

## Safety Precautions

(Always read these precautions before using this equipment.)



1. When the external power supply is abnormal or the control system malfunctions, in order to make sure the whole system being safely performed, please set a safety circuit outside it.
2. If the system cannot check out the abnormal conditions of inputs and outputs, it cannot control output anymore. To ensure the element being operated safety, please design an external circuit and system.



1. Please read this manual before installation.
2. Do not disassemble the main box and the keyboard without authorization.
3. Please make a call to the after sale service center of Coolmay if you have any questions.

### Precautions while testing and operating



1. Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit element, change the word element current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.
2. During test operation, never change the data of the elements which are used to perform significant operation for the system.
3. False output or malfunction can cause an accident.

# Coolmay HMI

## User Manual

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**Appendix MT series supported PLC**

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## Chapter 1 Overview

### Section 1 MT series HMI

Thank you for choosing Coolmay HMI. Read this manual and make sure you understand the functions and performance of Coolmay HMI thoroughly in advance to ensure correct use.

### Section 2 Function Instruction

#### ■ Supported PLCs

We support the following manufactures, PS、Omron、Siemens、Mitsubishi、ModBus RTU、ModBus ASCII、LG、Delta、Telemecanique、Matsushita and so on. As for new brands, we will supply relevant communication protocol for updating.( The brands referred above are reserved by the relevant manufactures)

#### ■ Convenient operation and macro instructions

By operating macros can help PLC to deal with complicated computation, together with the communication macro, users can draft the communication protocol by themselves and then the element can communicate with certain system through COM port.

#### ■ Quickly download program via USB

Download via USB Ver1.1/2.0 will shorten the download time

#### ■ Two PLCs supported simultaneous

Two COM ports can be supported simultaneously. Two controllers no matter with the same communication protocol or not can be connected simultaneously.

#### ■ Off-line simulation

Off-line simulation: Simulate project operation on PC without any connection.

#### ■ on-line simulation

On-line simulation: Simulate project operation on PC and PLCs are directly connected with PC.

#### ■ Ethernet communication port

10/100BASE-T ethernet communicate port provide fast data exchange function. Any TP can organize network to perform aggregate remote control.

#### ■ Backup data by SD card

Use SD card to backup data, or start another HMI by the data inside SD card. After starting it, write data into FLASH, thus there is no need to download the same data. The historical data and alarm messages can be transferred to SD card. The user can use card reader to read the messages.

#### ■ Multiple security

Provide password protection to protect the intellectual property of programmer. Provide password protection of using element of screen. The element can be used only when user's privilege level is higher than the status of the element.

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### Section 3 Naming Rule

#### MT6043 H/V W

LCD Size:

037: 3.5" (320X240)

043: 4.3" (480X272)

050: 5.0" (800X480)

070: 7.0" (800X480)

100: 10.2" (800X480)

MT:MT series HMI

H/V:H means horizontal, V means vertical

W: Ethernet port (optional)

### Section 4 Precaution

#### ■ Operation environment

When the operation temperature is among -20~70°C and the humidity is among 10%~90%RH, the brightness and the contrast ratio can be adjusted to provide users the best image. If beyond the range, long-time normal display not guaranteed.

#### ■ Random insertion prohibited

COM port is prohibited to plug during running time. Please turn off the power supply while connecting or removing the communication cables.

#### ■ Top choice of equip

Computers with PIII above 500, storage above 128MB, Windows above R2000&R98 adopted.

### Section 5 Parameters

Model	MT6037H	MT6043H/V	MT6050H/V	MT6070H/V	MT6100H/V
Display	3.5" TFT LCD	4.3" TFT LCD	800*480 TFT LCD	7.0" TFT LCD	10.2" TFT LCD
Resolution (bits)	320*240	480*272	800*480	800*480	800*480
Dimension (mm)	88*88*25	134*102*30	88*146*30	212*148*40	275*194*36
Cutout size (mm)	72*72	119*93	137*72	194*138	261*180
Display size	73*56	97*56	108*65	154*87	222*133
Brightness	350cd/m <sup>2</sup>	350cd/m <sup>2</sup>	350cd/m <sup>2</sup>	350cd/m <sup>2</sup>	350cd/m <sup>2</sup>
Backlight	LED	LED	LED	LED	LED
ROM	128MB	128MB	128MB	128MB	128MB
Display color	65536 colors	65536 colors	65536 colors	65536 colors	65536 colors
Touch type	4-wire precision resistance network				
Consumption	Below 3W	Below 3W	Below 3W	Below 3W	Below 3W

Weight	0.3kg	0.33kg	0.33kg	0.54kg	0.7kg
COM PORT	COM1:PC RS232&PLC RS485&PLC RS232				
USB PORT	Yes				
Contrast Ratio	400:1				
CPU	32-bit260MHz RISC				
Power down permitted	In 20ms				
Printing port	Yes				
System diagnosis	Power failure detection				
Power supply	12-24VDC±10%<150mA@24VDC				
Certification	Accord with EN50081-2 and EN50082-2				
FCC compatibility	Accord with FCC Class A				
Anti-jamming test	Voltage 1500Vp-p, pulse period 1μs, continue 1s				
Shock Proof Test	10-25Hz (X、Y、Z direction 2G 30mins)				
Insulation resistance	Above 10MΩ@500VDC				
Shell material	engineering plastics ABS+PC				
High-voltage insulation test	500VAC 1min				
Protection level	IP65 (the front panel)				
Operation temperature	-20~60℃				
Operation humidity	20~90%RH				
Storage temperature	-20~70℃				
Cooling method	Natural air cooling				

**Section 6 Hardware Specification**

MT6037H



Black panel (black back case)



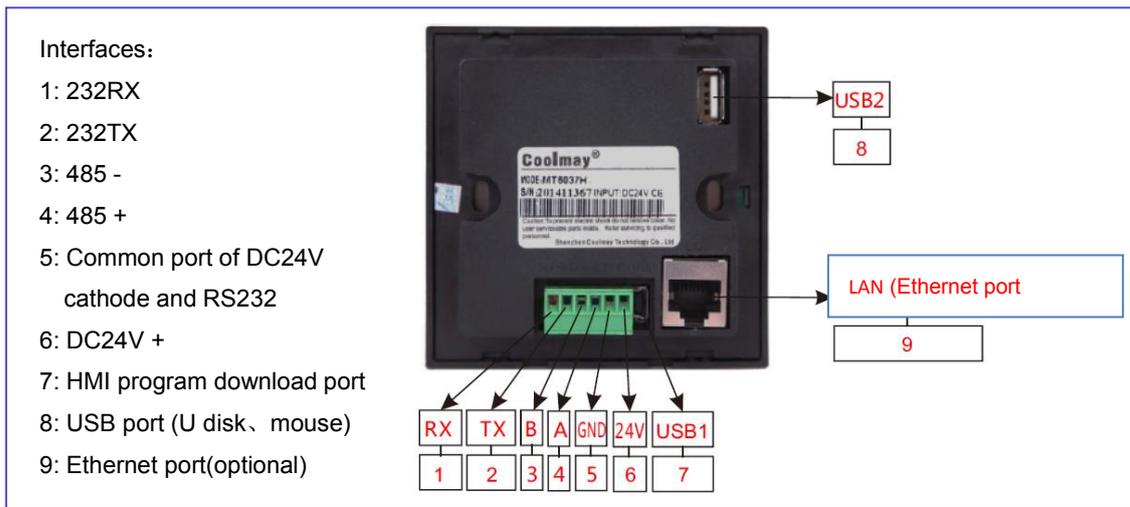
silver brushed panel(Black back case)



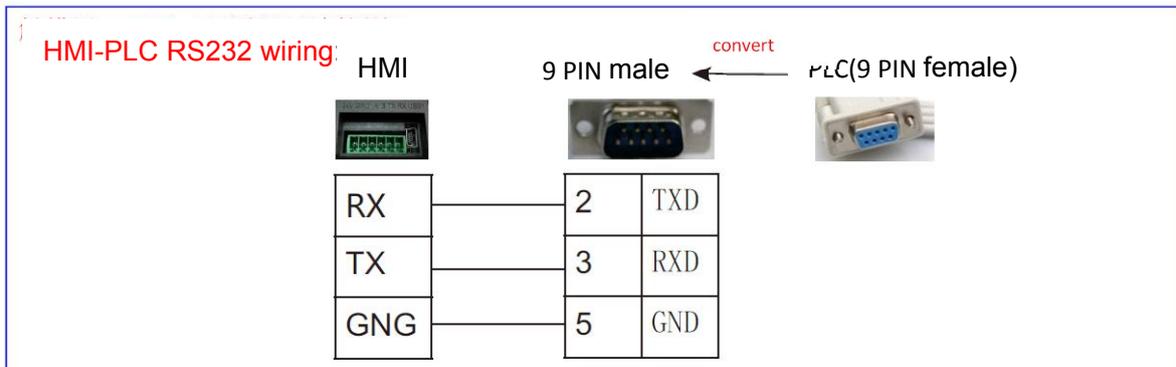
Golden brushed panel (White back case)



White back case



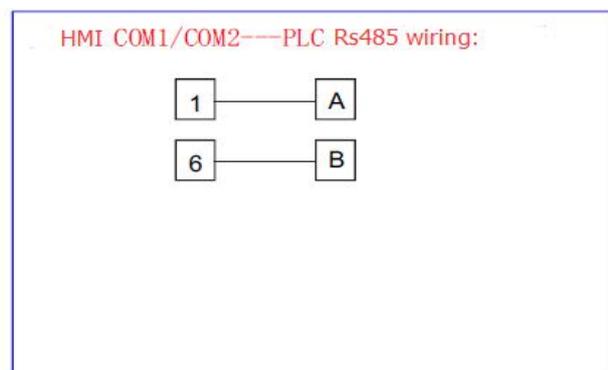
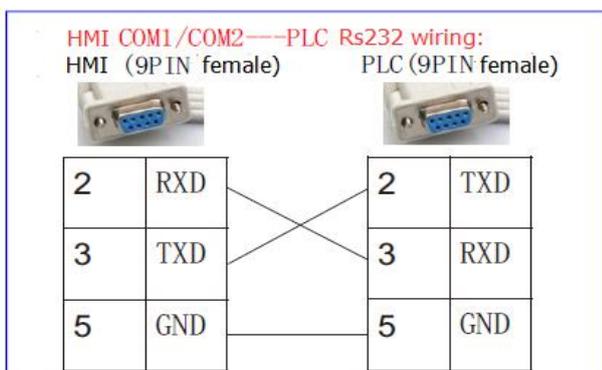
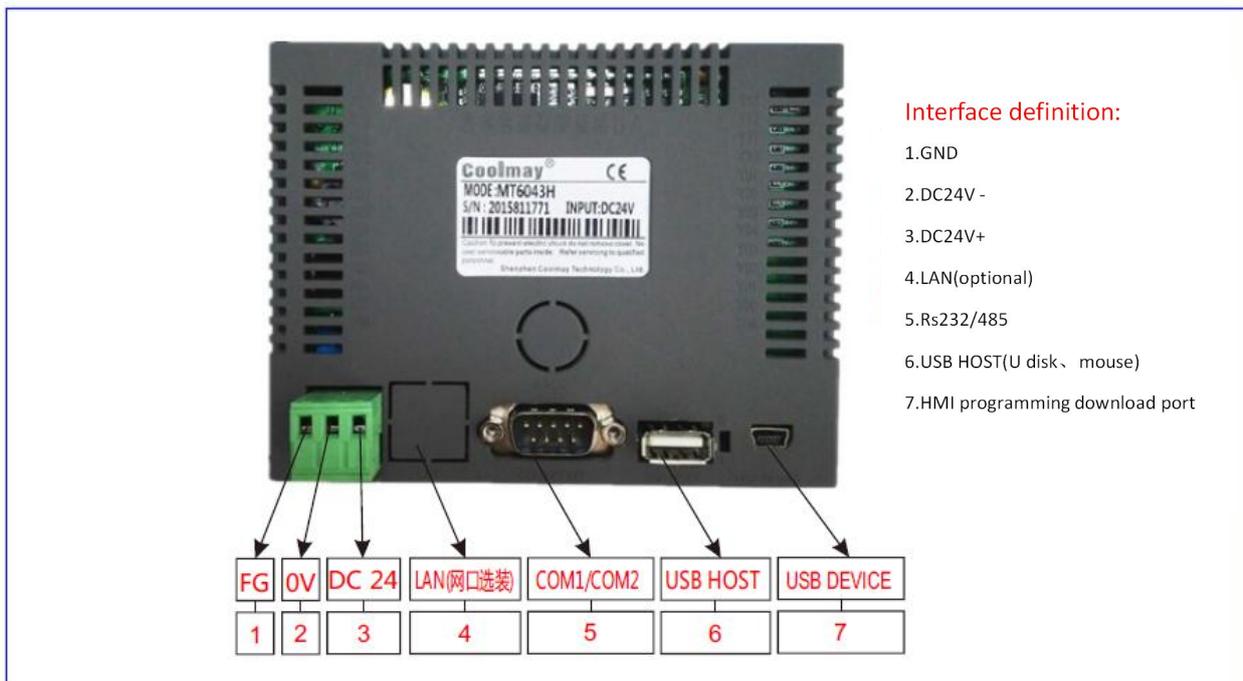
black back case



MT6043H



Gray panel



MT6050H



Black panel (black back case)



Silver brushed panel(black back case)



Golden brushed panel (White back case)



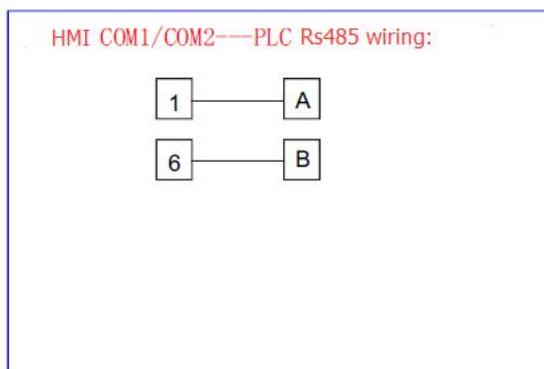
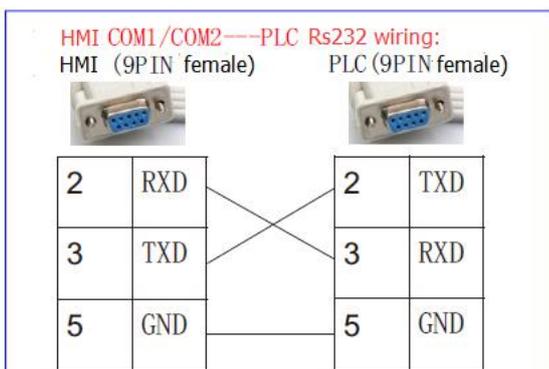
White back case



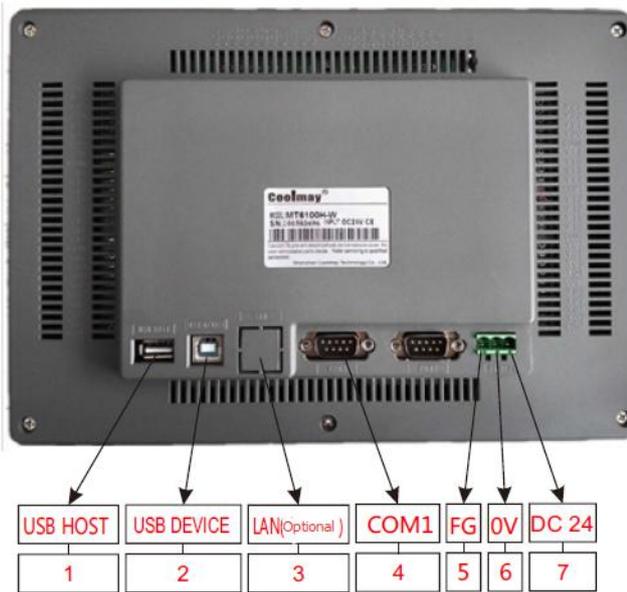
MT6070H



Gray panel

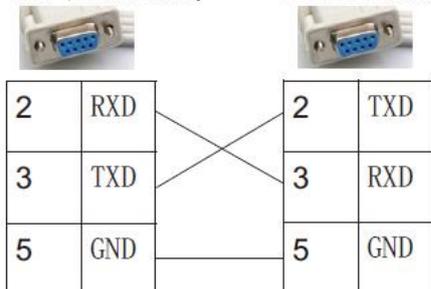


MT6100H

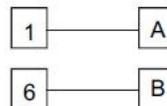


- Interface definition:
- 1.USB HOST(U disk, mouse)
  - 2.HMI programming download port
  - 3.LAN(optional)
  - 4.Rs232/Rs485
  - 5.frame ground
  - 6.DC24V-
  - 7.DC24V+

HMI COM1/COM2—PLC Rs232 wiring:  
 HMI (9PIN female)      PLC (9PIN female)

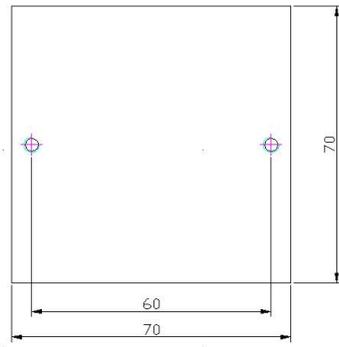


HMI COM1/COM2—PLC Rs485 wiring:

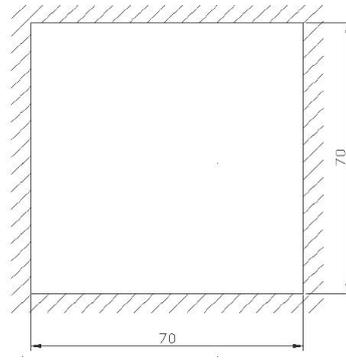


## Section 7 Installation

Dimensional drawing (MT6037H)

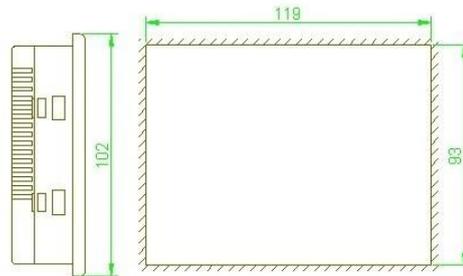
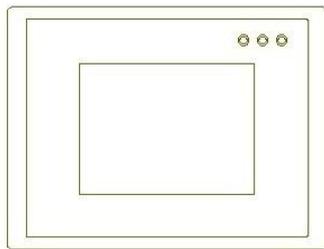
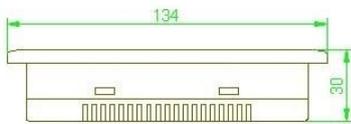


Wall Installation

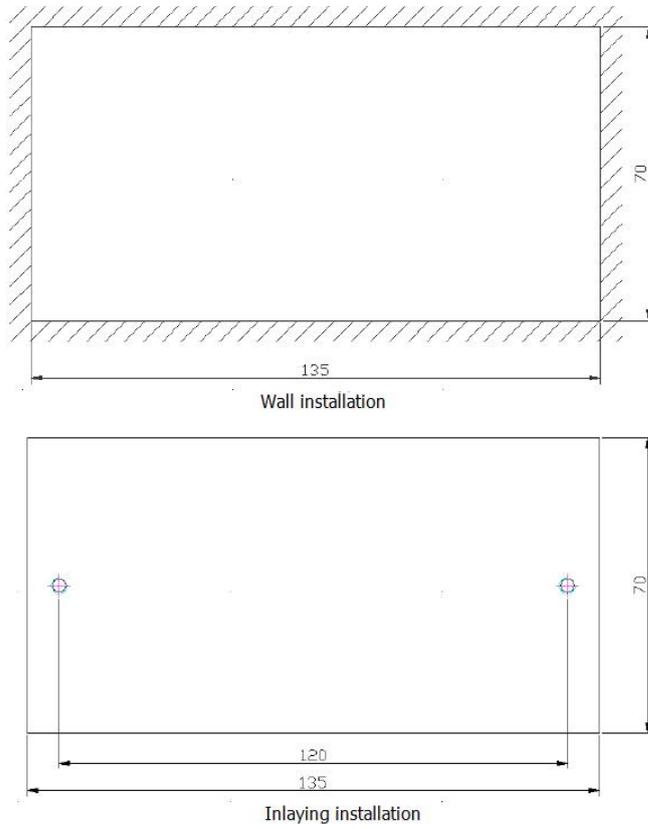


Inlaying Installation

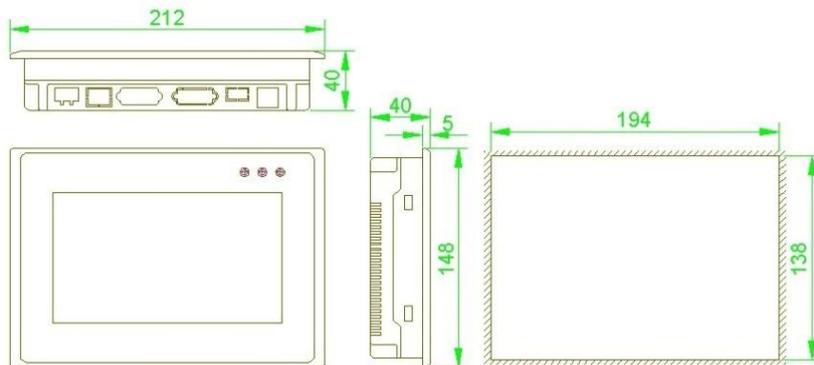
Dimensional drawing (MT6043H)



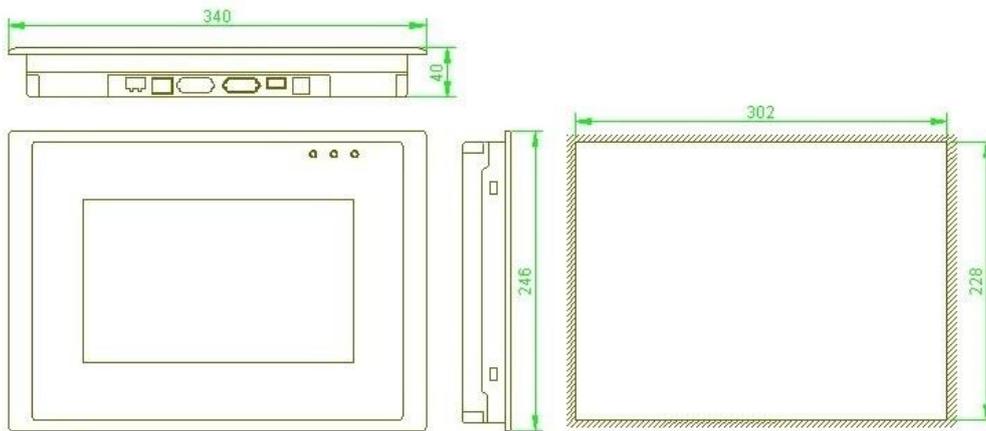
Dimensional drawing (MT6050H)



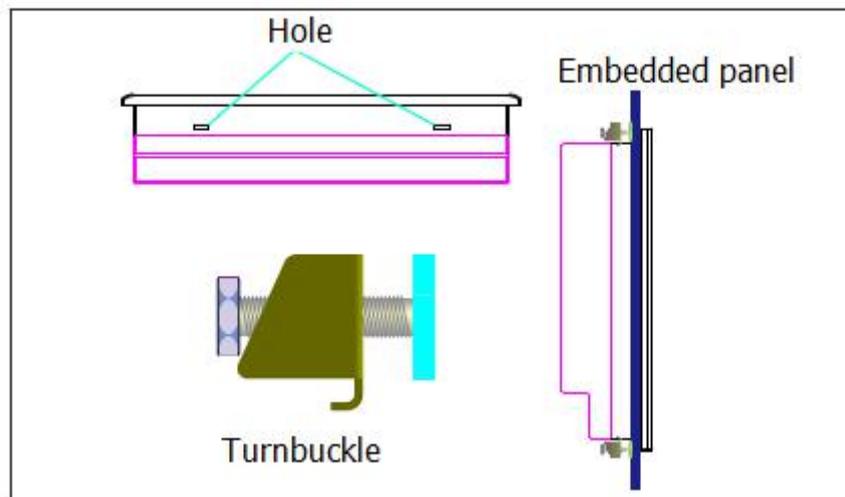
Dimensional drawing (MT6070H)



Dimensional drawing (MT6070H)



Installation Fastening



## Chapter 2 CoolMay HMI software

### Section 1 Installation (please download the latest version from the official website WWW.COOLMAY.NET)

This chapter introduces how to install Coolmay HMI software and screen editing, users can design working frame they want. Detailed explains will be listed in the later chapters.

#### ■ Hardware (recommended)

- 1、 PC host: CPU 80486 or higher
- 2、 Memory: 128MB or higher RAM
- 3、 Hard disk: Disc space available at least 100MB
- 4、 Display: VGA or SVGA
- 5、 Mouse: Compatible with Windows
- 6、 Printer: Compatible with Windows

#### ■ Software source

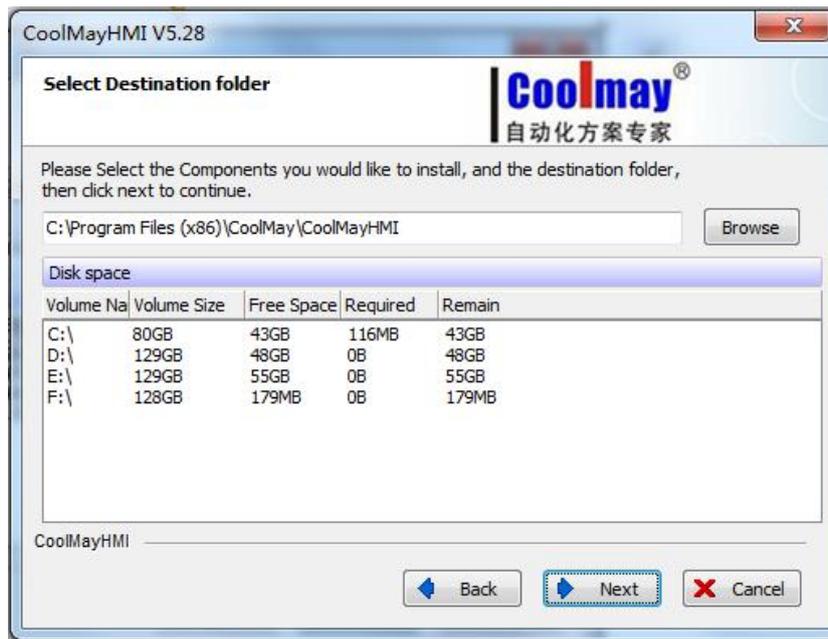
Download from the official website [HTTP://WWW.COOLMAY.NET](http://www.coolmay.net)

Steps to Install Coolmay HMI V5.28. Note: the software version is subject to the official website.

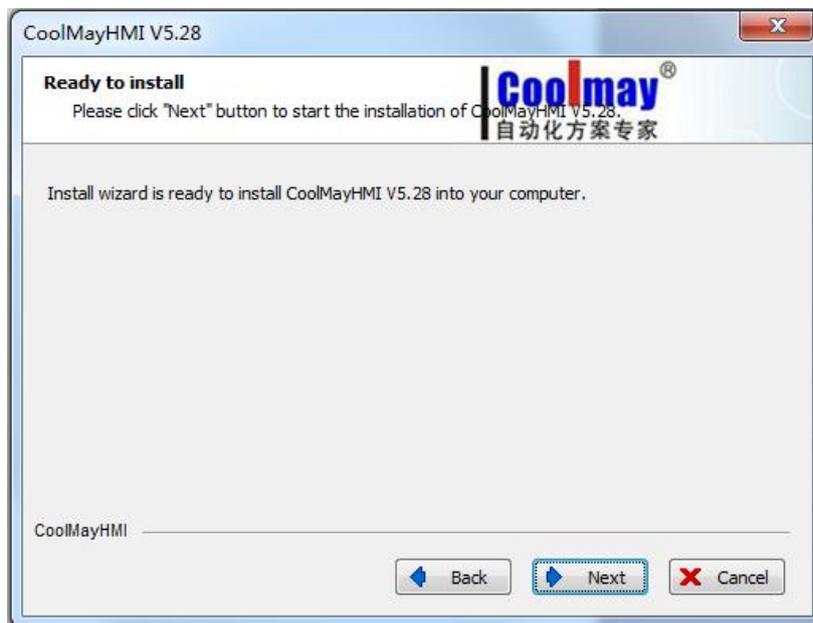
- Select [CoolMayHMI V5.28 EXE] in the installer window, start the installation program
- Click [Next] in the welcome window



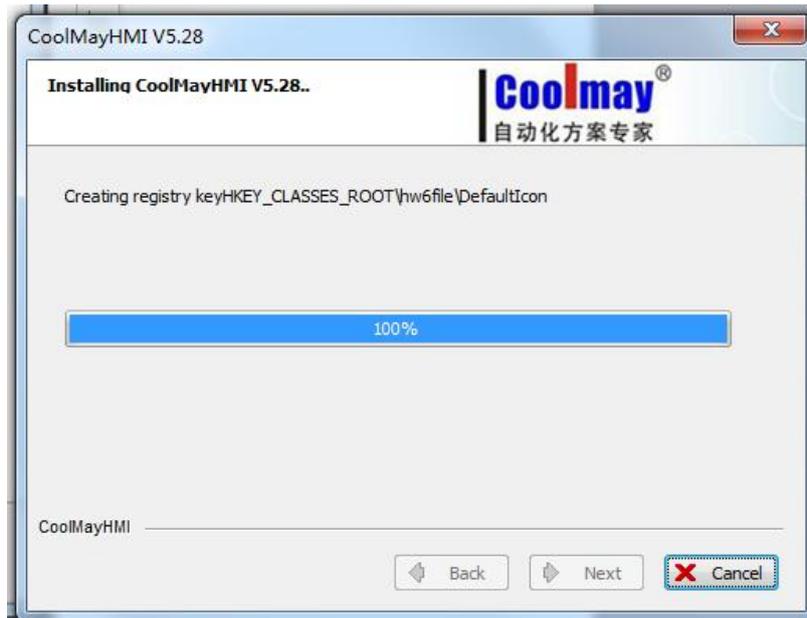
- Select a folder for installation, or use the default folder. Click [Next].



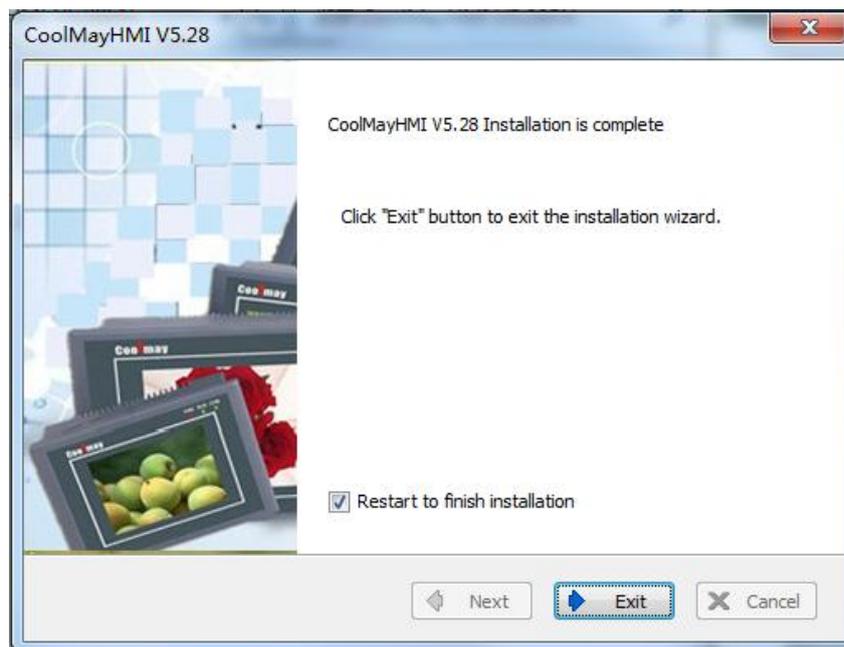
- Click [Next] to start installation.



- Installation progress



- Click [EXIT] to exit the installation wizard.

