

mcsTpc™

嵌入式一体化触摸屏/工控机



- TPC7062K/KS

中级教程

北京昆仑通态自动化软件科技有限公司

BEIJING KUNLUN TONGTAI AUTOMATION SOFTWARE TECHNOLOGY CO.,LTD.

Brief Introduction

This book primarily introduces several major functions applied to MCGS software configuration engineering: animation, alarms, formulas and multi language. It is divided into 4 chapters: chapter 1, simple animation configuration, introduces the configuration process of common animation forms in details, such as rotation, move and size change; chapter 2, alarms, it lists the most common alarm forms in project; chapter 3, formulas, it introduces configuration forms of two modes, formula stored in PLC and HMI in details, taking bread formula as an example; chapter 4 introduces multi language function newly added into MCGS embedded vision configuration software 6.8 vision and its specific implementation methods.

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The tutorial introduces simple applications of mcgsTps embedded integration touch screen and MCGS configuration software, suitable to friends familiar with the junior tutorials.

mcgsTpc series of tutorials:

<i>Junior tutorial of mcgsTpc</i>	Beijing Kunlun Tongtai Automation Software Technology Co., Ltd
<i>Intermediate tutorial of mcgsTpc</i>	Beijing Kunlun Tongtai Automation Software Technology Co., Ltd
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Industry Control Configuration Software & PLC Application Technologies Beijing University of Aeronautics Press

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Intermediate tutorial of mcgsTpc

Issues by Beijing University of Aeronautics Press

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Preface

Training objective: through the training, users are fully capable of actual projects of self-configuration and solve on-site problems.

Training objects: users familiar with PLC knowledge and having learnt junior tutorial of MCGS.

Training plan:

Schedule	Course Arrangement
09:00-09:20	Student attendance to receive materials
09:20-10:00	Overall introduction of company
10:00-10:30	Simply animation configuration
10:30-10:50	Practice
10:50-11:00	Rest
11:00-11:40	Introduction of alarm configuration
11:40-12:00	Practice
12:00-13:00	Lunch Filling out the customer questionnaire
13:00-13:50	Formula introduction and the 1 st mode configuration
13:50-14:20	Practice
14:20-14:30	An interval
14:30-15:00	Formula and the 2 nd mode configuration
15:00-15:30	Practice on computer
15:40-15:50	An interval
15:50-16:20	Multi-language configuration contents
16:20-16:40	Practice
16:40-17:00	Analysis & interactive communications of configuration FAQ

Chapter 1 Simple Animation Configuration

With the improvement of life-living standard, people have higher requirements of beauty in both life and work. In the true color era of HMI products came, just the gorgeous colors are far beyond customers' needs. What the customers really need most is to show a really realistic operation status of equipment with images in order to further improve the whole product to a higher level. The mcgsTps products of Kunlun Tongtai are dedicated to meet the customers' needs and, with good-quality hardware feature and powerful software functions, capable of offering complete animation solutions.

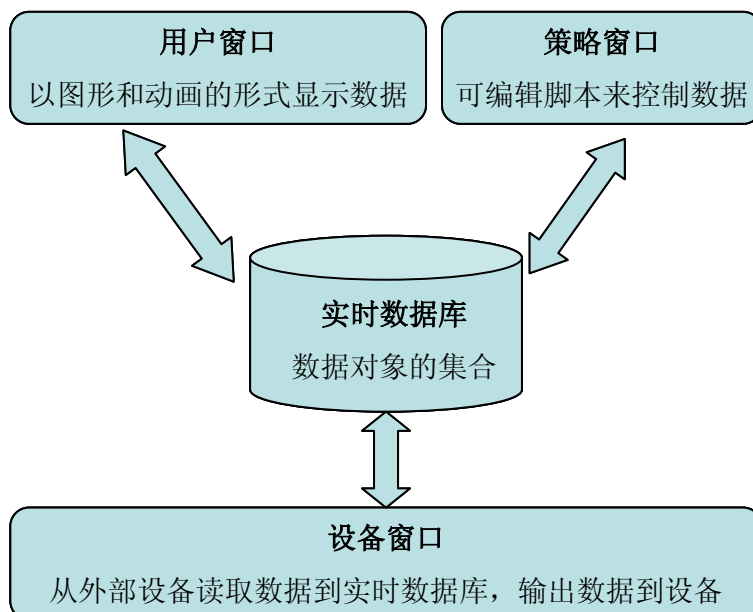
Complex actions are the applications of combining simple actions while most of the simple actions in the life can be understood as flashing, moving, rotation and size change, etc. It can show the industrial equipment vividly and realistically by combining such types of simple animations. From this chapter, we mainly learn to how to implement such simple actions in MCGS software.

1.1 Pre-knowledge

Before learning configuration, we firstly get to know the general frameworks and work processes of MCGS configuration software.

The real-time database in the core of the whole software: data collected from external hardware is sent to real-time database and then called by the window; through user window, values of database is changed and then output to external hardware through equipment window.

Animation components in user window are associated with data objects in database and correspondingly change according to values of data objects, so as to achieve “move” effects.



In the multimedia CD-ROM, there is a simple animation sample, including flash, move, rotation and size change, etc. which can be accomplished by simple setting in component's property window. Figure 1-1-2 shows operational effects of this sample in TPC7062K; we can respectively give a small environment to such several effects:

- Implement flash of titles
- Wrong message displayed is implemented with horizontal shift while motor polishes glass is implemented with vertical shift.
- Button controls rotation of fan.
- Size change of bar graph shows increase and reduction of data.



Figure 1-1-2 Operational Effects of Simple Animation


1.2 Animation Configuration

Start a new project and then conduct the configuration. MCGS configuration software offers a rich graphics library and almost all the components can set animation properties. As long as you make the appropriate settings in property dialog box, you can implement move, size change and flash, etc.

1.2.1 Set the Background

Before the configuration screen, the style and tone of the overall picture is recommended to be firstly set, so as to better set colors of other components in configuration making more beautiful pictures. We are going to introduce how to set the background according to the style of the sample.

1. Setting window background

Start a window and enter the configuration screen to add a “bit screen” . Click the icon with right-hand button and select “load bitmap” from shortcut menu ejected. Choose a pre-prepared bitmap, select it after loading and then set the coordinates of the bitmap (0,0) in the status bar in the lower-right corner with the size of 800*480. As figure 1-2-1 shows, the setting of background is completed.

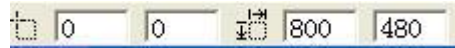



Figure 1-2-1 Setting of Coordinates and Size of Status Bar

2. Add the title background


Add “rectangular”  component and enter “animation configuration property settings” dialog box. In Property Setting page, set the filling color to “white” and edge color to “no edge”. Set its coordinates to (0, 0) with size to 800*60, so the setting of title background is completed.

Next let’s start configuring animation effects.

1.2.2 The 1st Animation Effect Flash

Flash effect is implemented through setting the properties of tag. We do firstly introduce uses of tag:

Besides the display of data, the tag can also be used as a text display, such as of a paragraph of company introduction, annotation information and titles, etc. Through the property dialogue box, the animation effect can also be set. Tag can be considered as one of the most useful components.

Add “tag”  component and enter “tag animation configuration property settings” dialog box. In the property setting page, set the filling color to “no filling”, character color to “navy blue”, font to “Song Ti, bold and small II” and select “flash effect”.

In extended property page, input the text contents, “simple animation configuration”.

In the flash effect property page, fill out 1 in the flash effect expression which means the conditions are established forever. Select flash implementation way “implement flash with pixel visibility change”. The configuration effect is shown in figure 1-2-2 and click confirm after the settings. Set the coordinates of tag to (230, 10) and size to 320*40. The configuration effect is displayed in figure 1-2-3.



Figure 1-2-2 Setting of Flashing Effect




Figure 1-2-3 Flashing Effect Picture of Tag

Note: when the values of the data objects connected (or expressions constituted by data objects) are non-0, the graphics objects start to blink at the speed set. When the value of the expression is 0, the graphic object stops the

flashing.

1.2.3 The 2nd Animation Effect Move

1. Horizontal move effect: we can also implement horizontal move effect with tag as long as we set the properties of “horizontal move” of tag.

Add a “tag”  and enter tag property setting page. Set the filling color to “no filling”, character color to “red” and font to “Song Ti, bold and IV”. Select “horizontal move” in location animation connection part.

In extended property page, input the text contents, “display error message”.

In the horizontal move property page, fill a data object in expression column; here we define a data object i. Set the minimum offset to 0 and maximum offset to 200; the corresponding values of expressions are respectively “0” and “100” shown in figure 1-2-4. Click confirm and the prompting frame is ejected shown in the figure 1-2-5; click “yes” and the dialogue box of “data object property setting” is ejected; select the object type of i to “value type” shown in the figure 1-2-6, and then the data object is added into the real-time database. (Note: the operation to rapidly add the variables is briefly described below in the book).



Figure 1-2-4 Property Setting of Horizontal Shift



Figure 1-2-5 Error Message of Data Objects

Double click the space of the window and enter the dialogue box of “user window property setting”. Add the script of “horizontal move of tag” in cycling script page and set the cycle time to 100 shown in the figure 1-2-7.

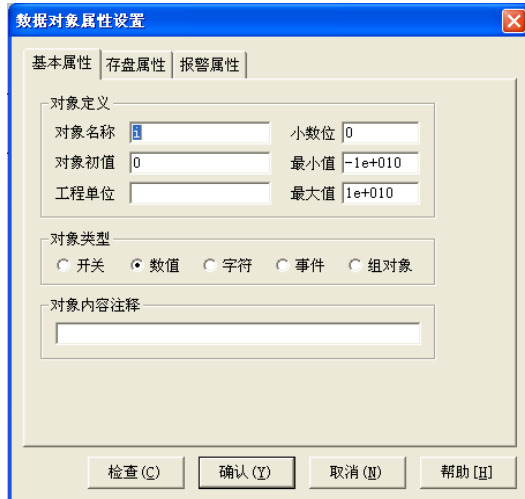






Figure 1-2-6 Adding Data Object of Horizontal Shift



Figure 1-2-7 Script Setting of Horizontal Shift

2. Vertical move effect: we express vertical move effect by cutting glass with a motor as long as we set the “vertical move” property of the glass.

Motor: select “insert component” , add “motor 13”  and “motor 14”  to the window in the object component library management, set the size to 70*40 and copy 3 groups of motors placing shown in the figure 1-2-8.

Glass slip band: add “rectangular”  and set the size to 10*230. Enter “animation configuration property setting” dialogue box; in the property setting page, set filling color to “red” and edge to black. Copy a rectangular and place it in the location shown in the figure 1-2-9.

