Fire Alarm System

Equipment

Conventional Fire Alarm Control Panel: 5L/10L

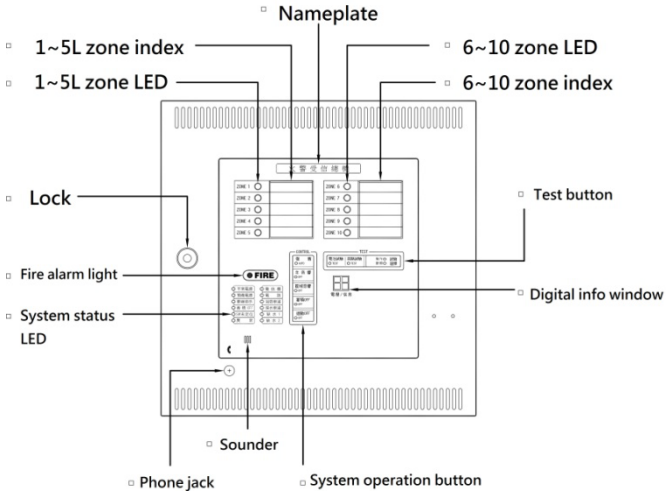
Operation

Manual

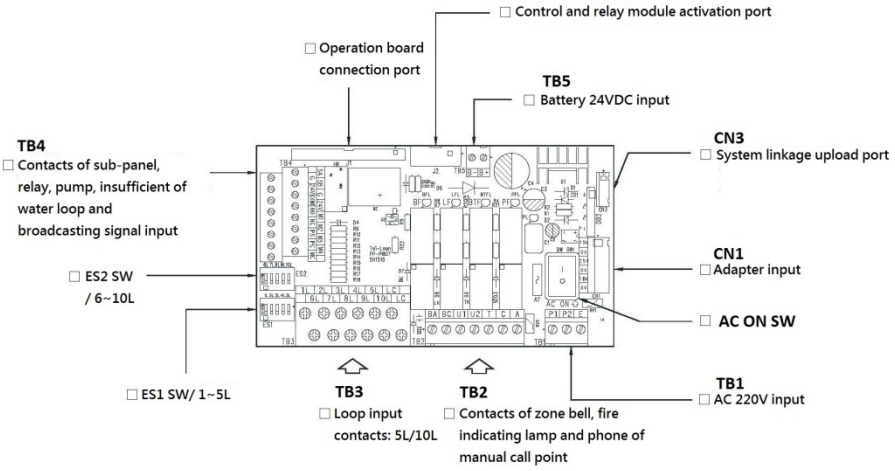
20200410 v.1

Contents

1. Appearance



2. Power Control Board



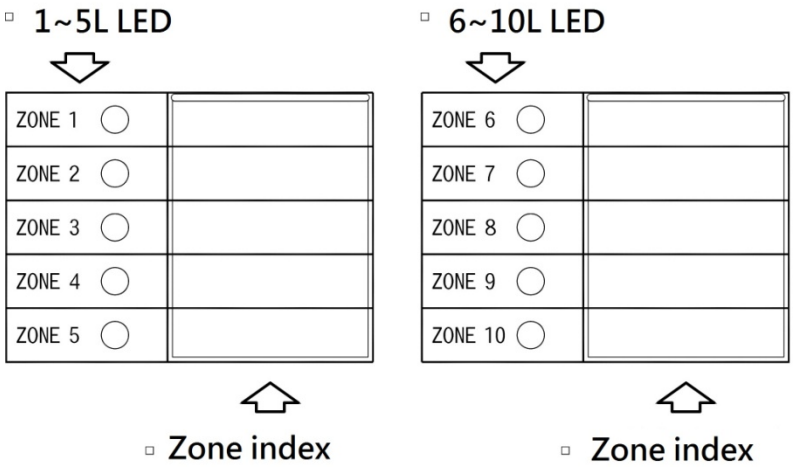
3. Specification

Item	Specification
Power	Power Source：AC220V 50/60Hz
	2. Standby Battery：DC24V 1.2AH/-Battery: When lower than DC21V, stop supplying electricity.
	3.Power Consumption： MAX current when alarming: DC24V 1A/5L MAX current when alarming: DC24V 1.5A/10L
	4.Grounding point: 〝≒〞
	5. Fuse Specification： □ AF—AC220V/Self-Reset 0.55A（Max. Current: 7A） □ PF—DC24V 3A/- DC Power □ BTF—DC24V 3A/-Battery □ LF—DC24V 1A/-Fire Indicating Lamp □ BF—DC24V 1A/-Zone Bell
Monitoring Zone	NO passive switch input（M1~M4、MC） Fire alarm pump, water pump, insufficient water 1, insufficient water 2
Loop	1.Monitoring Current：DC24V 10mA/L
	2.Working Current：DC24V 24mA/L
	3.Maximum Output：1.5mA DC24V/-Loop
	4.Smoke Detectors& R.O.R Heat Detector& Fixed Temperature Detector …etc, are applicable
	5.Rated impedance: under 50Ω

	6. Action impedance below 600Ω, and disconnection detection impedance above 16KΩ
	7.E.O.L resistor: 10KΩ¼W
	8. Grounded insulation resistance of loop is above DC250V 2MΩ.
	9. Concurrent (COM) loop⊖
Outputs	1.Zone Bell Output: DC24V 0.6A（BA⊕、BC⊖）
	2. Fire Indicating Lamp Output: DC24V 0.2A（U1⊖、U2⊕） *Fire Indicating Lamp : Always light on in normal status. When there is an alarm, it will flash to indicate.
