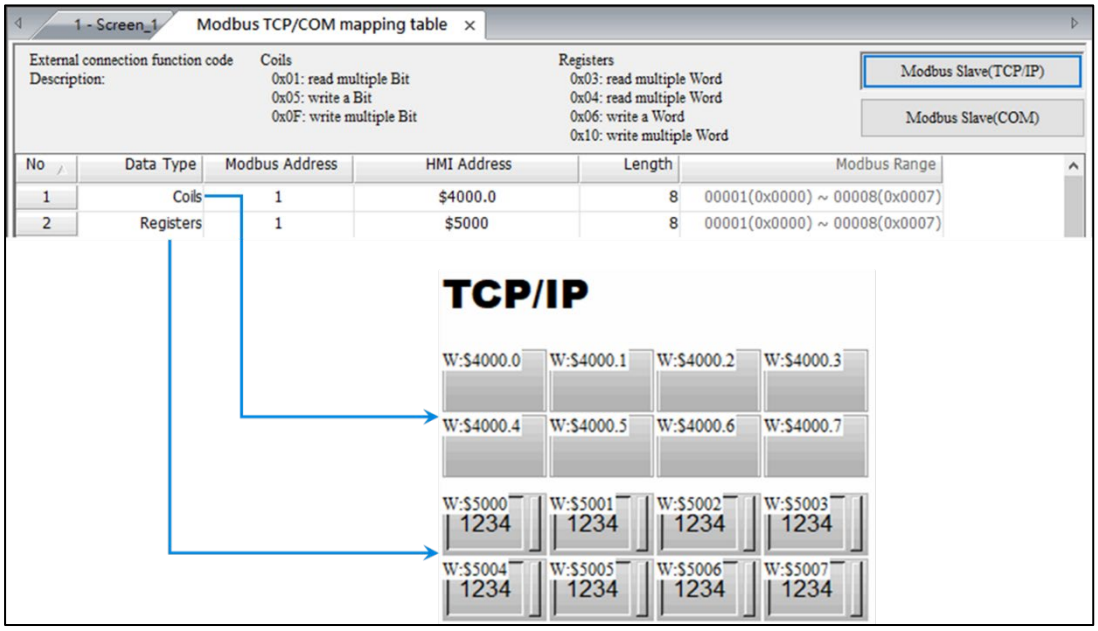
  HMI with Ethernet ports will have the Modbus Slave function enabled by default. You can configure the Modbus address corresponding to the HMI address through the **Modbus TCP/COM mapping table**.

  Example Settings

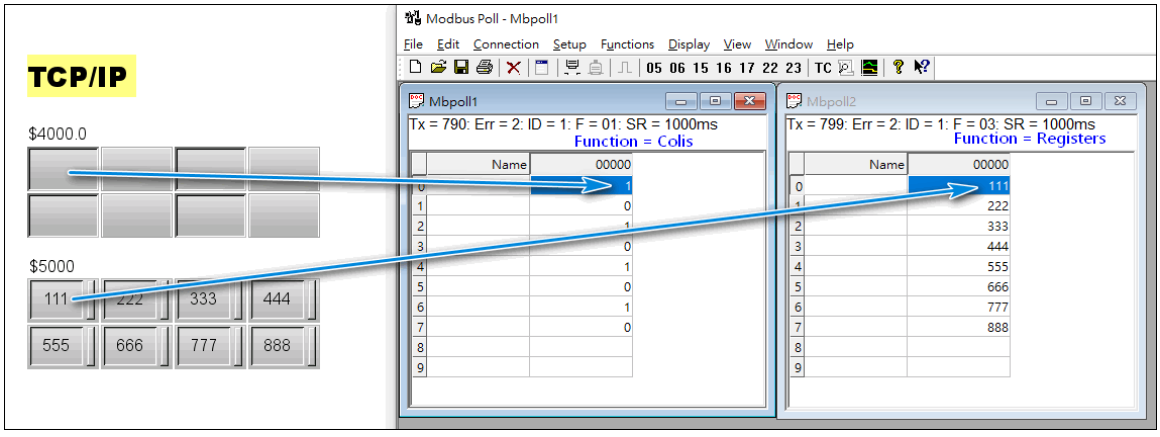
  1. In the **Modbus TCP/COM mapping table**, configure the mapping table.
     - Set the HMI address to $4000.0, corresponding to the Modbus address of **Coils** function code 0x00000.
     - Set the HMI address to $5000, corresponding to the Modbus address of **Registers** function code 0x00000.

2. Create elements on the screen and set the HMI address corresponding to Modbus, and then download the project to the HMI.

   The Modbus Master device is connected with TCP/IP and set connected HMI IP. Change values of elements on the HMI, and the HMI transmits data through Modbus.



The following figure shows the result that **Modbus Poll** is used as the Modbus Master and communicated with the HMI.



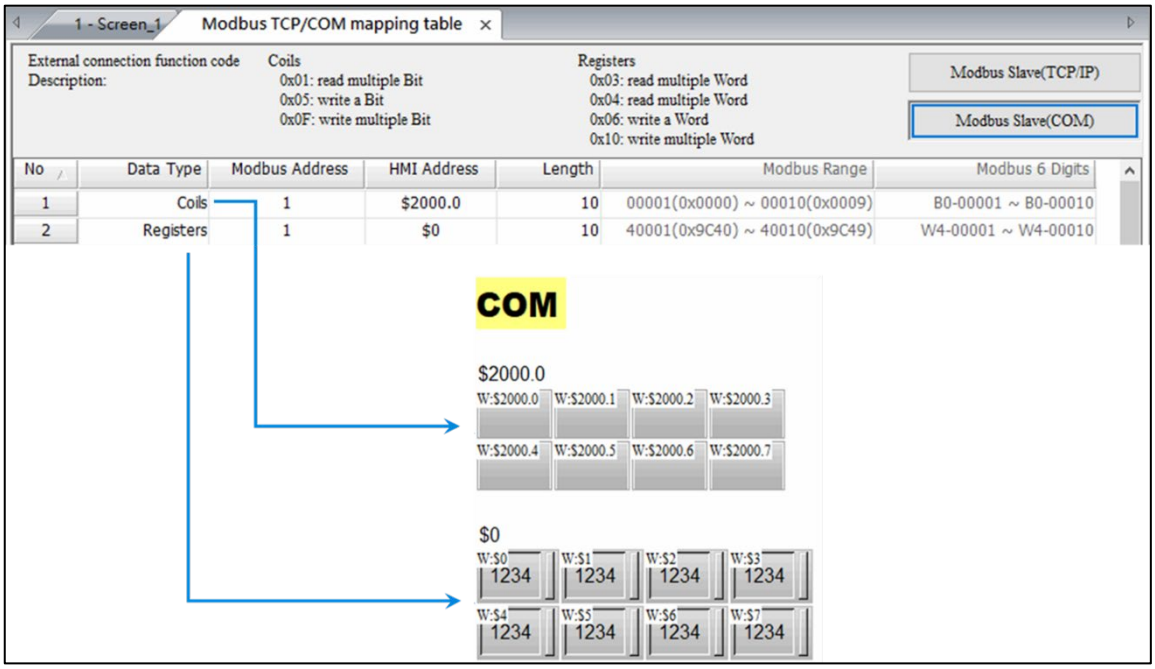
- **Modbus Slave (COM)**

  Follow the steps to set the **Modbus Slave (COM)** mapping.

  1. In the **Communication Settings** dialog, select **COM2**.

2. Select **Modbus** for **Manufacturers** and **RTU (Slave)** for **Series** to perform the Modus communication of Serial Port.
3. In **the Modbus TCP/COM mapping table**, click **Modbus Slave (COM)** to configure the corresponding relationship between the HMI address and Modbus address.

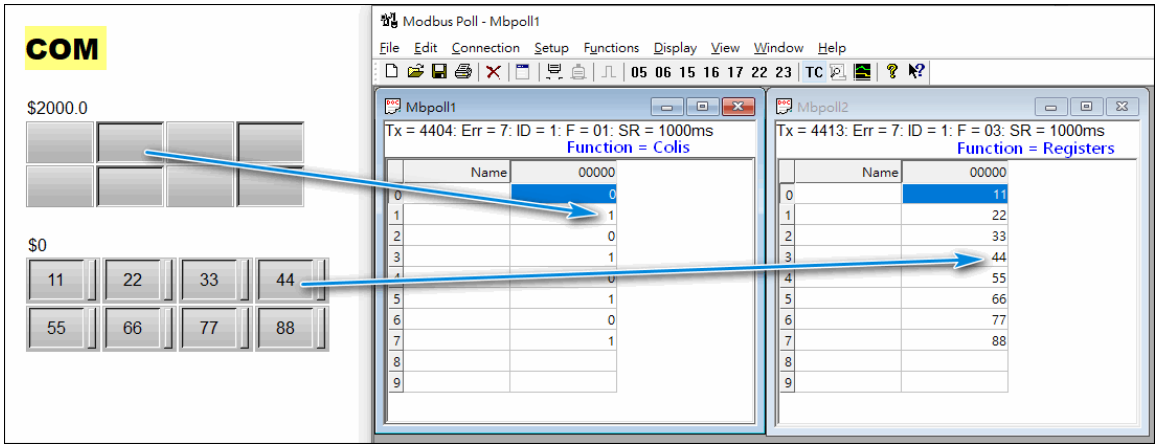
Example Settings



1. In the **Modbus TCP/COM mapping table**, configure the mapping table.
   - Set the HMI address to $2000.0, corresponding to the Modbus address of **Coils** function code 00001.
   - Set the HMI address to $0, corresponding to the Modbus address of **Registers** function code 40001.
2. Create elements on the screen and set the HMI address corresponding to Modbus, and then download the project to the HMI.

   The Modbus Master device is connected through the Serial Port. Change values of elements on the HMI, and the HMI transmits data through Modbus.

The following figure shows the result that **Modbus Poll** is used as the Modbus Master and communicated with the HMI.


COM
$2000.0
$0
11
22
33
44
55
66
77
88
Modbus Poll - Mbpoll1
File Edit Connection Setup Functions Display View Window Help
05 06 15 16 17 22 23 TC
Mbpoll1
Tx = 4404: Err = 7: ID = 1: F = 01: SR = 1000ms
Function = Colis
Name 00000
0 0
1 1
2 0
3 1
5 1
6 0
7 1
Mbpoll2
Tx = 4413: Err = 7: ID = 1: F = 03: SR = 1000ms
Function = Registers
Name 00000
0 11
1 22
2 33
3 44
4 55
5 66
6 77
7 88

EIP Data Exchange Table

The HMI supports Ethernet / IP connection. You can import EDS (Electronic Datasheet) files or manually enter CIP parameters to establish connection data, and configure the data exchange between the HMI internal memory and network devices through the data exchange table.

Note:

- Only available for DOP-300 series HMI.
- A maximum of 6 data exchange tables are supported and the same device supports up to 4 data exchange tables.

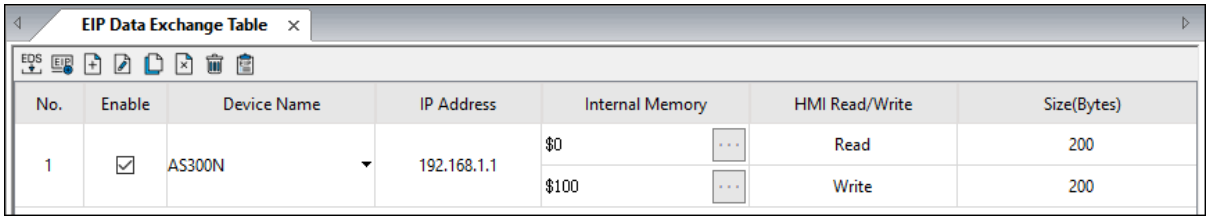
How to open the **EIP Data Exchange Table** configuration page?

- In the **Project** pane, double-click the EIP Data Exchange Table.

The following table lists the settings on the toolbar in the **EIP Data Exchange Table** configuration page and their descriptions.

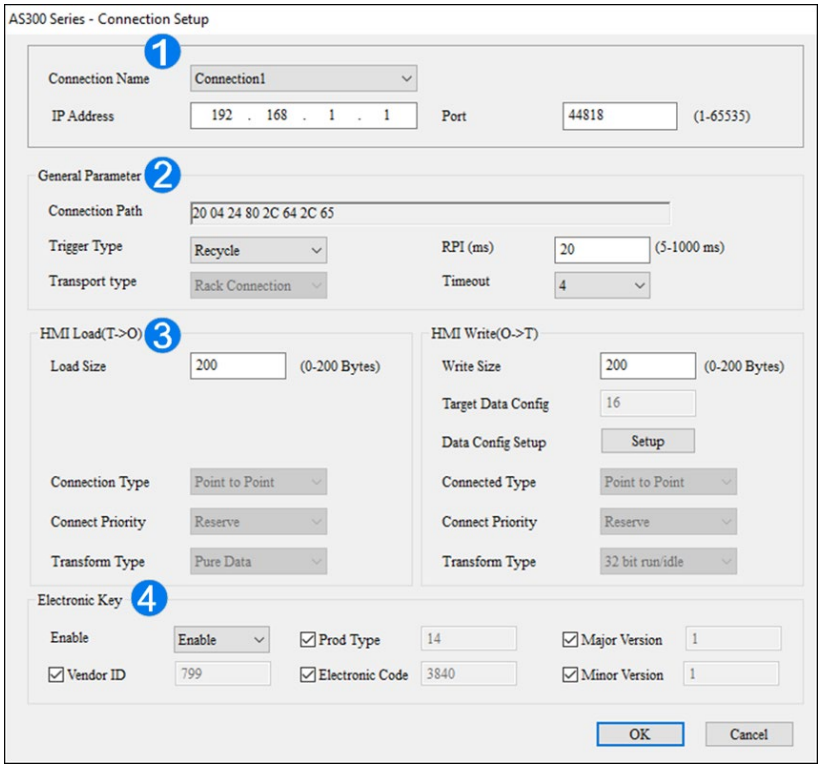
Setting	Description
	Import the EDS file of the connected device and set the connection parameters.
	Manually add an EIP device. Establish a device for connection by entering CIP parameters.
	After adding an EIP device, click this icon to add a data exchange table.
	After selecting one row of the data exchange table, click this icon to edit the connection parameters.
	After selecting one row of the data exchange table, click this icon to copy the selected row.
	After selecting one row of the data exchange table, click this icon to delete the selected row.
	Click to delete all data exchange tables.
	Click to open the **Device List** dialog. In the **Device List** dialog, select the newly added or imported EIP devices to delete. **Note**: When a device is deleted, its corresponding data exchange table is also deleted.

The following table lists each field setting in the **EIP Data Exchange Table** configuration page and their descriptions.



Setting	Description
No.	Displays the line numbers of the data exchange table.
Enable	Select to enable the data exchange of the row. If not selected, the data exchange configuration will not be loaded to the HMI.
Device Name	Select the name of the connected device. This name is defined in an EDS file or when you manually add an EIP device.
IP Address	Displays the IP address of the connected device. It can be configured in the **Connection Setup** dialog. **Note**: The same IP cannot be set for different devices.
Internal Memory	Set the internal memory address of the HMI for data exchange. **Note**: The read / write addresses of the same data exchange table cannot be the same.
HMI Read / Write	Displays the read / write mark for the HMI.
Size (Bytes)	Displays the size of data exchange. It can be configured in the **Connection Setup** dialog.

The following table lists the settings in the **Connection Setup** dialog of the device imported through EDS and their descriptions.



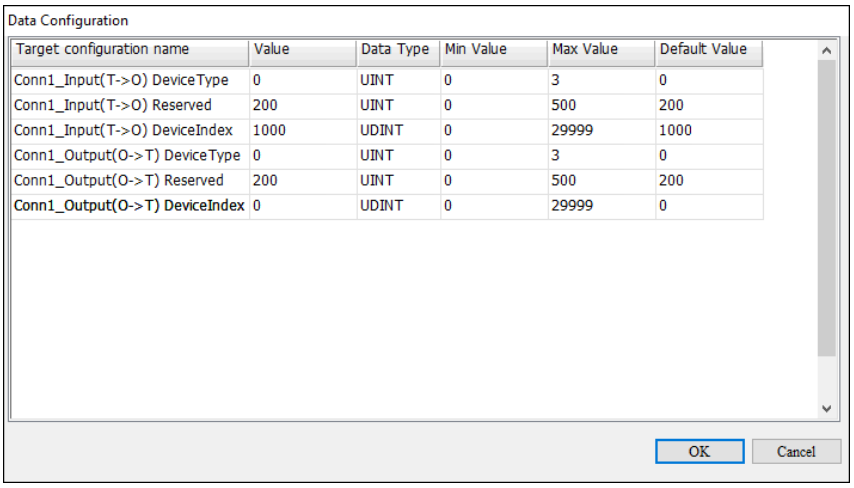
1 Connection settings

Setting	Description
Connection Name	Select the name of the connected device for data exchange. **Note**: When the same IP address is set for the same device, the same connection name cannot be selected.
IP Address	Enter the IP address of the device.
Port	Enter the device port. The range value is 1–65525, and the default value is 44818.

2 General Parameters

Setting	Description
Connection Path	Displays the connection path.
Trigger Type	Select the trigger type of the connection.
Transport Type	This setting is available only when you manually add an EIP.
RPI (ms)	Enter the RPI of the connection. The range value is 5–1000, and the default value is 20.
Timeout	Select a timeout for the connection. The default value is 4.

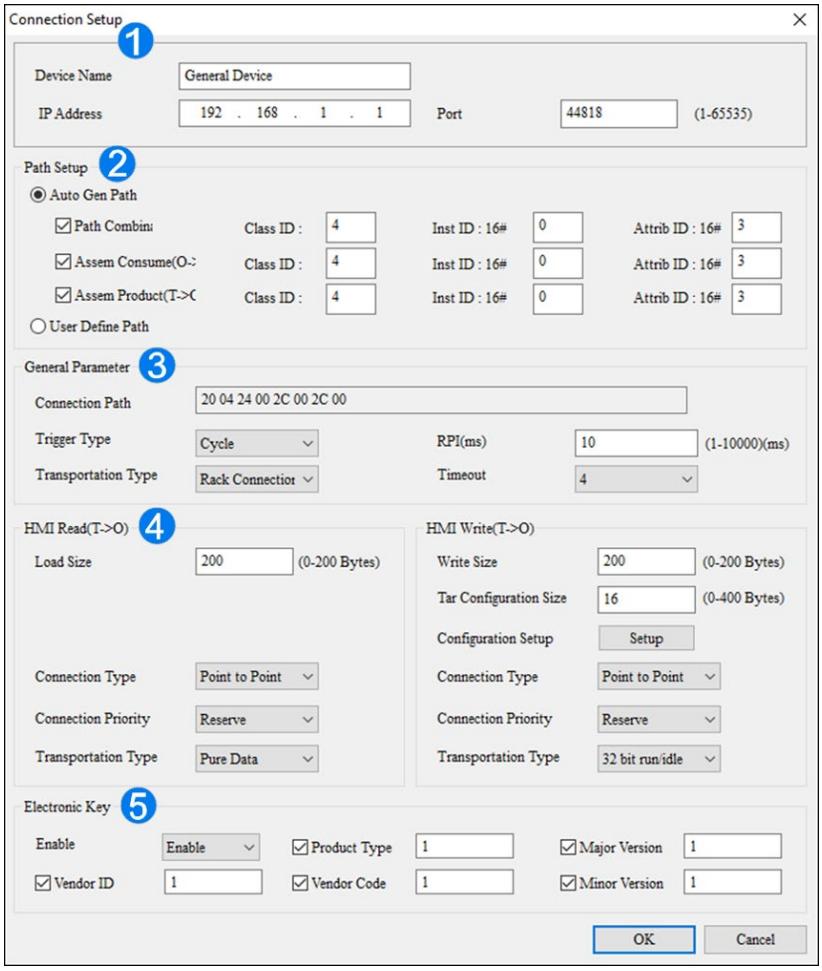
③ HMI Read / Write

Setting	Description
Load Size	Enter the read size. The range value is 0–200 (bytes), and the default value is 200 (bytes).
Write Size	Enter the write size. The range value is 0–200 (bytes), and the default value is 200 (bytes).
Tar Configuration Size	The setting is not available.
Configuration Setup	Click **Setup** to configure the connection data of the target device. In the **Data Configuration** dialog, set the data parameters in the **Value** field. 
Connection Type	The setting is not available.
Connection Priority	The setting is not available.
Transform Type	The setting is not available.

④ Electronic Key

Setting	Description
Enable	Select the items to match. **Note**: The parameter setting of the electronic key is available when you select the **Enable** checkbox in the **Enable** field.

The following table lists the settings in the **Connection Setup** dialog by manually establishing an EIP device and their descriptions.



1 Connection settings

Setting	Description
Device Name	Enter the name of the device.
IP Address	Enter the IP address of the device.
Port	Enter the device port. The range value is 1–65525, and the default value is 44818.

2 Path Setup

Setting	Description
Auto Gen Path	Enter the CIP parameters, and the **Connection Path** will be automatically generated according to the set parameters.
User Define Path	Define the **Connection Path** in the **General Parameter** area.

③ General Parameter

Setting	Description
Connection Path	This setting is available only when the **User Define Path** is selected.
Trigger Type	Select the trigger type of the connection.
Transportation Type	Select the transportation type of the connection.
RPI (ms)	Enter the RPI of the connection. The range value is 1–10000, and the default value is 10.
Timeout	Select a timeout for the connection. The default value is 4.

④ HMI Read / Write

Setting	Description
Load Size	Enter the read size. The range value is 0–200 (bytes), and the default value is 200 (bytes).
Write Size	Enter the write size. The range value is 0–200 (bytes), and the default value is 200 (bytes).
Tar Configuration Size	Enter the size of the target configuration. The range value is 0–400 (bytes), and the default value is 16 (bytes).
Configuration Setup	Click **Setup** to configure the connection data of the target device. In the **Data Configuration** dialog, set the data parameters in the **Value** field.
Connection Type	Select the connection type.
Connection Priority	Select a connection priority.
Transportation Type	Select the transportation format.

⑤ Electronic Key

Setting	Description
Enable	Select the items to match and enter the parameters. **Note**: The parameter setting of the electronic key is available when the **Enable** is selected in the **Enable** field.

Installment

The installment function allows customers to configure the device in stages by paying in installments to solve trial use and funding issues. A trial is also provided for customers. When the trial expires, it will lock the HMI screen to prevent further use.

Note:

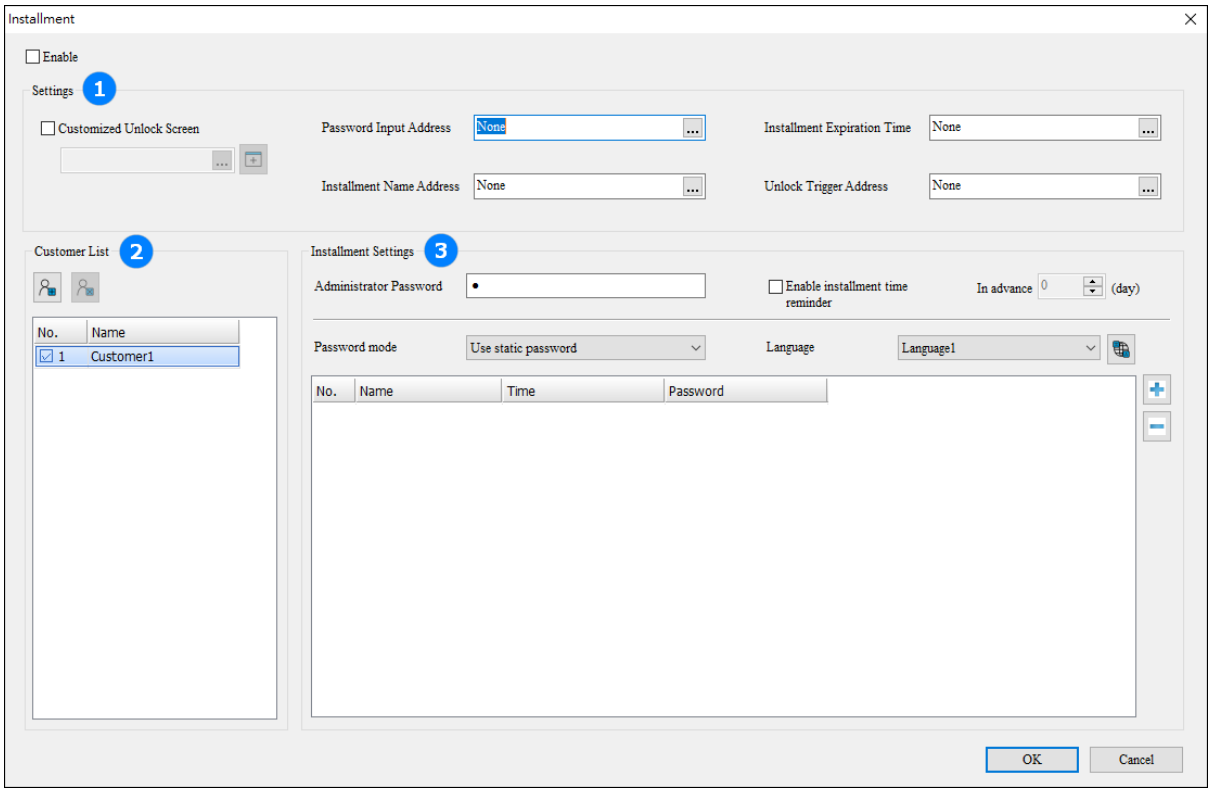
- If external memory addresses, such as controller addresses, are used for the installment settings, it is important to ensure that the device is communicating properly and functioning correctly to avoid errors occurring when executing the installment function.
- The installment function does not support online simulation and offline simulation.

Follow these steps to set the installment.

To set the installment

1. Click **Project** > **Other Setting** > **Installment** on the toolbar.
2. Set the installment in the **Installment** dialog.

The following table lists the settings in the **Installment** dialog with the descriptions.



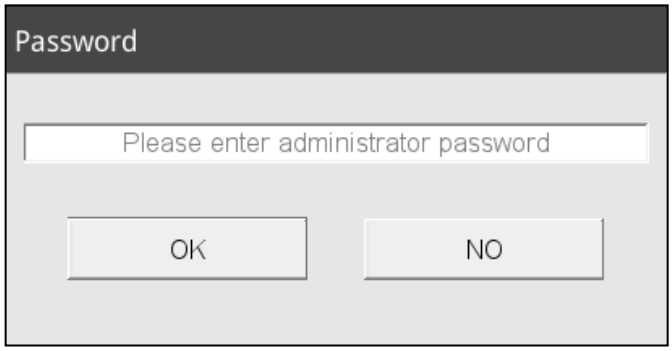
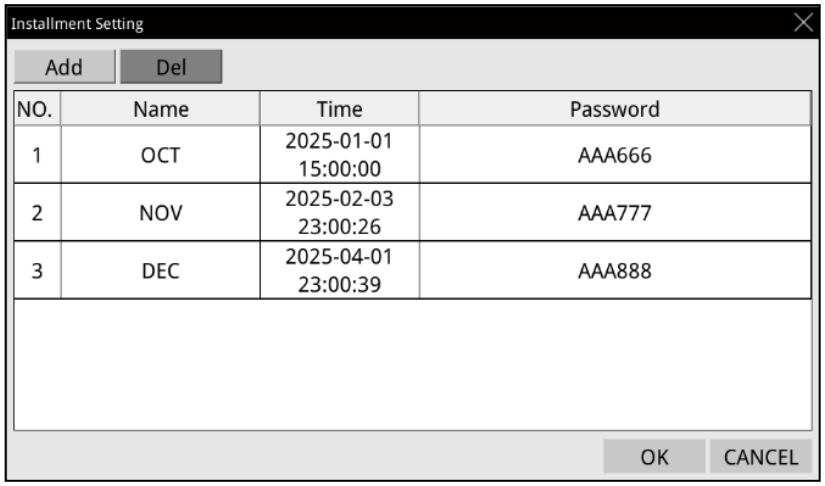
1 Settings

Settings	Description
Customized Unlock Screen	If selected, the existing sub-screen is available for you to select which can be used as the unlock screen. You can also click  to add the example unlock screen.
Password Input Address	Set the password input address. Corresponding to the address set for the **Character Entry** element on the unlock screen.
Installment Name Address	Set the installment name address. • **Character Display** element can be configured on the screen to show the name of the current unlocked installment. • Corresponding to the address set for the **Character Display** elements on the unlock screen.
Installment Expiration Time	Set the installment expiration time address. • **Date Display**, **Time Display**, and **Weekday Display** elements can be configured on the screen to show the time of the next installment. • Corresponding to the address set for the **Date Display**, **Time Display**, and **Weekday Display** elements on the unlock screen.
Unlock Trigger Address	Set the unlock trigger address. Corresponding to the unlock button configured on the unlock screen.

2 Customer List

Settings	Description
	Click to add new customer. Up to 10 customers can be added and the names must not be the same. Select the customer number, the customer installment information will be applied when downloading the project.
	After selecting the customer number, click this icon to delete.

3 Installment Settings

Settings	Description
Administrator Password	Set the administrator password. Enter this password on the HMI to unlock all installments.
Enable installment time reminder	If selected, you can configure the number of days to set expiration reminders. The range value is **0–15** and the default value is **1**.
Password mode	Select the password mode. • Select **Use static password**, the software will use a fixed password for each installment. • Select **Use variable password**, you can set an internal memory address and customize the **Password Length**, making it easy to set the password through macros or LUA.
Installment HMI change trigger	Set the HMI change trigger address to change the installment content on the HMI. • Trigger this address on the HMI and enter the installment setting **manager password** in the pop-up **Password** dialog.  • Displays the **Installment Settings** dialog. Add / delete the installment setting in this dialog. 

Settings	Description
	Click to add a new installment, up to 32 installments can be added. **Note**: • The installment name can only be entered in English. • The installment password supports the characters 09, !, $, #, %, a~z, and A~Z. • For the same customer, the installment password cannot be the same (including the administrator password).
	Click to delete the selected installment(s).
Language	The installment name can be set to different languages with the **Multi-language** function.

Keep Installment Data when Downloading

With this function, the installment information will not be updated after downloading the screen and the installment unlock record on the HMI will not be cleared.

1. On the toolbar, click **General** > **Configuration**.
2. In the **Configuration** dialog, select **General** > **System Setting**, and then select **Keep Installment payment settings after screen download** checkbox.

Enable Next Installment

To unlock the installment before the set installment time arrives, click **Element** > **Button** > **Enable Next Installment**, on the toolbar and create the **Enable Next Installment** button to cancel the current installment settings.

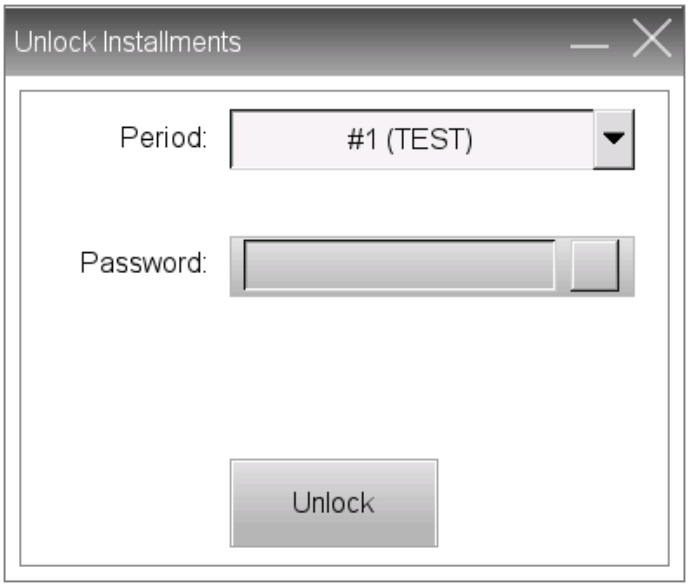
The Remaining Time for the Current Installment

Follow these steps to set the remaining time for the current installment.

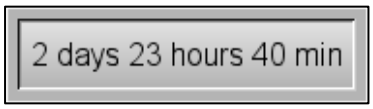
To set the remaining time for the current installment

1. Add a **Character Display** element on the screen.
2. Set the **Read Address** to “NEXT_INST_REMAIN_TIME” of Internal Parameter.

The HMI displays the remaining time until the next payment.



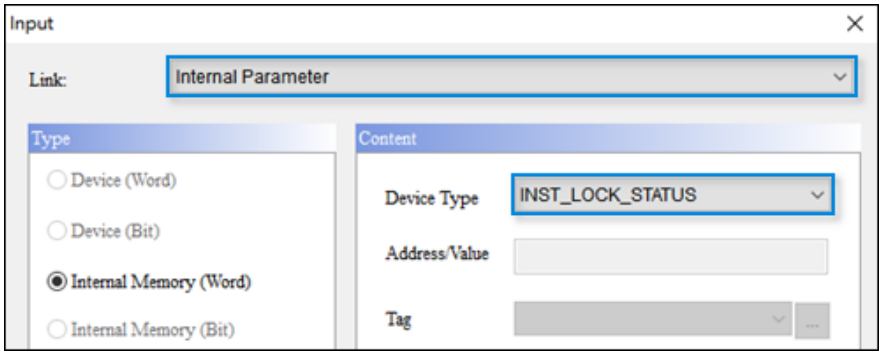
The following figure shows the effect of displaying the remaining time for the current installment by the HMI.



Note: The **String Length** of the **Character Display** element must be set to at least 23 characters to display the time completely.

Installment Lock Status

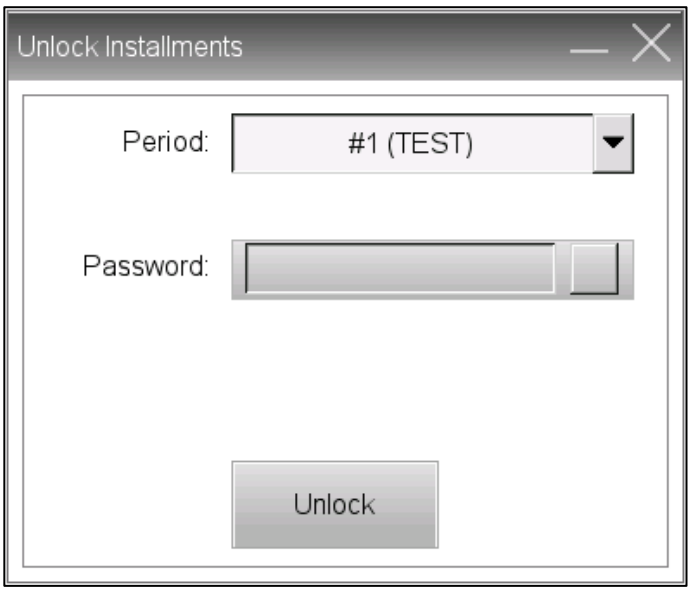
DIAScreen provides the Internal Parameter “INST_LOCK_STATUS” to facilitate you in identifying the installment status. Status 0 indicates that the installment is unlocked, while Status 1 indicates the installment is waiting to be unlocked. Once you have locked an installment, you can unlock it again.



How to unlock installment?

1. When the installment time is up or pressing the **Enable Next Installment** button on the HMI screen.

   The **Unlock Installments** screen displays.

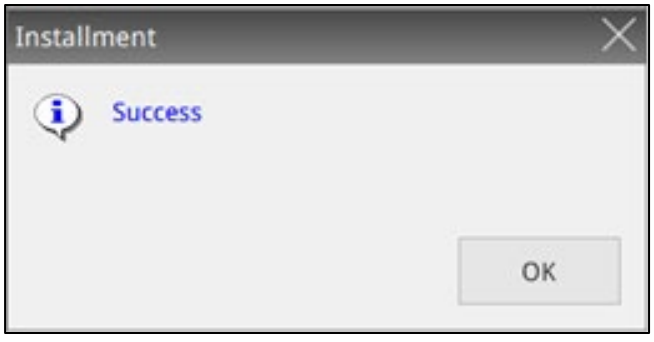


   Note: The unlocking installment screen must be configured with a **Drop-down menu** element, and select **Installment Period** for **Project Data Source**, so that when unlocking the installment, you can select the installment to perform unlocking.

2. In the **Unlock Installments** screen, choose the period to be unlocked, and then enter the password of the period.

3. After entering the password, click the **Unlock** button.

   - If the password is entered correctly, a message displays and prompts you that the unlock is successfully.



- If the password is entered incorrectly, a message displays and prompts you that the unlock is failed.

System Time Setting Restriction

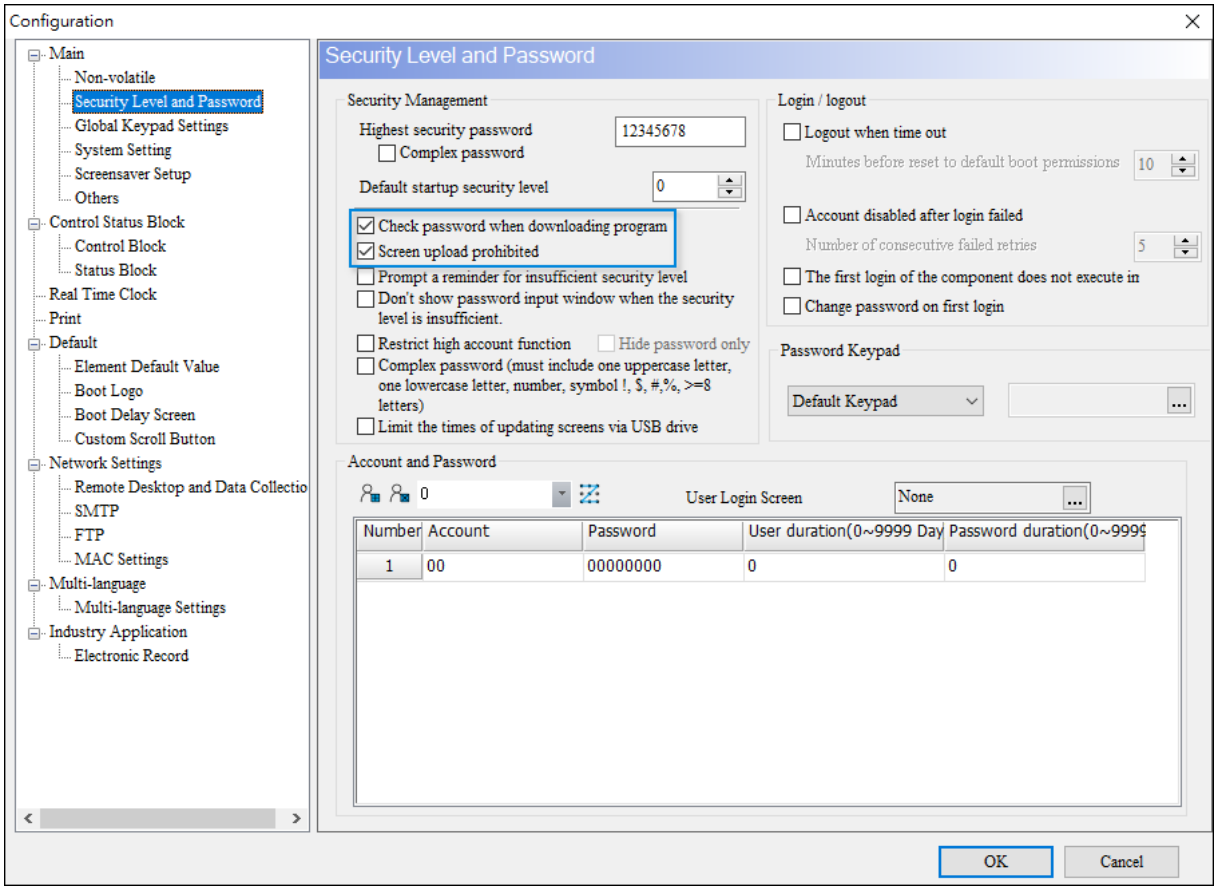
When the **Installment** function is enabled, the related functions of system time setting will be disabled, including LUA instructions, macros, NTP, system parameters, etc to prevent the device time setting from tampering during installment, causing the installment to fail to execute as scheduled. If system time calibration is required, you can use a project without installment settings or perform a factory reset, and then download the project with installment settings.

Note: If there is an abnormality with the device battery, the system time may be restored to the default value of 1970/01/01, and the HMI will be locked and cannot be used.

Project Protection

The **Installment** function involves the financial transactions, the projects must be well-protected and set the protection mechanism, such as **Check password when downloading program**, **Screen upload prohibited**. Project files, download executables, auto update data files, etc. must not be easily provided to outsiders.

Go to **General** > **Configuration** > **Security Level and Password** to set the protection mechanism.


Configuration
Main
Non-volatile
Security Level and Password
Global Keypad Settings
System Setting
Screensaver Setup
Others
Control Status Block
Control Block
Status Block
Real Time Clock
Print
Default
Element Default Value
Boot Logo
Boot Delay Screen
Custom Scroll Button
Network Settings
Remote Desktop and Data Collectio
SMTP
FTP
MAC Settings
Multi-language
Multi-language Settings
Industry Application
Electronic Record
Security Level and Password
Security Management
Highest security password
12345678
Complex password
Default startup security level
0
Check password when downloading program
Screen upload prohibited
Prompt a reminder for insufficient security level
Don't show password input window when the security level is insufficient.
Restrict high account function
Hide password only
Complex password (must include one uppercase letter, one lowercase letter, number, symbol !, $, #,%, >=8 letters)
Limit the times of updating screens via USB drive
Login / logout
Logout when time out
Minutes before reset to default boot permissions
10
Account disabled after login failed
Number of consecutive failed retries
5
The first login of the component does not execute in
Change password on first login
Password Keypad
Default Keypad
Account and Password
0
User Login Screen
None
Number
Account
Password
User duration(0~9999 Day
Password duration(0~9999
1
00
00000000
0
0
OK
Cancel

Element

Button

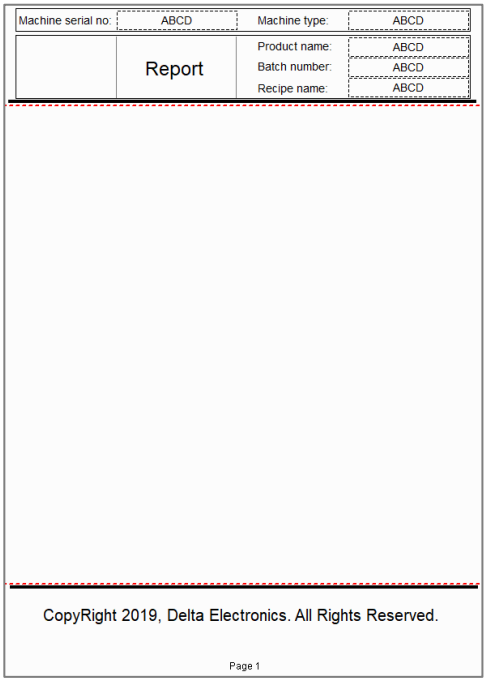
Template Output

Alarm records, operational records, recipe data and data history records can be exported as PDF files and stored in external storage devices through the **Template Output** element.

Follow these steps to set the template screen.

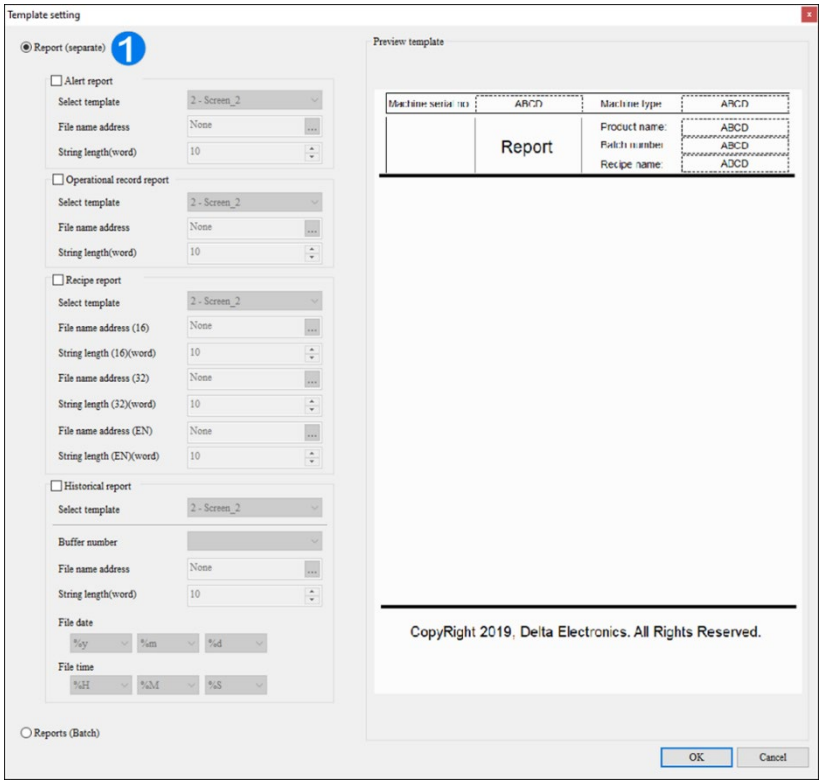
To set the template screen

1. Create a template screen. Do one of the following:
   - In the menu bar, click **General** > **New Screen** > **Template Screen**.
   - Right-click the blank space on the **Screen Management Window** and select **New Screen**. Select **Template Screen** for **Screen Type** and click **OK**.
2. In the template screen, you can customize the content displayed at the header and footer of the page. The blank space between two red dotted lines is the content of the report.



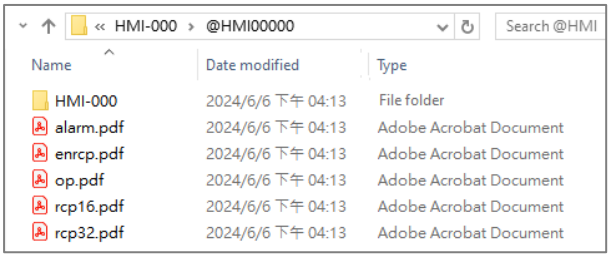
3. In the **Screen property setting** dialog, set the display style of the page number in the **Template setting** area.
4. Create a **Template Output** element on the screen.
5. In the **Template Output** property dialog, select the **Report Device**.

The following table lists the settings in the **Template setting** dialog with their descriptions.

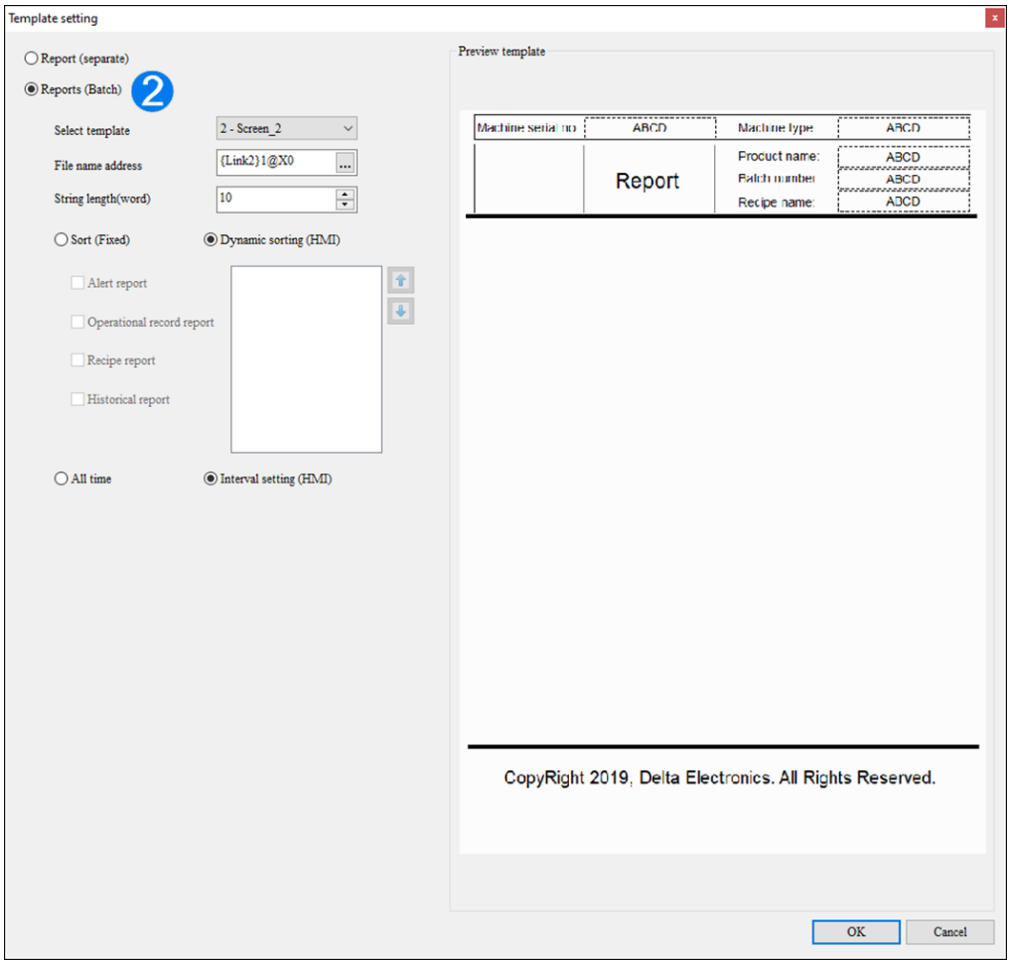


1 Report (separate)

After creating report output of each type, PDF files will be generated respectively.

Setting	Description
Select template	Select the template you want to apply.
File name address	Set the profile name address. If not set, the report file gets exported with the default file name. **Note**: The report file storage path is `\HMI\HMI-000\@HMI0000`. 
String length	Select or enter the string length for the file name.
File date	Select the date display format for the file. You can also set it to None to not to export the file date. **Note**: This setting is only available for historical reports.

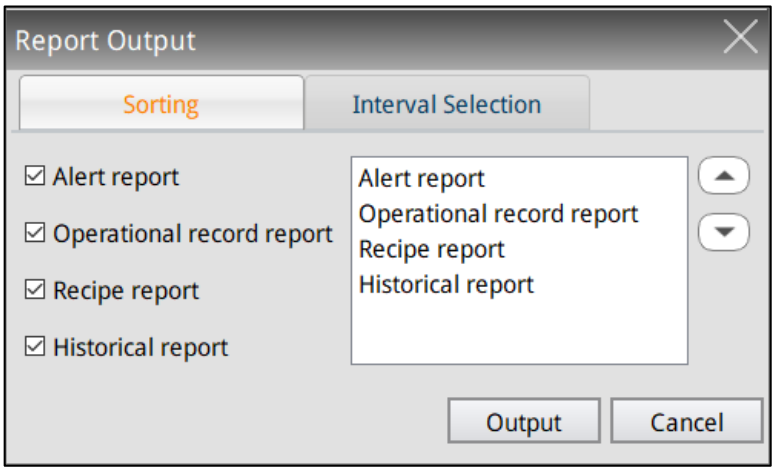
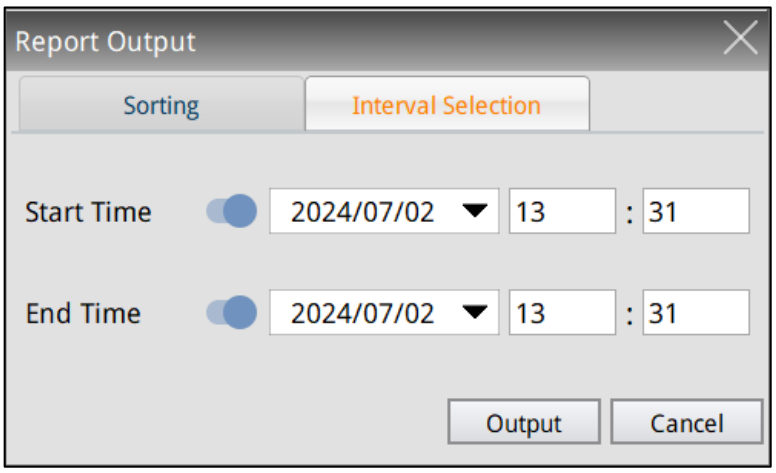
Setting	Description
File time	Select the time display format for the file. You can also set it to None to not to export the file time. **Note**: This setting is only available for historical reports.



2 Reports (Batch)

After customizing the display order of each type of report and exporting the reports, they will be consolidated as a single PDF file.

Setting	Description
Select template	Select the template to apply.
File name address	Set the file name address. If not set, the report file will be output with the default file name. **Note**: The default report file storage path is `\HMI\HMI-000\@HMI0000\batch.pdf`.

Setting	Description	
String length	Select or enter the string length for the file name.	
Sort	Sort (Fixed)	Select the output type of report and click  to sort the order in which the report is displayed.
	Dynamic sorting (HMI)	Select to sort the display order of reports on the HMI screen. 
Time	All time	Select to output reports of all recorded data.
	Interval setting (HMI)	Select to specify the time interval for the output data on the HMI screen. 

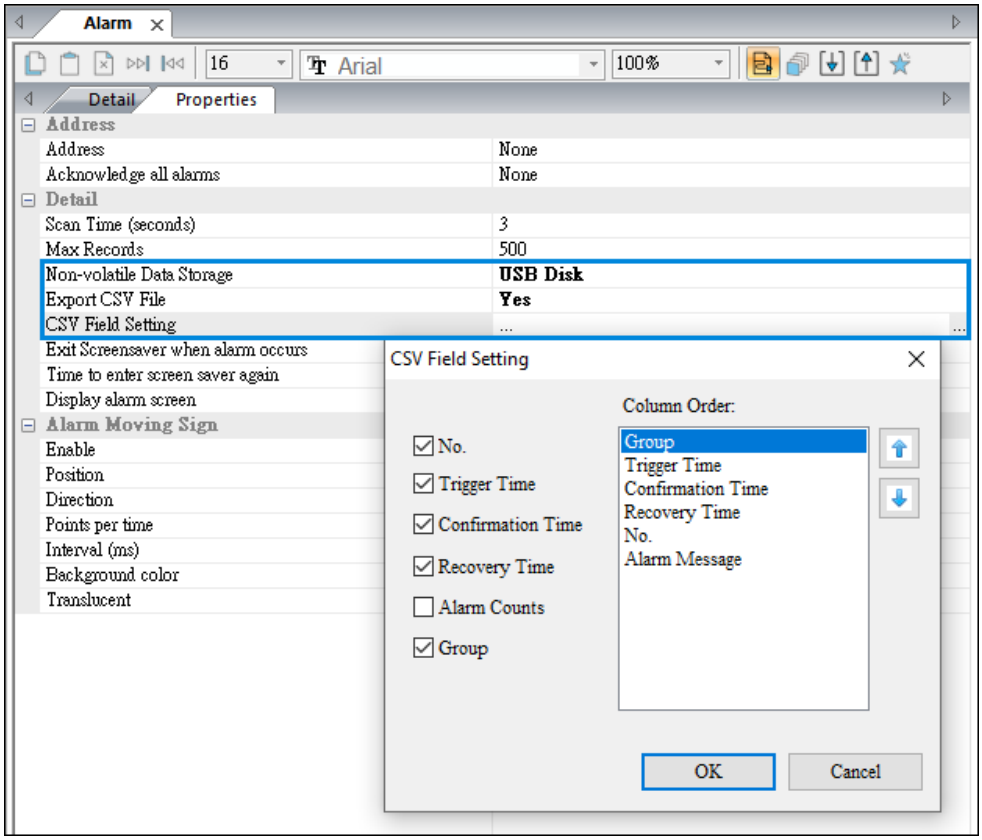
Report List

The alarm data can be exported as CSV file and stored in external devices through the **Report List** element.

Follow these steps to set the report list.

To set the report list

1. Create an alarm.
2. In the **Alarm** settings page, select the storage location of non-volatile, and then select **Yes** for **Export CSV File**.
3. Configure the **CSV Field Setting**. In the **CSV Field Setting** dialog, configure the content and order of the field to display.



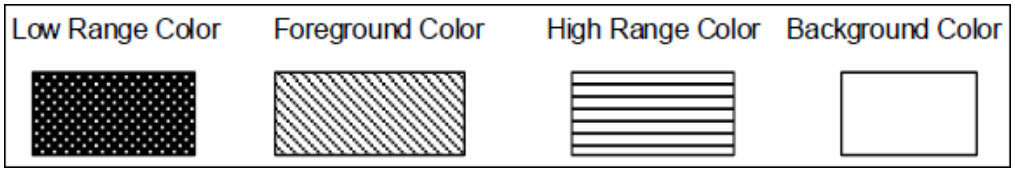
4. Create a **Report List** element on the screen.
5. Click the element on the HMI, then export the alarm information as a CSV file and store it to the set report device.

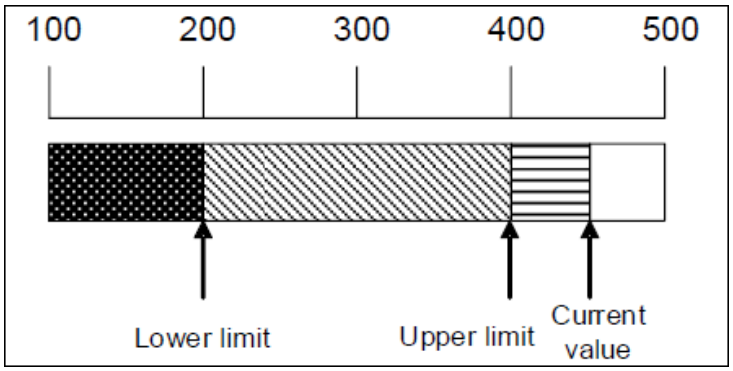
   Note: The report file storage path is `\HMI\HMI-000\@HMI0000\HistoryOp\CSV`.

Bar

- **Normal**

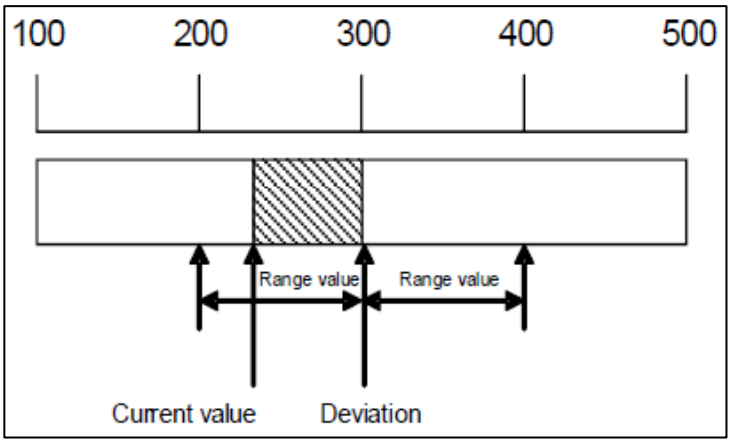
  The **Normal Bar** element displays the values corresponding to the read addresses in the form of a bar from the minimum value to the maximum value on the HMI. You can also set the colors for the lower limit, upper limit, and target values to identify them.





- **Differential**

  The **Differential Bar** element displays the deviation between the value of the **Read Address** and the set target value on the HMI.



The bar element of DIAScreen provides memory addresses with customizable target values and lower and upper limit values, making the application more flexible and meeting users' requirements.

Common Properties

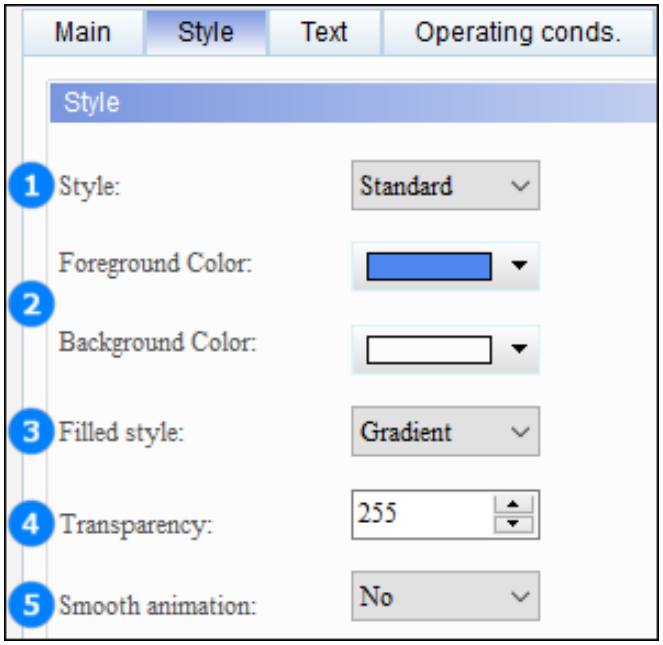
- **Main**
  - **Memory**

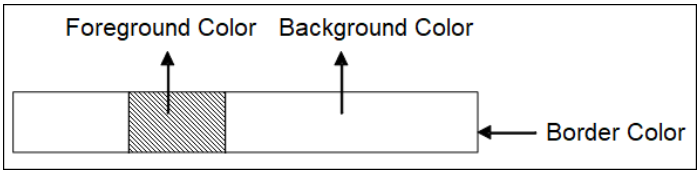
    Select the **Internal Memory** or the controller register address. The **Input** memory **Type** must be Word.

Detail

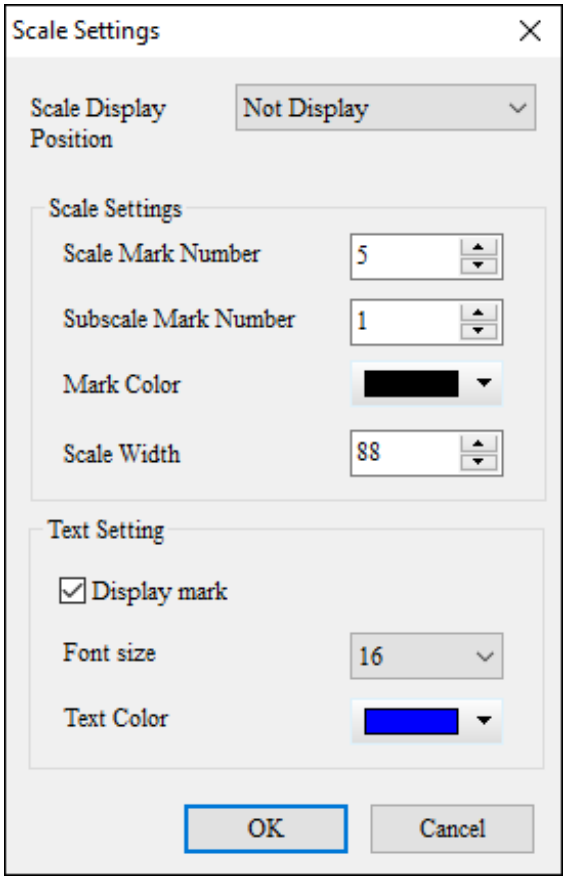
- **Data Type**: The available options are Word and Double Word.
- **Data Format**: The available options are BCD, Signed BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.
- **Minimum / Maximum**: Enter the valid range value according to the set **Data Type** and **Data Format**.
- **Variable minimum / maximum limits**: If selected, you can define the minimum and maximum value through the corresponding value of the memory address.

- **Style**



<table>
<tr><th>Legend</th><th>Setting</th><th>Description</th></tr>
<tr><td>1</td><td>Style</td><td>Select the appearance of the element. The available options are Standard, Raised, and Sunken. The default value is Standard.
<table>
<tr><th></th><th>Standard</th><th>Raised</th><th>Sunken</th></tr>
<tr><td>Normal Bar</td><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Differential Bar</td><td>  </td><td>  </td><td>  </td></tr>
</table></td></tr>
<tr><td>2</td><td>Foreground Color / Background Color / Border Color</td><td>Select the foreground color, background color, and border color of the element.
 
</td></tr>
<tr><td>3</td><td>Filled style</td><td>Select the filled style of the element.
Note: Since the default style of DOP-100 series models is Gradient, if the DOP-B project is opened, the elements are displayed in Fixed, and the effect is similar to that of DOP-B.
<table>
<tr><td>Gradient</td><td>  </td></tr>
<tr><td>Fixed</td><td>  </td></tr>
</table></td></tr>
<tr><td>4</td><td>Transparency</td><td>Select or enter the transparency value of the element. The range value is 50—255 and the default value is 255.
The lower the value is, the higher the transparency is.</td></tr>
<tr><td>5</td><td>Smooth animation</td><td>Select whether to enable the Smooth animation function.
When this function is enabled, the element display becomes smoother.</td></tr>
</table>

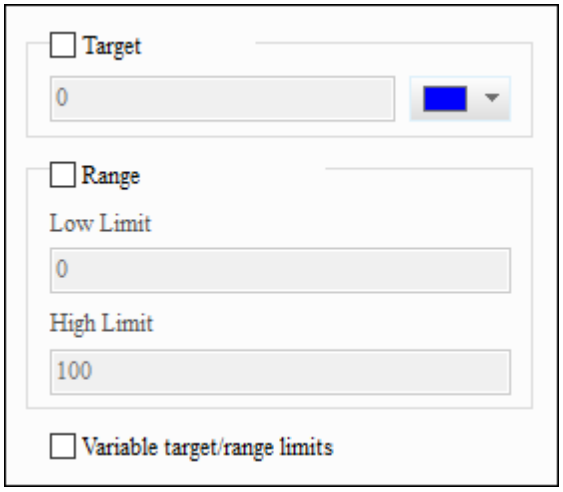
- **Style – Scale Settings**



Setting	Description
Scale Display Position	Select the position to display scale on the element according to **Direction**. • Scale can be displayed on the top or bottom when **Direction** is **Left** or **Right**. • Scale can be displayed on the left or right when **Direction** is **Top** or **Bottom**.
Scale Settings	Set the mark number, color, width of the scale. The range value of **Scale Mark Number** is 1–99.
Text Setting	Select the **Display mark** checkbox to display the mark and set the text size and color.

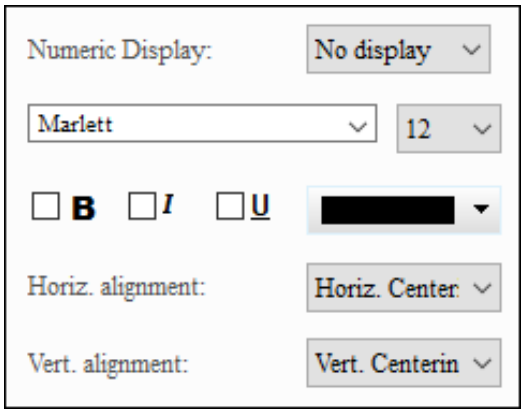
Normal Bar Properties

- **Main**
  - **Detail**



Setting	Description
Target	Select and enter the target value. You can also specify the display color. If the **Variable target / range limits** checkbox is not selected, enter only a constant value.
Range	Select and enter the **Low Limit** and **High Limit**. If the **Variable target / range limits** checkbox is not selected, enter only a constant value.
Variable target / range limits	If selected, set the memory addresses to dynamically change the displaying target value, and the low and high limit values.

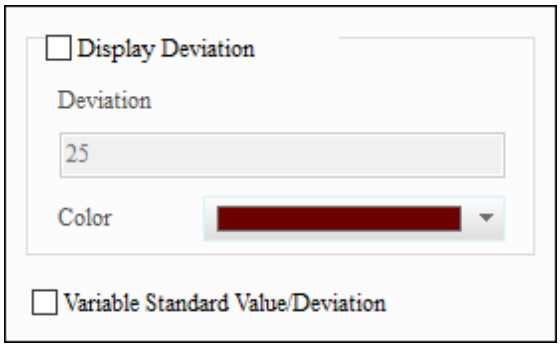
- **Style**
  - **Numeric Display**



The available options are No display, Value, and Percentage. The default value is **No display**. If you select **Value** or **Percentage**, you can set the display style and alignment type.

Differential Bar Properties

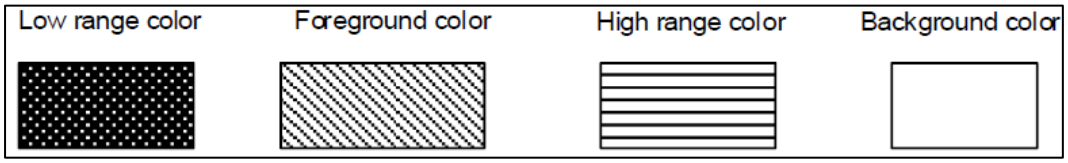
- **Main**
  - **Detail**

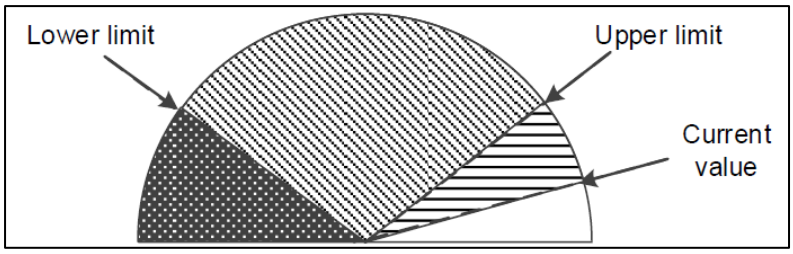


Select and enter the **Deviation**. You can also set the display color for deviation values within the range. If the **Variable target / range limits** checkbox is not selected, enter only a constant value to define the deviation value of the **Differential Bar** element.

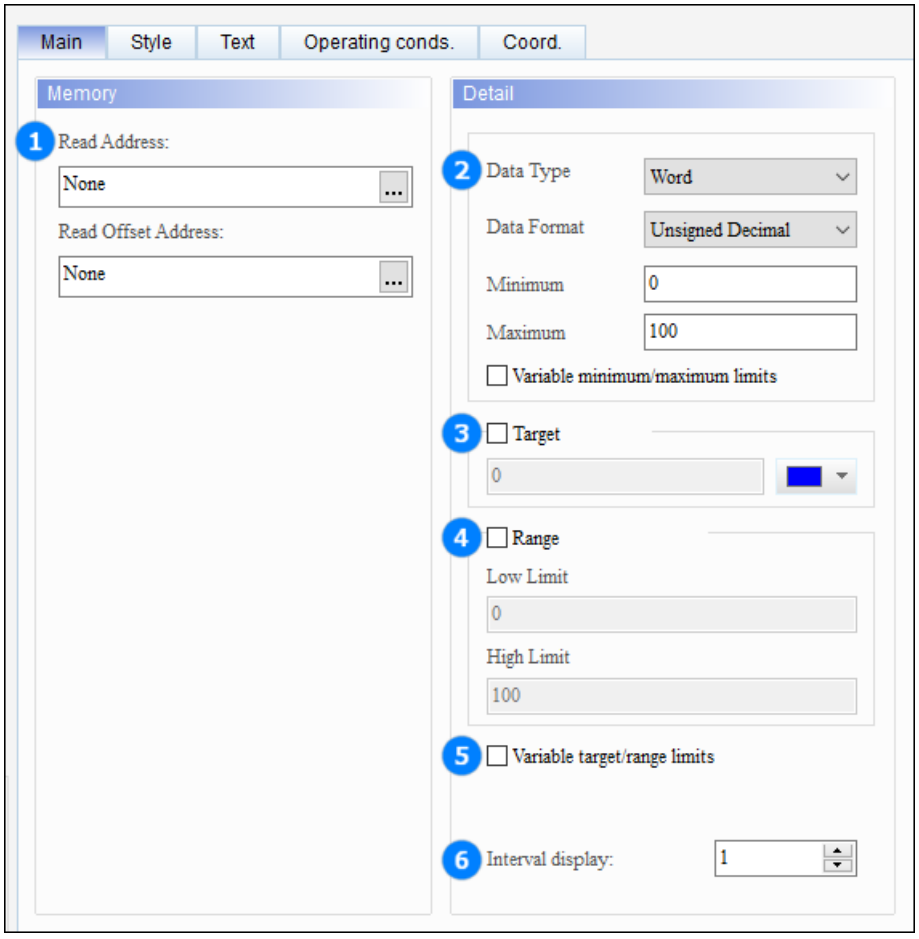
Pie

The **Pie** element displays the values corresponding to the read addresses in different pie styles on the HMI. You can also set the colors for the lower limit, upper limit, and target values to identify them.



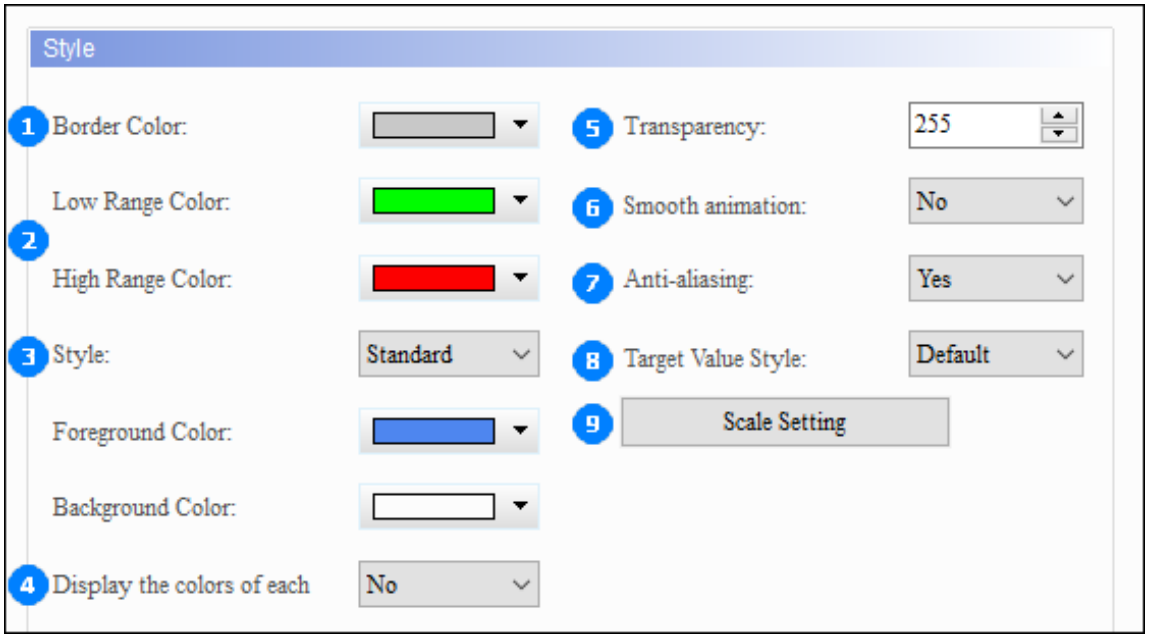


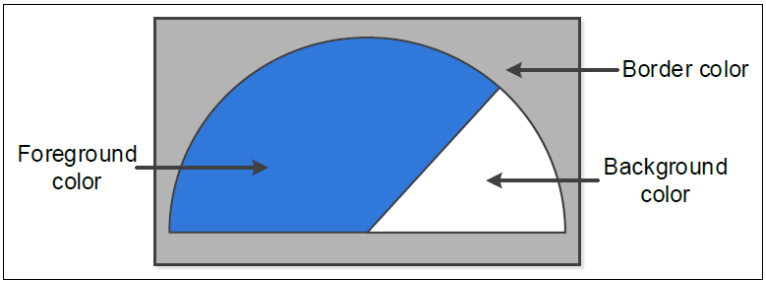
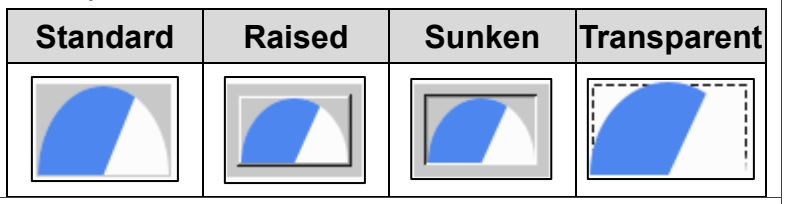
Common Properties

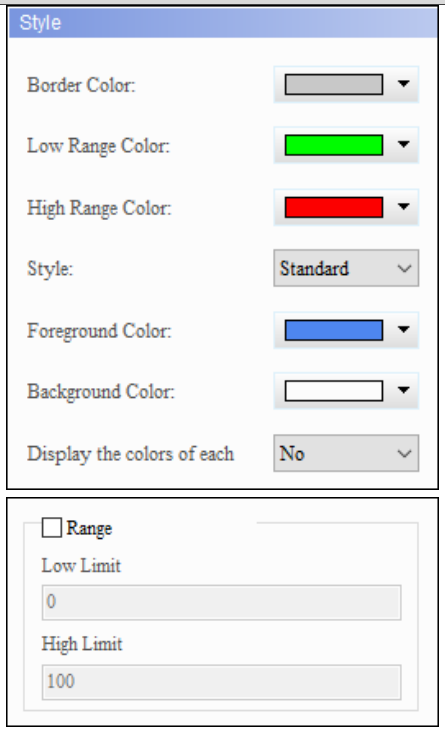
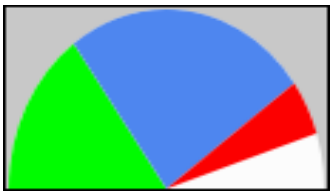
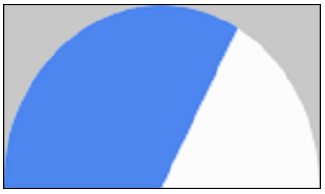
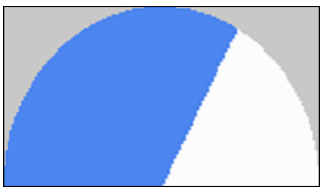


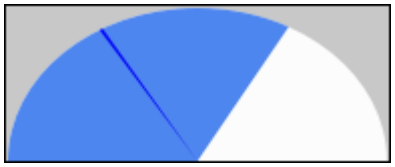
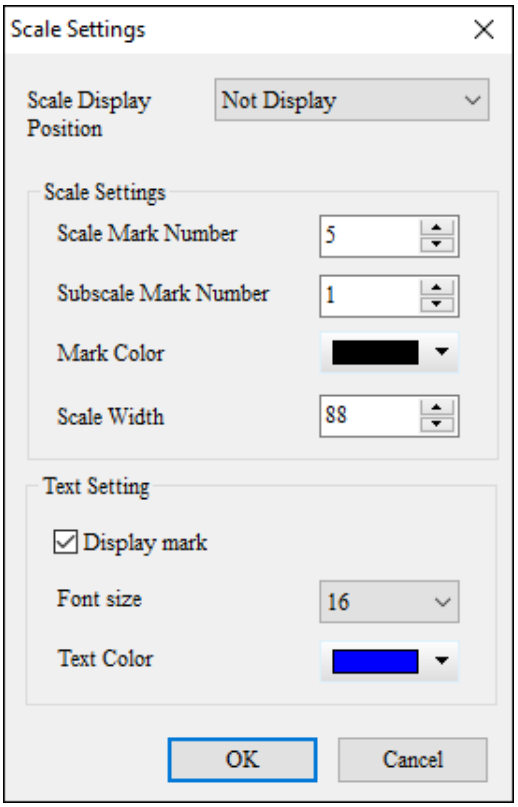
Legend	Function	Description
❶	Memory	Select the **Internal Memory** or the controller register address. The **Input** memory **Type** must be Word.
❷	Data Settings	• **Data Type**: The available options are Word and Double Word. • **Data Format**: The available options are BCD, Signed BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. • **Minimum / Maximum**: Enter the valid range value according to the set **Data Type** and **Data Format**. • **Variable minimum / maximum limits**: If selected, you can define the minimum and maximum value through the corresponding value of the memory address.
❸	Target	Select and enter the target value. You can also specify the display color. If the **Variable target / range limits** checkbox is not selected, enter only a constant value.
❹	Range	Select and enter the **Low Limit** and **High Limit**. If the **Variable target / range limits** checkbox is not selected, enter only a constant value.
❺	Variable target / range limits	If selected, set the memory addresses to dynamically change the displaying target value, and the low and high limit values.
❻	Interval display	Select or enter the interval display value. The range value is 0—100. To have an effect, the value displayed in the interval needs to be divided by the difference between the maximum value and the minimum value. For example, if the minimum value is 0, the maximum value is 100, the interval display value is 20, no scale is displayed when the value is 0~19; the scale is 20 when the value is 20~39; the scale is 40 when the value is 40~59, and so on.