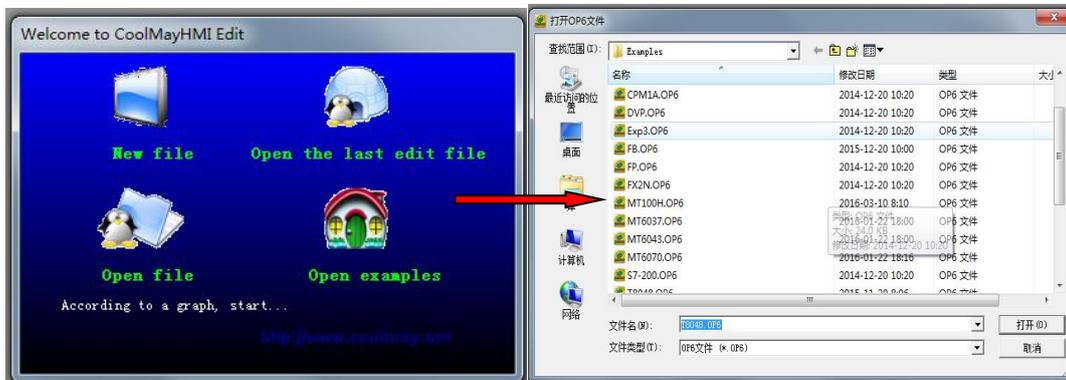


## Section 2 How to open CoolMayHMI

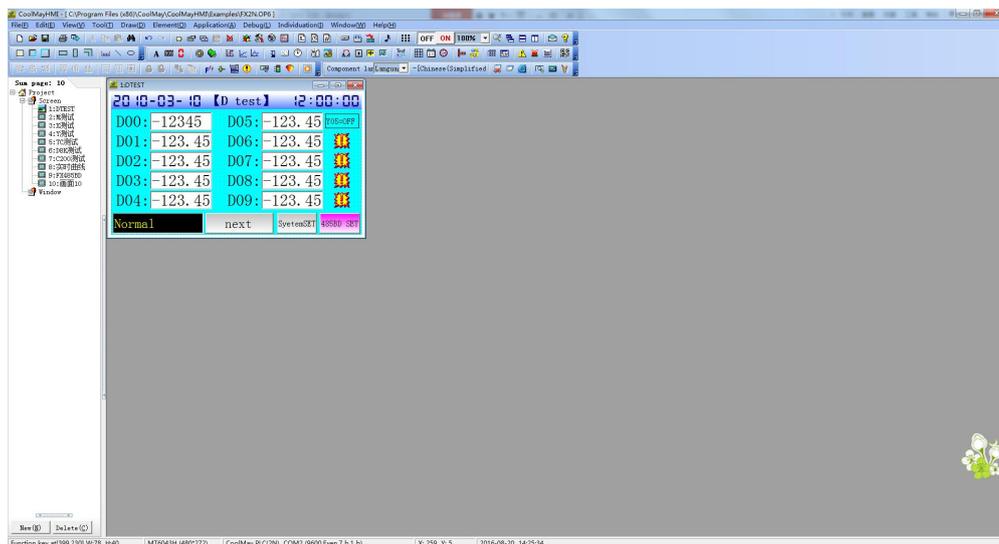
After installing CoolMayHMI , the shortcut icon  will be shown in the desktop. It can also be found in [Start] » [All Programs] » [CoolMay HMI].



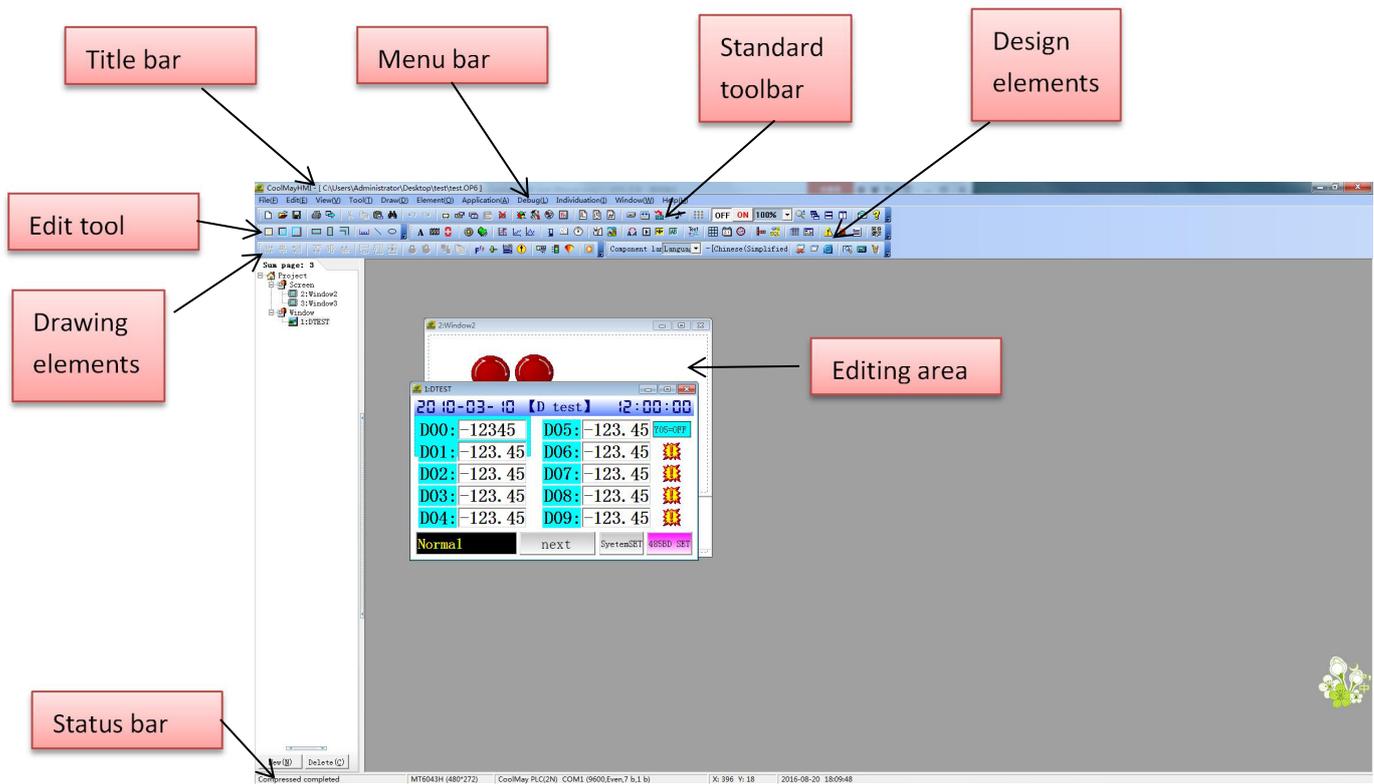
Take [Open examples] as an example: any of the above methods can run the configuration software. The welcome window will pop up when you start CoolMay HMI:



Click [Open examples] , Exp3.OP6 ->the interface is as follows:



## CoolMayHMI editing interface layout



Title bar: display the present route、file name、window number and name.

Menu bar: display menus of every command and these menus are all dropdown menus.

Standard toolbar: lay shortcut icons of commands. [Display file], [edite],[print] etc.

Design elements: command button for element element

Drawing element: command button for graphing elements

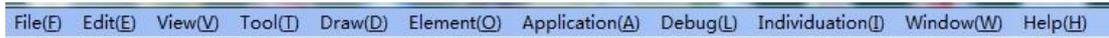
Edit tool: command button for editing elements

Image management: window of image management

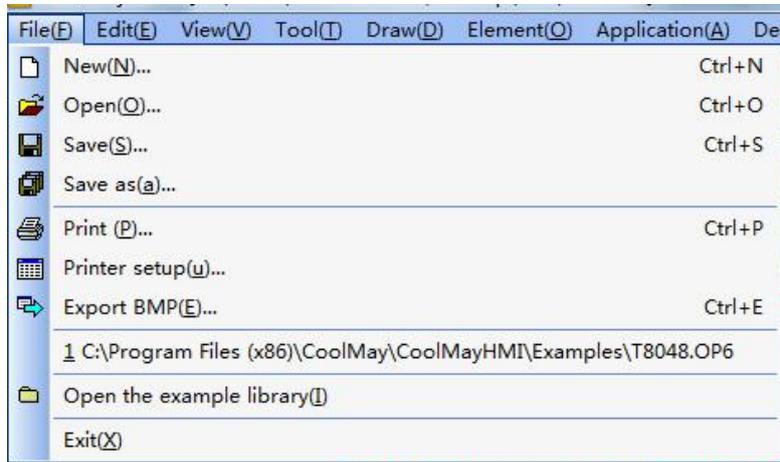
Screen editing area: windows for editing graphic elements

Status bar: display the current state, HMI parameter, communication element

## Section 3 Run Menu

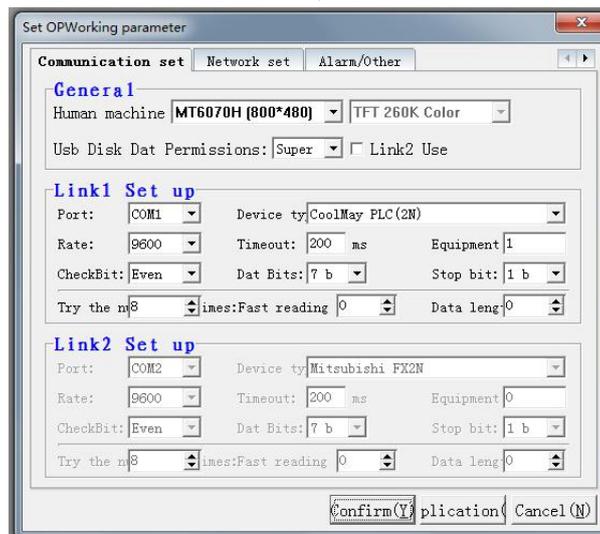


### 3.1 File



#### 1) Create a new project file

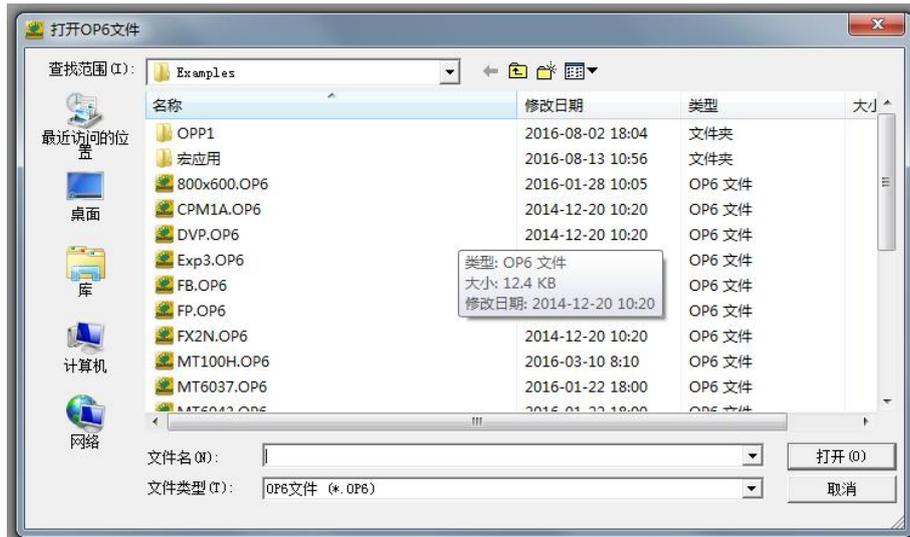
Click [New], or click the icon  in the toolbar, or use the defaulted hotkey **Ctrl+N**.



Set HMI parameters, Link1/Link2 COM port and PLC model, then click [Confirm].

#### 2) Open a project

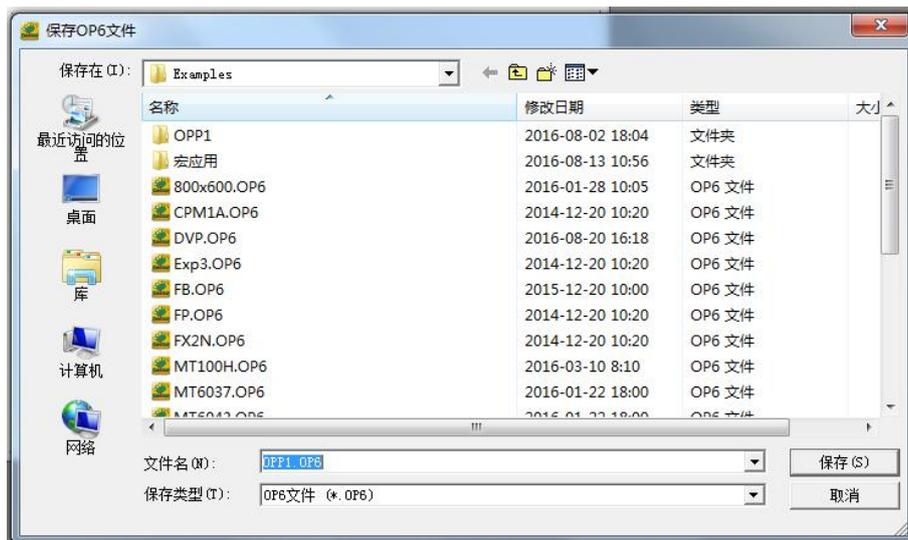
Open an existed project, click[Open] in [File] dialog box, or click  in the toolbar, or use the hotkey "Ctrl+O".



Select the project file , click [Open] or double click the file.

### 3) Save a project file

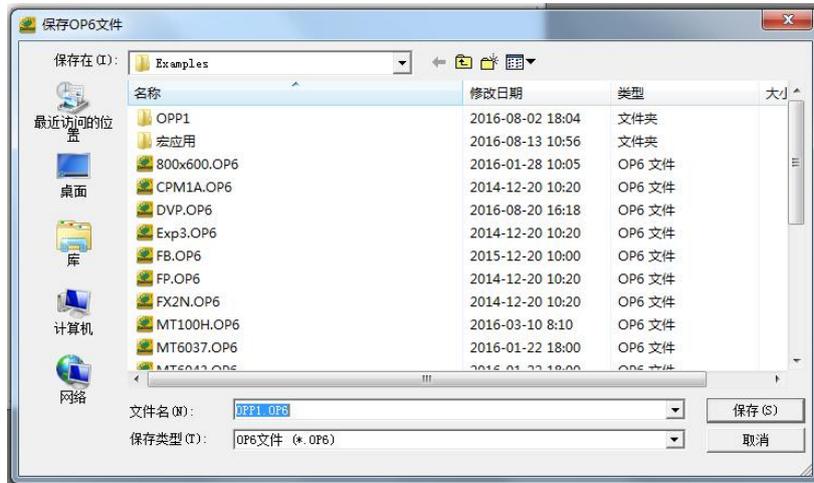
Click [Save] or the icon  in the toolbar, or use the default hotkey **Ctrl+S**.



When save a new project file, the save window pop up, entry the file name and click[save]. If the project file has been saved, no window pop up after click [save], just the latest information of the project file is saved then.

#### 4) Save as a new project file

Click [Save as] in [File] dialog box, [Save as a new file] dialog box will pop up no matter the file is a new one or an old one.



After entering the new file name, click[Save], then the file is saved as a new project file.

#### 5) Printer

Click [Print] or the icon  in the toolbar, or use the defaulted hotkey **Ctrl+P**.



#### 6) Printer settings

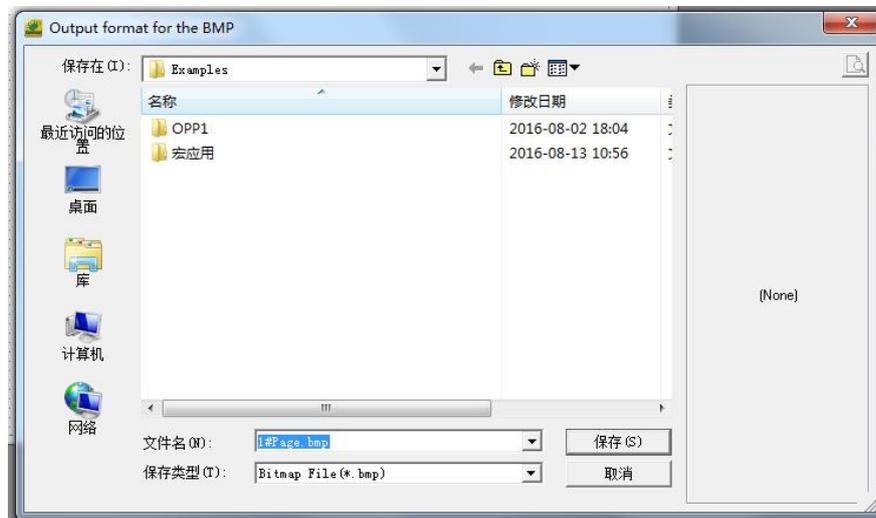
Select [Printer Settings] in the menu to open the following dialog box, then select a printer and set the parameters.

## 7) Export Picture

Store the current screen in the disk with BMP form, select [Picture Export] in [File] dialog box or click



in the toolbar, or the defaulted hotkey **Ctrl+ E**.

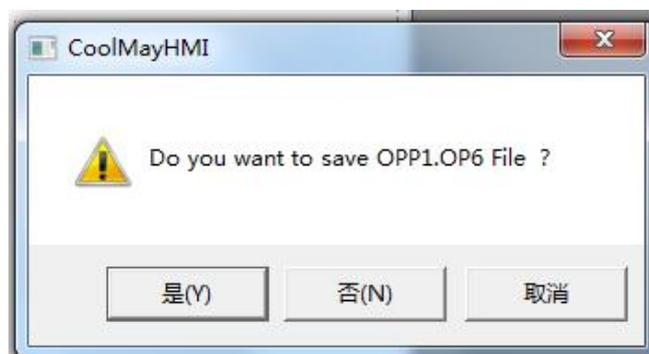


## 8) Route of project used recently

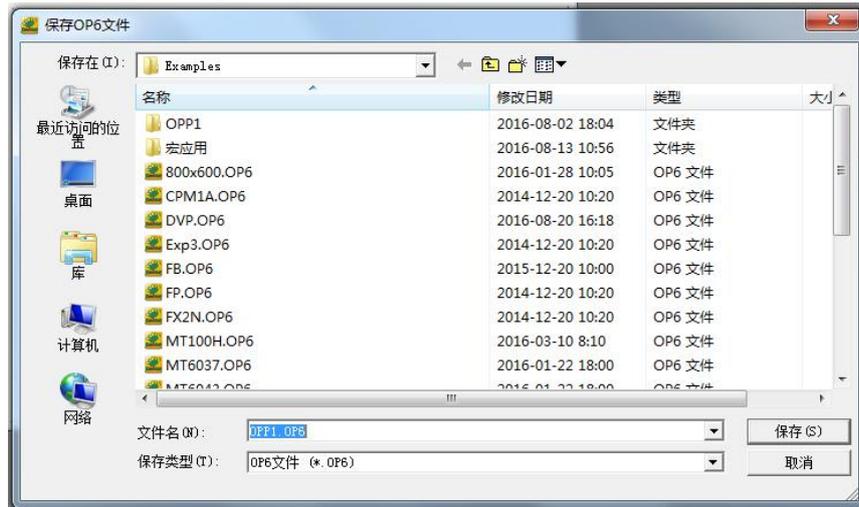
The project files which were used recently are stored here.

## 9) Exit

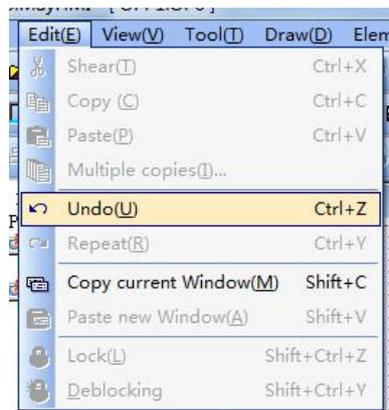
Select [Exit] in the [File] dialog box, or click [Close] in the main window, if the project file has been updated or hasn't been stored, then the following dialog pops up:



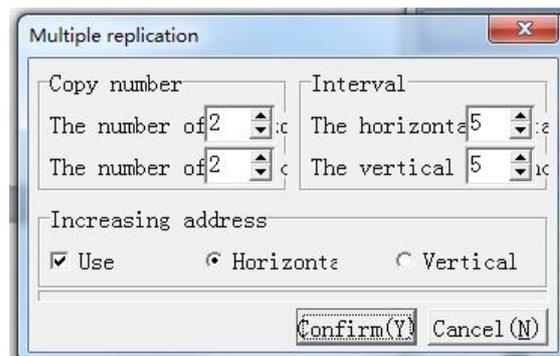
Click [Cancel], the project file won't be end. click [Yes] or [No], the project file will be closed later. If it is a new project file, the dialog of [Save as another new file] will be open, click [Save] or [Cancel], the program will be closed.



### 3.2 Edit (Quick Selection Tools)

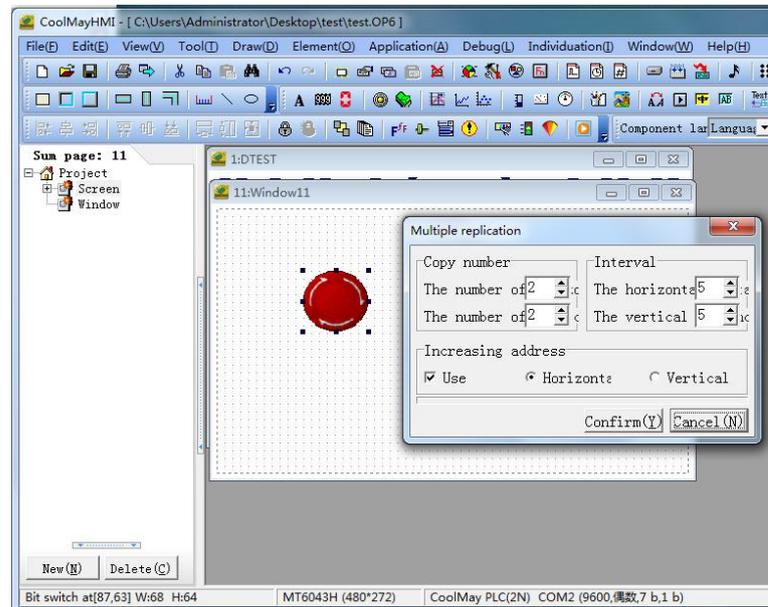


- 1) Shear Relocates the selected items to the clipboard. Hotkey: **Ctrl+X**
- 2) Copy Copies the selected items to the clipboard. Hotkey: **Ctrl+C**
- 3) Paste Pastes the items in the clipboard at the selected location. Hotkey: **Ctrl+Z**
- 4) Multiple copy  
Select a certain element to operate multiple duplication. The below dialog box will pop up.

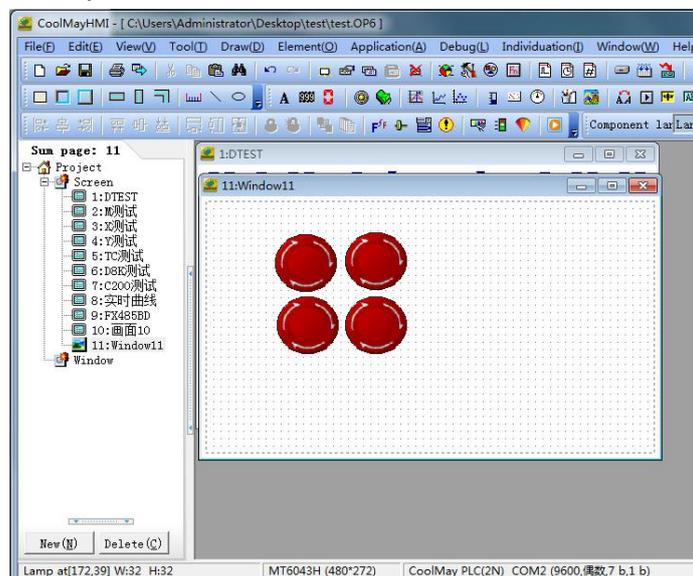


Set [Quantity in horizontal] and [Quantity in vertical], click [Confirm], get the module with the quantity of  $X*Y$ . Since the module itself is concluded in the matrix, the minimum quantity is 1. The interval is the same with the interval of elements. The new element will be auto separated after enter in and being duplicated. Incremental address is progressive increased horizontally or vertically as stated. If the unit is word, it will increase with the unit of word. If the unit is bit, it will increase with the unit of bit.

Example: quantity in horizontal=2, quantity in vertical=3



Example: Click [Confirm] to complete.



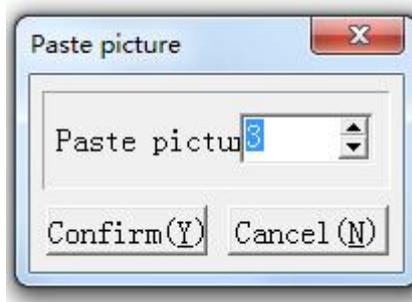
- 5) Undo Return to the last operation. Hotkey: **Ctrl+Z**
- 6) Repeat Repeat the last cancel operation. Hotkey: **Ctrl+Y**
- 7) Copy current Window

Copy the whole screen , if click paste at this moment, the original screen image will be pasted. Click

[Copy current window] in [edit], or click the icon  in the toolbar, or use the default hotkey **Shift+ C**.

8) Paste new window

Paster new screen image. Hotkey: **shift+ V**

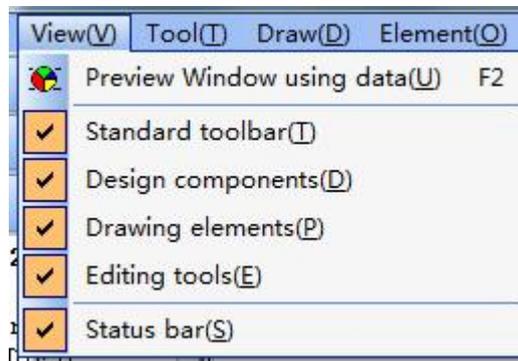


All the settings will remain the same, only the name will be assigned automatically.

9) Lock lock elements. Hotkey: **Shift + Ctrl + Z**

10) Deblocking Deblock the locked elements. Hotkey: **Shift + Ctrl + Y**

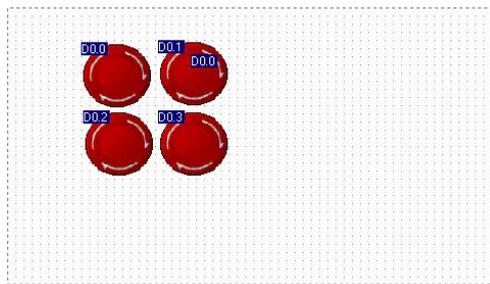
### 3.3 View



1) **Preview Window using data**

Display the data distribution of the screen which is used. Select [Preview Window using data

], or click the icon  in the toolbar. Hotkey: F2

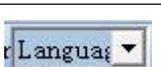


## 2) Standard Toolbar

Select whether display standard toolbar or not, see below figure:



Icon	Name	function
	New	Opens a new project file
	Open	Opens an existing project file
	Save	Save an project file
	print	Send the current project file to the printer
	Export BMP	Save the selected screen in the disk with image form(BMP)
	Cut	Relocates the selected items to the clipboard.
	Copy	Copies the selected items to the clipboard.
	Paste	Pastes the items in the clipboard at the selected location.
	undo	Turn back to the last operation
	repeat	Repeat the last operation
	Create new window	Create a new screen
	Modify the picture properties	Modify the screen attribute
	Copy current window	Copy the current current screen image
	Paste new window	Paste the screen image which is copied or cut.
	Delete	Deletes the selected screen image
	Preview window using data	Display the distribution condition of data used by the screen
	Set OP series	Set operation parameters of OP
	Bulk edit	Bulk modify all attributes of projects
	Set keyboard parameters	Set keyboard parameters

	Initial	Initial
	Clock	Clock
	Sub	Sub
	Target file path	Set login path of target file
	Compile	Compile a project
	download	Download project data via Ethernet in short time.
	Grid	Select whether to display the grids
	OFF	Bit unit means OFF
	ON	Bit unit means ON
	Preview scale	Select preview scale of screens
	Preview window using data	Preview data used by screen
	Cascade	Cascade MDI window
	Horizontal tiling	Tile MDI window horizontally
	Vertical tiling	Tile MDI window vertically
	Code convert	Open a code convert
	Help	Open online help
	Language selection	Select language
	Off-line simulation	No need to connect PLC while testing the compiled project on PC
	On-line simulation	Need to connect PLC while testing the compiled project on PC
	Ethernet monitoring	Construct network on PC to execute collective remote control
	Calculator	Open the calculator
	Draw	Open the drawing board

### 3) Design components

Select whether to display design element toolbar or not, please see the below figure.



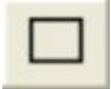
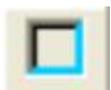
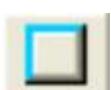
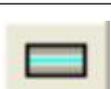
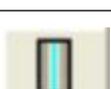
	Text	Place a new text
	Register	Place a new register
	Indicator	Place a new indicator light
	bit operation switch	Place a new bit operation switch
	historical trend chart	Place a new history tendency chart
	Real-time trend chart	Please a new waveform chart
	Bar graph	Place a new bar graph
	Meter	Place a meter clock
	picture	Place a new picture
	Dynamic text	Place a new dynamic text
	Function key	Place a new function key
	Variable Text	Place a new variable text

	Letter combinations	Place new letter combinations
	Roll lamp	Place a new roll lamp
	Focus prompt	Place a new focus prompt
	Date	Place a new data unit
	Time	Place a new time unit
	Clock pulse	Place a new clock pulse
	Clock counter	Please a new clock counter
	Data save	Place a new data save unit
	Historical data sheet	Place a new historical data sheet
	recipe data list	Place a new recipe data list
	Alarm record	Place a new alarm record list
	Amendment record list	Please a new amendment record list
	Memo	Place a new memo

#### 4) Drawing Elements

Select whether to display drawing element toolbar.



	Rectangle	Place a new rectangle
	Concave rectangular	Place a new concave rectangle
	Convex rectangular	Place a new convex rectangle
	Horizontal pipe	Place a new horizontal pipe
	Vertical pipe	Place a new vertical pipe
	Pipeline joints	Place a pipeline joint
	Graduation	Place a new scale
	Line	Place a new line
	Ellipse	Place a new ellipse

#### 5) Editing Tools

Select whether to display editing toolbar or not, see the below figure.

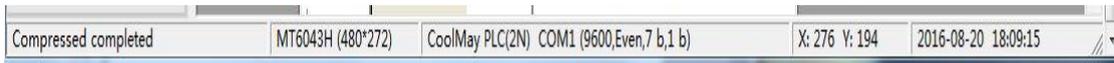
Paragraph Styles; Font Names; Font Size; Font Color; Bold ; Italic; Underline;  
AlignLeft; Center; Align Right; Bullets; Numbered List; Decrease Indent; Increase Indent.



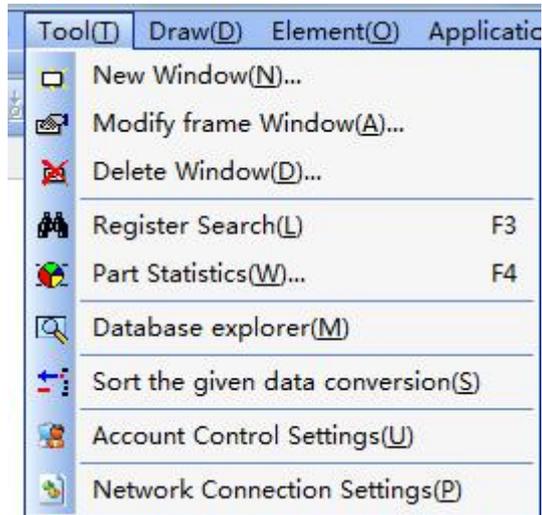
	left justifying	Align selected units to the left
	center horizontally	Horizontally center selected unit
	Align Left	Align selected units to the right
	Align top edge	Align selected units to the top edge
	Center Vertically	Vertically center selected unit
	Align from Bottom	Align selected units to the bottom
	Same width	Set the select unit the same width with the standard ones
	Same height	Set the select unit the same height with the standard ones
	Same size	Set the select unit the same size with the standard ones
	Lock	lock elements, prevent well-adjusted pages from accidentally damage
	Deblocking	Deblock the locked units
	Pushed down to the bottom	Pushed selected units to the bottom
	Multiple copy	Select an unit and multiply copy it

## 6) State Bar

Select whether to display the state bar or not, please see the below figure:



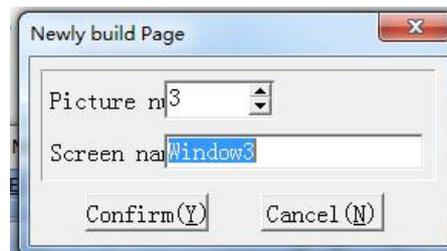
## 3.4 Tool



### 1) New Window

Add an edit screen, the screen name is decided by the user or defaulted by the system.click[New

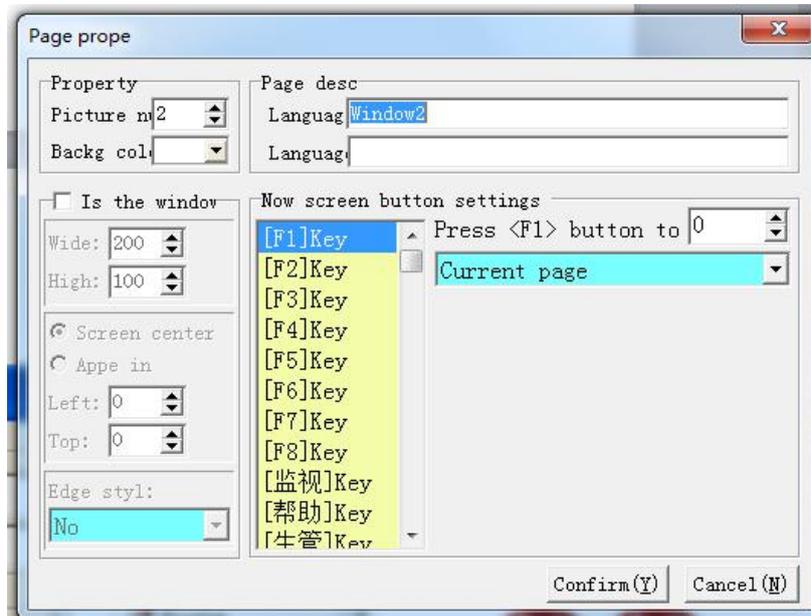
Window]in [Tool] dialog box or the icon , then the following dialog appears.



