VI20 STUDIO SOFTWARE MANUAL

Content

1 Introduction

The software **VI20 Studio** you are using is a new generation of configuration software that our R&D team has spent three years, on the basis of more than ten years of industry experience and technology accumulation, plus rich experience in **HMI** development and field application. I believe you will feel our professionalism and intention. Thank you!

2 Quick Start

2.1 Electrical Connection of the HMI

2.1.1 Connect to the Power Supply

The rated power supply of the **HMI** is from **DC18V to DC28V**, and we recommend **DC24V** . The interface is at the back, as shown in Fig. 1, the **24V+** is connected to **DC24V**, the **24V-** (or **0V**) is connected to **GND**. If there is large interference in the industry work field, we need reliable grounding using **FG** port. (Note: **FG**- Frame Ground, the reference grounding for the metal shell frame and the **DC** end.)

Fig. 1

2.1.2 Connect to the Computer

The **HMI** can be connected to the computer via a **USB** data cable for project uploading and downloading, as shown in Fig. 2. The communication with computer can be realized when it is connected to the **USB SLAVE** port. The **USB** communication drive can be installed by the system in default during software installation, or the drive can be manually installed if it is damaged.The drive file is saved in the installation directory:
C:Program Files(x86)\VEICHI\VI20Studio 1.0\Driver

Fig. 2

2.1.3 Serial Port Connection

The serial port of **HMI** is a standard **DB 9-pin** port, supporting **RS232/485/422** communication , as shown in Fig. 3. Different **HMI** types are integrated with different quantities of serial ports, and please refer to the Description for Communication Connection for the detailed connecting method.

Fig. 3

2.1.4 USB Host Connection

The **HMI** is integrated with a **USB HOST** device interface.This interface makes it easy to upload or download the project and the prescript by using the **U disk**.The sampling or warning data can also be saved in the **U disk** via this interface. A mouse or a keyboard with **USB** interface can be connected via the **USB** interface. A set of wireless mouse and keyboard is also usable. As shown in Fig. 4, a **U disk** can be directly inserted into the **USB HOST** port and be used.

Fig. 4

2.1.5 Network Port Using

The standard **RJ-45** network interface is used for communication, as shown in Fig. 5. An **RJ-45** plug can be directly inserted into the **Ethernet** port and be used.

Fig. 5

2.2 Software Downloading and Installing

2.2.1 Software Downloading

The software **VI20 Studio** can be downloaded from: https://www.veichi.org/
There are different versions according to the different operating systems (OS), as shown in Fig. 6.

SD700 Soft V1.6 - Turkey	ZIP	90MB	2019-09-20
VI20Studio 2.5.10593.0 for XP	zip	545MB	2021-04-17
VI20Studio 2.5.10746.0 for Win7	zip	562MB	2021-04-17

Fig. 6

2.2.2 Software Installing

Double click the **SETUP.exe** to install the software **VI20 Studio**, as shown in Fig. 7. Click the left button to start installation.

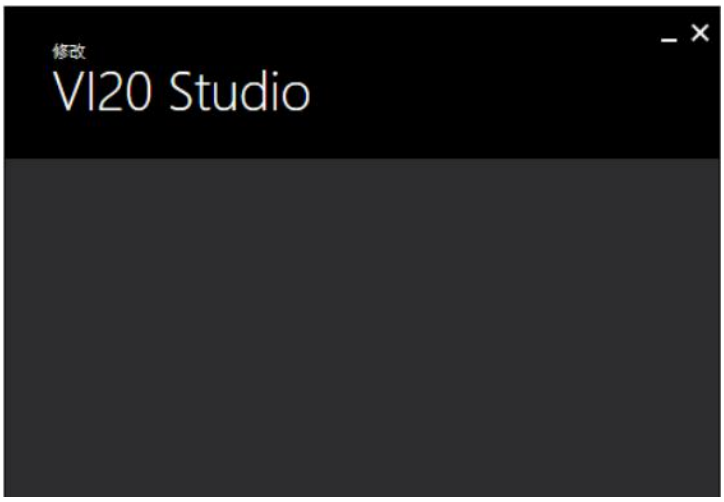


Fig. 7

2.2.3 Installation Is Completed

Click the button to complete the software installation, as shown in Fig. 8.

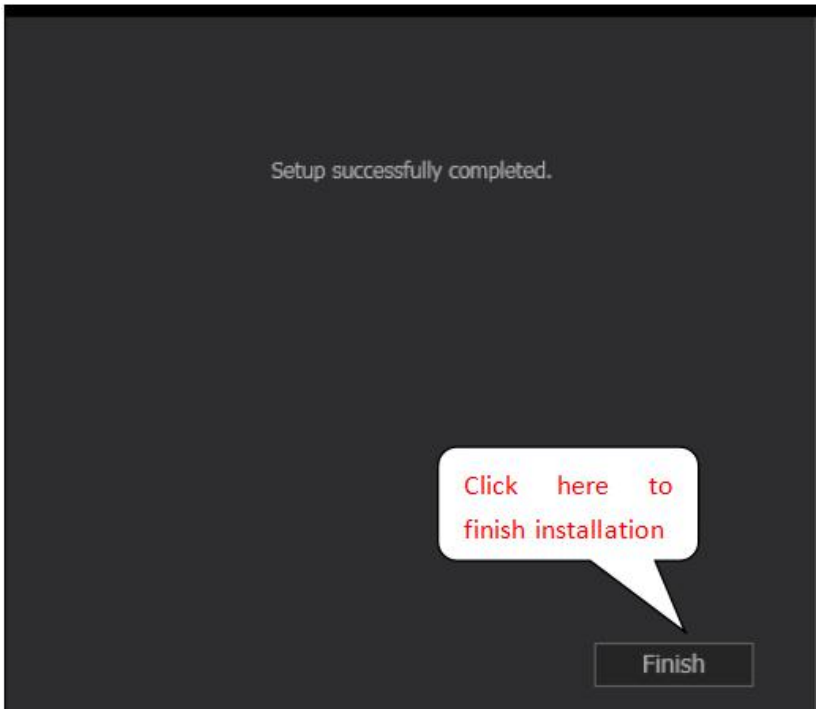
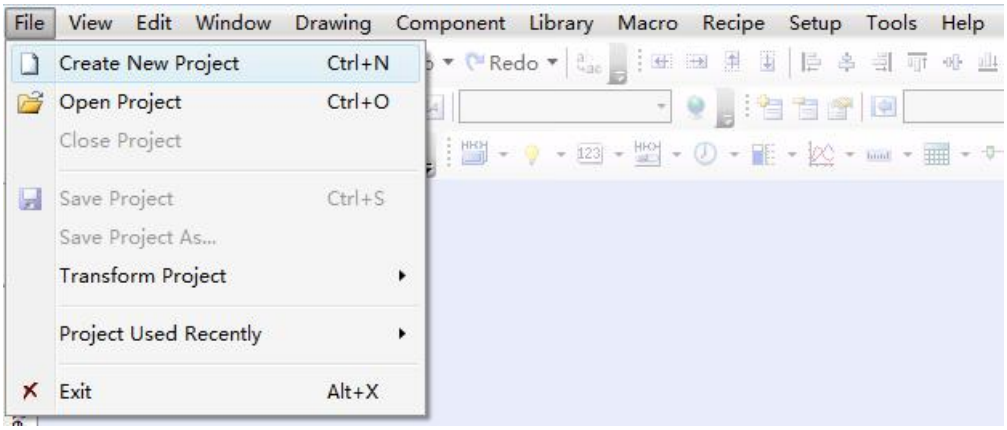


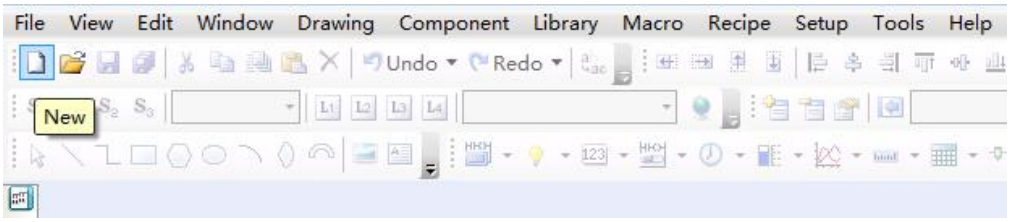
Fig.8

2.3 First Use

(1) Click the menu **File**–**Create New Project**, or click the shortcut , as shown in Fig. 9.



(a)



(b)

Fig. 9

(2) Enter the project name and select the project saving path, as shown in Fig. 10.

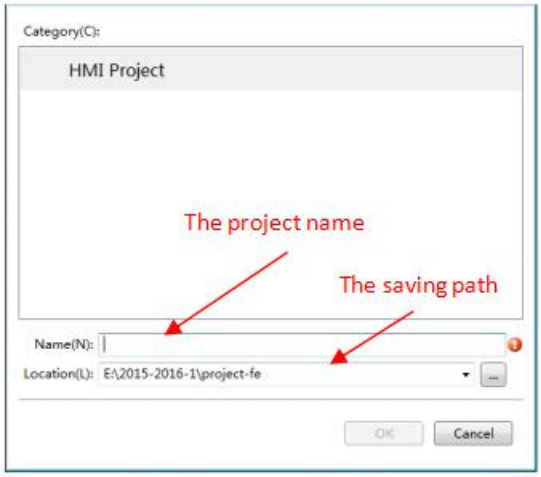


Fig. 10

(3) Select the **HMI** type, as shown in Fig. 11.

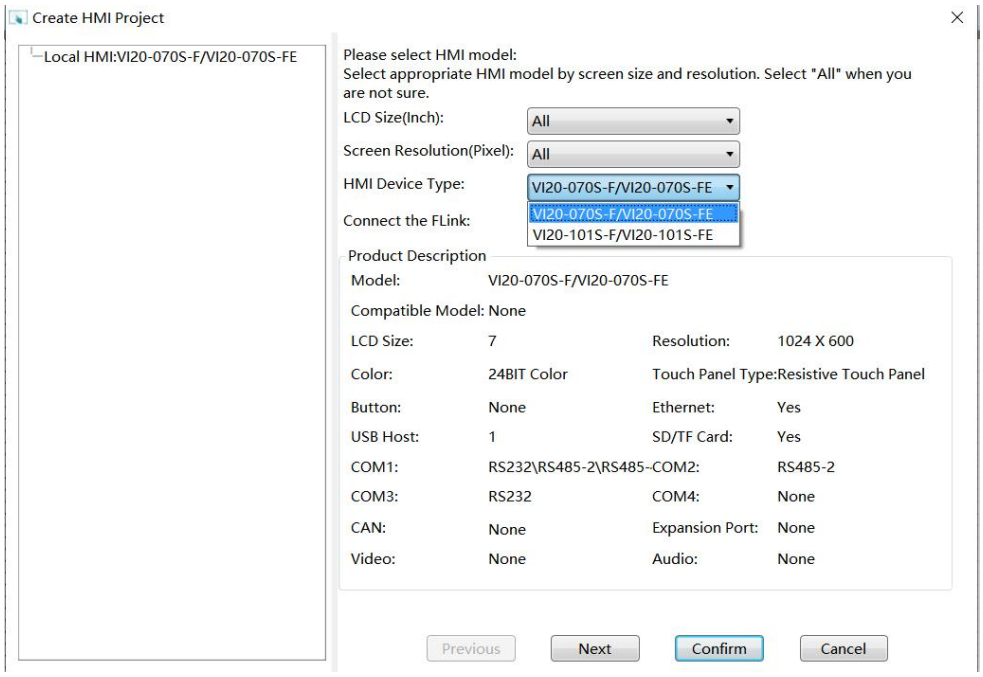
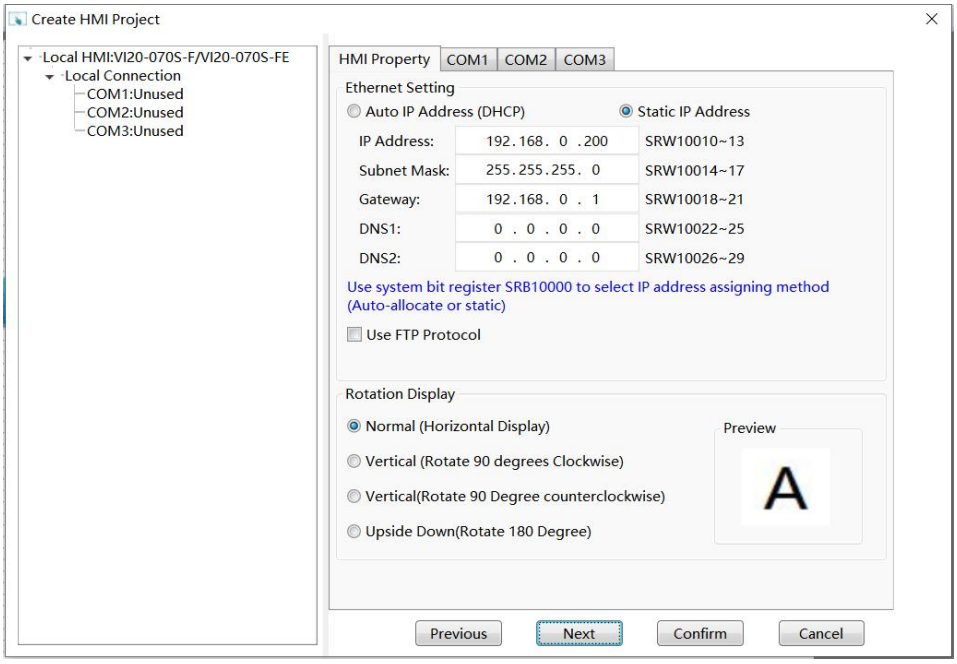
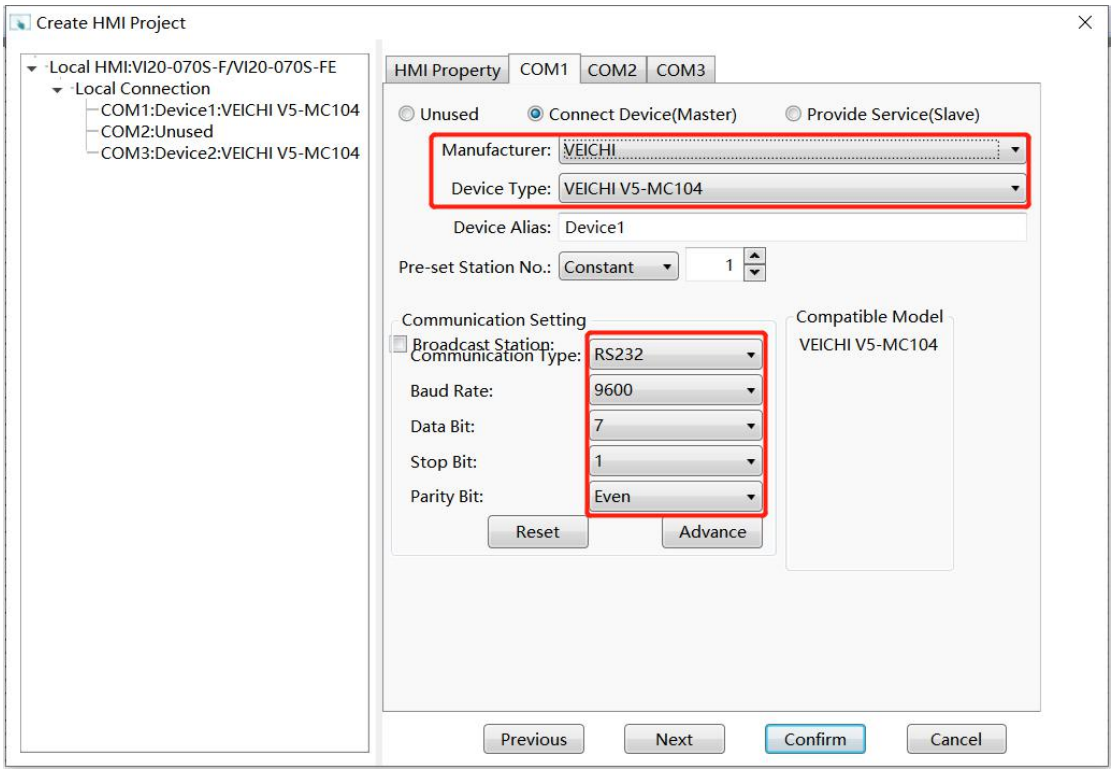


Fig. 11

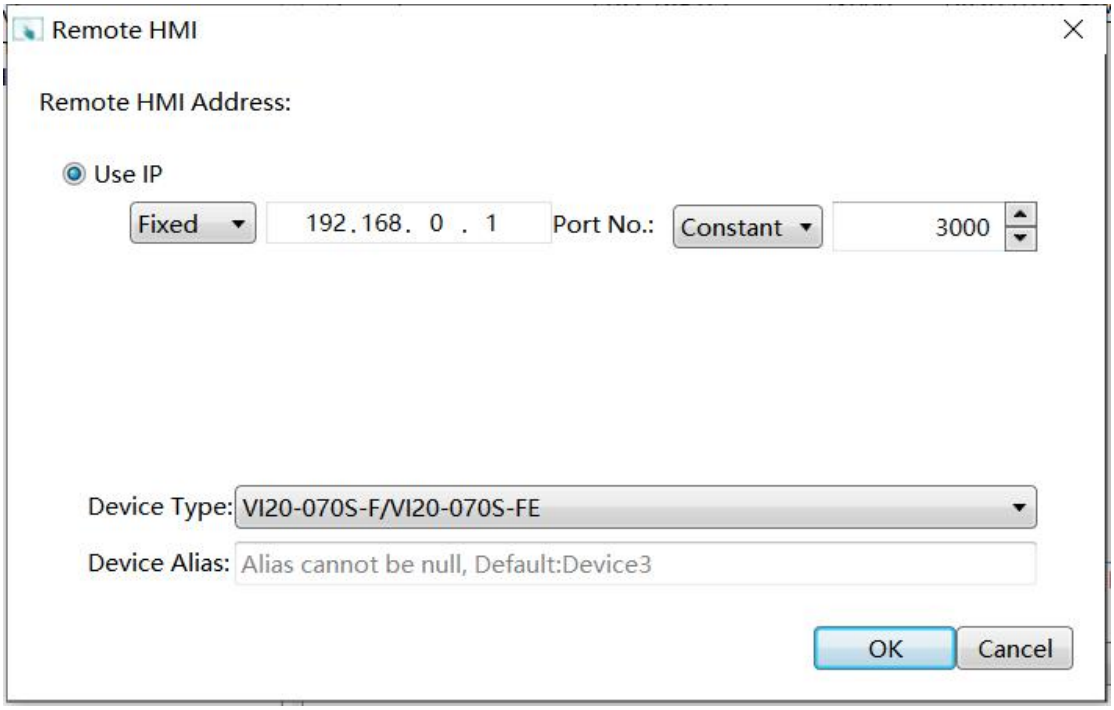
(4) Click the button **Next** and set the bus line communication mode for **HMI**, as shown in Fig. 12.



(a) **HMI** Property



(b) COM



(c) Ethernet PLC (Or Service by Remote **HMI**)

Fig. 12

(5) After the project is initialized, click the button **Confirm** and the project is created, as shown in Fig. 13.

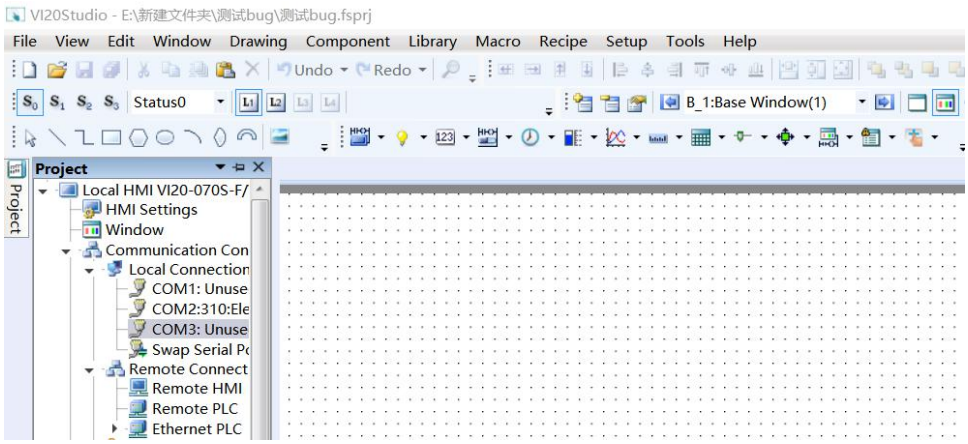
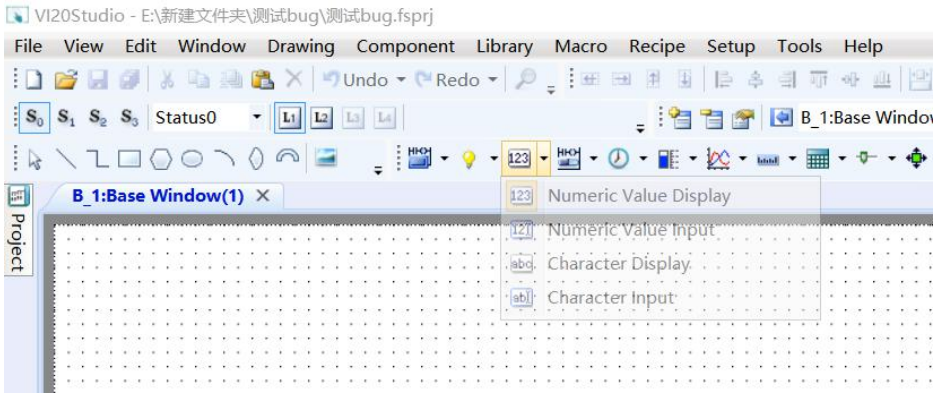
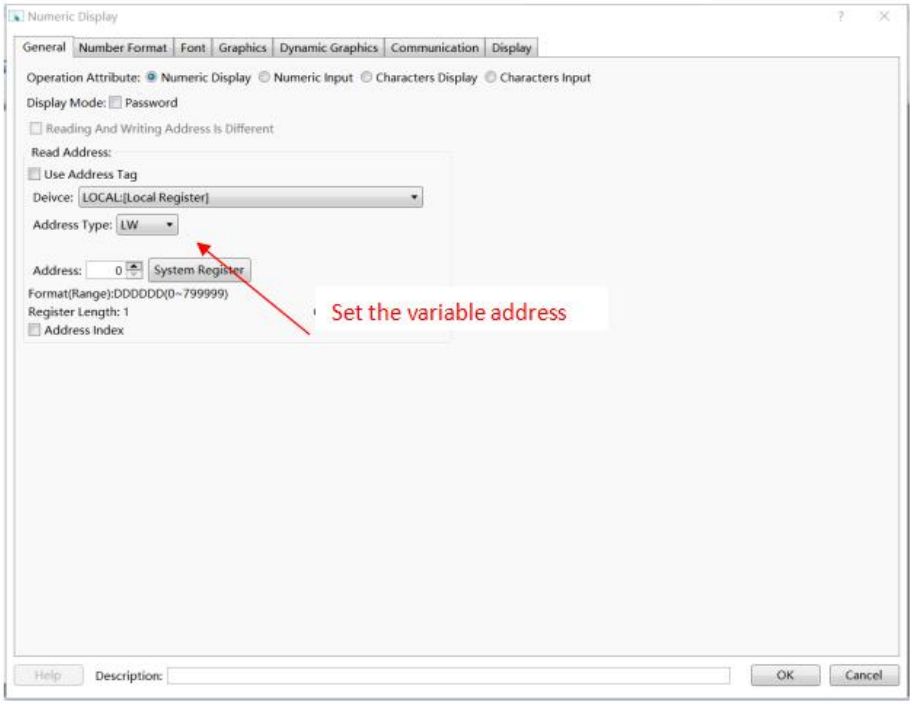


Fig. 13

(6) Add an **Input** and a **Display** into the picture and set the properties, as shown in Fig. 14.



(a)



(b)

Fig. 14

(7) Click **Offline Simulating** button and wait till engineering is completed, as shown in Fig. 15.

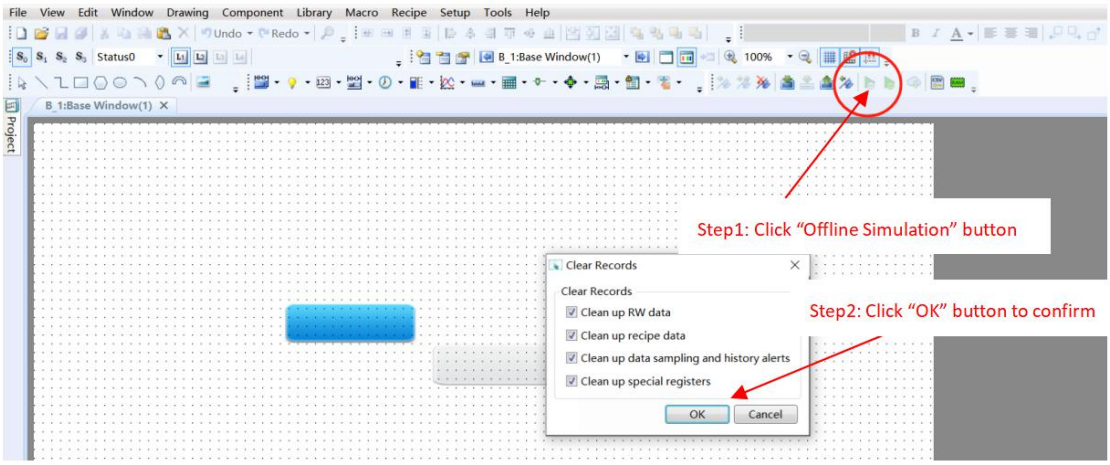
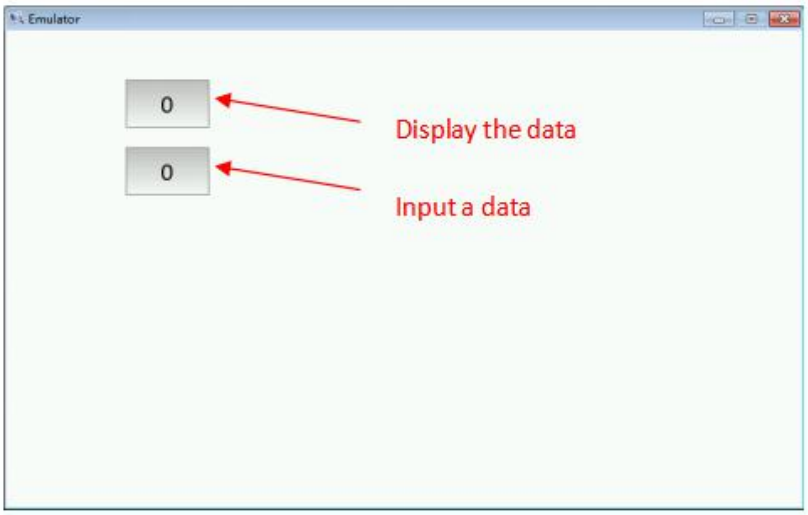
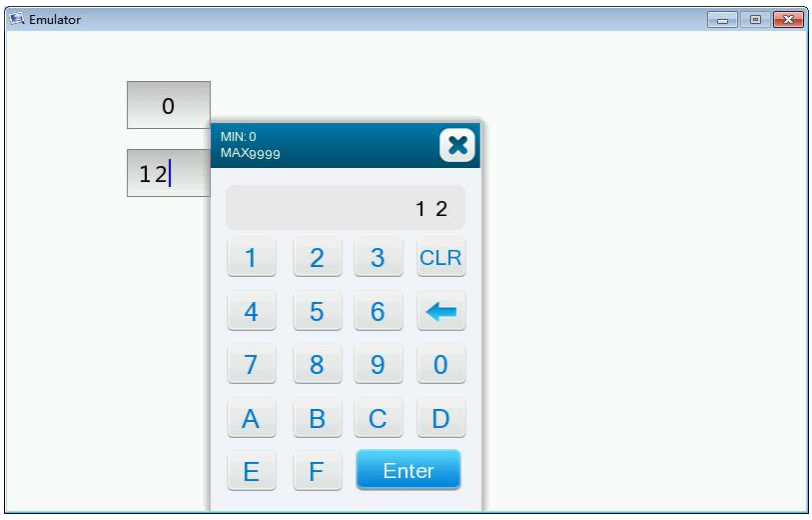


Fig. 15

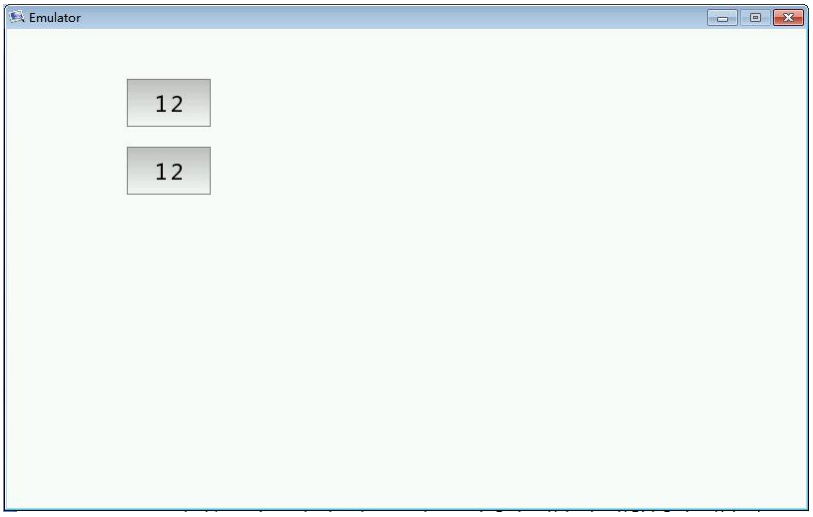
(8) Debug with the simulator to view the design effect, as shown in Fig. 16.



(a)



(b)



(c)

Fig. 16

2.4 Project Download and Upload

2.4.1 Project Downloading

(1) Switch on the power supply to **HMI**, select **Download** in the software, and wait till downloading is completed, as shown in Fig. 17.

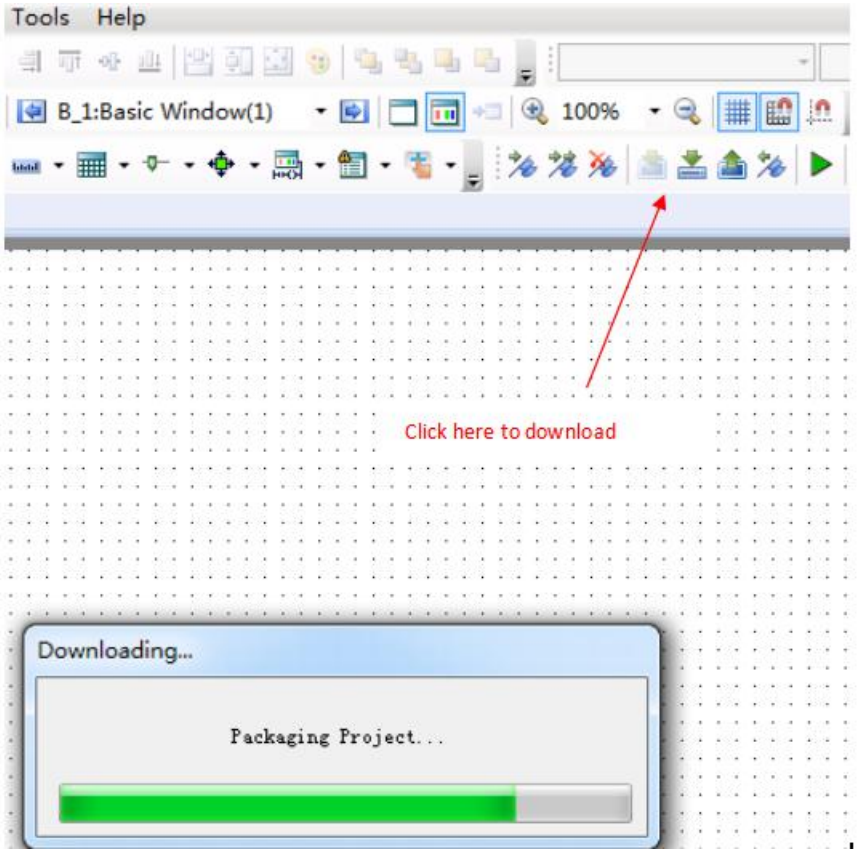


Fig. 17

(2) Select the project downloading mode, **USB** or network, and click **Download**, as shown in Fig. 18. If **Communication failure** appears, please check if the downloading line is correctly connected (**USB** line or network line). If the downloading operation is failed, please cut off the power supply to restart the **HMI** and try again.

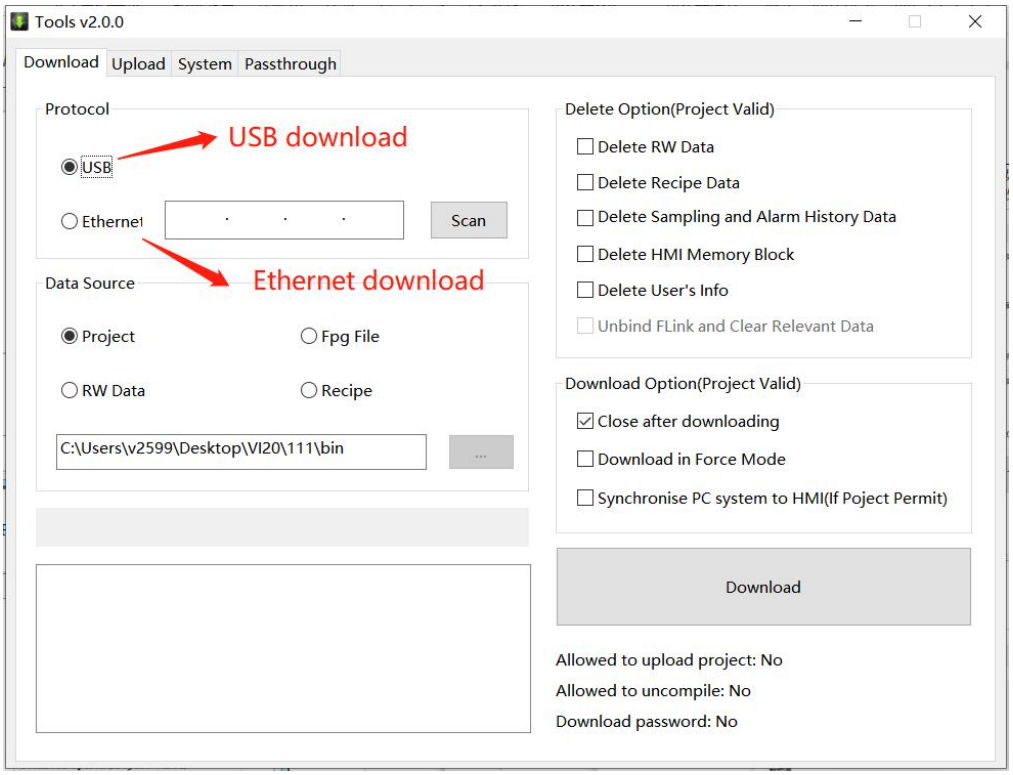
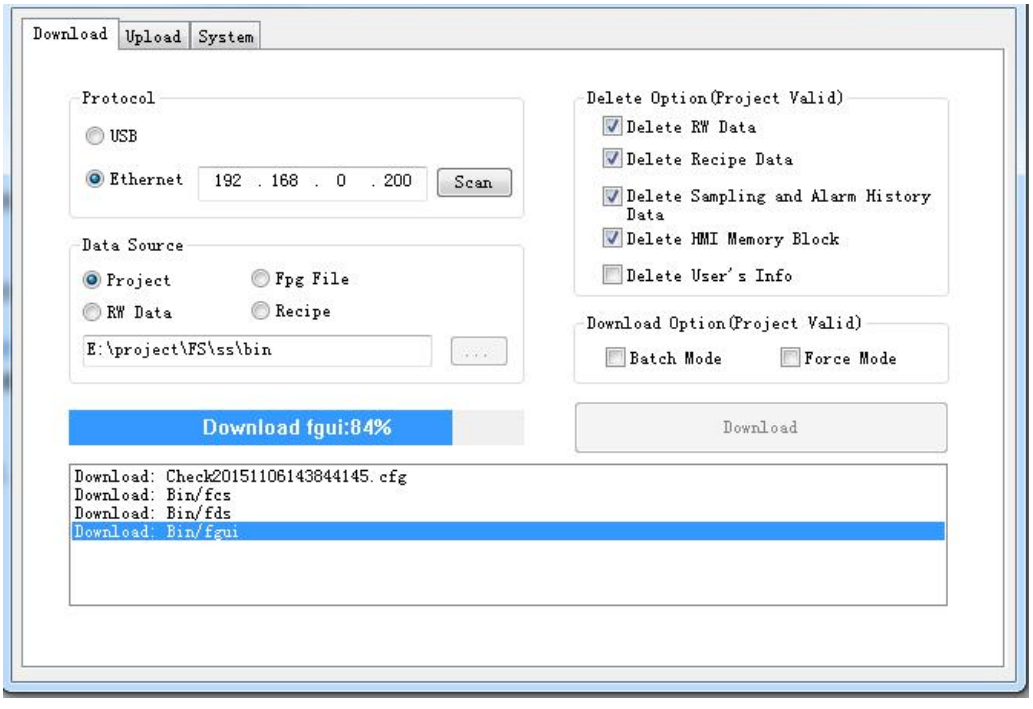
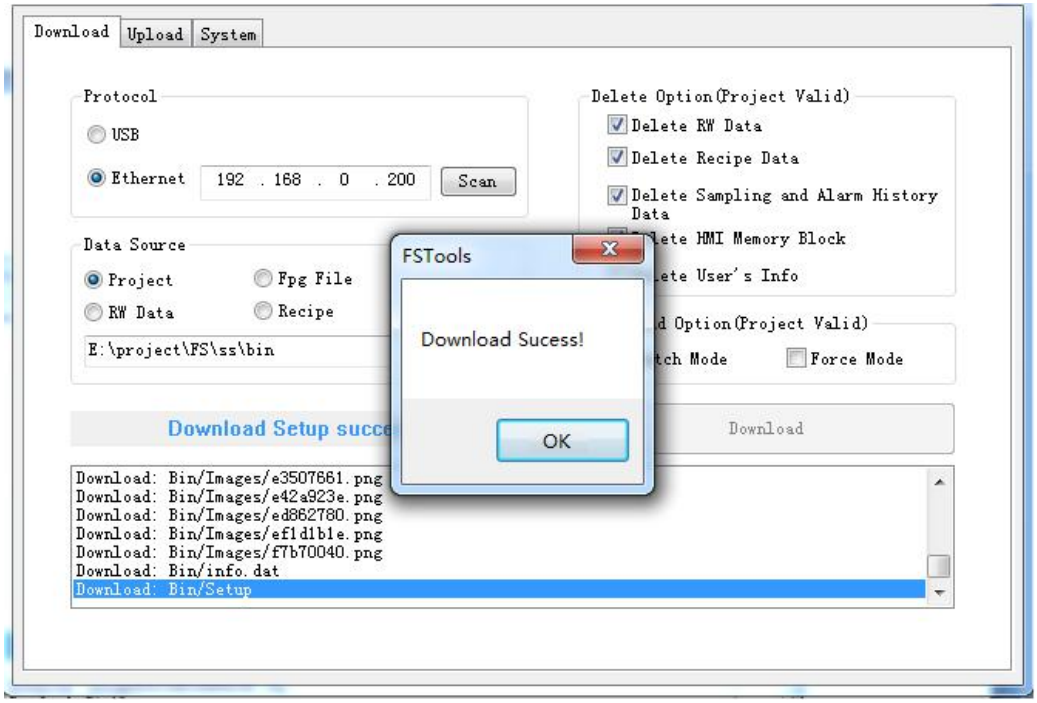


Fig. 18

(2) Wait till downloading is completed, as shown in Fig. 19.



(a)

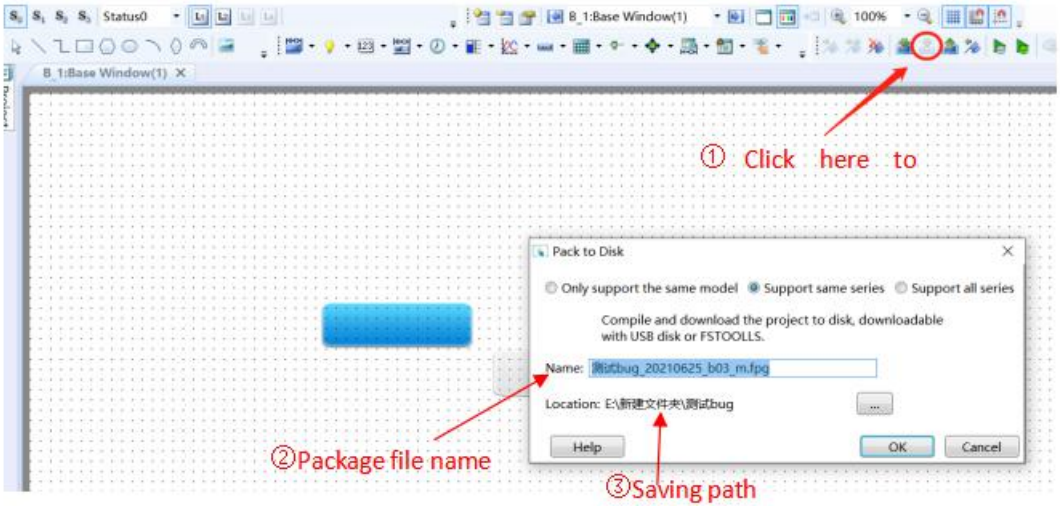


(b)

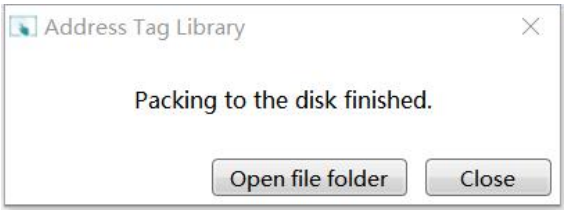
Fig. 19

2.4.2 Project Downloading from USB Disk

(1) Pack the project in the software and save it into the **USB** disk, as shown in Fig. 20.



(a)



(b)

Fig. 20

(2) Insert the **USB** disk into the **HMI**. When **HMI** is activated, press and hold at any point on the

screen with a finger, as shown in Fig. 21.

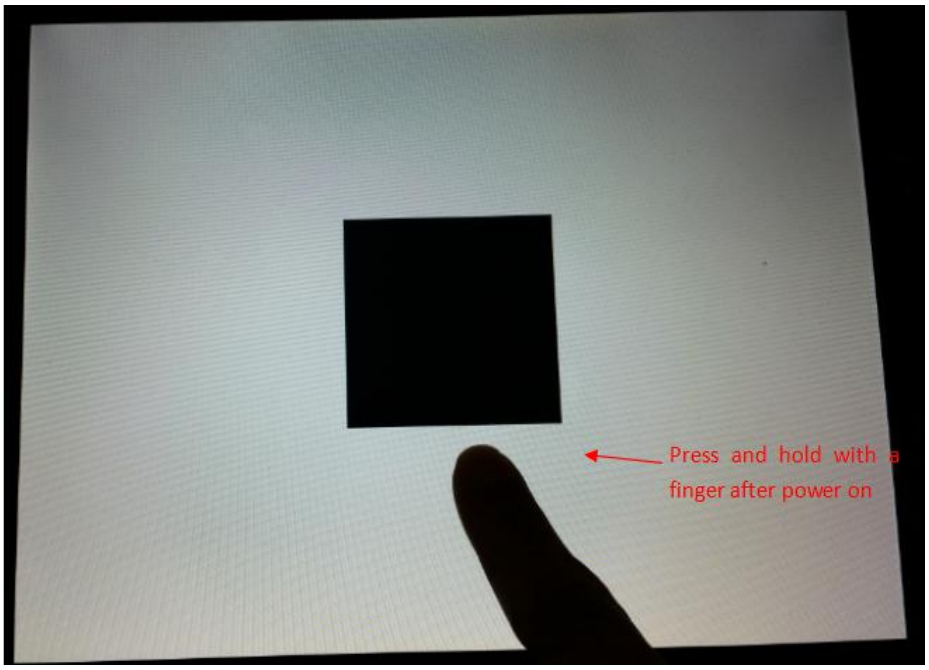


Fig. 21

(3) Press the button **Setup** for uploading, as shown in Fig. 22. Select **Project** and enter the password, as shown in Fig. 23. The default password for project management is **888888** which can be modified in the **Global Setting** of the software.

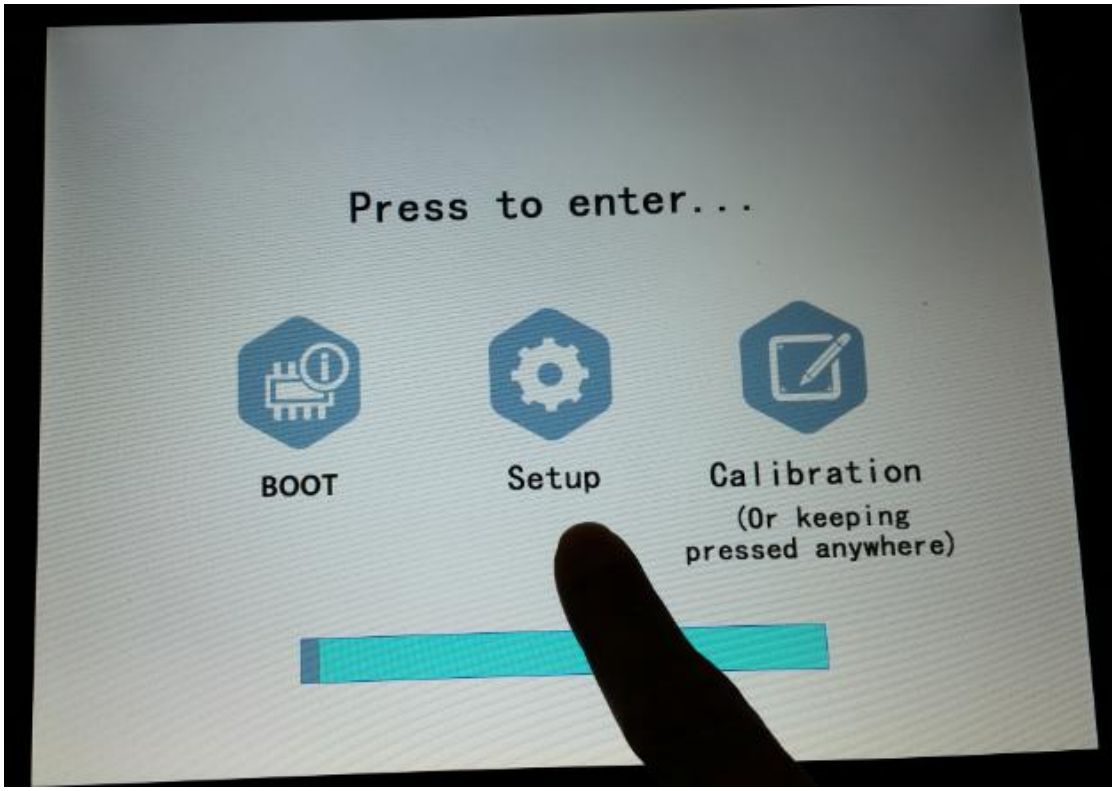


Fig. 22

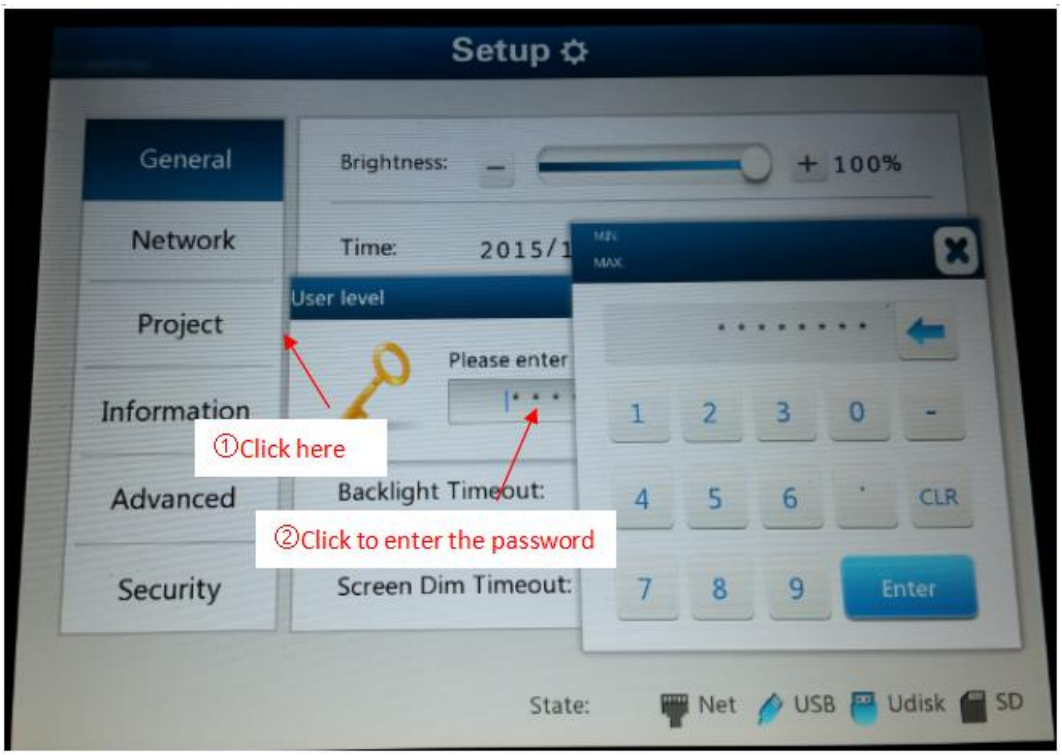
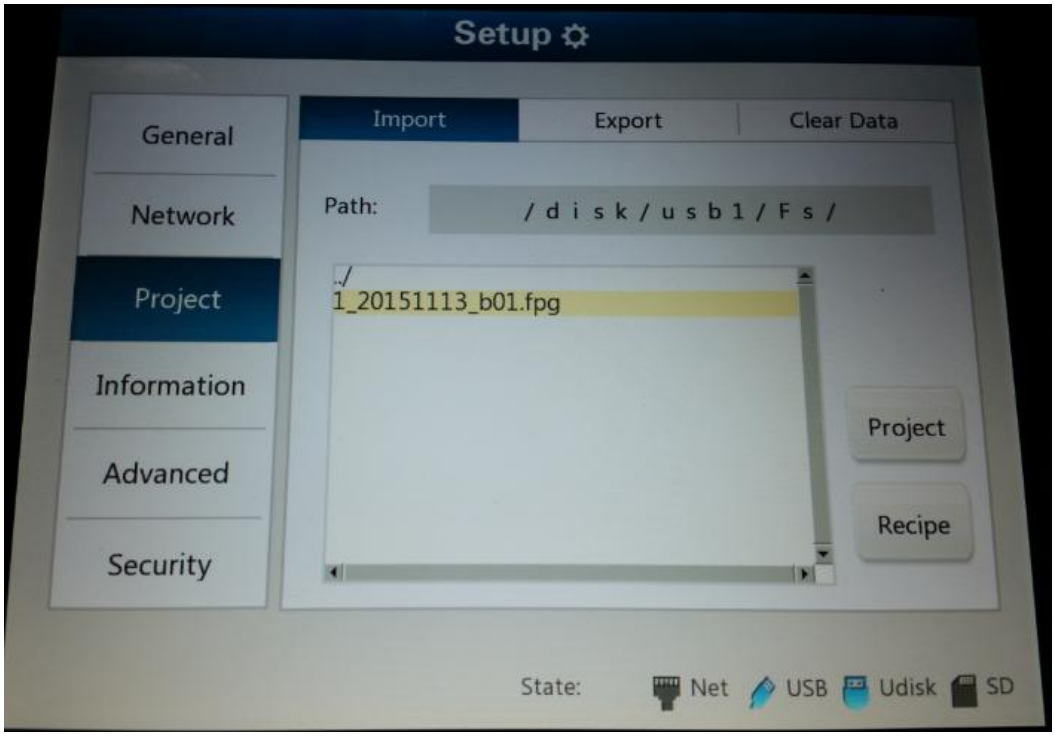
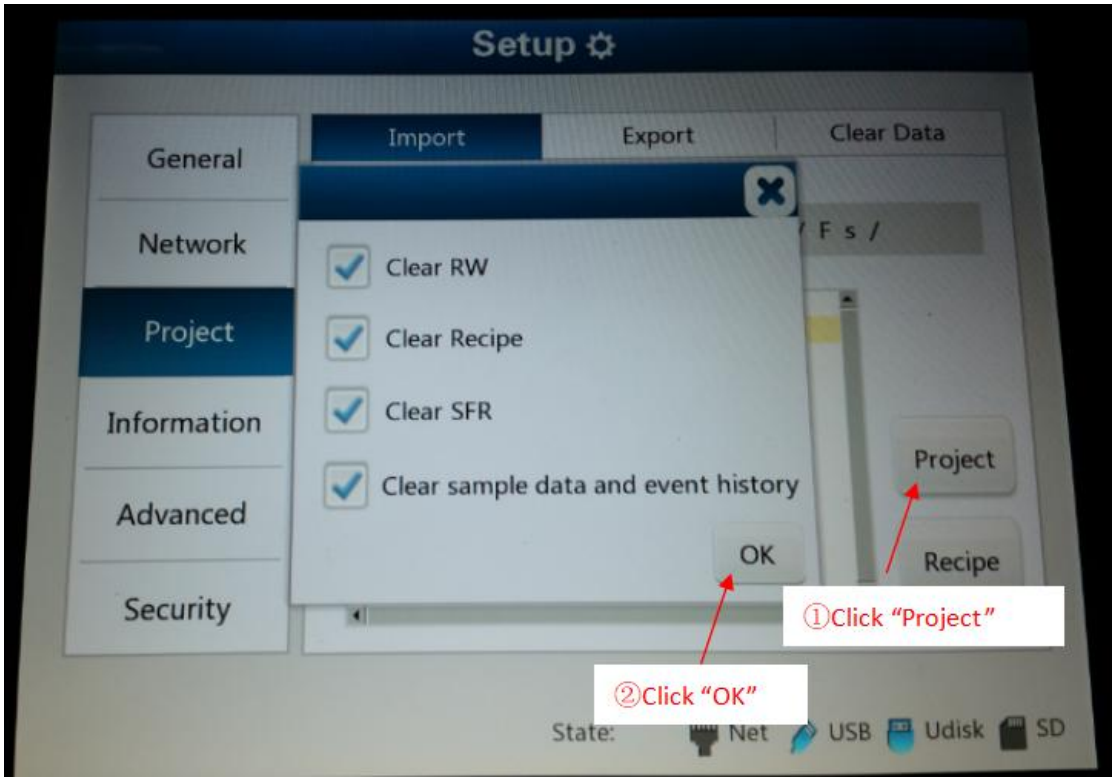


Fig. 23

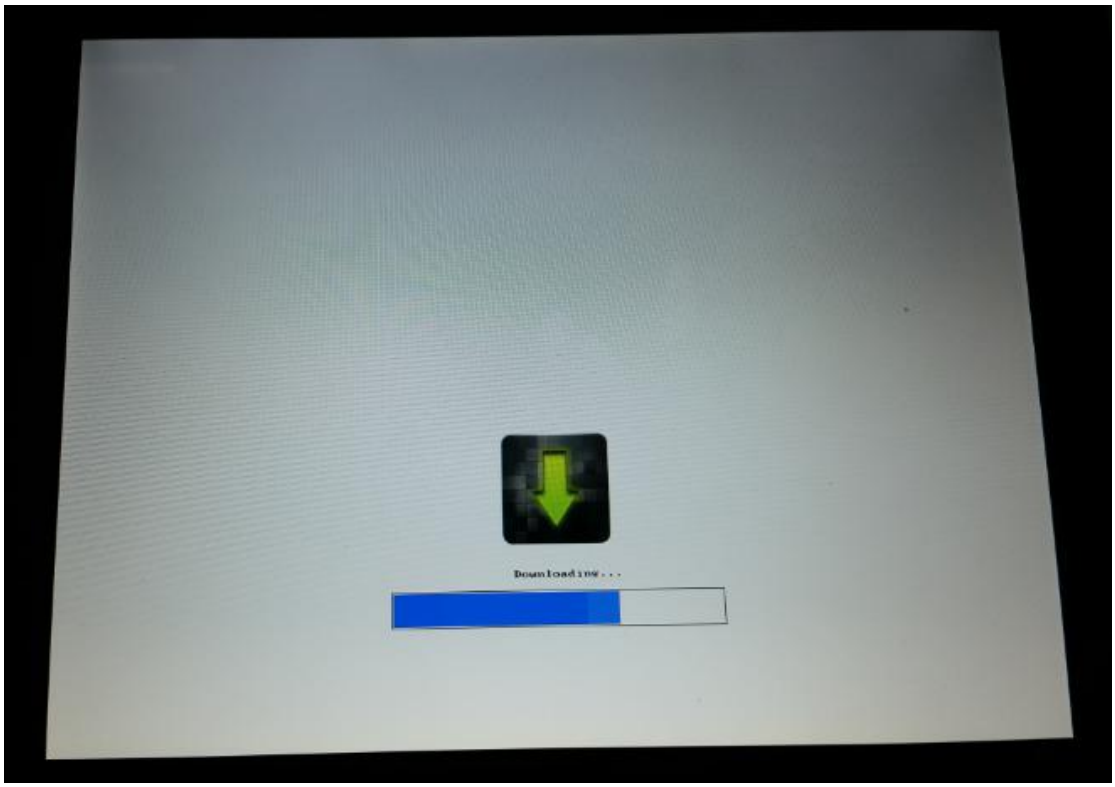
(4) Select the path of the package file in the **USB** disk, click **Import** (if project uploading to a USB disk is needed, please select **Export**.), and wait till data transmission is completed, as shown in Fig. 24.



(a)



(b)



(c)

Fig. 24

2.4.3 Project Uploading

(1) Click the **Upload** on the tool bar, set the communication mode, select to upload the project,

and start to upload the project, as shown in Fig. 25.

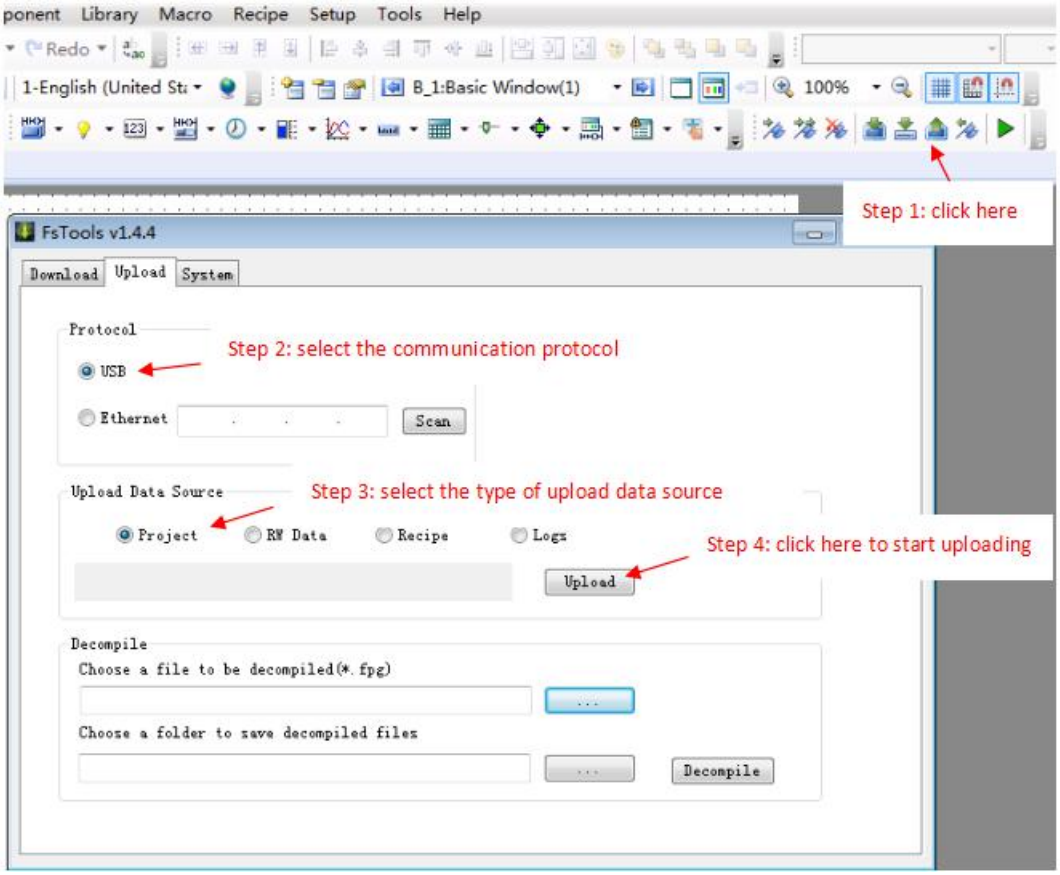


Fig. 25

(2) Enter the password for uploading, as shown in Fig. 26. The default password is **888888** which can be modified in **Global Settings**, as shown in Fig. 27.

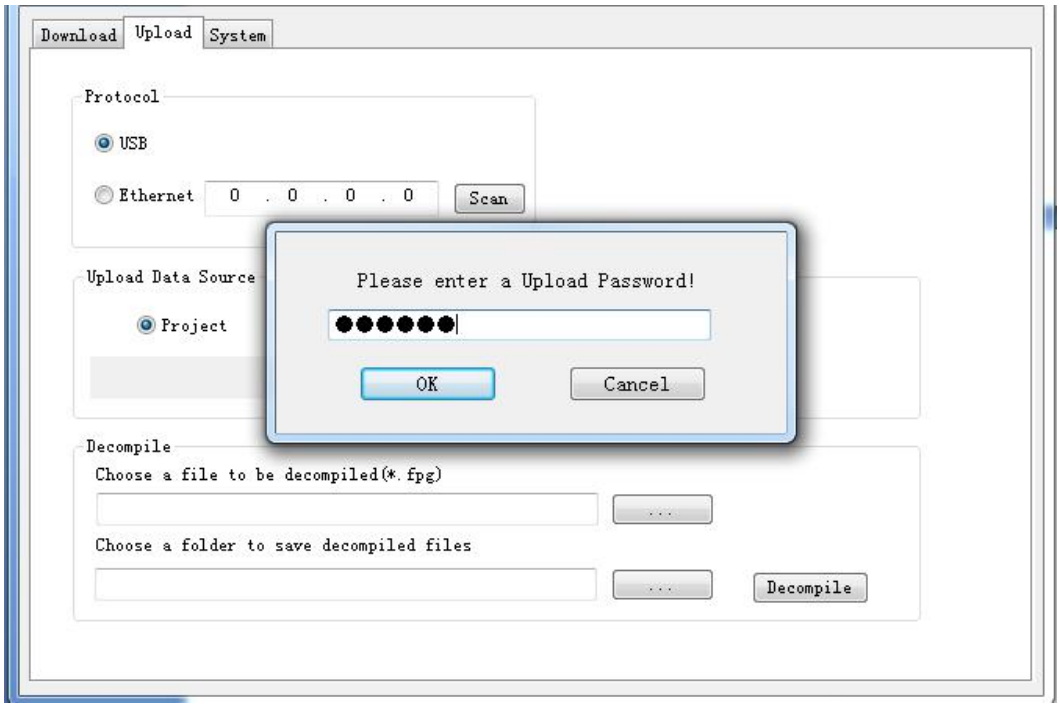


Fig. 26

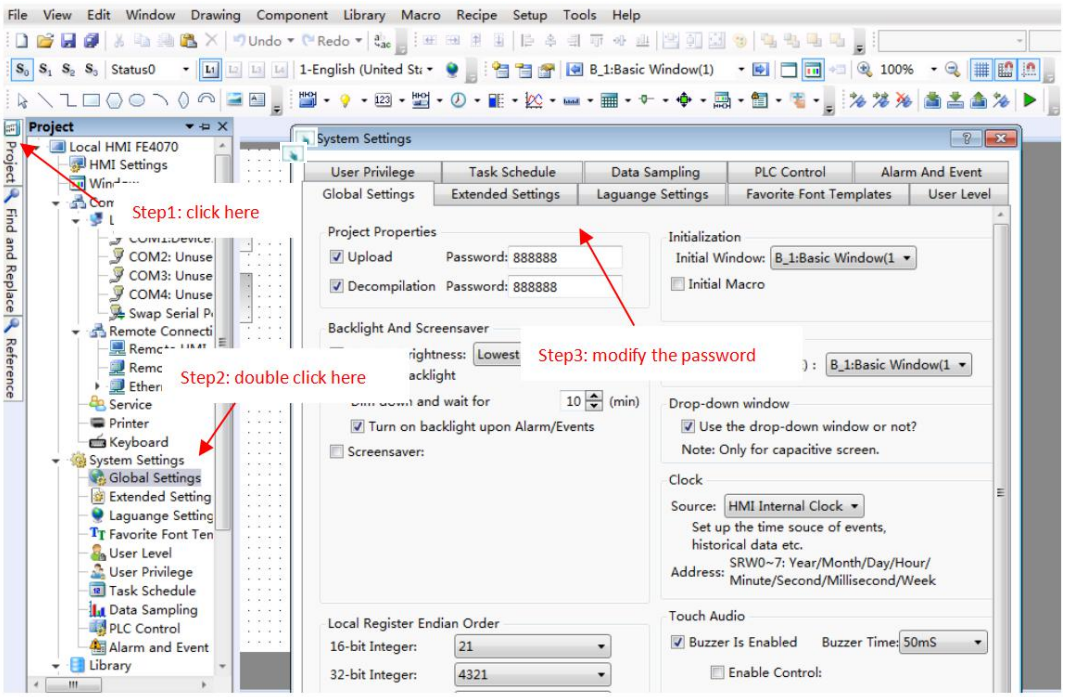


Fig. 27

(3) Select the project uploading path and save the file name, and click Save.

(4) If the **HMI** is correctly connected to the computer, the packaging operation will be started for uploading. Select the **Project** option, and click the **Upload** button, as shown in Fig. 28. When the uploading operation is finished, the **Uploading Success!** dialog box pops up, as shown in Fig. 29. Then click the **OK**.

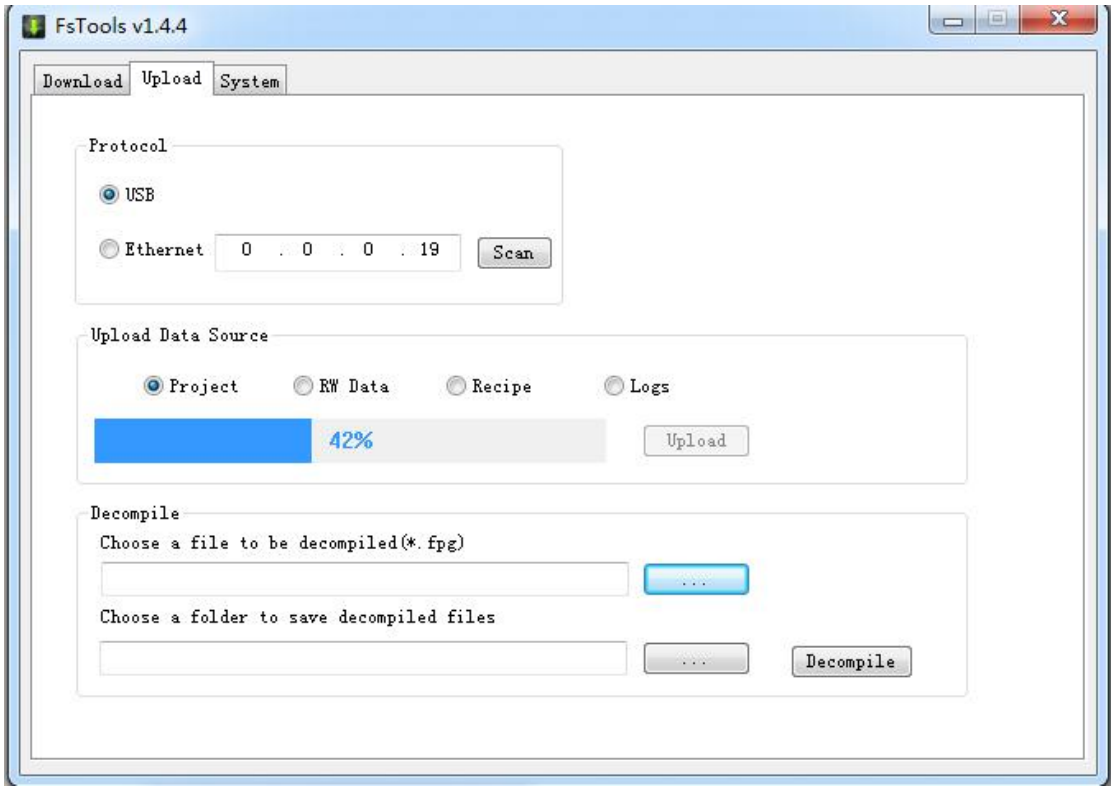


Fig. 28

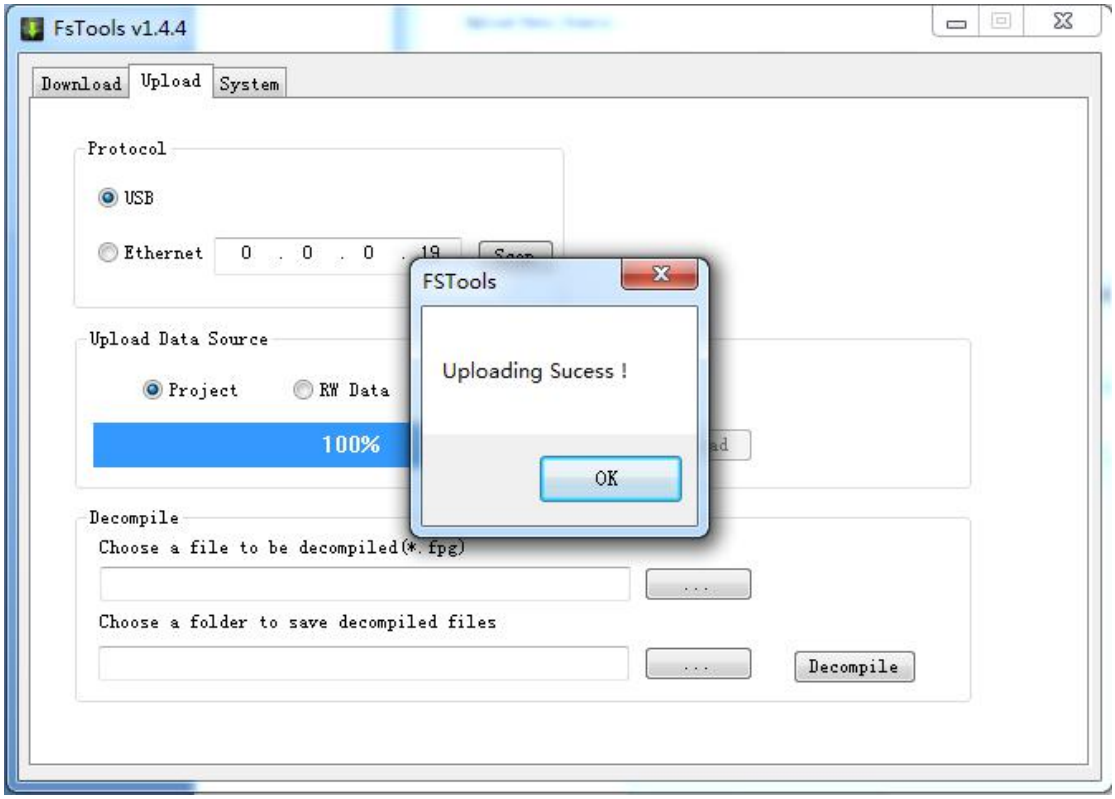


Fig. 29

2.4.4 Project Uploading to USB Disk

The uploading to **USB** disk is similar to the downloading from **USB** disk. Please see the details in the **Project Downloading from USB Disk**
Select **Export** in the 4th step.

2.4.5 Project Decompiling

The project uploading package file is operated for the project decompiling. The file type is **fpg**. Decompiling can create a project package. The function of project package can be seen in **Project Uploading** or **Project Uploading to USB Disk**.
(1) Firstly, click the tool button **Decompile**, select the package **fpg** file, set the project saving path, and click the **Decompile** button, as shown in Fig. 30.

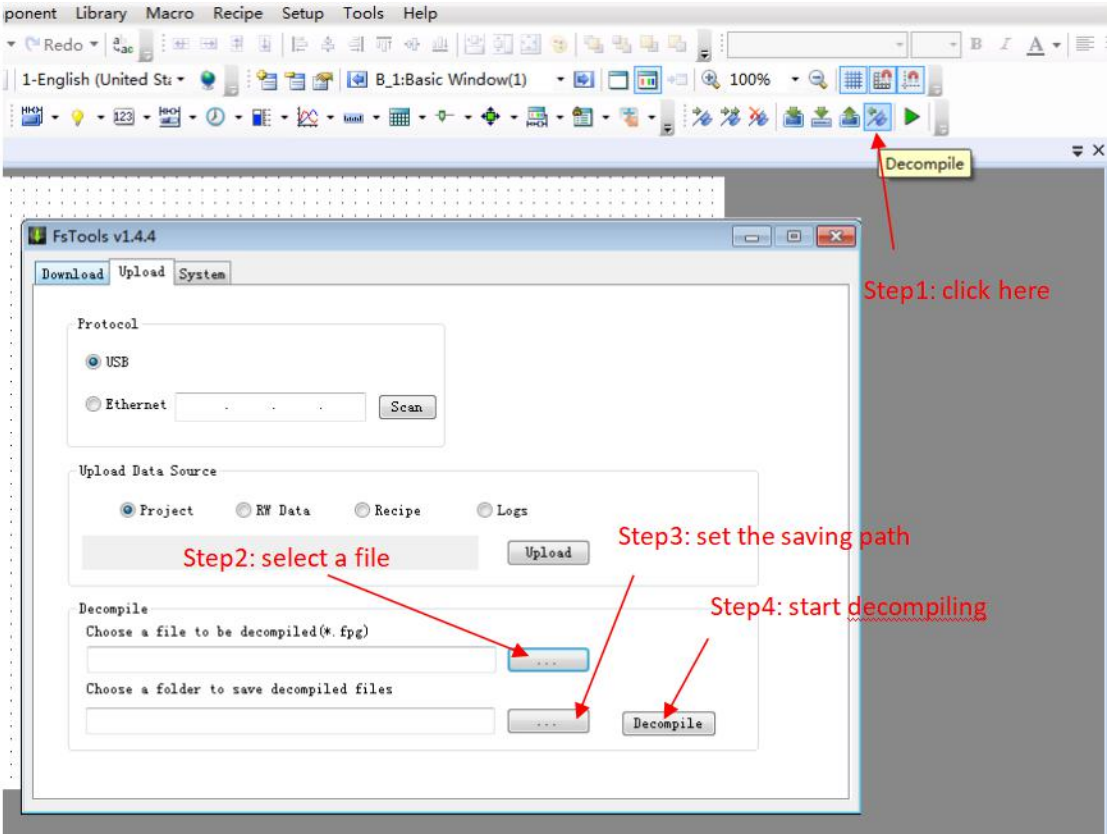


Fig. 30

(2) Enter the password for decompiling. The default password is **888888** which can be modified can viewed in the **General Setting** of the software.

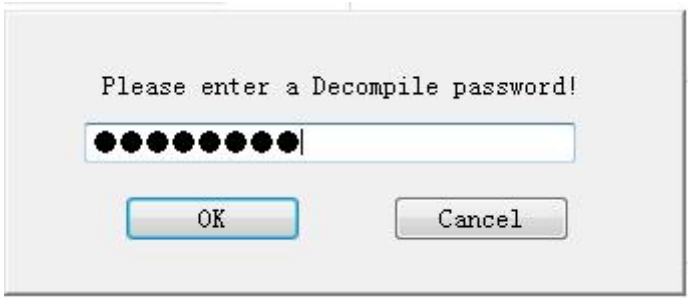


Fig. 31

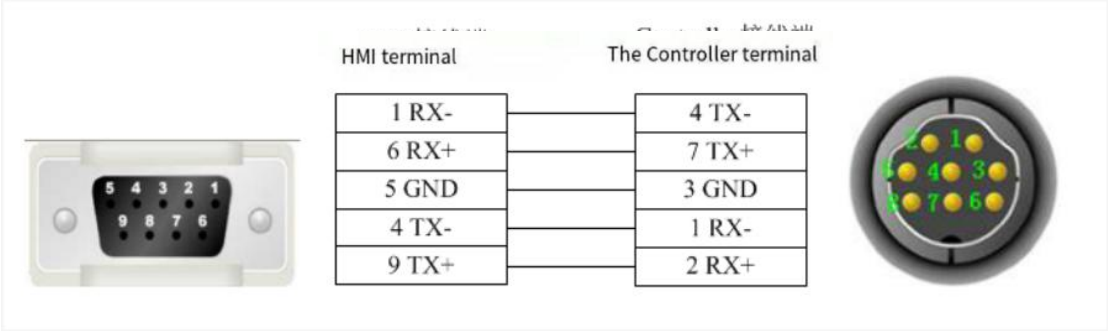
(3) After the **Decompile Success!** dialog box appears, click **OK** to complete the decompiling, as shown in Fig. 32.

Fig. 32

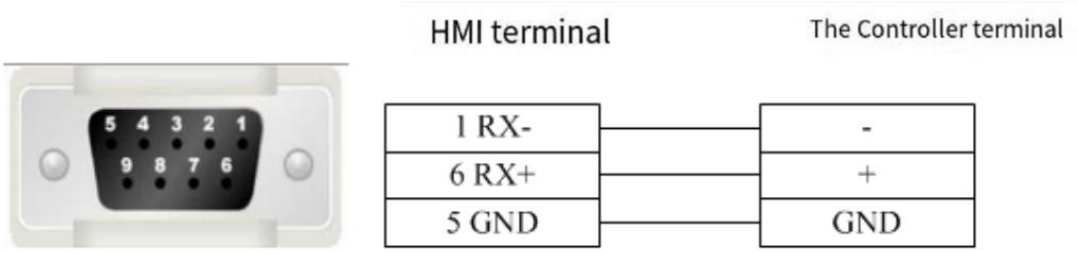
3 Description for Communication Connection

VEICHI

● **V5** series **RS485-4** cable



● **V5** series module **RS485-2** cable

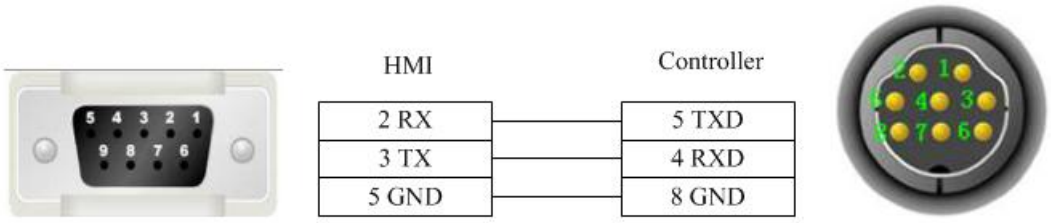


● Registers supported by **V5**:

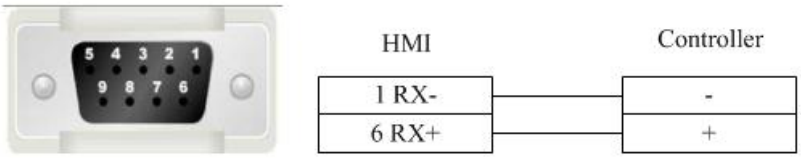
Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-377	----	OOO	
Input relay	X0-377	----	OOO	
Internal relay	M0-7679	----	DDDD	
Step relay	S0-4095	----	DDDD	
Timer contact	T0-511	----	DDD	
Counter contact	C0-255	----	DDD	
Timer current value	----	T_word0-511	DDD	
Counter current value	----	C_word0-199	DDD	
Counter register (32 bits)	----	C_word200-255	DDD	
Data register	----	D_word0-7999	DDDD	

DELTA

● **DELTA DVP** series **RS232** cable



● **DELTA DVP** series **RS485-2** cable

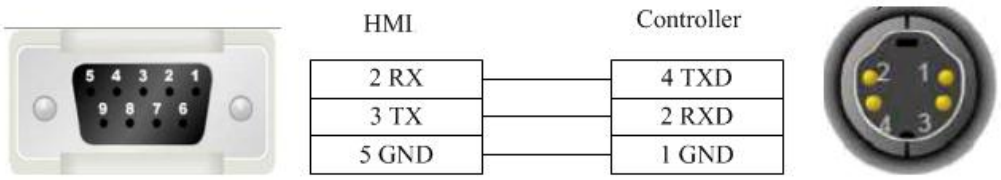


● Registers supported by **DELTA DVP**:

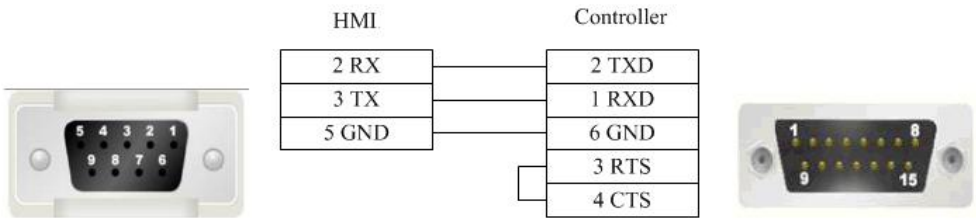
Device	Bit Address	Word Address	Format	Notes
External output node	Y0-9999	——	OOOO	
External input node	X0-9999	——	OOOO	
Internal auxiliary node	M0-9999	——	DDDD	
Sequence control node	S0-9999	——	DDDD	
Timer node	T0-9999	——	DDDD	
Counter node	C0-9999	——	DDDD	
Timer buffer	——	TV0-9999	DDDD	
Counter buffer	——	CV0-127	DDD	
Counter buffer (32 bit)	——	CV2 232-255	DDD	
Data register	——	D0-65535	DDDDD	

FATEK

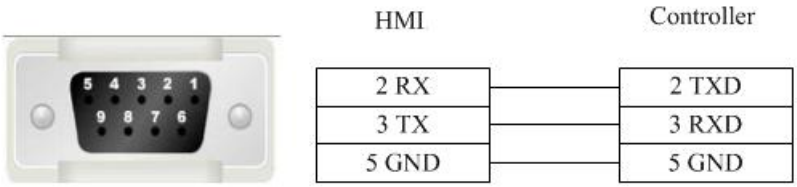
● **FATEK FB** series **RS232** cable



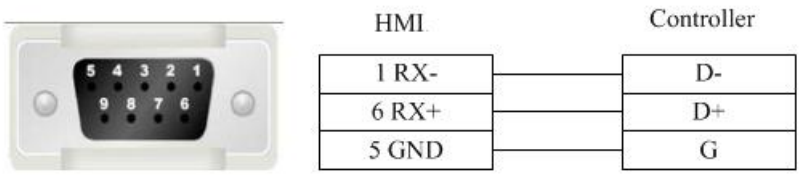
● **FATEK FB** special series **RS232** cable



● **FATEK FB** series **CB** module **RS232** cable



● **FATEK FB** series **R485-2** cable



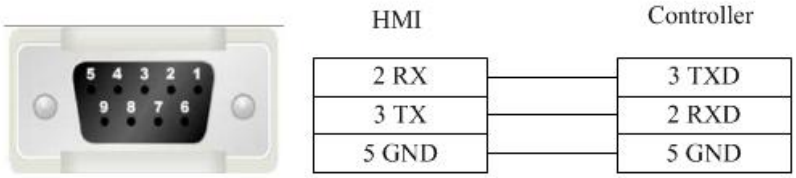
● Registers supported by **FATEK FB**

Device	Bit Address	Word Address	Format	Notes
External output node	Y0-9999	——	DDDD	
External input node	X0-9999	——	DDDD	
Internal auxiliary node	M0-9999	——	DDDD	
Sequence control node	S0-9999	——	DDDD	
Timer node	T0-9999	——	DDDD	
Counter node	C0-9999	——	DDDD	
Data register	——	R0-9999	DDDD	
Data register	——	D0-9999	DDDD	
Timer buffer	——	T0-9999	DDDD	
Counter buffer	——	C0-199	DDD	
Counter buffer (32bit)	——	DRC200-255	DDD	

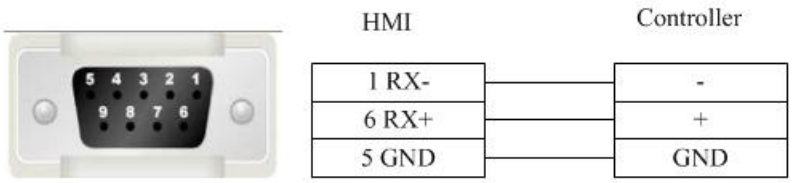
Flexem

1 Flexem FL2N(MISTUBISHI FX2N COMPATABLE)

● **Flexem FL2N** series **RS232** cable



● **Flexem FL2N** series **RS485-2** cable

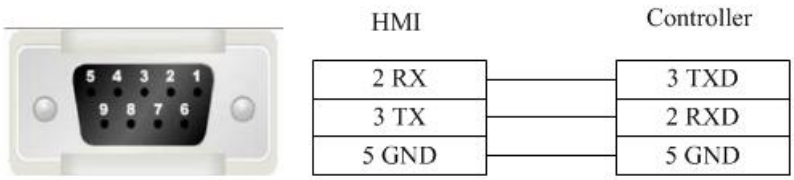


● Registers supported by **Flexem FL2N(MISTUBISHI FX2N COMPATABLE)**

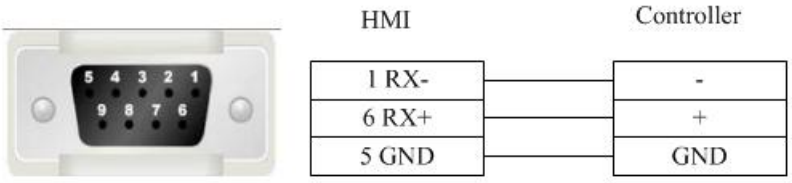
Device	Bit Address	Word Address	Format	Notes
External input node	X000-571	——	OOO	
External output node	Y000-571	——	OOO	
Internal auxiliary node	S0000-9999	——	DDDD	
Special auxiliary node	SM8000-9999	——	DDDD	
Timer node	T_bit000-255	——	DDD	
Counter node	C_bit000-255	——	DDD	
Timer buffer	——	T_word000-255	DDD	
Counter buffer	——	C_word000-255	DDD	
Counter buffer (32 bit)	——	C_dword200-255	DDD	
Data register	——	D0000-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	

2 Flexem FL2N(Modbus)

● **Flexem FL2N** series **RS232** cable



● **Flexem FL2N** series **RS485-2** cable



● Registers supported by **Flexem Fl2N (Modbus)**

Device	Bit Address	Word Address	Format	Notes
External input node	X0-571	——	OOO	
External output node	Y00-571	——	OOO	
Internal auxiliary node	S0-999	——	DDD	
Internal auxiliary node	M0-2047	——	DDDD	
Special auxiliary node	SM0-511	——	DDD	
Timer node	T_bit0-255	——	DDD	
Counter node	C_bit0-255	——	DDD	
Analog output register	——	AQ0-255	DDD	
Analog input register	——	AI0-255	DDD	
Timer buffer	——	T_word0-255	DDD	
Counter buffer	——	C_word0-255	DDD	
Counter buffer (32 bit)	——	C_dword200-255	DDD	
Data register	——	D0-4095	DDDD	
Special data register	——	SD0-511	DDDD	

3 Differences between Flexem FL2N(Mistubishi FX2N Compatable) and Flexem FL2N(Modbus)

Differences between **FLEXEM FL2N(MISTUBISHI FX2N COMPATIBLE)** and **FLEXEM FL2N(Modbus):**

FLEXEM FL2N(MISTUBISHI FX2N COMPATIBLE) is compatible with **Mitsubishi,** while **FLEXEM FL2N(modbus)** is compatible with **MODBUS**.

Additional description:

(1) If **modbus** applies **PLC** Addresses (Base 1), please refer to the table below for the address correspondence

Device	Type	Address	Protocol address	Function code
Y	Bit	Y0-377	0001-0256	1,5,15
X	Bit	x0-377	1201-1456	1,5,15
M	Bit	M0-M2047	2001-4048	1,5,15
SM	Bit	SM0-SM511	4401-4912	1,5,15
S	Bit	S0-S999	6001-7000	1,5,15
T	Bit	T0-T255	8001-8256	1,5,15
C	Bit	C0-C255	9201-9456	1,5,15
D	Word	D0-D4095	0001-4096	3,6,16
SD	Word	SD0-SD511	8001-8512	3,6,16
T	Word	T0-T255	9001-9256	3,6,16
C	Word	C0-C199	9501-9700	3,6,16
C	Double word	C200-C255	9701-9756	3,16

(2) If **modbus** applies **Protocol Addresses (Base 0)**, please refer to the table below for the address correspondence

Device	Type	Address	Protocol address	Function code
Y	Bit	Y0-377	0000-0255	1,5,15
X	Bit	X0-377	1200-1455	1,5,15
M	Bit	M0-M2047	2000-4047	1,5,15

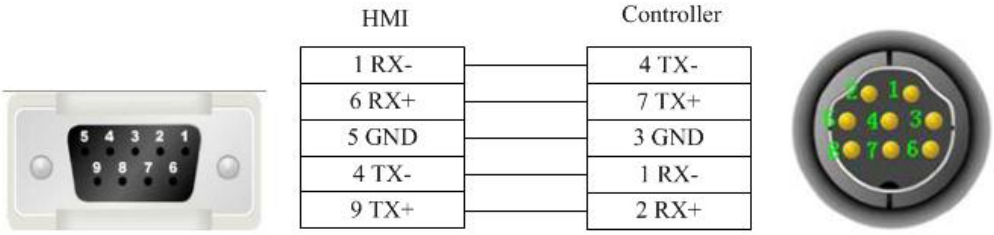
SM	Bit	SM0-SM511	4400-4911	1,5,15
S	Bit	S0-S999	6000-6999	1,5,15
T	Bit	T0-T255	8000-8255	1,5,15
C	Bit	C0-C255	9200-9455	1,5,15
D	Word	D0-D4095	0000-4095	3,6,16
SD	Word	SD0-SD511	8000-8511	3,6,16
T	Word	T0-T255	9000-9255	3,6,16
C	Word	C0-C199	9500-9699	3,6,16
C	Double word	C200-C255	9700-9755	3,16

HC

● **HC** series **PLC** series **CPU** port **RS232** cable

HC serial port programming cable is used to communicate with the **HMI** device.

● **HC** series **PLC** circular **8-pin RS485-4** cable



● Registers supported by **HCFA HCA2s_HCA2c_HCA2_LX1N_LX1S**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-571	——	OOO	
Input relay	X0-571	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-255	——	DDD	
Counter contact	C_bit0-255	——	DDD	
Stepping relay	S0-9999	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	
Timer current value	——	T_word0-255	DDD	
Counter current value	——	C_word0-255	DDD	

● Registers supported by **HCFA HCA4**

Device	Bit Address	Word Address	Format	Notes
Hold relay	HR_bit 00.00-99.15	——	DD.DD	
Data relay	DM_bit 0000.00-99.15	——	DDDD.DD	
Link relay	LR_bit 00.00-63.15	——	DD.DD	

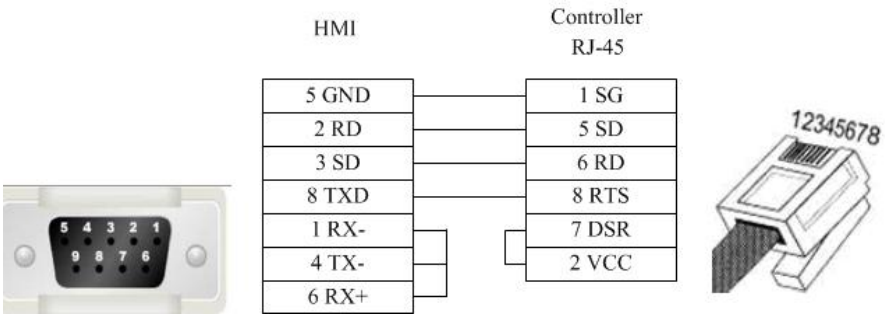
Auxiliary contact	AR_bit 00.00-959.15	——	DD.DD	
Channel contact	CIO_IR_bit 00.00.99.15	——	DDD.DD	
Counter relay	——	CNT_word 000-511	DDD	
Timer relay	——	TIM_word 000-511	DDD	
Hold bit	——	HR_word 00-99	DD	
Data register	——	DM_word 0000-6655	DDDD	
Link register	——	LR_word 00-63	DD	
Auxiliary value	——	AR_word 000-959	DDD	
Channel I/O register	——	CIO_IR_word 000-511	DDD	

● Registers supported by **HCFA HCA8s_HCA8c_HCA8**

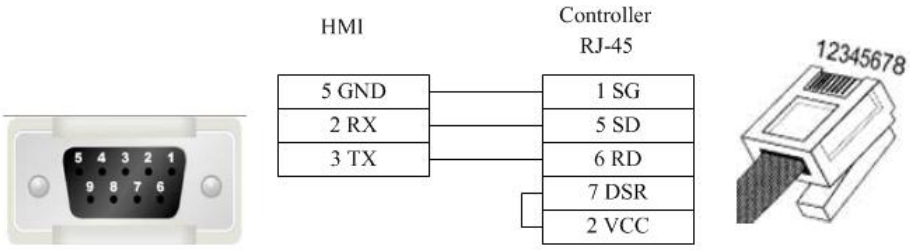
Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-764	——	OOO	
Input relay	X0-764	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-511	——	DDD	
Counter contact	C_bit0-511	——	DDD	
Stepping relay	S0-4095	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register bit	D_bit0.0-7999.F	——	DDDD.H	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	
Timer current value	——	T_word0-255	DDD	
File register		R0-32767	DDDDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

Hitachi

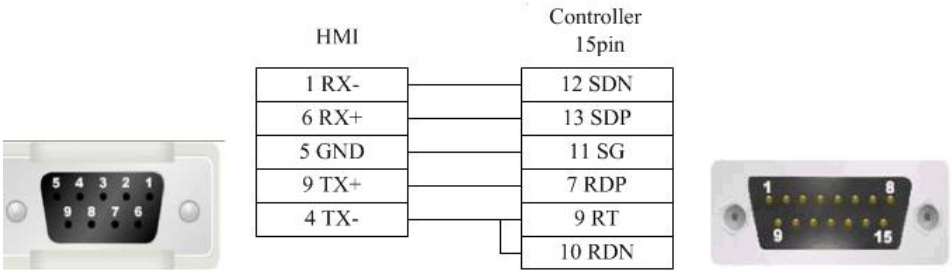
● **EHV-CPU_APPLICATION** series programming cable



● **EHV-CPU_APPLICATION** series **RS232** cable



● **EHV-CPU_APPLICATION** series **RS485-4** cable



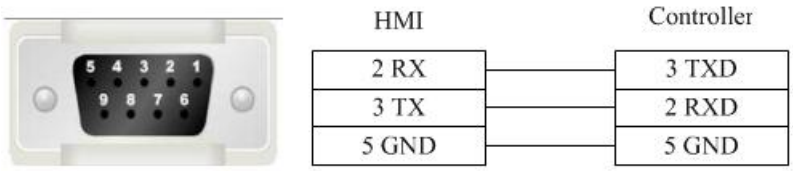
● Registers supported by **EHV-CPU_ APPLICATION**

Device	Bit Address	Word Address	Format	Notes
Input	X_bit0-FFFF	——	HHHH	
Output	Y_bit0-FFFF	——	HHHH	
Internal relay	R_bit0-FFFF	——	HHHH	
CPU link	L_bit0-FFFF	——	HHHH	
Data area	M_bit0-FFFF	——	HHHH	
Timer	T_C_bit0-FFFF	——	HHHH	
Counter	C_L_bit0-FFFF	——	HHHH	
Input		WX0-FFFF	HHHH	
Output	——	WY0-FFFF	HHHH	
Internal output	——	WR0-FFFF	HHHH	
CPU link	——	WL0-FFFF	HHHH	
Data area		WM0-FFFF	HHHH	
Timer counter	——	TC0-FFFF	HHHH	

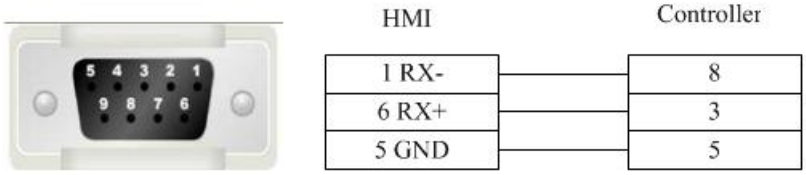
Data	——	DIF0-FFFF	HHHH	
Data		DFN0-FFFF	HHHH	

HollySys

● **HollySys LM** series **RS232** cable



● **HollySys LM** series **RS485-2** cable



● Registers supported by **HollySys LM**:

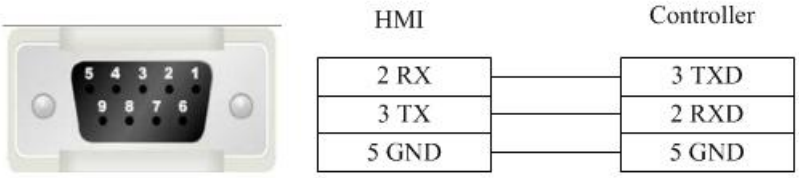
Device	Bit Address	Word Address	Format	Notes
External output node	Q0.0-4095.7	——	DDDD.O	
External input node	I0.0-4095.7	——	DDDD.O	
Intermediate auxiliary register bit	M100.0-62535.7	——	DDDDD.O	M0-99(Used by systematic diagnoses)
Analog output register	——	QW0-510	DDDD	
Analog input register	——	IW0-4095	DDDD	
Intermediate register	——	MW0-8188	DDDD	
Intermediate register(32 bit)	——	MD0-8186	DDDD	

Inovance

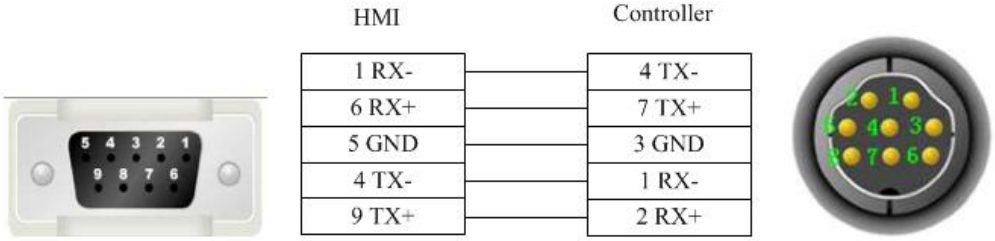
● **Inovance_H2u** series **CPU** port **RS232** cable

Inovance serial port programming cable is used to communicate with the **HMI** device.

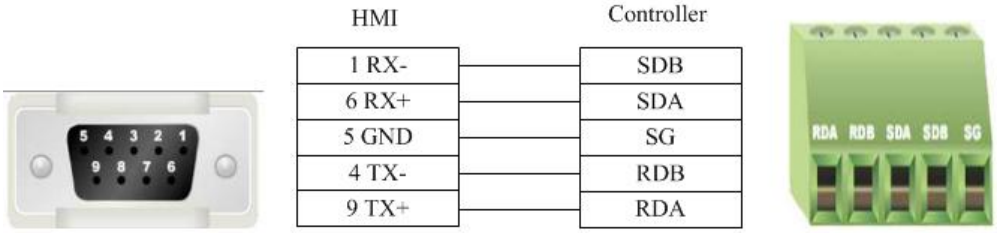
● **Inovance_H2U** series communication port **RS232** cable



● **Inovance_H2u** series **RS485-4** cable



● **Inovance_H2u** series module **RS485-4** cable

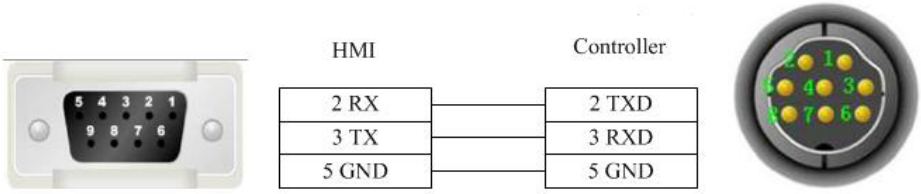


● Registers supported by **Inovance_H2U**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-571	——	OOO	
Input relay	X0-571	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-255	——	DDD	
Counter contact	C_bit0-255	——	DDD	
Stepping relay	S0-9999	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	
Timer current value	——	T_word0-255	DDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

Kewei

● **Kewei** cable

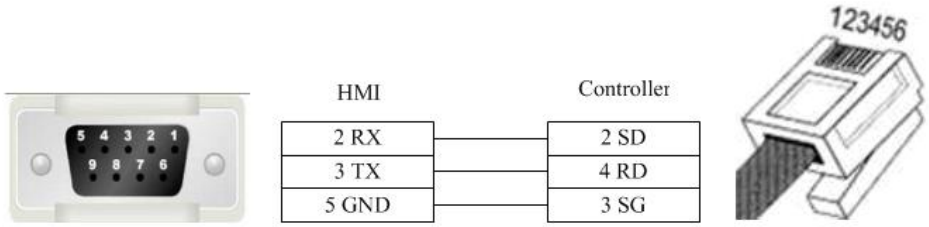


● Registers supported by **Kewei**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-377	——	OOO	
Input relay	X0-377	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-255	——	DDD	
Counter contact	C_bit0-255	——	DDD	
Stepping relay	S0-9999	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	
Timer current value	——	T_word0-255	DDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

KEYENCE

● **KEYENCE KV-1000-3000** series **CPU** port **RS232** cable



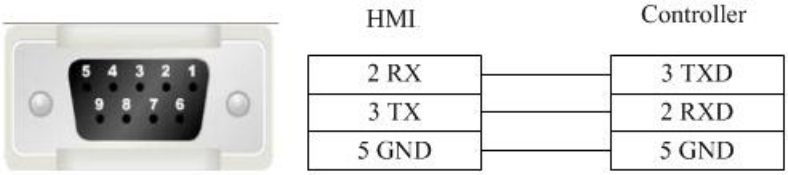
● Registers supported by **KEYENCE KV-1000-3000:**

Device	Bit Address	Word Address	Format	Notes
Latch relay	LR0.0-15999.15	——	DDDDD.DD	
Internal auxiliary relay	MR0.0-15999.15	——	DDDDD.DD	
Control relay	CR0.0-639.15	——	DDD.DD	
relay	R0.0-15999.15	——	DDDDD.DD	
Extended data memory	——	FM0-32767	DDDDD	
Extended data memory	——	EM0-65534	DDDDD	
High speed counter comparator	——	TC0-3999	DDDD	
Timer	——	TM0-511	DDD	

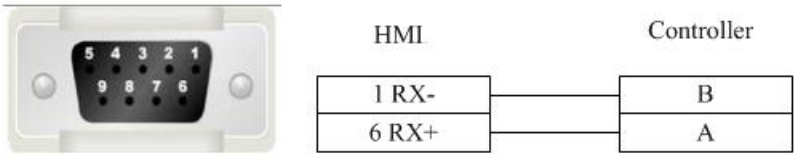
Counter	——	CM0-9999	DDDD	
Variable address register	——	Z0-12	DD	
Data memory	——	DM0-65534	DDDDD	

Kinco

● **Kinco** series **RS232** cable



● **Kinco** series **RS485-2** cable



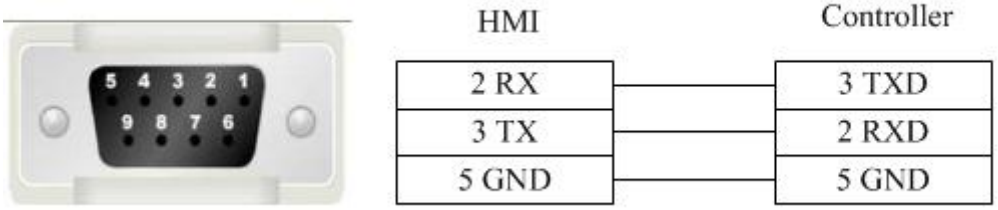
● Registers supported by **Kinco**

Device	Bit Address	Word Address	Format	Notes
System internal/external input node	I0.0-31.7	——	DD.O	
System internal/external output node	Q0.0-31.7	——	DD.O	
Intermediate auxiliary register	M0.0-31.7	——	DD.O	
Intermediate bit register	VW0.0-4094.7	——	DDDD.O	
Analog input register	——	AIW0-62	DD	
Analog output register	——	AQW0-62	DD	
Intermediate register	——	VW0-4094	DDDD	
Intermediate register	——	VD0-4092	DDDD	

LS

1 LS Master_K CPU Serial

● **LS Master_K CPU Serial RS232** cable

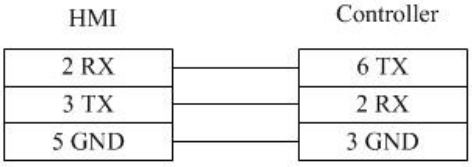


● Registers supported by **LS Master_K CPU Serial**

Device	Bit Address	Word Address	Format	Notes
Auxiliary relay	M0.0-4096.F	——	DDDD.F	
I/O relay	P0.0-4096.F	——	DDDD.F	
Link relay	L0.0-4096.F	——	DDDD.F	
Keep relay	K0.0-4096.F	——	DDDD.F	
Special relay	F0.0-4096.F	——	DDDD.F	
Data register bit	D_bit0.0-4096.F	——	DDDD.F	
Timer bit	T_bit0.0-4096.F	——	DDDD.F	
Counter bit	C_bit0.0-4096.F	——	DDDD.F	
Data register	——	D0.9999	DDDD	
Timer	——	T0.4096	DDDD	
Counter	——	C0.4096	DDDD	
Auxiliary relay	——	M_word0.4096	DDDD	
Special relay	——	F_word0.4096	DDDD	
Link relay	——	L_word0.4096	DDDD	

2 LS XGT CPU Serial

● **LS XGT CPU Serial RS232** cable



● Registers supported by **LS XGT CPU Serial**

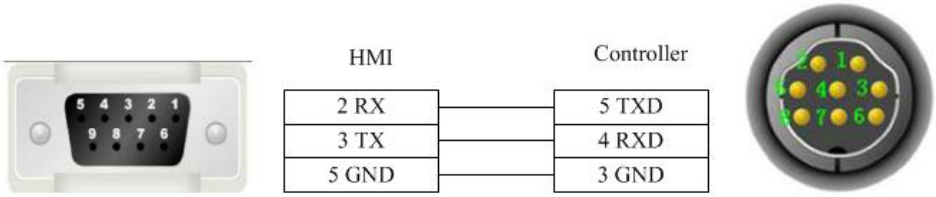
Device	Bit Address	Word Address	Format	Notes
Auxiliary relay	M_Bit0.0-16383.F	——	DDDDD.F	
I/O relay	P_Bit0.0-16383.F	——	DDDDD.F	
Keep relay	K_Bit0.0-65535.F	——	DDDDD.F	
Special relay	F_Bit0.0-16383.F	——	DDDDD.F	
Timer bit	T_Bit0.0-9999.F	——	DDDD.F	
Counter bit	C_Bit0.0-9999.F	——	DDDD.F	
Index relay	Z_Bit0.0-9999.F	——	DDDD.F	
Index relay	ZR_Bit0.0-16383.F	——	DDDDD.F	
Link relay	L_Bit0.0-32767.F	——	DDDD.F	

Communication relay	N_Bit0.0-81819.F	——	DDDD.F	
Data relay	D_Bit0.0-16383.F	——	DDDDD.F	
File relay	R_Bit0.0-16383.F	——	DDDDD.F	

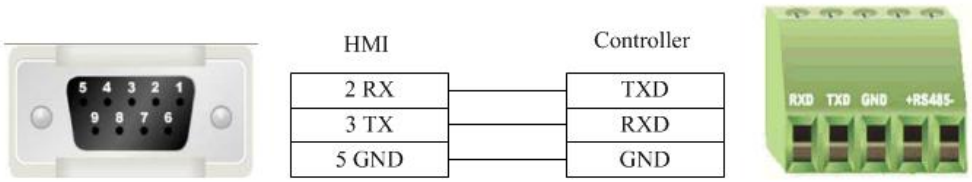
Data register	——	D0.10239	DDDDD	
I/O relay	——	P0.9999	DDDD	
Auxiliary relay	——	M0.9999	DDDD	
Keep relay	——	K0.9999	DDDD	
Special relay	——	F0.9999	DDDD	
Timer	——	T_SV0.9999	DDDD	
Counter	——	C_SV0.9999	DDDD	
Timer	——	T_CV0.9999	DDDD	
Counter	——	C_CV0.9999	DDDD	
Index relay	——	Z0.9999	DDDD	
Step control register	——	S0.9999	DDDD	
Link register	——	L0.9999	DDDD	
Communication register	——	N0.9999	DDDD	
File register	——	R0.10239	DDDDD	
Index register		R0.10239	DDDDD	

MEGMEET

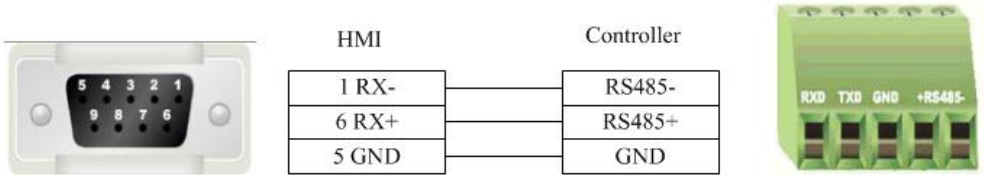
● **MEGMEET M280** series **CPU** port **RS232** cable



● **MEGMEET M280** series communication port **RS232** cable



● **MEGMEET M280** series **RS485-2** cable

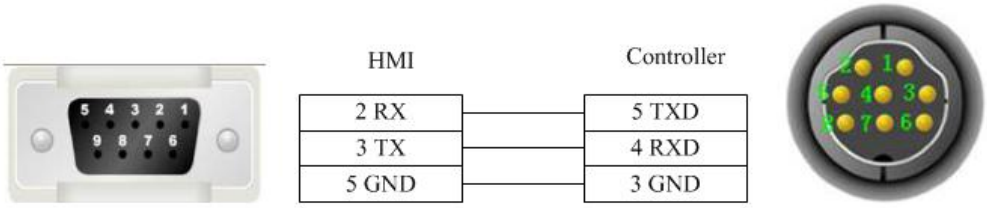


● Registers supported by **MEGMEET M280**

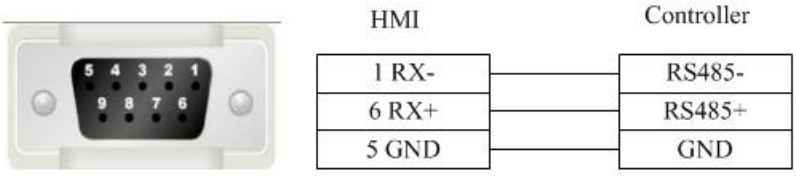
Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-571	——	OOO	
Input relay	X0-571	——	OOO	
Internal relay	M0-10239	——	DDDDD	
Timer contact	T_bit0-511	——	DDD	
Counter contact	C_bit0-511	——	DDD	
Stepping relay	S0-4096	——	DDDD	
Special internal relay	SM0-511	——	DDD	
Auxiliary register	——	R0-32767	DDDDD	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD0-511	DDD	
Variable address register	——	Z0-15	DD	
Timer current value	——	T_word0-511	DDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

MIKOM

● **MIKOM MX1H** series **CPU** port **RS232** cable



● **MIKOM MX1H** series **RS485-2** cable



● Registers supported by **MIKOM MX1H**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-777	——	OOO	
Input relay	X0-777	——	OOO	
Internal relay	M0-4095	——	DDDD	
Timer contact	T_bit0-511	——	DDD	
Counter contact	C_bit0-511	——	DDD	
Stepping relay	S0-1535	——	DDDD	
Special internal relay	SM0-511	——	DDD	
Auxiliary register	——	Un 0-199	DDD	n: 0-7
Data register	——	D0-32767	DDDDD	
Special data register	——	SD0-511	DDD	
Variable address register	——	Z0-255	DDD	
Timer current value	——	T_word0-511	DDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

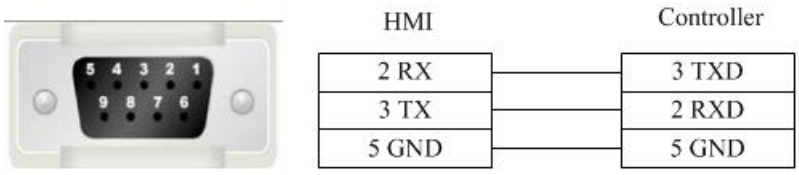
Mitsubishi

1 Mitsubishi_FX0S_FX0N_FX1S_FX1N_FX2

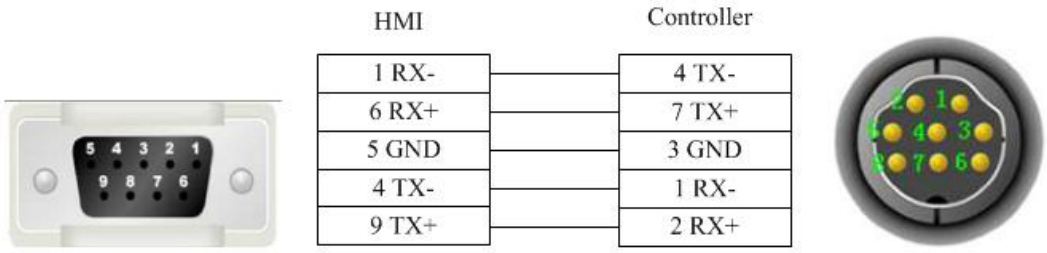
● **Mitsubishi FX** series **CPU** port **RS232** cable

Mitsubishi serial programming cable is used to communicate with the **HMI** device.

● **Mitsubishi FX** series communication port **RS232** cable



● **Mitsubishi FX** series **RS485-4** cable



● Registers supported by **Mitsubishi FX0S_FX0N_FX1S_FX1N_FX2**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-571	——	OOO	

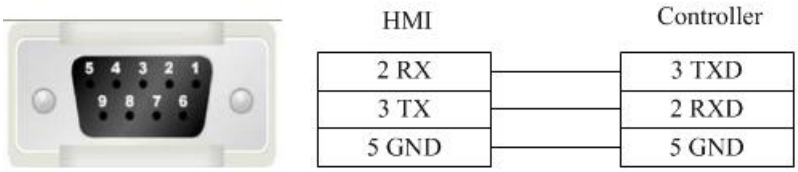
Input relay	X0-571	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-255	——	DDD	
Counter contact	C_bit0-255	——	DDD	
Stepping relay	S0-9999	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	
Timer current value	——	T_word0-255	DDD	
Counter current value	——	C_word0-255	DDD	

2 Mitsubishi FX2N

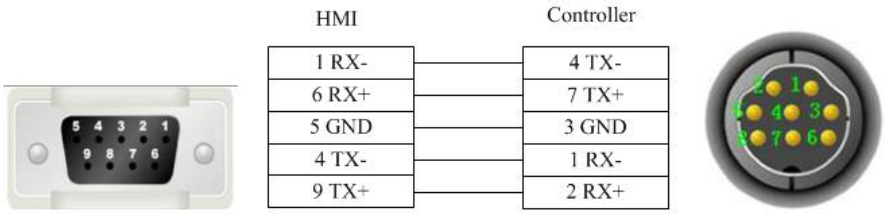
● **Mitsubishi FX** series **CPU** port **RS232** cable

Mitsubishi serial port programming cable is used to communicate with the **HMI** device.

● **Mitsubishi FX** series communication port **RS232** cable



● **Mitsubishi FX** series **RS485-4** cable



● Registers supported by **Mitsubishi FX2N:**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-571	——	OOO	
Input relay	X0-571	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-255	——	DDD	
Counter contact	C_bit0-255	——	DDD	
Stepping relay	S0-9999	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register	——	D_word0-7999	DDDD	
Special data register	——	SD8000-9999	DDDD	

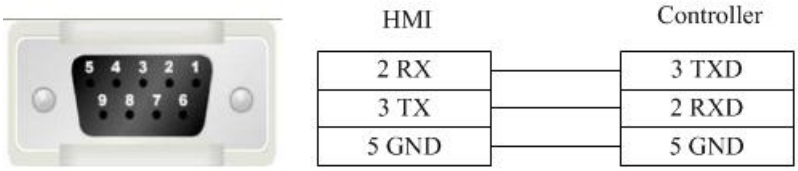
Timer current value	——	T_word0-255	DDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

3 Mitsubishi FX3U_FX3G

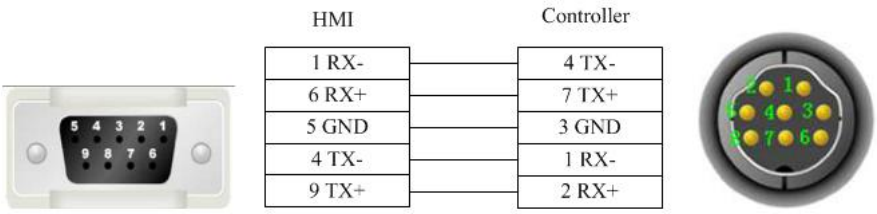
● **Mitsubishi FX** series **CPU** port **RS232** cable

The **Mitsubishi** serial port cable is used to communicate between the **HMI** device and the programming device.

● **Mitsubishi FX** series communication port **RS232** cable



● **Mitsubishi FX** series **RS485-4** cable

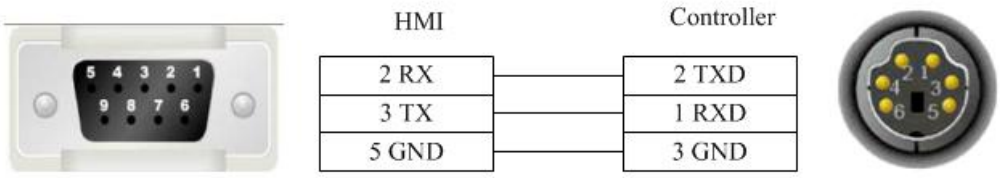


● Registers supported by **Mitsubishi FX3U_FX3G**

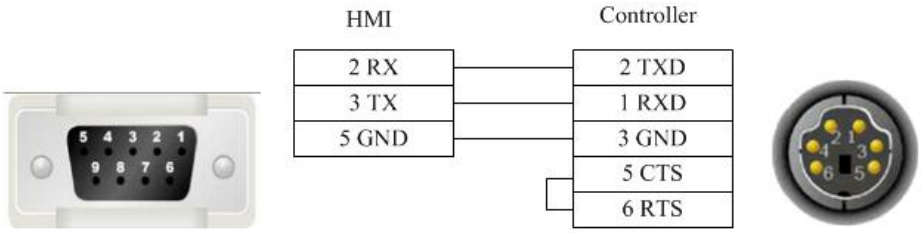
Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-764	——	OOO	
Input relay	X0-764	——	OOO	
Internal relay	M0-7999	——	DDDD	
Timer contact	T_bit0-511	——	DDD	
Counter contact	C_bit0-255	——	DDD	
Stepping relay	S0-4095	——	DDDD	
Special internal relay	SM8000-9999	——	DDDD	
Data register bit	D_bit0.0-127999.F	——	DDDDDD.H	
Data register	——	D_word0-17999	DDDDD	
Special data register	——	SD8000-9999	DDDD	
Timer current value	——	T_word0-511	DDD	
File register	——	R0-32767	DDDDD	
Counter current value	——	C_word0-199	DDD	
Counter current value	——	C_dword200-255	DDD	

4 Mitsubishi Melsec Q

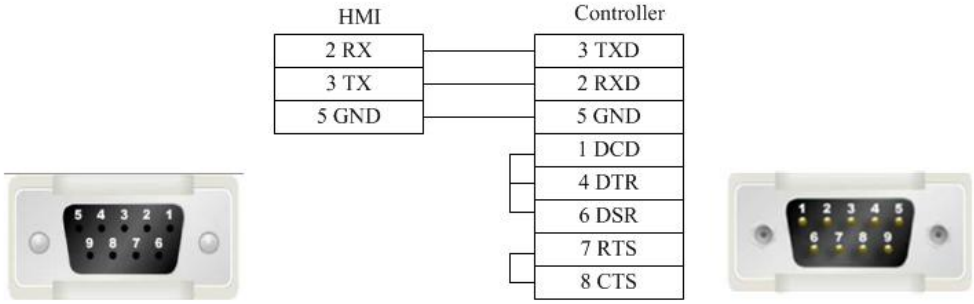
● **Mitsubishi Melsec Series RS232** cable



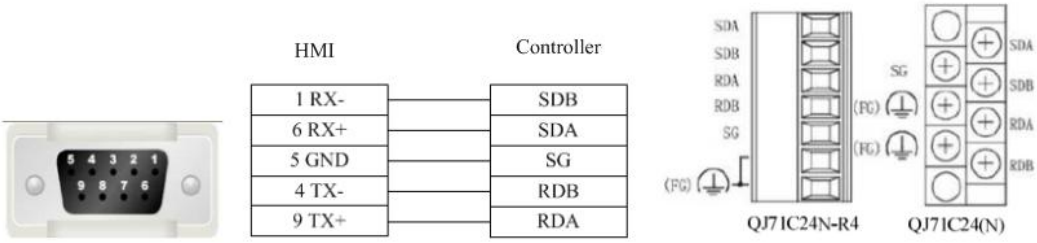
● **Mitsubishi Melsec Series Q** (Special) **RS232** cable



● **Mitsubishi MelsecSeries Q C24** communication module **RS232** cable



● **Mitsubishi Melsec Series Q C24** communication module **RS485-4** cable



● Registers supported by **Mitsubishi Melsec Q**:

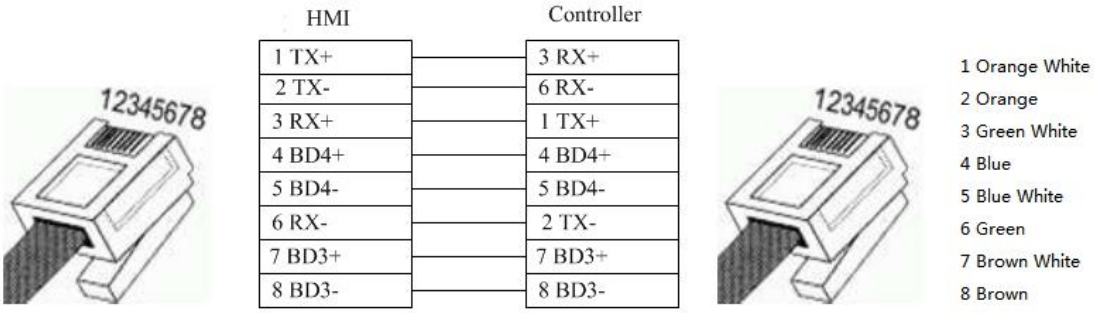
Device	Bit Address	Word Address	Format	Notes
Data output relay	DDY0-7FF	——	HHH	
Data input relay	DX0-7FF	——	HHH	
Stepping relay	S0-2047	——	DDDD	
Special link relay	SB0-3FF	——	HHH	
Counter coil	CC0-511	——	DDD	

Counter contact	CS0-511	——	DDD	
Accumulative timer coil	SC0-511	——	DDD	
Accumulative timer contact	SS0-511	——	DDD	
Timer coil	TC0-511	——	DDD	
Link relay	B0-7FF	——	HHH	
Variable address relay	V0-1023	——	DDDD	
Alarm	F0-1023	——	DDDD	
Latch relay	L0-2047	——	DDDD	
Internal relay	M0-8191	——	DDDD	
Output relay	Y0-7FF	——	HHH	
Input relay	X0-7FF	——	HHH	
Timer contact	TS0-511	——	DDD	
Data register	——	D0-11135	DDDDD	
File register	——	ZR0-65535	DDDDD	
Variable address register	——	Z0-9	D	
Stepping register	——	SW0-3FF	HHH	
File register	——	R0-32767	DDDDD	
Counter current value	——	CN0-511	DDD	
Accumulative timer current value	——	SN0-511	DDD	
Timer current value	——	TN0-511	DDD	
Link register	——	W0-7FF	HHH	

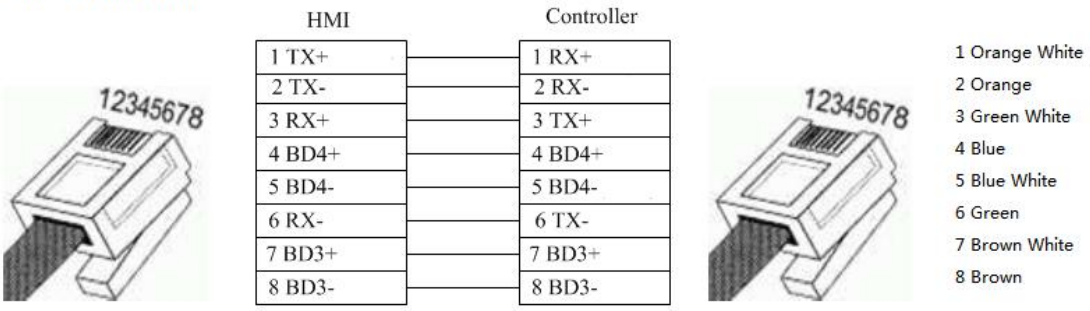
5 Mitsubishi_FX3U_ENET_L

● **Mitsubishi_FX3U_ENET_L** cable

Across connection



Direct connection



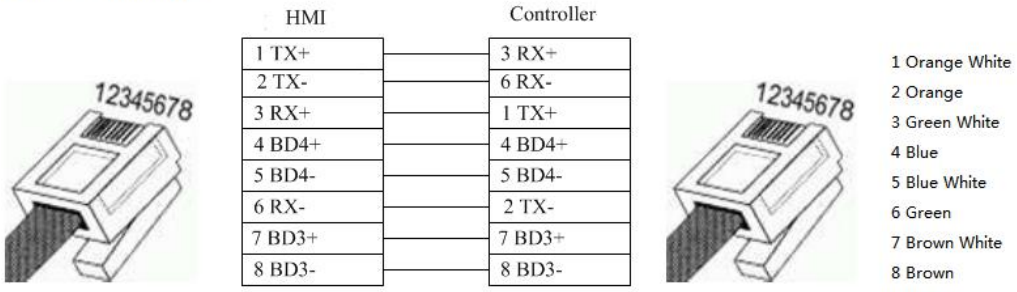
● Registers supported by **Mitsubishi_FX3U_ENET_L**

Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-377	——	OOO	
Input relay	X0-377	——	OOO	
Internal relay	M0-7999	——	DDDD	
Special internal relay	SM8000-8511	——	DDDD	
Stepping relay	S0-4095	——	DDDD	
Timer	T0-511	——	DDD	
Counter	C0-255	——	DDD	
Data relay	D_bit0-17999.15	——	DDDDD.DD	
Data register	——	D0-7999	DDDD	
Special register	——	SD8000-8511	DDDD	
File register	——	R0-32767	DDDDD	
Timer current value	——	TV0-511	DDD	
Counter current value	——	CV0-199	DDD	
Counter current value	——	CV2 200-255	DDD	

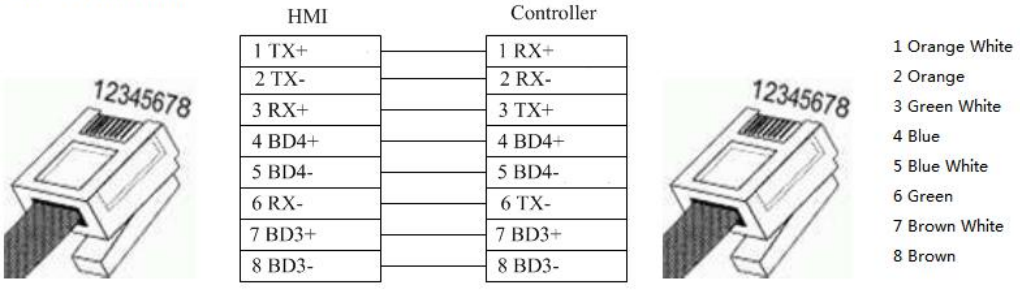
6 Mitsubishi_Melsec_Ethernet

● **Mitsubishi_Melsec_Ethernet (ASCII/Bin)** cable

Across connection



Direct connection



● Registers supported by **Mitsubishi_Melsec_Ethernet (ASCII/Bin)**

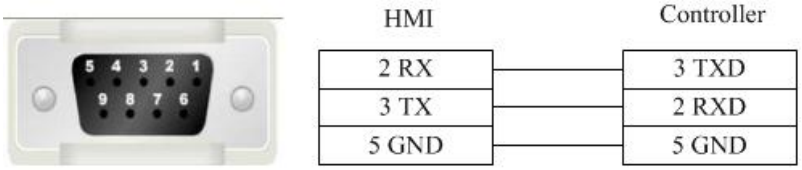
Device	Bit Address	Word Address	Format	Notes
Output relay	Y0-FFFF	——	HHHH	
Input relay	X0-FFFF	——	HHHH	
Internal relay	M0-65535	——	DDDDD	

Special internal relay	SM0-65535	——	DDDDD	
Latch relay	L0-65535	——	DDDDD	
Alarm	F0-65535	——	DDDDD	
Variable address relay	V0-65535	——	DDDDD	
Link relay	B0-FFFF	——	HHHH	
Timer contact	TS0-65535	——	DDDDD	
Timer coil	TC0-65535	——	DDDDD	
Accumulative timer contact	SS0-65535	——	DDDDD	
Accumulative timer coil	SC0-65535	——	DDDDD	
Counter contact	CS0-65535	——	DDDDD	
Counter coil	CC0-65535	——	DDDDD	
Special link relay	SB0-FFFF	——	HHHH	
Stepping relay	S0-65535	——	DDDDD	
Data output relay	DY0-FFFF	——	HHHH	
Data input relay	DX0-FFFF	——	HHHH	
Data register	——	D0-65535	DDDDD	
Special register	——	SD0-65535		
Link register	——	W0-FFFF	HHHH	
Stepping register	——	SW0-FFFF	HHHH	
Timer current value	——	TN0-65535	DDDDD	
Accumulative timer current value	——	SN0-65535	DDDDD	
Counter current value	——	CN0-65535	DDDDD	
Variable address register	——	Z0-65535	DDDDD	
File register	——	R0-65535	DDDDD	
File register	——	ZR0-393216	DDDDDD	

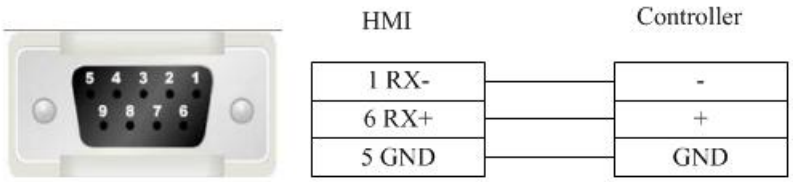
Modbus

1 Modbus_RTU

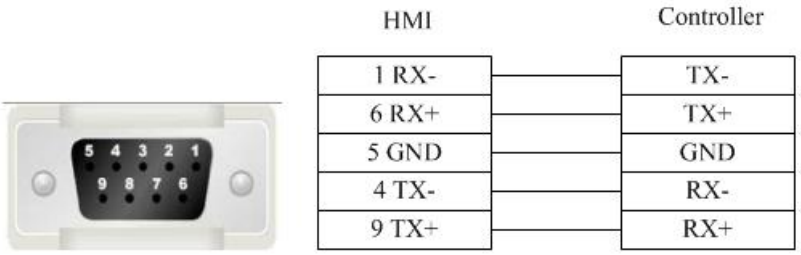
● **Modbus RTU** series **RS232** cable



● **Modbus RTU** series **RS485-2** cable



● **Modbus RTU** series **RS485-4** cable

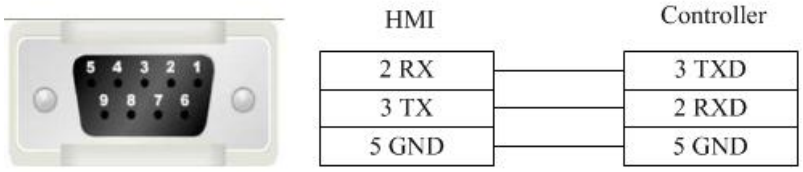


● Registers supported by **RTU**:

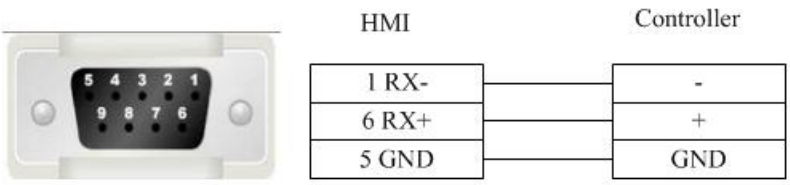
Device	Bit Address	Word Address	Format	Notes
System internal/external output node	0X1-65535	——	DDDDD	
System internal/external input node	1X1-65535	——	DDDDD	
Analog input data register	——	3X1-65535	DDDDD	
Data register	——	4X1-65535	DDDDD	

2 Modbus_ RTU _Extend

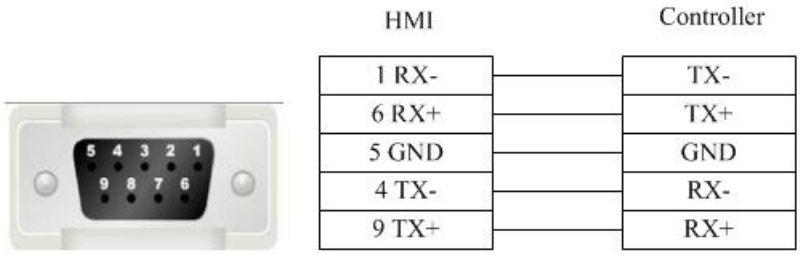
● **Modbus RTU** Extend series **RS232** cable



● **Modbus RTU** Extend series **RS485-2** cable



● **Modbus RTU** Extend series **RS485-4** cable



● Registers supported by **Modbus RTU** Extend:

Device	Bit Address	Word Address	Format	Notes
System internal/external output node	0X1-65535	——	DDDDD	
System internal/external input node	1X1-65535	——	DDDDD	
Analog input data bit	3X1_BIT1.0-65535.15	——	DDDDD.DD	
Data register bit	4X1_BIT1.0-65535.15	——	DDDDD.DD	
Analog input data register	——	3X1-65535	DDDDD	
Data register	——	4X1-65535	DDDDD	
Data register	——	5X1-65535	DDDDD	
Data register	——	6X1-65535	DDDDD	
Data register	——	3X-DINV1-65535	DDDDD	
Data register	——	4X-DINV1-65535	DDDDD	

Notice:

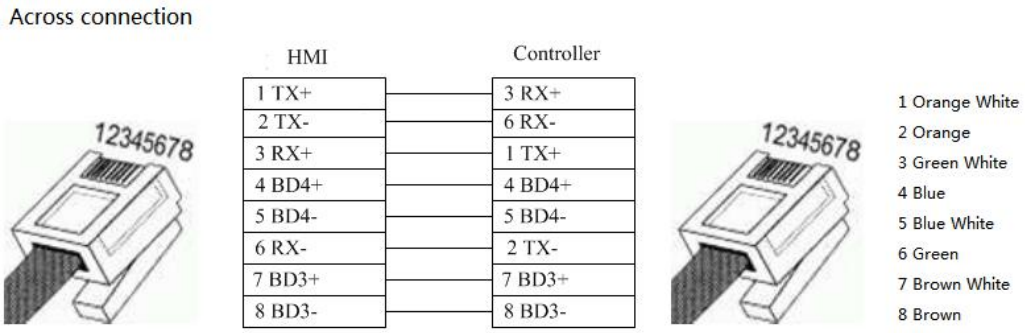
4X_DINV and **3X_DINV** are the big format of double word **4X**, and it is a word type address. For example, **4x3** is the hexadecimal **1234**, **4x4** is the hexadecimal **5678**, and **4X_DINV** is the hexadecimal **12345678**.

3 Differences between Modbus_RTU and Modbus_RTU_Extend

Many data memory such as analog input data bit, data register bit and function code data register are added into **Modbus_RTU_Extend** on the base of **Modbus_RTU**.

4 Modbus_ TCP

Modbus TCP cable



Direct connection

HMI	Controller
1 TX+	1 RX+
2 TX-	2 RX-
3 RX+	3 TX+
4 BD4+	4 BD4+
5 BD4-	5 BD4-
6 RX-	6 TX-
7 BD3+	7 BD3+
8 BD3-	8 BD3-

1 Orange White
2 Orange
3 Green White
4 Blue
5 Blue White
6 Green
7 Brown White
8 Brown

Registers supported by TCP

Device	Bit Address	Word Address	Format	Notes
System internal/external output node	0X1-65535	——	DDDDD	
System internal/external input node	1X1-65535	——	DDDDD	
Analog input data register	——	3X1-65535	DDDDD	
Data register	——	4X1-65535	DDDDD	

5 Modbus_ UDP

● **Modbus UDP** cable

Across connection

HMI	Controller
1 TX+	3 RX+
2 TX-	6 RX-
3 RX+	1 TX+
4 BD4+	4 BD4+
5 BD4-	5 BD4-
6 RX-	2 TX-
7 BD3+	7 BD3+
8 BD3-	8 BD3-

1 Orange White
2 Orange
3 Green White
4 Blue
5 Blue White
6 Green
7 Brown White
8 Brown

Direct connection

HMI	Controller
1 TX+	1 RX+
2 TX-	2 RX-
3 RX+	3 TX+
4 BD4+	4 BD4+
5 BD4-	5 BD4-
6 RX-	6 TX-
7 BD3+	7 BD3+
8 BD3-	8 BD3-

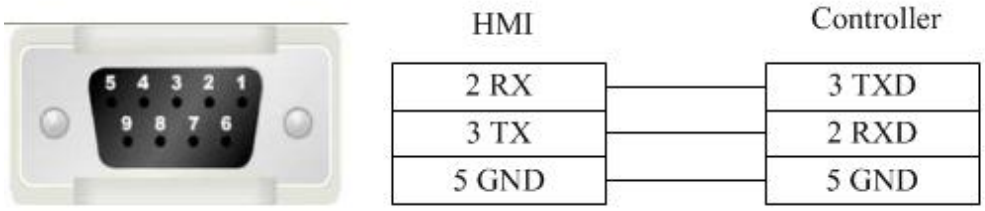
1 Orange White
2 Orange
3 Green White
4 Blue
5 Blue White
6 Green
7 Brown White
8 Brown

● Registers supported by **Modbus UDP**:

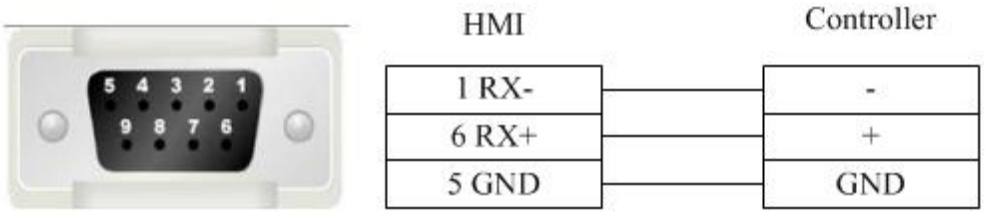
Device	Bit Address	Word Address	Format	Notes
System internal/external output node	0X1-65535	——	DDDDD	
System internal/external input node	1X1-65535	——	DDDDD	
Analog input data register	——	3X1-65535	DDDDD	
Data register	——	4X1-65535	DDDDD	

Modbus RTU Server - Serial port service

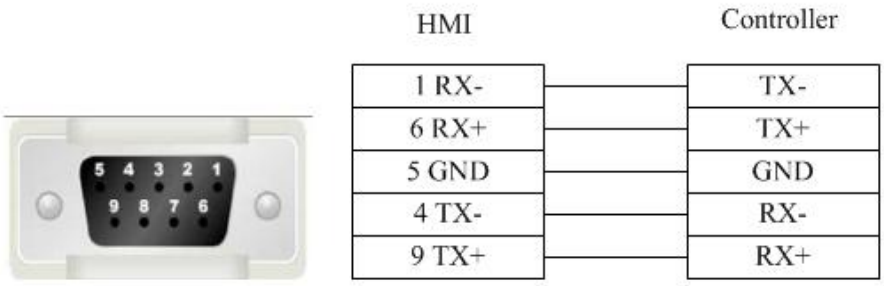
● **Modbus RTU Server** series **RS232** cable



● **Modbus RTU Server** series **RS485-2** cable



● **Modbus RTU Server** series **RS485-4** cable



● Registers supported by **Modbus RTU Server**:

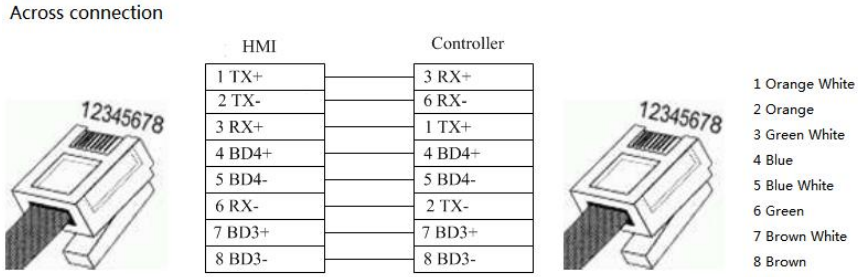
Device	Bit Address	Word Address	Format	Notes
System internal/external output node	LB0-65535	——	DDDDD	LBn: 0X(n+1) n: 0-65535 Fox example: LB0 = 0X1
System internal/external input node	LB0-65535	——	DDDDD	LBn: 1X(n+1) n: 0-65535 Fox example: LB0 = 1X1

Analog input data relay	——	LW0-9998	DDDDD	LWn: 3X(n+1) n: 0-9998 Fox example: LW0 = 3X1
Analog input data relay	——	RW0-55535	DDDDD	RWn: 3X(n+10000) n: 0-55535 Fox example: RW0 = 3X10000
Data register	——	LW0-9998	DDDDD	LWn: 4X(n+1) n: 0-9998 Fox example: LW0 = 4X1
Data register	——	RW0-55535	DDDDD	RWn: 4X(n+10000) n: 0-55535 Fox example: RW0 = 4X10000

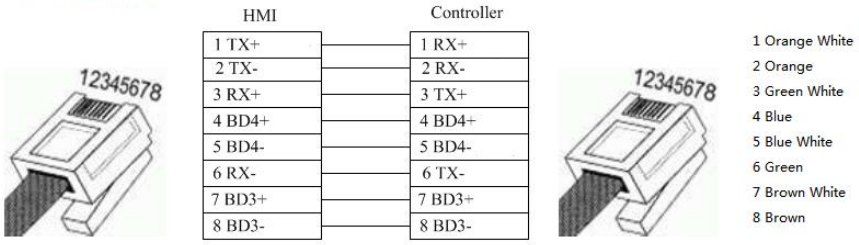
Modbus TCP Server– Ethernet service

● **Modbus TCP Server** cable

Across connection



Direct connection



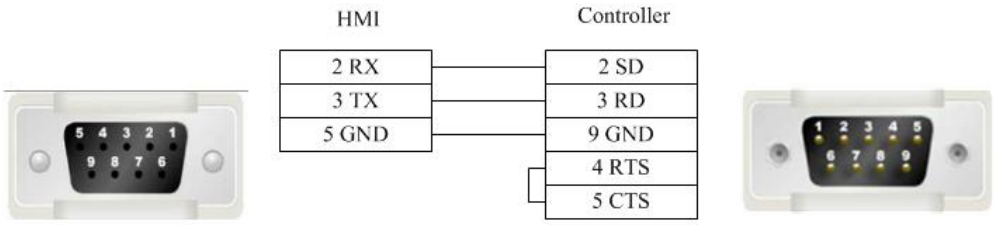
● Registers supported by **Modbus TCP Server**

Device	Bit Address	Word Address	Format	Notes
System internal/external output node	LB0-65535	——	DDDDD	LBn: 0X(n+1) n: 0-65535 Fox example: LB0 = 0X1
System	LB0-65535	——	DDDDD	LBn: 1X(n+1) n:

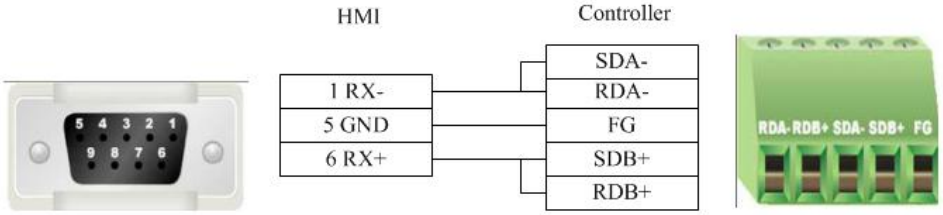
internal/external input node				0-65535 Fox example: LB0 = 1X1
Analog input data relay	——	LW0-9998	DDDDD	LWn: 3X(n+1) n: 0-9998 Fox example: LW0 = 3X1
Analog input data relay	——	RW0-55535	DDDDD	RWn: 3X(n+10000) n: 0-55535 Fox example: RW0 = 3X10000
Data register	——	LW0-9998	DDDDD	LWn: 4X(n+1) n: 0-9998 Fox example: LW0 = 4X1
Data register	——	RW0-55535	DDDDD	RWn: 4X(n+10000) n: 0-55535 Fox example: RW0 = 4X10000

OMRON

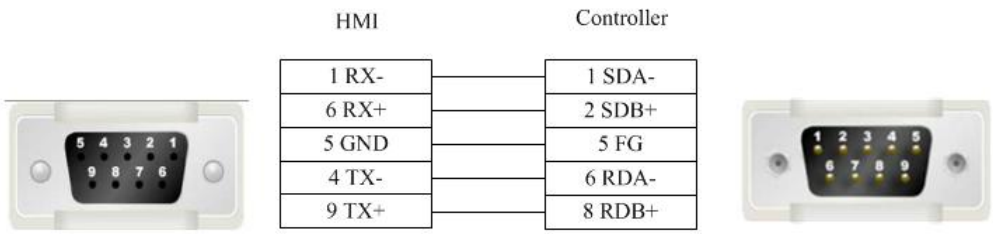
● **OMRON CP1H_CP1L** series **RS232** cable



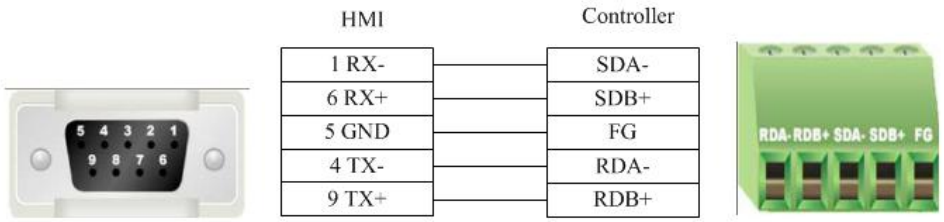
● **OMRON CP1H_CP11** series (communication module) **RS485-2** cable



● **OMRON CP1H_CP1L** series **RS485-4** cable



● **OMRON CP1H_CP1L** series (communication module) **RS485-4** cable

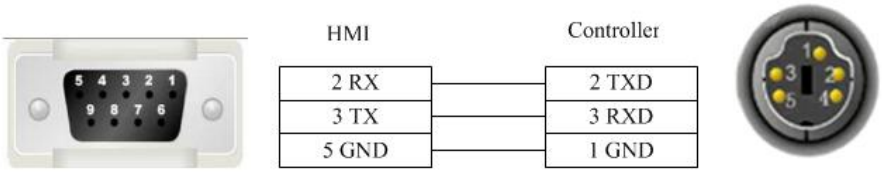


● Registers supported by **OMRON CP1H_CP1L**

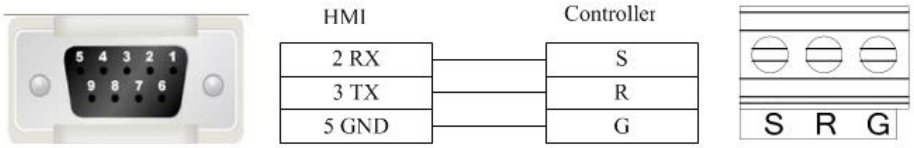
Device	Bit Address	Word Address	Format	Notes
Work relay	W_bit0.0-8191.15	——	DDDD.DD	
Hold relay	H_bit0.0-24576.15	——	DDDDD.DD	
Data relay	D_bit0.0-524288.15	——	DDDDDD.DD	
Counter relay	C_bit0.0-65535.15	——	DDDDD.DD	
Timer relay	T_bit0.0-15360.15	——	DDDDD.DD	
Auxiliary relay	A_bit0.0-15360.15	——	DDDDD.DD	
Channel I/O	CIO_bit0.0-98304.15	——	DDDDD.DD	
Work register	——	W_word 0-511	DDD	
Hold register	——	H_word 0-1535	DDDD	
Data register	——	D_word 0-32767	DDDDD	
Counter register	——	C_word 0-4095	DDDD	
Timer register	——	T_word 0-4095	DDDD	
Auxiliary register	——	A_word 0-959	DDD	
Channel I/O register		CIO_word 0-6143	DDDD	

Panasonic

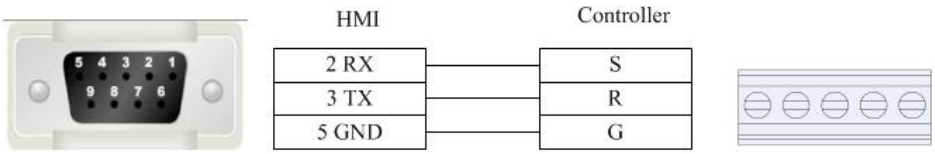
● **Panasonic FP** series **RS232** cable



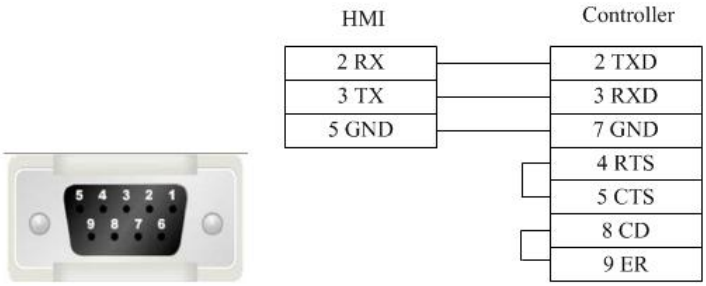
● **Panasonic FP** series **CPU** terminal **RS232** cable



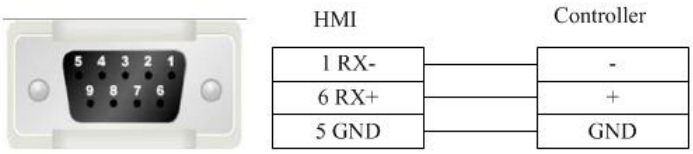
● **Panasonic FP** series communication card **RS232** cable.



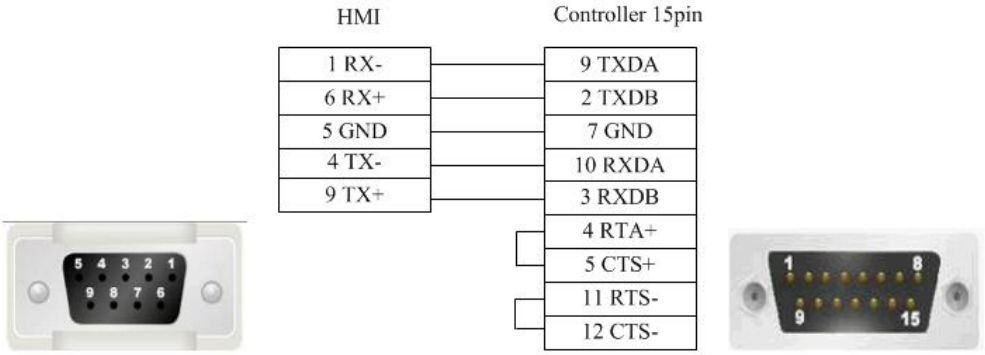
● **Panasonic FP2/3** series **RS232** cable



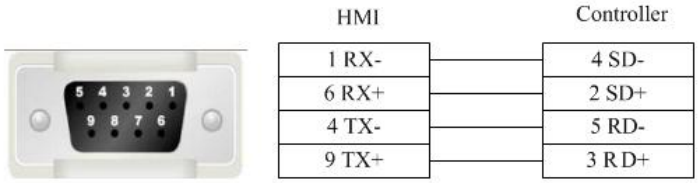
● **Panasonic FP** series **RS485-2** cable



● **Panasonic FP3** series **RS485-4** programming port cable



● **Panasonic FP** series (other modules) **RS485-4** cable



● Registers supported by **Panasonic FP0/FPX:**

Device	Bit Address	Word Address	Format	Notes
External output node	Y0-9999.F	——	DDDD.H	
External input node	X0-9999.F	——	DDDD.H	
Timer bit	T0-9999	——	DDDD	
Counter bit	C0-9999	——	DDDD	
Link auxiliary node	L0-9999.F	——	DDDD.H	
Internal auxiliary node	R0-9999.F	——	DDDD.H	
T/C current value	——	EV0-65535	DDDDD	
T/C set value	——	SV0-9999	DDDD	
Data register	——	DT0-99999	DDDDD	
Output register	——	WY0-32767	DDDDD	
Input register	——	WX0-32767	DDDDD	
Internal auxiliary register	——	WR0-32767	DDDDD	
Link data register	——	LD0-99999	DDDDD	
Link register	——	WL0-32767	DDDDD	
File register	——	FL0-99999	DDDDD	

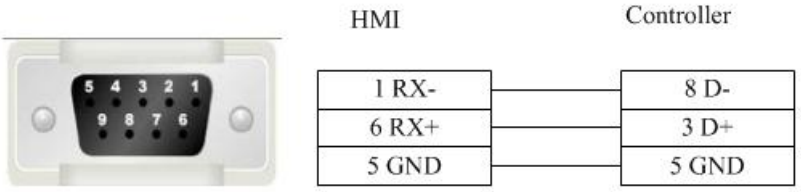
Siemens

1 Siemens S7_200

● **Siemens S7-200** series **RS232** cable

Siemens serial port programming cable is used to communicate with **HMI** device.

● **Siemens S7-200** series **RS485-2** cable



● Registers supported by **Siemens S7-200**

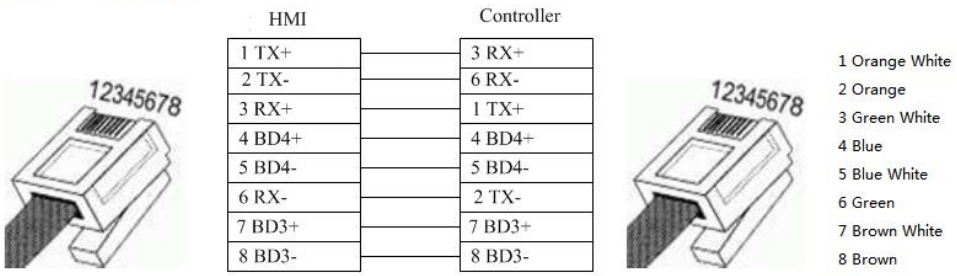
Device	Bit Address	Word Address	Format	Notes
Digital output and Peripheral image register node	Q.B0.0-127.7	——	DDD.O	
Internal memory bit	M.B0.0-255.7	——	DDD.O	
Digital input and Peripheral image register node	I.B0.0-127.7	——	DDD.O	
Special memory bit	SM.B0.0-4399.7	——	DDDD.O	
Variable memory node	V.B0.0-81919.7	——	DDDDD.O	
Timer bit	Tim0-255	——	DDD	
Counter bit	Cnt0-255	——	DDD	
SCR node	S.B0.0-255.7	——	DDD.O	
Digital output and Peripheral image register	——	QW0-14	DD	
Digital output and Peripheral image register (32 bit)	——	QD0-12	DD	
Digital input and Peripheral image register	——	IW0-14	DD	
Digital input and Peripheral image register (32 bit)	——	ID0-12	DD	
Internal memory	——	MW0-30	DD	
Internal memory (32 bit)	——	MD0-28	DD	
Analog output	——	AQW0-62	DD	
Analog input	——	AIW0-62	DD	
SCR	——	SW0-30	DD	
SCR (32 bit)	——	SD0-28	DD	
Special memory register	——	SMW0-548	DDD	
Special memory register	——	SMD0-5	DDD	

(32 bit)		46		
Variable memory	——	VW0-10238	DDDDD	
Variable memory (32 bit)	——	VD0-10236	DDDDD	
Timer current value	——	Tim0-255	DDD	
Counter current value	——	Cnt0-255	DDD	

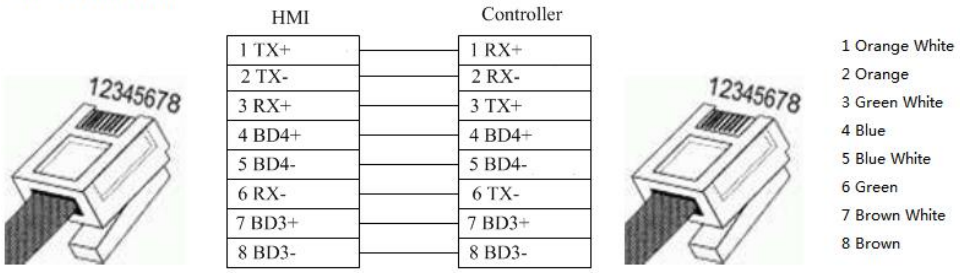
2 Siemens S7_200 Network

● **Siemens S7-200 Network c**able

Across connection



Direct connection



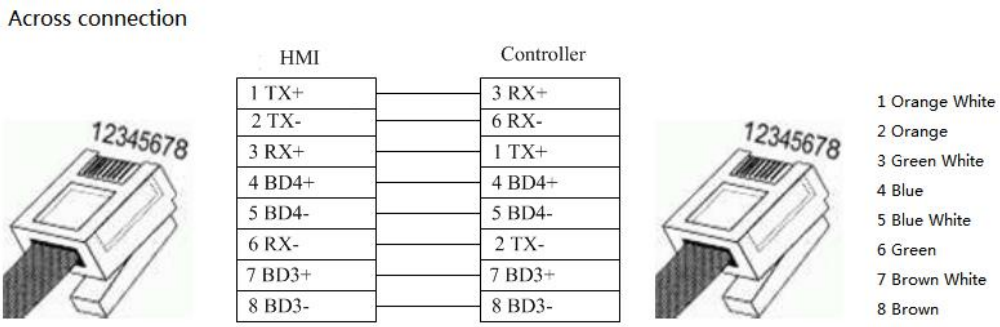
● Registers supported by siemens **S7-200 Network**:

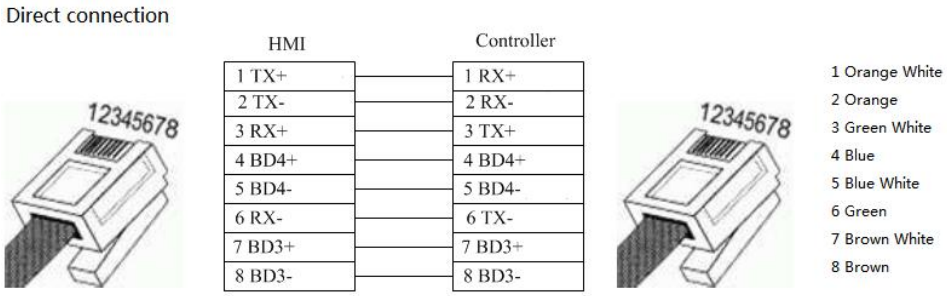
Device	Bit Address	Word Address	Format	Notes
Digital output and Peripheral image register node	Q.B0.0-127.7	——	DDD.O	
Internal memory bit	M.B0.0-255.7	——	DDD.O	
Digital input and Peripheral image register node	I.B0.0-127.7	——	DDD.O	
Variable memory node	V.B0.0-65535.7	——	DDDDD.O	
Digital output and Peripheral image register	——	QW0-14	DD	
Digital output and	——	QD0-12	DD	

Peripheral image register (32 bit)				
Digital input and Peripheral image register	——	IW0-14	DD	
Digital input and Peripheral image register (32 bit)	——	ID0-12	DD	
Internal memory	——	MW0-30	DD	
Internal memory (32 bit)	——	MD0-28	DD	
Variable memory	——	VW0-8190	DDDDD	
Variable memory (32 bit)	——	VD0-8188	DDDDD	

3 Siemens S7_200 Network Module

● **Siemens S7-200 Network Module** cable





● Registers supported by **Siemens S7-200 Network Module**

Device	Bit Address	Word Address	Format	Notes
Digital output and Peripheral image register node	Q.B0.0-127.7	——	DDD.O	
Internal memory bit	M.B0.0-255.7	——	DDD.O	
Digital input and Peripheral image register node	I.B0.0-127.7	——	DDD.O	
Variable memory node	V.B0.0-65535 .7	——	DDDDD.O	

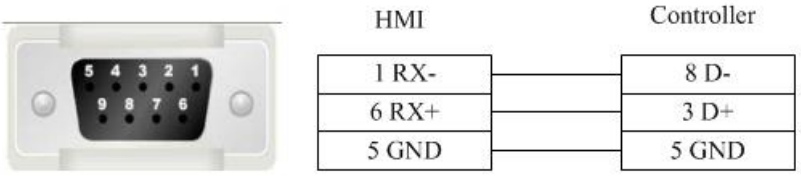
Digital output and Peripheral image register	——	QW0-14	DD	
Digital output and Peripheral image register (32 bit)	——	QD0-12	DD	
Digital input and Peripheral image register	——	IW0-14	DD	
Digital input and Peripheral image register (32 bit)	——	ID0-12	DD	
Internal memory	——	MW0-30	DD	
Internal memory (32 bit)	——	MD0-28	DD	
Variable memory	——	VW0-8190	DDDD	
Variable memory (32 bit)	——	VD0-8188	DDDD	

4 Siemens S7_300 MPI

● **Siemens S7-300 MPI** series **RS232** cable

SIEMENS serial port programming cable is used to communicate with **HMI** device.

● **Siemens S7-300 MPI** series **RS485-2** cable



● Registers supported by **Siemens S7-300 MPI**

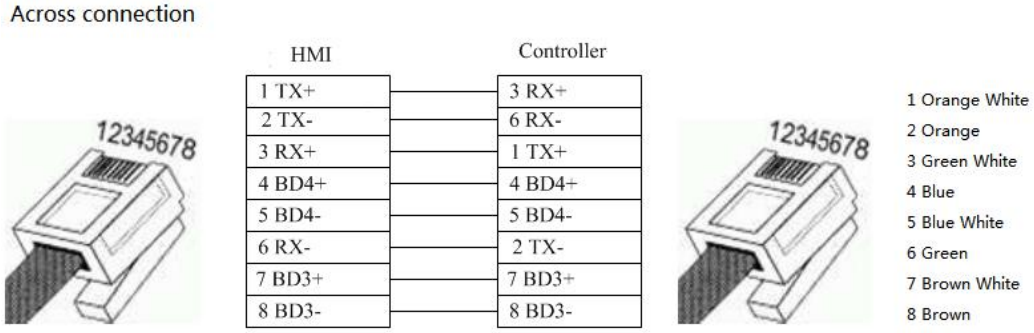
Device	Bit Address	Word Address	Format	Notes
External output node	Q.B0.0-511.7	——	DDD.O	
External input node	I.B0.0-511.7	——	DDD.O	
Internal auxiliary node	M.B0.0-4095.7	——	DDDD.O	
Data register node	DBn_DBX0.0-9999.7	——	DDDD.O	The main address can be set during the hardware configuration.
External output register	——	QW0-126	DDD	
External output register (32 bit)	——	QD0-124	DDD	
External input register	——	IW0-126	DDD	
External input register (32 bit)	——	ID0-124	DDD	
Internal register	——	MW0-2046	DDDD	
Internal register (32 bit)	——	MD0-2044	DDDD	
Data register	——	DBn_DBW0-65	DDDDD	The main

		534		address can be set during the hardware configuration.
Data register (32 bit)	——	DBn_DBD0-65532	DDDDD	The main address can be set during the hardware configuration.

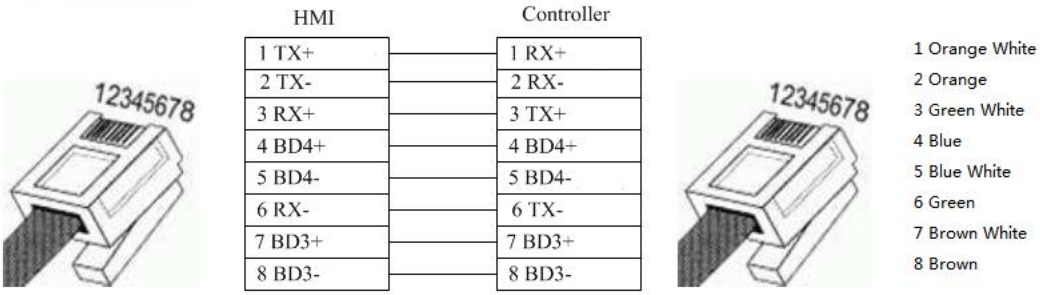
5 Siemens S7_300_Network

● **Siemens S7-300 Network** cable

Across connection



Direct connection



● Registers supported by **S7-300 Network**

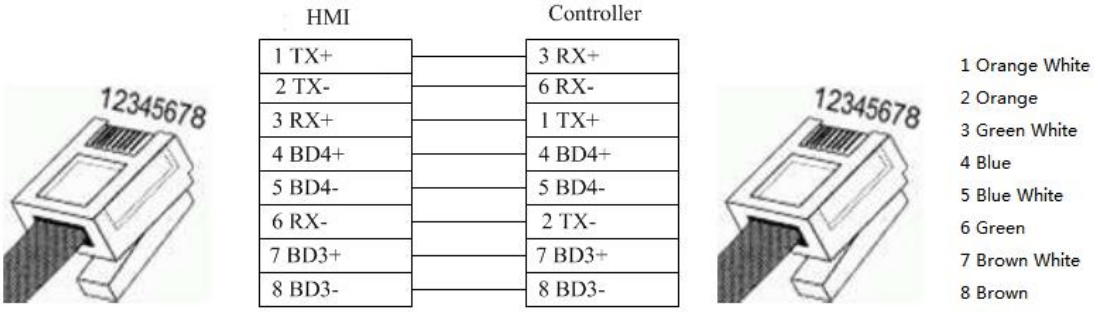
Device	Bit Address	Word Address	Format	Notes
External output node	Q.B0.0-2047.7	——	DDDD.O	
External input node	I.B0.0-2047.7	——	DDDD.O	
Data register node	DBn_DBX0.0-9999.7	——	DDDD.O	The main address can be set during the hardware configuration.
External output register	——	QW0-2046	DDDD	

External output register (32 bit)	——	QD0-2044	DDDD	
External input register	——	IW0-2046	DDDD	
External input register (32 bit)	——	ID0-2044	DDDD	
Internal register	——	MW0-2046	DDDD	
Internal register (32 bit)	——	MD0-2044	DDDD	
Data register	——	DBn_DBW0-65534	DDDDD	The main address can be set during the hardware configuration.
Data register (32 bit)	——	DBn_DBD0-65532	DDDDD	The main address can be set during the hardware configuration.

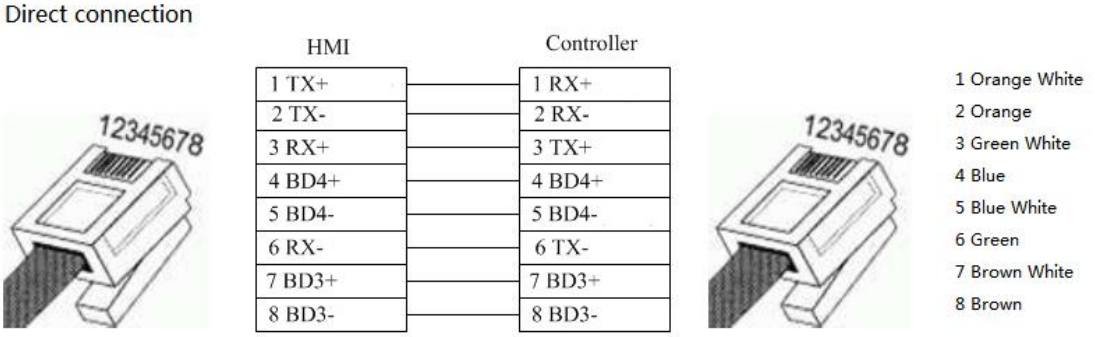
6 Siemens S7_1200_network

- **Siemens S7-1200 Network** cable

Across connection



Direct connection



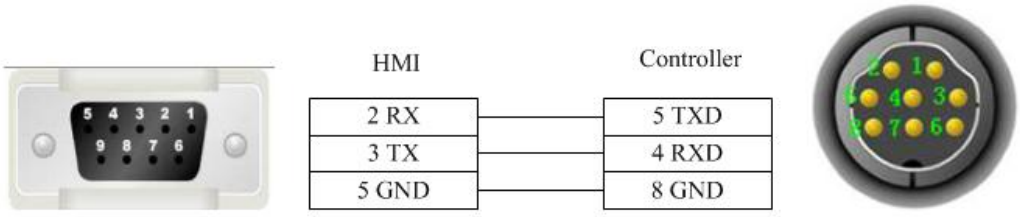
- Registers supported by **S7-1200**

Device	Bit Address	Word Address	Format	Notes

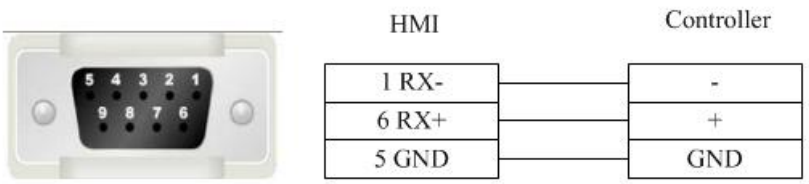
External output node	Q.B0.0-127.7	——	DDD.O	
External input node	I.B0.0-127.7	——	DDD.O	
Internal auxiliary node	M.B0.0-2047.7	——	DDDD.O	
Data register node	DBn_DBX0.0-65535.7	——	DDDDD.O	The main address can be set during the hardware configuration.
External output register	——	QW0-126	DDD	
External output register (32 bit)	——	QD0-124	DDD	
External input register	——	IW0-126	DDD	
External input register (32 bit)	——	ID0-124	DDD	
Internal register	——	MW0-2046	DDDD	
Internal register (32 bit)	——	MD0-2044	DDDD	
Data register	——	DBn_DBW0-65534	DDDDD	The main address can be set during the hardware configuration.
Data register (32 bit)	——	DBn_DBD0-65532	DDDDD	The main address can be set during the hardware configuration.

THINGET

● **THINGET Controller** series **RS232** cable



● **THINGET Controller** Series **RS485-2** cable



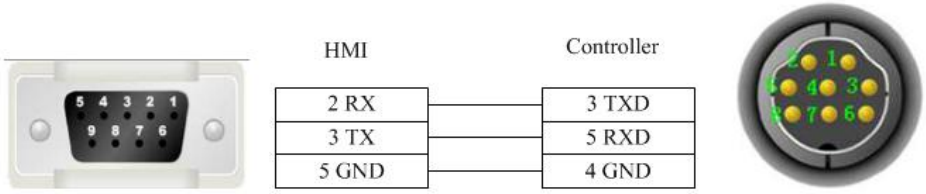
● Registers supported by **THINGET Controller**:

Device	Bit Address	Word Address	Format	Notes
Status node	S0-99999	——	DDDDD	
Counter node	C0-99999	——	DDDDD	
Timer node	T0-99999	——	DDDDD	
Interal relay node	M0-99999	——	DDDDD	
Output relay node	Y0.0-303237.7	——	OOOOOO.0	
Input relay node	X0.0-303237.7	——	OOOOOO.0	
FlashROM register	——	FD0-9999	DDDD	
Data register	——	D0-9999	DDDD	
Timer	——	TD0-9999	DDDD	
Counter	——	CD0-9999	DDDD	

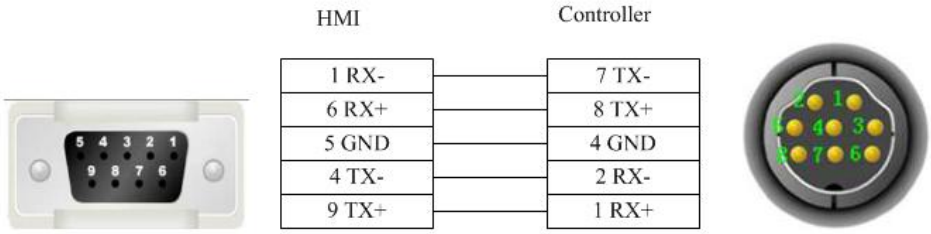
TRIO

1 TRIO _Modbus

● **TRIO_Modbus** series **RS232** cables



● **TRIO_Modbus** series **RS485-4** cable

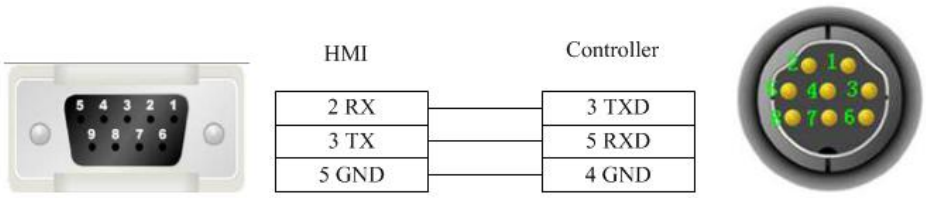


● Registers supported by **TRIO_Modbus**

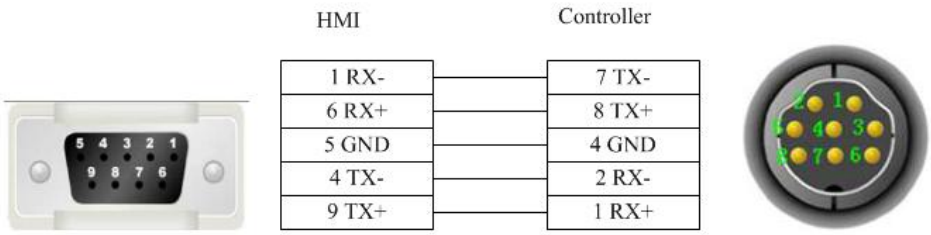
Device	Bit Address	Word Address	Format	Notes
System internal/external output node	0X1-65535	——	DDDDD	
System internal/external input node	1X1-65535	——	DDDDD	
Analog input data register	——	3X1-65535	DDDDD	
Data register	——	4X1-65535	DDDDD	

2 TRIO _Modbus_Extend

● **TRIO_Modbus_Extend** series **RS232** cable



● **TRIO_Modbus_Extend** series **RS485-4** cable



● Registers supported by **TRIO_Modbus_Extend**

Device	Bit Address	Word Address	Format	Notes
System internal/external output node	0X1-65535	——	DDDDD	
System internal/external input node	1X1-65535	——	DDDDD	
Analog input data bit	3X_BIT1.0-65535.15	——	DDDDD.DD	
Data register bit	4X_BIT1.0-65535.15	——	DDDDD.DD	
Analog input data register	——	3X1-65535	DDDDD	
Data register	——	4X1-65535	DDDDD	
Data register	——	5X1-65535	DDDDD	
Data register	——	6X1-65535	DDDDD	
Data register	——	3X-DINV1-65535	DDDDD	
Data register	——	4X-DINV1-65535	DDDDD	

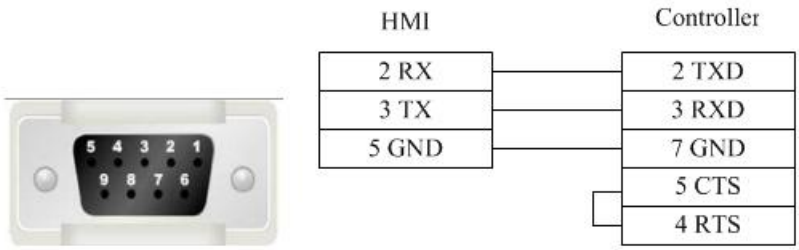
3 Differences between TRIO _Modbus and TRIO _Modbus_Extend

Many data memory such as analog input data bit, data register bit and data register are added into **TRIO_Modbus_Extend** on the base of **TRIO_Modbus.**

Yaskawa

1 Yaskawa

● **Yaskawa MP Series SIO (Extension)** cable



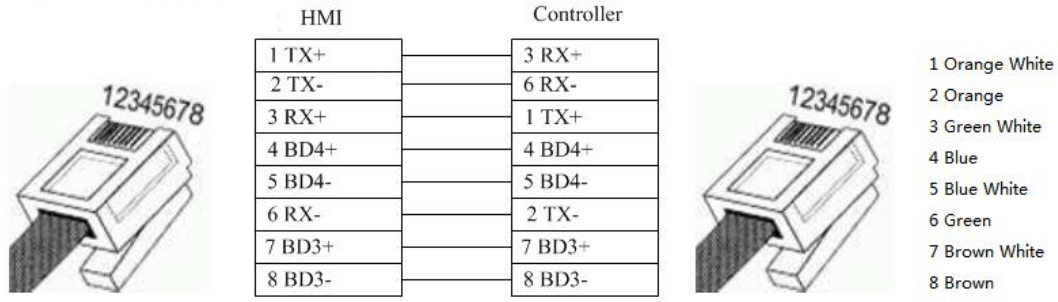
● Registers supported by **Yaskawa MP Series SIO (Extension):**

Device	Bit Address	Word Address	Format	Notes
Coil	MB0.0-65534.F	——	DDDDD.H	
Inputrelay	IB0.0-FFFF.F	——	HHHH.H	
Hold register	——	MW0-65534	DDDDD	
Input register	——	IW0-FFFF	HHHH	

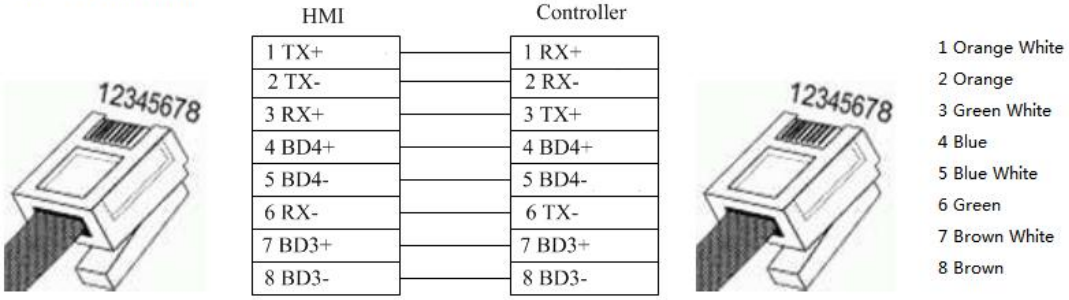
2 Yaskawa Network Device

● **Yaskawa UDP Slave** cable

Across connection



Direct connection



● Registers supported by **Yaskawa UDP Slave:**

Device	Bit Address	Word Address	Format	Notes
Coil	MB0.0-65534.F	——	DDDDD.H	
Inputrelay	IB0.0-FFFF.F	——	HHHH.H	
Output relay	QB0.0-FFFF.F	——	HHHH.H	

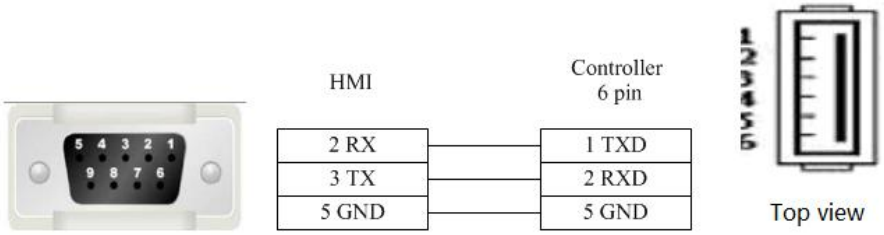
Hold register	——	MW0-65534	DDDDD	
Inputregister	——	IW0-FFFF	HHHH	
Output register	——	QW0-FFFF	HHHH	
Hold register	——	ML0-65534	DDDDD	

Yokogawa

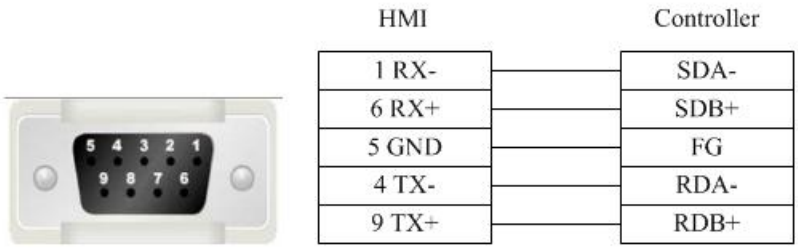
● **Yokogawa FA-M3** series **RS232** cable

Yokogawa serial port programming cable is used to communicate with the **HMI** device.

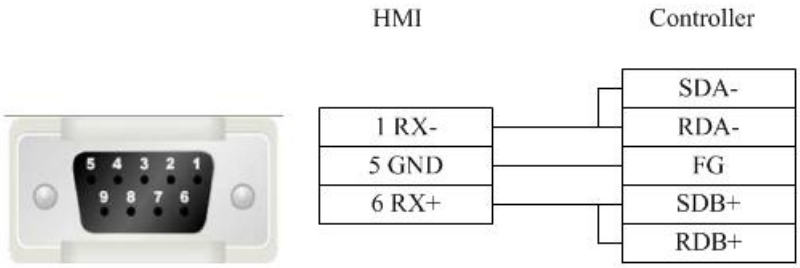
● **Yokogawa FA-M3** series **RS232** cable



● **Yokogawa FA-M3** series **RS485-4** cable



● **Yokogawa FA-M3** series **RS485-2** cable



● Registers supported by **Yokogawa FA-M3**:

Device	Bit Address	Word Address	Format	Notes
Input relay	X1.65535	——	DDDDD	
Output relay	Y1.65535	——	DDDDD	

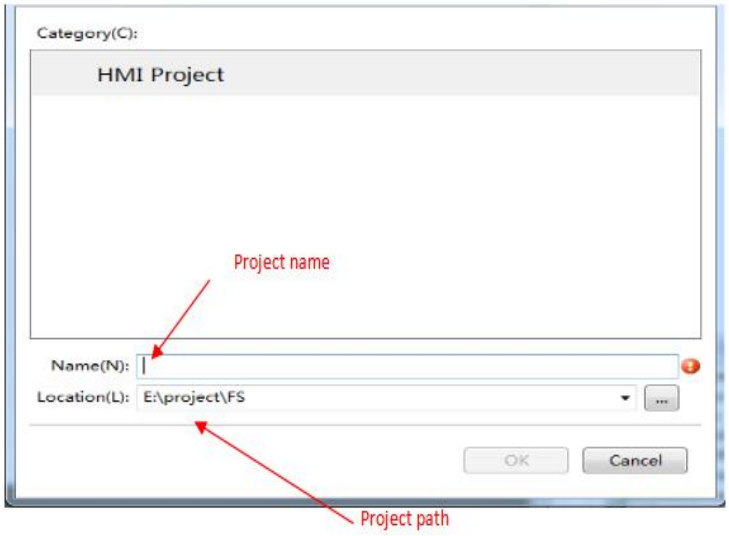
Internal relay	I1.65535	——	DDDDD	
Special relay	M1.65535	——	DDDDD	
Link relay	L1.65535	——	DDDDD	
Data register	——	D_word1. 65535	DDDDD	
File register	——	B_word1. 65535	DDDDD	
Index register	——	V_word1. 65535	DDDDD	
Link register	——	W_word1. 65535	DDDDD	
Special register	——	Z_word1. 65535	DDDDD	

4 Detailed Manual

4.1 File

4.1.1 Create New Project

Shortcut key: **<Ctrl>+<N>** It is used to create a new project.
After the project is correctly created, a file folder with the same name will be created to save the project files related.



Please refer to **First Use** for the following settings.

4.1.2 Open Project

Shortcut key: **<Ctrl>+<O>** It is used to open an existing project other than any project repeatedly.
After the software is opened, click and open the project with the file suffix name ***.fsprj.**
Remark: if the software is correctly installed, the user can directly open the project by clicking the corresponding file with the ***.fsprj** suffix in the Windows Explorer.

4.1.3 Close Project

Close the current project without exiting the software, usually used for switching among projects.

4.1.4 Save Project

Shortcut key: **<Ctrl>+<S>** Save the project being edited.

4.1.5 Save Project As

Use a new path or new name to save the current project (without deleting the previous project).

4.1.6 Project Used Recently

Display the paths of 10 projects opened recently and each one can be directly opened by clicking.

4.1.7 Exit

Shortcut key: **<Alt>+<X>** It is used to close the project and exit the software.

4.2 View

4.2.1 Project

Open/close project view which is the tree structure and easy to modify such as **HMI setting**, **Window**, **Communication connection**, **System setting**, **Library**, **macro**, and P**rescription**, and so on. Details can be seen in Detailed manual /Setup.

4.2.2 Window

Open/close the window view and use the tree structure and easy to modify the **Power-on Screen**, **Common Window**, **Basic Window**, **Keyboard Window** and **System Window**.

(1) Power-on Screen

It is the window displayed at startup. Any picture expected to be used by the user, such as the company logo, can be displayed. But it will disappear after a while before entering the configuration screen. The picture formats supported are **BMP, JPG, GIF** and **PNG**.

(2) Common window

The **Common Window** always exists and common window attributes are effective no matter the configuration screen is on a basic window or a pop-up window. The general effective components such as t macro and timer can be set in this window.

(3) Drop-down Window

The **Drop-down Window** can be operated to edit the content of the drop down list when the configuration screen is running. But this function is only effective for a capacitor screen.

(4) Basic Window

The attribute of **Basic Window** can be viewed or modified here. The window of number 29001~29006 is provided to log on with the user's authority for the user. It can be directly used in the software.

(5) Create Basic Window

A new basic window can be created by clicking **Create Basic Window** in the software picture. The window name, size and other attributes need to be set. The new basic window can also be created in the default attributes.

(6) Keyboard Window

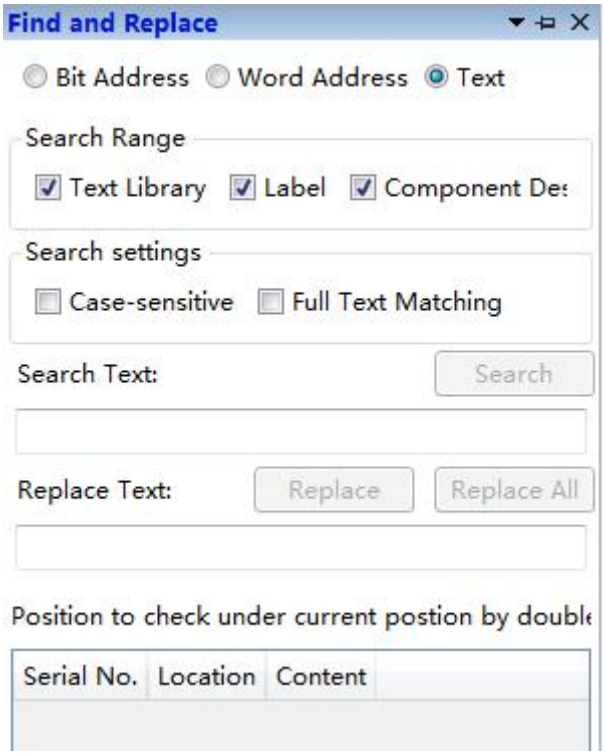
The **Keyboard Window** attributes can be viewed or modified after clicking here. And a customized keyboard can be created which used in the software.

(7) System window

For example, the **System Window** of communication faulty information.

4.2.3 Find and Replace

Open/close the **Find and Replace** view, used to search or replace any word address, bit address or text used in the current project.



4.2.4 Error

Open/close the **Error** view. All errors collected during compiling are recorded here.

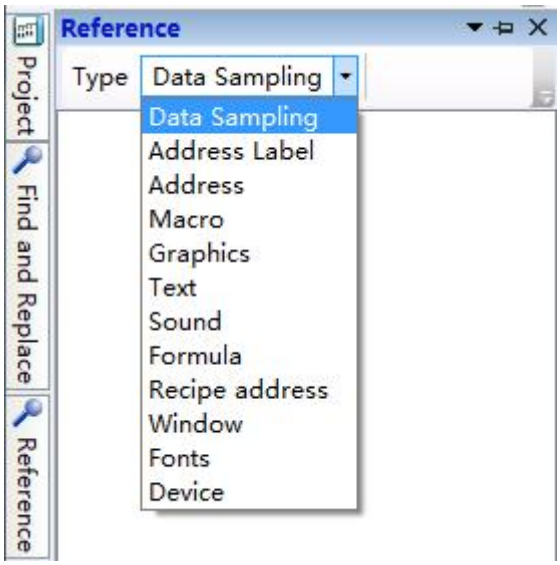
4.2.5 Output

Open/close the **Output** view. The compiling information can be output and displayed here.

4.2.6 Reference

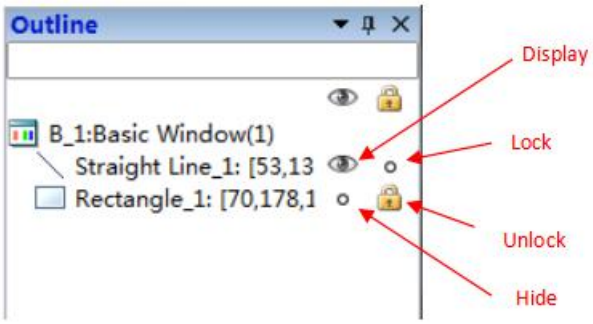
Open/close the **Reference** view. The reference information is collected and displayed here.

The information used by the current project such as address, macro and prescription can be viewed quickly.



4.2.7 Outline

Open/close the **Outline** view, and list all available components on the current window. One or all components can be quickly hidden or locked.



4.2.8 Restore to the Default View

Readjust the view arrangement of the software and restore the default arrangement.

4.2.9 Current Language

Select the current displaying language and the checked language is the current displaying language.

Note: the language refers to the content edited well by the current project other than translated by the system automatically!

4.2.10 Current Status

The checked Status is the current status. It is used to quickly display the display effect of components used in the current project window in different states.

4.3 Edit

4.3.1 Cancel

Cancel the operation and go back to the previous one.

4.3.2 Recovery

Recover the last action canceled.

4.3.3 Find/Replace

Set the designated searching range and search the bit address/ word address/ text or replace with a new bit address/ word address/ text.

4.3.4 Cut

Cut away the selected component and temporarily save it on the clipboard.

4.3.5 Copy

Copy the selected component and temporarily save it on the clipboard

4.3.6 Multi-Copy

Set the copy range, quantity, interval and direction, and make the addresses change in any rule to obtain more components (many components can be copied and pasted integrally, and the addresses will change orderly).

4.3.7 Paste

Paste the content of the clipboard onto the project.

4.3.8 Delete

Delete the selected components from the project.

4.3.9 Fine Tuning

Move left/right/up/down for one unit.

4.3.10 Alignment

It is effective only when many components are selected. It is used to align these components on the left, on the vertical middle line, on the right, on the up, on the horizontal middle line, or on the bottom.

4.3.11 Size

It is effective only when many components are selected. It is used to set these components to the same width, height or same size.

4.3.12 Layer

It is effective only when the component is selected. It is used to set the component to the top, to the bottom, to the previous layer, to the next layer, or set many components in the same horizontal space or in the same vertical space.

4.3.13 Same Color

It is effective only when many components are selected. It is used to set all components in the same color.

4.3.14 Group

Integrate many components.

4.3.15 Ungroup

Make the components of group to restore into individuals.

4.3.16 Center Horizontally

Center all selected components horizontally in the window.

4.3.17 Center Vertically

Center all selected components vertically in the window.

4.3.18 Lock

Lock the position of the component and stop it from size adjusting or position adjusting.

4.3.19 Unlock

Unlock a locked component and restore it to the state that its size or position can be adjusted.

4.4 Window

4.4.1 Create New Window

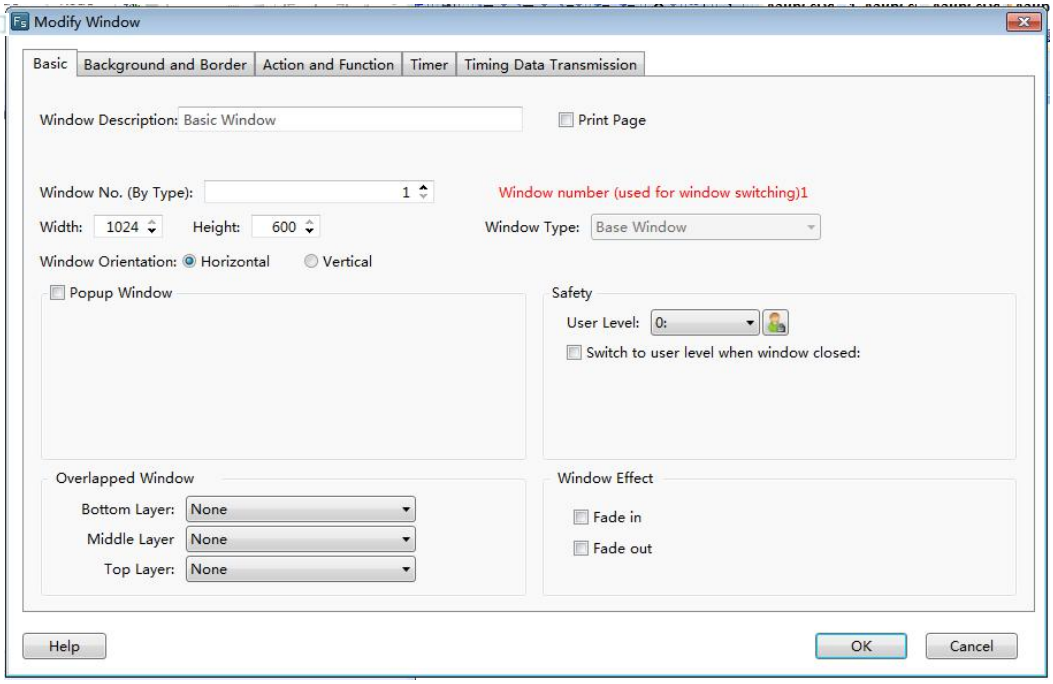
Create a new window and allow the user to set the window number, width, height and any other basic attribute or function.

4.4.2 Delete Window

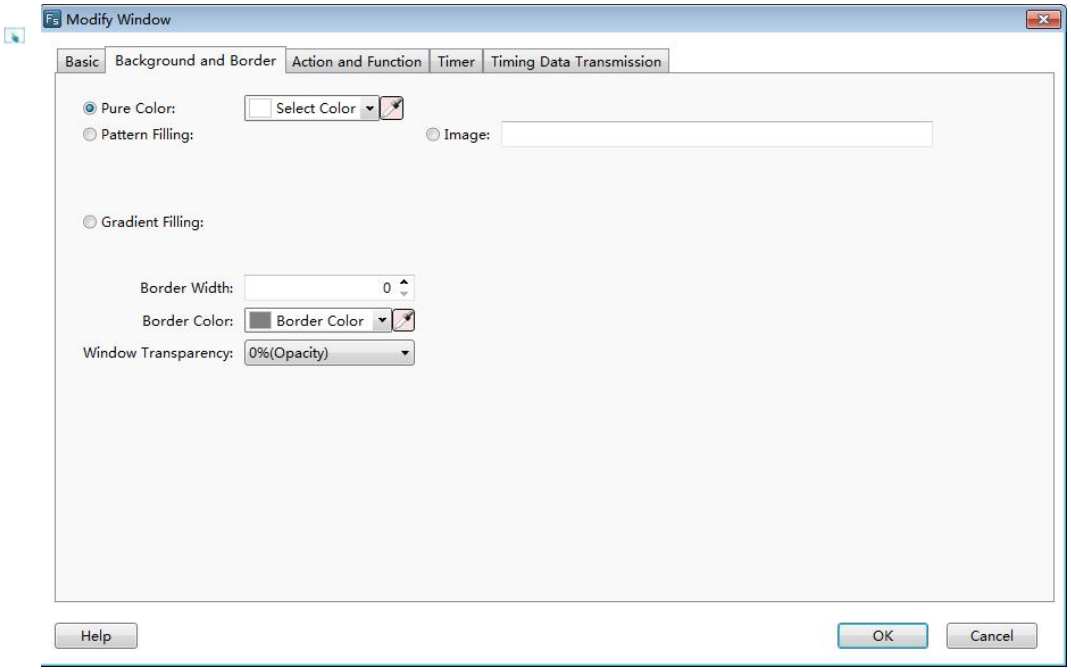
Delete the selected window

4.4.3 Current Window Properties

Set the current window attributes and allow the user to set the window number, width, height and any other basic attribute or function.
(1) Basic

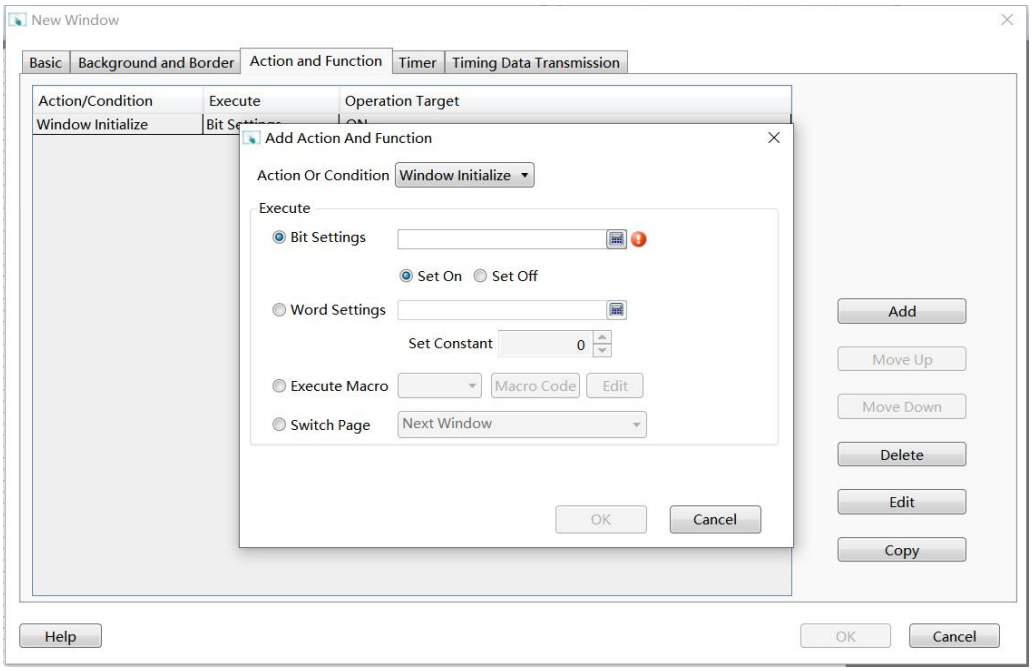


(2) Background and Border



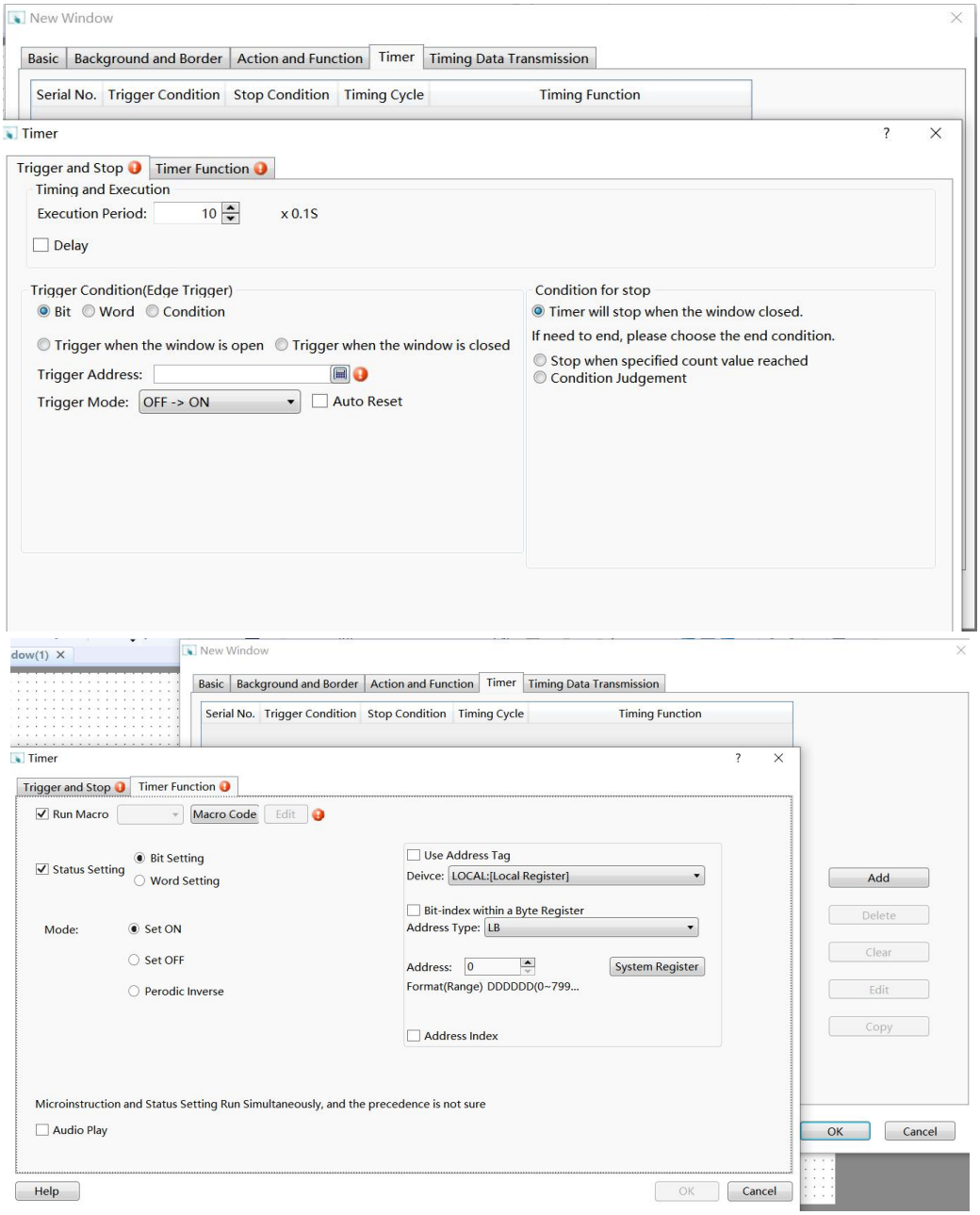
(3) Action and Function

The action to open or close a window can be used to activate a bit, a word, a macro command or switch among windows.



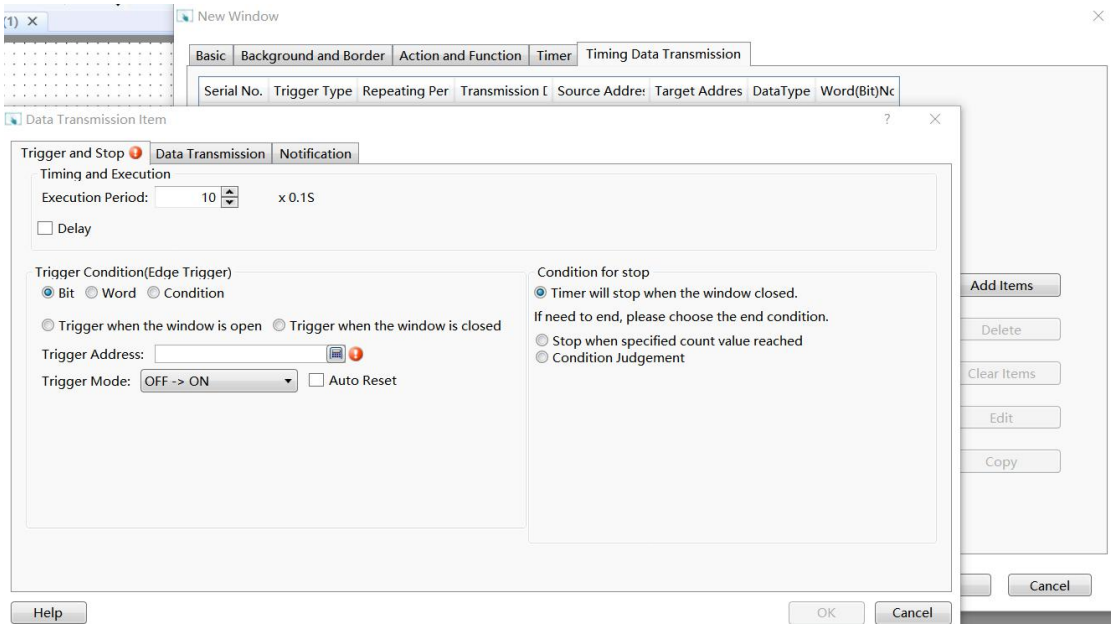
(4) Timer

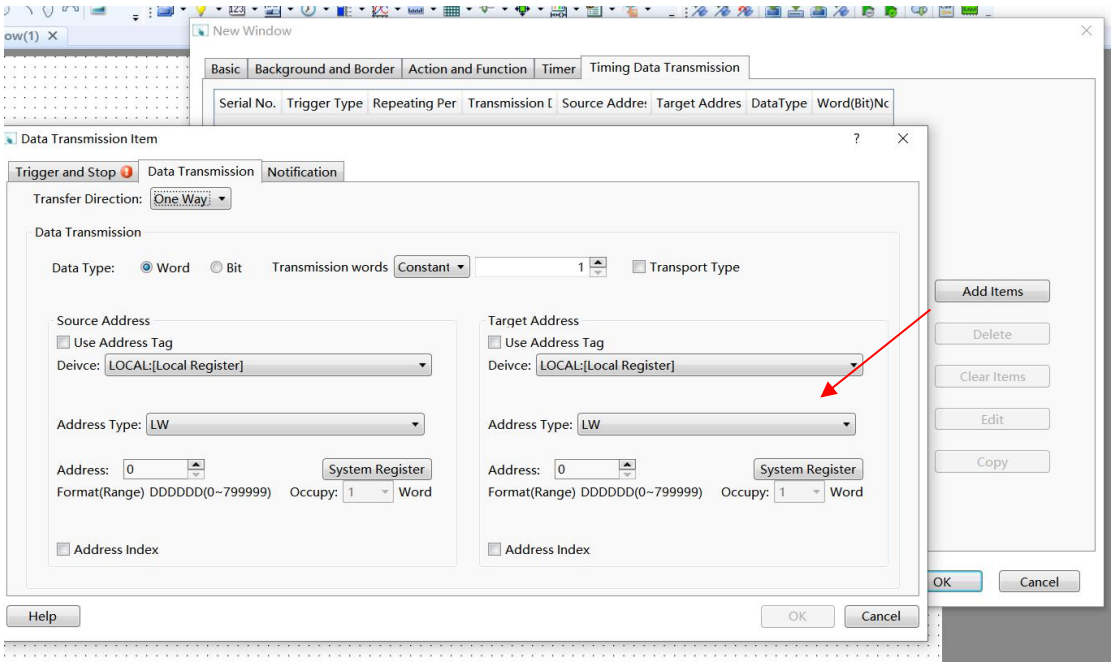
It is used to set an executing cycle. You can execute a macro or directly set a word or a bit according to the trigger conditions.

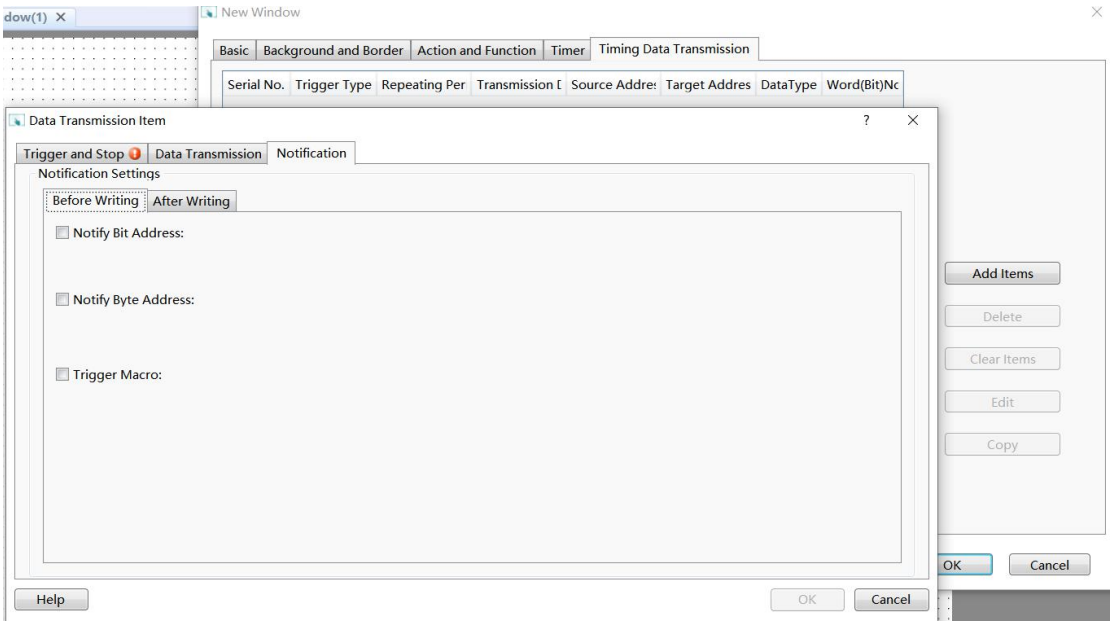


(5) Timing Data Transmission

It is used to transmit words or bits in batches. And an action can be set before or after write-in.







4.4.4 Edit Starting LOGO Window

The user can set the properties of the Power-on Screen window (double click the window after open the Power-on Screen)

4.4.5 Show the Public Window

Display/hide the Public Window and facilitate the user to view the effect of the Public Window displayed/hidden in the Basic Window.

4.4.6 Show the Lower Layer Window

Display/hide the lower layer window (the three lower layer windows are effective at the same time) and facilitate the user to view the effect of lower layer window displayed/hidden in the basic window.

4.4.7 Jump to the Target Window

When the selected component is integrated with a paging function, it is used to jump to the target screen window.

4.4.8 Show Grid

Display the grid and facilitate the user to view the position of components.

4.4.9 Grid Alignment

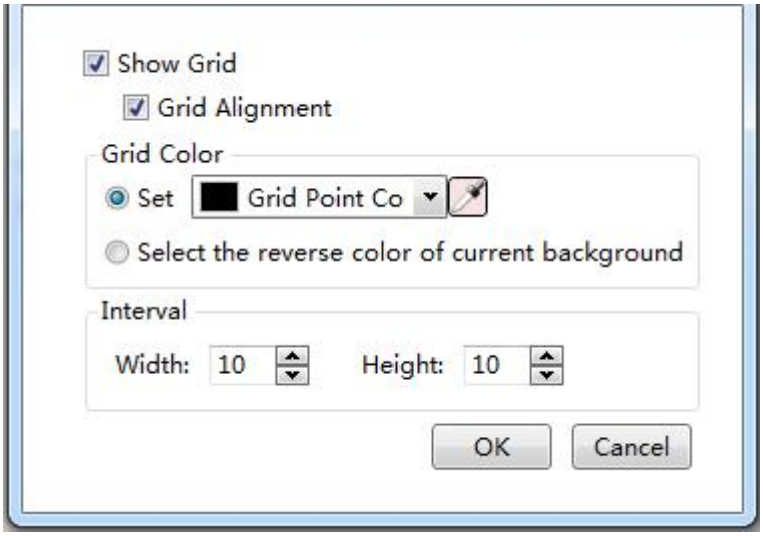
Facilitate components aligning by the grid alignment function.

4.4.10 Align to Alignment line

Activate the function of aligning the components in a line.

4.4.11 Grid Setting

Pop up the Grid Setting window. The user can customize the grid color and space here.

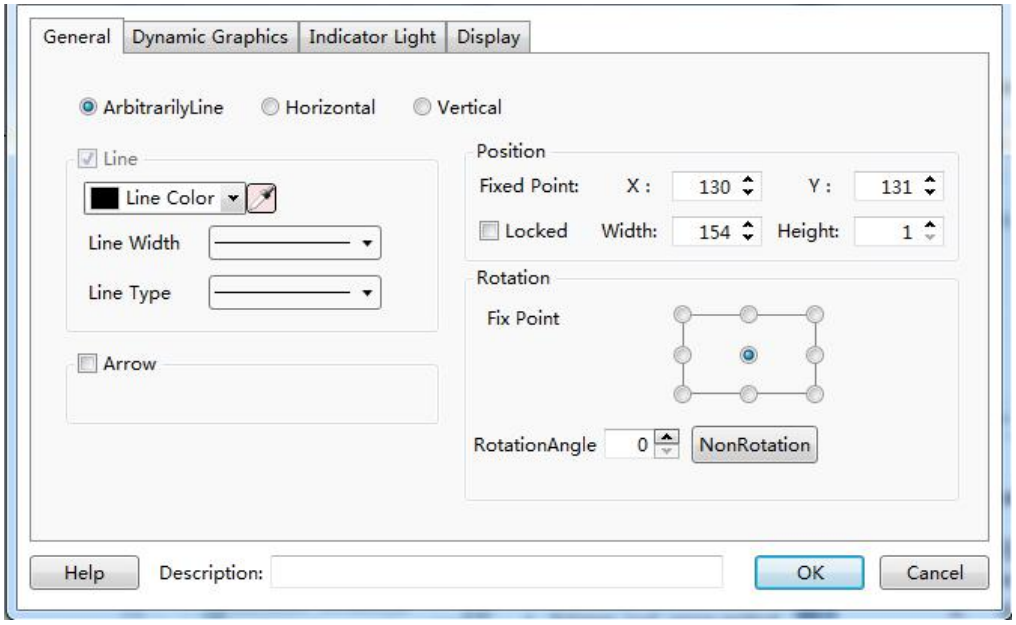


4.4.12 Window Zoom

Resize the window in a proportion including 50%, 75%, 100%, 125%, 150%, 175%, or 200%.

4.5 Drawing

4.5.1 Straight Line



(1) General

Arbitrarily Line:

The user can draw a straight line at will.

Horizontal:

Rotate the straight line drawn by the user to the horizontal position around the center point.

Vertical:

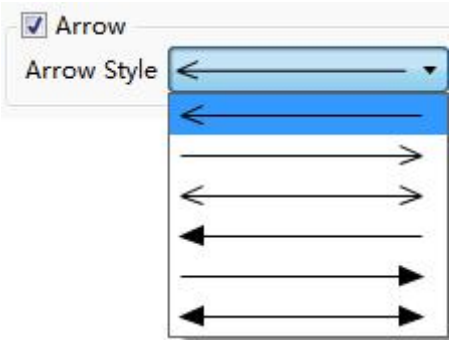
Rotate the straight line drawn by the user to the vertical position around the center point.

Line:

See Detailed manual/General functions/Drawing/Border settings

Arrow:

The user can set the arrow pattern in the combo box, see the figure below.



Position:

See Detailed manual/General functions/Position.

Rotate

See Detailed manual/General functions/Rotation..

(2) Dynamic Graphics

See Detailed manual/General functions/Dynamic Graphics

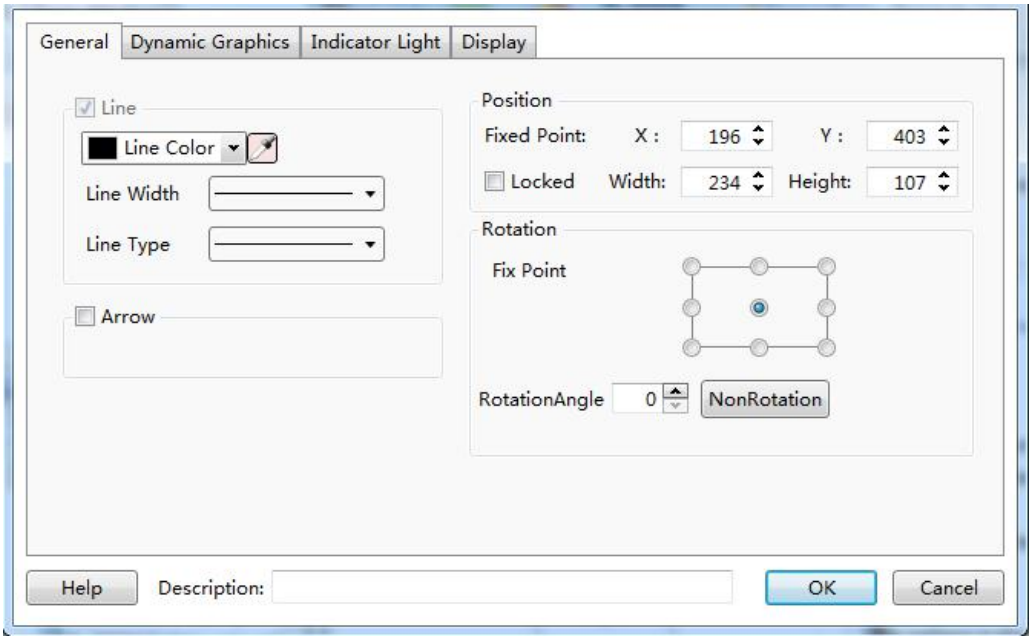
(3) Indicator Light

See Detailed manual/Component/Indicator Light for the details.

(4) Display

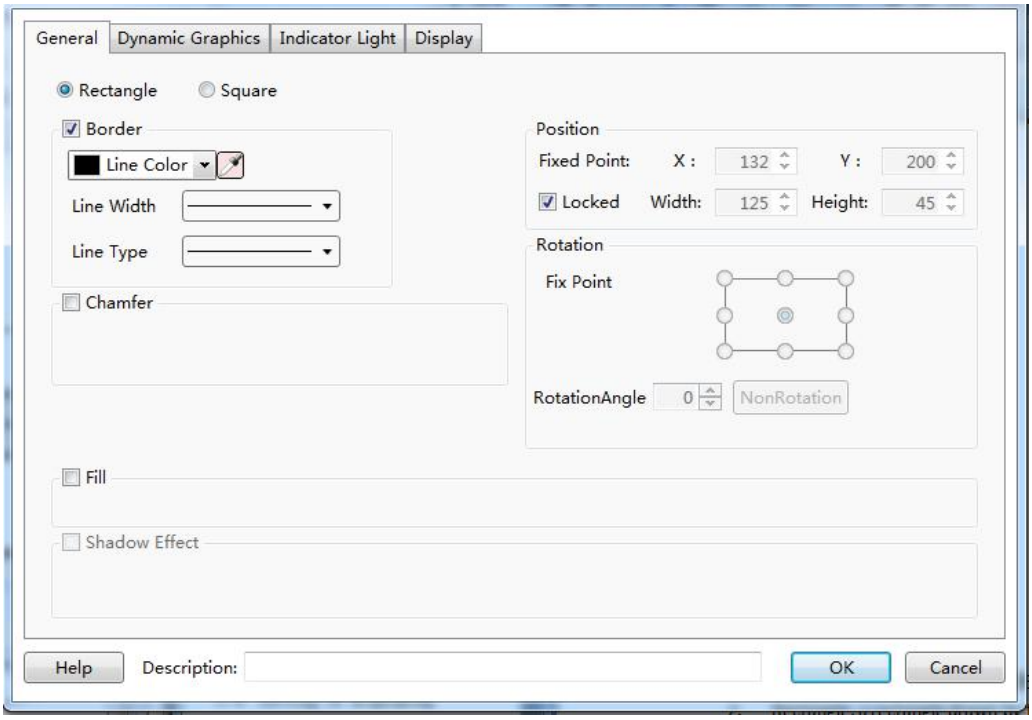
See Detailed manual/General functions/Display for the details.

4.5.2 Fold Line



Click the left key to fix the fold line point in drawing. And click the right key to finish drawing. See details in: Detailed Manual/ Drawing/ Straight Line.

4.5.3 Rectangle



(1) General

Rectangle:

A rectangle is set to be drawn by the user.

Square:

Make the rectangle width equal to its length, and thus it is set into a square.

Border:

See Detailed manual/General functions/Drawing/Border settings.

Chamfer:

After it is checked, edges of the rectangle drawn by the user can be chamfered in Line type (as shown in Fig. a) or in Fillet type (as shown in Fig. b). The maximum chamfering length cannot be larger than 1/2 of the shortest side length.

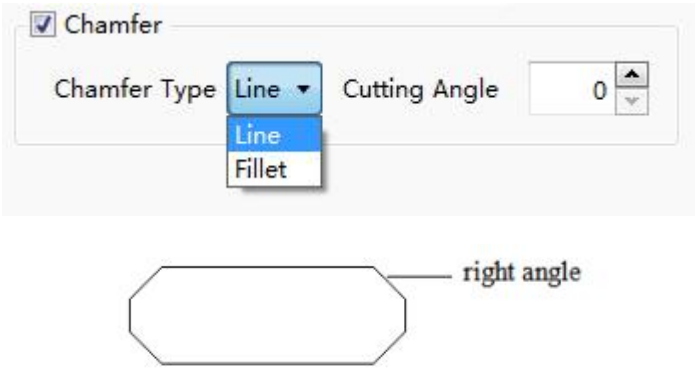


Fig. a

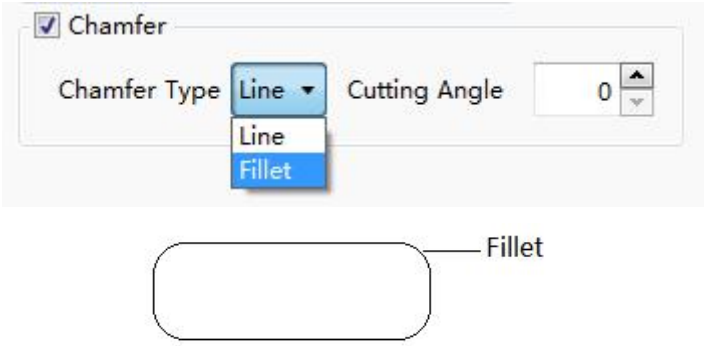


Fig. b

Position:

See Detailed manual/General functions/Position.

Rotate:

See Detailed manual/General functions/Rotation.

Fill:

See Detailed manual/General functions/Drawing/Filling settings.

Shadow Effect:

See Detailed manual/General functions/Shadow Effect.

(2) Dynamic Graphics

See Detailed manual/General functions/Dynamic Graphics.

(3) Indicator Light

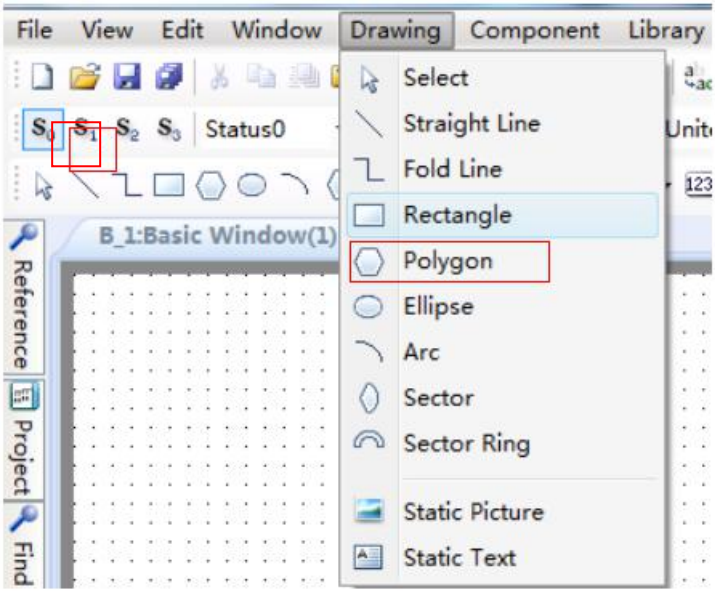
See Detailed manual/Component/Indicator Light for the details.

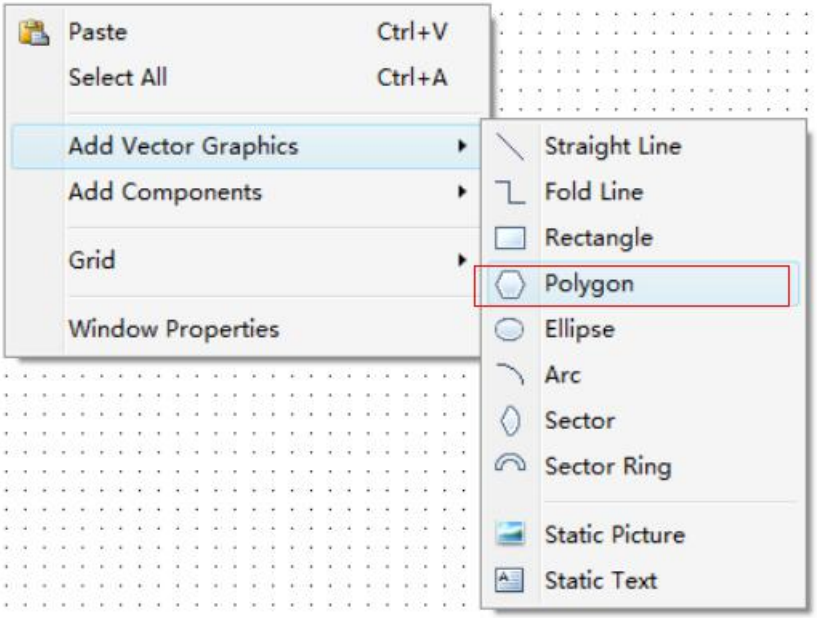
(4) Display

See Detailed manual/General functions/Display for the details.

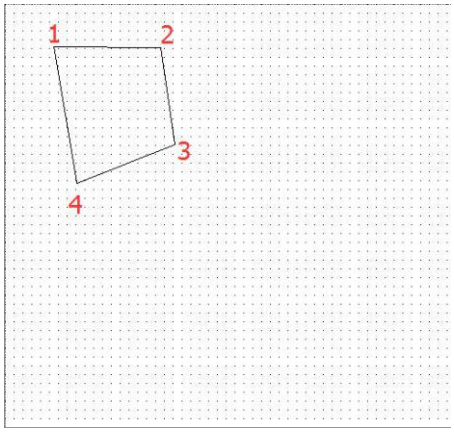
4.5.4 Polygon

Draw a polygon by click the polygon tool. You can find the polygon tool in the shortcut tool bar, the shortcut menu and the pull-down menu.

