SEC3002
Fire Alarm Control Panel
EN 54-2&4

INSTALLATION & COMMISSIONING MANUAL

Model: SEC3002

Fire Alarm Control Panel
EN 54-2&4

SANJIANG

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CONTENTS

1. About This Manual

This manual contains information necessary for the use of personnel engaged in the installation and commissioning of the SEC3002 Fire Alarm Control Panel, regarding the connection of the panel with its peripherals, programming of all the functions, etc.
This document does not cover panel operation or functionality. This data can be found in the separate Operating Manual.

2. Introduction

2.1 Overview

The purpose of the SEC3002 Fire Alarm Control Panel (FACP) is to monitor input signals, give indications and possibly activate outputs as programmed. It is designed to comply with EN 54-2 with qualities of simple installation, operation and easy maintenance.
The SEC3002 panel is an addressable fire detection panel with 1 loop of 324 addressable points and expansion capabilities. It is compatible with other peripherals made by Sanjiang with its own protocol.

2.2 Technical Specifications

Power supply		
Mains supply	220V/230VAC±15%. 47 ~ 63Hz. Max current 0.8A	
Mains fuse	T3.15AL250V	
Recommended mains cable	Screened cable, cable size 0.75mm^2	
Power rating	Imax.a=0.67A; Imax.b=2.6A; Imin=0.35A	
Max. charging current	1.2A	
Battery capacity, type and recommended model	Max. capacity 2×12V/17Ah; Min. capacity 2×12V/12Ah VRLA. PS-12170 for 17Ah (Power-sonic), LCPA1212 for 12Ah (Panasonic)	
Max. internal battery resistance	1Ω	
Battery fuse	F8AL250V	
Recommended battery cable	14AWG	
Quiescent current (full loaded)	< 0.4A	
Outputs		
S.C. Out (+, -)	Output voltage	18.5 ~ 27.5VDC
	Max. output current	0.5A
	Fuse rating	F1AL250V
	End of line resistor	4K7
	Type of cable	Plain unscreened cable, 1.5mm^2
	Cable diameter	1mm^2 ~ 2mm^2
	Transmission distance	≤1500m
	Max. number of sounders @50mA	20

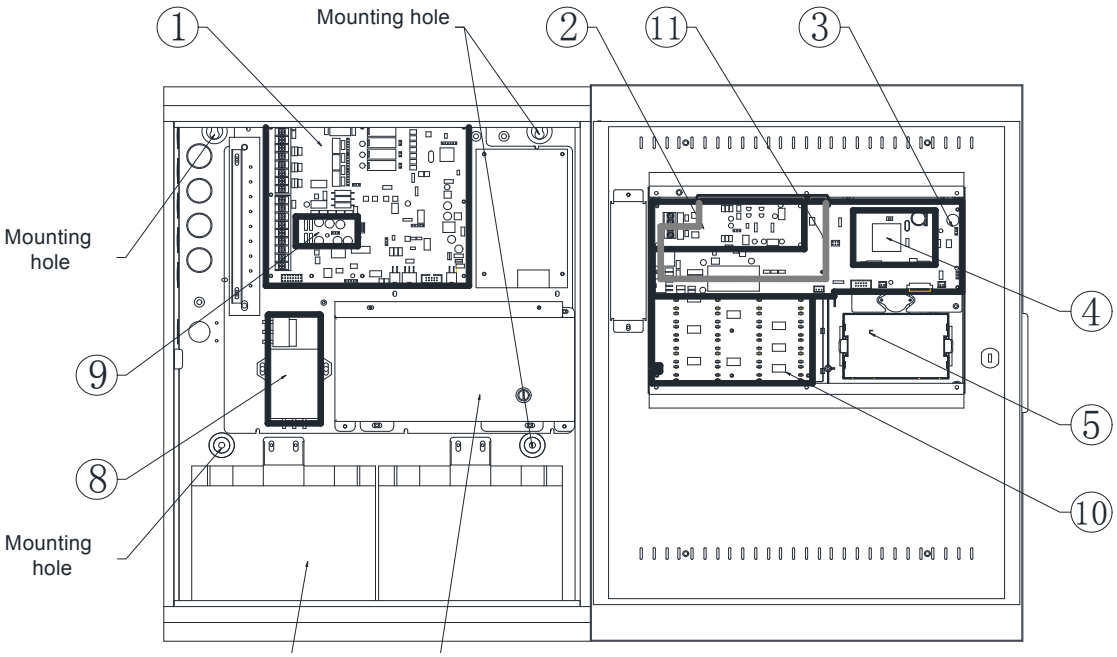
F.P.E. Out (+, -) F.A. Out (+, -)	Output voltage	18.5 ~ 27.5VDC
	Max. output current	0.5A
	Fuse rating	F1AL250V
	End of line resistor	4K7
	Type of cable	Plain unscreened cable, 1.5mm^2
	Cable diameter	1mm^2 ~ 2mm^2
	Transmission distance	≤1500m
Fault Out (NC, COM, NO)	Contact capacity	30VDC@2A, 125VAC@0.5A
	Type of cable	Plain unscreened cable, 1.5mm^2
	Cable diameter	1mm^2 ~ 2mm^2
24VK (+, -)	Output voltage	18.5 ~ 27.5VDC
	Max. output current	0.6A
	Fuse rating	F1AL250V
	Type of cable	Plain unscreened cable, 1.5mm^2
	Cable diameter	1mm^2 ~ 2mm^2
Input		
Class change (+, -)	Input mode	Passive
	Cable resistance	≤500Ω
	Type of cable	Plain unscreened cable, 1.5mm^2
	Cable diameter	1mm^2 ~ 2mm^2
Loop		
Loop Out (+, -) Loop In (+, -)	Output voltage	16.5 ~ 27.5VDC, pulse
	Output current	0 ~ 0.3A
	Loop type	Class A
	Type of cable	Screened or unscreened twisted-pair, 1.5mm^2
	Transmission distance	≤1000m
	Cable diameter	1mm^2 ~ 2mm^2
Network communication		
RS-485	Max. number of FIPs	30
	Transmission rate	9600 bps
	Type of cable	Screened or unscreened twisted-pair, 1mm^2
	Transmission distance	≤1000m
	Cable diameter	1mm^2 ~ 5mm^2
CAN	Max. number of panels	20
	Transmission rate	Optional: 10K, 20K, 50K and 100K bps
	Type of cable	Screened or unscreened twisted-pair, 1mm^2
	Transmission distance	≤1000m
	Cable diameter	1mm^2 ~ 5mm^2
Physical dimensions		
Approx. Dimensions of the panel (W×H×D)		430×560×170mm
Approx. weight (without battery)		12kg
Operating conditions		
Temperature range: 0°C~ 45°C; Max relative humidity: 95% (40°C ± 2°C, no condensation)		

3. Installation and Connections

The panel is supplied with a mental detachable exterior door, a mental front panel for operation and display, a mental back box and functional PCBs. Space is available inside the panel for the rated capacity of VRLA backup batteries, an optional communication board and additional loop board if applicable.

3.1 Panel's interior

The interior can be accessed by the key of the front panel provided.



①IO Board ②Communication Board ③B-Board ④A-Board ⑤Printer
⑥P.S.E ⑦Battery ⑧PSE Filter ⑨Loop SPU (surge protective unit)
⑩Zone Indication and Control Panel ⑪LED_Button Board

In general, the SEC3002 consists of 2 sections:

1. The right internal section contains the main processor of A-Board, the I/O communication interface of B-Board, the Buttons and LEDs Board, the ZCP board, the LCD and the Printer mounting area.