Reset picture NO. and screen name, or use the default ones, then click[Confirm].

## 2) Modify frame Window

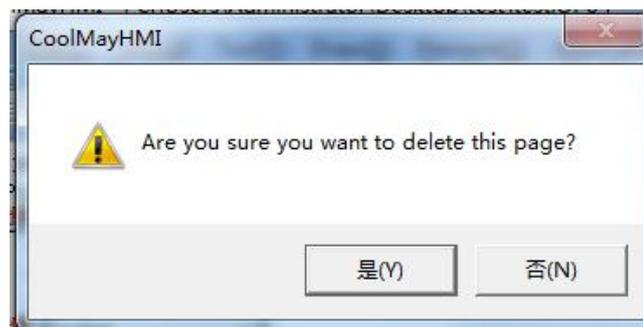
Click [Modify frame Window] or the icon , the following dialog appears.



Whether modify the page to a window and the width and height, the back color and description can be decided here.

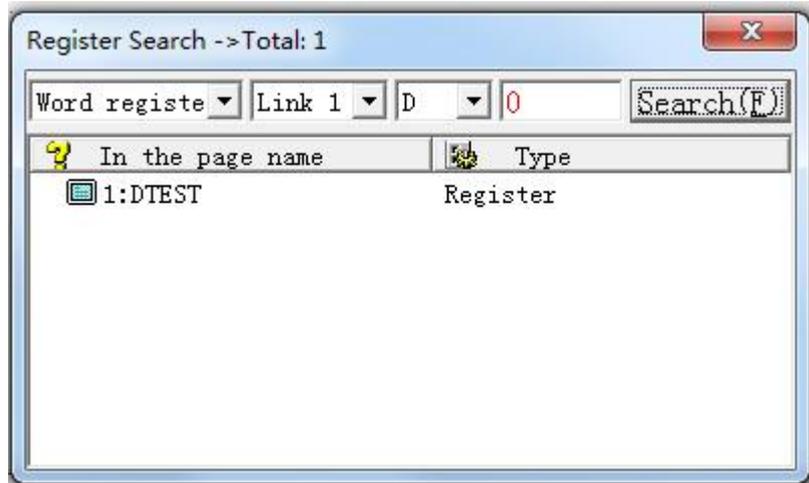
## 3) Delete Window

Delete the current page and relevant units (Note: when execute the operation, the deleted window cannot be withdraw. Please think twice before execution. Click [Delete Window] or the icon . Then the following dialog will pop up.



#### 4) Register Search

Look up the employment and distribution of registers. Set the search content firstly, click [Find], all the units being found will be export to the output field,click the option, the file will be selected automatically.



Click [Register Search] in [tool] dialog box. Hotkey:F3/CTRL + F

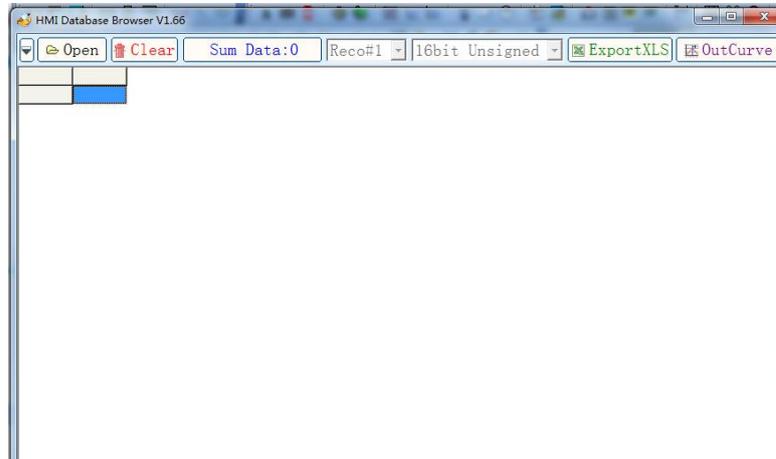
#### 5) Part Statistics

Collect statistics for the application of current window, click [Part Statistics], or use the hotkey F4, as below figure:

Component	Count
Total	0
Text	0
Register	0
Lamp	0
Historical Trends	0
Bar graph	0
BMP	0
Dynamic text	0
Function key	0
Variable text	0
Date	0
Time	0
Historical data sheet	0
prescription table	0
Alarm record	0
Real time alarm table	0
Flow Block	0
SQLquery	0
GIF Viewer	0
Memo	0
Rectangle	0
Hollow rectangle	0
Convex rectangle	0
Cross pipe	0
Vertical pipe	0
Scales	0
Ellipse	0
Line	0
Pipe Joint	0
Real-Time Trend	0
XY trend	0
Combination of letters	0
Meter	0
Roll Lamp	0

## 6) Database Explorer

Search the historical data list、 history tendency chart、 alarm record list and other data stored in database storage area, which is exported by U disk. These data can be convert to excel and curve through database explorer.



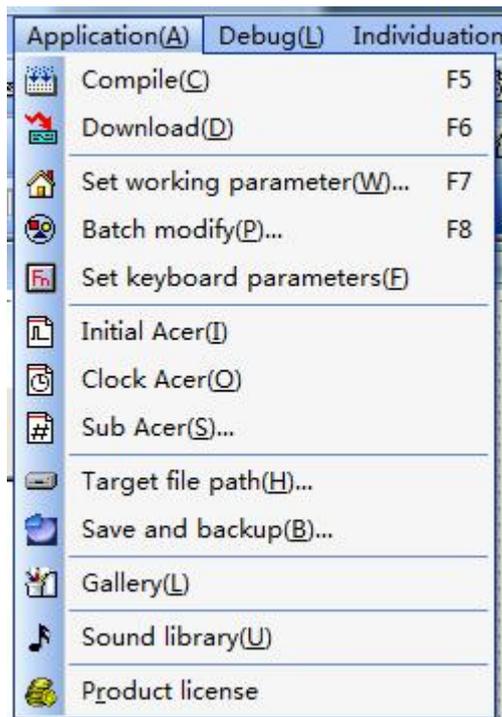
## 7) Account Control Settings

When used in computers with win7 and win8 system, account control settings need to be changed, move the cursor to never notify.

## 8) Network Connection Settings

When HMI download cable well connected with a computer, local area connection named Coolmay HMI will be added automatically. Right click it, select property and the IP address can be checked. If it is obtain IP addresses automatically, it can be selected to use the following IP address, set it as 222.222.222.X. Set subnet mask as 255.255.255.0. For example, set IP address as 222.222.222.3, subnet mask as 255.255.255.0. If there isn't any automatic identification, please turn to Coolmay official website([www.coolmay.net](http://www.coolmay.net)) and check the driver installation steps of win7 32/64.

### 3.5 Application

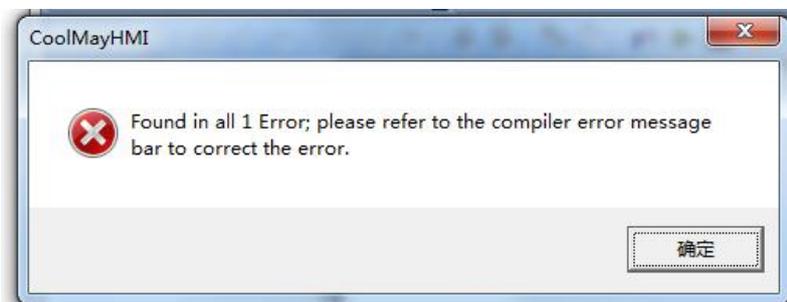


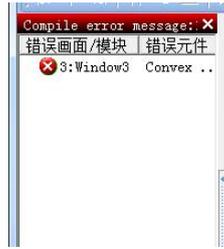
#### 1) Compile

By selecting this item, the editing element can be compiled to the format which can be accepted by HMI. If this item is a newly opened project, the file should be stored before compiling. If this item has a backup or it is an old file, users can compile directly. During the compiling process, messages can be export to the output field. If there are errors, they will be listed at the same time to remind users. If error

occurs, element file won't be generate. Users can click [Compile] or click the icon , or use the hotkey F5.

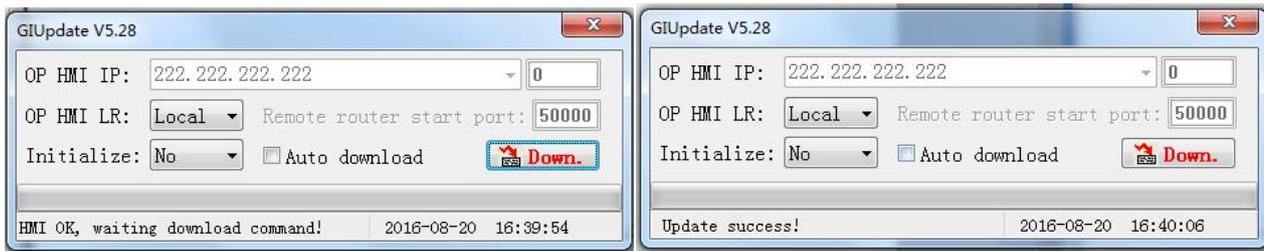
Compile Error:





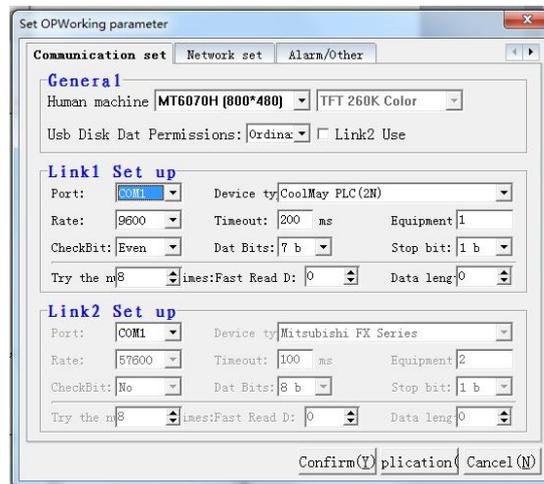
## 2) Download

Download window data to HMI, click it or click  in the toolbar, or use the defaulted hotkey F6. If the PC cannot be connected with HMI, error messages will pop up to remind users, such as the below diagram.

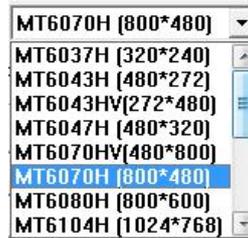


## 3) Parameter Settings

Set the working parameters of current project, click it or click  in the toolbar, or use the defaulted hotkey F7. They are divided into general, Link1, Link2, RS485, CAN-Bus, ethernet, interactive, control, defaulted value, language, record buffer, boot recipe download setting. Detailed information please refer to chapter 5.



a) HMI parameter: select resolution according to different HMI.



MT6037H: MT6037(320\*240);

MT6043H & EX2N-43H: MT6043(480\*272);Vertically display: MT6043V(272\*480);

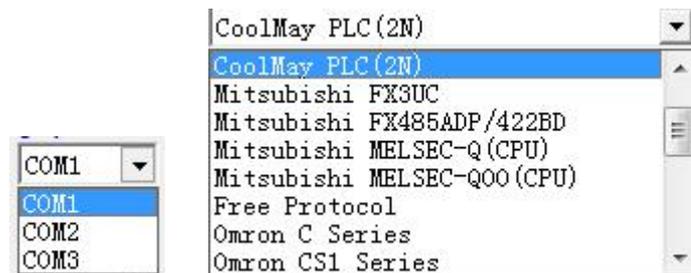
MT6070H & EX2N-70H: MT6070(800\*480); Vertically display: MT6070V(480\*800);

MT6100H & EX2N-100H: MT6070(800\*480);Vertically display: MT6070V(480\*800)。

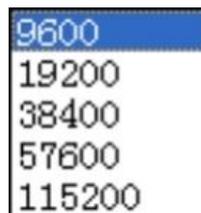
MT6050H: MT6070(800\*480); Vertically display: MT6070V(480\*800);

b) Link2: choose whether to use Link2 communication function or not.

c) COM port: set the COM port of HMI, COM1(for RS232 communication) or COM2(for RS232 or RS485)



d) Baud rate: 9600、19200、38400、57600 or 115200.



e) Communication timeout: set "communicate timeout", the default time is 200(ms) when communication with PLC.

f) PLC ID: set PLC station number, from 1 to 255.

g)Inspect bits: select NULL、 odd number or even number.

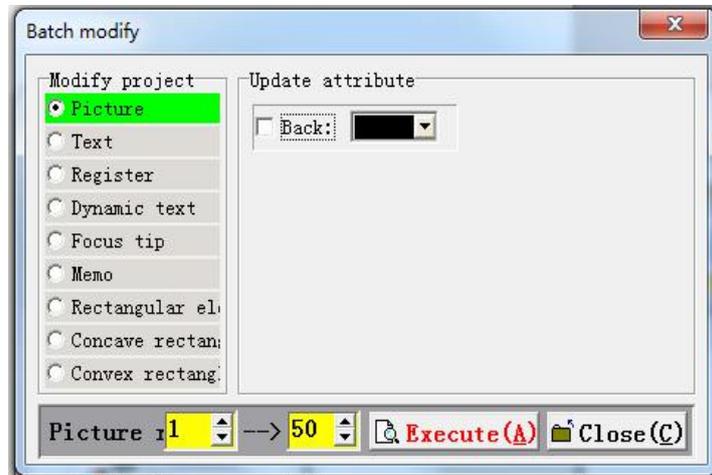


f) Data bits: select 6 bits, 7bits or 8 bits.

i) Stop bits: select 1 bits or 2 bits.

#### 4) Batch modify

Batch modify all attribute of each project,click [Batch modify] in [Application] dialog box,or click  in the toolbar, or use the defaulted hotkey F8.



##### ◆ Modify Item

Select screen image,text, register, dynamic text,memo, rectangular element, concave rectangular element or convex rectangular element.

##### ◆ Modify Property

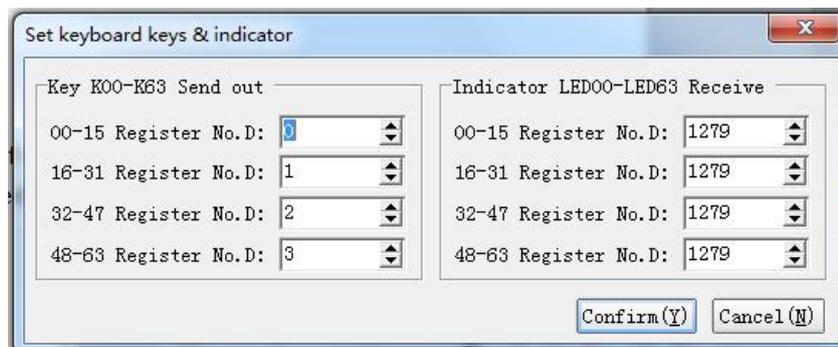
According to the change of modify item, the contents of modify property is also different. Reset new color or value after selecting the attributes needed to bulk editing.

##### ◆ Screen scope

Set the effective range of bulk editing, set value:1-240.

#### 5) Set keyboard keys and indicator

Set the communicate ID of keys and keyboard LED indicator. Click [5)Set keyboard keys and indicator] in [Application] dialog box, or click  in the toolbar. The below figure appears.



## 6) Initial

Compile initial macro, detailed information please refer to chapter four . Click [ Initial ], or click the

icon  in the toolbar.

## 7) Clock

Compile clock macro, detailed information please refer to chapter four. Click [Clock], or click the icon

 in the toolbar.

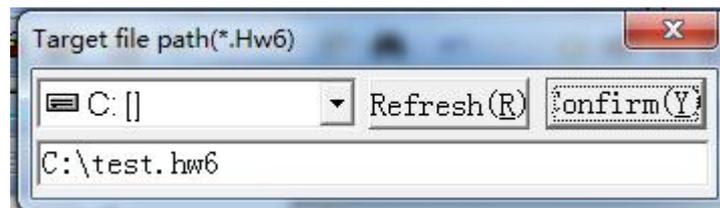
## 8) Sub

Compile sub macro, detailed information please refer to chapter four. Click [Sub], or click the icon  in the toolbar.

## 9) Target File Path

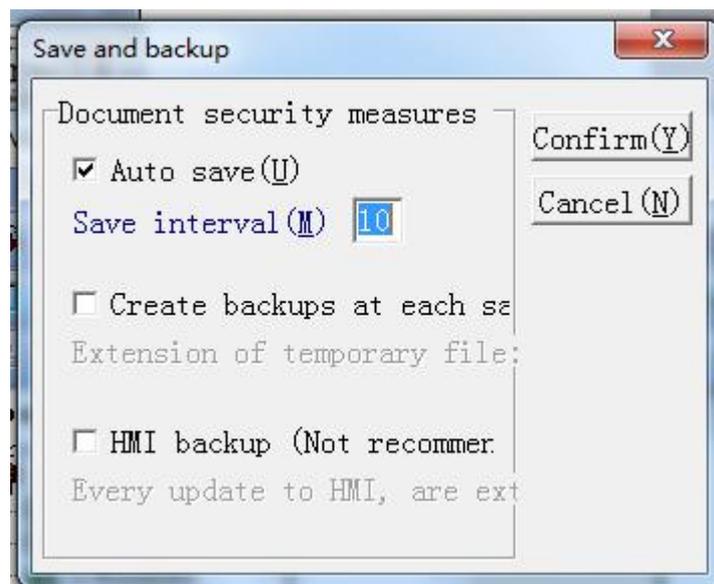
The output path of target file, the already compiled file will be stored here. Click [ Target File Path] in

[Application] dialog box, or click the icon  in the toolbar, then the following dialog will pop up.

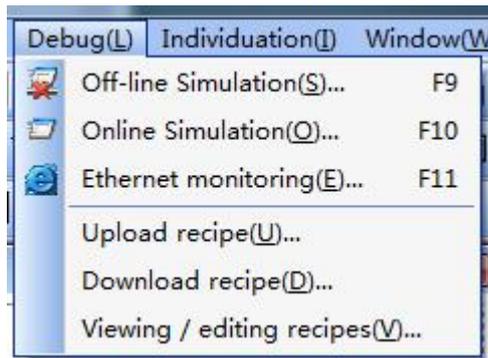


## 10) Save and Backup

Set whether autosave or not in fixed time, units: minute (m) ; select whether create backup each time you save, the following figure appears:



### 3.6 Debug Menu

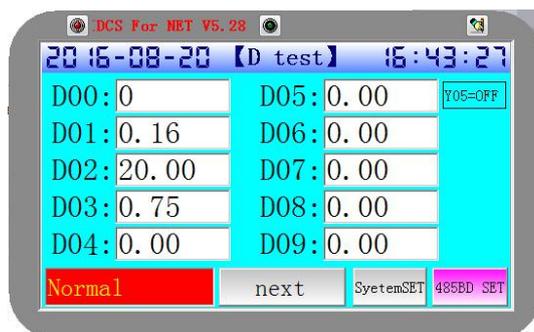


#### 1) Off-line Simulation

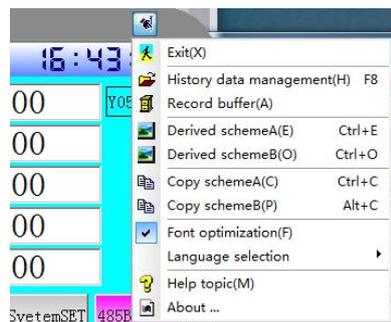
This function is used to test the editing window、read-write address and macros. Simulate project operation on PC without any connection.click [Off-line Simulation] in [Simulation] dialog box, or the icon



, or hotkey F9, the below figure will pop up:



Action menu of Off-line Simulation: Click the icon in the top right corner of simulation.



#### 2) On-line Simulation

On-line simulation: Simulate project operation on PC and PLCs are directly connected with PC. Drive the connected PLCs through simulation on PC. Click [On-line Simulation] in [Simulation] dialog box, or click

the icon , or use the defaulted hotkey F10.

The execution situation please refer to the below figure.



During on-line simulation, Administrator Login should be conducted before modifying the parameters. Otherwise the following dialog box will pop up.



Click the icon in the toolbar, the following dialog box appears:

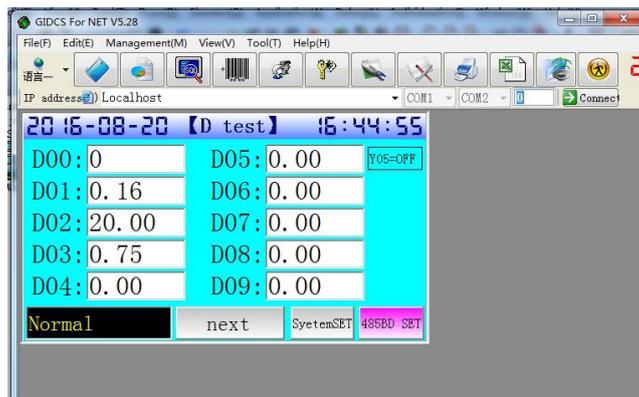


There is an initial administrator account, the user name and the password are both 'luo'. Please modify the administrator account after the first time starting the system.

### 3) Ethernet monitoring

Conduct collectively remote control by constructing network on PCs. Click [Ethernet Monitoring] in

[Monitoring] dialog box, or click the icon , or use the default hotkey F11. The executed situation please refer to the below figure:



During ethernet monitoring, Administrator Login should be conducted before modifying the parameters.

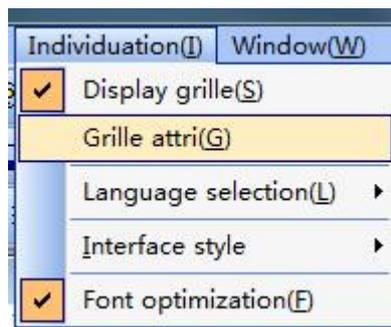


Click the icon in the toolbar, then the following dialog box will pop up:



There is an initial administrator account, the user name and the password are both luo. Please modify the administrator account after first time starting the system.

### 3.7 Individuation Menu

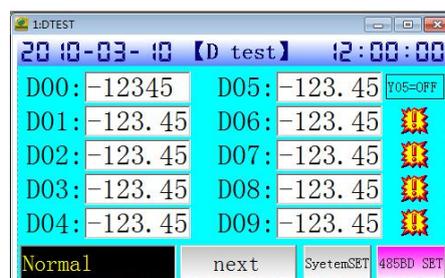
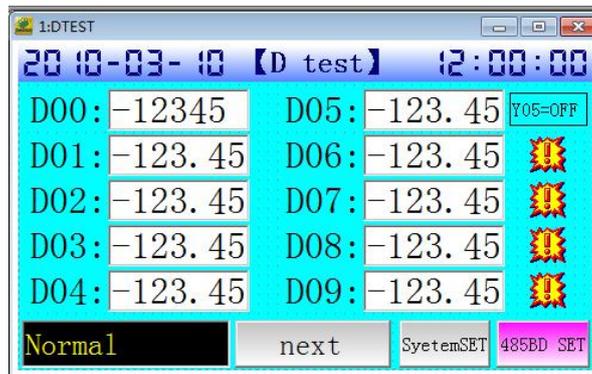


#### 1) Display Grille

Select whether display grids, click [Display Grille] in [ Individuation] dialog box, or click the icon



, the two figures below are with grilles and without grilles.

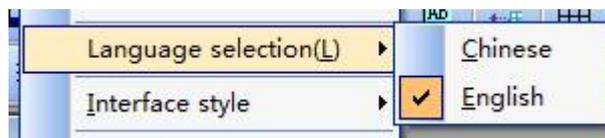


## 2) Grille Attribution

Set grid attribution, click [Grille Attribution] in [Personalized] dialog box, then the below figure will pop up:



## 3) Language selection--Chinese or English



## 4) Interface style



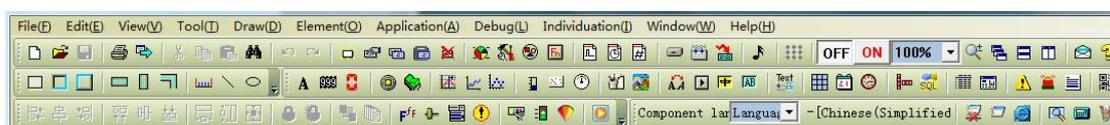
## Style 1



## Style 2

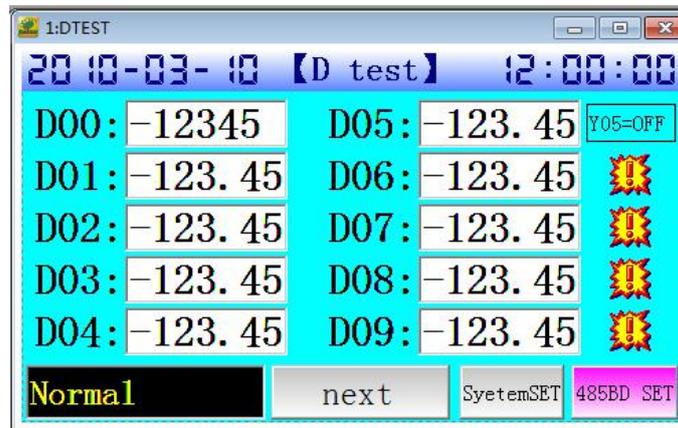


## Style 3

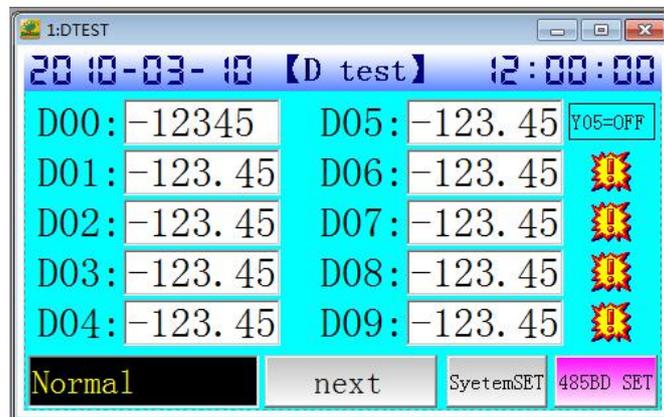


## 5) Font optimization

Select whether to optimize font.

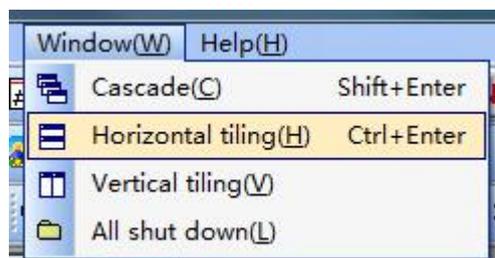


Before optimization



After optimization

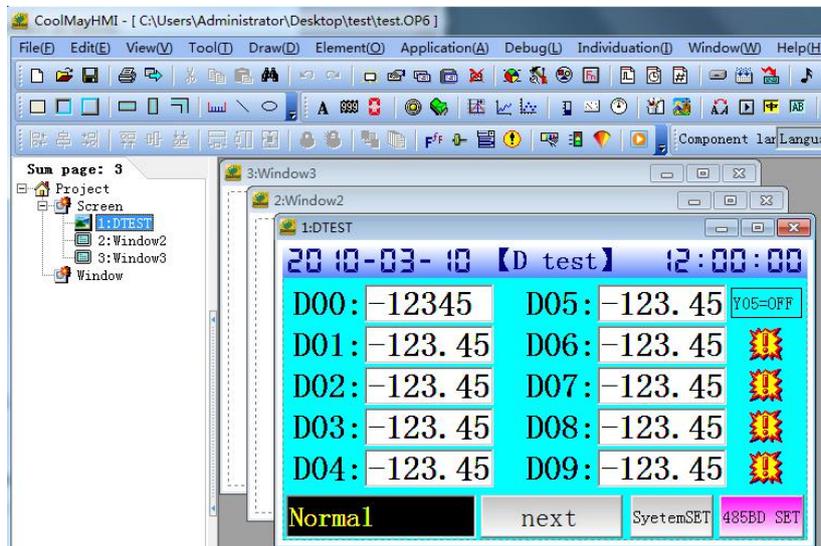
## 3.8 Window



### 1) Cascade

Screen images are displayed in the form of overlap,multiple images can be displayed at a time.All images will be displayed in the form of overlap after switching.Click [Cascade] in [Window] dialog box, or click the

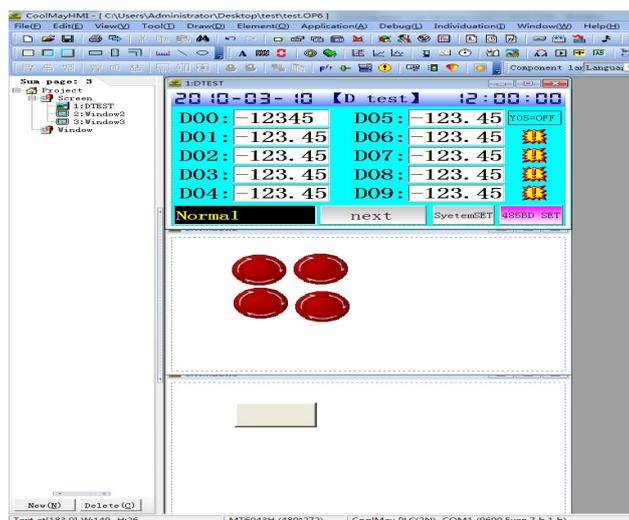
icon  , or use the defaulted hotkey Shift+Enter. The effect images are as below:



### 2) Horizontal tiling

Screen images are displayed in the form of tile horizontally. The height will shrink automatically in order to display all the images, so multiply images can be displayed simultaneously. Click [Horizontal tiling] in

[window] dialog box, or click the icon  , or use the defaulted hotkey Ctrl+Enter. The effect image is as below:

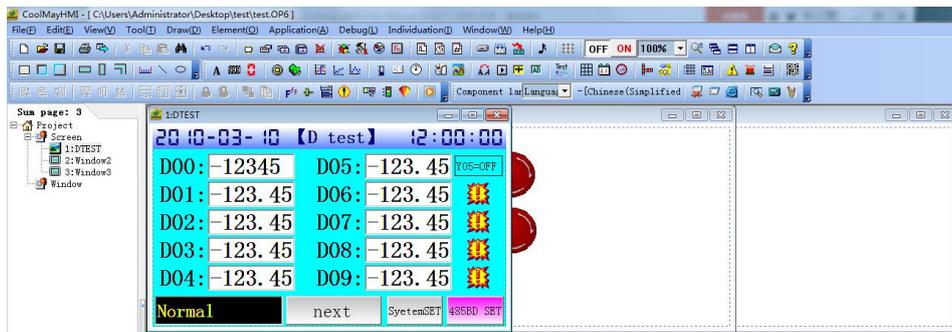


### 3) Vertical tiling

Screen images are displayed in the form of tile vertically. The width will shrink automatically in order to display all the images, so multiply images can be displayed at the same time. Click [Vertical tiling] in

[Window] dialog box, or click the icon  .

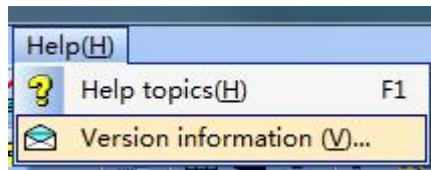
The effect image is as below:



### 4) All shut down

Close all MDI screen images. Click [All shut down] in [Window] dialog box.