	3. Relay Output NO& No-Voltage NO Contact（COM、NO、NC） Contact Capacity:AC250V 2A
	4.Controlling module& Relay module activation port J2/12P 2.54 connector（Optional item /see details in P11）
Input of broadcasting system	1. Broadcasting Relay: NO passive switch input（PS⊕、PC⊖）
	2. Force Zone bell stop ringing when broadcasting system is activated. (OPTIONAL)
Phone	1.Phone Handset 2 pieces
	2.Communication between Manual Call Point phone jack and FACP phone jack.（T⊕、C⊖）
E.O.L Switch	1. ES/1~5L，Switch to ON when the zone is empty.
	2. ES/6~10L，Switch to ON when the zone is empty.
Setting Port	1. System Linkage port: CN3
	2. Appointed Cables: 5P 2.5CN
Sub-Panel Connection	□ RS-485 Port（SA、SB）
	1. 20AWG-1Pr/PE aluminum isolated wire. （appointed wire）

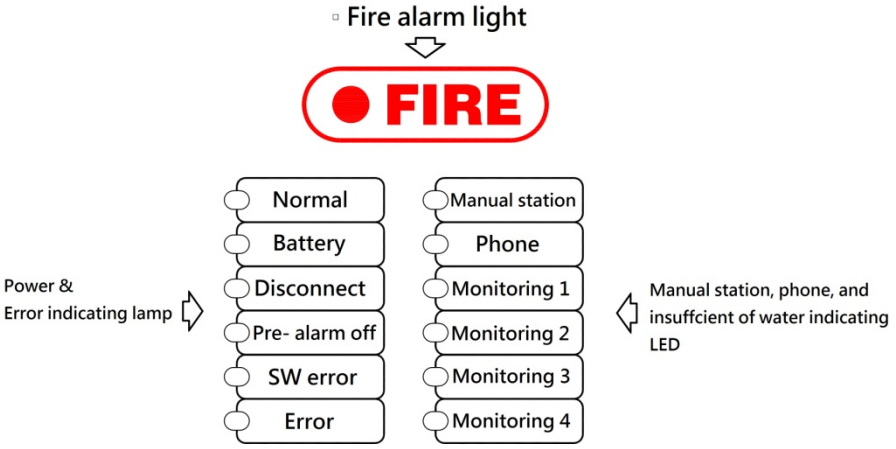
	2. Communication distance: 1000M MAX
	□ DC24Vwire: 1.6-2/HR（24V⊕、G⊖）
	□ Phone handset（T、C）1.2-2/HR（The connection quality will be better if applying isolated wires）
	□ Sub- Panel :DC24V（24V⊕、G⊖）offered by the FACP. (offered by FACP electricity: Maximum: 4 pieces, for 5pcs above need to connect with extra power supply) □ Sub-panel maximum connection capacity will be 31 pieces.
	□ Wiring
	1. The above wiring must adopt 1" EMT dedicated piping.
	2. The wiring is insulated from the ground DC250V20MΩ or more, and needed to confirm that the wiring is not contacted at either end of AC220V.
	3. The contacts（SA、SB、G、24V）of Communication wires and electronic wires contacts must not reverse the polarity connection, otherwise the LOOP board might be burned.