2. The left internal section contains the P.S.E (power supply equipment), the IO Board, the PSE Filter unit, the battery compartment, the mounting holes, cable knock-outs, as well as space for additional loop board if applicable.

P.S.E (refer to the separate manual of SEC3002_PSE for more details)

The P.S.E is an integral unit that provides power both for the panel and the backup rechargeable battery. And it is capable of monitoring the mains and battery states. With a 3A fuse in it and a PSE Filter besides, the P.S.E is protected from momentary high level voltage.

B-Board

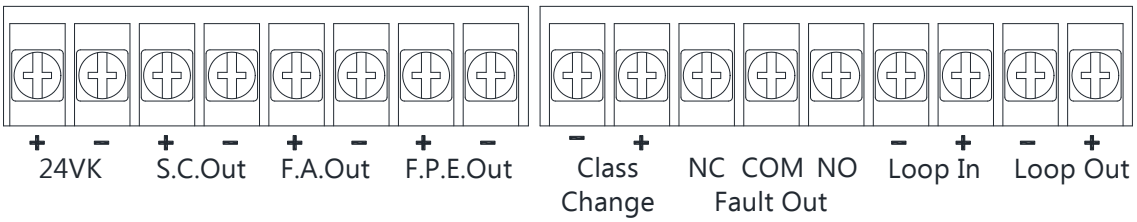
It provides connections for the main processor A-Board, the LED_Button Board, the Printer,

the LCD and the optional Communication Board; terminals of RS-485 and CAN bus for the communication between internal circuit boards.

IO Board

It generally contains terminals or interfaces for connecting the P.S.E, the internal B-Board, the loop devices, the Loop SPU, the additional loop board (if applicable) and other peripheral devices. The Loop SPU on it is to protect the loop from high energy voltage surges.

The diagram below shows the connection terminal blocks for field devices on the IO Board.

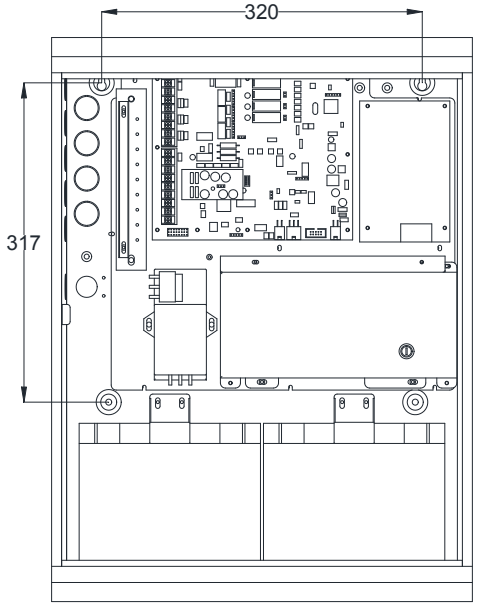


Communication Board (optional)

This board is optional for external communication with other panels or FIPs (fire indicating panel). Specifically, up to 20 panels can be networked with each other through the terminal pair of CANH and CANL on the communication board; the FIP is connected to the terminal of 485A and 485B, that is, communicates with the control panel using the RS-485 protocol.

3.2 Mounting the chassis to the wall

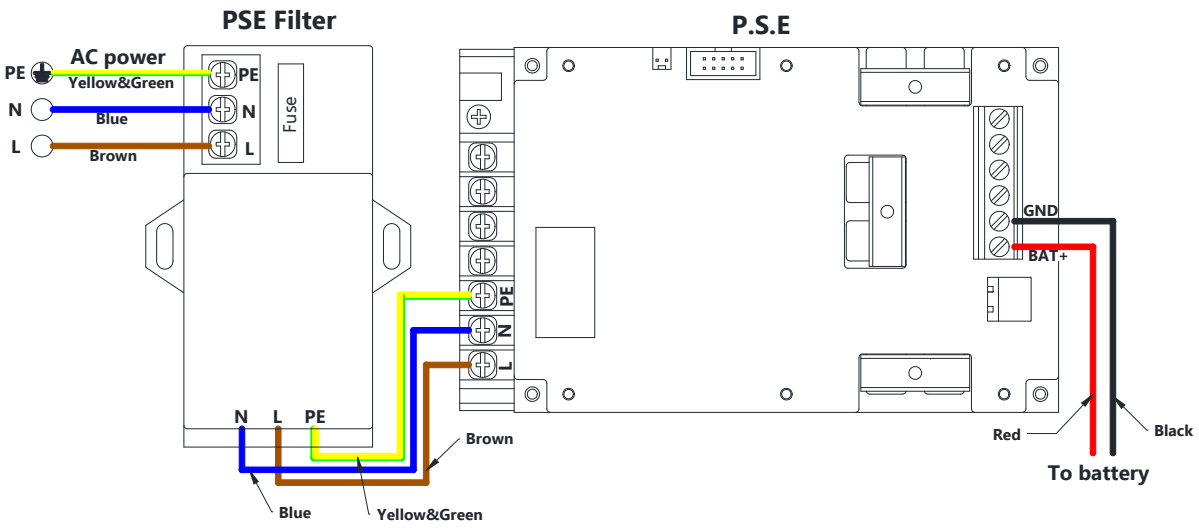
The panel can be surface or semi-flush mounted through the four mounting holes provided (the size of which is 6mm). See the diagram below about the mounting dimensions.



(Unit: mm)

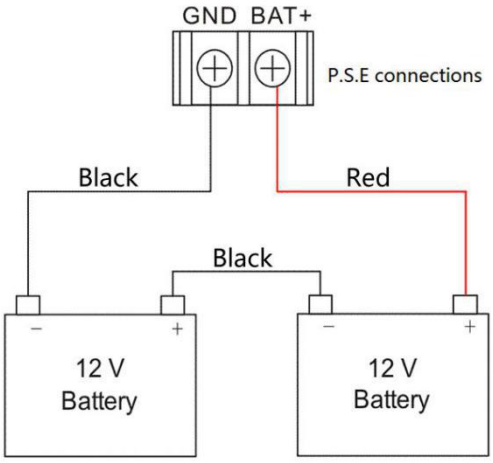
3.3 Mains connection

To connect the panel to the main power source, use a three-core cable with good quality cable glands fitted, and connect it to the P.S.E through a PSE Filter with a 3A fuse as the figure shows below.



3.4 Battery connection

For this single loop system, 2×12V/17Ah sealed lead acid batteries are used as per the calculation of battery capacity in section 6. The batteries should be connected in series first using the link wire supplied and be located within the panel enclosure. Then connect the battery wire leads to the P.S.E terminal connections.