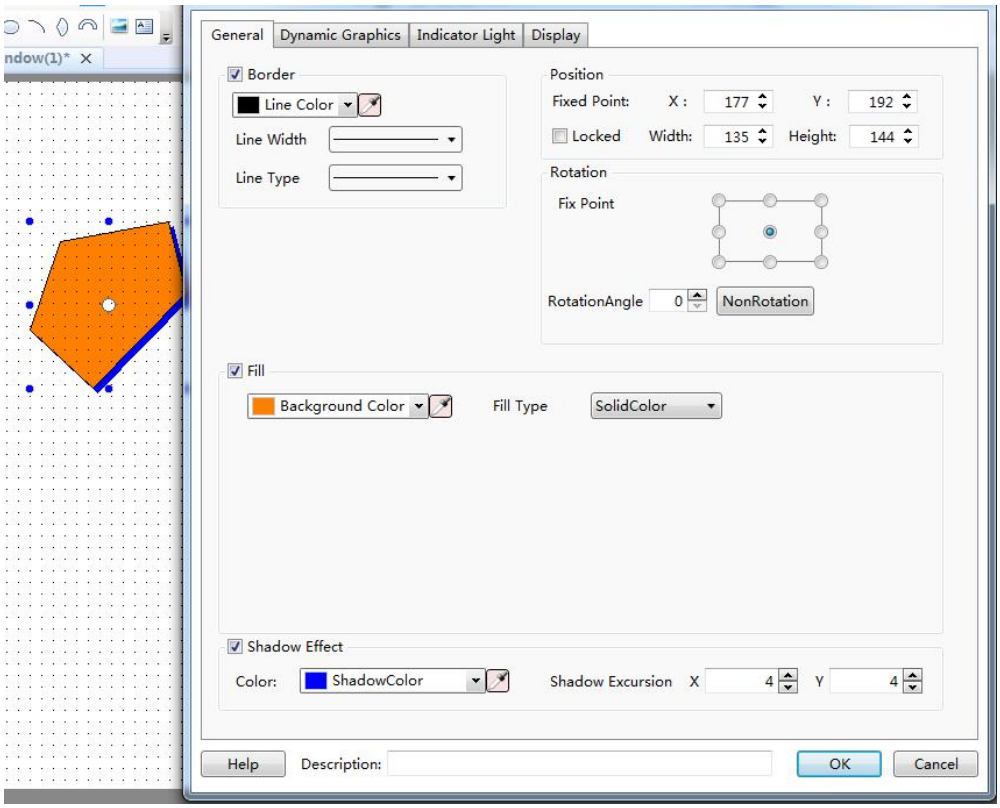




A side will be added every time when the left key is clicked. After all sides are obtained, a polygon can be obtained by clicking the left key and then clicking the right key.



(1) General



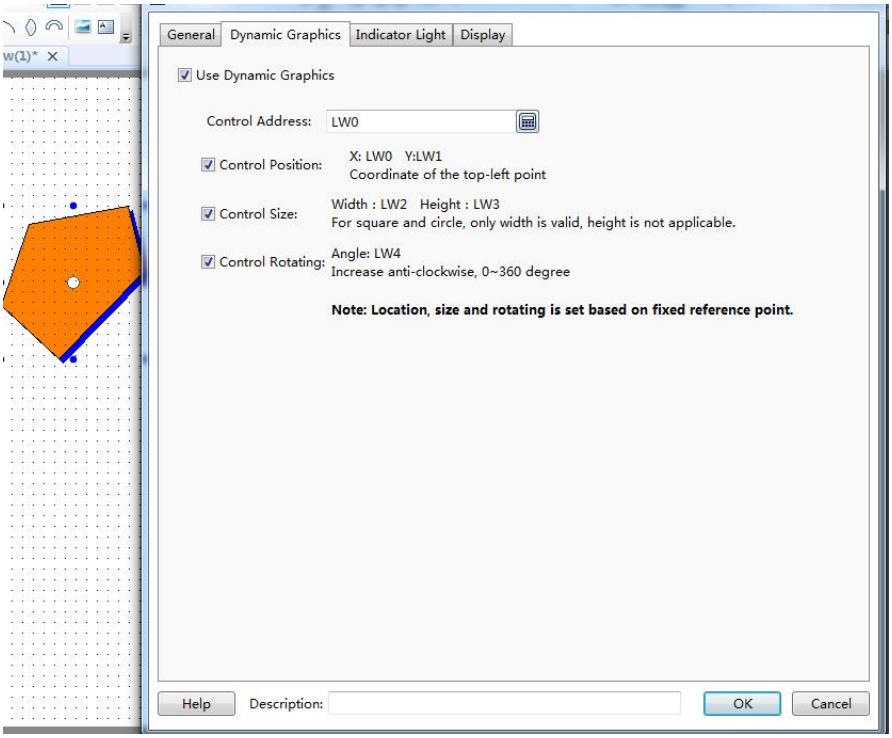
(a)Frame line pattern and frame line width

(b)Polygon filling color

(c)Polygon shadow effect

Please see details for the using method of polygon drawing.

(2) Dynamic Graphics



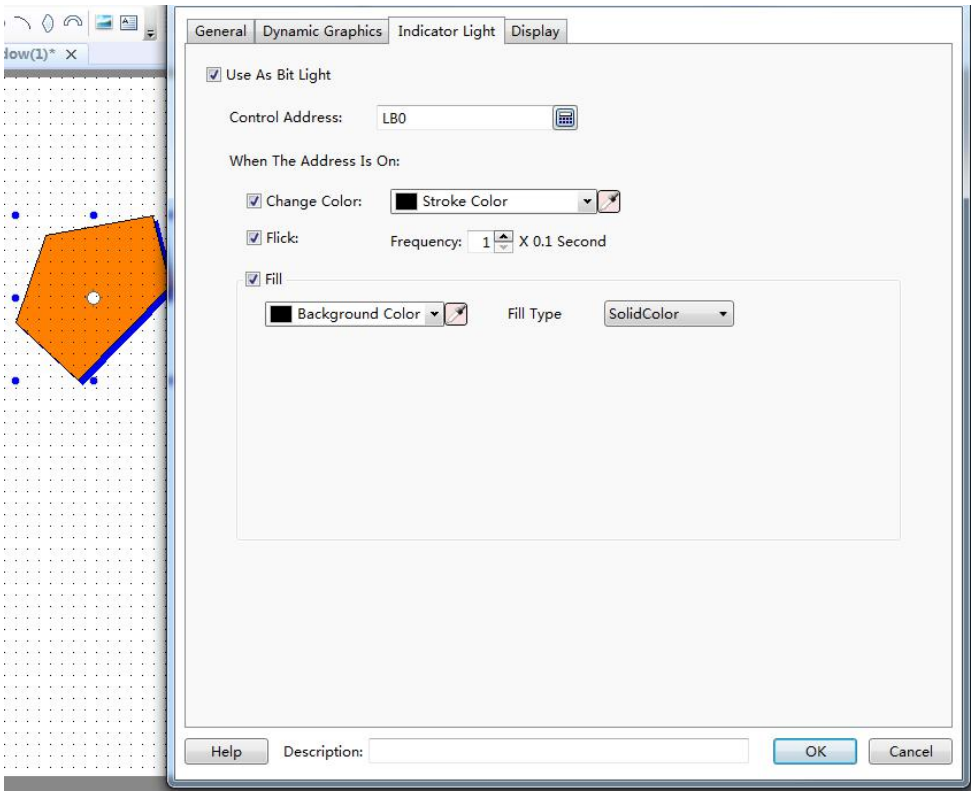
(a) Position control

(b) Size control

(c) Rotation control

Please see Detailed manual/General functions/Dynamic Graphics.

(3) Indicator Light



(a) Modify the frame color

(b) Control the frequency of flickering

(c) Modify the filling color

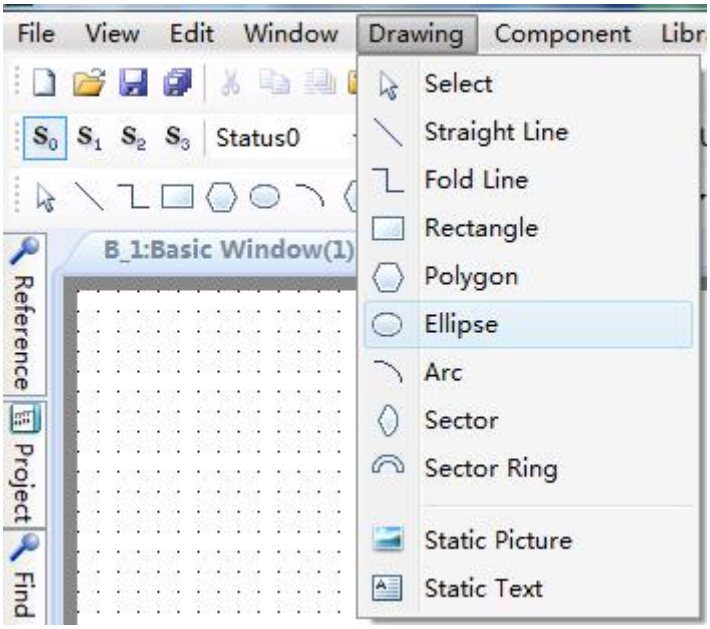
See Detailed manual/Component/Indicator Light for the details.

(4) Display

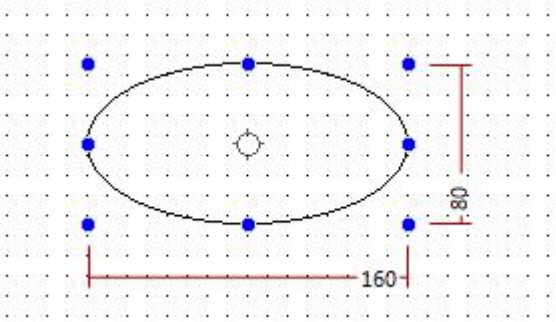
See Detailed manual/General functions/Display for the details.

4.5.5 Ellipse

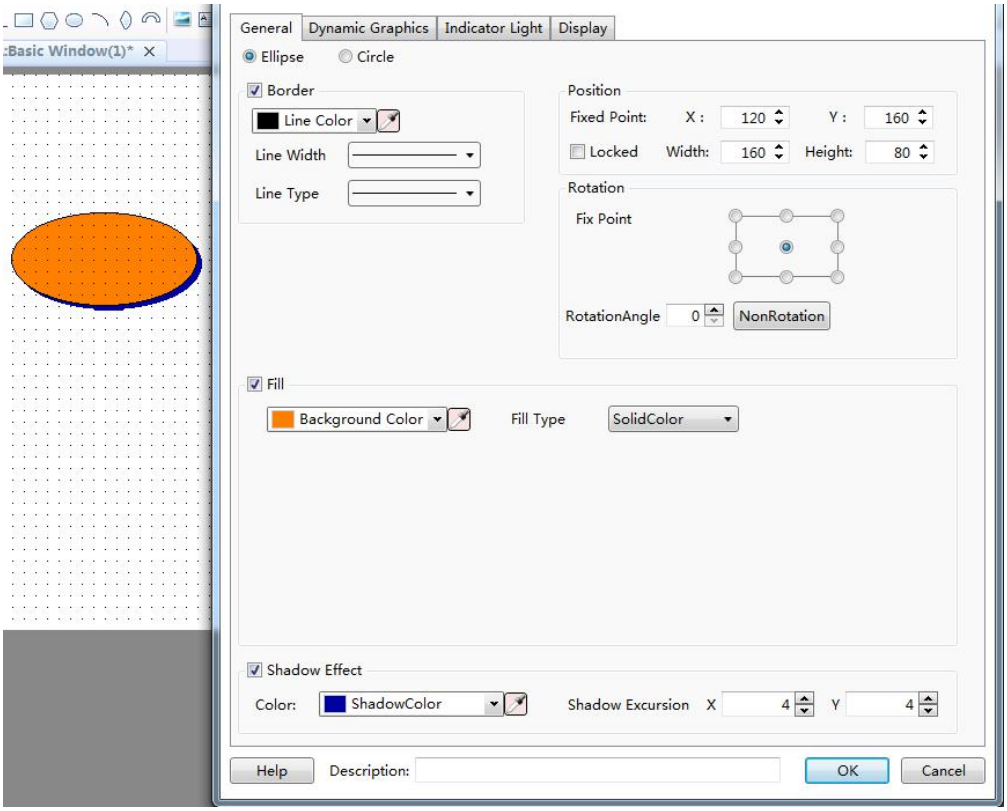
Click the ellipse icon on the tool bar by the left key, or select **Ellipse** command from the menu of Drawing.



Click and hold the editing area in the window, and drag the mouse to modify the ellipse size and shape.



(1) General

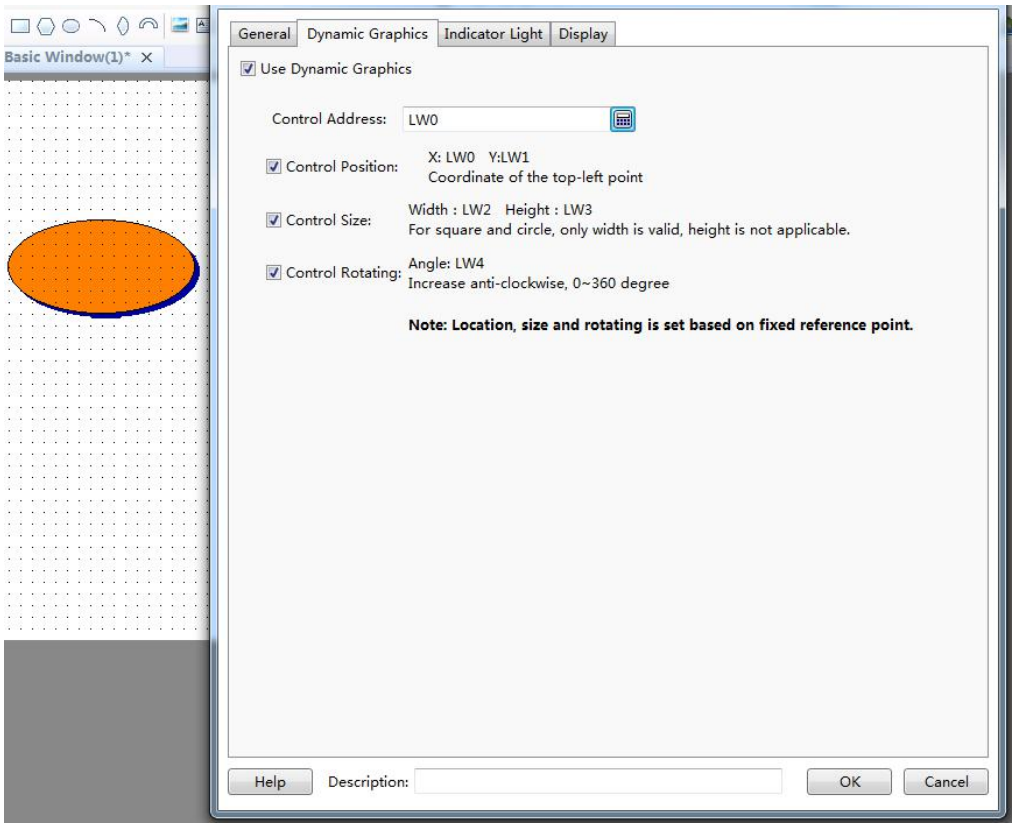


(a) Ellipse border color, width and pattern

(b) Ellipse filling color

(c) Ellipse shadow effect.

(2) Dynamic Graphics



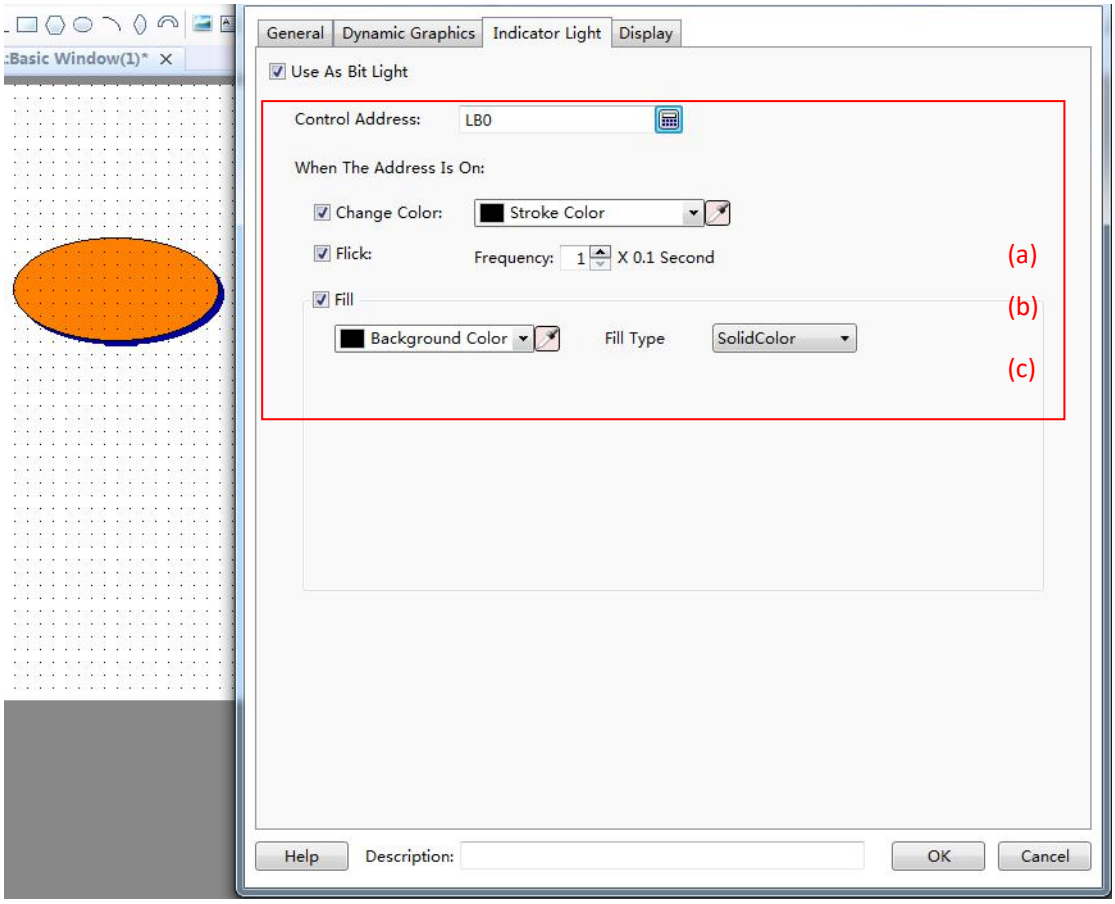
(a) Position control

(b) Size control

(c) Rotation control

See Detailed manual/General functions/Dynamic Graphics for the details.

(3) Indicator Light



(a) Modify the frame color

(b) Control flickering frequency

(c) Modify the filling color

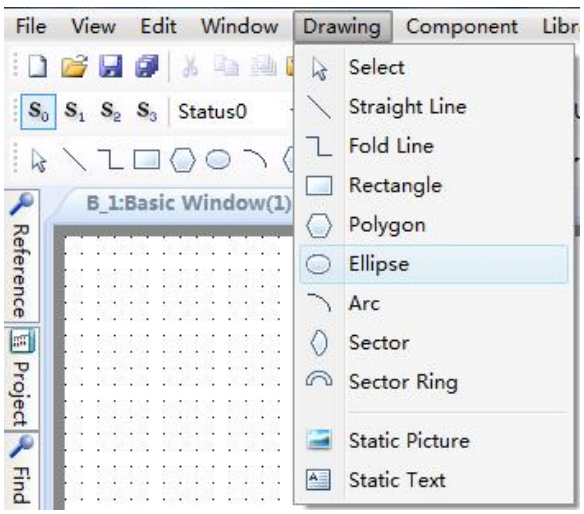
See[Detailed manual/Component/Indicator Light for the details.]

(4) Display

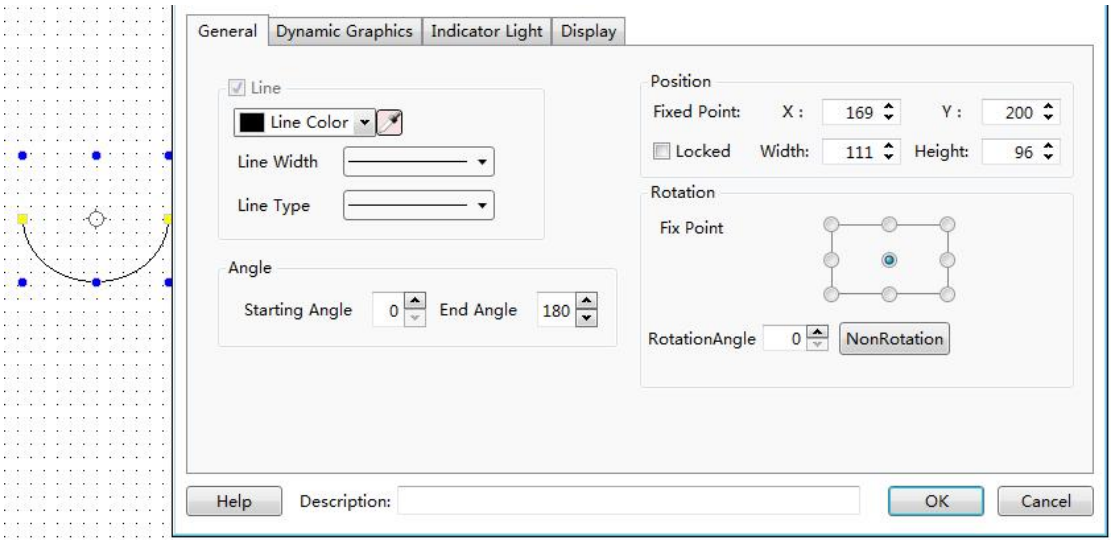
See [Detailed manual/General functions/ Display for the details.]

4.5.6 Arc

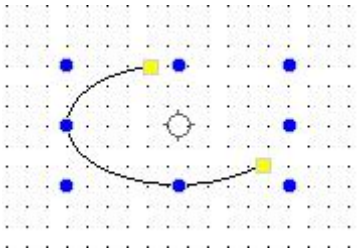
An arc can be drawn in a designated area. The arc component command can be found on the tool bar or from the menu of Drawing.



Select the arc component, designate any area to draw, and double click to set the arc properties.

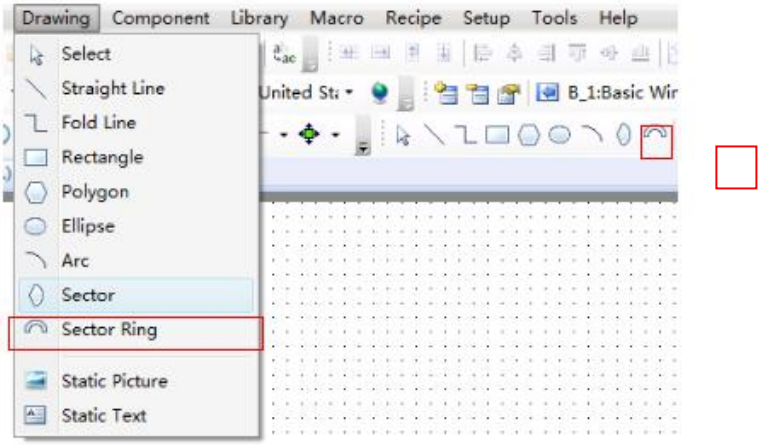


An arc can be got by setting the properties such as line color, width, type, starting angle, end angle, position and rotation. It can be freely drawn by dragging the yellow and blue areas.

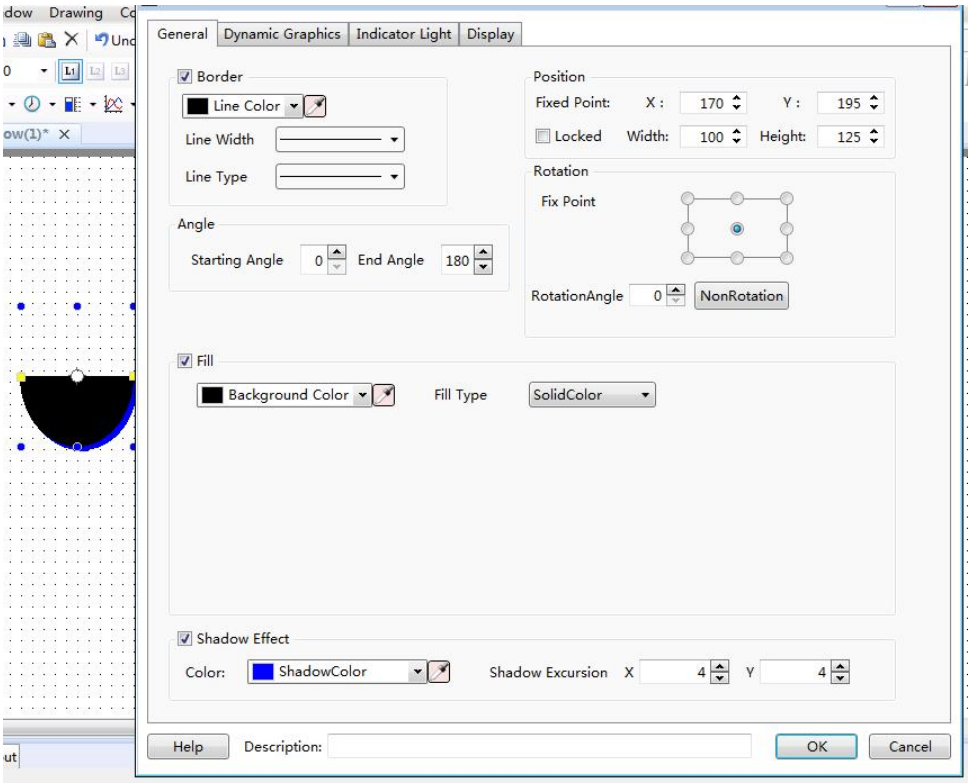


4.5.7 Sector

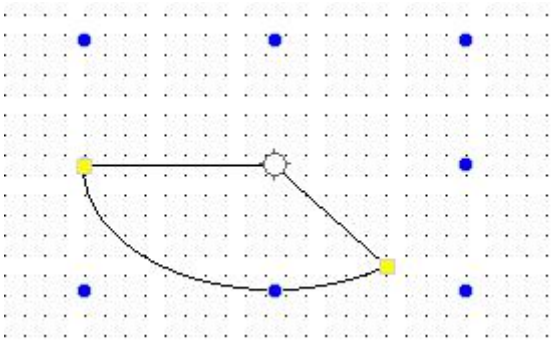
A sector can be drawn in a designated area. The sector component command can be found on the tool bar or from the menu of Drawing.



Select the sector component, designate any area to draw, and double click to set the sector properties.

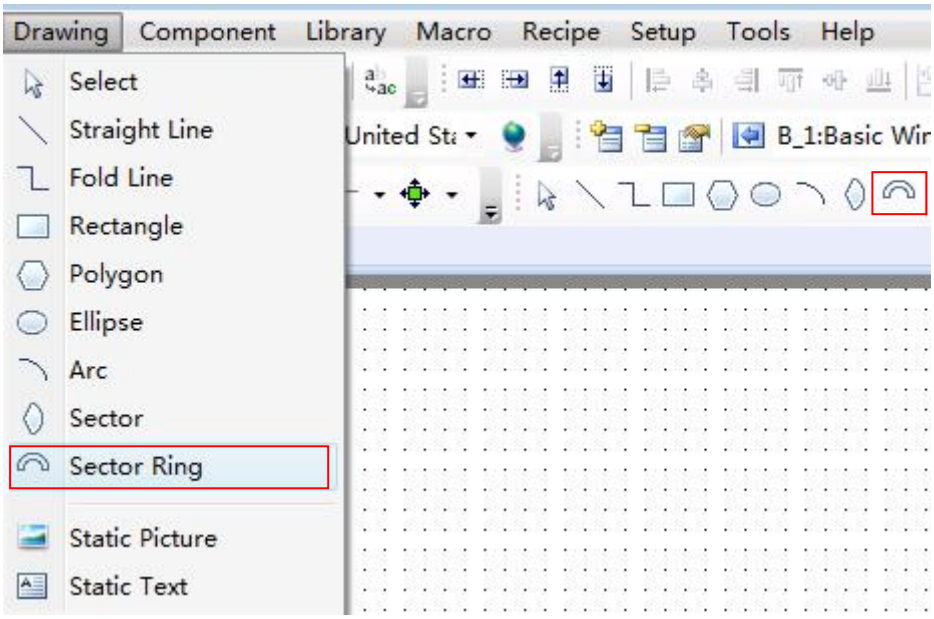


A sector can be got by setting the properties such as line color, width, type, starting angle, end angle, position, rotation, fill color, fill type and shadow effect.It can be freely drawn by dragging the yellow and blue areas.

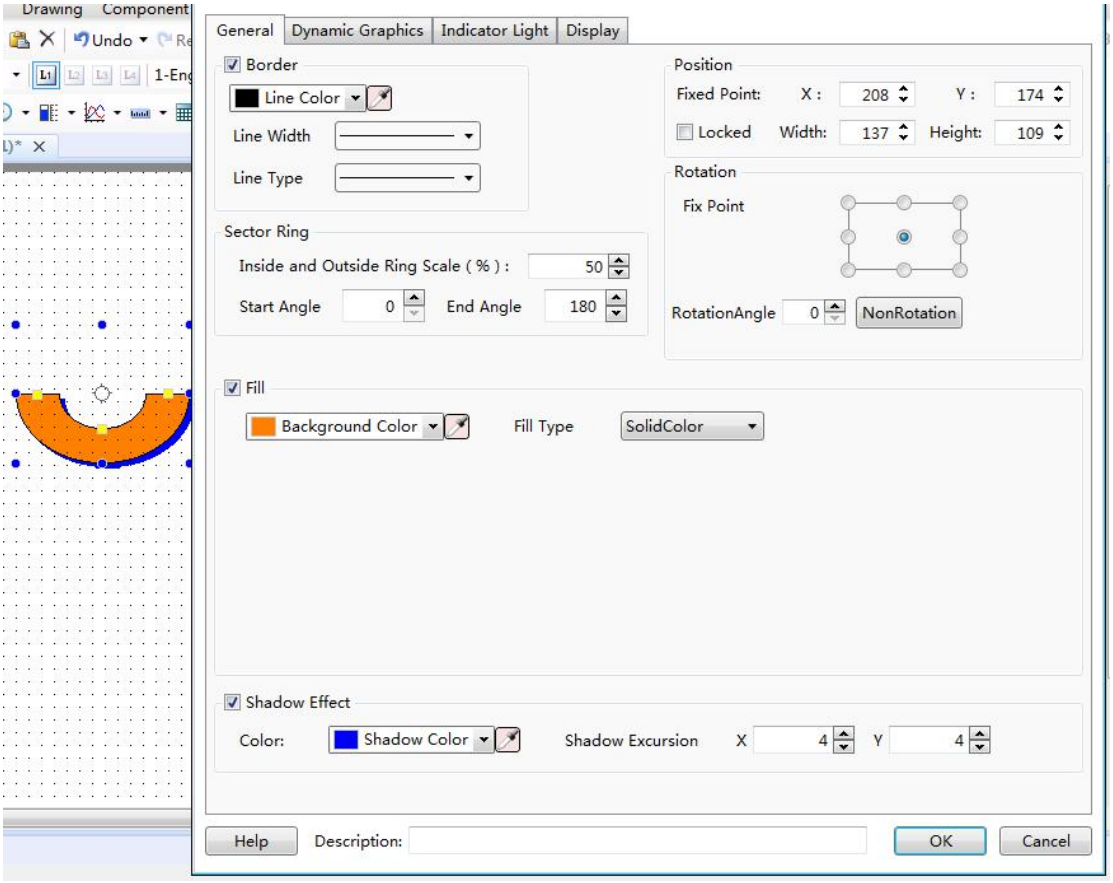


4.5.8 Sector Ring

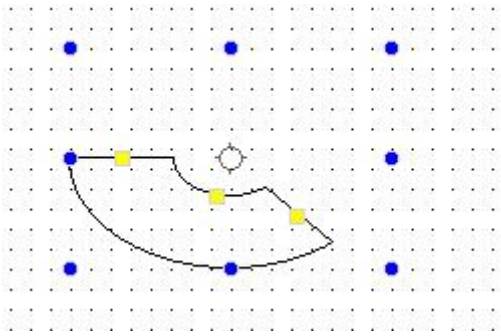
A sector ring can be drawn in a designated area. The sector ring component command can be found on the tool bar or from the menu of Drawing.



Select the sector ring component, designate any area to draw, and double click to set the sector ring properties.

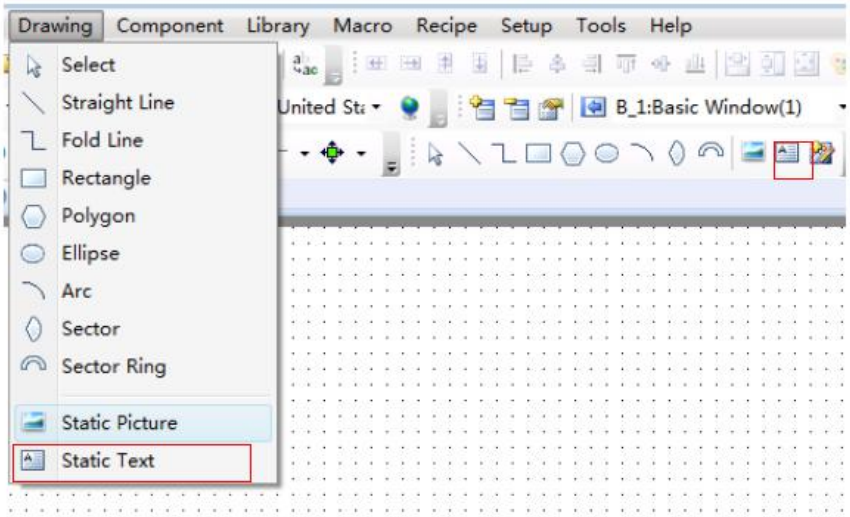


A sector ring can be got by setting the properties such as line color, line width, line type, starting angle, end angle, position, rotation, fill color, fill type and shadow effect.It can be freely drawn by dragging the yellow and blue areas.

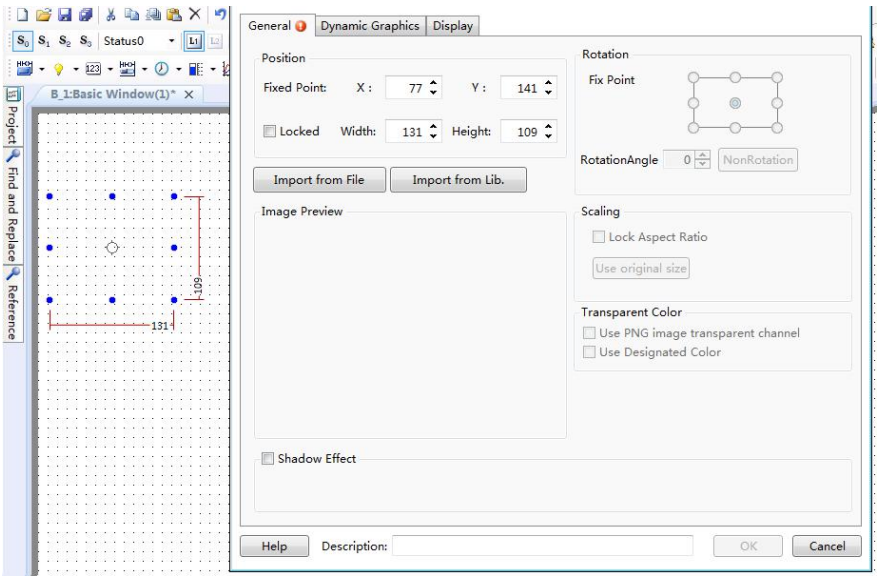


4.5.9 Static Picture

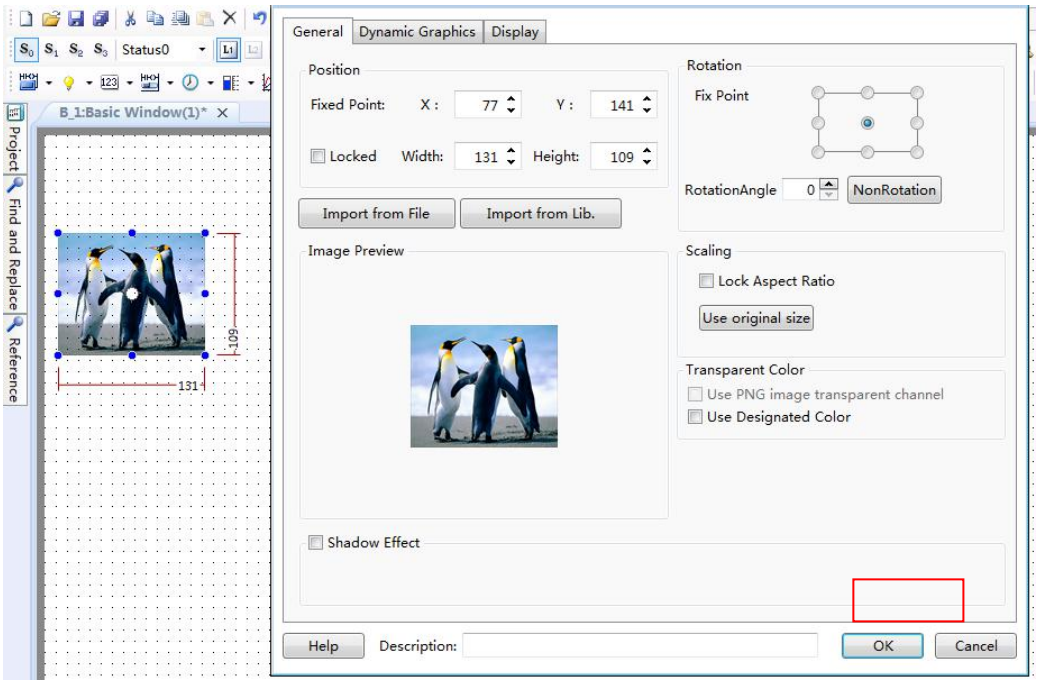
In this software, the **Static Picture** function will be used frequently. This function can make the whole project more clear and beautiful. The static picture command can be found from the shortcut tool bar or the pull-down menu of Drawing.



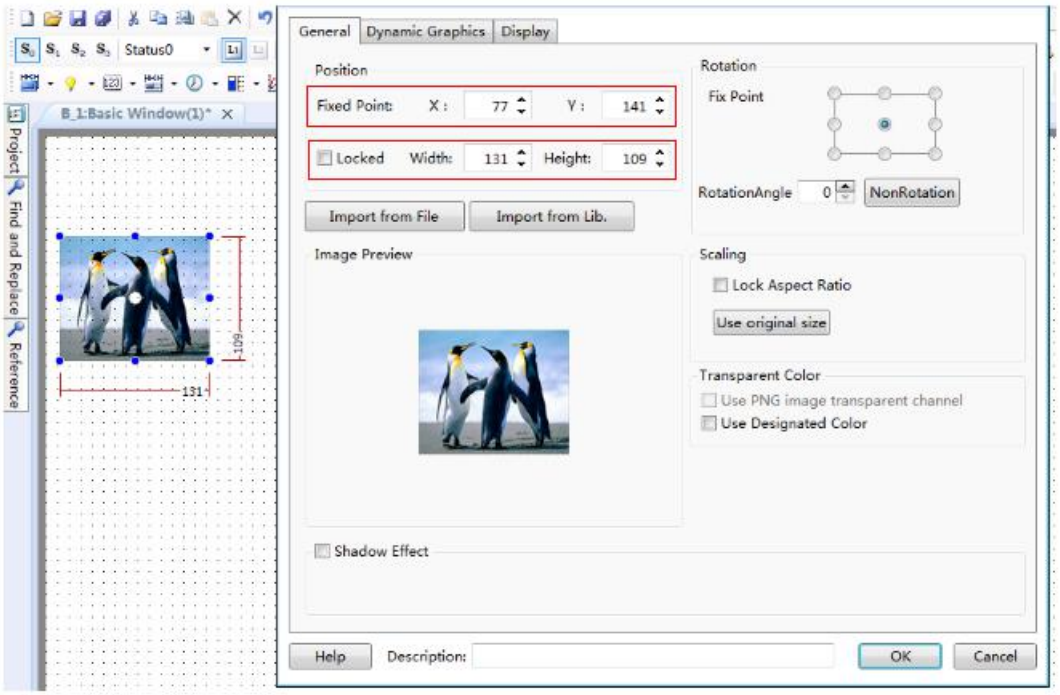
After the static picture component is selected, drag by the left key of the mouse, and then the corresponding properties window will pop up.



Local picture in the computer or in the software picture library can be imported by clicking the **Import from File** button or the **Import from Lib** button. And the picture will be put into the window by clicking the **OK** button.

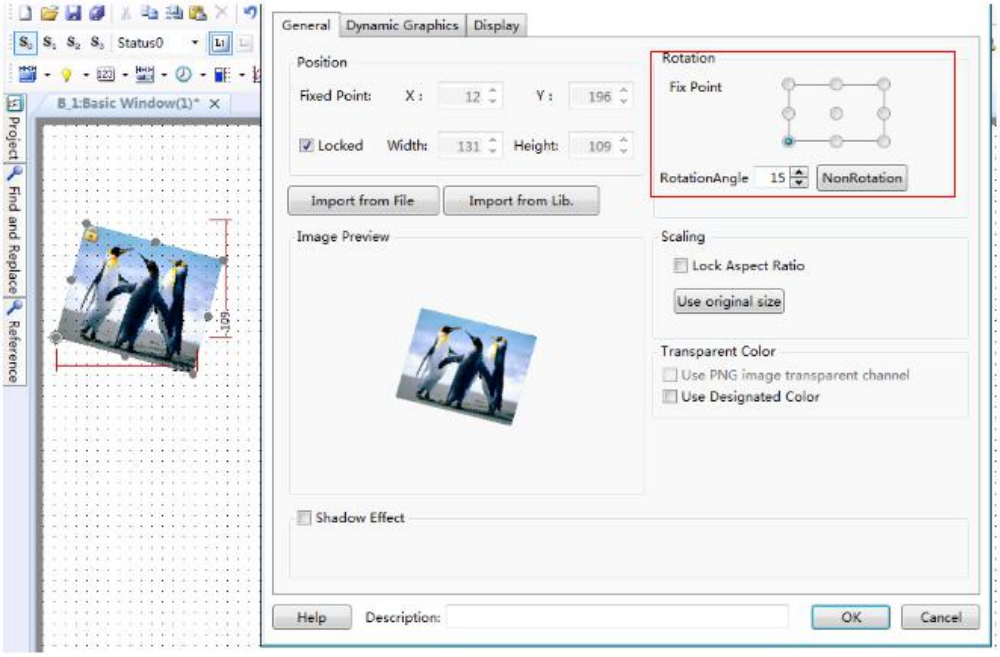


The static picture position can be modified. You can change the position by manually dragging or by setting the coordinates in the static picture properties window. The static picture size can be modified, too.

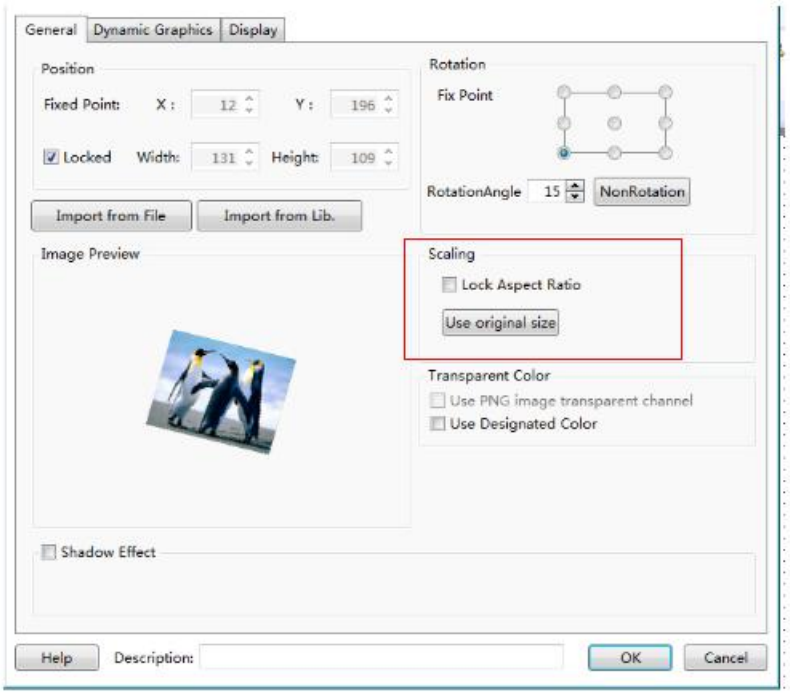


The static picture size and position can be fixed if the **Locked** is checked. And the static picture

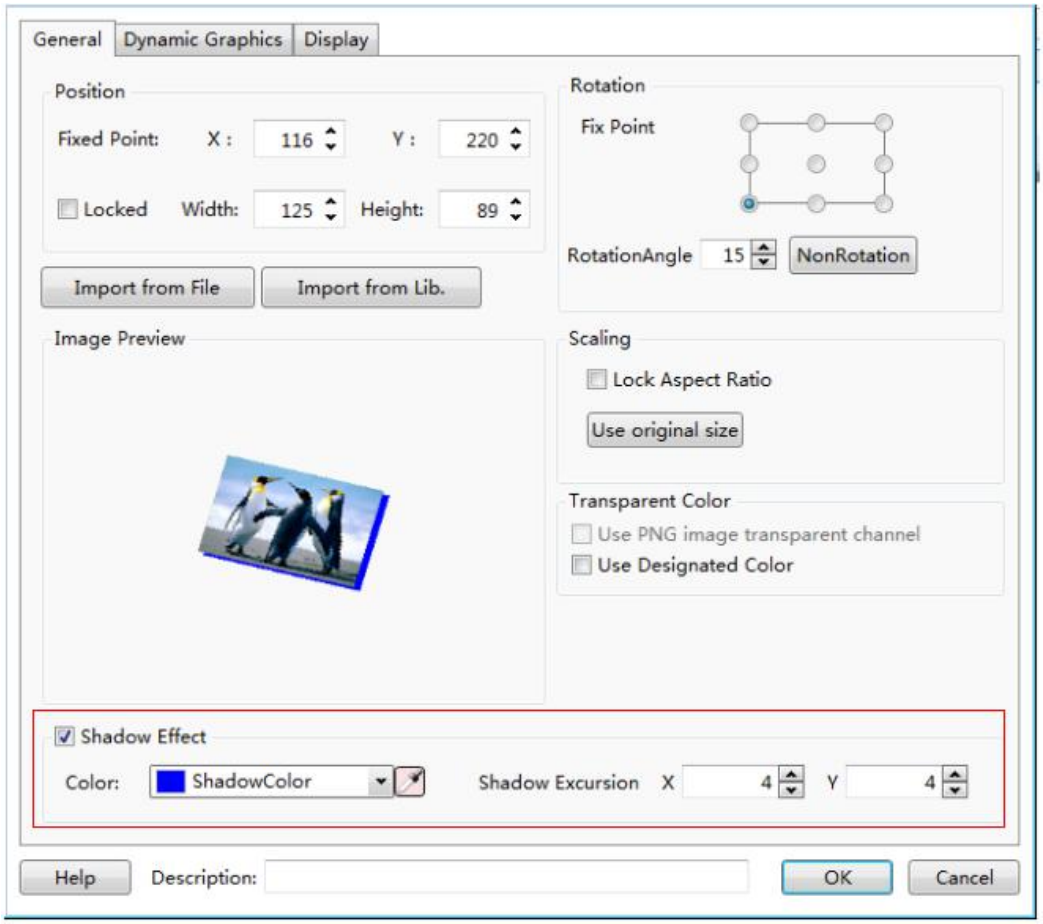
can be rotated around a fixed point. The fixed point and rotation angle can be set. The picture can be manually rotated (in any angle) after the fixing angle is set.



The static picture size can be set in the properties window by the Scaling function. It can be set either by checking **Lock Aspect Ratio** (the fixed horizontal/vertical ratio) or by checking **Use original size** (keeping the original size).

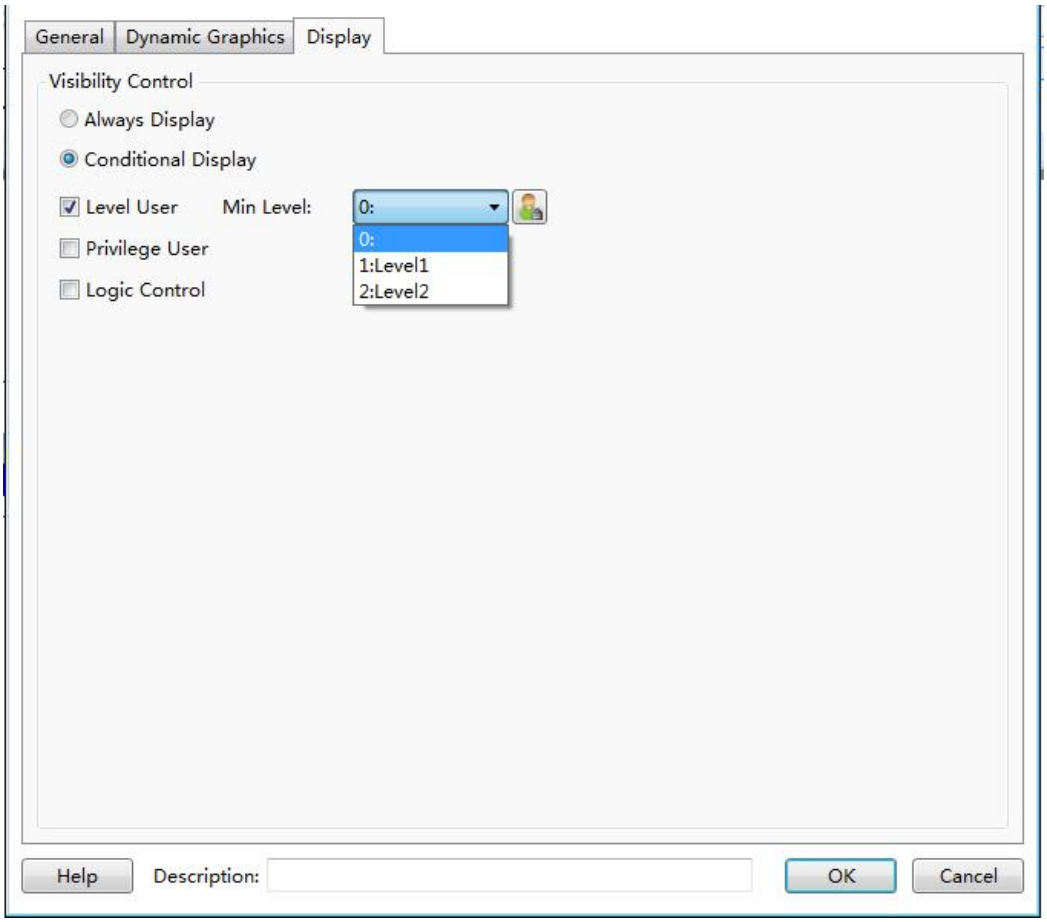


The picture effect can be beautified by the Shadow Effect function so that it can be differentiated from the background.

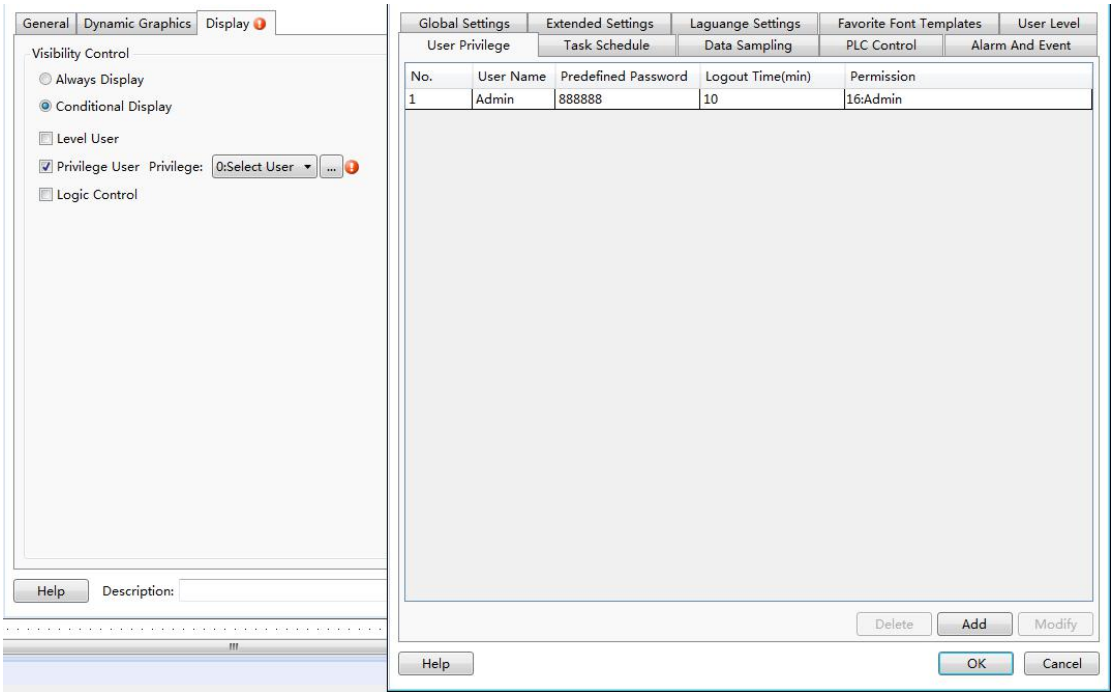


The static picture can be set to display only when the corresponding conditions are satisfied. The user can choose that the static picture is displayed all the time or displayed in conditions by setting the Display properties. The conditional display type includes Level User, Privilege User and Logic Control.

Level User: The static picture will be displayed only in the corresponding user level. It can be activated by checking it.

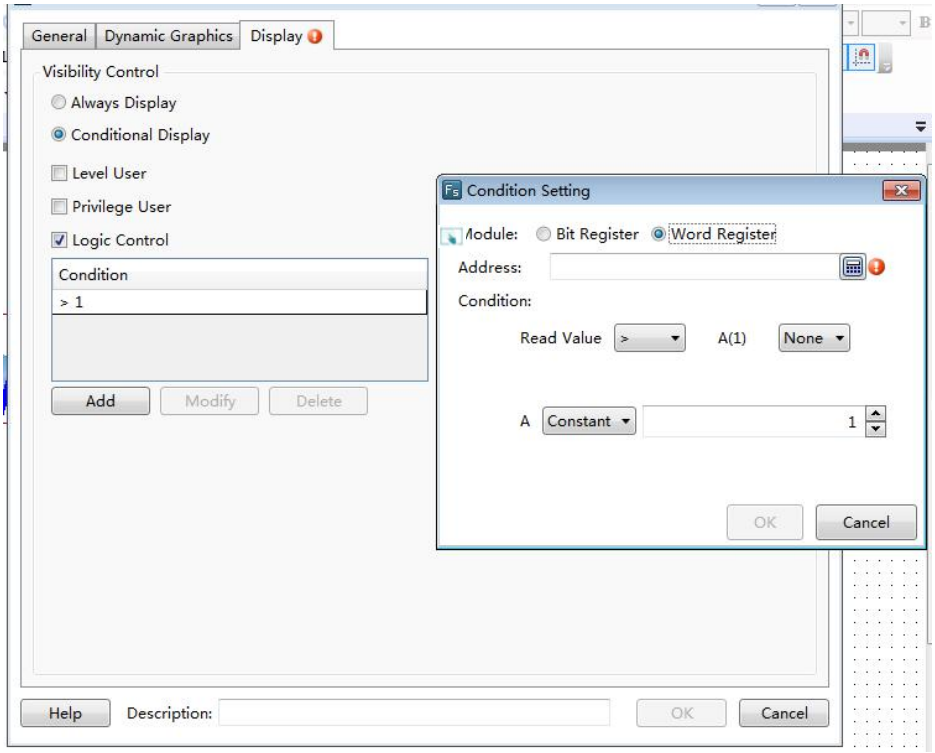


Privilege User: The static picture visibility control needs an authority. The authority system settings dialog can be opened by clicking the button "...".

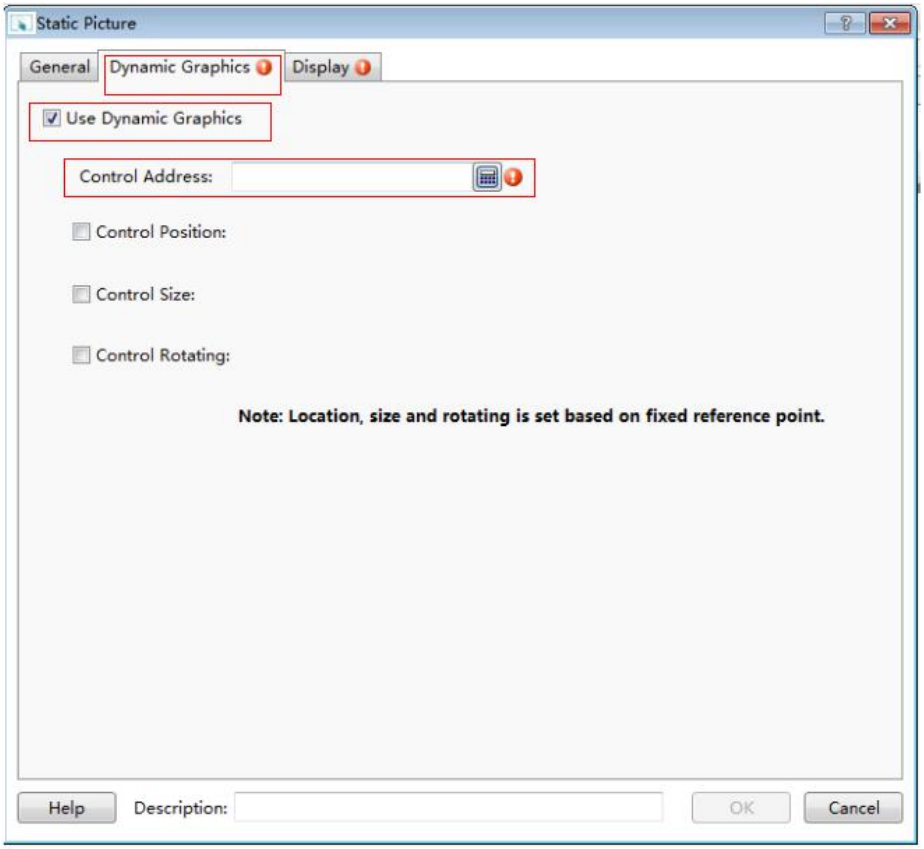


Logic Control: The static picture visibility can be controlled by the address conditions. The

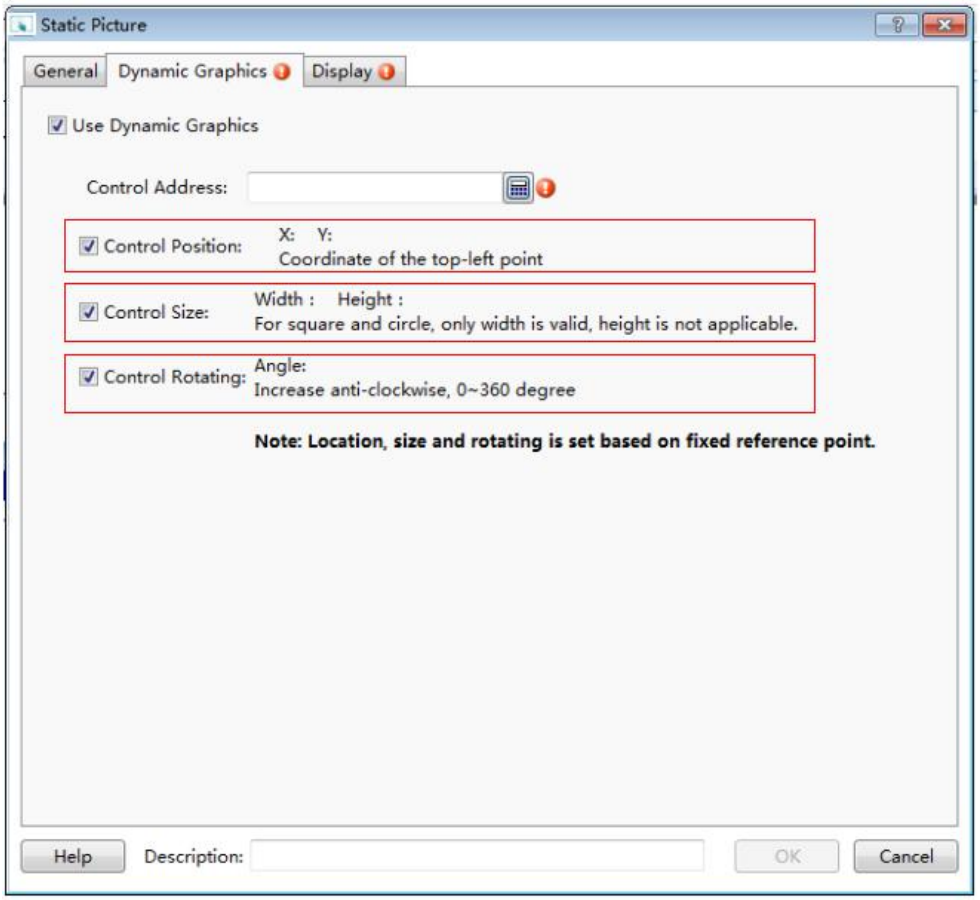
conditions include bit control (address ON and OFF) and word control (word address value conditions).



The static picture can be converted into a dynamic one by logic control. Static pictures can be quickly switched by picture stacking and the control address.

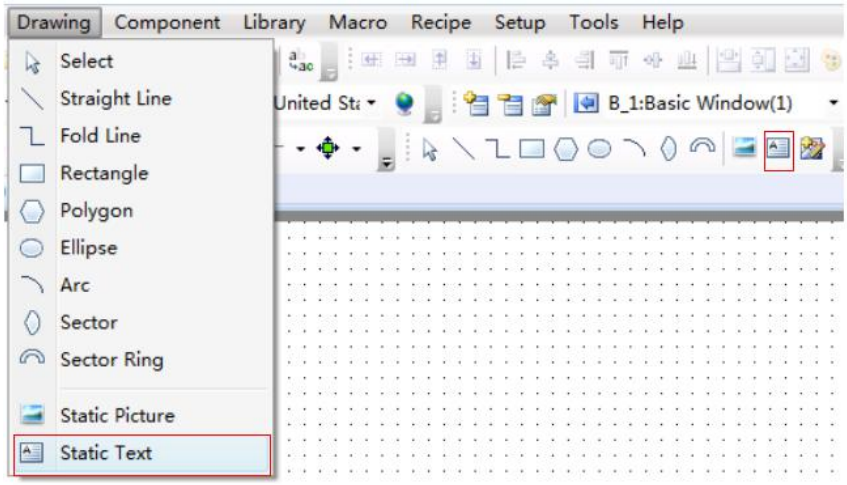


When the control address is fixed, the position, size and rotation can be controlled. E.g. when there are many sector pictures, they can be set to display rotating effect by setting the Control Rotating.



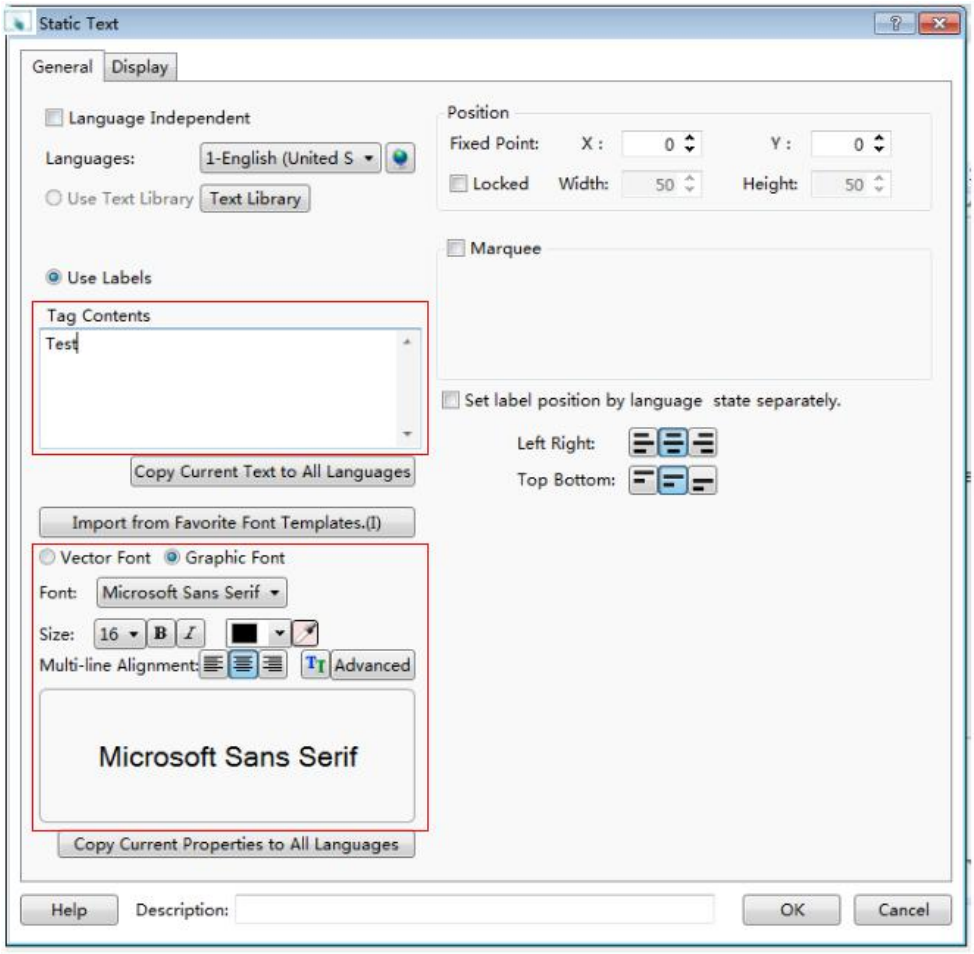
4.5.10 Static Text

When editing in the software, a lot of texts will be used for marking, displaying and describing, and thus the project edited can be easy to understand. The Static Text command can be found from the shortcut tool bar or the menu of Drawing.

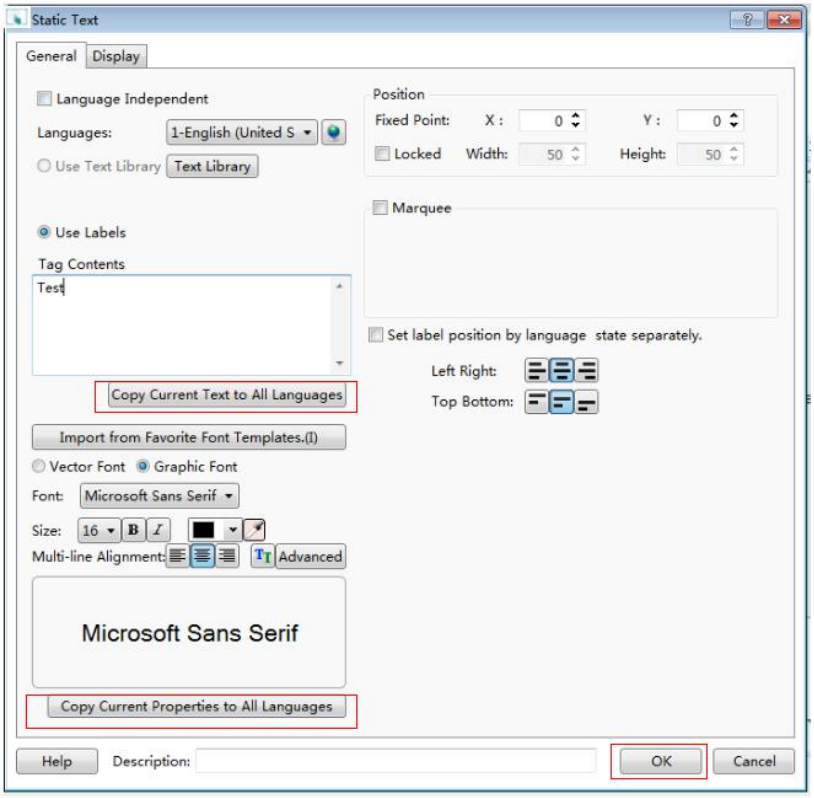


When click the Static Text command, the properties dialog will pop up. The content of the static

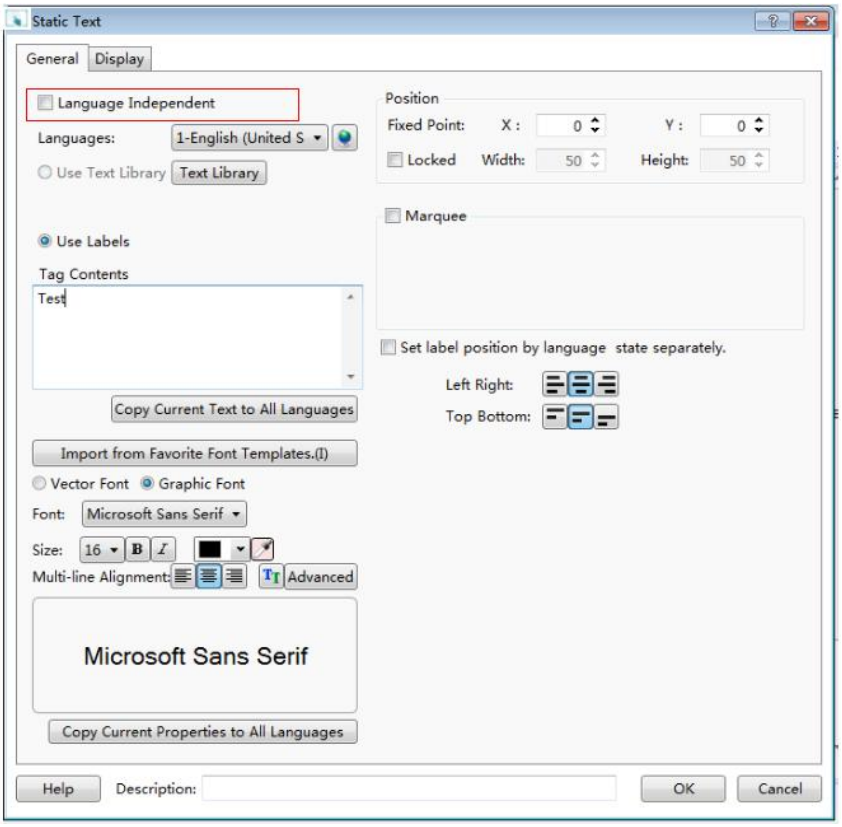
text to be displayed can be written into the Tag Contents. The font, size, color and alignment mode can be set here.



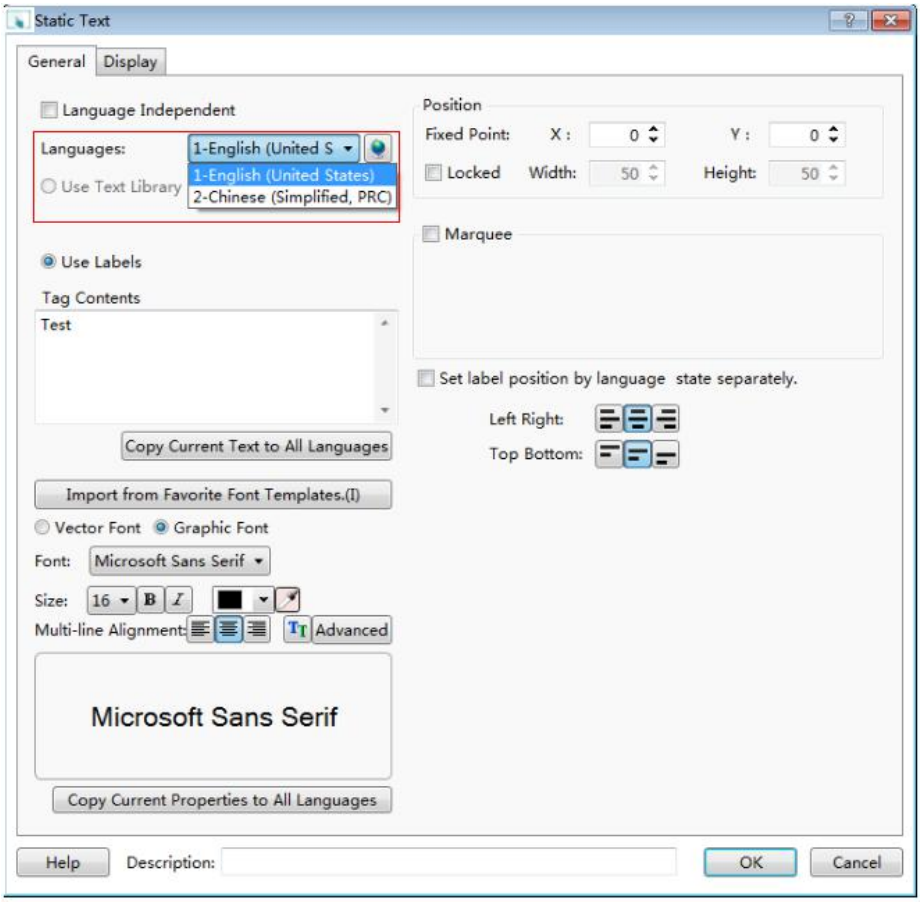
These properties such as the current text font, size, color and the alignment mode can be copied to make future texts uniform.



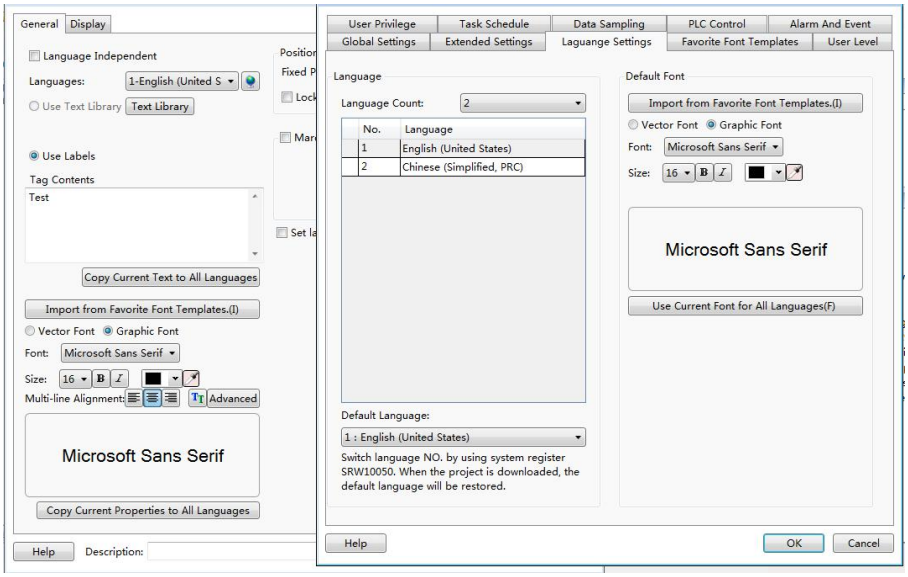
The function "Language Independent" can be checked to make sure the text is not influenced by other languages.



Sometimes, the project is provided to the users in different countries. You can set the different contents by switching Languages. Thus different texts can be displayed in different languages.

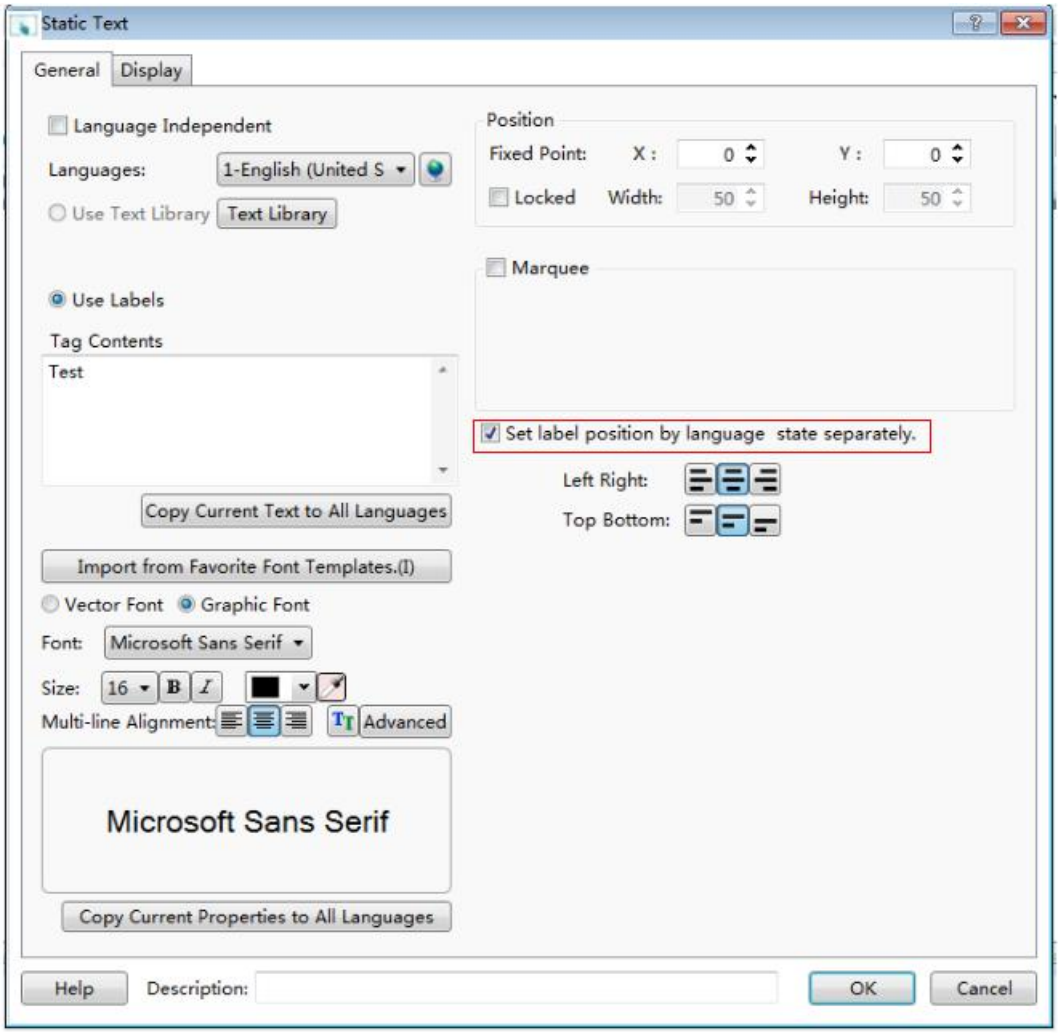


Multi languages can be set in System Settings dialog which is opened by clicking the button "  " to satisfy the different languages requirement.

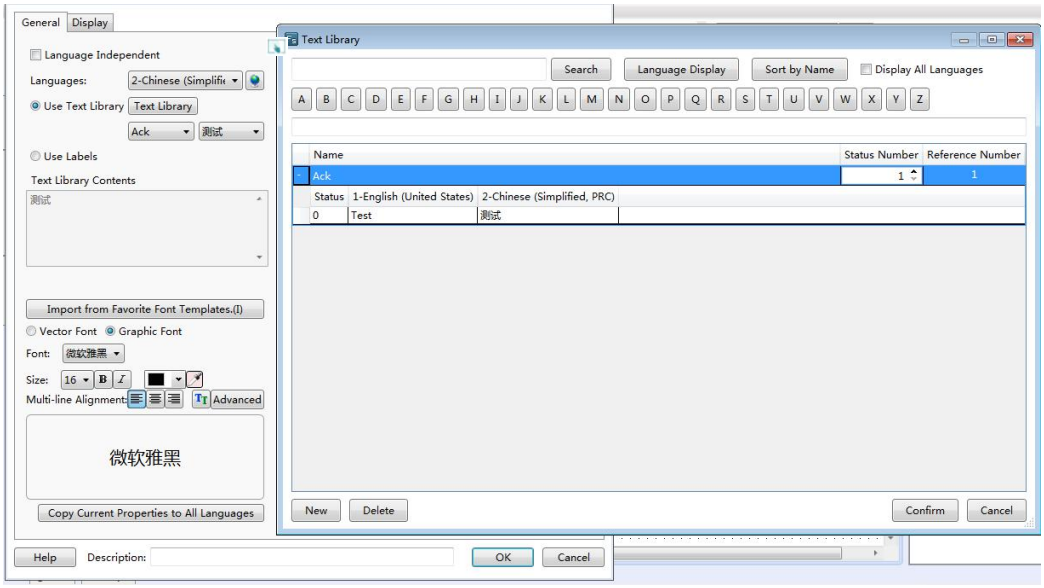


When you check the "Set label position by language state separately" function, different texts can

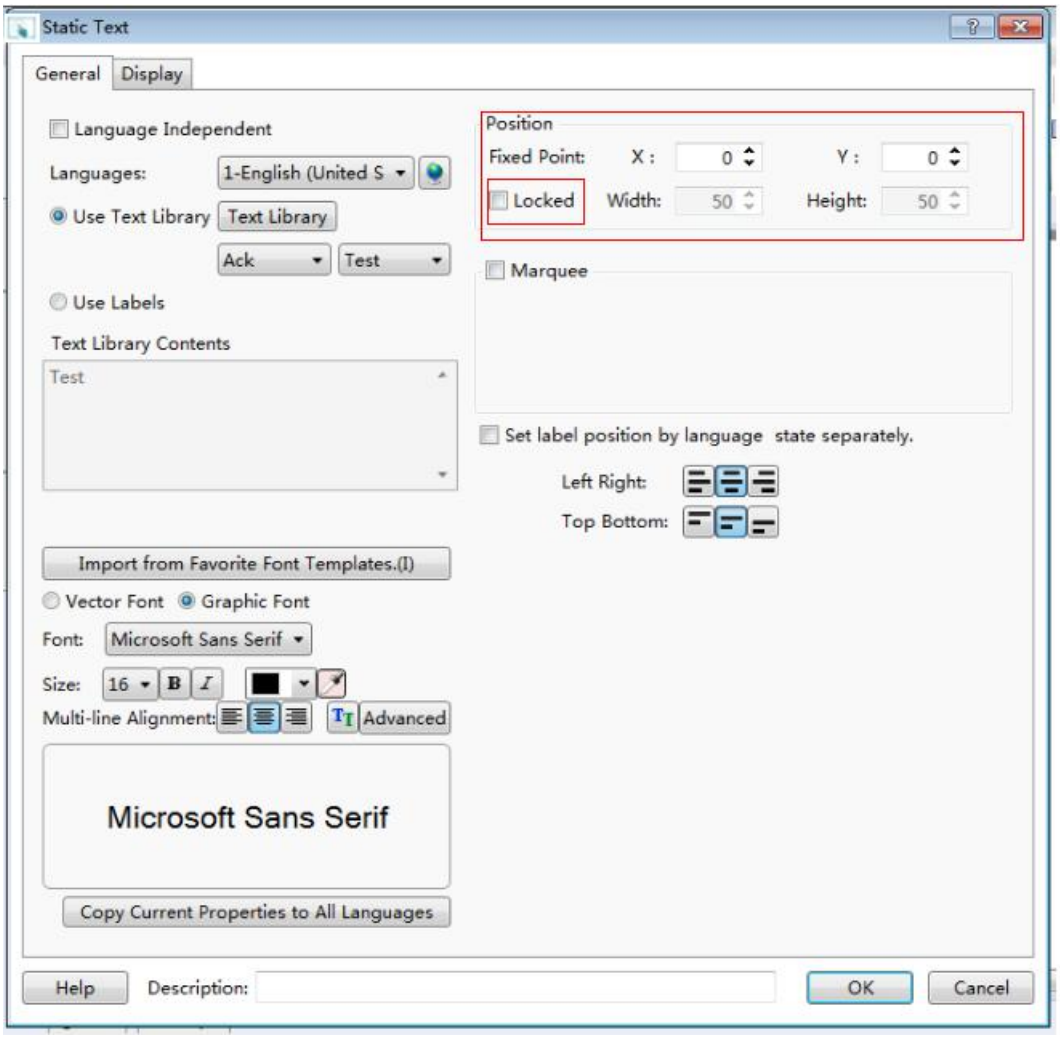
be aligned in different effects.



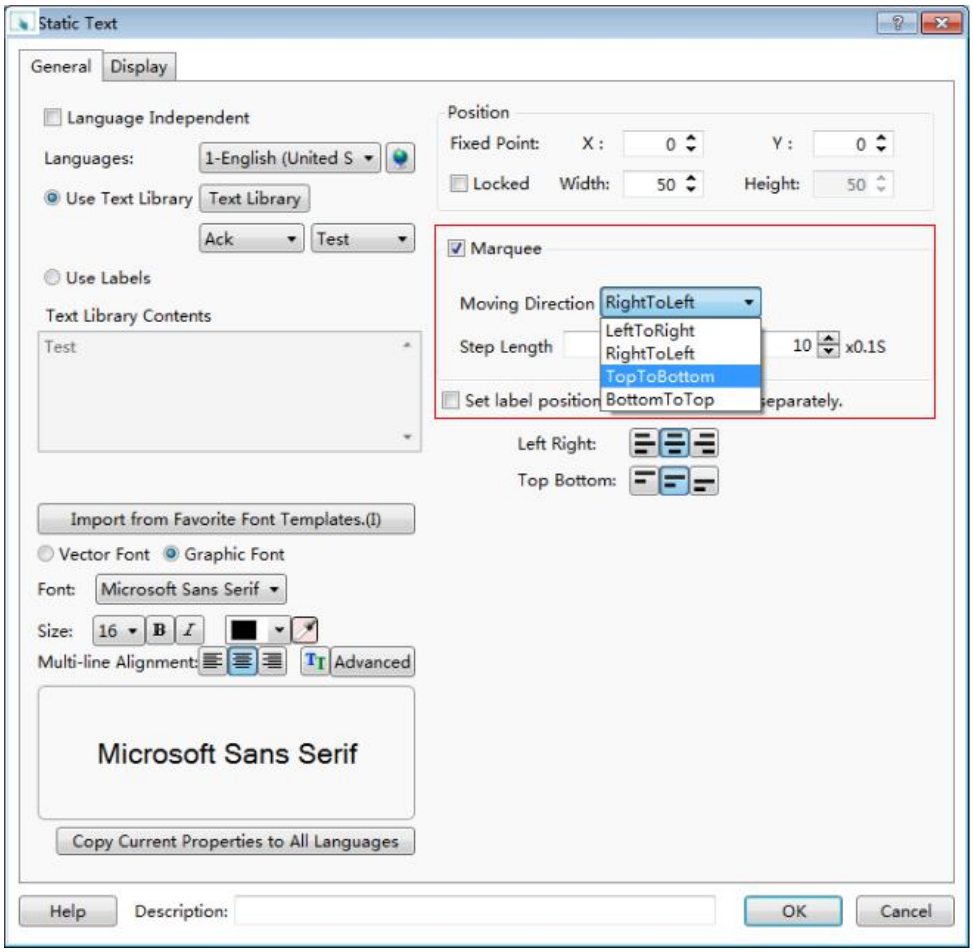
The static text can be used which is saved in the text library. The text library dialog can pop up by clicking the "Text Library" button. You can enter the text in the text library dialog in advanced and select it to use.



The static text can be set to a designated position, and the text can be locked to prevent any displaying defect caused by moving.

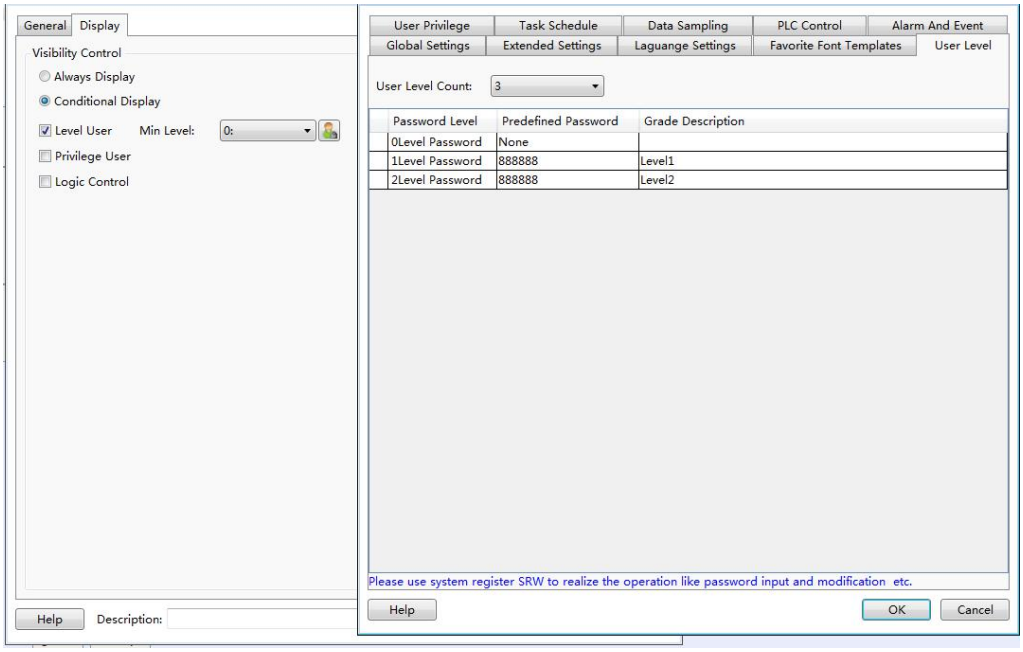


When the text includes a lot of words and characters, the revolving displaying function can be used to save the space. The revolving displaying function can be used by checking the "Marquee" function. The moving direction and the revolving displaying speed can be set in the properties dialog of the static text.



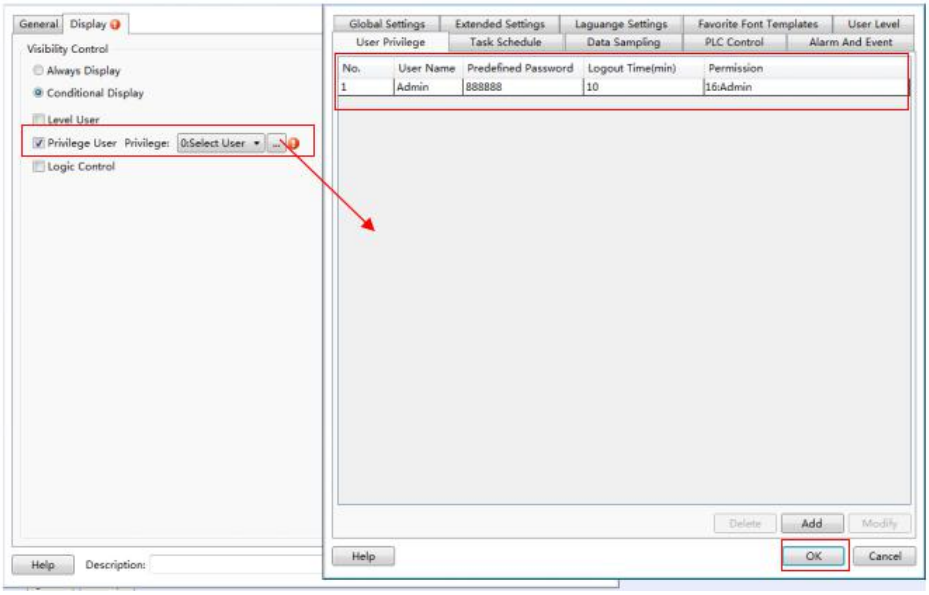
Similar to static picture functions, the static text can be also set to display only if necessary. The user can choose that the static text is displayed all the time or displayed in conditions by setting the Display properties. The conditional display type includes Level User, Privilege User and Logic Control.

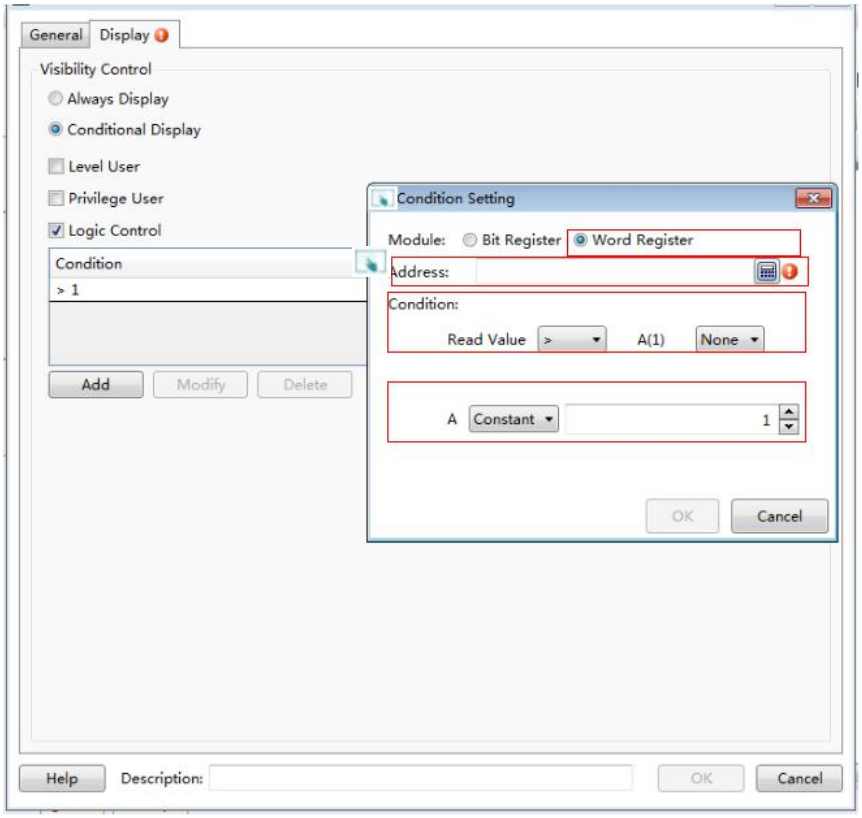
Level User: The static text will be displayed only in the corresponding user level. It can be activated by checking it. The user level system settings dialog can be opened by clicking the button "  ".



Privilege User: The static text visibility control needs an authority. The authority system settings dialog can be opened by clicking the button "  ".

Logic Control: The static text visibility can be controlled by the address conditions. The conditions include bit control (address ON and OFF) and word control (word address value conditions).

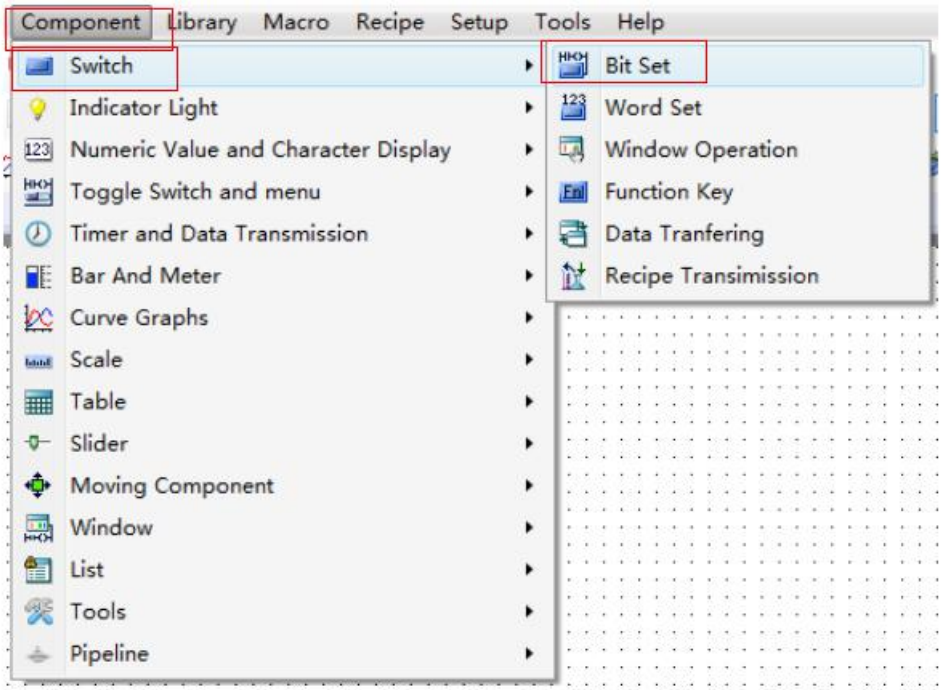




4.6 Component

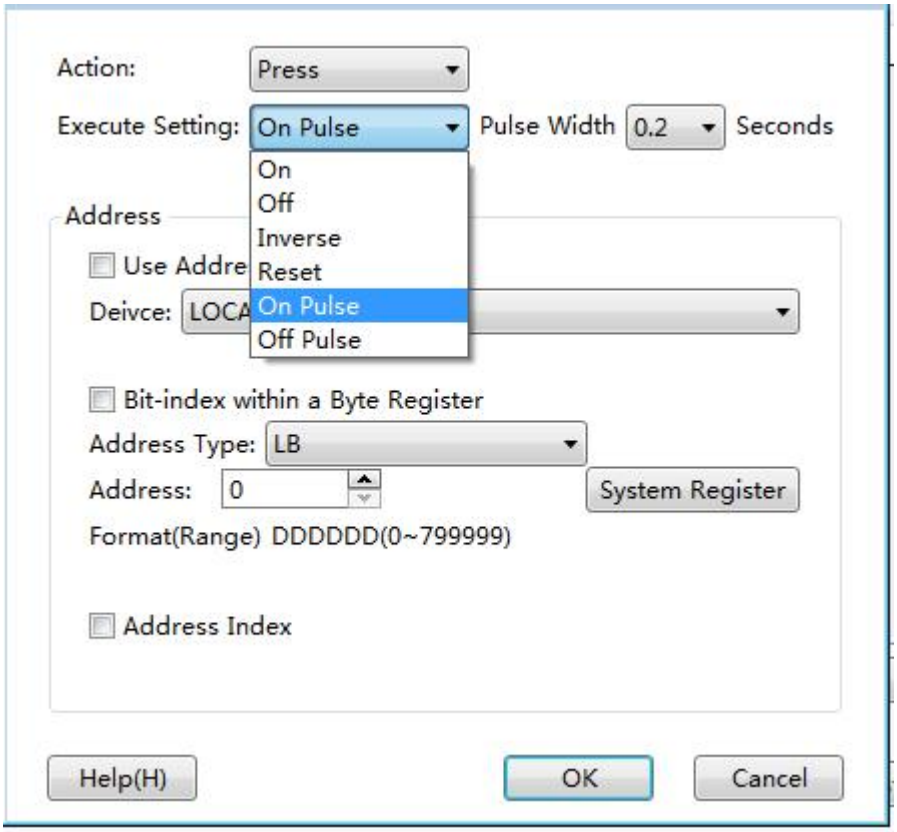
4.6.1 Switch

The Switch component includes Bit Set, Word Set, Window Operation, Function Key, Data Transferring and Recipe Transmission.



4.6.1.1 Bit Set

"Bit Set" is a component by which the internal bit address of HMI or the bit address of each controller connected to HMI is operated. The type of "Execute Setting" includes "On", "Off", "Inverse", "Reset", "On Pulse" and "Off Pulse".



- On

Set the bit address to ON.

- Off

Set the bit address to OFF.

- Inverse

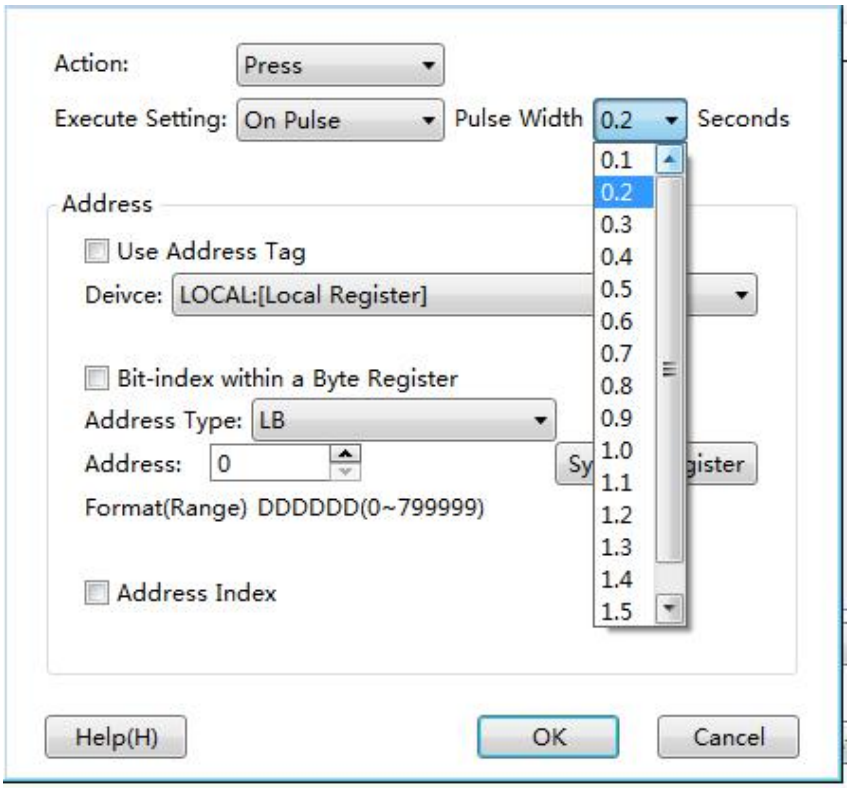
It is set a "Switch" by which the current state can be conversed. If the current bit address is ON, after it is operated, the bit address will be conversed to OFF. If the current bit address is OFF, after it is operated, the bit address will be conversed to ON.

- Reset

When it is operated and kept being held, the bit address is set at the ON state all the time. When it is released, the state of the bit address will be immediately switched to OFF.

- On Pulse

A rising edge pulse is produced which the bit address keeps the pulse "on" in a designated time width. The pulse width range is 0.1~1.5 seconds.



- Off Pulse

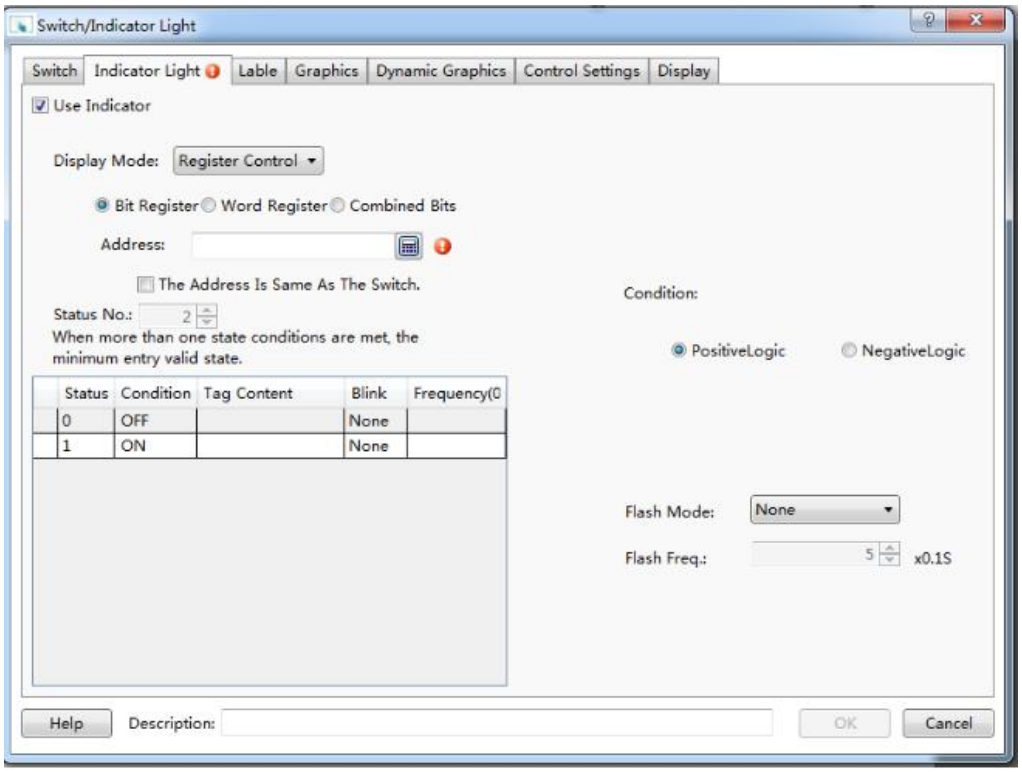
A falling edge pulse is produced which the bit address keeps the pulse "off" in a designated time width. The pulse width range is 0.1~1.5 second.

For the "On Pulse", if the pulse width is set to 1 second and the current bit state is OFF, a 1 second ON pulse signal will be produced and then it goes back to the OFF state. If the current bit state is ON, a 1 second ON time will be still set because the bit state is already ON, and then the bit state will turn OFF.

Similar to the "Off Pulse", if the pulse width is set to 1 second and the current bit state is ON, a 1 second OFF pulse signal will be produced and then it goes back to the ON state. If the current state is OFF, a 1 second OFF time will be still set because the bit state is already OFF, and then the bit state will turn ON.

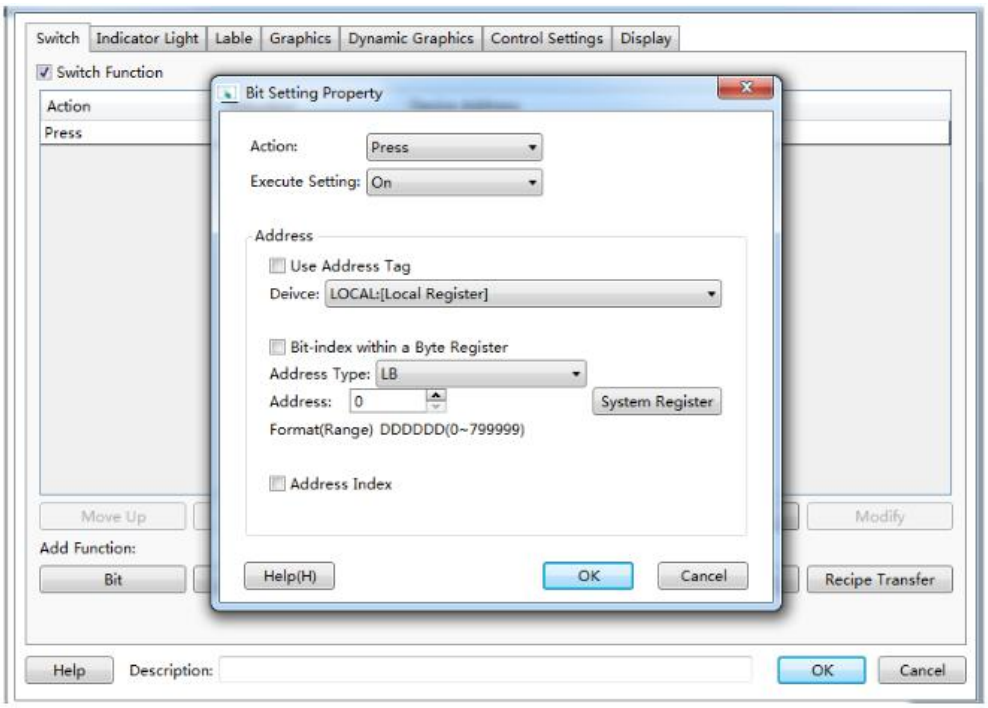
There is an "Action" attribute for the Bit Set component. It includes two options, "Press" and "Release". When the "Bit Set" component is pressed down, the bit set function will be executed immediately. When the "Release" attribute is selected and the "Bit set" component is pressed, the bit set function will not be executed. And when it is released, the "Bit set" function will be executed immediately. But the action is not valid when the "Execute Setting" is "Reset".

The "Bit Set" component has other property pages. For example, in the "Indicator Light" property page, it is recommended to check the "Use Indicator" option and set an address to monitor the "Bit set" component state if the "Use Graphics" option is checked in the "Graphics" property page. The details can be seen in the "System Manual/ Component/ Indicator Light".

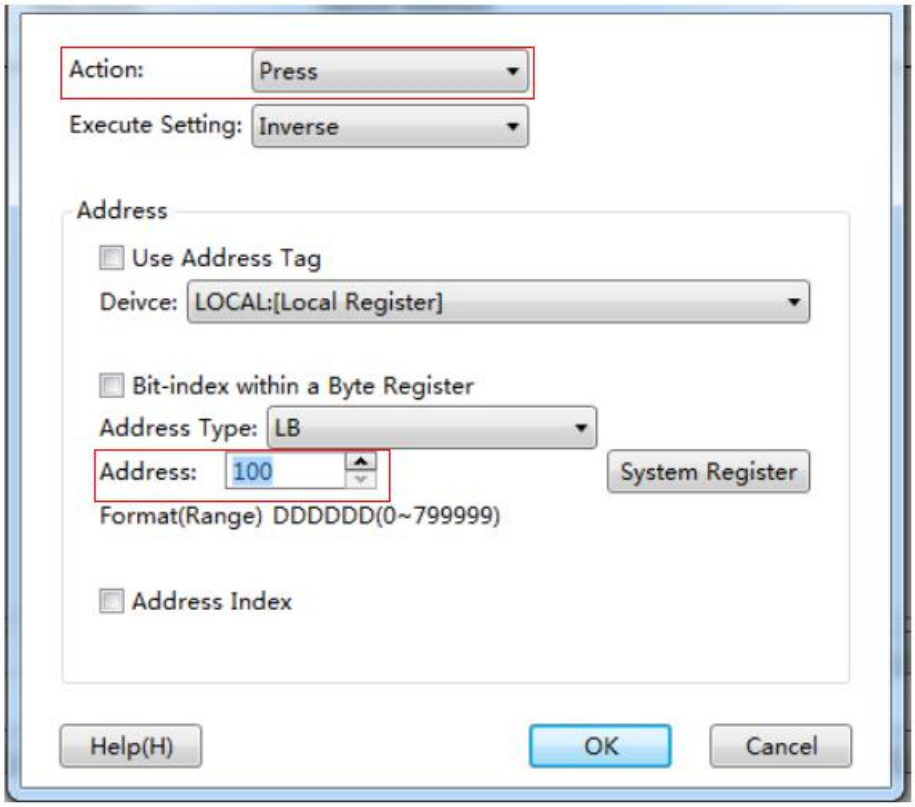


The following brief example introduces the process for setting the HMI internal address LB100 into the "Inverse" attribute.

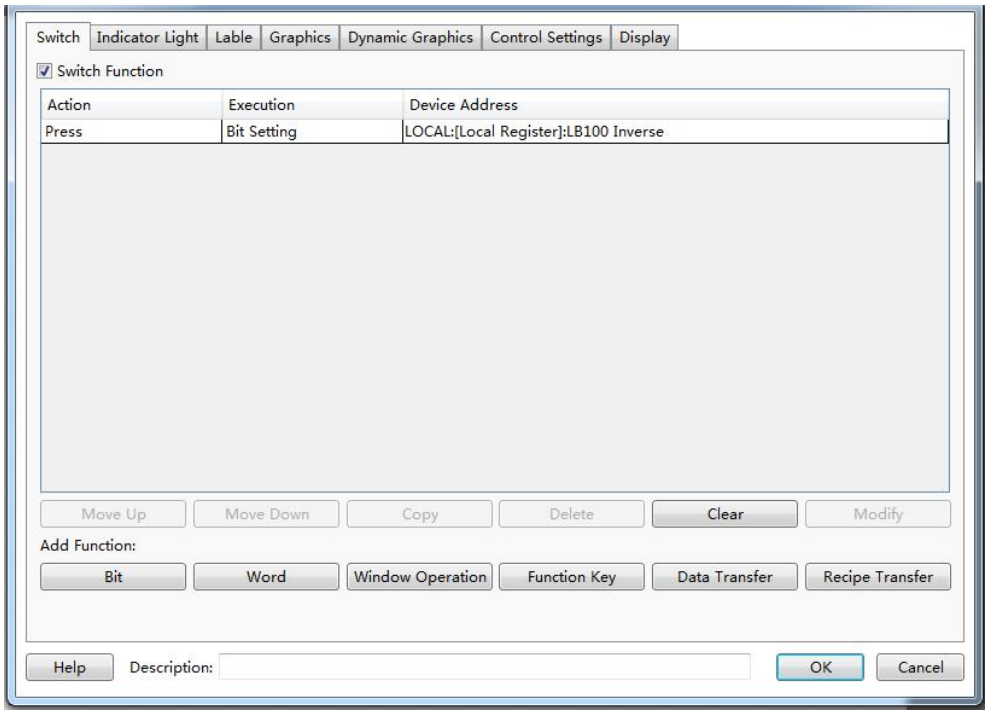
- In the software menu, click "Component/ Switch/ Bit Set" to open the following dialog.



The default action is "Press". The default Execute Setting is "On". The default address is "LB0". They are modified into the required as follows.



- Click "OK" to add an operation action in the "Switch" list.



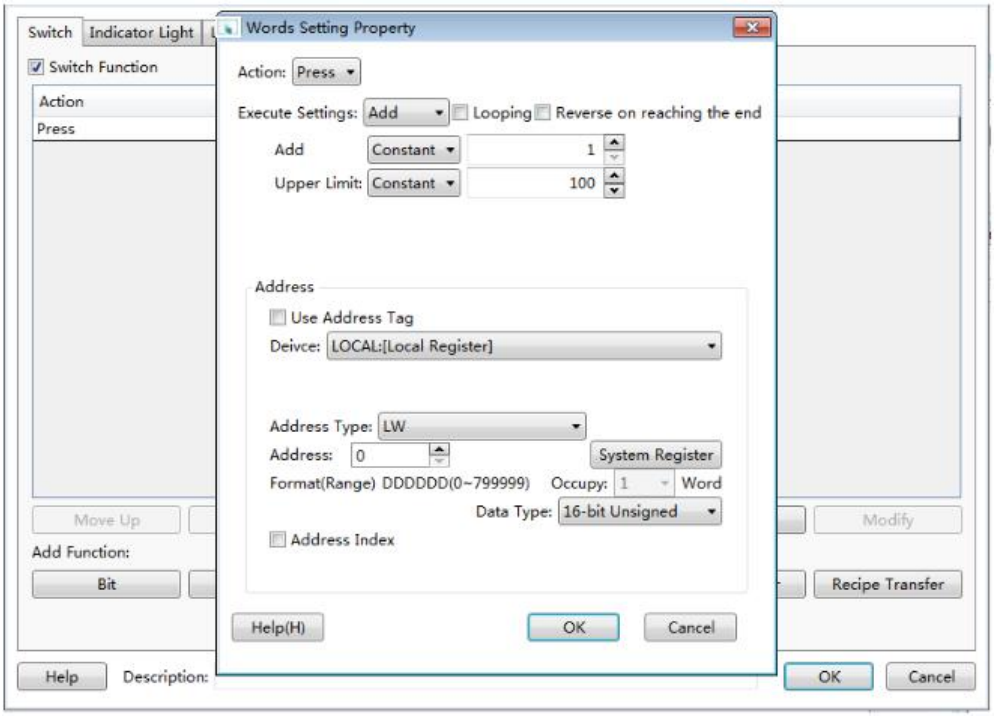
In the list, we can clearly see the execution attribute and the bit address to be operated.

Click "OK" in the Switch dialog to put the component into the window edited. In this way, a simple "Bit Set" component is finished.

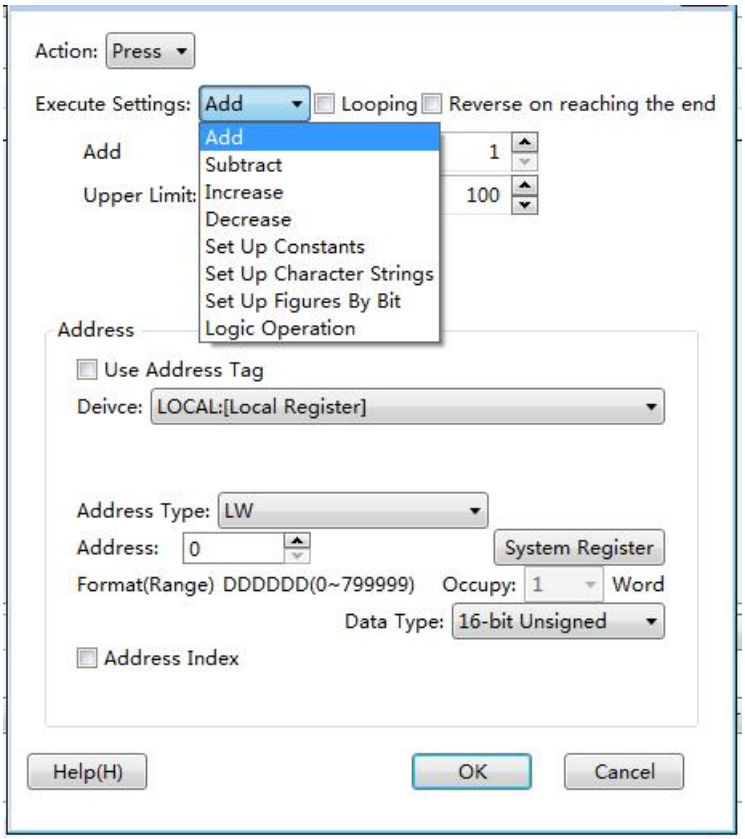
4.6.1.2 Word Set

"Word Set" is a component by which various attributes of the internal word register of HMI or the

word register of any controller connected to HMI are controlled. The Word Set property dialog can be opened by clicking the "Component/ Switch/ Word Set" in the menu. The default settings are shown as follows.

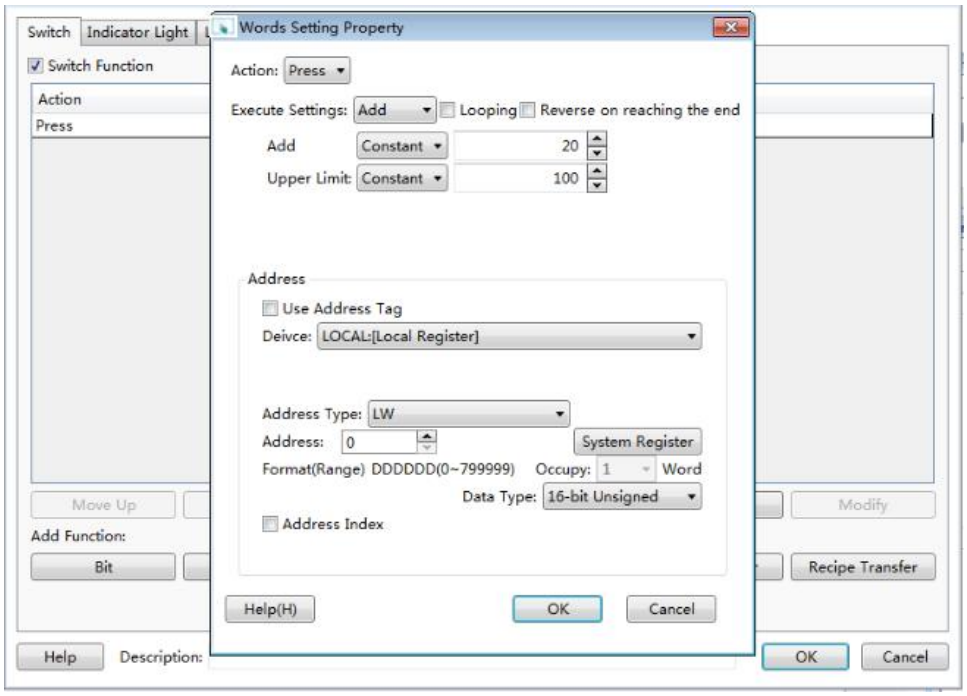


The type of "Execute Settings" includes "Add", "Subtract", "Increase", "Decrease", "Set up Constants", "Set up Character Strings", "Set up Figures by Bit" and "Logic Operation".



- Add

A designated data will be added to the value of the designated word register. The "Add" attributes contain the following settings.



➢ Add

At each time of operation, the set data will be added and written into the word register.

➢ Upper Limit

It is the upper limit of the word register operated. When the result reached the upper limit of operation, no further "Add" operation can be done.

➢ Looping

If "Looping" is checked, an option of "Lower limit" will appear. The operation will be continued at the upper limit and the adding operation will be done from the lower limit. For example, if the "Lower limit" is set to “0”, the "Add" is set to “1”, and the upper limit is set to “100”, the Word Set component will be valid when it is added to “100”. It will turn to 0, 1, 2, 3, and so on, at the next operations.

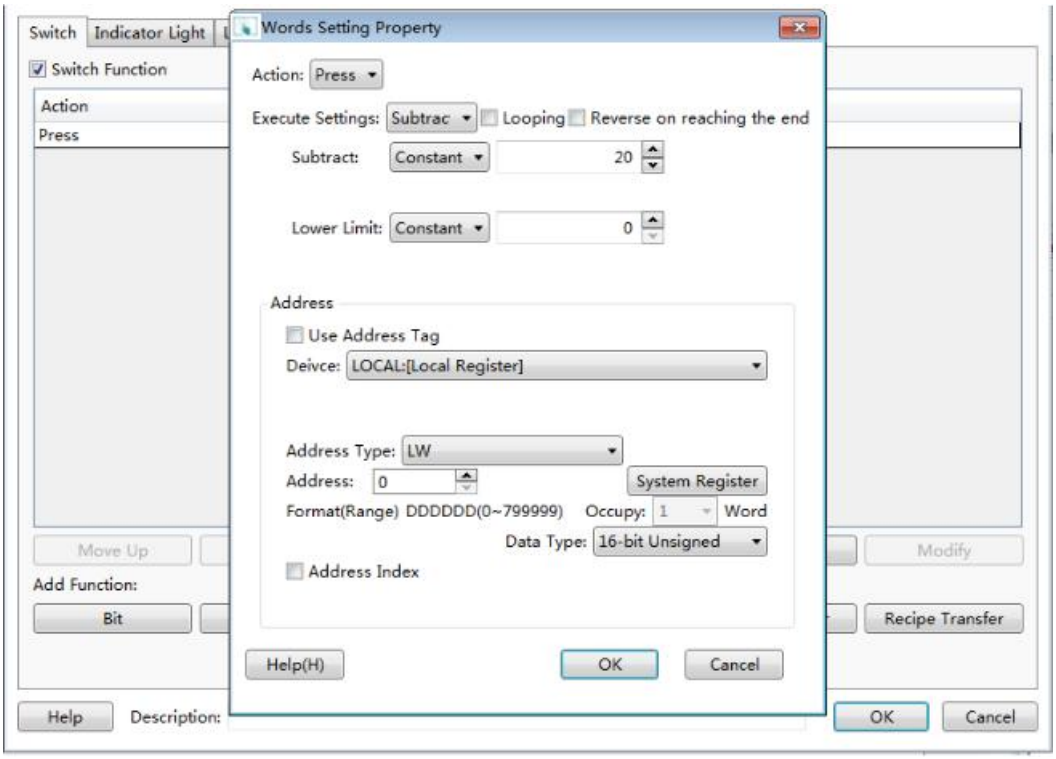
➢ Reverse on reaching the end

If "Reverse on reaching the end" is checked, the operation will be continued at the upper limit and the result will change to reduce from the upper limit to the lower limit. When the result reached the lower limit, the operation will change to add.

The "Add", "Upper limit" and "Lower limit" are all "Constant" in default. They can also be set into "Variable". It is noted that the data type of variable register must comply with the "Word Set" component address type.

- Subtract

A designated data will be subtracted from the value of the designated word register till the "Lower limit". The "Subtract" attributes contain the following settings.



➢ Subtract

At each time of operation, the set data will be subtracted from the word register.

➢ Lower Limit

It is the lower limit of the word register operated. When the result reached the lower limit of operation, no further "Subtract" operation can be done.

➢ Looping

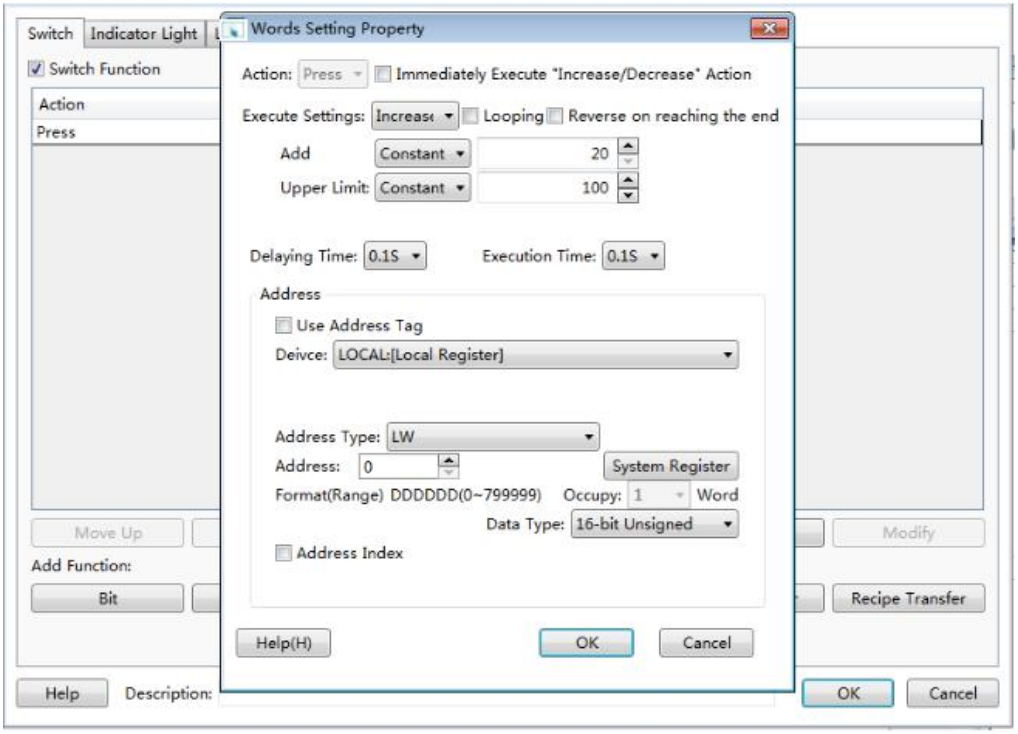
If "Looping" is checked, an option of "Upper limit" will appear. The operation will be continued at the lower limit and the subtraction will be done from the upper limit. For example, if the "Lower limit" is set to “0”, the "Subtract" is set to “1”, and the upper limit is set to “100”, the Word Set component will be valid when it is subtracted to “0”. It will turn to 100, 99, 98, 97,and so on, at the next operations.

➢ Reverse on reaching the end

If "Reverse on reaching the end" is checked, the operation will be continued at the lower limit and the result will change to add from the lower limit to the upper limit. When the result reached the upper limit, the operation will change to subtract.

● Increase

The result value will keep increasing if the component of "Increase" is pressed down. The increasing will stop if the component of "Increase" is released or the value reaches the upper limit. The component of "Increase" has attributes of "Immediately Execute Increase/Decrease Action”, "Delaying Time" and "Execution Time".



➢ Immediately Execute Increase/Decrease Action

"Increase" and "Decrease" all have this attribute. If it is checked, the operation of "Increase" or "Decrease" will be executed immediately without waiting when the component is pressed down.

➢ Delaying Time

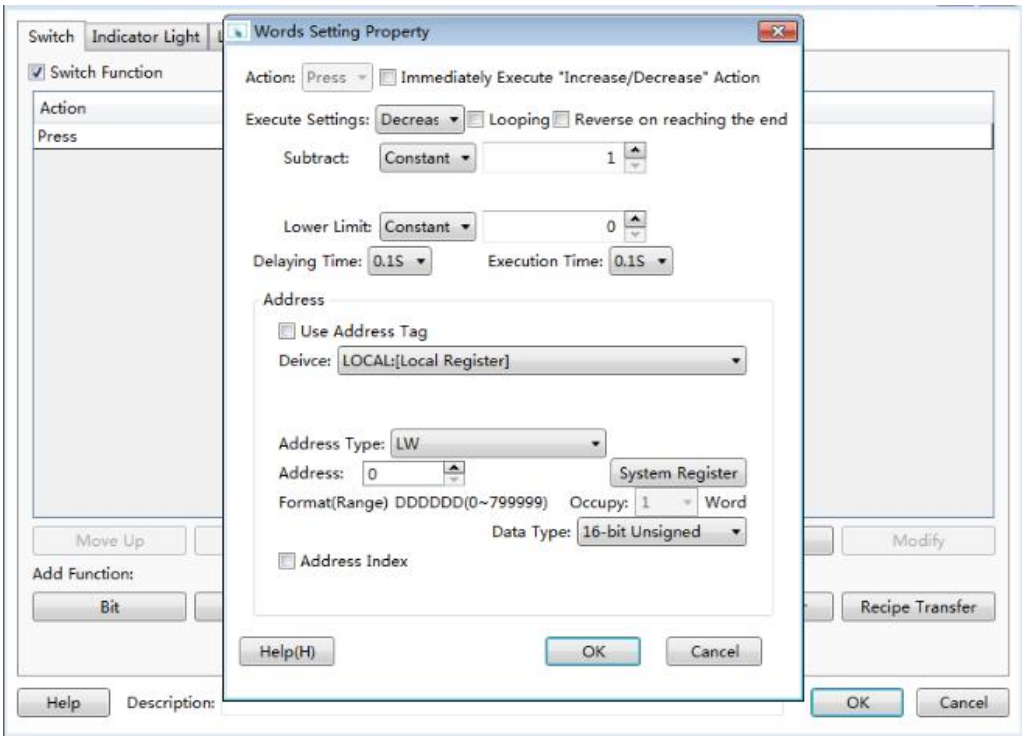
When the attribute of "Immediately Execute Increase/Decrease Action" is not checked, the "Delaying time "attribute is valid. The default time is 0.1s and the maximum is 1.5s. If the time is 0.1s, it means the action of "Increase" will be delayed 0.1s to execute after the component is pressed down.

➢ Execution Time

The "Execution Time" means the time to execute the action "Increase" once. The time range is 0.1s ~ 1.5s.

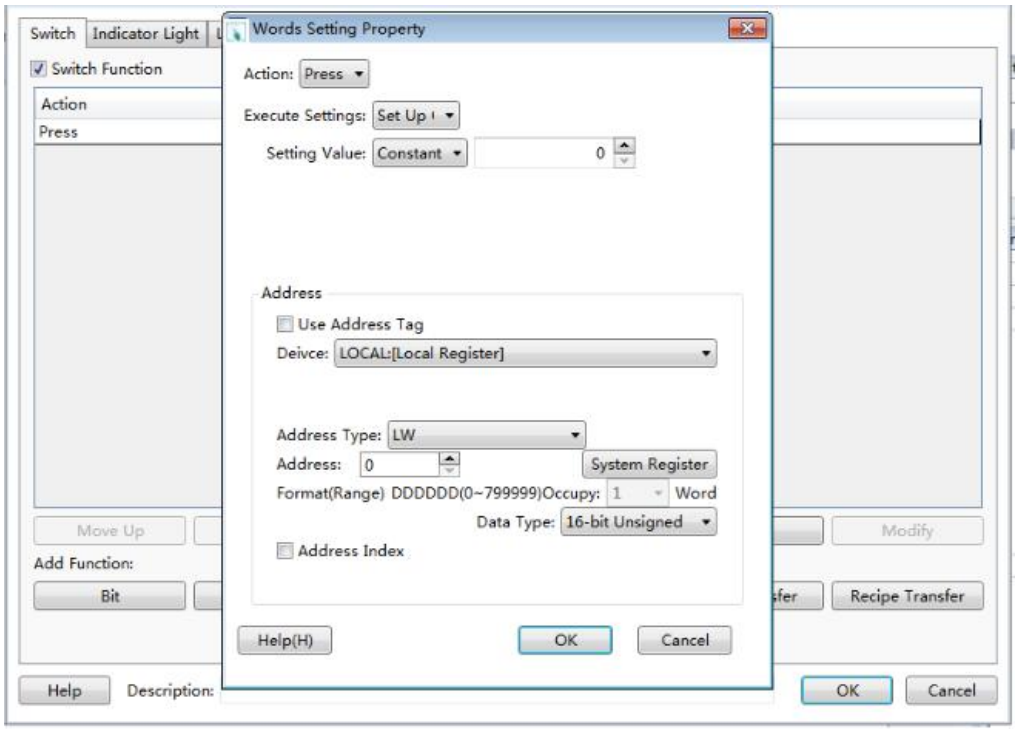
● Decrease

The function of "Decrease" is similar to the attribute of "Increase". The result value will keep decreasing if the component of is pressed down. The component of "Decrease" also has attributes of "Immediately Execute Increase/Decrease Action", "Delaying Time" and "Execution Time".



- Set Up Constants

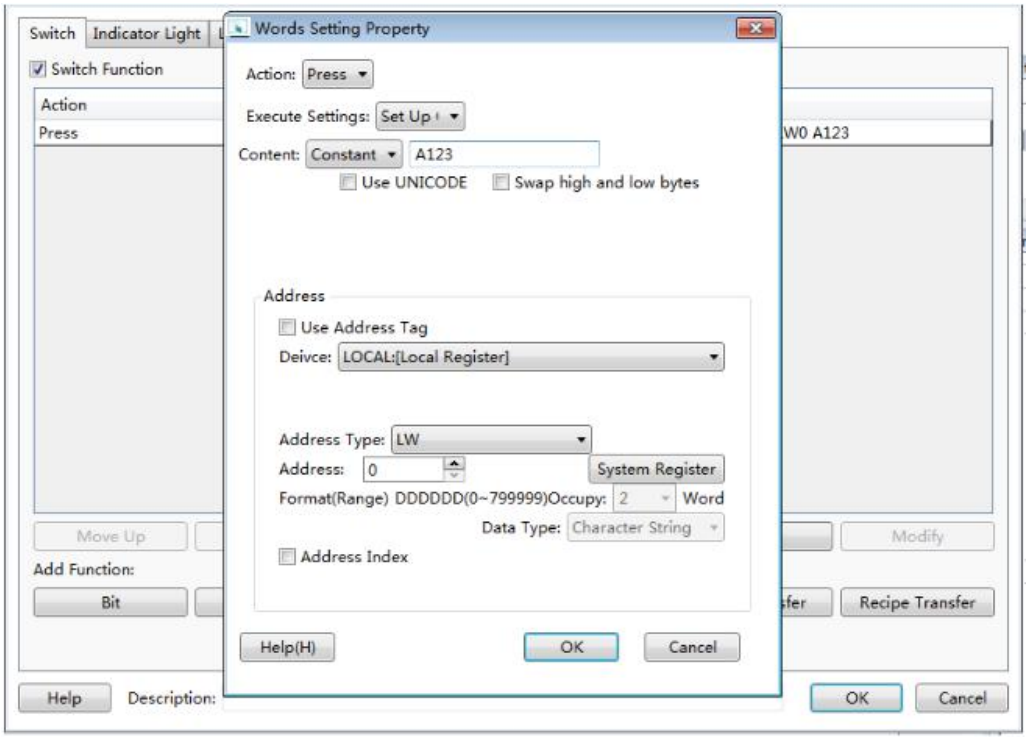
A data is written to the designated register. The data (Setting Value) can be a "Constant" or a "Variable".



In the figure above, a constant “0” is written to the register LW0 of HMI.

- Set Up Character Strings

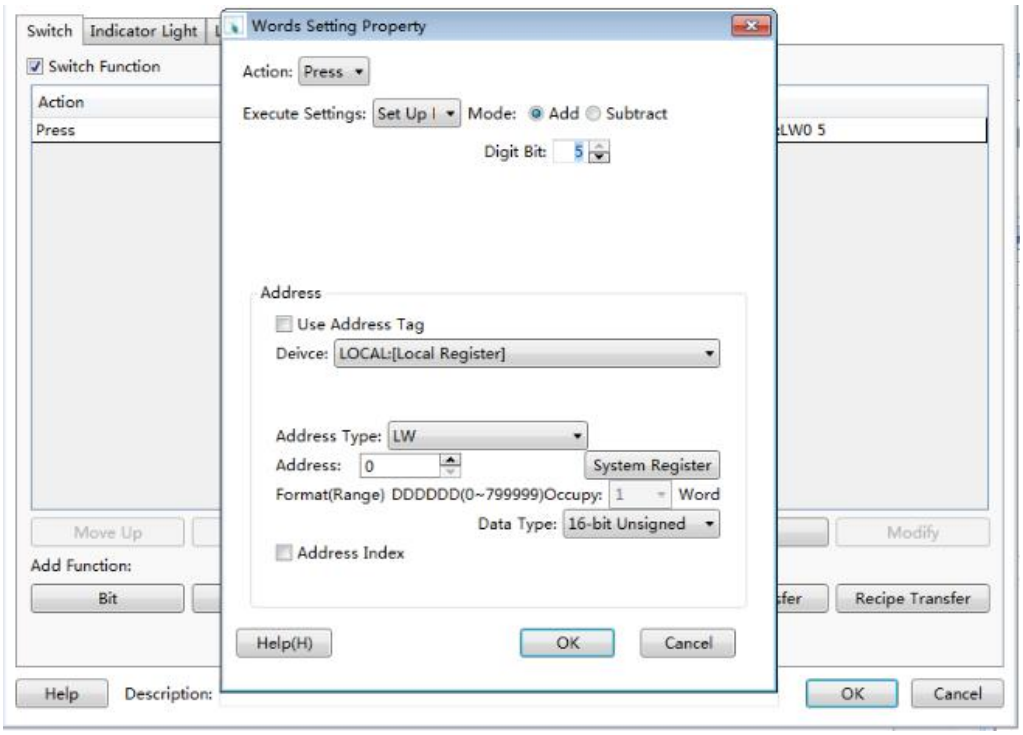
This function is similar to "Set up Constants". A character string can be written to the word register. For example, character string "A123” is written to the register LW0 and LW1 of HMI.



"Set up Character Strings" has two optional attributes "Use UNICODE" and "Swap high and low bytes". When "Use UNICODE" is checked, it means the character string written to registers is coded by UNICODE. The string is normally displayed only in "UNICODE". If "Swap high and low bytes" is checked, the high and low bytes in the character string will be exchanged before written to the word register.

- Set Up Figures By Bit

This function has two modes, "Add" and "Subtract". By this function, each bit of the value can be added or subtracted.

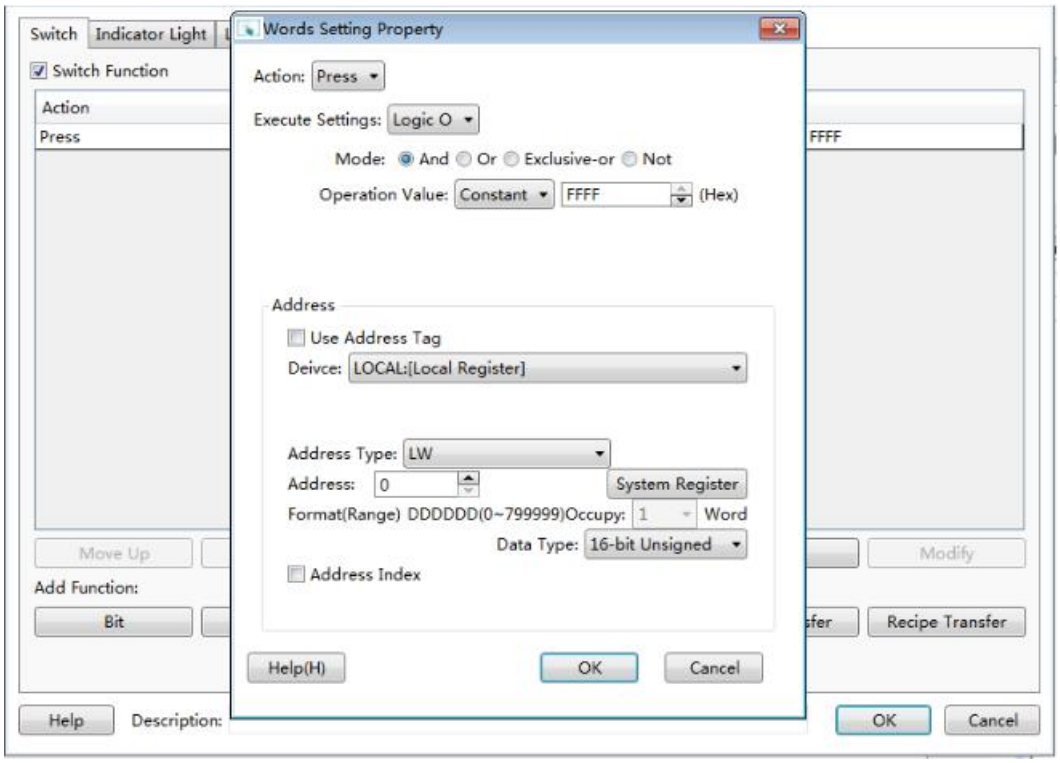


This function has an attribute "Date type". It can be “16-bit Unsigned" or “32-bit unsigned number". In other words, only unsigned single word and unsigned double word can use this function. If the data type is “16-bit unsigned number”, the value range is 0~65535. So the parameter of this function "Digit bit" can be 1~5. That means the number length is 1~5. “1” means units digit, “2” means tens digit, “3” means hundreds digit, “4” means thousands digit, and “5” means ten thousands digit. For example, if the "Digit bit" is 3 and the "Mode" is "Add", it means the hundreds digit is operated for adding. If the hundreds digit of a register is 6 and when this component is pressed down, the hundreds bit will change into 7, and then into 8 if it is pressed down again, and 9 again, 0 again, and 1 again, so the attribute of "Add" is similar to the "Looping" attribute. But, the "Add" or "Subtract" attribute of the "Set up Figures by Bit" function is only valid for one digit, and other digits are not changed.

For example, if "Digit bit" is 3, "Mode" is "Add", and the current register value is 18668, the value will change into 18768 when the component is pressed down, 18868 when it is pressed down again, 18968 again, 18068 again, 18168 again. The maximum value of a single word is 65535. If the "Digit bit" is 5, the ten thousands digit will change in 0~5.

- Logic Operation

This function has four modes, "And”, "Or”, "Exclusive-or" and "Not". The default mode is "Add".



In the figure above, when the component is operated, the value in register LW0 will has a logic operation "And" with 0×FFFF. The logic result will be written to register LW0. The operations of other three modes are similar to "And" mode but the logic operation.

The attribute "Operation Value" can be "Constant" or "Variables". The default is "Constant" and the data format is hexadecimal. It can be a variable, but the data type must comply with the register data type.

The attribute "Data Type" for logic operation can be “16-bit Unsigned”, “32-bit Unsigned”,

“16-bit BCD" and “32-bit BCD".

Special notice:

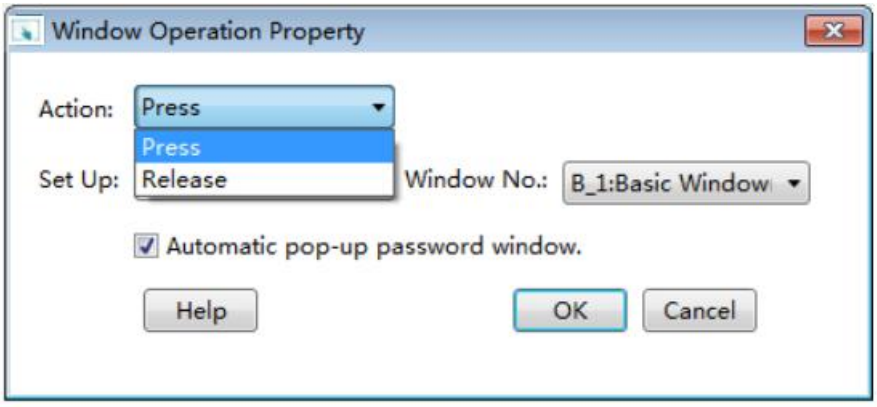
In all these functions for "Word Set", the "Action" is "Press" in default. That means the operation will be executed correspondingly when the component is pressed down. The "Action" can also be "Release" but not for the function "Increase" and "Decrease". That means the operation will be executed correspondingly when the component is released.

When use "Variables" for the "Word Set" function, the data type of "Variables" must comply with the data type of word register used. If not, the result may be incorrect.

4.6.1.3 Window Operation

- Action

The attribute "Action" of "Window Operation" can be "Press" or "Release".



➢ Press

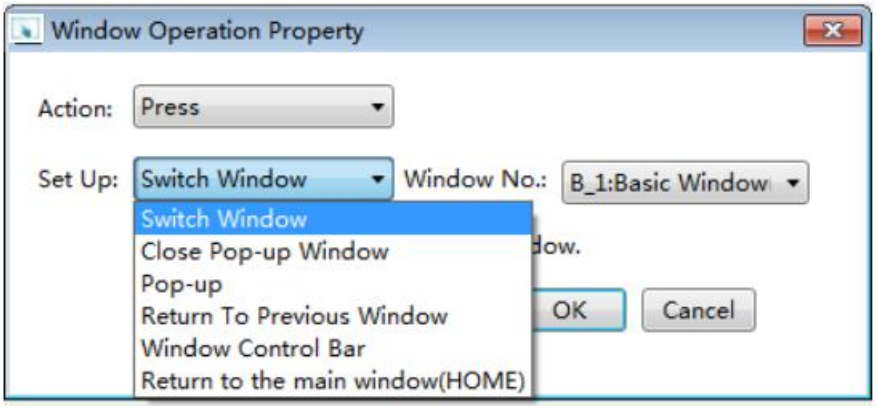
The corresponding keyboard function will be given out when the component is pressed down, and the macro instructions or system operation instructions will be executed.

➢ Release

The corresponding keyboard function will be given out when the component is released, and the macro instructions or system operation instructions will be executed.

➢ Set Up

The attribute "Set Up" of "Window operation" can be "Switch Window", "Close Pop-up Window”, "Pop-up”, "Return To Previous Window”, "Window Control Bar" or "Return to the main window (HOME)”.



➢ Switch Window

Close the current window and switch to a designated window.

➢ Close Pop-up Window

Put the button on the pop-up window, click to close it.

- Pop-up

Pop up a designated window.

- Return To Previous Window

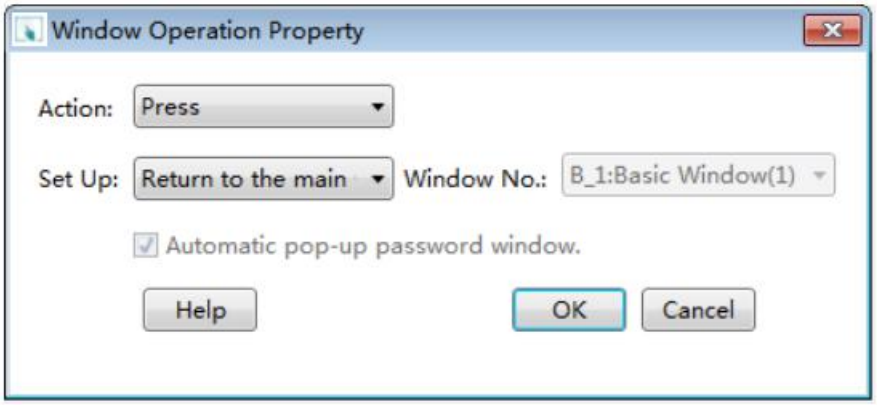
Close the current window and open the window opened last time.

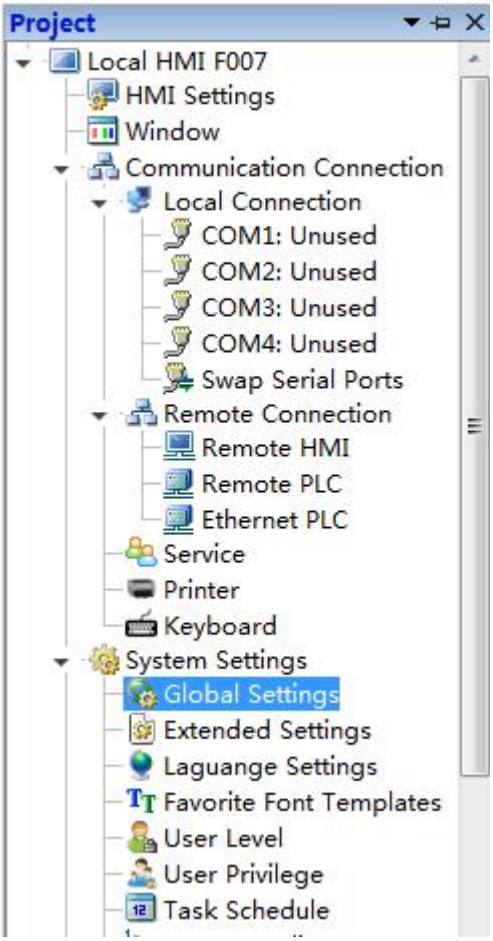
- Window Control Bar

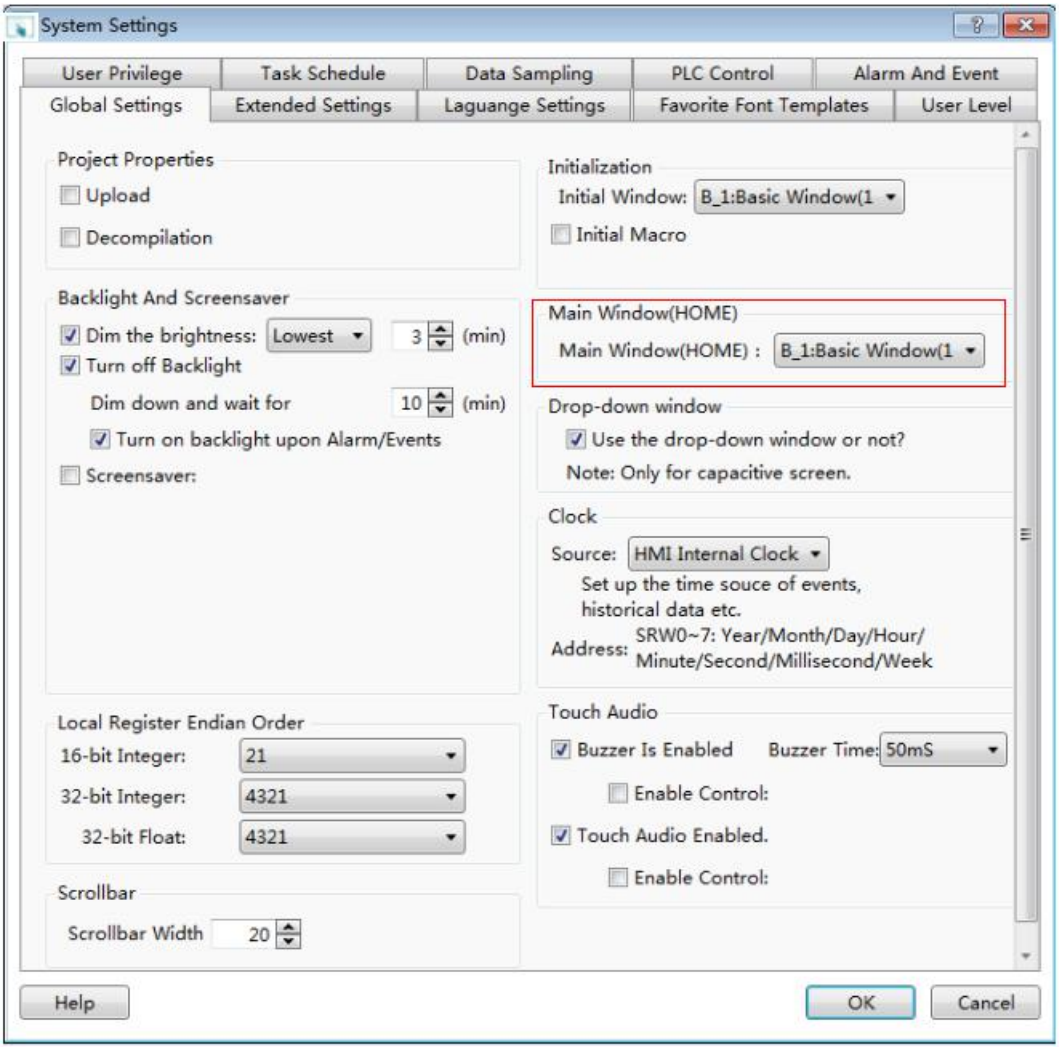
Put the component on the pop-up window, press, hold and drag to modify the pop-up window position.

- Return to the main window (HOME)

Close the current window and open the preset main window. The main window can be set by the menu command "Setup -> System Setting –> General Setting".







➢ Automatic pop-up password window

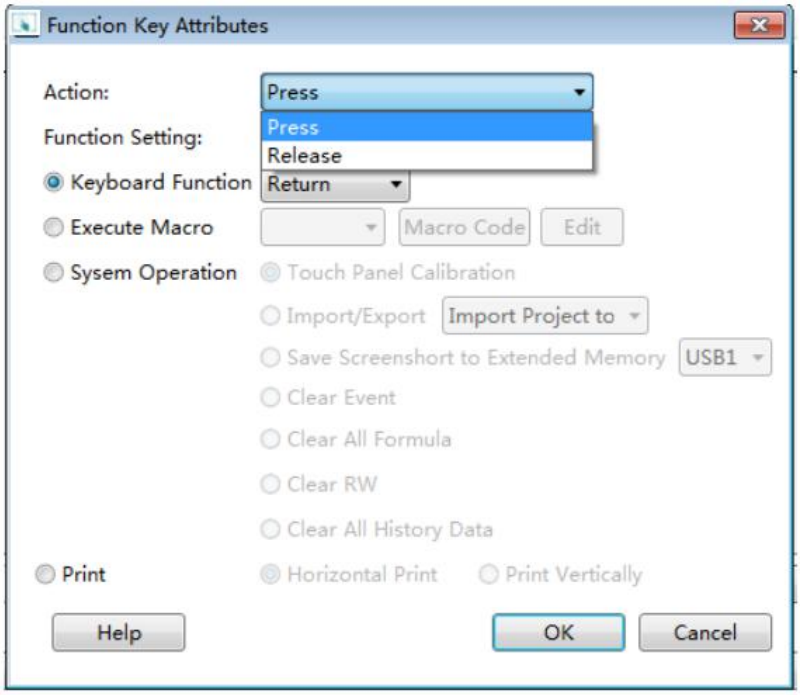
If "Automatic pop-up password window" is checked and when the window operation is switched to a window in a higher password or authority level, the window to enter password will pop up automatically.

4.6.1.4 Function Key

The "Function Key" component provides component executing action, keyboard function, executing macro instructions, and system operation functions.

- Action

The attribute "Action" of "Function Key" can be "Press" or "Release".



➢ Press

The corresponding keyboard function will be given out when the element is pressed down, and the macro instructions or system operation instructions will be executed.

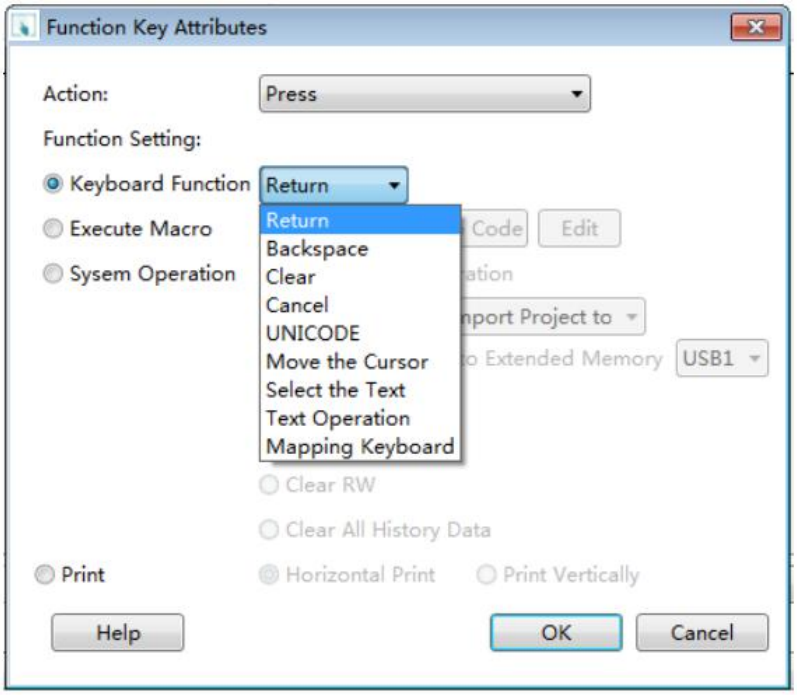
➢ Release

The corresponding keyboard function will be given out when the component is released, and the macro instructions or system operation instructions will be executed.

- Function Setting

The attribute "Function Setting" of the "Function Key" includes "Keyboard Function", "Execute Macro" and "System Operation".

➢ Keyboard Function



"**Return**"

It is the same to the "Enter" key on the keyboard.

"**Backspace**"

It is the same to the "Backspace" key on the keyboard.

"**Clear**"

Delete the current content which has been inputted for the component "Numeric Value Input" and "**Character Input**".

"**Cancel**"

Cancel the component operation of "Numeric Value Input" and "Character Input".

"**UNICODE**

Set the type of characters which inputted to the component "Character Input". The characters can be number keys (0, 1, 2…), letters of an alphabet (a, b, c…), ASCII code or Unicode characters.

"**Move the Cursor**"

Move the cursor according to the set modes including up, down, left, right, row beginning, row end, first bit and last bit. This function is effective only for the input component.

"**Select the Text**"

Set the operation for the selected text content, including "Selection Begin" and "Selection End". This function is effective only for the input component.

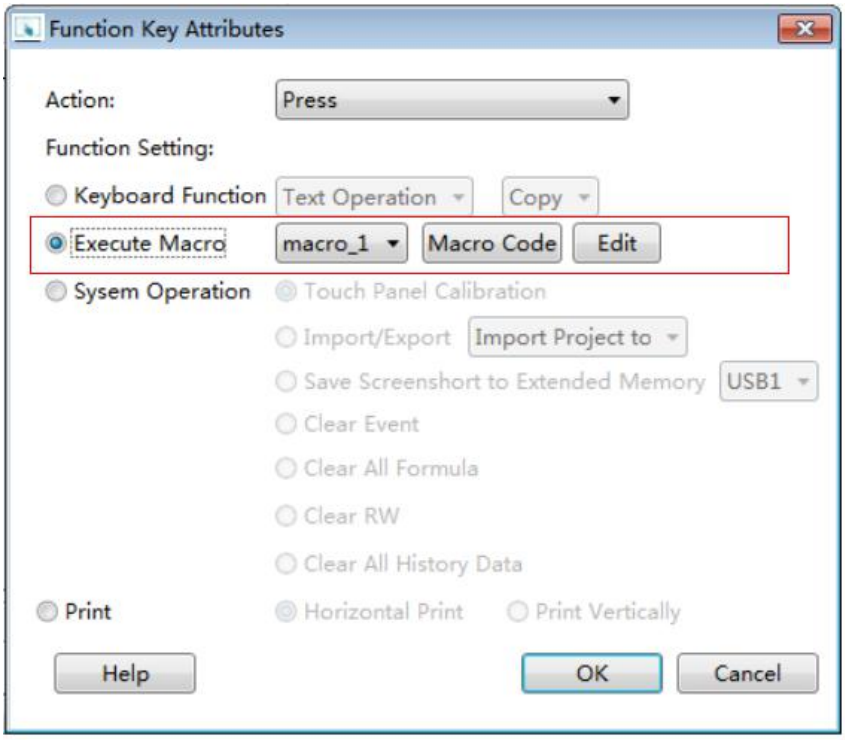
"**Text Operation**"

Set the operation for the text content, including "Copy", "Cut" and "Paste". This function is effective only for the input component.

"**Mapping Keyboard**"

When this function is activated, corresponding functions can be mapped to F1~F8 of HMI, including forward, backward, Esc, Enter, and so on. This function is effective only for some specified HMI.

- Execute Macro



If this function is selected, the selected macro will be executed when the component is pressed down or released. The "Macro Instruction" dialog will pop up if you click the button "Macro Code" or "Edit". You can select or create a macro here, or edit the current macro.

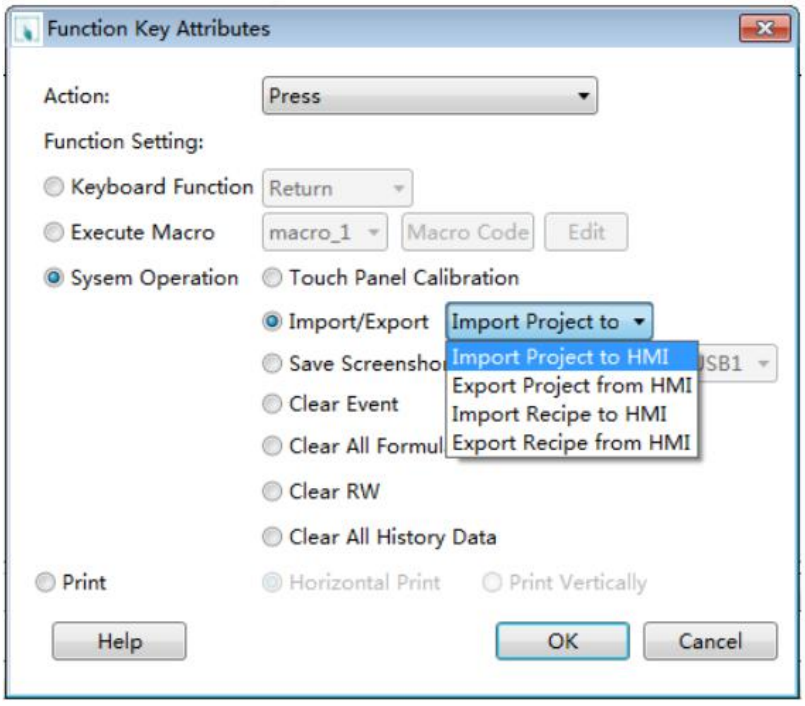
- System Operation

"Touch Panel Calibration"

By using this function, the user can enter the touch control calibrating window. Screen touch control calibration for HMI can be realized in this window.

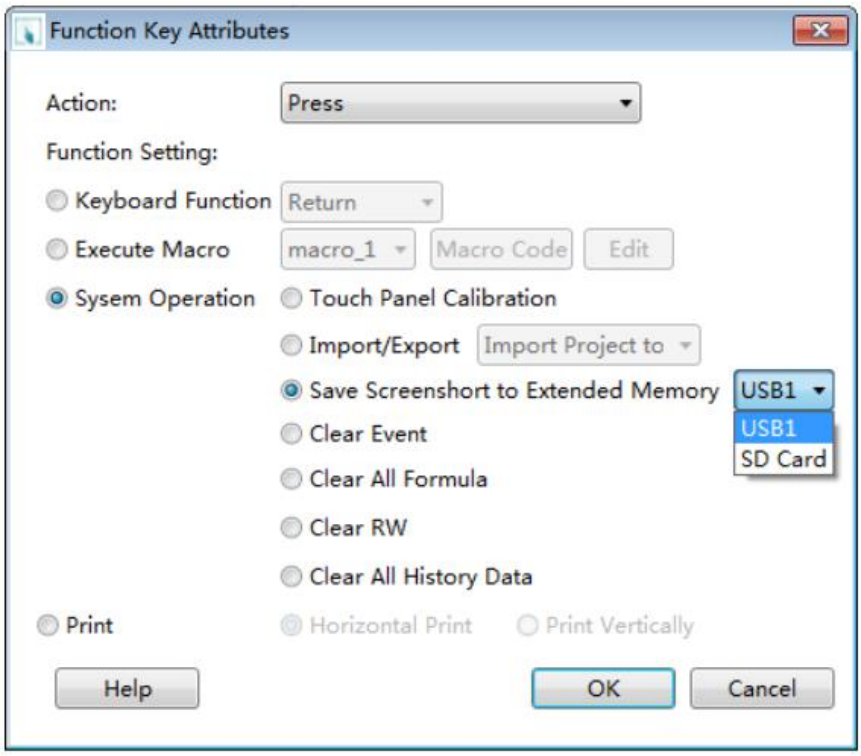
"**Import/Export**"

When this function is selected, the project or prescription data can be imported or exported. This function must be used together with the file view box, and it only supports the HMI with USB HOST or SD card slot.



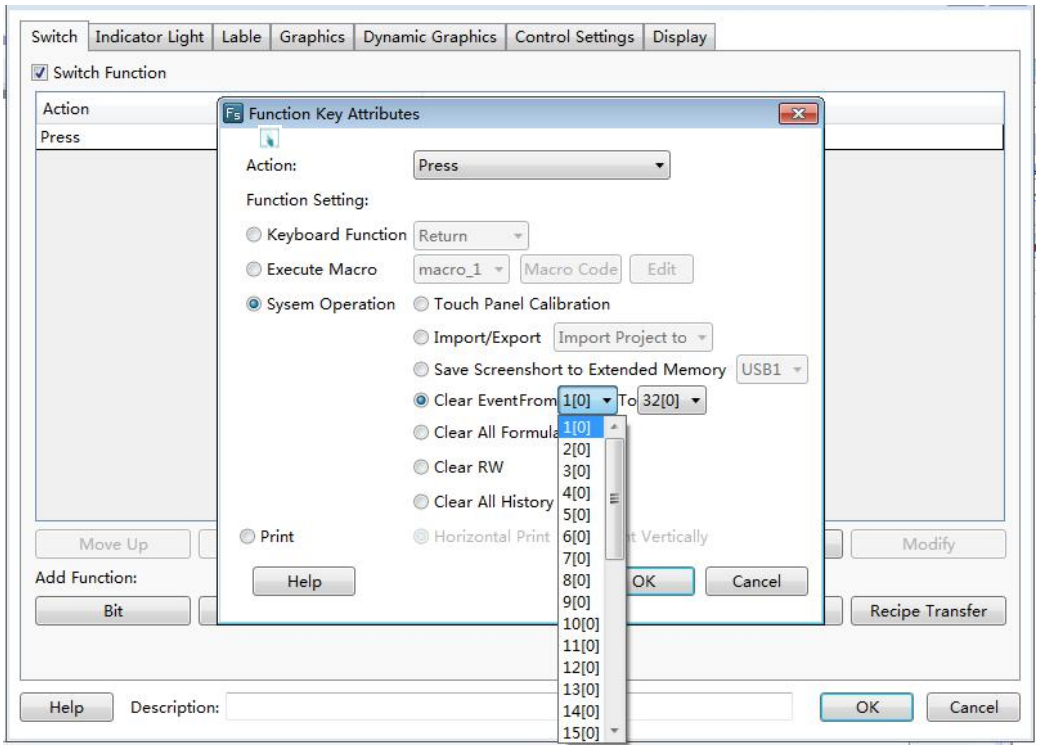
"**Save Screenshot to Extended Memory**"

When this function is selected, the touch screen picture can be captured and saved into an external memory device in the bmp format for printing or viewing HMI picture. And this function only supports the HMI with USB HOST or SD card slot.



"Clear Event"

This function can be used to clear warning events in groups.



"Clear All Formula"

This function can be used to clear all prescription data.

“Clear RW"

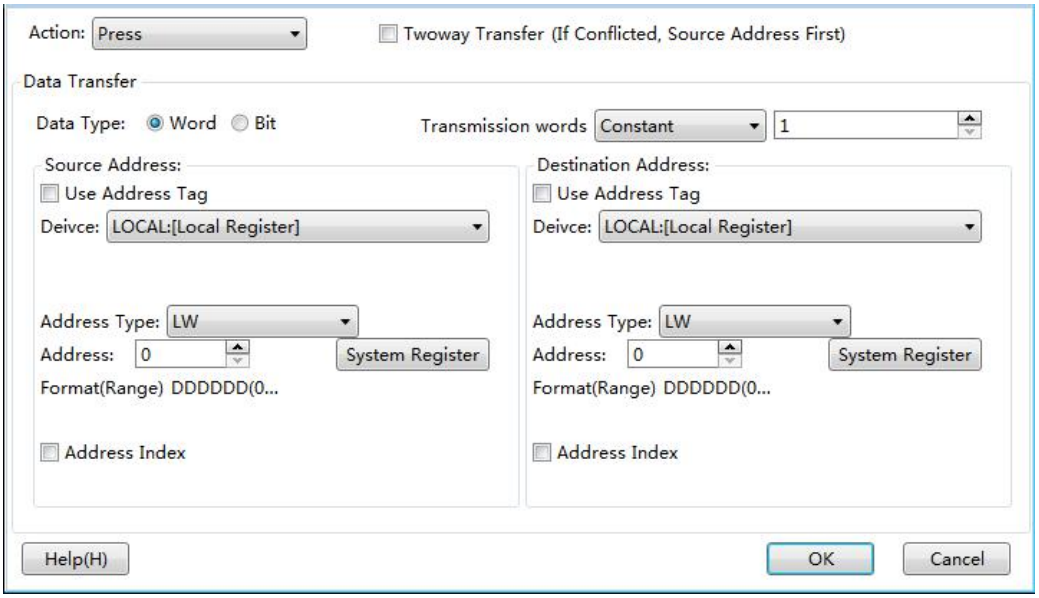
This function can be used to clear all RW data saved in power failure.

"Clear All History"

This function can be used to clear all history data. It can be used together with other switch components.

4.6.1.5 Data Transferring

The "Data Transferring" component can be used to transmit the data saved in one or more continuous addresses to another one or other more continuous addresses.



- Action

The attribute "Action" can be "Press" or "Release". When "Press" is selected, data transmission will be started when the component is pressed down. When "Release" is selected, data transmission will be executed when the component is released.

- Data Type

The "Data Type" means the type of data to be transmitted. It can be "Bit" or "Word".

- Transmission words

It means the number of data transmitted at one time. It can be set "Constant" or "Variable". If set "Variable", the register address must be designated. The maximum number of words transmitted in this software is 8192.

- Source Address

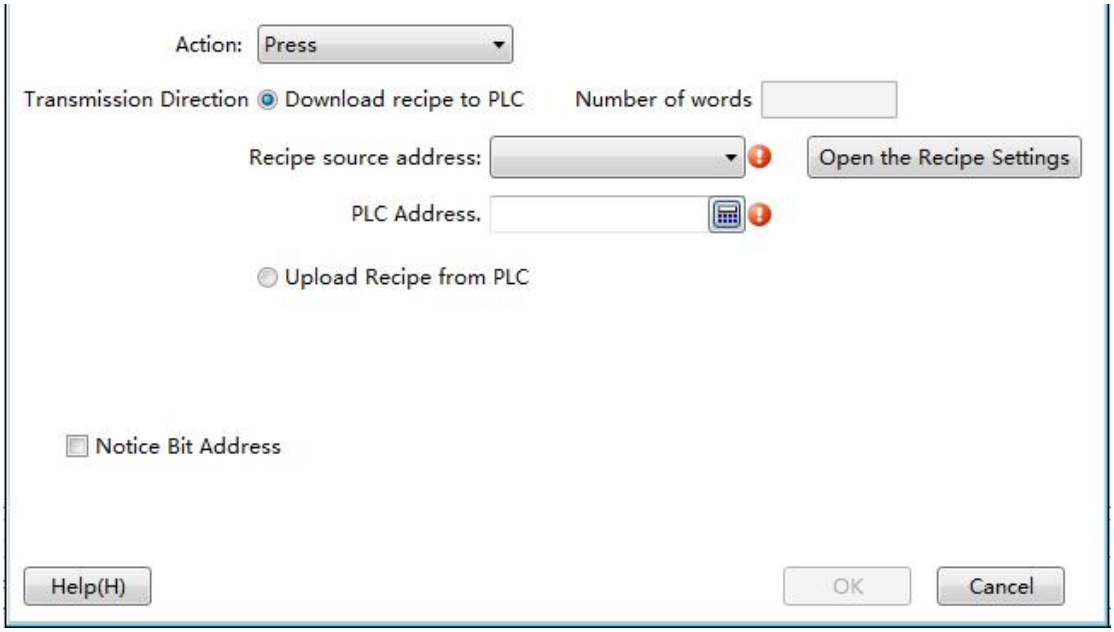
The "Source Address" means the first address of the data to be transmitted. The detailed can be seen in the Detailed manual/General functions/Address Editor/Standard Bit Address Input or Detailed manual/General functions/Address Editor/Standard Byte Address Input.

- Destination address

The "Destination address" means the first address of data transmission target. The detailed can be seen in the Detailed manual/General functions/Address Editor/Standard Bit Address Input or Detailed manual/General functions/Address Editor/Standard Byte Address Input.

4.6.1.6 Recipe Transmission

The "Recipe Transmission" component includes two transmission directions: "Download recipe to PLC" and "Upload recipe from PLC". "Download recipe to PLC" means transmitting the content of the recipe file to the address of PLC. "Upload recipe from PLC" means transmitting data from the address of PLC to the recipe file.

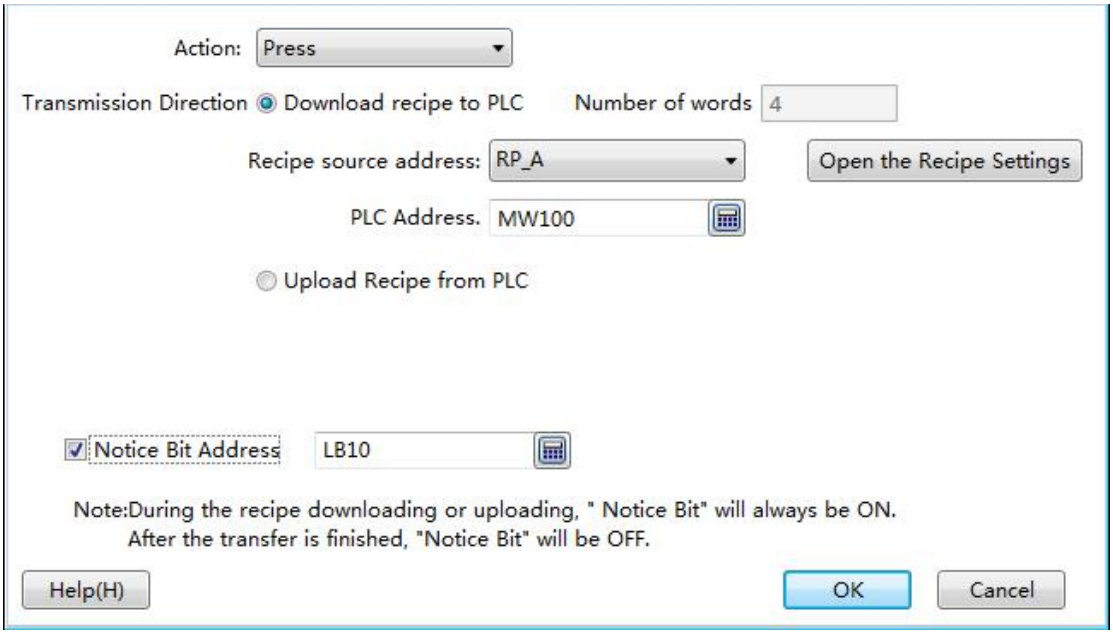


- Download recipe to PLC

It is the default for the "Transmission Direction".

➢ Recipe source address

When no recipe file is created, the "Recipe source address" will be blank with a red exclamatory mark. You can click the button "Open the Recipe Settings" to create recipe. After the recipe is created, you can select it in "Recipe source address" to download.



Notice:

The "Number of words" is determined by the recipe itself, and it always displays automatically.

➢ PLC Address

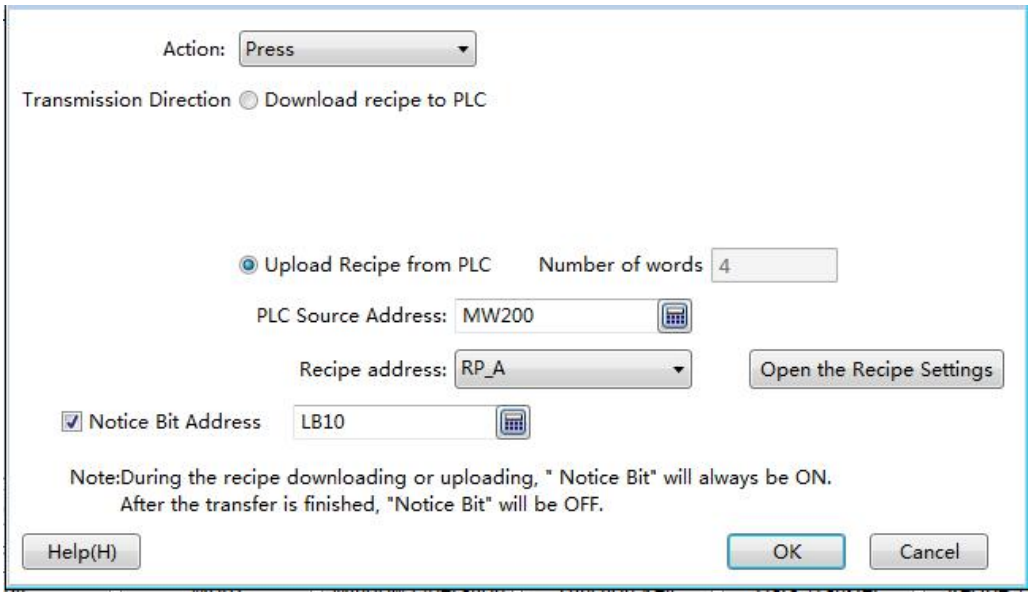
"PLC Address" means the target address for recipe file data transmission. It can be the address of PLC connected to HMI or an internal address of HMI. The detailed address editing method can be seen in: Detailed manual/General functions/Address Editor/ Standard Byte Address Input.

➢ Notice Bit Address

A bit address can be set here to monitor the recipe downloading state. The address editing method can be seen in: Detailed manual/General functions/Address Editor/Standard Bit Address Input. This bit address will be kept on during the recipe downloading or uploading, and it will be set to OFF after transmission.

- Upload Recipe from PLC

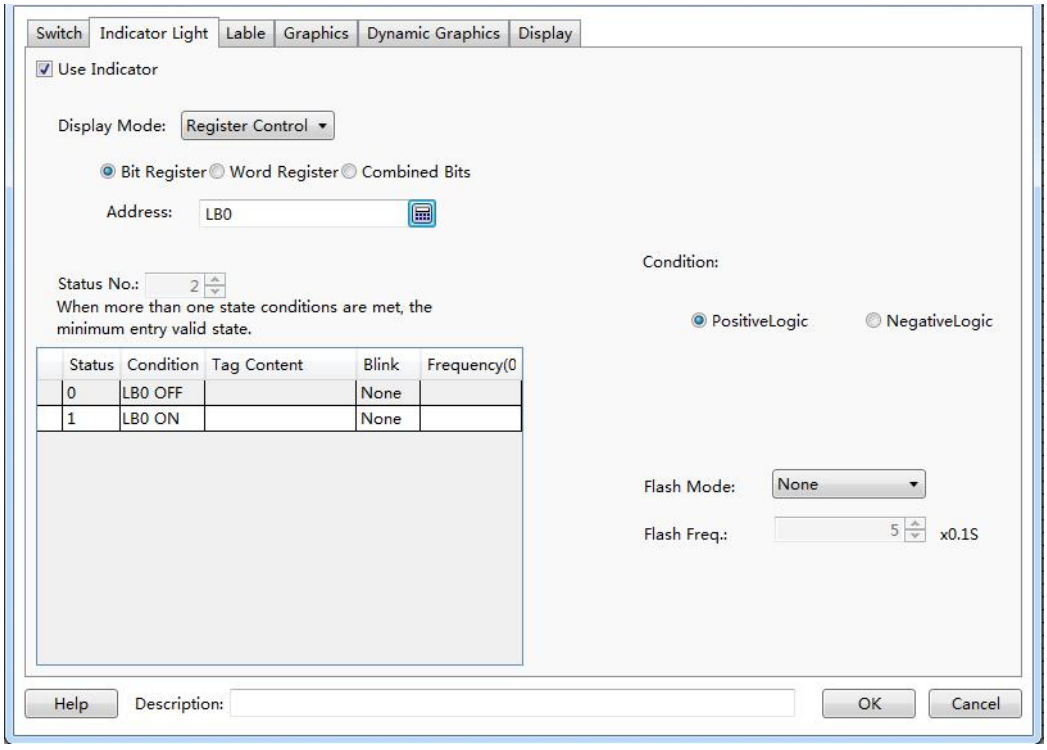
If the "Upload Recipe from PLC" is selected, the recipe uploading function will be activated.



The detailed operation of the recipe uploading can refer to the recipe downloading.

4.6.2 Indicator Light

4.6.2.1 Bit Indicator Light



- Display Mode

The "Display Mode" can be "Register Control" or "Automatic looping". The details are referred to: Detailed manual/General functions/Display.

- Bit Register

The component is a bit indicator when "Bit Register" is selected. The method to input bit address can be seen in: Detailed manual/General functions/Address editor/Standard Bit Address Input.

- Status No.

The status of a bit address can be ON or OFF. So it is 2 here in default and cannot be modified.

- Condition

➢ Positive Logic

State 0 is OFF and state 1 is ON.

➢ Negative Logic

State 0 is ON and state 1 is OFF.

- Flash Mode

It includes three modes: "None", "Blink Text" and "Blink Picture". You can select each status in left table and then set the flash mode for the status selected.

➢ None

It means no flashing.

➢ Blink Text

Text can flash in a frequency.

➢ Blink Picture

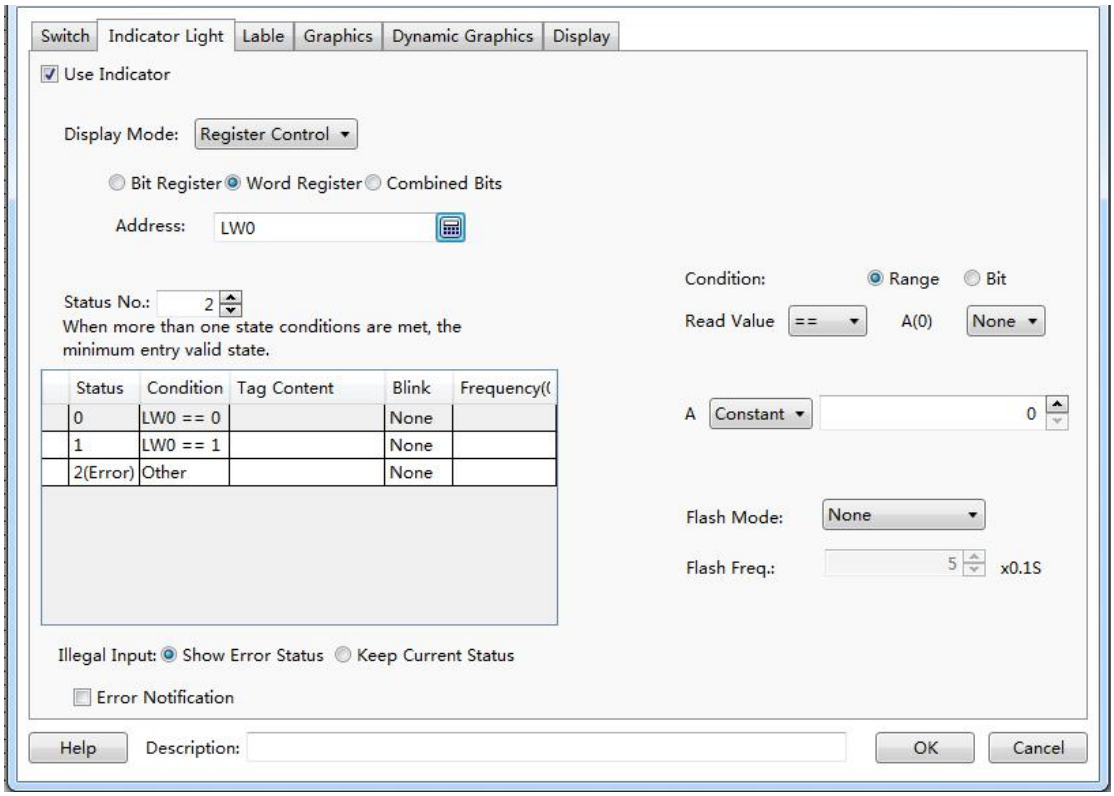
Picture can flash in a frequency.

- Flash Freq.

Picture or text will flash in a designated frequency. The frequency can be a multiple of 0.1 second.

Detailed attribute information of the current bit indicator light can be seen in the table at the left bottom.

4.6.2.2 Word Indicator Light



- Display Mode

The "Display Mode" can be "Register Control" or "Automatic looping".

- Word Register

The component is a word indicator when "Word Register" is selected. The method to input bit address can be seen in: Detailed manual/General functions/Address editor/Standard Byte Address Input.

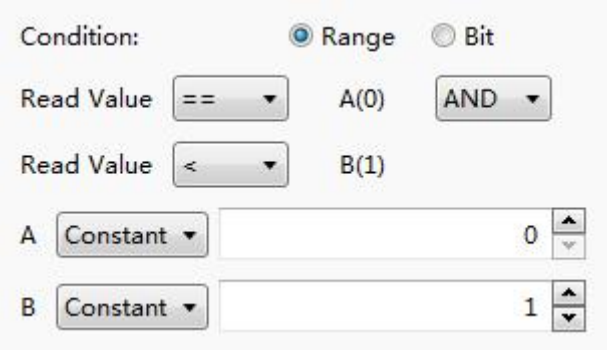
- Status No.

The range of the status number is 1~256. Each status corresponds to the value of the word address. When many statuses satisfy the condition at the same time, only the status with the minimum value will be effective.

- Condition

➢ Range

The status content (value) will be determined according to the comparison and logic operation result of the word address value. The comparison operation includes “>”, “<”, “>=”, “<=”, “==” and “!=”. The logic operation can be "AND", "OR" or "None".



➢ Bit

Text or picture can be displayed according to the state of one bit of the word address, e.g. bit LW0.1 of address LW0.

"Positive Logic" means that State 0 is OFF and state 1 is ON.

"Negative Logic" means that State 0 is ON and state 1 is OFF.

- Flash Mode

It includes three modes: "None", "Blink Text" and "Blink Picture". You can select each status in left table and then set the flash mode for the status selected.

➢ None

It means no flashing.

➢ Blink Text

Text can flash in a frequency.

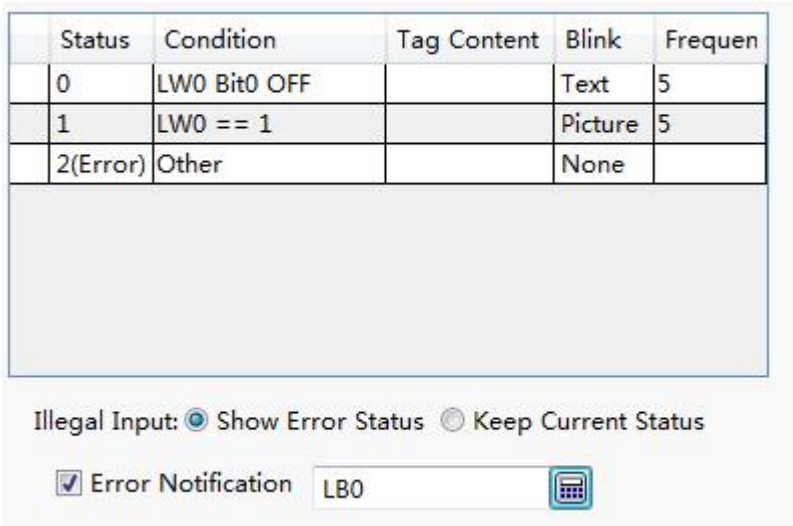
➢ Blink Picture

Picture can flash in a frequency.

- Flash Freq.

Picture or text will flash in a designated frequency. The frequency can be a multiple of 0.1 second.

Detailed attribute information of the current word indicator light can be seen in the table at the left bottom.



- Illegal Input

The value of word address doesn't satisfy the condition preset.

➢ Show Error Status

The indicator displays the "Error" status when illegal input happened. That is the last status displayed in the table.

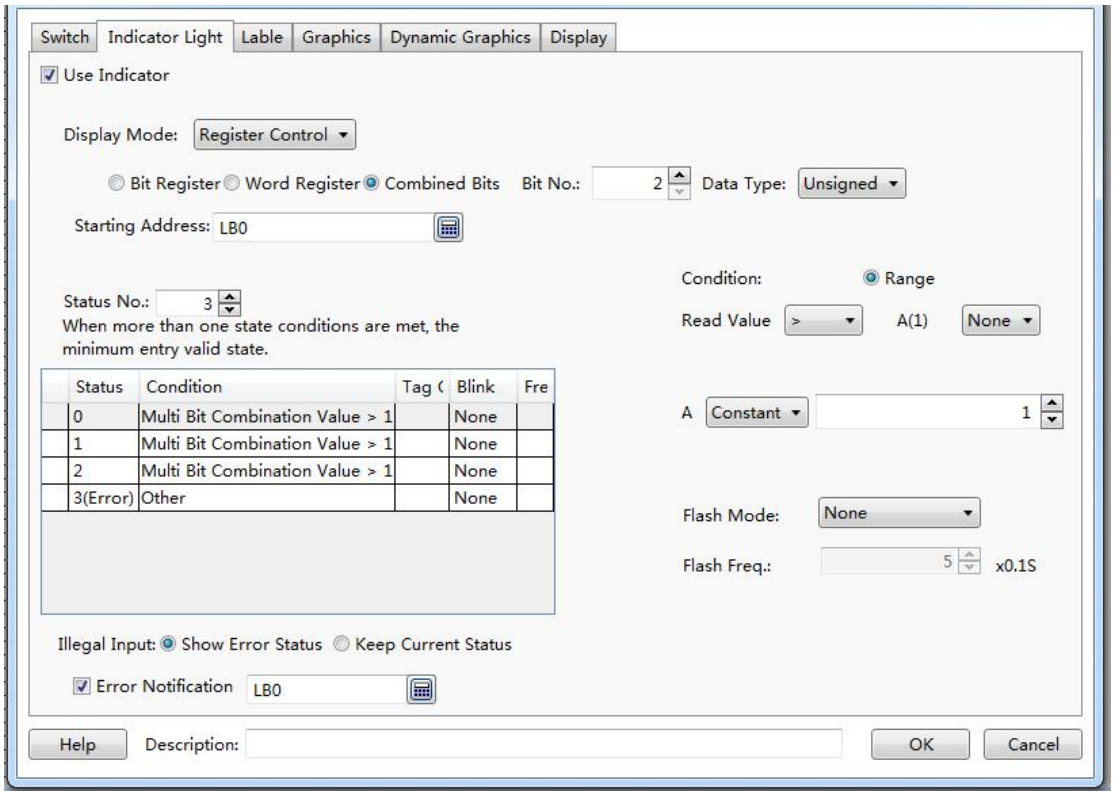
➢ Keep Current status

The indicator keeps the current status when illegal input happened.

- Error Notification

You can select a bit address here. It will be set to ON if the word address value doesn't satisfy with the condition. It will be set to OFF when the condition is satisfied.

4.6.2.3 Multi Bit Combination Indicator Light



- Display Mode

The "Display Mode" can be "Register Control" or "Automatic looping".

- Combined Bits

The status displayed is determined by a multi bit combination condition.

- Bit No.

The condition can be a combination of 2~32 bits. The "Bit No." means the number of bits.

- Data Type

➢ Unsigned

If the number of bits is n, the combination value will be 0~2n-1.

➢ Signed

If the number of bit is n, the combination value will be -2n-1~2n-1-1.

- Starting Address

The starting address is closely associated to the number of bits. For example, if the starting address is LB0 and the number of bits is 2, a combination will be formed. LB1 will be the high bit and LB0 will be the low bit. The range of 2 bits combination value will be 0~3 if the data type is unsigned. The range of 2 bits combination value will be -2~1 if the data type is signed.

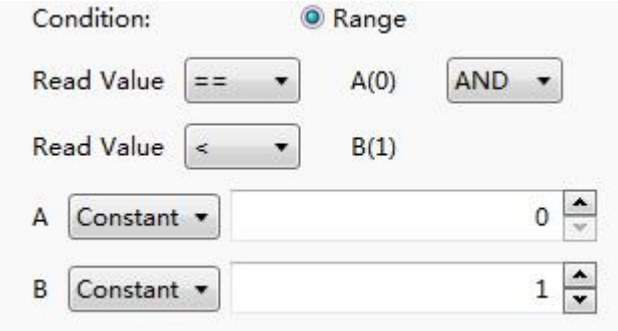
- Status No.

The range of the status number is 1~256. Each status corresponds to the value of the word address. When many statuses satisfy the condition at the same time, only the status with the minimum value will be effective.

- Condition

➢ Range

The status content (value) will be determined according to the value of the combined bits. The comparison operation includes “>”, “<”, “>=”, “<=”, “==” and “!=”. The logic operation can be "AND", "OR" or "None".



- Flash Mode

It includes three modes: "None", "Blink Text" and "Blink Picture". You can select each status in left table and then set the flash mode for the status selected.

➢ None

It means no flashing.

➢ Blink Text

Text can flash in a frequency.

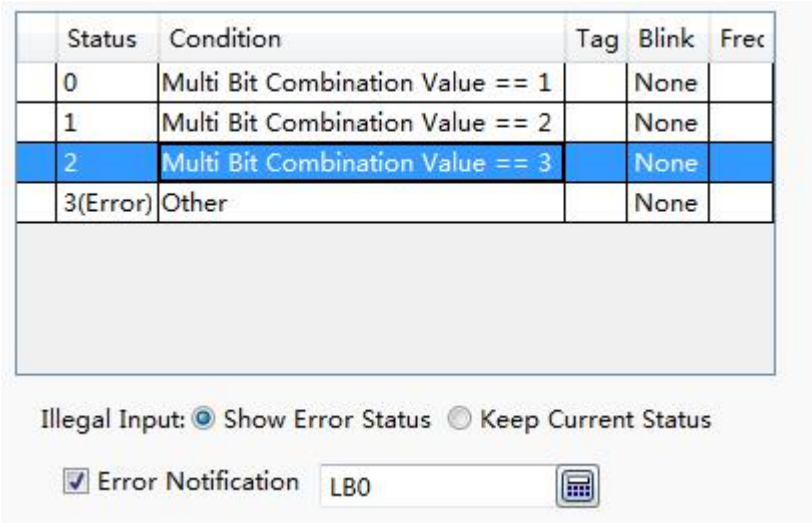
➢ Blink Picture

Picture can flash in a frequency.

- Flash Freq.

Picture or text will flash in a designated frequency. The frequency can be a multiple of 0.1 second.

Detailed attribute information of the current component can be seen in the table at the left bottom.



- Illegal Input

The multi bit combination value doesn't satisfy the condition preset.

➢ Show Error Status

The indicator displays the "Error" status when illegal input happened. That is the last status displayed in the table.

➢ Keep Current status

The indicator keeps the current status when illegal input happened.

- Error Notification

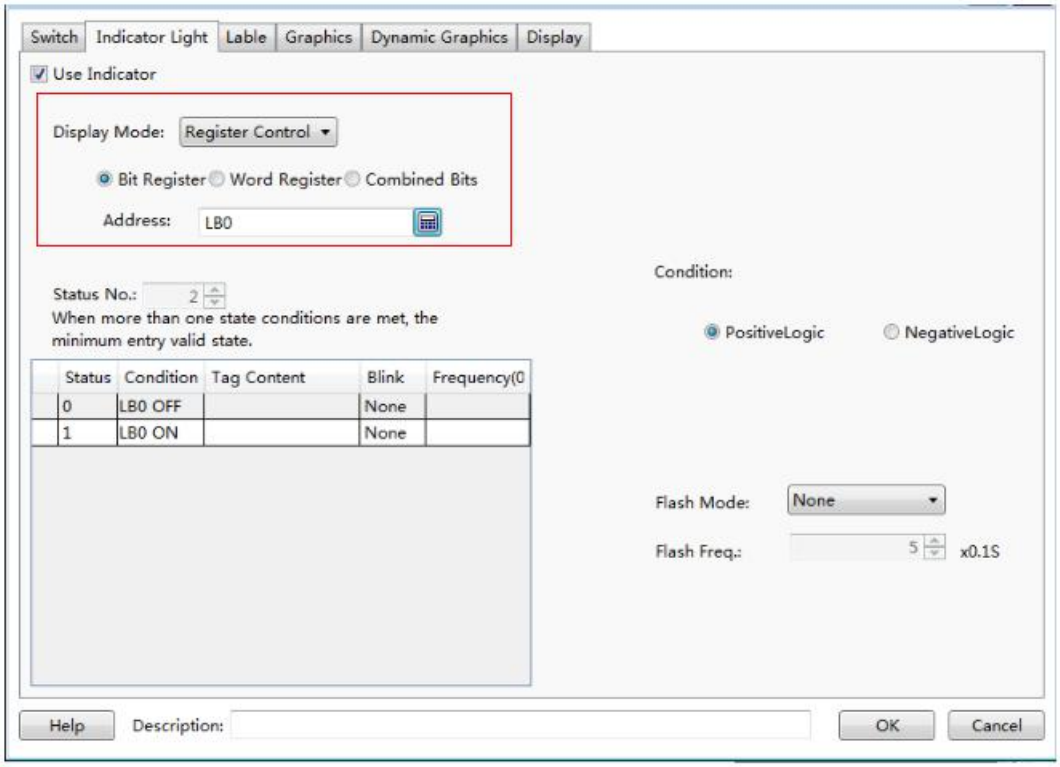
You can select a bit address here. It will be set to ON if the multi bit combination value doesn't satisfy the condition. It will be set to OFF when the condition is satisfied.

4.6.2.4 Display Mode

You can find the "Display Mode" if you check the "Use Indicator" in the property TAB of "Indicator Light". The display modes include "Register Control" and "Automatic looping".

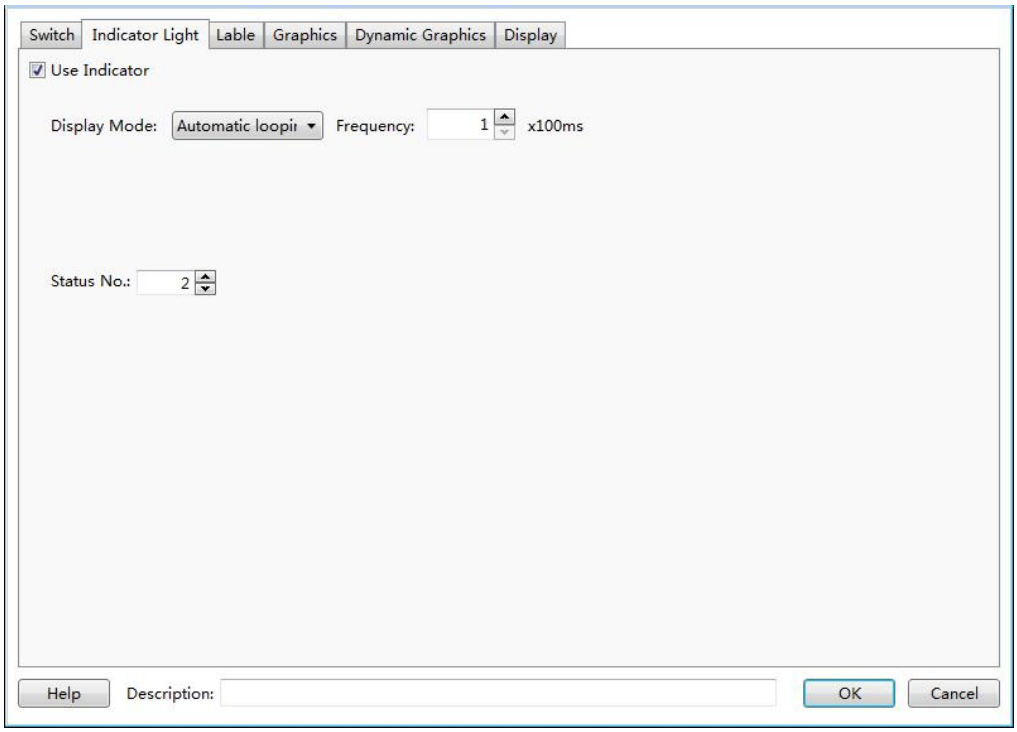
1 Register mode

The "Register Control" mode can be Bit Registers, Word Registers or Combined Bits.



2 Automatic looping

All the status will be cycled to display according to the specified frequency if the display mode is "Automatic looping". The unit of frequency is 100 milliseconds. The setting is shown as below.



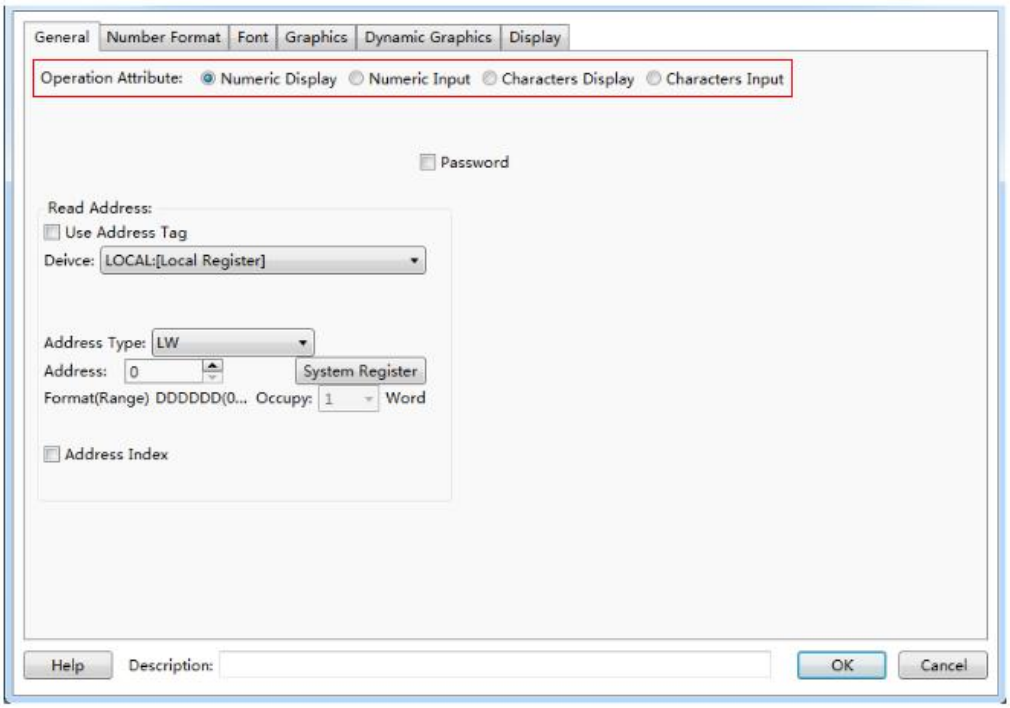
4.6.3 Numeric Value and Character Display

4.6.3.1 Numeric Value Display

4.6.3.1.1 General

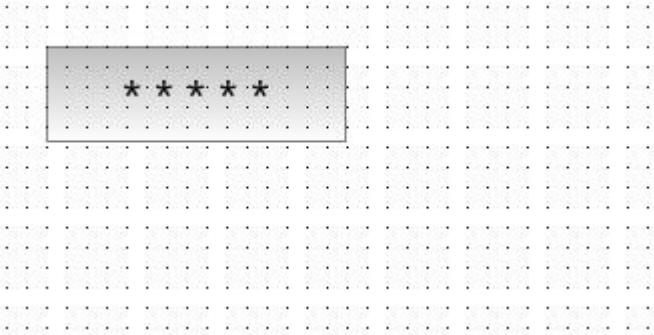
- Operation Attribute

The "Operation Attribute" includes four operation types: "Numeric Display”,” Numeric Input”,” Character Display" and "Character Input". The operation type of this current component can be modified here. It is highly efficient for the project modifying and maintaining.



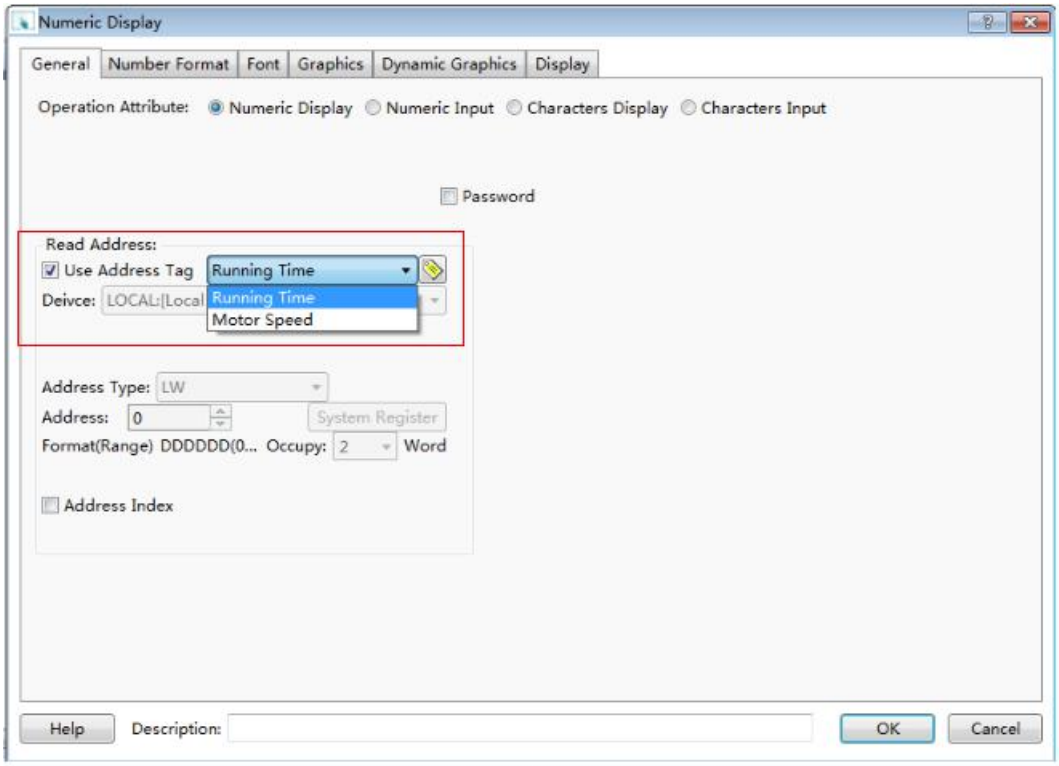
- Password

When the "Password" is checked, “*” will be displayed in the component (See the figure below). It is always used for the numeric value input component. The numeric value display component is not used generally.



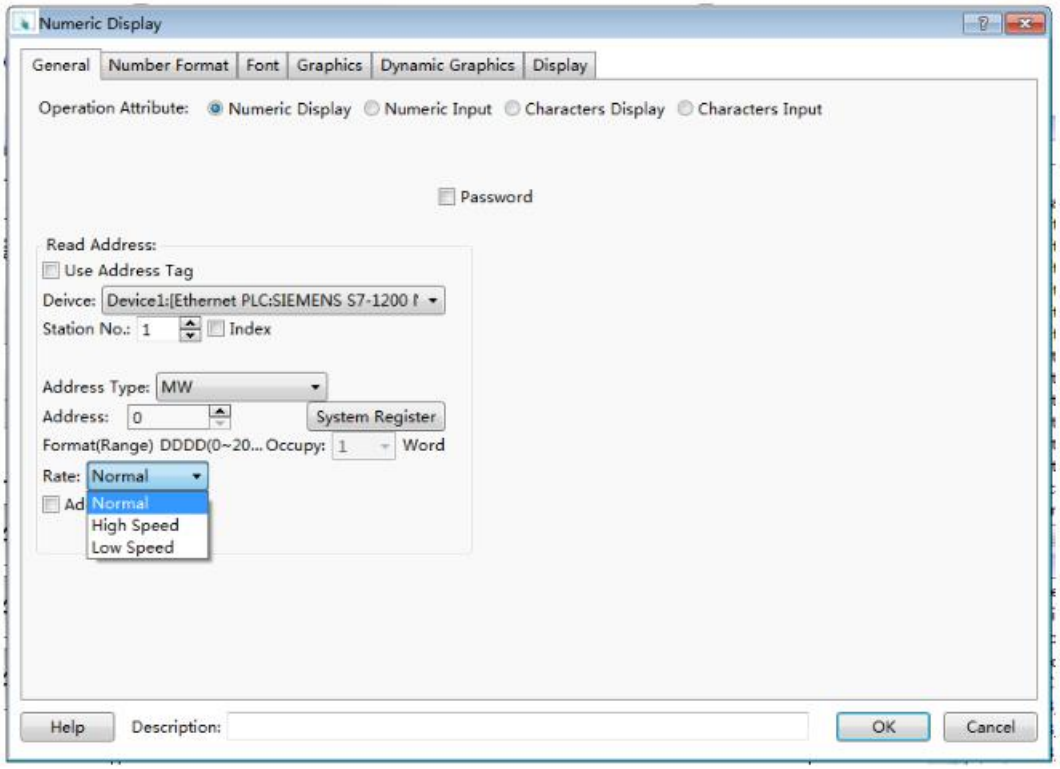
- Read Address

➢ Use Address Tag



When this function is checked, variables in the address tag library can be directly linked by the component (See address tag library details in: Detailed manual/Library/Address Tag Library). The address tag library can be used to improve the project maintaining efficiency. If many components in the project are linked to a same variable in the address tag library and this address need to be modified, it is only necessary to modify the variable address linked in the tag library without modifying each component.

- Address setting

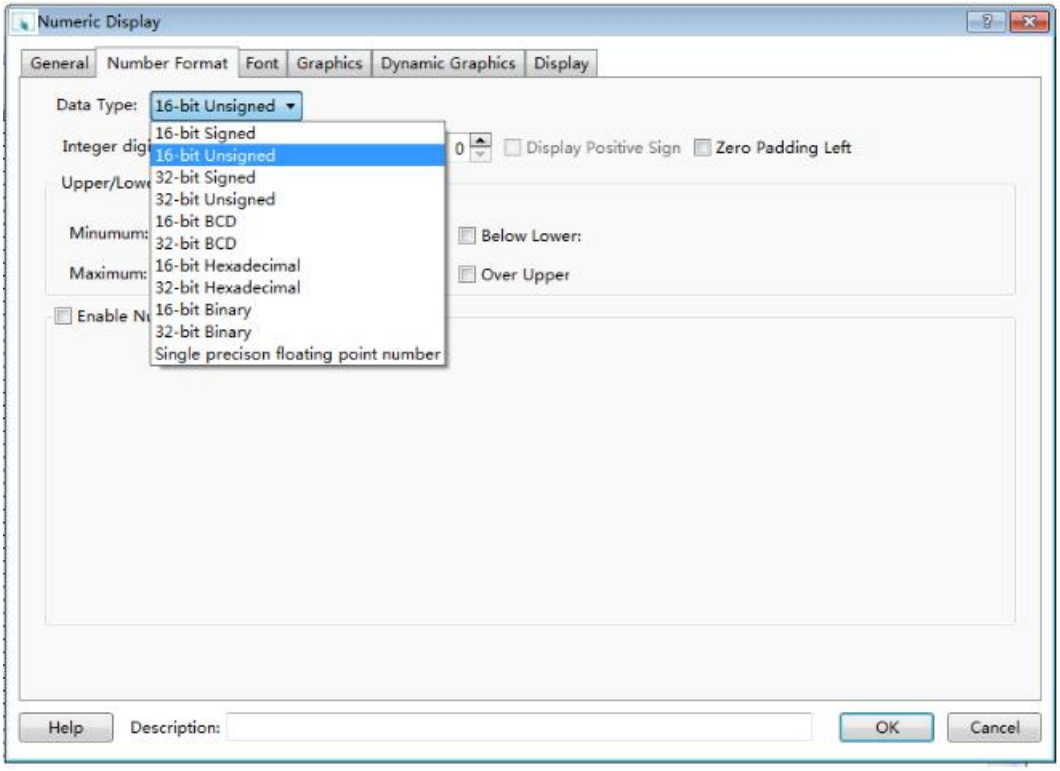


The address setting includes the attributes : "Device", "Address Type", "Address", "Format (Range)", "Address Index", and so on. Please see: Detailed manual/ General functions/ Address editor/ Standard Byte Address Input.

4.6.3.1.2 Number Format

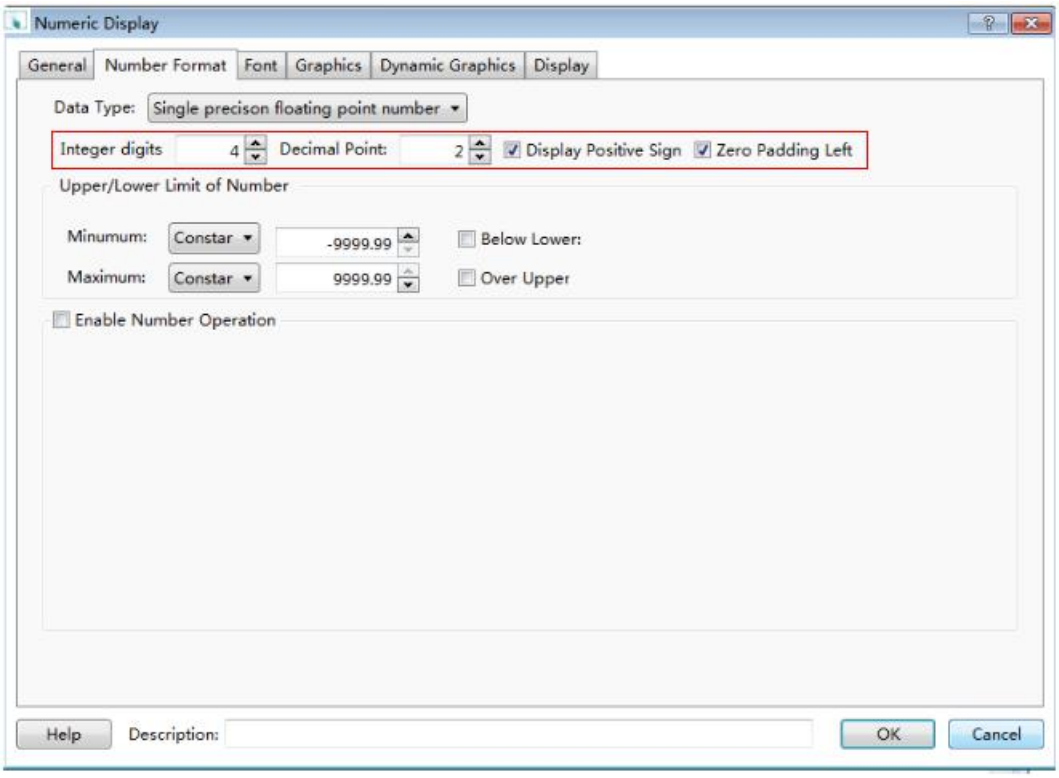
- Data Type

The "Data Type" can be "16-bit Signed", "16-bit Unsigned", "32-bit Signed", "32-bit Unsigned", "16-bit BCD", "32-bit BCD", "16-bit Hexadecimal", "32-bit Hexadecimal", "16-bit Binary", "32-bit Binary" or "Single precision floating point number".



- Data setting

The "Data setting" includes "Integer digits", "Decimal Point", "Display Positive Sign" and "Zero Padding Left".

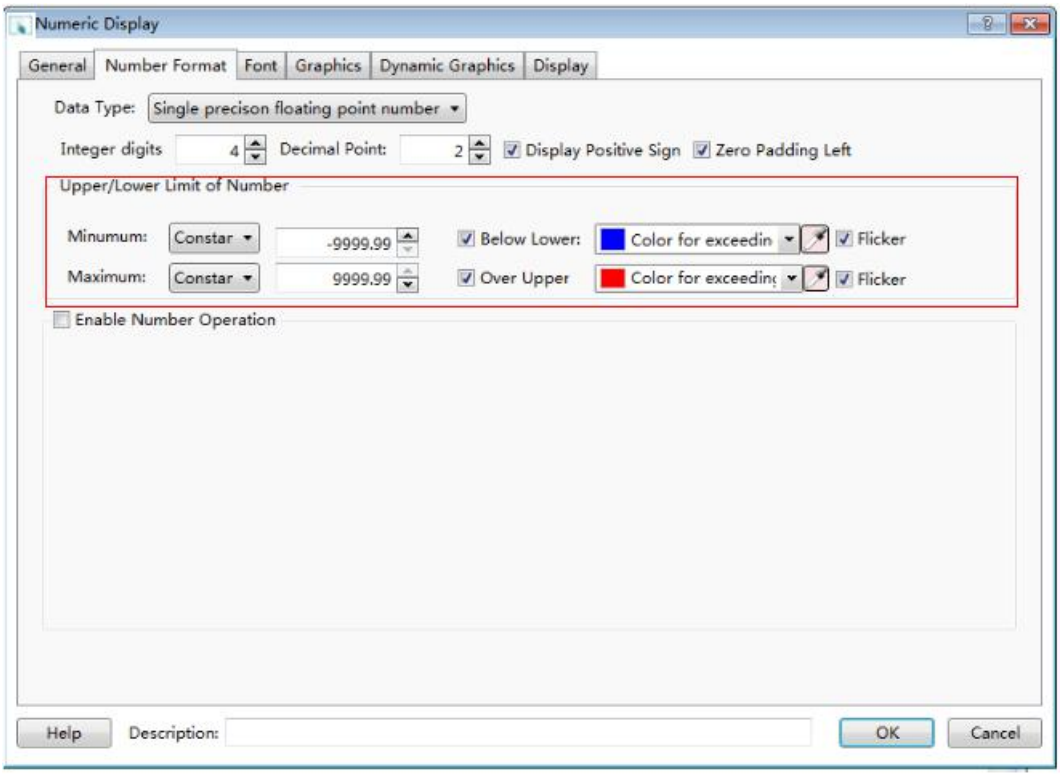


The "Integer digits" means the integer digit number of the data. The "Decimal Point" means the decimal digit number of the data.

Note: when the data type is an integer and the decimal bit is not zero, the value displayed will

reduce to satisfy the decimal digit number. For example, if the data is an integer “55” and two decimal bits are set, the value displayed will be “0.55”. In fact, only the value and the type of the data displayed can be modified by this function. The actual value and the actual type are not modified. It is still the integer “55”.

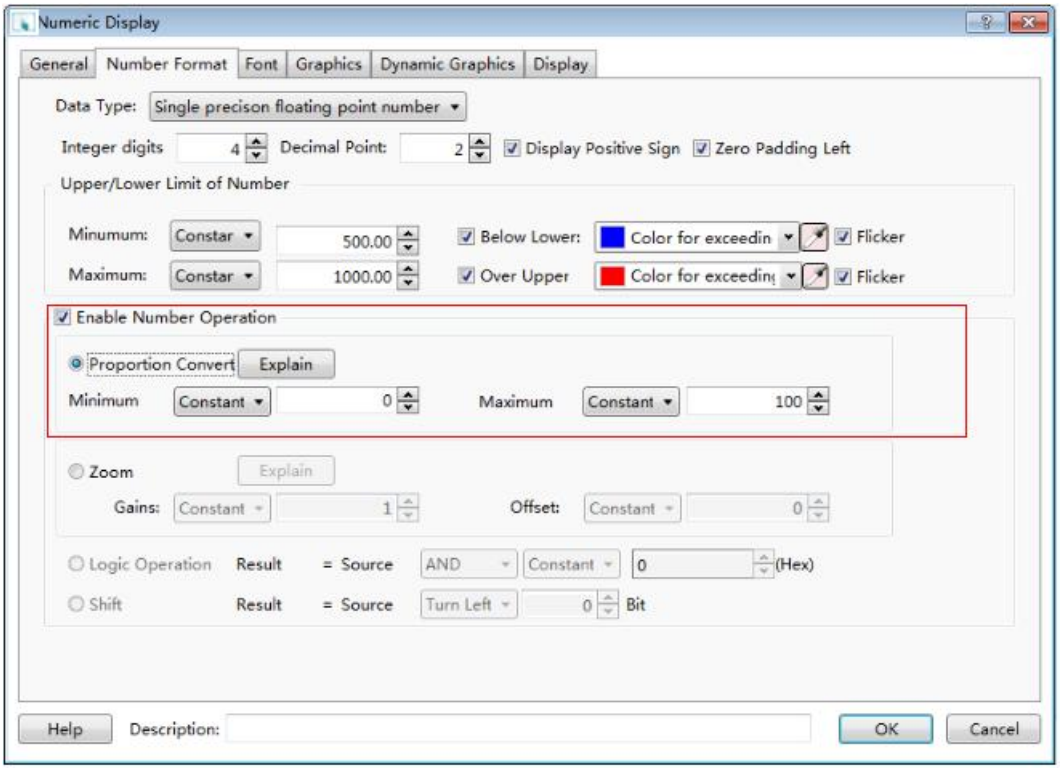
- Upper/Lower Limit of Number



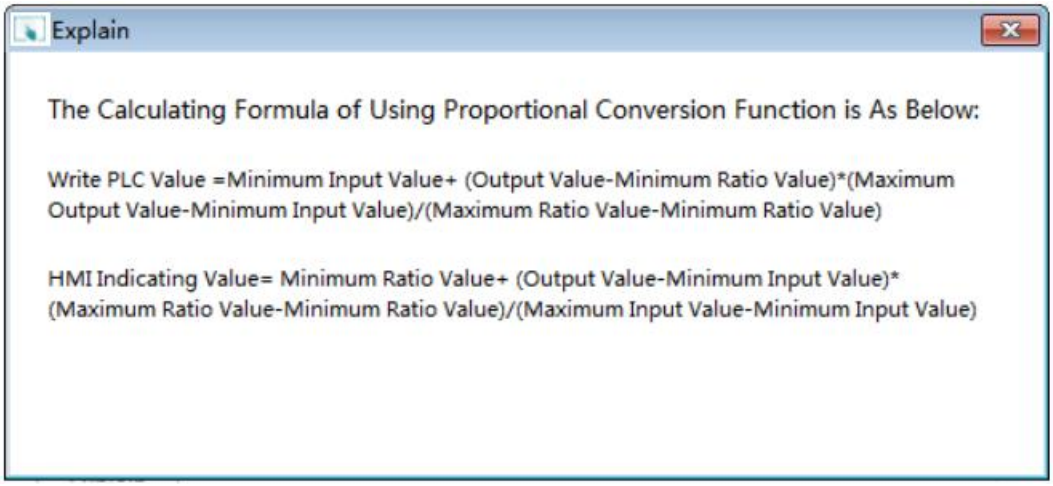
You can set the data upper limit in "Minimum" and the data lower limit in "Maximum". And you can set the font color of the data beyond the limit. When the "Flicker" is checked, the text will flash when the data is less than the lower limit or greater than the upper limit.

- Enable Number Operation

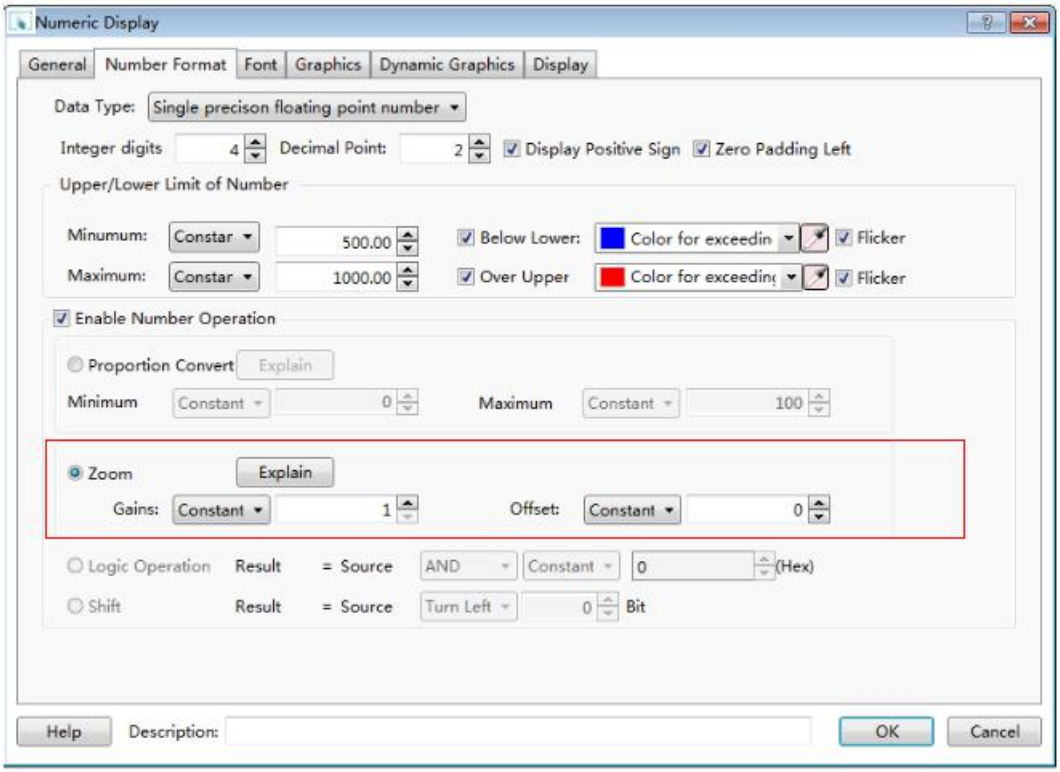
➢ Proportion convert



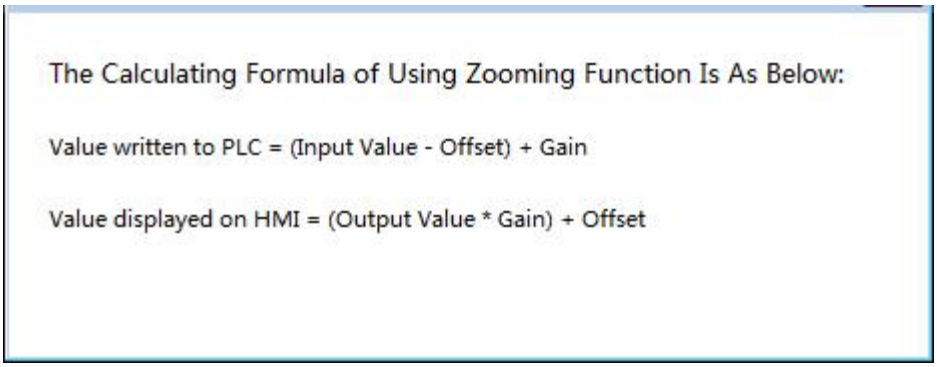
When the function of "Proportion Convert" is activated, the value displayed will be the result after proportional conversion. The proportional conversion formula is displayed when you click the button "Explain".