## 3.9 Help



### 1) Help Topics

Click it and then ONLINE HELP will appear. If you have any questions to inquire, you can turn to here

firstly. Click [Help Topics] in [Help], or click the icon  in the layout toolbar. The below figure will appear.

### 2) About CoolMayHMI

Display the version of CoolMayHMI, the latest version should be download in the official website ([www.coolmay.net](http://www.coolmay.net)). Click [Version information], the below figure will appear.



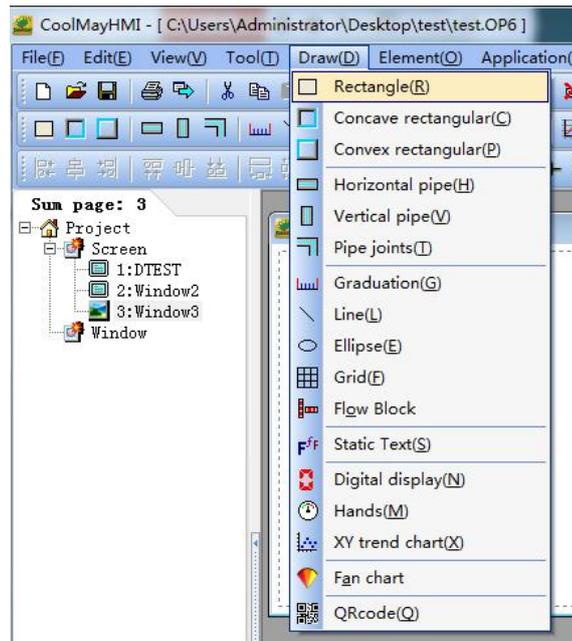
## Chapter 3 Element Function

In order to let users understand that every element of CoolMayHMI has its own function, this chapter will give explanations to each of them.

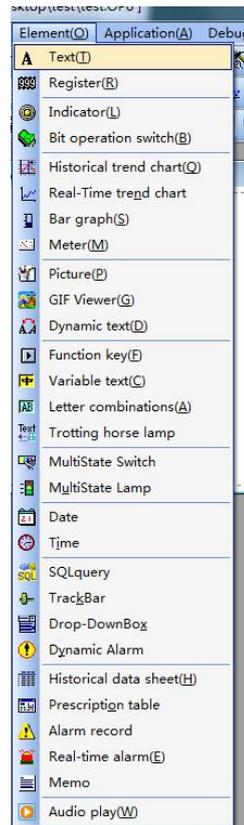
### Section 1 How to select element

There are two ways to start elements.

1.[Draw]»[Element], select the element and then start editing.

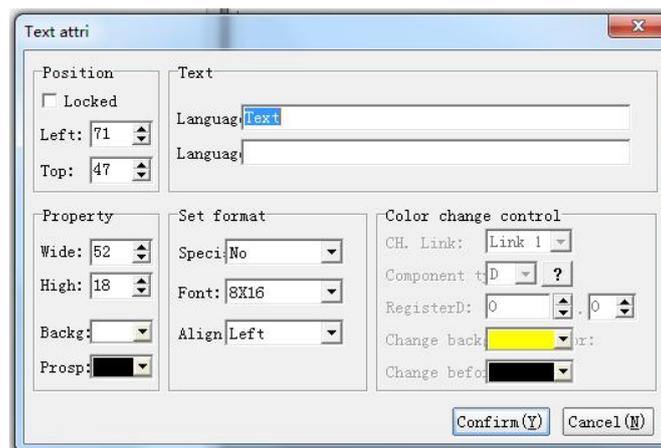


1. Click toolbar, select the element and then start editing.



## Section 2 Text

Display text information, including Chinese characters、English letters、Unicode character set; text attributions are as below:



**Position**

Locked: Lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of elements in the left page

Top: Coordinates of elements in the top page.

**Property**

Width: width of elements

Height: height of elements

Background: background color of elements

Foreground: foreground color of elements

**Text Attribute**

Language: Corresponding content which elements display when system language is selected "x"

**Format Setting**

Background Transparent: filter out the background color of elements

Color change control: Select the colors before and after change.

Font: set font size.

Align: alignment of texts and the outline border of elements.

**Color change control**

Channel Link: select communication channel.

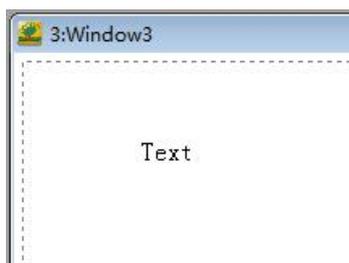
Component type: select element type

Register NO.: set the address of register

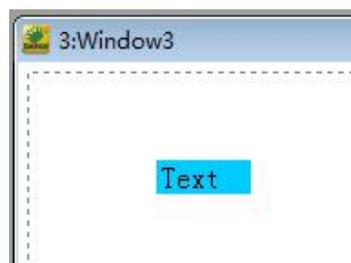
Change background color: background color of elements when color changing conditions are satisfied.

Change foreground color: foreground color of elements when color changing conditions are satisfied.

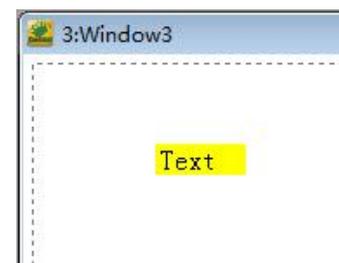
Examples:



background transparent



without background transparent color



changing conditions satisfied



### Section 3 Register

In the process of industrial control, the efficiency of the system can be reflected by the controller running parameters. Controller operations are displayed in the form of digital form is another advantage, which is an advantage of data presentation. Data input is to modify the parameters of the controller through HMI, it is another way of HMI connection.

#### Position

Locked: Lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

#### Property

Width: width of elements

Height: height of elements

Background: background color of elements

Prospect: foreground color of elements

#### Registers

Channel connection: select communication channel.

element type: select element type

Register No.: set the address of registers

Data type: 16bit/32bit optional

Set Permit: register parameters can be set only when "permit" is set, otherwise it can only be displayed and cannot be modified.

Signed number: the top digital of register is 1, display as "-xxxx".

Direct bound: set the maximum and minimum value of register data input, it is restricted by constant.

Indirect bound: set the maximum and minimum value of register data input, it is restricted by the value of other registers.

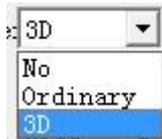
### Set Format

Bit number: the bits of the maximum setting and display of register

Decimal: set the decimal of the register

Background transparent: filter the background color

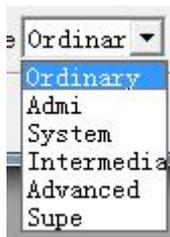
Password: only the correspond password be entered that the content of registers can be modified.



Border: select frame type

Font: set font size

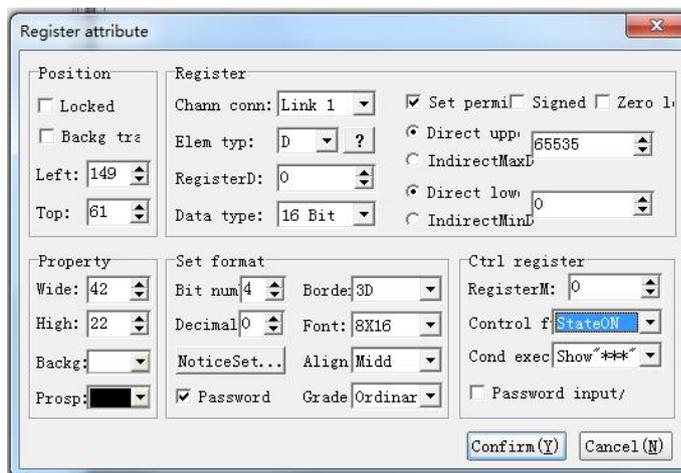
Align: alignment of value and frame of elements.



Grade: levels of password protection, it is effective only when password protection is used.

### Special

When register value meets the regulated conditions, this register will execute



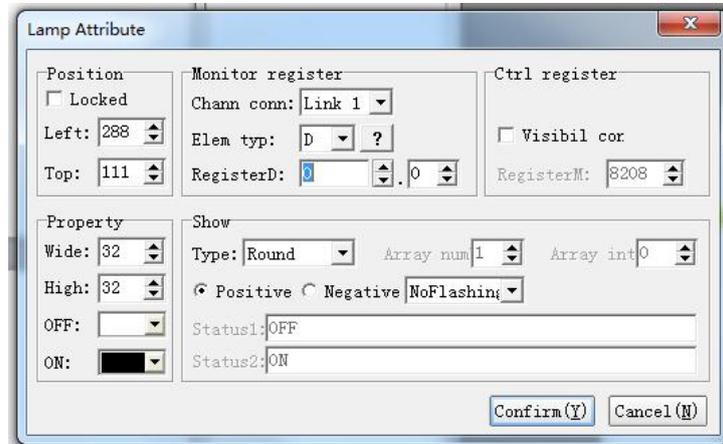
Above figure: When auxiliary contact M=0, D0 will show "\*\*\*".

Examples:



## Section 4 Indicators

During operational process, in order to show clearly what operation the personal has made and the working conditions of devices, indicator light provide speedy prove of operation and testing.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

OFF: displayed color when indicator light is OFF

ON: displayed color when indicator light is ON

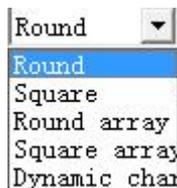
### Register

Channel connection: select communication channel

Element type: choose element type

Register No.: Set register address

### Show



Type: select appearance of indicator light

Positive logic: When indicator light is power off, display OFF color. When indicator light is power on, display ON color.

Negative logic: When indicator light is power off, display ON color. When indicator light is power on, display OFF color.

Flash: set flicker interval or without flicker



A dropdown menu with the following options: NoFlashing, NoFlashing, 0.5Second fl., 1.0Second fl., 1.5Second fl., 2.0Second fl.

**Controlled register**



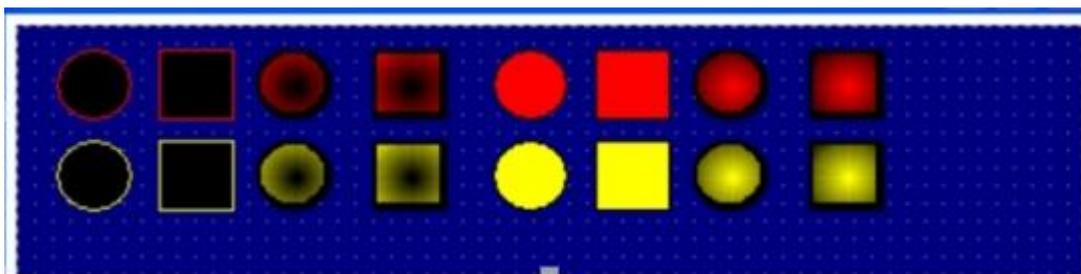
Ctrl register

Visibil cor

RegisterM: 0

Controlled register: For example, display when set M0=ON

Various attribute legends

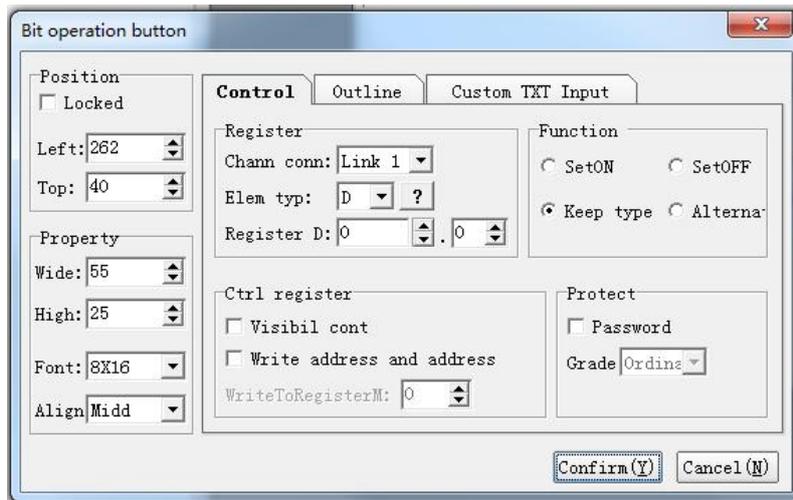


## Section 5 Bit operation switch

During operation, touch this button, HMI will immediately send out signals to PLC corresponding connection point ON or OFF.

There are four kinds of buttons for selecting: ON, OFF, alternative button, maintained button

### 1) Attribute of bit operation switch



#### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

#### Property

Width: width of element

Height: height of element

Font: set font size

Align: alignment of text and frame of element

#### Control Register

Channel connection: select communication channel

Element type: select element type

Register No.: Set register address

#### Control Function

Set ON : Press the contact to set it ON, hands away or repress , it is still ON.

Set OFF: Press the contact to set it OFF, hands away or repress , it is still OFF.

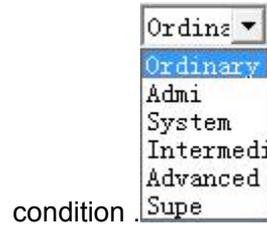
Alternative: Press the contact ON, it is still ON when hands away; it is OFF when repress it

Keep: Press the button, the contact is ON. It is still OFF when hands away.

**Control Protect**

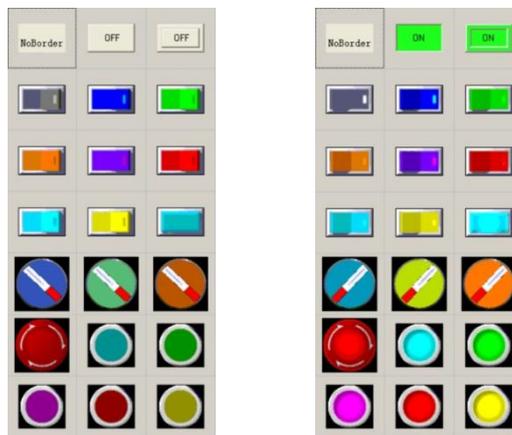
Password: Only when correspond password being entered can this button be operated successfully

Grade: password protection, operations will be effective only under password protection

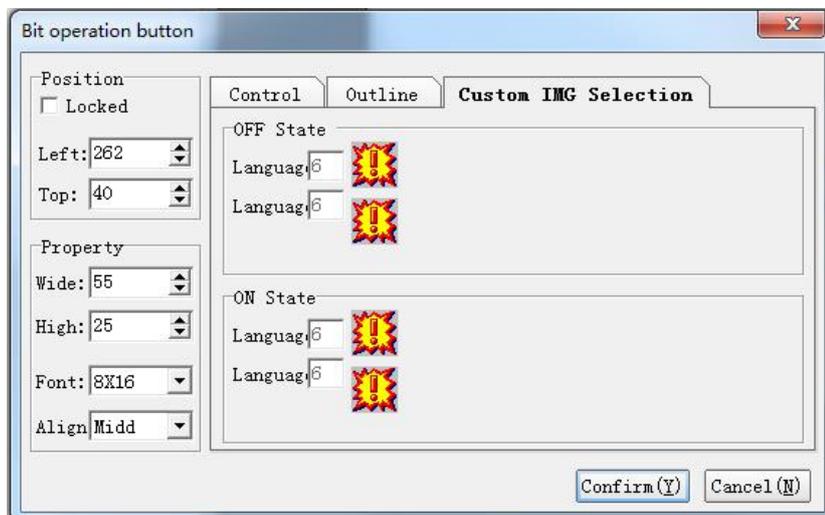


## 2) Attribute of bit operation switch II

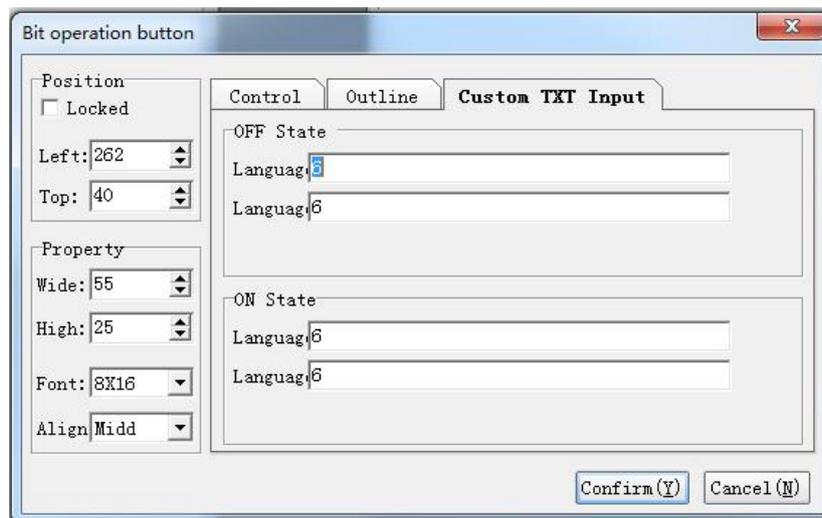
Outline of bit operation switch: select outline effect of this switch with the state OFF/ON, CoolMay provides 21\*2 shape effects as below:



Select  , double click  , then add user-defined picture.



## 3) Attribute of bit operation switch III



When select  the characters displayed when the switch is in the state OFF/ON are determined by these two following attributes.

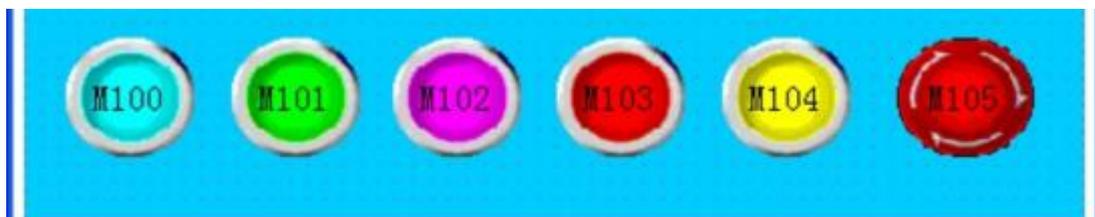
OFF state

Language: corresponding contents displayed by elements when system language is X.

ON state

Language: corresponding contents displayed by elements when system language is X.

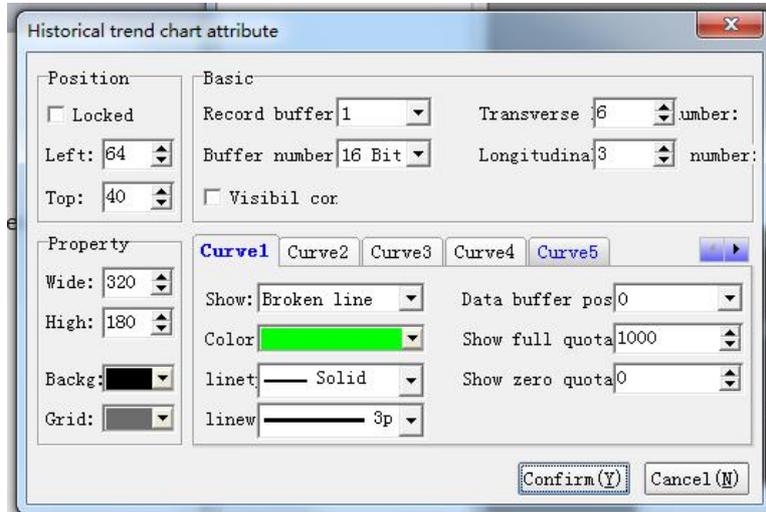
**Example:**



## Section 6 Historical trend chart

Historical trend chart: HMI can set sampling time and conditions to read numeric data of buffers which is designated by PLC, and store these data in the record buffer of HMI. After everlastingly and chronically sampling, the data will be convert to curve and displayed on the screen of HMI.

### 1) Historical trend chart attribute



#### Position

Locked: Lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

#### Property

Width: width of element

Height: height of element

Background: background color

Grid: color of grid

#### Basic

Record buffer #: Recorder buffer #(1~12) is a location which can temporarily store historic data. The location and capacity of recorder buffer must be defined firstly.

Buffer type : 16bit or 32bit optional

Transverse grid number: the amount of horizontal grids

Longitudinal grid number: the amount of vertical grids

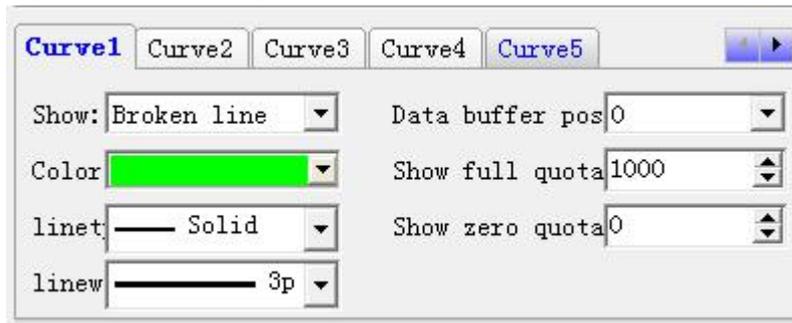
Visibil cor. : When you set register \$W=0, the trend chart will display, on the contrary the trend chart will be

hidden.  Visibil cor Register No. 0 = K 0

### 2) Historical trend chart attribute

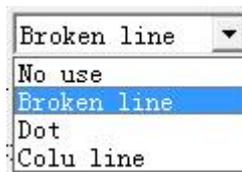
#### Curve 1..5

5 curves can be displayed simultaneously in one historic trend chart

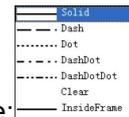


### ▲ Historical trend chart attribute Attribute of curve 1..5

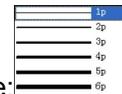
Display: select whether use this curve and select the display mode. As shown in figure



Color: color of curve



Line type: type of this curve, there are solid, dash and etc. As shown in figure:



Line width: width of this curve, 1P to 6P optional. As shown in figure:

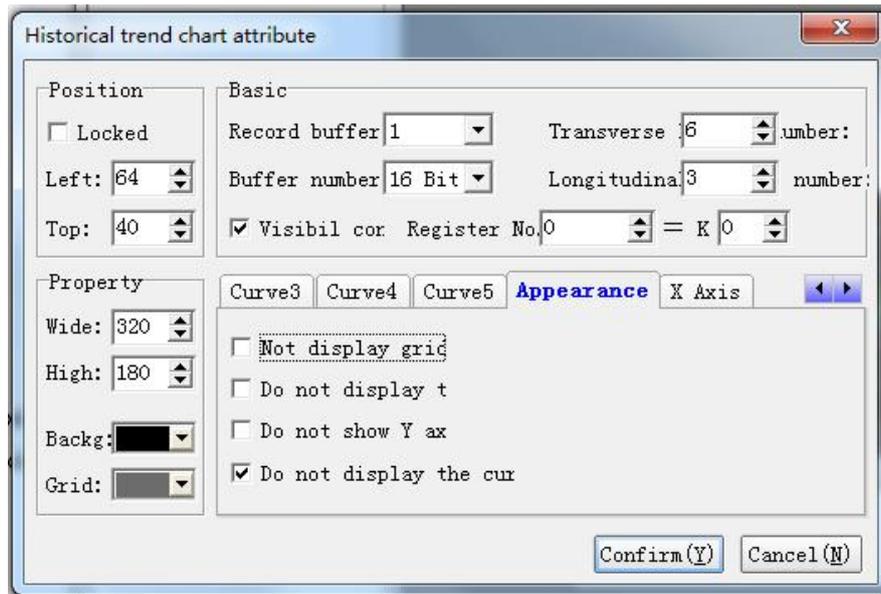
Data buffer position: This curve can show location of data origin in record buffer.

Show full quota: The maximum value showed by this curve, also it is the maximum value in Y axis. If data value is higher than this value, the maximum value will be displayed.

Show zero quota: The minimum value showed by this curve, also it is the minimum value in Y axis. If data value is lower than this value, the minimum value will be displayed.



### 3) Historical trend chart attribute Appearance



#### ▲ Historical trend chart attribute Appearance attribute

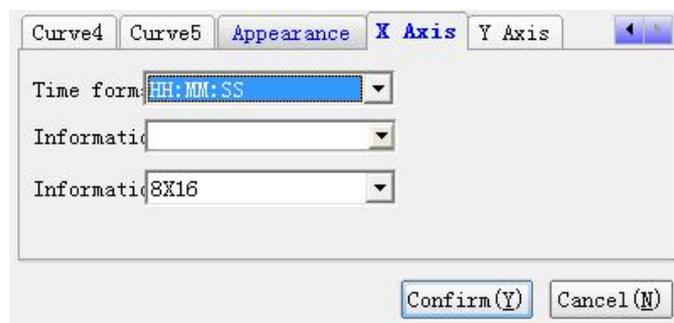
Not display grid: select whether display grid

Do Not display X axis: select whether display annotation on X axis

Do not display Y axis: select whether display annotation on Y axis

Do not display the current value : select whether display the current value.

#### 4) Historical trend chart attribute X axis



#### ▲ Historical trend chart attribute X axis attribute

Time format: select format of time displaying

Color: select color of time displaying

Font : select font of time displaying

#### 5) Historical trend chart attribute Y axis



#### ▲ Historical trend chart attribute Y axis attribute

Maximum coordinate: the maximum value on Y axis

Minimum coordinate: the minimum value on Y axis

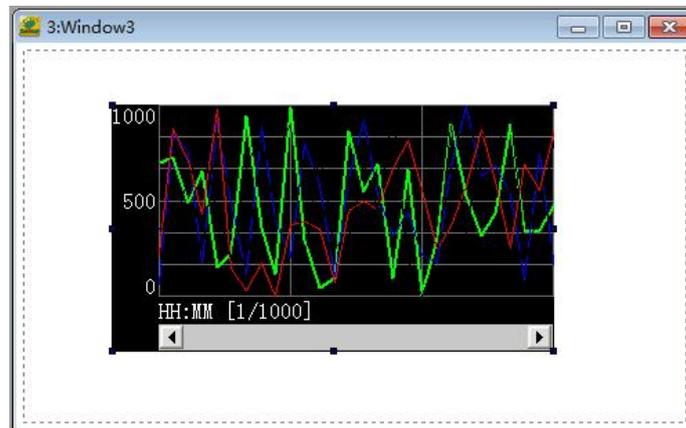
Decimal number: the number of decimal on Y axis

marked number: the number of marked points on Y axis

Color marked : color of marked points on Y axis

Mark font: the font of marked points on Y axis

### Example:



### Record buffer setting

Buffer#	Sources D	Trigger flag	#ach	lengt	Total	sum	Automatic	Recording
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.
<input type="checkbox"/> Record	0	<input type="checkbox"/> 0	1	1	1	1	<input type="checkbox"/>	1 Sec.

Buffer#: set location of record area

Source D: set the initial address of stored register, as shown in figure: the initial address is D8

Trigger flag#: set conditions for triggering,

the address is a 32-bit register of the initial address of the fast reading area, as shown in figure:



the triggering flag is 0, the initial address of fast reading area is D8, so the address of triggering flag is D8.0

Each Length: represents the quantity of registers being stored from data resource D (including the initial address of data resource D)

Example: store D10-D14 these five register

Total sum: total quantity of storage

Automatically stop: When selected, the system will stop automatically after recording the whole quantity, otherwise it will be covered automatically.

Record intervals: save data according to time intervals and the unit is second.

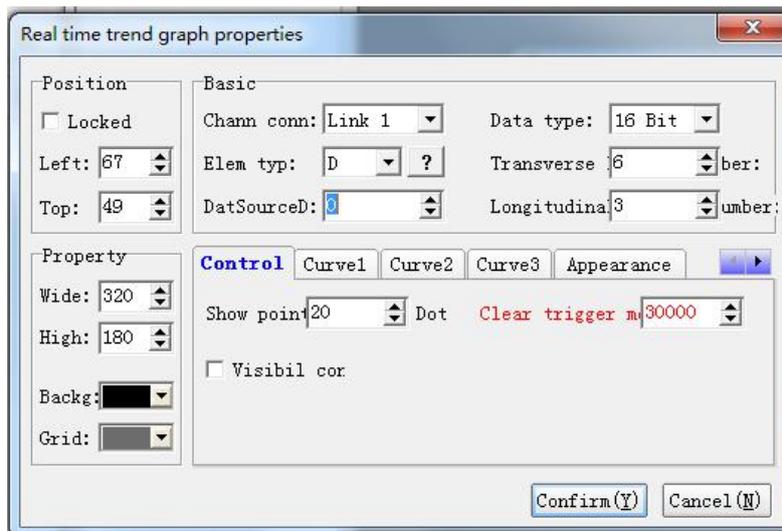
Note: recording condition can only be trigger flag or record intervals.



## Section 7 Real-time trend chart

HMI can read continuous data of corresponding address and directly and real-time display them to users by figure. For example: If there are 50 points and you set 3 curves and then you can get 50X3, that is 150 word data and at meantime these data are processed in PLC program. Setting procedure can be referred to following figures, or you can download sample program from CoolMay official website.

### 1) Real time trend chart attribute



#### Position

Locked: Lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

#### Property

Width: width of element

Height: height of element

Background: background color

Grid: color of grid

#### Basic attributes

Channel connection: select communication channel

Element type: select element type

Data resource: origin of collecting data

For example: If there are 50 display points, you can set 3 curves and address is D0, data type is 16bit, after these curves being triggered, there are 150 data being read. The location of Y axis in first curve is D0~D49, in second curve is D50~D99, in third curve is D100~D149. Another example: If there are 50 display points, you can set two curves and address is D0, data type is 32bit, after these curves being triggered, there are 200 data being read. The location of Y axis in first curve is D0~D99, in second curve is D100~D199.

Data type: 16bit or 32bit

Transverse grid number: the amount of horizontal grids

Longitudinal grid number: the amount of vertical grids

### Control attribute

Show points: points of data reading and display points on trend chart.

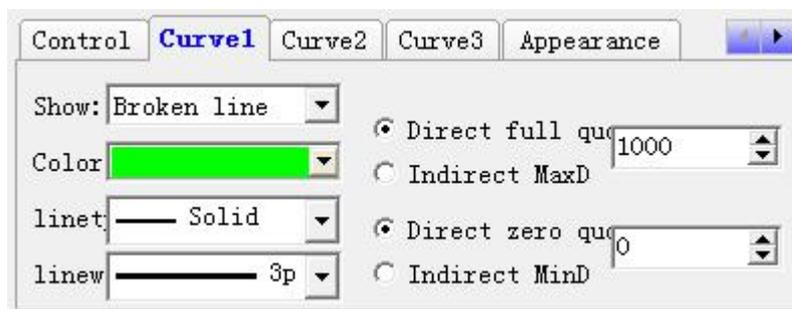
Clear triggered ID: When page send a matched ID, curse will be eliminated. Examples please refer to function key.

Visibility: When set register =Kxx, the chart will be displayed, otherwise the chart will be hided.

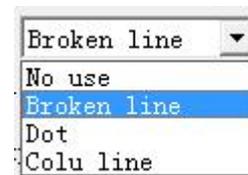
### 2) Real time trend chart attribute Curve1...3



Three curves can be displayed in historic trend chart at the same time

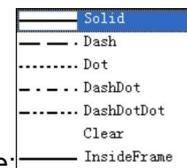


### 3) Real time trend chart attribute Curve1. ...3

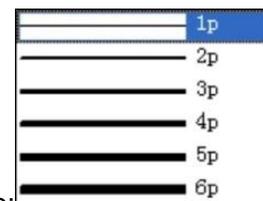


Display: select whether to use this curse and select the display mode

Color: color of this curve



Line type: type of this curve, for example: solid,dash and etc. As shown in figure:



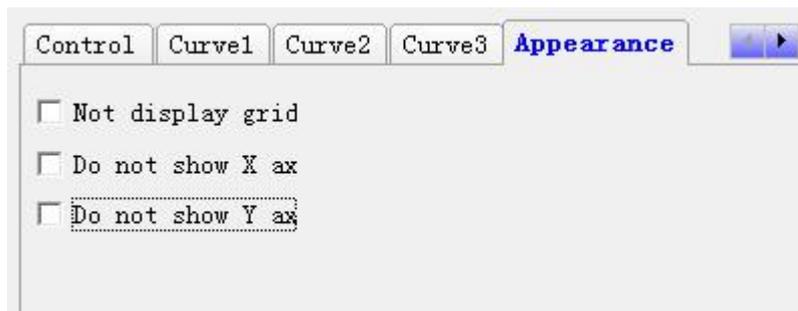
Line width:width of this curve, 1P to 6P optional. As shown in figure:

Full quota: The maximum value showed by this curve, also it is the maximum value in Y axis. If data value is higher than this value, this maximum value will be displayed.

Zero quota: The minimum value showed by this curve, also it is the minimum value in Y axis.  
If data value is lower than this value, this minimum value will be displayed.