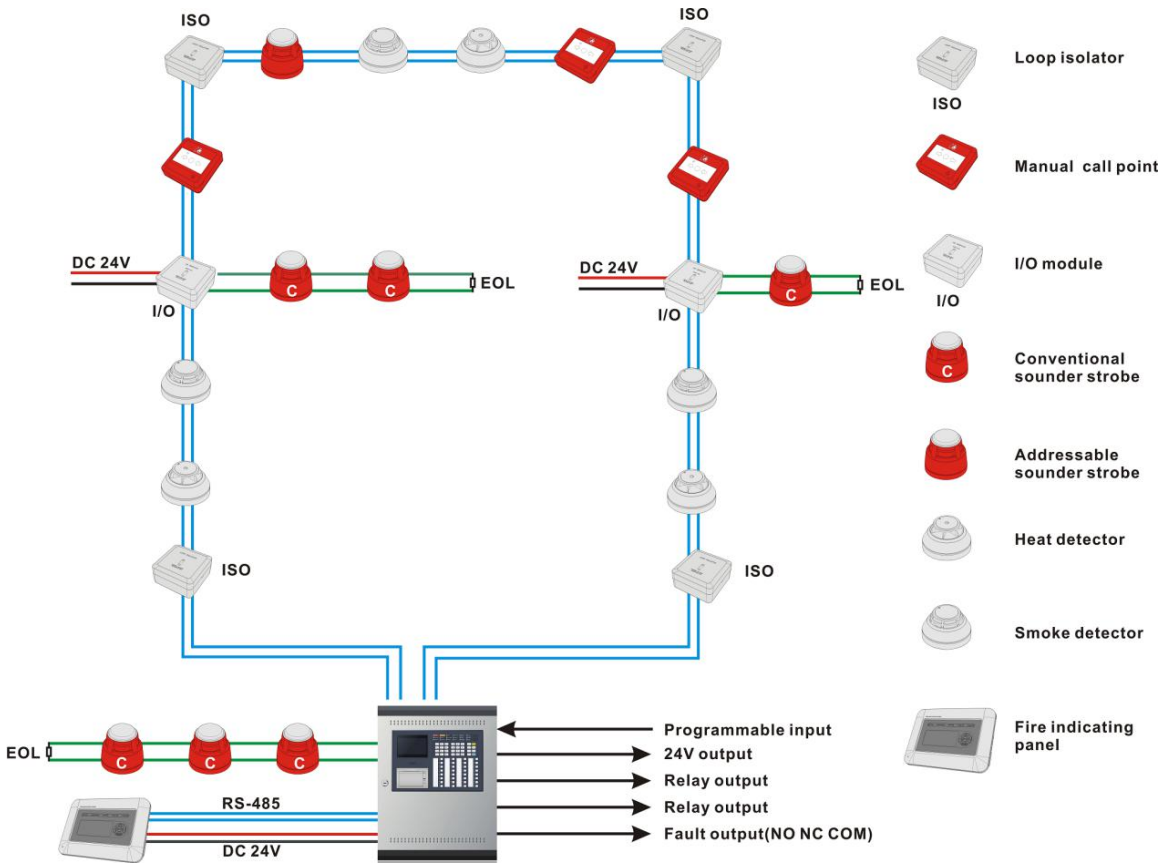


***Note**: Do NOT connect batteries before applying mains power first.*

3.5 Points connection to the loop

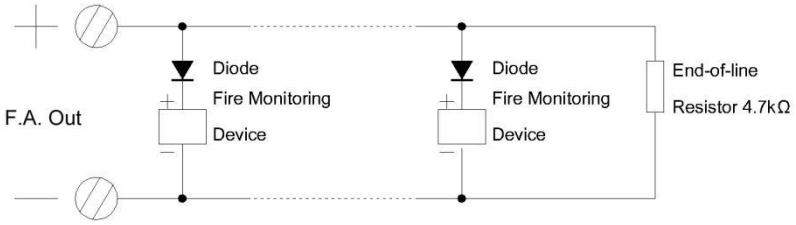
The figure in next page shows a typical loop connection complete with detectors, sounder strobes, modules and loop isolators. Both ends of the loop are connected respectively to the Loop In and Loop Out terminal block on the IO Board.

Means to limit the consequences of short fault on the loop is offered by containing loop isolators. At this point, a single short circuit fault will only disable devices in the section of wiring between isolators rather than disrupt the whole loop. Within 70s following the occurrence of short fault, the isolator will work. It is recommended to install the isolators at intervals not exceeding 32 addressable devices.

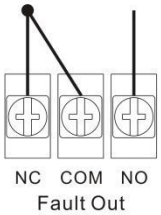


3.6 Other terminal connections

1. **F.A. Out** short for Fire Alarm Output: When there is a general fire the output is activated. A 4K7 end-of-line resistor (provided) is connected at the end of the circuit to allow the wiring to be monitored. If the circuit is unused, the 4K7 resistor must still be connected. A typical connection is shown below.



2. **Fault Out** short for Fault Output: The NO and COM are closed in normal state. When there is a general fault, this voltage free relay switches.



3. **F.P.E. Out** short for Fire Protection Equipment Output: When there is a general fire the output is activated by default. It can be disabled, therefore no output under disabled state. It

is also monitored for open and short circuit fault of its wiring. A typical connection is shown below.

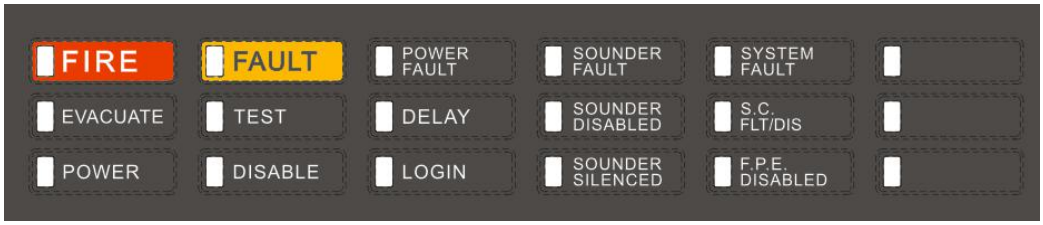
4. **S.C. Out** short for Sounder Circuit Output: A conventional sounder circuit is provided. When there is a general fire it activates the sounders connected by default. The sounders can be aborted and restarted by pressing the SILENCE/RESOUND button. It can be disabled, therefore no output under disabled state. It is also monitored for open and short circuit fault of its wiring. A typical connection is shown below.

5. **24VK**: It refers to a 24V power supply. It provides 24V output continuously and disconnects the power for about 2 seconds at the time the panel is reset.

6. **Class Change**: A programmable input. By shorting this terminal the S.C. Out port will be enabled to output immediately.

4. Indications and Controls

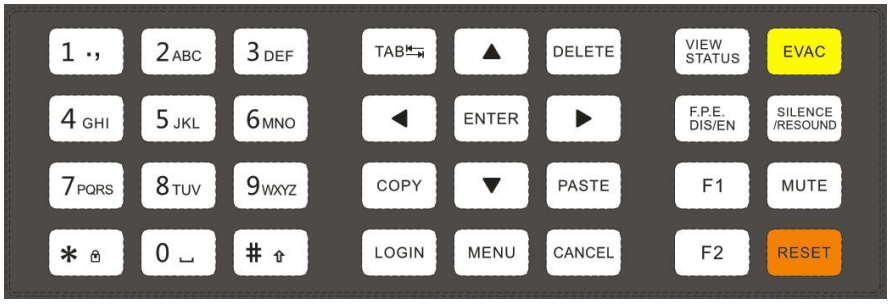
4.1 LED indicators



FIRE	Lit red when one or more devices are reporting a fire condition
EVACUATE	Lit red when the EVAC control button is pressed to activate all sounders of the system immediately
POWER	Lit green to show the panel's mains power or battery is functioning
FAULT	Lit yellow when one or more faults on the system are detected
TEST	Lit yellow when the panel is under zone test state. This indicator does NOT light for any other test which is not specified by EN 54-2

DISABLE	Lit yellow when one or more loop devices, zones or outputs are disabled
POWER FAULT	Lit yellow when the panel's mains power, battery or charger is in fault condition
DELAY	Steadily lit yellow when delay is configured as part of one or more cause and effect rules. Flashes when there is a delay running
LOGIN	Lit yellow when the panel is in access level 2 or 3
SOUNDER FAULT	Lit yellow when there is loop sounder in fault condition
SOUNDER DISABLED	Lit yellow when loop sounders are disabled
SOUNDER SILENCED	Lit yellow when all sounders of the system have been silenced by pressing the SILENCE/RESOUND button
SYSTEM FAULT	Lit yellow when the panel is unable to provide mandatory functions
S.C. FLT/DIS	Lit yellow when the sounder circuit output (S.C.Out) is disabled and flashes when it has a fault. Disable has priority over fault
F.P.E. DISABLED	Lit yellow to indicate the F.P.E. Out is disabled