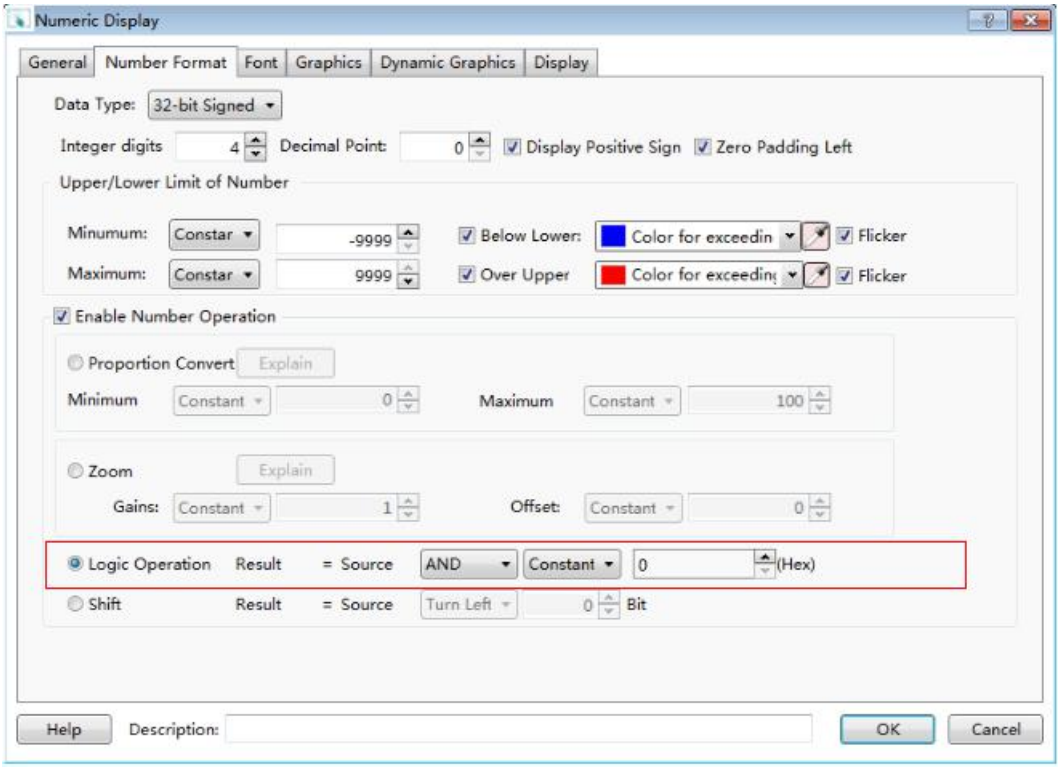
- Zoom



When the function of "Zoom" is selected, the value displayed will be the result after zooming conversion. The zooming conversion formula is displayed when you click the button "Explain".

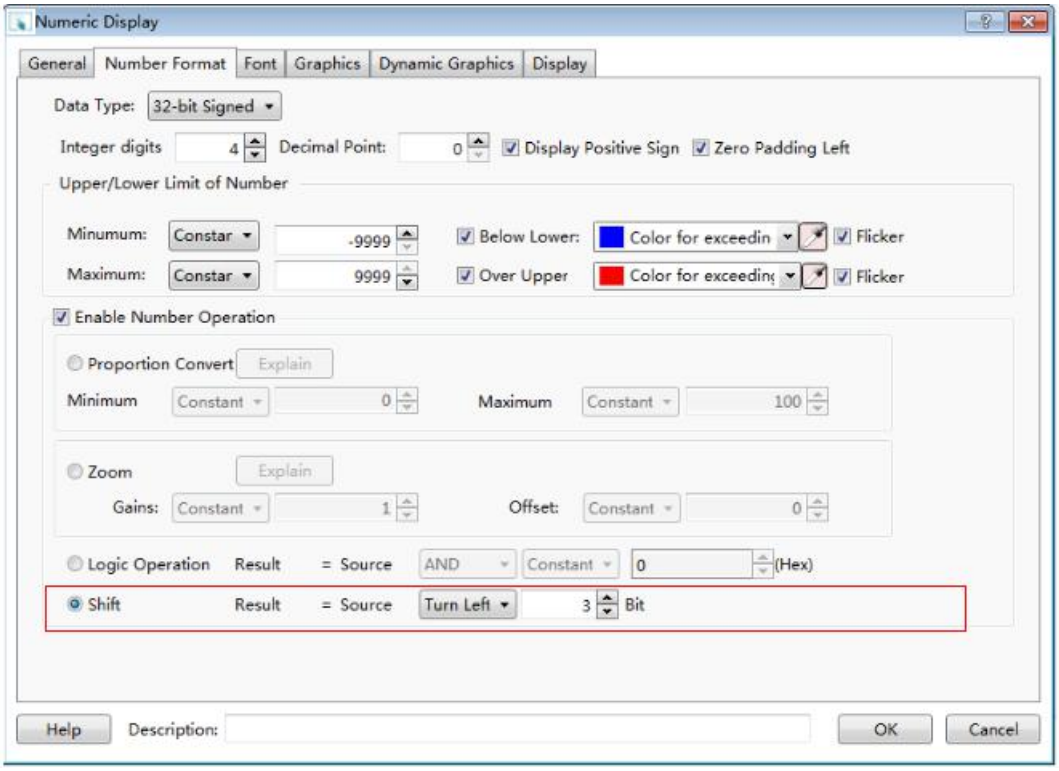


- Logic Operation



The data can be logically operated by the component which the logic operation can be "And", "Or" or "Exclusive or". And the result of logic operation will be displayed.

- Shift



The data can be shifted left or right by the component. And the result of shifting operation will be displayed.

4.6.3.1.3 Font

The detailed font setting can be seen: Detailed manual/ General functions/ Drawing/ Font Settings.

4.6.3.1.4 Graphics

The detailed graphics setting can be seen: Detailed manual/ General function/ Graphic edit.

4.6.3.1.5 Dynamic Graphics

The detailed graphics setting can be seen: Detailed manual/ General functions/ Dynamic Graphics.

4.6.3.1.6 Display

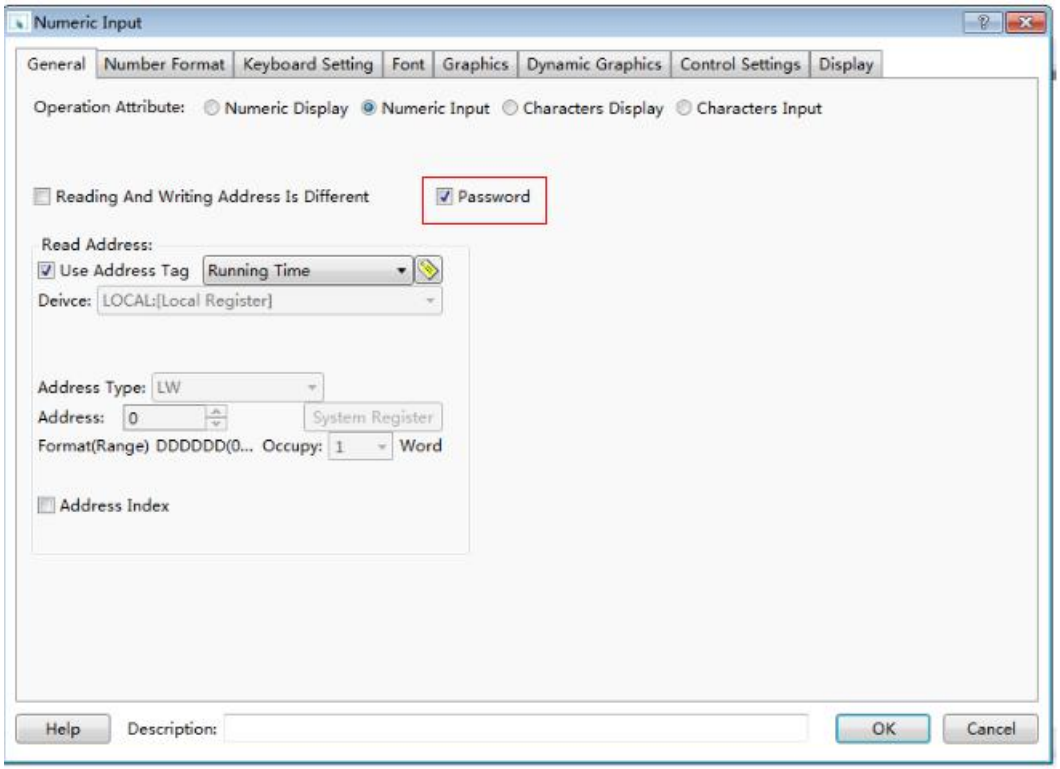
The detailed display setting can be seen: Detailed manual/ General functions/ Display.

4.6.3.2 Numeric Value Input

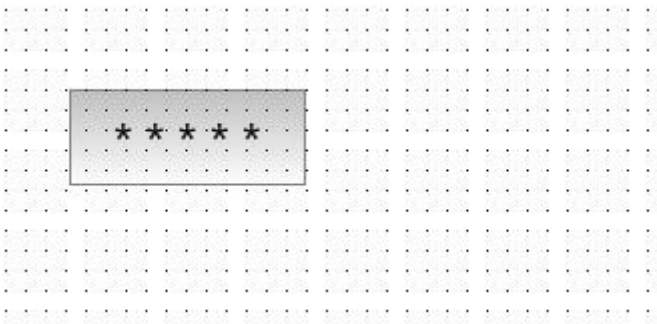
The attributes setting of the "Numeric Value Input" component is generally same to the "Numeric Value Display" component. The differences are detailed as below.

4.6.3.2.1 General

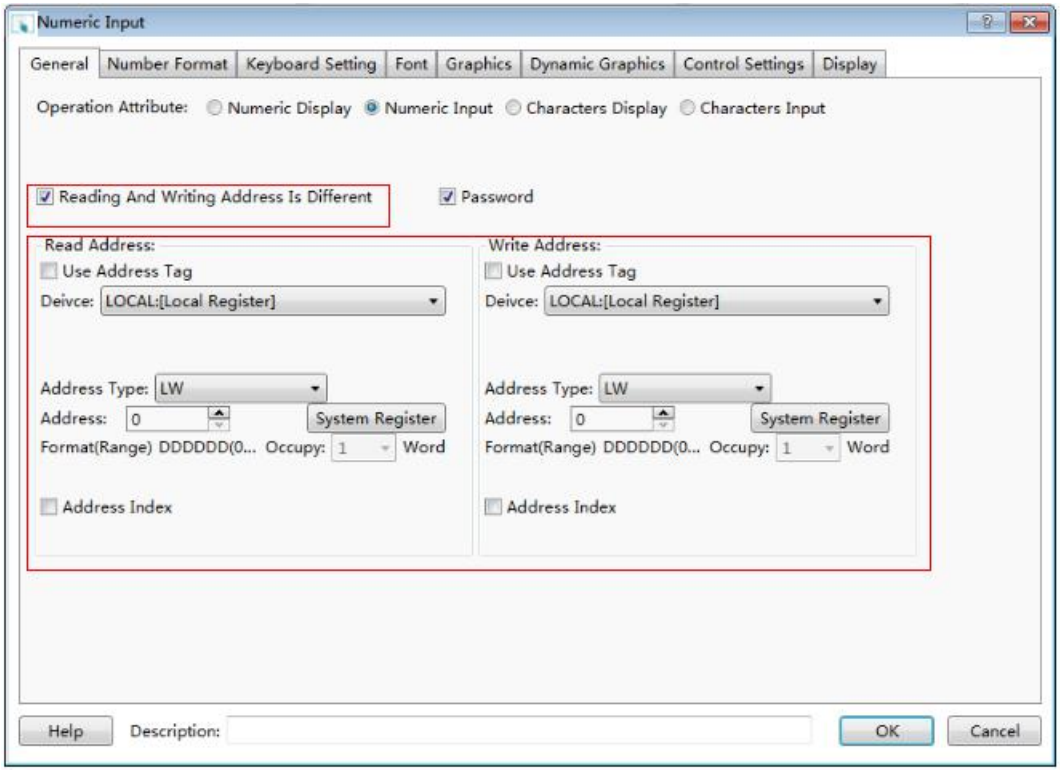
- Password



When the "Password" is checked, “*” will be displayed in the component (See the figure below). It can be checked if the current component is used to input the password.



- Reading Address" and "Writing Address



The numeric value input component is integrated with functions of reading data from an address and writing data to an address. When the "Reading And Writing Address Is Different" is not checked, the using method is same to the "Numeric Value Display" component. When the "Reading and Writing Address Is Different" is checked, different address can be set in the "Read Address" and in the "Write Address".

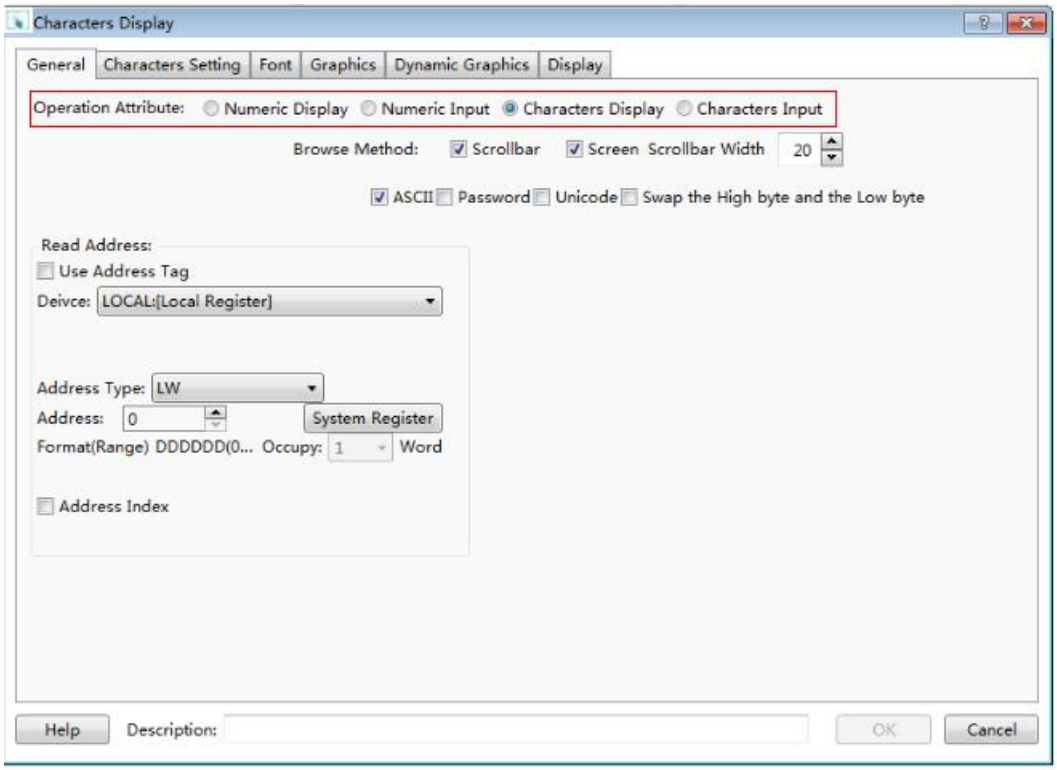
4.6.3.2.2 Keyboard Setting

See detailed functions in: Detailed manual/ General functions/ Keyboard setting.

4.6.3.3 Character Display

4.6.3.3.1 General

- Operating Attribute

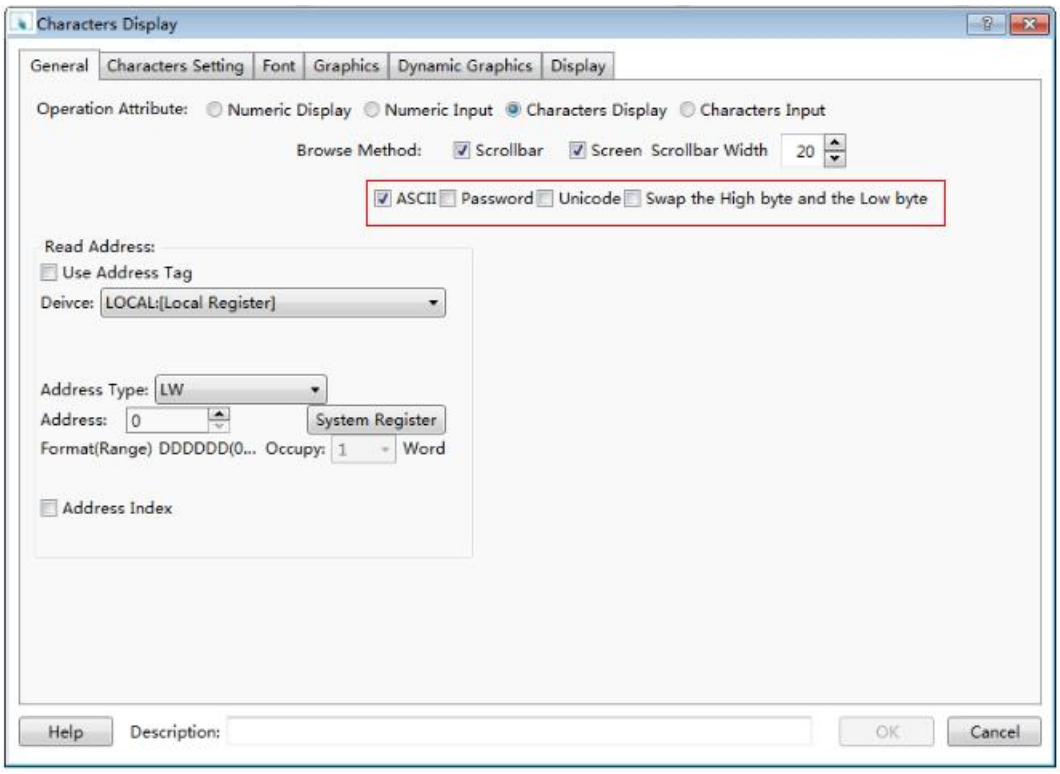


The "Operation Attribute" includes four operation types: "Numeric Display”,” Numeric Input”, "Character Display" and "Character Input". If you want the current Character Display component change to the Character Input component or Numeric component, you can modify it here. It is highly efficient for the project modifying and maintaining.

- Browse Method

The "Browse Method" includes "Scroll bar" and "Screen". You can select the "Scroll bar" or the "Screen" or both ways to browse the content of the current character component. The scroll bar width can be freely set. The "Screen" browse method is only effective for a capacitive screen.

- Display Mode



- ASCII

If it is checked, characters will be displayed in ASCII format. In this format, only ASCII characters will be displayed, including numbers, symbols and English letters. Chinese characters are not supported to display.

- Password

If it is checked, characters will be displayed in "*" mode.

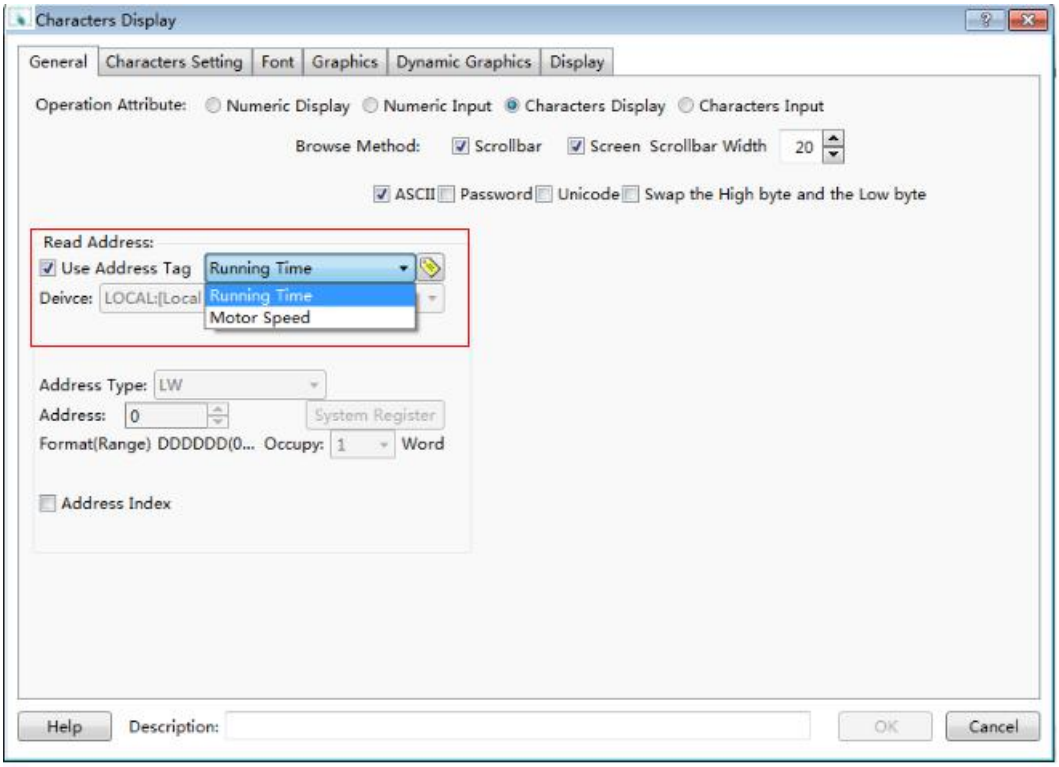
- Unicode

If it is checked, characters will be displayed in UNICODE. In the UNICODE mode, each Chinese character or English letter will occupy one character (two bytes).

- Swap the High byte and the Low byte

After the "ASCII" is checked, you can select the function "Swap the High byte and the Low byte".

- Read Address
- Use Address Tag

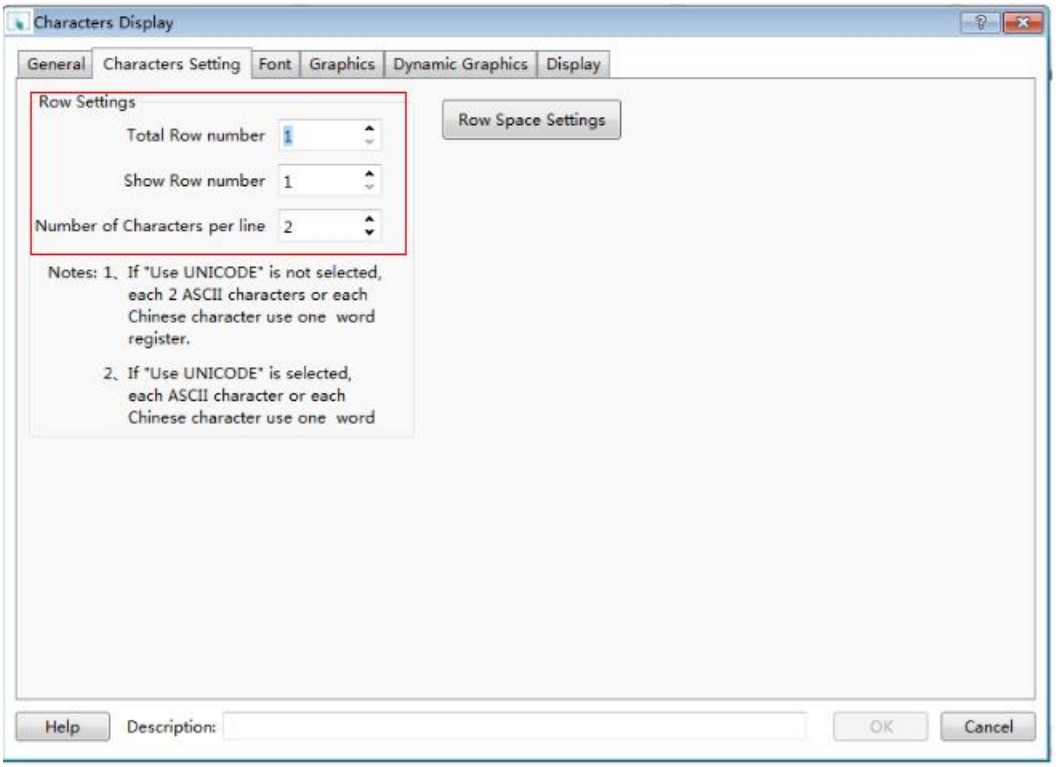


When this function is checked, variables in the address tag library can be directly linked by the component (See address tag library details in: Detailed manual/Library/Address Tag Library). The address tag library can be used to improve the project maintaining efficiency. If many components in the project are linked to a same variable in the address tag library and this address need to be modified, it is only necessary to modify the variable address linked in the tag library without modifying each component.

The address setting includes the attributes : "Device", "Address Type", "Address", "Format (Range)", "Address Index", and so on. Please see: Detailed manual/ General functions/ Address editor/ Standard Byte Address Input.

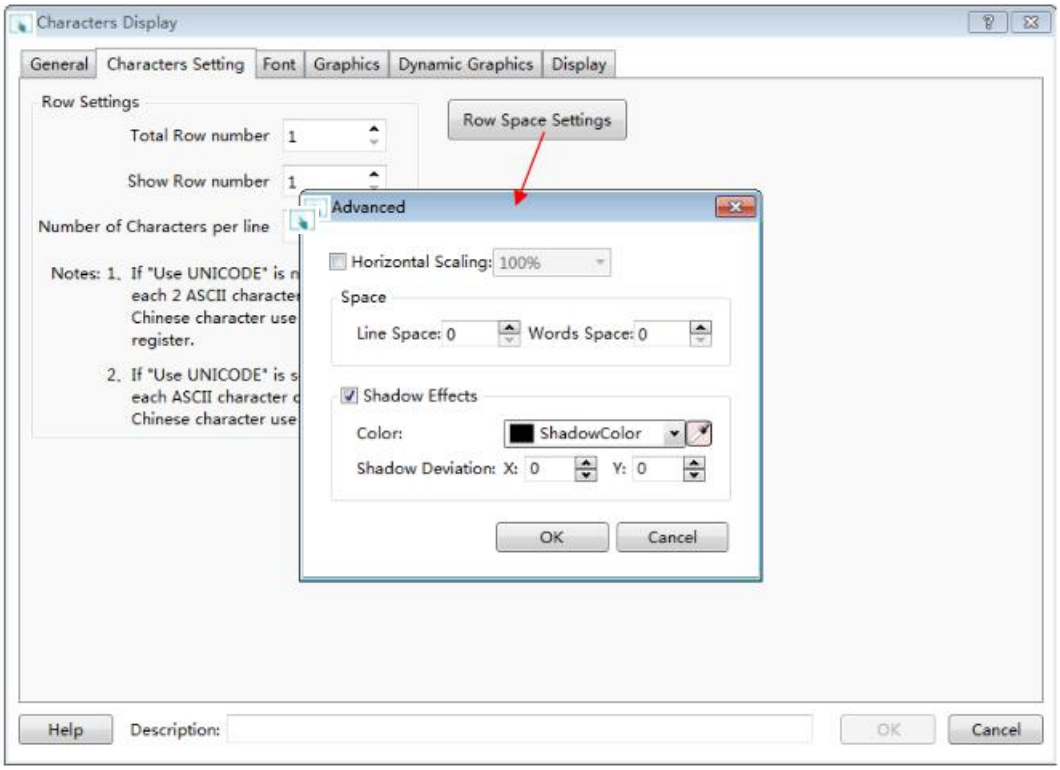
4.6.3.3.2 Characters setting

- Row Settings



The "Row Settings" includes "Total Row number", "Show Row number" and "Number of Characters per line". The "Total Row number" means the number of the rows which the current character component contains. The "Show Row number" sets the number of rows displayed in the current character component. If the number of rows displayed is smaller than the number of total rows, a scroll bar will appear automatically.

- Row Space settings



A dialog will pop up when you click the "Row Space Settings" button. You can set the attributes such as "Horizontal scaling", "Line space", "Words space", "shadow Effects", and so on.

4.6.3.3.3 Font

See detailed font setting in: Detailed manual/ General functions/ Font settings.

4.6.3.3.4 Graphics

See detailed Graphics setting in: Detailed manual/General functions/Graphic edit.

4.6.3.3.5 Dynamic Graphics

See detailed Dynamic Graphics setting in: Detailed manual/ General functions/ Dynamic Graphics.

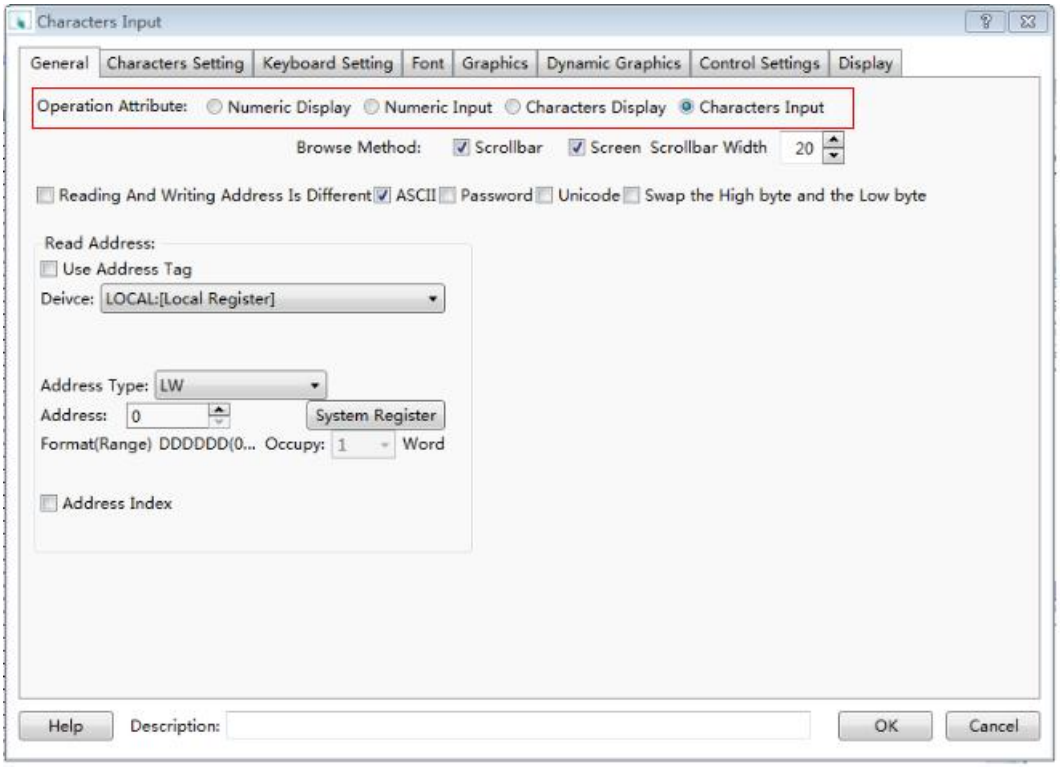
4.6.3.3.6 Display

See detailed display setting in: Detailed manual/ General functions/Display.

4.6.3.4 Character Input

4.6.3.4.1 General

- Operation Attribute

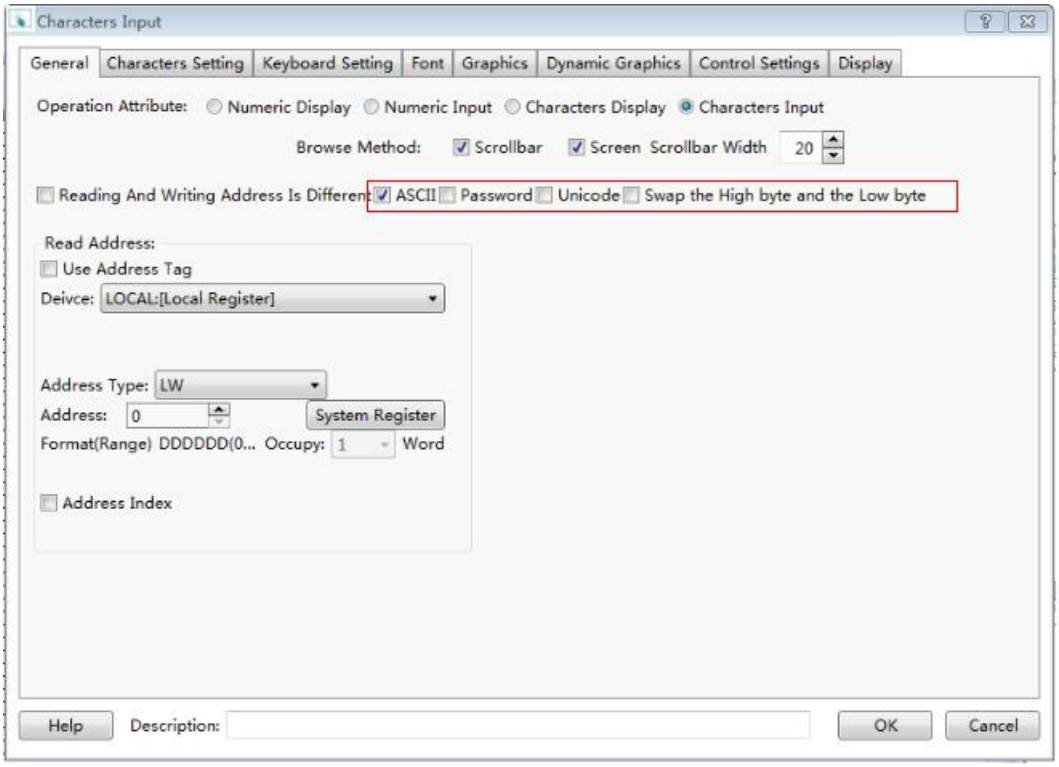


The "Operation Attribute" includes four operation types: "Numeric Display"," Numeric Input"," Character Display" and "Character Input". If you want the current Character Input component change to the Character Display component or Numeric component, you can modify it here. It is highly efficient for the project modifying and maintaining.

- Browse Method

The "Browse Method" includes "Scroll bar" and "Screen". You can select the "Scroll bar" or the "Screen" or both ways to browse the content of the current character component. The scroll bar width can be freely set. The "Screen" browse method is only effective for a capacitive screen.

- Display Mode



➢ ASCII

If it is checked, characters will be displayed in ASCII format. In this format, only ASCII characters will be displayed, including numbers, symbols and English letters. Chinese characters are not supported to display.

➢ Password

If it is checked, characters will be displayed in "*" mode.

➢ Unicode

If it is checked, characters will be displayed in UNICODE. In the UNICODE mode, each Chinese character or English letter will occupy one character (two bytes).

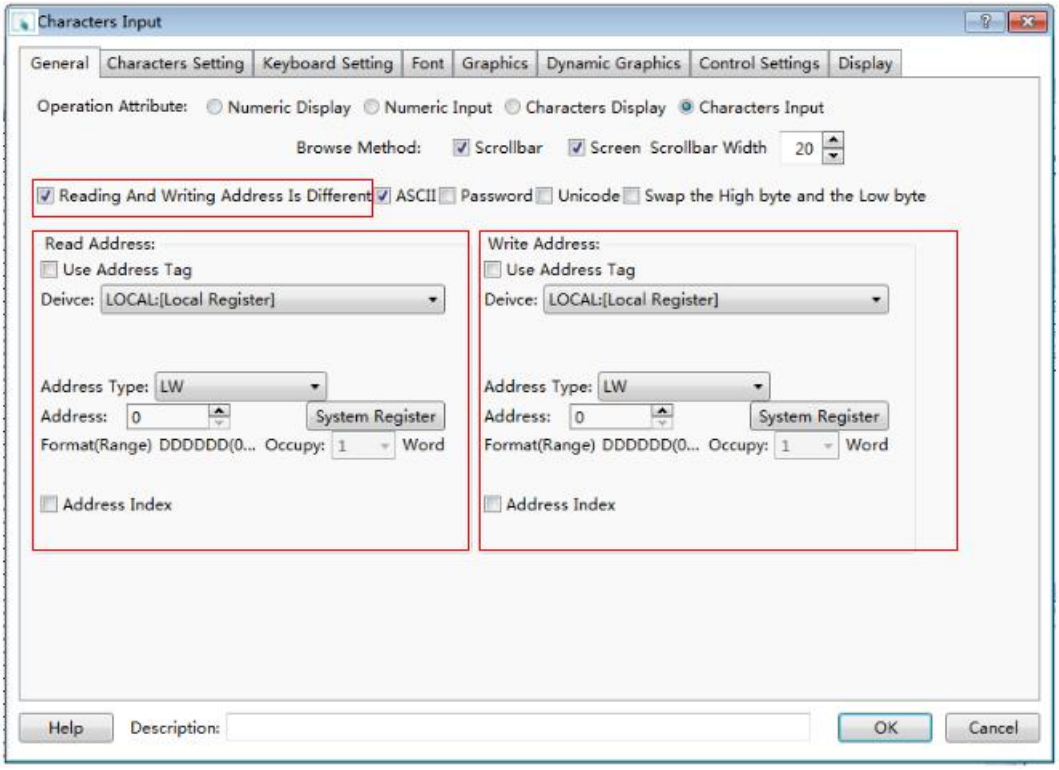
➢ Swap the High byte and the Low byte

After the "ASCII" is checked, you can select the function "Swap the High byte and the Low byte".

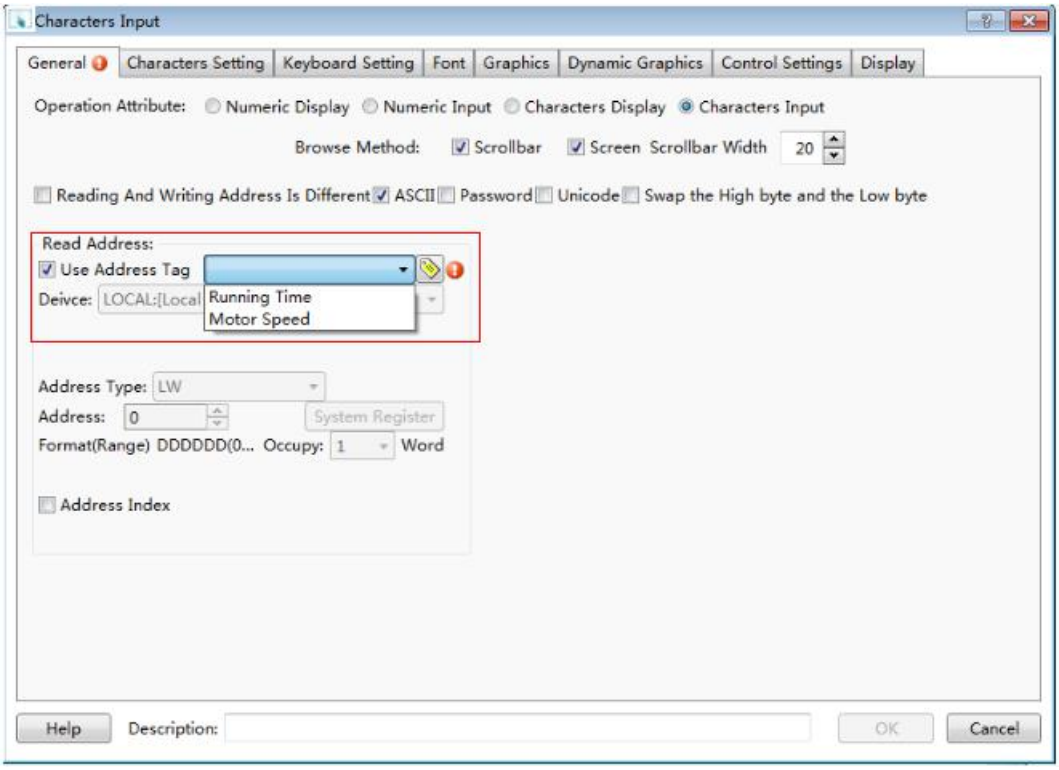
- Read Address

➢ Reading And Writing Address Is Different

The character input component is integrated with functions of reading data from an address and writing data to an address. When the "Reading And Writing Address Is Different" is not checked, the using method is same to the "Character Display" component. When the "Reading And Writing Address Is Different" is checked, different address can be set in the "Read Address" and in the "Write Address".



➢ Use Address Tag



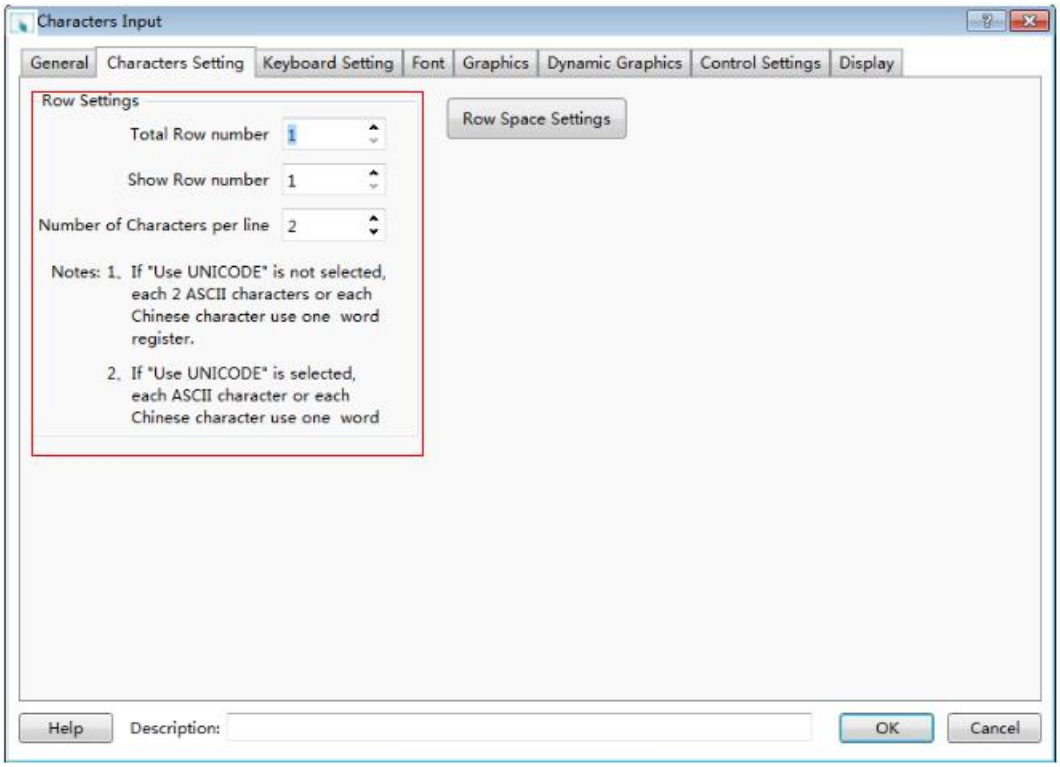
When this function is checked, variables in the address tag library can be directly linked by the component (See address tag library details in: Detailed manual/Library/Address Tag Library). The address tag library can be used to improve the project maintaining efficiency. If many components in the project are linked to a same variable in the address tag library and this address need to be modified, it is only necessary to modify the variable address linked in the tag library without

modifying each component.

The character address setting includes the attributes : "Device", "Address Type", "Address", "Format (Range)", "Address Index", and so on. Please see: Detailed manual/ general functions/ Address editor/Standard Byte Address Input.

4.6.3.4.2 Characters Setting

- Row Settings



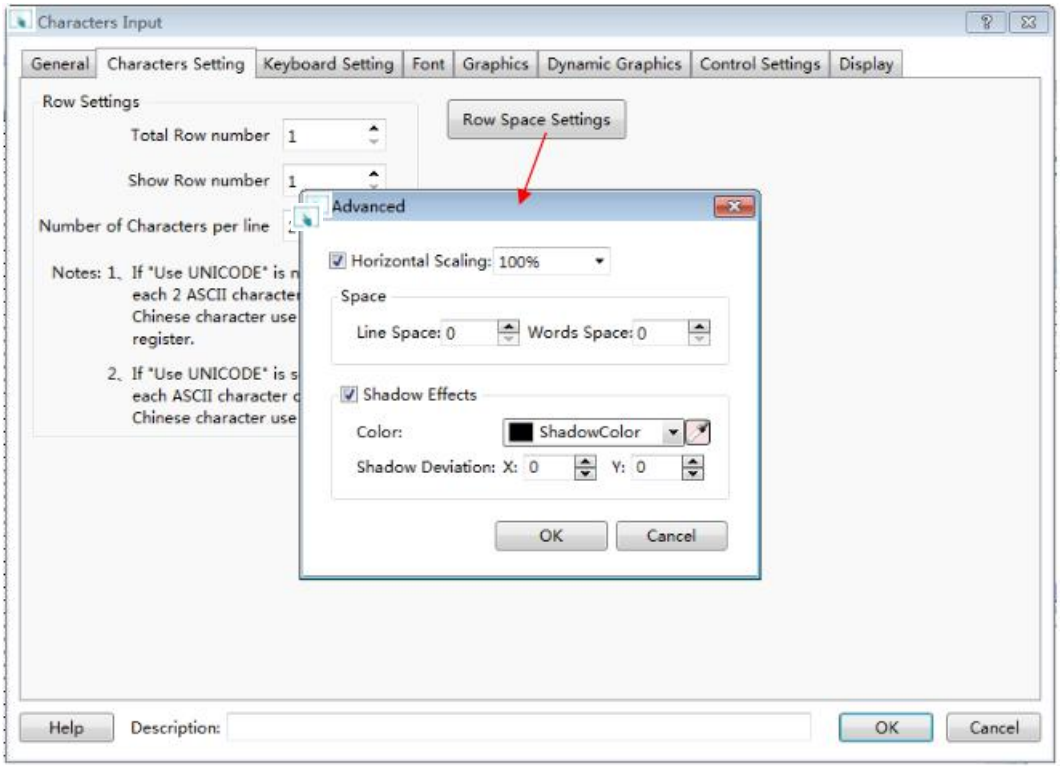
The "Row Settings" includes "Total Row number", "Show Row number" and "Number of Characters per line". The "Total Row number" means the number of the rows which the current character component contains. The "Show Row number" sets the number of rows displayed in the current character component. If the number of rows displayed is smaller than the number of total rows, a scroll bar will appear automatically.

Note:

If "Unicode" is not checked, each two ASCII characters or each one Chinese character occupies one word register.

If "Unicode" is checked, each ASCII character or each Chinese Character occupies one word register.

- Row Space settings



A dialog will pop up when you click the "Row Space Settings" button. You can set the attributes such as "Horizontal scaling", "Line space", "Words space", shadow color and shadow deviation.

4.6.3.4.3 Keyboard Setting

See detailed setting in: Detailed manual/ General functions/ Keyboard setting.

4.6.3.4.4 Data font

See detailed font setting in: Detailed manual/ General functions/Font settings.

4.6.3.4.5 Control Settings

See detailed control setting in: Detailed manual/ General functions/ Control settings.

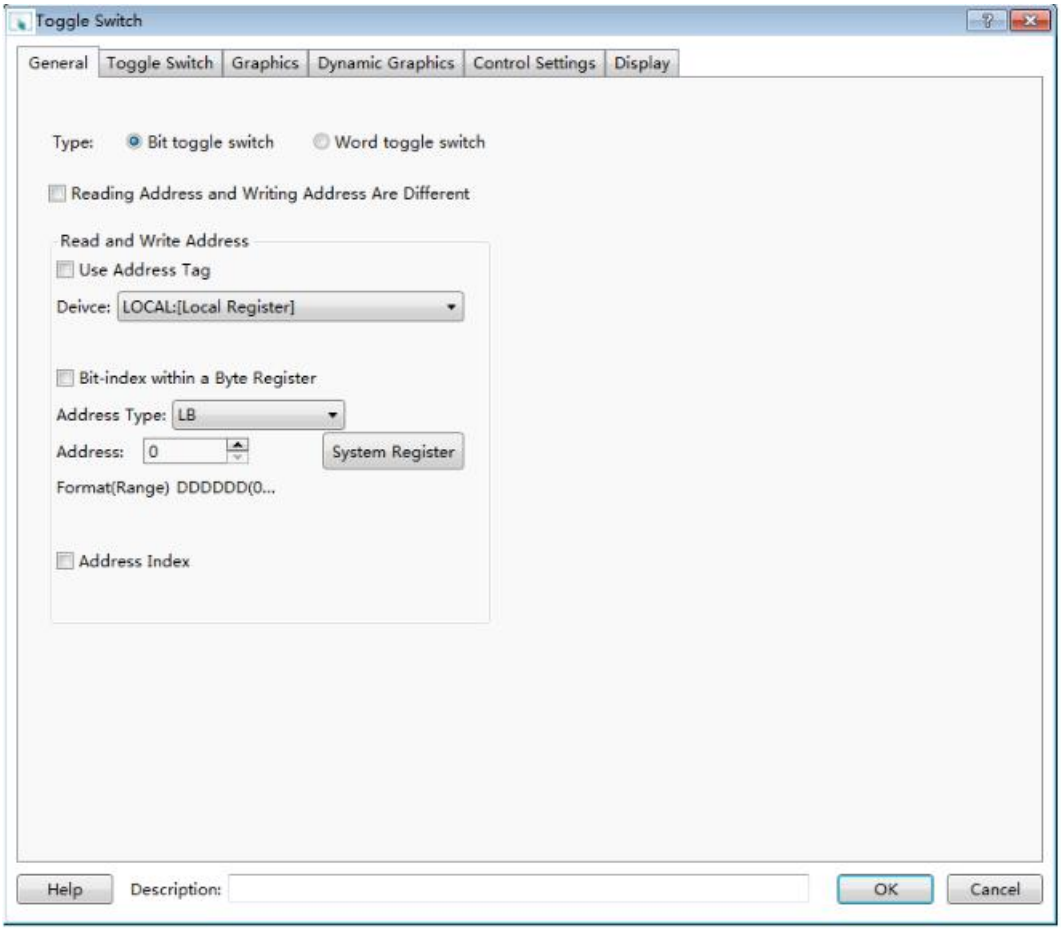
4.6.3.4.6 Display

See detailed display setting in: Detailed manual/ General functions/ Display.

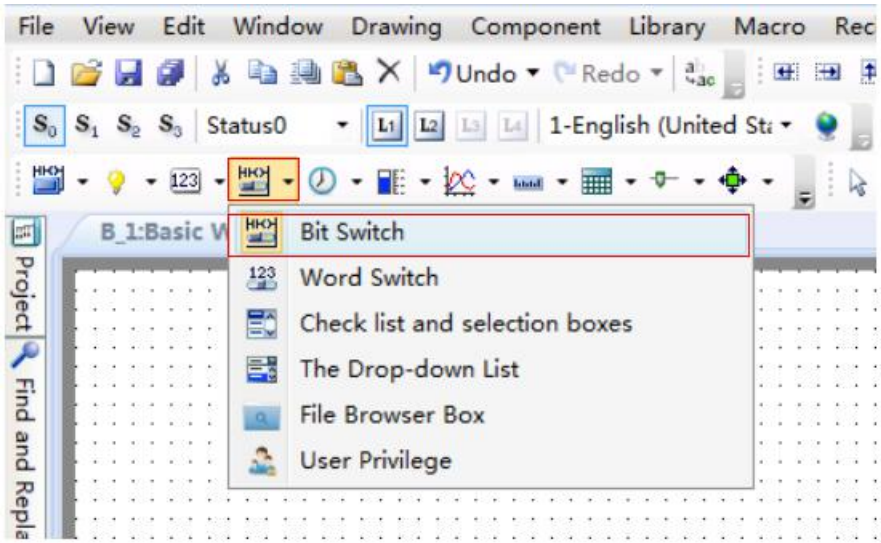
4.6.4 Toggle Switch and menu

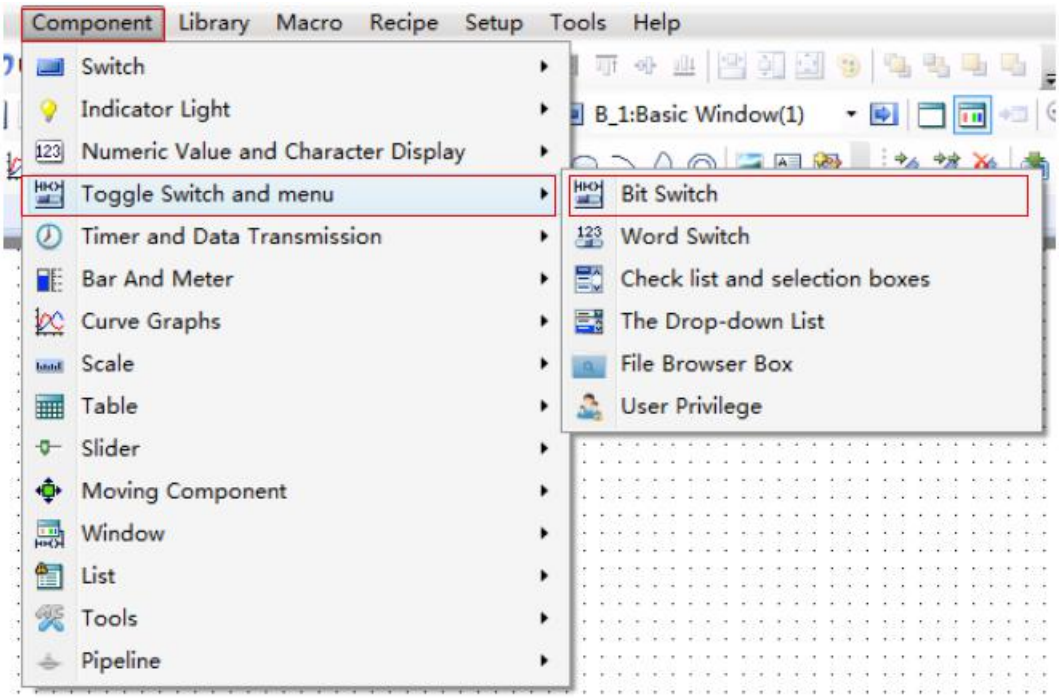
4.6.4.1 Bit Switch

The "Bit Switch" is used to set the action, switch type and text display of the bit switch which is used to change the bit state.



The "Bit Switch" component can be found on the tool bar or from the menu of Components.



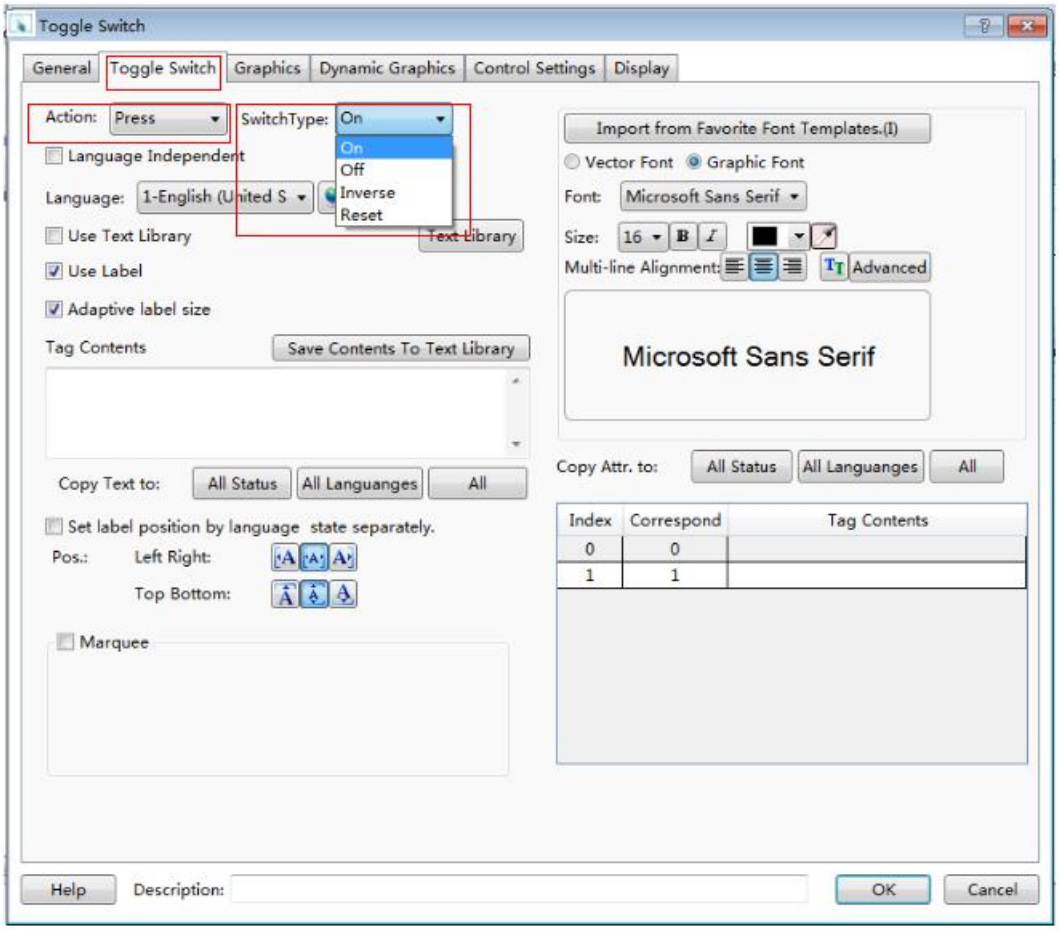


4.6.4.1.1 General

See details for bit address setting in: Detailed manual/ General functions/ Address editor/ Standard Bit Address Input.

4.6.4.1.2 Toggle Switch

On the page of "Toggle Switch", you can set "Press" or "Release" for the action. And the switch type can be "On", "Off", "Inverse" or "Reset".



Details for "Language" selection can be seen in:Detailed manual/Setup/System Settings/ Language Settings.

Details for "Import Favorite Font Template" can be seen in: Detailed manual/Setup/System Settings/Favorite Font Template.

Details for "Text Library" can be seen in: Detailed manual/Library/Text Library.

Details for "Marquee" setting can be seen in: Detailed manual/ General functions/ Marquee.

4.6.4.1.3 Graphics

Details for Graphics can be seen in: Detailed manual/ General functions/ Graphic edit.

4.6.4.1.4 Control Settings

Details for control settings can be seen in: Detailed manual/ General functions/Control settings.

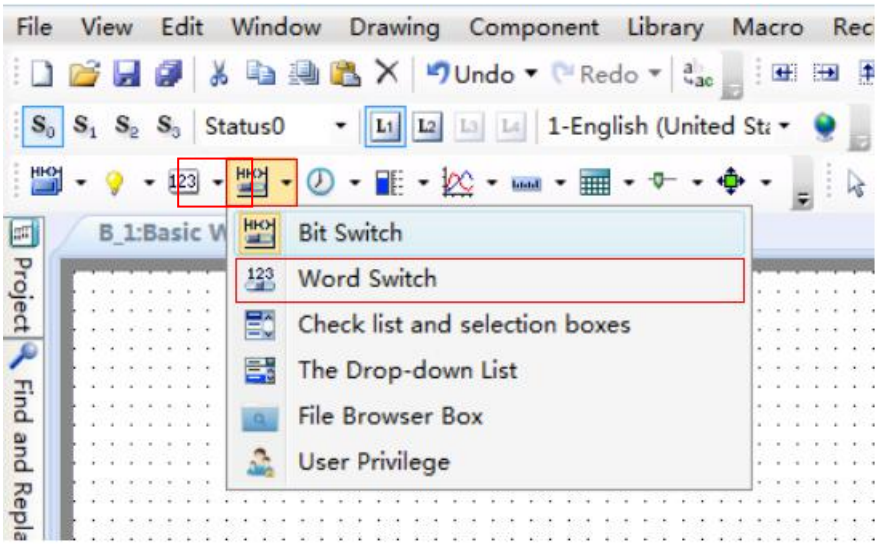
4.6.4.1.5 Display

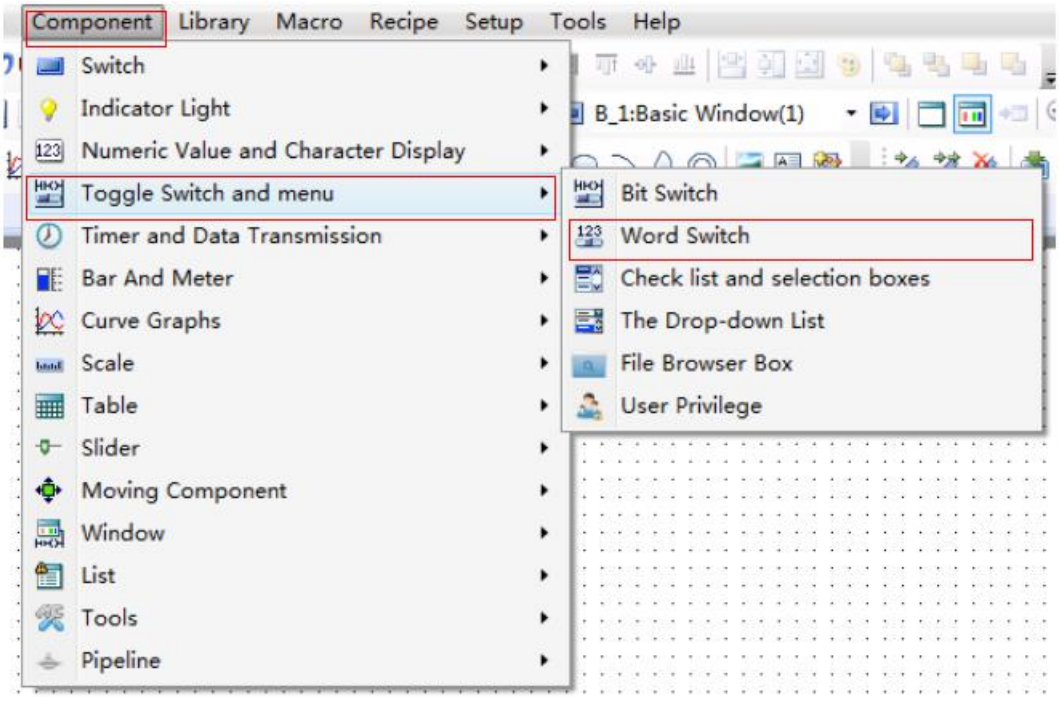
Details for display setting can be seen in: Detailed manual/ General functions/Display.

4.6.4.2 Word Switch

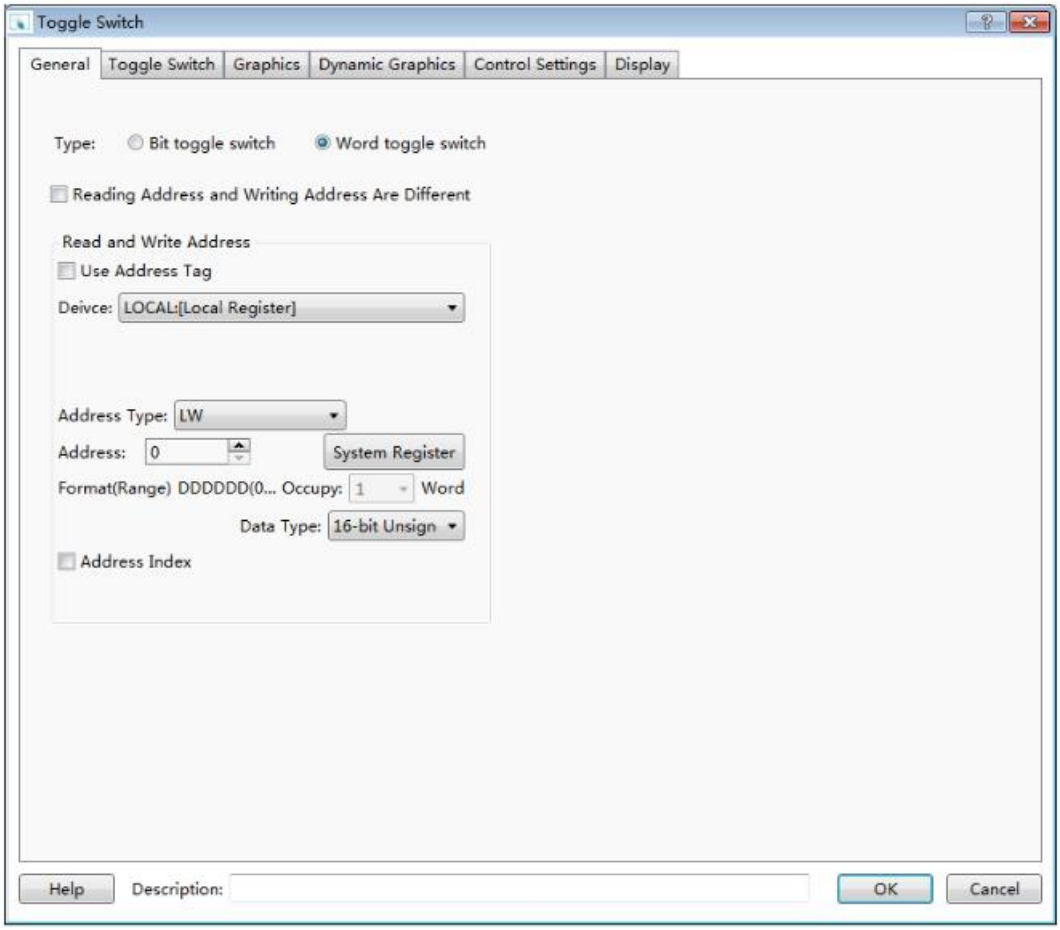
The word switch is used to set the action and text display for word address states.

The "Word Switch" component can be found on the tool bar or from the menu of Components.


File View Edit Window Drawing Component Library Macro Rec
Undo Redo
Status0
1-English (United Sta
B_1:Basic W
Project
Find and Repla
Bit Switch
Word Switch
Check list and selection boxes
The Drop-down List
File Browser Box
User Privilege


Component Library Macro Recipe Setup Tools Help
Switch
Indicator Light
Numeric Value and Character Display
Toggle Switch and menu
Timer and Data Transmission
Bar And Meter
Curve Graphs
Scale
Table
Slider
Moving Component
Window
List
Tools
Pipeline
B_1:Basic Window(1)
Bit Switch
Word Switch
Check list and selection boxes
The Drop-down List
File Browser Box
User Privilege

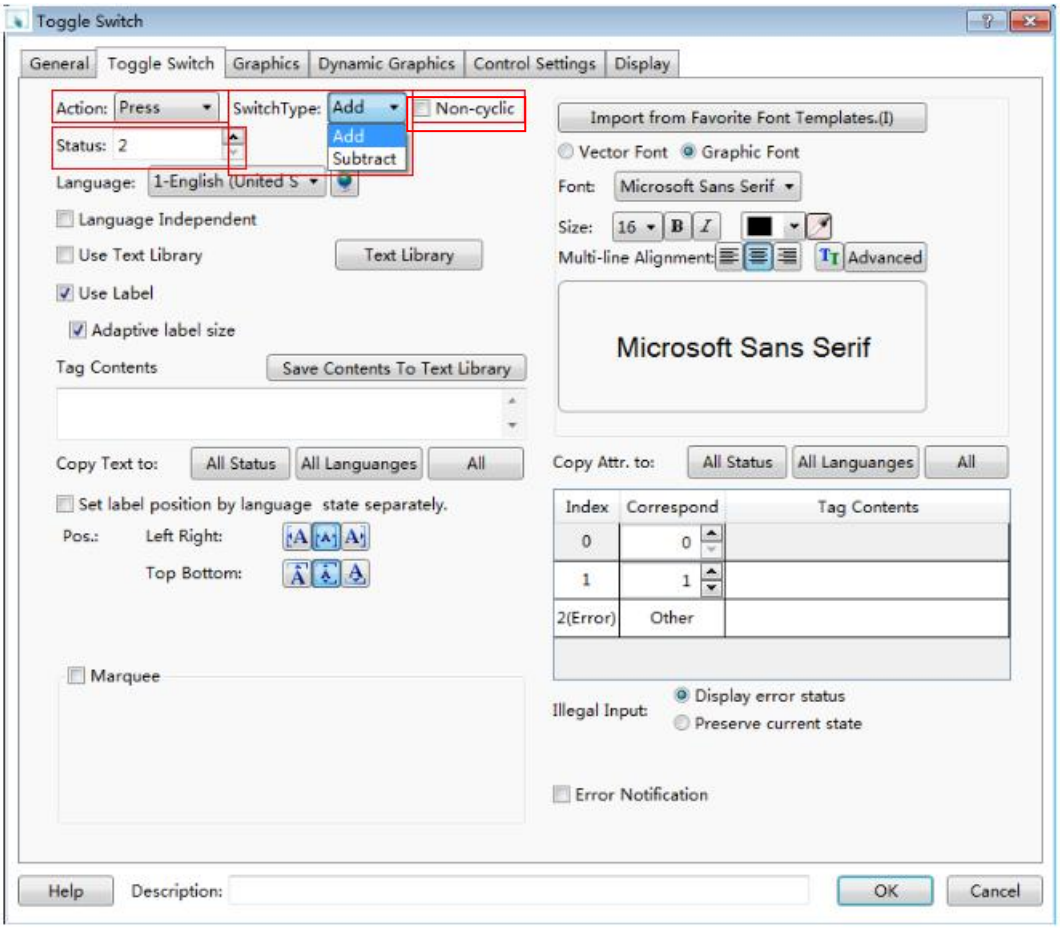
4.6.4.2.1 General



See details for word address setting in: Detailed manual/General functions/Address editor/Standard Byte Address Input.

4.6.4.2.2 Toggle Switch

On the page of "Toggle Switch", the action can be set "Press" or "Release". The switch type can be set to "Add" or "Subtract". if"Non-cyclic" is checked and the switch type is "And", it will stop adding when the result exceeds the maximum value. If "Non-cyclic" is not checked for the "Add" switch type, it will start to shift again from the minimum value when the result reaches the maximum value. The "Status" can be set directly or by the Up or Down arrows.



Details for "Language" selection can be seen in: Detailed manual/Setup/System Settings/ Language Settings.

Details for "Import Favorite Font Template" can be seen in: Detailed manual/Setup/System Settings/Favorite Font Template.

Details for "Text Library" can be seen in: Detailed manual/Library/Text Library.

Details for "Marquee" setting can be seen in: Detailed manual/ General functions/ Marquee.

4.6.4.2.3 Graphics

Details for Graphics can be seen in: Detailed manual/General functions/Graphic edit.

4.6.4.2.4 Control Settings

Details for control settings can be seen in: Detailed manual/ General functions/Control settings.

4.6.4.2.5 Display

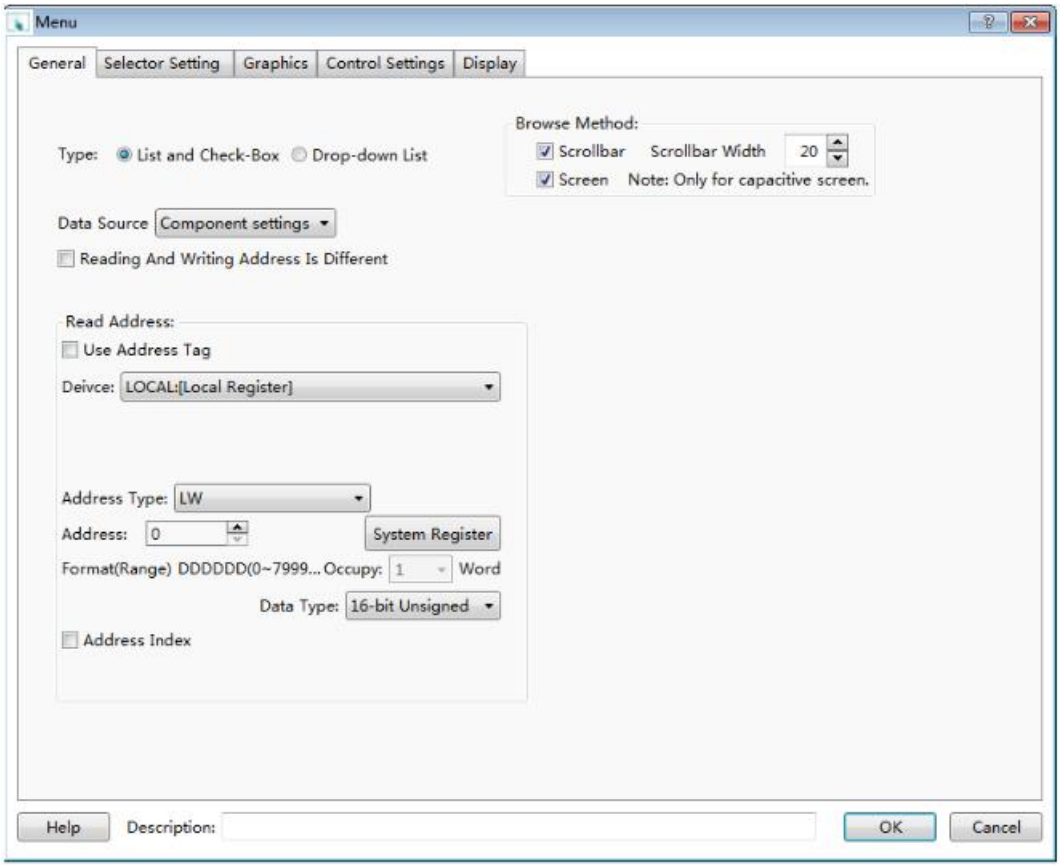
Details for display setting can be seen in: Detailed manual/ General functions/Display.

4.6.4.3 Check list and selection boxes

The component of "Check list and selection boxes" is used to operate "Word register". The preset value is written into the register and the preset text is displayed when the current component is operated. The preset text corresponding to the status value which is equal to the word register will display automatically. See the following description for details.

Click the menu command of the "Check list and selection boxes" component and open the property TAB of this component.

4.6.4.3.1 General



- Browse Method

The "Browse Method" includes "Scroll bar" and "Screen". You can select the "Scroll bar" or the "Screen" or both ways to browse the content of the current component. The scroll bar width can be freely set and the default width is 20. The "Screen" browse method is only effective for a capacitive screen.

- Data Source

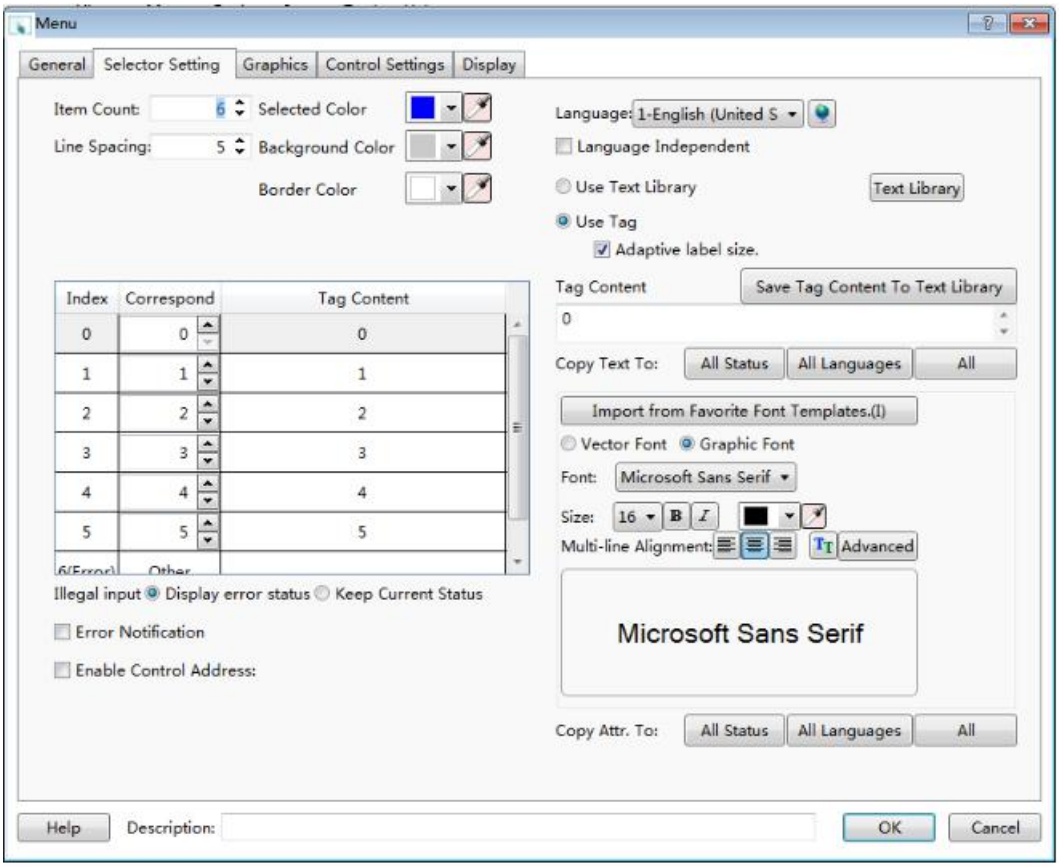
The default is "Component settings". That means the data source is the word register.

- Reading And Writing Address Is Different

The default is not checked. That means the read address and the write address are same. When it is checked, the "Read" register and the "Write" register can be set separately. The value of the "Read" register will be compared with the preset value to determine the corresponding text display. The preset value corresponding to the status selected will be written into the "Write" register when the component is operated.

4.6.4.3.2 Selector Setting

On the page of "Selector Setting", the attributes such as the number of items (“Item Count”), the preset value of each item and the content to be displayed can be set.



- Item Count

The default is 6. The range is 1~255. That means there are 255 items at most.

- Line Spacing

The default is 5. That means the space between rows.

- Selected Color

You can modify the color of the item selected in operation. The default is blue.

- Background Color

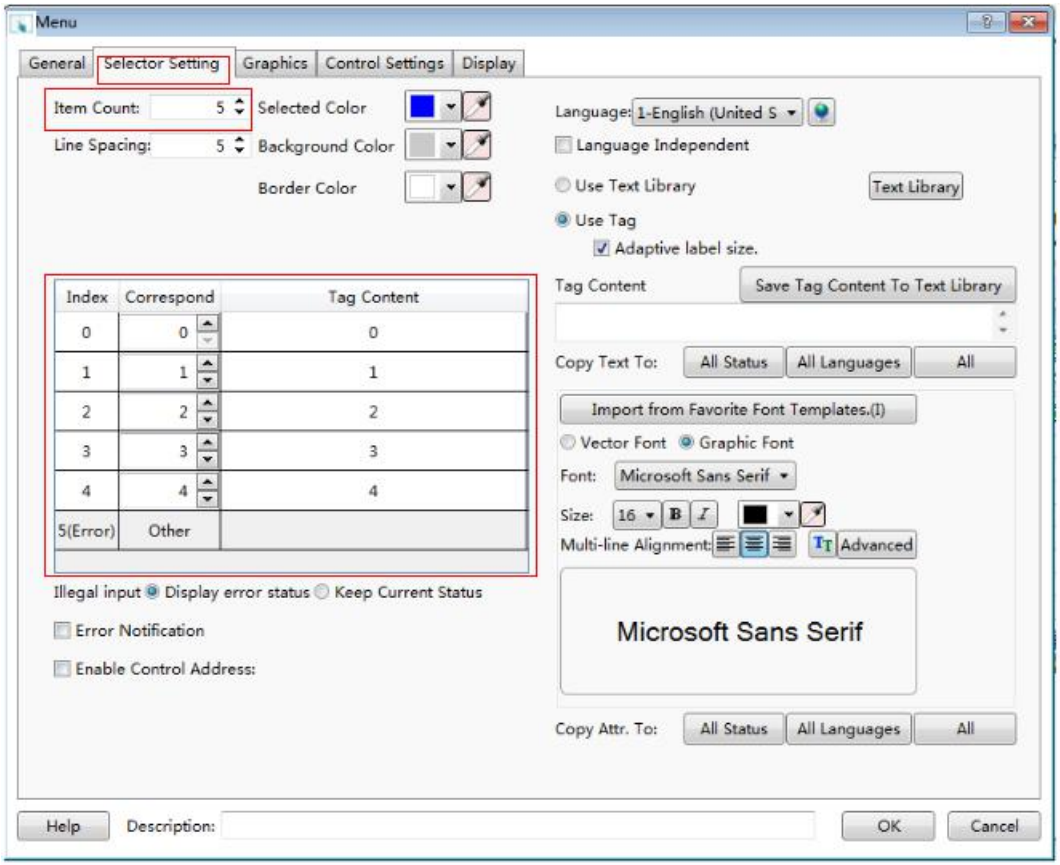
It is the background color of the component excluding the scroll bar. The default is grey.

- Border Color

It is the frame color of the selecting list components excluding the rolling bar, and the default is white.

- "Index", "Correspond" and "Tag Content"

There is a table for the list components. It includes three columns: "Index", "Correspond" and "Tag Content".



For example, the "Item Count" is set 5. The value of the "Index" is 0~5. Index 0~4 are corresponding to effective items and item 5 is corresponding to the "Error" one.

The default value of the column "correspond" is equal to the value of the "Index" for the effective items. When the number of items is set to 5, the content of the "correspond" for the index 5 is "Other". The "Other" means any value except “0~4”. The "correspond" value can be modified. For example, the "correspond" value of index 0 is modified 100. That means the text of index 0 in the "Tag Content" will be displayed if the value of the word register is equal to 100. And meanwhile, if item 0 is selected, the value 100 will be written into the word register.

The default value of the column "Tag Content" is equal to the value of the "Index" for the effective items. When any item is selected, the text required can be input to the corresponding "Tag Content".

- Illegal input

The "Illegal input" means that the value of word address doesn't equal to any value of the "correspond" for the effective items. The default is "Show Error Status".

➢ Show Error Status

The component displays the "correspond" content of the "Error" item when illegal input happened.

➢ Keep Current status

The component keeps the last correct status when illegal input happened.

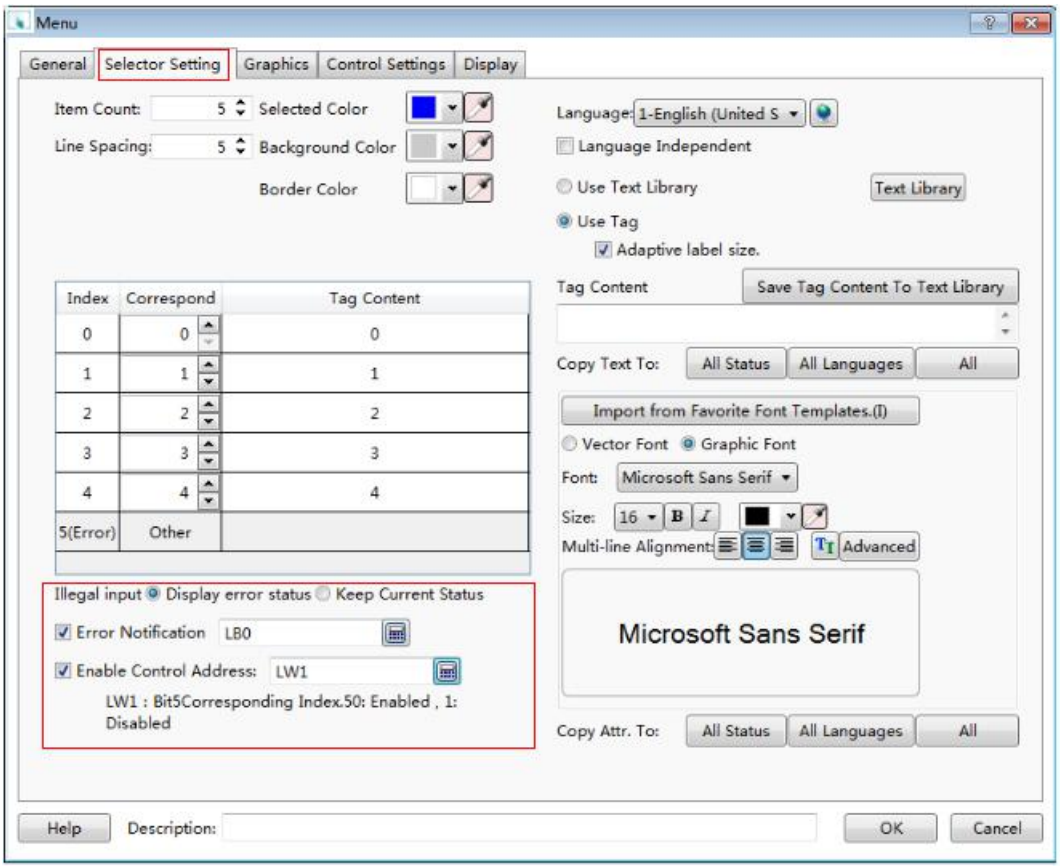
- Error Notification

When it is checked, a "Bit register" can be set. The "Bit register" will be set to ON if any error status appears.

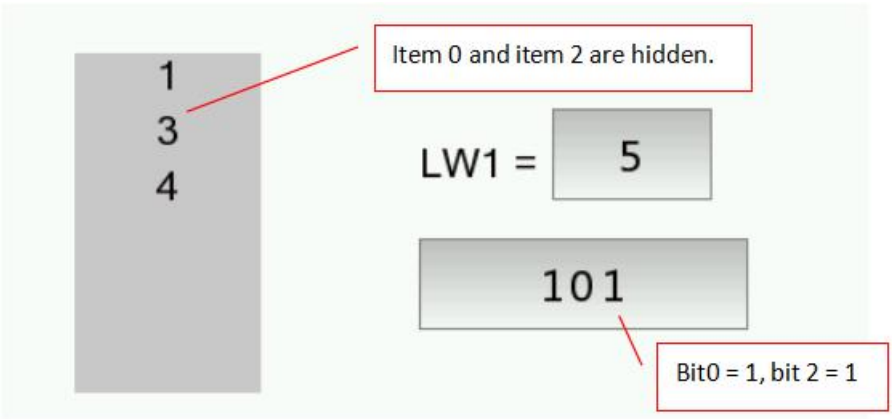
- Enable Control Address

If it is checked, a "Word register" can be set. Each bit of the word register is corresponding to an

index. That is, bit 0 is corresponding to index 0, and bit 1 is corresponding to index 1, and so on. When there are more than 16 items, the next word register will be occupied automatically. When the corresponded bit of the word register is ON, the item of the corresponding index in the list will be hidden. For example, when the word register value of the "Enable Control Address" is set to 5, the bit 0 and bit 2 of this word register are both ON and the items of the index 0 and the index 2 will be hidden.



In the figure above, when there is any wrong status, LB0 will be set to ON. When LW1=5, index 0 and index 2 will be hidden.



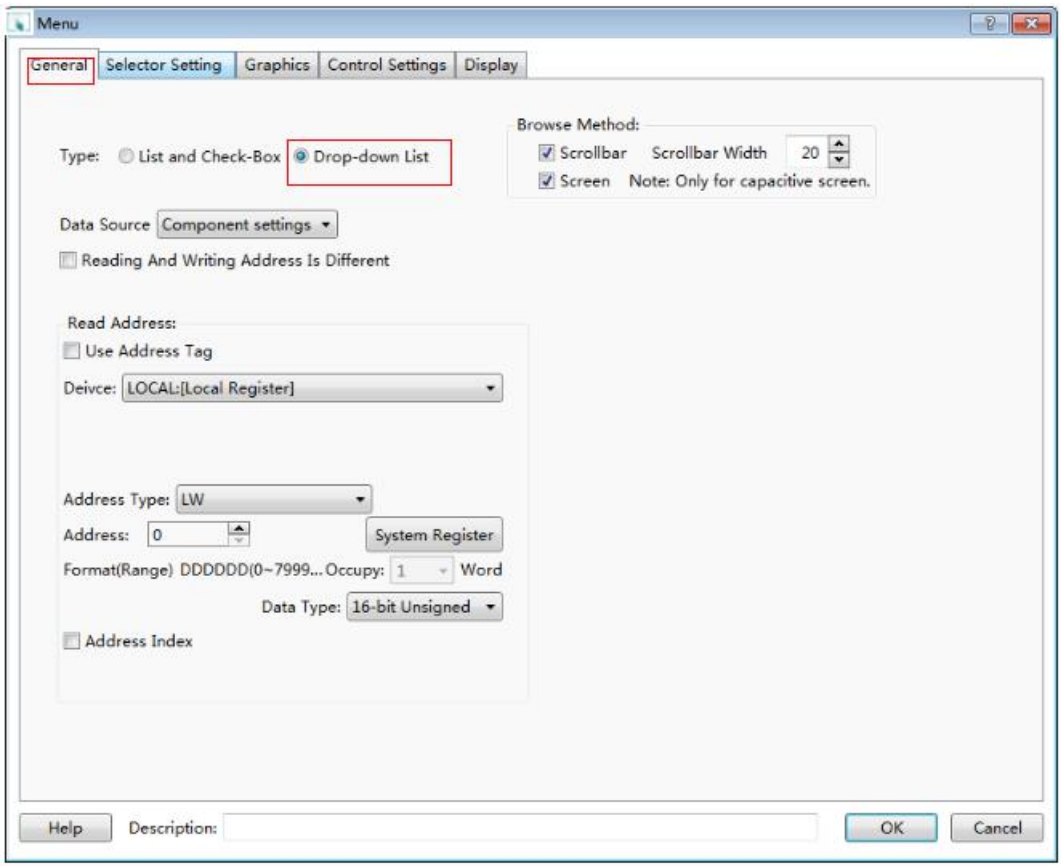
4.6.4.4 The Drop-down List

The attributes of "The Drop-down list" are almost same to the attributes of "Check list and selection box". The main difference is that "The Drop-down list" is withdrawn when it is not operated or after it is operated. The "Drop-down list" will be unfolded when it is clicked, and then

it can be viewed and operated by the scroll bar or by screen method.

4.6.4.4.1 General

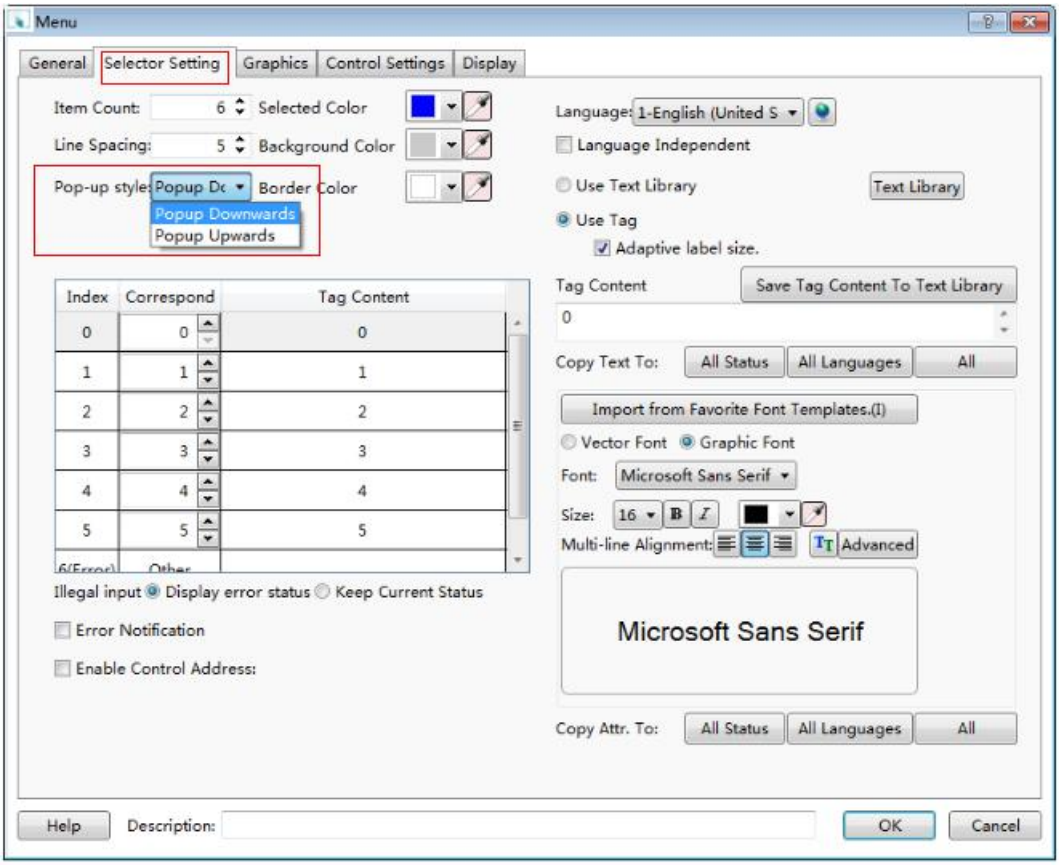
The property TAB of "The Drop-down list" can be opened by clicking the command "Component/ Toggle Switch and menu/ The Drop-down List" in the menu, see the figure below.



The figure above shows that the "General" property TAB is same to the "Check list and selection boxes", it is not introduced here, and details can be seen in Detailed manual/Commponent/Toggle Switch and menu/Check list and selection boxes.

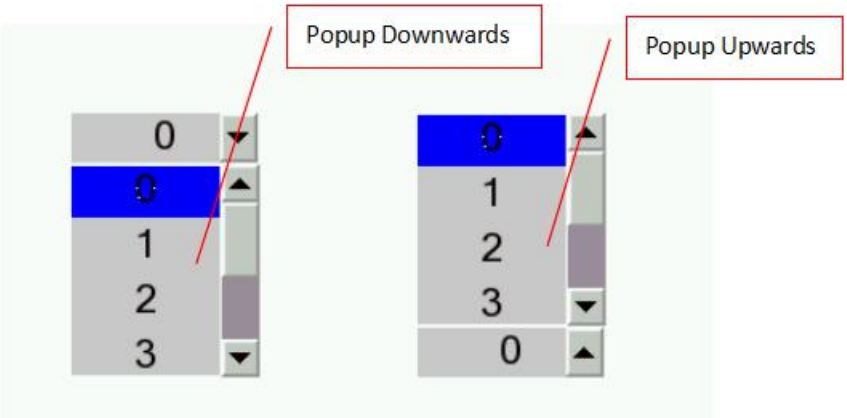
4.6.4.4.2 Selector Setting

Click the "Selector Setting" property TAB, it can be opened, see the figure below.

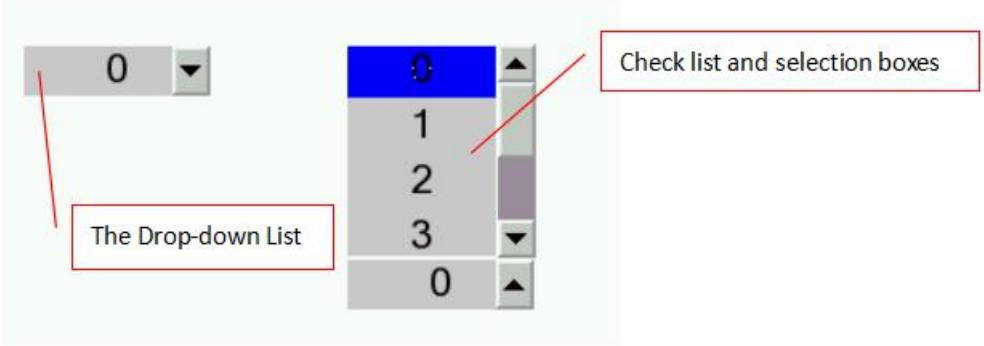


For "The Drop-down List" component, the most settings of the "Selector Setting" property TAB are same to the "Check list and selection boxes". The difference is that there is an additional item of "Pop-up style" for the "The Drop-down List".

The default is "Popup Downwards". The "Pop-up upwards" is optional. And it can be set according to the actual requirement. See the figure below.



The figure below shows the situation when "The Drop-down List" and "Check list and selection boxes" appear on the picture at the same time.

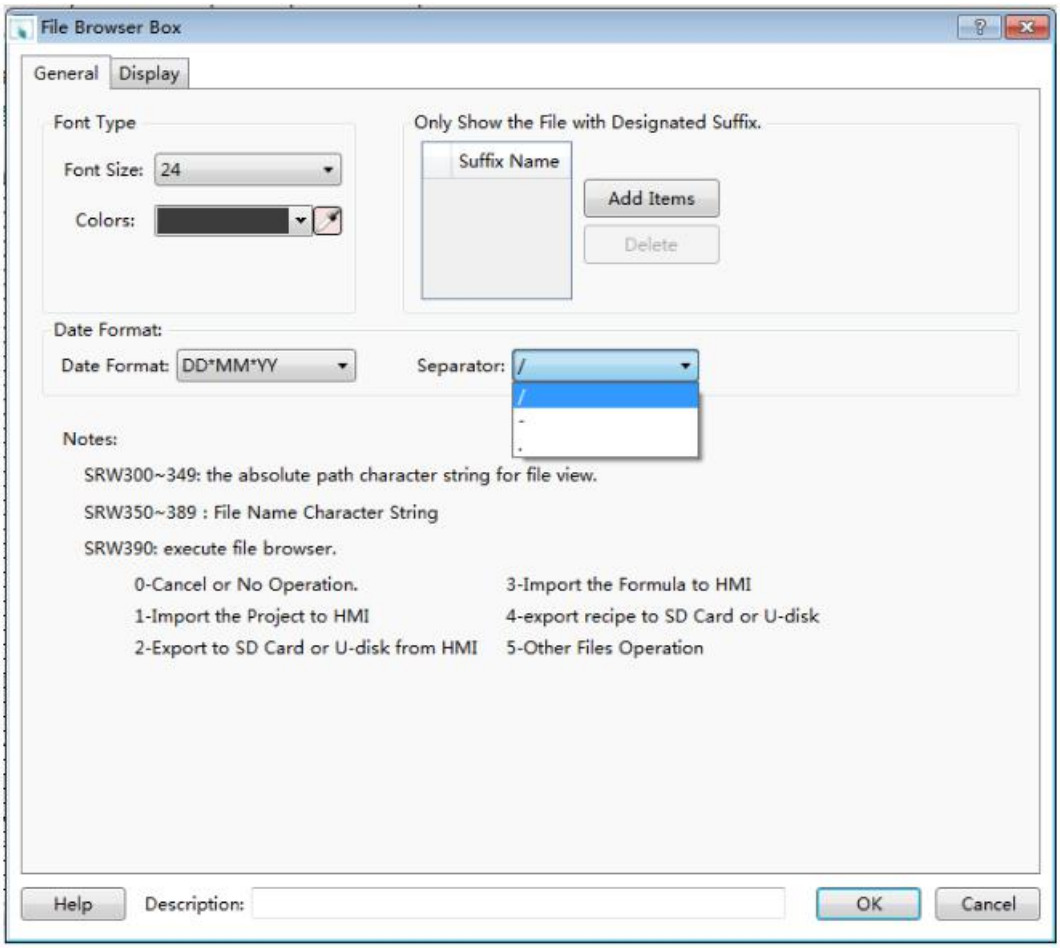


The figure above shows that when the "The Drop-down List" completes operation or has no operation, it is "withdrawn". It will be unfolded only when it is operated, while the "Check list and selection boxes" is always unfolded no matter it is in operation or not, and it can be directly viewed and operated.

The other details can be seen in Detailed manual/Commponent/Toggle Switch and menu/Check list and selection boxes.

4.6.4.5 File Browser Box

File Browser Box is used to display the file information of the internal and external storage devices.



4.6.4.5.1 General

- Font Type
  - Font Size

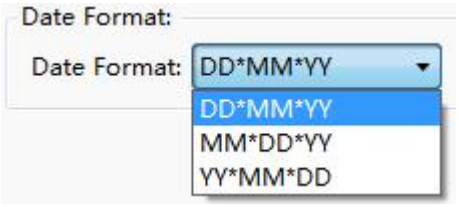
Select the appropriate font size here.

- Colors

Select the font color by the tool "  "or the color palette. When it is selected on the touch screen, the background color of the font is in the inverse tone.

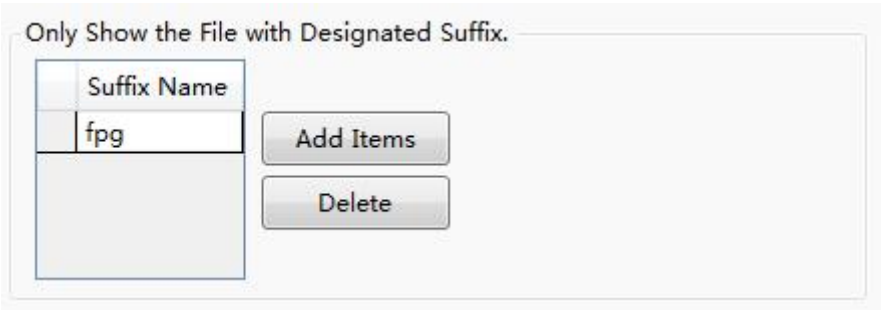
- Date Format

There are three optional date formats.



There are three optional separators provided among the day, the month and the year.

- Only Show the File with Designated Suffix.



The suffix is blank by default.It represents to display all. You can set the file type you want.

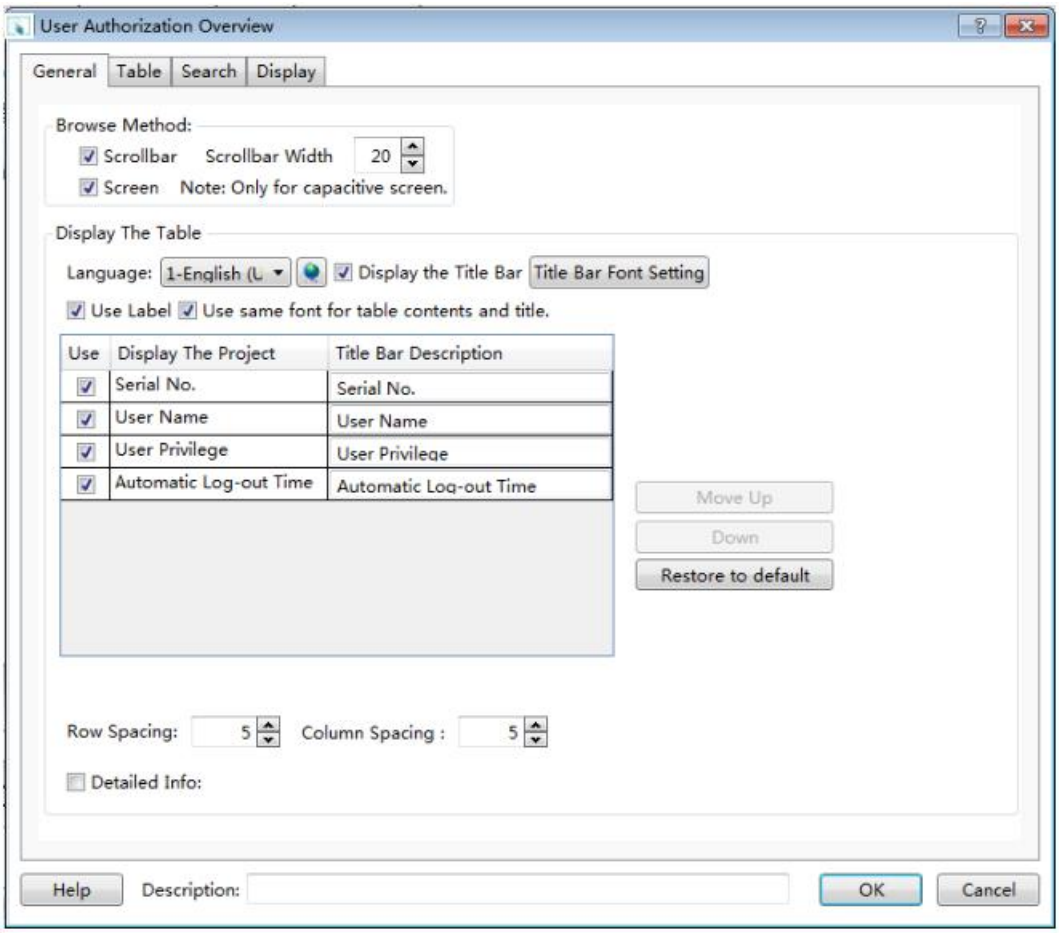
As shown as above, if you add the "fpg" suffix by clicking the button "Add Items", only files with fpg suffix will be displayed in the browser box for easy filtering and viewing. If you want to display all, click the button "Delete" and keep the browser box blank.

4.6.4.5.2 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.4.6 User Privilege

4.6.4.6.1 General



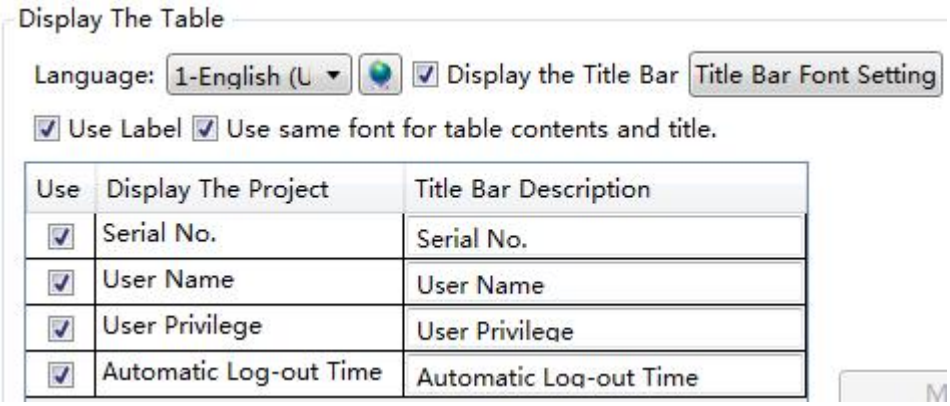
- Browse Method

You can view by scroll bar or screen sliding, and screen sliding is only effective for capacitive screen.

- Display The Table

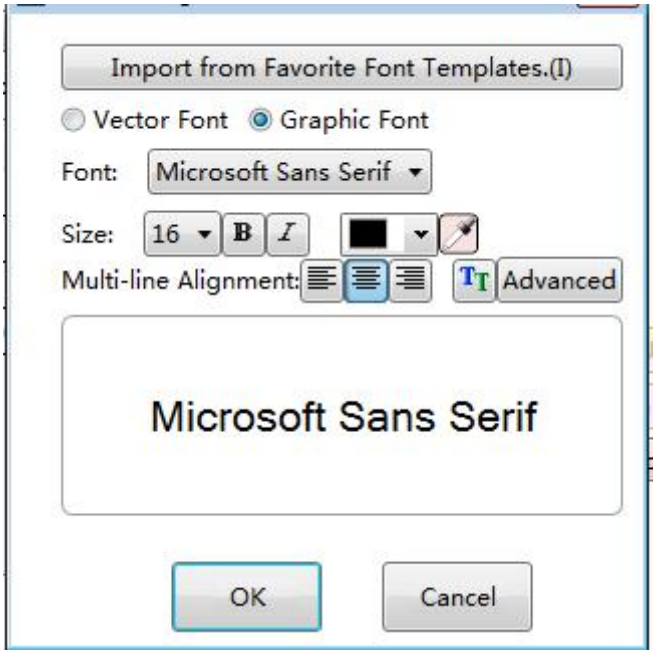
➢ Language

You can switch between Chinese and English here, and then you can edit the text in the below table in Chinese and in English separately.



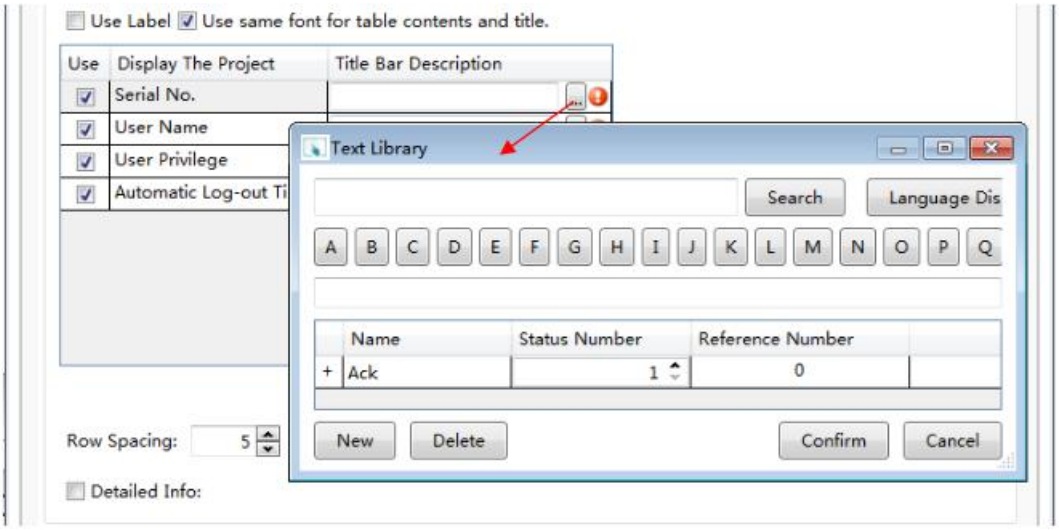
➢ Display the Title Bar

Check this option "Display the Title Bar", you can set the font of the title bar and the list, see details inDetailed manual/General functions/Drawing/Font settings.



➢ Use lable

Check this option, you can edit the "Title Bar Description" in the below table. Uncheck it, you can edit the "Title Bar Description" by using text library.



➢ Use same font for table contents and title

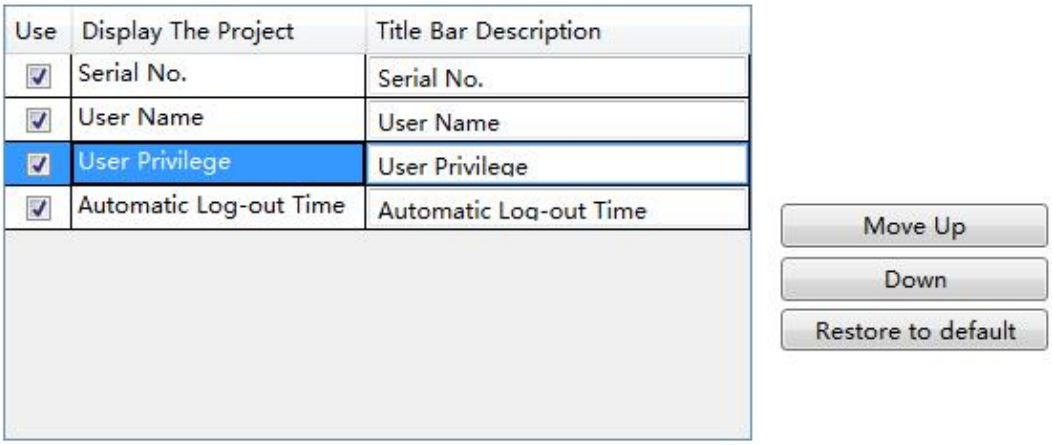
This option will be displayed only when you check the option "Display the Title Bar". After checking this option, the font of the list will be consistent with the font of the title bar. If you do not check it, you can edit the font of the list separately.

➢ Move UP and Down

You can adjust the arrangement of the displayed items by clicking the button "Move Up" or "Down".

➢ Restore to default

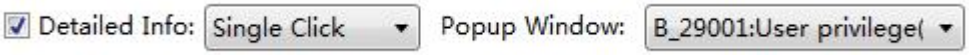
Restore the items to the initial arrangement.



- Row Spacing and Column Spacing

Adjust the row spacing by modifying the value of the edit box of "Row Spacing". And adjust the column spacing by modifying the value of the edit box of "Column Spacing".

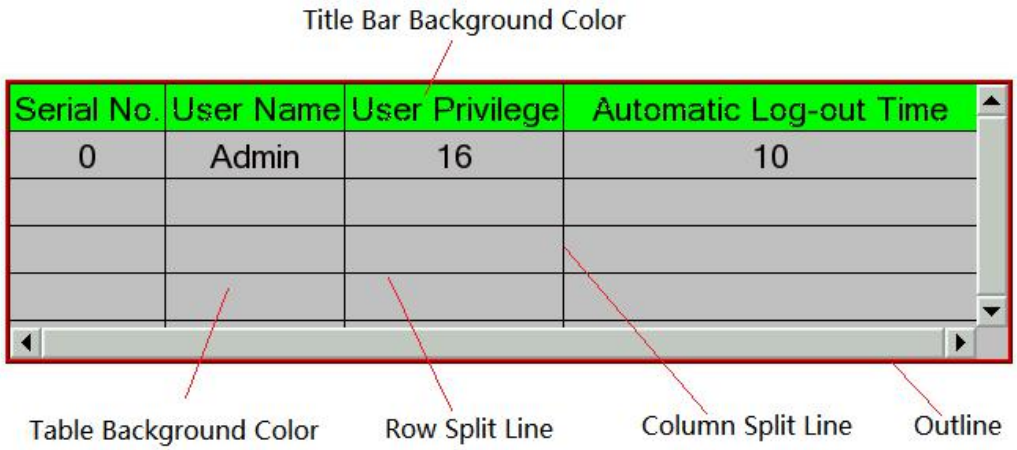
- Detailed Info



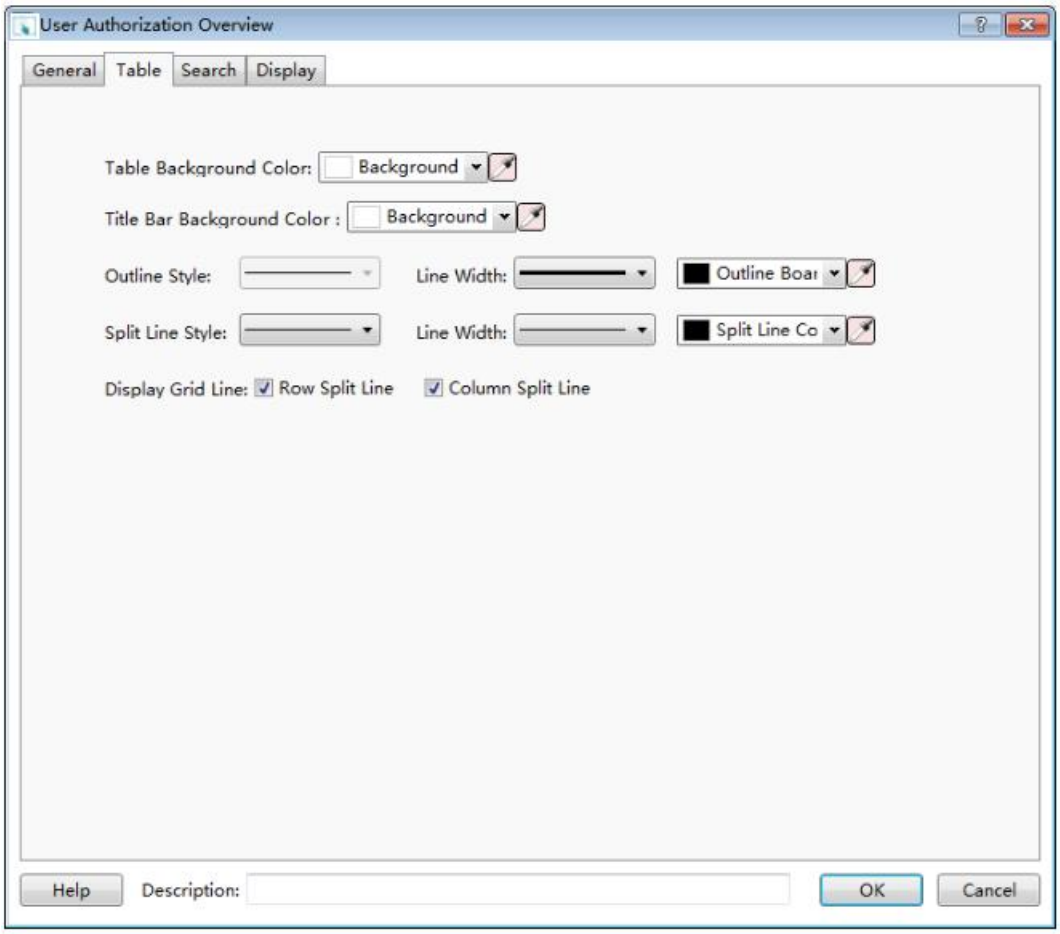
After check the option "Detailed Info", you can select a trigger mode to pop up the window such as "User privilege" for editing. The trigger mode can be set "Single Click" or "Double Click".

4.6.4.6.2 Table

You can set the appearance of the "User Privilege" component in the "Table" property TAB. The appearance of this component is show as below.



The "Table" property TAB of the "User Privilege" component is shown as below.



- Table Background Color and Title Bar Background Color

You can change the background color of the "User Privilege" component. And you can change the title bar background color, too.

- Outline Style, Split Line Style, Line Width and Line Color

You can change the type of the out line and the split line, the line width and the line color.

- Display Grid Line

After you check the option "Row Split Line" and the option "Column Split Line", the appearance of the "User Privilege" component is shown as below.

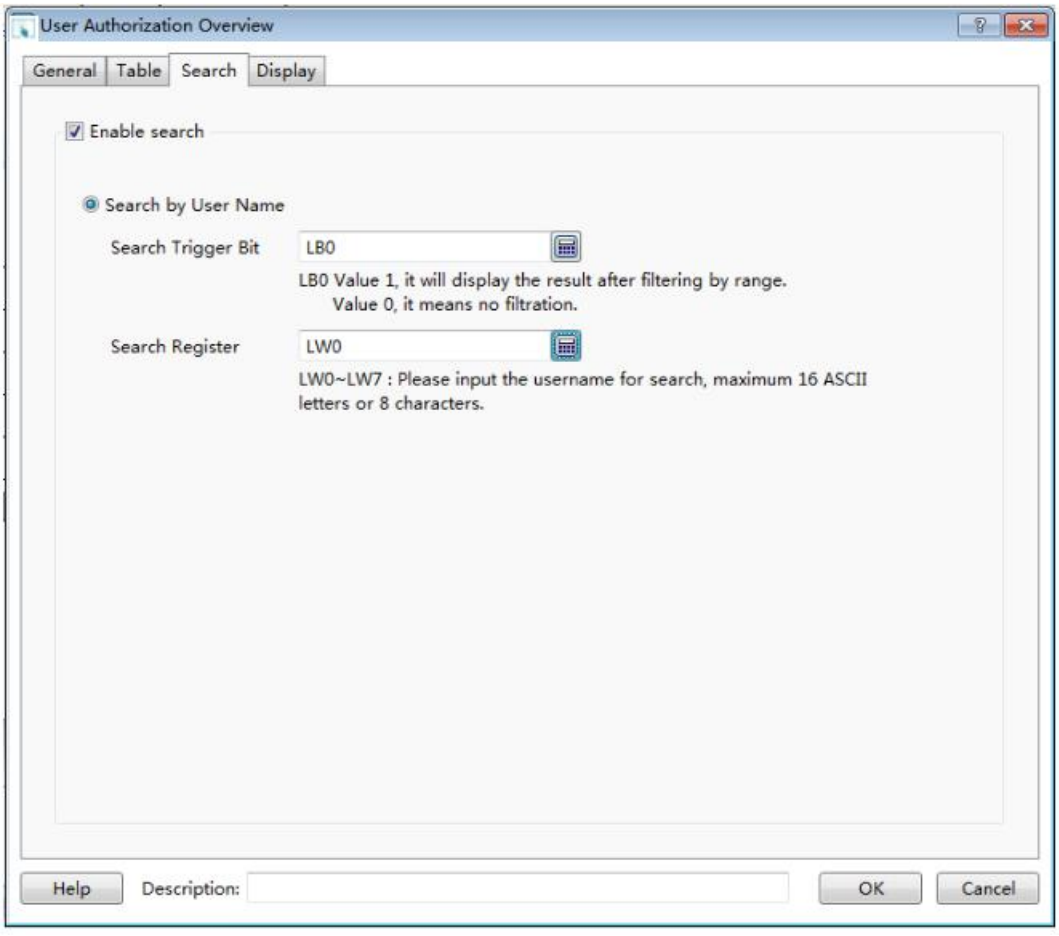
Serial No.	User Name	User Privilege	Automatic Log-out Time
0	Admin	16	10

If the option "Row Split Line" and the option "Column Split Line" are unchecked, the appearance is shown below.

Serial No.	User Name	User Privilege	Automatic Log-out Time
0	Admin	16	10

4.6.4.6.3 Search

Check the option "Enable search", and you can query the corresponding user privilege.



- Search Trigger Bit

A bit register needs to be set here. When the value of the bit register is “1”, the result of filtering by a range is displayed. When the value of the bit register is “0”, the displayed result is not filtered.

- Search Register

You need to specify a starting address of a set continuous 8 word registers here. You can input the corresponding user name to these registers to search. And the inputted user name should be no more than 16 ACSII letters or 8 ACSII characters.

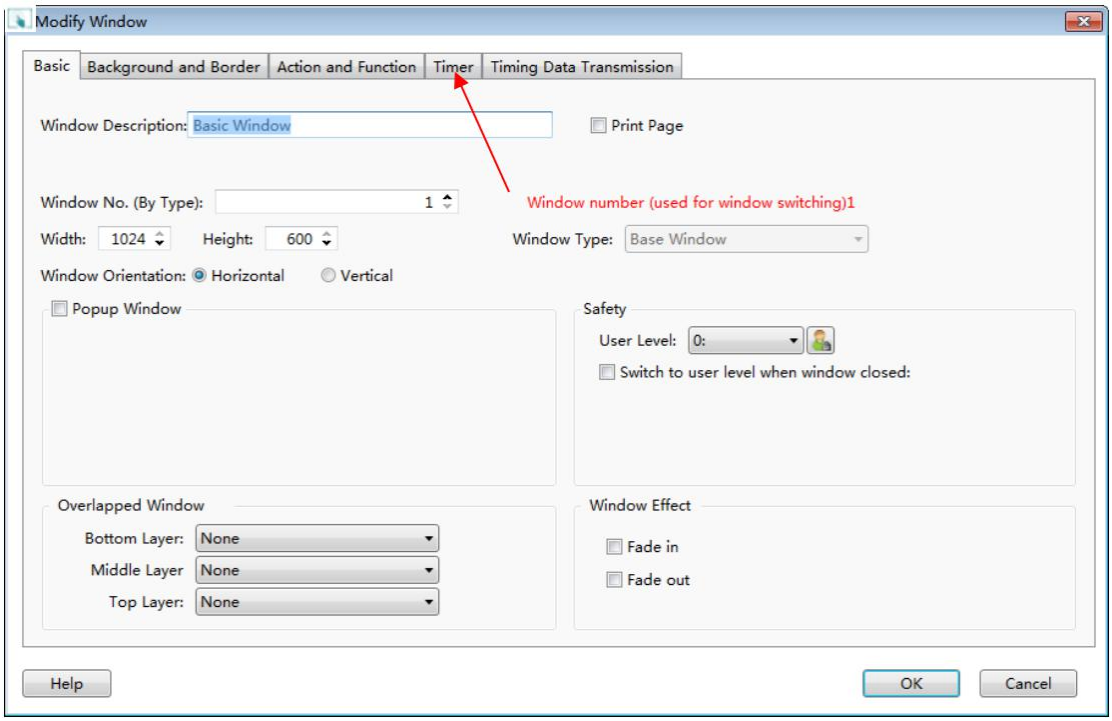
4.6.4.6.4 Display

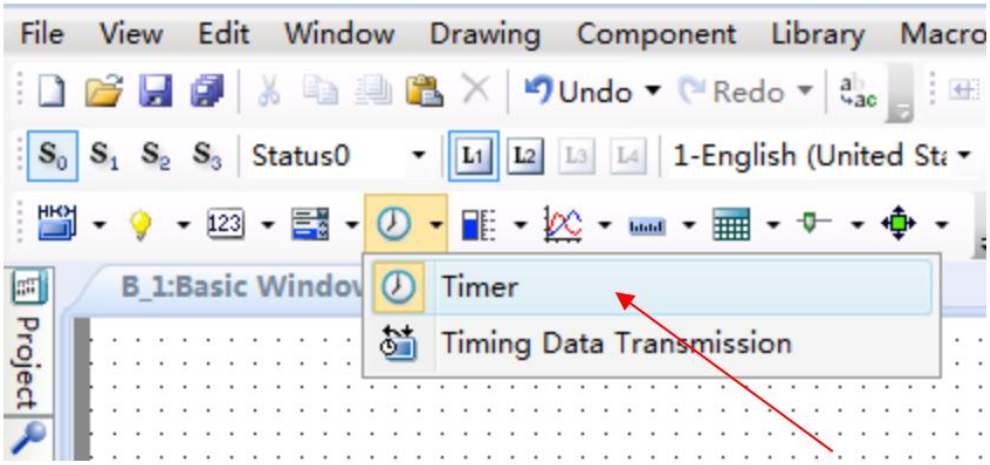
The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Drawing/Display.

4.6.5 Timer and Data Transmission

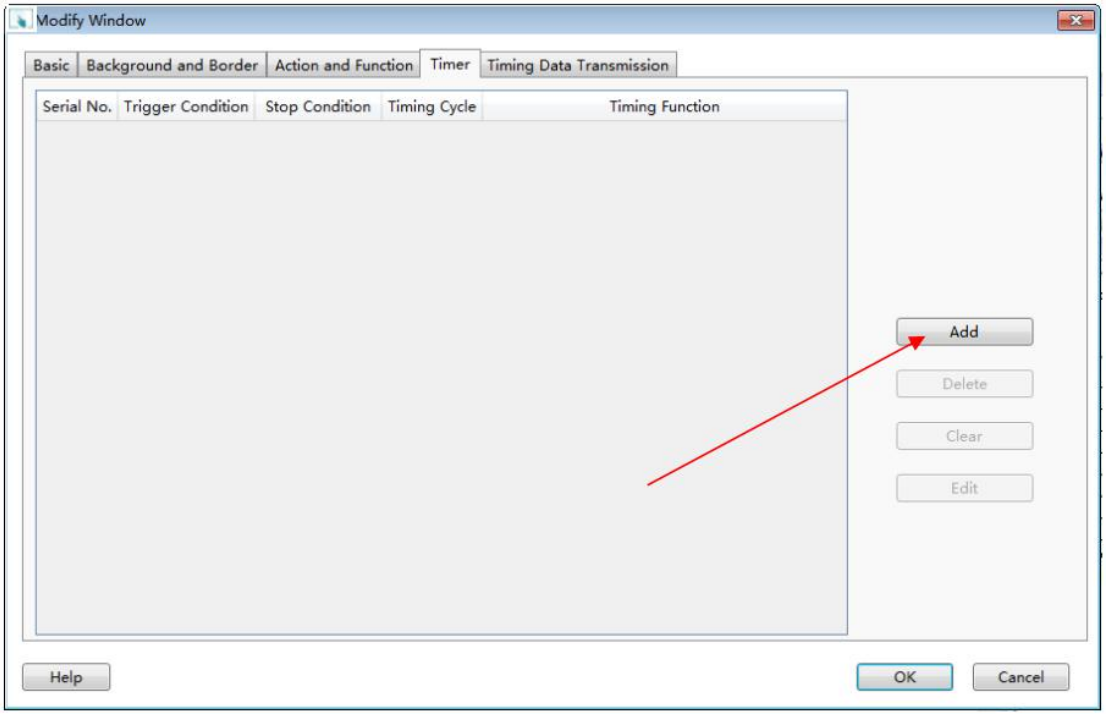
4.6.5.1 Timer

You can use the timer component to accomplish the tasks that need to be periodically executed or triggered under specific conditions.

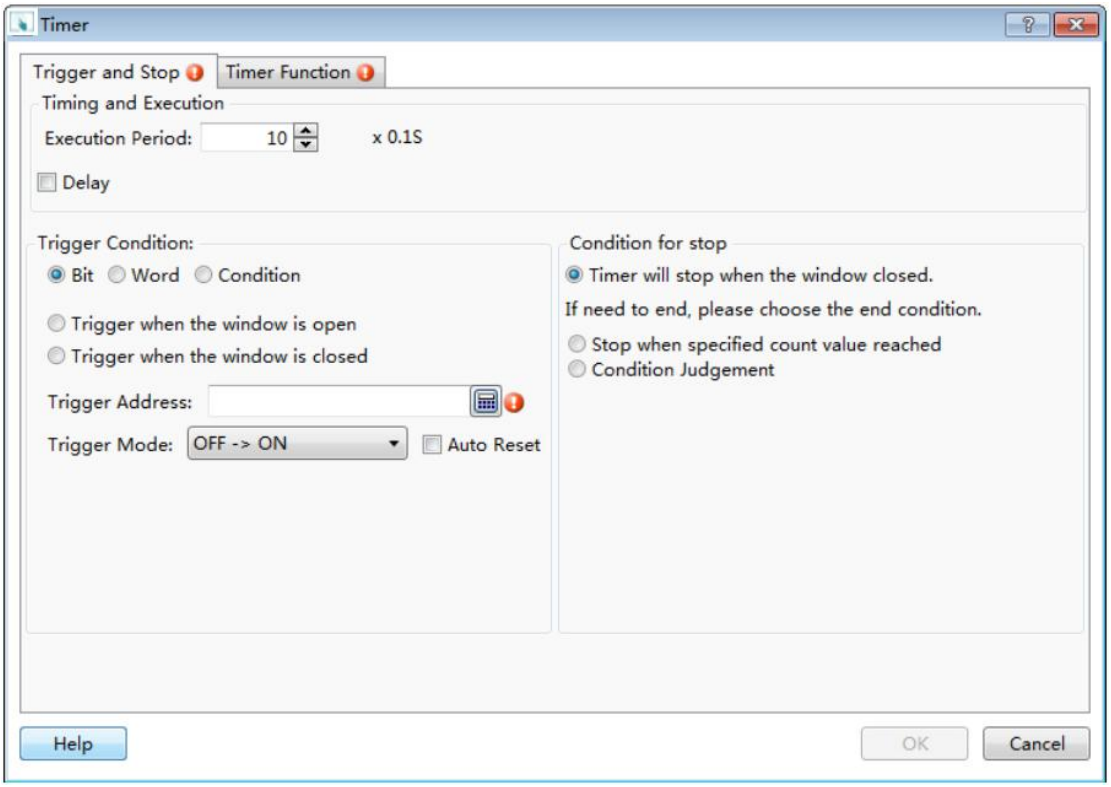




In the"Timer" property TAB, click the button "Add", you can open the detailed settings of the timer.

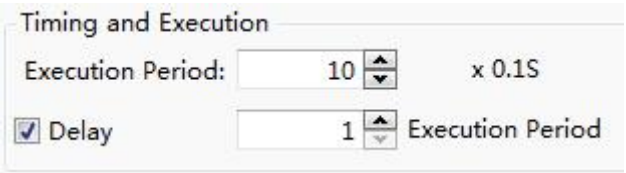


4.6.5.1.1 Trigger and Stop



- **Timing and Execution**

Set the operation mode of the timer in Timing and Execution.



➢ **Execution Period**

Set the execution cycle of the timer, in 0.1 s (seconds). If you want to set the execution cycle in 10 seconds, you can set to 100×0.1s.

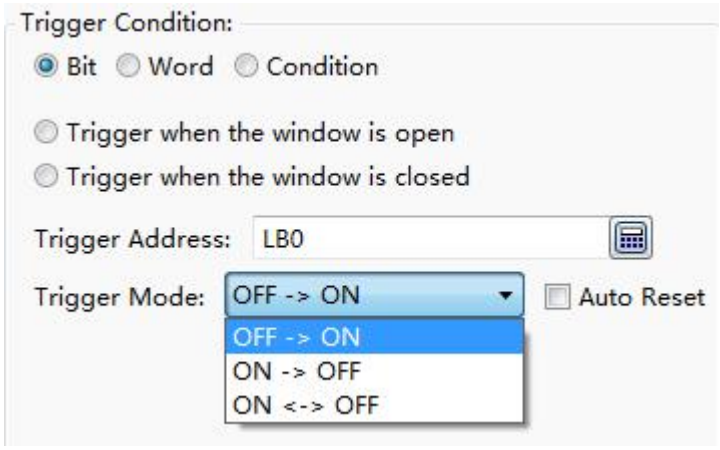
➢ **Delay**

In the case of unchecked "Delay" by default, when the trigger condition of the timer is met, the timer will execute immediately for the first time. After an interval of the setting execution cycle, the timer will execute for the second time until the end condition is met. If you want the timer to delay execution for a period of time when the trigger condition is met, you can check the "Delay" option, then delay time can be set to an integer times, such as three execution cycles.

- **Trigger conditions**

Trigger conditions is used to trigger the execution of the timer.There are many ways to trigger the timer in this software. You can choose according to your actual needs. It is important to note that the timer trigger mode should be edge trigger. After the trigger condition is met, the timer will continue working until the end condition is met.

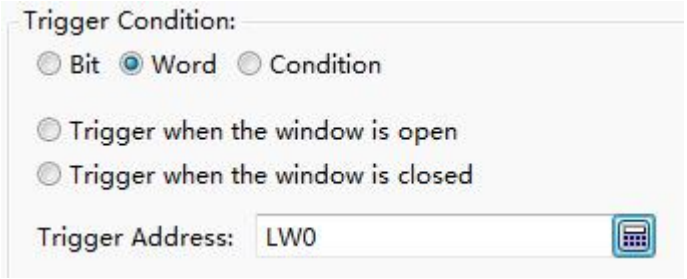
➢ **Bit**



After select the "Bit" option, you can specify a bit register in the "Trigger Address" to control the timer trigger. The "Trigger Mode" can be set "OFF→ON", "ON→OFF", or "ON←→OFF". For example, if you set "OFF→ON", that means the timer is triggered when the register value changes from 0 to 1.

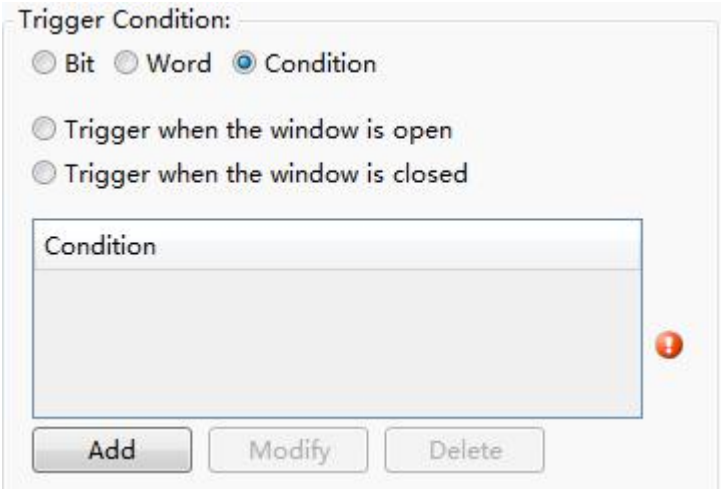
The "Auto Reset" refers to that the register value is automatically changed to OFF after the timer is triggered (for the "OFF→ON" trigger mode). The "ON ←→ OFF" trigger mode does not have the "Auto Reset" option.

- **Word**



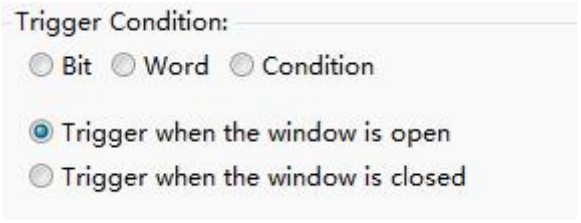
After selecting the "Word" option, you can specify a word register to control the timer trigger. When the value of the specified register is changed, the timer execution will be triggered.

- **Condition**



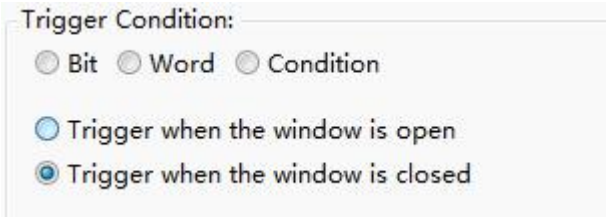
If you select "Condition" option, you can use a set of conditions to control the timer trigger. For the logical condition editing, see: Detailed manual/General functions/Logic Control.

- **Trigger when the window is open**



When the window in which the timer is located is opened, the timer execution will be directly triggered. Note that if the timer is located in the Public Window, only trigger once when the user project is executed after powering on the HMI, and it will not be triggered when switching to another window.

- **Trigger when the window is closed**

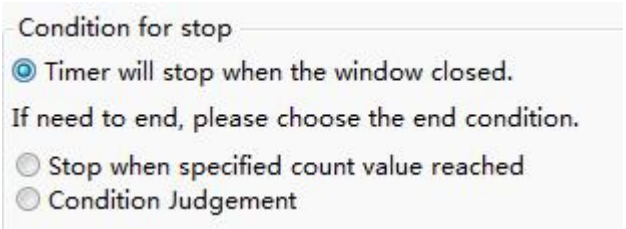


When the window in which the timer is located is closed and the other window is opened, the timer execution is triggered.

- **Condition for stop**

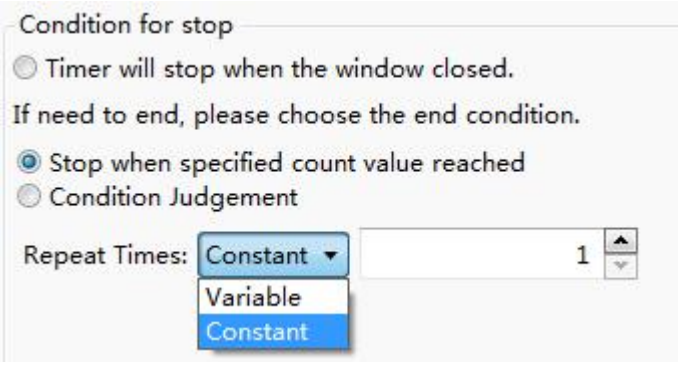
The condition for stop refers to the condition under which the timer stops execution. It is same to the "Trigger Condition". The condition for stop is also edge-triggered.

- **Timer will stop when the window closed**



The "Condition for stop" of the timer is "Timer will stop when the window closed" by default.If you want to end the timer execution in advance, select the other condition for stop:

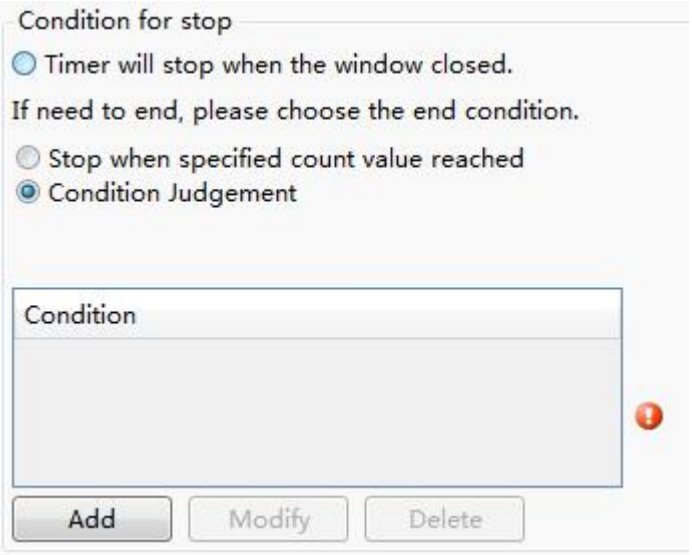
- **Stop when specified count value reached**



You can use the condition for stop to make the timer end automatically after repeating the specified number of times. Where in, for the specified number of times, you can directly enter it by constant, or you can specify a word register to control the timer execution times by variable.

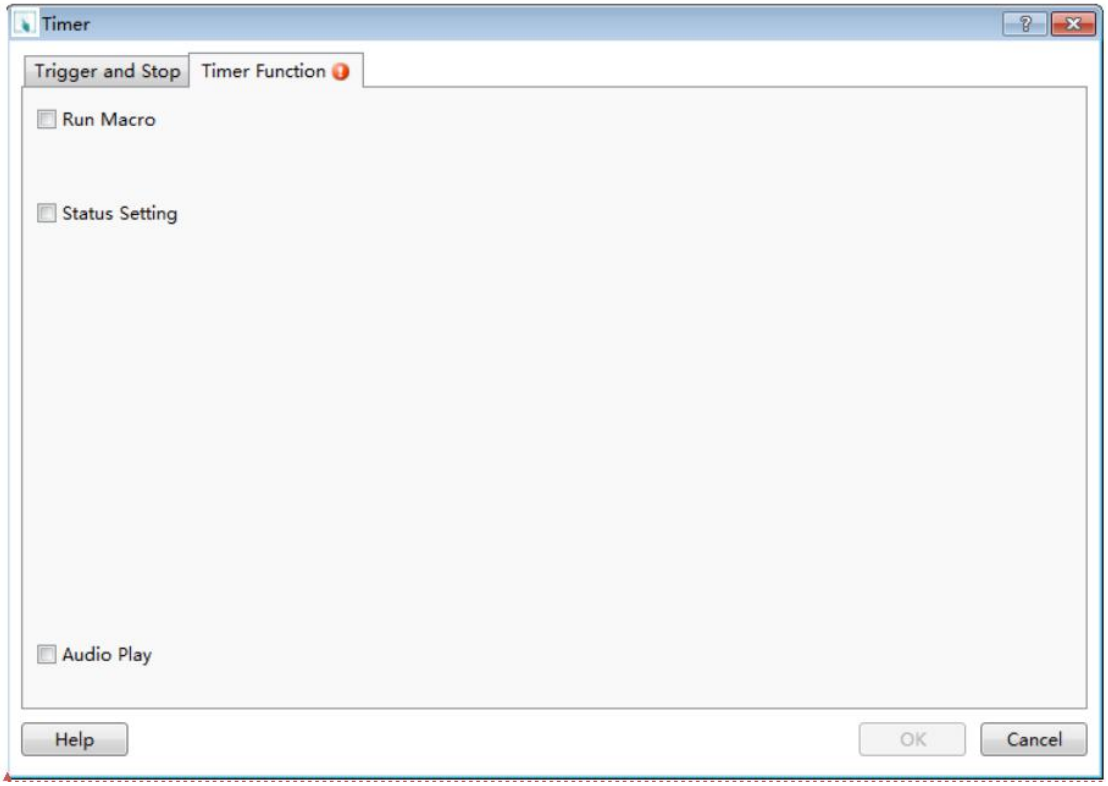
Note: When the trigger condition is "Trigger when the window is closed," the condition for stop will be directly selected as the "Stop when specified count value reached"and the number of times is set to 1 and not editable. This kind of timer can only be executed once.

- **Condition Judgment**



You can control the timer to end by using a set of conditions. When the conditions are satisfied, the timer execution ends. For the logical condition editing, see: Detailed manual/General functions/Logic Control.

4.6.5.1.2 Timer Function



Click the "Timer Function" tab and open the "Timer Function" property TAB.

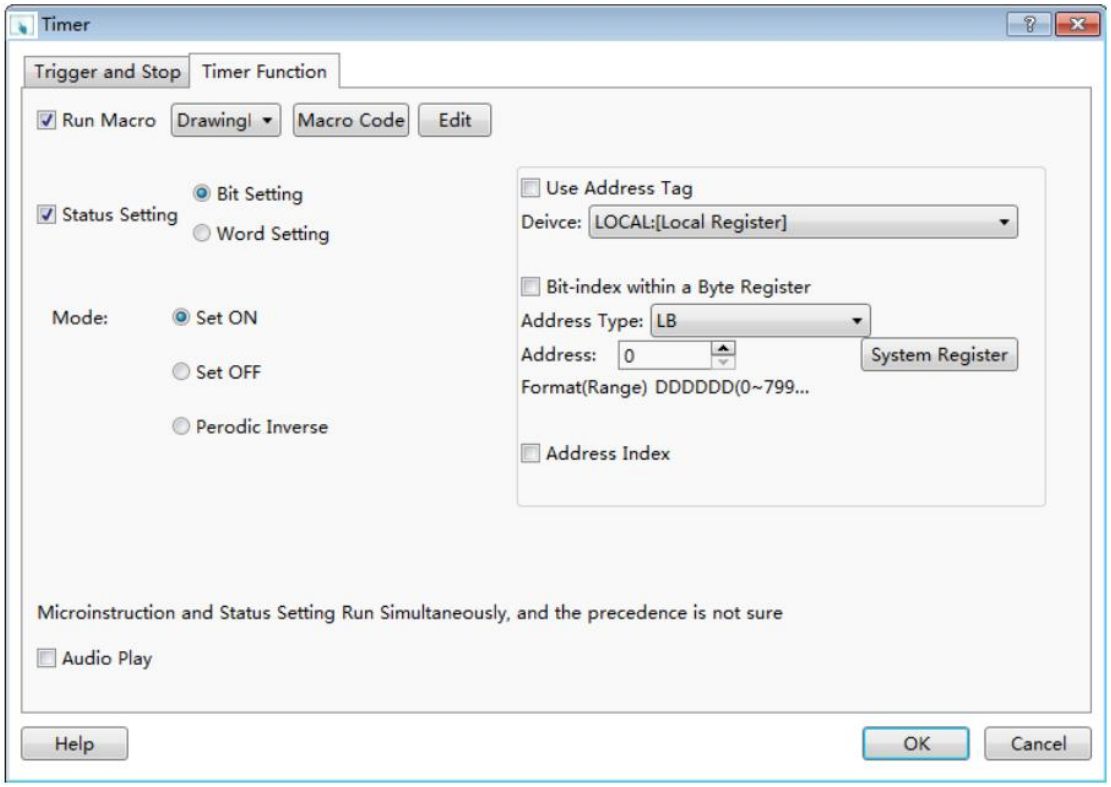
- **Run Macro**

You can use the timer to trigger the execution of macro instructions. If the macro instruction hasn't been established in the project, you can't check this box. You need to click the "Macro Code" to open the Macro code editor window and add the macro code. If the macro instruction is already exist, you can select the established macro from the drop-down list. Click the "Edit" button, you can directly open the Macro code editor window to edit the currently selected macro instruction.

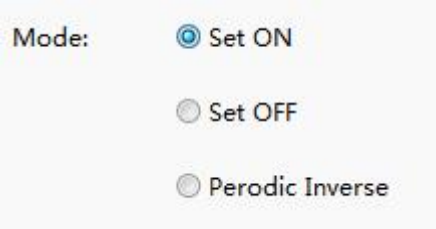
- **Status Setting**

The "Status Setting" function is used to set a bit register or set the value of a word register.

Whether setting the bit register status or setting the word register value, you first need to set the target address. For the address setting, refer to: Detailed manual/General functions/Address editor.

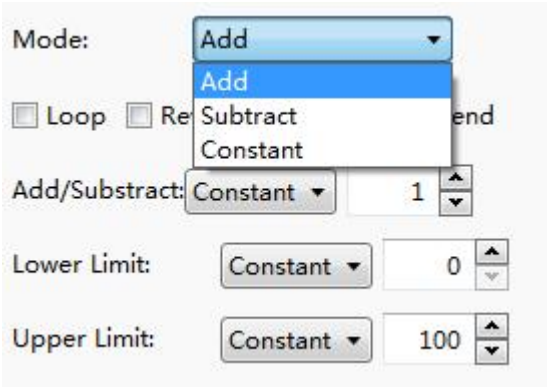


- **Bit Setting**



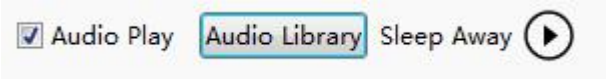
The mode of the bit setting includes "Set ON", "Set OFF" and "Periodic Inverse". The "Set ON" means that the bit is set ON when the timer is triggered and the bit remains ON in each execution period. The rules of "Set OFF" are same to the "Set ON". The "Periodic Inverse" refers that when the timer is triggered, the bit is inverted and continues to invert in each execution cycle.For example, the timer executed once per second switches the LB0 bit. LB0 will change the state once per second, 1 second is ON and 1 second is OFF.

- **Word Setting**



Word setting refers to periodic setting of a word register by timer. The setting modes include "Add", "Subtract" and "Constant".

- **Audio Play**



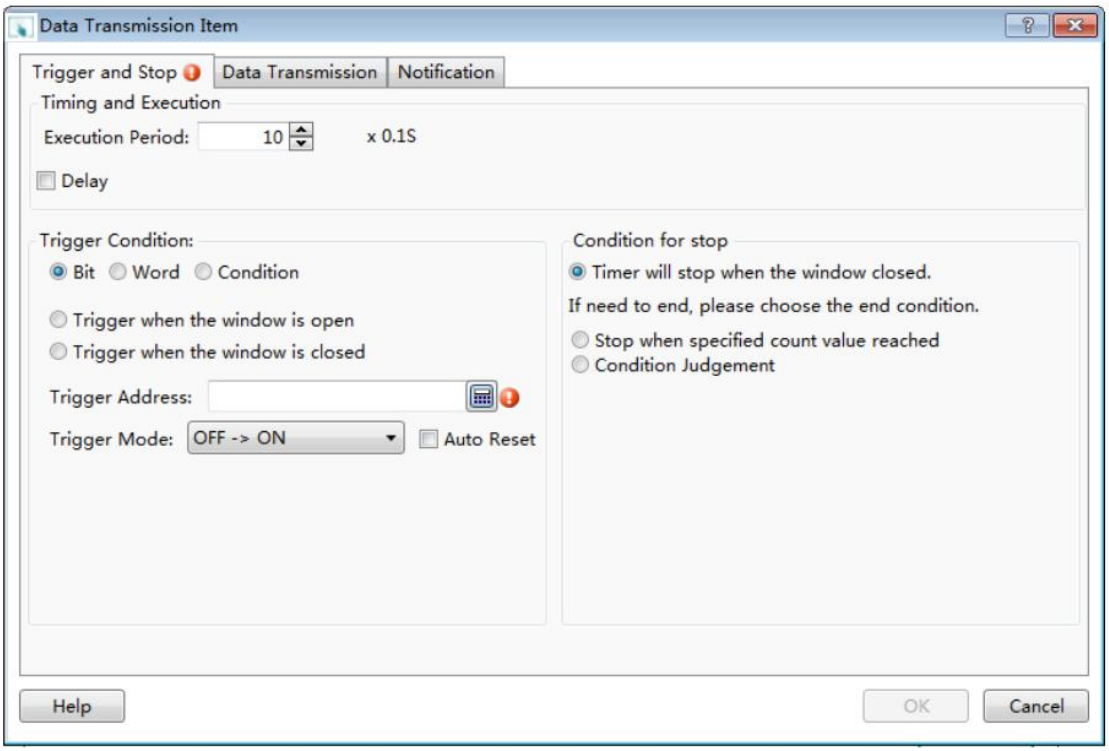
For the HMI device with an audio output function, you can use the timer to play sound.Click the "Audio Library", and select the audio file to be played from the "Audio Library". This software supports audio files in MP3 and WAV format. For adding audio files, please refer to:Detailed manual/Library/Audio Library. Click the triangle play button  at the back of audio file, you can hear the audio file.

Note:

The "Run Macro", "Status Setting" and "Audio Play" options can be checked at the same time. The timer can simultaneously control the execution of the three.However the execution order is uncertain.

4.6.5.2Timing Data Transmission

A single or batch data can be transmitted by timing. The action can be triggered or executes periodically. This component is similar to the timer. You need to add it to a specified window. If you want a global execution, you can add it to the public window.



4.6.5.2.1 Trigger and Stop

The "Trigger and Stop" is used to control the execution modes of components. The modes of "Trigger and Stop" include "Execution Period", "Trigger Condition" and "Condition for stop". The details can be refers to: Detailed manual/Component/Timer and Data Transmissionn/Timer.

4.6.5.2.2 Data Transmission

Data transmission can set the data to be transmitted, including the type and the length of the data to be transmitted, source address and target, and so on.

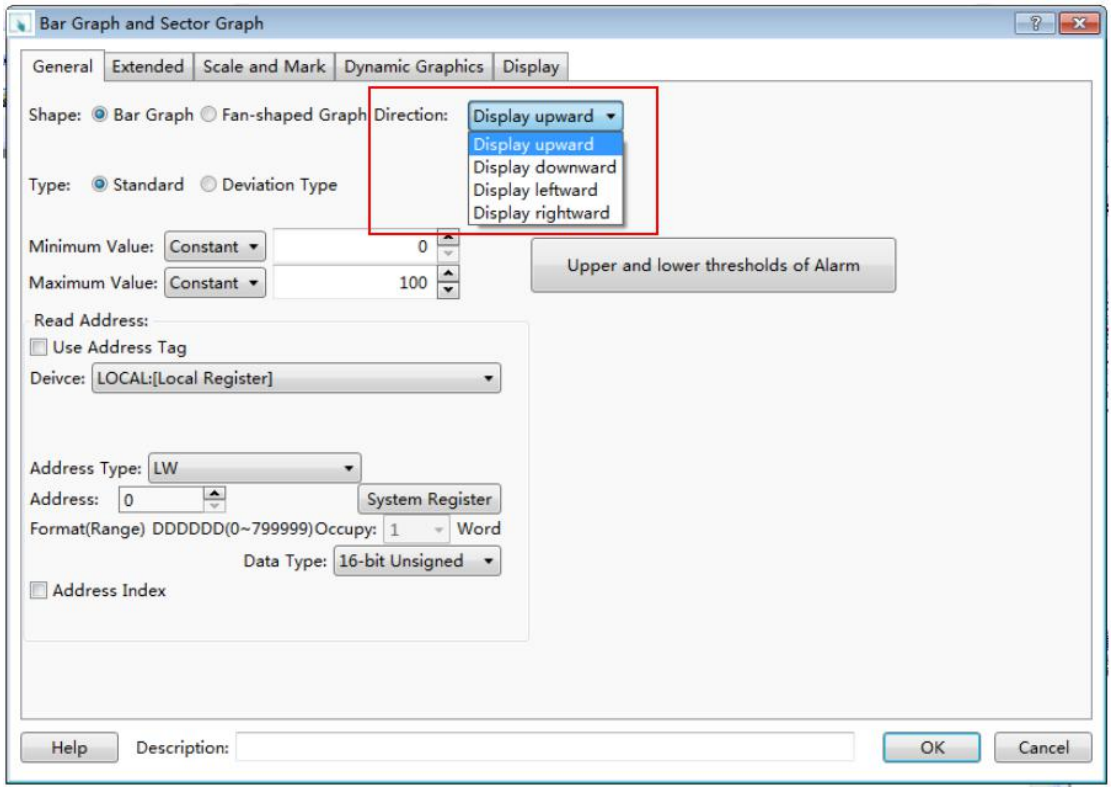
4.6.5.2.3 Notification

Notification function is similar to the notification function in the "Control Setting" property TAB of some components. It is used for before-writing notification and after-writing notification.For the detailed settings, refer to: Detailed manual/General functions/Drawing/Control settings.

4.6.6 Bar and Meter

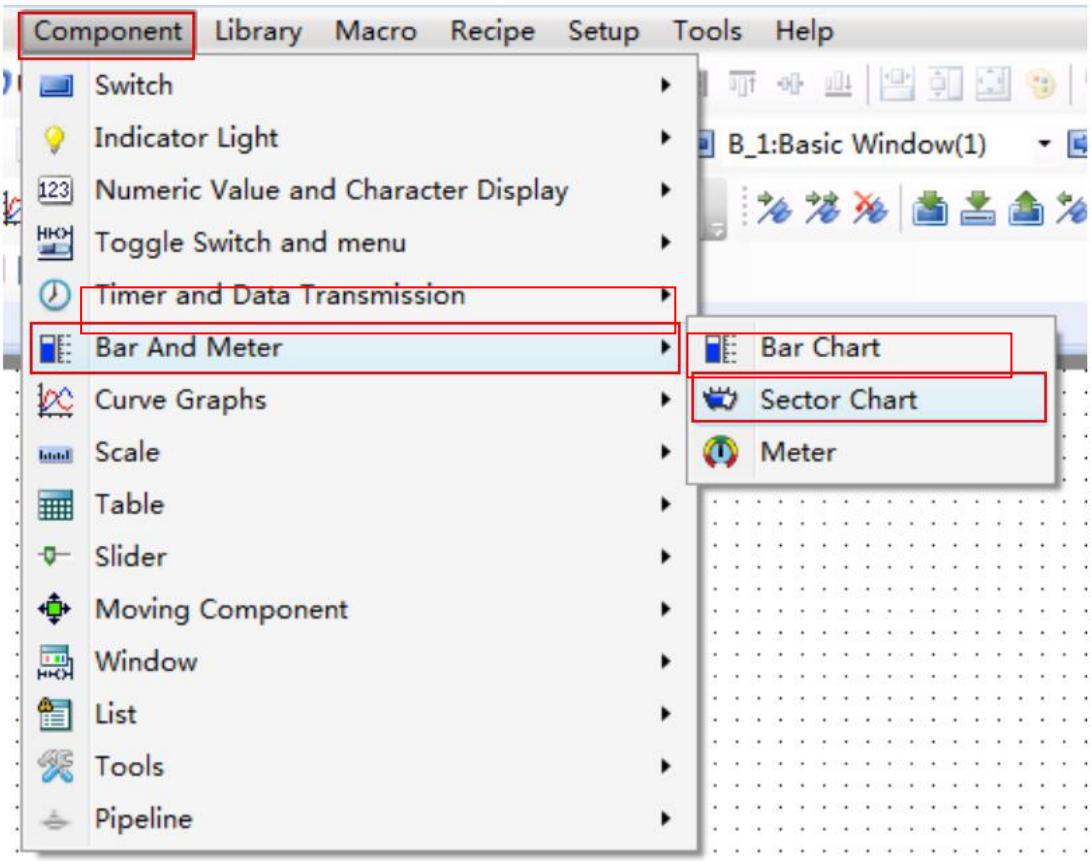
4.6.6.1Bar Chart

Apart from the slight difference of "Direction" as shown in the figure below, the other functions of the bar graph are the same as the Sector Chart. The detailed description is referred to: Detailed manual/Component/Bar and Meter/Sector Chart.

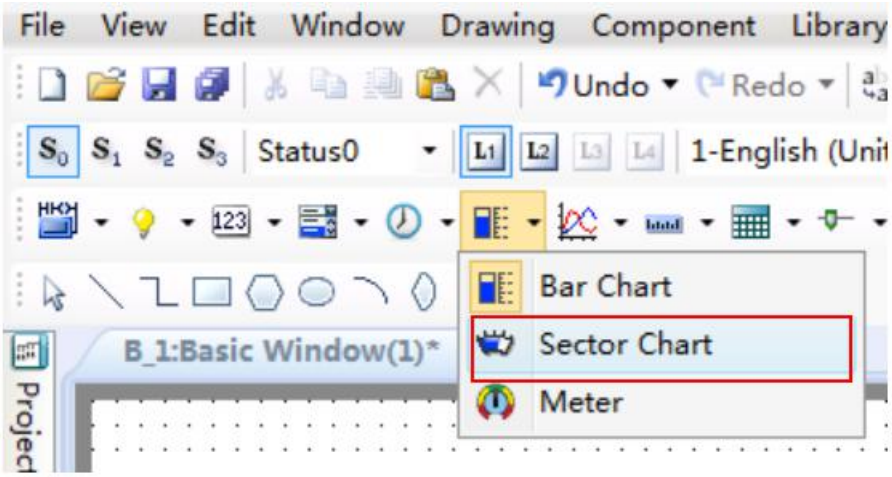


4.6.6.2 Sector Chart

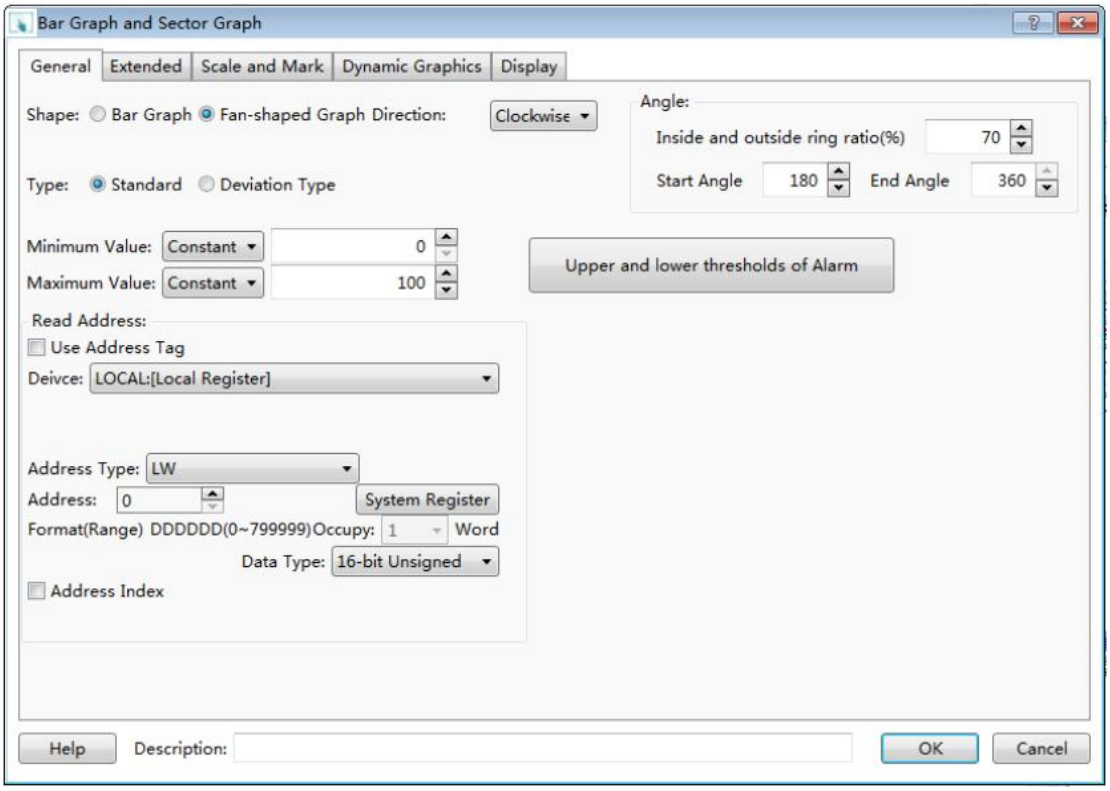
Add a sector chart component by clicking the menu command "Component/Bar and Meter". It is shown as below.



You can add the sector chart by clicking the corresponding shortcut button. It is shown as below.



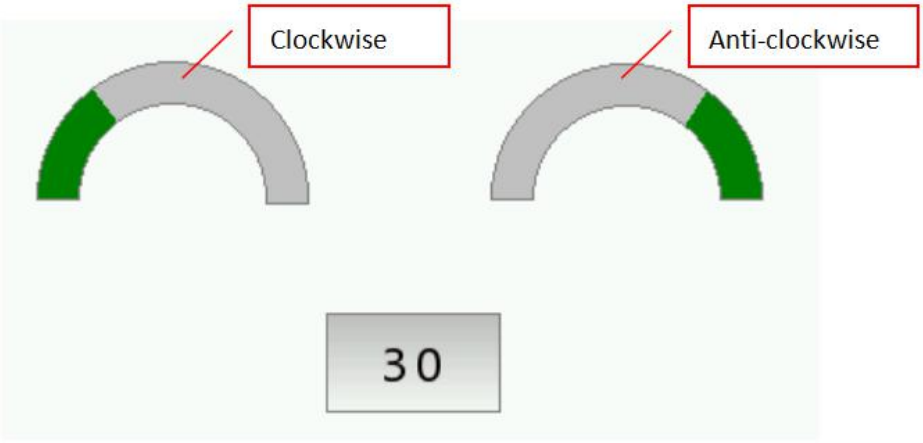
4.6.6.2.1 General



- **Direction**

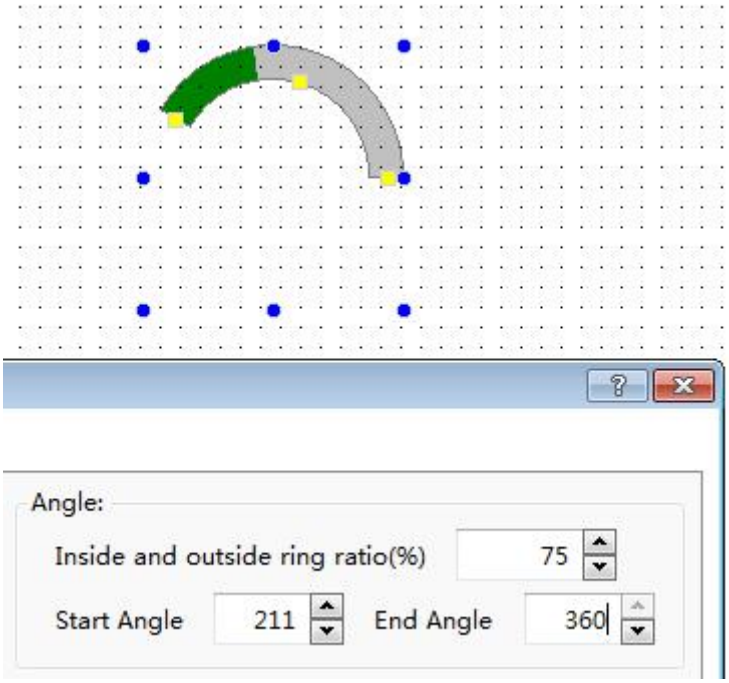
The option "Direction" is used to set the starting point direction which refers to the fill direction of the sector chart.

As shown below, the left Sector chart is filled by clockwise, and the right Sector chart is filled by anti-clockwise.



- **Angle**

The "Inside and outside ring ratio (%)" is set to a percentage of the inner ring radius to the outer ring radius. The "Start angle" of the sector chart can be set at will. The effect is shown as below.

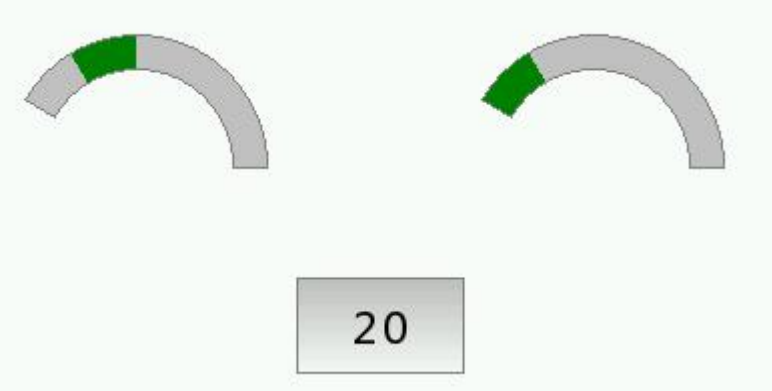


- **Type**

The types of the sector chart include "Standard" and "Deviation Type". The filling origin position of the standard sector chart is not adjustable. The origin position of the deviation type is adjustable. Here introduces the usage of bias type pie chart.

As shown as below, after selecting the Deviation Type, the "Origin Pos." can be freely set.

The running effects of the "Deviation Type" and the "Standard"are contrasted as shown as below (the left is deviation type, the right is standard type).



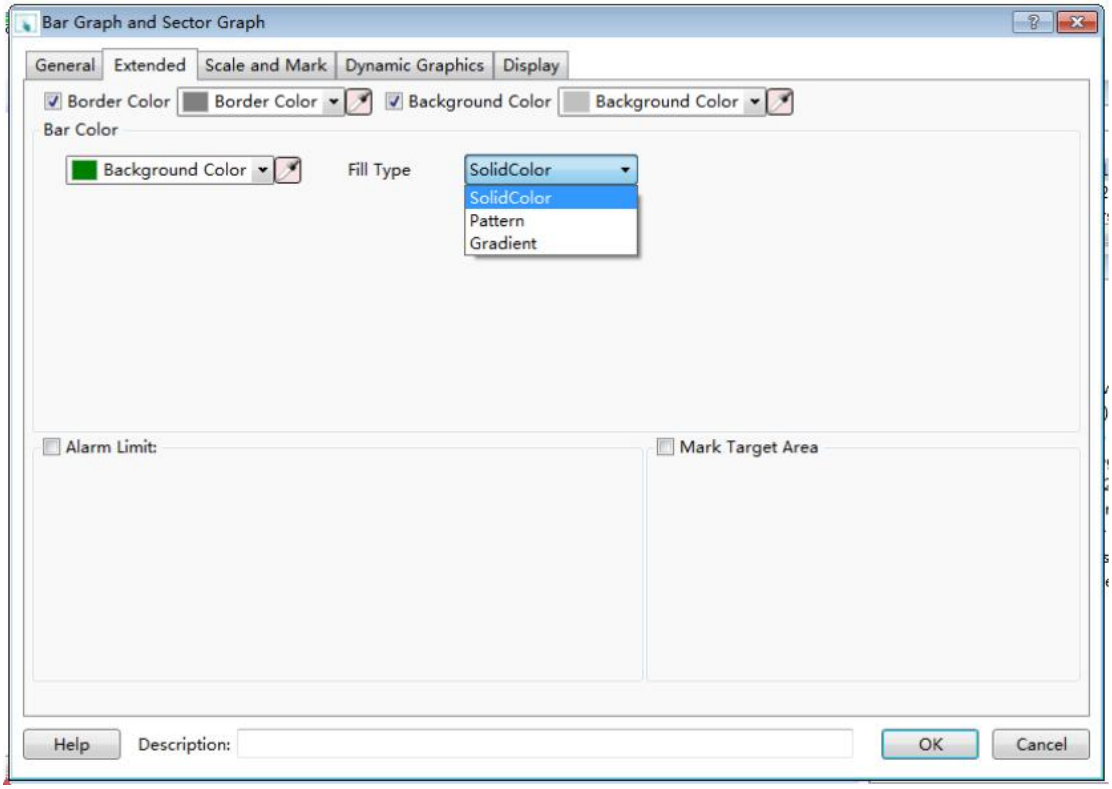
- **Read Address**

The detailed information is referred to: Detailed manual/General functions/Address editor/Standard Byte Address Input.

4.6.6.2.2 Extended

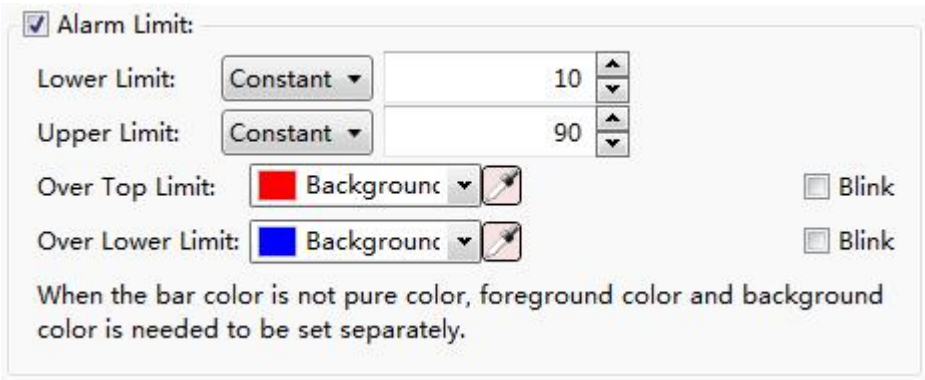
- **Border Color and Background Color**

As shown as below, the border color and the background color of the sector chart can be set freely. If the "Border Color" and "Background Color" are not checked,the border and the background color are not visible. The sector chart has three Fill Types: "Solid Color", "Pattern" and "Gradient". The Bar color can be set freely.



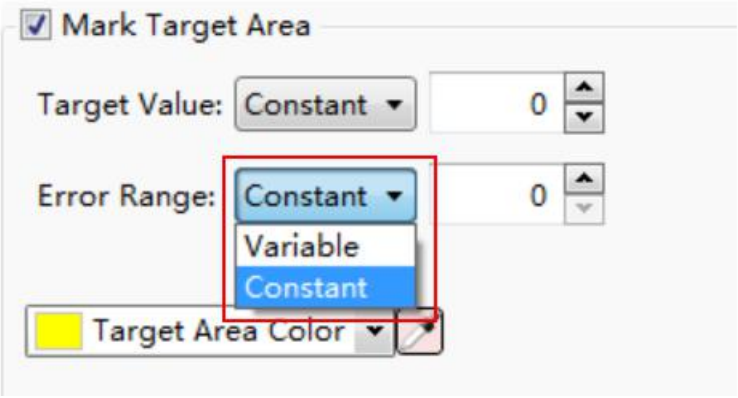
- **Alarm Limit**

As shown as below, you can set the upper and lower limit for alarm. Except for the "Blink" function, other functions are same to the "Meter".The detailed settings are referred to:Detailed manual/Component/Bar and Meter/Meter.

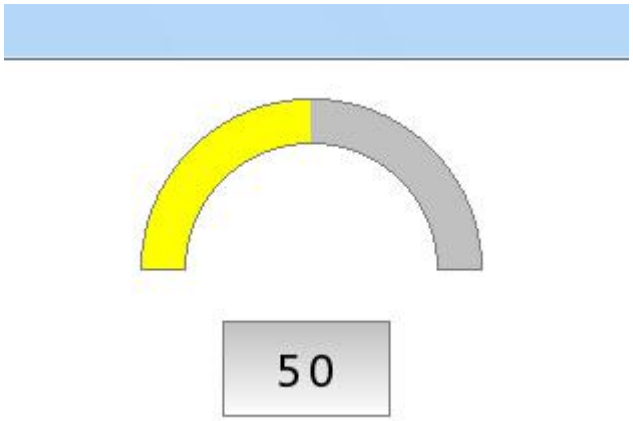


- **Mark Target Area**

When the value enters into the specified mark target area, the color of sector chart will be changed to the target area color. The target value and error range can be set by constant or by variable.



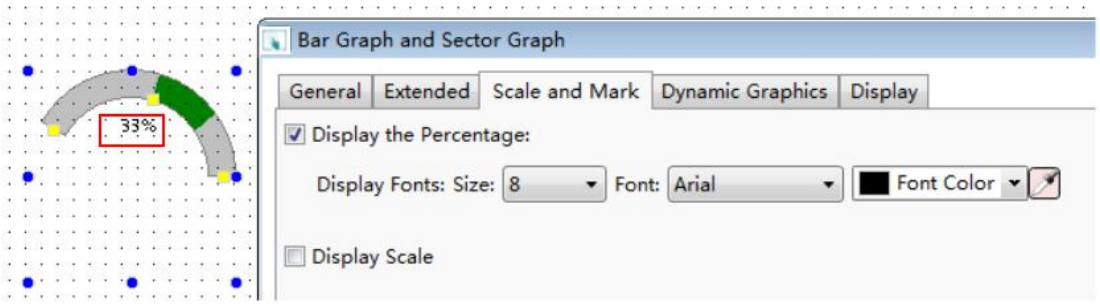
The running results are as shown in the figure below. In this case, the target area color is set yellow.



4.6.6.2.3 Scale and Mark

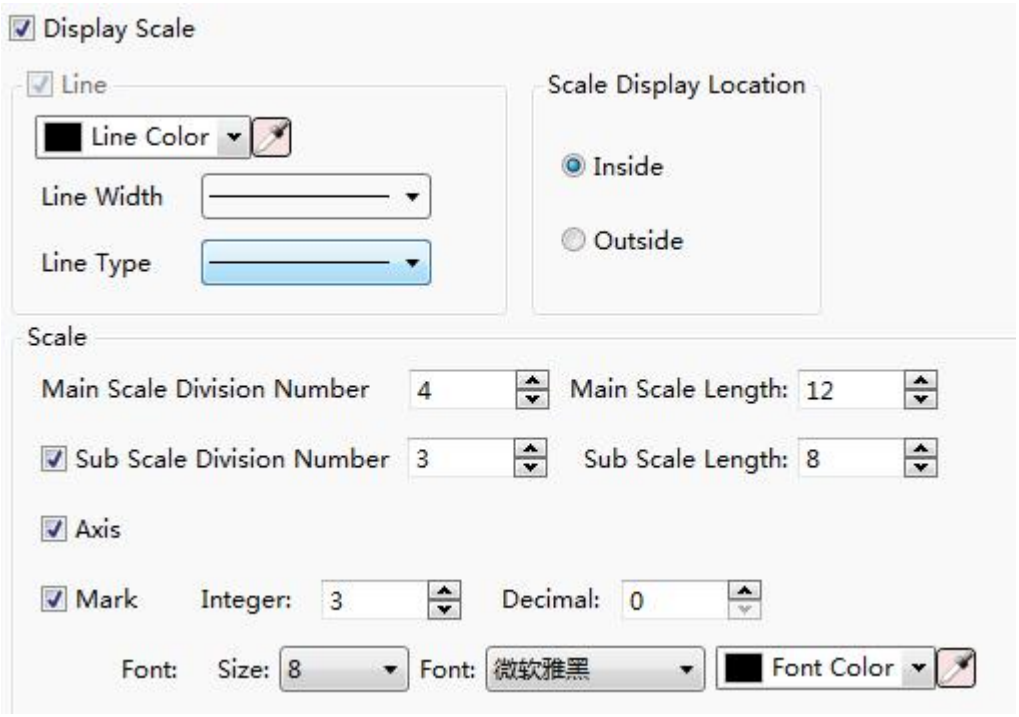
- **Display the percentage**

The function is used to display the total percentage of filling part to the entire sector chart. As shown as below, the display font size, font style and font color can be set freely.



- **Display Scale**

The "Display scale" usage of the sector chart is same to the meter but a slightly different, as shown as below. The detailed usage is referred to: Detailed manual/Component/Bar and Meter/Meter.

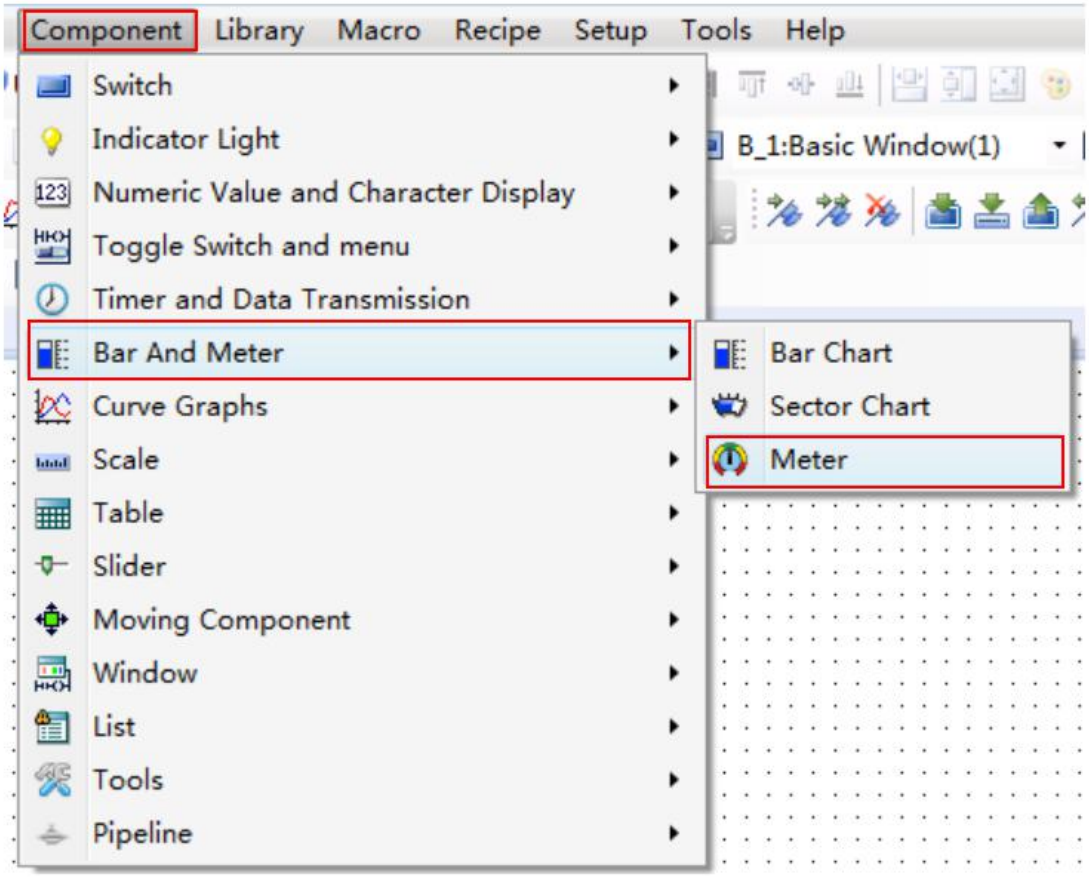


4.6.6.2.4 Display

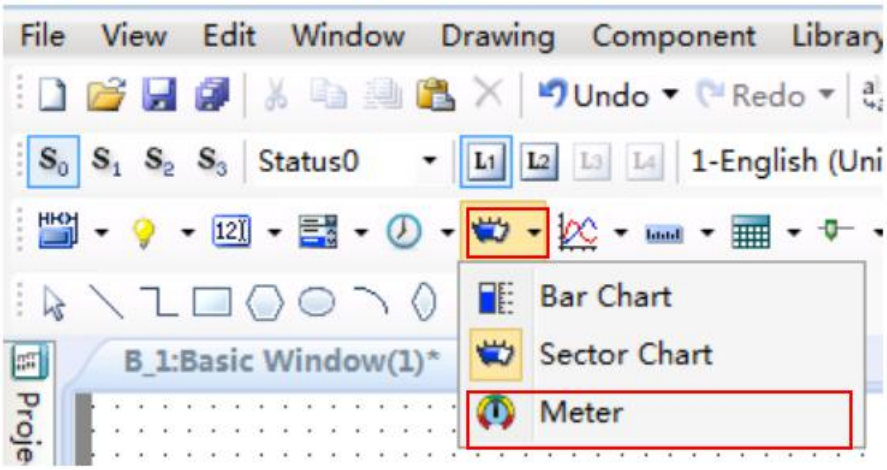
The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.6.3 Meter

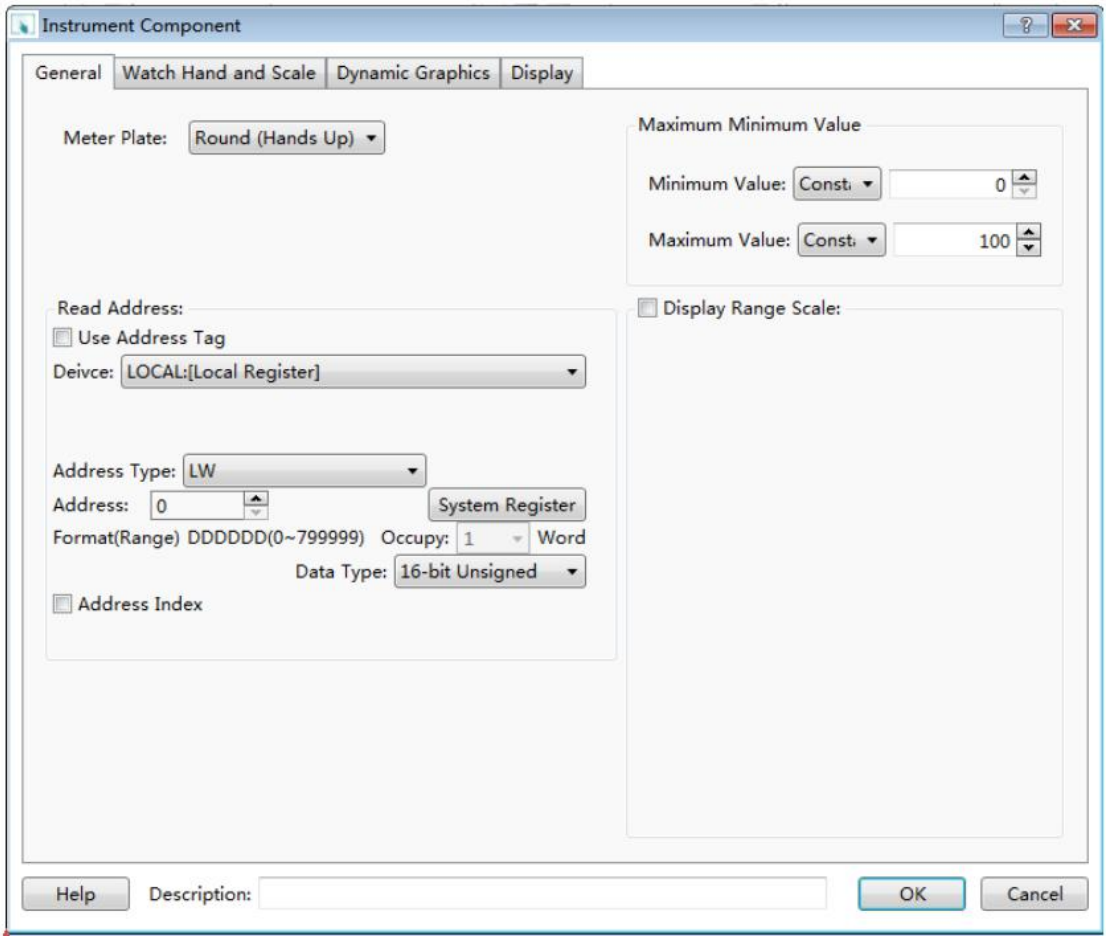
As shown as below, the Meter component can be added by clicking the menu command "Component/Bar and Meter".



You can add a meter component by clicking the corresponding tool button in the shortcut tool bar. It is shown as below.

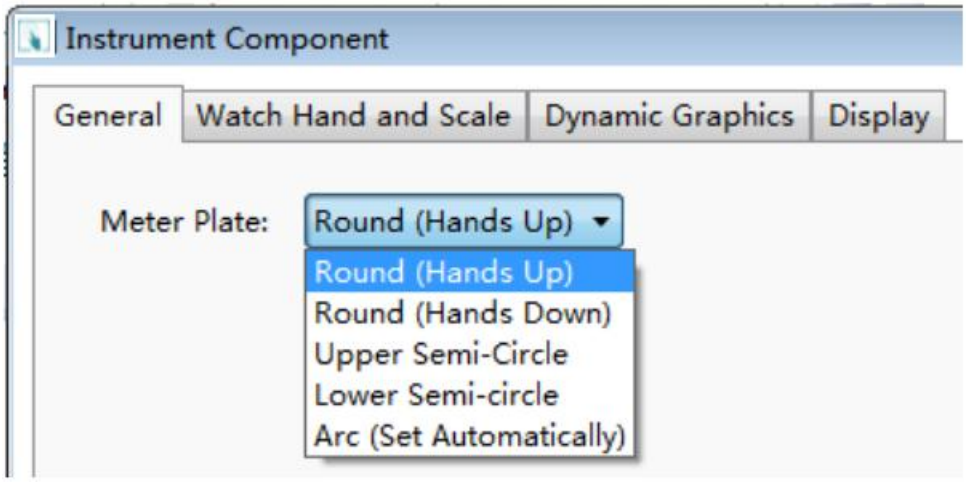


4.6.6.3.1 General

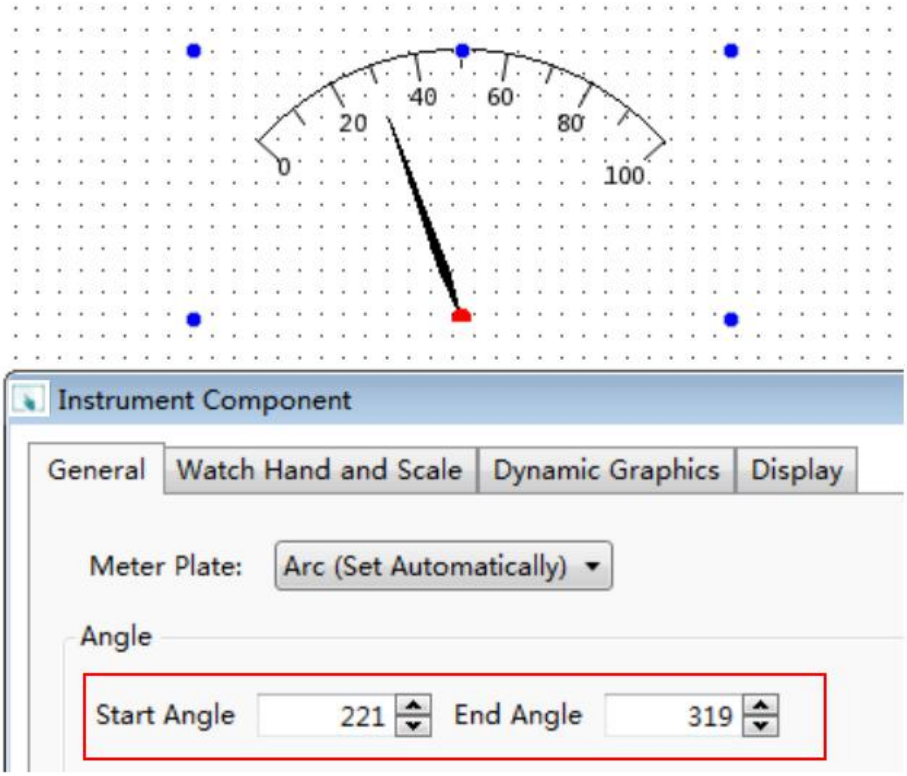


- **Meter Plate**

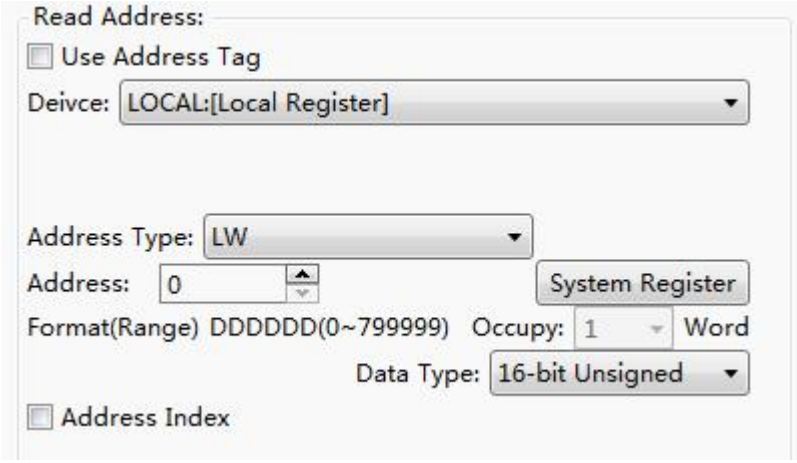
As shown as below, the meter plate includes five types: "Round (Hands Up)", "Round (Hands down)", "Upper Semi-Circle", "Lower Semi-circle" and "Arc (Set Automatically)".



The attributes of the "Round (Hands Up)", "Round (Hands down)", "Upper Semi-Circle" and "Lower Semi-circle" are same. For the Arc Meter Plate, you can freely set the starting angle and ending angle, as shown as below.



- **Read Address**

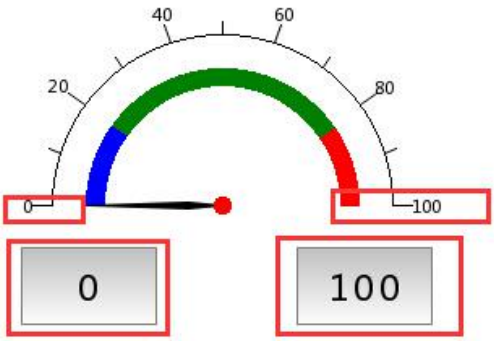


For details of Read Address, see: Detailed manual/General functions/Address editor/Standard Byte Address Input.

- **Maximum Minimum Value**

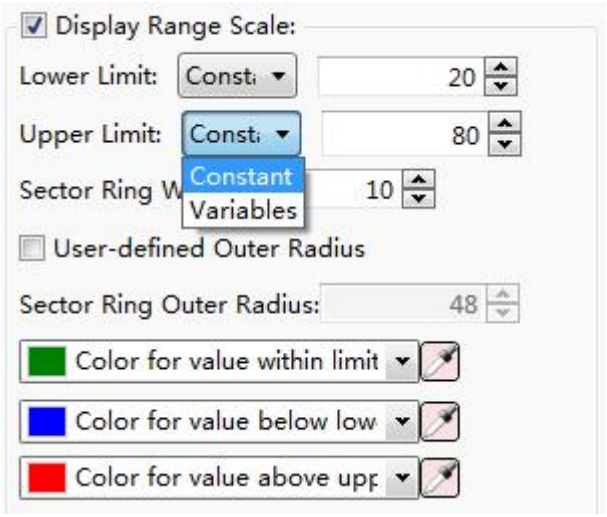
The Maximum value and the minimum value of the meter can be set by constant or by Variable. If you select by constant, a fixed constant can be set in the position shown in the figure below.

If you select by variable, you can specify a word register and enter a value to the word register to change meter during running your project, as shown in the figure below.



- **Display Range Scale**

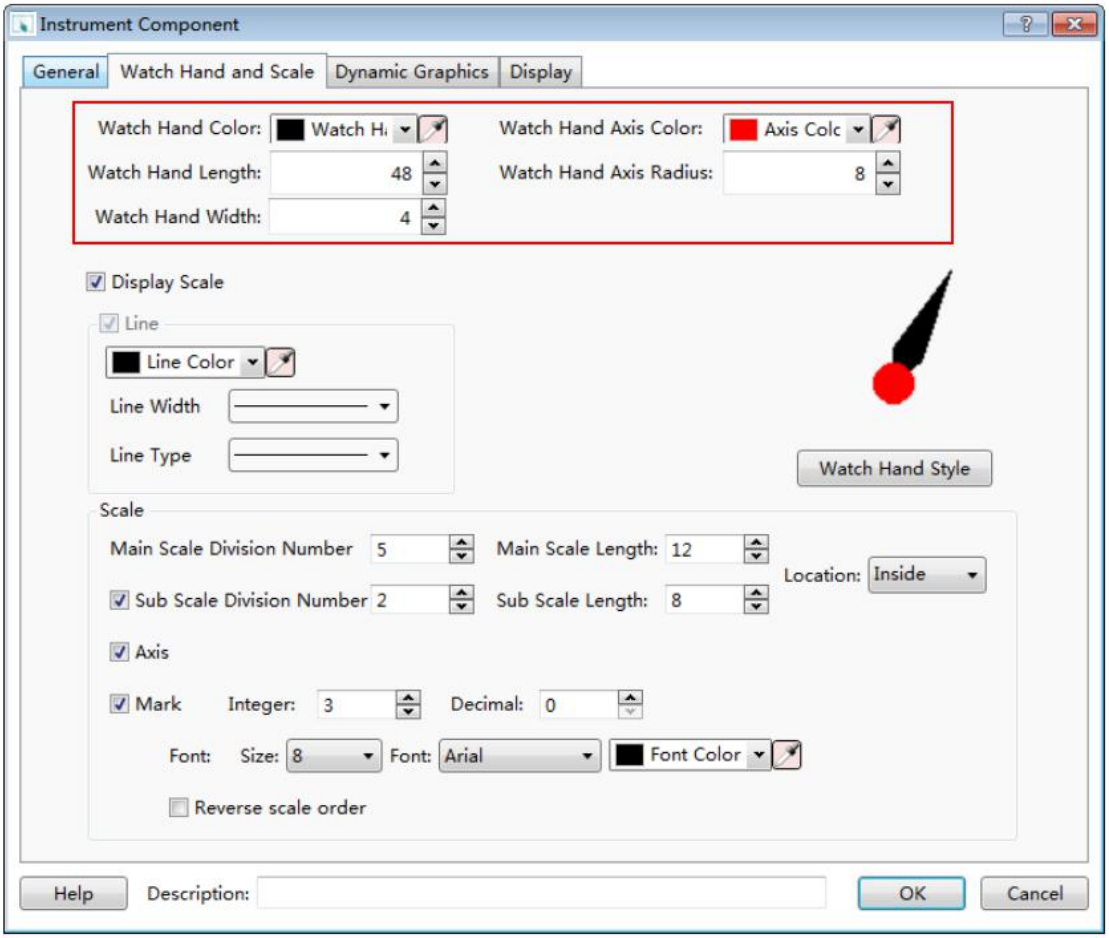
Set the upper and lower limit for alarm on the position shown in the figure below. The limit value can be set by constant or by variable. After setting the upper and lower limit value, you can also set the colors for value within limit, below lower limit and above upper limit, as shown below.



4.6.6.3.2 Watch Hand and Scale

- **Color and Size**

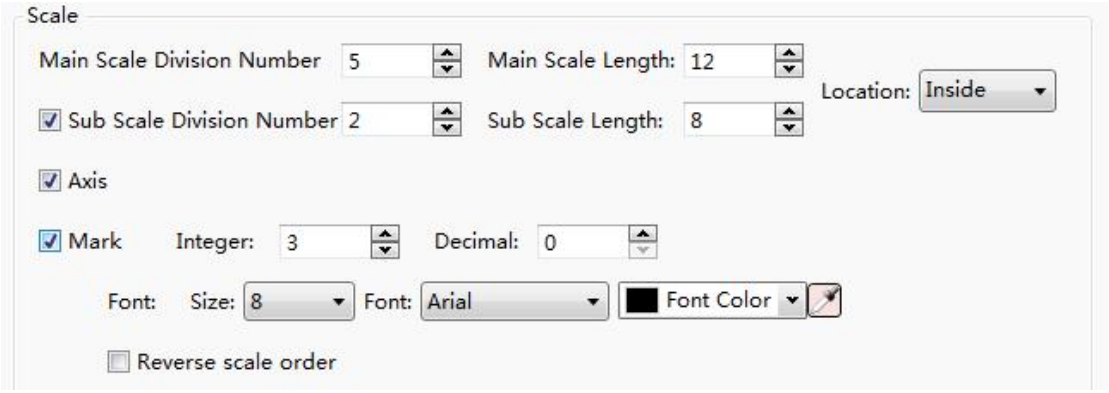
As shown in the figure below, the color of the watch hand and watch hand axis, the length and width of the watch hand,and the radius of the watch hand axis can be set.



- **Display Scale**

As shown as the figure below, you can modify the color, the width and type of the meter scale line after the "Display Scale" is checked.

➢ **Line**

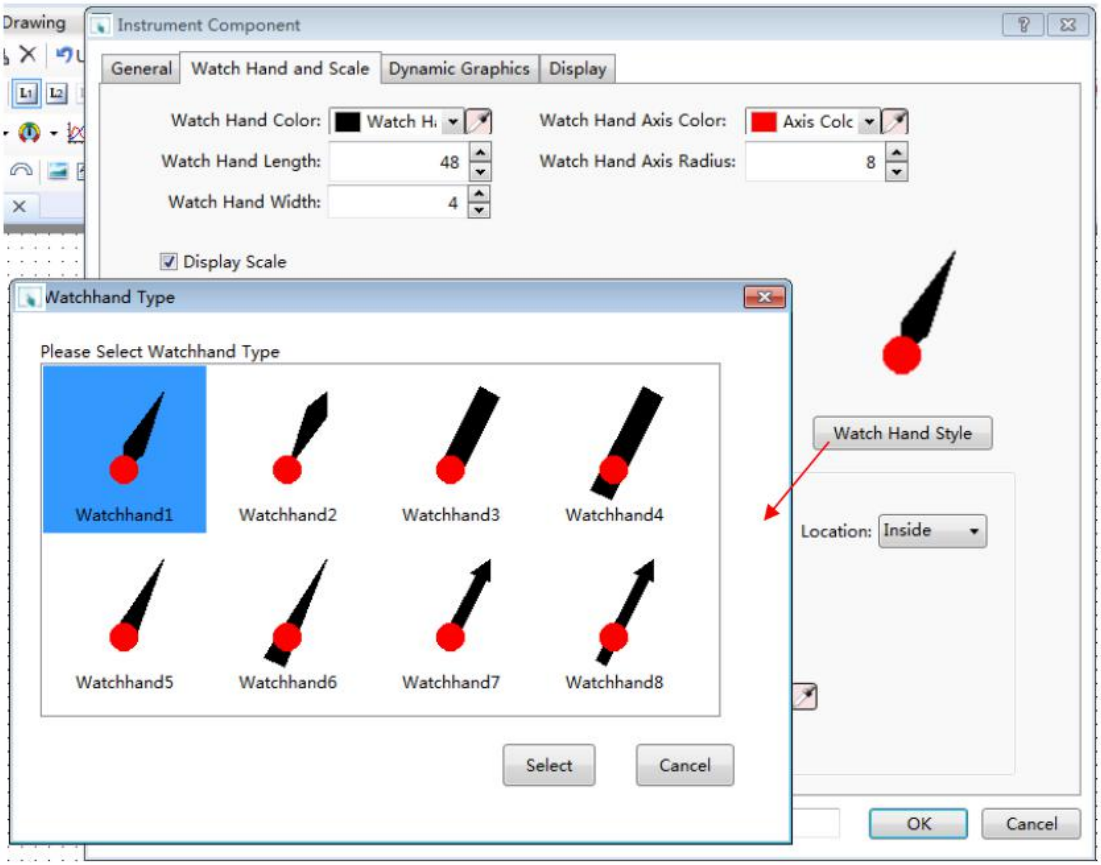


You can set the "Main Scale Division Number", the "Main Scale Length" and the "Sub Scale Length" here. The Location of the scale can be set "Inside", "Outside" and "Center", as shown as below. The "Sub Scale Division Number" and the "Axis" are checked by default. The default sub scale division number is 2. If the "Sub Scale Division Number" and the "Axis" are unchecked, that means the sub scale and axis are not displayed.

If the "Mark" is not checked, the meter will not display the scale value. After the "Mark" is checked, you can set the number of the integer digits and the decimal digits of the scale value and also can set the font styles of scale value. If you select the "Reverse scale order", then the maximum value and the minimum value will switch their positions.

- Watch Hand Style

Click the button "Watch Hand Style", you can select a style of watch hand for the meter.



4.6.6.3.3 Display

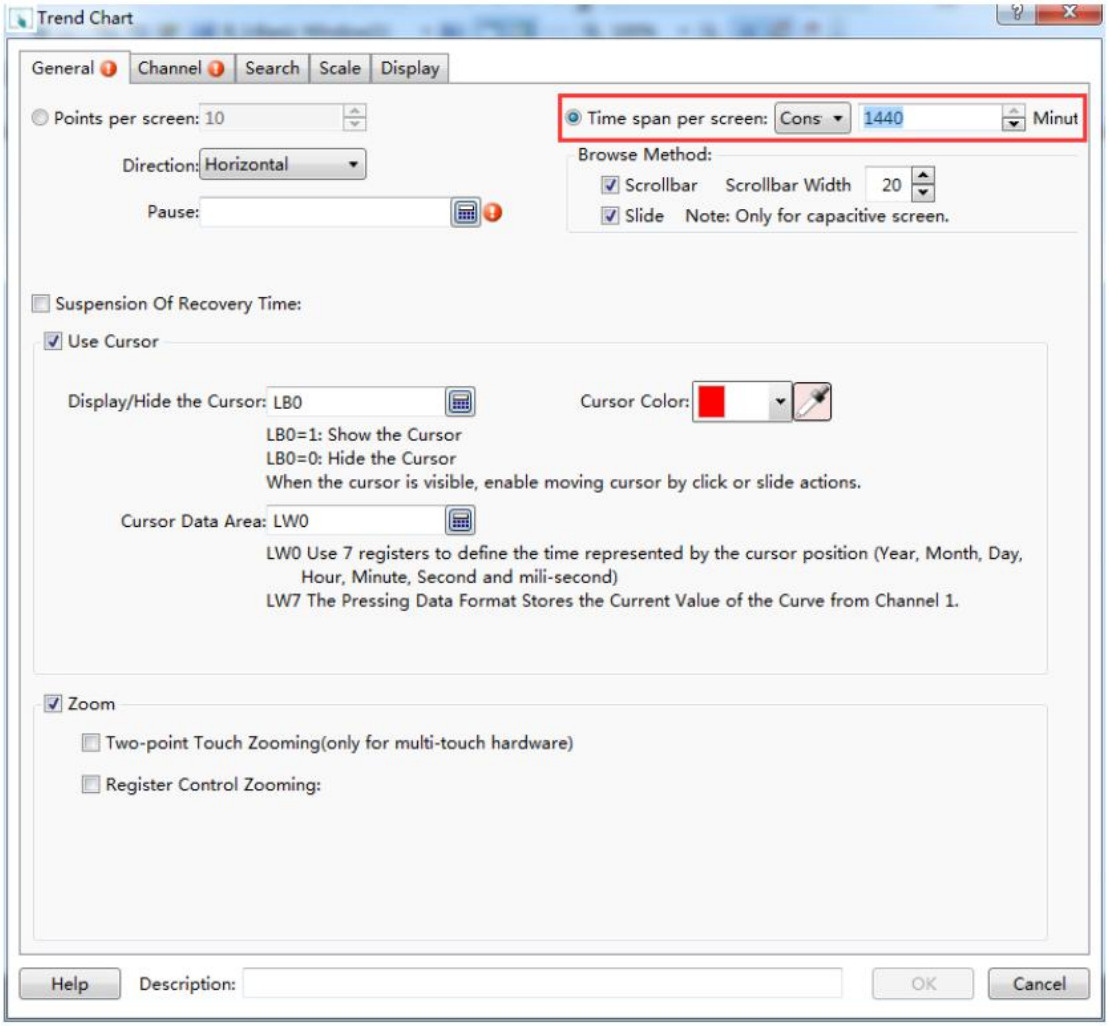
The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.7Curve Graphs

4.6.7.1Trend Curve

The "Trend Graph" component is a curve formed by the sampling data.

4.6.7.1.1 General



- **Display Points of Each HMI**

This option means the number of the displayed sampling data points on the screen. The default is 10.The max number of points can not more than the width of the used HMI resolution. For example, the 7-inch HMI device with the resolution 800*480 is used.Then the max number of points is 799.

- **Direction**

The option "Direction" is used to set the display direction of the trend curve. It is set "Horizontal" by default. It can be set "Vertical", too.

- **Pause**

A bit register address can be set here.When the bit register is ON, the trend curve is not refreshed (but the sampling is not paused). When it is OFF, the trend curve is refreshed in real time.

- **Time range per screen**

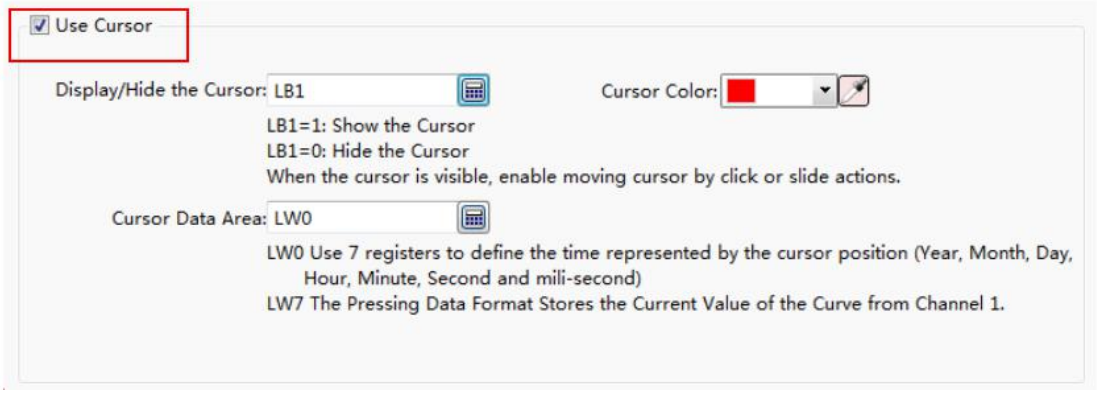
You can set the time axis range, there are constants and variables optional,variables are controlled through the register, maximum time can be set as1440 minutes.

- **Browse Method**

The methods of "Scroll bar" and "Slide" are all supported to view the trend curve.You can check anyone or two. But the "Slide" is only valid for the capacitive HMI device.

- **Use Cursor**

You can check the option "Use Cursor". This option is used to view the trend data crossed by the cursor and the data sampling time. The settings are shown as below.



- **Display/Hide the Cursor**

Here you can set a bit register.If the bit register is ON, the cursor is displayed. If it is OFF, the cursor is hidden. When the cursor is visible, you can click or slide to move the cursor.

- **Cursor Color**

The default color of the cursor is red. You can modify it according to the actual needs.

- **Cursor Data Area**

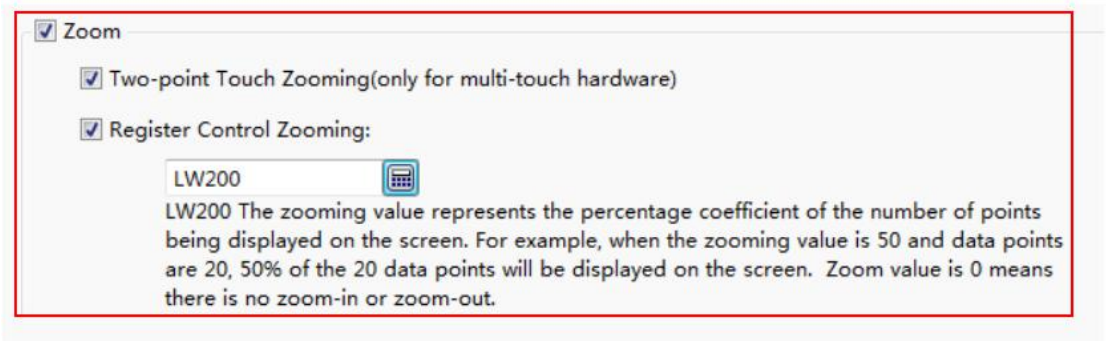
You need to set a starting address of a continuous word registers area here to save the information of the cursor data. The first 7 word registers save the sampling time of the trend data which is crossed by the cursor. They are year, month, day, hour, minute, second and millisecond. From the eighth register, the sampling data crossed by the cursor is saved. The data format should be consistent with which defined in "Data Sampling".

For example, the starting address of the cursor data area is set LW100. Then the registers from LW100 to LW106 save the sampling time information of year, month, day, hour, minute, second and millisecond. If the "Data Sampling" that you use only defines a data in "16-bit Unsigned" data type and the channel number is 1, then the LW107 register saves the sampled data at this time. If the "Data Sampling" that you use has the data sampled from two channels, the data type of the first channel is "Single precision floating point number" and the second channel is "16-bit Unsigned",then LW107 (Single precision floating point number) saves the data of the first channel and LW109 (16-bit Unsigned) saves the data of the second channel.Other data formats can be done in the same matter.

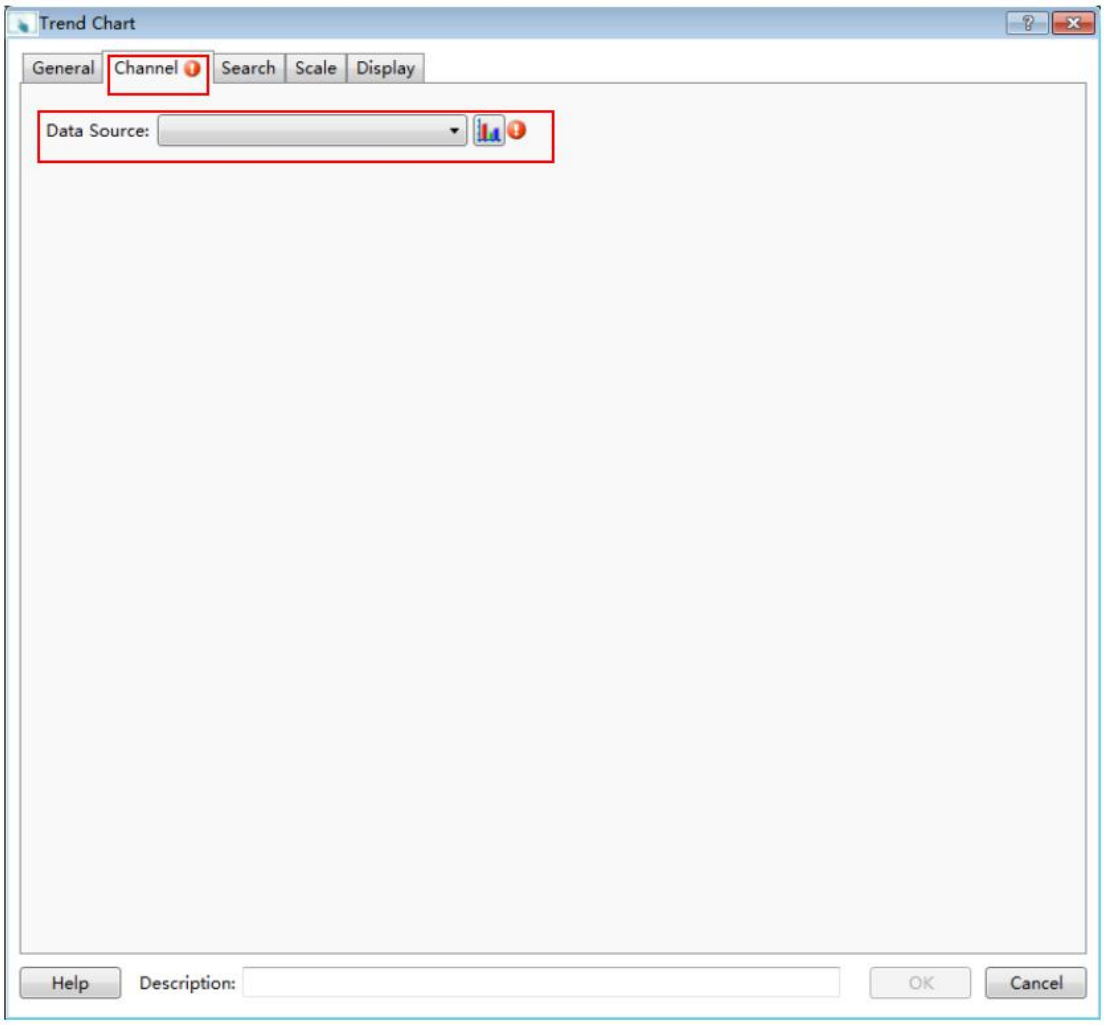
- **Use Zoom**

This option is optional. After it is checked, the option "Two-point Touch Zooming (only for multi-touch hardware)" can be check. This option is only valid for the capacitive HMI device. After you enable this function, the curve will be zoomed out when two fingers slide outward in the curve zone and the curve will be zoomed in when two fingers slide inward in the curve zone.

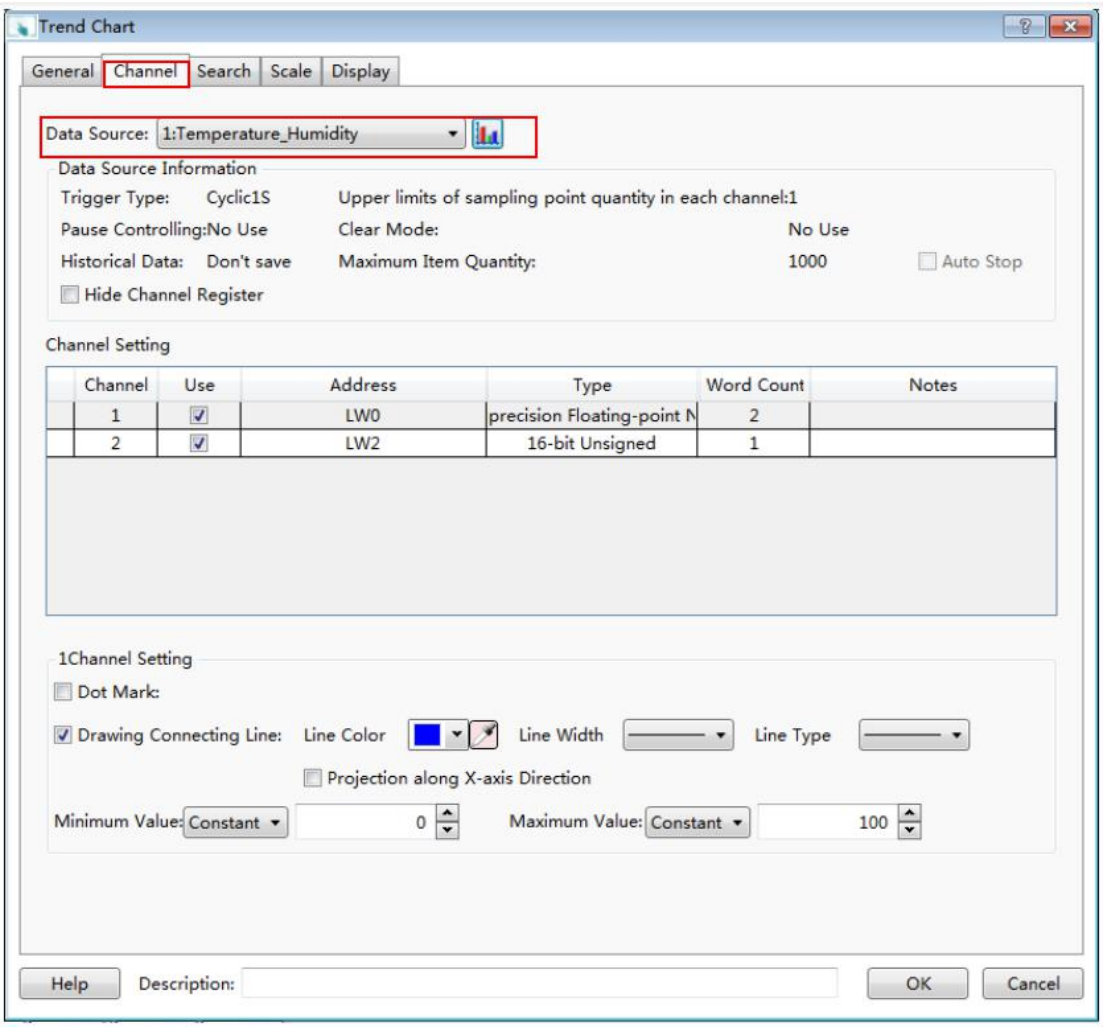
The option "Register Control Zooming" is used to zoom by using a word register. After check it, a word register needs to be given here.The value of this word register is the percentage of zooming. For example, the value of the word register is 50. It means that only 50% is displayed and the curve is scaled a half. If the value of the word register is 200, it means 200% is displayed and the curve is zoomed to 2 times. The settings are shown as below.



4.6.7.1.2 Channel



In the "Channel" property TAB, you need select a sampling data as the "Data Source". There will be a red exclamation mark here if the "Data Sampling" is not set. You can open the "Data Sampling" settings page to set the required sampling data by click the button "  ". After the setting is complete, the "Channel" page is shown as below.



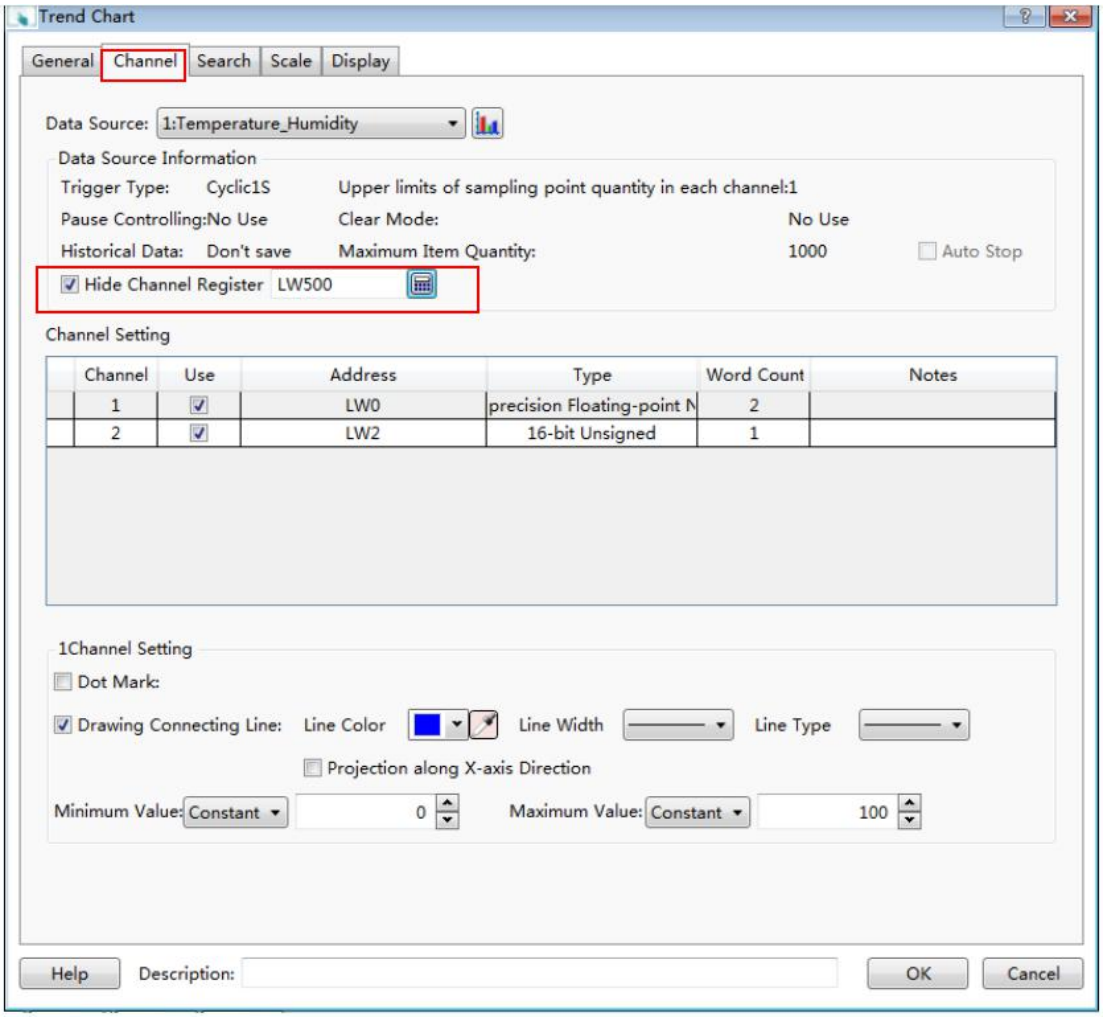
After you selecting a sampling data for the option "Data Source", all channels of this sampling data defined in the "Data Sampling" will be displayed in the "Channel Setting" property box.

For the above figure,the sampling data "Temperature Humidity" is selected as the data source. This sampling data has two channels. The data of channel 1 is from LW0 register and the data type is "Single precision floating point number". The data of channel 2 is from LW2 register and the data type is "16-bit Unsigned".

- **Data Source Information**

In this area, you can see the various attributes of the selected sampling data defined in the "Data Sampling".

There is an option "Hide Channel Register" here. After it is checked, you need to specify a word register. When the bit0 of this word register is ON, hide the curve of Channel 1. When the bit1 is ON, hide the curve of Channel 2. Other channels can be done in the same matter. The setting is shown as below.



For example, the option "Hide Channel Register" is set LW500. Then the curve of Channel 1 is hidden when the bit 0 of the LW500 is ON. The curve of Channel 2 is hidden when the bit 1 of the LW500 is ON.

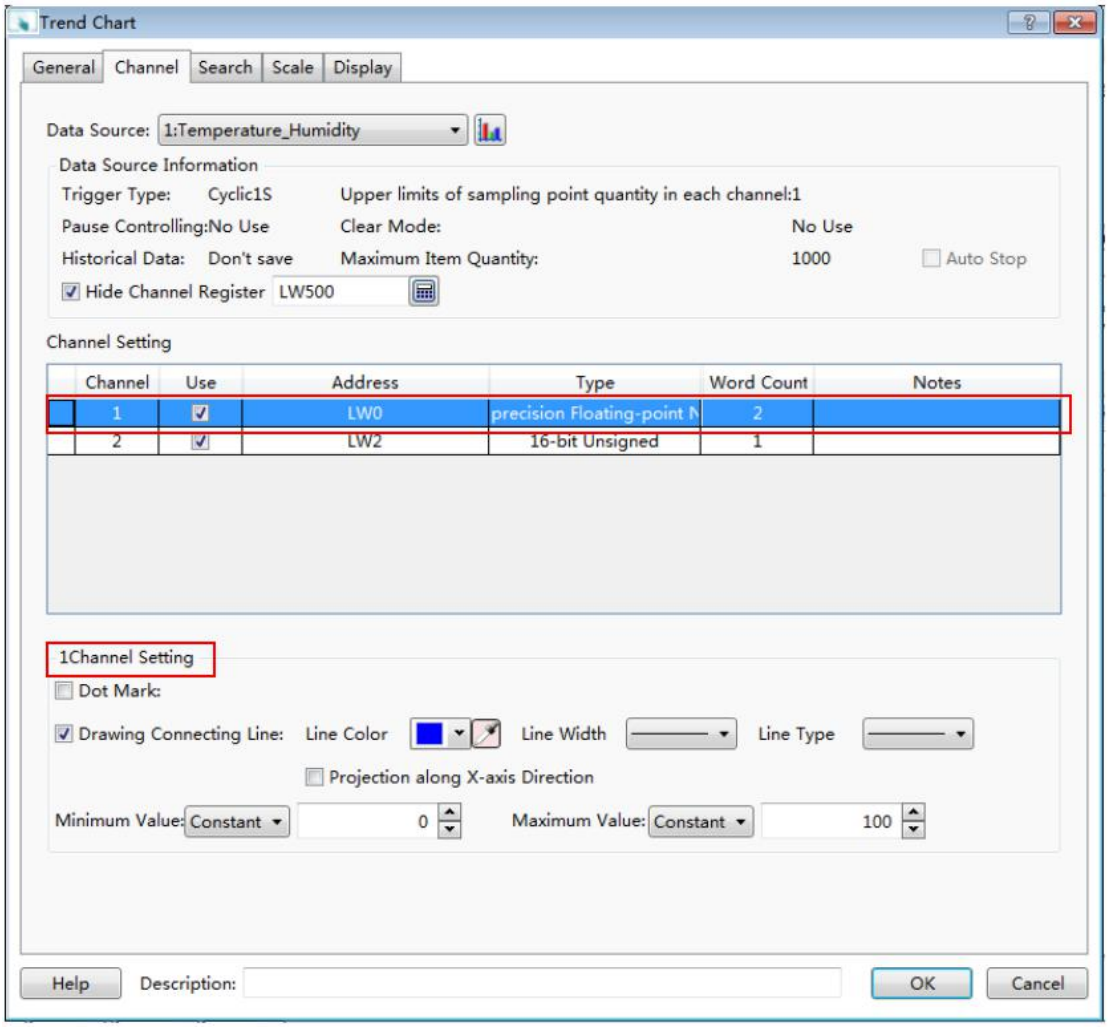
- **Channel Setting**

All channels of the data source are displayed here. They are all checked in the "Use" Column by default. It means they are all set to display on the trend curve.

Note:

If one channel is not checked in the "Use" column, that means the data of this channel will not be displayed on the trend curve. So the corresponding bit of the word register specified in the option "Hide Channel Register" cannot control the curve of this channel to display or hide.

Click one channel in the "Channel Setting" area, the relevant attribute settings of this channel will be displayed below. It is shown as below.



➢ **Dot Mark**

This option is not checked by default. After it is checked, you can set the dot color, the dot size and the dot style for each point of the sampling data.

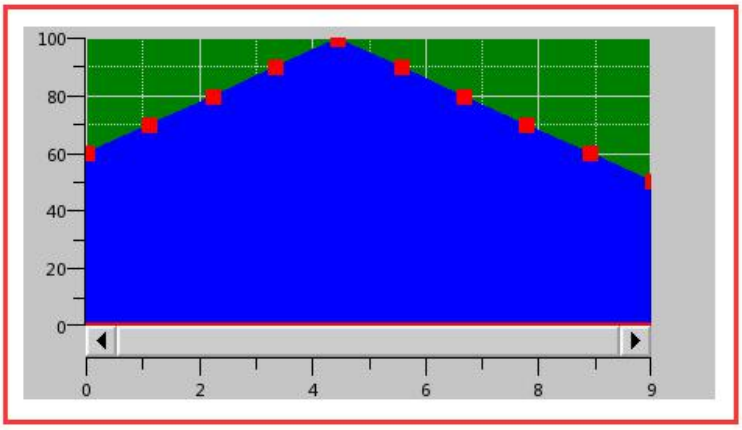
➢ **Drawing Connecting Line**

This option is checked by default. If it is checked, you can set the line color, the line width and the line type for the connecting line of the sampling data points.

➢ **Projection along X-axis Direction**

This option is not checked by default. After it is checked, the trend curve from the first point to the current sampling point will project to the X-axis to form a closed figure.

For example, the option "Dot Mark" and the option "Projection along X-axis Direction" are all checked, the display effect is shown as below.



