



Fire Alarm System

Equipment

Conventional Fire Alarm Control Panel: 16L-64L

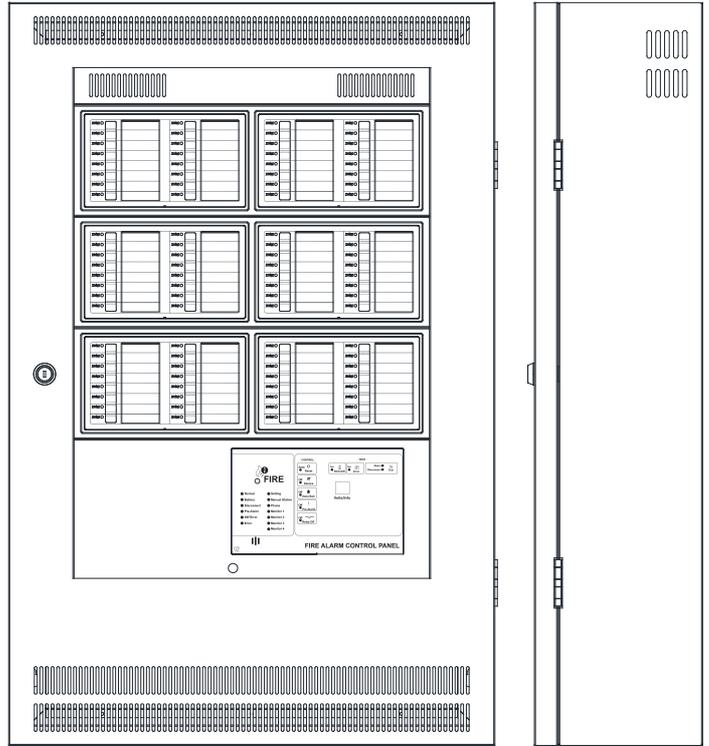
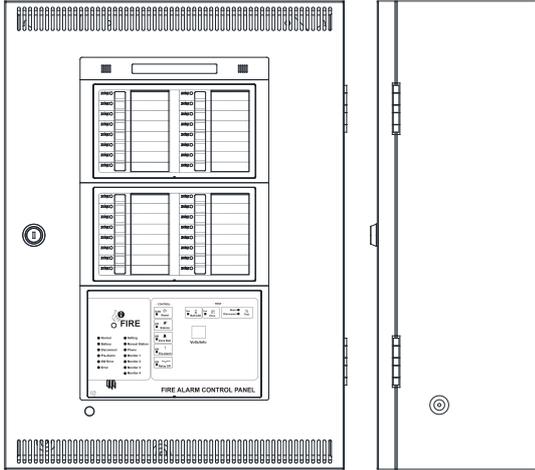
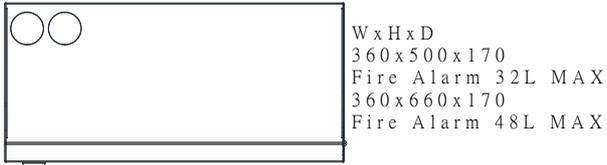
**Operation
Manual**