4.2 Button controls



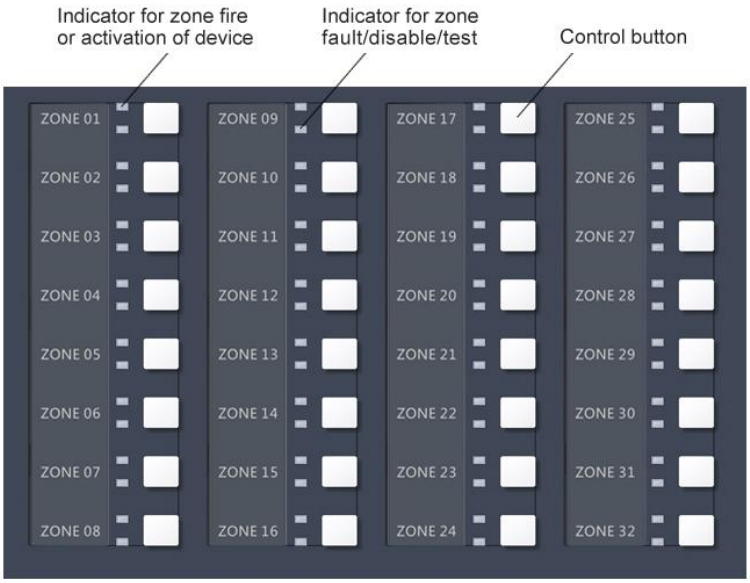
0~9, *, #	Used to enter numbers, letters and marks in a text box. Plus, * button provides access to LOGIN and LOGOUT windows at non-text-input state
TAB	Pressed to make the cursor move, or toggle between different items or windows from left to right, up to down
◄ ▼ ▲ ►	For toggling, scrolling, or moving the input cursor
DELETE	Deletes the character left to the cursor
ENTER	Confirms a text input or a manual operation
COPY	Copies the content of text selected currently
PASTE	Pastes the content of text copied to current text box
LOGIN	Provides access to the prompt window for user's login or logout
MENU	Provides access to the panel's user menus at access level 2&3
CANCEL	Used to cancel a navigation step or exit the current menu
VIEW STATUS	Displays the window of current alarm message (as appropriate). Then press TAB, ◄ or ► to go through fire, disablement or fault messages.

EVAC	Gives an evacuation warning by activating all sounders of the system at access level 2&3
F.P.E. DIS/EN	Disables or re-enables the F.P.E. Out at access level 2&3
SILENCE/RESOUND	Silences the system's sounders at access level 2&3. Press again to resound the sounders previously silenced
MUTE	Silences the panel's internal buzzer
RESET	Returns the panel to its normal condition by clearing all fire and fault status indications at access level 2&3
F1, F2	Reserved buttons

4.3 Zone indication and control panel

The panel offers 32 control buttons with a pair of indicator LEDs beside each button. After registering with default settings, the upper LED of a pair lights when a zone goes into fire. The lower LED indicates fault or disablement/test status of that zone (it flashes when there is any fault with the zone, it lights steadily when the zone is in disablement or test condition). The control button then is used to activate sounders in that zone.

Note: *Each unit of LEDs with a button corresponds to a zone by default settings. Besides, it can be defined to control a field device and give indication by configuring at Access Level 3 (refer to the ZCP setup function at section 5.2.3). In this case, the button is to start or stop the device and the upper LED lit to indicate a start command. It is strongly suggested that a label with a zone number or device name be stuck at the left of LEDs as a clarification of that unit.*



5. Commissioning and Programming

5.1 Overview

Commissioning is the setting to work of the panel after completion of all the installation and connection work. It includes registering and test of detectors and modules, setup of the zone indication and control panel, C&E programming and etc. All these functions are only available at access level 3, which are detailed by the following introduction.

5.2 Functions available at access level 3

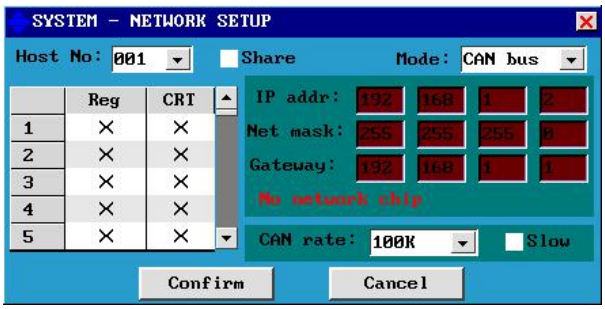
Press LOGIN button and input the six digital authorized password to get access to the following menu options.

5.2.1 System setup

Besides some basic system setup of changing time/password, adjusting LCD brightness and renaming the system as described at functions of access level 2 in the separate Operating Manual, configuration about network, fire indicating panel and printer can be completed.

Network setup

Select the network setup option under the menu category of SYSTEM, the following window (or similar) will appear.



The SEC3002's network protocol allows the interconnection of 20 SEC3002 main panels by CAN bus. To build a network, all panels should be registered on the central panel (Host No.1). Tick the 'Share' option if alarm signal of the central panel is required to be transmitted to the other sub panels. On the local sub panel, register the panels where its alarm signal is going to be reported. Only the registered panels on a sub panel will receive and display alarm signals from that panel.

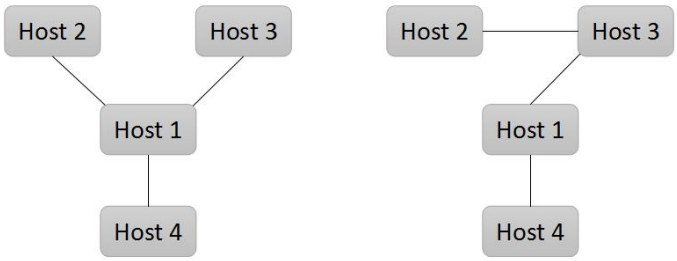
In network, the time of the system is based on the time of the central panel, that is, when the time of Host 1 is changed, time on other networking panels will be altered accordingly.

***Note**: All panels in a network should be set with the same transmission rate. The number of each panel should be different.*

There are 4 transmission rates: 10K, 20K, 50K, 100K. Some factors like the total number of network panels, the transmission distance of the system and the type of cable used should be taken into consideration. Commonly, twisted-pair cable is used for a network of 2-5 panels with the rate of 20K within 1000m.

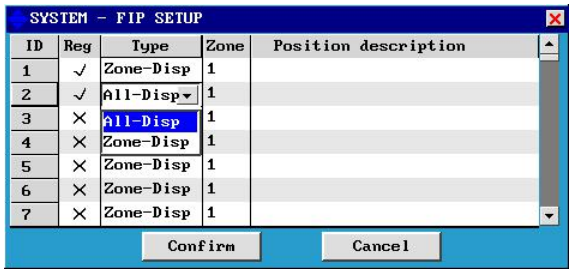
***Tips**: View the sending packets number and the receiving packets number on the bus through the 'Check BUS quality' menu option under the DISABLE/TEST category to see if they are close to each other, otherwise it means low ratio of success transmission where better to decrease the transmission rate or improve the transmission medium. In addition, when a CRT is involved in, it is regarded as a main panel and takes up a host number.*

***Caution**: The networking connection should be in series instead of a star or a ring way, otherwise abnormal communication will present.*



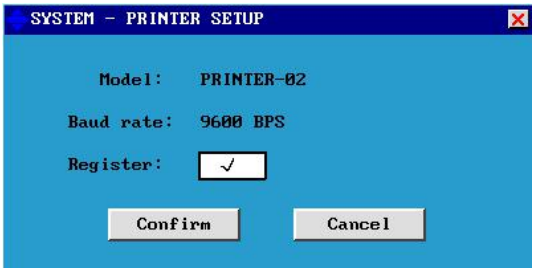
FIP setup

The FIP (fire indicating panel, also called as 'repeater') is a displaying terminal unit in the system showing alarm messages by connecting to the SEC3002 control panel through the RS-485 bus. It has two working modes: display all the alarm messages from the control panel, or only the messages of the zone where it is assigned to. Up to 30 FIPs can be included in this system. The setting window is as below.