4、Zone LED/ Index



Zone LED	Zone Index
• **Fire Alarm**： When zone detectors detect abnormal signals, the zone LED will be “ON” immediately, which indicates the FACP is in alarm status. • **Disconnection**： When loops/detectors are disconnected, or end resistors fall off, the zone LED will be “flashing” to indicate the zone has problems. (should check/fix immediately)	• **Index card**： FACP with 2 sets of zone index cards. • **Index Method**： After system tests, insert the index cards with defined zone name into zone index.

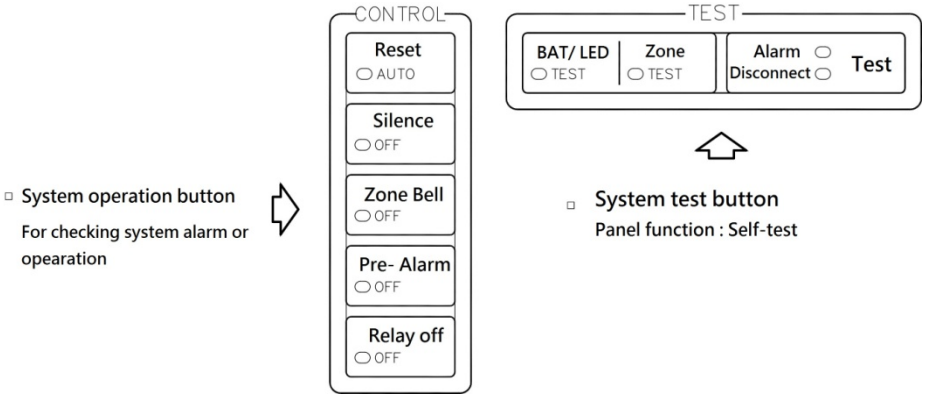
5、System Status LED



- **Fire Alarm Light**：The LED will be “flashing” when any zone receives fire alarm signal.
- **Normal**：The LED green light that indicates AC power supply in normal status.
- **Battery**：This LED will be “flashing” when AC power is disconnected. The LED will be off when under standard voltage, which indicates the battery is in self- protection status.
- **Disconnect**：The LED will be “flashing” when any zone is disconnected, which also indicates this zone need to be checked or fixed immediately.
- **Pre-Alarm OFF**：The LED will be “flashing” when this function is on. If any zone receives fire alarm signal, the linkage equipments are going to be triggered simultaneously without pre-alarm notice.
- **SW Error**：The LED will be “flashing” if any button on panel is not positioned.

- **Error**：The LED will be “flashing” when the power is gone, or fuse is burnt, or communication of loop board is broken. This needs to be checked/ fixed immediately.
- **Manual Station**：The LED will be “flashing” when the manual station is activated.
- **Phone**：The LED will be “ON” when receives calls from the other side.
- **Monitoring contacts(TB4/M1~M4)**：The light will be ON when receives NO signal, and the light goes off when signal is gone.

6、System Operation Button



Switch	Description
Reset	1. System Reset After the alarm signals are fixed, press this button to get FACP back to monitoring status. If there is any zone light still “ON”, must check the loop is either alarm or malfunction.

	2. Auto reset Under normal status, press and hold this button until the LED (AUTO) is “ON”. The alarming loop will auto-reset every 15 seconds, please check the loop signal if reset is invalid.
	3. To cancel this function, press and hold the button until the LED (AUTO) is OFF.
Silence	1. Main sounder **once** Press this button to mute the main sounder (including the system alarm signals & malfunction beep sound). If receives alarm signals again, just repeat the operation above if want to mute again.
	2. Main sounder **stop** Press and hold this button until the LED (OFF) is “ON”, then, the FACP stop warning sound of alarm& malfunction. Press and hold this button until the LED (OFF) is “OFF” to resume the warning sound.