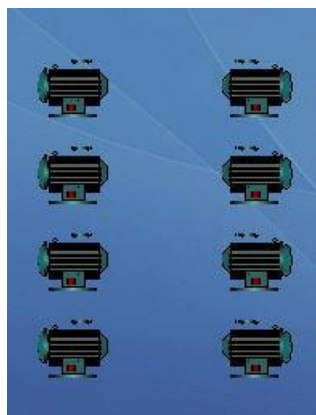


Figure 1-2-8 Specimen of Motor

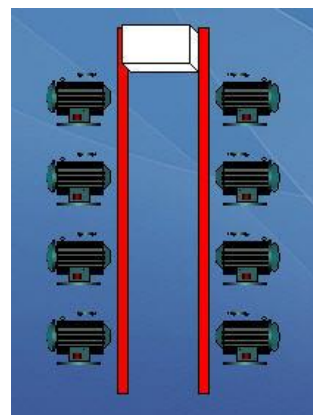




Figure 1-2-9 Glass Figure

Glass: select the “common symbol”  in the toolbox; open the common icons toolbox to select “cube”  to be added to the window. Enter its “animation configuration property settings” dialogue box, set the filling color to “white” and select “vertical move”.

In the vertical shift property page, define the numerical object b associated with expression with the minimum offset as 0 and maximum offset as 200. The values of corresponding expressions are respectively “0” and “100”

shown in the figure 1-2-10. Click “confirm”; when it hints configuration error, select “yes” to add data object b.

Open “user window property setting” dialogue box and add glass vertical shift script in cycle script shown in the label part of the figure 1-2-11.



Figure 1-2-10 Property Setting of Vertical Shift



Figure 1-2-11 Script Setting of Vertical Shift

Note: the offset considers graphic object’s locations in configuration as the basis (initial position) with the pixel as the unit. To the left is the negative direction while to the right is the positive direction (for vertical movement, being downward is the positive direction while being upward is the negative direction). The relationship of expressions and offset: taking the configuration setting in the figure 1-2-10 as an example. When the value of expression b is 0, the location of graphic object is moved 0 pixels to the right (namely, staying still); when the value of expression is 100, the location of graphic object is moved 200 pixels to the right.

1.2.4 The 3rd Animation Effect Rotation

The rotation of fan can be implemented with animation display members. The stage dividing points can be added to animation display member; the pictures can be added to each stage dividing point; a large number of stage dividing points can have many pictures. The alternating display of many pictures in different status can implement rotation effect; the rotation of fan is implemented by alternating displaying two pictures at different status.





1. Making fan frame: add “convex plane”  from common icons toolbox and set its size to 30*90; enter “animation configuration property setting” dialog box, set the filling color to “gray” and click “confirm” to save it. Copy two convex planes, adjust the size to 70*30 and respectively place them above and below the original convex shown in the figure 1-2-12. The framework of the fan is therefore completed.



Figure 1-2-12 Framework

2. Setting fan effect: add “animation display”  component, enter the dialogue box of “animation display component property setting”, select the stage dividing point “0”, click “bitmap” button to load the image and eject the dialogue box of “object component library management”. Click the “load” and add pre-prepared fan photos. After the successful load of image, select fan bitmap  just added and click “confirmation” to save it. After the “0”, the stage dividing point, is successfully added into the bitmap, delete the text list and set the image size to “full of buttons” shown in the figure 1-2-13. Set “1”, another stage dividing point, in the same way and insert another fan bitmap .

In the display property page, select the display variable “switch, the numeric type”, define associated numerical variables as “rotation visibility” and select animation display way “display images according to value shift of display variable” shown in the figure 1-2-14. Click “confirm”; when it indicates configuration error, select to add the data object “rotation visibility”.



Figure 1-2-13 Setting of Fan



Figure 1-2-14 Setting of Rotation Effects

After the settings, adjust the size of animation display configuration to 60*50 and drag it to the top left corner of fan framework. And then copy 3 fans, respectively placed to the upper right, lower left and right corners, shown in the figure 1-2-15.

3. Add script: open the dialogue frame of “user window property setting” and add script enabling fans to rotate in cycle script page shown in the label part of the figure 1-2-16.

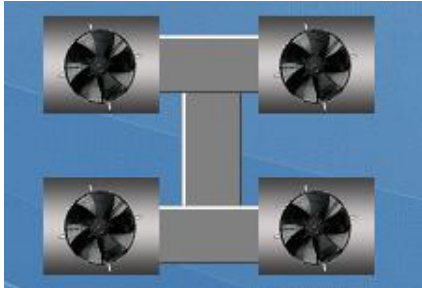


Figure 1-2-15 Configuration Effect of Fan



Figure 1-2-16 Rotation Script of Fan

4. Fan's button control: add two "standard buttons"  and set the button titles respectively to "start" and "stop".

(1) Start

Enter the property setting dialogue box of "start" button; in the operation property page, set "lift function": fill "set 1" in data object operation and define numerical values as "cycle" shown in the figure 1-2-17. "Cycle" controls the rotation of fans; when it is 1, the fan starts the rotation.

In property setting dialogue box of user window, add cycle script "IF cycle=1 THEN rotation visibility= 1-rotation visibility" shown in the label part of the figure 1-2-18.



Figure 1-2-17 Start Control of Fan

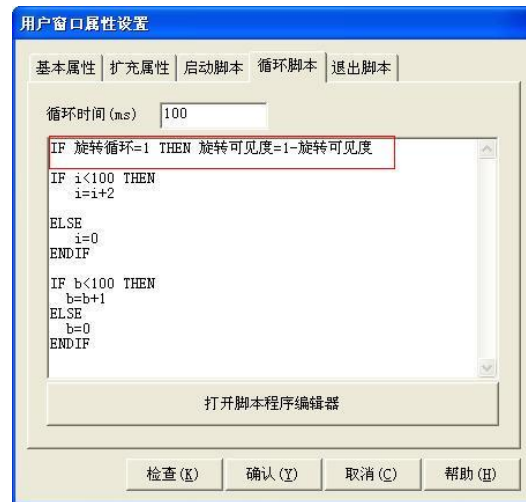


Figure 1-2-18 Rotation Script of Fan Control

(2) Stop

Enter the property setting dialogue box of "stop" button. In the operational attribute page, set "lifting function": operate "to 0" of data object value and "cycle" for associated variables shown in the figure 1-2-19. "Cycle" controls the rotation of fans; when it is 0, the fan stops the rotation.

Fan rotation control configuration is completed shown in the figure 1-2-20.



Figure 1-2-19 Stop Control of Fan

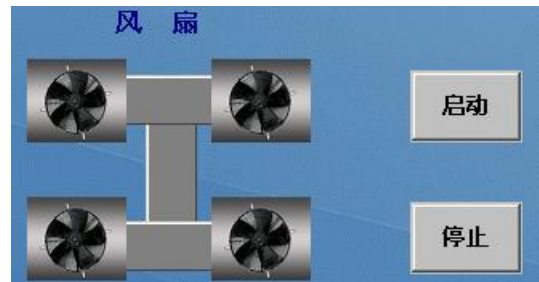



Figure 1-2-20 Impression Drawing of Fan Control


1.2.5 The 4th Animation Effect Bar Graph

Representing data with bar graph can more intuitively show the changes of data; the change of data can be implemented with “size change” of the bar graph.

1. Adding a coordinate plane

Add a “rectangular”  component and enter “animation configuration property setting” dialogue box. In the property setting page, set the filling color to “white” and edge color to “black” and click “confirm” to save it. Thus, the coordinate plane is produced.

2. Producing Y axis coordinate

Add a “tag”  and enter “tag animation configuration property setting” to set the filling color to “no filling”, edge color to “no edge” and character color to “black”.

Add the following numbers in the “text content input” of the extended property page: 120, 90, 60, 30, 0 (leaving 2 lines space between each two numeric characters) shown in the figure 1-2-21. The Y axis is produced.



Figure 1-2-21 Coordinate Settings of Y Axis

3. Producing bar graph

In the common icons toolbox, add “vertical pipe”  as the bar graph. Enter its “animation configuration

property setting” dialogue box in which set the filling color to “red” and select “size change”.

In size change page, the associated expression is defined as numerical data object c; click the icon button on the right of “change direction” and select size change direction is one-way upward change with change way as zooming shown in the figure 1-2-22.



Figure 1-2-22 Size Change Setting of Bar Graph

Copy another two bar graphs and respectively set the filling colors to “light green” and “navy blue”. In the size change page, set “maximum change percentage” respectively to 80 and 50 with the other setting the same as the 1st bar graph.

Note: when the value of expression is greater than or equal to 100 and the maximum change percentage is set to 100%, the size of graph object is equal to the initial size. No matter how the value of expression changes, the size of graph object changes between the minimum and maximum change percentage.

4. Adding script

In user window property setting dialogue box, add the script of bar graph change in the cycle script page shown in the label part in the figure 1-2-23.

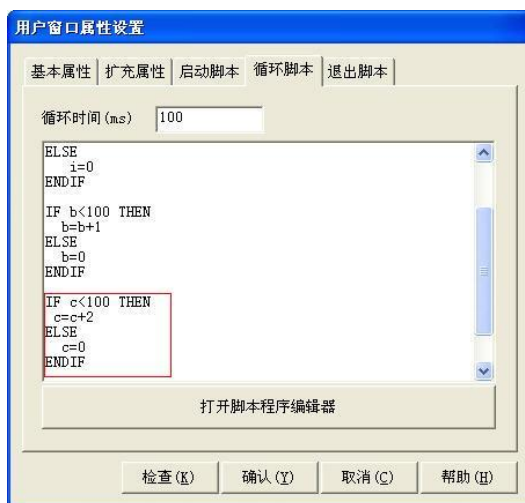


Figure 1-2-23 Script Setting of Bar Graph

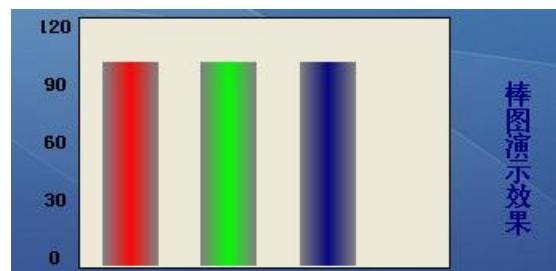



Figure 1-2-24 Configuration Effects of Bar Graph

5. Adding annotations

Add a “tag” , drag it to the right of the bar graph and set the text content to “bar graph demonstration effect” shown in the figure 1-2-24.

Thus, 4 simple animation effect configurations are completed. After completing, you can download them to TPC to check whether the operational effect is consistent with those in the samples.

Chapter 2 Alarms

In the working process, we do really hope that: when the equipment operation fails, we are capable of informing the working staffs so as to timely deal with it; checking the history record of alarms enables us to clearly understand the operation situations of equipment. Different field operations require different alarm ways. In conclusion, alarm has already become the necessary conditions for industrial site. According to customers' needs, MCGS configuration software comprehensively analyzes various needs of industrial site alarms and is committed to offer suitable alarm programs to the customers. This chapter is: after analyzing customers' real needs, Kunlun Tongtai lists implementation of word alarm, level alarm, multi-state alarm and alarm information displayed by window ejected, etc.