- **Style**



Legend	Function	Description
1	Border Color Foreground Color Background Color	Select the foreground color, background color, and border color of the element. 
2	Low Range Color High Range Color	Select the element's low and high range color to display on the HMI.
3	Style	Select the appearance of the element. The available options are Standard, Raised, Sunken, and Transparent. The default value is **Standard**. 
4	Display the colors of each	• If select **No**, no matter what the value is, only the **Foreground Color** will be displayed. • If select **Yes**, with the **Low Range Color** and **Range** functions, it can represent different colors of each stage.

Legend	Function	Description
		 The following is an example of setting **Display the colors of each** for **Pie(1)** element. 
⑤	Transparency	Select or enter the transparency value of the element. The range value is 50—255 and the default value is **255**. The lower the value is, the higher the transparency is.
⑥	Smooth animation	Select whether to enable the **Smooth Animation** function. When this function is enabled, the element display becomes smoother.
⑦	Anti-aliasing	Select whether to enable the **Anti-aliasing** function. When this function is enabled, the display of the elements will be more delicate, and there will be no aliasing. **Yes**:  **No**: 

<table>
<tr><th>Legend</th><th>Function</th><th>Description</th></tr>
<tr><td>⑧</td><td>Target Value Style</td><td>Select the style of the target value. The available options are Default and Style 1, and the default value is Default.
<table>
<tr><td>Default</td><td>  </td></tr>
<tr><td>Style 1</td><td>  </td></tr>
</table></td></tr>
<tr><td>⑨</td><td>Scale Settings</td><td> 

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Scale Display Position</td><td>Select the position to display scale on the element according to Direction.</td></tr>
<tr><td>Scale Settings</td><td>Set the mark number, color, width of the scale. The range value of Scale Mark Number is 1–99.</td></tr>
<tr><td>Text Setting</td><td>Select the Display mark checkbox to display the mark and set the text size and color.</td></tr>
</table></td></tr>
</table>

Data Display

The **Date Display**, **Time Display**, and **Week Display** elements display the date, time, and week of the HMI system. The date and time can also be displayed by setting the timestamp through **Read Address**, and the **Week Display** element can be edited using the **Multi-language** function.

<table>
<tr><th colspan="2">Data Display</th></tr>
<tr><td>Date Display</td><td>The available Date Format options include mm/dd/yy, dd/mm/yy, dd.mm.yy, yy.mm.dd, yy/mm/dd, mm.dd, and mm/dd. The default value is mm/dd/yy.</td></tr>
<tr><td>Time Display</td><td>The available Time Format options include HH:MM:SS and HH:MM. The default value is HH:MM:SS.</td></tr>
<tr><td>Week Display</td><td>If multi-language has been set, edit the Week display in the Text tab of the element properties dialog to present the multi-language effect.
<table>
<tr><th>State</th><th>Chinese</th><th>English</th></tr>
<tr><td>0</td><td>日</td><td>SUN</td></tr>
<tr><td>1</td><td>一</td><td>MON</td></tr>
<tr><td>2</td><td>二</td><td>TUE</td></tr>
<tr><td>3</td><td>三</td><td>WED</td></tr>
<tr><td>4</td><td>四</td><td>THR</td></tr>
<tr><td>5</td><td>五</td><td>FRI</td></tr>
<tr><td>6</td><td>六</td><td>SAT</td></tr>
</table></td></tr>
<tr><td>Illustration</td><td>After compiling the screen and downloading it to the HMI, the HMI screen appears as follows:
<table>
<tr><th>Date Display</th><th>Time Display</th><th colspan="2">Week Display</th></tr>
<tr><td rowspan="2">06/15/2016</td><td rowspan="2">13:31:14</td><td>Chinese</td><td>English</td></tr>
<tr><td>三</td><td>WED</td></tr>
</table></td></tr>
</table>

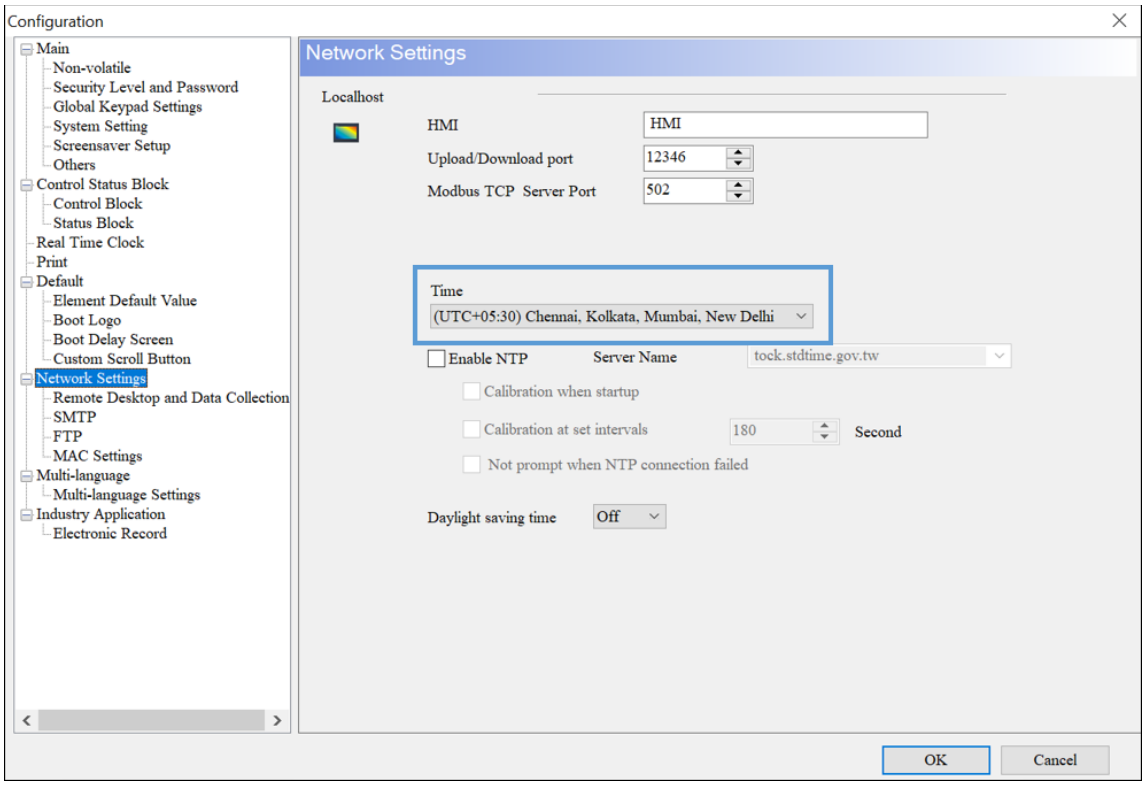
Timestamp

Set the displayed date and time through **Read Address**.

Timestamp rules

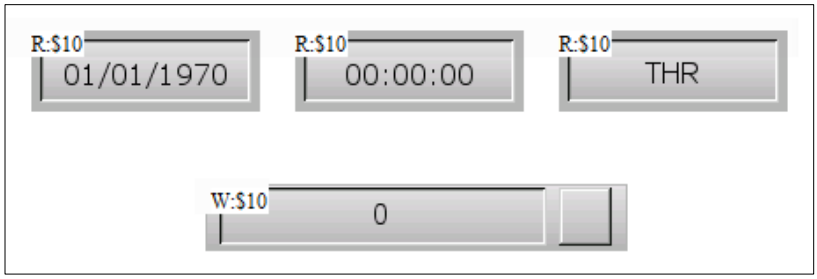
- Start time: 1970/01/01
- Standard type: in **seconds**

- Time zone setting: Go to **General** > **Configuration** > **Network Settings** > **Time zone** to set the time zone of the HMI time.



Example

1. Create **Date Display**, **Time Display**, and **Week Display** elements, and set **Read Address** to $10.
2. Create a **Numeric Entry** element and set **Write Address** to $10.
3. Compile the screen and download it to the HMI. Enter 0 to the **Numeric Entry** element on the HMI, and the time displays as 01/01/1970 00:00 (GTM +00:00).



4. Enter 86400 to the **Numeric Entry** element and the time displays as 01/02/1970 00:00 (GTM +00:00).

Note:

- The timestamp is in seconds. It is suggested to set an address that supports **Quad Word** data type.
- For timestamp conversion, see epochconverter.com/.
- Setting **None** for **Read Address** displays the HMI system time.

CODESYS time variable read

The **Date Display** and **Time Display** elements support reading CODESYS time-type Tags, including TIME, LTIME, DATE, TIME_OF_DAY, and DATE_AND_TIME.

Note: Except **Date Display**, **Time Display**, and **Week Display** elements, other elements do not support reading time-type Tags.

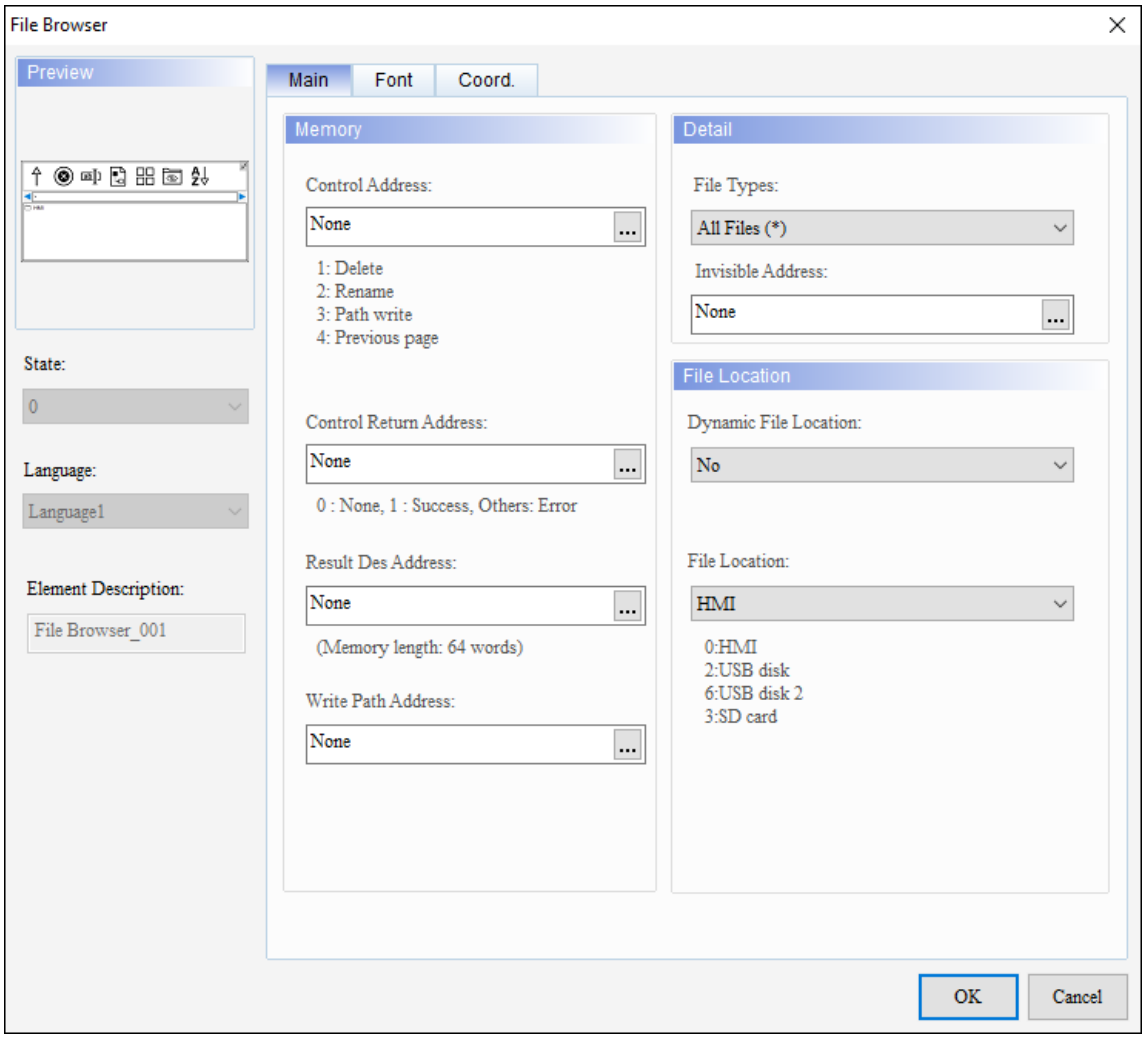
List

File Browser

You can browse the stored device files on HMI, and rename and delete files through the **File Browser** element.

The following table lists the properties of the **File Browser** element with their descriptions.

- **Main**



  - **Memory**

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Control Address</td><td>Set the address to trigger actions. The following table lists the corresponding actions of the state value.
<table>
<tr><th>State Value</th><th>Action</th></tr>
<tr><td>1</td><td>File deletion</td></tr>
<tr><td>2</td><td>File rename</td></tr>
<tr><td>3</td><td>Path write</td></tr>
<tr><td>4</td><td>Switch to the previous page</td></tr>
</table></td></tr>
<tr><td>Control Return Address

Result Describes Address</td><td>Set the return address after the action is completed, the status code and description of the return are as follows:
<table>
<tr><th>Action</th><th>Status</th><th>Description</th></tr>
<tr><td>No action</td><td>0</td><td>-</td></tr>
<tr><td>Succeed</td><td>1</td><td>-</td></tr>
<tr><td>File deletion</td><td>–1</td><td>Failed to delete the file</td></tr>
<tr><td rowspan="5">File rename</td><td>–2</td><td>File name is too long
Note: The maximum length of the file name is 255 characters.</td></tr>
<tr><td>–3</td><td>File does not exist</td></tr>
<tr><td>–4</td><td>The file name cannot contain the following characters: \/:*?\"<>|</td></tr>
<tr><td>–5</td><td>The name of the file has not been changed</td></tr>
<tr><td>–6</td><td>The same file name exists</td></tr>
<tr><td rowspan="2">Path write</td><td>–7</td><td>The path does not exist</td></tr>
<tr><td>–8</td><td>The path write address is not set</td></tr>
</table>
Note:
• The data type of Control Return Address is signed decimal.
• If the HMI language is non-English, the result description should be displayed using a Multi-language Input element.</td></tr>
</table>

Setting	Description
Write Path address	Do one of the following to write path address: • Select the file on the HMI and click  on the toolbar of the element to write the path. • Write value 3 for **Control Address**, and then write the current file path for **Write Path Address**. Write the file path to this address, and the file browser redirects to the specified file. **Note**: • The file path does not contain the root directory, but the path after the address is written to the file location. • Set this parameter using the **Character Display** or the **Multi-language Input** element.

- **Detail**

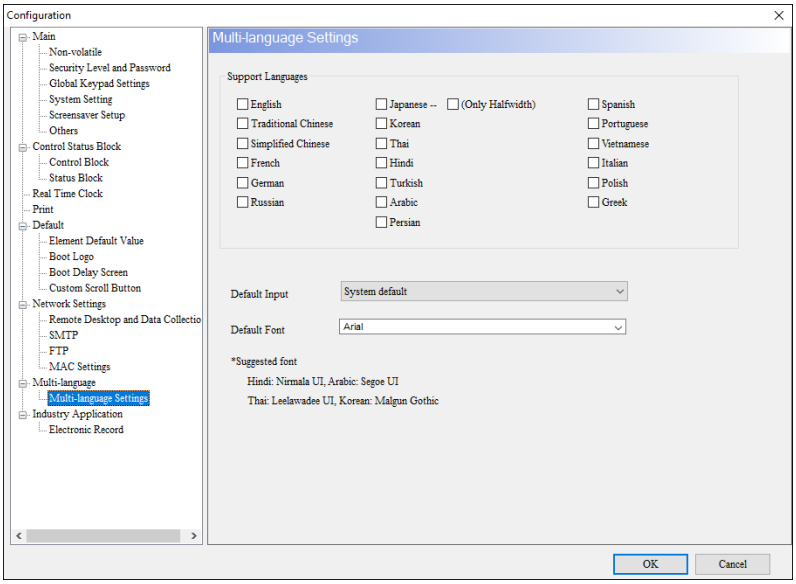
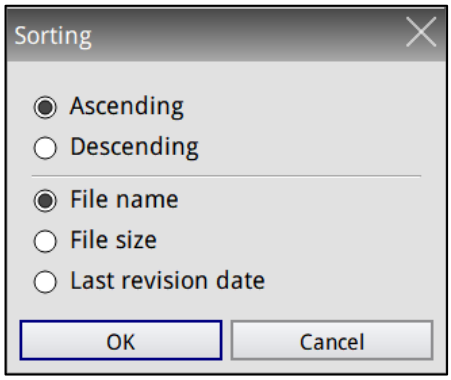
Function	Description
File Types	Select the type of file to display.
Invisible Address	Set the invisible address. When the invisible bit is On, the element is not visible to the HMI.

- **File Location**

Function	Description
Dynamic File Location	Choose whether to set the file location dynamically. Select **Yes** to select by the root directory of the address file.
File Location	Choose the root directory to which the path is written.

The following table lists the functions on the toolbar of the **File Browser** element with their description.

Icon	Function	Description
	Previous	Click to switch to the previous level of directory.

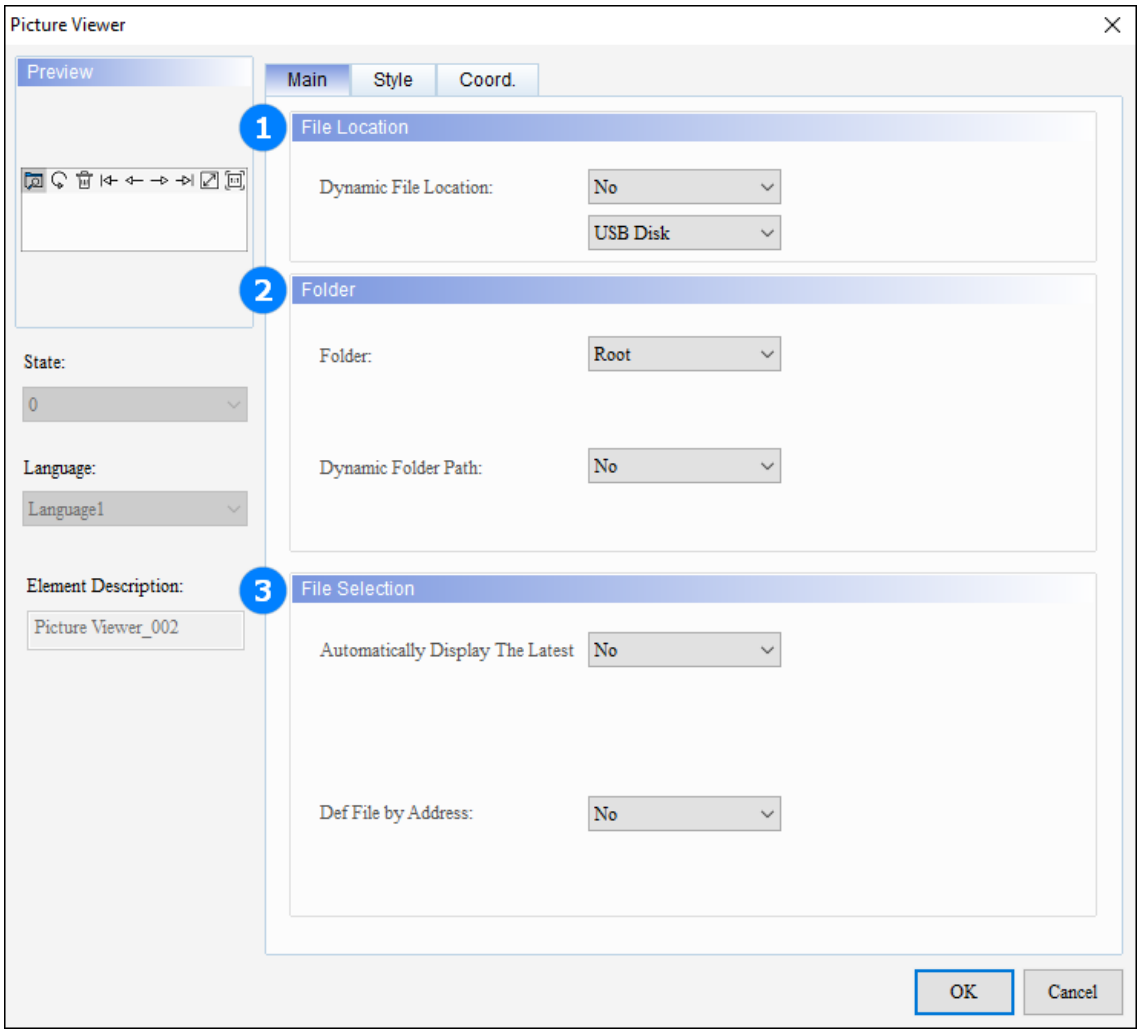
Icon	Function	Description
	File deletion	Click to delete the currently selected file.
	File rename	After selecting a file, click this icon to enter the file name to change the name of the selected file. **Note**: If you want to input words other than English or numbers, check the languages in the **Configuration** dialog. 
	Path write	After selecting the file, click this icon to display the full path of the file at the **Write Path Address**. **Note**: If you don't select a file, clicking this button has no effect.
	Display toggle	Click to display files as icons or manifests.
	Folder switching	Click to display or not display the folder.
	File sorting	Click to set how the files are sorted. 

Picture Viewer

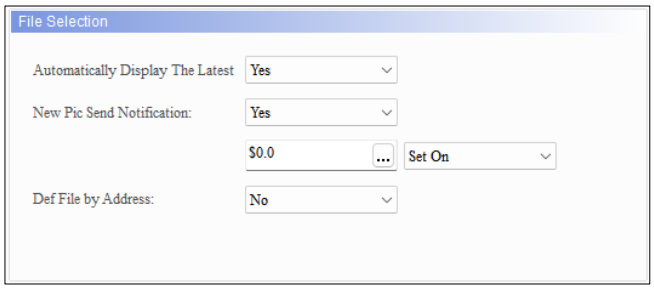
You can select files and view pictures on the HMI through the **Picture Viewer** element.

The following lists the properties of the **Picture Viewer** element and their descriptions.

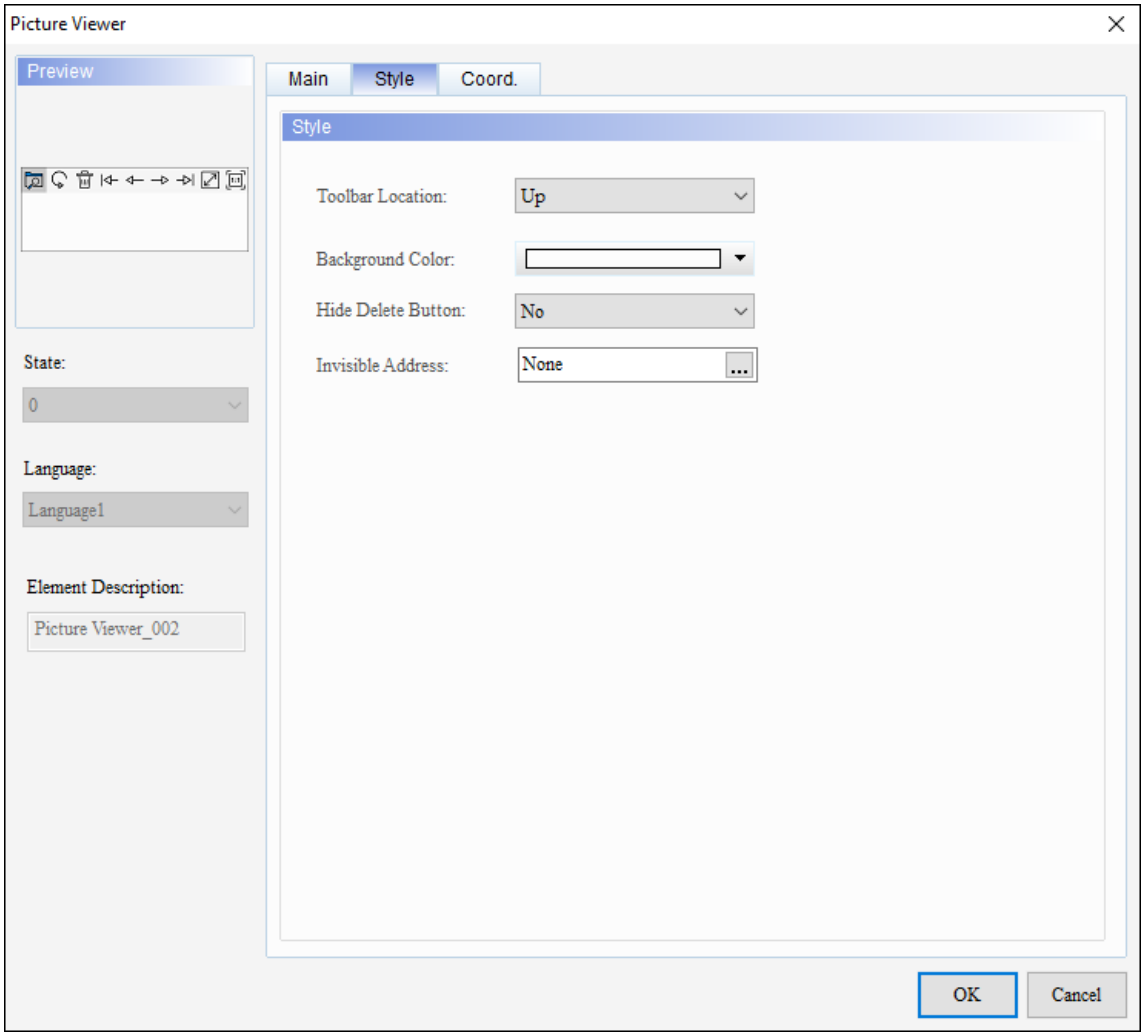
- **Main**



Legend	Function	Description
1	File Location	Select the location to store the files. • If **Dynamic File Location** is set to **No**, the storage device can be specified for reading. • If **Dynamic File Location** is set to **Yes**, the storage device can be dynamically specified on the HMI. The value 2 is USB disk, 6 is USB disk 2, 3 is SD card.

Legend	Function	Description
②	Folder	Set the folders to display in the File Browser. • **Root**: The root directory of the specified **File Location**. • **Capture Picture**: The screen_capture folder under the specified **File Location**. • **Define By User**: The specified folder under the specified **File Location**. If **Dynamic Folder Path** is set to **Yes**, the folder to display can be dynamically specified on the HMI. **Note**: You can only specify internal memory address of the HMI for **Dynamic Folder Path**.
③	File Selection	• Choose whether to automatically display the latest pictures. Select **Yes** to select whether to send a notification when the picture is updated, and specify the memory address of the notification.  • Choose whether to specify the file by the address. Select **Yes** to specify the file name of the picture by the address on the HMI to display the picture on the element.

- **Style**



Setting	Description
Toolbar Location	Select the location to which the toolbar is displayed on the element.
Background Color	Select the background color of the element.
Hide Delete Button	Select whether to hide the delete button.
Invisible Address	Set the invisible address. When the invisible bit is On, the element is not visible to the HMI.

Note:

- Only one **Picture Viewer** element can be configured for a screen, and only for a general screen.

- The picture will not be loaded by default when the HMI starts, and the picture will only be displayed if you enter the **File Browser** element and click on the picture file, or specify the file name by the file address.

The following table lists the functions on the toolbar of the **Picture Viewer** element with their descriptions.

Icon	Function	Description
	File browsing	Click to toggle to **File Browser**. The directory under the set **File Location** is displayed by default. For the functions on the toolbar of the **File Browser**, refer to File Browser.
	Refresh	Click to reload the currently displayed picture.
	Delete	Click to delete the currently displayed picture.
	The first picture	Displays the pictures in alphabetical order by file name.
	Previous picture	
	The next picture	
	The last picture	
	Maintain proportions	Click to maintain the picture's aspect ratio. The ratio scales according to the size of the element.
	Actual size	Click to display the original size of the picture.

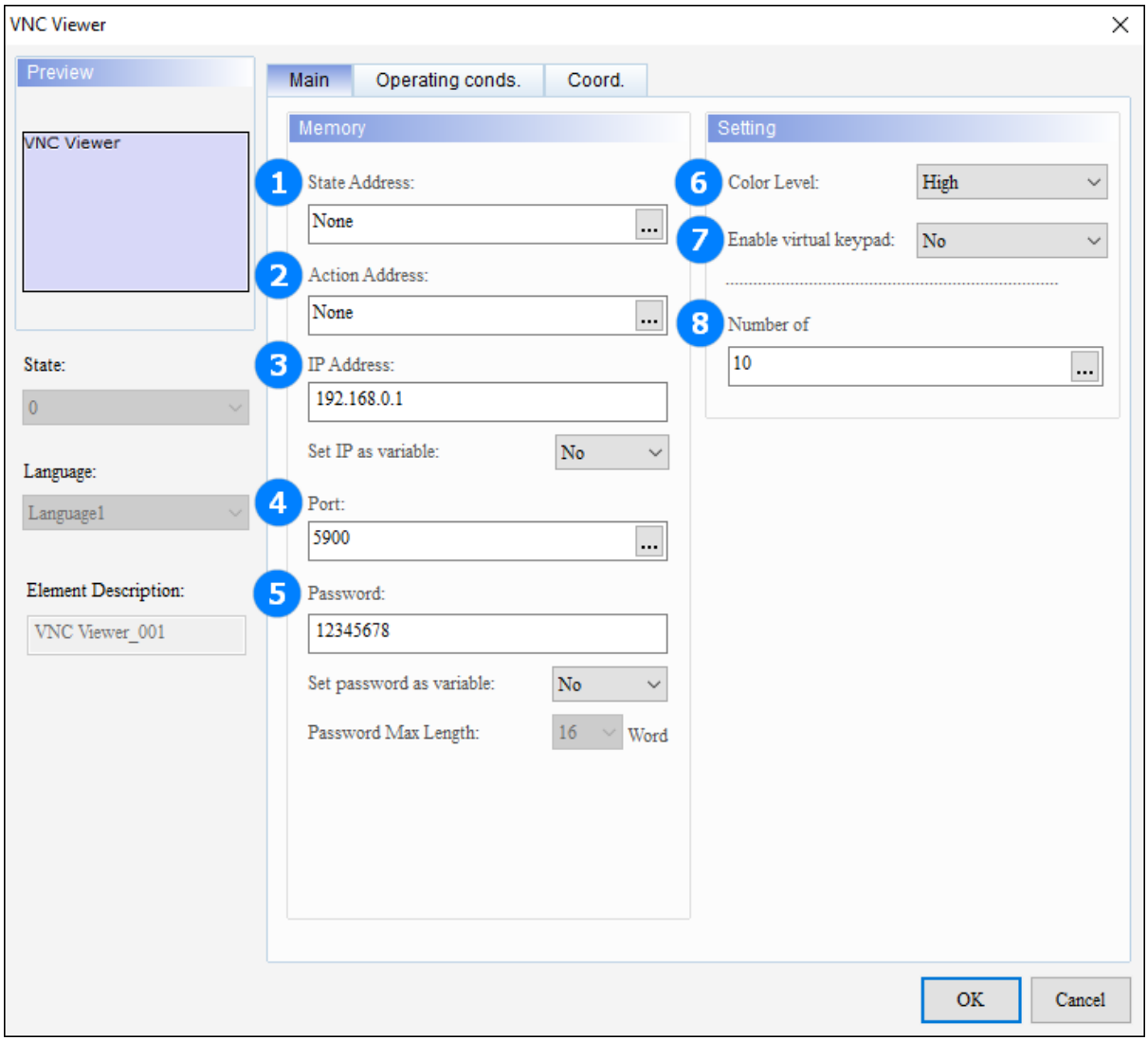
Frame and Multimedia

VNC Viewer

VNC (Virtual Network Computing) uses the RFB protocol to achieve screen sharing and remote operation. It can transmit keyboard and mouse movements and real-time images through the network. The **VNC Viewer** element of the HMI receives and controls the display device operated by the server.

Note: This function is only available for DOP-300 series models.

The following table lists the settings in the property dialog of the VNC Viewer element with the description.



<table>
<tr><th>Legend</th><th>Function</th><th>Description</th></tr>
<tr><td>1</td><td>State Address</td><td>Set the State Address in Word type.
Obtain the current connection state through the State Address values. The following table lists the state values with the corresponding description.<table><tr><th>State</th><th>Description</th></tr><tr><td>0</td><td>Stopped</td></tr><tr><td>1</td><td>Connecting</td></tr><tr><td>2</td><td>Connect failed</td></tr><tr><td>3</td><td>Authentication error</td></tr><tr><td>4</td><td>Server disconnect</td></tr><tr><td>5</td><td>Security error</td></tr><tr><td>6</td><td>Attempting to reconnect</td></tr><tr><td>7</td><td>Reconnect failed</td></tr><tr><td>8</td><td>Reconnect successful</td></tr></table></td></tr>
<tr><td>2</td><td>Action Address</td><td>Set the Action Address in Word type.
Send the action to the VNC device through the Action Address. The following table lists the state values with the corresponding description.<table><tr><th>State</th><th>Description</th></tr><tr><td>0</td><td>None</td></tr><tr><td>1</td><td>Start</td></tr><tr><td>2</td><td>Stop</td></tr><tr><td>3</td><td>Update</td></tr></table></td></tr>
<tr><td>3</td><td>IP Address</td><td>Set the IP address for the VNC server.
When selecting Yes for Set IP as variable, you can dynamically change the IP address on the HMI. Use the 4 Word addresses read by the IP starting address continuously as the set IP address.</td></tr>
<tr><td>4</td><td>Port</td><td>Set the Port for the VNC server. The default value is 5900.</td></tr>
<tr><td>5</td><td>Password</td><td>When selecting Yes for Set password as variable, you can dynamically change the VNC connection password on the HMI. Use the set Password Max Length, read by the set starting address, as the password. Password can consist of numbers and letters.</td></tr>
<tr><td>6</td><td>Color Level</td><td>Set the display color for different bits. The available options are High (32 Bit), Middle (16 Bit), and Low (8 Bit). The default value is High.</td></tr>
</table>

Legend	Function	Description
⑦	Enable virtual keypad	If select **Yes**, the **Keyboard** button appears at the bottom right corner of the element after clicking the **VNC Viewer** element on the HMI. Click the **Keypad** button to call out the ASCII keypad.
⑧	Number of	• If the connection to the server is disconnected, a message “Attempting to reconnect to VNC server” appears. When the connection is not restored after the set retries are reached, it will be automatically aborted and a message “Disconnected from VNC server” will appear. • If set to 0, it means the number of retries is unlimited. The maximum number is 65535, and the interval between each retry is 3 seconds.

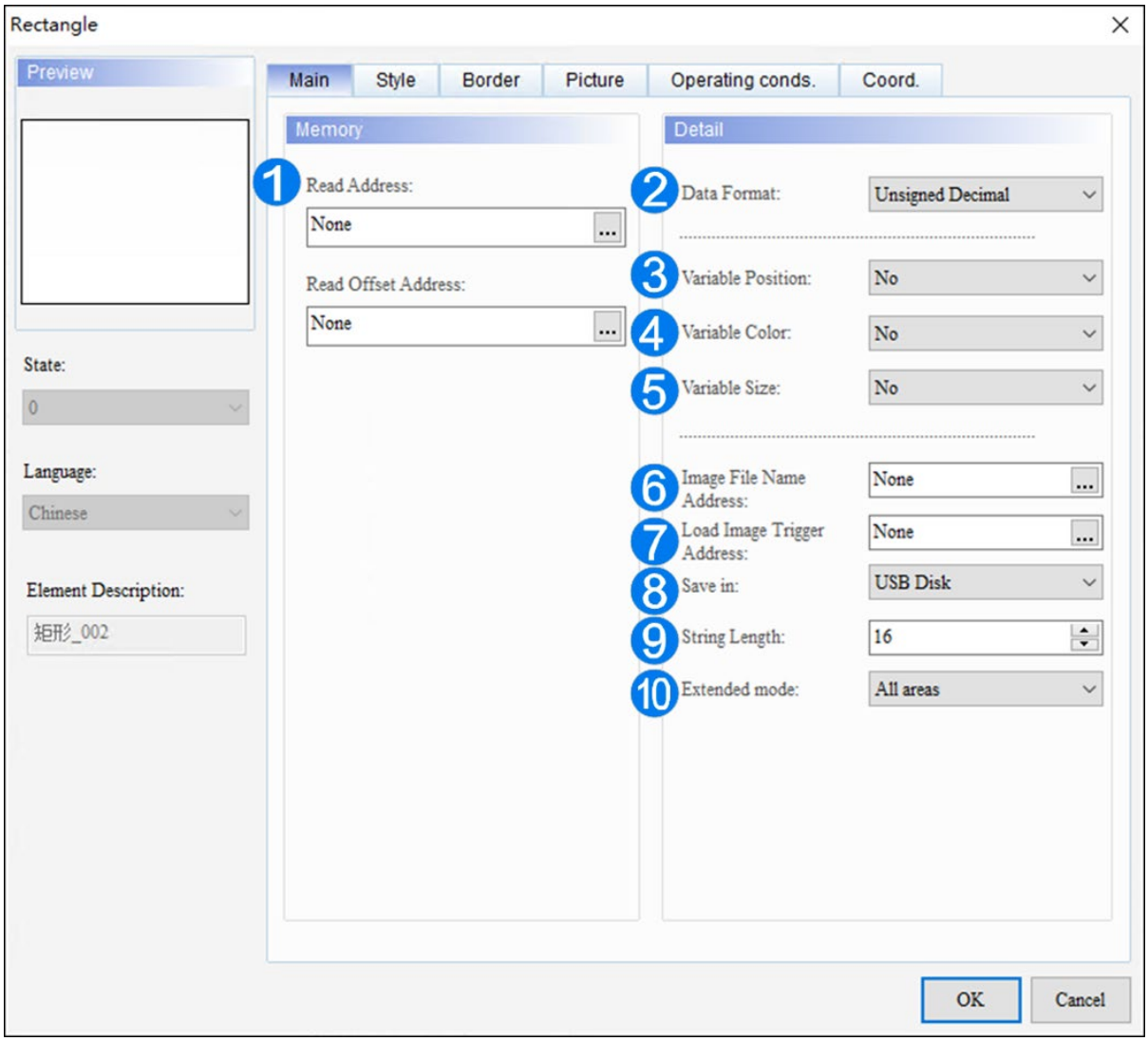
Drawing

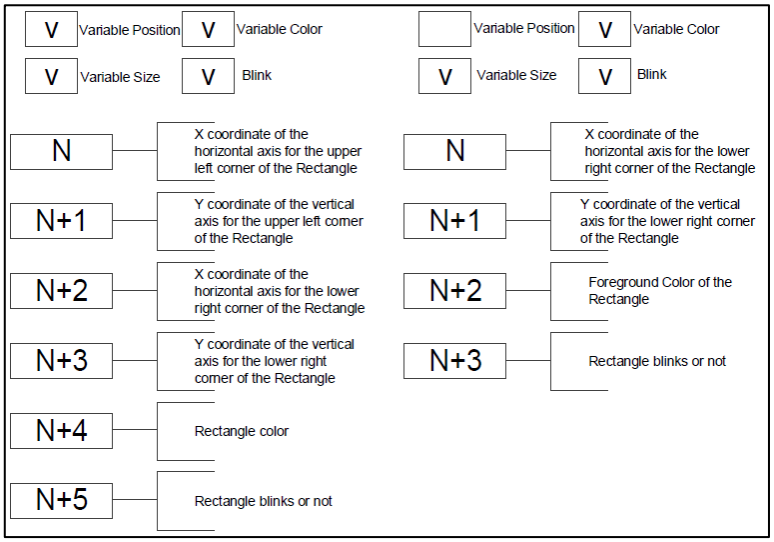
Rectangle Element

The **Rectangle** element provides various filled styles and border configurations and supports importing pictures from the picture bank. Use the set read address to control the moving position, color, size, and blinking of the rectangle element.

The following table lists the functions in the Rectangle element property dialog with their description.

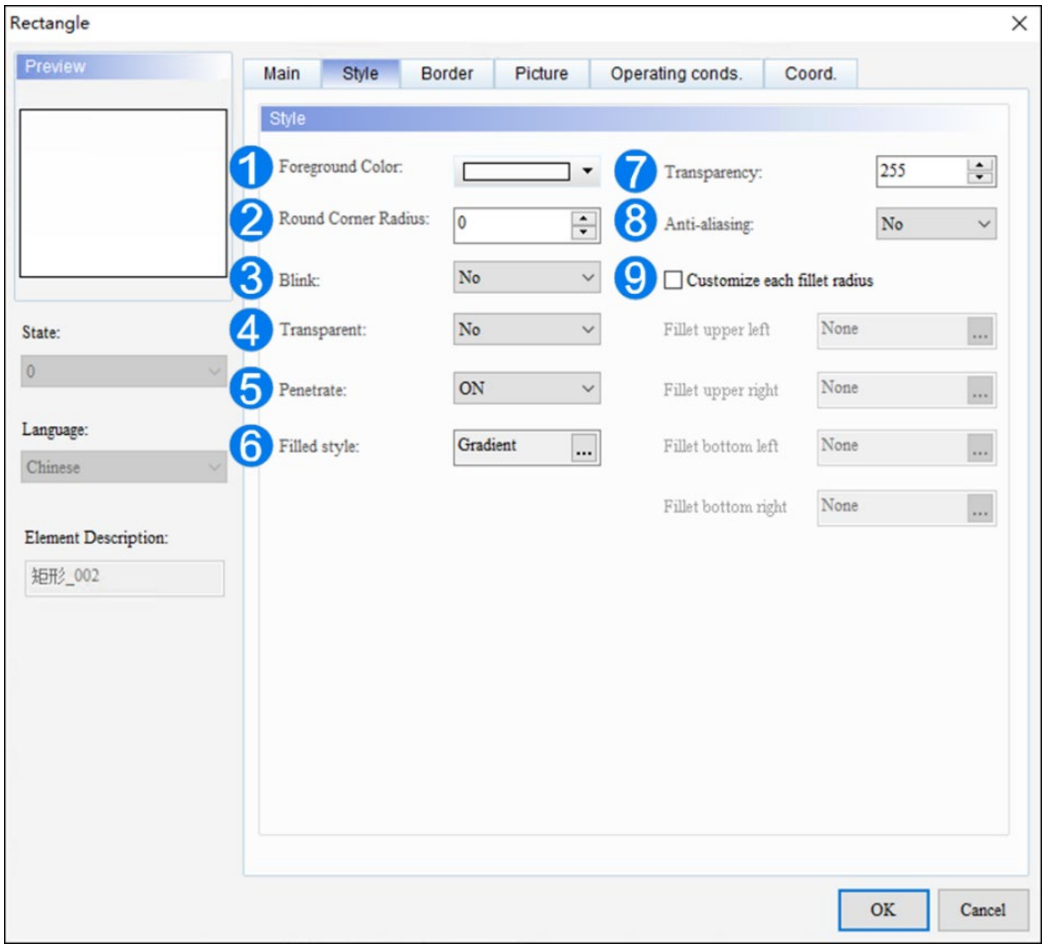
Main



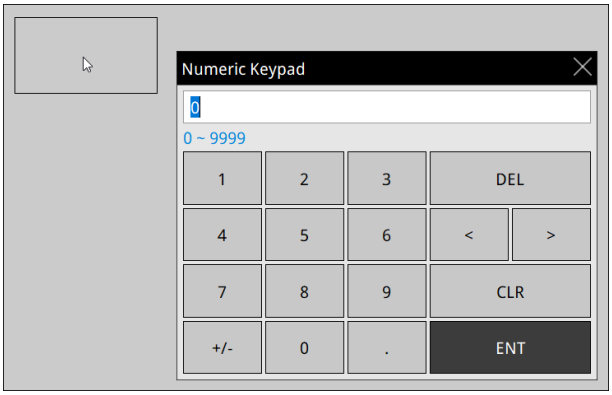
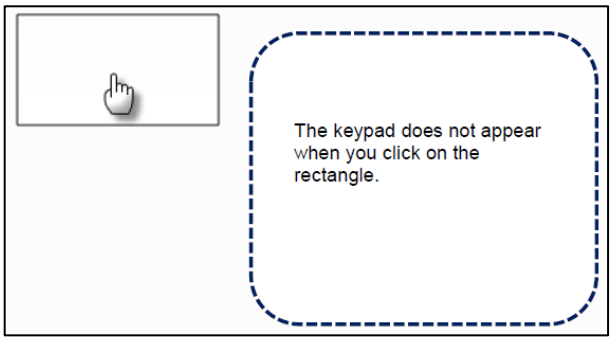
Legend	Function	Description
❶	Read Address	Select the internal address or controller register address. • When **Variable Position** is set to **Yes**, the value of the **Read Address** is regarded as the X coordinate of the horizontal axis for the upper left corner of the dynamic **Rectangle** element. • When **Variable Position** is set to **Yes**, the value of **Read Address+1** is regarded as the Y coordinate of the vertical axis for the upper left corner of the dynamic **Rectangle** element. • When **Variable Size** is set to **Yes**, the value of **Read Address+2** is regarded as the width for the dynamic **Rectangle** element. • When **Variable Size** is set to **Yes**, the value of **Read Address+3** is regarded as the height for the dynamic **Rectangle** element. • When **Variable Color** is set to **Yes**, the value of **Read Address+4** is regarded as the color for the dynamic **Rectangle** element. Its value range is 0–65535. • When **Blink** is set to **Yes**, the value of **Read Address+5** determines whether the dynamic **Rectangle** element blinks or not. When its value is greater than 1, the dynamic **Rectangle** element is displayed as blinking; when the value is 0, it does not blink. • When **Variable Position** is set to **No**, the corresponding memory addresses are automatically filled in. 
❷	Data Format	Select the data format. The default value is **Unsigned Decimal**.

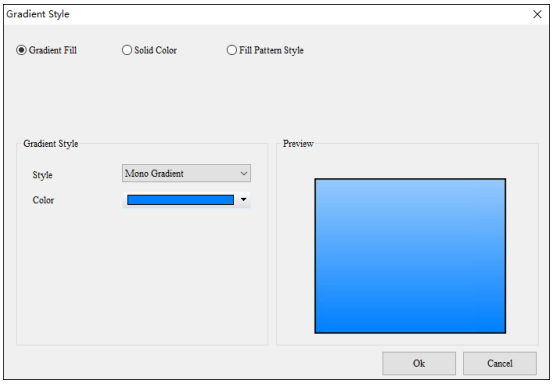
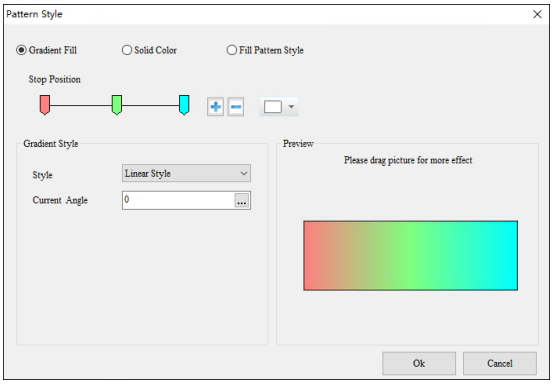
Legend	Function	Description
❸	Variable Position	Select whether the position can be moved. The default value is **No**. • If select **Yes**, the position of the dynamic **Rectangle** element can be moved. • If select **No**, the dynamic rectangle element cannot be moved, but the size can be changed.
❹	Variable Color	Select whether the color can be changed. The default value is **No**. • If select **Yes**, the color of the dynamic **Rectangle** element can be changed. Its value range is 0–65535. **Note**: This setting has no effect when the **Filled style** is set to more than one color such as **Gradient** or **Fill Pattern Style**.
❺	Variable Size	Select whether the size can be changed. The default value is **No**. • If select **Yes**, the size of the dynamic **Rectangle** element can be changed by changing its coordinates at the lower right corner. • If select **No**, the size of the rectangle element cannot be changed.
❻	Image File Name Address	Specify the selected item through this setting, and then set **Load Image Trigger Address** to On, the element displays the selected item. • **Image File Name Address** supports selecting the controller address (Word) and internal register address (Word). • **Load Image Trigger Address** supports selecting the controller address (Bit) and internal register address (Bit).
❼	Load Image Trigger Address	
❽	Save in	Select the stored type. The default value is **USB Disk**. By storing the image file in a USB Disk, USB Disk 2 or SD Card, the image file can be read on the HMI. Currently supports BMP, JPEG, PNG, and TIFF file formats.
❾	String Length	Select or enter the file name to read. The default value is **16**.
❿	Extended mode	Select the extended mode. The default value is **All areas**.

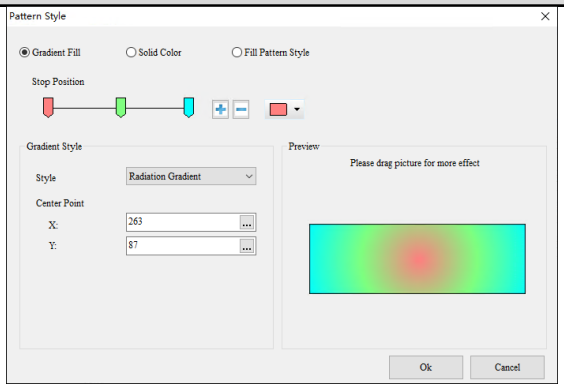
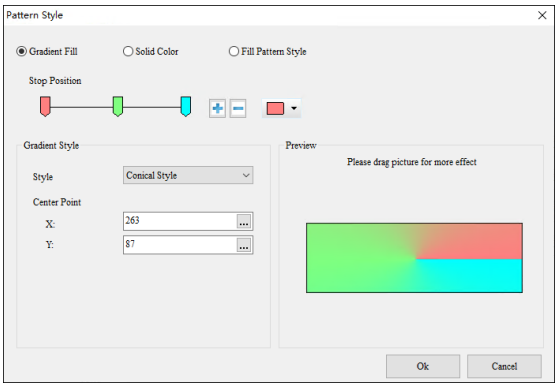
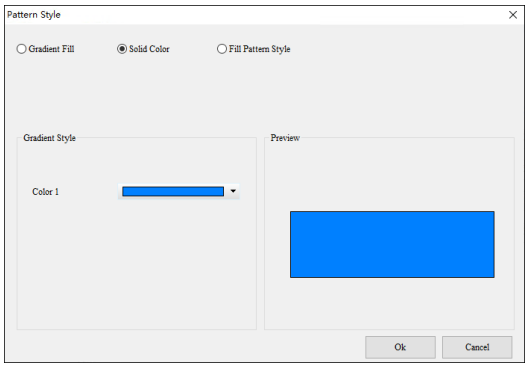
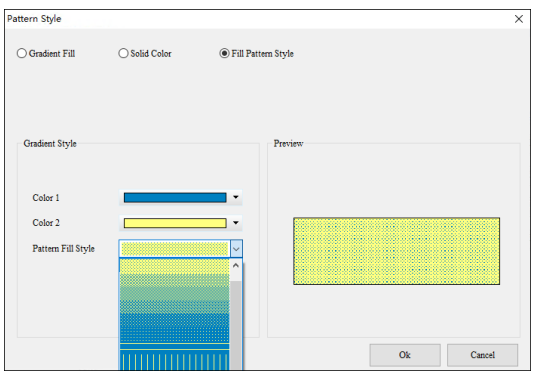
Style



Legend	Function	Description
❶	Foreground Color	Set the foreground color of the element. **Note**: This setting has no effect when the **Filled style** is set more than two gradients.
❷	Round Corner Radius	Select or enter the round corner radius. The size of this round corner radius is determined by the width and height of the **Rectangle** element. Take the smaller value among width/2 and height/2 of the **Rectangle** element. This is the maximum value that can be set for the radius.
❸	Blink	Select whether to blink or not. The default value is **No**. • If select **Yes**, the dynamic **Rectangle** element displays as blinking. When the value of the corresponding read address is great than 1, the dynamic **Rectangle** element displays as blinking; when the value is 0, it does not blink. • If select **No**, the dynamic **Rectangle** element does not blink.

<table>
<tr><th>Legend</th><th>Function</th><th>Description</th></tr>
<tr><td>④</td><td>Transparent</td><td>Select whether to display in transparent. The default value is No.
If select Yes, the Foreground Color setting has no effect.
If select No, the dynamic Rectangle element displays only the rectangle border line with the middle shown in transparent</td></tr>
<tr><td>⑤</td><td>Penetrate</td><td>Select whether the element that overlaps with the Rectangle element can be clicked. The default value is ON.
Example Operation
Create a Numeric Entry element.
Create one more Numeric Entry element and make it overlaps on top of the Numeric Entry element.
<table>
<tr><th>Function</th><th>Illustration</th></tr>
<tr><td>Penetrate ON</td><td>The Numeric Entry element under Rectangle element can be clicked.
 
</td></tr>
<tr><td>Penetrate OFF</td><td>The Numeric Entry element under Rectangle element cannot be clicked.
 
</td></tr>
</table></td></tr>
<tr><td>⑥</td><td>Filled style</td><td>Select the fill style of the element. The default value is Gradient. The following table lists the functions in the Gradient Fill view with their description.
<table>
<tr><th>Function</th><th>Illustration</th></tr>
</table></td></tr>
</table>

Legend	Function	Description	
		Gradient Style	Set the Gradient Style by setting the Current Angle or Center Point. Set the Current Angle or Center Point by dragging the mouse on the preview image, or set the memory address for dynamic configuration on the HMI. Supports adding gradient stop points and setting stop point colors to present the effect of multi-color gradients. **Note**: Up to 5 stop points can be set. • **Mono Gradient** The gradient color automatically configured by the software does not provide stop point configuration and is compatible with the behavior of DOPSoft software.  • **Linear Style**  • **Radiation Gradient**

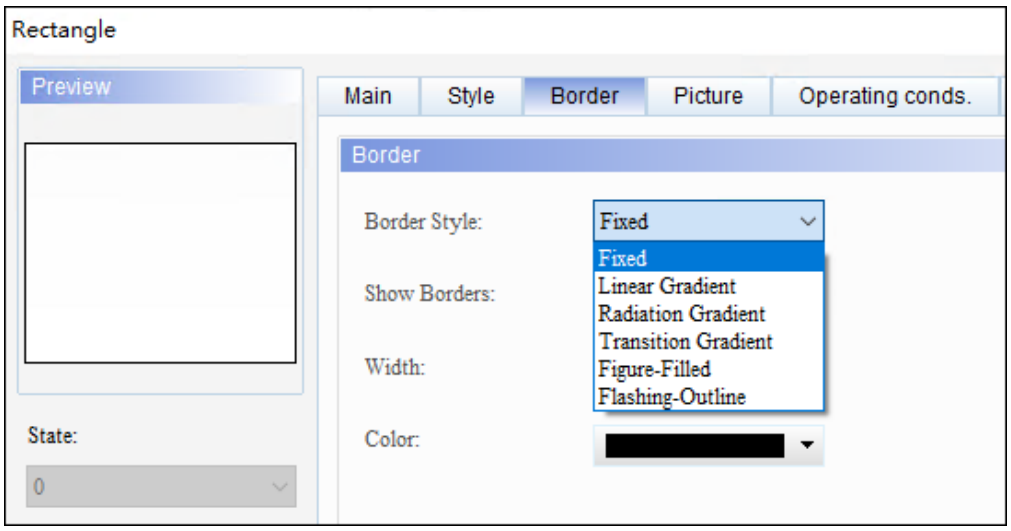
Legend	Function	Description
		 • **Conical Style** 
	Solid Color	Set a single color fill, the same as the **Foreground Color** setting. 
	Fill Pattern Style	Provides a variety of Fill Pattern styles and two color combinations to present pattern fill effects. 

Legend	Function	Description
		Note: This feature is supported in software version 1.4.0 and above.
❼	Transparency	Select or enter the transparency value. The range value is 50–255 and the default value is **255**.
❽	Anti-aliasing	Select whether to enable anti-aliasing effect. • If select **Yes**, the element border displays smooth. • If select **No**, the element border displays in aliasing. **Note**: This setting only has effect when the **Round Corner Radius** is set.
❾	Customize each fillet radius	Set each fillet radius. **Note**: The fillet radius settings are available when this setting is selected.

Border

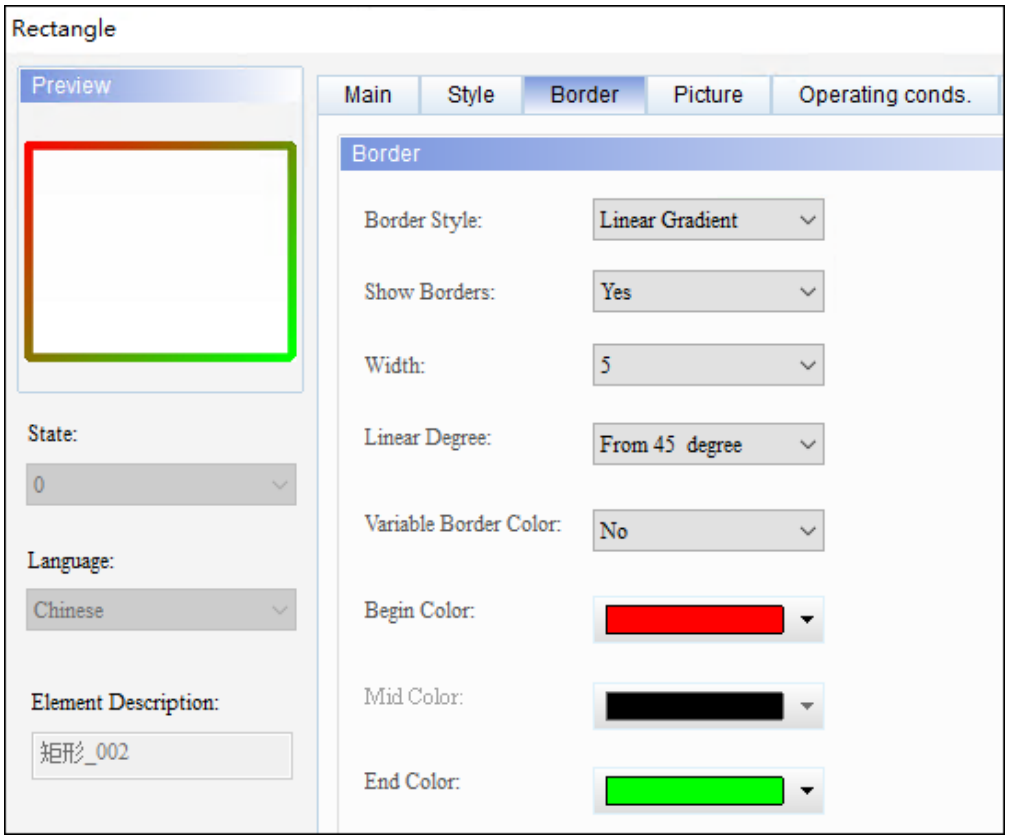
Note: This feature is supported in software version 1.3.1 and above.

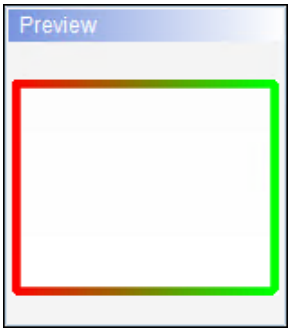
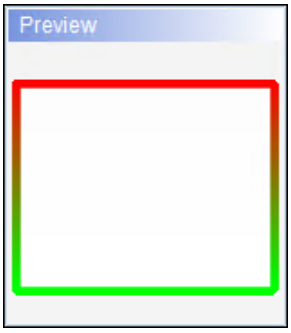
- **Border Style**
  - **Fixed**

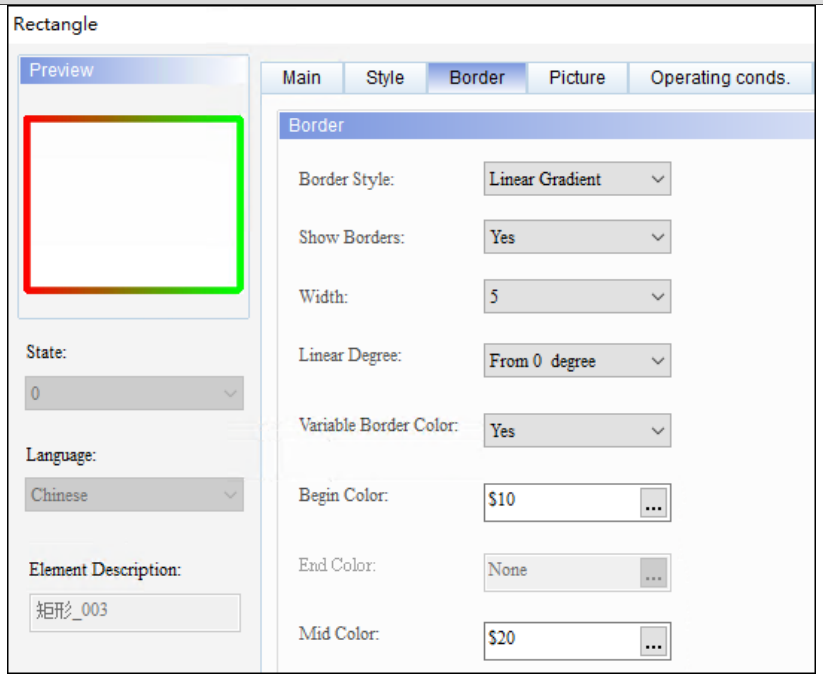
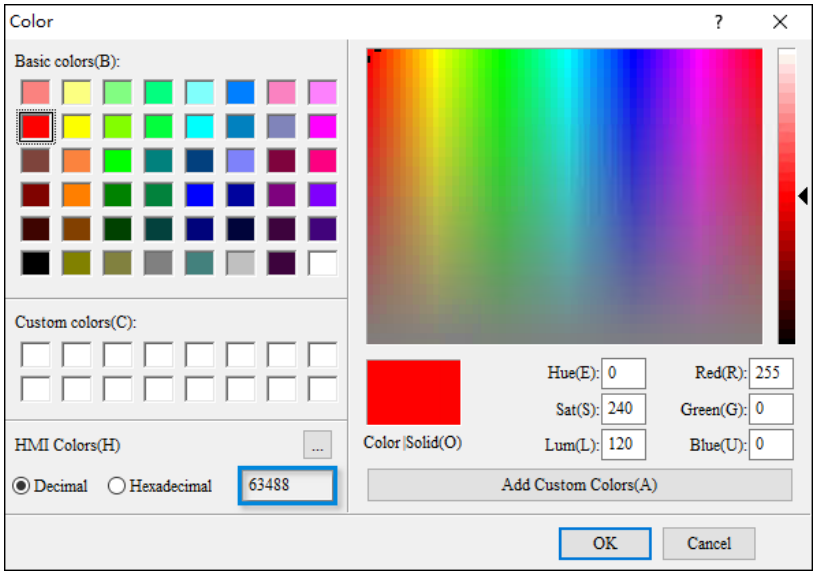


Function	Description
Width	Select the border width. The range value is 1 ~ 8, and the default value is **1**.
Color	Set the border color to display.

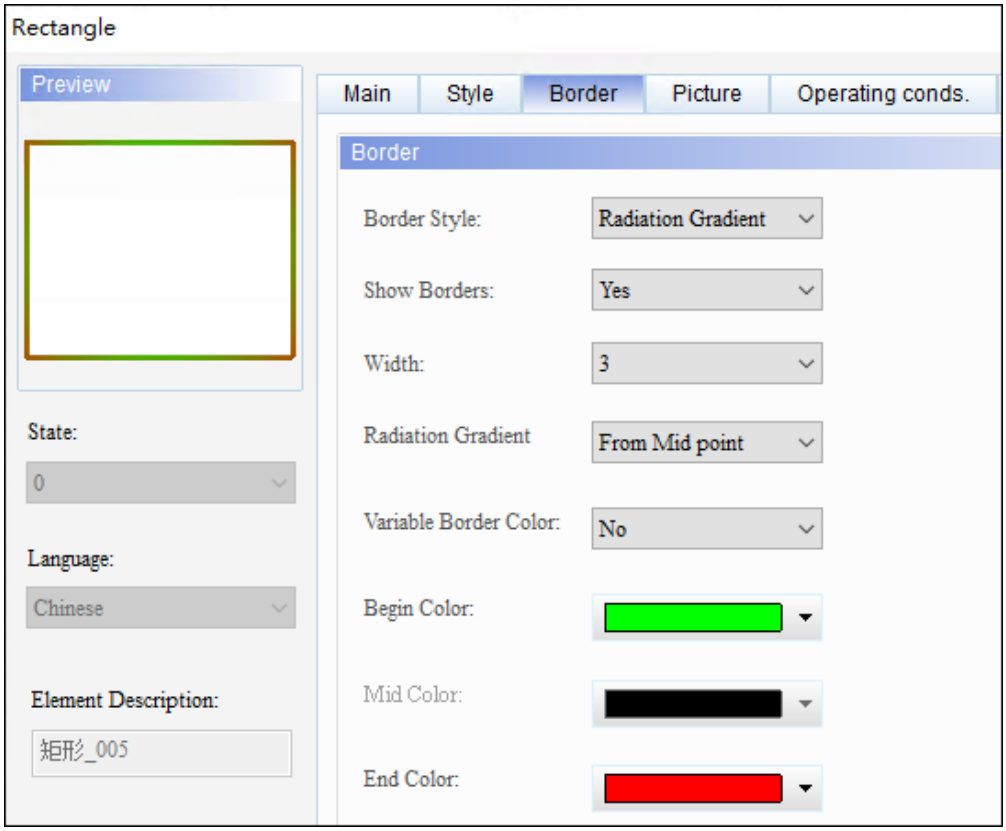
- **Linear Gradient**



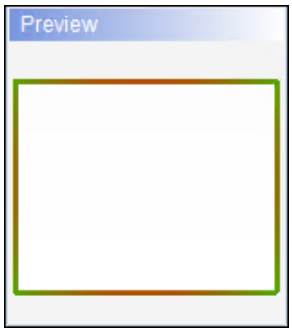
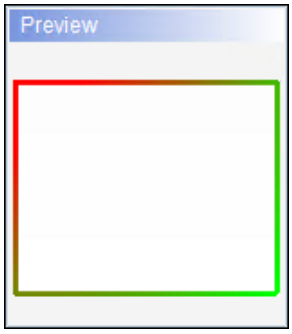
<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>Linear Degree</td><td>Select the angle of transition from Begin Color to End Color.
<table>
<tr><th>Angle</th><th>Result</th></tr>
<tr><td>From 0 degree</td><td> 
</td></tr>
<tr><td>From 45 degree</td><td> 
</td></tr>
<tr><td>From 90 degree</td><td> 
</td></tr>
<tr><td>From 180 degree</td><td> 
</td></tr>
</table></td></tr>
<tr><td>Variable Border Color</td><td>Select whether the border color is variable.
If select No, the Begin Color and End Color are fixed.
If select Yes, the Begin Color and End Color dynamically change on the HMI according to the set address.</td></tr>
</table>

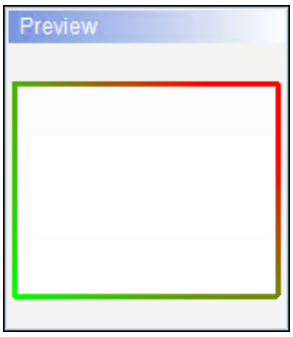
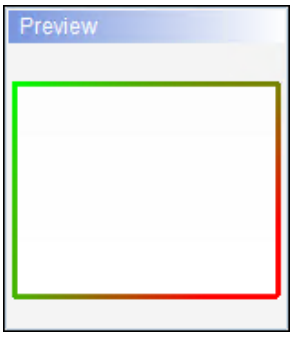
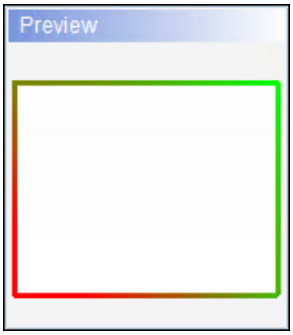
Function	Description
	 The value entered in the address corresponds to the color as shown in the following figure. 

- **Radiation Gradient**

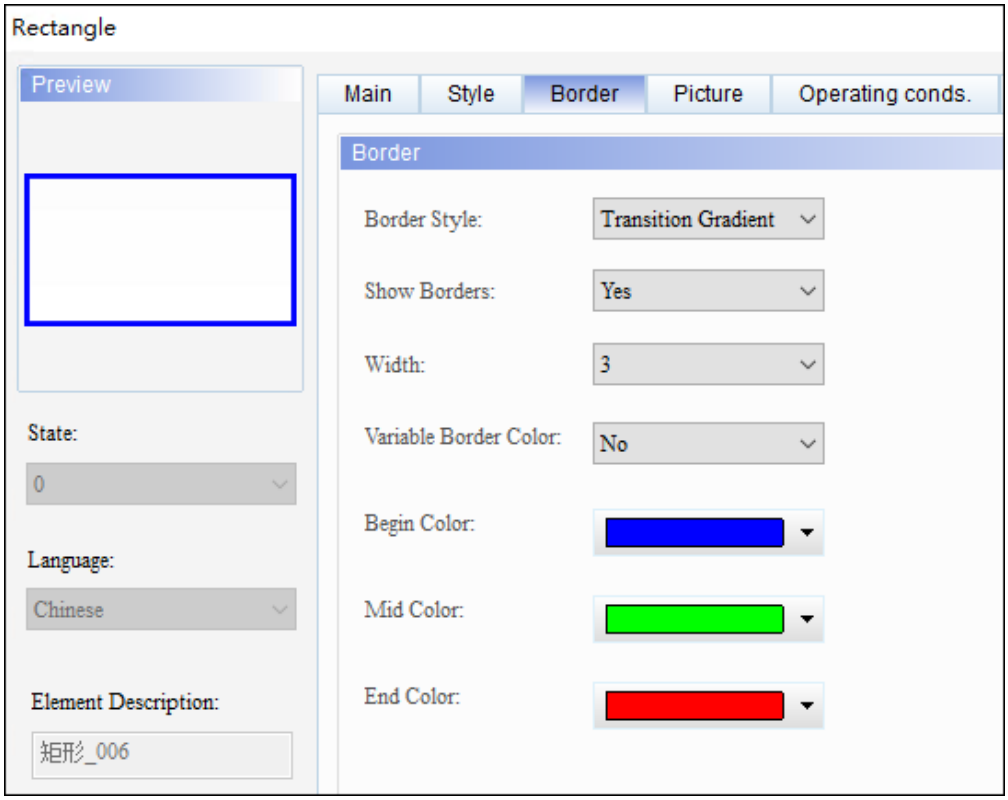


Function	Description
Radiation Gradient	**Begin Color** radiates from the mid point of the gradient to the **End Color**.

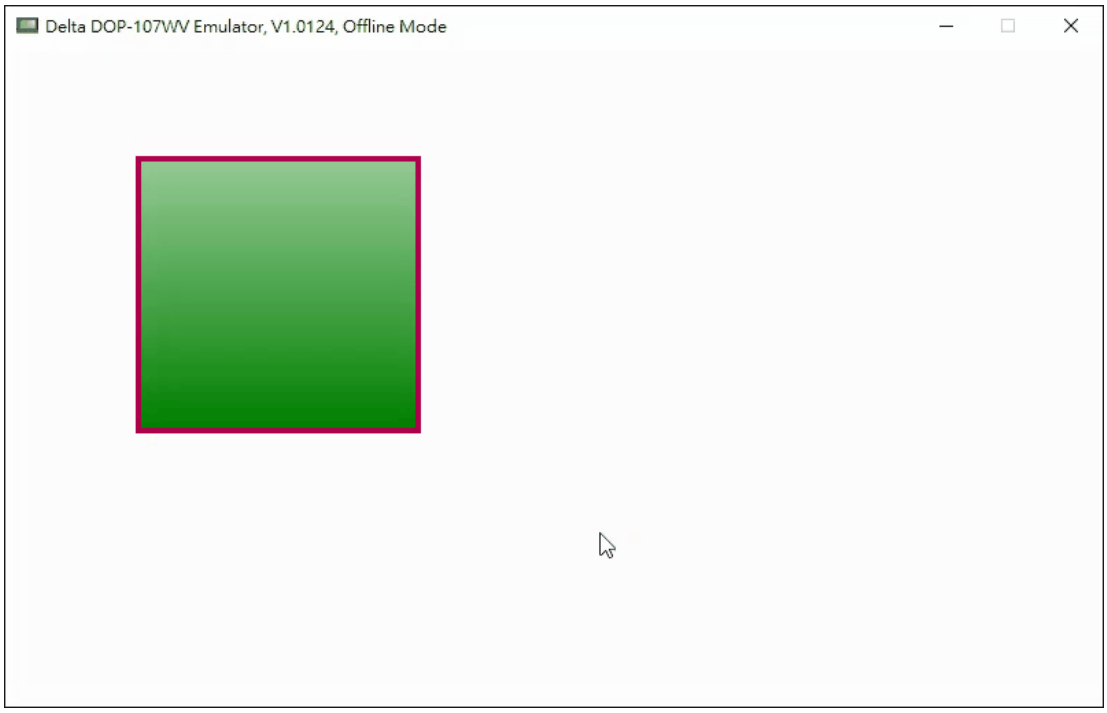
Angle	Result
From Mid point	
From Top-Left cor.	

Function	Description	
	From Top-Right cor.	
	From Bot-Right cor.	
	From Bot-Left cor.	

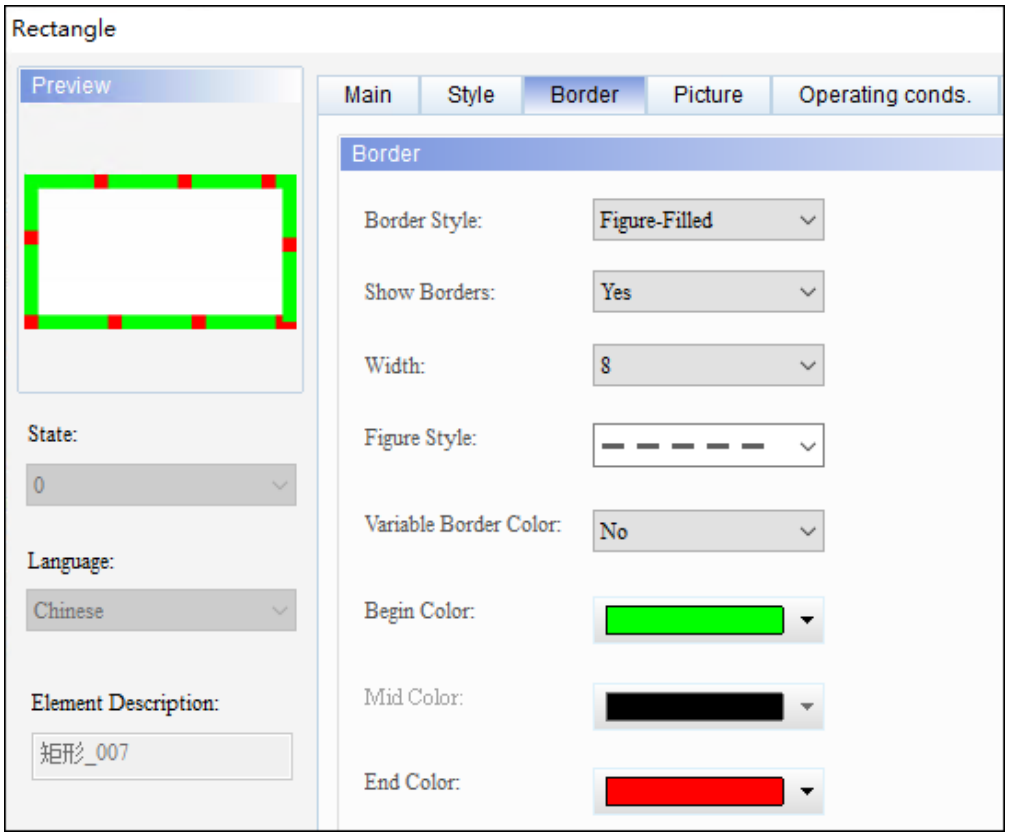
- **Transition Gradient**



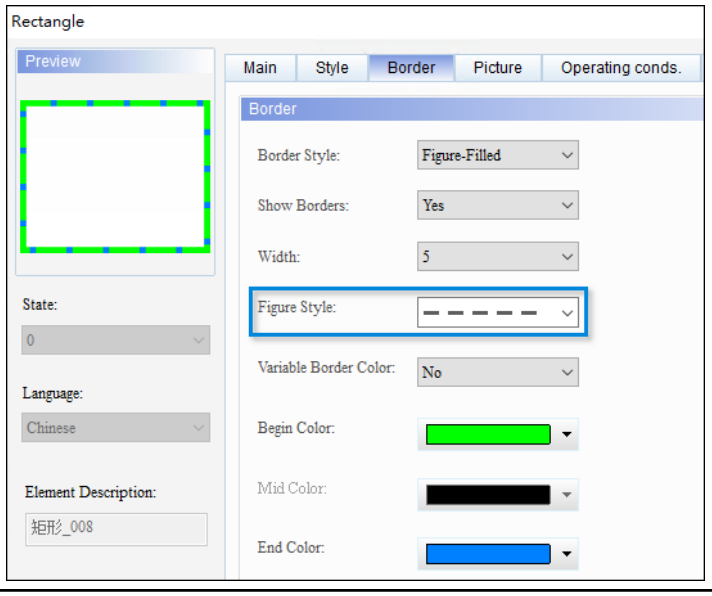
Select **Transition Gradient**, and HMI will dynamically cycle according to **Begin Color**, **Mid Color**, and **End Color**.