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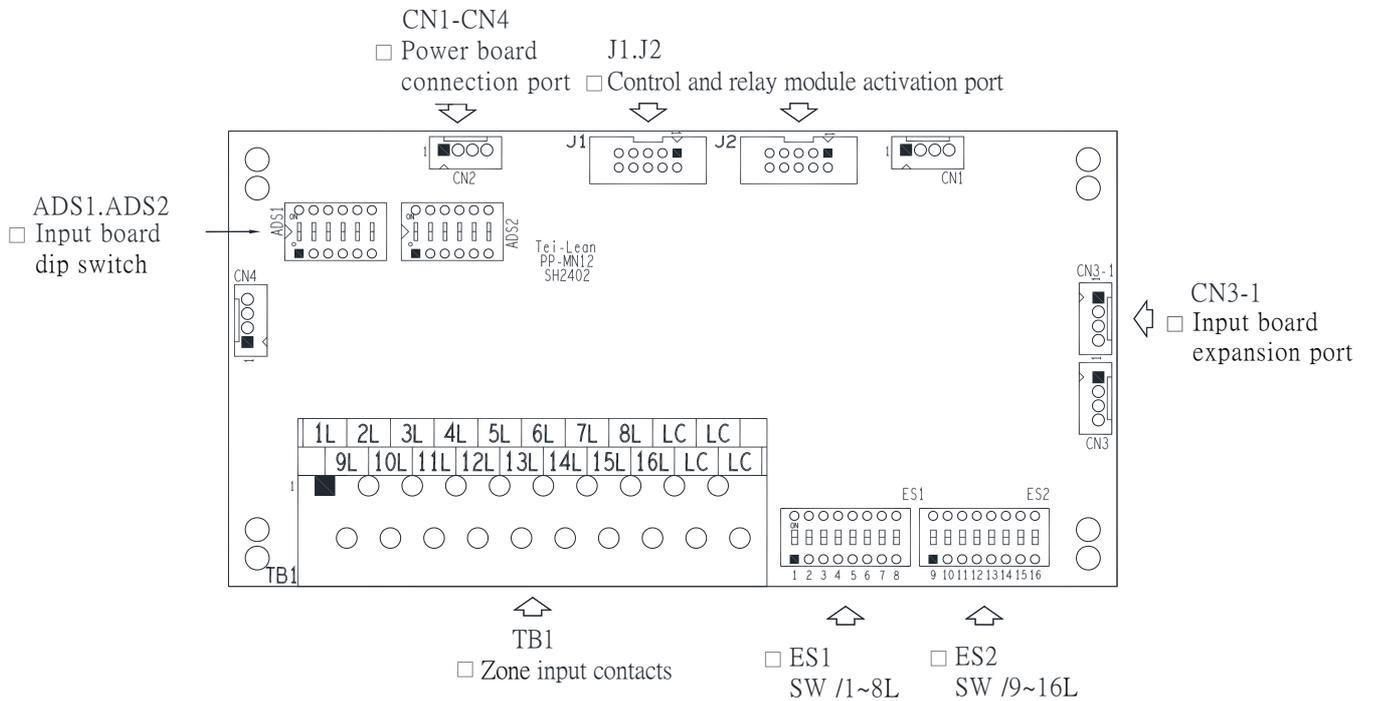
Contents

1. Appearance & Dimensions.....	1
2. Zone Input Board	1
3. Power Control Board	2
4. Specification.....	2
5. Zone LED/ Index	5
6. System Status LED	6
7. Error Code	7
8. System Operation Button.....	8
9. Construction Guidance	12
10. Wiring Diagram	13
11. Maintenance	14
12. Abnormal Status.....	16