2.1 Alarm Introduction

Before learning alarms, let's firstly get to know the processes to implement alarms in MCGS configuration software. In chapter 1, we have understood: data read from PLC and other external devices is the corresponding data objects sent to real-time database. Judge s whether the values of data object meet the conditions for alarms, and conduct the alarms if they do; saving values of data objects is to save the history record of alarms; displaying values of corresponding object (hereinafter abbreviated to as variable) in user window is to display the median of current PLC shown in the figure 2-1-2.

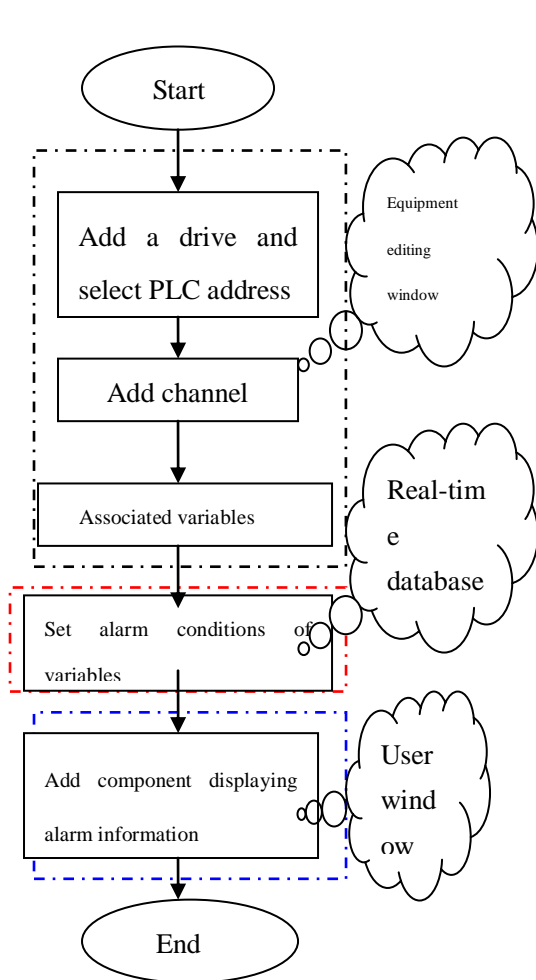


Figure 2-1-1 Setting Process of Configuration

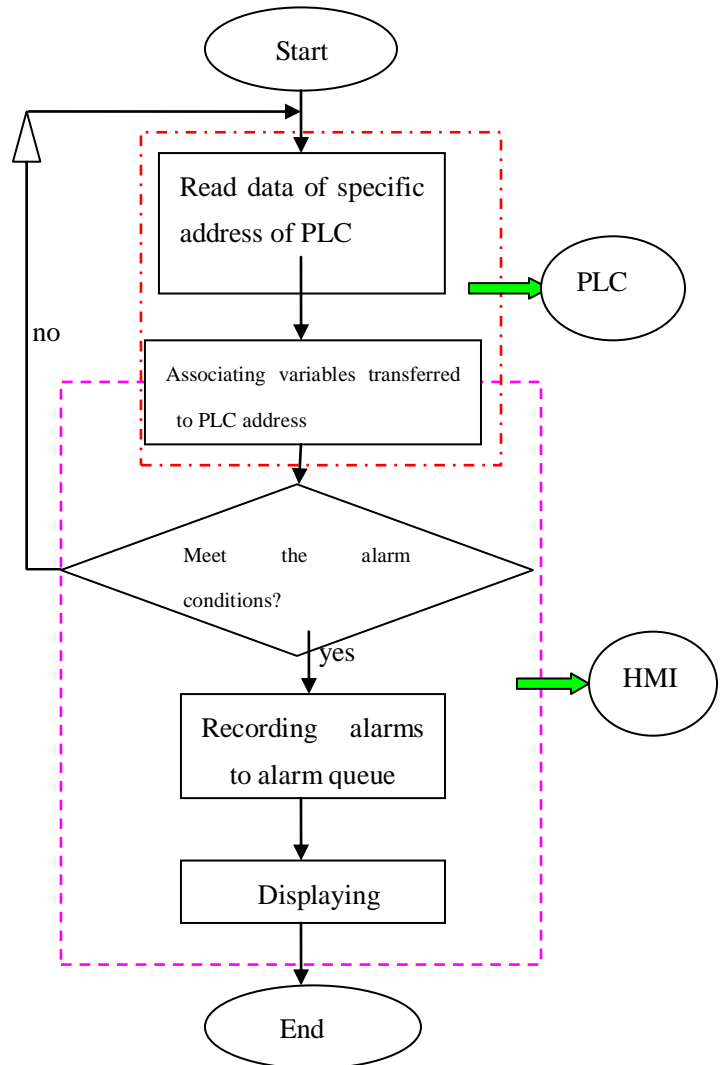


Figure 2-1-2 Data Process in Operation

The figure 2-1-1 displays the configuration processes of alarms; firstly the hardware equipment should be confirmed, such as PLC Model; add right drive component in the equipment window and addresses used in PLC (it is called passage in MCGS configuration software) and associate them with variables; set alarm properties in real-time database and display them in user window. MCGS offers alarm bar (digital gallop lamp), alarm display component, alarm browser component and many alarm components.

2.2 Alarm Configuration

2.2.1 Alarm Needs



Figure 2-2-1 Impression Drawing of Alarm Operation

We learn various expression ways of alarms through a sample with operational effects of the sample in the figure 2-2-1.

The alarm sample lists four common basic alarm ways. Firstly we analyze the alarm needs of each form, taking Siemens S7-200PLC as an example.

1. When the status of the 12.3, the address of PLC “M register” is 1, it hints it is full of water. The alarm information is of scrolling display on the screen.

2. When the values of 49, address of PLC “V register” exceeds the range of 10-30, it hints too high or low temperature displayed with lists.

3. When values of 200, address of PLC “V register” is non-0, it represents different failures which are displayed with corresponding abnormal alarm information on the picture.

Various failure information is as follows:

Values of V200	Meaning
0	Normal
1	Failure Information 1
2	Failure Information 2
3	Failure Information 3
4	Failure Information 4

4. When the 12.3 produce an alarm, the address of “M register”, a small window is immediately ejected, showing the current alarm information.

After clearly understanding the alarm needs, we start to analyze and conduct the configuration one by one. Since we have introduced how to add equipment in the junior tutorial in details, we don't say more than is necessary. Start engineering and add common serial interface father device and Siemens_S7200PPI drive in the equipment window.

2.2.2 Level Alarm

The first alarm need: when the value of 12.3, the address of “M register” in PCL, is 1, it hints it is full of water and is of scrolling display.

Plan: the alarm contents of address M12.3 is fixed and directly set the alarm property of corresponding variable; display with alarm bar component in user window (digital gallop lamp).

1. Add channel: in the equipment window, enter “equipment editing window” by double clicking Siemens_S7200PPI drive shown in the figure 2-2-2. click the button of “add equipment channel” to eject dialogue box of “add equipment channel” and “M register” of select channel type , “NO.3 of the channel” of data type, “12” of the channel address, “1” of the channel numbers and “read-write” of the read-writing way. As shown in the figure 2-2-3, click “confirm” after completing the settings.



Figure 2-2-2 Editing Window of Equipment



Figure 2-2-3 Adding M012_3Digital Channel

2. Associated variables of channel: select “rapid connection variable” button in equipment editing window, enter “rapid connection” dialogue box and select “default of equipment variable connection”. Click “confirm” to go back to equipment editing window to automatically produce variable name “equipment 0_M012_3”. In the equipment editing window, click “confirm” to eject the prompt dialogue box of “add data object” and select “add all”. Thus, variables established will be automatically added to real-time data library.


3. Set the alarm properties of variables in real-time data library: switch to “real-time database” and open property setting dialogue box of variable “equipment 0_read-write M012_3”. In the alarm property page, select “allow for alarm treatment” and set “switching value alarm”, the alarm value to 1 and alarm annotation to “full of water” shown in the figure 2-2-4. Click “confirm” after completing settings.






Figure 2-2-4 Setting Switching Value Alarm



Figure 2-2-5 Property Setting of Alarm Bar

4. Set alarm bar (digital gallop lamp) component: start “window 0” and add an “alarm bar (digital gallop lamp)” component. Enter dialogue box of “digital gallop lamp alarm property setting” and click  to select the variable “equipment 0_read-write M012_3” established in equipment window. Set the foreground color to “black”, background color to “light pink”, scrolling characters to 3, scrolling speed to 200 and support the flash shown in the figure 2-2-5.

Note: when the alarm bar (digital gallop lamp) component is not associated with any variable, it displays all the real-time alarm information.

5. Display data: add a “tag”  and select display output. In the display output property page, click  to select variable “equipment 0_read-write M012_3”, output with switching value. Besides, add a “tag”  and input “display water flooding”. Set color of tag and font according to effects of the figure 2-2-6.

6. Check effects: after completing the configuration, connect PLC and download operation check effects: when PLC produces alarms, the alarm information is displayed.

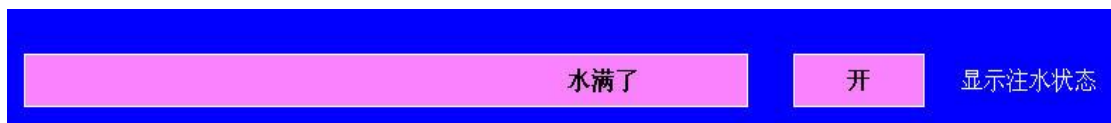


Figure 2-2-6 Operational Effects of Level Alarm

2.2.3 Word Alarm

The second alarm needs: when values of 49, the address of “V register” in PLC, exceed the range of 10-30, the list form is used to display too high or low temperature.

Plan: set the variables’ alarm property corresponding to 49, the address of “V register” and display it with alarm browser component in user window.

1. Add word channel: in equipment window, double click Siemens_S7200PPI drive to enter “equipment

editing window”; click “add equipment channel” button and enter “add equipment channel” dialogue box; select channel type “V register”, “16-bit unsigned binary” of data type, “49” of channel address, “1” of channel numbers and “read-write” of read-write way shown in the figure 2-2-7. Click “confirm” after completing the settings.



Figure 2-2-7 Adding VWUB049 Word Channel

2. Associated variables of channel: in the equipment editing window, select “rapid connection variable” button; enter “rapid connection” dialogue box; select “default equipment variable connection”; click “confirm” to return to equipment editing window to automatically generate variable name “equipment 0_read-write VWUB049”; click “confirm” in equipment editing window. The system hints adding variables; select “add all” and then variables established will be automatically added into real-time data library.

3. Set the alarm properties of variables in real-time database: switch to real-time database and open property setting dialogue box of variable “equipment 0_read-write VWUB049”. In the alarm property page, select “allow for alarm treatment”, set value of “upper limit of alarm” to 30 and alarm annotation to “too higher temperature” shown in the figure 2-2-8. Set value of “lower limit of alarm” to 10 and alarm annotation is “too lower temperature” shown in the figure 2-2-9. Click “confirm” after completing settings.