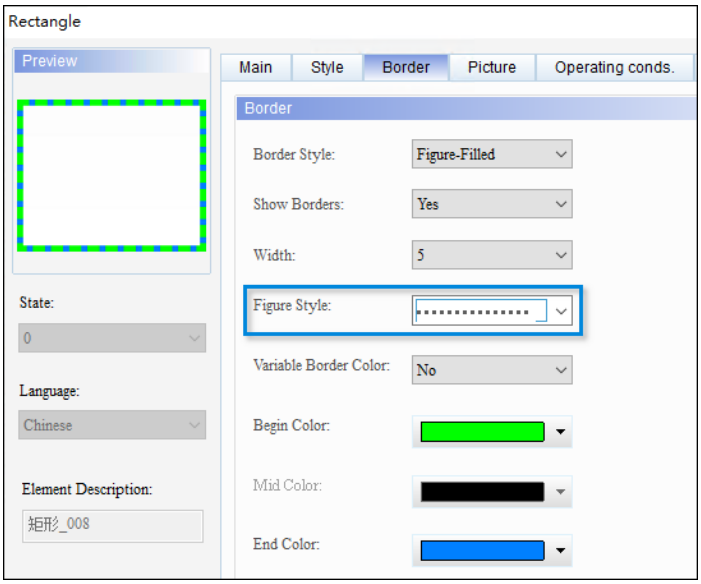
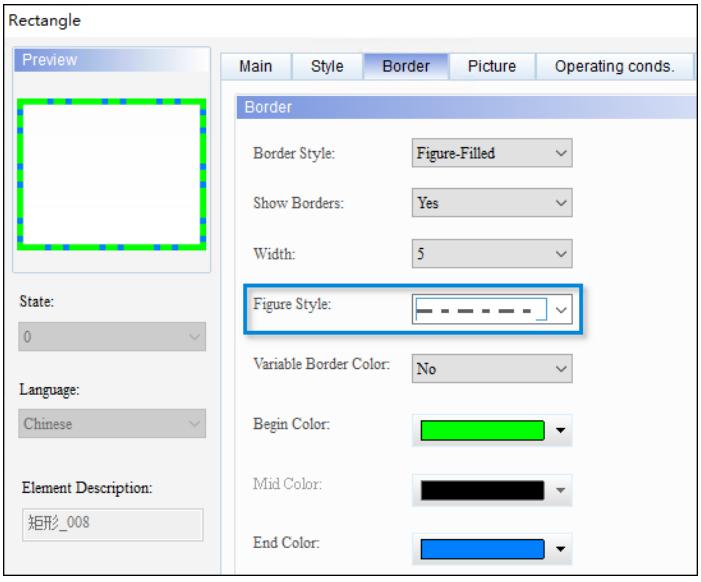
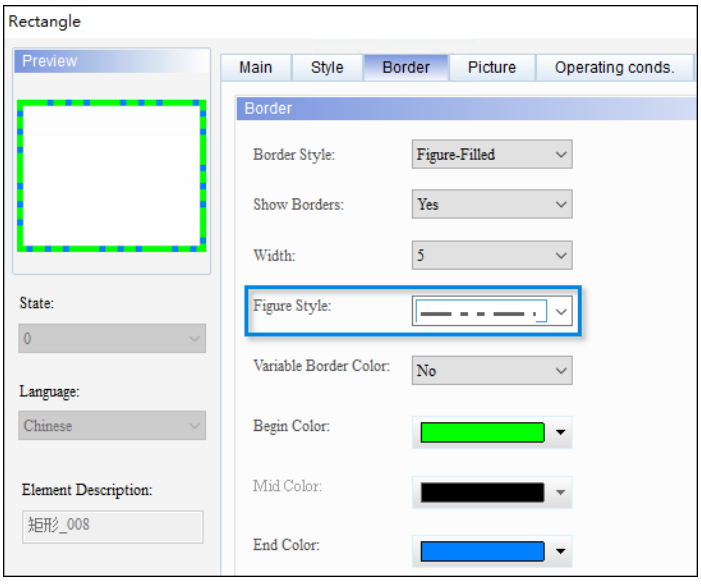


- **Figure-Filled**

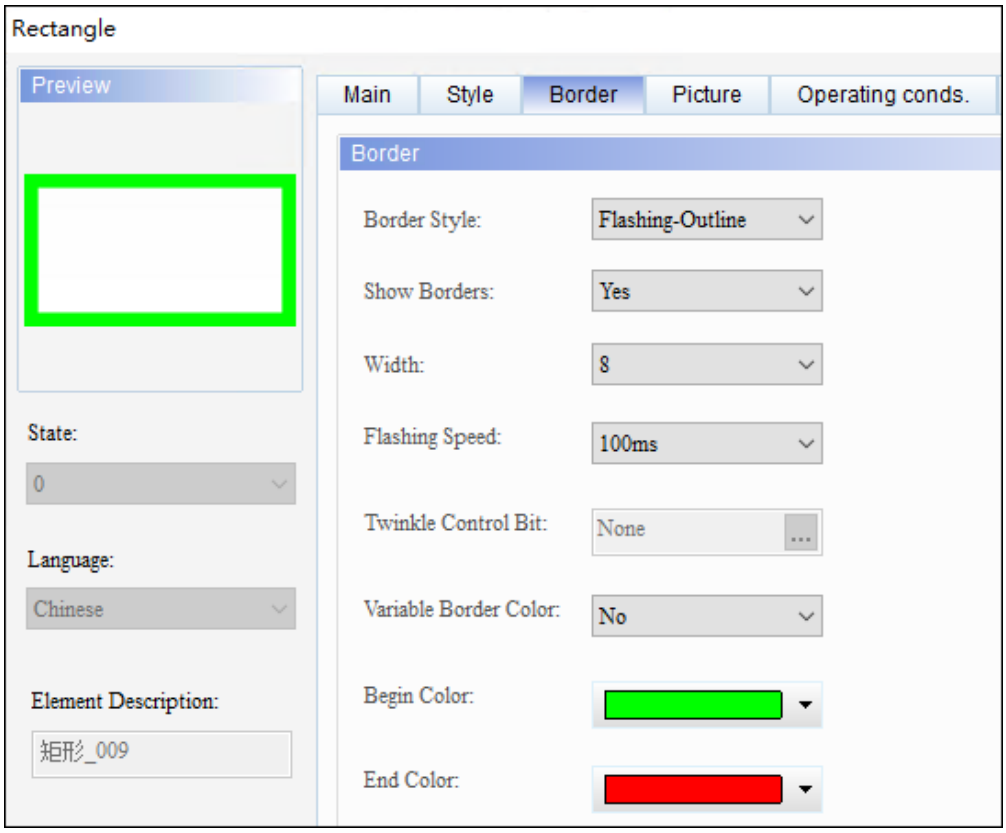


Function	Description
Figure Style	Select **Figure Style**. The dotted line type uses **Begin Color** as the line background color and **End Color** as the dotted line color.

Style	Result
Style 1	

Function	Description
	Style 2 
	Style 3 
	Style 4 

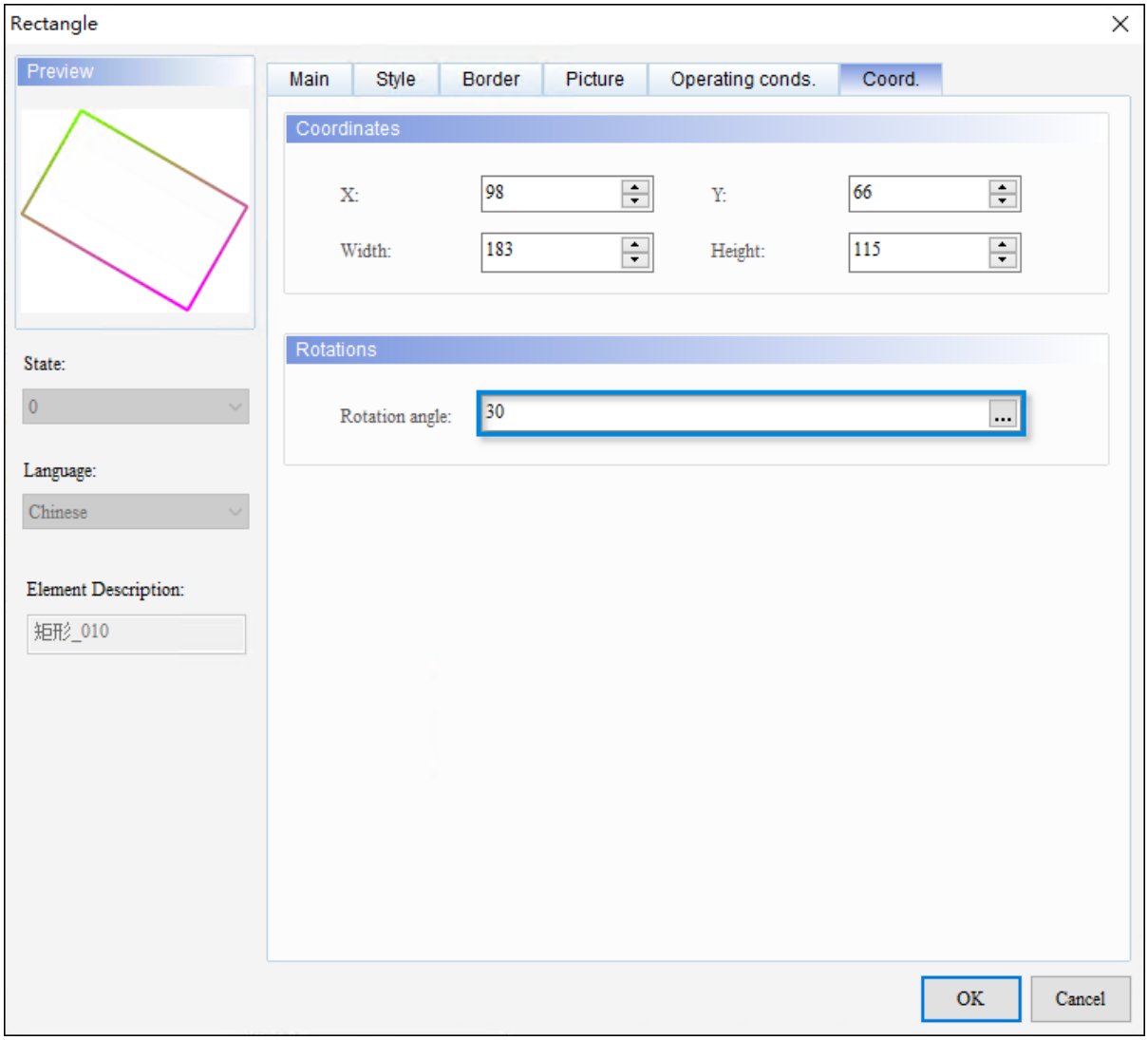
- **Flashing-Outline**



Function	Description
Flashing Speed	Select **Flashing Speed**. **Begin Color** and **End Color** flash alternately according to **Flashing Speed**.
Twinkle Control Bit	Select **Twinkle Control Bit** and set it to $1.1 as an example. When $1.1 is OFF, the border color is **Begin Color**; when $1.1 is ON, the border color is **End Color**. **Note**: This function is only available when the **Flashing Speed** is set to **Custom**.

Coord.

You can set **Rotation angle** as a variable or a constant, which is a value for clockwise rotation.


Rectangle
Preview
State:
0
Language:
Chinese
Element Description:
矩形_010
Main
Style
Border
Picture
Operating conds.
Coord.
Coordinates
X:
98
Y:
66
Width:
183
Height:
115
Rotations
Rotation angle:
30
OK
Cancel

Alarm Setting

You can set the properties to be used by the alarm elements, such as read address, sampling cycle, maximum records, non-volatile data storage, and alarm moving sign, and can also edit the alarm message contents to be displayed. The Bit or Word addresses can also be configured to trigger alarms through the continuous alarm address and non-continuous alarm address functions.

The content of the alarm message also supports dynamic changes. You can add %d1 and %f1 to the alarm message, and then enter the value through the monitoring address function. When the alarm is triggered, the alarm message with the current value can be displayed immediately.

The formula provided by the software calculates all the alarm relevant data edited. Then, the set non-volatile memory (HMI, USB Disk, and SD) saves these calculation results. For data saved in the HMI, the alarm data size is subject to change based on the HMI model, you can see the specifications for non-volatile memory in the HMI installation manual. For data saved in the external storage devices (USB Disk or SD Card), the alarm data size is determined by the external storage devices.

The alarm formulas are applicable to the **Alarm History Table** and **Alarm Frequency Table**. The CSV file size is determined by the message (length) entered, there is no formula for the CSV file.

The following describes the formulas for the **Alarm History Table** and **Alarm Frequency Table**.

1. Alarm History Table

$$\{[6\ Bytes(a)+2\ Bytes(b)]\times \mathrm{N}(c)\}+6\ Bytes(d)=\text{Actual file size}\ Bytes$$

a	Time and Date Data
b	Alarm Data
c	Scan Points
d	Data File Header

2. Alarm Frequency Table

$$2\ Bytes(a) \times N(b) = \text{Actual file size } Bytes$$

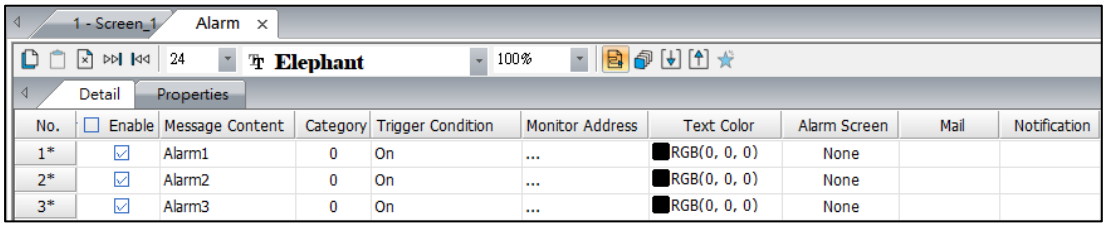
a	Alarm Frequency Data
b	Alarm Records

How to open the **Alarm** setting page?

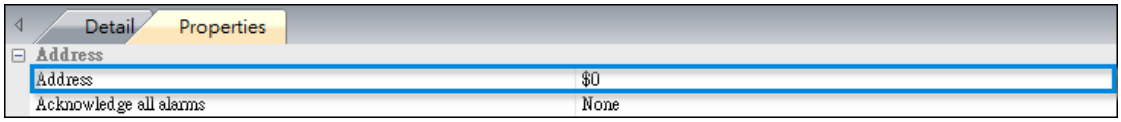
- In the **Project** pane, double click **Alarm**.
- On the toolbar, click **Data Management** > **Alarm Settings**.

Use the following the steps to set an alarm.

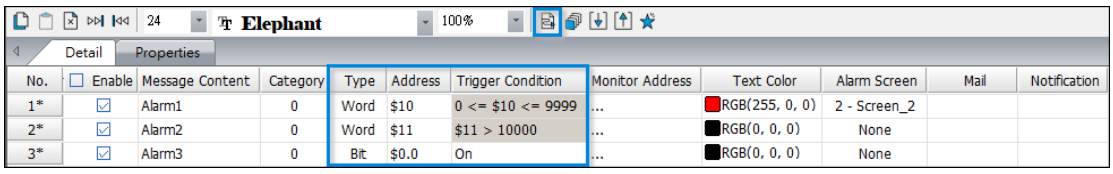
1. Click **Data Management** > **Alarm Settings** on the toolbar.
2. In the **Alarm** setting page, set the alarm for continuous alarm address and non-continuous alarm address.
   - **Continuous Alarm address**: Add 3 alarms.



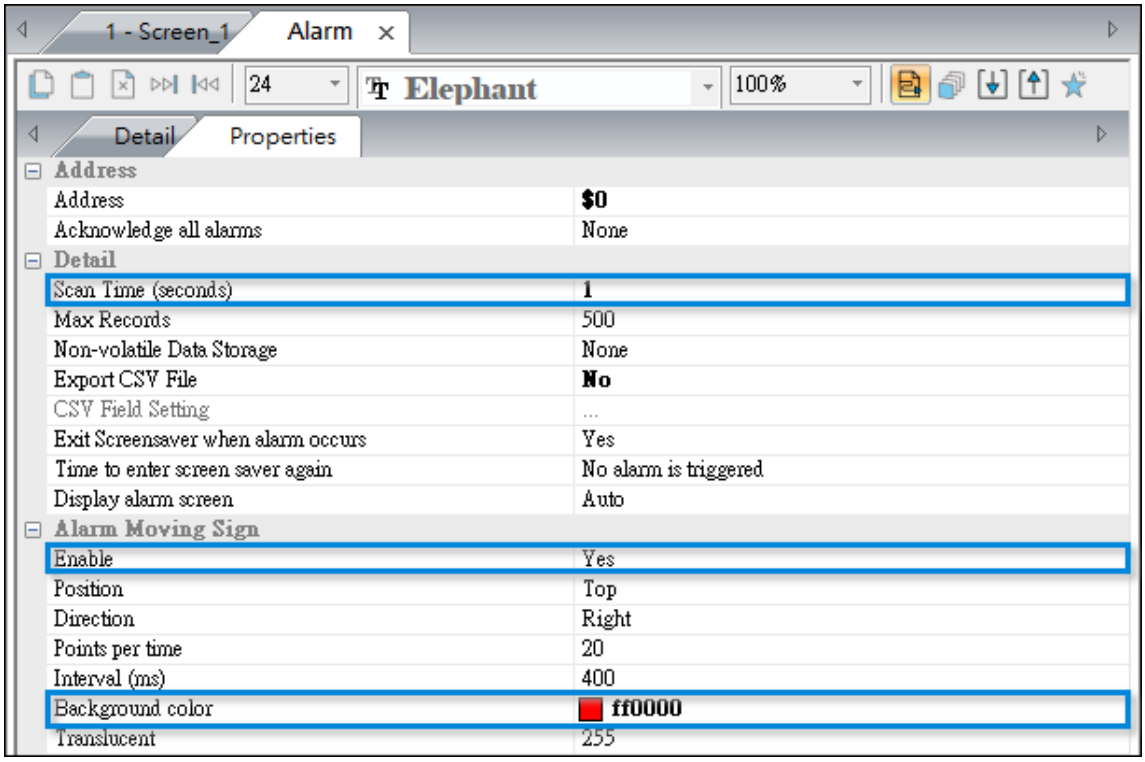
Set the alarm Address in the Properties tab, as shown below.



   - **Non-continuous Alarm address**: Click  on the toolbar and set the **Type**, **Address**, and **Trigger Condition**.

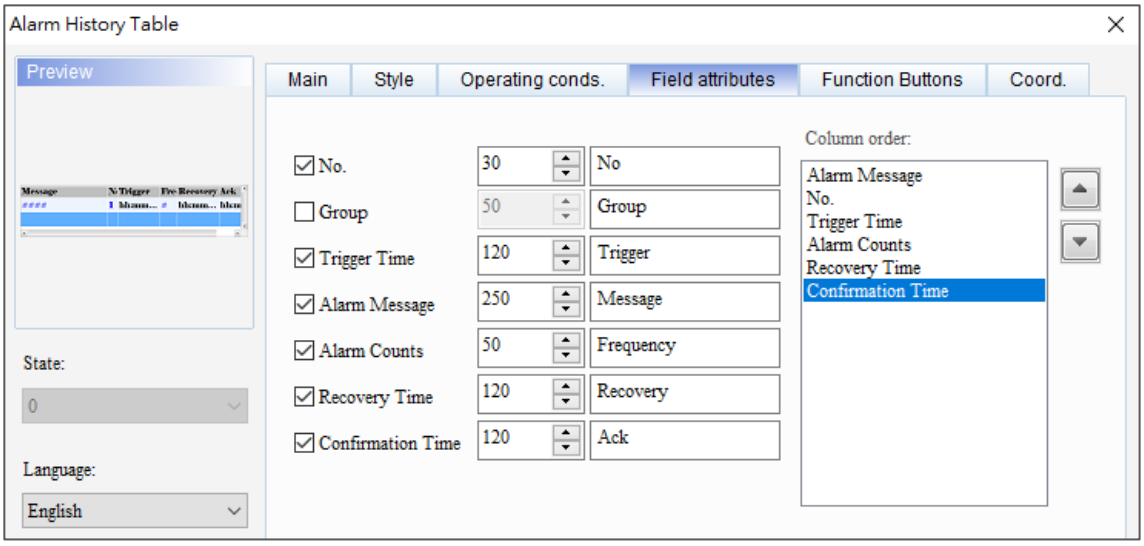


3. In the **Alarm** setting page, set the **Scan Time (seconds)** and **Alarm Moving Sign** in the **Properties** tab.



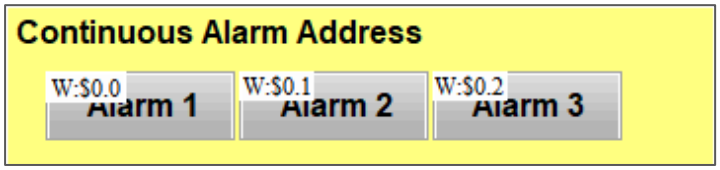
4. Click **Data Management** > **Alarm** on the toolbar and select **Alarm History Table**, and add it to the screen.

5. In the **Alarm History Table** element, select the items to display in the **Field attributes** tab.

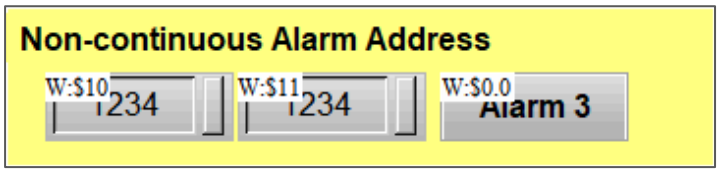


6. Create elements on the screen to trigger alarms.

   - **Continuous Alarm address**: Create 3 **Maintained Button** elements with addresses set to $0.0, $0.1, and $0.2.

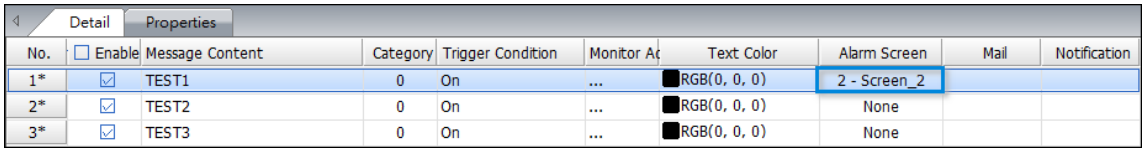


   - **Non-continuous Alarm address**: Create 2 **Numeric Entry** elements to trigger Word type alarms and a **Button** element to trigger Bit type alarms.



7. Click **General** > **New Screen** > **Subscreen** on the toolbar.

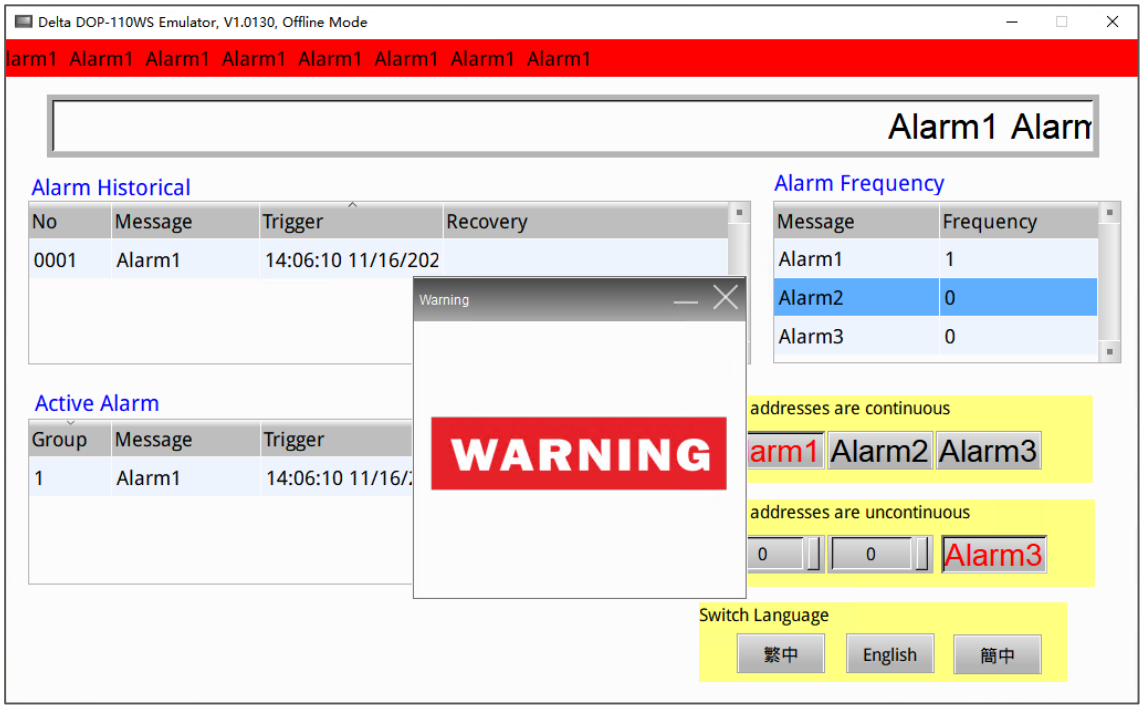
8. In the **Alarm** setting page, set the **Alarm Screen** of the number 1 item to the subscreen you have created.



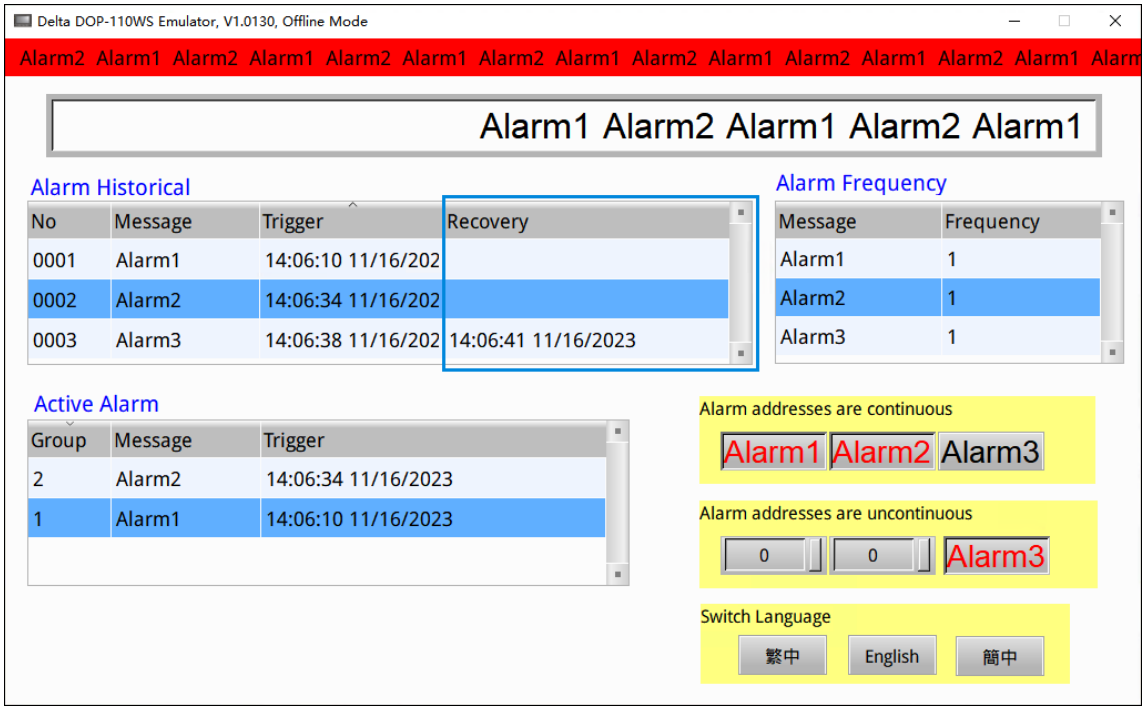
9. Click **Project** > **Compile All** on the toolbar and download the screen to the HMI.

   The following example shows the behavior of continuous alarm address on the HMI.

   Since Alarm 1 has an alarm screen set up, when clicking the button with the address $0.0 will trigger Alarm 1 and pop up an alarm dialog.

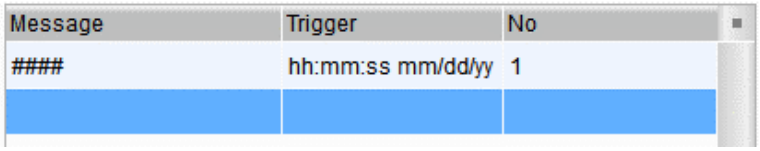
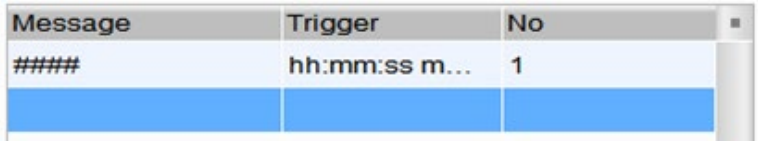
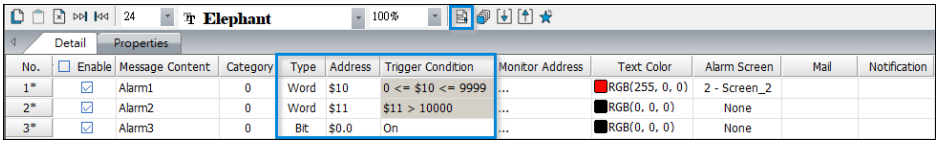


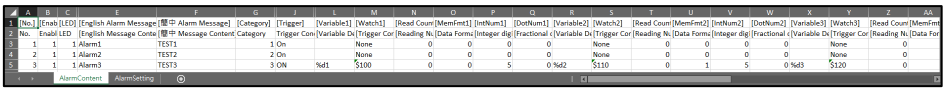
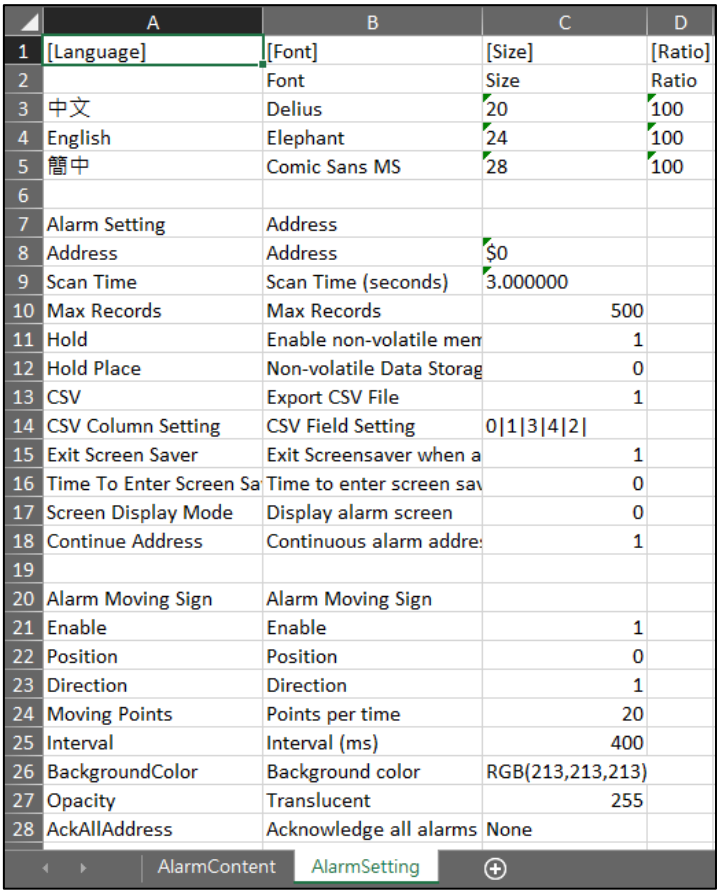
When the alarm is recovered, the **Recovery** field of the **Alarm History Table** displays the recovery time.



Alarm Settings Toolbar

The following table lists the settings on the toolbar in the **Alarm** setting page and their descriptions.

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>  </td><td>Click to copy the selected alarm items.
Support single and multiple copy functions.
Press Ctrl to select the alarm item to copy, and press Shift to select a range of alarm items to copy.</td></tr>
<tr><td>  </td><td>Click to paste the selected alarm items.
Supports single and multiple paste functions.
Note: You must first copy the alarm items.</td></tr>
<tr><td>  </td><td>After selecting the alarm items, click this icon to delete. The settings of the item will return to default settings.</td></tr>
<tr><td>  </td><td>Click to display the next 2048 entries.</td></tr>
<tr><td>  </td><td>Click to display the previous 2048 entries.</td></tr>
<tr><td>Alarm Font Size</td><td>Set the text size for displaying alarm message on the screen.</td></tr>
<tr><td>Alarm Font</td><td>Set the font for displaying alarm message on the screen.</td></tr>
<tr><td>Alarm Font Ratio</td><td>Set the scaling ratio for display alarm message on the screen.
The value range is 33% – 200%, and the default value is 100%.
<table>
<tr><th>Ratio</th><th>Result</th></tr>
<tr><td>100%</td><td> 
</td></tr>
<tr><td>150%</td><td> 
</td></tr>
</table></td></tr>
<tr><td>  </td><td>Click to switch between Continuous Alarm Address and Non-continuous Alarm Address.
Set the alarm address in the Alarm setting page, and the alarm can be triggered using Bit or Word addresses.

</td></tr>
</table>

Setting	Description
	Click to quickly set alarm categories in batches. In the **Alarm Category Settings** dialog, set the **Starting Alarm Number**, **Ending Alarm Number** and **Category ID**, click **Batch Setting**. The alarms and categories from the start number to the end number will be set to the specified numbers. • The category number range is 0 ~ 4095.
	Click to import the alarm data file. Supports .xlsx, .alm, and .ini formats. **Note**: .alm and .ini are alarm configuration files exported by the old software.
	Click to export the edited alarm data file. Supports .xlsx format. The exported .xlsx file contains AlarmContent and AlarmSetting. You can edit the contents of each field and alarm properties of the alarm in the alarm data file.  
	Click to optimize the reading of non-continuous alarm addresses and speed up the alarm reading and writing.

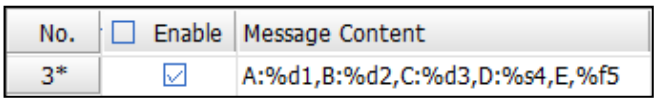
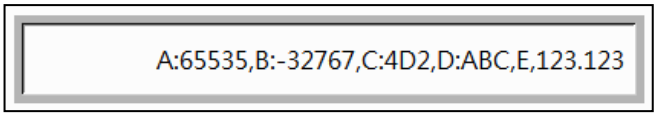
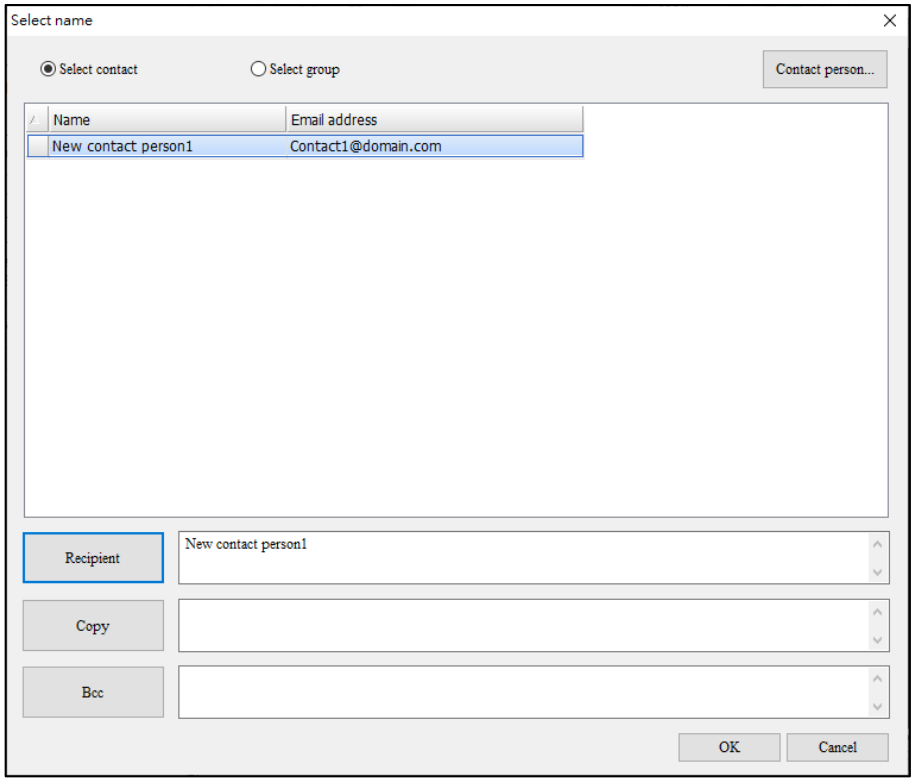
	A	B	C	D
1	[Language]	[Font]	[Size]	[Ratio]
2		Font	Size	Ratio
3	中文	Delius	20	100
4	English	Elephant	24	100
5	簡中	Comic Sans MS	28	100
6				
7	Alarm Setting	Address		
8	Address	Address	$0	
9	Scan Time	Scan Time (seconds)	3.000000	
10	Max Records	Max Records	500	
11	Hold	Enable non-volatile mem	1	
12	Hold Place	Non-volatile Data Storag	0	
13	CSV	Export CSV File	1	
14	CSV Column Setting	CSV Field Setting	0|1|3|4|2|	
15	Exit Screen Saver	Exit Screensaver when a	1	
16	Time To Enter Screen Sa	Time to enter screen sav	0	
17	Screen Display Mode	Display alarm screen	0	
18	Continue Address	Continuous alarm addre	1	
19				
20	Alarm Moving Sign	Alarm Moving Sign		
21	Enable	Enable	1	
22	Position	Position	0	
23	Direction	Direction	1	
24	Moving Points	Points per time	20	
25	Interval	Interval (ms)	400	
26	BackgroundColor	Background color	RGB(213,213,213)	
27	Opacity	Translucent	255	
28	AckAllAddress	Acknowledge all alarms	None	

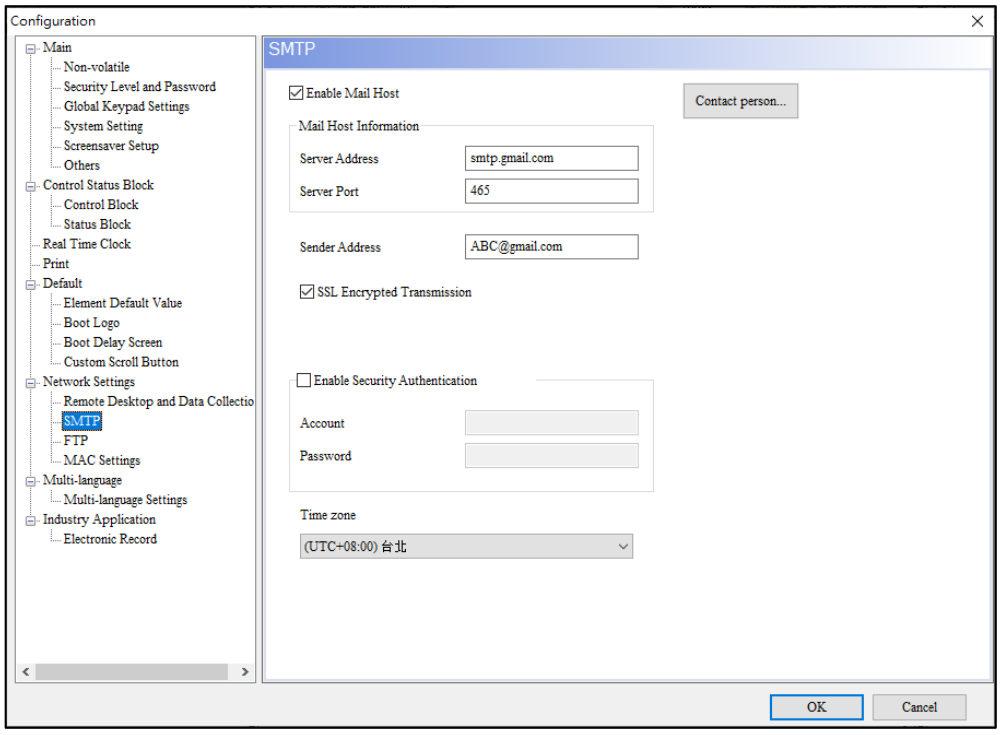
AlarmContent AlarmSetting

Alarm Message Settings

The following table lists the setting in the **Detail** tab in the **Alarm** setting page.

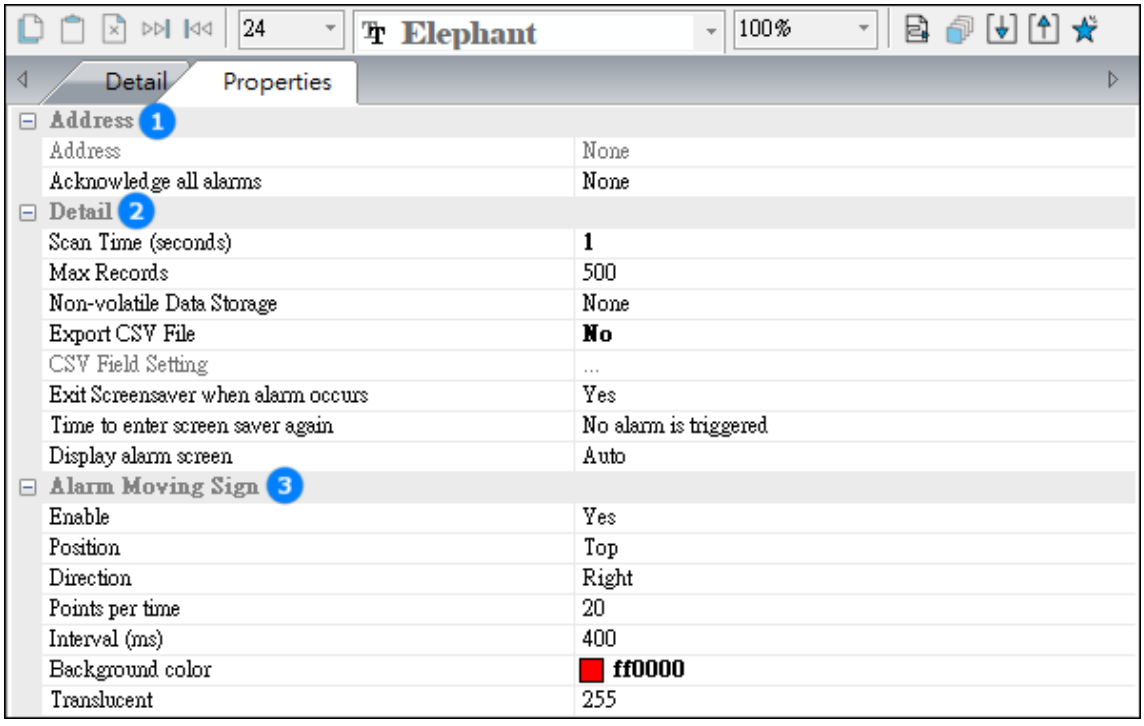
Setting	Description
No.	The number of alarm messages, and supports up to 20480 alarms.
Enable	Enable / disable the alarm. • If selected, run according to the set alarm rules after downloading. When you change any alarm setting field, the alarm is automatically enabled. • If not selected, the alarm content will not be checked when compiling the rule, and the alarm rule will not be executed when downloading to the HMI.
Message Content	Set the content of the alarm message to be displayed. • If you want to dynamically display message content, you can use it with the **Monitor Address** field. • If you want to set the message content displayed in different languages, you can go to **Project** pane > **Multi-language** to add a new language, and then go to **General** > **Language** drop-down menu to swtich.
Category	Set the category of the alarm number. On the toolbar, click  to quickly set the category numbers. After the setting is complete, you can set the display order in the alarm elements or display the alarm category according to the set range. The value range is 0–4095.
Type	Set the trigger type of the alarm as Word or Bit. **Note**: You must switch the alarm address to non-continuous.
Address	Set the trigger address of the alarm. **Note**: You must switch the alarm address to non-continuous.
Trigger Condition	• **Continuous Alarm Address**: Set the **Trigger Condition** as On or Off. ○ Select **On** to trigger an alarm when the Bit is On. ○ Select **Off** to trigger an alarm when the Bit is Off. • **Non-continuous Alarm Address**: Establish the Trigger conditions according to the set trigger type. ○ Select **Bit** for **Trigger Type**, the **Trigger Condition** can be configured as On or Off. ○ Select **Word** for **Trigger Type**, you can configure the trigger condition range in the **Trigger Condition** field.

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Monitor Address</td><td>Configure the settings for dynamic display of alarm message. The alarm message can display the current value of the monitor address.
The supported formats include %d (positive integer), %f (floating-point number), and %s (Alphanumeric). Besides, one alarm can set up to 8 monitoring addresses.
Enter the alarm message to be displayed in the Message Content field, and add the set Monitor Address such as %dx or %fx where x indicates 1~8.
<table>
<tr><td>Alarm message setting</td><td> 
</td></tr>
<tr><td>Result</td><td> 
</td></tr>
</table></td></tr>
<tr><td>Text Color</td><td>Set the text color of the alarm message displayed by the alarm element or the alarm moving sign when the alarm is triggered.</td></tr>
<tr><td>Alarm Screen</td><td>Set whether to show the specified alarm screen when the alarm is triggered. The default value is None.</td></tr>
<tr><td>Mail</td><td>Set the mail information. When an alarm occurs, the Mail function sends an e-mail to relevant recipients.
Click Recipient, Copy or Bcc in the Select Name dialog and select Select contact to select the recipient's email address in the contact list.
 
</td></tr>
</table>

Setting	Description
	Note: E-mail sending requires SMTP settings. Go to General > Configuration > SMTP to configure the mail address. 

Alarm Property Settings

The following table lists the settings in the **Properties** tab in the **Alarm** setting page.



1 Address

Setting	Description
Address	Set the Internal Memory or the controller register address to read addresses. Note: Address field is available only the alarm address is switched to continuous.
Acknowledge all alarms	Set the Internal Memory address to acknowledge all alarms. When the alarm is triggered, the **Alarm History Table** will record the alarm acknowledge time.

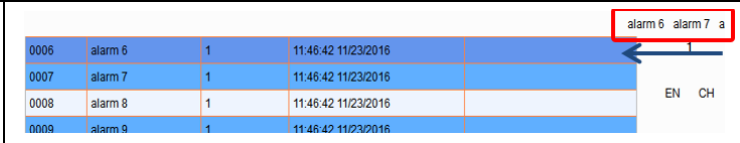
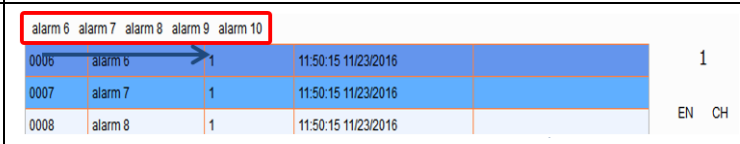
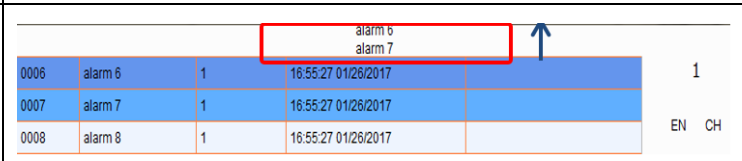
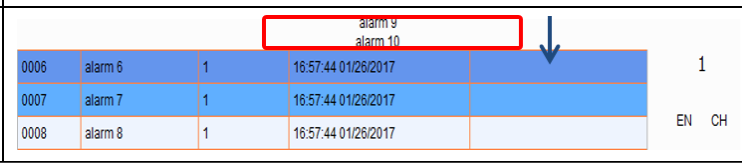
2 Detail

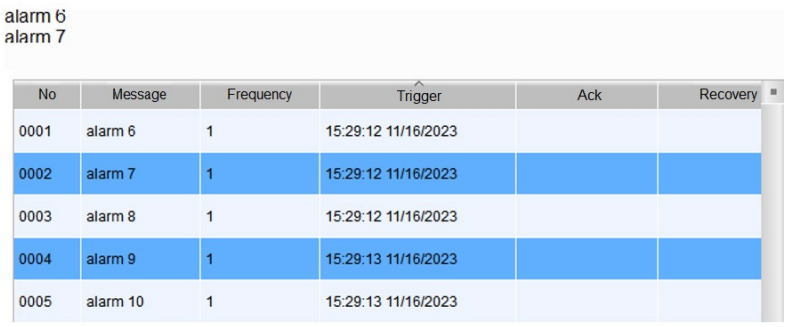
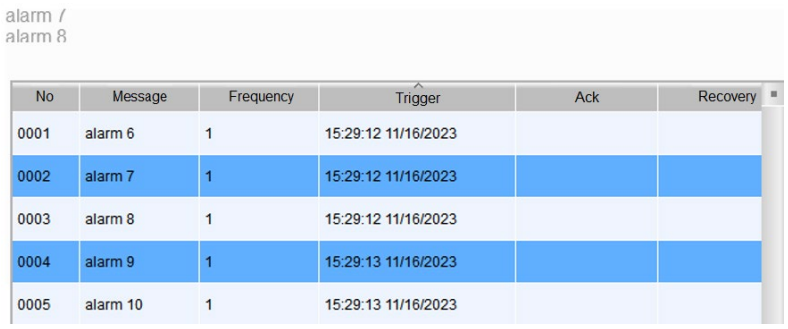
Setting	Description
Scan Time (seconds)	Set the time when the alarm is updated. The value range is 0.5–10, and the default value is 3.
Max Records	Set the max records for scan point. When the recorded scan point reaches the maximum, the record starts from 1 and overwrites the previous data. The value range is 1–9,999, and the default value is 500.
Non-volatile Data Storage	Set the storage location when the power is off. The storage location varies depending on the HMI model, including None, HMI, USB Disk, USB Disk 2, and SD. • If select **HMI**, when the HMI is powered off, the data is saved in the HMI SRAM. • If Export CSV File is set to **Yes**, set Non-volatile Data Storage to **USB Disk** or **SD**.
Export CSV File	Set as **Yes** to save the alarm data as CSV files in the external storage devices (USB Disk or SD Card).
CSV Field Setting	Select the column items for the exported CSV file, and you can adjust the column order. Use the **Print Output** button element to print the historical alarm content into a CSV file according to the CSV Field Setting and store it in the external storage devices. **Note**: This setting is available only the **Export CSV File** is set to **Yes**.
Exit Screensaver when alarm occurs / Time to enter screen saver	• These functions are used with the screen saver. • Set Exit Screensaver when alarm occurs to **Yes**: When an alarm occurs, the screensaver screen will stop immediately. if the screensaver screen is not set, the HMI will not enter backlight mode.

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>again</td><td>The following table lists the timing to enter the screensaver screen again.
<table>
<tr><th>Timing</th><th>Description</th></tr>
<tr><td>No alarm is triggered on the HMI</td><td>As long as no alarm is triggered, the HMI can enter the screensaver mode.</td></tr>
<tr><td>No alarm is triggered during the screen saver waiting time</td><td>• As long as no alarm is triggered during the screen saver waiting time, the HMI can enter the screensaver mode.
• The screen saver waiting time can be set in Configuration > Screensaver Setup.</td></tr>
</table>
• Set Exit Screensaver when alarm occurs to No: The HMI exits the screen saver when the alarm is triggered for the first time. After that, whether the alarm is cleared or not, the HMI enters the screensaver mode according to the set time.
• Screensaver screen creation: Create a normal screen and go to General > Screensaver Setup. In the Screensaver Setup dialog, drag the screen from All Screens to Screensaver Screen.</td></tr>
<tr><td>Display alarm screen</td><td>Set to display the alarm screen automatically or manually.
• Set to Auto: The HMI displays the alarm screen as soon as the alarm with a set alarm screen is triggered.
• Set to Manual: It must be controlled with the Alarm History Table element. The triggering methods are as follows:
○ In the element property dialog, set Action Control Addr. in the Operating conds. tab. When the value is set to 2, the alarm screen displays.
○ In the element property dialog, select the Trigger alarm screen checkbox in the Function Buttons tab to display the alarm screen.</td></tr>
</table>

③ Alarm Moving Sign

Setting	Description
Enable	Set whether to display the alarm moving sign. The default is No. • Set to **Yes**: When the alarm is triggered, no matter which page you operate on the HMI, an alarm moving sign shows at the specified position on the screen. • Set to **No**: When the alarm is triggered, alarm messages are not displayed.

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Position</td><td>Set the display position. The default is Top.
Set to Top: When the alarm is triggered, the alarm message is displayed at the top of the HMI screen.
Set to Bottom: When the alarm is triggered, the alarm message is displayed at the bottom of the HMI screen.</td></tr>
<tr><td>Direction</td><td>
<table>
<tr><th>Direction</th><th>Result</th></tr>
<tr><td>Left</td><td> 
</td></tr>
<tr><td>Right</td><td> 
</td></tr>
<tr><td>Up</td><td> 
</td></tr>
<tr><td>Down</td><td> 
</td></tr>
</table>
</td></tr>
<tr><td>Points per time</td><td>Set the points per time. The greater the number, the greater the distance each time the text moves. The value range is 1–50 (pixel).</td></tr>
<tr><td>Interval (ms)</td><td>Set how often the alarm moving sign moves. The value range is 1–50.
Note: The moving distance is determined by the setting of Points per time.</td></tr>
<tr><td>Background color</td><td>Set the background color of the alarm moving sign.</td></tr>
</table>

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Translucent</td><td>Set the transparency level of the alarm moving sign. The value range is 0–255, and the default value is 255.
<table>
<tr><th>Value</th><th>Result</th></tr>
<tr><td>255</td><td> 
</td></tr>
<tr><td>100</td><td> 
</td></tr>
</table></td></tr>
</table>

Alarm Element

You can create alarm element to display alarm status. Alarm elements including Alarm History Table, Active Alarm List, Alarm Frequency Table,Alarm Moving Sign, and Gantt Chart. This section introduces the properties of each alarm element.

Common Properties

- **Main – Enable group number filtering**

  You can select the group number for **Category** in the **Detail** in the alarm setting page.

  In the alarm element property dialog, select the **Enable group number filtering** checkbox in the **Main** tab. On the HMI, the element will display the alarm group according to the specified number. The value of the group number can be a variable or constant.

  Note: When **the Group** is 0, all alarms are displayed.

- **Operating conds. – Filter**

  In the alarm element property dialog, you can use the filter function to configure the items displayed on the alarm element in the **Operating conds.** tab.

  The following table lists the settings in the **Filter** area in the Operating conds. tab and their descriptions.

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Filter control address</td><td>Set the filter control address to filter the specified items.
<table>
<tr><th>Value</th><th>Action description</th></tr>
<tr><td>0</td><td>Default status, displays all triggered alarms.</td></tr>
<tr><td>1</td><td>Hides the alarms with both Recovery Time and Acknowledge Time.</td></tr>
<tr><td>2</td><td>Hides the alarms with Recovery Time.</td></tr>
<tr><td>3</td><td>Hides the alarms with Recovery Time or Acknowledgement Time.</td></tr>
<tr><td>4</td><td>Hides the alarms with Acknowledgement Time.</td></tr>
<tr><td>5</td><td>• This setting must be used with Alarm counter display.
• The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.</td></tr>
<tr><td>6</td><td>• This setting must be used with Alarm category start addr. and Alarm category end addr.
• When the alarm category number is not within the range set by Alarm category start addr. and Alarm category end addr., the alarm is hidden.</td></tr>
</table></td></tr>
<tr><td>Alarm counter display</td><td>• This setting is applicable to the Alarm History Table element and the must be used with Filter control address.
• When Filter control address is set to 5, enter the value of the alarm count.
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>Alarm element has alarms with alarm counts 1, 2, and 3 times</td><td>• Set to 1 for Alarm counter display, the Alarm History Table element displays the alarms with 1 or more alarm counts.
• Set to 2 for Alarm counter display, the Alarm History Table element displays the alarms with 2 or more alarm counts.
• Set to 3 for Alarm counter display, the Alarm History Table element displays the alarms with 3 or more alarm counts.</td></tr>
</table></td></tr>
</table>

<table>
<tr>
<td>Alarm category start addr./ Alarm category end addr.</td>
<td>

This setting must be used with Filter control address.
When Filter control address is set to 6, enter the alarm category number.

<table>
<tr><th>Example</th><th>Description</th></tr>
<tr>
<td>Alarm element has alarms with alarm category numbers 1 and 5</td>
<td>

Set to 1 for Alarm category start addr. and 3 for Alarm category end addr., only the alarms with alarm category number 1 are displayed on the alarm element.
Set to 1 for Alarm category start addr. and 5 for Alarm category end addr., the alarms with alarm category numbers 1 and 5 are displayed on the alarm element.

</td>
</tr>
</table>
</td>
</tr>
</table>

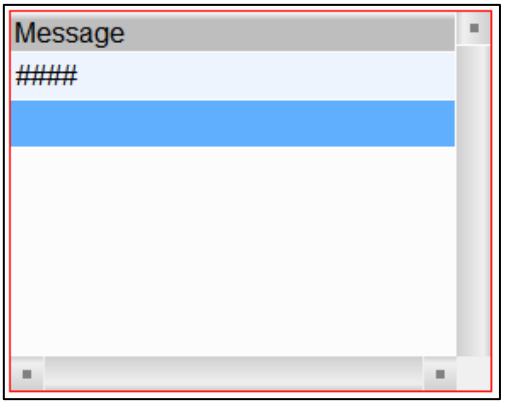
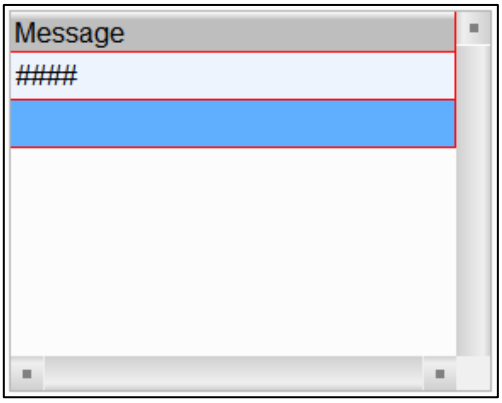
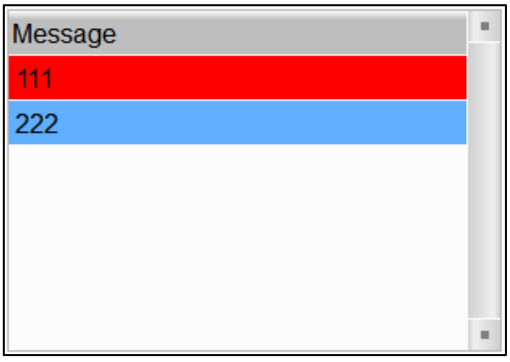
- **Operating conds. – Control**

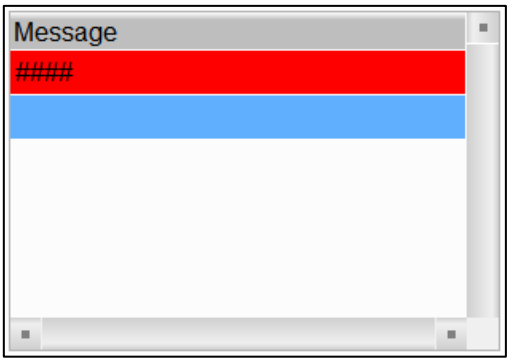
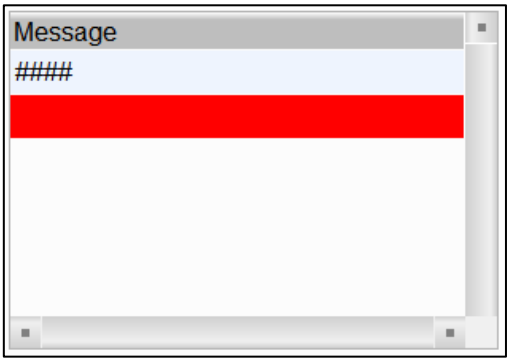
  In the alarm element property dialog, you can set the scroll control address in the **Operating conds**. tab and switch the alarm table display page on the HMI through the memory address. The scroll control supports 16-bit Unsigned, 16-bit signed, 32-bit Unsigned, and 32-bit signed data formats.

- **Style**

  The display style of Alarm elements on the HMI can be set.

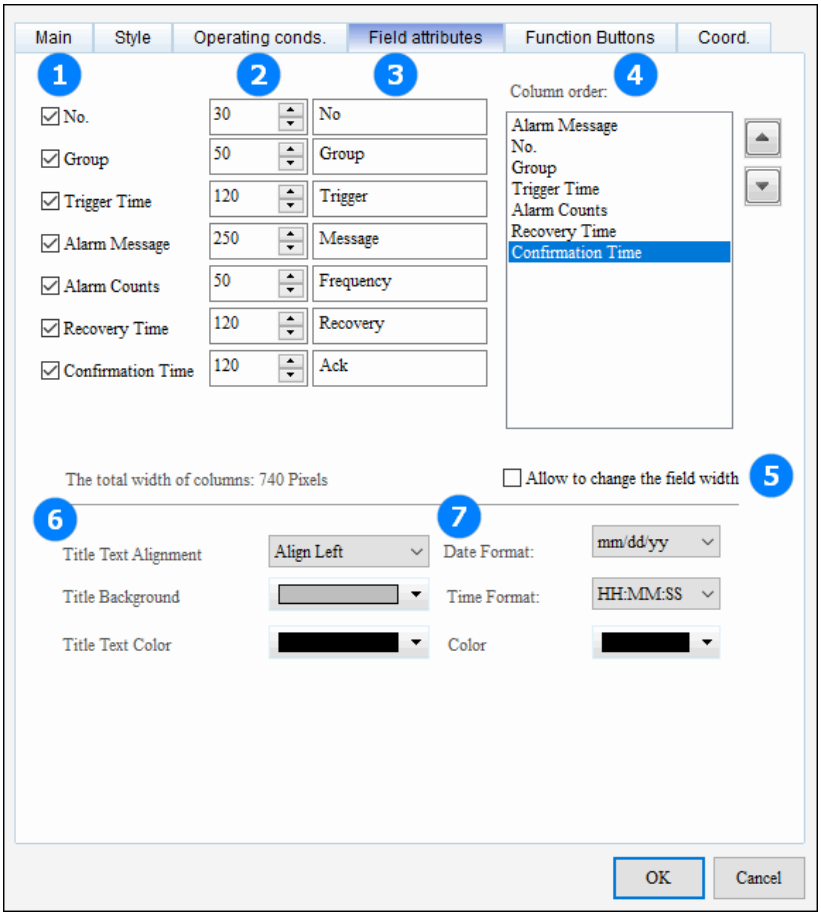
Setting	Description
Background Color	Set the background color of the element. The default is white. When set to red, it displays as follows. 

Setting	Description
Border Color	Set the border color of the element. The default is gray. When set to red, it displays as follows. 
Gridline Color / Show Gridlines	Set the gridline color of the element. The default is white. When set to red, it displays as follows. **Note**: The **Gridline Color** setting is valid only when you select **Yes** for **Show Gridlines**. 
Select Row Color	Set the color of the selected row of data when operating the element on the HMI. The default is blue. When set to red, it displays as follows. 

Setting	Description
Row Color	Set the color to display for each row of the alarm. The default is light blue. When set to red, it displays as follows. 
Alternating Row Color	Set the color for the alternating row of the alarm. The default is blue. When set to red, it displays as follows. 
Transparency	Set the transparency of the element. The range value is 50–255, and the default value is 255. The smaller the value, the more transparent the element is.

- **Field attributes**

  In the alarm element property dialog, set the field items to be displayed in the alarm table in the **Field attributes** tab.



Legend	Setting	Description	
1	Column display	Select the columns to be displayed in the element.	
2	Column width	Select or enter the width for each column.	
3	Column title	Enter the titles for each column.	
4	Column order	After selecting the columns to be displayed, click ▲ ▼ to adjust the column displaying order.	
5	Allow to change the field width	Select to drag the field on the HMI to change the displaying width.	
6	Title bar	Title Text Alignment	Select the title bar text as left, center or right.
		Title Background	Select the background color of the title bar.
		Title Text Color	Set the text color of the title bar.
7	Date and time	Date Format	Set the display date format.
		Time Format	Select the display time format.
		Color	Select the display color of date and time. The default is black.

- **Function Buttons**

  You can add function buttons in the **Function Buttons** tab of the alarm element properties dialog to control the display of the alarm table.

Setting	Description
Function Description	Select to add function buttons.
Default Description	Set the description of the function button. Click **Set As Default Description** to insert the default strings to the input fields. You can switch between the different languages to define the default text.
Default Button Width	Set the width of the function buttons. The value range is 25–100, and the default value is 60. After adjusting the width, right-click the element on the screen and select **Rearrange Function Buttons**, all function buttons display according to the settings.
Default Button Height	Set the width of the function buttons. The value range is 25–100, and the default value is 40. After adjusting the height, right-click the element on the screen and select **Rearrange Function Buttons**, all function buttons display according to the settings.

Alarm History Table Properties

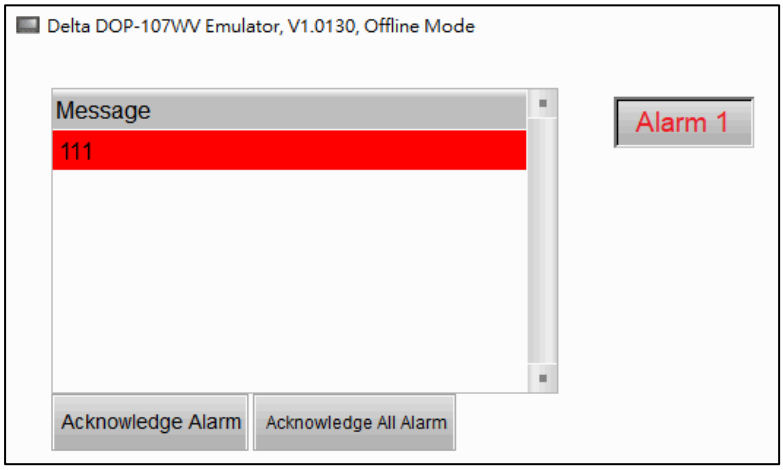
- **Style**

  You can set **Trigger Column Color**, **Confirm Column Color**, and **Recovery Column Color** after selecting **Color Mode** as **Alarm Status**. When an alarm is triggered on the HMI, colors display according to different statuses.

  Example Setting

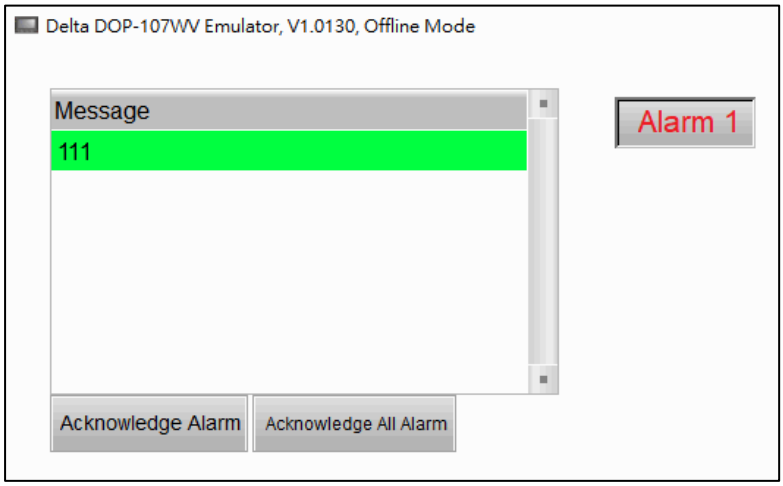
  1. Select the **Color Mode**.
  2. Trigger an alarm on the HMI.

     The trigger column is displayed in red.

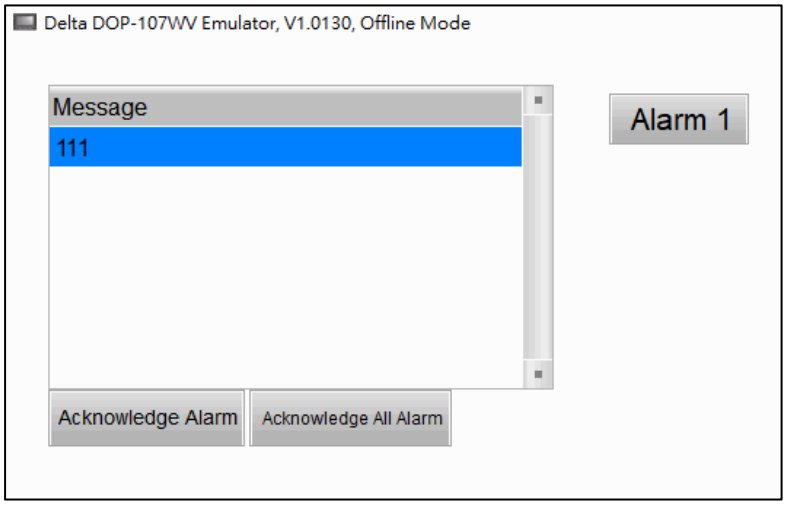


3. Click the **Acknowledge Alarm** or **Acknowledge All Alarm** button on the Alarm History Table.

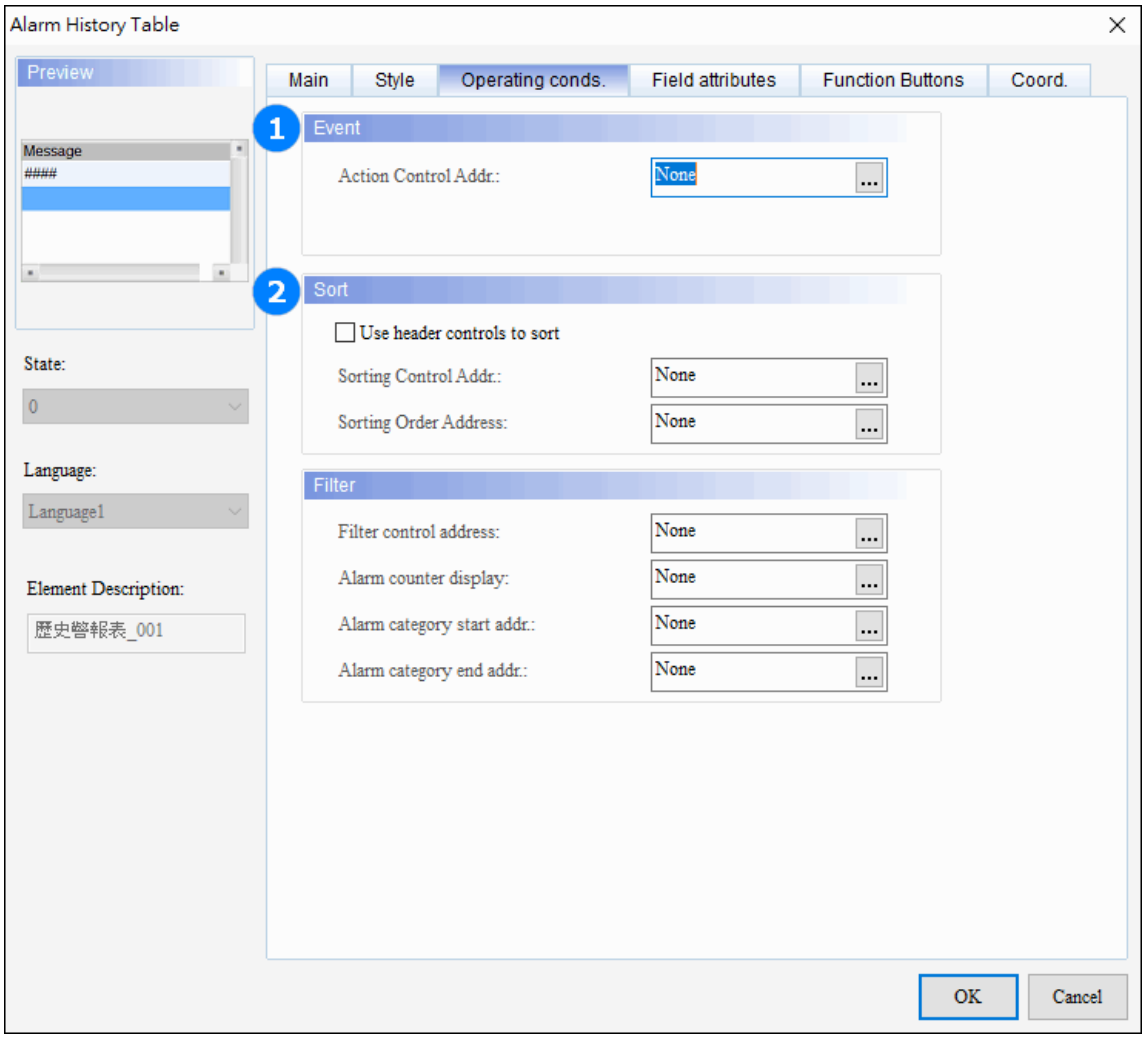
   The confirm column is displayed in green.



When an alarm is recovered, the recovery column is displayed in blue.



- **Operating conds.**



1 Event

Setting	Description
Action Control Addr.	Set the action control address to change screens or acknowledge the alarms for specified alarms.

Value	Description
0	Default status, no action.
1	Acknowledge for selected alarms in the **Alarm History Table element**.
2	If the selected alarm in the **Alarm History Table element** has a set alarm screen which is set to display manually, the alarm screen displays when the value is 2.

❷ Sort

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Use header controls to sort</td><td>If selected, click the header of the Alarm History Table element to sort the alarms in ascending or descending order. The Sorting Control Addr. and Sorting Order Address settings are not available.
Note: The sorting of the Message column is not supported.</td></tr>
<tr><td>Sorting Control Addr.</td><td>Set Sort Control Addr. for the specified item.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Default status, no action.</td></tr>
<tr><td>1</td><td>Sort by Trigger Time.</td></tr>
<tr><td>2</td><td>Sort by Acknowledge Time.</td></tr>
<tr><td>3</td><td>Sort by Recovery Time.</td></tr>
<tr><td>4</td><td>Sort by alarm count.</td></tr>
<tr><td>5</td><td>Sort by alarm category.</td></tr>
</table></td></tr>
<tr><td>Sorting Order Address</td><td>Set the sorting order address with the Sorting Control Addr. value to determine the ascending or descending order. For example, if the Sorting Control Addr. is set to 1 and the Sorting Order Address is set to 0, the Trigger Time is sorted in ascending order.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Sort in ascending order.</td></tr>
<tr><td>1</td><td>Sort in descending order.</td></tr>
</table></td></tr>
</table>

Active Alarm List / Alarm Frequency Table Properties

- **Operating conds.**

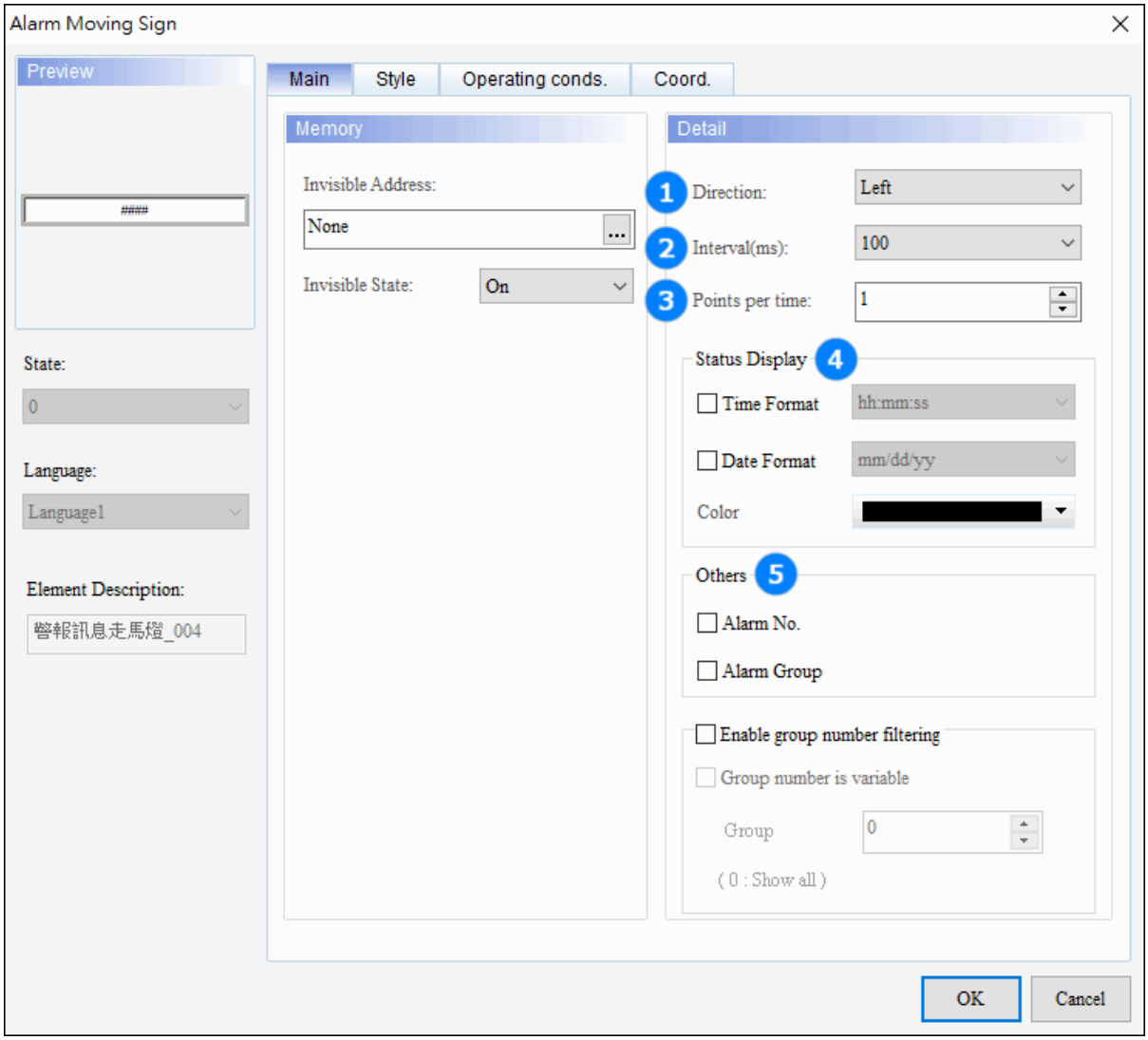
  Select the fields you want to display in the **Field attributes** tab, and then select **Use header controls to sort** checkbox in the **Operating conds.** tab, the **Default sort field** can be selected.

