The new generation of the SGD graphic displayer

User Manual

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File No.   520030313200
Vision No.   V1.0
Filing time   2017-01-03

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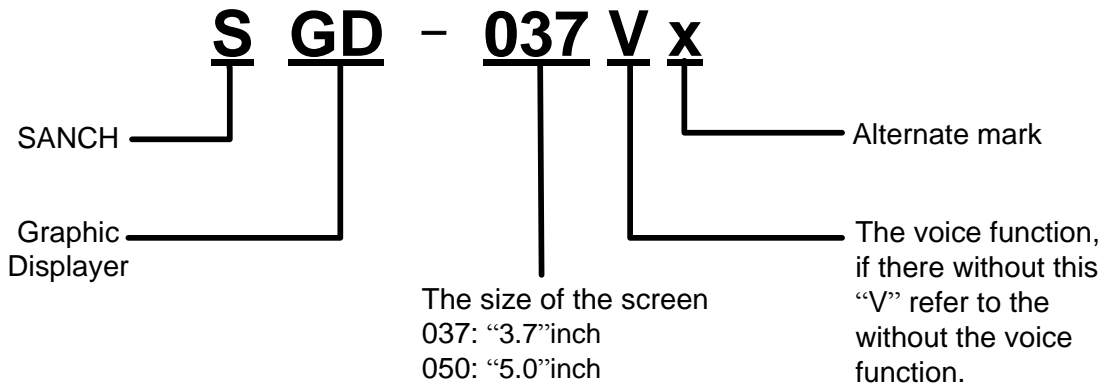Sanch wechat service number

CATALOG

Chapter 1   The overview of the products

1.1 About the graphic display Of the SGD series

The new generation graphic display of the SGD adopting the kernel Cortex-M3 industrial grade ARM chip with the excellent processor and advanced design ideas, determines the SGD series graphic display has the following characteristics:

◆32 bit RISC processor, stronger processing performance.

◆Chip SD 72M, advanced AHB, APB bus, the more fast speed.

◆Chip contains 128KB Flash and 20KB RAM, you can store more screen data.

◆The number of the chip pin is 64 feet, 100 feet, if the ports no reuse, they can extend more functions.

◆Comes with RTC, 32 bits counter can be timed for 136 years and supporting display the week at the same time.

◆The internal time of the displayer without manual adjustment, downloading the pictures can update at the same time.

◆Main board and LCD using the3.3V power supply, the required power supply is smaller.

◆Available "text light" (Lamp + text) display the coil status.

◆Dynamic text and dynamic vector text supporting text content with automatic sequence.

◆All 30 keys can be set to multifunction keys.

◆Up to 10 global functional keys, and also can use a special transfer board shift the key to the external sheet metal.

◆SGD-050V with voice function and double channel output, you can use the built-in speaker, can also be circumscribed an external power amplifier; when broadcast the specific content, the user can choose the vigorous male voice or ringing female voice.

◆You can play the keep-alive message, hourly chime, broadcast the state of the coil, the state of the register, alarm information etc.

◆Supporting common PLC device and inverter, adding the device agreements based on user requirements.

◆Supporting bar chart and trend diagram to support user password protection

◆Displayer can display the current screen number to the PLC, the current screen of the displayer can also be specified by the PLC register.

◆COM1 is a dedicated communication port, when download the screen without plugging the communication port cable.

◆The download port of the RS232 level is COM2; the download port of the USB Host is USB, convenient to the notebook users.

◆ All products of the SGD series come with RS232 communication interface, while containing the RS422, RS485 interface.

◆The screen saver can choose automatically close the LCD background light or switch to the certain screen; screen saver can be specified by PLC register.

1.2 The specification of the type

$$S \ GD \ – \ 037 \ V \ x$$

SANCH —

Graphic Displayer —

The size of the screen
037: "3.7"inch
050: "5.0"inch

Alternate mark

The voice function, if there without this "V" refer to the without the voice function.

1.3 Electrical characteristics and using environment

1.3.1 Electrical specifications

Input Voltage	DC12～24V ± 10%
Input Current	Less than 60mA(When input the DC24V)
Power Consumption	SGD-037 less than 1W; SGD-050V less than 2W
LCD Background Light Life	More than 20 thousand hours
Key Life	More than 1 million times

1.3.3 Using environment

Operating temperature	0-50℃, without condensation
Save temperature	–20℃-70℃
Ambient humidity	20-85%, without condensation
Vibration resistance	10-25Hz (X, Y, Z each direction 30 min 2G)
Anti-interference	Voltage noise: 1000Vp-p, pulse width 1uS, one minute
Ambient air	Non corrosive gas
Protection architecture	Suitable for IP65

1.4 Appearance and installation instructions

1.4.1 SGD-037

SGD-037 is a 20 button with a 3.7 inch graphic displayer, liquid crystal dot number 192*64, can display the 4 rows and 12 columns of Chinese characters.

(1) Appearance (Note: pictures capture from the catalog, others is inserted into during the typesetting).

(2) Key

The front of SGD-037 in addition to the LCD window, there are also 8 function keys, 10 numeric keys, 2 digital input auxiliary keys.
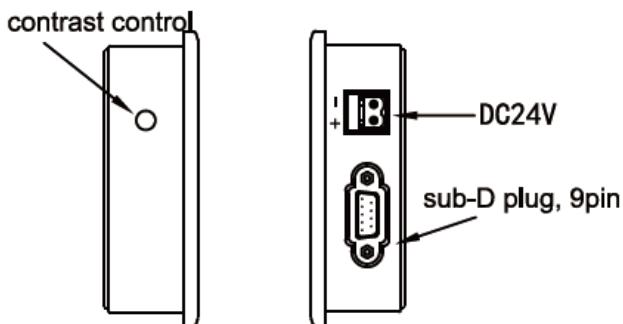
1) 10 numeric keys：1、2、3、4、5、6、7、8、9、0。

2) 2 digital input auxiliary keys：[+/-]、[CLR]

3) 8 function keys：[ESC]、[ALM] 、[↓] 、[↑] 、[←]、[→]、[SET]、[ENT]

(3)Port

One side of the SGD-037 with power terminals and communication interface, the other side is the contrast adjustment potentiometer.

The power supply terminal of the above in the right picture can externally connect the DC24V.

The download interface of the below in right picture is a communication interface, containing the RS232, RS485 and RS422 levels.

When downloading the image data, use the special communication cable to connect the 9 cores communication port of SGD-037 and the 9 cores communication port of personal computer. When communicating with PLC, according to the PLC model to confirm the connection way of communication port when communicate with the PLC.
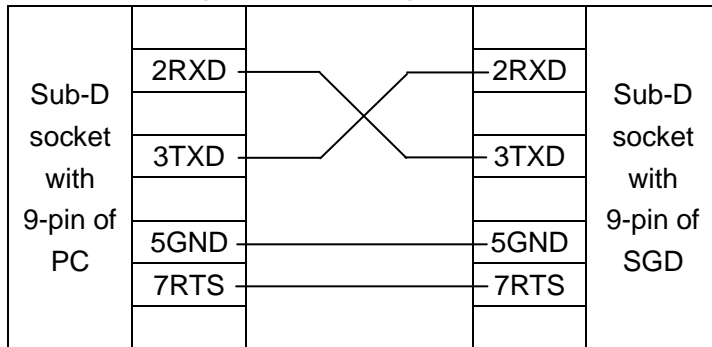
If it is found that the contrast degree of LCD is not appropriate during the using, can use a small

screwdriver to turn the potentiometer of the another side of displayer until the contrast degree is appropriate. SGD-037 LCD with LED background light, the background light will open as long as the operate the key. By default, for 1 minutes or more without any key operation, the background light automatic go out.
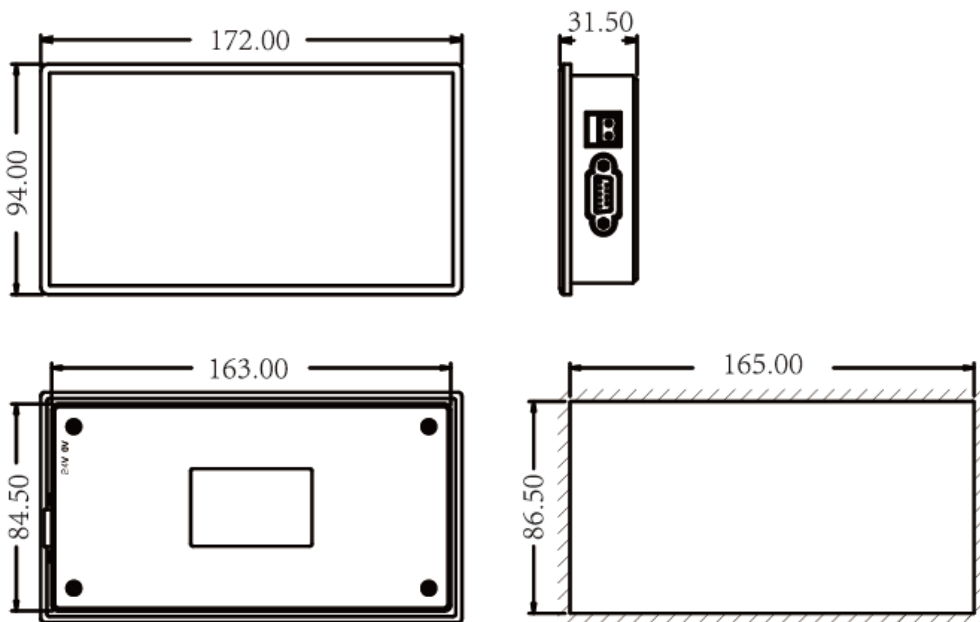
The pin definition number of the SGD-037 serial communication port :