Figure 2-2-8 Setting of Alarm Upper Limit Property



Figure 2-2-9 Setting of Alarm Lower Limit Property

4. Set alarm bar component: start “window 0” and add an “alarm browser ” component. Enter dialogue

box of “alarm browser component property setting”. In the basic property page, select “real-time alarm data (R)” for display mode, click  to select the variable “equipment) _read-write VWUB049” shown in the figure 2-2-10. In the display format page, check “date”, “time”, “object name”, “alarm type”, “current value”, “alarm description”, set proper column width and adopt default settings to the other items shown in the figure 2-2-11. In the font and color page, set background color to “light blue” and font to “Song Ti, bold, small IV and black” and adopt default settings to the other items. Click “confirm” to save it.

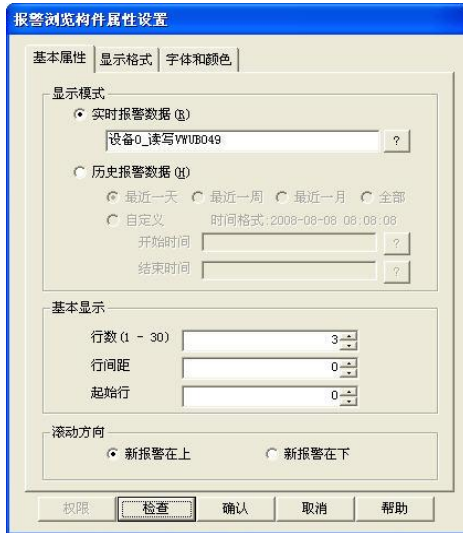





Figure 2-2-10 Basic Property Page



Figure 2-2-11 Setting the Display Format

Note: when the alarm browser component is not associated with any variable, all the real-time alarm information currently is displayed.

5. Display data: add a “tag”  and select display output. In the display output property page, click  to select variable “equipment 0_read-write VWUB049”, output with switching value. Besides, add a “tag” , input “display current temperature” in the extended property page. Set tag filling and font color according to the figure 2-2-12.

6. Check effects: after completing the configuration, connect PLC and download operation check effects: when PLC produces alarms, the alarm information is displayed.

日期	时间	对象名	报警类型	当前值	报警描述
2009/02/12	11:31:44	设备0_读写VW	下限报警	0.000	温度太低了

10 显示当前温度

Figure 2-2-12 Operational Effects of Word Alarm

2.2.4 Multi-state Alarm

The third alarm need: when the values of 200, the address of “V register” in PCL, are different, they hint

different failure information.

Plan: it is implemented with animation display component's characteristic of setting many stage dividing points; each non-0 stage dividing point represent a piece of failure information.

1. Add word channel: in equipment window, double click Siemens_S7200PPI drive to enter “equipment editing window”; click “add equipment channel” button and enter “add equipment channel” dialogue box; select channel type “V register”, “16-bit unsigned binary” of data type, “200” of channel address, “1” of channel numbers and “read-write” of read-write way shown in the figure 2-2-13. Click “confirm” after completing the settings.



Figure 2-2-13 Adding VWUB200 Word Channel

2. Associated variables of channel: in the equipment editing window, select “rapid connection variable” button; enter “rapid connection” dialogue box; select “default equipment variable connection”; click “confirm” to return to equipment editing window to automatically generate variable name “equipment 0_read-write VWUB200”; click “confirm” in equipment editing window. The system hints adding variables; select “add all” and then variables established will be automatically added into real-time data library.


3. Animation component setting: add a component of “animation display” in “window0” and enter dialogue box of “animation display component property setting”. In the basic property page, set stage dividing points to “0, 1, 2, 3, and 4”. Clear picture list of each stage dividing point and set all the background types to “bold frame button: push” and the text settings are in order (according to stage dividing point sequence): “normal”, “default information 1”, “default information 2”, “default information 3” and “default information 4”. Set foreground color, background, 3D effect and select “Song Ti, bold and small II” shown in the figure 2-2-14.






Figure 2-2-14 Setting Stage Dividing Point and Property



Figure 2-2-15 Select Display Variable

In the display property page, select “switch and numeric type” for the display variable; click  to select variable “equipment 0_read-write VWUB200”; select “display all pictures according to value shift of display variable” shown in the figure 2-2-15. Click “confirm” to save it.

4. Display data: add a “tag”  and select display output. In the display output property page, click  to select variable “equipment 0_read-write VWUB200”, output with switching value. Besides, add a “tag” , input “multi-state alarm” in the extended property page. Set tag filling and font color according to the figure 2-2-16.

5. Check effects: after completing the configuration, connect PLC and download operation check effects: when PLC produces alarms, the alarm information is displayed.






Figure 2-2-16 Operational Effects of Multi-state Alarm

2.2.5 Pop-up Window Mode Alarm

The fourth alarm need: when the state of M12.3 is 1, a small window is ejected hinting “full of water”.

Plan: it is implemented with child window ejected; utilize alarm strategy to timely judge whether the alarm is produced and set the size and coordinates of child window display.

1. Add the child window: switch to user window in the workbench interface and start “window1”.

2. Set display information: open “window 1”, select “common symbols”  of the toolbox and open the common icons toolbox. Add “convex plane”  and set coordinates to (0, 0), size to 310*140, “silver” for the filling color and no edge. And then add a “rectangular”  and set coordinates to (5, 5) and size to 300*130.





Insert “logo 24” from object component library and add a “tag”  with text contents “full of water”! And then put the two components in the suitable location of rectangular shown in the figure 2-2-17.



Figure 2-2-17 Window Information of Level Alarm

3. Set window pop-up effect: switch to the operational strategy window in the workbench interface, click “new strategy” button; select “alarm strategy” in the “select types of strategies” dialogue box; return to the operational strategy window after clicking confirm. Double click new strategy to enter strategy configuration window, click “new strategy line” in the tool bar and then open strategy toolbox to select “script program” shown in the figure 2-2-18.

Double click  to enter “strategy property setting” dialogue box; set strategy name to “affusion state alarm display strategy”; click  to select variable “equipment 0_read-write M012_3”; select “perform it once when the alarm is produced” for the corresponding alarm state; click confirm to save it shown in the figure 2-2-19. Double click script program icon  of the strategy; enter script program window and input “!OpenSubWnd (window1,450,300,310,140,0)”; click confirm to save it.

The similar ways are adopted to start “affusion state alarm end strategy”; select “perform it once when the alarm is produced” for the corresponding alarm state; the script program is “!CloseSubWnd(window1)”.

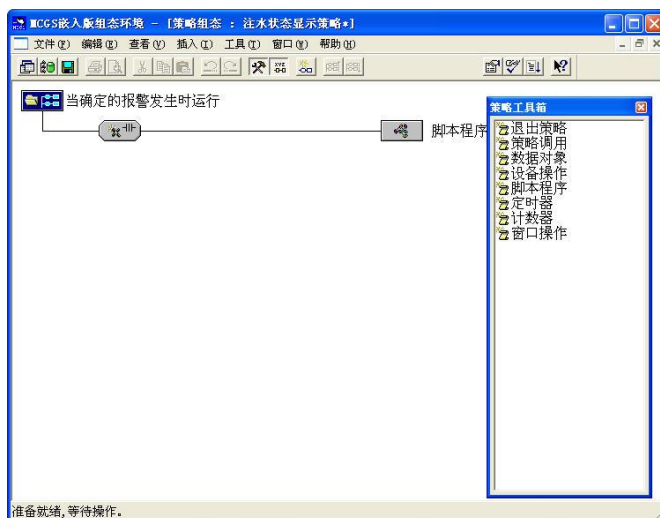


Figure 2-2-18 Adding Alarm Strategy



Figure 2-2-19 Property Setting of Level Alarm Strategy

4. Check effects: after the configuration, connect PCL; when the 12.3, the address of “M register” produces alarms, the window display alarm information will be ejected from window 0.

Note: if there is the alarm when starting the engineering, the alarm window will not be ejected.

After completing the alarm example function and then add a “tag” **A** to “window 0” as the title with text contents as “alarm” and background color as “white”. Add annotation “level alarm”, “word alarm” and “pop-up window display alarm information” to all alarms. After the configuration settings, the operational effects are implemented.

Chapter 3 Formula Functions

The chapter mainly introduces formula solutions offered by MCGS embedded vision of configuration software and make users grasp implementation methods of formula configuration as much as possibly through specific examples.

3.1 Introduction of Formula Function

Formula is the set of data in the same type, such as the machine parameter setting or production data. Our formula function can offer HMI interface to enable users to check and edit data. According to different data storage methods, formulas are generally divided into two modes:

■ Formula data stored in PLC

Formula data is stored in PLC; you can upload formula data needed to HMI for display. Users select certain formulas and modify them; and then they download them into PLC as the current formulas, commonly seen in the initial system as a way. Since way mainly appears in the early system. Since the early HMI itself can't store formula, it can only be implemented with storage space of PLC.

■ Formula data stored in HMI

Formula data is stored in HMI for displaying all the formula data. Users select certain formulas to be downloaded into PLC as the current formulas.

In this course, we introduce how to utilize MCGS embedded vision of configuration software and, taking bread formula as an example, implement the applications of the two formulas.

Suppose there are only 3 parameters in the bread formula: bread, water and salt. The different ratio mixtures can lead to three different flavors of bread, such as sugar-free, less sugar and cookie. Thus there are 3 members in the formula; 3 formula records are divided into according to different contents of 3 members.

The multi-media CD offers samples of formulas and two modes of formulas with operational effects shown in the figure 3-1-1 and 3-1-2.

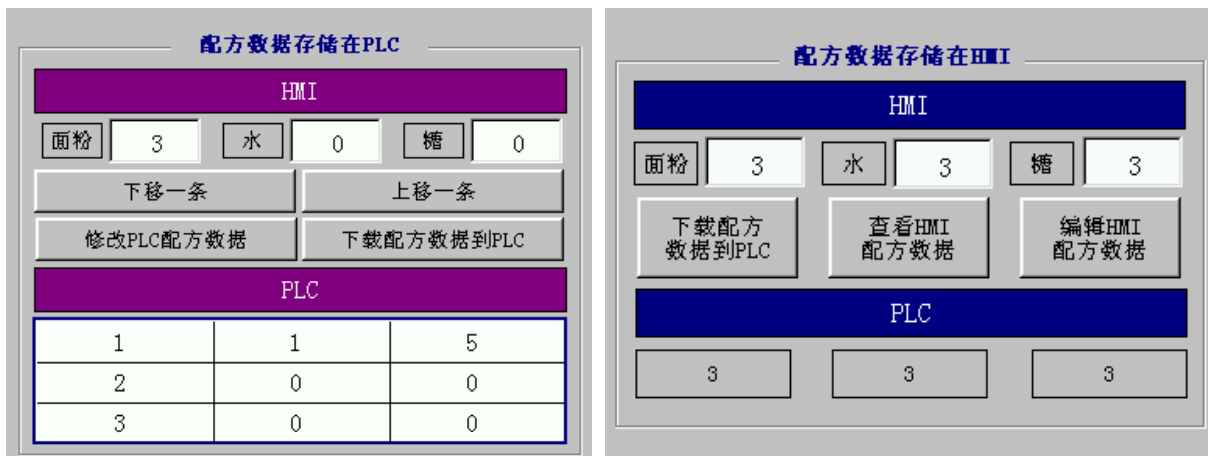


Figure 3-1-1 Operational Effects of Formulas Stored in PLC

Figure 3-1-2 Operational Effects of Formulas Stored in HMI

3.2 Usage of Formula Data Stored in PLC

3.2.1 Preparation work

Such applications store all the formula data in PLC; thus, HMI can only conduct several following operations:

1. HMI can be used to browse formula data of PLC.
2. A formula item can be selected for modification.
3. Any formula item can be downloaded into certain regions so as to enable normal operation of PLC.