Alarm Moving Sign Properties

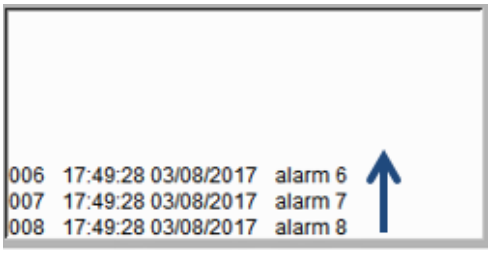
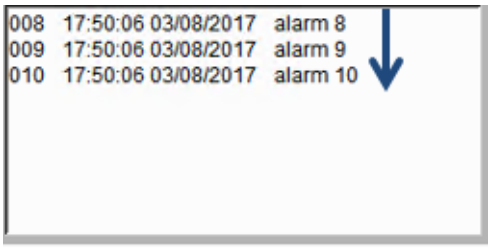
The **Alarm Moving Sign** element records the alarm number, time and date when an alarm is triggered. You can also set the time interval and moving distance according to your needs.

In the **Main** tab, you can set the content of the Alarm Moving Sign.

The following table lists the properties in the **Main** tab in the **Alarm Moving Sign** element and their descriptions.



1 Direction

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Direction</td><td>Select the display direction. The default value is Left.
<table>
<tr><td>Left</td><td> 
</td></tr>
<tr><td>Right</td><td> 
</td></tr>
<tr><td>Up</td><td> 
</td></tr>
<tr><td>Down</td><td> 
</td></tr>
</table></td></tr>
</table>

❷ Interval

Setting	Description
Interval (ms)	Set how often the message moves. The default value is 100.

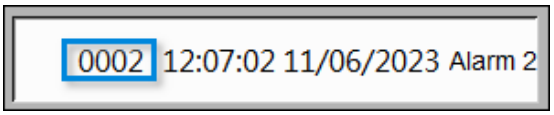
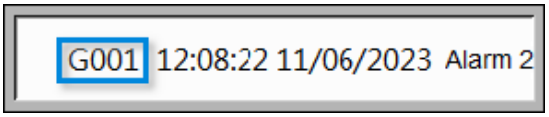
❸ Points per time

Setting	Description
Points per time	Set the distance each time text moves. The greater the number, the greater the distance each time the text moves. The value range is 1–50, and the default value is 1.

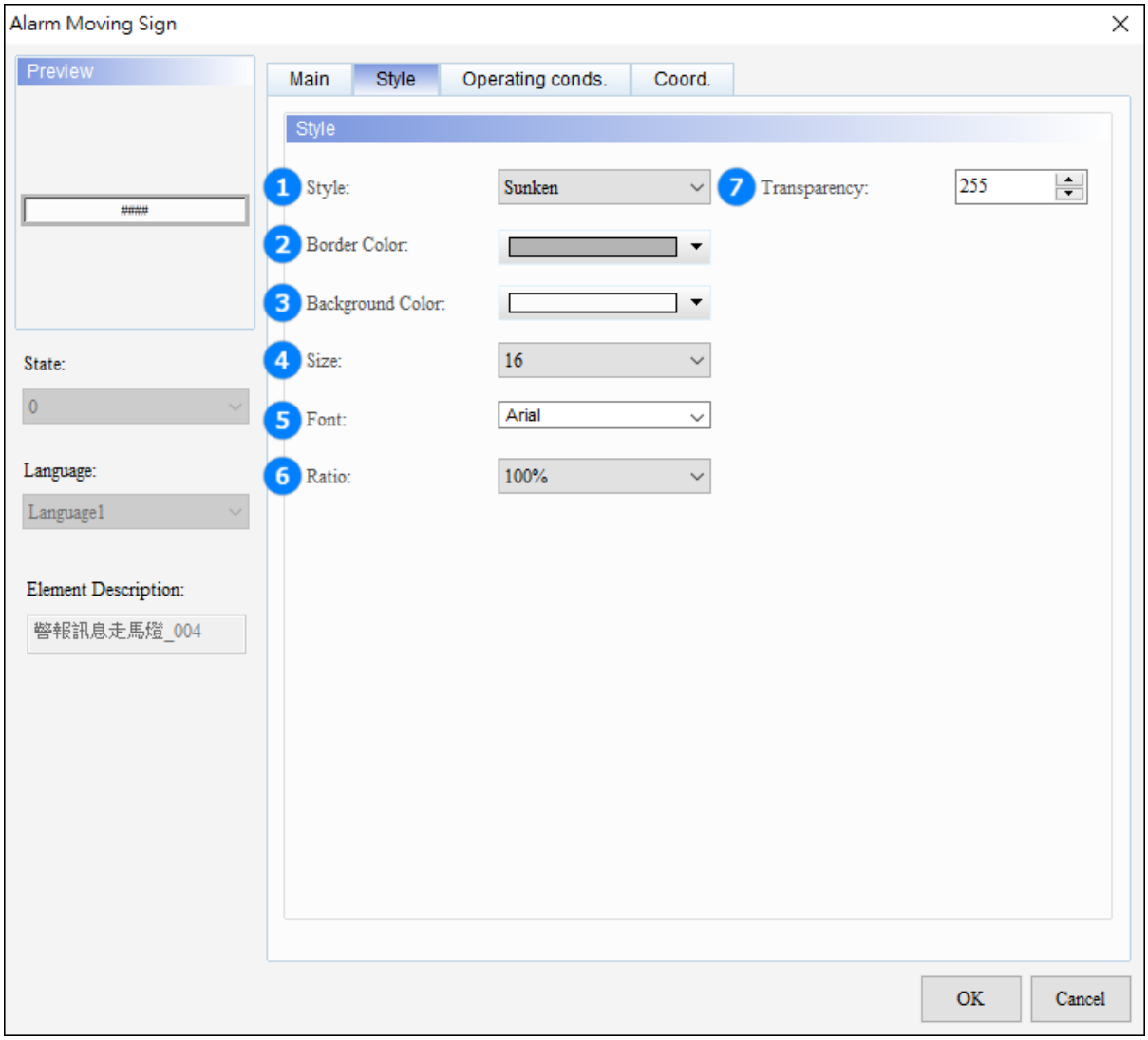
❹ Status Display

Setting	Description
Time format	Select the time format. The default value is hh:mm:ss.
Date format	Select the date format. The default value is mm/dd/yy.
Display Color	Select the display color of the time and date.

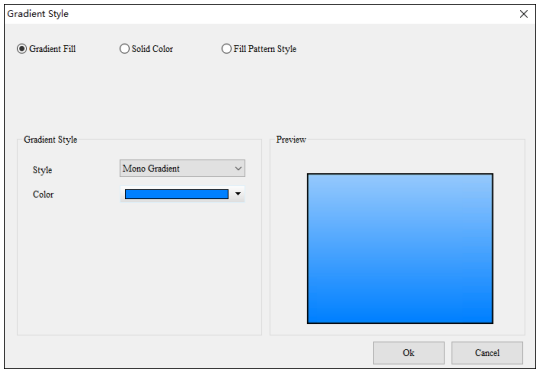
❺ Other displays

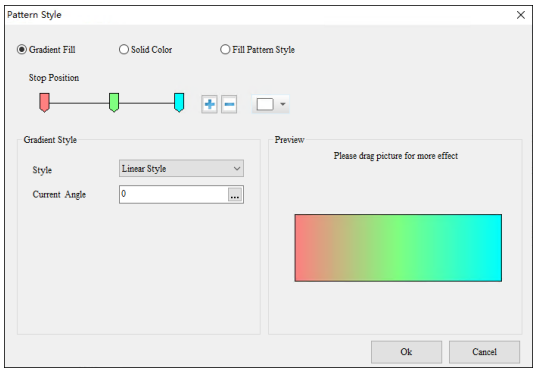
Item	Description
Alarm No.	If selected, the **Alarm Moving Sign** element displays the alarm number when an alarm is triggered. 
Alarm Group	If selected, the **Alarm Moving Sign** element displays the alarm category when an alarm is triggered. 

In the **Style** tab of the property dialog, you can set the display style of the **Alarm Moving Sign** element.

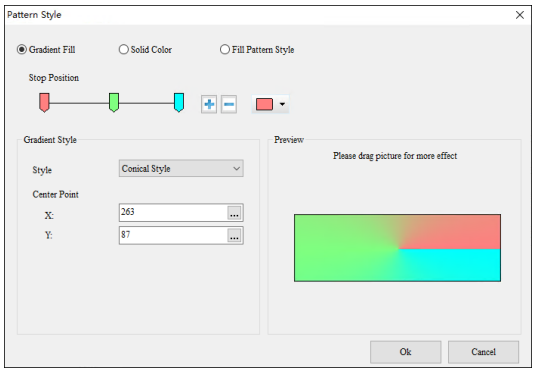
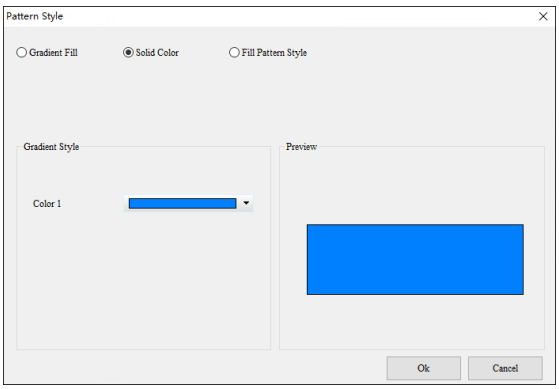


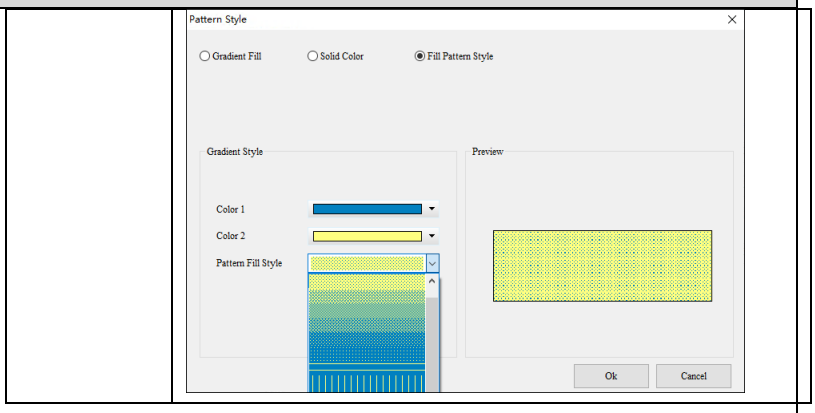
Legend	Setting	Description
1	Style	Set the appearance of the element. The options include Standard, Raised, Sunken, and Transparent. Standard: #### Raised: #### Sunken: #### Transparent: ####
2	Border Color	Set the border color of the element. The default is gray. When set to red, it displays as follows. ####

<table>
<tr><th>Legend</th><th>Setting</th><th>Description</th></tr>
<tr><td>③</td><td>Filled style</td><td>Select the fill style of the element. The default value is Gradient. The following table lists the functions in the Gradient Fill view with their description.
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Gradient Style</td><td>Set the Gradient Style by setting the Current Angle or Center Point. Set the Current Angle or Center Point by dragging the mouse on the preview image, or set the memory address for dynamic configuration on the HMI. Supports adding gradient stop points and setting stop point colors to present the effect of multi-color gradients.
Note: Up to 5 stop points can be set.
• Mono Gradient
The gradient color automatically configured by the software does not provide stop point configuration and is compatible with the behavior of DOPSoft software.
 

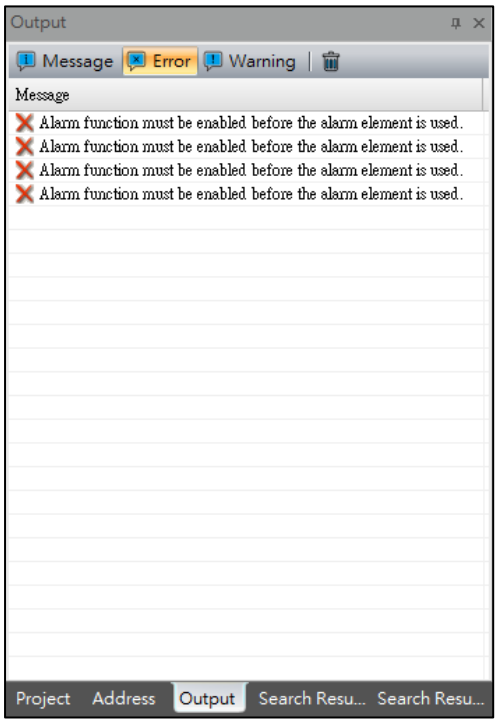
• Linear Style
 

• Radiation Gradient</td></tr>
</table>
</td></tr>
</table>

Legend	Setting	Description	
			 • **Conical Style** 
		Solid Color	Set a single color fill, the same as the **Foreground Color** setting. 
		Fill Pattern Style	Provides a variety of Fill Pattern styles and two-color combinations to present pattern fill effects.

Legend	Setting	Description
		 **Note**: If select **Transparent** for Style, the set **Filled style** will not be applied.
4	Size	Set the text size of the alarm message to be displayed.
5	Font	Set the font of the alarm message to be displayed. You can switch between different languages to set the font settings corresponding to the language.
6	Ratio	Set the scaling ratio of the alarm message to be displayed.
7	Transparency	Set or enter the transparency value. The smaller the value, the higher the transparency of the element. The value range is 50–255, and the default value is **255**.

Note: When an alarm element is created and the alarm reading address is not set, the error message will be displayed in the **Output** pane after compilation.



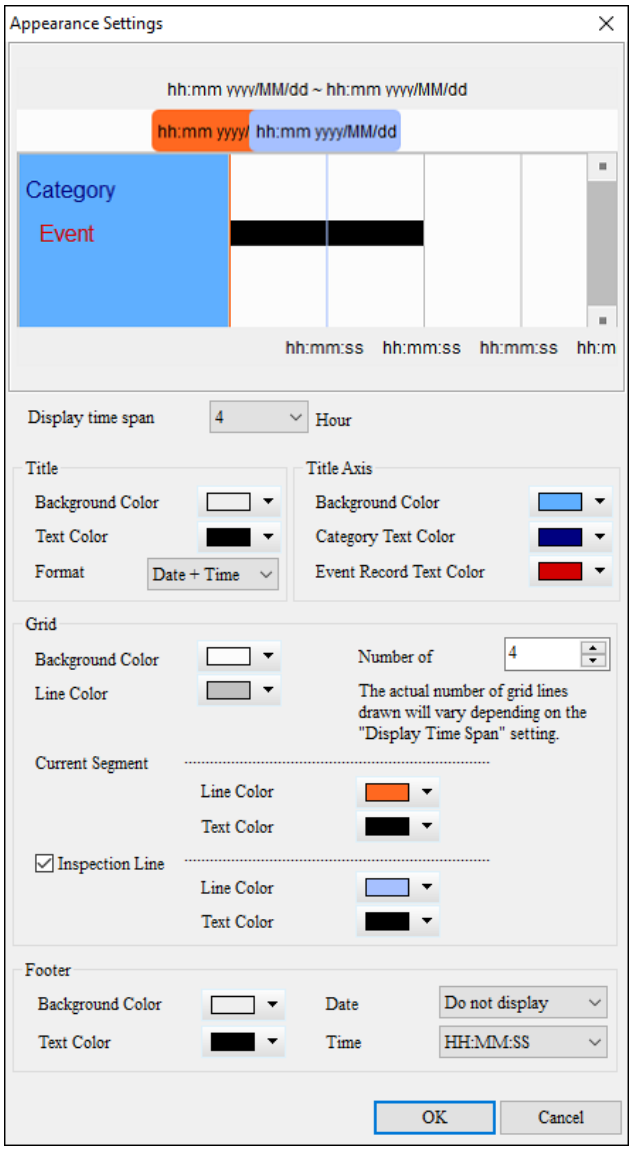
Gantt Chart Properties

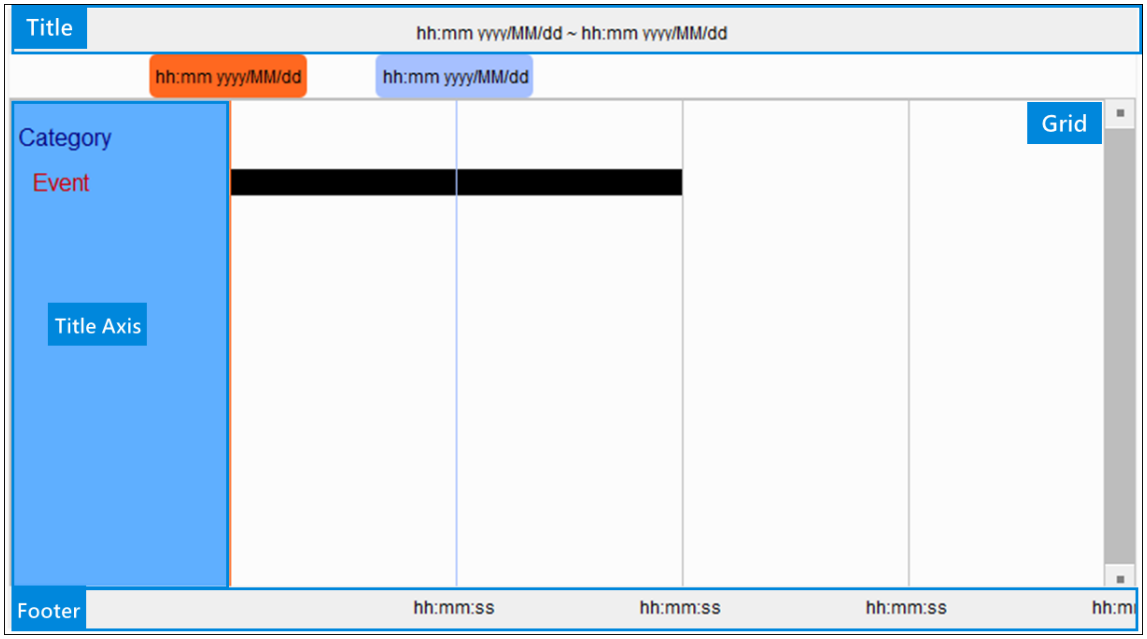
The **Gantt Chart** element displays the alarm trigger time to restore time. You can filter the alarm information to view using

Note: This element is only available for DOP-300 series model, and one screen can only have one Gantt Chart element.

- **Style**

  The following table lists the settings in the **Appearance Settings** dialog with their description.





Setting	Description
Display time span	Set the time range to display on the Gantt chart.
Title	Set the background color, text color, and date / time format of the title. **Note**: The format setting synchronously applies to **Current Segment** and **Inspection Line**.
Title Axis	Set the background color, category text color, and event record text color of the title axis.
Grid	Set the background, line color, and number of grids.
Current segment	Set the line color and text color.
Inspection Line	
Footer	Set the background color, text color, and date and time format.

History Buffer

The history buffer records specific data in HMI or external storage device, through the buffer attribute to set the sampling data, trigger mode, and file output content, after the buffer data is established. The sampling data can be displayed on the HMI through the sampling element.

History Buffer Settings

How to open the **History Buffer** settings page?

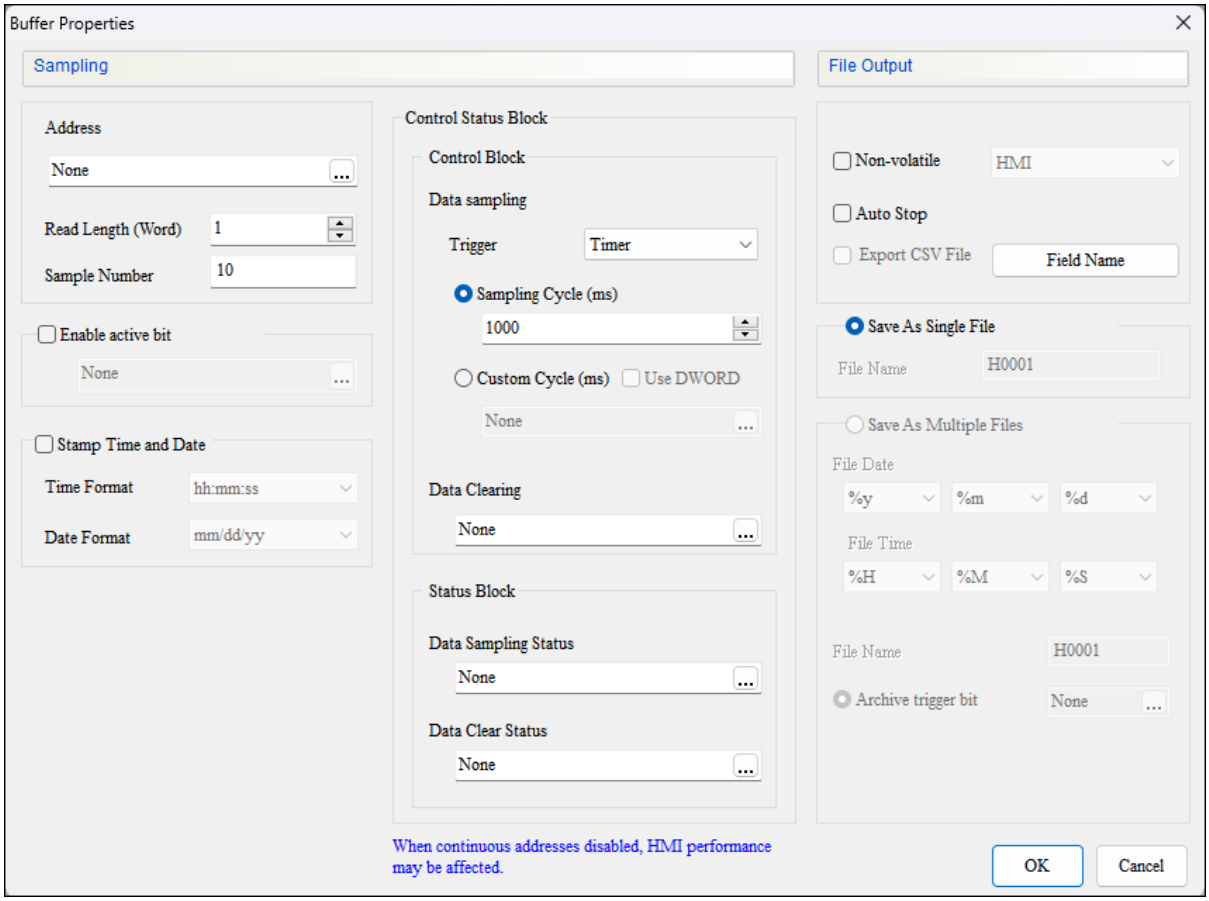
- In **Project** pane, double-click **History Buffer**.

Or

- On the toolbar, click **Data Management** > **History Buffer**.

On the **History Buffer** settings page, click the  to open **Buffer Properties** dialog.

The following table lists the settings in the **Buffer Properties** dialog with their description.



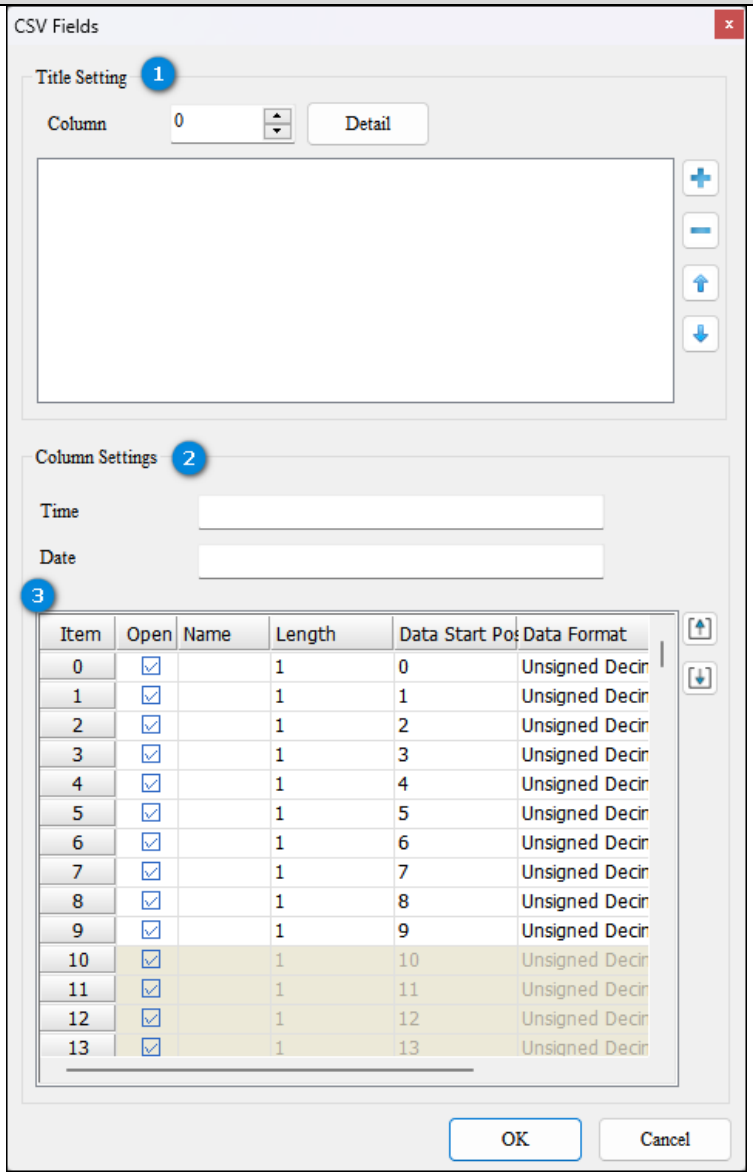
Settings	Description
Address	Select either the internal memory or the controller register address.
Read Length (Word)	Select or enter the number of words that can be sampled. The maximum value is 256.
Sample Number	Enter the number of historical data to be recorded. Up to 9,999,999 sampling points can be This function needs to be used with the **Auto Stop** function. If the **Auto Stop** checkbox is selected, the recording stops automatically when it reaches the set sample number. If the **Auto Stop** checkbox is not selected, the recording does not stop when it reaches the set sample number; instead, the recording restarts from the first record and overwrites the previous data.
Enable active bit	Select to set the active bit. If the **Trigger** is set to **Timer** for **Data sampling**, the HMI immediately records the sampling data as soon as it starts up. The Enable active bit function allows you to determine when to start sampling. When the active bit is On, it starts to sample; when the active bit is Off, it stops sampling.

Settings	Description
Stamp Time and Date	Select to set the time format and date format.

Trigger	Select the trigger source.
	• With **Timer** as the trigger source, you can choose between **Sampling Cycle** and **Custom Cycle**.
	  ○ **Sampling Cycle**: The range value is 100~86400000.
	  ○ **Custom Cycle**: The cycle time of sampling can be dynamically set on HMI through the specified memory address. The maximum value can be set to 32767. If **Use DWORD** is selected, the maximum value can be set to 2147483647.
	• With **Memory Address** as the trigger source, you can configure the bit address to trigger data capture. When the bit is On, it will be sampled.

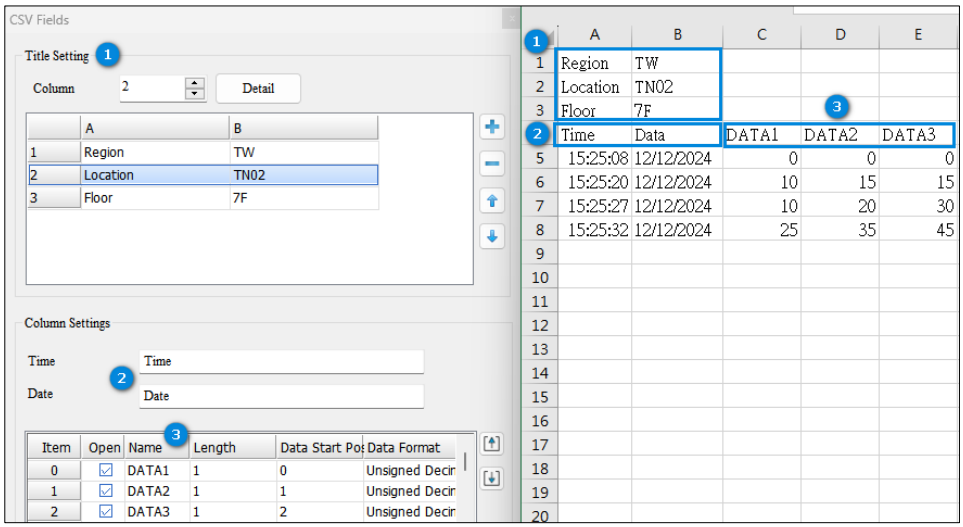
Data Clearing	Set the address of data clearing as a bit address. When the trigger address is On, the buffer data is cleared.
Status Block	Set the status block address as a bit address to read the sampling / clearing status. When the address is On, data sampling / clearing is performed.
Non-volatile	Check and select the storage location of data. The storage location varies depending on the external device supported by the model, including HMI, USB Disk, and SD. If HMI is selected, the data is recorded in the HMI SRAM when the power is cut off.
Auto Stop	If selected, the recording stops automatically when the set **Sample Number** is reached. **Note**: Refer to the instructions of **Sample Number**.
Export CSV File	Select to export historical data to a CSV file, and you can set the **Field Name** for a CSV file. **Note**: This setting is only available when **Non-volatile** is selected. The following table lists the settings in the **CSV Fields** dialog with their description.

Settings	Description



Legend	Setting	Description
1	Title Setting	Follow these steps to set the title. 1. Title column: Select or enter the **Column** and click **Detail** to display the corresponding columns. **Note**: Support up to 20 columns. 2. Title row: Click the buttons on the right to add, delete or move the title row. **Note**: Support up to 10 rows. 3. Enter the content of the displayed title in the title field.
2	Time and Date	Enter the time and date.

<table>
<tr><th>Settings</th><th colspan="3">Description</th></tr>
<tr><td></td><td>❸</td><td>Column Settings</td><td>Set for the column item.
The column items are displayed according to the Read Length (Word) setting. You can choose whether to Open the item or not, and set the data style to be presented on the CSV file, including the title name, data format, and integer digits/fractional digits.
You can also set the Data Start Position and Length according to the read data. Different Length supports different data formats. The following table lists the valid range value corresponding to the data format.
<table>
<tr><th colspan="2">Length is 1</th></tr>
<tr><th>Data Format</th><th>Valid Range Value</th></tr>
<tr><td>BCD</td><td>0~9999</td></tr>
<tr><td>Signed BCD</td><td>–999~9999</td></tr>
<tr><td>Signed Decimal</td><td>–32768~32767</td></tr>
<tr><td>Unsigned Decimal</td><td>0~65535</td></tr>
<tr><td>Hex</td><td>0~0xFFFF</td></tr>
<tr><td>Char</td><td>2 words</td></tr>
<tr><th colspan="2">Length is 2</th></tr>
<tr><th>Data format</th><th>Valid Range Value</th></tr>
<tr><td>BCD</td><td>0~99999999</td></tr>
<tr><td>Signed BCD</td><td>–9999999~99999999</td></tr>
<tr><td>Signed Decimal</td><td>–2147483648~2147483647</td></tr>
<tr><td>Unsigned Decimal</td><td>0~4294697295</td></tr>
<tr><td>Hex</td><td>0~0xFFFFFFFF</td></tr>
<tr><td>Char</td><td>4 words</td></tr>
<tr><td>Floating</td><td>0~9999999</td></tr>
</table></td></tr>
</table>

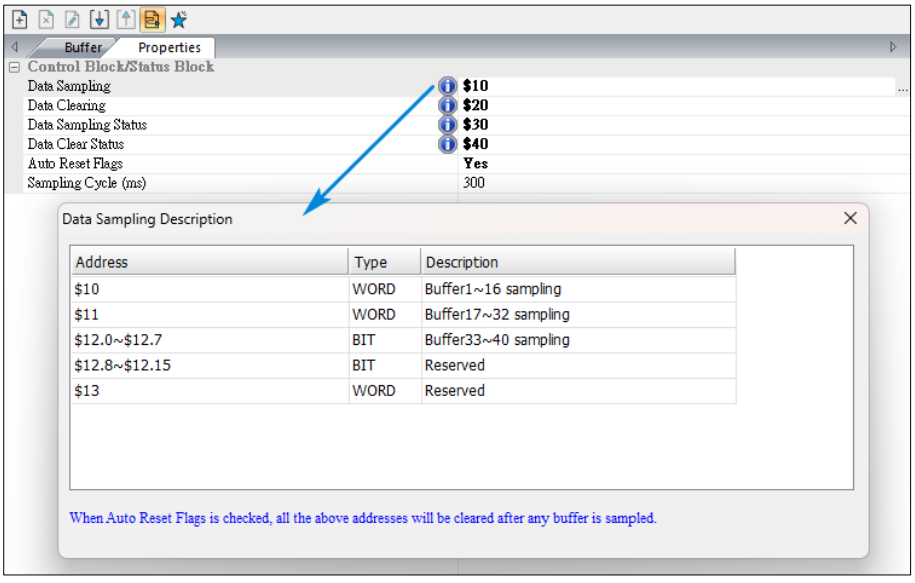
Settings	Description
	• Use Export / Import buttons on the right to export the data as an XLSX file. After editing, you can import it into the field settings. The field name of the CSV file and the corresponding output result, as shown in the following figure.  **Note**: If **Non-volatile** is not enabled, it can be used with the LUA command *history.ExportCSV* to export a CSV file.
File storage	Select to save the history butter data as single file or multiple file. • **Save As Single File**: All data is saved in a single file. You can define the file name (including English and numeric), and the maximum length is 8 characters. • **Save As Multiple Files**: When the **Sample Number** record of the historical buffer data is full, or the **Archive trigger bit** is triggered, the current data will be saved and the buffer data will be cleared. • The file name format of the multiple files is **File Name_Date_Time**. **Note**: **Save As Multiple Files** and **Auto Stop** cannot be used at the same time. To enable **Auto Stop**, select **Save As Single File** option.

The following table lists the functions on the toolbar in the History Buffer settings page.

Function	Description
	Click to adds buffers. Up to 40 sets of buffers can be added.

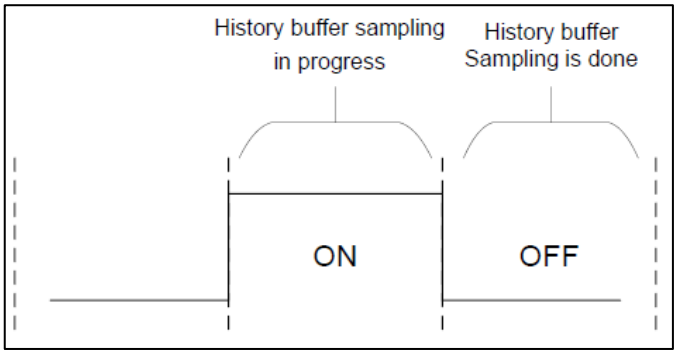
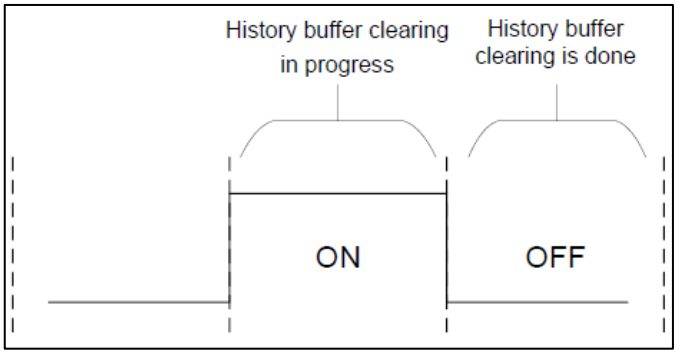
Function	Description
	Click to delete the selected buffer data.
	Click to open the selected buffer properties dialog to modify the buffer properties.
	Click to export buffer data as an XLSX file.
	Click to import buffer data after modification.
	Click to enable / disable the **Continuous historical buffer control command address** function. • **Enabled**: Use continuous address to control the sampling or clearing of data in each buffer. It is set on the **Properties** tab. Refer to the next paragraph. • **Disabled**: Set the respective control command addresses in the **Buffer Properties** dialog. **Note**: If continuous address function is not enabled, it may affect the performance of the HMI.
	Enabling optimization is recommended when the set addresses of multiple buffers are not continuous. If multiple buffer addresses are already continuous, enabling this function may result in the slow read speed.

In the **Properties** tab, you can set the control bit of the data sampling or clearing of the history buffer. It controls the actions of each buffer with the set starting address. Take the **Data Sampling** as an example, set the starting address to $10. You can click  to query the buffer number of each sampling bit control or view the actual control bits of that buffer in the properties dialog of each buffer.



Note: The **continuous historical buffer control command address** function needs to be enabled to set the Control Block / Status Block address.

The following table lists the settings in the **Properties** tab with their description.

Setting	Description
Data Sampling	Controls the buffer sampling flag. When the control bit is ON, a sampling is performed. **Note**: The **Trigger** of the buffer needs to be **Memory Address**.
Data Clearing	Clears the buffer data flags, including data for sampling elements and non-volatile records.
Data Sampling Status	When the HMI samples the history buffer, it turns the corresponding history buffer sampling status flag ON. After the sampling is complete, the history buffer sampling status flag is turned OFF in real time. 
Data Clear status	When the HMI clears the history buffer, it turns the corresponding history buffer clear status flag ON. After the clearing is complete, the history buffer clear status flag is turned OFF in real time. 
Auto Reset Flags	Set whether to automatically clear flags. When **Auto Cleared Flag** is set to **Yes**, all data sampling or data clearing addresses will be cleared to 0 after sampling or clearing any buffer.
Sampling Cycle (ms)	Set the interval at which the sampling is performed. The default value is 300, and the range value is 100~1000.

Sampling Function

Displays the sampling elements of historical buffer data. The following are sampling elements.

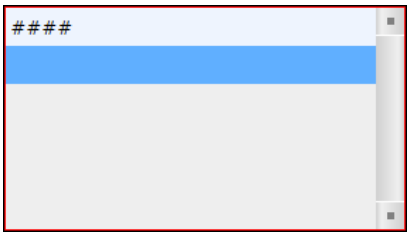
- **Historical Trend Graph**: Displays the sampled data over a period on the element in the form of a trend chart. A maximum of 60 curves can be displayed.
- **Historical Data Table**: Lists the values sampled from the history buffer on the element. A maximum of 60 fields can be displayed, corresponding to 60 curves in the historical trend chart.
- **Historical Event Table**: Converts the sampled values into information and presents them on the element in Word or LSB format.
- **Historical Overview Table**: Draws the historical data stored on an external storage device (USB disk or SD card) on the element in the form of a trend chart.
- **Circular Trend**: Draws the sampled data over a period as a circular trend chart using the polar coordinate system. A maximum of 60 curves can be displayed.

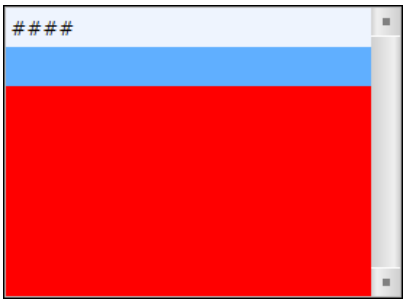
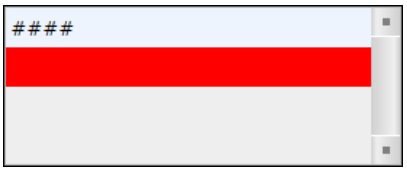
  Note: There can be only one **Circular Trend** element per screen.

Common Properties

- **Style**

  The following table lists the common style properties of **Historical Data Table** and **Historical Event Table**.

Setting	Description
Border Color	Set the border color of the element. The default color is gray. When set to red, it displays as shown in the following figure. 

Setting	Description
Background Color	Set the background color of the element. The default color is white. When set to red, it displays as shown in the following figure. 
Row Color	Set the color of the odd number of rows. The default color is light blue. When set to red, it displays as shown in the following figure. 
Alternating Row Color	Set the color of the even number rows. The default color is blue. When set to red, it displays as shown in the following figure. 
Select Row Color	Set the color of the select row to be displayed after clicking the element when executing on the HMI.
Transparency	Select or enter the transparency value of the element. The range value is 50~255. The smaller the value, the higher the transparency of the element.

- **Function Buttons**

The function buttons control the display of charts on the HMI.

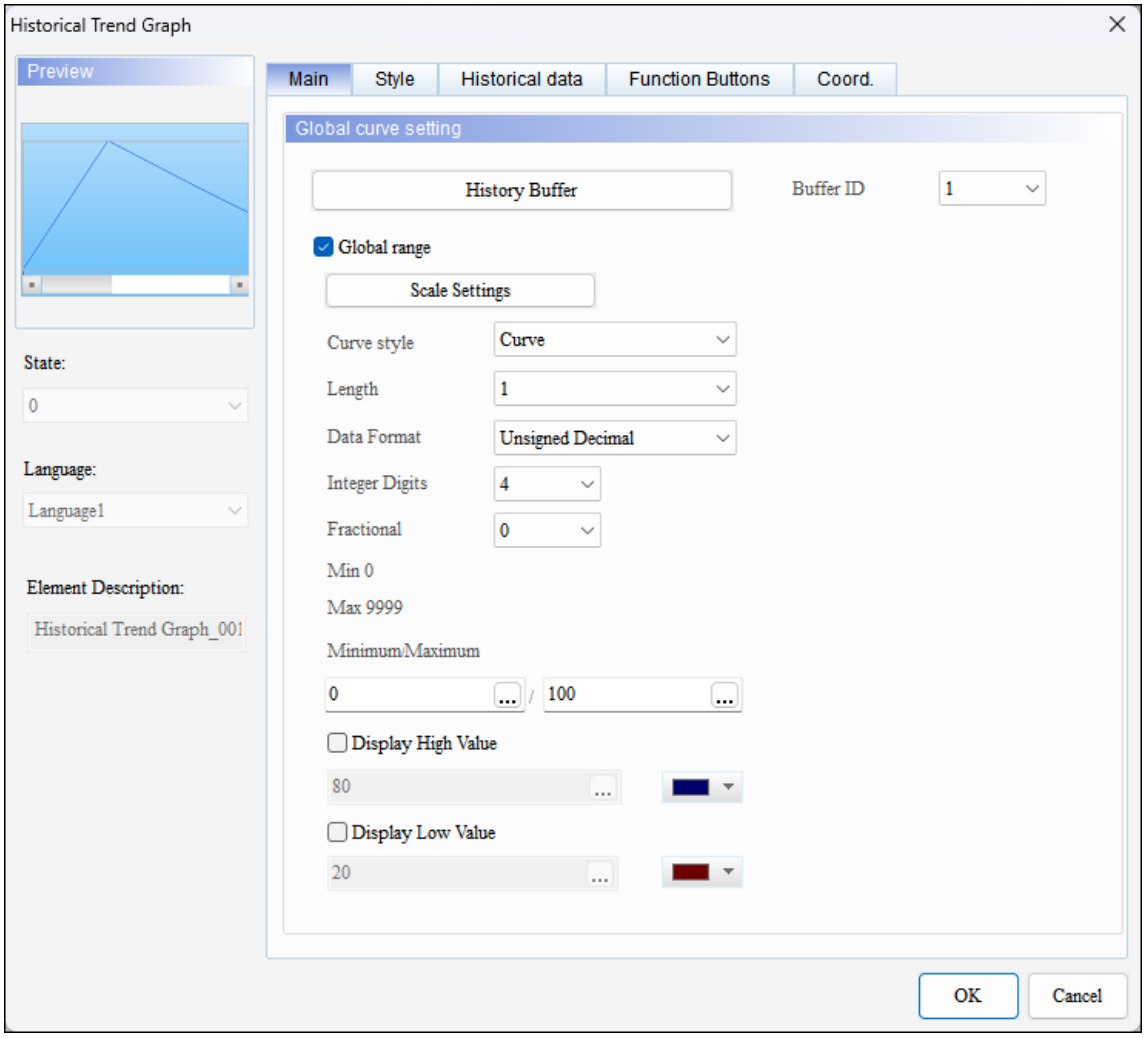
Setting	Description
Zoom In	Select to zoom in or out historical data on the X-axis on the trend chart. **Note**: This function is used for **Historical Trend Graph**.
Zoom Out	
Zoom Reset	Select to reset the X-axis to the default style. **Note**: This function is used for **Historical Trend Graph**.

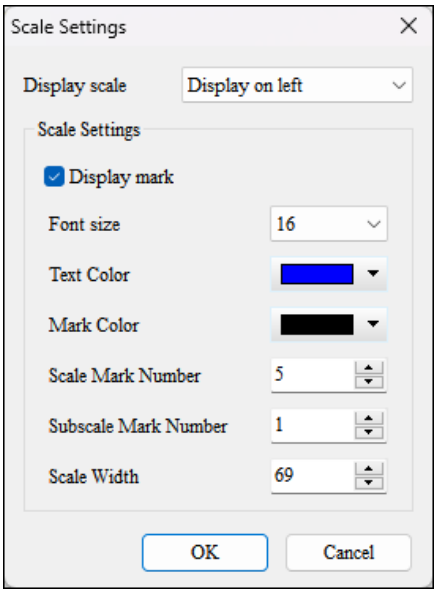
Setting	Description
Scroll	Configure the scroll direction and interval according to the characteristics of the element. The trend chart can be scrolled left and right, and the data table can be scrolled up and down.
Set the time display interval	Displays the corresponding data according to the set time interval.
Set as the default description	Click to fill in the function description as default strings.
Default button width / height	Select or enter the height and width of the function buttons. After changing the height or width, click **Rearrange Function Buttons** in the element context menu to update the button size.

Historical Trend Graph Properties

- **Main — Global curve setting**

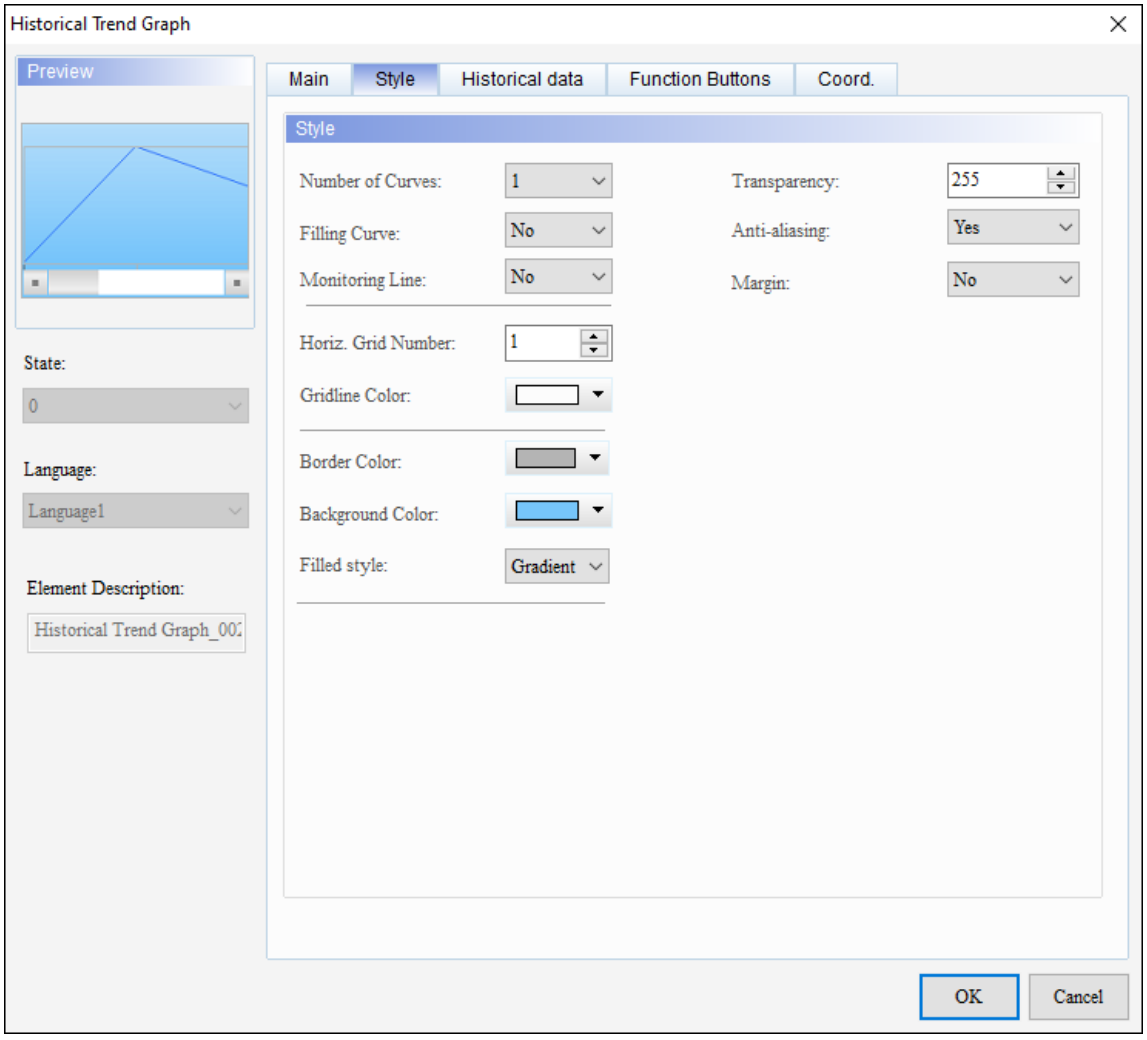
  The **Global range** checkbox needs to be selected to set the format of all curves on the trend chart uniformly.



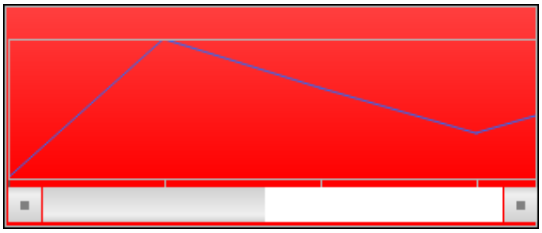
Setting	Description
Scale Settings	Set the position of the scale, the size and color of the markers, and the scale mark number. 

Setting	Description
Curve style	Select the curve style.
Length	Select the length. If the read length is 1, the length of the read data is 1 Word. If the read length is 2, the length of the read data is 2 Word.
Data Format	Select the data format. **Note**: **Floating** can only be selected when the read length is 2.
Integer Digits / Fractional Digits	Set integer digits and fractional digits to be displayed.
Minimum / Maximum	Set a valid range value according to the set **Read Length** and **Data Format**. You can enter a constant or a custom memory address to change the minimum / maximum value dynamically.
Display High Value / Display Low Value	Select to display high or low lines. You can enter a constant or custom memory address and set the color of the marking.

- **Style**

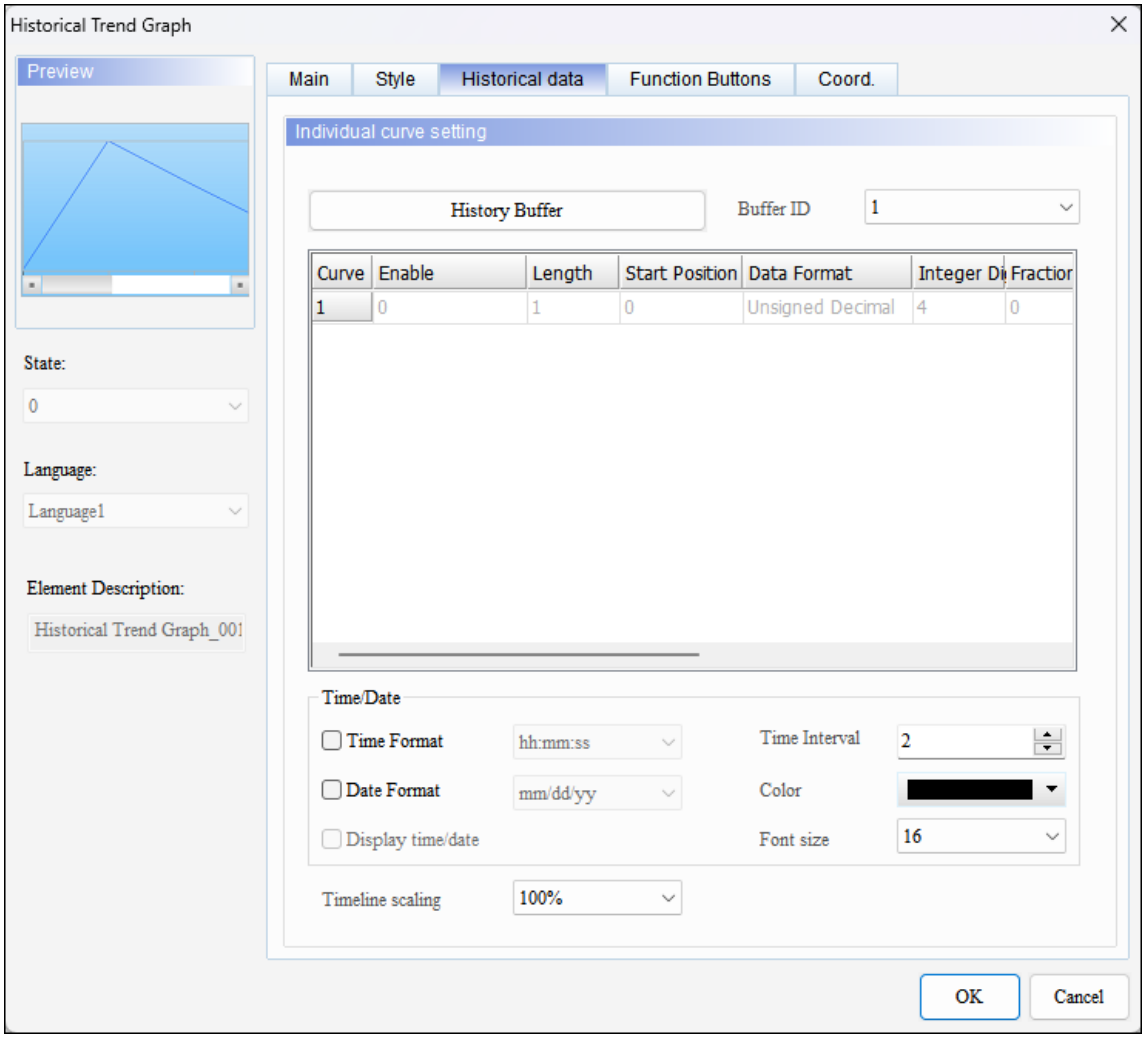


Setting	Description
Number of Curves	Select the number of curves to display. Support up to 60 curves. This setting is synchronized with the number of **Curve** in the **Historical data** tab.
Filling Curve	Select whether to fill the curve. If set to **Yes**, the area below the curve will be filled with the curve color. The filling effect is shown in the following figure. 

Setting	Description
Monitoring Line	Select whether to display the monitoring line. If set to **Yes**, the monitoring line will be displayed after clicking the sampling point on the HMI screen.
Horiz. Grid Number / Gridline Color	Set the horizontal grid number and the gridline color. The horizontal grid number divides the number of zones of the Historical Trend Graph element. If set to 2, there is one grid line and 2 zones; if set to 3, there are two grid lines and 3 zones, and so on. Support up to 50 zones.
Background Color	Sets the background color of the element. The default color is blue. When set to red, it displays as shown in the following figure. 
Filled style	Sets the fill effect of **Background Color**.
Transparency	Select or enter the transparency of the element. The range value is 50~255. The lower the number, the higher the transparency.
Anti-aliasing	Select whether to enable the anti-aliasing function. If select **Yes**, the element display becomes more delicate without jagged edges.
Margin	Select whether to enable the margining function. If select **Yes**, it leaves white space around the element, and the trend chart will be indented as shown in the following figure. 

- **Historical data – Individual curve setting**

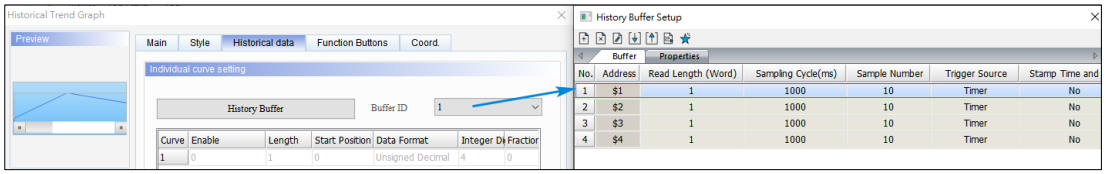
  Make the individual settings for all curves on the trend chart.



Follow these steps to configure the individual curve settings.

To configure the individual curve settings

1. Select the buffer data to be presented by this element, and the **Buffer ID** corresponds to the data number set in the **History Buffer Setup** dialog.



2. In the **Style** tab, set the **Number of Curves**, and then configure the individual curve settings table. The following table lists the settings of the individual curve settings table with their description.

Setting	Description
Enable	Set whether to enable the curve to read the data. • A value of 1 is enabled, and a value of 0 is not enabled. • The bit address can be set to enable curves dynamically on the HMI.
Length	Select the read length according to the data source. **Note**: If **Global range** is selected, it is not possible to set the read length for individual curves.
Start Position	Select the data start position, and it depends on the **Read Length** set in the **History Buffer Setup** dialog.
Data Format	Select the data format. **Note**: • If **Global range** is selected, it is not possible to set the value format for individual curves. • **Floating** can only be selected when the **Read Length** is **2**.
Integer Digits / Fractional Digits	Select the integer digits and fractional digits to be displayed. **Note**: If **Global range** is selected, it is not possible to set the integer digits and fractional digits for individual curves.
Line Color	Set the line color of the curve.
Line Weight	Select the line width of the curve. The range value is 1–8.
Minimum / Maximum	Set the minimum and maximum values according to the **Read Length** and **Data Format**. **Note**: If **Global range** is selected, it is not possible to set the minimum and maximum values for individual curves.
Write Address	Set the write address of the curve value on the monitoring line.
Curve Style	Select the curve style.

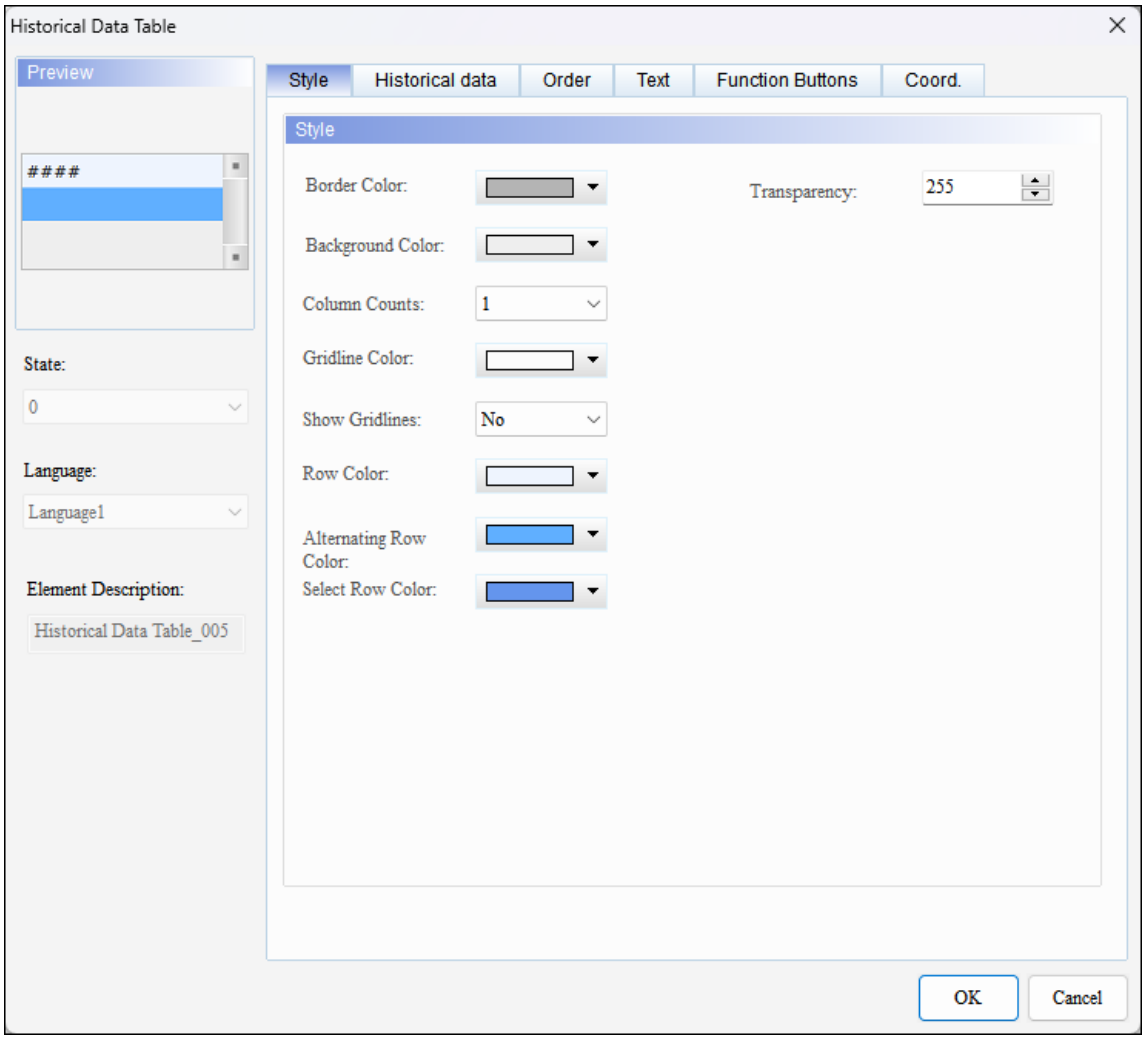
- **Time/Date**
  - **Time / Date Format**: Select to display the sampling time and date, and select the format to be displayed.
  - **Display time/date**: Select to display the timeline and set the time interval.

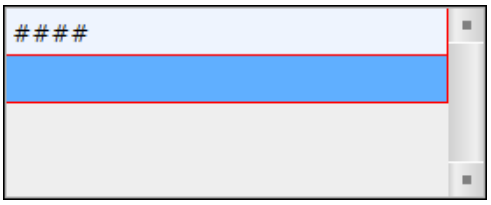
- **Time Interval**: Select or enter the interval between the sampling points displayed at the set time. If the interval is 3, the sampling time will be displayed on the timeline at the first and fourth sampling points.
- **Timeline scaling**: Select the zoom ratio of the timeline display. The scale is smaller, the more sample points can be seen.

Historical Data Table Properties

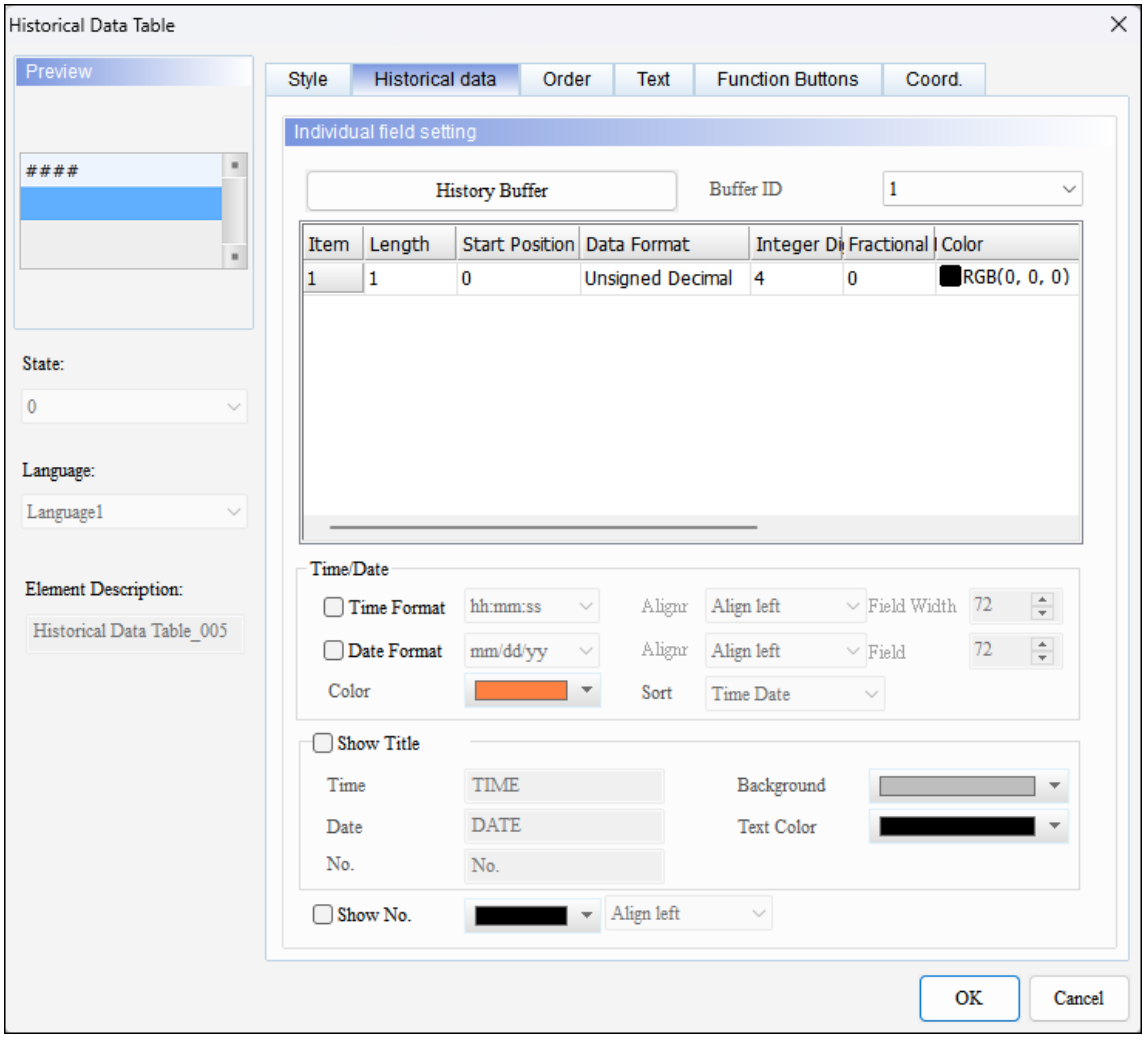
- **Style**

  The following table lists the unique properties in the **Historical Data Table**. For other Style properties, refer to Common Properties.



Function	Description
Column Counts	Select the number of curves to be displayed. Support up to 60 columns. This setting is synchronized with the number of curve item in the **Historical data** tab.
Gridline Color / Show Gridlines	Select the gridline color of the element. The default color is white. When set to red, it displays as shown in the following figure. **Note**: **Gridline Color** only works when **Show Gridlines** is set to **Yes**. 

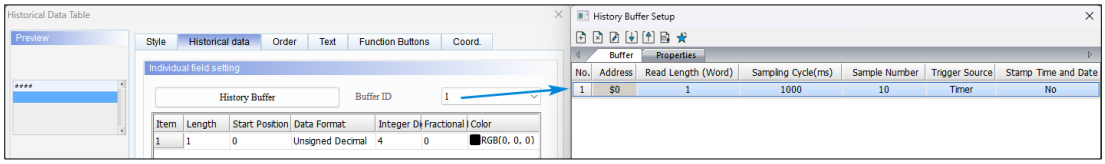
- **Historical data – Individual field setting**



Follow these steps to configure the individual field settings.

To configure the individual field settings

1. Select the buffer data to be presented by this element, and the **Buffer ID** corresponds to the data number set in the **History Buffer Setup** dialog.



2. In the **Style** tab, set the **Column Counts**, and then configure the individual field settings table. The following table lists the settings of the individual field settings table with their description.

Setting	Description
Length	Select the range of length and start position, which depend on the **Read Length** set in the **History Buffer** Setup dialog.
Start Position	
Data Format	Select the data format. **Note**: • **Floating** can only be selected when **Length** is **2**. • If **Length** is greater than 2, you can use only the Char format.
Integer Digits / Fractional Digits	Set the number of integer digits and fractional digits to be displayed. **Note**: There are no integers / fractional digits in the Char format.
Color	Set the text color of this field.
Column Width	Set the display width of this field. The range value is 0~9999.
Prefix Zero	Select to determine the number of digits to prefix according to the set **Integer digits**.
Title bar	Enter the title bar. **Note**: The title bar name is only displayed on the element when the **Show title bar** is selected.
Field alignment	Select to align the text in the field to the left, center, or right.

- **Time/Date**
  - **Time / Date Format**: Select to display sampling time and date, and set the display format, alignment, and field width.
  - **Color**: Select the display color of the text.
- **Show Title**

  Select to display the title bar, and set the time, date, and the title of the index, as well as the background color and text color of the title bar.

  Note: The text in the title row of the data field is configured in the **individual field settings**.
- **Show No.**

  Select to display the index, and set the text color and alignment of the index row.

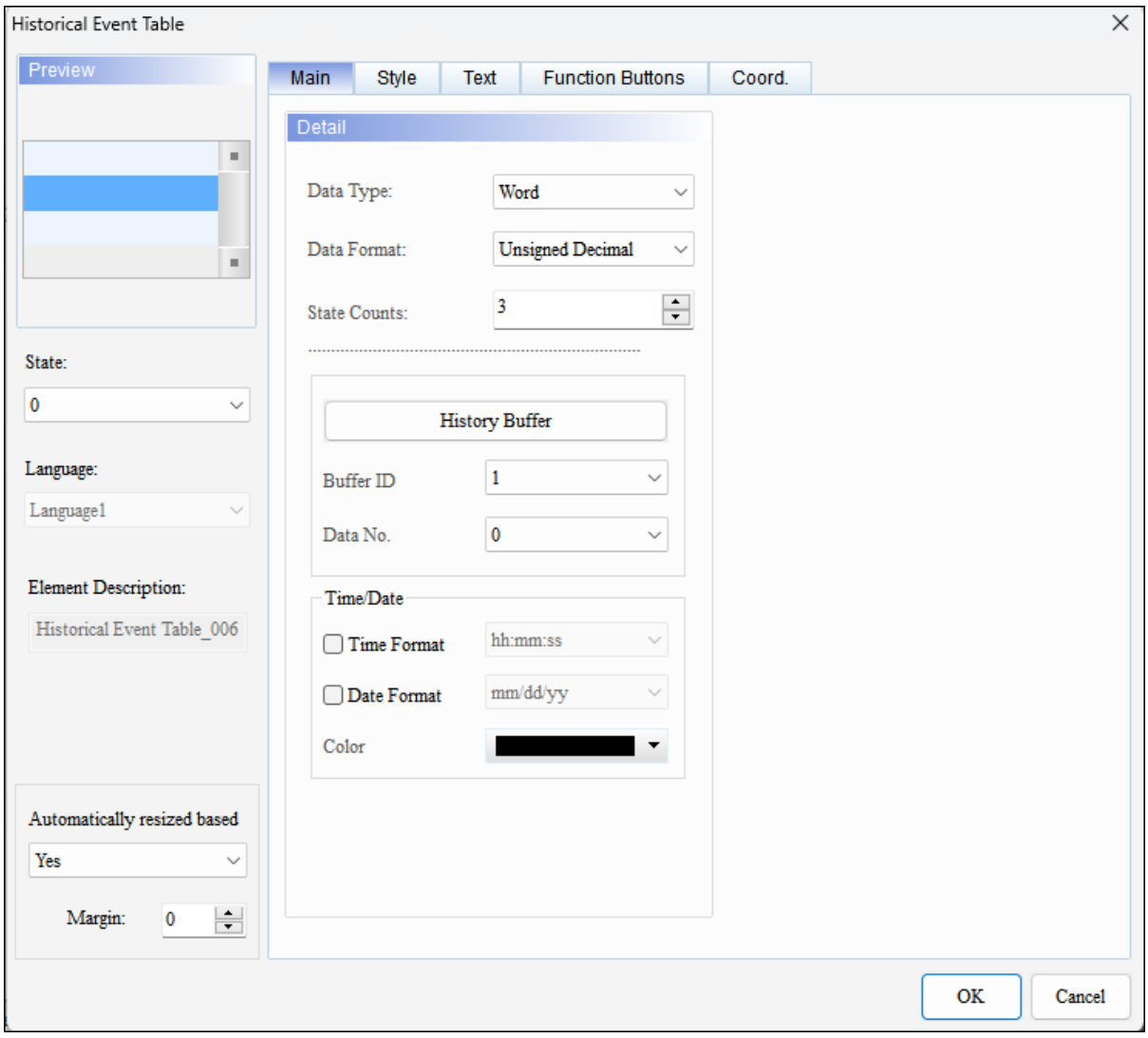
- **Order**

  Select the data sorting method, which is sorted by the sampling time.

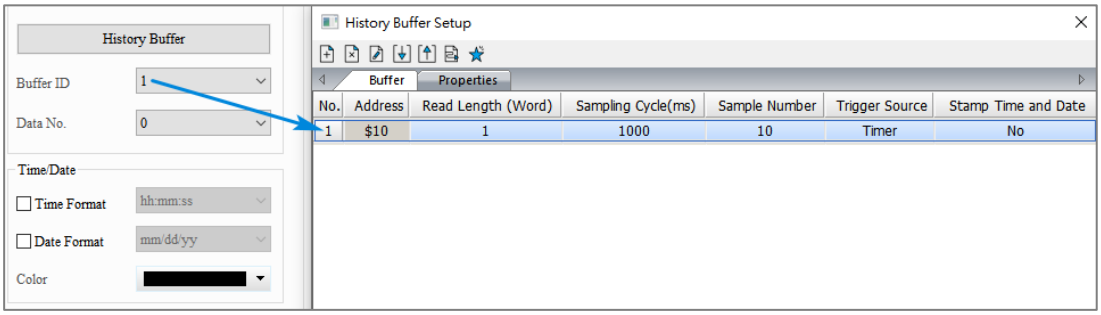
- **Text**

  Select the display font size of the text.

Historical Event Table Properties



- **Main – Detail**
  - **Data Type**: If select **Word**, you can set 1 to 256 states; if select **LSB**, the sampling values of historical data are converted into binary display, and you can set 1 to 16 states.
  - **Note**: To display State 0, select **LSB (Support State 0)**.
- **Main– Buffer setting**
  - **Buffer Number**: Select the buffer data to be presented by this component, which corresponds to the data number set in the **History Buffer Setup** dialog.

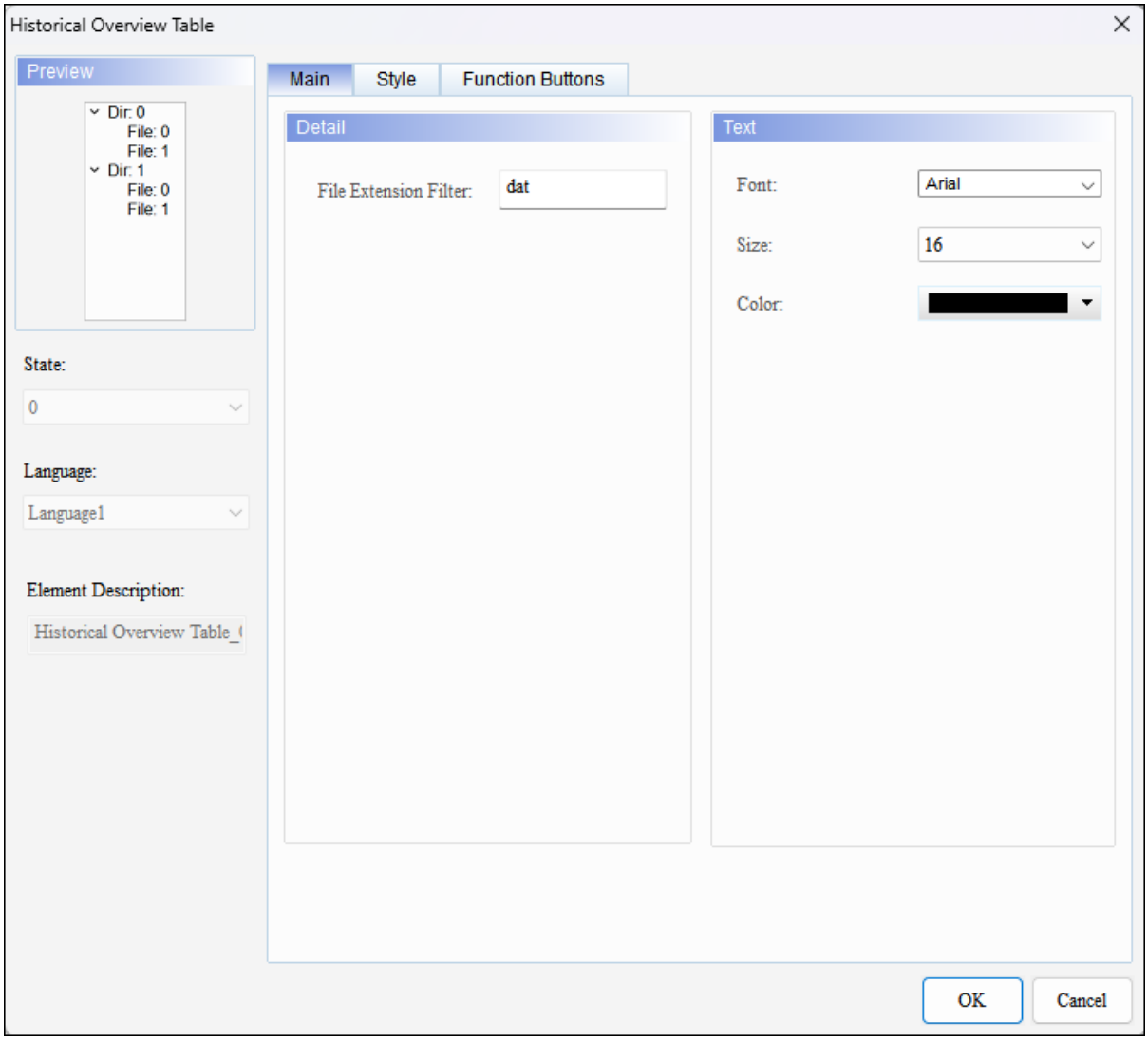


- **Data No**: Select the data number, which depends on the **Read Length** set in the **History Buffer Setup** dialog. If the read length is 1, the data position is 0.
- **Time/Date**: **Time / Date Format**: Select to display the sampling time and date, and select the display format and text color.

Historical Overview Table Properties

The **Historical Overview Table** element has a file browsing area on the left and the trend chart on the right, which have different properties.

For the trend chart properties, refer to Historical Trend Graph Properties. The following lists the properties of the **file browsing area** with their description.