Pin Number	Definition
1	TD+
2	RXD
3	TXD
4	NC
5	GND
6	TD-
7	RTS
8	RD-
9	RD+

SGD dedicated download line wiring connection diagram:

Sub-D socket with 9-pin of PC	2RXD		2RXD	Sub-D socket with 9-pin of SGD
	3TXD		3TXD	
	5GND		5GND	
	7RTS		7RTS	

(4)Size

(5)Installation

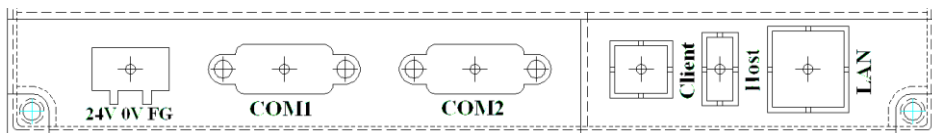sheet metal face   installation latch
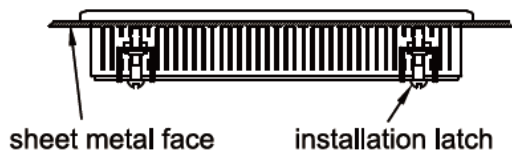
1.4.2 SGD-050 and SGD-050V

(1) Appearance

(2) Key

1). The 10 figure keys: 1、2、3、4、5、6、7、8、9、0.

2). 2 digital input auxiliary keys:[+/-]、[CLR].

3). 8 function keys:[ESC]、[ALM] 、[↓] 、[↑] 、[←]、[→]、[SET]、[ENT].

4). 10 senior function keys: F1 - F10

(3) Port

①Power Port

When theDC24V input, the polarity must be consistent with the shell mark.

② Communication port (connect to PLC)

Labeled COM1, including RS232, RS422, RS485 level.

The definition of the communication port pins of SGD-050/SGD-050V are as follows:

Pin Number	Definition
1	TD+
2	RXD
3	TXD

4	No
5	GND
6	TD-
7	RTS
8	RD-
9	RD+

③Download Port (connect to PC)

Labeled COM2, containing RS232 level.

The definition of the download port pins of SGD-050/SGD-050V are as follows:

Pin Number	Definition
1	
2	RXD
3	TXD
5	GND
6	
7	RTS
8	
9	

④ USB Port

Labeled USB Client, available USB cable connected to PC, download the project data.

(4) Size
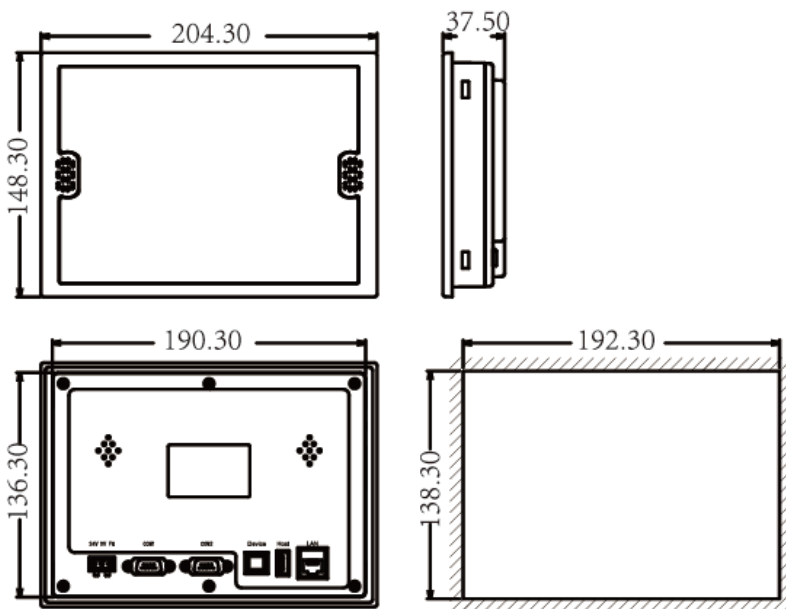
(5) installation

On the left and right sides of the SGD-050/SGD-050V, each of them with 2 installation slots, with 4 additional installation buckle, fixed on the sheet metal, the installation method is same to SGD-037.

Chapter 2   The image editing image SGDPro

2.1 The basic overview of the SGDPro

SGDPro is a special image editing tool of the SGD Series graphics displayer (SGD-037, SGD-050, SGD-050V, etc.), it is able to run on the existing Windows platform.

For XP users, user need to install the Net Framework 2; For Win7/Win8 users, defaulting the start is Net Framework. if users need to manually start the system with.Net Framework, the methods are: control panel - procedure- to open or close the Windows function, select the "Microsoft.Net Framework 3.5 (including.Net 2 and 3)", then click "OK".

2.2 The using steps of software

1. Decompression SGDPro.rar
2. Run setup SGDPro.msi
3. If it is USB downloading, according to the driver installation instructions under the installation directory to install the USB driver
4. Run the "SGDPro" image editing tool"
5. New project
6. Select displayer type and device type, and configure the communication parameters
7. Select the PC for downloading the serial number
8. Edit image element
9. Configure alarm list, interactive control, screen saver function, global function keys, voice function etc.
10. Preservation project
11. Download project

2.3 Software Interface

Double click on the desktop "SGDPro image editing tool" shortcut, open the SGDPro software, new projects，taking SGD-050V as an example:
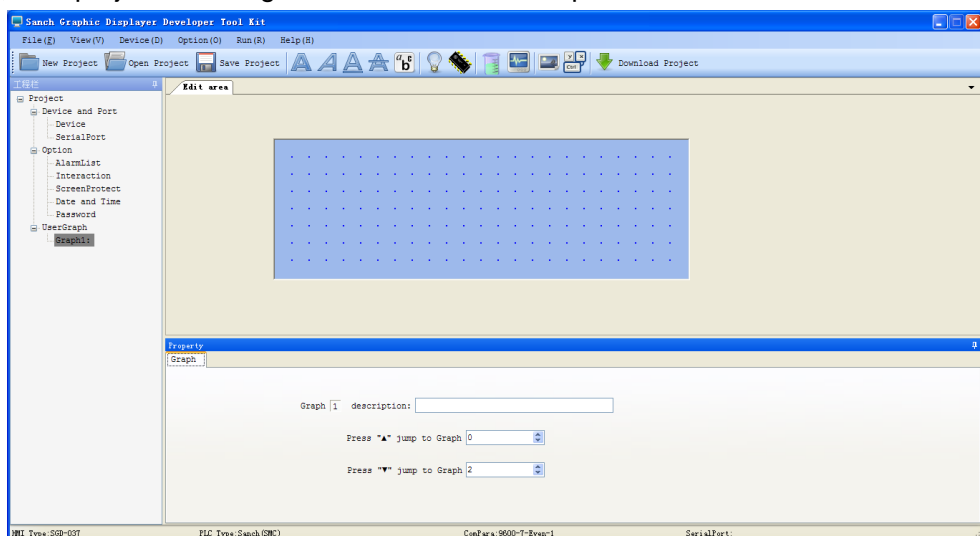
At the top of the software is the menu bar and toolbar, on the left is the project bar, middle side is the image editing area, the low side is the property bar, at the bottom side is the status bar.

The first opening software may find the project the width of columns or attribute column width, not suitable for personal habits, need to adjust its width or height. SGDPro supports the manual drag adjustment, and automatically save the habits of users, when the next time user open the SGDPro, no need to adjust again.
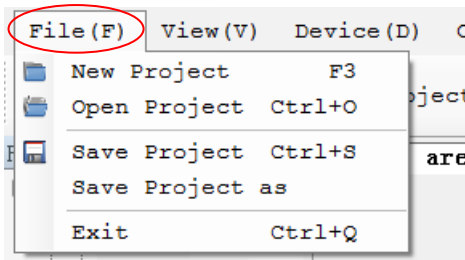
2.3.1 Menu Bar
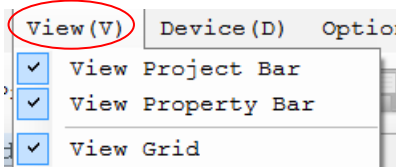
The style of the menu bar as follows:

```
File(F)   View(V)   Device(D)   Option(O)   Run(R)   Help(H)
```
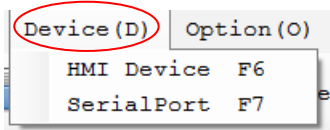
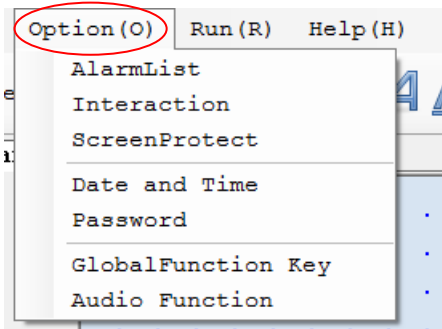Sub-menu at all levels menu as follows:
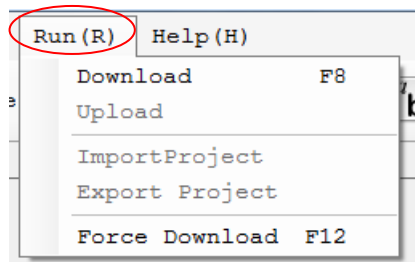
(1) File Menu
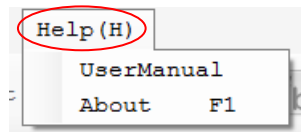

(2）View Menu

(3) Device Menu:

(4) Option Menu:

Note:The options menu above is the menu in which the selected display type is SGD-050V. If the selected display type is SGD-037, there is no "global function key" and "voice function settings" menu; if the selected display type is SGD-050, there is no "voice function set".