Printer setup

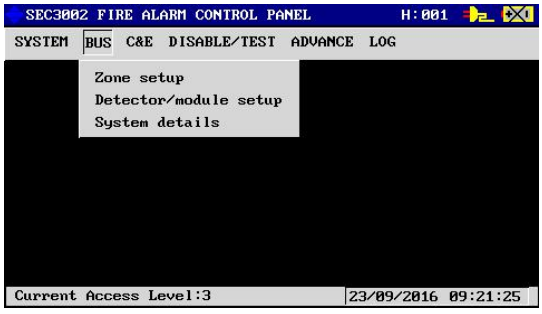
The standard printer of PRINTER-02 compatible to the panel can be registered through the menu option of 'Printer setup' under the 'SYSTEM' category.



Only when the printer is registered can it communicate with the panel and do print.

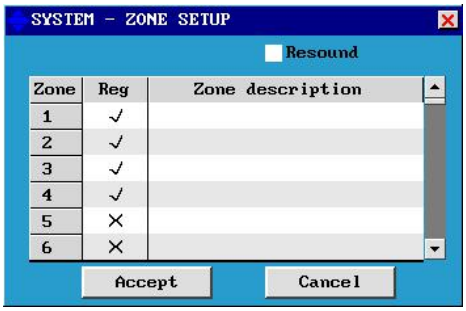
5.2.2 Bus setup

All configurations and commissioning relating to the bus is set under the BUS category, including naming of zones, registering and assignment of detectors/modules, and reading of the system details. The sub-menus are as example below:



Zone setup

When this menu option is selected, a window is shown to allow you to register and add a description for a specific zone, and to configure the 'Resound' option.

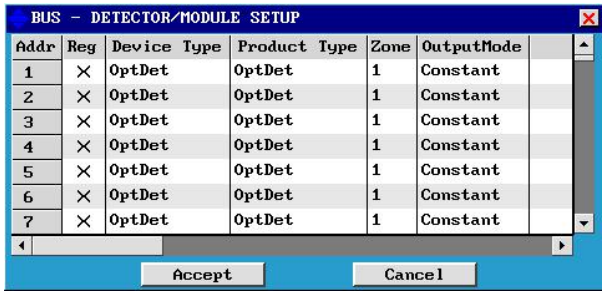


The 'Resound' function is selected to determine whether the silenced sounder(s) of all zones will be resounded on a new fire signal from any other zone.

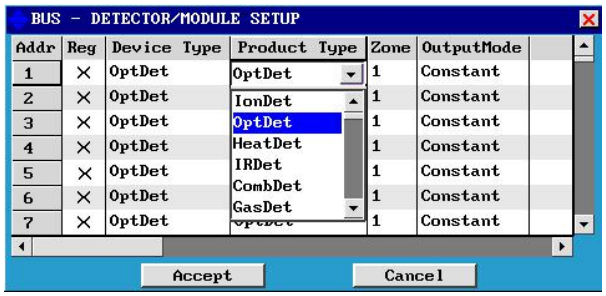
***Note**: When using the panel networking function, in order to avoid displaying confusion or communication error, try to configure and register different zones on different networking panels.*

Detector/module setup

All detectors and modules in the system can be configured under this setup window by completing the corresponding options.



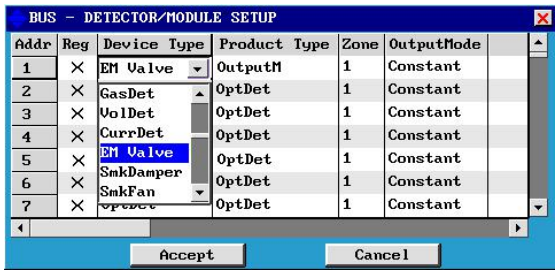
Tick the 'Reg' will register and assign the device to the loop with a unique 'Address' number. The following is the setup for the Product Type of a detector:



Since the Product Type is an inherent attribute of a field device, the optional product types provided in this system are listed as follows.

Ionization detector	Optical detector	Heat detector	Strobe
Infrared detector	Combination detector	JS input module	Gas detector
JK input module	Output module	Input/output module	I/O module-Broadcast
KZJ_LD module	Manual control button	Manual call point	Fire indicating panel
Fire hydrant call point	Sounder strobe	Sounder	

The following figure shows the setup for the Device Type of an output module:



Here, the device following the output module of address no.1 is an electromagnetic valve.

The Device Type is a concept specially defined for module devices, which refers to the type of device a module connects with. For example, the Device Type of an output module could be fire door, blow valve, etc.

Therefore for detectors, the Device Type and Product Type are generally the same. For modules, the Device Type and Product Type are usually different, except for the six special modules of manual control button, manual call point, fire hydrant call point, sounder strobe, sounder and strobe whose Device Type and Product Type are kept the same as detectors.

Refer to the Annex (device type list) for all the Device Type provided in this system.

The Zone refers to where a device belongs in the protected premises. It represents a detection zone for detector or manual call point, while representing an alarm zone for sounders. Except detector, MCP and sounder, it only indicates the geographical area the device is mapped to.

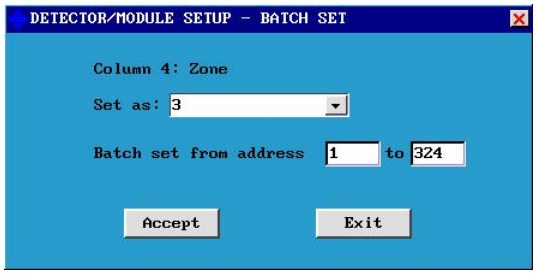
***Note**: When it comes to the function of disabling a zone, or the indication of a zone in a functional condition, it exclusively means a detection zone. For the default c&e function (see section 5.2.3), we consider the detection zone as the same area of the alarm zone with the same zone number.*

The Output Mode refers to the control mode of an output type module when transmitting signal to its following device. Thus, this option is ineffective to detectors or input type module. When Pulse is chosen, the output driver signal of the module will cut off after 5-10s. When Constant is chosen, the driver signal exists continuously. Constant is commonly set.

There are three Work Modes for detectors: Normal, Fast and Slow. It is recommended to use the Fast mode since Normal and Slow modes are adopted under some special applications.

Batch setup

If several devices with consecutive addresses have same features to be set, an alternative to configuring them all individually is to make a batch set. Double-click the option title to be set or press direction buttons to select one column and press ENTER, the setup window then pops up. Take the column of 'Zone' as an example:

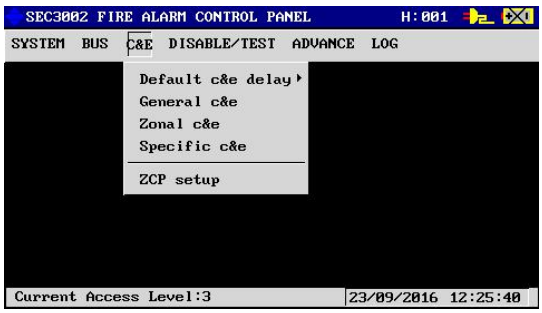


As the figure shows left, a range of addresses can be specified so that the devices involved are all assigned to zone 3.