Zone Bell	1.Zone Bell Stop（Mode A） Following description is according to the fire protection laws in Taiwan: (1) Turn off the zone bell under normal status by pressing the button once, and then the LED OFF will be on. (2) The system will start countdown for 5 minutes. After 5 mins, the zone bell will automatically sound. Note 1： If the above alarm source comes from a manual call point, the system will not enter the countdown timer, and the zone bell will be forced to sound immediately. Note 2： If the second alarm signal is received during the countdown time, the system will stop timing, and the zone bell will be forced to sound immediately.
	2. Zone Bell Stop（Mode B） (1) Press and hold until the LED（OFF） is ”flashing”, and then the zone bell will stop sound. (2) The main sounder will have beeping sound, and also the digital info window will show “PP” every 60 seconds to alarm. Press and hold this button until LED “OFF” is off to disable the setting.
Pre-Alarm OFF	1. Pre-alarm OFF: Press and hold until the LED(OFF) is〝ON〞, and the system will be in pre- alarm off status. When fire alarm occurs, FACP will trigger externally linked equipment, ex: zone bell, relay output…etc.

	2. Pre-alarm ON Press and hold until the LED(OFF) is〝OFF〞, and the system is in pre- alarm status. FACP needs to receive signals twice to trigger fire alarm. This function can prevent from false alarms.
Relay OFF	1. Relay Function OFF Stop sending signals to relay output: Press this button and the LED (OFF) will be “ON”.
	2. Relay Function ON Press this button and the LED(OFF) will be “OFF”, which can enable relay output function.

System Operation button：For checking system alarm or operation function.

Button	Description
Battery test	Under normal status, If you want to do battery test:: Press this button once and the LED will light on, the panel will perform the battery power supply test, and the normal AC power supply status will be automatically restored after 10 seconds.
Zone test & Test option	Before enters **Alarm test** or **Disconnection test**, the following steps should be followed: 1. Short press “Test button” to choose **Alarm test** or **Disconnection test.** (When LED lights on, the system enters Alarm/Disconnection testing mode.) 2. If you want the system get back to the normal status, short press “Test button” once until LED lights off.

	Zone alarm test (1). Press the “Test button” to choose **alarm test**. (2). Press and hold the “zone test” button until the LED turns on. (3). The system starts the alarm test one by one automatically, and the zone LED will light on to reflect the test results one by one. *The linkage equipments will not be triggered during the test.
	Disconnection test (1). Press the “Test button” to choose **disconnection test**. (2). Press and hold the zone test button until the LED turns on. (3). The system starts the disconnection test one by one, and the zone LED will light on to reflect the test results one by one. *The linkage equipments will not be triggered during the test.
	4. After the test is completed, press the reset button to restore the monitoring state.

7. Construction Notice

1. Make sure to read the wiring diagram of the panel carefully and confirm whether the AC input voltage: AC 220V is correct.
2. The panel shell "⏚" must be properly grounded.
3. Connect the AC220V power supply, turn on the AC power switch, and connect the battery wire (Note: ⊕⊖polarity cannot be inversely connected!)
4. All zone wires, control wires, etc. must be checked if they meet the requirements of fire protection laws before being connected to the

panel (very important!).

5. The output of the panel is DC24V, and its output capacity is detailed in electrical specifications.

6. Since each project has different system linkages, it is necessary to confirm whether the linkage function meets the requirements of the project before implementation.

7. The detector-loop wire adopts the two-in-two-out type. The detector in the end of each zone must be connected to a resistor 10KΩ 1/4W in parallel, and the same loop cannot be connected to more than one resistor at the same time.

8. The "ERS"(E.O.L.) next to the loop terminal of the panel is a terminal switch. When the loop is empty, the switch should be turned to "ON" to maintain the normal state of the panel.

9. The concurrent point of the zone bell (BC) and the fire alarm indicator light (U1) must be independent, and no concurrent wires should be used.