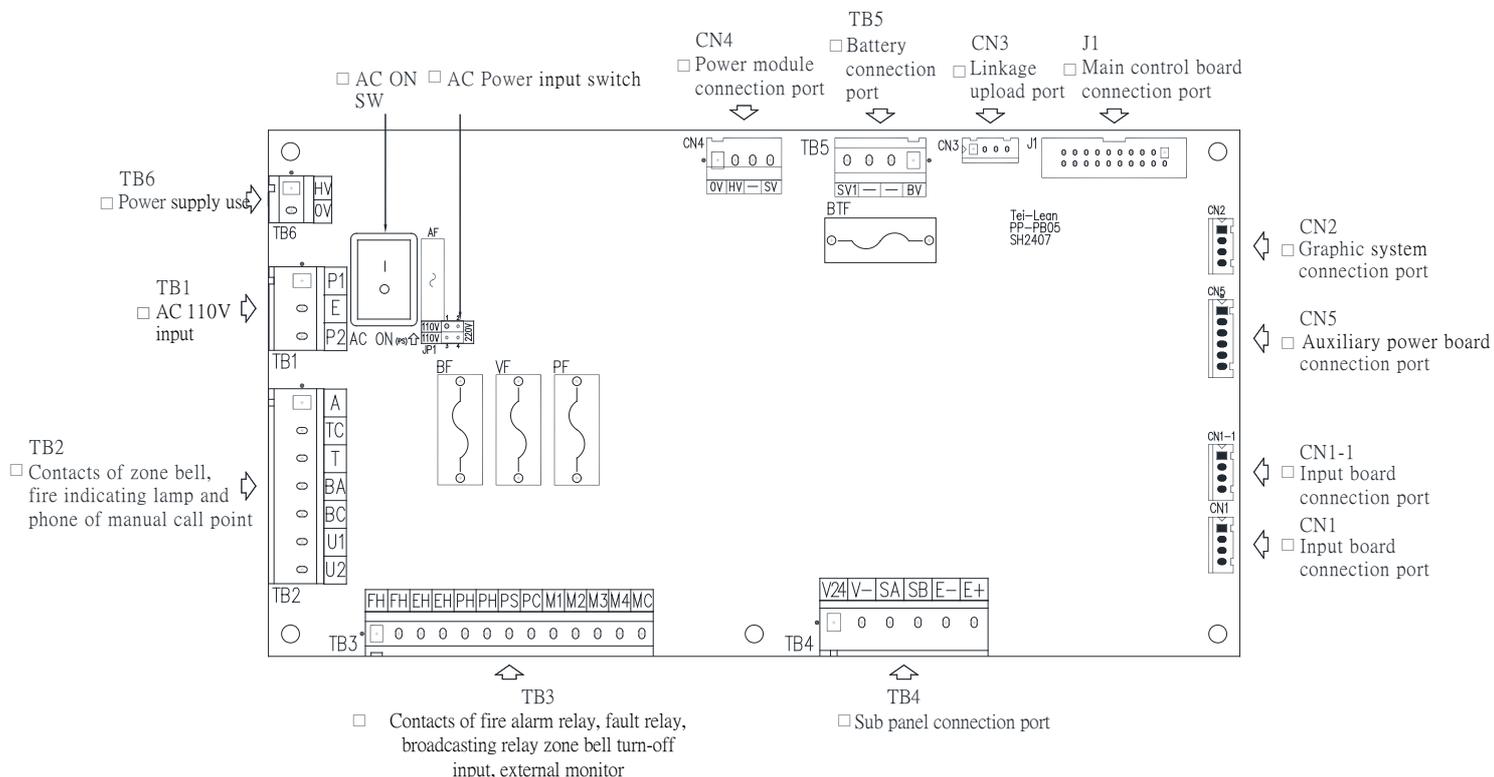
1. Appearance & Dimensions



2. Zone Input Board



3. Power Control Board



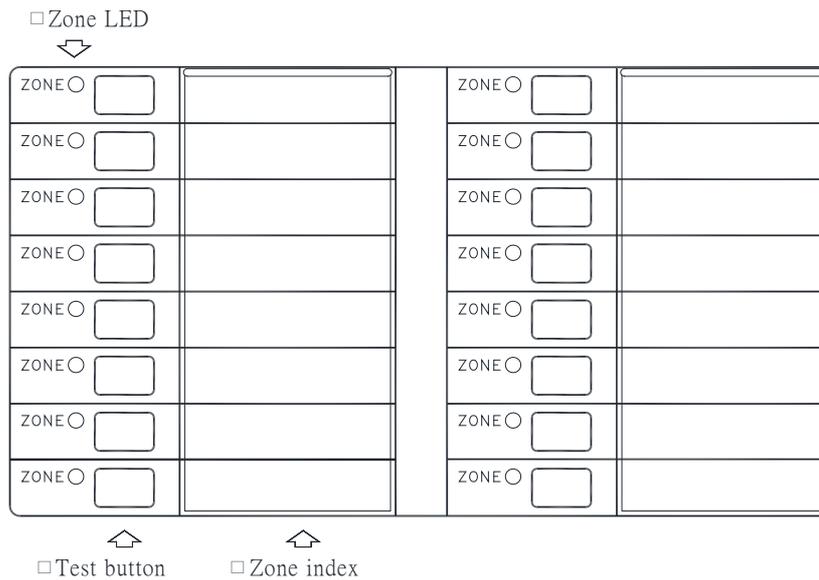
4. Specification

Item	Specification
Power	1. Power Source : AC220V 50/60Hz
	2. Standby Battery : DC24V 2.3AH/-Battery: When lower than DC20V, stop supplying electricity.
	3. Power Consumption : MAX current when alarming: DC24V 1A
	4. Grounding point: "≡"
	5. Fuse Specification : <input type="checkbox"/> AF—AC220V/Self-Reset 0.55A <input type="checkbox"/> PF—DC24V 2A/Zone board <input type="checkbox"/> BTF—DC24V 7A/Battery <input type="checkbox"/> VF—DC24V 2A/External Power & Sub-panel <input type="checkbox"/> BF—DC24V 3A/Zone Bell & Indicating Lamp
Zone	1. Monitoring Current : DC24V 10mA/zone
	2. Working Current : DC24V 24mA/zone
	3. Maximum Output : 1.5mA DC24V/zone