(5) Run menu:

(6) Help menu:

2.3.2 Toolbar

The style of the toolbar as follows:

The file menu of the left toolbar is shortcut key; the right side is a shortcut key of the operation menu; the middle is 11 controls, from left to right there are static text, variable text, static vector text, variable vector text, ASCII characters, lights, register, bar chart, trend chart, picture, function keys.

The "new project" and "open project" on the toolbar are always operational, and the other tool keys are operational only after the new project or the open project.

2.3.3 The details of the controls

(1) Static text

The property box of the static text as follows:
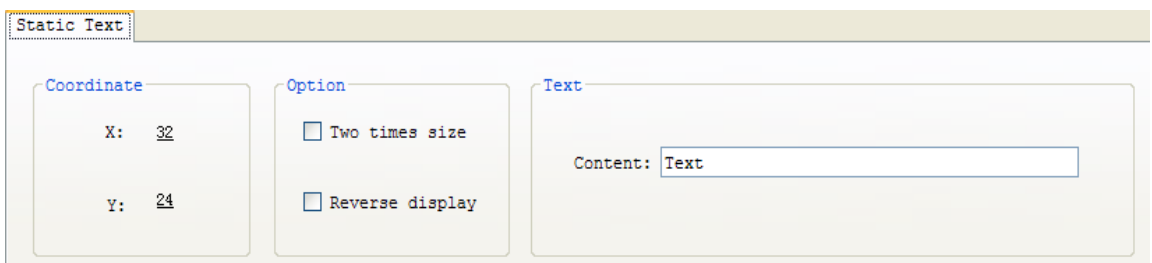

◆Two time size: The current text content, it is occupied the 32*32 lattice without Chinese characters; digital, letters occupy 16*32 lattice.

◆Reverse display: The control of the content of the text, showing blue letter on white or white letter on blue.

◆Content: The text content of the static text, after each modification in the content, this will automatically save in the memory

(2) Variable Text

The property box of the variable text as follows:
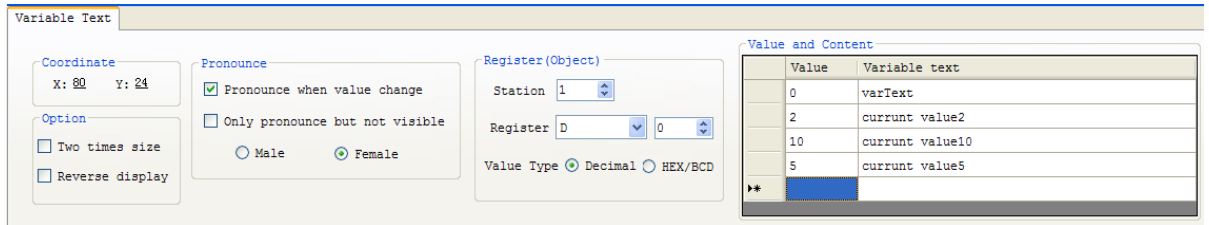
◆Voice broadcast: For type SGD-050V graphic displayer, user can set the current content when the register changes, broadcasting the register value corresponding text content.
If using the voice broadcasting function, user need to open the voice function in the "options" of "voice function settings" in menu.

◆The station number of the PLC: With the station number of graphic display communication device. Some PLC without the station number, some PLC with station number, but the choice of station number is different.

◆Register type: Taking the Modbus RTU for example, there are two kinds of the register: 4x (R/W) and 3x (R), the former is read-write, the latter is read-only.

◆The register address: from the beginning of 0, the maximum value is different.

◆Numerical format: optional decimal or hexadecimal.

◆Numerical content:

1). If you enter a dynamic text content in a cell without entering a value, the value is automatically added when you leave the current cell. The user can modify the value manually.

2).The scope of the numerical content is limited 0-255. Even if the value of the selected register will exceed 255, please do not set the value of more than 255.

3). If inputting the value exceeds 255 by the user will appear a prompt:
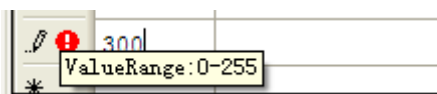
At this time, the cursor cannot leave the current cell. Only when the value is set correctly will the red tip will disappear.

4). After editing the current cell content is completed, user can press the "Enter" key to determine to write-in, user can also click the mouse in other cells, can complete the current editing state.

5).When the input value and the content, there is no need to arrange according to the order from small to large, just do the numerical corresponding to the content. When display the control to the user, it will read the data and content from memory, automatic sorting. Below is the result of automatic sorting.

Value and Content

	Value	Variable text
	0	varText
	2	currunt value2
	10	currunt value10
	5	currunt value5
▶*		

6). If the user wants to delete the contents of the existing cell, they can first select a cell , and then click the right click, pop-up right-click menu, select "Delete selected line".

(3) Static Font Text

The property box of the static font text as follows:

Static Font Text

Coordinate

X: 16

Y: 48

Option

☐ Reverse display

Font

Text

Content: FontText

◆ Font: Setting the font, size, effect of the static vector text.

(4) Variable Font Text

The property box of the variable font text as follows:

Variable Font Text

Coordinate
X:20 Y:72

Option
☐ Reverse display

Font

Pronounce
☑ Pronounce when value change
○ Male   ◉ Female

Regiser (Object)
Station 1
Register D ∨ 0
Value Type ◉ Decimal ○ HEX/BCD

Value and content

	Value	Variable text
	0	varFontText
	1	varFont 123
▶*		

The property settings of the control are seen "variable text" and "static vector text".

(5) ASCII Character

The property box of the ASCII character as follows:

ASCII Char

Coordinate

X: 24

Y: 0

Option

☐ Two times size

☐ Reverse display

Register (Object)

Station 1   Register D ∨ 0
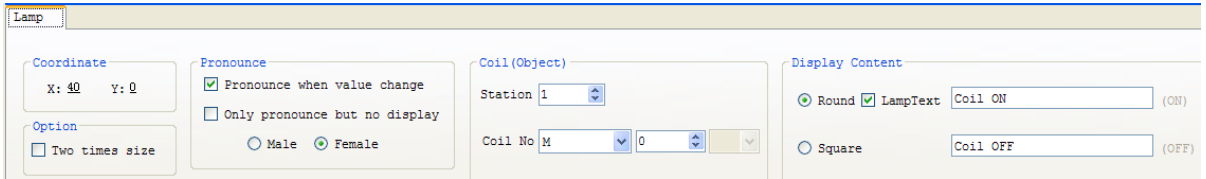
Register Num 1

Display

Char Num: 1

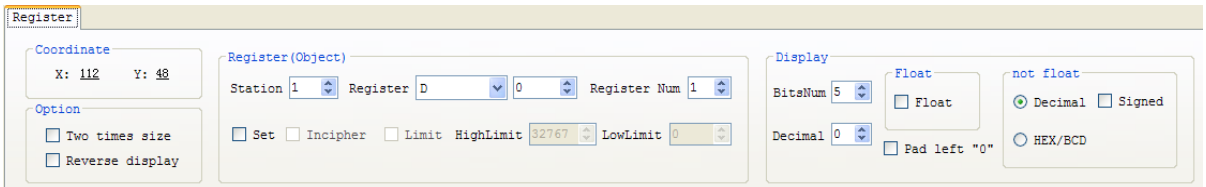◆When using this control, please limit the value of register within0-127.

(6) Lamp

The property box of the lamp as follows:

◆Voice broadcast: when the state of the coil changes, the voice broadcasting corresponding text content of the new state. It is possible to operate After this function is selected the "text prompt".

◆Text prompt: when the coil state changes, displayed the corresponding the text content of the new state .

(7) Register
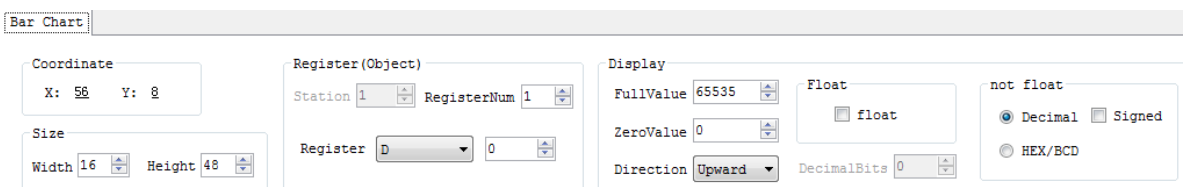
The property box of the register as follows:

◆Set: the value of the register can be set by the user through the key. Using this function, the selected register type must be support the written.