- **Minimum Value**

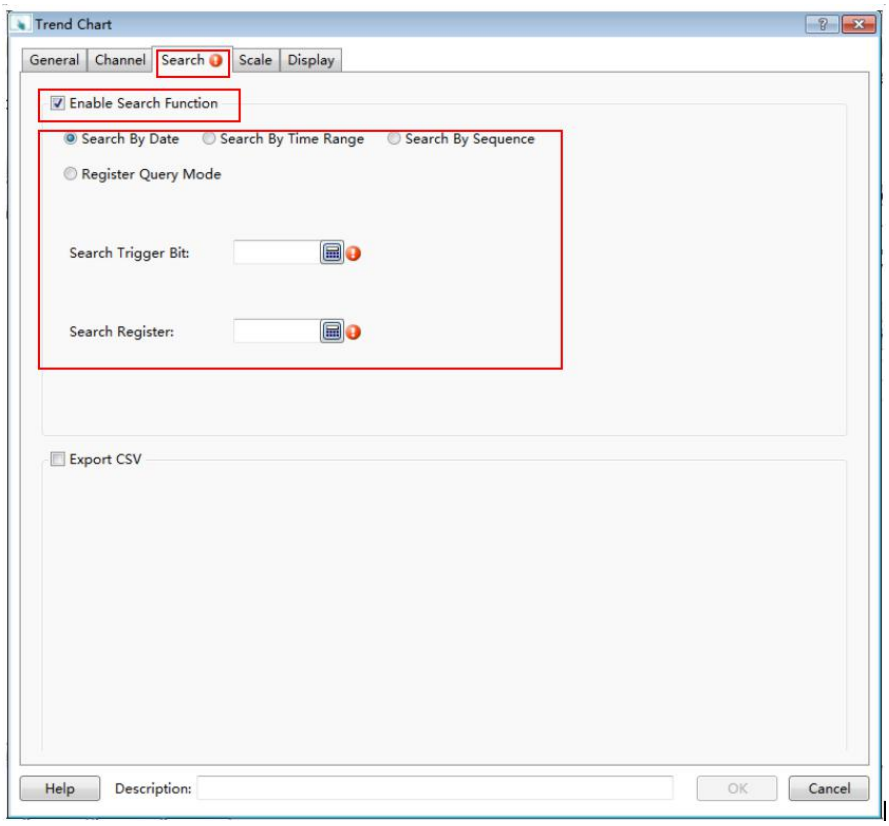
The minimum value of the trend curve can be set by Constant or by Variable. When set it by Variable, the data type of the specified word register should be consistent with the data type of the selected sampling data channel.

- **Maximum Value**

The maximum value of the trend curve can be set by constant or by variable. When set it by variable, the data type of the specified word register should be consistent with the data type of the selected sampling data channel.

4.6.7.1.3 Search

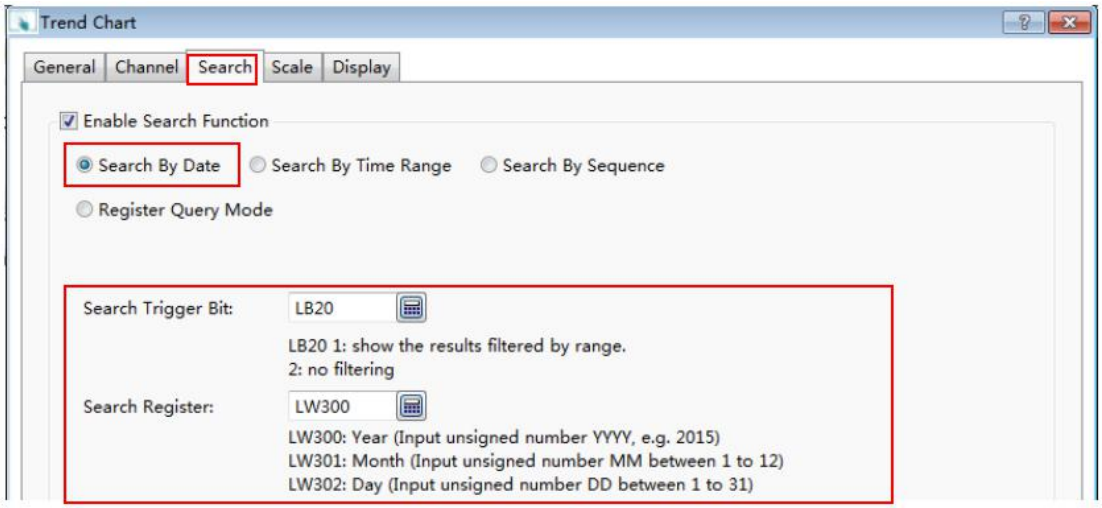
The option "Enable Search Function" is not checked by default in the "Search" property TAB. After it is checked, the settings are shown as below.



There are three fixed search modes supported: "Search by Date",“Search by Time Range" and "Search by Sequence". The "Register Query Mode" is a dynamic search mode. The default search mode is "Search by Date".

- **Search by Date**

The settings of "Search by Date" are shown as below.



"Search Trigger Bit"

The option "Search Trigger Bit" is used to specify a bit register to trigger the search function. When the trigger bit is ON, the filtered results are displayed. When the trigger bit is OFF, the result which is not filtered is displayed.

"Search Register"

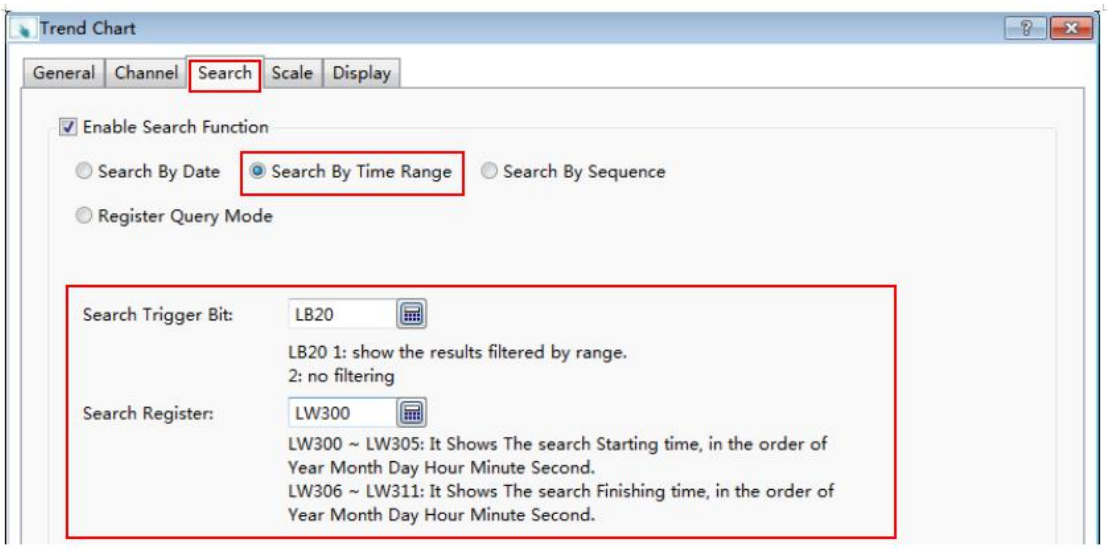
The "Search Register" is used to specify word registers to save the information of the search function. The number of the word registers is depending on the search mode. You can get the information of the used word registers according to the text displayed under the specified address.

For example, select the "Search by Date" mode and specify LW300 for the option "Search Register". Then LW300 saves the search year, LW301 saves the search month and LW302 saves the search day. You can use three numeric value input components connected with the three word registers to give the search conditions in your project.

- **Search by Time Range**

For the "Search by Time Range" mode, the function and the setting of the "Search Trigger Bit" are same to the "Search by Date" mode. The difference is the "Search Register."

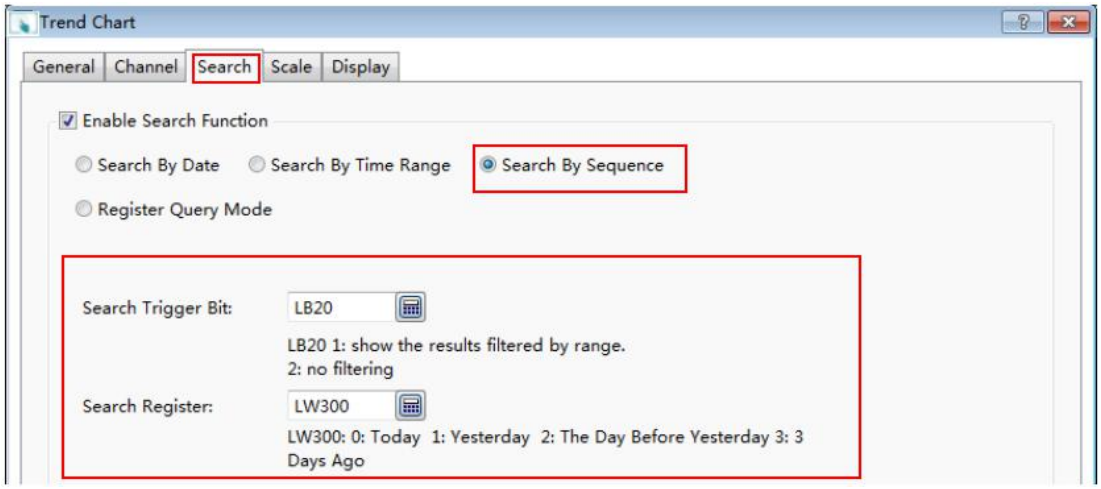
When selecting the "Search by Time Range" mode,you should specify a start address of a continuous 12 word registers area for the option "Search Register". The first six word registers save the start date of search, including year, month, day, hour, minute and second. The last six word registers save the stop date of search. The setting is shown as below.



- **Search by Sequence**

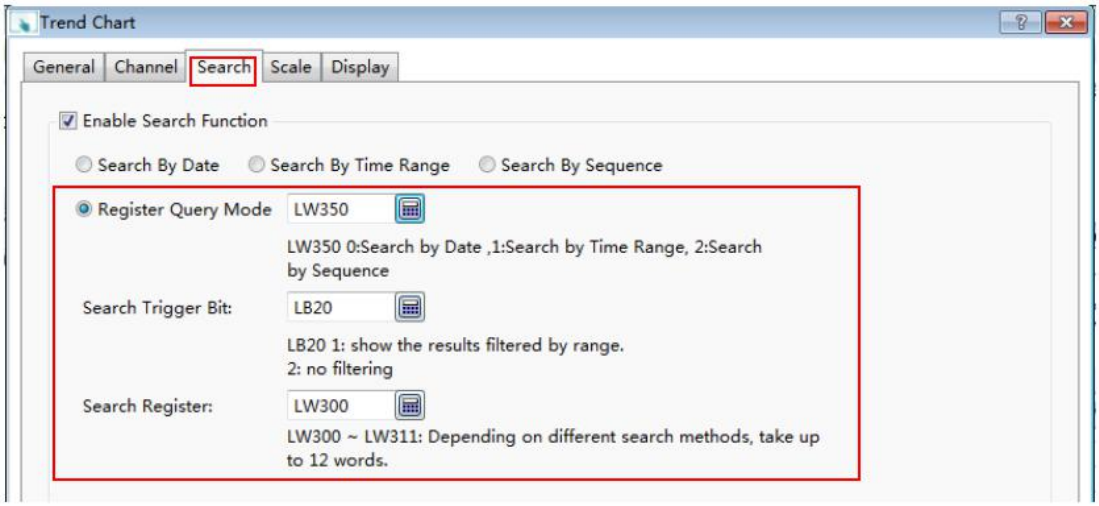
For the "Search by Sequence" mode, the function and the setting of the "Search Trigger Bit" are same to the "Search by Date" mode. The difference is the "Search Register."

For example, select the "Search by Sequence" mode and specify LW300 for the option "Search Register". The settings are shown as below. Then when LW300 is 0, the data of the current day is displayed on the curve. When LW300 is 1, the data of the yesterday is displayed on the curve.Other values can be done in the same matter.



- Register Query Mode

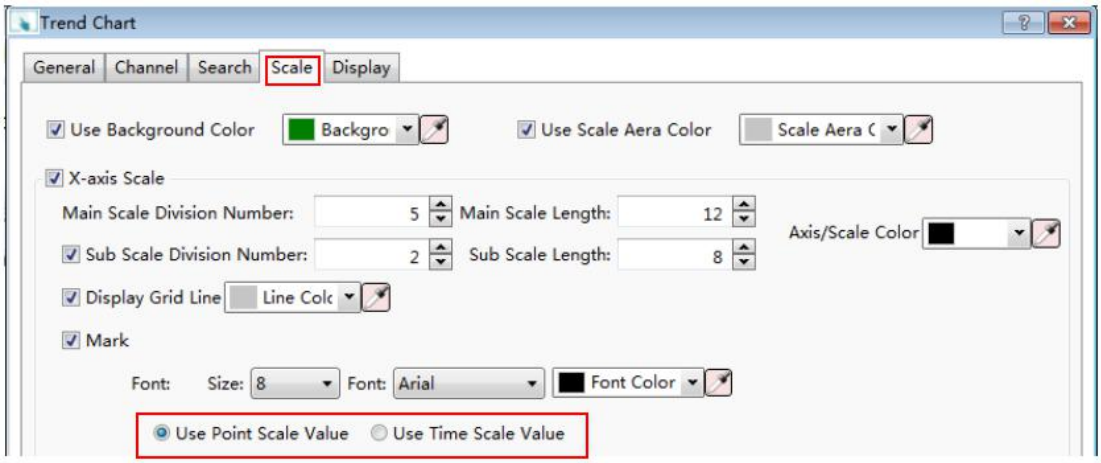
The "Register Query Mode" is a dynamic search mode.When the "Register Query Mode" is selected, you can specify a word register to dynamically adjust the search mode. If the word register is 0, the "Search by Date" mode will be used.If it is 1, the "Search by Time Range" mode will be used. If it is 2, the "Search by Sequence" mode will be used. The settings are shown as below.



4.6.7.1.4 Scale

- **X-axis Scale**

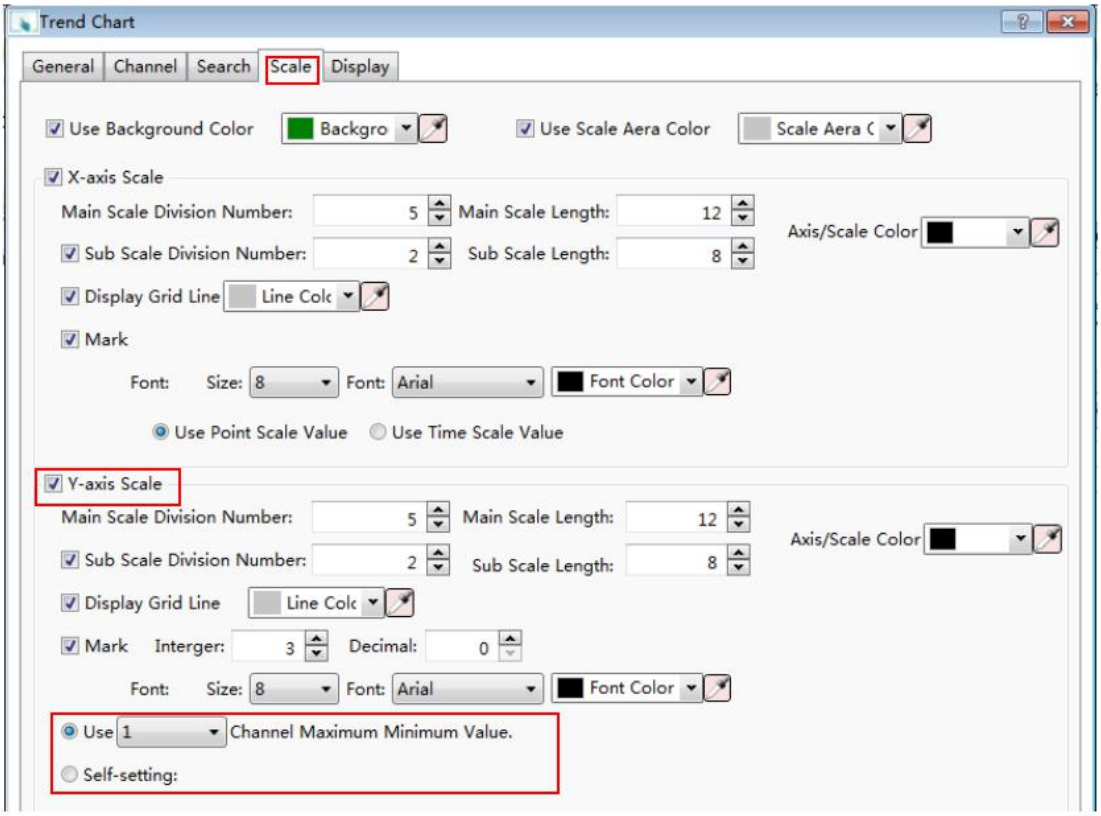
The source of X-axis value can be set "Use Point Scale Value" or "Use Time Scale Value". The default is "Use Point Scale Value". It is shown as below.



The option "Use Point Scale Value" means that the values of the sampling data points are used as the X-axis scale. The option "Use Time Scale Value" means that the time of the data sampling is used as the X-axis scale.

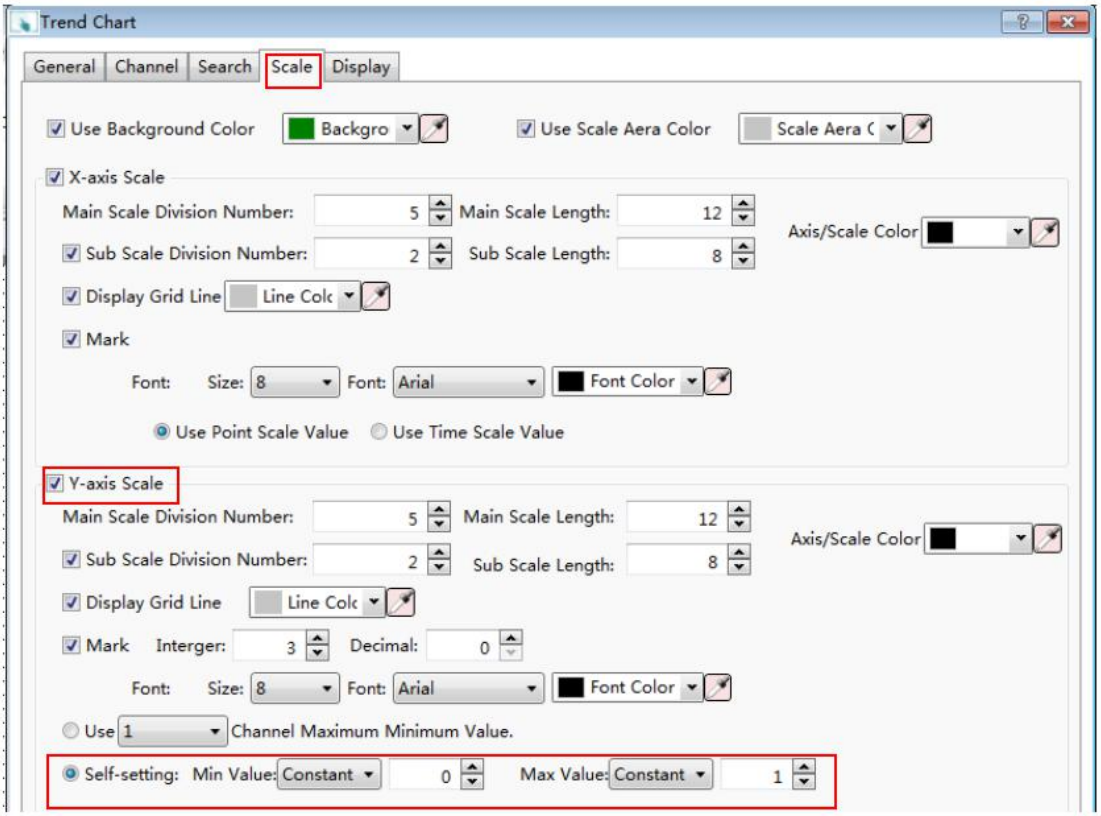
- **X-axis Scale**

The source of Y-axis value can be set "Use ... Channel Maximum Minimum Value" or "Self-setting". The default is "Use 1 Channel Maximum Minimum Value". It is shown as below.



After you select the option "Use ... Channel Maximum Minimum Value", you can specify a channel number. And the minimum and the maximum values of this channel will be used as the minimum and the maximum values of the Y axis.

If the option "Self-setting" is selected, you can set the maximum and minimum values by yourself as the source of Y-axis. The minimum and maximum values can be set by constant or by variable.The settings are shown as below.



For more details, please refer to: Detailed manual/Component/Scale.

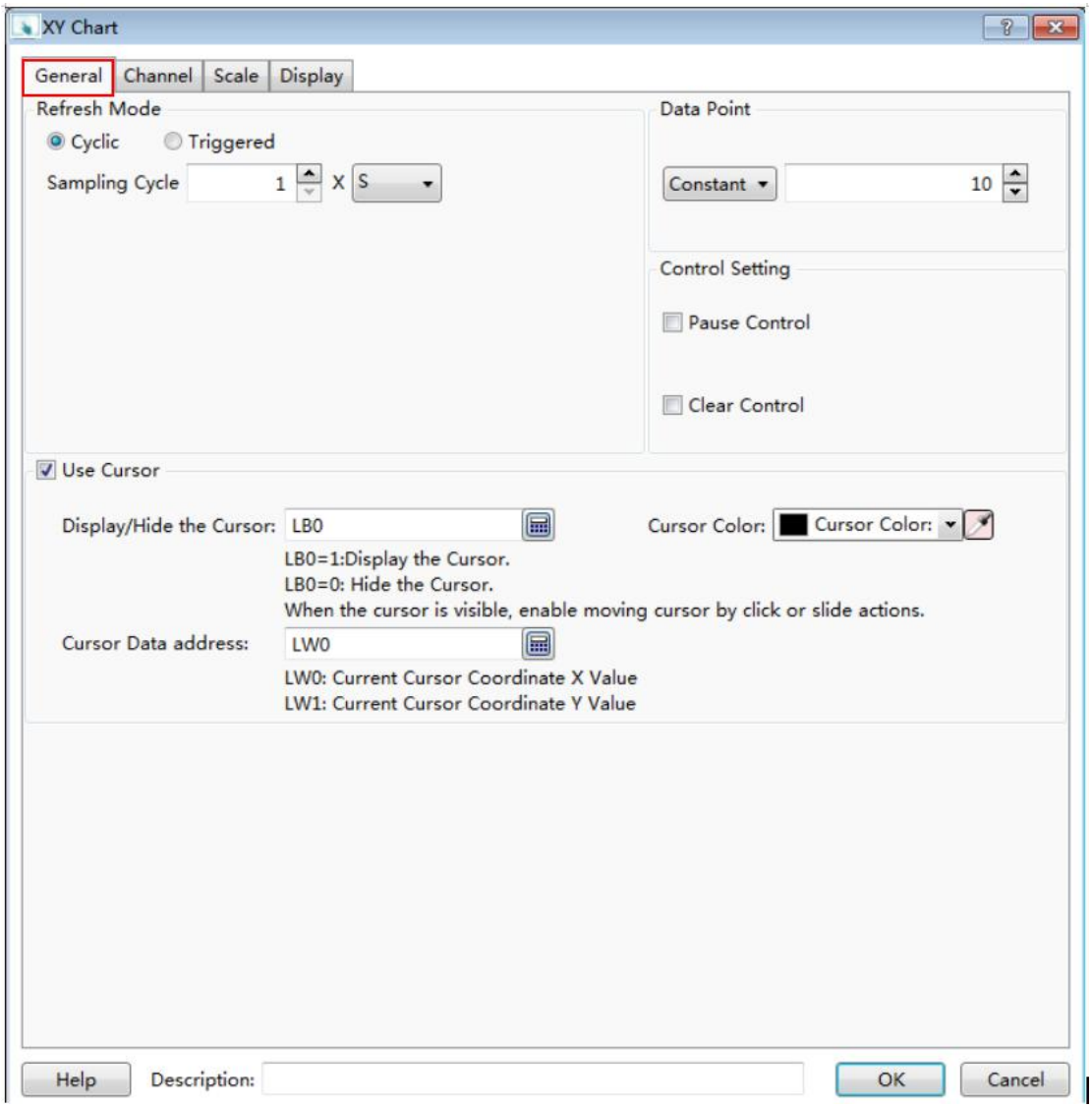
4.6.7.1.5 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.7.2 XY Chart

The "XY Chart" refers to the curve formed by the corresponding data points which are comprised by a set of data registers or two different sets of data registers. All settings are described below.

4.6.7.2.1 General



- **Refresh Mode**

The "Refresh Mode"includes two types: "Cyclic" and "Triggered".

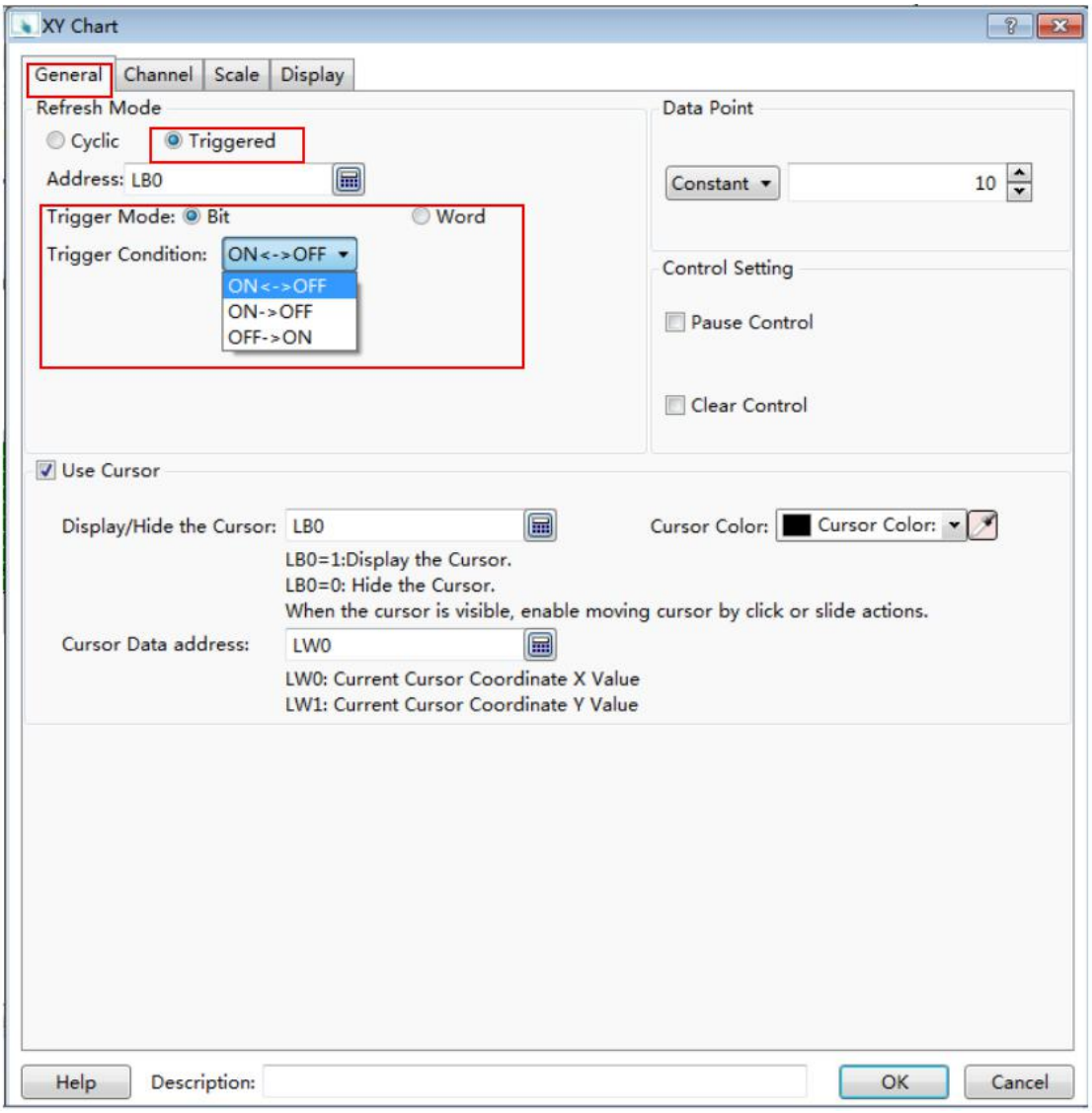
➢ **Cyclic**

The default refresh mode is "Cyclic". The default sampling cycle period is 1 second. That means the curve is refreshed every 1 second. The minimum sampling cycle period is 0.1 second.

➢ **Triggered**

After you select "Triggered" refresh mode, you need to specify a bit register and select the "Trigger Mode". The Trigger Mode can be set "Bit" or "Word".

For the "Bit" trigger mode, there are three "Trigger Condition": "OFF→ ON", "ON→OFF" and "OFF↔ON". You can choose one of them. The settings are shown as below.



For example, if the trigger condition is set "OFF→ ON", that means the XY curve will be refreshed when the specified bit register is changed from OFF to ON.

There is an option "Auto Reset" for the trigger condition "OFF→ ON" and "ON→OFF". If you check it, the bit register state will be reset after it is changed.

For the "Word" trigger mode, the details are referred to: Detailed manual/General functions/Drawing/Logical Control.

- **Data Point**

The default value is 10. The range is from 2 to 4096. The option "Data Point"can be set by constant or by variable.

- **Control Setting**

➢ **Pause control**

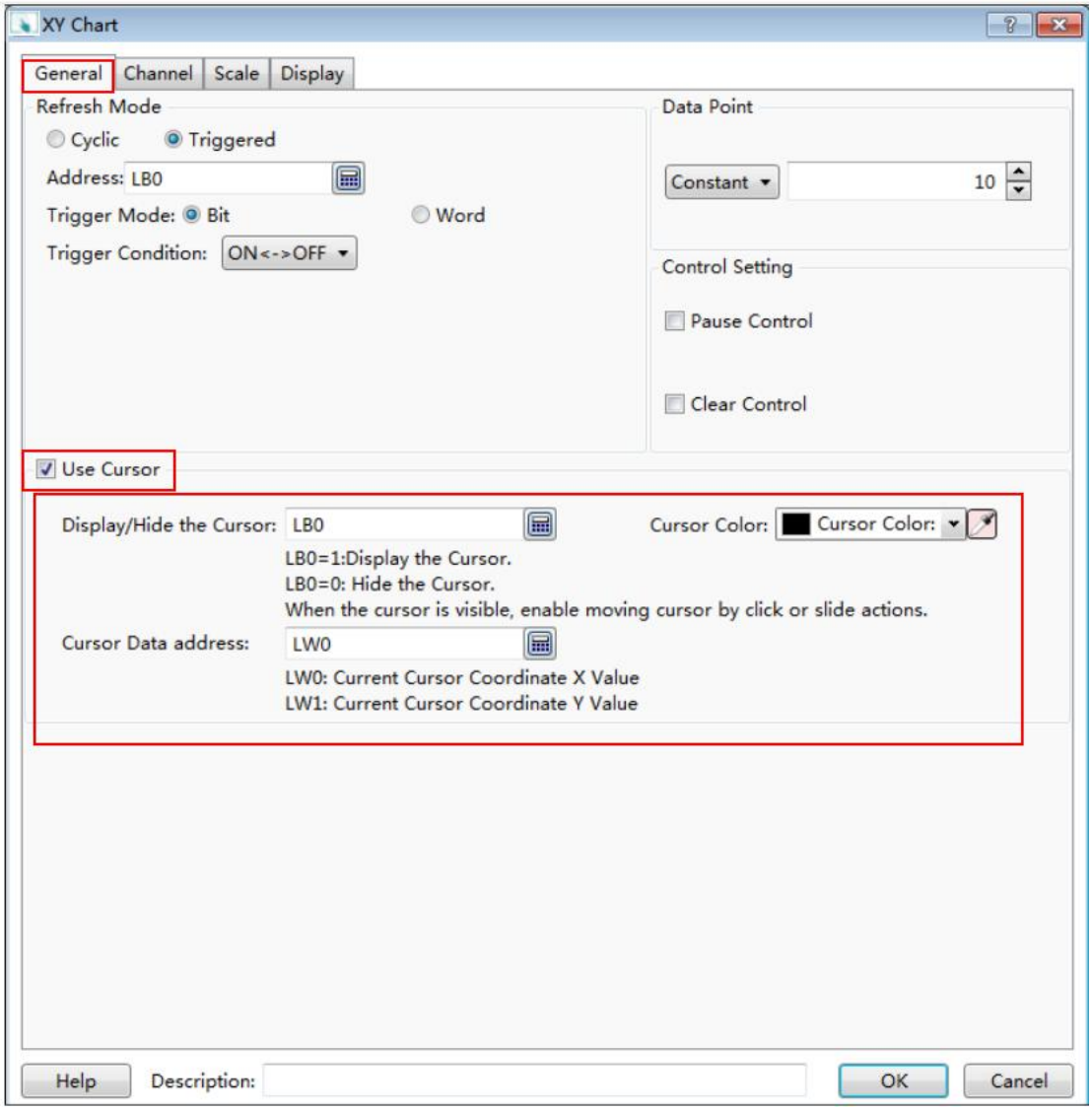
If you check this option, a bit register needs to be specified to control the Pause function. When the bit register is ON, the XY chart is paused and not be refreshed.

➢ **Clear control**

If you check this option, a bit register needs to be specified to control the Clear function. When the bit register is ON, the data of the current XY chart is cleared.

- **Use Cursor**

After this option is checked, some parameters need to be set. The settings are shown as below.



- **Display/Hide the cursor**

Same to the Trend Curve, a bit register needs to be specified to control the cursor display or hide.

- **Cursor Color**

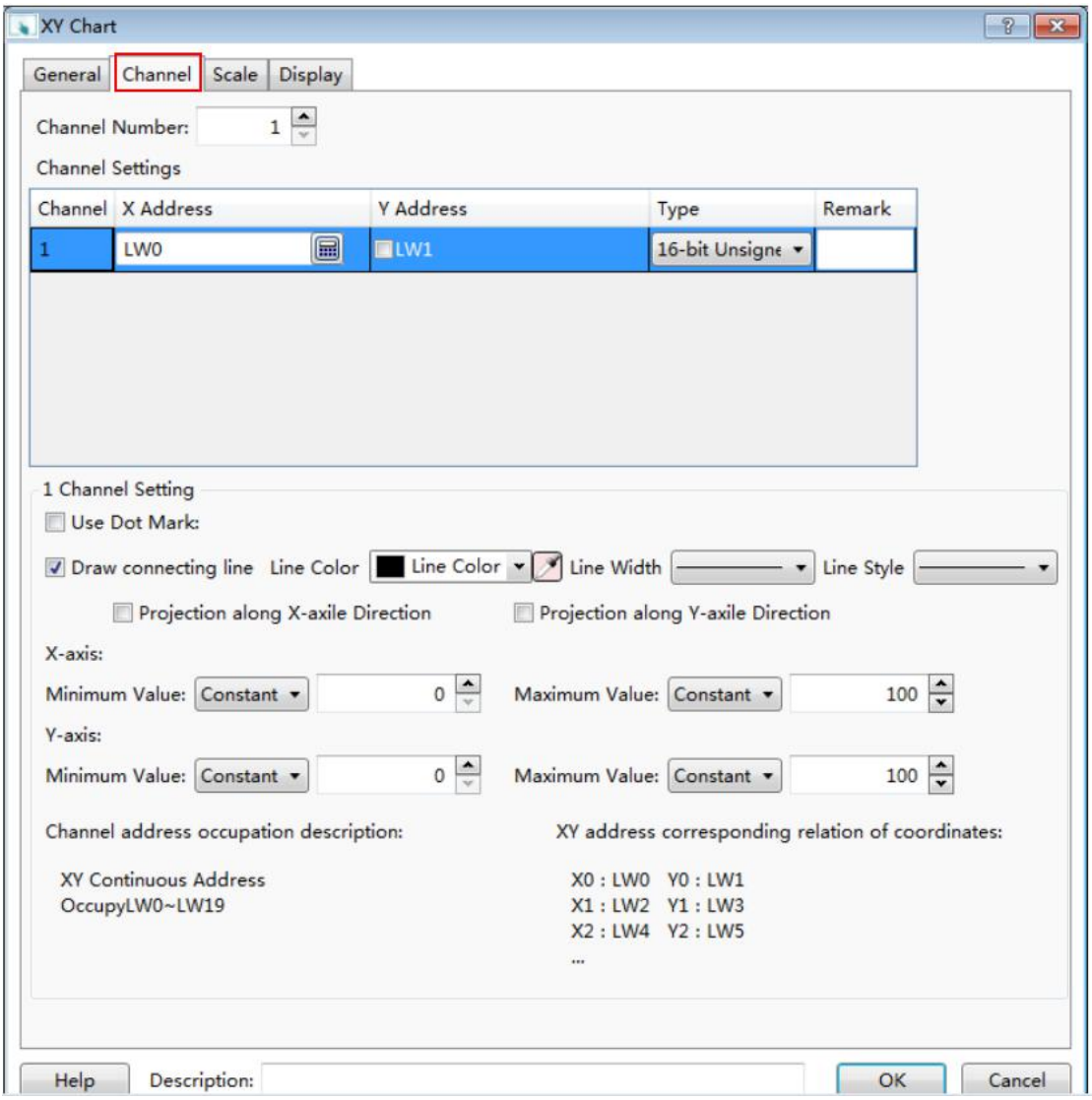
The cursor color is set here.

- **Cursor Data Address**

Similarly, you need to set a starting address of a continuous word registersarea here to save the coordinate data information of which the cursor is crossed with the XY chart. The data type is depended on the setting in the "Channel" property TAB. For example, the data type is set "16-bit Unsigned in the "Channel" property TAB and the first starting register address is set LW100, then the data of the cursor (X, Y) is (LW100, LW101). If the data type is "Single-precision Floating-point Number", then the data of the cursor (X, Y) is (LW100, LW102). Other data types can be done in the same matter.

4.6.7.2.2 Channel

The "Channel" property TAB is shown as below.



- **Channel Number**

The default value of the "Channel Number" is 1. The XY chart can display up to 16 channels simultaneously.

- **Channel Settings**

You can define the channel information in the "Channel Settings" table: the X address and the Y address are continuous by default. As shown as above,the default starting X address is LW0 and the default starting Y address is LW1. They are continuous. If you check the box in front of the Y address, the Y address can be not continuous with the X address. For example, you can set the starting Y address LW100.

➢ **Type**

Select the data type for the current channel according to the actual needs.

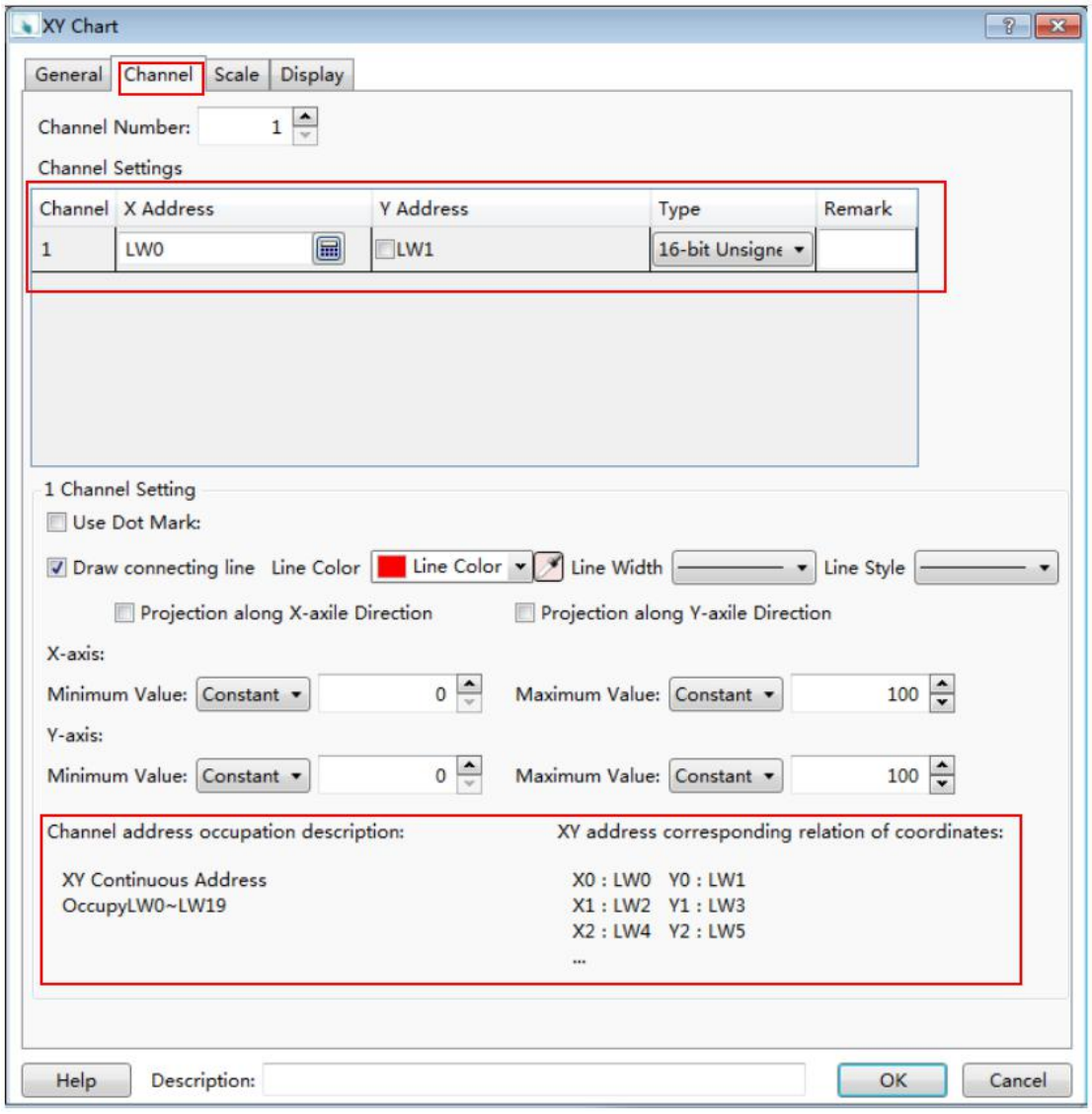
➢ **Remark**

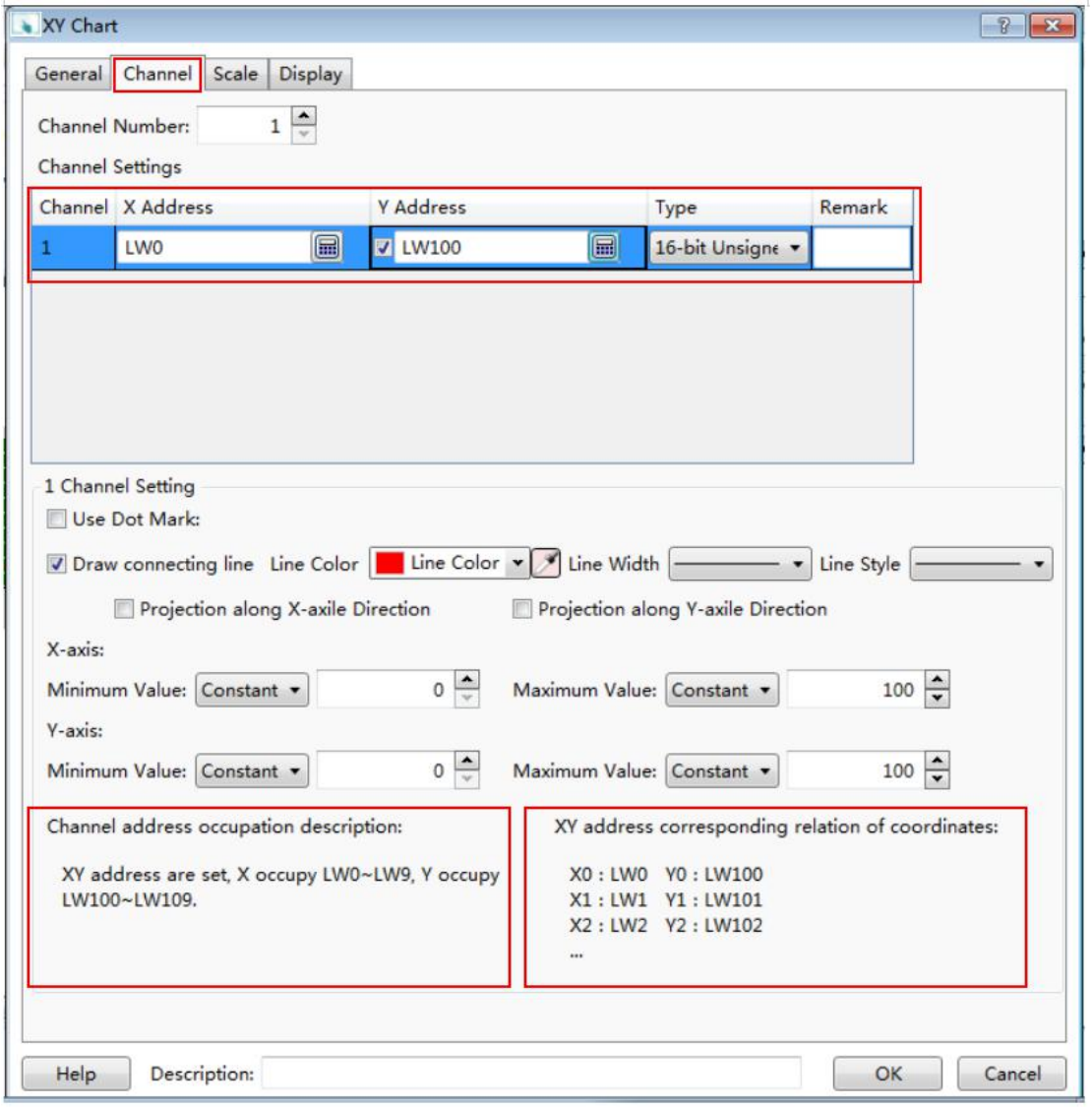
You can note the name of the curve for the current channel in the "Remark" column. For example, channel 1 is noted as "Disc a track".

Same as the Trend Curve, select a channel in the "Channel Settings" table, there are many parameters can be set for the selected channel in the following "Channel Setting". The most

parameters are same to the settings of the Trend Curve. The option "Projection along Y-axis Direction" is added here. The meaning of this option is same to the "Projection along X-axis Direction" but the direction is different. The Minimum Value and the Maximum Value of the Y-axis can be set different with X-axis. They can be set by constant or by variable. The default range of the Minimum Value and the Maximum Value is from 0 to 100. The detailed settings can be referred to the "Channel" property TAB of the Trend Curve.

For the information of the occupied addresses by the current channel, it is depended on the data type of this channel. You can view the text which is noted below the "Channel Setting". It is shown as below.





4.6.7.2.3 Scale

Refer to the "Scale" property TAB of Trend Curve.

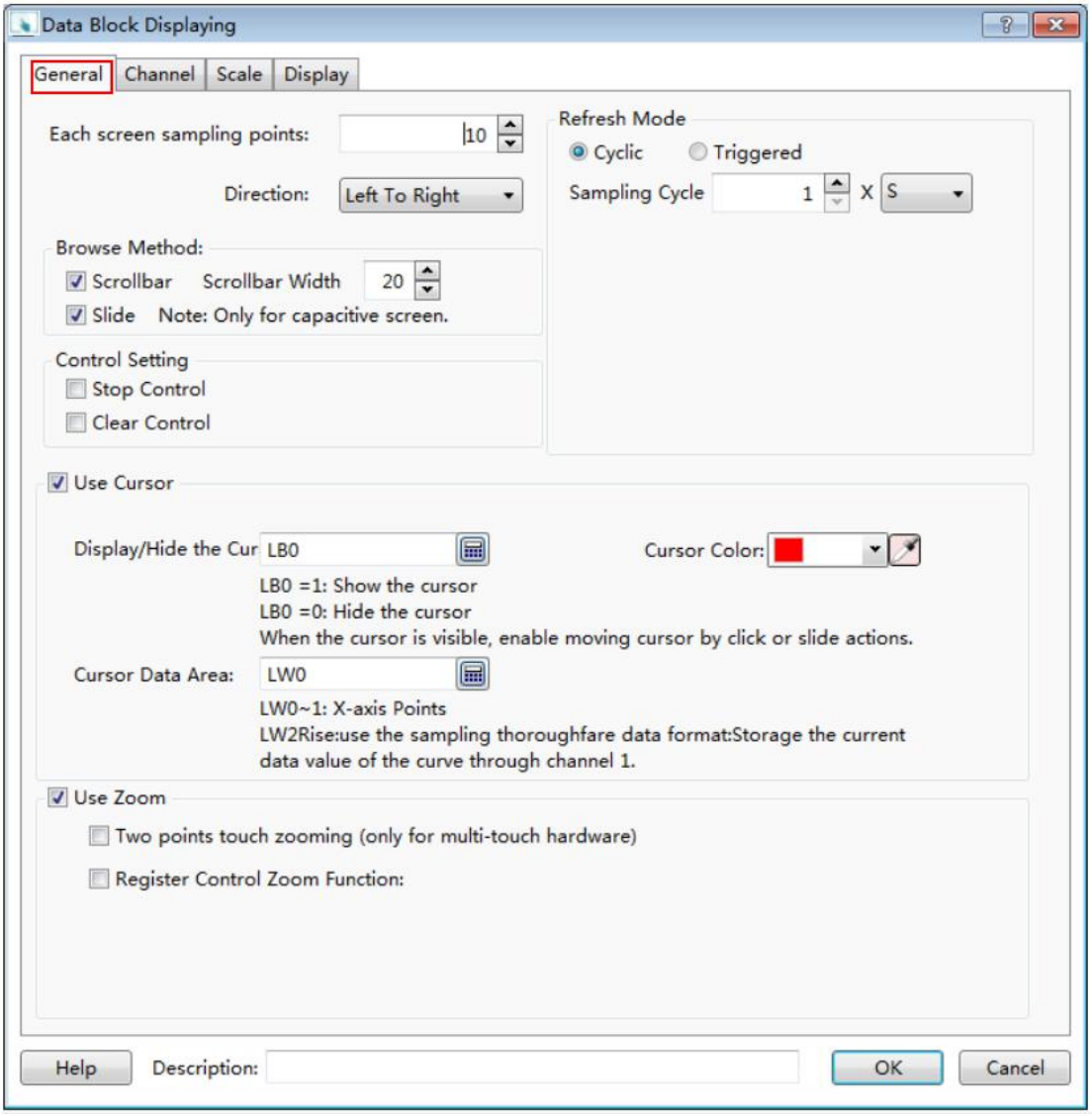
4.6.7.2.4 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.7.3Data Group Chart Display

The "Data Group Chart Display" component is a curve comprising of a set data of specified continuous registers.

4.6.7.3.1 General



- **Each screen sampling points**

The default value of this option is 10. The minimum value is 2 and the maximum value is less than the width of the used screen resolution. For example, the used screen resolution is 800*480, and then the maximum value of samples per screen is 799.

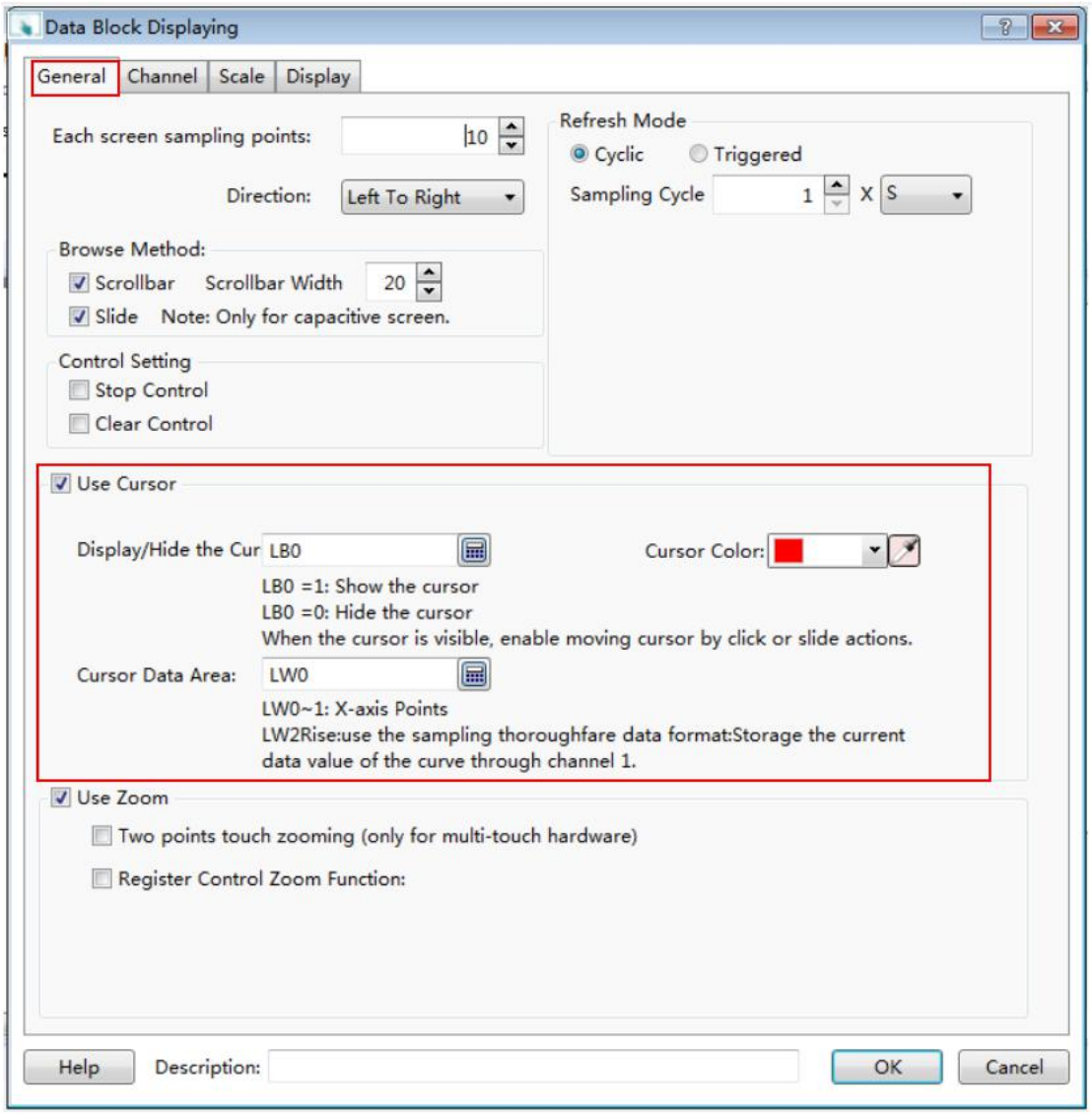
- **Direction**

The "Direction" option is set "Left to Right" by default. You can set it "Up to Down" too. They are corresponding to the "Horizontal" and "Vertical" display modes.

The settings of these parameters such as the "Browse Method", the "Control Setting", the "Refresh Mode" and the "Use Zoom" are same to the "XY Chart". The details can be referred to the settings in the "General" property TAB of XY Chart.

- **Use Cursor**

It is not checked by default. After check it, the parameters are shown as below.



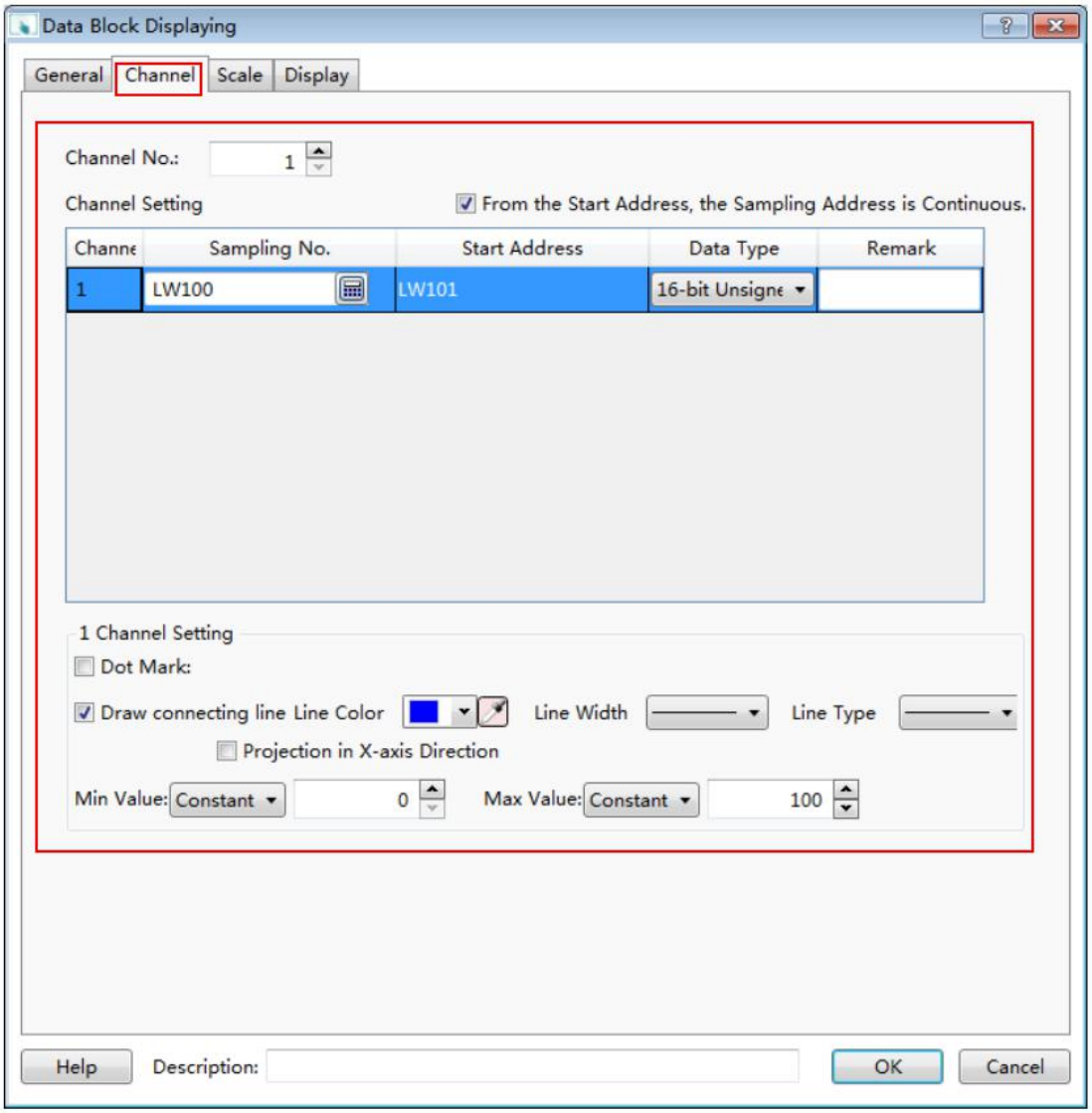
The settings of these options are same to the Trend Curve or the XY Chart, such as the "Display/Hide the Cursor" and the "Cursor Color".

- **Cursor Data Area**

Similarly, you can set a "Word Register" as the starting address of the continuous registers here. The first two word registers are used to save the point number where the cursor stays. The registers from the specified register address + 2 are used to save the data of which the cursor is crossed with the XY chart.

As shown as above, the starting register is set LW0, and then LW0 and LW1 save the point number where the cursor stays. If there are three channels for the XY chart, the data type of the Channel 1 is "16-bit Unsigned", the second channel is "Single-precision Floating-point Number", the third channel is "32-bit Unsigned", then LW2 (16-bit Unsigned number) save the Channel 1 data, LW3 (Single-precision Floating-point Number) save the Channel 2 data, LW5 (32-bit Unsigned) save the Channel 3 data. Other channels can be done in the same matter.

4.6.7.3.2 Channel



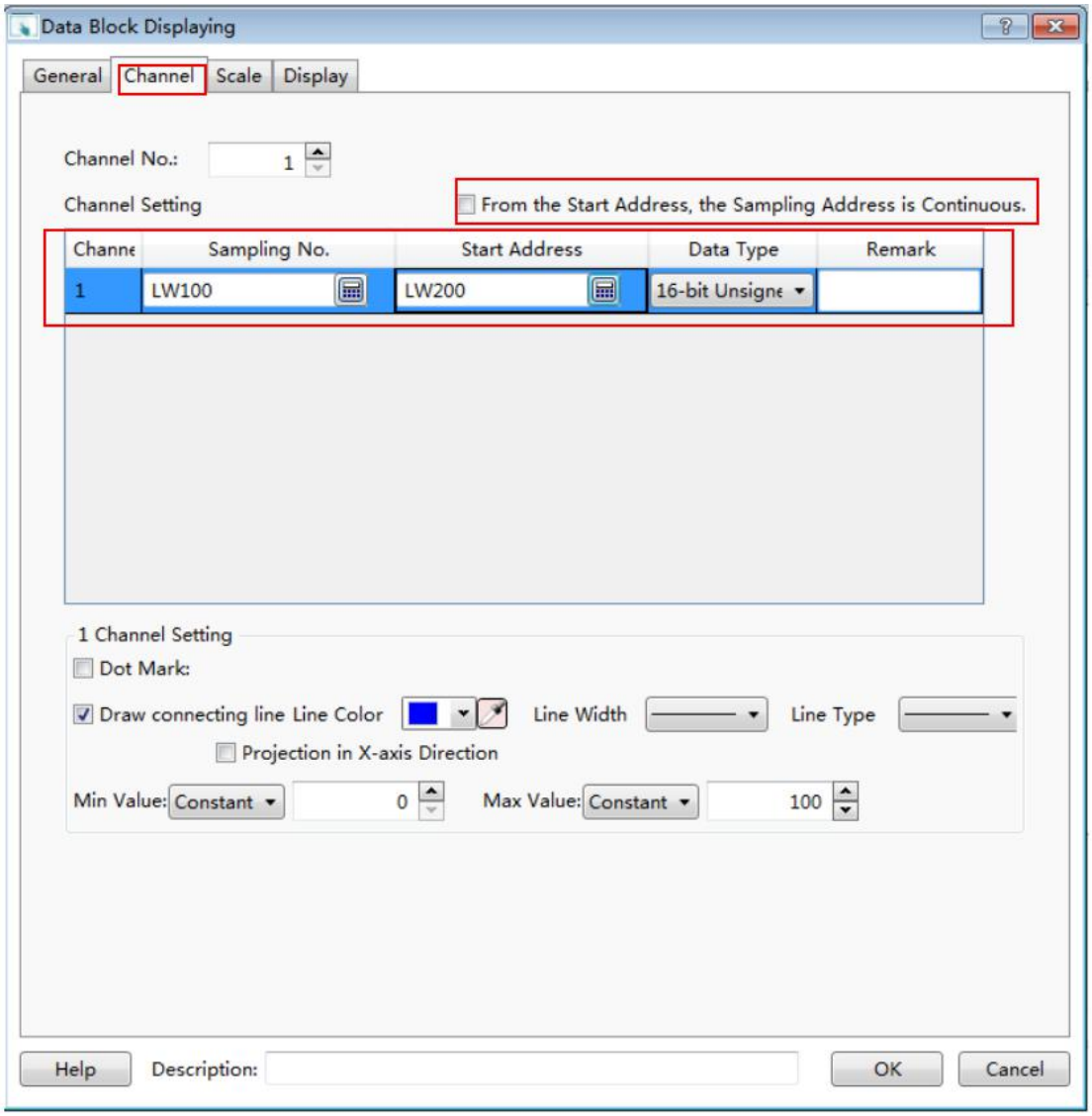
- **Channel No.**

There is 1 channel by default.A "Data Group Chart Display" component can display up to 16 channels.

- **From the Start Address, the Sampling Address is Continuous.**

This option is checked by default. If the register of the "Sampling No."for channel 1 in the "Channel Setting" table is set "LW100" and the "Data Type" is "16-bit Unsigned", then LW101 is used to save the first sample data, LW102 is used to save the second, and so on. If the "Data Type" is set "32-bit Unsigned", then LW101 (32-bit Unsigned) saves the first sample data, LW103 (32-bit Unsigned) saves the second sample data. Other data types can be done in the same matter.

If you don't check the option "From the Start Address, the Sampling Address is Continuous.",it means the "Start Address" of the registers to save the sample data can be set independently. The settings are shown as below.



The below parameters setting for the selected channel is same to the Trend Curve or the XY Chart. Please refer to the settings in the "Channel" property TAB of the Trend Graph or XY Curve.

4.6.7.3.3 Scale

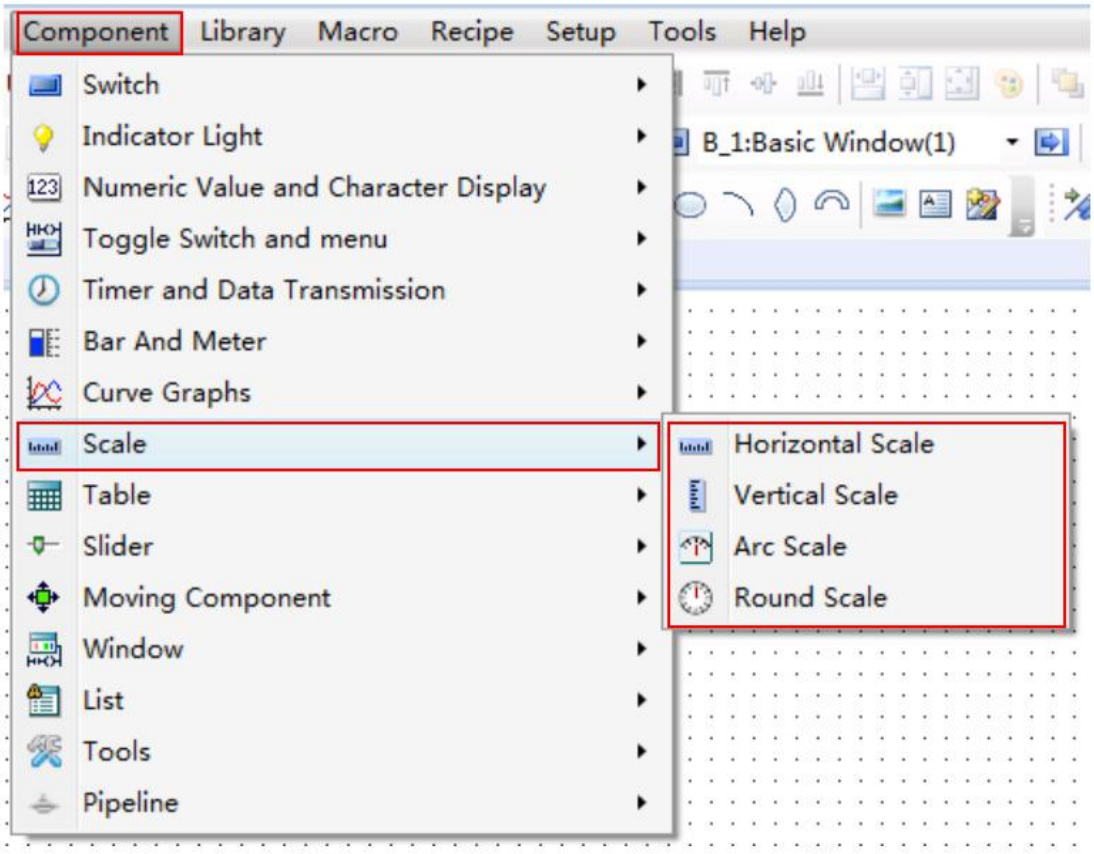
Refer to the settings in the "Scale" property TAB of the Trend Curve.

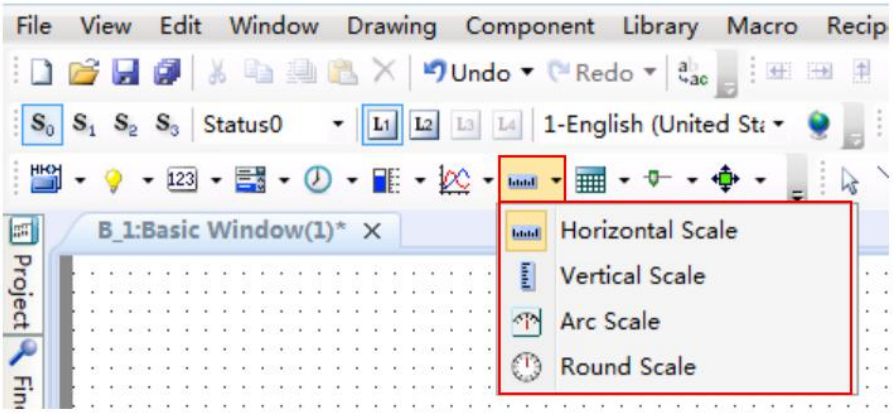
4.6.7.3.4 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.8 Scale

The "Scale" includes four types: "Horizontal Scale", "Vertical Scale", "Arc Scale" and "Round Scale". You can add a Scale component by clicking the menu command or by using the shortcut tools bar.

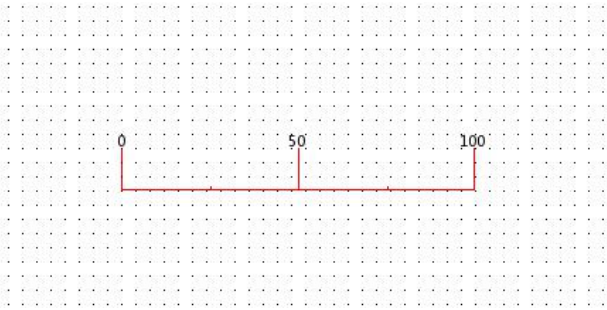




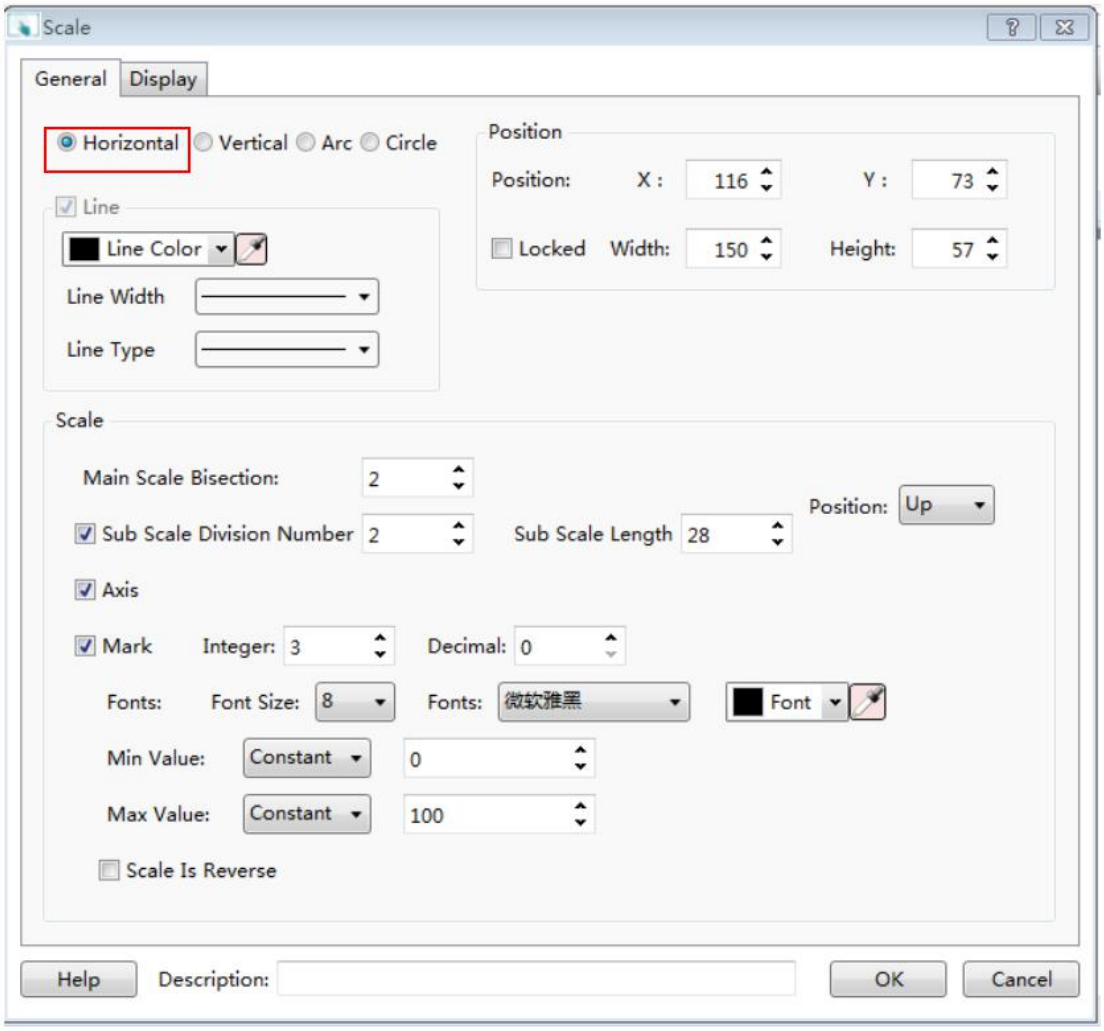
The "Horizontal Scale" is mainly used to display a progress bar. The "Vertical Scale" can be used to display the current liquid level of a tank or the charge state of a battery. The "Arc Scale" can display the value of a fuel meter, a speed meter, and other display devices. The "Round Scale" can display the revolution speed, the angle and other parameters.

4.6.8.1General

4.6.8.1.1 Horizontal Scale



First, the option "Horizontal" is selected. Then you can do other settings for the Horizontal Scale component.



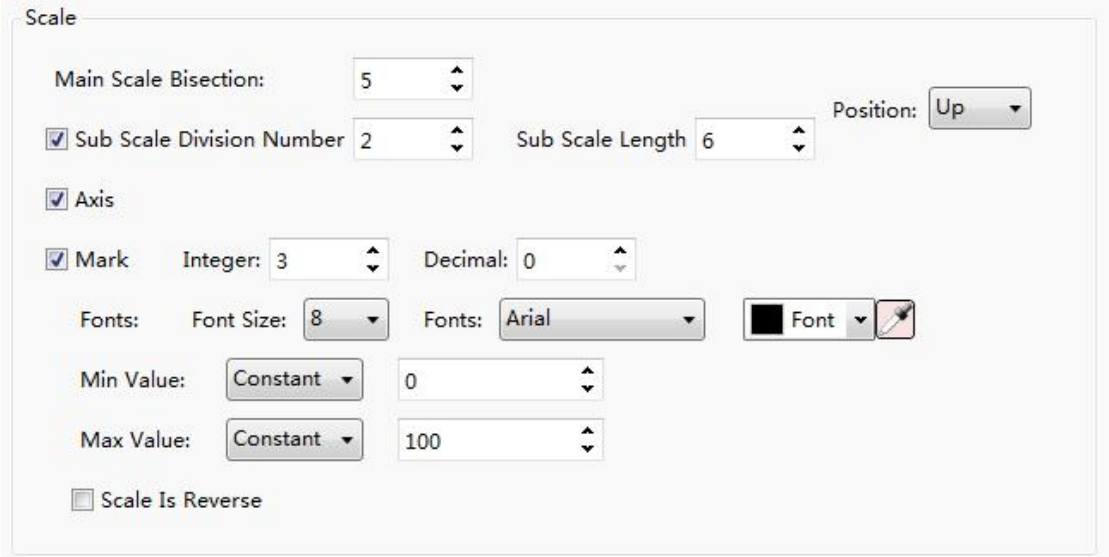
- Line

You can set the line color, the line width and the line type to meet the needs of your project.

- Scale

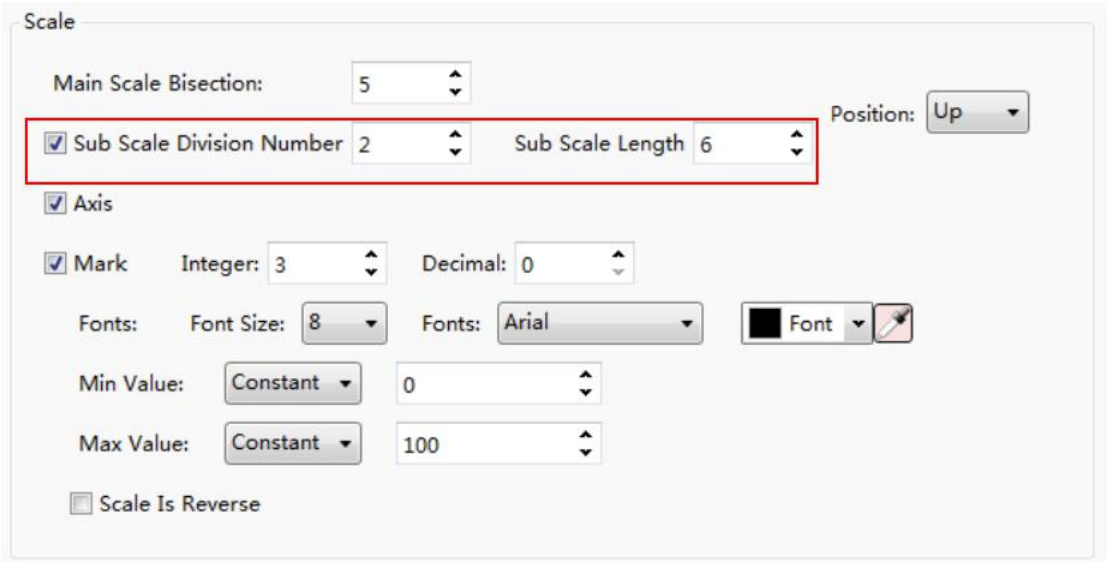
➢ Main Scale Bisection

Subdivide the scale in the scale range.



➢ Sub Scale Division Number

The main scale is subdivided singly. The option "Sub Scale Length" can be set to make difference with the main scale.



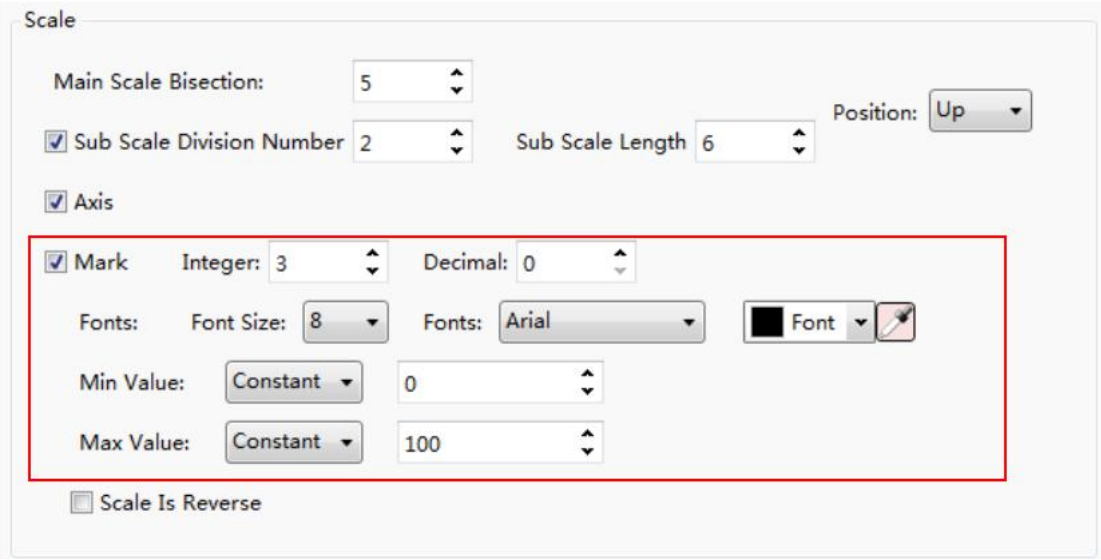
➢ Mark

The option "Mark is used to set the value of the main scale.

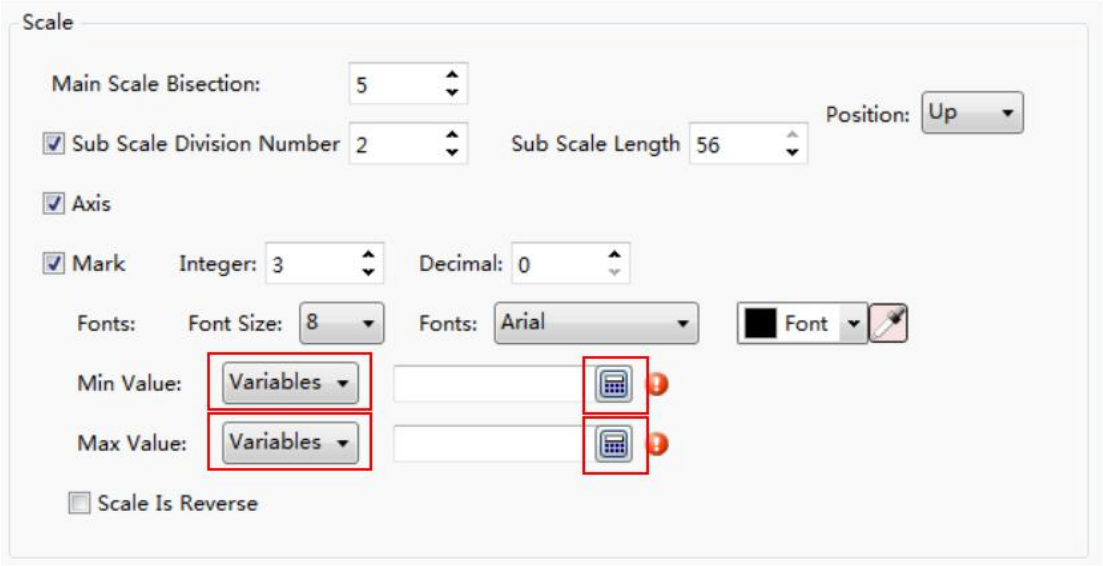
The option "Integer" refers to the number of the decimal integer digits. The option "Decimal" refers to the number of the decimal fraction digits.

You can set the font size, the font color and the font type for the main scale here.

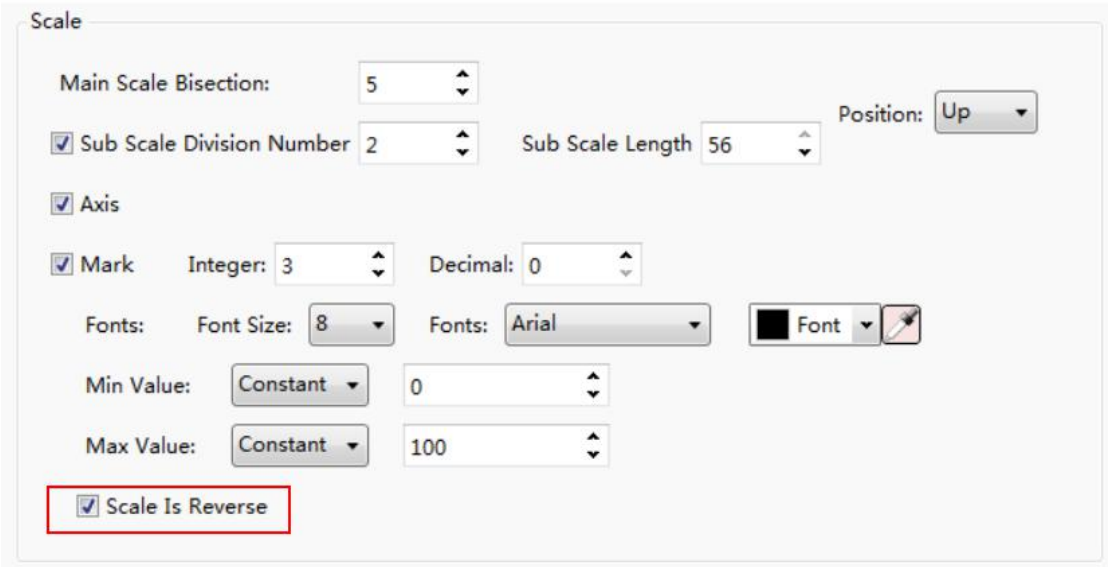
The options "Min Value" and "Max Value" are used to set the range of the main scale.



The options "Min Value" and "Max Value" can be set by Constant or by Variable. If you set them by Variable and specify word registers for them, you can change the range of the main scale by modifying the value of the specified word registers.

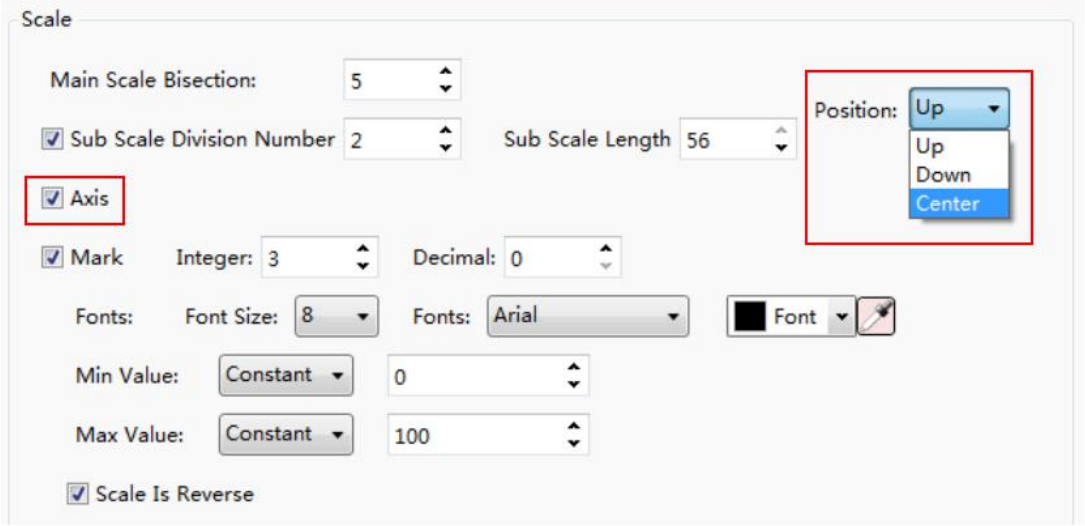


Usually, the scale value is displayed increasing from left to right.Sometimes,it needs to be displayed increasing from right to left. To do that, you should check the option "Scale Is Reverse".



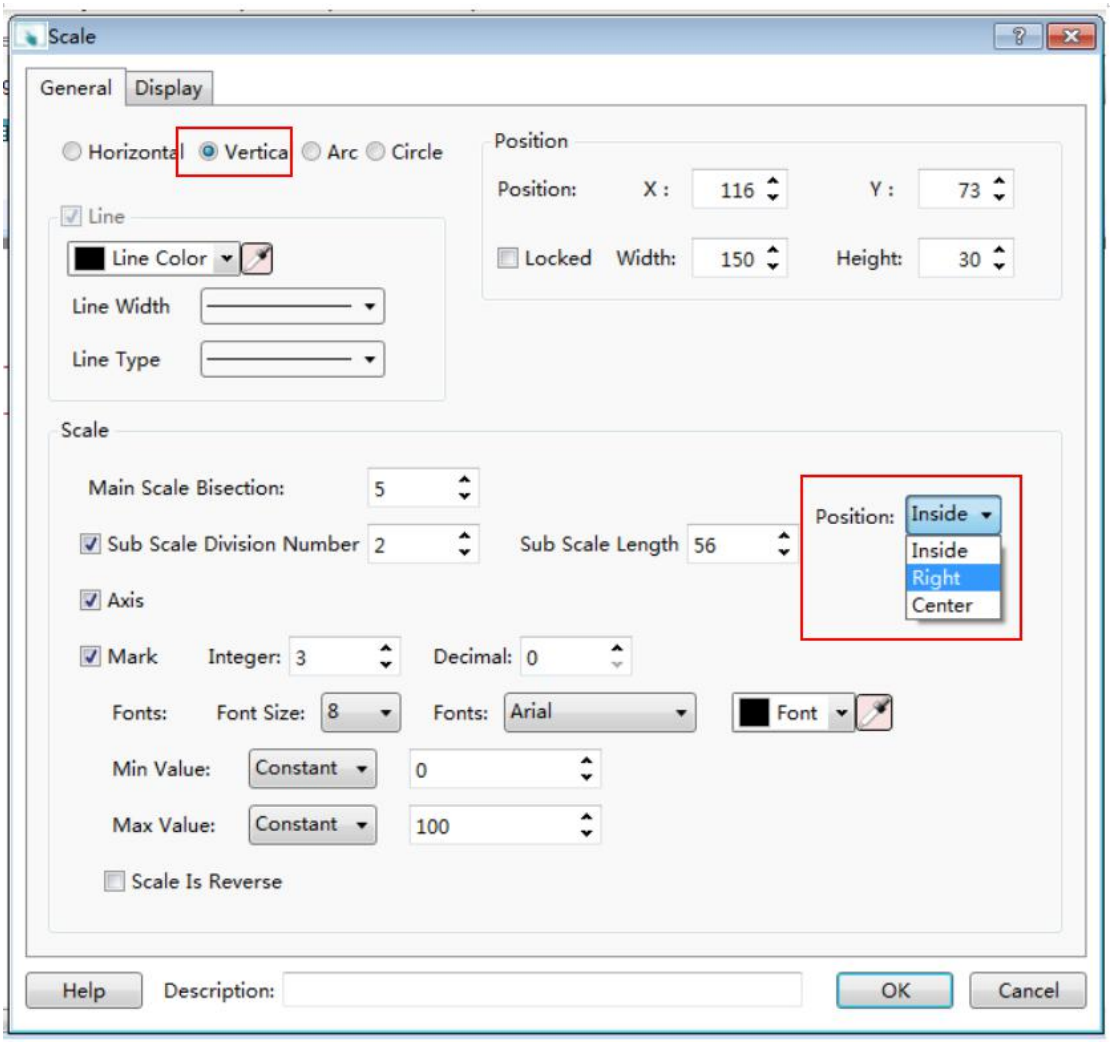
➢ **Axis**

You can check the option "Axis" to display the axis of the scale. The position of the axis can be set "Up", "Down" or "Center". Of course, you can remove the check to hide the axis of the scale.



4.6.8.1.2 Vertical Scale

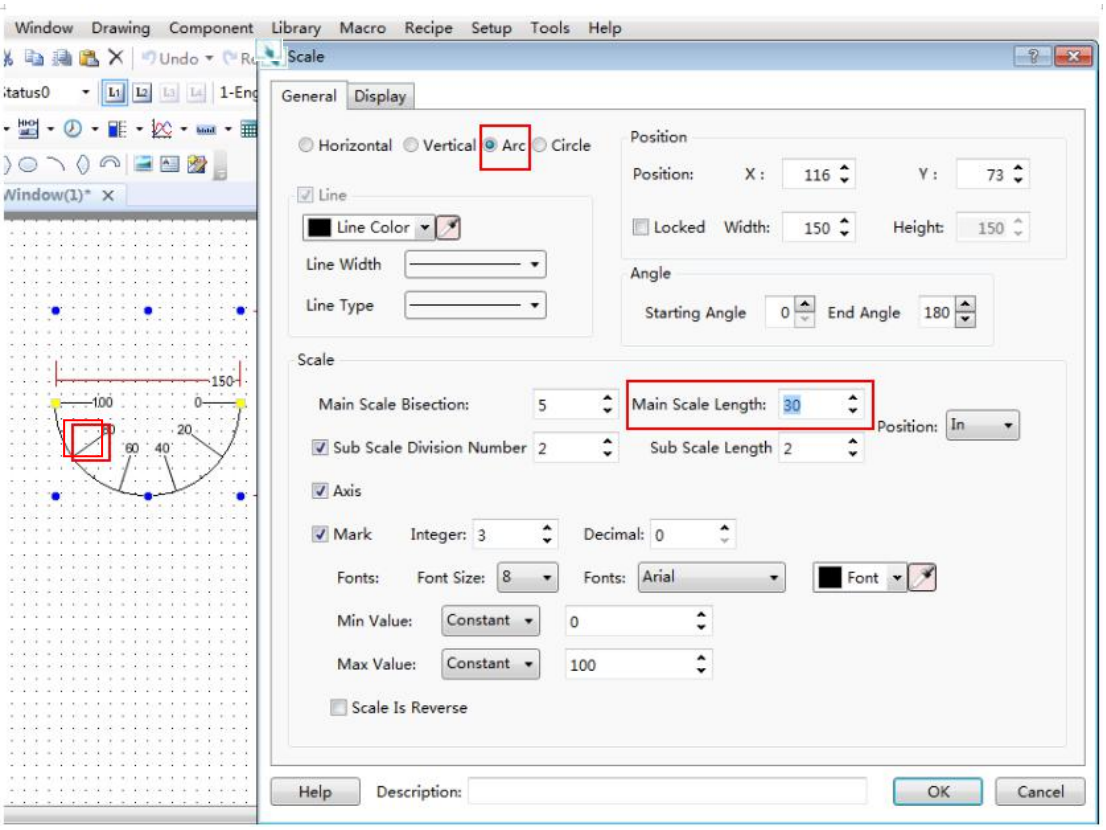
For the "Vertical Scale", the only difference with the "Horizontal Scale" is the option "Position" in the "Scale" property box. It is shown as below.



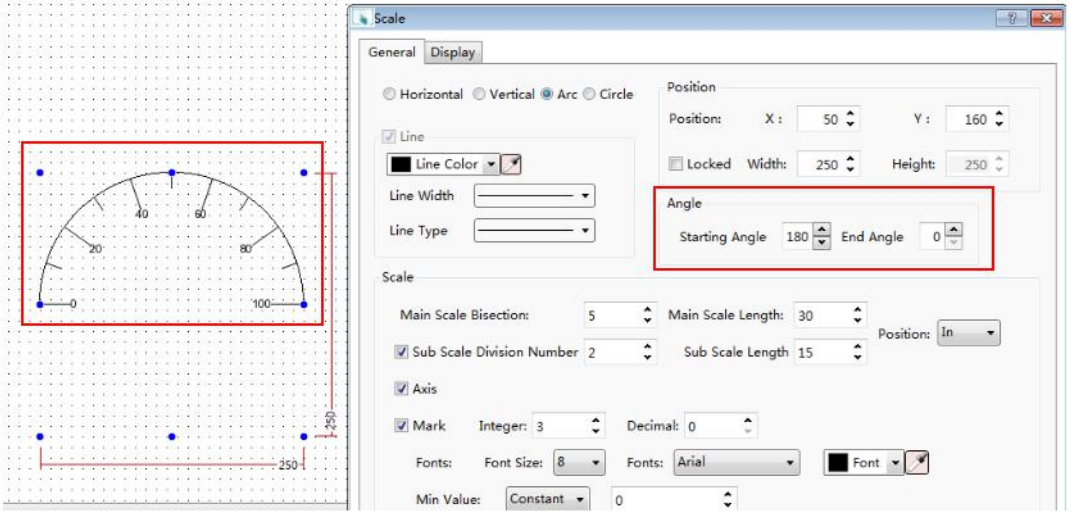
4.6.8.1.3 Arc Scale

For the "Arc Scale", there are three differences with the "Horizontal Scale". The options "Starting Angle" and "End Angle" are added in the "Angle" property box. The option "Main Scale Length" is added in the "Scale" property box. The option "Position" in the "Scale" property box is different.

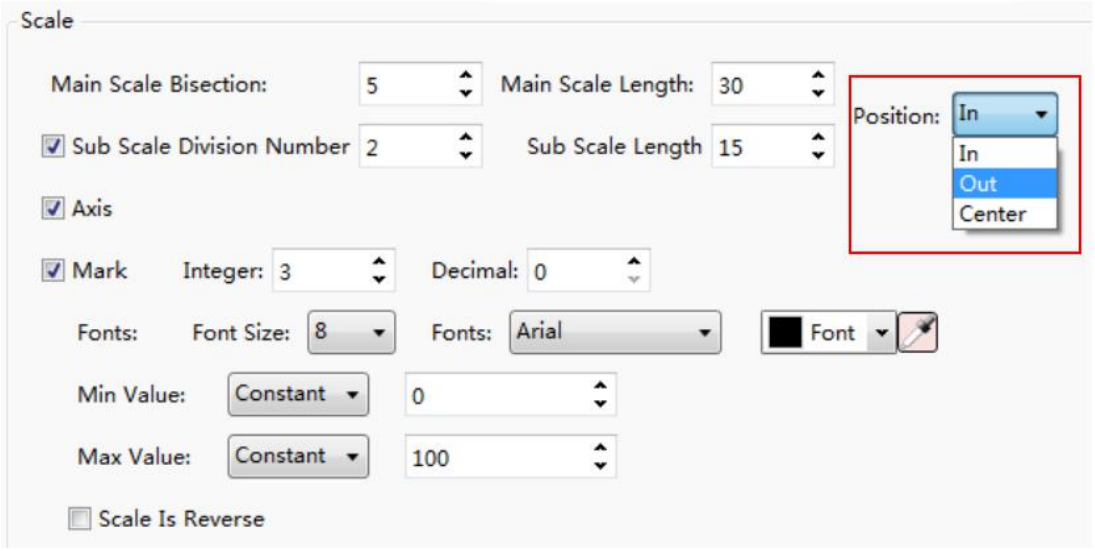
The option "Main Scale Length" is shown as below.



The start angle and the end angle can be set for the arc scale in the "Angle" property box. The settings and the effect are shown as below.

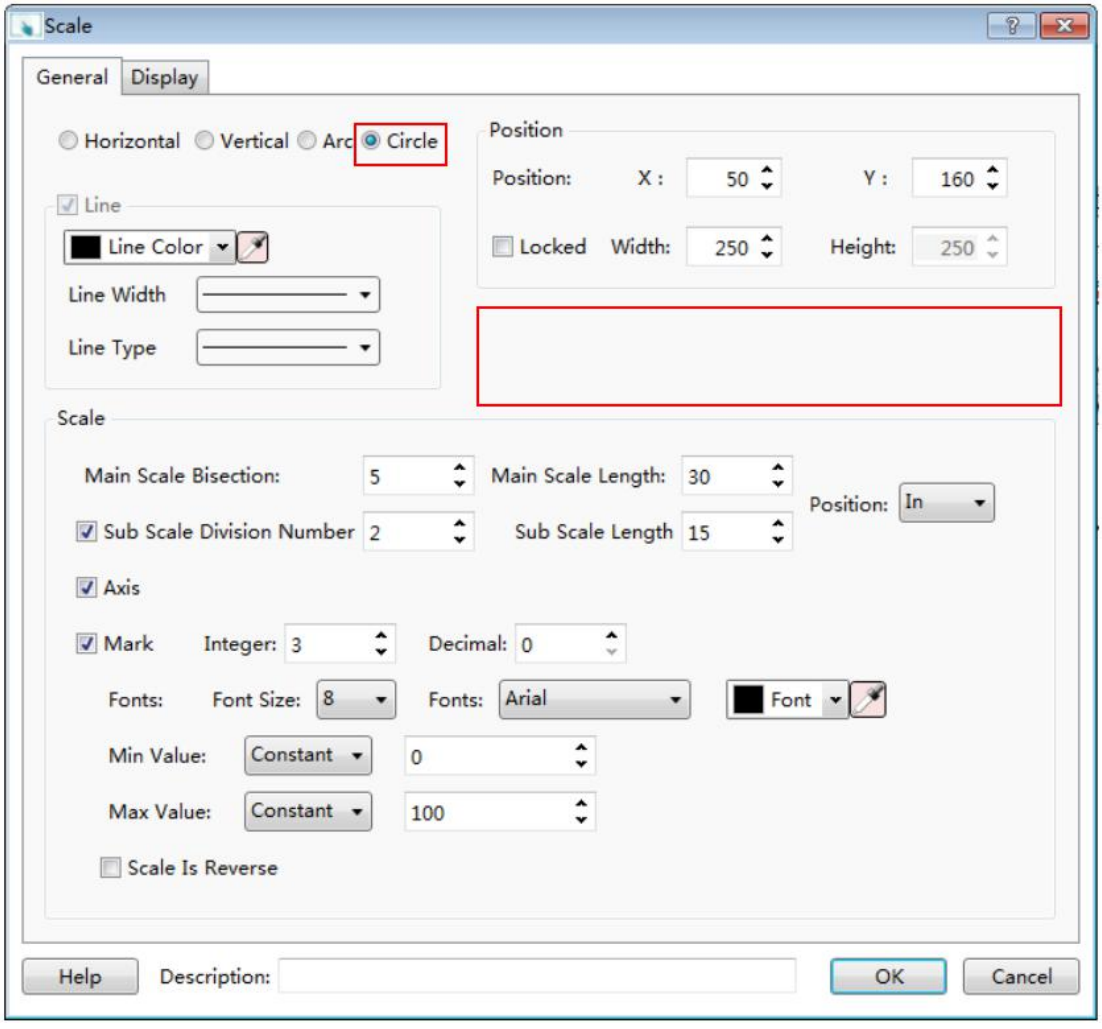


For the option "Position" in the "Scale" property box, the axis position of the scale can set "In", "Out" and "Center".



4.6.8.1.4 Round Scale

For the "Round Scale", the only difference with the "Arc Scale" is that there is not "Angle" settings. It is shown as below.



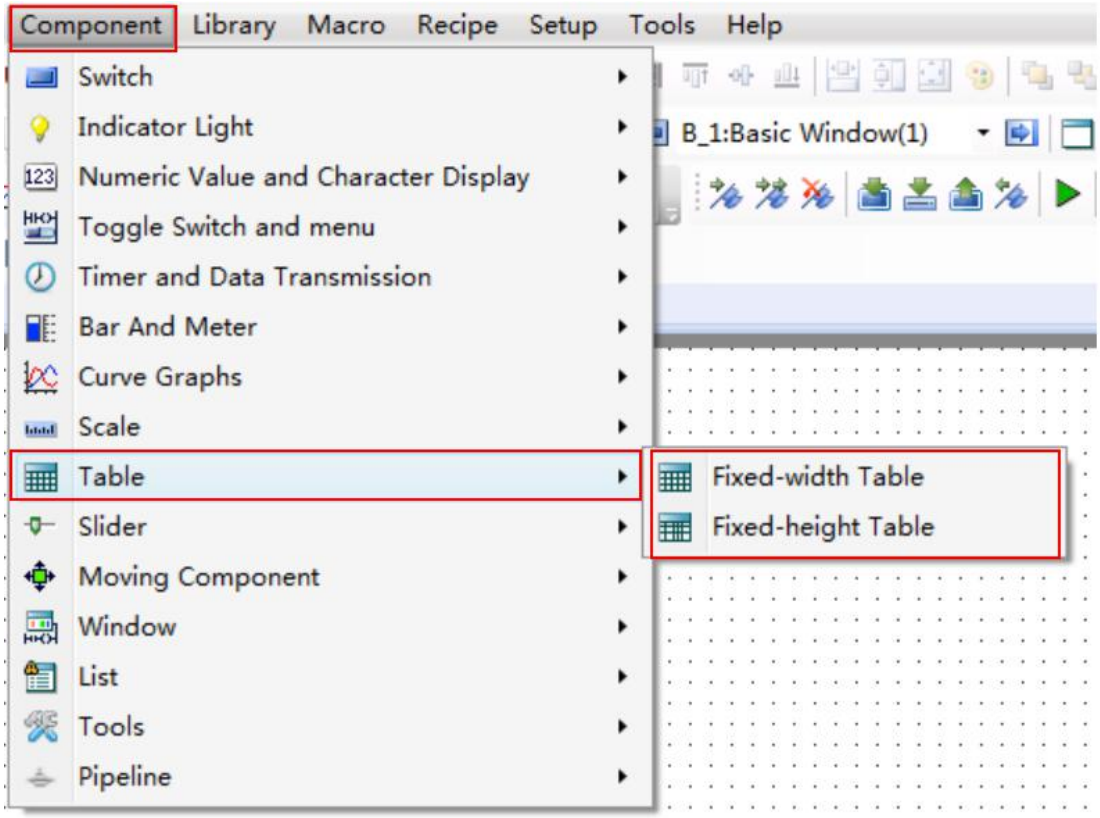
The settings of the "Position" for the Scale component are referred to: Detailed manual/General functions/Position.

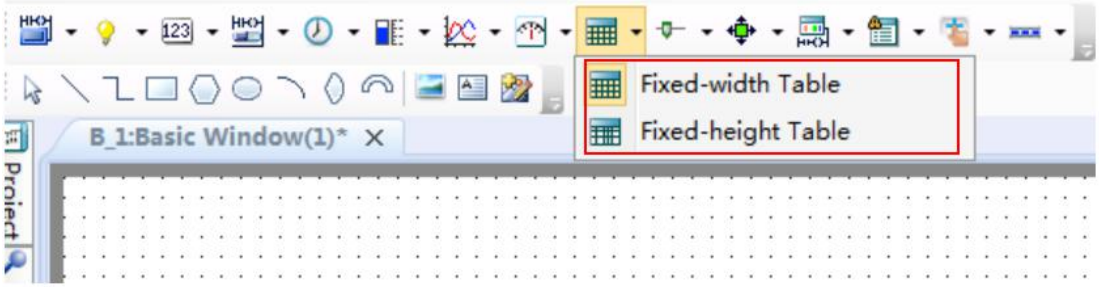
4.6.8.2Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

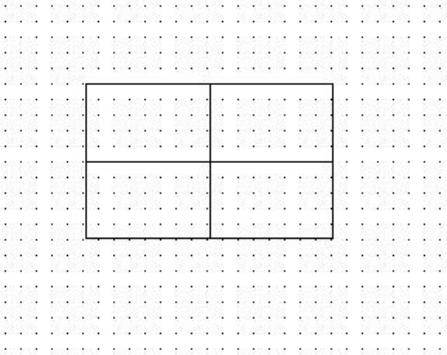
4.6.9 Table

The "Table" component is used largely in the project. There are two types: "Fixed-width Table" and "Fixed-height Table". You can add a Table component by clicking the menu command "Component/Table/Fixed-width Table" or “Component/ Table/ Fixed-height Table". Of course, you can add it by using the shortcut tools bar.

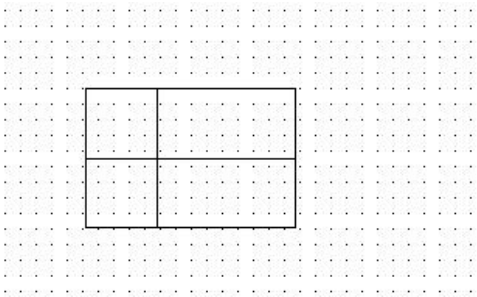




For the fixed-width table, the width of the cells is same and the height of the cells is equal.It is shown as below.

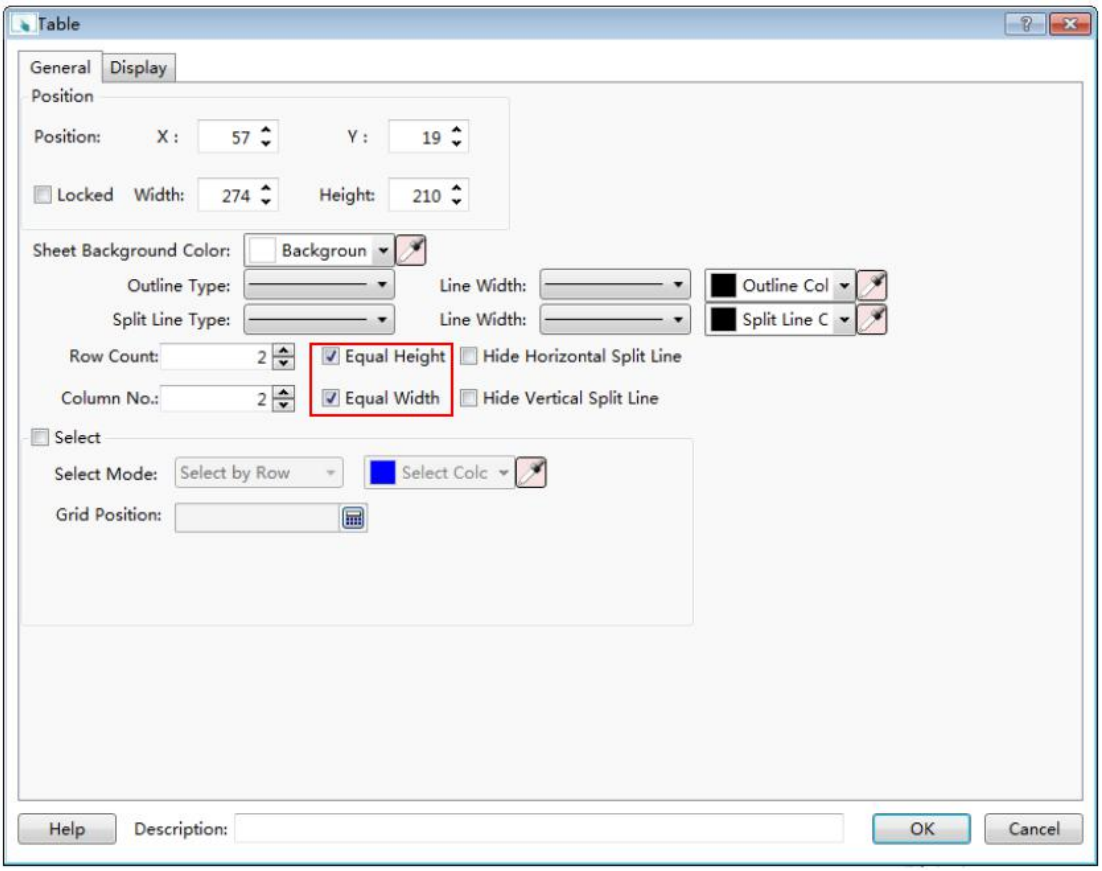


For the fixed-height table, the width and the height of the cells can be modified by mouse-dragging the split line. It is shown as below.

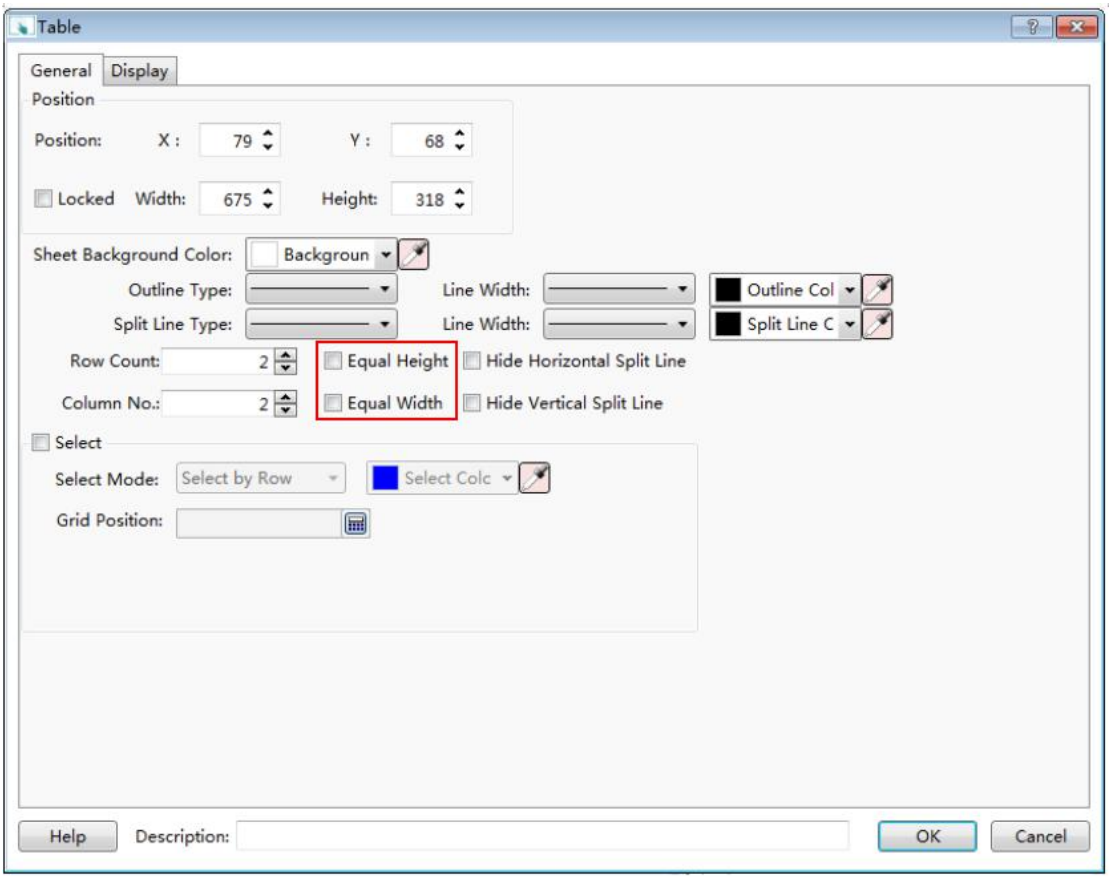


4.6.9.1General

The "General" property TAB of the "Fixed-width Table" is shown as below.



The "General" property TAB of the "Fixed-height Table" is shown as below.



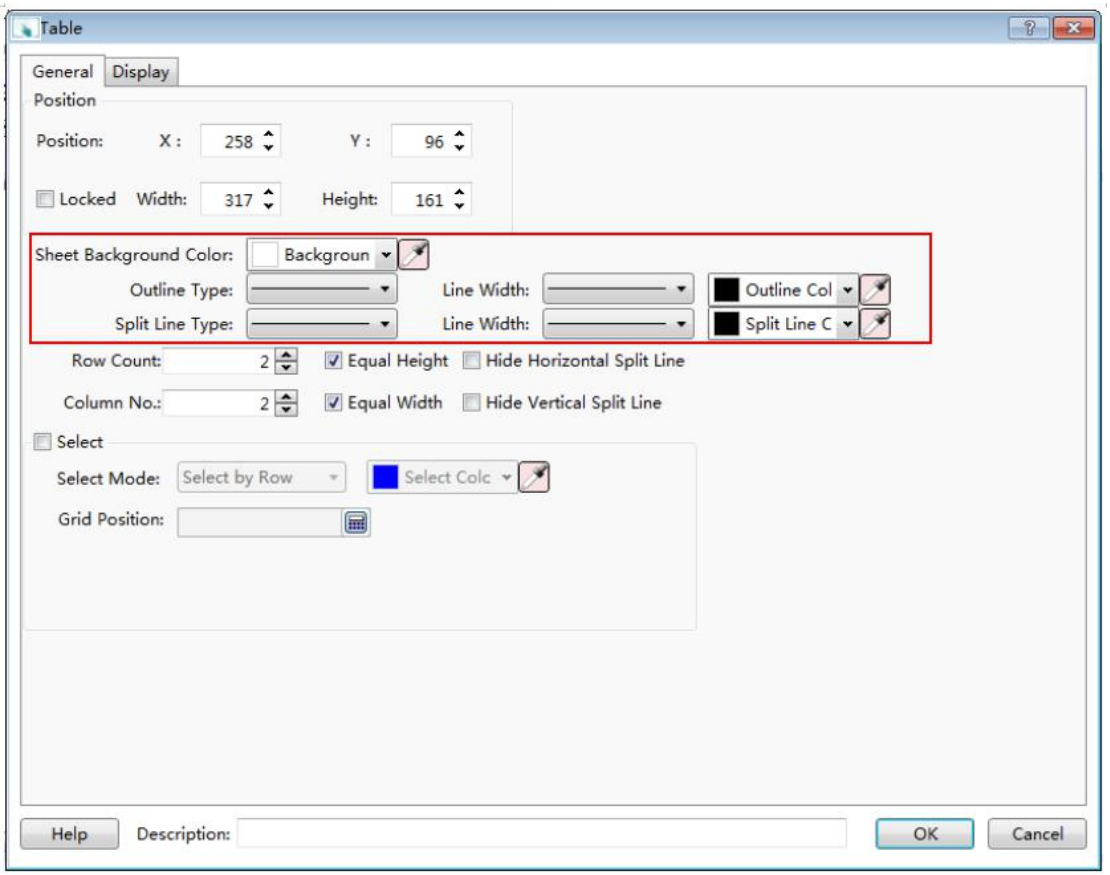
The difference with the "Fixed-width Table" is that the options "Equal Height" and "Equal Width" are not checked. Of course, you can check them and make the Fixed-height Table switch to the Fixed-width Table.

- **Position**

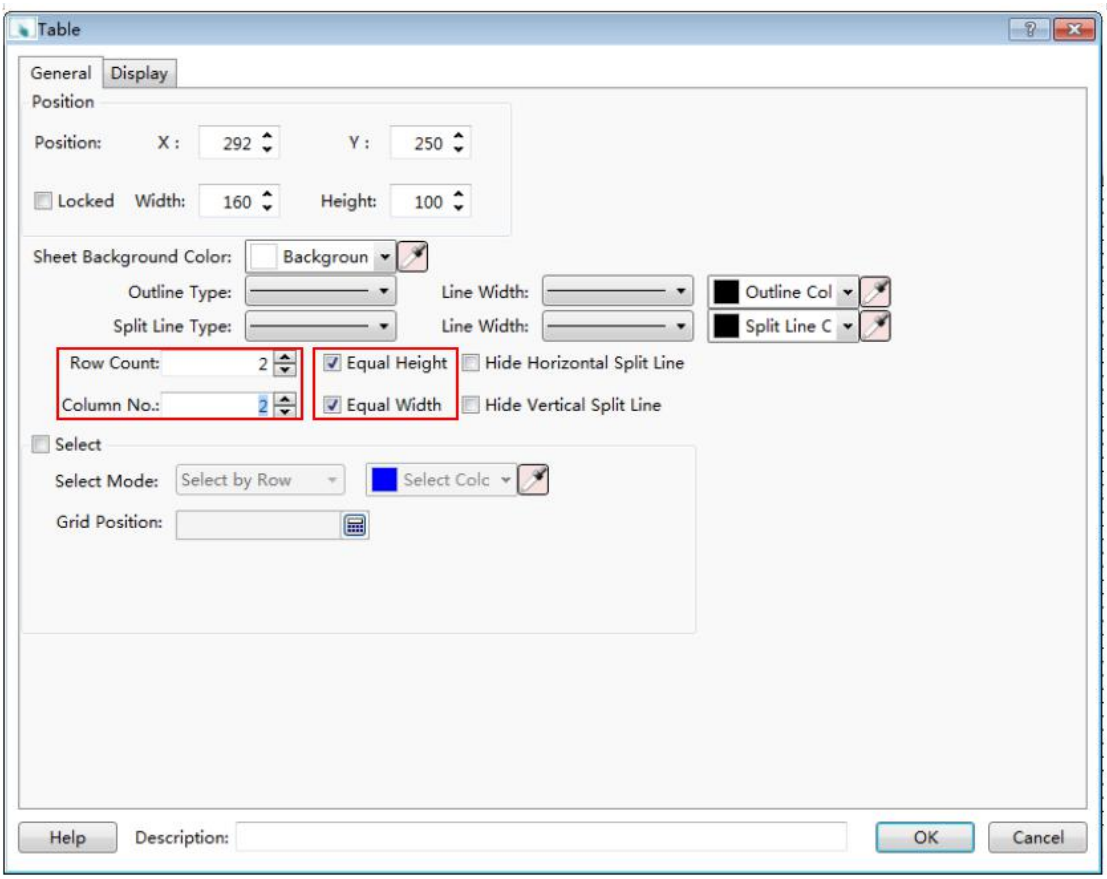
The option "Position" in the "General" property TAB is referred to: Detailed manual/General functions/Position.

- **Appearance settings**

The background color, the outline color, the split line color, the outline type, the split line type, the outline width and the split line width can be set for the table component appearance according to your needs and the project configuration.

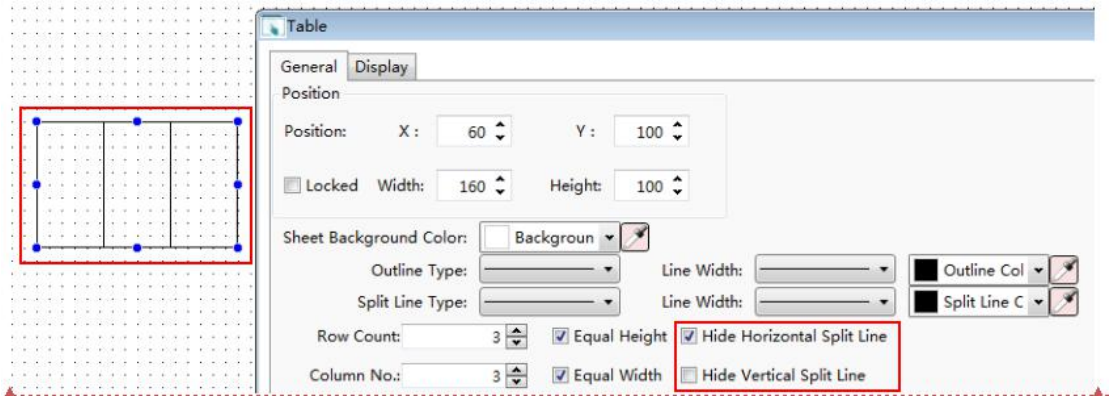


The option "Row Count" and the option "Column No." are used to set the number of the rows and the columns of the table. The option "Equal Height" and the option "Equal Width" can be checked. If they are all checked, the table will be a fixed-width table.



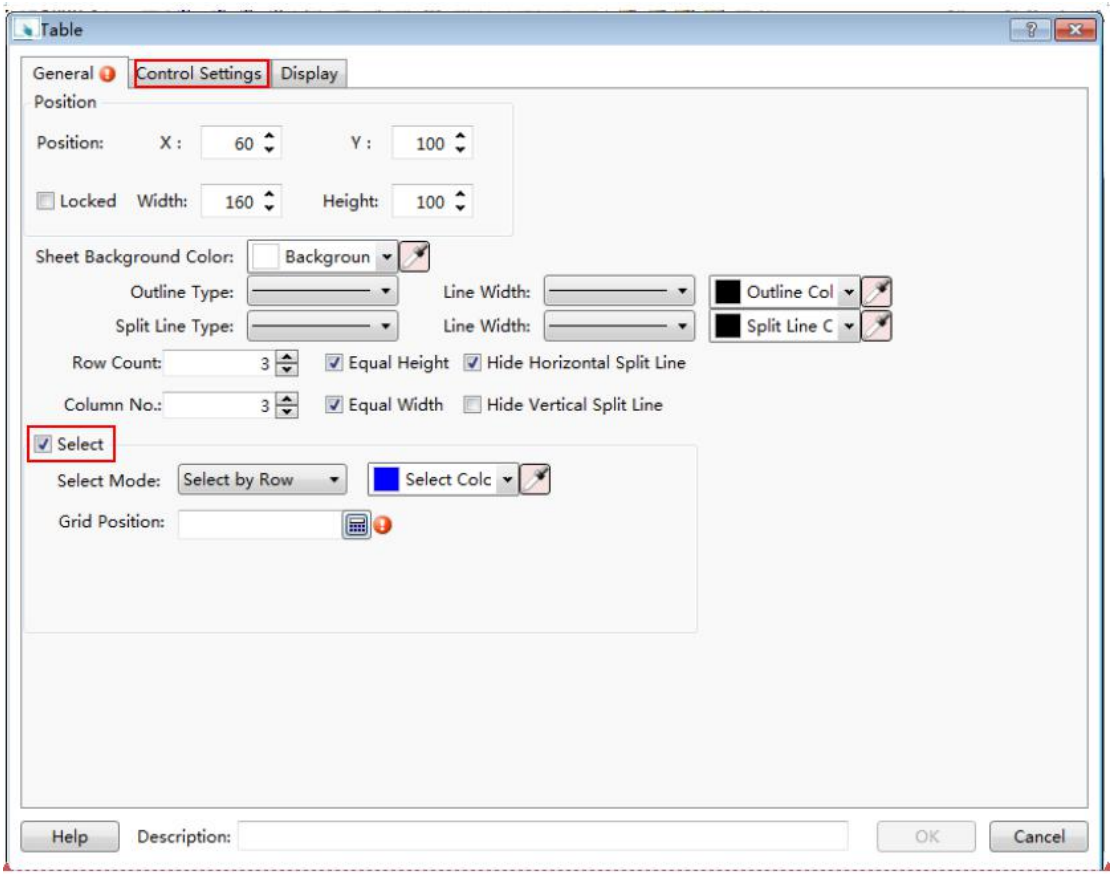
The option "Hide Horizontal Split Line" and the option "Hide Vertical Split Line" can be checked. You can check anyone or two to hide the split line of the table according to your needs

For example, only check the option "Hide Vertical Split Line". It is shown as below.



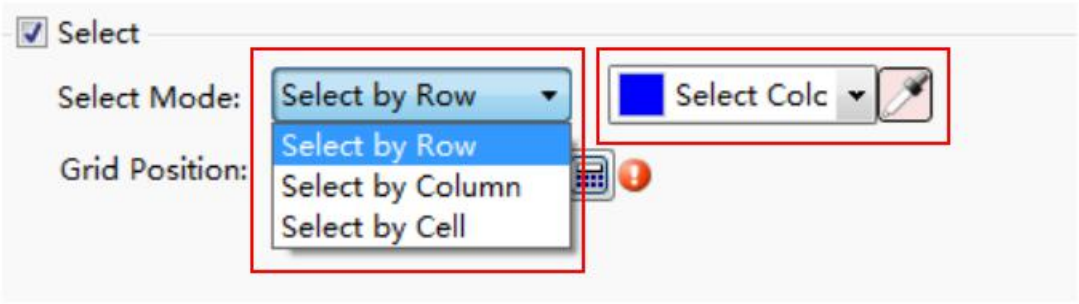
- **Select**

In the "General" property TAB, if you check the option "Select",the "Control Settings" property TAB will display.



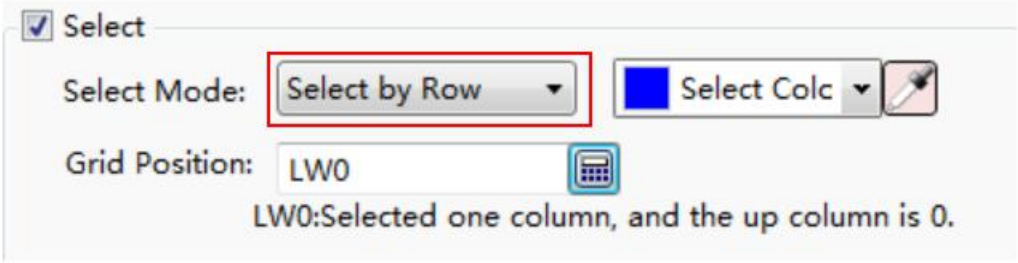
➢ **Select Mode and Select Color**

After checking the option "Select",you can set the color of the row/column/cell which is selected during running the project. The option "Select Mode" can be set "Select by Row", "Select by Column" or "Select by Cell". It determines that the selected is a row, a column or a cell.

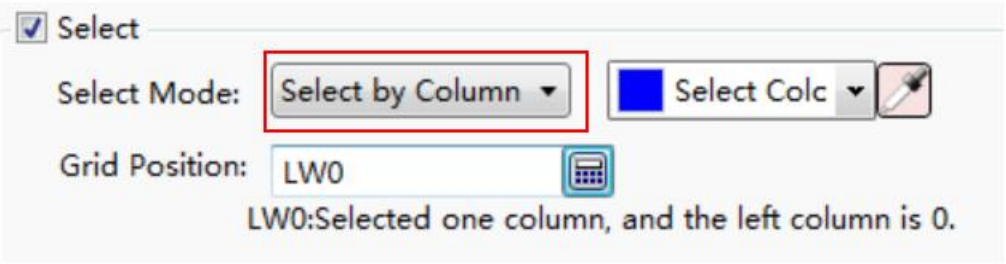


➢ **Grid Position**

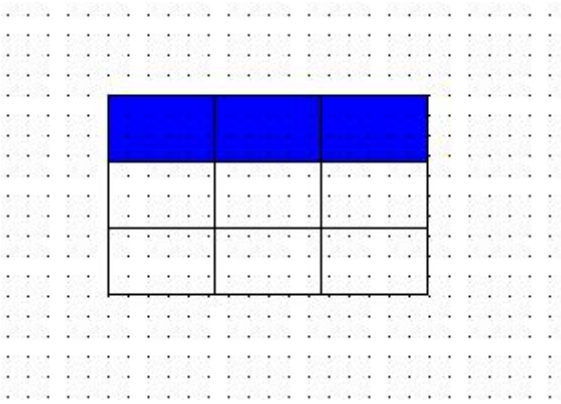
For the option "Grid Position", you need to give a word register to record the selected row number if the select mode is "Select by Row". The first row number is 0.



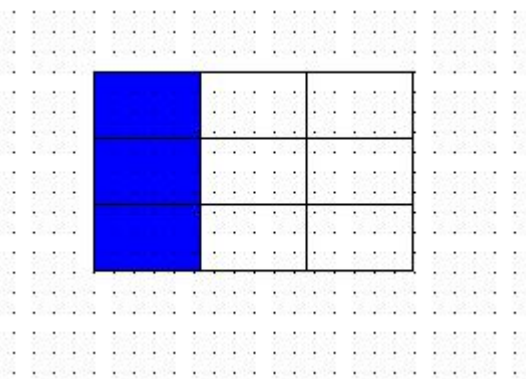
You need to give a word register to record the selected column number if the select mode is "Select by Column". The first column number is 0.



The effect of the "Select by Row" mode is shown as below.

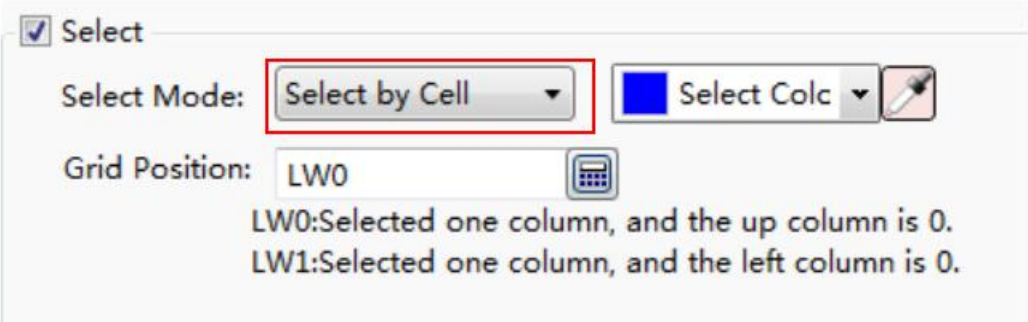


The effect of the "Select by Column" mode is shown as below.

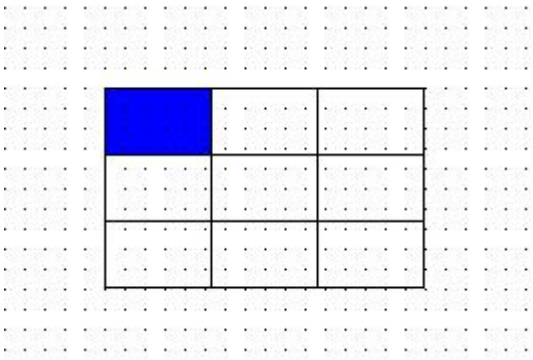


When selecting the mode "Select by Cell", two continuous word registers are occupied. You need to give the first address of the two word registers here. The first word register records the selected

row number and the second records the selected column number. The first row number and the first column number are 0.



The effect of the "Select by Cell" mode is shown as below.



4.6.9.2 Control Settings

The settings of the "Control Settings" property TAB are referred to: Detailed manual/General functions/Control settings.

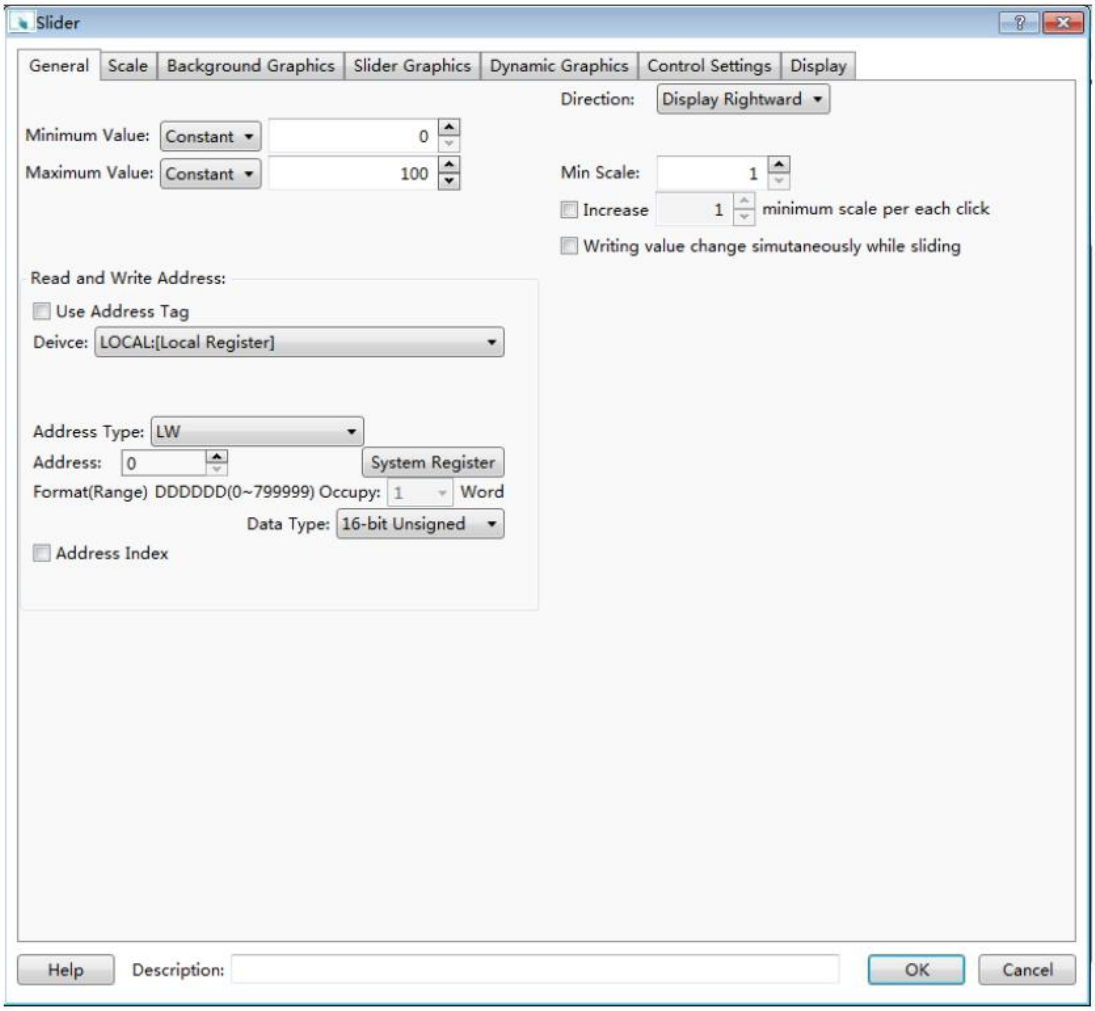
4.6.9.3 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.10 Slider

The "Slider" component can change the value of the specified word register by pressing and moving the slider block.

4.6.10.1 General

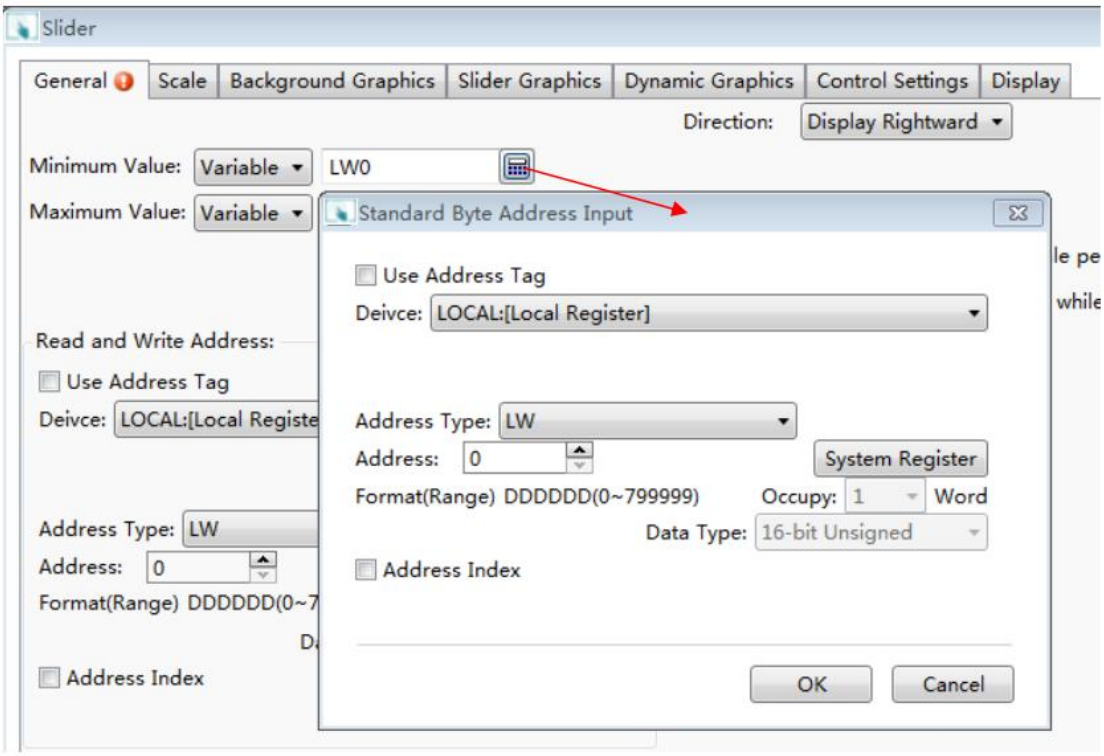


- **Minimum Value**

The option "Minimum Value" refers to the minimum value of the slider. It can be set by a constant or by a variable. When use a variable to set, the details are referred to:Detailed manual/General functions/Address editor/Standard Byte Address Input.

- **Maximum Value**

The option "Maximum Value" refers to the maximum value of the slider. It can be set by a constant or by a variable. When use a variable to set, the details are referred to:Detailed manual/General functions/Address editor/Standard Byte Address Input.

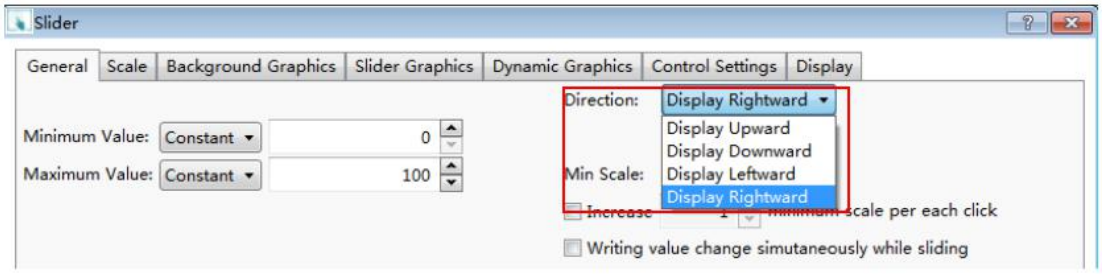


- **Read and Write Address**

You should specify a word register to change the value for the slider component. The word register input method is referred to:Detailed manual/General functions/Address editor/Standard Byte Address Input.

- **Direction**

The option "Direction" is used to set the display direction of the slider. It can be set "Display Upward", "Display Downward", "Display Leftward" and "Display Rightward",



- **Min Scale**

The "Min Scale" refers to the step of the slider block.

- **Increase**

The option "Increase" is used to set the minimum increase or decrease per each click. It should set multiple of the "Min Scale".If this option is not checked, it is set the value of the "Min Scale" by default.

- **Writing value change simultaneously while sliding**

After this option is checked, the word register which is set in the option "Read and Write Address" will change in real time during sliding the slider component. If it is not checked, the value of the word register will change after the slider block is released.

4.6.10.2 Scale

The settings of the "Scale" property TAB are referred to: Detailed manual/ Component/ Scale.

4.6.10.3 Background Graphics

The settings of the "Background Graphics" property TAB are referred to: Detailed manual/General functions/Graphic edit.

4.6.10.4 Slider Graphics

The settings of the "Slider Graphics" property TAB are referred to: Detailed manual/General functions/Graphic edit.

4.6.10.5 Dynamic Graphics

The settings of the "Dynamic Graphics" property TAB are referred to: Detailed manual/General functions/Dynamic Graphics.

4.6.10.6 Control Settings

The settings of the "Control Settings" property TAB are referred to: Detailed manual/General functions/Control settings.

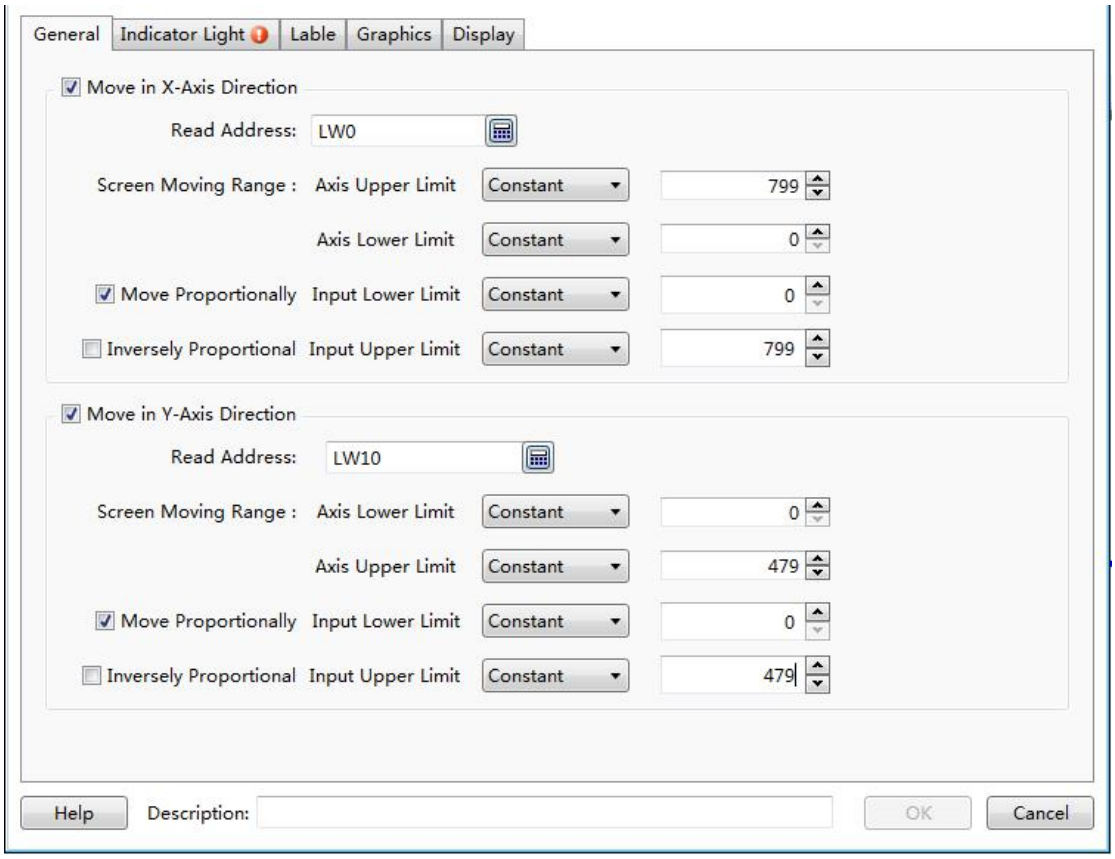
4.6.10.7 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.11 Moving Component

You can click the menu command "Component/Moving Component/Moving Component" to add a moving component in your project.

4.6.11.1 General



The option "Move in X-Axis Direction" refers to moving along the horizontal direction. The option"Move in Y-Axis Direction" refers to moving along the vertical direction.These two options can be checked together. That means moving in an oblique line direction. The angle of the oblique line can be computed based on the moving distance along the x-axis and along the y-axis.

4.6.11.1.1 Move in X-Axis Direction

- **Read Address**

For this option, you should set a word register to specify the moving distance of the moving component along the x-axis.The standard word address input method is referred to:Detailed manual/General functions/Address editor/Standard Byte Address Input.

- **Screen Moving Range**

After check this option, you should set the upper limit and lower limit of the moving range on the screen.

➢ **Axis Lower Limit**

The option "Axis Lower Limit" refers to the minimum value of x-axis for the moving range. It can be a constant or a variable. When it is a variable,the details are referred to:Detailed manual/General functions/Address editor/Standard Byte Address Input.

➢ **Axis Upper Limit**

The option "Axis Upper Limit" refers to the maximum value of x-axis for the moving range. It can be a constant or a variable. When it is a variable,the details are referred to:Detailed manual/General functions/Address editor/Standard Byte Address Input.

- **Move Proportionally**

After check this option, the moving component will move according to the proportion that the "Input Lower Limit" is corresponding to the "Axis Lower Limit" and the "Input Upper Limit" is corresponding to the "Axis Upper Limit".

For example, the "Axis Lower Limit" is 0, the "Axis Upper Limit" is 799, the "Input Lower Limit" is 0, and the "Input Upper Limit" is 7990. When the value of the specified word register is 0, the position is corresponding to the x coordinate: 0.When the value of the specified word register is 7990, it is corresponding to the x coordinate: 799.

- **Inversely Proportional**

This option can be checked when the option "Move Proportionally" is checked. After it is checked, the "Input Lower Limit" is corresponding to the "Axis Upper Limit" and the "Input Upper Limit" is corresponding to the "Axis Lower Limit". The moving component will move in a inverse proportion.

4.6.11.1.2 Move in Y-Axis Direction

The settings of the "Move in Y-Axis Direction" are same to the "Move in X-Axis Direction".But the moving component is along the vertical direction.

4.6.11.2 Indicator Light

Display a picture or a text according to the status of the specified address.

The settings of the "Indicator Light" property TAB are referred to: Detailed manual/Component/Indicator Light.

4.6.11.3 Label

The settings of the "Label" property TAB are referred to: Detailed manual/General functions/Label.

4.6.11.4 Graphics

The settings of the "Graphics" property TAB are referred to: Detailed manual/General functions/Graphic edit.

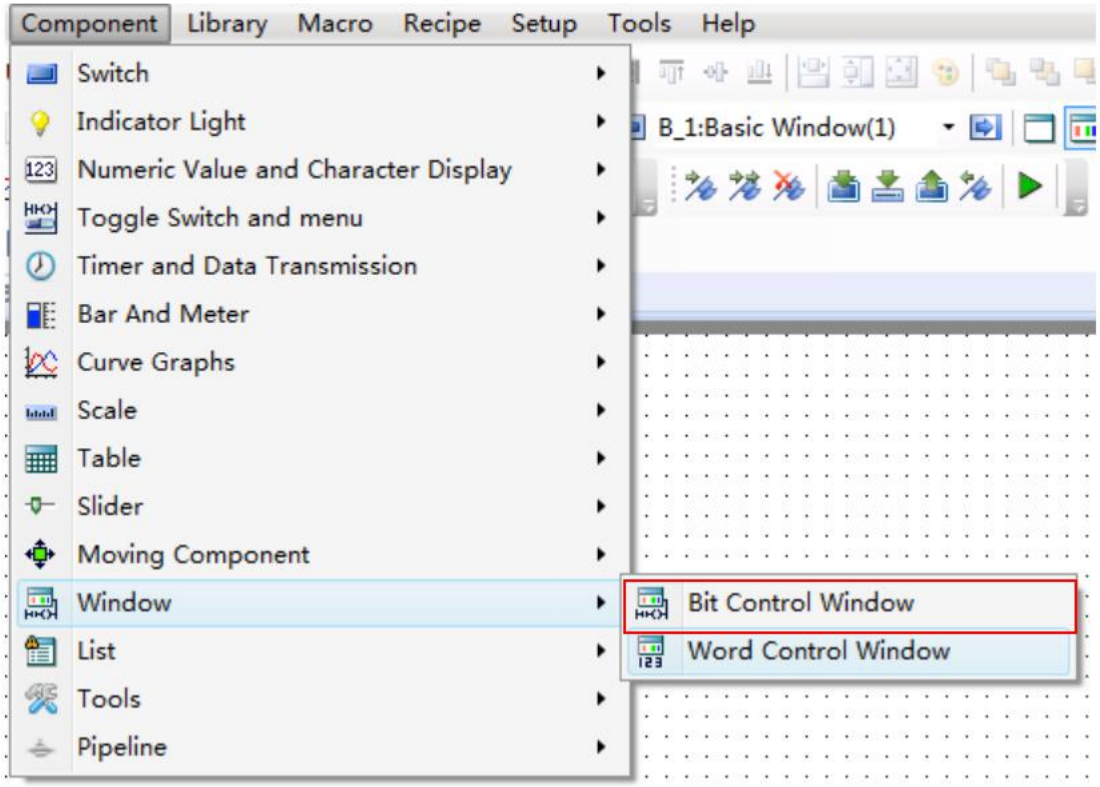
4.6.11.5 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.12 Window

4.6.12.1 Bit Control Window

You can click the menu command "Component/Window/Bit Control Window" to add a bit control window component in your project.

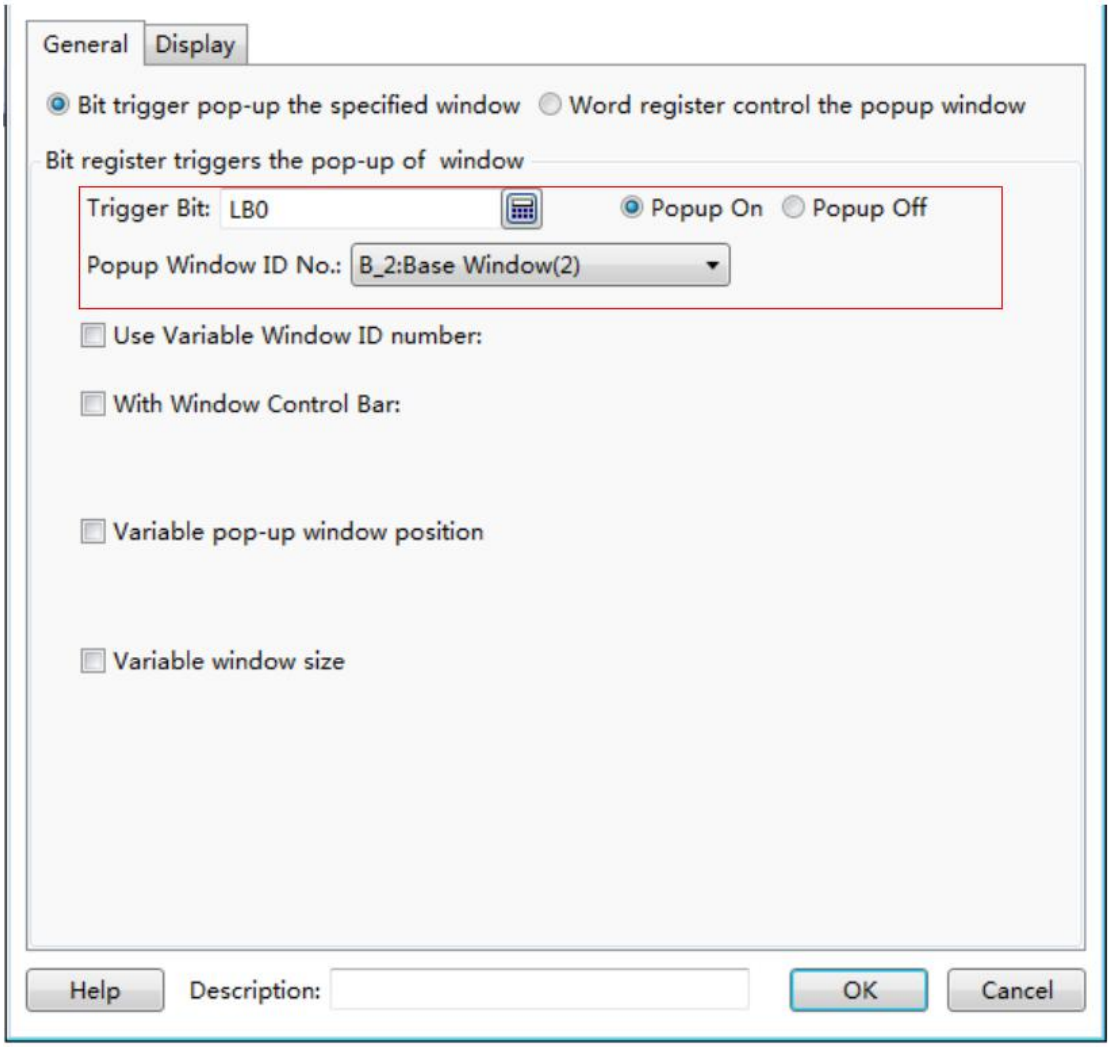


4.6.12.1.1 General

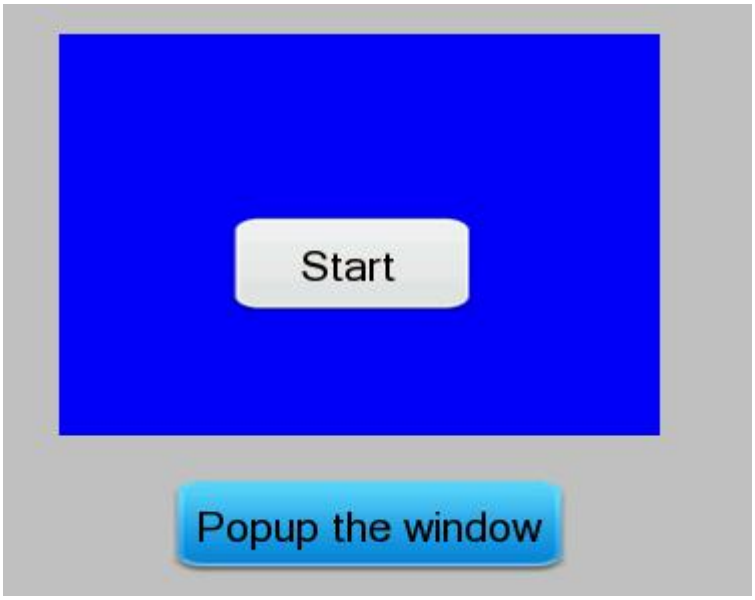
The "Bit Control Window"component is similar to the "Word Control Window"component. The differences with the "Word Control Window"component are pointed out as below. The other details are referred to: Detailed manual/Component/Window/Word Control Window.

- **Bit register triggers the pop-up of window**

The option "Trigger Bit" is used to specify a bit register to trigger a popup window. The popup window is determined by the option "Popup Window ID No.". If you select the option "Popup On", the window will popup when the bit register is ON.If you select the option "Popup Off", the window will popup when the bit register is OFF.

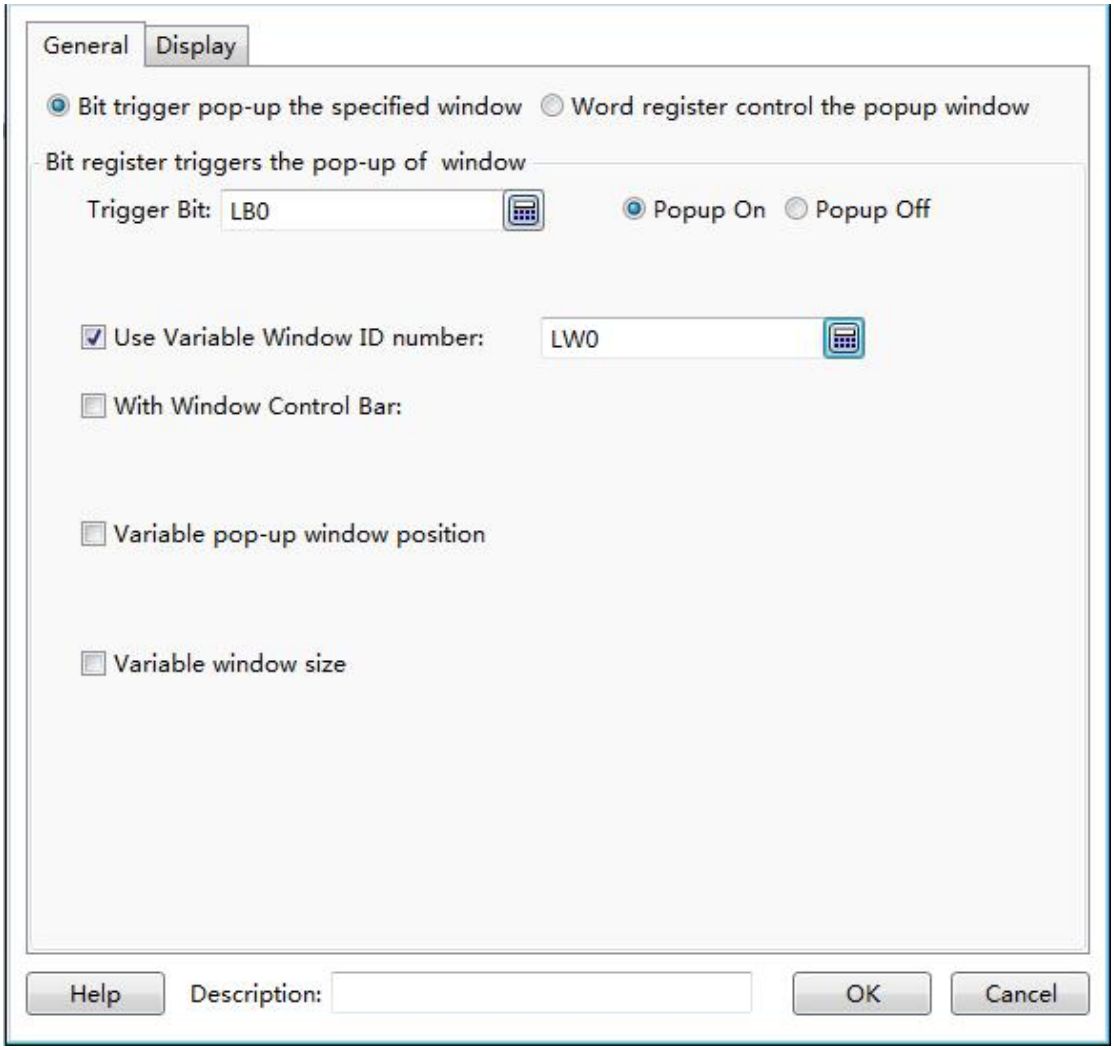


For example, a button named "Popup the window" is connected with LB0 and the trigger bit of the popup window component is set LB0. The simulation running result is shown as below. When press the button "Popup the window", the specified window will pop up.

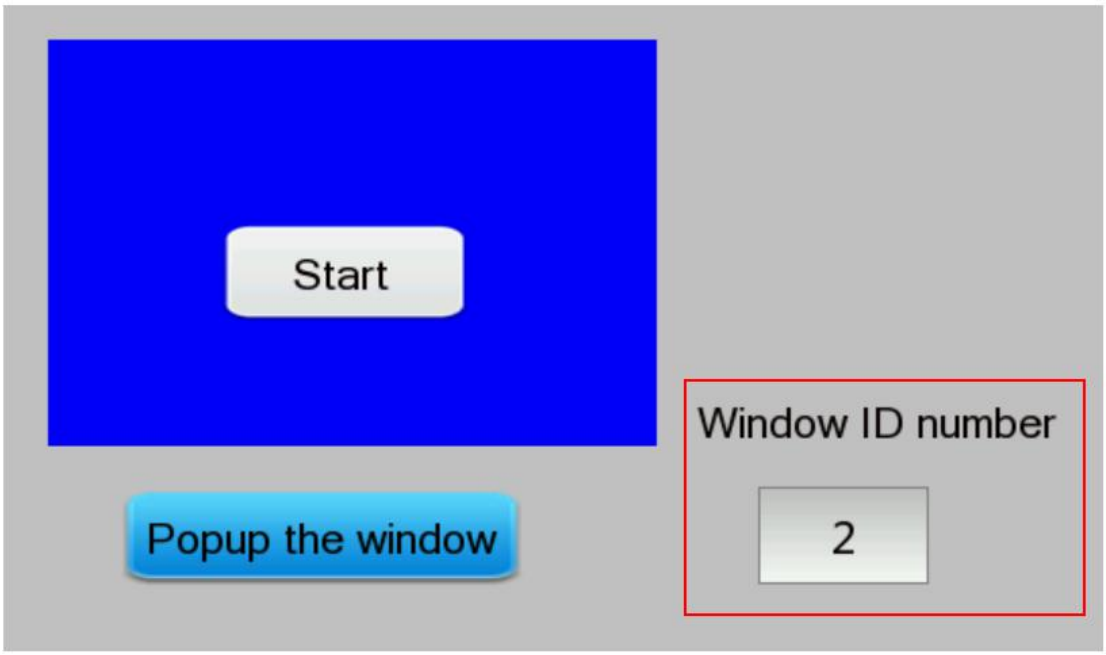


- **Use Variable Window ID number**

The function of "Use Variable Window ID number"is used to dynamically specify a pop-up window by using a word register.



For the above example, the word register is specified LW0 and a numeric value input component is connected with LW0. The simulation running result is shown as below. Enter the corresponding window ID number in the numeric value input component and then click the button"Popup the window", the designated window will pop up.

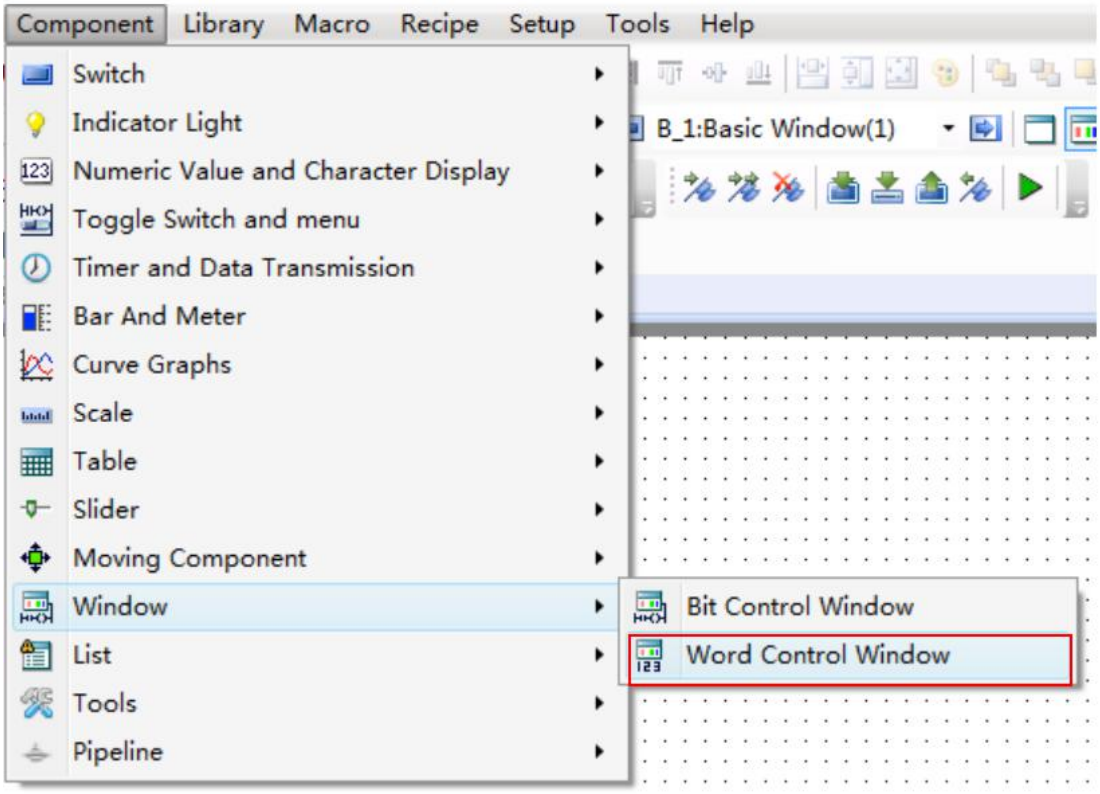


4.6.12.1.2 Display

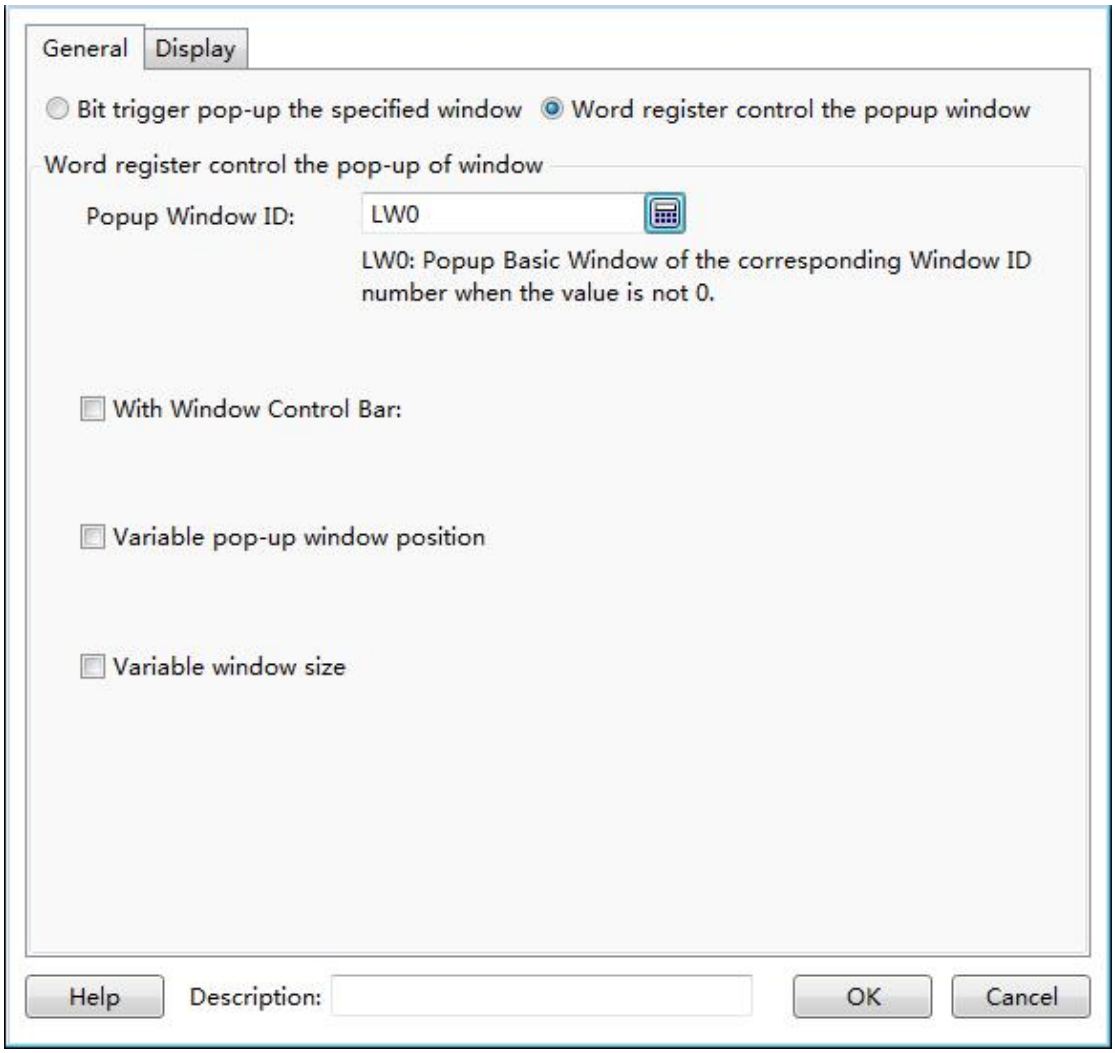
The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.12.2 Word Control Window

You can click the menu command "Component/Window/Word Control Window" to add a word control window component in your project.



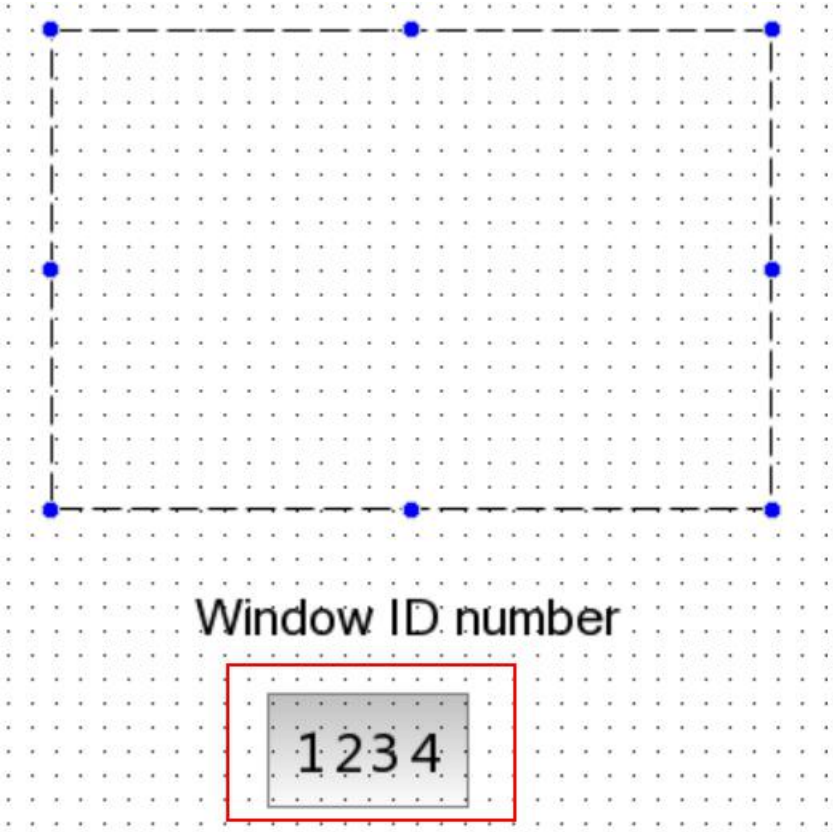
4.6.12.2.1 General



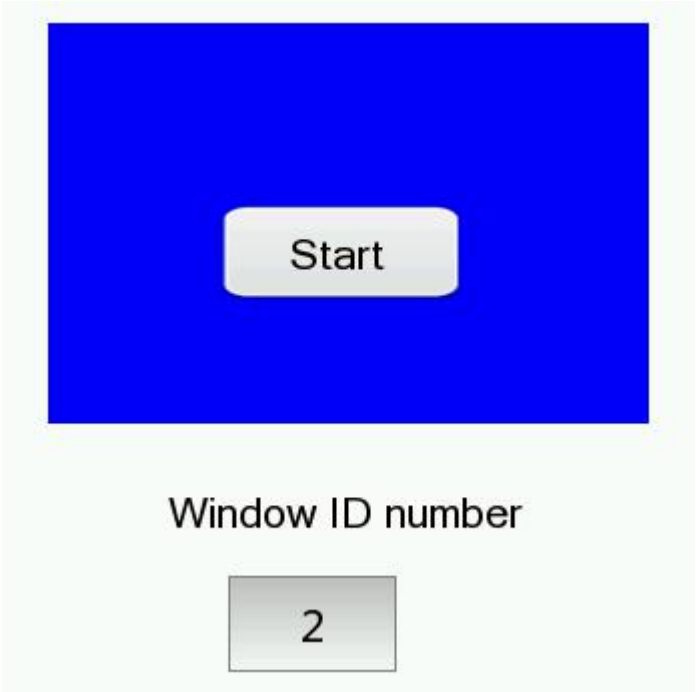
- **Word register control the pop-up window**

For the option "Popup Window ID", a word register needs to be given to specify the ID number of the popup window.

For example, add a word control window component and a numeric value input component in your project. The word register controlling the pop-up window is set LW0 and it is also connected with the numeric value input component. It is shown as below.

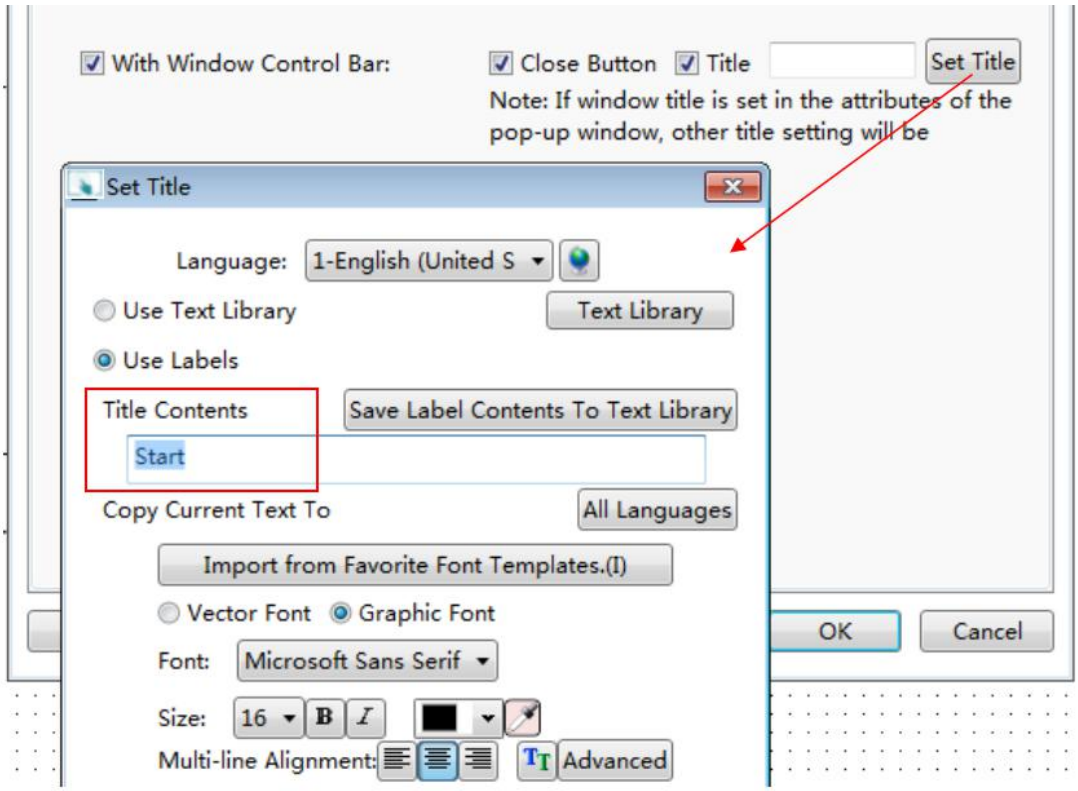


The simulation running result is shown as below.When input a positive integer value to the numeric value input component, the window which the ID number of it is equal to the inputted value will pop up.

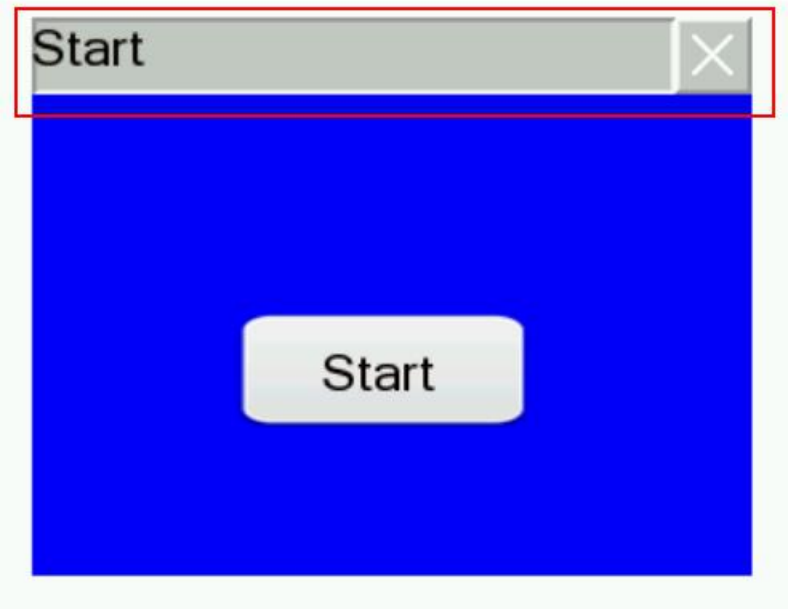


- **With Window Control Bar**

After checking the option "With Window Control Bar", you can add the window title by checking the option "Title"and add the window close button by checking the option "Close Button". The font of the window title can be set by clicking the button "Set Title". The details are referred to: Detailed manual/General functions/Font settings.

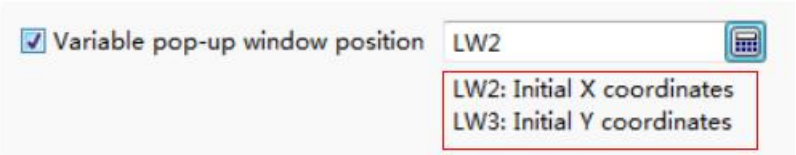


After set the window control bar, the simulation running result is shown as below.



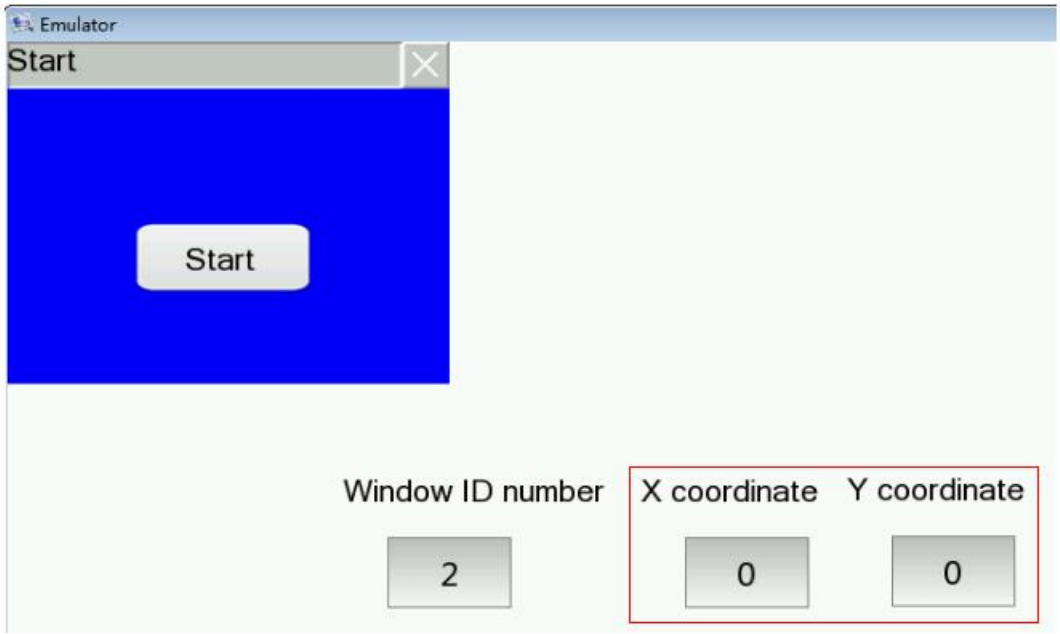
- **Variable pop-up window position**

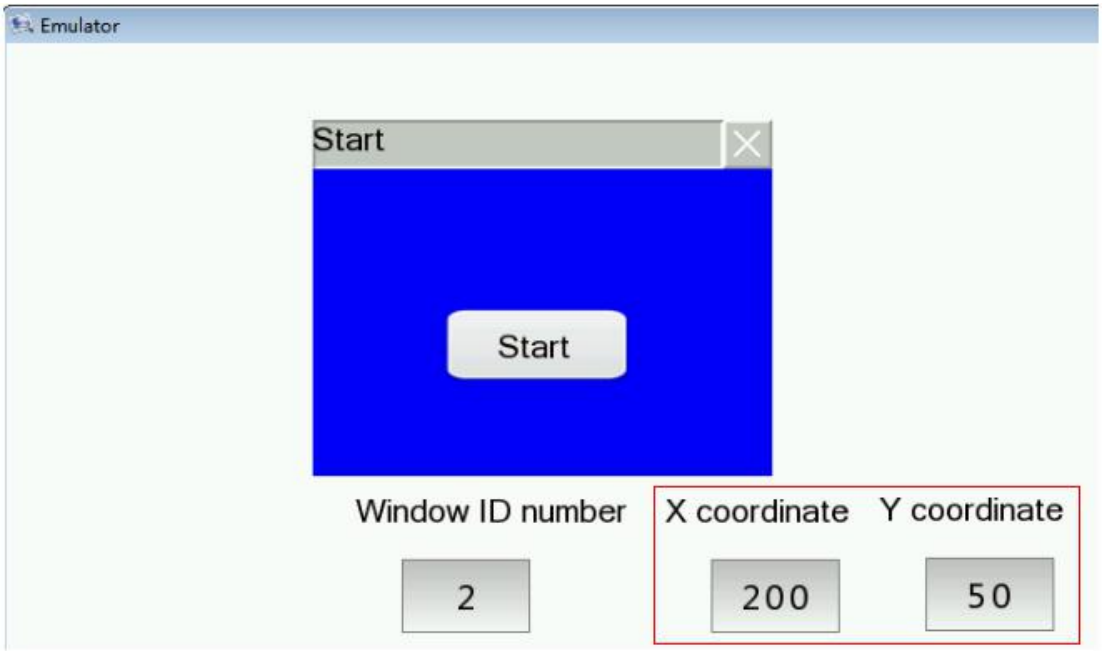
After check the option "Variable pop-up window position", a first address of continuous two word registers needs to be given to specify the X and Y coordinates of the pop-up window.



For the above example, check the option "Variable pop-up window position" and the first word register address of the window position control is set LW2.Then add two numeric value input components in your project for inputting the X and Y coordinates of the pop-up window.They are connected with LW2 and LW3 separately.

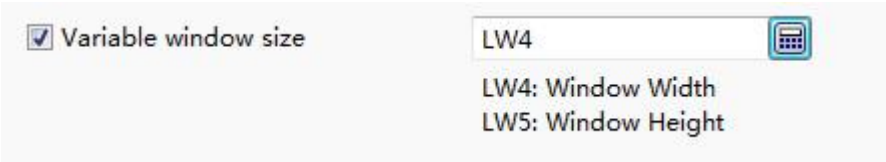
The simulation running result is shown as below. When change the values of the numeric value input components, the position of the popup window will change.





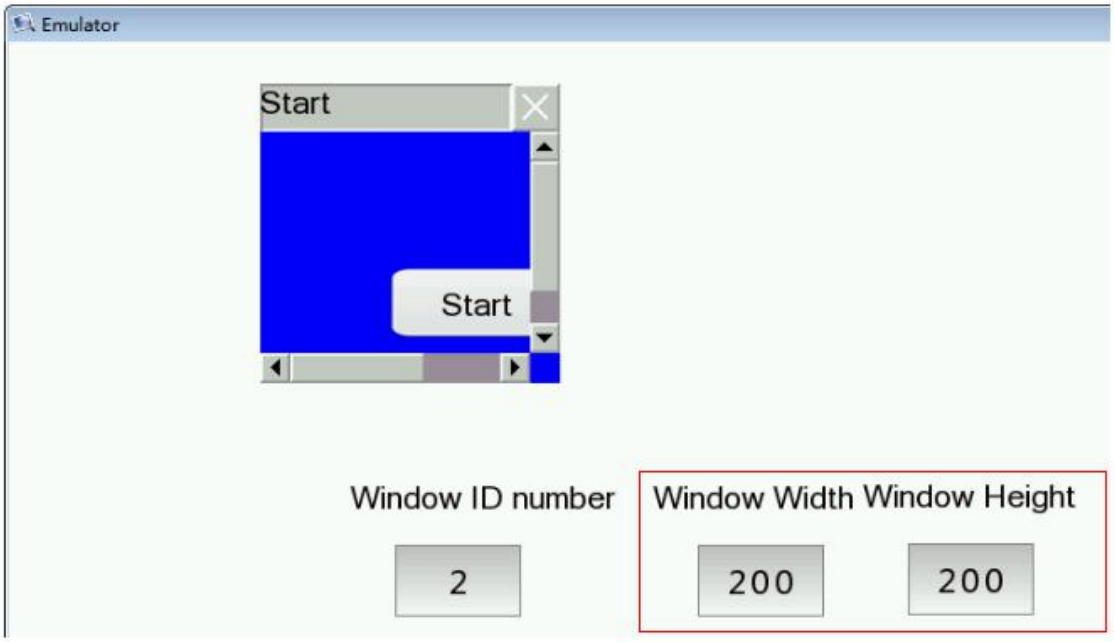
- **Variable window size**

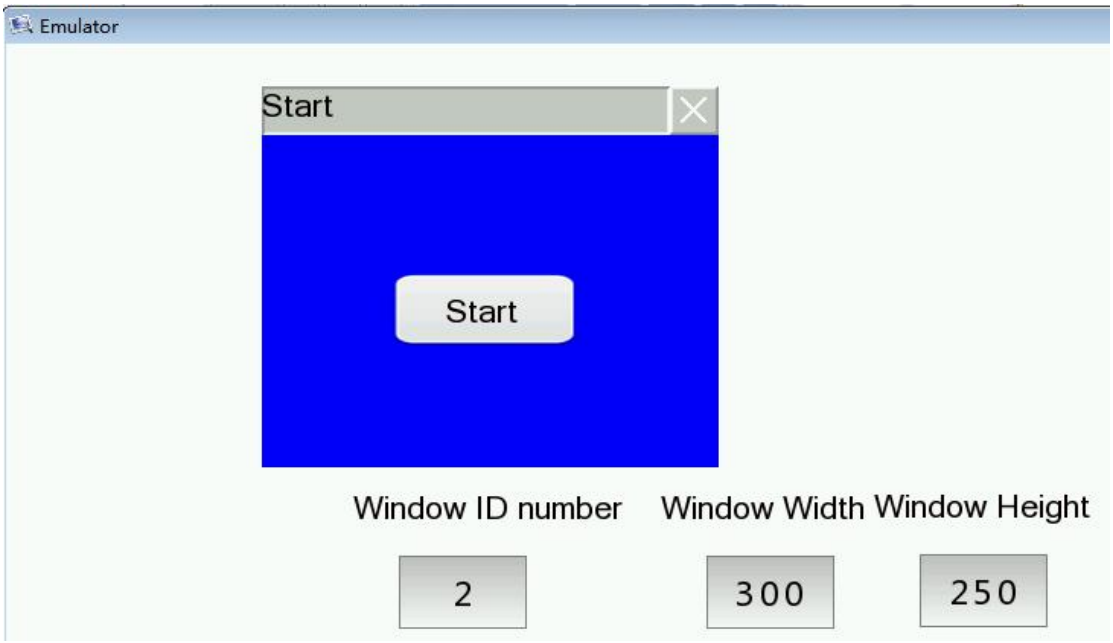
If you check the option "Variable window size", a first address of continuous two word registers needs to be given to specify the width and height of the popup window.



For the above example, check the option "Variable window size" and the first word register address of the window size control is set LW4.Then add two numeric value input components in your project for inputting the width and height of the pop-up window.They are connected with LW4 and LW5 separately.

The simulation running result is shown as below. When change the values of the numeric value input components, the size of the popup window will change.





4.6.12.2.2 Display

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Display.

4.6.13 List

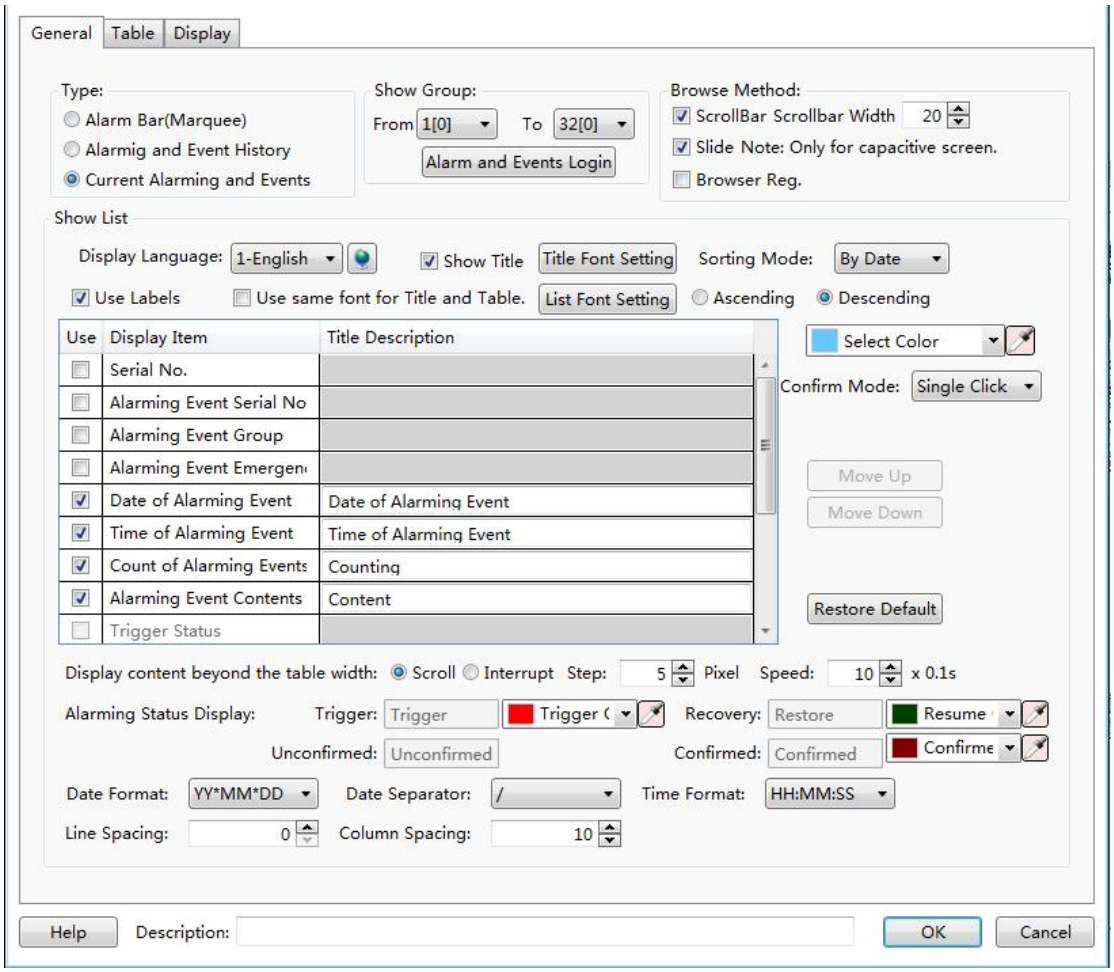
4.6.13.1 Alarm and Event Display

4.6.13.1.1 Current Alarm and Event

The "Current Alarm and Event" function is to display the current triggered alarms and events in a tabular form.Only the trigger state is displayed.

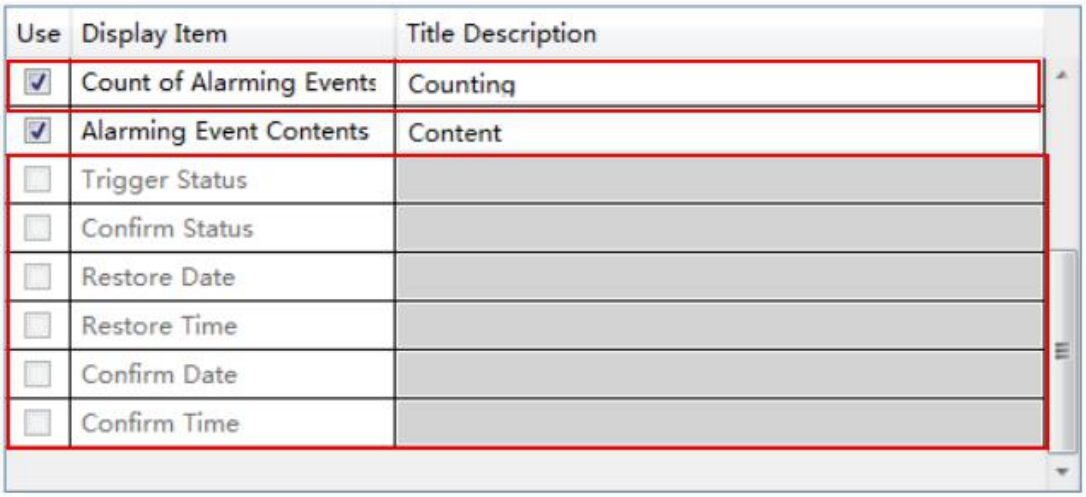
- **General**

The general properties of the "Current Alarm and Event" are basically the same to the "Alarming and Event History". Please refer to: Detailed manual/Component/List/Alarm and Event History.



Note:

The differences with the "Alarming and Event History" are shown as below.



- The "Current Alarm and Event" includes"Count of Alarming Events". But the "Alarming and

Event History" does not include it.

The "Current Alarm and Event" only displays the trigger status. It does not confirm and restore the status.So the gray color options in the table can not be checked.

- **Table**

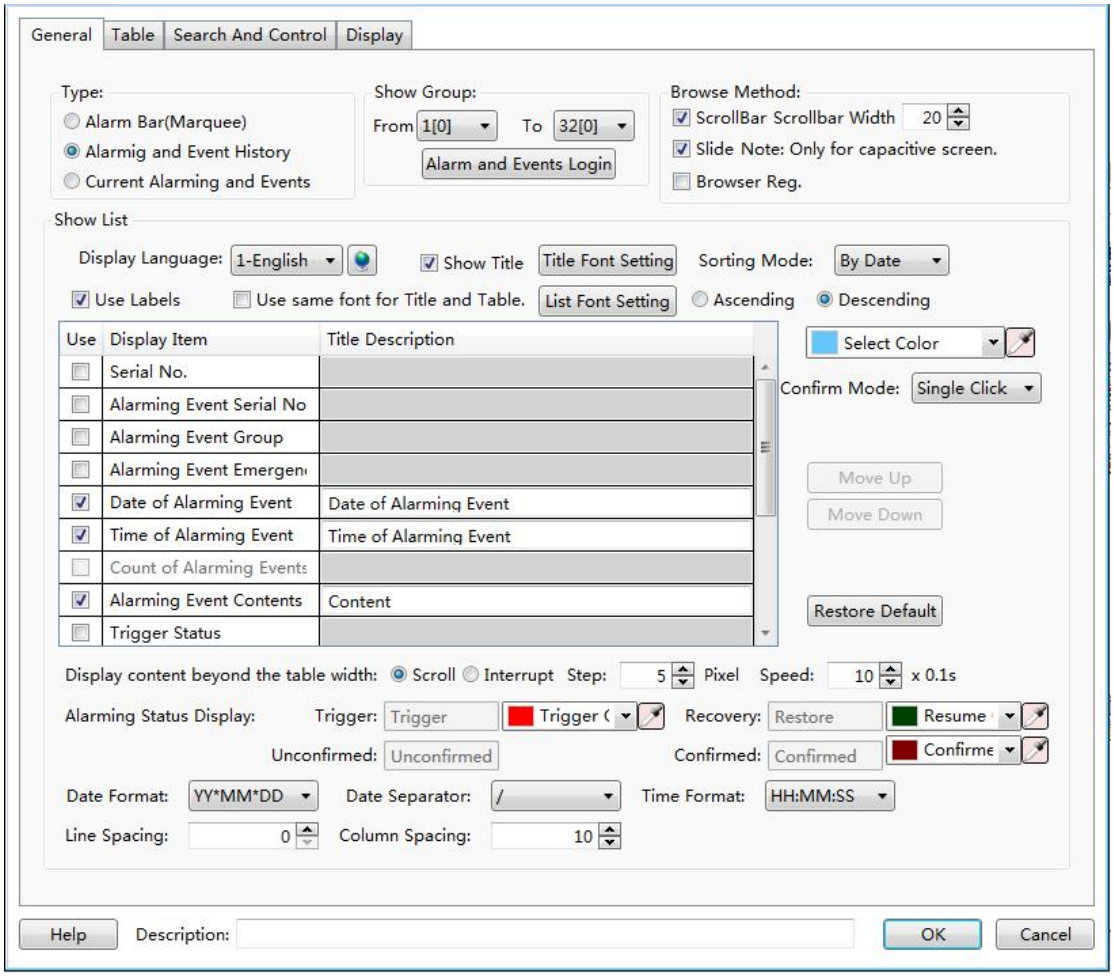
The settings of "Table" property TAB is referred to: Detailed manual/General functions/Table drawing.

- **Display**

The settings of "Display" property TAB is referred to: Detailed manual/General functions/Display.

4.6.13.1.2 Alarming and Event History

The "Alarming and Event History" function is to display all alarms entries in tabular form, including the current and historical alarms and events.



- **General**

➢ **Show Group**

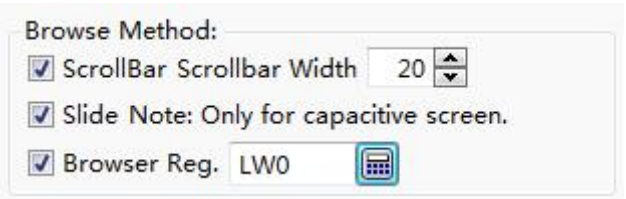
You can select some groups of alarms and events to display in the alarm list.

Note:

The alarms and events can be grouped when they are created. The range of groups is from 1 to 32. The alarm and event content can be set by clicking the button "Alarm and Events Login" or by double-clicking the "System Settings/Alarm and Event" in the project tree. The details are referred

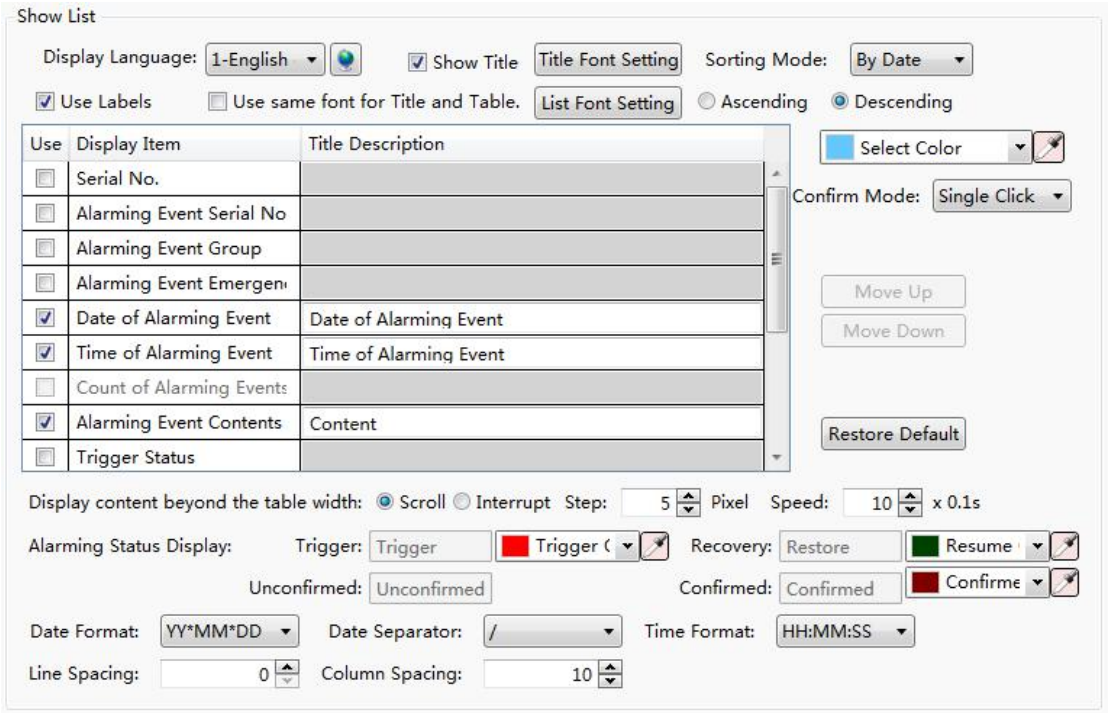
to:Detailed manual/Setup/System Settings/Alarm and Event.

- **Browse Method**



There are three browse methods: "Scroll Bar", "Slide" and "Browser".
The scroll bar will display in the alarm list if you check the option "Scroll Bar". You can view the alarms by using the scroll bar. The "Scroll bar Width" needs to be set. The unit of it is pixel.
You can check the option "Slide" in order to view the alarms by sliding the screen. This function is supported by the capacitive screen devices.
The option "Browser" can be checked when you need to view multiple pages. A word register needs to be specified to define the current page. The default is that 0 represents the records on the current day, 1 represents the records on yesterday, 2 represents the records on the day before yesterday, and so on. The word register input is referred to: Detailed manual/General functions/Address editor/Standard Byer Address Input.

- **Show List**



"Display Language"
The "Display Language" is selected to switch the current display language for editing the Title Description. The details are referred to: Detailed manual/Setup/System Settings/Language Settings.
"Show Title"

The option"Show Title" is checked by default.If you do not want to display the title bar, you can cancel the check.

"Title Font Setting"

It is used to set the font of the title bar. The details are referred to: Detailed manual/General functions/Drawing/Font settings.

"Sorting Mode"

The "Sorting Mode" set the arrangement order of the alarms and events.

If you set "By Date" and select the option "Descending", the latest event will be displayed on the top.

If you set "By Level" and select the option "Descending", the higher level events are displayed on the top.

If you select the option "Ascending", the display order is inverse.

"Select Color"

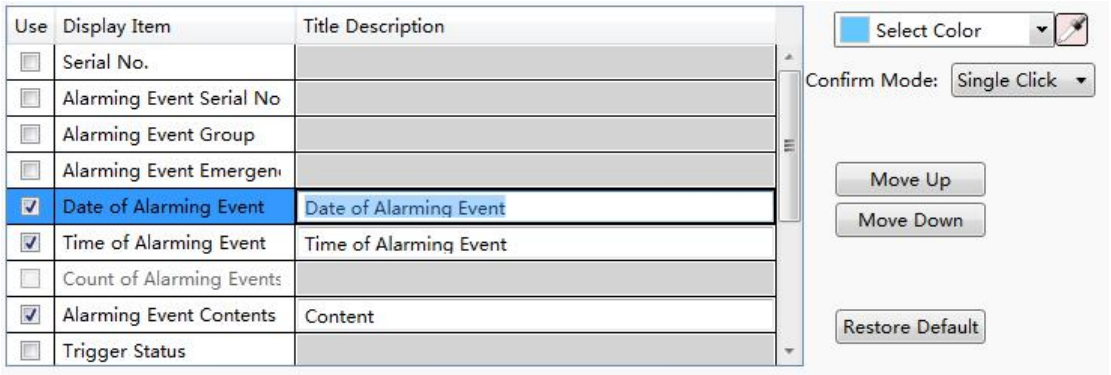
The selected alarm entry will display in the color which is set by the option"Select Color".

"Confirm Mode"

When the alarm is triggered, it is in the trigger status.If you want to confirm this alarm, you need to select the "Confirm Mode". It can be "Single Click", "Double Click" or "Press And Hold".

"List settings"

The title bar contents of the alarm list are set in the below table. The contents of the title bar can be set to display by checking it. But the gray Display Items can not be checked.



For the order of the contents arrangement, you can use the button "Move Up" or "Move Down" to modify it. The content on the to prow will display on the left of the alarm list. You can restore the default arrangement by clicking the button "Restore Default ".

“Display content beyond the table width"

There are two modes, "Scroll" and "Interrupt", to display the title contents when they are more than the alarm list width. You can select one mode to display.

The content will be displayed by scrolling if you select the "Scroll" mode. You need to set the step size (Step: 1 to 255 pixels), and the scrolling speed (Speed: 1 to 255*0.1s).

The excess contents will be truncated directly if you select the "Interrupt" mode.

"Alarming Status Display"

You can set the text color of the alarms and events in the different status here.

"Date and Time Format"

The "Date Format" is used to set the sort order of year (YY), month (MM) and day (DD). The "Date Separator" is used to set the separator among year,month and day. The "Time Format" is used to set the time display format.

"Line Spacing and Column Spacing"

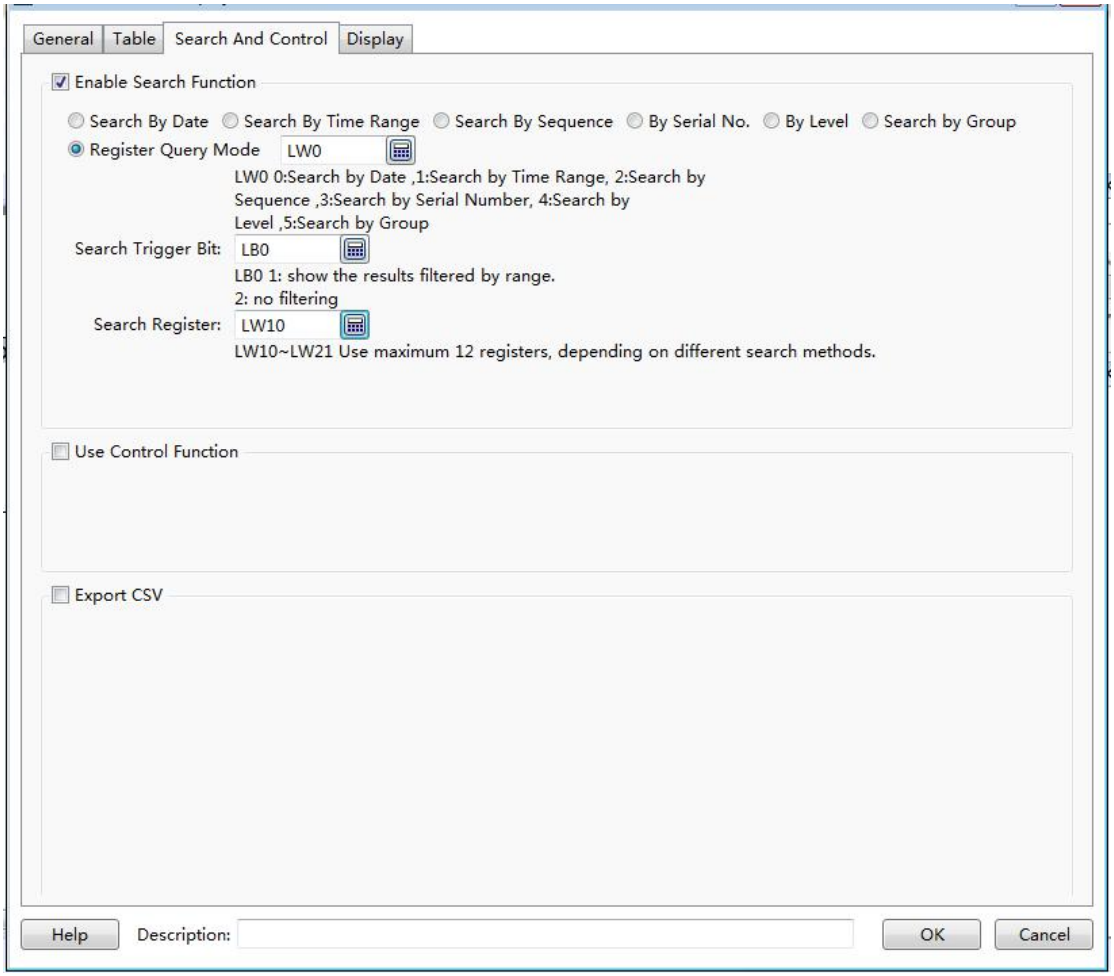
The "Line Spacing" and the "Column Spacing"are to set the ranks spacing of the alarm list. The unit is pixel and the range is 0-255.

- **Table**

The settings of the "Table" property page TAB are referred to: Detailed manual/ General functions/ Drawing/ Table Drawing.

- **Search And Control**

The "Search And Control" property TAB is shown as below.



- **Enable Search Function**

Check the option "Enable Search Function" to use the search function.

"Search mode"

There are seven search modes: "Search By Date", "Search By Time Range", "Search By Sequence", "By Serial No.", "By Level", "Search by Group" and "Register Query Mode".

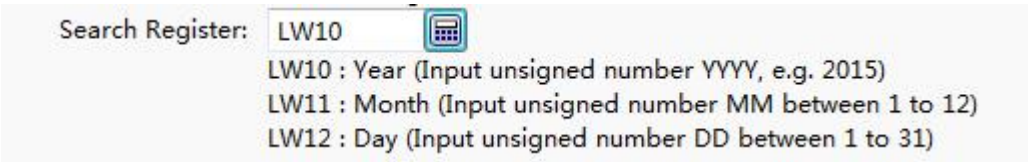
The "Register Query Mode" is a dynamic search mode.You can specify a word register to dynamically adjust the search mode. If the word register is 0, the "Search By Date" mode is used.If it is 1, the "Search By Time Range" mode is used. If it is 2, the "Search By Sequence" mode is used.If it is 3, the "By Serial No." mode is used. If it is 4, the "By Level." mode is used. If it is 5, the "Search by Group." mode is used.The word register address input method is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.

"Search Trigger Bit"

The option "Search Trigger Bit" is used to specify a bit register to trigger the search function. Note that the search function is not edge-triggered mode. When setting the trigger bit 1, the alarm list displays the filtered results. After set the trigger bit 0, the list will display the results which are not filtered. The bit address input method is referred to: Detailed manual/General functions/Address editor/Standard Bit Address Input.

"Search Register"

The "Search Register" is used to specify the first word register address for the search function. The number of the word registers is depending on the search mode. The function of the word registers used to search is different for the different search mode. You can get the information of the used word registers according to the text displayed under the first word register address. The word address input method is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.



- **Use Control Function**

After checking this option, you can use word address registers to control the display of the alarms and events in the alarm list.

- **Export CSV**

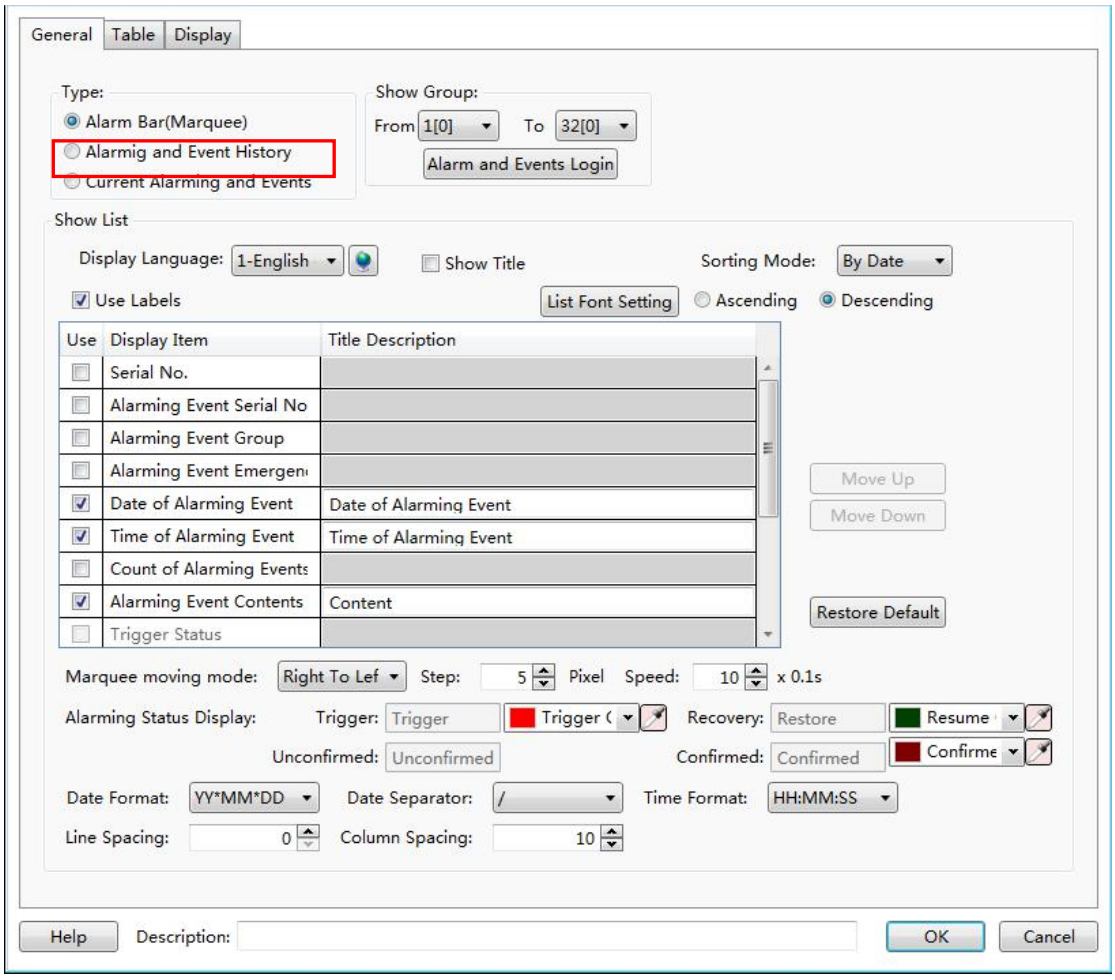
The option"Export CSV" is referred to:Detailed manual/ General functions/ Drawing/ Export CSV.

- **Display**

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Drawing/Display.

4.6.13.1.3 Alarm Bar (Marquee)

The "Alarm Bar" function is to display the alarms and events in a single line and in a marquee form. The scrolling direction, step and speed need to be set.A title can be chosen to display.



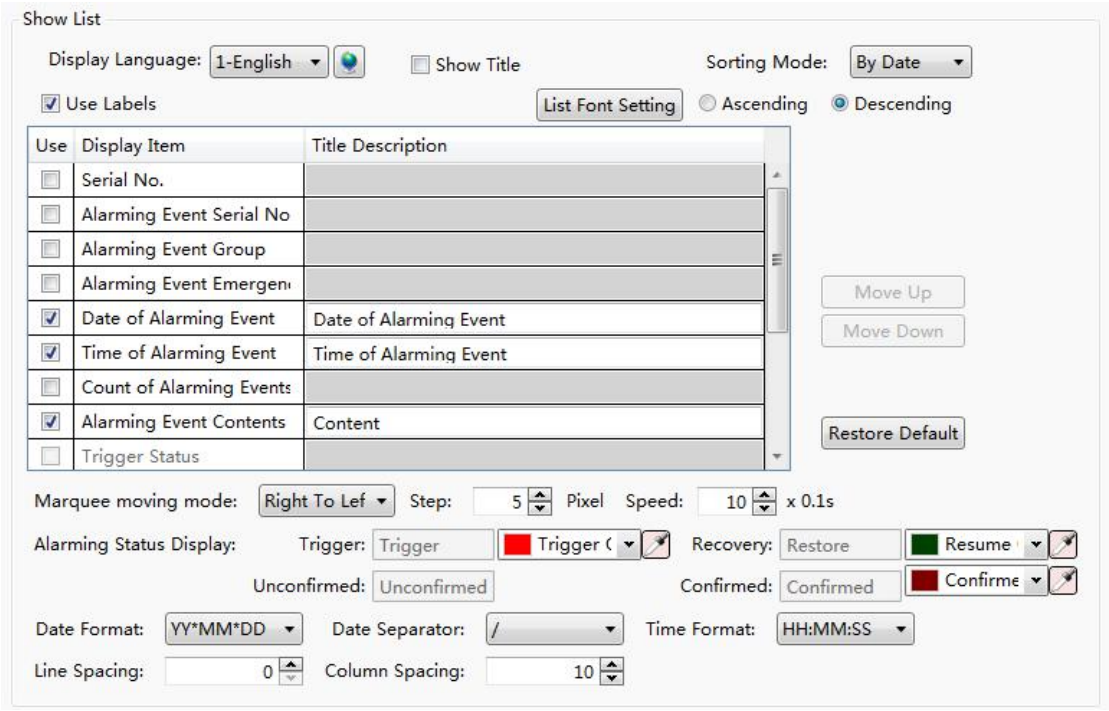
- **General**

➢ **Show Group**

The specified groups of the alarms and events will display in the Alarm Bar.

The alarms and events can be grouped when they are created. The range of groups is from 1 to 32. The alarm and event content can be set by clicking the button "Alarm and Events Login" or by double-clicking the "System Settings/Alarm and Event" in the project tree. The details are referred to:Detailed manual/Setup/System Settings/Alarm and Event.

➢ **Show List**



"Display Language"

The "Display Language" is selected to switch the current display language for editing the Title Description. The details are referred to: Detailed manual/Setup/System Settings/Language Settings.

"Show Title"

The option "Show Title" is checked by default.If you do not want to display the title bar, you can remove the check.

"List Font Setting"

The button "List Font Setting" is used to set the font of the title bar. The details are referred to: Detailed manual/ General functions/ Drawing/ Font settings.

“Sorting Mode"

The "Sorting Mode" sets the arrangement order of the alarms and events.

If you set "By Date" and select the option "Descending", the latest event will be displayed on the top.

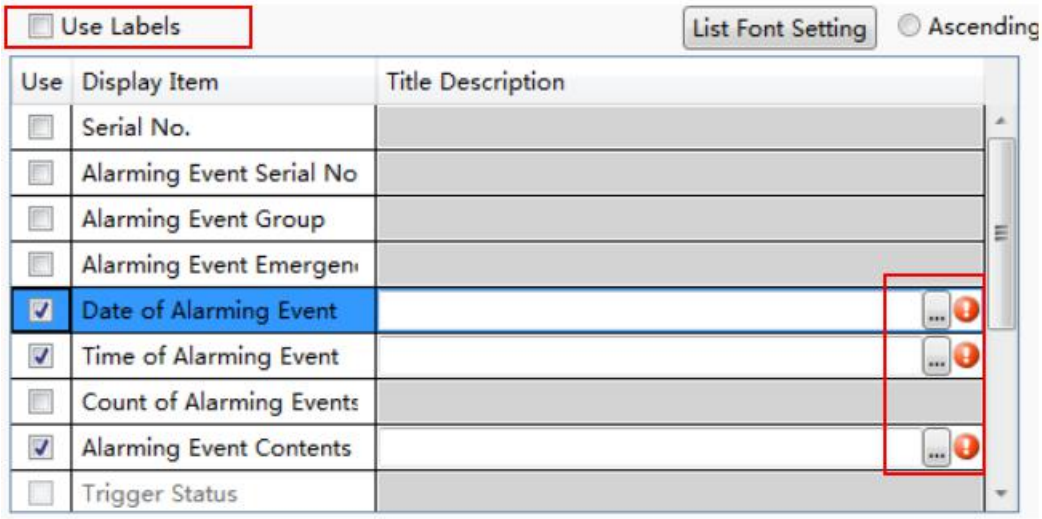
If you set "By Level" and select the option "Descending", the higher level events are displayed on the top.

If you select the option "Ascending", the display order is inverse.

"Use Labels"

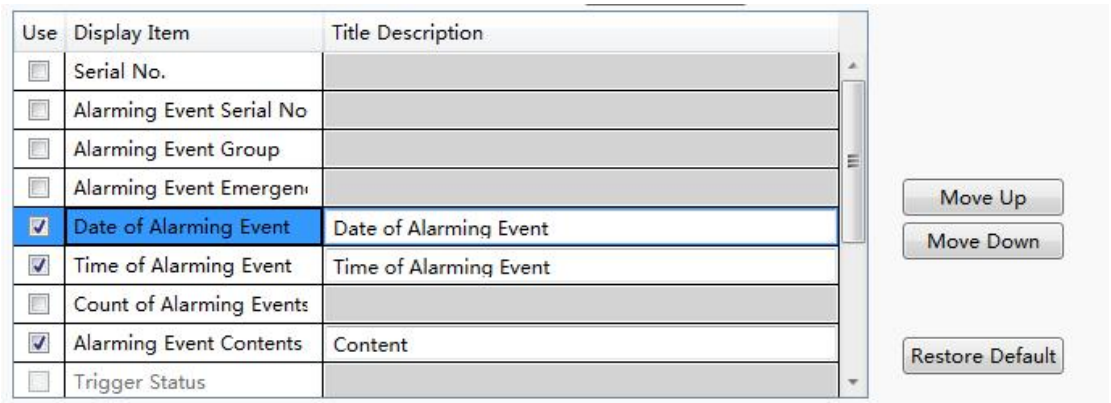
If you check the option "Use Labels", the contents of the "Title Description" can use the default or you can edit them.

If you don't check the option "Use Labels", the contents of the "Title Description" can be set by using the text in the text library. It is shown as below.You can click the button "..." to open the text library and select the required text. The details of the Text Library are referred to:Detailed manual/Library/Text Library.



"List settings"

The title bar contents of the alarm bar are set in the below table. The contents of the title bar can be set to display by checking it. But the gray Display Items cannot be checked.



You can use the button "Move Up" or "Move Down" to modify the order of the display items arrangement. The content on the to prow will display on the left of the alarm bar. You can restore the default arrangement by clicking the button "Restore Default ".

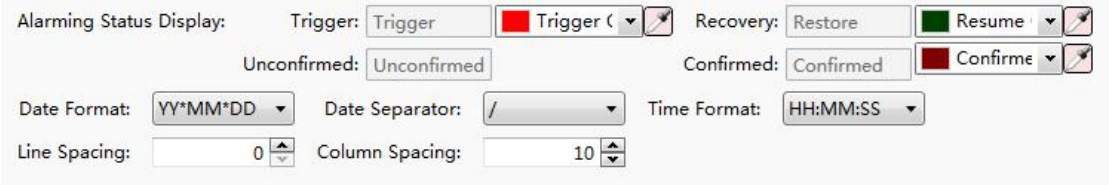
"Marquee moving mode"

You can set the scrolling direction of the alarm contents, the step size (Step: 1 to 255 pixels), and the scrolling speed (Speed: 1 to 255*0.1s).

"Alarm Status Display"

The alarm bar only displays the triggered alarms and events. So only the Trigger Color can be changed.

"Date Format"



The "Date Format" is used to set the sort order of year (YY), month (MM) and day (DD). The "Date Separator" is used to set the separator among year,month and day. The "Time Format" is used to set the time display format.

"Line Spacing and Column Spacing"

The "Line Spacing" and the "Column Spacing"are to set the ranks spacing of the alarm bar. The unit is pixel and the range is 0-255.

- **Table**

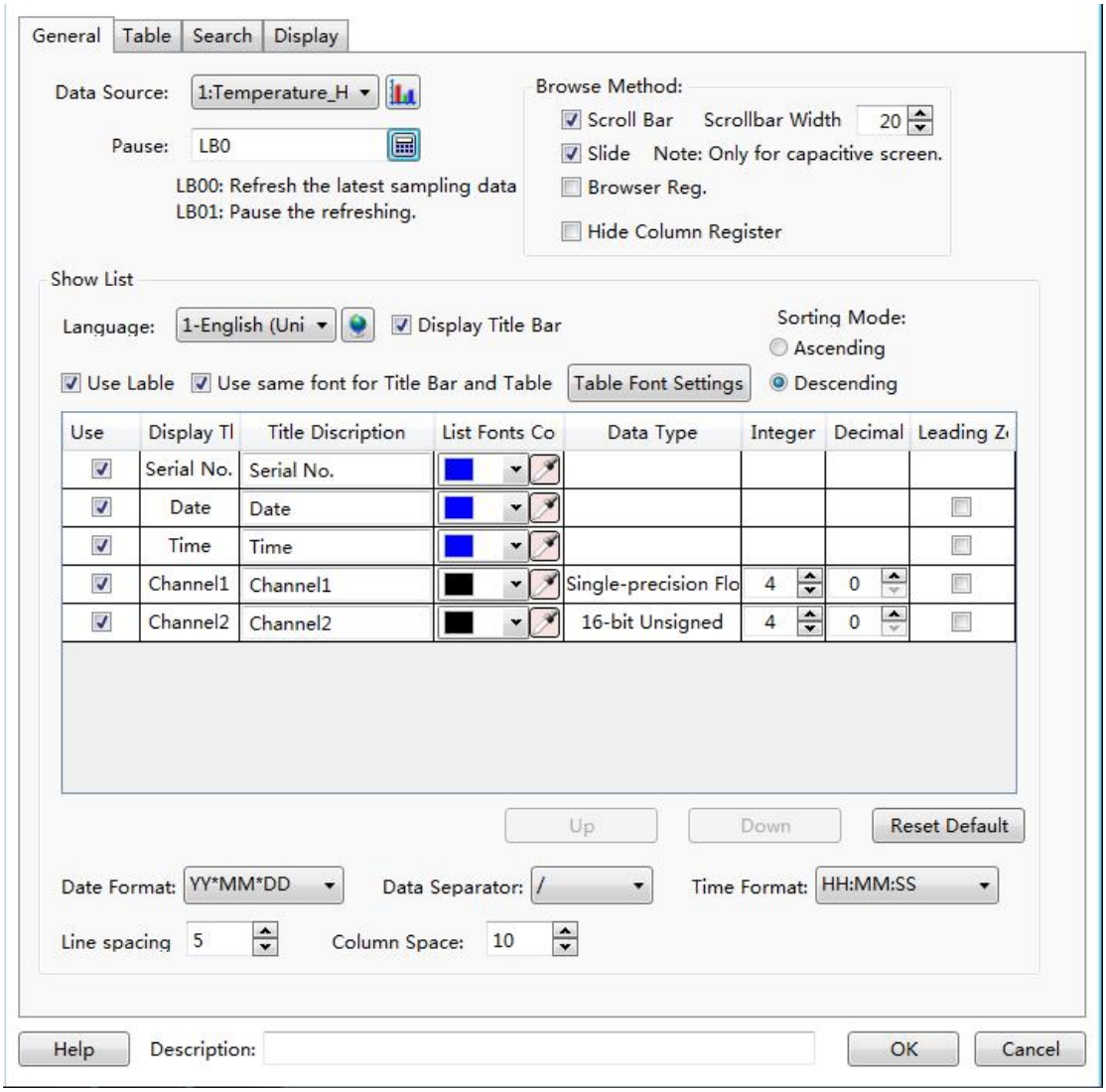
The settings of the "Table" property TAB are referred to: Detailed manual/General functions/Drawing/Table Drawing.

- **Display**

The settings of the "Display" property TAB are referred to: Detailed manual/General functions/Drawing/Display.

4.6.13.2 Historical Data Display

The function of the "Historical Data Display" is to display the sampling data in tabular form. The display is continuously refreshed according to the specified sampling frequency.



4.6.13.2.1 General

- **Data Source**

Select a data sampling from the pull-down list.If there is no data sampling, you can quickly build one by clicking the button "  ". The details are referred to: Detailed manual/Setup/System Settings/Data Sampling.

- **Pause**

A bit register address can be set to pause or start the display of the historical data sampling.

For example: set a bit address LB0 for the option "Pause". Then when LB0 is OFF, the latest data sampling is refreshed. When LB0 is ON, the refreshing is paused.

Note:

The refreshing is paused, but sampling is not stopped. All sampling data will be refreshed.

- **Browse Method**

The "Browse Method" includes "Scroll Bar", "Slide", "Browser" and "Hide Column Register".

➢ **Scroll Bar**

When checking the option"Scroll Bar", the list will appear scroll bar for viewing. The scroll bar width can be customized. The unit is pixel.

➢ **Slide**

You can check the option "Slide" in order to view by sliding the screen. This function is supported by the capacitive screen devices.