	4. Smoke Detectors & R.O.R Heat Detectors & Fixed Temperature Detectors ...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) zone⊖
Outputs	1. Zone Bell Output: DC24V (BA⊕ 、 BC⊖)
	2. Fire Indicating Lamp Output: DC24V (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 (FH 、 EH 、 PH) Contact Capacity:AC250V 2A
Monitoring Zone	NO passive switch input (M1~M4 、 MC) Fire alarm pump, water pump, insufficient water 1, insufficient water 2
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(optional)
	2.Communication between Manual Call Point phone jack and FACP phone jack. (T 、 TC)
E.O.L Switch	1. ES1/1~8L , Switch to ON when the zone is empty.
	2. ES2/9~16L , Switch to ON when the zone is empty.
Setting Port	1. System Linkage port: CN3
	2. Appointed Cables: 4P 2.5CN
Sub-Panel Connection	□ RS-485 Port (SA 、 SB)
	1. 20AWG-1Pr/PE aluminum isolated wire. (appointed wire)

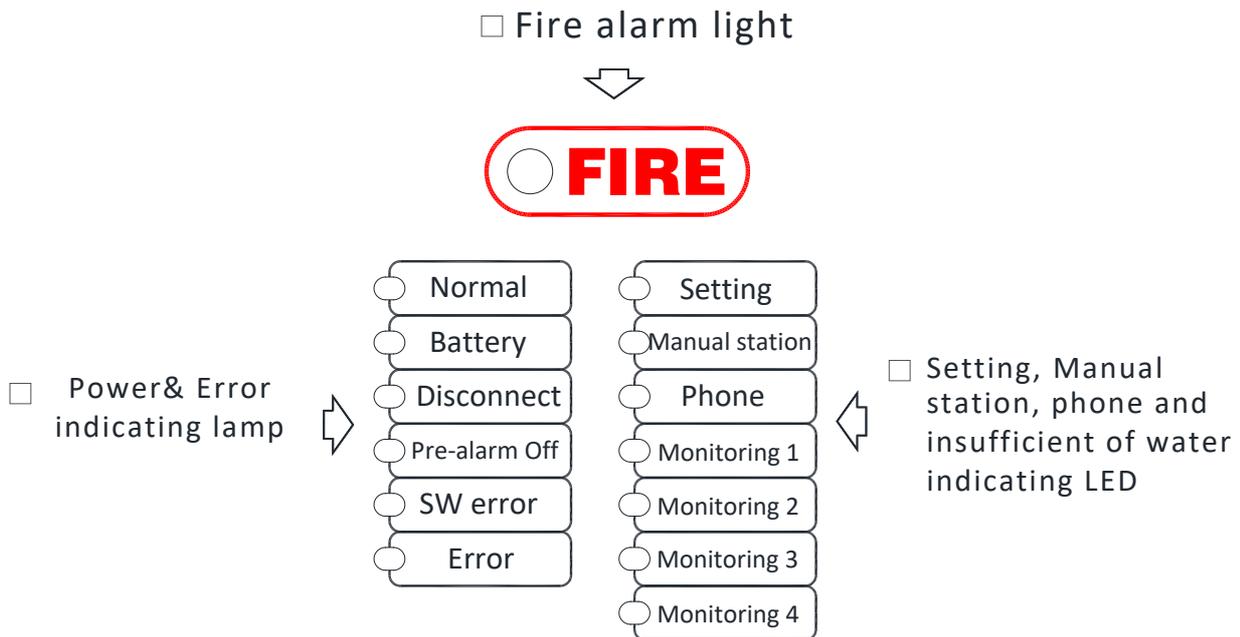
	2. Communication distance: 1000M MAX
	<input type="checkbox"/> DC24V wire: 1.6-2/HR (V24 \oplus 、 V- \ominus)
	<input type="checkbox"/> Phone handset (T 、 TC) 1.2-2/HR (The connection quality will be better if applying isolated wires)
	<input type="checkbox"/> Sub- Panel :DC24V (V24V \oplus 、 V- \ominus) offered by the FACP. (offered by FACP electricity: Maximum: 4 pieces, for 5pcs above need to connect with extra power supply)
	<input type="checkbox"/> Sub-panel maximum connection capacity will be 30 pieces.
	<input type="checkbox"/> Wiring
	1. The above wiring must adopt 1" EMT dedicated piping.
	2. The wiring is insulated from the ground DC250V 20M Ω or more, and needed to confirm that the wiring is not contacted at either end of AC220V.
	3. The contacts (SA 、 SB 、 V- \ominus 、 V24 \oplus) of Communication wires and electronic wires contacts must not reverse the polarity connection, otherwise the LOOP board might be burned.