◆Incipher: the user must be open the user password when setting data.

◆High limit and low limit: High limit and low limit on the value of the register the user input.

If the register width is 1 bytes, the signed ranges is -128 to 127;

If the register width is 2 bytes, the signed ranges is -32768 to32767;

If the register width is 4 bytes, the signed ranges is -2147483648 to 2147483647;

◆Register number: the minimum is 1, the maximum number is 2.

◆Bit number: To display the bit number of data. If the user selects a register that is 16 bits and the number of registers is 2, the maximum number should be set as 10.

◆Float number: Using when the value stored in the register is float.

◆Pad left "0": when the actual value bit of the register less than the display bit number   the high of the gap filled with the '0' .

◆Signed number: when the displayed value of the register is negative, show "-" in the front of the value.

(8)Bar chart

The property box of the bar chart as follows:

◆Full value:The full value at the bar chart of corresponding value.

◆Zero value:The zero value at the bar chart of corresponding value.

◆Direction: Full scale relative to the orientation of zero scale.

(9) Trend chart

The property box of the trend chart as follows:

Trend Chart		

Coordinate	Register(Object)	Display		Float	not float
X: 96 Y: 8	Station 1 Register Num 1	FullValue 65535 Sample Dots 20		□ float	● Decimal □ Signed
Size	Register D ▼ 0	ZeroValue 0 Sample Interval 1		DecimalBits 0	○ HEX/BCD
Width 96 Height 48					

◆Acquisition points: X axis shows the total number of acquisition points.

◆Sampling interval: The interval unit between this sampling and the last sampling is seconds.

(10) Picture

Click the "picture" control, pop-up opening picture dialog box. It is monochrome LCD, so only support monochrome bitmap file display, that is black and white picture display.

By limiting the number of liquid crystal lattice, the image size must less than the selected number of liquid crystal lattice.

(11) Function Key

The property box of the function key as follows:

Function Key		

Coordinate	Function	Set Coil	Jump to
X: 144 Y: 0	Key F1 Key ▼	Station 1 Coil No M ▼ 0 ▼	Jump to: ● Graph 1
	☑ Hand ● Set Coil	● ON ○ OFF ○ Reverse ○ Press:ON;Bounce:OFF	○ Password
Option	□ Hide ○ Set Value	Set Value	○ AlarmList
□ Two times size		Station 1 Register D ▼ 0	○ Date and Time
□ Reverse display	□ Incipher ○ Jump to	Register Num 1 Value 0	

◆Key name: if the selected displayer is SGD-037, the total number of the key is 20 with multi-function keys; if the selected displayer is SGD-050 or SGD-050V, the total number of the key is 30 with multi-function keys

◆Hand: Display the hand shaped image in front of the key.

◆Hide: Control the key with visible or invisible.

◆Incipher: Select the encryption function, you need to open the user password before using the key.

◆Set coil, set the value, jump to screen: This is the 3 function of the multifunction keys.

2.3.4 Operating method

(1) New Project

    Click "New Project" in toolbar, "select device and set communication parameters" pops up;
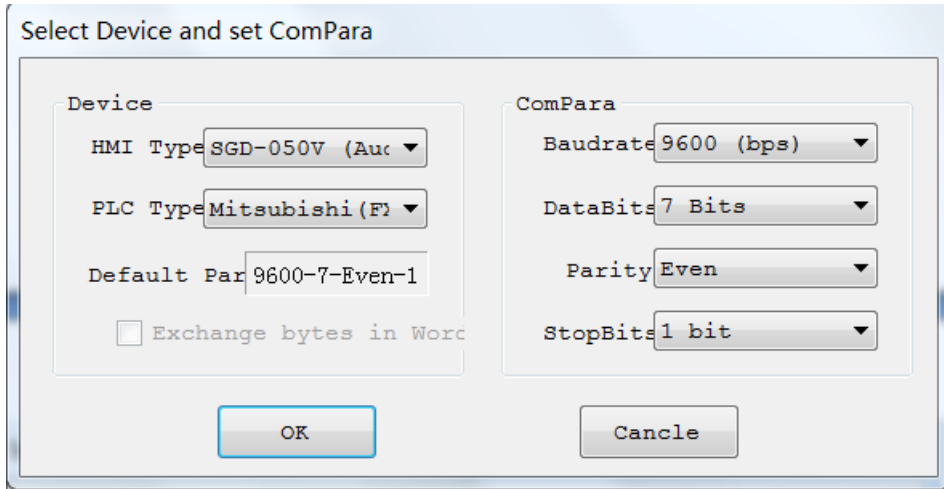
Create new project at first time, the HMI type defaults as "SGD-050V", PLC defaults as "Modbus RTU

    After select new PLC, the defaulted communication parameter of the device will show to users. The user is able to set communication parameter according to actual requirement and the recommended defaulted parameter.

    Click of "cencle" of "select device and set compare", users quit creation of new project. Click "ok", the "select serial port" pops up.

    The computer serial port not only includes physical serial port but also virtual serial port transferring from usb port to RS232

    After click "ok" of "select device and set compare", the menu and control turn to operational, and statusbar updates too.
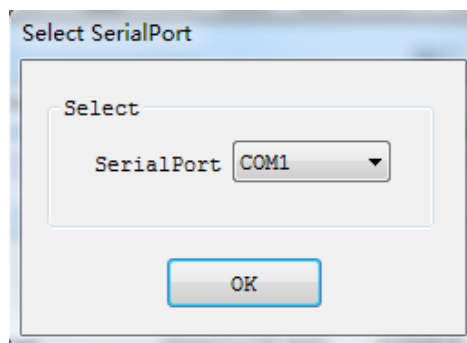
(2) Edit Graph

    After create project, a blank graphic named as "graph 1"shows to users who can place the controls on the graph.

    For the controls needed to be deleted, users can select the control and click the "delete" of key board to delete the control, the "notify" box will pop up as below:
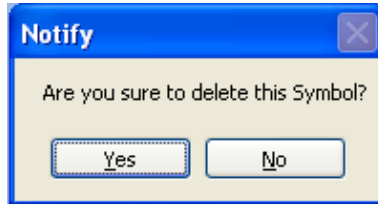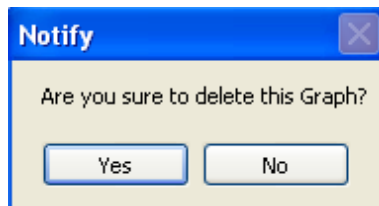
After finish the graph edition, users can right click "user graph" at left side toolbar to select "new graph" or "insert graph" as below:
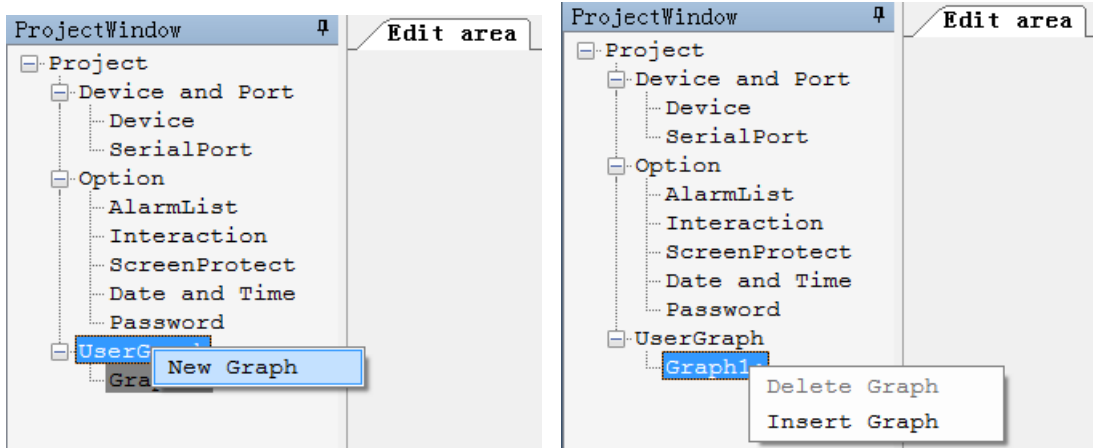
For graph needed to be deleted, users can right click "user graph" at left side toolbar to select "delete graph" as below:
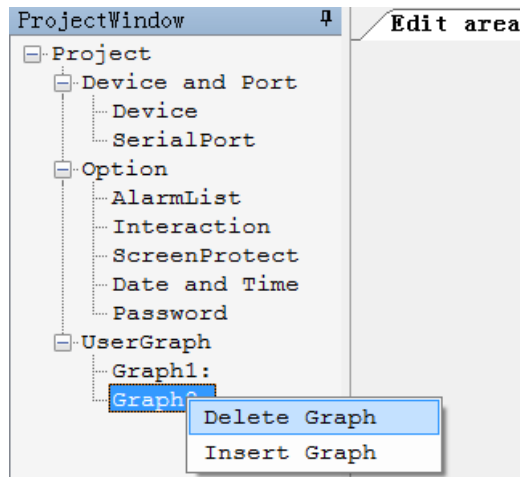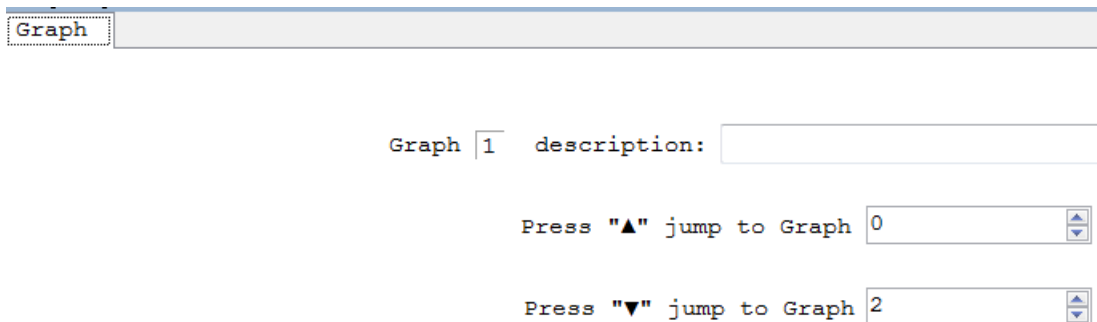