- **Main – File Extension Filter**

  Enter the extension of the file you want to browse. The default value is **dat**.

- **Main – Text**

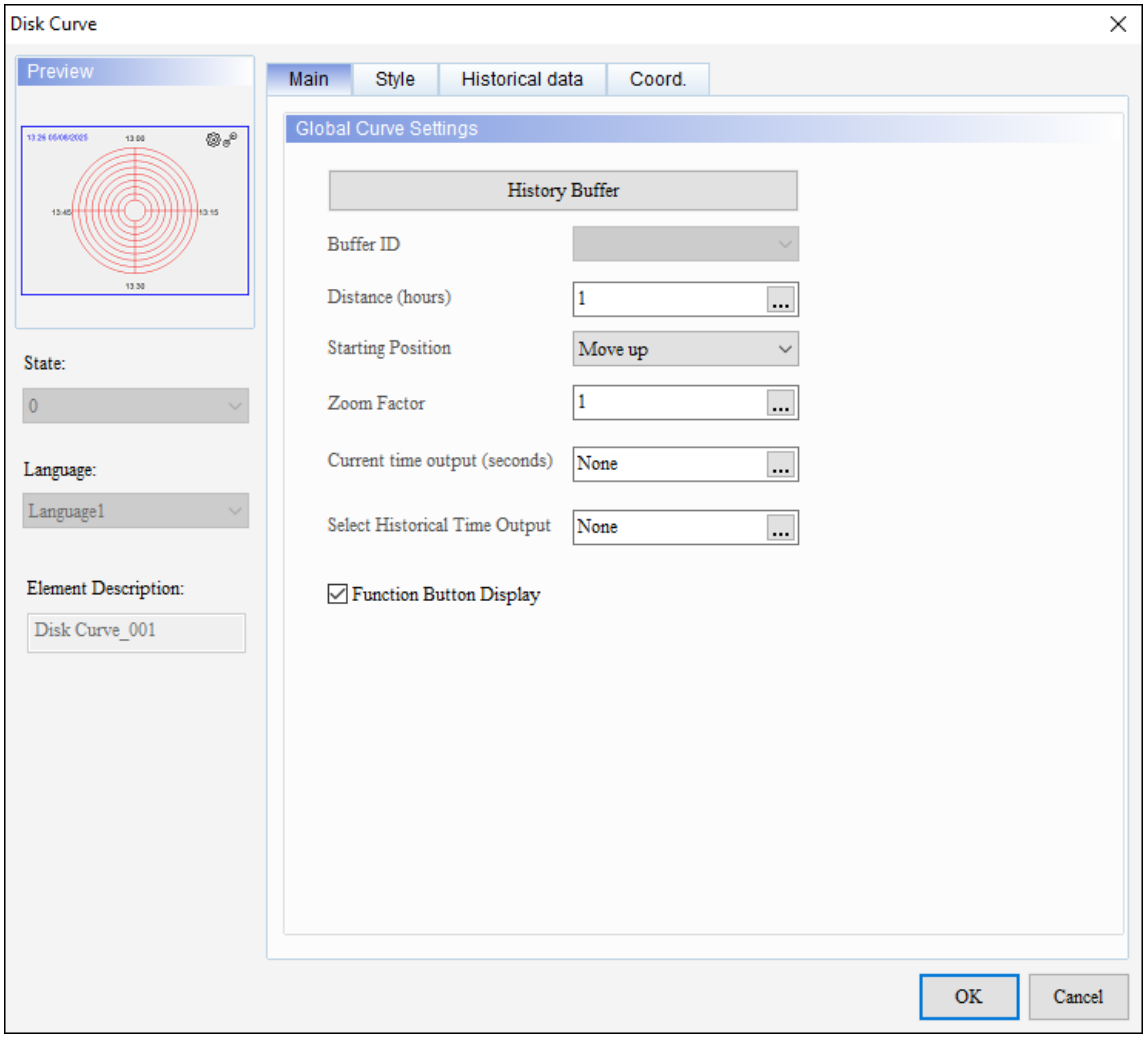
  Set the font, size, and color of the text in the file browsing area.

- **Style**

  Set the border color, background color, and transparency of the file browsing area.

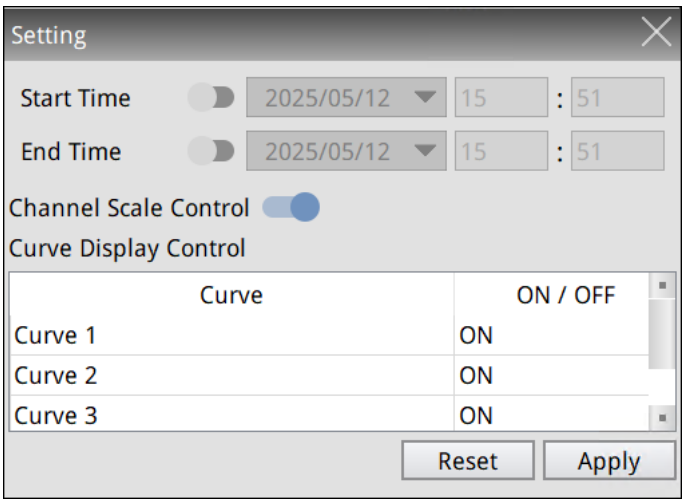
Circular Trend Properties

- **Main — Global curve setting**



Setting	Description
Distance (hours)	Set the length of time for a circle of the circular trend chart. The range value is 1–24. You can also set the memory address to dynamically change the length of time on the HMI.
Starting Position	Select the starting position of the curve.
Zoom Factor	Set the zoom factor. The range value is 1–10. You can also set a memory address to change the displayed zoom factor on the HMI dynamically.
Current time output (seconds)	Set the time gap between the loading time by HMI and the last historical data, which is recorded in seconds.
Select Historical Time Output	Set the time gap between the HMI loading time and monitoring line. Record in seconds.

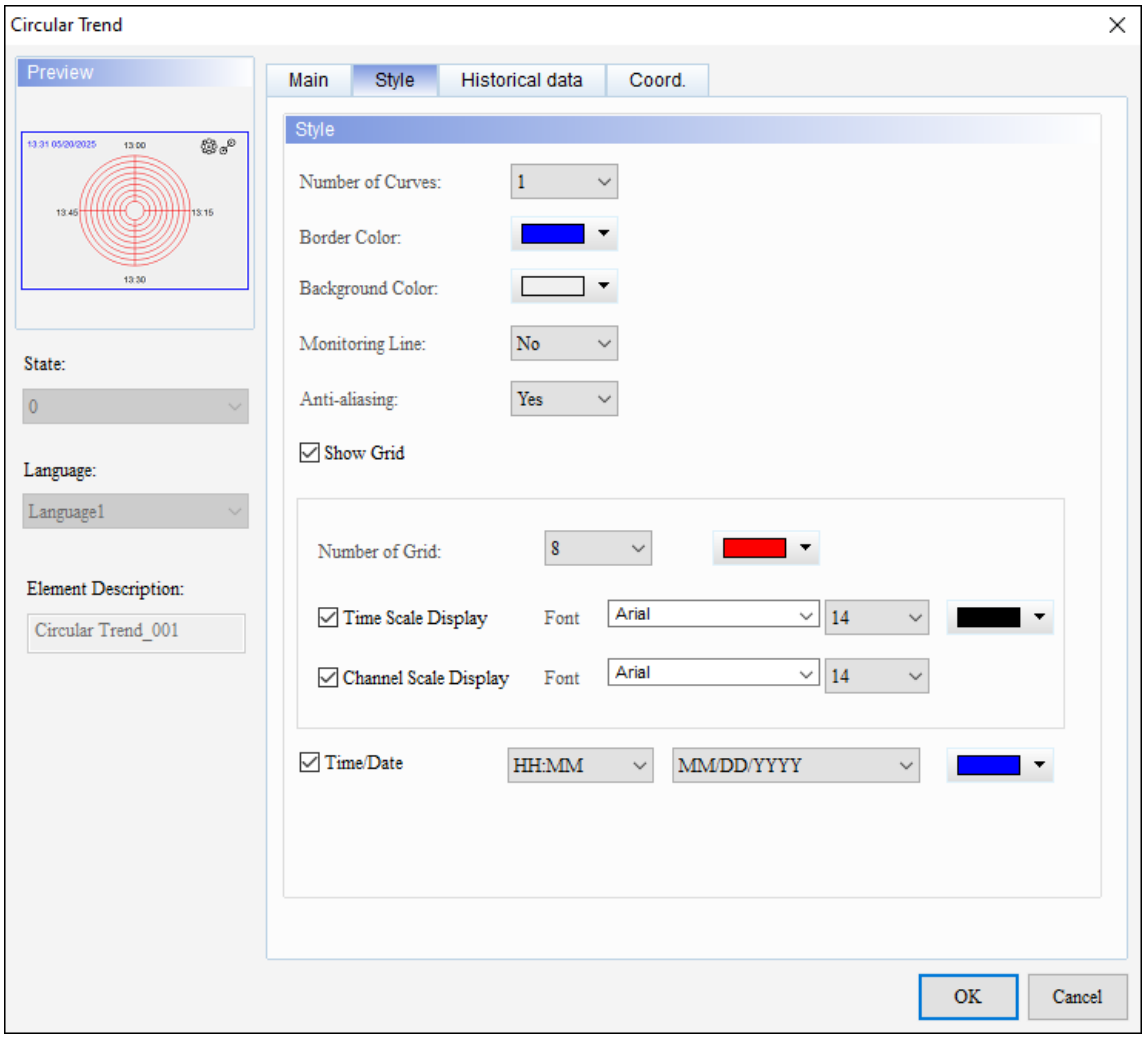
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Function Button Display</td><td>
If selected, you can open the settings dialog and adjust the circle's display settings on the HMI.

Click  to open the setting dialog to set the displayed time range of data and displayed channel.


Click  to expand the function menu. The following table lists the functions in the function menu.
<table>
<tr><th>Icon</th><th>Function</th><th>Description</th></tr>
<tr><td>  </td><td>Displays the previous data</td><td rowspan="2">Click to toggle the displayed time range. The time range in units of the set time distance.</td></tr>
<tr><td>  </td><td>Display the next data</td></tr>
<tr><td>  </td><td>Display the last data</td><td>Click to display the last data in units of the time distance.</td></tr>
<tr><td>  </td><td>Set the factor for zoom in to 1</td><td>Click to reset the factor for zoom in to 1.</td></tr>
<tr><td>  </td><td>Zoom in 1x</td><td>Click once to increase the factor for zoom in by 1 until the factor reaches 10 and no longer zooms in.</td></tr>
<tr><td>  </td><td>Zoom out 1x</td><td>Click once to reduce the factor for zoom out by 1 until the factor reaches 1 and no longer zooms out.</td></tr>
</table>

</td></tr>
</table>

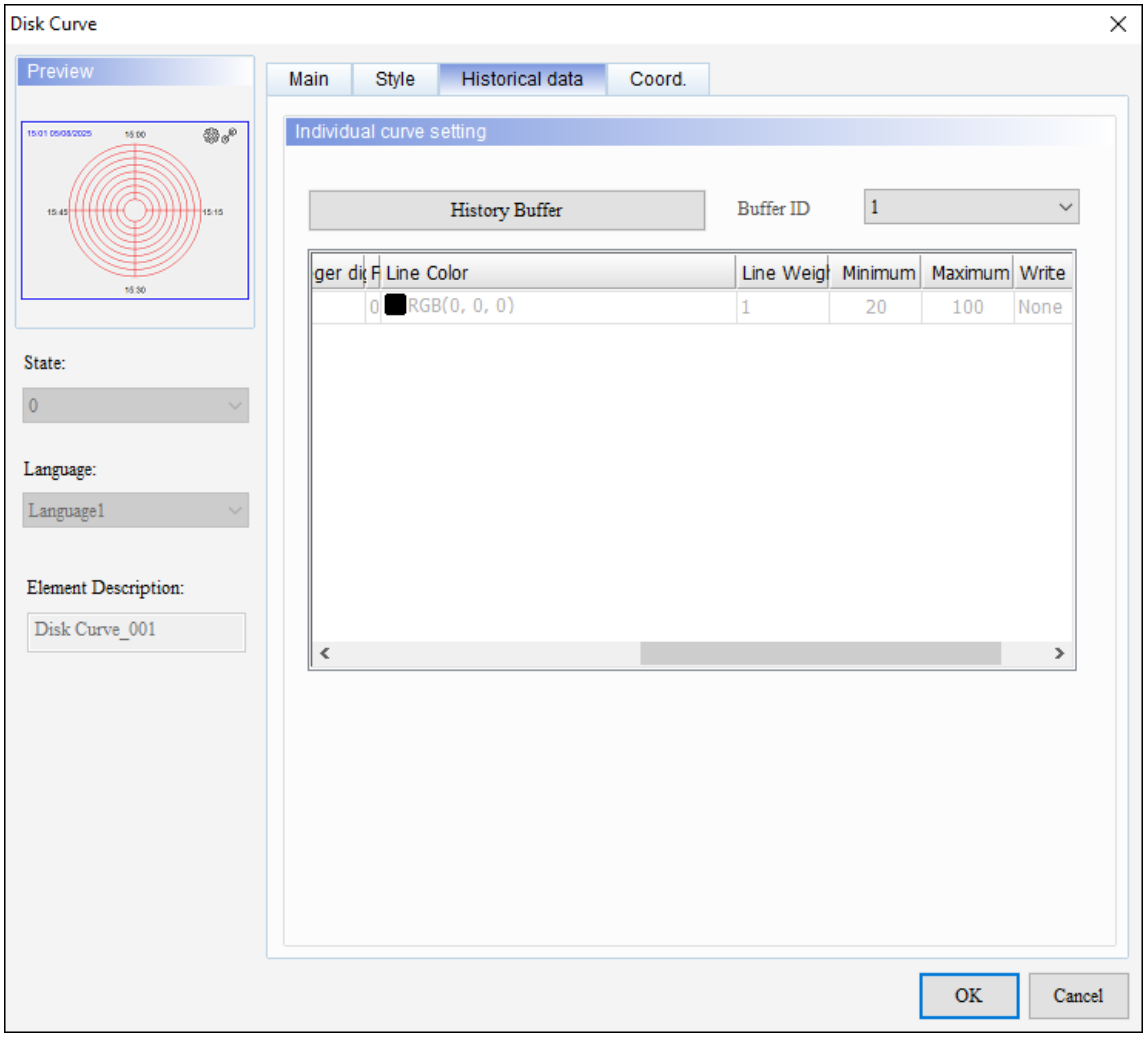
- **Style**



Setting	Description
Number of Curves	Select the number of curves to display. Support up to 8 curves. This setting is synchronized with the number of **Curve** in the **Historical data** tab.
Monitoring Line	Select whether to display the monitoring line. If set to **Yes**, the monitoring line is displayed after clicking the sampling point on the HMI screen, and the monitoring line time is displayed at the upper left.
Anti-aliasing	Select whether to enable the anti-aliasing function. If select **Yes**, the element display becomes more delicate without jagged edges.
Show Grid	Select to display the circular grid, and configure the number of grids and time scale settings.
Time Scale Display	Select to display the time scale on the circular trend chart, and set the scale font and color.

Setting	Description
Channel Scale Display	Select to display the channel scale on the circular trend chart, and set the scale font. **Note**: The scale color is displayed based on **Line Color** in the **Historical data** tab.
Time/Date	Select to display the current time at the upper left of the element, and set the format and color to display.

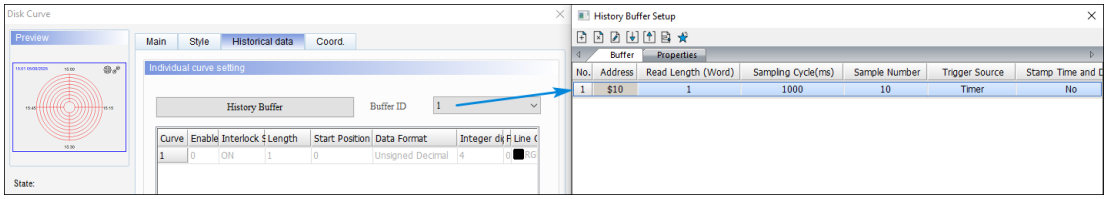
- **Historical data – Individual curve setting**



Follow these steps to configure the individual curve settings.

To configure the individual curve settings

1. Select the buffer data to be presented by this element, and the **Buffer ID** corresponds to the data number set in the **History Buffer Setup** dialog.



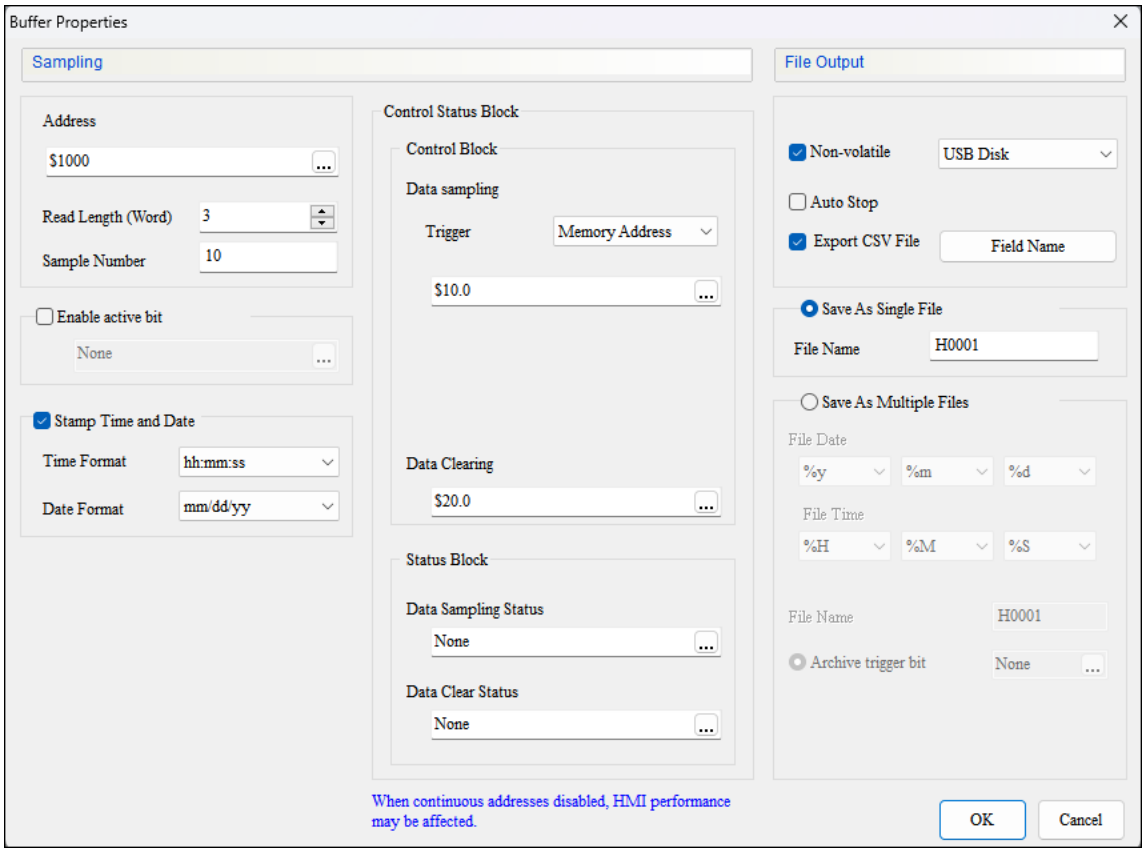
2. In the **Style** tab, set the **Number of Curves**, and then configure the individual curve settings table. The following table lists the settings of the individual curve settings table with their description.

Setting	Description
Enable	Set whether to enable the curve to read the data. • A value of 1 is enabled, and a value of 0 is not enabled. • The bit address can be set to enable curves dynamically on the HMI.
Interlock State	This setting is only available when **Enable** is set as a bit address.
Length	Select the read length according to the data source.
Start Position	Select the data start position, and it depends on the **Read Length** set in the **History Buffer Setup** dialog.
Data Format	Select the data format. **Note**: **Floating** can only be selected when the **Read Length** is **2**.
Integer Digits / Fractional Digits	Select the integer digits and fractional digits to be displayed.
Line Color	Set the line color of the curve.
Line Weight	Select the line width of the curve. The range value is 1–8.
Minimum / Maximum	Set the minimum and maximum values according to the **Read Length** and **Data Format**.
Write Address	Set the write address of the curve value on the monitoring line.

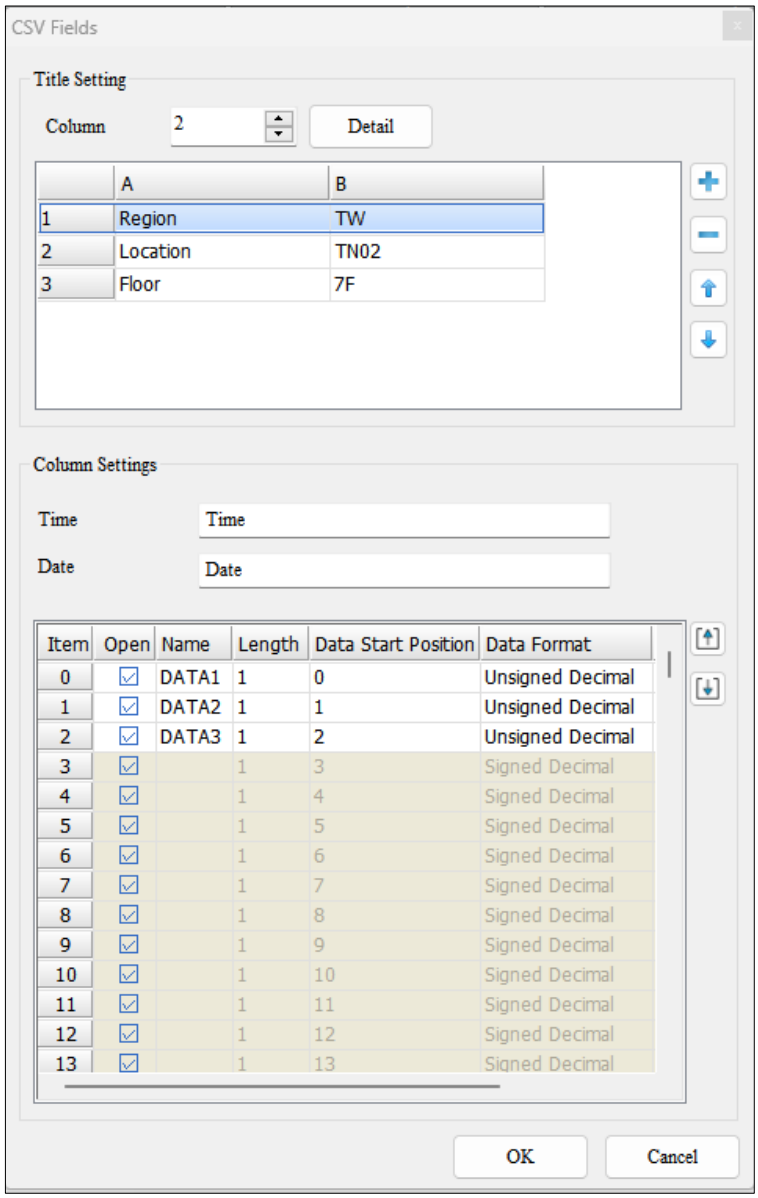
History Buffer Setting Example

Follow these steps to add a history buffer and view the history data through the sampling element.

1. In the **History Buffer** settings page. Click  on the toolbar to add **Buffer Properties** dialog.
2. In the **Buffer Properties** dialog, set the buffer properties as shown in the following figure.



The example of setting the **Field Name** of **Export CSV File** is shown in the following figure.

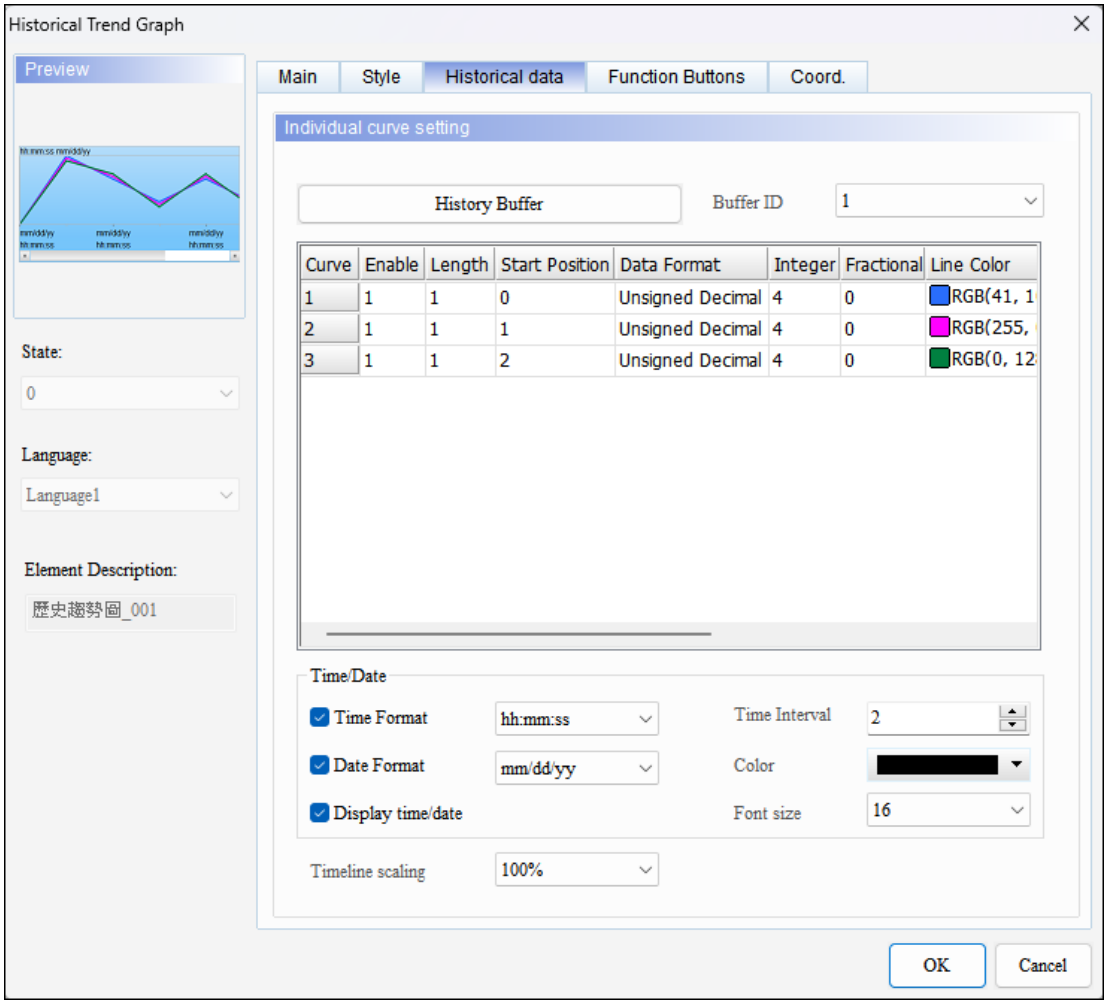


3. Create a **Historical Trend Chart** element on the screen, and then double-click the element to open the properties dialog.

   a. In the **Style** tab, select **3** for **Number of Curves**.

   b. In the **Historical data** tab, set **Enable** in **Individual curve setting** table to **1**, and set the curve properties.

   c. In the **Time/Date** area, set the display method of time and date.

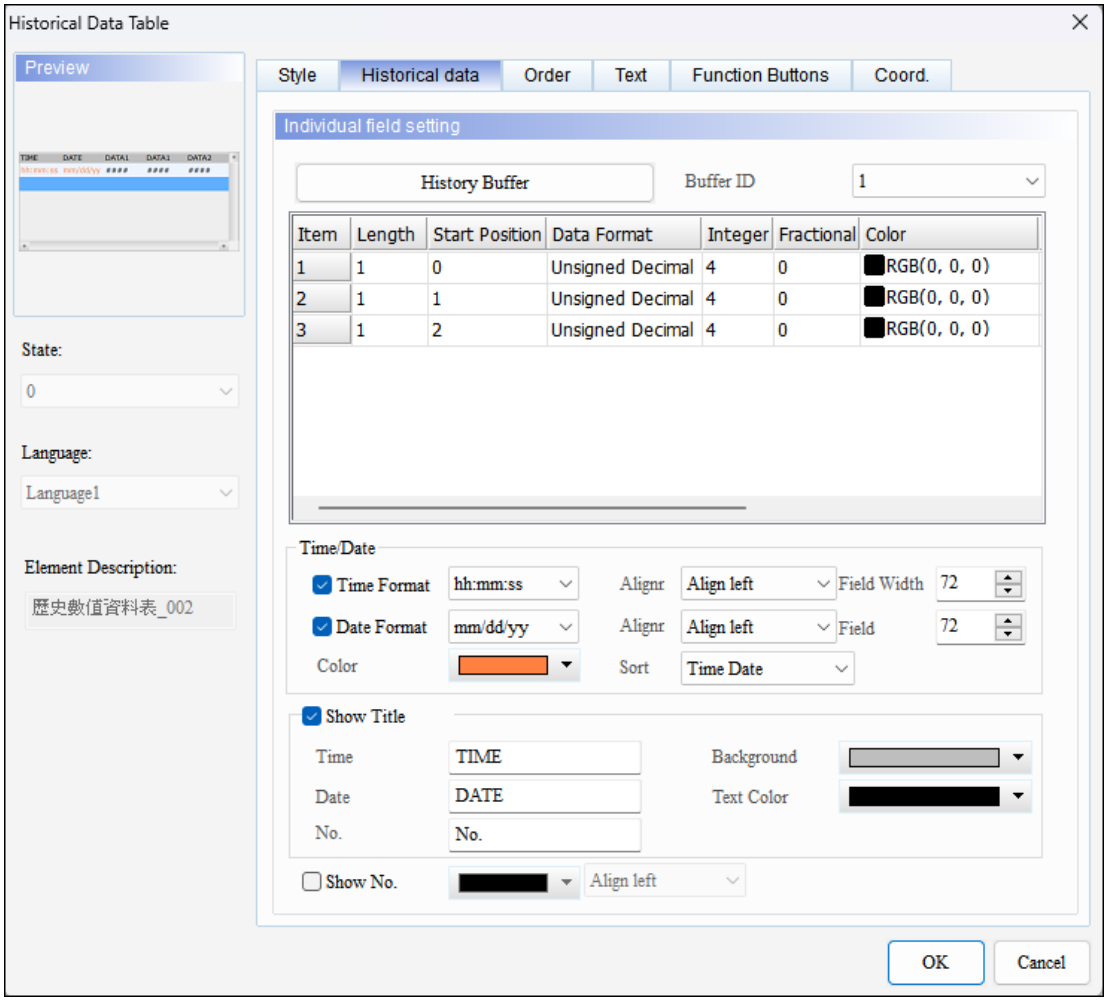


4. Create a **Historical Data Table** element on the screen, and then double-click the element to open the properties dialog.

   a. In the **Style** tab, set 3 for **Column Counts**.

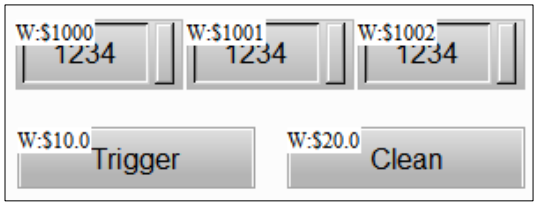
   b. In the **Historical data** tab, set each property of the **Individual curve setting** table.

   c. Select the **Time Format**, **Date Format**, and **Show Title** checkboxes.

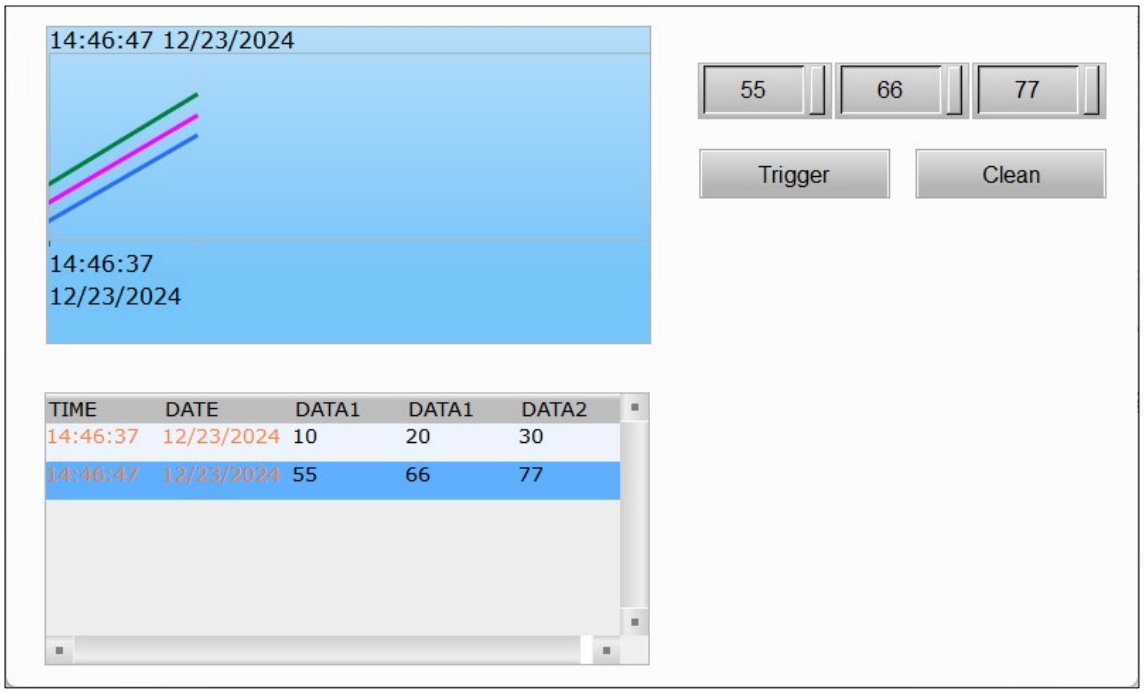


5. Create 3 **Numeric Entry** elements on the screen, and then set the **Write Address** is the read address of the history buffer $1000.

6. Create 2 **Momentary** button elements on the screen, and then set the **Write Address** to $10.0 and $20.0 respectively, corresponding to the trigger bit and data clear bit.



7. Download the screen to the HMI and enter the value within 100 to 3 **Numeric Entry** elements respectively. Click the button with the memory address of $10.0, and the **Historical Data Table** records the current value. Click $10.0 button again, and the historical trend chart draws the data curve. The following figure shows the execution result.



8. The historical data is synchronously written to the USB disk. The file path is `HMI\HMI-000\History\CSV\H0001.csv`, and the content of the CSV file is also written to the data content according to **Field Name**.

	A	B	C	D	E
1	Region	TW			
2	Location	TN02			
3	Floor	7F			
4	Time	Date	DATA1	DATA2	DATA3
5	14:55:14	12/23/2024	10	20	30
6	14:55:25	12/23/2024	55	66	77

Enhanced Recipe

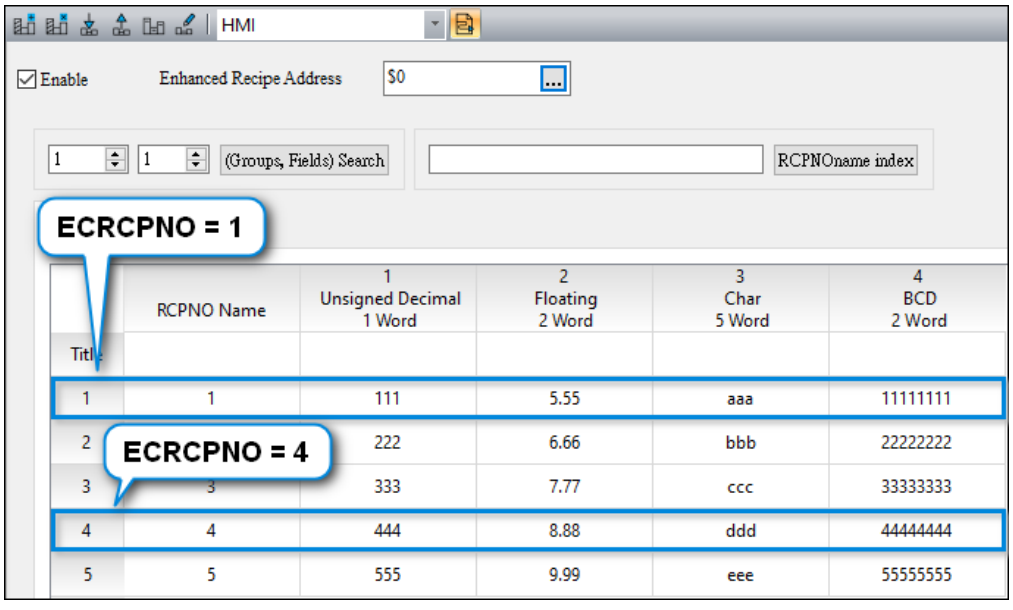
Due to production needs, an enhanced recipe is provided that can record a mixture of alphanumeric (string) and numeric formats. The data type supported by the enhanced recipe is Word or Double Word and use the address of the control area different from the 16-Bit / 32-Bit Recipe to set the control area. When reading or writing recipes, you need to specify the recipe number and recipe group for reading and writing one of the recipes.

The following table lists the definition of each enhanced recipe special registers.

Register Name	Definition
ENRCP	Enhanced Recipe Register
ENRCPNO	Enhanced Recipe Number Register
ENRCPG	Enhanced Recipe Group Register
ENRCPGNAME	Enhanced Recipe Group Name Register

Enhanced Recipe Number Register (ENRCPNO)

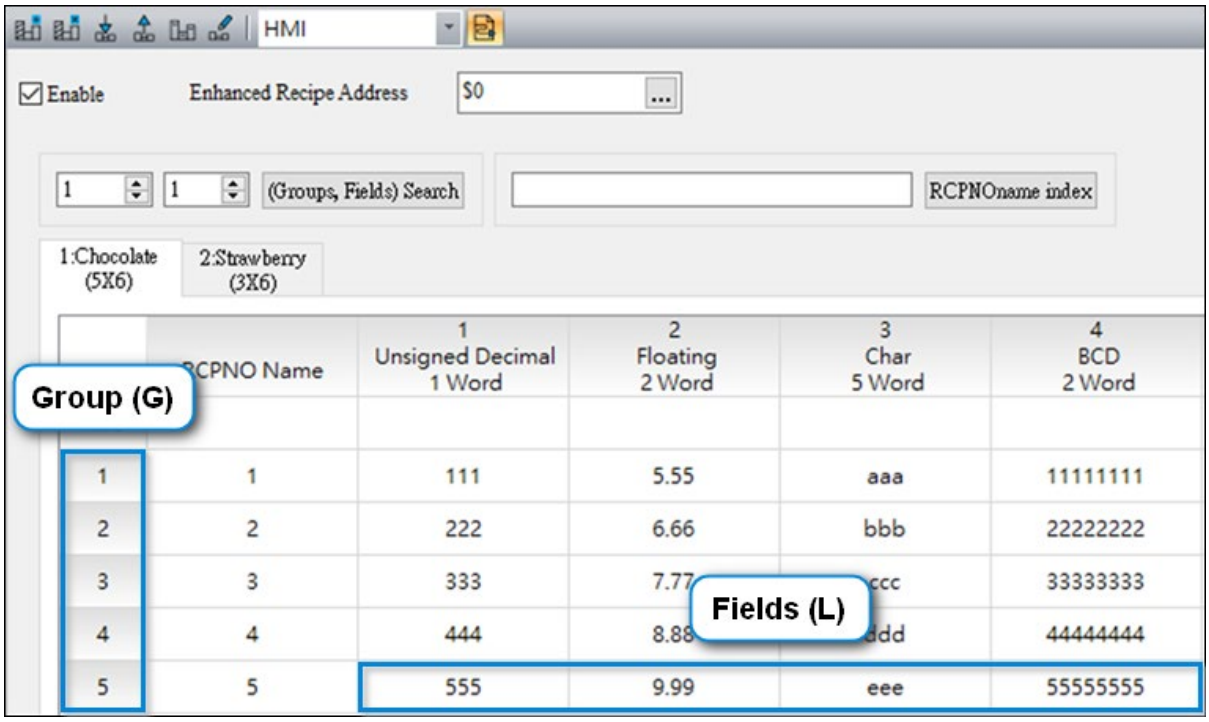
The enhanced recipe number register is used to specify the enhanced recipe number. Read and write a group of recipes according to the recipe number recorded in the recipe number register. For example, when selecting the first group of recipes, ENRCPNO = 1; when selecting the fourth group of recipes, ENRCPNO = 4.



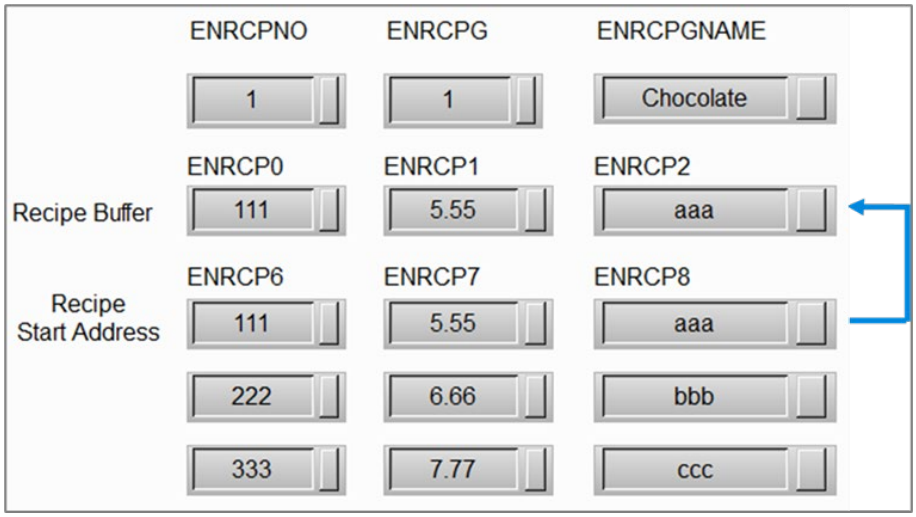
Note: The enhanced recipe number registers do not have power-off retentive function. When the HMI is powered off, the data in the register cannot be retained.

Enhanced Recipe Register (ENRCP)

The recipe buffer is arranged in front of the recipe register. This area allows you to place a selected group of recipes. When the number of fields in the recipe buffer is the same as the number of fields in the selected recipe group, it means that the recipe buffer occupies L recipe registers. The number of recipe buffers occupied by a recipe table is L * (G+1), where G+1 represents the number of registers with one more set of buffers.

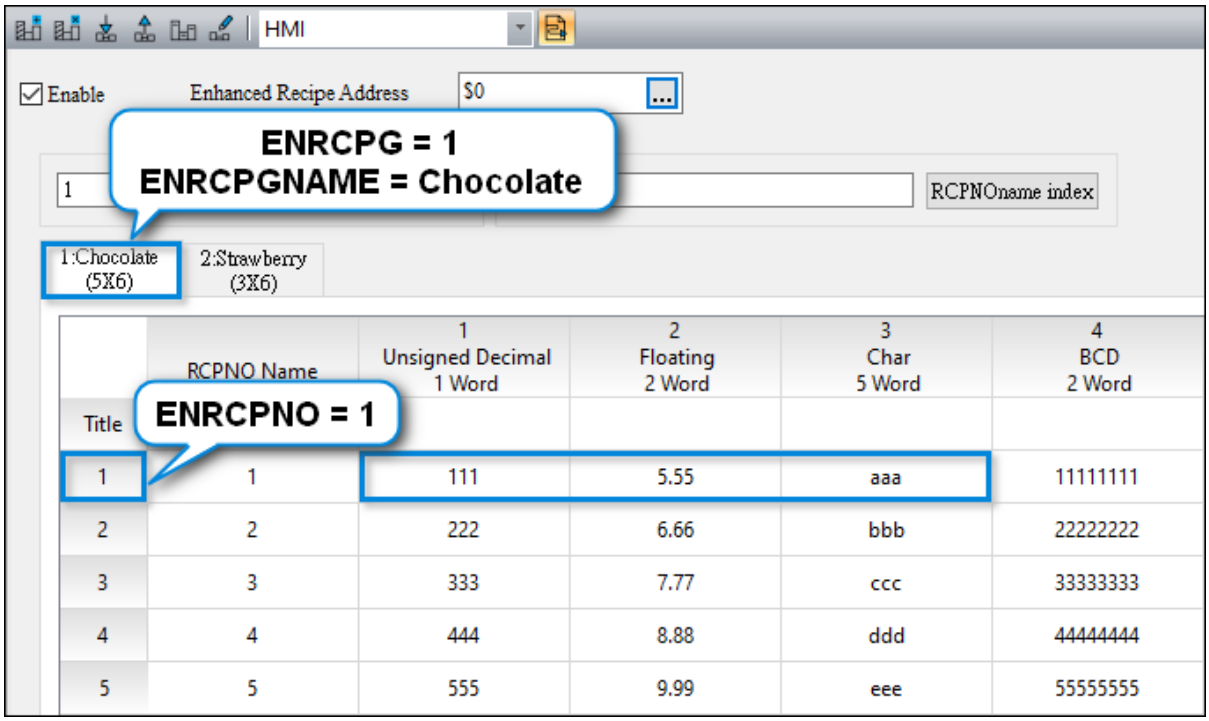


The main purpose of the recipe buffer is that you only need to switch the number of recipe groups to know the currently specified recipe parameters. If the selected recipe group (ENRCPNO) is 1, and then the recipe buffer displays the first group recipe value, that is, ENRCPNO = 1.



Enhanced Recipe Group Register (ENRCPG / ENRCPGNAME)

The enhanced recipe set selection register is used to specify the enhanced recipe set. Up to 255 sets of enhanced recipe data can be created. To call the enhanced recipe data, users must use recipe set 1~255 (ENRCPG 1~255). If enhanced recipes are enabled, the default value for the recipe set is 1. Therefore, if the first group of recipes for the first set of enhanced recipes is selected, that means ENRCPG = 1, ENRCPGNAME = chocolate, and ENRCPNO = 1.



ENRCPGNAME extracts the recipe content by entering the recipe name while ENRCPG enters a value from 1 ~ 255.

ENRCPGNAME names the recipe group name in Unicode, you can enter the language of each country. With this register, you can enter the recipe name to call the recipe. It must be used with the **Multi-Language Input** element (available for DOP-100 series HMI) must be used with.

Note: The enhanced recipe group register does not have the power-off retention function. When the HMI is powered off, the data in the register cannot be retained.

Enhanced Recipe Quantity Limitation

If the non-volatile data storage area is set in the USB disk or SD card, the maximum number of enhanced recipe files cannot exceed 256 fields X 10000 groups. If the non-volatile data storage area is set in the HMI, the editable size of the enhanced recipe depends on the flash memory specifications of different models.

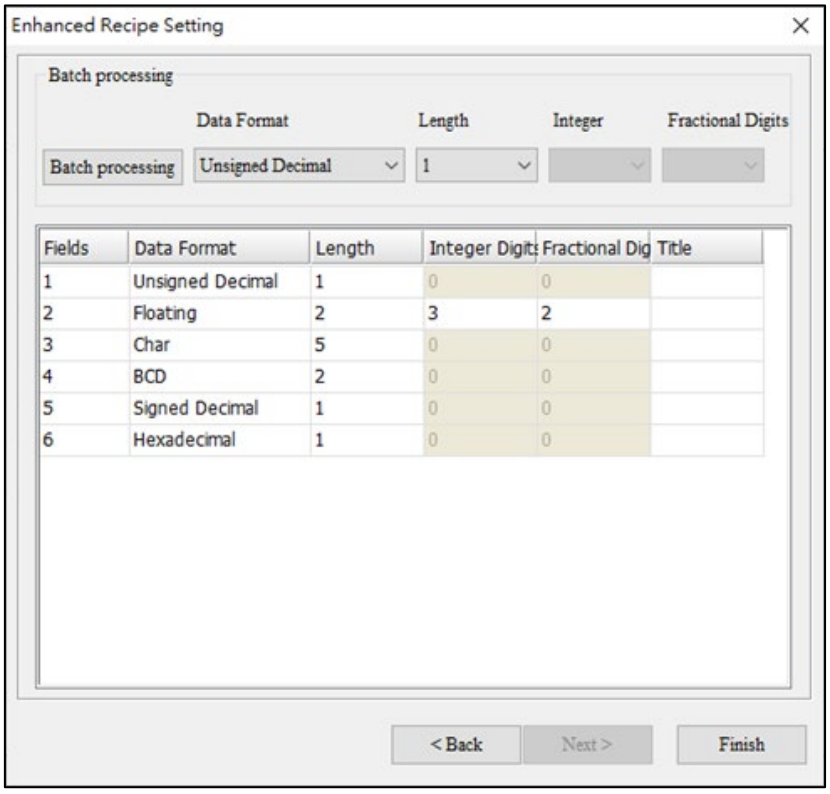
Enhanced Recipe Example

The following table lists the example of operating the enhanced recipe.

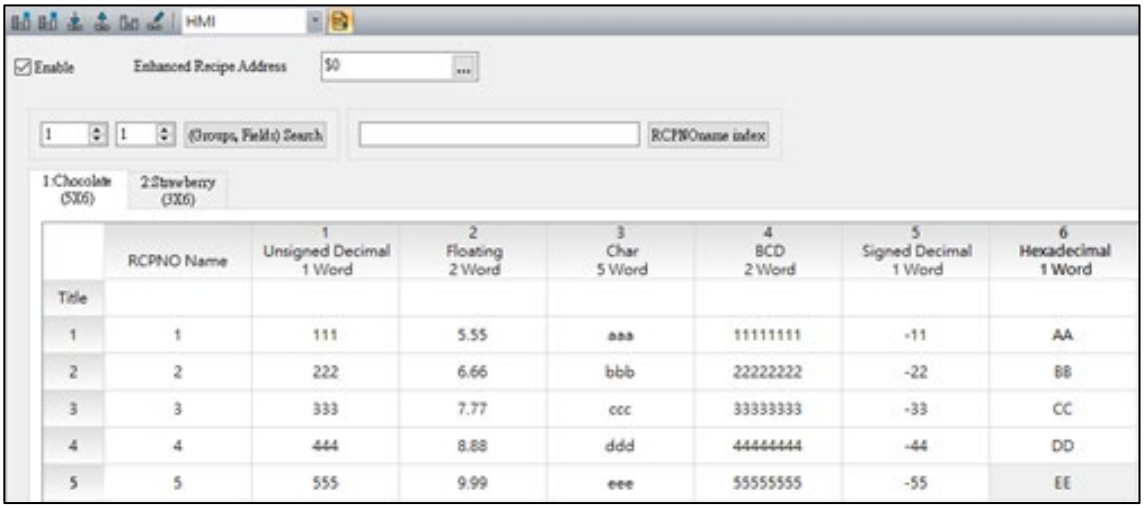
Set the enhanced recipe

1. Click **Data Management** > **Recipe** > **Advanced Recipe** on the toolbar.
2. Select the **Enable** checkbox in the enhanced recipe setting page, and then set **Enhanced Recipe Address** to $0.
3. Click  .
4. Set the **Name** as Chocolate, **Fields** as 6, and **Group** as 5 in the **Enhanced Recipe Setting** dialog, and then click **Next**.
5. Configure the data format. Do the following:
   - Set the 1st field as Unsigned Decimal and **Length** to 1.

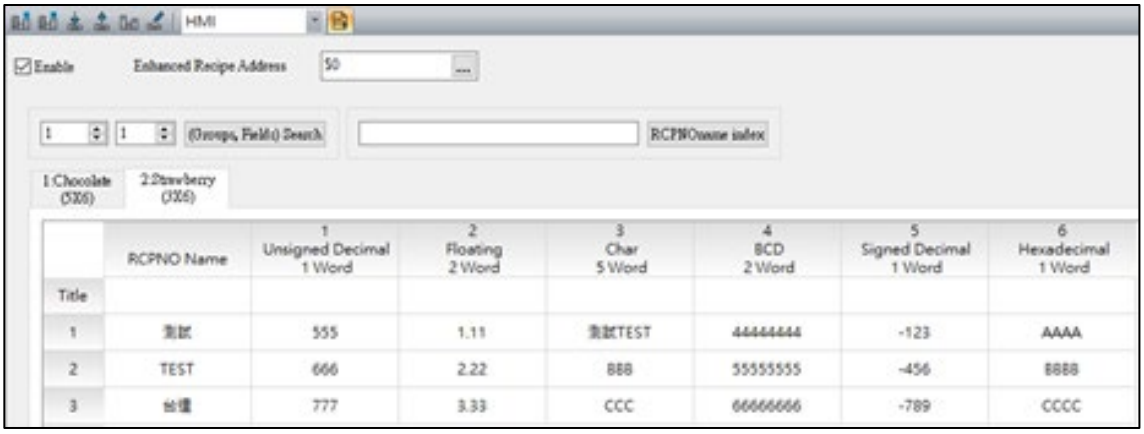
- Set the 2nd field as Floating, and **Length** to 2, **Integer Digits** to 3, and **Fractional Digits** to 2.
- Set the 3rd field as Char and **Length** to 5.
- Set the 4th field as BCD and **Length** to 2.
- Set the 5th field as Signed Decimal and **Length** to 1.
- Set the 6th field as Hexadecimal and **Length** to 1.



6. Click **Finish**, and then enter recipe data.



7. Add a new recipe, and then set **Name** to Strawberry, **Fields** to 6, and **Group** to 3.
8. Set the same data format and enter the recipe data.

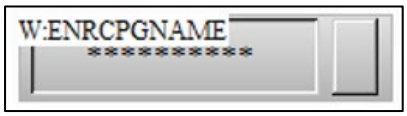


Create ENRCPG Numeric Entry element

1. Create a **Numeric Entry** element.
2. Set the **Write Address** to ENRCPG. This element is mainly used to select the enhanced recipe group.

Create ENRCPGNAME Multi-Language Input element

1. Create a **Multi-language Input** element.
2. Set the **String Length** to 10.
3. Set the **Write Address** to I ENRCPGNAME. This element is mainly used to select the enhanced recipe group by entering the recipe name.



Create ENRCPNO Numeric Entry element

1. Create a **Numeric Entry** element.
2. Set the **Write Address** to ENRCPNO. This element is mainly used to select the enhanced recipe number.

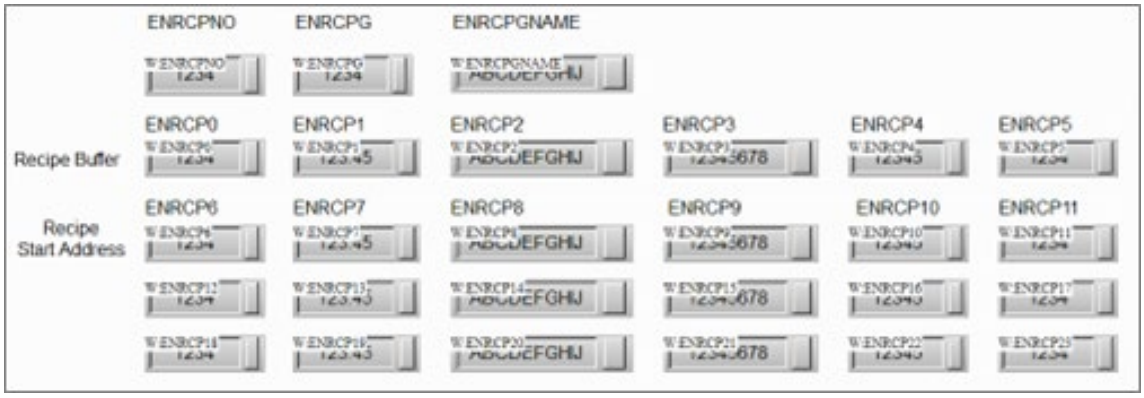
Create ENRCP Numeric Entry element

Before creating the **Numeric Entry** element to display the enhanced recipe register, the formula [(L*(G+1)-1)}] of the recipe register can be applied to calculate the number represented by n in ENRCPn. According to the configured recipe field length (L) is 3 X group number (G) is 3, substitute into the recipe, and the number ENRCPn is ENRCP0~ENRCP11.

1. Create a **Numeric Entry** element and set the **Write Address** to ENRCP0. Set its representation mode according to the first field of the recipe table, select the **Data Type** as Word and **Data Format** as Unsigned Decimal.
2. Create a **Numeric Entry** element and set the **Write Address** to ENRCP1. Set its representation mode according to the second field of the recipe table, select the **Data Type** as Double Word and **Data Format** as Floating, and then set the **Integer Digits** to 3 and **Fractional** to 2.
3. Create a **Multi-Language Input** element and set the **Write Address** to ENRCP2. Set its representation mode according to the third field of the recipe table, select or enter the **String Length** as 10

   Note: One word length can store two characters.
4. Create a **Numeric Entry** element and set the **Write Address** to ENRCP3. Set its representation mode according to the fourth field of the recipe table, select the **Data Type** as Double Word and **Data Format** as BCD.
5. Create a **Numeric Entry** element and set the **Write Address** to ENRCP4. Set its representation mode according to the fifth field of the recipe table, select the **Data Type** as Word and **Data Format** as Signed Decimal, and then set its **Maximum** and **Minimum**.

6. Create a **Numeric Entry** element and set the **Write Address** to ENRCP5. Set its representation mode according to the sixth field of the recipe table, select the **Data Type** as Word and **Data Format** as Hexadecimal.
7. Repeat steps 1 ~ 6 to create ENRCP6 ~ ENRCP23 elements in order and set their data formats.



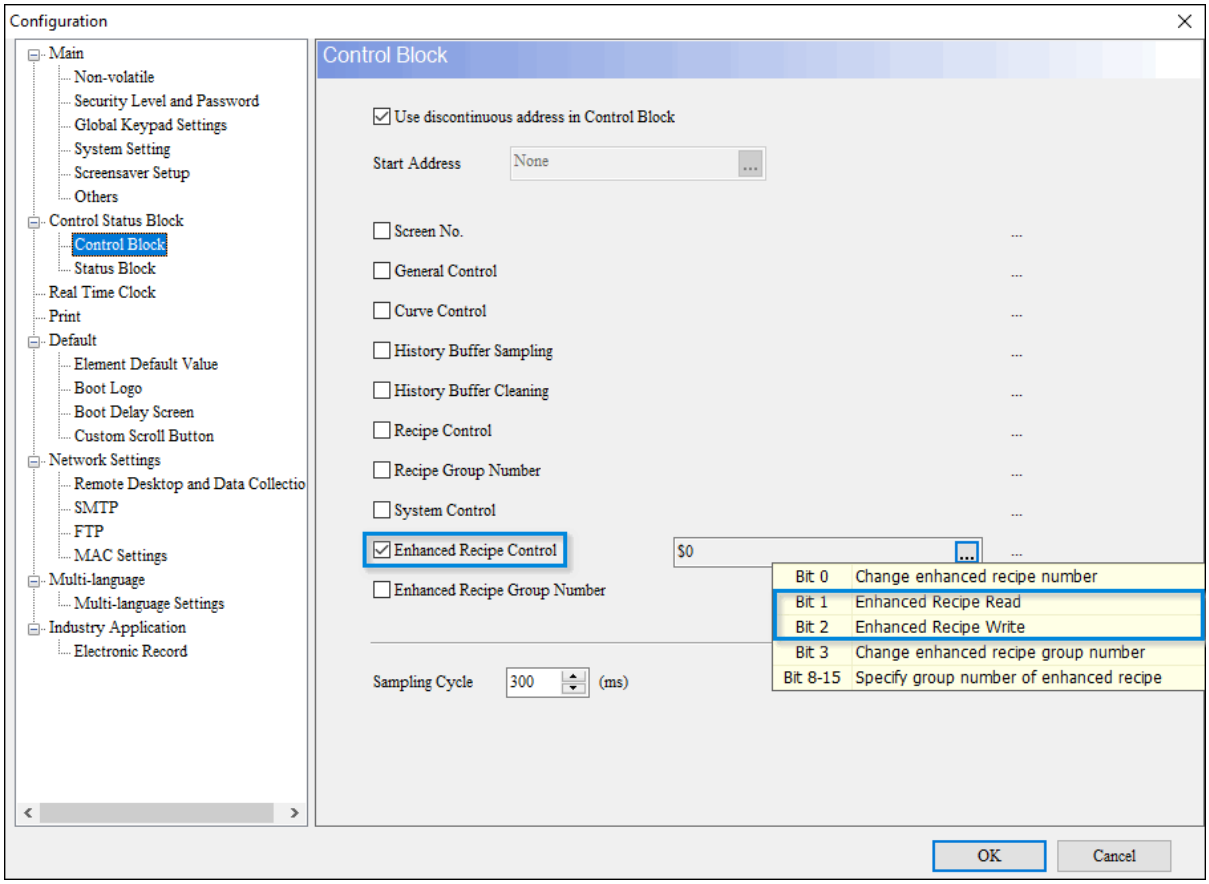
Note: ENRCP0~ENRCP5 is the recipe buffer, and the actual recipe data is ENRCP6~ENRCP23.

Create recipe read controller address element

Repeat steps 1~6 of the ENRCP address setting to create elements in order and set the **Write Address** to $0~$11 and set its **Data Format**.

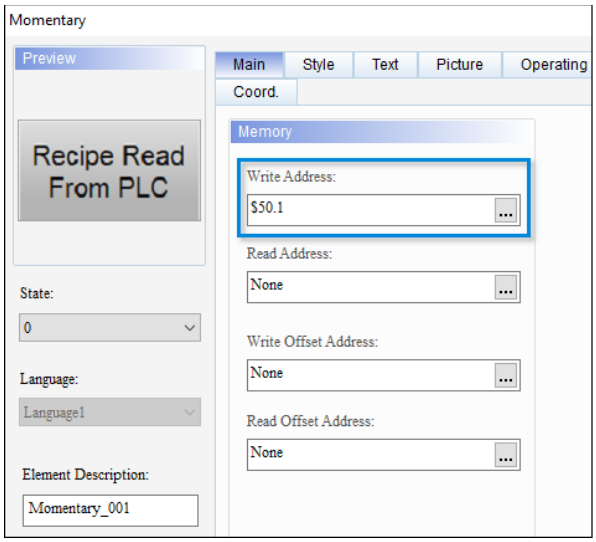
Set Enhanced Recipe Control

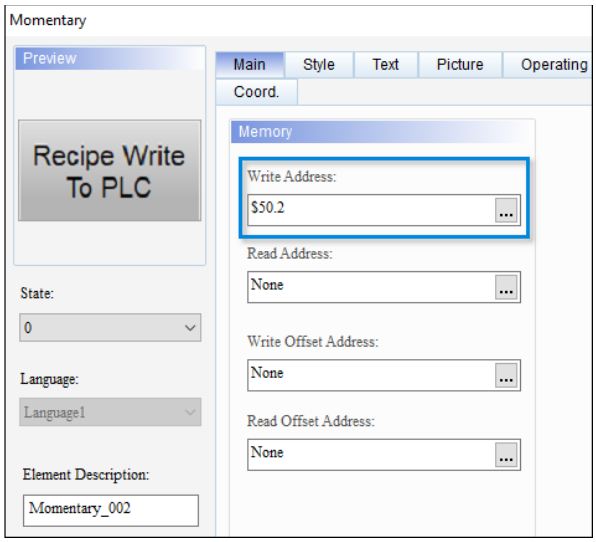
Click **General** > **Configuration** on the toolbar, select the **Enhanced Recipe Control** checkbox in the **Control Block** page, and then set the start address of the control block to decide the recipe control address.



Create Momentary button element

Create two **Momentary Buttons** elements, set the **Write Address** to $50.1 and $50.2 respectively, corresponding to Bit 1 and Bit 2 of the recipe control flag to read and write recipes.

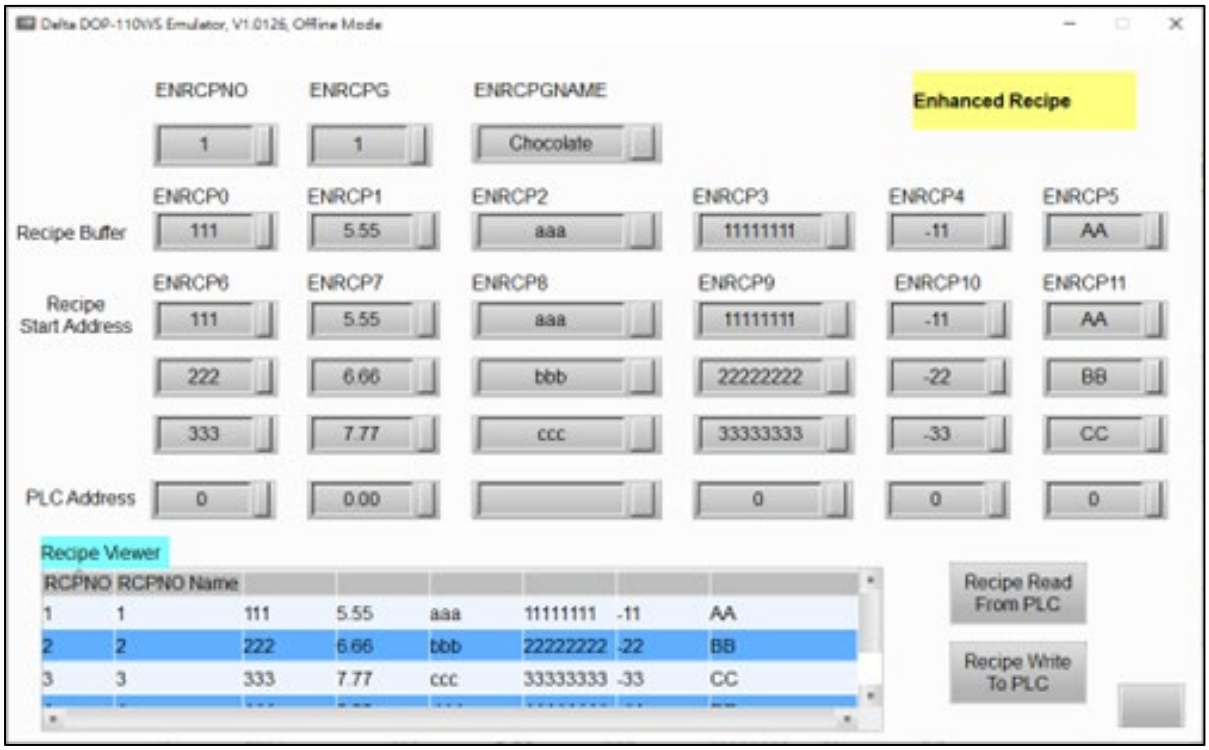




Result

After completing the establishment and configuration of all elements, compile and download all data to HMI. You can select different enhanced recipe group according to your needs.

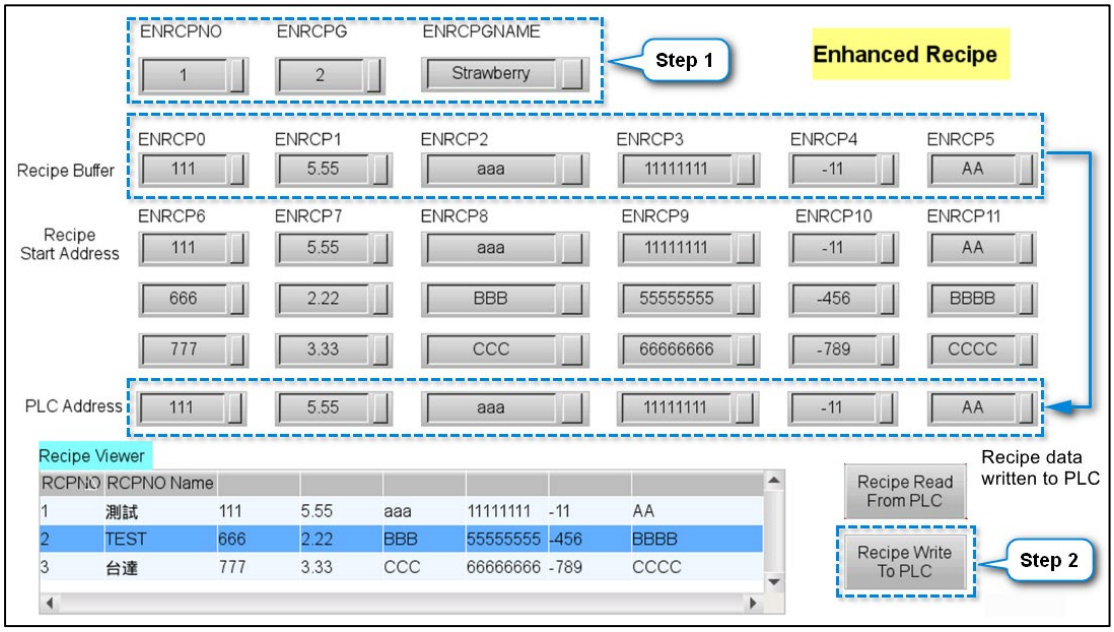
The recipe data will be displayed in ENRCP0 ~ ENRCP11 according to the selected recipe group, among which ENRCP0 ~ ENRCP5 is the recipe buffer data, and the start address of the first group of actual recipe data is ENRCP6.



Trigger the **Recipe Write** button, which will refer to the selected enhanced recipe group, and write the recipe data of this group to the PLC. Triggering the **Recipe Read** button will also refer to the selected enhanced recipe group, write the PLC data, and read it back to the selected data content of the formula group by HMI.

- **Write Recipe**

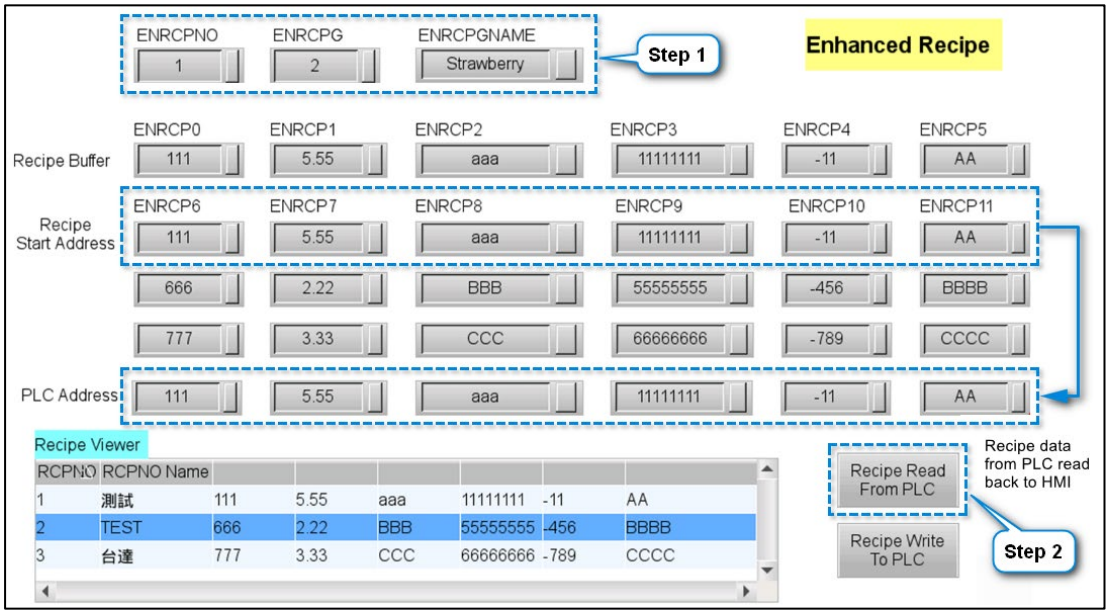
  1. Set the recipe number and group to be written to the controller.
  2. Click **Recipe Write To PLC** to write the data in the recipe buffer to the controller address.



- **Read Recipe**

1. Set the recipe group name on the HMI screen.

2. Click **Recipe Read From PLC** to read the controller address data back to the specified recipe number.



Enhanced Recipe Attributes

The following table lists the settings in the enhanced recipe setting page and their descriptions.

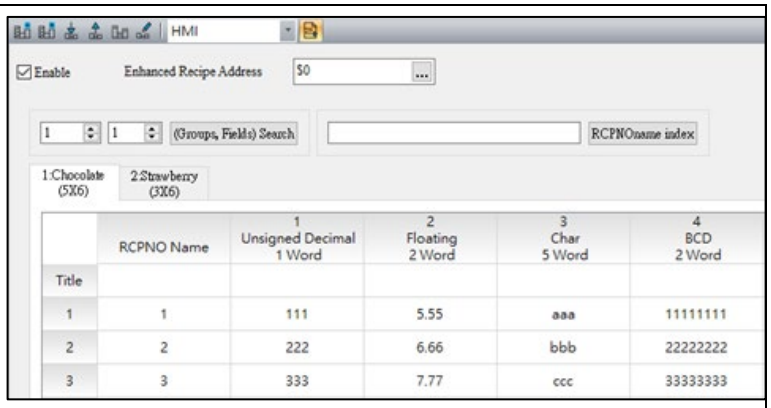
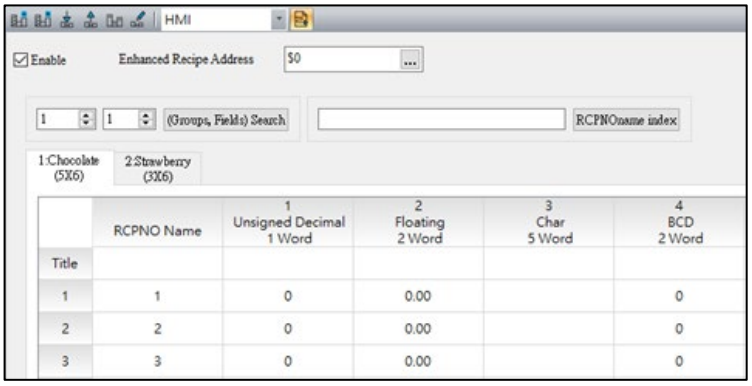
Setting	Description
	Click to add a recipe. Up to 255 sets of recipes can be added.
	Click to delete a recipe. After the deletion, a message dialog displays, asking you whether to delete the enhanced recipe data.
	Click to import the recipe file. Support .csv and .xlsx file formats. **Note**: If the wrong file is opened, the recipe data will not be displayed normally, and an error message will be displayed after loading.
	Click to export the recipe files is .csv and .xlsx file formats. • The .csv file only records the data format of the recipe field and the content of the recipe data.

Setting	Description

ENRCP-4.0						
巧克力	6	3				
2	1	0	0			
5	2	3	2			
8	5	0	0			
0	2	0	0			
1	1	0	0			
3	1	0	0			
1	111	5.55	aaa	11111111	-11	AA
2	222	6.66	bbb	22222222	-22	BB
3	333	7.77	ccc	33333333	-33	CC
草莓	6	3				
2	1	0	0			
5	2	3	2			
8	5	0	0			
0	2	0	0			
1	1	0	0			
3	1	0	0			
測試	555	1.11	測試TEST	44444444	-123	AAAA
TEST	666	2.22	BBB	55555555	-456	BBBB
台達	777	3.33	CCC	66666666	-789	CCCC

- The .xlsx file records detailed recipe address information, including data format, recipe title, recipe group address or field read address.

Enhanced Recipe	1.0						
Enable Enhanced Recipe	1						
Continuous Enhanced Recipe Address	0						
Enhanced Recipe Address	$0						
Enhanced Recipe Storage Location	HMI						
Recipe Name	巧克力						
Recipe Fields	6						
Recipe Group	3						
Recipe Address Continued	0						
Recipe Read Address	None						
Recipe Fields Setting	Data Format	Length	Integer Dig	Fractional	Title	Read Address	
	Unsigned Decimal	1	0	0		$0	
	Floating	2	3	2		$1	
	Char	5	0	0		$3	
	BCD	2	0	0		$8	
	Signed Decimal	1	0	0		$10	
	Hexadecimal	1	0	0		$11	
Recipe Data	RCPNO Name						
	1	111	5.55	aaa	11111111	-11	AA
	2	222	6.66	bbb	22222222	-22	BB
	3	333	7.77	ccc	33333333	-33	CC

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>  </td><td>Click to clear all recipe contents.
<table>
<tr><td>Before</td><td> 
</td></tr>
<tr><td>After</td><td> 
</td></tr>
</table></td></tr>
<tr><td>  </td><td>Click to set the Name, Fields, Group, and Data Format.</td></tr>
<tr><td>Recipe Storage</td><td>Select the recipe storage location. The options vary from the model, including HMI, USB Disk, USB Disk 2,and SD.
If select HMI, the data will be recorded in the ROM of HMI when powering off.</td></tr>
<tr><td>  </td><td>Click to switch to Continuous recipe address or Non-continuous recipe address.
Unclicking the Continuous Recipe Address icon, the Group addresses are consecutive checkbox displays on the recipe group page.
If select Group addresses are consecutive, you can set the group Read Address. Its address is the start address of the recipe group.
If unselect Group addresses are consecutive, the read address will be displayed in the recipe table, and the read address of each recipe field can be set individually.</td></tr>
<tr><td>Enable</td><td>Click to enable the enhanced recipe. If not selected, all enhanced recipe settings will be invalid.</td></tr>
</table>

Setting	Description
Enhanced Recipe Address	Select **internal memory** or controller register address. If click  , the start address of all enhanced recipes is the set address.
(Groups, Fields) Search	After entering the number of groups and fields to be searched, click this button to search.
RCPNOname index	After entering the RCPNO name to be searched, click this button to search.

The following table lists the settings in the Enhanced Recipe Setting dialog and their descriptions.

Setting	Description
Name	Enter the group name of the enhanced recipe. Support Unicode input, you can enter the languages of each country.
Field	Select or enter the number of fields. **Fields** indicates the length and of the recipe. The value range is 1–2048.
Group	Select or enter the number of groups. **Group** indicates the length of the enhanced recipe. The value range is 1–65535.
Data Format	Select the data format. The options are BCD, Signed Decimal, Unsigned Decimal, Hex, Floating, and Char. Among them, the read length of the Char format supports up to 32 Word lengths (that is, 64 characters), and supports Unicode input. **Note**: If select Char, do not fill in the value with the same character as the delimiter, otherwise, it will cause data errors and the data will fail to import.
Length	Select the read length. The read length varies from the data format.

Data Format	Length
BCD	1: Word 2: Double Word 4: Quad Word
Signed Decimal	
Unsigned Decimal	
Hexadecimal	
Floating	2: Double Word 4: Quad Word
Char	Supports up to 32 Words (64 characters)

Setting	Description
Integer Digits	This setting is available only when the **Data Format** is selected as Floating. **Note**: The sum of **Integer Digits** and **Fractional Digits** only supports 7 digits.
Fractional Digits	This setting is available only when the **Data Format** is selected as Floating. **Note**: The sum of **Integer Digits** and **Fractional Digits** only supports 7 digits.