5. Zone LED/ Index



Zone LED	Zone Test Button	Zone Index
<ul style="list-style-type: none"> ● 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 zones/detectors are disconnected, or end resistors fall, the zone LED will be " flashing" to indicate the zone has problems. (should check/fix immediately) 	<ul style="list-style-type: none"> ● Single Test Mode : When entering fire alarm or disconnection test mode, select the test button for each zone to perform the single-point test function. 	<ul style="list-style-type: none"> ● 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.

6. 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 in the default position.
- **Error** : The LED will be “flashing” when the power is gone, or fuse is burnt, or communication of zone board is broken. This needs to be checked/ fixed immediately.
- **Setting** : The LED will be “flashing” when entering setting mode, and the LED goes off when leaving it.
- **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. This LED light is a hardware light so it can't light on when conducting LED testing.
- **Monitoring contacts(TB3/M1~M4)** : The light will be ON when receives NO signal, and the light goes off when signal is gone.

7. Error Code

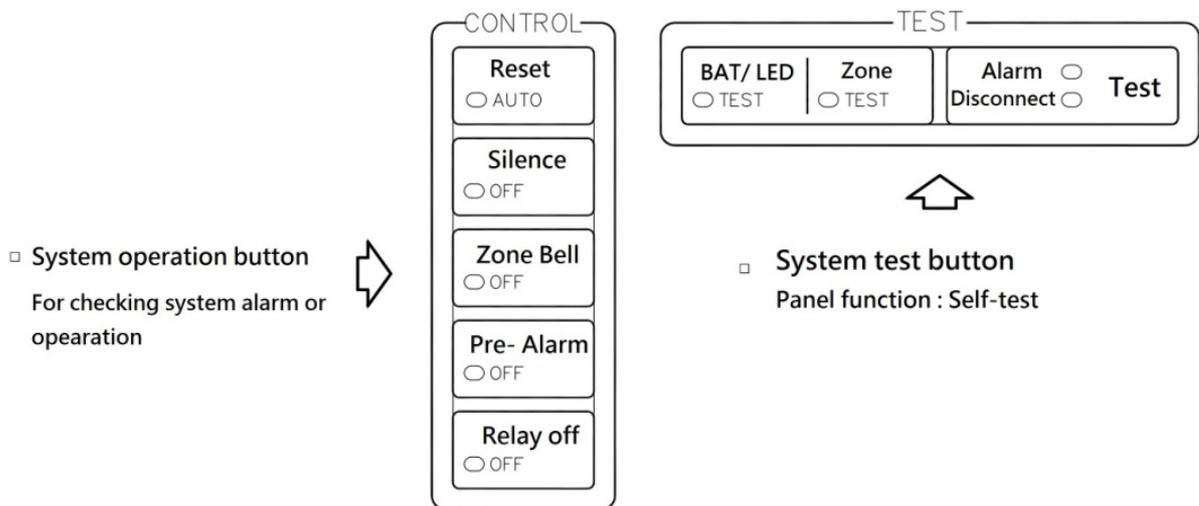
□ Voltage/Error Code



Volts/Info

Error Code	Description	Error Code	Description
E1	AC Power failure	00 – 99	Voltage
E2	Battery failure	H0	Sub-panel disable
E3	Battery low voltage	P0	Burning mode
E5	Zone bell & indicating lamp power failure	PH	Bell auto-stop ringing when phone function of broadcasting system is activated
E6	External power & sub-panel power failure	0E	Battery test normal
E7	Zone board failure	EP	Battery low voltage warning
F4	Power control board communication failure	PP	Zone bell OFF
C1	1L~8L communication failure	C5	33L~40L communication failure
C2	9L~16L communication failure	C6	41L~48L communication failure
C3	17L~24L communication failure	C7	49L~56L communication failure
C4	25L~32L communication failure	C8	57L~64L communication failure
H1	No. 1 sub-panel communication failure	L1	No. 17 sub-panel communication failure
H2	No. 2 sub-panel communication failure	L2	No. 18 sub-panel communication failure
H3	No. 3 sub-panel communication failure	L3	No. 19 sub-panel communication failure
H4	No. 4 sub-panel communication failure	L4	No. 20 sub-panel communication failure
H5	No. 5 sub-panel communication failure	L5	No. 21 sub-panel communication failure
H6	No. 6 sub-panel communication failure	L6	No. 22 sub-panel communication failure
H7	No. 7 sub-panel communication failure	L7	No. 23 sub-panel communication failure
H8	No. 8 sub-panel communication failure	L8	No. 24 sub-panel communication failure
H9	No. 9 sub-panel communication failure	L9	No. 25 sub-panel communication failure
0H	No. 10 sub-panel communication failure	0L	No. 26 sub-panel communication failure
1H	No. 11 sub-panel communication failure	1L	No. 27 sub-panel communication failure
2H	No. 12 sub-panel communication failure	2L	No. 28 sub-panel communication failure
3H	No. 13 sub-panel communication failure	3L	No. 29 sub-panel communication failure
4H	No. 14 sub-panel communication failure	4L	No. 30 sub-panel communication failure
5H	No. 15 sub-panel communication failure		
6H	No. 16 sub-panel communication failure		

8. 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 zone is either alarm or malfunction.
	2. Auto reset Under normal status, press and hold this button until the LED (AUTO) is "ON". The alarming zone will auto-reset every 15 seconds, please check the zone 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. Note: Since the phone circuit is designed as an independent function, the phone operation will not be affected by the Silence button.

<p>Zone Bell</p>	<p>1. Zone Bell Stop (Mode A)</p> <p>Following description is according to the fire protection laws in Taiwan:</p> <p>(1) Turn off the zone bell under normal status by pressing the button once, and then the LED OFF will be on.</p> <p>(2) The system will start countdown for 5 minutes. After 5 mins, the zone bell will automatically sound.</p> <p>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.</p> <p>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.</p>
	<p>2. Zone Bell Stop (Mode B)</p> <p>(1) Press and hold for 5 seconds until the LED (OFF) is "flashing", and then the zone bell will stop sound.</p> <p>(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.</p>
<p>Pre-Alarm OFF</p>	<p>1. Pre-alarm OFF</p> <p>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.</p>
	<p>2. Pre-alarm ON</p> <p>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.</p>

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 3 seconds.
LED test	By pressing battery test button until all LED light and information window are light on can check if LED light is broken. Phone light is not included in this test.
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.