Except for "graph 1", other graphs can be deleted. The "notify" will pop up after select "delete graph"
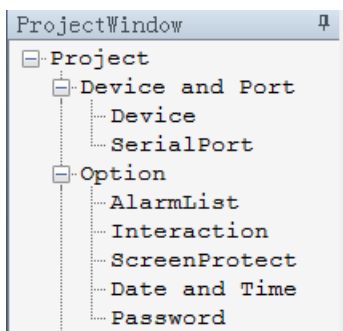
Users can change graph by "▲"and"▼" after placing and editing graphs.

The defaulted change order of graph is according to graph sequence. Users can revise the change order by "graph property" as below:

Graph

Graph 1 description:

Press "▲" jump to Graph 0

Press "▼" jump to Graph 2

(3) Configure other functions

After finish the graph edition, users can configure the serial port, alarm list, audio function and other special functions. Those functions can be selected from menu and directory tree at "project"

ProjectWindow

- Project
  - Device and Port
    - Device
    - SerialPort
  - Option
    - AlarmList
    - Interaction
    - ScreenProtect
    - Date and Time
    - Password

(4) Serial port

Click the "serial port", "select serial port" pops up. Users can select the serial port they need;

Select SerialPort

Select

SerialPort COM1
            COM1

OK
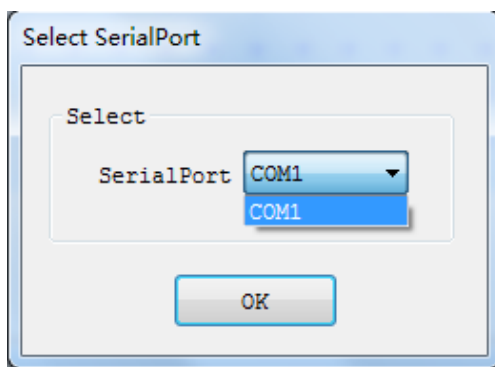
◆When users use virtual converter of USB converting RS232, the virtual serial port will be produced. If virtual serial port turns up in"select serial port" after open "select serial port", do not move the converter otherwise cause operation fault of soft in upper computer.

◆When the "select serial port" has not been opened, users can move away converter. After the converter has been moved, the original serial port disappears. If users select "download project" they will be reminded that the selected serial port does not exist when the user need to select serial port again.

(5) Alarm list

Click "alarm list" alarm list box pops up. users can set the alarm content according to actual, as below:

◆When configure alarm, users need configure PLC station and coilNO. The setted coil number needs to correspond to PLC program.

◆Click alarm content and input the content, press "enter" or click other cells to quit edition

◆After finish edition, the coil number corresponding to content produce automatically

◆The edited content is saved in internal storage automatically. Click "ok" to quit alarm list

(6) Interaction

It has two functions:1. Report the current displaying graph number to PLC;2. Display the graph number corresponding to resistor pointed by PLC. As below:
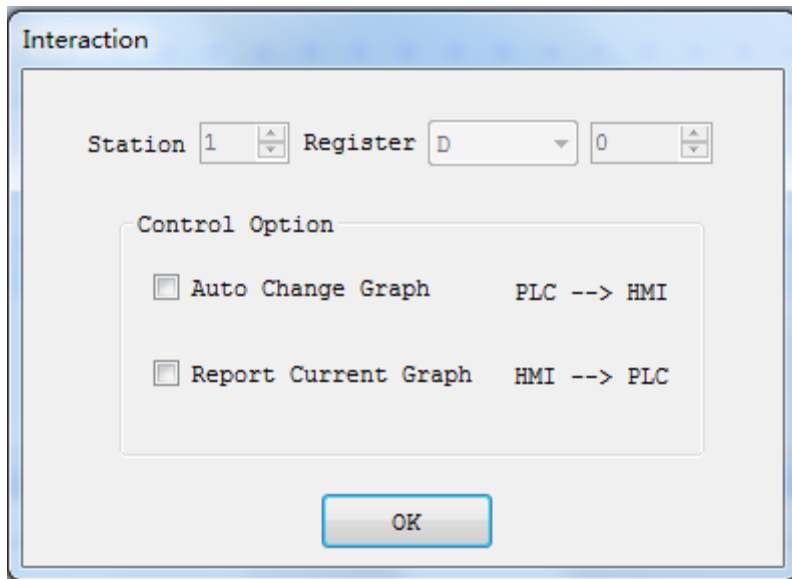
◆Click any check box in control option, resistor turns to be operational status

◆If set resistor as 4x-10, 4x-10 displays the graph needed to be displayed and 4x-11 displays the current graph sequence

◆When the graphic displayer reads the value of resistor 4x-10 in PLC, the graphic displayer will search the graph corresponding to value. If the graph corresponding to value exists, the screen will change to the graph and the value will be written as "0". While if the graph do not exist or the value is not in the range of graph, the screen will not change

(7) Screen protect

    If long time users have not operated graphic displayer, the displayer changes to common screen which offer convenience to monitor, set device; or turn off background light to save power and extend working life of LED.
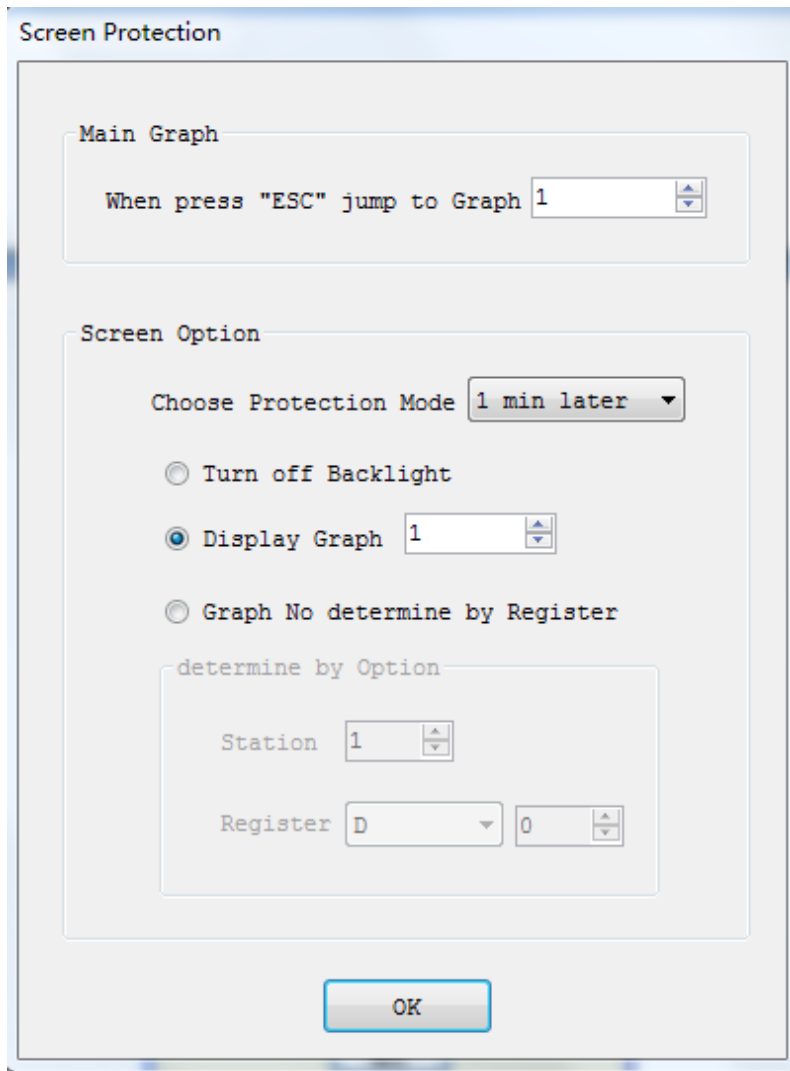

◆Graph 1 is defaulted main graph. Users can set main graph according to actual

◆Default that without key operation and alarm occurring in 1 min, the background light switch off automatically

◆Users can set that the displayer show the pointed screen after internal time without any operation which can be pointed by resistor

◆Users can choose to use screen protection or not

(8) Date and time

The common way to update time is that when users editing the image, place the jump to the time and date screen key to update the time.