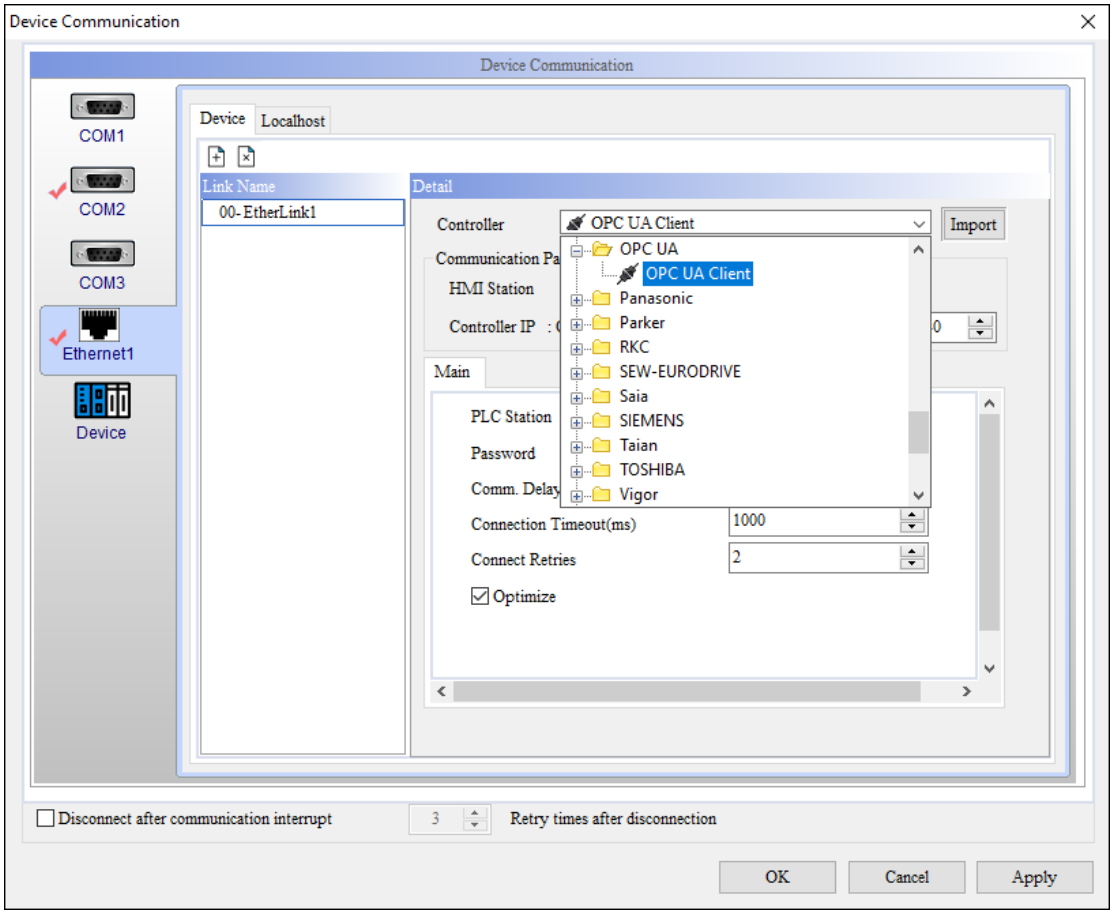
OPC UA

Use the OPC UA Client function to import tags from files or use Ethernet to connect to the OPC UA Server. This section introduces the setting instructions for OPC UA Client and OPC UA Server.

OPC UA Client Settings

To set OPC UA Client

1. Create a project for a model that supports Ethernet.
2. On the menu bar, click **General** > **Device Communication**.
3. In the **Device Communication** dialog, click **Ethernet1**.
4. In the **Device** tab, click  to add a new network connection, and then select the controller as **OPC UA Client**.



To import OPC UA Tag

- **Import from file**

1. In the **Device Communication** dialog, set the controller as **OPC UA Client**, and click **Import**.
2. In the **Tag List** dialog, click  to import tag (XML or CSV file).

   Note:

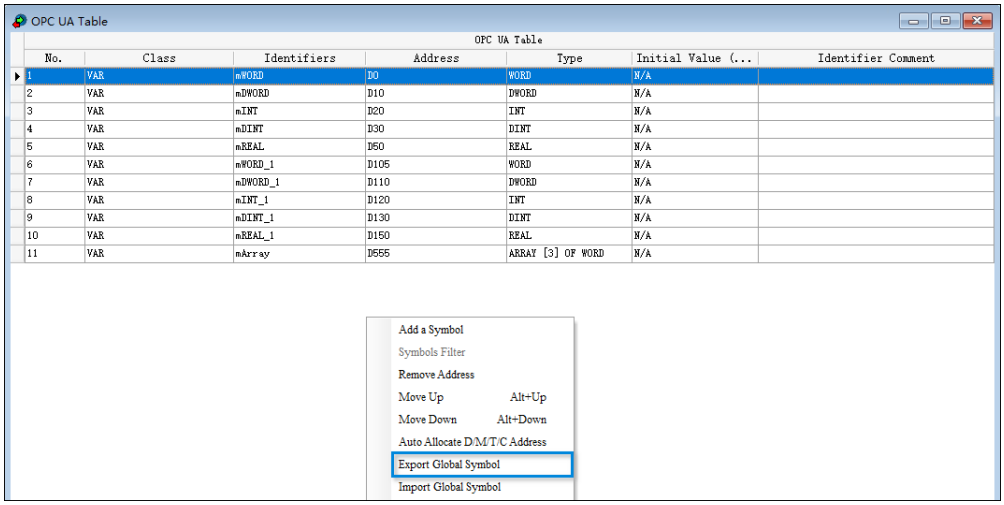
   - The .xml file is a file exported by the OPC UA server.
   - The .csv file is a file exported by ISPSoft software. Follow the steps to export a .csv file.

     a. In ISPSoft software, in **Project** pane, double-click **Global Symbols** > **OPC UA Table**.

     b. In the **OPC UA Table** dialog, right-click an empty space and select **Add a Symbol** to create the symbol.

     c. Export the global symbol table. Do any of the following:

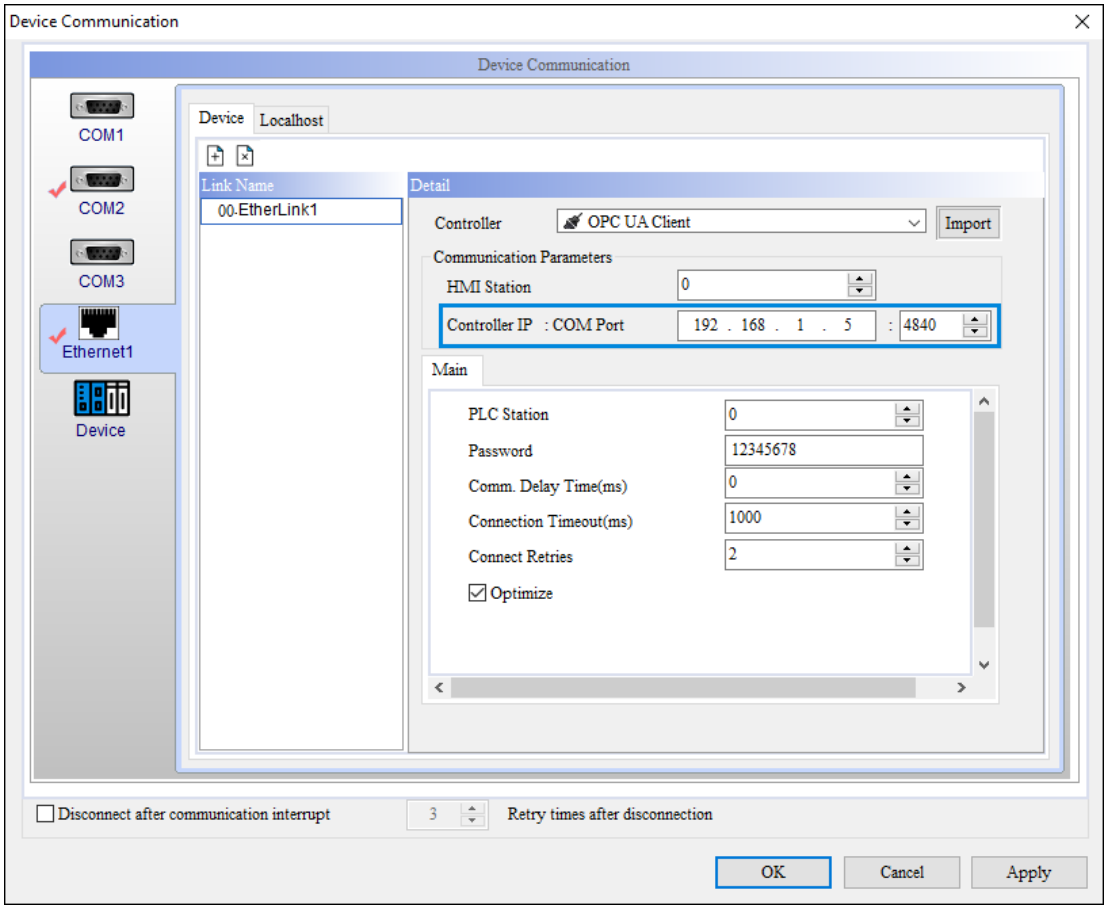
     - Right-click an empty space and select **Export Global Symbol**.
     - In **Project** pane, right-click **OPC UA Table** and select **Export Global Symbol**.



Note: The OPC UA Server function is currently only available for AS-300 series models. It requires an additional AS-FOP02 communication card and ISPSoft version 3.13 and above.

- **Import Tags from OPC UA Server**

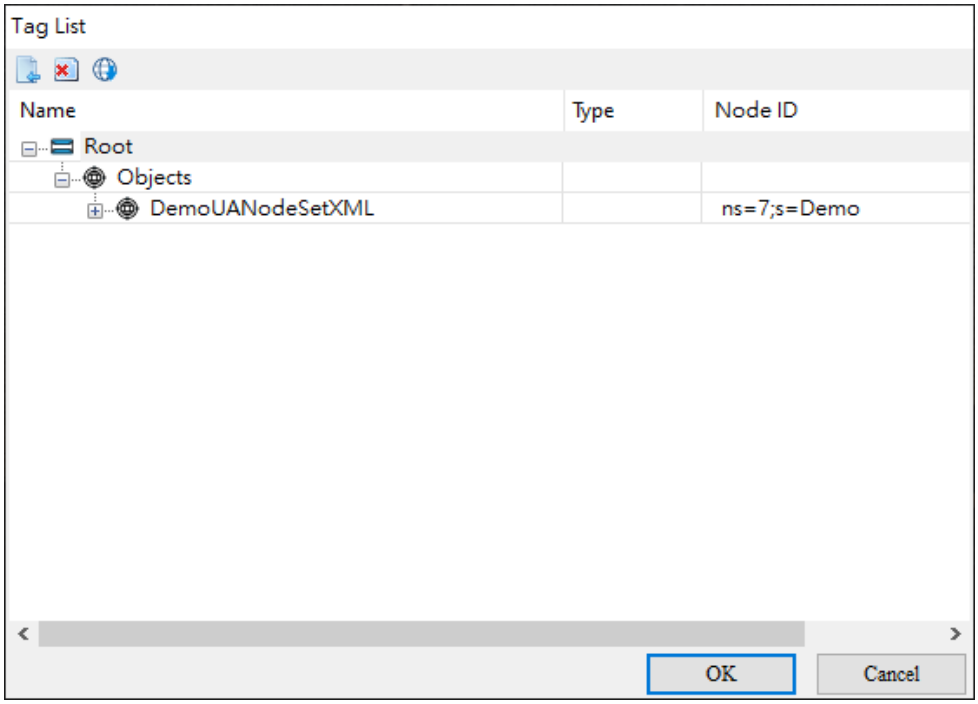
1. In the **Device Communication** dialog, after setting **Controller** as **OPC UA Client**, enter IP address and communication port of the OPC UA server in **Controller IP** field.



2. Click **Import**.

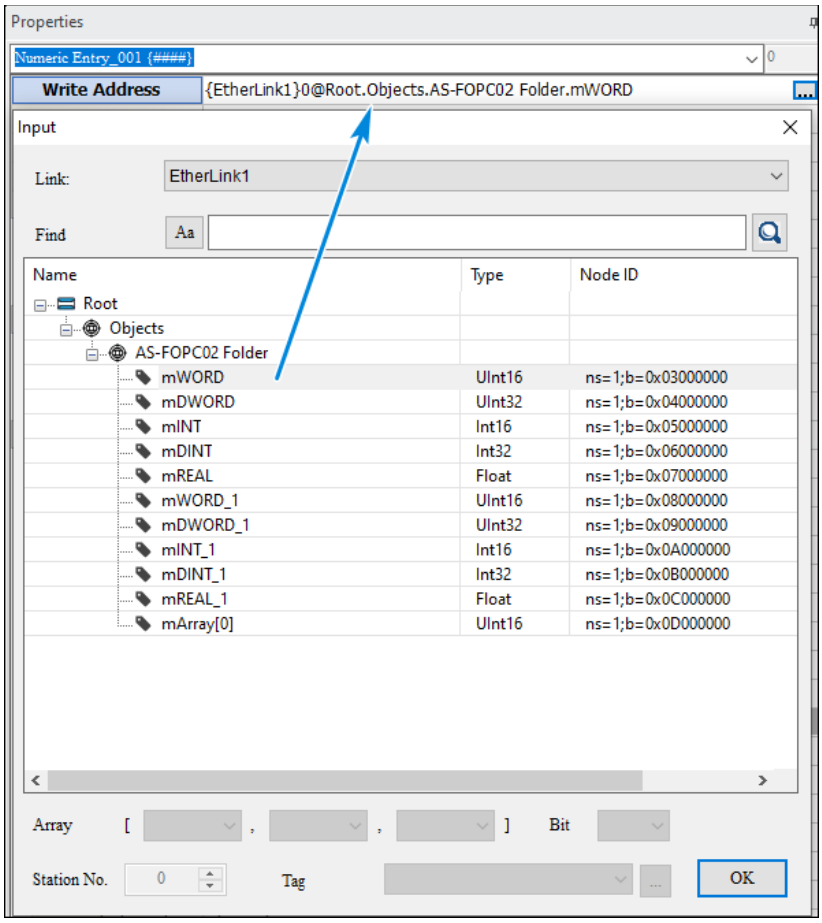
3. In the **Tag List** dialog, click  .

   The Tag has been imported to the OPC UA Server through the set IP address. The tag list can be viewed.

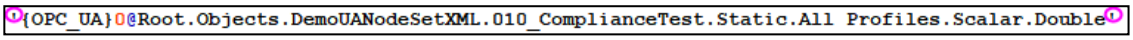


Using OPC UA Tag

- Used for elements: In the **Read Address** / **Write Address** dialog, select **EtherLink1** for **Link**.



- Userd for macro commands: In the macro editing dialog, click  and enter macro command. If the variable content selects OPC UA Tag, OPC UA Tag automatically adds single quotes after updating the macro; if you use  to input OPC UA Tag, you need to manually add single quotes before and after the OPC UA Tag.



The following table lists the supported OPC UA Tag NodeID types and OPC UA Tag data types.

OPC UA Tag NodeID Type Support List		
NodeID (Identifier Type)	**Scalar**	**Array**
I (Numeric)	V	V
B (Opaque)	V	-
S (String)	V	V
G (GUID)	V	-
Data Type	**Scalar**	**Array**
Boolean	V	V
Byte	V	V
Int32	V	V
Int16	V	V
Int64	V	V
Double	V	V
Float	V	V
SByte	V	V
String	V	V
UInt32	V	V
UInt16	V	V
UInt64	V	V

OPC UA Server Settings

Set the communication address as an OPC UA variable through the OPC UA Server.

Note: This function only supports DOP-107WV, DOP-103WQ, DOP-110WS, DOP-112MX, DOP-115MX, DOP-112WX, DOP-115WX, and DOP-300 series models.

How to open **OPC UA server**?

- In **Project pane**, double-click **OPC UA Server**.

Or

- Click **IIoT** > **OPC UA Server** on the menu bar.

The following table lists the functions in the **OPC UA Server** dialog with their description.

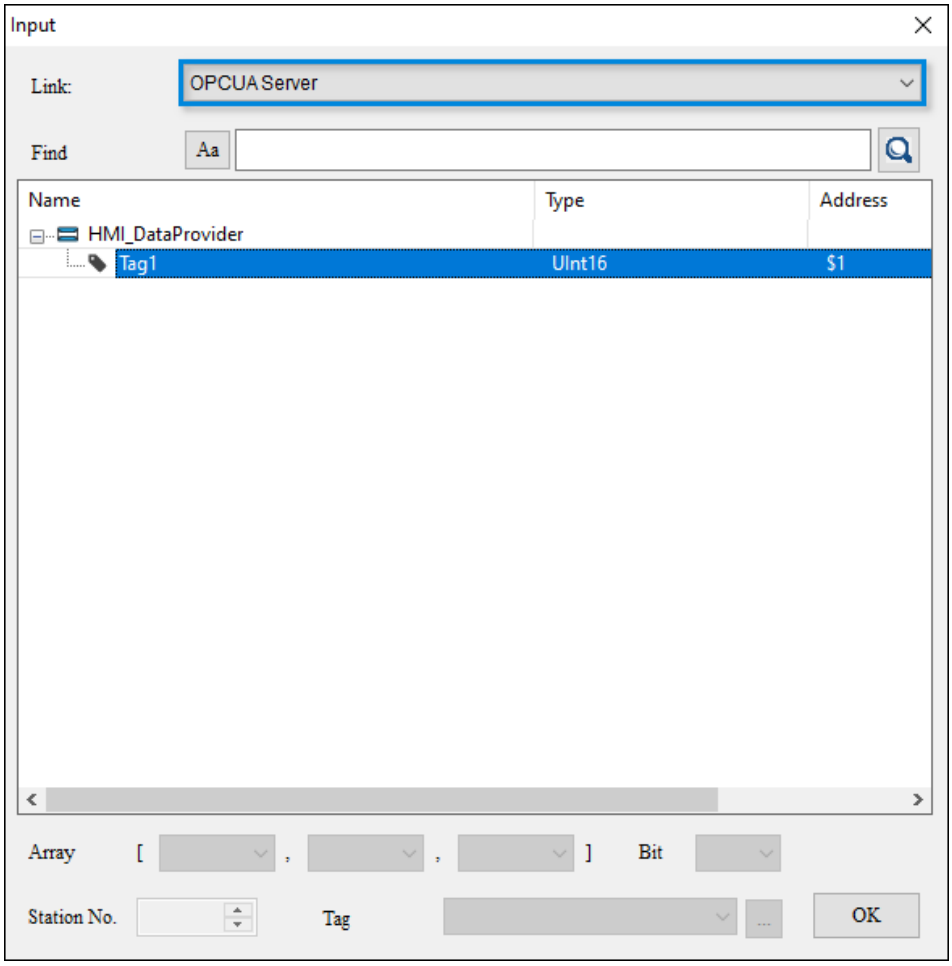
Function	Description
	Click to add a new group.
	Click to add a new tag. **Note**: Address is required. If not set, a message appears to inform you that the address input failed.
	Select the tag or group you want to delete, then click this icon to delete.
	Select the tag or group you want to edit, then click this icon to edit its properties. **Note**: You can double-click a tag or group to edit properties.

Follow these steps to apply the OPC UA server tag to the element.

To apply OPC UA server tag to element

1. Create an element.
2. In the address **Input** dialog of the element, select **OPCUA Server** for **Link**.

   Tags display in the list below.
3. Select the tag you want to apply to the element, and click **OK**.



OPC UA Security Policy and User Authentication

In OPC UA (Open Platform Communications Unified Architecture), security can be ensured through account authentication and encrypted communication. The account authentication is the most basic and simple. Enter the user's account name and password and have the server verified the credentials and allow access if they match.

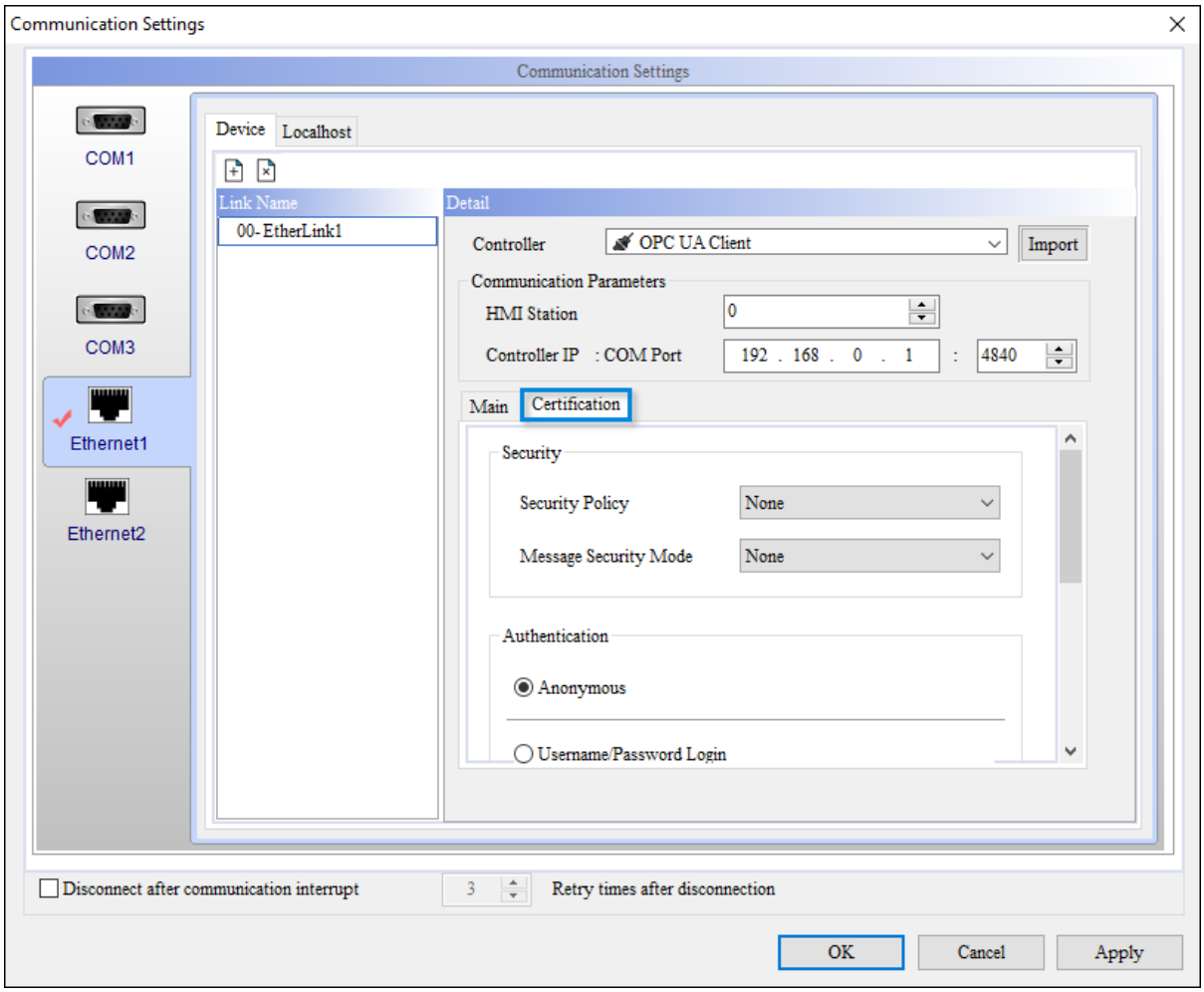
Note: This function is only available for DOP-300 series models.

Follow these steps for OPC UA authentication.

- **OPC UA Client**

  1. In the **Device Communication** dialog, click **Ethernet1**.
  2. In the **Device** tab, select **OPC UA Client** for **Controller**, and the **Certification** tab displays.

The following table lists the functions in the **Certification** tab with their description.



❶ Security

Function	Description
Security Policy	Select a security policy. The available options include None, Basic128Rsa15, Basic256, Basic256Sha256, Aes128Sha256RsaOaep, and Aes256Sha256RsaPss.
Message Security Mode	Select a message security mode. The available options include None, Sign, and Sign & Encrypt.

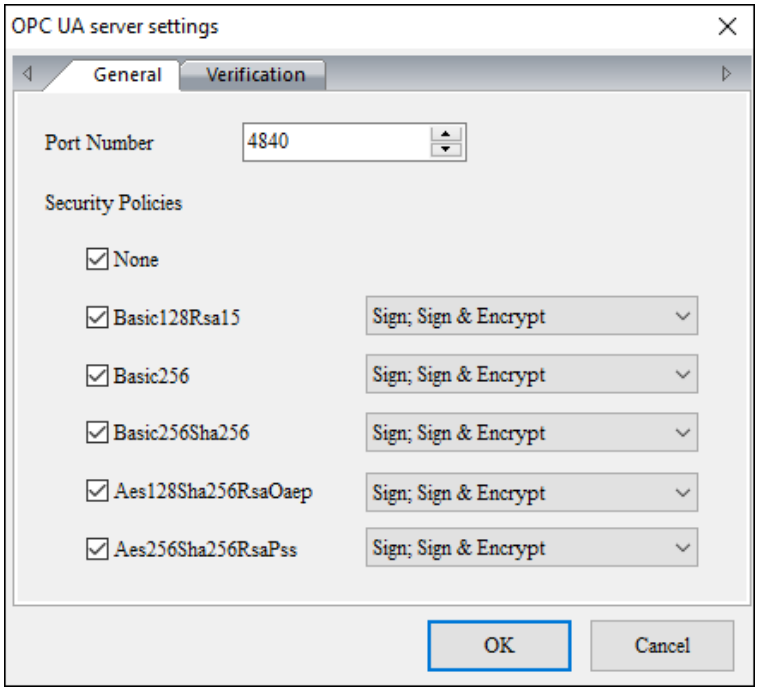
❷ Authentication

Function	Description
Anonymous	Choose anonymous login or user login.
Username/Password Login	

- **OPC UA Server**

  In the **OPC UA Server** dialog, click  to open **OPC UA server settings** dialog.

The following table lists the functions in the **OPC UA server settings** dialog with their description.



Function		Description
General	Port Number	Select or enter the port number. The range value is 0–65535, and the default value is **4840**.
	Security Policies	Check the security policy and select message security mode. • Security policy options include None, Basic128Rsa15, Basic256, Basic256Sha256, Aes128Sha256RsaOaep, and Aes256Sha256RsaPss. • Message security mode options include None, Sign, and Sign & Encrypt
Verification	Allow anonymity	If selected, check at least one of the options - Browse, Read, or Write.
	Username & Password	If selected, Name and Password should not be vacant.

MQTT Settings

HMI sends messages through an object to the MQTT server or subscribes to a topic from the MQTT server. It can also be an MQTT server. When the HMI is an MQTT server, the messages will not be sent to other servers.

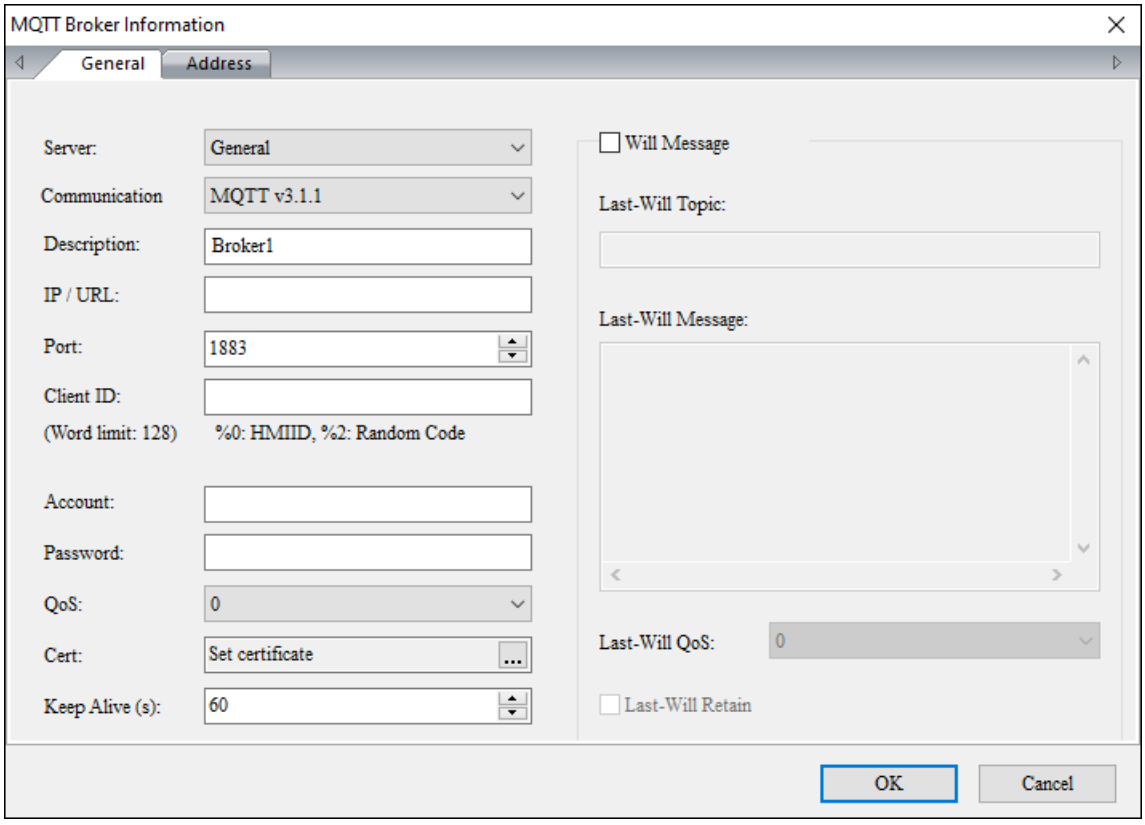
MQTT Broker

You need to add a Broker to enable MQTT functions.

To add a Broker

1. Click **IIoT** > **MQTT Settings** on the toolbar.
2. In the **MQTT Settings** dialog, click  to add a Broker on the toolbar.

   Note: Supports up to 5 MQTT Broker for one HMI.
3. In the **MQTT Broker Information** dialog, enter the information for the Broker in the **General** tab.



Note: In the MQTT specification, each client will have a Client ID, allowing the broker to determine where the data is sent, but if the Client ID is duplicated, the client that connects later will fail to connect. In order to avoid duplicate client IDs, HMI provides two variables, %0 (HWID) and %2 (Random Code) settings, where HWID is an internal parameter and is a unique identification code in the HMI, and different machines will have their own HWID.

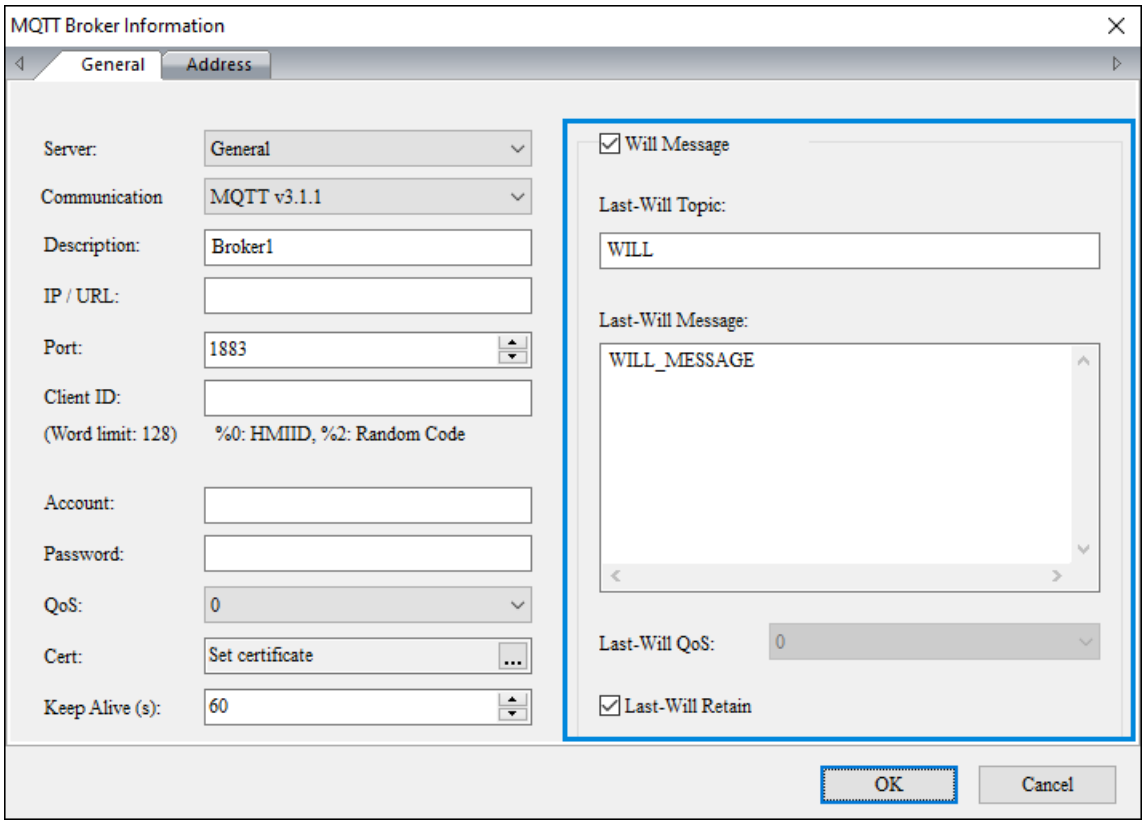
Will Message

The Will Message is a simplified version of the PUBLISH message. It is specified through the CONNECT packet when the device is connected to the server. The server publishes Will Message to the Will Topic specified when the device is unexpectedly disconnected, the server must complete the storage of the Will Message before responding CONNACK to ensure that the message is published.

Follow these steps to set up Will Message.

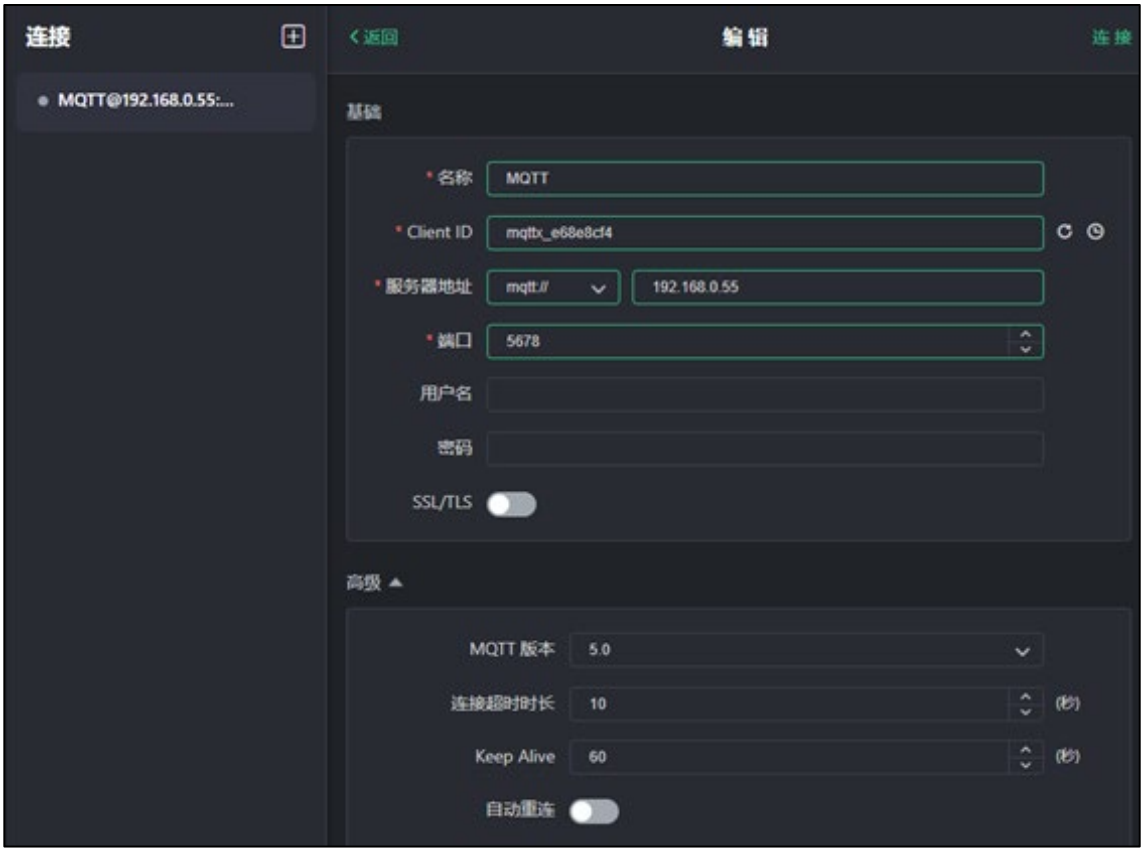
To set up will message

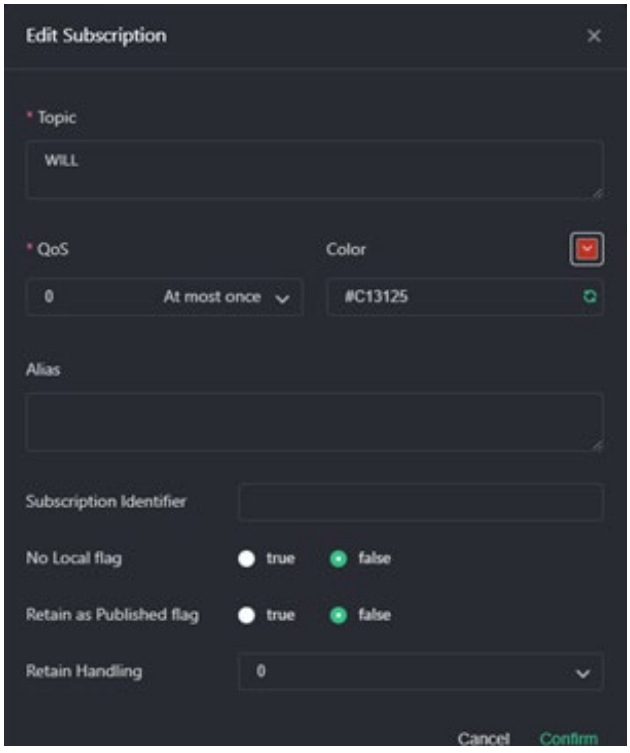
1. In the **MQTT Broker Information** dialog, set up **Will Message**.



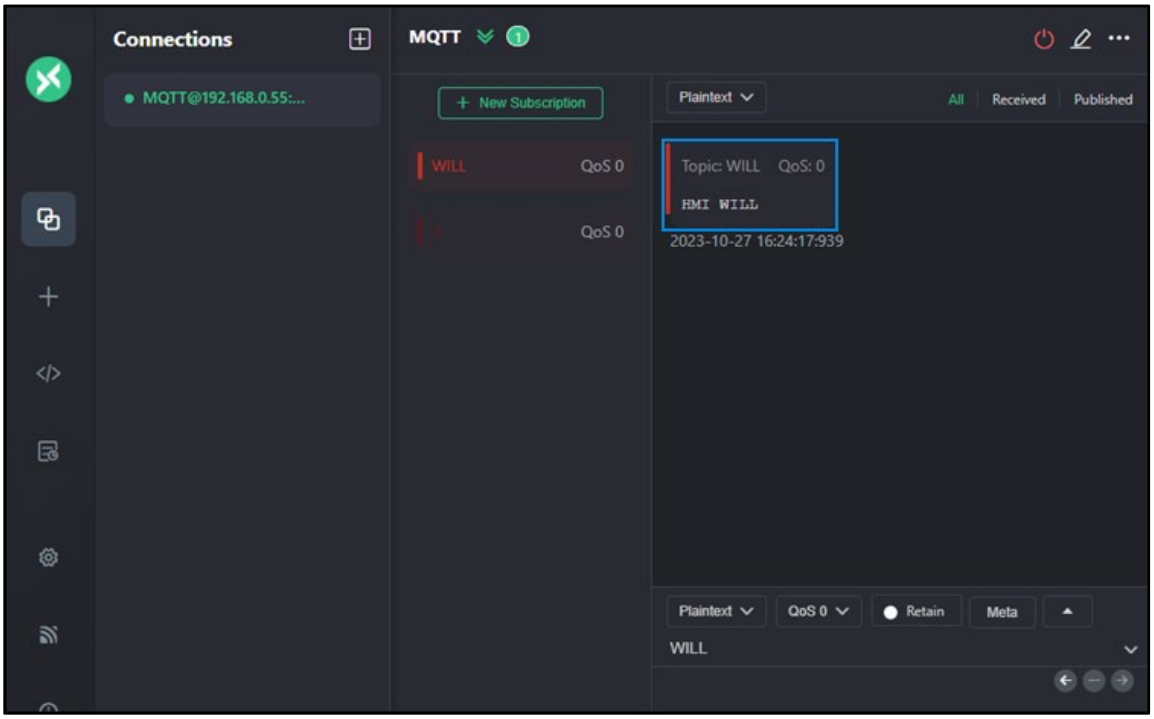
2. Open MQTTX software and set up the Will Message Subscriber of the MQTT connection.

   Note: You can go to mqttx.app/zh to download the MQTTX software.

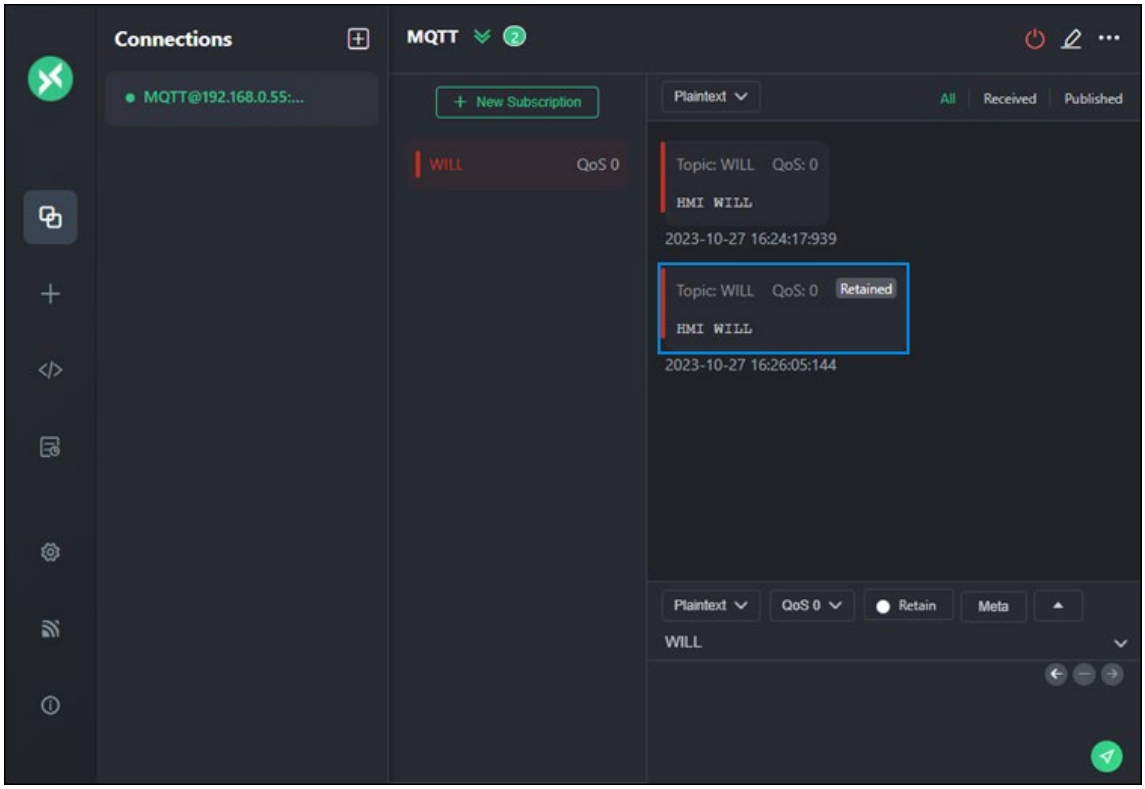




When the HMI is disconnected, MQTTX receives the WILL Message.



3. In the MQTTX tool, click  and reconnect to receive the WILL retained message.



Address Setting

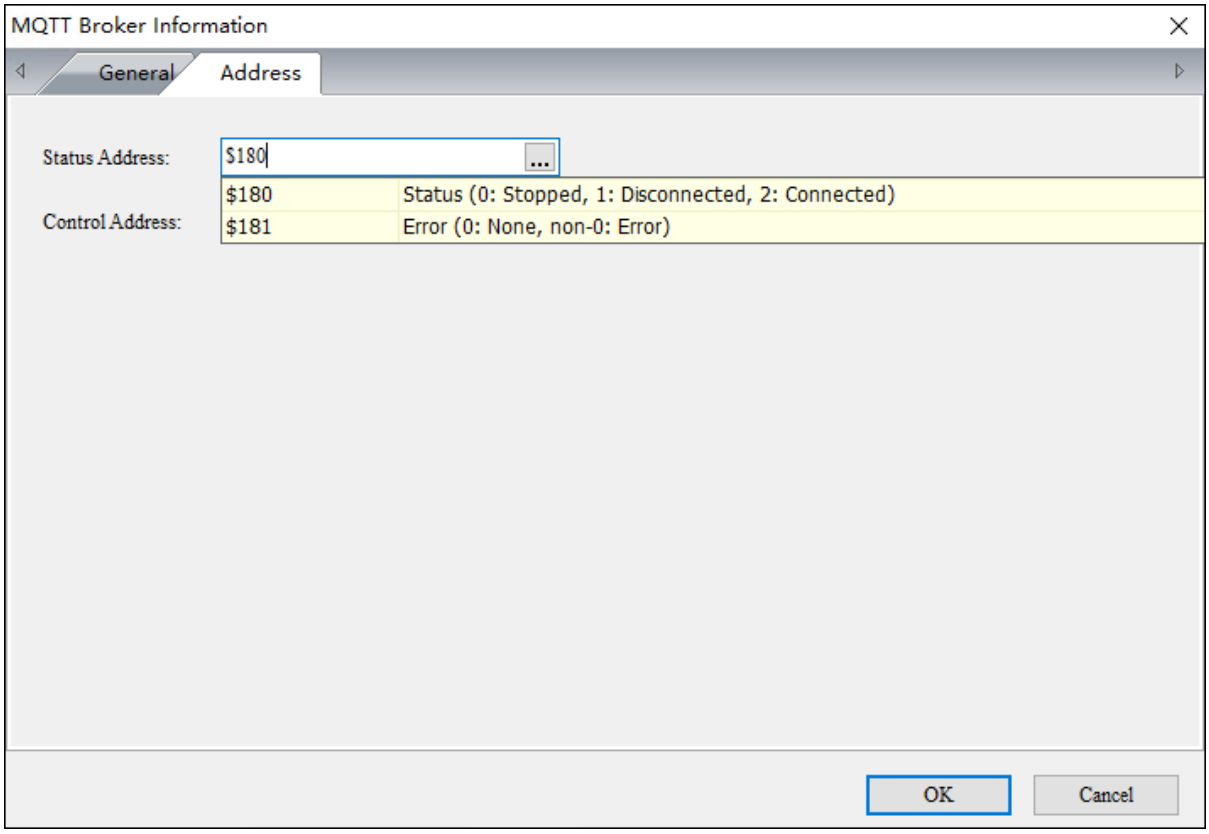
The **States Address** function displays the current connection status and error codes of the Client and Server. The connection state helps you check whether the device is disconnected. If disconnected, you can check the type of the current communication error through the error codes and set the Control Address on the HMI to change the connection message, such as Broker IP, Port, account, password, and so on.

To set states address and control address

- In the **MQTT Broker information** dialog, set the current **States Address** and **Control Address** in the **Address** tab to automatically configure all controls through the continuous address function.

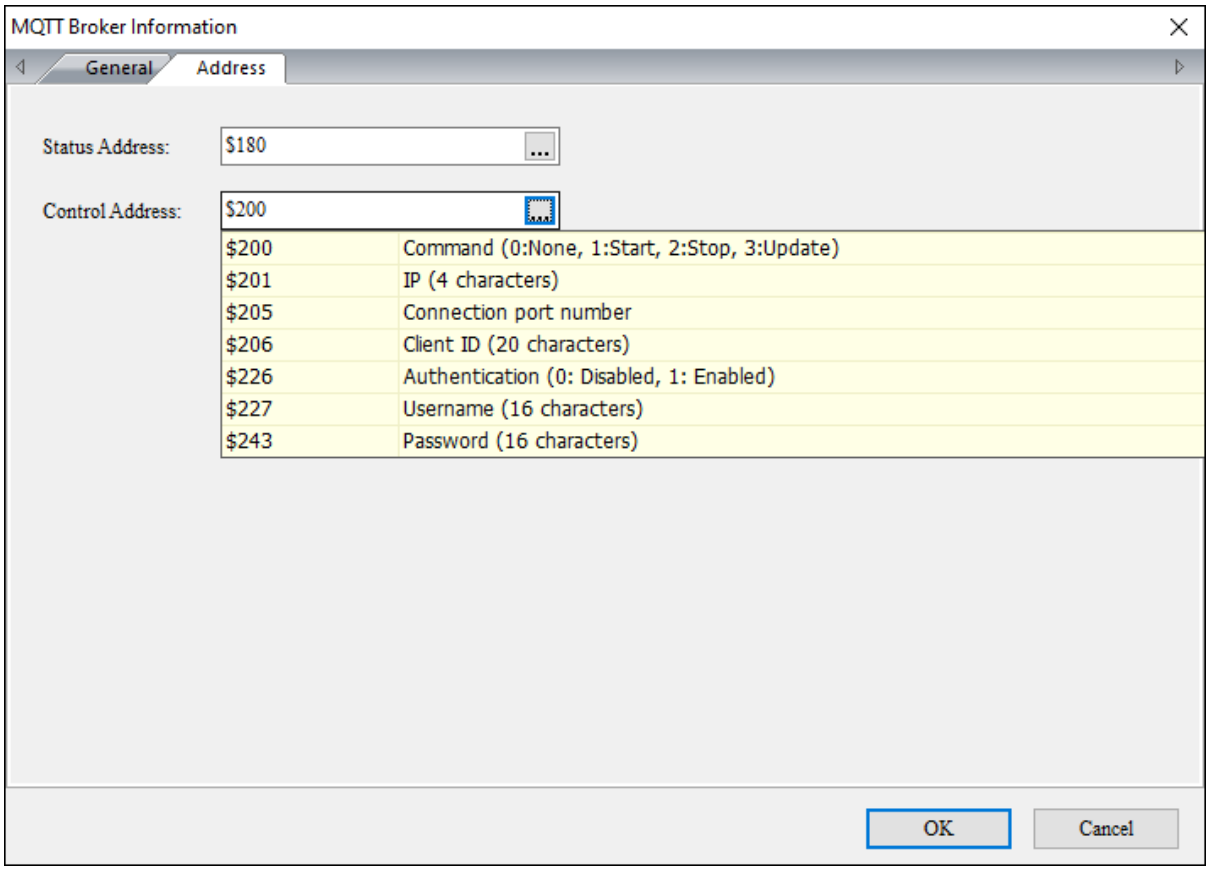
  Note: The **States Address** and **Control Address** limit setting the internal memory address.

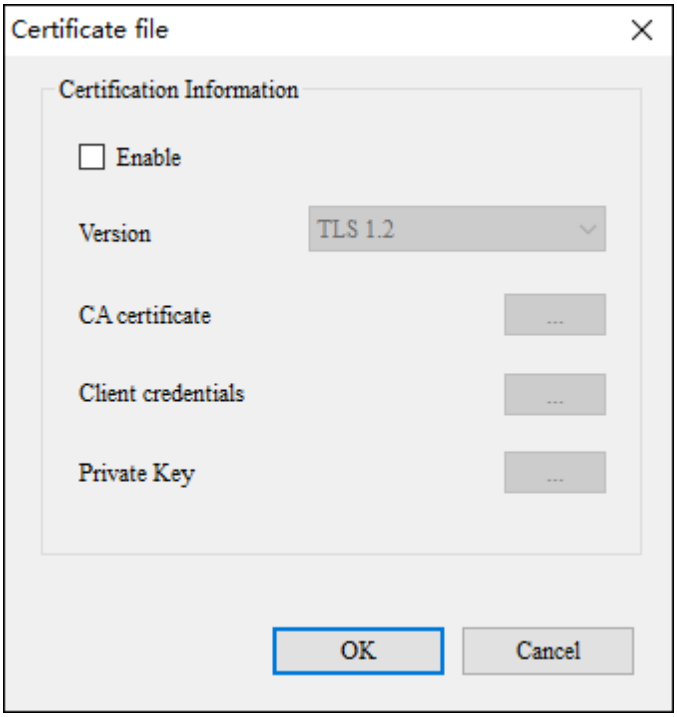
The following table lists the internal addresses limited by **States Address** with their description of error codes. Set the **States Address** to $180 as an example.



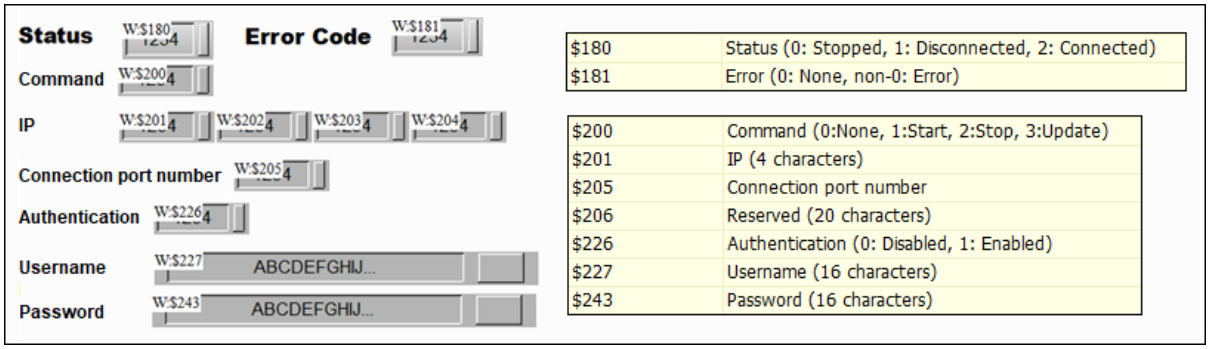
Address	Error Code Description
$180 (Status address)	• 0: Stopped • 1: Disconnected • 2: Connected
$181 (Error address)	• 0: No errors • 3: Invalid parameter • 4: Client is not connected to Broker • 7: Disconnected • 14: Underlying system calls failed **Note**: Look over and judge from the system log or other relevant messages for detailed error messages. • 15: Network address analysis error or not use the external network to connect • 99: JSON data type is not yet supported

The following table lists the internal address limited by **Control Address** with their description of error codes. Set the **Control Address** to $200 as an example.

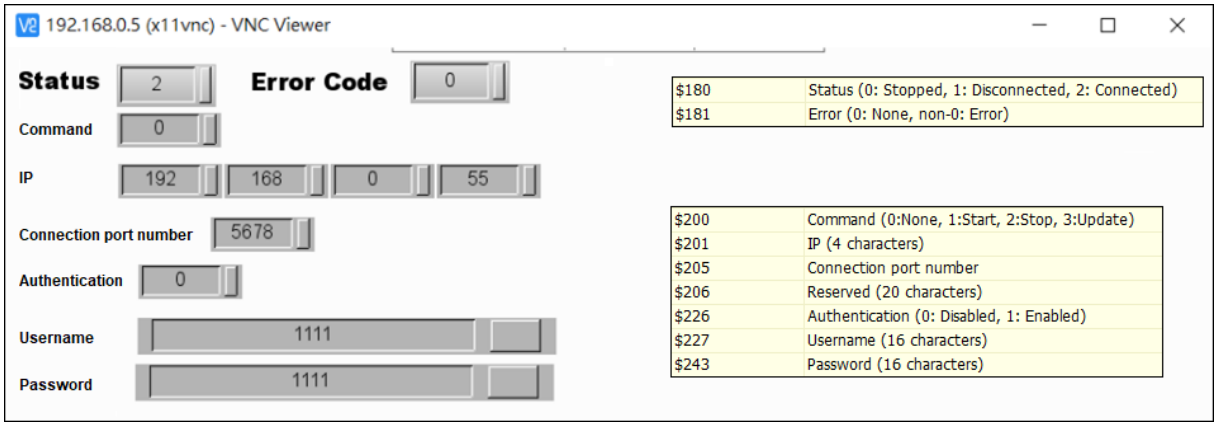


Address	Error Code Description
$200 (Command address)	• 0: None • 1: Start • 2: Stop • 3: Update
$201~204 (Broker IP address)	Used to set the IP address for which the **Data Type** is Word.
$206 (Client ID)	A maximum of 20 bits are supported.
$226 (Authentication address)	• 0: Disabled • 1: Enabled **Note**: This address is based on whether the **Certification Information** is enabled. 
$227~242 (Username address)	Used to configure the user account address. Set the **Character Input** element for which the string length is 16.
$243~259 (Password address)	Used to configure the password address. Set the **Character Input** element for which the string length is 16.

The following figure is an example of the screen configuration.



After downloading the screen to the HMI, the addresses are shown in the figure below.

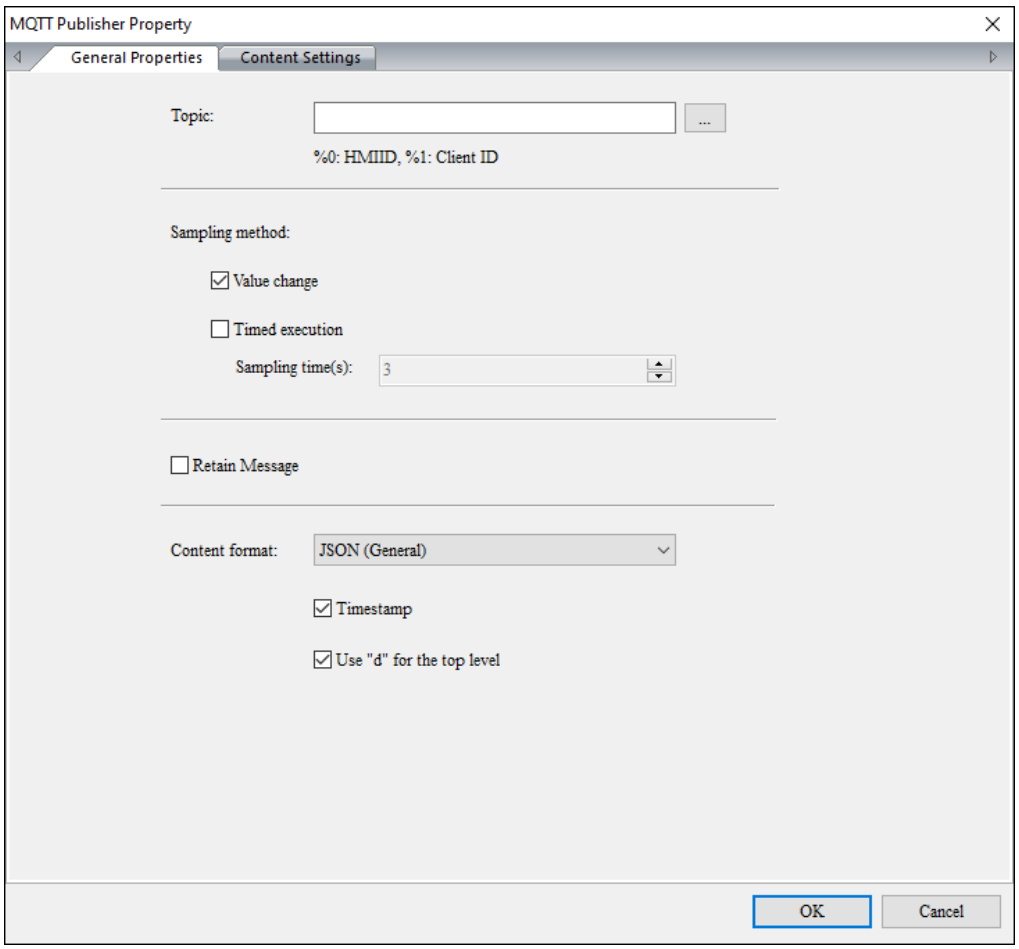


MQTT Publisher & Subscriber

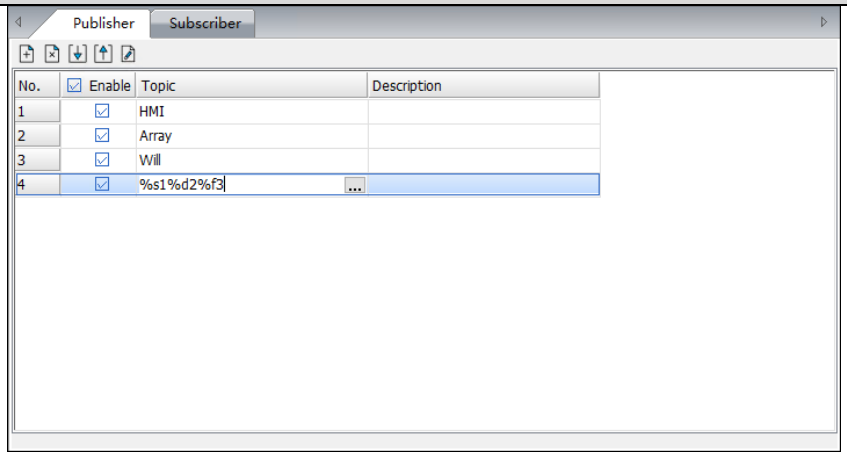
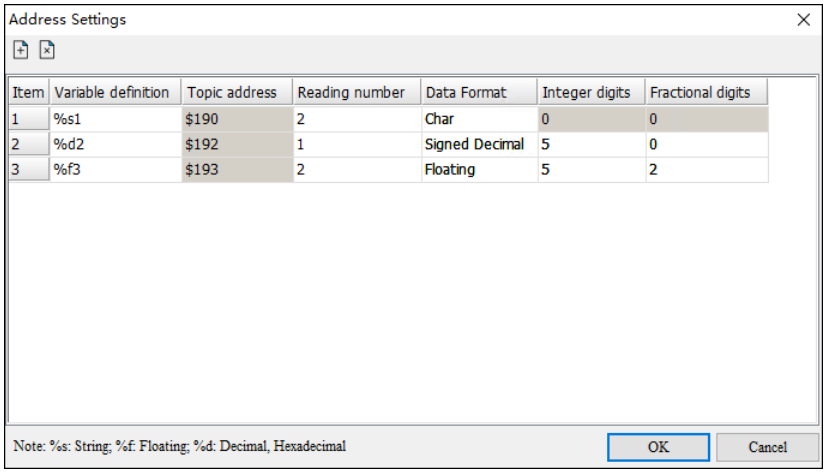
This section describes the properties content of Publisher and Subscriber.

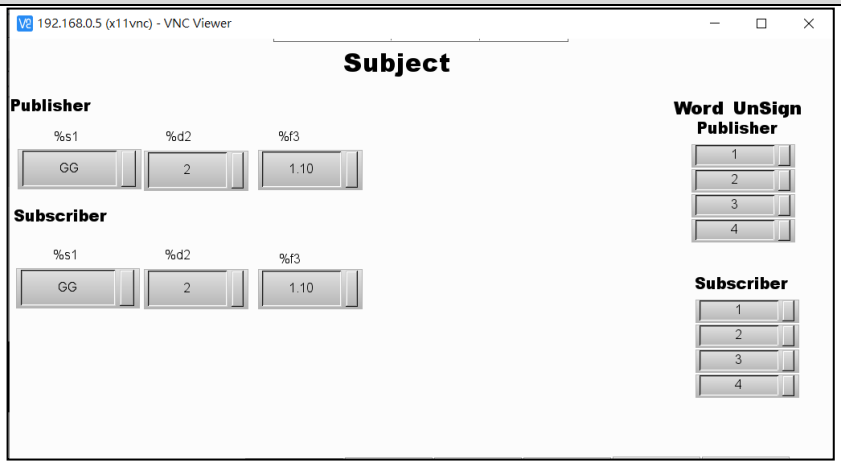
Note: Publisher and Subscriber can add up to 100 topics each.

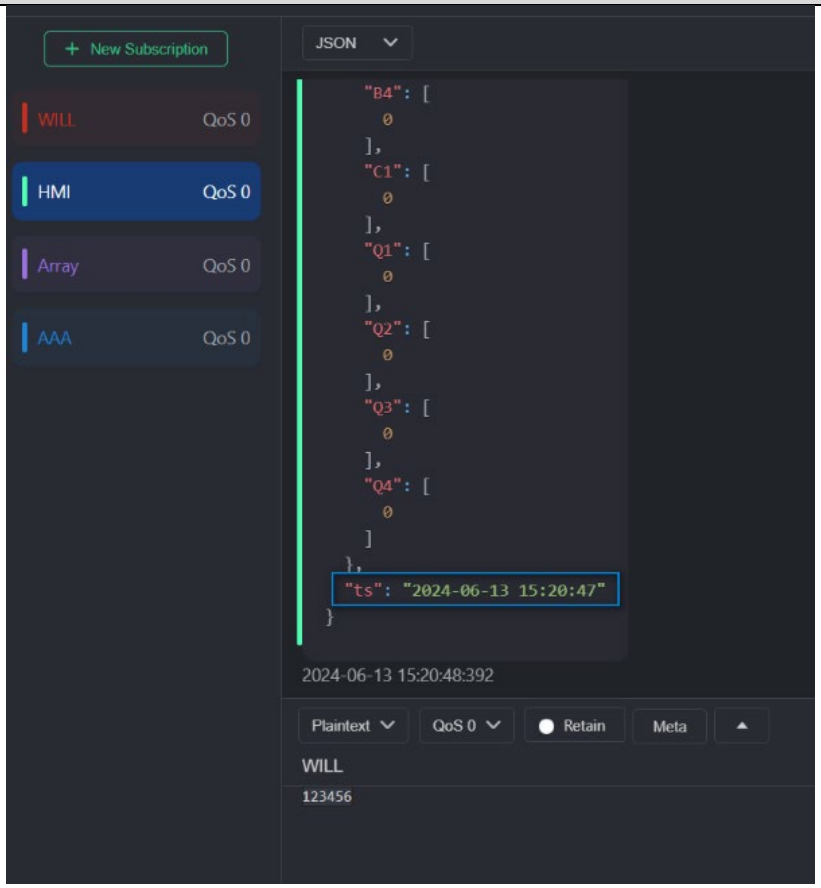
General Properties



Function	Description
Topic	• In order to reduce the possibility of duplicate topics and make it easier for users to distinguish where data is being sent and received from, you can set the topic as a variable, providing %0 as HWID and %1 as the Client ID. • **DOP-300 series HMI** can dynamically set the topic. After configuring the address variable for the topic content, the topic content can be dynamically changed through the address variable on the HMI to obtain different topic messages. Follow these steps to set the topic. 1. Click ... in the **Topic** field on the **General Properties** tab or in the **Topic** field on the Publisher or Subscriber list.

Function	Description
	 2. In the **Address Settings** dialog, set **Variable definition** and **Topic address** and click **OK**. **Note**: ○ The setting formats are %s: String, %f: Floating, %d: Decimal, and Hexadecimal.  ○ The maximum number is 8. 3. Enter the variable definition in the **Topic** field in the **General Properties** tab, for example, %s1%d2%f3. 4. Execute on the HMI. When the topics of Publisher and Subscriber are the same, the HMI sends the corresponding data.

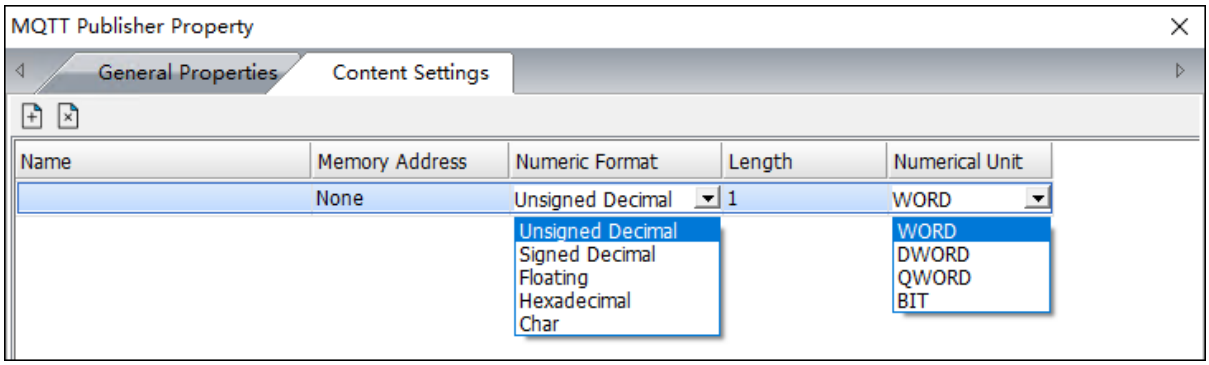
Function	Description
	
Sampling method	Select the sampling method during execution. • Value Change: Sampling when the value changes. • Timed Execution: Sampling according to the set sampling time. **Note**: This function is only available in the **Publisher** properties.
Retain Message	When Publisher publishes a message, if the Retained mark in the MQTTX software is set as True, the message is a Retain Message in MQTT. The MQTT server stores the latest retain message for each topic so that clients that come online after the message is published can still receive the message when subscribing to the topic. **Note**: This function is only available in the **Publisher** properties.
Content format	Select the content format. • JSON (General): Basic JSON format. • JSON (Advanced): You can customize the JSON format of the nested structure. **Note**: JSON (Advanced) is only supported in the DOP-300 series HMI.
Timestamp / Use “d” for the top level	• Timestamp and d message format may not exist in different application scenarios. However, the default MQTT Message function of Delta HMI displays these two pieces of information. In case the messages received when receiving data do not contain these two pieces of information, the communication fails. It is suggested to enable **Time stamp** and **Use “d” for the top level** functions. • Confirm whether the timestamp and “d” mark appear in the JSON format of the HMI topic through the MQTTX software. **Note**: Go to mqttx.app/zh to download the MQTTX software. **Timestamp:**

Function	Description
	 **Use “d” for the top level:** 

Content Settings

JSON (General)

DIAScreen provides Unsigned Decimal, Signed Decimal, Floating, Hexadecimal, and Char numeric formats with different numerical units for users to set according to the data size to transfer.

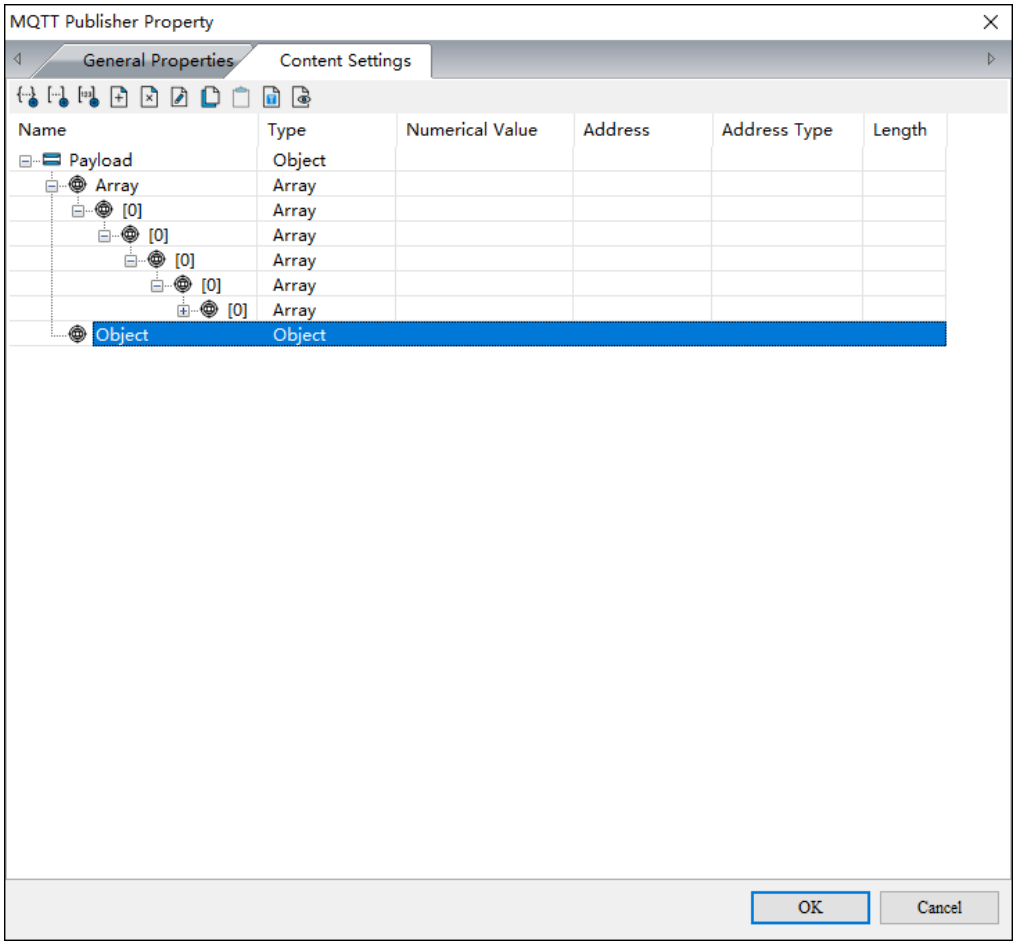


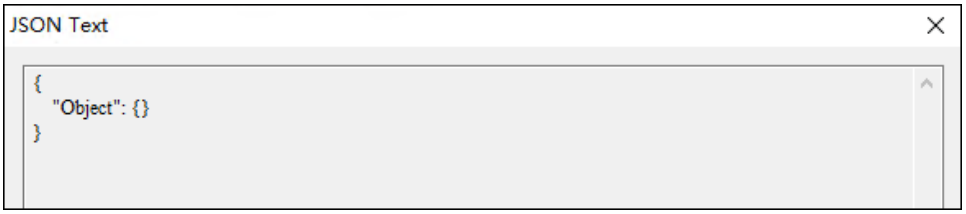
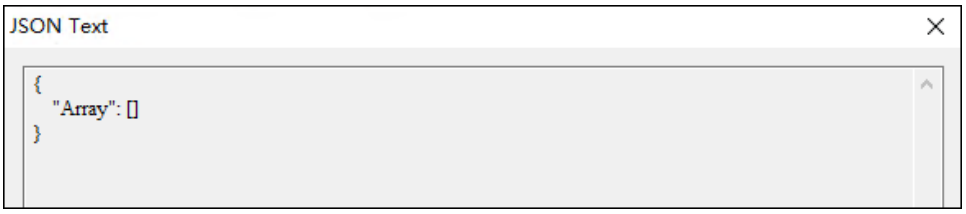
JSON (Advanced)

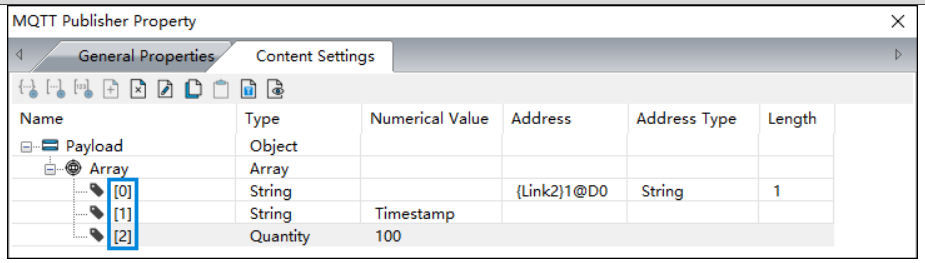
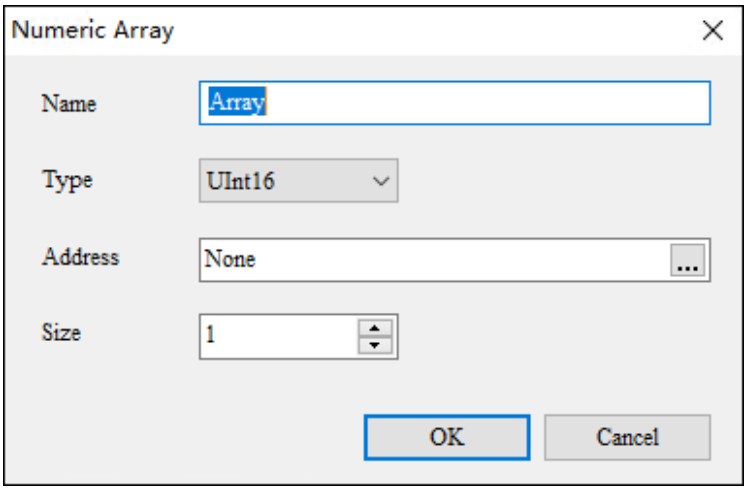
Note:

- This function is only supported in the DOP-300 series HMI.
- Advanced JSON format can set up to 8 layers of nodes.
- A maximum of 512 nodes can be set for a topic.

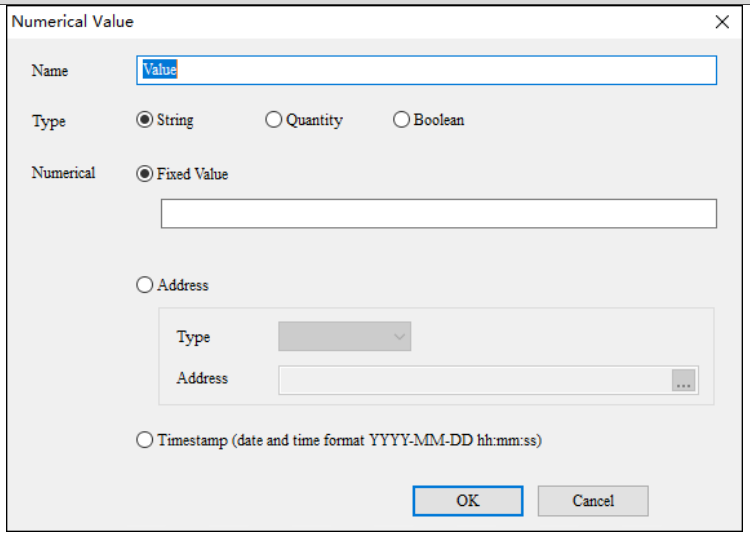
The following lists the toolbar settings in the **Content Settings** tab for JSON (Advance) with their description.