### 3) Real time trend chart attribute. Appearance



#### Real time trend chart attribute Attribute of appearance

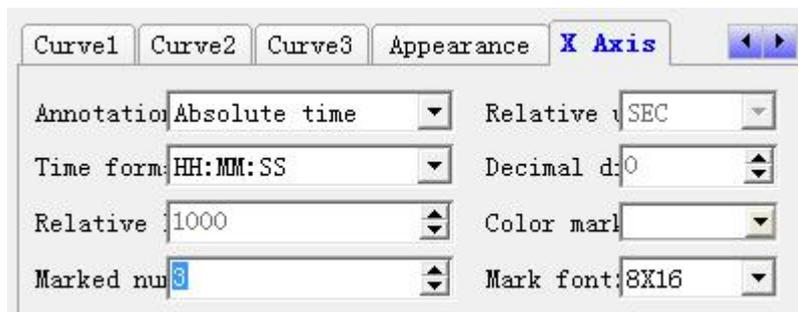
Not display grid: select whether display network

No not show X axis: select whether display annotation on X axis

No not show Y axis: select whether display annotation on Y axis



### 4) Real time trend chart attribute X axis



#### Real time trend chart attribute X axis attribute

Annotation: absolute time and relative value

Time format: format of displayed time, effective only when "absolute time" is selected.

Relative longitude: Relative longitude of time displaying, effective only when "relative time" is selected

Marked number: number of displayed annotations

Relative unit: Relative unit of time, effective only when "relative time" is selected

Decimal digits: Decimal digits of time displaying, effective only when "relative time" is selected

Color marked: Color of time displaying

Mark font: Font size of time annotation

## 5) Real time trend chart attribute

Y axis



Curve2	Curve3	Appearance	X Axis	Y Axis
Maximum c	1000	Color mark		
Minimum c	0	Mark font	8X16	
Decimal d	0			
Marked num	3			

Max. Coordinate: the Max. Value that Y axis annotation

Min. Coordinate: the Min. Value that Y axis annotation

Decimal Digits: decimal digits that Y axis annotation

Marked number: quantity of Y axis annotation

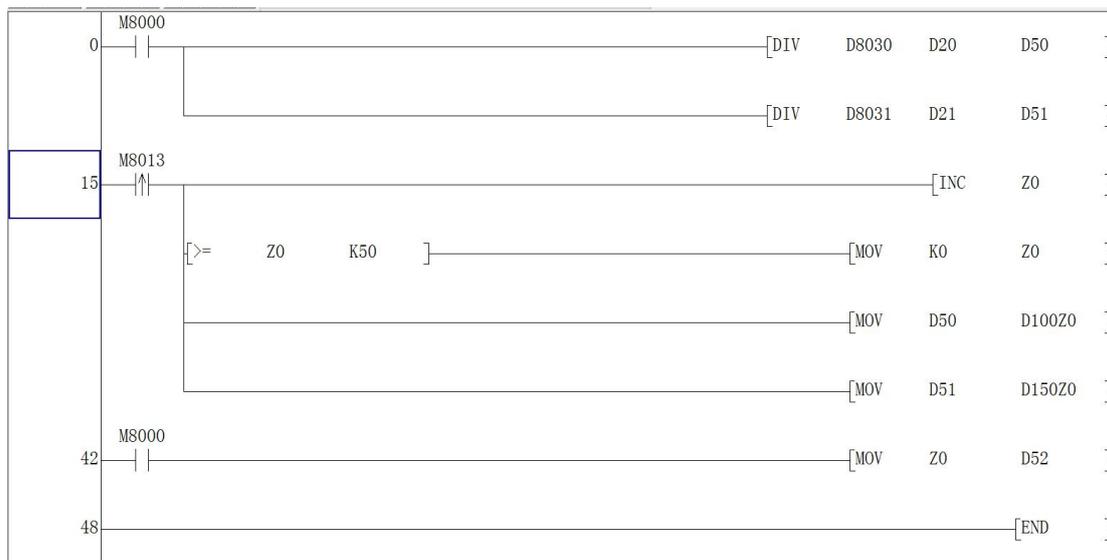
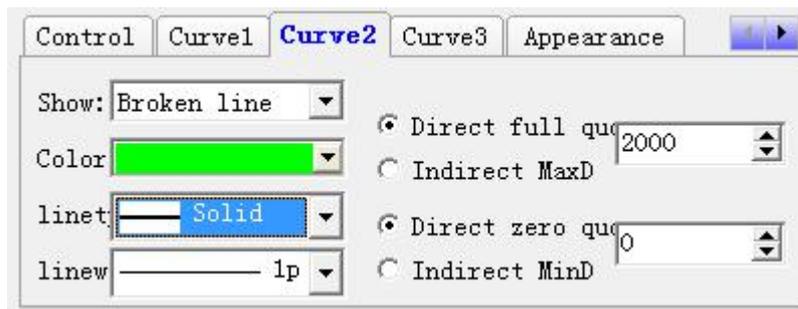
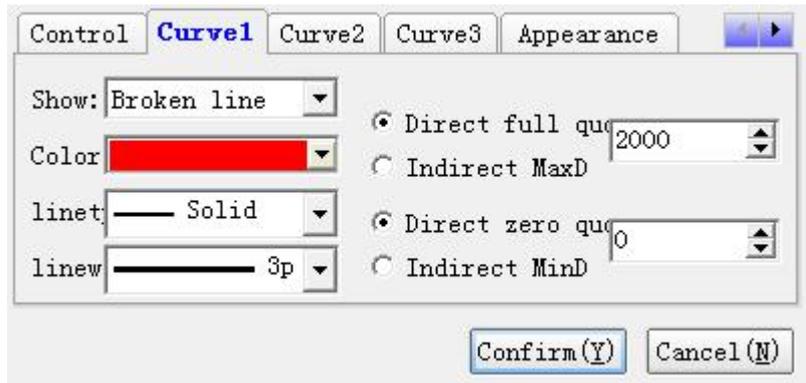
Color marked: color of Y axis annotation

Mark font: font size of Y axis annotation

Set two curves which record analog D50 and D51. The first curve record D50, occupying 50 register from D100-D149, the second curve record D51, occupying 50 registers from D150-D199. Program settings of HMI and PLC are as below, please download detailed sample program from the official website.

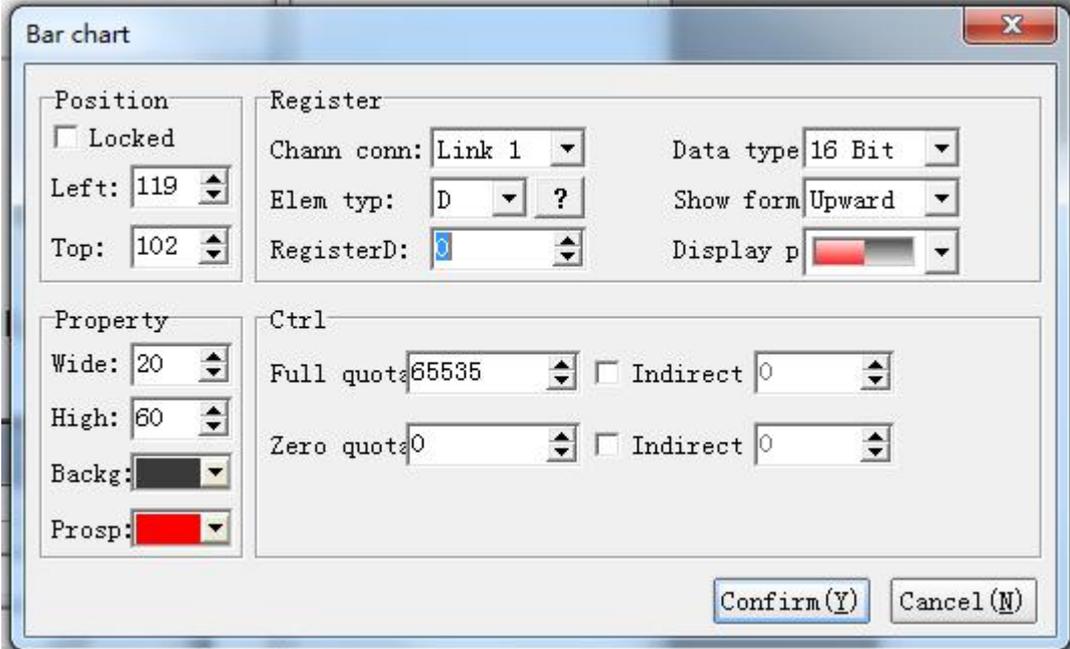
Real time trend graph properties

Position		Basic	
<input type="checkbox"/> Locked	Chann conn: Link 1	Data type: 16 Bit	
Left: 67	Elem typ: D ?	Transverse 16	ber:
Top: 49	DatSourceD: 100	Longitudina 3	umber:
Property		Control	
Wide: 320	Curve1	Curve2	Curve3
High: 180	Appearance		
Backg:	Show point 50	Dot	Clear trigger m 30000
Grid:	<input type="checkbox"/> Visibil cor		
		Confirm(Y)	Cancel(N)



## Section 8 Bar graph

Bar graph is another form to display digit which can display data of analog such as temperature, pressure, flow and so on. Bar chart can show data by percentage way according to full and zero quota. Height and width can be designated optiona



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page.

Top: Coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Prospect: foreground color

### Register

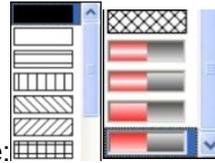
Channel connection: select communication connection

Element type: choose type of elements

Register : set register's address

Data type: select 16bit or 32bit

Show form: the direction of bar chart changes when the value of register gets larger, for example: up, down, left and right.



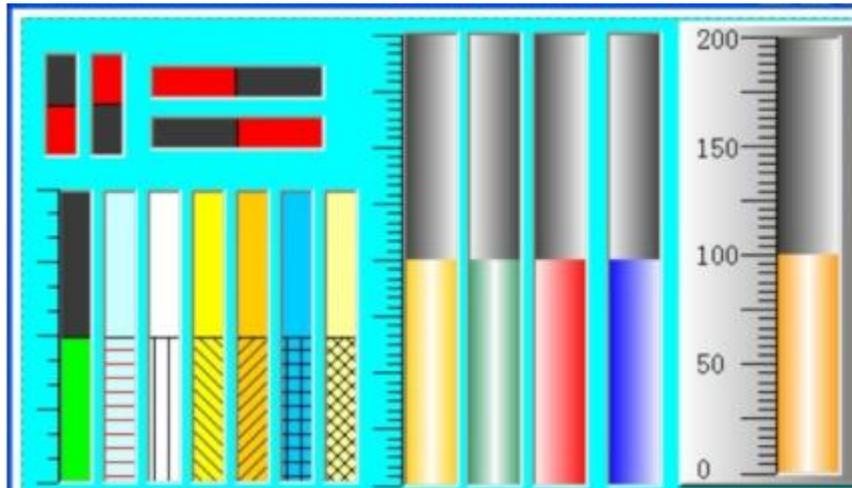
Display padding image: Padding image of bar chart as shown in figure:

**Control**

Full quota: The maximum value which bar chart can display

Zero quota: The minimum value which bar chart can display

**Examples**





## Section 9 Meter

Meter is another form to display digit which can display data of analog such as temperature, pressure, flow and so on.

### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Outer: frame color

background: background color

### Register /scale

Channel connection: select choose communication connection

Element type: select type of element

Register number: set register address

Full quota: The maximum value which meter can display

Zero quota: The minimum value which meter can display

Number of main scale: number of main scale

Secondary scale number: scale number allocated by each main scale

show unit name: set displayed unit name

### Position data/Target/Scope

Axis, mark range and target pointer can be selected not to display. When not displayed, their correspond attributes can not be used.

Target area: area displayed by target point

Target pointer: color of target pointer

Tick mark: color of scale mark

Low area color: color in low area

High area color:color in high area

Low area: percentage of low area

High area: percentage of high area

### Scale mark

When scale mark is not selected, the relevant attribute can not be used.

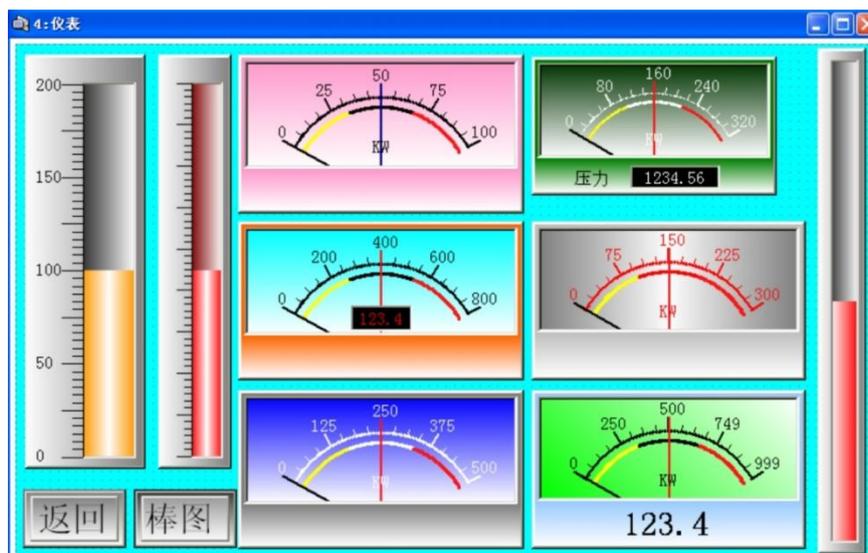
Bit number: The maximum digit of scale mark.

Decimals: decimals of scale mark .

Maximum mark: The maximum number of scale mark.

Minimum mark: The minimum number of scale mark.

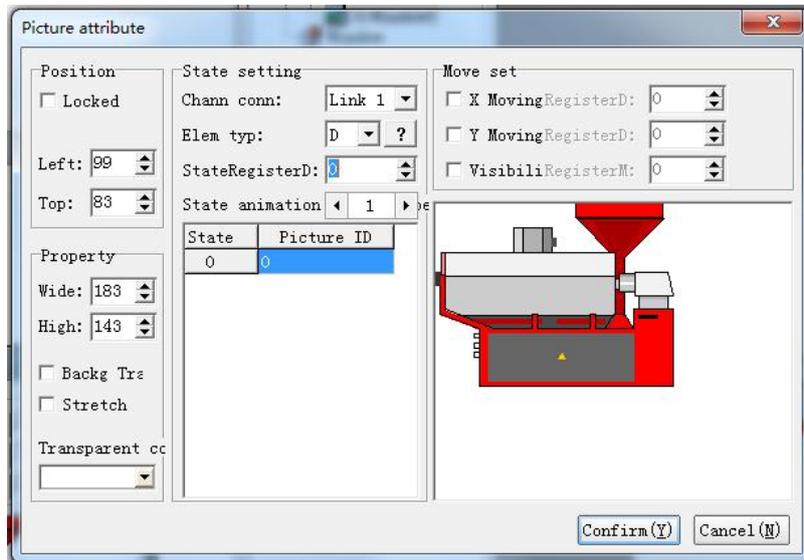
### Examples:





## Section 10 Picture

Picture element is bitmap which can show the figure of machine so that operators can understand easily. Also, the bitmap can show factory logo and emblem to enhance product identity. Picture state and absolute location are controlled by three registers.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background transparent : filter the transparent color which has already been selected

Stretch: when selected, images can automatically adjust width and height which has already been set.

Transparent color: select transparent color, also can be selected by color selection device

### State setting

Channel connection: select communication channel

Element type: select element type

State register D: display corresponding picture according to the value of register

State animation number: increase or decrease the number of animation through the buttons  and



### Move

X moving: when selected, elements can horizontally move along the X axis. When the register value

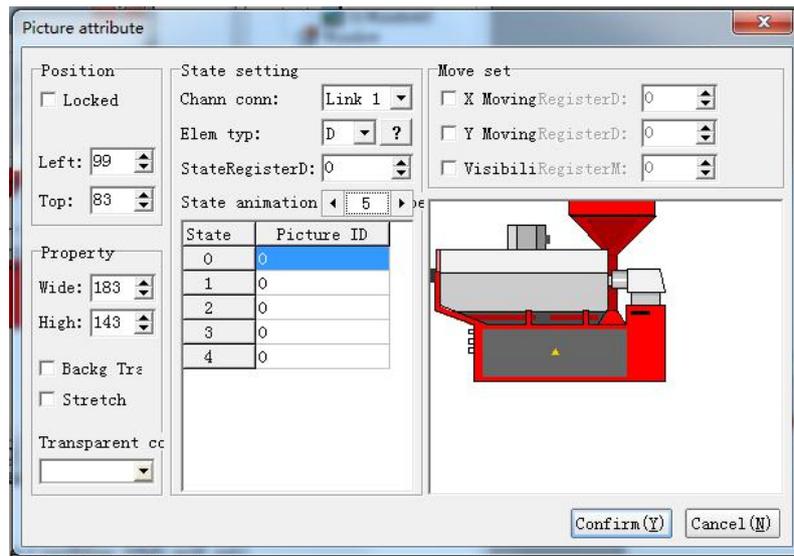
increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements are used as Y-axis vertical scroll. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Visibility: when auxiliary contact M is driven ON, the element will display. When driven OFF, the element will be hidden.

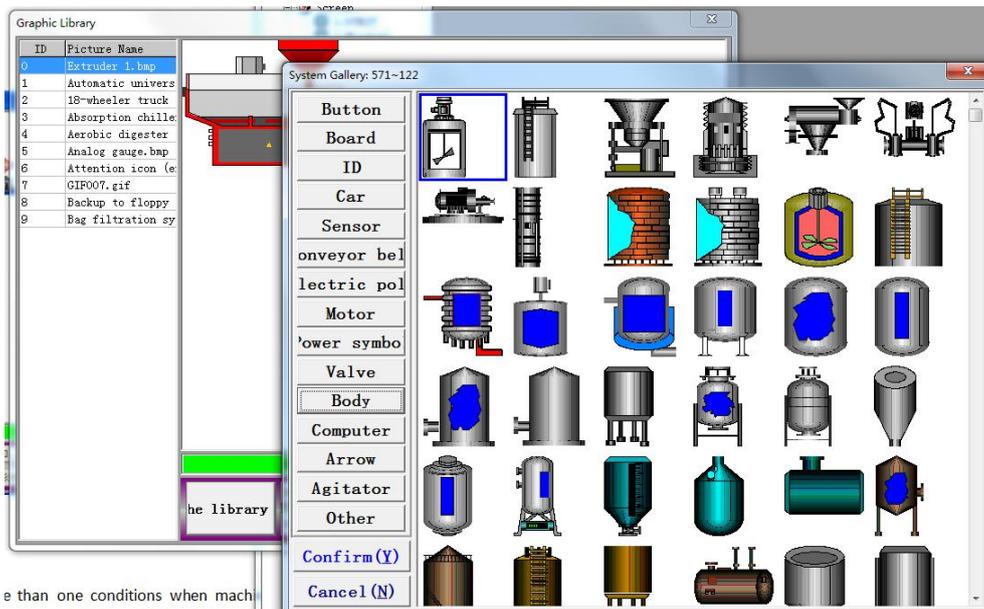
### Ways of extracting picture

CoolMay provide two ways for extracting picture, as figure shows:



### Graphic library

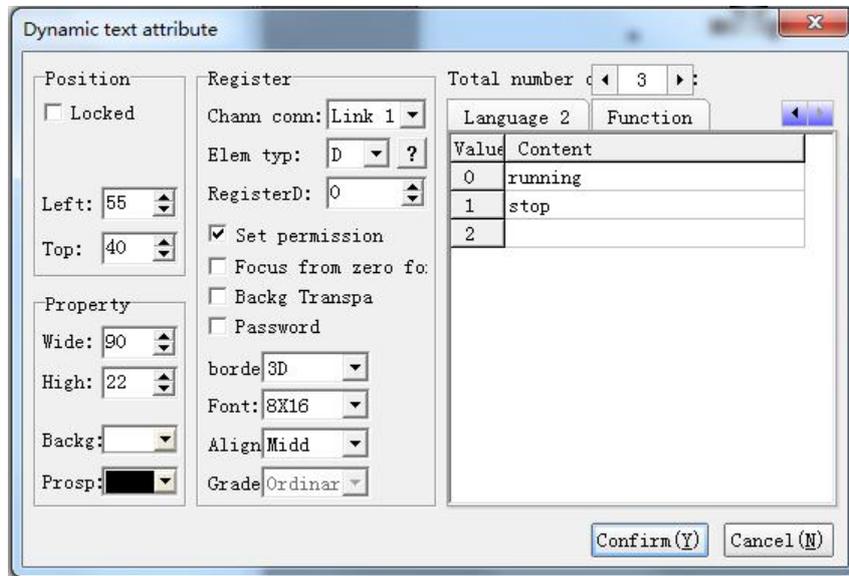
After selecting one of these two ways to extract picture, CoolMay HMI will pop-up picture library dialog box, which provide some functions such as selection, addition, derivation, substitution, deletion, conversion from BMP to JPG, overturn/rotation, color transposition, stretch, compressed graphic library.





## Section 11 Dynamic text

During industrial control, there are more than one conditions when machine is working. GIF Viewer can display different working conditions which is the most ideal choice.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

prospect:foreground color

### Register

Channel connection: select communication channel

Element type: select type of element

RegisterD: set register address

Set permission: controlled by keyboard. When selected, the data will be usually sent by keyboard to PLC, otherwise it will show text according to data from PLC, like action prompt and alarm prompt.

Focus from zero forcibly: effective when "set permission" is selected. Data in register will be deleted when cursor of keyboard left

Background transparent: filter color of background

Password : When selected, password protection will be effective

Border: display the type of frame

Font : font size

Align:alignment of text and element's border

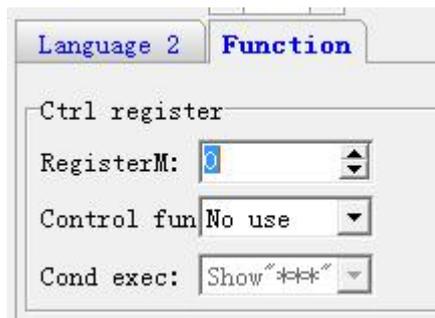
Grade: password grade. Effective only when "password" is selected.

### Language

Language: When selected, the corresponding text will display.

### Function

Special: When "key register" meets the required conditions, the corresponding operations will be executed.



As shown in the above figure: When M=ON, the dynamic text string will display " \*\*\*\* "

### Modify record setting

Explanation:The amendant record "Modify Project" will send to the system when users modify the element

Language:corresponding contents displayed by elements when system language is X.

### Status display

Value	Content
0	running
1	stop
2	

Value	Content
0	运行中
1	停止
2	

#### As shown above:

When system language is the first language and corresponding register equals 0, it will display "running", when equals 1 it will display "stop" .....

When system language is the second language, and corresponding register equals 0, it will display "运行中" when equals 1 it will display "停止" .....



## Section 12 Function Key

The function key is collection of all key functions. Functions can be set to buttons so that they can execute different functions.

### Location

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

foreground:foreground color

### Basic

Language: corresponding contents displayed by elements when system language is X.

Password: only with certain grade can password protection be modified.

### Format setting

Border: border type

Font: font size

Align:alignment of text and element's border

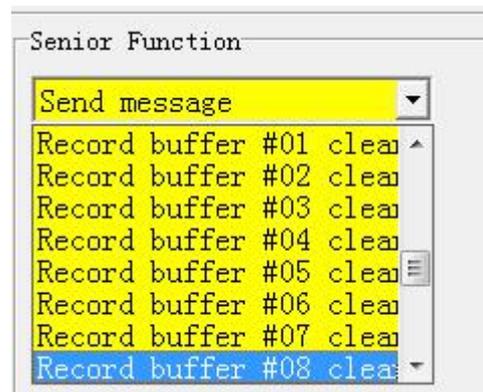
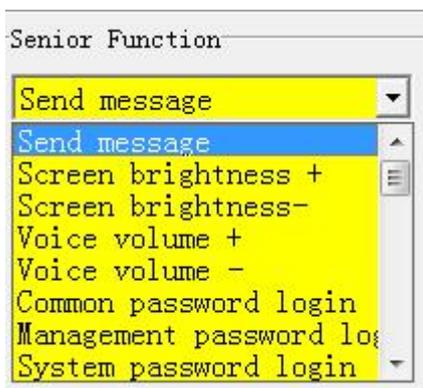
Grade: password grade, effective only when "password " is selected.

### Window jumping and senior function

Window jumping and senior function cannot be selected simultaneously.

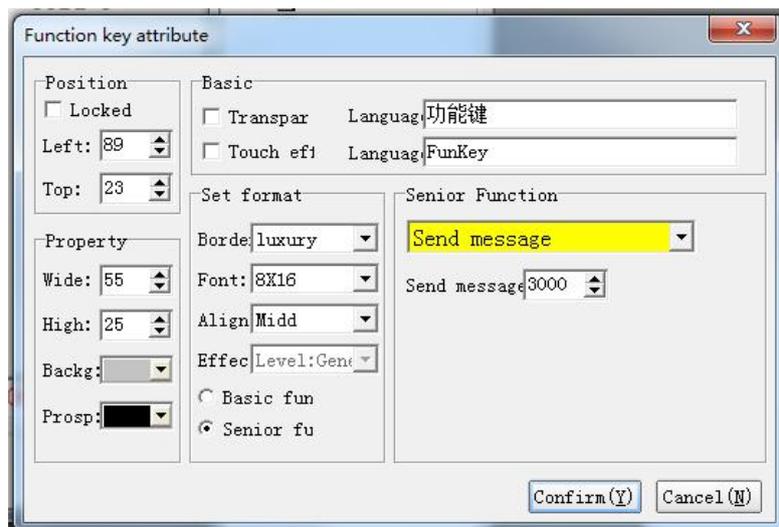
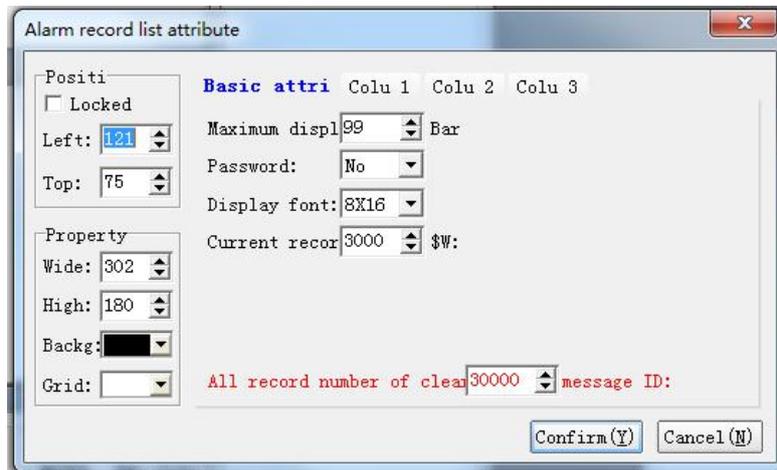
window jumping: jump from this page to the designated ones

Senior function: Functions includes sending messages, screen brightness adjusting,voice volume adjusting, logging in/out by password, backup and restore system data, language switch, input methods switch, keypad tone switch.



### Senior function

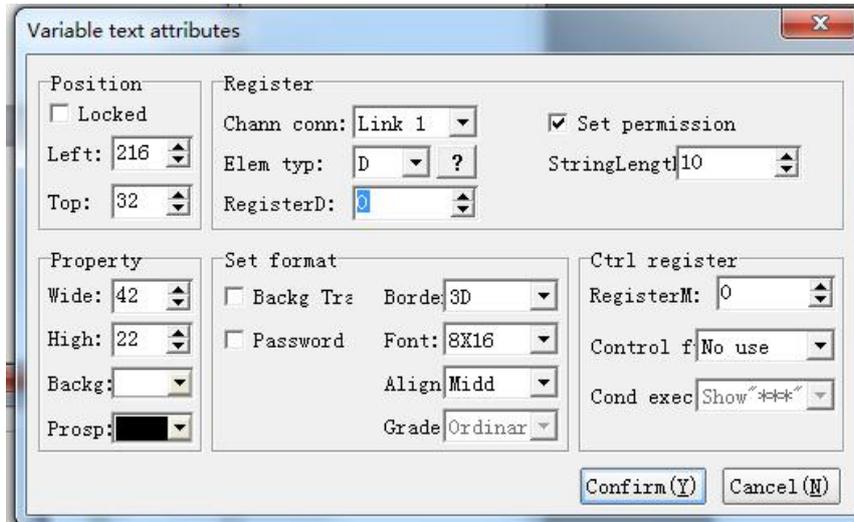
It will still need an allocated ID for sending message .For example below figure is the alarm record list. When sending message set ID=30000 at meantime ID=30000 means all information in alarm record list will be deleted. When you press the function button, the alarm record list will implement procedure of deleting all record information. As illustrated in following figure:





### Section 13 Variable text

Variable text can enter and display letters, characters, numbers and Chinese characters. Similar to input data, when you enter characters, there must be have corresponding small keyboard and Chinese phonetic characters window.



#### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

#### Property

Width: width of elements

Height: height of elements

Background: background color

Foreground: foreground color

#### Register

Channel connection: select communication channel.

Element type: select element type

RegisterD: set register address

Set permission: controlled by keyboard. When selected, the data will be usually sent by keyboard to PLC, otherwise it will show text according to data from PLC, like action prompt and alarm prompt.

#### Set Format

Background transparent: filter color of background

Password : When selected, password protection will be effective

Border: border type

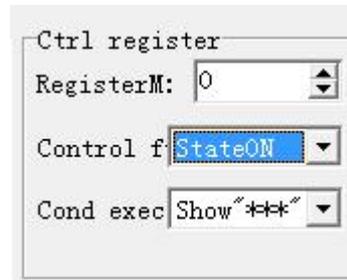
Font: font size

Align: alignment of text and element's border

Grade: password grade. Effective only when "password" is selected.

### Special

When the value of controlled register meets the designated conditions , this register will be executed.



Above figure explanation: when registerM=ON, this variable text element will show"\*\*\*\*"

## Section 14 Letter Combinations

Letter Combination is to converse the designated letter (A-Z) to number, which is generally used for "programmable function setting".

### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Foreground:foreground color

### Register

Channel connection: select communication channel.

Element type: select element type

Register D: set register's address

Set permission: controlled by keyboard. When selected, the data will be usually sent by keyboard to PLC, otherwise it will show text according to data from PLC, like action prompt and alarm prompt.

### Set format

Background transparent : filter color of background

Password : When selected, password protection will be effective

Border: border type

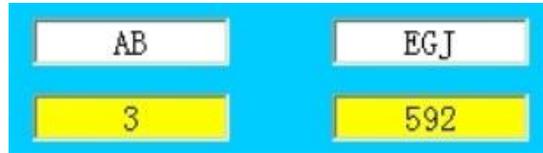
Font : font size

Align:alignment of text and element's border

Grade: password grade. Effective only when "password" is selected.

### Special

The meaning of special attribute is the same with variable text .



### Example:

The above figure means A corresponding to the zero bit of D620, B corresponding to the first bit of D620, C corresponding to the second bit of D620, D corresponding to the third bit of D620, E corresponding to the fourth bit of D620, F corresponding to the fifth bit of D620, G corresponding to the sixth bit of D620 and so on...

If set "AB", which means the zero and first bit of D620 are both equal 1, the other bit is 0, that is D620=3. If set "EGJ", which means the fourth, sixth, ninth bit equal 1, the other bit is 0, that is D620=592.



## Section 15 Roll lamp

Text will circularly display as roll lamp. In addition, you can also set points of every movement and time intervals to decide display ways of rolling subtitle.

### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Foreground:foreground color

### Text

Language : Corresponding content will be displayed when system language is "X",

### Set format

Font: set font size

Direction:The movement direction of roll lamp.

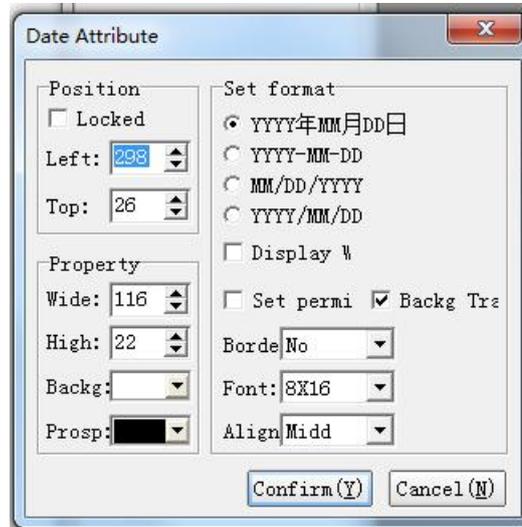
Delay: set movement internal delay

Word number: set word number for every movement



## Section 16 Date

Date element can be used for adjusting and displaying date.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Prospect: foreground color

### Set format

Display format: Take May 22<sup>th</sup>,2007 as an example, when select YYYY-MM-DD: 2007-05-22; when select MM/DD/YYYY:22/5/2007

Week: week will be displayed before date

Set permission: it can be set only when selected, otherwise it can just be displayed but can not be adjusted.