SGD Series text display supports synchronous PC time to graphic display, the method is in the time and date interface selecting " Update HMI system-time when downloading". The diagram as follows:
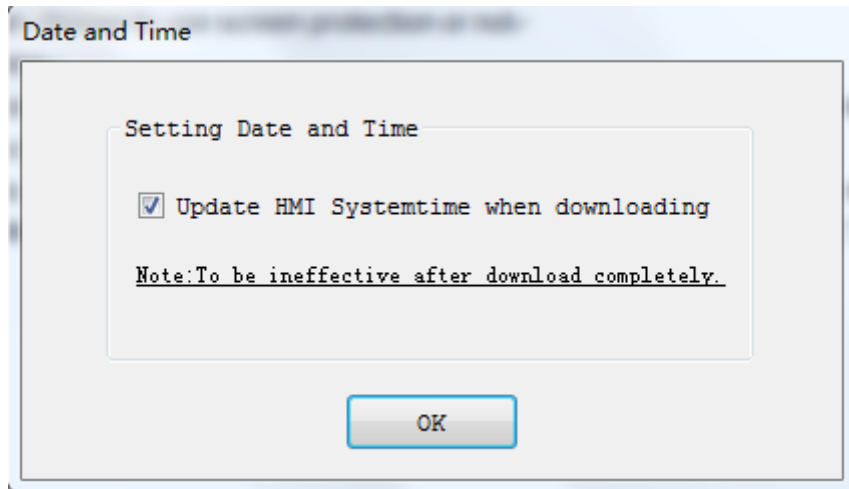
◆Under normal circumstances, time just only need to update once, so the synchronize the time function after the failure of the successful download system file. If the next time need to synchronize the time, need to set again.

◆Updating range from January 1, 2010 to December 31, 2099. If the user set the time outside this range, the lower computer will refuse to update.

(9) Password Function

The project designers can set up a 6 digits password to restrict unauthorized user operations.
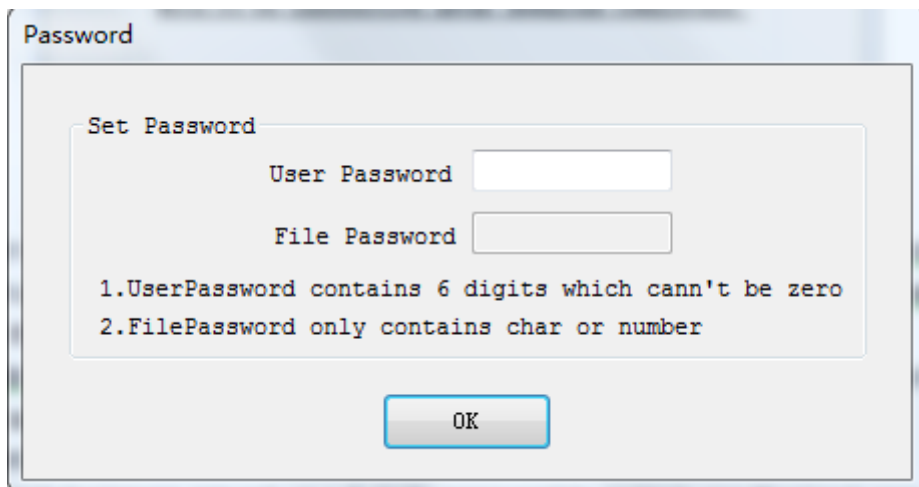
◆The user password is 6 figures, but they are not allow all zero,the password can not be verified through regular expression if you input the characters other than the digits,that is to say,the password is invalid.

◆If you input 6 figures entire number of 0, means that the password function is invalid.

(10) Global function keys

　　To facilitate the using of function keys, and not affected by the current screen, user can set the global function key, the diagram as follows:

◆Only SGD-050 and SGD-050V two graphics display can use the global function key.

◆If the current screen set a key with advanced function, while setting the key with a global function, the current screen advanced function is priority, global features in the current picture is invalid.

◆If the user needs to use the global function of the key "F1", and set to jump to the date and time screen. Operation method is divided into two steps: sing key and setting function. Specific as follows:

　In the global settings box "Using key" column, finding the "F1 - cell unused", double-click the left mouse key, then the contents of the cell changes into "F1 - used", a combination box on the right side of the advanced function has become operational state at the same time,

　In the "function selection "column, double-click the cell corresponding to the F1 key, switch to the key function.When the contents of the current cell change into " jump screen ", the combination box of the right " jump screen " has become operational.selecting the unit box "date and time ", then click" OK ".

(11) Audio function settings

Audio function settings box to use audio function and set broadcast function.
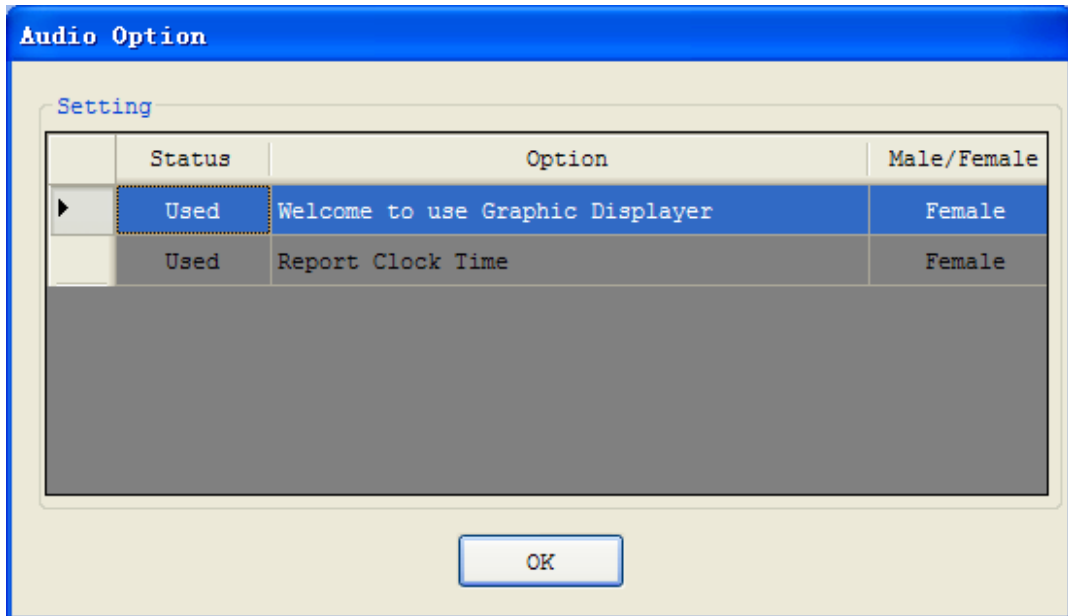
◆Only theSGD-050V graphics display with audio function.

◆By default, the audio function are not used.

◆If user wants to use the audio broadcasting function in the list of the first line, double-click the first cell of the header cell, cell contents change to the "used". At this time, the "welcome to use the SGD graphic display" is in a editable state and the content can be re-input.

◆Double click the "speaker" cell to toggle the male and female sound.

◆Part of the controls of the audio broadcast function, user can also set broadcast times.

◆If user want to use the lamp, variable text, variable vector text of these three controls audio, but also need to set the related properties in the control of the interface.

After setting the screen content and advanced functions, click "save project". If it is the first time to save the project will pop up dialog box to prompts the user, as shown below:
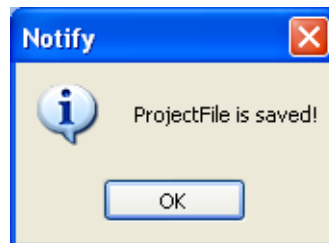
After saving the project,user can download the project data to graphic display.

Download port and communication port of SGD-037 are the same port. COM1 of the SGD-050 and SGD-050V are communication port, COM2 and USB Client are download port. Giving power to the play after confirming the correct connection of the download cable graphic display. clicking the "download project" or pressing the shortcut F8 in the keyboard, user can download the project.

The entire download process is divided into two steps. The first step is to clear data; the second step is to download the data. The hints of download process are as follows:
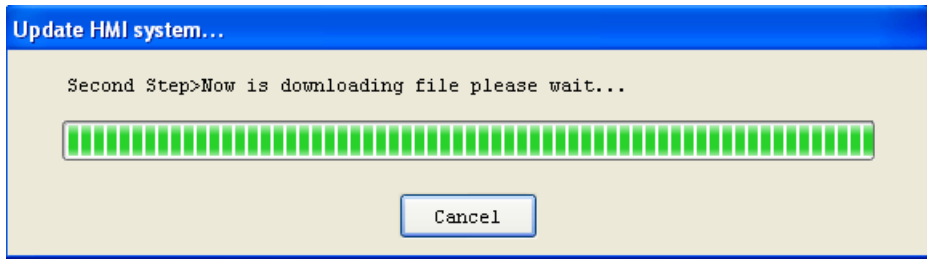
◆Do not cut off the power or disconnect the download cable during the downloading. After the download, will prompt user.

If you choose a graphic display of SGD-050 or SGD-050V, and connecting communication line of PLC to the COM1 before giving power on the display , then user can see the PLC register and the coil value of the graphic display has been read..