Analysis:

1. Three formula items of bread formula are all stored in the register of Siemens S7-200. Since 16-bit unsigned binary is selected for data format, each formula member takes 2-bit storage space. Each formula item is 6 bytes; 3 formulas are 18 bytes in total set to be stored in 18-byte contiguous address space, ranging from 0 to 17 bytes, in V register. The initial data can be written to by PLC program software.

PLC address	Data
VWUB000	1
VWUB002	1
VWUB004	5
VWUB006	2
VWUB008	0
VWUB010	0
VWUB012	3
VWUB014	0
VWUB016	0

Starting address of 1st formula →

Starting address of 2nd formula →

Starting address of 3rd formula →

2. We use Siemens S7-200 PLC to stimulate bread production machine, receive three parameters of bread formula with the receiving address as 100~105 bytes of V register.

2.

PLC address	Data
VWUB100	1
VWUB102	1
VWUB104	5

Configuration ideas:

According to needs above, a following configuration idea is offered by comprehensively combining characteristics of MCGS software.

1. Add variables firstly in the MCGS database for operating formula data, later.
2. Add PLC equipment in equipment window and set it.
3. And then, add several tags, input boxes and button components in user window; edit necessary scripts for displaying and operating formulas.

After setting configuration environment, we can immediately download engineering to HMI and operate formulas in operating environment.

3.2.2 Formula Configuration

Start a new project and let's begin the configuration.

1. Creating variables

- Open “real-time database” of workbench and start 3 numerical variables of “flour”, “water” and “sugar”; other properties keep the default values. Such variables are applied to implement the display and modification of data of formula.
- Start a char-type variable “equipment string” and other properties keep default value. The variable is used for information transfer with equipment.
- Start a numerical variable “offset” and other properties keep default value. Such variables are used to store offset addresses of formula data in PLC.
- Start two numerical variables “a” and “b” and other properties keep default value. Such variable is used to analyze “equipment character string” variable.

After creating variables, necessary notes can be selected to be added; the real-time database accomplished is shown in the figure 3-2-1.

名字	类型	注释
a	数值型	解析设备字符串
b	数值型	解析设备字符串
InputTime	字符型	系统内建数据对象
InputSTime	字符型	系统内建数据对象
InputUser1	字符型	系统内建数据对象
InputUser2	字符型	系统内建数据对象
offset	数值型	PLC地址偏移量
面粉	数值型	面包配方成员
设备字符串	字符型	与设备进行信息传送
水	数值型	面包配方成员
糖	数值型	面包配方成员

Figure 3-2-1 Creating Variables of Real-time Database

2. Adding equipment

- Switch to workbench; open equipment window; add “common serial interface father device” and Siemens_ S7200PPI”; consider “S7200PPI” drive as the child device of “common serial interface father device”.
- Double click “Siemens_ S7200PPI” drive; enter equipment editing window; check drive template information in order to make sure the drive is “new drive template” shown in the figure 3-2-2.

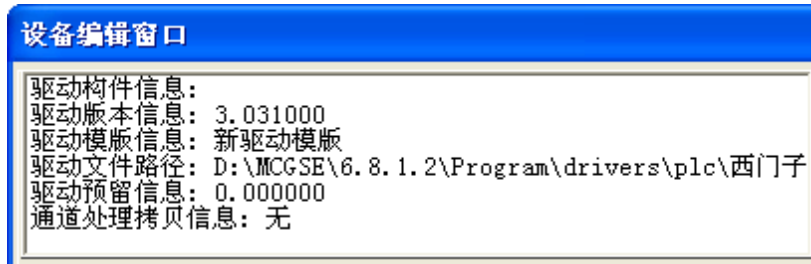


Figure 3-2-2 Equipment Window Configuration

- In order to facilitate real-time check of formula data in PLC, we add channels of the data in the equipment and connect the variables shown in the figure 3-2-2, so as to view the data in real time.

索引	连接变量	通道名称
0000	设备0_通讯状态	通讯状态
0001	设备0_读写VWUB000	读写VWUB000
0002	设备0_读写VWUB002	读写VWUB002
0003	设备0_读写VWUB004	读写VWUB004
0004	设备0_读写VWUB006	读写VWUB006
0005	设备0_读写VWUB008	读写VWUB008
0006	设备0_读写VWUB010	读写VWUB010
0007	设备0_读写VWUB012	读写VWUB012
0008	设备0_读写VWUB014	读写VWUB014
0009	设备0_读写VWUB016	读写VWUB016

Figure 3-2-3 Channel Connection Variables

Note: it is suggested that add a tag or input box component in engineering interface associating with “equipment 0_communication status” variable for displaying current communication status of PLC and HMI in order to assure the normal operation of the project. When the communication status is 0, it means the normal PLC and HMI.

3. Creating animation component and writing script program

- Switch to “user window” interface in workbench; start a user window; add tag, input box, button, free forms and other components; start window interface shown in the figure 3-2-4.

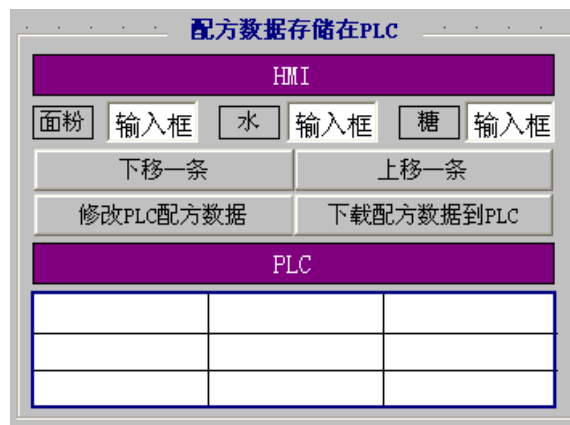


Figure 3-2-4 Configuration Window Interface

- Set operation property page in the properties of the three input box above, respectively associating with data center variables, “flour”, “water” and “sugar” used for display and modification of formula numbers.
- The form component can be activated by double clicking free form component below “PLC” tag so as to enter form editing mode. Once selecting “connect” command in “form” menu, you will find the asterisks (“*”) are added behind the line and column number of form for display. Click form with right-hand button and adopt the way selecting from data center in variable selection dialogue frame opened associating with channel connection variables shown in the figure 3-2-3 to display data of channel.
- Pushing script of “move a strip down” button is edited as follows:

```
if offset = 12 then exit
if (offset < 12) then offset = offset + 6
```

```
!SetDevice(equipment 0,6,"ReadBlock(V,offset,[WUB][WUB][WUB],1,equipment character string)")
```

```
a = 1
```

```
b = 1
```

```
b = !InStr(a, equipment character string, ",")
```

```
flour = !Val(!Mid(equipment character string, a, (b - a)))
```

```
a = b + 1
```

```
b = !InStr(a, equipment character string, ",")
```

```
water = !Val(!Mid(equipment character string, a, (b - a)))
```

```
sugar = !Val(!Mid(equipment character string, (b + 1), (!Len(equipment character string)-b)))
```

The meaning of the script is:

- 1) Within the specified range, move PLC address forward with the length of a set of formula data.
 - 2) Read formula data of offset location in PLC memory.
 - 3) Analyze data acquired and assign to formula members for display and modification.
- Pushing script of “move a strip up” button is edited as follows:

```
if offset = 0 then exit
if (offset >= 6) then offset = offset - 6
```

```
!SetDevice(equipment0,6,"ReadBlock(V,offset,[WUB][WUB][WUB],1, equipment character string)")
```

```

a = 1
b = 1
b = !InStr(a, equipment character string, ',')
flour = !Val(!Mid(equipment character string, a, (b - a)))
a = b + 1
b = !InStr(a, equipment character string ',')
water = !Val(!Mid(equipment character string, a, (b - a)))
sugar = !Val(!Mid(equipment character string, (b + 1), (!Len(equipment character string) -
b)))

```

The meaning of the script is:

- 1) Within the specified range, move PLC address forward with the length of a set of formula data.
- 2) Read formula data of offset location in PLC memory.
- 3) Analyze data acquired and assign to formula members for display and modification.

- Pushing script of “modify PLC formula data” button is edited as follows:
-

```

equipment character string = !StrFormat("%g,%g,%g", flour, water, sugar)
!SetDevice(equipment 0, 6, "WriteBlock(V,offset,[WUB][WUB][WUB], 1, equipment
character string)")

```

The meaning of script is:

Write numbers of flour, water and sugar into PLC formula data storage regions according to prescribed format, namely, modify formula.

- Pushing script of “download formula data to PLC” button is edited as follows:

```

equipment character string = !StrFormat("%g,%g,%g", flour, water, sugar)
!SetDevice(equipment0, 6, "WriteBlock(V,100,[WUB][WUB][WUB], 1, equipment character
string)")

```

The meaning of script is:

Write numbers of flour, water and sugar into PLC formula data storage regions according to prescribed format in which the formulas for use should be selected.

Note: when variable names in the real-time database corresponding to formulas are in order; batch read-write equipment orders can be utilized to implement data operation. There is no need to analyze the character string.

For instance: we consider Data1, Data2, Data3 as three variables of bread formula, flour, water and sugar; thus, batch read-write functions, ReadPV, WritePV, can be used for check and modification of formula operation.

```

!SetDevice(equipment 0,6,"ReadPV(V,offset,WUB,3,Data1, nReturn)")

```

It means three 16-bit binary numbers of V register from address of offset with the variable, Data 1, in the MCGS as the start. In the successive 3 variables (namely, Data1, Data2, Data3), perform whether it can be successfully returned with nReturn: 0 means success while non-0 means failure. Thus, it can control the reading of the previous strip or the next formula data to configuration variables and display them.

!SetDevice(equipment0,6, "WritePV(V,offset,WUB,3,Data1,nReturn)")

It means that it will consider Data1 of MCGS variable as the start; values of three successive variables (namely, Data1, Data2, Data3) are written into successive registers from starting from offset of V register in 16-bit unsigned binary way; perform whether it can be successfully returned with nReturn: 0 means success while non-0 means failure. Thus, it can control that writing designated formula data into designated locations of PLC so as to achieve goal modifying or perform formula data.