Background transparent :filter background color

Border: select border type

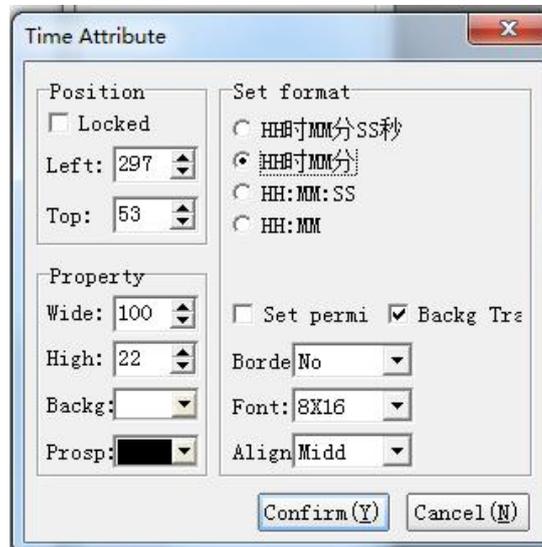
Font: set font size

Align:Alignment of displayed content and text border.



## Section 17 Time

Time element is used for adjusting and displaying time.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Prospect: foreground color

### Set Format

Set permission: it can be set only when selected, otherwise it can be just displayed but can not be adjusted.

Background Transparent: filter background color

Border: select border type

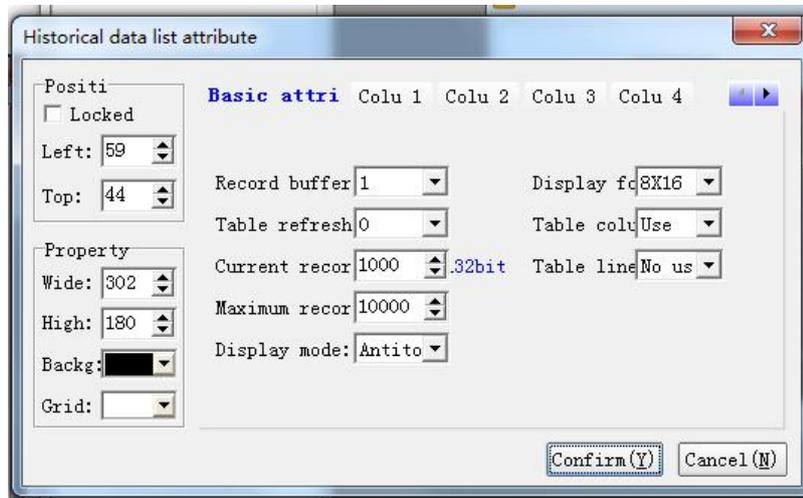
Font: set font size

Align: Alignment of displayed content and text frame



## Section 18 Historical data list

The list is used for saving historical production conditions, usually used for production management and SPC tracking record and etc.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Grid: grid color

### Basic attribute

Record buffer: select location for recording

Refresh flag: select the address of trigger flag

Max. record: set the max row number of recording

Current record number: set the register address of the current record number

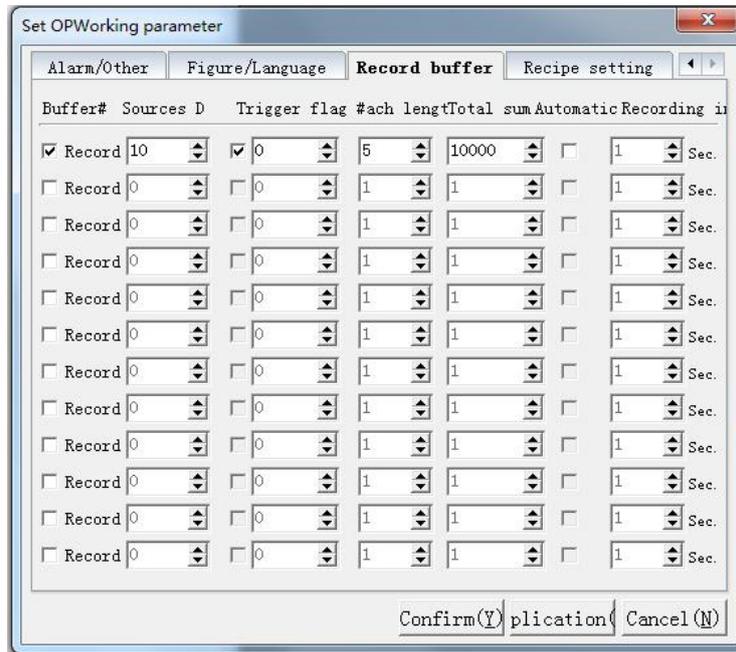
### Record buffer setting

Buffer#: the location of record buffer

Data source D: Set initial address of register, as shown in figure:the initial is D8

Trigger flag#: Set conditions for trigger, the address is a 32 bit register which is used as initial address of fast reading area.

For example: triggered flag is 0, and starting address of fast reading area is D8. So the address of triggering flag is D8.0



Each Length: represents the quantity of registers being stored from data resource D (including the initial address of data resource D)

Example: store D10-D14 these five register

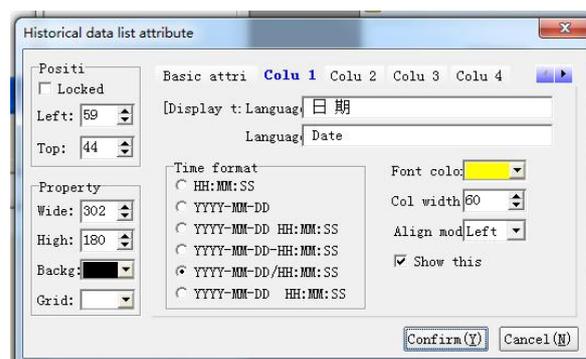
Total sum: represent the total quantity of storage

Auto-stop: When selected, the system will stop automatically after recording the whole quantity, otherwise it will be covered automatically.

Record intervals: save data according to time intervals and the unit is second.

Note: recording condition can only be trigger flag or record intervals.

## Historical data list Column 1



**Column 1**

Language: corresponding content displayed by the title of this list when the system language is “X”

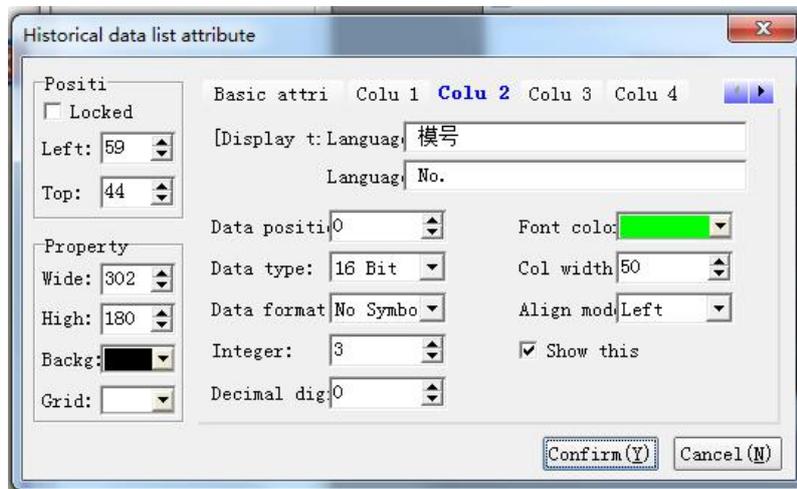
Time format: set format of date and time

Font color: font color displayed in this list

Column width : Set column width of this list

Align : alignment of displayed content and width of this list

Show this list: select whether display this list

**Column 2 .....15**

Language: corresponding content displayed by the title of this list when the system language is “X”

Data position: setting register's address of this list

Data type: 16 or 32 bit optional

Data format:select data format of this list

Integer : Set integer digit of this list

Decimal digit: Set decimal digit in this list

Font color: set font color of this list

Column width : Set column width of this list

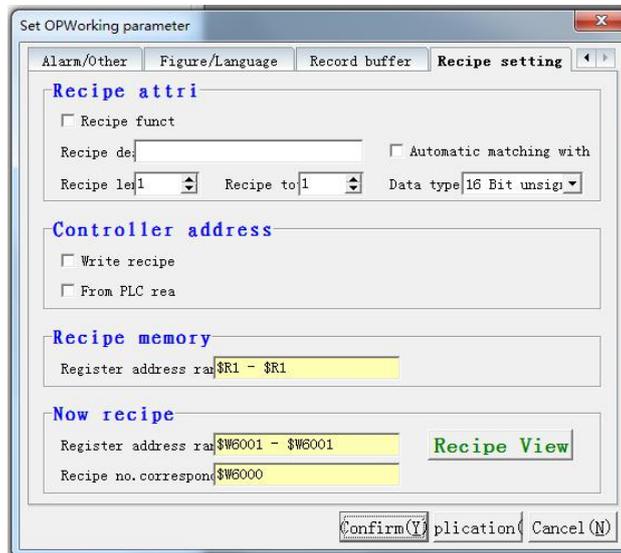
Alignment: Alignment of displayed content and width of this

Show this list: choose whether display this list



## Section 19 Recipe

The transmission of recipe data can trigger a continuous register data transmission. This transmission can not only be downloaded from recipe memory to PLC, but also can be uploaded from PLC to recipe memory, which provide convenience for operation.



Description of recipe: The description and explanation of present file name

Recipe length: The record address's length and number read by present recipe. These addresses in recipe record list are arranged in order, they are generated automatically and cannot be changed. The maximum length is 4096.

Recipe total quantity : the number of recipe, at most 512 recipe can be supported

**Remark: length of recipe \* number of bytes occupied by data category \* total quantity of recipe ≤ 512**

Data type: data type in data register

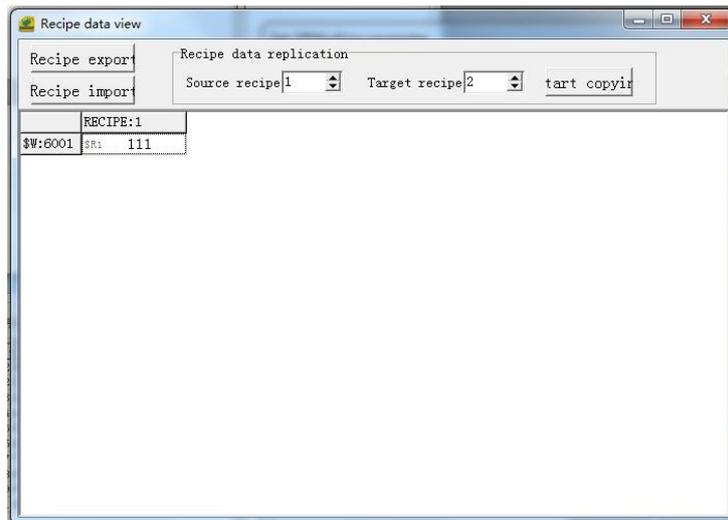
Read recipe from PLC: set address of data register that relevant to recipe and PLC

Recipe Memory: the record address range of recipe in HMI cannot be changed since they are generated automatically

Current recipe: the record address of recipe in HMI and data register in PLC are all arranged in order, which can not be changed since they are generated automatically

### Recipe data view and function key

1. Set up recipe configuration as methods mentioned above, as shown below:



This recipe has 4 subsidiary recipes, each recipe has 10 members, its saved address is HMI's memory address from \$W6001 to \$W6010.

2. When recipe configuration is set up, the next step is to display the recipe on screen and can be changed or directly download in PLC. Therefore the below control function are needed.



3. Display recipe: add data register  in the newly created screen, set the attribute as:

Recipe no. correspond

, click the right mouse in the position of the input box, multi-copy registers in the vertical position

Click function key: successively add recipe function key to advanced function menu

Buttons can be created to write every recipe into PLC、read recipe from PLC、save recipe and select the former and the later recipe through setting relevant functions.

### Special instructions of recipe

Pay attention to below points when using formula function:

- Please notice the data type selected when write in parameters that formula needed, 16-bit data occupy one byte and 32-bit data occupy two bytes, which means the data type should remain the same when select controls , please pay particular attention to the use of 32-bit data address. Because 32-bit data occupy two bytes, please avoid data address overlapping when write in address.
- \$W6000 is a fixed use, only its formula number can be changed, under other circumstance it can not be used. \$W6000=0 means the first number of formula. By such analog,
- SW8001.0 is download indicator light of formula, SW8001.1 is upload indicator light of formula and \$W8002 is stationary name of formula.
- The address of formula parameter is continuous.



## Section 20 Alarm record list

Alarm record list is used for displaying real-time content and historical alarm record.

This list can control event message and display triggering time by a register's address message, meanwhile it can save historical record in inner data base of MT series PLC. The target address and numbers of recording can be set freely by user.

### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Grid: grid color

### Basic attributes

Max. No. of recording: set maximum row No. of recording

Password: record can be deleted only when the password is entered.

Font : set font size

Current recording No.: Assign the whole quantity of current alarm recording to the designated register

All record number of cleared message ID : function key is an advanced function, set the ID of sending message as 30000, all the record content will be deleted after this message being recognized.

### Alarm record list column 1



#### Column 1 attribute

Language: corresponding content display by the title when system language is “X”.

Time format: set format of time and date

Font color: set font color of this list

Column Width: set column width

Align: alignment of the content and the width of this list

### Alarm record list column 2



#### column 2

Language: corresponding content displayed by the title when system language is “X”.

Column Width: set column width of this list

Align: alignment of the displayed content and column width of this list

## Alarm record list column 3



column 3

Language: corresponding content displayed by the title when system language is “X”.

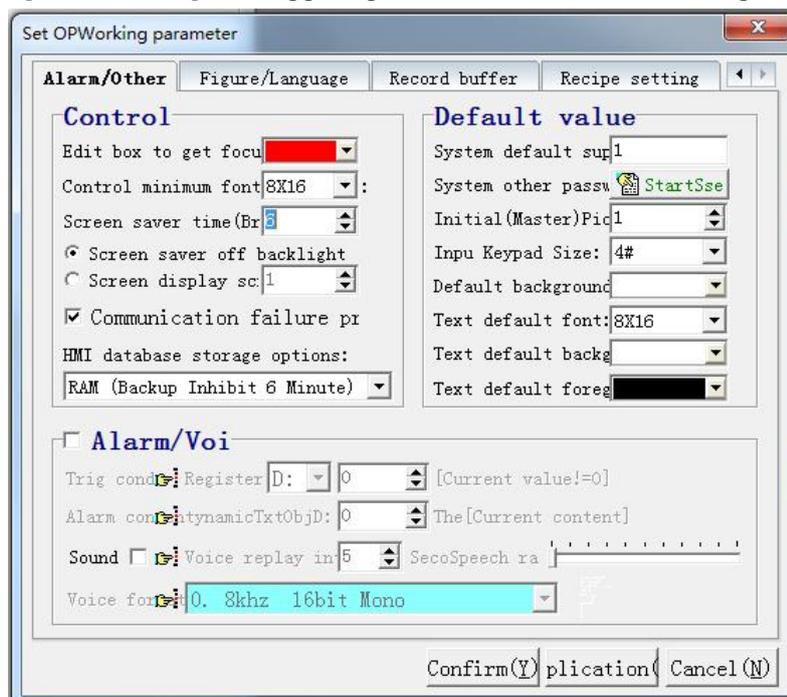
Font color: set font color of this list

Column Width: set column width of this list

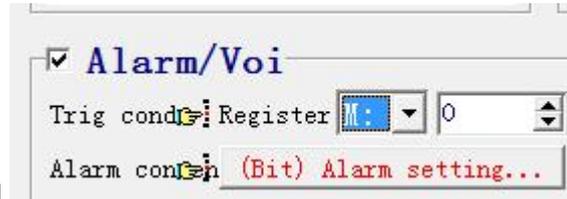
Align: alignment of the displayed content and column width of this list

### Set alarm record register

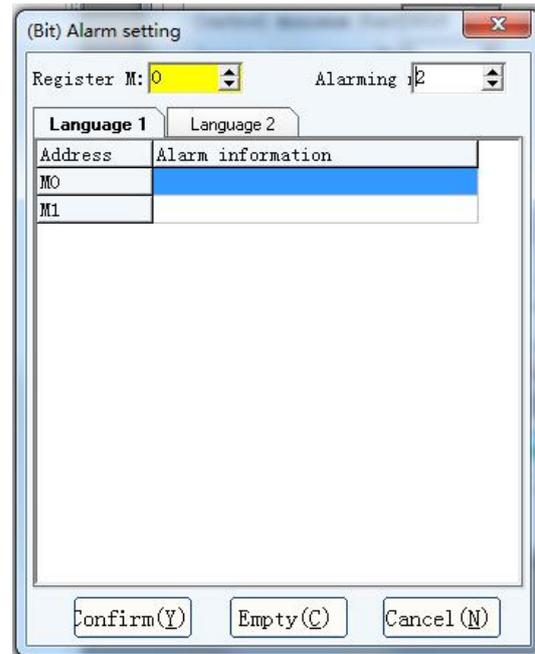
In [OP parameter]>>[Alarm/others], the triggering condition can be set as D register or M reg



## Set triggering condition as M



When triggering condition is M,

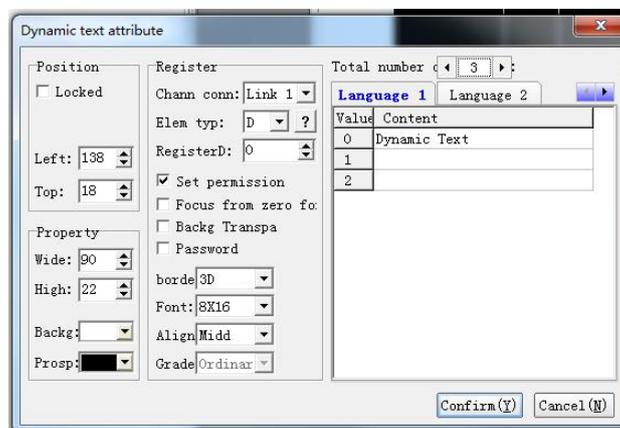


Click [alarm setting] and set alarm register and content.

## Set triggering condition as D

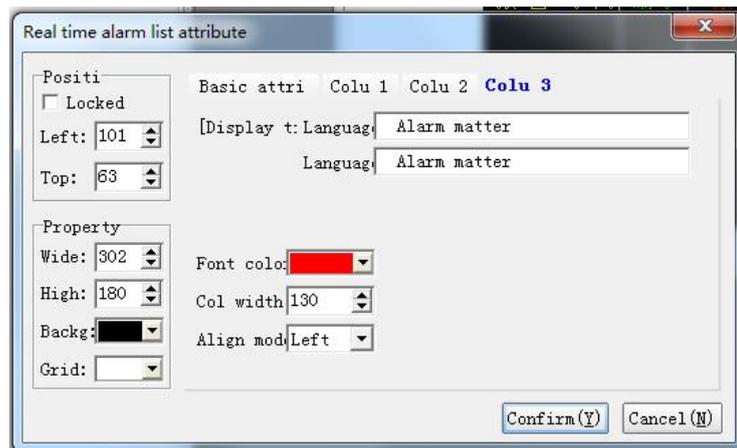


When triggering condition is D, dynamic text  need to be added to set alarm content. If the alarm is triggered, the value of register will also be triggered in PLC and contents corresponded will be displayed in the list .



## Section 21 Real-time alarm list

Real-time alarm list is used for displaying real-time alarm record, the same as alarm record list, it is a display of event message and trigger time controlled by one register address. The element address and permitted record quantity can be set freely according to users. When the alert is canceled, the record will be deleted automatically. Settings of register address and alarm content please refer to the last Section.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Grid: grid color

### Basic attributes

Max. No. of recording: set maximum row No. of recording

Password :record can be deleted only when the password is entered.

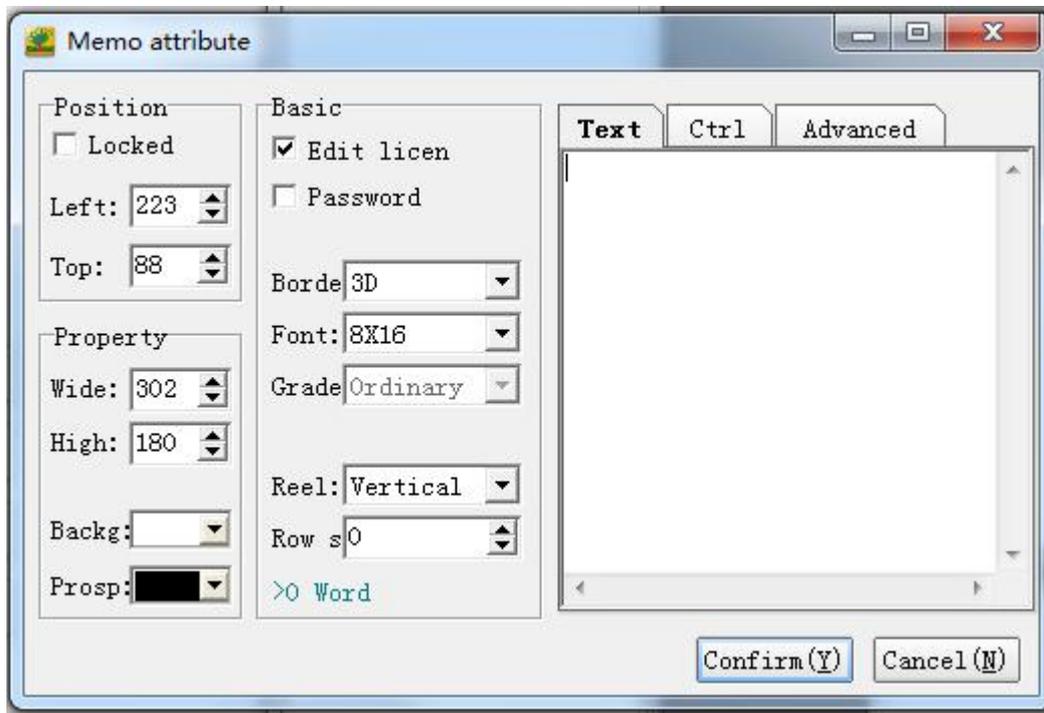
Font : set font size

Current recording No.: Assign the whole quantity of current alarm recording to the designated register.

## Section 22 Memo



Memo is used for recording, displaying text and taking notes.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: Coordinates of the elements in the left page

Top: Coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

Background: background color

Prospect: foreground color

### Basic attributes

Permission: When selected, contents can be modified by keyboard.

Password protection: effective only when "permission" is selected and only with certain grade can password protection be modified.

Border: type of frame

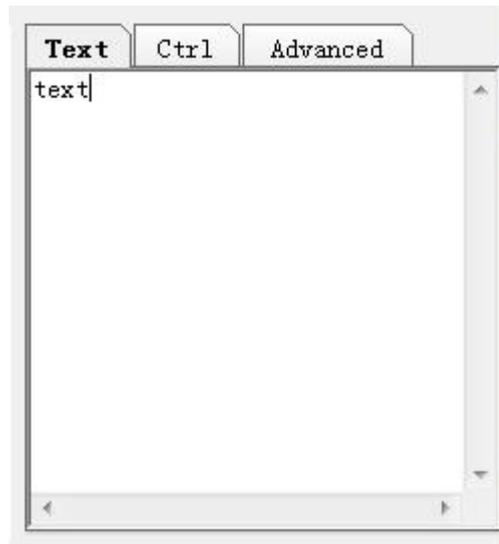
Font: font size

Grade: password grade, password can be effective only when "password protection" is selected.

Scroll: select whether the scroll is effective vertically or horizontally

Row space: the distance between two rows

**Memo Text**



**Text attribute**

Setting initial content of text

**Memo Control**



### Control

Memo ID: set ID of this memo, all IDs of memo in one project are exclusive.

Control channel: choose communication channel

Control element type: choose element type

Control visibility: when selected, memo can be displayed on screen only when the data of ID equals the designated value.

Text Auto-update : when selected and the stated ID changes, the text will be updated automatically.

### Memo advanced



### Advanced attribute

Related language: select system language corresponding to the dealt mode of this memo

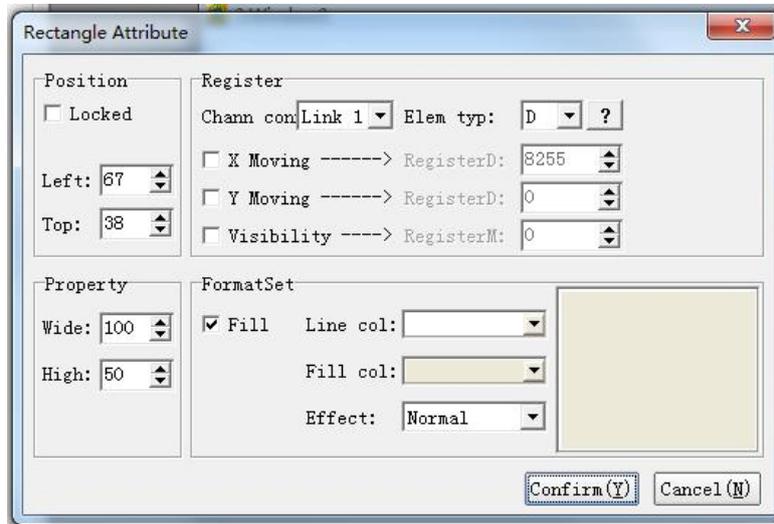
ID used for triggering message of downloading text: When receive the set ID, the text will be downloaded to U flash disk.

ID used for triggering message of clearing text: When receive the set ID, the text will be deleted.



## Section 23 Rectangle

Rectangle element is used for database publishing and partition, screen displaying and modification and ect...



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

### Register

Channel connection: select communication channel.

Element type: select element type

X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements will vertically move along Y axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

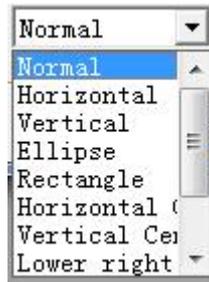
Visibility: when auxiliary contact M is driven ON, the element will display. When driven OFF, the element will be hidden.

### Set format

Fill : when selected, fill the color which has been set, otherwise the graph will only display the frame and other Sections will be transparent.

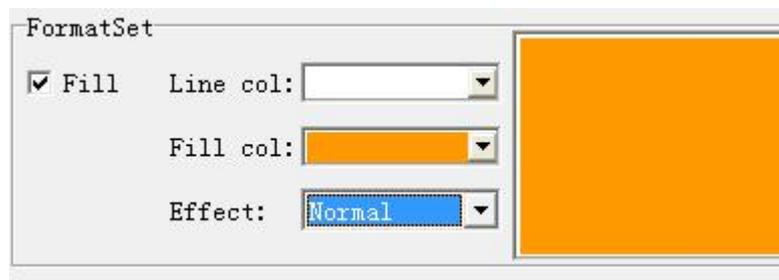
Line color: the frame color.

Fill color: the color which is filled, it is effective only when the function FILL is selected.



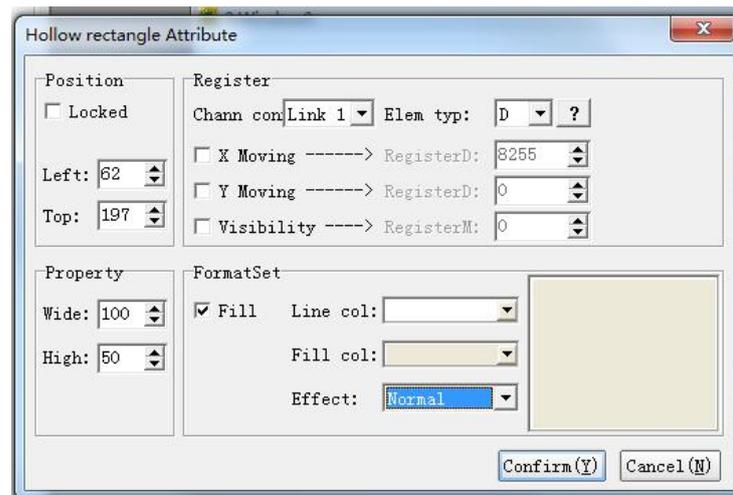
Effect: there are 11 special effects

Example: fill effect is “normal”



## Section 24 Hollow rectangle

Hollow rectangle can also be used for database publishing and partition, image displaying and modification and ect...



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page.

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

### Register

Channel connection: select communication channel.

Element type: select element type

X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements will vertically move along Y axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

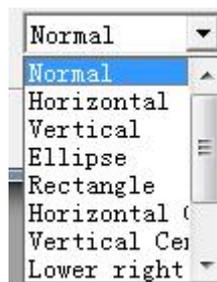
Visibility: when auxiliary contact M is driven ON, the element will display. When driven OFF, the element will be hidden.

### Set Format

Fill : when selected, fill the color which has been set, otherwise the graph will only display the frame and other Sections will be transparent.

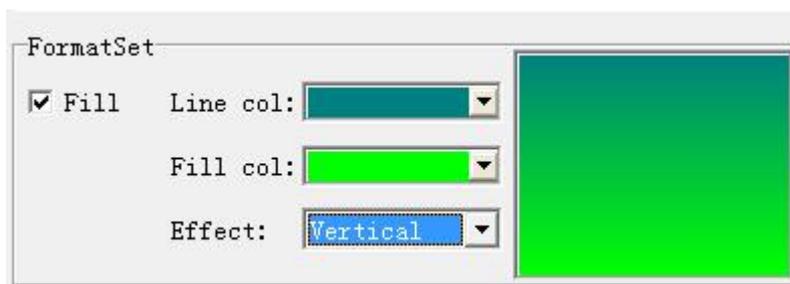
Line color: the frame color.

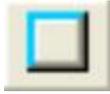
Fill color: the color which is filled, it is effective only when the function FILL is selected.



Effect: there are 11 special effects

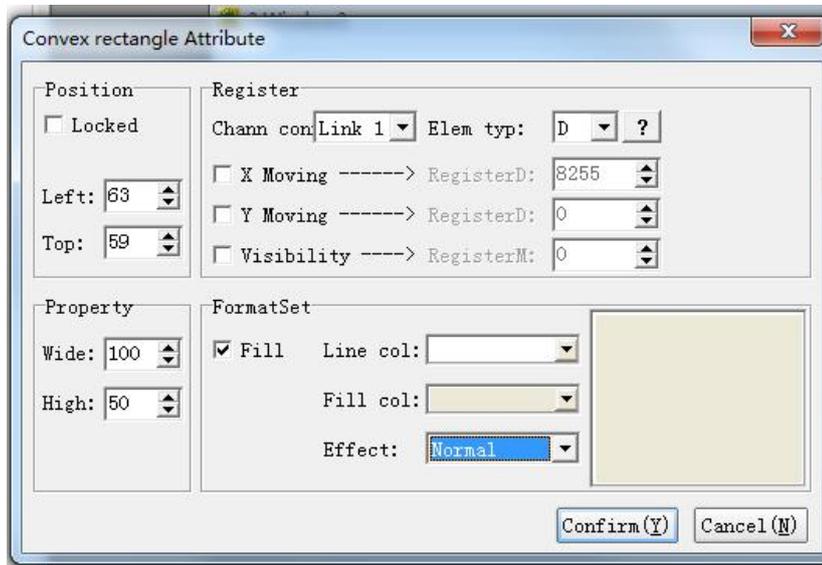
**Example:** fill effect is "Vertical"





## Section 25 Convex Rectangle

Convex rectangle can be used for data layout , modification of screen display,etc.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

### Register

Channel connection: select communication channel.

Element type: select element type

X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements will vertically move along Y axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Visibility: when auxiliary contact M is driven ON, the element will display. When driven OFF, the element will be hidden.

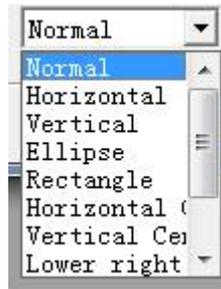
### Set Format

Fill : when selected, fill the color which has been set, otherwise the graph will only display the frame and other Sections will be transparent.