If user select the graphic display type is SGD-037, then need to cut off the power, unplug the download cable,insert the communication line between SGD-037 and PLC, finally give power to the display graphic. The user can see the communication with PLC has been established after the self-checking of the graphic display.

2.3.5 fault analysis and removal

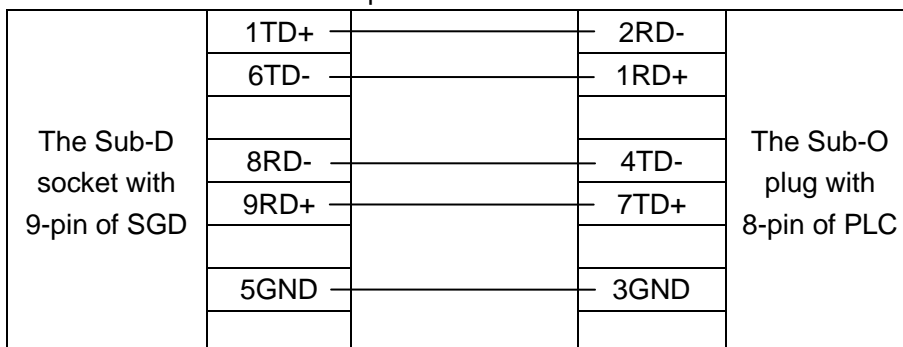| No.	Faults	Reason	Removal way
1	Without action after supplying	Incorrectness of positive and negative polar	Check the polar of supply
		The input voltage is lower than required	Use suitable supply
2	Unable to download project data	Incorrectness of cable connection	Use the original cable
		Without connecting well with download port	Break supply and connect to COM2
		Fault in USB transferring RS232	Change to COM2
		Incorrectness of serial port choice	Check the serial port configuration and cable
3	Unable to communicate with PLC after downloading	Mismatch of communication cable	Please use the original communication cable
		Mismatch of communication parameter	Please check the communication parameter
		PLC is not on work	Operate PLC

Chapter 3 Communication format and communication cable producing

3.1 Mitsubishi FX series and PLC

SGD series displayer can communicate with PLC of Mitsubishi FX series

Items	Content		
The communication port of SGD displayer	9pin communication port		
PLC communication port	Programming port or FX2N-422BD		
Default communication parameter	9600bps、7bit、1stop、Even		
Office number	0 office		
Communication distance (farthest)	70meters		
Communication mode	RS422		
Cable model	SGD-FX-CABLE		
	FX0S	FX0N	FX2N
Switch value of corresponding address	M000～M511	M000～M511	M000～M511
Digital value of corresponding address	D00～D31	D000～D255	D000～D511

SGD-FX-CABLE-A connection sketch map:

The Sub-D socket with 9-pin of SGD			The Sub-O plug with 8-pin of PLC
1TD+	————	2RD-	
6TD-	————	1RD+	
8RD-	————	4TD-	
9RD+	————	7TD+	
5GND	————	3GND	

For those without RS422 chip, users can adopt the follow connection method:

SGD-FX-CABLE-B connection sketch map:

The Sub-D socket with 9-pin of SGD			The Sub-O plug with 8-pin of PLC
2RXD	3.3K ——[ ]——	4TD-	
3TXD	3.3K ——[ ]——	1RD+	
5GND	————————	7TD+	
		2RD-	

Sub-O socket with 8-pin：

3.2 Siemens S7-200 series PLC

SGD series displayer can communicate with programming port or expander communication port of S7-200 series PLC by PPI protocal

Items	Content
The communication port of SGD displayer	RS485 communication terminal
PLC communication port	Programming port or expander communication port
Default communication parameter	9600bps、8bit、1stop、Even
Office number	2 offices
Communication distance(farthest)	100meter (twisted pair)
Communication mode	RS485
Cable model	SGD-S7-CABLE
Switch value of corresponding address	M000～M317
Digital value of corresponding address	VW000～VW4096

SGD-S7-CABLE connection sketch map:

3.3 Omron C series PLC

CPM1A and CQM1-CPU11 have one communication port, which need to transfer the programming port to RS232 and then communicate with SGD displayer by communication cable or communication module （CIF01-CAB）produced by Omron.
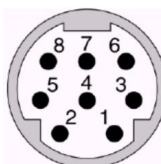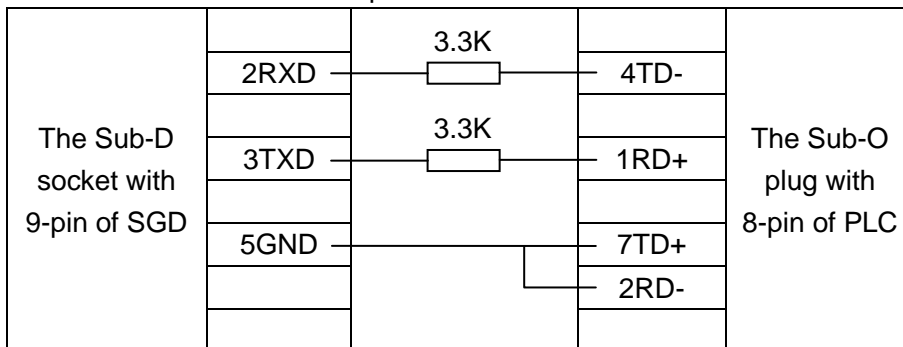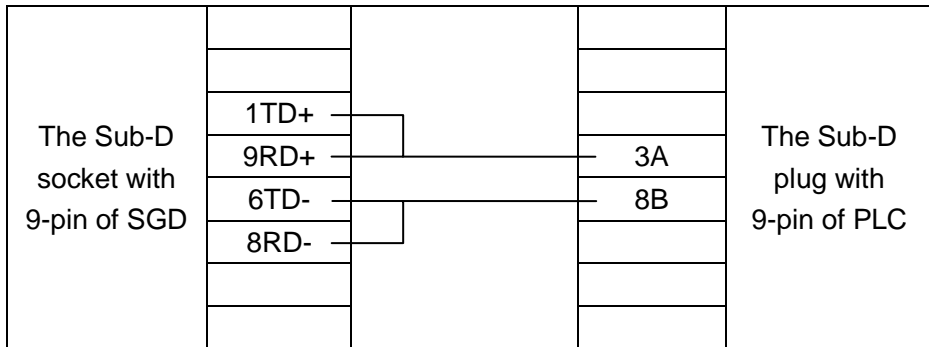
Items	Content
The communication port of SGD displayer	9 pin communication port
PLC communication port	Programming port or expander communication port
Default communication parameter	9600bps、7bit、2stop、Even
Office number	0 office
Communication distance(farthest)	15meter
Communication mode	RS232
Cable model	SGD-CQM-CABLE or CIF01-CABLE
Switch value of corresponding address	IR20000～IR22715
Digital value of corresponding address	DM000～DM1024

SGD-CQM-CABLE connection sketch map:

The Sub-D socket with 9-pin of SGD				The Sub-D plug with 9-pin of PLC
	2RXD ————		———— 2TXD	
	3TXD ————		———— 3RXD	
	5GND ————		———— 9GND	
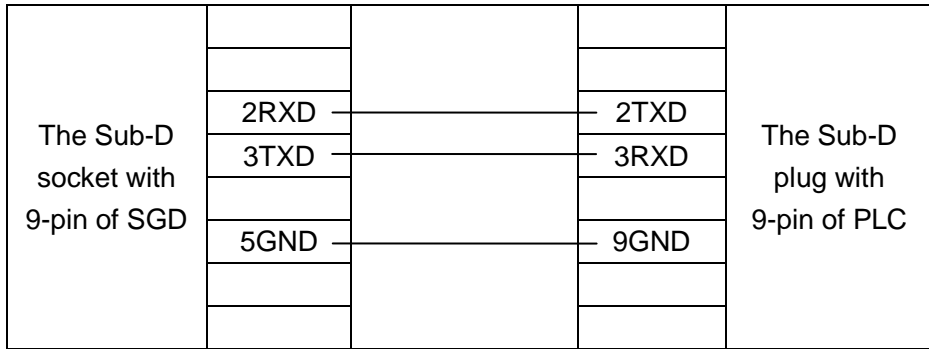
Note:The operating model of PLC should be monitored, otherwise, the data can not be written.