3.2.3 Using the formula

Download formula projects edited to HMI and connect PLC equipment; the project's operation effect is shown in the figure 3-2-5.

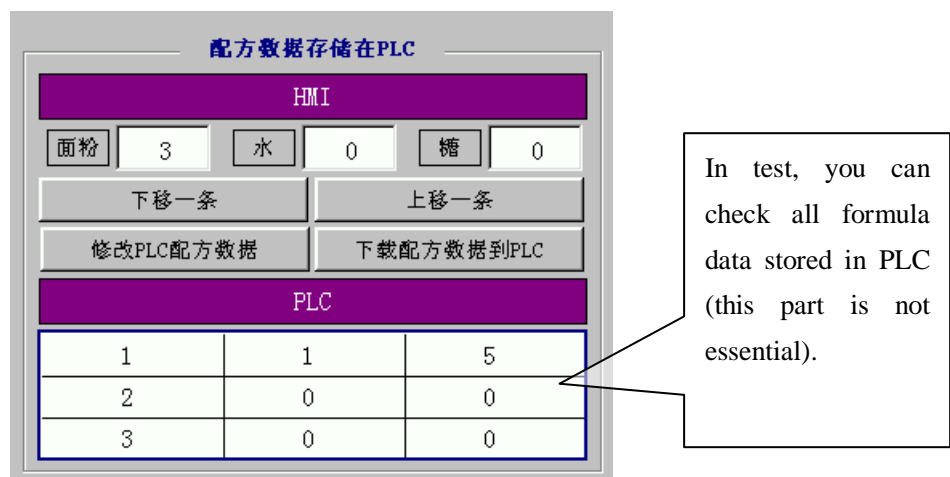


Figure 3-2-5 Operational Effect Diagram

- Click “move a strip upward” and “move a strip downward” to switch formula items. The current formula item data is displayed in the 3 input box components below HMI.
- Click “modify PLC formula data” so that data in the three frames below “HMI” can be written into PLC according to the specified format; modify the current formula data in PLC. The figure 3-2-6 and 3-2-7 represent modification processes of formula data.

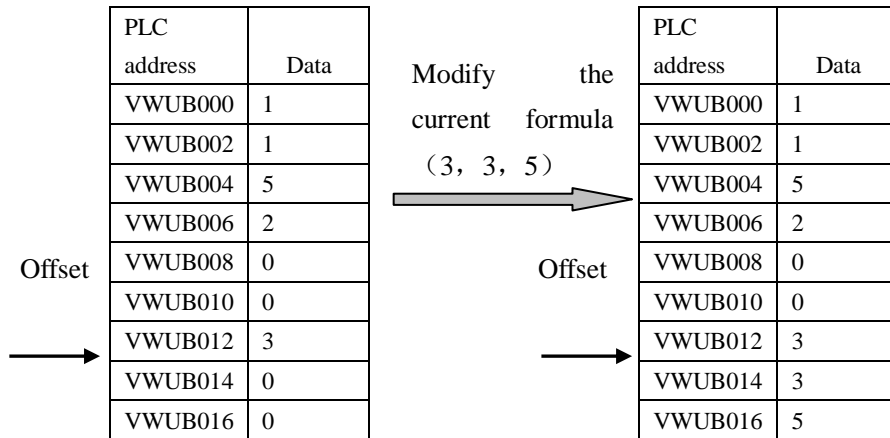


Figure 3-2-6 Initial Value of Formula Stored in PLC

Figure 3-2-7 Modifying 3rd Formula Data of PLC

- When switching to formula data adopted, click “download formula data to PLC” so that formula selected can be downloaded to certain regions of PLC, representing change of the usage of the formula data. It is 100 here; the address differs from project to project and is generally determined value.
- Form component in the bottom is associated with data in all addresses of objected PLC, capable of representing all formula data of PLC. (the part is not essential)

Note: the premise to assure normal operation of the project is normal communications of PLC and HMI.

3.3 Usage of Formula Data Stored in HMI

3.3.1 Preparation Work

The formula functions of this mode: all the data of formulas are stored in HMI; the formula function of configuration software can be utilized for convenient check and modification in operation. If it is necessary to check data currently used in PLC, data of addresses corresponding to PLC can be read and displayed through channels. HMI can conduct the following operations:

1. All the data of formulas can be browsed with HMI.
2. Designated items can be selected for modification.
3. A certain formula can be downloaded to certain regions so as to make normal operation of PLC.

We can still utilize Siemens S7-200 PLC to stimulate bread production machine to receive three parameters of bread formula with 100 ~105 bytes of V register as the receiving address.

Configuration ideas:

1. Add variables in MCGS database for operating formula data, later.
2. Add PLC equipment and conduct settings in equipment window.
3. Use formula configuration tool to edit formula members, items and data.
4. Add several tags, input boxes and button components in user window; edit necessary scripts to display and operate formula.

After setting configuration environment, we can download projects to HMI and operate formulas in operating environment.

3.3.2 Formula Configuration

Start a project; let's start configuration.

1. Starting variables

- Open “real-time database” of workbench; start 3 numeric variables “flour”, “water” and “sugar” with other properties keeping default values. Such variables are used to associate with displaying formula data.
- Start group object “raw material group”; add “flour”, “water” and “sugar” to group members. Such variables are used to operate a set of formula data.
- Start a char-type variable “equipment character string” and other properties keep the default values. Such variables are used for information transfer with equipment.
- Start two numeric variables “a” and “b” and other properties keep the default values. Such variables are used to analyze “equipment character string”. The variables created are shown in the figure 3-3-1.

名字	类型	注释
a	数值型	解析设备字符串
b	数值型	解析设备字符串
InputETime	字符型	系统内建数据对象
InputSTime	字符型	系统内建数据对象
InputUser1	字符型	系统内建数据对象
InputUser2	字符型	系统内建数据对象
面粉	数值型	配方成员
设备字符串	字符型	与设备进行信息传送
水	数值型	配方成员
糖	数值型	配方成员
原料组	组对象	操作一组配方数据

Figure 3-3-1 Creating Variables of Real-time Database

2 Adding equipment

- Switch to workbench; open equipment window; use equipment toolbox to add “common serial interface father device” and “Siemens_S7200PPI”; consider “Siemens_S7200PPI” as the subset of “common serial interface father device”.
- Double click Siemens_S7200PPI drive to enter equipment editing window; check drive template information in the upper left corner of the window to assure the drive to be the “new drive template” shown in the figure 3-3-2.

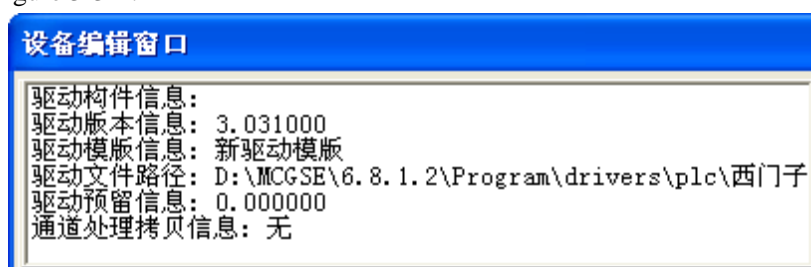





Figure 3-3-2 Equipment Window Configuration

3 Design formulas

- Click “tool (T)” of the main menu of MCGS, select menu item of “formula configuration design” and open formula configuration design tool.
- Click “file(F)”→ “add formula group(N)” or click tool bar  button to start a formula group (“formula group 0”). Click the right button of “formula group 0”, select “rename formula group (R)” and rename formula group “formula group 0”.
- Click “mode(M)”→“increase a line(I)”, or toolbar  button to start a formula member. Click the right button of variable name of formula members, select variable “flour” in variable selection dialogue box ejected. Likewise, start two formula members, respectively connected to variables “water” and “sugar”.
- Click “use variable name as column title name” button to respectively name formula members “flour”, “water” and “sugar”. Formula members created are shown in the figure 3-3-3.

编号	变量名称	列标题	输出延时
0	面粉	面粉	0
1	水	水	0
2	糖	糖	0

Figure 3-3-3 Creating Formulas

- Click “edit(E)”→“edit formula(E)”, or toolbar  button to open formula modification dialogue box. Click “increase” button in formula modification dialogue box can increase a formula item. Adding formula data is shown in the figure 3-3-4; save it after completing the adding and exit formula modification dialogue frame.



配方编号	0	1	2
配方名称	低糖面包	无糖面包	甜面包
面粉	1	2	3
水	1	0	0
糖	5	0	0

Figure 3-3-4 Modification Dialogue Box of Formulas

- Click “file(F)”→“save formula(S)”, or toolbar  button to save the formula. After saving it, close formula configuration design tool.

4 Creating animation components and writing script program

- Switch to “user window” interface of workbench; start a user window and open it.
- Create tag, button, input box and animation components; the configuration is shown in the figure 3-3-5.



Figure 3-3-5 Window Configuration Interface

- Consider two bigger tags as titles and respectively name them “HMI” and “PLC”. Three input boxes are used to display formula data values of HMI; three tags below are used to display data values on PLC equipment.
- Make three input boxes below “HMI” respectively associate with parameters of data center “flour”, “water” and “sugar”, used for display and modification of formula members.
- Make three tags below “PLC” as “display output” to display data of PLC. When associating with variables, check “generate according to collect information”, select “common serial interface father device 0[common serial interface father device]” for communication port, “equipment 0 [Siemens_S7200PPI]” for collection equipment, “V register” for channel type, “16-bit unsigned binary” for data type” and “read-write” for read-write type. Channel addresses of three tags are respectively filled with “100”, “102” and “104”. Three tags are all selected to be output as numerical quantity.
- Texts of three button components are respectively set: “download formula data to PLC”, “check HMI formula data” and “edit HMI formula data”.
- Pushing script of “download formula data to PLC” button is edited as follows:

equipment character string = !StrFormat("%g,%g,%g", flour, water, sugar)

!SetDevice(equipment0, 6, "WriteBlock(V,100,[WUB][WUB][WUB], 1, equipment character string)")

The meaning of the script:

Write numbers of flour, water and sugar of current formula into PLC equipment according to prescribed format

- Pushing script of “check HMI formula data” button is edited as follows:

!RecipeLoadByDialog("bread formula", "please select a bread formula")

The meaning of the script:

Call formula check dialogue box to check formula data.

- Pushing script of “edit HMI formula data” button is edited as follows:

!RecipeModifyByDialog("bread formula")

The meaning of the script:

Call formula check dialogue box to edit designated formula data.

Note: it is suggested that adding a tag or input box component in the project interface associating with a switch-type variable representing PLC communication status for displaying the current communication status of PLC and HMI, so as to assure normal operation of the project. When the communication state is 0, it represents the normal communications of PLC and HMI.