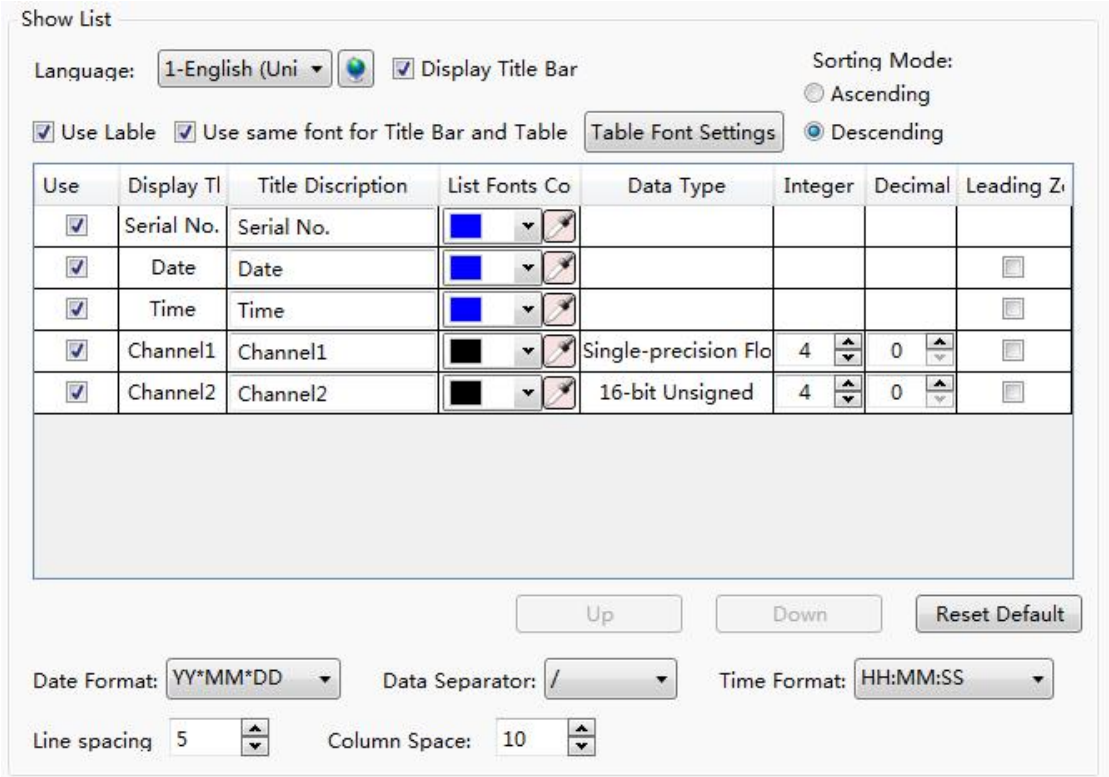
➢ **Browser**

The option "Browser" can be checked when you need to view multiple pages. A word register needs to be specified to define the current page. The default is that 0 represents the records on the current day, 1 represents the records on yesterday, 2 represents the records on the day before yesterday, and so on. The word register input is referred to: Detailed manual/General functions/Address editor/Standard Byte Address Input.

➢ **Hide Column Register**

If you check the option "Hide Column Register", a word register can be set. The value of the word register is used to control the display or hiding of each column.

- **Show List**



➢ **Language**

The "Display Language" is selected to switch the current display language for editing the Title Description. The details are referred to: Detailed manual/ Setup/ System Settings/ Language Settings.

➢ **Display Title Bar**

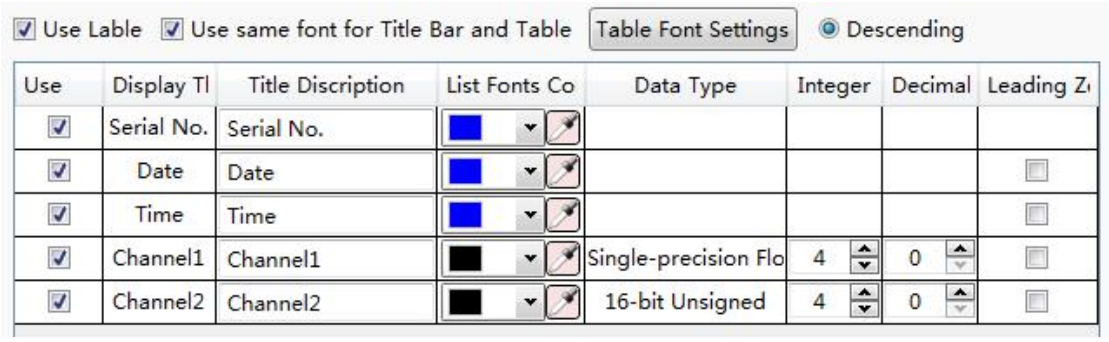
The option "Display Title Bar" is checked by default.If you do not want to display the title bar, you can remove the check.

➢ **Table Font Settings**

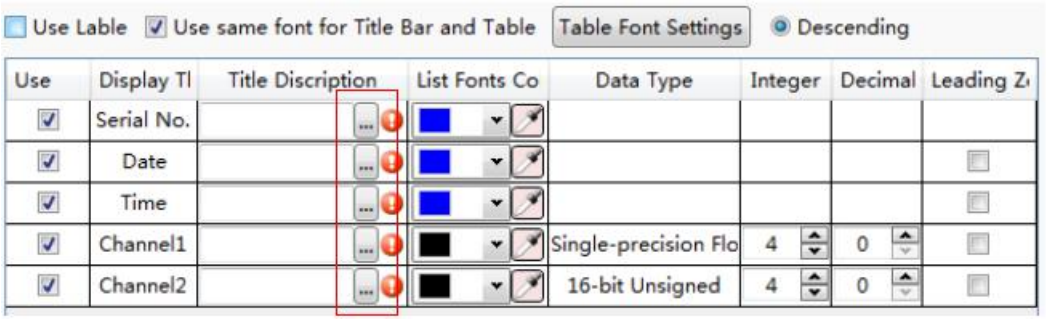
It is used to set the font of the title bar. The details are referred to: Detailed manual/General functions/Drawing/Font settings.

➢ **Use Label**

By default, the option "Use Label" is checked.The contents of the "Title Description" can use the default or you can edit them. It is shown as below.



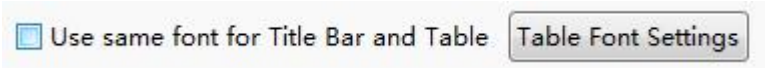
If you don't check the option "Use Label", the contents of the "Title Description" can be set by using the text in the text library. It is shown as below.You can click the button "  " to open the text library and select the required text. It is shown as below.



The details of the Text Library are referred to:Detailed manual/Library/Text Library.

➢ **Use same font for Title Bar and Table**

By default, the font of the contents in the list is same to the font of the title bar.If you want to define the font of the contents in the list, you can remove the check and set the font by clicking the button "Table Font Settings".

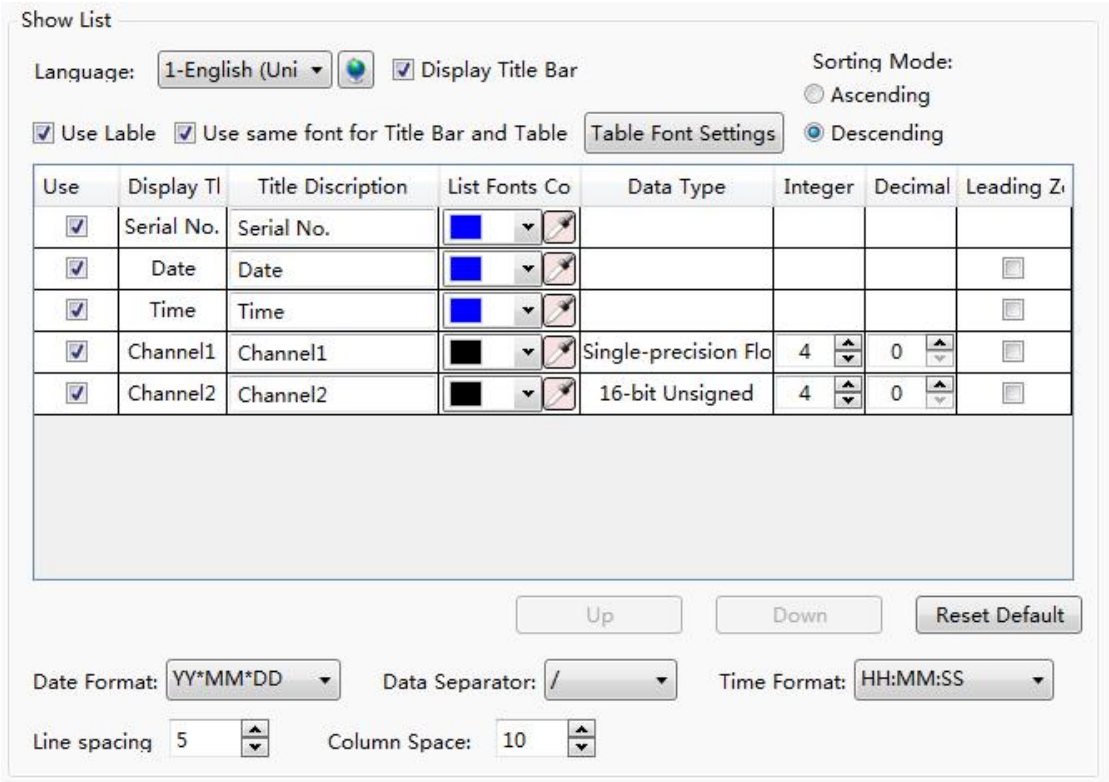


The details are referred to: Detailed manual/General functions/Drawing/Font settings.

- **Sorting Mode**

There are two Sorting Modes: Ascending and Descending.When the option "Ascending" is selected, the oldest record is displayed in the first row. When the option "Descending" is selected, the newest record will display on the first row.

- **List Settings**



- Language

The **Display Language** is selected to switch the current display language for editing the Title Description. The details are referred to: Detailed manual/ Setup/ System Settings/ Language Settings.

- Display Title Bar

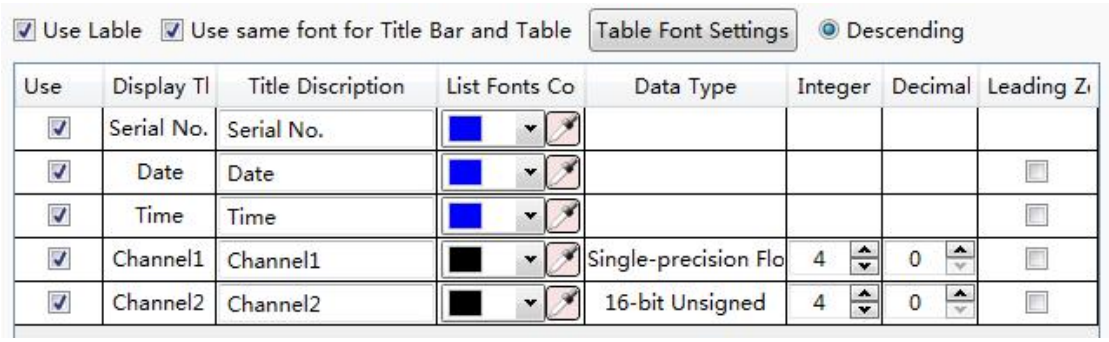
The option **Display Title Bar** is checked by default. If you do not want to display the title bar, you can remove the check.

- Table Font Settings

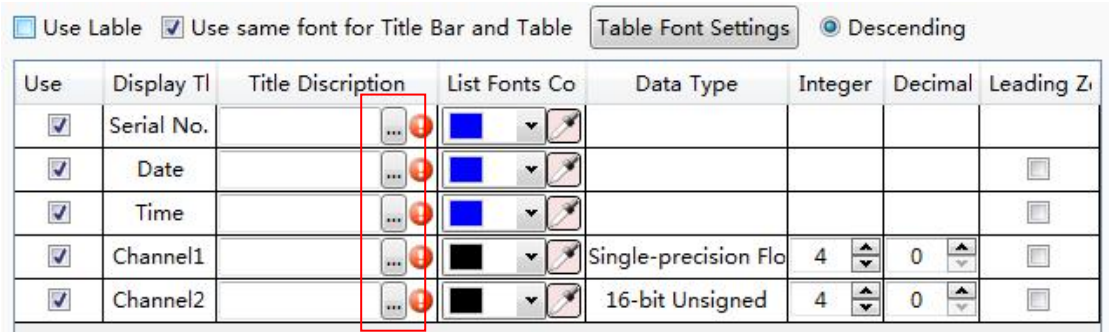
It is used to set the font of the title bar. The details are referred to: Detailed manual/General functions/Drawing/Font settings.

- Use Label

By default, the option **Use Label** is checked. The contents of the **Title Description** can use the default or you can edit them. It is shown as below.



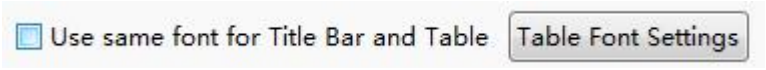
If you don't check the option **Use Label**, the contents of the **Title Description** can be set by using the text in the text library. It is shown as below. You can click the **button**  to open the text library and select the required text. It is shown as below.



The details of the Text Library are referred to: Detailed manual/Library/Text Library.

- Use same font for Title Bar and Table

By default, the font of the contents in the list is same to the font of the title bar. If you want to define the font of the contents in the list, you can remove the check and set the font by clicking the button **Table Font Settings**.

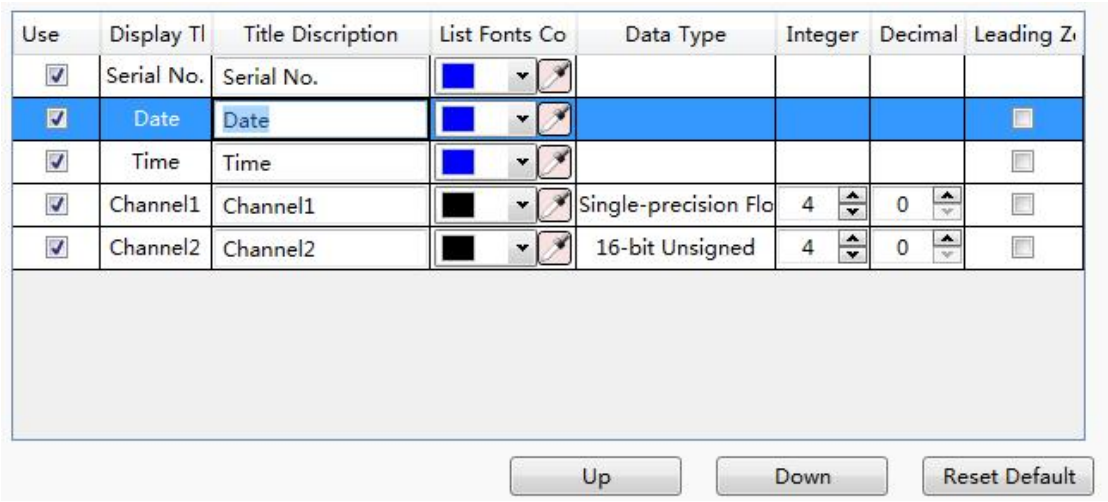


The details are referred to: Detailed manual/General functions/Drawing/Font settings.

- Sorting Mode

There are two Sorting Modes: Ascending and Descending. When the option **Ascending** is selected, the oldest record is displayed in the first row. When the option **Descending** is selected, the newest record will display on the first row.

- List Settings



You can select the required contents to display in the title bar by checking in the **Use** column. For the order of the contents arrangement, you can use the button **Move Up** or **Move Down** to modify it. The content on the to prow will display on the left of the Historical Data Display List. You can restore the default arrangement by clicking the button Restore **Default**.

- Date and Time Format

The **Date Format** is used to set the sort order of year (YY), month (MM) and day (DD). The **Date Separator** is used to set the separator among year, month and day. The **Time Format** is used to set the time display format.

- Line Spacing and Column Space

The **Line Spacing** and the **Column Space** are to set the ranks spacing of the alarm list. The unit is pixel and the range is 0-255. The line space is a unified value, and the column space can be set one by one and can be set to the same value.

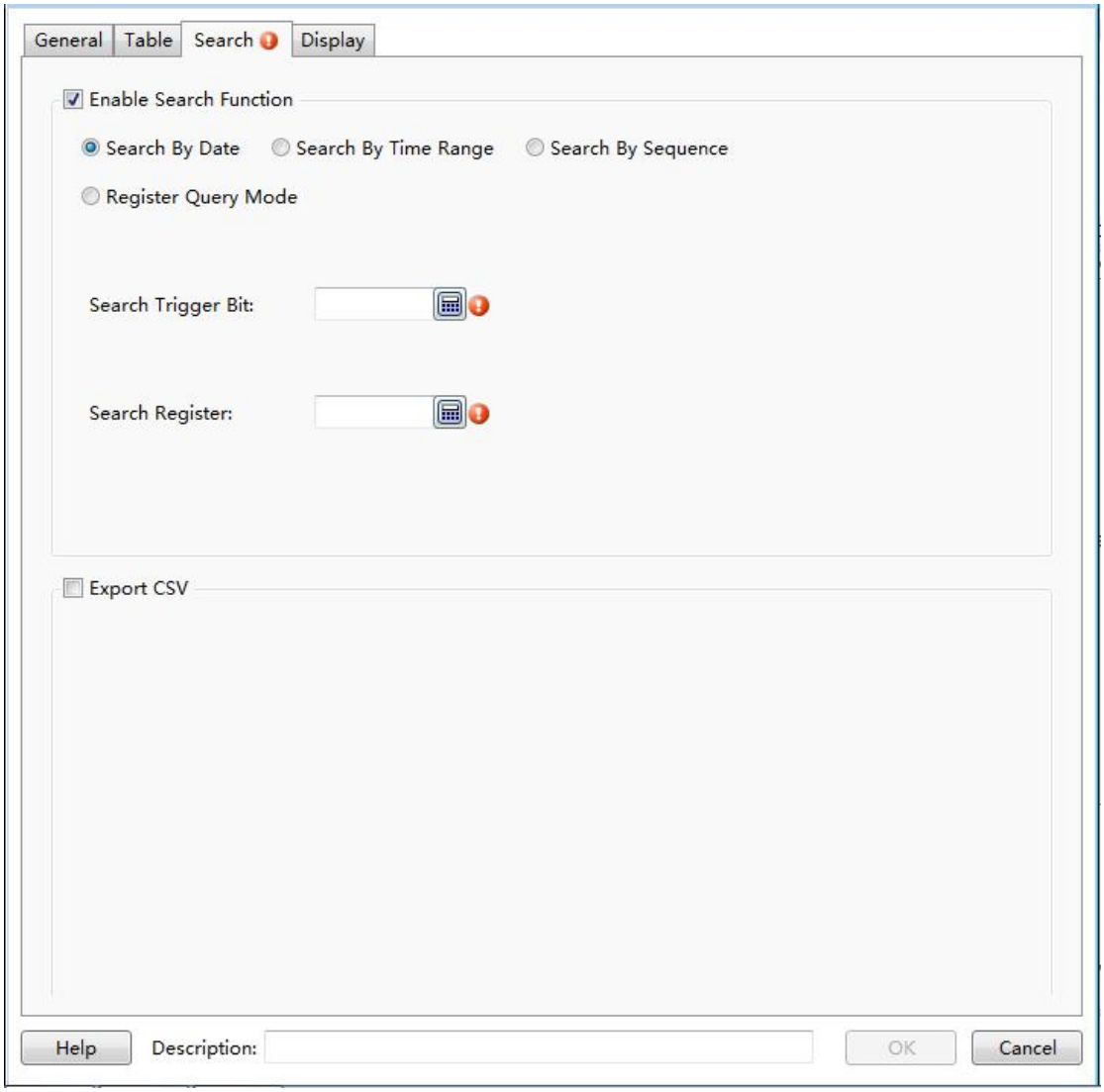
4.6.13.2.2 Table

The settings of the **Table** property TAB are referred to: Detailed manual/ General functions/ Drawing/ Table Drawing.

4.6.13.2.3 Search

- Enable Search Function

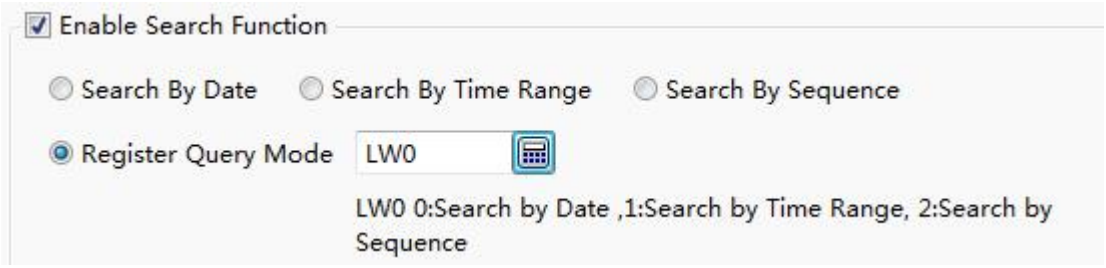
Check the option **Enable Search Function** to use the search function.



➢ Search mode

There are four search modes supported: **Search By Date**, **Search By Time Range**, **Search By Sequence** and **Register Query Mode**.

The **Register Query Mode** is a dynamic search mode. You can specify a word register to dynamically adjust the search mode. If the word register is 0, the **Search By Date** mode is used. If it is 1, the S**earch By Time Range** mode is used. If it is 2, the **Search By Sequence** mode is used. The word register address input method is referred to: **Detailed manual/General functions/Address editor/Standard Byte Address Input.**



- Search Trigger Bit

The option **Search Trigger Bit** is used to specify a bit register to trigger the search function. Note that the search function is not edge-triggered mode. When set the trigger bit 1, the alarm list displays the filtered results. After setting the trigger bit 0, the list will display the results which are not filtered. The bit address input method is referred to: Detailed manual/General functions/Address editor/Standard Bit Address Input.

- Search Register

The **Search Register** is used to specify the first word register address for the search function. The number of the word registers is depending on the search mode. The function of the word registers used to search is different for the different search mode. You can get the information of the used word registers according to the text displayed under the first word register address. The word address input method is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.

- Export CSV

The option **Export CSV** is referred to: Detailed manual/ General functions/ Drawing/ Export CSV.

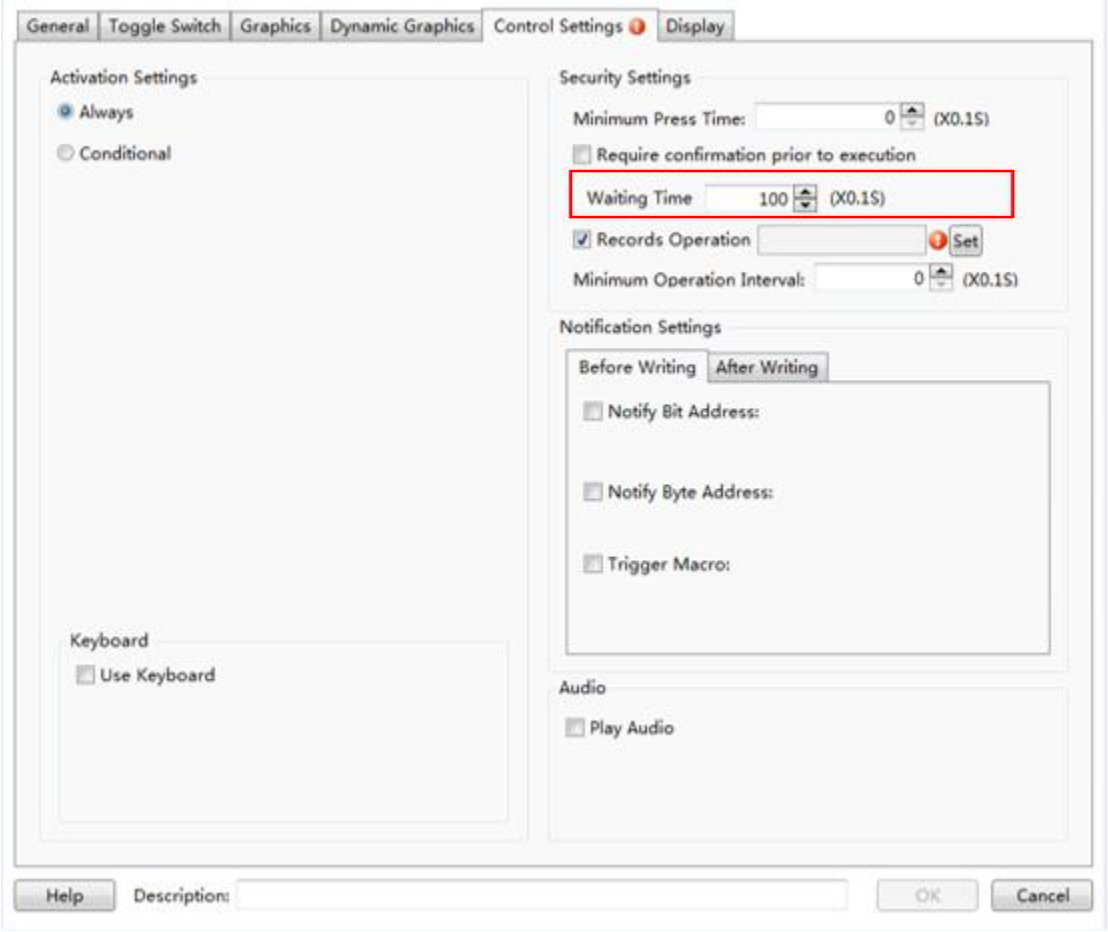
4.6.13.2.4 Display

The settings of the Display property TAB are referred to: Detailed manual/General functions/Drawing/Display.

4.6.13.3 Operator Log

The function of the **Operation Log** is to record the required detailed operation of the HMI device, such as a button is triggered at a certain time, a value is modified at another certain time, and so on. The Operation Log component displays the detailed operating records in the list form. You can search the records or export them.

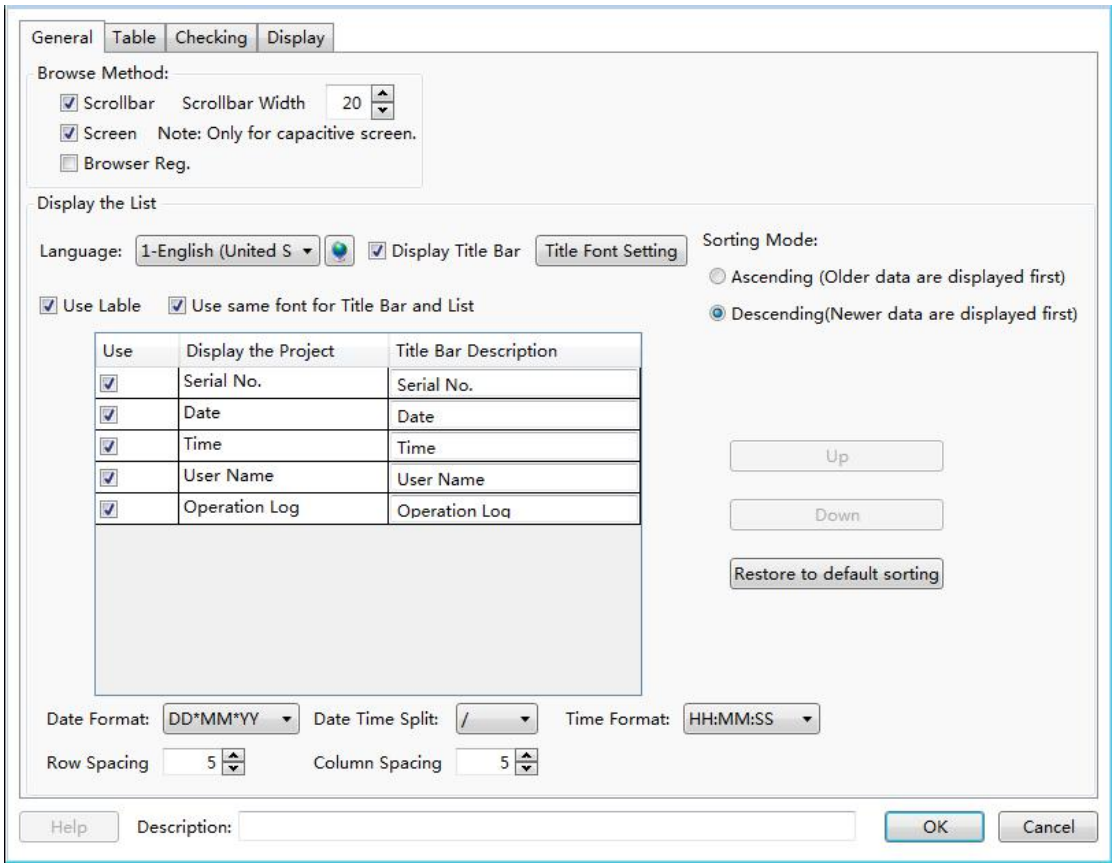
Note 1: For the created components, the operations are not recorded by default. To record the operation of a component, check the **Records Operation** option in the **Control Settings** property TAB and click the button **Set** to set the operation information. The details are referred to: Detailed manual/General functions/Drawing/Control settings and Detailed manual/General functions/Drawing/Label.



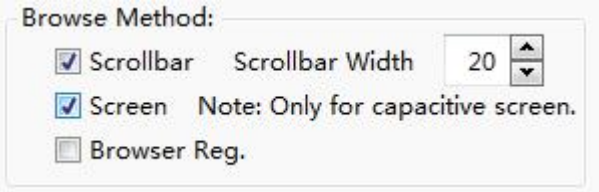
Note 2: Only when the user privilege is enabled and a user logs in, the operator user name will be recorded and displayed. When the user privilege is not enabled or there is no user to log in, the user name is displayed a blank in the operation records.

4.6.13.3.1 General

The general attributes of the **Operator Log** are set in the **General** property TAB.



- Browse Method



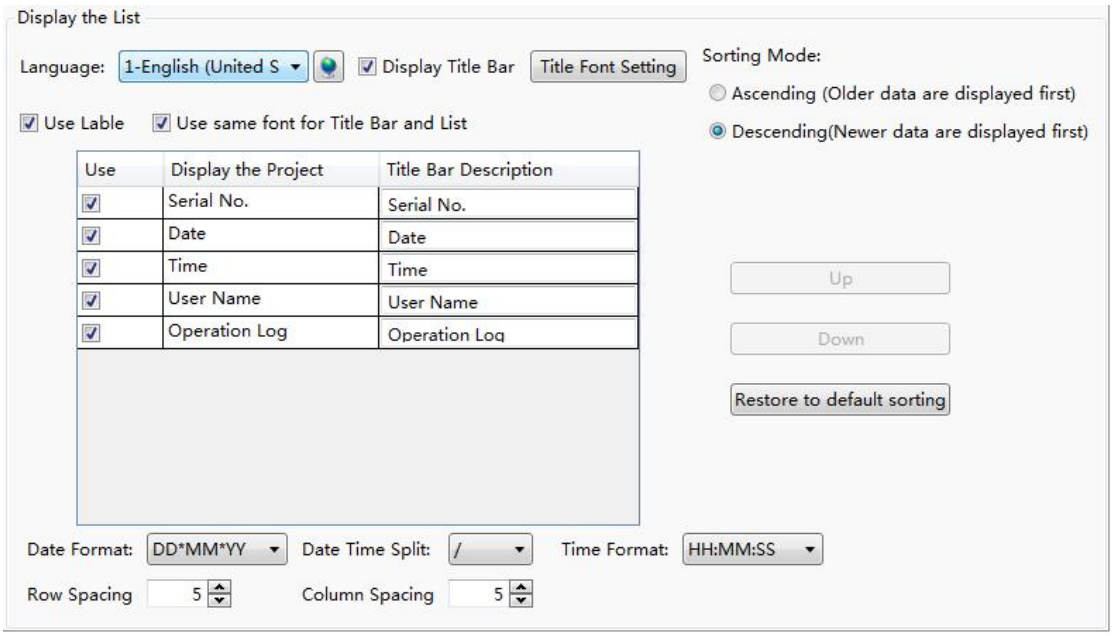
There are three browse methods: **Scroll bar**, **Screen** and **Browser**.

The scroll bar will display in the alarm list if you check the option **Scroll bar**. You can view the alarms by using the scroll bar. The "Scroll bar Width" needs to be set. The unit of it is pixel.

You can check the option **Screen** in order to view the records by sliding the screen. This function is supported by the capacitive screen devices.

The option **Browser** can be checked when you need to view multiple pages. A word register needs to be specified to define the current page. The default that 0 represents the records on the current day, 1 represents the records on yesterday, 2 represents the records on the day before yesterday, and so on. The word register input is referred to: Detailed manual/General functions/Address editor/Standard Byte Address Input.

- Display the list



➢ Language

The **Language** is selected to switch the current display language for editing the Title Description. The details are referred to: Detailed manual/ Setup/ System Settings/ Language Settings.

➢ Display Title Bar

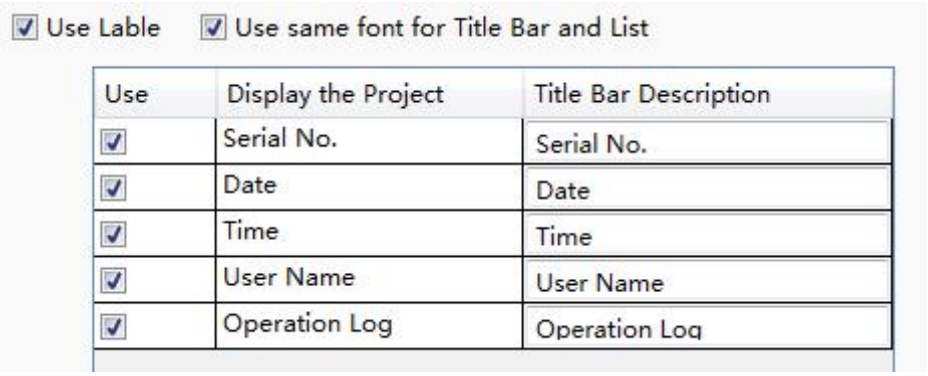
The option **Display Title Bar** is checked by default. If you do not want to display the title bar, you can remove the check.

➢ Title Font Setting

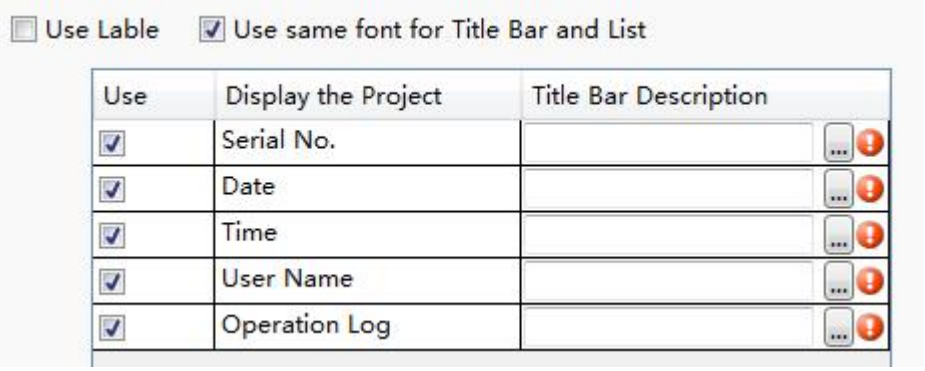
It is used to set the font of the title bar. The details are referred to: Detailed manual/General functions/Drawing/Font settings.

➢ Use label

By default, the option **Use Label** is checked. The contents of the **Title Bar Description** can use the default or you can edit them. It is shown as below.



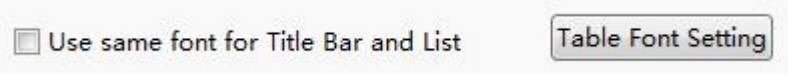
If you don't check the option **Use Label**, the contents of the **Title Bar Description** can be set by using the text in the text library. It is shown as below. You can click the **button "..."** to open the text library and select the required text. It is shown as below.



The details of the Text Library are referred to: Detailed manual/Library/Text Library.

- Use same font for Title Bar and List

By default, the font of the contents in the list is same to the font of the title bar. If you want to define the font of the contents in the list, you can remove the check and set the font by clicking the button **Table Font Settings**.

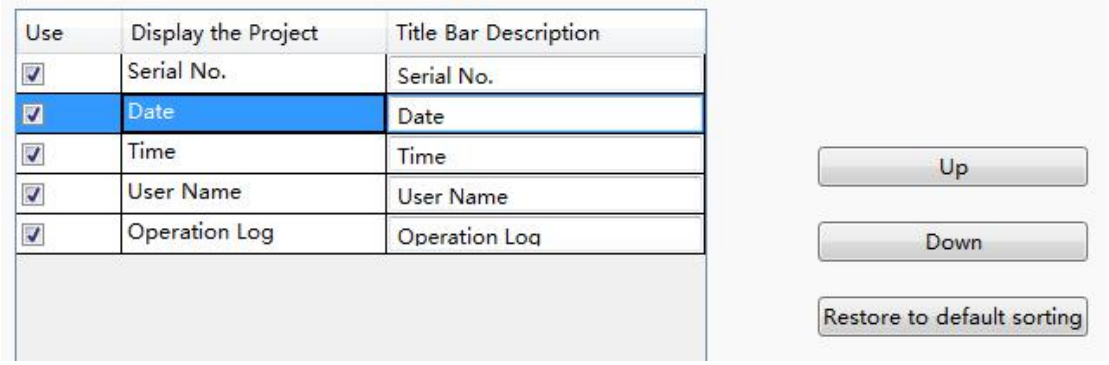


The details are referred to: Detailed manual/General functions/Drawing/Font settings.

- Sorting Mode

There are two Sorting Modes: Ascending and Descending. When the option **Ascending** is selected, the oldest record is displayed in the first row. When the option **Descending** is selected, the newest record will display on the first row.

- List Settings



You can select the required contents to display in the title bar by checking in the **Use** column. For the order of the contents arrangement, you can use the button **Up** or **Down** to modify it. The content on the to prow will display on the left of the Operator Log List. You can restore the default arrangement by clicking the button "Restore to default sorting".

- Date and Time Format

The **Date Format** is used to set the sort order of year (YY), month (MM) and day (DD). The **Date Time Split** is used to set the separator among year, month and day. The **Time Format** is used to set the time display format.

- Row Spacing and Column Spacing

The **Row Spacing** and the **Column Spacing** are to set the ranks spacing of the operator log list. The unit is pixel and the range is 0-255.·

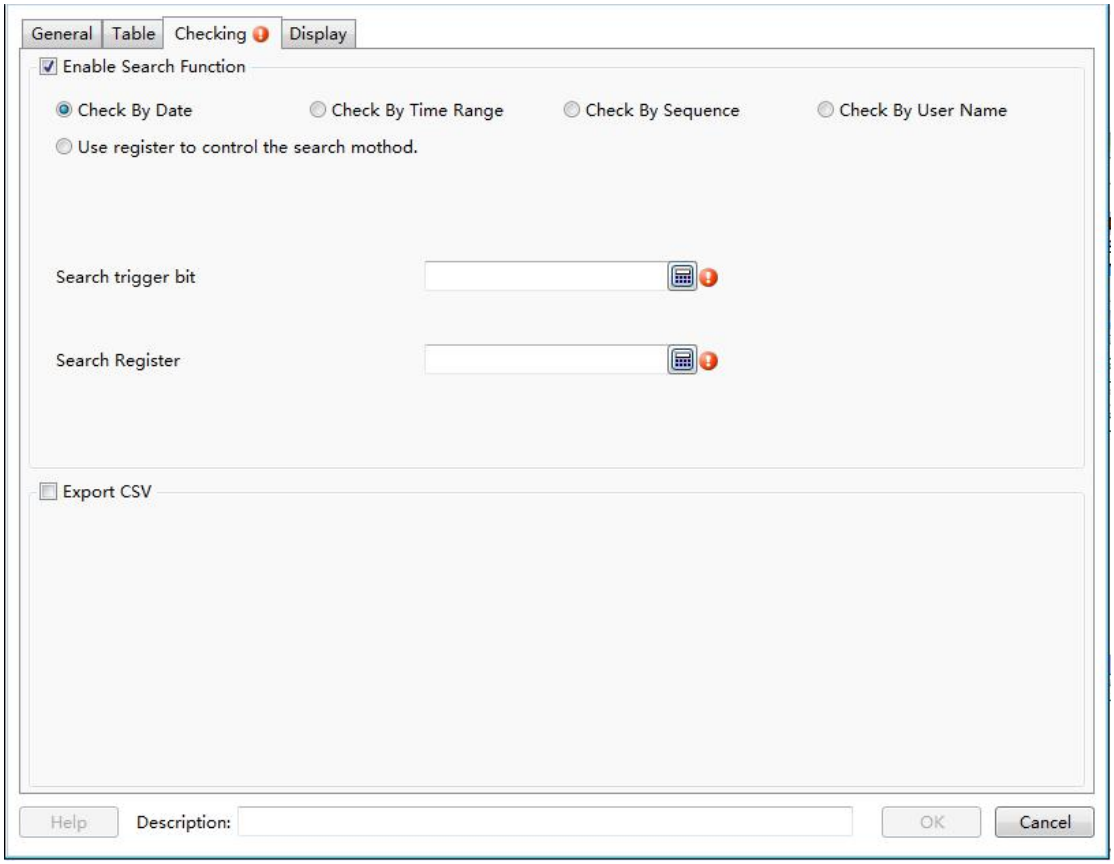
4.6.13.3.2 Table

The settings of the **Table** property TAB are referred to: Detailed manual/ General functions/ Drawing/ Table Drawing.

4.6.13.3.3 Checking

- Enable Search Function

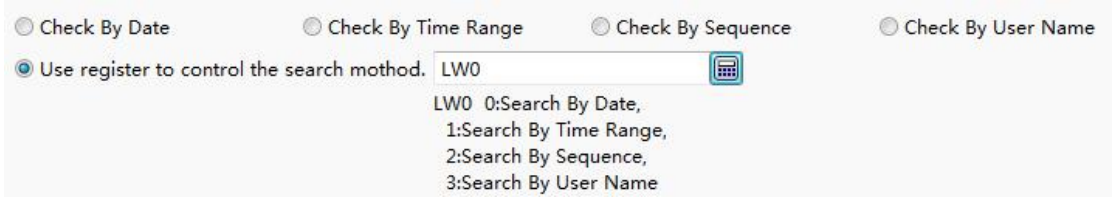
Check the option **Enable Search Function** to use the search function.



➢ Search mode

There are four fixed search modes supported: **Check By Date**, **Check By Time Range**, **Check By Sequence** and **Check By User Name**.

The **Use register to control the search method** is a dynamic search mode. You can specify a word register to dynamically adjust the search mode. If the word register is 0, the **Check By Date** mode is used. If it is 1, the **Check By Time Range** mode is used. If it is 2, the **Check By Sequence** mode is used. If it is 3, the **Check By User Name** mode is used. The word register address input method is referred to: Detailed manual/General functions/Address editor/Standard Byte Address Input.



➢ Search trigger bit

The option "Search trigger bit" is used to specify a bit register to trigger the search function. Note that the search function is not edge-triggered mode. When set the trigger bit 1, the alarm list displays the filtered results. After set the trigger bit 0, the list will display the results which are not filtered. The bit address input method is referred to: Detailed manual/General functions/Address editor/Standard Bit Address Input.

➢ Search Register

The **Search Register** is used to specify the first word register address for the search function. The number of the word registers is depending on the search mode. The function of the word registers used to **search is** different for the different search mode. You can get the information of the used word registers according to the text displayed under the first word register address. The word address input method is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.

- Export CSV

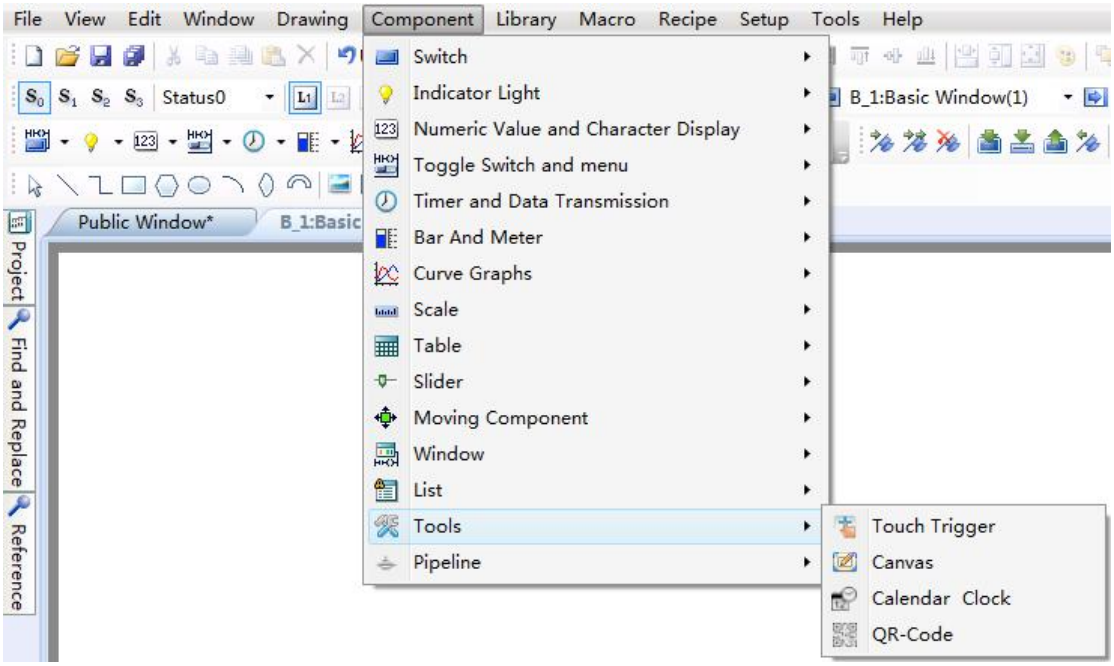
The option **Export CSV** is referred to: Detailed manual/ General functions/ Drawing/ Export CSV.

4.6.13.3.4 Display

The settings of the **Displa**y property TAB are referred to: Detailed manual/General functions/Drawing/Display.

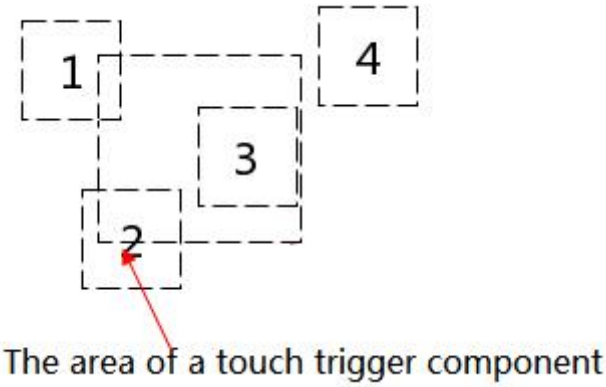
4.6.14 Tools

The **Tools** component includes **Touch Trigger**, **Canvas**, **Calendar Clock** and **QR-Code**.



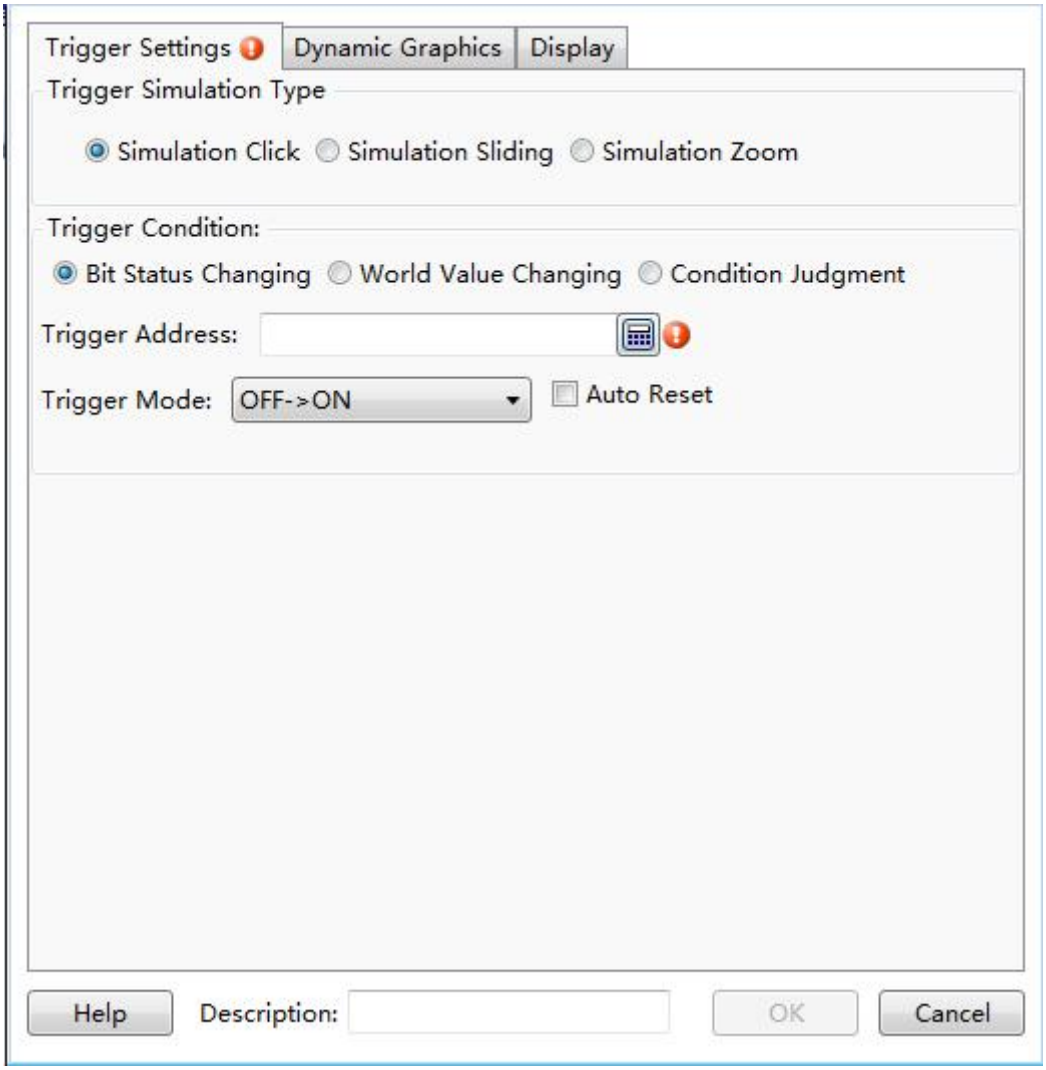
4.6.14.1 Touch Trigger

The **Touch Trigger** component can be used in the occasions that a component or more components can be triggered not by touching. That is, all components which occupy the active area of the touch trigger component can be triggered when the register specified by the touch trigger component meets the conditions.



As shown as above, when the trigger condition of the touch trigger component is met, the components 1,2 and 3 will be triggered, while component 4 will not be triggered.

The property page of the **Touch Trigger** component is shown as below.



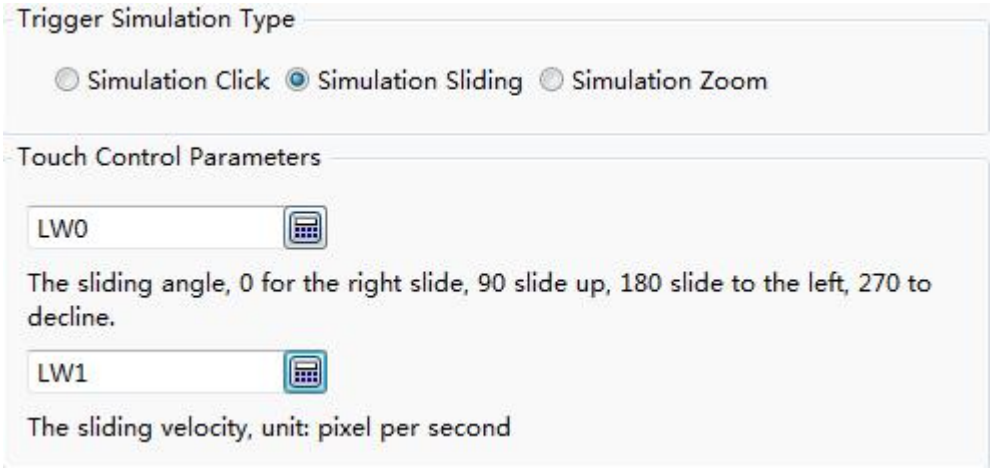
4.6.14.1.1 Trigger Simulation Type

The **Trigger Simulation Type** refers to the trigger type of the **Touch Trigger** component. It includes **Simulation Click**, **Simulation Sliding** and **Simulation Zoom**. They are corresponding to the trigger actions when the trigger conditions of the touch trigger component are met.

- Simulation Click

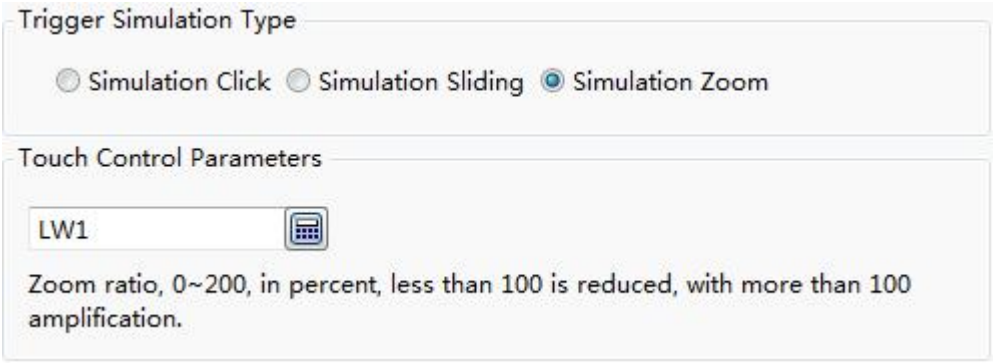
When the trigger conditions of the touch trigger component are met, the components which occupy the active area of the touch trigger component will execute the click action, such as clicking a switch button.

- Simulation Sliding



When the trigger conditions of the touch trigger component are met, the components which occupy the active area of the touch trigger component will execute the sliding action within this area. The sliding action is controlled by two word registers. The first word register controls the sliding angle, 0 for sliding to right, 90 for sliding up, 180 for sliding to left, 270 for sliding down. The second word register controls the sliding velocity. The sliding velocity unit is pixel per second. The address input of the word register is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.

- Simulation Zoom



When the trigger conditions of the touch trigger component are met, the components which occupy the active area of the touch trigger component will execute the zooming action within this area, such as viewing the trend curve by zooming.

The zoom ratio is controlled by a word register. The range of zoom ratio is 0-200, in percent. The value 1-200 is legal. It represents the zoom percentage which less than 100 is corresponding to reducing and more than 100 is corresponding to amplification. The address input of the word register is referred to: Detailed manual/ General functions/ Address editor/ Standard ByteAddress Input.

4.6.14.1.2 Triggering Condition

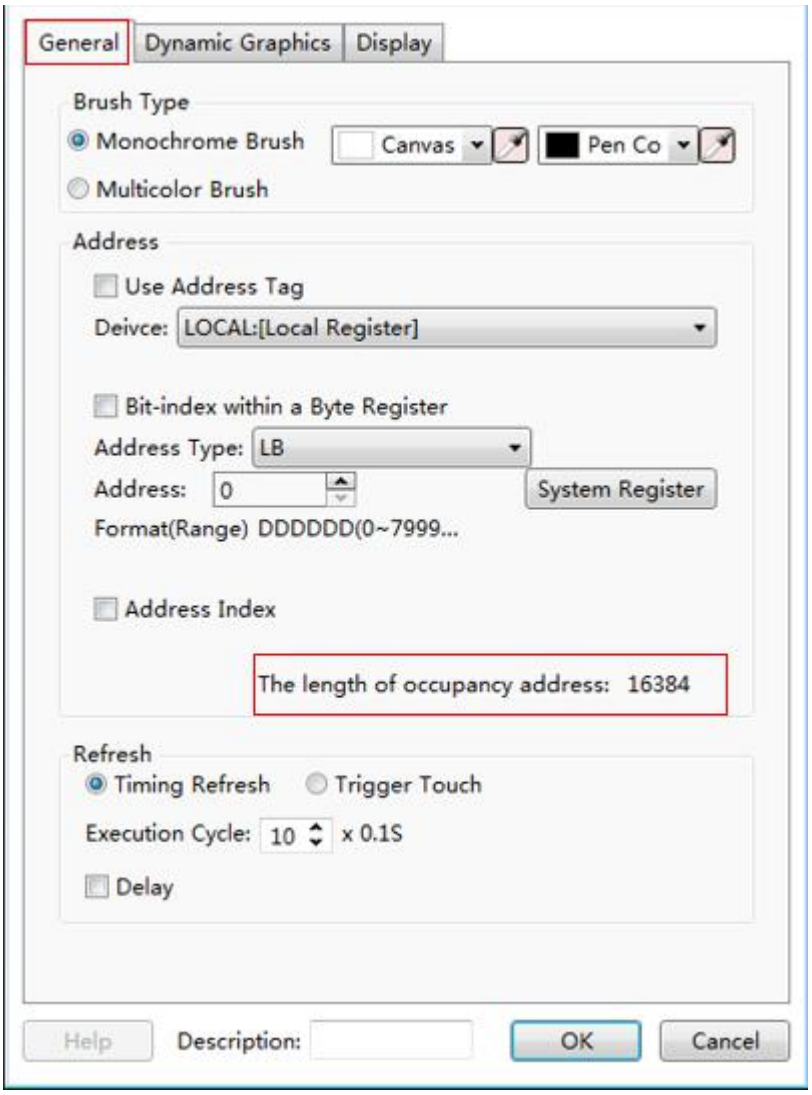
The **Trigger Condition** supports **Bit Status Changing**, **Word Value Changing** and **Condition Judgment**. The settings are referred to: Detailed manual/Component/Timer and Data Transmission/Timer.

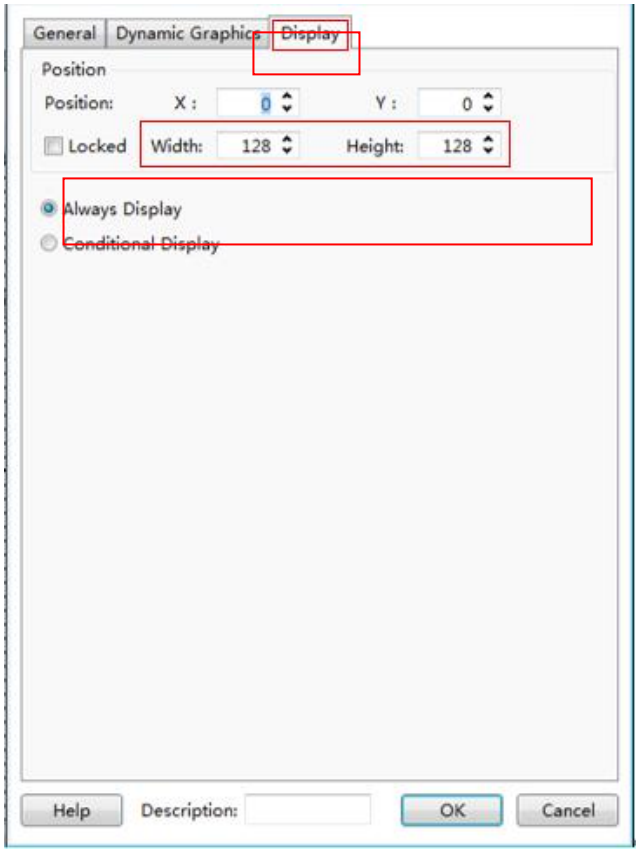
4.6.14.2 Canvas

The property page of the "Canvas" can be opened by clicking the menu command **Component/Tools/Canvas**.

4.6.14.2.1 Monochrome Brush

You can control the graphics canvas by bit registers. You can modify the canvas color and the pen color, as shown as below.



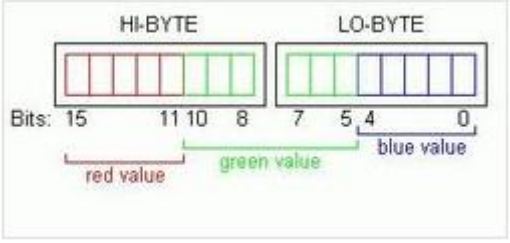


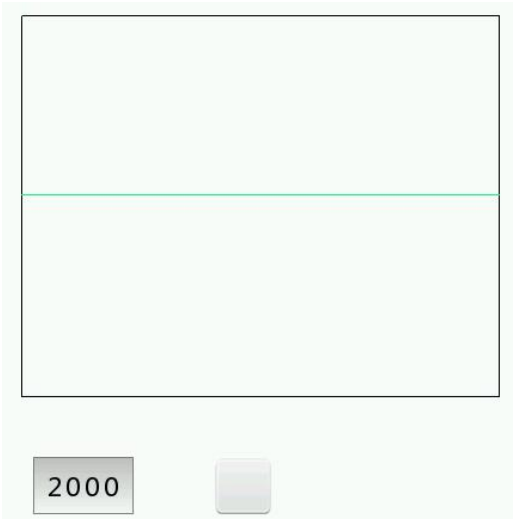
In the above settings, you can see that the Canvas Width is 128 and the Canvas Height is 128 in the **Display** property page. The size of the canvas is 128*128.So the occupied LB addresses number is 16384. It is displayed in the **General** property page. If any of the address LB0 ~ 160000 is 1, the corresponding pixel on the canvas is white. If it is 0, the corresponding pixel on the canvas is black. You can also check the **Bit-index within a Byte Register** to set the canvas. It is easy to program a complex graphic. You can set LW0=65535 (0xFFFF) directly if you want all LW0.0~ LW0.15 to be 1.

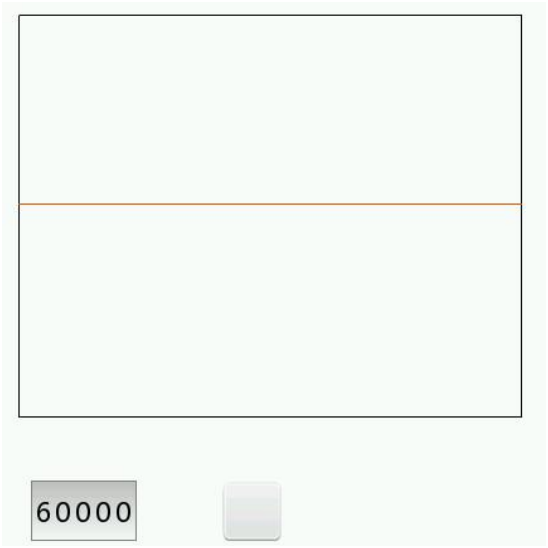
4.6.14.2.2 Multi color Brush

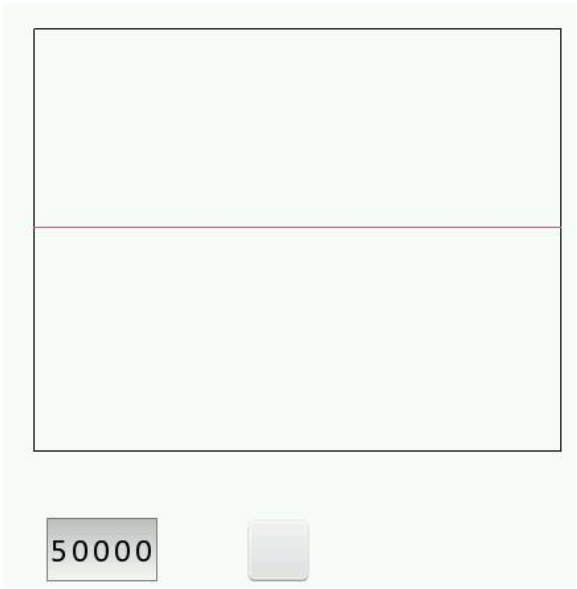
The settings of the **Multi color Brush** are similar to the monochrome brush. The default canvas color is white. Each pixel of the canvas is controlled by using word register addresses. The color of pen brush is based on the value of the corresponding word address according to the RGB565 form.

The RGB565 mode is a color mode which a pixel occupies two bytes. The first 5 bits in the low byte are used to indicate B (BLUE). The last 3 bits in the low byte + the first 3 bits in the high byte are used to indicate G (Green). The last 5 bits in the high byte are used to indicate R (RED).



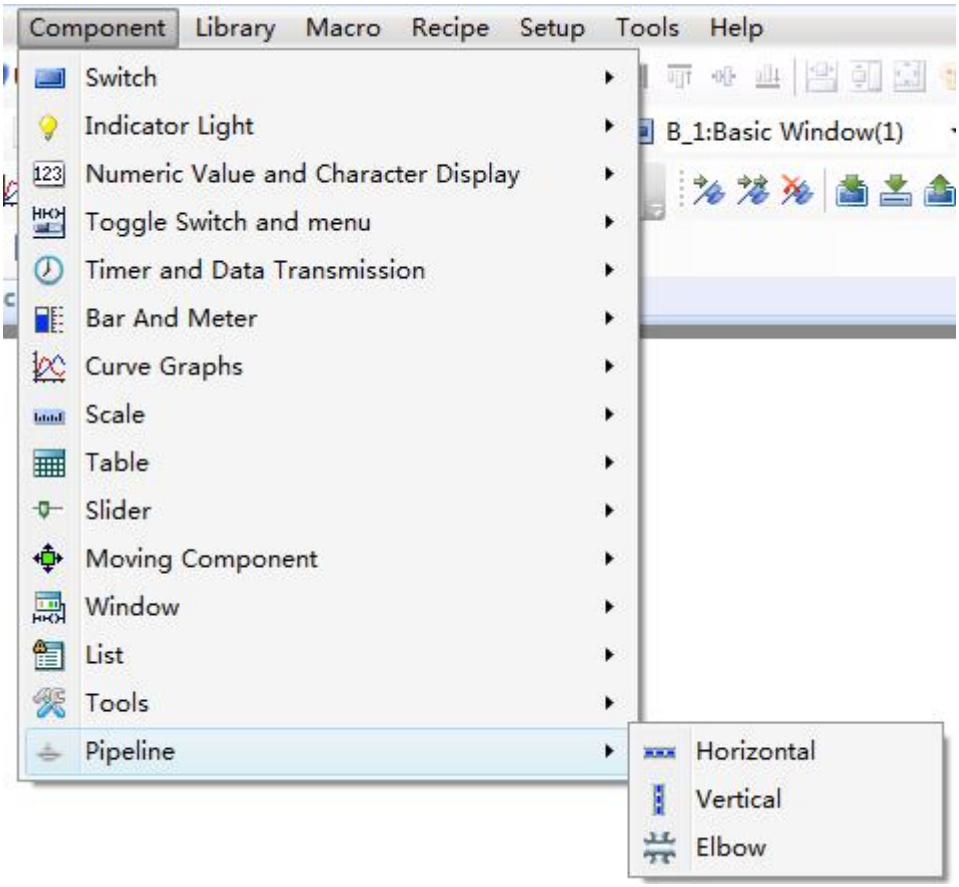

2000


60000


50000

4.6.15 Pipeline

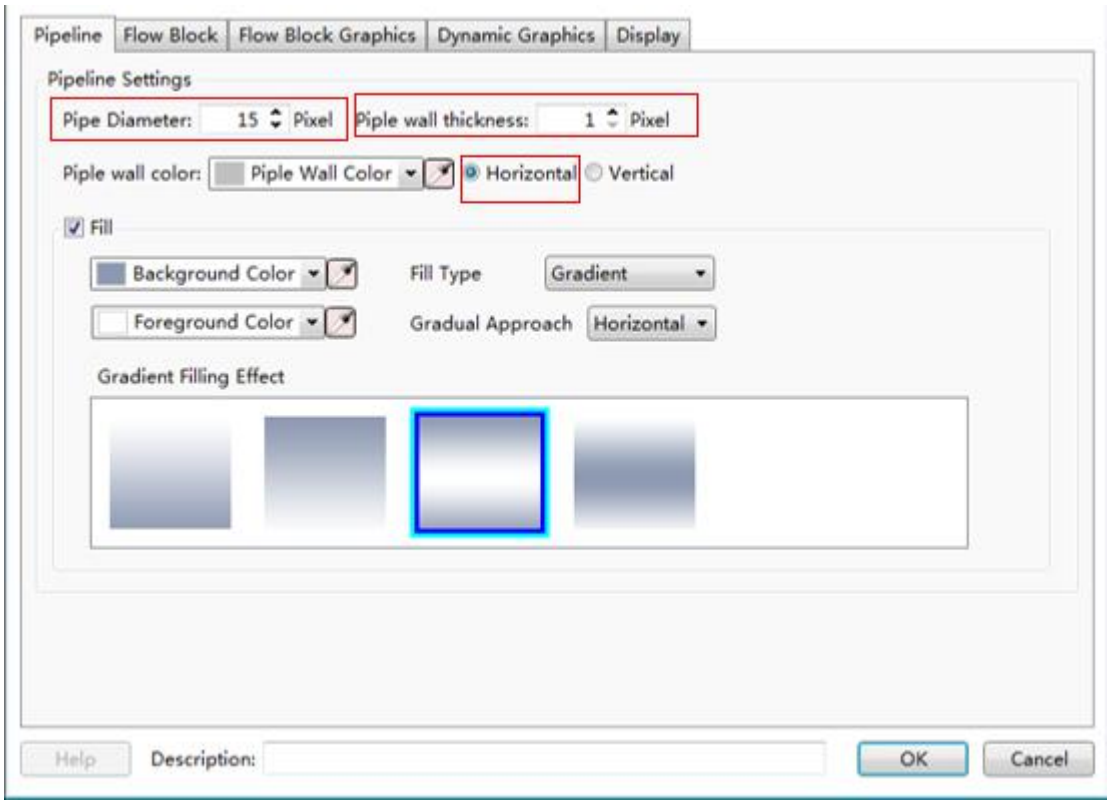
The **Pipeline** component includes three types: Horizontal, Vertical and Elbow.

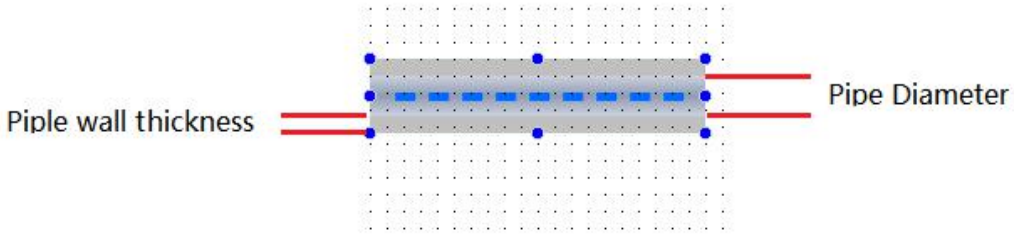


4.6.15.1 Horizontal

4.6.15.1.1 Pipeline

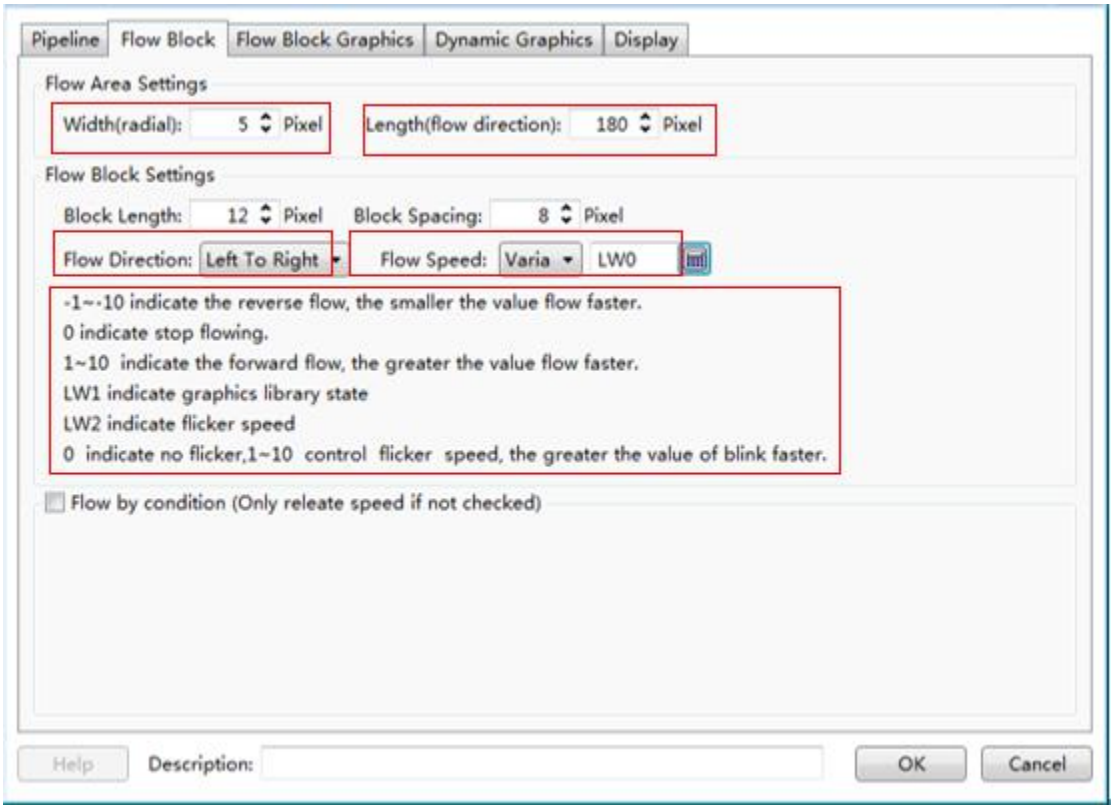
The Pipe Diameter and Pipe wall thickness should be given when you use a horizontal component. It is shown as below.

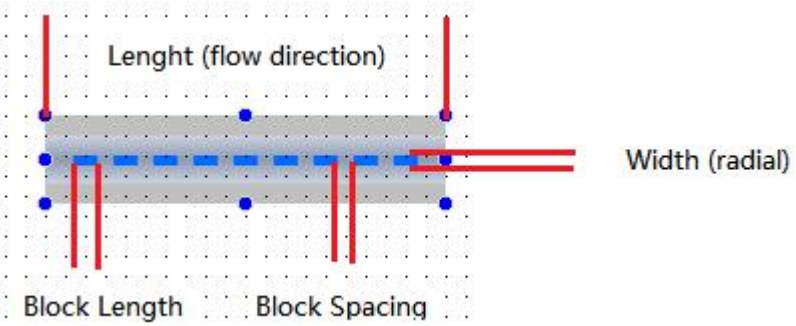




4.6.15.1.2 Flow Block

The **Flow Block** property page is mainly used to set the width and length of the pipe and the flow block. The flow direction and flow velocity parameters are also set here. It is shown as below.

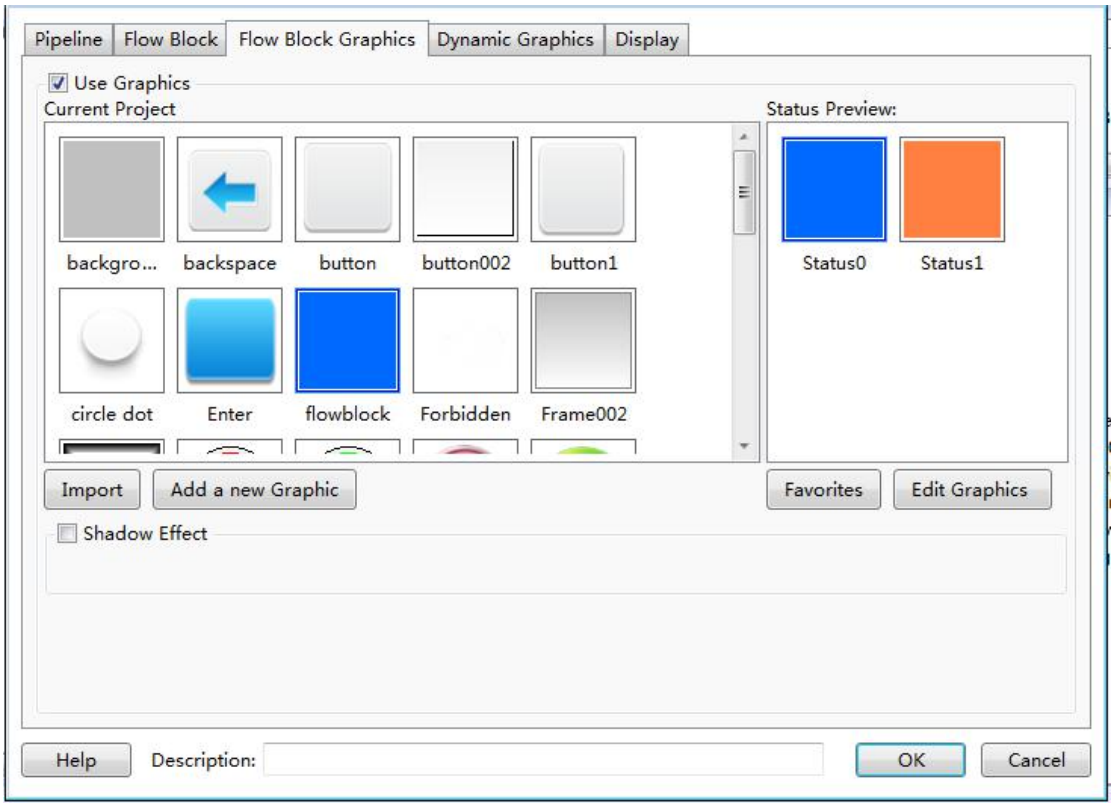




Note: For example, the system will use LW0, LW1 and LW2 to control the flow block of the pipe when the Flow Speed is set LW0.

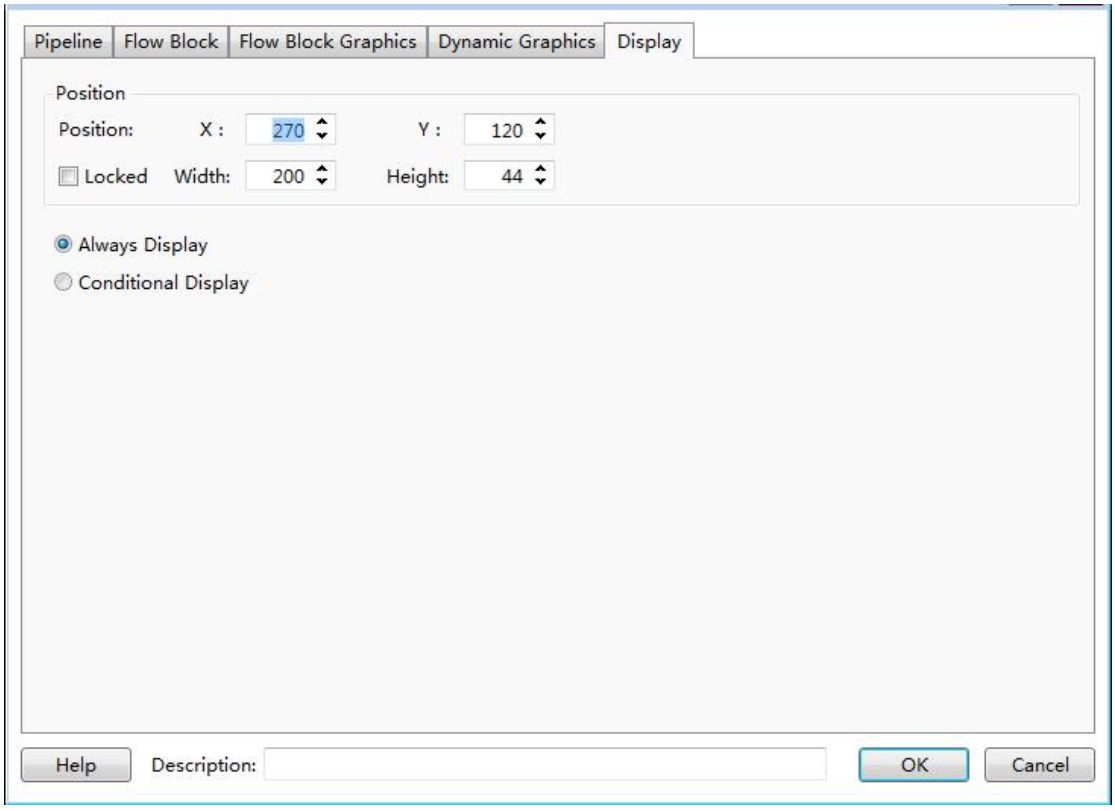
4.6.15.1.3 Flow Block Graphics

The graphic of the flow block is set here. You can edit the graphic and the display color in different status. It is shown as below.



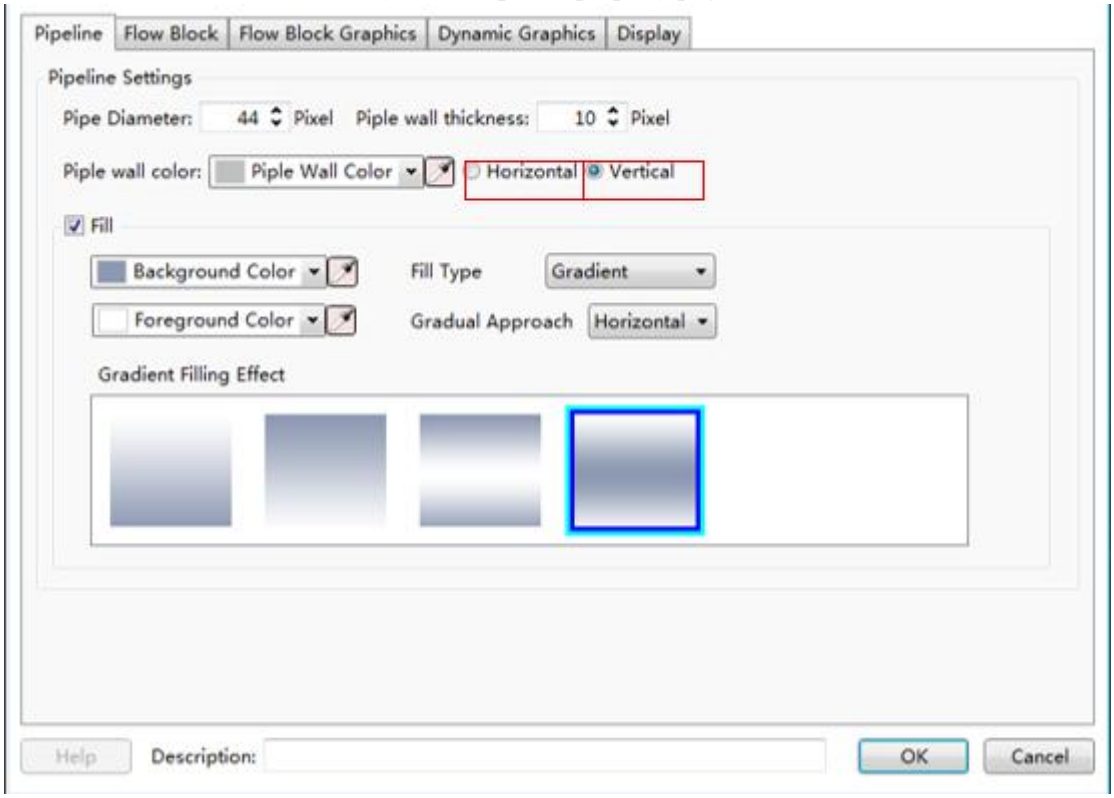
4.6.15.1.4 Display settings

The overall height and width of the pipeline component are set here. The settings are shown as below. Note that the **Width** of the component should be greater than the length of the flow block and the **Height** of the component should be greater than the diameter of the pipeline.



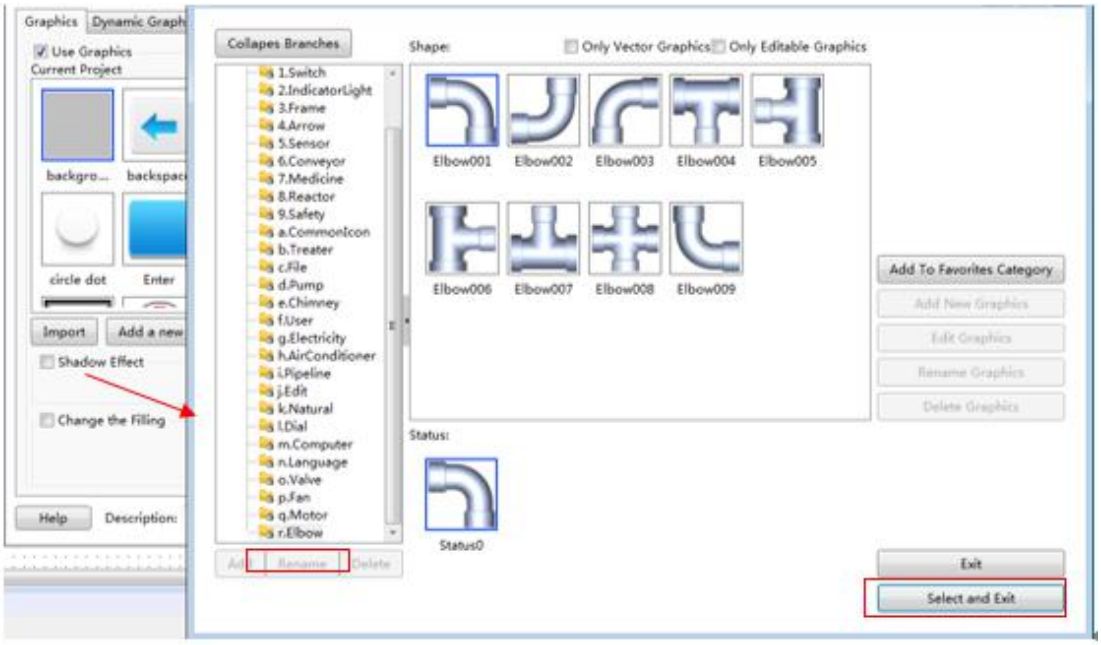
4.6.15.2 Vertical

The settings of a vertical pipeline are similar to a horizontal pipeline. The attribute of vertical or horizontal can be switched directly in the **Pipeline** property page. It is shown as below.



4.6.15.3 Elbow

It is mainly used to connect the horizontal pipeline and the vertical pipeline. There are many kinds of elbows in the graphics library. You can use it by clicking the button **Import** to select one to use. They are shown as below.

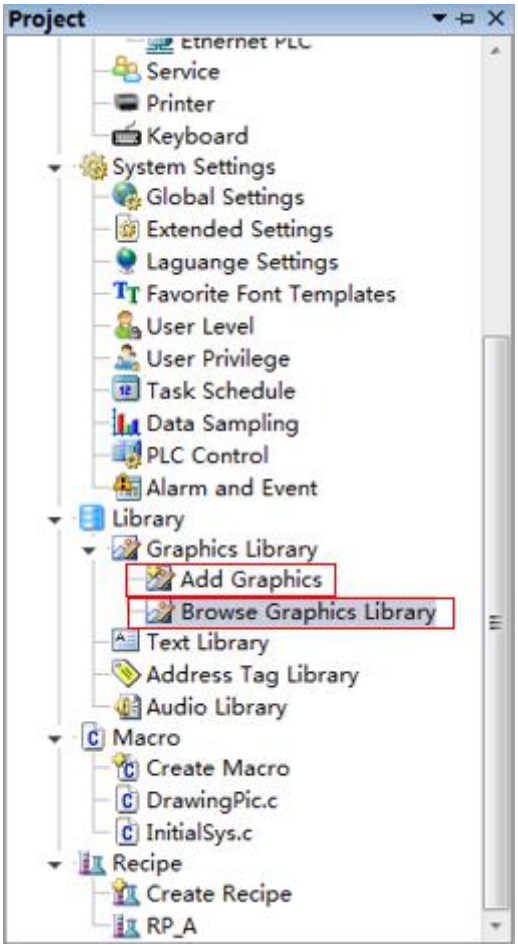


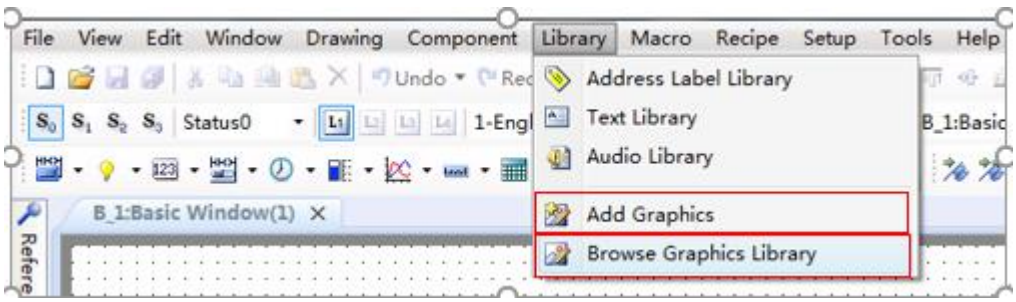
4.7 Library

4.7.1 Graphics Library

Many graphics need to be used in the project configuration. The VI20 Studio software has a graphics library which provides rich graphics. The users can also add their own pictures to the library to use.

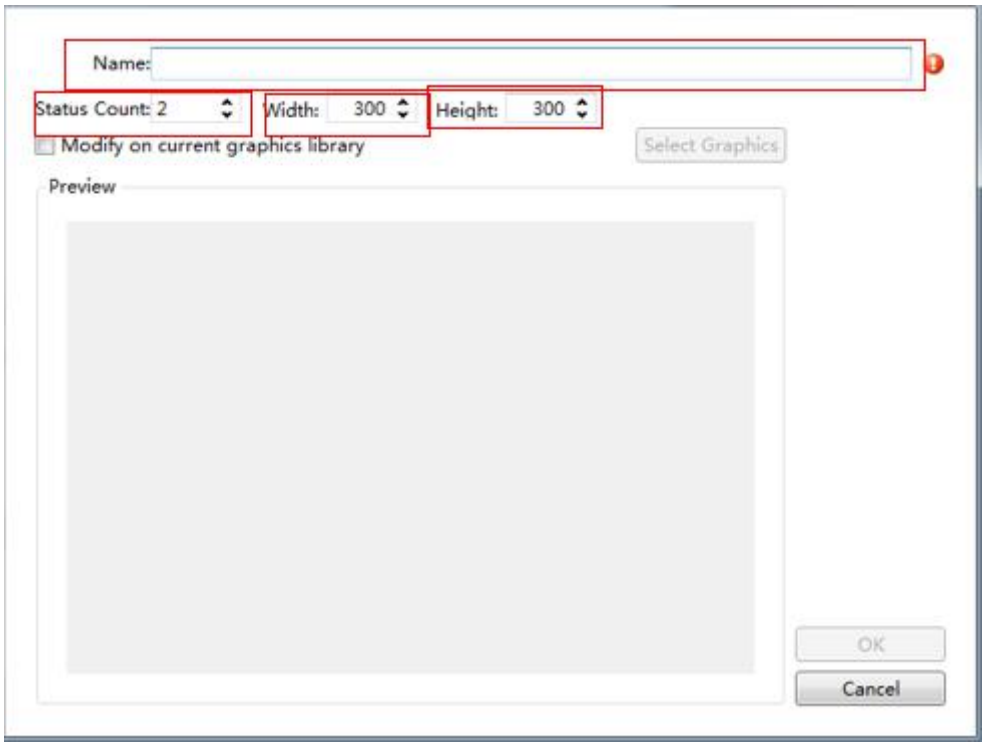
The commands of Graphics Library include **Add Graphics** and **Browse Graphics Library**. You can use any of these commands by clicking the menu command **Library/Add Graphics** or **Library/Browse Graphics Library**. You can also double-click the **Library/ Add Graphics** or **Library/ Browse Graphics Library** in the project tree.





4.7.1.1 Add Graphics

The "Add Graphics" window is shown as below.

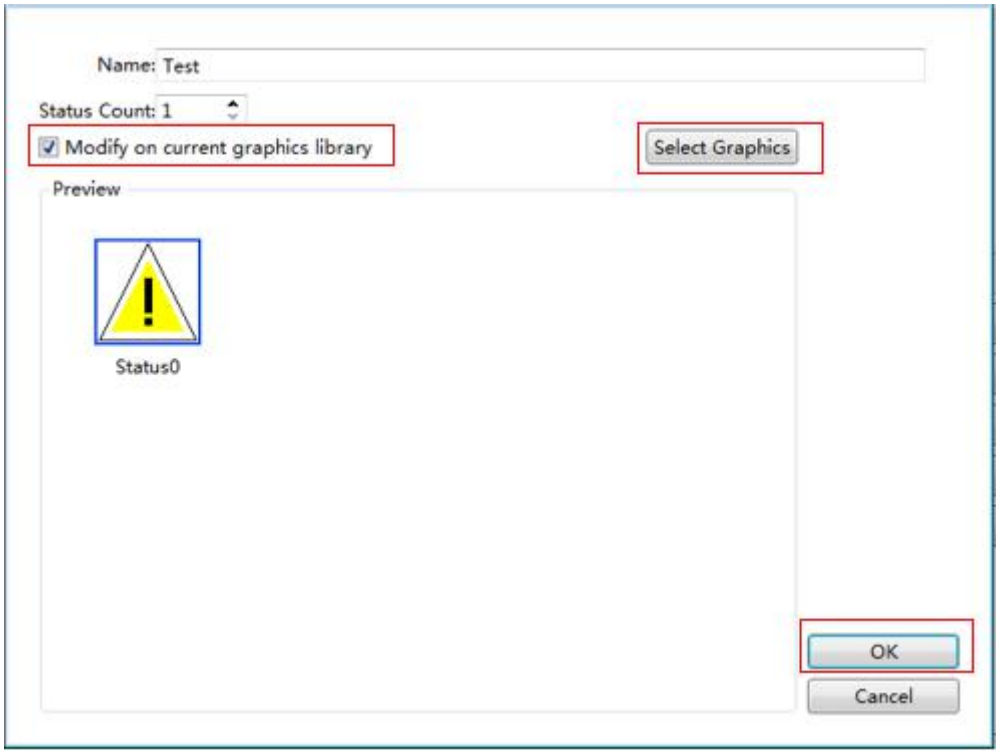


4.7.1.1.1 Name, Status Count, Width and Height

You need to give a name for the new added graphic. A graphic may have many statuses. You should set the number of the statuses for the option **Status Count**. And you should also set the Width and the Height for your graphic.

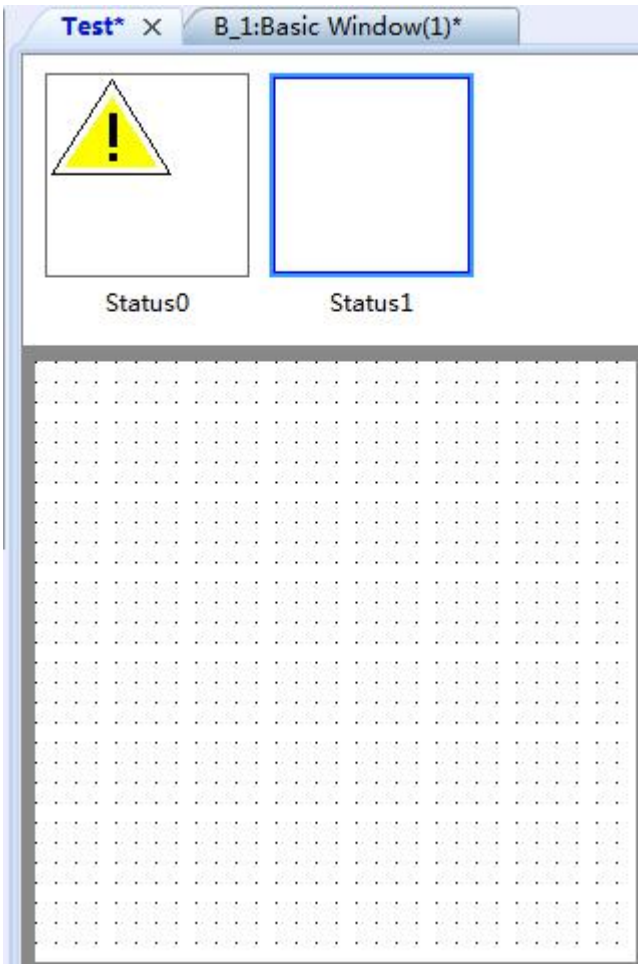
4.7.1.1.2 Modify on current graphics library

Please check the option **Modify on current graphics librar**y if you want to modify the selected graphic from the graphics library. Then you can click the button **Select Graphics** to select a graphic from the library.



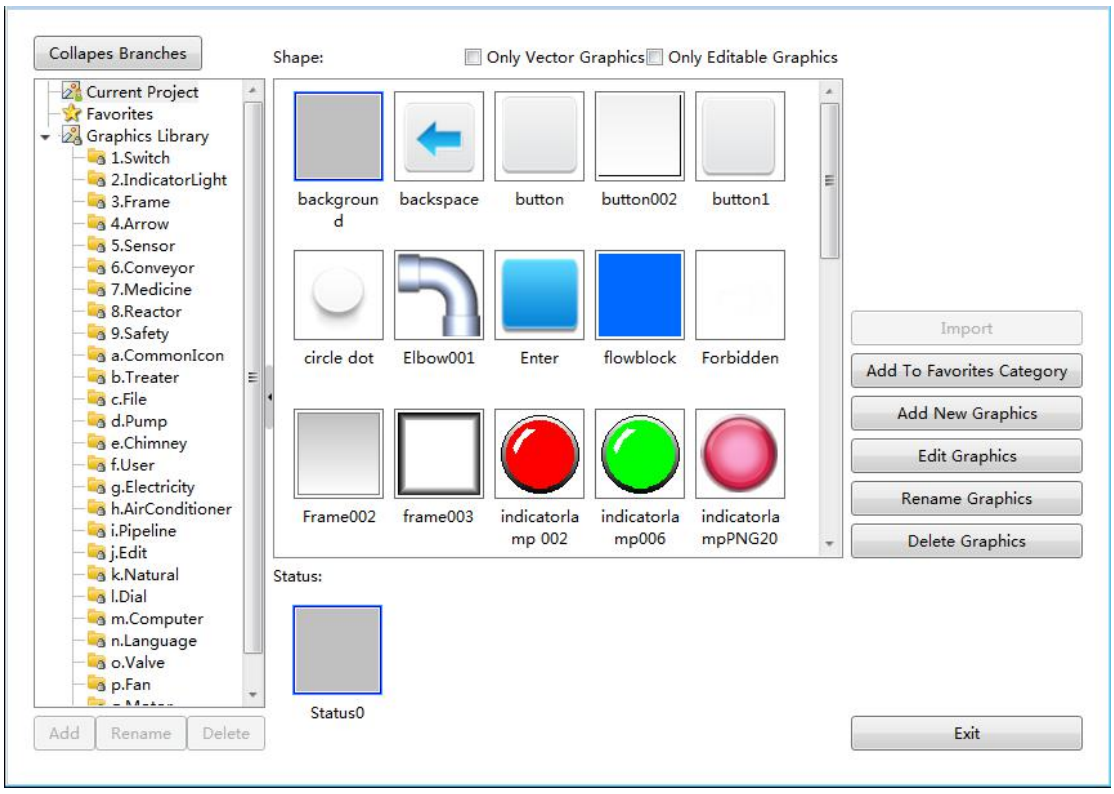
4.7.1.1.3 Edit

Click the button **OK** to confirm. Then the graphic editor window is displayed. The content of the editor window is corresponding to the selected status. It is shown as below.



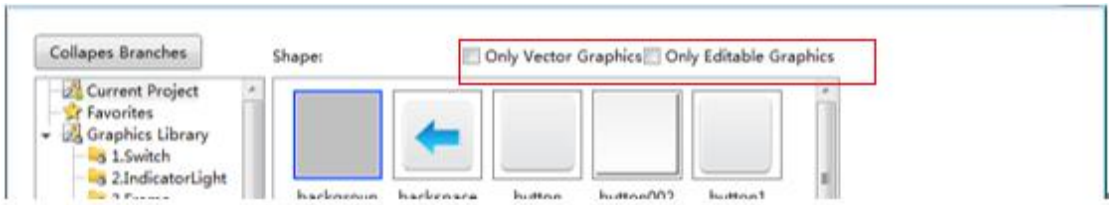
4.7.1.2 Browse Graphics Library

The menu command **Browse Graphics Library** is used to open the **View Graphics Library**. It is shown as below.



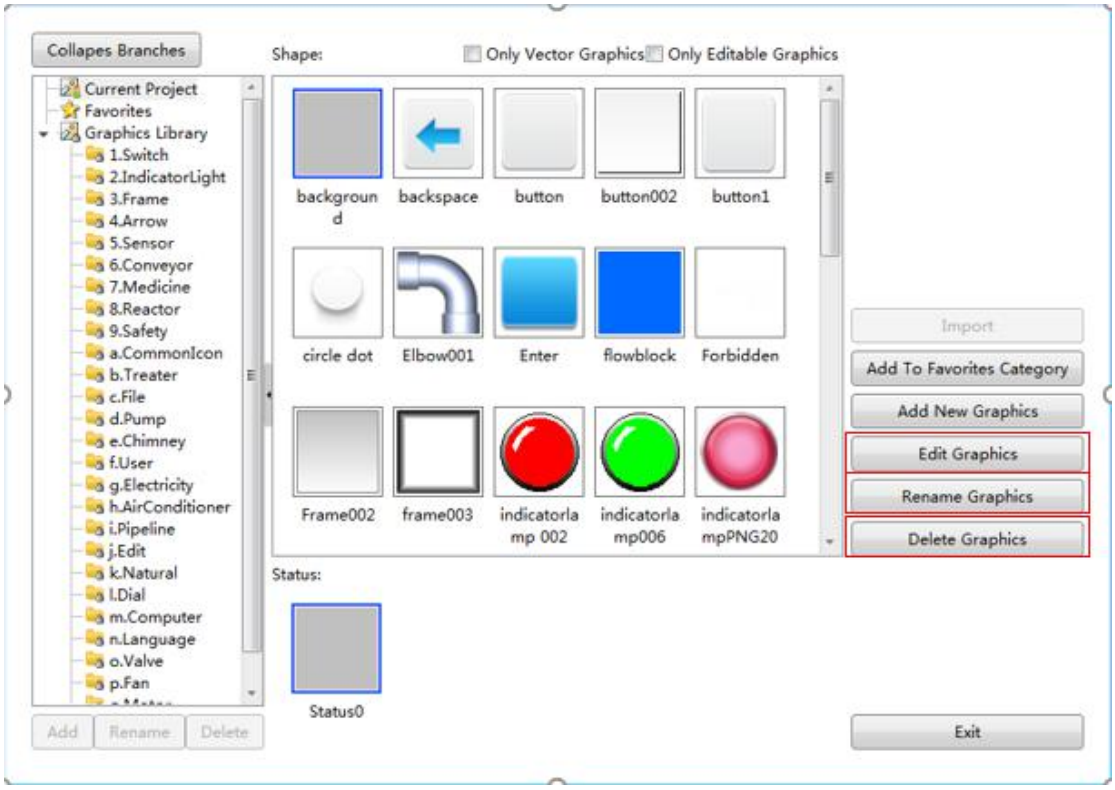
4.7.1.2.1"Only Vector Graphics" and "Only Editable Graphics"

You can filter to display the graphics by check the **Only Vector Graphics** or the **Only Editable Graphics**.



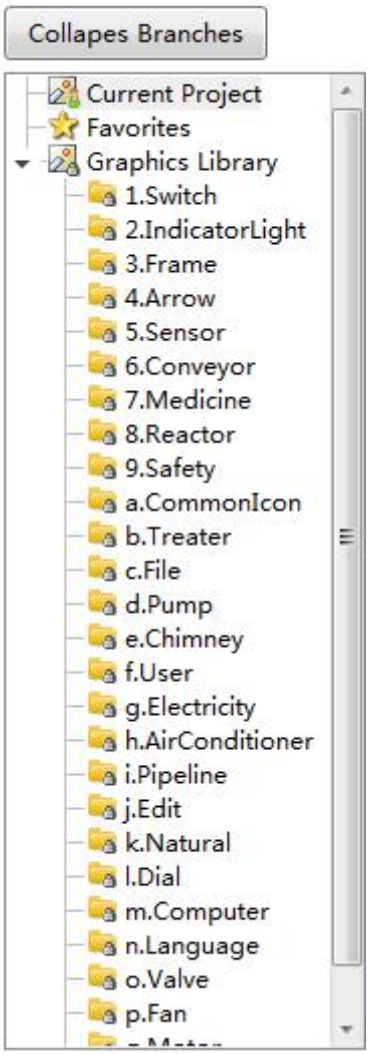
4.7.1.2.2 Add, Edit and Rename Graphics

You can add a new graphic to the library by clicking the button **Add New Graphics**. After select a graphic in the library, you can modify it by clicking the button **Edit Graphics** and rename it by clicking the button **Rename Graphics**.



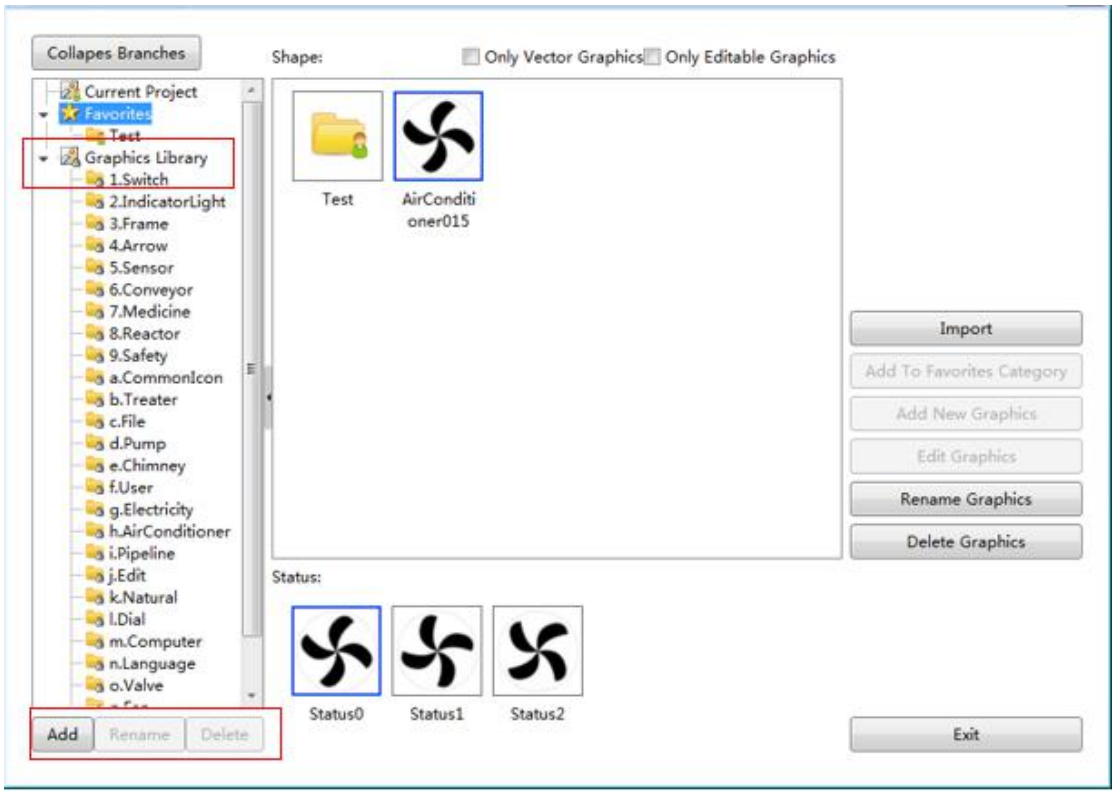
4.7.1.2.3 "Collapse Branches" and "Expand Branches"

There are rich graphics in the Graphics Library, such as Switch, Frame, Arrow, and so on. You can view the directory on the left area of the **View Graphics Library** window by clicking the button **Expand Branches** and select a required graphic from the directory.

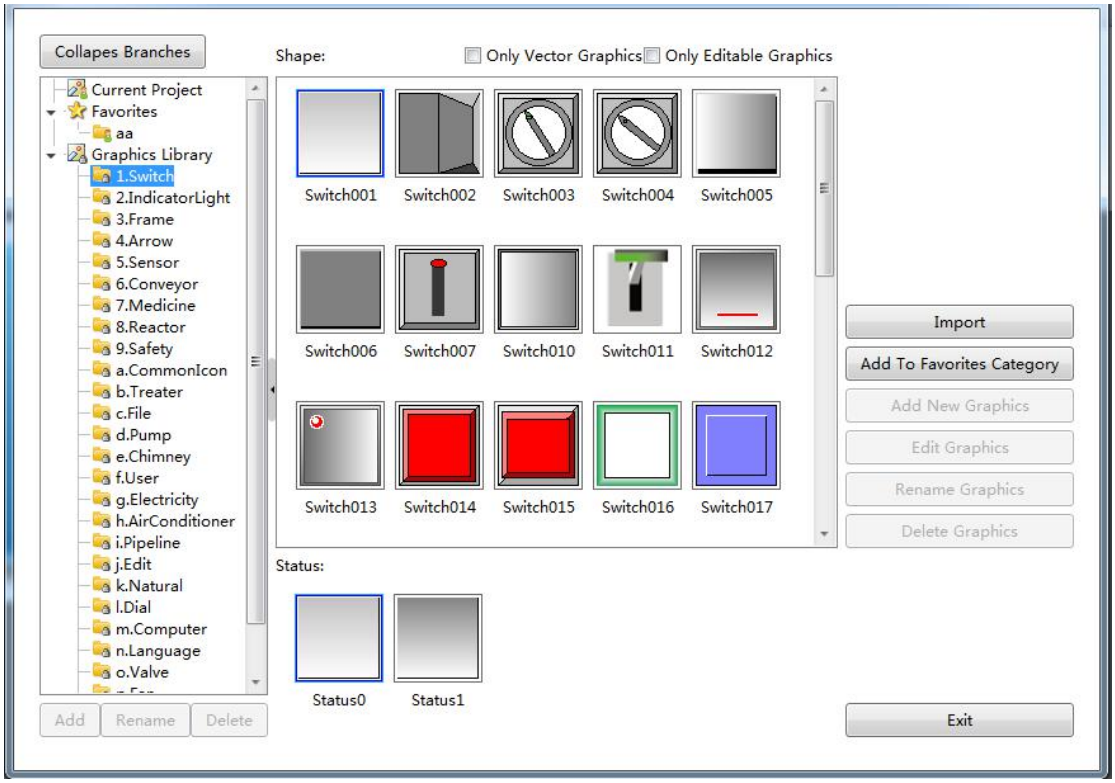


4.7.1.2.4 Favorites

The users can select favorite or popular graphics into the **Favorites** or a category under the **Favorites**. The category under the **Favorites** can be added by clicking the button **Add**. It can be renamed by clicking the button **Rename** or deleted by clicking the button **Delete**.



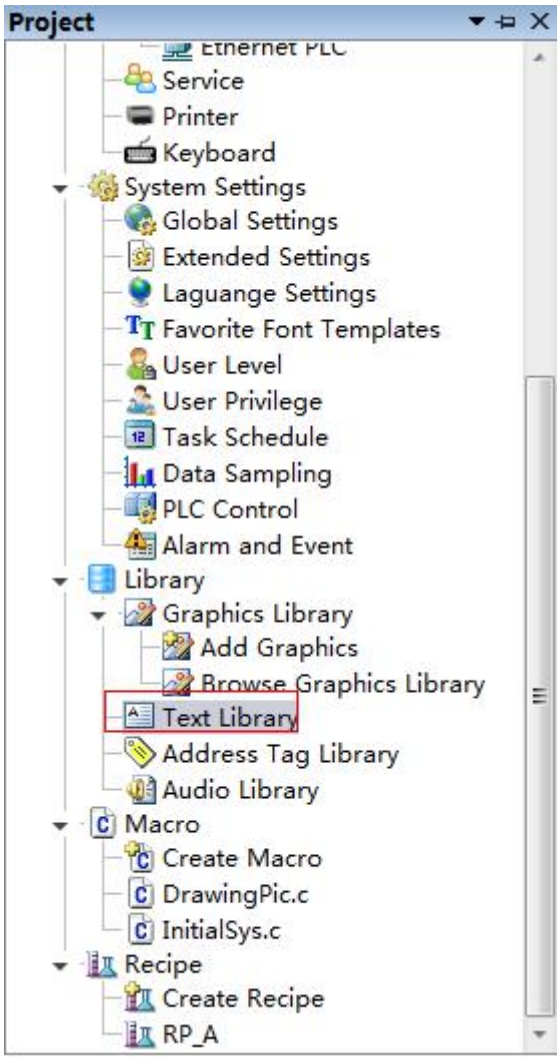
The selected graphic of the Graphics Library can be added to the Favorites or a category of the Favorites by clicking the button **Add to Favorites Category**.



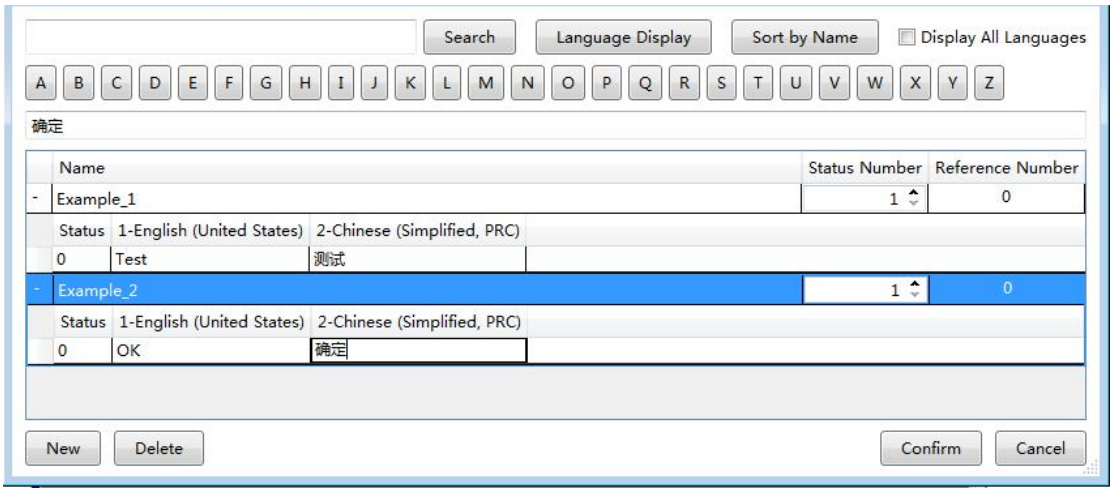
4.7.2Text Library

The text can be saved in the form of multi-languages and multi-statuses by using the function of the Text Library. It can facilitate the users to use the text and modify it together in the project.

The Text Library can be opened by clicking the menu command **Library/ Text Library** or double-click the **Library/ Text Library** in the project tree.



The **Text Library** window will pop up. It is shown as below.



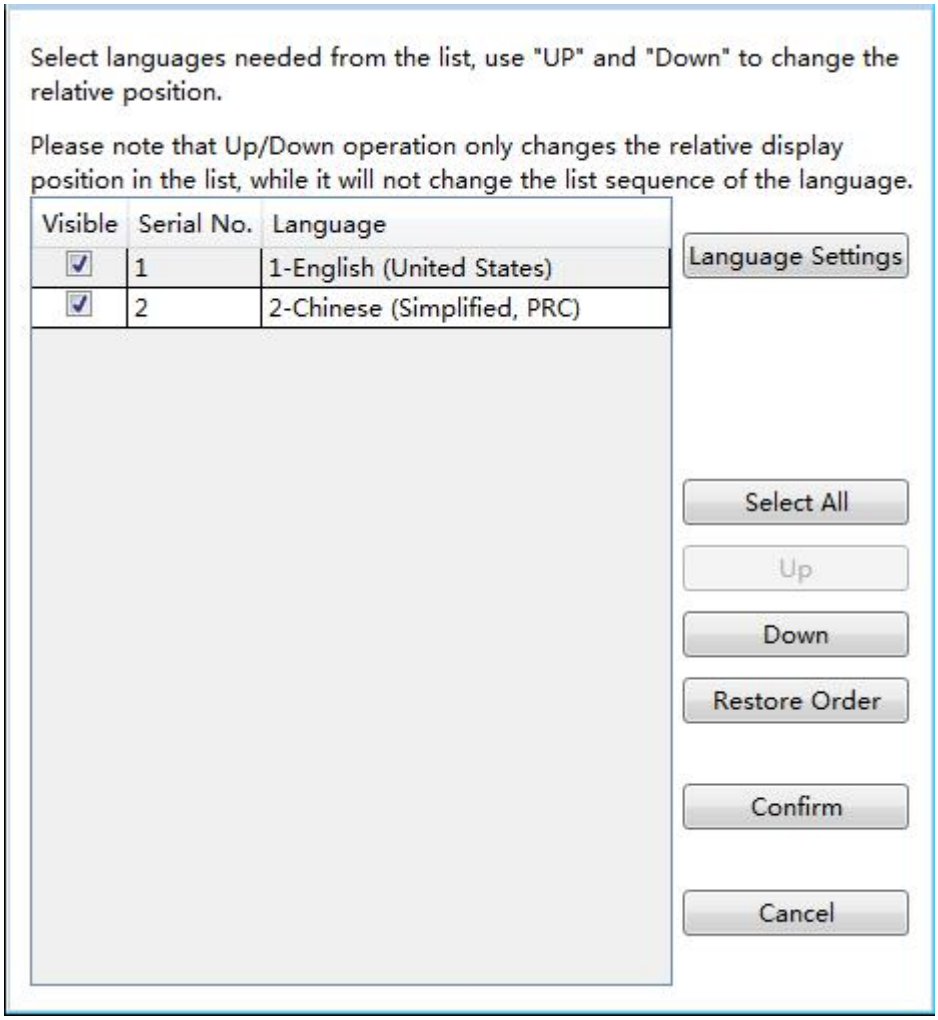
4.7.2.1 Search

After enter the name required to find and click the button **Search**, all items which match the content will be found out.

Note that only the name is supported to find. The content in different language is not supported to search.

4.7.2.2 Language Display

After click the button **Language Display**, the **Language Display** window will pop up. It is shown as below.



4.7.2.2.1 Language Settings

After clicking the button **Language Settings**, the **Language Settings** property page will be opened. You can add or delete language and set the display color, size and other information here. The details of the "Language Settings" are referred to: Detailed manual/ Setup/ System Settings/Language Settings**.**

4.7.2.2.2 Other settings

The checked languages will be displayed in the **Text Library** window. And you can check all the languages by clicking the button **Select All**. Meanwhile, you can modify the order of the languages by clicking the button **Up** or **Down** after select a language.

Note: The settings are valid for the language display effect in the **Text Library** window. It does not change the order of languages.

4.7.2.3 Sort by Name

After clicking the button **Sort by Name**, all items in the text library will be sorted in the increasing order by the first letter of the item name.

4.7.2.4 Display All Languages

After checking the button **Display All Language**, all the languages will display in the table including which is not checked in the "language display" window.

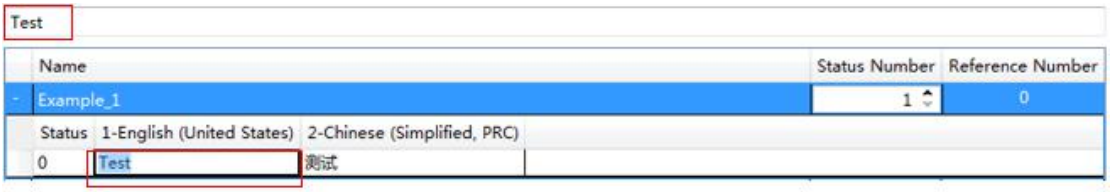
4.7.2.5 A~Z letters

The A~Z letters are used to locate the desired item.

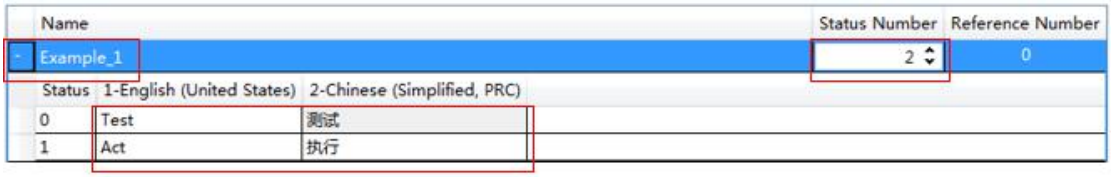
4.7.2.6 Preview box

The same content to the selected text in the table displays simultaneously in the preview box. If you modify the content in the preview box, the selected text in the table will be modified to the same content.

Note: The name of the item is not displayed in the preview box.



The item in the table is shown as below.



Note: The name of the item cannot be blank and not be duplicated.

4.7.2.7 New

A new item will be created after you click the button **New**.

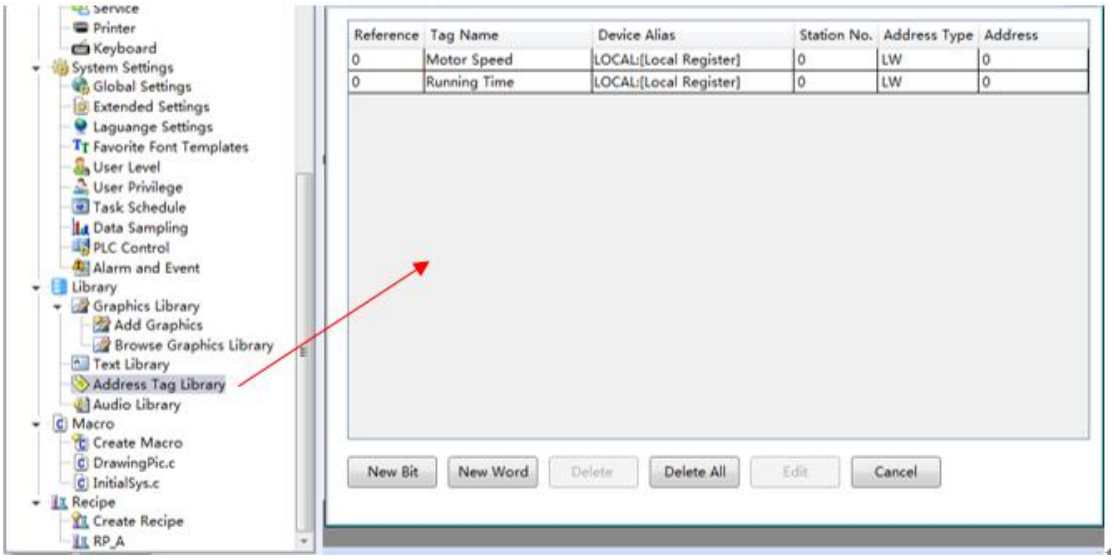
4.7.2.8 Delete

The selected item will be deleted after you click the button **Delete**.

4.7.3Address Tag Library

The **Address Tag Library** saves the addresses in the tag form. This makes it easy to use and modify the address for the user.

The Address Tag Library can be opened by clicking the menu command **Library/ Address Label Library** or double-click the **Library/ Address Tag Library** in the project tree.



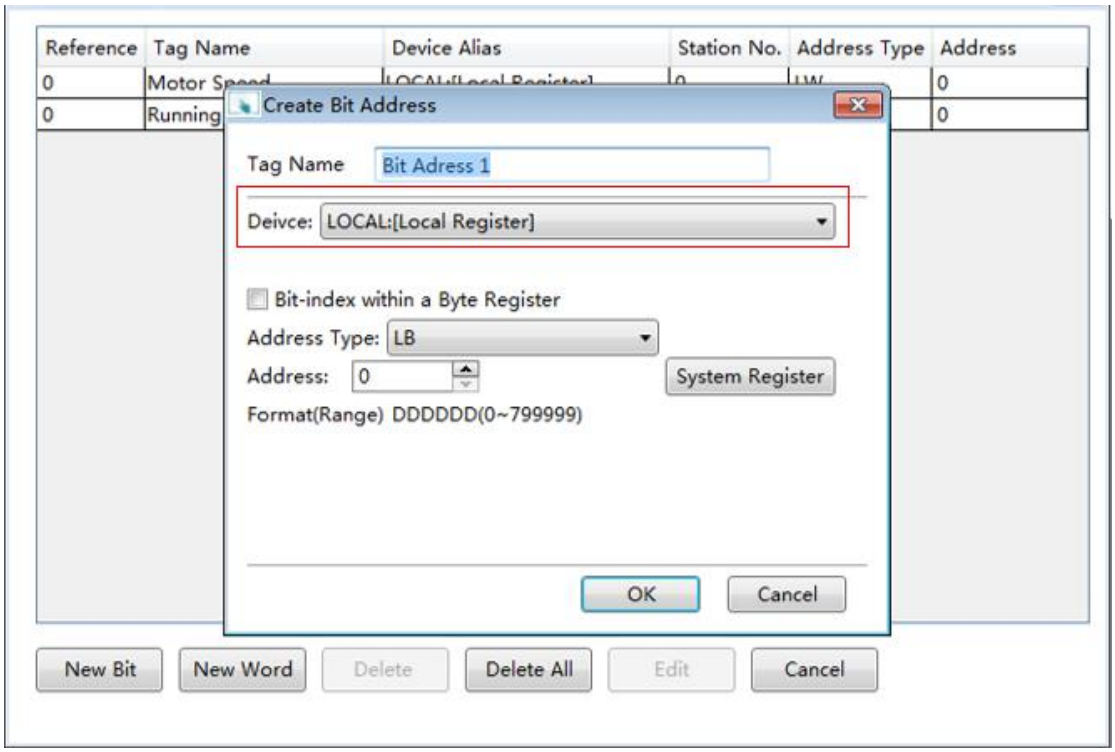
4.7.3.1 Table preview

The table in the **Address Tag Library** displays the information of all the address tags.

Reference	Tag Name	Device Alias	Station No.	Address Type	Address
0	Motor Speed	LOCAL:[Local Register]	0	LW	0
0	Running Time	LOCAL:[Local Register]	0	LW	0

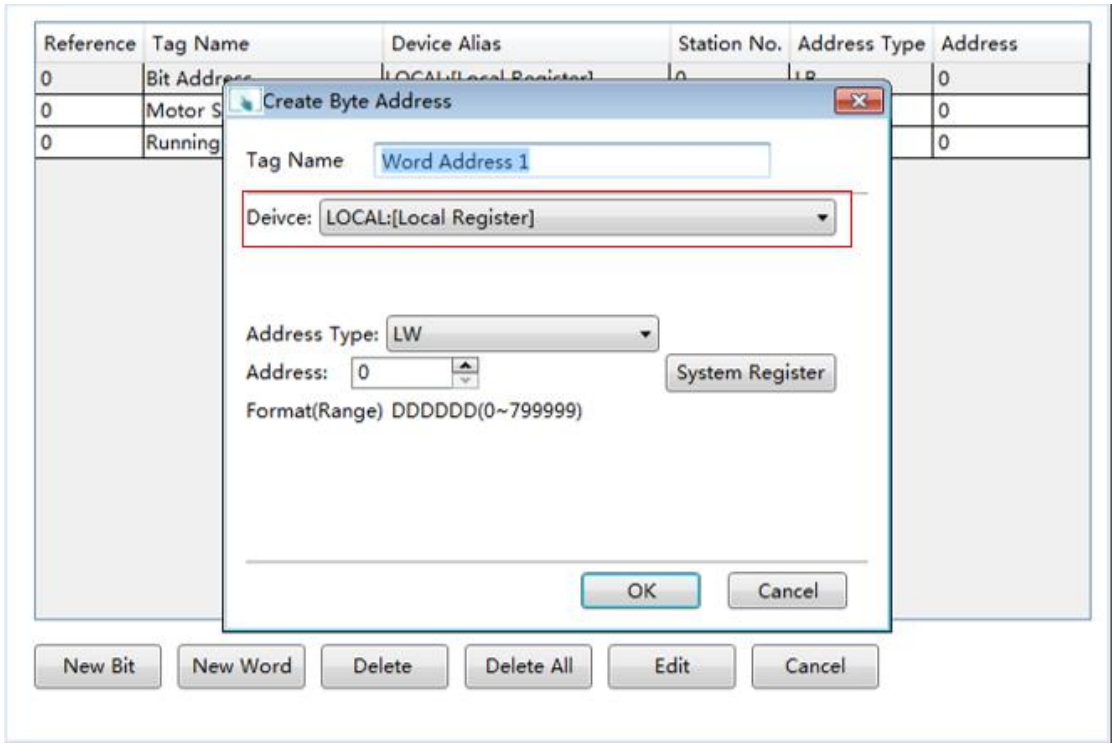
4.7.3.2 New Bit

After click the button **New Bit**, the **Create Bit Address** dialog will pop up. You can create a new bit address here. The details to input the bit address are referred to: Detailed manual/General functions/Address editor/Standard Bit Address Input.



4.7.3.3 New Word

After click the button **New Word**, the **Create Byte Address** dialog will pop up. You can create a new word address here. The details to input the bit address are referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.



4.7.3.4 Delete

Delete the selected tag.

4.7.3.5 Delete All

Delete all tags.

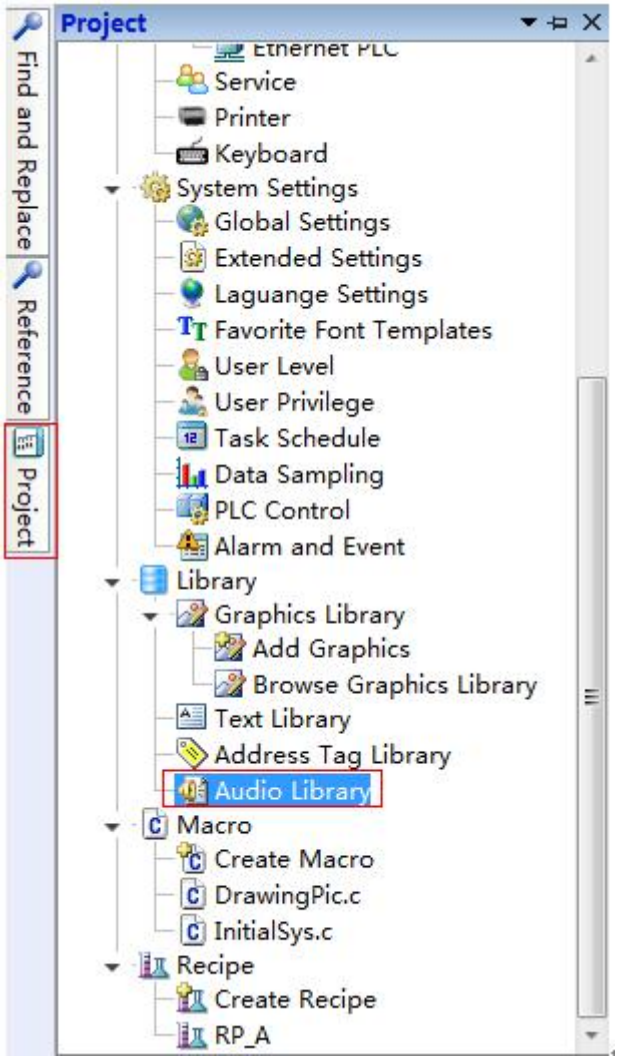
4.7.3.6 Edit

Modify the selected tag.

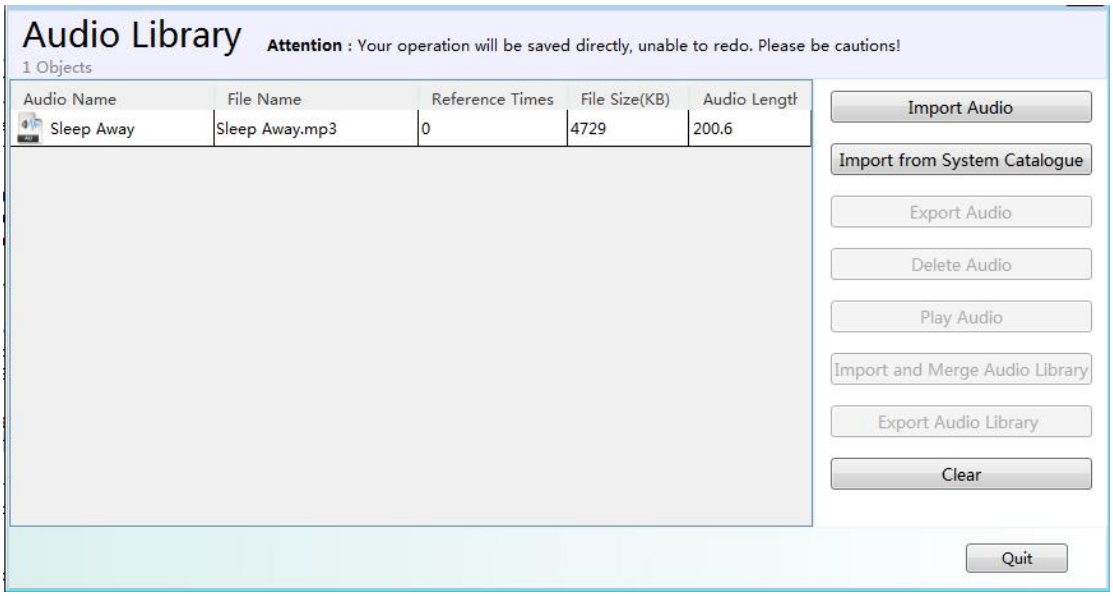
4.7.4 Audio Library

In the VI20 Studio software, you can use some specific audios. These audios can be selected from the Audio Library or be added from the other devices.

The Audio Library can be opened by clicking the menu command **Library/ Audio Library** or double-click the **Library/ Audio Library** in the project tree.

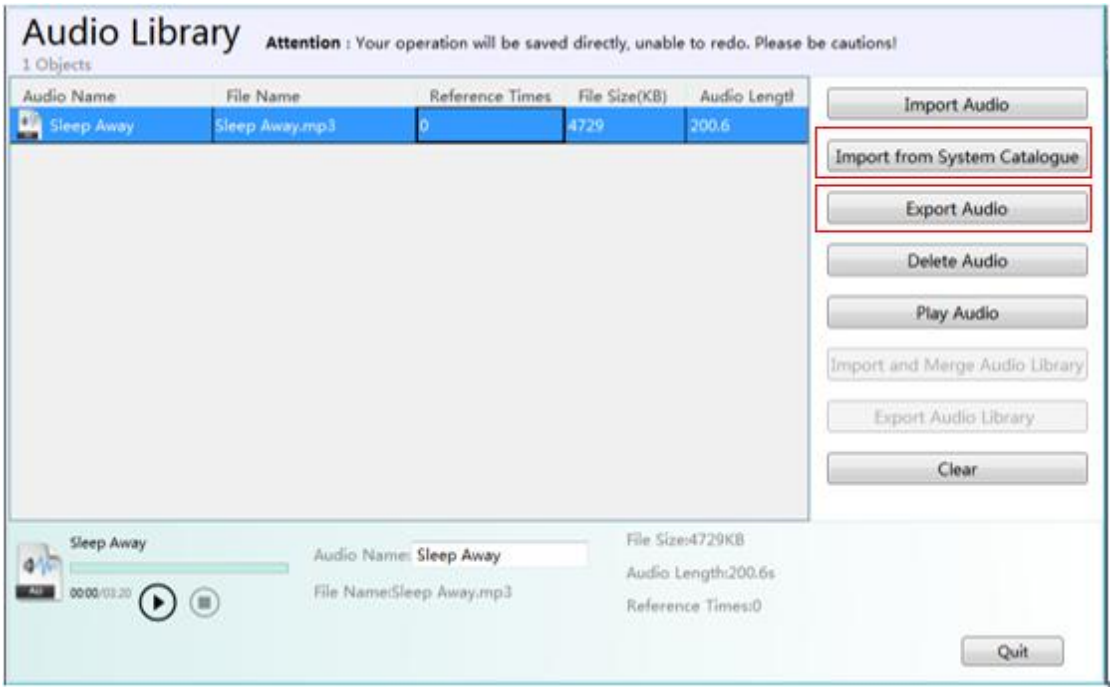


The **Audio Library** is opened as below.



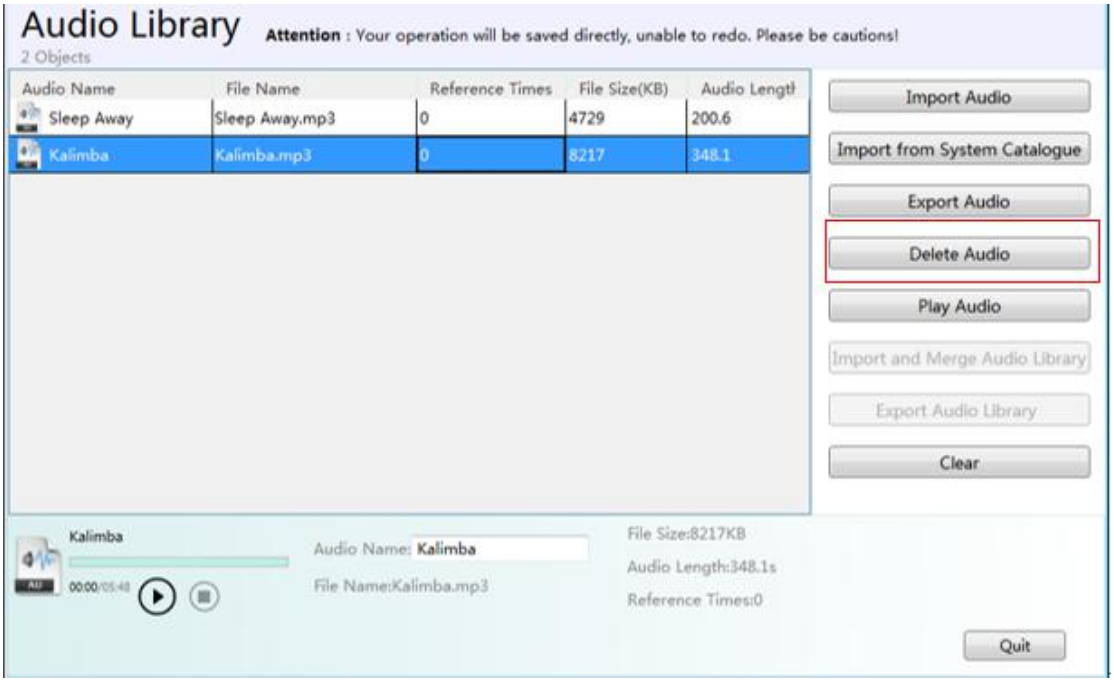
4.7.4.1 Import Audio

After click the button **Import Audio** or **Import from System Catalogue**, the audio file in the current computer can be imported to the Audio Library.



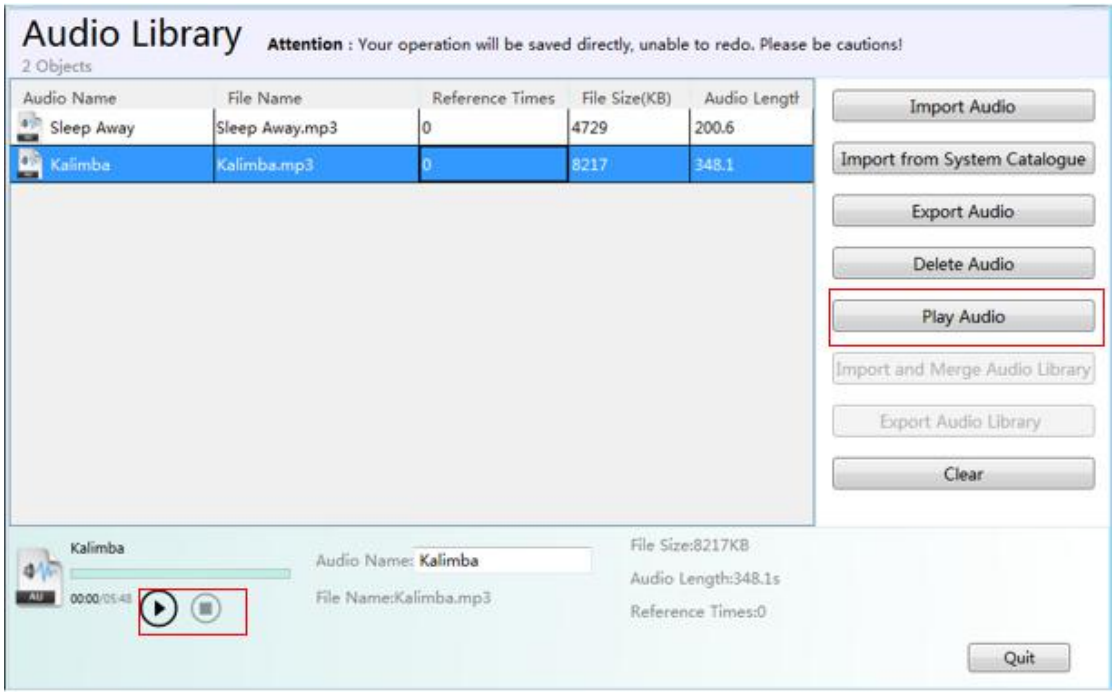
4.7.4.2 Export Audio

You can click the button **Export Audio** to export the selected audio. So the other projects can use it.



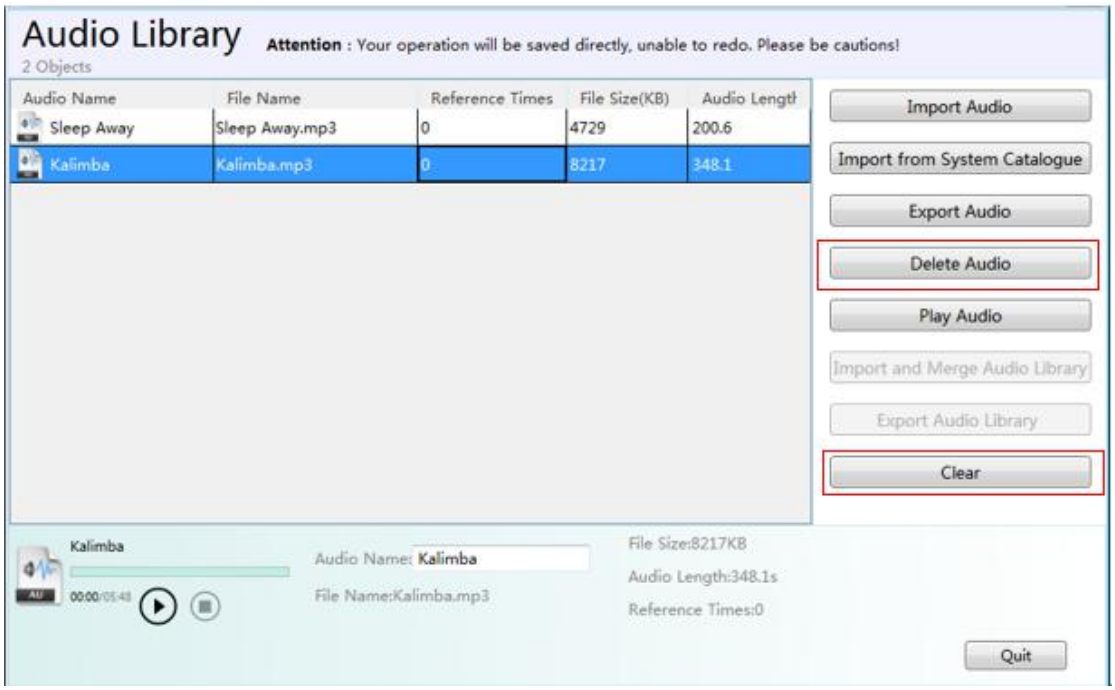
4.7.4.3 Play Audio

After you import the audio to the Audio Library and select it, you can click the button **Play Audio** to listen.



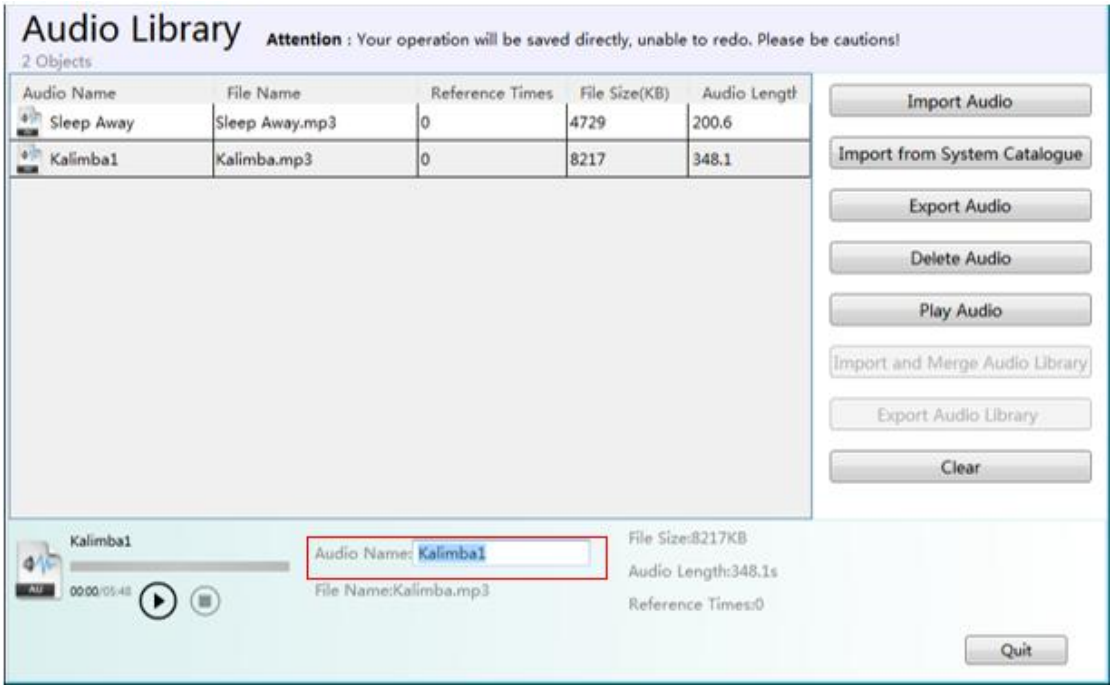
4.7.4.4“Delete Audio" and "Clear"

You can delete the selected audio by clicking the button **Delete Audio**. And you can delete all the audios of the Audio Library by clicking the button **Clear**.



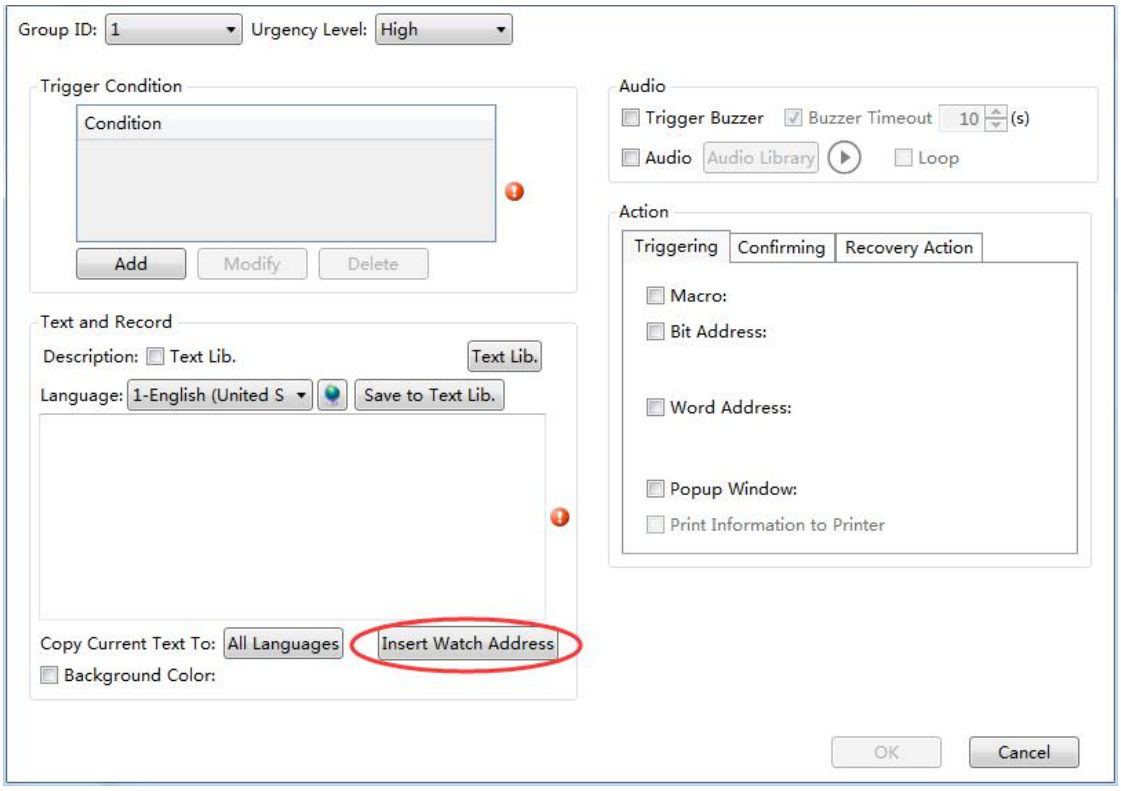
4.7.4.5 Name

You can change the name of the imported audio in the edit box **Audio Name** for your project.



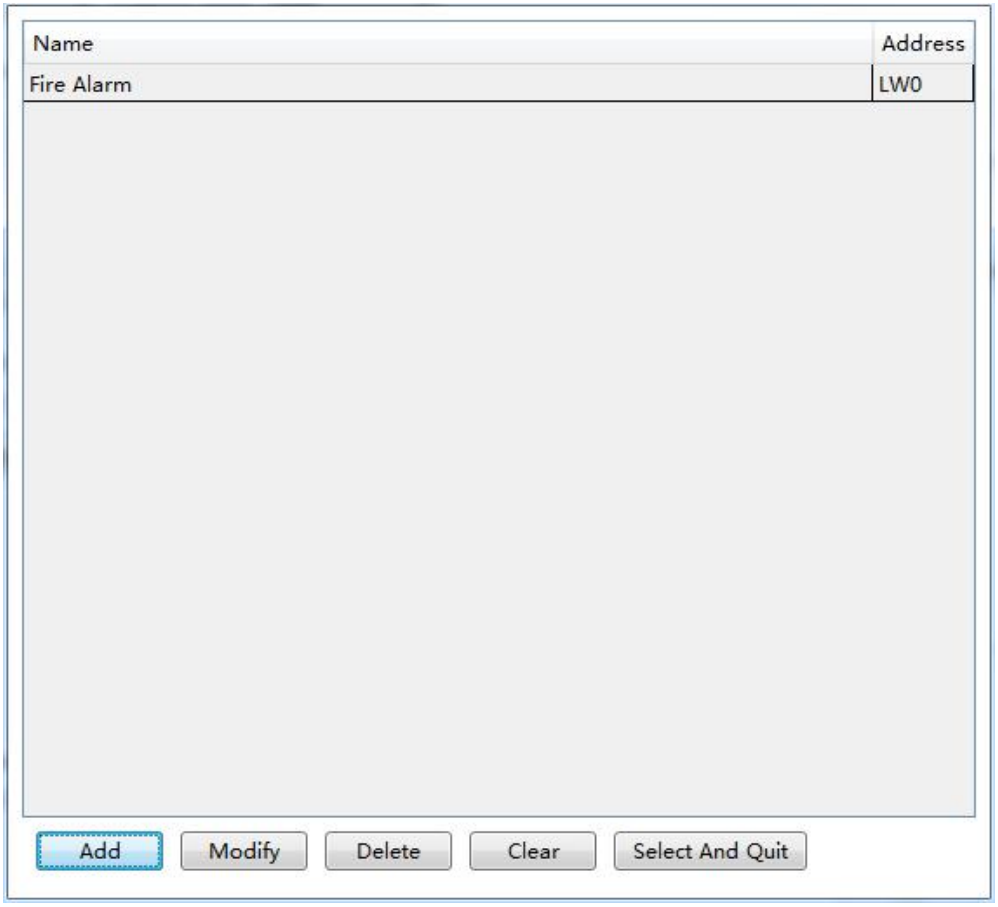
4.7.5 Watch Address Table

Insert Watch Address button will be used in the alarm content display of the **Alarm and Event Detail Setting**. You can set the **Watch Address Table** in the following ways.



You can click the button as shown in the figure to enter the **Watch Address Table** (path: Alarm and Event Display/Alarm and Events Login/Create/Insert Watch Address), you can also enter it through the tool bar (path: Library /Watch Address Table).

The **Watch Address Table** page is shown as below:



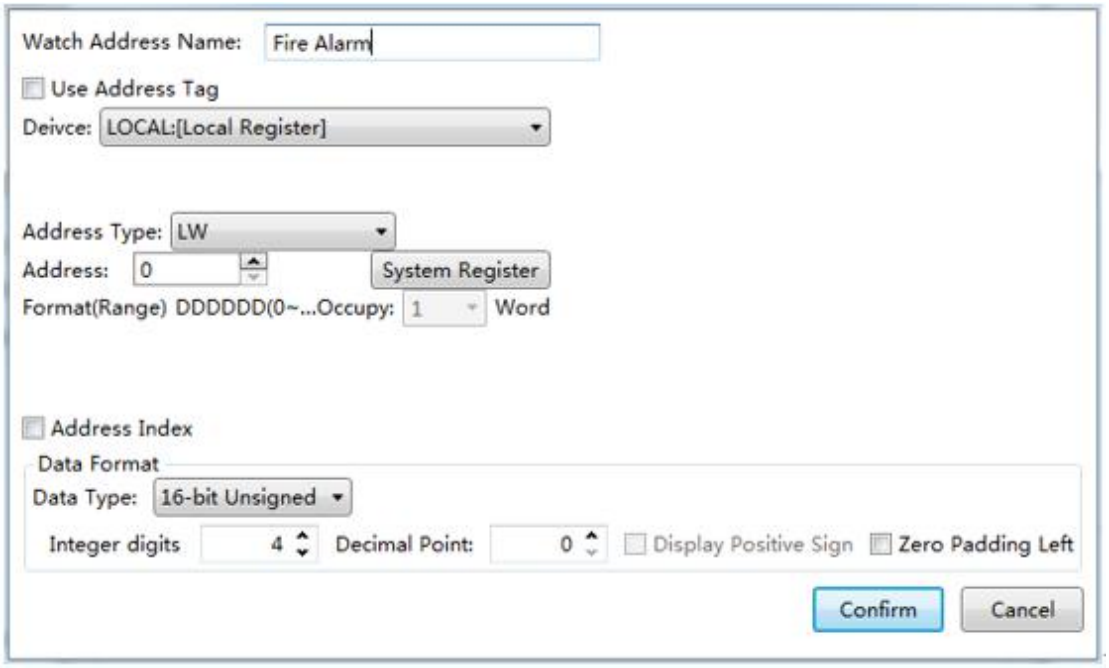
Add: You can add new watch address entry. Click **Add**, set the watch address name, such as **Fire Alarm**, and set the address of the watch entry, such as **local register LW0**, set the data format, there are various data types to choose; click **Confirm after setting finished**, you can see the figure as below.

Modify: You can modify the created watch address entry.

Delete: You can delete the selected watch address entry.

Clear: You can delete all watch address entries.

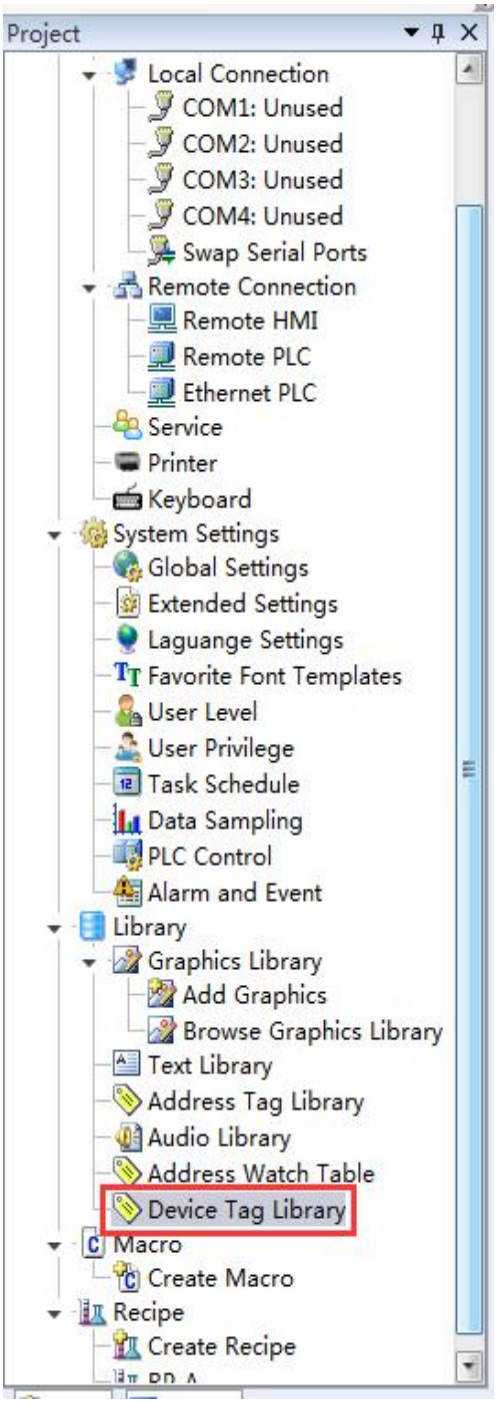
Select and Quit: When you enter the **Watch Address Table** from the **Alarm and Event Detailed Setting** page, select the watch address entry you are using, click the **Select and Quit** button to complete setting.

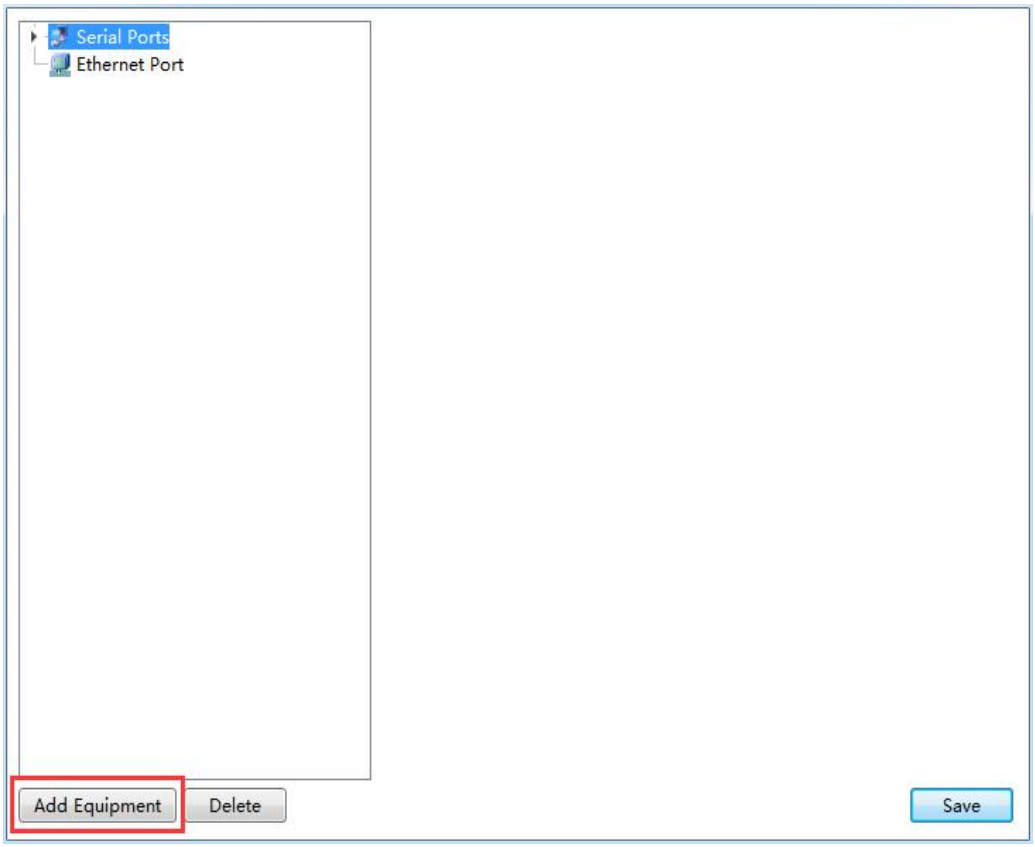


4.7.6 Device Tag Library

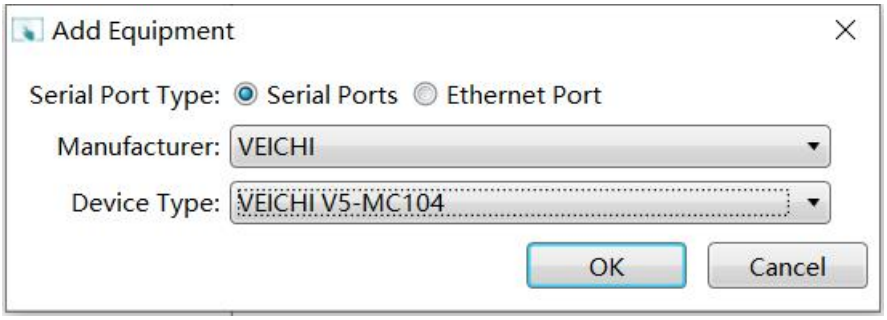
The "**Device Tag Library**" saves the device addresses in the tag form. This makes it easy for the users to use and modify the addresses.

You need add the contents of the tag first when using the devices of tag type. The added tag should be the tags on the tag type devices.

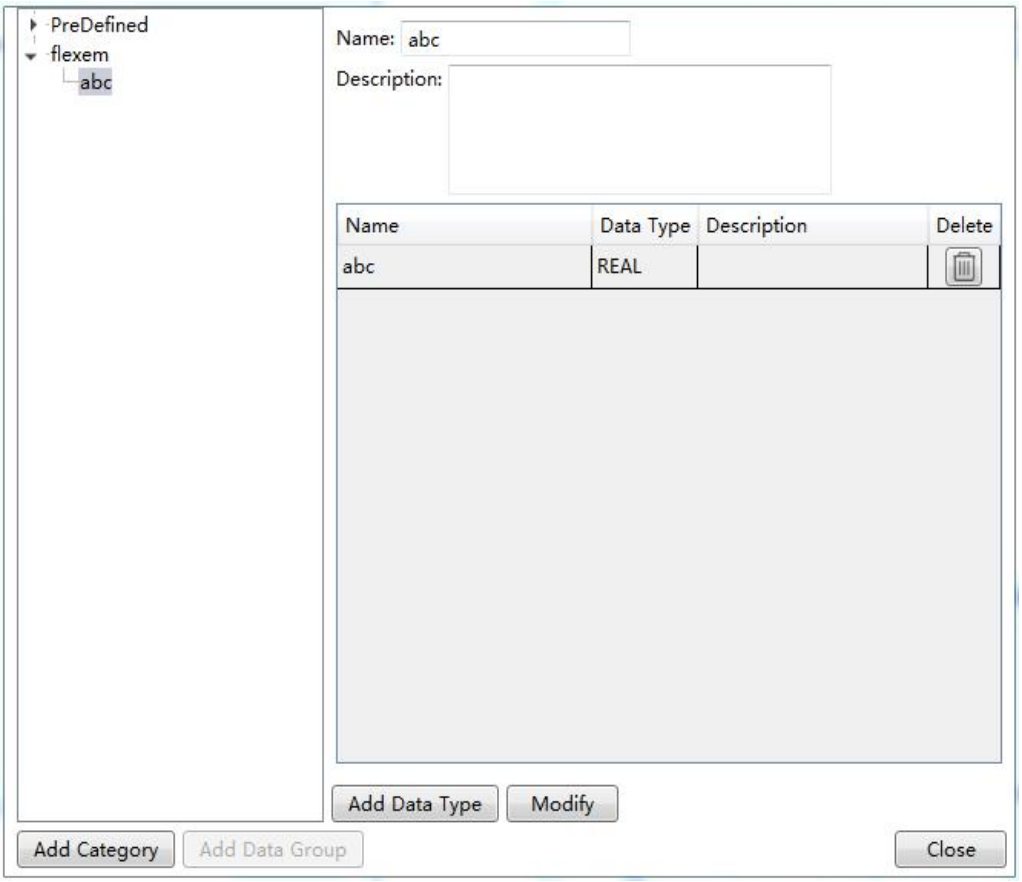

Project
Local Connection
COM1: Unused
COM2: Unused
COM3: Unused
COM4: Unused
Swap Serial Ports
Remote Connection
Remote HMI
Remote PLC
Ethernet PLC
Service
Printer
Keyboard
System Settings
Global Settings
Extended Settings
Laguange Settings
Favorite Font Templates
User Level
User Privilege
Task Schedule
Data Sampling
PLC Control
Alarm and Event
Library
Graphics Library
Add Graphics
Browse Graphics Library
Text Library
Address Tag Library
Audio Library
Address Watch Table
Device Tag Library
Macro
Create Macro
Recipe
Create Recipe

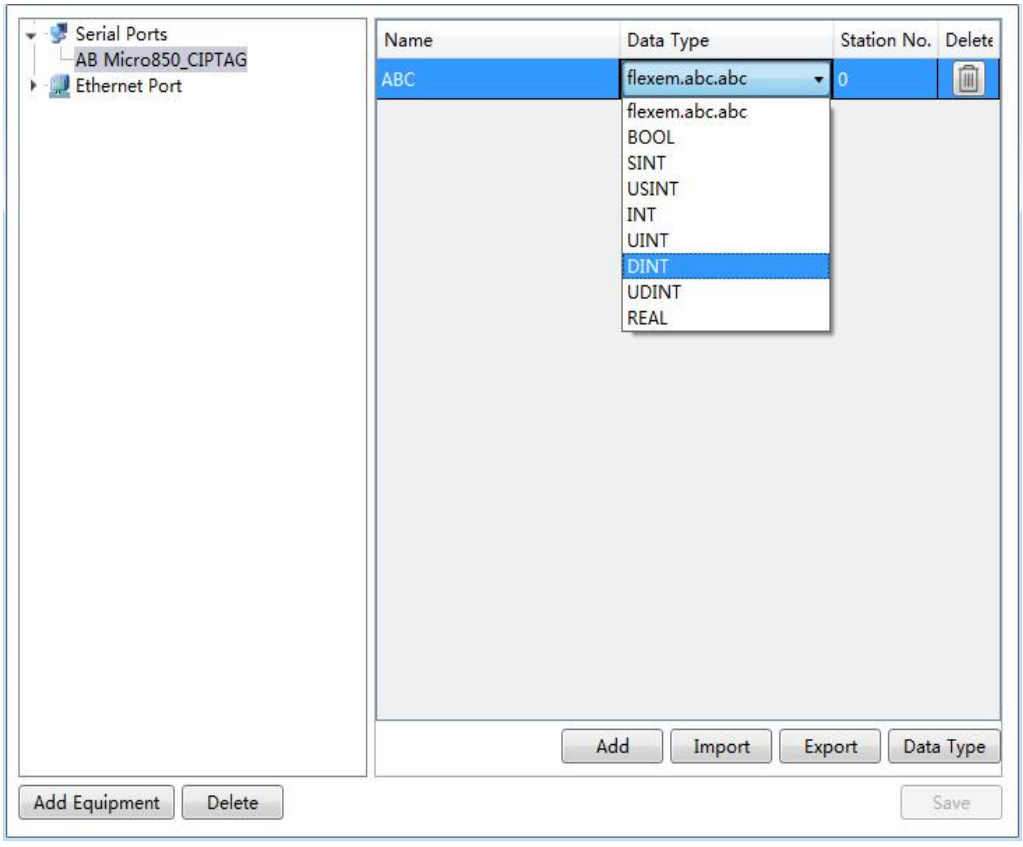


Add Equipment: Click the '**Add Equipment**' button, select the **Serial Port Type**, and select the '**Manufacturer**' and '**Device Type**'. Then click '**OK**' to finish adding after selecting device, the added device should be the tag type device here, such as the figure shown as below.



Add Tags





A

dd: You can add tags manually, enter the tag name, select the data type and station number, click

'**Save**' after finishing adding.

Import: You can import the tags directly in the form of file, this will facilitate users to quickly establish a tag library. The tag file format can be imported is CSV file. The CSV format files can be exported by the tag type PLC software, you can also make it with Excel, about the table format, you can refer to Export the CSV File.

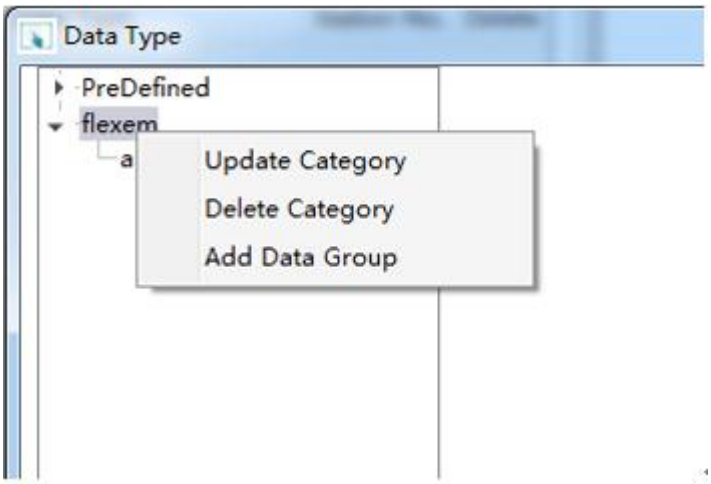
Export: You can export the added contents of the tag library as CSV format files, which you can quickly import to other devices to use.

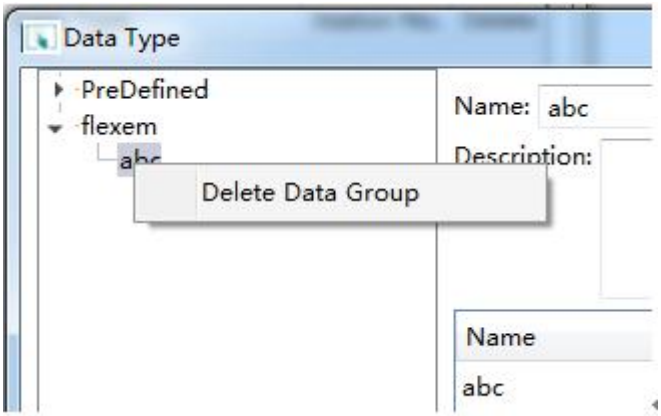
Data type: You can classify and group the data type of the device tags, this will facilitate users to quickly select the data type they need. Click the '**Data Type**' button, click the '**Add Category**', then you can define the category name, click the '**Add Data Group**', you can add the elements of the group - data type. Click '**Close**' after the definition.

After defining the data type, you can see the data type just defined in the '**Data Type**' page, as shown below: you can select the data type for the 'flexem / abc.REAL', the nature of this type is '**REAL**'.

Delete Data Type:

Right-click the data category then you can modify category, delete category, and add data group. Right-click data group then you can delete the data group.

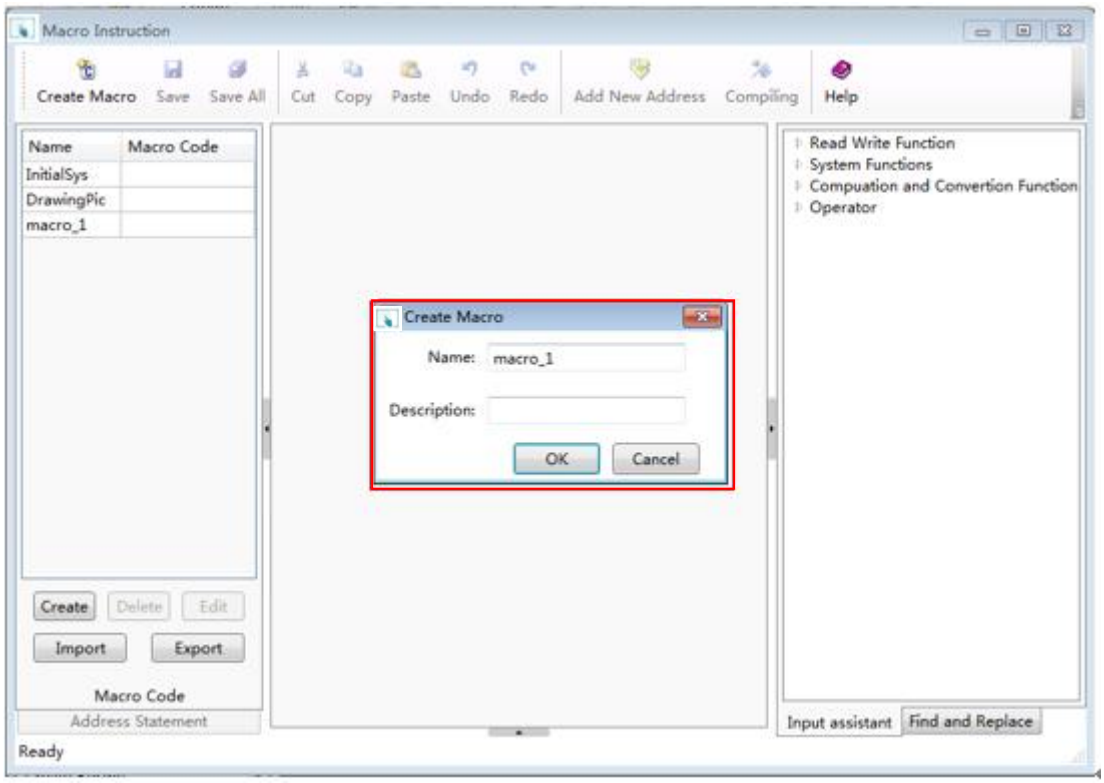




4.8 Macro

4.8.1 Create Macro

Click the menu command '**Macro/ Create Macro**' or double-click the '**Macro/ Create Macro**' in the project tree, you can open the '**Create Macro**' window. It is shown as below.



(1) Name

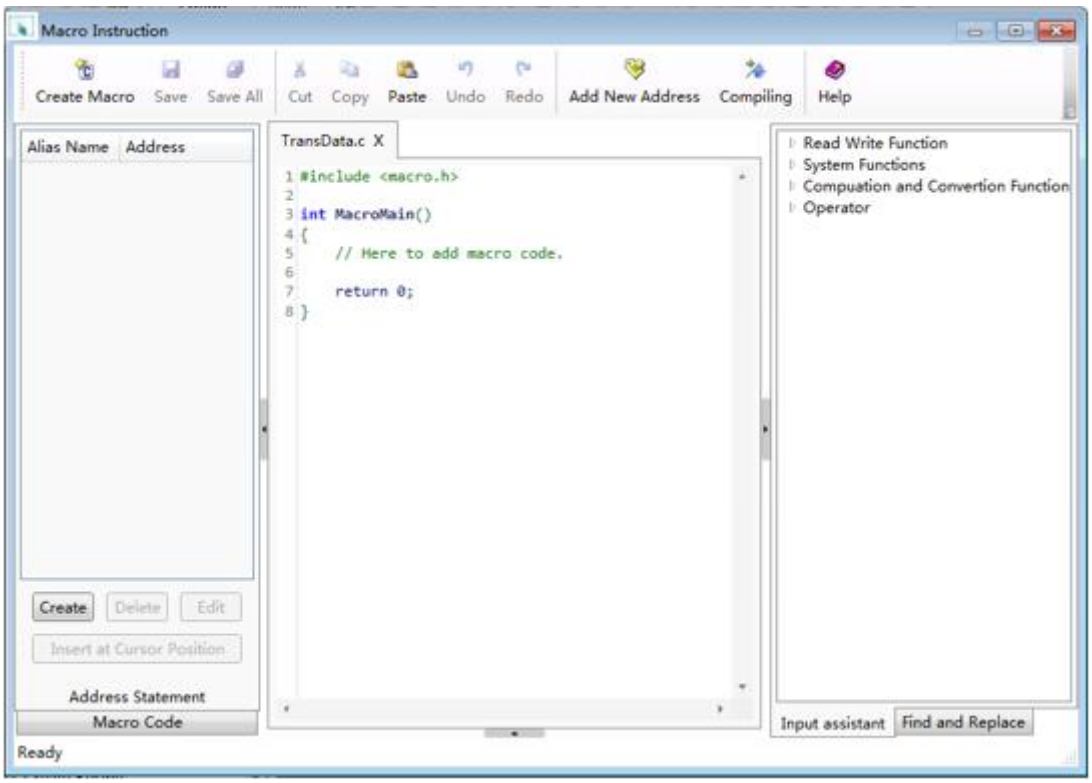
You need to designate a name for the new macro. It will be displayed in the '**Macro**' directory of the project tree. When you call and execute a macro, the name is used. It can be in Chinese or English.

(2) Description

The '**Description**' is used to introduce the macro, which is similar to the 'Comments'. It can be in

Chinese or English.

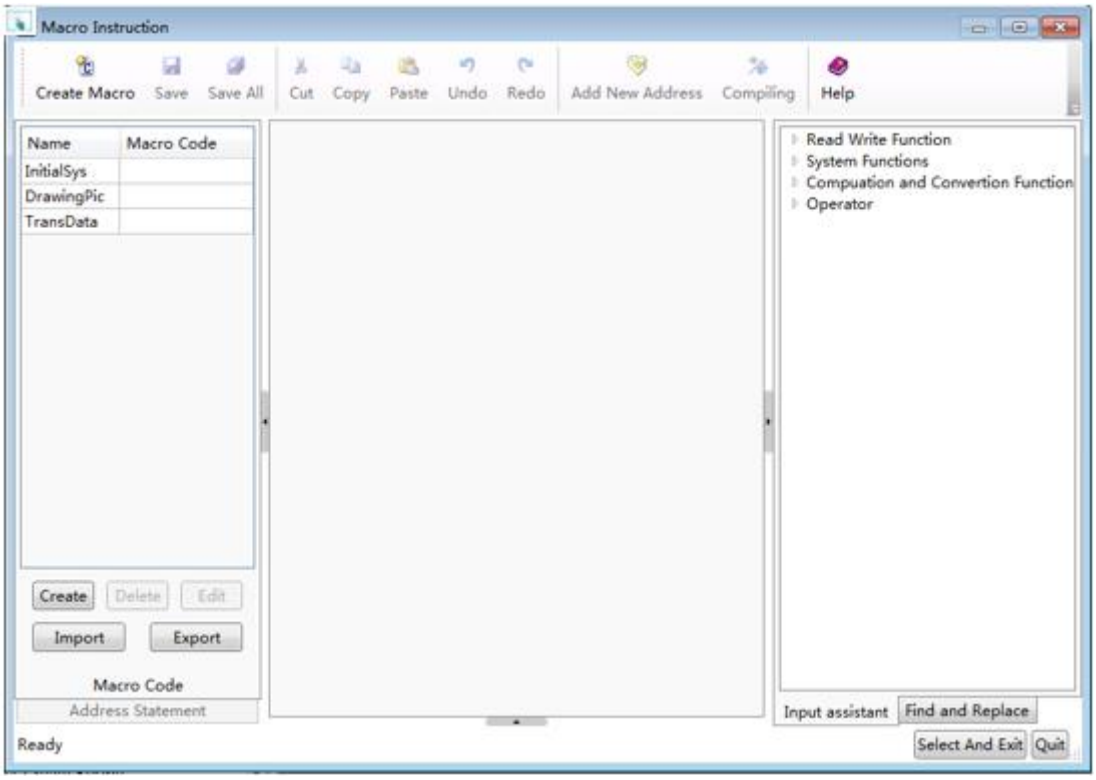
Click the button "**OK**" to confirm and the new macro will be displayed in the macro editor as below. You can also click the button "**Cancel**" to cancel the new macro.



You can edit the macro code in the code editor window.

4.8.2 Edit Macro

Click the menu command '**Macro/ Edit Macro**', you can open the '**Macro Instruction**' window. It is shown as below.



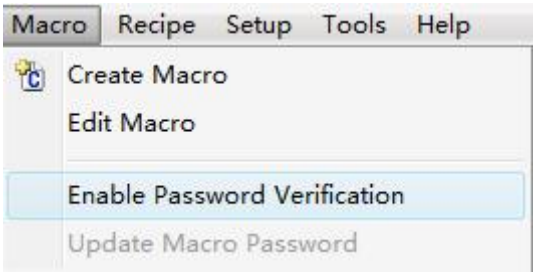
The existing macros are listed on the left side of the '**Macro Instruction**' window.

After clicking any one of the existing macros, you can delete, modify, import and export it. But the deleted macro will not be recovered.

After double-click any one of the macro, the macro can be opened and display in the code editor window area.

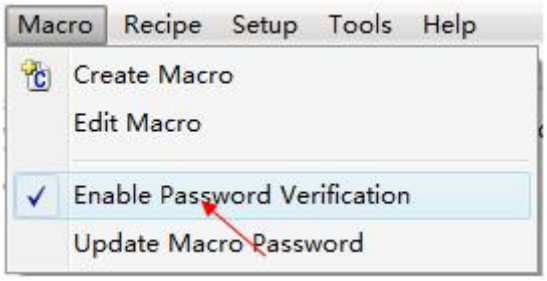
4.8.3 Enable Password Verification

You can use the password verification function to protect the macro codes.
Click the menu command '**Macro/Enable Password Verification**', you can open the '**Set Macro Password**' window.



Note the '**Confirm Password**' needs to be same to the '**Password**'. Otherwise the '**OK**' button will be unavailable.
After you enable password verification, the '**Verify Password**' window will pop up when you click the menu command '**Create Macro**' or '**Edit Macro**'. These two menu commands can be used only after you entering the correct password. The '**Verify Password**' window is shown as below.

If you want to cancel the password verification function, you can click the menu command '**Macro/Enable Password verification**' again and enter the correct password to cancel the password verification function.



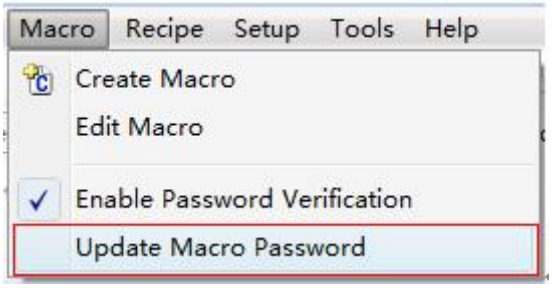
If you want to modify the macro password, the details are referred to: Detailed manual/Macro/Update MacroPassword.

Note: The macro password is a global password. All macros need to password verification once you enable the password verification function. You can't set a password for a single macro.

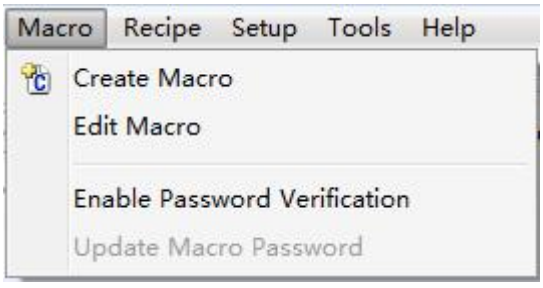
4.8.4 Update Macro Password

If you use the '**Enable Password Verification**' function, the menu command '**Update Macro Password**' is available. Otherwise this command is not available.

The menu command 'U**pdate Macro Password**' is available. It is shown as below.



The menu command '**Update Macro Password**' is not available. It is shown as below.



After click the '**Update Password Verification**', the '**Update macro password**' window will pop up.

Enter the correct old password and valid new password, then clicking the button '**OK**' to confirm the password modification.

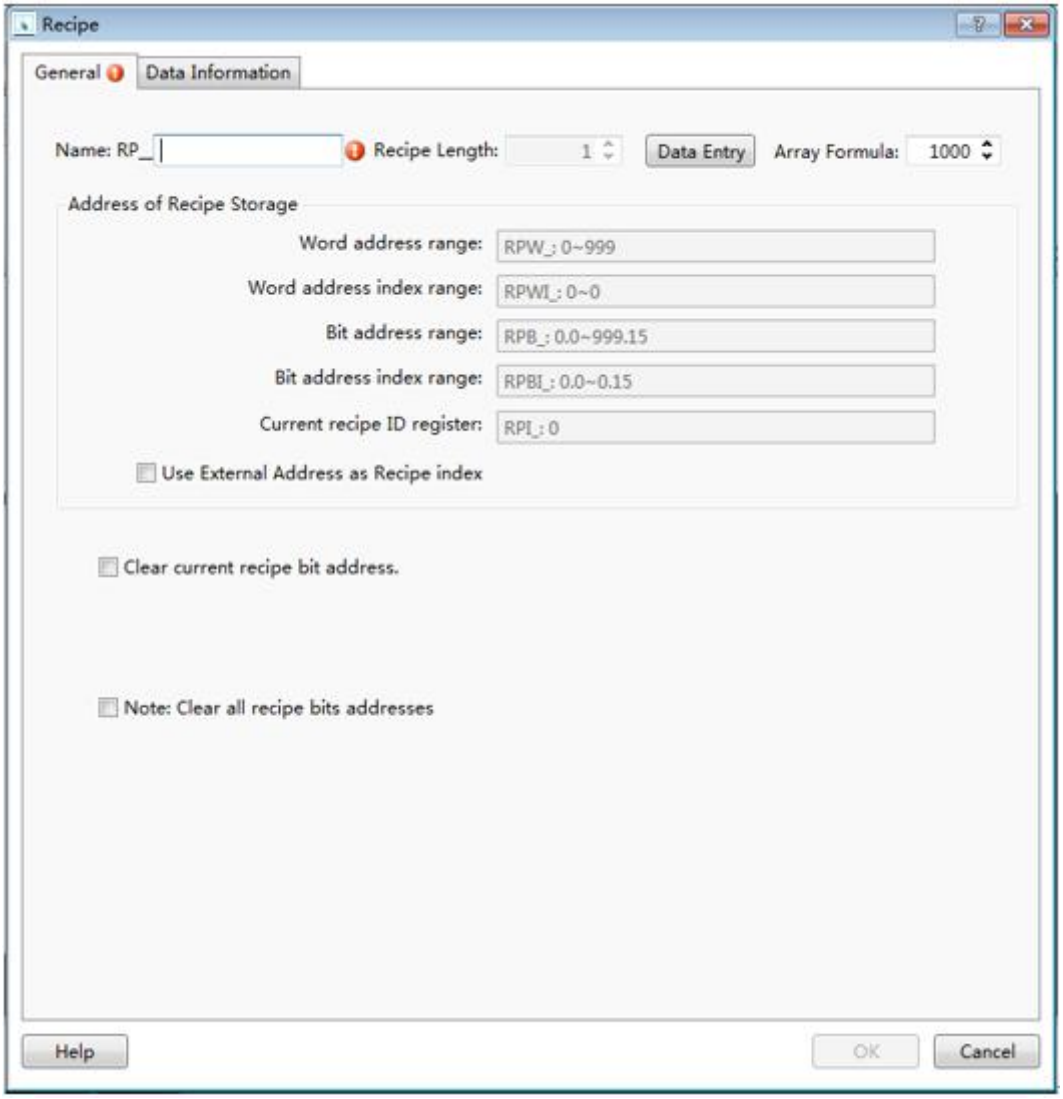
If the new password is not valid, the button '**OK**' is unavailable.

After click the button '**OK**', a '**Warning**' window will pop up to message that the old password is error if the old password is not correct.

4.9 Recipe

Recipe refers to a group of data saved in a continuous registers of the HMI device. The data in this area is resistant after powering off. It can be quickly downloaded to the controller.

Click the menu command '**Recipe/ Create Recipe**' or double-click the '**Recipe/ Create Recipe**' in the project tree, you can open the '**Recipe**' settings page. It is shown as below.



4.9.1 General

4.9.1.1 Name

You need to specify a name for the new recipe for the '**Name**' option. The name can be English, numbers, letters, and so on. The prefix name '**RP_**' is fixed and not editable. It represents a '**recipe register**'. For example, if you give a name 'coffee' for a recipe, then the whole name of the recipe is 'RP_ coffee'. The recipe word register name is 'RPW_coffee'.

4.9.1.2 Recipe Length

The default '**Recipe Length**' is 1. You can modify it by clicking the button '**Data Entry**' or clicking the title of the settings page '**Data Information**'. The Recipe Length refers to the number of words occupied by each group of this recipe.

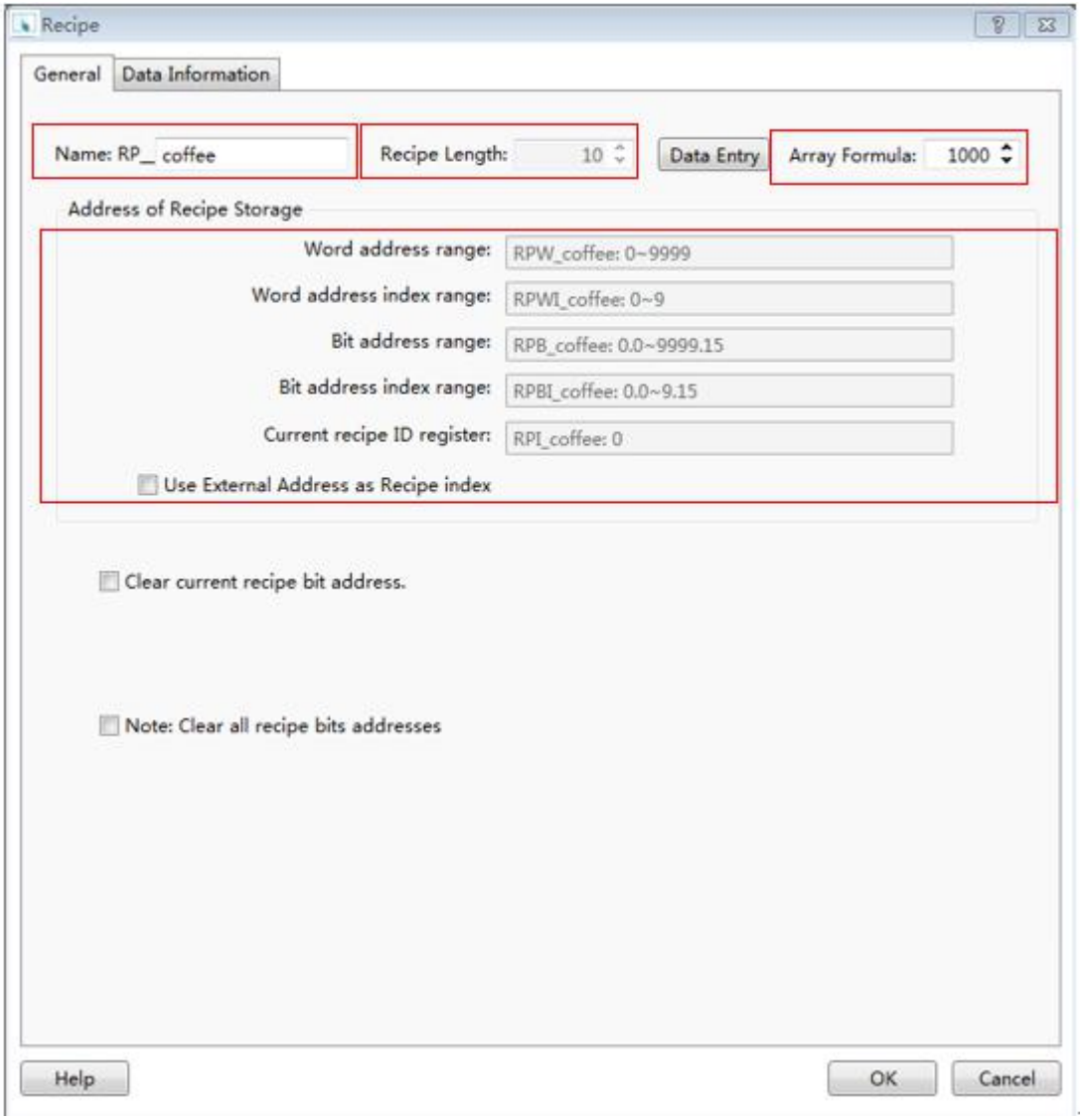
4.9.1.3 Array Formula

The default value of the '**Array Formula**' is 1000. It ranges from 1 to 65535.

The whole length of the word register addresses occupied by the recipe can be calculated after you set the "**Recipe Length**" and the "**Array Formula**". For example, if the "**Recipe Length**" is 10 and the "**Array Formula**" is 1000, then the whole length of the word register addresses occupied by the recipe is 10*1000=10000.

4.9.1.4 Address of Recipe Storage

You can view the details of the addresses occupied by the recipe in the "**Address of Recipe Storage**" area. It is shown as below.



4.9.1.4.1 Word address range

For example, the '**Recipe Length**' is 10 and the 'Array Formula' is 1000, so the whole length of the word register addresses occupied by the recipe is 10*1000=10000. The Recipe name is 'RP_Coffee'. So the address range of the word registers is 'RPW_ Coffee: 0 ~ 9999'.

4.9.1.4.2 Word address index range

In the above example, the 'Recipe Length' is 10 for each group of the recipe. So the Word address index range is 'RPWI_ coffee: 0-9'.

4.9.1.4.3 Bit address range

The bit address range is determined by the word address range. So the bit address in the above example is "RPB_ coffee: 0.0 to 9999.15."

4.9.1.4.4 Bit address index range

Similarly, the bit address index range is determined by the '**Recipe Length**'. So the 'Bit address index range' is 'RPBI_ coffee: 0.0 to 9.15'.

4.9.1.4.5 Current recipe ID register

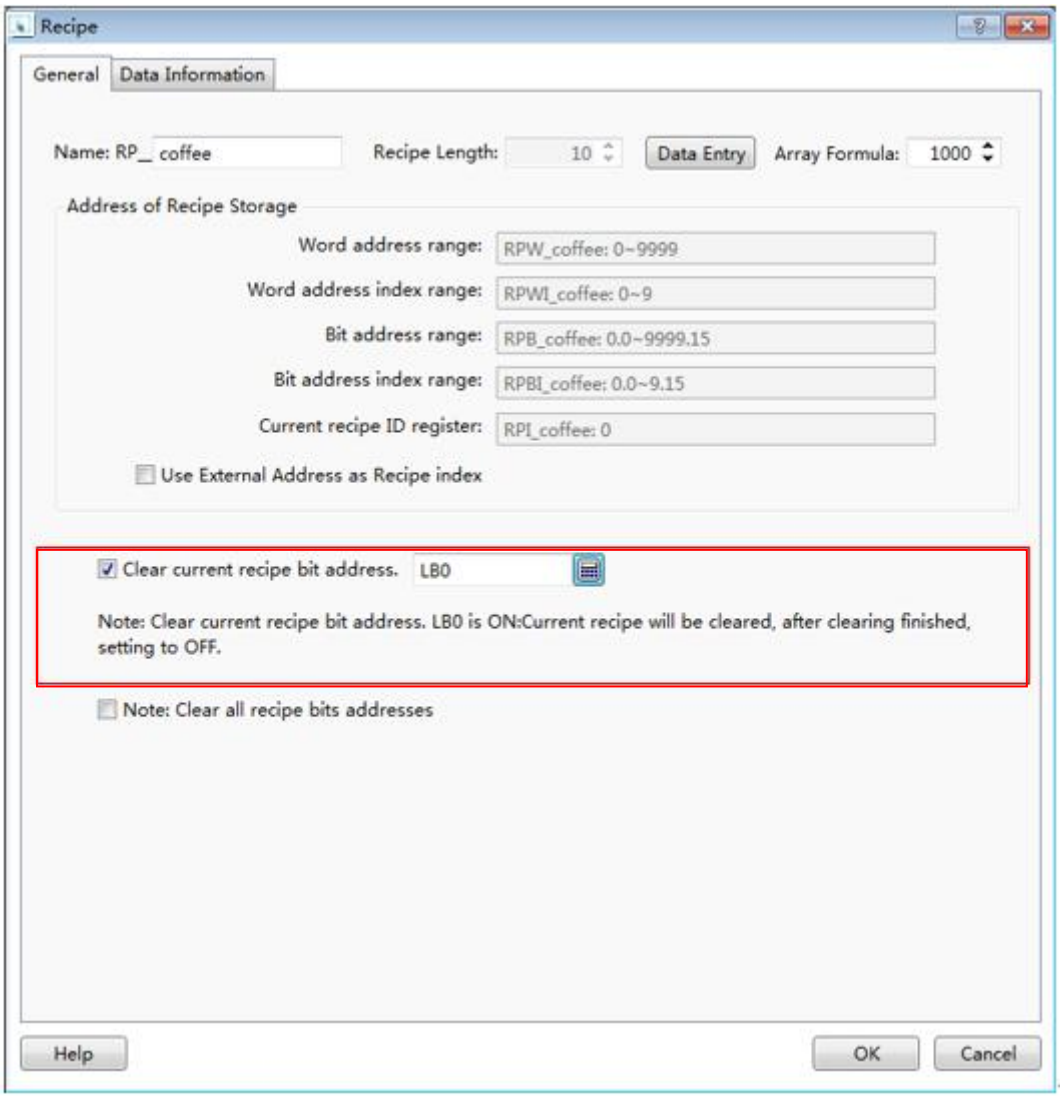
The '**Current recipe ID register**' is used to specify the group number of the recipe. For the above example, the '**Current recipe ID register**' is 'RPI_coffee: 0'.It is a unique register for each recipe.

4.9.1.4.6 Use External Address as Recipe index

It is not checked by default. If it is checked, you can specify a word address as a recipe ID register and the '**Current recipe ID register**' (such as 'RPI_ Coffee: 0') is not valid.

4.9.1.5 Clear current recipe bit address

It is not checked by default. If it is checked, you can specify a bit address. If it is set **ON**, the current data of the recipe group which specified by the recipe ID register will be cleared. After the data is cleared, this bit address will be reset **OFF**. It is shown as below.

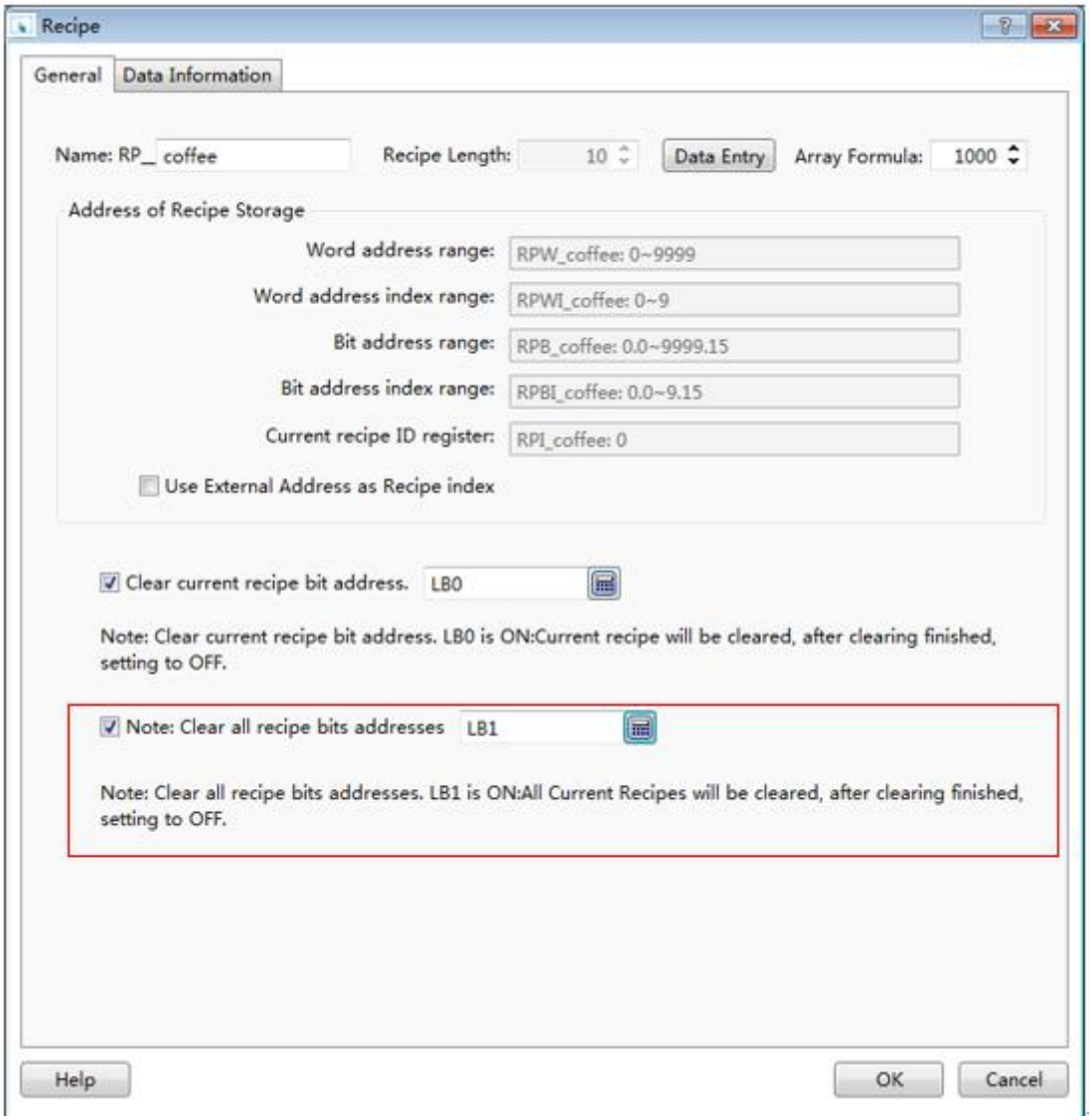


For example, if the value of the "RPI_ coffee: 0" register is 3, the data of the No. 3 group of the recipe "RP_coffee" will be cleared when the '**Clear current recipe bit address**' LB0 is set **ON**. After finish clearing, **LB0** will be reset **OFF**.

4.9.1.6 Note: Clear all recipe bit addresses

It is not checked by default. If it is checked, you can specify a bit address. If it is set **ON**, the data

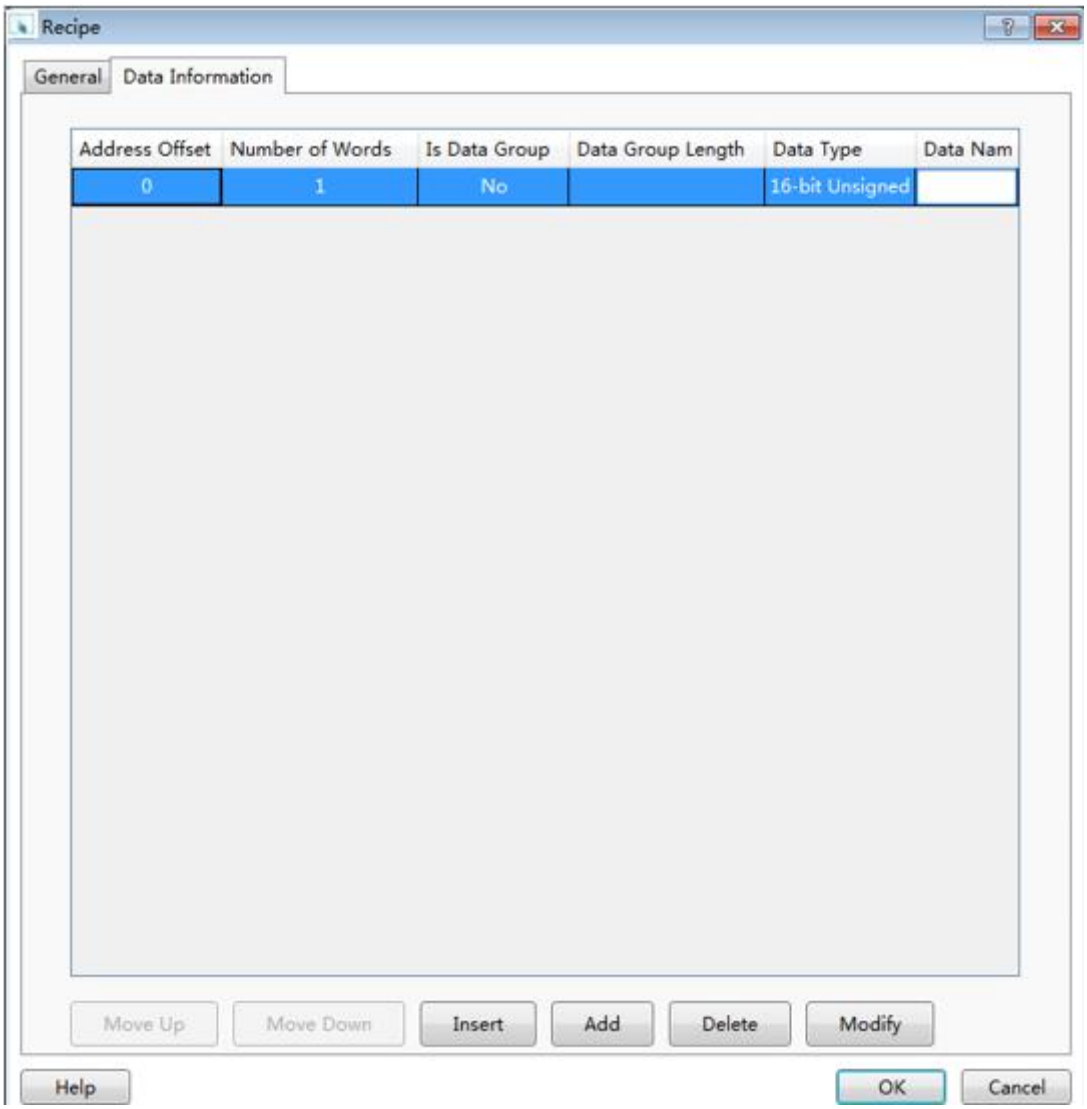
of all the recipe groups will be cleared. After the data is cleared, this bit address will be reset **OFF**. It is shown as below.



For the above example, all the data of the recipe "RP_coffee" will be cleared if the bit register **LB1** is **ON**. After the data is cleared, **LB1** will be reset **OFF**.

4.9.2 Data Information

The default "**Data Information**" settings page is shown as below.



The default recipe length is 1. A 16-bit unsigned data is preset.

4.9.2.1 Modify

After double-click the selected entry, the '**Data Setting**' dialog will pop up. You can modify the settings for this entry. It is shown as below.

4.9.2.1.1 Name

A description for the data of this entry can be given here.

4.9.2.1.2 Address Offset

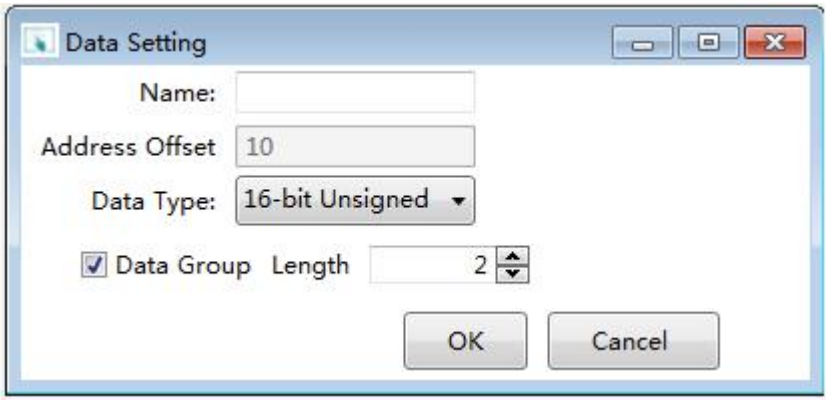
It refers to the address offset of this entry in the recipe. The address offset of the first entry starts from 0. It is determined according to the data type and the entry order by system and not be edited.

4.9.2.1.3 Data Type

A data type needs to be set here. The default is '**16-bit Unsigned**'.

4.9.2.1.4 Data Group

It is not checked by default. You can check it when you need to define a group of the same data type data for this entry.



4.9.2.1.5 Length

The '**Length**' option needs to set for the data group when you check the option '**Data Group**'. Click the button '**OK**' to finish the settings for the selected entry.

4.9.2.1.6 Move Up

For many data entry, the selected data entry will be moved up a row after click the button '**Move Up**'.

4.9.2.1.7 Move Down

For many data entry, the selected data entry will be moved down a row after click the button '**Move Down**'.

4.9.2.2 Insert

After select an entry in the list and then click the button '**Insert**', a new entry will be added before the selected entry.

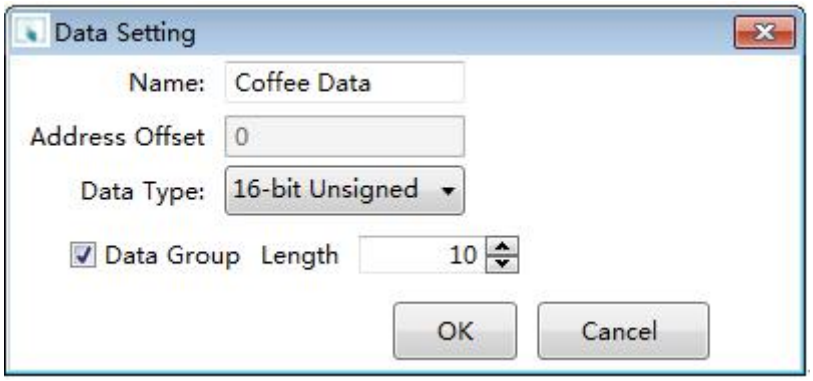
4.9.2.2.1 Add

After click the button '**Add**', a new data entry will be added after the last data entry.

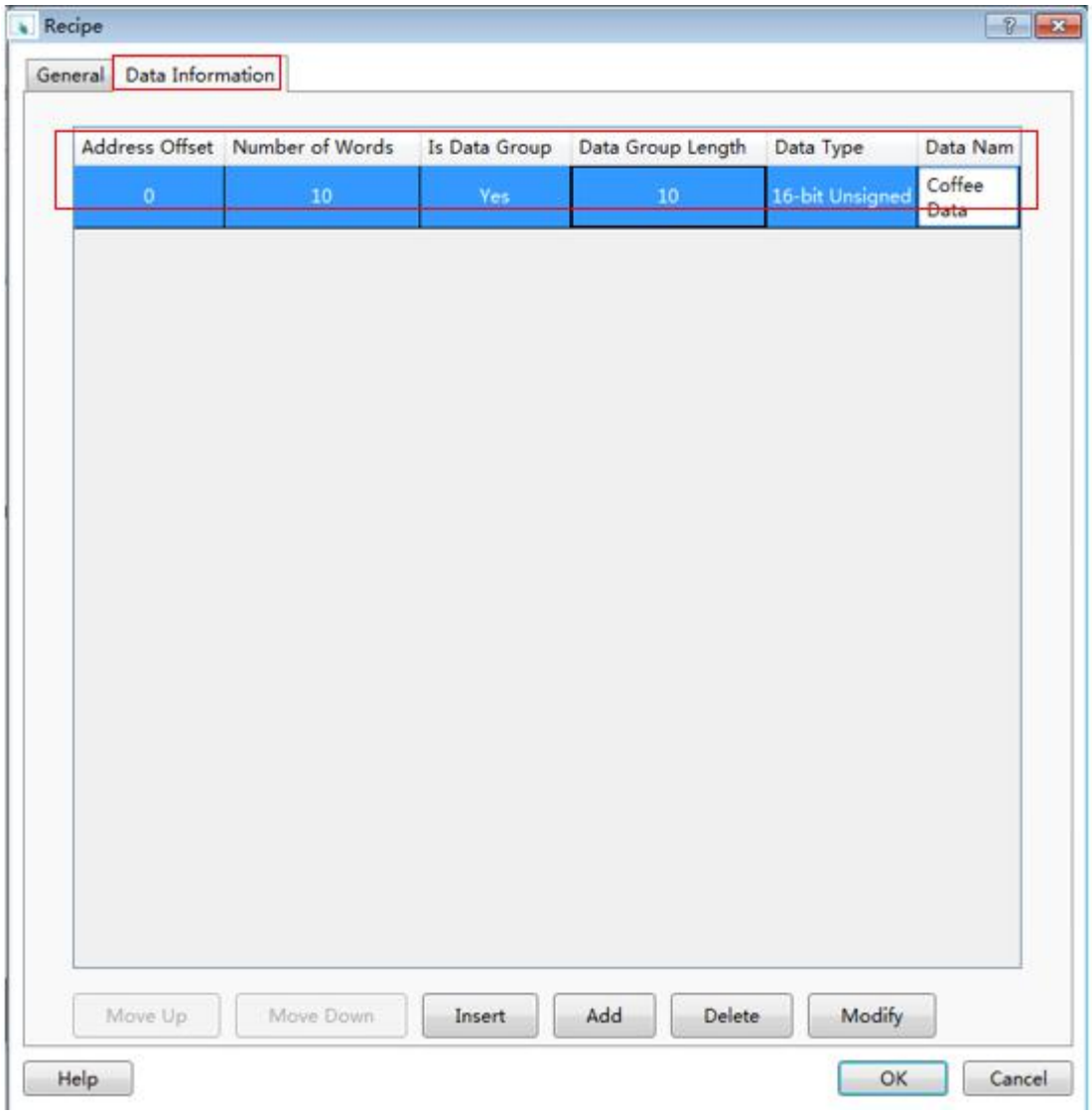
4.9.2.2.2 Delete

The selected data entry will be deleted from the list after click the button '**Delete**'.

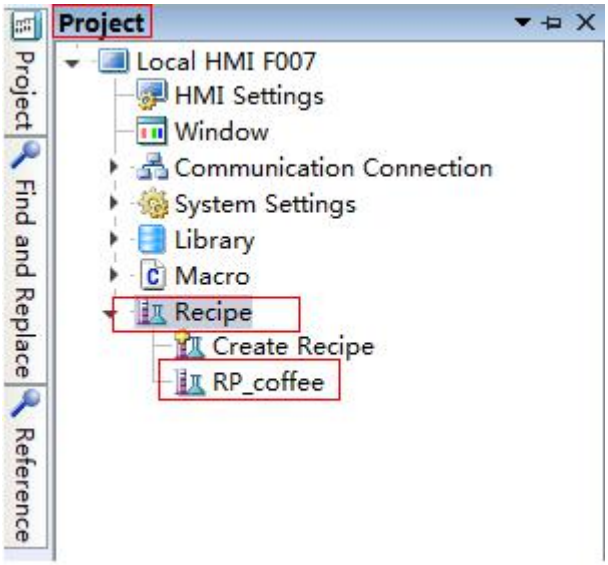
For example, the recipe "RP_coffee" has only one entry and the data type of the entry is "**16-bit Unsigned** ". The Recipe Length is 10. The data setting of the entry is shown as below.



After click the button '**OK**' to confirm the entry setting, the '**Data Information**' setting page of this recipe is shown as below.



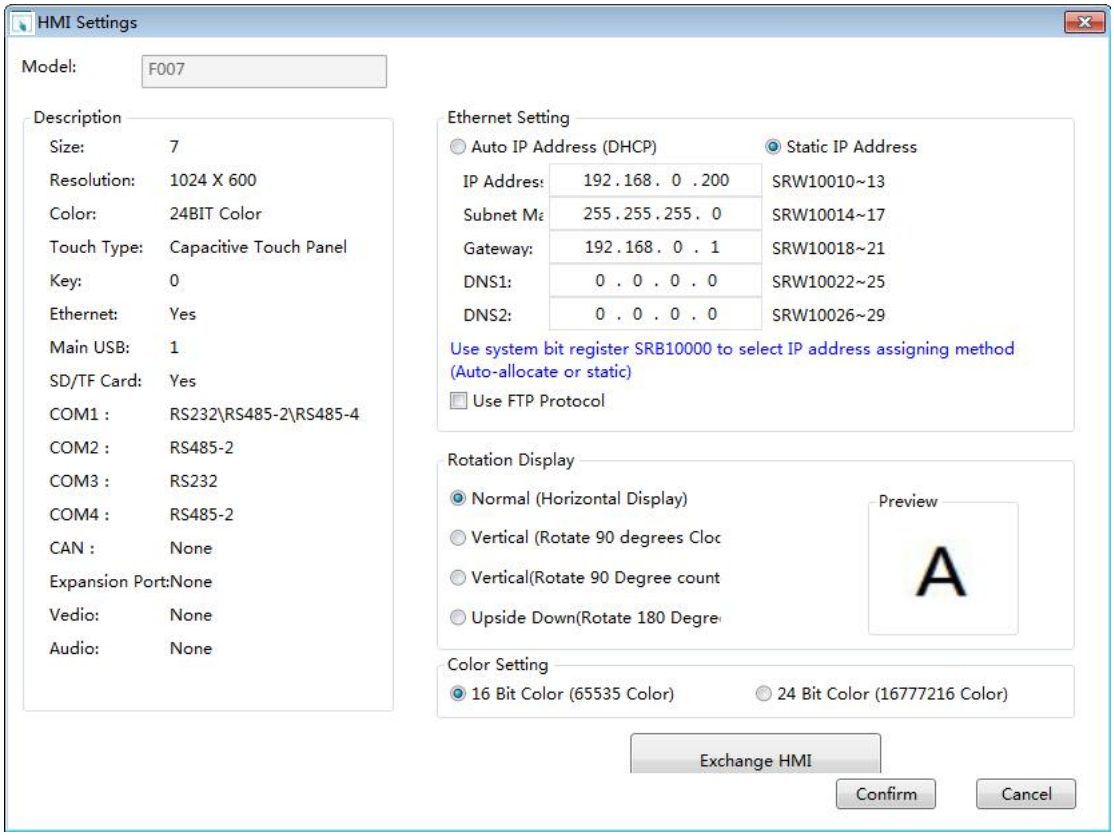
Thus, a named "RP_coffee" recipe is created. It will be displayed in the project tree. It is shown as below.



4.10 Setup

4.10.1 HMI Settings

You can open the '**HMI Settings**' property TAB by clicking the menu command '**Setup/ HMI Settings**'. It is shown as below.



4.10.1.1 Model

The '**Model**' displays the type of the current selected HMI device.

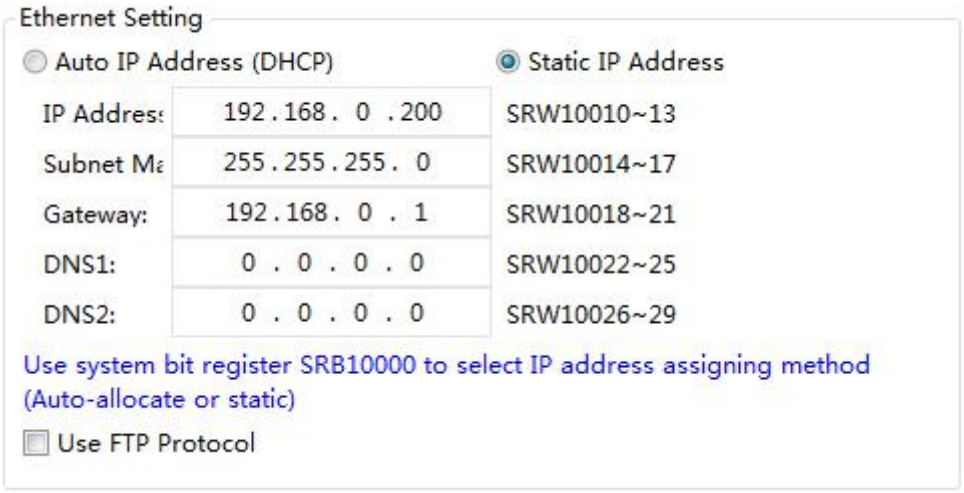
4.10.1.2 Description

The detailed information of the current HMI device is displayed in the '**Description**' area.

4.10.1.3 Ethernet setting

You can set the Ethernet connection properties for the current HMI device. The setting mode of IP address can be '**Auto IP Address (DHCP)**' or '**Static Address**'.

If you select a '**Static Address**' mode, the IP address can be assigned here. Or you can use the SRW registers to set the IP address.



When SRB10000=0, the setting mode is DHCP. When SRB10000=1, the '**Static Address**' mode is used to assign the IP address. You can switch the IP address setting mode by the SRB10000 register.

4.10.1.4 Rotation Display

There are 4 rotation display effect. They are '**Normal (Horizontal Display)**', Vertical (Rotate 90 degrees Clockwise), '**Vertical (counterclockwise)**' and '**Upside down (Rotate 180 degrees)**'. You can preview the display effect of the character '**A**' on the right area.

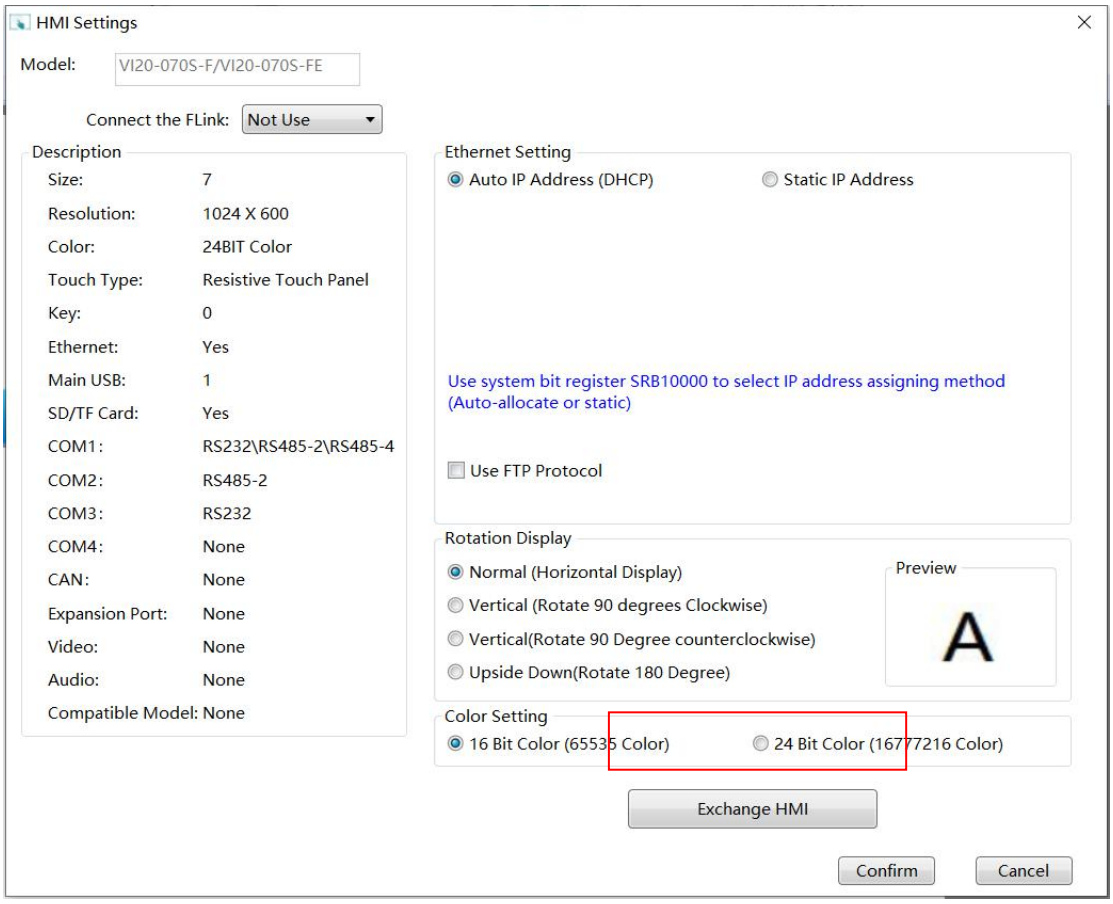
The rotation display mode should be selected according to the installation direction of the HMI device.

4.10.1.5 Color Setting

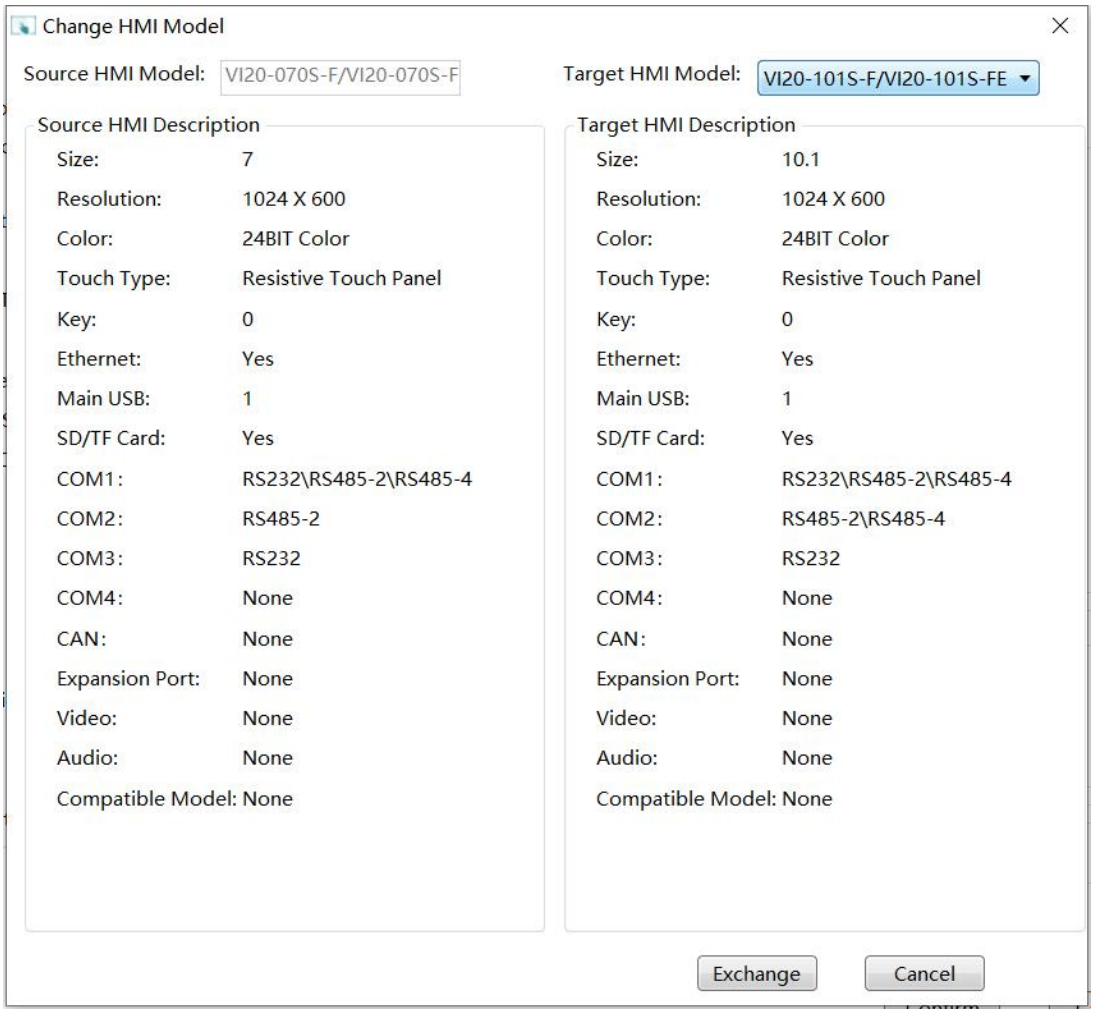
You can select '**16 Bit Color (65535 Color)**' or '**24 Bit Color (16777216 Color)**' based on your project. This setting will take effect after restarting.

4.10.1.6 Exchange HMI

If you want to change the HMI device type for your project, you can click the button '**Exchange HMI**'.