3.4 Schneider NEZA series PLC

SGD 100 can communicate with programming port of NEZA series PLC by modbus

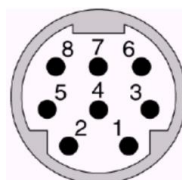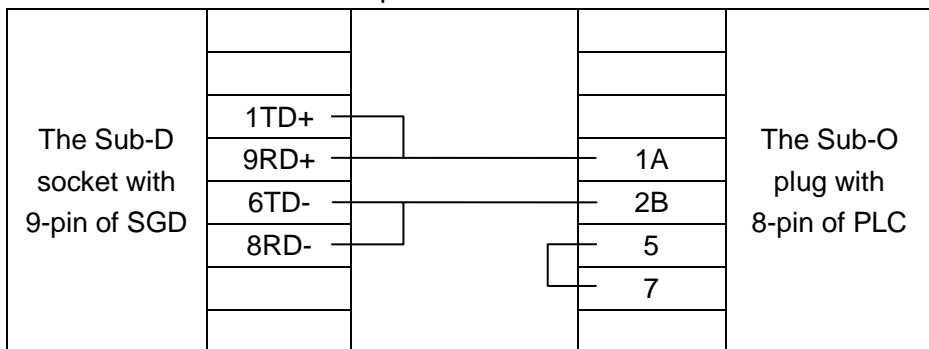| Items	Content
The communication port of SGD displayer	RS485 communication terminal
PLC communication port	Programming port
Communication protocol	Modbus Slave
Default communication parameters	9600bps、8bit、1stop、Even
Office number	1 office
Communication distance (farthest)	100meter (twisted pair)
Communication mode	RS485
Cable model	SGD-NEZA-CABLE
Switch value of corresponding address	%M000～%M127
Digital value of corresponding address	%MW000～%MW511

SGD-NEZA-CABLE connection sketch map:

| The Sub-D socket with 9-pin of SGD				The Sub-O plug with 8-pin of PLC
	1TD+			
	9RD+		1A	
	6TD-		2B	
	8RD-		5	
			7	

Sub-O socket with 8-pin：

3.5 Delta DVP series PLC

SGD series displayer can communicate with Delta DVP series PLC by the PLC programming port

Item	Content
The communication port of SGD displayer	Communication port with 9 pin
PLC communication port	Programming port
Default communication parameters	9600bps、7bit、1stop、Even
Office number	1 office
Communication distance (farthest)	15meter
Communication mode	RS232
Cable model	SGD-DVP-CABLE
Switch value of corresponding address	M0～M999
Digital value of corresponding address	D0～D599

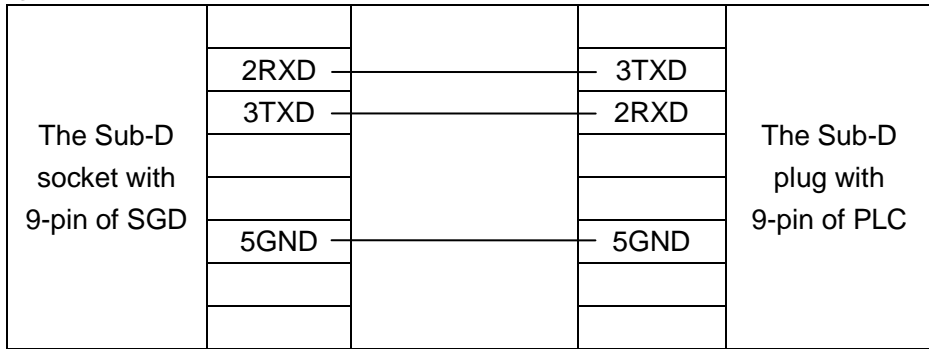SGD-DVP-CABLE connection sketch map:
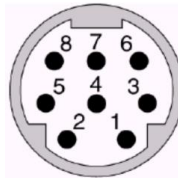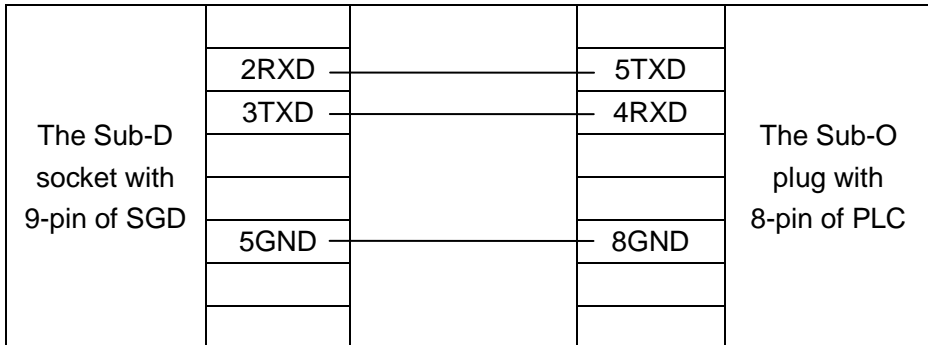
Sub-O socket with 8-pin：

3.6 LG Master-K series PLC(Programming port)

SGD series displayer can communicate with LG Master- K series PLC by Programming port.

Item	Content
The communication port of SGD displayer	Communication port with 9 pin
PLC communication port	Programming port
Default communication parameter	38400bps、8bit、1stop、None
Office number	1-31 office
Protocol	LG Master - K Programming port
Communication distance (farthest)	15 meter
Communication mode	RS232
Cable model	SGD-LG-CABLE
Switch value of corresponding address	M000～M191F
Digital value of corresponding address	D0000～D4500

SGD-LG-Prog-CABLE connection sketch map:

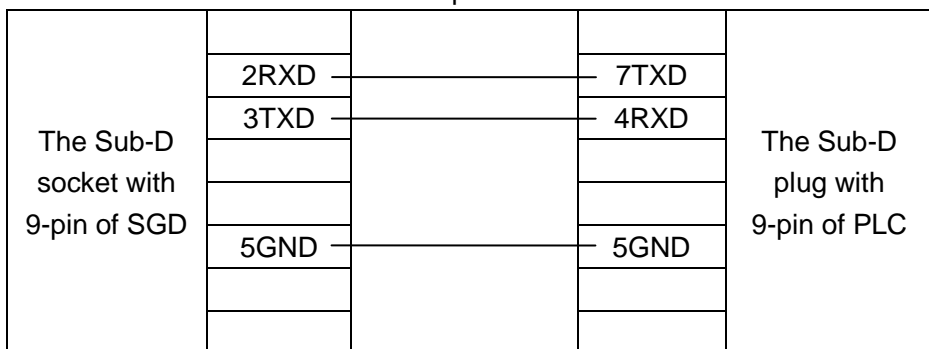| The Sub-D socket with 9-pin of SGD	2RXD ——————— 3TXD	The Sub-D plug with 9-pin of PLC
	3TXD ——————— 2RXD	
	5GND ——————— 5GND	

Note: Dial switch 1-OFF/2-ON

3.7 LG Master-K series PLC(communication port)

SGD series displayer can communicate with LG Master- K series PLC by communication port2

Item	Content
The communication port of SGD displayer	Communication port with 9 pin
PLC communication port	Port2
Default communication parameter	9600bps、8bit、1stop、None
Office number	1-31 office
Protocol	Modbus RTU
Communication distance (farthest)	15 meter
Communication mode	Rs232
Cable model	Sgd-lg-cable
Switch value of corresponding address	M000～m191f
Digital value of corresponding address	D0000～d4500

SGD-LG-Modbus-CABLE connection sketch map:

| The Sub-D socket with 9-pin of SGD	2RXD ——————— 7TXD	The Sub-D plug with 9-pin of PLC
	3TXD ——————— 4RXD	
	5GND ——————— 5GND	

Note: Dial switch 1-OFF/2-ON

3.8 Panasonic FP series PLC

SGD series displayer can communicate with Panasonic FP series by PLC programming port or expander communication port

Item	Content
The communication port of SGD displayer	Communication port with 9 pin
PLC communication port	Programming port or expander communication port
Default communication parameter	9600bps、8bit、1stop、None
Office number	1office
Communication distance (farthest)	15meter
Communication mode	RS232
Cable model	SGD-FP1-CABLE
Switch value of corresponding address	R0000～R875F
Digital value of corresponding address	DT0000～DT9999

SGD-FP-CABLE connection sketch map:
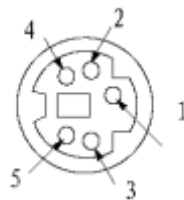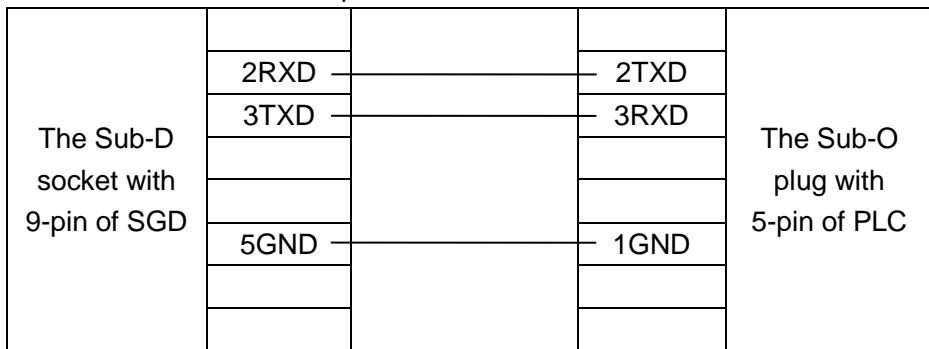
Sub-O socket with 5-pin:

3.9 YongHong FB series PLC

SGD series displayer can communicate with YongHong FB series PLC by PLC programming port or expander communication port

Item	Content
The communication port of SGD displayer	Communication port with 9 pin
PLC communication port	Programming port or expander communication port
Default communication parameter	9600bps、7Bit、1stop、Even
Office number	1 office
Communication distance (farthest)	15meter
Communication mode	RS232
Cable model	SGD-FB-CABLE
Switch value of corresponding address	M0000～M1911
Digital value of corresponding address	R0000～R8071

SGD-FB-CABLE connection sketch map:

The Sub-D socket with 9-pin of SGD			The Sub-D plug with 15-pin of PLC
2RXD	———————	2TXD1	
3TXD	———————	1RXD1	
5GND	———————	6GND	