3.3.3 Use the Formula

Download formula project edited to HMI and connect to PLC equipment to run HMI with operational effects shown in the figure 3-3-6.

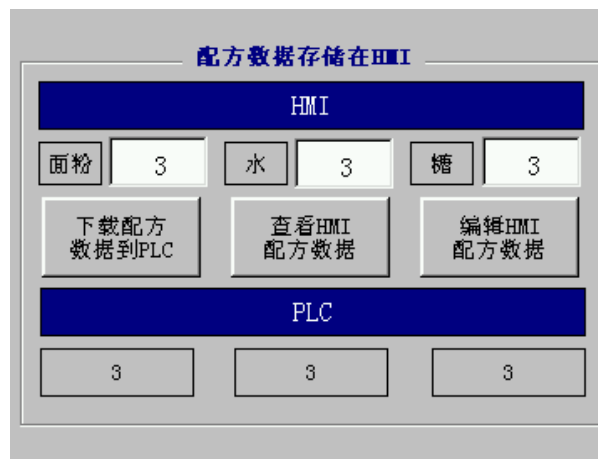


Figure 3-3-6 Operational Effect Diagram

- The initialization of input box is 0, the initial value of data object. After selecting the designated formula items, data of formula item is displayed in three input boxes below HMI.
- Click “download formula data to PLC” to write data in three input boxes below “HMI” into PLC according to the prescribed format.
- Click “check formula data of HMI” to call formula check window.
- Click “edit formula data of HMI” to call formula editing window so as to edit and modify formula data.

Chapter 4 Multi-language Project Configuration

With the development of industrial internationalization, the multi-language display effects have become the basic needs of many international companies. MCGS embedded software adds multi-language functions in 6.8 versions, offering multi-language display plan to users.

The multi-media CD offers a sample of multi-language configuration with operational effects shown in the figure 4-1-1 and 4-1-2.



Figure 4-1-1 Operational Effects of Chinese Environment Figure 4-1-2 Operational Effects of English Environment

We therefore take this as an example to learn the multilingual settings and use in learning configuration and operational environment.

And then let's start the configuration!

4.1 Introduction of Multi-lingual Configuration

MCGS is configuration software with all Chinese. For the majority users as the Chinese ones as well as characteristics of MCGS software, we offer the following configuration ideas for your reference.

- Conduct configuration project according to default language of the project

The initial default language of the project is Chinese; firstly conduct the window contents in the Chinese language environment, including settings of various components properties and functions, etc.

- Set the language of the project and edit multi-lingual contents of the project

Set the project languages as Chinese and English; focus on editing multi-lingual contents of window components in the multi-lingual text form.

- Set the switch language functions of project in the operational environment

Set two buttons in configuration with respective functions as switch the environment to Chinese and English; when downloading it, it can dynamically switch the language environment



According to three steps above, the multilingual operation project can be easily configured.


4.2 Direction to Rapid Multilingual Configuration


Start a project; let's take the tag and button as an example to implement a rapid configuration of a simple

multilingual project according to steps introduced in the previous chapter.

4.2.1 Conduct Configuration Project According to Default Language of the Project

Interface configuration: start a window; enter “user window property setting” dialogue box and set the window background to blue. Add a “tag”  as the title of the window; set the coordinates to (0,0), size to 800*50, filling color to white and text contents to “multilingual configuration”. And then add two “round rectangular” .

Tag configuration: add two “tag” , enter its property setting dialogue box; set text contents to “tag 1” and “tag 2” and both character and edge color to “yellow” and select “no filling” for filling color.

Button configuration: add two “button”  components; enter the 2nd button property setting dialogue box; cancel “use the same property”; set “lift” state to “life”, text of “push” state to “push” and button background color to “navy blue”. The text of the 1st button will not be modified but keep the default state.

Since the initial language environment here is Chinese, it is the Chinese language contents of tag button that we set here.





Figure 4-2-1 Tag & Button Configuration

4.2.2 Editing of Multilingual Contents

After configuring components of window, the multilingual contents of project are then edited. Firstly, the project language is set to Chinese and English and then the multilingual contents of various components are edited.

1. Set Project Language

Click “multilingual configuration” of the toolbar  and open multilingual configuration window shown in the figure 4-2-2. In the initial situations, the window displays the No., Chinese and column contents referred to which are the multilingual locations in the configuration window. Serial number, language column and reference column together are called multilingual configuration text form.

Click “open language selection dialogue box”  of the toolbar and enter “language selection in operation” dialogue box shown in the figure 4-2-3. Check English and then the project settings are two languages. The drop-down list leftward is to set the default language of the project, namely, the initial operational language when

downloading and running the project with the default choice as Chinese. After click confirm, return to multilingual configuration window; at that time, the “English” display column is added into the window.

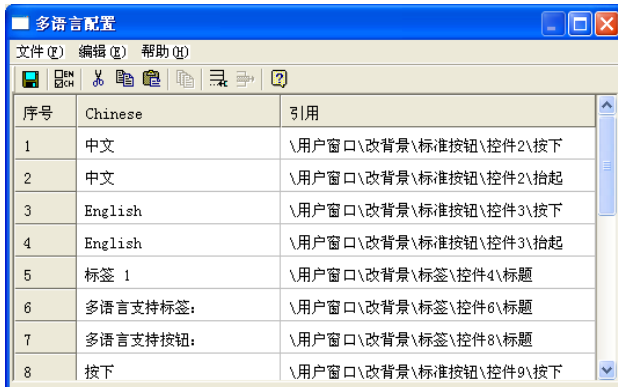


Figure 4-2-2 Multilingual Setting Dialogue Box

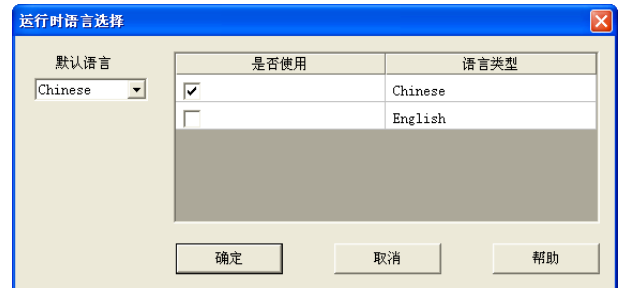



Figure 4-2-3 Language Selection Dialogue Box

2. Edit Multilingual Contents

Multilingual configuration text form displays the language column contents supported by current projects. When the relevant text contents of the project configuration change, the multilingual configuration text form will conduct the real-time display. If the English language contents of the current interface are to be edited, you do need just enter the corresponding English contents. For instance, English contents of “tag 1” is “Label One”, you do only need to input the content according to the showing in the figure of 4-2-4.

When there is any duplicate language column contents, the “copy same items”  function on the toolbar can be used. For the duplicate contents, you do only need to input the corresponding multilingual contents once; multilingual contents of other items will be automatically filled.

Additionally, users can also select to export the contents of multilingual text form to “*.csv” file; edit multilingual contents in Excel and then import the contents edited.

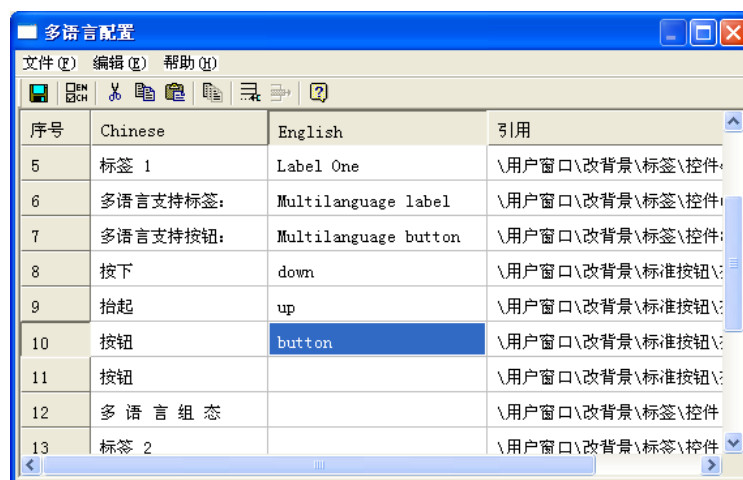


Figure 4-2-4 Editing Multilingual Contents

4.2.3 Language Switch Setting of the Project

The language switch of the project is implemented with script function `!SetCurrentLanguageIndex ()`. If we

want to manually switch the languages in operation; we can add two language switch buttons and set language switch script in the script of button.


1. Add two “buttons”  in the window; set its properties with one text contents as “Chinese” and the other as “English” shown in the figure 4-2-5. here we set the background color of buttons to “purple”.



Figure 4-2-5 Chinese-English Switch Button

2. Enter the property setting dialogue box of “Chinese” button; in the script program page and “life script” interface, click “open script program editor”, enter script program editing window and select system function—>operational environment operational functions —>!SetCurrentLanguageIndex(), from the directory tree on the right side of the window shown in the figure 4-2-6. Click confirm and add functions into the script. Return script program page and add parameter 0 in the function parenthesis (of which 0 represents the setting is Chinese while 1 represents the setting is English). The “English” button is set in the same way and the parameter in the function is 1 shown in the figure 4-2-7.



Figure 4-2-6 Function Selection List



Figure 4-2-7 Scrip Program Page

4.3 Explanation to Multilingual Support Contents

The section mainly introduces, in the MCGS embedded software, components and contents supporting multilingual.

1. Text contents of operational environment

Text contents displayed when downloading and running the project are generally divided into three types: software built-in text, editable parts in users' configuration and adding contents in the operational contents. It is the introduction of multilingual support of the three types of contents below.

- Software built-in text: such as title of alarm browser component not capable of being edited by users but supporting multilingual.
- Editable parts of users' configuration: such as text contents of tags and buttons not capable of being edited by users but support multilingual.
- Adding contents to operational environment: such as user information added in the operation not supporting multilingual.

2. Components supporting multi language

- Main animation component: tag, button, animation button and display component.
- Data display component: data browse of deposit, free form, historical form and combo box component.
- Components related to alarm: alarm display component, browse and bar (digital gallop lamp).
- Display output; switch and other text information set in the button input.
- Parameters in the script.