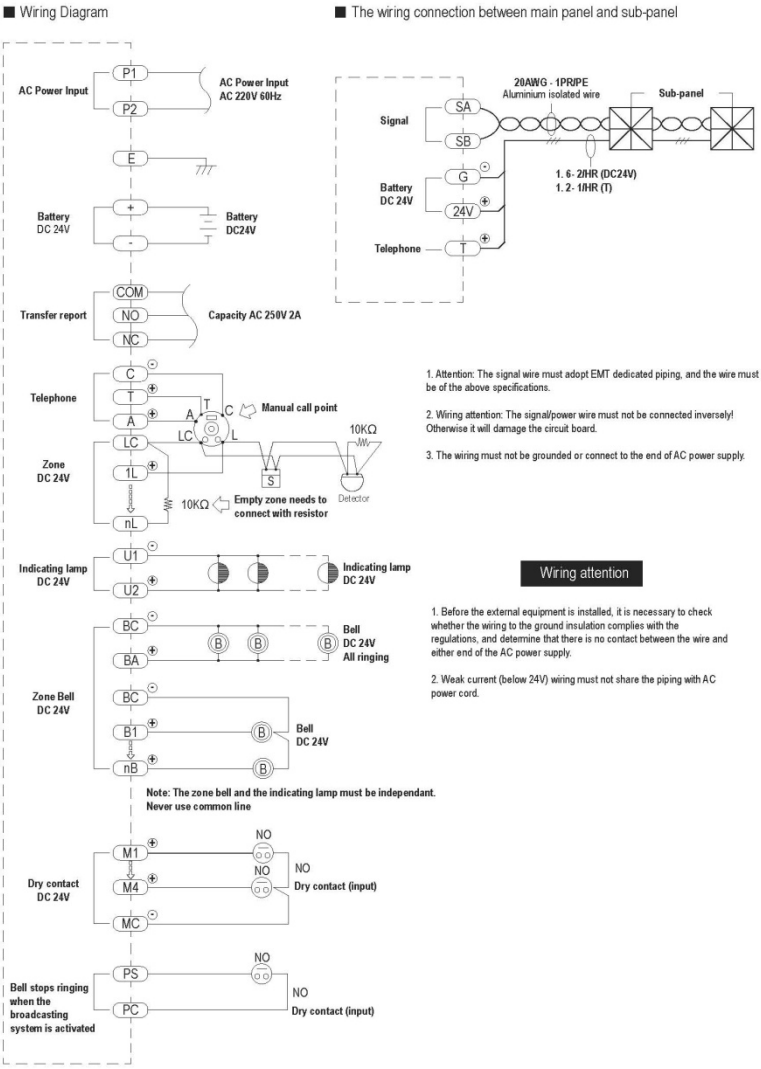
10. The communication wire (EMT) and the weak current (DC24V) monitoring/control wire must be independently piped, and it is strictly prohibited from sharing the pipe with the AC power supply (above AC220V).

11. Each wire must not be in contact with either end (both ends) of the AC power supply.

12. The external equipment must be confirmed if the functions and power consumption are normal before connected to the panel.

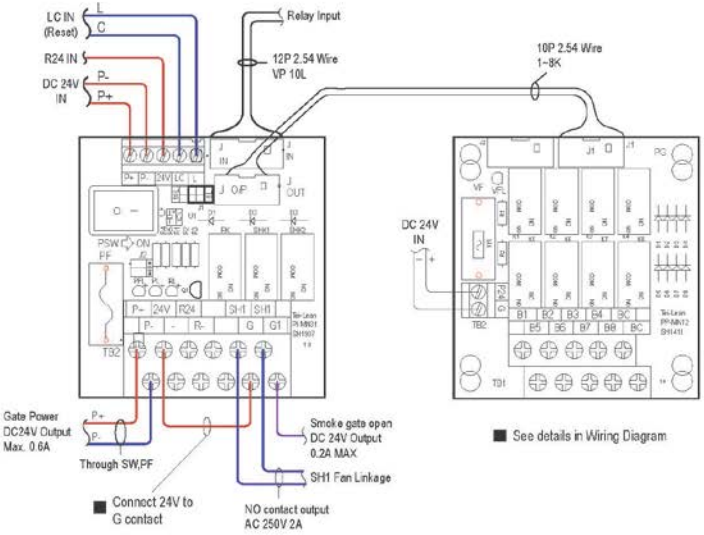
13. The external equipment (such as fan, pumps, etc.) linked to the panel must be equipped with a RELAY to be transfer the voltage.

8.Wiring Diagram

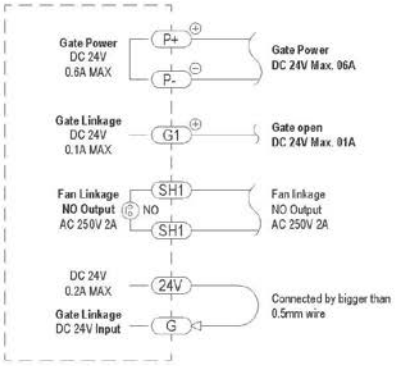


9. Gate/Fan Wiring diagram

■ 5L / 10L Gate / Fan linkage wiring diagram



■ 1L Gate / Fan linkage wiring diagram



Wiring attention

1. Before the external equipment is installed, it is necessary to check whether the wiring to the ground insulation complies with the regulations, and determine that there is no contact between the wire and either end of the AC power supply.