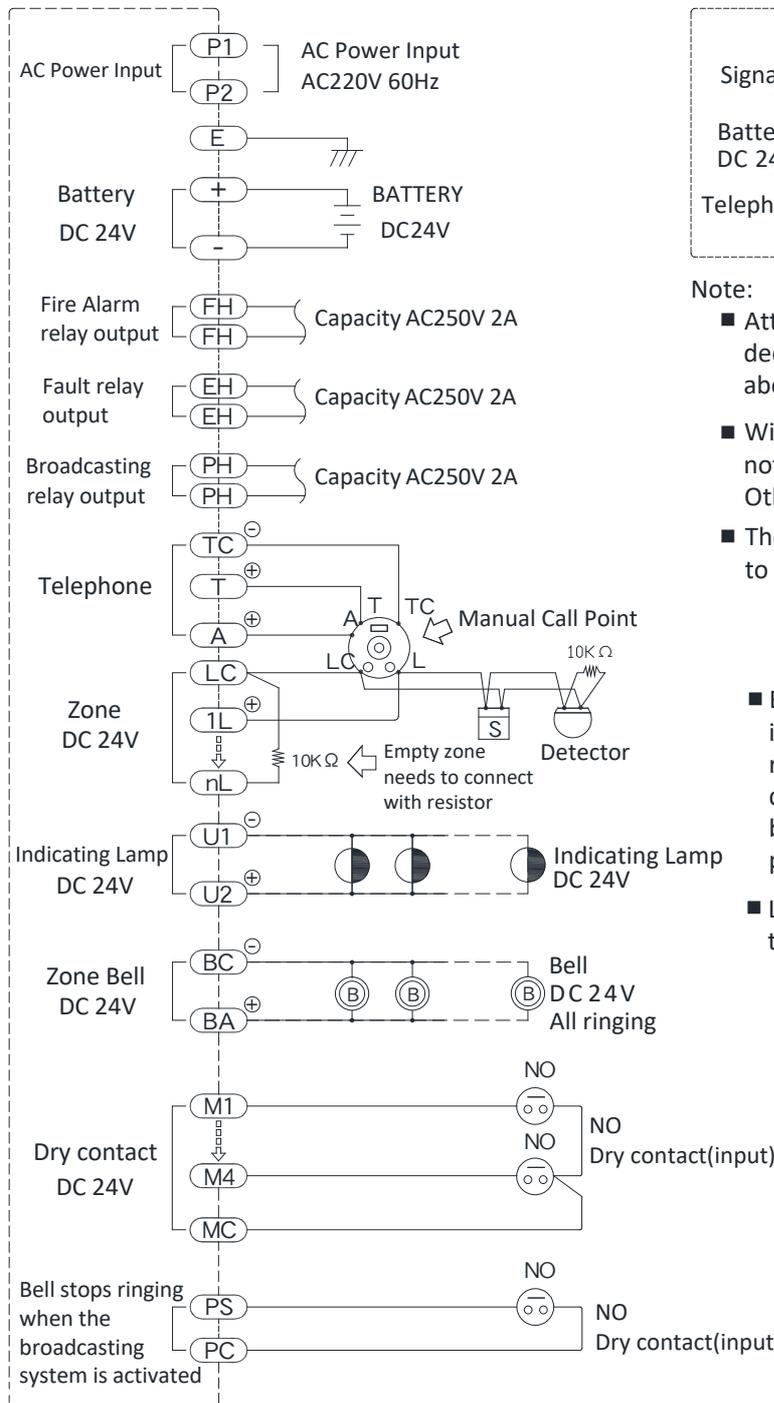
	<p>Zone alarm test</p> <p>1. Single Point Test Mode:</p> <p>(1). Press the “Test button” to choose Alarm Test.</p> <p>(2). Press the “zone test” button until the LED turns on.</p> <p>(3). The system enters fire alarm test for each zone. Press each zone button to perform the test.</p> <p>*The external equipments will not be triggered during the test.</p> <p>2. Automatically Test Mode:</p> <p>(1). Press the “Test button” to choose alarm test, then LED on the left side will light on.</p> <p>(2). Press and hold the zone test button until the LED turns "flashing".</p> <p>(3). The system starts the alarm test automatically, and the zone LED will light on to reflect the test results one by one.</p> <p>*The external equipments will not be triggered during the test.</p>
	<p>Disconnection test</p> <p>1. Single Test Mode:</p> <p>(1). Press the “Test button” to choose Disconnect Test.</p> <p>(2). Press the “zone test” button until the LED turns on.</p> <p>(3). The system enters disconnection test for each zone. Press each zone button to perform the test.</p> <p>*The external equipments will not be triggered during the test. The disconnect light will be flashing during the test.</p>
	<p>2. Automatically Test Mode:</p> <p>(1). Press the “Test button” to choose disconnection test, then LED on the left side will light on.</p> <p>(2). Press and hold the zone test button until the LED turns on.</p> <p>(3). The system starts the disconnection test automatically, and the zone LED will light on to reflect the test results one by one.</p> <p>* The external equipments will not be triggered during the test. The disconnect light will be flashing during the test.</p>
	<p>After the test is completed, press the reset button to restore the monitoring state.</p>