Manual

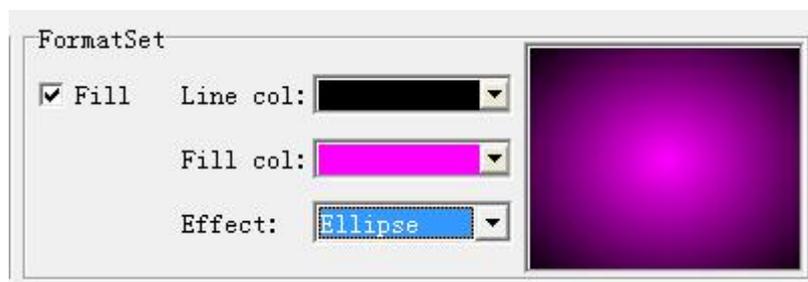
Line color: the frame color.

Fill color: the color which is filled, it is effective only when the function FILL is selected.



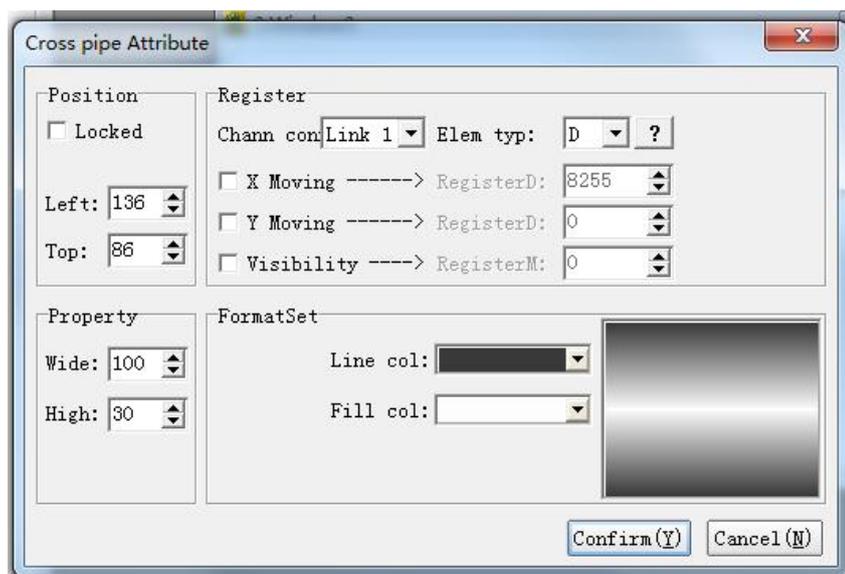
Effect: there are 11 special effects

**Example** : effect=oval



## Section 26 Cross pipes

Cross pipes is used for flow definition, it can simulate the technological process on the spot and can also modification of screen display, etc.



**Position**

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

**Property**

Width: width of elements

Height: height of elements

**Register**

Channel connection: select communication channel.

Element type: select element type

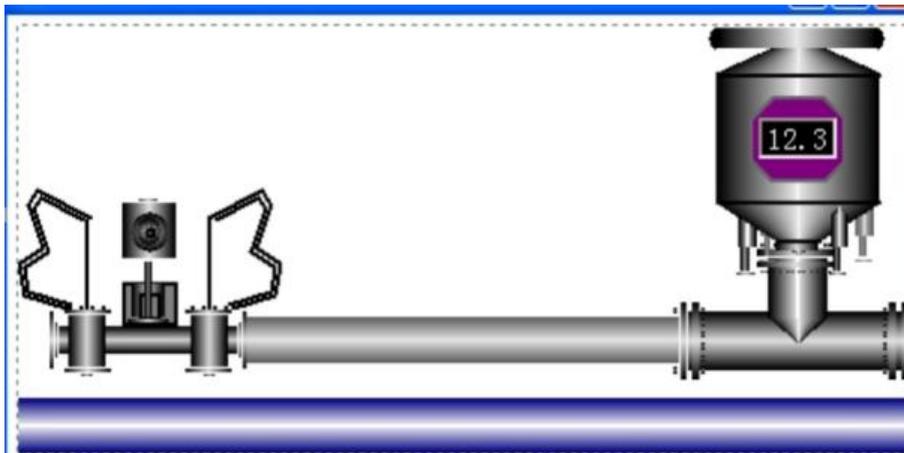
X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements will vertically move along Y axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

**Set Format**

Fill color: fill the set color

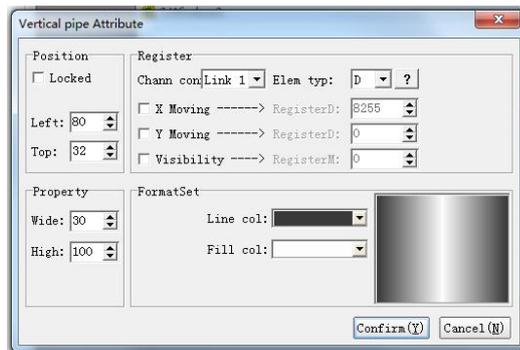
Line color: the frame color

**Example:**

## Section 27 Vertical pipes



Vertical pipes is used for flow definition, it can simulate the technological process on the spot and can also modification of screen display, etc.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

### Register

Channel connection: select communication channel.

Element type: select element type

X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

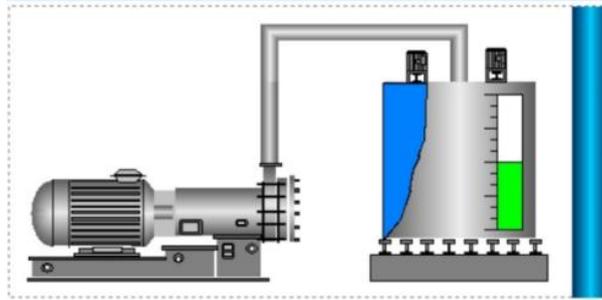
Y moving: when selected, elements will vertically move along Y axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

### Set Format

Fill color: fill the set color

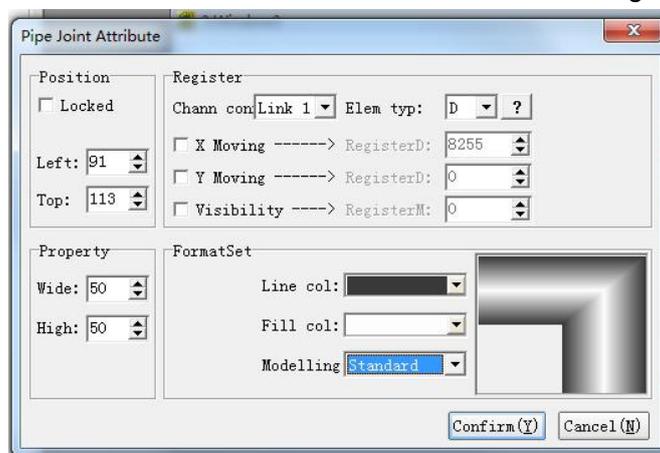
Line color: the frame color

### Example:



## Section 28 Pipe joint

Pipe joint is also apply to flow chart definition, it can simulate the technological process of the scene.



### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of elements

Height: height of elements

### Register

Channel connection: select communication channel.

Element type: select element type

X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements will vertically move along Y axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

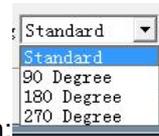
Visibility: when the auxiliary contact is driven ON, the element will display. When driven OFF, the element will be hidden.

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**Set Format**

Fill color: fill the set color

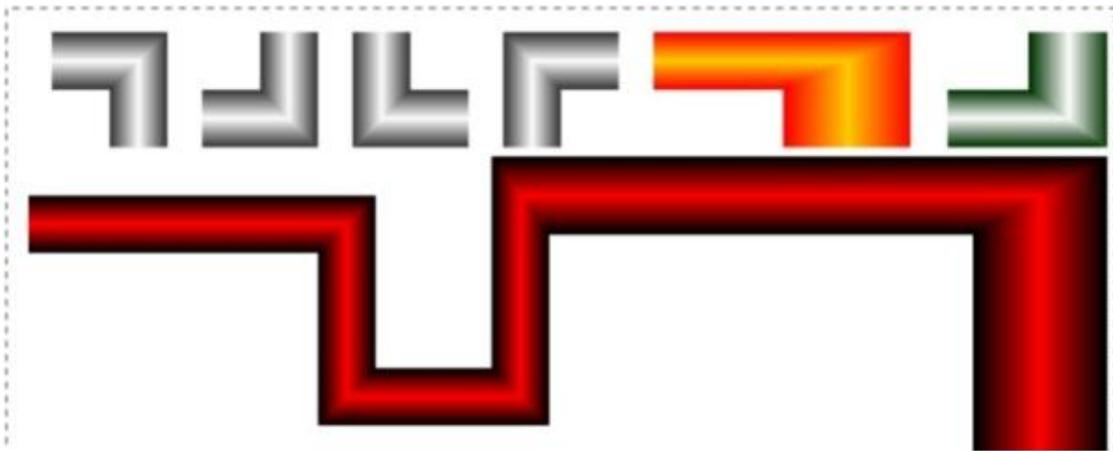
Line color: the frame color



Joint model: the system provide 4 models for selection:

The effect please refer to the application.

Examples:

**Section 29 Scale**

Equivalent to a graduated scale. The scale direction can be changed by using the options of element type. The quantity of primary and secondary can be changed by attributing them. And the color change can be used to create unique scale.



---

Manual

### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

### Property

Width: width of scale

Height: height of scale

### Display

Variety: option.

Color: select color of scale

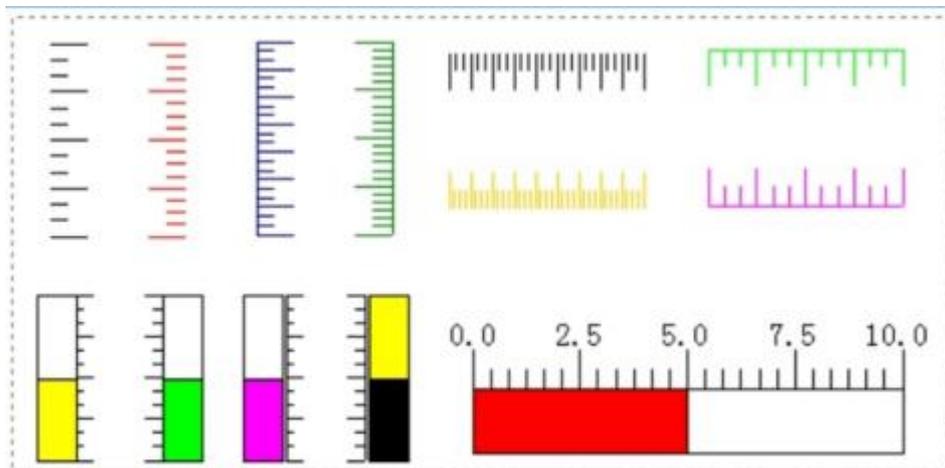
Primary scale quantity: set the quantity of main scales.

Secondary scale quantity: set the quantity of secondary scales.

### Set Format

Display coordinate axis: select whether to display coordinate axis or not.

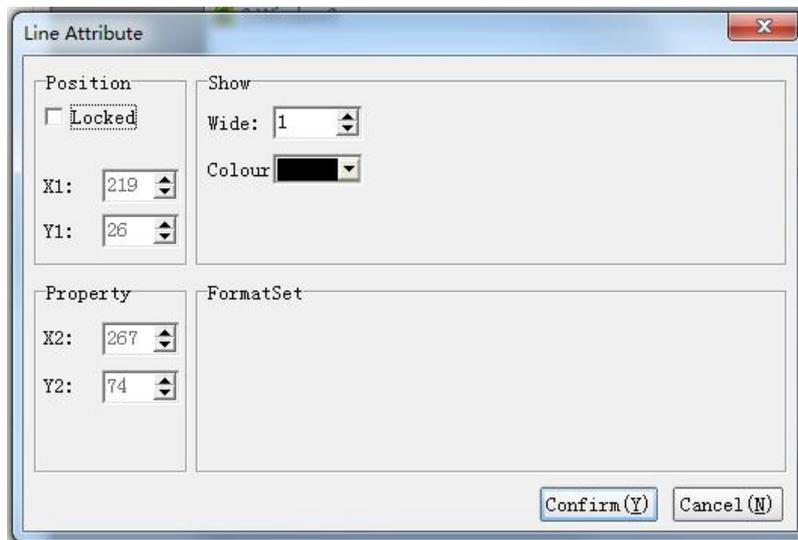
### Examples:



### Section 30 Line



The setting of line element attribute is as below, the user can change the width and color of the line according to themselves.



#### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

X1: Coordinate of the first point

Y1: Coordinate of the first point

#### Property

X2: Coordinate of the second point

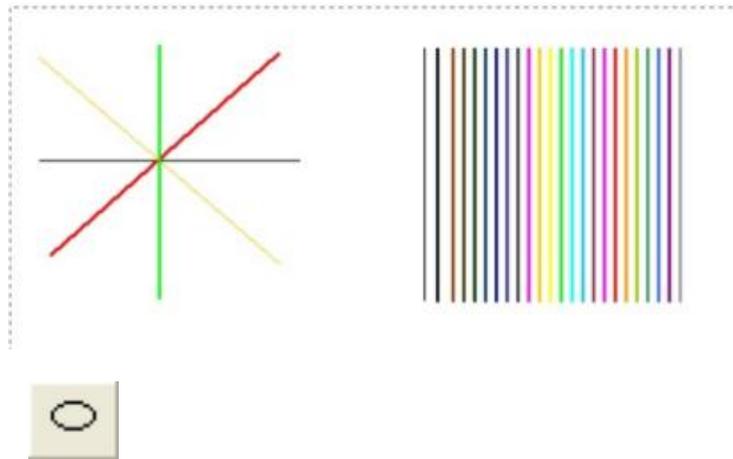
Y2: Coordinate of the second point

#### Show

Wide: set the width of the line

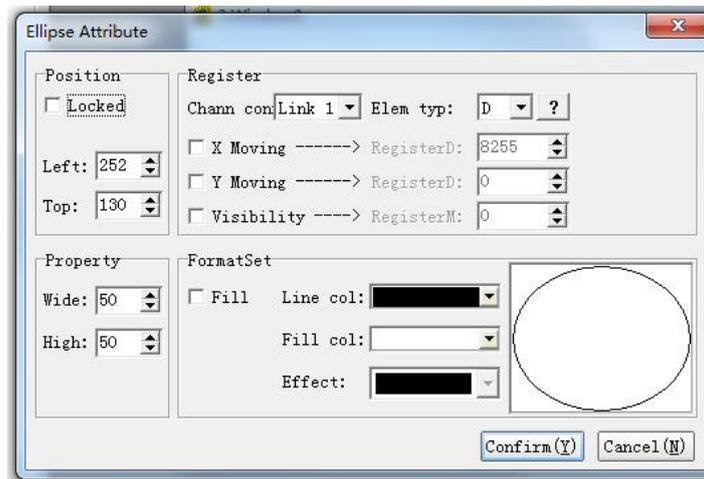
Color: set the color of the line

#### Examples:



### Section 31 Ellipse

ellipse, the shape is decided by the width and height. If the width equals to the height, then the shape will be a circle. If not, the shape will be an oval. The color and fill effect can be changed.



#### Position

Locked: lock elements, prevent well-adjusted pages from accidentally damage.

Left: coordinates of the elements in the left page

Top: coordinates of the elements in the top page.

#### Property

Width: width of elements

Height: height of elements

#### Register

Channel connection: select communication channel.

Element type: select element type.

X moving: when selected, elements will horizontally move along X axis. When the register value increase or decrease 1, the element will move one pixel towards the left or the right.

Y moving: when selected, elements will vertically move along Y axis. When the register value

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increase or decrease 1, the element will move one pixel towards the left or the right.

Visibility: when the secondary contact M is driven ON, the element will display. When driven OFF, the element will be hidden.

**Set Format**

Fill color: when selected, the set color will be filled, otherwise only the outline border displays, other Sections will be transparent.

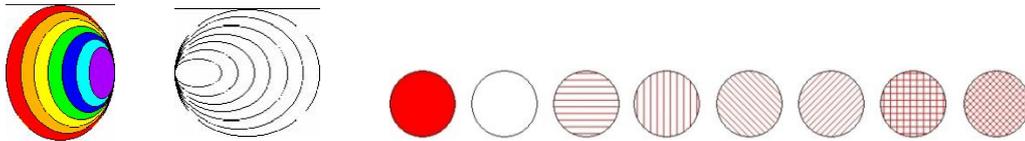
Line color: the border color

Fill color: the color to be filled

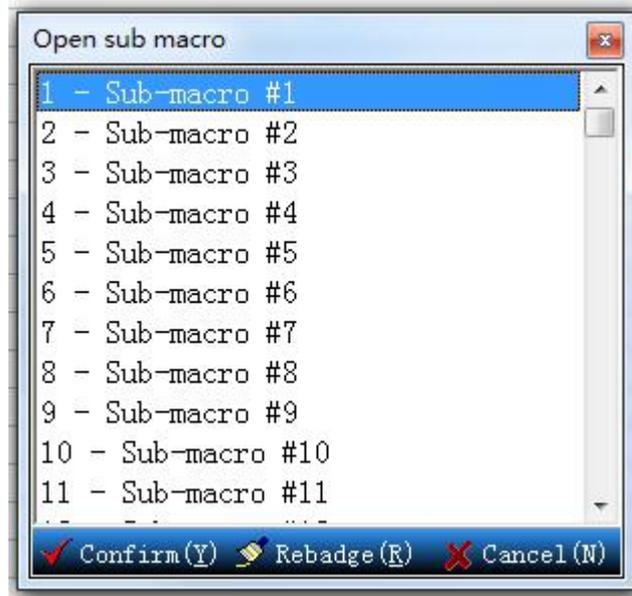


Fill effect: 8 special effects are provided, the effect please refer to the application.

Examples:

**Chapter 4 Macros**

Macro is a quite convenience and powerful function. Relatively it is easy to cause errors if people who write macro is careless. Therefore after macros are written, they should be simulate on PC online or offline, and can only be executed on HMI after being simulated for a period of time. Proper usage of macro can not only be helpful but also be time saving. If sensor units and hard drivers are used together, macros may even be economize on manpower( Similar to the automation process). At most 512 rows can be written for one macro. If there are remarks or character strings in one row, at most 50 Chinese characters can be written in this row. At most 16 sub-macro are permitted, numbers run from 1 to 16( please refer to below figure), the method of application is call " CALL sub-macro NO."



Write down the functions of sub-macros according to the different functions, thus it is convenient to manage, debug and apply these macros. The initial name of all sub-macros is Sub-macro#n, n means 1 to 16.

## Section 1 Macro Type

### 1) Initial

There is only one initial macro in a whole program or machine. It is a macro which will be executed once the program starts. Therefore the values which must be executed or be set first can be lead in in advance. It can not only avoid the inconvenience of setting but also avoid the problems caused by the unknown initial value by controlling the program or machine which is similar to initial setting. If there are certain settings in PLC, initial macro can be used here. It may save users a lot of time if the macro is well designed.

### 2) Clock

There is only one clock macro in a whole program or machine, too. It may be executed repeatedly all the time and it is completed for only once. After being completed, the execution will repeat when the next Clock is triggered.

### 3) Sub

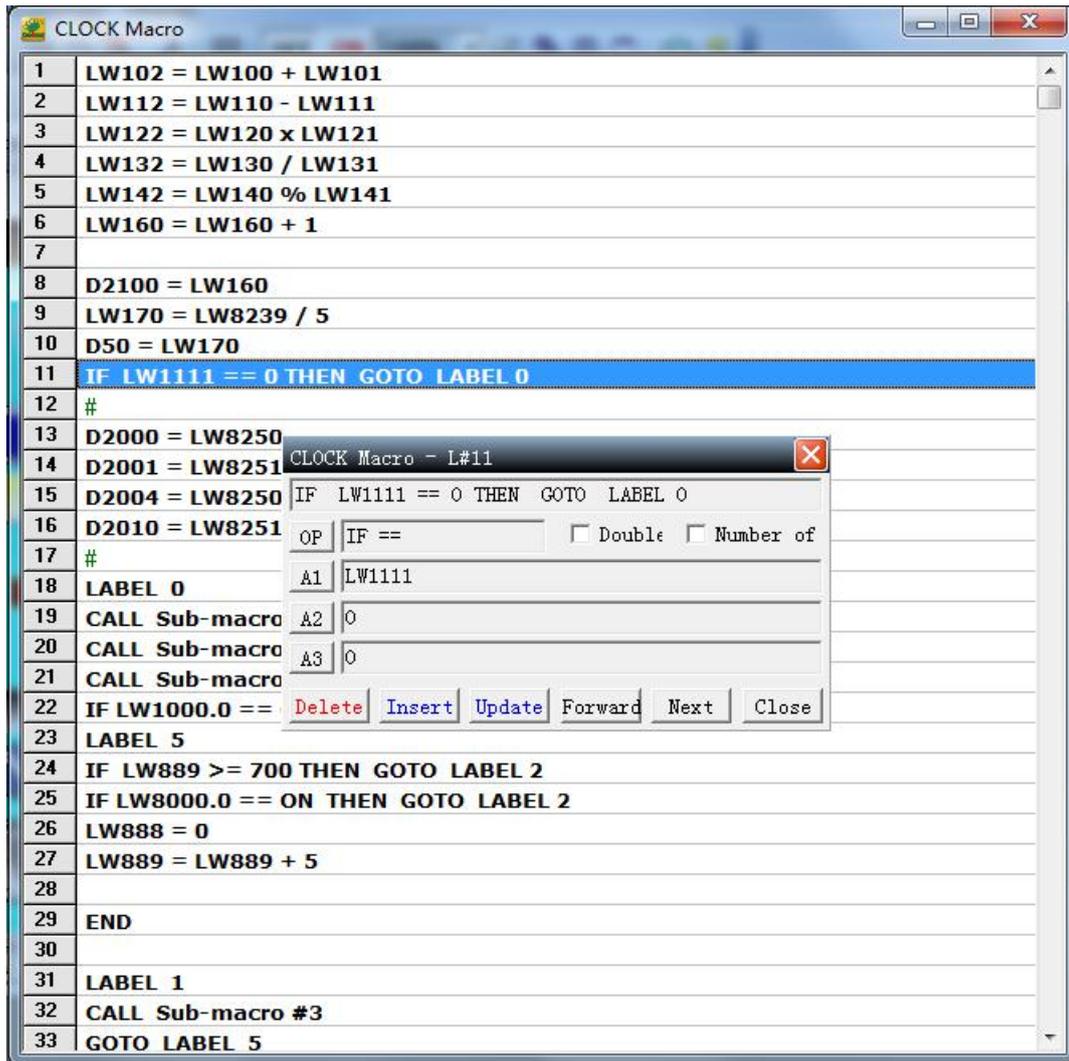
There are 16 sub-macros. The same as sub-program, users can put motions or functions with high repeatability into sub-macros. It can not only save time of writing macros but also be easily debugging. For example, if one function is used in ten operations, this function can be written as a sub-macro. When written as sub-macro#1, the macros with this function can be solved only by written "CALL 1". If this function needs to be modified, only the sub-macro needs to be modified. It is no need to modify

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all the ten functions. The sub-macros can be easily managed by writing their names to represent their functions.

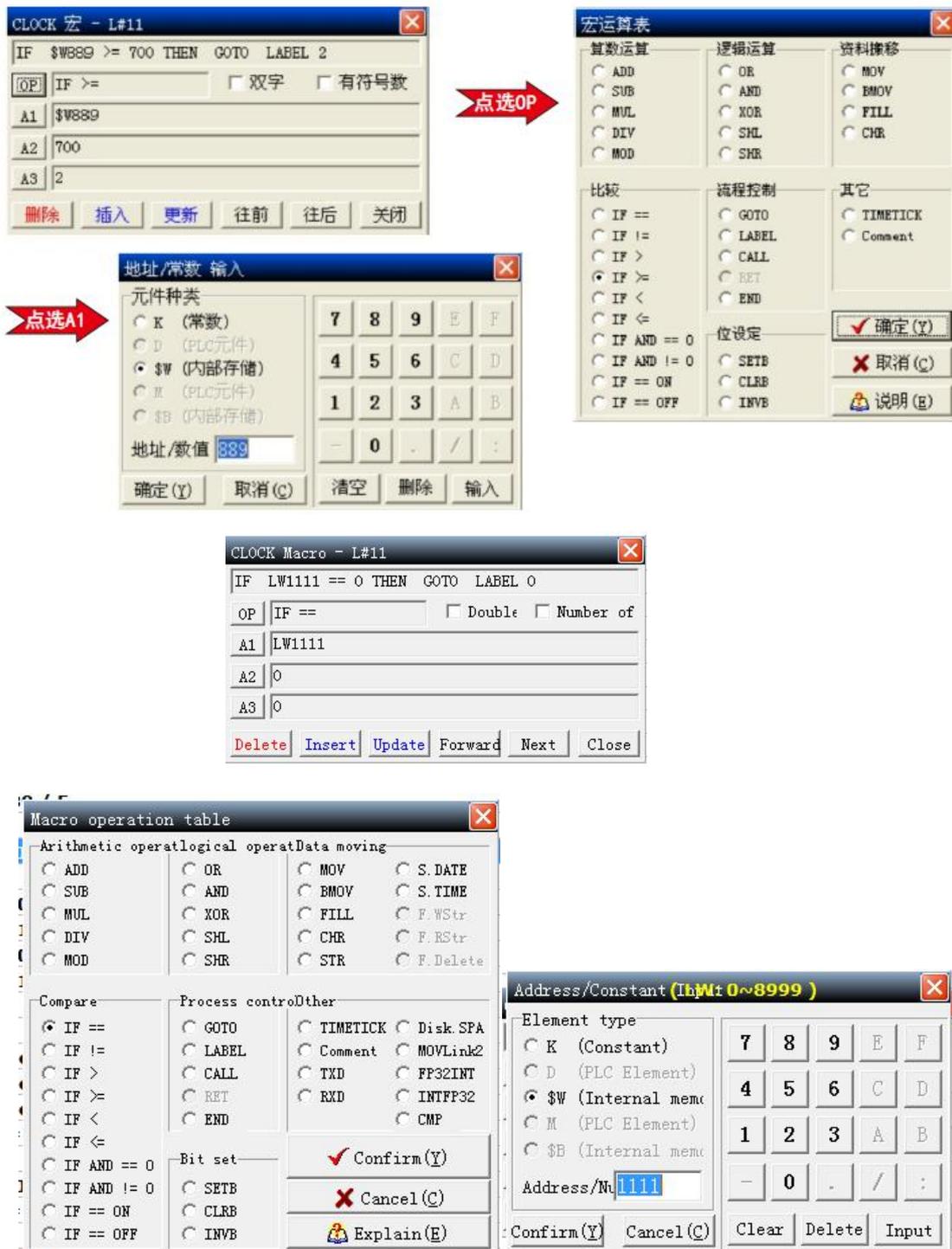
## **Section 2 Editing of Macro**

When the macro is selected, click and enter into the editing screen image, and then it can be edited. Click one row casually, the editing window will emerge automatically and it will change according to the location you click. The numbers in the left is the number of every row.



When start editing macro, you only need to click any one row, the editing window will appear ( see below figure), and then click OP to decide the macro you needed, and then the instruction window will appear. The user only need to move the mouse to the location of the instruction needed and then click OK to get back. The user can start editing the macro. The editing methods are stated in the later Sections.

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## 1) Open a macro

The function of open an old macro file is provided for users to edit macros conveniently. Users can open the saved files by using this function, no matter which manufacturer the PLC belongs to. Therefore there is no need to enter into the macros with high repeatability again, which greatly

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reduced the editing time. Below is the window opened.

Undo(U)	Ctrl+Z
Recovery(E)	Ctrl+Y
Cut(T)	Ctrl+X
Copy(C)	Ctrl+C
Paste(P)	Ctrl+V
Delete(D)	
Delete all(A)	
Save(S)	
Open macro file...	Ctrl+O
Save macro file...	Ctrl+S
Print(M)	Ctrl+P
Exit	

## 2) Save a macro

The function of save as a new file is provided for users to edit macros. Users can save the current macro, no matter as a backup or in order to decrease the re-enter of other macros.

Undo(U)	Ctrl+Z
Recovery(E)	Ctrl+Y
Cut(T)	Ctrl+X
Copy(C)	Ctrl+C
Paste(P)	Ctrl+V
Delete(D)	
Delete all(A)	
Save(S)	
Open macro file...	Ctrl+O
Save macro file...	Ctrl+S
Print(M)	Ctrl+P
Exit	

## Section 3 Operand of macros

### 1) Arithmetic operation

Arithmetic Operation: ADD,SUB,MUL,DIV and MOD(take remainders). Every operation has three

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operands, every operands can be the internal storage or constant(the output must be internal storage).Unit format:Word 、 Double Word、 Signed、 Signed Double Word. Detailed information please refer to the below diagram.

Instruction	Operation	Data form	Format	Others
ADD	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	If the value of Word,(dWord) is longer than the length of them, only the value inside the range of Word,(dWord) will be recorded, others will be abanded.
SUB	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	
MUL	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	
DIV	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	
MOD	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	

W=Word、 D=Double Word、 S=Signed。

ADD →  $A1=A2+A3$

E.g.:  $A1(\text{Word})=A2(\text{Word}) + A3(\text{Word})$

$A1(\text{Double Word})=A2(\text{Double Word}) + A3(\text{Double Word})$

$A1(\text{Signed})=A2(\text{Signed}) + A3(\text{Signed})$

$A1(\text{Signed Double Word})=A2(\text{Signed Double Word}) + A3(\text{Signed Double Word})$

SUB →  $A1=A2-A3$

E.g.:  $A1(\text{Word})=A2(\text{Word}) - A3(\text{Word})$

$A1(\text{Double Word})=A2(\text{Double Word}) - A3(\text{Double Word})$

$A1(\text{Signed})=A2(\text{Signed}) - A3(\text{Signed})$

$A1(\text{Signed Double Word})=A2(\text{Signed Double Word}) - A3(\text{Signed Double Word})$

MUL →  $A1=A2 * A3$

E.g.:  $A1(\text{Word})=A2(\text{Word}) * A3(\text{Word})$  。

$A1(\text{Double Word})=A2(\text{Double Word}) * A3(\text{Double Word})$

$A1(\text{Signed})=A2(\text{Signed}) * A3(\text{Signed})$

$A1(\text{Signed Double Word})=A2(\text{Signed Double Word}) * A3(\text{Signed Double Word})$

DIV →  $A1=A2 / A3$ 。 A1is quotient,  $A3 \neq 0$

E.g.:  $A1(\text{Word})=A2(\text{Word}) \% A3(\text{Word})$

$A1(\text{Double Word})=A2(\text{Double Word}) \% A3(\text{Double Word})$

$A1(\text{Signed})=A2(\text{Signed}) \% A3(\text{Signed})$

$A1(\text{Signed Double Word})=A2(\text{Signed Double Word}) \% A3(\text{Signed Double Word})$

## 2) Logical operation

Logic Operation: OR,AND,XOR,SHL and SHR. Every operation has three operands, every

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operands can be the internal storage or constant(the output must be internal storage).Unit format: Word 、 Double Word. Detailed information please refer to the below diagram.

Instruction	Operation	Data form	Format	Others
OR	A1、 A2、 A3	Internal Memory, constant	W、 D	
AND	A1、 A2、 A3	Internal Memory, constant	W、 D	
XOR	A1、 A2、 A3	Internal Memory, constant	W、 D	
SHL	A1、 A2、 A3	Internal Memory, constant	W、 D	
SHR	A1、 A2、 A3	Internal Memory, constant	W、 D	

W=Word、 D=Double Word

OR →  $A1=A2 | A3$

$A1(\text{Word})=A2(\text{Word}) | A3(\text{Word})$  or  $A1(\text{dWord})=A2(\text{dWord}) | A3(\text{dWord})$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	1

AND →  $A1=A2 \& A3$

$A1(\text{Word})=A2(\text{Word}) \& A3(\text{Word})$  or  $A1(\text{dWord})=A2(\text{dWord}) \& A3(\text{dWord})$

A	B	F
0	0	0
0	1	0
1	0	0
1	1	1

XOR →  $A1=A2 \wedge A3$

$A1(\text{Word})=A2(\text{Word}) \wedge A3(\text{Word})$  or  $A1(\text{dWord})=A2(\text{dWord}) \wedge A3(\text{dWord})$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	0

SHL →  $A1=A2 \ll A3$

$A1(\text{Word})=A2(\text{Word}) \ll A3(\text{Word})$

Left shift is to fill 0 into bit0 while shifting out. If  $A3 > 16$ ,  $A1=0$

$A1(\text{dWord})=A2(\text{dWord}) \ll A3(\text{dWord})$

Left shift is to fill 0 into bit0 while shifting out. If  $A3 > 32$ ,  $A1=0$

SHR →  $A1=A2 \gg A3$ 。

$A1(\text{Word})=A2(\text{Word}) \gg A3(\text{Word})$

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Left shift is to fill 0 into bit15 while shifting out bit0. If  $A3 > 16$ ,  $A1=0$

$A1(dWord)=A2(dWord) \gg A3(dWord)$

Left shift is to fill 0 into bit31 while shifting out bit0. If  $A3 > 32$ ,  $A1=0$

### 3) Data Shift

Data shift: MOV,BMOV,FILL and CHR.Detailed information please refer to the below diagram(the output can only be the internal storage).