2. Weak current (below 24V) wiring must not share the piping with AC power cord.

10. Maintenance

Item	Description
Maintenance	□ Normal Normal light shows green light, and the voltmeter indicates 22V~26VDC
	□ Appearance inspection Check whether the appearance is damaged, replace the damaged part and clean the appearance
	□ Alarm test Details of test operation process in P11: To test if the fire alarm of each loop is normal. The test will not trigger output devices (ex: zone bell, etc…). If you want to check the zone bell, you must go to push the manual call point to sound the bell.
	□ Disconnection test Details of test operation process in P11: To test whether the disconnection function is normal.

	□ Equipment maintenance 1. If the maintenance of equipment in public places will disturb people on site, it must be coordinated with relevant organization units in advance. 2. Damage or defective equipment on site must be maintained in priority. 3. The maintenance schedule shall be at least twice a year (or based on your country's regulation), including visual inspection and functional inspection. 4. Comprehensive maintenance: A professional organization or original distributor must be appointed to do a comprehensive inspection every year, and the list should be recorded and handed over to the relevant personnel or relevant units for archiving to ensure safety. (Refer to the list below)
	□ Insulation inspection 1. Remove the wires between the panel and other devices to measure whether other devices are grounded. 2. Check whether the terminal of the panel is grounded. 3. Measure whether there is an AC voltage between the external wire and the AC power source.
	□ Maintenance A comprehensive inspection must be commissioned by a professional organization or the original distributor every year.

Abnormal state	1. Zone LED is on + main speaker sounds + fire alarm light flashes
	2. Zone LED flashes + main sounder sounds + disconnection LED flashes
	3. The battery power light flashes + the normal light is off + the Volts/info window displays E1
	4. SW Error LED flashes
	5. Error LED flashes + Volts/info window displays E7
	6. Manual station LED flashes.
	7. Phone LED is on
	8. Monitor 1/2/3/4 LED is on.

11、Abnormal state

Abnormal state	Possible cause	Solution
Zone LED is on + main sounder sounds + fire alarm light flashes	1. Zone detector activates or malfunction 2. Circuit wire failure 3. Circuit board failure	1. Check whether the detector in this area is alarming. 2. If it is a false alarm, press the reset button to resume monitoring 3. May ask distributor to inspect.

Zone LED flashes + main sounder sounds + disconnection LED flashes	1. The zone wire is faulty or the detector falls off 2. The resistor falls off (10KΩ 1/4W)	May ask distributor to inspect.
The battery power light is flashing + the normal power light is off + the digital info window displays E1	1. AC power failure 2. AC power fuse failure 3. Power board failure	1. Turn on the AC power 2. Change the fuse (note the specifications) 3. May ask distributor to inspect.
SW Error light flashes	The panel operation or test button is not fully positioned.	Check whether all buttons on the panel are positioned.
Error LED flashes + digital info window displays E7	1. Fuse failure 2. Power failure, battery failure 3. Circuit board failure	1. Check the broken fuse and replace it by a new one with corresponding specifications. 2. May ask distributor to inspect.
Manual station LED flashes	1. Manual call point is triggered on site.	1. Check the manual call point.
Phone LED is on	1. There is a call on site 2. Phone wire failure	1. Insert the phone to the phone jack. 2. May ask distributor to inspect.

Monitor 1/2/3/4 LED is on.	1. Fire pump activates on site. 2. There is no water in the fire pump water tank on site.	1. Check the situation on site.
Indicating lamp isn't functioning.	1. Indicating lamp LF fuse failure 2. Circuit board failure	1. Replace the fuse with the same specification. 2. May ask distributor to inspect.
Zone bell isn't functioning.	1. Zone bell BF fuse failure 2. Circuit board failure	1. Replace the fuse with the same specification. 2. May ask distributor to inspect.
Voltage is abnormal.	1. AC power is unstable 2. Circuit board failure	1. Check AC power voltage 2. May ask distributor to inspect.
LEDs on the control panel flash abnormally.	1.Circuit board failure	1. May ask distributor to inspect.
Operation button doesn't work.	1.Circuit board failure	1. May ask distributor to inspect.