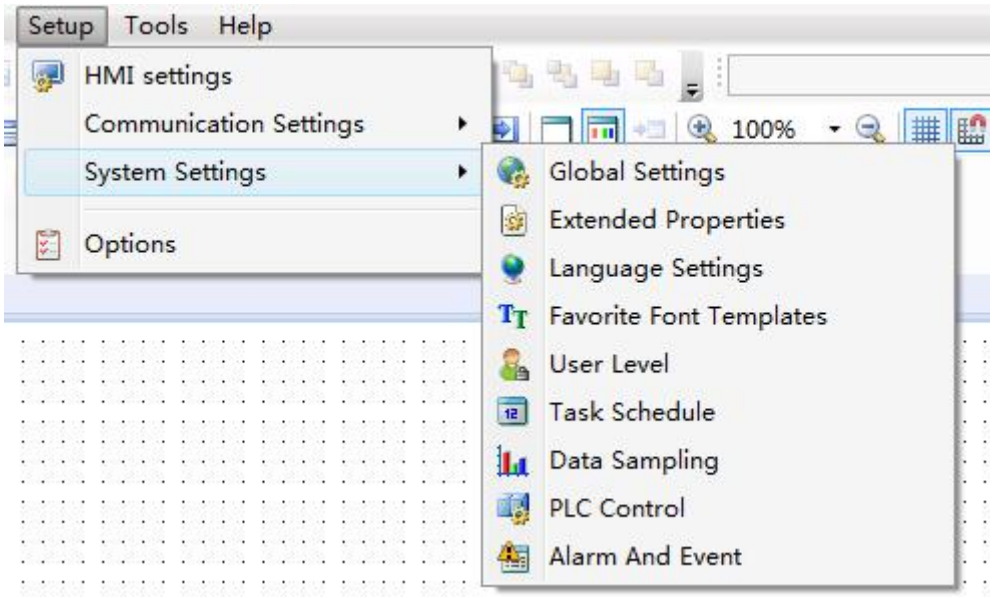
The "**Change HMI Model**" dialog will pop up after you click the button "**Exchange HMI**".



After you select the "**Target HMI Model**" for your project and click the button "**Exchange**" to confirm the setting, the project will be converted to adapt the new HMI device.

The resolution and color need to be adjusted by manual after the exchanging operation. Because the resolution and color change may result in the change of the window size and the loss of color.

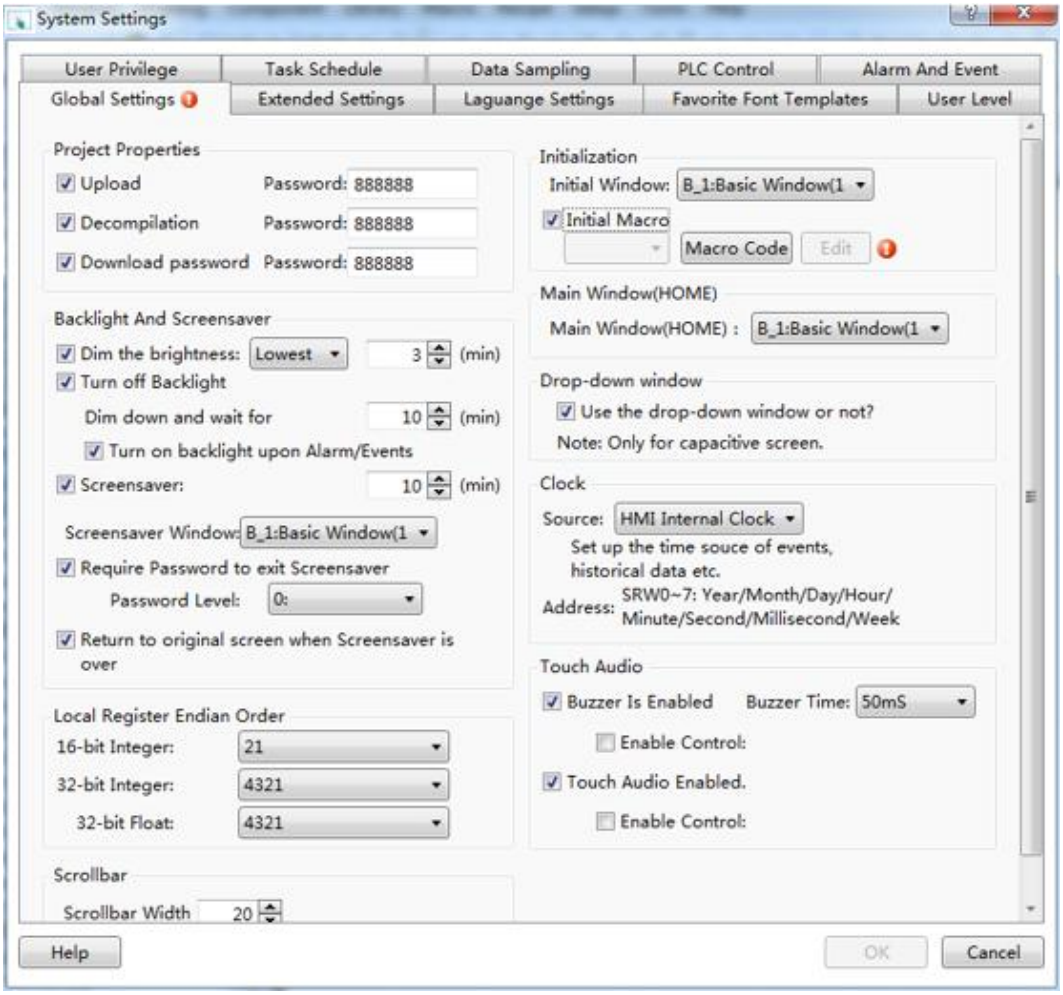
4.10.2 System Settings



4.10.2.1 Global Settings

You can set the project properties, backlight and screensaver, initialization, the main window, touch audio and other related attributes in the "**Global Settings**" property TAB.

Click the menu command "**Setup/ System Settings/Global Settings**" to open the "**Global Settings**" property TAB. It is shown as below.



4.10.2.1.1 Project Properties

● Upload

If you check "**Upload**" and set the "**Password**", the project can be allowed to upload when the other user enter the password after it is downloaded to the HMI device. The uploaded project file can be downloaded to the other HMI device by using the VI20 Studio software Tools.

Note: The uploaded project file is a special archive. The project can be opened after decompiling the VI20 Studio software.

● Decompilation

If you check "**Decompilation**" and set the "**Password**", the project can be allowed to decompile by the VI20 Studio Tools after the password is entered.

Note:

- If only the "**Decompilation**" is checked, the Fpg file of this project can be decompiled after entering the correct password. But this project can't be uploaded.
- If only the "**Upload**" is checked, this project can be uploaded after enter the correct password. But the Fpg file of this project can't be decompiled.
- If the "Upload" and the "**Decompilation**" are not checked, the size of the file after compiling is the least. But it cannot be uploaded or decompiled. On the other hand, it is safest way to protect your project.

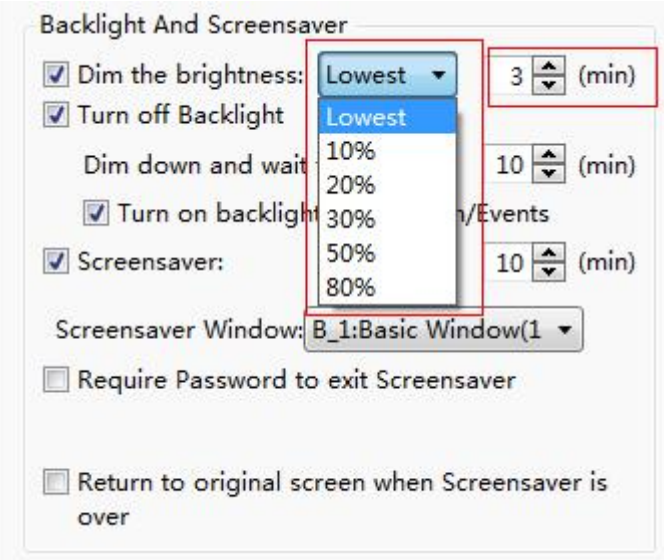
● Download Password

The project in HMI may be replaced by the download content if the option is not checked. After checking the option, then you need to enter the password every time you want to download projects from the HMI, to avoid the original projects to be replaced.

4.10.2.1.2 Backlight and Screensaver

● Dim the brightness

You can check the option "Dim the brightness" to adjust the backlight lightness after the specified time. The lightness can be set "Lowest", “10%”, “20%”, “30%”, “50%” or “80%”. The specified time needs to input in integer.



● Turn off Backlight

➢ Dim down and wait for

You can set a specified time to turn off the backlight after the lightness is adjusted. The default value is 10. That means it will keep 10 minutes after the backlight lightness is adjusted. Then the backlight will be turned off.

Note: The configuration screen will be invisible after the backlight is turned off.

➢ Turn on backlight upon Alarm/Events

If you check the option "**Turn on backlight upon Alarm/Events**", the backlight will be turned on automatically when the alarms or events occur and the backlight is off during the running.

➢ Screensaver

If you check the option "**Screensaver**", the Screensaver Window will be switched to display when the time is up. The Screensaver Window must be specified. It is used to display the company LOGO.

➢ Require Password to exit Screensaver

If you check the option "**Require Password to exit Screensaver**", a system message window will pop up to prompt you to enter the corresponding level password when you want to exit the screen saver window.

Note: You need to use the character input component to enter the password to SRW100 ~ 103.

➢ Return to original screen when Screensavers is over

If you check the option "**Return to original screen when Screensavers is over**", it will return to the original screen when you click the HMI screen. Of course, if you set a password, the system message window will pop up to prompt you to enter the password before return to the original screen.

Note: If you don't check the option "**Return to original screen when Screensavers is over**", it will still stay in the screensaver window when the screensaver is over.

4.10.2.1.3 Local Register Endian Order

The "**Local Register Endian Order**" refers to the order of the high byte and the low byte. For example, a 32-bit register LW0=0x12345678. If you select the “4321” mode, then the word register LW0=0x1234 and the word register LW1=0x5678. If you select the “2143” mode, then the word register LW0=0x5678 and the word register LW1=0x1234.

4.10.2.1.4 Scroll bar

For some components without setting the scroll bar width, you can set it in the "**Scroll bar Width**" option. For example, you set the scroll bar width for the pop up window component here.

4.10.2.1.5 Initialization

● Initial Window

The "**Initial Window**" refers to the first displayed configuration window after the project is downloaded to the HMI or the HMI is powered on.

● Initial Macro

After check the "**Initial Macro**", you can specify a Macro to run before the configuration window is displayed. This function can realize the initial work of your project.

4.10.2.1.6 Main Window (HOME)

The main window can be set here. So you can return to the main window in any configuration window by setting "**Return to the main window (HOME)**” for the "**Window Operation**" function of the Bit Set component.

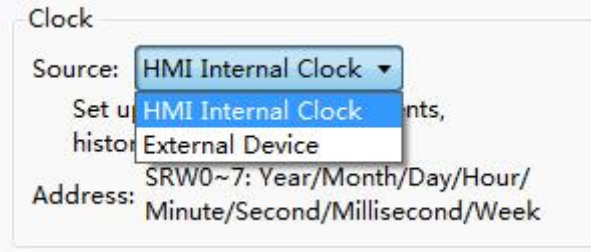
4.10.2.1.7 Drop-down window

If this function is checked, you can specify a window as a pull-down window, where you can put the alarm events and other related components to display. This function is valid only for the capacitive HMI device.

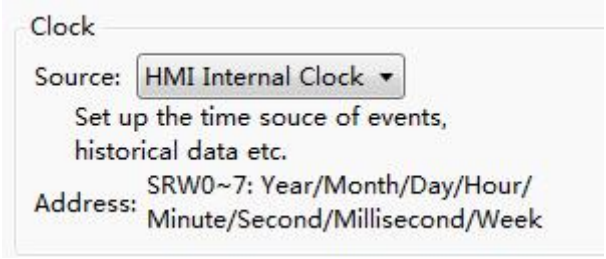
Note: When you slide the HMI window to more than half the width of the window from the upper edge down during running the project, the Drop-down window will display gradually. Similarly, when you slide to more than half the width of the window from the lower edge up, the Drop-down window will be withdrawn.

4.10.2.1.8 Clock

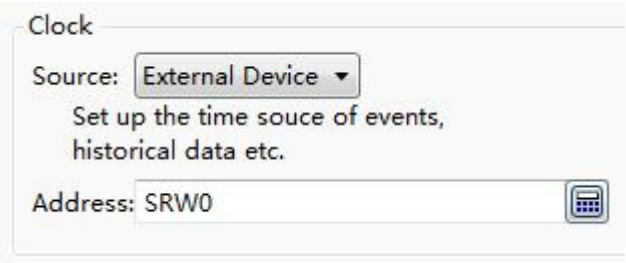
The "**Source**" of Clock can be set "**HMI Internal Clock**" or "**External Device**".



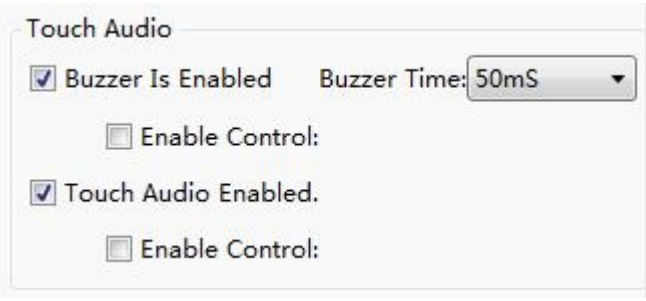
If you select the "**HMI Internal Clock**" as the HMI clock, SRW0~7 will be used to save the time source of events, historical data, etc.



If you select the "**External Device**", the registers address can be changed.



4.10.2.1.9 Touch Audio



● **Buzzer is enabled**

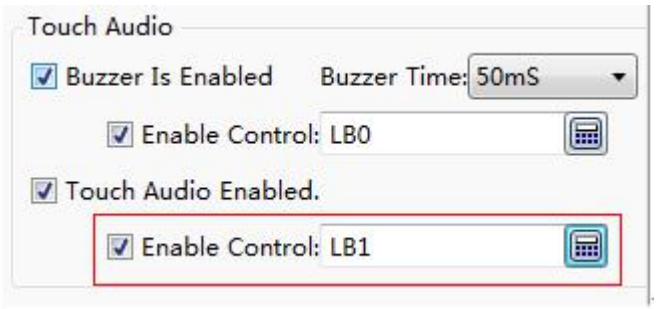
If only the option "**Buzzer Is Enabled**" is checked, the buzzer will beep for a specified time when you touch the effective components, such as buttons.

If the option "**Enable Control**" is also checked, you need to select a bit register. When the bit register is **ON**, the function of "**Buzzer Is Enabled**" is allowed to use. For example, the LB0 is set for the "**Enable Control**". If LB0 is **ON**, the buzzer will beep when you touch the effective components. When it is **OFF**, the buzzer will not beep. The option "Buzzer Time" can set 50ms, 75ms,100ms,150ms,200ms,300ms,500ms,800ms, and1s.

● **Touch Audio Enabled**

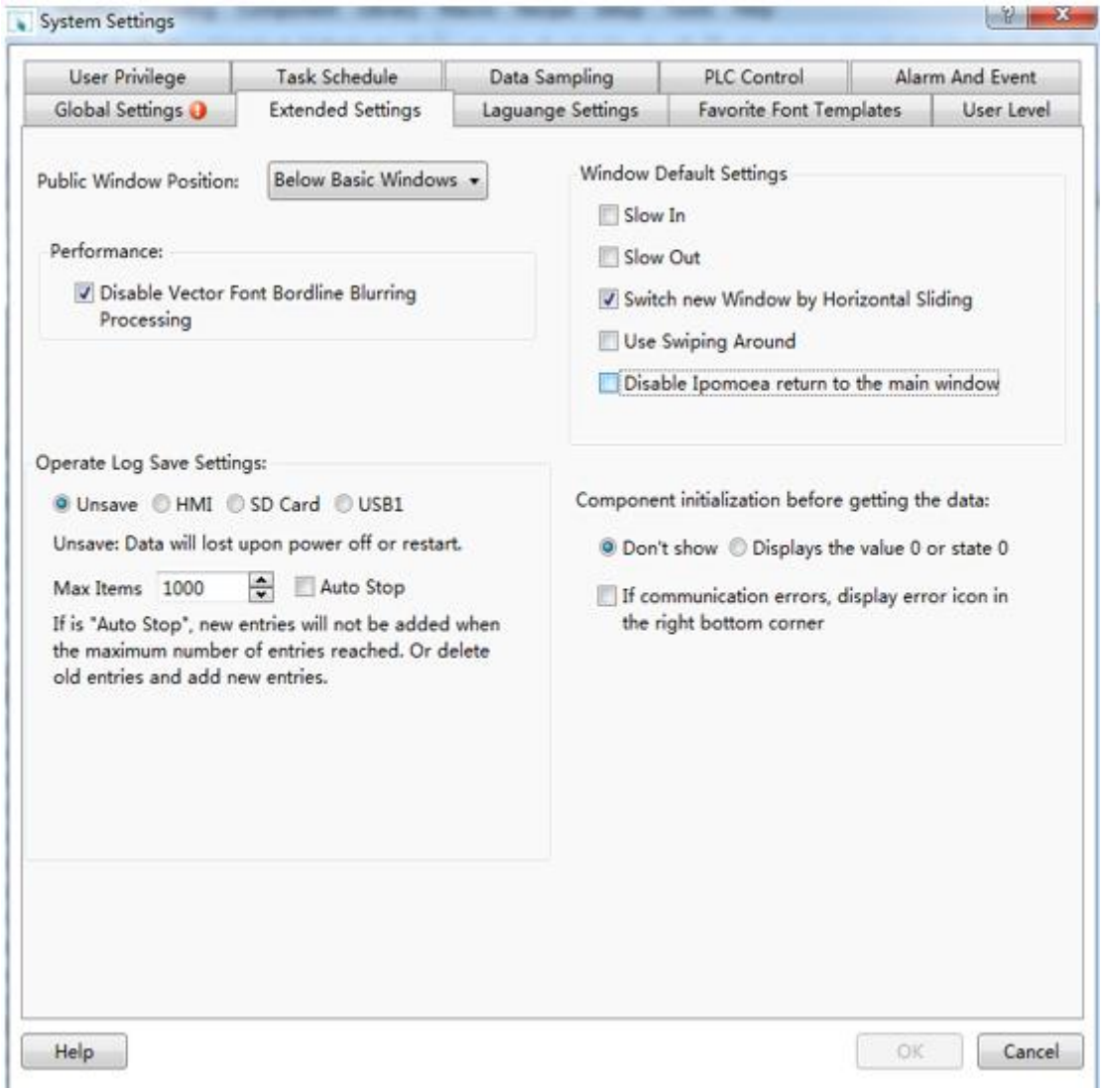
If the option "**Touch Audio Enabled**" is checked, all audio play is available. It is selected by default.

If the option "**Enable Control**" is also checked, you need to select a bit register. When the bit register is **ON**, the function of "Touch Audio Enabled" is allowed to use. For example, the LB1 is set for the "**Enable Control**". If **LB1** is **ON,** the audio play is available. If it is **OFF**, the audio will not be available.



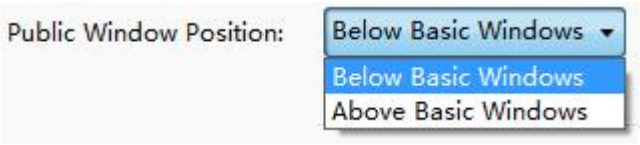
Note: If the option "**Touch Audio Enabled**" is not checked in the global settings, the audio will not be available even if the audio is active in the proper TAB of the effective component.

4.10.2.2 Extended Settings



4.10.2.2.1 Public Window Position

The attribute of "**Public Window Position**" can be set "**Below Basic Window**" or "**Above Basic Window**". The option "**Below Basic Window**" is selected by default.



The effect of the "**Below Basic Window**" is shown as below.

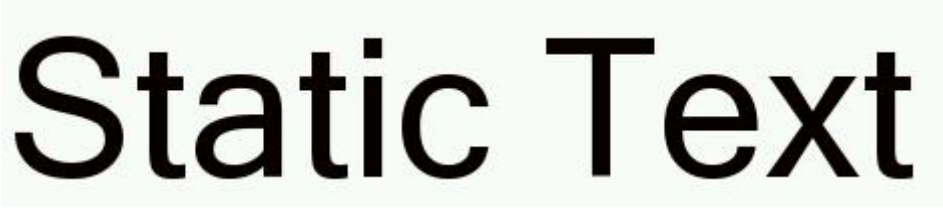
The effect of the "**Above Basic Window**" is shown as below.

4.10.2.2.2 Performance

If you check the option "**Disable Vector Font Borderline Blurring Processing**", the display effect of the fonts will have some burr. It does not look smooth and good, but the display speed is faster. You can use this option to get higher display speed when less display quality is demanded.

Note: the speed difference is not obvious for the hardware which the version is above A8. So you need not check this option generally.

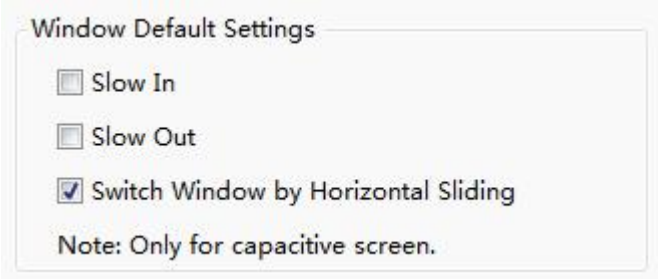
If you don't check the option "**Disable Vector Font Borderline Blurring Processing**", the display effect is shown as below.



If you check the option "**Disable Vector Font Borderline Blurring Processing**", the display effect is shown as below.

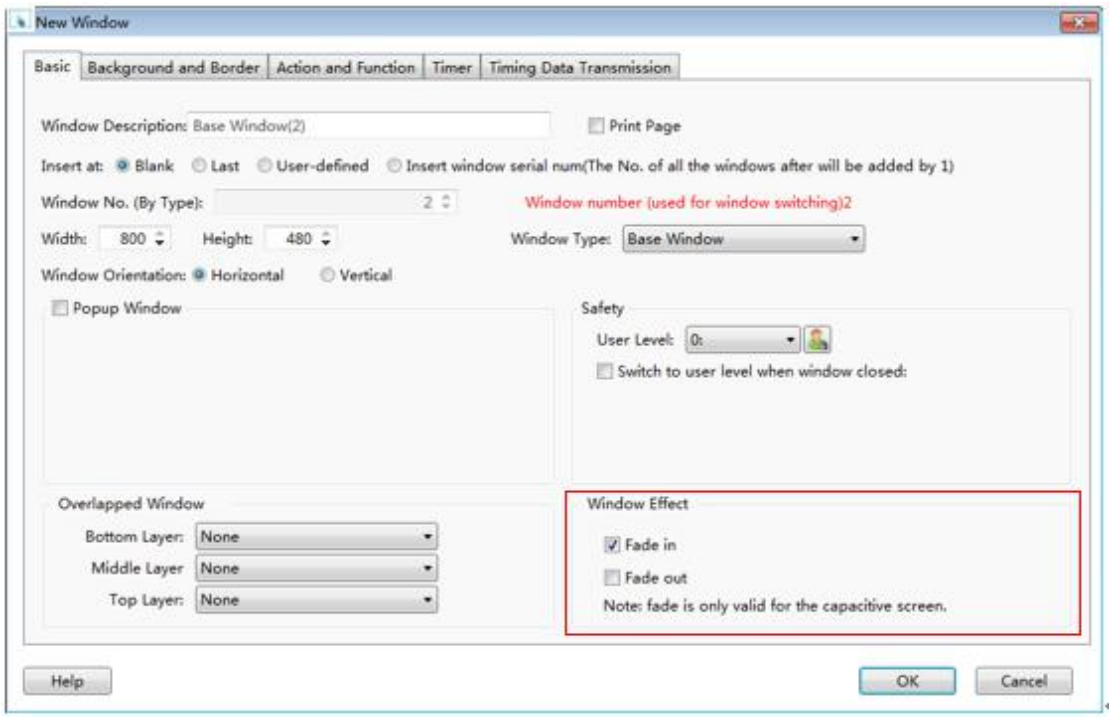
4.10.2.2.3 Window Default Settings

There are three options for the "**Window Default Settings**". They are "**Slow In**", "**Slow Out**" and "**Switch Window by Horizontal Sliding**". The three options are valid only for the capacitive screen.



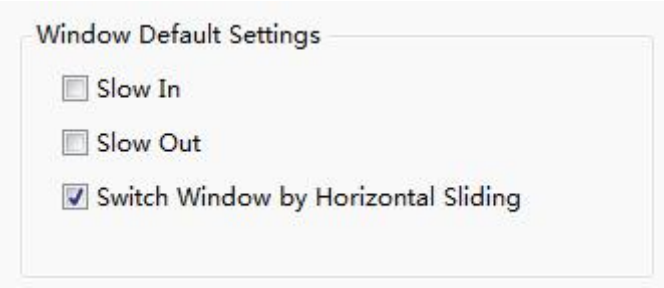
- **"Slow In" and "Slow Out"**

After the "**Slow In**" or "**Slow Out**" is checked, the new window will have a fade effect. You can find the "**Fade in**" option is checked by default in the "**Basic**" property TAB of the new window. Another window effect is "**Fade out**". The fade effect is only valid for the capacitive HMI device.



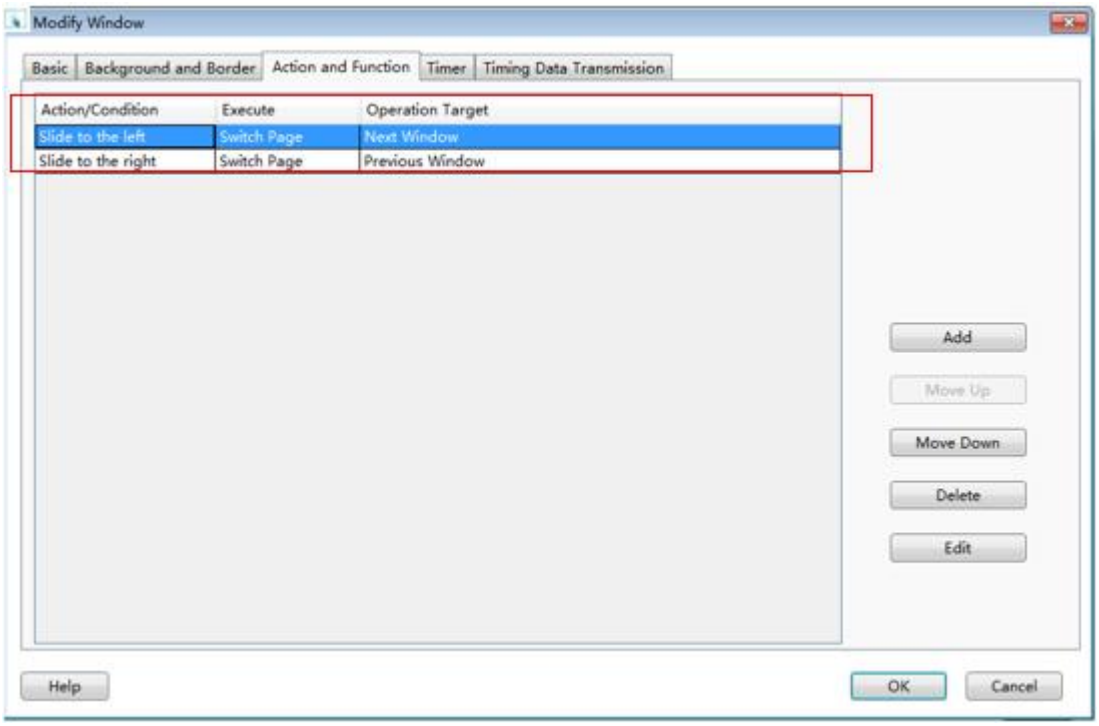
Note: The fade effect will produce an effect on the speed of switching windows obviously. The economic HMI model are not suggested to be used.

● **Switch Window by Horizontal Sliding**



After the "**Switch Window by Horizontal Sliding**" option is checked, the windows can be switched by horizontal sliding action. This function is only supported by the capacitive HMI devices.

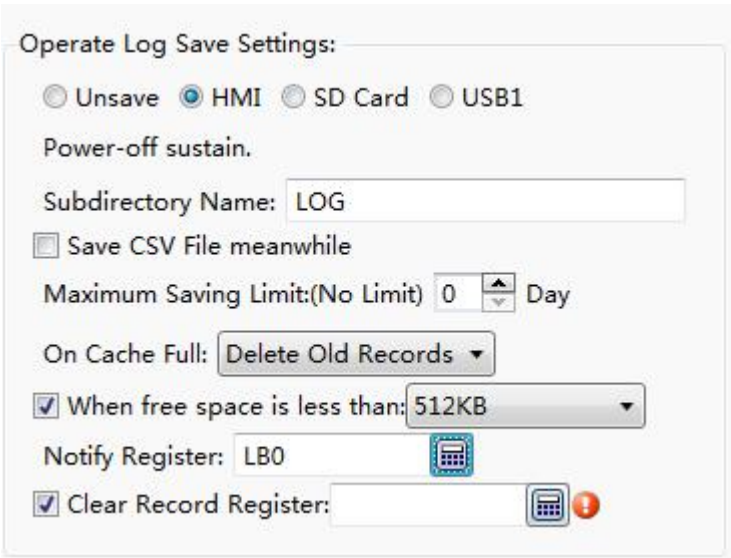
You can set the operation for this function in the "**Action and Function**" property TAB of the basic window.



If you click the '**Slide left / right**' button, then the function of horizontal sliding will take effect, the function is only valid for the capacitive HMI.

If you click the '**Disable Ipomoea return to the main window option**', then the function of '**Ipomoea return to the main window'** is disabled, the function is enabled by default, you can check the option if you do not need it. It can be controlled by the special register **'SRB10012=1, too**'.

Operate Log Save Settings:



This settings is the global settings, the operating steps can be recorded without setting the operate log control, the default is not saved, you can choose to save to the local HMI, SD card, USB1. The address of storing operate log is retained after power down, you can define the subdirectory name

by yourself. The files saved is .db files.

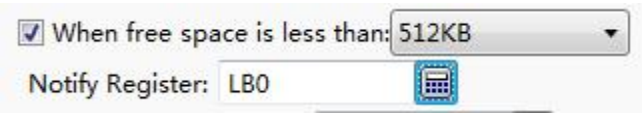
Save CSV File meanwhile:

The operate log will be saved as .db file and CSV file at the same time. The CSV file can be opened directly and viewed with Excel.

Maximum Saving Limit:

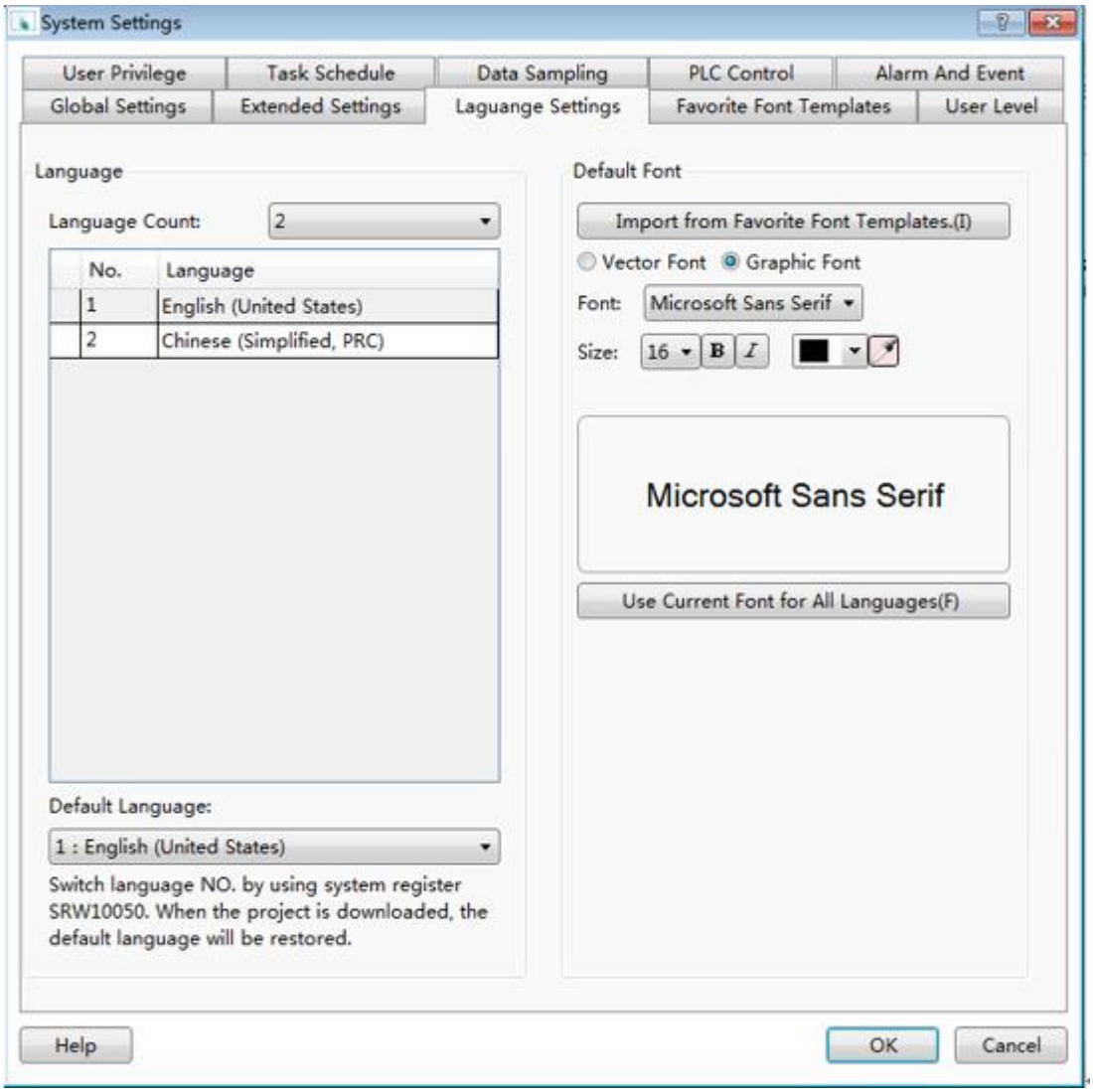
There is no limit when select 0days, you can click the option '**Delete Old Records**'when the cache is full, the new operate log will continue recording, '**Discard New Records**', it will not record the operate log any more if the cache is full.

You can set the '**Notify Register**' when the cache is full, as shown below, LB0 is set to 1 when the free space is less than 512KB.



You can set a flag bit to clear the historic records of the operate log.

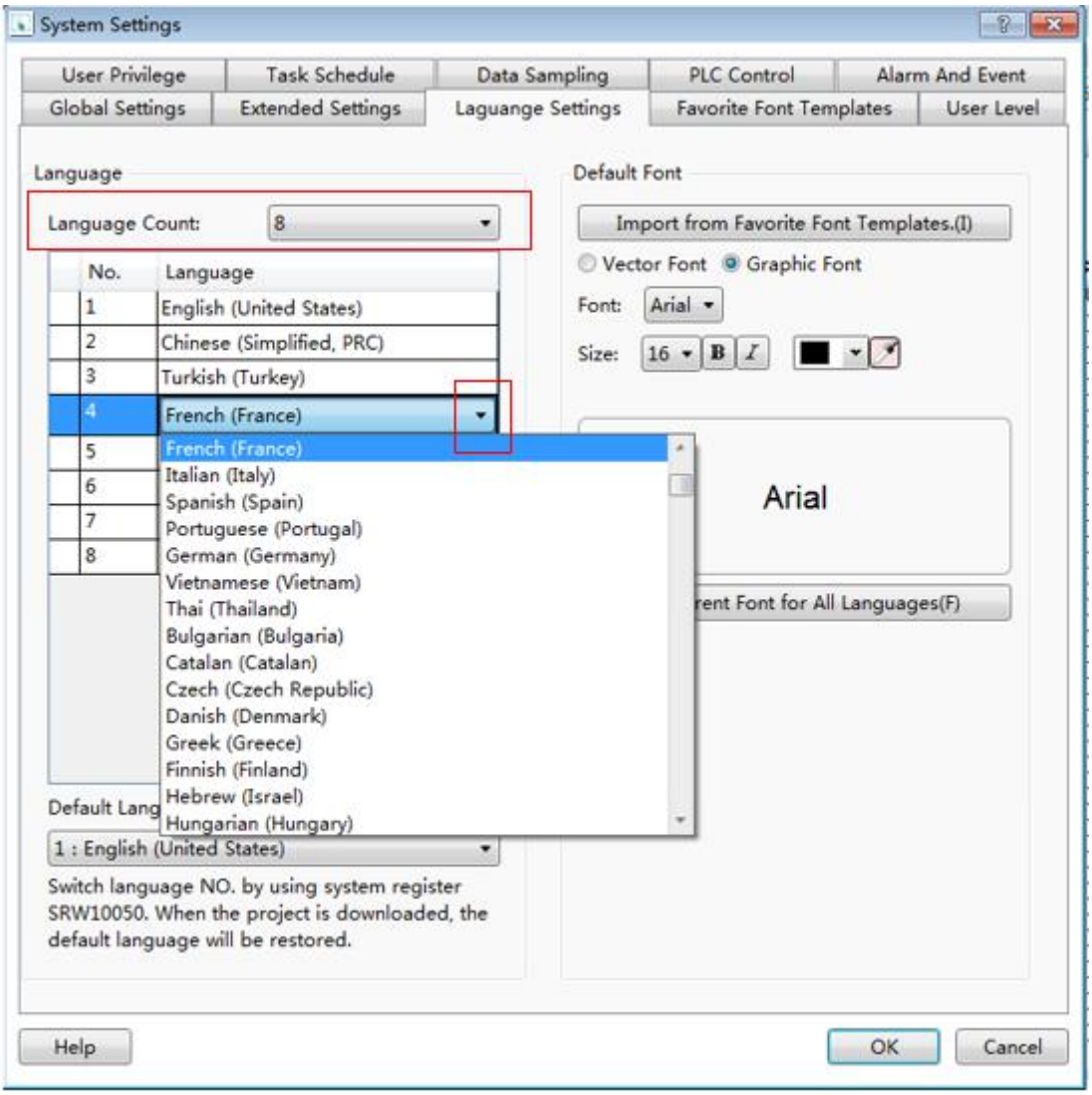
4.10.2.3 Language Settings



4.10.2.3.1 Language

● **Language Count**

You can select the number of the languages in the list of the "**Language Count**" option. Then you set the languages in the table. The languages should be different in the table. You can modify the languages by the lists in the table.



● **Default Language**

You can select a language from the list as the "**Default Language**". After downloading the project, the specified default language will be as the display language. You can switch the display language by changing the value of SRW10050. The No.1 language will be displayed when SRW10050 is 0. The No.2 language will be displayed when SRW10050 is 1. The No.3 language will be displayed when SRW10050 is 2. And so on. The display language will be changed to the specified "**Default Language**" when the project is downloaded again.

4.10.2.3.2 Default Font

Refer to: Detailed manual/ General functions/ Font settings.

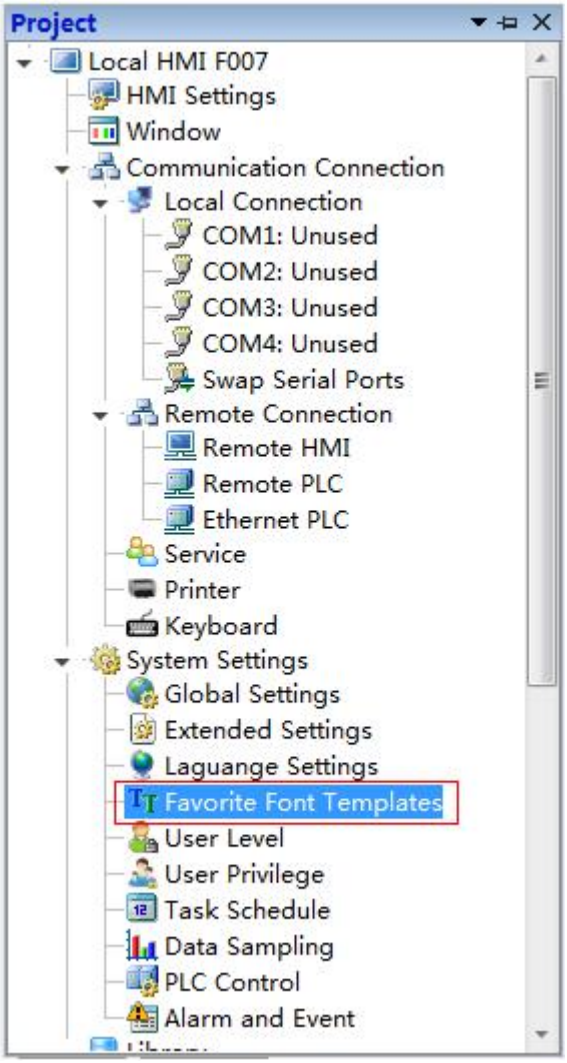
4.10.2.4 Favorite Font Templates

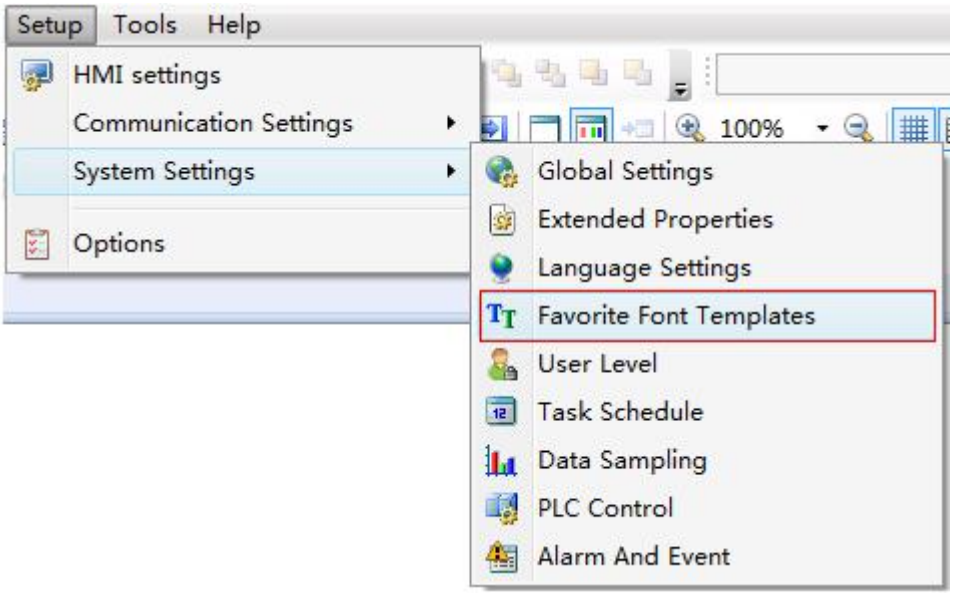
The function is used to save the common font styles as a template. You can use this template when

you set the font style.

4.10.2.4.1 Open the "Favorite Font Templates"

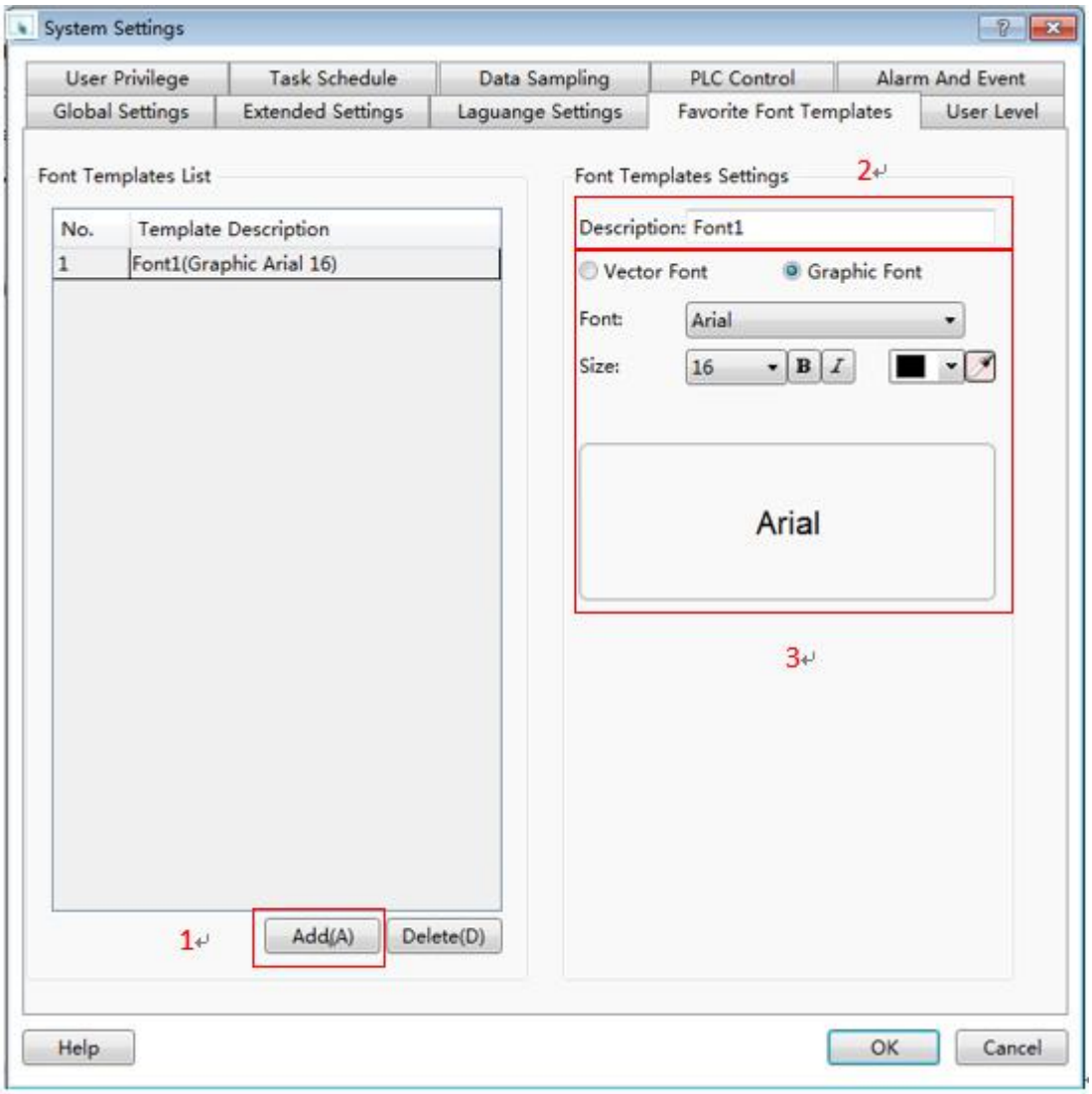
You can open the "**Favorite Font Templates**" settings page in the project tree or by clicking the menu command "**Setup/System Settings/Favorite Font Templates**".





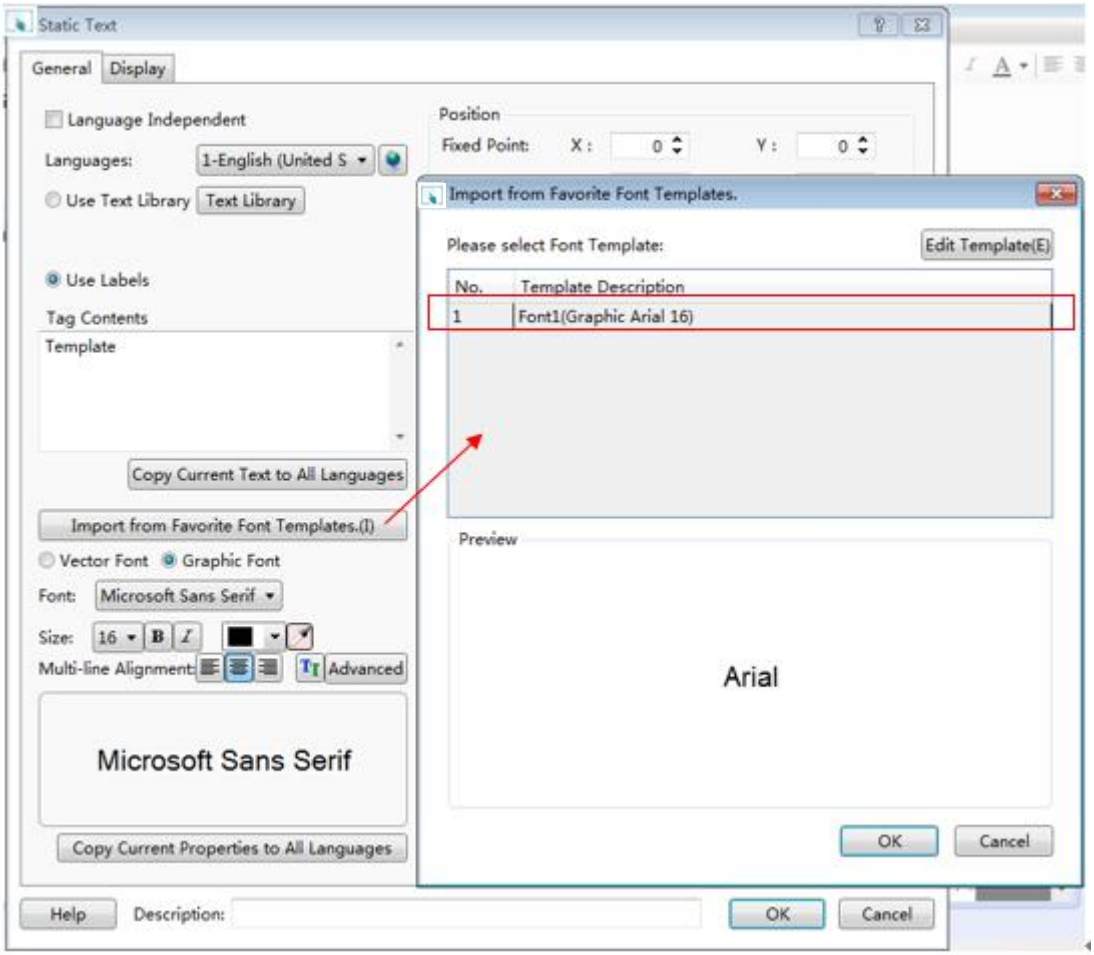
4.10.2.4.2 Add Font Templates

First, click the button "**Add(A)**". Then give a name for the current font template in the "**Description**". The font style need to be set, referred to: Detailed manual/General functions/Font settings. At last, click the button "OK" to confirm and save the settings.

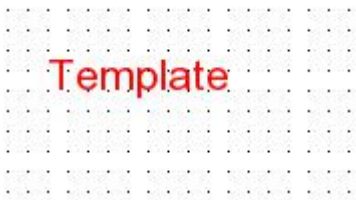


4.10.2.4.3 Use a font template

For example, a font template is used in the property settings of a Static Text component.



First, click the button "**Import from Favorite Font Templates**" in the property window of a Static Text component to open the "**Import from Favorite Font Templates**" dialog. Then select the required font template and click the '**OK**' button. The result is shown as below.

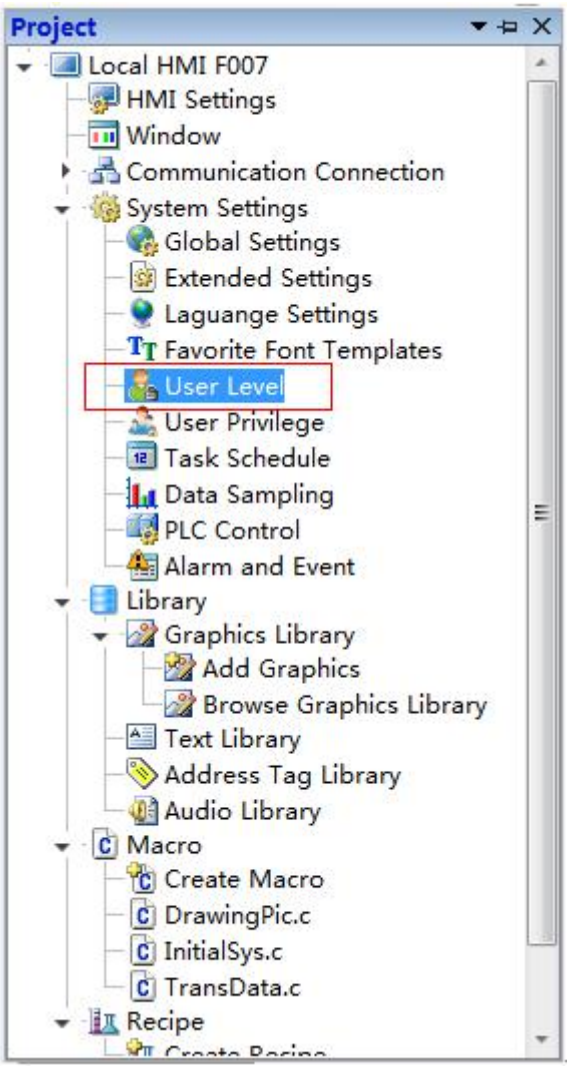


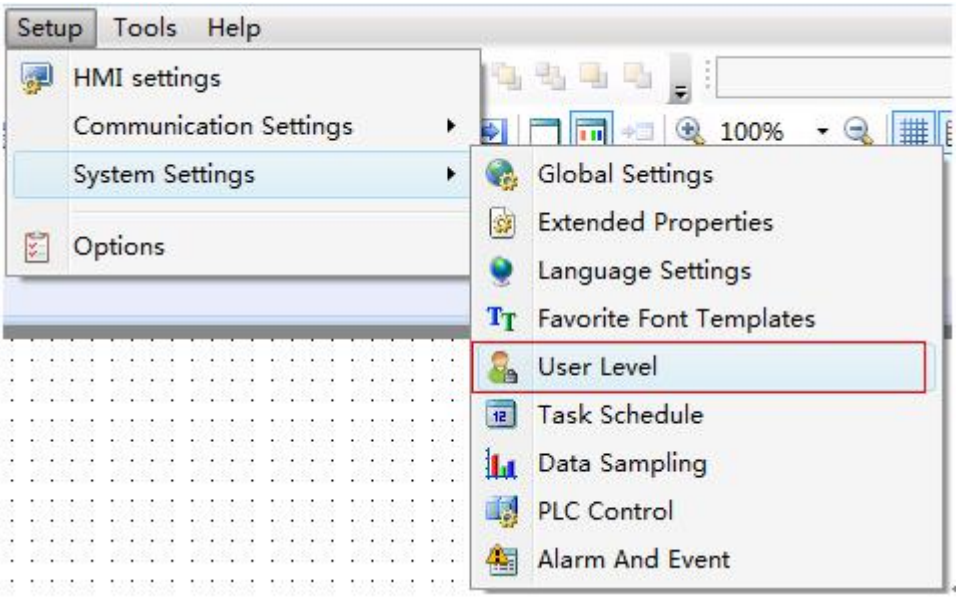
4.10.2.5 User Level

You can set the levels and the level passwords for the users in the "**User Level**" settings page. The settings of the "**User Level**" are valid in the whole HMI system. The higher the level is, the greater the range which can be operated is. The higher user level can access the screen windows which the lower user level can access. But it is not prohibited that the lower user level accesses the higher user level.

4.10.2.5.1 Open

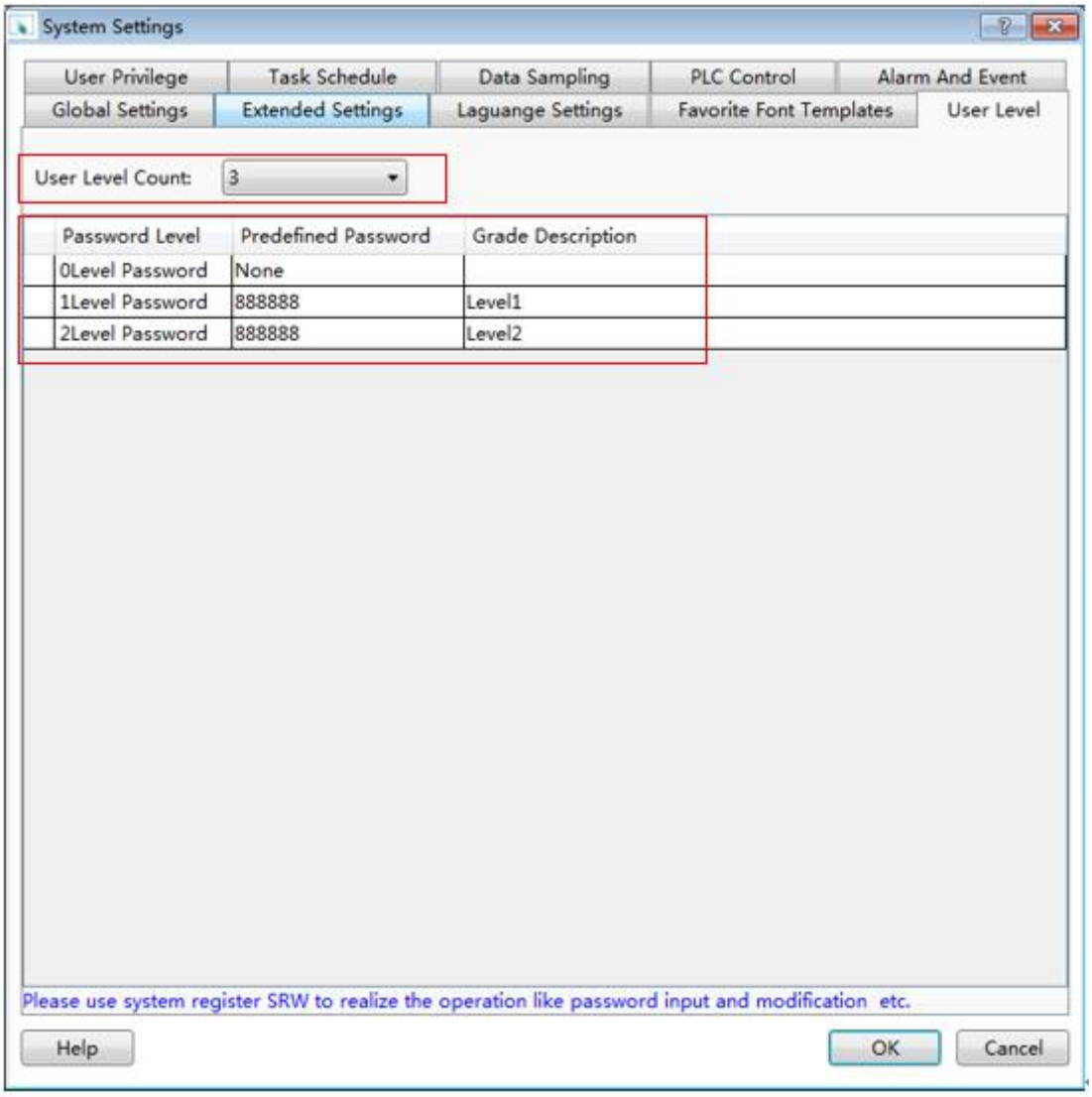
The "**User Level**" settings page can be opened by double-clicking the "**User Level**" option in the System Settings of the project tree or click the menu command "**Setup/ System Settings /User Level**".


Project
Local HMI F007
HMI Settings
Window
Communication Connection
System Settings
Global Settings
Extended Settings
Laguange Settings
Favorite Font Templates
User Level
User Privilege
Task Schedule
Data Sampling
PLC Control
Alarm and Event
Library
Graphics Library
Add Graphics
Browse Graphics Library
Text Library
Address Tag Library
Audio Library
Macro
Create Macro
DrawingPic.c
InitialSys.c
TransData.c
Recipe


Setup
Tools
Help
HMI settings
Communication Settings
System Settings
Options
100%
Global Settings
Extended Properties
Language Settings
Favorite Font Templates
User Level
Task Schedule
Data Sampling
PLC Control
Alarm And Event

4.10.2.5.2 Edit

The "User Level" settings page is shown as below.



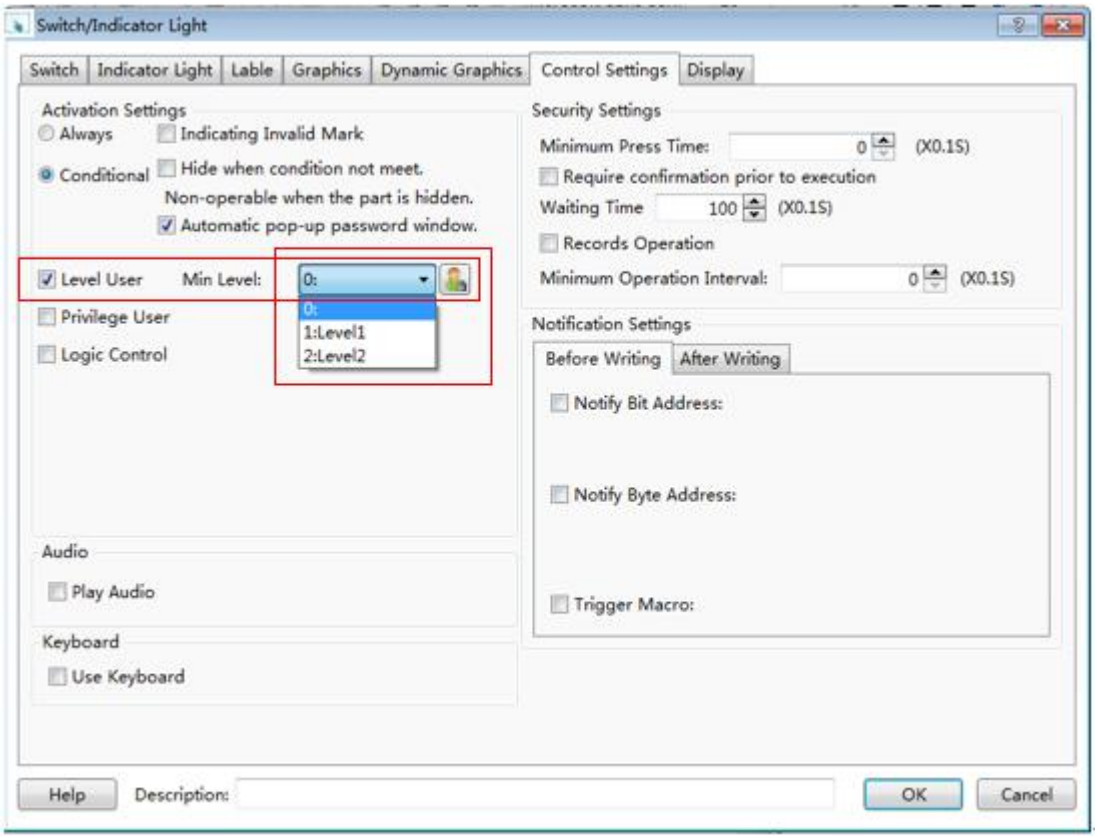
You can set the number of the user level in the "**User Level Count**" by using the list. And you can edit the information of every user level in the table, such as the Predefined Password and the Grade Description.

4.10.2.5.3 Use

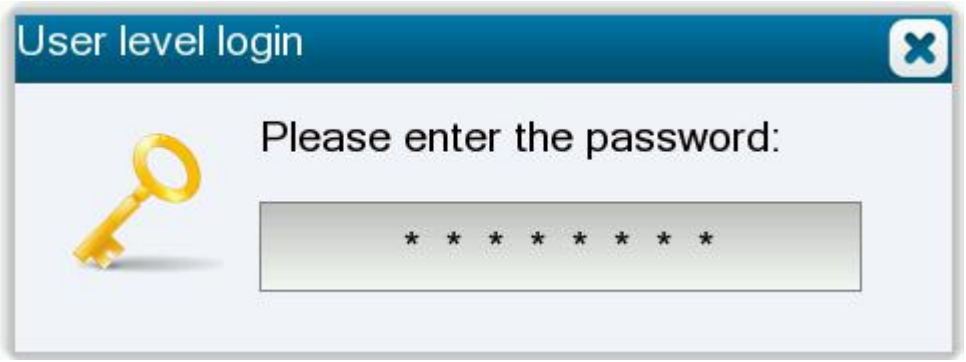
For example, set the user level function for the "**Bit Switch**" component.

Open the property window of the "**Bit Switch**" component and select the option "**Conditional**" in the property TAB of "**Control Settings**". Check the option "**Level User**" and select the level from the list. It is shown as below.

Note: High-level users have low-level user operation permissions.



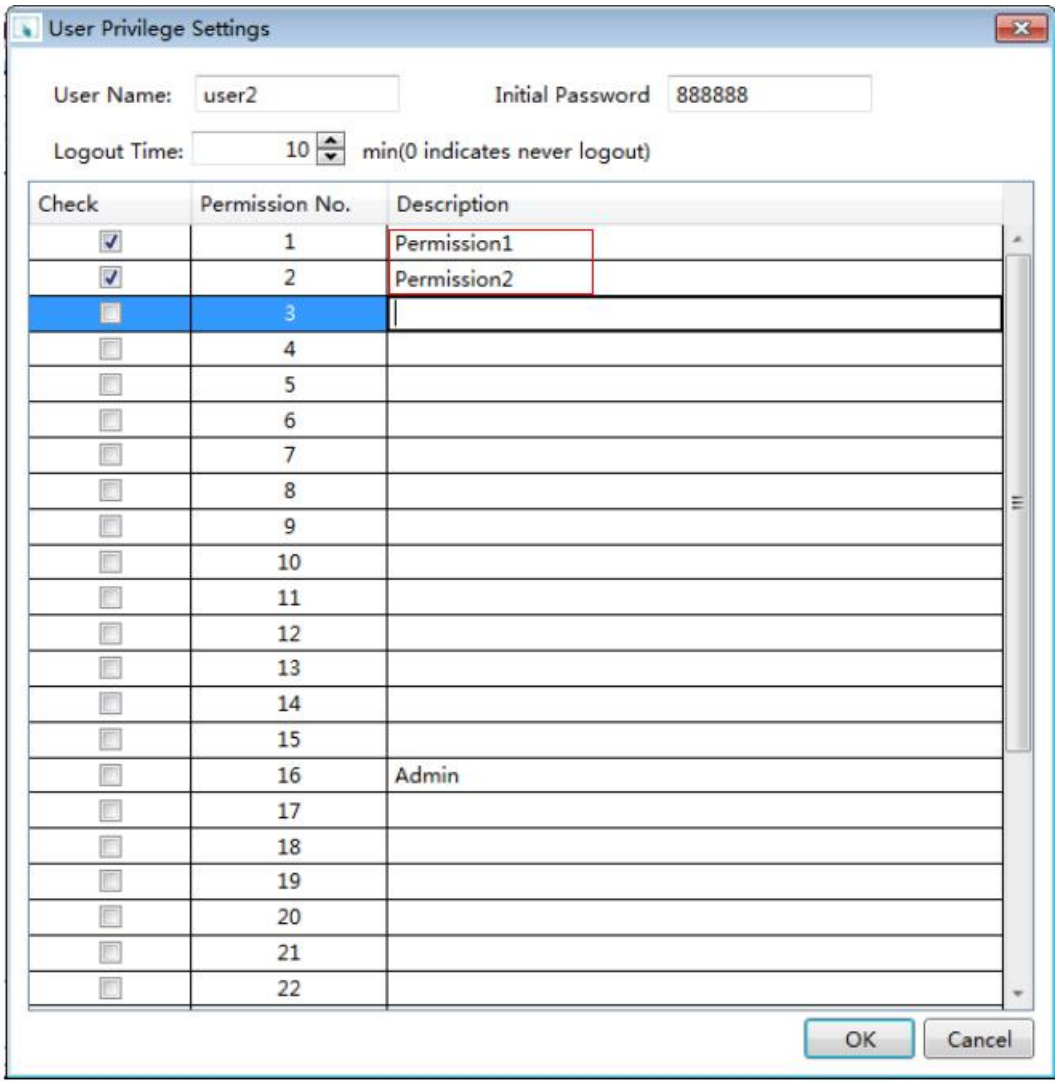
Run the project. A "**User level login**" window will pop up when you click the component. It is shown as below. You can operate the component only by entering the correct password in the "**User level login**" window.



4.10.2.6 User Privilege

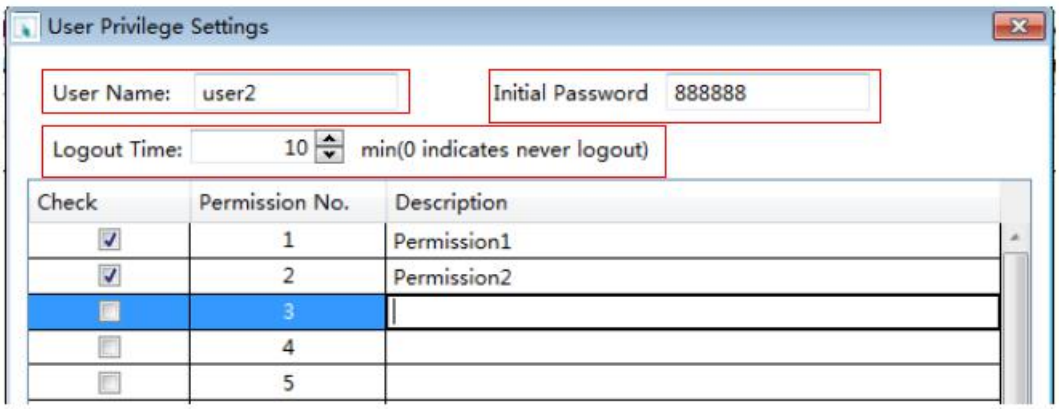
The "**User Privilege**" is used to provide security for the user operations. The different privilege is given when the user enter the different user name and the corresponding password.

4.10.2.6.1 Add



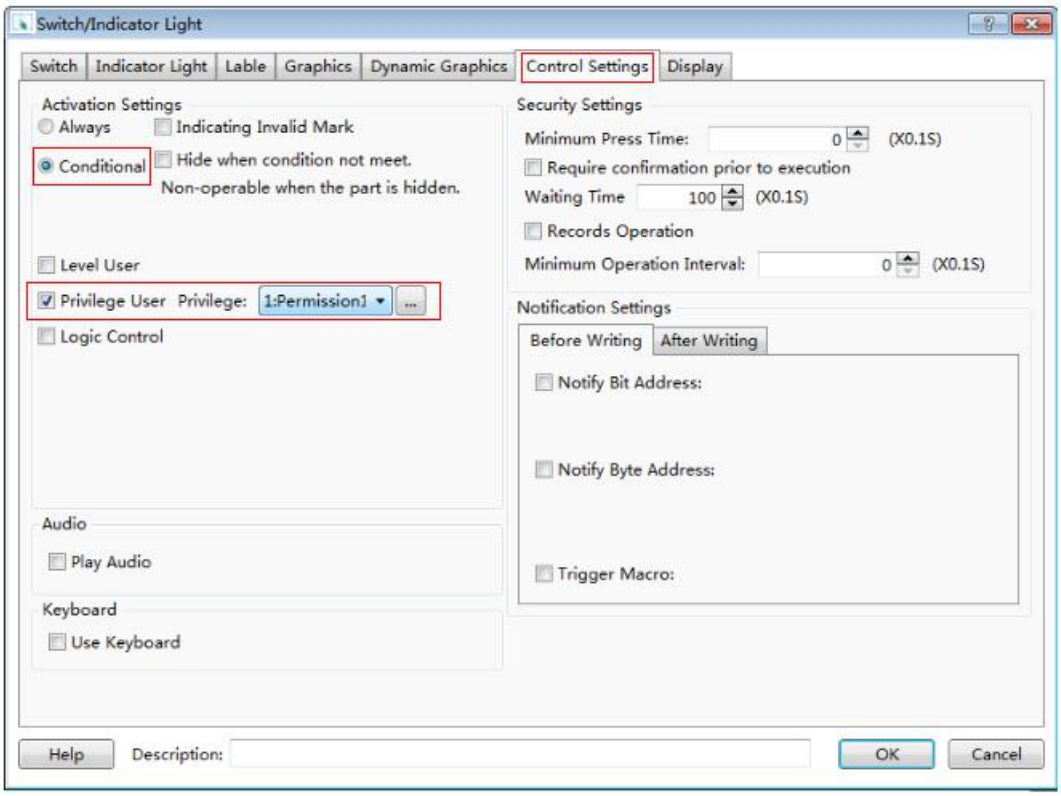
4.10.2.6.2 Set User name and password

You can set different User Name, Initial Password and Logout Time for different privileges in the **User Privilege Settings** dialog. The login state of the current user will exit if the Login Time is more than the Logout Time.



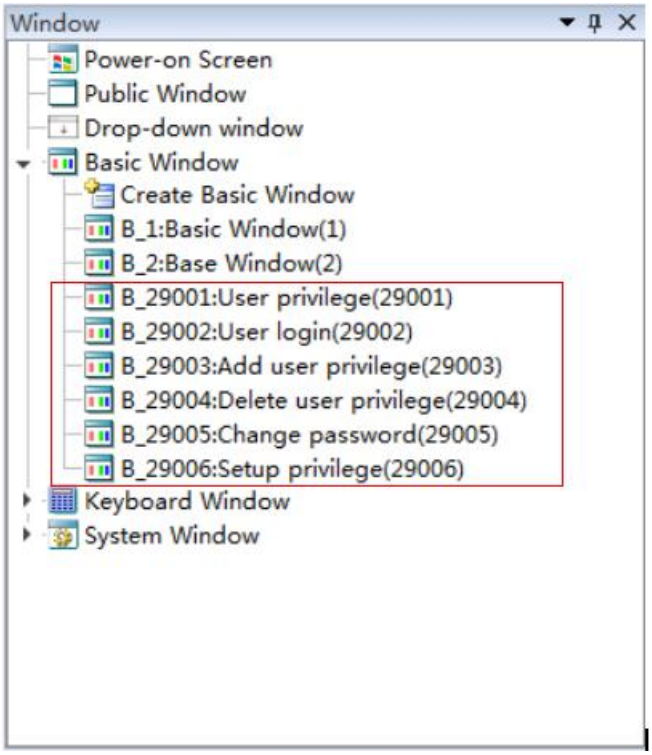
4.10.2.6.3 Use

You can use the **User Privilege** in many situations, such as the control settings, the window switch, the value input, and so on.



4.10.2.6.4 Call

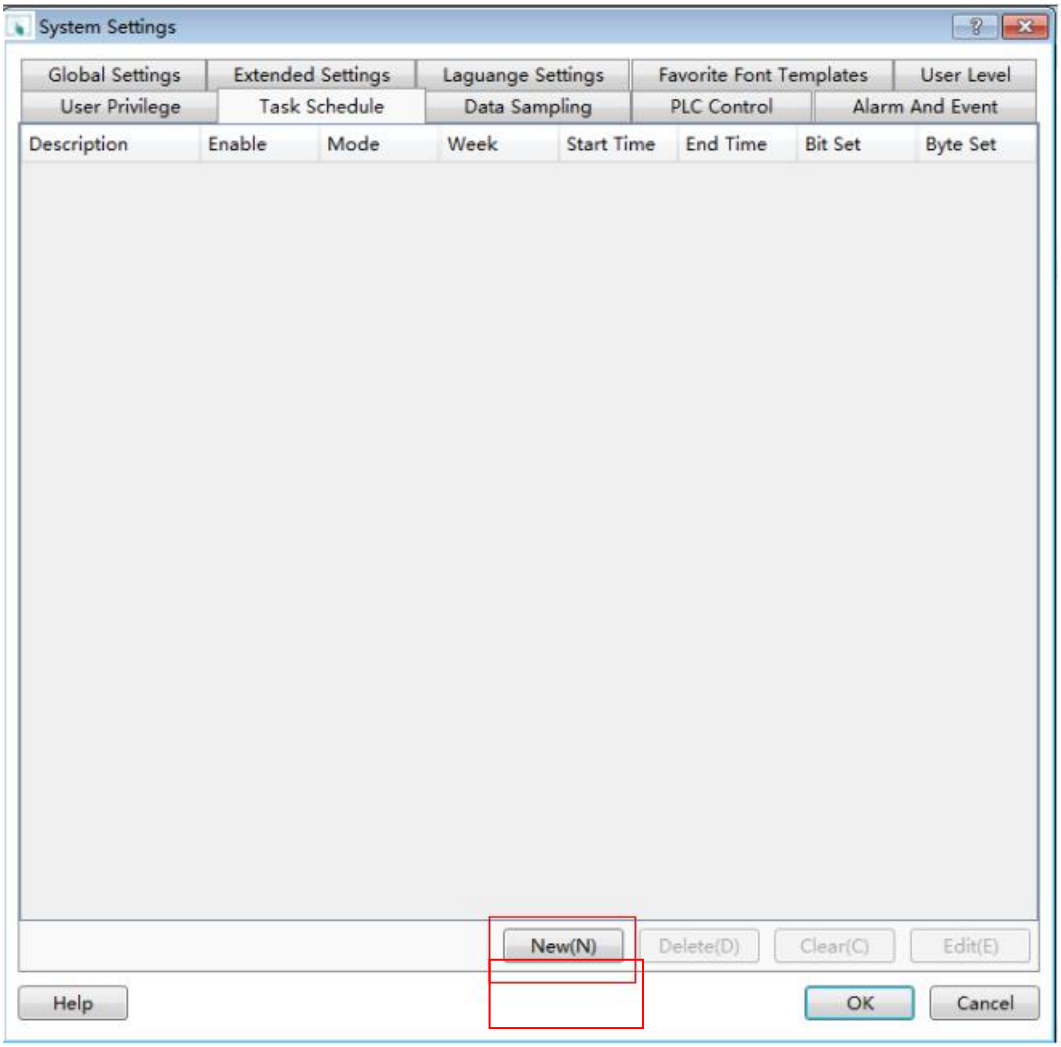
You can find some windows which the system provides in the project tree, such as the User privilege window, the User login window, and so on. These windows make it easy to use for users.



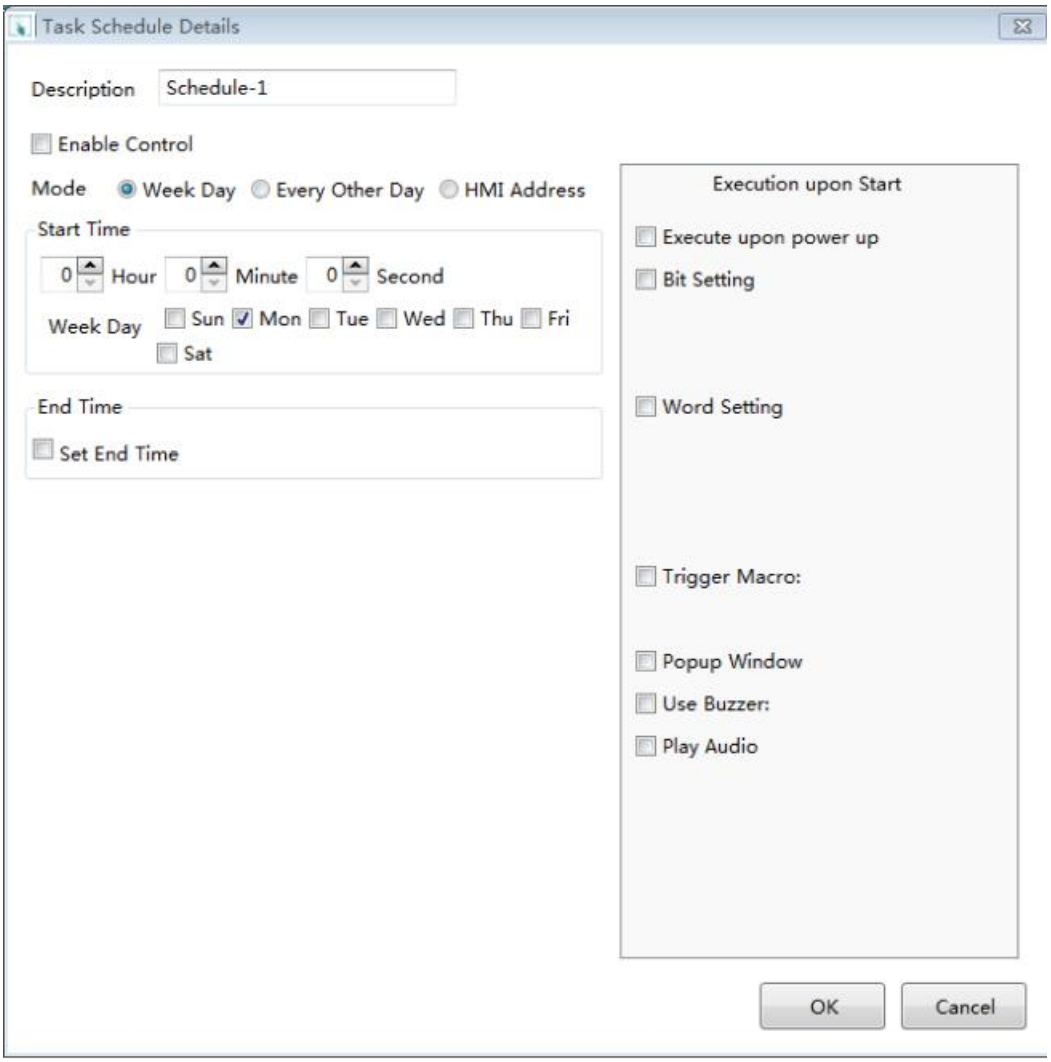
4.10.2.7 Task Schedule

The **Task Schedule** is used to execute some operations when time is up.

You can open the **Task Schedule** property TAB by clicking the menu command **Setup/ System Settings/Task Schedule**. It is shown as below.



After click the button **New(N)**, the **Task Schedule Details** window pop up. It is shown as below.



4.10.2.7.1 Description

You can give a name for the task schedule in the **Description** edit box. This description can facilitate the identification in programming.

4.10.2.7.2 Enable Control

After you check the option **Enable Control**, you can select a bit register. When the bit is ON, this Task Scheduler is not allowed to use.

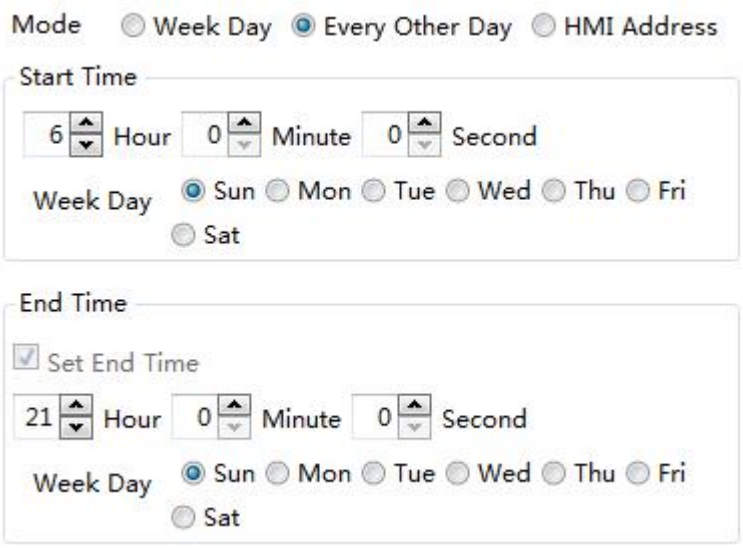
4.10.2.7.3 Mode

- Week Day

The start time and the end time are within a week.

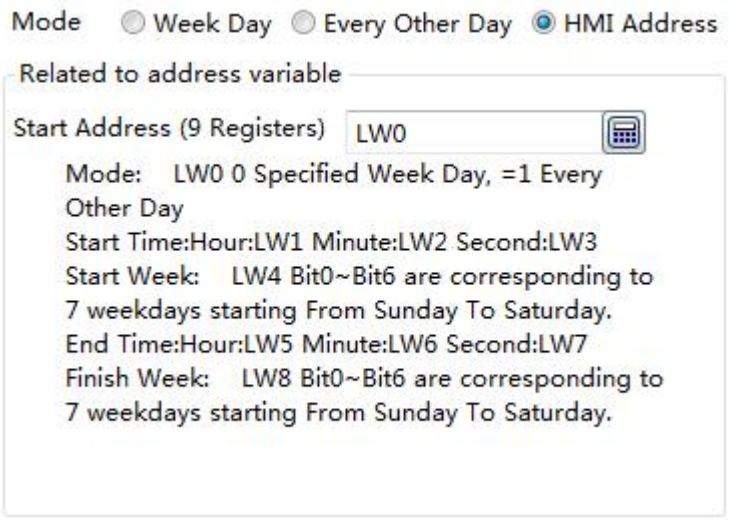
- Every Other Day

The start time and the end time can execute in the adjacent two weeks. The Week Day of the start time is only selected one. You must set the end time.



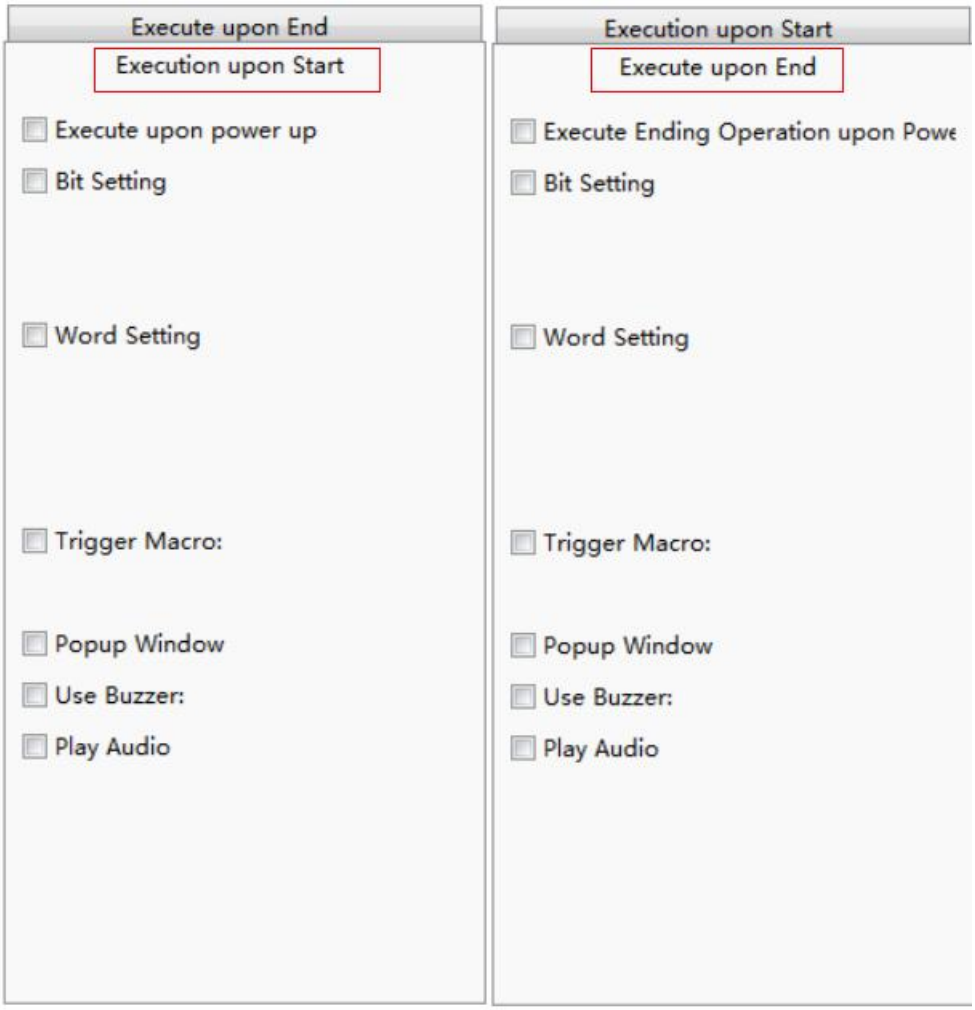
- HMI Address

Use word registers to set the mode.



4.10.2.7.4 Execution upon Start and Execute upon End

Only an **Execution upon Start** setting page is displayed by default. The **Execute upon End** setting page is visible if you check the option **Set End Time**. They are shown as below.



The operations need to be executed are listed in the **Execution upon Start** setting page and the **Execute upon End** setting page.

- Execute upon power up

If you check the option **Execute upon power up**, the operations checked in the **Execution upon Start** setting page will be executed in the time range (start time - end time). It will stop outside the time range.

- Execute Ending Operation upon Power Off

If you check the option **Execute Ending Operation upon Power Off**, the operations checked in the **Execute upon End** setting page will be executed in the time range (start time - end time).It will stop outside the time range.

- Bit Setting

This operation is to set a bit register ON or OFF.

- Word Setting

This operation is to change the value of a word register.

- Trigger Macro

This operation is to trigger a Macro.

- Popup Window

This operation is to pop up a window.

- Use Buzzer

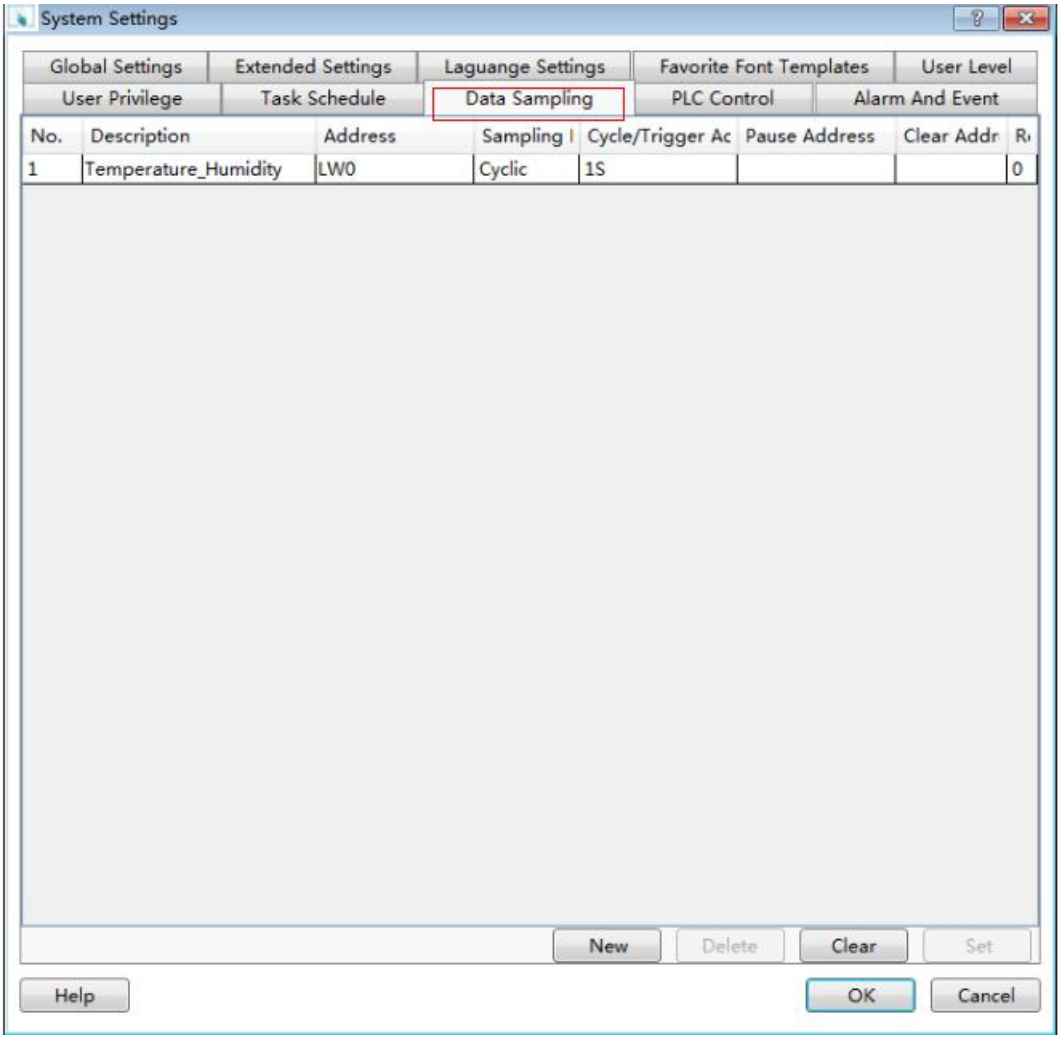
This operation is to make the internal buzzer of HMI to ring.

- Play Audio

This operation is to play an audio.

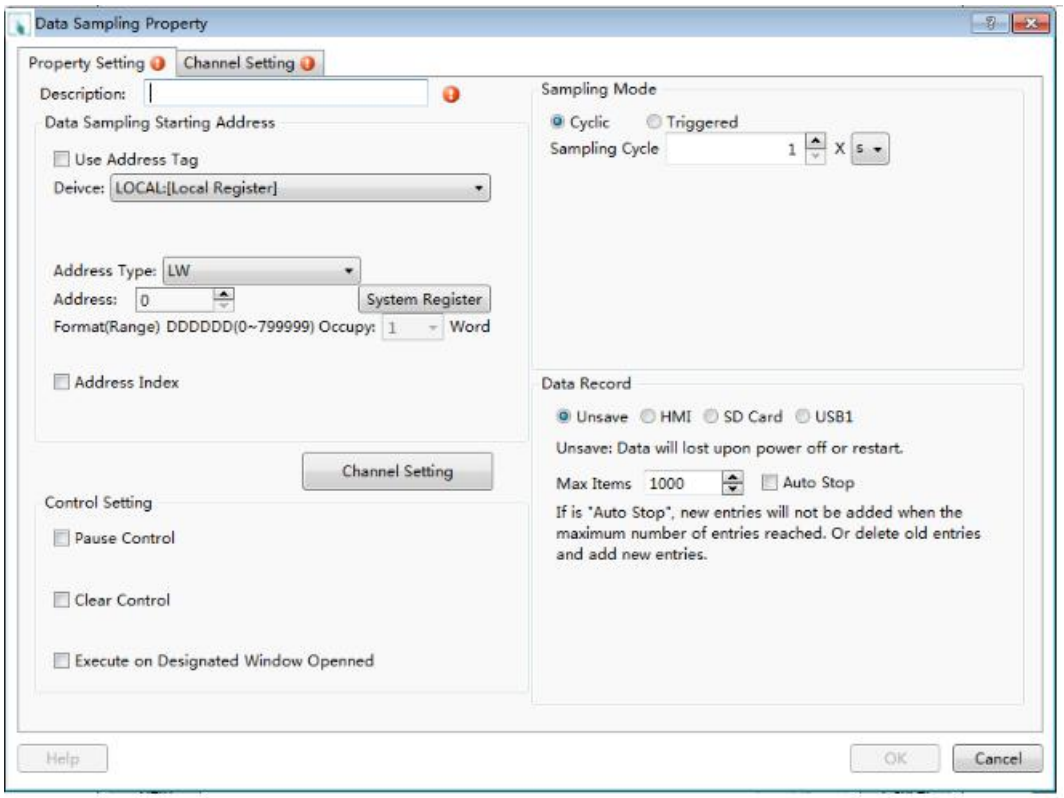
4.10.2.8 Data Sampling

The **Data Sampling** is the data source of these components such as the **Trend Curve**, the **Historical Data Display**, and so on. You must create the **Data Sampling** before using these components. You can open the **Data Sampling** property TAB by clicking the menu command **Setup/ System Settings/Data sampling**. It is shown as below.



4.10.2.8.1 Property Setting

After clicking the button **New** in the **Data Sampling** property TAB, the **Data Sampling Property** dialog will pop up. It is shown as below.



- Description

The **Description** is used as the name of the **Data Sampling**. It is a required the attribute. If it is null, there will be a red exclamation mark to indicate that a name is needed here. The **Description** can be a text which is easy to understand, such as **Level of Tank 1**, **Temperature of Main Motor**, and so on.

- Data Sampling Starting Address

A word register is needed to specify as the start address of the data sampling here. It is can be an internal address of the HMI and the register address of the controller which is connected to the HMI.

- Control Setting

Three attributes of the Control Setting are optional. They are not be checked by default. You can check or not check them according to the actual needs.

- Pause Control

If the **Pause Control** is checked, you can set a bit address to control the data sampling. When this bit address is ON, the data sampling is paused. When it is OFF, the data sampling will continue.

- Clear Control

If the **Clear Control** is checked, you can set a bit address to clear the sampling data. When this bit address is ON, all the sampling data in the memory is cleared.

- Execute on Designated Window Opened

After checking this attribute, you can specify a window when the window is set to open, the above **Pause control** and **clear control** to be effective.

If the **Execute on Designated Window Opened** is checked, you can specify a window. When this window is opened, the settings of **Pause Control** and **Clear Control** are valid.

- Sampling Mode

The Sampling mode can be **Cyclic** or **Triggered**. The default is **Cyclic**.

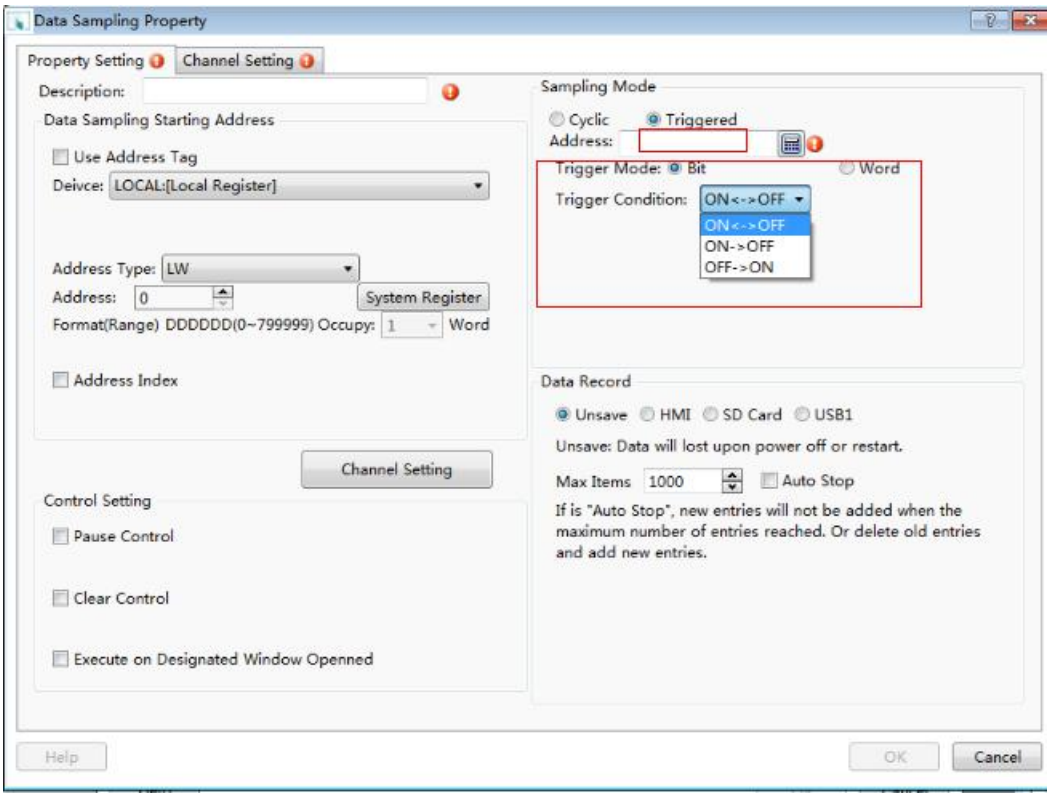
- Cyclic

The unit of the Sampling Cycle can be **s** or **0.1s**. The default is 1 s.

- Triggered

If you select the **Triggered** option, the data sampling will be done according to the **Trigger Condition**. The Trigger Mode includes **Bit** and **Word.** The **Address** is needed to specify according to the Trigger Mode. The **Trigger Condition** of Bit Trigger Mode can be **OFF→ ON**, **ON→OFF** or **OFF↔ON**. For Word Trigger Condition, you can refer to:

Detailed manual/General functions/Drawing/Logic Control.

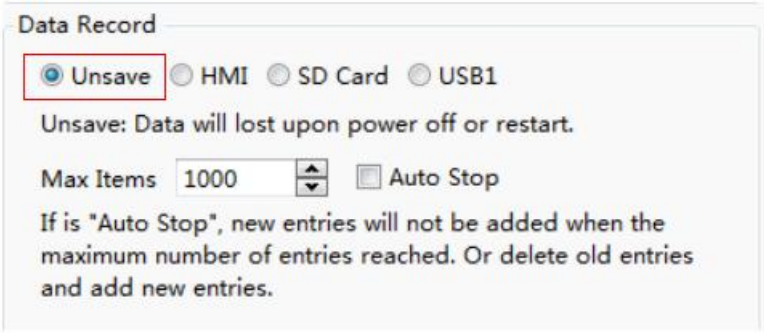


- Data Record

You can save the sampling data to the HMI or other peripherals. The default is **Unsave**. That is, the sampling data is not saved.

➢ Unsave

When you select **Unsave**, there will be a **Max Items** setting for the memory occupation. The default is 1000. The maximum is 99,999. The **Auto Stop** is not checked by fault. If the **Auto Stop** is checked, the new items will not be added when the maximum number of items reached. Or delete the oldest items and add the new items. It is shown as below.

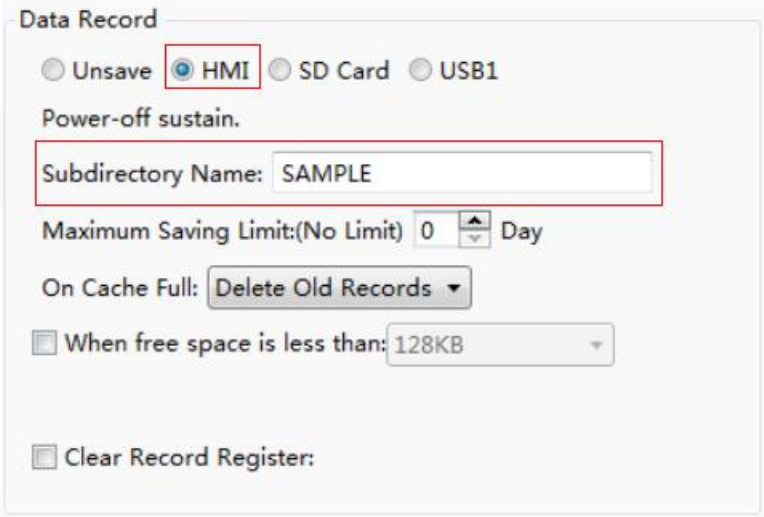


Note:

All the sampled data will be lost if you select **Unsave**. After powering on, you need to sample the data again.

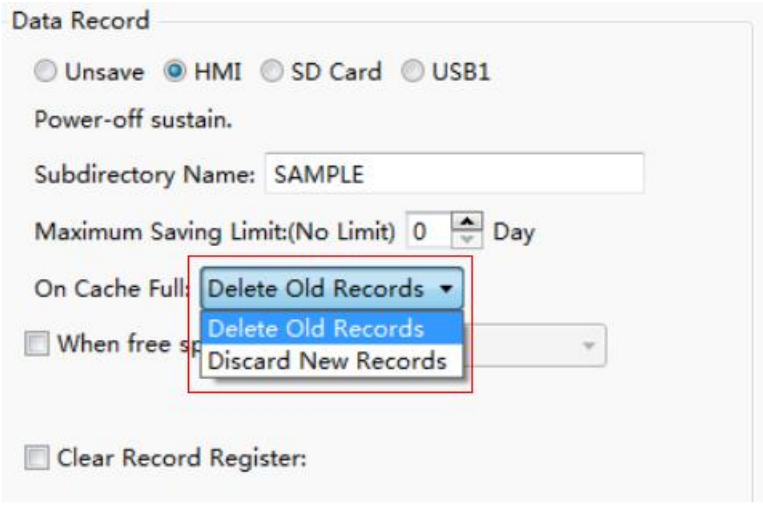
- HMI

When you select **HMI** for the Data Record, the **Subdirectory Name** is required.



The **Maximum Saving Limit** option is set **0** Day by default. That means there is no limit to save. However, there is a limit because of the limited capacity of the HMI Flash. It is suggested that the **Maximum Saving Limit** option is set several days when you select HMI to save data, such as 15 days, 30 days, and so on.

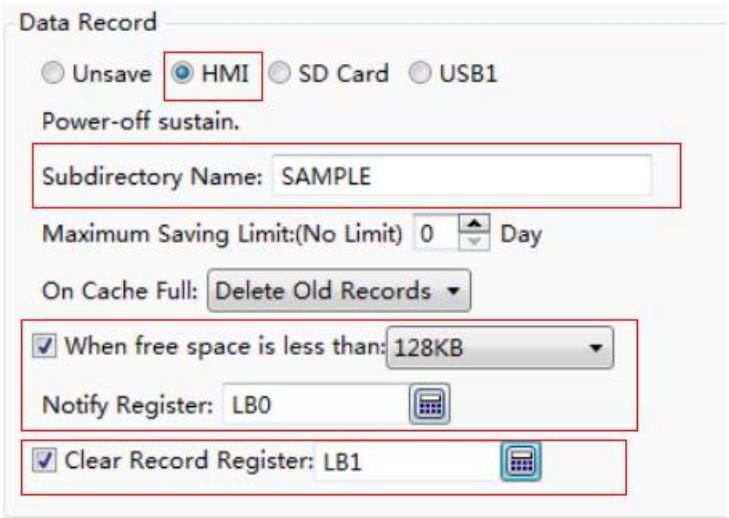
The default action is **Delete Old Records** when the Flash memory of the HMI is full. This is a cycle record mode. You can also select **Discard New Records** option. It is a fixed-saving mode which the new records are no longer saved when the Flash memory is full.



If you check the option **When free space is less than**, the action of **Notify Register** will be done when the free space is less than the specified capacity. The capacity range is 16KB ~ 2MB. You can set a bit register to notify. The bit register will be ON when the free Flash capacity is less than the specified.

If you check the option **Clear Record Register**, you can specify a **bit register**. When the **bit Register** is ON, all the saved history records will be cleared.

For example, you want to save the data record to the **SAMPLE** folder in the HMI. The bit register LB0 will be ON to indicate insufficient space when the free space is less than 128KB. All saved history records will be deleted when the bit register LB1is set ON. The settings are shown as below.

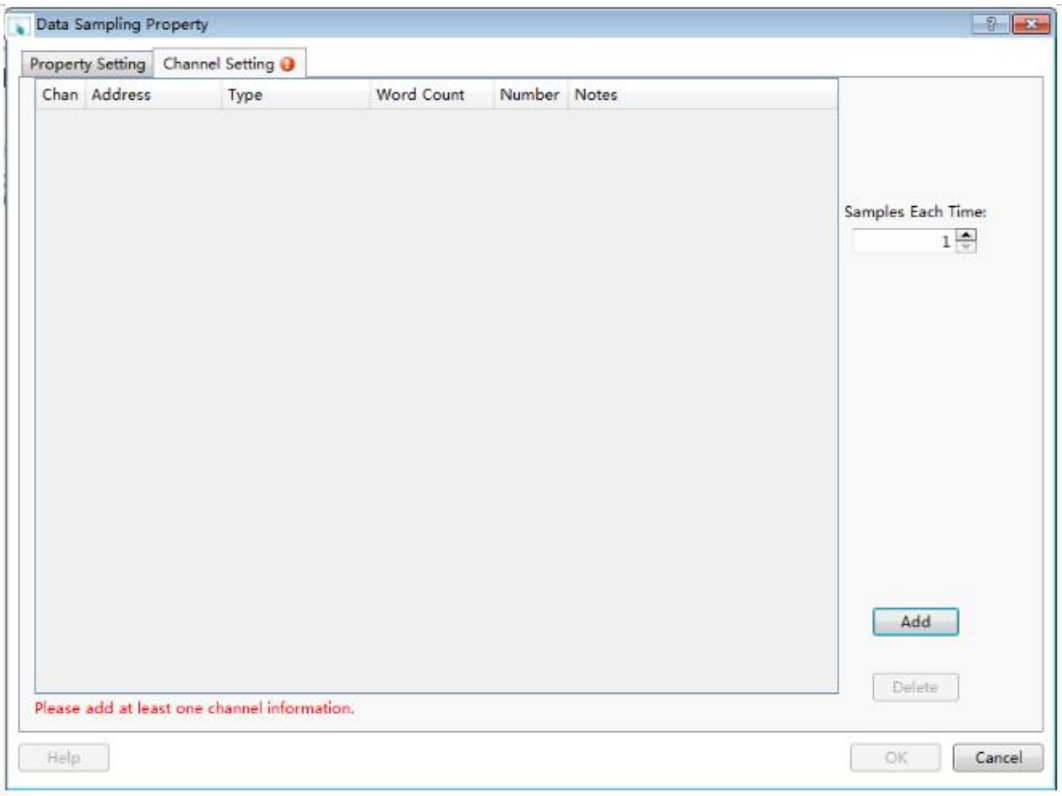


- SD Card and USB1

You can choose to save the data records to SD card or USB disk. The settings are referred to the **HMI**.

4.10.2.8.2 Channel Setting

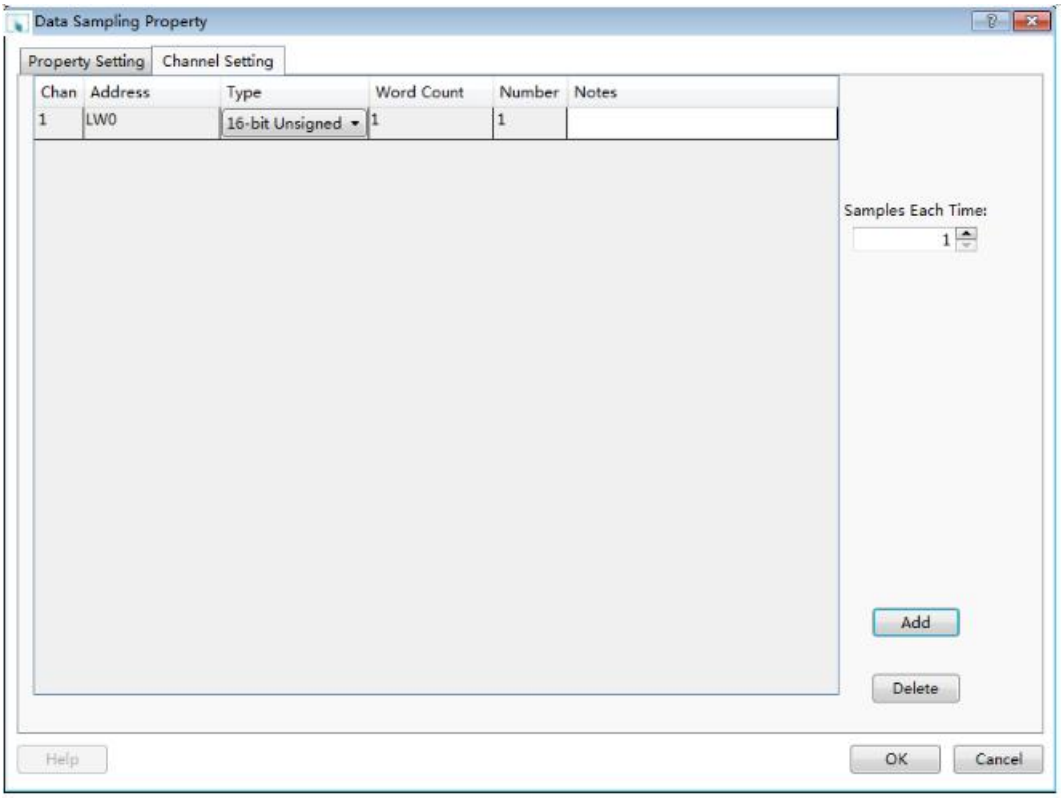
The **Channel Settings** property TAB is shown as below.



There will be a red exclamation mark here due to no channel.

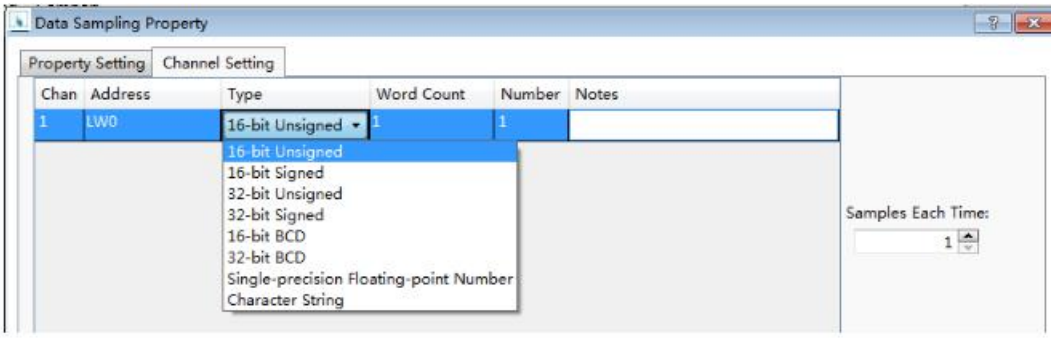
- Add channel

After clicking the button **Add**, an item will be added. It is shown as below.

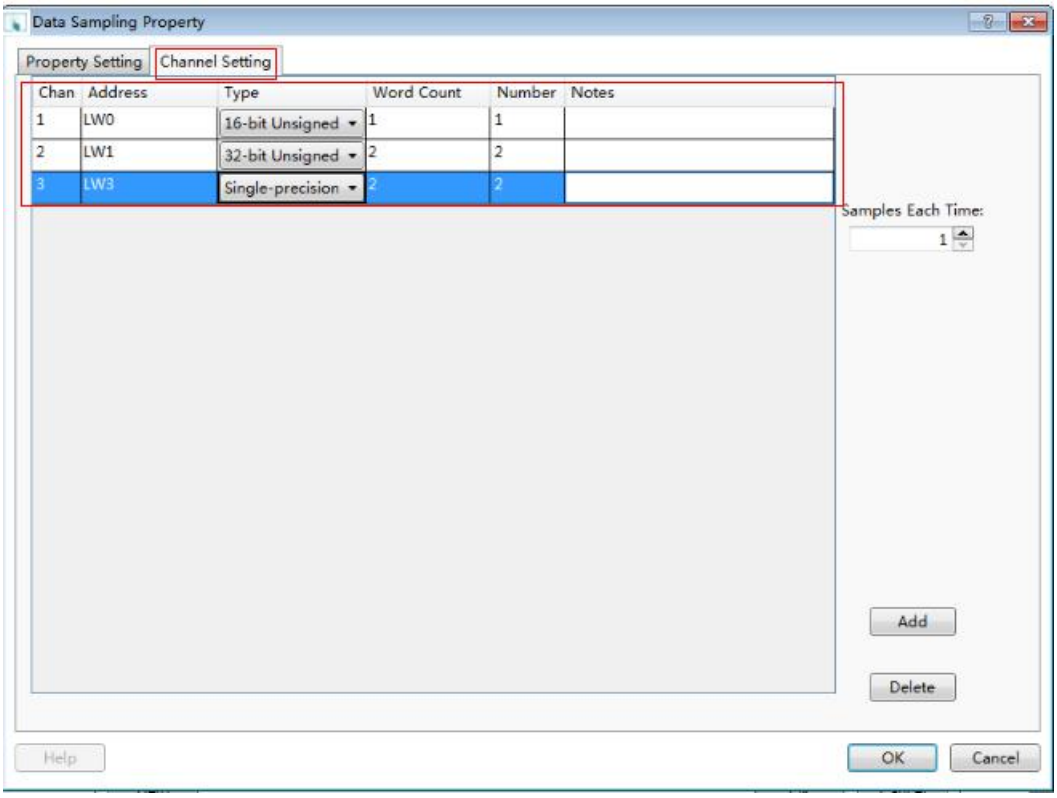


The **Address** refers to the start address of the data record. The **Type** of data record can be **16-bit Unsigned**, **16-bit Signed**, **32-bit Unsigned**, **32-bit Signed**, **16-bit BCD**, **32-bit BCD**,

Single-precision Floating-point Number or **Character String**. The maximum memory occupied is 64word registers for the type of **Character String**.

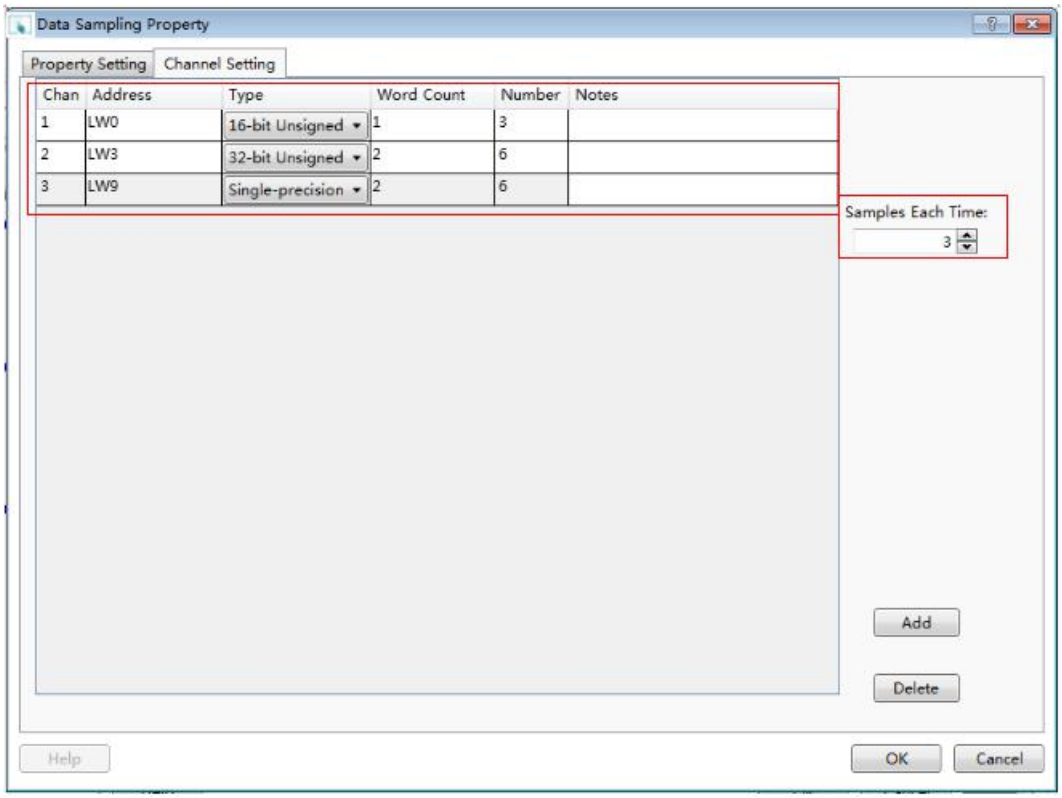


You can create many channels by clicking the button **Add.** The addresses of the data record are continuous and specified automatically. It is shown as below.



- Samples Each Time

The default value of **Samples Each Time** is 1. That means that one data is sampled each time. When this parameter is set a value larger than 1, the addresses which each channel occupies will multiply. For example, the option **Samples Each Time** is set 3. Then the number of address occupied by each channel is shown as below.



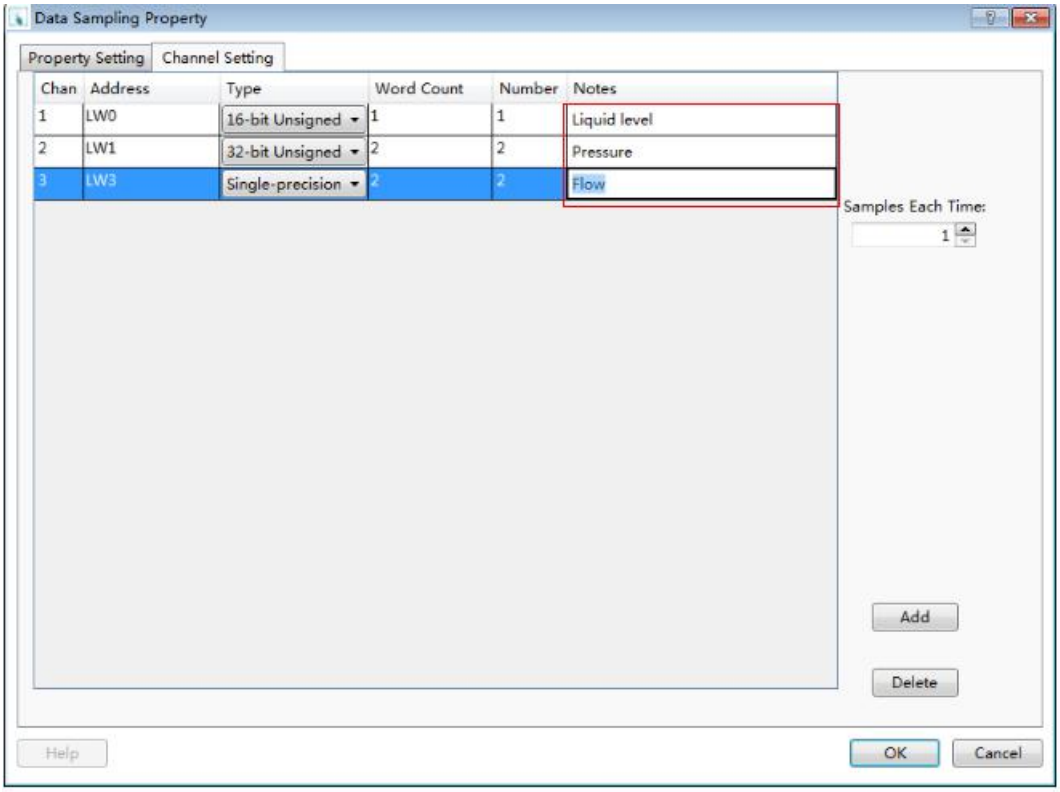
In this example, LW0 ~ LW2 is occupied by the first channel, LW3 ~ LW8 is occupied by the second channel, and LW9 ~ LW14 is occupied by the third channel. The number of address is three times as the number which the **Samples Each Time** is set 1.

- Delete channel

You can delete the selected channel by clicking the button **Delete**.

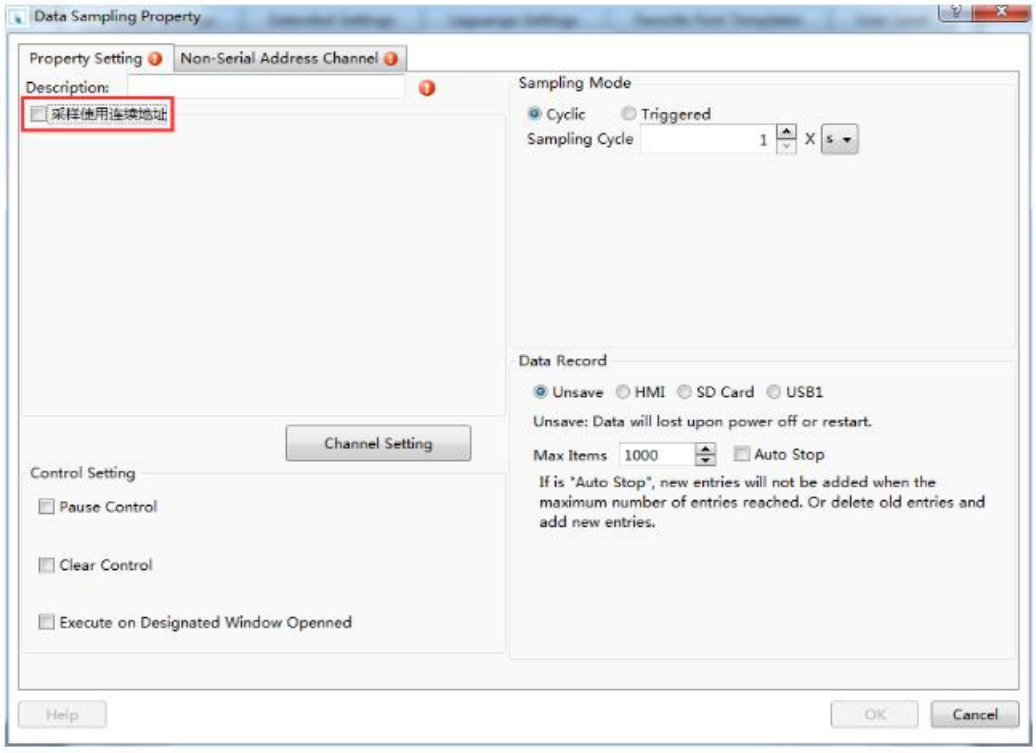
- Notes

In the **Notes** column of each channel, you can give a description. The **Notes** makes it easy to read and it will display in the **Historical Data** table. For example, the first channel is **Liquid level**, the second channel is **Pressure**, and the third channel is **Flow**. It is shown as below.



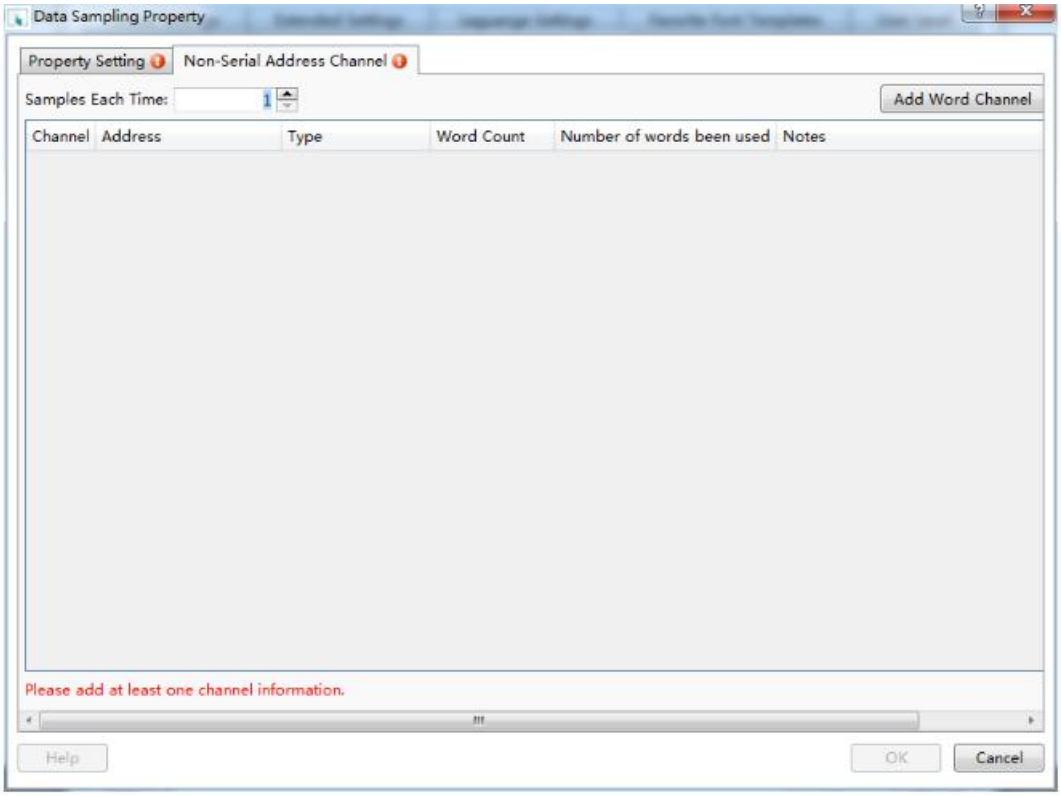
- Sample Using Serial Address

You can set the non-serial address sampling channel if the option is not checked.



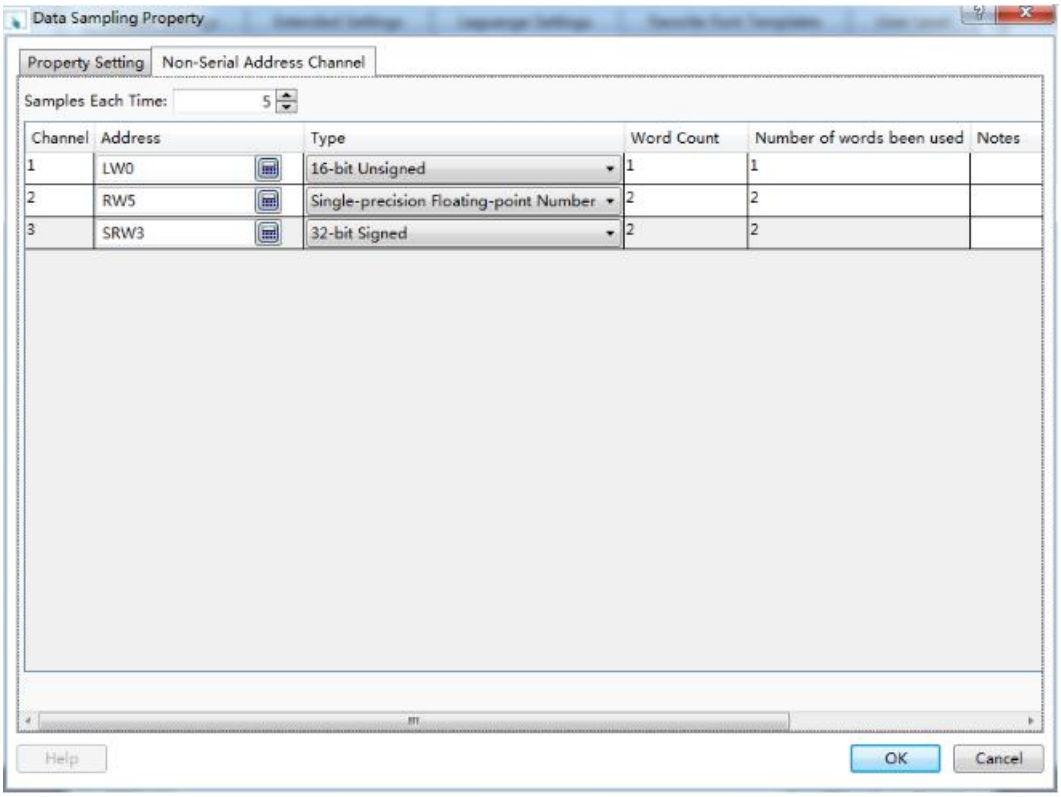
- Non-Serial Address Channel

Click the **Non-Serial Address Channel** button, then the **Non-Serial Address Channel** page will display.



- Add Word Channel

Click the **Add Word Channel** button, there will be a entry of data sampling, then you can click the address button to edit the address, then you can choose device and address type. The length of the sampling points can be set by the option of Samples Each Time. You can click the **Add Word Channel** again, continue to add a channel, the new channel address can be defined by yourself, and it does not need to continue with the last channel address. As shown in the following figure:



It can be seen that the sampling addresses of multiple channels could be non-continuous addresses.

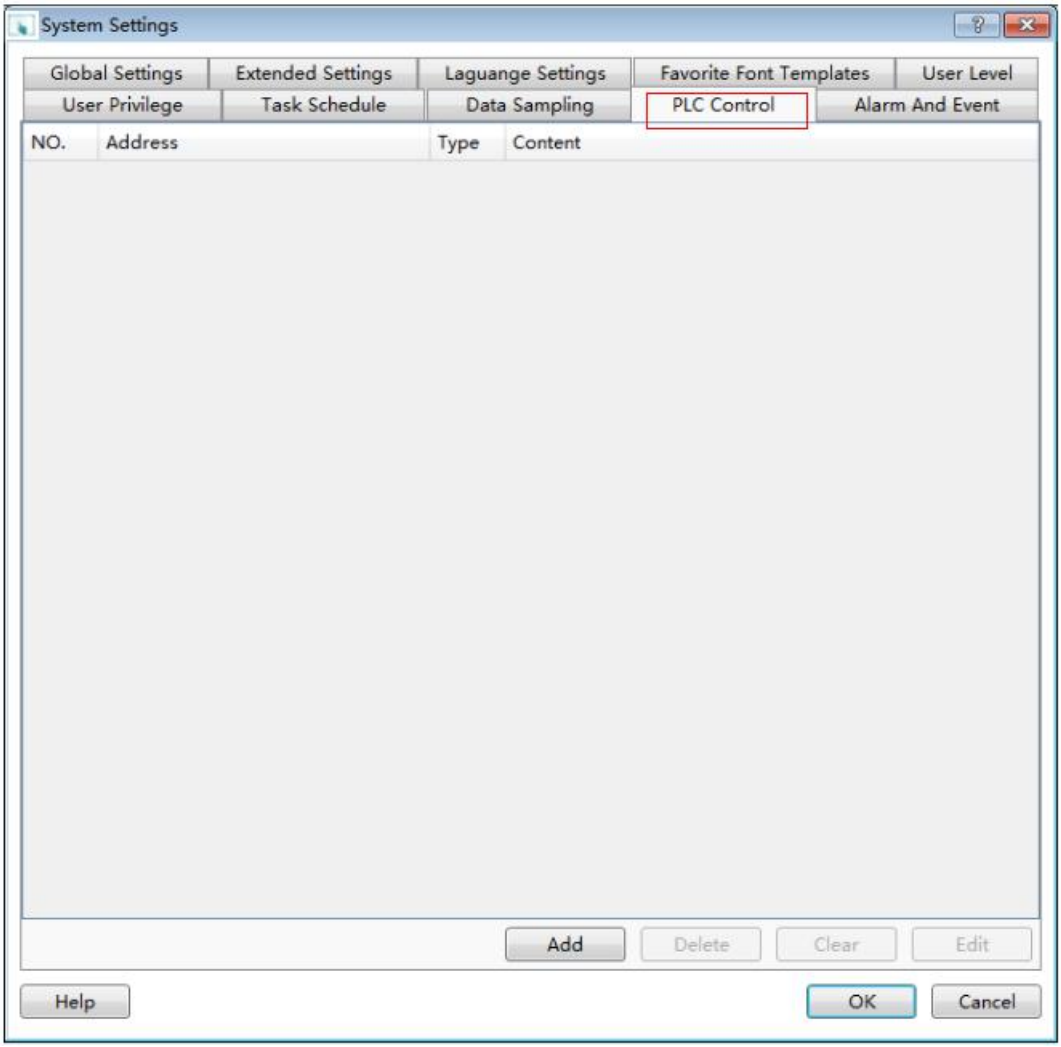
- Samples Each Time

The default is 1, which means 1 point per sample. When the value is set more than 1, the sampling points of each channel is changed to the set value.

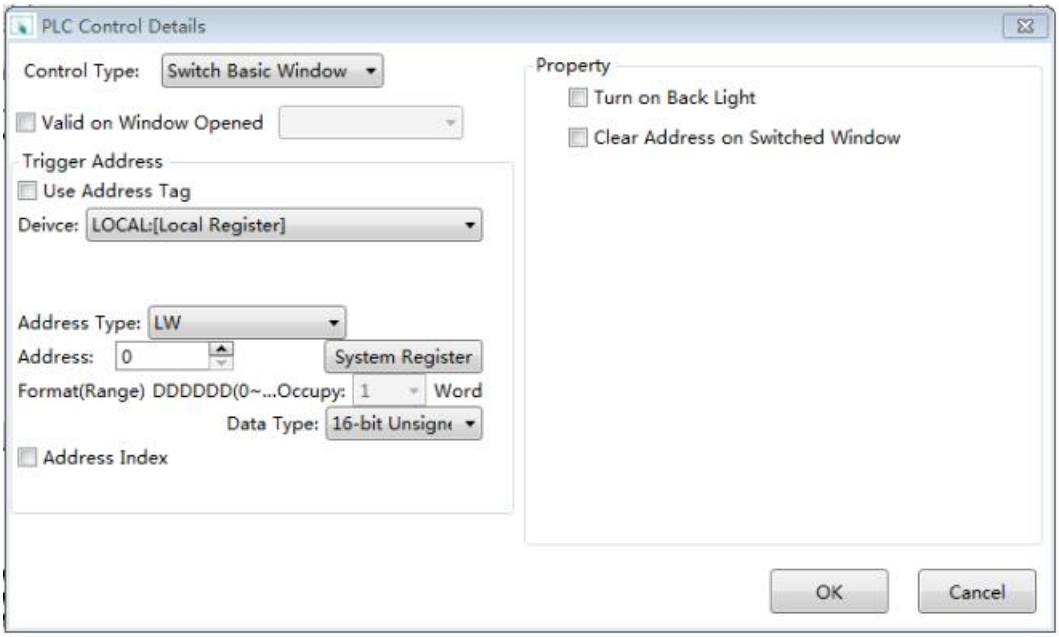
4.10.2.9 PLC Control

The **PLC Control** attribute is used to execute an action according to the change of the address of the local HMI or the controller connected to the local HMI. This is a global Attribute. That is, the action of the **PLC Control** will be executed regardless of which one the current screen window is, as long as the conditions are met.

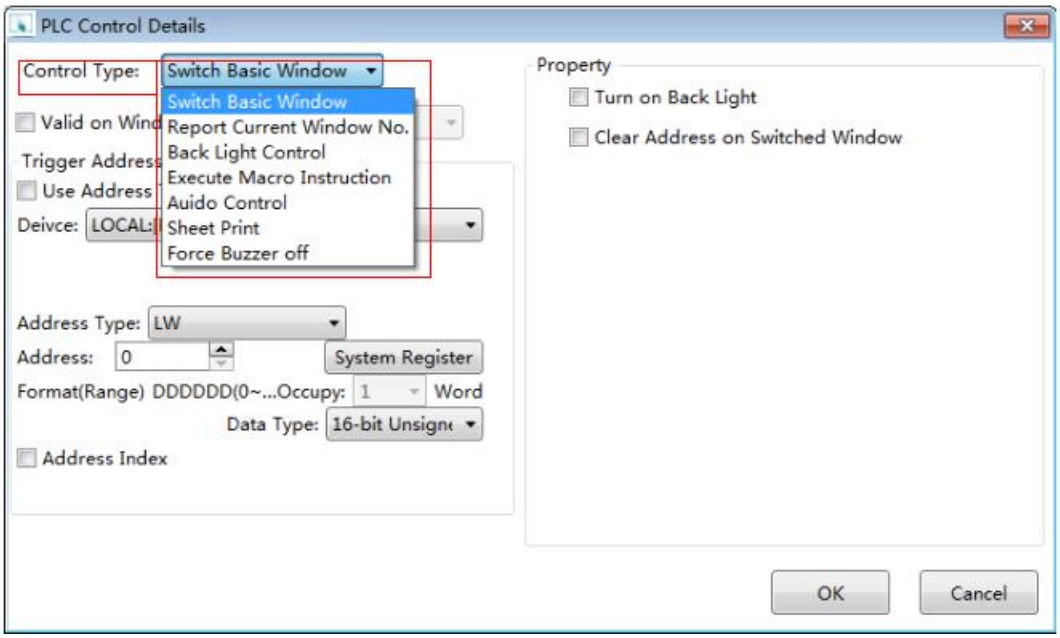
After clicking the menu command **Setup / System Settings / PLC Control**, the **PLC Control** settings page will be opened. It is shown as below.



Click the button **Add** in the **PLC Control** settings page, the **PLC Control Details** settings dialog will pop up. It is shown as below.

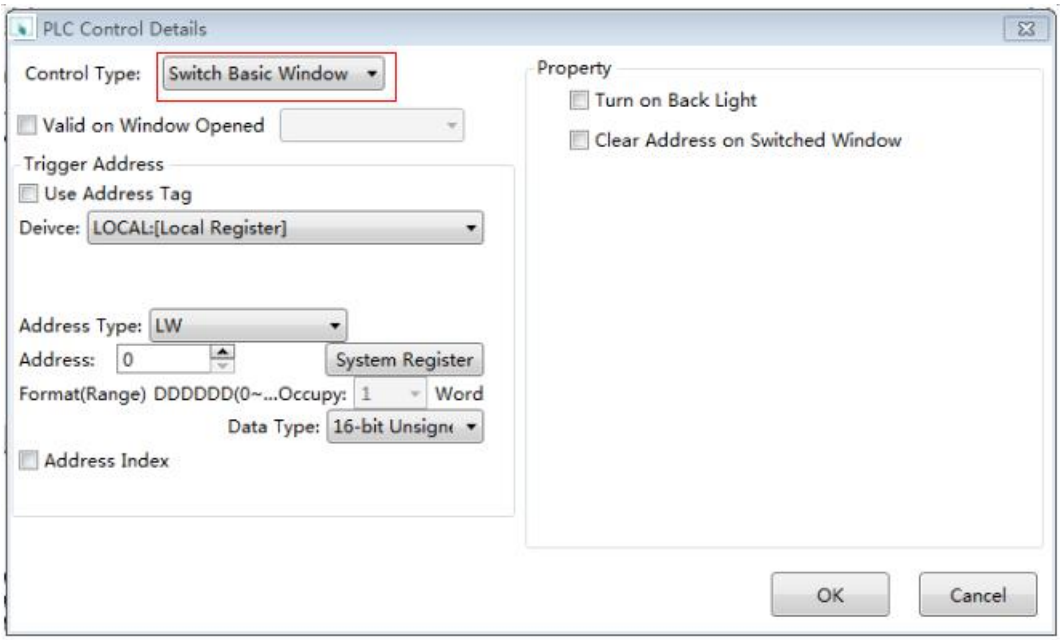


The **Control Type** refers to the action of the **PLC Control**. It includes **Switch Basic Window**, **Report Current Window No.**, **Back Light Control**, **Execute Macro Instruction**, **Audio Control**, **Sheet Print**, and **Force Buzzer off**.



4.10.2.9.1 Switch Basic Window

You can switch the basic window of the HMI by changing the value of a register.



- Valid on Window Opened

The **Valid on Window Opened** is a public attribute of the **PLC Control**. By default, it is not checked. After checking this attribute, you can select a base window. The action defined in the **PLC control** will be executed when the specified base window is switched to open.

- Trigger Address

You can select a word register to trigger the **Switch Basic Window** action. For example, if the **Trigger Address** is set LW100, the HMI will display the Basic Window (1) when the value of LW100 is 1, and the HMI will automatically switch to the Basic Window (20) when the value of LW100 is 20. And so on.

- Property

There are two optional attributes in the **Property** box. They are not checked by default.

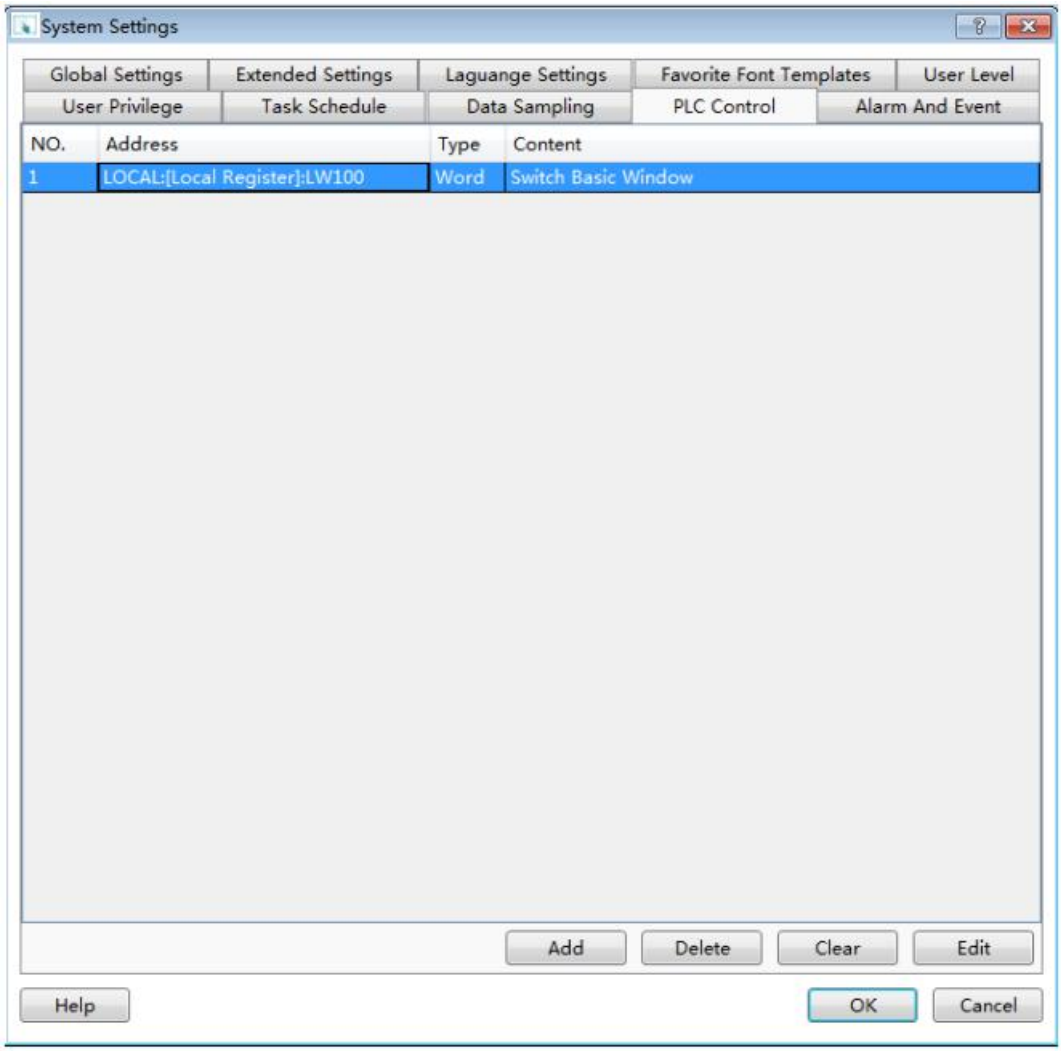
➢ Turn on Back Light

If you check the option **Turn on Back Light**, the back light will be turned on automatically when the action of **Switch Basic Window** is executed and the back light is closed.

➢ Clear Address on Switched Window

If you check the option **Clear Address on Switched Window**, the value of the word register will be cleared to zero automatically after the action of **Switch Basic Window** is finished.

After click the **OK** button, the **PLC Control** action will be added in the **PLC Control** settings page.



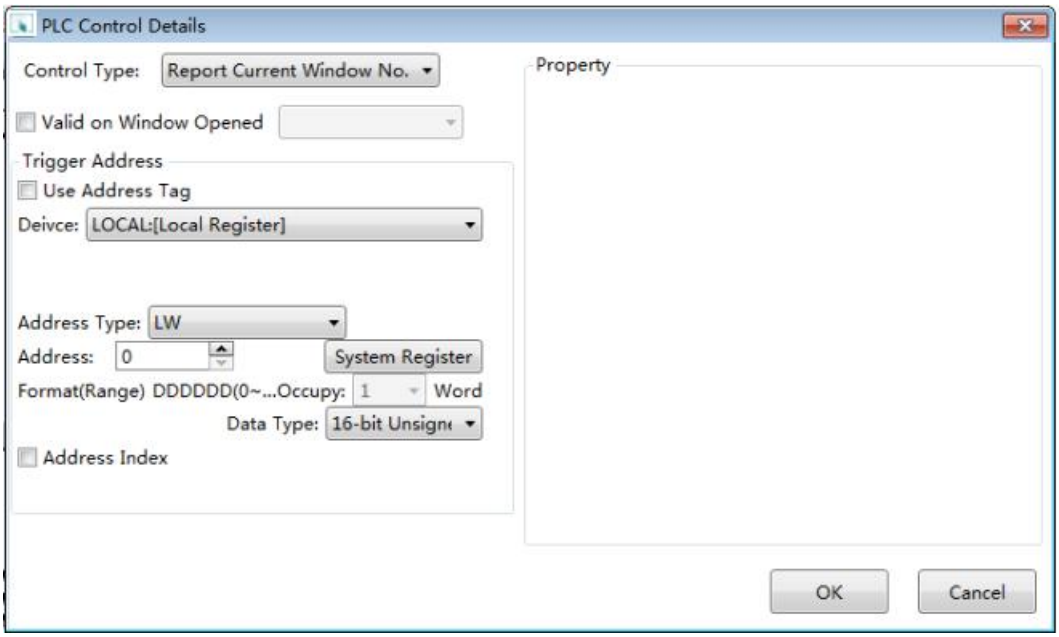
Note:

The **Switch Basic Window** action will be triggered only when the value of the trigger address changes. You can also use a Bit Set component to switch the base window in the VI20 Studio software. But the switch basic window action may not be executed if you use the two switch

window methods. For example, after you input a value to the trigger address to switch the basic window, you switch another basic window by using the Bit Set component. Then you input the same value to the trigger address to switch the first basic window. But it does not act because the value of the trigger address does not change. To avoid this situation, you should check the option **Clear Address on Switched Window**.

4.10.2.9.2 Report Current Window No.

The current window number can be recorded to a register.

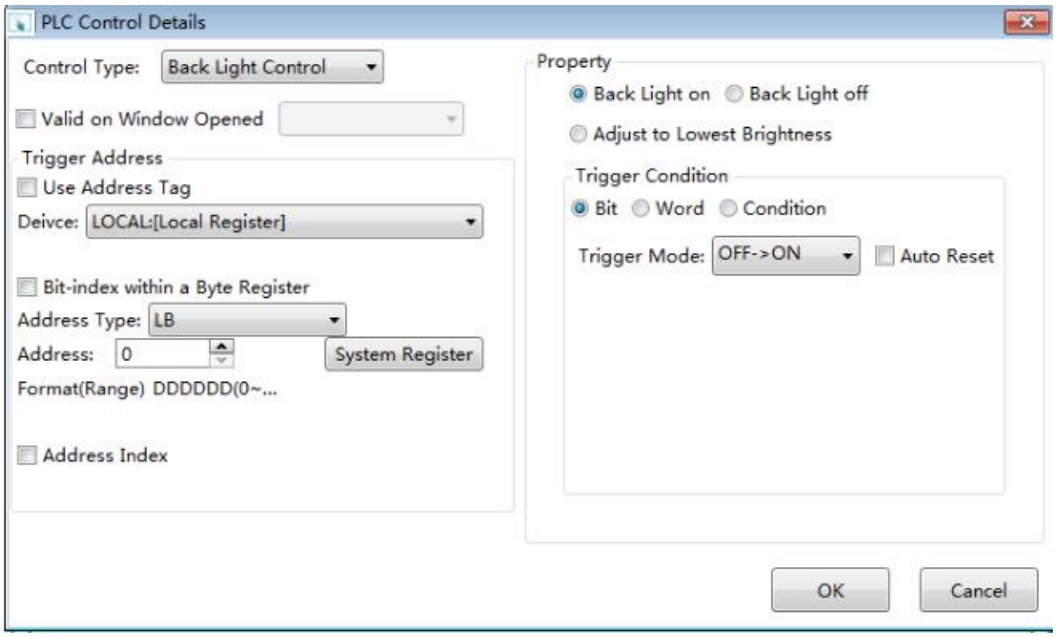


- Trigger Address

You can select a word register to trigger the **Report Current Window No.** action. For example, if the **Trigger Address** is set LW200, the number of the current basic window will be moved to LW200 when the HMI displays a window. If the HMI device displays the Basic Window (18), then the value of LW200 is equal to 18.

4.10.2.9.3 Back Light Control

You can define a trigger condition to control the state of the back light if you select the **Back Light Control** as the control type.



- Back Light on

The option **Back Light on** is selected by fault. If this option is selected and the trigger condition is satisfied, the back light will be turned on when the back light is closed or in the lowest lightness.

- Back Light off

If the option **Back Light off** is selected and the trigger condition is satisfied, the back light will be turned off.

- Adjust to Lowest Brightness

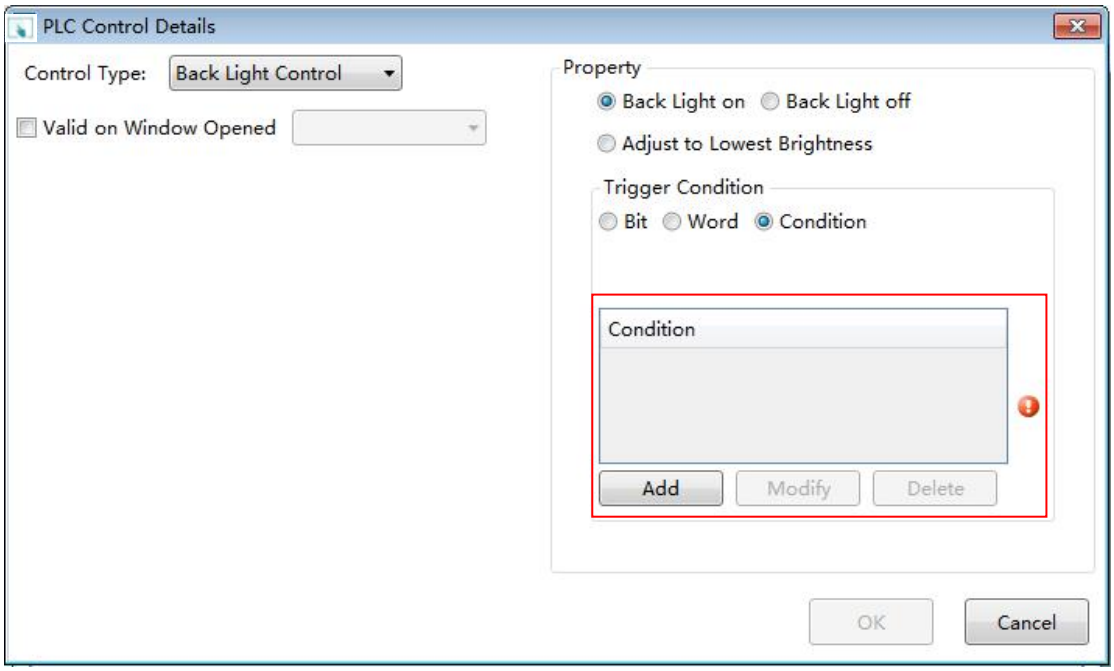
If the option **Adjust to Lowest Brightness** is selected and the trigger condition is met, the back light of the HMI will be adjusted to the lowest lightness.

- Trigger Address

The **Trigger Address** can be a word or bit register. It depends on the setting of the **Trigger Condition**.

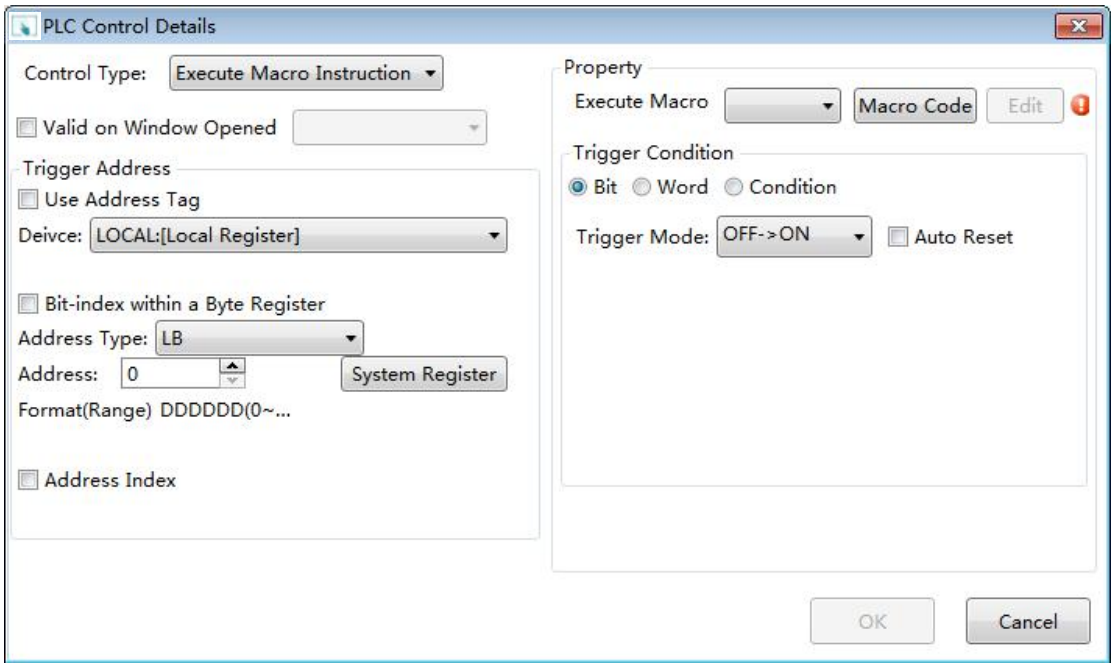
- Trigger Condition

You can select **Bit**, **Word** or **Condition** for the **Trigger Condition**. If you select **Bit** or **Word**, the condition is determined by the register which is given in the **Trigger Address**. If you select **Condition**, the condition needs to be given by the logic control editor box.



The detailed of **Condition** setting is referred to: Detailed manual/ General functions/ Drawing/ Logical Control.

4.10.2.9.4 Execute Macro Instruction



- Execute Macro

You can select a Macro from the list. The selected Macro will be executed when the Trigger Condition is achieved. If you have not created a Macro, there will be a red exclamation mark to prompt that any one macro has not been established. Click the button **Macro Code**, you can open the Edit Macro window.

- Trigger Address

The **Trigger Address** can be a word or bit register. It depends on the setting of the **Trigger Condition**.

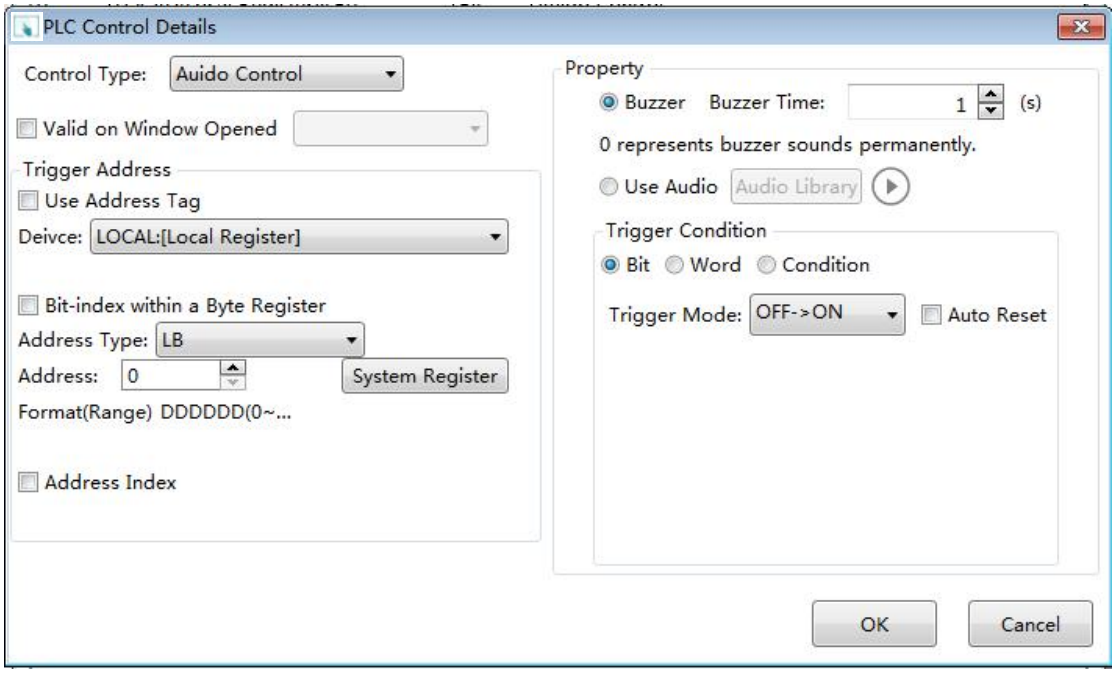
- Trigger Condition

You can select **Bit**, **Word** or **Condition** for the **Trigger Condition**. If you select **Bit** or **Word**, the condition is determined by the register which is given in the **Trigger Address**. If you select **Condition**, the condition needs to be given by the logic control editor box.

The detailed of **Condition** setting is referred to: Detailed manual/ General functions/ Drawing/ Logical Control.

4.10.2.9.5 Audio Control

You can control the internal buzzer of the HMI or the audio from the **Audio Library** by using the control type of **Audio Control**. This function is invalid if the audio output is not supported by the HMI device.



- Buzzer

The option **Buzzer** is selected by default. If it is selected, the internal buzzer of the HMI will ring when the trigger condition is satisfied. The **Buzzer Time** is used to set the time of buzzer ringing. It is 1 second by default. The max value of the **Buzzer Time** is 100 seconds. When the **Buzzer Time** is set **0**, the buzzer will continue ringing until the trigger condition is not satisfied.

- Use Audio

If the option **Use Audio** is selected, you can select an audio from the **Audio Library**. When the **Trigger condition** is satisfied, the audio will be played.

- Trigger Address

The **Trigger Address** can be a word or bit register. It depends on the setting of the **Trigger Condition**.

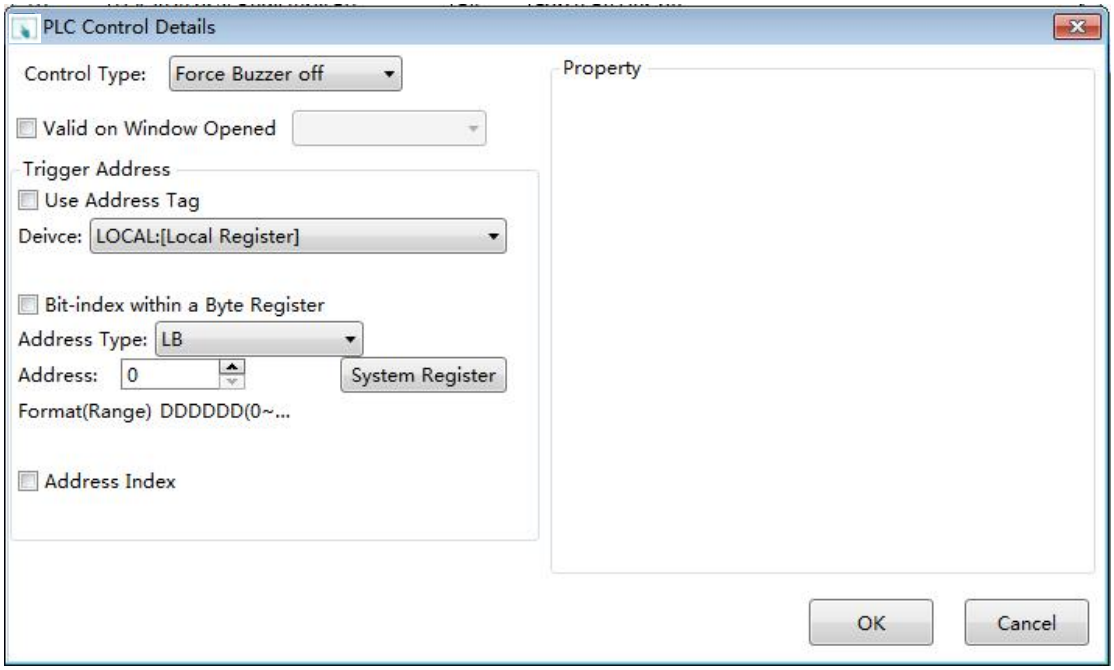
- Trigger Condition

You can select **Bit**, **Word** or **Condition** for the **Trigger Condition**. If you select **Bit** or **Word**, the condition is determined by the register which is given in the **Trigger Address**. If you select **Condition**, the condition needs to be given by the logic control editor box.

The detailed of **Condition** setting is referred to: Detailed manual/ General functions/ Drawing/ Logical Control.

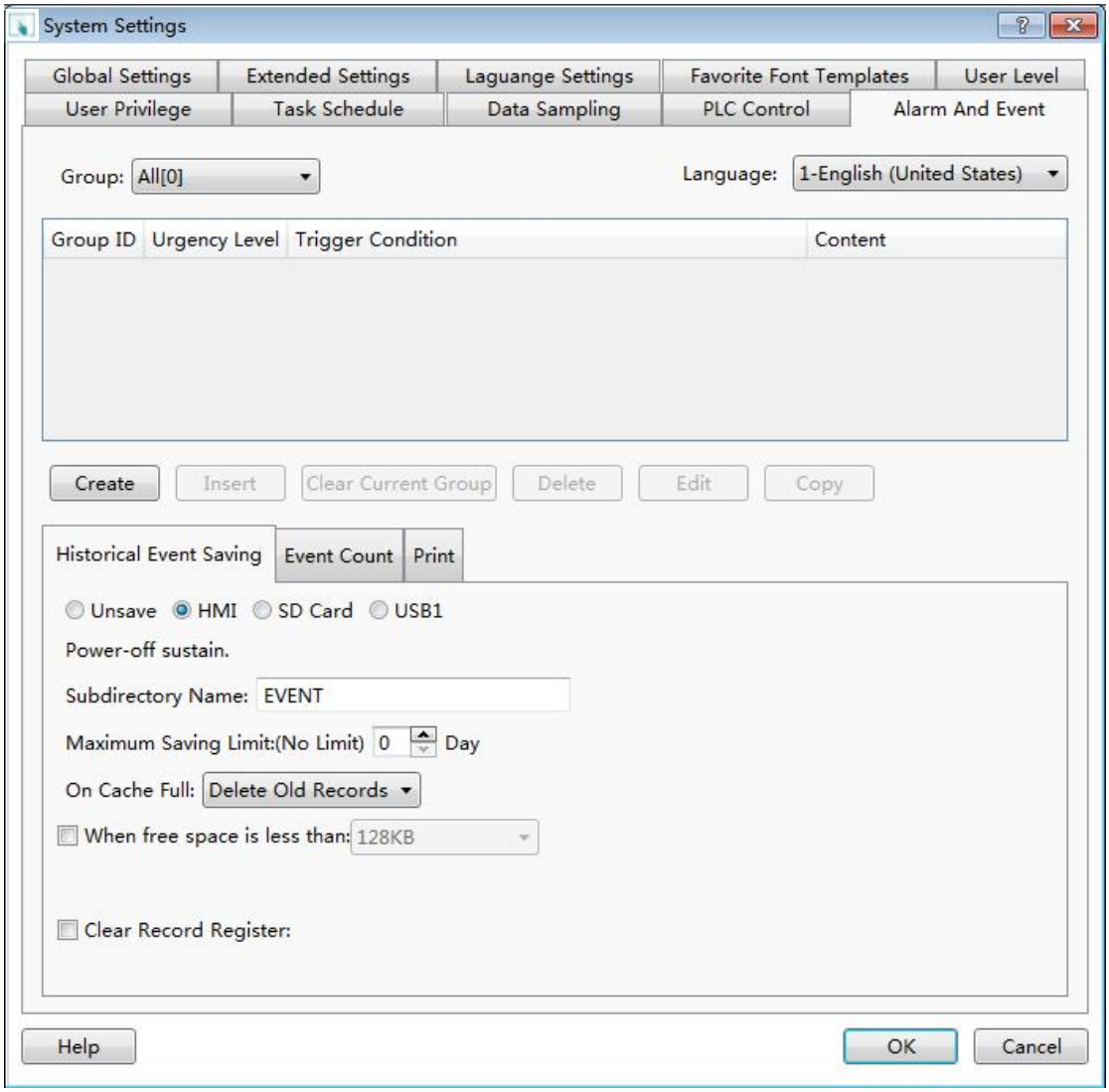
4.10.2.9.6 Force Buzzer off

You can specify a bit register to force the buzzer off by using the control type of **Force Buzzer off**. When the state of the buzzer is ON, it will be forced to OFF if the specified bit register is ON.



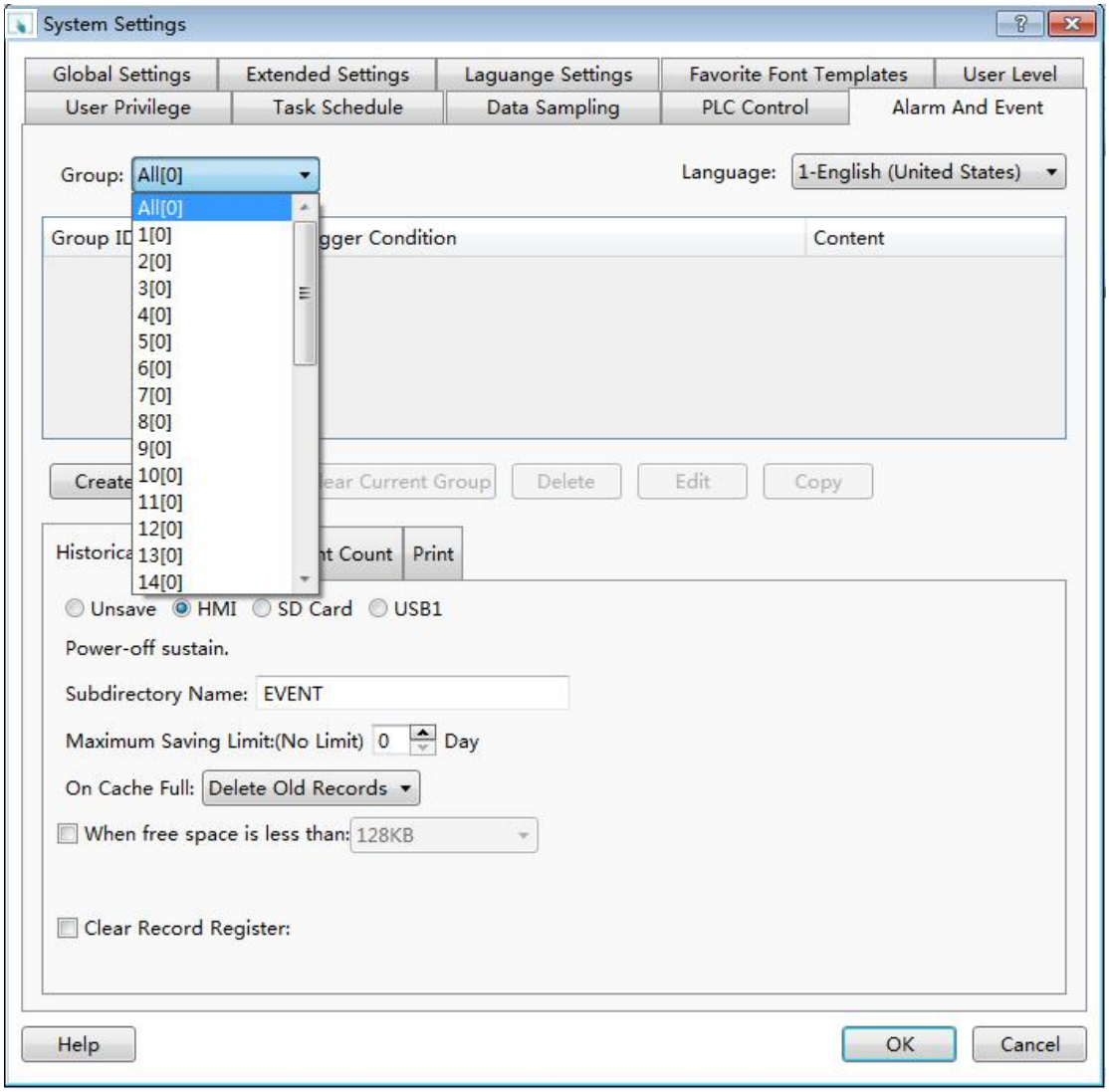
4.10.2.10 Alarm And Event

You can preset the attributes of the alarms or events such as the conditions and contents in the **Alarm And Event** settings page. The **Alarm And Event** settings page can be opened by clicking the menu command **Setup/System Settings/Alarm And Event**.

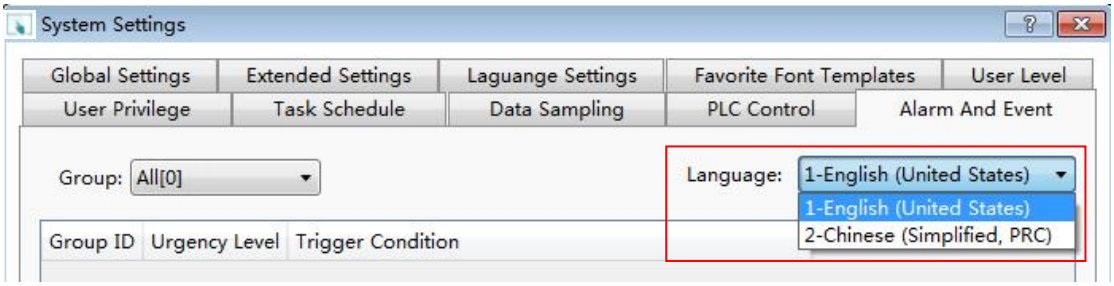


4.10.2.10.1 Group

The alarms and events can be viewed by groups. The users can customize the groups. Here, the option **Group** can be set any one of **All, 1, 2, 3 …32**.



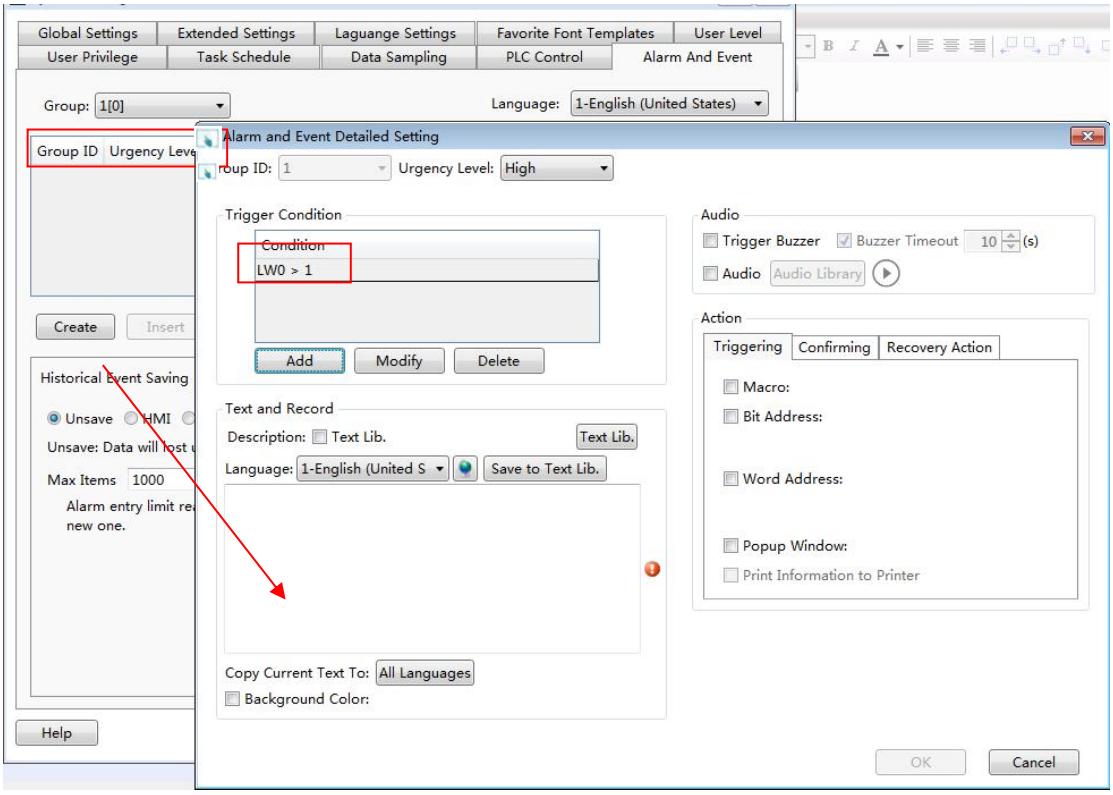
4.10.2.10.2 Language



The alarm content can be displayed in different languages. So you need select a language for the option **Language** to view the alarm content.

4.10.2.10.3 Create and set

After selecting a Group, then click the button **Create**, the **Alarm and Event Detailed Setting** window will pop up. It is shown as below.



- Group ID

If you select **All** for the **Group** in the settings page, the **Group ID** can set any one of 1~32 here. If you select any one of 1~32 for the **Group** in the settings page, the **Group ID** is same to the **Group**. It refers to the group of the alarm or event waiting for be set here.

- Urgency Level

The **Urgency Level** can be set **High**, **Medium** or **Low**. You can set it according to the priority level of the alarm or event.

- Trigger Condition

The trigger condition of the alarm or event can be set here by using the button **Add**, **Modify** or **Delete**. The details can be referred to: Detailed manual/General functions/Address editor/Standard Bit Address Input and Detailed manual/General functions/Address editor/Standard Byte Address Input.

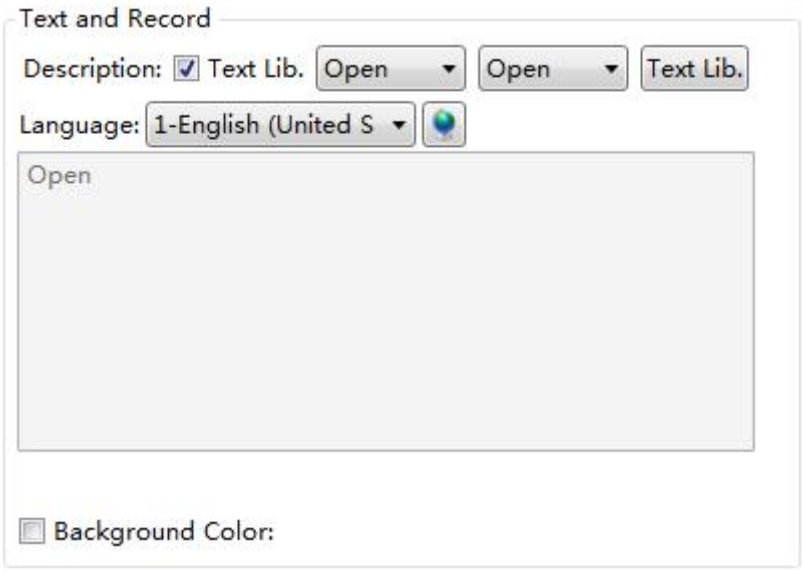
- Text and Record

➢ Description: Text Lib

You can input the description for the current alarm or event in the edit box here. Or you can check the **Text Lib** and use a text of the Text Lib as the description. The **Text Lib** is referred to: Detailed manual/Libray/Text Library.

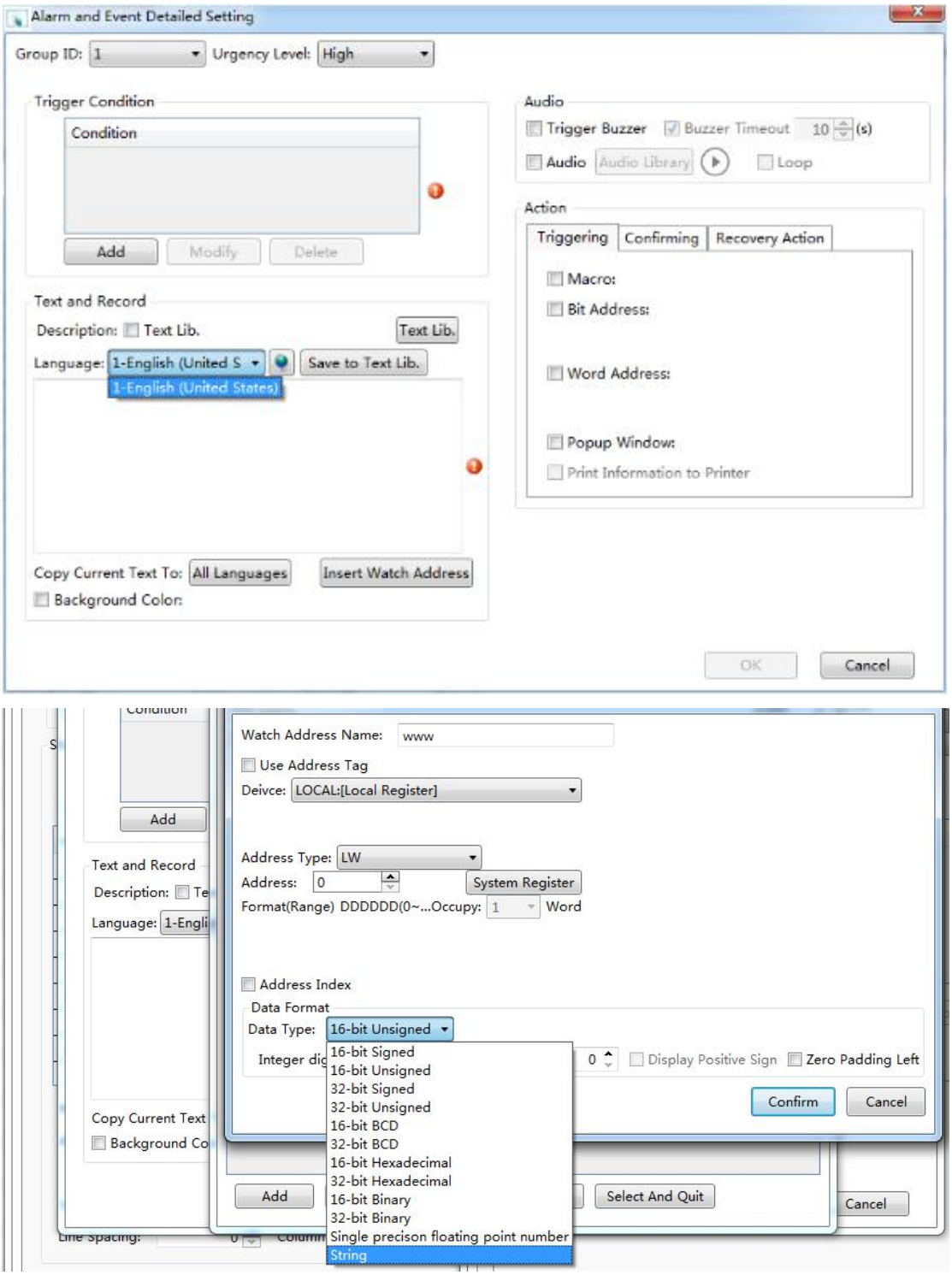
➢ Language

You can select a language for the current display language here. If you check the **Text Lib** and use a text in the Text Lib as the description, the content in the edit box will only be viewed and not be edited. It can be viewed in different language by switching the Language.



- Insert Watch Address

The display content of the alarm is the contents of the register address, the data type of the address support the string type.


Alarm and Event Detailed Setting
Group ID: 1
Urgency Level: High
Trigger Condition
Condition
Add
Modify
Delete
Audio
Trigger Buzzer
Buzzer Timeout
10
(s)
Audio
Audio Library
Loop
Action
Triggering
Confirming
Recovery Action
Macro:
Bit Address:
Word Address:
Popup Window:
Print Information to Printer
Text and Record
Description:
Text Lib.
Text Lib.
Language:
1-English (United S
Save to Text Lib.
1-English (United States)
Copy Current Text To:
All Languages
Insert Watch Address
Background Color:
OK
Cancel

Watch Address Name:
www
Use Address Tag
Deivce:
LOCAL:[Local Register]
Address Type:
LW
Address:
0
System Register
Format(Range) DDDDDD(0~...Occupy:
1
Word
Address Index
Data Format
Data Type:
16-bit Unsigned
16-bit Signed
16-bit Unsigned
32-bit Signed
32-bit Unsigned
16-bit BCD
32-bit BCD
16-bit Hexadecimal
32-bit Hexadecimal
16-bit Binary
32-bit Binary
Single precison floating point number
String
Display Positive Sign
Zero Padding Left
Confirm
Cancel
Add
Select And Quit
Cancel

- Audio

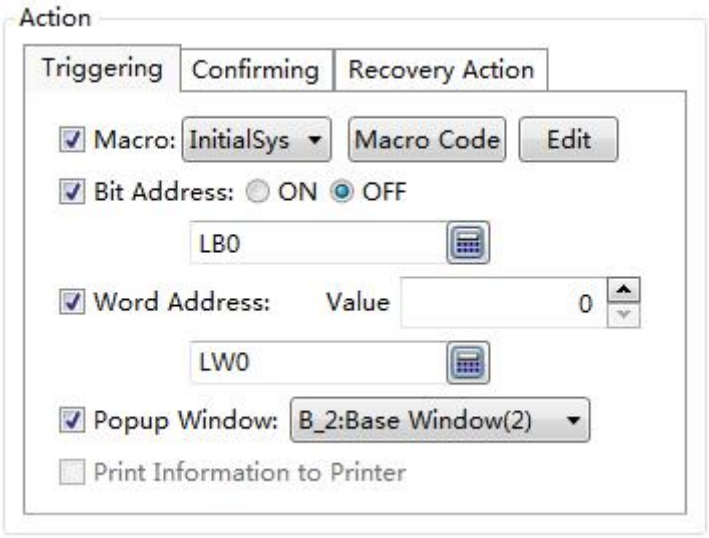

Audio
Trigger Buzzer
Buzzer Timeout
10
(s)
Audio
Audio Library
Sleep Away

If the option **Trigger Buzzer** is checked, the internal buzzer of HMI will beep when an alarm occurs. If the option **Buzzer Timeout** is checked, you can set the beeping time of the buzzer. If the option **Audio** is checked, you can select an audio from the Audio Library as the sound of the alarm or event.

You can try to hear the audio by Click the button  .

- Action

There are three kinds of actions according to the status of the alarm or event. They are **Triggering**, **Confirming** and **Recovery Action**. You can set the actions in different status for the alarm or event by clicking the title of the setting page **Triggering**, **Confirming** or **Recovery Action**.



The actions of **Triggering** refer to the actions that they will be executed when the alarm or event occurs. The actions of **Confirming** refer to the actions that they will be executed when the alarm or event is acknowledged by manual. The actions of **Recovery Action** refer to the actions that they will be executed when the alarm or event exists.

- Macro

Select a Macro to execute as an action. You can also open the Macro Editor by clicking the button **Macro Code** or edit the Macro by clicking the button **Edit**.

- Bit Address

Set a bit register ON or OFF.

- Word Address

Write a value to a specified word register.

- Popup Window

Pop up a specified window.

- Print Information to Printer

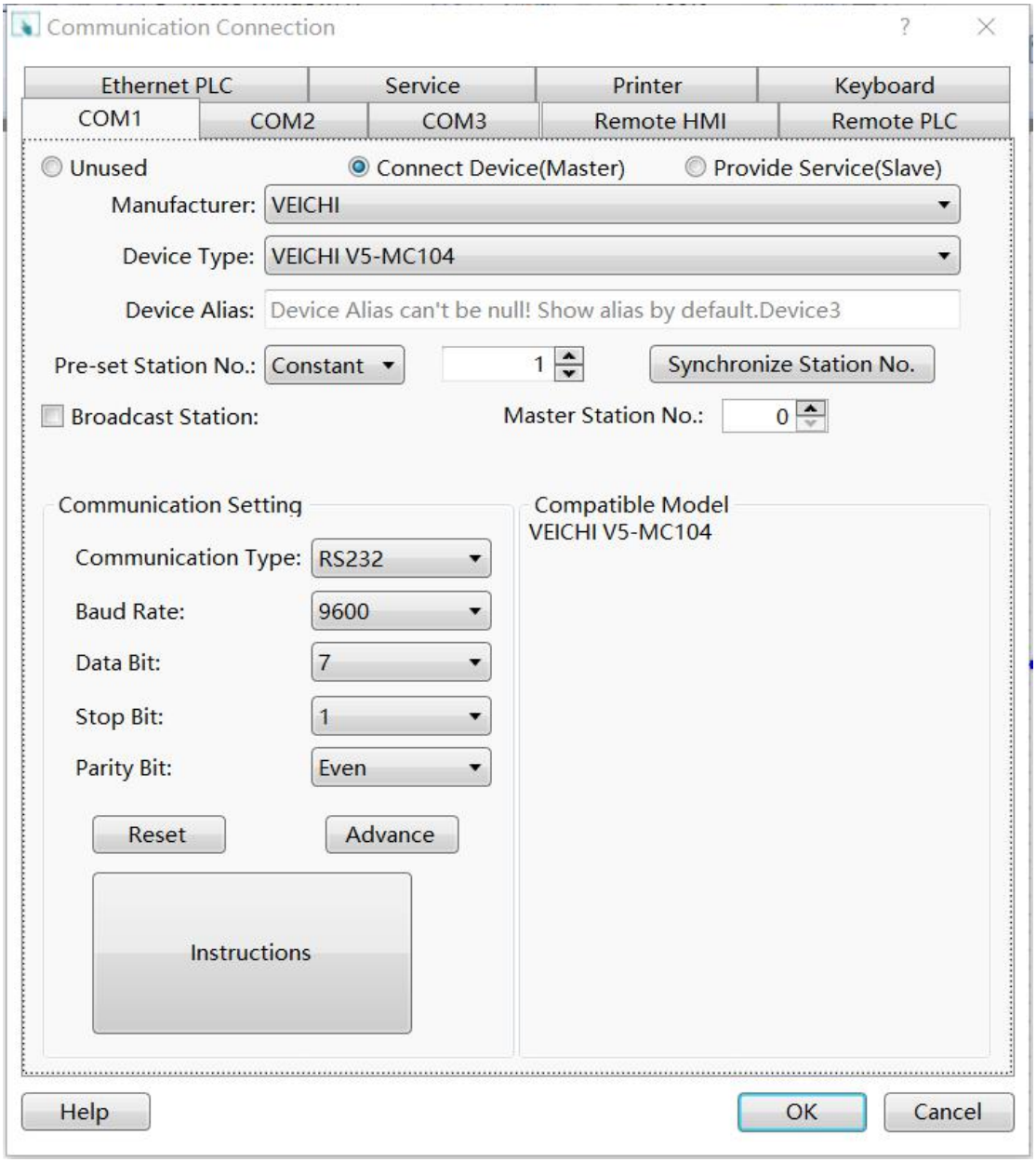
Make the printer to print the corresponding information.

4.10.3 Communication Settings

4.10.3.1 Local Connection

The command **Local Connection** in the **Communication Settings** menu is used to set the communication parameters of the COM ports.

Select the corresponding COM port (COM1, COM2, COM3, or COM4) property TAB to set the communication parameters.



4.10.3.1.1 Unused

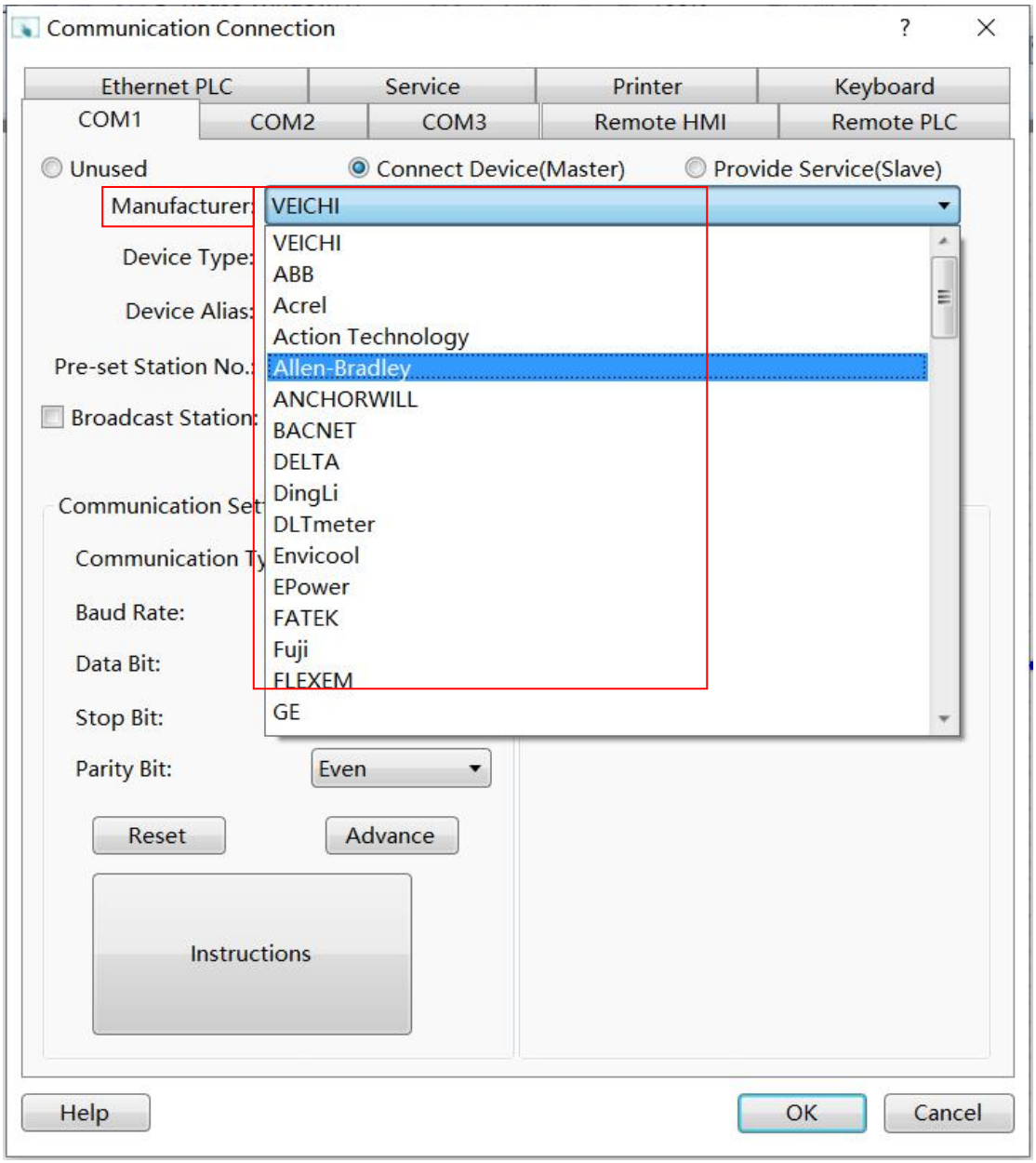
The option **Unused** is the default. It means the selected COM port is not used to communicate.

4.10.3.1.2 Connect Device (Master)

The option **Connect Device (Master)** needs to be selected when the touch screen is as master device. Then you need to set communication parameters for the corresponding PLC.

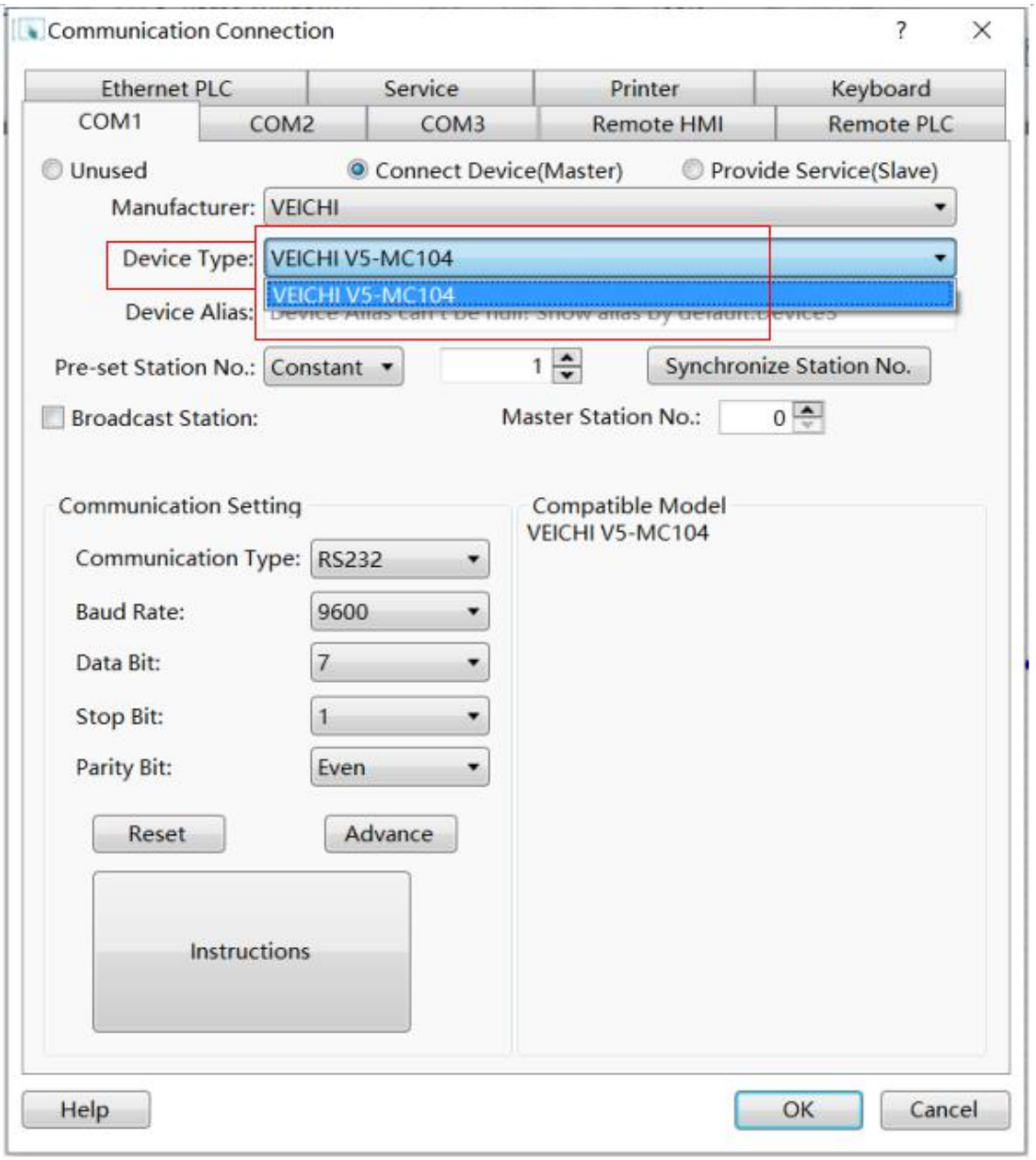
- Manufacturer

The option **Manufacturer** is used to set the manufacturer of the connected PLC.



- Device Type

The **Device Type** refers to the corresponding type of the connected PLC.



- Pre-set Station No.

The option **Pre-set Station No.** is used to set the PLC station number. You can set it by Constant or Variable.

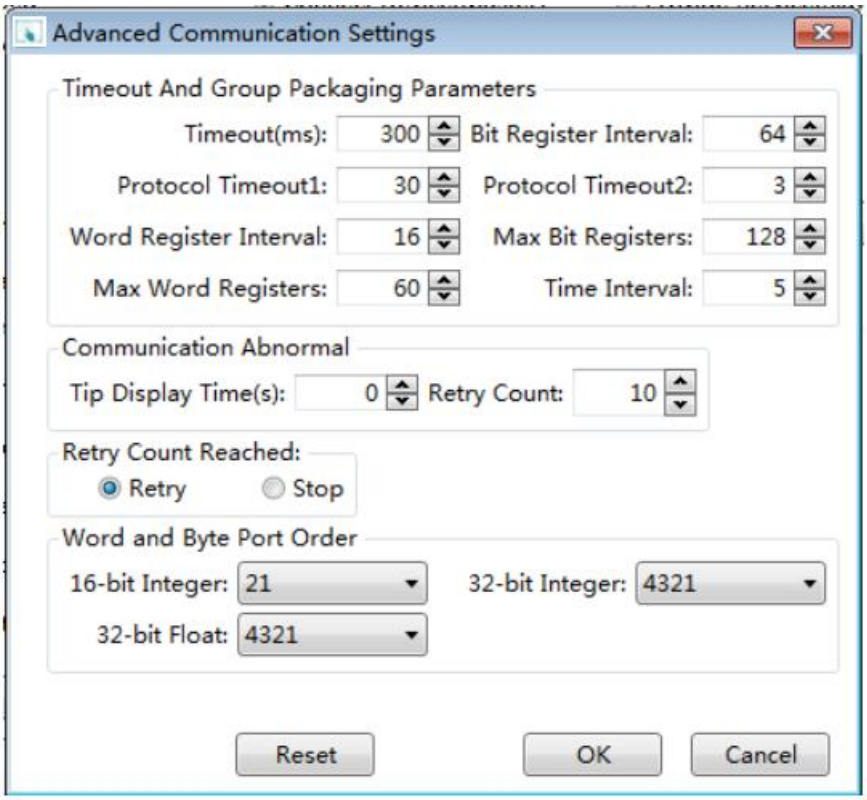
You can input a fixed station number of the connected PLC by Constant way. It is the default station number for the new address. The station number which is already set will not change if you modify the preset station number. You can use the button **Synchronize Station No.** to unify the station number.

You can set the **Pre-set Station No.** by variable. It means the preset station number will depend on the value of a variable which you can input by a numeric value input component. The method to input the variable address is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.

- Synchronize Station No.

After clicking the button **Synchronize Station No.**, the station number will be modified and saved for all addresses of this PLC used in the current project.

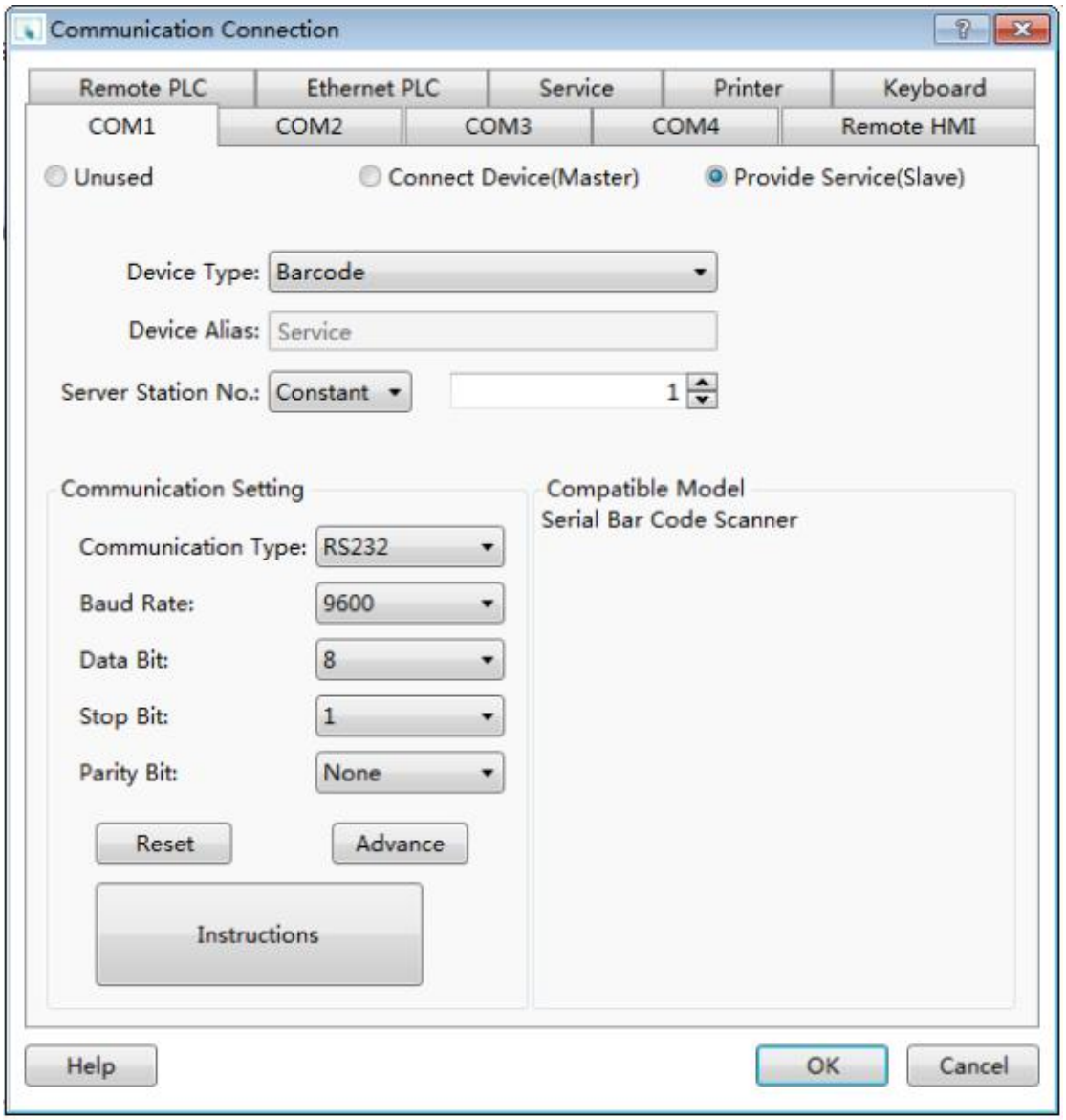
- Communication Setting
  - Communication Type: RS232, RS485-2 and RS485-4 are optional.
  - Baud Rate: 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200 and 187500 are optional.
  - Data Bit: the number 7 and 8 are optional.
  - Stop Bit: the number 1 and 2 are optional.
  - Parity Bit: None, Odd and Even are optional.
  - Reset: the default settings will be restored if you click the button **Reset**.
  - Advance: more communication protocol parameters can be modified if you click the button **Advance**. The settings are shown as below.



The parameters in the Advanced Communication Settings should not be modified, unless the professional guidance is given. The optional modification may result in a communication failure or unexpected events occur. You can consult the factory technical staff to modify the advanced parameters based on your needs. In most cases, the default parameters are the be stand need not to be changed.

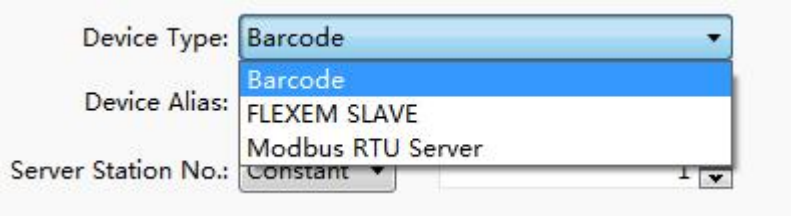
4.10.3.1.3 Provide Service (Slave)

The touch screen is used as the slave device.



- Device Type

The Device Type includes Bar code, FLEXEM SLAVE and Modbus RTU Server. It is shown as below.



- Device Alias

Serve is the default name of the Device Alias.

- Server Station No.

You can set the **Server Station No.** by Constant or Variable. It is the station number of the touch screen as a slave device.

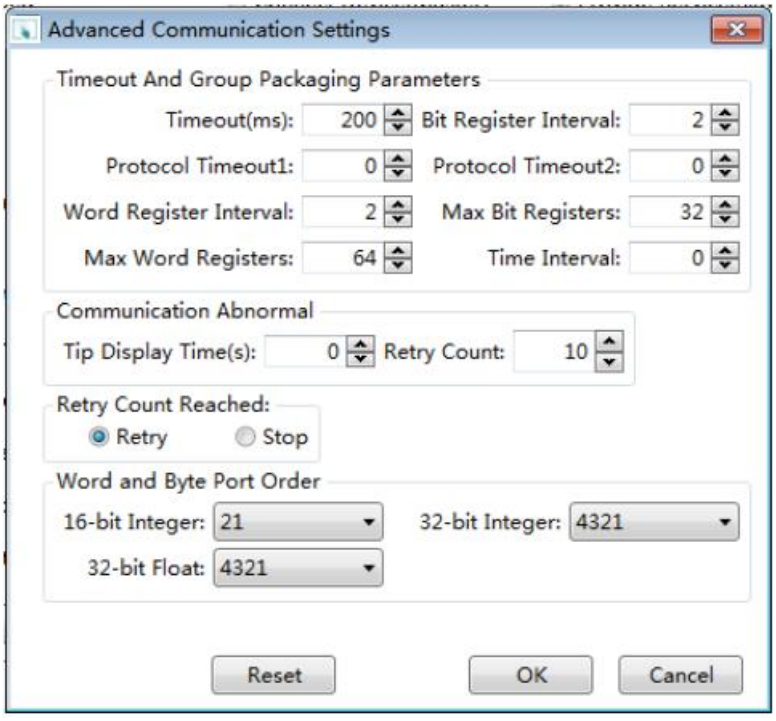
- Constant

The user can input a constant as the fixed station number.

- Variable

You can set the **Server Station No.** by variable. It means the server station number will depend on the value of a variable which you can input by a numeric value input component. The method to input the variable address is referred to: Detailed manual/General functions/Address editor/Standard ByteAddress Input.

- Communication Setting
- Communication Type: RS232, RS485-2 and RS485-4 are optional.
- Baud Rate: 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200 and 187500 are optional.
- Data Bit: the number 7 and 8 are optional.
- Stop Bit: the number 1 and 2 are optional.
- Parity Bit: None, Odd and Even are optional.
- Reset: the default settings will be restored if you click the button **Reset**.
- Advance: more communication protocol parameters can be modified if you click the button "Advance". The settings are shown as below.



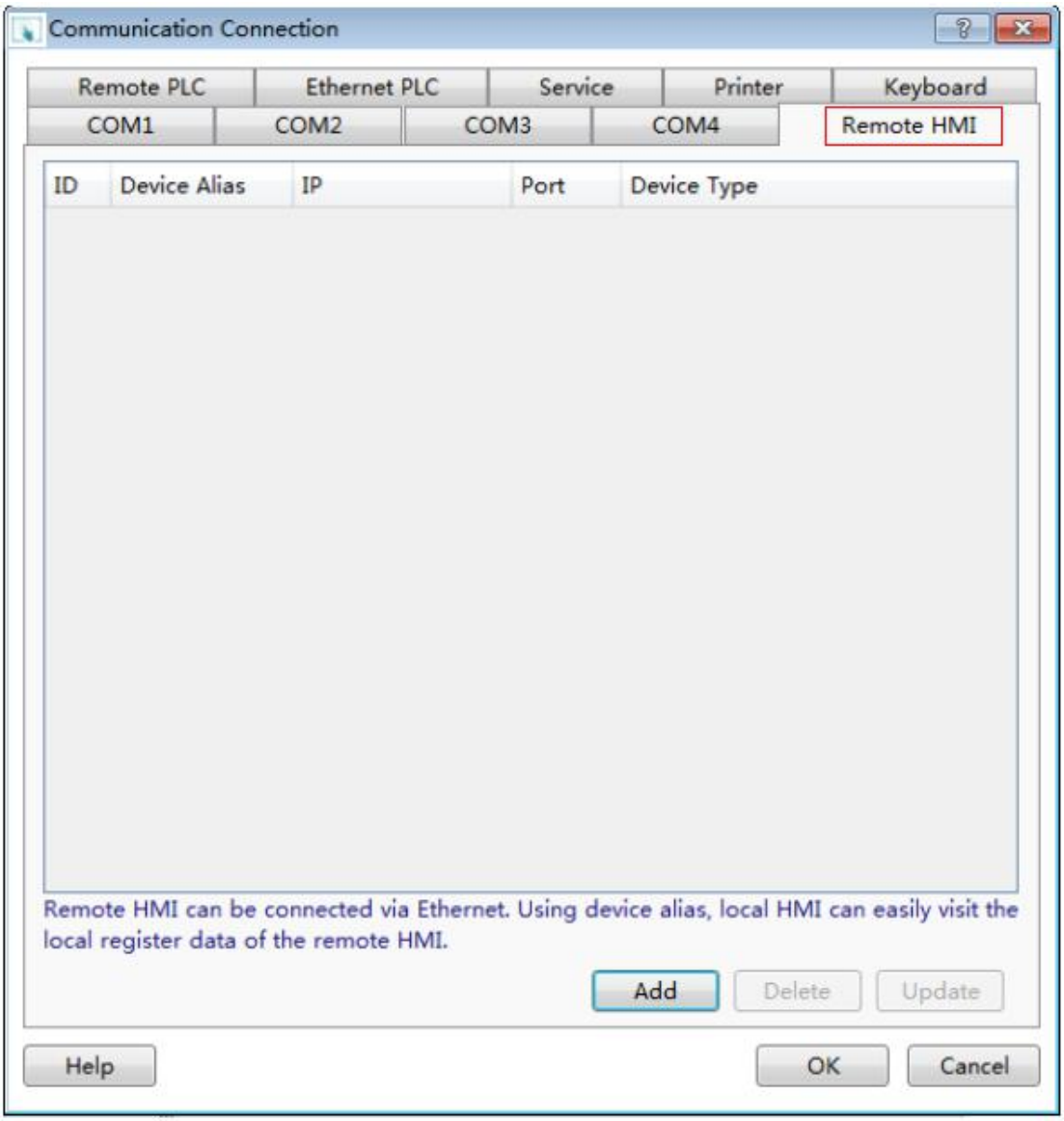
The parameters in the Advanced Communication Settings should not be modified. The optional modification may result in a communication failure or unexpected events occur. You can consult the factory technical staff to modify the advanced parameters based on your needs.

4.10.3.2 Remote Connection

The Remote connection contains three connection modes: **Remote HMI**, **Remote PLC** and **Ethernet PLC**.

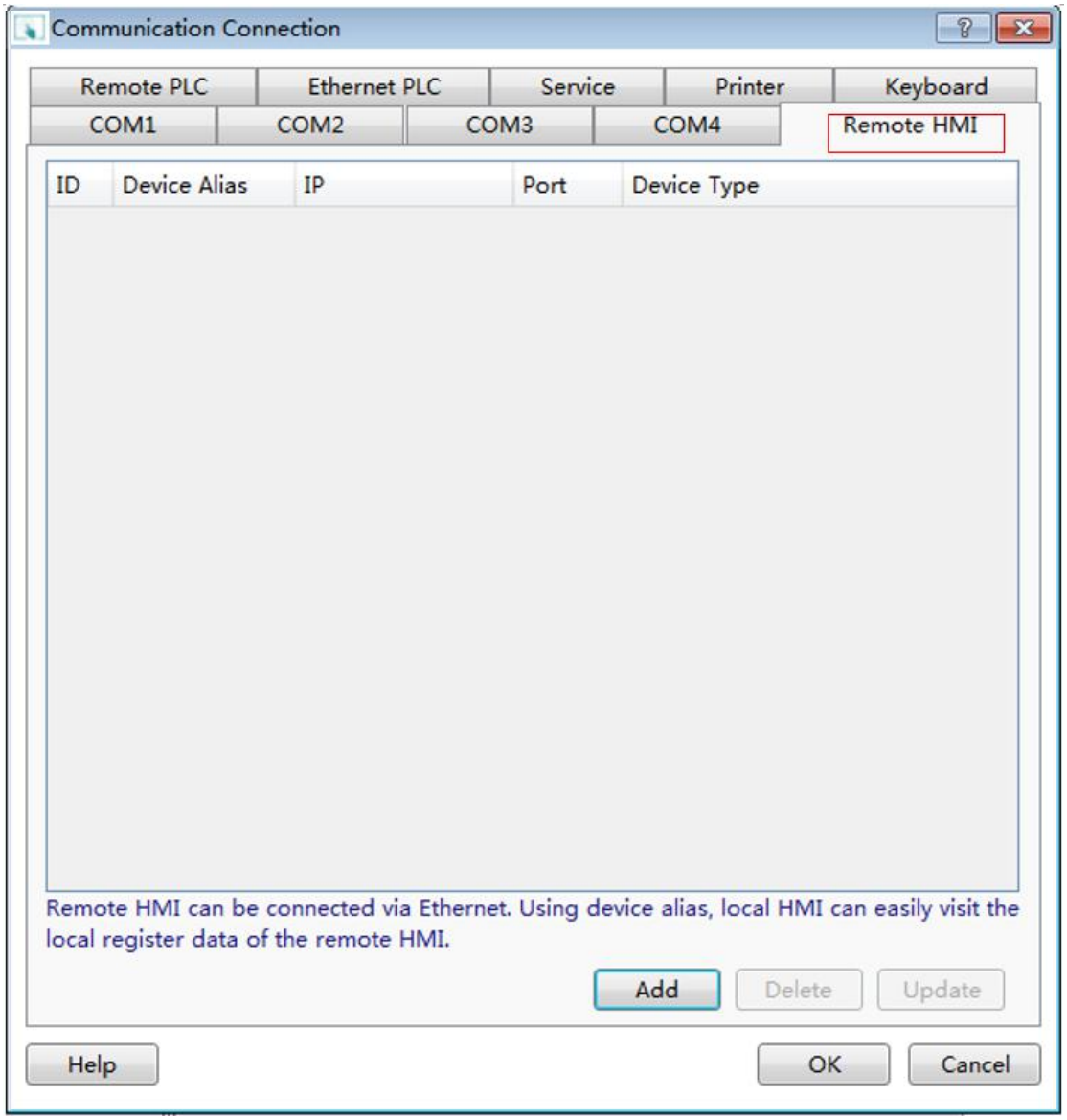
4.10.3.2.1 Remote HMI

After click the menu **Setup / Communication Settings / Remote Connection**, the **Remote HMI** settings page is opened as the default. It is shown as below.



For one of the HMI device, anyone of other HMI devices in the same Ethernet network of the LAN is the Remote HMI. For example, there are two HMI: one named HMI1, another one named HMI2. These two HMI devices are connected in an Ethernet network. For HMI1 device, HMI2 is the **remote HMI** of HMI. For HMI2 device, HMI is the **remote HMI** of HMI2.

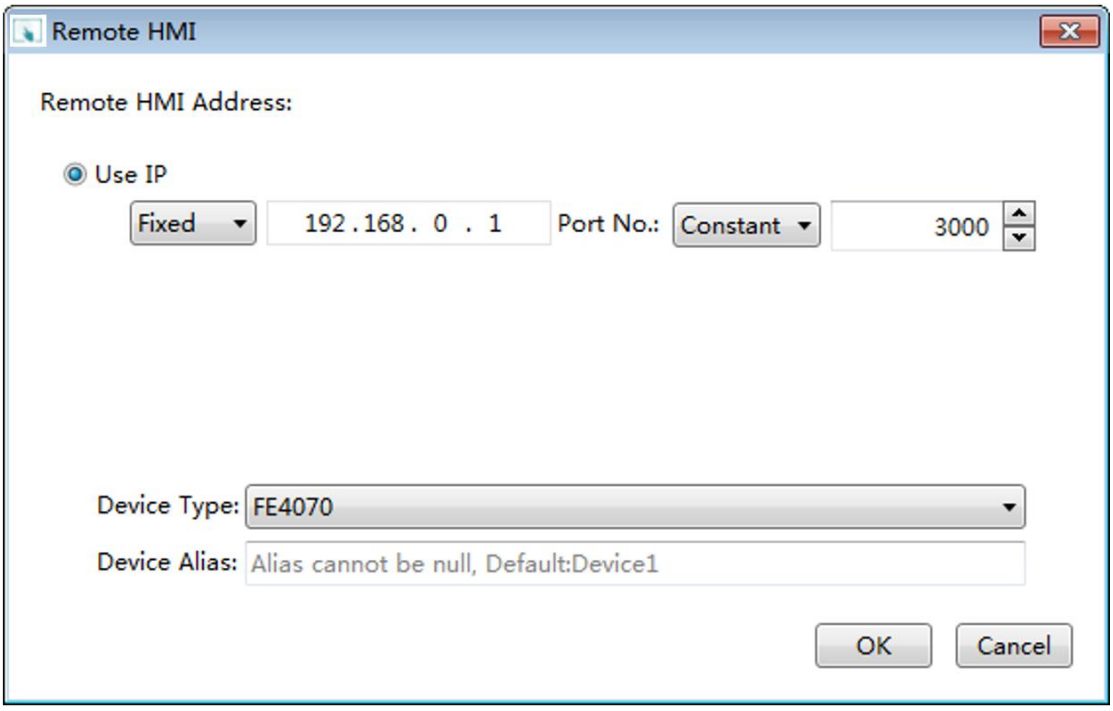
After clicking the button **Add** in the **Remote HMI** settings page, the **Remote HMI** settings dialog will pop up. It is shown as below.



● **Remote HMI**

For one HMI device, any other HMI devices in the same Ethernet network of the LAN is the **Remote HMI**. For example, there are two HMI devices connected in the same Ethernet network: one is named HMI1, and the other is named HMI2. HMI2 is the **remote HMI** of HMI1. Similarly, HMI1 is the **remote HMI** of HMI2.

After clicking the button **Add** in the **Remote HMI** settings page, the **Remote HMI** settings dialog will pop up as below:

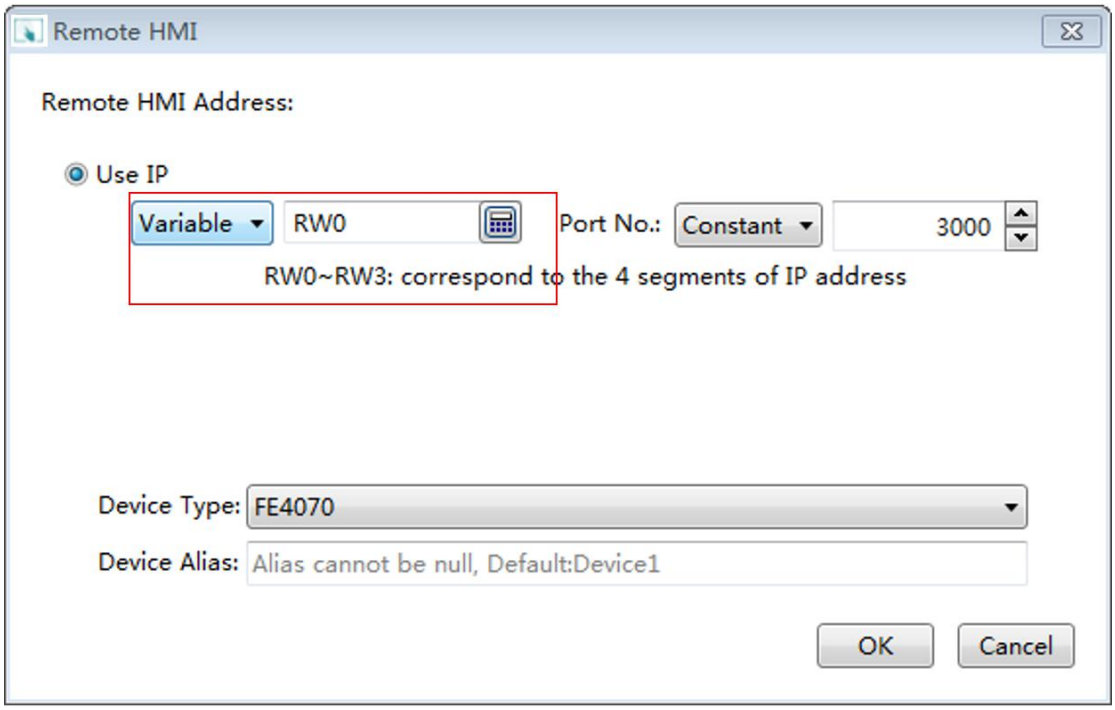


● **Use IP**

You can set the IP address of the remote HMI: **Fixed** or **Variable**.

The default setting is **Fixed 192.168.0.1**. Example: If the IP address of HMI1 is **192.168.0.10** and the IP address of HMI2 is **192.168.0.20**, when editing the project setting of HMI1 to access HMI2, the IP address here should be the IP of HMI2, that is **192.168.0.20**.

When you select the IP address as **Variable**, a **word register** address needs to be given as the start address. It will automatically occupy 4 word registers, which is corresponding to the 4 network segments of the IP address respectively. It is shown as below:



The variable address is the 4 word registers RW0~RW3. You can input the IP address of the Remote HMI to the 4 word registers respectively.

● **Port No.**

You can set the **Port No.** of the remote HMI to **Constant** or **Variable**. The default setting of Port No. is **Constant** 3000. You could also set the Port No. to **Variable** and use a word register to change the port number of the remote HMI. The default Port No. is suggested usually. Please note that all the Port No. of the connected HMI must be the same. Otherwise, the connection may fail.

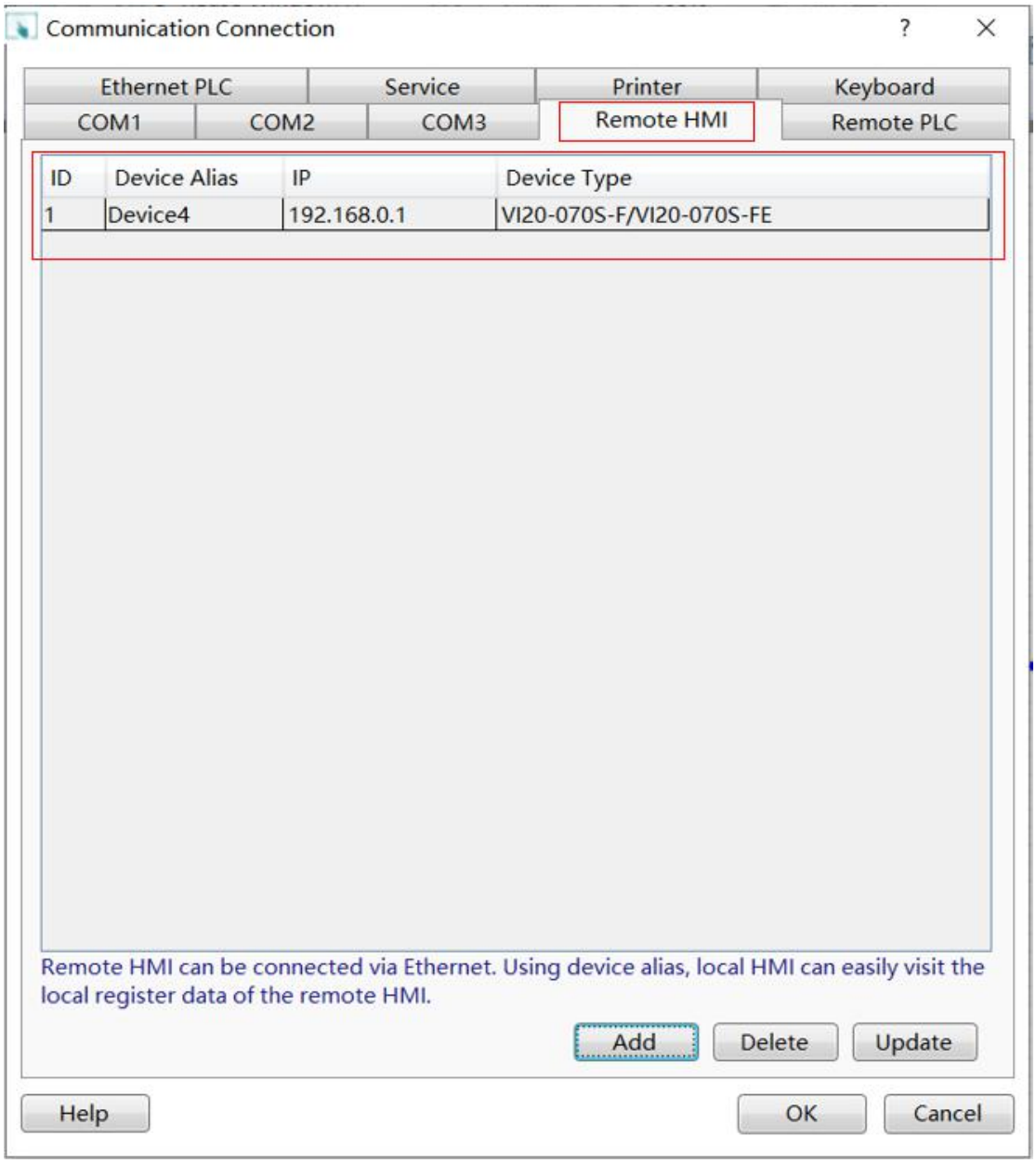
● **Device Type**

The **Device Type** refers to the type of the remote HMI device to be accessed.