Instruction	Operation	Data form	Format	Others
MOV	A1、 A2	Internal Memory, Constant,PLC	W、 D	A1 has only internal storage and constant
BMOV	A1、 A2、 A3	Internal Memory, Constant,PLC	W	A1 and A2 have only internal storage and constant
FILL	A1、 A2、 A3	Internal Memory, constant	W	
CHR	A1、 A2、 A3	Internal Memory, constant	W	A2 is input string

W=Word、 D=Double Word.

MOV →  $A1(\text{Word})= A2(\text{Word})$  or  $A1(\text{DWord})= A2(\text{DWord})$

MOV is to copy data in A2 to the target buffer A1,and data in A2 will not be changed. If A1 is the address of PLCs , data in A2 is written in the address by communication.Otherwise, if A2 is the address of PLC, data of A2 is read out by communication and then move to A1.

BMOV → BMOV(A1, A2, A3).

BMOV is to move A2 to A1, move the value of A3 in total. Word is the only format.Start from A2,copy the data of the buffers with the value of A3 to buffers initialed from A1, and data in A2 will not be changed.The Maximum effective value of A3 is 30.No matter A3 is a direct or indirect data, if the effective value is greater than 30, it will be dealt with 30. If the length of the block is greater than the Maximum value of internal storage or PLC, this instruction will be given up executing.

FILL → FILL(A1, A2, A3).

Fill the value of A2 from A1, there are the value of A3 in total, Start from A2,fill the data of the buffers with the value of A3 to buffers initialed from A1, and data in A2 will not be changed.If the length of the block is greater than the Maximum value of internal storage or PLC, the compiling will not be passed.

CHR → ASCII, such as CHR (A1, "A2").

Convert the characters in A2 into ASCII and then store them in A1. The maximum length of the character string is 50 characters.

#### 4) Compare

Compare: IF =、IF !=、IF >、IF >=、IF <、IF <=、IF AND == 0、IF AND != 0、IF == ON,IF == OFF,etc. Detailed information please refer to the below diagram.

Instruction	Operation	Data form	Format	Others
IF =	A1、 A2、 A3	Internal Memory, Constant	W、 D、 S	A3 has only constant
IF !=	A1、 A2、 A3	Internal Memory, Constant	W、 D、 S	A3 has only constant
IF >	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	A3 has only constant
IF >=	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	A3 has only constant
IF <	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	A3 has only constant
IF <=	A1、 A2、 A3	Internal Memory, constant	W、 D、 S	A3 has only constant
IF AND == 0	A1、 A2、 A3	Internal Memory, constant	W、 D	A3 has only constant
IF AND != 0	A1、 A2、 A3	Internal Memory, constant	W、 D	A3 has only constant
IF ==ON	A1、 A2	Internal Memory, constant	B	A1 has only PLC and constant, A2 has only constant
IF == OFF	A1、 A2	Internal Memory, constant	B	A1 has only PLC and constant, A2 has only constant

W=Word、 D=Double Word、 S=Signed

IF == → e.g. IF A1==A2 THEN GOTO LABEL A3. Format of Signed DW can be used.

IF != → e.g. IF A1!=A2 THEN GOTO LABEL A3. Format of Signed DW can be used.

IF > → e.g. IF A1>A2 THEN GOTO LABEL A3. Format of Signed DW can be used.

IF >= → e.g. IF A1>=A2 THEN GOTO LABEL A3. Format of Signed DW can be used.

IF < → e.g. IF A1<A2 THEN GOTO LABEL A3. Format of Signed DW can be used.

IF <= → e.g. IF A1<=A2 THEN GOTO LABEL A3. Format of Signed DW can be used.

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IF AND == 0 → e.g. IF (A1&A2)== 0 THEN GOTO LABEL A3 . Format of Signed DW can be used.

IF AND != 0 → e.g. IF(A1&A2) != 0 THEN GOTO LABEL A3. Format of Signed DW can be used.

IF == ON → e.g. IF A1==ON THEN GOTO LABEL A2.

IF ==OFF → e.g. IF A1==OFF THEN GOTO LABEL A2.

### 5) Process Control

Process Control: GOTO、LABEL、CALL、RET and END ,detailed information please refer to the below diagram.

Instruction	Operation	Data form	Format	Others
GOTO	A1	constant		
LABEL	A1	constant		
CALL	A1	constant		
RET	N/A			
END	N/A			

GOTO → e.g. GOTO LABEL A1. LABEL A1 must in the same program.

LABEL → e.g. LABEL A1.

Labels in the same macro program cannot be the same. However, different macros can assign the same label.

CALL → Call Sub-macro, e.g. CALL A1.

Call Sub-macro can transfer the right of control to program instructions of macro. Normally macros are used to execute certain function、 pass parameters tables、 operate a set of instructions and so on. Please note that sub-macros must be exist and they must be returned by a RET instruction at the end of the program. The RET instruction will transfer the right of control to the instruction in the next row which is under the original sub-macro. The number of Sub-macros can start from 01~, the name of sub-macro can be customized.

RET → return to macro

RET is only used in Sub-macros, but CALL is placed in main programs. There must be a CALL corresponding to every RET.

END → End Macro

END means a macro is ended. The macro after END will not be executed. It will start from the instructions in the first row.

## 6) Bit Set

Bit Set: SETB、CLRB and INVB , detailed information please refer to the below diagram.

Instruction	Operation	Data form	Format	Others
SETB	A1	PLC, Internal Memory	Bit	
CLRBL	A1	PLC, Internal Memory	Bit	
INVB	A1	PLC, Internal Memory	Bit	

SETB →set BIT ON, Usage: SETB A1

CLRB →set BIT OFF, Usage: CLRB A1

INVB →reversely set the state of BIT , Usage: INVB A1

## 7) Others

There are TIMETICK and Comment.

Instruction	Operation	Data form	Format	Others
TIMETICK	A1	Internal Memory	W、D	
Comment	A1	Character String		

TIMETICK → get the time of the system(CPU operation time ), put in the selected address, increase 1 means increase 100ms.

Comment → increase readability of macros, but has no effect to macros actually.

## Section 4 Errors

### 1) LABEL undefined

This message means the label that GOTO needed cannot be found. See below figure:



### 2) LABEL Repeat

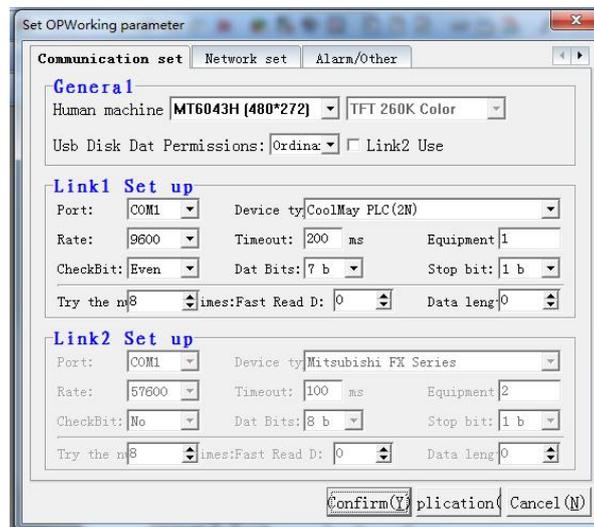
This message means that there are the same label no. in this program. See below figure:



## Chapter 5 System Control Area

HMI system pause area and state respond buffer must be defined so that MT series can communicate with PLCs with other brands and display screen images bidirectional.

Click [parameter setting] in [Application] dialog box, or click the icon in the toolbar, or use the defaulted hotkey F7.



### Section 1 Parameters

#### 1) Communication Setting Conditions of program updating

In order to prevent the controller from starting in the mode of semi-automatic/automatic or when the motor is turned on, updating the HMI program, resulting in poor quality of products and unexpected accidents due to the suddenly change of parameter settings. The program can only be updated in the manual mode or when the motor is turned off.

#### 2) Communication Setting Usage of link2

Choose whether to use Link2 or not. MT series HMI support 2 different kinds of controllers to communication simultaneously. For example, Link1 connect with CoolMay PLC(2N), Link2 connect with Omron C Series PLC.

#### 3) Communication Setting Times of connection attempts

When the setting of communication is failed, times of connection attempts will be auto-repeated. When the times is over the setting value, the HMI will stop connecting and give an alarm "communication failed".

#### 4) Communication Setting Fast reading area

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This setting can rapidly display data when HMI is communication with PLCs. Some data are scattered instead of continuous. It is suggested that the the address of PLC data is continuous in order to get the best effect of data update and guarantee correct communication. The display speed of the data in the fast reading area is far more quickly than those outside the area.

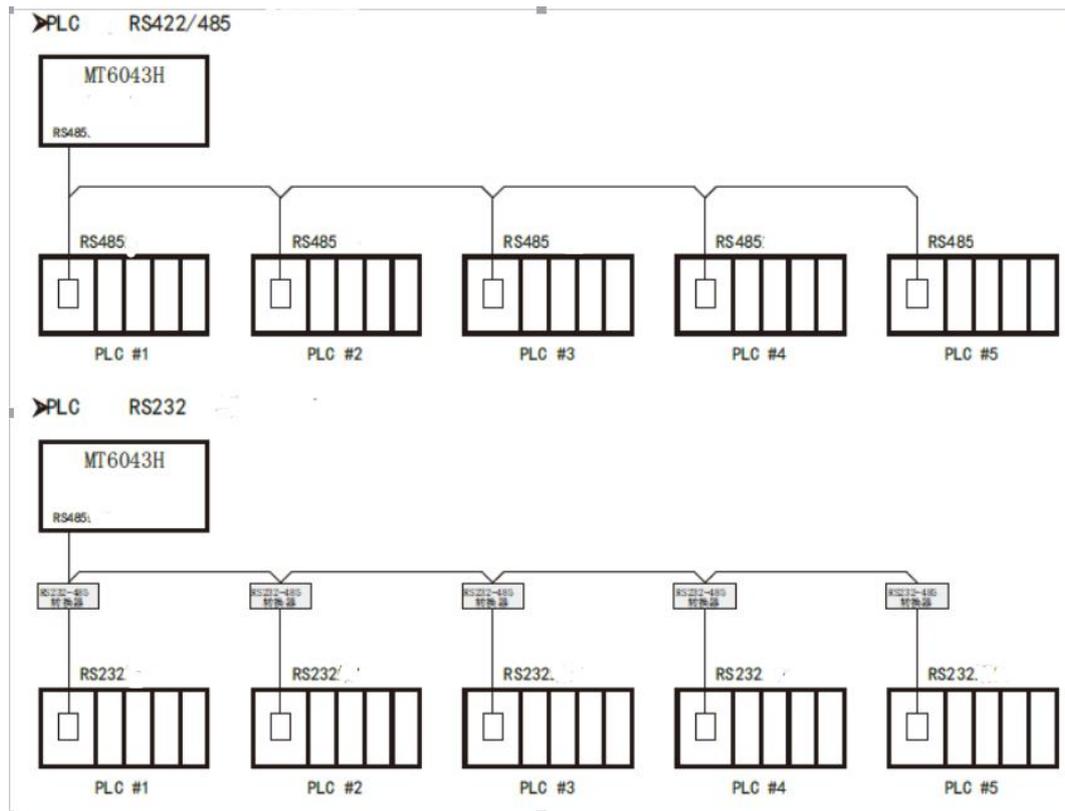
The following data must be placed in fast reading area, otherwise the system will not take the initiative to read these data: conditions of program updating, automatic switch of displayed screen, voice control, historical curve, clock pulse(triggering condition), clock counter(counting condition), data save(data resources), history list, LED indicator.

## Network Setting

## 5) RS485/CAN\_Bus multi-controller communication ID address mode

“Standard/Extension” optional. “Standard” apply to the situation when one HMI is connected with one PLC. “Extension” apply to the situation when one HMI is connected with multiply PLCs. Coolmay HMI support “Extension”, namely one HMI can connect with registers of multiply PLCs through RS422/485, please note that PLCs in the same line must be the same brand or must support the same communication protocol and register address. Since RS232 doesn’t support one HMI communicating with multiple PLCs simultaneously, when there isn’t RS422 or RS485, RS232 should be converted to RS422 or RS485 by communication adapter. The specific hardware connection differs along with different PLCs. Below are two normal applications.

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6) RS485/CAN\_Bus multi-controller communication. Initial ID address of extension  
It is effective when the ID address is "extension", the initial ID address of extension is the same with the ID address of the initial PLC in the main line.

7) RS485/CAN\_Bus multi-controller communication Registers quantity of every ID address

It is effective when the ID address is "extension", the register quantity of every ID address is the same with the register quantity every PLC in the main line occupied. For example, initial ID address of extension=0, registers quantity of every ID address=100.

8) Ethernet setting IP address

Enter the IP address which is get from the network administrator or the INTERNET service provider. The IP address is 32 bits, it is represent by 4 figures separated by full stops from 0 to 255.

9) Ethernet Setting Subnet mask

Enter the subnet mask which is get from the network administrator or the INTERNET service provider. Combine it with the IP address to recognize the network segment in use. The subnet mask is 32 bits, it is represent by 4 figures separated by full stops from 0 to 255. Normally, the default subnet mask uses 0 or 255 as value (e.g. 255.255.255.0), other figures can also appear.

10) Ethernet Setting Default gateway

Enter the IP address of default gateway needed. It is an address of a local IP router, which is in the same network with the computer which transfer the communication beyond the local network. Values

## Manual

of every field must be between 0 and 255. The gateway is a router which connects independent IP network segments.

For example, gateways may be needed to connect network segments with other network segment, WAN or INTERNET.

## 11) Interaction Automatic switch of displayed screen



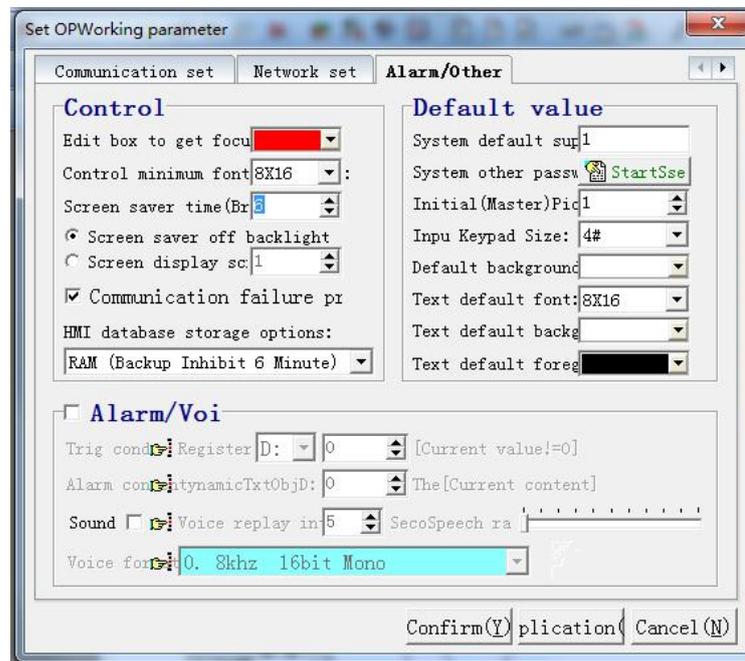
In general, screen switch are executed by pressing buttons. Besides, modification of register value can also switch the screen images. If this attribute is effective, write the value into registerD1 when operation, it will automatically switch to the Nth screen image. Subsequently the value D1 will be zero clearing.

## 11) Interaction Report the current screen number



Write the data of the current screen number into D2, thus the PLC can get the number of the displaying screen.

Other settings:



## 13) Control Edit boxes get focal color

Edit boxes get focus color: set color when edit boxes gain focal points.

## 14) Control Parameter auto-display

## Manual

If this attribute is effective, when the edit box gets focal points, Coolmay HMI will timely remind that the current setting range or the optional item has the prompt effects. The tip time can be customized.

## 15)Control Screen saver time

Screen Saver Time: set the screen saver time. Only one of displaying screen image or turning down the backlight can be selected.

## 16)Control Display screen image for screen saver

If this function is selected, when it is time to save the screen, the HMI will not shut down the backlight but switch to the displayed screen image automatically.

## 17)Control Splash screen delay time

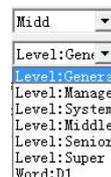
Splash screen delay time: set the delay time of screen display after starting, range:0~99s

## 18)Control Parameter auto-prompt

Set the length of parameter auto-prompt time, the prompt message will disappear when timeout.

## 19)Default Default supervisor password

When the encryption function of "data setting" function key is effective, these units can be operated only when the system defaulted password is logged in successfully. Screen hidden and data encryption can be easily achieved by using this function. MT system provide password management



with six classes to satisfy different data management, please see the below figure:

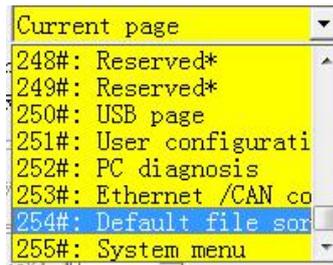
The supervisor password defaulted by the system is the same with the default password when updating program. The default password of others like common, manage, system, middle, advance is "12345678", when the default password is successfully log in, new password can be set.

## 20)Default Initial (master control) screen image number

When the controller is power on, the first user screen will be displayed. Normally this screen image is set as the main menu or the screen which is used with the highest frequency. The attribute of the initial screen cannot be a window or visibility control screen, otherwise CoolMayHMI will give a warning while compiling, see the below figure.



The background color of the initial screen can also be the background color of special screen



#### 21)Voice Playing conditions

When the data of the appointed register isn't "0", the system will broadcast the corresponding content repeatedly.

#### 22)Voice Rebroadcast interval

When the playing conditions are set up(Abnormal alarm occurs ), the interval time of rebroadcast appears.

#### 23)Voice Voice rate

Set the rate of voice, 0% is the slowest, 100% is the fastest. Normally 50%.

#### 24)Voice Voice format

0. 8khz 16bit Mono
1. 8khz 16bit Stereo
2. 11khz 16bit Mono
3. 11khz 16bit Stereo
4. 22khz 16bit Mono
5. 22khz 16bit Stereo
6. 44khz 16bit Mono
7. 44khz 16bit Stereo
8. 48khz 16bit Mono
9. 48khz 16bit Stereo

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## 25. Multiply Language    Quantity of language

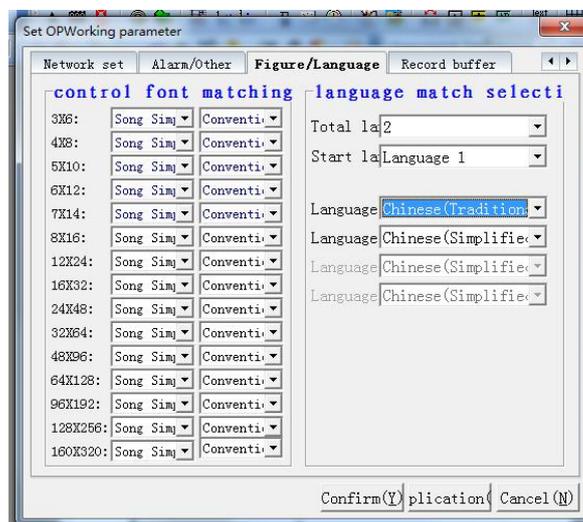
MT series support four language to switch at the same time. Proper language quantity can be selected according to the actual situation.

## 26. Multiply Language    Initial language

Select the language when the first time the system operated.

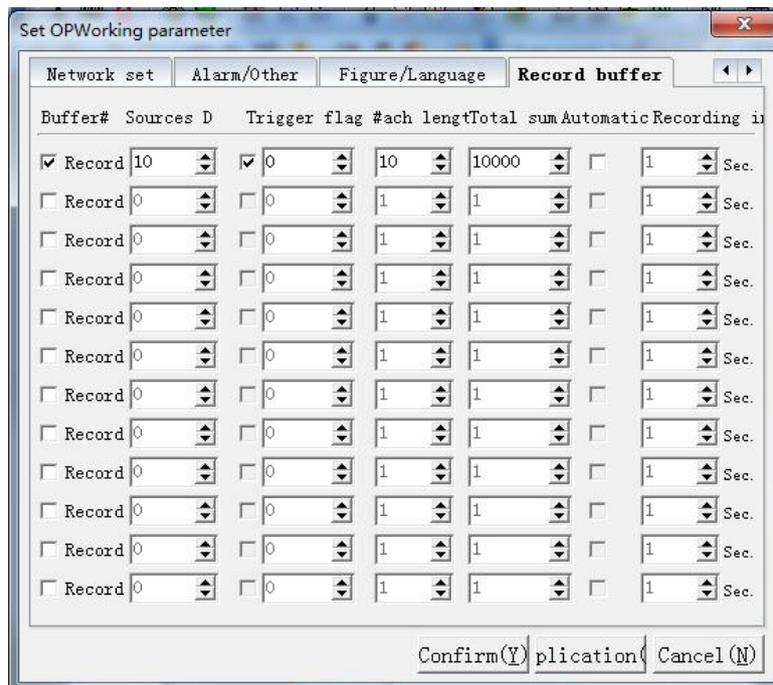
## 27. Match    Language selection

Select the language which is matched with the “X”; CoolMayHMI support all the language with global Unicode form.





### Record buffer zone download



In the settings of historical data display module, record buffer zone must be assigned so that on-line interaction can be applied. Record buffer zone is the BACKUP RAM location where sampling data is stored. The location and size of record buffer zone must be set in advance.

28)Record Buffer Zone Data resource D

## Manual

Set the location where record buffer zone #1 to #12 read the PLC data. E.g. D10 is the initial location.

## 29)Record Buffer Zone Record conditions \$W

Set the conditions with which record buffer zone #1 to #12 read the PLC data. When the record condition is  , the content of the assigned register is NO≠0 , the record will be execute if yes.

When the record condition is  , the HMI will execute the record without conditions.

## 30)Record Buffer Zone Length and the whole quantity

The length 10 means 10words=continuous data of D10~D19,the whole quantity means the maximum sampling that the record buffer zone can store.

## 31)Record Buffer Zone Auto-stop

When select auto-stop, when the most large number of sampling is 10000, the HMI stops sampling. When not selected, that means the first record will be removed from record buffer zone during the process of the 10001th sampling.

## 32)Record Buffer Zone Record interval

The record interval is triggered by HMI, the unit of sampling cycle is second. For example,  $60*1=60s$  (1 minute)

**Section 2 Special Registers**

## 1) Internal Cache Area

Word access: \$Wn (n: 0~8255);

Bit access: \$Bn (n: 0~4095);

HMI provide 8256 internal power-down save cache area; \$W0~\$W8199 is read-write registers, , \$W8200~\$W8255 is read-only register.

## 2) Read-only register code

Auxiliary register list	
Register	Function
\$W6000	Recipe serial number register
\$W6000...\$W8000	Current recipe memory address
\$W8001	[bit0] recipe download indicator ,[bit1]recipe upload indicator
\$W8002...\$W8026	Save name of current recipe
\$W8027...\$W8032	Save date of current recipe (including hour、minute、second、year、month、day)
\$W8095	Virtual date , set the offset days

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\$W8096	Virtual date, offset year
\$W8097	Virtual date, offset month
\$W8098	Virtual date, offset day
\$W8100..\$W8104	Rank given No.1 data name
\$W8105	Rank given No.1 function
\$W8106	Rank given No.1 compensation value
\$W8107	Rank given No.1 interval
\$W8108	Rank given No.1 given address
\$W8109	Rank given No.1 given next time
\$W8110	Rank given No.1 current position
\$W8111	Rank given No.1 amount of data
\$W8112..\$W8119	Rank given No.1 start time
\$W8120..\$W8124	Rank given No.2 data name
\$W8125	Rank given No.2 function
\$W8126	Rank given No.2 compensation value
\$W8127	Rank given No.2 interval
\$W8128	Rank given No.2 given address
\$W8129	Rank given No.2 given next time
\$W8130	Rank given No.2 current position
\$W8131	Rank given No.2 amount of data
\$W8132..\$W8139	Rank given No.2 start time
\$W8140..\$W8144	Rank given No.3 data name
\$W8145	Rank given No.3 function
\$W8146	Rank given No.3 compensation value
\$W8147	Rank given No.3 interval
\$W8148	Rank given No.3 given address
\$W8149	Rank given No.3 given next time
\$W8150	Rank given No.3 current position
\$W8151	Rank given No.3 amount of data
\$W8152..\$W8159	Rank given No.3 start time
\$W8160..\$W8164	Rank given No.4 data name
\$W8165	Rank given No.4 function
\$W8166	Rank given No.4 compensation value
\$W8167	Rank given No.4 interval
\$W8168	Rank given No.4 given address
\$W8169	Rank given No.4 given next time
\$W8170	Rank given No.4 current position
\$W8171	Rank given No.4 amount of data

## Manual

\$W8172..\$W8179	Rank given No.4 start time
\$W8180..\$W8184	Rank given No.5 data name
\$W8185	Rank given No.5 function
\$W8186	Rank given No.5 compensation value
\$W8187	Rank given No.5 interval
\$W8188	Rank given No.5 given address
\$W8189	Rank given No.5 given next time
\$W8190	Rank given No.5 current position
\$W8191	Rank given No.5 amount of data
\$W8192..\$W8199	Rank given No.5 start time
\$W8200	System language
\$W8201	Buzzer duration
\$W8202	Buzzer alarm
\$W8203	Screen rotation
\$W8204	Backlight time
\$W8205	Buzzer function
\$W8206	Multiply devices communication interval
\$W8207	Ethernet function
\$W8208	Update hw6 from long distance
\$W8209..\$W8212	IP address
\$W8213..\$W8216	Subnet mask
\$W8217..\$W8220	Gateway
\$W8221..\$W8226	MAC address
\$W8227..\$W8236	ID or received ID set by CAN
\$W8237..\$W8239	Hour、minute、Second
\$W8240..\$W8243	Year、month、day、week
\$W8246	Link1 communication timeout counter (master station)
\$W8247	Link2 communication timeout counter (master station)
\$W8248	Link1 communication succeed counter
\$W8249	Link2 communication succeed counter (master station)
\$W8250	Random number per second (0~10000)
\$W8251	Random number per second (0~10000)
\$W8253	System boot time (minute)
\$W8254	Lock control set by data
\$W8255	Special function

## Appendix MT series supported PLC

### Section one Porcheson PS series

#### 1) software setting

Parameter	Suggested settings
PLC type	PORCHESON PS Slave
COM port	RS232
Data bit	8
Stop bit	1
Check bit	even
Baud rate	57600
Controller ID	1

#### 2) Operational address

Word Devices	Address Range	Size	Type Code	Int. Addr.	Int. Aux. Addr.
Dn	n: 0-2199	W	8	n	0
Dn	n: 10000-10429	W	9	n	0
Tn	n: 0-299	W	5	n	0
Cn	n: 0-99	W	6	n	0

Bit Devices	Address Range	Type Code	Int. Addr.	Int. Aux. Addr.	
Mn	n: 0-2099;	B8	0C0H	n	0
Xn	n: octal 0-377;	B8	0C3H	n	0
Yn	n: octal 0-377;	B8	0C4H	n	0
Tn	n: 0-299;	B8	0C5H	n	0
Cn	n: 0-99;	B8	0C6H	n	0

#### 3) MT( COM1 )-PS wiring :

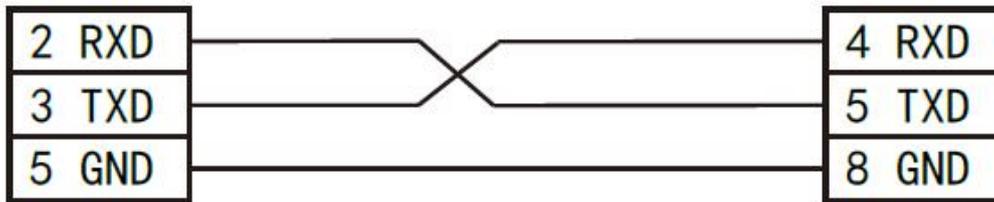


MT 9-pin D type female



PS 15-pin D type female

## Manual



## Section 2 MITSUBISHI FX Series

## 1) software setting

Parameter	Suggested settings
PLC type	Mitsubishi Fx Series
COM port	
Data bit	7
Stop bit	1
Check bit	even
Baud rate	9600
Controller ID	0

## 2) Operational address

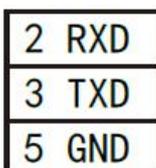
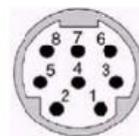
Word Devices	Address Range	Size	Type Code	Int. Addr.	Int. Aux. Addr.
Dn	n: 0-7999	W	8	n	0
Dn	n: 8000-8255	W	9	n	0
Tn	n: 0-255	W	5	n	0
Cn	n: 0-199	W	6	n	0
Cn	n: 200-255	DW	7	n	0

Bit Devices	Address Range	Type Code	Int. Addr.	Int. Aux. Addr.	
Mn	n: 0-3071;	B8	0C0H	n	0
Mn	n: 8000-8255;	B8	0C1H	n	0
Xn	n: octal 0-377;	B8	0C3H	n	0
Yn	n: octal 0-377;	B8	0C4H	n	0
Tn	n: 0-255;	B8	0C5H	n	0
Cn	n: 0-255;	B8	0C6H	n	0

## 3) MT( COM1 )-Mitsubishi Fx wiring

MT 9-pin D type female

Fx 8-pin female



Pin number	Signal	Discription
1	RXD-	Receive -
2	RXD+	Receive +
3	GND	Ground
4	TXD-	Transmit -
5	+5V	External power supply +5V
6	CCS	Direction control wire
7	TXD+	Transmit +
8	NC	Not conected

### Section 3 Omron CPM/CQM Series

#### 1) software setting

Parameter	Suggested settings
PLC type	Omron CPM/CQM Series
COM port	RS232
Data bit	7
Stop bit	2
Check bit	even
Baud rate	9600
Controller ID	0

#### 2) Operational address

Word Devices	Address Range	Size	Type Code	Int. Addr.	Int. Aux. Addr.
DMn	n: 0-6655	W	5	n	0
TCn	n: 0-511	W	4	n	0
Bit Devices	Address Range		Type Code	Int. Addr.	Int. Aux. Addr.
IRnb	n: 0-511; b=00-15; <a href="#">BBO</a>		0C0H	n	b
HRnb	n: 0-99; b=00-15; <a href="#">BBO</a>		0C1H	n	b
TCn	n: 0-511		0C4H	n	0

#### 3) MT( COM1 )- Omron CPM/CQM wiring

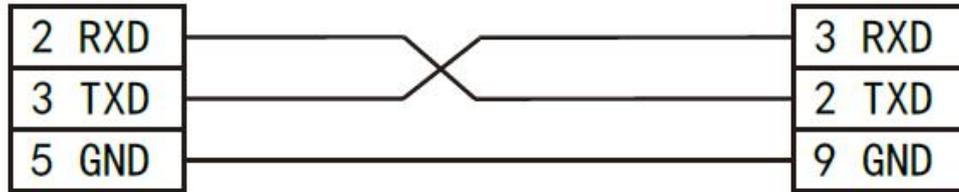
MT 9-pin D type female



CPM/CQM 9-pin D type female



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## Section 4 Siemens S7-200 Series

## 1) software setting

Parameter	Suggested settings
PLC type	Siemens S7-200 Series
COM port	RS485
Data bit	8
Stop bit	1
Check bit	even
Baud rate	9600
Controller ID	2

## 2) Operational address

Word Devices	Address Range	Size	Type Code	Int. Addr.	Int. Aux. Addr.
VWn	n: 0-5119	B	8	n	0
Tn	n: 0-255	W	12	n	0
Cn	n: 0-255	W	13	n	0

Bit Devices	Address Range	Type Code	Int. Addr.	Int. Aux. Addr.
SMn.b	n: 0-193; b: 0-7; <a href="#">BBO</a>	0C3H	n	b
In.b	n: 0-7; b: 0-7; <a href="#">BBO</a>	0C0H	n	b
Qn.b	n: 0-7; b: 0-7; <a href="#">BBO</a>	0C1H	n	b
Tn	n: 0-255	0C6H	n	0
Cn	n: 0-255	0C7H	n	0

## 3) MT( COM 2)- Siemens S7-200 wiring

Manual

MT 9-pin D type female



S7-200 9-pin circular female