12、Trouble shooting

Trouble	State	Possible cause	Solution
1.Disconnection	1.The zone LED	1. The external	1. Remove the

signal light is on	flashes 2.The disconnection LED flashes at the same time 3.Disconnection sound sounds	circuit or resistance of the loop is faulty 2. The loop control board of panel failure	external wire of the zone and then turn the dip switch of the loop to ON 2. If the panel gets back to normal status, then the external wire is faulty. If not, the panel is malfunction. 3. If it doesn't get back to normal status, please contact the distributor for repair.
2. The main sounder doesn't sound when disconnected.	1. Main sounder doesn't sounds when disconnected	1. The operation board of the panel is faulty 2. Main sounder failure	Same as above
3. Output devices don’t activate.	1. The indicating lamp does not light up.	1. The terminal is loose and the power cord of the	1. Check whether the terminals are loose

	2. The zone bell does not ring. 3. The smoke gate does not activate. 4. The buzzer does not sound. 5. The fan does not activate. 6. Broadcasting system is not linked. 7. Other linkage devices are not linked.	device is loose 2. External equipment failure 3. Device power output fuse failure 4. The LED of the fuse is on.	2. Check whether the fuse of each output board is burned
4.Fuse failure	1. The LED light next to the fuse is on 2. Error light flashes 3. Related external equipment does not activate, such as indicating lamps, bells, gates, buzzers, etc.	1. The external equipment is short-circuited or the electrical load of the equipment is too large.	1. Remove the external wire of the equipment and replace the fuse with the same specification. 2. The external wire can be connected only after the cause of the external fault has been checked

			and eliminated
5. Fire light is on.	1. The zone light is on 2.The fire alarm LED flashes 3. The main sounder and zone bells sound.	1. The external circuit of the zone is short-circuited or the detector is faulty (false alarm). 2. The manual call point is malfunctioning or being activated. 3. The zone control board failure.	1. First, remove the external wire of the zone, and press reset to check whether the zone LED becomes flashing. If it is flashing, it is an external wire problem (detectors). If the zone LED is still on, it means the panel is faulty.
6. The panel is not functioning.	1. The power light and the information window aren't functioning. 2. The zones cannot be tested.	1. The fuse is burned. 2. AC power failure.	1. Use a multi-meter to check whether the input voltage AC220V is normal 2. Check whether the fuse is burned
7.The voltage showed on information window is	1. The voltage exceeds 32~40V 2. The voltage is between 12V~0V	1. AC power voltage is too high or insufficient. 2. Voltmeter	1. Use a multi-meter to measure whether the voltage of AC

abnormal		failure. 3.Digital information widow failure)	power is normal 2. Check whether the fuse is burned
8.The battery light turns on abnormally	1. When the power supply is normal, the standby power light is on at the same time.	1. The PC operation board failure.	1. Ask the distributor for repair.
9. All the LED lights flash or keep on after turning on the panel.	1.All zone LEDs flash 2.All zone LEDs are always on 3.The fuse light is on 4.External linkage has abnormal output	1. This PC board is damaged by high voltage electricity, and this leads to all PC boards to be burned. 2. There is high voltage intrusion in the common wire or external wire of the zone, and this leads the PC board to be burned.	1. May ask distributor to inspect and repair. Replace the PC board if needed.
10.Phone LED turns on	1. The phone LED is on and the main	1. The phone jack is inserted.	1. Remove the phone wire to see

abnormally	sounder sounds	2. External phone light is short-circuited	if it remains abnormal.
11.The fire alarm light is abnormal (the zone LED is off)	1. The red fire indicator lights up	1. Circuit board failure 2. Power board failure	1. Check whether the zone is alarming. 2. Check which zone LED is on 3. After removing the external wire, press the reset button to see if it is normal 4. If it is not functioning, please contact the distributor.
12. The button is invalid.	1. The button is not functioning.	1. Poor contact of the button. 2. Button failure	1. Clear the button and try again. 2. May ask distributor to inspect

13、Error Code

Error Code	Description
E1	AC power failure
E2	Battery failure
E3	Battery low voltage
E7	Main power fuse failure
OE	Battery test normal
PH	Bell auto-stop ringing when phone function of broadcasting system is activated.
PP	Zone bell OFF