5.2.3 C&E programming

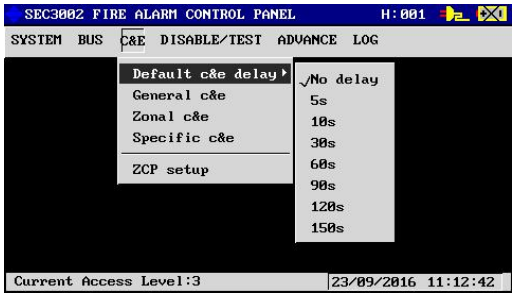
In the event of a fire, a default output of sounders will be activated. Besides this, outputs of specified modules can be set here as per requirements from the client/specifier.

Click by the USB mouse or press ► to select the C&E menu option. It shows 5 sub-menus:



Default c&e delay

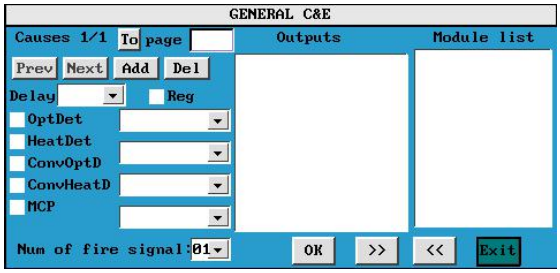
A default output is designed for the sake of c&e setting brevity, that is, the associated zonal sounder, F.A.Out, F.P.E.Out and S.C.Out (if applicable) will be activated when a fire occurs. Meanwhile, the default output to the loop sounders can be delayed by a time of 5s, 10s, 30s, 60s, 90s, 120s or 150s.



The delay function only applies to the associated loop sounders. Under no circumstance will F.P.E.Out, S.C.Out or F.A.Out be delayed when they are applicable.

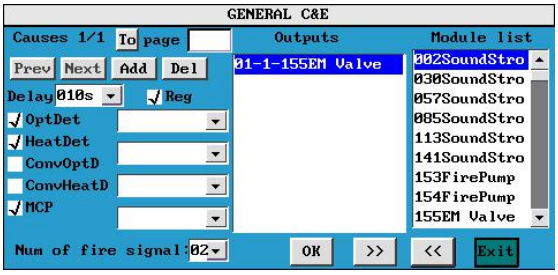
General c&e

The programming window is as follow:



It consists of two main parts: the Conditions (serve as the Causes) and the Outputs, which together can make a c&e rule. Under the Module List all output devices on the loop (sometimes sounders or other output device connected after output module) will be listed to be chosen as the Outputs. In general c&e setup, the Causes apply to all devices in the system. Press 'Add' to create a rule and press 'Del' to delete one. To enable a c&e press the 'Reg'. The default value of 'Num of fire signal' is '01', which means once there is one alarm signal generated from any of the given type devices the Outputs devices on the list will be activated after a period of time delay (as appropriate). The output will not be active until the number of fire signals is met.

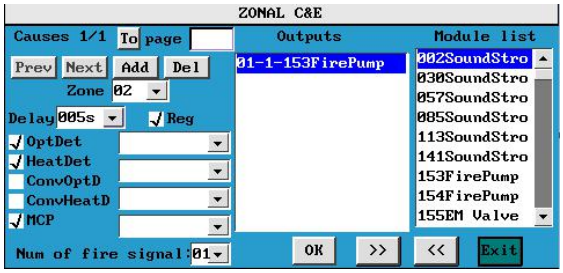
***Note**: For the function of overriding delays by activating any MCP in the system, it refers to the delay which is running. If the MCP used to override the delays is involved in another c&e rule with a time delay, it will again activate a new delay to the outputs as set. Pay attention to this when configuring to use the delay override function specified in the standard of EN 54-2 with Clause 7.11.1 d).*



The meaning of this c&e is when any 2 of smoke detector, heat detector or manual call point are active, the electromagnetic valve wired after the I/O module with the address of 155 will be triggered after 10s.

Zonal c&e

In this section, the Causes apply to devices in the given zone. The c&e meaning of the figure below is when any one of smoke detector, heat detector or manual call point is active in zone 2, the fire pump wired after the I/O module with the address of 153 will be triggered after 5s.

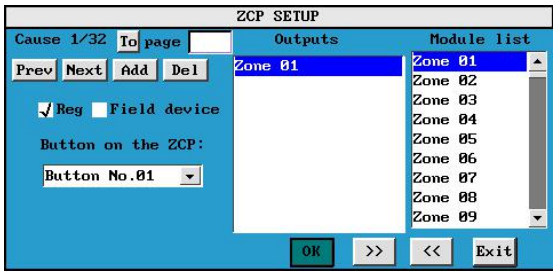


Specific c&e

In this section, the Causes can apply to specific devices by entering their assigned addresses. Maximum of 5 points can be set at one time. Here the meaning of its c&e rule is only when all the points set in the conditions are active, the outputs could take place.

ZCP setup

On the zone indication and control panel (ZCP), each of the 32 buttons is used to activate the loop sounders of a unique zone under default settings, i.e. at the authorized level of access level 2 or 3, pressing a button on ZCP will activate the matched zonal sounders. Additionally, for convenience of customized function, the button's utility can be defined additionally. The setup window is shown below.



There are 32 default configurations for each unit of LEDs with a button. Similar to the left, register the default setting so that each unit corresponds to a unique zone as it defines.

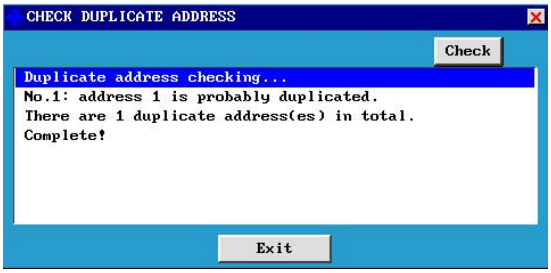
It is always recommended that the default settings be registered, except a start/stop control of a specified device with a button is specially expected, then tick the 'Field device' option and choose from the Module List a device that you want to match. Remember to change a label denoting it after configuration. Usually when the total number of zones configured is less than 32, you take advantage of this function. For example, the system is configured only to 20 zones, you may assign the other 12 units for controls and indications of some specific devices.

5.2.4 Disable/test functions

Besides the disable/test functions that can be carried out at access level 2, there are some other tests designed specially for the convenience of commissioning by authorized personnel at access level 3. They are point test, module start/stop and duplicate address check.

Check duplicate address

This function helps you to locate detector/module with duplicate addresses on the loop. When 'Check' clicked, it starts checking and the buttons are of no effect during the period. When complete, all duplicate addresses will be shown as below.

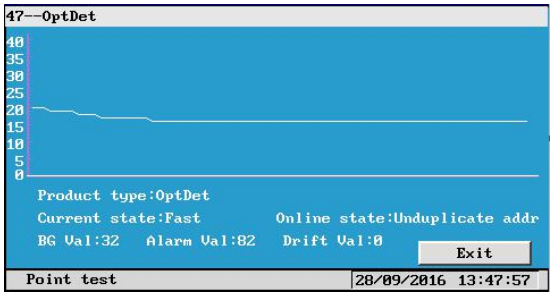


Point test

This function allows you to view the analogue status of any addressable point in real time. When selected, you will be prompted to enter the specific address of the device you want to put into test:

***Note**: It is commonly used for analyzing and locating faults, it will not exit until a manual operation or an event present, thus long time use is not recommended.*

Enter the target point and press OK to start the point test:



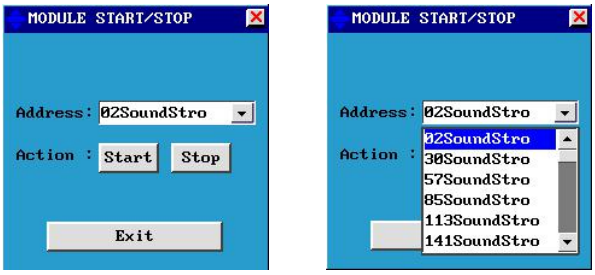
The curve indicates the change of smoke density in the no.47 smoke detector during the test. Here, the background value, alarm value and drift value only apply to smoke detector. Press Exit to stop at any time.