Appendix mcgsTpc Selection Guide

Technical Overview

mcgsTpc		K 系列		H 系列						
分类	型号	TPC7062KS	TPC7062K	TPC7063E	TPC7063H	TPC1063E	TPC1063H	TPC1262H	TPC1561H	
	产品特性	尺寸 (英寸)	7		7		10.4		12.1	15
液晶屏		TFT 液晶显示, 真彩 (LED 背光)			TFT 液晶显示, 真彩					
显示颜色		65535色			65535色					
背光寿命		50, 000 小时			50, 000 小时					
分辨率		800×480		800×480		640×480		800×600	1024×768	
触摸屏		电阻式			电阻式					
供电电源		24VDC			24VDC					
CPU主板		ARM低功耗, 400MHz			ARM低功耗, 400MHz					
内存		64M SDRAM			64M SDRAM					
存储设备		64M FLASH			64M FLASH					
环境条件	组态软件	MCGS嵌入式组态软件(运行版)			MCGS 嵌入式组态软件(运行版)					
	工作温度	0℃~45℃		-10℃~50℃		0℃~50℃				
	工作湿度	5%~90%			5%~90%					
	储存温度	-10℃~60℃			-10℃~60℃					
	储存湿度	8%~90%			8%~90%					
	振动频率	10~57Hz 57~150Hz		10~57Hz 57~150Hz						
	振动加速度	0.075mm 9.8 m/s ²			0.075mm 9.8 m/s ²					
振动扫频速率	Oct/min ≤1			Oct/min ≤1						
产品规格	结构	工业塑料结构		工业塑料结构				铝合金结构		
	颜色	银灰色		银灰色				黑灰色		
	面板尺寸 (mm)	226.5×163	226.5×163	226.5×163	226.5×163	315×239	315×239	323×246	420×310	
	机柜开孔 (mm)	215×152	215×152	215×152	215×152	303×226	303×226	303×226	384×284	
	净重 (kg)	0.8	0.8	1.6	1.7	2.1	2.2	3.9	6.1	
外部接口	USB	1主1从		2主						
	以太网	无	RJ45以太网口	RJ45以太网口						
	串口	1×RS232、1×RS485		1×RS232/485		1×RS232、1×RS232/485				
	扩展	—		—	2×RS232 1×RS232/485/422 1×RS485	—	1×RS232、1×RS232/485可选			
认证	认证	CE/FCC		CE/FCC						
	防护等级	IP65(前面板)			IP65(前面板)					
	抗干扰性	工业一级	工业三级	工业三级						

Equipment Overview

mcgsTpc K Series

TPC7062KS

Front of TPC7062KS



Back of TPC7062KS



Product Attributes

CPU Board: ARM embedded CPU, GHz 400MHz
 Memory: 64M SDRAM
 Storage Device: 64M NAND FLASH
 Touch Screen: resistance-type
 Interface: 1×RS232,1×RS485、2×USB(1 major and 1 subordinate)

Product Specifications

Power: 24V DC
 Permitted Range: 19.2V~28.8V
 Panel Size: 226.5mm×163mm
 Pore of Cabinet: 215mm×152mm

Display Specifications

Display size: 7 inches
 Display materials: TFT color LCD
 Display Color: 65535colors
 Resolution: 800×480
 Backlight: LED
 Backlight Life: 50,000hours

Application Environment

Working Temperature: 0°C~50°C
 Working Humidity: 5%~90%
 Storage Temperature: -10°C~60°C

Interface of TPC7062KS



- ① Power
- ② COM
- ③ USB1
- ④ USB2

TPC7062K

Product Attributes

CPU Board: ARM embedded CPU, GHz 400MHz
 Memory: 64M SDRAM
 Storage Device: 64M NAND FLASH
 Touch Screen: resistance-type
 Interface: 1×RS232、1×RS485、2×USB(1 major and 1 subordinate)、1×LAN

Product Specifications

Power: 24V DC
 Permitted Range: 19.2V~28.8V
 Panel size: 226.5mm×163mm
 Pore of Cabinet: 215mm×152mm
 Weight: 0.8kg

Display Specifications

Display size: 7 inches
 Display materials: TFT color LCD
 Display Color: 65535colors
 Resolution: 800×480
 Backlight: LED
 Backlight Life: 50,000hours

Application Environment

Working Temperature: 0°C~50°C
 Working Humidity: 5%~90%
 Storage Temperature: -10°C~60°C

Front of TPC7062K



Back of TPC7062K



Interface of TPC7062K



- ① Power
- ② COM
- ③ USB1
- ④ USB2
- ⑤ Ethernet

Equipment Overview

mcgsTpc H Series

TPC7063E/H

Front of TPC7063E/H



Back of TPC7063H



Interface of TPC7063E/H



- ①Power
- ②COM
- ③USB
- ④Ethernet
- ⑤Expansion

Note: TPC7063E with expansion interface ⑤; TPC7063H without expansion interface⑤.

Product Attributes

CPU Board: ARM embedded CPU, GHz 400MHz
 Memory: 64M SDRAM
 Storage Device: 64M NAND FLASH
 Touch Screen: resistance-type
 Interface: 1×RS232/RS485、2×USB、1×LAN
 Expansion interface:2×RS232、1×RS232/485/422、1×RS485

Product Specifications

Power: 24V DC
 Permitted Range: 19.2V~28.8V
 Panel size: 226.5mm×163mm
 Pore of Cabinet: 215mm×152mm

Display Specifications

Display size: 7 inches
 Display materials: TFT color LCD
 Display Color: 65535colors
 Resolution: 800×480
 Backlight Life: 50,000hours

Application Environment

Working Temperature: 0℃~50℃
 Working Humidity: 5%~90%
 Storage Temperature: -10℃~60℃

TPC1063E/H

Product Attributes

CPU Board: ARM embedded CPU, GHz 400MHz
 Memory: 64M SDRAM
 Storage Device: 64M NAND FLASH
 Touch Screen: resistance-type
 Interface: 1×RS232、1×RS232/RS485、2×USB、1×LAN、1063H scalable CAN bus
 Expansion interface: 1×RS232、1×RS232/RS485 (eligibility)

Product Specifications

Power: 24V DC
 Permitted Range: 19.2V~28.8V
 Panel size: 315mm×239mm
 Pore of Cabinet: 303mm×226mm

Display Specifications

Display size: 10.4 inches
 Display materials: TFT color LCD
 Display Color: 65535colors
 Resolution 640×480

Application Environment

Working Temperature: 0℃~50℃
 Working Humidity: 5%~90%
 Storage Temperature: -10℃~60℃

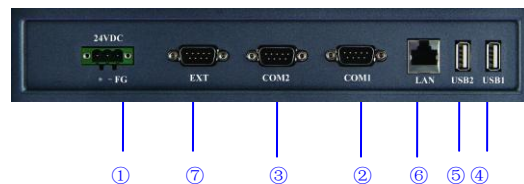
Front of TPC1063E/H



Back of TPC1063H



Interface of TPC1063H



- ①Power
- ②COM1
- ③COM2
- ④USB1
- ⑤USB2
- ⑥Ethernet
- ⑦Expansion

Note: TPC7063E with expansion interface ⑦; TPC1063H without

Equipment Overview

mcgsTpc H Series

TPC1262H

Front of TPC1262H



Back of TPC1262H



Product Attributes

CPU Board: ARM embedded CPU, GHz 400MHz
 Memory: 64M SDRAM
 Storage Device: 64M NAND FLASH
 Touch Screen: resistance-type
 Interface: 3×RS232,1×RS232/RS485,2×USB and
 1×LAN

Product Specifications

Power: 24V DC
 Permitted Range: 19.2V~28.8V
 Panel size: 323mm×246mm
 Pore of Cabinet: 303mm×226mm
 Weight: 3.9kg

Display Specifications

Display size: 12.1inches
 Display materials: TFT color LCD
 Display Color: 65535 colors
 Resolution: 800×600
 Background life: 50,000hours

Application Environment

Working Temperature: 0°C~50°C
 Working Humidity: 5%~90%
 Storage Temperature: -10°C~60°C

Interface of TPC1262H



- ①Power
- ②COM1
- ③COM2
- ④USB1
- ⑤USB2
- ⑥Ethernet
- ⑦Expansion

TPC1561H

Product Attributes

CPU Board: ARM embedded CPU, GHz 400MHz
 Memory: 64M SDRAM
 Storage Device: 64M NAND FLASH
 Touch Screen: resistance-type
 Interface::3×RS232,1×RS232/RS485,2×USB and
 1×LAN

Product Specifications

Power: 24V DC
 Permitted Range: 19.2V~28.8V
 Panel size: 420mm×310mm
 Pore of Cabinet: 384mm×284mm
 Weight: 6.1kg

Display Specifications

Display size: 15 inches
 Display materials: TFT color
 LCD
 Display Color: 65535 colors
 Resolution: 1024×768

Application Environment

Working Temperature: 0°C~50°C
 Working Humidity: 5%~90%
 Storage Temperature: -10°C~60°C

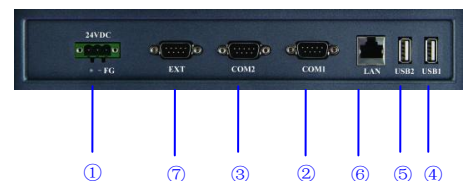
Front of TPC1561H



Back of TPC1561H



Interface of TPC1561H



- ①Power
- ②COM1
- ③COM2
- ④USB1
- ⑤USB2
- ⑥Ethernet
- ⑦Expansion

Beijing Kunlun Tongtai

Customer Information Form

Name		Department	
Company Name		E-mail	
Address		Post Code	
Tel:		Fax No.	Cell phone
Industry	<input type="checkbox"/> Textile Machinery <input type="checkbox"/> Power Machinery <input type="checkbox"/> Rubber Machinery <input type="checkbox"/> Plastics Machinery <input type="checkbox"/> Printing & Packaging Machinery <input type="checkbox"/> HVAC <input type="checkbox"/> Glass Machinery <input type="checkbox"/> Track Traffic <input type="checkbox"/> Environmental Protection Equipment <input type="checkbox"/> Energy Metallurgy <input type="checkbox"/> Numerical Control Machine <input type="checkbox"/> Others _____		
Nature of Users	<input type="checkbox"/> Equipment Manufacturers <input type="checkbox"/> System Integrators <input type="checkbox"/> Institutes <input type="checkbox"/> Colleges <input type="checkbox"/> Trade <input type="checkbox"/> Others _____		
Company Size	Total staffs _____ Gross product _____ thousands Industrial ranking _____ Annual output of equipment _____ piece Types of equipment _____ Price of equipment _____ thousands Amount of screen devices used (annually) _____ pieces Amount of screen devices not used (annually) _____ pieces		
The hardware you use?	Touch Screen: Brand _____ Model No. _____ Amount _____ Price _____ Brand _____ Model No. _____ Amount _____ Price _____ PLC: Brand _____ Model No. _____ Amount _____ Price _____ Brand _____ Model No. _____ Amount _____ Price _____ Others: Brand _____ Model No. _____ Amount _____ Price _____		
What features of HMI do you most focus on?	The product features you pay attention to finally _____ <input type="checkbox"/> Brand <input type="checkbox"/> Quality <input type="checkbox"/> Price <input type="checkbox"/> Appearance <input type="checkbox"/> Certification <input type="checkbox"/> Functions <input type="checkbox"/> Interface <input type="checkbox"/> Ease for use <input type="checkbox"/> Openness <input type="checkbox"/> Others _____ You expectations to main features of product: _____		



TPC7062 FCC Certification



TPC7062 CE Certification



ISO9001 Quality Management System Certification



TPC7063 FCC Certification



TPC7063 CE Certification



ISO9001 Quality Management System Certification



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