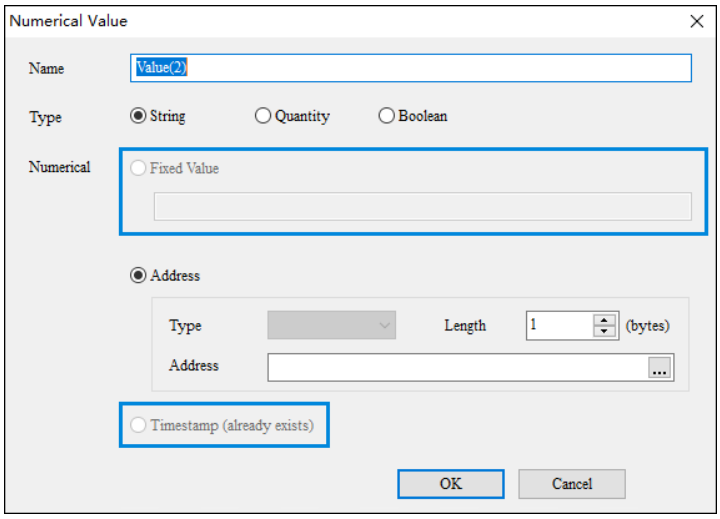
Function	Description
	**Click to add an object. The JSON format is represented by { }.**  **Note**: The maximum name input length is 256 characters.
	Click to add a general array. The JSON format is represented by **[ ].**  **Note**: • The maximum name input length is 256 characters • The names of child nodes under general arrays cannot be edited, and the software will automatically name them with [0] ~ [n].

Function	Description
	
	Click to add a Numeric array. In the **Numeric Array** dialog, set **Name**, **Type**, **Address**, and **Size** for a numeric array.  **Note**: The maximum name input length is 256 characters. The following figure shows the JSON format of a numeric array. 
	Click to add a value. In the **Numerical Value** dialog, set Name, Type, Timestamp, and so on for a numerical value.

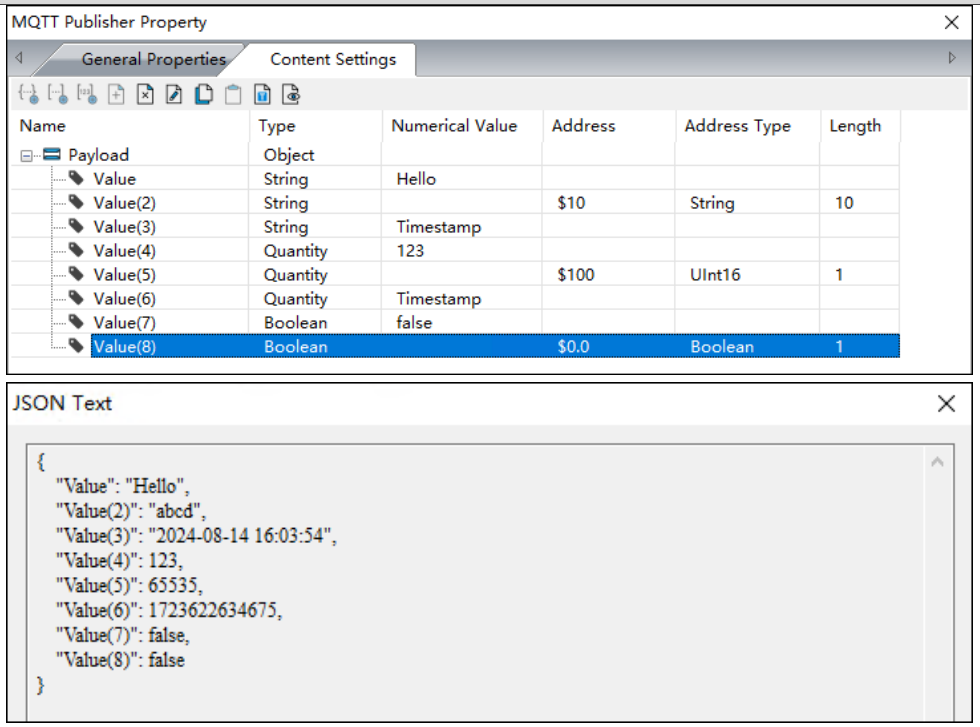
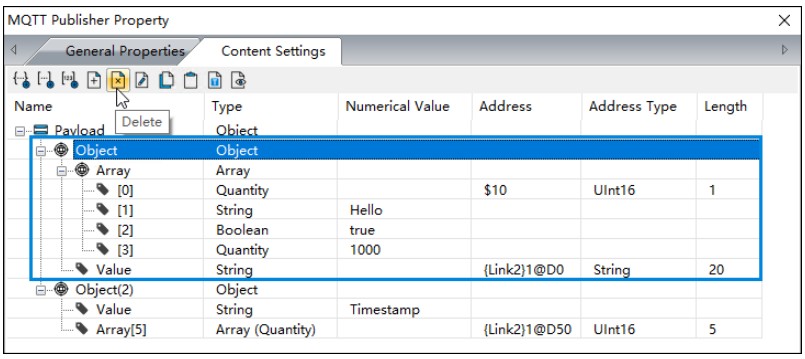
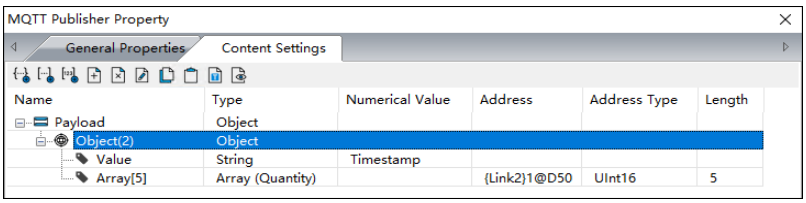
Function	Description

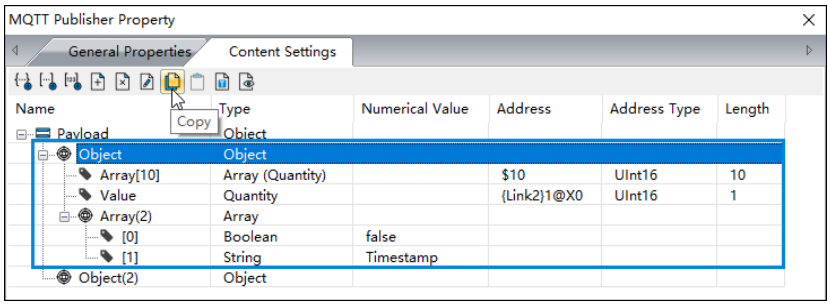
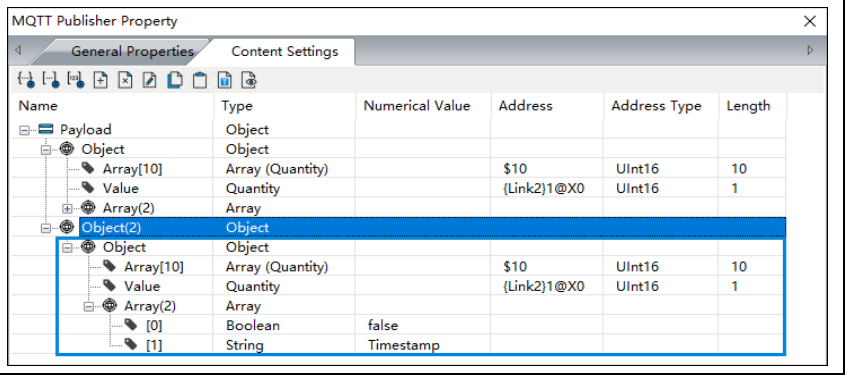


Function	Description
Name	Enter a value name. **Note**: The maximum input length is 256 characters.
Type	Select the numerical type. The default is **String**.
Numerical	Select the numerical format. The default is **Address**. **Note**: • When **String** is selected as **Type**, a maximum of 256 characters can be entered for a **Fixed Value**. • When **Quantity** is selected as **Type**, up to 20 characters can be entered for a **Fixed Value**. • When setting Subscriber topic content, the **Fixed Value** option is not available and the **Timestamp** option is limited to one topic selection.

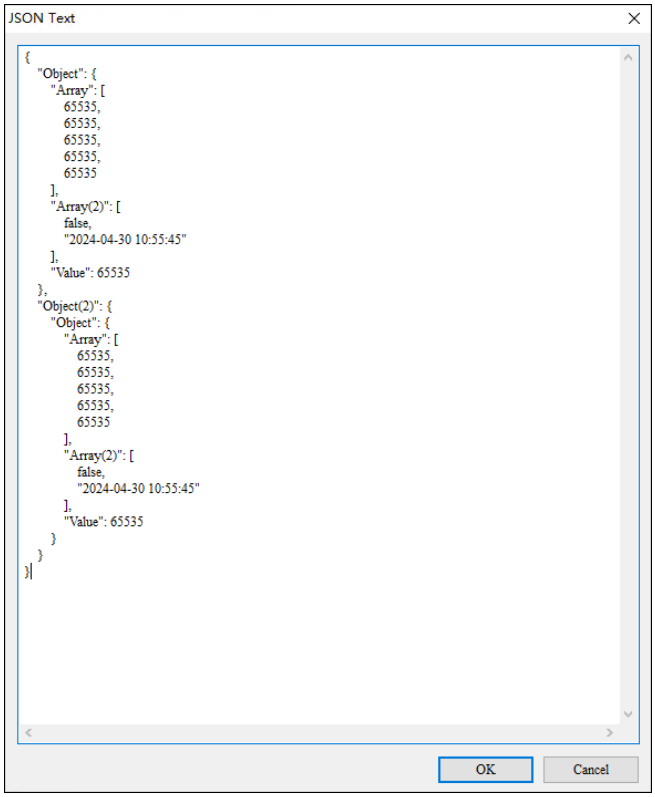
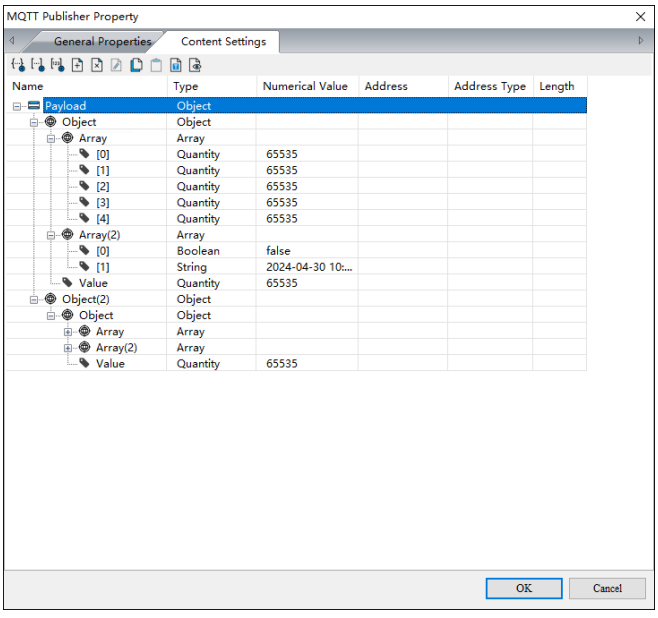


The corresponding JSON format of each numerical type is shown in the following figure.

Function	Description
	
	Select the node to be deleted and click this icon to delete. **Note**: Its child nodes will be deleted together. Before delete  After delete 
	Select the node to be edited and click this icon to edit.

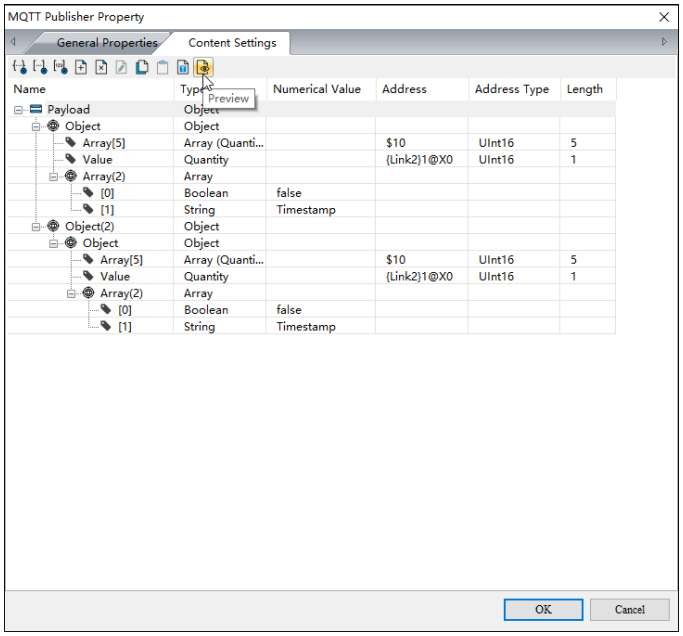
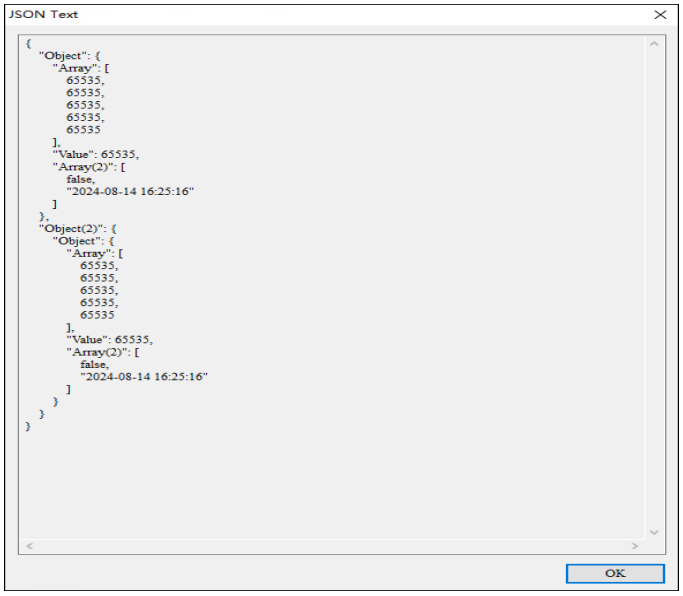
Function	Description
	Select the node to be copied and click this icon to copy and paste. **Note**: Its child nodes will be copied together. **Copy**  **Paste** 

Function	Description
	Click to use a template. In the **JSON Text** dialog, fill in the JSON format, the corresponding tree structure will be automatically converted.

JSON text content	
Tree structure after conversion	

Note:

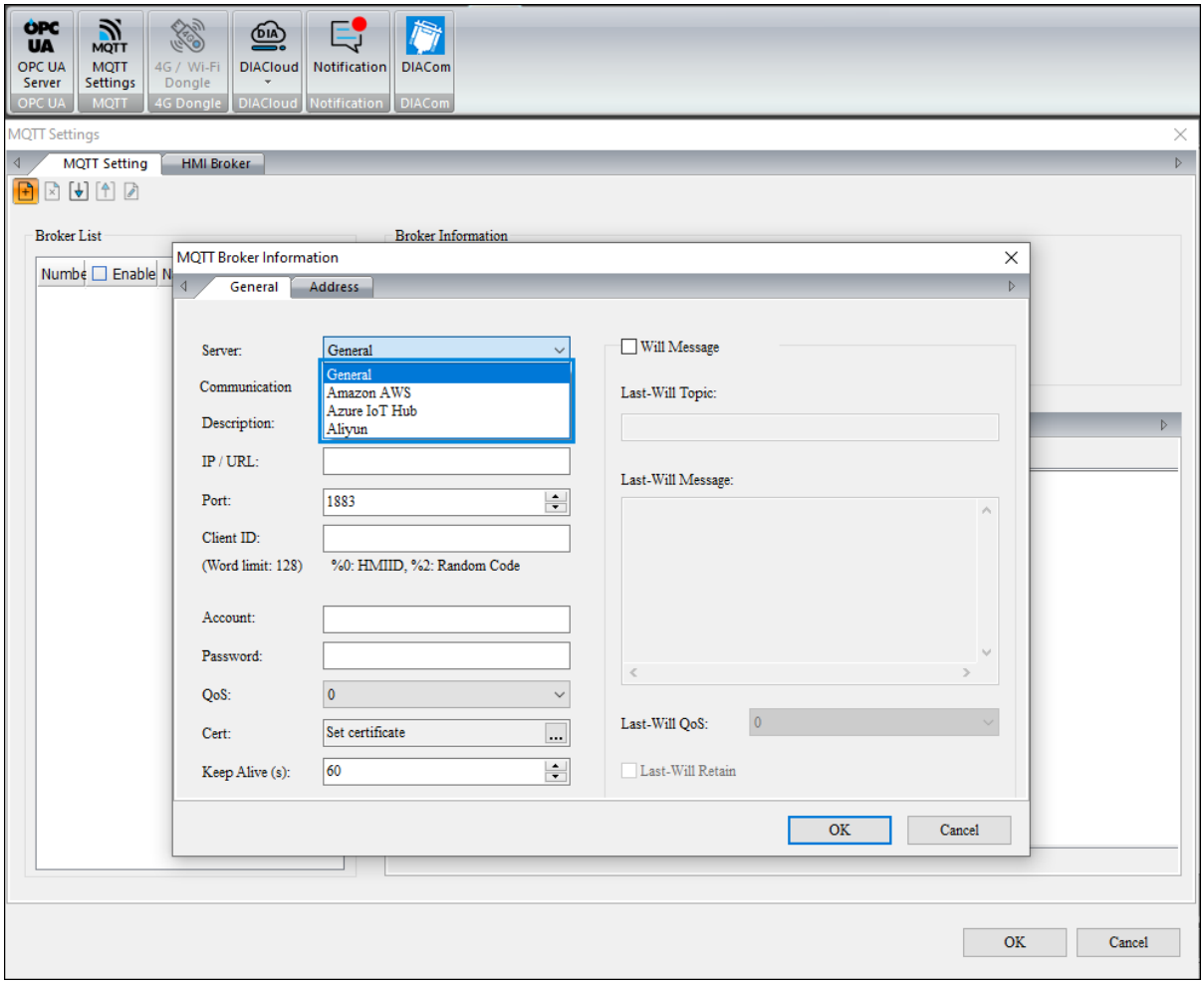
- The Value node in the Publisher topic settings is converted to a **Fixed Value**.
- The Value node in the Subscriber topic settings is converted to an **Address Value**.

Function	Description
	Click to preview the JSON format. The tree structure content will be converted to the corresponding JSON format. Tree structure content:  JSON text content after conversion: 

Support Azure IoT Hub and Aliyun Server

MQTT supports Azure IoT Hub and Aliyun server. The applicable models are as follows.

- Azure IoT Hub server: All series models
- Aliyun server: DOP-300 series models



The comparisons between Azure IoT Hub and Aliyun server are as follows.

	Azure IoT Hub	**Aliyun**
Cert certificate version	TLS 1.2 and above	TLS 1.2 and above
QoS	0, 1	0, 1,2
Communication	MQTT v3.1.1	MQTT v3.1.1
Default port	8883	8883

MQTT Broker Information Settings Limit

- When selecting **Azure IoT Hub** or **Aliyun** for **Server**, **Communication** can only be selected as **MQTT v3.1.1**.
- When selecting **Azure IoT Hub** for **Server**, **QoS** can only be set to **0** or **1**.
- When selecting **Azure IoT Hub** and **Aliyun** for **Server**, **Version** can only be set to **TLS1.2** in the **Certificate** file dialog of the **Cert** field.

- When selecting **Aliyun** for **Server**, **Content format** can only be set to **JSON (Advanced)** in the property dialog of the **Publisher** and **Subscriber** tabs.
- When selecting **Azure IoT Hub** for **Server**, in the **MQTT Subscriber Property** dialog of the **Subscriber** tab, the **Topic** field requires two special open symbols, such as # and #, and # can only be placed in the end of the final level.

  Example:

  - **# symbol**

    Enter devices/Delta_HMI/messages/events/#, other characters must not be entered after the # symbol.

  - **+ symbol**

    Only /single-level message can be entered after the + symbol, for example, devices/+/temperature. If you enter two levels of message, you will not be able to receive the information.

- When selecting **Amazon AWS** for **Server**, you need to verify its credentials. Without a credential, you cannot use the Amazon AWS server.

IIoT

IIoT integrates the cloud platform for DIAScreen, which can upload DIAScreen projects to the cloud or download projects from the cloud to DIAScreen for editing. At the same time, the HMI can also transmit data to the cloud and monitor the device through the configuration screen of the cloud platform.

Note: This function is only applicable to DOP-300 series models.

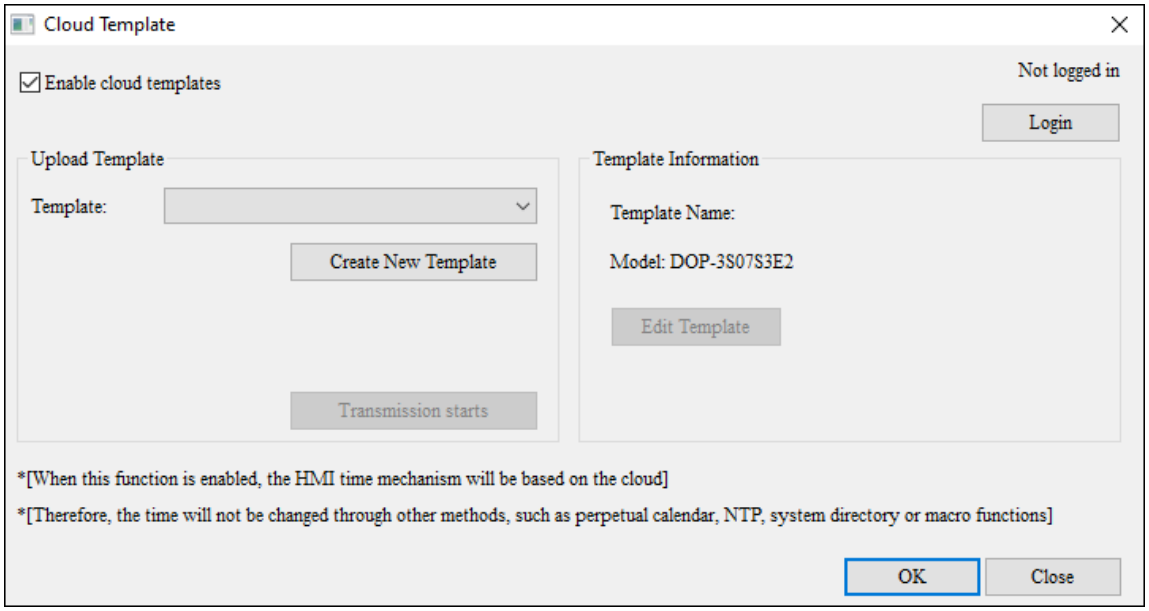
To create a template and upload it to the cloud

1. On the menu bar, click **IIoT** > **DIACloud** > **Cloud Template**.
2. In the **Cloud Template** dialog, check **Enable cloud templates**.

   Note: The VNC function will be enabled at the same time to monitor the HMI screen from the cloud.
3. In the **Upload Template** area, click **Create New Template**.
4. In the **Template Information** area, click **Edit Template** to edit template.
5. In the **Cloud Template Information** dialog, enter the template information and click **OK**.

   The template is created.
6. Click **Login** in the upper right corner to open **Login to DIACloud** dialog.
7. In the **Login to DIACloud** dialog, enter your DIACloud Account and Password, and then click **Login**.

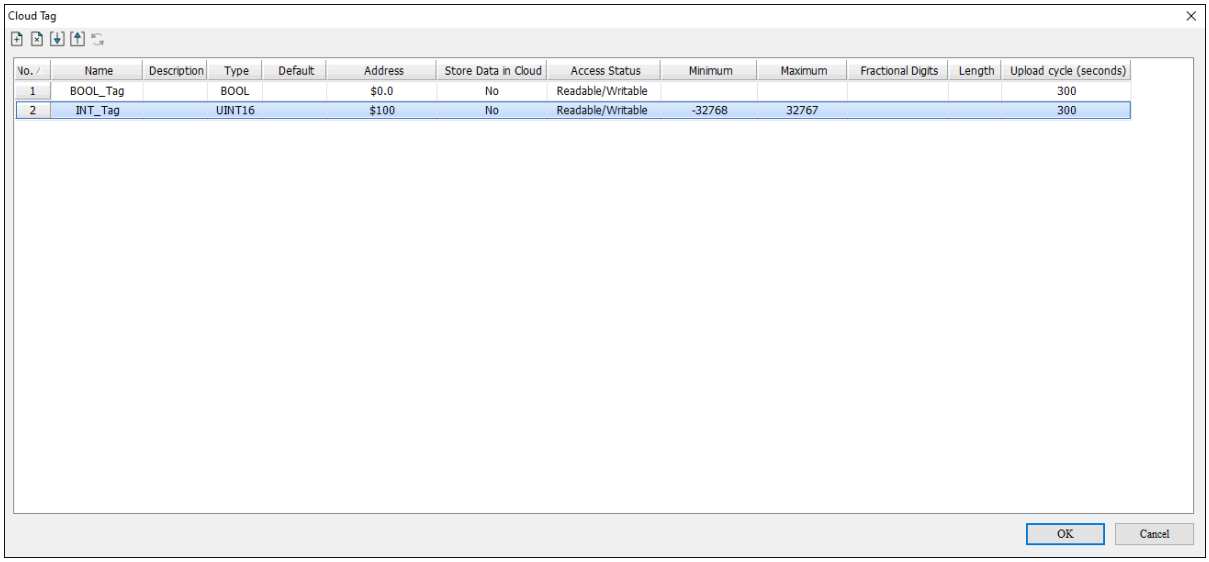
   Note: If you have not registered a DIACloud account, go to hms.diacloudsolutions.com to register.
8. Click **Transmission starts** to start to upload the DIAScreen project to the cloud.



You can also create cloud data in DIAScreen so the configuration screen can reference the corresponding variables to monitor the device.

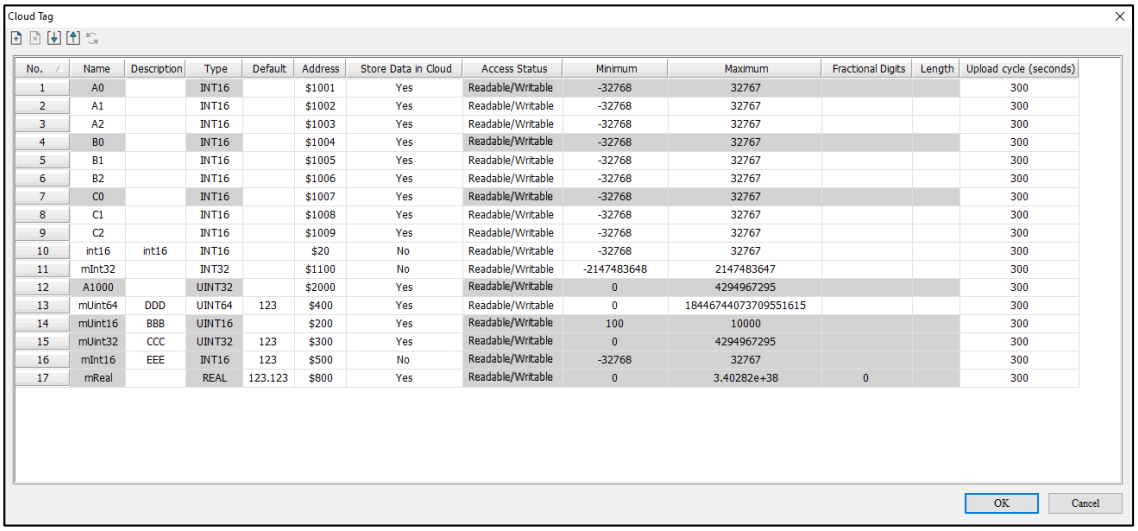
To create Cloud Tag

1. On the menu bar, click **IIoT** > **DIACloud** > **Cloud Tag**.
2. In the **Cloud Tag** dialog, click  to add a new tag.
3. Make relevant settings and click **OK**.



Note:

- Cloud tag supports BOOL, UINT16, UINT32, UINT64, INT16, INT32, INT64, REAL, LREAL and STRING data types. The corresponding data type can be selected based on the actual data value.
- If the currently edited project has been bound to a template, you need to log in to DIACloud before opening the **Cloud Tag** dialog to ensure that the tag content is synchronized with the cloud.
- If the cloud tag is used in the configuration screen, some fields in the **Cloud Tag** will be grayed out and cannot be edited.



No.	Name	Description	Type	Default	Address	Store Data in Cloud	Access Status	Minimum	Maximum	Fractional Digits	Length	Upload cycle (seconds)
1	A0		INT16		$1001	Yes	Readable/Writable	-32768	32767			300
2	A1		INT16		$1002	Yes	Readable/Writable	-32768	32767			300
3	A2		INT16		$1003	Yes	Readable/Writable	-32768	32767			300
4	B0		INT16		$1004	Yes	Readable/Writable	-32768	32767			300
5	B1		INT16		$1005	Yes	Readable/Writable	-32768	32767			300
6	B2		INT16		$1006	Yes	Readable/Writable	-32768	32767			300
7	C0		INT16		$1007	Yes	Readable/Writable	-32768	32767			300
8	C1		INT16		$1008	Yes	Readable/Writable	-32768	32767			300
9	C2		INT16		$1009	Yes	Readable/Writable	-32768	32767			300
10	int16	int16	INT16		$20	No	Readable/Writable	-32768	32767			300
11	mInt32		INT32		$1100	No	Readable/Writable	-2147483648	2147483647			300
12	A1000		UINT32		$2000	Yes	Readable/Writable	0	4294967295			300
13	mUint64	DDD	UINT64	123	$400	Yes	Readable/Writable	0	18446744073709551615			300
14	mUint16	BBB	UINT16		$200	Yes	Readable/Writable	100	10000			300
15	mUint32	CCC	UINT32	123	$300	Yes	Readable/Writable	0	4294967295			300
16	mInt16	EEE	INT16	123	$500	No	Readable/Writable	-32768	32767			300
17	mReal		REAL	123.123	$800	Yes	Readable/Writable	0	3.40282e+38	0		300

You can also download projects to DIAScreen from the cloud.

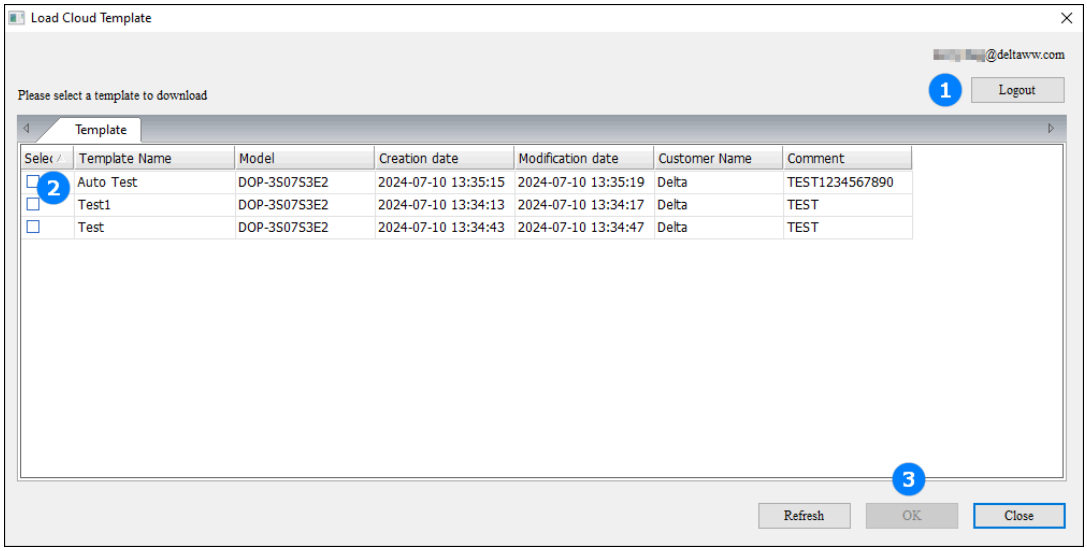
How to enable cloud templates?

- In the main menu, click **Open Cloud Template**.

Follow these steps to download a project from the cloud to a template.

To download projects to templates from the cloud

1. Click **Login** to log in to DIACloud.
2. Select the template you want to download.
3. Click **OK** to start the transfer.


Load Cloud Template
@deltaww.com
Please select a template to download
1
Logout
Template
Sele
Template Name
Model
Creation date
Modification date
Customer Name
Comment
2
Auto Test
DOP-3S07S3E2
2024-07-10 13:35:15
2024-07-10 13:35:19
Delta
TEST1234567890
Test1
DOP-3S07S3E2
2024-07-10 13:34:13
2024-07-10 13:34:17
Delta
TEST
Test
DOP-3S07S3E2
2024-07-10 13:34:43
2024-07-10 13:34:47
Delta
TEST
3
Refresh
OK
Close

Address Conversion

After selecting an element on the screen, modify all the addresses of the selected element directly in the list through the address conversion function. You can also replace the address for a specific element.

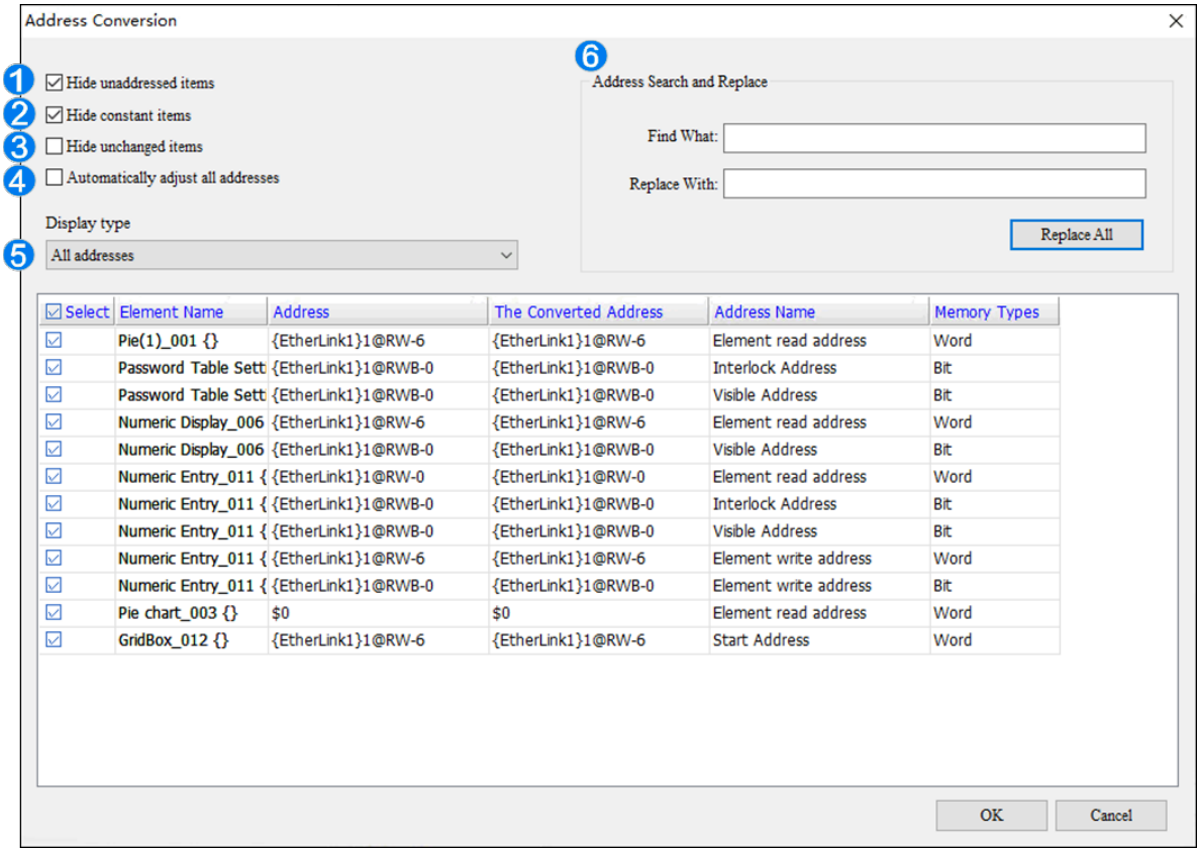
How to open **Address Conversion**?

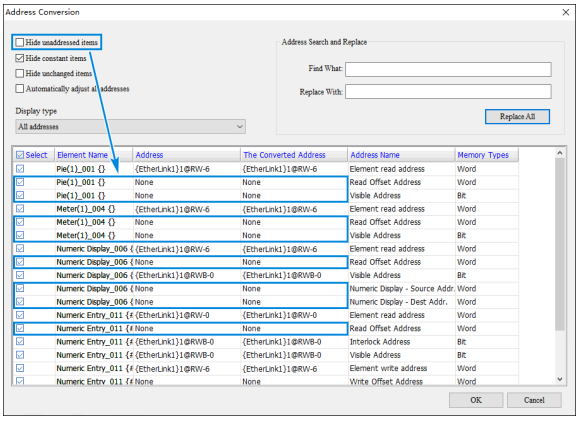
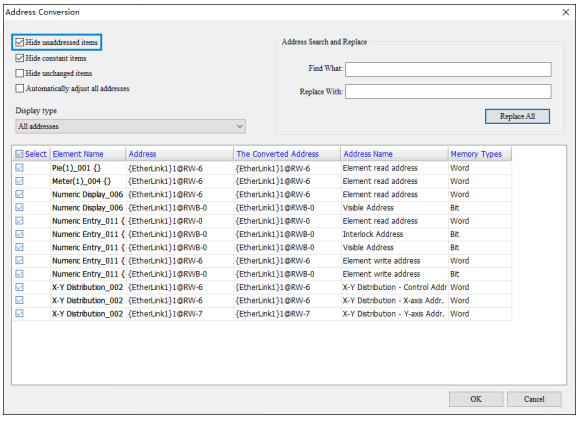
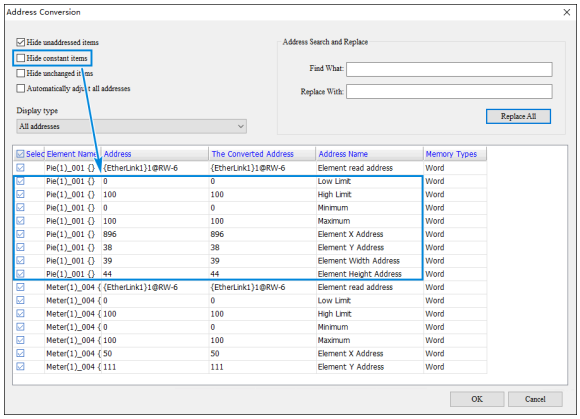
- On the menu bar, click **Tools** > **Address Conversion**.

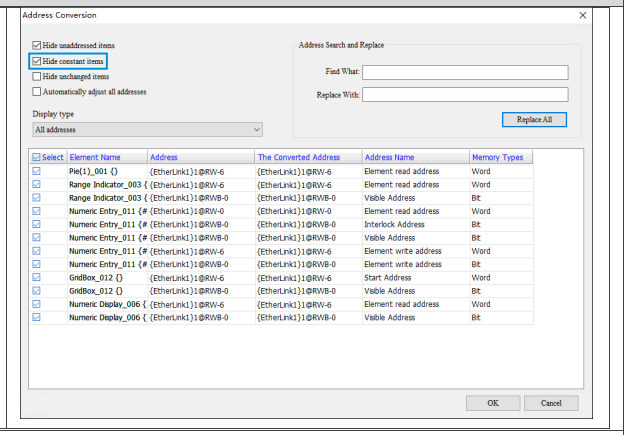
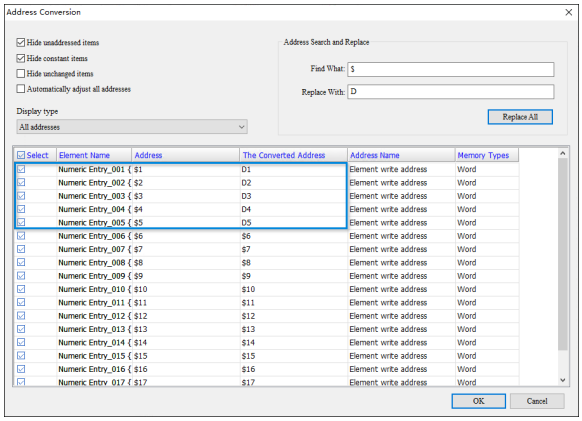
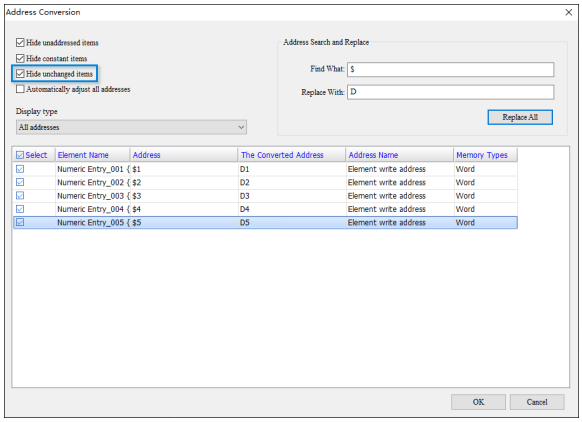
Or

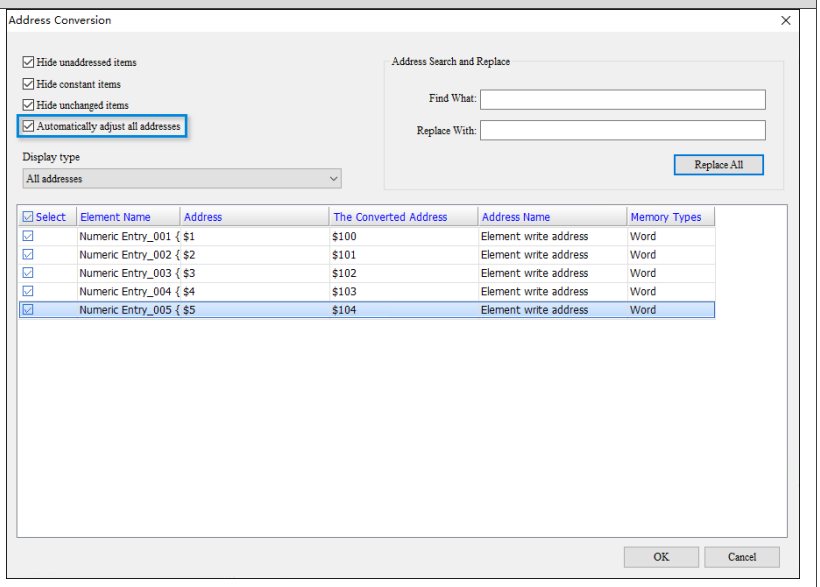
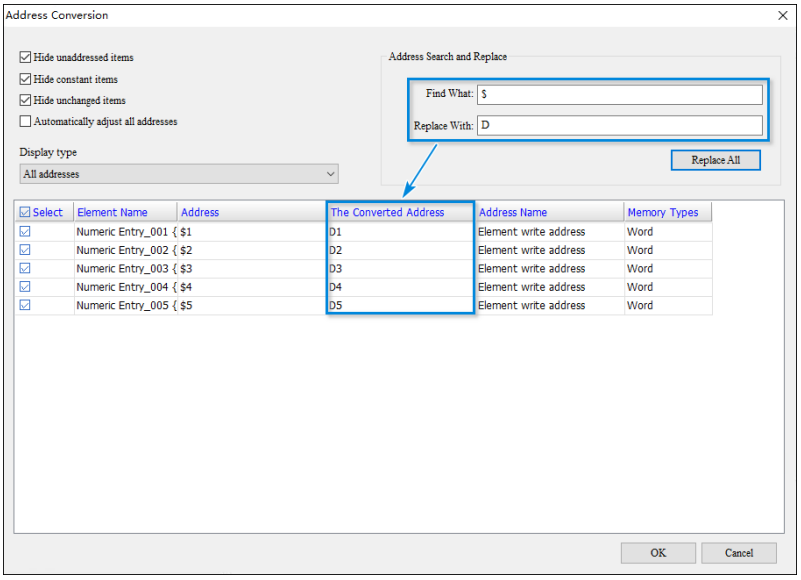
- Right-click the element and select **Address Conversion**.

The following table lists the settings in the **Address Conversion** dialog with their description.



<table>
<tr><th>Legend</th><th>Function</th><th>Description</th></tr>
<tr><td>1</td><td>Hide unaddressed items</td><td>Select to hide items whose addresses are not set.
<table>
<tr><th>Function</th><th>Illustration</th></tr>
<tr><td>Unselected</td><td>Display addresses with None.
  </td></tr>
<tr><td>Selected</td><td>Hide addresses set to None.
  </td></tr>
</table></td></tr>
<tr><td>2</td><td>Hide constant items</td><td>Select to hide addresses set to constant, such as element position and upper/lower limit value.
<table>
<tr><th>Function</th><th>Illustration</th></tr>
<tr><td>Unselected</td><td>Display constant addresses.
  </td></tr>
<tr><td>Selected</td><td>Hide constant addresses.</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Legend</th><th>Function</th><th>Description</th></tr>
<tr><td></td><td></td><td>  </td></tr>
<tr><td>❸</td><td>Hides unchanged items</td><td>If selected, only items with changes to The Converted Address field will be displayed.
<table>
<tr><th>Function</th><th>Illustration</th></tr>
<tr><td>Unselected</td><td>Display all element addresses.
  </td></tr>
<tr><td>Selected</td><td>Hide unchanged items.
  </td></tr>
</table></td></tr>
<tr><td>❹</td><td>Automatically adjust all addresses</td><td>Select to adjust all addresses automatically. Changing the address of the first item in The Converted Address column and then selecting the item will automatically offset The converted address according to the original address offset.</td></tr>
</table>

Legend	Function	Description
		
⑤	Display type	Select the type of address to display in the address list. The default is **All addresses**.
⑥	Address Search and Replace	Enter **Find What** and **Replace With** to find and replace the string with a new string. 

All Tags

You can convert a memory address to tag through the DIASceen Tag configuring function for use as well as use the import function of different files to import the variables declared in the programming software to DIAScreen.

DIA Tag

Synchronize the global variables declared in DIADesigner through DIA Tag function to DIAScreen and use. The following describes the setting method of DIA Tag.

DIADesigner operation

1. Create a project.
2. In **Project Explorer**, add a controller device.
3. Double-click **Programming**, right-click **Global Variable**, and then select **Add Global Variable Table**.
4. In the **Add Global Variable Table** dialog, enter the **Name** and **Comment**, and then click **OK**.
5. In the Global Variable table, add variables.

   Note: The variable address must be configured. If not configured, DIAScreen will not be able to use the Tag.
6. Click **Compile** on the toolbar.

DIAScreen operation

1. Create a project.
2. In the **Device Communication** dialog, select Delta controller.

   Note: The controller type must be the same as the controller type created in DIADesigner.
3. In the **Project** pane, double-click **DIA Tag**.

4. In the **DIA Tag** settings page, click  .
5. In the **DIA Tag Import Settings** dialog, select a DIADesigner project file (.diade).
6. Select a **Link Name**. The communication parameters of the connection are listed in the dialog.
7. Set the **Station No.**

   Note:

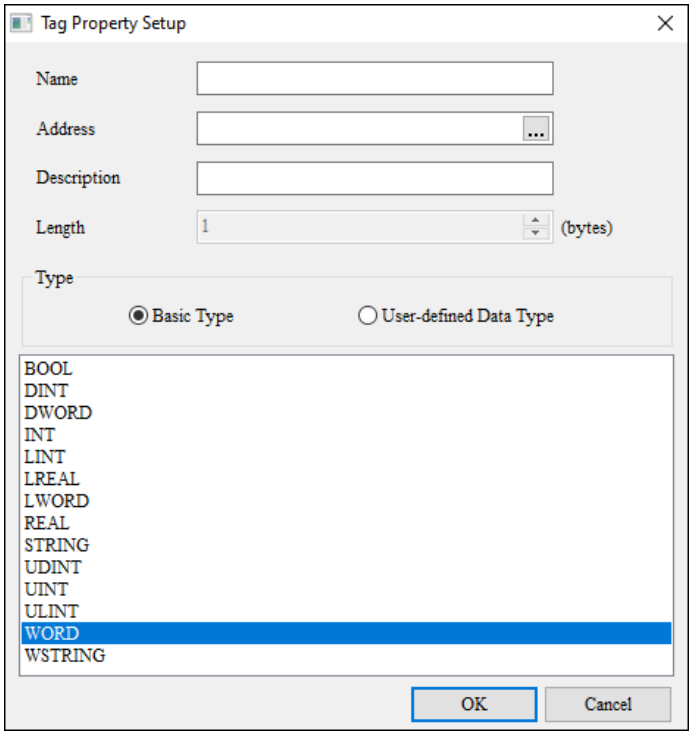
   - The **Don't specify station number** checkbox is selected by default. The **Station No**. field is available only when the DIA Tag is used on the element.
   - If unselect the **Don't specify station number** checkbox, the specified station number can be entered in the **Station No.** field.
8. Click **OK**.
9. In the **DIA Tag** setting page, click  to enable DIA Tag automatic synchronization.
10. In the **DIA Tag Synchronization Settings** dialog, select **Enable automatic sync** checkbox and set **Automatic check cycle**.
11. Create an element on the screen, and then double-click it.
12. In the address **Input** dialog of the element, select **DIA Tag** for **Link**. The variables are listed in the dialog.

Note: You can also export .diatag files from ISPSoft or DIADesigner software, and select DIATag File (.diatag) in the **DIA Tag Import Settings** dialog to import the files, but tags of this file type do not support **Synchronization** function.

Tag

You can add tags of different types in the tag page or declare structures and arrays of user-defined data types as tags.

The following table lists the functions of **Tag Property Setup** dialog with their description.



Function	Description
Name	Enter a tag name. The naming convention is as follows: • The name cannot exceed 220 bytes, and one Chinese character occupies 2 bytes. • The name cannot start with a number. • System reserved keywords, such as recipe register address RCP, cannot be used. • Decimal points, square brackets, and @ symbol are not allowed in names. • The name should be in the same language as the operating system (except English and number). Using a language different from the system language will result in garbled characters.
Address	Set the address corresponding to the tag. **Note**: Configure an address of sufficient length according to the selected Type.
Description	Enter a description for the tag.
Length	Select or enter a length. **Note**: This function is only available when **Basic Type** is **STRING** or **WSTRING**.
Type	• **Basic Type** The following table lists the format and description of each Basic Type.

Type	Description
BOOL	1-Bit value format, which can only be used for bit control addresses, such as bit-type button elements.
INT	Word unit and signed integer format
DINT	Double Word unit and signed integer format
LINT	Quad Word unit and signed integer format
WORD	Word unit value format
DWORD	Double Word unit value format
LWORD	Quad Word unit numerical format
REAL	Floating point value format of Double Word unit
LREAL	Floating point value format of Quad Word unit
UINT	Word unit and unsigned integer format
UDINT	Double Word unit and unsigned integer format
ULINT	Quad Word unit and unsigned integer format
STRING	String format, 1 ASCII character is 1 byte, up to 128 bytes.
WSTRING	String format, 1 ASCII character is 1 byte, up to 256 bytes.

- **User-defined Data Type**
  Create a user-defined type on the **structure** or **array** page. You can create a tag for the user-defined type in the tab page.

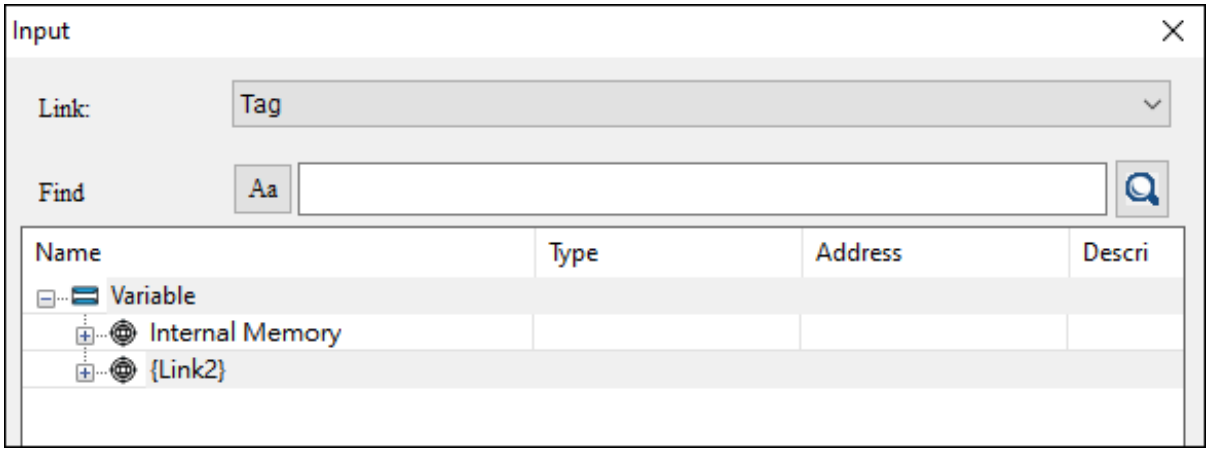
Tag Import

The set tags can be exported as XLSX files and imported into Excel after editing. CSV files of variable tables edited by external software can also be imported into DIAScreen for programming.

Note: You need to clear the current tag content before importing the tag.

Tags usage

In the element address **Input** dialog, select **Tag** for **Link** name, and then select the tag. The element address will be presented as a tag name.



User-defined Data Type

A user-defined data type (also called DUT (Data Type Unit) or UDT (User-defined Data Type)) is a data type that is combined by users using existing basic data types.

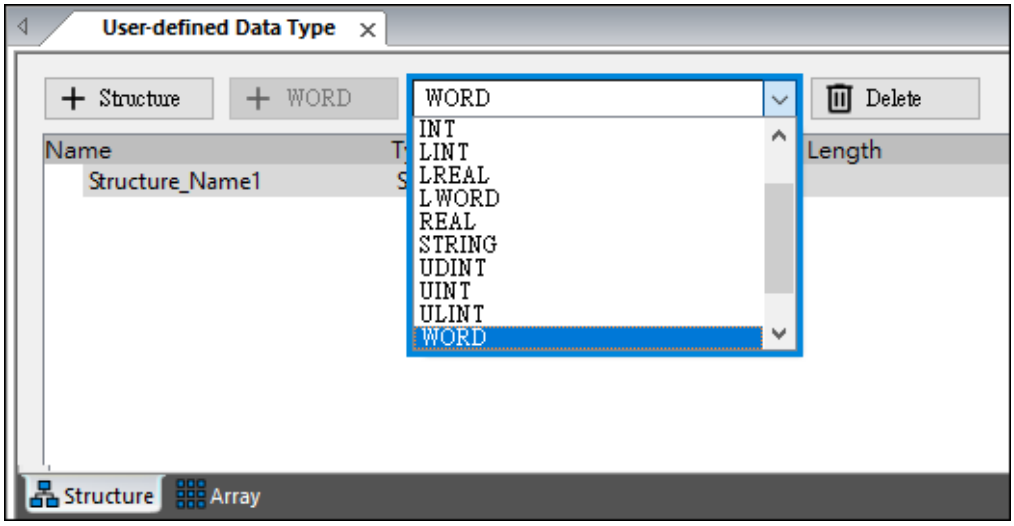
Structure

A structure consists of a fixed number of elements of various data types, and a structure or array element can also serve as an element of another structure. Structures can be used to define grouped data and to transmit parameters as a data unit.

Follow these steps to build a structure.

To build a structure

1. In **User-defined Data Type** page, click **+Structure** to add a structure. You can edit the structure name in the **Name** field.
2. Select the data type.



3. Select **Structure** and click **+WORD**. A new element will be added under the structure, and the element name can be edited in the **Name** field.

The naming rules for structure names and element names are as follows:

- Structure names must not be repeated.
- It is not allowed to add new elements with duplicate names in the same structure.
- The maximum length of the structure name and element name is 32 characters.
- Structure names and element names cannot have spaces, and cannot use special characters such as * # ? \ % @ [] () . , etc.
- Structure names should be in the same language as the operating system (except English and number). Using a language different from the system will result in garbled characters.

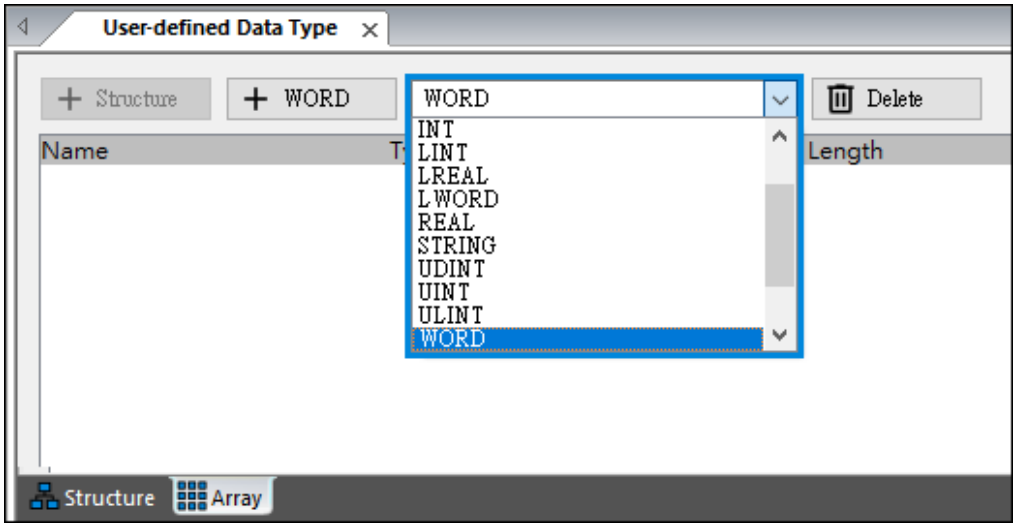
Array

An array consists of fixed length and the same data type.

Follow these steps to create an array.

To create an Array

1. In **User-defined Data Type** page, select a data type.



2. Click **+WORD** to add a new array. In the **Name** field, edit the array name.

The naming rules of array names are as follows:

- Array names must not be repeated.
- The maximum length of the array names is 32 characters.
- Array names cannot have spaces, and cannot use special characters such as * # ? \ % @ [] () . , etc.
- Array names should be in the same language as the operating system (except English and number). Using a language different from the system will result in garbled characters.

Address Settings

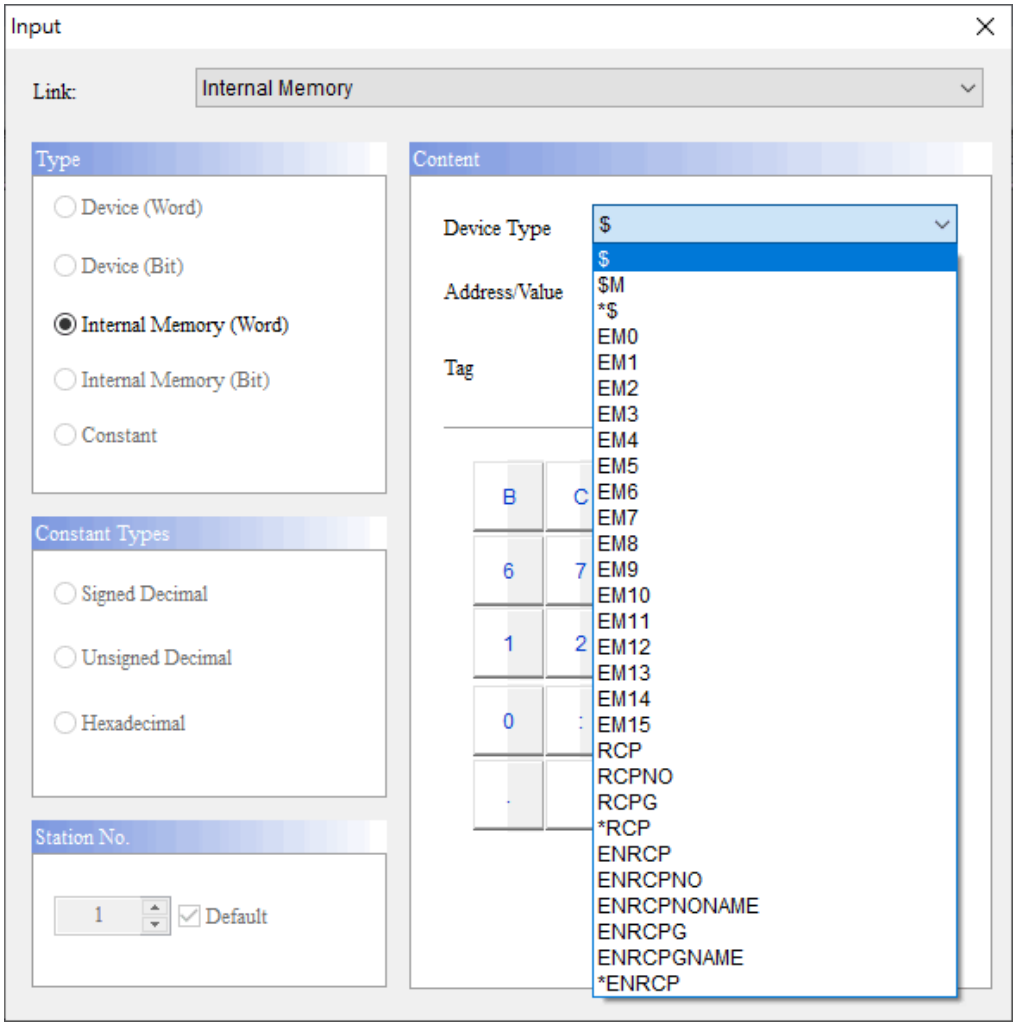
Each HMI function needs to be executed through address concatenation, you can set the address in the element property dialog. The address settings include Internal Memory Address and External Controller Address. This section describes various address definitions and their setting methods.

Internal Memory

Delta HMI has a total of 13 types of registers with different functions.

1. Internal register $
2. Non-volatile internal register $M
3. Indirect address register *$
4. Extended memory EM0~15
5. Recipe register RCP
6. Recipe number register RCPNO
7. Recipe group register RCPG
8. Recipe indirect addressing register *RCP
9. Enhanced recipe register ENRCP
10. Enhanced recipe number register ENRCPNO
11. Enhanced recipe group register ENRCPG
12. Enhanced recipe group name register ENRCPGNAME
13. Enhanced recipe indirect addressing register *ENRCP

Types 5~13 belong to recipe addresses. For detailed description, see the manual of the recipe.



Internal Register ($)

The Internal Register is the HMI internal memory that freely reads data and supports all kinds of configurations, such as the communication address of the element.

The HMI can access 200,000 sets of 16-bit internal registers.

Note: The internal register does not have a power-off retention function, so the data in the register is not retained when the power is off.

Access Type	Element Type	Access Range
Word	$n	$0~$199999
Bit	$n.b	$0.0~$199999.15

Note: n is Word (0~199999); b is Bit (0~15).

Non-volatile Internal Register ($M)

The Non-volatile Internal Register provides a power-off retention function. The data in the register is retained when the power is off so that you can record important data in this register. The HMI can access 5000 sets of 16-bit non-volatile internal registers ($M0.0~$M4999.15).

Access Type	Element Type	Access Range
Word	$Mn	$0~$4999
Bit	$Mn.b	$0.0~$4999.15

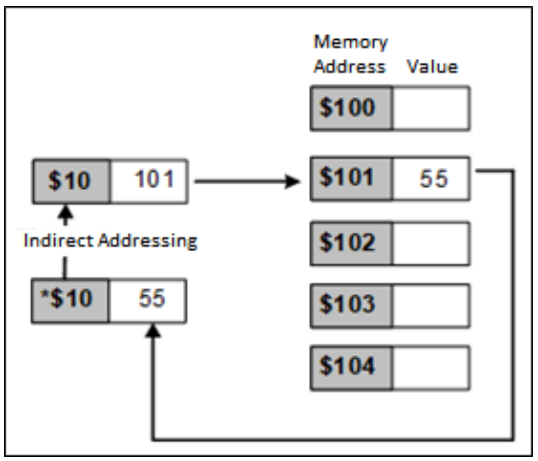
Note: n is Word (0~4999); b is Bit (0~15).

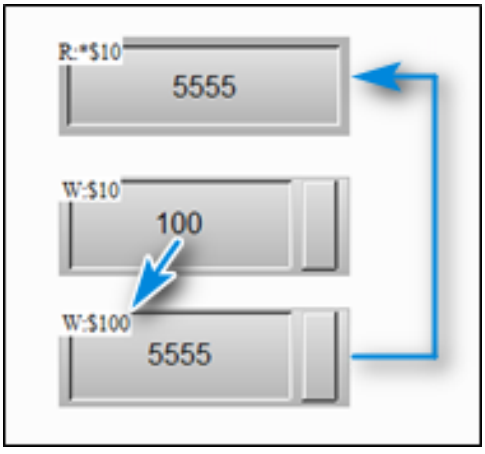
Indirect Address Register (*$ / *D$)

The Indirect Address Register uses the value of the internal memory as the address, and assigns the address value to the corresponding **Indirect Address Register** of the internal memory.

Access Type	Element Type	Access Range
Word	*$0~*$199999	$0~$199999
Double Word	*D$0~*D$199998	$0~$199998

Indirect address register *$n or *D$n, obtains the value from the internal memory $n, sets the value as a new address, and then accesses the value from the new address. For example, $10 = 101, $101 = 55, then *$10 = 55.





If the address assigned by the internal memory exceeds the value of one Word (65535), the indirect address register must use ***D$** and obtain the value in Double Word format.

Note: The indirect address register does not have a power-off retention function, so the data in the register is not retained when the power is off.

Extended Memory

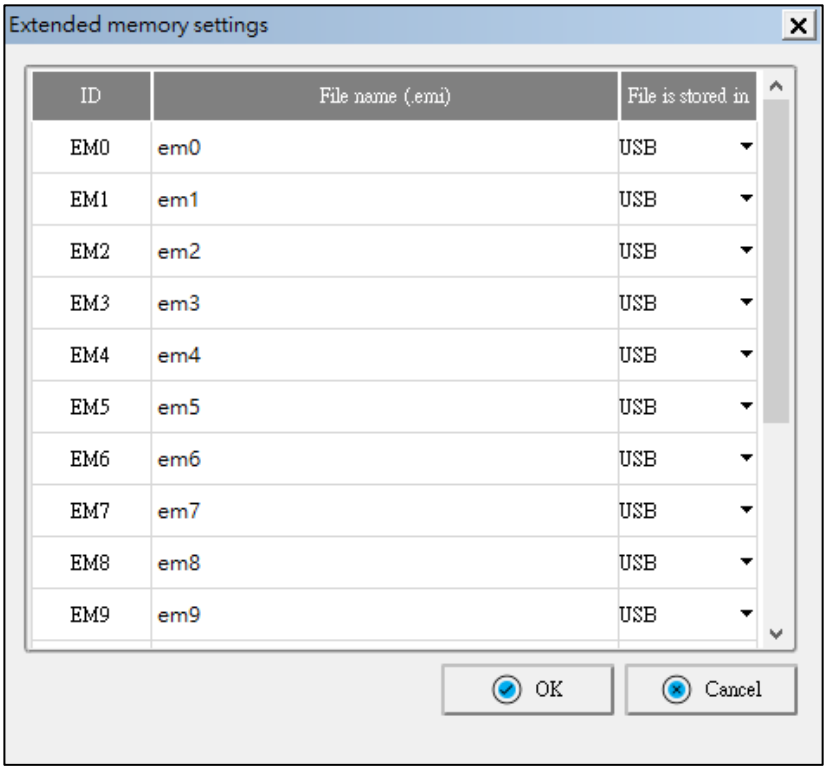
The Extended Memory (EM) can store data on an external storage device so that the data can be retained even after the HMI is powered off. The elements on the HMI screen are also read and written through the extended memory.

- The extended memory has 16 groups (EM0~EM15).
- Supports file storage in external storage devices (USB, USB 2 disk and SD card).
- Each EM is a file, supporting a maximum of 512MB.
- Values can be read and written into the file.
- The maximum Word address is 268435455, and the last Word of the 512MB file can be read.
- The address of the last Bit is EM0_268435455.15.
- EM addresses can be used in elements and macro functions, and can also be used to create data codes.

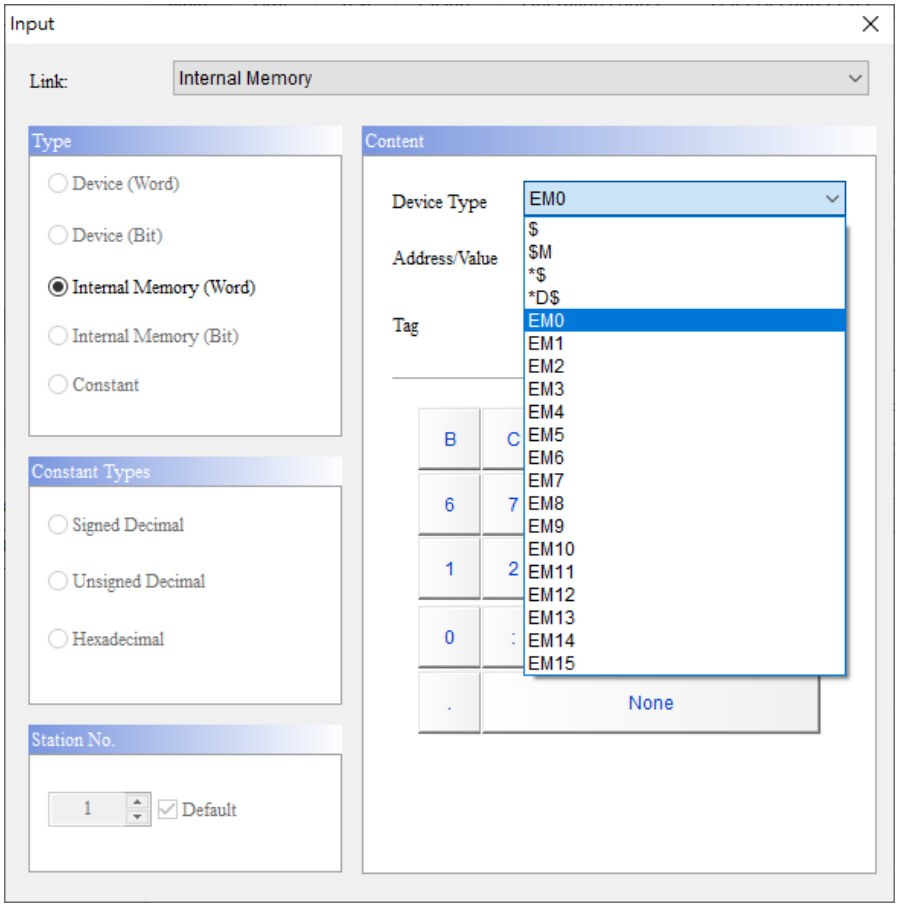
Follow the steps to set the extended memory.

1. On the toolbar, click **Project** > **Other Settings** > **Extended Memory Settings**.
2. In the **Extended memory settings** dialog, set the file name corresponding to each EM area.

   The file name supports multiple languages, and the maximum file name length is (32*4) bytes. The file extension stored on the external storage device is .emi.



3. In the address **Input** dialog of the element, select **Internal Memory** for **Link**, select **EM0~EM15** for **Device Type**, and then enter the read and write address.



The following table lists the API for LUA applications to read and write extended memory.

Command	Description
mem.em.Read (EMID, addr, [FORMAT])	Read 1 WORD from the addr address of EMID
mem.em.Write (EMID, addr, value)	Write 1 WORD from the addr address of EMID
mem.em.ReadDW (EMID, addr, [FORMAT])	Read 1 DWORD from the addr address of EMID
mem.em.WriteDW (EMID, addr, value)	Write 1 DWORD from the addr address of EMID
mem.em.ReadQW (EMID, addr, [FORMAT])	Read 1 QWORD from the addr address of EMID
mem.em.WriteQW (EMID, addr, value)	Write 1 QWORD from the addr address of EMID
mem.em.ReadBit (EMID, addr, bit_index)	Read the bit_index value from the addr address of EMID
mem.em.WriteBit (EMID, addr, bit_index, value)	Write the value from the addr address bit_index of EMID
mem.em.ReadFloat (EMID, addr)	Read 1 Float from the addr address of EMID
mem.em.WriteFloat (EMID, addr, value)	Write 1 Float from the addr address of EMID
mem.em.ReadDouble (EMID, addr)	Read 1 Double from the addr address of EMID
mem.em.WriteDouble (EMID, addr, value)	Write 1 Double from the addr address of EMID
mem.em.ReadASCII (EMID, addr, length)	Read length characters from the addr address of EMID
mem.em.WriteASCII (EMID, addr, string, length)	Write length characters from the addr address of EMID

DXMC Series Internal Memory Address

The following table lists the internal memory address range of Word elements.

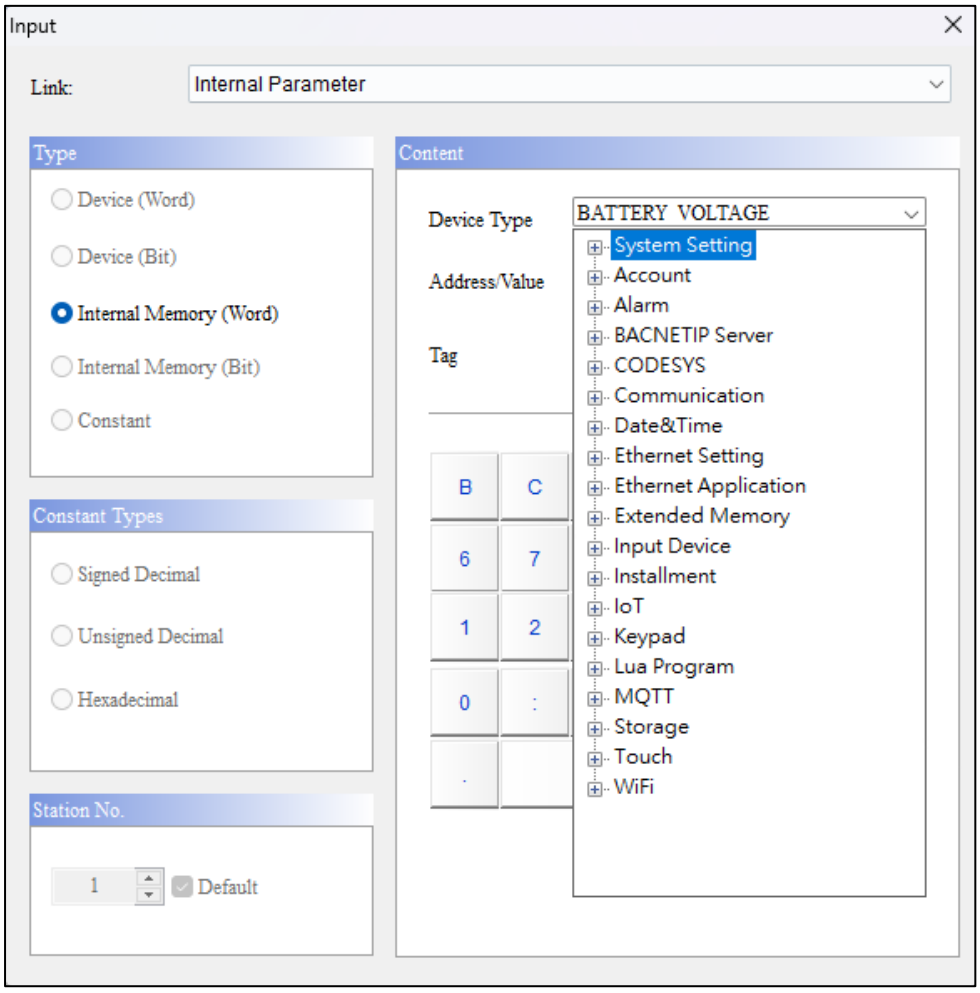
Register Type	Symbol Format Word No.(n)	Read and Write Address Range	Data Length	Remark
X_Register	**X**n	**X**0~**X**1FFFFF	Word	Hexadecimal
Y_Register	**Y**n	**Y**0~**Y**1FFFFF	Word	Hexadecimal
DV_Register	**DV**n	**DV**0~**DV**262143	Word	Even addressing
DH_Register	**DH**n	• DXMC-1H08AD-70, DXMC-1H08CD-7S, DXMC-1H08ED-7S: **DH**1000000~**DH**1061439 • DXMC-1P08NE-4S/70/7S, DXMC-1P04NE-7S, DXMC-1FA1RN-70F: **DH**1000000~**DH**1024575 • DXMC-1FA2RN-70F: **DH**1000000~**DH**1049151	Word	Even addressing
SDV_Register	**SDV**n	**SDV**3000000~**SDV**3065535	Word	Even addressing
SDH_Register	**SDH**n	• DXMC-1H08AD-70, DXMC-1H08CD-7S, DXMC-1H08ED-7S: **SDH**6000000~S**DH**6065535 • DXMC-1P08NE-4S/70/7S, DXMC-1P04NE-7S, DXMC-1FA1RN-70F: **SDH**6000000~S**DH**6004095 • DXMC-1FA2RN-70F: **SDH**6000000~S**DH**6008191	Word	Even addressing
RP_Register	**RP**n	**RP**0~**RP**7FFFFF	Word	Hexadecimal
Controller	**CR**n	**CR**0~**CR**14FFFFF	Word	Hexadecimal
MW_Register	**MW**n	**MW**0~**MW**67108863	Word	Even addressing
MD_Register	**MD**n	**MD**0~**MD**67108863	Word	Even addressing
ML_Register	**ML**n	**ML**0~**ML**67108863	Word	Even addressing

The following table lists the internal memory address range of Bit elements.

Contact Type	Symbol Format Byte No.(n); Bit No.(b)	Read and Write Address Range	Remark
X_Coil	**X**n.b	**X**0.0~**X**1FFFFF.15	Hexadecimal
Y_Coil	**Y**n.b	**Y**0.0~**Y**1FFFFF.15	Hexadecimal
DV_Coil	**DV**n.b	**DV**0.0~**DV**262143.7	-
DH_Coil	**DH**n.b	• DXMC-1H08AD-70, DXMC-1H08CD-7S, DXMC-1H08ED-7S: **DH**1000000.0~**DH**1061439.7 • DXMC-1P08NE-4S/70/7S, DXMC-1P04NE-7S, DXMC-1FA1RN-70F: **DH**1000000.0~**DH**1024575.7 • DXMC-1FA2RN-70F: **DH**1000000.0~**DH**1049151.7	-
SDV_Coil	**SDV**n.b	**SDV**3000000.0~**SDV**3065535.7	-
SDH_Coil	**SDH**n.b	• DXMC-1H08AD-70, DXMC-1H08CD-7S, DXMC-1H08ED-7S: **SDH**6000000.0~**SDH**6065535.7 • DXMC-1P08NE-4S/70/7S, DXMC-1P04NE-7S, DXMC-1FA1RN-70F: **SDH**6000000.0~**SDH**6004095.7 • DXMC-1FA2RN-70F: **SDH**6000000.0~**SDH**6008191.7	-
SM_Coil	**SM**n.b	**SM**0.0~**SM**8191.15	-
MX_Coil	**MX**n.b	**MX**0.0~**MX**67108863.7	-
MW_Coil	**MW**n.b	**MW**0.0~**MW**67108863.7	-

Internal Parameter

The I**nternal Parameter** can access the HMI internal state values, including system time value, external storage device status, X / Y coordinates when touching, touch status, remaining battery voltage in percentage, network parameters, firmware version, extended memory status, and so on.