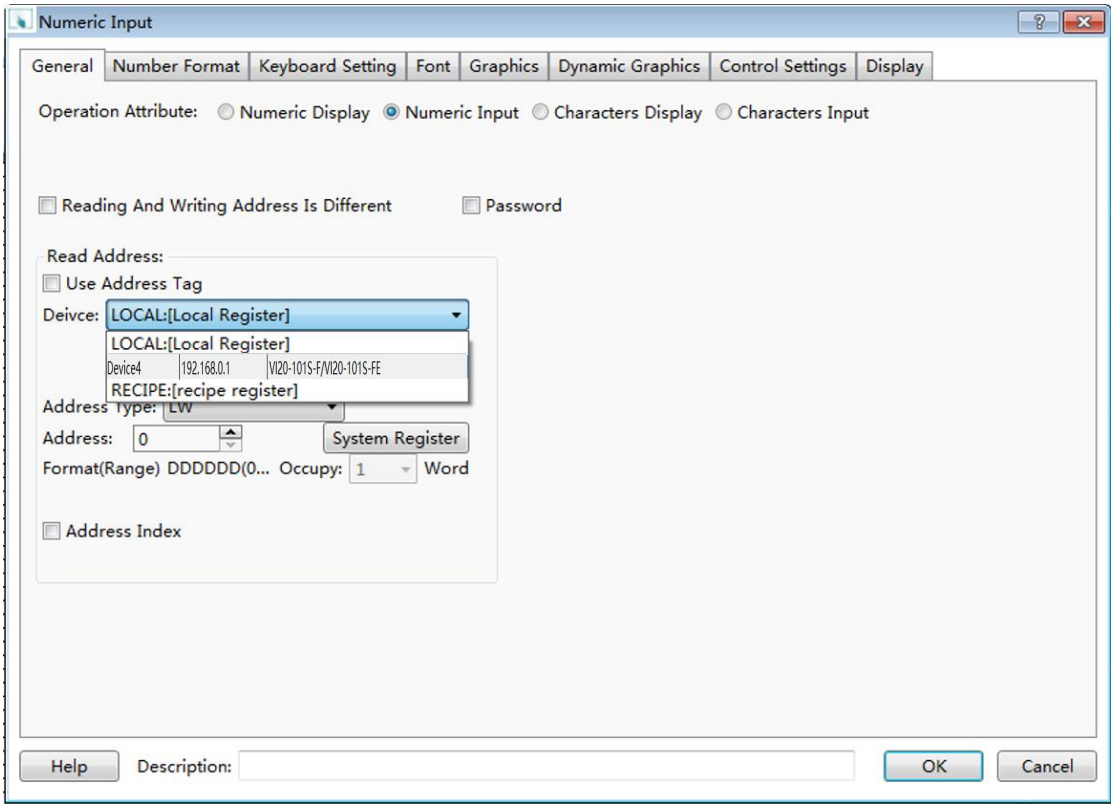
● **Device Alias**

The default setting is **Device 3**. It cannot be null. You can also set a device alias which is easy to understand, such as **HMI for Machine 3**.

Click the button **OK** to confirm the above settings of accessing one **Remote HMI**, which is shown as below.



Click the button **OK** to save the settings, and then you can find the **Remote HMI** device in the register addresses, which is shown as below.



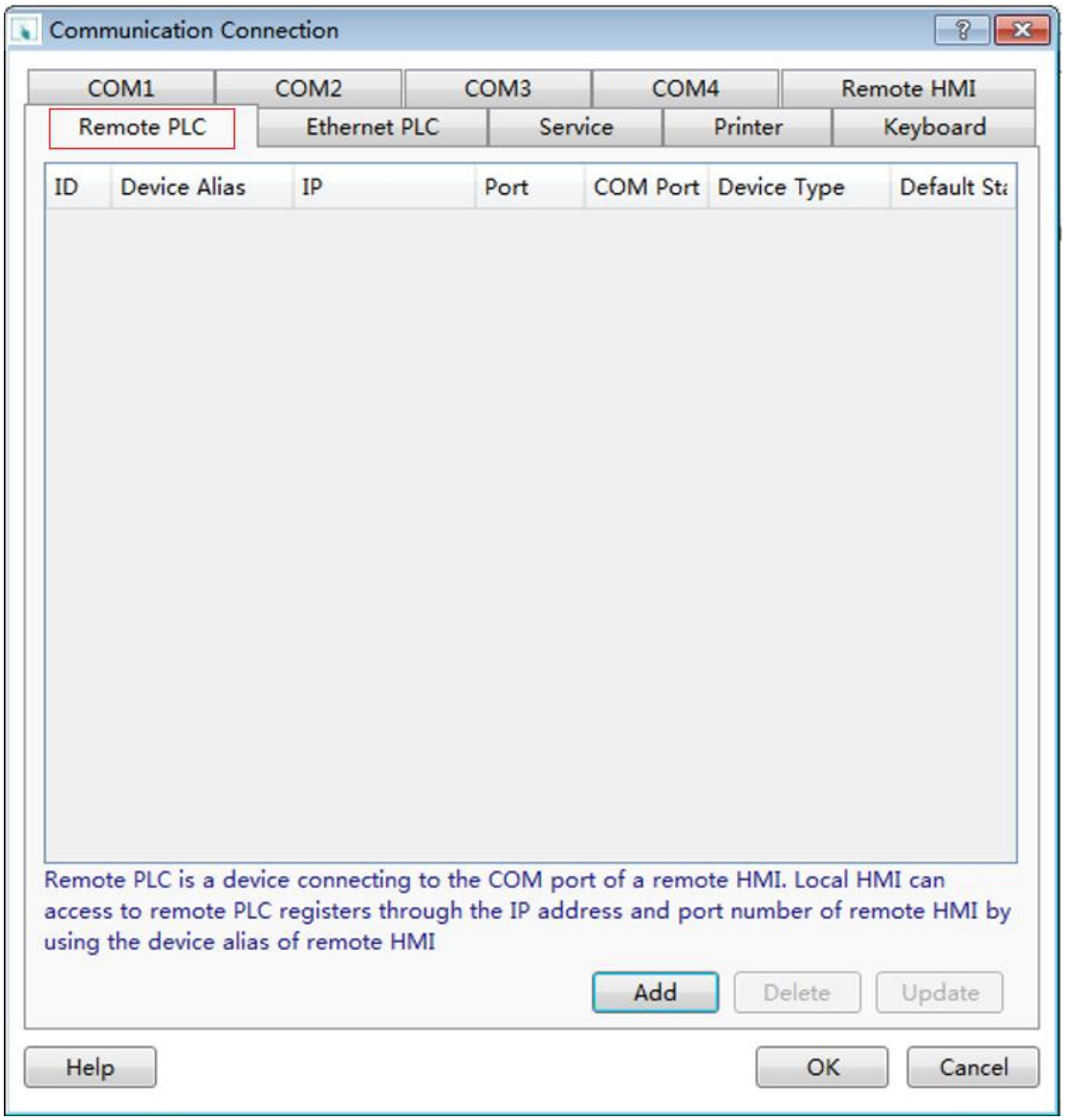
After finishing the setting of **Remote HMI**, the local HMI can access all the register data of the **Remote HMI**, including the **LW, RW, SRW, LB, SRB** and other registers.

You can add other **Remote HMI** devices as above.

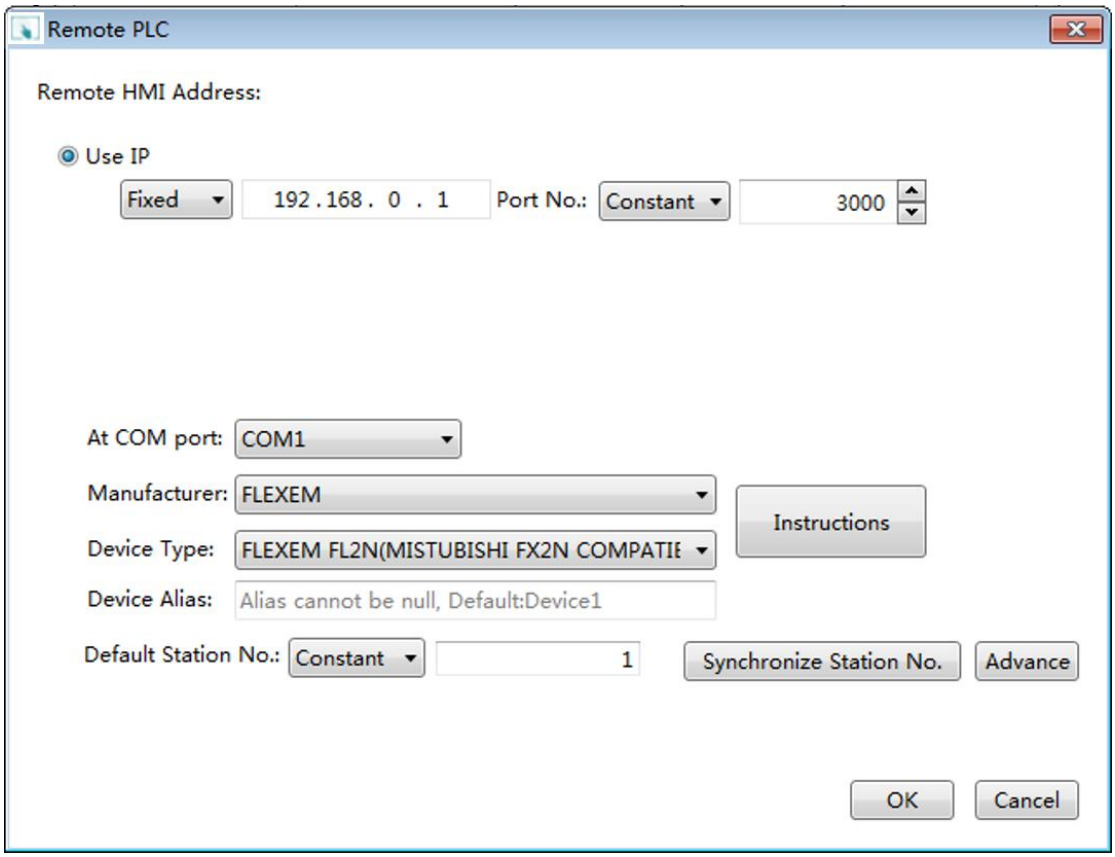
4.10.3.2.2 Remote PLC

The **Remote PLC** refers to the devices which are connected with the remote HMI, including the PLC, the inverter, the servo, the instruments, and so on.

After clicking the menu **Setup / Communication Settings / Remote Connection**, the **Remote HMI** setting page is opened as the default. Click the **Remote PLC** tab to open the **Remote PLC** setting page. It is shown as below.



Click the button **Add** to open the edit page, which is shown as below.



● **Remote HMI Address**

➢ **Use IP**

Set the IP address of the **Remote HMI**.

➢ **Port No.**

Set the Port No. of the **Remote HMI**.

The detailed settings of **Use IP** and **Port No.** can be referred to the settings in the **Remote HMI** settings page.

● **COM**

➢ **At COM port**

The **At COM port** refers to the serial port No. of **Remote HMI** which the **Remote PLC** device is connected to. The default is COM1. For example, it is set COM2 if the accessed controller is connected to the COM2 port of **Remote HMI**.

➢ **Manufacturer**

The **Manufacturer** refers to the manufacturer of the connected **Remote PLC** devices.

➢ **Device Type**

The **Device Type** refers to the type of the connected **Remote PLC** device.

➢ **Device Alias**

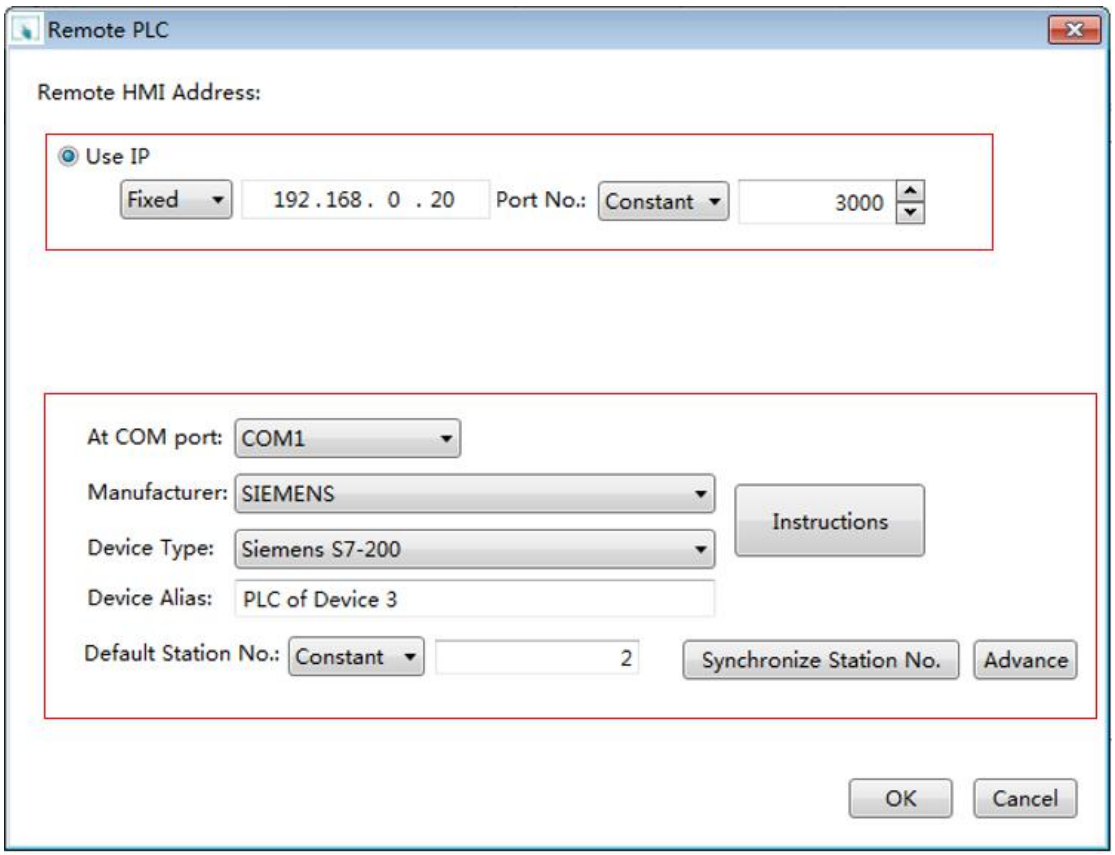
It cannot be null. You can set a device alias which is easy to understand, such as **HMI for Machine 3**.

➢ **Default Station No.**

The **Default Station No.** refers to the station number of the **Remote PLC** device. It must be consistent with the actual station number of the **Remote PLC** device.

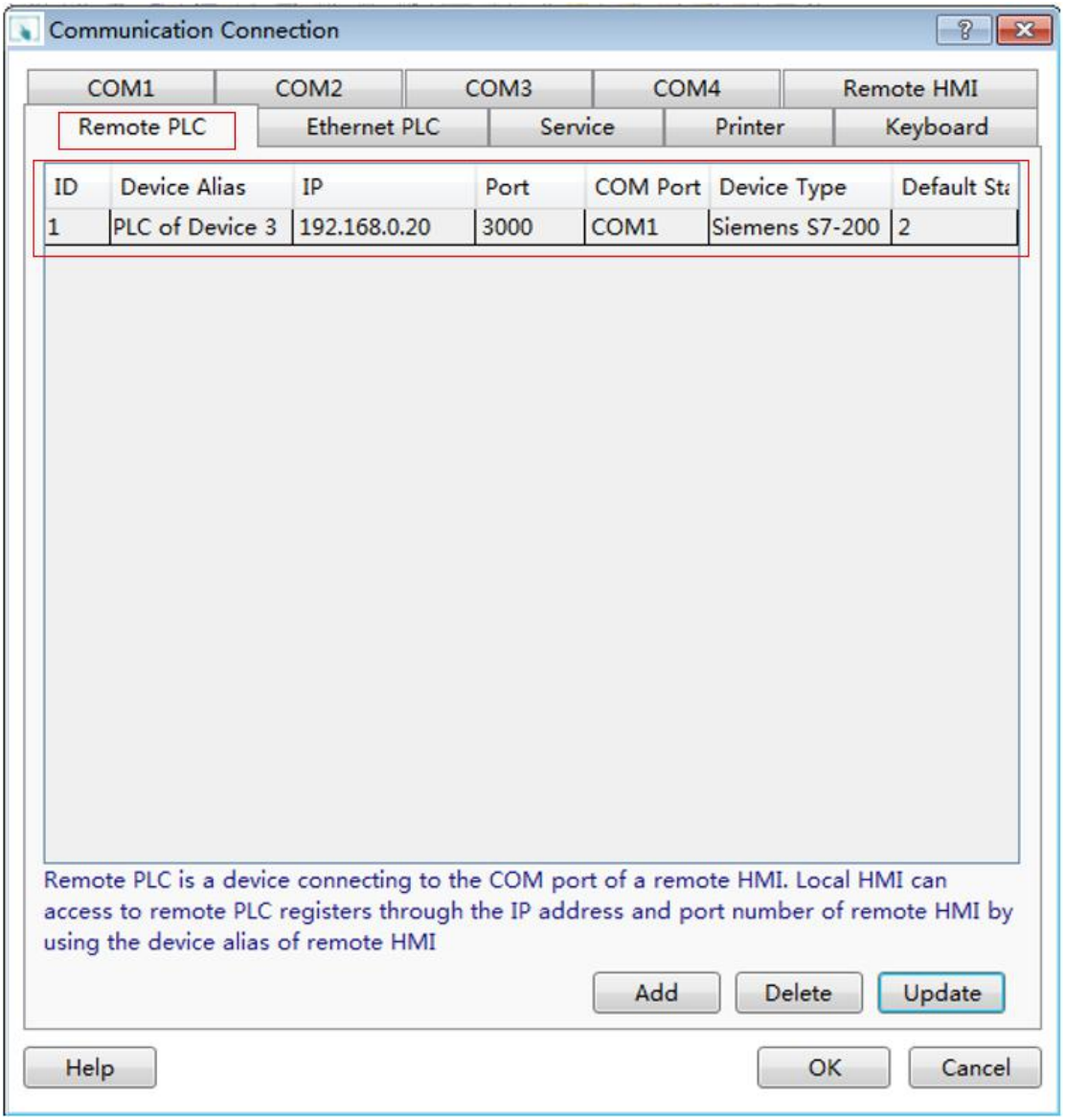
➢ **Advance**

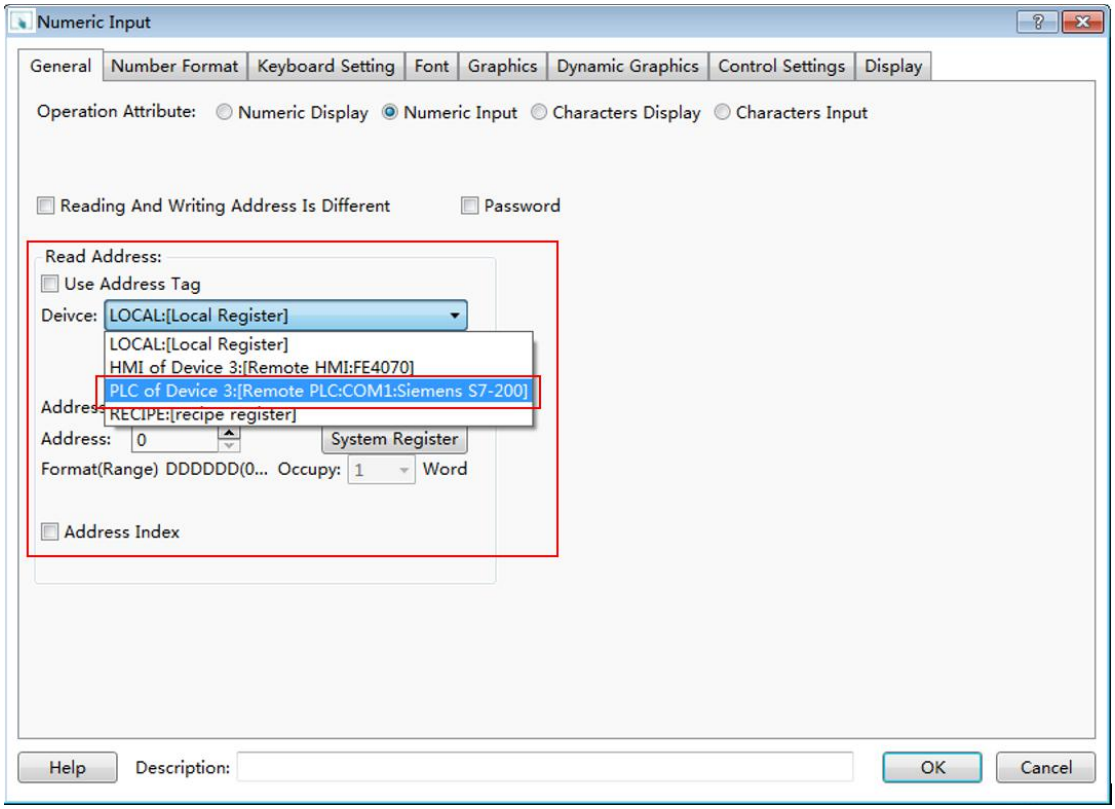
Please refer to the **Advance** settings of the **Local Connection**.



As above, the **Remote PLC** device is connected to the **Remote HMI**, of which the IP address is **192.168.0.20**. The type of the **Remote PLC** is Siemens S7-200 and it is connected to the COM1 port of **Remote HMI**. The station number is 2.

Click the button **OK** to add the **Remote PLC** device. You could find and access to the **Remote PLC** devices in the **Device Type** as below.


Communication Connection
COM1
COM2
COM3
COM4
Remote HMI
Remote PLC
Ethernet PLC
Service
Printer
Keyboard
ID
Device Alias
IP
Port
COM Port
Device Type
Default Sta
1
PLC of Device 3
192.168.0.20
3000
COM1
Siemens S7-200
2
Remote PLC is a device connecting to the COM port of a remote HMI. Local HMI can access to remote PLC registers through the IP address and port number of remote HMI by using the device alias of remote HMI
Add
Delete
Update
Help
OK
Cancel



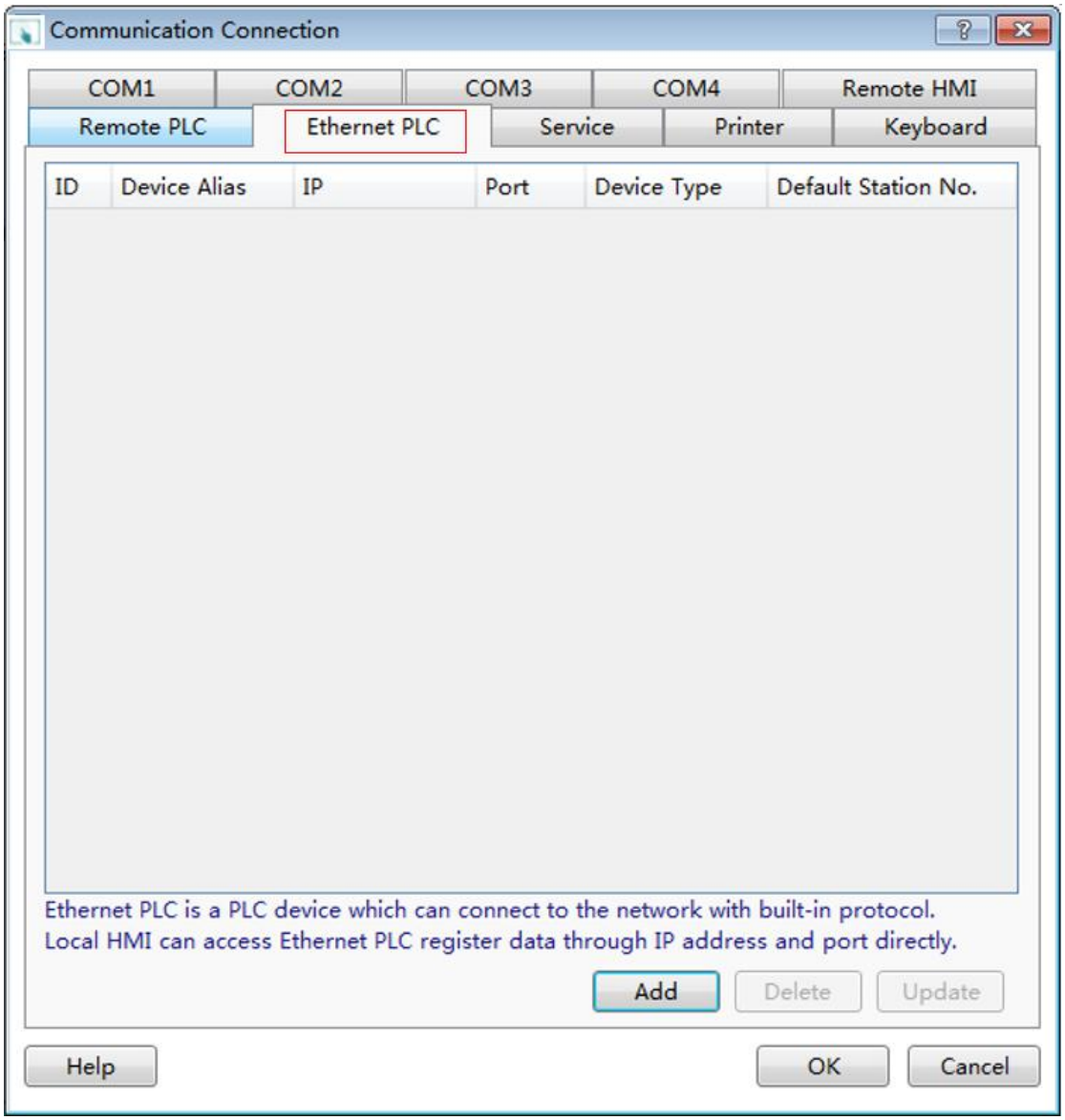
After finishing the settings of the **Remote PLC**, the local HMI can access all the registers of the **Remote PLC** which is connected to the **Remote HMI**.

You could add more **Remote PLC** as above.

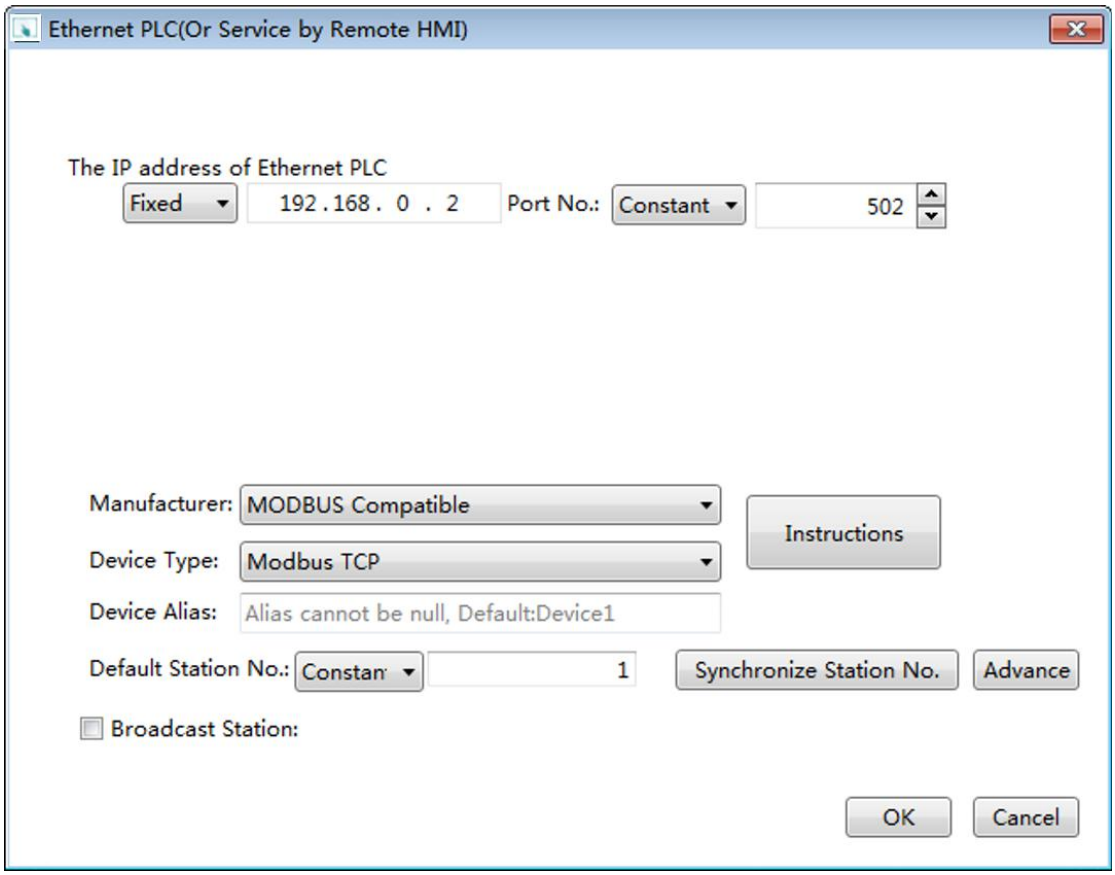
4.10.3.2.3 Ethernet PLC

The **Ethernet PLC** refers to the PLC that communicates with HMI through Ethernet communication. Like the PLC connected with serial port, Ethernet PLC also communicates though the network communication protocol which is supported by the HMI and the PLC.

After clicking the menu **Setup / Communication Settings / Remote Connection**, the **Remote HMI** settings page is opened as the default. Click the **Ethernet PLC** tab to open the **Ethernet PLC** settings page. It is shown as below.



Click the button **Add** to open the edit page. It is shown as below.



We could find that the **Ethernet PLC** setting page is similar with the **Remote PLC** setting page.

● **The IP address of Ethernet PLC**

The **IP address of Ethernet PLC** refers to the IP address of the connected PLC.

● **Port No.**

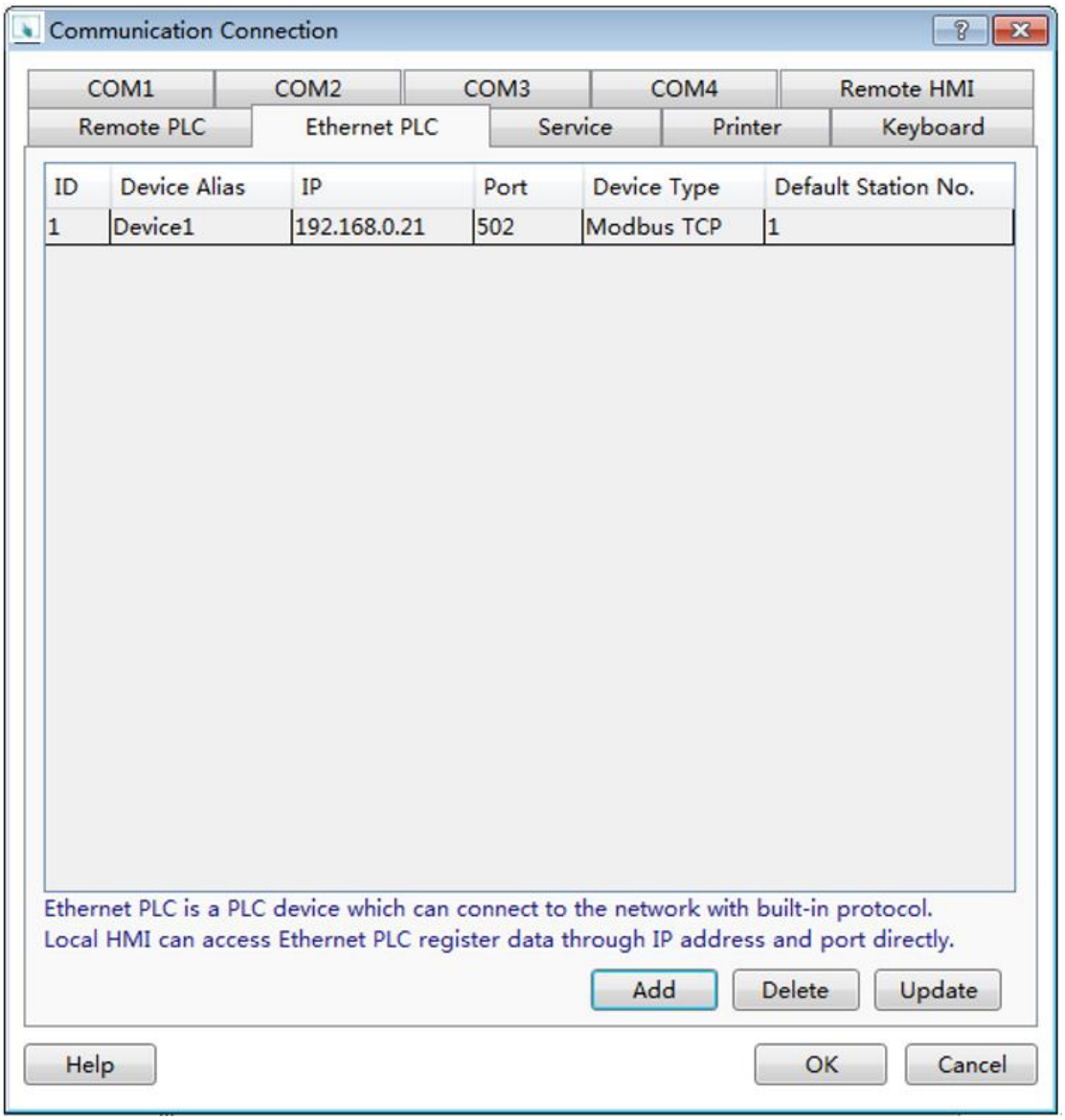
The **Port No.** is the communication port number between the Ethernet PLC and HMI. The **Port No.** is different for different **Ethernet PLC** devices. There is a default **Port No.** when you select the **Ethernet PLC**. Generally, it is ok to use the default port number if there is no special requirement. For example, the default port number for the **Modbus TCP** is 502.

The **Manufacturer**, **Device Type**, **Device Alias**, **Default Station No.** are same as the settings in the **Remote PLC**.

● **Broadcast Station**

The default is not selected. After selecting, you can set a station number for the broadcast station. You can determine whether to use this function or not according to the actual situation.

Click the button **OK** to confirm the settings and the **Ethernet PLC** device is added to the **Ethernet PLC** settings page. More **Ethernet PLC** could be added as this. For example, if the **Modbus TCP** is selected as the device type, the set page is shown as below.

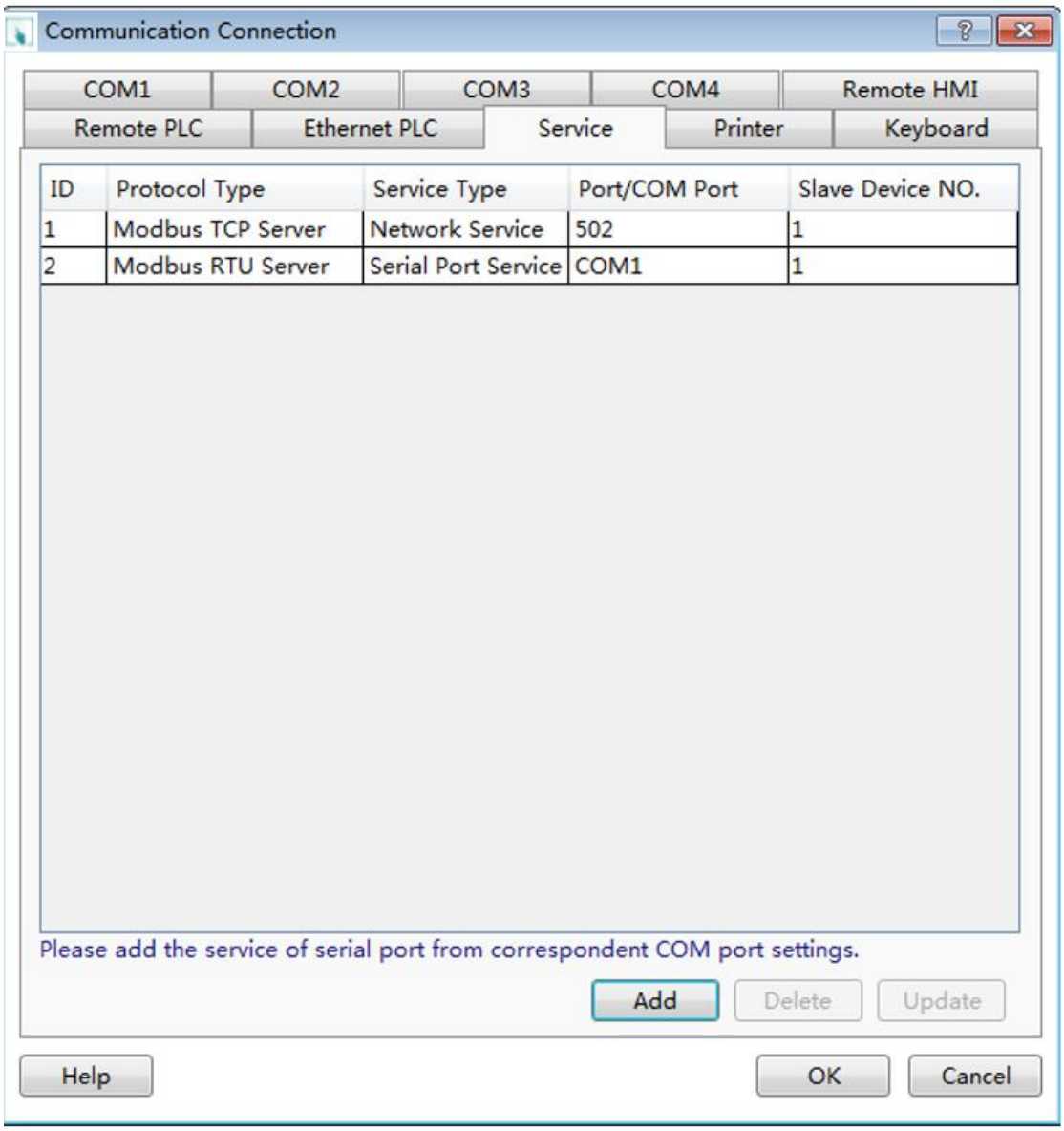


The Ethernet connection of HMI could realize the functions as **Multi HMI Connection**, **Multi HMI and One PLC Connection**, **Multi HMI and Multi PLC Connection**, and so on.

4.10.3.3 Service

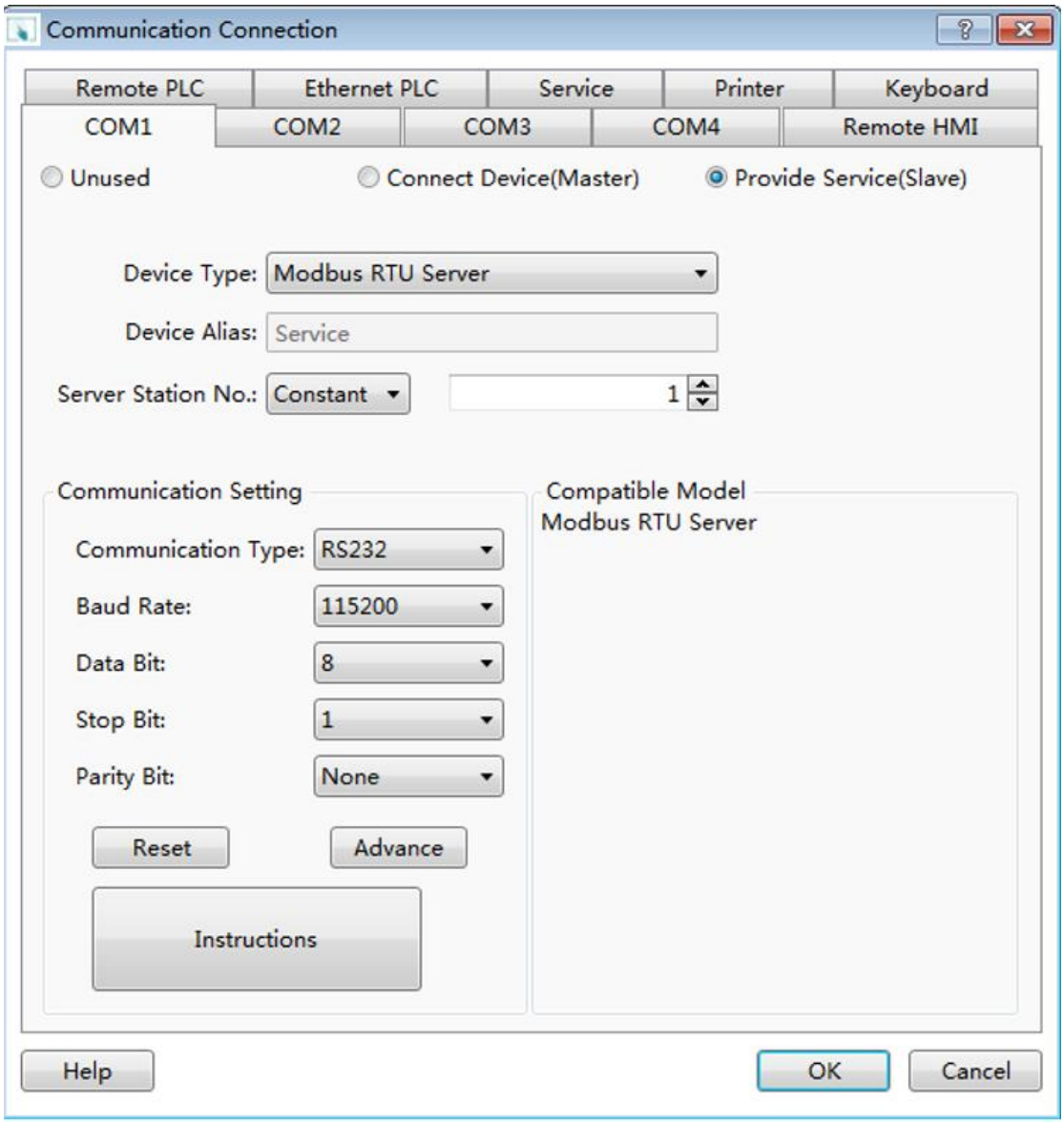
Service refers to that the HMI device provides the data requested by other devices. That is the HMI is a slave device. The port is silent at this time and all the communication operations should be initiated by other master devices.

There are two kinds of services: Serial Port Service and Network Service.



s

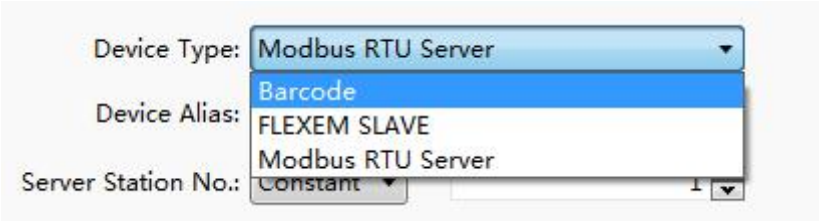
4.10.3.3.1 Serial Port Service



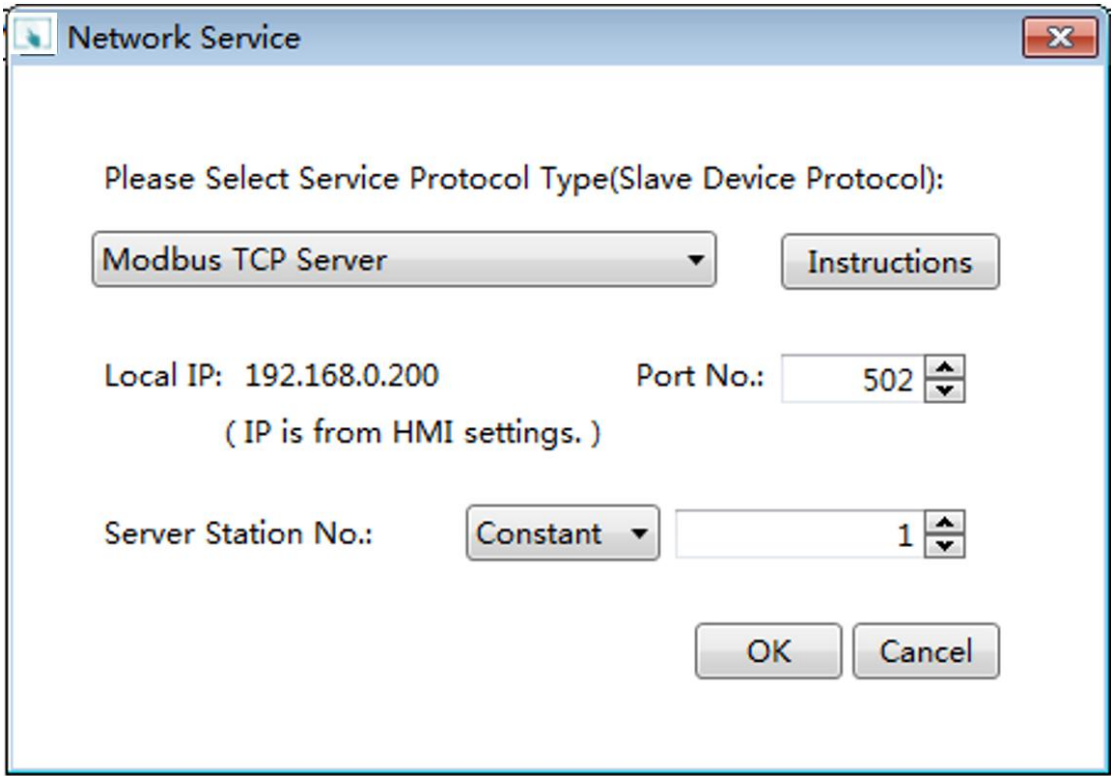
The Device Type supports Bar code. The scanned bar code information could be displayed with 100 continuous characters which starts from LW8900. LB8999, as the flag bit, is set ON after being scanned (it will not be reset automatically).

The Device Type supports FLEXEM SLAVE and the HMI can work as a slave or a master device.

The Device Type supports Modbus RTU Server. More details are referred to: Modbus RTU Server.



4.10.3.3.2 Network service



The Device Type supports Modbus TCP Server.

4.10.3.4 Printer

Set the printer connection.

4.10.3.4.1 Communication setting

Communication type (optional): RS232, RS485-2, RS485-4 (422)

Baud rate (optional): 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200, 187500

Data bit (optional): 7, 8

Stop bit (optional): 1, 2

Parity check bit (optional): None, odd parity, even parity

Restore: If the communication settings are changed, click this button to restore the default settings.

4.10.3.5 Keyboard

Set the keyboard connection.

4.10.3.5.1 Communication setting

Communication type (optional): RS232, RS485-2, RS485-4 (422)

Baud rate (optional): 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200, 187500

Data bit (optional): 7, 8

Stop bit (optional): 1, 2

Parity check bit (optional): None, odd parity, even parity

Restore: If the communication settings are changed, click this button to restore the default settings.

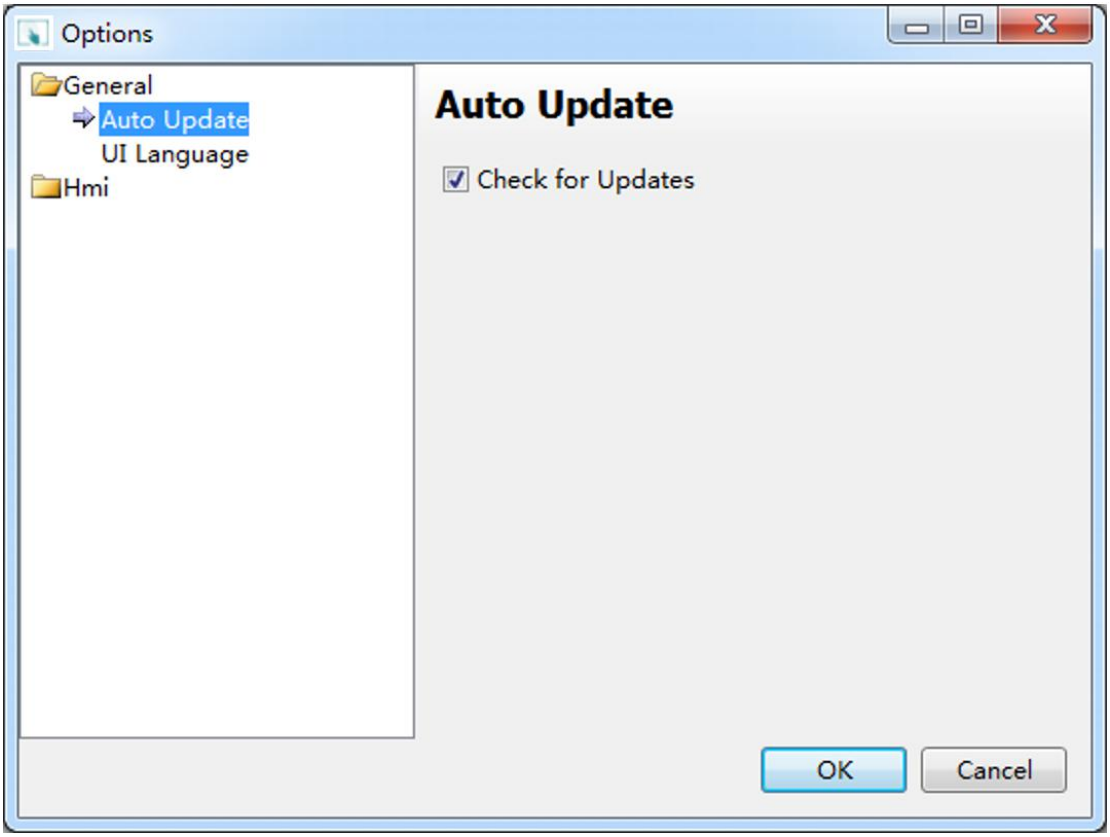
4.10.3.6 Keyboard mapping setting

You can map **up, down, forward, backward, enter** and **cancel** to different buttons as needed. You can choose **not use, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, up, down, forward,**

backward, enter and **cancel**

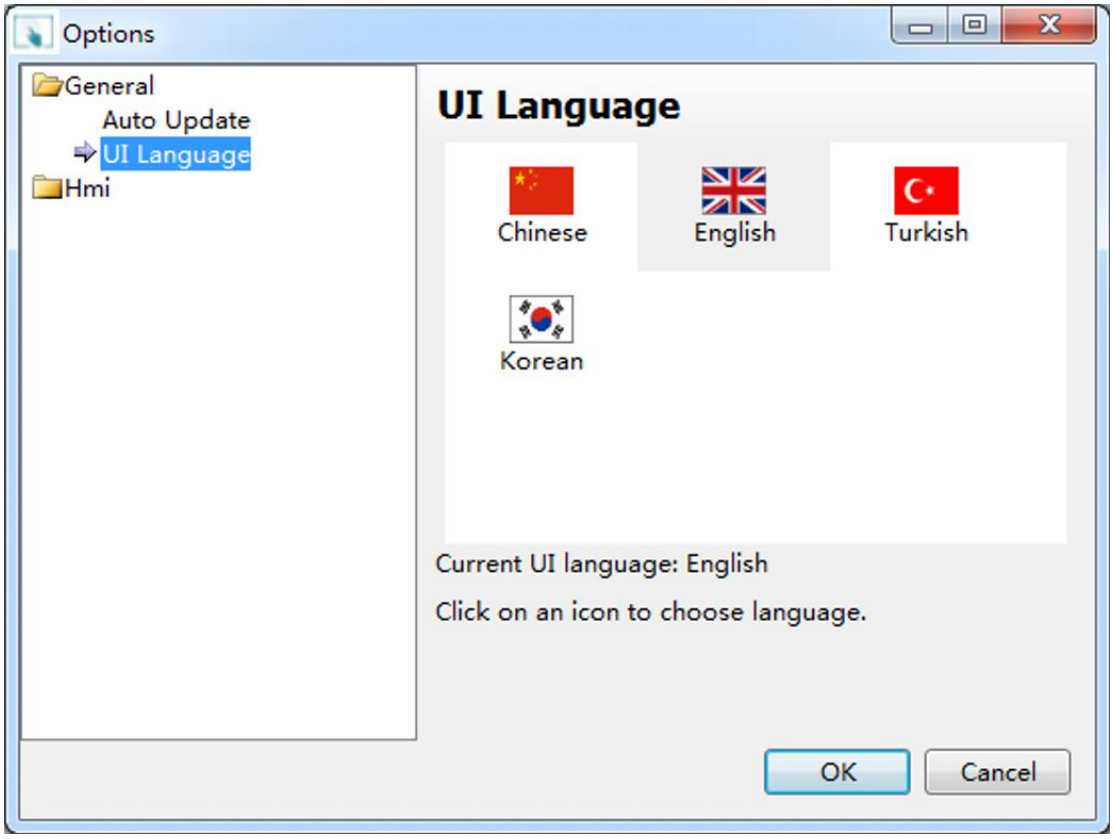
4.10.4 Options

Software interface display and other settings.



● **Auto update**

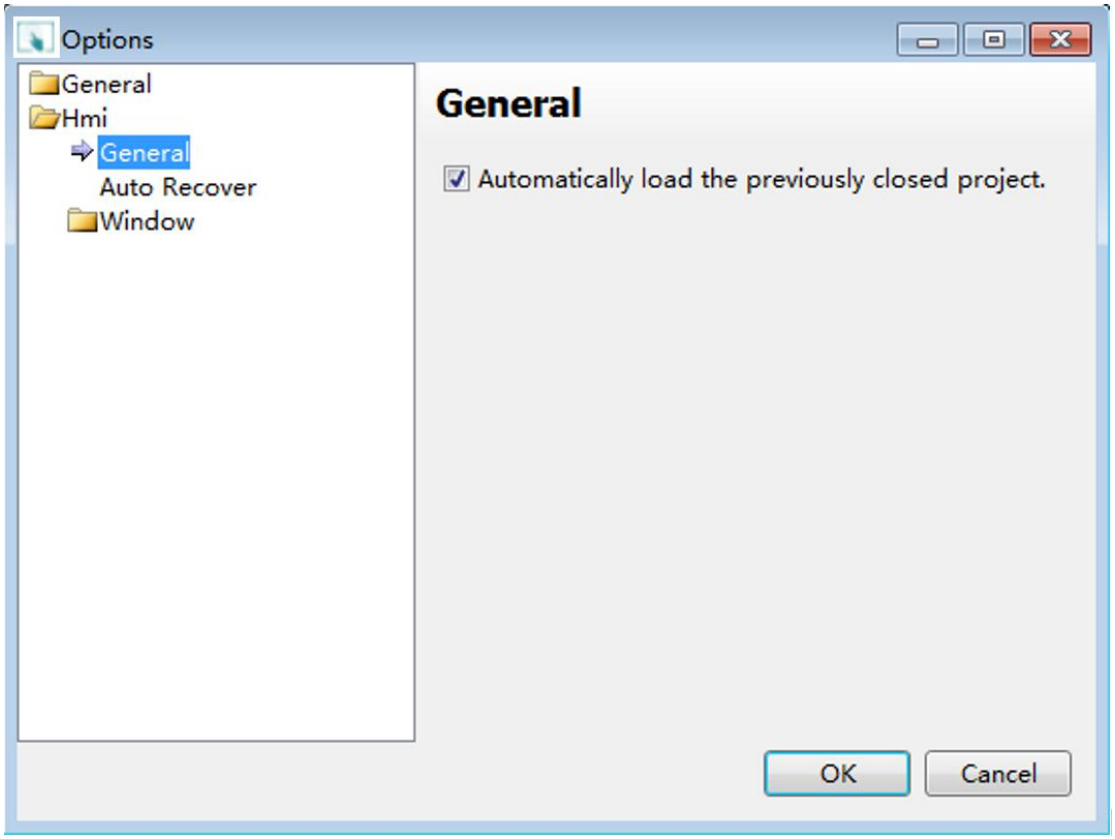
If the **Check for Updates** is selected, the software will check the updates automatically when it is opened. You will be prompted to update if there is any update package.



● **UI Language**

You can set the UI language of VI20 software, and it will take effect after restarting

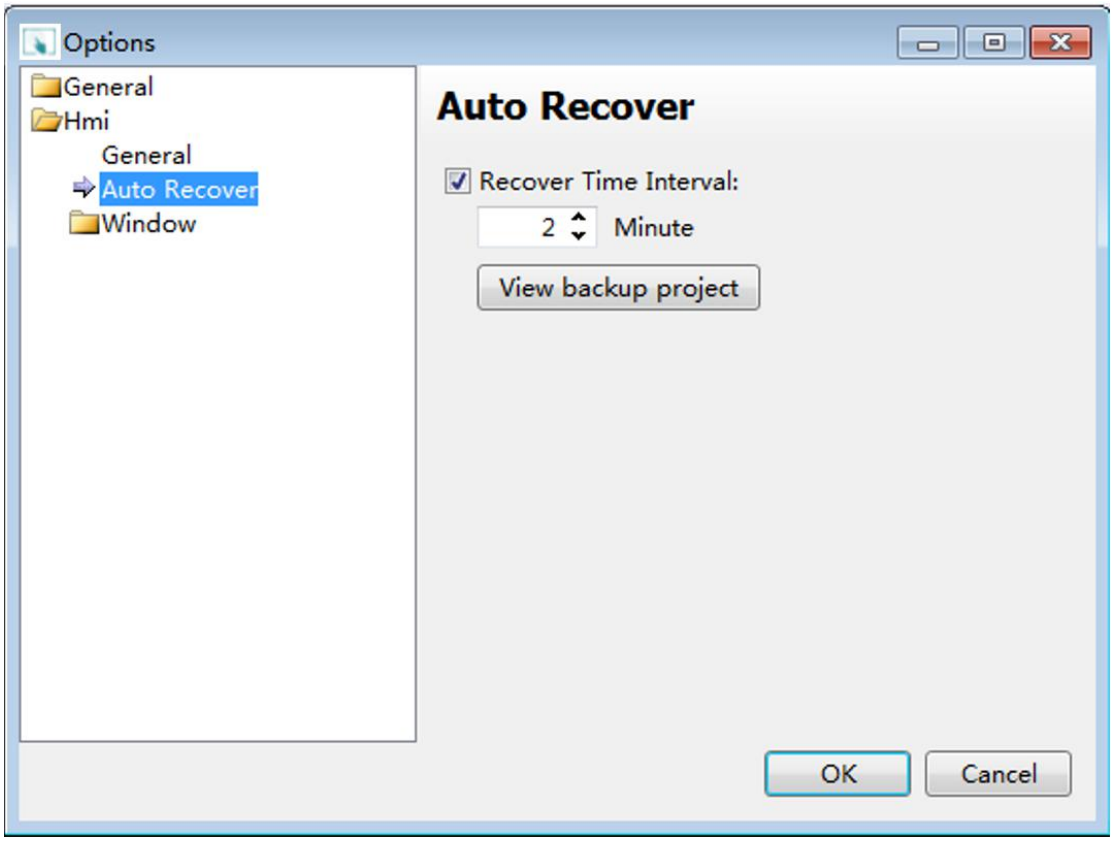
4.10.4.1 General



● **General**

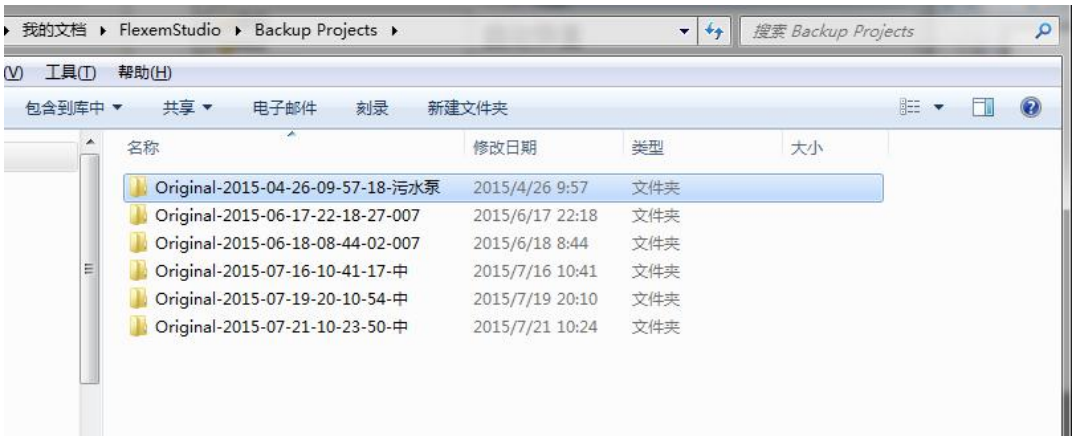
If you select the **Automatically load the previously closed project** option, the last closed project will be loaded automatically when you open the software.

4.10.4.2 HMI

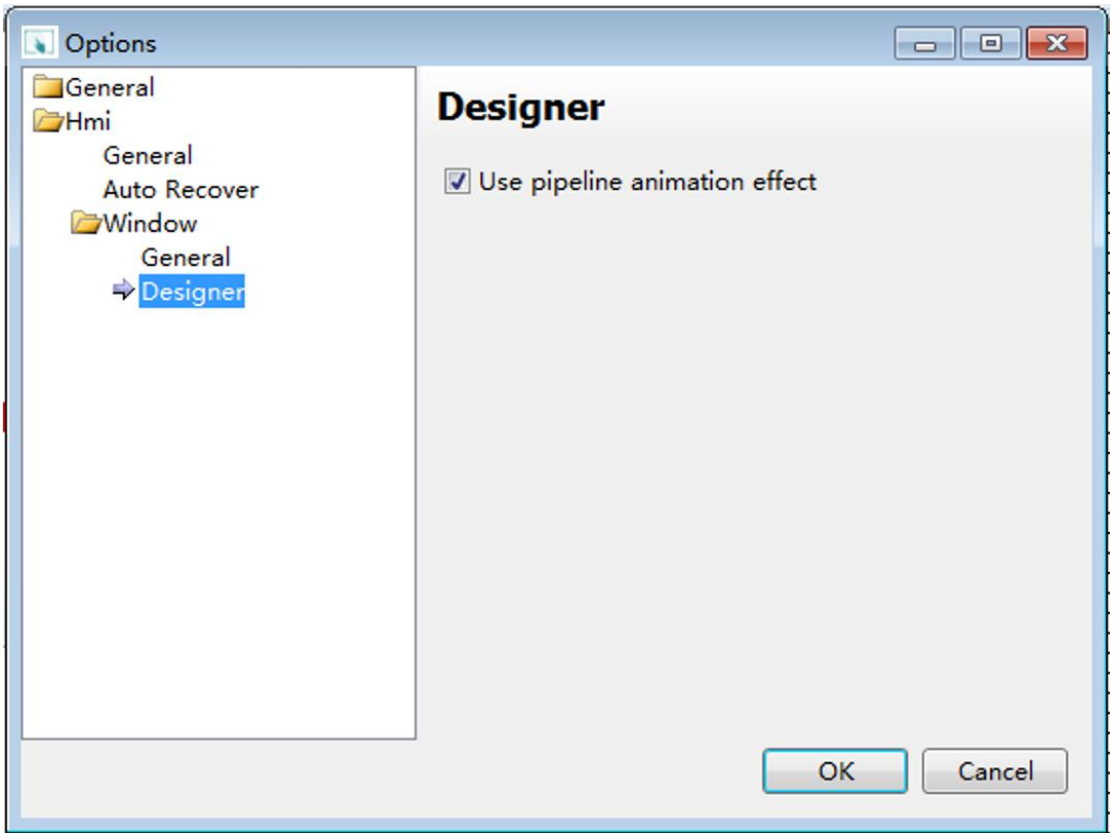


● **Auto recover**

Set the **Recover Time Interval** here. If you set it 2 minutes as above, the project will be automatically saved every two minutes, so as to prevent the unexpected shutdown of the software or the power failure of the computer before saving. When such a situation occurs, the software will be opened again with the project saved 2 minutes ago.



You can open the file folder **Backup Projects** by clicking the button **View backup project**.



● **Window**

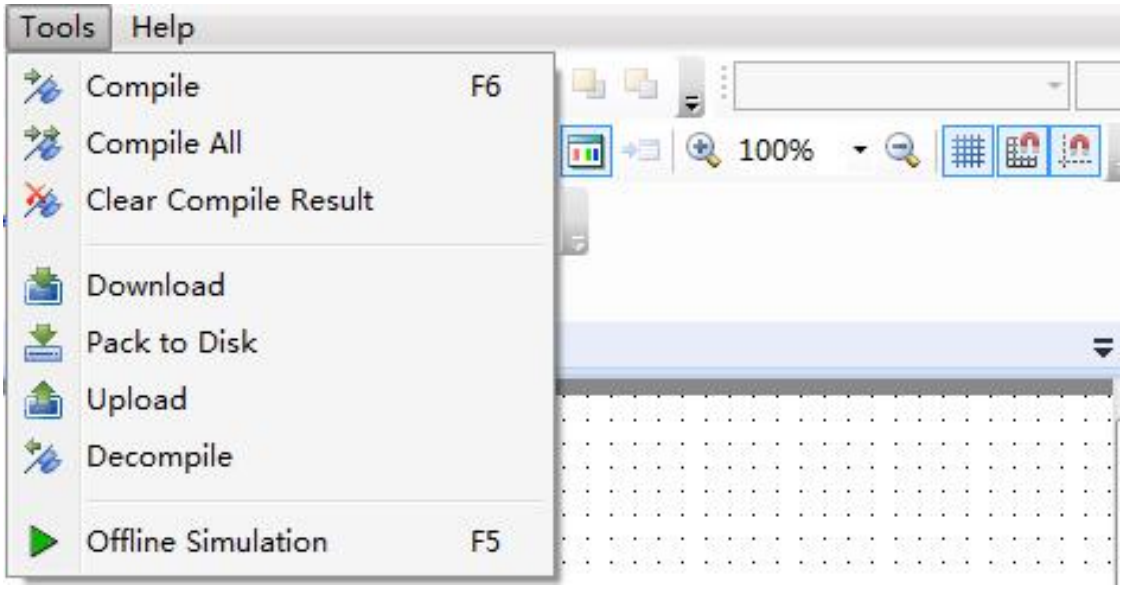
General.

● **Designer**

If you select the Use pipeline animation effect, you can see the dynamic liquid flow effect in the pipeline component during the project editing process.

4.11 Tools

The Tools menu in the VI20 software includes **Compile, Compile All, Clear Compile Result, Download, Pack to Disk, Upload, Decompile,** and **Offline Simulation**.



● **Compile**

The project will be saved automatically and the system will generate a bin directory and related files in the project folder for simulation or download if there is no error.

● **Compile All**

The project changes will be saved automatically and all the files are forced to recompile. (No matter if there is any change.)

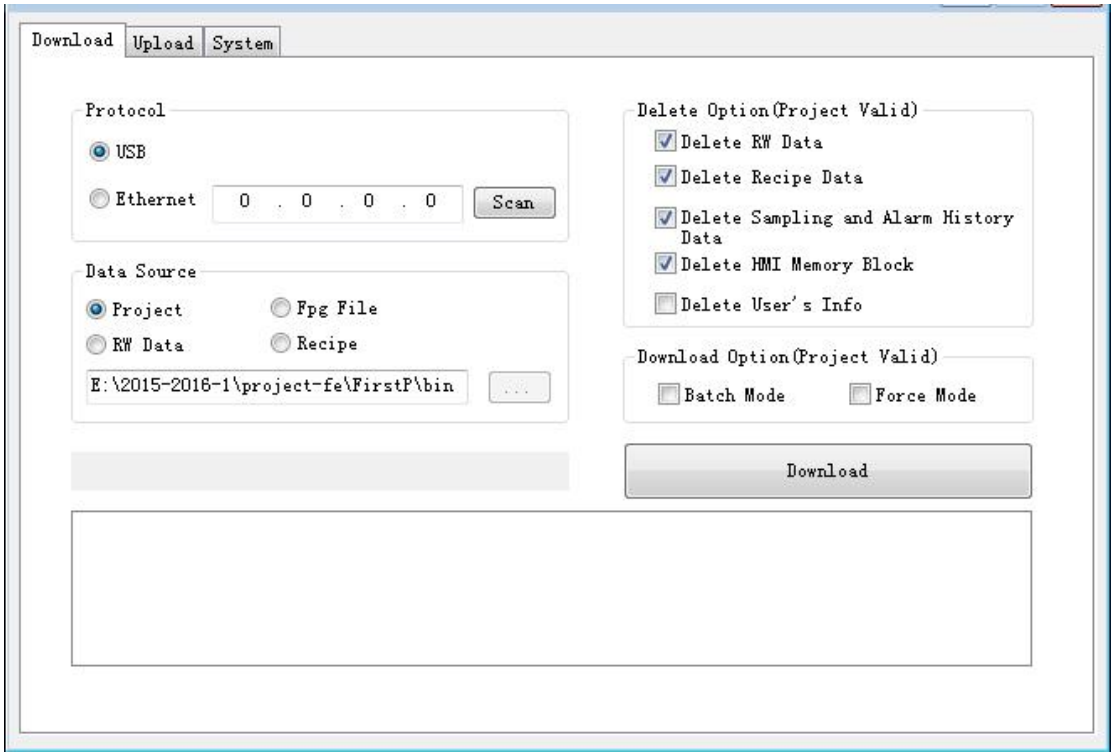
● **Clear Compile Result**

Clear all the compilation results, user data and recipe data generated during simulation.

● **Download**

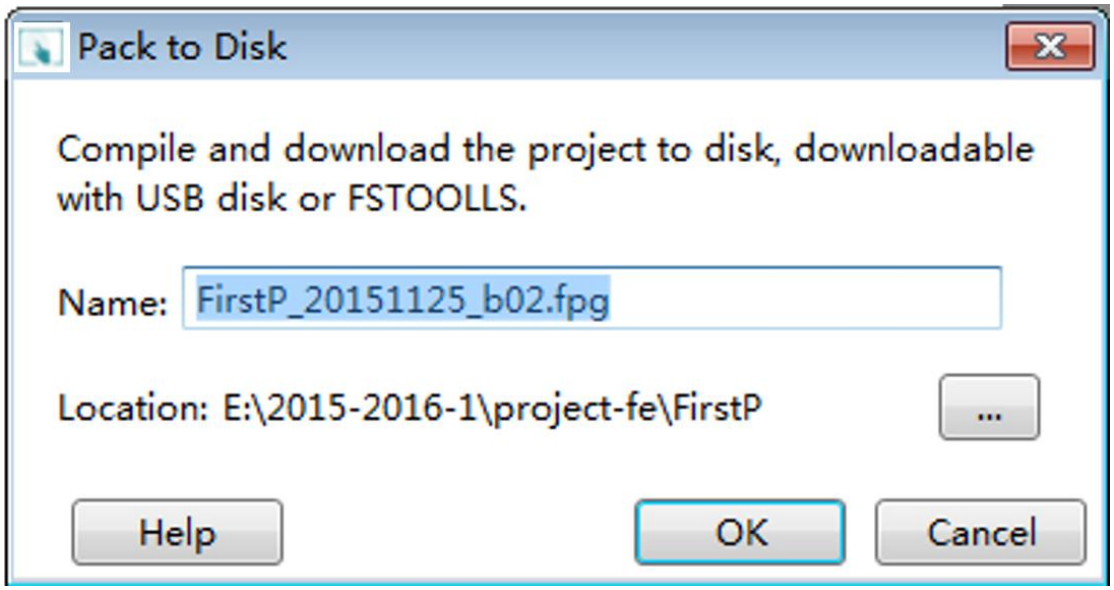
The system will compile the project automatically and generate a directory of upload and some relevant files for decompilation. Then the relevant files are packaged and the download tool dialog is popped up. Before clicking the button **Download**, you need to select the communication mode (USB or Ethernet) and the data source (Project or Fpg File). You can check the delete options and check the download options (Batch Mode or Force Mode) according to demands.

The system will automatically compile the project and generate the upload directory and related files for decompilation. Then, the related files are packaged and the project is downloaded through the VI20Tools (supporting USB and network download). You can select the communication mode (USB or Ethernet), select the data source (current project or FPG package), Clear the settings and download the settings (batch download or forced download). When the previous settings are completed, you can click download button to download the configuration project



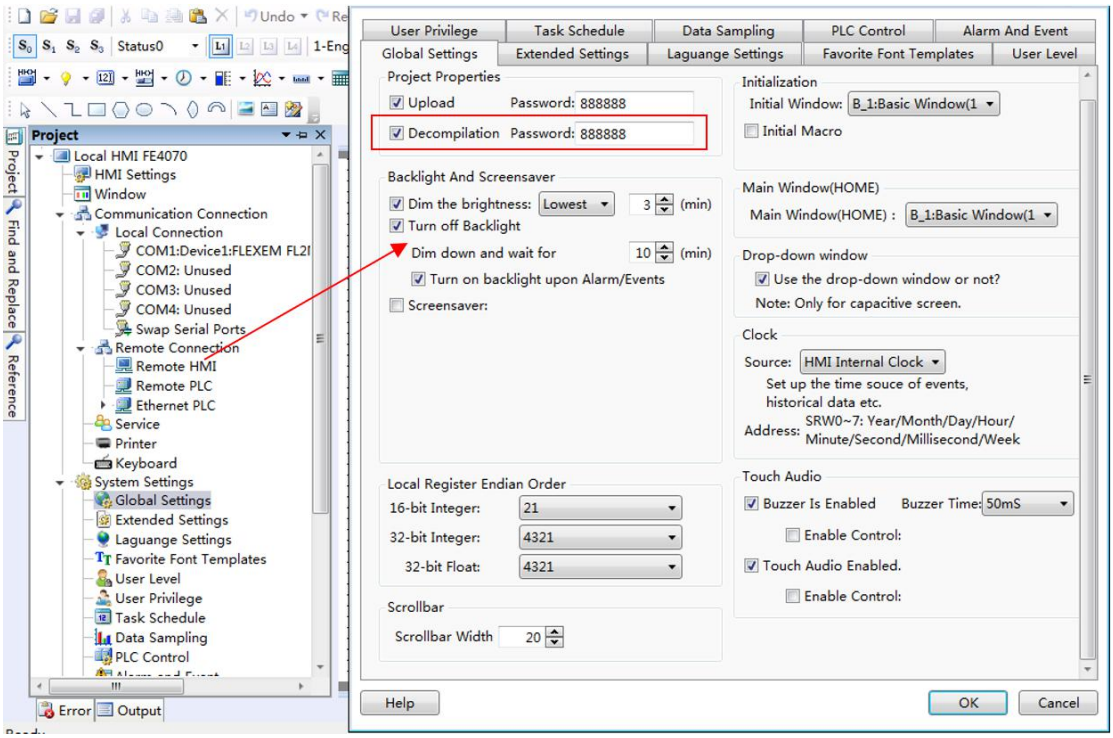
● **Pack to Disk**

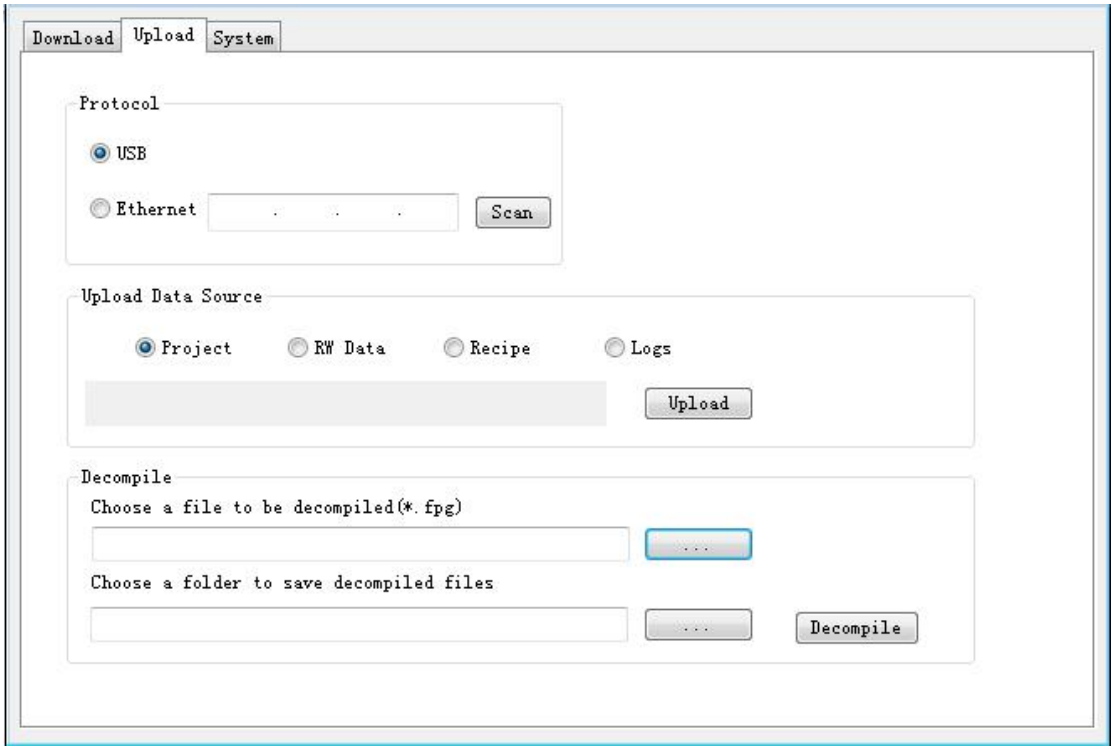
Compile the project and package it to the disk. Then you can download it by the USB disk or the VI20TOOLS.



● **Upload**

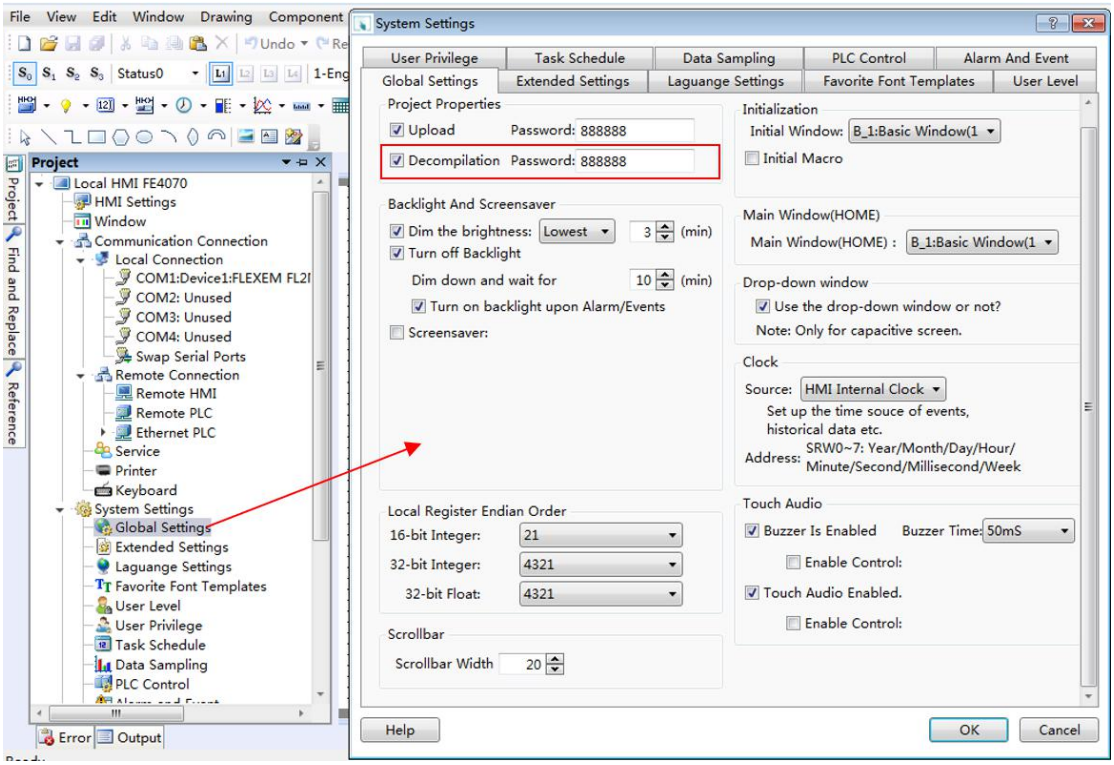
If you select **Upload** to enable upload in the Global Settings, the configuration information downloaded in the HMI device can be uploaded by the USB or Ethernet communication mode. The configuration information can be Project, RW Data, Recipe or Logs.

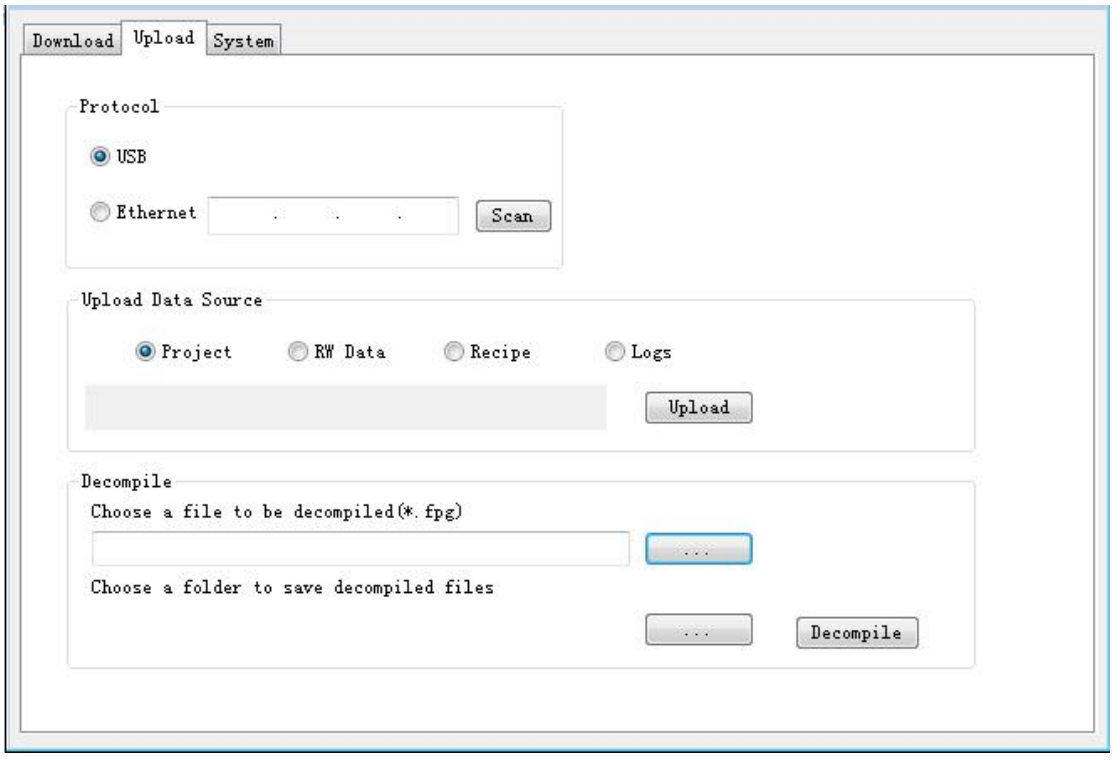




● **Decompile**

The Fpg File can be decompiled to project if you select **Decompilation** to enable decompile function in the Global Settings.



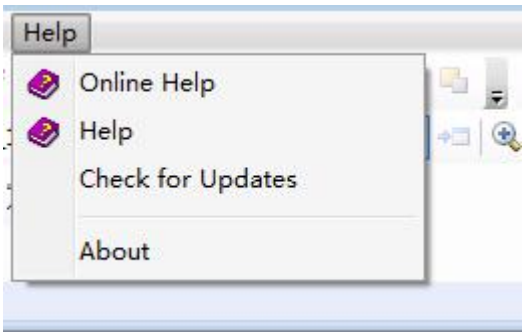


● **Offline Simulation**

Use the VI20Gui simulator to simulate the project running in offline. It could be used for the off-line simulation of some demonstration projects.

4.12 Help

The Help menu in the VI20 software includes: Online Help, Help, Check for Updates, and About (software version).

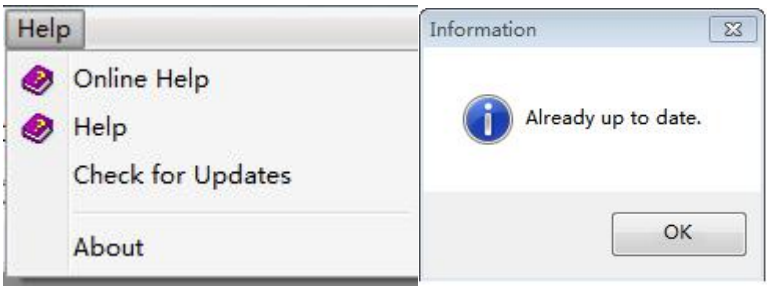


●Help

You can find the software introduction, menu, communication connection and introduction of system special registers in the **Help**.

● Check for Updates

The VI20 Software has the iterative update function.



● Contact us

Please contact us if you meet any problem while using or find any BUG. We will provide the solution as soon as possible.

● About

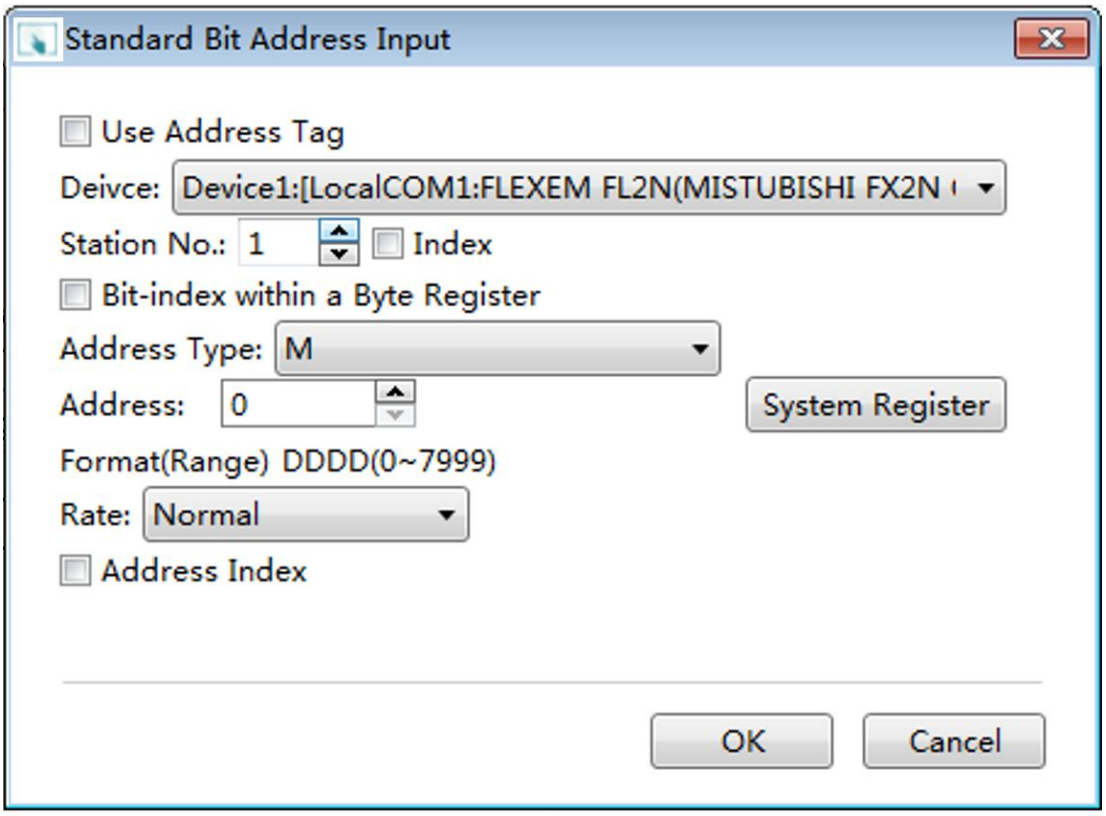
The current VI20 Studio software version information and copyright declaration will be displayed when you click the menu command **About**.

4.13 General Functions

4.13.1 Address Editor

4.13.1.1 Standard Bit Address Input

In the VI20 software, the **Standard Bit Address Input** function will be used frequently. You can input the bit address of the connected device to realize the connection between different PLC devices. You could easily find the input position in many applications that need the standard bit address input function. The input interface is shown as below.

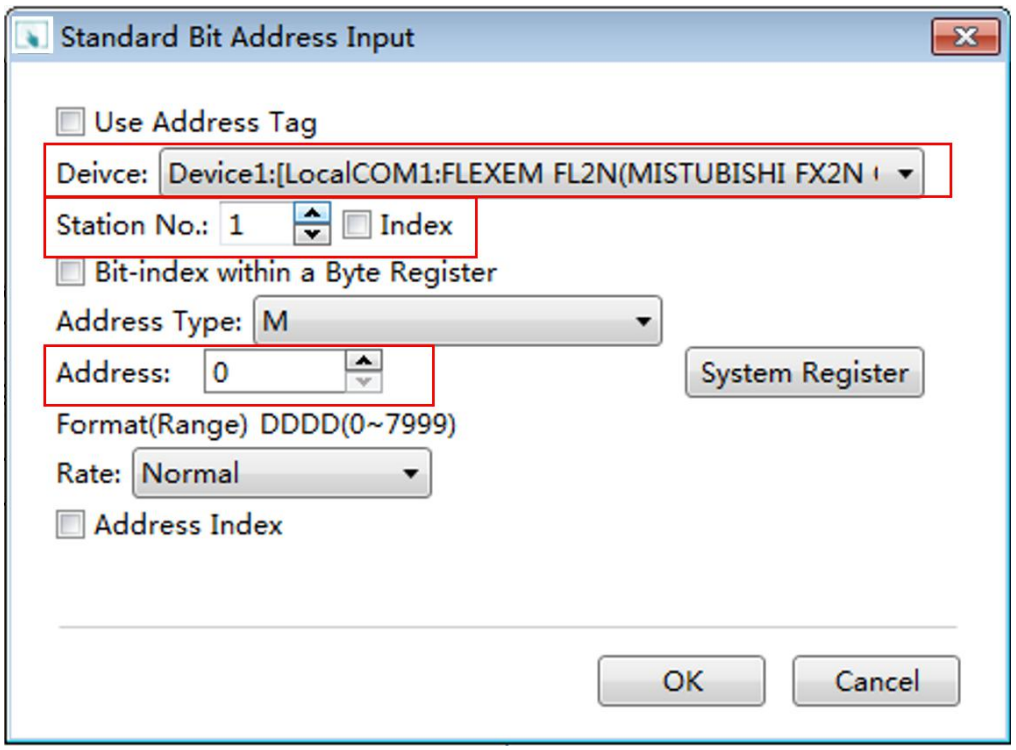


● **Address Type:**

In the VI20 software, different connection devices have corresponding bit address symbols. For example, X in VEICHI V5 series PLC represents the address of the input coil; Y represents the address of the output coil; M represents the address of the intermediate register; SM represents the system special bit address; S represents the status address, etc. As shown as below:

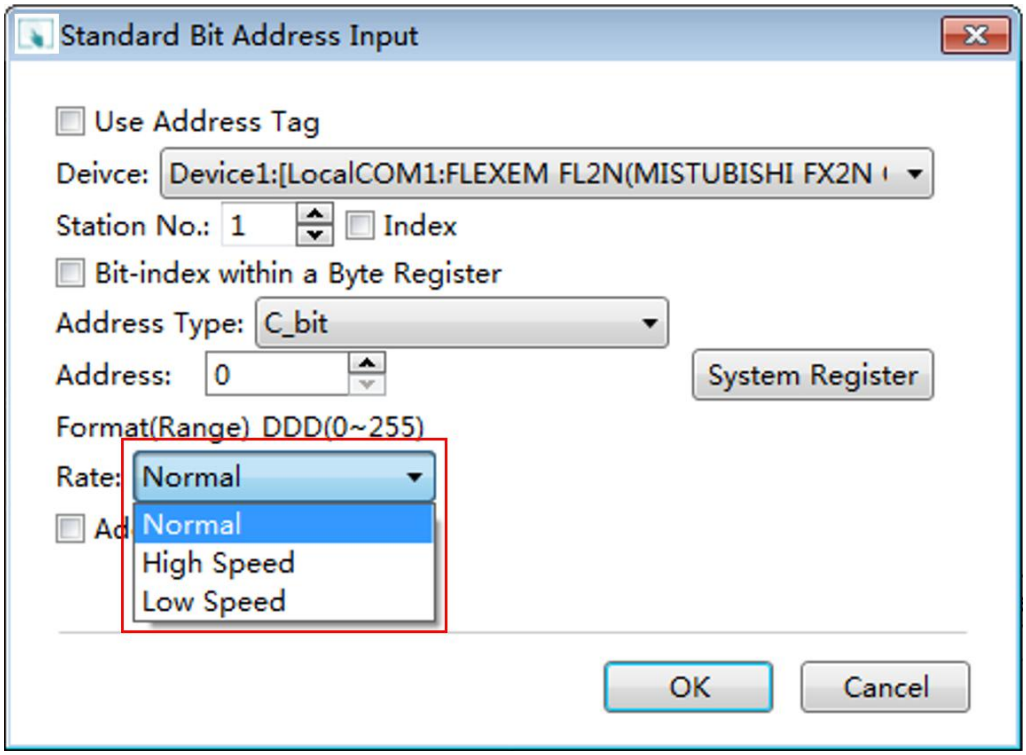
● **Station No. Address**

If the address is not connected normally after you input a specific address number, please check whether the settings (Device, Station No. and Address) are set correctly, as shown as below:



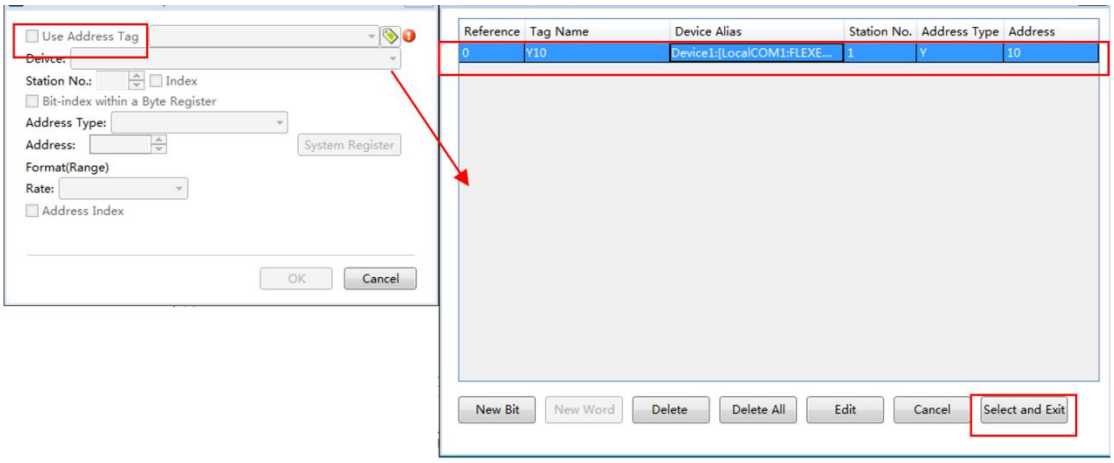
● **Communication rate**

If you find the data refresh rate is a little slow, you can change the communication rate as below:



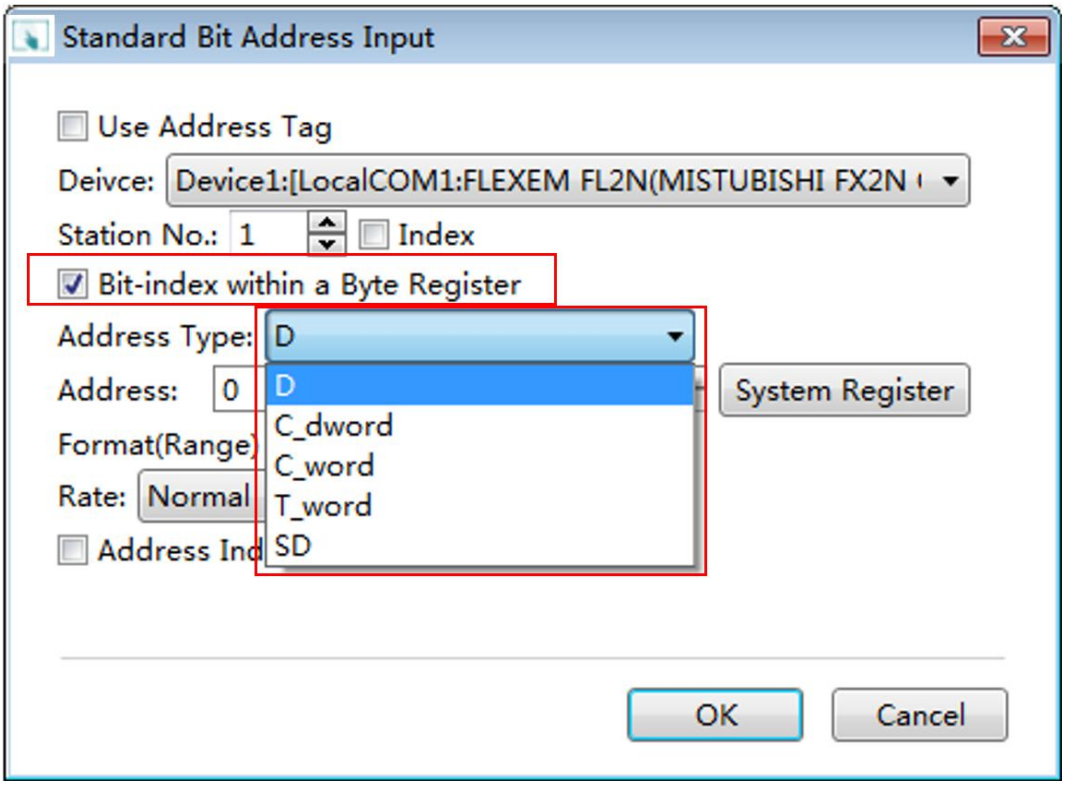
● **Address Tag Library**

You can use the address tag library before editing. Prepare the data addresses in the address tag library in advance and select the address tag you need when input them, as shown as below:



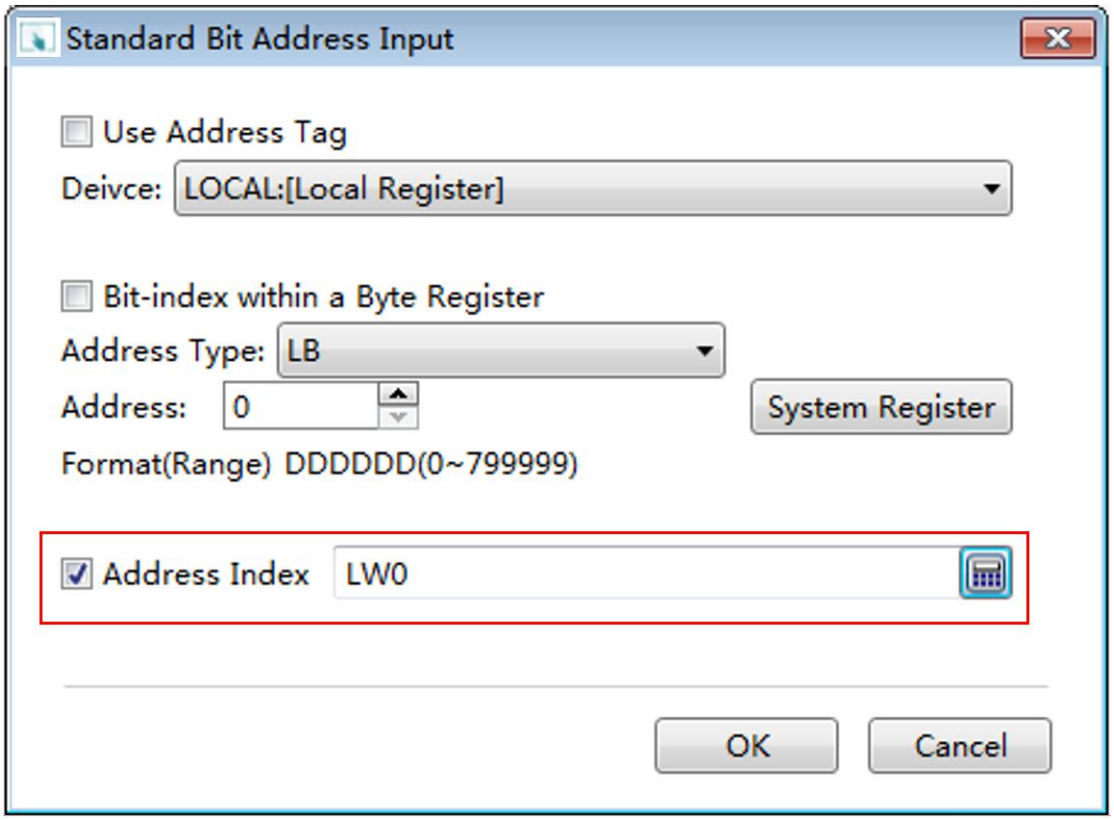
● **Bit-index**

The **Bit-index within a Byte Register** function can be used. You need to select the **Bit-index within a Byte Register**, as shown as below.



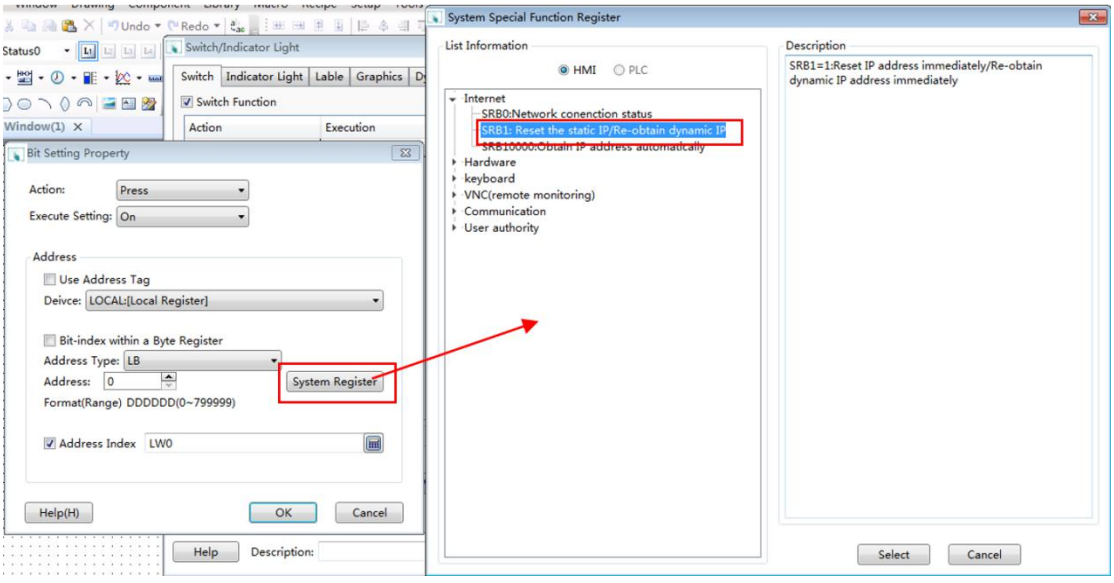
● **Address index**

You could select the word address with the numerical input component to control the address change. For example, the bit address is LB0 and index address is LW0, then component address will be LB (0 + LW0), as shown as below:



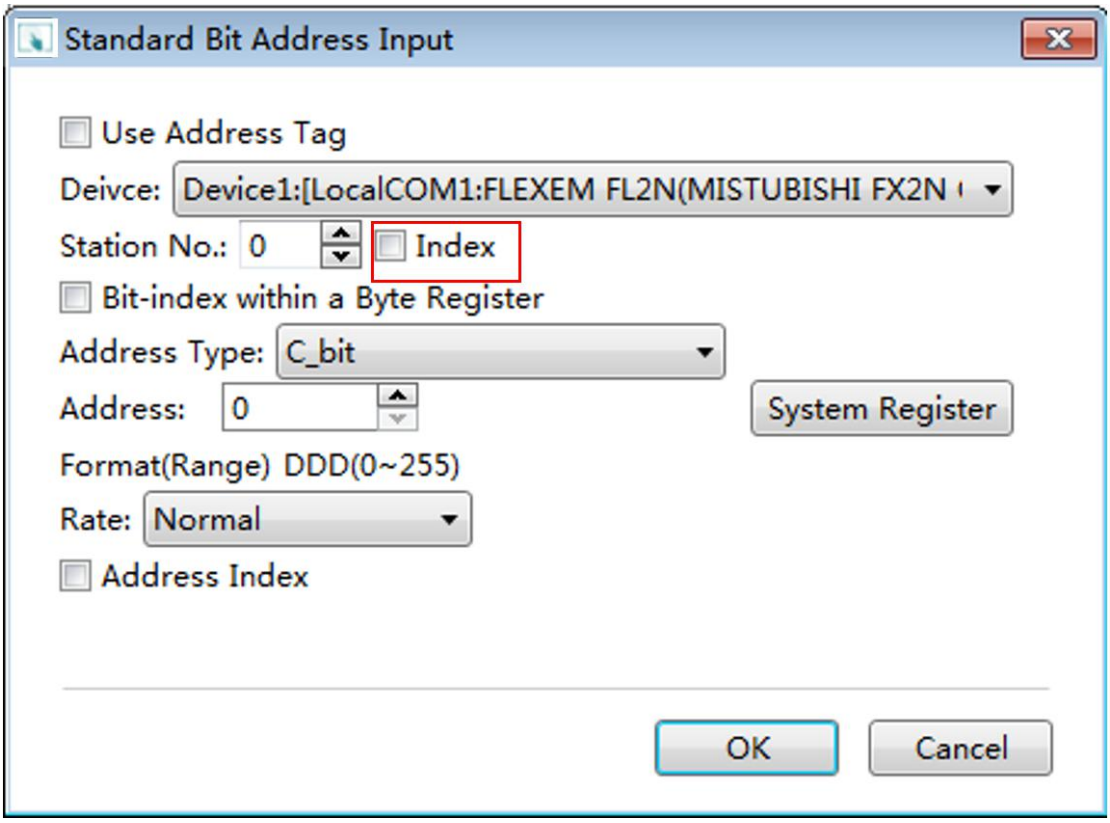
● **System special registers**

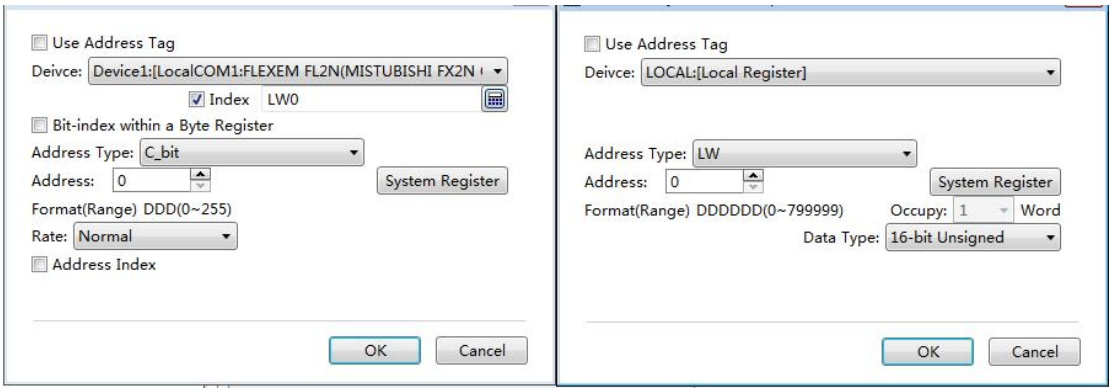
You could quickly select the system register to use the system special register addresses, as shown as below:



● **Slave station index**

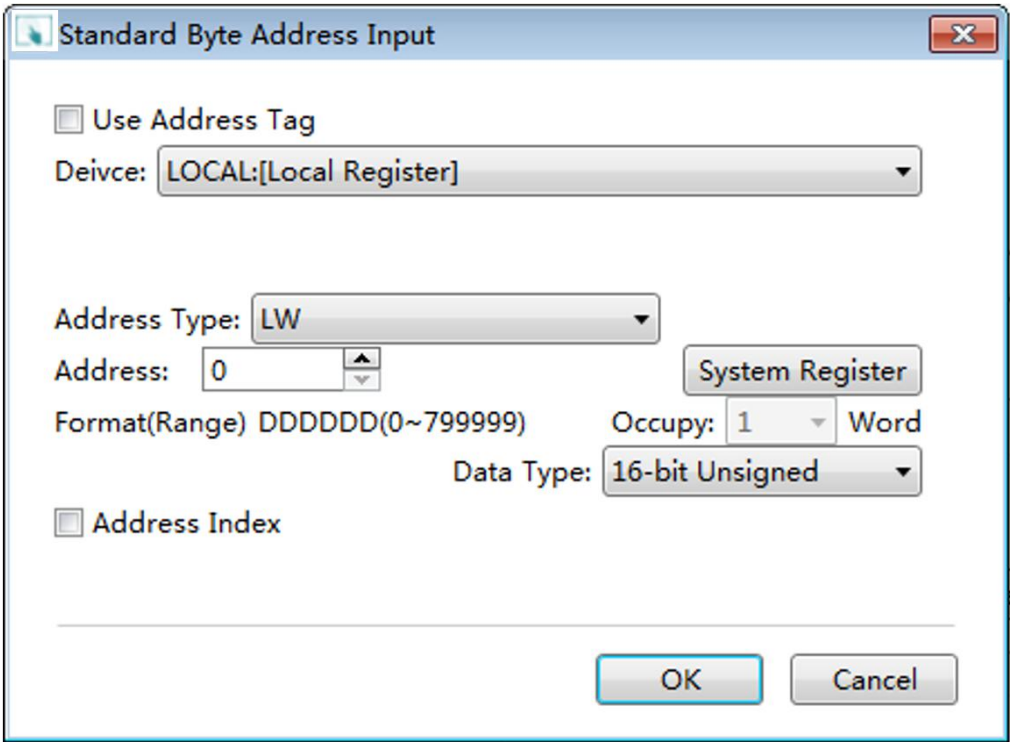
The screen could be connected with multiple slaves at some time, so the stations number is varied. You need to use the **Index** function at this time to provide a variable station number, as shown as below:





4.13.1.2 Standard Byte Address Input

In the VI20 software, the **Standard Byte Address Input** function will be used frequently. You can input the byte address of the connected device to realize the connection between different PLC devices. You could easily find the input position in many applications that need the standard byte address input function. The input interface is shown as below:

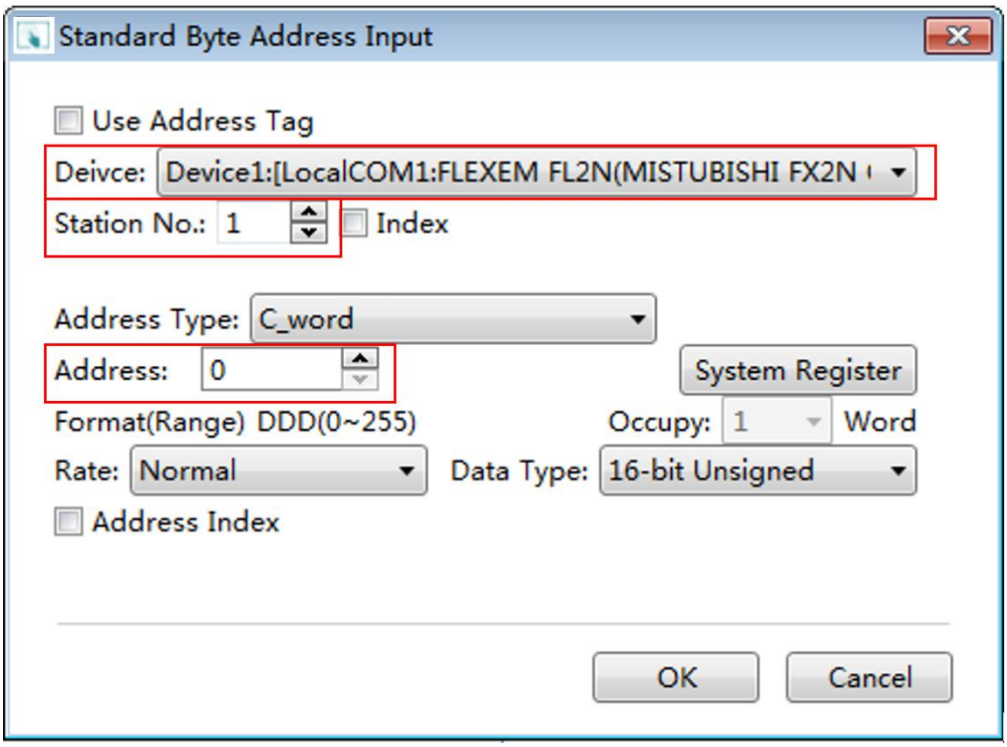


● **Address Type:**

In the VI20 software, different connection devices have corresponding byte address symbols. For example, D in VEICHI V5 series PLC represents the data register; SD represents the special register; T represents the timer; C_word represents the current value of 16-bit counter; C_dword represents the current value of 32-bit counter. As shown as below:

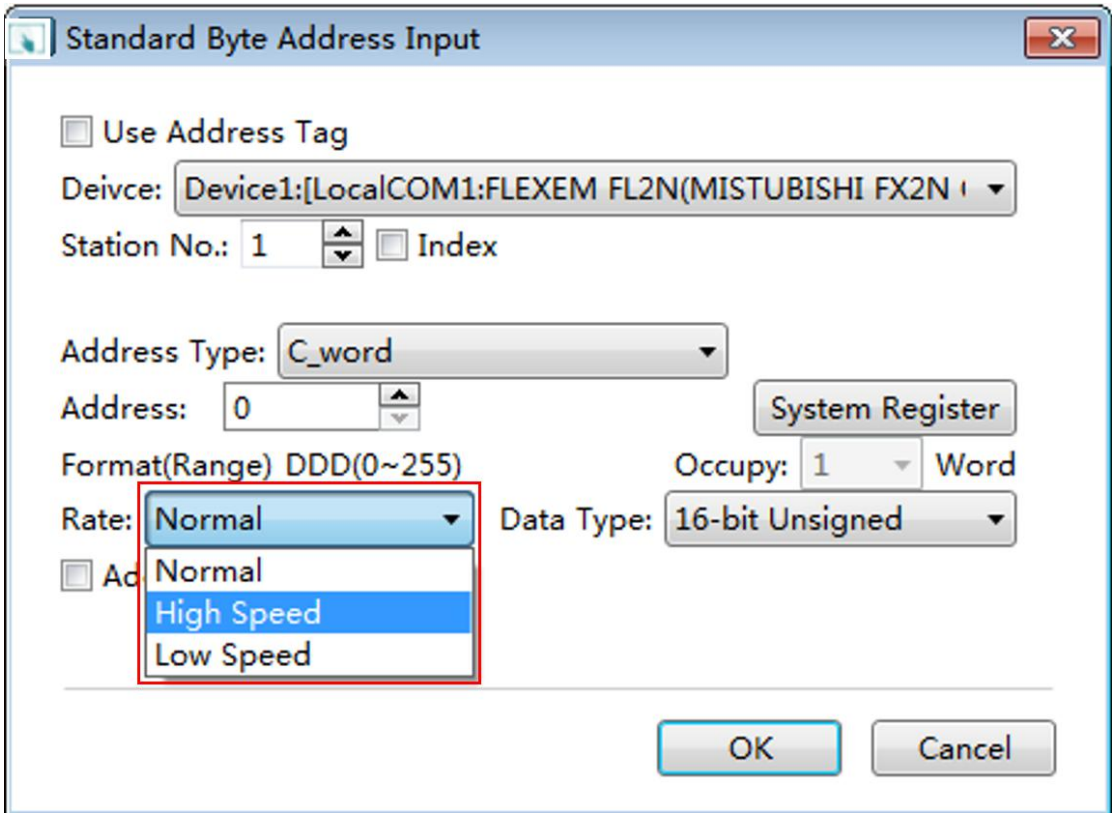
● **Station No. Address**

If the address is not connected normally after you input a specific address number, please check whether the settings (Device, Station No. and Address) are set correctly, as shown as below:



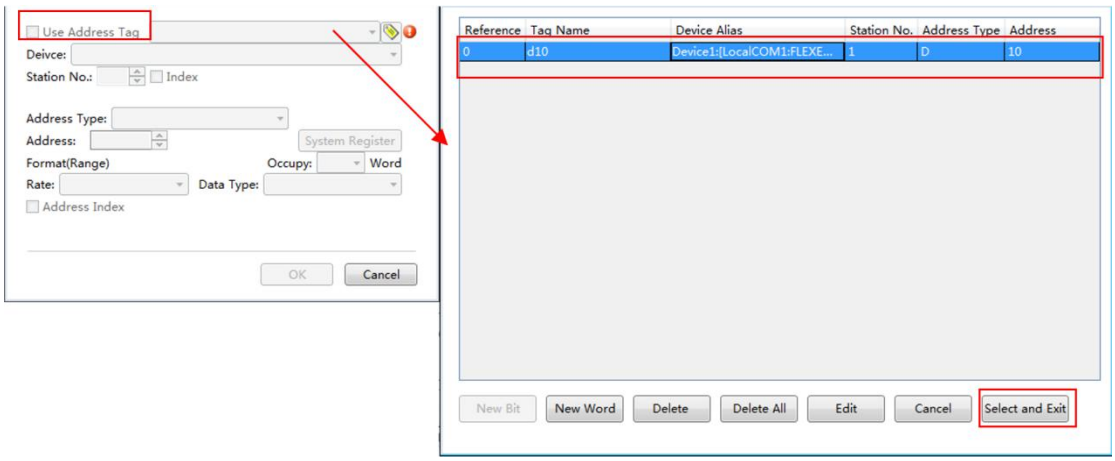
- **Communication rate**

If you find the data refresh rate is a little slow, you can change the communication rate as below:



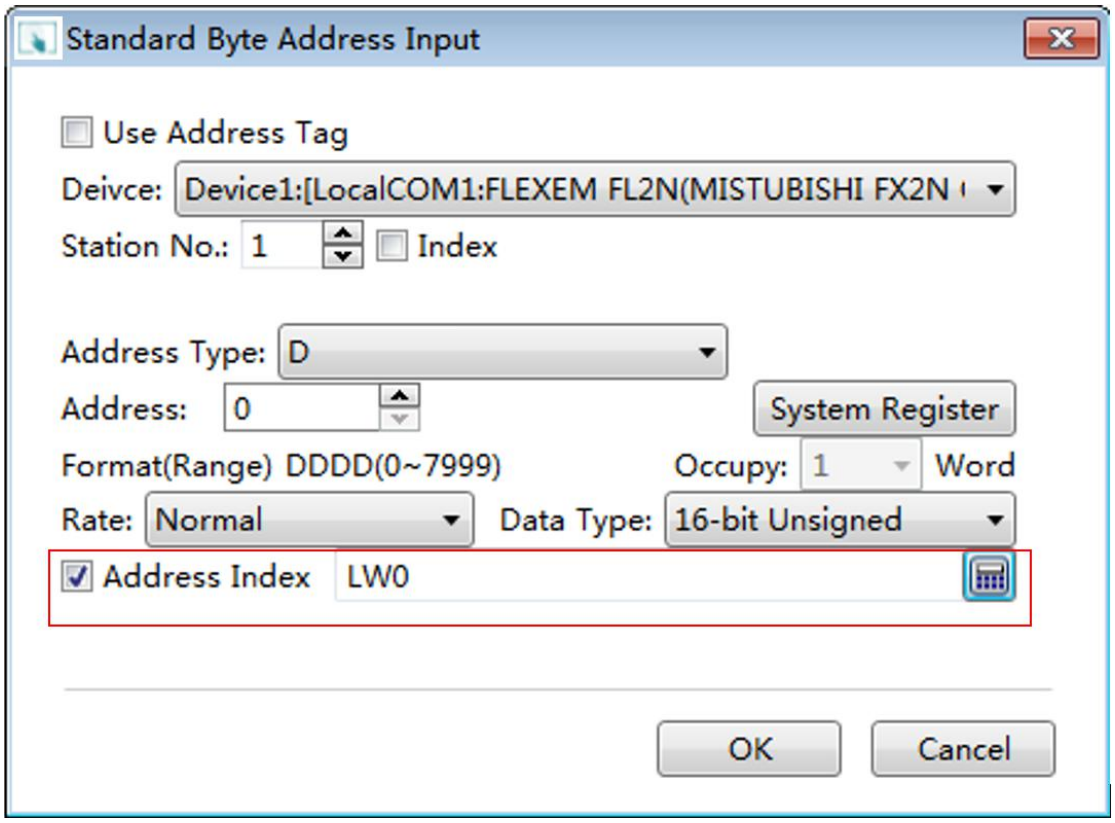
- **Address Tag Library**

You can use the address tag library before editing. Prepare the data addresses in the address tag library in advance and select the address tag you need when input them, as shown as below:

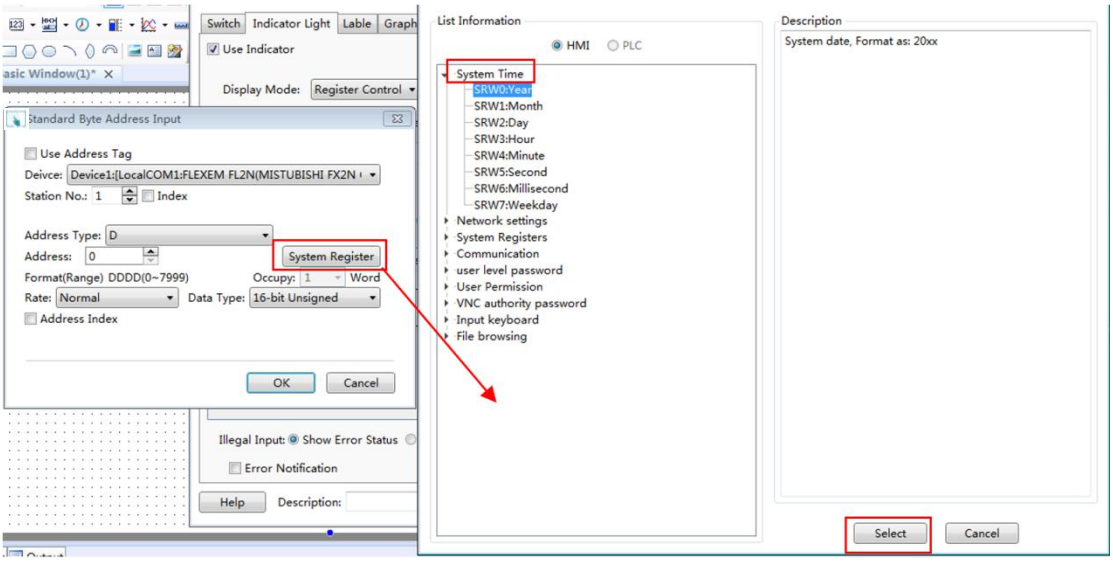


● **Address index**

You could select the byte address with the numerical input component to control the address change. For example, the address is D0 and index address is LW0, then component address will be D (0 + LW0), as shown as below:

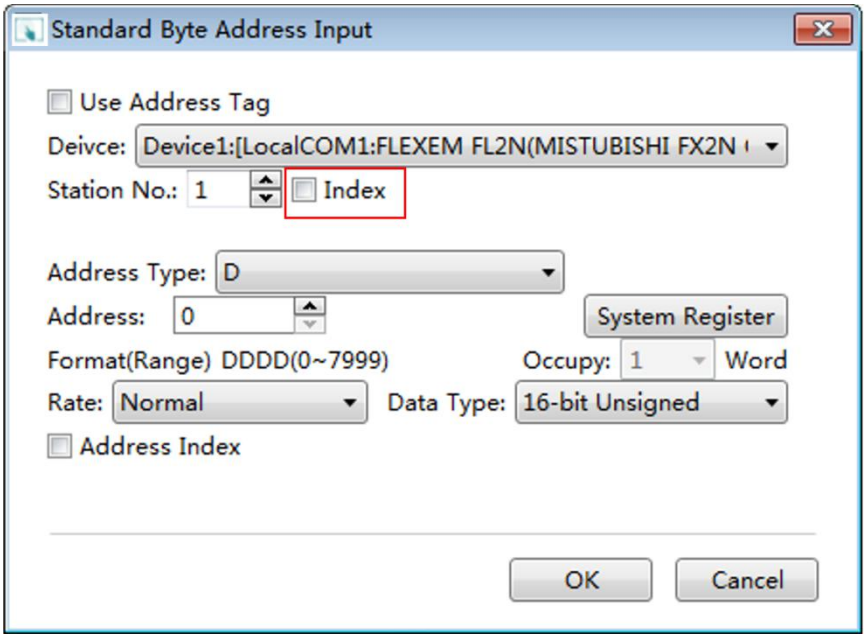


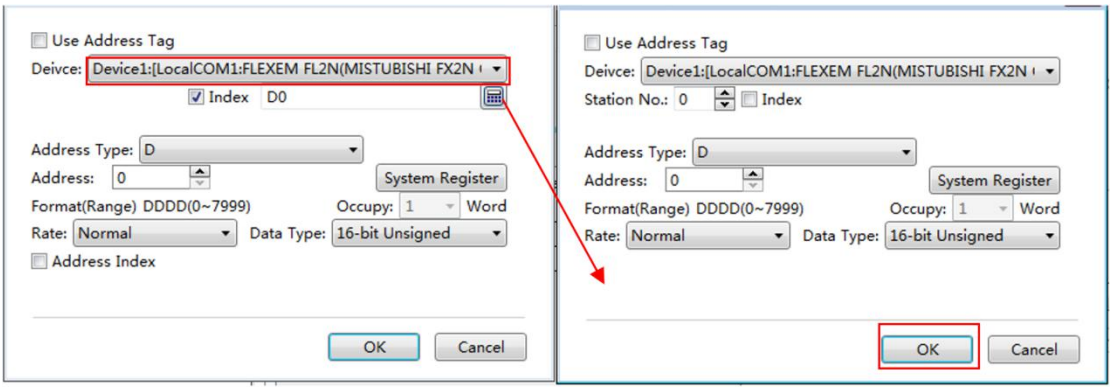
You could quickly select the system register to use the system special register addresses, as shown as below:



● **Slave station index**

The screen could be connected with multiple slaves at some time, so the stations number is varied. You need to use the **Index** function at this time to provide a variable station number, as shown as below:

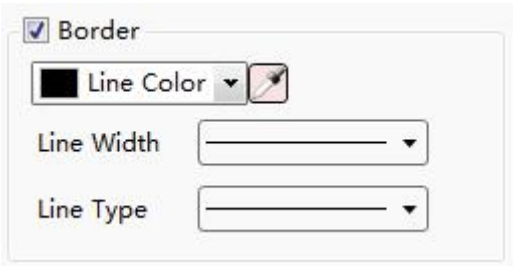




4.13.2 Drawing

4.13.2.1 Border settings

Double-click the figure and you can view and select border color and style.



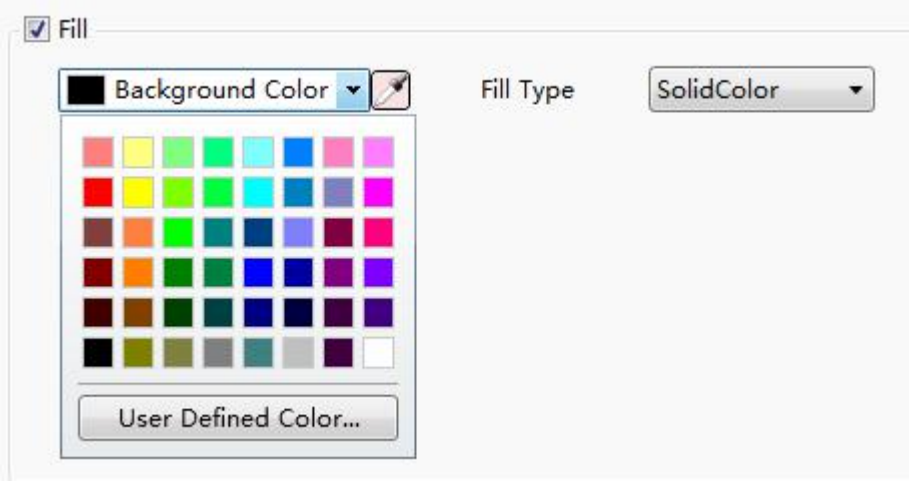
The line width and line type are selectable:

Select the color from the drop-down menu as below or use the pipette tool  .

4.13.2.2 Filling settings

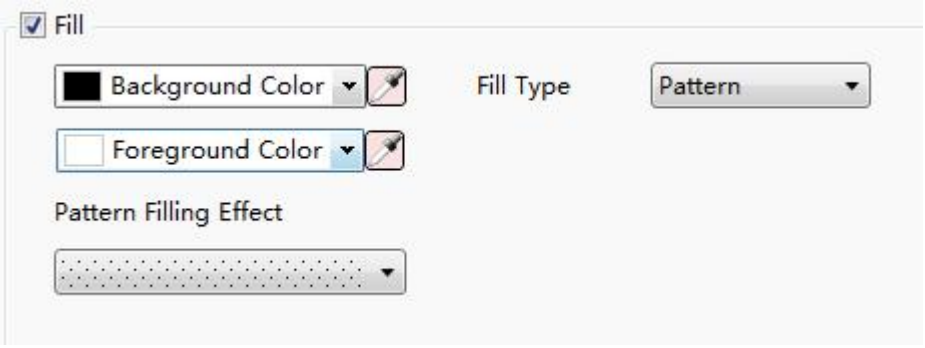
Double-click the figure and you can view and select the fill type and the fill color.

● **Solid Color**



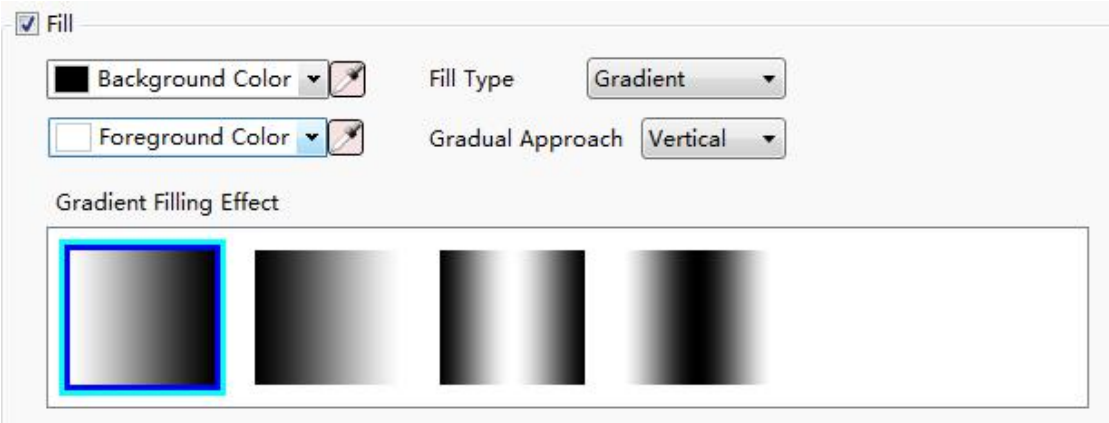
Select the solid color as the fill type; and select the corresponding color as the fill color or you can use the color pipette tool  to select the color .

● **Pattern**



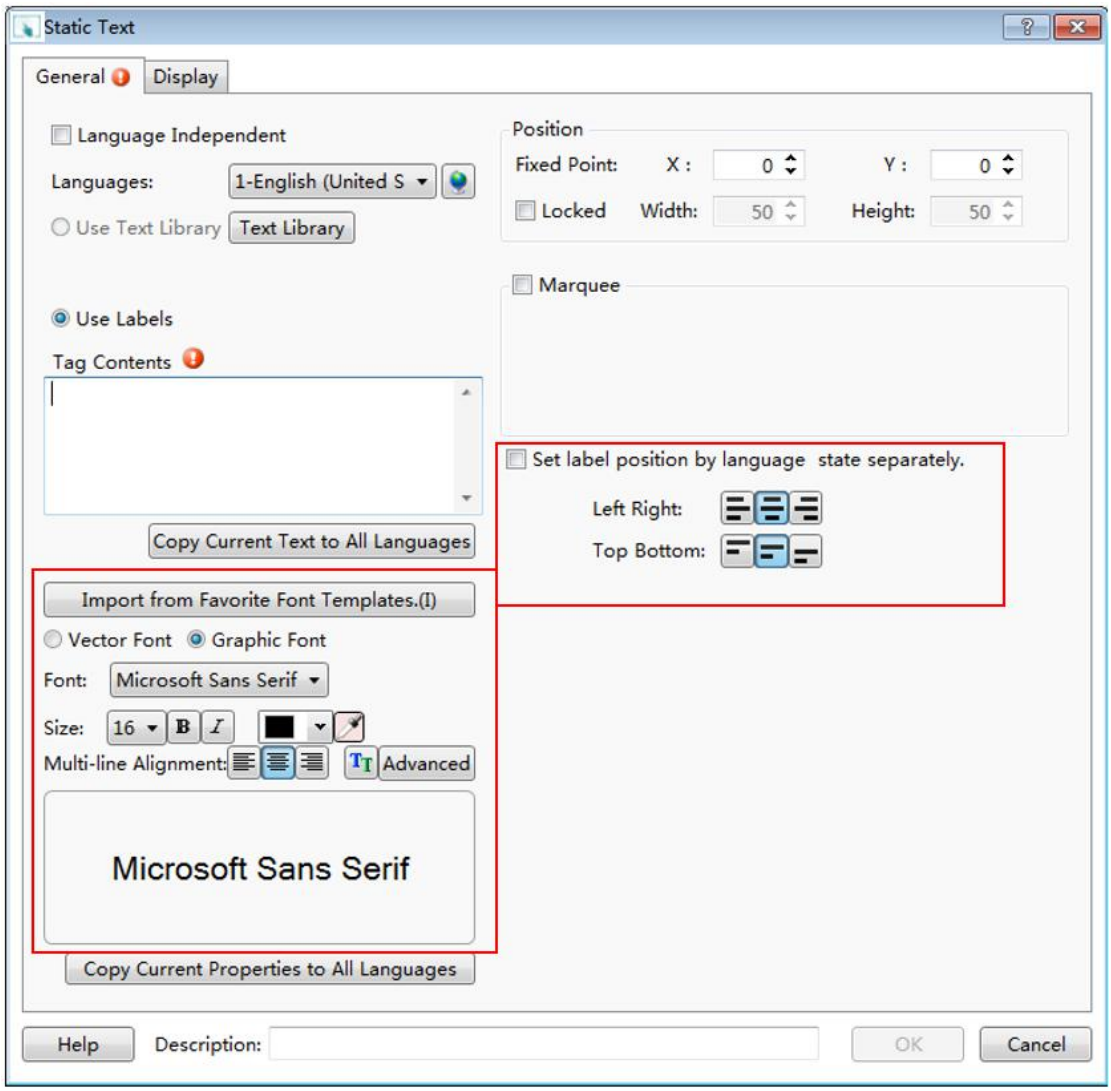
Select the fill pattern styles, pattern foreground and background colors

● **Gradient**



Select the gradient method and corresponding foreground and background color.

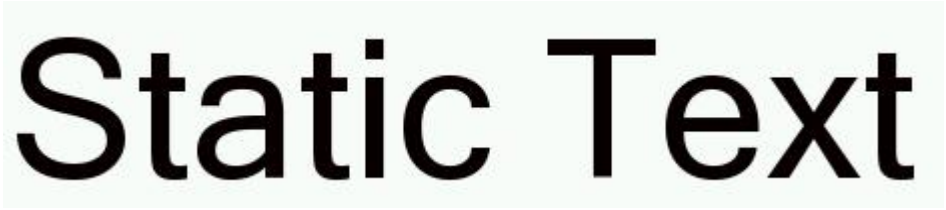
4.13.3 Font Settings



● **Vector Font**

According to the settings of user font properties, you could pick out the text from the corresponding font library and processed into TrueType font file (ttf format) for HMI use.

- Disadvantages
  - Only support the TrueType font (ttf format) installed in the current operating system;
  - There will be some blurring in the font display when you disable the **Vector Font Bordline Blurring Processing**. The comparison effect is shown as below:



Note: Disable the **Vector Font Bordline Blurring Processing** via the path: Project / / Extended Settings.

- Advantages
  - Occupy Less memory. By intercepting the font in the font file, the size of the font file can be reduced. The same character in the same font type will just use one font data regardless of size, color, bold, or italic.
  - Full size and can be set freely without distortion.
  - Supports multi-line text alignment.
  - Text Library supports the use of vector fonts.

● Graphical Font

Regard the string as a whole and save it as a bitmap to the project.

- Disadvantages
  - Occupy more memory because of the bitmap storage format.
- Advantages
  - Supports all the fonts installed in the current operating system.
  - Better display effect.

● Equivalent width

When displaying values / characters, each value / character is displayed according to the maximum width of a single value / character. The larger the font size is, the greater the maximum width of a single value / character is.

- For example, the max width of a single value is 17 and the max width of a single character is 22 if the font size is 16,

● Font

Set the font type. It supports all font types installed in the current operating system, such as Microsoft Sans Serif.

● Size

Set the current font size. The range is from 8 to 144. The font supports bold and italic, and you can modify the font color by using the pipette tool  .

● **Multi-line Alignment**

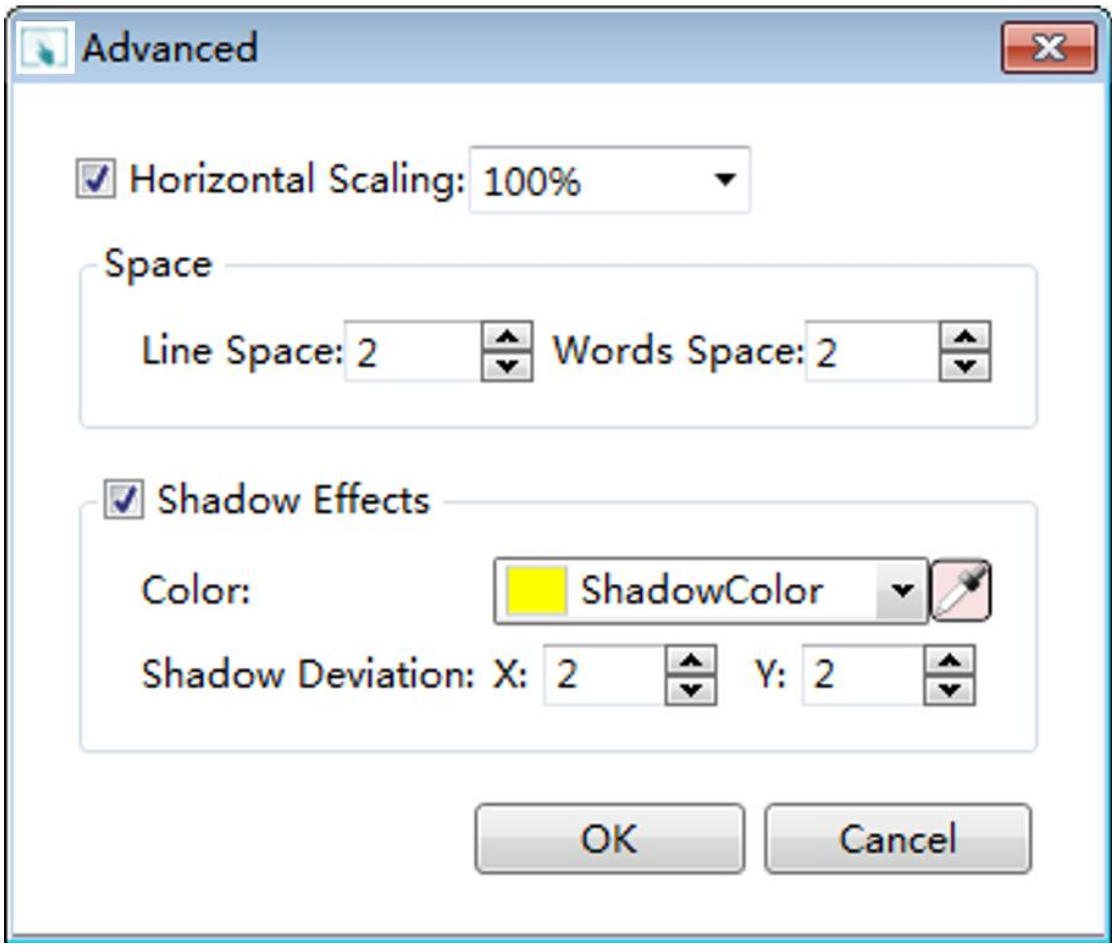
It is only valid for multiple lines text. You can set the multiple lines text align to the left, center or right.

● **Save to common font template**

Click to add the font format set below to the font template

● **Advanced**

Set more character format.



● **Position**

Set the single line character position of the current components.

● **Import common font template**

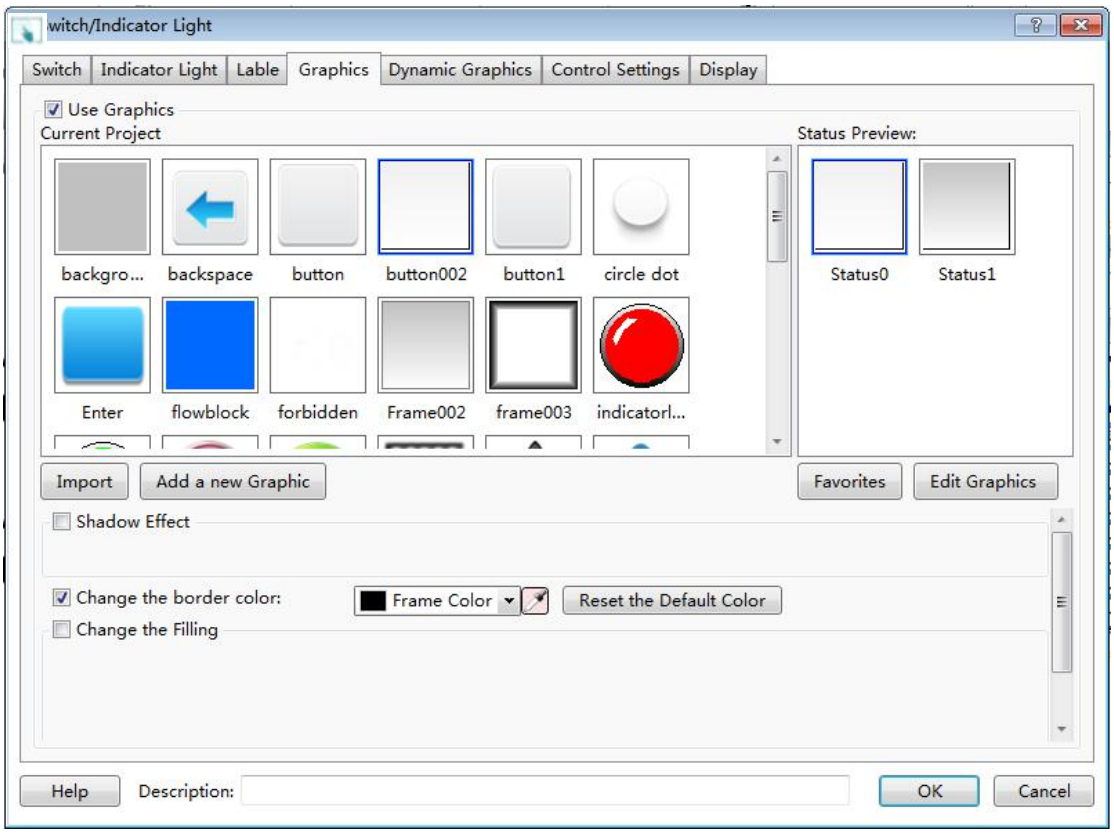
The common fonts can be set and called uniformly. No need to adjust the font every time

Click **Add** to set the font template on the right

You can directly use the created template through the button **Import from common font template** in the text creation interface.

Select the created font template and click **OK**.

4.13.4 Graphic Edit



● The Current Project Graphics Library

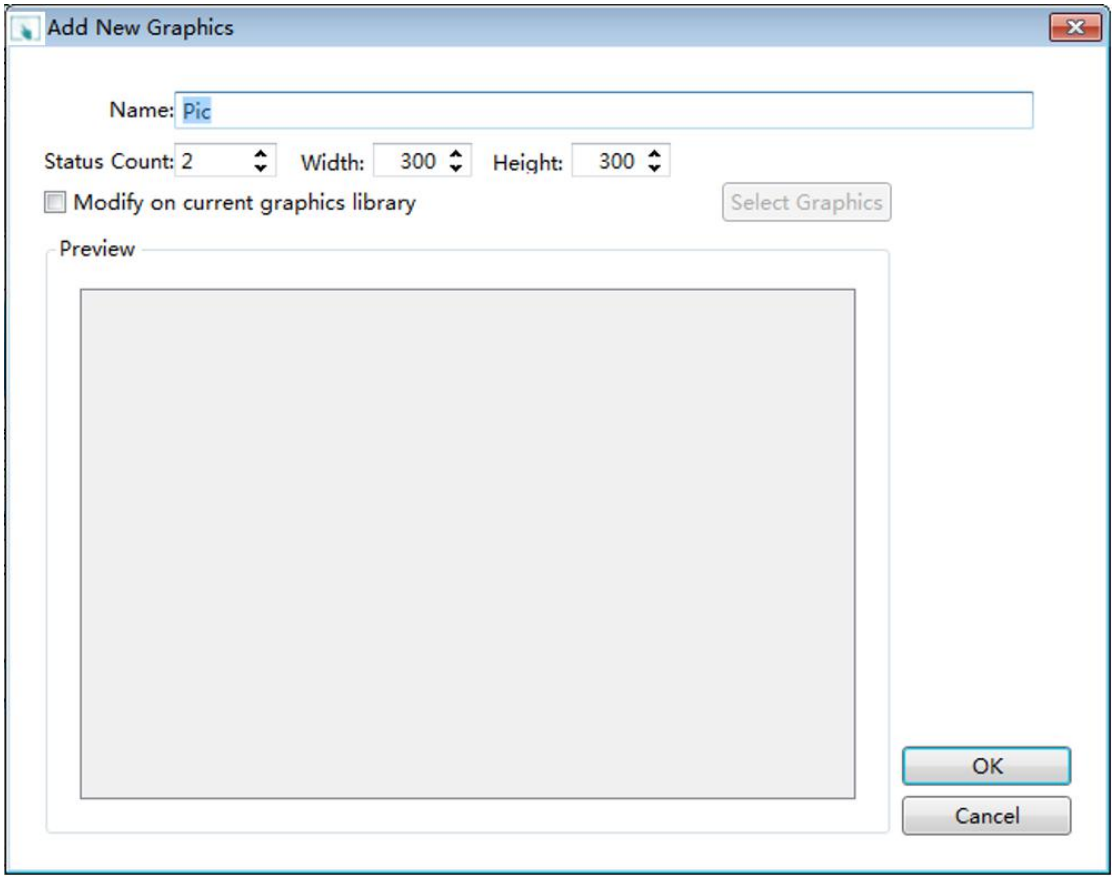
Click and select the graphic option of the current project. You can preview the status in the right window.

● Import

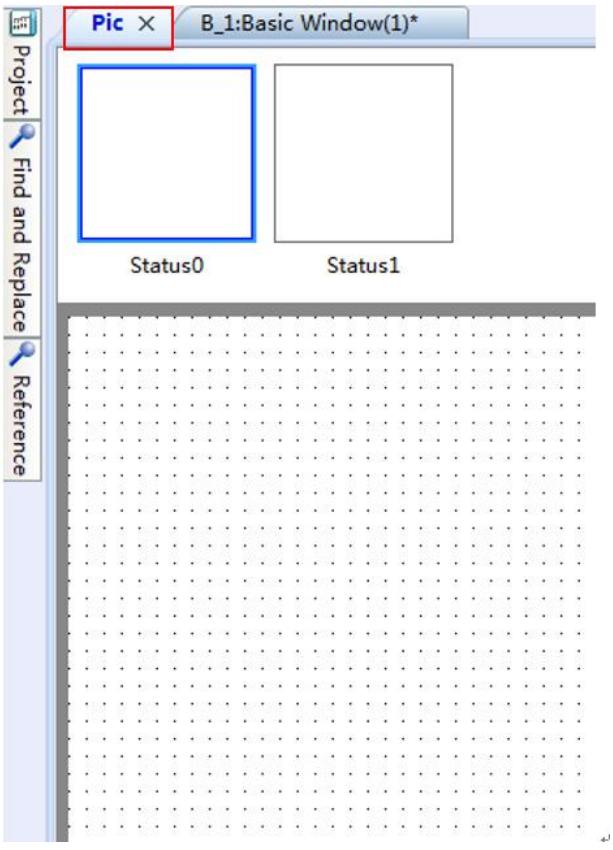
Click the button **Import** to open the system graphics library. You can select a system graphic and import into the current project graphics library.

● Add a new Graphic

Click the **Add a new graphic** button (see figure a below) and the user can input **Graphics Name** and other information in the pop-up window according to the needs. After confirming and closing all pop-up windows, the user can see that the same name editable window has been opened (see Figure b below), and the user can edit the required graphics by himself. For details, please refer to: **Project/Library/Graphics Library/Add graphics.**


Add New Graphics
Name: Pic
Status Count: 2
Width: 300
Height: 300
Modify on current graphics library
Select Graphics
Preview
OK
Cancel

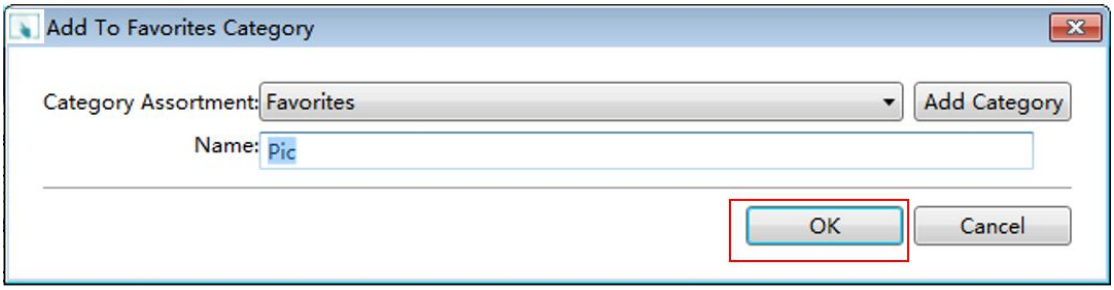
a


Pic
B_1:Basic Window(1)*
Project
Find and Replace
Reference
Status0
Status1

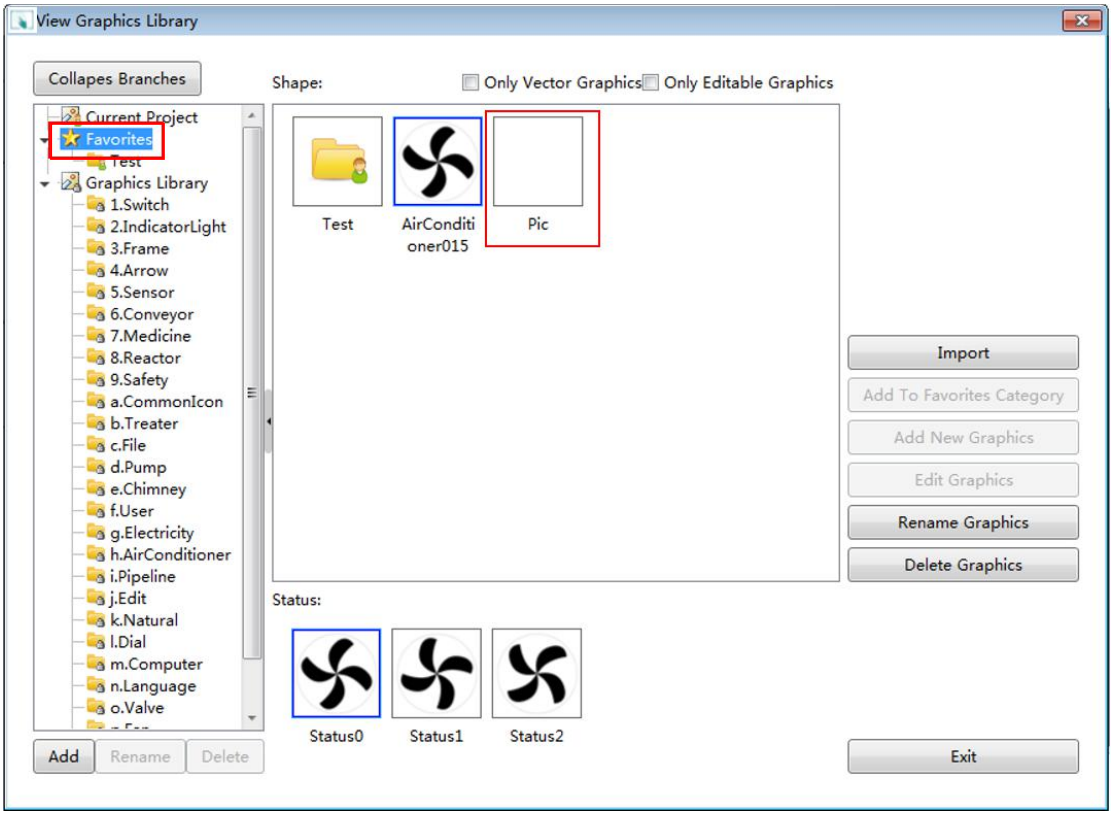
b

● **Favorites**

Click the button **Favorites** and you can add the current selected graphic to a specified Favorites Category. The Favorites Category can be selected, added and renamed (see Figure a). Click the button **OK** to confirm the **Add** to the Favorites Category. You can view the graphics collected in the Favorites Category (see Figure b).



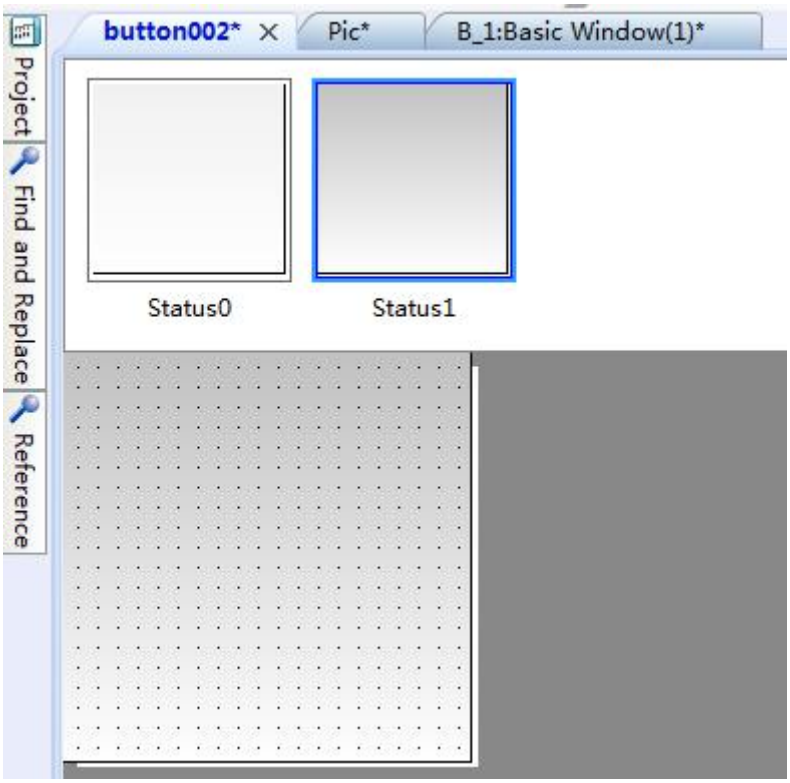
a



b

● **Graphics Edit**

Click the button **Edit Graphics.** After confirming and closing all the pop-up windows, you can see that an editable window with the same name of the graphic is already opened (see Figure a). The graphic can be edited by the user himself. Details refer to: **Graphics Library**.



● Shadow Effect

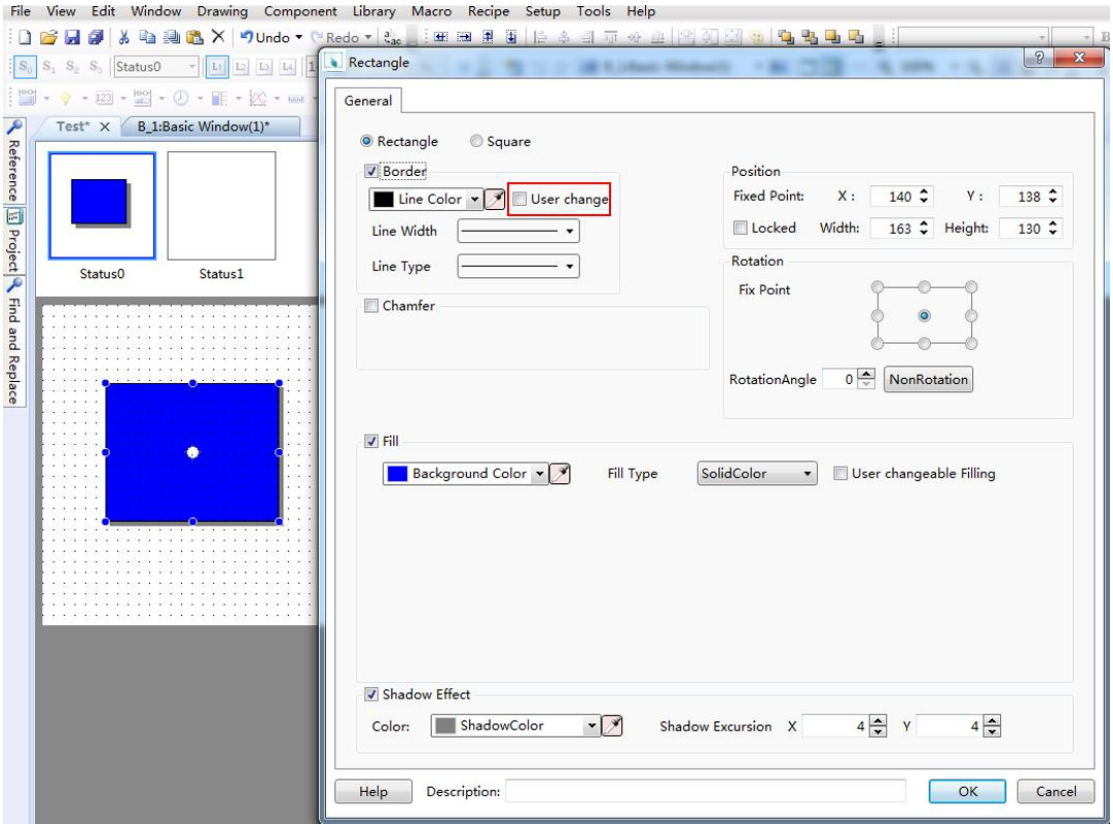
Select the Shadow Effect (see Figure a), and you can add the shadow effect on the selected graphic (see Figure b).

a.

b.

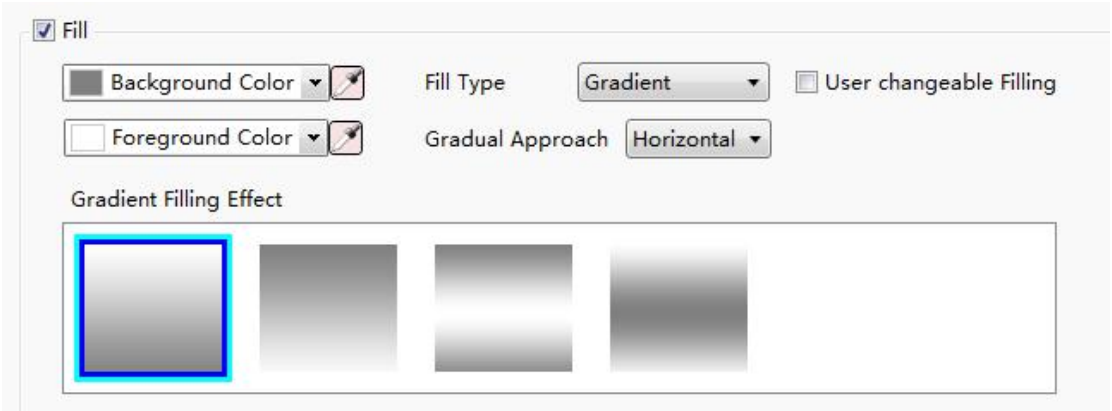
● Border

You can change the outer border color of the current selected graphic. Note: The option is valid only when the selected graphic is vector graphic and the attribute can be modified. (see Figure a)!

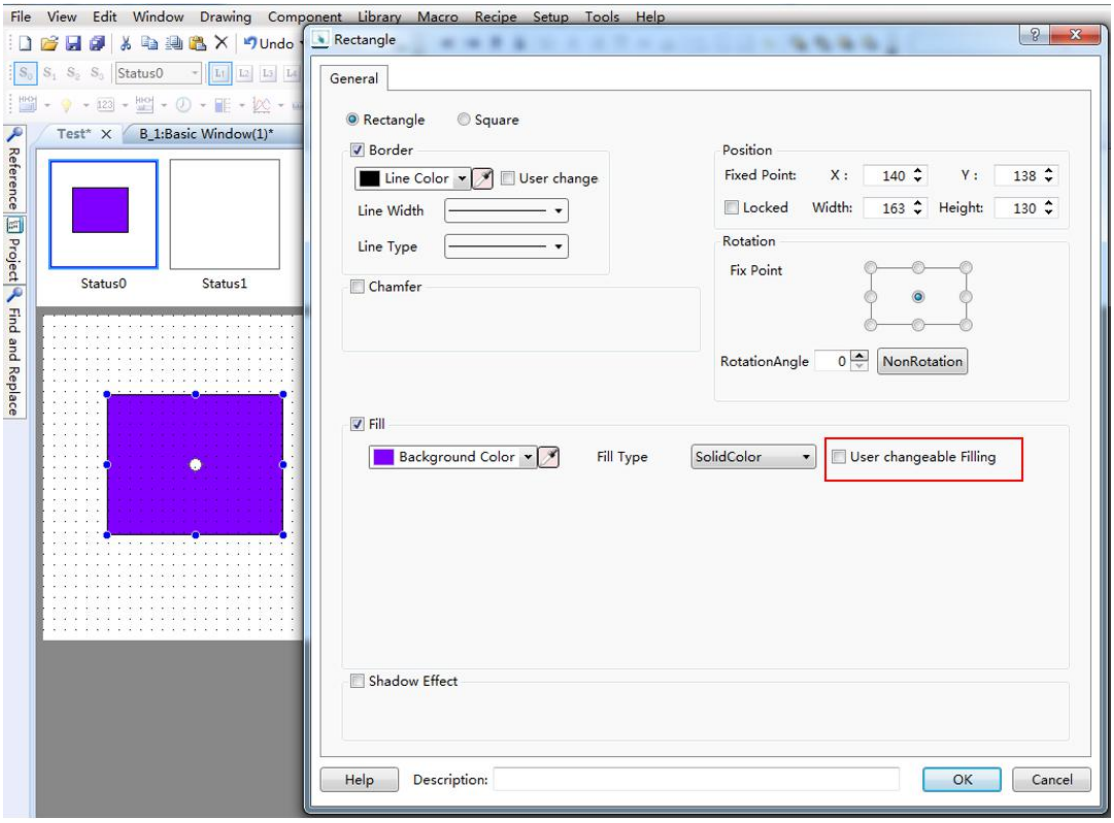


● **Fill**

You can change the filling effect of the current selected graphic (see Figure a). Note: The option is valid only when the selected graphic is vector graphic and the attribute can be modified. (see Figure b)!



a



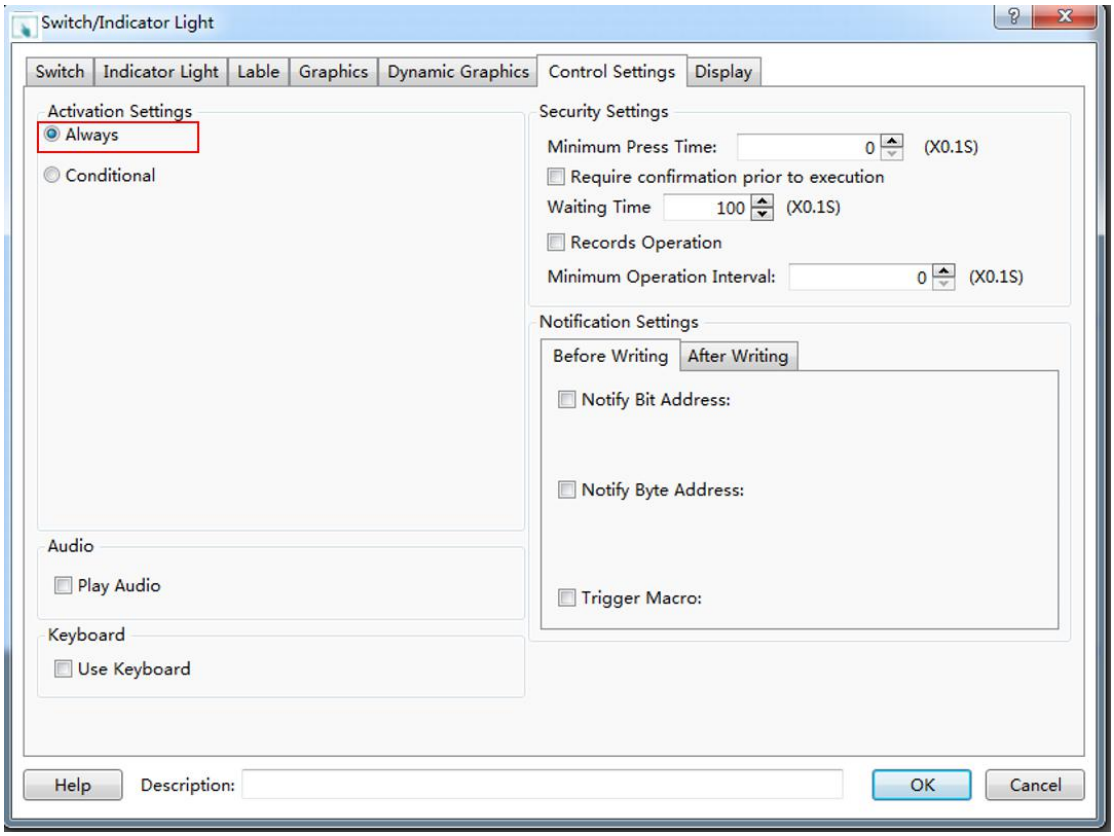
b

4.13.5 Control Settings

(1) Activation Settings

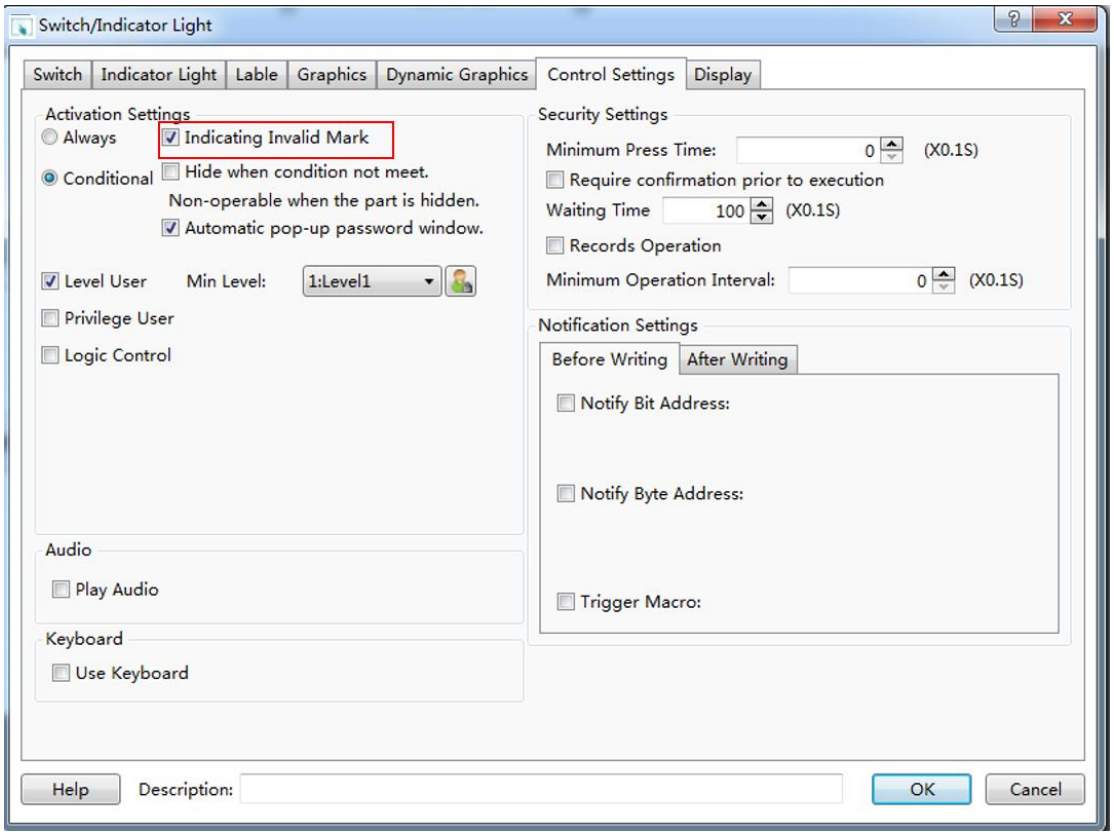
● **Always**

The component can always be operated if you select the option **Always**.

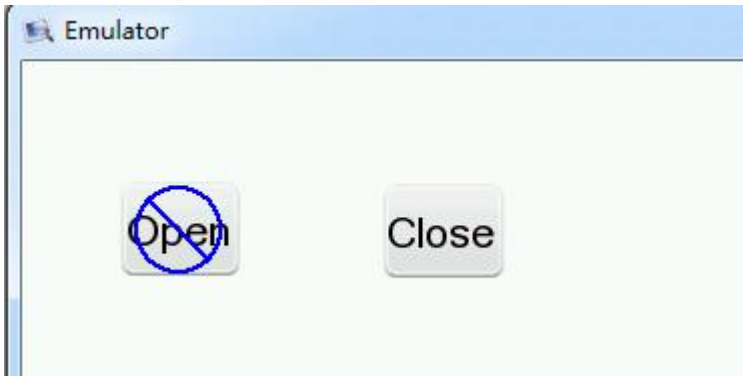


● **Conditional**

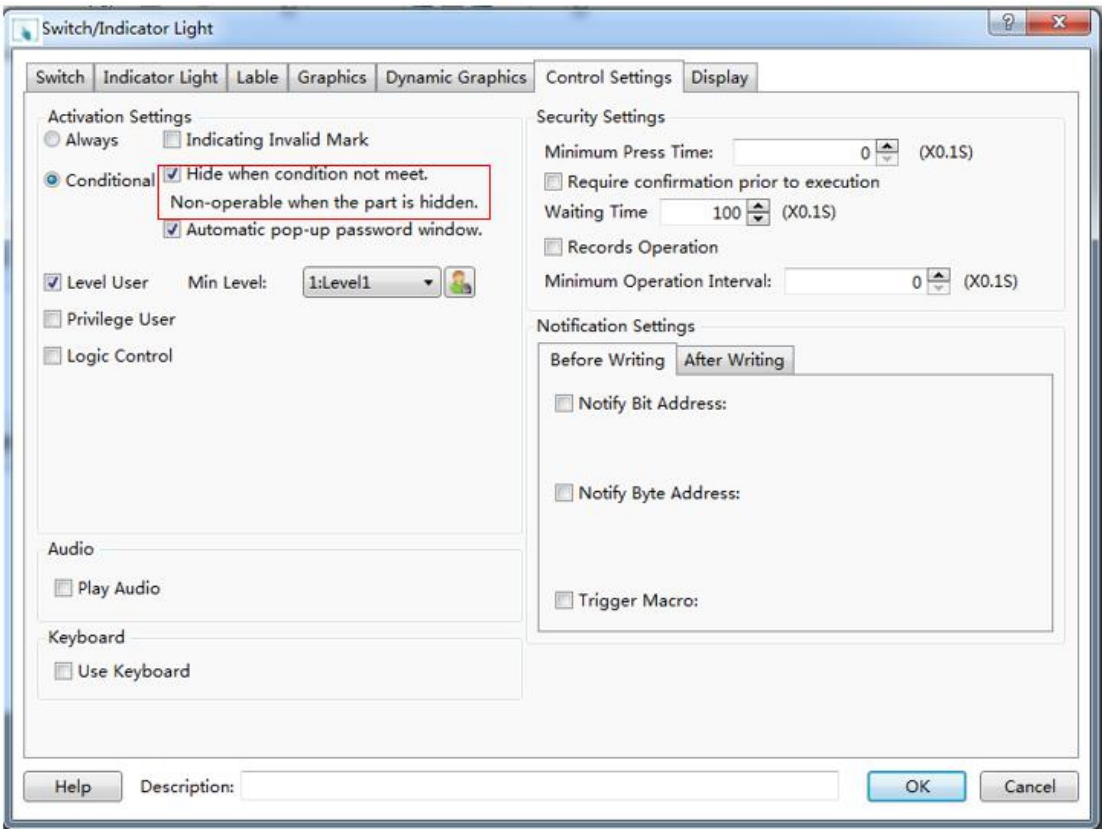
➢ Indicating Invalid Mark



If this function is selected, if the operating conditions are not met, a prohibited operation mark will be displayed, as shown in the figure below.

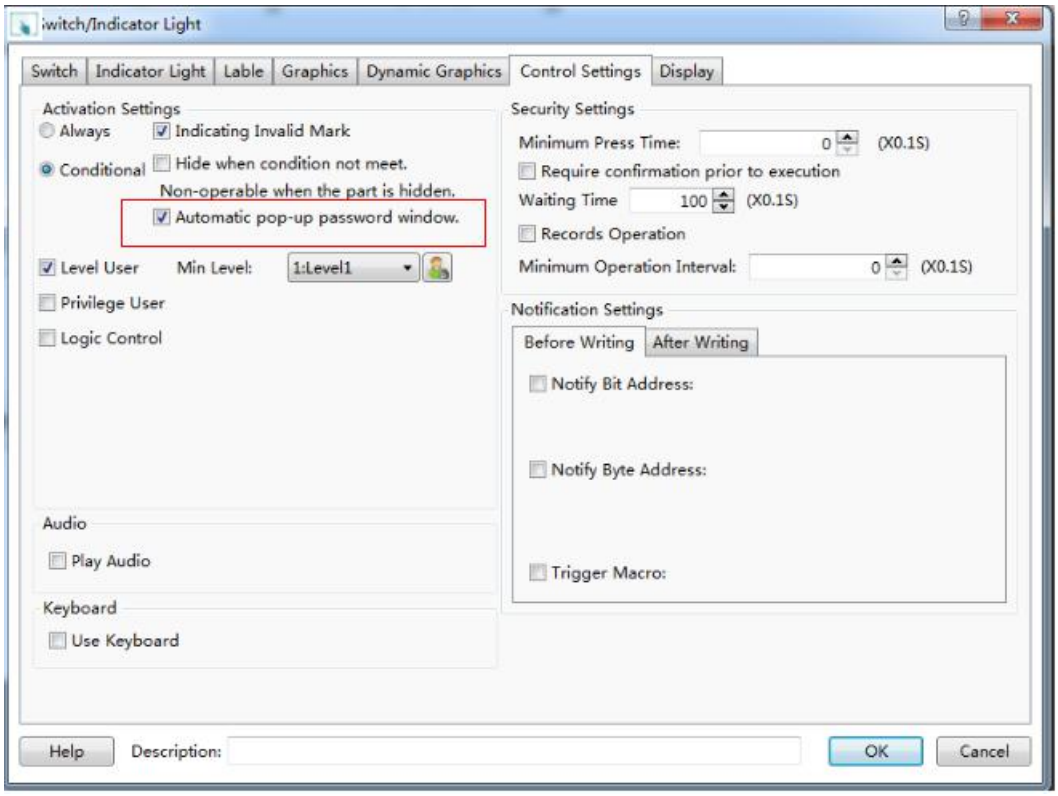


- Hide when conditions aren't met.

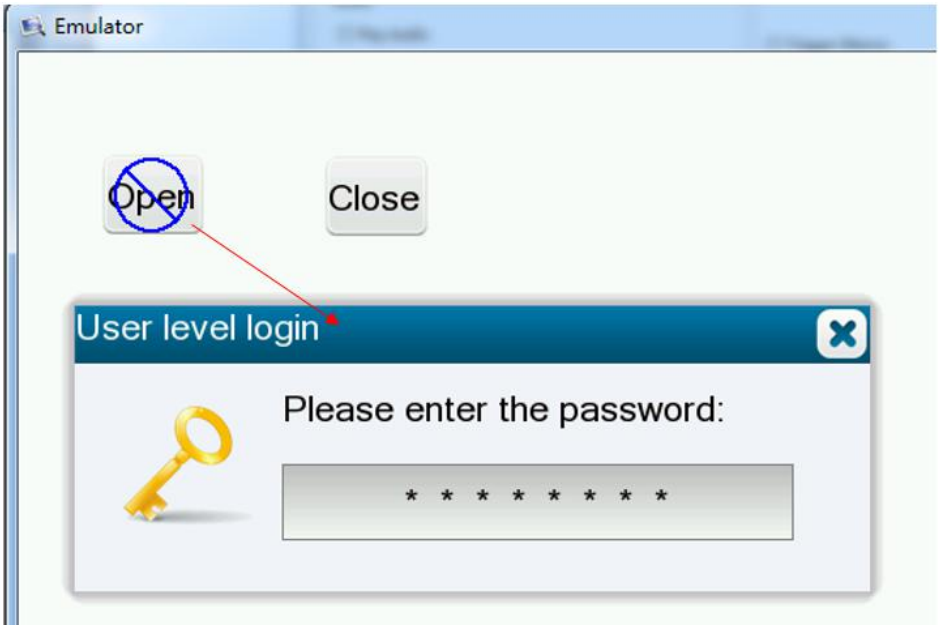


When you check the option, the component will hide if the operating conditions are not met.

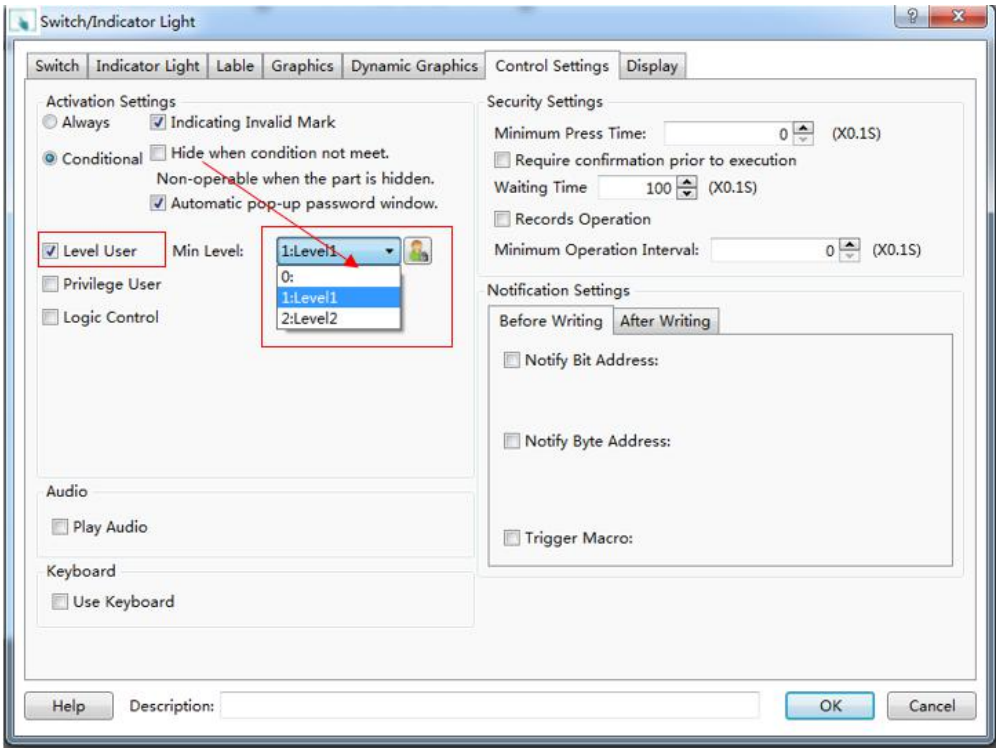
- Automatic pop-up password window



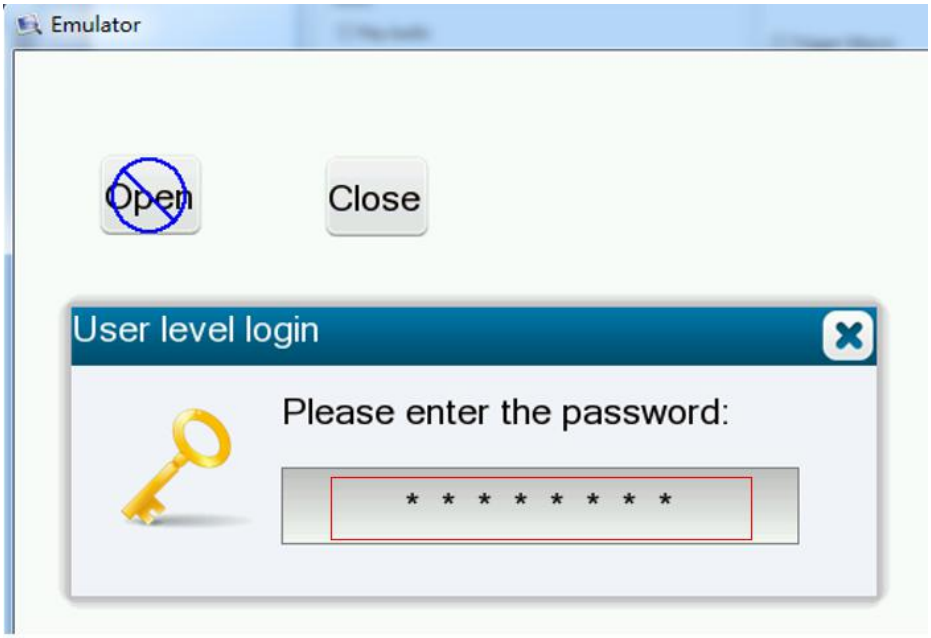
If you check the option "Automatic pop-up password window", the user login window will pop up when you click the component. It is shown as below.



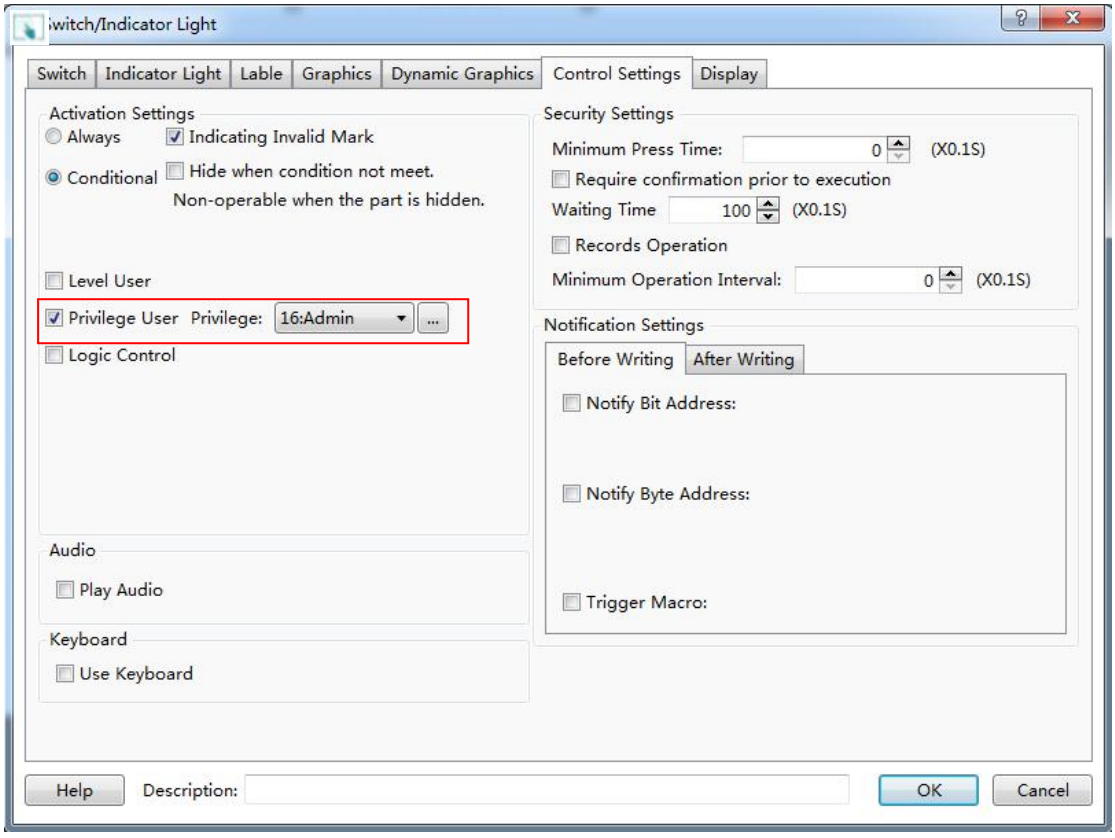
Level user



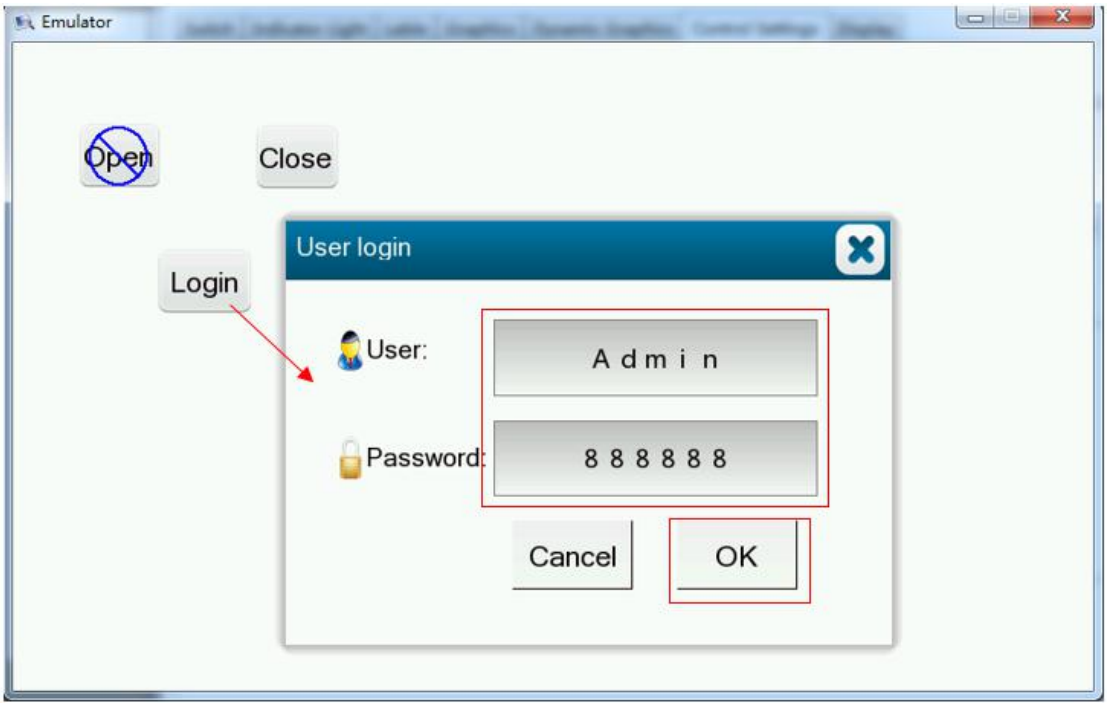
After checking this function, you need to enter the appropriate user level password to operate the device. It is shown as below.



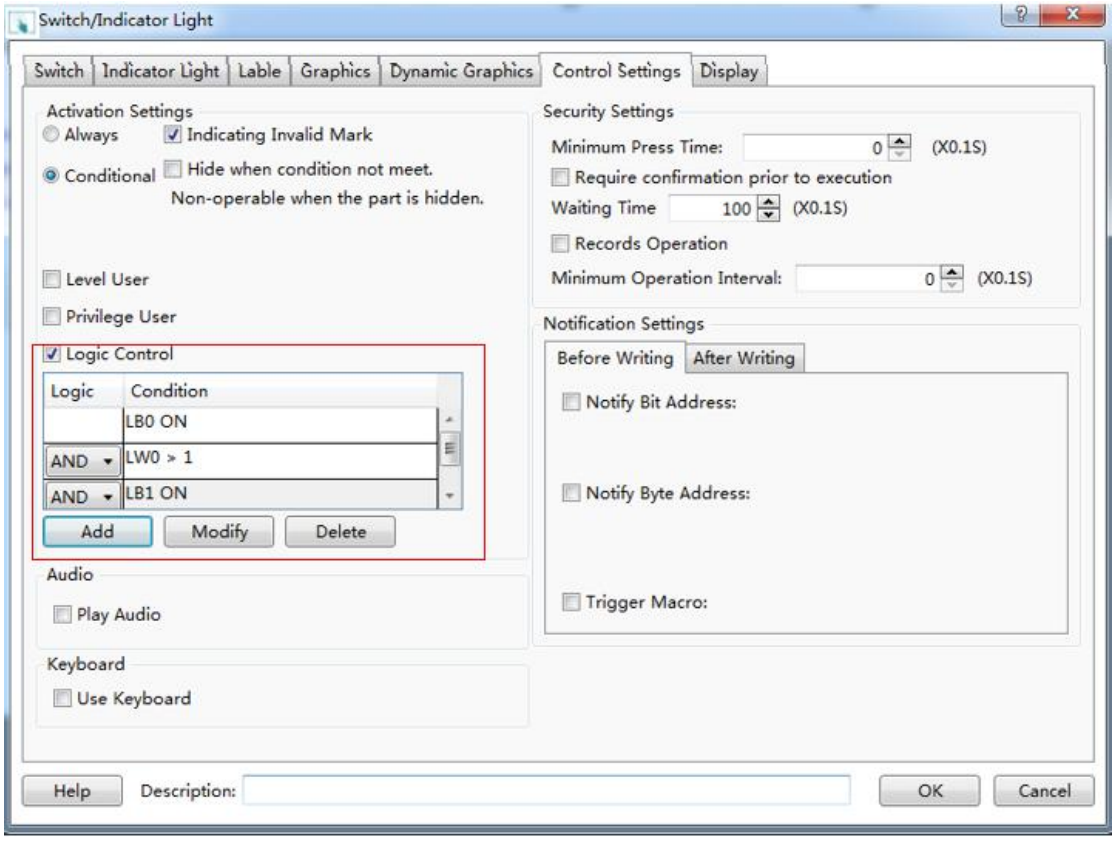
- Privilege User



After checking this function, you need to login by using the corresponding user privilege to operate the component. It is shown as below.



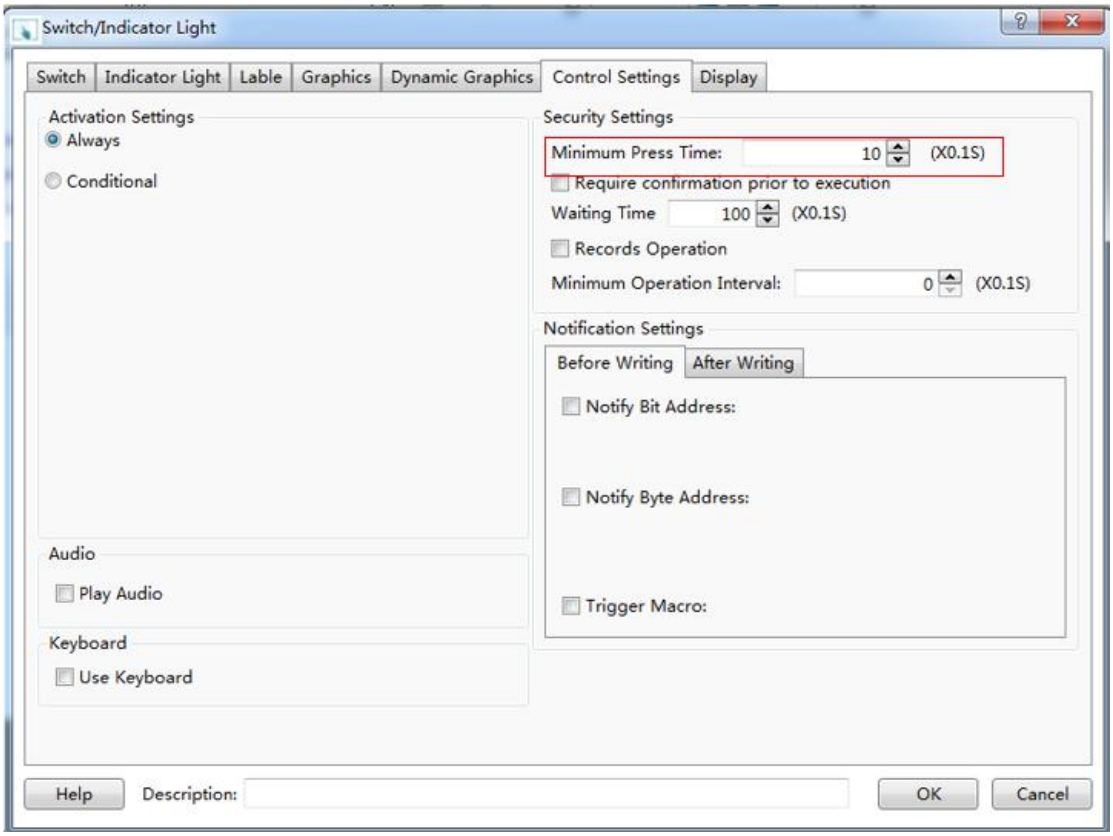
- Logic control



After check this function, the component can be operated when the specified conditions are satisfied. The conditions can be multiple logical operations.

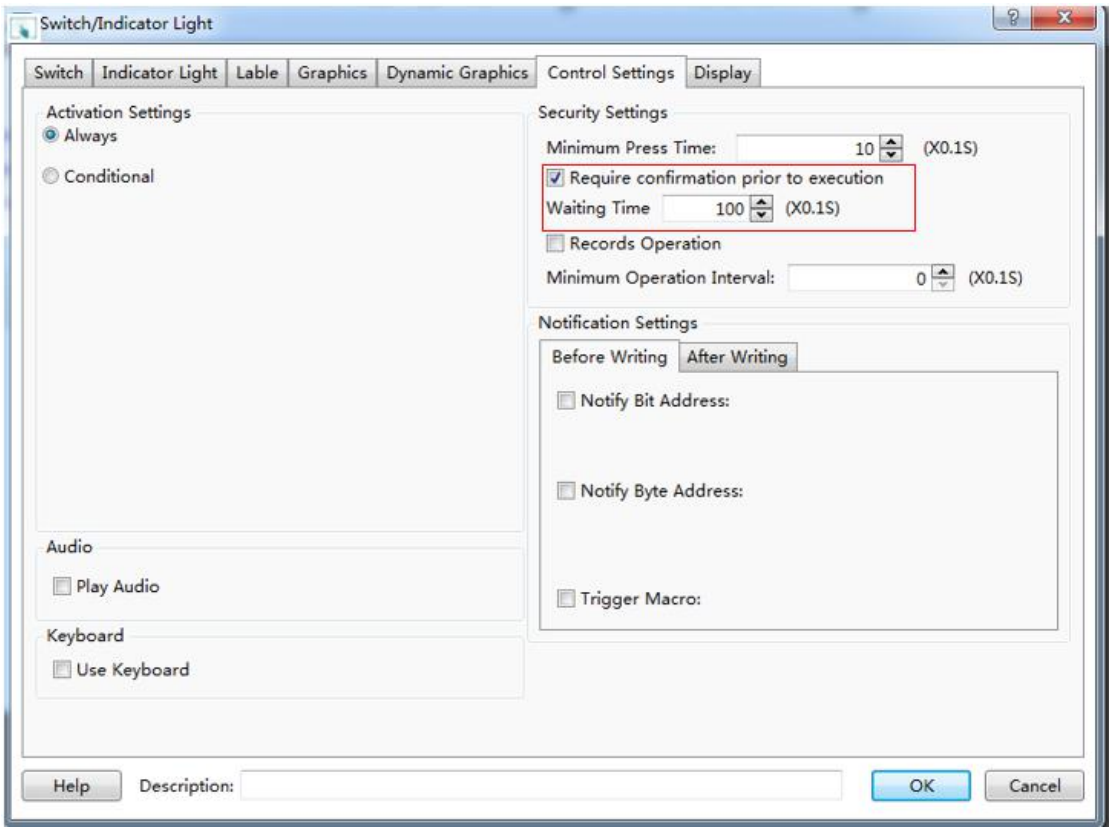
Security Settings

- Minimum Press Time



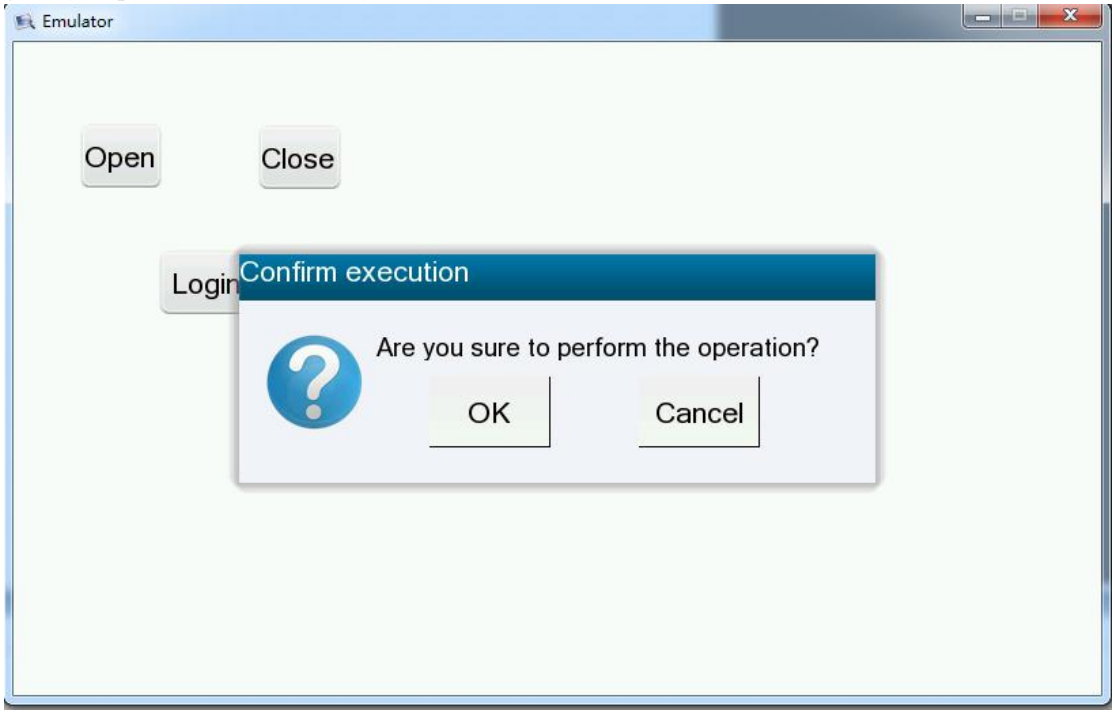
You need to hold the button component for a specified time to perform actions. The function is used to avoid the action due to touching the screen by mistake.

- Require confirmation before execution

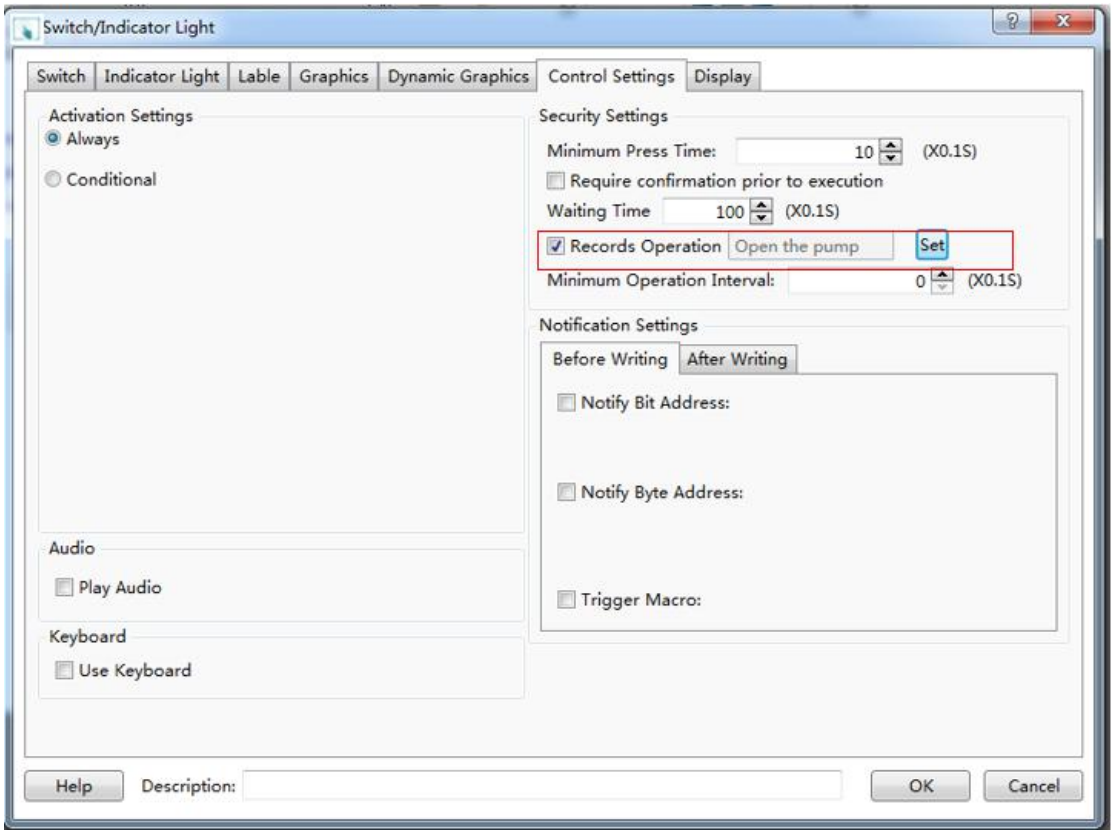


After checking this function, click the button component to automatically pop up the operation

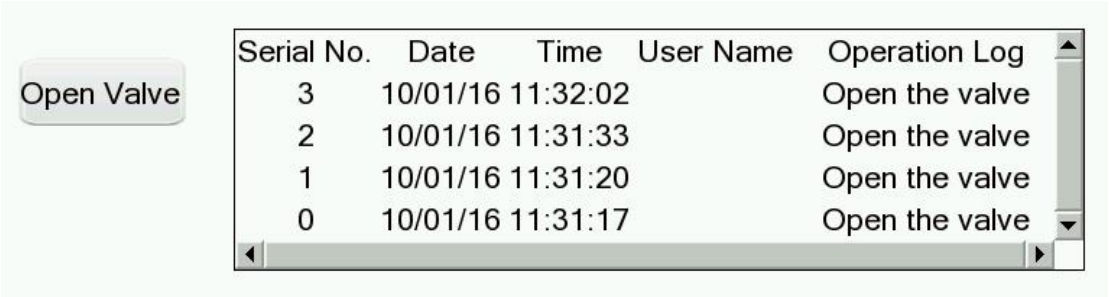
confirmation dialog box, without having to edit the confirmation window separately, which greatly improves work efficiency. As shown below.



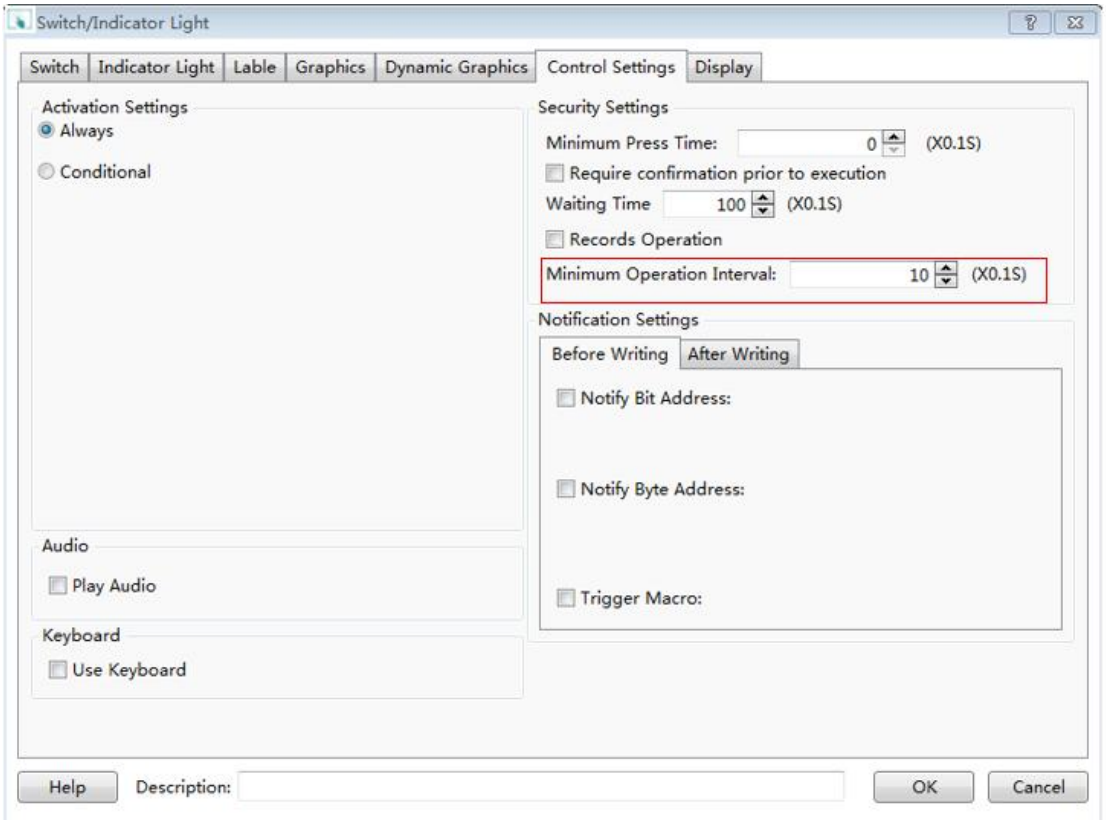
- Records Operation



If you check this function, you can record the operations of the component and display the records in the operator Log. It is shown as below.



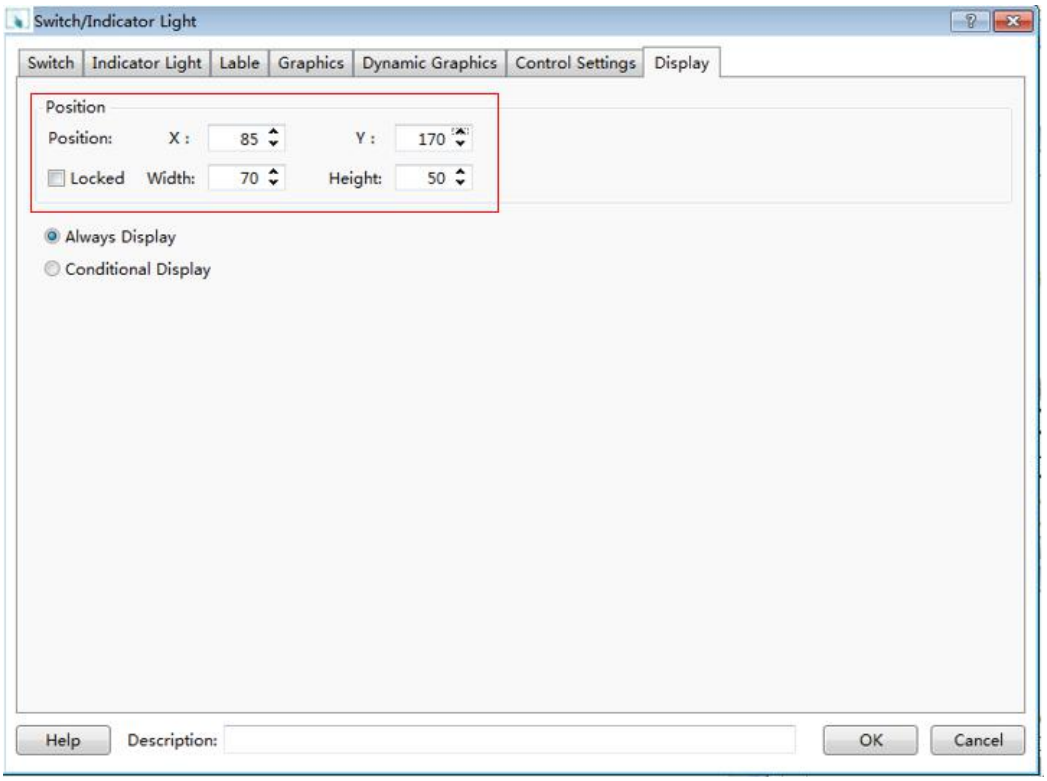
- Minimum Operation Interval



By using the "Minimum Operating Interval" function, continuous actions can be avoided in a short time due to touching the screen continuously by mistake.

4.13.6 Display

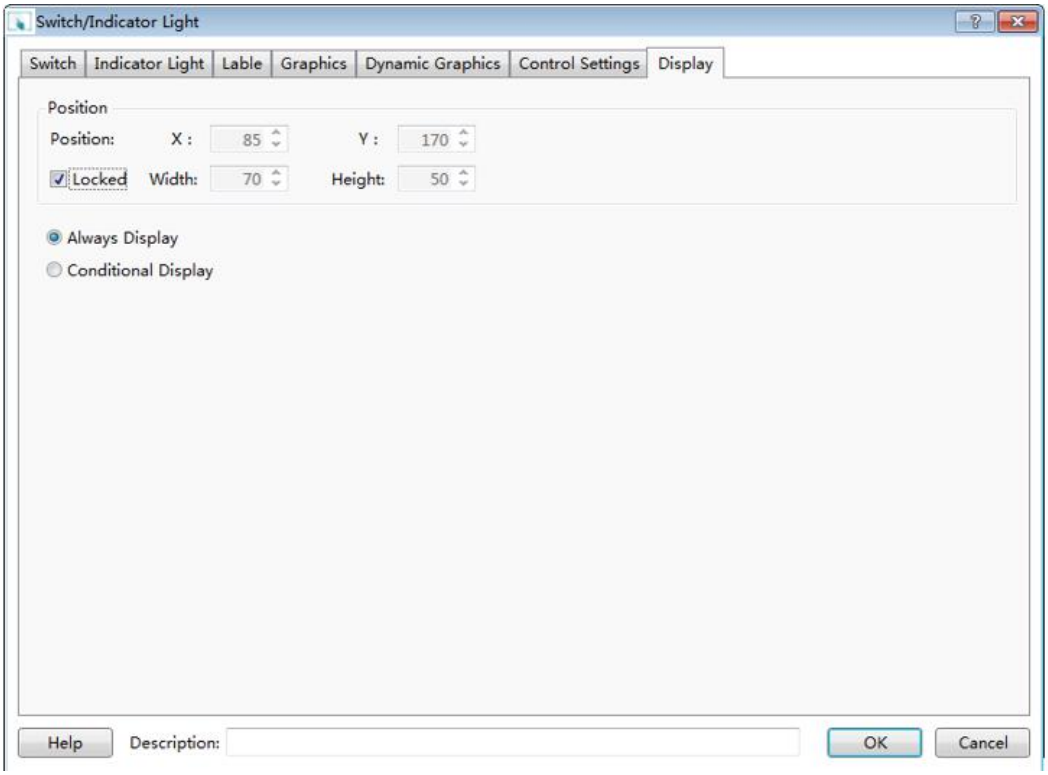
1. Position and size



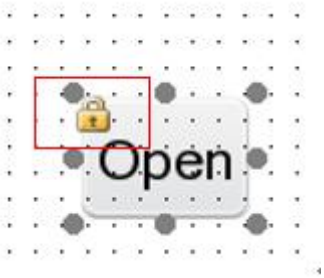
(1) At the designated position in the above figure, the display position of the component can be changed by setting the component X and Y coordinate values.

(2) At the specified position in the above figure, the size of the component can be changed by setting the value of the component width and height.

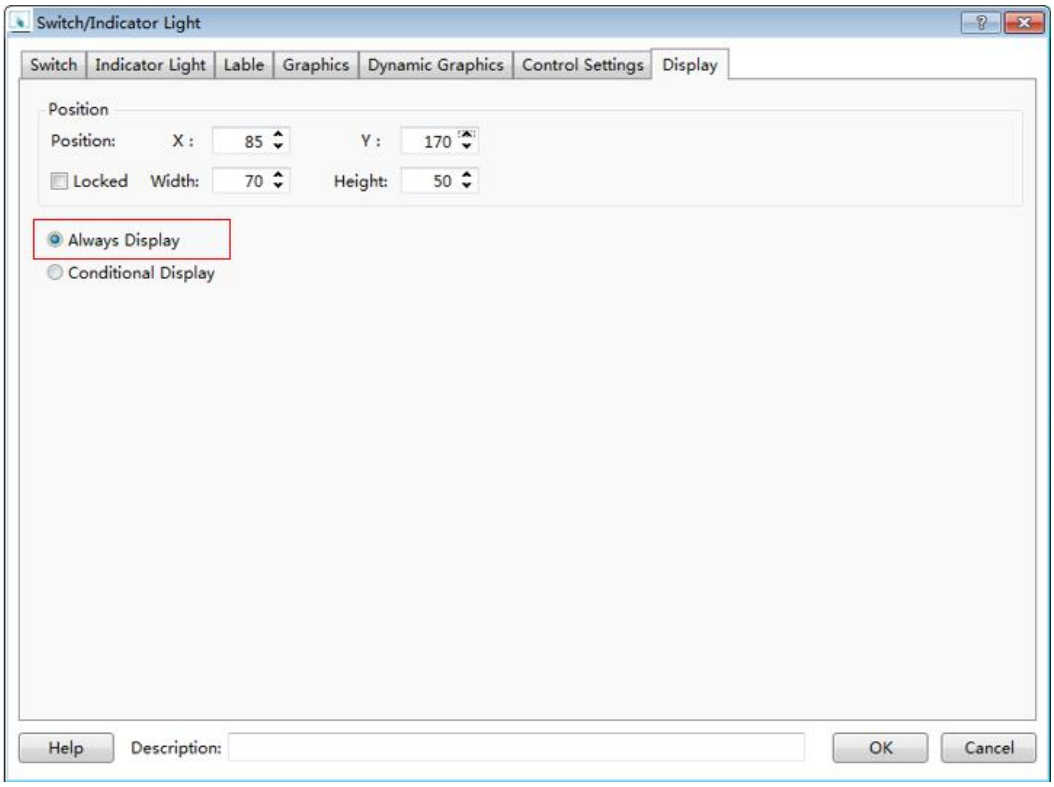
2. Lock element position and size



After the lock function is checked, the position and size of the picture are all locked and cannot be changed, and a small lock icon will appear on the component in the editing interface. As shown below.



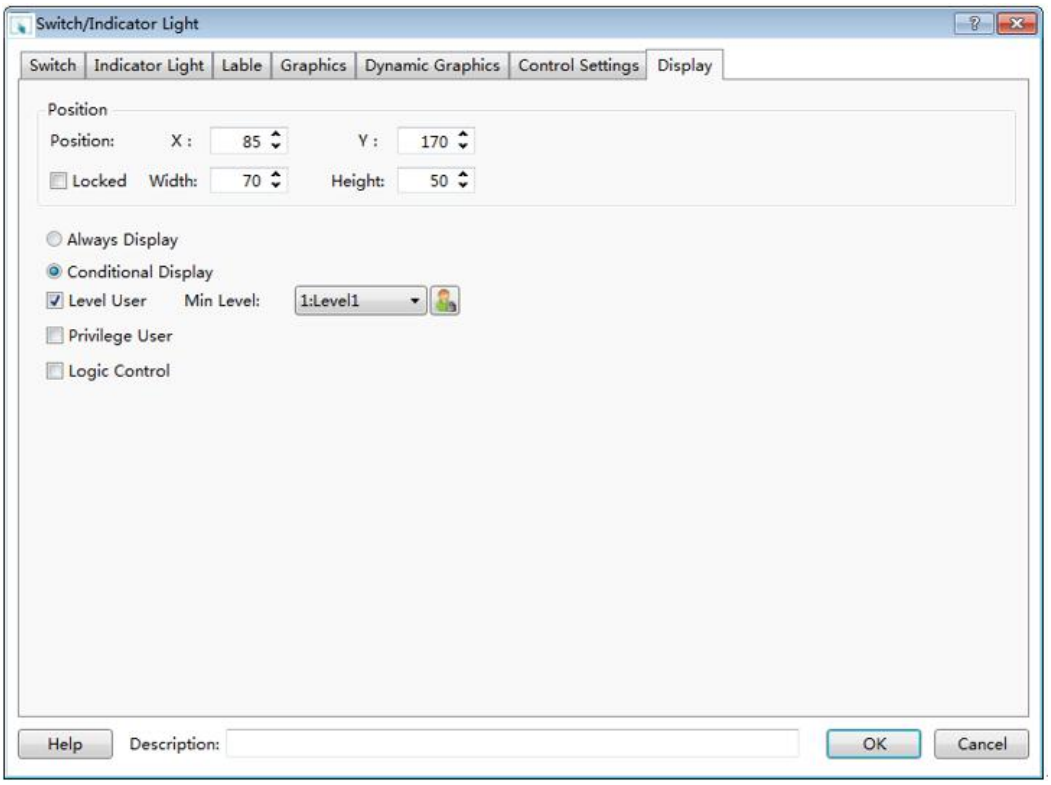
3. Component display and hide



The default setting of the software is to always display. After checking this option, the component will always be visible when the project is running.

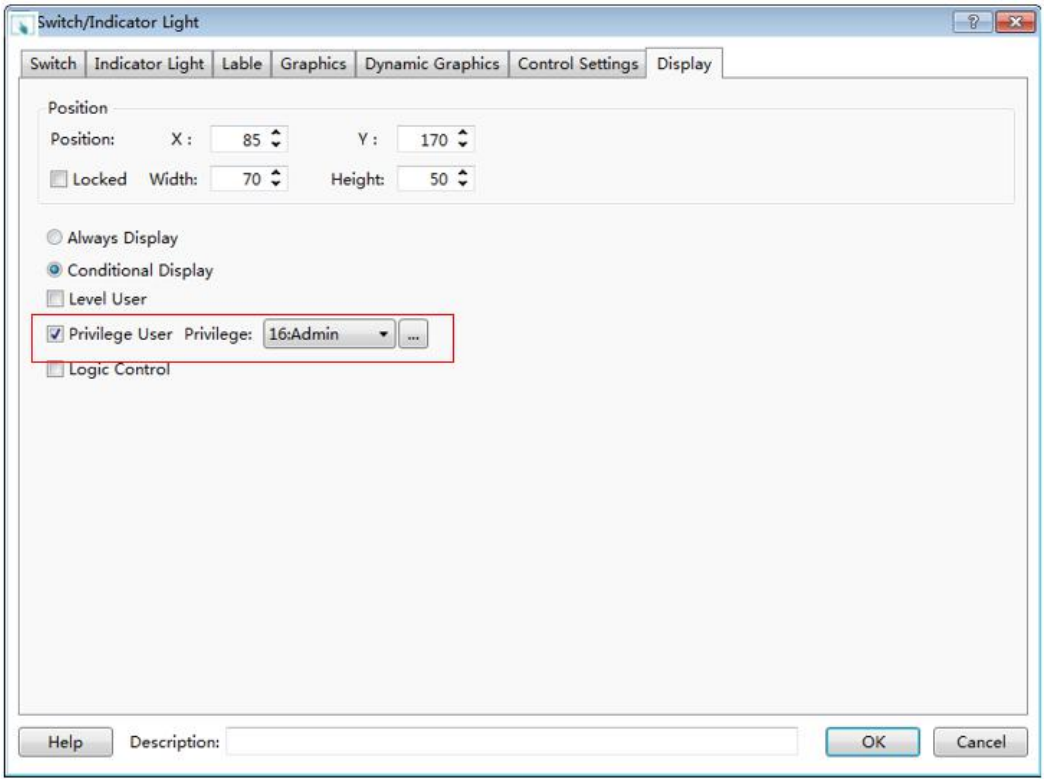
Conditional Display

- Level User



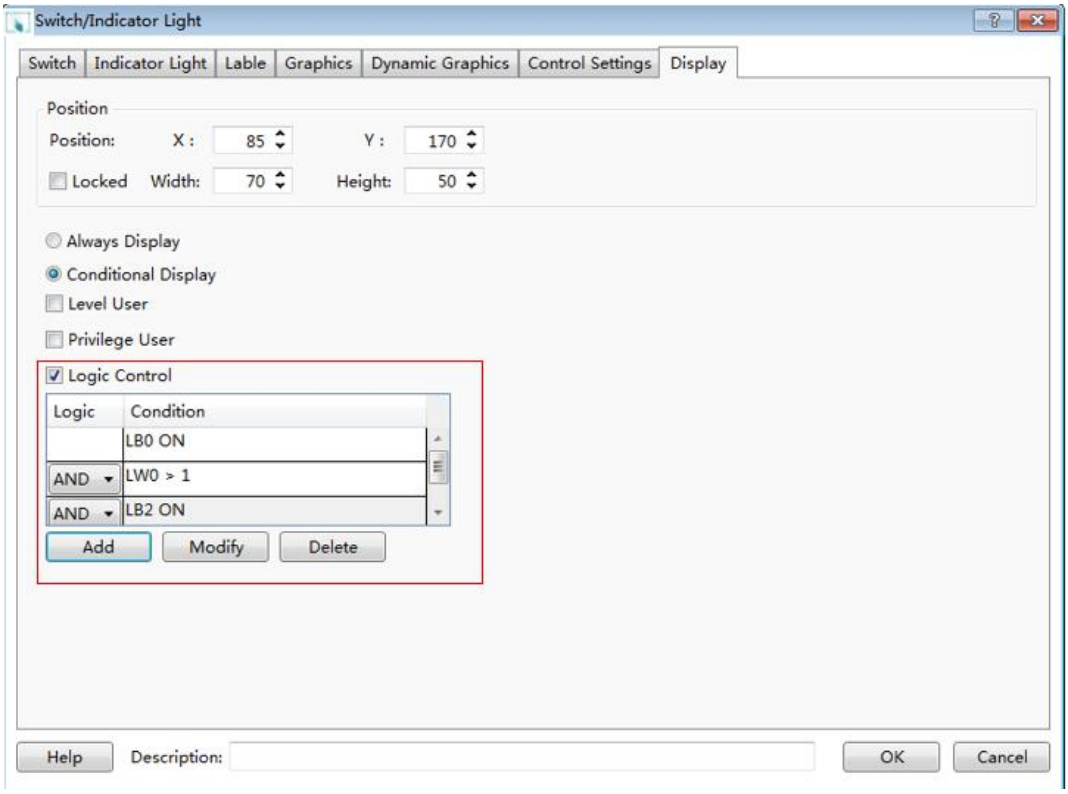
If you check this function, the component will be visible after you entering the appropriate user level password.

- Privilege User



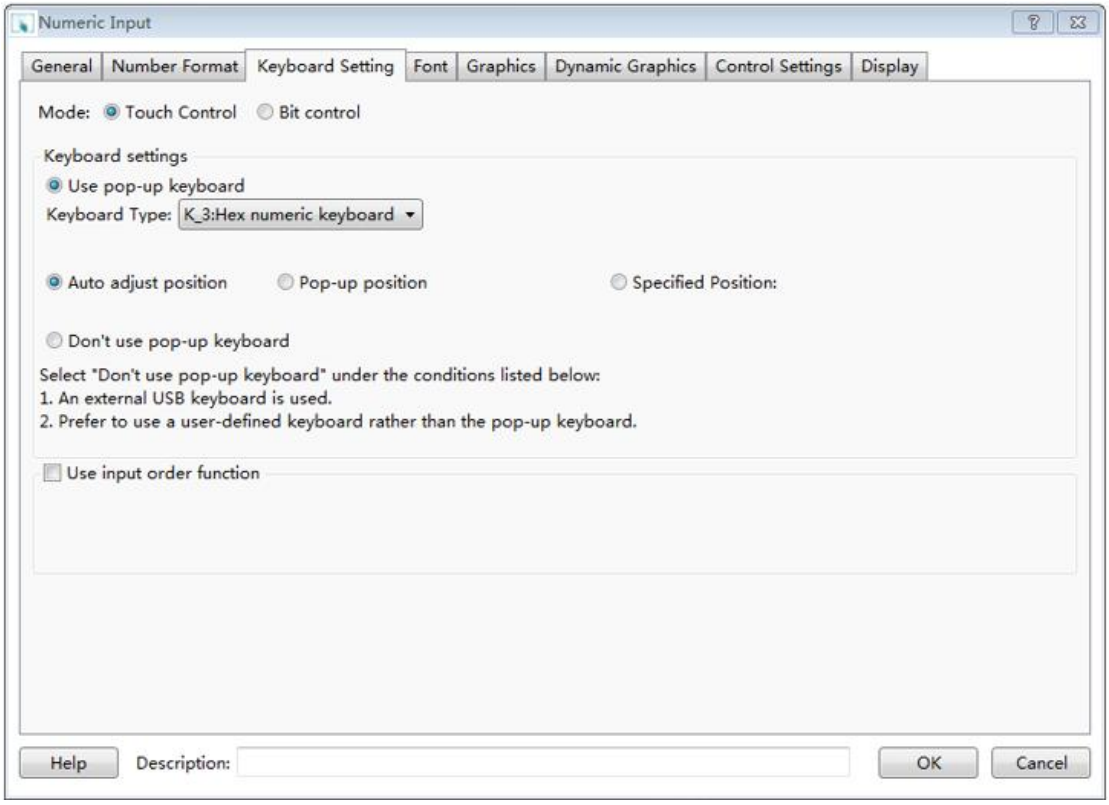
If you check this function, the component will be visible after you login by using the corresponding user privilege.

- Logic Control



After checking this function, the hidden display of the element can be controlled by the corresponding bit state or the size of the word value, and multi-condition logic operations are supported as shown in the figure above.

4.13.7 Keyboard Setting



(1) Mode

- Touch Control

The keyboard will be popped up if you click the HMI input component.

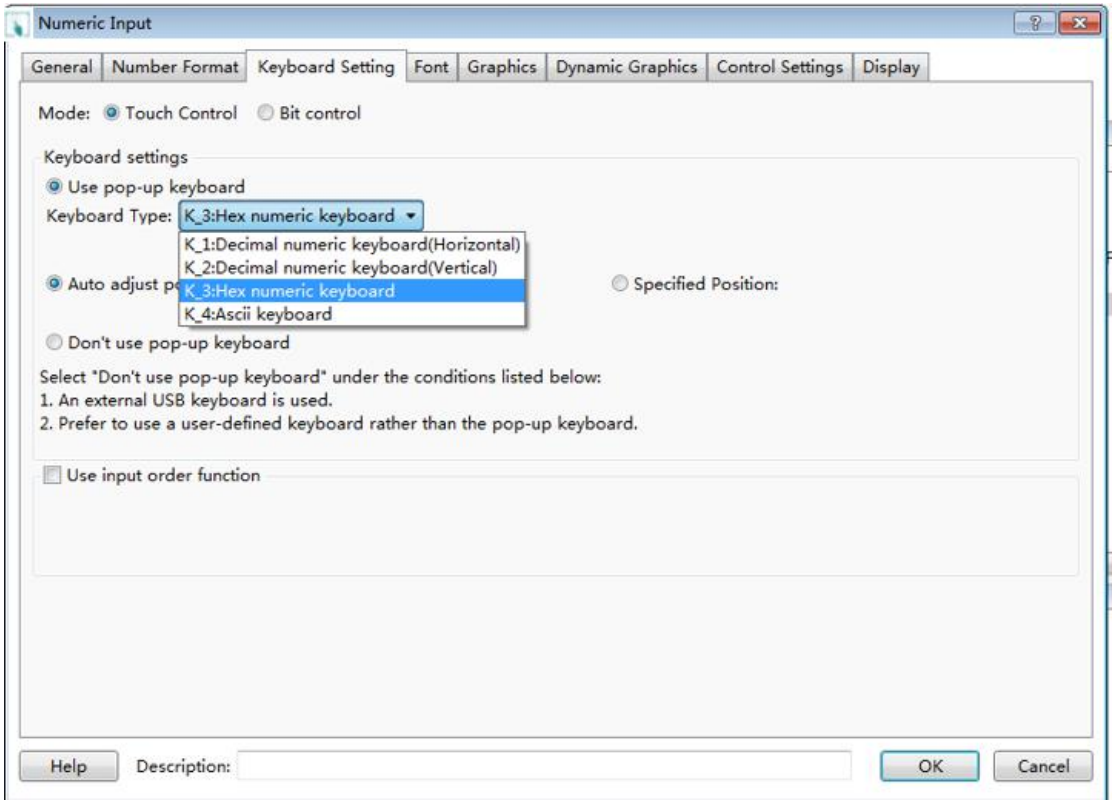
- Bit control

Bit control: control the pop-up and closing of the keyboard through the bit register. For example, in the figure below, when LB0 is ON, the input state is triggered.