9. Construction Guidance

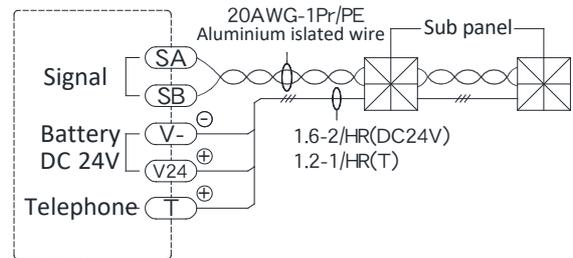
1. Make sure to read the wiring diagram of the panel carefully and confirm whether the AC input voltage: AC 220V is correct.
2. The panel shell "≡" must be properly grounded.
3. Connect the AC 220V power supply, turn on the AC power switch, and connect the battery wire (Note: ⊕ ⊖ polarity cannot be inversely 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-zone 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 zone cannot be connected to more than one resistor at the same time.
8. The "ES"(E.O.L.) next to the zone terminal of the panel is a terminal switch. When the zone 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 RS-485 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.

10. Wiring Diagram

■ Wiring Diagram



■ The wiring connection between main panel and sub-panel



Note:

- Attention: The signal wire must adopt EMT dedicated piping, and the wire must be of the above specifications.
- Wiring attention: The signal/power wire must not be connected inversely! Otherwise it will damage the circuit board.
- The wiring must not be grounded or connect to the end of AC power supply.

【 Wiring attention 】

- Before the external equipment is installed, it is necessary to check that the insulation resistance value must be above 2MΩ, and determine that there is NO contact between the wire and either end of the AC power supply.
- Low voltage wiring (below 24V) must not to share the piping with AC power cable.

11. Maintenance

Item	Description
Mainten ance	<input type="checkbox"/> Normal Normal light shows green light, and the voltmeter indicates 22V~26VDC.
	<input type="checkbox"/> Appearance inspection Check whether the appearance is damaged, replace the damaged part and clean the appearance.
	<input type="checkbox"/> Alarm test Details of test operation process in P10: To test if the fire alarm of each zone 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.
	<input type="checkbox"/> Disconnection test Details of test operation process in P10: To test whether the disconnection function is normal.

	<p>□ Equipment maintenance</p> <ol style="list-style-type: none"> 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)
	<p>□ Insulation inspection</p> <ol style="list-style-type: none"> 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.
	<p>□ Maintenance</p> <p>A comprehensive inspection must be commissioned by a professional organization or the original distributor every year.</p>

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.

12 、 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.

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

Monitor 1/2/3/4 LED is on.	<ol style="list-style-type: none"> 1. Fire pump activates on site. 2. There is no water in the fire pump water tank on site. 	<ol style="list-style-type: none"> 1. Check the situation on site.
Indicating lamp isn't functioning.	<ol style="list-style-type: none"> 1. Indicating lamp LF fuse failure 2. Circuit board failure 	<ol style="list-style-type: none"> 1. Replace the fuse with the same specification. 2. May ask distributor to inspect.
Zone bell isn't functioning.	<ol style="list-style-type: none"> 1. Zone bell BF fuse failure 2. Circuit board failure 	<ol style="list-style-type: none"> 1. Replace the fuse with the same specification. 2. May ask distributor to inspect.
Voltage is abnormal.	<ol style="list-style-type: none"> 1. AC power is unstable 2. Circuit board failure 	<ol style="list-style-type: none"> 1. Check AC power voltage 2. May ask distributor to inspect.
LEDs on the control panel flash abnormally.	<ol style="list-style-type: none"> 1. Circuit board failure 	<ol style="list-style-type: none"> 1. May ask distributor to inspect.
Operation button doesn't work.	<ol style="list-style-type: none"> 1. Circuit board failure 	<ol style="list-style-type: none"> 1. May ask distributor to inspect.