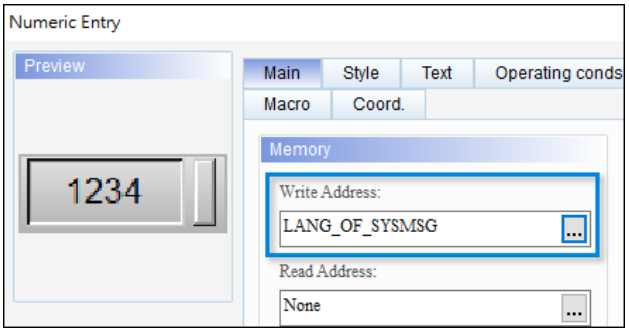


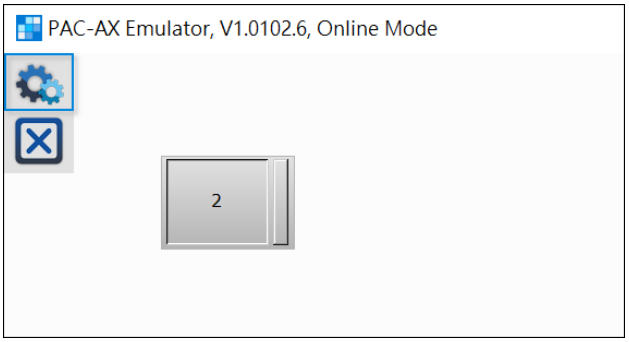
Note: Internal Parameter is available only for Word elements. You are unable to use this function if you create Bit elements.

The following table lists each internal parameter with their descriptions.

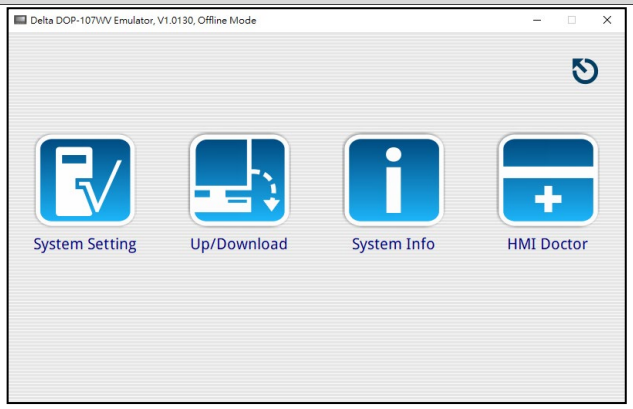
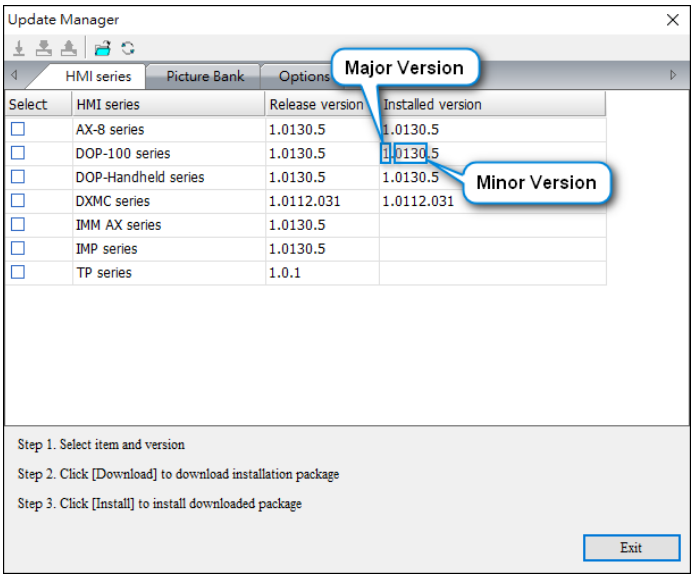
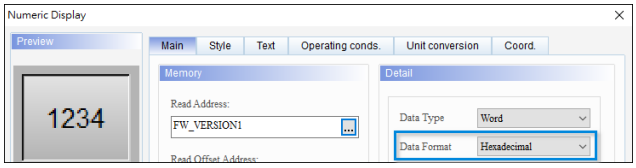
System Setting

Parameter	Definition	Description
BATTER_ VOLTAGE	Remaining HMI battery	The display unit is percentage.

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>LANG_OF_
SYSMSG</td><td>Display language of the HMI directory</td><td>
<table>
<tr><th>State Value</th><th>Language</th></tr>
<tr><td>0</td><td>English</td></tr>
<tr><td>1</td><td>Tradition Chinese</td></tr>
<tr><td>2</td><td>Simple Chinese</td></tr>
<tr><td>3</td><td>Spanish</td></tr>
<tr><td>4</td><td>French</td></tr>
<tr><td>5</td><td>Russian</td></tr>
<tr><td>6</td><td>Turkish</td></tr>
</table>
Follow these steps to set the system menu language.
1. Create an element such as Numeric Entry element.
2. In the address input dialog of the element, select Link name as Internal Parameter, and the Device Type as LANG_OF_SYSMSG.


3. Download the screen to the HMI and change the value of the element on the HMI.
4. Press and hold the screen for 2 seconds, and the system menu button appears on the top left of the screen.


After entering the system menu, you can see the display language changes.
</td></tr>
</table>

Parameter	Definition	Description
		
SP_BRIGHT	Backlight brightness of HMI	The display unit is percentage.
SYS_BUZZER_VOLUME	Buzzer volume	The display unit is percentage. The value range is 0–100.
BTN_BUZZER_VOLUME	Touch-tone	The display unit is percentage. The value range is 0–100.
FW_VERSION1	Major version number of HMI firmware version	
FW_VERSION2	Minor version number of HMI firmware version	• When setting this parameter, set the **Data Format** to **Hexadecimal**. 
Loaded CODESYSTags	Total number of loaded CODESYS Tag	Display the number of current loaded tags. HMI displays the progress bar when preloading the tags. After all tags are loaded, the total number of preloaded CODESYS tags can be known.

Parameter	Definition	Description
BOOT_BUZZER_VOLUME	Boot buzzer volume of HMI	The display unit is percentage. The value range is 0–100.
HardwareID	HMI hardware code	Read the HMI hardware code. This parameter is set using the **Character Display** element, and the string length is 32 to ensure that the complete hardware code is read.

Account

Note: This parameter only applies if the account is set to a **non-simple password**.

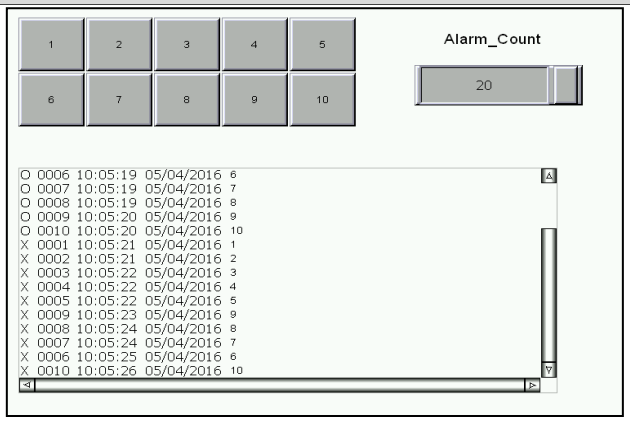
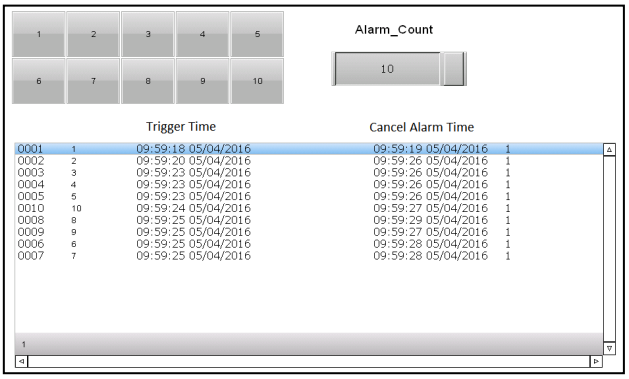
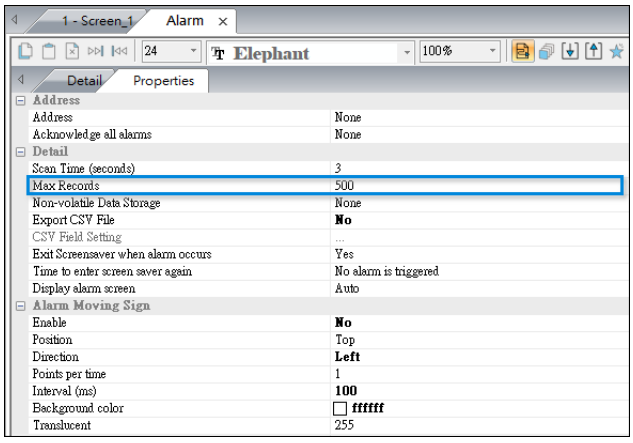
Parameter	Definition	Description
ACCOUNT	Currently logged-in account	• Account contains English letters and numbers, use the **Character Display** element. • Account contains non-ASCII characters, use the **Multi-language Input** element.
SetUserAccount	User account	• It is used for user login / logout, adding / deleting an account, and changing a password. • Use the **Character Entry** element to set this parameter.
AdminLogin	Highest authority account number	**State Value** / **Result** 0 – Log in using a non-highest authority account. 1 – Log in with the highest authority account.
SetUser Password	User password	• The password is displayed in ***. • It is used for user login / logout, adding / deleting an account, and changing a password. • Use the **Character Entry** element to set this parameter.
SetUserLevel	User level	• It is used for user login / logout, adding / deleting an account, and changing a password. • The level range is 0–10.

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>AccountStatus</td><td>Account status</td><td>Read the login status of the current account. The status includes the following:
Unexpired
Unlocked
Expired
Locked
Use the Character Entry element to set this parameter.</td></tr>
<tr><td>CurrentUser Level</td><td>Currently logged in level</td><td>Read the level (0~10) of the current login account.</td></tr>
<tr><td>LoginResult</td><td>Login status</td><td rowspan="2">Read whether the last login / logout of the current account was successful. The status includes the following:
Success
Fail
Use the Character Entry element to set this parameter.</td></tr>
<tr><td>LogoutResult</td><td>Logout status</td></tr>
<tr><td rowspan="2">Login
Logout</td><td rowspan="2">Login settings
Logout settings</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>The action is completed.</td></tr><tr><td>1</td><td>Trigger login / logout</td></tr></table></td></tr>
<tr><td>DeleteUser Account</td><td>Delete account</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>The action of deleting an account is completed.</td></tr><tr><td>1</td><td>Trigger account deletion</td></tr></table></td></tr>
<tr><td>DeleteUser AccountResult</td><td>Delete account result</td><td>Read whether the deletion of the account is successful. The status includes the following:
Success
Fail
Use the Character Entry element to set this parameter.</td></tr>
<tr><td>AddUser Account</td><td>Add account</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>The action of adding an account is completed.</td></tr><tr><td>1</td><td>Trigger account adding</td></tr></table></td></tr>
<tr><td>AddUser AccountResult</td><td>Add account result</td><td>Read whether the adding of the account is successfully read. The status includes the following:</td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td></td><td></td><td>• Success
• Fail.
Use the Character Entry element to set this parameter.</td></tr>
<tr><td>ChangeUser Password</td><td>Change password</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>The password change action is completed.</td></tr><tr><td>1</td><td>Trigger password change</td></tr></table></td></tr>
<tr><td>Change PasswordResult</td><td>Change password result</td><td>Read whether the change of the password is successful. The status includes the following:
• Success
• Fail
Use Character Entry element to read this parameter.</td></tr>
<tr><td>UserDescription</td><td>Get a description of the user who is currently logged in to the account</td><td>The user description only supports English and numbers. Use the Character Display element to read this parameter.</td></tr>
<tr><td>RFIDSerialNumber</td><td>Get the RFID serial number of the current login account</td><td>The RFID serial number uses the Character Display element to read this parameter.</td></tr>
<tr><td>SetRFIDSerialNumber</td><td>Set the RFID serial number</td><td rowspan="2">If is used for Add/Delete User Account Screen, only English and numbers are supported. Use the Character Entry element to set this parameter.</td></tr>
<tr><td>SetUserDescription</td><td>Set a user description</td></tr>
</table>

Alarm

Parameter	Definition	Description
ALARM_COUNT	Alarm triggered The total number of transactions	• Display the total number of alarms that are triggered and de-triggered. • The DOP-B, DOP-H, and HMC series models record the triggered and de-triggered alarms separately. As a result, Alarm_Count displays 20 when there are ten alarms.

Parameter	Definition	Description
		 • The DOP-W and DOP-100 series models record the triggered and de-triggered alarms within one row of data. As a result, Alarm_Count displays 10 when there are ten alarms.  • This function reminds you to export the alarm data in case the initial alarm data contents are removed when the data reach the set maximum. 

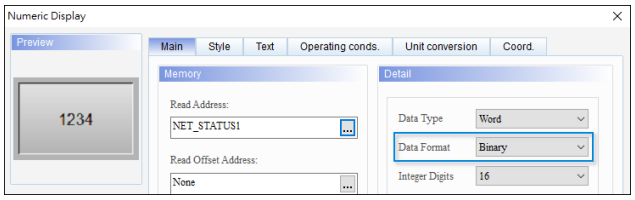
BACNETIP Server

Parameter	Definition	Description
DEVICEID	Device ID of BACnet	The device ID can be changed dynamically on the HMI.

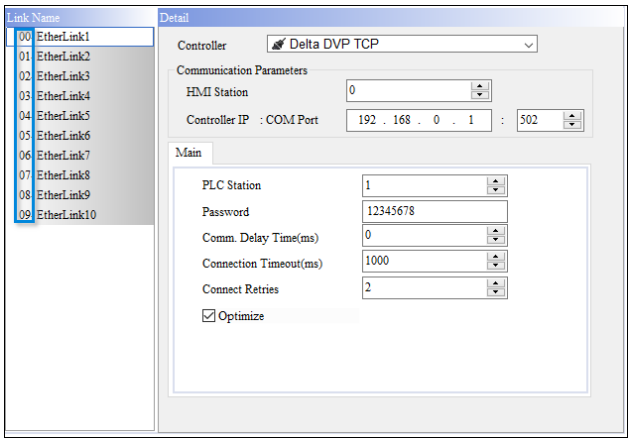
Communication

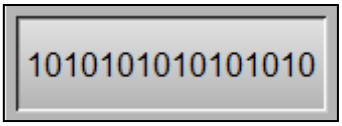
<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>NET_STATUS1</td><td rowspan="4">Network connection status</td><td rowspan="4">

NET_STATUS1 represents the 16 connections of the first controller;
NET_STATUS2 is the 16 connections of the second controller, and so forth for NET_STATUS2 and NET_STATUS4.
Set the Data Format as Binary when setting these internal parameters.



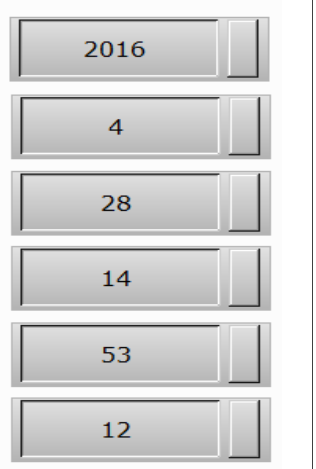
Sort according to the EtherLink device number added by the software.





<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Not connected</td></tr>
<tr><td>1</td><td>Connected</td></tr>
</table>
</td></tr>
<tr><td>NET_STATUS2</td></tr>
<tr><td>NET_STATUS3</td></tr>
<tr><td>NET_STATUS4</td></tr>
</table>

Date&Time

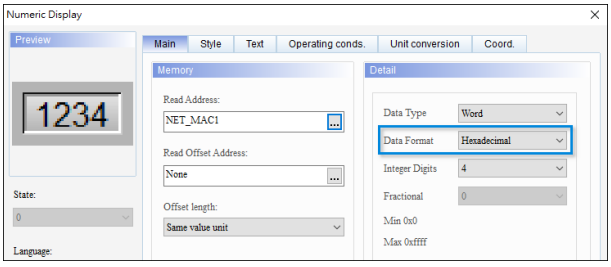
<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>TIME_YEAR</td><td rowspan="6">HMI time value</td><td rowspan="6"><table><tr><th>Time Value</th><th>Result</th></tr><tr><td>TIME_YEAR (yyyy)</td><td rowspan="6"> 
</td></tr><tr><td>TIME_MONTH (mm)</td></tr><tr><td>TIME_DAY (dd)</td></tr><tr><td>TIME_HOUR (hr)</td></tr><tr><td>TIME_MINUTE (min)</td></tr><tr><td>TIME_SECOND (sec)</td></tr></table></td></tr>
<tr><td>TIME_MONTH</td></tr>
<tr><td>TIME_DAY</td></tr>
<tr><td>TIME_HOUR</td></tr>
<tr><td>TIME_MINUTE</td></tr>
<tr><td>TIME_SECOND</td></tr>
</table>

Ethernet Setting

Some DOP-100 series HMI models have two Ethernet ports, so the network parameters are named as: NET1_IP1~NET1_IP4, SUBMASK1_IP1~SUBMASK1_IP4, GWAY1_IP1~GWAY1_IP4 and NET2_IP1~NET2_IP4, SUBMASK2_IP1~SUBMASK2_IP4, GWAY2_IP1~GWAY2_IP4.

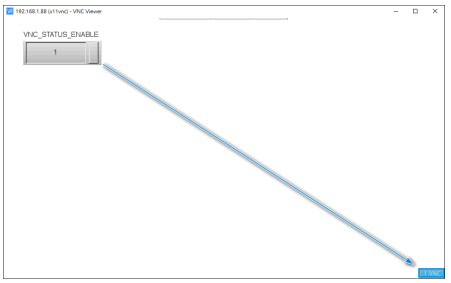
For the DOP-100 models to be compatible with the DOP-B projects, the network parameters NET_IP1 to NET_IP4, SUBMASK_IP1 to SUBMASK_IP4, and GWAY_IP1 to GWAY_IP4 are added.

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>NET1_IP1
NET2_IP1</td><td rowspan="4">IP address of the HMI</td><td rowspan="4">Take 192.168.1.88 as an example.
 
</td></tr>
<tr><td>NET1_IP2
NET2_IP2</td></tr>
<tr><td>NET1_IP3
NET2_IP3</td></tr>
<tr><td>NET1_IP4
NET2_IP4</td></tr>
</table>

Parameter	Definition	Description
SUBMASK_IP1 SUBMASK1_IP1	Submask IP address of the HMI	Take 255.255.255.0 as an example. 
SUBMASK_IP2 SUBMASK1_IP2		
SUBMASK_IP3 SUBMASK1_IP3		
SUBMASK_IP4 SUBMASK1_IP4		
GWAY1_IP1 GWAY2_IP1	Gateway IP address of the HMI	Take 192.168.1.254 as an example. 
GWAY1_IP2 GWAY2_IP2		
GWAY1_IP3 GWAY2_IP3		
GWAY1_IP4 GWAY2_IP4		
DNS1_IP1 DNS2_IP1	IP address of the HMI DNS Server	Take 192.168.1.5 as an example. 
DNS1_IP2 DNS2_IP2		
DNS1_IP3 DNS2_IP3		
DNS1_IP4 DNS2_IP4		
NET_MAC1 NET2_MAC1	MAC number of the HMI network port	• When setting this parameter, set the **Data Format** to **Hexadecimal**.  • The value is displayed with the high and low bits swapped. If the value is 1800, it is displayed as 00:18.
NET_MAC2 NET2_MAC2		
NET_MAC3 NET2_MAC3		

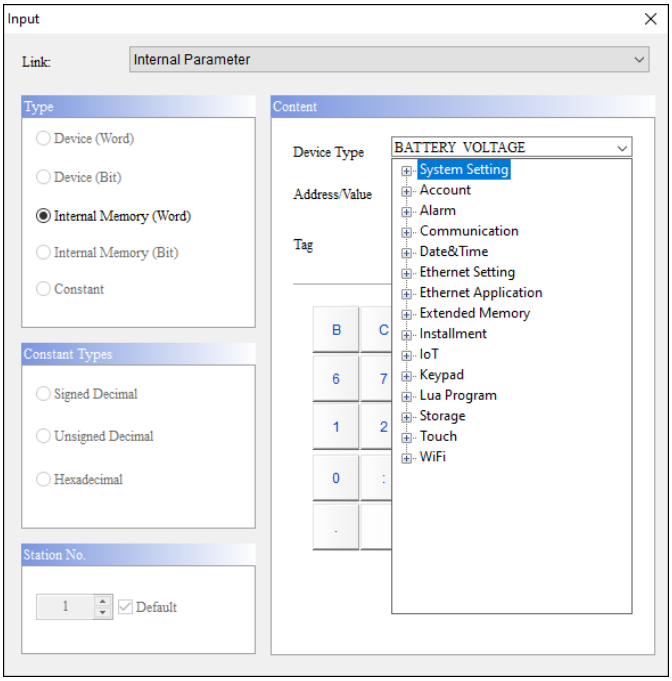
Ethernet Application

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>SMTP_STATUS</td><td>SMTP connection status</td><td rowspan="2">
<table>
<tr><th>State Value</th><th>State Description</th><th>Corresponding Message in SMTP_INFO</th></tr>
<tr><td>0</td><td>Status unknown</td><td>Unknown</td></tr>
<tr><td>1</td><td>Connection success</td><td>Message Sent</td></tr>
<tr><td>–100</td><td>Connection failed</td><td>Unable to connect to Host</td></tr>
<tr><td>–101</td><td>System disconnected</td><td>The displayed message changes according to the system.</td></tr>
<tr><td>–102</td><td>Authentication required</td><td>530 SMTP Authentication is required.</td></tr>
<tr><td>–103</td><td>Authentication failed</td><td>Fail to send message due to Authentication Fail</td></tr>
<tr><td>–999</td><td>SMTP error</td><td>Fail to send message</td></tr>
</table>
</td></tr>
<tr><td>SMTP_INFO</td><td>SMTP messages</td></tr>
<tr><td>REMO_COUNT</td><td>Number of remote devices connected to the HMI</td><td>Remote devices include eServer, VNC, and LUA online debugging programs.</td></tr>
<tr><td>VNC_ENABLE</td><td>VNC start</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Disable VNC</td></tr>
<tr><td>1</td><td>Enable VNC</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>VNC_STATUS_ENABLE</td><td>VNC status display</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Turn off the VNC status display.</td></tr>
<tr><td>1</td><td>Turn on the VNC status display.
  </td></tr>
</table>
</td></tr>
<tr><td>VNC_ NOPASSWORD</td><td>VNC Password Setting</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>No password is required for VNC connection.</td></tr>
<tr><td>1</td><td>Password is required for VNC connection.</td></tr>
</table>
</td></tr>
<tr><td>VNC_ VIEWONLY</td><td>VNC Read-only Setting</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>After connecting to HMI, you can only view the screen and cannot operate it.</td></tr>
<tr><td>1</td><td>Operation is possible after connecting to HMI.</td></tr>
</table>
</td></tr>
<tr><td>VNC_MULTI_ CONNECT</td><td>VNC Multi-connection Mode</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Multiple VNC connections are allowed by HMI.</td></tr>
<tr><td>1</td><td>Only one VNC connection is allowed by HMI.</td></tr>
</table>
</td></tr>
<tr><td>VNC_ PASSWORD</td><td>VNC Password Setting</td><td>Set the VNC connection password (up to 8 characters) through the Character Input element.</td></tr>
<tr><td>VNC_PORT</td><td>VNC Connection Port</td><td>Set the VNC connection port.</td></tr>
</table>

Parameter	Definition	Description	
InternetConn Status	Internet Connection status	**State Value**	**Result**
		0	No Internet connection
		1	Internet connection exists
		2	Detecting

Extended Memory

Parameter	Definition	Description
StatusEM0~15	Extended memory status	Displays the current processing status of each extended memory. 

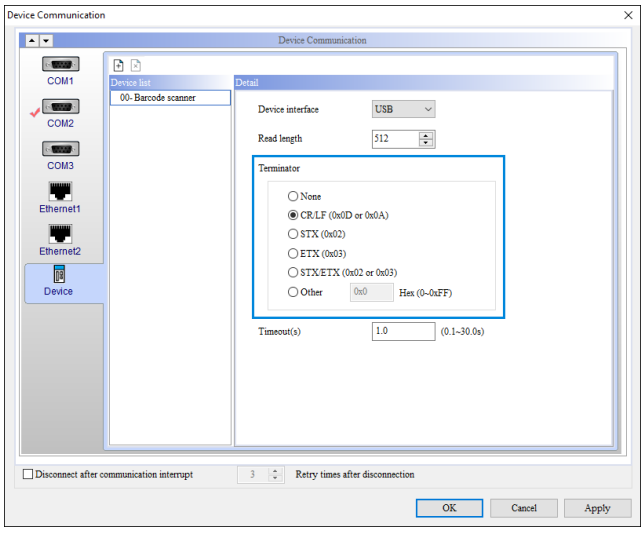
State Value	Result
0	Writing is complete
1	Writing
2	The corresponding disk does not exist
3	File write error
4	File read error

Input Device

HMI supports reading data from external input devices. The following parameters control external input devices and read the data.

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>InputDevID</td><td>The interface of input device</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>1</td><td>COM1</td></tr>
<tr><td>2</td><td>COM2</td></tr>
<tr><td>3</td><td>COM3</td></tr>
<tr><td>4</td><td>COM4</td></tr>
<tr><td>10</td><td>USB (Default)</td></tr>
</table>
</td></tr>
<tr><td>InputDevConnStatus</td><td>The connection status of input device</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>No keypad device detected</td></tr>
<tr><td>1</td><td>Keypad device detected</td></tr>
</table>
</td></tr>
<tr><td>InputDevData</td><td>Read data content</td><td rowspan="2">

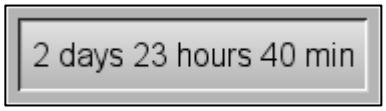
Displays the data in InputDevData and reads the data length in InputDevDataLen.
The read data displays the character before the Terminator. If the Terminator is not received, the reading stops when the timeout period expires.

Note: Set the Terminator and Timeout in the Device page on the Device Communication dialog.


</td></tr>
<tr><td>InputDevDataLen</td><td>Read data length</td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>InputDevClear</td><td>Clear data and data length</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Idle</td></tr>
<tr><td>1</td><td>Clear the data and data length. After clearing, the device status returns to 0.</td></tr>
</table>
</td></tr>
<tr><td>InputDevInProgress</td><td>Progress of input device</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Idle</td></tr>
<tr><td>1</td><td>Receiving data</td></tr>
</table>
</td></tr>
<tr><td>InputDevStatus</td><td>Status of input device</td><td>
After clearing the read data, the device status returns to 0.
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Idle</td></tr>
<tr><td>1</td><td>Reading successful</td></tr>
<tr><td>2</td><td>Reading failed</td></tr>
<tr><td>3</td><td>The read data size exceeds the specified size.</td></tr>
<tr><td>4</td><td>Open the port failed</td></tr>
</table>
</td></tr>
</table>

Installment

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>NEXT_INST_ REMAIN_TIME</td><td>Current installment time left</td><td>
Displays the remaining time until the next installment.
It is recommended to use Character Display elements.
Note: The String Length must be set to 23 to display the complete time.


</td></tr>
<tr><td>INST_LOCK_ STATUS</td><td>Installment locked status</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Connection failed</td></tr>
<tr><td>1</td><td>Connection successful</td></tr>
</table>
</td></tr>
</table>

IoT

This parameter is only available for DOP-300 series HMI.

Note: Tunnel related parameters are read-only.

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>IoTNotify</td><td>Cloud notification</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Cloud has no new version.</td></tr>
<tr><td>2</td><td>New firmware updates on the cloud.</td></tr>
<tr><td>3</td><td>Cloud has new template updates, but the template ID remains unchanged and the data will not stop updating.</td></tr>
<tr><td>5</td><td>Cloud has new template updates and the template ID changes, and the data will stop updating.</td></tr>
</table>
</td></tr>
<tr><td>IoTDeviceStatus</td><td>Connection state of HMI and Cloud</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>The device is turning on.</td></tr>
<tr><td>1</td><td>The device account is unbinding.</td></tr>
<tr><td>2</td><td>The device account is binding.</td></tr>
<tr><td>3</td><td>Device online</td></tr>
<tr><td>4</td><td>Device offline</td></tr>
</table>
</td></tr>
<tr><td>IoTEnable</td><td>Enable Cloud service</td><td>
<table>
<tr><th>State Value</th><th>Result</th></tr>
<tr><td>0</td><td>Not enabled</td></tr>
<tr><td>1</td><td>Enabled</td></tr>
</table>
</td></tr>
<tr><td>IoTPairingKey</td><td>Cloud template binding verification code</td><td>

Verification code (6 digits) entered when the HMI is bound to the cloud template.
Use the Numeric Input element to set this parameter.

</td></tr>
<tr><td>IoTBindingQRCode</td><td>Bind HMI to DIACloud</td><td>Set to 1, bind the HMI and DIACloud.</td></tr>
<tr><td>IoTUnBindingQRCode</td><td>Unbinding DIACloud</td><td>Set to 1, unbinding the HMI and DIACloud.</td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>IoTShowQRCode</td><td>Cloud template QR code</td><td>Use the QR Code Display element to set this parameter.</td></tr>
<tr><td>IoTTunnelStatus

IoTTunnel StatusDesc</td><td>State value and description of the HMI connected to FUDA Tunnel</td><td>
<table>
<tr><th>State value</th><th>Description</th></tr>
<tr><td>0</td><td>Tunnel is not connected</td></tr>
<tr><td>1</td><td>Tunnel is connected</td></tr>
<tr><td>2</td><td>The tunnel data has reached the limit.</td></tr>
<tr><td>4</td><td>Fail to load Tunnel configuration file</td></tr>
<tr><td>9</td><td>Fail to open Tunnel interface</td></tr>
<tr><td>–1</td><td>Connection timed out</td></tr>
<tr><td>99</td><td>Establish a connection</td></tr>
</table>
</td></tr>
<tr><td>IoTTunnelID</td><td>The ID of the HMI connected to FUDA Tunnel</td><td>• When not connected, display 0.
• When connected, display the allocated value (1~65535) by the server. The ID is still displayed after disconnection.</td></tr>
<tr><td>IoTTunnelIP</td><td>The Tunnel IP set in the virtual network adapter of HMI</td><td>• IP format is 0.0.0.0~255.255.255.255.
• Use the Character Read element to set this parameter.</td></tr>
<tr><td>IoTTunnelServer</td><td>Tunnel server address</td><td>Displays the server name when connected. The server name is still displayed after disconnection.</td></tr>
<tr><td>IoTTunnelLatency</td><td>Tunnel connection delay time</td><td>• When not connected, display –1.
• When connected, display the delay time.</td></tr>
<tr><td>IOTDataSync Status</td><td>Cloud Template Sync status</td><td>Displays whether the current template is downloaded from DIACloud. The status includes the following:
• Sync.
• Not sync.
Use the Character Entry element to set this parameter.</td></tr>
</table>

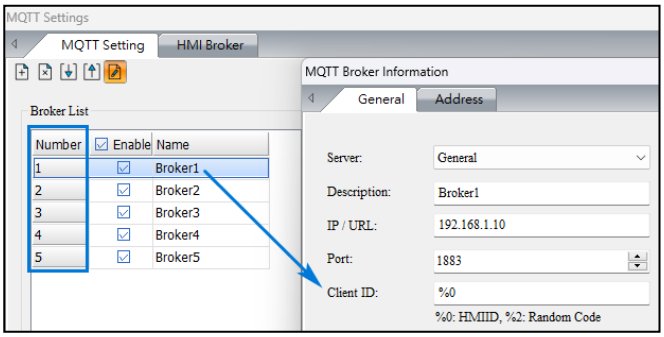
Keypad

Parameter	Definition	Description
KEY_CHAR	Show keyboard text	• When the HMI is connected to an external keypad, the characters can be directly input through the keypad and displayed through this parameter. • It is recommended to use **Character Entry** or **Character Display** elements.

Lua Program

Parameter	Definition	Description
PROGRAM_ STATUS	Current LUA running status	**State Value** / **Description** 0 – Stop 1 – Run 2 – Breakpoint 3 – Pause
PROGRAM_ INFO	LUA execution information	If an error occurs during LUA operation, the current error message can be displayed through this parameter.

MQTT

Parameter	Definition	Description
MQTTClientID	Read Broker ClientID	Set the Broker ID to read the corresponding Client ID.  **Note:** • MQTTClientID is read-only, and this parameter is read by the **Character Display** element.
BrokerNumber	Assign Broker Number	• BrokerNumber corresponds to the Broker List in MQTT Setting.

MQTT Broker

Parameter	Definition	Description
BrokerInfo	Read the execution status of Broker	Displays the current execution status of MQTT Broker. The status includes the following: • Executing • Memory is full and rejects all published messages. • Stopped Use the **Character Entry** element to set this parameter.

Storage

Parameter	Definition	Description
SD_STATUS	State value of external storage device (SD card)	**State Value** / **Result** 0 / SD card is not inserted 1 / SD card is inserted
USB_STATUS	State value of external storage (USB disk)	**State Value** / **Result** 0 / USB disk is not inserted 1 / USB disk is inserted
USB2_STATUS	State value of external storage (USB disk)	**State Value** / **Result** 0 / USB disk is not inserted 1 / USB disk is inserted **Note**: This parameter is only available for DOP-300 series HMI.

Touch

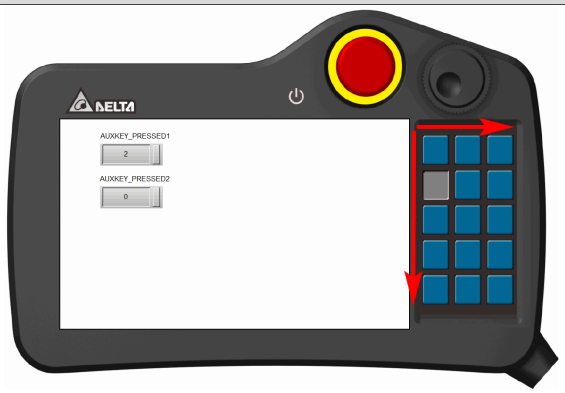
Parameter	Definition	Description
TP_STATUS	State value of HMI panel	**State Value** / **Result** 0 / Panel is not touched 1 / Panel is touched

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>TP_X</td><td>Touch the X coordinate of HMI panel</td><td rowspan="2"><table><tr><th>Coordinate</th><th>Result</th></tr><tr><td>X</td><td rowspan="2"> 
</td></tr><tr><td>Y</td></tr></table></td></tr>
<tr><td>TP_Y</td><td>Touch the Y coordinate of HMI panel</td></tr>
<tr><td>TP_FORCE</td><td>Pressing force applied to the HMI</td><td>The display unit is percentage.</td></tr>
<tr><td>TP_DELAY</td><td>Delay time of pressing the HMI screen</td><td>The display unit is percentage.</td></tr>
</table>

Handheld HMI

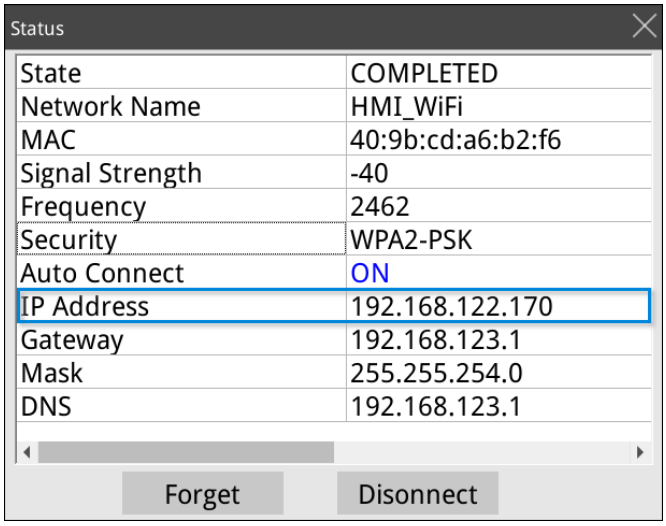
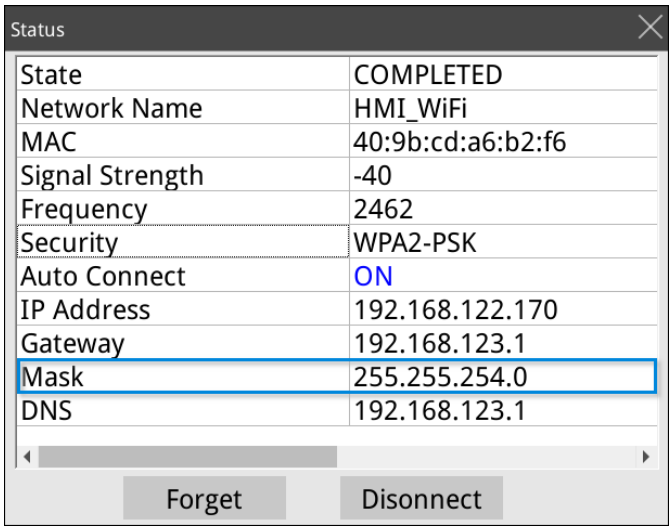
This parameter is only available for DOP-Handheld series HMI.

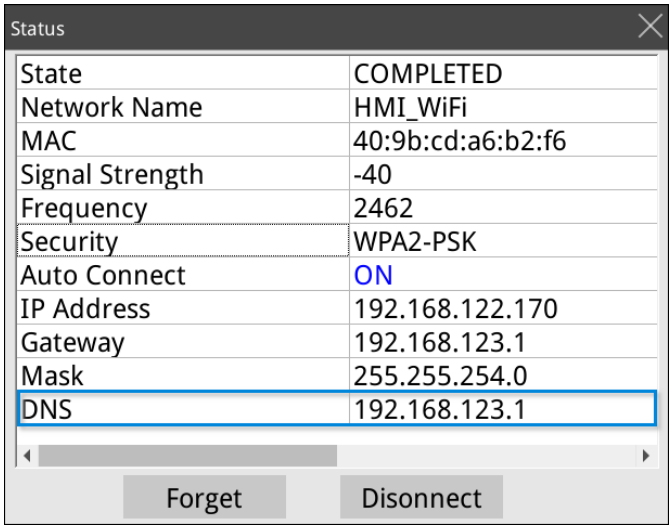
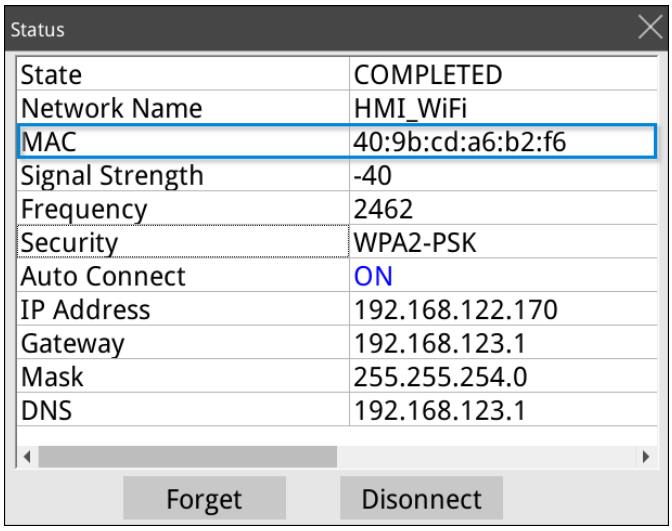
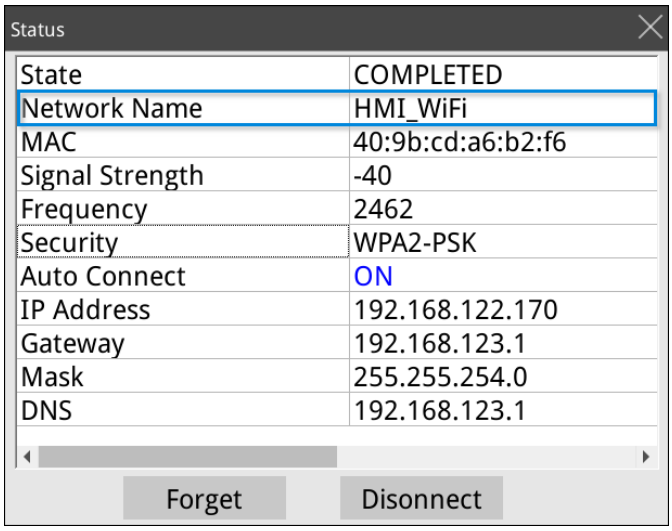
<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>EMS_STATUS</td><td>Current status of emergency stop switch</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>Emergency stop switch is not pressed</td></tr><tr><td>1</td><td>Emergency stop switch is pressed</td></tr></table></td></tr>
<tr><td>LSWITCH_ STATUS</td><td>Current status of enabling switch</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>Enabling switch is not pressed</td></tr><tr><td>1</td><td>Enabling switch is pressed</td></tr></table></td></tr>
<tr><td>HANDWHEEL_ COUNTER</td><td>Accumulated number of rotations of handwheel</td><td>Rotate to the right, the value increases by 1; rotate to the left, the value decreases by 1.</td></tr>
<tr><td>AUXKEY_ PRESSED1</td><td rowspan="2">Auxiliary key press status</td><td rowspan="2">Displayed in power of 2, the leftmost button is the first row, and the value is displayed from top to bottom, with the value increasing by 1, 2, 4, and 8, as shown below.
If there are more than 24 auxiliary keys, it will be displayed with parameter AUXKEY_PRESSED2.</td></tr>
<tr><td>AUXKEY_ PRESSED2</td></tr>
</table>

Parameter	Definition	Description
		

WiFi

Parameter	Definition	Description
WiFi.Country	Wi-Fi country codes	Use the **Character Input** element to set this parameter.
WiFi. DongleStatus	Wi-Fi Dongle configuration status	This parameter is read-only. **State Value** / **Result** 0 – The Dongle is not inserted 1 – The Dongle is inserted
WiFi.Connect Command	Wi-Fi connection configuration	When set to 1 or 2, this parameter will be automatically reset to 0. **State Value** / **Result** 0 – No commands in progress 1 – Disconnected 2 – Connected
WiFi. ErrorMessage	Wi-Fi connection error message	This parameter is read-only. Use the **Character Display** element to read this parameter.
WiFi. ConnectStatus	Wi-Fi connection status	This parameter is read-only. **State Value** / **Result** 0 – Not connected 1 – Connecting 2 – Connected 3 – Fail to connect

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>WiFi.
SignalLevel</td><td>Wi-Fi
signal level</td><td>This parameter is read-only, the level 4 has the highest signal.<table><tr><th>Level</th><th>Signal Strength</th></tr><tr><td>0</td><td>–100 < signal < –88</td></tr><tr><td>1</td><td>–88 <= signal < –78</td></tr><tr><td>2</td><td>–78 <= signal < –67</td></tr><tr><td>3</td><td>–67 <= signal < –55</td></tr><tr><td>4</td><td>–55 <= signal < 0</td></tr></table></td></tr>
<tr><td>WiFi.
SignalStrength</td><td>Wi-Fi signal strength</td><td>This parameter is read-only, the unit is dBm.</td></tr>
<tr><td>WiFi.IPSetting</td><td>Wi-Fi
network mode</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>DHCP</td></tr><tr><td>1</td><td>Static</td></tr></table></td></tr>
<tr><td>WiFi.IP1</td><td rowspan="4">Wi-Fi
IP address</td><td rowspan="4"> 
</td></tr>
<tr><td>WiFi.IP2</td></tr>
<tr><td>WiFi.IP3</td></tr>
<tr><td>WiFi.IP4</td></tr>
<tr><td>WiFi.Mask1</td><td rowspan="4">Wi-Fi
subnet mask</td><td rowspan="4"> 
</td></tr>
<tr><td>WiFi.Mask2</td></tr>
<tr><td>WiFi.Mask3</td></tr>
<tr><td>WiFi.Mask4</td></tr>
</table>

Parameter	Definition	Description
WiFi.DNS1 WiFi.DNS2 WiFi.DNS3 WiFi.DNS4	Wi-Fi DNS	
WiFi.MAC1 WiFi.MAC2 WiFi.MAC3 WiFi.MAC4 WiFi.MAC5 WiFi.MAC6	Wi-Fi Dongle MAC	
WiFi. NetworkName WiFi.Password	Name / password of connected AP	

<table>
<tr><th>Parameter</th><th>Definition</th><th>Description</th></tr>
<tr><td>WiFi.Security</td><td>Encryption method</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>WPA2</td></tr><tr><td>1</td><td>WEP</td></tr><tr><td>2</td><td>NONE</td></tr></table></td></tr>
<tr><td>WiFi. AutoConnect</td><td>Whether to automatically connect Wi-Fi</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>Manual</td></tr><tr><td>1</td><td>Auto</td></tr></table></td></tr>
<tr><td>WiFi.Enable</td><td>Whether to enable Wi-Fi Dongle</td><td><table><tr><th>State Value</th><th>Result</th></tr><tr><td>0</td><td>Not enabled</td></tr><tr><td>1</td><td>Enabled</td></tr></table></td></tr>
</table>

External Controller Address

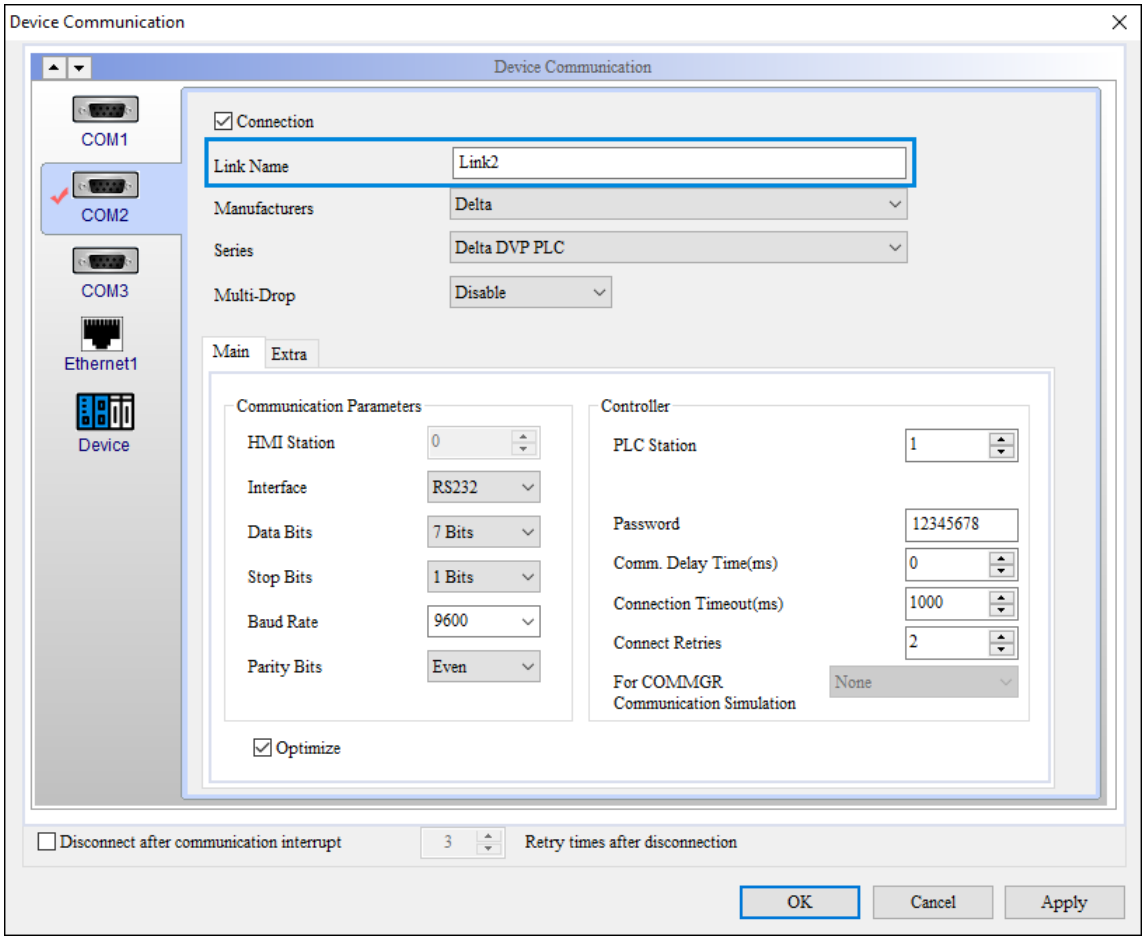
HMI monitors the parameters of the device after it is connected to the controller through COM Port or Ethernet.

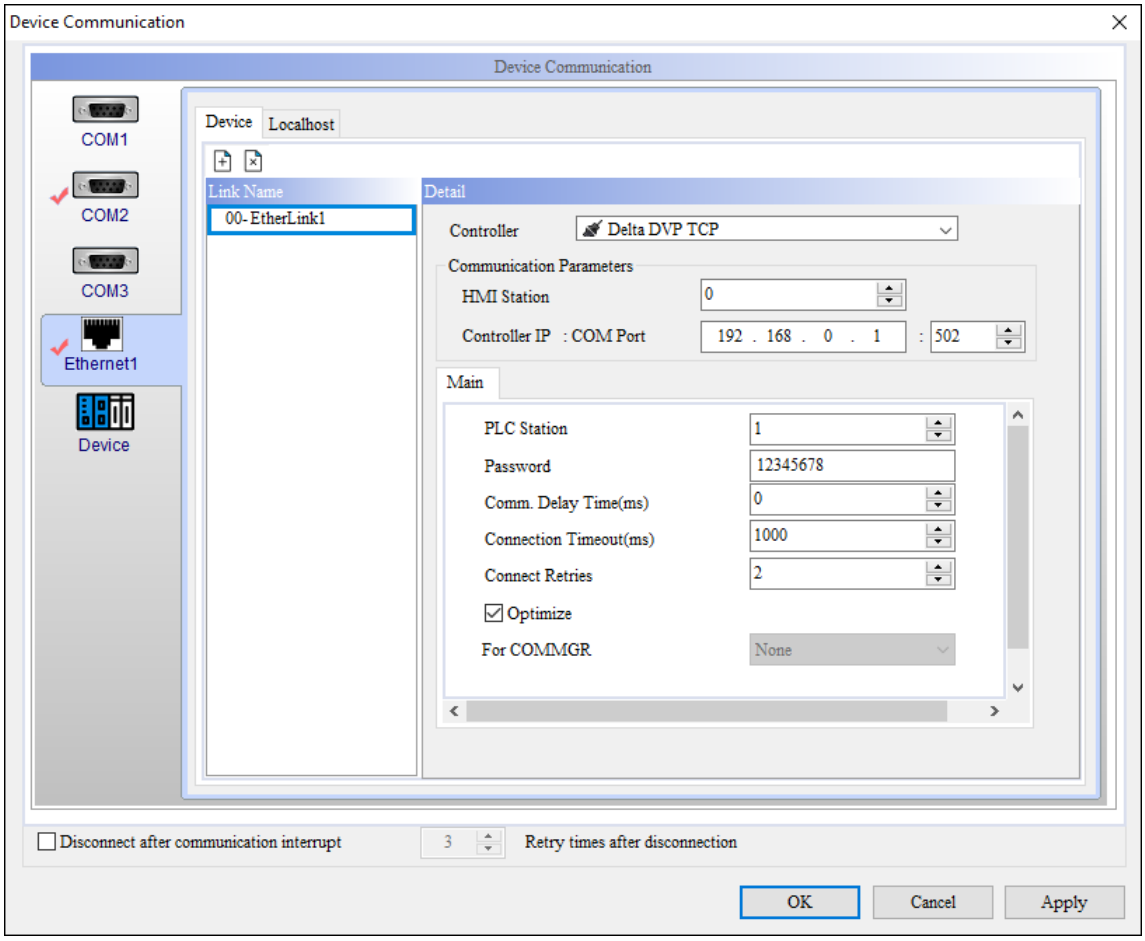
Follow these steps to set the external controller address.

To set the external controller address

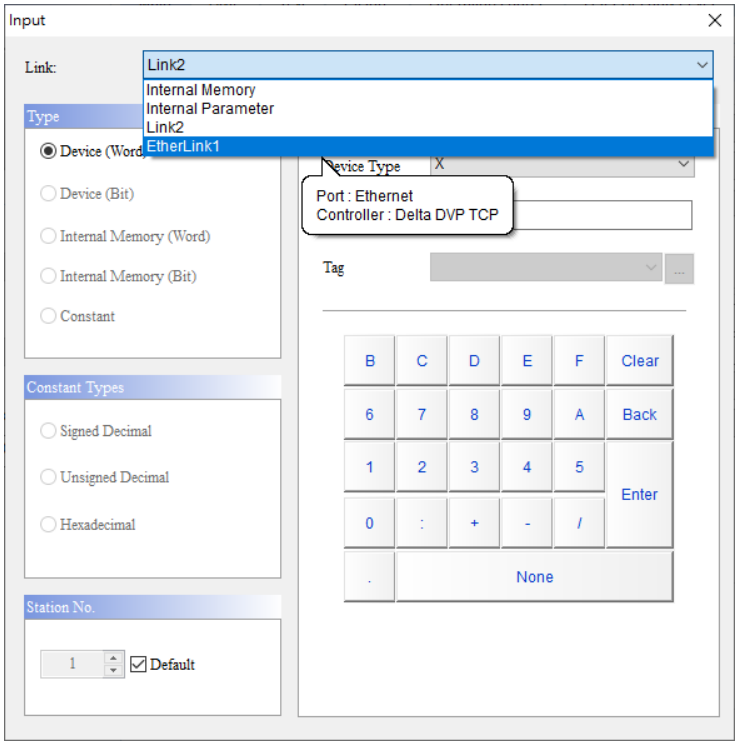
1. Click **General** > **Device Communication** in the menu bar.
2. In the **Device Communication** dialog, set the **Link Name**.

   The following shows an example of setting the COM Port and Ethernet link names.


Device Communication
Device Communication
COM1
COM2
COM3
Ethernet1
Device
Connection
Link Name
Link2
Manufacturers
Delta
Series
Delta DVP PLC
Multi-Drop
Disable
Main
Extra
Communication Parameters
HMI Station
0
Interface
RS232
Data Bits
7 Bits
Stop Bits
1 Bits
Baud Rate
9600
Parity Bits
Even
Controller
PLC Station
1
Password
12345678
Comm. Delay Time(ms)
0
Connection Timeout(ms)
1000
Connect Retries
2
For COMMGR Communication Simulation
None
Optimize
Disconnect after communication interrupt
3
Retry times after disconnection
OK
Cancel
Apply



3. In the address **Input** dialog of the element, select the **Link** name, and then set the controller address.

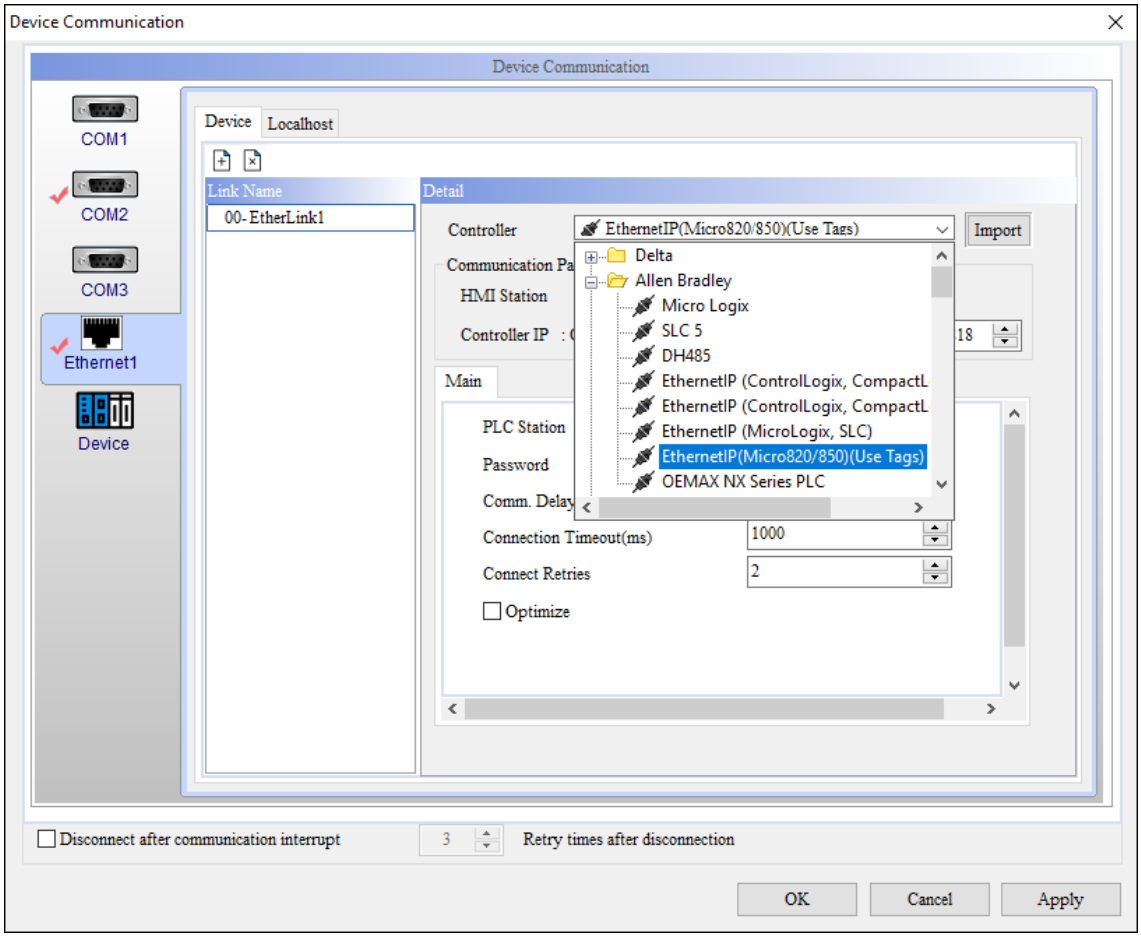


4. Unselect the **Default** checkbox, and then set the **Station No.**

Some Ethernet controllers support variable import function, such as Allen Bradley, Beckoff, Simens, Omron, CODESYS, and so on. After importing the corresponding variable file in the **Device Communication** dialog, the HMI can communicate with the controller through variables (Tag).

How to use Tag?

1. In the **Device Communication** dialog, select **Ethernet1**.
2. In the **Device** tab, click  .
3. Select **EthernetIP (Micro820)(Use Tags)** for **Controller**.



4. Click **Import**.
5. In the address **Input** dialog of the element, select the **Link** name with the imported variable file.

   The variables are listed in the dialog.

6. After selecting the variable, click **OK**.

In the variable selection dialog, you can:

- Use keywords to search for variables.

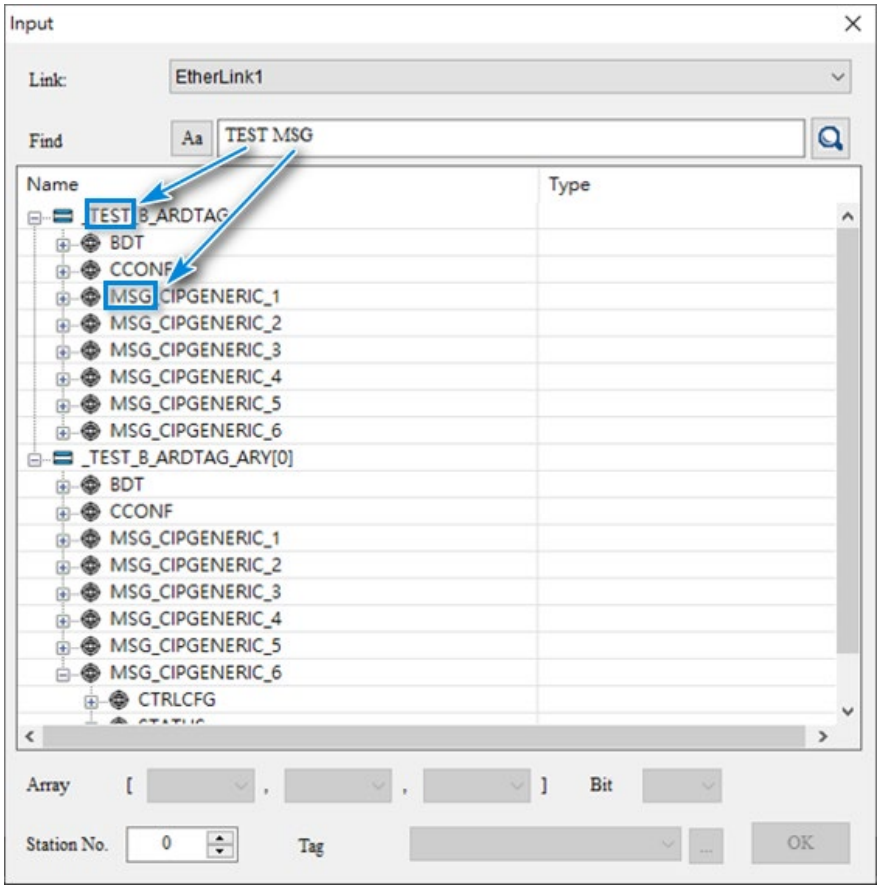
  In the **Find** field, enter a keyword and click  . You can also click  to set whether the keyword is case-sensitive.

  The variables containing the keyword are listed in the dialog.

- Use spaces to search for variables under a specific level.

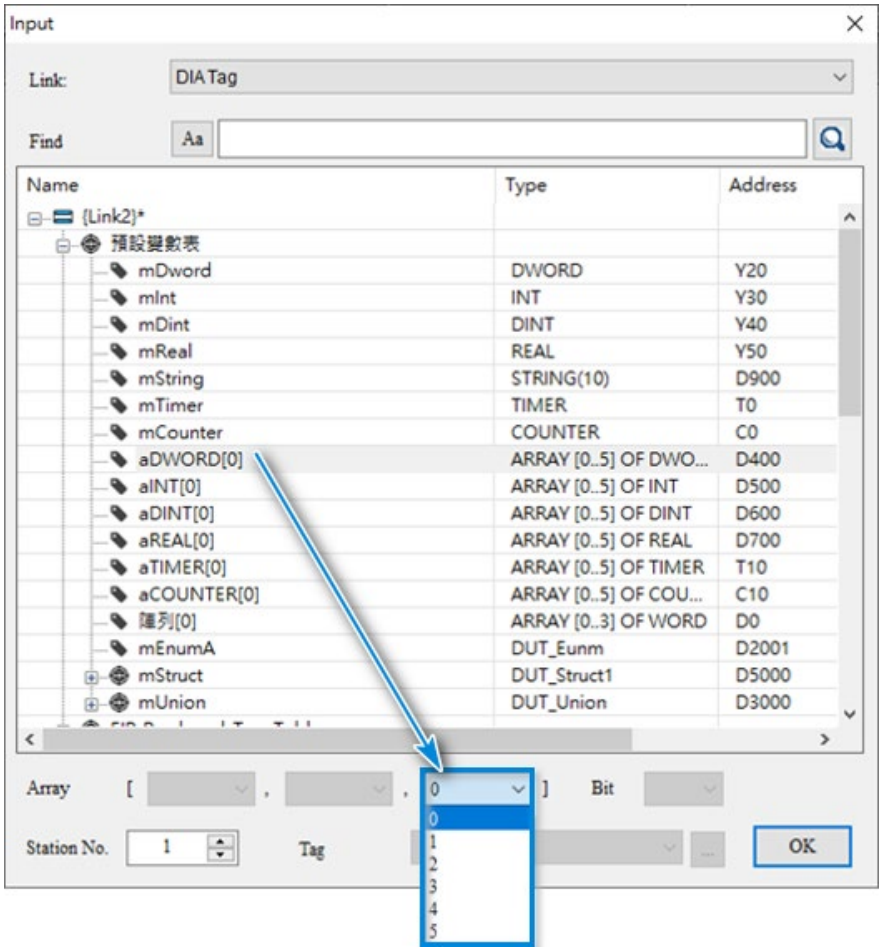
  Enter the upper level keyword followed by a space, and then enter the lower level keyword.

  The matching variables are listed in the dialog.



7. If array variables are imported, select the number of arrays in the drop-down menu of the **Array** after selecting the array variable.

   Note: If you need to read and write the Bit of a specific variable in the Bit element, select it through the drop-down menu of the **Bit**.



Variable Sharing

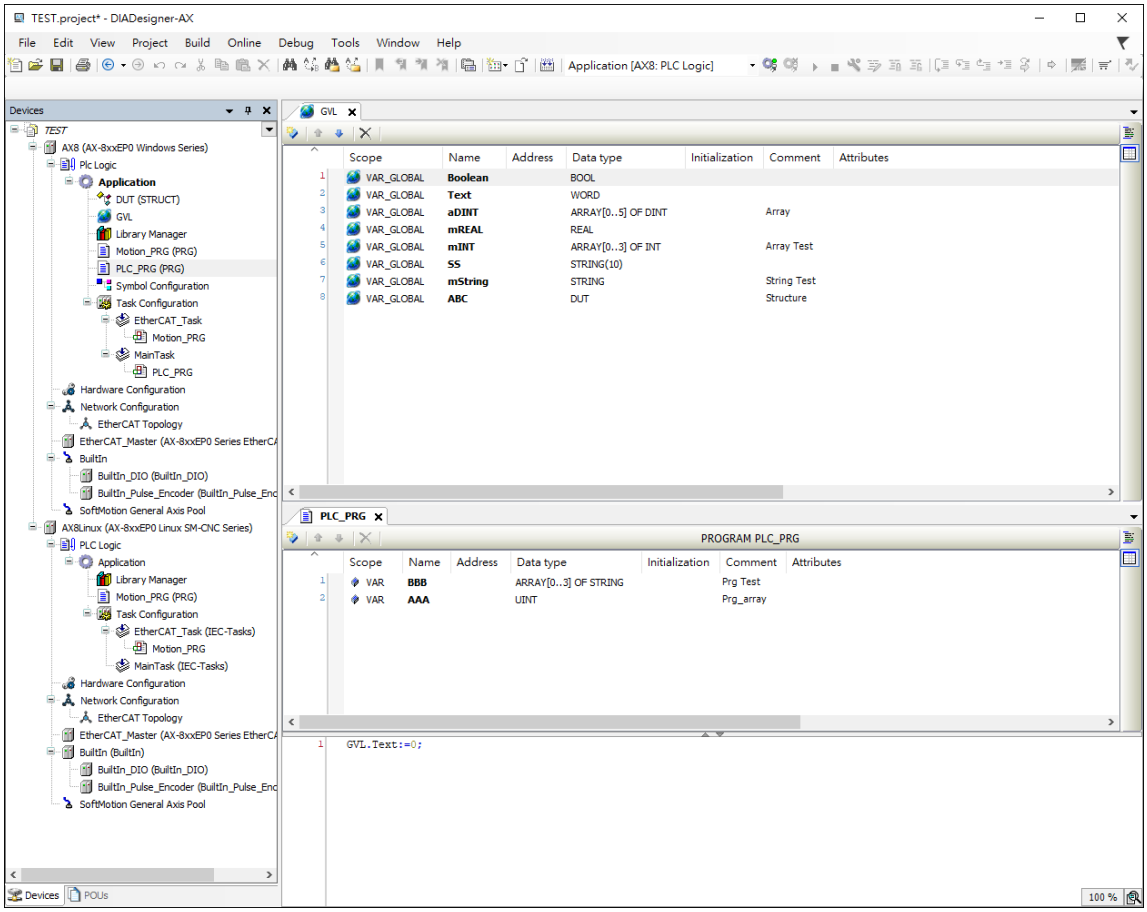
The variables declared by DIADesigner and DIADesigner-AX can be synchronized through the DIA Tag function of DIAScreen, and can be assigned to the elements on the HMI for use.

DIADesigner-AX Tag Automatic Synchronization

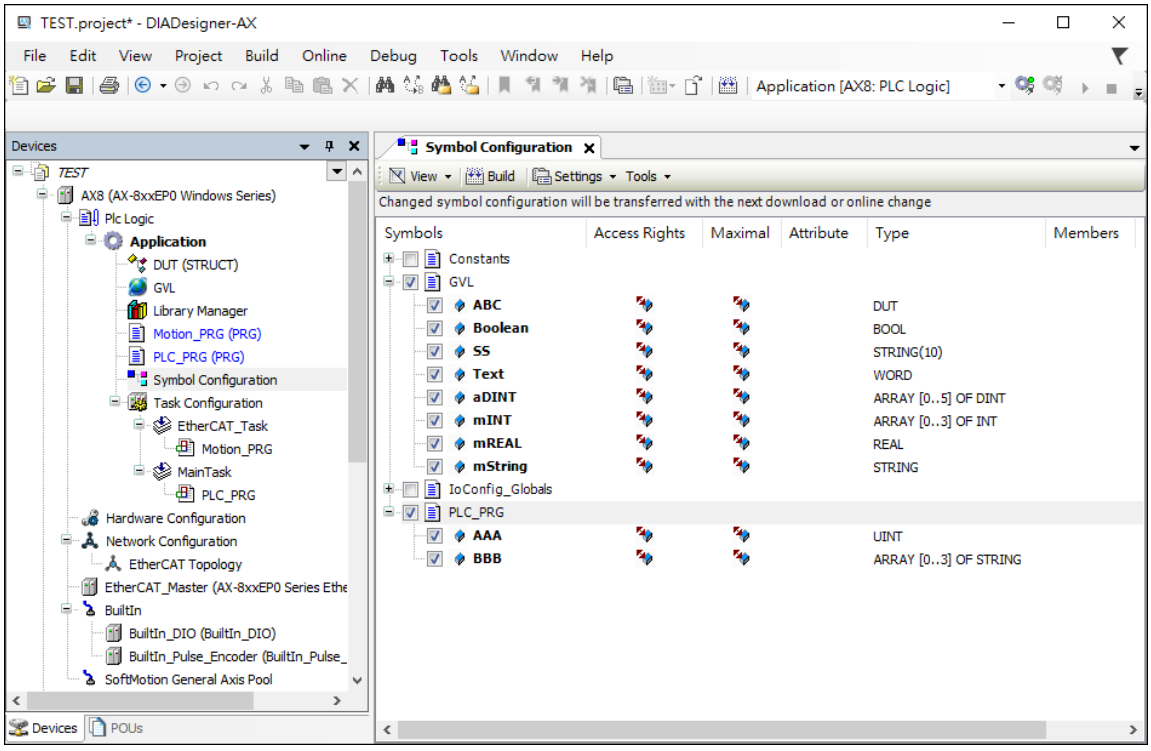
Follow these steps to synchronize variables declared by DIADesigner-AX to DIAScreen.

DIADesigner-AX operation (software version 1.6.0)

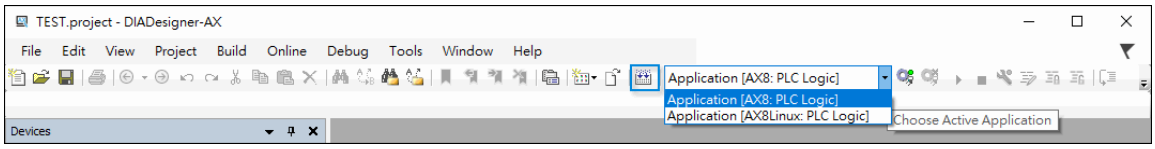
1. Create global variables or POU variables.



2. Create a symbol table and select the variables to use.



3. Select the device and click  to compile.



4. Click **Build** > **Generate Code** on the toolbar.

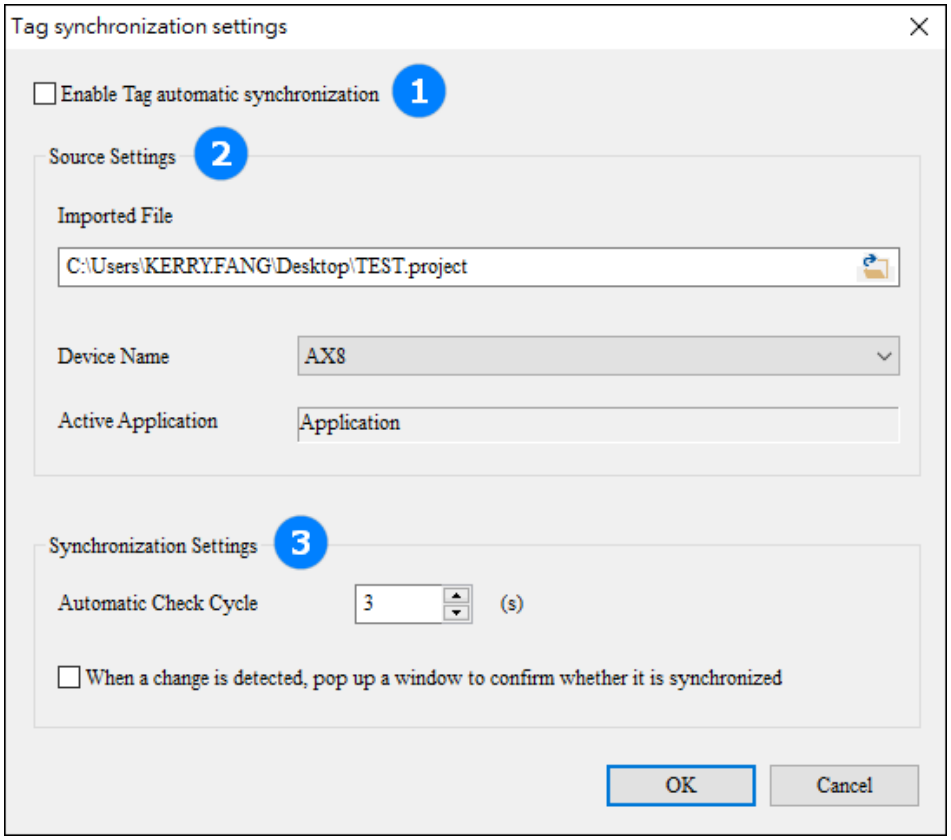
DIAScreen operation

1. Create a project, select the model that includes a network, and then open the variable import dialog.
   - If select **DOP-100 series** for **series**, select the **CODESYS** controller in the **Ethernet** setting page of the **Device Communication** dialog, and then click **Import**.

     The **Tag List** dialog displays.
   - If select **AX-8 series** for **series**, double-click **Built-In PLC** in the **Project** pane.
2. Click  to select .xml or .project file.

   Note: To enable the tag automatic synchronization function, select .project file.
3. After selecting .project file, click **Open**.
4. In the **Select device to import** dialog, select the **Device Name**, and then click **OK**.
5. Click  .
6. Perform the settings in the **Tag synchronization settings** dialog.

The following table lists the settings in the **Tag synchronization settings** dialog with their descriptions.



1 Enable Tag automatic synchronization

Setting	Description
Enable Tag automatic synchronization	Select **Enable Tag automatic synchronization**. Once the code is generated in DIADesigner-AX, DIAScreen automatically checks whether the symbol table has been updated according to the set Check Cycle.

2 Source Settings

Setting	Description
Imported File	Displays the synchronized project file path, and you can also change the file path here.
Device Name	You can select the device in the project file.
Active Application	Automatically imports the program name of the device after selecting the device.

3 Synchronization Settings

Setting	Description
Automatic Check Cycle	Set the automatic check cycle. The value range is 3 – 60, and the default value is **3**.
When a change is detected, pop up a window to confirm whether it is synchronized	If selected, a message dialog displays when a change is detected and asks you whether to synchronize automatically. • Select **Yes** to perform automatic synchronization and update the Tag List in DIAScreen. • Select **No** to not to update the Tag List in DIAScreen and turn off the automatic synchronization function.

Note: If automatic synchronization is enabled and the project file path exists, when the dpa project file is opened, Tag automatic synchronization will be executed first.

DIADesigner Tag Automatic Synchronization

Follow these steps to synchronize variables declared by DIADesigner to DIAScreen.

DIADesigner operation (software version 1.4.2)

1. Create a project.
2. In **Project Explorer**, add a controller device.
3. Double-click **Programming**, right-click **Global Variable**, and then select **Add Global Variable Table**.
4. In the **Add Global Variable Table** dialog, enter the **Name** and **Comment**, and then click **OK**.
5. In the Global Variable table, add variables.

   Note: The variable address must be configured. If not configured, DIAScreen will not be able to use the Tag.
6. Click **Compile** on the toolbar.

DIAScreen operation

1. Create a project.

2. In the **COM** setting page of the **Device Communication** dialog, select **Delta** for **Manufacturers** and select the type of controller created in DIADesigner for **Series**.
3. In the **Project** pane, double-click **DIA Tag**.
4. In the **DIA Tag** setting page, click  .
5. In the **DIA Tag Import Settings** dialog, select a DIADesigner project file (.diade).
6. Select a **Link Name**.

   The communication parameters of the connection are listed in the dialog.
7. Set the **Station No.**

   Note:

   - The **Don't specify station number** checkbox is selected by default. The **Station No**. field is available only when the DIA Tag is used on the element.
   - If unselect the **Don't specify station number** checkbox, the specified station number can be entered in the **Station No.** field.
8. Click **OK**.
9. In the **DIA Tag** setting page, click  .
10. In the **DIA Tag Synchronization Settings** dialog, select **Enable automatic sync** checkbox and set **Automatic check cycle**.
11. Create an element on the screen, and then double-click it.
12. In the address **Input** dialog of the element, select **DIA Tag** for **Link**.

    The variables are listed in the dialog.

DOP-300 Series HMI Special Features

The following table lists the special features for DOP-300 series HMI.

Category	Function
Element	VNC Viewer
	Gantt Chart
Protocol	EIP Data Exchange Table
IIoT	OPC UA Server Safety Verification
	OPC UA Client Safety Verification
	MQTT JASON Custom
	Aliyun Server
Internal Parameter	IoT
	Storage - USB2_STATUS

Smarter. Greener. Together.

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