(2) Keyboard Settings

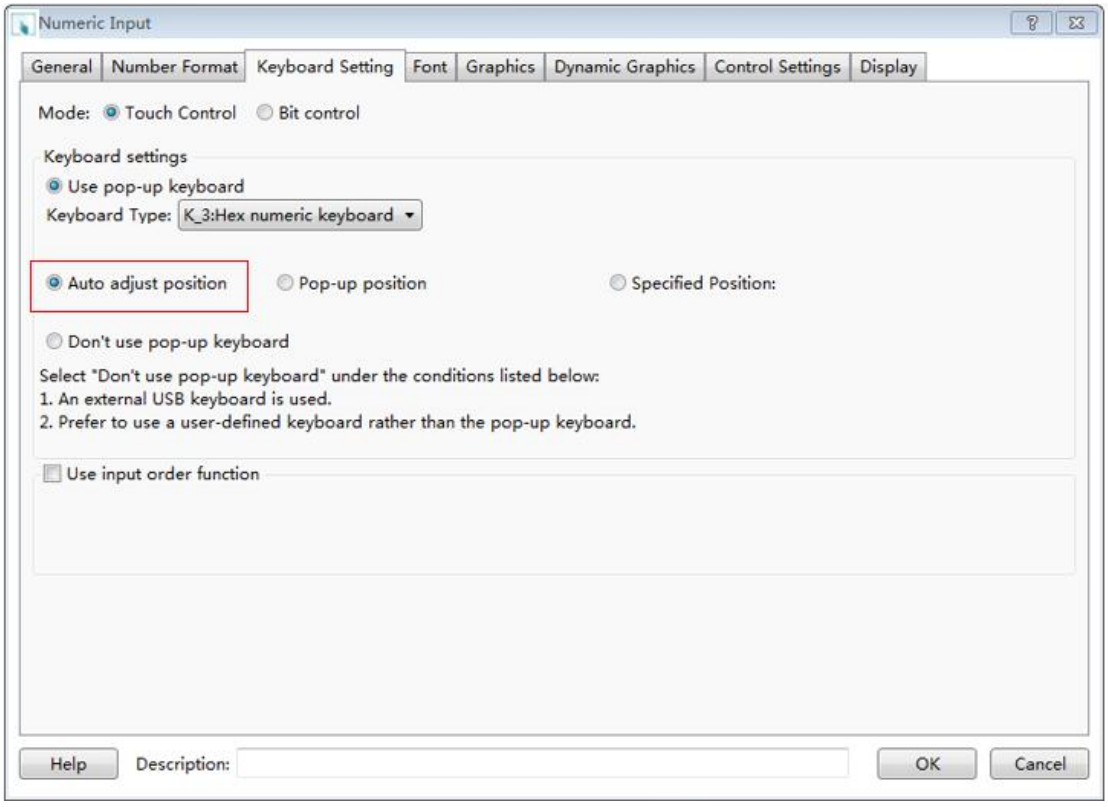
- Use pop-up keyboard

Use pop-up keyboard: use the built-in keyboard type of the system, the keyboard type can be selected.

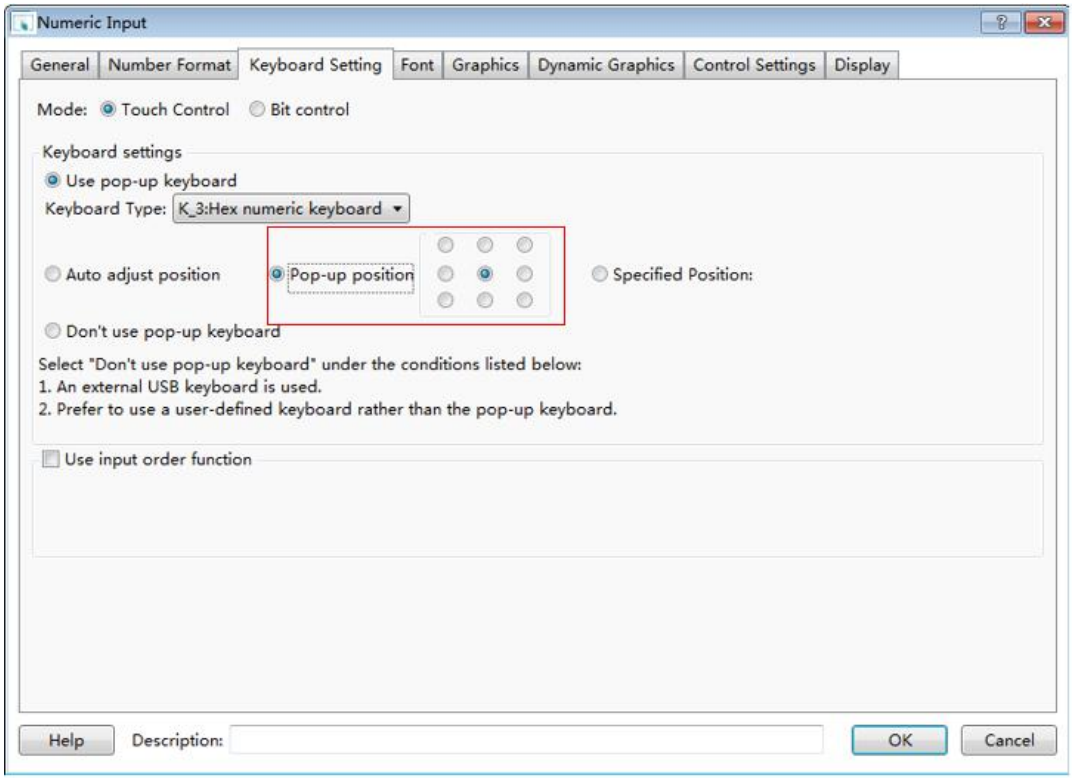


➢ Auto adjust position

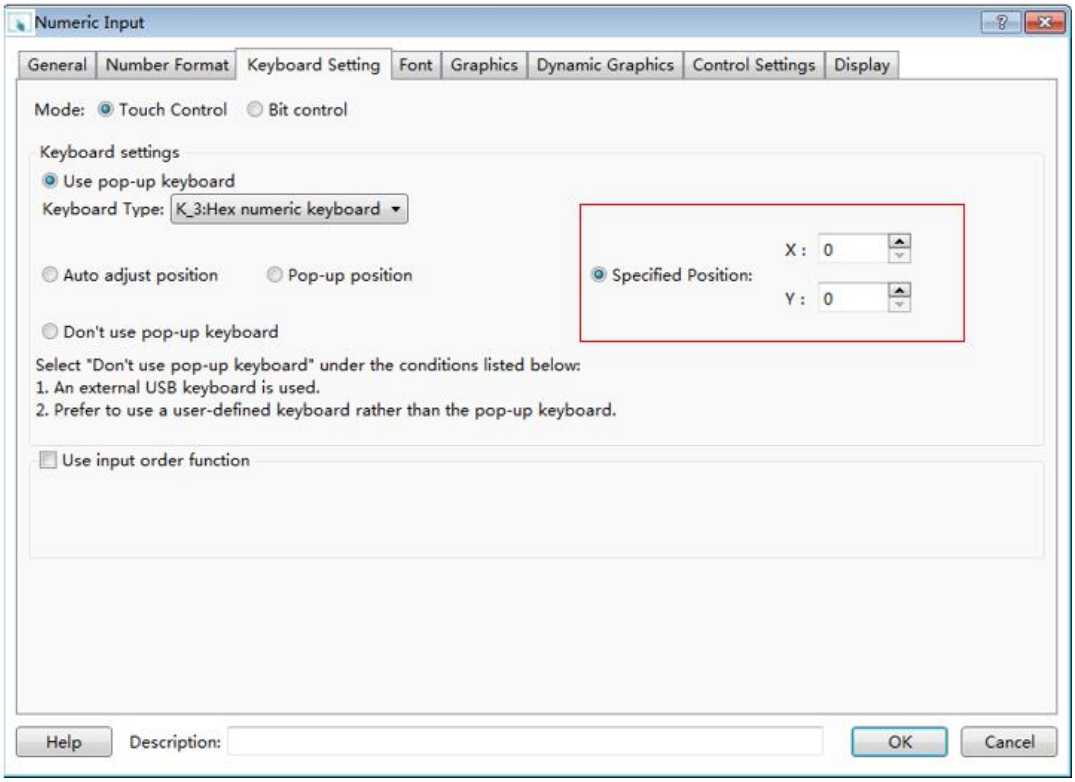
The position of the pop-up keyboard is adjusted automatically according to the position of the HMI input component.



➢ Pop-up position



➢ Specified Position



- Don't use pop-up keyboard:

Do not use pop-up keyboard: If you need an external keyboard or you need to use a user-drawn keyboard, you can choose not to use the system pop-up keyboard.

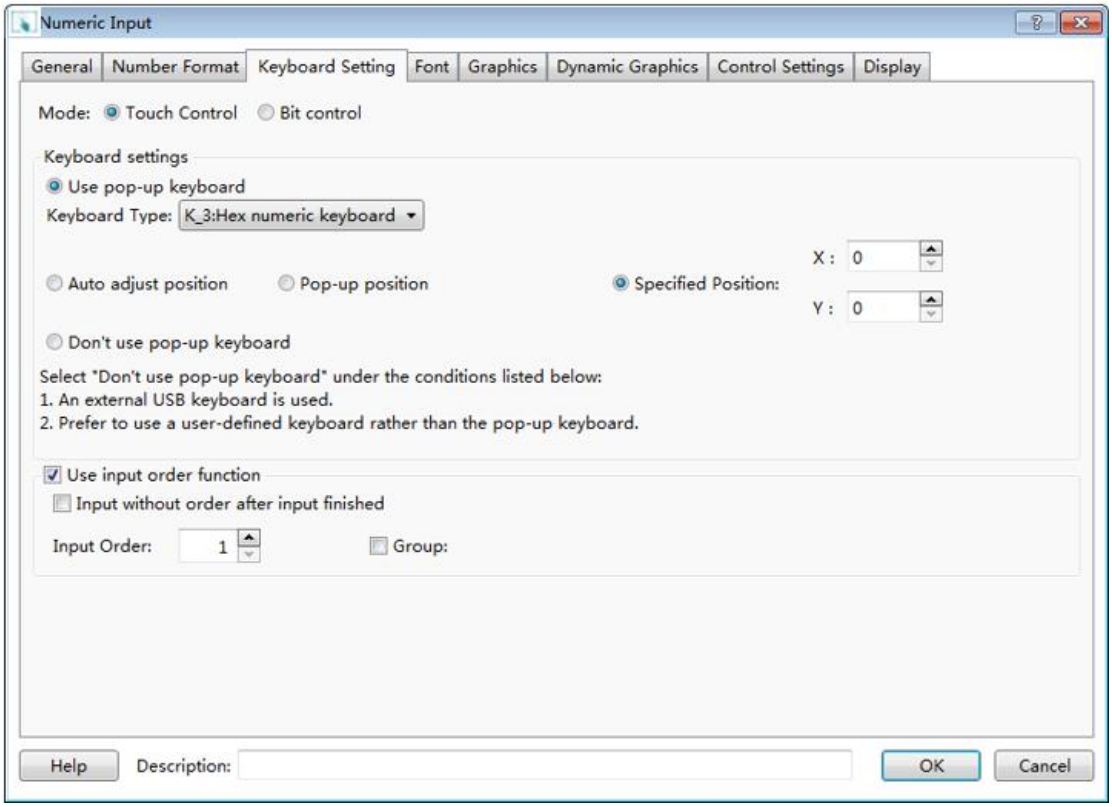
(3) Use input order function

Generally, this option is only set when there are multiple input components. This option can continuously input the input components according to the set input sequence.

No more input in sequence after input of number list items: check the input element of this option, after input is completed, the function of sequential input will be stopped.

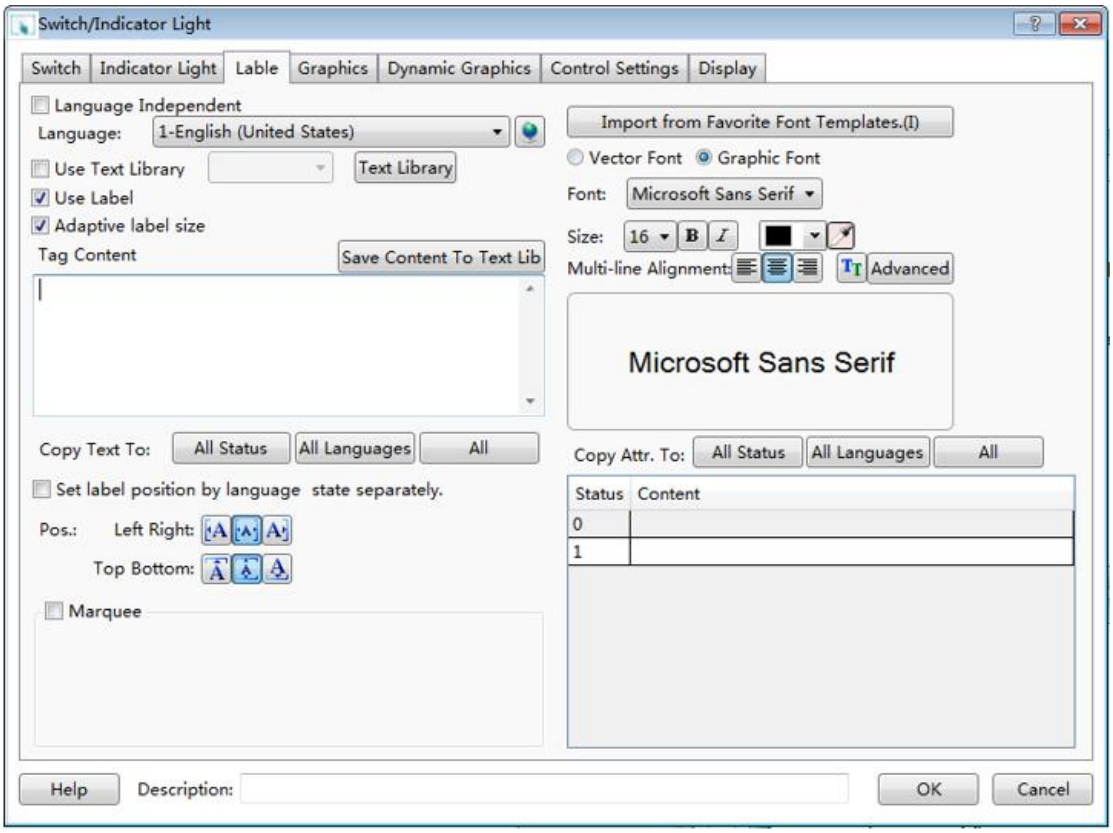
Number list item input sequence: according to the settings in the group, the numeric input components of each group will be continuously input in order from small to large.

Number list item group: input components can be grouped, and each group is input in order from small to large.



4.13.8 Label

Adding a label for a component can be increased readability. You can set the properties of the label such as the language, the content, the font type and other settings. The display text will change when the status is switched if you set different text for different status.



1 Language

Select a language for label edit. The settings will only take effect in the selected language.

2 Language Independent

When you change the language, the label content is not affected.

3 Use Text Library

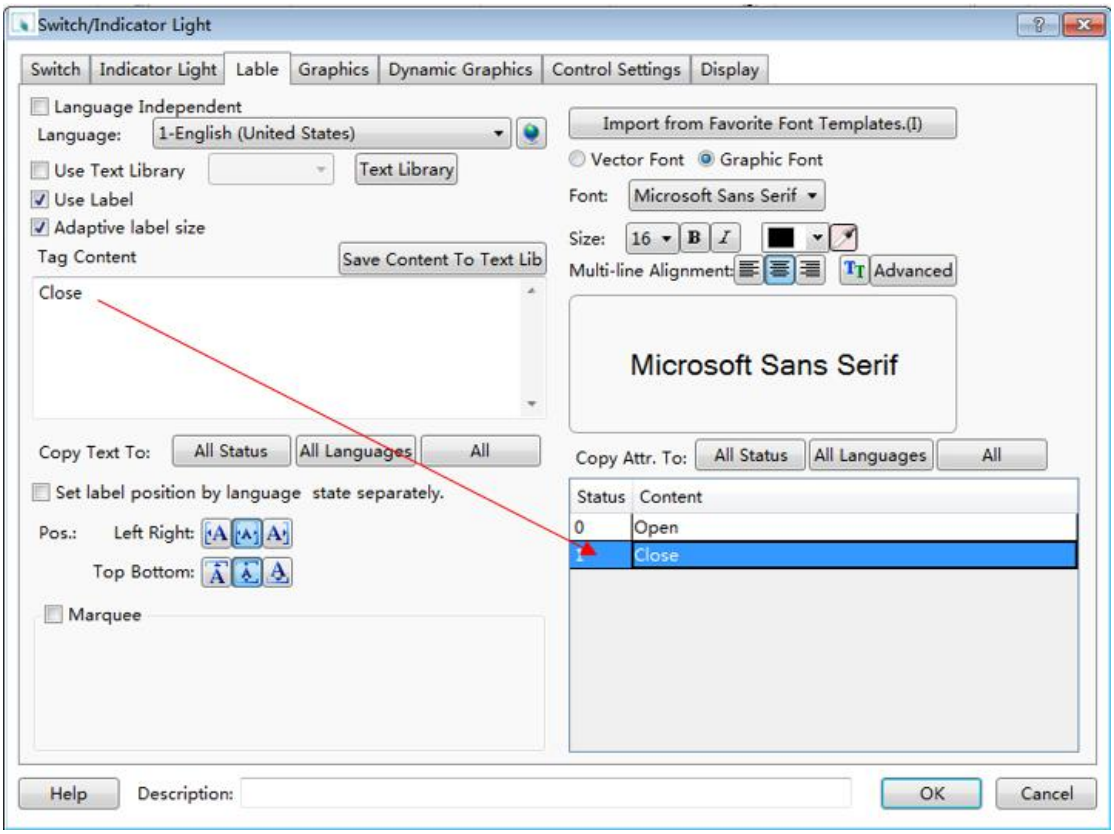
After the "Use Text Library" is checked, the label content will be filled by the selected text entry in the text library. Some common text can be ready in the text library.

4 Use Label

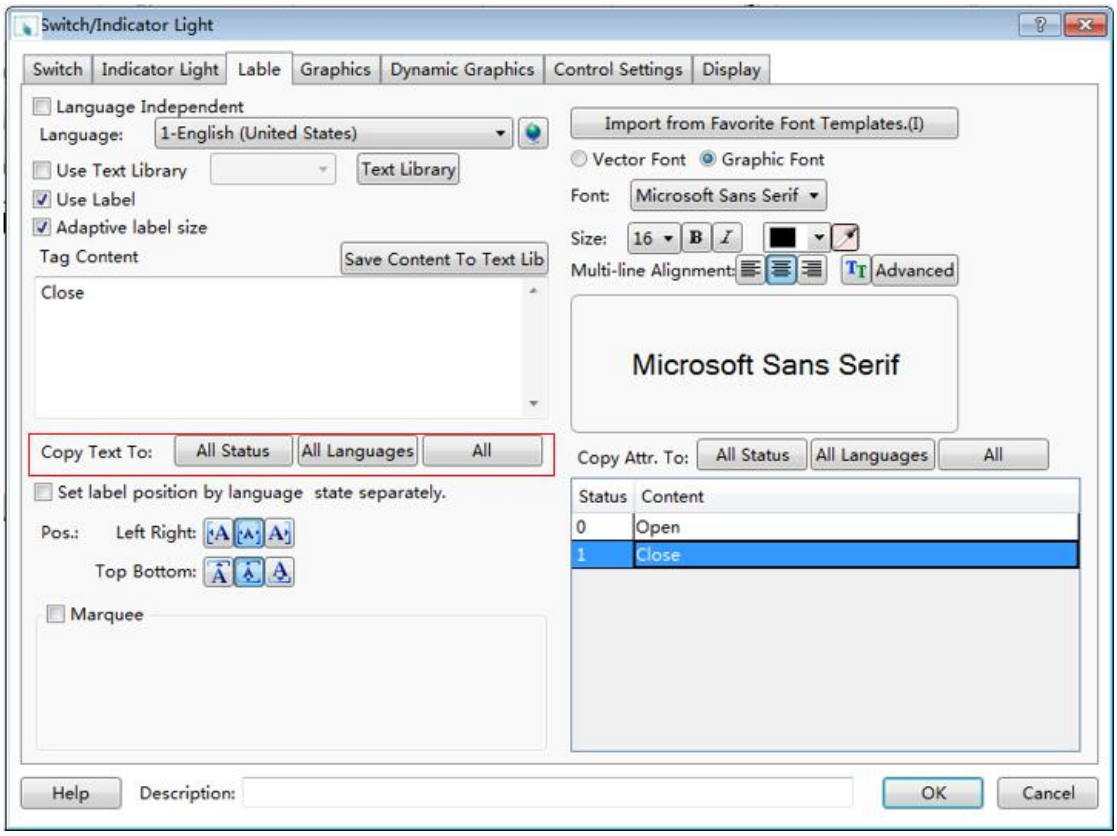
You need to check this option when you want to set a label for the component.

5 Tag Content

Select each state to write the label, after the current state is written, click the next state to continue to enter the label content.



After the label content of each state is written, it can be copied to all languages and states.



6 Label attributes

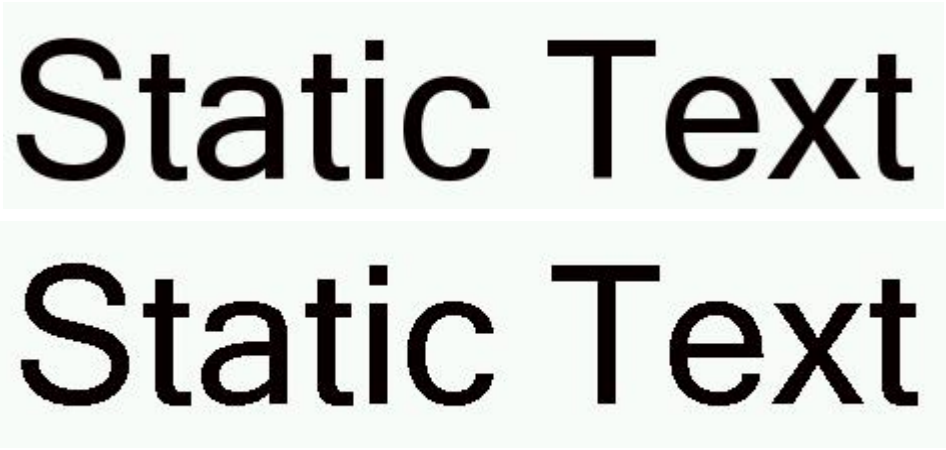
The content of each label can be set with any font, size, color, alignment, advanced settings (spacing, zoom, shadow) and other common content attributes that come with the font system.

After each state or language setting is completed, it can be copied to all states and language, avoid repeated setting work, and can call common font templates set by the system to simplify the editing of label attributes, which is efficient and convenient.

7 Vector Font and Graphic Font

Vector Font disadvantages：Only the True Type fonts (ttf format) installed in the current operating system are supported. When "Stroke Font Edge Blur Processing" is disabled, the font display will have some glitches. The comparison effect is shown in the following figure.

.



Note: Disable "stroke font edge blur processing", set under 4.10.2.2 extended properties.

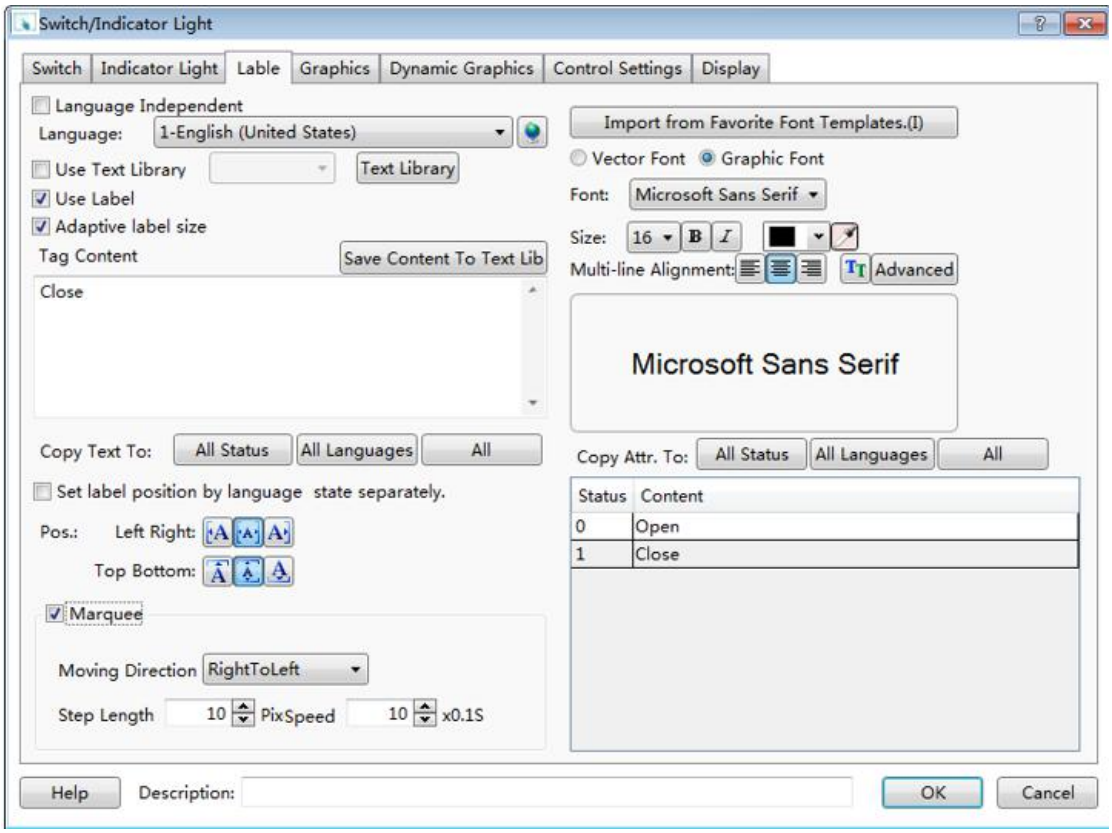
- Vector Font Advantages
  - Occupy Less memory. The same character in the same font type uses one font data regardless of size, color, bold, or italic.
  - Full size and can be set freely without distortion.
  - Supports multi-line text alignment.
  - Text Library supports the use of vector fonts.
- Graphical Font

Regard the string as a whole and save it as a bitmap to the project.

- Disadvantages
  - Occupy more memory because of the bitmap storage format.
- Advantages
  - Supports all the fonts installed in the current operating system.
  - Display effect is good.

8 Marquee

In the VI20 Studio software, every label of the component can be set to display by scrolling the fonts. The scrolling direction, step length, speed, etc. can be set separately.

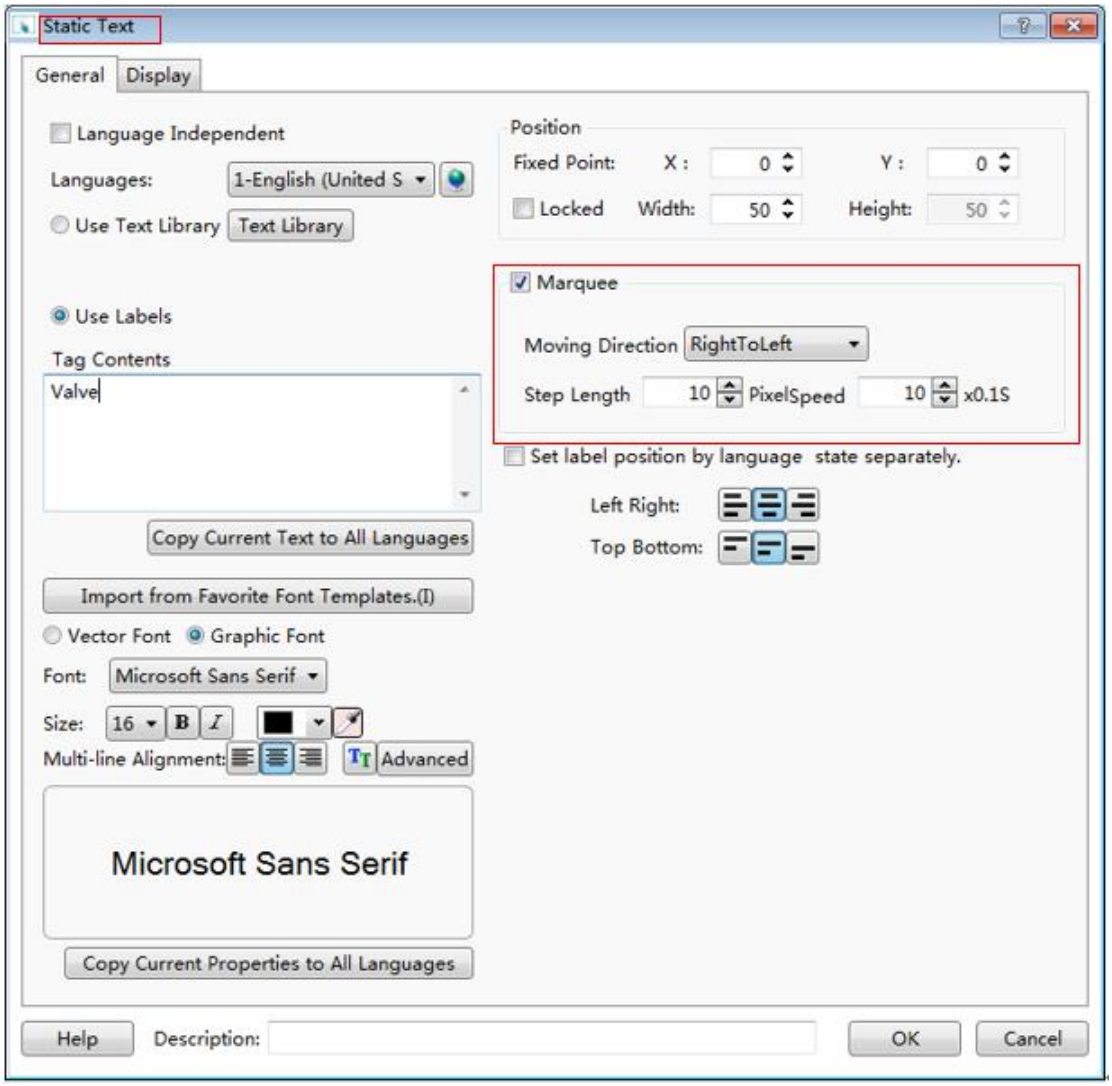


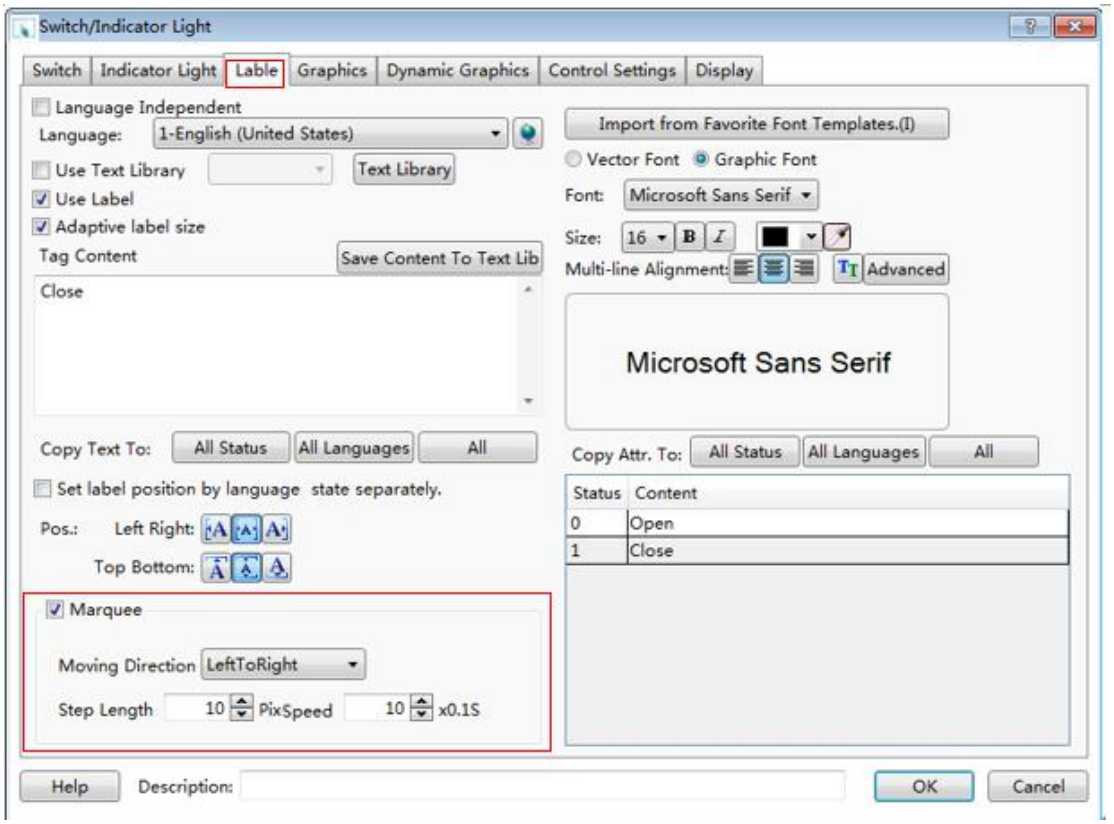
4.13.9 Marquee

The Marquee is to display text content by scrolling text.

In this software, the main useful effects of the Marquee are: component labels and static text.

For the text attributes and static text of each component label, when the Marquee option is checked, the text will be scrolled in the form of Marquee. After checking this attribute, you can set the moving direction and moving speed of the Marquee effect. As shown below:


Static Text
General
Display
Language Independent
Languages:
1-English (United S
Use Text Library
Text Library
Use Labels
Tag Contents
Valve
Copy Current Text to All Languages
Import from Favorite Font Templates.(I)
Vector Font
Graphic Font
Font:
Microsoft Sans Serif
Size:
16
Multi-line Alignment:
Advanced
Microsoft Sans Serif
Copy Current Properties to All Languages
Position
Fixed Point:
X :
0
Y :
0
Locked
Width:
50
Height:
50
Marquee
Moving Direction
RightToLeft
Step Length
10
PixelSpeed
10
x0.1S
Set label position by language state separately.
Left Right:
Top Bottom:
Help
Description:
OK
Cancel



1 Moving Direction

There are four moving direction: Left to Right, right to Left, Top to Bottom and Bottom to Top. Select one to be the moving direction of fonts scrolling.

2 Step Length

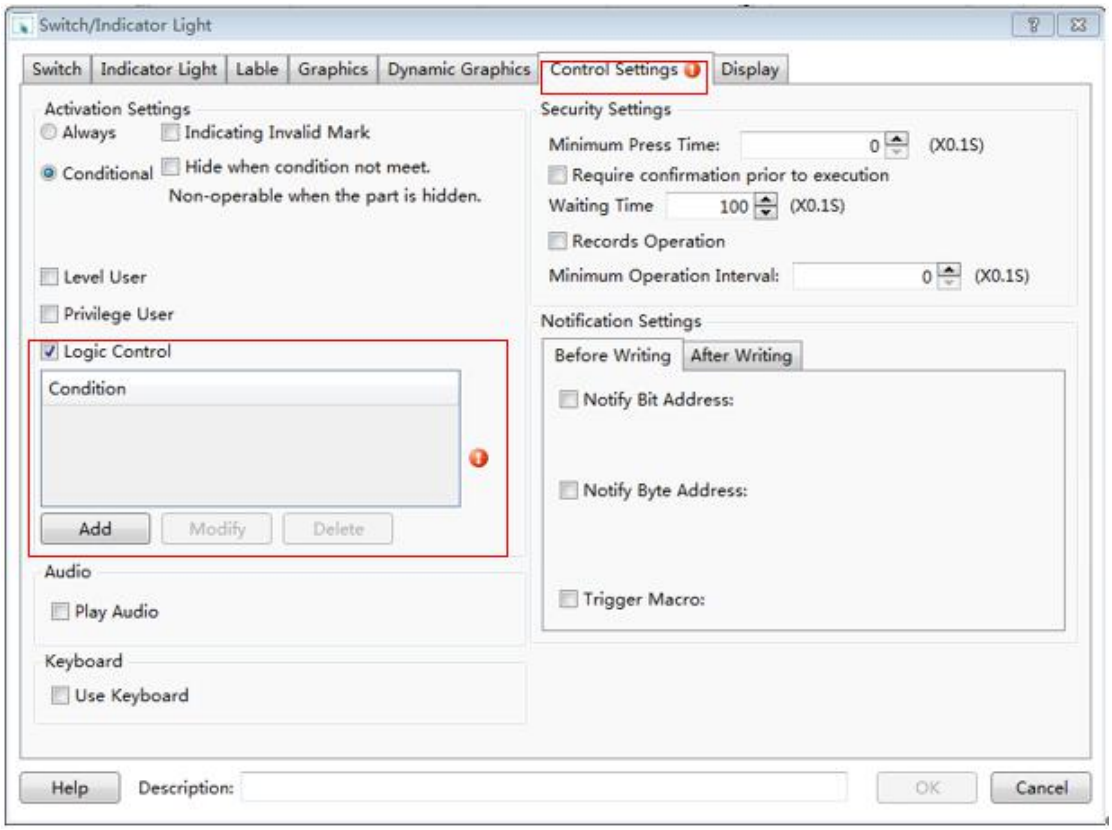
The unit is pixel, the number of pixels moved each time.

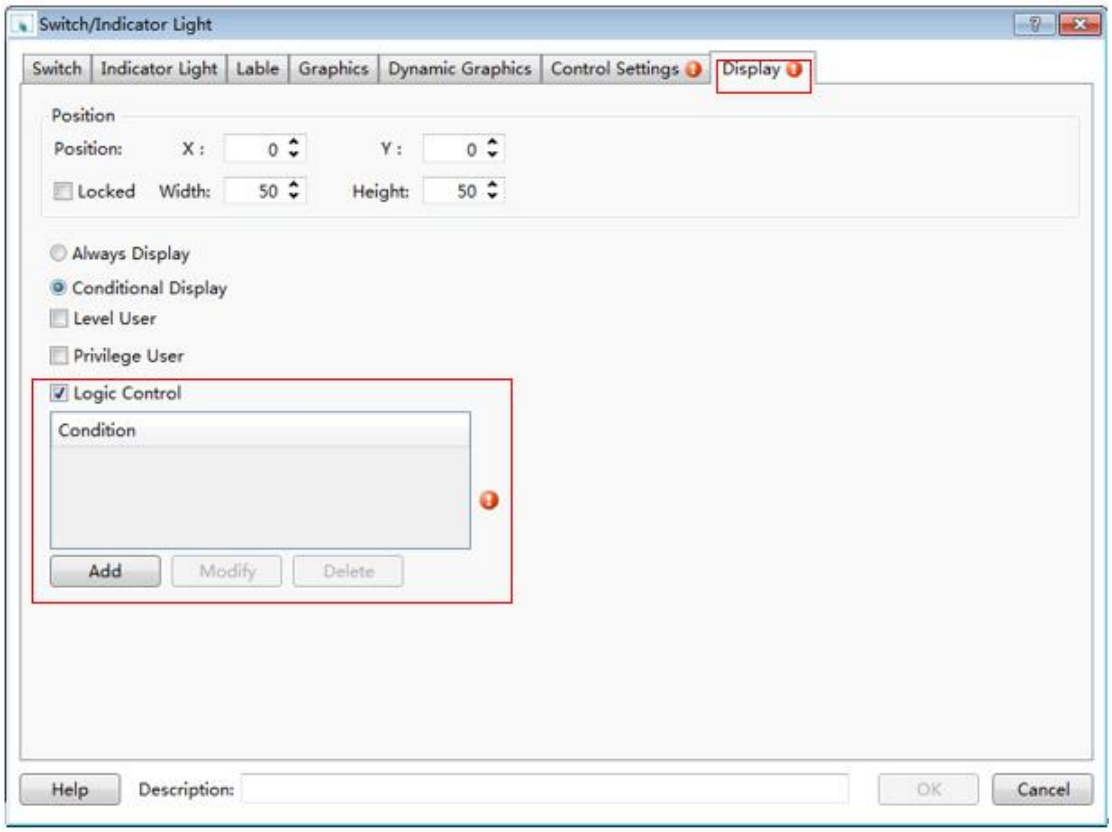
3 Pix Speed

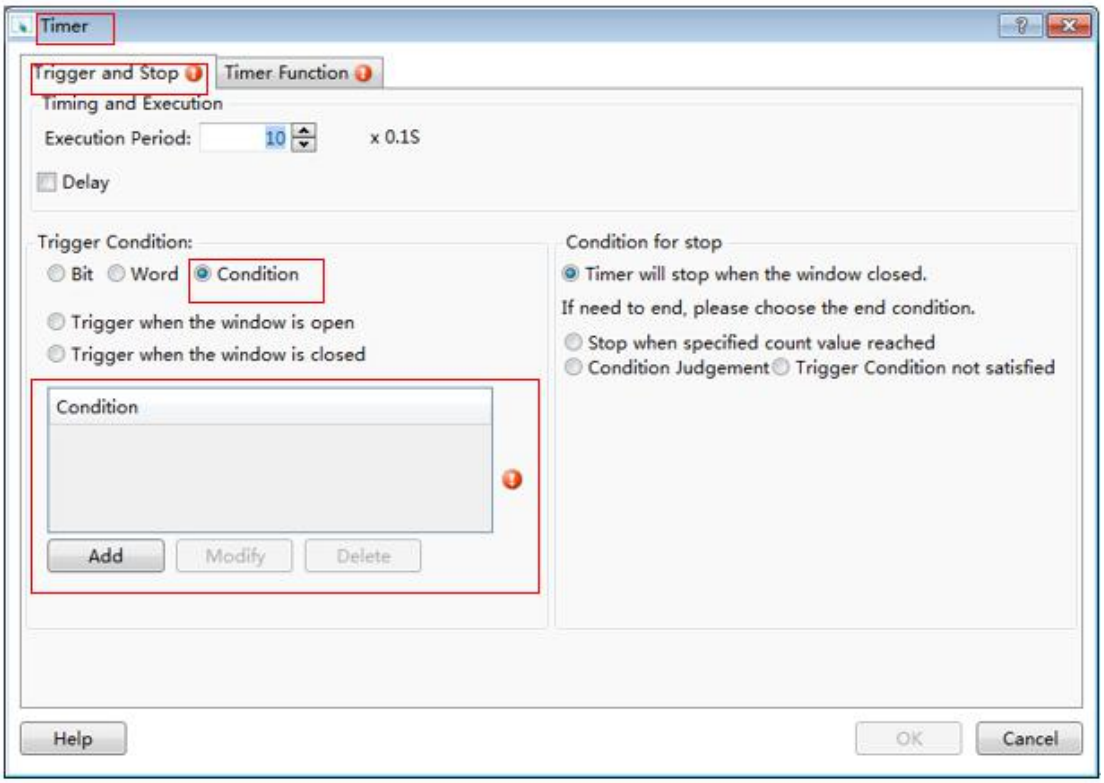
The unit of PixSpeed is 0.1 seconds. The range of PixSpeed is from 1 to 255. For example, setting PixSpeed10 means that the moving speed of fonts scrolling is 1 second. After moving out of the size range of the component, move from the rightmost side of the component to the left, the moving speed is still 10 pixels per second, and so on...

4.13.10 Logic Control

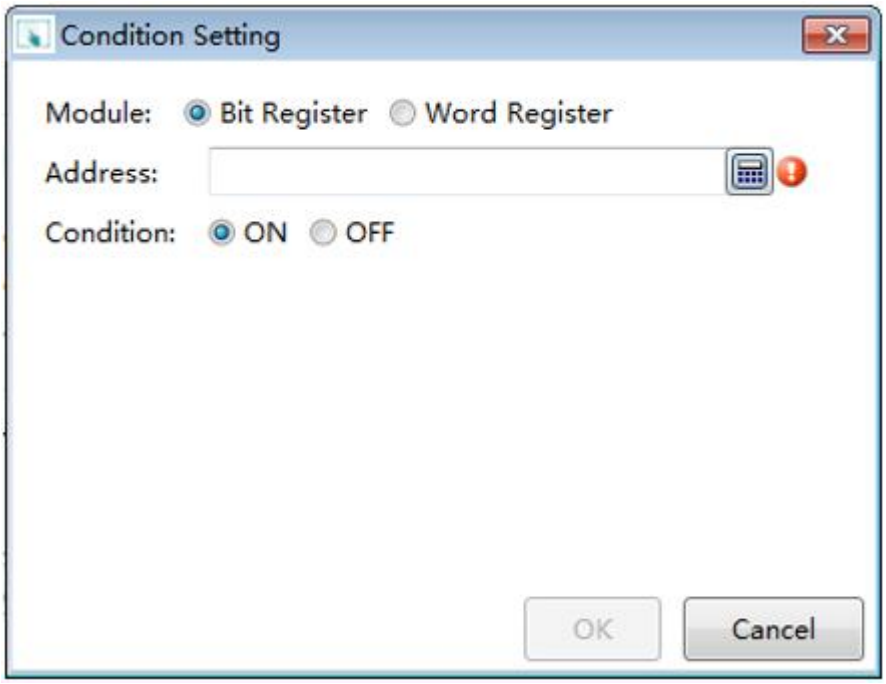
A very commonly used function in this software is
"Logical Condition Editor", through this editor, you can easily realize the processing and judgment of various logical relations, and can minimize the use of macro instructions. You can easily find the logic condition editor in many components or situations where you need to make conditional judgments. The most common ones are "control setting/condition enable/logic control" and "display setting/condition display/logic control" of each operating element. In the "timer" element and "timing data transmission" element, when the trigger condition is selected "condition judgment", this "logic condition editor" can also be opened. No matter where you open this editor, the initial interface of its editing interface is shown in the figure below (take the switch element "Control Settings/Condition Enable" as an example):


Switch/Indicator Light
Switch
Indicator Light
Lable
Graphics
Dynamic Graphics
Control Settings
Display
Activation Settings
Always
Indicating Invalid Mark
Conditional
Hide when condition not meet.
Non-operable when the part is hidden.
Level User
Privilege User
Logic Control
Condition
Add
Modify
Delete
Audio
Play Audio
Keyboard
Use Keyboard
Security Settings
Minimum Press Time:
0
(X0.1S)
Require confirmation prior to execution
Waiting Time
100
(X0.1S)
Records Operation
Minimum Operation Interval:
0
(X0.1S)
Notification Settings
Before Writing
After Writing
Notify Bit Address:
Notify Byte Address:
Trigger Macro:
Help
Description:
OK
Cancel

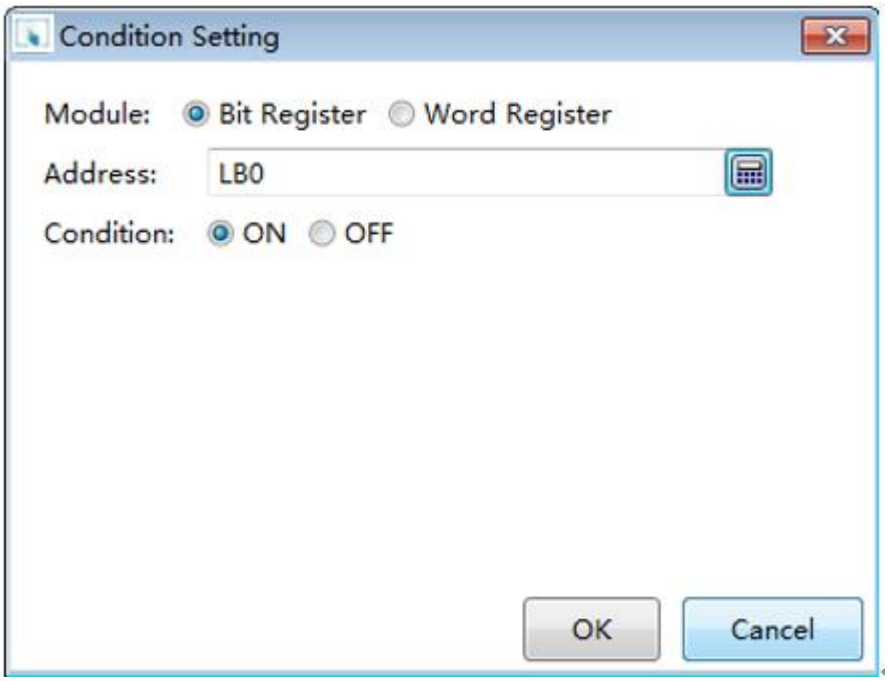

Switch/Indicator Light
Switch
Indicator Light
Lable
Graphics
Dynamic Graphics
Control Settings
Display
Position
Position:
X :
0
Y :
0
Locked
Width:
50
Height:
50
Always Display
Conditional Display
Level User
Privilege User
Logic Control
Condition
Add
Modify
Delete
Help
Description:
OK
Cancel



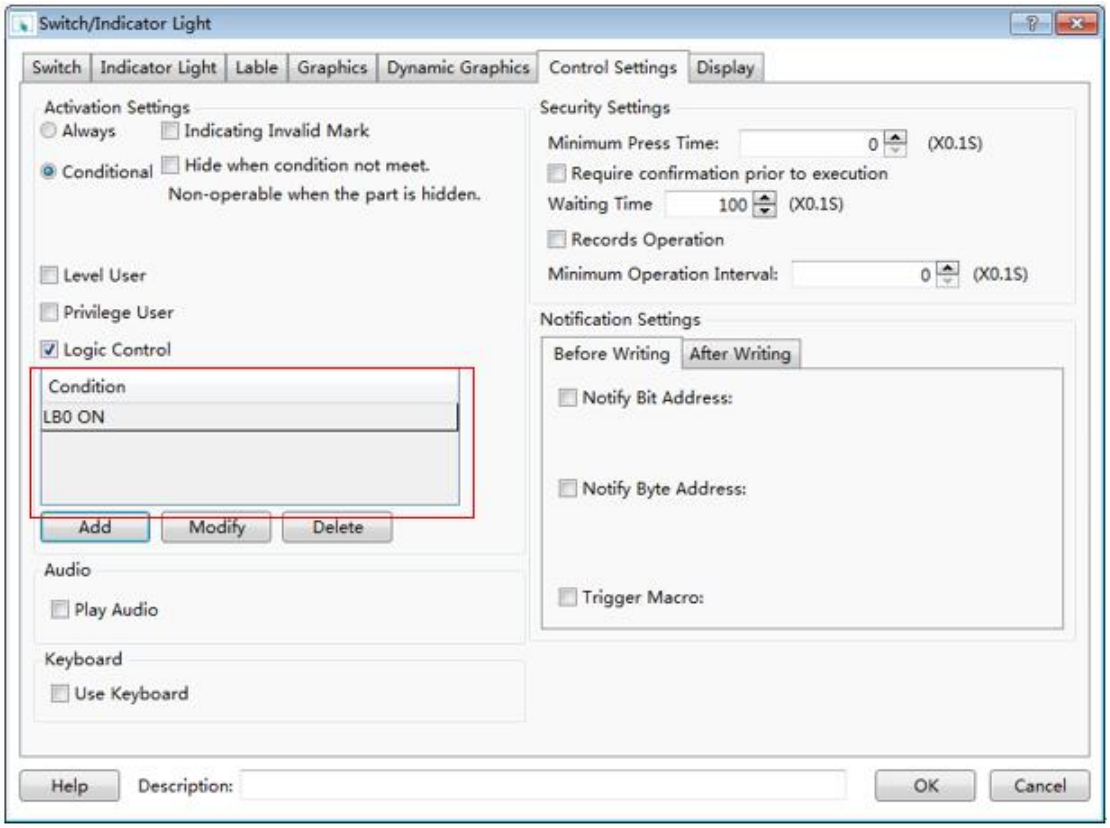
As you can see from the above picture, since no conditions have been set, there will be a red exclamation mark prompt. Now click "Add", and the following interface will pop up:



There are two address types: Bit Register and Word Register. The default selection is Bit Register. The logic condition judgment for Bit Register is "ON" or "OFF". The default selection is "ON". Click the tool button "  "or double-click the "Address" blank box, you can edit and select a "bit register". For example, set the address of "Bit Register" LB0, and set the Condition "ON". It is shown as below.

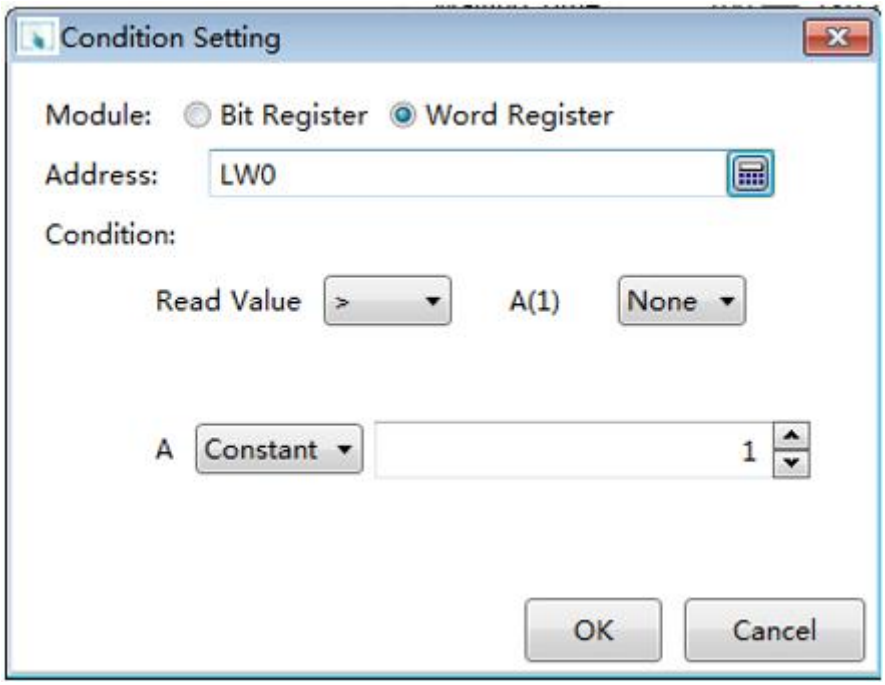


The red exclamation mark will disappear after you select an address for the condition. Click the button "OK" and the condition will be added to the Logic Control list. It is shown as below.

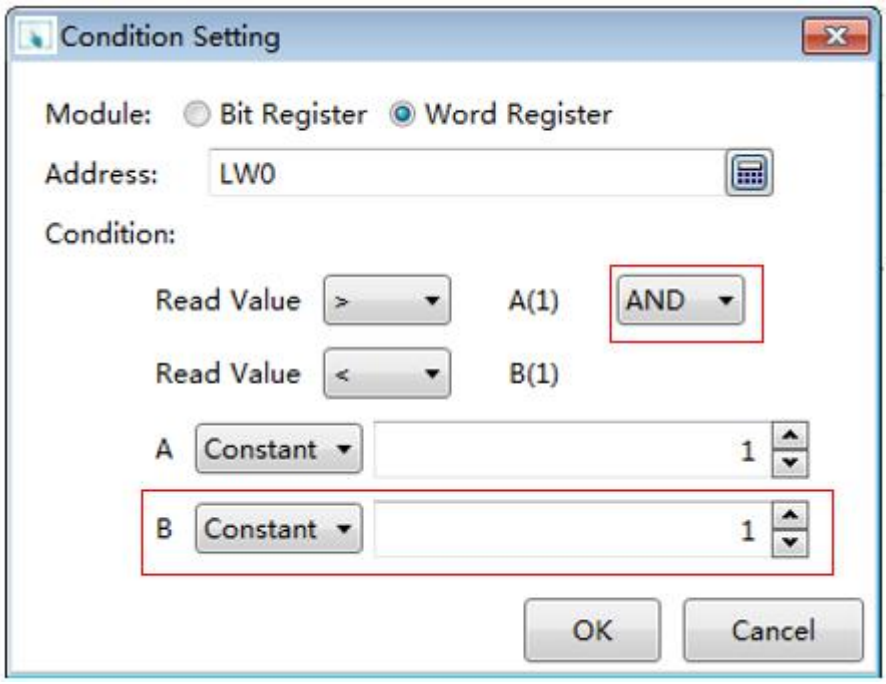


It can be seen from this list that the "switch" element can only be operated when LB0 is ON, otherwise the operation is invalid. If in actual applications, only the condition when LB0 is ON is not enough to meet the actual needs, for example, the value of the LW0 register needs to be judged to meet the requirements, then at this time, we will add another condition. Still click "Add", at this time we select "Word Register" behind "Module" and set the register address to LW0, as

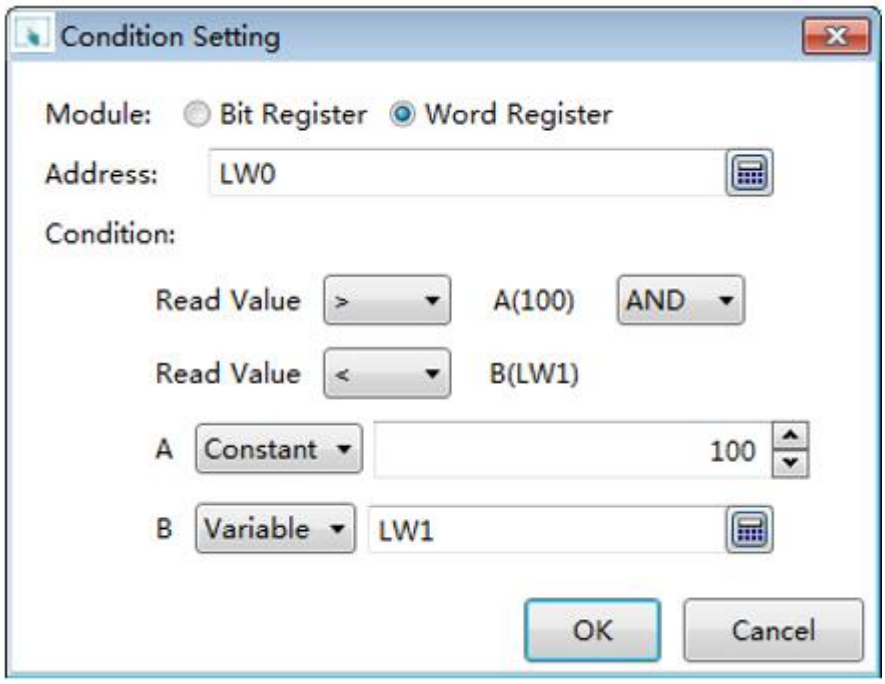
shown in the figure below：



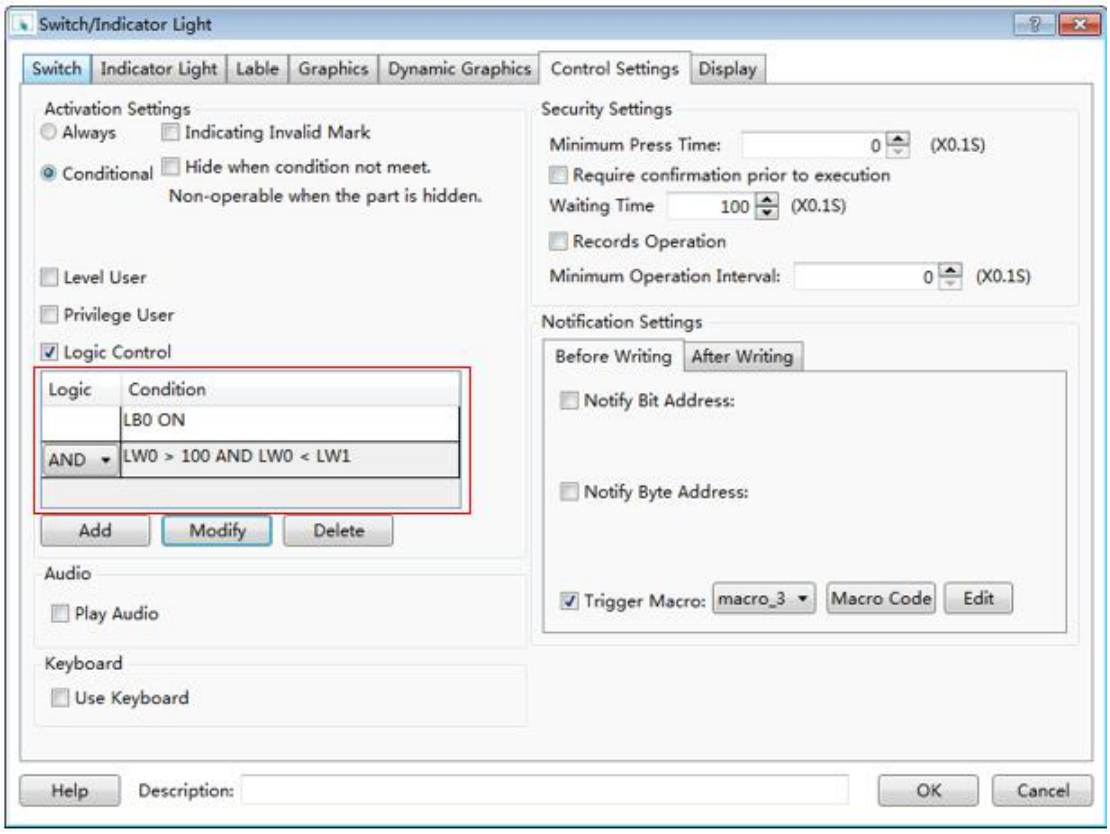
Click on the option list after "Read Value" under "Conditions", we can see that the conditions are "<", ">", ">=", "<=","==" and "!=" in total Six condition symbols. The default after the letter A(1) is "None". After clicking it, we can see that there are two options, "AND" and "OR". The default selected after the letter A in the next line is a constant. After clicking it, you can see that there is a "variable" to choose from. From this, it can be seen that when selecting the conditions of the "word register", we can combine the various logical conditions we need in practice from these three conditions. Assuming that we select "AND" for the attributes behind A(1), there will be an extra row of register condition selections, as shown in the following figure:.



If the condition we need is "LW0>100", and the condition after "is "LW0< LW1", then the condition after reading the value in the second line is selected as "<", after the attribute of letter B, we need to add "constant "Change to "Variable", the address is set to LW1, the screen after setting is as shown in the figure below:



The condition after setting is that the value of LW0 is greater than 100, and the value of LW0 is less than the value of LW1, the condition is true. After clicking "OK", you can add this condition to the condition list, as shown in the figure below:



As can be seen from the above figure, there are two conditions we set in the list. There is an option before the second condition. The default is "AND", which means that the first condition and the second condition are in a relationship with. After clicking open to see, there is an "attribute. It can be seen that the conditions before and after are not isolated, but can also be a logical "and" or a logical "or" relationship. In this way, only the logic after all the list conditions are calculated When it is "True", the conditional enable is "True", and the component can be operated or "displayed", otherwise it cannot be operated or "not displayed" is displayed.

In addition to the "Add" button below the list, you can also see the "Modify" and "Delete" buttons. When a certain condition in the list is selected, click on "Modify" to modify the condition, or Double-click a condition in the list to open the condition editor for modification. When you select a condition in the list and then click the "Delete" button, the selected condition will be deleted from the list.

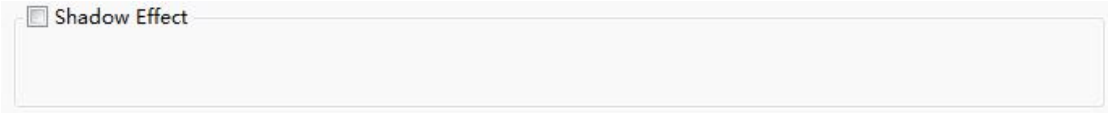
Note: When there are multiple conditions in the list, they are executed in order from top to bottom.

4.13.11 Shadow Effect

During configuration, you can set the shadow effect for vector graphics, bitmaps, component graphics and text, etc. The setting panel is as shown in the figure below:

1. Start the shadow effect:

The setting options will be displayed only after the check box in front of the shadow effect is checked, otherwise the setting options will be hidden:



1 Color

You can use the color palette to set the shadow color.

You can also use the tool "  " to set the shadow color.

2 Shadow Excursion

The Shadow Excursion includes the X-axis (horizontal) direction offset and the Y axis (vertical)

direction offset. The unit is pixel.

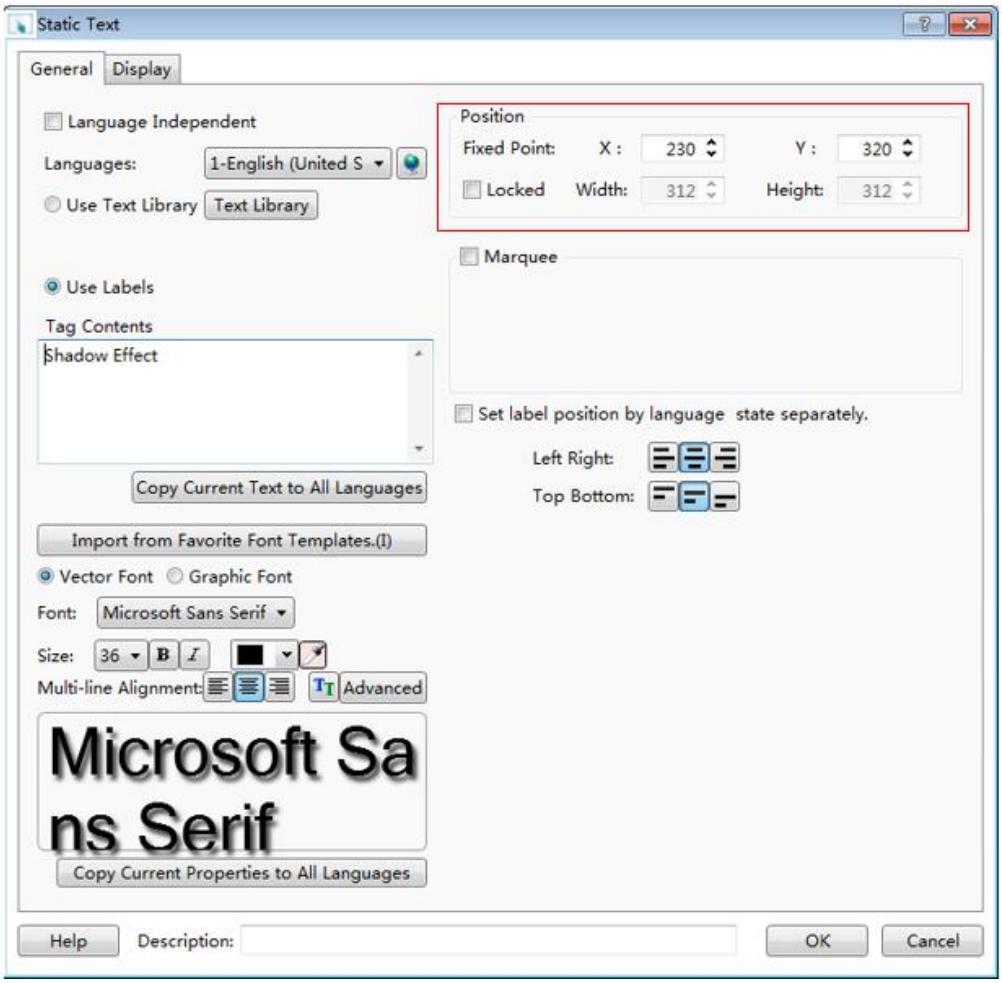
Note:

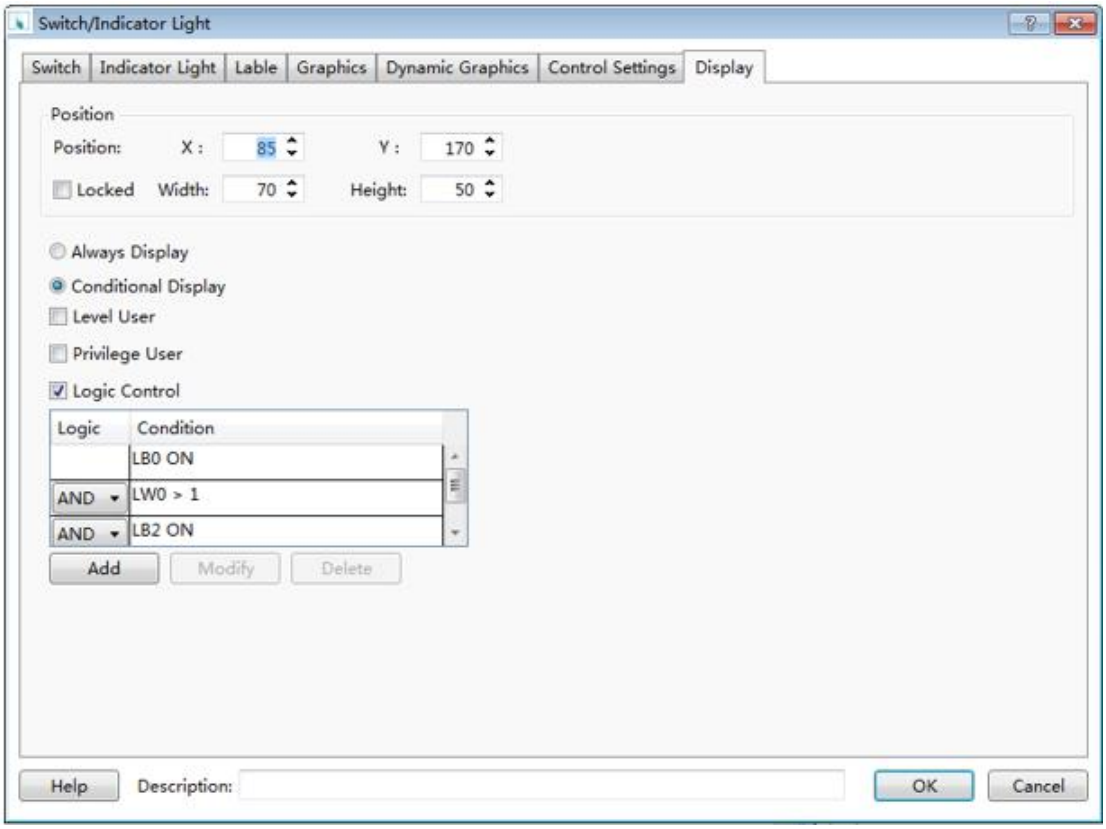
- The coordinates in this software refer to:Detailed manual/General functions/Drawing/ Position.
- The range of Shadow Excursion is: -16 to 16.The positive number for X-axis represents the shadow direction is to the right.The positive number for Y-axis represents the shadow direction is downward. The negative number represents the contrary direction.

The display results are shown as below.

4.13.12 Position

During configuration, each component has a location option. The location options of some components are in the "General Properties" tab, and the location options of some components are in the "Display Settings" tab:



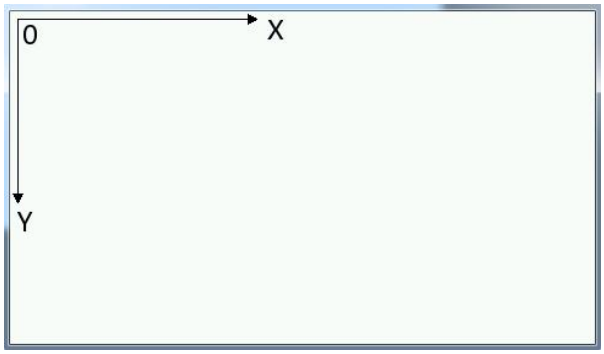


Function Description: The X and Y attributes are used to set the display position of the component in the window. There are two types of titles during use. One is "Fixed point coordinates:", as shown on the left, and the other is "Position:", as shown above as shown on the right, using "fixed point coordinates:" as the label, the starting position of the component indicated by X and Y is determined by the "fixed point", please refer to rotation for details; using "position:" as the label, X and Y Both indicate the position of the upper left corner of the component.

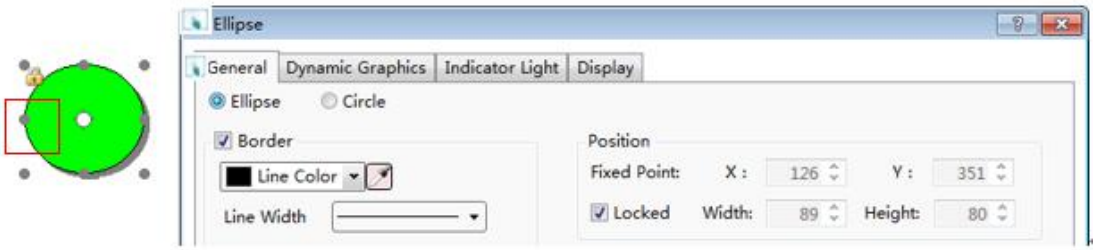
Note:

The coordinate system of this software is shown in the figure below, the upper left corner is the origin, the horizontal X axis, the X axis right, the vertical Y axis, and the Y axis down.

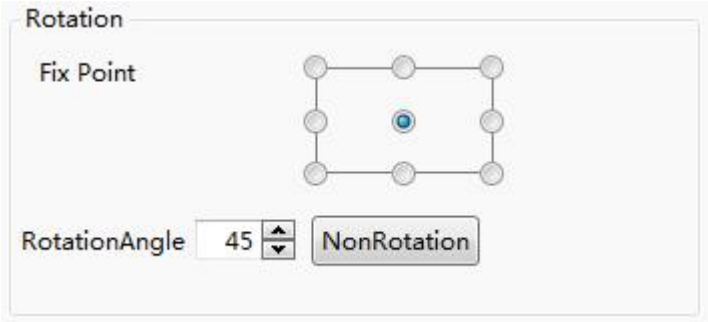
The width and height attributes are used to set the width and height of the component. If a certain attribute cannot be set, it means that the attribute is unavailable, as shown in the figure below:



Lock: After checking the lock, the position of the component is locked, and its position and size cannot be edited. After the component is selected on the configuration interface, the upper left corner of the component will display a lock symbol:



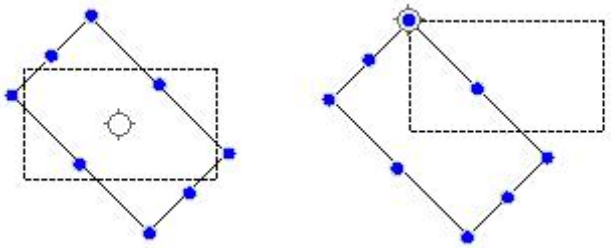
4.13.13 Rotation



The function of "Rotation" can adjust the display angle of the components such as static graphics, vector graphics and other components. This function is a static function. That is, the display angel is not adjusted in the HMI if you set the display angle in the "Rotation" property. If you want to dynamically adjust the display angle of the graphics, please refer to: Detailed manual/General functions/Dynamic Graphics.

1 Fix Point

Each figure has nine fixed points. The middle fixed point is selected as the default by the system. You can change the fixed point. The result is different after the figure rotates around the different fixed point. For example, a rectangle rotates the center fixed point and another rectangle rotates the upper left fixed point. It is shown as below.



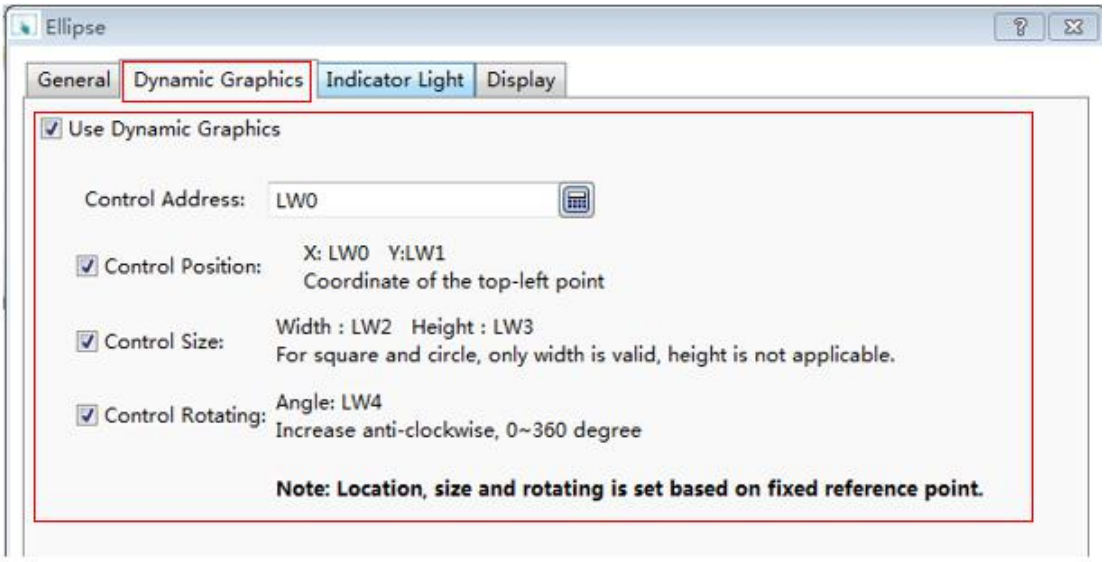
2 Rotation Angle

The Rotation Angle is used to set the clockwise rotation angle of the component. This angle range is 0-360 degrees.

3 Non Rotation

You can quickly set the display angle to zero by clicking the button “on Rotation".

4.13.14 Dynamic Graphics



For components such as static pictures and vector graphics, you can edit their position, size and rotation during configuration. The edited graphics will be statically displayed on the HMI. If you want to dynamically adjust the position, size and rotation of the graphics during the operation of the HMI, you need to use the dynamic graphics function.

Dynamic graphics function-use registers to dynamically control the position, size and rotation of graphics.

(1) Use Dynamic Graphics

If you want to use the dynamic graphics function, please check the "Use dynamic graphics" checkbox first.

(2) Control Address

Fill in the first address of the dynamic graphics control register and the editing method of the word register address, please refer to: Detailed manual/General function/Address editor/Standard ByteAddress Input.

(3) Control Position

If you want to dynamically control the position of the component, please check the control position check box. When controlling the position, you need to use two word registers. The register address will be displayed behind the control position. The register will control the absolute coordinates of the fixed point of the component on the screen. point. For the coordinate system on the touch screen, please refer to: Detailed manual/General function/Position.

(4) Control Size

If you want to dynamically control the size of the component, please check the "Control size" check box. When controlling the size, you need to use two word registers to control the width and height of the component separately. The register address will be displayed behind the control size. For a square for components with the same width and height as a perfect circle, only the register that controls the width is valid.

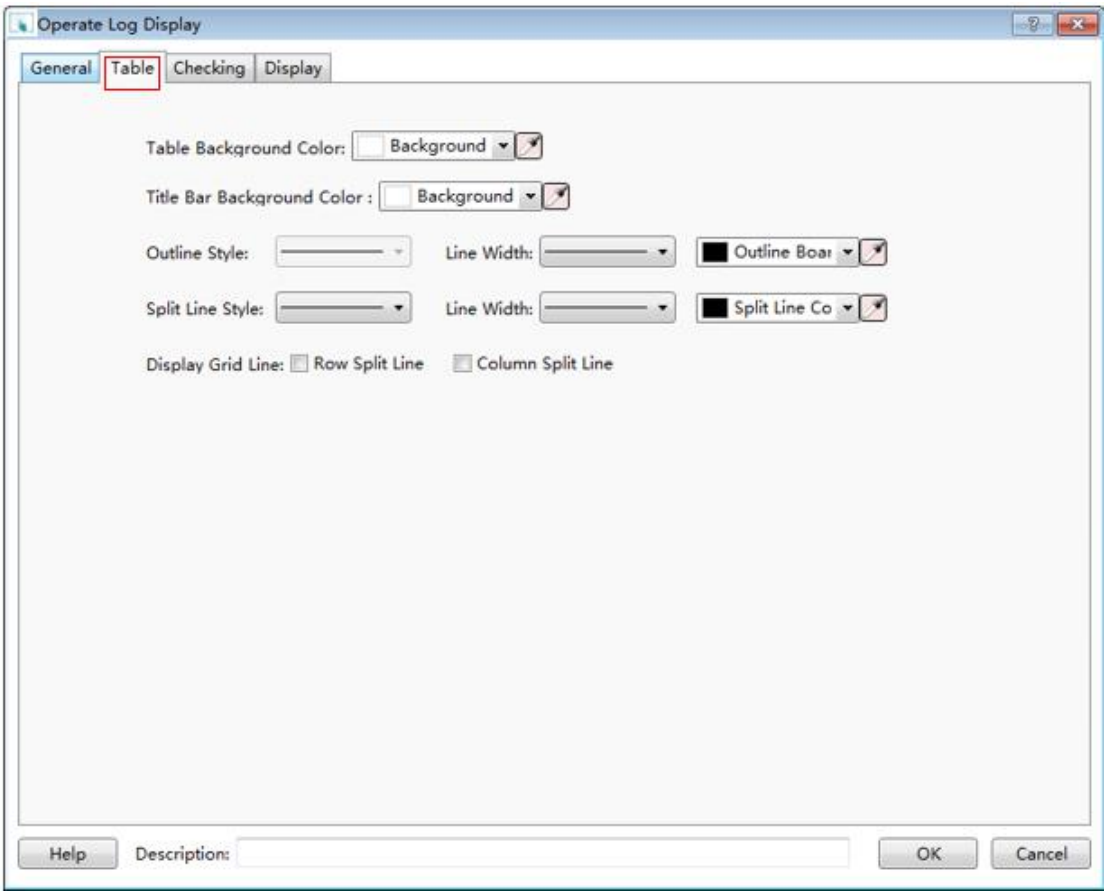
(5) Control Rotating

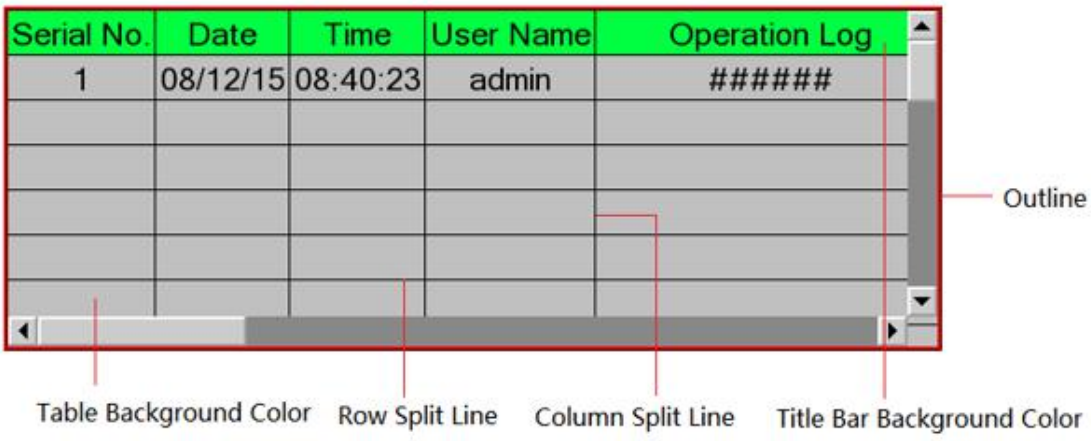
If you want to dynamically control the rotation of the component, please check the "Control rotation" check box. When controlling the rotation, a word register is required. The register address will be displayed behind the control rotation. The register will control the clockwise rotation angle of the component. The range is 0 360 degrees.

Note:

The control of position, size and rotation is based on the "fixed point" of the component. For the description of the fixed point, please refer to：Detailed manual/General function/Rotation.

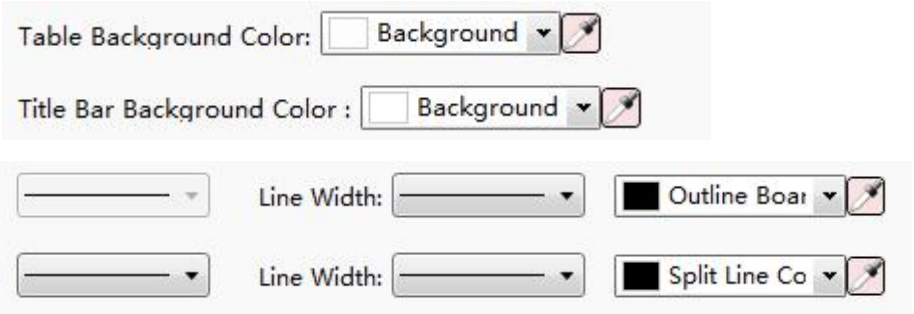
4.13.15 Table Drawing



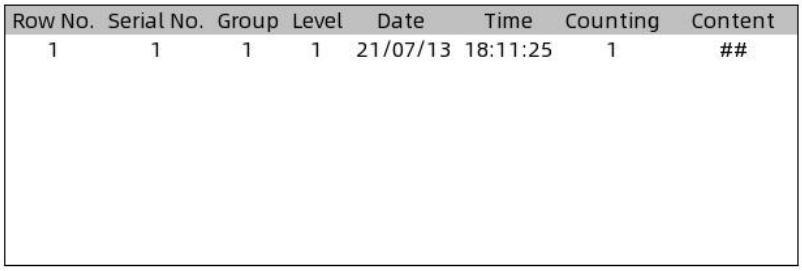


Background color

The table background color and title bar background color can be changed.



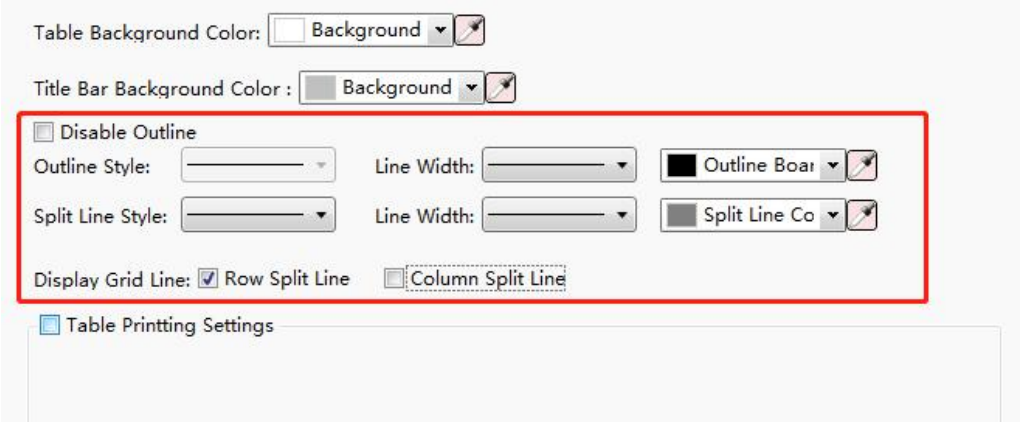
The result is as follows:



Row No.	Serial No.	Group	Level	Date	Time	Counting	Content
1	1	1	1	21/07/13	18:11:25	1	##

Line type

You can change the outer frame line type, divide the linear line width and the corresponding color.

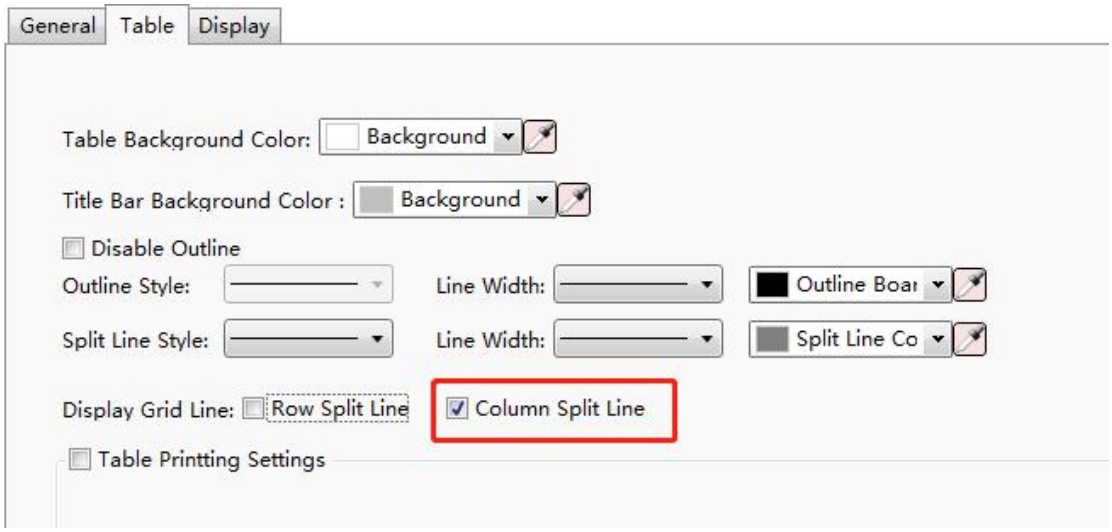


The result is as follows:

Row No.	Serial No.	Group	Level	Date	Time	Counting	Content
1	1	1	1	21/07/13	18:11:25	1	##

Grid

Set the display and hide of the network grid

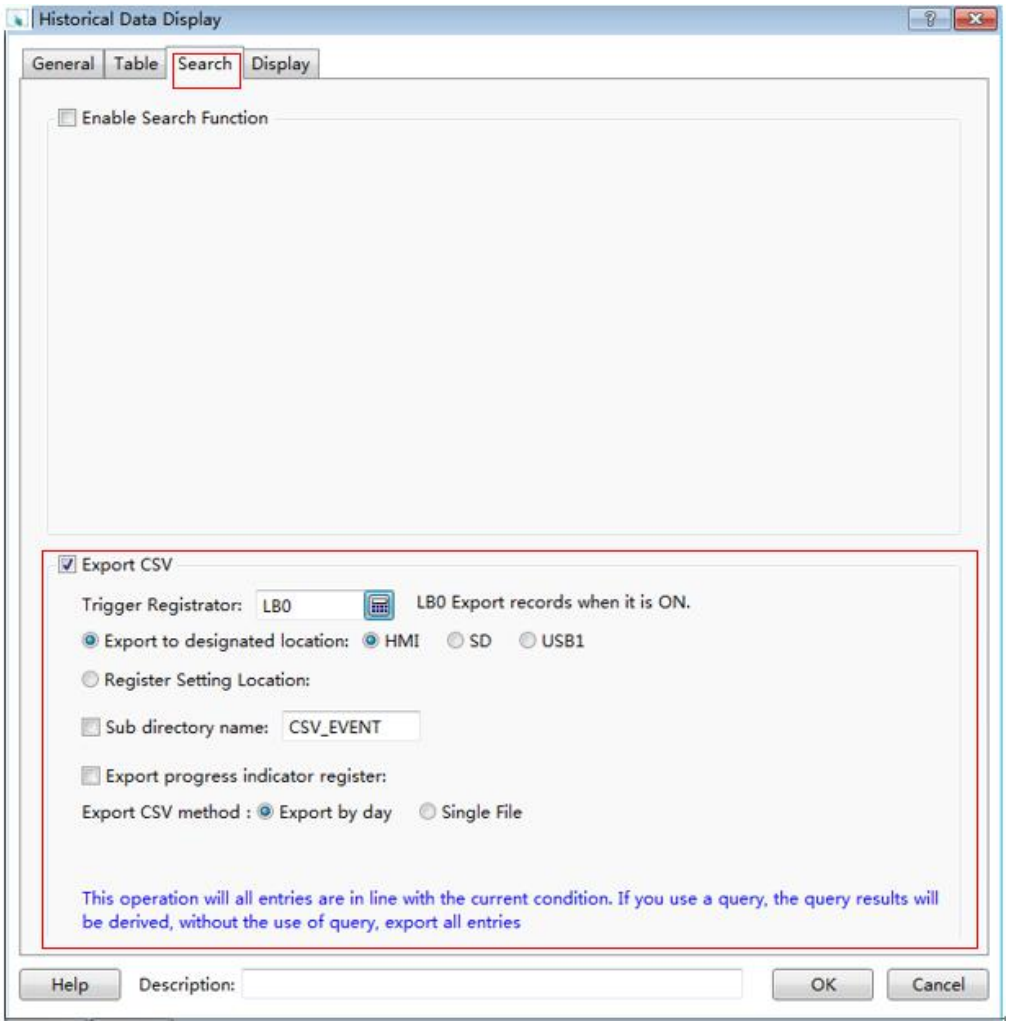


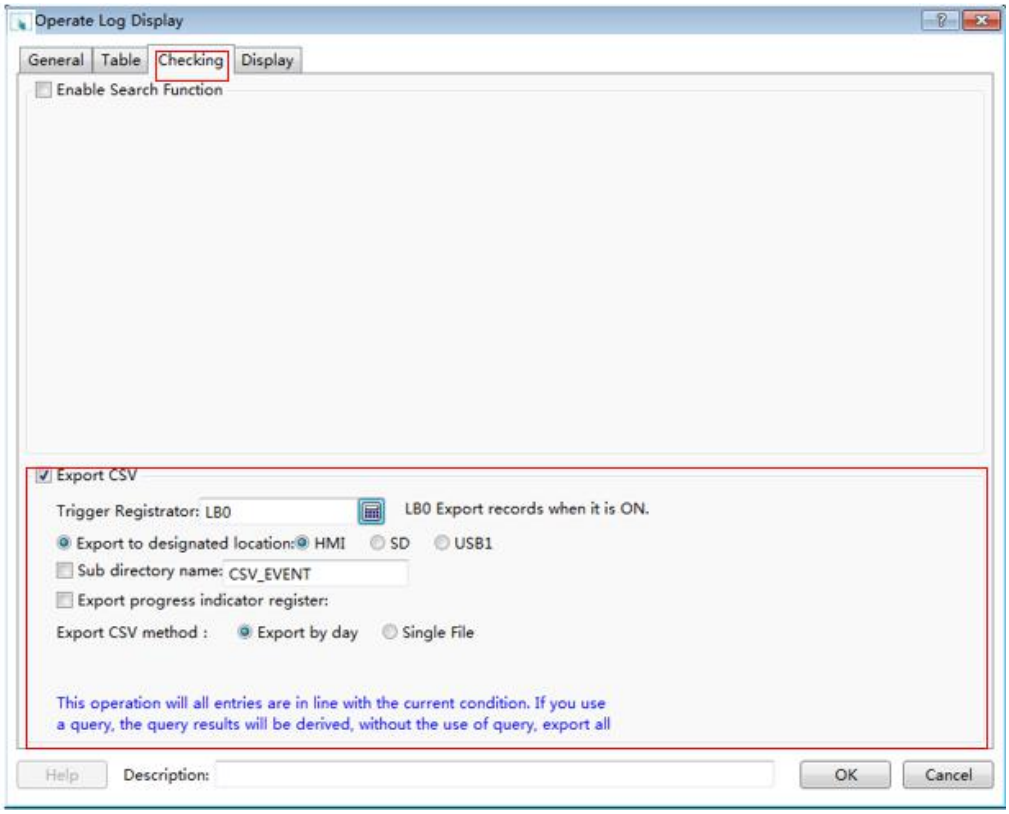
The result is as follows:

Row No.	Serial No.	Group	Level	Date	Time	Counting	Content
1	1	1	1	21/07/13	18:11:25	1	##

4.13.16 Export CSV

When you need to export the tabular data in the touch screen into a file that can be recognized by the computer, you can use the export CSV function. This function is generally in the "Query" tab of the list element, such as historical data, alarm and event list, operation log, etc. In the component, the export function will be used.


Historical Data Display
General
Table
Search
Display
Enable Search Function
Export CSV
Trigger Registrator:
LB0
LB0 Export records when it is ON.
Export to designated location:
HMI
SD
USB1
Register Setting Location:
Sub directory name:
CSV_EVENT
Export progress indicator register:
Export CSV method :
Export by day
Single File
This operation will all entries are in line with the current condition. If you use a query, the query results will be derived, without the use of query, export all entries
Help
Description:
OK
Cancel


Operate Log Display
General
Table
Checking
Display
Enable Search Function
Export CSV
Trigger Registrator:
LB0
LB0 Export records when it is ON.
Export to designated location:
HMI
SD
USB1
Sub directory name:
CSV_EVENT
Export progress indicator register:
Export CSV method :
Export by day
Single File
This operation will all entries are in line with the current condition. If you use a query, the query results will be derived, without the use of query, export all
Help
Description:
OK
Cancel

(1) Trigger Register

The export of CSV file needs to use a bit register to trigger. When this bit register changes from OFF to ON, the export action will be triggered and the contents in the list will be exported to the CSV file. Under normal circumstances, we place a bit switch in the window to control the register. For register input method, please refer to:: Detailed manual/General function/Address editor/Standard Bit Address Input.

(2) Export to designated location

The function of "Export to designated location" supports exporting the CSV file to HMI, SD card or USB disk. The corresponding options are: HMI, SD, USB1.

(3) Subdirectory name

You can give a sub directory name for the exporting location.

Note:

Please use the character component to input the sub directory name if you use registers to provide it. The method to input the register is referred to: Detailed manual/General function/Address editor/Standard ByteAddress Input.

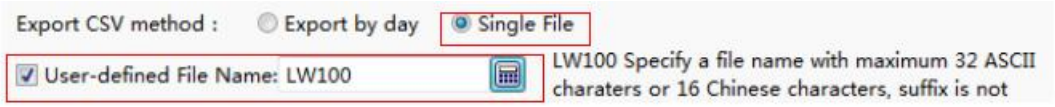
(4) Export progress indicator register

A register can be given to display the exporting progress if the data is large. It is shown as below.

The exporting progress uses the percentage of completion (0-100) to represent. You can use numeric value display component or a bar graph component to display.

(5) Export CSV method

The CSV export method is divided into day-by-day export and single-file export. When you select the day-by-day export, the exported files will generate different CSV files according to the date, and when you choose the single-file export, it will be exported into a single file. When exporting to a single file, you can choose whether to customize the file name. If you don't check it, it will be named automatically according to the default naming rule. After checking, you can specify a register address and temporarily enter the file name when exporting.



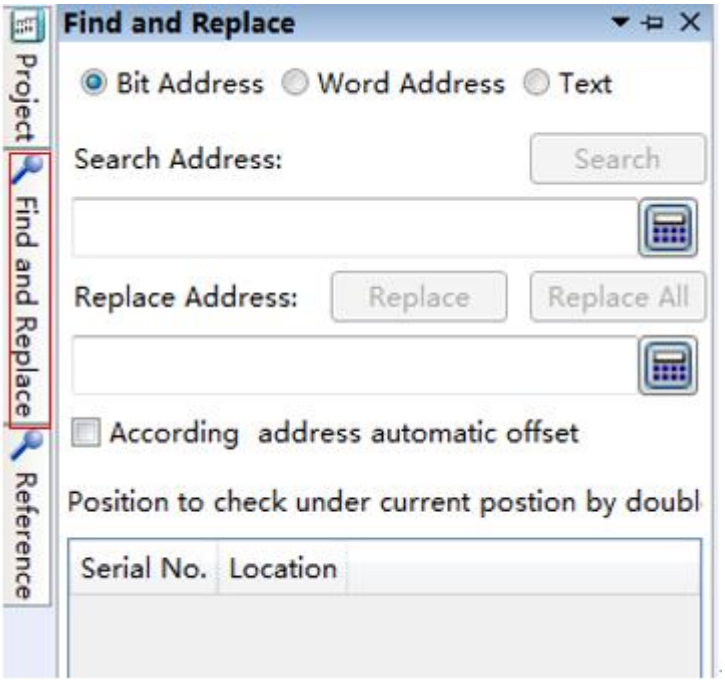
When configuring, please use the character input component to input a customized file name, and limit the length of the file name to 32 ASCII characters or 16 Chinese characters.

Note:

This operation will export all entries in the current condition. If you use the function of "Enable Search Function", the current result of searching will be exported.

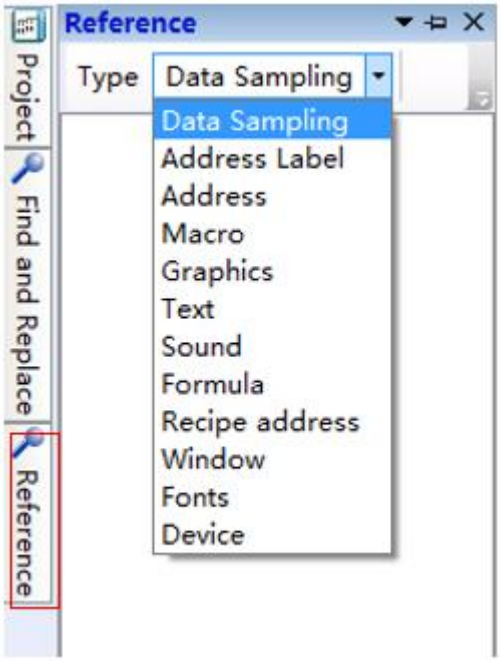
5 Use Topic

5.1 Find and Replace

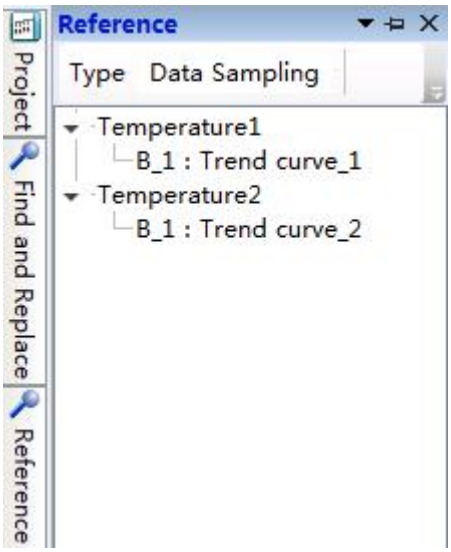


5.2 Reference

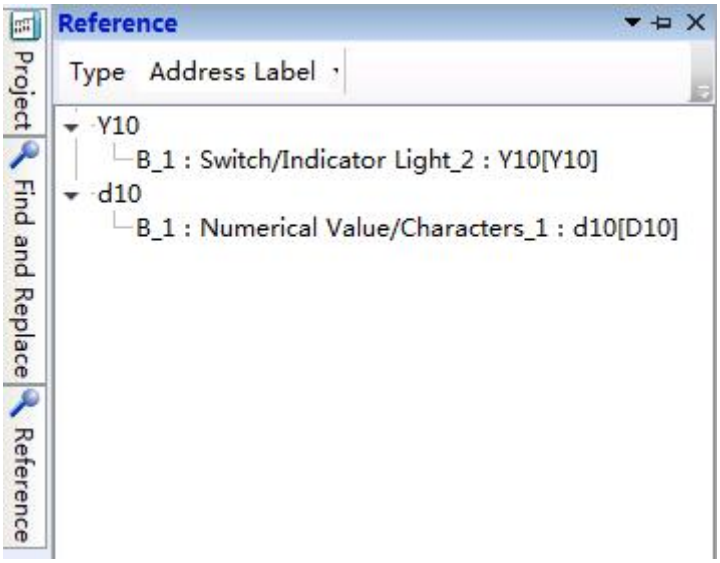
The citation function is to list and quickly locate the cited places in the project by listing address tags, data sampling, macro instructions, etc., which is convenient for searching.



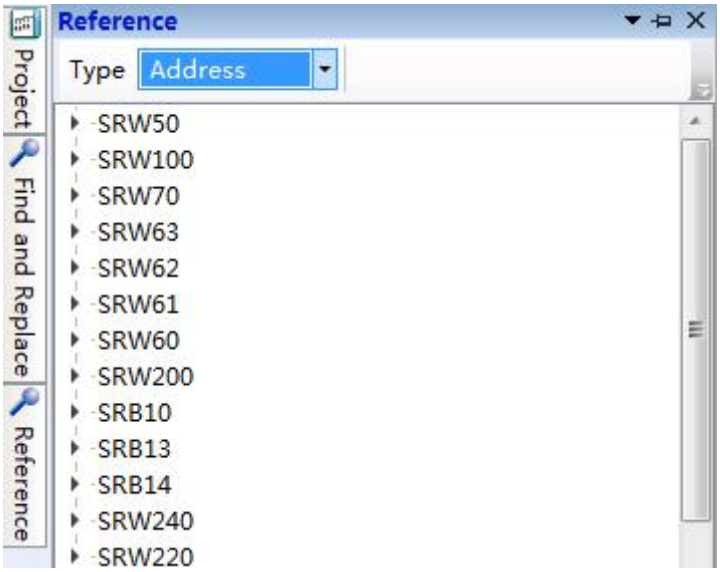
For example, all the uses of "Data Sampling" in the current project are listed in the following after select it.



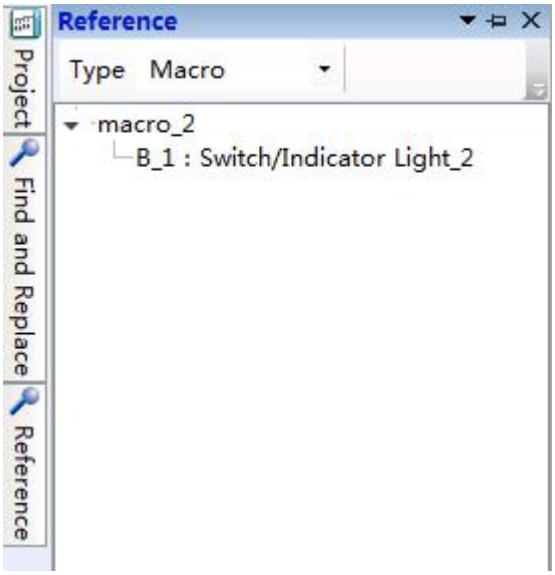
For example, all the uses of "Address Label" in the current project are listed in the following after selecting it.



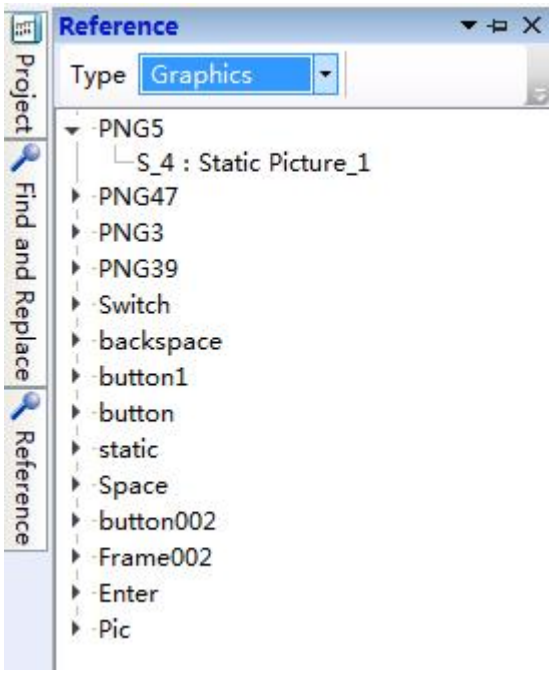
For example, all the uses of "Address" in the current project are listed in the following after selecting it.



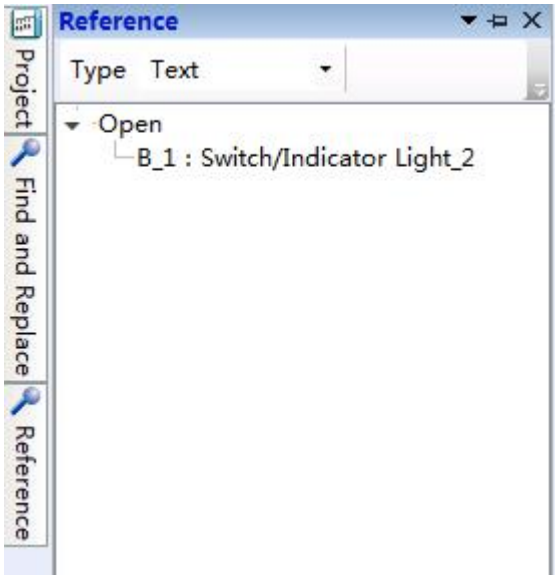
For example, all the uses of "Macro" in the current project are listed in the following after selecting it.



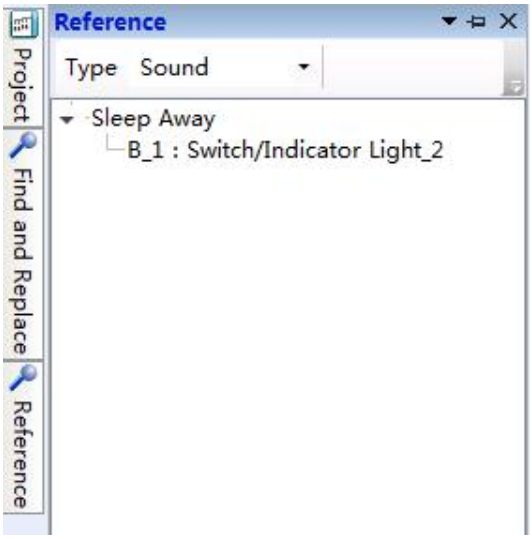
For example, all the uses of "Graphics" in the current project are listed in the following after selecting it.



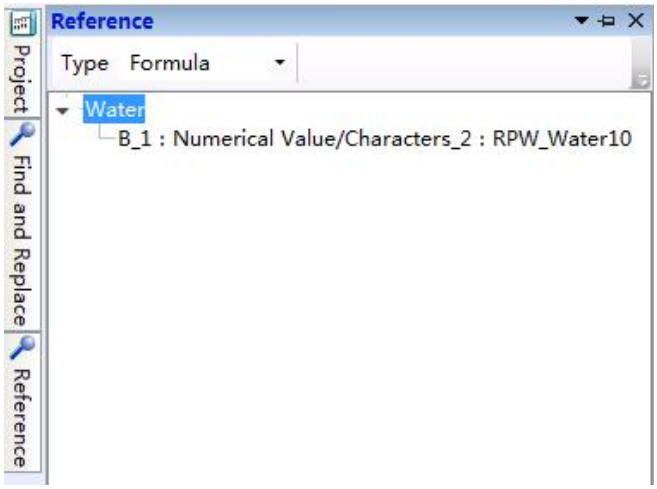
For example,all the uses of "Text" in the current project are listed in the following after selecting it.



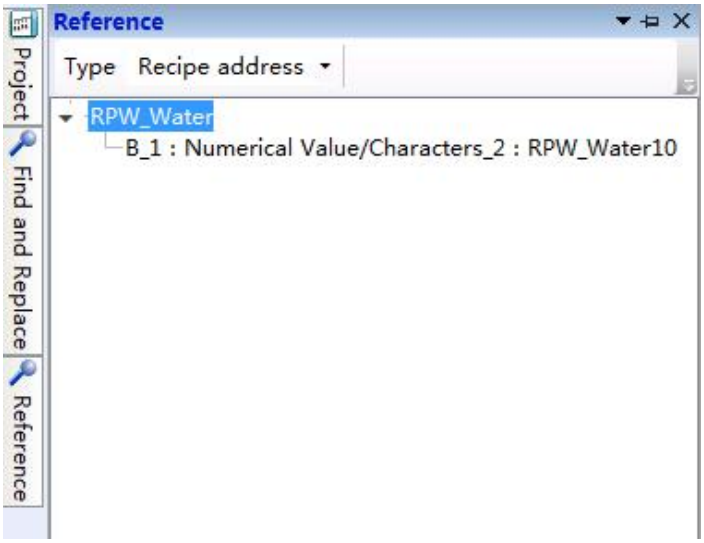
For example,all the uses of "Sound" in the current project are listed in the following after selecting it.



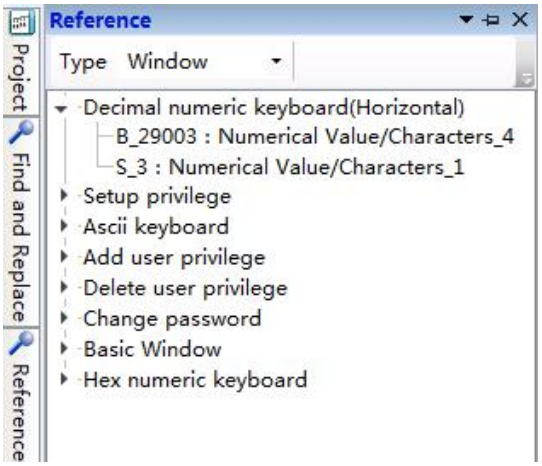
For example, all the uses of "**Formula**" in the current project are listed in the following after selecting it.



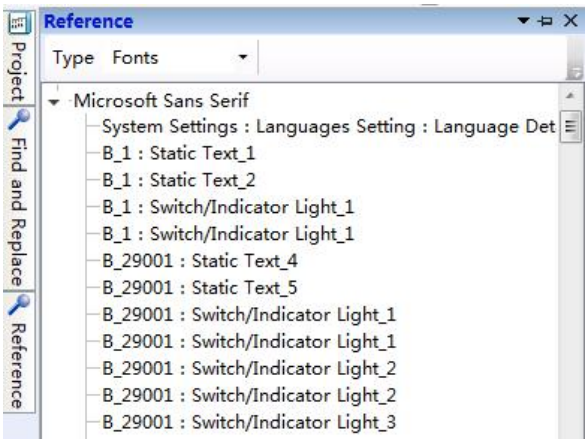
For example, all the uses of "**Recipe Address**" in the current project are listed in the following after selecting it.



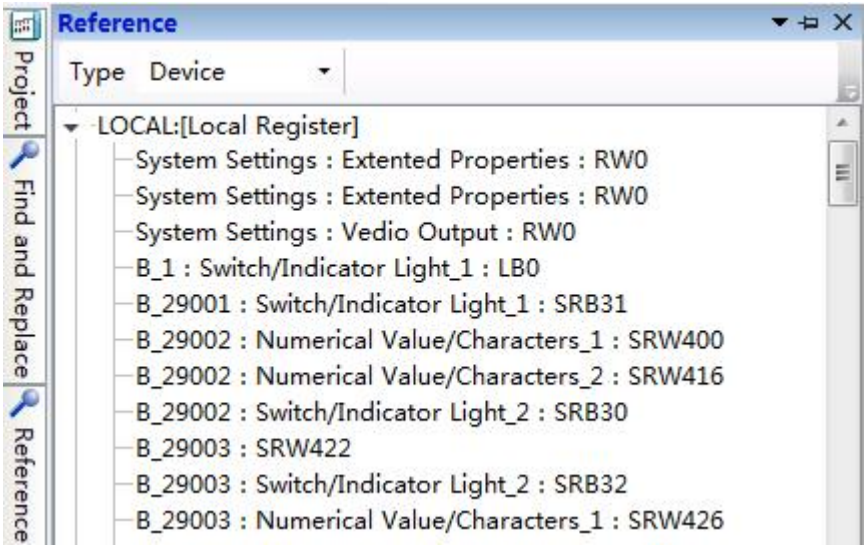
For example, all the uses of "**Window**" in the current project are listed in the following after selecting it.



For example, all the uses of "**Fonts**" in the current project are listed in the following after selecting it.

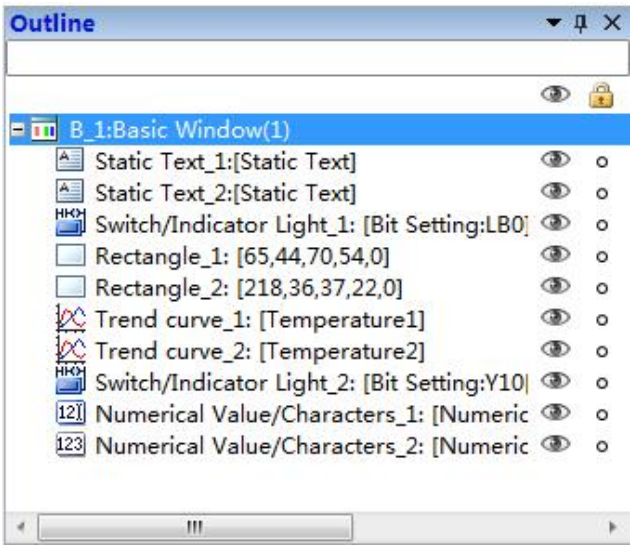


For example, all the uses of "**Device**" in the current project are listed in the following after selecting it.

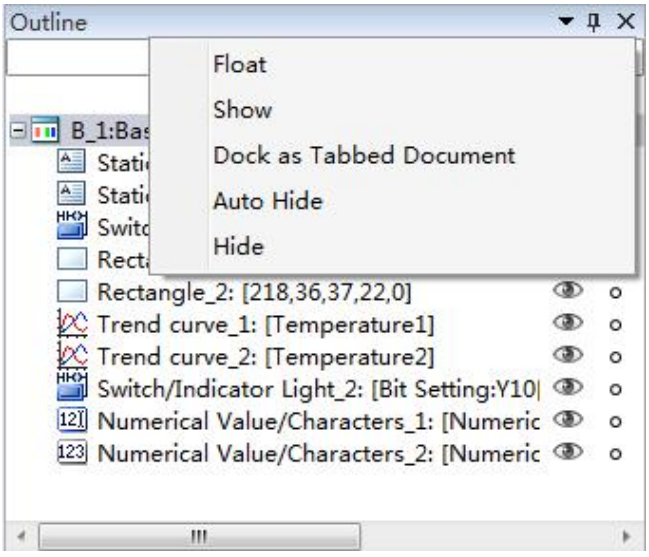


5.3 Outline

It will display all components of the current work window in the "**Outline**" window.



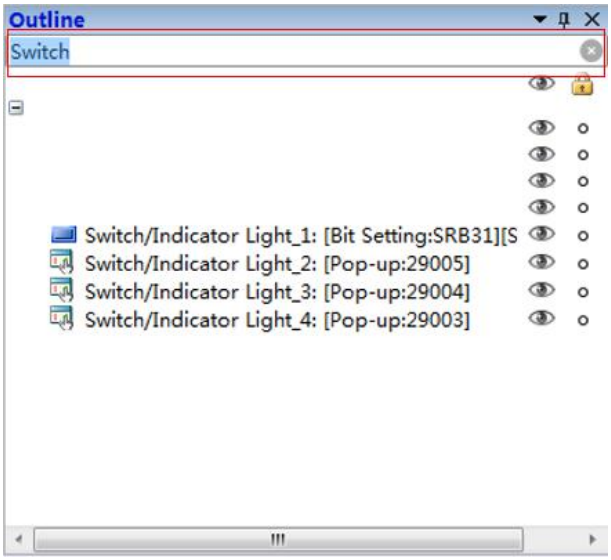
The tool button " " on the top right corner which is used to control the display mode of the outline window. The tool button " " is used to make the outline window show or auto hide. The tool button " " is used to close the outline window.



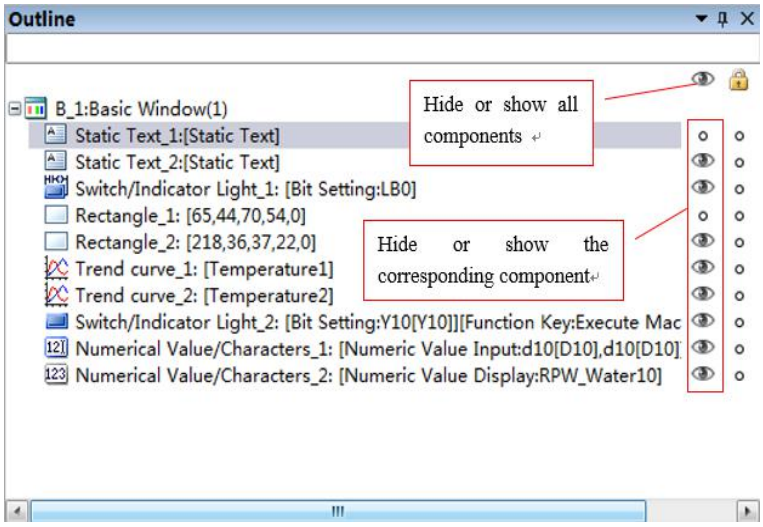
Note:

You can check "**Outline**" from the "**View**" menu and make the outline window display again after the Outline window is closed.

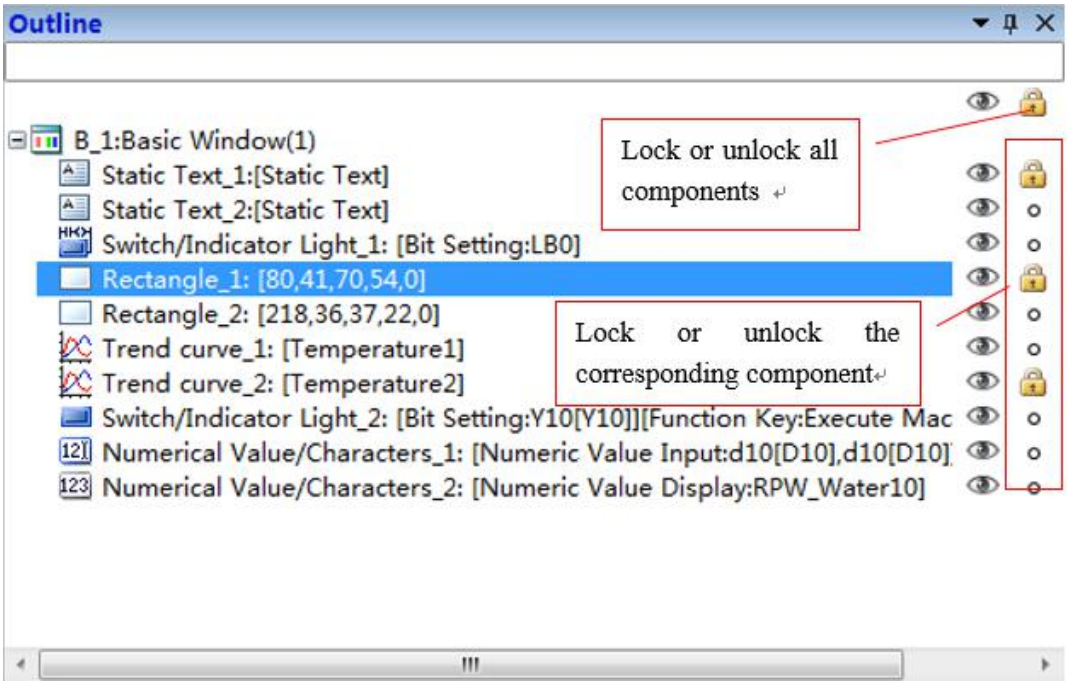
You can find the component by inputting the component name in the blank text box on the top of the outline window and click the "**Enter**" key. All the components display can be restored by clear the text box and click the "**Enter**" key.



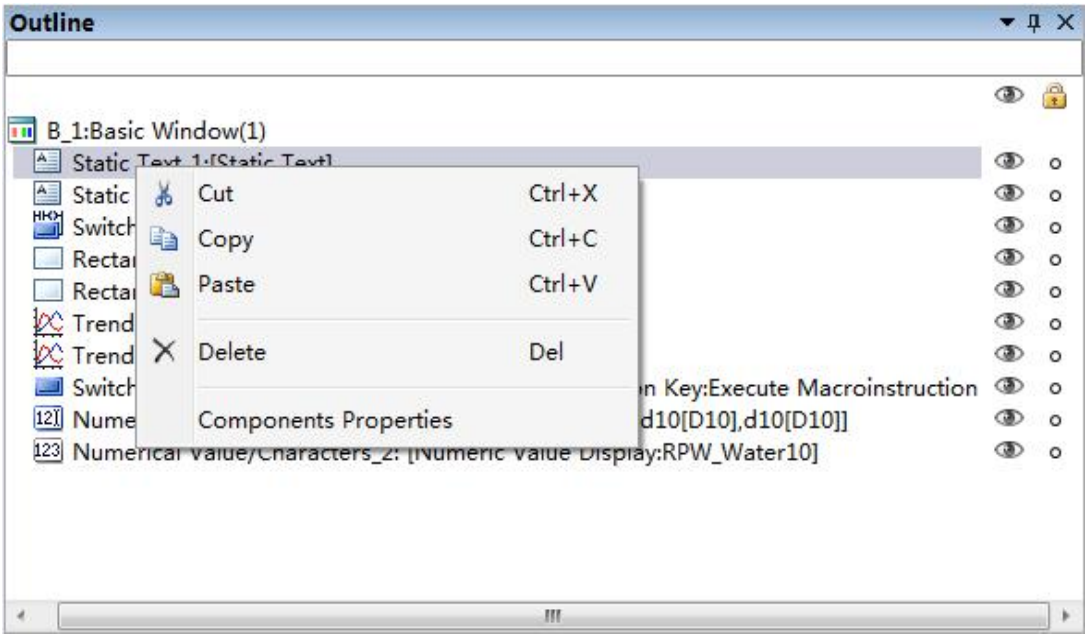
When you click the little eye tool " " except the top one, it will change to " " and hide the corresponding component in the window. When you click it again, it will change to " " and make the corresponding component show in the window. The top little eye tool " " will control all components hide or shown by clicking it.



When you click the right tool " ", it will change to " " and lock the corresponding component in the window. When you click it again, it will change to " " and unlock the corresponding component. The top tool " " will control all components locked or unlocked by clicking it. The component will not move if it is locked.



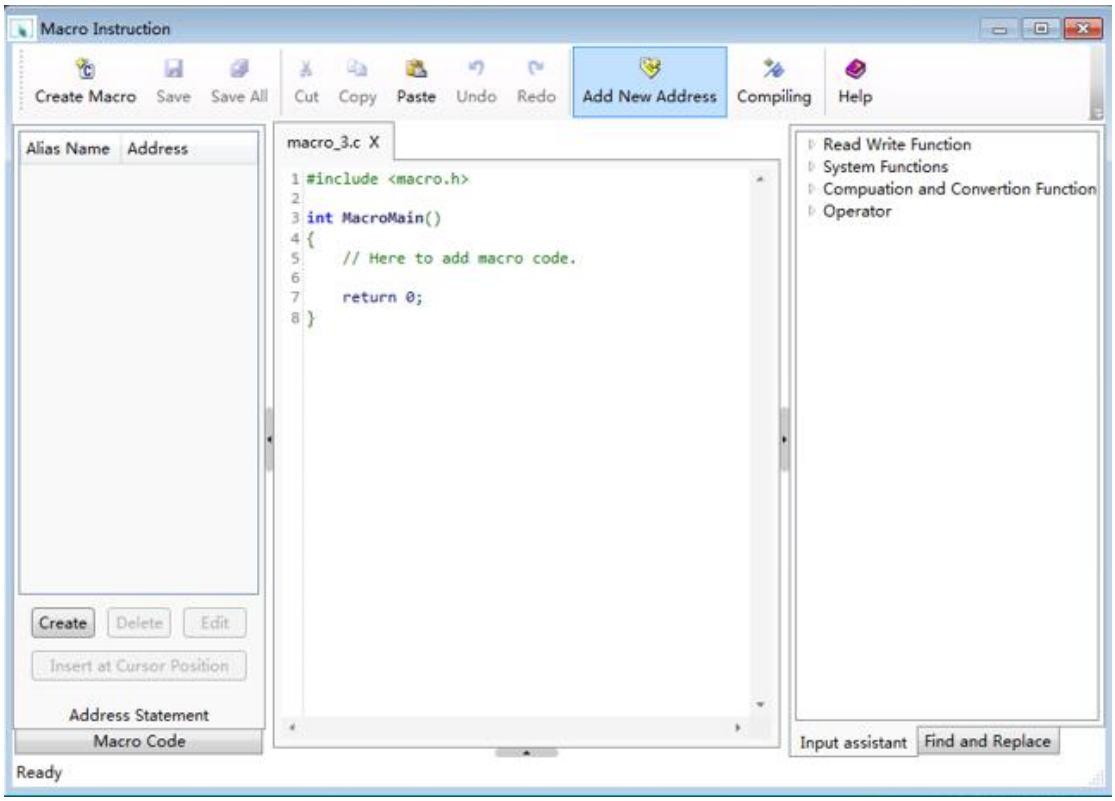
You can right-click to pop up the shortcut menu and cut, copy, paste or delete the selected components. You can look at the components properties by this way.



5.4 Macro

5.4.1 Macro Editor Introduction

The "**Macro Editor**" can be opened by clicking "**Create Macro**" or "**Edit Macro**" from the "**Macro**" menu. It is shown as below.

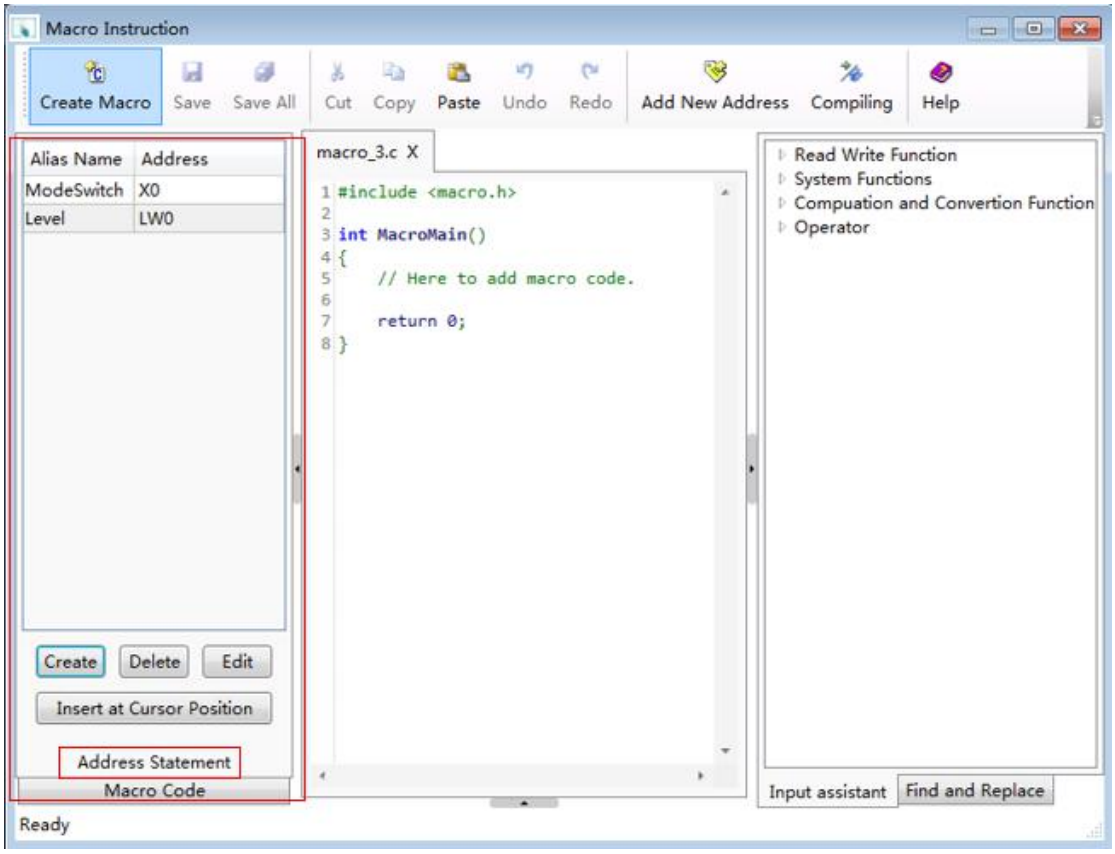


5.4.1.1 Shortcut Tools Bar

"**Shortcut Tools Bar**" contains "**Create Macro**", "**Save**", "**Save All**", "**Cut**", "**Copy**", "**Paste**", "**Undo**", "**Redo**", "**Add New Address**", "**Compiling**" and "**Help**" buttons.

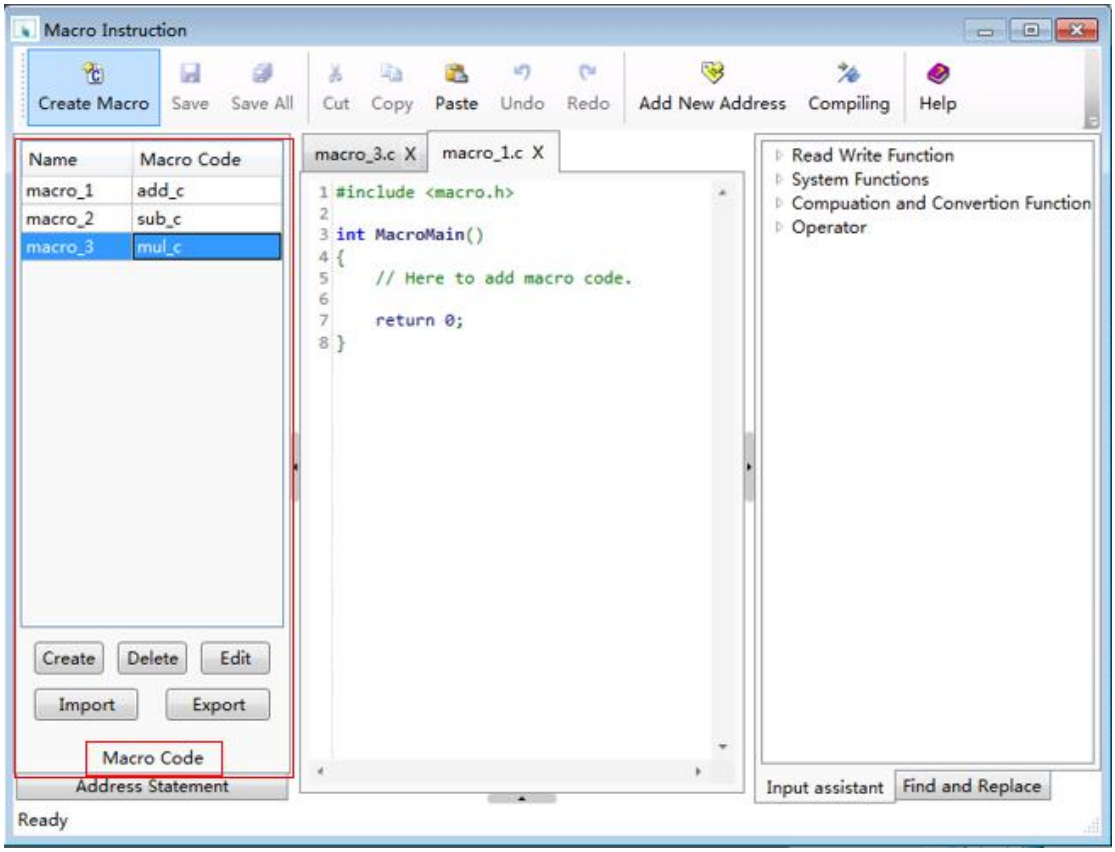
Create Macro: Create a new macro.
Save: Save the current macro.
Save All: Save all macros.
Cut, Copy, and Paste: Edit the selected macro codes.
Undo, Redo: Undo /Redo the edit of the selected macro codes.
Add New Address: Add a new address alias for the current macro.
Compiling: Compile the current macro.
Help: Open the help file.

5.4.1.2 Address Statement



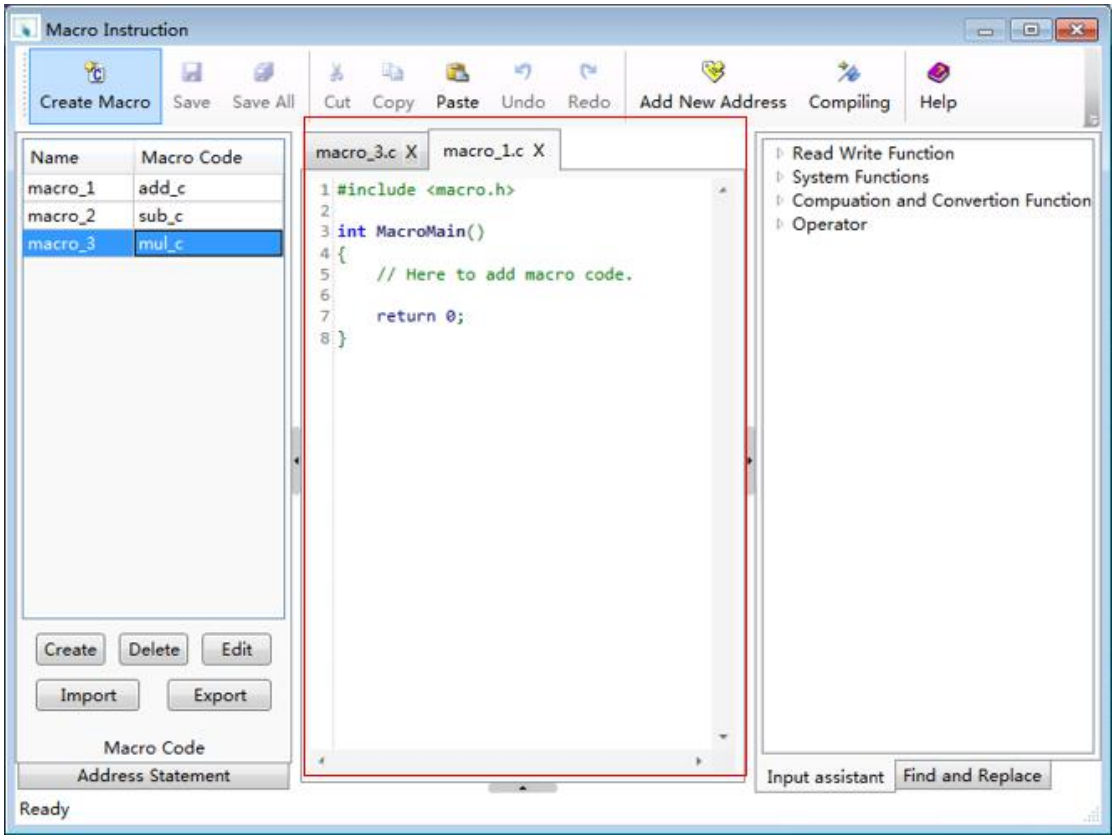
"**Address Statement**" is used to create and manage the address aliases in the current macro. The "**Address Statement**" window shows on the left of the macro editor. You can hide or display it by using "  ". You can switch to the macro code window by clicking the bottom tab "**Macro Code**".

5.4.1.3 Macro Code



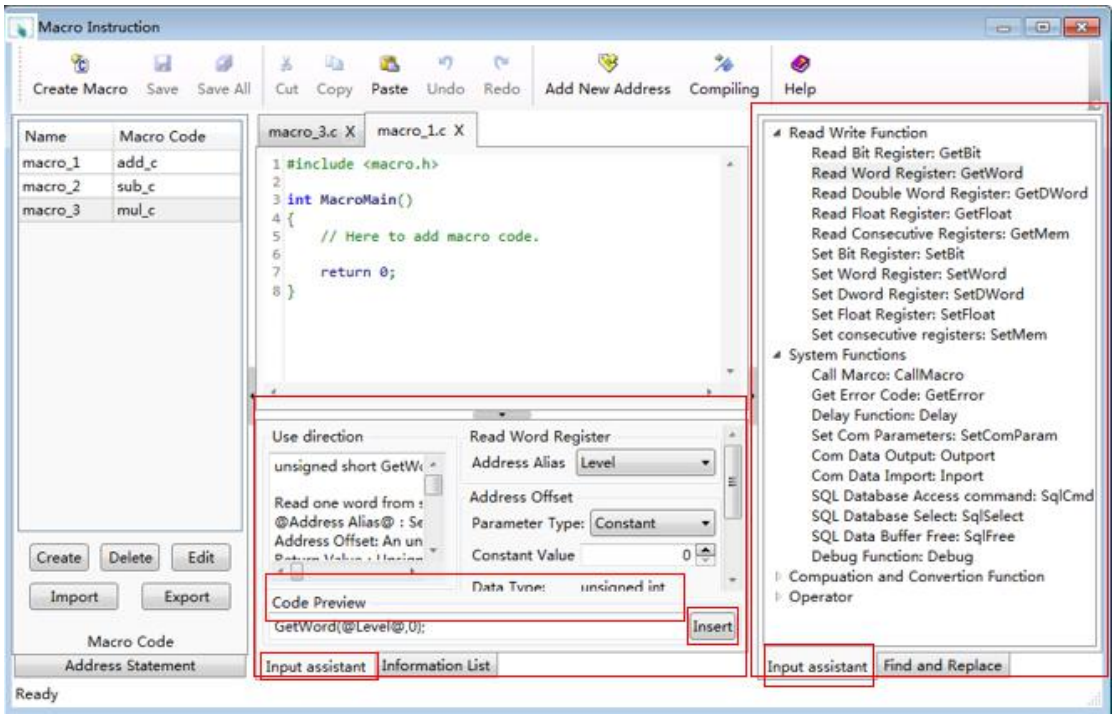
"**Macro Code**" window is used to create or manage the macros in the current project. All macros in this project will be listed here. These macros can be edited, deleted, imported and exported. You can simply double-click a macro's name to edit the codes of the macro.

5.4.1.4 Code Editor Window



"**Code Editor**" window is a code editor which is compatible with C syntax. The detailed macro codes are edited here. "**Code Editor**" window is a multi-tab window. You can open multiple macros and display one macro by clicking the corresponding tab. If a macro code has been edited but not yet saved, it will display "*" in this macro tab. For example, it will display "**macro_1.c***" if the codes of this macro are edited and not saved.

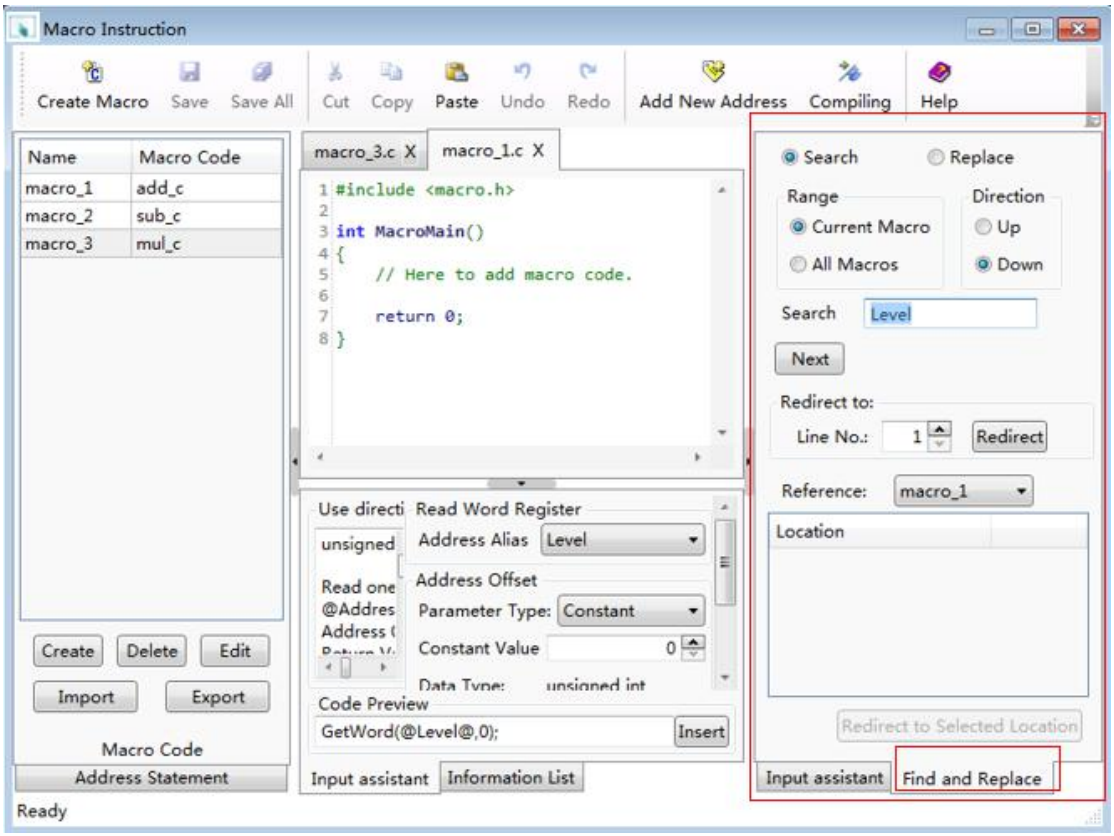
5.4.1.5 Input Assistant Window



"**Input assistant**" window on the right of the macro editor lists the built-in functions. It will display a detailed description of the function in the "**Input assistant**" window at the lower middle position of the macro editor when you select a built-in function on the right window.

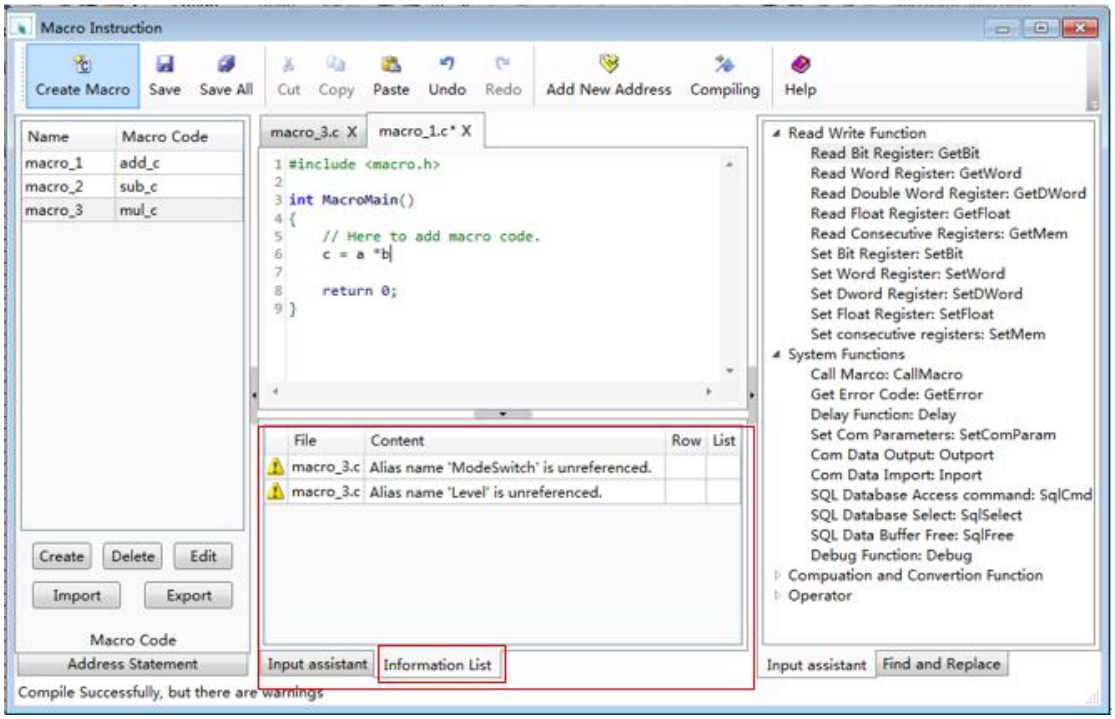
The "**Input assistant**" window at the lower middle position of the macro editor gives the use direction. And you can set the parameters of this function here, too. The function with the parameters you have set will display in the "**Code Preview**" edit box. It will be inserted into the current cursor position when you click the "**Insert**" button.

5.4.1.6 Find and Replace



"**Find and Replace**" function can provide a more convenient method of editing the macro codes. It can perform jump between lines and you can view the macro reference here.

5.4.1.7 Information List



"**Information List**" window displays prompts and error messages when the macro compile. You can double-click the error message entry in the list if compiling errors occur. It will quickly navigate to the position where this error occurs.

5.4.2 A Macro Example

In this example, we use a macro to execute a simple calculation function. The output value (saved in "**LW1**") will be 3 times as much as the input value (saved in "**LW0**") if the output value is less than or equal to 300, or it will be 2 times as much as the input value.

5.4.2.1 Create a New Project

Refer to: Detailed manual/File/Create New Project.

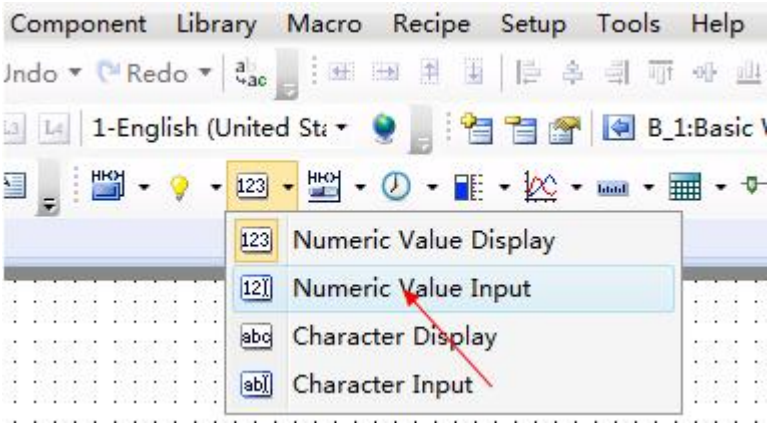
Build a new project.

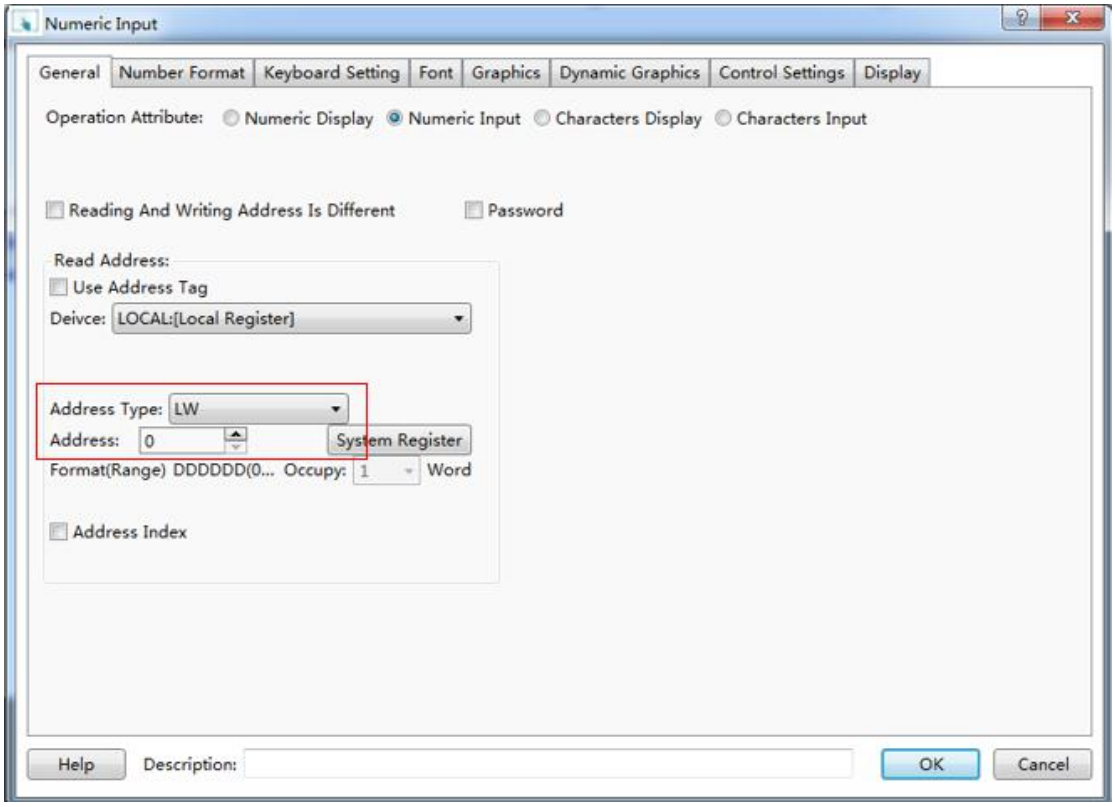
5.4.2.2 Add the Components

(1)Add a numeric value input component.

Refer to: Detailed manual/Component/Numeric Value and Character Display/Numeric Value Input.

Add a numeric value input component in the window and set the address as "**LW0**".

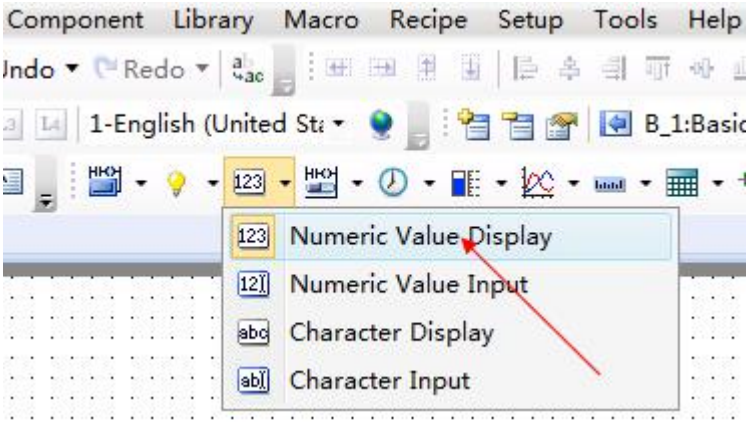


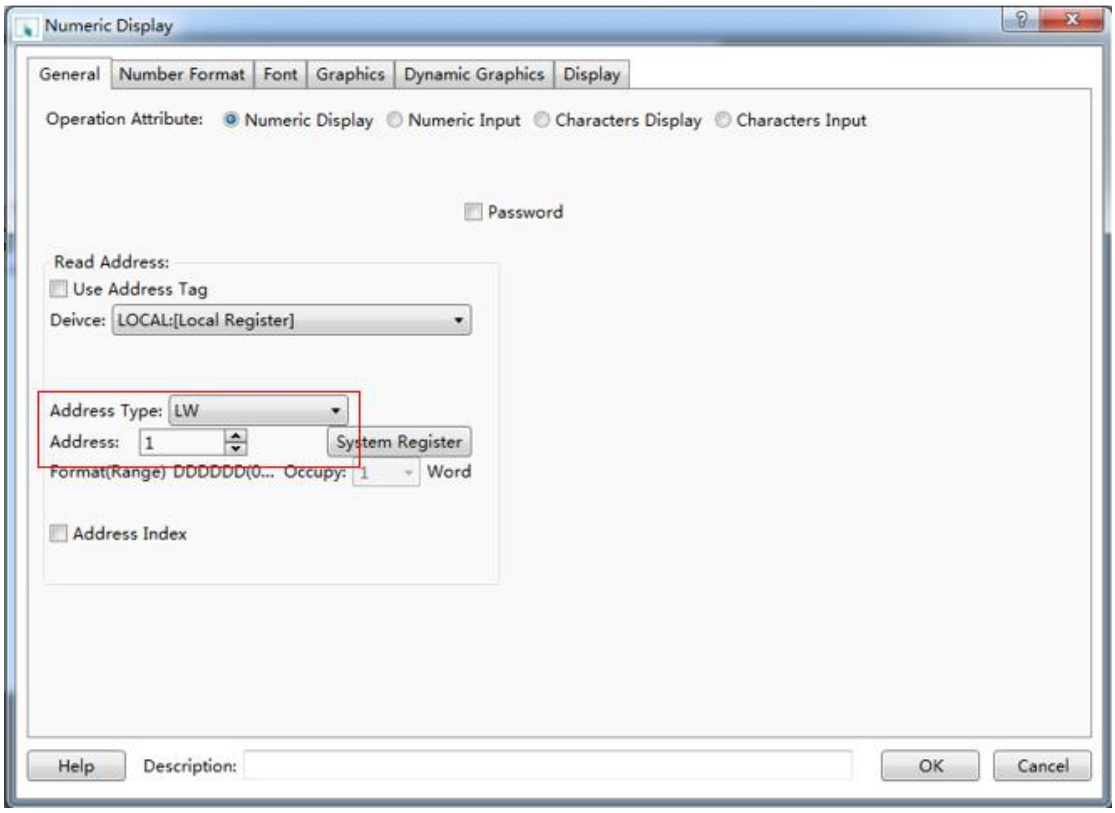


(2)Add a value display component.

Refer to: Detailed manual/Component/Numeric Value and Character Display/Numeric Value Display.

Add a numeric value display component in the window, and set the address as "**LW1**".





(3)Add the text description.

Refer to: Detailed manual/Drawing/Static Text.

Add text description for the two numeric value components, as shown as below.

5.4.2.3 Create and Edit a Macro

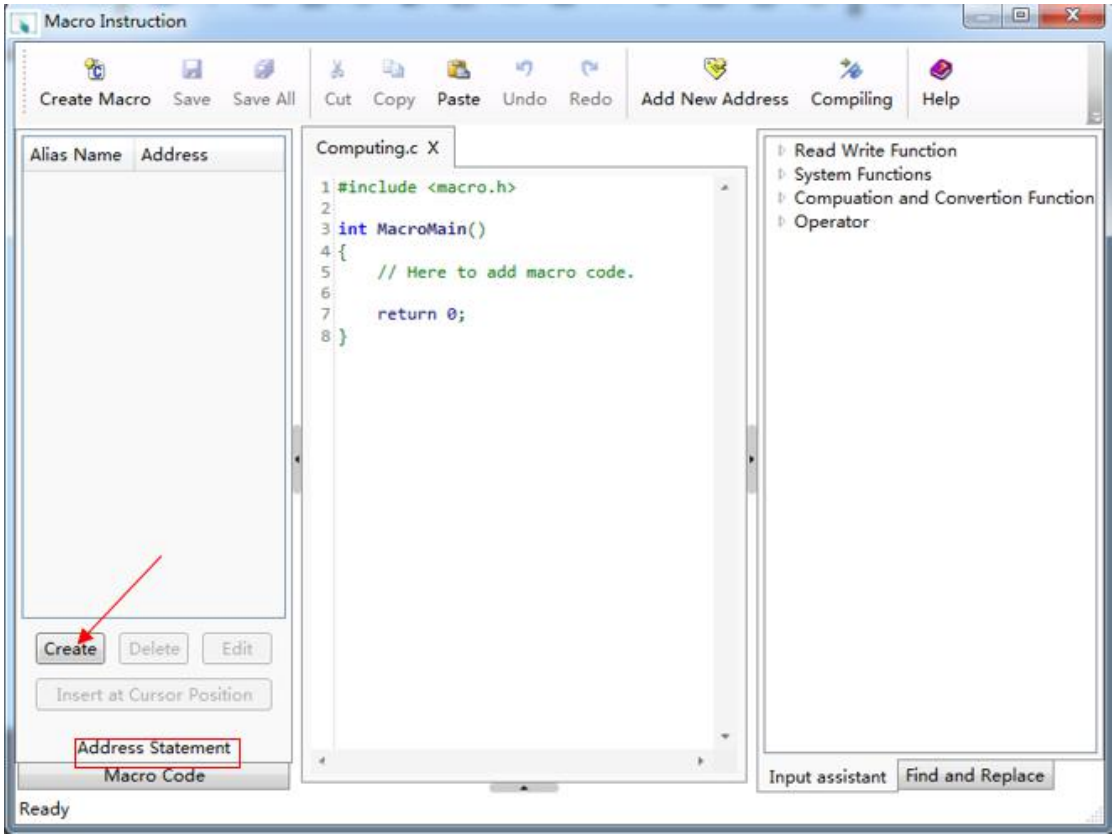
(1)Create a new macro.

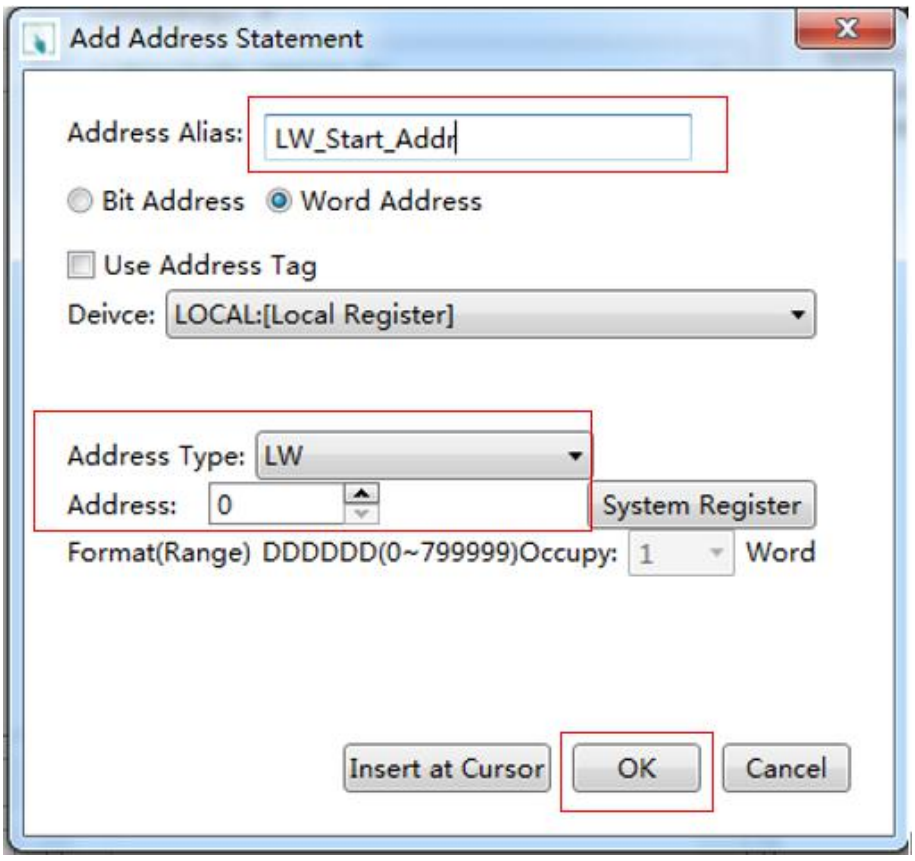
Refer to: Detailed manual/Macro/CreateMacro.

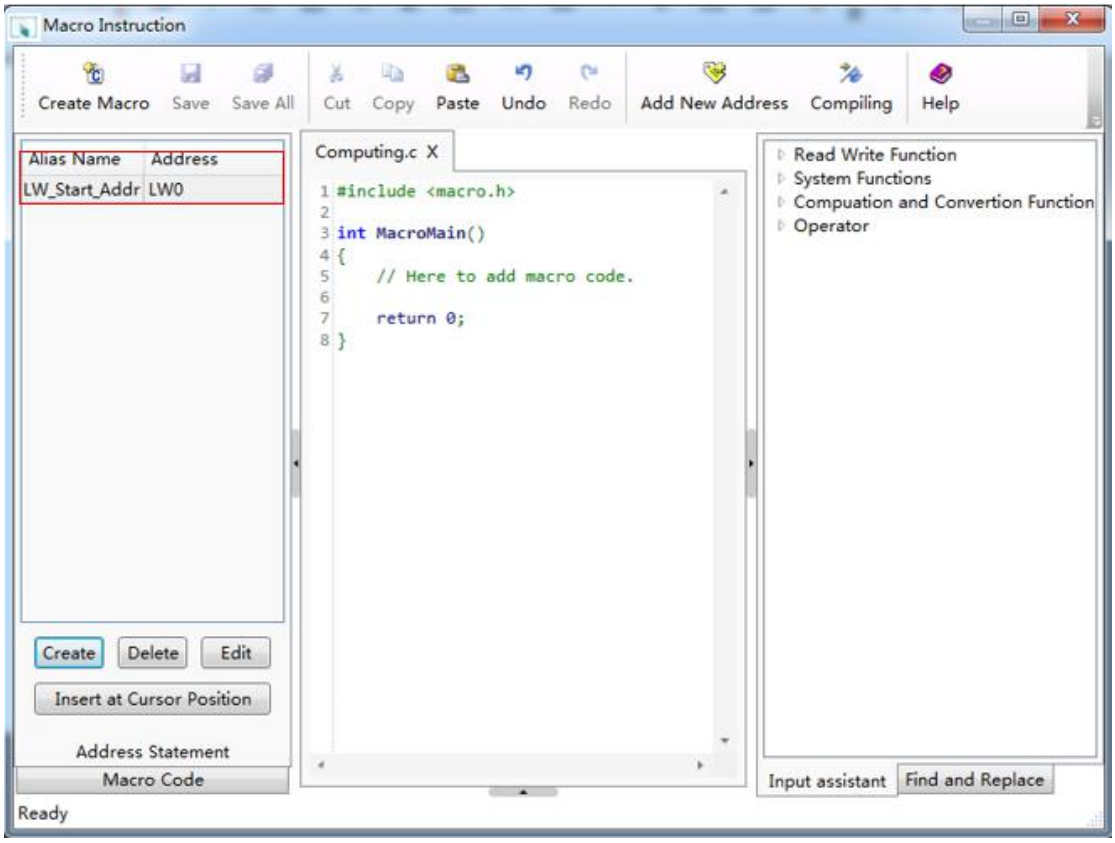
Create a new macro, named "**Computing**".

(2)Add an address statement.

Add an address statement. Define the "**LW**" starting address "**LW0**" as "**LW_Start_Addr**".


Macro Instruction
Create Macro
Save
Save All
Cut
Copy
Paste
Undo
Redo
Add New Address
Compiling
Help
Alias Name
Address
Computing.c X
#include <macro.h>
int MacroMain()
{
// Here to add macro code.
return 0;
}
Read Write Function
System Functions
Compuation and Convertion Function
Operator
Create
Delete
Edit
Insert at Cursor Position
Address Statement
Macro Code
Input assistant
Find and Replace
Ready


Add Address Statement
Address Alias:
LW_Start_Addr
Bit Address
Word Address
Use Address Tag
Deivce:
LOCAL:[Local Register]
Address Type:
LW
Address:
0
System Register
Format(Range) DDDDDD(0~799999)Occupy:
1
Word
Insert at Cursor
OK
Cancel



(3)Edit the macro codes.

In the macro code editor window, edit the macro codes according to the logic previously defined. The syntax rules follow the C language specification. The final macro codes are as follows.

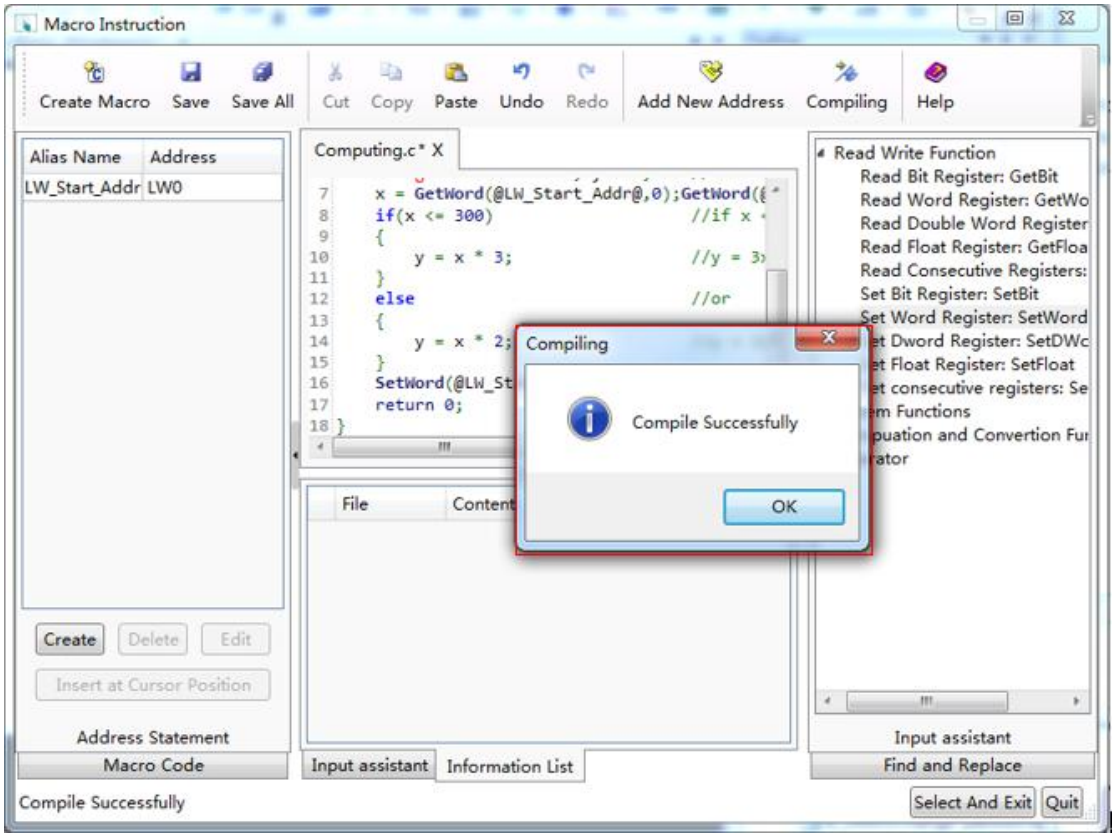
Computing.c* X

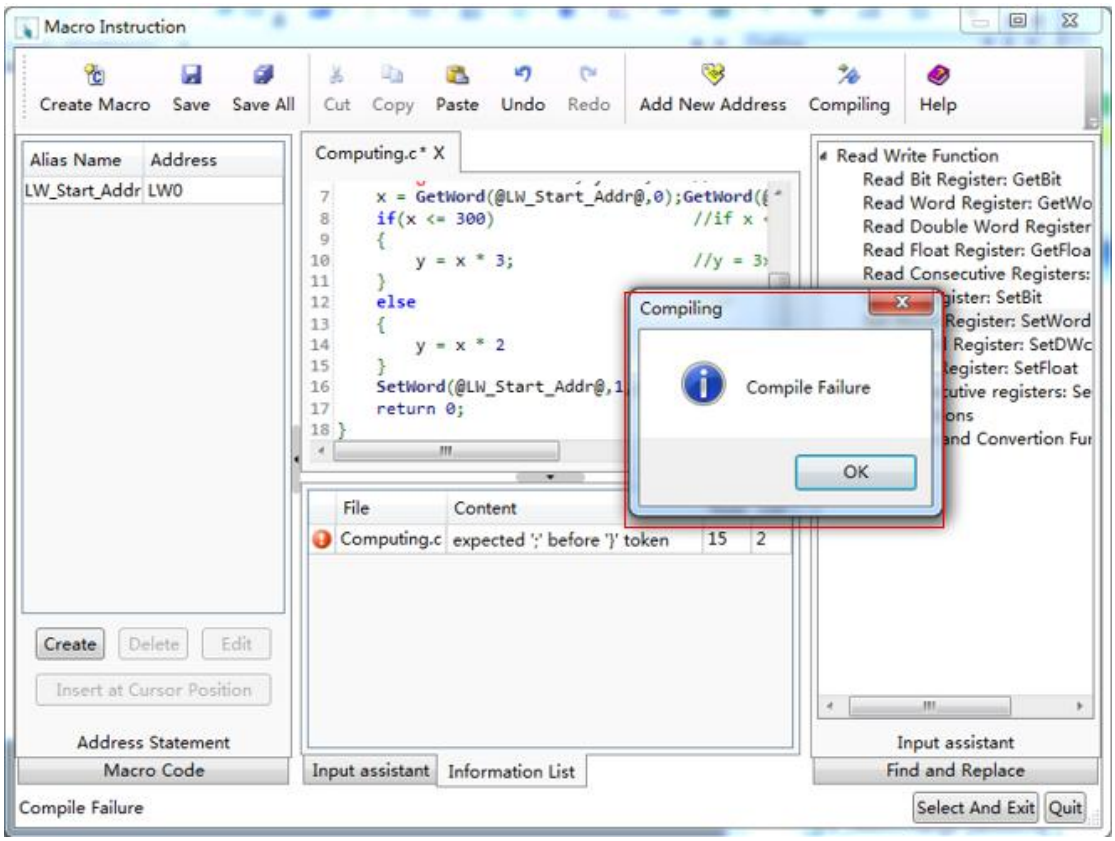
```
#include <macro.h>

int MacroMain()
{
    // Here to add macro code.
    unsigned short x = 0, y = 0;    //define the variables
    x = GetWord(@LW_Start_Addr@,0);GetWord(@LW_Start_Addr@,0);//read LW0 to x
    if(x <= 300)                    //if x <= 300
    {
        y = x * 3;                  //y = 3x
    }
    else                            //or
    {
        y = x * 2;                  //y = 2x
    }
    SetWord(@LW_Start_Addr@,1,y);   //write the value of y to LW1
    return 0;
}
```

(4)Compile and save.

Click the “**Compile**” button "  " on the shortcut toolbar to compile after finish editing the macro codes. A message box will pop up to display "**Compile Successfully**" if no syntax errors; otherwise the message box will display "**Compile Failure**".



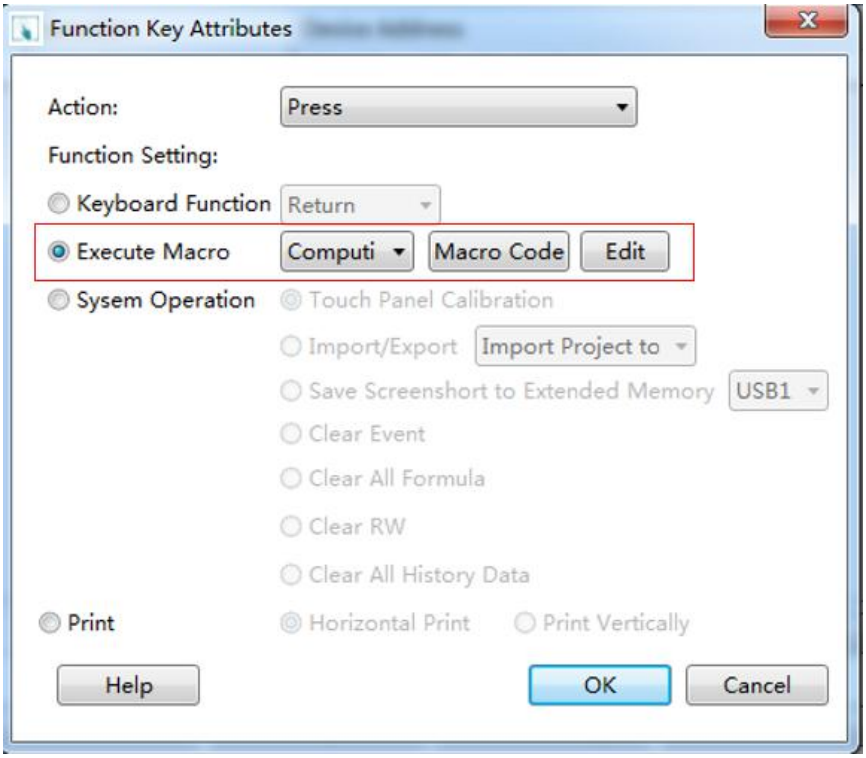


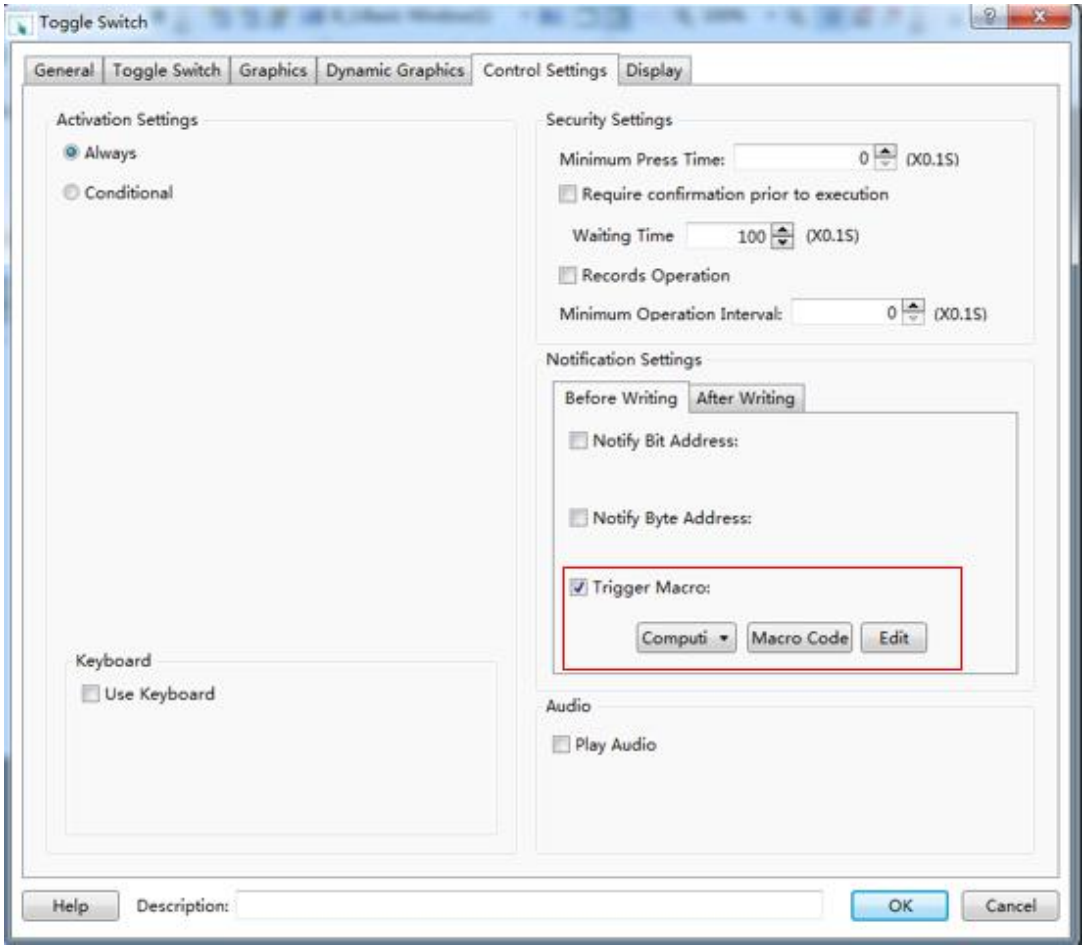
If compiling fails, you should modify the macro codes according to the error messages of the information list until compiling is successful.

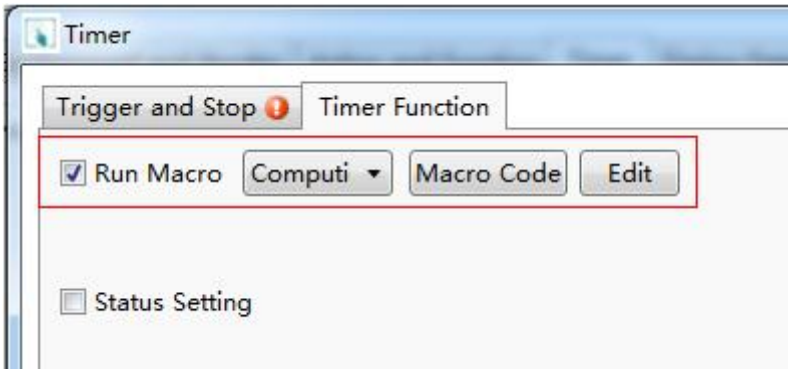
Click the "**Save**" button "  " on the shortcut toolbar to save the macro codes. Then close the macro window.

5.4.2.4 Execute the Macro

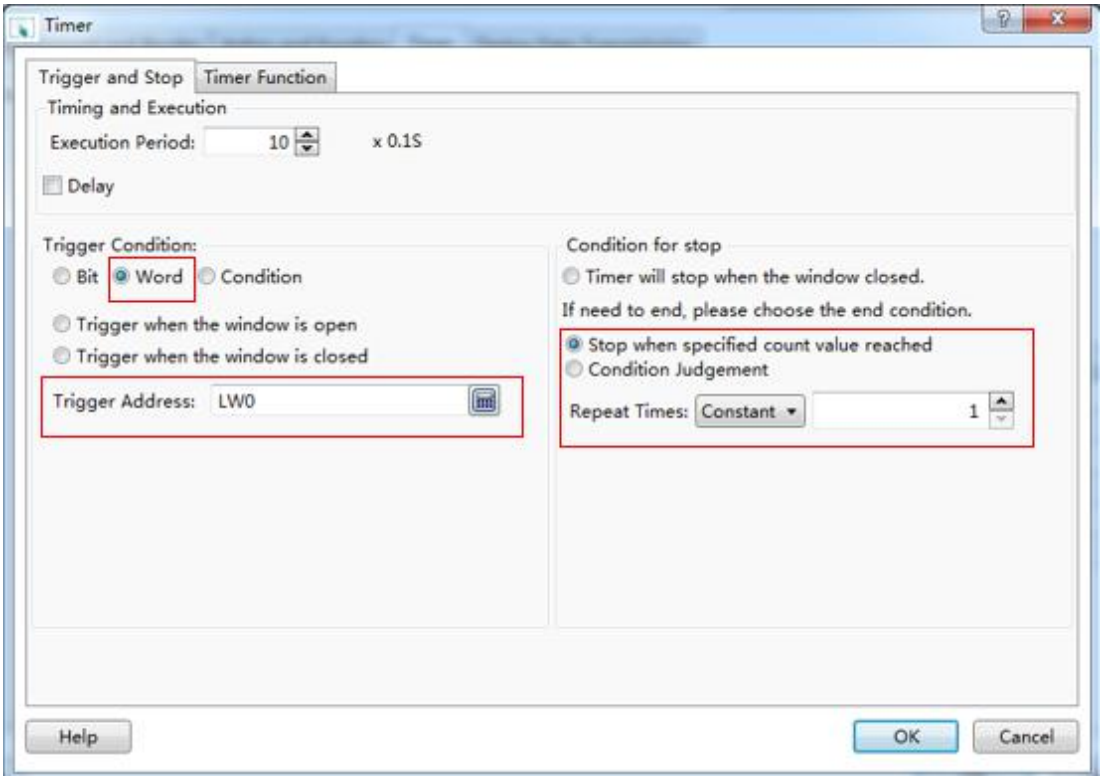
There are many ways to execute the macro. You can set macros for the buttons, the notification settings in the component control settings and timer function.

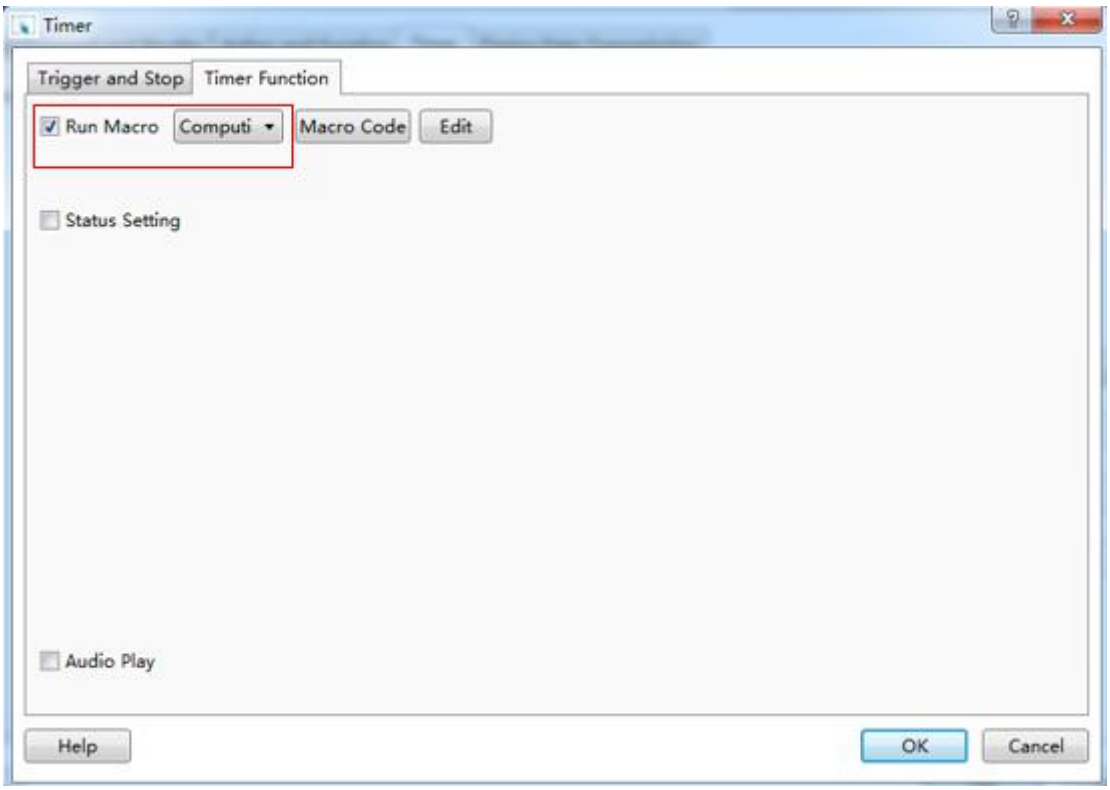

Function Key Attributes
Action:
Press
Function Setting:
Keyboard Function
Return
Execute Macro
Computi
Macro Code
Edit
Sysem Operation
Touch Panel Calibration
Import/Export
Import Project to
Save Screenshort to Extended Memory
USB1
Clear Event
Clear All Formula
Clear RW
Clear All History Data
Print
Horizontal Print
Print Vertically
Help
OK
Cancel


Toggle Switch
General
Toggle Switch
Graphics
Dynamic Graphics
Control Settings
Display
Activation Settings
Always
Conditional
Security Settings
Minimum Press Time:
0
(X0.1S)
Require confirmation prior to execution
Waiting Time
100
(X0.1S)
Records Operation
Minimum Operation Interval:
0
(X0.1S)
Notification Settings
Before Writing
After Writing
Notify Bit Address:
Notify Byte Address:
Trigger Macro:
Computi
Macro Code
Edit
Keyboard
Use Keyboard
Audio
Play Audio
Help
Description:
OK
Cancel



In this example, execute the "**Computing**" macro when the input value changes by using the timer function. See settings as shown as below. The detailed using method of the timer component, please refer to: Detailed manual/Component/Timer and Data Transmission/Timer.

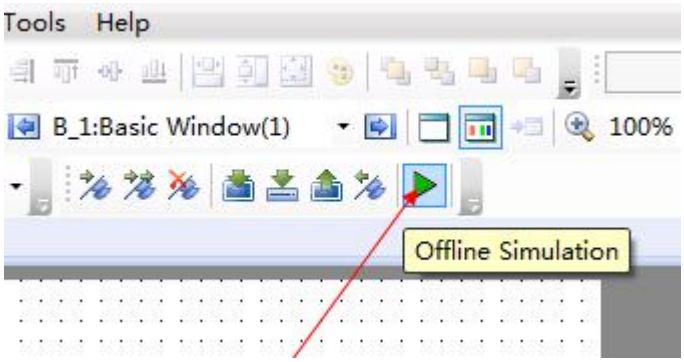




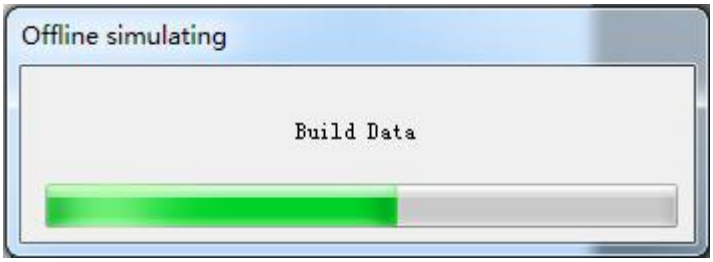
5.4.2.5 Offline Simulation

Offline simulation can be executed to verify the correction of the function after the above steps are finished.

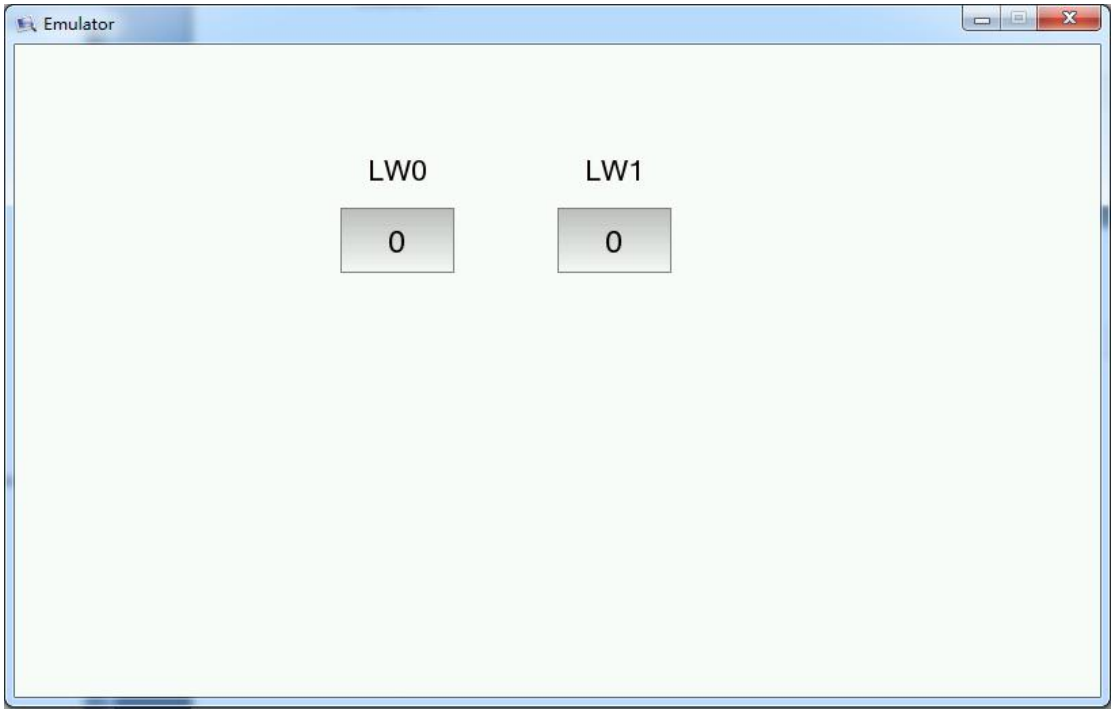
Click the "**Offline** Simulation" button"  " on the shortcut tools bar.



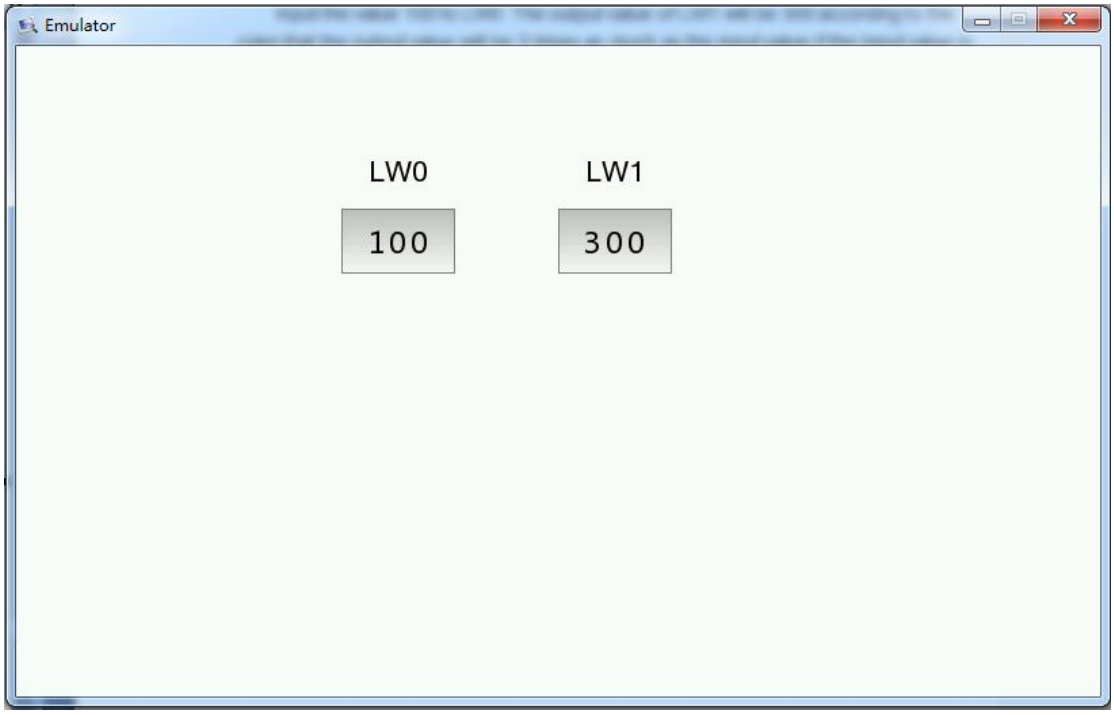
A "**Clear Records**" message box will pop up. After clicking the button "**OK**", the project will compile.



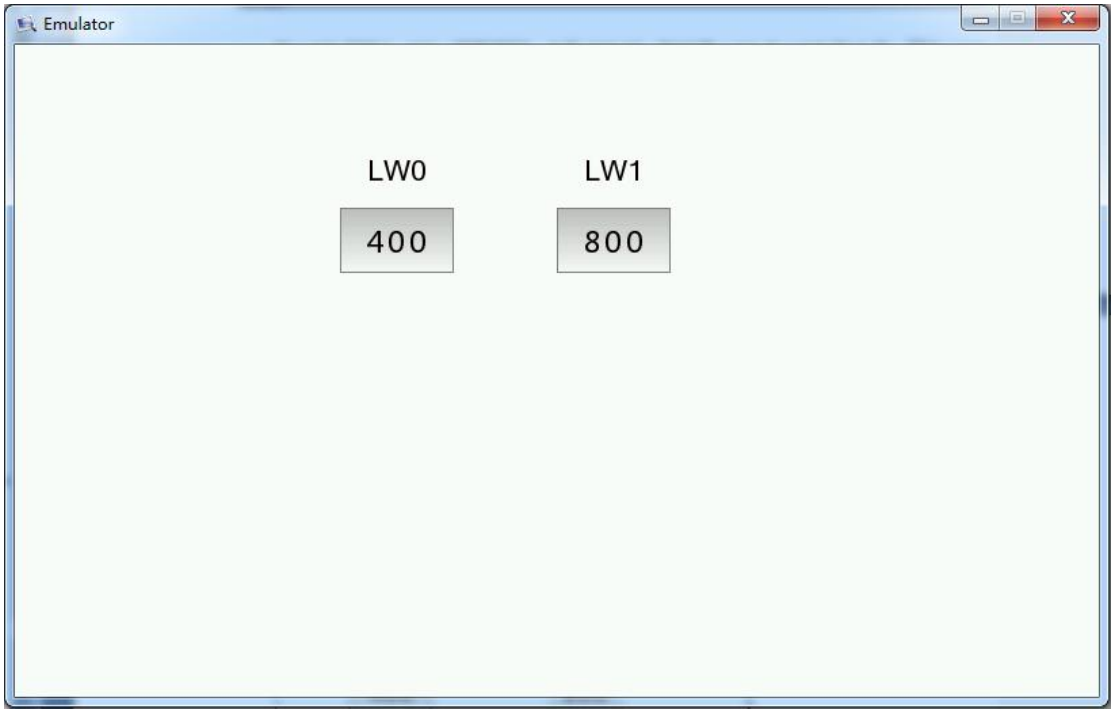
The project compiling needs a little time. There is a progress bar to indicate the compiling progress. The simulator window (Emulator)will open automatically after the compiling is finished.



Input the value 100 to "**LW0**".The output value of "**LW1**" will be 300 according to the rules that the output value will be 3 times as much as the input value if the input value is less than or equal to 300.



Input the value 400 to "**LW0**".The output value of "**LW1**" will be 800 according to the rules that the output value will be 2 times as much as the input value if the input value is not less than or equal to 300.



5.5 Online Software Upgrade

If the user can't receive the automatic update reminders, the following solutions are given.
(1) Execute "**cmd**" in the administrator mode. Please input the following commands.
rmdir /s /q "%userprofile%\wc"

rmdir /s /q “%appdata%\wyUpdate AU"
(2) Reopen the VI20 Studio software.

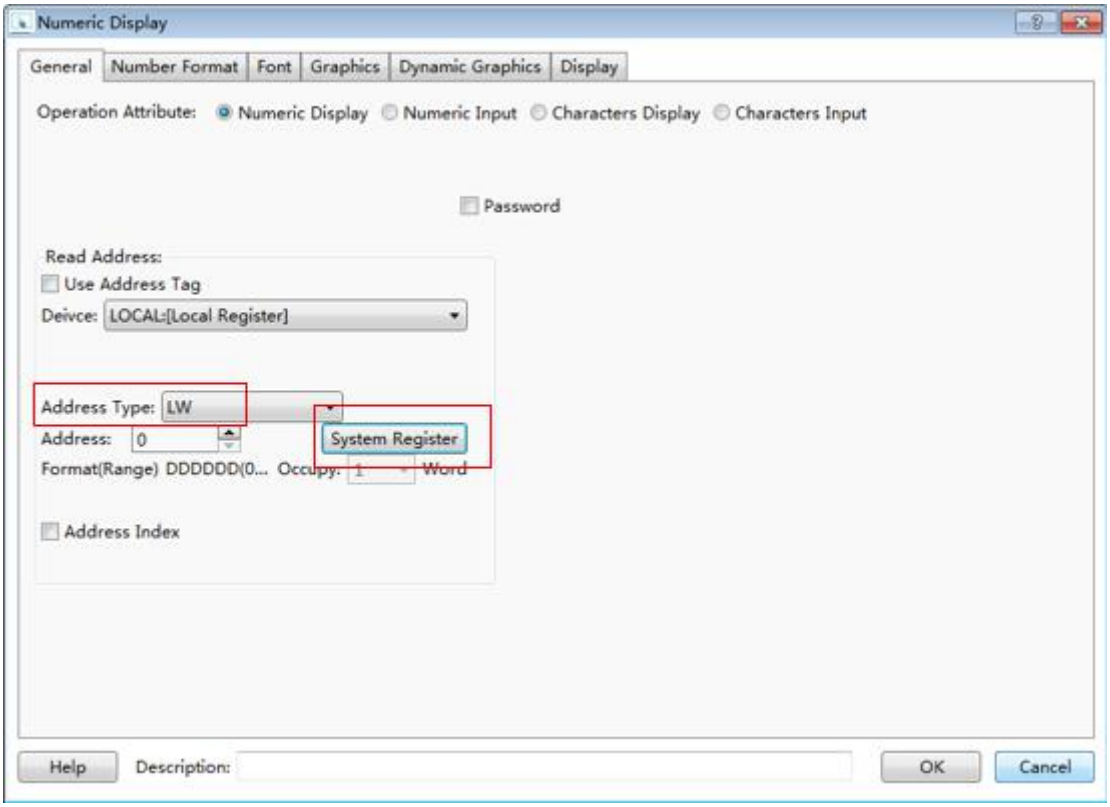
6 Appendix

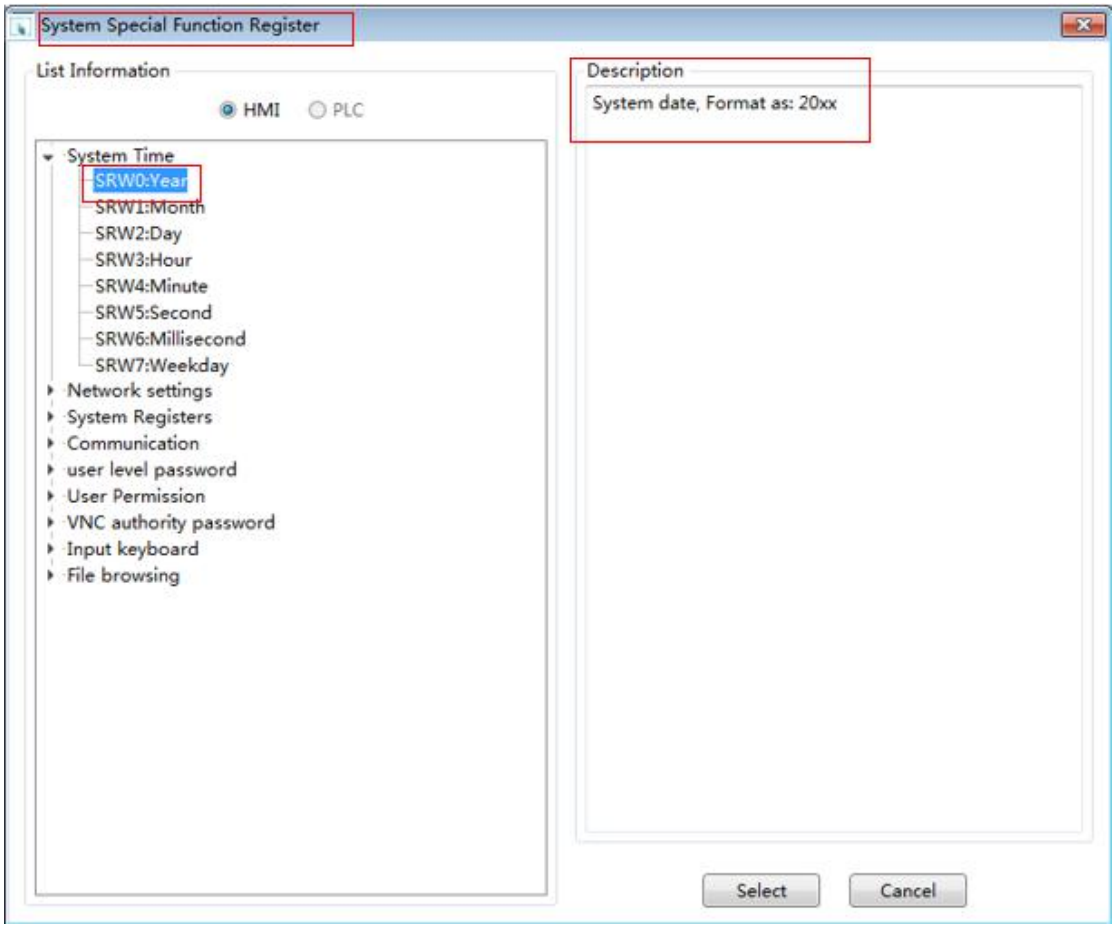
6.1 The Use of Register

The type of HMI register includes "**Word Register**" and "**Bit Register**".

6.1.1 Word Register

LW: An internal "**Word Register**" in HMI. The data is lost when the power is off. The register address range is 0 - 799999.
RW: An internal "**Word Register**" in HMI. The data can be saved if power is off. The register address range is 0 - 524288.
SRW: A special internal "**Word Register**" in HMI. The register address range is 0 - 11023. You can click the "**System Register**" button and open the "**System Special Function Register**" to get the specific function of each SRW register when you use the component such as "**Numeric Display**". For example, SRW0 ~ 7 saves the system time. The "**Description**" introduces the function of the selected register.

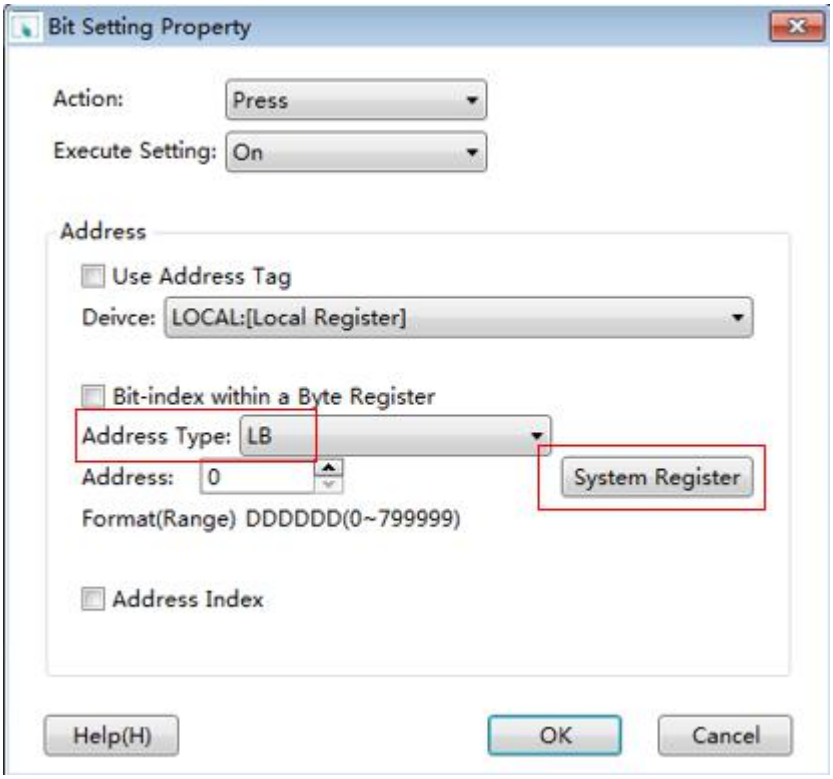


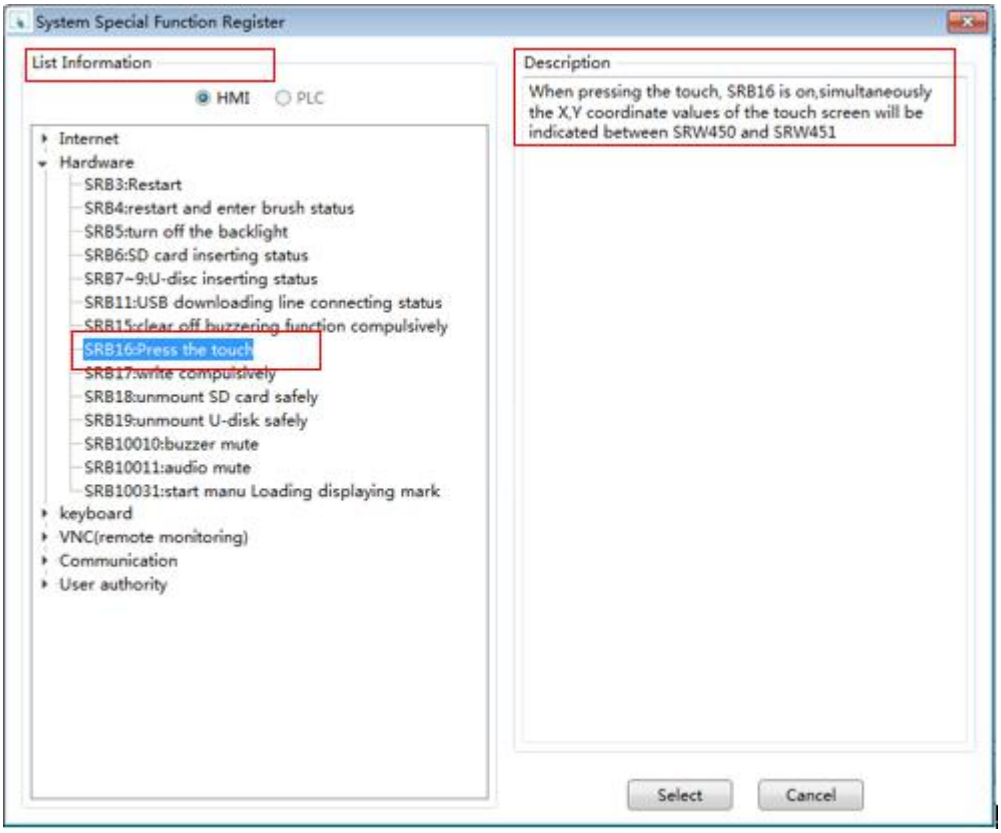


6.1.2 Bit Register

LB: An internal "**Bit Register**" in HMI. The data is lost when the power is off. The register address is 0 - 799,999.

SRB: A special internal "**Bit Register**" in HMI. The register address range is 0 - 11023. You can click the "**System register**" button and open the "**System Special Function Register**" to get the specific function of each SRB register when you use the component such as "**Bit Set**". The "**Description**" introduces the function of the selected register. For example, SRB16 is ON when the touch screen is pressed.


Bit Setting Property
Action:
Press
Execute Setting:
On
Address
Use Address Tag
Deivce:
LOCAL:[Local Register]
Bit-index within a Byte Register
Address Type:
LB
Address:
0
System Register
Format(Range) DDDDDD(0~799999)
Address Index
Help(H)
OK
Cancel

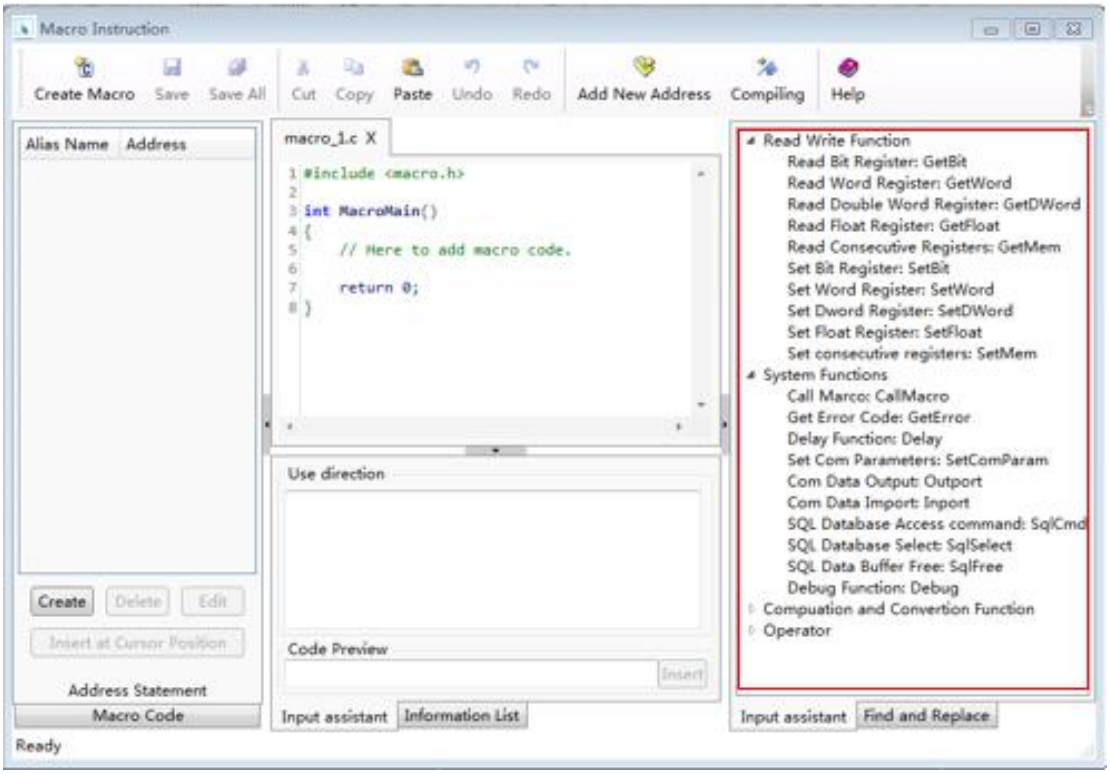

System Special Function Register
List Information
HMI
PLC
Internet
Hardware
SRB3:Restart
SRB4:restart and enter brush status
SRB5:turn off the backlight
SRB6:SD card inserting status
SRB7~9:U-disc inserting status
SRB11:USB downloading line connecting status
SRB15:clear off buzzering function compulsively
SRB16:Press the touch
SRB17:write compulsively
SRB18:unmount SD card safely
SRB19:unmount U-disk safely
SRB10010:buzzer mute
SRB10011:audio mute
SRB10031:start manu Loading displaying mark
keyboard
VNC(remote monitoring)
Communication
User authority
Description
When pressing the touch, SRB16 is on,simultaneously the X,Y coordinate values of the touch screen will be indicated between SRW450 and SRW451
Select
Cancel

Note:

"**Word Register**" and "**Bit Register**" in HMI are two different areas, so the address does not overlap. For example, "**LW0**" and "**LB0**" are two registers that they are not related. "**SRW0**" and "**SRB0**" are also two different special system registers. But each word register can be divided into 16bit registers. For example, "**LW0**" can be divided into 16bit registers: LW0.0 ~ 0.15.

6.2 Built-in Functions

You can find the built-in functions when you create or edit Micros. They can be used by calling directly.



6.2.1 Read Write Function

6.2.1.1 Read Bit Register: Get Bit

Bool GetBit(@Address Alias@, Address Offset):
Read one bit from designated register address.
@Address Alias@: Select a bit address register
Address Offset: An unsigned integer, Read Address=The address specified by @Address Alias@ + Address Offset
Return Value: BOOL, the value of the bit which was read
Error Information:
Get the error code using GetError() function.
int error=GetError();

Example:
bool power=GetBit(@power_on@, 2):

In this example, power_on is the alias of "**LB0**", so the function "**GetBit**" will read the bit value from "**LB2**" and return to a BOOL variable power.

6.2.1.2 Read Word Register: Get Word

Unsigned short GetWord(@Address Alias@, Address Offset):

Read one word from specified register address.

@Address Alias@: Select a word address register

Address Offset: An unsigned integer, Read Address=The address specified by @Address Alias@ + Address Offset

Return Value：Unsigned Short Type, the value of the word which was read

Error Infomation: Get the error code using GetError() function.

int error=GetError();

Example：

Unsigned short speed=GetWord(@Speed@, 3):

The Alias @Speed@ represents the register LW0 in this example, so the target word register is LW3 (LW0+3), the value of LW3 is returned to an Unsigned Short variable named "speed".

short speed = (short) GetWord(@Speed@, 3): //If use signed number, you can use force conversion.

6.2.1.3 Read Double Word Register: Get DWord

Unsigned int GetDWord(@Address Alias@, Address Offset):

Read a double word from a specified register address.

@Address Alias@: Select an address register (word or double word).

Address Offset: An unsigned integer, Read Address=The address specified by @Address Alias@ + Address Offset.

Return Value： unsigned int type, the value of the double word which was read. If the address is word type, the function will return two consecutive words.

Error Information: Get the error code using GetError() function.

int error=GetError();

Example：

Unsigned int speed=GetDWord(@Speed@, 3):

The Alias @Speed@ represents the register LW0 in this example, so the target word register is LW3 and LW4, the value of LW3 and LW4 are returned to a Unsigned int variable named "speed".

int speed = (int) GetDWord(@Speed@, 3): //If use signed number, you can use force conversion.

6.2.1.4 Read Float Register: GetFloat

Float GetFloat(Array Pointer, @Address Alias@, Address Offset, Byte Count):

Read a single precision float number from specified register address.

Array pointer: type, pre-declared.

@Address Alias@: select the start address of a register type, which can be a bit type or word type register

Address Offset: an unsigned integer, Read Address=The address specified by @Address Alias@ + Address Offset

Byte Count: an unsigned integer, The number of bytes to be read. Special attention needs to be converted according to the data type.

The number of bytes should be sizeof (data type declared by the array) * the number of arrays to be read, the maximum number of bytes is 20480

Set Value: float type number, the float type number to be set to the register
Return Value: int type, 0-ailure, 1-success
Example:
unsigned short data[10];
int error = GetMem(data, @Array Data@, 2 , 10*sizeof(unsigned short)):
In this example, @Array Data@ = LW0, so the function will return 10 words from the address starting from LW2.
char data[5];
int error = GetMem(data, @Array Data@, 2, 5):
@Array Data@ = LW0, so the function will read 3 words (each word contains 2 variables of char type, the higher half of the last word is invalid) and copy to the array named "data"

6.2.1.5 Read Consecutive Registers: GetMem

Int GetMem(Array Pointer, @Address Alias@, Address Offset, Byte Count):
Read consecutive words from specified registers.
Array Pointer: pointer type, point to a pre-defined array.
@Address Alias@: select a register as the beginning address, could be a bit type or word type register.
Address Offset: an unsigned int number. The read beginning address=The address specified by @Address Alias@ + Address Offset.
Byte Count: an unsigned int number, specifying how many bytes should be read. Please note: Byte Count = sizeof (Type of the Array) * (number of elements in the array). The upper limit of Number of Bytes is 20480.
Return Value: int type, 0-Failure, 1-Success.
Example:
unsigned short data[10];
int error = GetMem(data, @Array Data@, 2 , 10*sizeof(unsigned short)):
In this example, @Array Data@ = LW0, so the function will return 10 words from the address starting from LW2.
char data[5];
int error = GetMem(data, @Array Data@, 2, 5):
@Array Data@ = LW0, so the function will read 3 words (each word contains 2 variables of char type, the higher half of the last word is invalid) and copy to the array named "data"

6.2.1.6 Set Bit Register: SetBit

Int SetBit(@Address Alias@, Address Offset, Set Value):
Write a bool value into one bit of a designated register address.

@Address Alias@: select a bit address register
Address Offset: an unsigned integer, Target Address=The address specified by @Address Alias@ + Address Offset.
Set Value: BOOL, the value to be written into the designated bit register, 0 or 1.
Return Value: int type, 0-Failure, 1-Success.
Example:
int error=SetBit(@power@, 2, 1)
In this example, power is the alias of LB0, so the function SetBit will write “1” into the bit LB2.

6.2.1.7 Set Word Register: SetWord

Int SetWord(@Address Alias@, Address Offset, Set Value):

Write one 16-bit number into a designated word register.

@Address Alias@: select a word type address.

Address Offset: unsigned int, TargetAddress=The address represented by @Address Alias@ + Address Offset.

Set Value: short type, the value to be written into the designated register.

Return Value: int type, 0-Failure, 1-Success.

Example:

short speed;

int error=SetWord(@Speed@, 3, speed);

In this example, the alias @Speed@ refers to LW0, so the function will write the value of speed into the word register LW3 .

6.2.1.8 Set Double Word Register: SetDWord

Bool SetDWord(@Address Alias@, Address Offset, Set Value):

Write one 32-bit number into a designated word register, the register could be a Dword register or two consecutive word registers.

@Address Alias@: select a word or word type address.

Address Offset: unsigned int, TargetAddress=The address represented by @Address Alias@ + Address Offset.

Set Value: int type, the value to be written into the designated register.

Return Value: int type, 0-Failure, 1-Success.

Example:

Unsigned int speed;

int error=Set DWord(@Speed@, 3, speed):

In this example, the alias @Speed@ refers to LW0, so the function will write the value of speed into the word registers LW3 and LW4.

6.2.1.9 Set Float Register: Set Float

Int SetFloat(@Address Alias@, Address Offset, Set Value):

Write one single precision float number into a designated word register.

@Address Alias@: select a word or word type address.

Address Offset: unsigned int, Target Address=The address represented by @Address Alias@ + Address Offset.

Set Value: float type, the float value to be written into the designated register.

Return Value: int type, 0-Failure, 1-Success.

Example:

float speed=3.14;

int error=SetFloat(@Speed@, 3, speed):

In this example, the alias @Speed@ refers to LW0, so the function will write the value of speed into the dword registers consist of LW3 and LW4.

6.2.1.10 Set Consecutive Registers: Set Mem

Int SetMem(Array Pointer, @Address Alias@, Address Offset, Byte Count):

Write the array data into consecutive registers.

Array Pointer: pointer type, point to a pre-defined array.
@Address Alias@: A register as the beginning address. It can be a bit type or word type register.
Address Offset: an unsigned int number. The read beginning address=The address specified by @Address Alias@ + Address Offset.
Byte count: an unsigned int number, specifying how many bytes should be read. Please note: Byte count = sizeof (Type of the Array) * (number of elements in the array). The upper limit of Number of Bytes is 20480.
Return Value: int type, 0-Failure, 1-Success.
Example:
unsigned short data[10];
int error = SetMem(data, @Array Data@, 2, 10*sizeof(unsigned short)):
In this example, @Array Data@ = LW0, so the function will copy 10 words to the 10 word register address starting from LW2.
char data[5];
int error = SetMem(data, @Array Data@, 2, 5):
@Array Data@ = LW0, so the function will copy the value from the array named "data" to 3 words starting from LW2(each word contains 2 variables of char type, the higher half of the last word is invalid)

6.2.2 System Functions

6.2.2.1 Call Macro: Call Macro

Int CallMacro("Macro Name"):
Call Designated Macro.
Macro Name: The content within the double quotes is the name of the macro being called, don't use any file name suffix.
Return Value: int type, the return value of the main function of the macro will be returned.
Example:
int error = CallMacro("Macro_1");

6.2.2.2 Get Error Code: GetError

Int GetError( ):
Get error code.
No input parameters.
Return Value: int type, the corresponding error code.
0-Not executed
1-Success
2-Timeout
3-Error
4-Socket word error
5-Communication failure
Example:
int error =GetError();

6.2.2.3 Delay Function: Delay

Delay(ms):

Delay Function, the input parameter is the number of mili-seconds, unsigned int type.
Return Value: None.
Example:
Delay(1000)://Delay 1000ms.

6.2.2.4 Set Com Parameters: SetComParam

Int SetComParam(Port Number, Baud Rate, Data Bit, Stop Bit, Check Bit, Communication Mode);
Port Number: the ID of com port, unsigned int type. 0-COM1, 1-COM2, 2-COM3...
Baud Rate: the speed of communication, int type. e.g. 9600, 115200
Date Bit: the number of bits used as data, int type, 7,8
Stop Bit: the stop bit, int type, 1,2
Check Bit: specify the way of checking, int type, 'n' or 110-no check, 'o' or 111-odd check, 'e' or 101-even check
Communication Mode: set the mode of communication, int type, 0-232, 1-485-4w, 2-485-2w.
Return Value: 0-Failed, 1-Success.
Example：

```
int error=SetComParam(0,115200,8,1,'n',2);//COM1,485-2w, 115200,8,1,N.
```

6.2.2.5 Com Data Output: Outport

Int Outport(Port ID, Buffer Pointer, Data Quantity);
Please call the SetComParam function to initialize the serial port before call this function.
Port ID: the ID of com port, unsigned int type. 0-COM1, 1-COM2, 2-COM3...
Buffer Pointer: the pointer to the buffer array.
Data Quantity: unsigned short, the number of data to be sent out.
Return Value: the number of bytes of the output data.
Example：

```
unsigned char send_buff[]="Hello world!";
int error=Outport(1,send_buff,12);
```

6.2.2.6 Com Data Import: Inport

Int Inport(Port ID, Buffer Pointer, Buffer Size, Timeout Limit):
Please call the SetComParam function to initialize the serial port before call this function.
Port ID: the ID of com port, unsigned int type. 0-COM1, 1-COM2, 2-COM3...
Buffer Pointer: the pointer to the buffer array
Buffer Size: The length of buffer being read, the size will be returned when read complete, maximum buffer size is 4096.
Timeout Limit: unit mS, if no data is received within nmS, or buffer is full, the receive function will return.
Return Value: the number of data actually be read, return value of -1 indicates error.
Example:

```
unsigned char recv_buff[];
intdata_count=Inport(1,recv_buff,16,10);
```

6.2.2.7 SQL Database Access Command: SqlCmd

Int SqlCmd(Database file ID, SQL command string pointer);
Database file ID: int type, 0 represents the database for historical and alarm events; 1,2,3...represent the database file corresponding to the data sampling IDs.

SQL command string pointer: char type, pointer to the SQL command strings.
Return Value: int type, 1-Success, 0-Failed.

6.2.2.8 SQL Database Select: SqlSelect

Int SqlSelect(Database file ID, SQL command string pointer, Buffer of inquiry results, Number of Rows Returned, Number of Columns Returned);
Database file ID: int type, 0 represents the database for historical and alarm events; 1,2,3...represent the database file corresponding to the data sampling IDs.
SQL command string pointer: char type, pointer to the SQL command strings.
Buffer of inquiry results: char type, pointer.
Number of Rows Returned: int type, the number of rows of the returned results.
Number of Columns Returned: int type, the number of columns of the returned results.
Return Value: int type, 1-Success, 0-Failed.
Example:

```
char **pResult;
intRow,Col;
int err=SqlSelect(2,"xxx",pResult,Row,Col);
SqlFree(pResult);
```

6.2.2.9 SQL Data Buffer Free: SqlFree

Int SqlFree(Pointer to Database inquiry buffer);
Pointer to database inquiry buffer: Char Array pointer.
Return Value: int type, 1-Success, 0-Failure.
Example:

```
char **pResult;
intRow,Col;
int err=SqlSelect(2,"xxx",pResult,Row,Col);
SqlFree(pResult);
```

6.2.2.10 Debug Function: Debug

void Debug(Port ID, Format String,Var1,Var2...);
Please call the Set Com Param function to initialize the serial port before call this function. But serial port initialization is not needed if only debug in the simulation window.
Port ID: the ID of com port, unsigned int type. 0-COM1, 1-COM2, 2-COM3...
Format String: the format of output string, usage is same as printf in C language.
Variables: the name of variables corresponding to the output strings, same usage as printf function in C programming language.
The format is defined below, [] indicates optional elements.
%[Designated Parameter][Identifier][Width][.Precision]Designator
If you want to output '%', please use '%%'. 1- Define the direction of processing. Negative sign means the direction is from back end to the beginning.2- The word element for space filling. 0 means fill 0s to the spaces.3- The width of the character.4- Precision, the number of decimal places.
Character Conversion:
%% Print % sign, no conversion
%c Convert the integer to corresponding ASCII character
%d Convert the integer to decimal number

%f Convert to floating number
%o Convert the integer to Octal numbers
%s Convert the integer to string
%x Convert the integer to lower case hexadecimal number
%X Convert the integer to upper case hexadecimal number
Example：
intitest=12;
floatftest=65.4321;
Debug(0,"itest=%d\n ftest=%2.3f\n",itest,ftest);
Output Result：
itest=12
ftest=65.432

6.2.3 Computation and Conversion Function

6.2.3.1 CRC Check Function, 16Bit

unsigned short CRC16(Array Pointer，Computation Length);
Array Pointer: point to the array being processed.
Computation Length: the number of bytes being processed.
Return Value: 16-bit CRC check value.
Example：
unsigned char data[]={5,6,3,2,18};
unsigned short crc16=CRC16(data,5);

6.2.4 Operator

6.2.4.1 Assignment Operator

=: Assignment operator, used to assign.
Example：
Int i;
i=100;

6.3 System Prompts List

There will be some system prompts when an error occurred during the VI20 Studio software is running. The error information saves in the internal address SRW70.
SRW70 = 1- Input value exceeds the limit
SRW70 = 2- Being processed
Success SRW70 = 3– Operation is done successfully
SRW70 = 4- Data Range is out
SRW70 = 5- Insufficient memory
SRW70 = 6- Macro execution occurs error
SRW70 = 7- Password input error
SRW70 = 8- Connection server fails
SRW70 = 9- Operation failed
SRW70 = 10- Inconsistent with current user permissions

SRW70 = 11- Logout successfully
SRW70 = 12- Log in repeatedly
SRW70 = 13- No SD card is detected
SRW70 = 14- USB dsik1 was not detected
SRW70 = 15- USB disk 2 was not detected
SRW70 = 16- Database is upgrading, please wait ...
SRW70 = 17- Being queried, please wait ...
SRW70= 137- File does not exist
SRW70= 138- File type is error
SRW70= 139- Operation failed
SRW70= 140- File already exists
SRW70= 141- Wrong password.
SRW70=142– Insufficient memory space in the touch screen
SRW70=143-Insufficient memory space in SD card or USB disk