Module start/stop

This function allows you to trigger or stop an output type module to check the module and its following device are working correctly.

When selected, all the addresses of preregistered modules with their device type will be listed to be chosen from.

It provides an intuitive way for device commissioning individually.

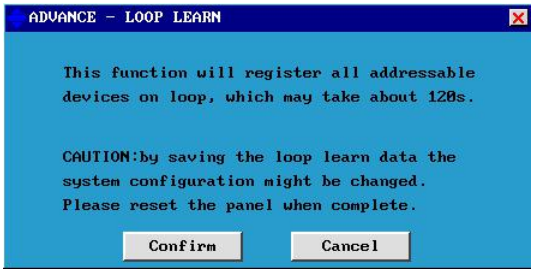


5.2.5 Advanced functions

Besides some essential system configurations mentioned above, this ADVANCE category provides supplementary functions for system commissioning including loop learn, data load/backup, file reset and update of the system.

Loop learn

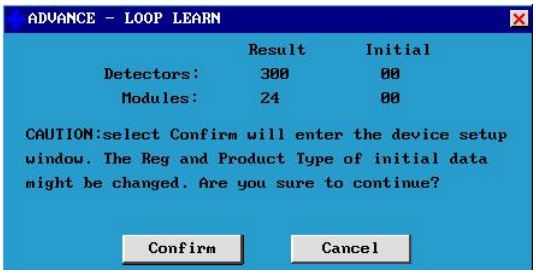
This function activates the panel's automatic loop learn facility. As it prompts below, the loop learn process may take about 120s and it cannot be stopped during the period.



When the auto-learn completes successfully, a comparison between the loop learn result and the initial data will be given. And as it prompts, selecting Confirm will get entry to the detector/module setup window with the Reg and Product Type data overwritten by the new auto-learned data, which means the previous system configuration will be changed. So take care about this before you continue with it. See the picture below.

Additionally, other attributes about the device will be set as default settings, for example, the devices will be all assigned to zone 1 which can be modified as designed later.

When the time counted is over, the loop learn fails and it prompts timeout error.

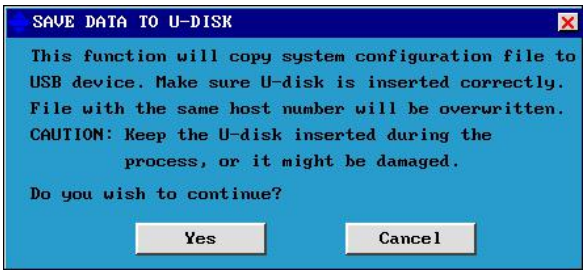


Save data to U-disk

This function will copy the file of system configuration to the U-disk you insert at the top right USB port of the front panel.

***Note**: Choose a U-disk of capacity within 32G and make sure its file system is FAT32 or FAT16, otherwise format it on computer. The remaining capacity of the U-disk should be above 2M for data backup*.

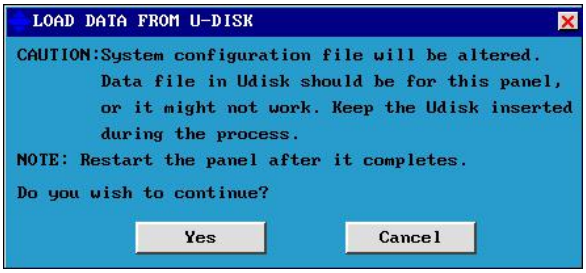
Take the prompt as reference:



Press 'Yes' to start copy. The process might take about 30-60s and other function will be suspended.

Load data from U-disk

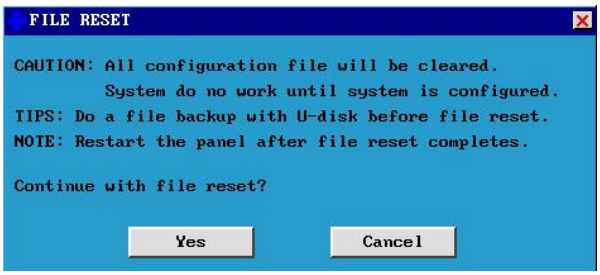
This function will load the configuration file from U-disk to the panel's flash and overwrite the panel's existing data. So this function must be used with care.



When it completes, restart the panel to take the newly loaded data into effect.

File reset

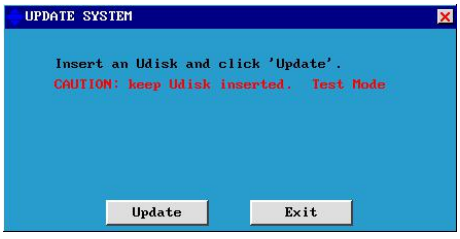
This function allows you to clear the panel's memory back to its factory default settings. It is such a vital operation that only authorized user of level 3 could operate and you should make sure that you are willing to do so. Better to follow its tips:



Restart the panel after it indicates the file reset completes.

Update system

The system allows to be updated on site with additional functions by using a U-disk at the authorized engineer level for future development. Copy the file needed to the U-disk and insert it to the USB port. Click 'Update' then the panel starts to recognize the data. Operating as the prompt says will complete.

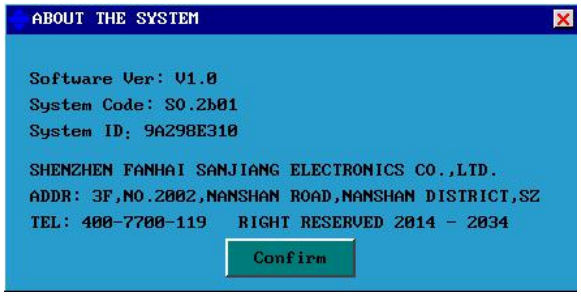


5.2.6 View system and software version info

The system information as well as the version of each processor with program can be read

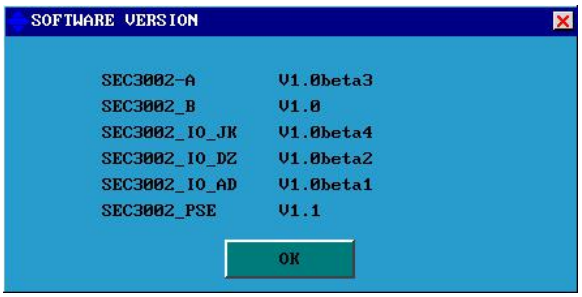
through the corresponding menu options under the category of 'LOG'.

System information



Software versions

The version for each program of the control panel can be identified under this window. Meanwhile, there will be a label regarding the version stuck on or beside each processor for convenience.



6. Battery Capacity Calculation

The standby time of the fire alarm control panel after the main power source has failed depends on the quiescent load of the panel, the alarm load of the panel, and the capacity of the batteries. To determine the capacity of batteries required in a system, the following formula is used:

$$\text{Battery capacity (Ah)} = 1.25 \times (T_1 \times (I_{Fq} + I_{Lq}) + T_2 \times (I_{Fmax} + I_{Lmax} + I_{Rout}) + [(T1+T2) \times I_P])$$

In which,

The multiplier 1.25 is present to account for loss of capacity over the life of the battery.

I_{Fq} = 0.3A, which is the quiescent current of the fire alarm control panel in the event of the loss of the mains supply;

I_{Lq} is the quiescent current of the loop load, which is determined by the number of loads. The quiescent current of a smoke detector, a heat detector, or a manual call point is typically 0.0002A (or 200μA), while that of a module/sounder strobe is 0.0025A (or 2.5mA);

I_{Fmax} = 0.32A, which is the alarm current of the fire alarm control panel;

I_{Lmax} is the maximum loop current. The alarm current of a smoke detector, a heat detector, or a manual call point is typically 0.001A (or 1mA), while that of a sounder strobe is 0.08A (or 80mA);

I_{Rout} is the alarm output current of the panel's three relays, which is determined by the number of loads they connect;

I_P = 0.02A, which refers to the optional printer's current consumption;

T_1 is the amount of standby hours required (most commonly being 24 hours);
T_2 is the amount of alarm hours required (most commonly being half an hour).

Take the system of 324 points with a printer as an example: there are 312 addressable detectors, 12 input/output modules, 12 conventional sounder strobes, 12 loop isolators and 3 full loaded relay output.
Thus,

I_{Lq} = 0.0002 x 312 + 0.001 x 24 = 0.086A,
I_{Lmax} = 0.001 x 312 +0.08 x 12 = 1A,
I_{Rout} = 0.5 x 3 = 1.5A,
Battery capacity = 1.25 x (24 x (0.3+0.086) + 0.5 x (0.32+1+1.5) +[(24+0.5) x 0.02])
= 1.25 x (9.264 + 1.41 + 0.49)
= 13.95Ah

7. Maintenance and Troubleshooting

7.1 Maintenance

Periodic maintenance should be carried out on the system as prescribed in the local design, maintenance and installation regulations.
The key to the panel shall be kept by specially assigned maintenance personnel.
The standby batteries should be periodically checked for integrity of the connections. And a period of 5 years is recommended to replace the correct type of battery.

7.2 Troubleshooting

Solution of all suspected faults MUST only be carried out by suitably qualified technical engineers.

- **Problem**: apply power to the panel but the LCD display is off and panel does not work.
  Possible reason and solution: check if the fuse on the PSE Filter blows out; Check if the POWER indicator on the front panel is on, otherwise something is wrong with the P.S.E that the manufacturer should be informed.
- **Problem**: both mains fault and battery fault are reported.
  Possible reason and solution: check whether the power state feedback cable is properly connected between the IO Board and the P.S.E; It may be due to the reason that the mains is in fault condition while battery is at low voltage.
- **Problem**: a fault of loop open is reported.
  Possible reason and solution: check if the connector to the terminal of Loop Out or Loop In is loose; Check if the circuit between Loop Out and Loop In exists an interruption.
- **Problem**: a fault of loop short is reported.
  Possible reason and solution: check if the polarized terminals of Loop Out and Loop In are connected right, that is, ensure the signal from Loop Out (+) is not back to Loop In (-) by mistake but to Loop In (+); Check if a short circuit exists on the loop and repair.
- **Problem**: alarm sounders cannot be activated when a fire signal is generated.
  Possible reason and solution: read the specific fault message regarding the sounders and repair; Make sure sounders are powered by 24V; Check the cause and effect configuration about sounders activation.

- **Problem**: the F.P.E.Out, the F.A.Out, or the S.C.Out is reported fault.
  Possible reason and solution: ensure that a 4K7 EOL resistor is well connected to each of the three ports; Check if the corresponding fuse of F2, F3 or F4 on the IO board blows out; Check if the jumper of JP3, JP6 or JP10 beside the fuse is slipped over the pins accordingly.
- **Problem**: no indication is given by the ZCP when there is a zonal fire, zonal fault, etc.
  Possible reason and solution: the setup for ZCP is not registered; The ZCP circuit board is disconnected or damaged; Check the ZCP board and register under the ZCP setup window.
- **Problem**: a printer communication fault is reported.
  Possible reason and solution: check if the cable between the printer and the B-Board is connected or not; The printer may be powered off by pressing the SEL button on it that the indicator is off.

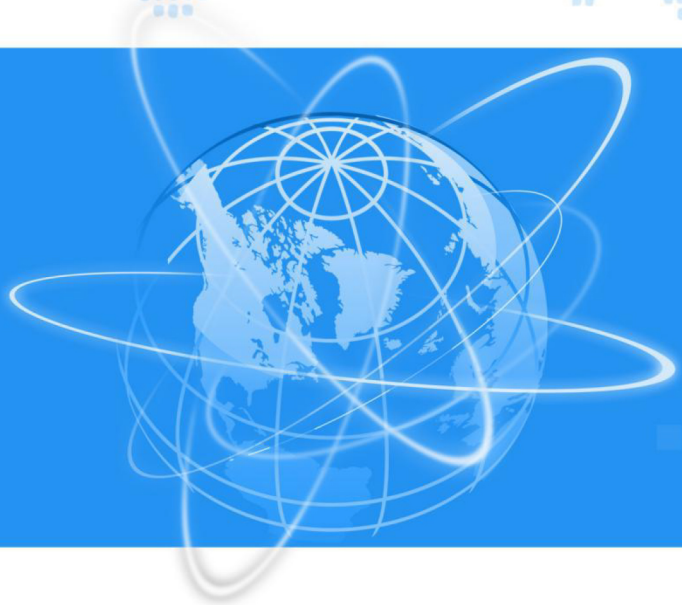
Annex - Device type list

Device	Abbr.
Ionization Detector	IonDet
Optical Detector	OptDet
Heat Detector	HeatDet
Infrared Beam Detector	IRDet
Combination detector (smoke and heat detector)	CombDet
Combustible Gas Detector	GasDet
JS Input Module	JSInputM
JK Input Module	JKInputM
Output Module	OutputM
Input and Output Module	IOModule
Input and Output-Broadcast	IO-Bcst
KZJ-LD C&E Module	KZJ-LD
Manual Control Button	MCB
Manual Call Point	MCP
Fire Hydrant Call Point	HydrCP
Sounder Visual Indicator/Sounder Strobe	SoundStro
Sounder	Sounder
Visual Alarm/Strobe	Strobe
Alarm Bell	Alarmbell
Conventional Optical Detector	ConvOptD
Conventional Ionization Detector	ConvIonD
Conventional Heat Detector	ConvHeatD
Conventional Infrared Beam Detector	ConvIRD
Conventional Combination Detector	ConvComD
Heat Cable	HeatCable
Pressure Switch	PresSwitch
Flow Indicator/Detector	FlowIndi
Voltage Detector	VolDet
Current Detector	CurrDet
Electromagnetic Valve	EM Valve
Smoke Exhaust Damper	SmkDamper
Smoke Exhaust Fan	SmkFan
Blow Valve	BlowValve
Blower	Blower
Fire Damper	FireDamper
Fire Door	FireDoor
Door Closer	DoorCloser
Door Holder	DoorHolder

Door Sensor/Magnetic Contact Switch	DoorSensor
Deluge Valve	DelugeVal
Generator	Generator
Stabilized Pressure Pump	PressPump
Fire Pump	FirePump
Foam Pump	FoamPump
Water Pump	WaterPump
Air Conditioner	Air-con
Fire Emergence Evacuation Broadcast	BCST
Fire Emergency Lightning	EmLight
Fire Evacuation Indicator	EvacIndi
Broadcast Module	BCST-M
Fire Indicating Panel	FIP
Power Supply Box	PSB

CREATE A SAFE WORLD

ENJOY A SMART LIFE



SANJIANG

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